

Maternal and Child Health



Five-Year Needs Assessment 2010



Maternal and Child Health

Five-Year Needs Assessment 2010



***Division of Community and Public Health
Section for Healthy Families and Youth
Section of Epidemiology for Public Health Practice***

***Missouri Department of Health and Senior Services
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Missouri Maternal and Child Health Five-Year Needs Assessment: 2010

Table of Contents

Acronyms	i
Executive Summary	a
A. Five-Year Needs Assessment.....	1
1.0 Process.....	1
1.1 Process for Conducting Needs Assessment	1
1.1.1 Goals and Vision.....	1
1.1.2 Leadership.....	1
1.1.3 Describe the State’s overall needs assessment methodology	1
1.1.4 Methods for Assessing Three MCH populations in Missouri	3
1.1.5 Methods used to assess the state’s capacity to provide direct health care, enabling, population-based, and infrastructure building services	4
1.1.6 Describe all sources used.....	5
1.1.7 Linkages between Assessment, Capacity and Priorities	8
1.1.8 Dissemination	9
1.1.9 Describe the strengths and weaknesses of current methods and procedures used for the comprehensive MCH five-year needs assessment	11
1.2 Needs Assessment Partnership Building and Collaboration.....	13
2.0 Assessment of Needs of the Maternal and Child Health (MCH) Population	17
2.1 Socio-Demographic Overview.....	17
2.1.1 Demographics	17
2.1.2 Economy	24
2.1.3 Employment.....	25
2.1.4 Poverty	25
2.1.5 Maternal and Child Health Population	28
2.2 Health of Women.....	29
2.2.1 General Women Population.....	30
2.2.2 Women with a Recent Live Birth	33
2.3 Maternal and Infant Health.....	36
2.3.1 Births	36
2.3.2 Teen Birth Rate.....	37
2.3.3 Health Insurance and Women, Infants and Children (WIC) Enrollment during Pregnancy	39
2.3.4 Prenatal Care.....	40
2.3.5 Maternal Cigarette Smoking.....	42
2.3.6 Maternal Alcohol Use.....	43
2.3.7 Physical Abuse Around Pregnancy.....	43
2.3.8 Maternal Morbidity.....	44

2.3.9	Maternal Mortality	48
2.3.10	Infant and Fetal Deaths	48
2.3.11	Low Birth Weight (LBW) and Preterm Delivery (PTD)	53
2.3.12	Birth Defects	55
2.3.13	Newborn Blood Spot Screening.....	56
2.3.14	Newborn Hearing Screening.....	57
2.3.15	Breastfeeding	58
2.4	Health of Children and Adolescents	62
2.4.1	Overall Description of Children and Adolescent Population	62
2.4.2	Overall Health Status of Children and Adolescents	65
2.4.3	Leading Causes of Deaths in Children and Adolescents	67
2.4.4	Unintentional Injuries due to Motor Vehicle Accidents (MVA)	68
2.4.5	Child Maltreatment	69
2.4.6	Teen Suicide.....	70
2.4.7	Childhood Immunization Coverage	71
2.4.8	Overweight and Obesity	72
2.4.9	Youth Tobacco Use.....	74
2.4.10	Alcohol and Drug Use	75
2.4.11	Sexual Behaviors	77
2.4.12	Chlamydia	78
2.4.13	Oral Health.....	79
2.4.14	Childhood Lead Poisoning.....	81
2.5	Children and Youth with Special Health Care Needs.....	84
2.5.1	Socio-Demographics of Children and Youth with Special Health Care Needs.....	84
2.5.2	Impact on CYSHCN and Their Families	86
2.5.3	Specific Health Care Service Needs and Unmet Needs.....	88
2.5.4	Health Conditions Among CYSHCN	89
2.5.5	National Performance Measures (NPM) for CYSHCN.....	90
2.5.6	Asthma	92
2.6	Performance Measures, Outcome Measures, and Health Status Indicators.....	93
2.7	Results from Focus Groups.....	93
2.7.1	Methodology	93
2.7.2	Provider Focus Group Summary	95
2.7.2.1	Rural Provider Analysis	95
2.7.2.2	Urban Provider Analysis.....	97
2.7.3	Consumer Focus Group Summary.....	98
2.7.4	Hispanic Consumer Focus Group Summary.....	103
2.7.5	Survey among Focus Group Participants.....	104
3.0	MCH Program Capacity by Pyramid Levels	110
3.1	Direct/Enabling Services	110
3.1.1	Medicaid and SCHIP	110

3.1.2	Public Primary Health Care through Federally Qualified Health Centers.....	115
3.1.3	Primary Care Resources Initiative (PRIMO).....	118
3.1.4	Primary Care Physician Capacity	120
3.1.5	Dental Health Care Network.....	124
3.1.6	Mental Health Care Network through Missouri Department of Mental Health	126
3.1.6.1	Division of Comprehensive Psychiatric Services	127
3.1.6.2	Missouri Division of Developmental Disabilities.....	131
3.1.6.3	Division of Alcohol and Drug Abuse - Programs for Women, Children and Adolescents	132
3.1.7	Local Public Health Network.....	135
3.1.8	Emergency Medical Service Networks.....	137
3.1.9	Bureau of Special Health Care Needs (SHCN)	141
3.1.10	Supplemental Nutrition Program for Women, Infants and Children (WIC)	148
3.1.11	Missouri Home Visiting Program.....	151
3.1.12	Missouri Model for Brief Smoking Cessation Training Program	154
3.1.13	Comprehensive Tobacco Control Program.....	155
3.1.14	Healthy Kids, Healthy Communities to Reverse the Childhood Obesity Epidemic through Local Initiatives.....	157
3.2	Population-Based Services.....	157
3.2.1	Newborn Blood Spot Screening.....	157
3.2.2	Missouri Newborn Hearing Screening Program.....	159
3.2.3	Immunization Program	162
3.2.4	State Response to the 2009-2010 H1N1 Influenza Pandemic	163
3.2.5	Bureau of HIV, STD, and Hepatitis.....	164
3.2.6	Newborn Health Program	167
3.2.7	FREE Prescription Prenatal Vitamins through Schnucks Pharmacies	172
3.2.8	Breastfeeding Program.....	172
3.2.9	Alternatives to Abortion	173
3.2.10	Adolescent Health Program	173
3.2.11	School Health Services	176
3.2.12	Injury Prevention Network	182
3.2.13	Childhood Lead Poisoning Prevention Program (CLPPP).....	183
3.2.14	Asthma Prevention and Control Program.....	184
3.2.15	Diabetes Prevention and Control Program (DCPC)	187
3.3	Infrastructure Building Services	188
3.3.1	Maternal and Child Health Coordinated System	188
3.3.2	Early Childhood Comprehensive System	190
3.3.3	Missouri Pregnancy Risk Assessment Monitoring System (PRAMS).....	191
3.3.4	Pediatric Nutrition Surveillance System (PedNSS) and Pregnancy Nutrition Surveillance System (PNSS).....	192
3.3.5	Pregnancy Associated Mortality Review (PAMR).....	193

3.3.6	Birth Defect Registry	193
3.3.7	Behavioral Risk Factor Surveillance System (BRFSS).....	194
3.3.8	Community Health Improvement Resources (CHIR) Web Site.....	195
4.0	Selection of State MCH Priorities	198
4.1	Process of Selection of State MCH Priorities	198
4.2	Summary of State MCH Priorities	199

Figures

Figure 1	Metropolitan and Micropolitan Statistical Areas	18
Figure 2	Missouri Population Pyramid, 2008	19
Figure 3	Racial Composition of Missouri Population, 2008.....	20
Figure 4	Number of African-American Population by County, Missouri, 2008	21
Figure 5	Number of Hispanic Population, Missouri, 1990-2008.....	22
Figure 6	Number of Hispanic Population by County, Missouri, 2008.....	23
Figure 7	Number of Asian/Pacific Islander Population by County, Missouri, 2008	24
Figure 8	Percentage of Persons Living in Poverty by County, Missouri, 2008	26
Figure 9	Percentage (%) of Live Births to Women on Medicaid, Missouri, 1990-2008 ...	27
Figure 10	Percentage (%) of Medicaid Births by County, Missouri, 2008.....	28
Figure 11	Prevalence of Overweight/Obesity and Current Cigarette Smoking Among Women 18-44 Years of Age, MO and U.S., 1999, 2003, and 2008	33
Figure 12	Percentage (%) of Unintended Pregnancies by Maternal Demographics, MO PRAMS 2007.....	35
Figure 13	Prevalence (%) of Select Maternal Health Behaviors by Pregnancy Intention, MO PRAMS 2007.....	35
Figure 14	Birth Rate Among Girls 15-17 Years, by Race/Ethnicity, MO and U.S., 2006 ..	37
Figure 15	Teen (15-17 years) Birth Rate by Race and Ethnicity, Missouri, 1990-2008.....	38
Figure 16	Teen Birth Rate Among Hispanics, MO and U.S., 1990-2008.....	39
Figure 17	Percent of Infants Born to Women Receiving Prenatal Care Beginning in the First Trimester, by Medicaid Status, Missouri, 1990-2008	41
Figure 18	Percent of Women Who Smoked During Pregnancy, MO and U.S., 1990-2008.....	42
Figure 19	Prevalence (%) of Smoking During the Last Three Months of Pregnancy, Missouri, 2007	43
Figure 20	Prevalence (%) of Physical Abuse During Pregnancy, Missouri, 2007	44
Figure 21	Infant Mortality Rate, MO and U.S., 1990-2008.....	49
Figure 22	Infant Mortality Rate by Race, MO and U.S., 1994-2008.....	49
Figure 23	Neonatal and Post-neonatal Mortality Rate, MO and U.S., 1998-2008	51
Figure 24	Infant Mortality Rate for SIDS and Unintentional Injuries, Missouri, 1999-2008.....	52
Figure 25	Percentage (%) of Infants Often Placed on Their Back to Sleep, by Maternal Characteristics, Missouri, 2007	53
Figure 26	Rate of Low Birth Weight (%), by Race, Missouri, 1990-2008.....	54
Figure 27	Rate of Preterm Delivery (%), by Race, Missouri, 1990-2008.....	55
Figure 28	Percentage (%) of Mothers Who Ever Breastfed Their Infants, NIS and PedNSS, 2002-2008.....	60
Figure 29	Percentage (%) of Mothers Who Breastfed Their Infants at 6 Months, NIS and PedNSS, 2002-2008.....	61

Figure 30	Percentage of Mothers Who Ever Breastfed and Who Breastfed at 8 Weeks, Missouri PRAMS, 2007.....	62
Figure 31	Death Rate Due to Motor Vehicle Accidents Among Children and Adolescents, MO and U.S., 1999-2008	69
Figure 32	Suicide Death Rate Among Youth 15-19 Years of Age, MO and U.S., 1999-2008	70
Figure 33	Percent of 19-35 Month Old Children Who Received Recommended Schedule of Immunizations*, MO and U.S., 1999-2008.....	72
Figure 34	Percent of Children Ages 2-4 Years in WIC with a BMI \geq 85 th Percentile, MO and U.S., 1997-2008.....	73
Figure 35	Prevalence (%) of Current Cigarette Smoking Among High School Students, MO and U.S., 1995-2007	74
Figure 36	Prevalence (%) of Episodic Heavy Alcohol Drinking Among High School Students, MO and U.S., 1995-2007	76
Figure 37	Prevalence (%) of Cigarette Smoking, Alcohol Drinking and Illicit Drug Use Among High School Students, by Race, Missouri, 2007	77
Figure 38	Prevalence (%) of Ever Having Sexual Intercourse Among High School Students, by Race, Missouri, 1995-2007	77
Figure 39	Reported Rate of Chlamydia Among Girls Ages 15-19 Years, by Race/Ethnicity, Missouri, 1996-2008	78
Figure 40	Prevalence (%) of Receiving Preventive Dental Care Among Children Ages 1-17 Years, by Socio-demographic Characteristics, Missouri, 2007	80
Figure 41	Missouri Children <6 Years of Age Tested for Lead Poisoning	82
Figure 42	Missouri Lead Testing Areas, April 9, 2009.....	84
Figure 43	Impact on Families with CYSHCN, Missouri, 2005-2006.....	87
Figure 44	National Performance Measures for CYSHCN, MO and U.S., 2005-2006	90
Figure 45	Rate of Asthma ER Visits Among Children <15 Years Old by Race, Missouri, 1998-2007	93
Figure 46	Missouri Managed Care Regions.....	113
Figure 47	Percent of Women of Childbearing Age Enrolled in Missouri Medicaid Using Family Planning, by County, 2008.....	114
Figure 48	All Providers for Missouri Medicaid, by County, 2008	115
Figure 49	Missouri Federally Qualified Health Centers	116
Figure 50	Counties with Funded PRIMO Project, Missouri.....	119
Figure 51	Health Professional Shortage Areas in Missouri	120
Figure 52	Number of Primary Care Physicians Per County, 2009	121
Figure 53	Number of Primary Care Physicians with OB/GYN Specialty Per County, 2009	122
Figure 54	Number of Primary Care Physicians Specializing in Pediatrics Per County, 2009	123
Figure 55	Dentists in Clinical Practice, by County, Missouri, 2009.....	126
Figure 56	Administrative Agents, Comprehensive Psychiatric Service Areas, Missouri Department of Mental Health	128
Figure 57	Children's Service Areas, Division of Comprehensive Psychiatric Services, Missouri Department of Mental Health	129

Figure 58	Percent of Missourians with Serious Mental Illness, Served by Comprehensive Psychiatric Services	130
Figure 59a	CSTAR Women and Children Treatment Program Locations, Missouri, Missouri Department of Mental Health	133
Figure 59b	CSTAR Adolescent Treatment Program Locations, Missouri, Missouri Department of Mental Health	134
Figure 60	Local Public Health Agencies by Governance, February 2008, Missouri Department of Health and Senior Services	136
Figure 61	Missouri Air Ambulance.....	139
Figure 62	Missouri Hospitals	140
Figure 63	EMS Resources in Missouri.....	141
Figure 64	Children and Youth with Special Health Care Needs (CYSHCN) Service Coordination Region Map.....	143
Figure 65	Counties Currently Served by the Building Blocks Program	152
Figure 66	Counties Served by the Missouri Community-Based Home Visiting Programs	153
Figure 67	2008 Misses from Missouri Newborn Hearing Screening.....	161
Figure 68	2008 Refers from Missouri Newborn Hearing Screening	162
Figure 69	Schools Participating in the School Health Services Contract, FY 2009	177
Figure 70	Nurses Working in Public School Districts	178
Figure 71	Statewide Nurse to Student Ratio	178
Figure 72	Scholarships for Registrations Offered	178
Figure 73	Contractor Successes from FY 05-09	180
Figure 74	Missouri SAFE KIDS Coalitions.....	182
Figure 75	Missouri Workforce Development, Becoming an Asthma Educator and Care Manager, (Number of People Completing the Course 2006-2009)	186
Figure 76	School Health Program Participants 2009	187
Figure 77	FFY 2009 Maternal and Child Health Contracts	189
Figure 78	Maternal Child Health Services Contract 2009-2011 Priority Health Issues	190

Tables

Table 1	Selected Demographic Information, MO and U.S.....	17
Table 2	Life Expectancy at Birth in Missouri.....	19
Table 3	Poverty Rate (%)*, MO and U.S., 2001 and 2008.....	25
Table 4	Maternal and Child Health Population, Missouri, 1999 and 2008	29
Table 5	Selected Health Indicators Among Women, MO and U.S.	31
Table 6	Prevalence (%) of Selected Preconception Health Indicators, MO PRAMS, 2007.....	33
Table 7	Number of Live Births and Birth Rates by Maternal Age and Race/Ethnicity, Missouri, 1999 and 2008.....	36
Table 8	Percentage (%) of Selected Maternal and Infant Health Outcomes and Behaviors by Maternal Age, Missouri PRAMS 2007	39
Table 9	Percentage (%) of Live Births to Women on Food Stamps, Medicaid, or WIC During Pregnancy, Missouri, 1999, 2003, and 2008.....	40
Table 10	Proportions (%) of Hospitalizations for Selected Maternal Complications Associated with Pregnancy, Women 15-44 Years of Age, Missouri, 1998 and 2007*	46
Table 11	Prevalence (%) of Maternal Infections During Pregnancy, MO PRAMS 2007 ..	47
Table 12	Top Five Leading Causes of Infant Deaths, Missouri, 2008	50
Table 13	Incidence of Selected Disorders Identified through Newborn Blood Spot Screening, Missouri, 2005-2008	56
Table 14	Comparison of Selected Breastfeeding Indicators in Missouri and the Nation.....	59
Table 15	Selected Socio-demographic Characteristics in Children and Adolescents in Missouri.....	64
Table 16	2007 National Survey of Children’s Health, Missouri Profile	66
Table 17	Leading Causes of Deaths in Children and Adolescents, MO and U.S., 2006....	68
Table 18	Percentages (%) of Middle and High School Students Who Had Positive or Negative Attitudes Towards Smoking, Missouri, 2003 and 2009.....	75
Table 19	Oral Health Indicators Among Missouri Third Grade School Children, 2010....	79
Table 20	Missouri’s Performance in Eight Proven Policy Approaches against the National Benchmark	81
Table 21	Prevalence of CYSHCN, MO and U.S., 2001 and 2005-2006.....	85
Table 22	Prevalence (%) of CYSHCN Among Children Ages 0-17, by Socio- demographic Characteristics, Missouri, 2005-2006	86
Table 23	Prevalence (%) of CYSHCN with Affected Daily Activities and Missed School Days, MO and U.S., 2005-2006.....	87
Table 24	Percentage (%) of CYSHCN Needing Specific Health Care Services and Percentage (%) of CYSHCN with a Specific Health Care Service Need, but Not Received.....	88
Table 25	Prevalence (%) of Selected Health Conditions Among CYSHCN, MO and U.S., 2005-2006.....	89

Table 26	List of Focus Groups.....	94
Table 27	Demographics of Focus Group Participants	104
Table 28	Participant Responses to Survey Questions	105
Table 29	Number of Missouri Medicaid Enrollees, 2005-2009	112
Table 30	Distribution of Missouri Physicians by Primary Care Specialty	124
Table 31	WIC Monthly Caseload 2005 Compared to 2009.....	150
Table 32	Number of Abnormals Requiring Follow-Up, and Confirmed Positives and On Treatment, Missouri Newborn Blood Spot Screening Program, 2005-2008	158
Table 33	Number of Samples Submitted by Clients at MIPP Clinics and Positive Percentage (%) for Chlamydia or Gonorrhea	166
Table 34	Measures of Outreach Education Services	168

Acronyms

A2A	Alternatives to Abortion
AAP	American Academy of Pediatrics
ABLES	Adult Blood Lead Epidemiology and Surveillance Program
ACIP	Advisory Committee on Immunization Practices
ACOG	American College Obstetricians and Gynecologists
ADA	Division of Alcohol and Drug Abuse
ADHD	Attention Deficit Hyperactivity Disorder
AEGP	Abstinence Education Grant Program
AHI	Adult Head Injury Program
AHP	Adolescent Health Program
ALC	Preconception Health for Adolescents Action Learning Collaborative
AMCHP	Association of Maternal and Child Health Programs
ASD	Autism Spectrum Disorders
ASTHO	Association of State and Territorial Health Officials
ATOD P&A	Alcohol, Tobacco and Other Drugs Prevention and Awareness Program
BCCCP	Missouri Breast and Cervical Cancer Control Project
BCCDC	Bureau of Cancer and Chronic Disease Control
BDRS	Birth Defect Registry System
BEMS	Bureau of Emergency Medical Services
BHI	Bureau of Health Informatics
BMI	Body Mass Index
BRFSS	Behavioral Risk Factor Surveillance System
CAHMI	Child and Adolescent Health Measurement Initiative
CASH	Council for Adolescent and School Health
CBEC	Coordinating Board for Early Childhood
CD	Children's Division
CDC	Centers for Disease Control and Prevention
CHC	Community Health Center
CHIP	Children's Health Insurance Program
CHIR	Community Health Improvement Resources
CLPHS	Center for Local Public Health Services
CLPPP	Childhood Lead Poisoning Prevention Program
CMS	Centers for Medicare and Medicaid Services
CPONDER	CDC's PRAMS On-line Data for Epidemiologic Research
CPS	Comprehensive Psychiatric Services
CSMT	Comprehensive System Management Team
CSTAR	Comprehensive Substance Abuse Treatment and Rehabilitation
CYSHCN	Children and Youth with Special Health Care Needs
CYSHCNP	Children and Youth with Special Health Care Needs Program
DCPH	Division of Community and Public Health
DD	Missouri Division of Developmental Disabilities
DESE	Missouri Department of Elementary and Secondary Education

DHSS	Department of Health and Senior Services
DMH	Missouri Department of Mental Health
DOVE	Domestic Violence Ended
DPCP	Diabetes Prevention and Control Program
DSS	Missouri Department of Social Services
DYS	Division of Youth Services
ECCS	Early Childhood Comprehensive System
EBL	Elevated Blood Lead Level
EHDI	Early Hearing Detection and Intervention
EMS	Emergency Medical Services
EMSC	Emergency Medical Services for Children
EPA	Environmental Protection Agency
EPHP	Section of Epidemiology for Public Health Practice
FASD	Fetal Alcohol Spectrum Disorder
FQHC	Federally Qualified Health Center
FSD	Family Support Division
FSP	First Steps Program
FVPF	Family Violence Prevention Fund
GIS	Geographic Information System
H1N1	Pandemic Influenza A
HCY	Healthy Children and Youth Program
HFY	Section for Healthy Families and Youth
HIV	Human Immunodeficiency Virus
HP 2010	Healthy People 2010 Objectives
HRSA	Health Resources and Services Administration
IMR	Infant Mortality Rate
IOM	Institute of Medicine
ISC	Integrated Community Services for Children and Youth Special Health Care Needs
LBW	Low Birth Weight
LFU	Loss to Follow-up
LPHA	Local Public Health Agencies
MAC	Missouri Asthma Coalition
MAPCP	Missouri Asthma Prevention and Control Program
MCBHV	Missouri Community-Based Home Visiting Program
MCH	Maternal and Child Health
MCHB	Maternal and Child Health Bureau
MFH	Missouri Foundation for Health
MHDC	Missouri Medicaid for Disabled Children
MHIAC	Missouri Head Injury Advisory Council
MICA	Missouri Information for Community Assessment
MIHA	California's Maternal Infant Health Assessment
MIPP	Missouri Infertility Prevention Program
MMWR	Morbidity and Mortality Weekly
MNHSP	Missouri Newborn Hearing Screening Program

MoCAN	Missouri Council for Activity and Nutrition
MoCHAPS	Missouri Child Health Assessment Program Survey
MOD	March of Dimes
MOHSAIC	Missouri Health Strategic Architectures and Information Cooperative
MoPRA	Missouri Pregnancy Related Assessment and Monitoring System
MOU	Memorandum of Understanding
MPCA	Missouri Primary Care Association
MSU	Missouri State University
MTQ	Missouri Tobacco Quitline
MVA	Motor Vehicle Accident
NACCHO	National Association of County and City Health Officials
NCFA	National Council on Folic Acid
NCHS	National Center for Health Statistics
NFP	Nurse Family Partnership
NH	Non Hispanic
NHANES	National Health and Nutrition Examination Survey
NIS	National Survey of Immunization
NPM	National Performance Measures
NRT	Nicotine Replacement Therapy
NSCH	National Survey of Children's Health
NCSHCN	National Survey of Children with Special Health Care Needs
NTD	Neural Tube Defect
OA	Office of Administration
OB/GYN	Obstetrics/Gynecology
OHNM	Oral Health Network of Missouri
OOE	Office of Epidemiology
OPCRH	Office of Primary Care and Rural Health
PAMR	Missouri Pregnancy Associated Mortality Review
PAT	Parents as Teachers
PDW	Physical Disabilities Waiver Program
PedNSS	Pediatric Nutrition Surveillance System
PID	Pelvic Inflammatory Disease
PNSS	Pregnancy Nutrition Surveillance System (CDC)
PPD	Postpartum Depression
PRAMS	Pregnancy Risk Assessment Monitoring System
PCP	Primary Care Physicians
PRIMO	Primary Care Resources Initiative
PTD	Preterm Delivery
RWJF	Robert Wood Johnson Foundation
SAMSHA	Substance Abuse and Mental Health Services
SCA	Service Coordination Assessment
SCHIP	State Children's Health Insurance Program
SED	Serious Emotional Disturbances
SHCN	Bureau of Special Health Care Needs

SHS	School Health Services
SIDS	Sudden Infant Death Syndrome
SIMC	State Infant Mortality Collaborative
SMI	Serious and Persistent Mental Illness
SOC	System of Care
STAT	State Technical Assistance Team
STEMI	Stroke/S-T Elevated Myocardial Infarction
STD	Sexually Transmitted Disease
SUID	Sudden Unexplained Infant Death
TBI	Traumatic Brain Injury
TEMP	Temporary Missouri Medicaid during Pregnancy
TOP	Teen Outreach Program
TVIS	Title V Information System
UHF	United Health Foundation
UMKC-IHD	University of Missouri Kansas City, Institute for Human Development
UNHSP	Universal Newborn Hearing Screening Program
VFC	Vaccines for Children
VLBW	Very Low Birth Weight
WIC	Special Supplemental Nutrition Program for Women, Infants and Children
WISQARS	Web-based Injury Statistics Query and Reporting System (CDC)
YEA TEAM	Youth Empowerment in Action Tobacco Education Advocacy, and Media
YRBS	Youth Risk Behavior Survey
YTS	Youth Tobacco Survey

Missouri Title V MCH/CYSHCN Services Block Grant Needs Assessment 2011-2015

EXECUTIVE SUMMARY

In 2010, the Title V Agency of the Missouri Department of Health and Senior Services, Division of Community and Public Health completed a statewide maternal and child health (MCH) and children and youth with special health care (CYSHCN) needs assessment. The Health Resources and Services Administration (HRSA) – the federal funding agency for Title V requires that all agencies receiving Title V funds conduct a statewide MCH/CYSHCN needs assessment every five years. In addition to being a mandatory requirement, the needs assessment process also serves a core function of public health, setting the stage for policy development and programming. The process incorporates many of the 10 Essential Services of Public Health, including monitoring health status, diagnosing and investigating health problems, mobilizing community partnerships, and informing and empowering families, youth, and other stakeholders about important health issues. The needs assessment process also provides Title V agencies an opportunity to monitor the changing trends/needs, availability, gaps, quality and accessibility of health care services for MCH/CYSHCN populations. Monitoring these issues will provide state Title V agencies with the necessary information to make appropriate program and policy decisions for optimal resource allocation in a challenging environment. While the needs assessment process is primarily data driven, input from community stakeholders is crucial to bridge the gap between data, practice and overall MCH leadership in the state.

The Missouri 2010 Title V Needs Assessment study is comprehensive and all inclusive with input from quantitative and qualitative resources. The study was designed to enable the Missouri Title V Agency to compare its services to the needs of the community, which were identified through secondary data from the census, internal data repositories, population surveys, and input from others in the community with expertise on the issues of the population served. The data and descriptive analyses can be used by Title V to better understand the needs of the community and to evaluate how the agency is serving these needs. While the quantitative aspect involved an in-depth data analysis of select MCH indicators, the qualitative aspect comprised of statewide focus groups involving not only consumers but also providers of health care services to MCH/CYSHCN populations. On April 6, 2010, a stakeholder meeting was convened in Jefferson City, MO. where representatives from agencies across the state were presented the results of quantitative and qualitative studies conducted for the 2010 Missouri Title V needs assessment. The stakeholder meeting, in conjunction with qualitative and quantitative data analyses, led to the identification of the following top ten MCH priorities for Missouri that will be targeted over the next five years:

1. Improve health care access for MCH populations
2. Prevent and reduce smoking among women and adolescents
3. Reduce obesity among women, children and adolescents
4. Improve the mental health status of MCH populations

Missouri Department of Health and Senior Services
2010 Title V Maternal and Child Health Needs Assessment

5. Enhance access to oral health care services for MCH populations
6. Improve preconception health among women of childbearing age
7. Reduce the rate of teen pregnancies and births
8. Reduce disparities in adverse birth and pregnancy outcomes
9. Reduce intentional and unintentional injuries among women, children and adolescents
10. Support adequate early childhood development and education

The top ten MCH priorities for Missouri highlight the importance of a life course perspective rather than a fragmented approach to MCH. The priorities also identify targeted areas for improvement at the state and local level, guide development of state performance measures, identify activities to meet priority needs and allocate resources. While eight of the ten priorities were also identified during the previous needs assessment, two (#6 and #7) were newly identified. The priorities in conjunction with the associated national and state performance measures will assist programs in developing a plan of action for the next five years to target specific areas for improvement with a defined scope rather than broad objectives. The priorities will also assist Title V leadership in making difficult decisions under resource constraint settings.

These MCH priorities establish a framework for the allocation of Title V MCH Block Grant resources over the next five years. While certain priority needs such as smoking among MCH population groups, reduction of obesity, and adequate early childhood development can be favorably impacted through the allocation of MCH Block Grant funding, other needs such as improving access to health care might be more difficult to impact. However, the overriding MCH priority need for Missouri that emerged through the needs assessment process was to improve access to care for MCH population groups in Missouri. Improved access to MCH health care services will require a much larger commitment of resources (National and State) beyond Title V MCH Block Grant funding.

A. Five-Year Needs Assessment

Chapter 1. Process

1.1 Process for Conducting Needs Assessment

1.1.1 Goals and Vision

The Title V Maternal and Child Health (MCH) Block Grant, one of the largest federal block grant programs, provides funding to states to address the health care needs of women, infants and children including Children and Youth with Special Health Care Needs (CYSHCN). As a requirement of the Title V MCH Block Grant Application, states are required to conduct an MCH Needs Assessment every five years and to use the findings of the assessment to identify/realign state priorities, to guide resource allocation and program planning towards addressing those priorities. The goal of the Missouri Title V Needs Assessment is to identify MCH priorities for Missouri for the next five years and direct Title V resources to meet these MCH challenges through state/local partnerships and collaboration. The long term vision for the needs assessment process is to enhance/improve:

- Preventive and primary care services for pregnant women, mothers and infants
- Preventive and primary care services for children
- Services for CYSHCN

1.1.2 Leadership

The Missouri Title V Needs Assessment was coordinated within the Maternal and Child Health Epidemiology Team, Office of Epidemiology (OOE), Section of Epidemiology for Public Health Practice (EPHP) with significant input from the Section for Healthy Families and Youth (HFY), Division of Community and Public Health (DCPH), Missouri Department of Health and Senior Services (DHSS). The joint effort between the OOE and the Section of HFY captures the theme of Missouri's Title V Needs Assessment process – crossover of data, programs and policy to determine the state's MCH priorities for the next five years. While the OOE took the lead in gathering and analyzing data for various MCH indicators, all programs/agencies within DHSS providing reproductive, perinatal and child health services provided invaluable input from a programmatic point of view with respect to existing capacity and gaps in providing services to MCH populations. The following sections outline the methodology and sources used for Missouri's Title V Needs Assessment.

1.1.3 Describe the State's overall needs assessment methodology

Multiple methods were applied by this agency to support the Title V needs/capacity assessment. While any one method represents a unique but imperfect perspective, the use of multiple methods has the advantage of identifying need and capacity more fully.

- Missouri's health profile and ranking in comparison to other states and the nation as compiled by Health Resources and Services Administration (HRSA), Centers for Disease Control and Prevention (CDC), Robert Wood Johnson Foundation (RWJF), United

Missouri Department of Health and Senior Services
2010 Title V Maternal and Child Health Needs Assessment

Health Foundation (UHF) rankings and Association for Maternal and Child Health Programs (AMCHP) to ascertain external perspectives of MCH needs in Missouri.

- National Data Sources: U.S. Census Bureau, National Survey of Children's Health and National Survey of Children with Special Health Care Needs (NSCH/NSCSHCN), National Center for Health Statistics (NCHS), Centers for Disease Control and Prevention (CDC).
- Qualitative primary data generated through 13 focus groups conducted throughout Missouri was divided into two groups:
 - Consumer Focus Groups (including Hispanics)
 - Provider Focus Groups
- Review of community, county and state health profiles through the Missouri Information for Community Assessment (MICA) with selected MCH indicators and related priorities generated by the Bureau of Health Informatics (BHI).
- MCH population group(s) forecasts developed from demographic data drawn from the U.S. Census and from analysis provided by the resident expert on Missouri State Demographics housed within the BHI.
- Analysis of Missouri data in comparison to national data on key MCH indicators by the MCH Epidemiology Team from a variety of state, local and national data sources. The select MCH indicators include but are not limited to:
 - Infant mortality
 - Low birth weight and preterm births
 - Racial disparities
 - Preconception and prenatal health
 - Maternal mortality and morbidity
 - Unintended pregnancies (teenage pregnancies)
 - Tobacco use among mothers during pregnancy
 - Sexually Transmitted Diseases (STDs) among women of childbearing age
 - Pre-pregnancy and childhood obesity
 - Percentage of MCH population groups with insurance coverage
- Data provided by the Missouri Department of Social Services (DSS), Missouri Department of Mental Health (DMH), Missouri Primary Care Association (MPCA), and other professional associations concerning the infrastructure capacity (in Missouri) to deliver basic health services to MCH population groups.
- Data from leading surveillance systems that capture MCH related data – Behavioral Risk Factor Surveillance System (BRFSS), Youth Risk Behavior Survey (YRBS), Missouri Pregnancy Risk Assessment Monitoring System (PRAMS), Missouri Child Health Assessment Survey (MoCHAPS), STD Surveillance Systems.
- Nominal group process was used by selected MCH stakeholders to suggest possible MCH priorities for Missouri. Stakeholders reviewed the data of key MCH indicators identified during the needs assessment process, and applied the following criteria in delineating MCH priority need areas for Missouri:
 - **Criterion 1:** Degree to which the need can be impacted by known effective interventions
 - **Criterion 2:** Degree of health-related consequences of not addressing need

- **Criterion 3:** Degree of state and national support other than Title V for impacting need (i.e., considering the “big picture” – finances, politics, service system priorities, socio-cultural issues, etc.)
- **Criterion 4:** Degree of current demographic disparity regarding need (e.g., race, gender, income, place of residence)
- **Criterion 5:** Degree to which other local providers of service consumers identify a particular need as a high priority
- An MCH priority setting methodology that relies on group consensus, voting, criteria based rating and Q sort methodology was applied to data collected for MCH population groups in Missouri at the stakeholders meeting. This methodology relies upon the selection of diseases or risk factors most directly impacting upon the health status of MCH population groups; selection of priority criteria such as deaths, racial disparity, hospitalizations, prevalence, and amenability to change and application of criteria to diseases/risk factors by state and geographic region to rank priority MCH needs.

The results of the stakeholders meeting in conjunction with MCH indicators data, program and policymakers input were used to develop the final set of MCH priorities for Missouri over the next five years.

1.1.4 Methods for Assessing Three MCH populations in Missouri

In 2010, the Title V agency for Missouri (Missouri Department of Health and Senior Services [DHSS]/Division of Community and Public Health [DCPH]) completed the statewide five-year maternal and child health (MCH) and Children and Youth with Special Health Care Needs (CYSCHN) needs assessment. The study was designed to enable Title V to assess its services in relation to the MCH needs of the state, which were identified through secondary data from the census, related data, population surveys, input from others in the community with expertise on the issues of the population served and focus groups with consumers and providers across Missouri. While the quantitative data with respect to the three MCH populations was collected from a variety of state and national data sources (Section 1.3 and Section 1.5) the qualitative data was gathered from a series of focus groups conducted across Missouri and had representation from all three MCH populations. Providers and consumers had an opportunity to comment on health care services for all three major groups of MCH populations in Missouri:

- Pregnant women, mothers, and infants
- Children
- Children and Youth with Special Health Care Needs (CYSHCN)

On April 6, 2010, selected MCH “stakeholders” from across Missouri gathered in Jefferson City to review quantitative and qualitative data compiled towards the needs assessment and selection of state MCH priorities. The stakeholders were presented with data from statewide focus groups and epidemiological trends on select MCH indicators to help guide them with an idea of Missouri’s standing with respect national performance measures, current state performance measures and current state MCH priorities. An MCH priority setting methodology that relies on group consensus, voting, criteria based rating and Q sort methodology was applied to data collected for MCH population groups in Missouri at the stakeholders meeting. The qualitative

and quantitative data in conjunction with the stakeholder's meeting led to the identification of the top ten MCH priorities for Missouri that will be targeted over the next five years.

1.1.5 Methods used to assess the state's capacity to provide direct health care, enabling, population-based, and infrastructure building services

The methods used to assess capacity to provide MCH services in Missouri encompass all three major MCH population groups (preventive and primary care services for pregnant women, mothers and infants; preventive and primary care for services for children; and, services for CYSHCN) and can be summarized as follows:

- The primary purpose of FQHC's/CHC's is to expand access to primary health care for uninsured and underserved populations, including MCH populations, experiencing a variety of barriers to access health care services. The Missouri Primary Care Association (MPCA) is a non-profit membership organization supporting increased access to comprehensive primary health care. MPCA represents Missouri's CHC's and promotes the development of programs and systems that assist in the delivery of high quality, accessible, and personalized primary health care and dental care services to urban and rural populations across Missouri. MPCA provided the information needed to assess primary care and dental care capacity to deliver MCH services in Missouri through FQHCs.
- The Missouri DMH is the state's lead agency to provide basic mental health and substance abuse treatment services to MCH populations in Missouri. The Missouri Division of Alcohol and Drug Abuse (ADA) within DMH is the state authority responsible for developing and implementing a statewide response addressing substance abuse problems impacting Missouri families and communities. Since Title V programs already reach families through other services, in collaboration with DMH, an assessment was performed of the state's capacity to provide mental health and substance abuse treatment services to MCH populations in Missouri.
- Each year, approximately 50% of Missouri births are paid by Medicaid (MO HealthNet). The Family Support Division of the DSS is responsible for the MO HealthNet program for pregnant women and newborns. This program provides healthcare coverage, including sixty-day postpartum coverage, for pregnant women whose family income does not exceed 185% of the federal poverty level for their household size. Since DSS is the lead agency providing health care services to low income pregnant women and children and CYSHCN, the Missouri Title V agency in conjunction with DSS assessed the current capacity and gaps to deliver MCH related services to at-risk families in Missouri.
- The OPCRH works to ensure access to and availability of primary health care services for all populations, including MCH populations. The OPCRH works to ensure access to and availability of primary health care services for all of Missouri's populations, including its rural citizens. Part of this effort is to reduce the shortage of medical, dental, mental and nursing health professionals throughout Missouri. The office also administers Missouri's oral health program, which provides a broad range of core public health activities for oral health. The Missouri Title V agency in collaboration with the OPCRH assessed the primary care workforce shortage in Missouri including dental care and their impact on health care services to MCH populations.

Missouri Department of Health and Senior Services
2010 Title V Maternal and Child Health Needs Assessment

- The Section of HF&Y is Missouri's Title V agency and the Section Administrator is the Title V Director for Missouri. The Title V programs provide a wide range of MCH health care services, such as preconception and prenatal care, breastfeeding; newborn screening, injury prevention and CYSHCN services to MCH populations in Missouri. Local public health agencies (LPHA's) are autonomous and operate independently of each other and of the state and federal public health agencies. Through contracts, they work directly with the Center for Local Public Health Services (CLPHS), MO DHSS to deliver public health services in each of Missouri's communities. The Title V programs in conjunction with CLPHS performed an assessment of current capacity and gaps of LPHAs to deliver MCH related health care services at a community level.
- The impact of chronic disease on adverse maternal and child health outcomes is now well established and the need to reduce chronic disease burden through statewide programs is key to improving the health of MCH populations. The Bureau of Cancer and Chronic Disease Control (BCCDC) is the lead agency responsible for the health and well being of Missourians, including women of childbearing age, through statewide chronic disease prevention/reduction programs. Recognizing the need for collaboration between MCH and chronic disease the Missouri Title V agency in conjunction with BCCDC assessed the burden of chronic disease, the current capacity and gaps to reduce the same among MCH populations.

1.1.6 Describe all sources used

The primary sources of data and information used to compile this MCH five-year needs assessment can be summarized as follows:

- AMCHP MCH Epidemiology Pre-Conference Skills Building Workshop on State Title V Needs Assessment, December 8-9, 2008.
- Maternal and Child Health Needs Assessment and Its Uses in Program Planning: Promising Approaches and Challenges, September, 2004.
- Promising Practices in Maternal and Child Health Needs Assessment: A Guide Based on a National Study.
- Missouri Department of Health and Senior Services:
 - Maternal and Child Health Data (Birth and Death certificates) from the Bureau of Health Informatics Vital Statistics reporting system
 - Pregnancies, fetal deaths and terminations
 - Missouri Information for Community Assessment (MICA) – Community Profiles, MCH data, Priorities, Intervention, Population, WIC MICA and Community Health Information Resources (CHIR), Hospital Discharge System
 - Birth Defects Registry (BDR)
 - County profiles that contain selected MCH data and key health issues by county that in some instances reflect key health indicators of MCH populations. These profiles are also maintained by BHI.
- Missouri county level study with key chronic disease indicators for every county in Missouri. The study was designed to produce county-level prevalence of behavioral risk factors, chronic diseases and conditions, and preventive practices among adults 18 years and older in Missouri.

Missouri Department of Health and Senior Services
2010 Title V Maternal and Child Health Needs Assessment

- Maternal and child health surveillance information system including data generated to track MCH Title V national and state performance measures.
- Missouri Division of Community and Public Health MCH-Related Surveillance Systems that collect and monitor self-reported and empirical data on the nutritional health status and dietary practices of Missourians and chronic disease and national health objectives.
 - Missouri Pediatric Nutrition Surveillance System (PedNSS) monitors the growth, anemia and breastfeeding status of children in Missouri who participate in federally funded child health and nutrition programs such as the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC).
 - Missouri Pregnancy Nutrition Surveillance System (PNSS) monitors behavioral and nutritional risk factors among pregnant and postpartum women in the state enrolled in public health programs such as WIC.
 - Behavioral Risk Factor Surveillance System (BRFSS) Program tracks the prevalence of chronic-disease related characteristics and monitors progress toward national health objectives related to decreasing high-risk behaviors, increasing awareness of medical conditions, and increasing the use of preventive health services of persons 18 years and older.
 - Pregnancy Risk Assessment Monitoring System (PRAMS). PRAMS collects state-specific, population-based data on maternal attitudes and experiences prior to, during, and immediately following pregnancy.
 - Missouri Child Health Assessment Program Survey (MoCHAPS). MoCHAPS is a toddler survey that captures information about the health of very young children in Missouri. It is a follow-up to the Missouri PRAMS survey.
- Qualitative primary data generated through 13 focus groups formed specifically to support this five-year MCH needs assessment for Missouri:
 - Consumer Focus Groups (including Hispanic)
 - Provider Focus Groups
- Missouri Census Data Center that maintains census data and application archives; prepares current population estimates and projections for Missouri; and performs analysis of state economic trends:
 - Missouri Office of Administration (OA)
Division of Budget and Planning (State Demographer's Office)
Jefferson City, Missouri
 - Office of Social and Economic Data Analysis
University of Missouri, Columbia, Missouri
 - Geographic Resources Center
University of Missouri, Columbia, Missouri
 - Center for Economic Information
University of Missouri, Kansas City, Missouri
- 2001 and 2005 and 2006 NSCSHCN, Data Resource Center for Child and Adolescent Health Web site. Available from <http://www.cshcndata.org>.
- Missouri Department of Health and Senior Services sources include but are not limited to:
 - Center for Local Public Health Services (CLPHS)
 - Office of Primary Care and Rural Health (OPCRH)
 - Bureau of Emergency Medical Services (BEMS)

Missouri Department of Health and Senior Services
2010 Title V Maternal and Child Health Needs Assessment

- Division of Professional Registration
- Lead Missouri Health Strategic Architectures and Information Cooperative (MOHSAIC)
- Newborn Screening
- Lead Poisoning
- Bureau of HIV, STD and Hepatitis
- Centers for Disease Control and Prevention:
 - National Center for Health Statistics (NCHS)
 - State Health Profiles
 - CPONDER - CDC's PRAMS On-line Data for Epidemiologic Research
 - WISQARS - Leading Causes of Deaths; CDC WONDER – Population
 - National Immunization Survey
 - National Survey of Children's Health
 - Smoking and Tobacco Web site. Available from http://www.cdc.gov/tobacco/data_statistics/fact_sheets/youth_data/tobacco_use/index.htm
- CDC WONDER - Sexually Transmitted Disease Morbidity. Available from <http://wonder.cdc.gov/std.html>
- Morbidity and Mortality Weekly Reports (MMWR)
- Breastfeeding: Data: NIS 2009. Available from http://www.cdc.gov/breastfeeding/data/NIS_data/index.htm.
- CDC. Healthy Youth - Injury and Violence. Available from <http://www.cdc.gov/HealthyYouth/injury/index.htm>.
- EHDI Hearing Screening and Follow-up Survey. Available from <http://www.cdc.gov/ncbddd/ehdi/data.htm>.
- Maternal and Child Health Bureau, U.S. Department of Health and Human Services, Health Resources and Services Administration, Title V Information System (TVIS) Web-based system for 2003 National Performance Measures Comparison.
- U.S. Census Bureau and the American Community Survey.
- MO Department of Economic Development. 2009 Missouri Economic Report. Available from http://www.missourieconomy.org/pdfs/MO_Econ_2007.pdf.
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- Child and Adolescent Health Measurement Initiative (CAHMI).
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Missouri Department of Health and Senior Services
2010 Title V Maternal and Child Health Needs Assessment

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- Maternal & Child Health Needs Assessment Focus Groups Report, 2009. Institute of Public Policy, Harry S Truman School of Public Affairs, University of Missouri, Columbia, MO.
- University of Missouri, Columbia, Missouri Workforce Report.
- SAFE KIDS Coalition Network.
- Substance Abuse and Mental Health Services Administration (SAMSHA), Office of Applied Studies, Rockville, MD.
- *Shortchanging America's Health: A State-by-State Look at How Federal Public Health Dollars are Spent.* Trust for America's Health, April 2008.
- Kaiser Family Foundation's Kaiser Commission on Medicaid and the Uninsured. *Headed for a Crunch: An Update on Medicaid Spending, Coverage and Policy Heading into an Economic Downturn.* Kaiser Commission on Medicaid and the Uninsured: 2008. Available from <http://www.kff.org/medicaid/7815.cfm>.
- Adams MM, Alexander GR, Kirby RS, Wingate MS. *Perinatal Epidemiology for Public Health Practice.* New York, NY: Springer Science + Business Media, LLC, First edition, 2008.
- American Academy of Pediatrics. *The Changing Concept of Sudden Infant Death Syndrome: Diagnostic Coding Shifts, Controversies Regarding the Sleeping Environment, and New Variables to Consider in Reducing the Risk.* *Pediatrics* 2005; 116:1245-1255.
- March of Dimes. *March of Dimes white paper on preterm birth - The Global and Regional Toll.* White Plains, New York: March of Dimes Foundation, 2009.

1.1.7 Linkages between Assessment, Capacity and Priorities

The needs assessment process culminated in the identification of top ten MCH priorities for Missouri over the next five years. The Missouri Title V MCH Needs Assessment document spans across the state's MCH needs, the capacity of state/local agencies to make a positive impact on these needs and the selection of state priorities that could be monitored on an ongoing basis. The linkages between these three parts can be summarized as follows:

- Quantitative and qualitative (focus groups) analysis was performed on a variety of MCH issues that impact the health status of MCH populations
- Based on input from Florida (Dr. Bill Sappenfield) these MCH issues were classified into three broad categories encompassing:
 - Women of childbearing age
 - Pregnant women and infants
 - Children and adolescents
- In close collaboration with state MCH programs an analysis was performed to:
 - Identify the state's current capacity to address these MCH issues including policy analysis
 - Identify the capacity gaps influencing current results and desired ones
- In close collaboration with the internal and external stakeholders, through a series of meetings, prioritize the capacity gaps (Needs Assessment)

Missouri Department of Health and Senior Services
2010 Title V Maternal and Child Health Needs Assessment

- Selecting Missouri's top 10 MCH priorities (top 10 MCH capacity gaps) that will be addressed over the next five years

1.1.8 Dissemination

The Missouri Title V Five-Year Needs Assessment will be disseminated statewide to a variety of internal and external stakeholders for maximum impact on policy and to improve access to health care services for MCH populations in Missouri. In addition to all the entities within the Division of Community and Public Health – Section of Epidemiology for Public Health Practice, Healthy Families and Youth, Chronic Disease Prevention and Nutrition Services, Disease Control and Environmental Epidemiology, the product was also distributed to MCH stakeholders throughout Missouri. The following list of agencies present at the stakeholders meeting were involved in setting up the five year priorities and received the Title V Needs Assessment for dissemination within their respective communities.

Missouri Department of Health and Senior Services
2010 Title V Maternal and Child Health Needs Assessment

American Academy of Pediatrics, Missouri Chapter	Missouri Department of Social Services, MO HealthNet Division
American College of Obstetricians and Gynecologists, Missouri Section	Missouri Department of Social Services, State Technical Assistance Team, Child Fatality Review
Brain Injury Association of Missouri, Inc.	Missouri Division of Social Services, Children's Division
Bridges of Missouri, Inc.	Missouri Head Start, State Collaboration Office
Children's Mercy Family Health Partners	Missouri KidsFirst
Children's Mercy Hospitals and Clinics	Missouri Parents Act (MPACT)
Children's Mercy Hospitals and Clinics, Northland Urgent Care Center	Missouri Primary Care Association
Children's Trust Fund	Missouri Safety Council
Citizens for Missouri's Children	Missouri School Counselor Association
Coordinating Board for Early Childhood	Missouri State Highway Patrol
Department of Child Health, University of Missouri-Columbia	Mother and Child Health Coalition
Early Hearing Detection and Intervention, Chapter Champion Pediatric Council	ParentLink
Evergreen Behavioral Sciences	Shriners Hospitals for Children-St. Louis
Family Support Network	Southeast Missouri Hospital Home Health
Missouri Family Voices	Southwest Missouri State University, Department of Communication Sciences and Disorders
Governor's Council on Disability	Special Health Care Needs Family Partner
Kansas City Free Health Clinic	Special Olympics Missouri (SOMO)
Kansas City Health Department	SSM Cardinal Glennon Children's Medical Center
March of Dimes	St. Louis Children's Hospital, Department of Pediatrics, Division of Medical Genetics
Mayor's Commission on Children	St. Louis County Health Department
Missouri Academy of Family Physicians (MO-AFP)	St. Louis Maternal, Child and Family Health Coalition
Missouri Assistive Technology	St. Mary's Pediatrics
Missouri Association of Local Public Health Agencies	Teen Pregnancy and Prevention Partnership
Missouri Association of School Nurses	Thompson Center and University of Missouri-Columbia
Missouri Bootheel Regional Consortium	University of Missouri-Columbia, Extension
Missouri Department of Corrections	University of Missouri-Kansas City, Institute for Human Development
Missouri Department of Elementary and Secondary Education, Section for Early Learning	Washington University Cystic Fibrosis Center, Division of Pediatric Allergy and Pulmonary Medicine
Missouri Department of Health and Senior Services, Division of Regulation and Licensure, Section for Child Care Regulation	Washington University School of Medicine

1.1.9 Describe the strengths and weaknesses of current methods and procedures used for the comprehensive MCH five-year needs assessment

The strengths and weaknesses of the methods employed for this needs assessment encompass all three major MCH population groups (preventive and primary care services for pregnant women, mothers and infants; preventive and primary care for services for children; and, services for CYSHCN) and can be summarized as follows:

Strengths

1. The needs assessment used comprehensive and state-of-the-art MCH surveillance systems housed within DHSS that rank near or at the top of MCH information systems across the nation.
2. Both quantitative and qualitative methods were used to identify MCH needs and priorities for allocation of MCH resources in Missouri.
3. Since the last needs assessment the MICA system has been expanded to clearly delineate into community profiles, priorities MICA (objective method for establishing priorities) and Intervention MICA (Web-based resource for planning, implementing and evaluating interventions to improve the health of a community).
4. The organizational location of the OOE, BHI and MCH programs within the same division proved very helpful in the continuous flow of information. Resources provided through Title V over the years have led to the development of a robust vital statistics and health informatics unit that provides valuable data for a variety of Missouri MCH indicators.
5. Highly experienced and knowledgeable MCH program staff who are well versed with national, state and local resources to address MCH challenges provided invaluable support to the needs assessment
6. Excellent working relationships with external agencies such as DMH, DSS and DESE led to data and information sharing with minimal difficulties.
7. The creation of the MCH Epidemiology Team within the OOE that led the needs assessment effort was very fruitful in the timely coordination of resources and generation of the end product. The team consists of a team lead, a CDC MCH epidemiology assignee, two research analysts and a senior epidemiology specialist. The Missouri PRAMS survey is also placed in the MCH Epidemiology team.
8. Furthermore, excellent working relationship between the MCH Epidemiology team and the MCH programs led to the seamless flow of information between data and programs – a critical part of the needs assessment process.

Weaknesses

1. MCH data generated at the program level has lower validity than population-based data that is generated through more reliable collection methods and surveillance systems.
2. While the community and priority MICA profiles, developed by BHI, are extremely helpful in identifying local community health needs (MICA Priorities) they can only serve as guiding tools and the actual needs have to be determined in the context of a particular community and its demographics. The MICA profiles are built on pre-set

algorithms based on the extent of the problem, however, one size does not fit all and the needs in a community might differ from those identified through MICA profiles. That said MICA can serve as a very good starting point for community needs assessment.

3. The impact of a declining/stagnant economy can be felt across various U.S. public and private sectors, including public health, and MCH is no exception. With declining revenues, states are forced to cut/reduce services and staff that are critical to run MCH programs. Missouri is no different than the rest of the nation and is facing the brunt of a poor economy and lack luster job market over the past couple of years with no end in sight. A stagnant economy in Missouri will mean that, whatever priority MCH needs are identified in this assessment; they will be competing for funds with a growing host of other state priorities resulting from the state budget shortfall and reductions.
4. While this document has performed an objective assessment of MCH needs in Missouri, keeping in mind the current capacity and gaps in MCH services, increased resource allocations to meet those needs (where required) may or may not necessarily follow. It needs to be interpreted in the bigger context of issues deferred to in the previous paragraph as public health services can only benefit when other sectors of the economy are also performing well. The association between a strong revenue stream/economy and a robust public health service infrastructure is inseparable.

1.2 Needs Assessment Partnership Building and Collaboration

The majority of MCH and CYSHCN programs are within the Section of Healthy Families & Youth (HFY), Division of Community and Public Health (DCPH), Missouri DHSS. In addition to core MCH programs, nutrition, chronic disease prevention programs, WIC and communicable disease prevention programs are also housed within DCPH. Health promotion, primary care, rural health, minority health, and local public health services are also within DCPH. The Section for Epidemiology and Public Health Practice (EPHP) led by the State Epidemiologist, also within DCPH, houses the core MCH, chronic disease and communicable disease epidemiology teams. Furthermore, the Bureau of Health Informatics and Vital Records that are the primary sources of birth and death certificate data are also housed within the EPHP Section. In summary, all components – programmatic and data, which impact MCH services in the state, are under one big umbrella unit – DCPH. The integration of all these different programs and data provide great flexibility in terms of flow of information and information exchange with minimal challenges. The integrated DCPH organizational structure can be hailed as one of the biggest assets of this needs assessment in terms of partnership building and collaboration. DCPH, through the Section of HFY, continues to collaborate with Healthy Start Grantees/MCH coalitions in St. Louis, Kansas City and the Bootheel and with MCH advocacy groups such as the Children’s Trust Fund, Family Voices, SAFE KIDS Coalitions, March of Dimes, American Academy of Pediatrics (AAP), Association of Maternal and Child Health Programs (AMCHP), The American Congress of Obstetricians and Gynecologists (ACOG), State Child Fatality Review Team, CDC and Citizens for Missouri’s Children (Kids Count). Agencies/units within DCPH now support and participate in several emerging state coalitions and federal initiatives (e.g., Infant Mortality Task Force, State Systems Development Initiative; Pregnancy Risk Assessment Monitoring System, Behavioral Risk Factor Surveillance System). The following section summarizes the external partnerships and collaborations that Missouri MCH programs are involved with:

- **Association of Maternal and Child Health Programs (AMCHP)** is a national resource, partner and advocate for state public health leaders and others working to improve the health of women, children, youth and families, including those with special health care needs. The following list includes a few projects that Missouri MCH programs collaborate with AMCHP:
 - Title V Block Grant Application and Needs Assessment – Missouri MCH programs and the epidemiology team are part of the Region VII AMCHP group and routinely participate in AMCHP sponsored conference calls to discuss Title V Block grant and needs assessment related issues.
 - State Infant Mortality Collaborative (SIMC) – Missouri, along with four other states—Delaware, Hawaii, Louisiana and North Carolina, was part of the AMCHP/CDC/March of Dimes SIMC initiative to address infant mortality related issues. The SIMC focused on the application of MCH epidemiology to discern the underlying factors responsible for excess infant mortality and therefore opportunities for intervention.
 - Preconference training sessions held in conjunction with the annual MCH epidemiology conference for professional development of staff working on MCH related issues

Missouri Department of Health and Senior Services
2010 Title V Maternal and Child Health Needs Assessment

- Maternal and Child Health (MCH) and Chronic Disease Integration Project. developing and implementing a state action plan to address the prevention of type 2 diabetes among women with a history of gestational diabetes
- Preconception Health and Adolescents Action Learning Collaborative: Bridging Adolescent and Women's Health
- The Safe Families Initiative: A collaborative approach to reducing violence: In 2006-2007 Missouri was one of the four states along with Massachusetts, Maine and New Mexico that was awarded a grant from AMCHP and the Family Violence Prevention Fund (FVPF) to establish the safe families' action learning lab. The purpose of this initiative is to coordinate and conduct internal capacity-building activities (e.g., skills training, material development, resource identification etc). As part of this initiative in Missouri the Title V agency:
 - Reviewed data and assessed the extent of domestic violence problem in Missouri
 - Conducted a Sexual Assault Prevention Conference, August 2007
 - Participated in a Healthy Marriage Initiative, 2008
 - Initiated domestic violence screening in home visiting and alternatives to abortion programs using the Domestic Violence Ended (DOVE) intervention protocol
 - The Rose Brooks Center, a comprehensive domestic violence agency that provides a full continuum of care, taught on the importance of domestic violence screening
 - A "Denim Day" is celebrated annually at the Missouri DHSS and the proceeds (\$2 to wear denim) go to support the local rape and abuse crisis centers.
- **Centers for Disease Control and Prevention (CDC).** Missouri MCH programs collaborate with CDC staff from respective units on a variety of MCH related data and program issues. Starting in 2007, Missouri is also the host state for a CDC MCH Epidemiology Assignee dedicated towards working on MCH surveillance systems such as PRAMS, Title V data issues and needs assessment. The Missouri PRAMS Steering Committee includes a variety of internal and external stakeholders to determine analytical priorities for Missouri PRAMS data in view of the state MCH priorities and also identify emerging MCH issues.
- **The Missouri Folic Acid Advisory Committee** meets annually to facilitate statewide folic acid education and increased daily consumption of 400 micrograms (mcg) of folic acid for all women of childbearing age to reduce the risk of neural tube defects (NTD's) and other serious birth defects.
- **The Office on Women's Health** and the **Missouri Women's Health Council** developed "Setting a New Direction, A Strategic Framework for Missouri Women", which was rolled out at community-based events and widely distributed in the states. It identifies priority needs of Missouri's women and makes action recommendations.
- **The Missouri Asthma Coalition (MAC)** is a statewide body of partners committed to asthma care improvement. The MAC is comprised of institutions and organizations, including public health departments/divisions, government departments, non-profits, educational institutions, environmental health entities, health care institutions, pharmaceutical and medical device companies, community-based and advocacy organizations, as well as people with asthma and their caregivers. The MAC is the resultant organization of the Missouri Asthma Prevention and Control Program's formal

partnering efforts during its formative years and serves as a statewide collaborative effort for planning, resource sharing, and technical assistance.

- **March of Dimes.** The Missouri DHSS works with March of Dimes, Missouri chapter on a wide range of issues to improve MCH in Missouri. Some of the collaboration with MOD include:
 - The Missouri Model for Brief Smoking Cessation Intervention aimed at training health care professionals to promote smoking cessation among pregnant and women of childbearing age using evidence-based interventions
 - The Folic Acid Education campaign targeting high school students to promote folic acid consumption among adolescents as part of preconception health
 - A spatial analysis of preterm births in Missouri to assess the regions of the state where preterm delivery rates are high and level appropriate health care access
- **The Missouri Early Childhood Comprehensive Systems Initiative (ECCS)** includes a coalition of early childhood advocates in Missouri who are, with DCPH staff support, working to complete the following ECCS state plan components:
 - Development of a coordinated comprehensive early childhood system with leadership from the Governor appointed Coordinating Board for Early Childhood (CBEC)
 - Development of ECCS indicators with baselines and targets to measure state performance
 - Establish a local infrastructure to inform and support the early childhood system and assist with implementation of the state early childhood plan
 - Development of a Parent Leadership Resource and Referral clearinghouse to address the diversity and fragmentation of parent organizations.
 - Priority interventions to be pursued to reduce gaps and move indicators
- **Office of Primary Care and Rural Health (OPCRH).** The mission of the Office of Primary Care and Rural Health is to help communities provide access to all necessary health care services to all their residents. These services are best delivered through community-based systems of care, managed and staffed by people from the community. The Missouri Title V agency recognizes the significance of OPCRH goals and vision and not only provides substantial fiscal support but also has a strong partnership in various OPCRH initiated activities that impact MCH health care services in Missouri. The OPCRH through the Primary Care Resource Initiative for Missouri (PRIMO) program provides financial resources to community based organizations to create new or to expand existing primary medical, dental and mental health services in underserved communities.
- **The MO Coalition for Oral Health** began in 1999 as an informal Steering Committee of a group of organizations interested in improving oral health in the state. Over the next several years, both the Missouri Primary Care Association and then the Missouri Head Start Association/Missouri State Head Start Collaboration Office actually served as the "lead organizations" for the Coalition's work to improve oral health. The Missouri DHSS, through OPCRH, is one of the founding and supporting members of this coalition.
- **The Missouri Council for Activity and Nutrition (MoCAN)** has been established with a vision for Missourians to make healthy food choices and to be physically active. The Governor formally kicked off the state plan in July 2005, *Preventing Obesity and Other Chronic Diseases—Missouri's Nutrition and Physical Activity Plan* as the "Healthy Missourians Initiative." The council is made up of representatives from statewide groups

interested in implementing the plan. Currently meetings are held two to three times per year to implement work plans to achieve the plan's objectives, track outcomes and evaluate which efforts are most effective.

- **Center for Local Public Health Services (CLPHS)** facilitates development of professional standards and continuous learning opportunities for the local public health workforce and provides leadership and technical assistance to develop processes, such as strategic planning, continuous quality improvement, and defining and implementing core public health functions. The Title V agency works with the Center as funds are directed to local public health agencies for implementation of core public health functions and essential services as well as to contract with local public health agencies to support MCH contracts.
- **DHSS's Partnership with Medicaid Agency.** In Missouri, Medicaid health services are provided by the MO HealthNet Division, Missouri Department of Social Services, in accordance with Title XIX, Public Law 89-97, 1965 amendments to the federal Social Security Act, 42 U.S.C. Section 301. The purpose of the MO HealthNet Division is to purchase and monitor health care services for low-income and vulnerable citizens of the State of Missouri including the MC+ for Kids, Missouri's State Children's Health Insurance Program (SCHIP) (1115 Demonstration Waiver) and MO HealthNet for pregnant women. While the DSS Family Support Division (FSD) determines MO HealthNet eligibility for individuals and families, including CYSHCN, through a fiscal agent the payment of claims for medical services performed by fee-for-service providers and encounter data submitted by MC+ managed care health plans is by Title V MCH programs. Hence, DHSS works closely with DSS to coordinate efforts to identify and enroll children in Missouri's SCHIP and MO HealthNet. DHSS and DSS collaborate in the exchange of program data to monitor quality indicators and for health data analysis.
- **DHSS's Partnership with Mental Health Agency.** DMH is organizationally comprised of three divisions: the Division of Comprehensive Psychiatric Services (CPS), the Division of Developmental Disabilities and the Division of Alcohol and Drug Abuse. The Title V MCH programs are an integral part of DMH efforts to address mental health needs of Missourians. DMH was a key collaborator with DSS on the CDC Fetal Alcohol Syndrome grant in reducing alcohol consumption among women of childbearing age. Title V programs also collaborate with DMH to address emerging MCH problems such as perinatal depression and mental health needs of young adults.
- **Comprehensive System Management Team (CSMT):** System of Care (SOC) is a partnership of organizations, family members and communities with shared responsibility to meet the mental health needs of children, youth and families. In an effort to evaluate the effectiveness of the SOC and its components, and to move beyond just reporting data about families served to a mechanism that tracks progress, measures quality and makes adjustments as needed, CSMT was established. Led by DMH, CSMT is comprised of a variety of state level organizations including Title V. The Deputy Section Administrator from the Section of HF&Y (Title V Programs) represents Missouri DHSS on the CSMT.
- **Council for Adolescent and School Health (CASH):** The purpose of the Council for Adolescent and School Health (CASH) is to inform and advise the Missouri Department of Health and Senior Services (DHSS) decision-makers regarding adolescent and school health issues and initiatives.

Chapter 2. Assessment of Needs of the Maternal and Child Health (MCH) Population

2.1 Socio-Demographic Overview

2.1.1 Demographics

The state of Missouri with 114 counties and one independent city (St. Louis City) covers an area of 69,709 square miles and ranks 21st in size among all states in the nation. The state is centrally located in the heartland of the United States (U.S.) and shares borders with Arkansas, Kansas, Kentucky, Illinois, Iowa, Nebraska, Oklahoma, and Tennessee.

With 5.9 million people, Missouri ranks 18th in the U.S. for total population and has a population density similar to the national rate (85 persons vs. 86 persons per square mile respectively). While the U.S. population increased by 8% between 2000 and 2008, Missouri's population increased by only 5.6% during the same time period. Table 1 compares select demographics between Missouri and the U.S..

Table 1. Selected Demographic Information, MO and U.S.

	MO	U.S.
Population, 2008	5,911,605	304,059,724
Density, 2008 (persons per square mile)	85	86
Median Age, 2006-2008	37.5	36.7
Percentage of Population, 2008		
65+	13.6%	12.7%
85+	2.2%	1.9%
Male/Female Ratio, 2008	48.9/51.1	49.3/50.7
% below Poverty, 2008	13.3%	13.2%
% of School Age Below Poverty, 2008	16.6%	16.5%
% of Live Births to Women 10-17, 2007*	3.4%	3.4%
Race Distribution, 2008		
White	85.8%	80.7%
African-American	11.9%	13.3%
Asian/Pacific Islander	1.7%	4.9%
American Indian	0.6%	1.1%
Educational Attainment (Ages 25+), 2006-2008		
High School Graduate +	85.6%	84.5%
Bachelor's Degree +	24.5%	27.4%

Sources:

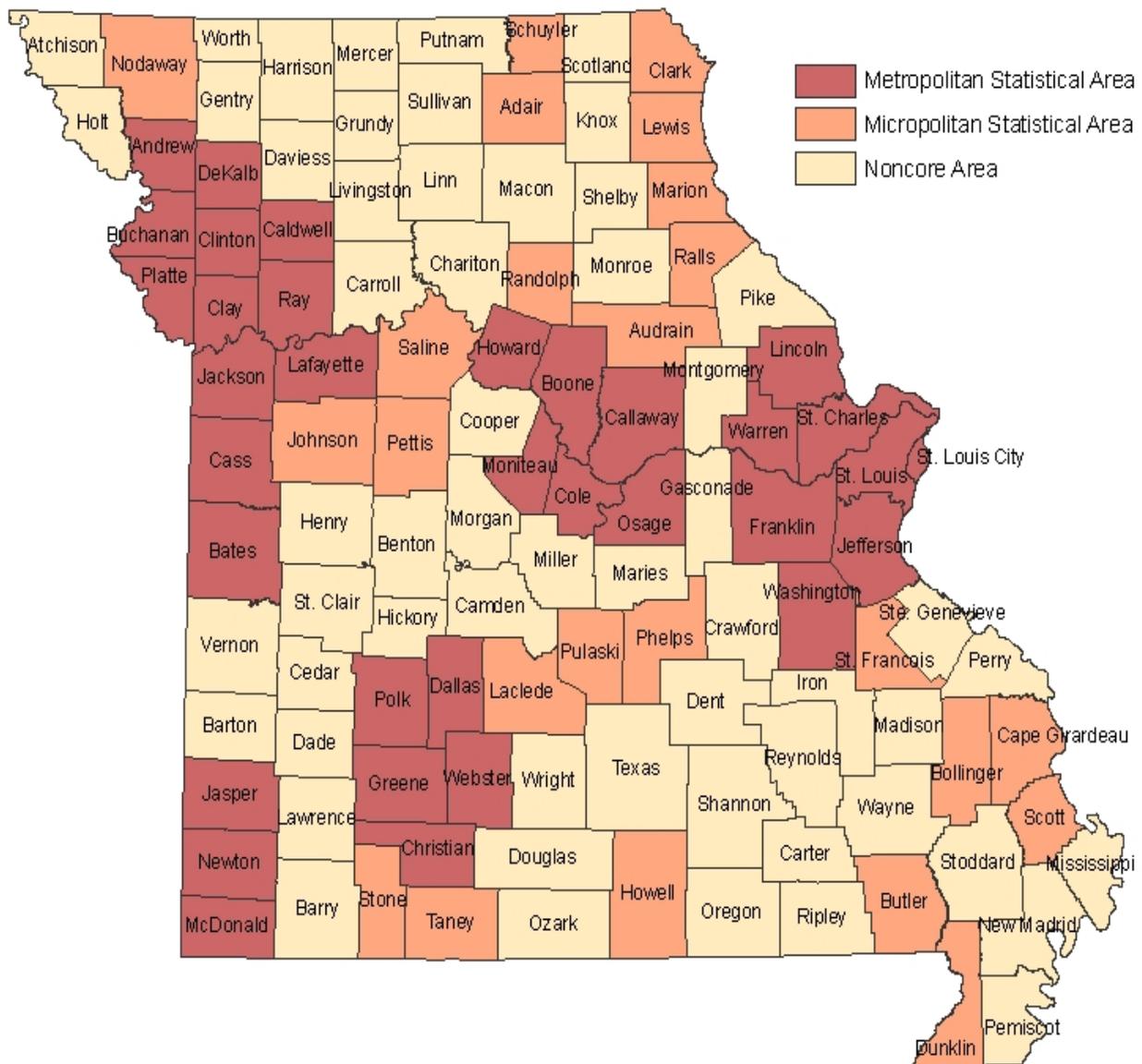
U.S. Census Bureau

* Missouri data: Missouri Department of Health and Senior Services. MICA-Births; U.S. data: CDC. Births: Preliminary Data for 2007. National Vital Statistics Reports 2009; 57(12)

There are large differences in population distribution across Missouri, with the majority located near either St. Louis or Kansas City. While both cities have sizable portions of their metro population across the state border in Illinois and Kansas respectively, the cores of both cities are situated in Missouri. Over half of the state's population (55%) falls inside the metropolitan

statistical areas (MSA) of these two cities, with St. Louis MSA (Franklin, Jefferson, Lincoln, St. Charles, St. Louis, St. Louis City, Warren, and Washington) accounting for over one-third of the total state population and Kansas City MSA (Jackson, Clay, Platte, Cass, Lafayette, Ray, Caldwell, Clinton, and Bates) accounting for nearly an additional 20%. Missouri has six other cities that are designated as MSAs by the Census Bureau in order of size: Springfield, Joplin, Columbia, Jefferson City, Cape Girardeau, and St. Joseph. Overall, Missouri has 34 counties that are designated as MSAs and an additional 24 counties that are considered micropolitan statistical areas. About half (57) of Missouri’s counties are noncore areas (Figure 1).

Figure 1. Metropolitan and Micropolitan Statistical Areas



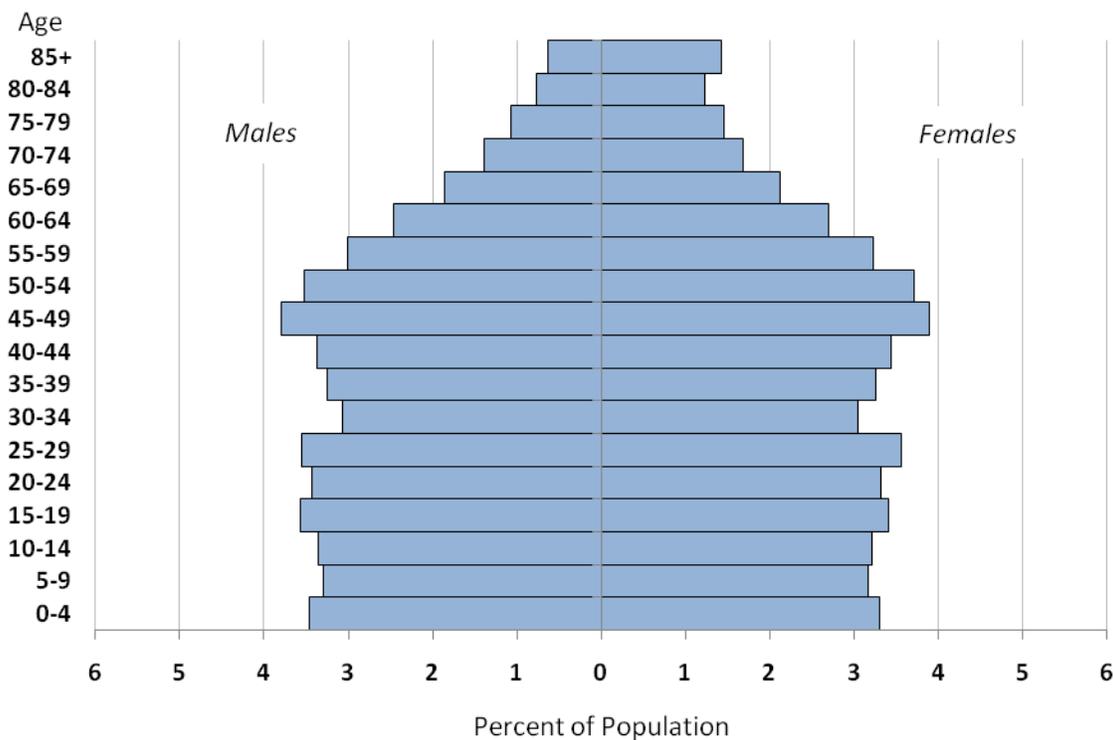
Source: U.S. Census Bureau

In summary, over the past few decades the majority of population growth occurred in the suburban areas of Kansas City and St. Louis and in the more rural central and southwestern parts

of Missouri. The population has either decreased or remained static in the urban cores of Kansas City and St. Louis, as well as the largely agricultural lands of northern and parts of southeast Missouri.

The current population distribution of Missouri is similar to that of the nation as a whole. The baby boom generation (persons born from 1946-1964) dominates Missouri demographics. The Missouri age pyramid (Figure 2) shows a bulge in the 45-49 and 50-54 age groups. Persons in those age groups will be moving into traditional retirement age over the next 15 years. This will have a major impact on Missouri both economically and in terms of health care services.

Figure 2. Missouri Population Pyramid, 2008



Source: Missouri Department of Health and Senior Services. Vital Statistics

Compared to the national average of 12.7%, 13.5% of Missouri’s population is 65 plus years old and is projected to increase to over 20% of the total state population by 2030. This projected increase can be attributed to the aforementioned baby boom generation aging as well as increased life expectancy due to advances in medical care. Table 2 outlines the changes in Missouri’s life expectancy by gender over the past two decades. The gap in life expectancy between men and women shrank the over last two decades.

Table 2. Life Expectancy at Birth in Missouri

	Male	Female
1988-1992	71.6	78.8
2004-2009	74.3	79.7

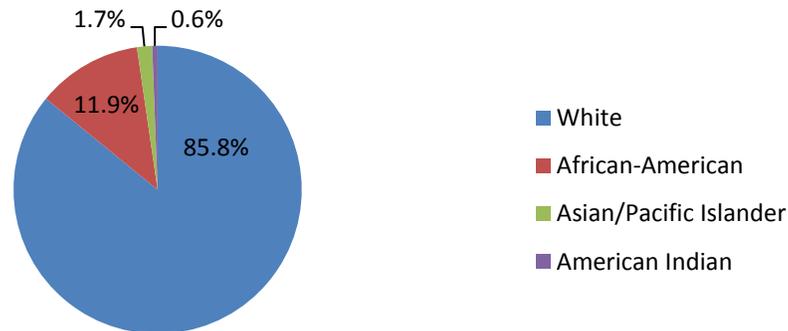
Source: Bureau of Health Informatics, Missouri Department of Health and Senior Services

Missouri's percentage of population under 5 years of age is projected to change from 6.7% in 2008 to 6.1% in 2030. This is in stark contrast to 1950 where 10% of the state's population was under five years of age. The projected growth in Missouri's baby boom generation coupled with a projected decrease in the younger populations will pose significant challenges in the years to come in terms of health care delivery and services.

Race/Ethnicity Composition

Missouri residents are predominantly white (85.8%) with a significant African-American (11.9%) population. The percentage of African American population in Missouri is slightly lower than that in the nation (11.9% vs. 13.3%). Hispanics make up 3.2% of the state's population; Asians and Pacific Islanders make up 1.7%, and Native Americans 0.6% (Figure 3). While the following sections provide further information about Missouri's minority populations it is significant to note that, similar to national trends (12.3% in 1990 to 13.3% in 2008) Missouri's African-American population has increased from 10.5% in 1990 to 11.9% in 2008.

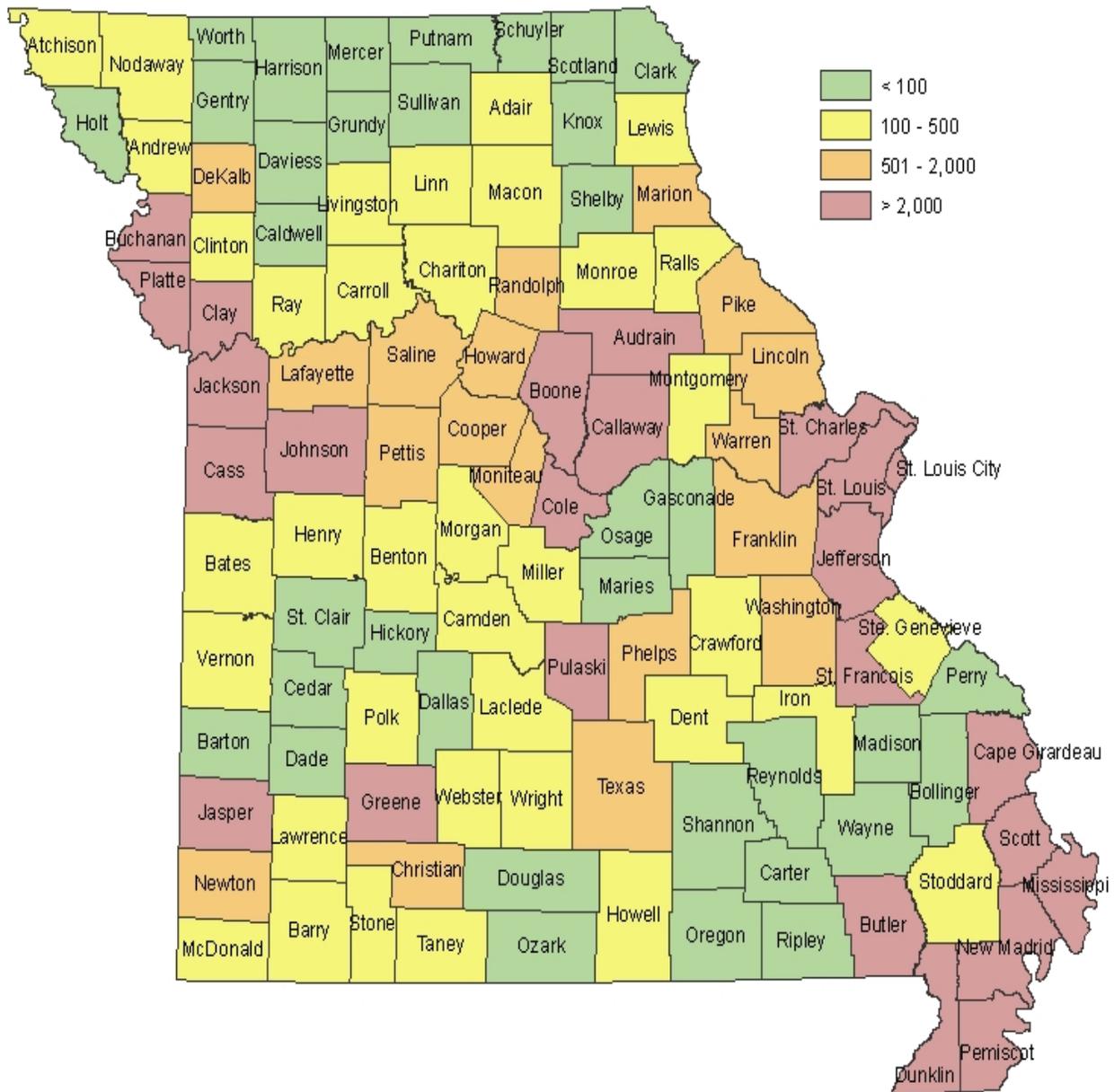
Figure 3. Racial Composition of Missouri Population, 2008



Source: U.S. Census Bureau

Missouri's minority populations are largely concentrated around the urban areas of the state's two major cities - St. Louis City and Kansas City. 80% of Missouri's African-American population is in St. Louis City, St. Louis County and Jackson County (Kansas City) followed by a sizeable representation in the southeastern parts of the state (Missouri Bootheel Region) and a smaller proportion in the central parts of the state (Figure 4). The percentage of African-American population ranges from 0.1% in select northern counties to 49% in St. Louis City.

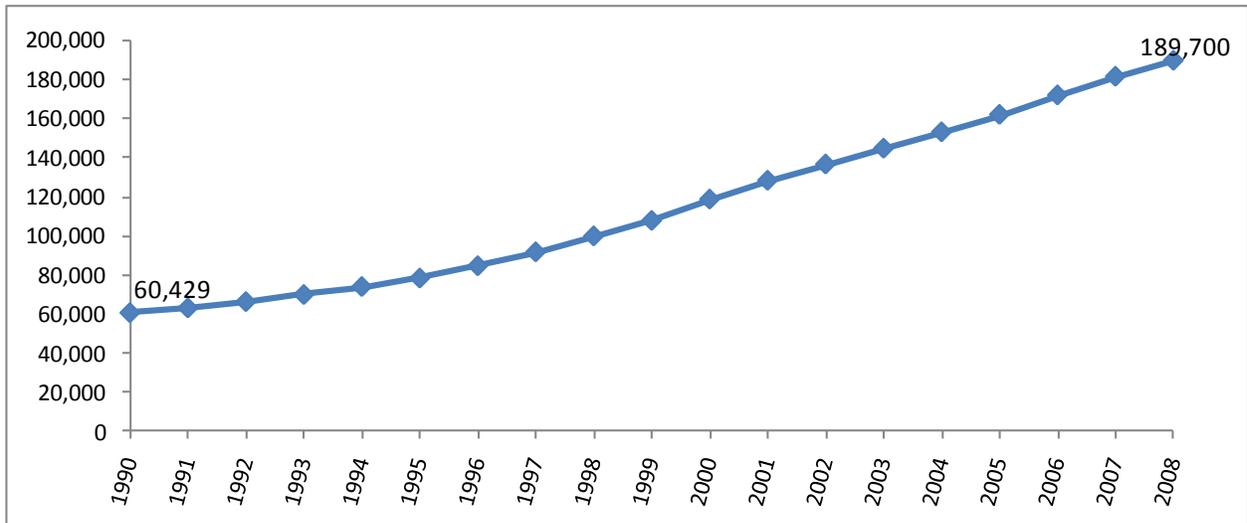
Figure 4. Number of African-American Population by County, Missouri, 2008



Source: U.S. Census Bureau

One demographic in which Missouri differs significantly from the nation is the percentage of Hispanic population in the state. Hispanics make up roughly 14% of the total population nationally, but account for only 3.2% of Missouri's population ranking it 39th among all U.S. states in terms percentage of Hispanic population. That being said, the Hispanic population is the fastest growing segment in Missouri and increased by nearly 60% between 2000 and 2008 after almost doubling between 1990 and 2000 (Figure 5). This increase can be attributed to a younger population base, higher fertility rates and increased migration rates into the state.

Figure 5. Number of Hispanic Population, Missouri, 1990-2008



Source: Missouri Department of Health and Senior Services. Missouri Information for Community Assessment (MICA)-Population

Figure 6 shows the distribution of Missouri's Hispanic population across the state. The majority of Hispanics reside in the metropolitan areas and a block of six counties in the southwest corner of the state. The largest segment of Missouri's Hispanic population is located around Kansas City in Jackson County (30% of all Hispanics in the state) followed St. Louis City and St. Louis County (18% of Hispanics in the state). A larger proportion of Hispanics live in rural Missouri than African-Americans. The proportion of Hispanic population varies widely across counties, ranging from 0.4% in Worth and Mercer counties to 16% in Sullivan County.

\$17.8 billion in taxable sales during the first quarter of 2008, a decrease of 2% in actual dollars from the same quarter in 2007.¹

2.1.3 Employment

The 2008 economic recession that followed the housing bubble burst and crippled the nation with high unemployment rates did not spare Missouri either. Missouri's unemployment rate was between 4.5% and 6% (seasonally adjusted) between 2003 and 2007 but took a turn for the worse since the 2008 economic recession. Similar to the national unemployment rates (5.5% vs. 9.4%) Missouri's unemployment rate rose from 5.8% to 9% between May 2008 and May 2009. While Missouri's unemployment rate was comparable to the national rate since 2004, it is starting to show signs of improvement with assistance from public and private initiatives. In 2009 Missouri ranked 33rd (1=lowest) in the nation for unemployment rate.¹

Similar to national trends and those observed in many other states Missouri experienced a significant number of job losses in the manufacturing sector in the past decade. Employment in the manufacturing sector decreased by 11% between 2008 and 2009 – a net loss of 34,000 jobs. Missourians, especially those living in the rural areas of the state, relied heavily on the manufacturing sector for their livelihood. The increasing globalization along with the loss of manufacturing jobs has had a significant impact on the lives of rural Missourians. However, Missouri saw an increase of 8,500 jobs in education and health services over the last year.¹

2.1.4 Poverty

Based on the 2008 U.S. Census Current Population Survey, 780,000 or 13.3% of Missourians have incomes below the federal poverty level. Missouri ranked 31st (1=lowest) in the nation for poverty rates. Missouri's poverty rate has been increasing faster than the national rate (Table 3).

Table 3. Poverty Rate (%)*, MO and U.S., 2001 and 2008

	2001	2008
U.S.	11.7%	13.2%
MO	9.7%	13.3%

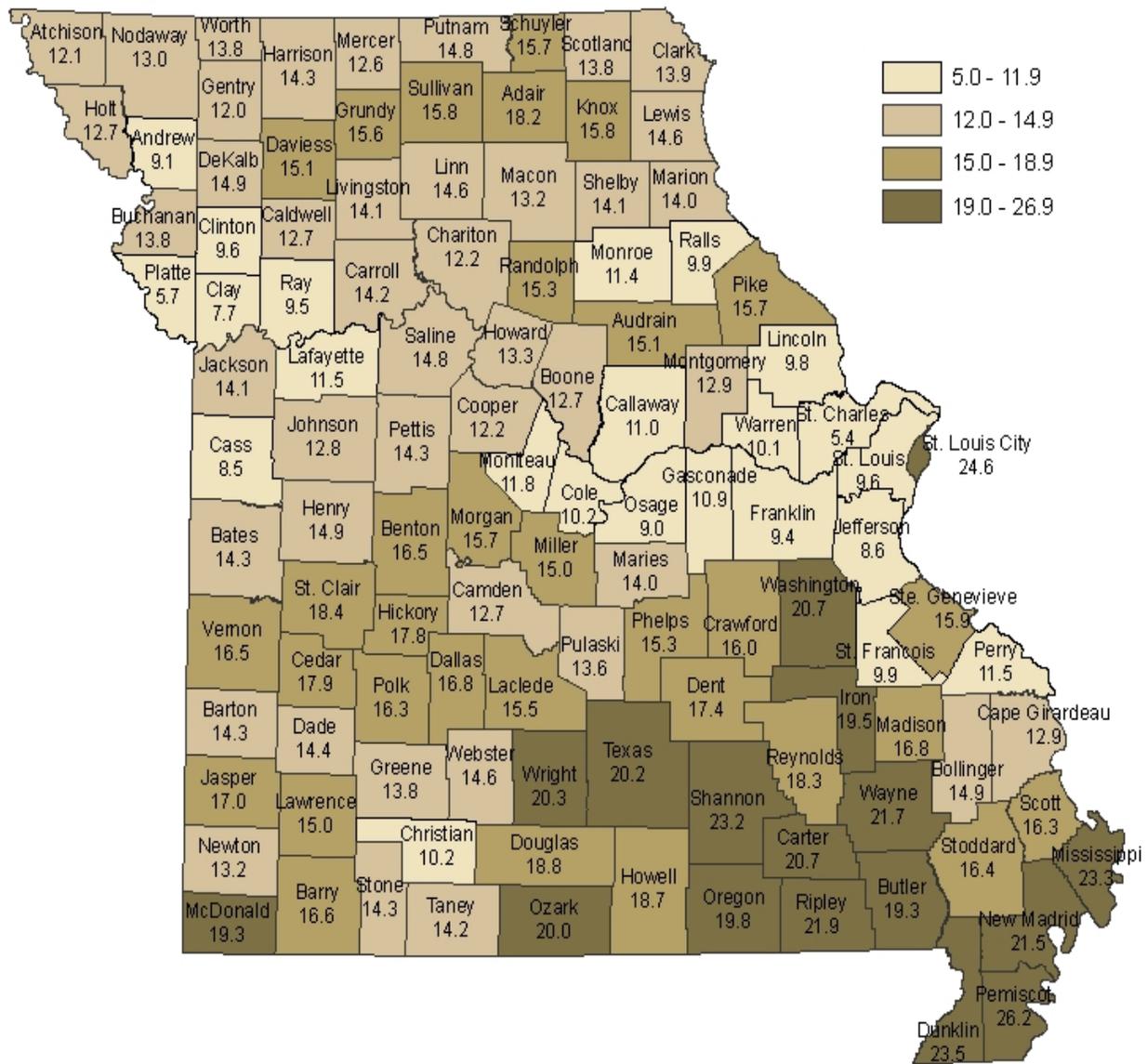
*Poverty defined as persons below 100% of federal poverty level

Source: Current Population Survey, U.S. Census Bureau

Poverty rates differ greatly by region in the state (Figure 8). There is a large pocket of high poverty rates in the southeast area of the state (Bootheel region), where poverty rates are routinely above 19%. High poverty rates also plague St. Louis City. In contrast, poverty rates are lowest in the suburban counties around St. Louis and Kansas City.

¹ MO Department of Economic Development. 2009 Missouri Economic Report. Accessed from http://www.missourieconomy.org/pdfs/MO_Econ_2007.pdf on February 2, 2010.

Figure 8. Percentage of Persons Living in Poverty by County, Missouri, 2008

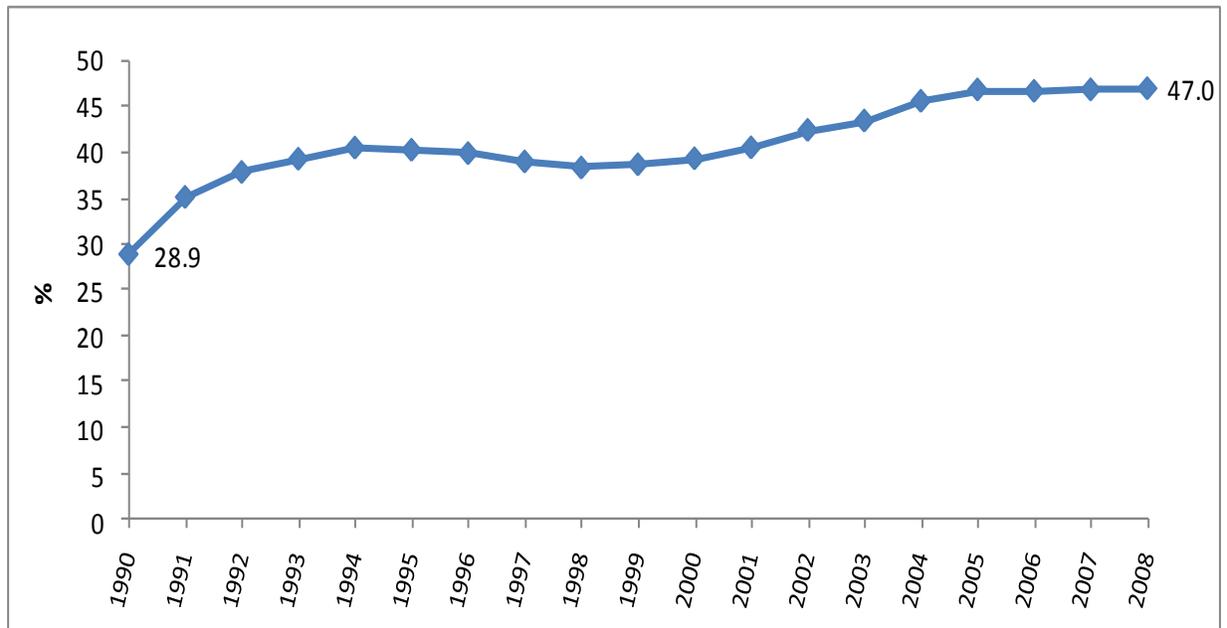


Source: U.S. Census Bureau. American Community Survey

According to the U.S. Census Current Population Survey, the median household income in Missouri dropped by 14.6% from \$54,930 in 1999/2000 to \$46,906 in 2007/2008, the steepest decline among all 50 states. This compares to the national drop of 2.5% from \$52,544 to \$51,233 in the same time period.

Births to mothers on Medicaid are also a good indicator of poverty. Figure 9 shows the gradual increase in the proportion of Medicaid births over the past twenty years in Missouri. The proportion increased from 28.9% in 1990 to 47% in 2008.

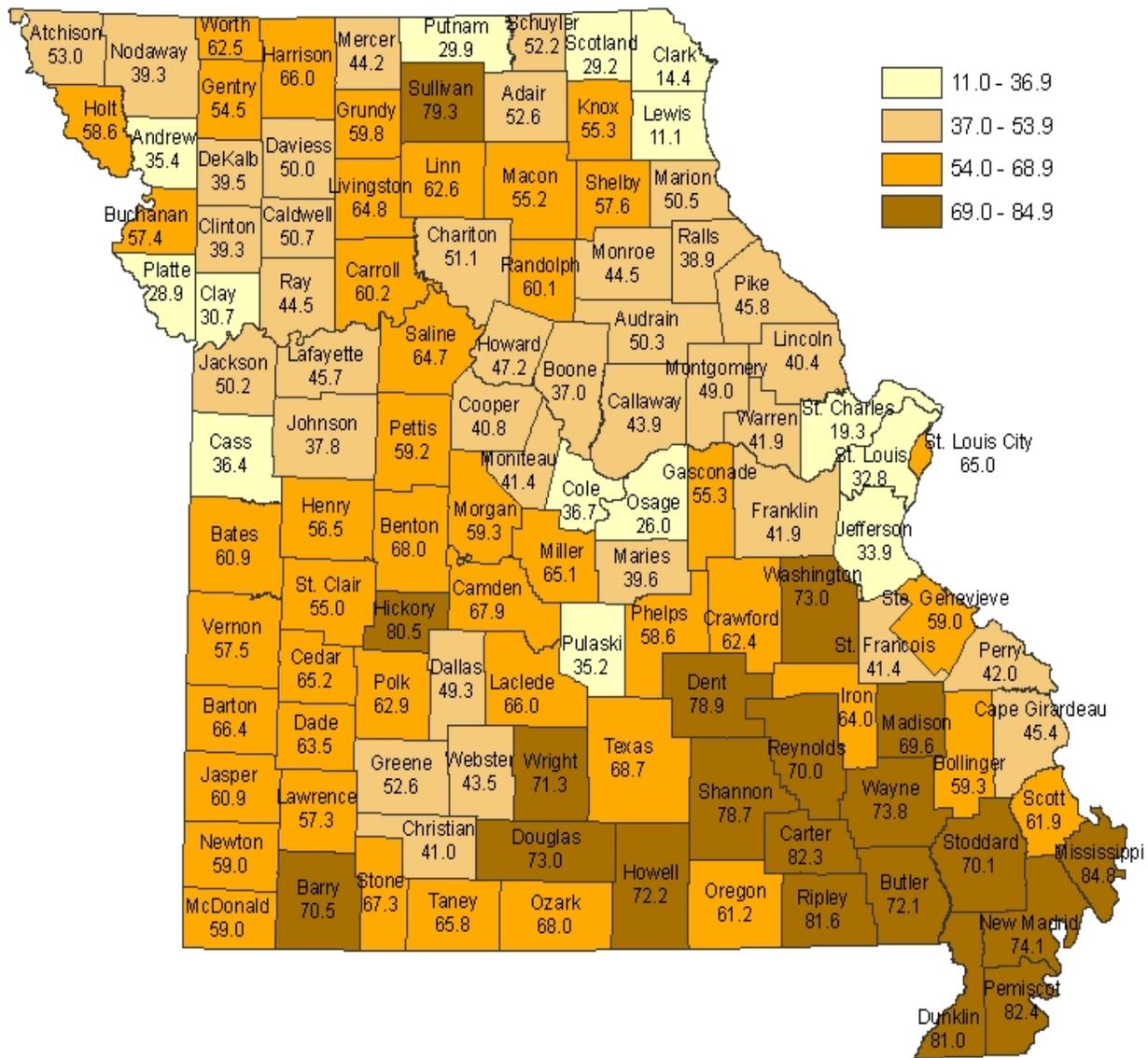
Figure 9. Percentage (%) of Live Births to Women on Medicaid, Missouri, 1990-2008



Source: Missouri Department of Health and Senior Services. MICA-Births

In general, the counties south of the Missouri River have higher rates of Medicaid births than the northern counties (Figure 10). The percent of Medicaid births is highest in the southeast region, ranging between 69% and 85% for most counties in that area of the state.

Figure 10. Percentage (%) of Medicaid Births by County, Missouri, 2008



Source: Missouri Department of Health and Senior Services. MICA-Births

2.1.5 Maternal and Child Health Population

Table 4 provides a summary of Missouri’s MCH population in 2008 compared to 1999. In 2008, the total estimate of Missouri’s MCH population including women of childbearing age, infants, and children and adolescents was 2,566,154, nearly half (43.4%) of the state’s entire population. Both the number and proportion of MCH populations slightly decreased from 1999 to 2008. This may partially reflect the aging trend in the Missouri population. The decrease was across subgroups of women ages 15-44 and children and adolescents ages 1-19. However, the number of deliveries and children and youth with special health care needs (CYSHCN) increased in the same time period.

Table 4. Maternal and Child Health Population, Missouri, 1999 and 2008

Group	1999		2008		% Change in Number From 1999 To 2008
	Number	% of Population	Number	% of Population	
Total Population	5,561,948	100%	5,911,605	100%	6.3
MCH Population	2,595,520	46.7%	2,566,154	43.4%	-1.1
MCH Subgroups					
Women of Childbearing Age (15-44)	1,206,566	22%	1,184,891	20%	-1.8
Live Births	75,366	1.4%	80,944	1.4%	7.4
Pregnancies	88,414	1.6%	90,930	1.5%	2.8
Children & Adolescents (Ages 1-19)	1,515,356	27.2%	1,501,752	25.4%	-0.9
Children and Youth with Special Health Care Needs (CYSHCN)	215,818 (2001)	3.8%	223,070 (2005/2006)	3.8%	3.4

Sources:

Total population and population for each age group: Missouri Department of Health and Senior Services. MICA-Population

Live births: Missouri Department of Health and Senior Services. MICA-Births

Pregnancies: Missouri Department of Health and Senior Services. MICA-Pregnancies

CYSHCN: Child and Adolescent Health Measurement Initiative. 2001 & 2005/2006 NSCSHCN, Data Resource Center for Child and Adolescent Health Web site. Accessed from www.cshcndata.org on February 2, 2010.

Note. MCH population includes children ages 0-19 and women ages 20-44.

2.2 Health of Women

Despite significant advances in obstetric and neonatal care over the past three decades, adverse birth outcomes and the associated racial disparities continue to be a major public health problem in the U.S. and Missouri. While improving access to early and adequate prenatal care was essential in reducing adverse birth outcomes, it is now well recognized that health care around the time of pregnancy alone is not sufficient enough to improve pregnancy outcomes. Current scientific evidence indicates that prevention and health promotion before pregnancy and throughout a woman's lifespan is essential to achieve further improvement in MCH outcomes. A life course perspective approach rather than a fragmented approach to MCH, especially woman's health, is absolutely essential to achieve further reductions in adverse birth outcomes.

There has been a broad interest in preconception care in the past two decades. CDC published "Recommendations on Preconception Health and Health Care" in 2006. "Improving preconception health will require changes in the knowledge, attitudes and behaviors of persons, families, communities, and institutions (e.g., government and health care settings. The purpose of preconception care is to improve the health of each woman before any pregnancy and thereby affect the future health of the woman, her child, and her family."² The recommendations "call for the improvement of a woman's health by managing preexisting medical conditions (such as diabetes, obesity, epilepsy, and hypothyroidism), providing vaccines (such as rubella, hepatitis

² Centers for Disease Control and Prevention. Recommendations for improving preconception health and health care: United States: A report of the CDC/ATSDR Preconception Care Work Group and the Select Panel on Preconception Care. MMWR 2006 21;55(RR-6):1-23

B), screening and treatment for other conditions (such as HIV/AIDS, sexually transmitted infections), and counseling for some behavioral risks (alcohol use and smoking)."³

2.2.1 General Women Population

Table 5 shows the status of select health indicators among Missouri women compared to the nation. Missouri was either better or comparable to the nation in a few indicators such as:

- Having medical insurance (84.2% vs. 80.7%)
- Having leisure time physical activity (76.5% vs. 75.9%)
- Having Pap test (82.9% vs. 82.9%)
- Reported rate (per 100,000) of AIDS cases (3 vs. 7.5)

However, Missouri women consistently have higher rates of life style associated/behavioral risk factors compared to national rates. The rates of smoking, obesity, binge drinking, hypertension, poor dental care, and STDs (Chlamydia and Gonorrhea) among women of childbearing age are higher in MO than the nation (Table 5). Although the percentage of women without health insurance is lower in MO than the nation, a higher percentage of MO women reported not being able to see doctor because of the cost (24% vs. 20.1%). According to the Behavioral Risk Factor Surveillance System (BRFSS), Missouri's prevalence ranked the following in the nation:

- 4th highest in current smoking (2008)
- 6th highest in obesity (2008)
- 6th highest in mental health not good in ≥ 14 days of the past month (2008)
- 7th highest in not having teeth cleaned in the past year (2008)
- 9th highest in hypertension (2007)

³ Atrash H, Jack BW, Johnson K, Coonrod DV, Moos MK, Stubblefield PG, Cefalo R, Damus K, Reddy UM. Where is the "W"oman in MCH? Am J Obstet Gynecol. 2008;199(6 Suppl 2):S259-65.

Table 5. Selected Health Indicators Among Women, MO and U.S.

Indicators	MO	U.S.	Year
Access to Health Care Among Women Ages 18-44 (%)			
Without medical insurance	15.8	19.3	2008
Could NOT see doctor because of cost	24	20.1	2008
Prevalence of Health Behaviors Among Women Ages 18-44 (%)			
Overweight or obesity (BMI>25)	54.8	50.6	2008
Obesity (BMI>30)	29.8	24	2008
NO leisure-time physical activity in the past month	23.5	24.1	2008
Current cigarette smoking	28.4	18.8	2008
Binge drinking	16	14.1	2008
NOT take multivitamins currently	54.5	53.5	2006
Never having HIV test	51.5	45.8	2008
Preventive Care (%)*			
Women aged 50+ who have NOT had a mammogram in the past two years	22.8	20.5	2008 (U.S.: Median)
Women aged 18+ who have NOT had a Pap test within the past three years	17.1	17.1	2008 (U.S.: Median)
Oral Health Among Women Ages 18-44 (%)			
Loss of permanent teeth	29.8	28	2008
Teeth NOT cleaned in the past year	38.4	31.6	2008
Prevalence of Chronic Diseases Among Women Ages 18-44 (%)			
Diabetes	2.2	2.8	2008
Diabetes only during pregnancy	3.4	3.2	2008
Hypertension	11.6	9.5	2007
Hypertension only during pregnancy	4	3.5	2007
Currently have asthma	10.6	10.5	2008
Mental health not good >14 days in the past 30 days	15.4	12.9	2008
Reported Rate (per 100,000) of STD and HIV			
Chlamydia among females ages >15	730.2	713.6	2008
Gonorrhea among females ages >15	182.8	145.4	2008
AIDS cases among females ages >13	3	7.5	2007
Death Rate (per 100,000) Among Women Ages 18-44			
Top 5 Leading Causes of Deaths (Based on MO Women Ages 18-44)			
Unintentional injuries	29.3	20.9	2006
Motor vehicle accidents	14.3	10.3	2006
Cancer	19.5	18.5	2006
Breast cancer	4.7	-	2006
Lung cancer	2.7	-	2006
Heart disease	10.7	9.1	2006
Suicide	6.8	5.3	2006
Homicide	5.0	3.8	2006

Sources: AIDS data for Missouri: Department of Health and Senior Services. Bureau of HIV, STD, and Hepatitis
AIDS data for U.S.: CDC. Cases of HIV infection and AIDS in the United States and Dependent Areas, 2007
Chlamydia and Gonorrhea: CDC WONDER. Sexually Transmitted Disease Morbidity
Death rate for Missouri: Department of Health and Senior Services. MICA-Deaths; MICA-Population

Missouri Department of Health and Senior Services
2010 Title V Maternal and Child Health Needs Assessment

Death rate for U.S.: CDC WISQARS (Web-based Injury Statistics Query and Reporting System); CDC WONDER-Population
Rest of the indicators: CDC. BRFSS

Leading Causes of Deaths

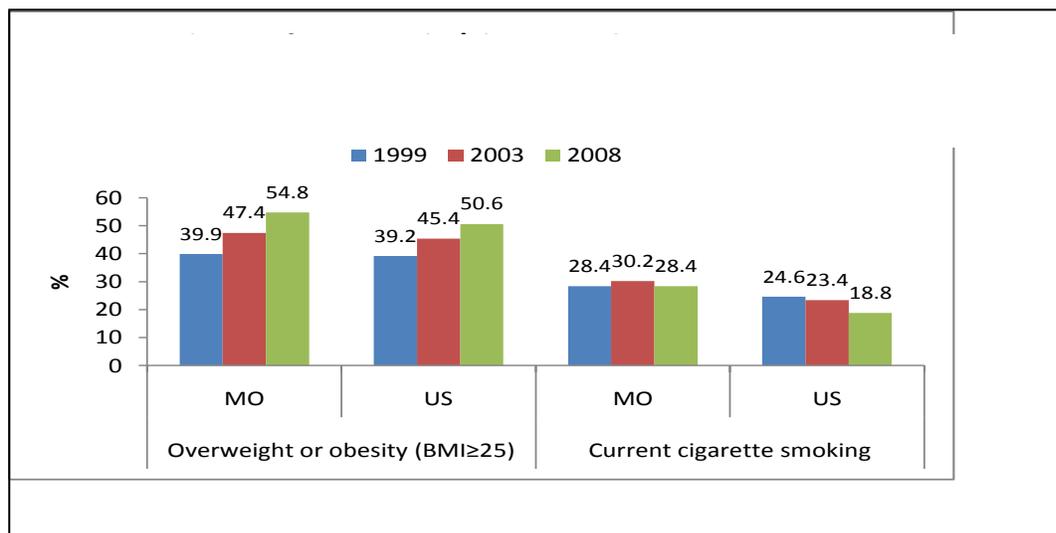
Unintentional injuries were the leading cause of deaths among MO women of child bearing age in 2006, followed by cancer, heart disease, suicide and homicide. The top five leading causes accounted for more than two-thirds (68.9%) of all deaths in this age group. More than one in four deaths (28.3%) was due to unintentional injuries, specifically motor vehicle accidents. Breast and lung cancer were the leading causes of cancer deaths (37.8%) among MO women of child bearing age (Table 5). Death rates among MO women of childbearing ages were consistently higher than national rates for all five leading causes of deaths, especially due to unintentional injuries, where Missouri's rate was nearly 1.5 times the national rate (29.3 vs. 20.9) (Table 5).

Smoking and Overweight/Obesity

Cigarette smoking and overweight/obesity are the leading preventable causes of adverse perinatal outcomes. They are associated with various chronic diseases and adverse perinatal outcomes such as preterm delivery, Cesarean section, diabetes, and hypertensive disorders. While the rates of smoking among women of child bearing age in the nation have steadily declined in the past decade (24.6% in 1999 vs 18.8% in 2008), the rates of smoking among MO women of childbearing age have essentially remained unchanged (28.4% in 1999 vs. 28.4% in 2008) (Figure 11). It is also of significance to note that Missouri has the lowest state tobacco tax in the country.

The rates of obesity among general population in the U.S. have reached epidemic proportions and have now become serious threats to the health and well being of women and children in the U.S. Overweight/obesity among female adolescents who will eventually enter the reproductive phases of their life cycle could negatively impact the nation's efforts to reduce adverse birth outcomes and underscores the urgent need to address overweight/obesity among women of child bearing age in the nation and Missouri. Similar to national trends the prevalence of overweight/obesity among MO women of child bearing age increased by 37.3% in the past decade (39.9% in 1999 to 54.8% in 2008) and consistently remained higher than the national rates (Figure 11). The percentage of live births to MO women with pre-pregnancy overweight/obesity also steadily increased from 41% in 1999 to 47.2% in 2008.

Figure 11. Prevalence of Overweight/Obesity and Current Cigarette Smoking Among Women 18-44 Years of Age, MO and U.S., 1999, 2003, and 2008



Source: CDC. BRFSS

Overweight: 30 > body mass index (BMI) ≥ 25; obesity: BMI ≥ 30

2.2.2 Women with a Recent Live Birth

The Pregnancy Risk Assessment Monitoring System (PRAMS) is a state specific population-based surveillance system developed by CDC to monitor maternal behaviors, attitudes and experiences before, during and shortly after pregnancy. Missouri became a CDC PRAMS state in 2006 and began data collection in May 2007. Table 6 presents several unique preconception health indicators among Missouri women with a recent live birth from MO PRAMS.

Table 6. Prevalence (%) of Selected Preconception Health Indicators, MO PRAMS, 2007

Indicators	%	State Ranking (1=highest)*
No health insurance in the month before pregnancy	30.9	11
Teeth NOT cleaned prior to pregnancy	24.4	-
Previous live births >3 weeks before the due date	6.3	-
Unintended pregnancy	46.3	7
Smoked in the 3 months before pregnancy	31.7	4
Alcohol drinking in the 3 months before pregnancy	57.7	9
Prepregnancy overweight or obese (BMI ≥ 25 kg/m ²)	43.8	-
Prepregnancy obese (BMI ≥ 30 kg/m ²)	26	5
Not take multivitamin ≥ 4 times a week of the month before pregnancy	67.1	7
Physical abuse by partner in the year before pregnancy	5.3	6

Source: MO PRAMS data 2007; CPONDER—CDC's PRAMS On-line Data for Epidemiologic Research

BMI: Body Mass Index *Ranking among 27 states, New York state (excluding New York City), and New York City with PRAMS response rate ≥ 65%, **Available for 23 states

-not available from CPONDER

Multivitamin Use

Daily use of multivitamins containing folic acid before and during pregnancy has been demonstrated to prevent 50-70% of neural tube defects (NTDs). Because about half of pregnancies in the U.S. are unplanned, the U.S. Public Health Service and CDC published recommendations in 1992 that all women of childbearing age who are capable of becoming pregnant should consume 0.4 mg of folic acid daily for prevention of NTDs.⁴ In 2009, the U.S. Preventive Services Task Force (USPSTF) updated the recommendation that all women planning or capable of pregnancy take a daily supplement containing 0.4 to 0.8 mg of folic acid.⁵ More than half (54.5%) of Missouri women 18-44 years of age did not take a multivitamin in 2006, and the percentage did not differ significantly from 1999 (55.5%). More than two-thirds (67.1%) of Missouri women with a recent live birth in 2007 did not take a multivitamin ≥ 4 times a week in the month before pregnancy (Table 6); the percentage was much higher in younger women (91.4%, ages under 20 ; 80.1%, ages 20-24), African-Americans (80.6%), Medicaid recipients (80.8%), and those smoking before pregnancy (79.9%).

Unintended Pregnancy

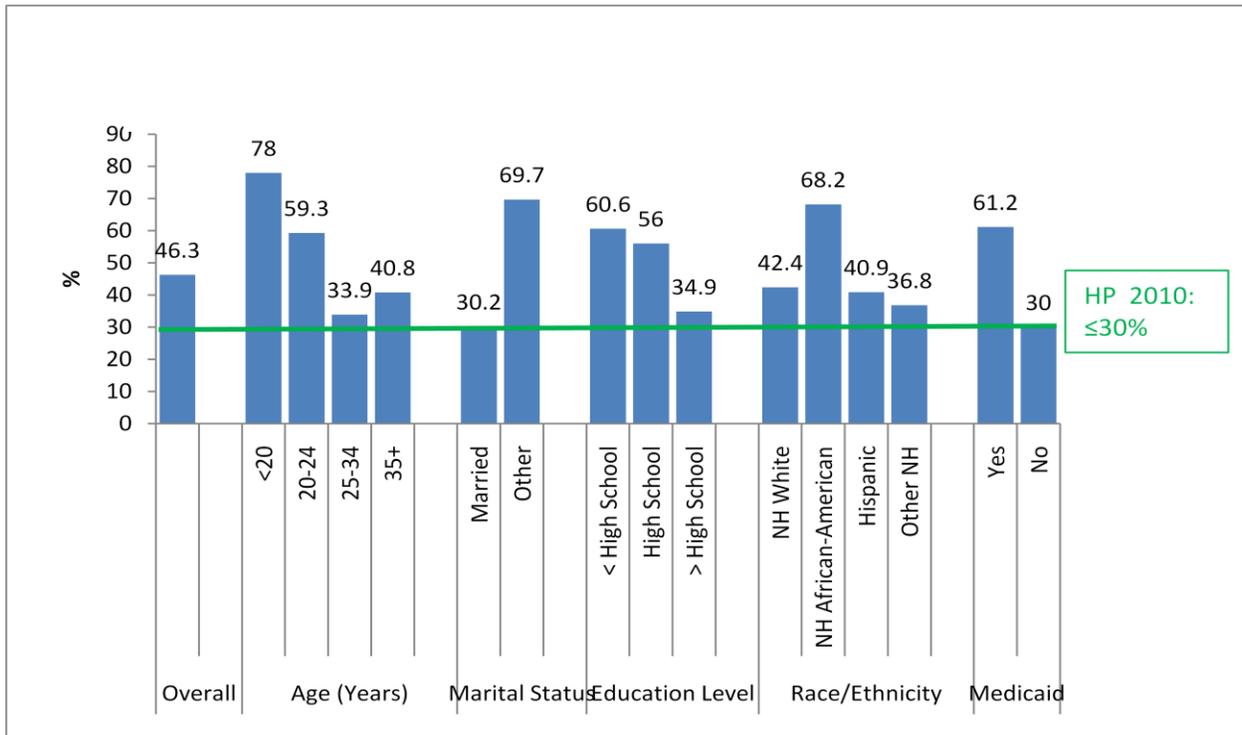
Unintended pregnancies are associated with various maternal risk behaviors that can adversely affect the health of mothers and their unborn babies. One of the key preconception care recommendations from CDC is that all pregnancies are intended and planned. Similar to national trends, nearly half (46.3%) of all Missouri live births were from unintended pregnancies in 2007, far from achieving the Healthy People (HP) 2010 objective of 30%.

The percentage of unintended pregnancies varies by maternal socio-demographic characteristics. Women 25-34 years of age (33.9%), married (30.2%), >12 years of education (34.9%), and not on Medicaid (30%) (Figure 12) were less likely to have unintended pregnancies than women less than 20 years of age, unmarried, <12 years of education, and receiving Medicaid. Unintended pregnancies among African-Americans were more than twice the HP 2010 objective of 30% (Figure 12). Compared to women with an intended pregnancy, those with an unintended pregnancy were less likely to take a multivitamin ≥ 4 times a week the month before pregnancy (17.3% vs. 45.7%), receive first trimester prenatal care (68.5% vs. 87.9%), breastfeed at eight weeks postpartum (34.4% vs. 53.1%), and more likely to smoke before (38% vs. 26%) and during pregnancy (24.3% vs. 13.6%) (Figure 13).

⁴ U.S. Public Health Service. Recommendations for the use of folic acid to reduce the number of cases of spina bifida and other neural tube defects. *MMWR Recomm Rep.* 1992;41(RR-14):1-7.

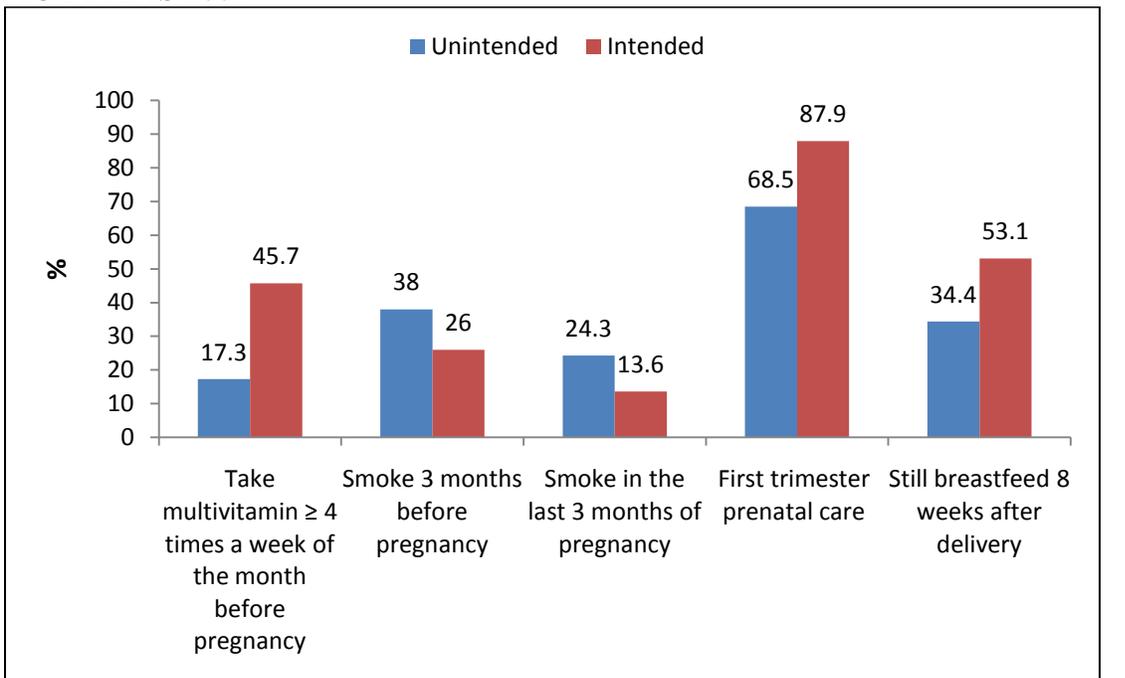
⁵ Wolff T, Witkop CT, Miller T, Syed SB; U.S. Preventive Services Task Force. Folic acid supplementation for the prevention of neural tube defects: an update of the evidence for the U.S. Preventive Services Task Force. *Ann Intern Med.* 2009;150(9):632-9.

Figure 12. Percentage (%) of Unintended Pregnancies by Maternal Demographics, MO PRAMS 2007



Source: CPONDER—CDC’s PRAMS On-line Data for Epidemiologic Research

Figure 13. Prevalence (%) of Select Maternal Health Behaviors by Pregnancy Intention, MO PRAMS 2007



Source: CPONDER—CDC’s PRAMS On-line Data for Epidemiologic Research

2.3 Maternal and Infant Health

2.3.1 Births

The total number of live births to Missouri residents was 80,944 in 2008, an increase of 7.4% from 1999 (Table 7). The overall birth rate among Missouri women 15-44 years old also increased by 9.4% from 62.5 in 1999 to 68.3 in 2008.

Birth Rate by Maternal Age

Similar to national trends increasing proportions of Missouri women tend to delay their childbearing to an older age. Between 1999 and 2008, while the birth rate declined by 19.8% among teens aged 15-17 years, it was essentially unchanged among women 18-19 and 20-29 years old. However, the birth rate increased by 16.2%, from 36.4 in 1999 to 42.3 in 2008, among women 30-44 years old (Table 7).

Births by Race/Ethnicity

During the past decade an increase in births and birth rates was observed among white, African-American and Hispanic populations. While the white women population decreased marginally and the African-American women population increased marginally it is the Hispanic women population in the 15-44 years age category that has seen the maximum shift. In conjunction with the rapid increase in Missouri's overall Hispanic population, the Hispanic women population (15-44 years) also increased by 56.5% from 1999 to 2008. Births to Hispanic women nearly doubled from 1999 to 2008 and the Hispanic birth rate increased by 21.8% from 91.6 in 1999 to 111.5 in 2008, significantly higher than the rates for whites and African-Americans (Table 7).

Table 7. Number of Live Births and Birth Rates by Maternal Age and Race/Ethnicity, Missouri, 1999 and 2008

	Births			Women population			Birth rate per 1,000 women population		
	1999	2008	% change from 1999 to 2008	1999	2008	% change from 1999 to 2008	1999	2008	% change from 1999 to 2008
Overall*	75,366	80,944	7.4	1,206,566	1,184,891	-1.8	62.5	68.3	9.4
Age (years)									
15-17	3,243	2,662	-17.9	120,474	123,266	2.3	26.9	21.6	-19.8
18-19	6,760	6,492	-4.0	81,294	78,167	-3.8	83.2	83.1	-0.1
20-29	41,976	47,216	12.5	365,382	407,123	11.4	114.9	116.0	1.0
30-44	23,236	24,387	5.0	638,289	576,335	-9.7	36.4	42.3	16.2
Race/Ethnicity*									
White	62,254	65,076	4.5	1,024,241	990,620	-3.3	60.8	65.7	8.1
African-American	11,237	12,512	11.3	155,566	162,308	4.3	72.2	77.1	6.7
Hispanic	2,374	4,525	90.6	25,921	40,571	56.5	91.6	111.5	21.8

Source: Department of Health and Senior Services. Vital Statistics-Birth Data; Department of Health and Senior Services. MICA-Population; CDC. CDC WONDER – Population.

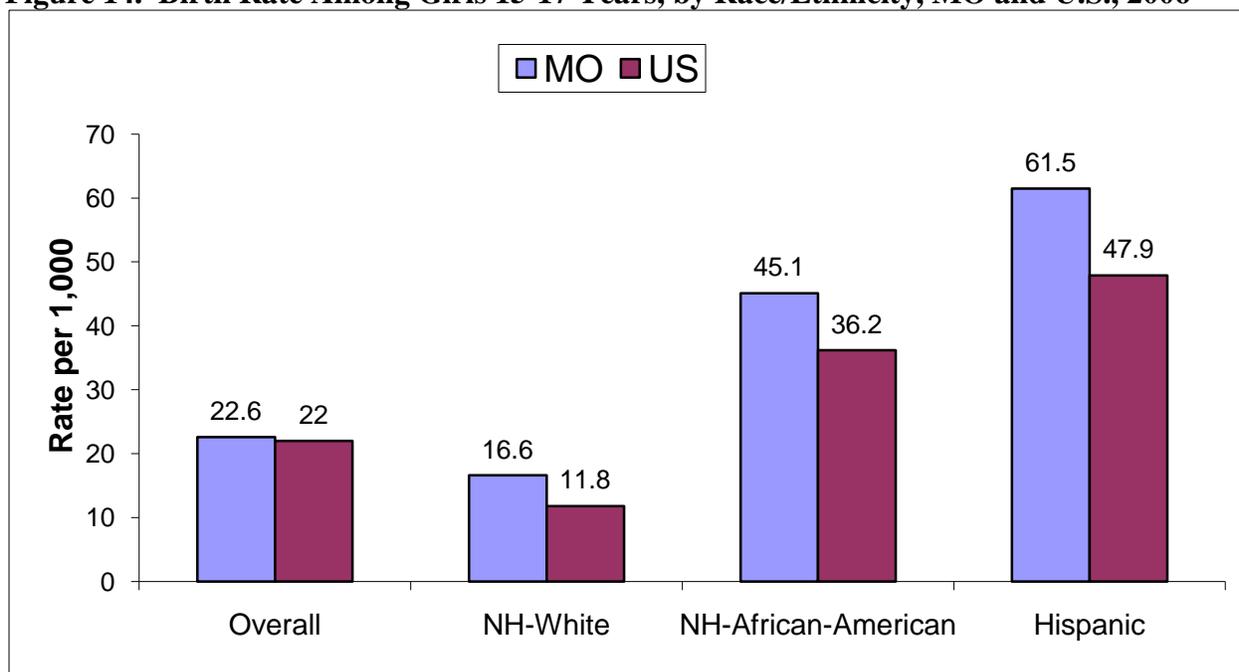
*Women population includes women aged 15-44 years; births are to women of all ages; the birth rate is the fertility rate, which is defined as the total number of births (regardless of the mother's age) per 1,000 women ages 15-44 years.

2.3.2 Teen Birth Rate

Teenage pregnancy including births are a serious public concern in the U.S. and Missouri. Teenage pregnancies are associated with an increased risk of poor social, economic and health outcomes for both the mother and the child. In 2008, more than one in ten pregnancies (11,193 or 12%) or births (9,246 or 11.4%) in Missouri was to teens under 20. While 29% of Missouri teen births in 2008 were to 15-17 year olds, 70% were among 18-19 year olds. According to a report recently published by the National Campaign to Prevent Teen Pregnancy, taxpayer costs associated with teen childbearing are greatest for younger teens under 18. In Missouri, an average annual cost associated with a child to a mother under 18 is \$4,043, compared to an average of \$1,397 for a child to a mother under 20. Births to teens under 18 accounts for more than 90% of the total costs associated with teen childbearing.⁶

Figure 14 shows the teen birth rate by race and ethnicity in Missouri compared to the U.S. rates. The overall teen birth rate among 15-17 year olds in Missouri was comparable to the national rate in 2006 (22.6 vs. 22 per 1,000). However, Missouri teen birth rates were consistently higher than the national rates among NH-whites, NH-African-Americans and Hispanics. The lack of noticeable difference among teen birth rates in Missouri and the nation is due to a higher teen birth rate among Hispanics compared to whites and African-Americans and a much higher proportion of Hispanic teen births in the nation compared to Missouri. In 2006, one-third (33.5%) of teen births among 15-19 year olds in the U.S. were to Hispanics, compared to only 7.2% in Missouri.

Figure 14. Birth Rate Among Girls 15-17 Years, by Race/Ethnicity, MO and U.S., 2006



Sources:

MO data: MO DHSS. MICA – Births and MICA-Population: Population for NH-whites and NH-African-Americans obtained from CDC WONDER Population.

U.S. data: U.S. data: Martin JA, et al. Births: final data for 2006. Natl Vital Stat Rep. 2009;57(7):1-102

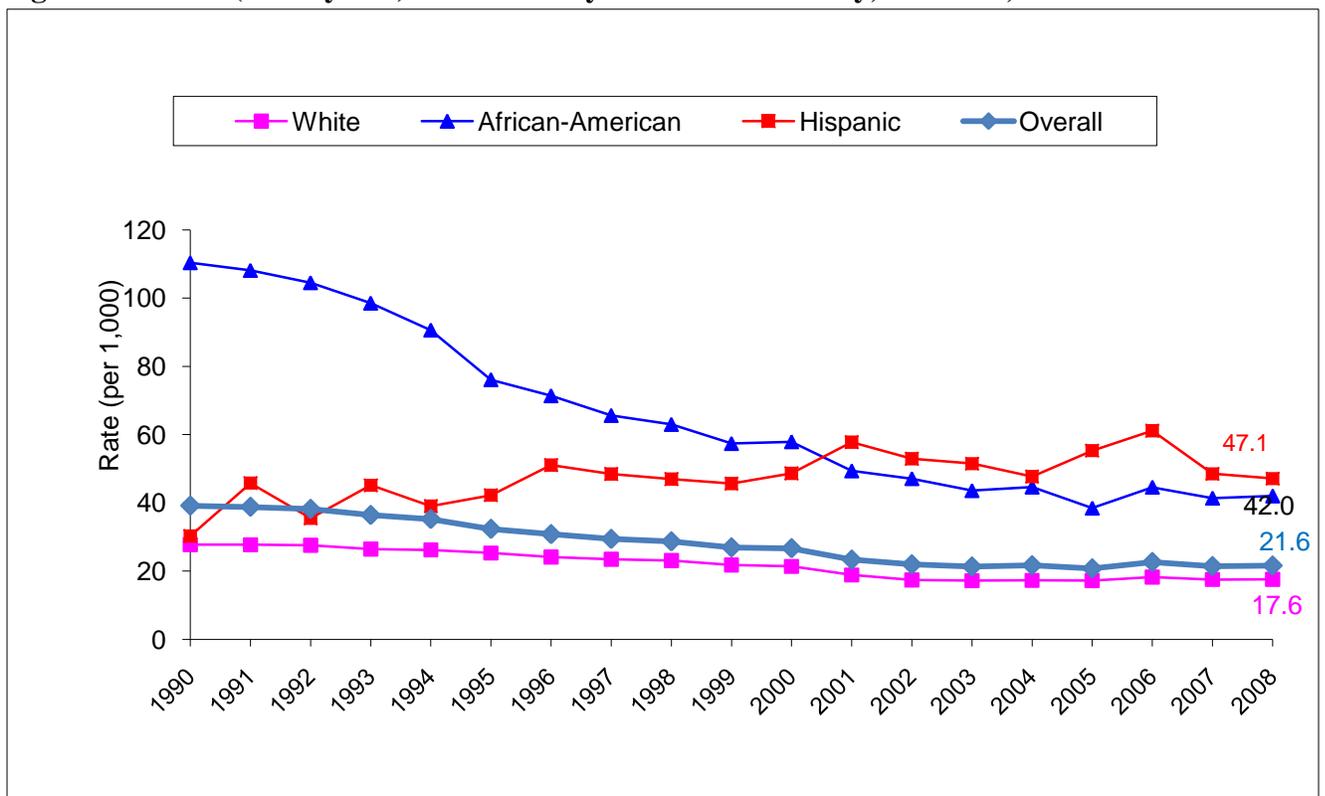
⁶ Hoffman, SD. By the Numbers: The Public Costs of Teen Childbearing. National Campaign to Prevent Teen Pregnancy, October, 2006

Similar to national trends teen (15-17 years) birth rates in Missouri declined by 44.9%, from 39.2 in 1990 to 21.6 in 2008 per 1,000 respectively, with a record low rate of 20.8 per 1,000 in 2005 since 1990. The rates steadily declined between 1990 and 2002, but tended to stall out around 21.5 per 1,000 since 2003 (Figure 15). While the 2006 teen birth rate rose for both Missouri and the nation it did not continue in Missouri in 2007 and 2008. Similar to the national picture, after significant improvements in reducing Missouri teen birth rates in the 1990s and early 2000s, the rates have reached a plateau. Further improvements in reducing teen birth rates will require innovative solutions compatible with the 21st century world and technology.

Teen Birth Rate by Race/Ethnicity

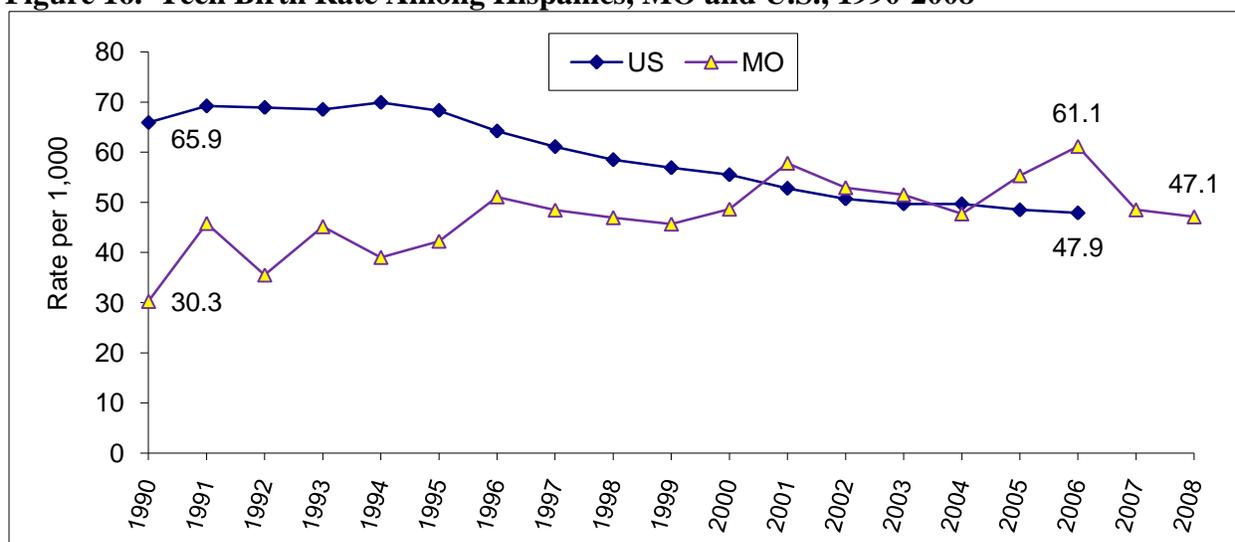
The teen birth rate among girls ages 15-17 in Missouri has been consistently lower in whites than African-Americans and Hispanics. Between 1990 and 2008, the teen birth rate declined by 62% for African-Americans and 37% for whites but increased by 55% for Hispanics. Since 2001, Hispanic teen birth rates in Missouri have been consistently higher than the African-American rates (Figure 15). On the other hand, Hispanic teen birth rates in the nation have declined since 1990 Figure 16). Between 1990 and 2007, the teen girl population (15-17 years) in Missouri increased by about 200% in Hispanics and 22% in Non-Hispanics (NHs). This rapid increase in Hispanic population across all age categories will require special attention in the years to come to meet their health care needs in a culturally competent manner.

Figure 15. Teen (15-17 years) Birth Rate by Race and Ethnicity, Missouri, 1990-2008



Source: Department of Health and Senior Services. Vital Statistics-Birth Data; Department of Health and Senior Services. MICA-Population; CDC. CDC WONDER – Population

Figure 16. Teen Birth Rate Among Hispanics, MO and U.S., 1990-2008



Sources:

Missouri data: Department of Health and Senior Services. Vital Statistics-Birth Data; Department of Health and Senior Services. MICA-Population

U.S. data: Martin JA, et al. Births: final data for 2006. Natl Vital Stat Rep. 2009;57(7):1-102

Teen Births Associated with Adverse Health Outcomes and Behaviors

In addition to the social and economic challenges teen mothers are also at increased risk of adverse pregnancy and birth outcomes. According to Missouri PRAMS 2007, 78% or about four in five births to women < 20 years resulted from unintended pregnancy. Among all maternal age groups, women < 20 years had the highest percentages of not taking a daily multivitamin before pregnancy (93.5%), low-birth-weight deliveries (9.7%), infant exposure to cigarette smoke (20.6%), not breastfeeding (44.2%), and infant non-back sleep position (40%) (Table 8).

Table 8. Percentage (%) of Selected Maternal and Infant Health Outcomes and Behaviors by Maternal Age, Missouri PRAMS 2007

	Maternal age (years)			
	<20	20-24	25-34	35+
Unintended pregnancy	78	59.3	33.9	40.8
Not taking multivitamin daily pre-pregnancy	93.5	82.3	65.1	61.1
Low birth weight	9.7	8.2	5.5	8.2
Baby exposed to cigarette smoke	20.6	13.3	9.9	5.3
Not breastfeeding	44.2	33	24.5	19.3
Infant non-back sleep position	40	28.4	23	22.2

Source: CPONDER—CDC's PRAMS On-line Data for Epidemiologic Research

2.3.3 Health Insurance and Women, Infants and Children (WIC) Enrollment during Pregnancy

According to an annual survey released by the Kaiser Family Foundation's Commission on Medicaid and the Uninsured in 2008, Medicaid spending increased nationwide by 5.3% in 2008

and enrollment increased by 2.1%, largely due to the persistent economic downturn.⁷ Nearly half of pregnant women with a live birth in Missouri were either on Medicaid or WIC during pregnancy, and more than one in four received Food Stamps (47.6%, 43.5%, and 26.5% respectively in 2008). The percentages of the Missouri women enrolled in Food Stamps, Medicaid, and WIC during pregnancy rose by 64.6%, 18.4%, and 7.7% respectively from 1999 to 2008 (Table 9). It should be noted that an estimated 6.5% of Missouri women with a recent live birth did not have any health insurance for their prenatal care.

Table 9. Percentage (%) of Live Births to Women on Food Stamps, Medicaid, or WIC During Pregnancy, Missouri, 1999, 2003, and 2008

Year	Food Stamps		Medicaid		WIC	
	Number	%	Number	%	Number	%
1999	11,679	16.1	29,161	40.2	29,312	40.4
2003	15,708	21.4	33,436	45.4	30,897	42
2008	20,593	26.5	38,004	47.6	34,659	43.5

Source: Department of Health and Senior Services. MICA-Births

WIC enrollment, for eligible clients, in the first trimester is essential to ensure maximum impact on the health of mothers and infants. According to the CDC Pregnancy Nutrition Surveillance System (PNSS) report, the percent of women enrolled in WIC during the first trimester of pregnancy in Missouri increased from 37.5% in 1995 to 43% in 2008, and has been consistently higher than the national figure (43% vs. 31.7% in 2008). Missouri ranked fifth highest in the nation for first trimester enrollment during pregnancy among WIC eligible women. The Missouri WIC program began giving additional funds to local WIC providers to increase WIC participation among pregnant women in 2008.

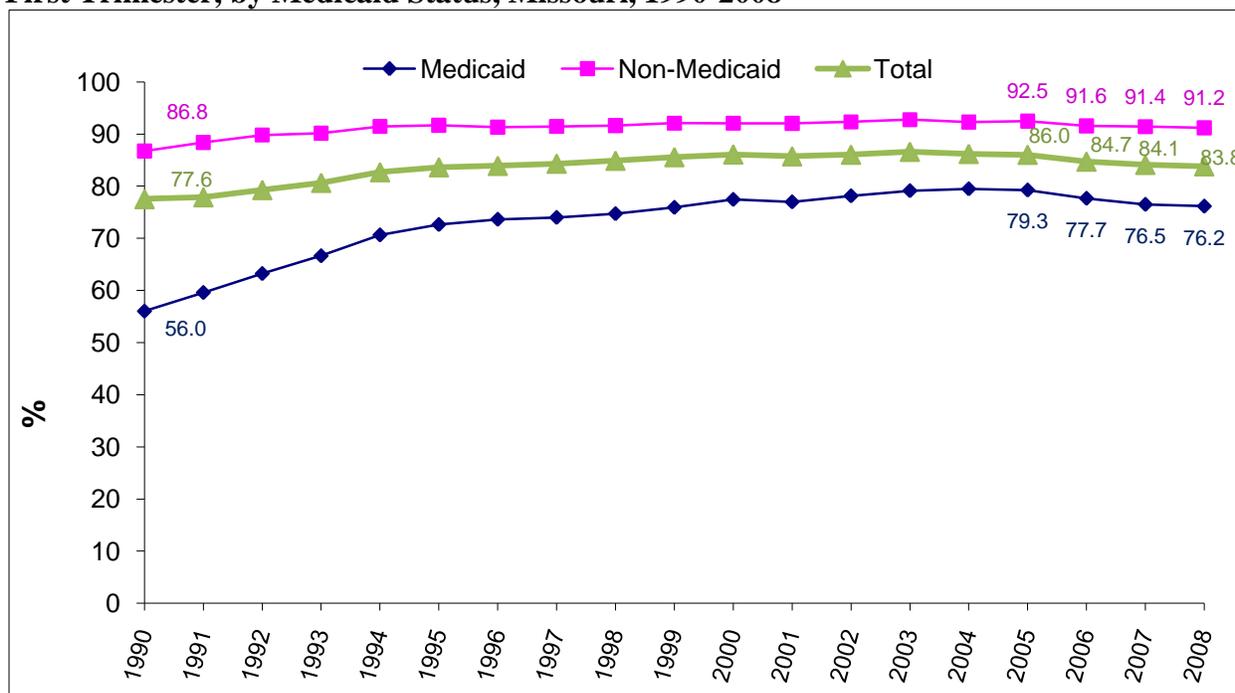
2.3.4 Prenatal Care

Early Prenatal Care

During the past three decades significant progress was made in improving women's access to early and adequate prenatal care. The proportion of women with first trimester prenatal care in Missouri has been consistently higher than the nation and increased from 77.6% in 1990 to 83.8% in 2008. Missouri ranked third highest in the nation for first trimester prenatal care enrollment. However, early prenatal care rates in Missouri stabilized around 86% between 2000 and 2005 and had shown a small but noticeable decline consistently since 2005, both among Medicaid and non-Medicaid women (Figure 17). The National Center for Health Statistics (NCHS) also reported a similar decline in early prenatal care rates nationwide since 2005. More recent changes to welfare and Medicaid policy might limit further improvements in timely prenatal care.

⁷ Kaiser Family Foundation's Kaiser Commission on Medicaid and the Uninsured. Headed for a Crunch: An Update on Medicaid Spending, Coverage and Policy Heading into an Economic Downturn. Kaiser Commission on Medicaid and the Uninsured: 2008 (available: <http://www.kff.org/medicaid/7815.cfm>)

Figure 17. Percent of Infants Born to Women Receiving Prenatal Care Beginning in the First Trimester, by Medicaid Status, Missouri, 1990-2008



Source: Department of Health and Senior Services, Vital Statistics – Births; CDC, NCHS. National Vital Statistics Reports

Adequate Prenatal Care

Adequate prenatal care defined as 80% or greater on the Kotelchuck Index in Missouri followed the similar pattern observed for early prenatal care. Adequate prenatal care rates in Missouri increased from 70.7% in 1990 to 79.2% in 2005, but then started to decline for three consecutive years 2006-2008 (74.3% in 2008). The decrease was also found in both Medicaid and non-Medicaid populations (85.8% in 2005 vs. 81.8% in 2008, non-Medicaid; 72.3% in 2005 vs. 66.6% in 2008, Medicaid).

Prenatal Care Quality and Content

PRAMS provides unique information regarding quality and content of prenatal care that is not routinely collected by birth certificate data. According to Missouri PRAMS 2007, among Missouri women with late or no prenatal care, the three most commonly reported barriers for getting prenatal care were:

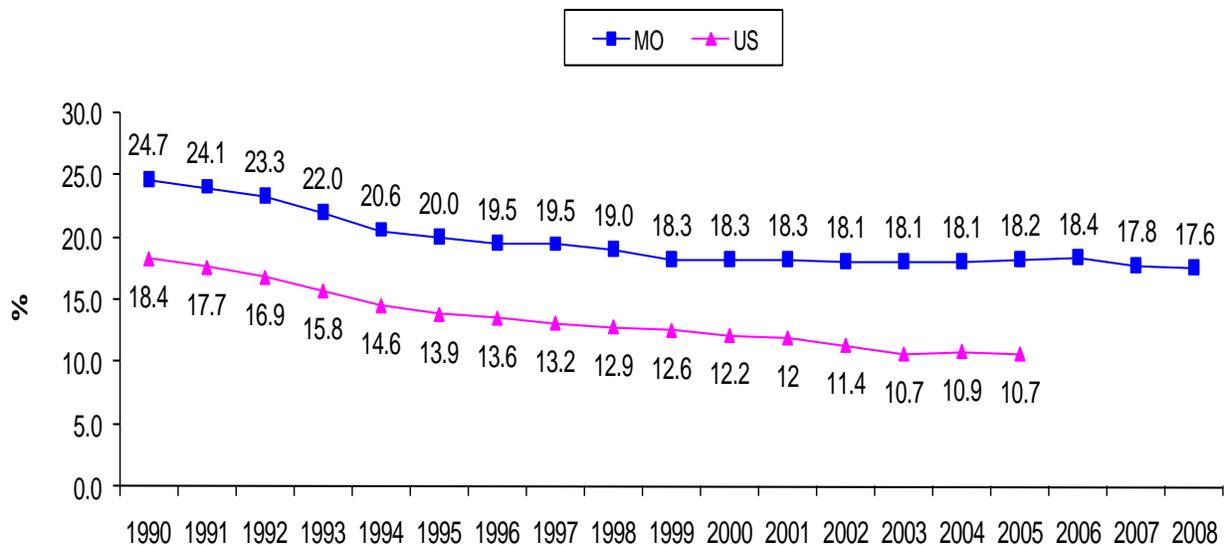
- “Didn’t have enough money or insurance to pay for visits” (34.4%)
- “Couldn’t get appointment when I wanted one” (27.9%)
- “Didn’t have Medicaid card” (27.7%)

Another indicator of prenatal care content is the receipt of prenatal counseling on various health issues from health care providers. The lowest percentages of receiving counseling were found for topics about physical abuse by partners (51%) and seat belt use (55.9%).

2.3.5 Maternal Cigarette Smoking

Smoking during pregnancy is associated with a wide variety of adverse pregnancy and birth outcomes. The rates of smoking during pregnancy among Missouri women (17.6% in 2008) have been consistently higher than national rates (10.7% in 2005) (Figure 18). The *HP 2010* objective is 99% abstinence from smoking during pregnancy and Missouri has long ways to go to reach this objective. The rates of smoking among Missouri women of childbearing age are also higher than national rates. Similar to national trends the rates of smoking during pregnancy among Missouri women decreased from 24.7% in 1990 to 18.3% in 1999, but remained around 18% since 1999 while the national rates declined to 10.7%. However, since 2007, the rates of smoking during pregnancy among Missouri women have shown a marginal decrease.

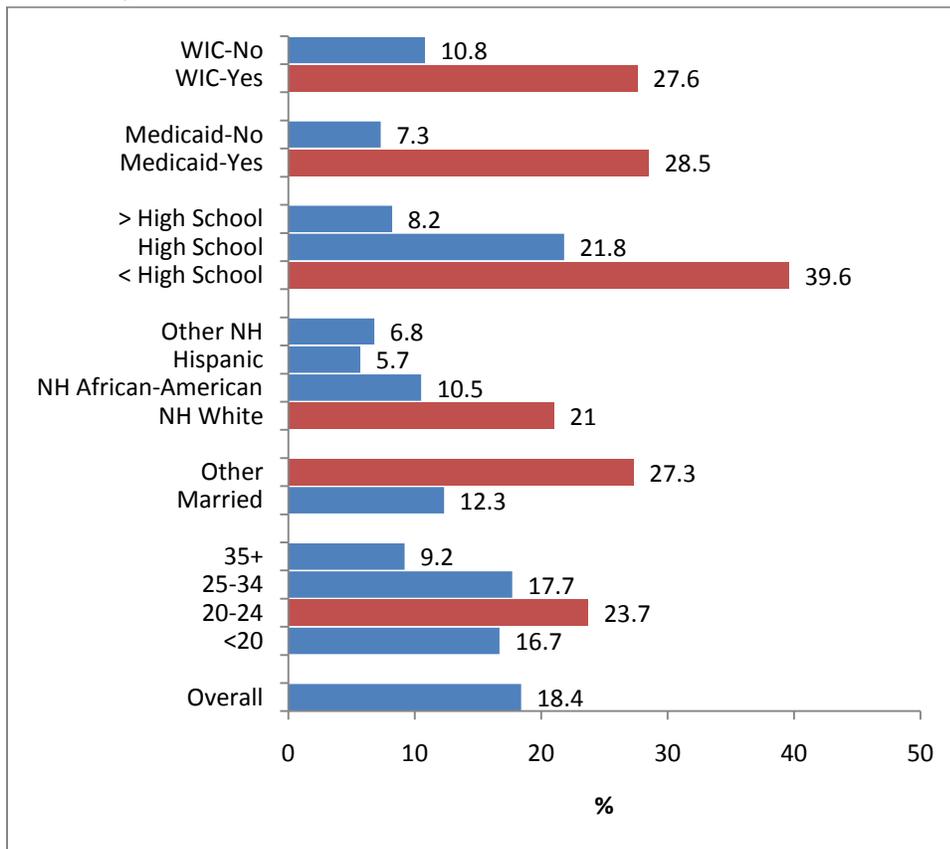
Figure 18. Percent of Women Who Smoked During Pregnancy, MO and U.S., 1990-2008



Source: DHSS. MICA-Birth.

Missouri PRAMS provides data for smoking prevalence during the three months prior to pregnancy, the last three months of pregnancy, and after pregnancy respectively. According to Missouri PRAMS 2007, nearly one third of Missouri women smoked in the three months before pregnancy (31.7%). Although the rates of smoking during pregnancy decreased to 18.4%, the postpartum smoking prevalence was back to 25.9%. Similar to results from other studies, 43% of Missouri women who smoke quit upon realizing their pregnancy, however, more than half (56%) of them relapsed postpartum. The rates of smoking in the last three months of pregnancy varied significantly by maternal characteristics in Missouri; it was higher among younger women 20-24 years of age (23.7%), those unmarried (27.3%), NH whites (21%), those with less than 12 years of education (39.6%), and those on Medicaid (28.5%) or on WIC (27.6%) (Figure 19). As mentioned previously the state of Missouri has the lowest state tobacco tax (17 cents per pack) in the nation further complicating smoking cessation efforts in the state.

Figure 19. Prevalence (%) of Smoking During the Last Three Months of Pregnancy, Missouri, 2007



Source: CPONDER—CDC’s PRAMS On-line Data for Epidemiologic Research.

2.3.6 Maternal Alcohol Use

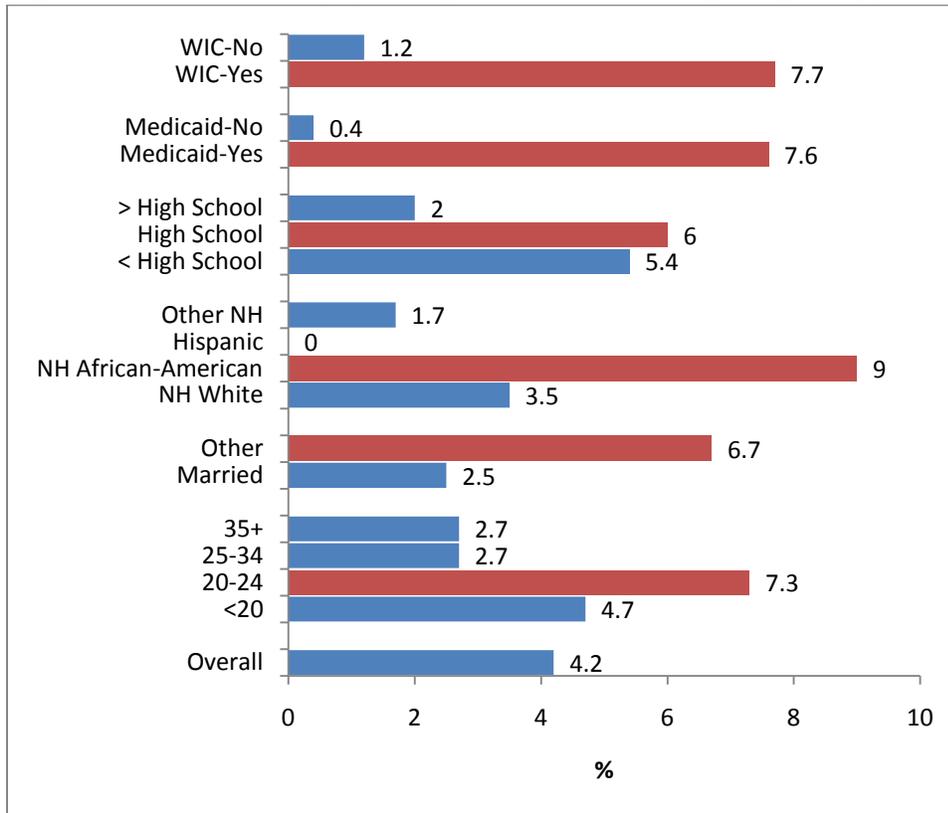
Women who drink alcohol during pregnancy are at risk for having a child with fetal alcohol spectrum disorders (FASD) – a range of neurobehavioral and developmental abnormalities with lifelong consequences. Because no level of alcohol consumption during pregnancy has been proven to be safe, the American Academy of Pediatrics (AAP) recommends abstinence from alcohol use for women who are pregnant or planning to become pregnant. According to Missouri PRAMS 2007, the prevalence of alcohol use in the last three months of pregnancy in Missouri was 4.5%, which met the HP 2010 objective of 6%. However, more than half of Missouri women (57.7%) reported alcohol use in the three months before pregnancy; this could reflect alcohol use in early pregnancy before pregnancy recognition.

2.3.7 Physical Abuse Around Pregnancy

Physical violence against women around pregnancy is associated with various adverse maternal behaviors, and perinatal outcomes such as use of alcohol, tobacco, and drugs, late prenatal care, high level of stress, maternal infections, preterm delivery, and low birth weight (LBW). According to Missouri PRAMS 2007, the proportion of Missouri women who reported physical abuse by a husband or partner was 5.3% before pregnancy and 4.2% during pregnancy. Among PRAMS states collecting physical abuse data in 2007, Missouri had the third highest rate of physical abuse during pregnancy, and sixth highest in prevalence of physical abuse before

pregnancy. Women at an increased risk of physical abuse during pregnancy include younger women 20-24 years of age (7.3%), those not married (6.7%), NH African-Americans (9%), those with 12 or fewer years of education (6%, high school; 5.4%, less than high school), and those on Medicaid (7.6%) or WIC (7.7%) (Figure 20).

Figure 20. Prevalence (%) of Physical Abuse During Pregnancy, Missouri, 2007



Source: CPONDER—CDC’s PRAMS On-line Data for Epidemiologic Research.

2.3.8 Maternal Morbidity

Maternal morbidity may resolve or result in long-term disability after pregnancy. Severe maternal morbidity, if either untreated or inadequately treated may lead to death.⁸ HP 2010 has set objectives to reduce maternal complications during hospitalized labor and delivery, reduce ectopic pregnancies, and reduce postpartum complications, including postpartum depression. There is no single source that can provide comprehensive quality data on maternal morbidity.

Birth certificates collect data on various pregnancy complications for pregnancies resulting in a delivery. According to 2008 Missouri birth certificate data, the most frequently reported medical conditions (per 1,000 live births) were pregnancy-associated hypertension (51.4) and diabetes (33.2). It should be noted that birth certificate data may underreport maternal morbidity.

⁸ Adams MM, Alexander GR, Kirby RS, Wingate MS. *Perinatal epidemiology for public health practice*. 1st edition. New York, NY: Springer Science + Business Media, LLC; 2008.

The hospital discharge data is a more reliable source for maternal morbidity.⁹ From 1998 to 2007, the percentage of pregnancy related hospitalizations for selected maternal complications decreased for conditions such as ectopic pregnancy, hemorrhage during pregnancy, abruptio placenta, or placenta previa, dystocia (including malposition, malpresentation, disproportion, or obstruction), fetal distress and abnormal forces of labor, and umbilical cord complication (Table 10). However, the percentages increased in the same time period for certain conditions such as complications of hypertension, diabetes, previous C-section, and trauma due to perineum and vulva (Table 10). Pre-pregnancy overweight or obesity is a common risk factor for multiple maternal morbidities such as hypertension and diabetes. It should be noted that the number of hospitalizations presented in Table 10 are based on principal diagnosis, and therefore possibly underestimate the full burden of each complication.

Ectopic Pregnancy

Because clinical management of ectopic pregnancy shifted from primarily inpatient care to outpatient care in the 1990s, and since no reliable outpatient data is available caution needs to be exercised while interpreting the decline in hospitalizations data for ectopic pregnancy.

Hypertensive Disorders and Diabetes during Pregnancy

Chronic hypertension, including pregnancy induced hypertension (PIH), is associated with severe maternal and infant morbidity such as hemorrhage due to placenta abruption, acute renal dysfunction and even maternal, fetal and infant mortality. Diabetes during pregnancy (diagnosed both prior to and during pregnancy) is also associated with adverse pregnancy and birth outcomes (intrauterine fetal death, macrosomia, maternal hypertensive disorders and need for C-section). The steady increase in pre-pregnancy overweight/obesity rates coupled with the concomitant increase in maternal hypertension and diabetes rates further strengthens the association between these risk factors.

In 2006, Missouri had lower rates of diabetes during pregnancy than the nation (31.4 vs. 42.3 per 1000 live births); however the rates of PIH (49.8 in MO vs. 39.1 in U.S. per 1000 live births) and chronic hypertension (11.2 in MO vs. 10.8 in U.S. per 1000 live births) were higher than national rates. Mirroring the increasing trend in maternal hypertension and diabetes in the nation since the 1990s, the rate (per 1,000) of live births to Missouri women with chronic hypertension (6.6 vs. 12.7), pregnancy-associated hypertension (50.4 vs. 51.4), eclampsia (0.7 vs. 0.9), and diabetes during pregnancy (20.4 vs. 33.2) increased by 92.4%, 2%, 28.6% and 62.7% respectively from 1999 to 2008. Pregnancy-associated hypertension is the most common maternal hypertensive disorder. The data for diabetes during pregnancy among Missouri women is from the 1989 birth certificate and does not differentiate between pre-existing and gestational diabetes. The implementation of the new birth certificate (2003 version) in Missouri starting in 2010 will allow for a clear distinction between pre-pregnancy and gestational diabetes.

According to hospital discharge data, the proportion of pregnancy related hospitalizations for hypertensive disorders and diabetes also rose from 5.1% and 1.6% in 1998 to 5.5% and 2% in 2007 respectively among Missouri women 15-44 years old (Table 10). The increase was across

⁹ Lydon-Rochelle MT, Holt VL, Nelson JC, Cárdenas V, Gardella C, Easterling TR, et al. Accuracy of reporting maternal in-hospital diagnoses and intrapartum procedures in Washington State linked birth records. *Paediatric Perinatal Epidemiology* 2005;19:460-71.

younger (20-24) and older maternal age groups (25-34 and 34-44). African-American women were at a higher risk for maternal hypertension and diabetes compared with whites (8 vs. 5.2 and 2.1 vs. 1.9 respectively of every 100 pregnancy related hospitalizations, Missouri, 2007).

Table 10. Proportions (%) of Hospitalizations for Selected Maternal Complications Associated with Pregnancy, Women 15-44 Years of Age, Missouri, 1998 and 2007*

Complications	1998		2007	
	Hospitalizations	%	Hospitalizations	%
Decrease in % from 1998 to 2007				
Ectopic pregnancy	551	0.7	450	0.5
Hemorrhage during pregnancy, abruptio placenta, placenta previa	1,113	1.4	1,032	1.2
Malposition, malpresentation, disproportion, or obstruction	5,796	7.2	4,927	5.7
Fetal distress and abnormal forces of labor	6,450	8.0	3,616	4.2
Umbilical cord complication	6,022	7.5	3,964	4.6
Increase in % from 1998 to 2007				
Hypertension complicating pregnancy, childbirth and the puerperium	4,107	5.1	4,755	5.5
Diabetes or abnormal glucose tolerance complicating pregnancy, childbirth, or the puerperium	1,270	1.6	1,756	2.0
Previous C-section	5,188	6.5	9,274	10.7
Trauma to perineum and vulva	10,954	13.6	13,709	15.8
Total hospitalizations due to pregnancy, childbirth, or reproduction	80,306	100	86,676	100

Source: Missouri Department of Health and Senior Services. MICA-Hospital Discharges

*Diagnoses for hospitalizations in MICA are based on the principal diagnosis, and are classified using the Ninth Revision of the International Classification of Diseases (ICD-9). The diagnosis groupings used in the MICA are based on the Clinical Classification Software (CCS).

Maternal Infections during Pregnancy

Many sexually transmitted diseases (STDs) and other maternal infections (urinary tract infection and Group B Strep infection) have been associated with various adverse maternal and infant outcomes such as ectopic pregnancy, infertility, premature rupture of membranes, preterm delivery, infant blindness, infant mental retardation, and postpartum endometritis. Early detection and treatment of maternal infections are important to prevent many maternal complications, infant transmission, and neonatal diseases.

Missouri PRAMS collects a wide range of self-reported maternal infections during pregnancy among women with a recent live birth. Maternal infections are very common; about 28,000 or more than one-third (35.8%) of Missouri women with a recent live birth in 2007 reported at least one infection during pregnancy (Table 11). The three most frequently reported infections were urinary tract infection (UTI) (18.6%), yeast infection (10%), and Group B Strep infection (9.1%).

An estimated 5,500 or 7.1% of Missouri women with a live birth in 2007 reported having any STDs including chlamydia, gonorrhea, syphilis, genital warts (HPV), herpes, or trichomoniasis (Trich) during pregnancy. Chlamydia was the most commonly reported STD (2.9%) with significantly higher rates among teens (15.2%), African-Americans (13.4%), Medicaid (12.1%) or WIC (12.2%) clients, and those with high school (10.4%) or lower (9.2%) education.

Table 11. Prevalence (%) of Maternal Infections During Pregnancy, MO PRAMS 2007

Maternal infections	Estimated Number	%
<i>Any STDs (genital warts, herpes, chlamydia, gonorrhea, syphilis, or trich)</i>	5,517	7.1
Chlamydia	2,282	2.9
Genital warts (HPV)	2,081	2.7
Herpes	880	1.1
Trichomoniasis (Trich)	678	0.9
Gonorrhea	463	0.6
Syphilis	46	0.1
Urinary tract infection (UTI)	14,515	18.6
Yeast infection	7,777	10
Group B Strep (Beta Strep)	7,105	9.1
Bacteria vaginosis	3,898	5
Pelvic inflammatory disease (PID)	234	0.3
Other infections	1,407	1.8
Any of the above conditions	27,979	35.8

Source: Missouri PRAMS 2007

Postpartum Depression (PPD)

Reducing PPD is one of the HP 2010 objectives. PPD can occur within a year after delivery and has the potential to adversely impact the health and well-being of both the mother and the child. Missouri PRAMS collected unique information on self-reported postpartum depressive symptoms. According to 2007 Missouri PRAMS, about one in six (16%) of new mothers in Missouri reported frequently experiencing symptoms of PPD ranking Missouri third highest in the nation for frequent postpartum depressive symptoms. The prevalence was much higher among Missouri women with certain socio-demographic characteristics:

- Physically abused by a partner or husband before or during pregnancy: 31.8%
- Experience ≥ 3 prenatal psychosocial stressors: 28.8%
- Not have postpartum check: 26.7%
- African-American: 24.3%
- On Medicaid: 23.4%
- Smoked before or during pregnancy: 21.6%
- Teen mothers: 21.4%
- 12 or fewer years of education: 21%
- Not married: 20.7%

Among those with PPD symptoms, only 40% sought help for depression from a health care provider.

2.3.9 Maternal Mortality

It is reported that each day in the U.S., between two and three women die of pregnancy-related causes. Although the risk from dying of these complications has dramatically decreased in the U.S. in the past 50 years, this risk has not declined since 1982. The Healthy People 2010 objectives for the U.S. lists maternal mortality as a priority area for improvement, including specific goals of no more than 3.3 maternal deaths per 100,000 live births overall, and no more than 5.0 maternal deaths among African-American women. The fourfold increase nationally in risk for maternal deaths among African-American women compared with white women is one of the largest racial disparities among major public health indicators.

The maternal death data presented in the vital statistics report is based on the following definition for maternal deaths: “mother dying as a result of complications of pregnancy, childbirth and puerperium (ICD-10 codes O00-O99).” The maternal death rates calculated through the Missouri Pregnancy Associated Mortality Review (PAMR) enhanced surveillance methodology were two times higher than the rates reported in the Missouri annual vital statistics reports (25.8 vs. 13.5 deaths per 100,000 live births). PAMR is an enhanced surveillance system to capture maternal deaths through review of a series of events surrounding pregnancy and post-partum. The PAMR process is more thorough and comprehensive in comparison to the annual vital statistics reports where the data is reported based solely on the ICD 10 code.

Between 1999 and 2003, the Missouri PAMR project identified 228 pregnancy related deaths. The Missouri PAMR project’s key findings, mirrors the nation’s racial difference. The pregnancy mortality rate for African-American women is more than twice that of white women in Missouri. Women with less than 12 years of education are more likely to die from pregnancy related causes. The Missouri PAMR project found that obese women in Missouri are almost three times as more likely to die than normal weight women. Pregnancy-related death was significantly higher for women age 35 and older. Embolism is the leading cause of maternal death in Missouri. The next leading causes of maternal deaths were hemorrhage and hypertension. Of concern is also the 6% of maternal deaths attributed to suicide.

2.3.10 Infant and Fetal Deaths

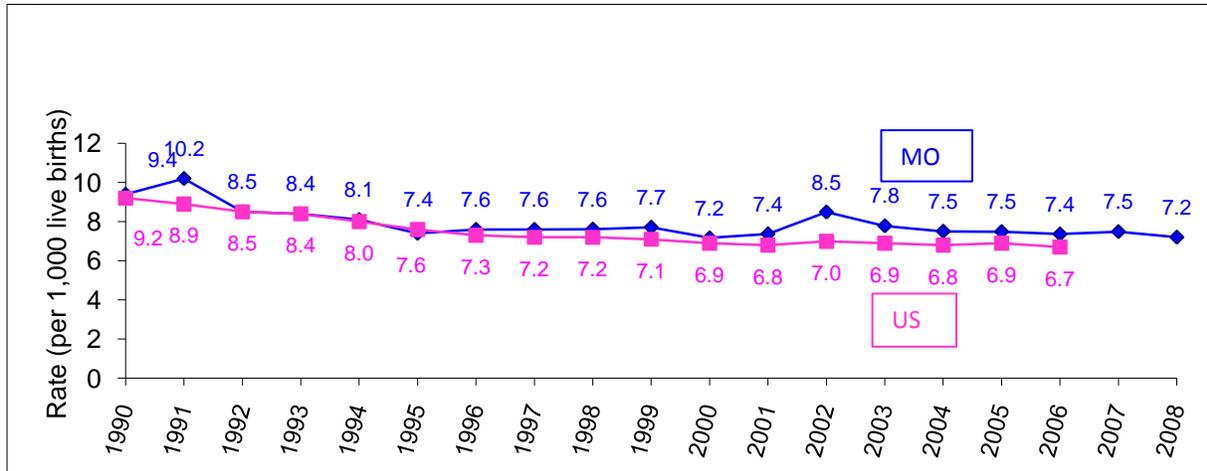
Infant Mortality Rate

Infant mortality refers to deaths of children under the age of one year. It is measured by the infant mortality rate (IMR), which is the total number of deaths to children under the age of one year for every 1,000 live births. Infant mortality is the single most important public health indicator used to monitor the health and well being of a community and is associated with a variety of factors such as maternal health, quality and access to medical care, socioeconomic status, and public health practices. Reducing IMR and eliminating associated racial disparities are consistent with the first and second overarching goals of the U.S. HP 2010 objectives. Missouri’s IMR has been slightly higher than the national rate since 1996 and far above the HP 2010 target of 4.5 per 1,000 live births. Similar to national trends, after declining rapidly in early 1990s Missouri’s IMR pretty much remained unchanged since 2001 (Figure 21).

Both Missouri and the nation saw a noticeable increase in IMR in 2002, but the increase did not continue. Missouri’s IMR decreased from 2002 to 2004 but stabilized around 7.5 per 1,000

through 2007. However, in 2008 Missouri's IMR decreased by 4% (7.5 in 2007 to 7.2 per 1,000) (Figure 21), the lowest since 2001. The decrease in 2008 IMR was largely due to a reduction in infant deaths associated with short gestation/LBW and maternal complications.

Figure 21. Infant Mortality Rate, MO and U.S., 1990-2008

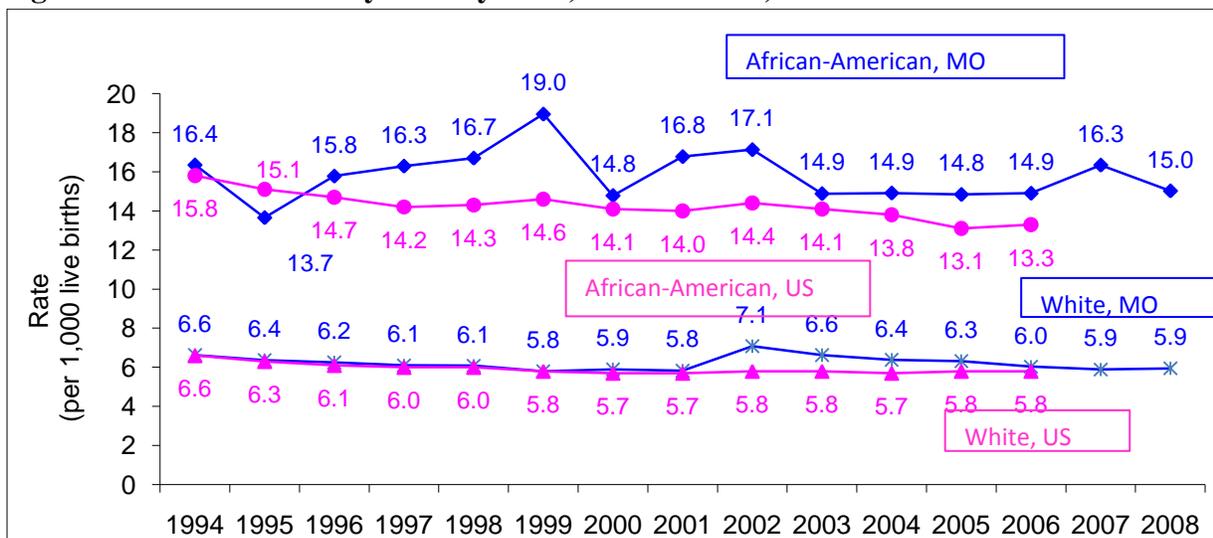


Source: Department of Health and Senior Services, Vital Statistics – Deaths; CDC, NCHS. National Vital Statistics Reports

Racial Disparity in Infant Mortality

While significant strides have been made in reducing overall infant mortality in Missouri and the U.S., African-American infants are at an increased risk of dying within the first year than white infants. Similar to national rates, African-American IMR in Missouri was twice that of white IMR (15 vs. 5.9 per 1,000 live births in 2008) and has been so for the past two decades both in the nation and Missouri. Of all the racial disparities in health measures this is the most disturbing and innovative public health interventions to reduce this gap are the need of the hour.

Figure 22. Infant Mortality Rate by Race, MO and U.S., 1994-2008



Source: Department of Health and Senior Services, Vital Statistics – Deaths; CDC, NCHS. National Vital Statistics Reports

Leading Causes of Infant Deaths

In 2008 there were 583 infant deaths in Missouri. The top five leading causes of infant deaths (Table 12) were birth defects, short gestation and LBW, unintended injuries, sudden infant death syndrome (SIDS), and maternal complications of pregnancy, and accounted for two-thirds (66.7%) of all infant deaths in Missouri in 2008 (Table 12). All infant deaths due to short gestation LBW and maternal pregnancy complications in Missouri in 2008 occurred in the neonatal period (<28 days of age), and the short gestation and LBW accounted for one-third (32.5%) of neonatal deaths. On the other hand, majority of infant deaths due to SIDS and unintentional injuries were in the post-neonatal period, and unintentional injuries were the leading cause of post-neonatal deaths in Missouri in 2008 (33.6%).

Table 12. Top Five Leading Causes of Infant Deaths, Missouri, 2008

Causes (ICD-10 codes)	Rank	Infant deaths	Neonatal deaths	Post neonatal deaths	Proportion of infant deaths (%)	Infant death rate (per 100,000 live births)
All causes		583	357	226	100	720.3
Birth defects (Q00-Q99)	1	139	93	46	23.8	171.7
Short gestation and LBW (P07)	2	116	116	0	19.9	143.3
Unintentional injuries (V01-X59)	3	84	8	76	14.4	103.8
Suffocation in bed (W75)		68	7	61	11.7	84.0
SIDS (R95)	4	32	6	26	5.5	39.5
Maternal pregnancy complications (P01)	5	18	18	0	3.1	22.2
Other causes		194	116	78	33.3	239.7

Source: Department of Health and Senior Services, Vital Statistics – Deaths

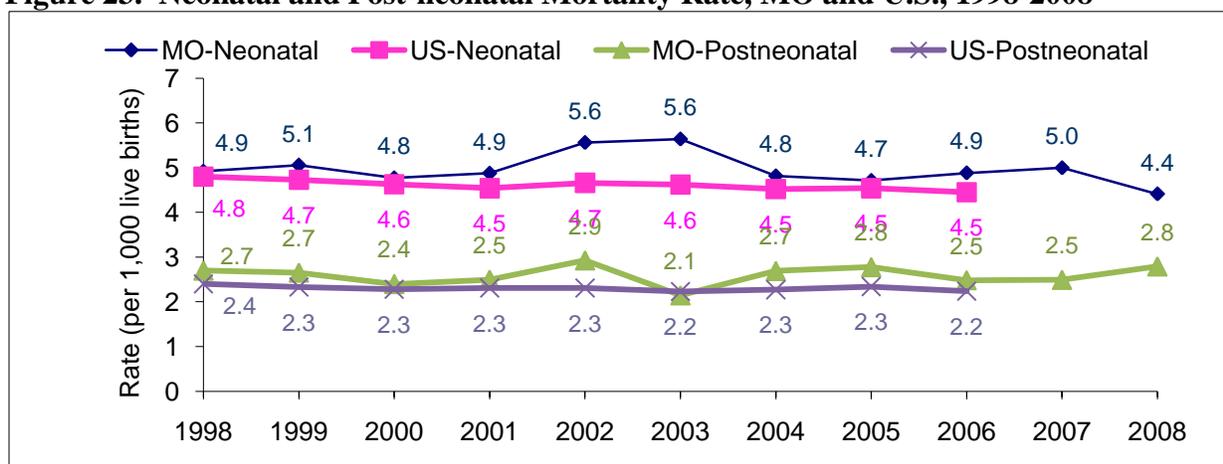
Neonatal and Post-neonatal Infant Deaths

Similar to overall infant deaths, Missouri's neonatal and post-neonatal IMRs were higher than national rates (Figure 23), with no significant declines between 1998 and 2007. However, Missouri's Neonatal IMRs (per 1000 live births) decreased by 12% from 5 in 2007 to 4.4 in 2008, mainly due reductions in infant deaths because of short gestation/LBW, and maternal complications. On the other hand, Missouri's post-neonatal IMR increased by 12% from 2.5 in 2007 to 2.8 in 2008, largely due to an increase in infant deaths attributable to suffocation in bed.

Fetal Deaths

Missouri vital statistics define fetal death as death at 20 weeks of gestation or later or birth weight of ≥ 350 grams if gestational age is unknown. With 478 fetal deaths in 2008 Missouri's fetal death rate was at 5.9 per 1,000 live births plus fetal deaths and has remained around this rate since 1999 with no significant changes.

Figure 23. Neonatal and Post-neonatal Mortality Rate, MO and U.S., 1998-2008



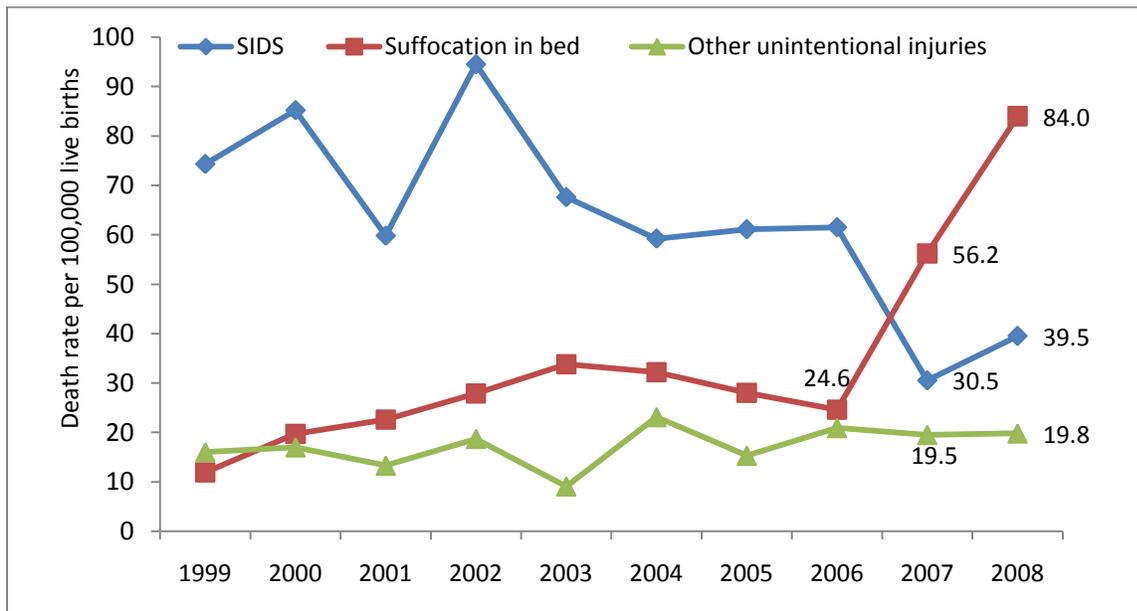
Sources: MO data: MO DHSS. Missouri Vital Statistics Annual Reports U.S. data: CDC, NCHS. National Vital Statistics Reports

Sudden Infant Death Syndrome (SIDS), Infant Sleep Position, and Bed Sharing

In 2008, SIDS was the fourth leading cause of infant deaths in Missouri. There has been a significant decrease in the SIDS rate since AAP released its recommendation of a non-prone (back or side) sleep position for healthy infants in 1992 and further revised its recommendation in 1996 to emphasize back sleep position for infants. The SIDS rate (per 100,000 live births) in Missouri decreased by 77% from 170.6 in 1990 to 39.5 in 2008. In 2005, the AAP Task Force on SIDS published its revised policy statement¹⁰ indicating that some of the recent decrease in might be due to differences in coding infant deaths attributable to SIDS. Missouri's SIDS rate continued to decline since 1999, particularly since 2007 and this decline coincided with the steady increase in IMR due to suffocation in bed since 1999, especially since 2007 (Figure 24).

¹⁰ American Academy of Pediatrics. The Changing Concept of Sudden Infant Death Syndrome: Diagnostic Coding Shifts, Controversies Regarding the Sleeping Environment, and New Variables to Consider in Reducing the Risk. Pediatrics 2005;116:1245-1255

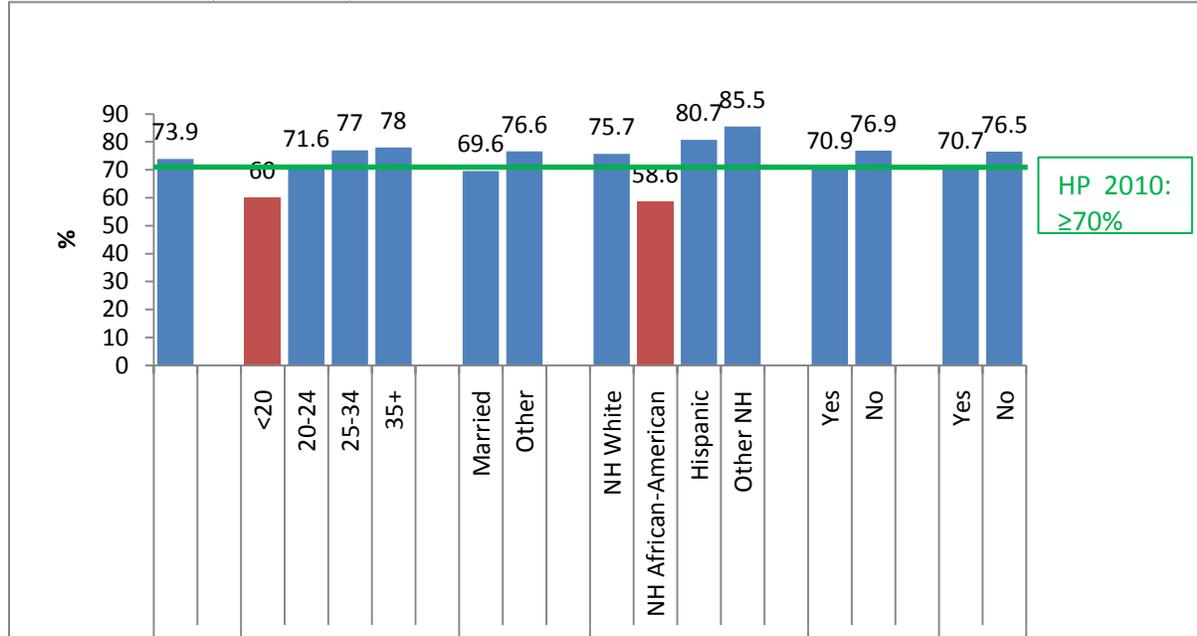
Figure 24. Infant Mortality Rate for SIDS and Unintentional Injuries, Missouri, 1999-2008



Source: Department of Health and Senior Services. Vital Statistics – Death and Birth Data

The HP 2010 objective for infant sleep position is that 70% of all healthy full-term infants are placed to sleep on their back. According to Missouri PRAMS 2007, almost three in four (73.9%) Missouri women often placed their baby on their back to sleep (Figure 25). Of those (26.1%) reporting placing their baby on non-back sleep position, more than half reported the stomach position (14.3%). The percentage of infants placed on their back to sleep met or exceeded the HP 2010 objective among most subpopulations (Figure 25). However, the percentage of women placing their baby on back to sleep was low among teen (60%) and NH African-American mothers (58.6%), far below the HP 2010 objective and the overall state prevalence (Figure 25).

Figure 25. Percentage (%) of Infants Often Placed on Their Back to Sleep, by Maternal Characteristics, Missouri, 2007



Source: CPONDER—CDC’s PRAMS On-line Data for Epidemiologic Research

Although bed sharing with the infant is still a controversial topic, there have been a number of studies suggesting a relationship between SIDS/ suffocation and bed sharing. The risk of SIDS/suffocation may be extremely high when adults sleep with the infant on a couch. On the other hand, room sharing but not bed sharing has been shown to reduce the risk of SIDS/suffocation.

According to Missouri PRAMS 2007, about one in four (23.4%) Missouri women reported bed sharing with their baby. Similar to infant sleep position, the percentage of bed sharing was much higher among teen (32.9%) and NH African-American mothers (45.3%).

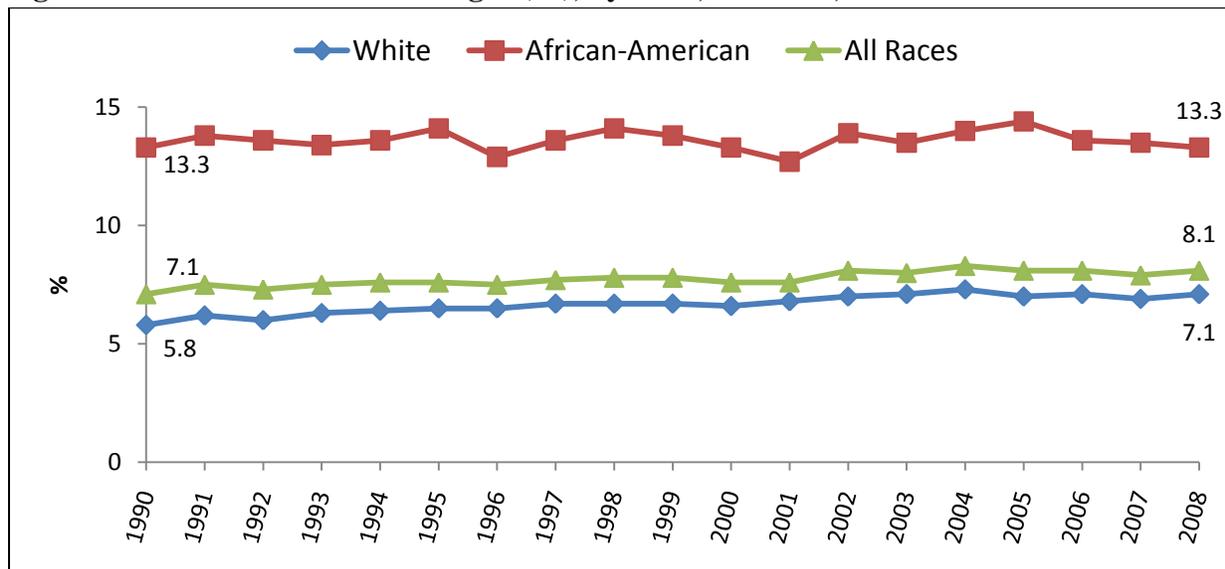
2.3.11 Low Birth Weight (LBW) and Preterm Delivery (PTD)

LBW and PTD continue to be a major public health concern and are the leading cause of infant deaths, especially neonatal deaths in Missouri and the nation. In 2008, one in five infant deaths (19.9%) and one-third (32.5%) of neonatal deaths were due to LBW and PTD in Missouri.

Low Birth Weight (LBW)

Babies born less than 5 pounds 8 ounces (2500g) are considered LBW and are at an increased risk for infant mortality and morbidity. In 2008, the overall LBW rate in Missouri was 8.1% (8.3% in U.S.) with higher rates among African-American (13.3%) than white infants (7.1%). Similar to national trends the rates of LBW in Missouri increased by 14.1% (7.1% in 1990, 8.1% in 2008) (Figure 26) in the past two decades. The increase in LBW rate in Missouri from 1990 to 2008 was mainly due to an increase in LBW rate in whites (5.8% vs. 7.1%) than African-Americans (13.3% vs. 13.3%). African-American women are two times more likely than white women (13.3% vs. 7.1%) to deliver LBW babies and this persistent racial disparity for the past two decades continues to be a significant public health concern in U.S. and Missouri (Figure 26).

Figure 26. Rate of Low Birth Weight (%), by Race, Missouri, 1990-2008



Source: Missouri DHSS. MICA-Births

Preterm Delivery (PTD)

Preterm delivery refers to the birth of a baby less than 37 weeks of completed gestation. Preterm babies are at an increased risk of infant mortality and morbidity. Missouri's PTD rate was slightly higher than the national rate (13.2% vs. 12.8% in 2006) with significant racial disparities. Similar to national trends Missouri's PTD rates increased by 14.4%, from 11.1% in 1990 to 12.7% in 2008 (Figure 27). However, since 2005 Missouri saw a steady decrease in PTD rates (13.7% in 2005 vs. 12.7% in 2008) among both whites and African-Americans.

Similar to IMR and LBW rates, PTD rates have been consistently higher among African-Americans than whites (18.4% vs. 11.6% in 2008) (Figure 27). While PTD rates among African-Americans have effectively remained unchanged in the past two decades it is the steady increase in PTD rates among whites that contributed to the narrowing of racial disparity. Despite lack of any significant increase in the past two decades, premature births are leading cause of infant mortality among African-Americans. Among singleton preterm births (<37 weeks) in Missouri, the IMR decreased by 23% among whites (39.2 vs. 30.3 per 1,000) but only 4% among African-Americans (59.8 vs. 57.4 per 1,000) from 1991 to 2007. This may partially explain the essentially unchanged racial disparity in IMR. The nation also saw a similar pattern.¹¹

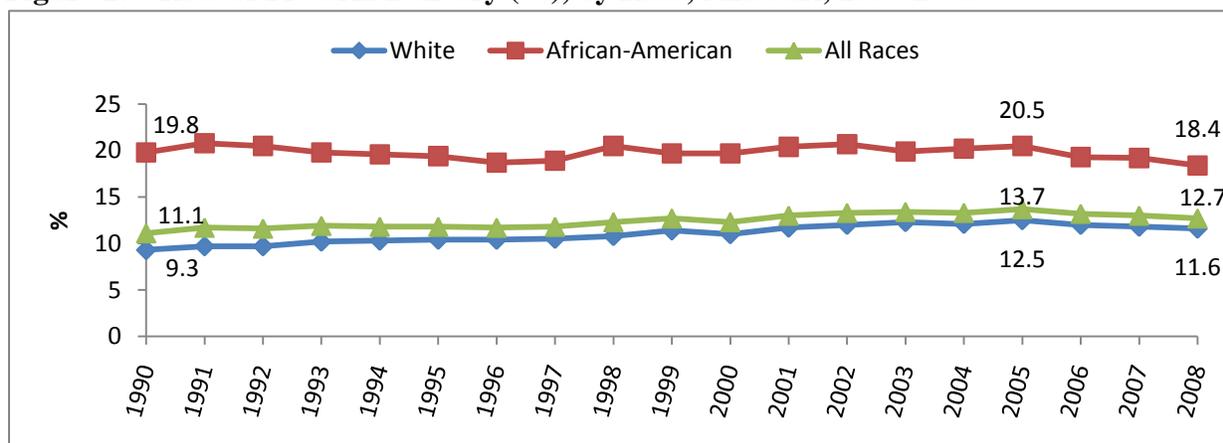
The reasons for the upward trend in PTD nationwide are not fully clear. Possible factors may include greater use of assisted reproductive techniques which increase the rates of multiple gestations; a rise in the proportion of births to women older than 35; and changes in clinical practice such as the early induction of labor or C-sections close to, but not at, full term.¹² The

¹¹ Schempf AH, Branum AM, Lukacs SL, Schoendorf KC. The contribution of preterm birth to the Black-White infant mortality gap, 1990 and 2000. *Am J Public Health*. 2007;97:1255-60

¹² March of Dimes. March of Dimes white paper on preterm birth - The global and regional toll. White Plains, New York: March of Dimes Foundation, 2009

increase in the rate of late PTD (34-36 weeks gestation) accounts for most of the increase in PTD. From 1999 to 2005, the rate of late PTD increased by 9% (8.1% vs. 8.9%) among singleton births in Missouri while the rate of the rest PTD increased by only 2.9% (2.9% vs. 3%) in Missouri; in the same time period, C-section increased by 37.1% (21% vs. 28.8%).

Figure 27. Rate of Preterm Delivery (%), by Race, Missouri, 1990-2008



Source: Missouri DHSS. MICA-Births

2.3.12 Birth Defects

The Missouri Department of Health and Senior Services (DHSS) maintains a passive Birth Defect Registry System (BDRS) and utilizes a multiple source approach. While the Missouri BDRS is primarily birth certificate based it also includes data from death certificates, newborn patient abstracts, pediatric patient abstracts, and program specific datasets (e.g., Children and Youth with Special Health Care Needs Program (CYSHCNP), Newborn Hearing Screening Program, Newborn Blood Spot Screening Program, etc.). Each year, approximately 6% of Missouri infants have a birth defect according to the Missouri BDRS. For 2002-2006, the 5.9% of live births with one or more birth defects reported in the BDRS represent 15.5% of LBW births and 35.7% of infant deaths.

The trend in reporting shows slight increases most years since 1993. The rate for 1993-1997 was 543.6 per 10,000, significantly lower than the 593.8 rate for 2002-2006. The increase results primarily from high birth defect reporting on newborn and pediatric patient abstracts. While a true increase in birth defects rates cannot be ruled out, we also believe that a substantial portion of cases reflect better diagnosis and reporting, particularly among cardiovascular defects. Also, the Missouri BDRS is passive, therefore the department accepts cases that active registries in other states would not include.

Overall, birth defects are significantly higher among African-American infants (649.0 per 10,000) than among white infants (585.9 per 10,000). Rates for Hispanics and NH are similar. Among both white and African-American infants, Medicaid births have significantly higher rates of overall defects than non-Medicaid births.

Neural tube defects have decreased significantly in this decade. Among 1993-1997 births, there were 8.0 per 10,000 neural tube defects, significantly higher than the 5.9 per 10,000 rate for

2002-2006. As has been observed in other states, most of the decrease has been in spina bifida, while anencephaly cases have remained essentially unchanged. Folic acid fortification of food was mandated beginning in 1998. For the years 2002-2006 the Missouri spina bifida rate for live births was 4.3 per 10,000, significantly lower than the rate of 6.3 for the years 1993-1997. Spina bifida is significantly higher among white Missouri infants (4.8 per 10,000) than among African-American infants (1.9 per 10,000). Somewhat higher rates of both anencephaly and spina bifida are observed among Hispanic births, although the differences are not statistically significant.

2.3.13 Newborn Blood Spot Screening

Prior to July 2005, Missouri's newborn blood spot screening program screened all newborns for congenital adrenal hyperplasia, congenital hypothyroidism, galactosemia, hemoglobinopathies and phenylketonuria (PKU). On July 1, 2005, Missouri expanded its newborn screening panel by adding those disorders screened through tandem mass spectrometry screening (14 amino acids disorders, 13 fatty acid disorders and 15 organic acid disorders). In January 2007 cystic fibrosis (CF) was added to the newborn screening panel. In December 2008 biotinidase deficiency was added to the newborn screening panel. Missouri's newborn screening program now screens for all 29 core conditions recommended by the American College of Medical Genetics and the March of Dimes. When considering secondary conditions, screening for these disorders actually allows for a total of 67 disorders to be detected through newborn screening in Missouri. The following table (Table 13) shows the incidence of the disorders in Missouri compared to the U.S.

Table 13. Incidence of Selected Disorders Identified through Newborn Blood Spot Screening, Missouri, 2005-2008

Disorder	Missouri		U.S.
	Number of Confirmed Cases	Incidence	Estimated Incidence
Phenylketonuria	25	1/12,909 births	1/15,000 births
Congenital Hypothyroidism	130	1/2,483 births	1/3,000 births
Sickle Cell Disease	159	1/2,030 births	1/3,000 births
Cystic Fibrosis	48 (2007&2008)	1/3,392 births	1/4,000 births
Congenital Adrenal Hyperplasia	18	1/17,929 births	1/13,000 births
Amino Acid Disorders (other than PKU)	17	1/18,984 births	1/20,000 births
Fatty Acid Disorders	49	1/6,586 births	1/10,000 births
Organic Acid Disorders	18	1/17,929 births	1/25,000 births
Classical Galactosemia	5	1/64,545 births	1/50,000 births

Source: Missouri State Public Health Laboratory, Newborn Screening Laboratory

Nearly all newborns in Missouri received blood spot screening (99.9% or 80,753 out of 80,868 in 2008), and all confirmed true positive cases (145 in 2008) received treatment. Missouri

maintained 100% of follow-up among screen positive newborns. However, due to the increased number of conditions screened and the complexity of confirmation, the length of the follow-up is longer than previously noted.

2.3.14 Newborn Hearing Screening

The national Early Hearing Detection and Intervention (EHDI) goals and the U.S. HP 2010 objectives recommend:

- All newborn infants be screened for hearing loss in the first month of life, preferably before hospital discharge
- All infants who screen positive have audiologic evaluations before three months of age
- All babies with confirmed hearing loss receive intervention before six months of age

Effective January 1, 2002, state law mandates screening the hearing of all infants born in Missouri.

Missouri Universal Newborn Hearing Screening Program (UNHSP) has achieved steady high screening rates since the UNHSP initiation in 2002. Almost all live births in Missouri received newborn hearing screening before discharge. The percentage of live births screened before discharge increased from 96.6% in 2006 to 98.6% in 2008.

According to the CDC EHDI program data 2007,¹³ Missouri performed better than the nation in the following indicators with respect to timely screening, diagnosis, and intervention:

- Percentage of live births screened (97.7% vs. 94%)
- Percentage of passing screening before one month among the total who passed screening (97.9% vs. 87.2%)
- Percentage of infants diagnosed (including cases of normal hearing and hearing loss) before 3 months of age among the total diagnosed (73.3% vs. 65.6%)
- Percentage of those enrolled in Part C Early Intervention before 6 months among the total enrolled (65.2% vs. 61.7%)

However, like many other states, Missouri saw a large proportion of loss to follow-up (LFU) for audiological evaluation among infants who did not pass the hearing screening. Although the LFU rate varied from the lowest of 2% in North Carolina to the highest of 95.6% in Montana in 2007, more than half of states (24 out of 44) had a LFU rate more than 50%.¹³ Among 1,490 infants who did not pass the screening in Missouri in 2007, 56.8% were loss to follow-up, which was the median rate among 44 states.

A preliminary analysis of 2006-2007 Missouri UNHSP data linked with birth certificate data identified higher percentages of LFU among infants to mothers with certain characteristics such as those under 20, NH African-Americans, unmarried, less than 12 years of education, on Medicaid, Food Stamps, or WIC, and with late or no prenatal care.

In 2007, 133 infants were identified with hearing loss through the UNHSP in Missouri, representing 1.6 per 1,000 screened, slightly higher than the national prevalence of 1.2 per

¹³ CDC. CDC EHDI Hearing Screening & Follow-up Survey (www.cdc.gov/ncbddd/ehdi/data.htm)

1,000.¹³ Under the state law, the Missouri DESE “monitors the delivery of early intervention services to those infants identified by the newborn hearing screening program and report annually to the department of health.” Eligible infants and toddlers are served by the Missouri First Steps Program (FSP) under Part C of the Individuals with Disabilities Act. Like several other states, Missouri’s FSP through Part C generally only enrolls infants with severe to profound hearing loss and with significant developmental delay. Thus, not all infants with hearing loss are eligible to receive early intervention.¹⁴ Because of lack of funding, Missouri’s eligibility criteria for FSP are more restrictive than all but two other states.¹⁵ In 2007, nearly half of the 133 cases with hearing loss (49.6%) were enrolled in FSP, which was slightly lower than the median percentage of 54.8% among 42 states.¹³

2.3.15 Breastfeeding

The advantages of breastfeeding for infants, mothers, families, and society have been well documented.^{16 17 18} According to the AAP, with rare exceptions, human milk provides the most complete form of nutrition for infants, including premature and sick newborns. Accordingly, the AAP recommends that infants be breastfed exclusively for the first six months after birth and that breastfeeding continue through the entire first year of life. Breastfeeding is associated with a lower incidence of obesity during childhood and adolescence, and a decreased incidence of insulin-dependent diabetes mellitus, hypertension, and hypercholesterolemia in adulthood.¹⁹ The HP 2010 Objective was established to increase the proportion of mothers who breastfeed their infants to: 75% for early postpartum, 50% at 6 months, 25% at 12 months, 40% exclusively for 3 months, and 17% exclusively for 6 months.²⁰

Comparison of Selected Breastfeeding Indicators in Missouri and the Nation

While the nation is not far (1.1%, 6.6%, and 3.4%, respectively) from reaching the HP 2010 Targets for percentages of women who ever breastfed, breastfed 6 months, and exclusively breastfed 6 months, Missouri still has much progress (9.7%, 16.9%, and 8.5%, respectively) to make to reach these targets. Additionally, Missouri ranked 40th in the nation for percent of mothers who ever breastfed, 40th for percent who breastfed at 6 months, and 44th for percent who exclusively breastfed at 6 months. Table 14 shows that the national and Missouri Pediatric Nutrition Surveillance System (PedNSS) populations have even further (13.0%, 23.1%, and 9.8%, for the nation, and 19.9%, 34.6%, and unknown, for Missouri, respectively) to go in order to reach these breastfeeding targets. Missouri ranked 35th and 39th in the nation for percent of infants ever breastfed and percent of infants breastfed at 6 months respectively (PedNSS).

¹⁴ DESE. Report on First Steps Children Identified through the Newborn Hearing Screening Program having Permanent Hearing Loss. December 2008.

¹⁵ Franck M. Missouri is sixth from last in First Steps. *St. Louis Post-Dispatch*, 2007.

¹⁶ Leung AK, Sauve RS. Breast is best for babies. *Journal of the National Medical Association* 2006 July, 97(7):1010-1019

¹⁷ Oddy WH. The impact of breast milk on infant and child health. *Breastfeeding Review* 2002 Nov;10(3):5-18.

¹⁸ Gartner LM, Morton J, Lawrence RA., et al. Policy statement: Breastfeeding and the use of human milk. *Pediatrics* 2006 Feb;115(2):496-506

¹⁹ Gartner LM, Morton J, Lawrence RA., et al. Policy statement: Breastfeeding and the use of human milk. *Pediatrics* 2006 Feb;115(2):496-506

²⁰ Centers for Disease Control and Prevention. *Breastfeeding: Data: NIS 2009*. Available at http://www.cdc.gov/breastfeeding/data/NIS_data/index.htm

Table 14. Comparison of Selected Breastfeeding Indicators in Missouri and the Nation

	Percent Ever Breastfed [% to reach target]	Percent Breastfed at 6 Months [% to reach target]	Percent Exclusively Breastfed at 6 Months [% to reach target]
Healthy People 2010 Target	75	50	17
Nation ⁽¹⁾	73.9 [1.1]	43.4 [6.6]	13.6 [3.4]
Missouri ⁽¹⁾	65.3 [9.7]	33.1 [16.9]	8.5 [8.5]
National PedNSS ⁽²⁾	62.0 [13.0]	26.9 [23.1]	7.2 [9.8]
Missouri PedNSS ⁽³⁾	55.1 [19.9]	15.4 [34.6]	(4)
Missouri State Ranking ⁽⁵⁾	40	40	44
Missouri PedNSS State Ranking ⁽⁶⁾	35	39	(4)

Sources:

2008 NIS.

2008 National PedNSS.

2008 Missouri PedNSS.

Note: Percentages are not calculated by CDC if < 100 records are available for analysis after exclusions.

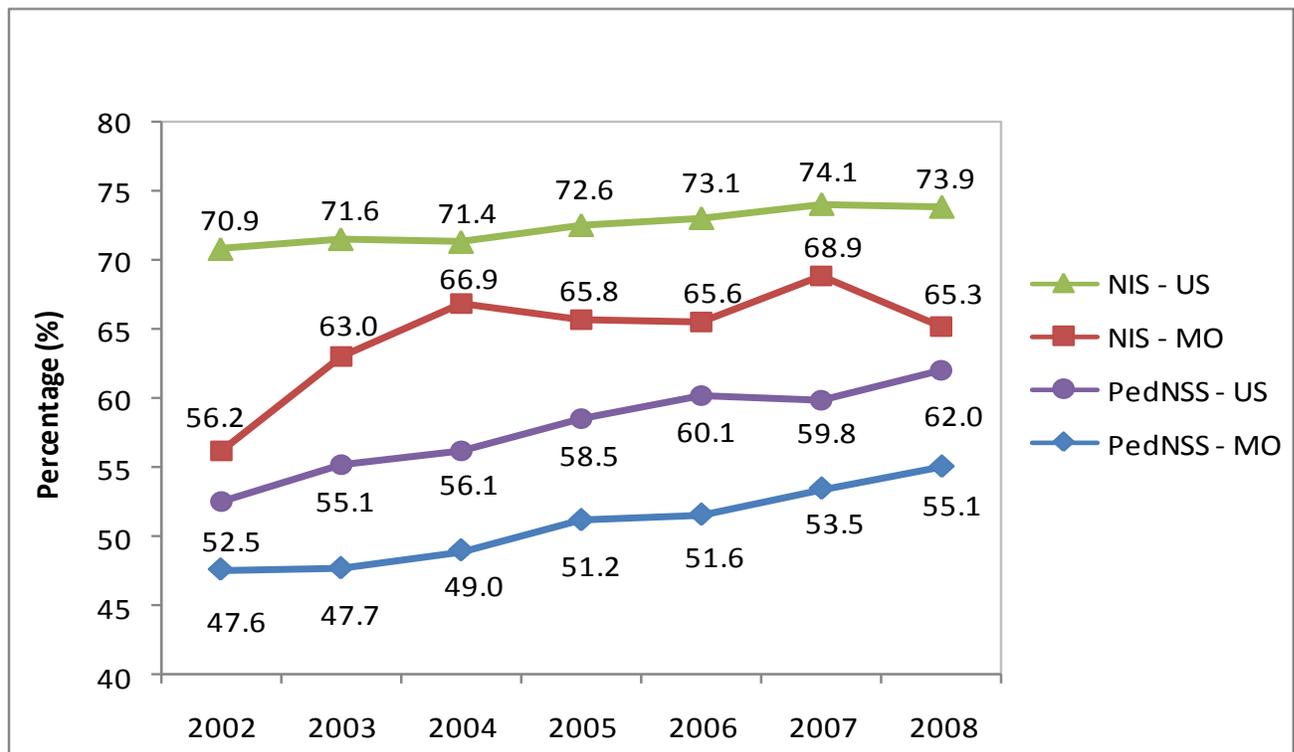
State ranking compares Missouri's rate to all U.S. states and the District of Columbia, from high to low. Rank 1 = best rate

PedNSS state ranking compares Missouri PedNSS's rate to other contributors, from high to low. Rank 1 = best

Breastfeeding Initiation and Breastfeeding at Six Months

From 2002 to 2008, there was an increase in mothers who initiated breastfeeding in the general populations and the low-income PedNSS populations in Missouri and the U.S. However, women initiating breastfeeding in the general population is consistently higher than those in the PedNSS populations. According to National Survey of Immunization (NIS), there was an increase in the percentage of women who ever breastfed in Missouri from 56.2% in 2002 to 65.3% in 2008. The PedNSS reveals an increase in breastfeeding initiation among the Missouri WIC population from 47.6% in 2002 to 55.1% in 2008. Overall, U.S. women (73.9%) are nearing the HP 2010 objective to increase the breastfeeding initiation rate to 75%, but Missouri women and women participating in Missouri WIC still remain far below this target (Figure 28).

Figure 28. Percentage (%) of Mothers Who Ever Breastfed Their Infants, NIS and PedNSS, 2002-2008

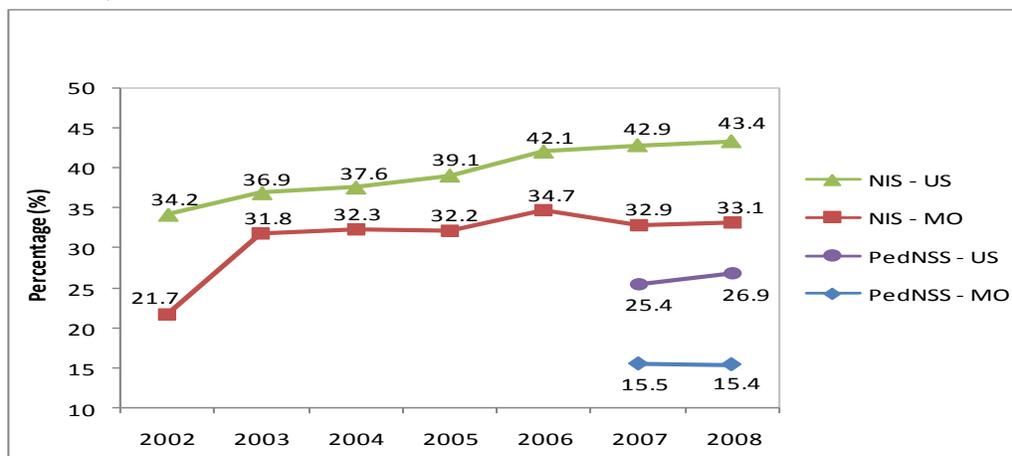


Sources: 2008 NIS; 2008 Missouri PedNSS; 2008 National PedNSS.

Note: It is advised that the trend data in Missouri and the nation should not be compared directly since they had different distributions on race/ethnicity. The Missouri PedNSS includes data exclusively from the Missouri Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), while the National PedNSS includes data from the National WIC and low-income infants and children participating in other federally funded maternal and child health programs.

Overall, both the nation and Missouri experienced an increase in the proportion of women who breastfed their infants at 6 months. The percentage of Missouri women who breastfed at six months increased from 21.7% in 2002 to 33.1% in 2008, however, this rise slowed in Missouri, only increasing by 1.3% from 2003 to 2008. The proportion of U.S. WIC women who breastfed at 6 months also increased from 25.4% in 2007 to 26.9% in 2008, while the percentage of Missouri WIC women who breastfed at 6 months did not experience an increase but remained relatively stable from 2007 (15.5%) to 2008 (15.4%). The percentages of women breastfeeding at 6 months are still below the HP 2010 target of 50% for U.S. women (43.4%), Missouri women (33.1%), U.S. WIC women (26.9%), and Missouri WIC women (15.4%). Furthermore, the proportion of women participating in Missouri WIC who breastfed at 6 months was less than half than that of the general women population in Missouri (Figure 29).

Figure 29. Percentage (%) of Mothers Who Breastfed Their Infants at 6 Months, NIS and PedNSS, 2002-2008



Sources: 2008 NIS; 2008 Missouri PedNSS; 2008 National PedNSS.

Note: It is advised that the trend data in Missouri and the nation should not be compared directly since they had different distributions on race/ethnicity.

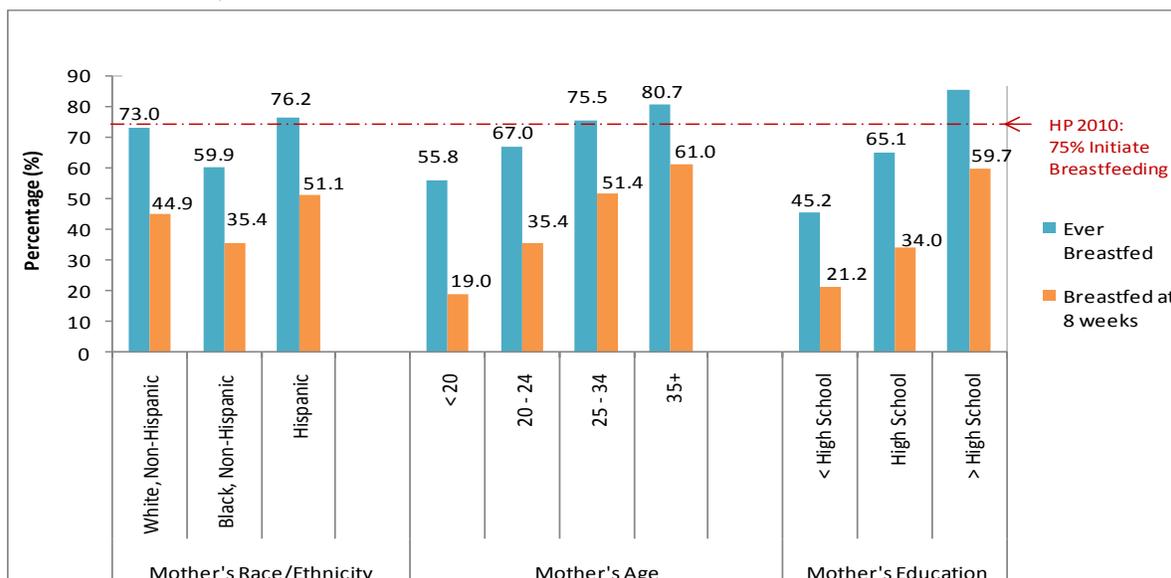
PedNSS procedures for breastfeeding duration data collection did not capture adequate data to measure duration prior to 2007.

Breastfeeding by Maternal Characteristics

According to 2007 Missouri PRAMS, 71.6% initiated breastfeeding, not reaching the HP 2010 target of 75%. However, certain subgroups have met this target. Women who are Hispanic (76.2%), 25-34 years of age (75.5%), 35 years of age or older (80.7%), and those who have more than a high school education (85.5%) have met this breastfeeding target of 75%. In addition, white, NH women (73.0%) are close to reaching this target, with only 2% to go. Missouri's subpopulations not meeting HP 2010 target of 75% include women who are NH African-American (59.9%), less than 20 years of age (55.8%), 20-24 years of age (67.0%), those with a high school (65.1%) or less than a high school education (45.2%), and those with (Figure 30).

Among the 2007 PRAMS participants, 44.5% still breastfed at 8 weeks. Corresponding to the proportions of women who initiated breastfeeding were the smaller proportions who breastfed at 8 weeks. There is not a HP 2010 target for breastfeeding at 8 weeks, or 2 months. However, if the breastfeeding target of 50% at 6 months was applied to the prevalence of breastfeeding at 8 weeks, Missouri still did not reach the target of 50%. The groups with the lowest proportions of women who initiated breastfeeding and who breastfed at 8 weeks are African-American, NH, less than 20 years of age, and have less than a high school education (Figure 30).

Figure 30. Percentage of Mothers Who Ever Breastfed and Who Breastfed at 8 Weeks, Missouri PRAMS, 2007



Source: 2007 Missouri PRAMS.

Barriers to Breastfeeding

In order to focus breastfeeding promotion efforts in the right areas, it is first important to understand the barriers and challenges to breastfeeding that women experience. Among the 2007 PRAMS participants, 71.6% initiated breastfeeding and 44.5% still breastfed at 8 weeks. Among the 2007 PRAMS participants who did not initiate breastfeeding, their top reasons included: did not like breastfeeding (47.5%), had other children to care for (28.8%), went back to work or school (23.8%), and mother sick or on medication (16.1%). In comparison, among women who initiated breastfeeding and stopped within 8 weeks, their leading reasons for stopping included: not enough milk (48.6%), did not satisfy baby (33.2%), soreness (33.1%), and difficulty nursing (32%). These reasons should be addressed with pregnant women and new mothers in order to increase breastfeeding rates and promote the health of mothers and infants in Missouri.

2.4 Health of Children and Adolescents

2.4.1 Overall Description of Children and Adolescent Population

In 2008, an estimated 1,582,696 children 0-19 years of age were living in Missouri - 27% of Missouri's total population (DHSS MICA-Population). Table 15 shows selected socio-demographic characteristics in Missouri and the nation. The age distribution of children 0-19 years of age in Missouri is similar to that in the nation. The proportion of younger children under 9 years of age is higher in Hispanics than those in whites and African-Americans. In 2008, one in five children 0-19 years of age were below federal poverty level and one-third of children under age 18 lived in single-parent families in Missouri; these measures were comparable with the national figures (19% vs. 18.9%; 32% vs. 32%).

Health Insurance

The percentage of children 0-19 years of age without health insurance in Missouri has been consistently lower than that nationwide since 1996 (7.6% vs. 10.9% in 2008). The percentage of children without health insurance in Missouri showed a general downward trend from 1995 to 2001, but then steadily increased from 6.7% in 2002 to 10.5% in 2007. However, the percentage in 2008 (7.6%) decreased for the first time in the past eight years in Missouri.

According to the 2007 National Survey of Children's Health (NSCH), 94.4% of Missouri children under age 18 had health insurance in 2007. However, having insurance does not necessarily guarantee adequate coverage and in 2007, one in four (24.7%) insured children in Missouri did not have sufficient coverage sufficient to meet their medical needs (Table 15).

Medicaid and WIC Enrollment

Nearly one-third of Missouri children 0-19 years of age (32%) were enrolled in MO HealthNet (Medicaid)/State Children's Health Insurance Program (SCHIP) and more than one-third of children 0-4 years of age participated in WIC in 2008.

Racial Disparity

Race/ethnicity disparity remained wide in socioeconomic status (SES) indicators among Missouri children. African-American and Hispanic children tended to be worse than whites in most of the SES indicators (Table 15). For example, the poverty rates for African-American (38.4%) and Hispanic (36.4%) children were more than twice the rate for whites (15.6%) in 2008. Similarly, the percentage of children in single-parent families was greatly higher in African-Americans (44%) and Hispanics (37.8%) than in whites (26.6%).

Table 15. Selected Socio-demographic Characteristics in Children and Adolescents in Missouri

	U.S.	MO				
Socio-demographic characteristics	All races/ ethnicities	All races/ ethnicities	White	African-American	Hispanic	Year
All children 0-19 years ^a	82,640,086	1,582,696	1,300,002	242,748	78,959	2008
Age distribution^a						
% 0-4 years	25.4	25.2	25.0	25.9	32.5	2008
% 5-9 years	24.3	24.1	24.2	23.3	27.0	2008
% 10-14 years	24.3	24.6	24.7	24.2	21.4	2008
% 15-19 years	26.0	26.1	26.1	26.6	19.1	2008
Family						
% of children <18 in households headed by single parent ^b	31	29.8	26.6	44	37.8	2008
Poverty						
% below 100% income-to-poverty ratio ^b	18.9	19	15.6	38.4	36.4	2008
Health insurance and WIC enrollment						
% without health insurance ^b	10.9	7.6	7.2	10.7	23.3	2008
% with insurance NOT adequate among children (0-17) insured ^c	23.5	24.7	24.3	26.0	26.2	2007
% in Medicaid/SCHIP ^d	-	32.0	26.2	60.7	41.3	2008
% of children 0-4 enrolled in WIC ^e	-	38.2	30.6	52.2	64.0	2008

Sources:

a Missouri Department of Health and Senior Services. MICA-Population

b U.S. Census Bureau. Current Population Survey (CPS), Annual Social and Economic Supplement 2009. Accessed from (http://www.census.gov/hhes/www/cpstc/cps_table_creator.html), CPS Table Creator, on March 1, 2010.

c Child and Adolescent Health Measurement Initiative. 2007 National Survey of Children's Health, Data Resource Center for Child and Adolescent Health Web site. Accessed from www.nschdata.org on January 27, 2010.

d Missouri Department of Social Services (DSS)

e CDC. PNSS Report

2.4.2 Overall Health Status of Children and Adolescents

The national Kids Count's overall child health assessment ranked Missouri 33rd among 50 states in 2009, unchanged compared to the ranking in 2005.²¹ The Child and Adolescent Health Measurement Initiative develops state and national profiles of children's health and well-being, by using a broad range of information collected from the NSCH. The NSCH provides traditional indicators of health status and health care, as well as aspects of school, family, and neighborhood that can affect children's health. No other survey provides this breadth of information about children.

Table 16 shows the 2007 (the most recent year available) Missouri profile with comparison to the nation. Missouri performed better than or was comparable with the nation in most of the indicators in the profile such as perception of children's health status, consistent insurance coverage, receiving developmental screening and mental health care, having medical home, school and activities, reading to young children, and perception of supportive and safe neighborhood. However, Missouri fares slightly worse than the nation in several areas such as breastfeeding, receiving preventive health and dental care, and household smoking, child care, and neighborhood amenities and conditions.

Child Care and Neighborhood

Among Missouri parents with children 0-5 years of age receiving care, 35.5% reported at least one of the child care issues including making emergency child care arrangements due to circumstances beyond their control and quitting/not taking/changing their job because of child care problems; this compared to 30.7% nationwide (Table 16). As for the parents' perception of neighborhood, compared with the nation, children in Missouri were less likely to live in a neighborhood with a park, sidewalks, library, and a community center (44.7% vs. 48.2%), and more likely to live in a neighborhood with poorly kept or dilapidated housing (19.3% vs. 14.6%) (Table 16).

²¹ Annie E. Casey Foundation. Kids Count Data Center. Available from <http://datacenter.kidscount.org/data/acrossstates/Default.aspx>.

Table 16. 2007 National Survey of Children's Health, Missouri Profile

Topic	Indicator	MO	U.S.
HEALTH STATUS			
Child Health Status	percent of children in excellent or very good health	87.3	84.4
Oral Health Status	percent of children with excellent or very good oral health	72.1	70.7
Injury	percent of children ages 0-5 with injuries requiring medical attention in the past year	10.6	10.4
Breastfeeding	percent of children ages 0-5 who were ever breastfed	67.9	75.5
Risk of Developmental or Behavioral Problems	percent of children age 4 months to 5 years determined to be at moderate or high risk based on parents' specific concerns	24.2	26.4
Positive Social Skills	percent of children ages 6-17 who exhibit two or more positive social skills	92	93.6
Missed School Days	percent of children ages 6-17 who missed 11 or more days of school in the past year	5.8	5.8
HEALTH CARE			
Current Health Insurance	percent of children currently insured	94.4	90.9
Insurance Coverage Consistency	percent of children lacking consistent insurance coverage in the past year	11.2	15.1
Preventive Health Care	percent of children with a preventive medical visit in the past year	87.1	88.5
Preventive Dental Care	percent of children with a preventive dental visit in the past year	75.4	78.4
Developmental Screening	percent of children age 10 months to 5 years who received a standardized screening for developmental or behavioral problems	19	19.5
Mental Health Care	percent of children ages 2-17 with problems requiring counseling who received mental health care	73.9	60
Medical Home	percent of children who received care within a medical home	64.8	57.5
SCHOOL AND ACTIVITIES			
School Engagement	percent of children ages 6-17 who are adequately engaged in school	80.4	80.5
Repeating a Grade	percent of children ages 6-17 who have repeated at least one grade	8.8	10.6
Activities Outside of School	percent of children ages 6-17 who participate in activities outside of school	81.3	80.7
Screen Time	percent of children ages 1-5 who watched more than one hour of TV or video during a weekday	53.6	54.4
CHILD'S FAMILY			

Table 16. 2007 National Survey of Children's Health, Missouri Profile (Continued)

Reading to Young Children	percent of children ages 0-5 whose families read to them everyday	51.2	47.8
Singing and Telling Stories to Young Children	percent of children ages 0-5 whose families sing or tell stories to them everyday	57.8	59.1
Religious Services	percent of children who attend religious services at least weekly	58.1	53.7
Mother's Health	of children who live with their mothers, the percentage whose mothers are in excellent or very good physical and emotional health	56.8	56.9
Father's Health	of children who live with their fathers, the percentage whose fathers are in excellent or very good physical and emotional health	66.9	62.7
Smoking in the Household	percent of children who live in households where someone smokes	34.4	26.2
Child Care	percent of children ages 0-5 whose parents made emergency child care arrangements last month and/or a job change for child care reasons last year	35.5	30.7
CHILD AND FAMILY'S NEIGHBORHOOD			
Neighborhood Amenities	percent of children who live in neighborhoods with a park, sidewalks, a library, and a community center	44.7	48.2
Neighborhood Conditions	percent of children who live in neighborhoods with poorly kept or dilapidated housing	19.3	14.6
Supportive Neighborhoods	percent of children living in neighborhoods that are supportive	83.9	83.2
Safety of Child in Neighborhood	percent of children living in neighborhoods that are usually or always safe	88.6	86.1

Source: Child and Adolescent Health Measurement Initiative. 2007 National Survey of Children's Health, Data Resource Center for Child and Adolescent Health Web site. Accessed from www.nschdata.org on January 27, 2010.

2.4.3 Leading Causes of Deaths in Children and Adolescents

Death is relatively rare among children in Missouri and the nation. One hundred fifty-one children ages 1-9 and 436 adolescents ages 10-19 died in Missouri in 2006, representing death rates (per 100,000) of 22 and 53.7 respectively. The Missouri's death rate in children was only slightly higher than the national rate (20.5 per 100,000) in 2006 while the death rate in Missouri adolescents was 31% higher than the national figure (41 per 100,000), largely due to the higher death rate for motor vehicle accidents in Missouri (20.8 vs. 13.2 per 100,000) (Table 17).

Intentional and Unintentional Injuries

Unintentional injuries were the leading cause of deaths in both children and adolescents, with 587 deaths for ages 1-19 in Missouri in 2006, accounting for about half of total deaths for these age groups. Of these deaths, nearly half (41%) among children and three-fourths (74.5%) among

adolescents were due to motor vehicle accidents (MVA) (Table 17). Alarming, homicide was the third leading cause of deaths in Missouri children, and homicide and suicide were the second and third leading causes of deaths in adolescents in both Missouri and the nation. In short, 70% of all deaths among Missouri children ages 1-19 were attributed to injuries due to motor vehicle crashes (33%), all other unintentional injuries (16%), homicide (14%), and suicide (7%) in 2006. Factors associated with these injuries may include accidental drowning and submersion, and adolescent behaviors such as physical fights, carrying weapons, making a suicide plan, and not using seat belts.²²

Table 17. Leading Causes of Deaths in Children and Adolescents, MO and U.S., 2006

		MO		U.S.	
Ages 1-9 Years					
Ranking	Cause of Death	Deaths	Death Rate per 100,000	Deaths	Death Rate per 100,000
1	Unintentional Injury	61	8.9	2,654	7.4
	Motor vehicle accidents	25	3.6	986	2.7
	All other accidents	36	5.3	1,668	4.6
2	Cancer	21	3.1	836	2.3
3	Homicide	17	2.5*	515	1.4
4	Birth defects	12	1.8*	697	1.9
5	Septicemia	3	0.4*	128	0.4
	All causes	151	22.0	7,366	20.5
Ages 10-19 Years					
1	Unintentional Injury	227	28.0	7,873	18.8
	Motor vehicle accidents	169	20.8	5,517	13.2
	All other accidents	58	7.1	2,356	5.6
2	Homicide	64	7.9	2,532	6.1
3	Suicide	42	5.2	1,771	4.2
4	Cancer	21	2.6	1,123	2.7
5	Heart disease	14	1.7*	523	1.3
	All causes	436	53.7	17,153	41.0

Sources:

Missouri: Department of Health and Senior Services. MICA-Deaths; MICA-Population

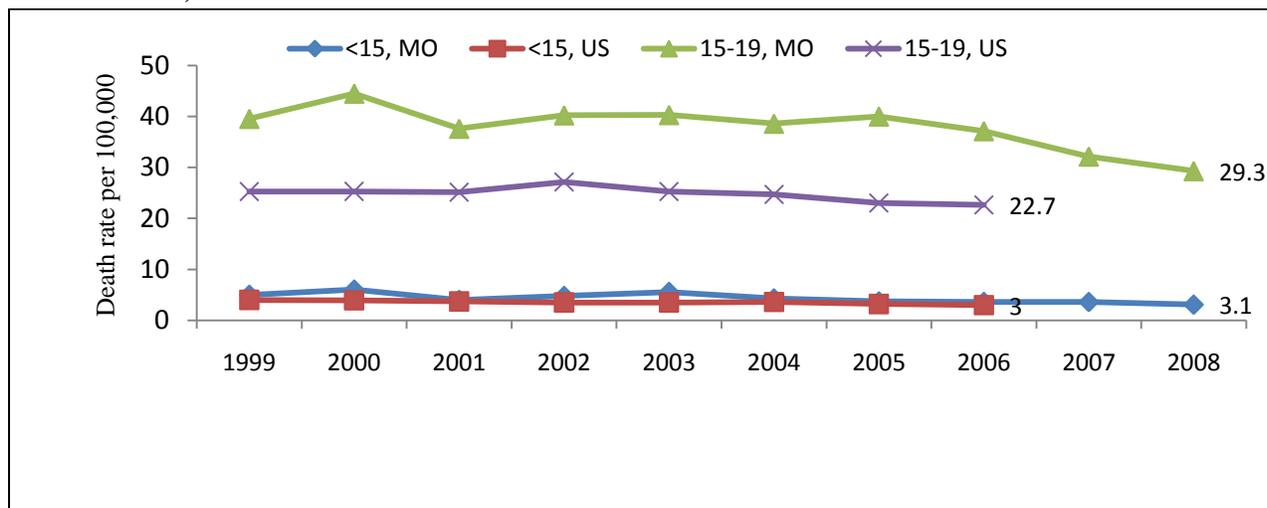
U.S.: CDC WISQARS - Leading Causes of Deaths; CDC WONDER – Population

2.4.4 Unintentional Injuries due to Motor Vehicle Accidents (MVA)

MVAs are the leading cause of deaths among children and adolescents in Missouri and the nation. In 2007, MVA in Missouri were responsible for 176 deaths and more than 15,000 injuries that required hospitalizations or emergency room visits (ER). The death rates due to MVA among children and adolescents in Missouri have been consistently higher than national rates, especially among youth, where the death rate in Missouri was 63.4% higher than the nation (37.1 vs. 22.7 per 100,000 in 2006) (Figure 31). However, similar to national trends, death rates due to MVA in Missouri has declined by 38% for children under age 15 and 26% for youth ages 15-19 between 1999 and 2008 (Figure 31).

²² CDC. Healthy Youth – Injury and Violence. Accessed from <http://www.cdc.gov/HealthyYouth/injury/index.htm> on January 27, 2010.

Figure 31. Death Rate Due to Motor Vehicle Accidents Among Children and Adolescents, MO and U.S., 1999-2008



Sources:

Missouri: Department of Health and Senior Services. MICA-Deaths; MICA-Population
U.S.: CDC WISQARS - Leading Causes of Deaths; CDC WONDER – Population

2.4.5 Child Maltreatment

Child maltreatment can lead to various health problems, including physical injuries, and impact on early brain development, and functioning of the nervous and immune systems. Maltreated children are at higher risk for problems as adults such as alcoholism, depression, drug abuse, obesity, sexual promiscuity, smoking, suicide, and certain chronic diseases.²³ It is difficult to know the true magnitude of child maltreatment as it is underreported.

The Missouri DSS Child Abuse and Neglect Hotline accepts confidential reports of suspected child abuse, neglect, or exploitation through a toll-free telephone line, which is answered seven days a week, 24 hours a day. A call to the hotline is referred to as a report or reported incident of child abuse/neglect. A report may involve one or more children. The number of reports/children involved gradually decreased by 9.9%/10.4% from 56,111/84,590 in 2004 to 50,565/75,781 in 2008.²⁴

During 2008, there were 6,732 children substantiated for abuse or neglect in Missouri. Of all substantiated cases, 38.8% were under 6 years of age. The most prevalent category of abuse/neglect cases was neglect (43.8%), followed by physical abuse (26.0%), and sexual abuse (23.1%). Of the 30 child abuse and neglect fatalities, 25 (83.2%) were under 6 years of age.²⁴

According to Missouri Injury MICA, there were 700 ER visits and hospitalizations due to abuse/neglect/rape for children under age 15 in Missouri in 2007, representing a rate of 59.9 per

²³ CDC. Understanding child maltreatment – Factsheet 2009. Accessed from <http://www.cdc.gov/violenceprevention/pdf/CM-FactSheet-a.pdf> on January 29, 2010.

²⁴ Missouri Department of Social Services (DSS), Children’s Division. Child abuse and neglect calendar year 2008 annual report. DSS, August 2009. Accessed from <http://www.dss.mo.gov/re/pdf/can/cancy08.pdf> on February 1, 2010.

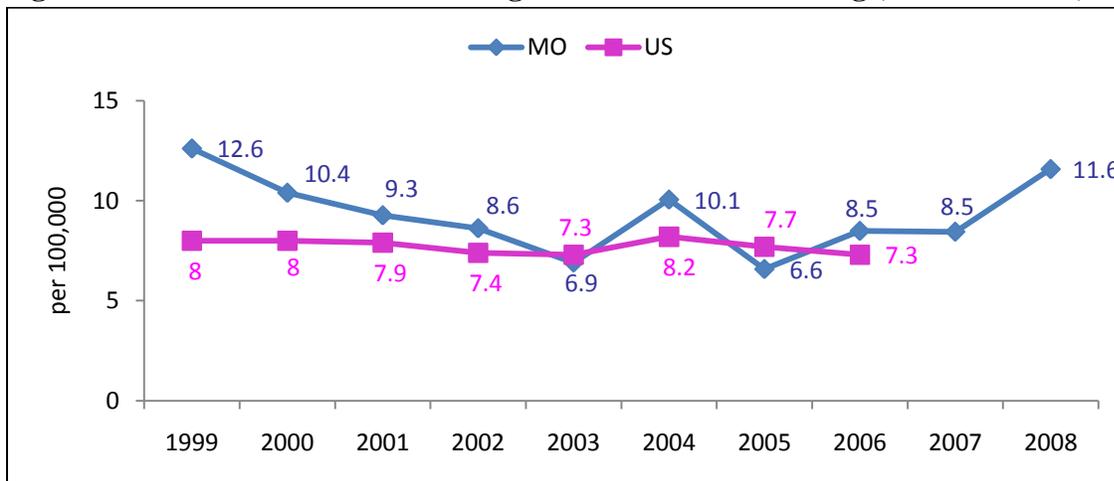
100,000, essentially unchanged from 59.8 per 100,000 in 2004. African-American children were more than five times as likely as white children to have such ER visits and hospitalizations in Missouri in 2007 (182.3 vs. 35.4 per 100,000).

2.4.6 Teen Suicide

Suicide Deaths

Suicide was the third leading cause of death among youth in both Missouri and the nation. Both Missouri and the nation saw a decline in suicide death rate among youth ages 15-19 from 1999 to 2003, and the decrease was larger in Missouri (Figure 32). An increase in the rate in 2004 was observed in both Missouri and nation, but the increase did not continue. There were 48 suicide deaths in Missouri youth ages 15-19 in 2008, representing a death rate of 11.6 per 100,000, which showed a noticeable increase compared with the rate in 2007 and 2006 (8.5 per 100,000), though the increase was not statistically significant. In addition, there was no significant change in distributions of suicide deaths by gender, age, race, cause, and geographic areas between 2007 and 2008. Considering the small number of suicide deaths and the one-year spike could be by chance, it is too early to tell this is the start of a real increasing trend.

Figure 32. Suicide Death Rate Among Youth 15-19 Years of Age, MO and U.S., 1999-2008



Sources:

Missouri: Department of Health and Senior Services. MICA-Deaths; MICA-Population

U.S.: CDC WISQARS - Leading Causes of Deaths; CDC WONDER – Population

Suicide and Self-Inflicted Injuries

Missouri reported 1,838 hospitalizations and ER visits involving external causes of suicide and self-inflicted injuries among youth ages 15-19 in 2007, corresponding to a rate of 443.8 per 100,000, which did not change significantly from 2001 (414.6).

Suicidal Behaviors

According to Youth Risk Behavior Survey (YRBS), nearly one in six (14.8%) Missouri high school students seriously considered attempting suicide in 2007, comparable to the national prevalence of 14.5%. Similar to national trends, Missouri's prevalence of this measure decreased from 24.5% in 1995 to 14.8% in 2008.

By Sex

Females are more likely to have suicidal behaviors and self-injuries than males. Female students consistently had higher reported prevalence of seriously considering attempting suicide than male students, both in Missouri and the nation 1995 to 2007. In 2007, the prevalence in Missouri was 19.4% for females compared to 10.5% for males.

Since 2004, there has been an ongoing controversy over whether antidepressant medications might reduce or increase suicide risk in children and adolescents. There is a wide range of factors that might be associated with suicide, including interpersonal relationship problems, family discord, legal and disciplinary problems, school concerns, and mental health conditions such as depression. Drug and alcohol use can exacerbate these problems.²⁵

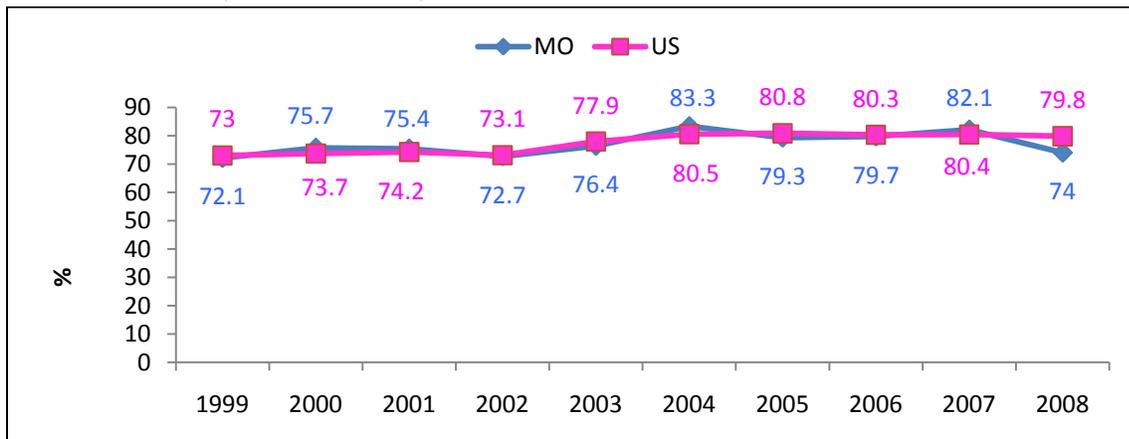
2.4.7 Childhood Immunization Coverage

Many vaccine-preventable diseases are more common and more deadly among infants and small children. Childhood immunization is important to protect children against these potentially deadly diseases. The percentage of children ages 19-35 months who received the recommended schedule of immunizations in Missouri had been comparable to national rates, and gradually increased from 72.1% in 1999 to 82.1% in 2007.

Similar to national observations, Missouri saw a decline in the percentage of children receiving scheduled immunizations from 82.1% in 2007 to 74% in 2008 (79.8% in U.S.) (Figure 33). The Missouri Immunization Program pointed out a few factors that might result in missed opportunities for vaccination. Like many other states, Missouri encountered shortages and delays in some vaccines in 2008. Some private providers have either discontinued participation in the Vaccines for Children (VFC) program due to guideline changes required of VFC providers issued in 2007 or stopped carrying vaccines altogether.

²⁵ CDC. Suicide trends among youths and young adults ages 10-24 years--United States, 1990-2004. MMWR Morb Mortal Wkly Rep 2007;56:905-8. Accessed from <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5635a2.htm>. on February 1, 2010.

Figure 33. Percent of 19-35 Month Old Children Who Received Recommended Schedule of Immunizations*, MO and U.S., 1999-2008



Source: CDC. National Immunization Survey

* 4:3:1:3:3 - ≥ 4 doses of any diphtheria and tetanus toxoids and pertussis vaccines including diphtheria and tetanus toxoids, and any acellular pertussis vaccine (DTaP/DTP/DT), ≥ 3 doses of poliovirus vaccine, ≥ 1 dose of measles-mumps-rubella (MMR) vaccine, ≥ 3 doses of Haemophilus influenzae type b (Hib) vaccine, ≥ 3 doses of Hepatitis B vaccine; reporting year from July the year to June the next year

According to a study conducted by CDC, Missouri was one of 29 to 34 states (depending on which of these individual vaccines were examined) that reached the HP 2010 goal of $\geq 95\%$ coverage for each of the vaccines recommended by the Advisory Committee on Immunization Practices (ACIP) among children entering kindergarten in 2005-2006 school year. The vaccination rates were 97.6% for polio, 97% for DTP/DTaP/DT, 96.9% for measles/mumps/rubella, 97.5% for hepatitis B, and 97.6% for varicella.²⁶

2.4.8 Overweight and Obesity

It has been well documented that overweight and obesity are major risk factors for chronic diseases, including type 2 diabetes, cardiovascular disease, hypertension, osteoporosis, some cancers, and asthma. The likelihood of becoming overweight or obese adults increase from about 20% among children at four years of age, to between 40% and 80% for adolescents.^{27,28}

Reducing the proportion of children and adolescents who are overweight or obese to 5% is the HP 2010 objective. Unfortunately, according to the National Health and Nutrition Examination Survey (NHANES), the proportion of overweight (Gender- and age-specific BMI > the 95th percentile) among U.S. children had more than doubled for adolescents ages 12-19 (6% vs. 16%), and had increased by three times for children ages 6-11 (4% vs. 16%) in the past three decades from 1971-1974 to 1999-2002.

²⁶ CDC. Vaccination coverage among children entering school--United States, 2005-06 school year. MMWR Morb Mortal Wkly Rep 2006;55:1124-6. Accessed from <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5541a3.htm> on February 1, 2010.

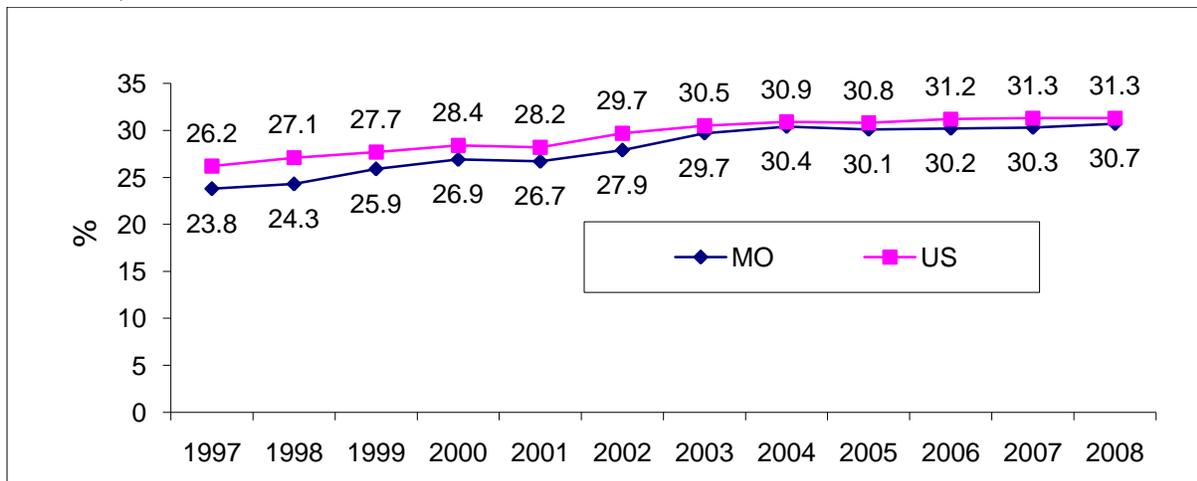
²⁷ The Center for Health and Health Care in Schools, The George Washington University. Childhood overweight. Accessed from <http://www.healthinschools.org/~media/Files/obesityfs.ashx> on February 16, 2010.

²⁸ Guo SS, Chumlea WC. Tracking of body mass index in children in relation to overweight in adulthood. Am J Clin Nutr. 1999;70(suppl):145S-148S

Among WIC Children Ages 2-4 Years

WIC data, while not representing the general child population, provides prevalence of overweight or obesity among children enrolled in WIC. Nearly one-third of Missouri WIC children were overweight or obese, and Missouri's prevalence had been consistently lower than the national figure (30.7% vs. 31.3% in 2008). Mirroring the national trend, the percentage of overweight or obesity in WIC children in Missouri had gradually increased from 23.8% in 1997 to 30.4% in 2004. However, since 2004, the increasing trend had slowed down (Figure 34). Prevalence of overweight or obesity among WIC children varies by race/ethnicity, with Hispanic children having the highest prevalence of 38.1% in 2008. This compared with prevalence of 30.5% and 26.8% for NH white and NH African-American children respectively.

Figure 34. Percent of Children Ages 2-4 Years in WIC with a BMI \geq 85th Percentile, MO and U.S., 1997-2008



Source: CDC. PedNSS Report

Missouri WIC has made some changes in the food package in the past five to seven years and implemented the new WIC food package since October 2009. The WIC initiatives and other state programs will aim to focus on efforts to reverse this trend in future years.

Among General Children Population Ages 10-17 Years

NSCH provides prevalence of overweight or obesity among general children population ages 10-17. Nearly one-third (31%) of Missouri children ages 10-17 were overweight or obese in 2007, which was comparable with the national figure of 31.6%, and remained unchanged compared with the prevalence in 2003 (31%). Of a particular concern is that around half of the NH African-American (52.3%) and Hispanic (43.3%) children in Missouri were overweight or obese, twice as high as the prevalence in NH white children (25.1%) (2007 NSCH). A similar pattern of racial/ethnic disparity was also observed nationally.

Among High School Students

According to the Youth Risk Behavior Survey (YRBS), the prevalence of overweight or obesity among teens in grades 9-12 in Missouri largely increased from 22.5% in 1999 to 27.6% in 2001, and fluctuated around 27-28% since then. The prevalence in Missouri had been roughly comparable with the national figure, with the prevalence of 26.3% in Missouri, compared with 28.8% in the nation in 2007. Similarly, African-American students were much more likely to be overweight or obese than white students in Missouri (38.4% vs. 23.2% in 2007).

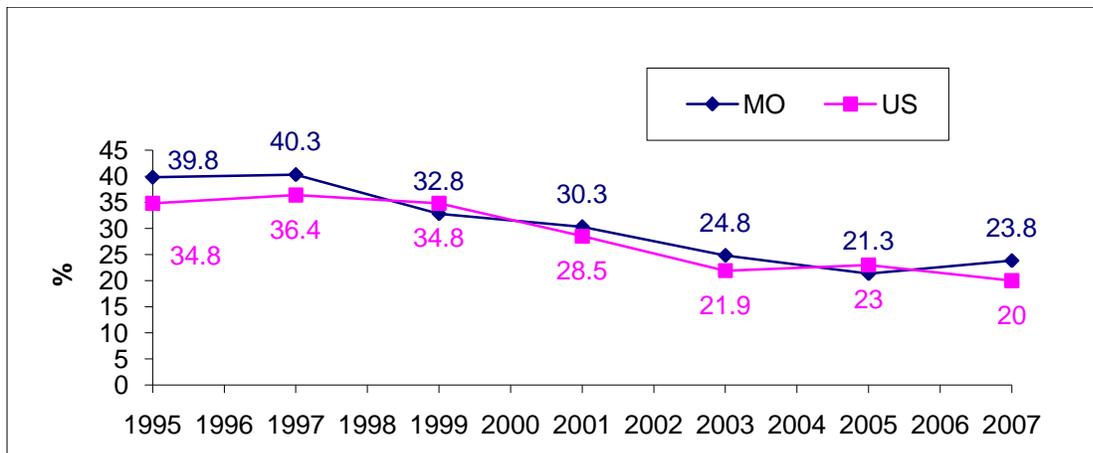
2.4.9 Youth Tobacco Use

Most adult smokers start smoking when they are teenagers. Many factors are associated with youth tobacco use, such as peer influence, household member smoking, tobacco advertising and price, and lack of cognitive and social support. Tobacco use in adolescence is associated with many other health risk behaviors, including high-risk sexual behavior and use of alcohol or other drugs.²⁹

Among High School Students

The prevalence of current cigarette smoking among Missouri high school students has been comparable with the national prevalence, and shows a continuous decrease from 40.3% in 1997 to 21.3% in 2005 and this decrease is statistically significant. Missouri saw a slight increase in the smoking prevalence from 21.3% in 2005 to 23.8% in 2007, though the increase is not statistically significant (Figure 35). Similarly, the prevalence of current use of any form of tobacco in Missouri had been also trending downward from 39% in 1999 to 29.6% in 2007. Tobacco use is more prevalent in white than African-American youth in Missouri, with the prevalence of current cigarette smoking being 25.2% in whites, compared to 15% in African-Americans in 2007 (Figure 35).

Figure 35. Prevalence (%) of Current Cigarette Smoking Among High School Students, MO and U.S., 1995-2007



Source: CDC. Youth Risk Behavior Survey

Note. Current cigarette smoking: smoking cigarettes on at least one day during the 30 days before the survey.

²⁹ CDC. Smoking and tobacco use Web site. Accessed from http://www.cdc.gov/tobacco/data_statistics/fact_sheets/youth_data/tobacco_use/index.htm on February 2, 2010.

Among Middle School Students

According to the Youth Tobacco Survey (YTS), among Missouri middle school students, there has also been a steady decline in the prevalence of current cigarette smoking from 14.9% in 1999 to 5.7% in 2009. However, Missouri's prevalence was extremely higher than that in states such as California (8.8% vs. 3.9% in 2003, the latest available data) where excise taxes have been raised and there are adequate state and national settlement funds for prevention programs. Missouri's prevalence was higher in Hispanics (26%) and whites (21.8%) than African-Americans (8.1%). The cigarette smoking prevalence among Missouri youth steadily increased from 1.9% for grade six to 28.1% for grade 12 (2009 Missouri YTS).

Attitudes Towards Smoking

Both middle and high school students had a high awareness (~90%) of the harmful effects of smoking (Table 18). However, the perception that smoking helps students fit in socially with their peers was still common. The percentages with such perception declined among middle students from 2003 to 2009 but did not change significantly among high school students in the same time period (Table 18).

Table 18. Percentages (%) of Middle and High School Students Who Had Positive or Negative Attitudes Towards Smoking, Missouri, 2003 and 2009

	Middle School Students		High School Students	
	2003	2009	2003	2009
Positive Attitudes Toward Smoking				
Think young people who smoke cigarettes have more friends	20.2	15.4	19.5	19.8
Think smoking cigarettes make young people look cool or fit in	14.5	7.8	12.6	10.6
Negative Attitudes Toward Smoking				
Definitely or probably think smoke from other's cigarette is harmful	91.3	91	92.5	89.5
Think people can get addicted to using tobacco just like cocaine or heroin	90.2	89.5	87.9	86.5
Tobacco Control and Prevention Activities				
Practiced ways to say "No" to tobacco use at school this year	40.4	42.1	14.9	18.7
Participated in any community event discouraging tobacco use in past year	21	17.3	14.1	13.4

Source: Missouri DHSS. YTS

2.4.10 Alcohol and Drug Use

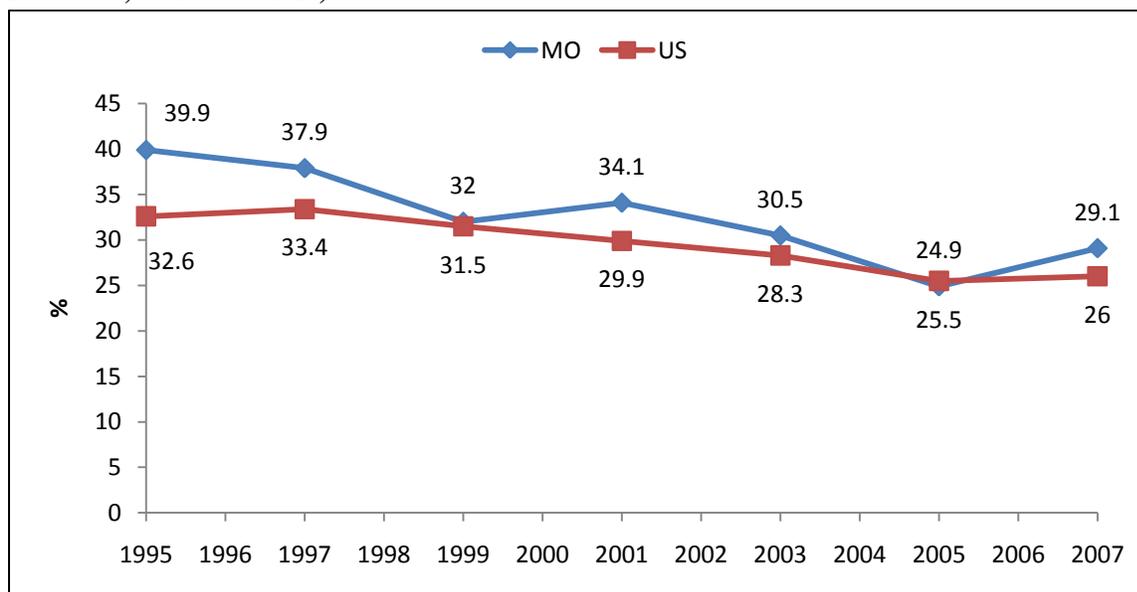
Alcohol Use

Alcohol use is more common than tobacco and illicit drug use in youth. Alcohol and drug abuse are linked to high-risk sexual behavior, and major risk factors for homicides, suicides and motor vehicle crashes, which are the leading causes of death and disability among youth in Missouri and the U.S..

Nearly one-third (29.1%) of Missouri high school students reported episodic heavy alcohol drinking during the last month, slightly higher than the national rate of 26% in 2007. Similar to

national trends, Missouri's prevalence declined by 27% from 39.9% in 1995 to 29.1% in 2007 (Figure 36). White youth were more than twice likely to drink heavily than African-Americans (32.4% vs. 13.7% in 2007) (Figure 37).

Figure 36. Prevalence (%) of Episodic Heavy Alcohol Drinking Among High School Students, MO and U.S., 1995-2007



Source: CDC. YRBS

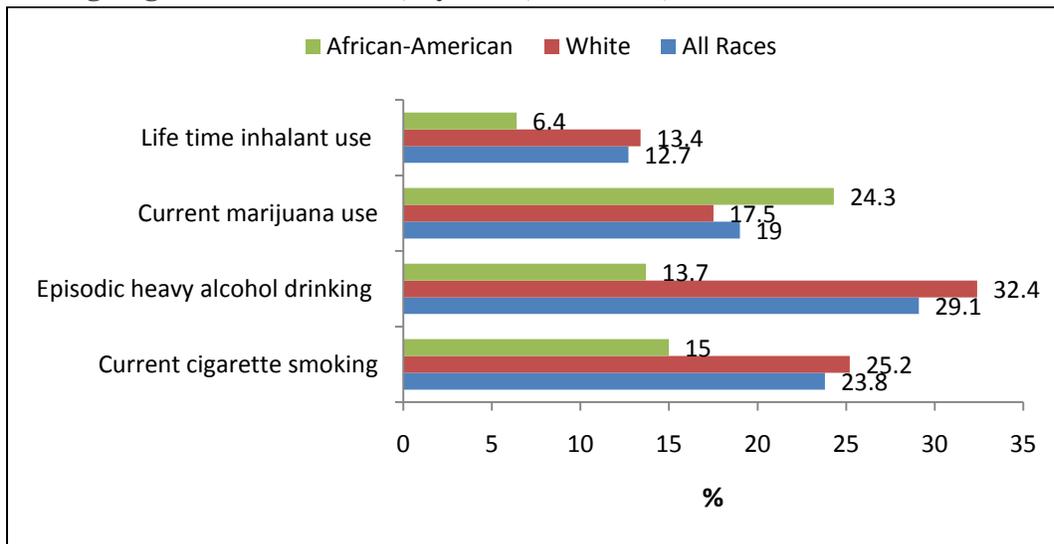
Note: Heavy alcohol drinking: having ≥ 5 drinks of alcohol in a row, that is, within a couple of hours, on at least 1 day during the 30 days before the survey.

Drug Use

Marijuana is the most commonly used illicit drug in the U.S. According to YRBS, one in five (19%) Missouri youths in grades 9-12 reported using marijuana one or more times during the last month in 2007, which was comparable with the national figure of 19.7%. Youth marijuana use had declined in both Missouri and the nation in the past decade (28.2% in 1997 vs. 19% in 2007 in Missouri). While tobacco and alcohol use is more common in white youths, African-American youths tend to be more likely to use marijuana than whites in Missouri (24.3% vs. 17.5% in 2007) (Figure 37).

Inhalant use (including sniffing glue, breathing the contents of aerosol spray cans, or inhaling any paints or sprays to get high) is also common in youths. The prevalence of high school students ever using an inhalant was 12.7% in Missouri in 2007, which was comparable with the national figure of 13.3%, and lower than 20% in 1995. The Missouri prevalence largely dropped from 1995 to 1999 (12.8%), but roughly unchanged since then. The prevalence of ever using inhalants in white youths was about twice the prevalence in African-Americans in Missouri in 2007 (13.4% vs. 6.4%) (Figure 37).

Figure 37. Prevalence (%) of Cigarette Smoking, Alcohol Drinking and Illicit Drug Use Among High School Students, by Race, Missouri, 2007

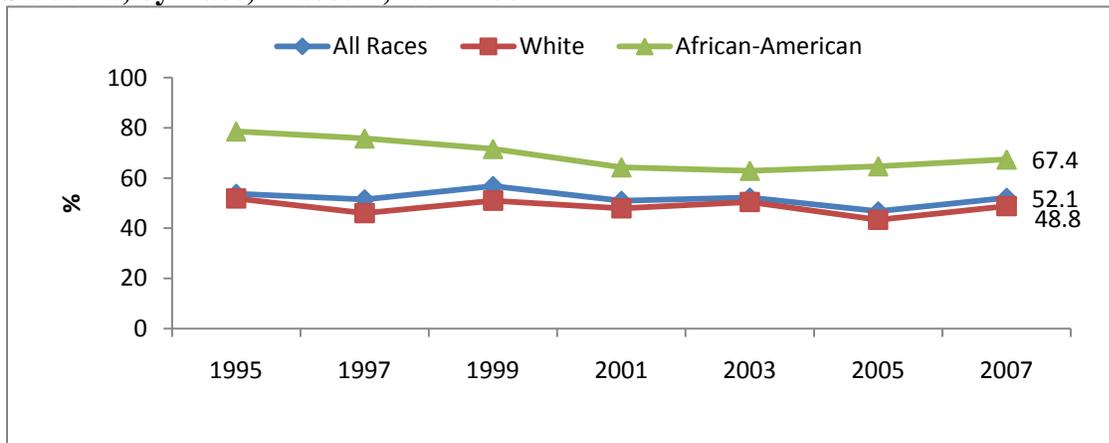


Source: CDC. YRBS

2.4.11 Sexual Behaviors

Sexual intercourse puts youth at risk for HIV/STD infection. Sexual abstinence is the only 100% effective way to prevent HIV, other STDs, and pregnancy. Half of Missouri high school students reported ever having sexual intercourse. The overall percentage in Missouri was slightly higher than the national figure in 2007 (52.1% vs. 47.8%) and had remained so since 1995 (53.7%) (Figure 38). Despite significant declines between 1995 and 2003, the percentage of sexual intercourse among African-American youth still remains higher than in whites (67.4% vs. 48.8% in 2007). The percentage of Missouri high school students initiating sexual intercourse before age 14 decreased in the past decade, from 8.9% in 1995 to 6.5% in 2007. The percentage was three times higher in African-Americans than in whites (16.3% vs. 4% in 2007).

Figure 38. Prevalence (%) of Ever Having Sexual Intercourse Among High School Students, by Race, Missouri, 1995-2007



Source: CDC. YRBS

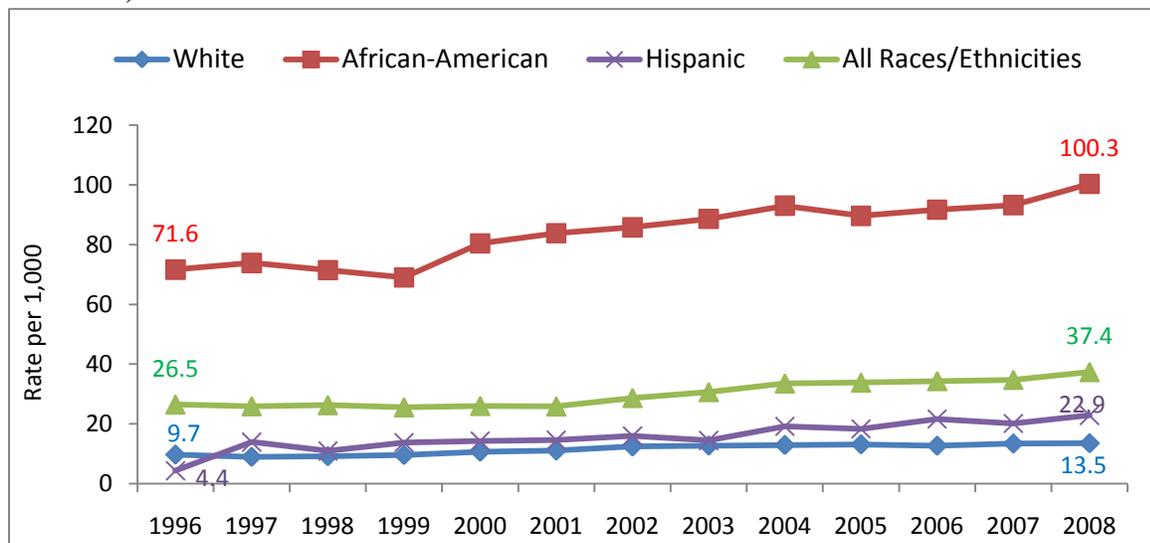
Teens are more likely to engage in high-risk sexual behaviors such as unprotected and unintended sexual activity under the influence of drugs or alcohol. In 2007, 21.9% of Missouri high school students who had sexual intercourse during the past three months drank alcohol or used drugs before last sexual intercourse, which was comparable with the national figure of 22.5%, and had declined consecutively since 1995 (29.1%).

2.4.12 Chlamydia

Chlamydia is the most commonly reported bacterial STD. Chlamydia plays an important role in causing cervicitis, pelvic inflammatory disease (PID), infertility, and potentially fatal ectopic pregnancy. Maternal chlamydial infection during pregnancy has been associated with preterm labor, premature rupture of membranes and postpartum endometritis. Women infected with chlamydia are much more likely to become infected with HIV, if exposed.

Chlamydia is reported more often in females than males. The higher rate for females mostly reflects the fact that females are far more likely to be screened than males. Teen girls ages 15-19 had the highest reported rate among all age/sex groups, with Missouri's rate (per 1,000) being 37.4 for girls ages 15-19 compared with 4.2 for total population in 2008. In 2008, there were 7,549 reported chlamydia cases among Missouri teen girls ages 15-19, accounting for nearly half (41.7%) of the total women cases in Missouri. The reported rate of chlamydia had been consistently higher in Missouri than in the U.S., with the rate for teen girls ages 15-19 being 37.4 in Missouri, compared with 32.6 in the nation in 2008.

Figure 39. Reported Rate of Chlamydia Among Girls Ages 15-19 Years, by Race/Ethnicity, Missouri, 1996-2008



Source: CDC WONDER - Sexually Transmitted Disease Morbidity (<http://wonder.cdc.gov/std.html>)

Mirroring the national trend, Missouri had seen an increasing trend in the reported rate of chlamydia in the past decade. According to the CDC report about trends in STDs, “increases in chlamydia rates are more likely a reflection of the continued expansion of screening and use of more sensitive tests, rather than an increase in the total burden of the disease in the United

States.”³⁰ Chlamydia rates among Missouri teen girls (15-19) increased by 41.1% from 26.5 in 1996 to 37.4 per 1,000 in 2008 (Figure 39) and the increase was observed across both white and African-American groups. African-American teen girls are disproportionately affected by Chlamydia and had the highest Chlamydia rate (100.3 per 1,000) of any groups in 2008 followed by Hispanics (22.9 per 1,000) and whites (13.5 per 1,000) in Missouri (Figure 39). Chlamydia infection rates were highest among teens in St. Louis City (99.8 per 1,000 in 2008), more than double the statewide rate in this age group (37.4 per 1,000).

2.4.13 Oral Health

Dental caries (tooth decay) is the most common health problem of childhood, occurring five to eight times more frequently than asthma, the most common chronic disease in children. By the age of 18, about 80% of children in the U.S. have experienced dental caries. Although dental sealants are a proven method for preventing decay, the majority of Missouri children do not have access to this valuable preventive service. There are several HP 2010 objectives that pertain to oral health for children, such as to:

- Reduce the proportions of dental caries experience and untreated dental decay to 11% and 9% among young children (ages 2-4), 42% and 21% in children (ages 6-8), and 51% and 15% in adolescents age 15
- Increase the proportion of receiving dental sealants on their molar teeth to 50% among children age 8 years and adolescents age 14 years
- Increase the proportion of low-income children and adolescents who received any preventive dental service during the past year to 57%

Among Third Grade School Children

The Missouri DHSS conducted a statewide oral health survey of third grade children every five years since 2001. According to the most recent survey conducted in 2010, among the third grade children in Missouri, more than half (52%) had dental caries experience, nearly one in four (25%) had untreated tooth decay, and only 24% had dental sealants, all of which were far from the HP 2010 objectives of 42%, 21%, and 50% respectively. Compared to whites, African-American children had higher percentages of untreated decay (29%), and were in need of dental (28%) and urgent dental treatment (5%) respectively (Table 19).

Table 19. Oral Health Indicators Among Missouri Third Grade School Children, 2010

Indicator	White non-Hispanic	African-American
Caries free	48.6%	50.4%
Caries experience	51.4%	49.6%
Untreated decay	24.0%	29.0%
Dental sealants	25.2%	20.8%
Needs dental treatment	22.6%	27.8%
Needs urgent dental treatment	3.9%	4.8%

Source: Missouri Department of Health and Senior Services. Office of Primary Care and Rural Health. Oral Health of Missouri's Children, 2010.

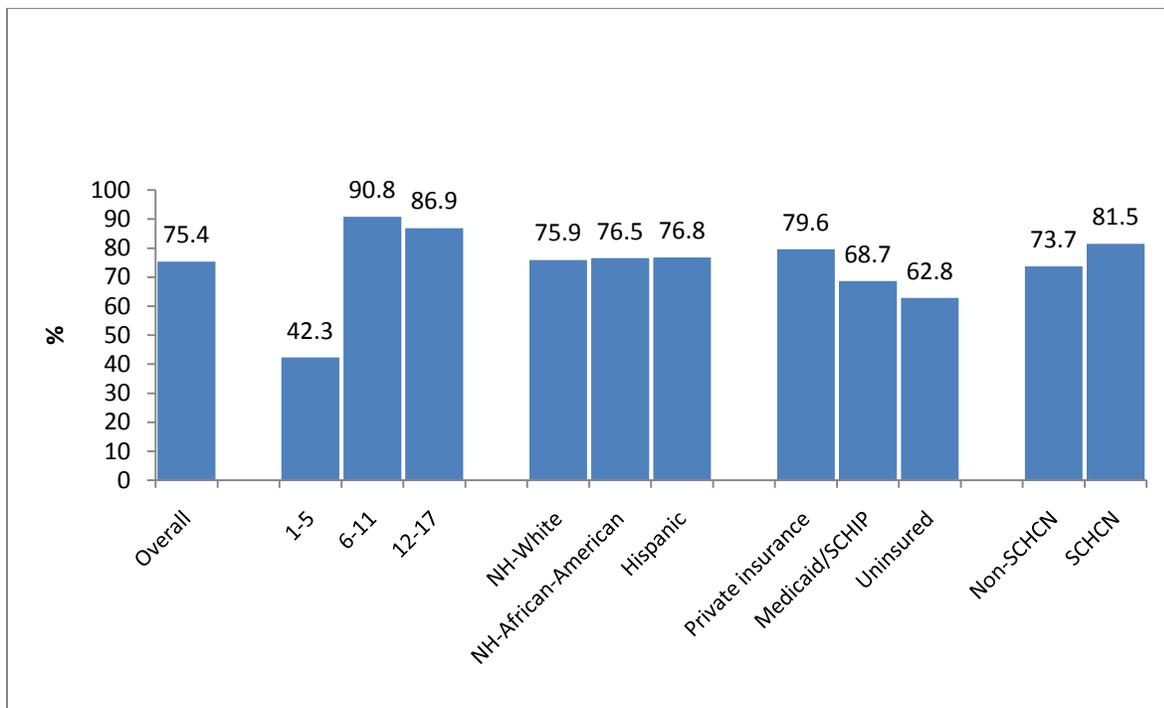
³⁰ CDC. Trends in Reportable Sexually Transmitted Diseases in the United States, 2007. Accessed from <http://www.cdc.gov/STD/stats07/trends.pdf> on February 16, 2010.

Among General Children Population

The NSCH provides current dental health status and dental care access among general children population ages 1-17 for individual states and nationwide. According to the 2007 NSCH, 27.4% of Missouri children ages 1-17 had one or more oral health problems in the past six months, generally comparable with the national prevalence of 26.7%. Decayed teeth or cavities is the single dominant dental problem (19.4% in Missouri). The prevalence of cavities in the past six months in Missouri tended to be higher among children ages 6-11 (27.2%), Hispanic children (23.8%), and children with Medicaid/SCHIP (21.2%) or uninsured (24.4%).

Three in four (75.4%) of Missouri children ages 1-17 received preventive dental care in the past year. Although Missouri's overall percentage as well as the percentages among children on Medicaid/SCHIP (68.7%) or uninsured (62.8%) (surrogate of low-income) exceeded the HP 2010 objective of 57%, it was lower than the national prevalence of 78.4%, and ranked the fifth lowest in the nation. The percentage of receiving preventive dental care among Missouri children was only 42.3% among younger children ages 1-5, and also lower among children on Medicaid/SCHIP or uninsured (Figure 40).

Figure 40. Prevalence (%) of Receiving Preventive Dental Care Among Children Ages 1-17 Years, by Socio-demographic Characteristics, Missouri, 2007



Source: Child and Adolescent Health Measurement Initiative. 2007 National Survey of Children's Health, Data Resource Center for Child and Adolescent Health Web site. Accessed from www.nschdata.org on February 16, 2010.

National Benchmark for Eight Dental Health Policy Approaches

The Pew Center on the States recently published a report to assess and grade 50 states and the District of Columbia on eight proven policy solutions that ensure dental health and access to care

for children.³¹ Only six states earned an “A” and 36 states received a “C” or lower. Missouri earned a “C.” Table 20 shows Missouri meets half of eight policy benchmarks aimed at addressing children’s dental health needs.

According to the report, nearly 18% of the Missouri population are unserved by dentists. “In 2005, Missouri developed a school-based fluoride varnish, screening and education program that has helped improve access to preventive services for children and is growing steadily. However, Missouri does not have a school-based sealant program.”³¹

Table 20. Missouri’s Performance in Eight Proven Policy Approaches against the National Benchmark

	MO	US	MEETS OR EXCEEDS
Share of high-risk schools with sealant programs, 2009	0%	25%	
Hygienists can place sealants without dentist’s prior exam, 2009	Y	Y	✓
Share of residents on fluoridated community water supplies, 2006	79.7%	75%	✓
Share of Medicaid-enrolled children getting dental care, 2007	27.9%	38.1%	
Share of dentists’ median retail fees reimbursed by Medicaid, 2008	46.8%	60.5%	
Pays medical providers for early preventive dental health care, 2009	Y	Y	✓
Authorizes new primary care dental providers, 2009	N	Y	
Tracks data on children’s dental health, 2009	Y	Y	✓
Total score	C		4 of 8
<small>Grading: A = 6-8 points; B = 5 points; C = 4 points; D = 3 points; F = 0-2 points</small>			

Adapted from:

Pew Center on the States. *The Cost of Delay: State Dental Policies Fail One in Five Children*. The Pew Charitable Trusts, February 2010.

2.4.14 Childhood Lead Poisoning

Lead affects nearly every organ and system in the body. Lead can damage the brain, central nervous system, kidneys, and immune system. Lead poisoning can cause reading and learning disabilities, lower IQ levels, anemia, impaired hearing, slowed growth, reduced attention span, hyperactivity, and behavioral problems.

³¹ Pew Center on the States. *The Cost of Delay: State Dental Policies Fail One in Five Children*. Pew Center on the States, Washington, DC, February 2010.

CDC has established 10 µg/dL as the action level for blood lead in children less than 6 years of age. Lead is most harmful to children under 6 years of age. Because lead poisoning often occurs with no obvious and specific symptoms, it frequently goes unnoticed. The only way to know whether a child has lead poisoning is by a blood lead test.

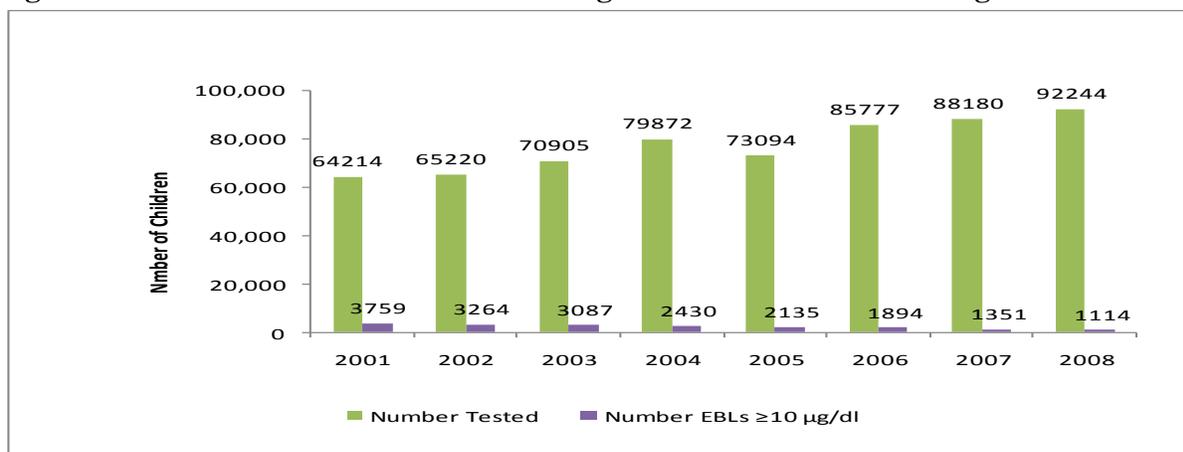
Lead poisoning is caused by either swallowing or inhaling lead or lead dust. The most common source of lead poisoning in both Missouri and the U.S. is lead-based paint. Children who are at highest risk for lead poisoning include those living in homes built before 1978 that contain lead-based paint; homes undergoing remodeling; families with lower socioeconomic status; and current or former mining, milling and smelting areas of the state.

Missouri is the top producer of lead ore and lead by-products in the U.S. Mining and smelting activity continue in parts of Missouri. At least 32 counties have either historic or current mining activities conducted within their boundaries. Environmental policy changes over the past few decades have resulted in children’s decreased exposure to lead. Some of these policies include the residential lead-based paint ban, ban on lead in plumbing, removal of lead from gasoline, and the ban on lead solder in canned foods.

Among Missouri children under 6 years of age who were tested for blood lead, the percentage with confirmed elevated blood lead levels (EBLs) of ≥ 10 µg/dL decreased from 5.9% in 2001 to 1.2% in 2008. Although the percentage of the children with EBL ≥ 10 µg/dL had been consistently higher in Missouri than in the U.S. (5.9% vs. 3% in 2001; 2.2% vs. 1.2% in 2006), the gap continued to grow smaller.

From 2001 to 2008, despite an increase in the number of children tested for blood lead, the number of children identified with EBLs of ≥ 10 µg/dL steadily decreased from 3,759 in 2001 to 1,114 in 2008 (Figure 41). Overall, the percentage of children under age 6 tested for lead poisoning increased from 14.4% in 2001 to 20.7% in 2008. However, there are still health care providers and local public health agencies that are not in compliance with the testing requirement of 19 CSR 20-8.030, leading to the probability of lead poisoned children go unidentified.

Figure 41. Missouri Children <6 Years of Age Tested for Lead Poisoning



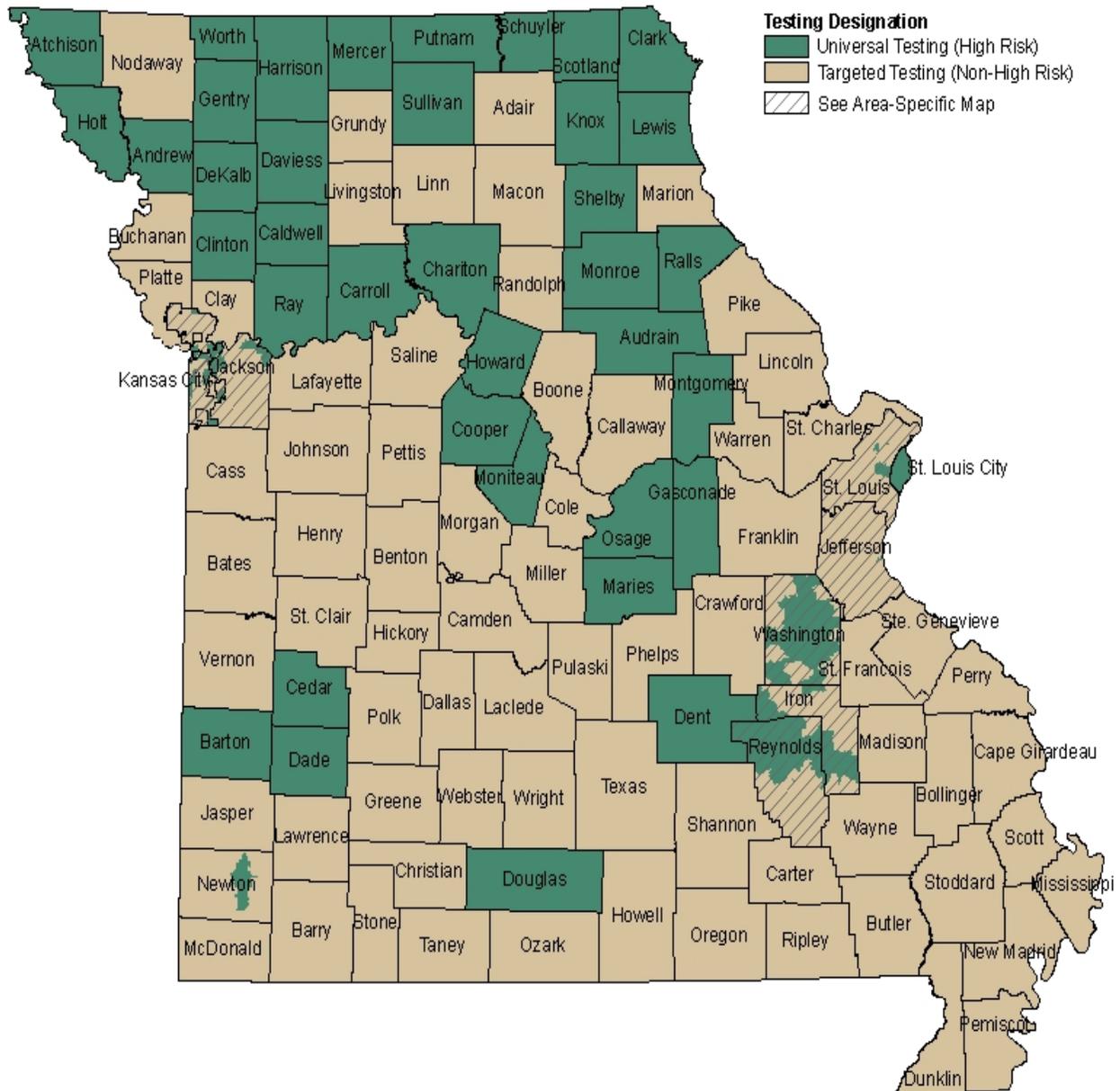
Source: Missouri Department of Health and Senior Services. Lead MOHSAIC (Missouri Health Strategic Architectures and Information Cooperative)

Missouri Department of Health and Senior Services
2010 Title V Maternal and Child Health Needs Assessment

Children living in areas with older housing are at higher risk for lead poisoning. According to 2000 census data, Missouri had about 24% of housing units being built before 1950, which was slightly higher than the national average of 22%. Within the high risk areas identified in 2009, housing in St. Louis City and the Kansas City and St. Louis County high-risk ZIP Codes was comprised of 65%, 51%, and 43% pre-1950 housing, respectively. Based on 2000 census data, these metro areas contained only 30% of the population of children less than 6 years of age but nearly 60% of the lead poisoned children. In 2008, of the 1,114 children found to have an EBL, 502 (45.1%) were in St. Louis City, 88 (7.9%) were in St. Louis County, 69 (6.2%) were in Kansas City, and 455 (40.8%) were in out-state areas in Missouri.

In 2009, 37 counties, the jurisdiction of St. Louis City, and 42 ZIP Codes were identified as high risk or Universal Testing Areas (Figure 42), and will be required, by statute, to annually blood lead test all children less than 6 years of age. Children living in non-high risk or Targeted Testing Areas (Figure 42) must be screened annually by a verbal risk assessment until age 6. If they have a positive response to the verbal risk assessment, then they must be blood lead tested. For areas covered with diagonal lines in the map, additional area-specific maps are available at <http://www.dhss.mo.gov/ChildhoodLead/Maps.html>. In 2008, the average percentage of pre-1950 housing in areas that were designated as high risk was 37%. Additionally, in these high risk areas in 2008, 2.4% of the children tested had an EBL, compared to 0.8% in non-high risk areas.

Figure 42. Missouri Lead Testing Areas, April 9, 2009



Source: Missouri Department of Health and Senior Services. Childhood Lead Poisoning Prevention Program. Accessed from <http://www.dhss.mo.gov/ChildhoodLead/StatewideMap.pdf> on February 17, 2010.

2.5 Children and Youth with Special Health Care Needs

2.5.1 Socio-Demographics of Children and Youth with Special Health Care Needs

Children and Youth with Special Health Care Needs (CYSHCN) are defined as "those who have or are at increased risk for a chronic physical, development, behavioral, or emotional condition

Missouri Department of Health and Senior Services
 2010 Title V Maternal and Child Health Needs Assessment

and who also require health and related services of a type or amount beyond that required by children generally.”³²

According to the most recent National Survey of Children with Special Health Care Needs (NSCSHCN) conducted in 2005-2006, estimated 223,070 children under age 18 in Missouri, which represented 16.2% of all Missouri children, had special health care needs based on the Health Resources and Services Administration (HRSA) Maternal and Child Health Bureau (MCHB) definition. Similar to the national trend, the prevalence of CYSHCN in Missouri slightly increased from 15% in 2001 to 16.2% in 2005-2006, and was consistently higher than the national figures of 12.8% in 2001 and 13.9% in 2005-2006. About one in four (25.1%) Missouri households with children had at least one child with special health care needs in 2005-2006, higher than the national percentage of 21.8% (Table 21).

Table 21. Prevalence of CYSHCN, MO and U.S., 2001 and 2005-2006

	MO		U.S.	
	2001	2005/2006	2001	2005/2006
Number of CYSHCN ages 0-17	215,818	223,070	9,360,356	10,221,439
% of CYSHCN among children ages 0-17	15%	16.2%	12.8%	13.9%
% of households with children ages 0-17 that have CYSHCN	22.5%	25.1%	20.0%	21.8%

Source: Child and Adolescent Health Measurement Initiative. 2001 and 2005/2006 NSCSHCN, Data Resource Center for Child and Adolescent Health Web site. Accessed from www.cshcndata.org on February 17, 2010.

The prevalence of CYSHCN varies by certain socio-demographic factors. The prevalence of CYSHCN in Missouri was higher in children age 6 years or older, and in males. Hispanics had a lower prevalence of CYSHCN than NH whites and African-Americans (Table 22).

³² McPherson M, Arango P, Fox HB, A new definition of children with special health care needs. Pediatrics 1998; 102:137-140

Table 22. Prevalence (%) of CYSHCN Among Children Ages 0-17, by Socio-demographic Characteristics, Missouri, 2005-2006

	%
Age	
Ages 0-5 years	9
Ages 6-11 years	19.5
Ages 12-17 years	19.8
Sex	
Male	19.3
Female	12.9
Poverty Level	
0-99% FPL	18.4
100-199% FPL	16.4
200-399% FPL	14.5
400% FPL or more	16.7
Race/Ethnicity	
Non-Hispanic White	15.6
Non-Hispanic African-American	17.8
Hispanic	12.5

Source: Child and Adolescent Health Measurement Initiative. 2005-2006 NSCSHCN, Data Resource Center for Child and Adolescent Health Web site. Accessed from www.cshcndata.org on February 17, 2010.

2.5.2 Impact on CYSHCN and Their Families

Impact on CYSHCN

Table 23 shows the overall impact of a child's condition on his or her daily activities based on the NSCSHCN 2005-2006. The percentages of CYSHCN with greatly affected daily activities and school attendance were both slightly lower in Missouri compared with the nation in 2005-2006 (Table 23). Nearly half (41.1%) of CYSHCN in Missouri were never affected in their daily activities, while one in five (19.5%) had their daily activities greatly affected.

In general, a child misses an average of three school days due to acute conditions. This compares to an average of seven days due to both acute and chronic conditions for school CYSHCN.³³ In 2005-2006, about 13% of CYSHCN ages 5-17 in Missouri missed 11 or more school days in the past year (Table 23), while more than half (53.5%) only missed three or fewer days, and a majority (74.9%) had missed school days within six days.

³³ Health Resources and Services Administration, Maternal and Child Health Bureau. The National Survey of Children with Special Health Care Needs Chartbook 2005-2006. Rockville, Maryland: U.S. Department of Health and Human Services, 2007

Table 23. Prevalence (%) of CYSHCN with Affected Daily Activities and Missed School Days, MO and U.S., 2005-2006

Impact on the Child	MO	U.S.
% CYSHCN whose conditions affect their activities usually, always, or a great deal	19.5	24
% CYSHCN ages 5-17 with 11 or more days of school absences due to illness	12.8	14.3

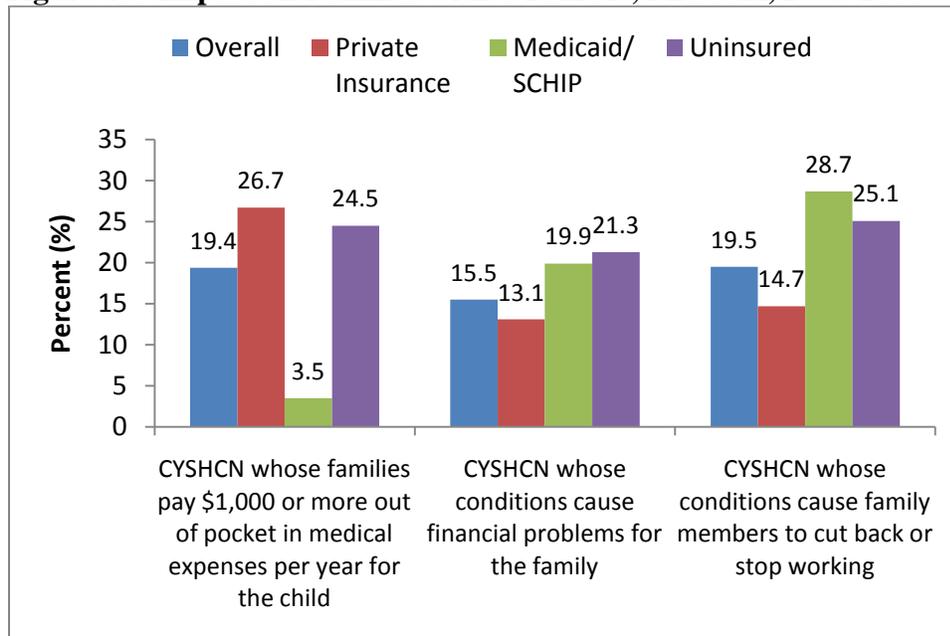
Source: Child and Adolescent Health Measurement Initiative. 2005/2006 NSCSHCN, Data Resource Center for Child and Adolescent Health Web site. Accessed from www.cshcndata.org on February 17, 2010.

Impact on Families with CYSHCN

Having CYSHCN may affect the financial burden of the family. One in five (19.4%) CYSHCN in Missouri had \$1,000 or more out-of-pocket medical expenses in the past year, which was comparable with the national figure of 20% in 2005-2006. Only 3.5% of children with Medicaid or SCHIP in Missouri had this high level of expenditures. This compared with one in four for those with private insurance (26.7%) and uninsured (24.5%) (Figure 43).

Percentages of CYSHCN whose conditions cause financial problems or affect family members' employment status were slightly lower in Missouri than in the U.S. (15.5% vs. 18.1% and 19.5% vs. 23.8% respectively). Unlike the pattern of out-of-pocket medical expenses by insurance status, families of CYSHCN on Medicaid/SCHIP or uninsured were much more likely to report financial problems, and a change in employment status, compared with those with private insurance (Figure 43).

Figure 43. Impact on Families with CYSHCN, Missouri, 2005-2006



Source: Child and Adolescent Health Measurement Initiative. 2005/2006 NSCSHCN, Data Resource Center for Child and Adolescent Health Web site. Accessed from www.cshcndata.org on February 17, 2010.

2.5.3 Specific Health Care Service Needs and Unmet Needs

Specific Health Care Service Needs

CYSHCN need a broad range of services, from preventive and specialty care to special equipment and therapies to manage their conditions. The percentages of CYSHCN needing specific health care services in Missouri were generally comparable with the national figure in 2005-2006 (Table 24). Prescription medication (87.6%) was the most commonly reported health care need among CYSHCN, followed by preventive dental care (80.6%), routine preventive care (75.8%), specialist care (51%), vision care (33.2%), and mental health care (25.9%) (Table 24).

Unmet Needs

The percentage of Missouri CYSHCN needing specific health care services who did not receive all needs varied by the type of services, ranging from the lowest 1.1% for prescription medication and disposable medical supplies to the highest 13.4% for other dental care. Following other dental care, other four most frequently reported unmet needs in Missouri were physical, occupational, or speech therapy (11.4%), home health care (11.1%), substance abuse treatment (10.4%), and preventive dental care (9.9%). Missouri fared better than the nation in the percentage of unmet needs for most (10 out of 15) specific services listed in Table 24. However, it was noticed that unmet needs for dental care services, including both preventive dental care (9.9% vs. 7.7%) and other dental care (13.4% vs. 10.3%) were higher in Missouri than the nationwide (Table 24).

Table 24. Percentage (%) of CYSHCN Needing Specific Health Care Services and Percentage (%) of CYSHCN with a Specific Health Care Service Need, but Not Received

Specific health care services	Need for each specific health care services among CYSHCN			Not receiving all needs for each specific care among CYSHCN with the service needed		
	Ranking (1=highest, MO data)	MO (%)	U.S. (%)	Ranking (1=highest, MO data)	MO (%)	U.S. (%)
Prescription medications	1	87.6	86.4	14	1.1	1.8
Preventive dental care	2	80.6	81.1	5	9.9	7.7
Routine preventive care	3	75.8	77.9	10	2.5	2.4
Specialist care	4	51	51.8	9	3.7	5.4
Eyeglasses/vision care	5	33.2	33.3	11	2	4.2
Mental health care	6	25.9	25	7	9.5	14.9
Other dental care	7	24.1	24.2	1	13.4	10.3
Physical, occupational or speech therapy	8	21.7	22.8	2	11.4	13.5
Disposable medical supplies	9	17.7	18.6	14	1.1	2.5
Durable medical equipment	10	11	11.4	13	1.5	3.9
Hearing aids or hearing care	11	5.1	4.7	8	8	8
Mobility aids or devices	12	4.3	4.4	12	1.6	7.2
Home health care	13	3.2	4.5	3	11.1	10.6
Communication aids or devices	14	1.9	2.2	6	9.6	23.9
Substance abuse treatment	15	1.7	2.8	4	10.4	20.6

Missouri Department of Health and Senior Services
2010 Title V Maternal and Child Health Needs Assessment

Source: Child and Adolescent Health Measurement Initiative. 2005/2006 NSCSHCN, Data Resource Center for Child and Adolescent Health Web site. Accessed from www.cshcndata.org on February 17, 2010.

2.5.4 Health Conditions Among CYSHCN

The NSCSHCN 2005-2006 newly added questions that asked parents whether they had been told by a health care provider that their child had any of the selected chronic conditions. The prevalence of each of the selected conditions among CYSHCN in Missouri was generally comparable with the nation (Table 25). Allergies, reported by more than half of the CYSHCN (54.7%) in Missouri, are the most commonly reported condition, followed by asthma (37.4%), ADD/ADHD (30%), and depression and other emotional problems (20.7%).

Table 25. Prevalence (%) of Selected Health Conditions Among CYSHCN, MO and U.S., 2005-2006

Health Condition	2005/2006	
	Prevalence (%)	
	MO	U.S.
Allergies	54.7	53
Asthma	37.4	38.8
Attention deficit disorder (ADD)/ Attention deficit hyperactivity disorder (ADHD)	30	29.8
Depression, anxiety, eating disorder, or other emotional problem	20.7	21.1
Migraine or frequent headaches	16	15.1
Mental retardation or developmental delay	9.7	11.4
Autism or autism spectrum disorder	4.7	5.4
Heart problems	4	3.5
Arthritis or other joint problems	3.7	4.2
Epilepsy or other seizure disorder	3.6	3.5
Anemia or Sickle Cell Disease	2	2.3
Diabetes	1.6	1.6
Cerebral palsy	1.3	1.9
Down syndrome	0.7	1

Source: Child and Adolescent Health Measurement Initiative. 2005/2006 NSCSHCN, Data Resource Center for Child and Adolescent Health Web site. Accessed from www.cshcndata.org on February 17, 2010.

A recent report issued by the AAP Council on Children with Disabilities in 2007 introduces universal screening that pediatricians conduct formal autism spectrum disorders (ASD) screening on all children at age 18 and 24 months regardless of whether there are any concerns.³⁴ The clinical guideline published by the Subcommittee on Attention Deficit Hyperactivity Disorder (ADHD) of the AAP in 2000 recommends primary care clinicians should initiate an evaluation

³⁴ Johnson CP, Myers SM; American Academy of Pediatrics Council on Children With Disabilities. Identification and evaluation of children with autism spectrum disorders. *Pediatrics*. 2007;120:1183-215. Epub 2007 Oct 29.

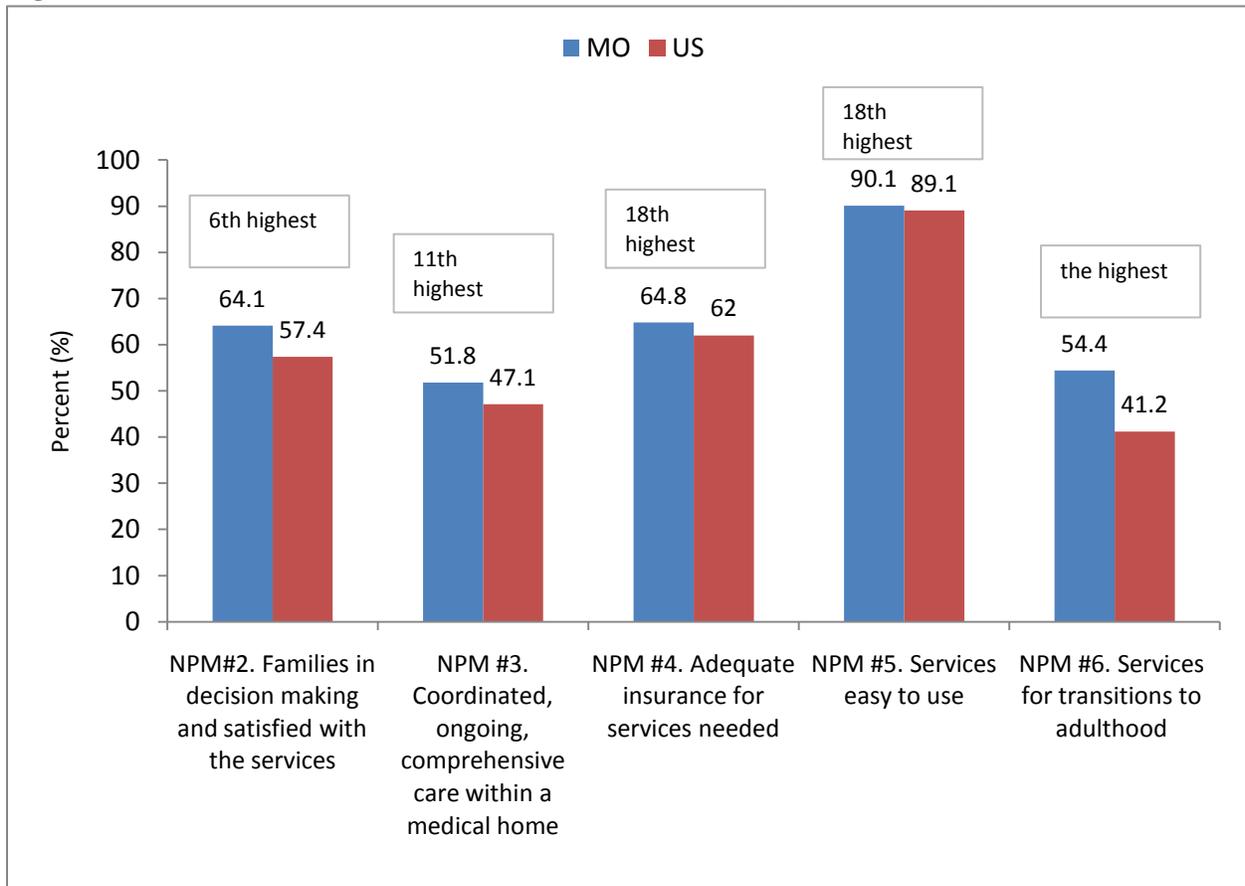
for ADHD for a child age 6 to 12 who presents with inattention, hyperactivity, impulsivity, academic underachievement, or behavior problems.³⁵

2.5.5 National Performance Measures (NPM) for CYSHCN

The current MCH Title V Block Grant Application included five of the six critical indicators as NPM to evaluate success towards the national agenda for CYSHCN. The five indicators cover issues regarding insurance coverage, medical home, organization of services, family roles, and transition to adulthood. The NSCSHCN is used to measure the five indicators. These outcomes provide a concrete picture to measure progress in developing family-centered, community-based, and coordinated care for CYSHCN.

Figure 44 shows comparisons of the five NPMs between Missouri and nationwide in 2005-2006. Overall, Missouri performs as well as or better than the nation on the five NPMs for CYSHCN.

Figure 44. National Performance Measures for CYSHCN, MO and U.S., 2005-2006



Source: Child and Adolescent Health Measurement Initiative. 2005-2006 NSCSHCN, Data Resource Center for Child and Adolescent Health Web site. Accessed from www.cshcndata.org on February 17, 2010.

³⁵ Committee on Quality Improvement of the American Academy of Pediatrics. Clinical practice guideline: diagnosis and evaluation of the child with attention-deficit/hyperactivity disorder. American Academy of Pediatrics. Pediatrics. 2000;105:1158-70.

NPM #2 Family-Centered Care

Family-centered care supports families as integral partners in decision-making of their children's care. The percentage of CYSHCN whose families are partners in decision making and satisfied with services was 64.1% in 2005-2006 in Missouri, up from 57.2% in 2001 ($p < 0.05$). Missouri's percentage in 2005-2006 was significantly higher than the national figure of 57.4%, and ranked 6th highest in the nation (Figure 44). However, certain subgroups tended to have lower percentages in this measure in Missouri (2005-2006), such as:

- Those uninsured (38.4%)
- Without medical home (40%)
- Those with emotional, behavioral, and developmental issues (50.6%)

NPM #4 Adequate Health Insurance

The Children's Health Insurance Program (CHIP) has begun to address the issues of children uninsured, but the problem of under insurance remains a major concern for CYSHCN and their families. The percentage of CYSHCN receiving adequate health insurance for the services needed in Missouri had been consistently above the national levels in both 2001 (66% vs. 59.6%) and 2005-2006 (64.8% vs. 62%) (Figure 44). Although there was a slight decrease in the percentage of this measure from 2001 to 2005-2006 in Missouri, the decrease was not statistically significant. In 2005-2006, certain groups of CYSHCN in Missouri were less likely to receive adequate health insurance, such as those:

- With functional limitation (52% with emotional, behavioral, and developmental issues (54.7%)
- Without medical home (53.2%)

NPM #3 Care within Medical Home

"Medical home is a source of ongoing, comprehensive, coordinated, and family-centered care in the child's community."³³ All children should be entitled to a medical home. Medical home is particularly important for CYSHCN, and it provides continuity of care and coordination among multiple services to best meet needs of the child and family. The NPM #3 is defined based on confirmative response to all 11 questions from the NSCSHCN.³³ More than half of CYSHCN in Missouri received adequate care on every needed component of medical home in 2005-2006 (51.8%), which was significantly higher than the national figure of 47.1% (Figure 44). However, some subgroups of Missouri CYSHCN were less likely to receive care through a medical home, such as those:

- With functional limitation (36.3%)
- With emotional, behavioral, and developmental issues (39.8%)
- NH African-American (40.7%)
- On Medicaid/SCHIP (40%) or uninsured (40.9%)

NPM #6 Services for Transition to Adulthood

Challenges remain to make a successful transition planning to adulthood for CYSHCN. "Few coordinated services have been available to assist them in their transition from school to work, home to independent living, and child and family-focused care to adult-oriented care."³³ The NPM #6 was defined for CYSHCN ages 12-17 whose doctors had discussed the shift to adult providers, the child's changing needs, and insurance coverage, and encouraged the child to take responsibility for his or her health. More than half (54.4%) of Missouri CYSHCN ages 12-17 received the services necessary to make transitions to all aspects of adult life, including adult

care, work, and independence in 2005-2006. Missouri had the highest percentage in this measure among all states in 2005-2006, compared with the national figure of 41.2% (Figure 44). However, a much lower percentage in this measure, compared with the state average of 54.4% was observed in some subgroups of Missouri CYSHCN, such as those:

- Living under 100% FPL (32.2%)
- Uninsured (35%)
- Without medical home (35.5%)
- NH African-American (37%)
- On Medicaid/SCHIP (42%)

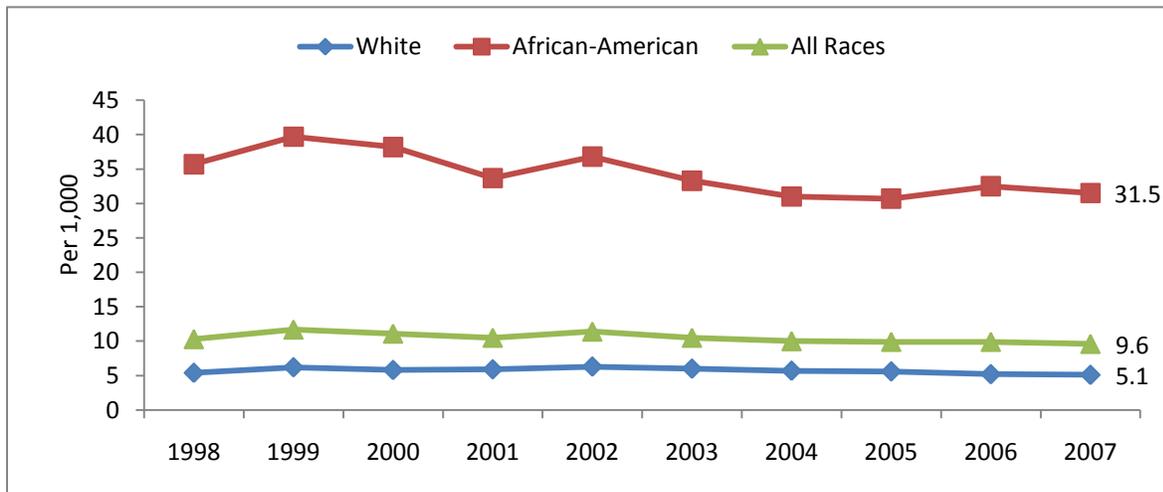
2.5.6 Asthma

Asthma is the most common chronic disease of children and youth in Missouri and the nation. Asthma is the leading cause of school absences and hospital stays from a chronic illness in children. In 2007, approximately 152,450 children (10.8% of individuals less than age 18) reported living with asthma in Missouri, accounting for about nearly one-third (29%) of estimated 530,950 people with asthma in Missouri. Missouri children have a slightly higher prevalence rates of current asthma than the nation (10.8% vs. 9%, 2007 NSCH). St. Louis City was ranked number one by the Asthma and Allergy Foundation of America as the nation's "most challenging" for asthma sufferers to live, leaping from ninth in 2008 and 29th in 2007.

According to the survey of Inventory of Students with Special Health Care Needs conducted by the School Health Program with the Missouri DHSS, over 68,000 or 7.7% of Missouri school students were on asthma medication at home or school in 2008-2009 school year. The 2008-2009 survey represented 478 school districts (SD) or 863,943 students out of a total of 524 SD or 885,493 students in Missouri. The prevalence of asthma on medication increased from 7% in 2004-2005 to 7.7% in 2008-2009.

Among children age 17 and younger, asthma is more common among boys (11.7%) than girls (9.9%) and among African-Americans (21.8%) than whites (7.7%) in Missouri (2007 NSCH). These children bear a disproportionate burden of asthma emergency room (ER) visits and hospitalizations. The rate of ER visits for asthma (per 1,000) slightly decreased from 10.3 in 1998 to 9.6 in 2007 among Missouri children under age 15. However, the racial disparity remained wide, with the rate (per 1,000) of 31.5 for African-Americans, more than six times the rate of 5.1 for whites (Figure 45). The higher rate among minorities indicates more severe disease and/or less control of the disease. The HP 2010 objectives set eight ER visits and 2.5 hospitalizations for asthma per 1,000 children under age 5. Missouri did not reach these objectives, with the rate of ER visits of 12.5 per 1,000 and the rate of hospitalizations of 3.4 per 1,000 for asthma for this population in 2007.

Figure 45. Rate of Asthma ER Visits Among Children <15 Years Old by Race, Missouri, 1998-2007



Source: Missouri DHSS. Emergency Room MICA

Potential consequences for individuals with poorly managed asthma include frequent ER visits, hospitalizations, school absenteeism, limited activity and poor quality of life. Although the onset of asthma cannot be prevented and there is no known cure, environmental changes, exposure to triggers and inadequate control and lack of self-management measures play a large role in exacerbations and indicate the need for increase knowledge and skills; access to competent front-line care providers at home, day-care, schools, and in hospitals and clinics; and appropriate deliver, inhalation technique and daily use of control medications.

2.6 Performance Measures, Outcome Measures, and Health Status Indicators

Many of the performance measures, outcome measures, and health status indicators have been described throughout the relevant sections of this needs assessment. The most recent data of these measures can be found from Forms 11, 12, 20 and 21 of the 2011 MCH Block Grant Application.

2.7 Results from Focus Groups

Stakeholder input is primal to the needs assessment process and community input, from both providers and consumers, is the center piece of this qualitative process. As outlined in Section 1 of this document the Missouri Title V Needs Assessment process obtained input from providers and consumers through a series of 13 focus groups held across the state in various locations. Since the information obtained through these focus groups is directly from the communities it is a direct reflection of the status of health services and barriers to access them in Missouri. The following sections provide a summary of the methodology and results of these focus groups:

2.7.1 Methodology

To assess the diverse maternal and child health needs throughout the state of Missouri 13 focus groups were scheduled during July, August, September and October of 2009. The focus group locations were chosen to be a mixture of urban and rural. Additionally, three of the focus groups were designed to recruit specific populations including Hispanic consumers, rural providers and urban providers. With input from DHSS staff working on the needs assessment the focus groups

Missouri Department of Health and Senior Services
2010 Title V Maternal and Child Health Needs Assessment

were conducted by the Institute of Public Policy, Harry S Truman School of Public Affairs, University of Missouri, Columbia, Missouri. The town/city, type of group, location of group, date conducted and number of participants can be found in Table 26. By diversifying the region and the type of host location a wide variety of perspectives were obtained.

The method of participant recruitment varied by location. Staff at each host location worked with the needs assessment team to post flyers and monitor sign-up sheets in the community. Focus group locations were chosen based on accessibility to the target population and the willingness of a facility to partner with the assessment team. In some locations existing groups like support groups or facility staff allowed the investigators to attend a scheduled gathering. Other times staff posted flyers in multiple locations and allowed interested participants to sign-up by calling or visiting a specific individual. In many instances, the staff at the host location worked hard to recruit participants by talking with them when they visited their facilities for appointments or meetings. Those times where a local advocate recruited individuals or when we were allowed to visit an existing group for the focus group were the most successful in terms of recruitment. The goal for each focus group was to recruit 20 participants with a minimum of 10 participants each time. Participants were recruited from the following groups: Women of child bearing age, adolescents/teens, parents and family members of children without special health care needs, and parents and family members of CYSHCN. Each participant in the consumer focus groups was given a \$25 gift certificate as an incentive. The incentives varied by location depending on availability of vendors and the needs of the department. Participants in the provider focus groups were provided a catered meal rather than a gift certificate as incentive.

At the end of the focus groups discussion the participants were given a survey to provide additional feedback on maternal and child health that may not have been discussed during the focus group. The survey data was more quantitative in nature. It was entered into a database and analyzed for trends among focus group participants. The following sections and the associated tables summarize the results of the focus groups and were taken from the “Maternal and Child Health Needs Assessment Report 2009” by the Institute of Public Policy, Harry S Truman School of Public Affairs, University of Missouri, Columbia, Missouri.

Table 26. List of Focus Groups

Town/City	Location	Type of Focus Group	Date Conducted	Number of Participants
Jefferson City	HeadStart Cole County East	Consumer	June 18	8
Columbia	Lutheran Family & Children’s Services	Consumer	July 15	18
Cape Girardeau	Cape Girardeau County Health	Consumer	August 10	10
Poplar Bluff	Butler County Health Center	Consumer	August 11	11
Sikeston	Southeast Missouri Health Network	Provider	August 12	9

Table 26. List of Focus Groups (Continued)

St. Louis	Grace Hill Settlement House HeadStart Program	Consumer	August 6	37
St. Louis	Grace Hill Neighborhood Health Centers	Provider	August 14	26
Branson	Taney County Health Department	Consumer	August 25	8
Springfield	Jordan Valley Community Health Care Center	Consumer	September 15	9
Kansas City	UMKC Women's Center	Consumer	September 29	8
Moberly	Randolph County Health Department	Consumer	October 8	12
Kirksville	Kirksville Gardens	Consumer	October 15	14
Sedalia	Amigos de Christo Lutheran Church	Hispanic Consumer	October 22	13

2.7.2 Provider Focus Group Summary

2.7.2.1 Rural Provider Analysis

Patients have difficulties accessing the medical system efficiently

Patients are using the emergency department unnecessarily because they do not have insurance. They wait until issues become severe, or because they cannot find a doctor who will accept Medicaid for their particular health concern. They are then more medically complicated to treat.

More and more patients are uninsured and underinsured, especially when they get pregnant. They are not receiving health care before getting pregnant or early in the pregnancy.

Migrant and Spanish speaking patients face special challenges and need special services. They have language, cultural, and immigration status issues that require special expertise on the part of the health care system. Specially trained staff members to assist migrant and Spanish speaking consumers are needed at the local level.

A child receiving correct immunizations on schedule is difficult. Parents are not educated about the child's immunization needs. They do not have continuity of care which makes tracking immunizations very difficult. Many children will be vaccinated multiple times because parents do not have proof of immunizations, and the MOHSAIC system has been difficult to use to solve this problem. Improvements in the MOHSAIC system and its usability can help to solve this problem.

CYSHCN face access issues in rural areas (especially on Medicaid). The specialists are not as available as necessary, and some specialists do not accept Medicaid which further hinders access for CYSHCN.

Finding providers who take Medicaid is difficult for all consumers. Due to the current reimbursement structure there is a shortage of providers who accept Medicaid or new patients with Medicaid. This creates an access barrier for many consumers who use Medicaid.

The structure of health care limits the services that can be provided in rural areas. Rural areas could be more creative with the resources that are available, however policies like scope of practice, reimbursement from Centers for Medicare and Medicaid Services (CMS) and others limit the ways in which existing resources can be utilized. Rural areas need more flexibility in how they offer adequate health care.

Family

Parents need more education about health and health care. Parents are not informed about immunizations, nutrition, chronic disease, asthma, and other health issues facing themselves and their children. Teenage pregnancy is a problem in rural areas. Due to cultural norms regarding teen pregnancy and a conservative climate surrounding sexuality education there is a significant teen pregnancy problem in rural areas. Teen parents are particularly in need of more education regarding their health and the health of their children.

Transportation/Geographical Access

Specialists for CYSHCN are difficult to find in rural areas (especially with Medicaid). Due to this limited accessibility, transportation to specialists in more urban areas is a barrier to receiving the necessary health care.

Travel to specialists is difficult (for everyone). Consumers who need specialists often have more pressing health concerns. If consumers have limited ability to pay it makes the travel problem more difficult. Many needing care from health care specialists must travel long distances to more urban areas for care. This is just another barrier to receiving appropriate care in a timely manner.

Community

Integrating public health into the schools would improve child health in rural areas. Given the limited resources and the lack of accessibility, public health measures in the schools could improve public health for children and families. This could take the form of more education or direct preventive care such as dental sealants or vaccinations.

School nurses are working well with health care professionals in some situations. They are working with health care providers to provide some of the education and services in the schools. While this is a strength of rural areas, more of this work should be done.

Education

There are health education services currently available including local health departments, WIC and the educators at local hospitals. However, additional health education services are needed to

address patient education for consumers with chronic diseases, obesity prevention, nutrition education (malnourishment and obesity prevention), asthma managements, substance use/abuse, tobacco prevention, adolescent sexuality and other issues.

Changes in the Past Five Years

During the past five years the providers observed that patients are more demanding of services without being fully informed. Additionally, payers are more involved in health care than they used to be. In addition to being subject to many outside influences, there are more chronic health problems that could be prevented or need to be managed by lifestyle changes.

Perfect Health Care System

The provider focus group participants would like to reestablish the value of the relationship between the patient and the physician. One strategy for accomplishing this would be to reduce payer input into health care. They would also like to use media for patient education and put public health nurses back into schools.

2.7.2.2 Urban Provider Analysis

Medical/Provider Relationships

Continuity of care needs to be improved. Patients do not return for follow-up appointments and they do not comply with prescriptions. Additionally, they do not always return to the same provider. Many issues arise from the lack of continuity.

Uninsured and underinsured patients have difficulty navigating the Medicaid system. They are not familiar with the rules. They do not fully understand what is covered and when. It is also difficult for providers to keep up with changes in Medicaid policies.

Cultural competence of care is becoming more and more important as providers see more people from different backgrounds with different degrees of health literacy.

Prenatal care in subsequent pregnancies is often lacking since the patients feel that they do not need to have prenatal care after the first pregnancy. This is reinforced when they then have healthy children in second and third pregnancies without prenatal care.

Immunizations present many challenges related to tracking them for children. Schools, providers, and parents need a mechanism that assists with tracking immunizations. MOHSAIC is not currently working in practice, but is a good idea in theory. Making MOHSAIC more user-friendly is necessary.

Specialty care is difficult even in urban areas. Access to specialists is still limited by being in the appropriate payer network, especially Medicaid. Additionally, long wait times are common in urban areas.

Use of the emergency room for primary care is common. This is especially true among immigrants who are less likely to be insured due to income, eligibility for Medicaid, and fears regarding their immigration status.

Transportation and Geographic Access

Getting to appointments is difficult for some. While consumers have access to public transportation and Medicaid will cover transportation costs there are still barriers. Adolescents are often unfamiliar with how to use public transit, or consumers may not have the money for the trip to the appointment. They are also often unfamiliar with how to use the Medicaid transportation.

Transportation to urgent appointments is difficult to arrange through the Medicaid transportation service.

Health care in schools would increase access for adolescents. Just as in the rural areas, providers felt that taking health care to schools would increase access for much of the population who is currently in the greatest need.

Outreach could increase access by educating community members about health, available services, and social service programs. Providing direct services in the community, rather than in a health center, could greatly increase access.

Education Services

New parents need education. Many parents, especially adolescent parents, do not fully understand all that is needed to maintain their health and the health of their child. Services to enhance parent knowledge and skills regarding immunizations, navigating the health care system, and preventive health are much needed.

More adolescent sexuality education is needed. Teenage pregnancy prevention is needed. Teenage pregnancy continues to be a significant problem seen by health care providers. Additionally, education regarding the prevention of STDs and other issues related to adolescent sexuality is needed in the community and schools.

Greatest Unmet Need

Urban providers commented that access to health care including prevention services, family planning services, and access to technology like X-ray and mammography for low-income patients was among the greatest unmet health care needs.

Other unmet needs identified included lack of access to healthy food and opportunities to exercise, obesity prevention programs, malnutrition prevention, mental health services and the involvement of men in children's health care and pregnancy prevention.

Changes in Past Five Years

The two greatest changes urban providers saw were both related to paying for health care. They saw increased out-of-pocket expenses for patients and increased bureaucracy in health care.

2.7.3 Consumer Focus Group Summary

Medical/Provider Relationships

Hours of availability of some services are too limited. Consumers who are working are not able to access services offered at limited times.

Providers who accept Medicaid consumers are difficult to find in many areas. Additionally, providers who do accept Medicaid patients may not be accepting new Medicaid patients.

There is often confusion about who accepts specific plans for specific services. Consumers reported being very unclear about which facilities they could access for specific types of health care with specific insurance/Medicaid providers.

Quality of the consumer experience can be variable in terms of customer service and quality of health care professionals. Consumers felt that at some of the health care providers designed to increase access for low-income people that the staff were not courteous or of acceptable quality. Additionally, many consumers reported getting inadequate or incorrect care that was discovered later by a different clinician.

Preventive services are often covered by insurance/Medicaid, but they may be difficult to access due to limited hours and working parents needing to take time away from work. Many local health departments were given high marks for affordable immunizations and good accessibility. However, some consumers report forgoing preventive care in order to save money, especially when they are uninsured.

Long wait times for appointments make health care less accessible, especially for working adults.

Even with Medicaid coverage some consumers find that they still have no/limited providers available. Many participants reported they still have to go to the emergency department to receive care.

Some areas, especially rural areas, have a health care provider shortage that is felt by the consumers.

Language and cultural barriers make accessing health care difficult for some consumers. This includes not seeking care because of uncertainty of accommodations for language interpretation and receiving inadequate care due to language and cultural barriers.

Family

Obtaining immunizations for children can be difficult since they are not always offered at the original health care provider's facility. Parents report needing to take a day away from work to go to their doctor and an additional day from work to get immunizations at the health department.

Many consumers are facing special health care challenges for themselves and their families. Some examples include diabetes, allergies, bi-polar disorder, and brain surgery. These additional special health care needs exacerbate difficulties parents and children may be facing when obtaining health care.

Families facing special health care needs spend more time on managing insurance and care. Due to the complexity of the issues, more time and energy is required on the part of the parents or caregivers.

Health Education/Informational Resources

A variety of sources were cited regarding where individuals receive health education and information including:

- Work
- Head Start
- Clinic
- Word of mouth
- Local public health agencies
- Health fairs
- School nurses
- Parents as Teachers (PAT)
- Mommy and Me classes
- Breastfeeding classes
- School
- Internet
- Division of Family Services
- Community organizations
- WIC
- Rural health clinics
- Nurse hotlines
- Lactation consultants
- Birthing classes

Available education/information resources are often outdated and electronic information is difficult to use. Print materials become outdated quickly in a changing health care environment and consumers report difficulties accessing and utilizing existing electronic or web-based information. An efficient and simple web page with important information about services that is up-to-date was cited as a resource that would be helpful.

A barrier to some community services is that some organizations run out of funding very quickly at the beginning of each month. Particularly utility assistance runs out very quickly. Lack of funding for these types of social services has a ripple effect on consumer health.

School nurses were reviewed very favorably. The only complaint regarding school nurses was their limited capacity due to limited hours at individual schools. Most consumers felt that if there were more school nurses with more time at each school that they could provide even better and more extensive services.

Transportation/Geographical Access

Transportation services are available via Medicaid and other social service programs. Getting Medicaid transportation arranged is difficult for many consumers. Additionally, some consumers reported not being picked up by the Medicaid transportation in rural areas and consequently missing important health care appointments.

Some services require more travel. Particularly specialists and dental services require consumers to travel a long distance to any provider or to providers who accept their insurance/Medicaid. Many consumers around the state are traveling to Columbia, St. Louis or Kansas City for certain types of specialty health care.

In rural areas consumers are typically traveling farther, and that travel requires more time away from work and more difficulty in reaching the needed health care services.

Some specialty or preventive service providers do travel to rural areas occasionally. Consumers were very appreciative of those outreach services.

Financial

Having insurance or Medicaid increases access, but does not guarantee that consumers will be able to access needed health care.

Medicaid is difficult for adults to obtain if they are not pregnant. Many consumers reported that they cannot afford insurance, but they do not qualify for Medicaid. There is a significant gap between qualifying for Medicaid and being able to afford insurance as an adult. Some consumers reported a need for support to keep people working by helping them afford health insurance while transitioning from Medicaid to private insurance.

Medicaid is easier to obtain for kids, but is still confusing to navigate the system at times. For adults and kids it is also common for Medicaid to be “taken away” without consumers knowing why.

Some consumers with special health care needs found the formularies for Medicaid too restrictive. They must endure trying formulary medications before the recommended medications (that are not on the Medicaid formulary) can be covered.

Individuals who have private insurance still find it to be inadequate coverage and need additional assistance with health care expenses.

Out-of-pocket expenses such as co-payments or health care services that are not covered are burdensome for consumers. Support in covering these additional costs is needed. Some services like dental, eyeglasses, mental health, over-the-counter medications diabetic supplies, vitamins, and prescriptions require significant out-of-pocket expenses.

Many consumers find that they cannot have their first choice for health care because of restrictions from insurance/Medicaid. In order to be covered by their particular Medicaid plan they must choose different facilities for their care. Some consumers felt they sacrificed quality of care to go to a facility that accepted their Medicaid.

Reimbursement and finances drive health care decisions made by patients and clinicians. Consumers felt that clinicians were concerned about money and made decisions about what type of health care to deliver based on what would be covered by the payer.

Navigating insurance and Medicaid is difficult and time consuming. Many consumers reported they spent a long time on the phone with payers getting health care expenses approved in order to receive the care that was needed. Sometimes they were never able to figure out the issue and ended up paying out-of-pocket for some expenses they thought should be covered.

Consumers report large co-payments being required before services will be delivered. These large out-of-pocket costs are a barrier to access.

Medicaid's lack of coverage for specific services was sighted as a barrier to those services. Breast pumps and circumcision were two examples cited as services that were not covered therefore changing the health care decisions of the consumers.

Pre-existing conditions were cited as significant barriers to receiving health care coverage due to higher premiums.

Community

WIC is a very well-received service. Consumers who had experienced WIC were almost universally positive. However, WIC is limited to a relatively narrow population. Similar services for other populations (older children, women when not pregnant, men) would be welcome.

Some community organization services help to fill the gaps. Planned Parenthood was an example given in some locations that uses a sliding scale and extended hours. Sliding scale services were a common request from consumers. They do not necessarily want a handout as much as affordable health care for their families.

Head Start is a very well-received and well-utilized resource. Many consumers reported satisfaction with the services (child care and other) provided by their Head Start program.

More extended hours or special clinics for maternal and child health needs are needed in order to increase access, especially for working parents. Occasional weekend hours would help consumers receive preventive care without missing work.

If participants could design a perfect system it would include:

- Access to needed health care
- Increase quality of care
- Easy transportation to appointments
- Extended hours past regular working hours for working families
- Adequate funding to help people who need care
- Free health care
- Better health care for mothers
- Coverage for natural herbs/medicines/treatments

Participants saw the most unmet health needs in their communities to be:

- Dental health
- Mental health
- Vision/eye care
- Prescription coverage
- Accessible health care in rural areas

Participants saw the most significant changes in the past five years to be:

- Reduced services
- Reduced hours by providers

- Fewer funded/free services
- Insurance accepted in fewer places
- Providers who will not accept Medicaid
- Quality of care has decreased
- Stricter formularies
- More out-of-pocket expenses
- Doctors come and go in rural areas of Missouri

2.7.4 Hispanic Consumer Focus Group Summary

Medical/Provider Relationships

There was a perception among Hispanic consumer participants that it was important to know the provider or interpreter in order to be seen more quickly for their health care.

Migrants have difficulty moving from one state to another with Medicaid coverage. When they move from one state to the other some services transfer and others do not. This caused additional confusion and large bills for some.

Focus group participants reported numerous incidents of poor quality of care from bedside manner to misdiagnosis. They also reported poor customer service.

Participants reported being told they would be charged for WIC services and choosing to forgo the services as a result.

Health Education/Informational Resources

A variety of sources were cited regarding health education and information such as WIC and University-based programs.

Financial

Regardless of immigration status, qualifying for Medicaid is very difficult for adults. The maximum income is very low. Consumers feel that there is a gap between Medicaid qualification and being able to afford private insurance. Consumers felt that they should not have to become pregnant or disabled to receive health care coverage.

Kids are easier to cover via Medicaid, but parents have a very difficult time receiving health care coverage.

Out-of-pocket expenses such as co-payment or specific services are not covered. These large up-front co-payments are a deterrent to consumers receiving needed health care.

Consumers report receiving unexpected bills for health care after the fact. The bills are often expensive and they are unable to pay.

Community

Interpretation services are valuable, but then the interpreters know about the patient's health status. Many feel there is a lack of confidentiality with the interpreter. Additionally, participants

felt that there was discrimination at some of the community facilities. Some community members report going to a specific Hispanic clinic to get around some of these concerns.

Participants saw the most unmet health need in their community to be a lack of dental care.

2.7.5 Survey among Focus Group Participants

Survey Response Summary

General medical care (76%), dental care (81%), childhood immunizations (63%) and Pap smears (62%) are the health issues that respondents most need now or have needed in the last year.

Respondents receive health care at private providers more than at any other type of facility. Community clinics and local health departments are the next more popular type of facility depending on the type of service they are seeking.

Respondents are most uncertain about where to receive dental care (21% do not know where to receive dental care) and breast cancer screening (16% do not know where to receive).

Respondents use the emergency room most often for general medical care for colds, flu, fevers, coughs, injuries, allergies, etc. among services about which we asked (11%).

Respondents would be most likely to seek general health information from their doctor (77%). Other popular responses included the local health department (45%), friends (42%) and relatives (37%).

Twenty percent of those responding had a child with a disability or special health care needs.

Only 48% of those responding had insurance/Medicaid/other health care coverage for all members of their family. However, 91% of respondents had at least some of their family members covered.

Of those respondents who do not have health care coverage 29% do not have coverage because they cannot afford it and 29% do not qualify for coverage.

Survey Results

Table 27. Demographics of Focus Group Participants

Gender	Number (%)
Female	127 (89%)
Male	15 (11%)
Age Category	
12-20 years of age	24 (17%)
21-44 years of age	96 (66%)
45+ years of age	24 (17%)
Race	
African-American	59 (42%)
White	68 (49%)
Asian	2 (1.4%)

Table 27. Demographics of Focus Group Participants (Continued)

Other	10 (7%)
Ethnicity	
Hispanic	17 (12%)
Non-Hispanic	126 (88%)
Language Spoken at Home	
Number (%)	
English	130 (91%)
Spanish	8 (6%)
Both English and Spanish	3 (2%)
Average Number of Children by Age	
Age of Children	
Average Number in Participant Household	
0-5 years	1.08
6-11 years	0.41
12-20 years	0.38
21+ years	0.16
Total number of children	1.99

Table 28. Participant Responses to Survey Questions

Number of respondents who report agreement with the statement: My family/I have faced serious health problems within the past year.

Response	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Number (%)	38 (25%)	32 (22%)	36 (25%)	24 (17%)	16 (11%)

Respondents were asked to check whether or not they had needed services in the past year and whether or not they knew where to get those services in their own communities.

	Number (%) of Respondents Who Need Now (✓)	Number (%) of Respondents Who Have Used in the Past Year (✓)	Number (%) of Respondents Who do not need (✓)	Percentage who know where to get this service in his/her community (✓)
Prenatal or pregnancy care	12 (8%)	44 (31%)	65 (45%)	56%
Childbirth facilities, delivery of a baby	12 (8%)	41 (29%)	64 (45%)	63%
General medical care for colds, flu, fevers, coughs, injuries, allergies, etc.	43 (30%)	66 (46%)	14 (10%)	60%
Childhood immunizations	33 (23%)	50 (35%)	27 (19%)	63%
Breast cancer screening	31 (22%)	23 (15%)	59 (41%)	47%
Pap smear (cervical cancer screening)	40 (28%)	49 (34%)	28 (20%)	57%
Vision care, eyeglasses or hearing for children	48 (34%)	31 (22%)	33 (23%)	50%
Dental care	81 (57%)	34 (24%)	10 (7%)	45%
Women Infants Children (WIC)	32 (22%)	35 (24%)	44 (31%)	60%
Food stamps	39 (27%)	32 (22%)	41 (29%)	64%

Table 28. Participant Responses to Survey Questions (Continued)

Temporary Assistance	26 (18%)	18 (13%)	67 (47%)	56%
Family Planning, birth control	25 (17%)	29 (20%)	62 (43%)	58%
Cancer Care	13 (9%)	3 (2%)	96 (67%)	39%
HIV/AIDS care	5 (3%)	4 (3%)	102 (71%)	43%
Testing and care for sexually transmitted diseases (i.e., chlamydia, gonorrhea, syphilis, etc.)	9 (6%)	20 (14%)	80 (56%)	50%
Smoking cessation treatment	16 (11%)	5 (3%)	98 (69%)	24%
Specialized health care needs (such as speech therapy)	21 (15%)	10 (7%)	77 (54%)	25%

Respondents were asked how they pay for the following health services.

	Number who use Private Insurance (✓)	Number who use Medicare/Medicaid (✓)	Number who pay Out of pocket (✓)	Number who report needing this service, but cannot afford to pay (✓)	Number who report they do not need (✓)
Prenatal and pregnancy care	16 (11%)	50 (35%)	8 (6%)	3 (2%)	77 (54%)
Childbirth facilities, delivery of babies	14 (10%)	47 (33%)	5 (3%)	4 (3%)	77 (54%)
General medical care for colds, flu, fevers, coughs, injuries, allergies, etc.	36 (25%)	56 (39%)	31 (22%)	25 (17%)	13 (9%)
Childhood immunizations	19 (13%)	71 (50%)	8 (6%)	12 (8%)	34 (24%)
Breast cancer screening	22 (15%)	30 (21%)	10 (7%)	14 (10%)	59 (41%)
Pap smear (cervical cancer screening)	31 (22%)	51 (34%)	19 (13%)	19 (13%)	22 (15%)
Vision care, eyeglasses or hearing for children	21 (15%)	49 (34%)	29 (20%)	22 (15%)	28 (10%)
Dental care	33 (23%)	40 (28%)	30 (21%)	40 (28%)	9 (6%)
Family Planning, birth control	20 (14%)	40 (28%)	14 (10%)	12 (8%)	57 (40%)
Cancer care	8 (6%)	16 (11%)	1 (1%)	7 (5%)	106 (74%)
HIV/AIDS care	5 (3%)	12 (8%)	1 (1%)	6 (4%)	114 (80%)
Testing and care for sexually transmitted diseases	13 (9%)	30 (21%)	10 (7%)	10 (7%)	80 (56%)
Smoking cessation treatment	4 (3%)	6 (4%)	7 (5%)	8 (6%)	111 (78%)
Specialized health care needs	19(13%)	28 (20%)	10 (7%)	15 (10%)	68 (48%)

Respondents were asked where they go to get the following health services.

	Number (%) who report Private physician (doctor) (✓)	Number (%) who report Community Clinic (✓)	Number (%) who report Health Department (✓)	Number (%) who report Emergency Room (✓)	Number (%) who report Other (✓)	Number (%) who report they Don't know/ unsure (✓)	Number (%) who report they do not need (✓)
Prenatal and pregnancy care	51 (36%)	14 (10%)	6 (4%)	0 (0%)	3 (2%)	4 (3%)	62 (43%)

Missouri Department of Health and Senior Services
2010 Title V Maternal and Child Health Needs Assessment

Table 28. Participant Responses to Survey Questions (Continued)

Childbirth facilities, delivery of babies	52 (36%)	3 (2%)	2 (1%)	9 (6%)	4 (3%)	4 (3%)	66 (46%)
General medical care for colds, flu, fevers, coughs, injuries, allergies, etc.	70 (49%)	36 (25%)	16 (11%)	16 (11%)	6 (4%)	6 (4%)	9 (6%)
Childhood immunizations	51 (36%)	28 (20%)	29 (20%)	2 (1%)	2 (1%)	6 (4%)	29 (20%)
Breast cancer screening	39 (27%)	20 (14%)	3 (2%)	2 (1%)	2 (1%)	23 (16%)	50 (35%)
Pap smear (cervical cancer screening)	69 (48%)	33 (23%)	11 (8%)	0 (0%)	1 (1%)	13 (9%)	15 (10%)
Vision care, eyeglasses or hearing for children	68 (48%)	22 (15%)	3 (2%)	2 (1%)	11 (8%)	25 (17%)	16 (11%)
Dental care	62 (43%)	31 (22%)	5 (3%)	1 (1%)	6 (4%)	30 (21%)	7 (5%)
Family Planning, birth control	42 (29%)	29 (20%)	11 (8%)	0 (0%)	1 (1%)	7 (5%)	54 (38%)
Cancer care	14 (10%)	4 (3%)	3 (2%)	1 (1%)	1 (1%)	12 (8%)	100 (70%)
HIV/AIDS care	10 (7%)	7 (5%)	4 (3%)	1 (1%)	1 (1%)	6 (4%)	109 (76%)
Testing and care for sexually transmitted diseases	21 (15%)	27 (19%)	10 (7%)	0 (0%)	1 (1%)	7 (5%)	76 (53%)
Smoking cessation treatment	6 (4%)	6 (4%)	2 (1%)	0 (0%)	3 (2%)	13 (9%)	107 (75%)
Specialized health care needs	24 (17%)	12 (8%)	3 (2%)	5 (3%)	9 (6%)	10 (7%)	80 (56%)

Respondents were asked where they would go in their community to learn general information about the health of their children.

Where respondents would go for health information	Number (%)
Doctor	110 (77%)
Local health department	64 (45%)
Friends	60 (42%)
Relatives	53 (37%)
Nurse or nurse practitioner	51 (36%)
Community-based agency	35 (24%)
School nurse	17 (12%)
Other	16 (11%)

Respondents were asked if they had a child with a disability or special health care needs. If they answered yes they were asked to specify what type of special health care need.

Response	Number (%)
Yes	29 (20%)
No	114 (79%)

Table 28. Participant Responses to Survey Questions (Continued)

Types of Special Health Care Needs
Speech therapy
ADHD and social disorder
Rare skin disorder and ADHD/BiPolar/OCD/Sensory Disorder
Neuroblastoma cancer
Developmental delays
ADHD/ADD, GAD, Depression
Hemanangioma of face
Sickle Cell Disease
Asthma, severe allergies
Mental health issues
Prune belly syndrome, kidney disease, club feet & urological issues
Asthma, allergies
Asthma
ADHD
Asthma
Heart murmur
Traumatic brain injury
Autism
Speech care
Seizures
Developmentally delayed and has PKU
Sensory integration disorder
Speech, vision
Learning disability
Both sons have chronic ear infections, one has severe allergies, both have tubes in ears
Severe asthma
Developmental delay
ADD

Table 28. Participant Responses to Survey Questions (Continued)

Respondents were asked if their family had health insurance coverage.

Response	Number (%)
Yes, all of my family is covered	69 (48%)
Some members of my family are covered	64 (45%)
Children, but not adults	42 (66%)
Adults, but not children	6 (9%)
Other combination	13 (20%)
No one in my family has health insurance	9 (6%)

Table 28. Participant Responses to Survey Questions (Continued)

If respondents had health insurance, they were asked to report which type of insurance.

Type of Insurance	Number (%)
Private insurance	41 (29%)
Medicaid	82 (57%)
Other health insurance	5 (3%)

If respondents had health insurance, they were asked to report which of the following benefits were covered by their insurance.

	Number (%) who are covered by Private insurance (✓)	Number (%) who are covered by Medicaid (✓)	Number (%) who are covered by Other insurance (✓)	Number (%) who do not know (✓)
Preventive/primary medical care	39 (27%)	60 (42%)	4 (3%)	17 (12%)
Medical care for infectious diseases including prescription drugs for treatment	38 (27%)	58 (41%)	3 (2%)	25 (17%)
Prenatal care	29 (20%)	52 (36%)	2 (1%)	36 (25%)
Family planning, birth control	30 (21%)	49 (34%)	3 (2%)	34 (24%)
Childhood immunizations	26 (18%)	70 (49%)	2 (1%)	22 (15%)
Breast cancer screening	28 (20%)	30 (21%)	3 (2%)	53 (37%)
Vision and hearing screening for children	26 (18%)	56 (39%)	5 (3%)	33 (23%)
Dental services for women and children	30 (21%)	54 (38%)	5 (3%)	36 (25%)
Smoking cessation	10 (7%)	10 (7%)	3 (2%)	83 (58%)
Specialized benefits for children with "special health care needs"	14 (10%)	32 (22%)	1 (1%)	65 (45%)
Mental Health Services	21 (15%)	28 (20%)	2 (1%)	63 (44%)

Respondents who reported not having coverage for all members of their family were asked to report why they do not currently have health insurance/Medicaid.

Response	Number (%)
Cannot afford it	42 (29%)
Don't Need It	1 (1%)
Do not qualify	41 (29%)
Other	6 (4%)

Chapter 3. MCH Program Capacity by Pyramid Levels

3.1 Direct/Enabling Services

3.1.1 Medicaid and SCHIP

In Missouri, Medicaid health services are provided by MO HealthNet, a Division of Missouri Department of Social Services. The MO HealthNet Division is to purchase and monitor health care services for low-income and vulnerable citizens in Missouri. Effective September 1, 1995, the Missouri Medicaid introduced a new health care delivery program called Managed Care. The goal of the Managed Care is to improve the accessibility and quality of health care services for Missouri Medicaid participants and state aid eligible populations, while reducing the costs of providing that care. Missouri's Children's Health Insurance Program (CHIP), implemented in 1998, is a Medicaid expansion. Missouri is one of 12 states with State CHIP (SCHIP) eligibility of 300% or more of federal poverty level, which allows more children enrolled in these states than most other states.

Missouri Medicaid has a wide spectrum of benefits available to the MCH population:

- Missouri Medicaid for Kids:
 - Infants under age 1 whose family income is less than 185% of the federal poverty level (FPL) may be eligible
 - Children under age 6 with a family income under 133% of FPL
 - Children ages 6 through 18 with a family income at or below 100% FPL
 - Uninsured children with a gross family income up to 300% of the FPL "Uninsured Children" are persons under 19 years of age who have not had employer-subsidized health care insurance or other health care coverage for six months prior to application.
- Missouri Medicaid for Pregnant Women (MPW) — This program is intended to provide Missouri Medicaid benefits to low-income pregnant women. A woman whose family income does not exceed 185% of poverty may qualify.
- Women's Health Services Program (1115 Demonstration Waiver) — Uninsured women who lose Missouri Medicaid health care coverage 60 days after the birth of their child are covered for women's health services for an additional year, regardless of family income level. Coverage is limited to family planning, and testing and treatment of STDs.
- Through Section 1115 Demonstration Waiver Missouri Medicaid provides family planning services to women with incomes too high to qualify for comprehensive Medicaid coverage. The waiver, due to expire on September 30, 2010, allows the state to cover family planning services for all women losing eligibility after the 60-day post partum period who have incomes between 150-300 percent of federal poverty level.
- Newborn - Automatic Eligibility — Newborns are automatically eligible for assistance if their mother is receiving a federally matched category of assistance at the time of birth.
- Missouri Medicaid for Disabled Children (MHDC) — A disabled child may be eligible for medical assistance. The income and resources of the parents are taken into consideration.
- Psychiatric Services 21 years of age and younger — Provides assistance to individuals younger than 21 years of age in a psychiatric facility.
- IV/E Alternative Care — provides assistance to children in the Children's Division's (CD) foster care and adoptive homes.

Missouri Department of Health and Senior Services
2010 Title V Maternal and Child Health Needs Assessment

- Homeless, Dependent, Neglected Children — Provides assistance for children in care and custody of the CD.
- Medical Assistance for Children in Care — Children in the custody of the Division of Youth Services (DYS) or a juvenile court.
- Breast and Cervical Cancer Treatment Program — Missouri Medicaid coverage for uninsured women under age 65 screened for breast or cervical cancer by Missouri's Breast and Cervical Cancer Control Project (BCCCP) and diagnosed with cancer or abnormal breast ultrasound (Category IV or V). (Note: The BCCCP Program has requirements including income limits that must be met to get the screening.)
- Temporary Missouri Medicaid during Pregnancy (TEMP) — Pregnant women may be determined eligible by qualified providers for temporary eligibility during pregnancy until they can apply for and begin receiving full Missouri Medicaid benefits. TEMP is "state only" funded if a participant is found ineligible for regular Missouri Medicaid until the end of the TEMP eligibility period.

Trend in Number of Enrollees

As of September 2009, there were 943,280 Missourians enrolled with Missouri Medicaid. SCHIP has dramatically increased the number of children in Missouri with health insurance coverage, from 66,628 in September 2000, to 103,237 in FY 2009.

Overall, the number of Missouri Medicaid enrollees slightly decreased from 2005 to 2009. In 2005, Missouri adopted sweeping Medicaid cutbacks. More than 100,000 people lost coverage.³⁶ Compared with 2005, the number of Missouri Medicaid enrollees in 2006 fell by 7.9% for children under age 18, and 17% for women age 18-44. However, Missouri saw a significant increase in Medicaid enrollment in 2009 compared with 2008 (Table 29).

³⁶ Zuckerman S, Miller DM, Pape ES. Missouri's 2005 Medicaid Cuts: How Did They Affect Enrollees And Providers? Health Affairs 2009;28(2): w335-w345

Table 29. Number of Missouri Medicaid Enrollees, 2005-2009

Year	Children Age <18		Women Age 18-44		All Ages	
	Number of Enrollees	Annual Percent Change (%)	Number of Enrollees	Annual Percent Change (%)	Number of Enrollees	Annual Percent Change (%)
2005	515,947		169,093		950,820	
2006	475,299	-7.9	140,376	-17.0	857,982	-9.8
2007	453,451	-4.6	142,259	1.3	860,166	0.3
2008	476,709	5.1	141,926	-0.2	868,726	1.0
2009	513,238	7.7	162,386	14.4	943,280	8.6

Source: Missouri Department of Health and Senior Services. MICA-Medicaid

Legislative Changes during Last Five Years Related to MCH

Senate Bill 539, effective August 28, 2005, eliminated some optional services for individuals 21 years of age and older. It also changed the effective dates of service for some of the Missouri Medicaid Program benefits. The services eliminated included: podiatry services diabetes self-management training certain durable medical equipment items, hearing aid services, lenses and frames. However, effective July 1, 2006, lenses and frames were restored and durable medical items were restored effective March 2, 2007.

Effective September 1, 2007, uninsured children age birth through 18 years, with a family income below 150% Federal Poverty Level (FPL), who was eligible for the CHIP, began receiving non-emergency medical transportation. Effective October 1, 2009, managed care health plans were required to provide dental services and one pair of eyeglasses every two years. Effective July 1, 2007, a physician fee increase was implemented to increase physician reimbursement rates less than 55% of the Medicare reimbursement rate to 55% of Medicare.

Changes in Eligibility

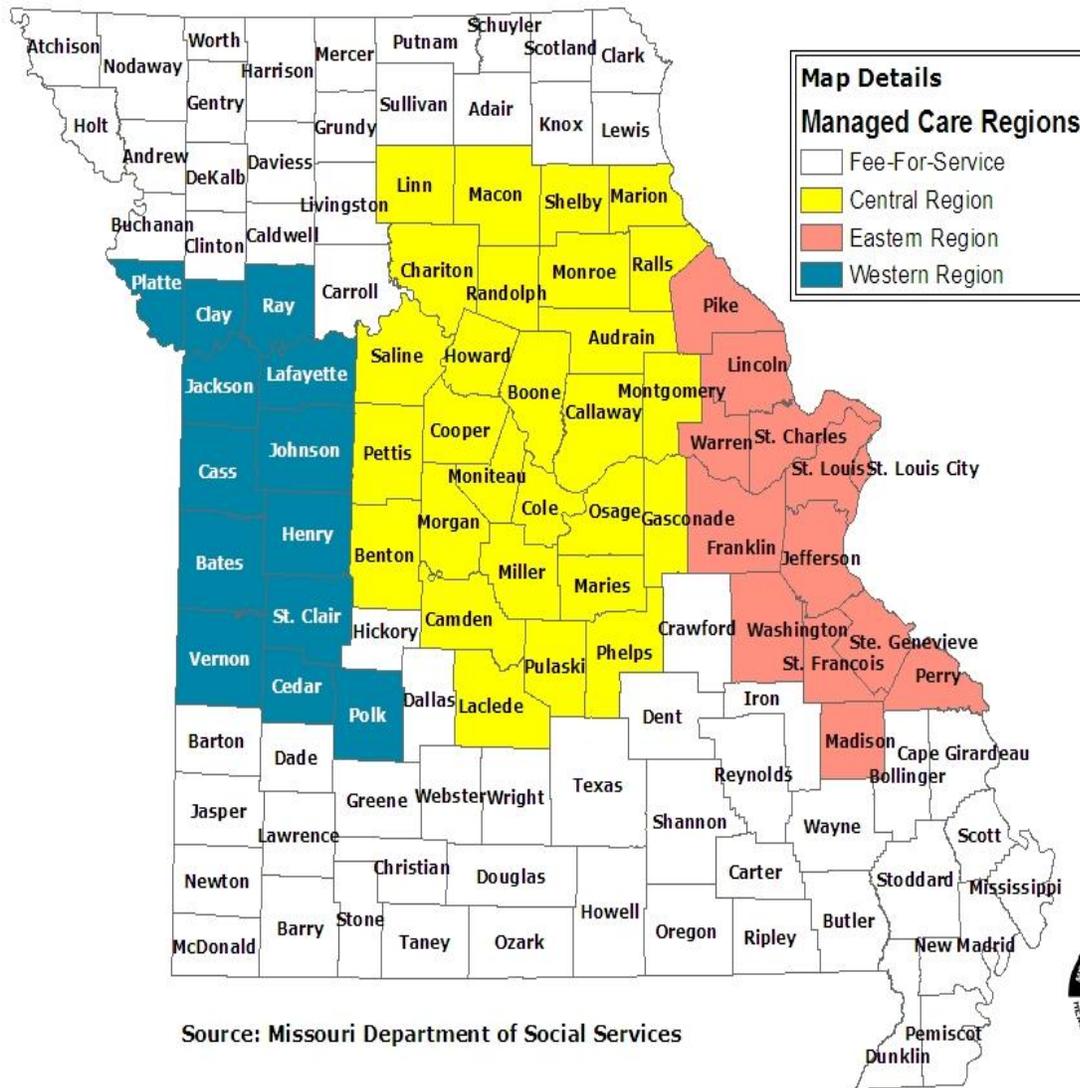
The Missouri Medicaid 1115 Women's Health Services Waiver for low-income woman covers family planning services. Effective January 1, 2009, family planning services are covered for women ages 18-55 with a net family income at, or below, 185% of the FPL. Services include: comprehensive physical exams, comprehensive laboratory studies (Pap smear, pregnancy testing and blood studies), STD testing, provision of medications, consultation and referral.

Achievements and Future Plans for Managed Care

Effective January 1, 2008, the state of Missouri introduced the Missouri Medicaid Managed Care program in 17 counties contiguous to the existing Missouri Medicaid Managed Care regions. The following map (Figure 46) shows the expanded managed care in Missouri.

The MO HealthNet Division conducted four public forums in 2008, which aimed to discuss potential expansion of Missouri Medicaid managed care to the southwest and south central portion of Missouri.

Figure 46: Missouri Managed Care Regions



Source: Missouri Department of Social Services

Source: Missouri Department of Social Services

Achievements - Family Planning Services for Women

While the Missouri Department of Social Services’ MO HealthNet Division is now the only state agency in Missouri supporting family planning services for low-income women there was a significant increase in the number of low-income Medicaid women that utilized family planning services between 2000 and 2009. There was a total of 9,803 Medicaid clients that used family planning services in 2000, while in September 2009, there was a total of 31,499 (15.2% of all enrolled women of child bearing age 15-44). Figure 47 shows the percent of child bearing age women utilizing family planning services by Missouri counties.

Figure 49. Missouri Federally Qualified Health Centers



Source: MPCA. Missouri Community Health Centers 2009 Directory (http://www.mo-pca.org/wp-content/files/directory/2009_directory.pdf)

These 21 primary care (community health centers) listed on this map serve low income working persons, low income rural areas in general, and an increasing number of migrant workers (documented and undocumented). These community health centers can be identified under http://www.mo-pca.org/wp-content/files/directory/2009_directory.pdf:

Missouri Department of Health and Senior Services
2010 Title V Maternal and Child Health Needs Assessment

Access Family Care

(formerly Ozark Tri-County Health Care Consortium)
Administration Building
4301 Doniphan Drive
Neosho, MO 64850
Phone: (417) 451-9450
Fax: (417) 451-9459
www.accessfamilycare.org

Central Ozarks Medical Center

304 West Washington Street
Richland, MO 65556
Phone: (573) 765-5131
Fax: (573) 765-3122

Community Health Center of Central Missouri

3400 W. Truman Blvd.
Jefferson City, MO 65109
Phone: (573) 632-2777
Fax: (573) 632-2769

Crider Health Center

1032 Crosswinds Court
Wentzville, MO 63385
Phone: (636) 332-6000
Fax: (636) 332-9950
www.cridercenter.org

Cross Trails Medical Center

408 South Broadview
Cape Girardeau, MO 63703
Phone: (573) 339-1196
Fax: (573) 339-9378
www.crosstrails.us

Family Care Health Centers

401 Holly Hills Avenue
St. Louis, MO 63111
Phone: (314) 481-1615
Fax: (314) 353-1310
www.familycarehealthcenter.org

Family Health Center

1001 West Worley
Columbia, MO 65203
Phone (Columbia): (573) 214-2314
Toll-free: (877) 677-4342
Fax: (573) 814-2835
www.fhcmo.org

Grace Hill Neighborhood Health Centers Inc.

2524 Hadley
St. Louis, MO 63106
Phone: (314) 898-1700
Fax: (314) 898-1077
www.gracehill.org

Great Mines Health Center

600 Purcell, Suite B (through March 2009)
#1 Southtowne Drive (starting April 2009)
Potosi, MO 63664
Phone: (573) 438-9355
Fax: (573) 438-7892
www.gmhcenter.org

Jordan Valley Community Health Center

618 N. Benton Avenue
Springfield, MO 65806
Phone: (417) 831-0150
Fax: (417) 831-0155
www.jvchc.com

Katy Trail Community Health

821 Westwood Drive
Sedalia, MO 65301
Phone: (660) 826-4774
Fax: (660) 826-1300
www.katyhealth.org

Missouri Highlands Health Care

110 S. 2nd Street
P.O. Box 157
Ellington, MO 63638
Phone: (573) 663-2313
Fax: (573) 663-2441
www.mohigh.org

Missouri Ozarks Community Health

P.O. Box 1359
504 NW 10th Avenue
Ava, MO 65608
Phone: (417) 683-4831
Fax: (417) 683-1602
www.moch.us

Myrtle Hilliard Davis Comprehensive Health Center

5471 Dr. Martin Luther King Drive
St. Louis, MO 63112
Phone: (314) 367-5820
Fax: (314) 367-7010
www.mhdchc.org

Northeast Missouri Health Council

314 E. McPherson
Kirksville, MO 63501
Phone: (660) 627-5757
Fax: (660) 627-5802
www.nmhinc.org

Northwest Health Services

2303 Village Drive, PO Box 8612
St. Joseph, MO 64508
Phone: (816) 271-8261
Fax: (816) 232-8421
www.nwhealth-services.org

Betty Jean Kerr

People's Health Centers
5701 Delmar Blvd.
St. Louis, MO 63112
Phone: (314) 367-7848
Fax: (314) 367-2985
www.phcenters.org

Samuel U. Rodgers Health Center

825 Euclid Avenue
Kansas City, MO 64124
Phone: (816) 474-4920
Fax: (816) 474-4914
www.rodgershealth.org

Southeast Missouri Health Network

311 Main Street
New Madrid, MO 63869
Phone: (573) 748-2404
Fax: (573) 748-2554
www.semohealthnetwork.org

Southern Missouri Community Health Center

1137 Independence
West Plains, MO 65775
Phone: (417) 255-8464
Fax: (417) 255-9732
www.smchc.org

Swope Health Services

3801 Blue Parkway
Kansas City, MO 64130
Phone: (816) 923-5800
Fax: (816) 448-2919
www.swopehealth.org

These community health centers and their satellite clinics represent an important part of the health “safety net” for Missourians in general and for the MCH population in particular. This safety net is comprised of doctors, dentists, nurses, and others who work in public hospitals, non-profit community hospitals, community-based and school-based health centers, public health clinics, and private practices.

Missouri's Primary Care Unit coordinates a range of initiatives to expand primary care capacity in Missouri. Through private/public partnerships, these programs work to ensure access to and availability of primary care services for all Missouri populations. Efforts to increase access include evaluating availability and accessibility of medical, psychiatric, and dental health professionals; state and federal partners in the recruitment and retention of health care professionals in health professional shortage areas; and assessing the extent, impact, and characteristics of the lack of insurance on the health care delivery system, communities, and individuals in Missouri.

3.1.3 Primary Care Resources Initiative (PRIMO)

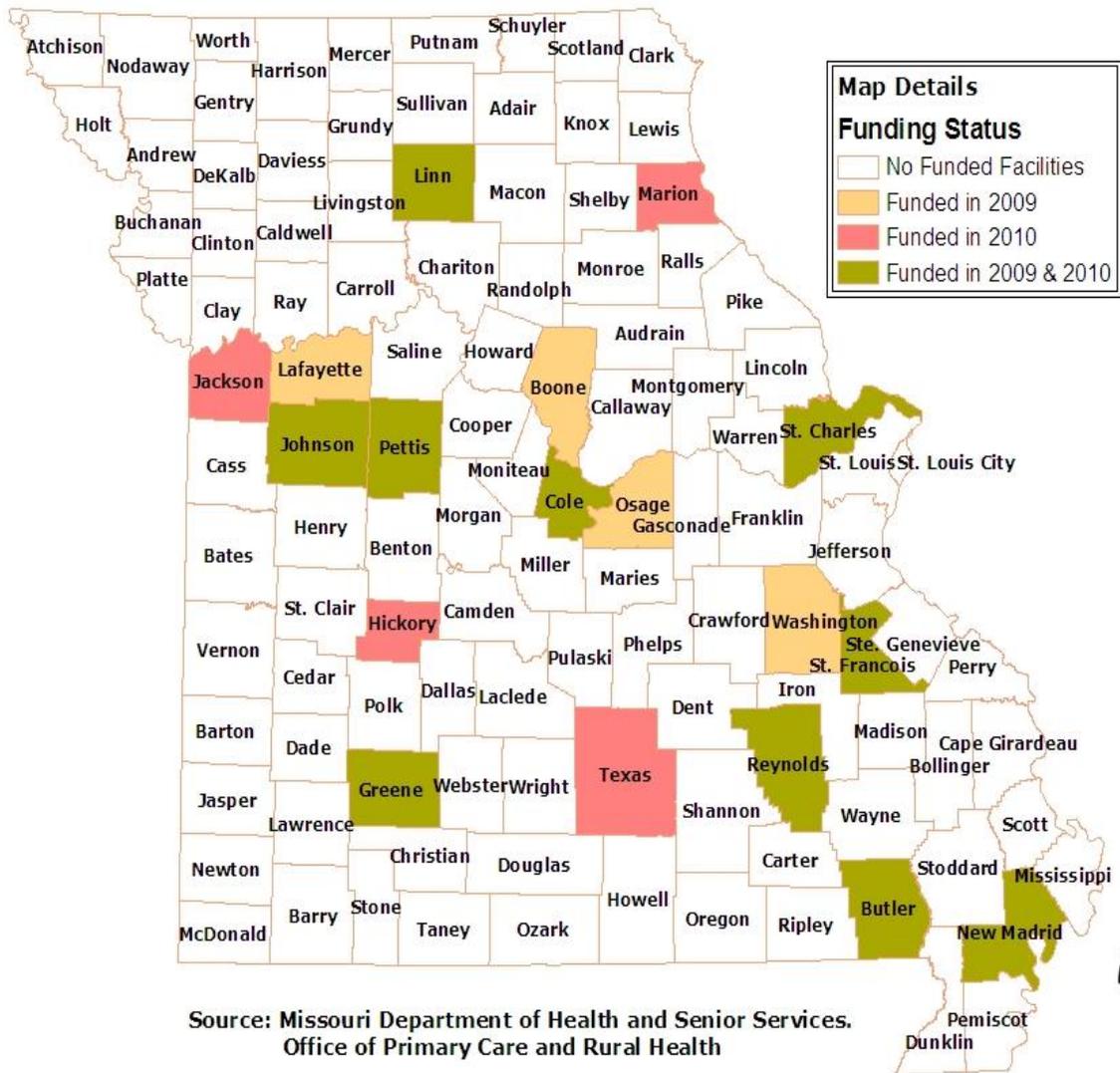
In a climate of diminishing resources, the Primary Care Resources Initiative for Missouri (PRIMO) has taken on added significance. PRIMO is a program operated through the Missouri DHSS that assists in the recruitment of individuals from rural, inner city, and other underserved areas for medical, dental, behavioral and nutritional training with an obligation to return and practice in those areas for a specified period of time. A formula for PRIMO loan forgiveness is applied to loans received by these primary health care students. In 2008, behavioral and nutritional health practitioners were added to the list of eligible primary care professions who are required to:

- Work in a geographic or low-income health professional shortage area (HPSA) to earn forgiveness of their loans
- Accept Medicaid and MC+ patients in their practice
- Consider employment in a Community Health Center (CHC) or a public health department

The PRIMO program also offers funding to facilities that provide access to medical, dental and behavioral health care for the underserved and uninsured populations in Missouri. These dollars are used to assist facilities in community assessment, hiring providers, providing needed equipment, administrative costs, facility operations, etc. Typically funding is provided for three years with the expectation that during that time, the facility will become self-sustainable through other means of funding.

The following map (Figure 50) depicts those counties in Missouri where a PRIMO project has assisted communities in recruiting and developing primary care resources:

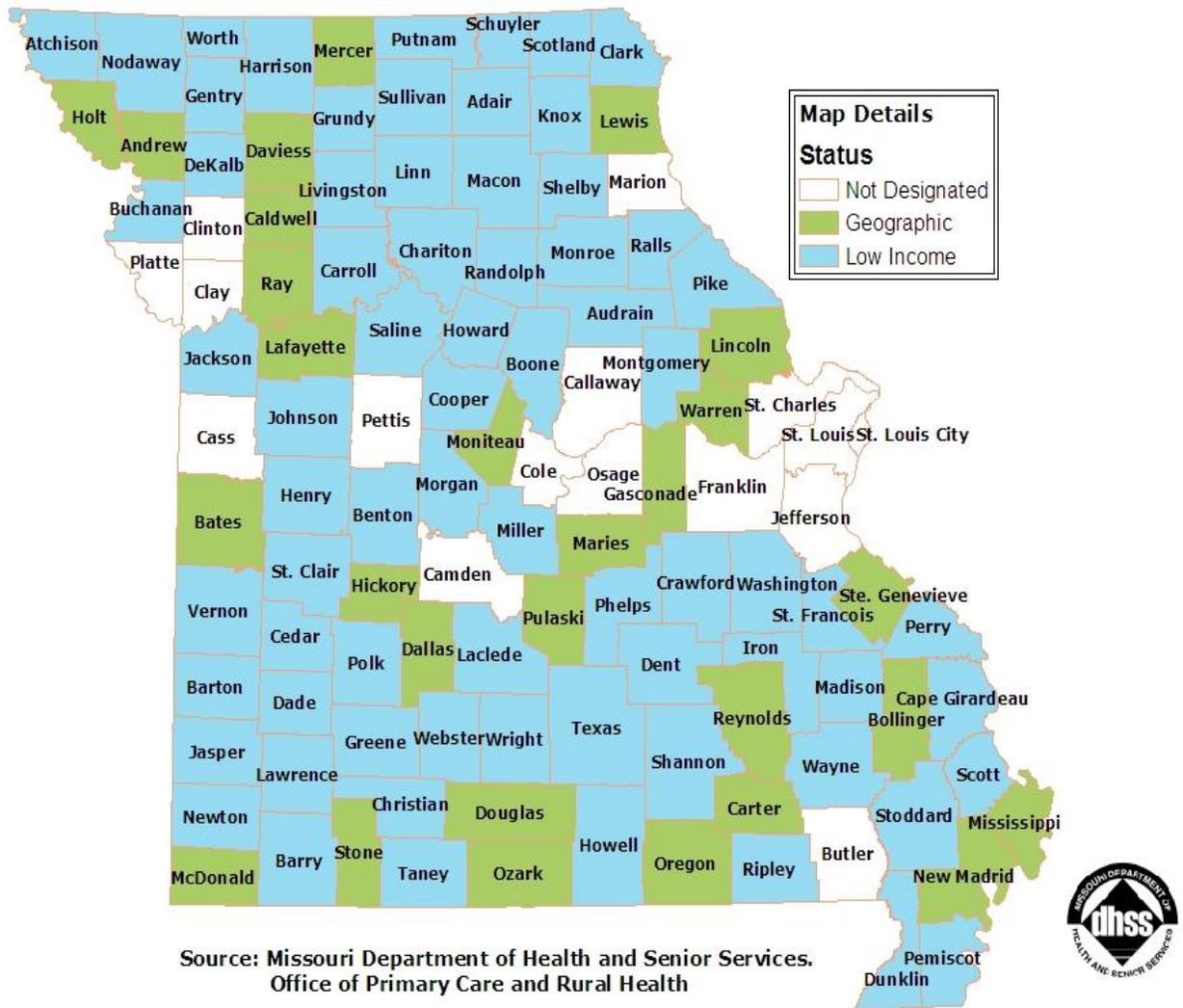
Figure 50. Counties with Funded PRIMO Project, Missouri



Source: Missouri DHSS. Office of Primary Care and Rural Health.

Areas of need for placement of physicians and dentists are determined by applying federal criteria to identify primary care Health Professional Shortage Areas (HPSAs) in Missouri. As the following map (Figure 51) indicates, virtually all areas of Missouri have been designated as HPSAs when these criteria are applied:

Figure 51. Health Professional Shortage Areas in Missouri



Source: Missouri DHSS. Office of Primary Care and Rural Health.

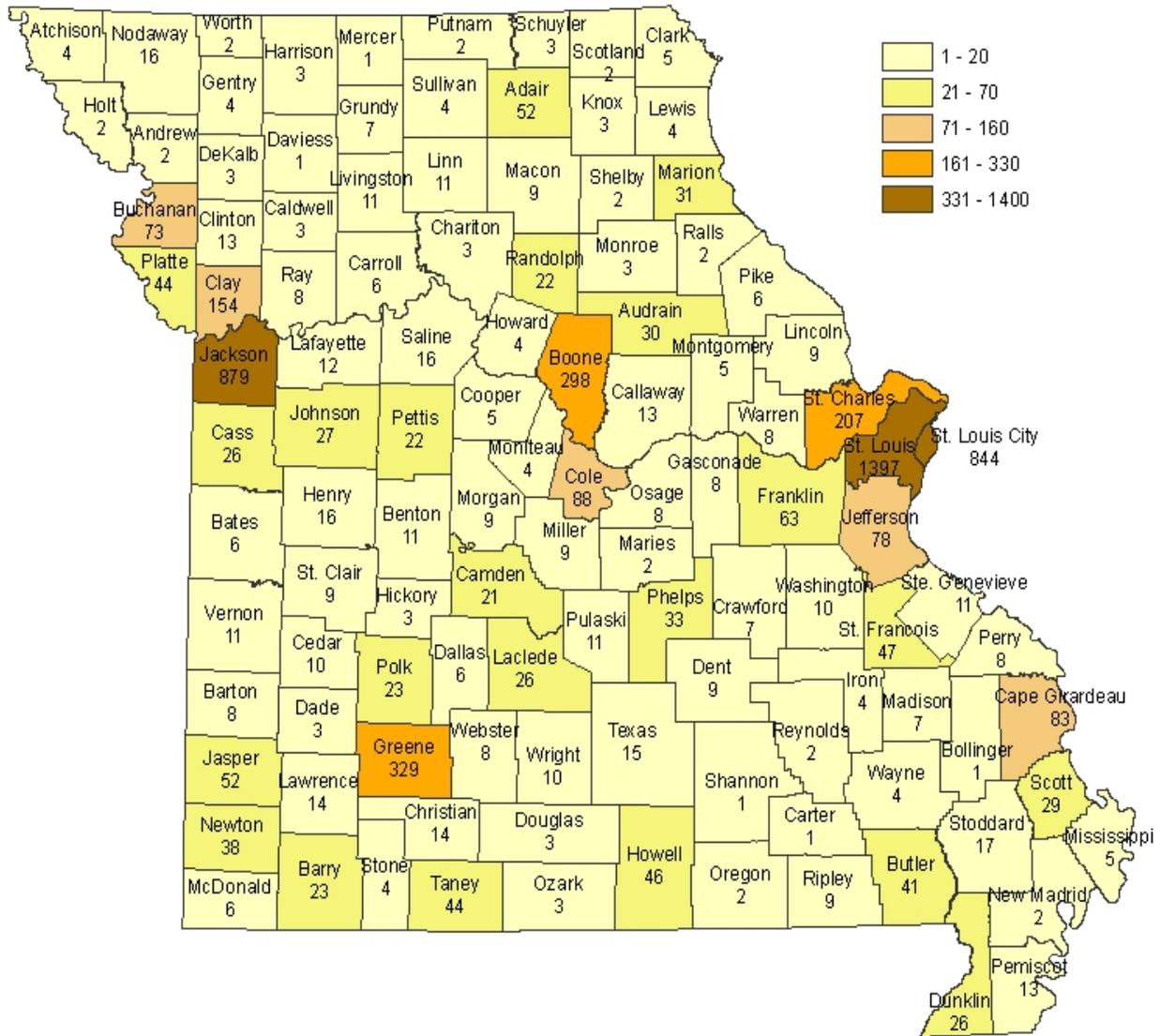
3.1.4 Primary Care Physician Capacity

The information in primary care physicians was collected via the October 2008 relicensure period from the Division of Professional Registration and shared with DHSS through a Memorandum of Understanding (MOU). The MOU also allows for the DHSS to conduct a survey of physician practice characteristics through the re-licensure survey, these characteristics assist with understanding current trends in patient encounters and the delivery of primary health care.

The following map (Figure 52) shows the number of primary care physicians (PCPs) by county. PCPs include those with specialties in primary pediatrics, obstetrics/gynecology (OB/GYN), general internal medicine, general practice, or family practice. There were a total of 5,737 PCPs in Missouri. The number of PCPs varies significantly by county, ranging from only one in four non-metro counties of Carter, Daviess, Mercer, and Shannon located in northern and southeast Missouri to the largest of 1,397 in St. Louis County. Majority (76%) of PCPs were located in

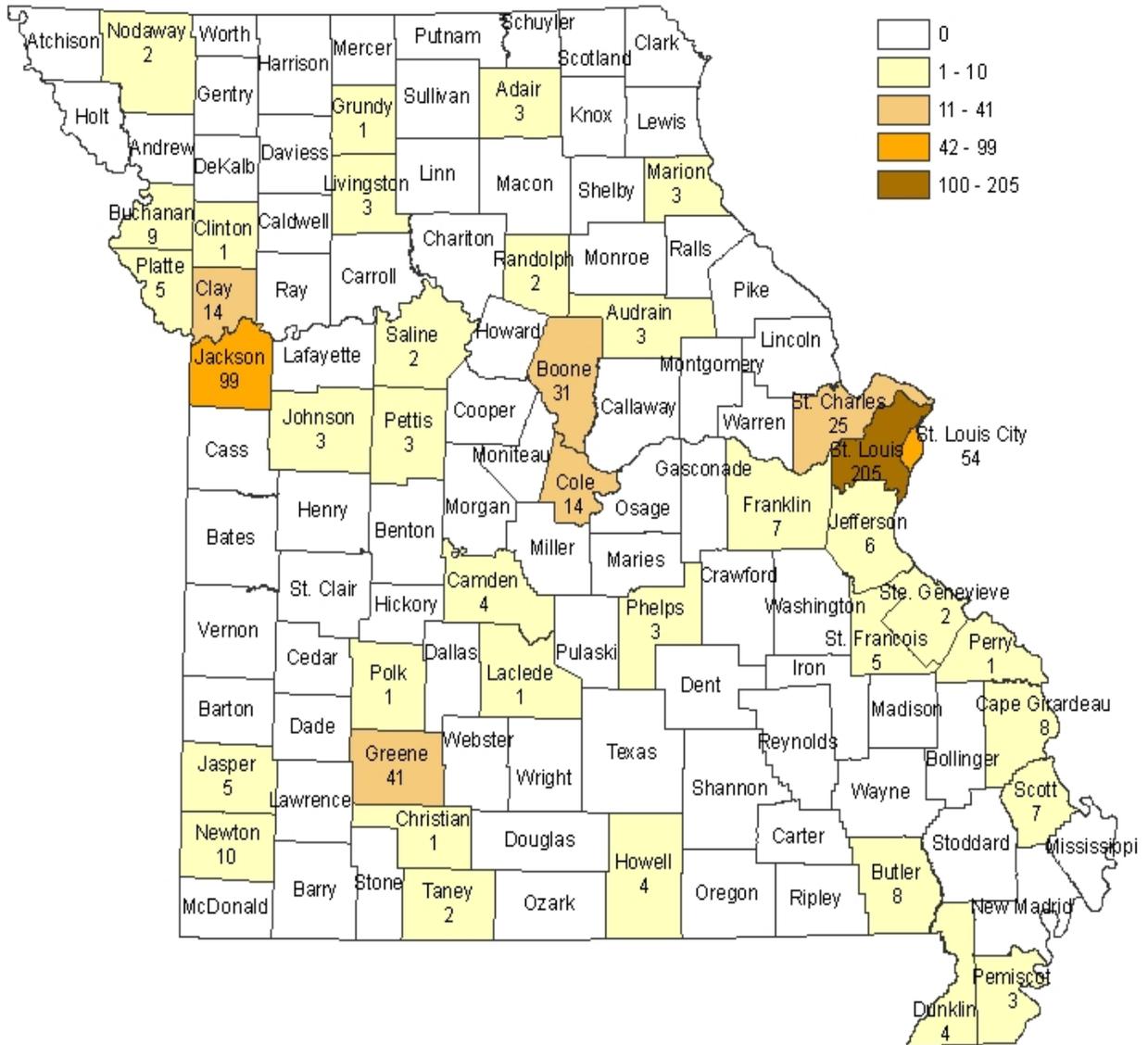
major metro counties of St. Louis, Jackson, St. Louis City, Greene, Boone, St. Charles, Clay, Cole, Cape Girardeau, and Jefferson.

Figure 52. Number of Primary Care Physicians Per County, 2009



The map below (Figure 53) demonstrates number of PCPs in OB/GYN specialty by county. There were a total of 605 OB/GYN physicians, accounting for 11% of the total PCPs in Missouri. Most (75 out of 115) counties did not have OB/GYN physicians. Similar to the distribution of total PCPs, three in four (75%) OB/GYN physicians were in metro counties of St. Louis, Jackson, St. Louis City, Greene, Boone, and St. Charles.

Figure 53. Number of Primary Care Physicians with OB/GYN Specialty Per County, 2009



Source: Division of Professional Registration, October 2008 Relicensure, Missouri Department of Health and Senior Services

Figure 54 shows number of PCPs in pediatrics by county. 1,057 or 18% of PCPs were pediatricians in Missouri. Similarly to the distribution of OB/GYN, 71 or 62% of counties did not have pediatricians. Three in four (74%) pediatricians were centralized in three metro counties of St. Louis, Jackson, St. Louis City, and Boone.

Table 30. Distribution of Missouri Physicians by Primary Care Specialty

Primary Care Specialty	2001	2008
General or Family Practice	14.3%	12.3%
General Internal Medicine	17.2%	15.2%
Obstetrics and Gynecology	5.3%	4.1%
Pediatrics	7.4%	7.2%

Officials are concerned with shortages of primary care providers, who are the main source of health care for Americans. The income gap is one of the main reasons more medical students are choosing specialties or sub-specialties over primary care. Primary care physicians are insufficiently underpaid compared with many specialists.

3.1.5 Dental Health Care Network

Missouri mirrors the nation’s need for improved access to care for uninsured and underserved populations who do not have a dentist or dental clinic available to them. Six counties do not have practicing dentists and 12 counties have only one dentist of record. In addition, out of 2,595 registered dentists in Missouri, only 518, or 20%, billed Missouri Medicaid for services in 2007. With about 506,000 children enrolled in Missouri Medicaid across the state, it is particularly difficult for these children to access dental care. Community health clinics help to provide an infrastructure to provide oral health care; however, access to care continues to be one of the barriers in improving oral health.

To further explore oral health care needs in Missouri, a methodology to estimate the demand-based dental needs of the population in a defined area was developed in 2005. The model that was developed was designed to project both the need for oral health services within a defined region and the oral health workforce needed to assure access and quality care. The methodology was based on population characteristics (within a geographic area), disease prevalence, water fluoridation, pregnancy, poverty and estimates of dental disease and morbidity as determined from a standard national database, the NHANES III. In 2009, this methodology was updated and can be found in the “Update of Area-Wide Need-Based Planning Model for Oral Health Services” at <http://www.dhss.mo.gov/oralhealth/publications.html>.

Infrastructure

- Population served by public water system 5,066,874
- Percentage of people on public water systems that receive fluoridated water 80%
- Number of dental schools 1
- Number of dental hygiene schools 8
- Number of dental assisting schools 5
- Number of community-based low-income dental clinics 43
- Number of school-based or school-linked dental clinics 2
- Number of school-based health centers with an oral health component 0
- Number of local health departments with a dental program 17
- Number of tribal, state, or local agencies with service populations of 4

Missouri Department of Health and Senior Services
2010 Title V Maternal and Child Health Needs Assessment

- 250,000 or more
- Number of agencies with a dental program 2
 - Number of dental programs directed by a dental professional 2
 - Number of directors with an advanced public health degree 2

Workforce

- Number of dentists in Missouri 2,595
- Percentage of dentists enrolled in Medicaid 24%
- Percentage of dentists enrolled in SCHIP 28%
- Number of dental hygienists in the state 2,342

In 2003, the Oral Health Network of Missouri (OHNM) was created to support the following:

- Recruitment/Retention of Oral Health Professionals
- Finance/Reimbursement Improvement and Revision
- Education and Prevention Expansion
- Infrastructure Development

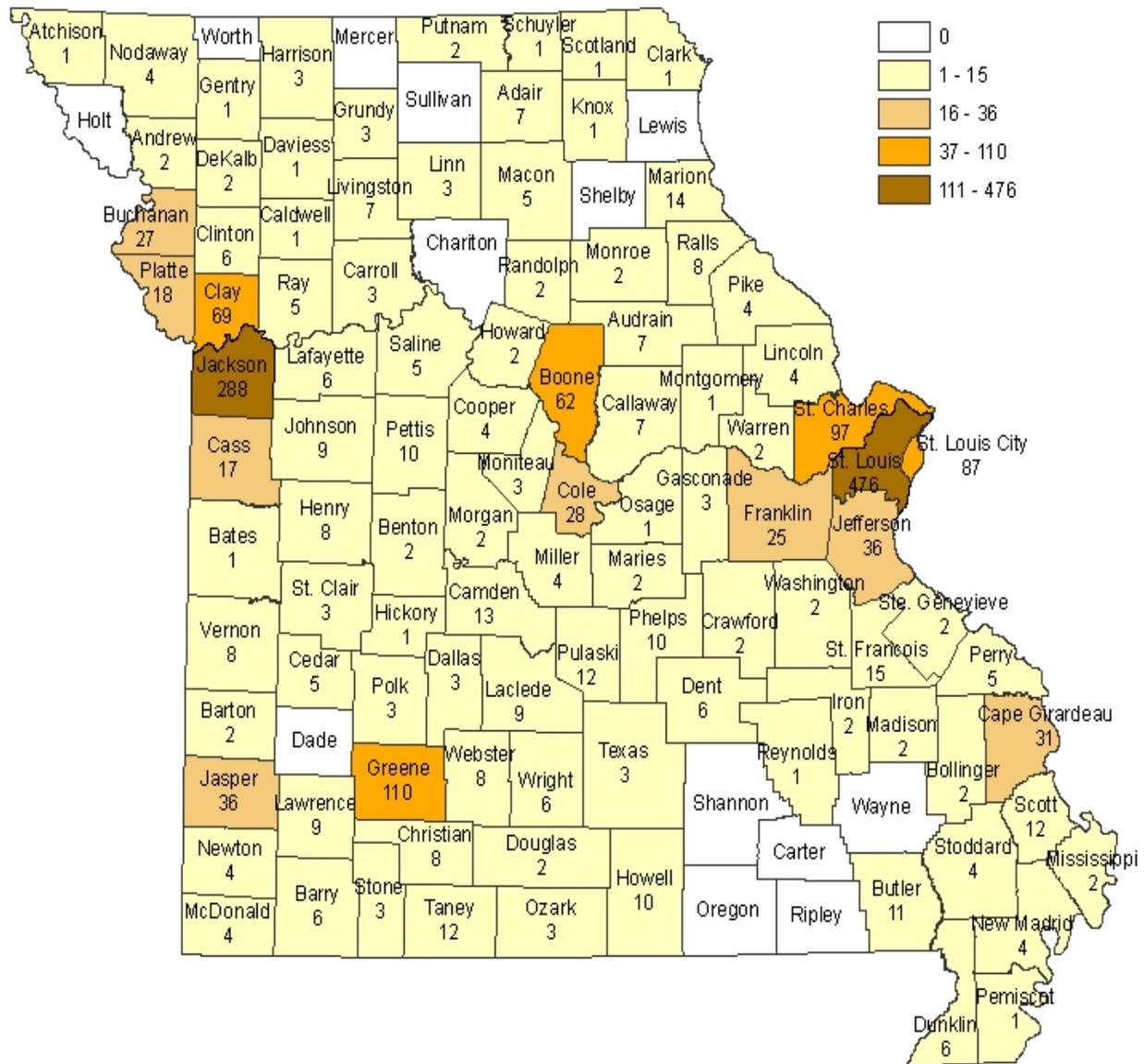
OHNM is a statewide oral health care network whose members provide oral care to medically underserved, uninsured, and insured populations at over 24 delivery sites within Missouri's rural and urban communities. The OHNM is a non-profit tax exempt organization that received Bureau of Health Care Integrated Services Development Initiative (ISDI) funding. Most of the community health centers previously identified are a part of this coalition that provide oral care to the medically underserved.

Programs

- There has been a loss of practicing dentists since the last MCH five-year needs assessment was conducted in 2005
- There has been an increase of dental hygienists working in Missouri since 2005

The map (Figure 55) shows number of dentists in practice in Missouri by county in 2009. Most (85 out of 115) of the counties only had five or fewer dentists for each, especially there were 13 counties with no dentists.

Figure 55. Dentists in Clinical Practice, by County, Missouri, 2009



Source: University of Missouri - Kansas City School of Dentistry; Missouri Department of Health and Senior Services. Office of Primary Care and Rural Health

3.1.6 Mental Health Care Network through Missouri Department of Mental Health

Missouri Department of Mental Health (DMH) works under three principal missions of prevention, treatment and improvement of mental disorders. DMH serves approximately 150,000 Missourians annually.

DMH is organizationally comprised of three divisions. Division of Comprehensive Psychiatric Services (CPS) provides services to anyone who has a mental illness or disorder. These include schizophrenia or profound depression, or court ordered mental evaluation and treatment. CPS also provides services through long-term care and acute-care facilities, a children’s psychiatric hospital, a children’s residential treatment center, and 25 community mental health centers

located around the state (Figure 56). Division of Developmental Disabilities provides services to those who have a developmental disability such as mental retardation, autism, cerebral palsy, or another serious disability that occurred before the age of 22. Division of Alcohol and Drug Abuse provides services to people who have alcohol, other drug, or gambling addictions.

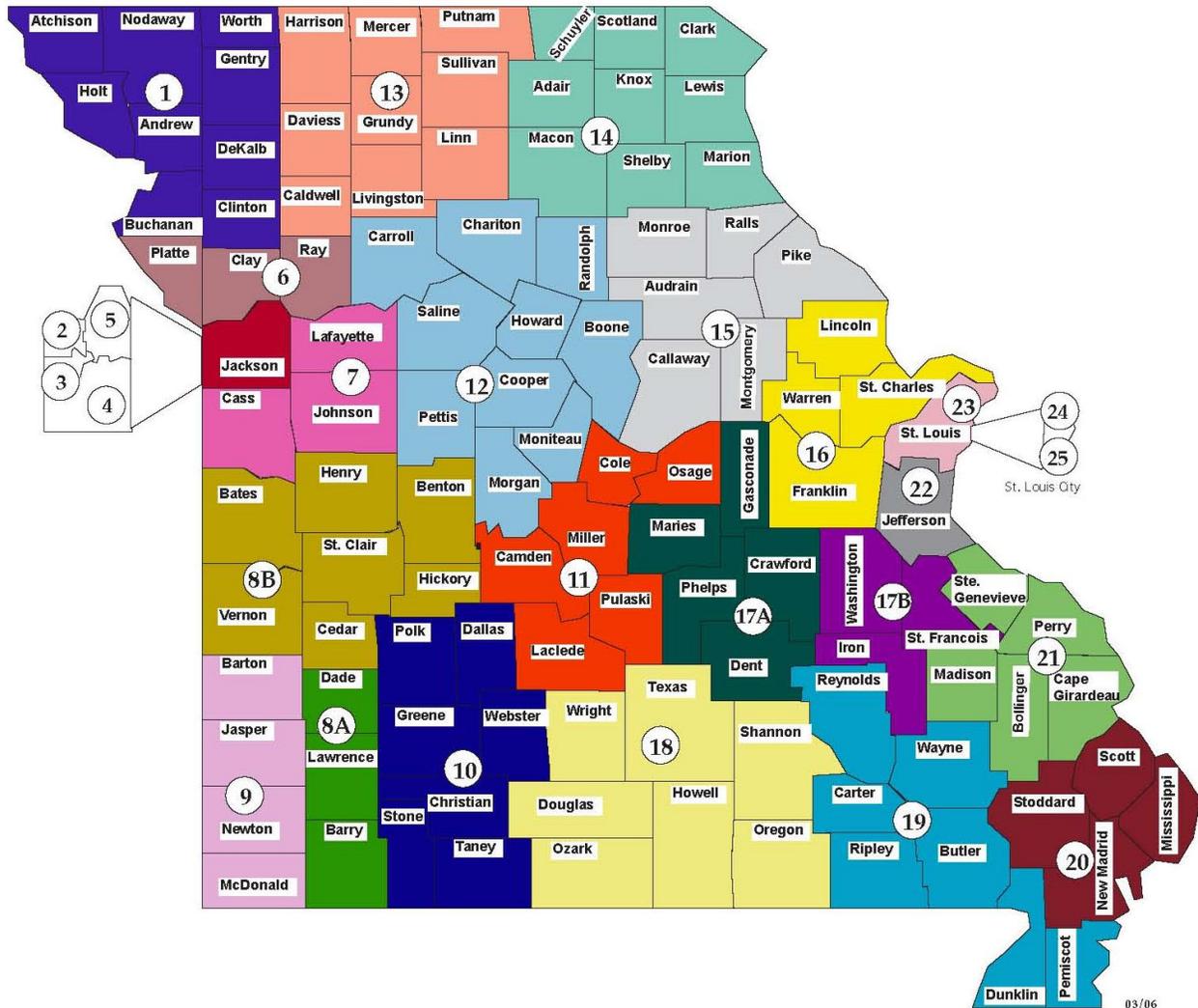
3.1.6.1 Division of Comprehensive Psychiatric Services

CPS is charged with the delivery of services to persons with mental illnesses throughout the state of Missouri. In FY 2009, CPS served more than 77,254 individuals. The division is committed to serving four target populations:

- Persons with serious and persistent mental illness (SMI)
- Persons suffering from acute psychiatric conditions
- Children and youth with serious emotional disturbances (SED) and
- Forensic clients

In addition, CPS has identified four priority groups within the target populations: 1) individuals in crisis, 2) people who are homeless, 3) those recently discharged from inpatient care, and 4) substantial users of public funds. These target populations currently constitute the majority of consumers whom the division serves, both in inpatient and ambulatory settings.

Figure 56. Administrative Agents, Comprehensive Psychiatric Service Areas, Missouri Department of Mental Health



Office of Comprehensive Child Mental Health

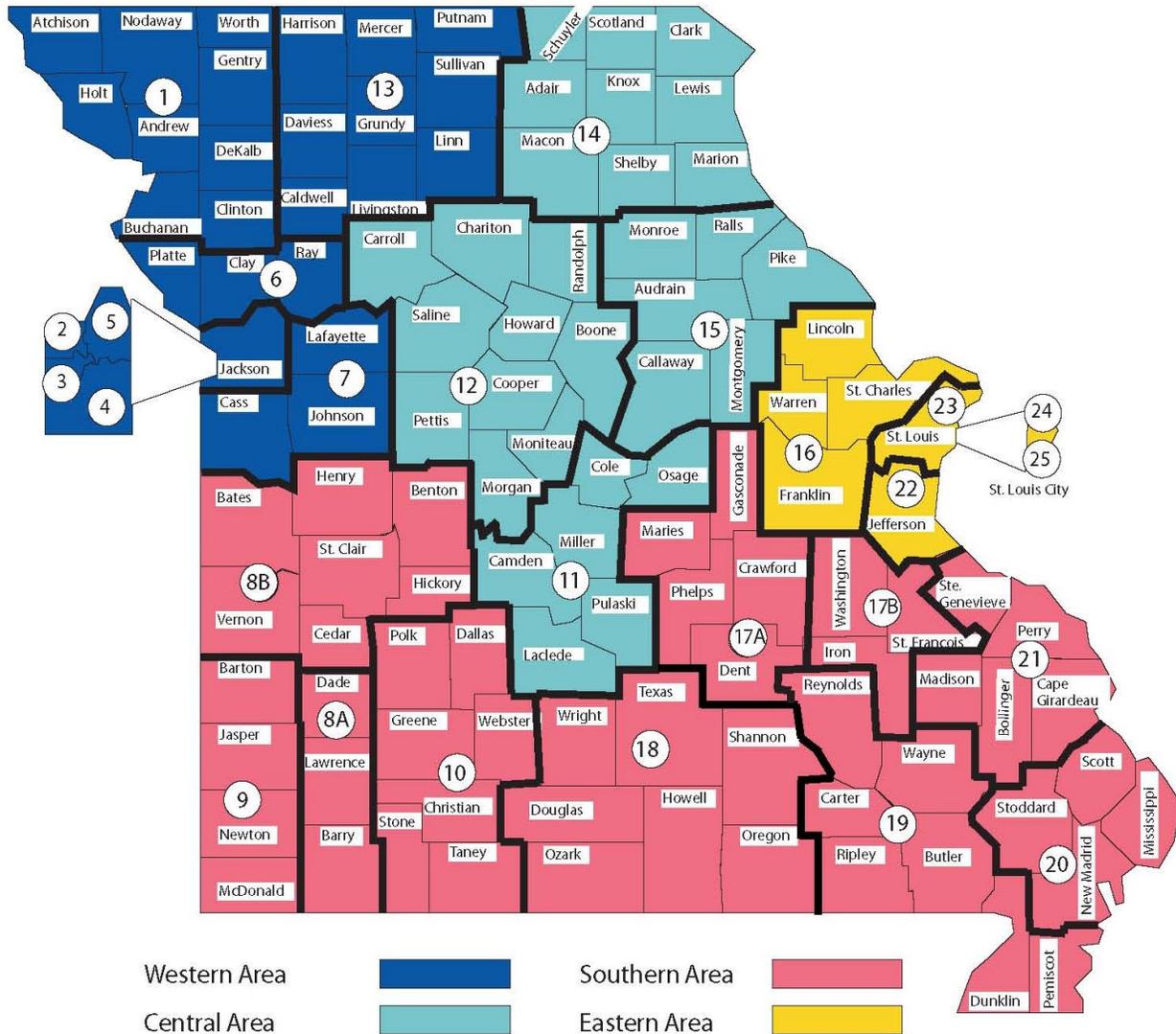
Under the Missouri State Statute of 2006, *RSMo 630.020, 630.097 and 630.1000*, among other responsibilities, the Missouri Department of Mental Health is charged with the establishment of the Office of Comprehensive Child Mental Health.

This office has established a team of stakeholders, including state departments, and non-governmental organizations at the national, state and local levels, with the responsibility for developing a comprehensive children’s mental health services plan to describe the mental health service needs of Missouri’s children. This plan is child-centered and family-focused. CPS services are available to children, youth and families in Missouri in four Children Service Areas (Figure 57).

These services are health, mental health and rehabilitation services, community psychiatric rehabilitation provides a range of mental health services, educational and employment services,

housing services, substance abuse services, medical and dental services, support services, services provided by local school systems under the “*Individuals with disabilities education act*”, case management services, services for persons with co-occurring (substance abuse/mental health) disorders, other activities leading to the reduction of hospitalizations.

Figure 57. Children’s Service Areas, Division of Comprehensive Psychiatric Services, Missouri Department of Mental Health

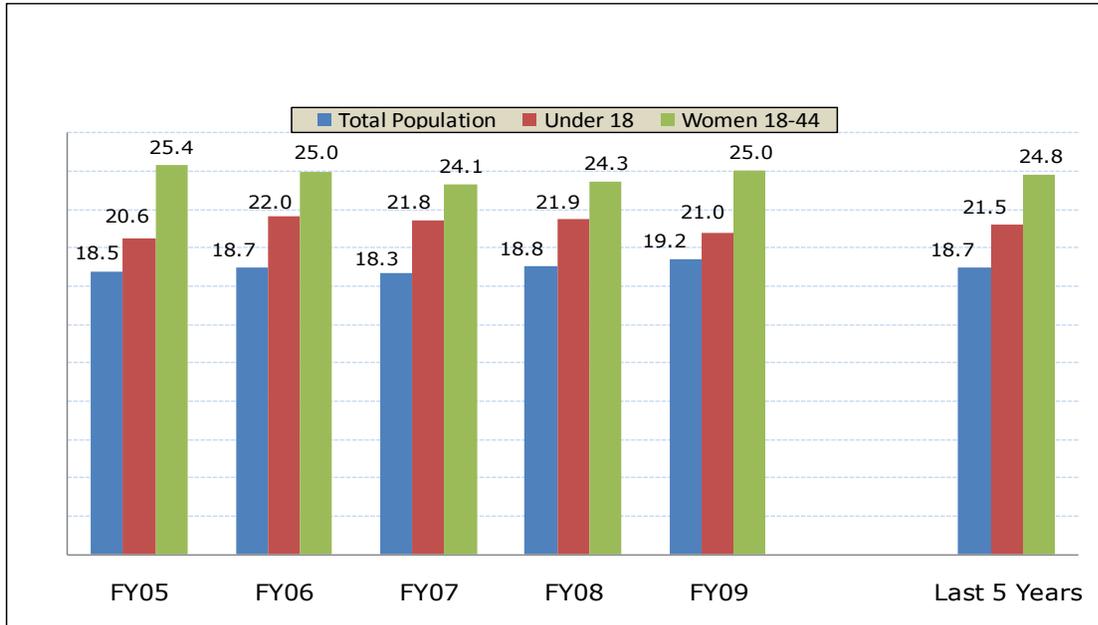


CPS and Maternal and Child Health (MCH) Population

The Maternal and Child Health (MCH) Population, youth under 18 and women 18-44, consistently has been given priority for treatment. During the last five years (FY 05-09), CPS served 75,203 clients per year, representing about 18.7% of the total population that had some mental disorder. On average, 16,453 or about 21.5% of Missouri children with Serious Emotional Disturbances (SED) were served by CPS per year; 18,653 or one-fourth of Missouri women of childbearing age, 18-44, with Serious and Persistent Mental Illness (SMI) were served

by CPS per year (Figure 58). These calculations are based on the prevalence of SMI among adults (7.0%) and the prevalence of SED among children and youth (5.4%).

Figure 58: Percent of Missourians with Serious Mental Illness, Served by Comprehensive Psychiatric Services



Source: Missouri DMH

Recent Significant Changes

Based on the 2008 Georgetown Training Institute’s Protocol, families are now retaining the custody of their children. Currently, 93% of youth referred have been diverted from state custody and of those 40% have been maintained at home.

The DMH has built an infrastructure to support a system of care through the development of a state-wide CyberAccess System in partnership with MO HealthNet to coordinate delivery of services, billing and other quality assurance activities.

DMH’s Comprehensive System Management Team is reviewing the National Child Traumatic Stress Network’s Trauma Toolkit. Though no assistance was provided in the state budget for the support of school mental health, DMH has facilitated support from other local resources. DMH is also providing an array of services like: functional assessment, evidence-based practice, prevention, early childhood comprehensive system, juvenile justice activities, school-based activities, evaluation and monitoring for quality services, and family involvement services.

Strengths and Weaknesses of CPS Care System

Strengths:

- DMH uses the Child and Adolescent Functional Assessment Scale that takes 10 minutes to complete for comprehensive assessment of a child/adolescent. It is effective and DMH plans to computerize it.

Missouri Department of Health and Senior Services
2010 Title V Maternal and Child Health Needs Assessment

- Family Support Services focuses on the support system for parents of children with serious emotional disorders. A treatment family home model is being further enhanced to be more consistent and cohesive through development of the toolkit for treatment of family home care, train the trainer, etc.
- Suicide prevention for youth is a priority for DMH. A youth suicide prevention grant has enabled DMH to respond to the local needs through training gate keepers within the schools, youth services organizations, parents, teachers and care givers.

Weakness:

- There is a weakness in the accurate collection of outcome data that still needs more work.

3.1.6.2 Missouri Division of Developmental Disabilities

Since FY 2008 the Missouri Division of Developmental Disabilities (DD) has participated in the National Core Indicator Project and in FY 2009, DD conducted a survey of families and children who were receiving support services from DD. The division also uses the 25 service areas across Missouri (Figure 56).

The data showed that Missouri was among six states that conducted this survey to gather information on planning, choice and control, access and support delivery, community connections, family involvement, satisfaction and family outcome. The report of this survey is forthcoming in 2010.

Senate Bill 768 in 2008 established the Missouri Commission on Autism Spectrum Disorders to create a comprehensive statewide plan. In 2009, Senate Bill 157 codified five regional autism projects under the division to provide assessment, advocacy, communication and language therapy, crisis intervention, life skills and respite care. There are five proposed pieces of legislation in the Missouri House of Representatives to modify/enhance the existing services to youth with Autism Spectrum Disorder.

Division of Developmental Disabilities and MCH Population

Currently, 11,336 children under the age of 18, and 6,350 women between the ages of 15-44 are receiving services from the division of DD.

Recent Changes

DD, through legislation change, extended their services to provide coverage for youth. The division also enhanced the services through not-for-profit organizations that currently serve 10,000 Missourians. The division also redesigned the service delivery system and regional offices.

There have been no changes in disability guidelines or the eligibility criteria during the last five years, for children under age 18, or for women 18-44 years old.

Unmet Needs

According to the survey of families, DD services face several challenges, e.g., lack of options; system limitation (age cap on children); lack of care during night work hours; lack of quality

licensed providers; and high turnover at day cares and service reach issues. About 40% of families believe that early intervention services are not adequate.

3.1.6.3 Division of Alcohol and Drug Abuse - Programs for Women, Children and Adolescents

In Missouri, the Division of Alcohol and Drug Abuse (ADA) is the state authority responsible for developing and implementing a statewide response addressing substance abuse problems impacting Missouri families and communities.

An estimated 185,000 Missouri females need some type of substance abuse intervention.³⁷ An estimated 40,000 Missouri adolescents – both male and female – need some type of substance abuse intervention.³⁸ In FY 2009, ADA served 13,888 substance abusing adult females ages 18-44, 707 pregnant women at any age, and 3,315 adolescents under the age of 18 in its programs. Another 1,093 children received codependent services while a family member was in treatment. The ADA service capacity is only able to provide services to approximately 8% of Missouri women and adolescents who need substance abuse treatment and intervention.

The division maintains the Comprehensive Substance Abuse Treatment and Rehabilitation (CSTAR) programs for women and adolescents. This is Missouri's only Medicaid-funded substance abuse treatment program. The CSTAR programs provide a continuum of care approach to substance abuse treatment – providing a flexible combination of clinical and supportive services. The division has 12 CSTAR Women and Children contracted service providers with sites in 31 Missouri cities and eight CSTAR Adolescent contracted service providers with sites in 42 Missouri cities (Figure 59).

³⁷ SAMHSA. Tabulations from National Survey on Drug Use and Health, 2002-2007. Office of Applied Studies, Rockville, MD, 2007.

³⁸ SAMHSA. National Survey on Drug Use and Health, 2006-2007. Office of Applied Studies, Rockville, MD, 2007.

Figure 59a. CSTAR Women and Children Treatment Program Locations, Missouri, Missouri Department of Mental Health

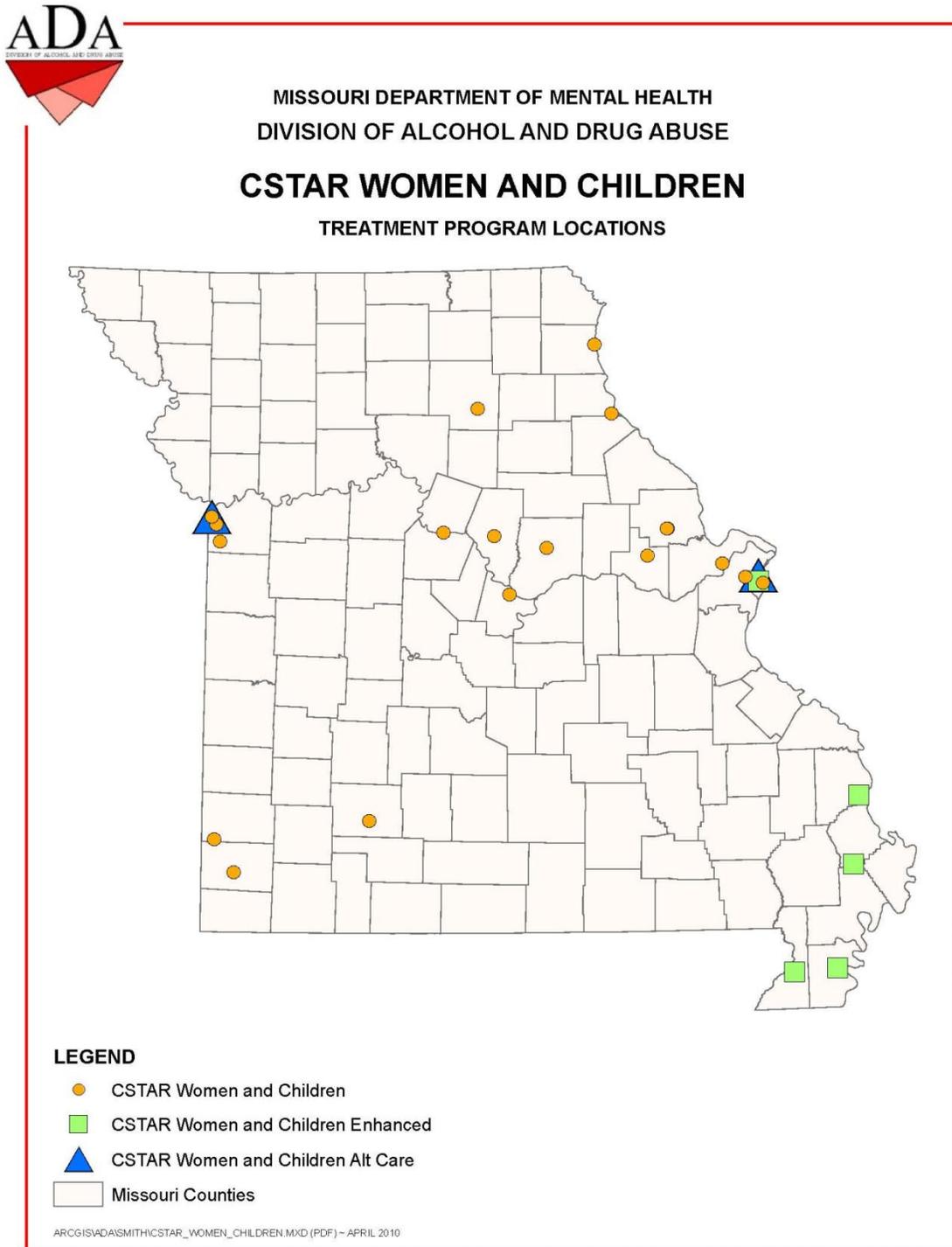
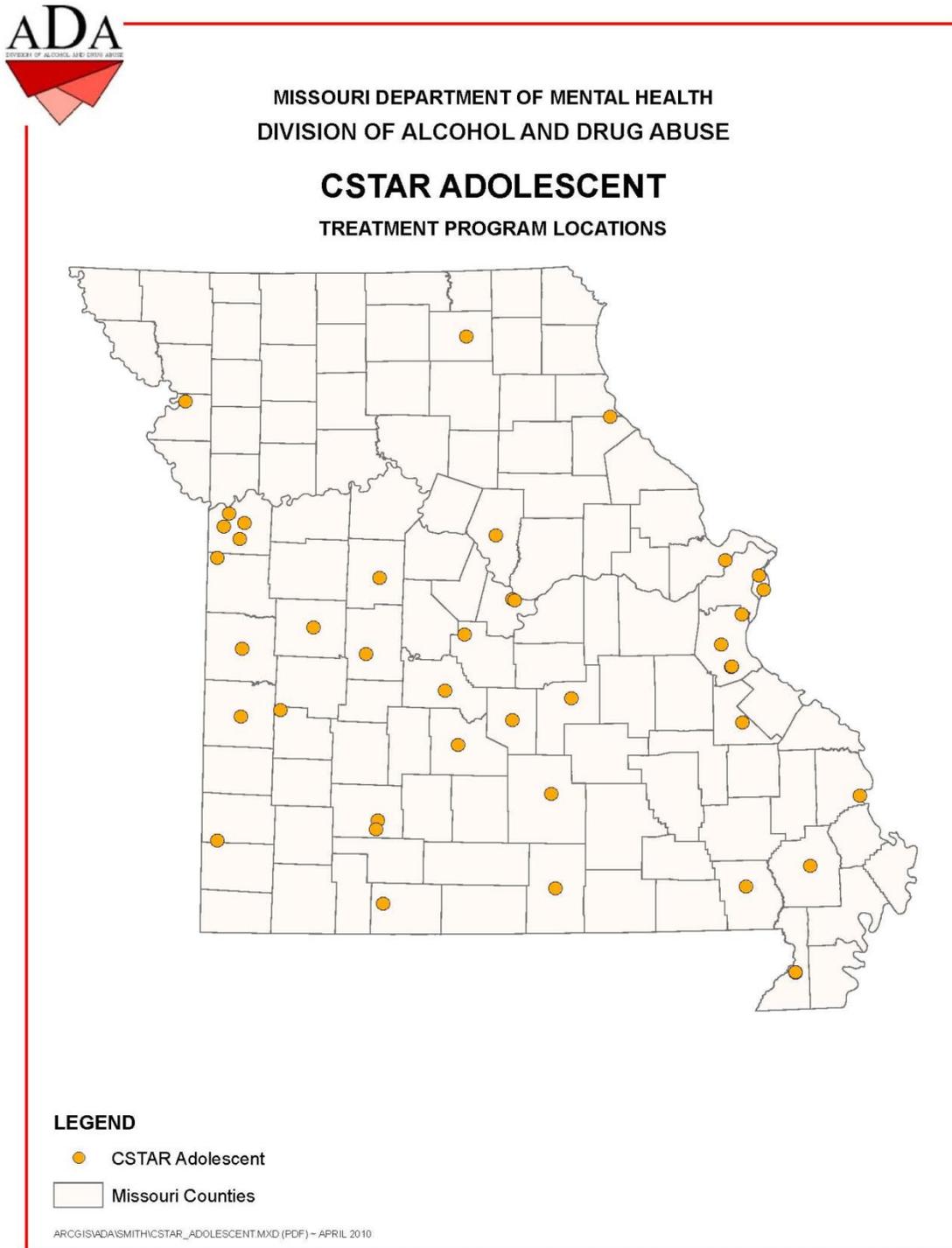


Figure 59b. CSTAR Adolescent Treatment Program Locations, Missouri, Missouri Department of Mental Health



In Missouri, pregnant women with substance abuse issues are a priority population and require immediate admission. In FY 2009, ADA served 707 pregnant women. In FY 2009, ADA developed contract language to more specifically address expectations regarding the admission

of priority populations and to more clearly identify prenatal and supportive services that must be provided to pregnant women and women with dependent children entering treatment. These service provisions address primary medical care for women including referral for prenatal care; primary pediatric care including immunization for the children; gender specific substance abuse treatment and other therapeutic interventions for women which may address issues of relationships, sexual and physical abuse, parenting and child care; therapeutic interventions for the children; and sufficient case management and transportation to ensure women and their children have access to needed services.

ADA works closely with the MO HealthNet Division to ensure that Medicaid eligible women and children needing substance abuse treatment services have access to such services. In FY 2007, specialized communication protocol was developed to facilitate communication between primary care physicians, case managers, ADA CSTAR providers, and ADA clinical review.

ADA's treatment programs track progress in achieving and maintaining abstinence, employment, stable housing, and a crime-free lifestyle. Outcomes data shows that 75% of women and adolescents admitted into the CSTAR program have maintained abstinence at program discharge. Over the past three years, 307 babies have been born drug-free to moms in the CSTAR Women Programs, and 294 children have been returned to their mother's custody from foster care.

3.1.7 Local Public Health Network

The public health system in Missouri is comprised of the Missouri DHSS, 114 LPHAs, and multiple other partners, such as health care providers, that work together to protect and promote health.

“Local public health agencies in Missouri are autonomous and operate independently of each other and are independent from federal public health agencies. Through contracts, they work directly with DHSS to deliver public health services in each of Missouri's communities. DHSS receives funds from Centers for Disease Control and Prevention, other federal agencies, state general revenue, and other sources and distributes these funds that provide support for local public health programs. DHSS also provides technical support, laboratory services, a communication network, and other vital services to aid local efforts.”

The above text was taken from the Missouri DHSS Web site:

<http://www.dhss.mo.gov/LPHA/index.html>. Also located at the <http://www.dhss.mo.gov> Web site are data and statistical reports: <http://www.dhss.mo.gov/LPHA/DataStats.html> and Community Health Improvement Resources (CHIR): www.dhss.mo.gov/CHIR:

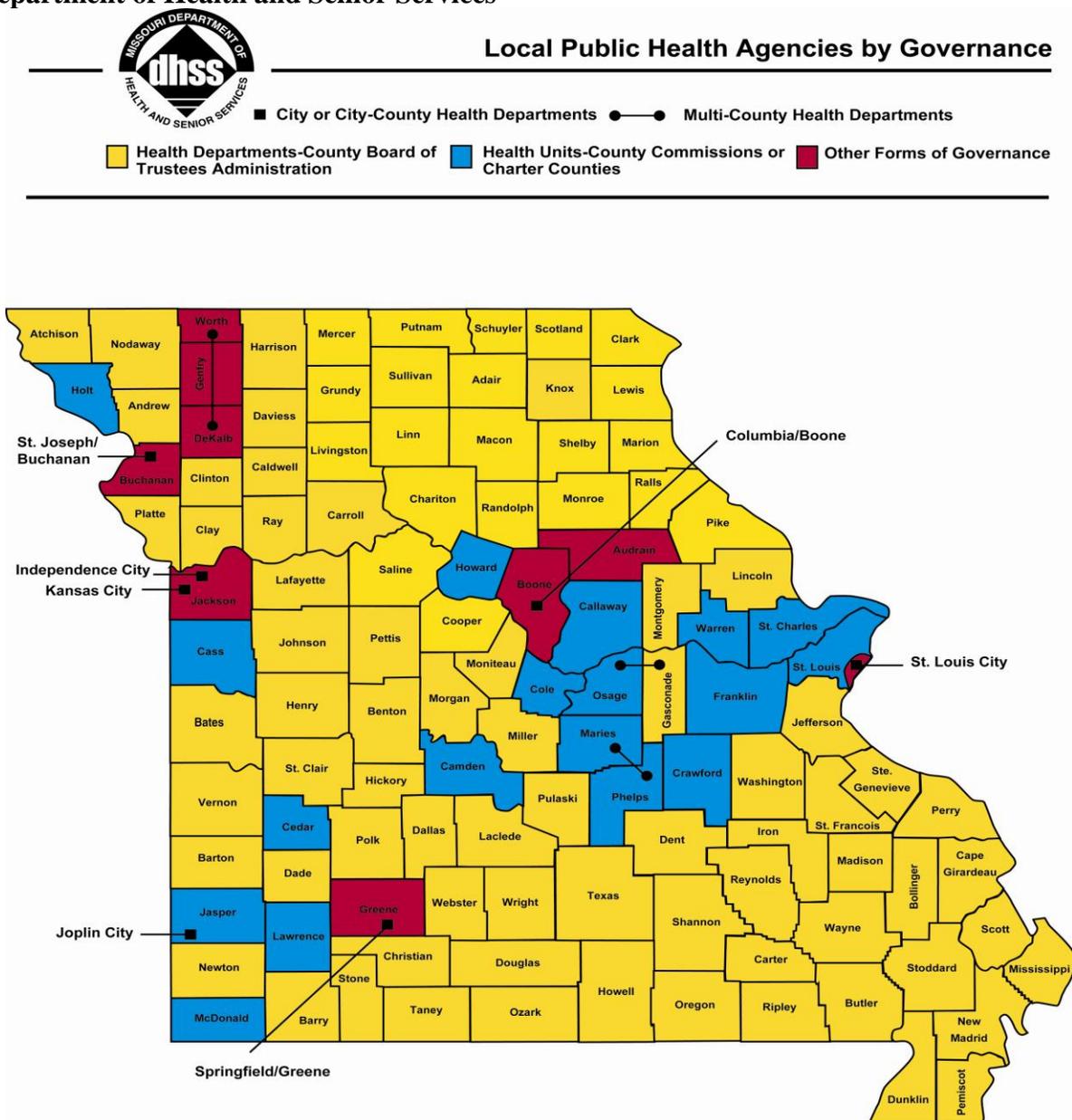
- Local Public Health Agencies and Services
- Financial Trends in Local Public Health Agencies: 1999-2003
- Local Public Health Agency Financial Review: 1997-2001, 2002 through 2008
- Local Public Health Agency Infrastructure Survey Reports for 2001 through 2008
- MICA (Missouri Information for Community Assessment)- an interactive data query system for use in conducting a needs assessment
- Community Data Profiles (State, County and City Profiles)- state, regional, and local data for selected health issues for use in assessment and evaluation

Missouri Department of Health and Senior Services
 2010 Title V Maternal and Child Health Needs Assessment

- Priorities MICA-an interactive tool to assist with prioritizing diseases and risk factors
- Intervention MICA-information, tools and resources for planning evidence-based interventions to address health conditions or risk factors

The following map (Figure 60) provides a graphic overview of Local Public Health Agency (LPHA) capacity in Missouri:

Figure 60. Local Public Health Agencies by Governance, February 2008, Missouri Department of Health and Senior Services



February 2008

Source: Missouri DHSS Web site <http://www.dhss.mo.gov/LPHA/index.html>

In 2008, the most recent LPHA capacity assessment was completed by the department's Center for Local Public Health Services. This assessment measured the capacity of LPHA administration, workforce, services and programs offered, and activities related to communicable disease reporting in communities. The complete infrastructure survey can be found at <http://www.dhss.mo.gov/LPHA/DataStats.html>. Some of the findings of this assessment are provided below:

- Satellite Locations: 16% of agencies report having branch locations.
- Availability: The majority of LPHAs report providing services after 5:00 p.m. for WIC, immunizations, health education, truck accidents involving food, communicable disease control, and STD screening and treatment.
- Emergency Contact: 100% of agencies have a system to receive notification and respond to emergencies at all times of the day or night. Cell phones are predominately utilized.
- Strategic Planning: 76% of agencies report having a strategic plan. Of the 87 agencies that have a plan, 56% report that it was updated in 2003 or 2004. Sixty percent of agencies report referring to their strategic plan from one to four times during the year; however, 18% do not ever refer to it. All agencies with a strategic plan involved their staff in its development or revision, 77% involved their governing body, and 43% involved members of the community. Strategic plans are used by 74% of agencies for performance management, 75% use it for budget allocation, and 39% use the plan for marketing.

Currently there are 112 LPHAs that have entered into MCH contracts with DHSS.

3.1.8 Emergency Medical Service Networks

In reference to emergency medical services capacity for the citizens of Missouri (including the MCH population), the following information from <http://www.dhss.mo.gov/EMS/index.html> provides an overview of the section in DHSS responsible for assuring providers of emergency services meet or exceed the standards.

“The Bureau of Emergency Medical Services (BEMS) of the Section for Health Standards and Licensure in Missouri’s Department of Health and Senior Services is responsible for protecting the health, safety and welfare of the public by assuring that emergency medical services provided by ambulance services, emergency medical response agencies, trauma center, training entities and emergency medical technicians meet or exceed established standards.

BEMS investigates complaints and may exercise its authority to deny, place on probation, suspend or revoke the licensure of an ambulance service, training entity, trauma center, emergency medical response agency, and emergency medical technician when statutory or regulatory violation is substantiated.

All applicants (initial or re-licensure) for emergency medical technician licensure must undergo a criminal background check before being approved for Missouri licensure.”

Missouri Department of Health and Senior Services
2010 Title V Maternal and Child Health Needs Assessment

Of a network of 29 trauma centers that serve Missouri, ten are Level I trauma centers of which three are designated as Pediatric Centers. Missouri's Trauma Nurse Managers oversee both Adult and Pediatric Trauma Centers. In addition to the 10 Level I trauma centers, there are 11 Level II and 8 Level III trauma centers.

In 1987 Missouri legislature created the State Advisory Council on EMS. The council consists of 16 multidisciplinary individuals with trauma/EMS or health care expertise from rural and urban areas of the state. Sub-committees include Legislative, Pediatric, Trauma, 9-1-1, Specialty Care Transport, Air Ambulance, and EMS Regional Medical Directors. The council makes recommendations regarding policies, plans, procedures, and regulations related to the EMS/Trauma System to DHSS.

In March 2004, the Unit of Emergency Medical Services received a HRSA State Partnership Grant to revitalize Missouri's Emergency Medical Services for Children (EMSC). As a result, EMS is building coalitions with Injury Prevention, School Nurses Association and Homeland Security. A list-serve for EMSC and trauma has been developed. A strategic planning session has been held for EMSC.

In 2006, the bureau developed a recognition program for services that demonstrate they meet or exceed the requirements for pediatric equipments as set forth by the American College of Pediatrics. After inspection, services are provided with a reflective sticker that can be displayed on vehicles in recognition of this achievement. In 2009 the bureau hired a Health Facility Nurse Consultant to coordinate the Stroke/S-T Elevated Myocardial Infarction (STEMI) program for the department.

The following maps (Figures 61-63) are provided by EMS to illustrate the coverage and capability of the EMS/Trauma System to handle the needs of Missouri residents including Air Ambulance, Hospital and EMS Services.

Figure 62. Missouri Hospitals

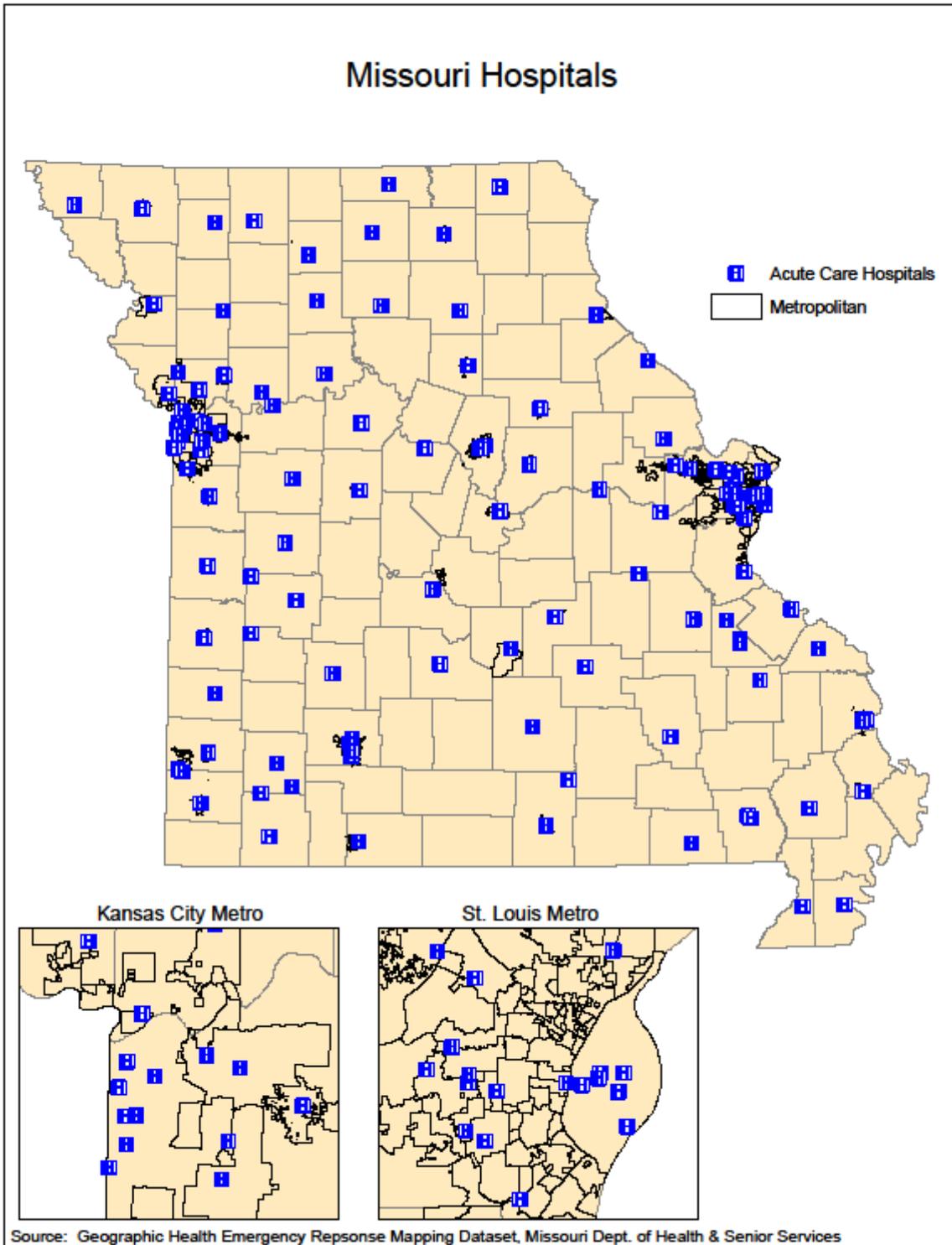
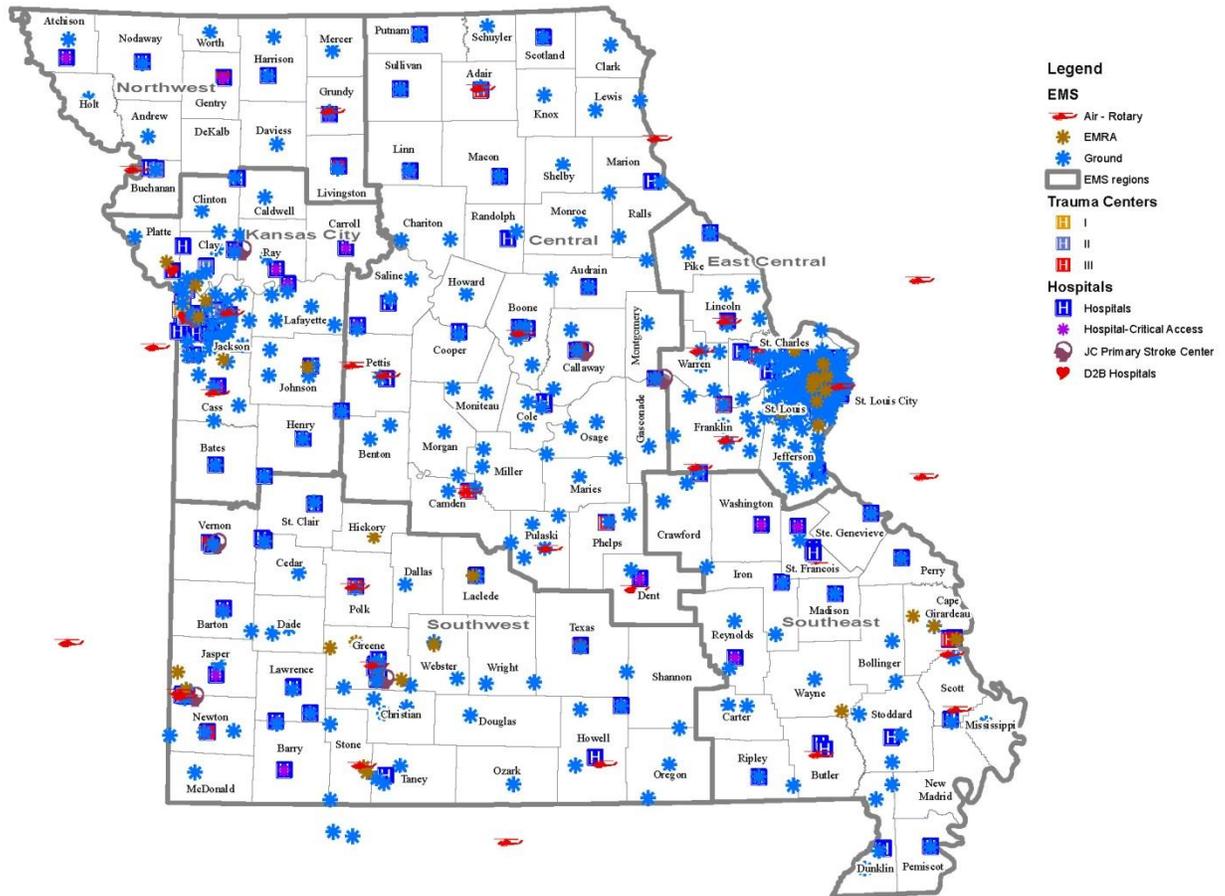


Figure 63. EMS Resources in Missouri



Source: Missouri Dept of Health and Senior Services, January 2008
 Population based on 2000 census, US Bureau of Census.

TMS
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 emsResource2008.mxd
 2/22/08

3.1.9 Bureau of Special Health Care Needs (SHCN)

The Bureau of Special Health Care Needs (SHCN) of the Section for Healthy Families and Youth (HFY) in the Division of Community and Public Health (DCPH) provides statewide health care support services, including service coordination, for children and adults with disabilities, chronic illness and birth defects. Service coordination is essential for people with complex conditions and needs. SHCN administers multiple programs and initiatives including: the Children and Youth with Special Health Care Needs Program (CYSHCNP), Healthy Children and Youth Program (HCY), Physical Disabilities Waiver Program (PDW), Adult Head Injury Program (AHI), Missouri Head Injury Advisory Council (MHIAC), and the Family Partnership. In addition, SHCN participates in a number of other initiatives, including the Missouri Assistive Technology Council (MO AT), the Planning Council for Developmental Disabilities, and the Missouri Commission on Autism Spectrum Disorders.

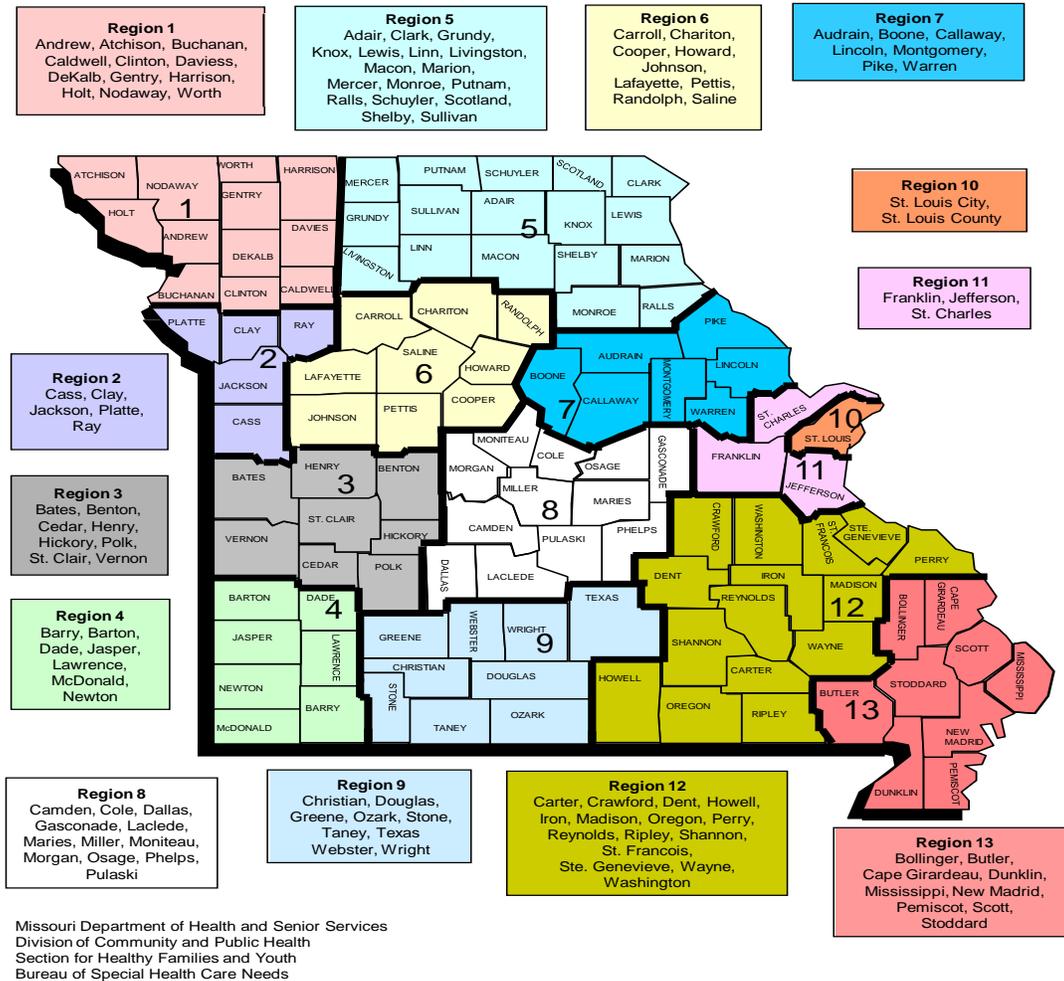
Children and Youth with Special Health Care Needs Program (CYSHCNP)

The CYSHCNP provides assistance statewide for CYSHCN from birth to age 21. The program focuses on early identification and service coordination for children and youth who meet medical eligibility guidelines. As payer of last resort, the program provides limited funding for medically necessary diagnostic and treatment services for children whose families also meet financial eligibility guidelines. Rising health care costs that are disproportionately incurred by the population continue to be a challenge. CYSHCNP has developed a strong resource network to ensure the program is the payer of last resort without jeopardizing supports to meet the needs of program participants. CYSHCNP developed a screening tool to identify CYSHCN. The tool assists in early identification, promoting early intervention/treatment and leading to the best possible health outcome. CYSHCNP services are delivered through participating provider contracts. SHCN enrolls approved providers for the CYSHCNP to provide medical and primary/specialty care services for program participants to obtain medical care and ancillary services. Provider licenses are verified on the Internet prior to enrollment to assure that the licenses are current. The eligibility status of approved providers is reviewed periodically. SHCN maintains provider enrollment information in the MOHSAIC system for availability to Service Coordinators and e-mails Service Coordinators on a regular basis to inform them of new and discontinued providers. Service Coordinators provide participants/families with information and resources to assist families in selecting appropriate providers. SHCN maintains contracts with local public health agencies to provide service coordination for participants in the CYSHCNP. SHCN provides continual training, mentoring and technical assistance for the contractors, and monitors the contracts to assure quality. Through regional contracts, participants/families receive service coordination from individuals who are located within the participant's region and, therefore, are knowledgeable about local services.

Service Coordinators conduct home visits and complete assessments in collaboration with participants/families to determine individual and family strengths, needs, and unmet goals. In addition, Service Coordinators participate in interagency meetings and promotional functions to identify CYSHCN, to educate the public about issues faced by CYSHCN and their families, and to increase public knowledge of SHCN services. Service coordination contract regions in Missouri are depicted in the following map (Figure 64).

Figure 64. Children and Youth with Special Health Care Needs (CYSHCN) Service Coordination Region Map

Contract Period: 7/01/09 through 6/30/10



Healthy Children and Youth Program (HCY) and Physical Disabilities Waiver Program (PDW)

SHCN maintains a cooperative agreement with the Department of Social Services, MO HealthNet Division to provide Administrative Case Management for participants of the HCY and PDW Programs. The HCY Program provides service coordination and authorization for medically necessary services for Missouri Medicaid recipients with special health care needs from birth to age 21. Authorized services may include in-home personal care, in-home nursing care and skilled-nursing visits. The PDW Program provides service coordination and authorization for medically necessary services to Missouri Medicaid recipients with serious and complex medical needs who have reached the age of 21 and are no longer eligible to receive services through the HCY Program. PDW participants must require medical care equivalent to the level of care received in an intermediate care facility, not be enrolled in another waiver, and have been eligible for private duty nursing through the HCY Program. Authorized services for PDW may include in-home personal care, in-home nursing care, skilled nursing visits, supplies and equipment. Service coordination for both HCY and PDW participants includes assessment

through home visits and links to services and resources that enable participants to remain safely in their homes with their families.

Adult Head Injury Program

SHCN maintains contracts with local public health agencies and the University of Missouri - Missouri Rehabilitation Center to provide Service Coordination for Missouri residents, ages 21 to 65, who are living with a traumatic brain injury (TBI). Through service coordination, the program links participants to community and public resources to enable each person to obtain goals of independent living, community participation and employment. Participants of the AHI Program who meet financial eligibility requirements may also receive rehabilitative services to help them achieve identified goals. Rehabilitative services include counseling, vocational training, employment supports and home and community-based support training. Collaboration between SHCN, local public health agencies, the University of Missouri, community based providers, and local resource agencies is key to providing effective services and supports for program participants.

Missouri Head Injury Advisory Council (MHIAC)

The MHIAC is a Governor appointed 25-member Council designated in statute to study the systems in Missouri that impact individuals with traumatic brain injury. The MHIAC was moved by Executive Order of the Governor from the Office of Administration to the DHSS in 2005. Since DHSS is the lead agency for Traumatic Brain Injury services in Missouri, the move of the council aligns with the department's role as lead agency. In 2006, the MHIAC adopted the following mission: to lead in the development of a collaborative statewide system of prevention, public awareness, and provision of services and supports driven by the needs of individuals with brain injury and their families. The MHIAC is an advisory to the DHSS and also serves in a specific advisory capacity to the Traumatic Brain Injury Implementation Partnership Grant awarded to DHSS by the U.S. Department of Health and Human Services, Health Resources and Services Administration. The council is representative of the following entities who collaborate to recommend policy and implement activities: brain injury survivors and their family members, community-based providers, health care professionals, Missouri Department of Mental Health, Missouri Department of Social Services, Missouri Department of Elementary and Secondary Education, Missouri Department of Insurance, Missouri Department of Corrections, the Missouri Department of Transportation, and legislative members representing the House and Senate. A challenge for MHIAC is membership appointments, however many individuals have begun participating in the council work without being designated as an appointed member. Participation by other state agencies and stakeholders at the community level has increased over time. In 2005, the MHIAC completed a comprehensive needs assessment and from this information developed a state TBI action plan for 2007-2010. Many activities completed by the MHIAC in conjunction with TBI grant specific activities have increased public awareness of TBI, and provided tools and resources to assist individuals in accessing comprehensive systems of services and supports for individuals with TBI and their family members.

Family Partnership

SHCN contracts with one local public health agency to implement Family Partnership statewide activities. The Family Partnership provides information and support to CYSHCN and their

families. These individuals are also given the opportunity to network with each other through various settings including regional and statewide meetings. Families are reimbursed for lodging, meals, mileage, respite (if needed), and a stipend to participate in Family Partnership meetings. Family Partnership members include individuals with special health care needs as well as their parents, legal guardians or siblings. SHCN utilizes information from the Family Partnership members to enhance the relationship between SHCN and the individuals and families they serve. The Family Partnership uses a grassroots approach to serve individuals with special health care needs and their families. The Family Partners are parents/legal guardians of individuals with special health care needs and have a unique connection with the families they serve while maintaining the professional aspect of the program. Family Partners are located in the community of the participants/families. In 2008, a fourth Family Partner was hired to serve the southeast region of the state. Family Partners participate in SHCN Regional Office and management meetings and provide outreach activities to encourage participation in the Family Partnership meetings. The Family Partnership conducts an annual statewide Family Partnership Parent and Caregiver Retreat. The number of families attending this event has steadily increased over the past five years. The Family Partnership has experienced difficulty in recruiting a more diverse group of families to attend meetings. Family Partnership regional and statewide meeting information has been shared with some non-English speaking communities to assist in addressing the issue. A core group of 20 families statewide will be involved in the development and feedback of documents, forms, fact sheets, newsletters, and the MCH Block Grant application for next year. Recent initiatives of the Family Partnership involve collaboration with the University of Missouri Kansas City, Institute for Human Development (UMKC-IHD) on two grants. UMKC-IHD was awarded the Integrated Community Services for Children and Youth Special Health Care Needs (ICS) grant and is developing training modules for the Family Partners. Training has been completed with the Family Partners on effective outreach practices and building a network of families within each of their regions. The ICS grant has established a Youth Advisory Council that will be conducting focus groups at each of the Family Partners' regional meetings. UMKC-IHD was also awarded the Family to Family Health Information Center (F2F) grant. Through the F2F grant, a statewide newsletter is distributed quarterly to CYSHCN and HCY participants. The newsletter contains regional information submitted by the Family Partners as well as articles on topical issues. Through continued outreach from the Family Partners and collaboration with the CYSHCN Service Coordinators, families are becoming more aware of the services available to them, including the Family Partnership.

Assistive Technology

SHCN has a contract with the Missouri Assistive Technology to provide funding for access to assistive technology and assistive technology services for CYSHCN. Funding for access to assistive technology and assistive technology services enhances health care services for CYSHCN.

Service Coordination

A key component of SHCN programs, service coordination is an essential service for people with complex medical conditions and needs. Service coordination is a collaborative, proactive process that assists a participant/family to assess their needs, identify resources and develop a plan to address those needs. Service coordination facilitates, implements, coordinates, monitors, and evaluates services and outcomes. It also encourages a participant/family to develop the

skills needed to function at their maximum level of independence. The service coordination process includes: screening, referral, eligibility determination, assessment of needs, service plan development and implementation, resource linkage, monitoring and evaluation, and transition/closure. As part of the service coordination process, a comprehensive assessment is completed in collaboration with participants/families to determine individual and family strengths, needs and unmet goals. The assessment tool utilized by SHCN programs is the Service Coordination Assessment (SCA). This tool is part of a web based system and is uniquely designed to address the specific needs of each individual participant. The SCA is completed with participants/families at least on an annual basis and includes elements in line with The National Survey of Children with Special Health Care Needs including: partnering in decision making and satisfaction of services; receiving coordinated, ongoing, comprehensive care within a medical home; adequacy of private and/or public insurance to pay for services, organized and easy to use community-based service systems; and youth who receive the services necessary to make transitions to all aspects of adult life, including adult health care, work and independence. Service Coordinators address specific needs and services available to assist in the achievement of the best possible health and highest level of functioning for SHCN participants. Families are provided contact information to appropriate referral sources as needs are identified through the completion of the SCA. This referral process promotes collaborative efforts with other state agencies and private organizations. Participants/families are linked with health care and community services at the local level.

SHCN Operational Quality Improvement

SHCN continues to implement strategies to assure efficient and effective services for participants/families.

- SHCN Trainers provide training to SHCN staff and staff of contracted agencies. SHCN continues to focus on improving training materials and developing training modules, to enhance knowledge of SHCN staff and staff of contracted agencies, in an effort to improve SHCN services for participants/families.
- Requirements for the CYSHCNP Manager have been refined to require that position be filled by a Registered Nurse.
- SHCN streamlined, simplified and improved processes including the development of a Service Coordination Model. The model is designed to help articulate the service coordination process which strives to assist participants in achieving the best possible health and the greatest degree of independence.
- SHCN coordinates with other agencies to obtain information regarding participant diagnosis and treatment to expedite participant services in a cost effective manner.
- SHCN is in the process of developing a web-based system for participant information. The web-based system will improve accessibility to participant information and will enhance statewide data collection.
- SHCN has developed a process to conduct participant record reviews for all SHCN programs. The information from the record reviews will be utilized to identify trends and improve the quality of services provided by Service Coordinators.
- SHCN partners with Family Voices of Missouri and UMKC-IHD on a grant to establish a Family to Family Health Information Center. The goal of the project is to provide information, training, and personal support to families of CYSHCN.

- SHCN partners with UMKC-IHD, who received a grant for service integration. The goal of the project is to improve and sustain access to quality, comprehensive, coordinated community based systems of services for CYSHCN and their families. This project will fund a needs assessment, which includes a survey of SHCN program participants on both needs and satisfaction with service coordination functions.
- SHCN partners with University of Missouri-Columbia Thompson Center, who received a grant for Improved Services for Children with Autism Spectrum Disorder and other Developmental Disabilities.
- In addition to SHCN programs and initiatives, focus areas and activities of SHCN align with National Performance measures related to CYSHCN. Examples of these include:
- **CYSHCN whose families partner in decision making at all levels and are satisfied with the services they receive.** SHCN staff and staff of contracted agencies participate in several family focused coalitions. In addition, SHCN is dedicated to providing culturally competent services to participants and families. SHCN staff and staff of contracted agencies participate in events to increase knowledge of cultural diversity. Interpreters are provided and documents are translated for individuals with limited English proficiency.
- **CYSHCN who receive coordinated, ongoing, comprehensive care within a medical home.** SHCN promotes the medical home philosophy through education and training opportunities. A Medical Home Fact Sheet was developed by SHCN and is available on the Web site and distributed at health fairs and conferences to improve services and promote sustainability of the medical home system. The SCA uses the MCHB definition of medical home to determine if SHCN participants have a medical home. Medical home materials are provided to participants/families who do not have a medical home as determined by the SCA. In addition, SHCN ensures coordinated, ongoing comprehensive care for SHCN participants through service coordination.
- **CYSHCN whose families have adequate private and/or public insurance to pay for the services they need.** In collaboration with other entities, SHCN developed an Insurance Comparison Checklist and the Insurance Fact Sheet. These tools empower families with the necessary resources for obtaining adequate insurance. These materials are available on the SHCN Web site and have been distributed to participants/families. SHCN participates in various activities and collaborates with other entities to promote adequate insurance for participants. SHCN collaborates with Managed Care Organizations, Systems of Care Boards, Department of Social Services, Department of Mental Health, and Department of Elementary and Secondary Education to obtain information about children and youth with special health care needs that transition within the systems of care and identify gaps in insurance coverage for the special needs population to assist in reducing the gaps in coverage. In addition, SHCN trains Service Coordinators to determine available adequate insurance and maintains protocols to monitor the status of MO HealthNet referrals. SHCN enables Service Coordinators to attain and monitor participants' MO HealthNet status through data linkage with the Department of Social Services.
- **CYSHCN whose families report the community-based service systems are organized so they can use them easily.** SHCN recruits health care professionals to assure adequate medical care for participants to receive community-based services through the CYSHCNP. In addition, SHCN staff and staff of contracted agencies are actively involved in collaborative functions and outreach activities statewide. SHCN frequently participates in various case conferences, outreach and site visits, presentations, conferences and

teleconferences, meetings, workshops, in-services and trainings, advisory boards, committees, exhibits, health fairs, and panels to promote organized community-based service systems for CYSHCN and to increase public knowledge of SHCN services. Examples of some collaborative entities include: Department of Elementary and Secondary Education, Department of Insurance, Department of Mental Health, Department of Social Services, Managed Care Organizations, Systems of Care Boards, Federally Qualified Health Centers, Local Public Health Agencies, American Red Cross, local emergency response personnel, emergency management agencies, Independent Living Centers, Missouri Rehabilitation Center, advocacy agencies, attorneys, child behavioral/parenting support agencies, child care providers, community groups, dentists, families, home health agencies, hospitals, medical specialty clinics, physicians, primary care providers, schools, community professionals, health care facilities, and other private and public entities. Collaboration efforts also focus on public health preparedness and response activities, including H1N1, for CYSHCN. SHCN actively participates in local, regional and state disaster response planning activities to represent the needs of SHCN participants. SHCN contributes to a statewide plan to increase awareness of emergency response personnel about the needs of individuals with special health care needs. SHCN participants/families are provided with emergency preparedness material such as the American Red Cross Disaster Services' "Disaster Preparedness for People with Disabilities," Service Coordinators discuss emergency preparedness with participants/families to encourage the development of emergency response plans to help ensure coordinated services during the specific time of an emergency.

- **Youth with special health care needs, who receive the services necessary to make transitions to all aspects of adult life, including adult health care, work and independence.** SHCN and staff of contracted agencies collaborate with programs and services that serve adults to assist youth in transitioning smoothly to appropriate adult services. Service Coordinators assist participants and collaborate with key agencies to plan for transitions, utilizing several planning tools. Transition Plans are completed by Service Coordinators with participants/families and team members during transition meetings to assist in determining the transition needs and appropriate timelines for referrals to other agencies. Transition Plans address the needs of participants as they: transition from one life-stage to another life-stage, discontinue from a service, or transition to a new Service Coordinator or agency. Participants who are transitioning receive assistance to plan for these changes in order to achieve the best possible outcome.

3.1.10 Supplemental Nutrition Program for Women, Infants and Children (WIC)

The following information was taken from DHSS's Web site for the Supplemental Nutrition Program for Women, Infants and Children: <http://www.dhss.mo.gov/wic/index.html>.

Women, Infants and Children (WIC) is a special supplemental nutrition program that provides services to pregnant women, new mothers, infants and children up to their 5th birthday based on nutritional risk and income eligibility. The primary services provided are health screening, risk assessment, nutrition education and counseling, breastfeeding promotion and referrals to health care. Supplemental food is provided at no cost to participants.

Missouri Department of Health and Senior Services
2010 Title V Maternal and Child Health Needs Assessment

Past experience shows that pregnant women who participate in the WIC Program have fewer low birth weight babies, experience fewer infant deaths, see the doctor earlier in pregnancy and eat healthier.

Local WIC providers are the contact point for receiving WIC services. There are 118 local WIC providers located throughout the state where participants are evaluated for nutritional risk and income eligibility.

WIC's goal is to improve health by informing families about good health practices and by providing nutritious foods to eligible participants. Every year, thousands of women, infants and children receive health screenings, nutrition assessments and health education from the Missouri WIC program.

The WIC program prescribes and pays for nutritious foods to supplement the diets of pregnant women, mothers who breastfeed for one year and mothers who formula feed for six months, infants and children up to their 5th birthday who qualify as “nutritionally at-risk” and meet 185% of the Federal Poverty Guidelines. Program participants are reassessed every six months to determine eligibility status. The WIC program also provides nutrition education, breastfeeding promotion and support, conducts immunization screenings and appropriate referrals to address the WIC participant’s need. WIC participants obtain their foods by redeeming food checks for specific items at local grocery stores and pharmacies.

Income guidelines are revised annually in adherence to the Federal Poverty Guidelines. Nutrition Risk Criteria is revised periodically to reflect emerging science related to nutrition assessment and nutrition risk conditions that are used to determine WIC program eligibility. Dietary risk criteria were revised in 2005 due to an Institute of Medicine (IOM) report in 2002 recommending that all women and children (ages 2-5 years) who meet categorical and residency requirements for WIC program eligibility also be presumed to be at dietary risk due to failure to meet the Dietary Guidelines.

Service changes in the last five years include the addition of web-based participant nutrition education; allowing participants who are not considered high risk to be eligible for tri-monthly check pick-up; training of local agency staff at Department District offices vs. driving to Jefferson City for trainings; and state office staff meetings via videoconferences vs. driving to Jefferson City.

Missouri WIC currently has 48 WIC agencies participating in the Breast Feeding Peer Counseling (BFPC) program, up from 38 in 2003.

In 1999, Missouri enacted a law (*RSMo. § 191.915*) that requires new mothers be given information by the hospitals on breastfeeding and the benefits to the child, as well as information on local breastfeeding support groups. The law also requires them to offer breastfeeding consultations to new mothers when determined appropriate by the attending physician. All physicians who provide obstetrics and gynecological care shall inform patients as to prenatal preparation for and postnatal benefits of breastfeeding. Missouri law § 191.918 states: *not withstanding any other provision of law to the contrary, a mother may, with as much discretion as possible, breast-feed her child in any public or private location where the mother is otherwise authorized to be.*

Missouri WIC Achievements in the Last Five Years

- The percent of pregnant women enrolled in WIC in the first trimester of pregnancy increased from 40.9% in 2004 to 43.0% in 2008.
- The percent of postpartum women living in a smoking household decreased from 29.2% in 2004 to 25.0% in 2008.
- The proportion of women who initiated breastfeeding increased from 49.1% in 2004 to 55.4% on 2008.
- The prevalence of preterm delivery decreased from 12.1% in 2004 to 10.3% in 2008.
- Missouri developed the Program for Dietetic Interns that provides an internship for local WIC agency nutritionists. This program provides advanced training to qualify them to become registered dietitians.
- Missouri WIC implemented a new computer system, Missouri WIC Information Network System (MOWINS) in 2009 for all 118 local WIC providers. This new system provides more complete data gathering from Missouri’s WIC participants.
- Beginning October 2009, WIC began offering a new food package based on the healthy eating advice of the 2005 Dietary Guidelines for Americans and the American Academy of Pediatrics. The new food package included: the addition of fruits and vegetables, whole wheat breads, tofu and soy milk for children and women; infant fruits and vegetables for all infants beginning at 6 months of age; infant meats at 6 months of age for fully breastfeeding infants; and decreased higher fat foods such as whole milk and cheese for women and children. The amount of juice for children and women was decreased and juice for infants was removed from the program.
- Missouri WIC began including community partners in all breastfeeding trainings. The community partners include, PAT, La Leche League, Home Visiting Nurse programs, Early Head Start, Building Blocks, Doulas and other health care providers.
- WIC local agencies are loaning electric hospital grade breast pumps to WIC participants to continue breastfeeding after they return to work with over 1,800 breast pumps in circulation statewide.
- Missouri hosted an International Board Certified Lactation Consultant preparatory course in 2009.
- Missouri collaborated with other agencies in the creation of the Missouri Breastfeeding Coalition. Also formed were the Missouri WIC Breastfeeding Task Force and the Peer Counselor Task Force.
- Missouri WIC collaborated with Hannibal (Missouri) Hospital’s Baby Friendly Task Force to partnership with seven local WIC agencies to implement baby friendly (breastfeeding friendly) WIC agencies.

Table 31. WIC Monthly Caseload 2005 Compared to 2009

Participant Category	2005 Monthly Caseload	% of total	2009 Monthly Caseload	% of total
Women	35,224	26.5%	37,656	25%
Infants	36,588	27.5%	40,682	27%
Children	60,563	46%	71,676	48%
Total	132,225		150,014	

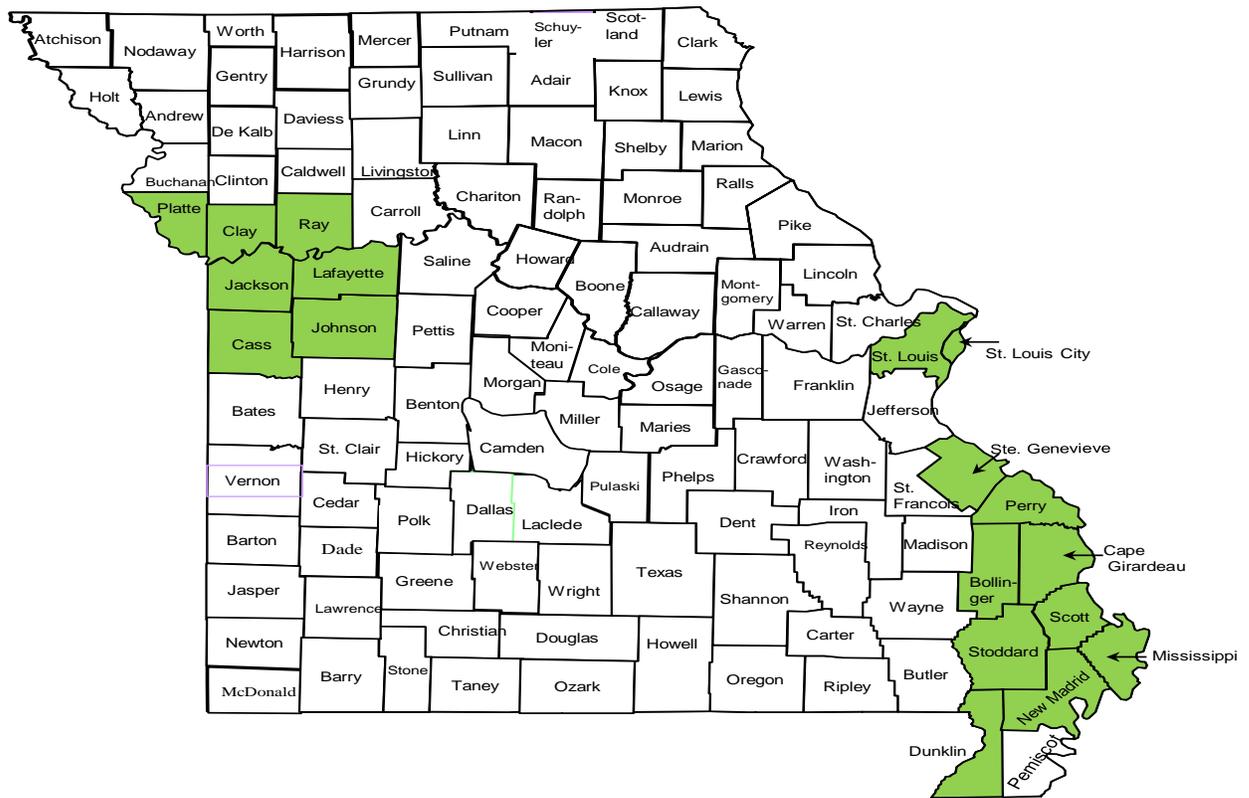
3.1.11 Missouri Home Visiting Program

The Missouri DHSS currently provides home visiting services targeting the maternal and child population through two programs. Both programs serve pregnant and parenting mothers and their children through age 2 of the targeted child.

Building Blocks of Missouri Program

The Building Blocks of Missouri program is based on the David Olds' model of home visiting and is currently replicated as the Nurse Family Partnership (NFP) nationally. The program has broad holistic objectives, which promote healthy and safe parenting and home environment. Program enrollment is open to low-income, first time mothers, prior to the 28th week of pregnancy. Registered nurses provide the services. The program was initially funded by the legislature in fiscal year 2000 with general revenue funding. At its inception the program had two sites, one in Kansas City serving 100 clients and one in southeast Missouri serving 50 clients. In 2002, the southeast site was expanded to serve 100 clients. A site was established in Springfield through a Healthy Communities, Healthy Schools grant in 2003-2007 but was disbanded due to a lack of continued funding. In 2005, a site was begun in St. Louis serving 100 clients. In 2008, the Kansas City site was moved from Truman Medical Center to the Kansas City Health Department, and in 2009 the southeast Missouri site was expanded to serve 125 clients. As shown in Figure 65, the program currently provides services in: Cass, Clay, Jackson, Johnson, Lafayette, Platte, and Ray counties in the Kansas City area through the Kansas City Health Department, serving 100 clients; Bollinger, Cape Girardeau, Dunklin, Mississippi, New Madrid, Perry, Scott, Ste. Genevieve, and Stoddard counties in southeast Missouri through Southeast Missouri Hospital Home Health, serving 125 clients; and St. Louis City and County through the St. Louis County Department of Health, serving 100 clients through Title V Maternal and Child Health Block Grant funding. The programs are now able to serve a total of 325 clients during a given time period. There is currently federal legislation pending to expand evidence-based home visitation programs and it is hoped that the Building Blocks program will be expanded to include all areas of the state that are geographically feasible should this funding be made available. In FY09, the program served 362 pregnant women (ages 15-44) and 201 infants.

Figure 65. Counties Currently Served by the Building Blocks Program



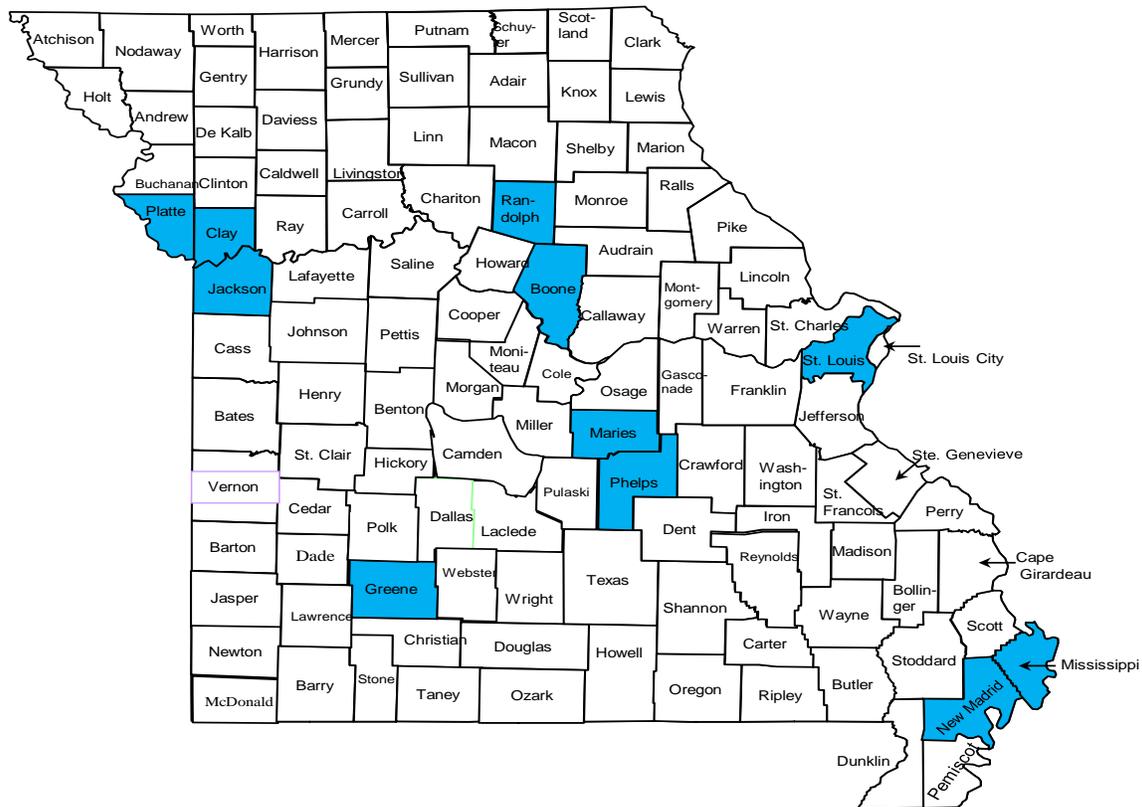
Source: Missouri Department of Health and Senior Services, Bureau of Genetics and Healthy Childhood

Missouri Community-Based Home Visiting Program

The Missouri Community-Based Home Visiting Program (MCBHV) was implemented in seven counties throughout the state in FY97 as the Families at Risk Program using general revenue funding. In FY2000, the program structure was revised, renamed the Missouri Community-Based Home Visiting Program and was expanded to twelve programs using Title V Maternal and Child Health Block Grant funds. The program targets low income (185% of poverty level or less) pregnant women, who are at risk of adverse pregnancy outcomes, who reside in the counties served by the program, and who meet community established eligibility requirements. The Missouri Community-Based Home Visiting Program (MCBHV) model utilizes nurses and paraprofessionals. The goals of this program are to increase healthy pregnancies and positive birth outcomes, as well as decrease child abuse and neglect. The target population is specific to each individual site and addresses the needs of families in the specific geographic area who are most at risk of infant mortality or morbidity, and child abuse or neglect. Prior to FY10 the program targeted pregnant women and women less than 90 days postpartum. Beginning in FY10 the program’s eligibility requirements were changed to target only pregnant women. Currently there are seven county health departments participating in the program and three private, not-for-profit agencies. Figure 66 shows that the program serves women in Boone, Clay, Greene,

Jackson, Maries, Mississippi, New Madrid, Phelps, Platte, Randolph and St. Louis Counties. Each site has funding to serve 25 women at any given time. Some of the sites have additional funding from other sources and are able to serve additional women in the program using these funds. In the past five years, two sites, the Jefferson County Health Department and the Madison County Health Department, have discontinued the program due to inadequate funding. With the decrease in the number of sites, the services provided have not changed.

Figure 66. Counties Served by the Missouri Community-Based Home Visiting Programs



Source: Missouri Department of Health and Senior Services, Bureau of Genetics and Healthy Childhood

Strengths and Weaknesses

Strengths, assets and resources of the Missouri Home Visiting Program include:

- The Nurse Family Partnership/Building Blocks of Missouri program is a nationally replicated, evidence-based model of nurse home visiting, which is receiving a large amount of publicity at the federal level.
- The Bureau of Genetics and Healthy Childhood is making suggestions for revisions to the Missouri Community-Based Home Visiting Program to make it more evidence-based by standardizing admission criteria and using an evidence-based standardized curriculum for all of the contractors.

Weaknesses, service/support gaps and challenges of the Missouri Home Visiting Program:

- Lack of adequate funding to expand the Missouri Community-Based Home Visiting and Nurse Family Partnership/Building Blocks of Missouri Programs to all counties and the

City of St. Louis to assure that every pregnant woman who desires to enroll in a home visiting program is able to receive services prenatally through age 2 of her child.

3.1.12 Missouri Model for Brief Smoking Cessation Training Program

The Alcohol, Tobacco and Other Drug Prevention and Awareness (ATOD P&A) Program targets the prevention and/or reduction of the incidence of alcohol, tobacco and other drugs in the preconceptional and prenatal periods. One of the major focuses of the program has been assuring educational outreach to health care providers to decrease the smoking rates of women during pregnancy through the use of the Missouri Model for Brief Smoking Cessation Training. The Missouri Model for Brief Smoking Cessation Training is a Missouri-specific curriculum built on the U.S. Public Health Services evidence-based five-step intervention (5 A's) outlined in the Clinical Practice Guideline: Treating Tobacco Use and Dependence. The Missouri Model also incorporates the Transtheoretical Model on stages of behavior change, motivational interviewing and referrals to the Missouri Tobacco Quitline for intervention and support. The Missouri Model for Brief Smoking Cessation Training was developed by the program in 2005 to tackle the high smoking rates among pregnant women in Missouri to support clinician implementation of a comprehensive tobacco control program with women of reproductive age, particularly pregnant women.

In FY 2006, the Missouri Model for Brief Smoking Cessation Training began a health care provider training. Maternal and Child Health Block Grant funds were used to support these smoking cessation efforts and the initial series of trainings. An additional grant for \$1,500 was received from the March of Dimes for the purchase of educational posters to be distributed at the trainings. Nine four-hour trainings were offered, including two each in St. Louis, Kansas City, and Columbia, and one each in Springfield, Cape Girardeau and Jefferson City. Two hundred and twenty health care providers attended the trainings that year, including 17 OB-GYN faculty and residents of the University of Missouri, School of Medicine. Attendees of the training gave an "excellent" rating for satisfaction of speaker knowledge, overall presentation, usefulness of information, meeting of expectations, and/or satisfaction of educational need.

In 2007, a \$25,000 March of Dimes Grant was used to support the training effort. The curriculum was revised to include the ability to provide one-hour trainings for physicians by Dr. Kevin Everett of the University of Missouri, curriculum developer and presenter. Eight, four-hour trainings were attended by 158 health care providers, and 119 physicians participated in four one-hour trainings. The four-hour trainings were provided in: St. Louis (2), Poplar Bluff, Springfield (2), Cameron, Macon, and Columbia. The one-hour trainings were given to members of: the Cape Girardeau Medical Society, St. Louis Gynecological Society, Greene County Medical Society, and the Northeast Missouri Regional Medical Center. An average of 90% of the individuals attending both types of training rated the presentations as "excellent" for satisfaction of speaker knowledge, overall presentation, usefulness of information, meeting of expectations, and/or satisfaction of educational need.

Based on the prior success of the program in 2008, the program was awarded another March of Dimes grant to provide five, 60-90 minute Missouri Model trainings for physicians, dentists, respiratory therapists, and/or allied health professionals in regional areas. Two-hundred and seven health care providers attended these trainings. The five groups who attended the trainings

were: members of the Greater St. Louis Dental Society, Buchanan County Medical Society, Missouri Society of Respiratory Care, Cole County Medical Society, Missouri Association of Osteopathic Physicians and Surgeons, and the Missouri Dental Hygienists' Association at their annual conference.

Since 2008, there have been no further Missouri Model Trainings offered. There are currently no plans to offer additional training due to the lack of funding available, nor have there been additional requests for training. Dr. Everett's current position also restricts his ability to devote time to this project. Should the program receive additional requests for the training they will work with Dr. Everett to identify possible funding sources.

Weaknesses

Weaknesses, service/support gaps and challenges of the Missouri Model for Brief Smoking Cessation Training Program include:

- Lack of funding.
- Need of an instructor who is available to conduct trainings on an on-demand basis.
- No ability to follow-up with attendees at long-term intervals to assess the use of the knowledge gained in the training to affect smoking rates of their patients.

3.1.13 Comprehensive Tobacco Control Program

Summary Description of the Program

The goals of the Missouri Comprehensive Tobacco Use Prevention Program are to prevent youth initiation of tobacco use, promote quitting among youth and adults, eliminate exposure to secondhand smoke, and reduce tobacco's impact on populations disproportionately affected by tobacco. Despite limited funding, the last few years have seen a remarkable improvement in Missouri's capability and capacity to move forward on tobacco control. In 2007, state funds supplemented a nearly bankrupt Missouri Tobacco Quitline, with \$200,000 quickly following for a youth tobacco prevention and media literacy intervention; this funding continued in 2008 and 2009. At the end of 2007, the Missouri Foundation for Health (MFH) provided a \$3 million grant to DHSS for three years to enhance the Quitline by providing free nicotine replacement therapy (NRT). And particularly gratifying was the \$1.5 million appropriated by the state legislature in 2008 for youth prevention and the fact that the legislature appropriated another \$1 million in 2009, despite a very tight state budget. This funding doubled the number of schools in the state with a tobacco prevention program and is allowing for evaluation efforts to move the programs toward evidence-based best practices. Approximately 230 schools or youth groups around the state are now working on changing their communities' norms around tobacco use.

Youth Advocacy and Prevention Groups

Youth advocacy and prevention groups supported and promoted include: Smokebusters, which is high school based, and Youth Empowerment in Action Tobacco Education, Advocacy, and Media (YEA TEAM), which is middle school based. Smokebusters started in northeast Missouri in 1999 and became active in 2005 on a limited basis in the northwest, southeast and southwest through funding from the MFH, the Heartland Foundation, and the Comprehensive Cancer Control Program in the department. The state funding in 2008-2011 has allowed the program to spread to Kansas City and western Missouri and to more counties in the southwest. The YEA

TEAM program started in the St. Louis area and the southeast in 2006 with funding from the MFH. State funding from 2007-2011 has allowed the program to spread to more schools in the St. Louis area.

Successes with school programs for youth advocacy and prevention, including empowering them to seek environmental and policy change in their communities are particularly encouraging. In 2007-2009, youth advocacy and prevention programs funded by the state and MFH organized at least 130 school or community groups in at least 67 counties. Over 3,800 youth were trained in advocacy and tobacco education and their efforts directly educated approximately 60,000 children and 37,000 adults.

Local Smoke-Free Policies

Efforts to establish local smoke-free policies are getting increasing support. As of the end of 2009, at least 18 communities in Missouri have adopted an ordinance restricting smoking in some or all public places in their communities, with nine communities having comprehensive smoke-free ordinances, covering workplaces, restaurants and bars. Currently, there are 25 active local tobacco control coalitions working on smoke-free policies.

Missouri Tobacco Quitline (MTQ)

The MTQ (1-800-QUIT-NOW) has been providing free cessation coaching services and referrals for local assistance since 2005. However, funding is insufficient to allow all callers to receive complete services. Through one grant from the Missouri Foundation for Health (MFH), MTQ has offered nicotine replacement therapy (NRT) to eligible callers since 2008 and will continue to do so through 2010.

Missouri's strategic plan for Comprehensive Tobacco Control updated in 2007 (www.dhss.mo.gov/SmokingAndTobacco/Publications.html), identified smokers with low income as the most important disparity to work on in the next few years. These individuals are the target market for the MTQ. Since the start of the MTQ in 2005, the priority population has been adults (over age 18) on Medicaid or who are uninsured and pregnant women, regardless of insurance status. At this time, all individuals who call can receive materials and/or one coaching call to assist them in setting up their plan. The priority populations may enroll in multiple coaching calls and receive NRT. Currently, individuals with chronic diseases, women breastfeeding an infant under one year of age, and women planning to get pregnant in the next three months are part of the priority population.

The number of individuals calling the MTQ substantially increased from 1,871 in October 2005-June 2006 to 8,662 in July 2008 - June 2009. The annualized reach of the Quitline has increased from 0.3% in October 2007 to 1.1% in November 2009 (The target reach is 2%). From October 2005 to November 2009, a total of 15,412 individuals called the MTQ, and 13,326 requested an intervention – approximately 188 were pregnant women, and 8,477 received NRT since July 2008, and very few pregnant women received NRT.

3.1.14 *Healthy Kids, Healthy Communities* to Reverse the Childhood Obesity Epidemic through Local Initiatives

The program, “Healthy Kids, Healthy Communities” is the Robert Wood Johnson Foundation (RWJF)'s single largest investment to reverse the childhood obesity epidemic by 2015 through local initiatives to improve access to affordable healthy foods and opportunities for physical activity for children and families. The program encompasses nine leading sites announced in late 2008 and 41 additional sites across the country.

One of the nine leading community sites is Columbia in central Missouri. Columbia’s Healthy Environment Policy Initiative (HEPI) Partnership, led by the PedNet Coalition, Inc., has successfully pushed new street and sidewalk design and school wellness policies targeting five neighborhoods in Columbia. Two issues rank highest on their list: increasing the availability of affordable, nutritious foods for children and families there and making area streets and parks more conducive to walking, bicycling and safe play. Their work is done through a new “Healthy Environment Policy Board” to advocate for local policies addressing food, activity and transportation. It is aided by a new, multilayered GIS (geographic information system) mapping application that will allow the combination of population and community data to better analyze where grocery stores, walking paths and bus routes are located. Another primary goal is the promotion of community gardens.

An additional site involving Missouri is the Kansas City community site, which includes Argentine, a mostly Latino community on the Kansas side, and Ivanhoe, a predominantly African-American neighborhood on the Missouri side. The Hartwig Legacy Foundation hopes to turn obesity rates around with the *Bi-State Kansas City Healthy Kids Initiative*. In partnership with groups such as the Ivanhoe Neighborhood Council, the initiative will focus on making it easier for the communities’ 16,000 residents to eat more nutritious foods and be more physically active. Ivanhoe will push for walking trails, recreation facilities and community gardens where residents can grow fruits and vegetables. Joint-use agreements with schools and churches will open doors for sports and other activities that encourage youth to be fit. The Greater Kansas City Food Policy Coalition is working to develop a sustainable food system that can deliver healthy foods to children no matter what their ZIP Code.

3.2 Population-Based Services

3.2.1 Newborn Blood Spot Screening

Newborn blood spot screening is a vital public health activity that is essential for preventing the devastating consequences of certain metabolic, endocrine and genetic disorders not clinically recognizable at birth. When infants are diagnosed and treated early, serious problems including disability and even death can be averted. It is the goal that every newborn be screened for certain harmful or potentially fatal disorders that aren’t otherwise apparent at birth.

There are no eligibility requirements for newborn screening, and services are provided statewide. State law mandates that all newborns born in Missouri have a newborn screening. Therefore, the number of newborns screened depends upon how many babies are born that year. See Table 32 for more information on the number of births, abnormal results requiring follow-up and confirmed positives.

Missouri screens for all 29 core conditions recommended by the American College of Medical Genetics and the March of Dimes. When considering secondary conditions, screening for these disorders actually allows for a total of 67 disorders to be detected through newborn screening.

Several changes have been made to newborn screening in Missouri over the past five years, including the addition of new disorders to the newborn blood spot panel. In 2005, amino acid, fatty acid and organic acids screening through tandem mass spectrometry screening were added. In 2007, cystic fibrosis was added, and then in 2008, biotinidase deficiency was added.

Legislation was passed in 2009 that adds screening for five lysosomal disorders to the newborn screening panel in 2012. These five disorders include: Krabbe disease, Neuman Pick disease, Fabry disease, Gaucher disease, and Pompe disease.

Table 32. Number of Abnormals Requiring Follow-Up, and Confirmed Positives and On Treatment, Missouri Newborn Blood Spot Screening Program, 2005-2008

Year	Abnormals requiring follow-up	Confirmed positive and on treatment	Total number of births
2005	251	54*/54	78,547
2006	338	73/73	81,353
2007	383	77/77**	81,883
2008	370	106/105***	80,944

*Screening for disorders found through tandem mass spectrometry began in the spring of 2005.

**CF was added to the NBS panel.

***Biotinidase deficiency was added to NBS panel in December.

Strengths and Weaknesses

Strengths, assets and resources of the Newborn Blood Spot Screening program include the following:

- The newborn screening program is a vital public health activity that is needed to detect certain genetic, metabolic and endocrine disorders at birth. The major strength of screening newborns is that through early detection, diagnosis and treatment, serious problems are prevented. Early diagnosis and proper treatment are essential and can make the difference between death or lifelong impairment and healthy development.
- The program's greatest strength is the availability of genetic expertise. This is obtained through contracts with genetic tertiary centers for follow-up on newborns. In addition, the Genetic Advisory Committee appointed by the governor has many experts, including geneticists, physicians, parents and consumers. The committee meets one to two times annually to review progress of the programs as well as provide advice.
- Missouri legislation requires insurance companies to provide formula and low-protein food products to infants from birth to 6 years of age who are diagnosed with a metabolic disorder. If an insurance company drops coverage on the child or if a family does not have insurance coverage, there are state programs that can assist in providing formula to the family. These state programs include the MO HealthNet, and the Metabolic Formula program.

Weaknesses, service/support gaps and challenges of the Newborn Blood Spot Screening program include the following:

- Laboratory technology used to detect genetic disorders is outpacing medical treatment.
- Disorders for which there are laboratory tests to screen but the disorders do not meet Missouri's newborn screening requirement of:
 - The disorder being an important health problem that occurs frequently enough in the population to justify screening an entire population
 - The disorder causing severe medical complications and/or preventing death
 - The treatment must be effective when initiated early, accepted among health care professionals and available to all screened newborns
 - Testing must be precise, validated, acceptable and cost effective
- Unfunded mandates, which occur when the legislature passes legislation that adds additional tests to the newborn screening panel but does not allocate funding to implement the legislation.
- Pressure to add new tests to the newborn screening panel that comes from multiple sources – parents of infants clinically diagnosed with conditions that could have been identified at birth; and recommendations of health care professionals, medical organizations, the business sector and government legislation.
- Media coverage through numerous venues also gets the attention of parents and parents-to-be about expanded screening. The ensuing parental pressure on legislators to implement screening for certain condition(s) accounts for some of the differences in newborn screening panels from state to state.

3.2.2 Missouri Newborn Hearing Screening Program

The Missouri Newborn Hearing Screening Program (MNHSP) is a part of continuing national efforts to promote the early detection of hearing loss, the tracking of infants/children who are deaf or hard of hearing, and the initiation of effective intervention systems. The MNHSP partners with Missouri hospitals to ensure that every newborn is screened, referrals for audiologic testing are made when needed, and data is collected to monitor the screening, referral and diagnostic process. MNHSP Follow-up Coordinators are responsible for follow-up of children who: did not have an initial hearing screen; did not receive a pass result on the initial hearing screen; or are found to be at risk for late onset hearing loss. The mission of the program is to assure all babies born in Missouri receive a hearing screen and appropriate follow-up as early identification, diagnosis and intervention services increase the likelihood that children with hearing loss will achieve communication skills commensurate with their hearing peers.

Figure 67 shows the 2008 number of newborns who never received newborn hearing screening by county. The most common reasons for missing the hearing screening are refusal, equipment failure and early discharge. Figure 68 shows the 2008 number of newborns who did not pass their initial newborn hearing screening by county.

Major Accomplishments and Products in the Past Five Years

- Collaboration with the DESE to develop the annual Newborn Hearing Screening Report of aggregate information about children diagnosed with hearing loss and enrolled in First Steps (Part C).

Missouri Department of Health and Senior Services
2010 Title V Maternal and Child Health Needs Assessment

- Collaboration with DESE in 2007 to design and implement a pilot program of service coordination for families of newborns diagnosed with severe to profound permanent hearing loss.
- Loans of portable hearing screening equipment to Mennonite and Amish community health care providers in central and southwest Missouri to screen babies born at home.
- The MNHSP Standing Advisory Committee was established on November 4, 2005.
- Professional audiology consultative services contracted through Missouri State University (MSU).
- “Audiologic Services for Missouri Newborns Parent Resource Guide” was made available for parents of newborns who require audiologic testing.
- Newborn Hearing Screening Parent Brochure, “Your Baby’s First Hearing Test,” was made available in English, Spanish, Bosnian and Vietnamese.
- Parent informational flyers on hearing milestones and risk factors for late-onset hearing loss were made available in English and Spanish.
- Parent information on hearing loss, known as “Audiology Cards,” and an NCHAM-developed brochure, known as “Communicate with Your Child,” with Missouri-specific resources, were made available for audiologists and First Steps (Part C) staff.
- A pilot project was conducted with six hospitals to reduce the number lost to follow-up, following a “refer” result. This was done by changing the procedure for follow-up activities, including appointment confirmation for re-screenings or audiologic testing, telephone calls as appointment reminders, and letters to the newborn’s primary care physician.
- Collaboration with MSU and DESE in 2009 to expand the pilot program of service coordination for families of newborns diagnosed with severe to profound permanent hearing loss to include use of hearing loss professionals and portable hearing screening equipment to secure re-screenings for newborns who fail or “refer” on the initial hearing screening and are unable to obtain a rescreening.

Strengths and Weaknesses

Strengths, assets and resources of the Missouri Newborn Hearing Screening Program include the following:

- A major strength of the MNHSP is the strong follow-up component. Two follow-up coordinators track every baby who missed the newborn hearing screening and every baby who did not pass the newborn hearing screening. Letters of notification, along with a fact sheet about hearing loss and the importance of screening, are mailed to families and the physician of record in each of these cases.
- In an effort to reduce loss to follow-up after failure to pass newborn hearing screening, the MNHSP is piloting a project with six hospitals that includes changes to follow-up procedures in the hospital and at the MNHSP. Hospitals make rescreening appointments for newborns who fail the newborn hearing screening and send the appointment information to the MNHSP. The MNHSP follow-up coordinators make reminder phone calls to the parents 24 hours prior to the appointment time and send a letter of notification to the pediatrician named by the baby’s mother as the baby’s doctor.

Weaknesses, service/support gaps and challenges of the Missouri Newborn Hearing Screening Program include the following:

- The challenge of loss to follow-up after failure to pass the newborn hearing screening remains the biggest barrier to MNHSP success. In 2007, of the 1,490 babies who did not

Missouri Department of Health and Senior Services
 2010 Title V Maternal and Child Health Needs Assessment

pass their final screening, 719 (48%) have no record of a diagnostic evaluation. The MNHSP plans to combat this problem by the establishment of a rescreening project which will include the use of hearing-loss professionals who will identify areas of high loss to follow-up and develop plans to obtain re-screenings or diagnostic evaluations for those populations. The MNHSP has contracted with Missouri State University to develop this program, known as the MOHear Project, and it is currently in its beginning stages.

Figure 67. 2008 Misses from Missouri Newborn Hearing Screening

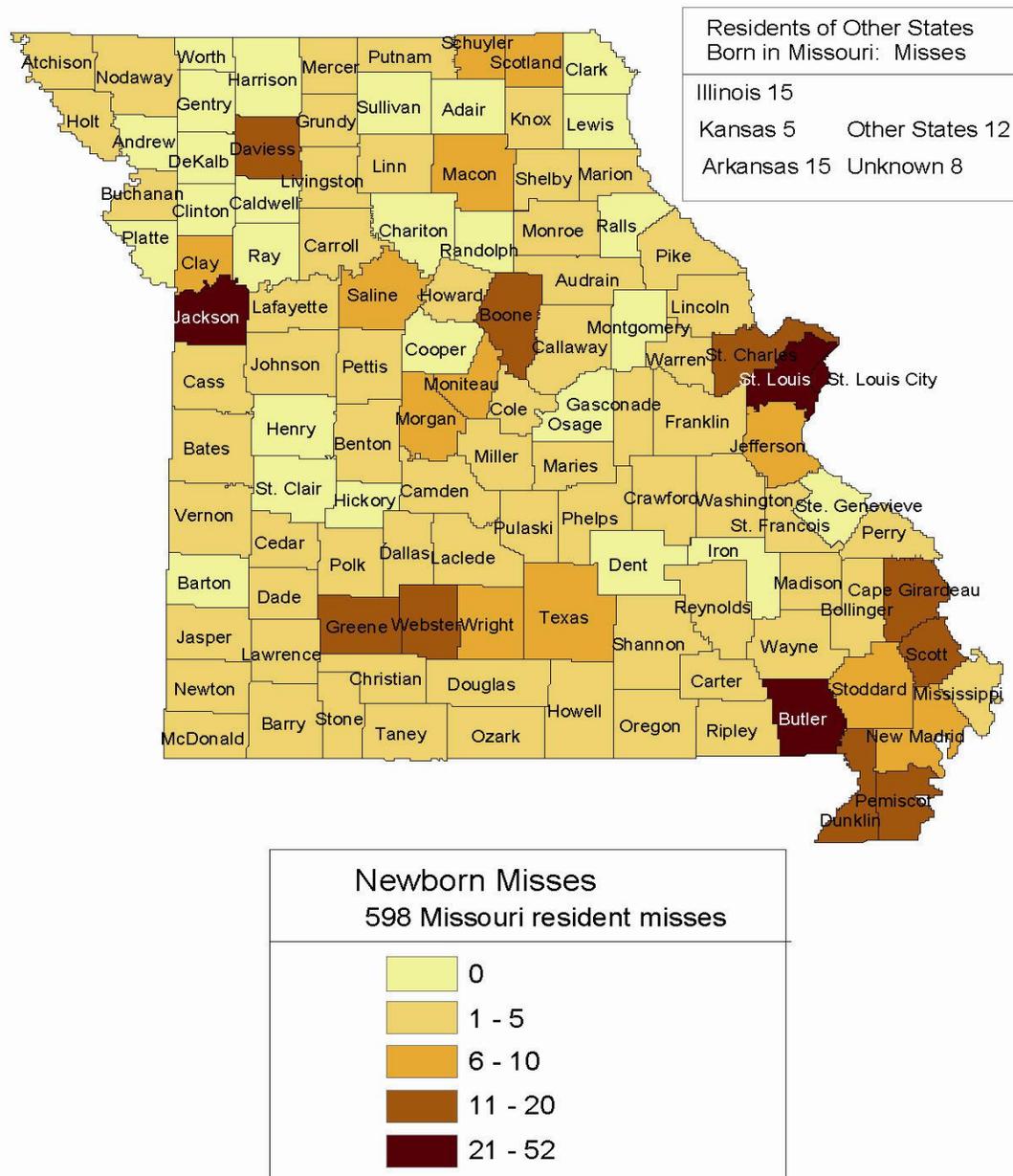
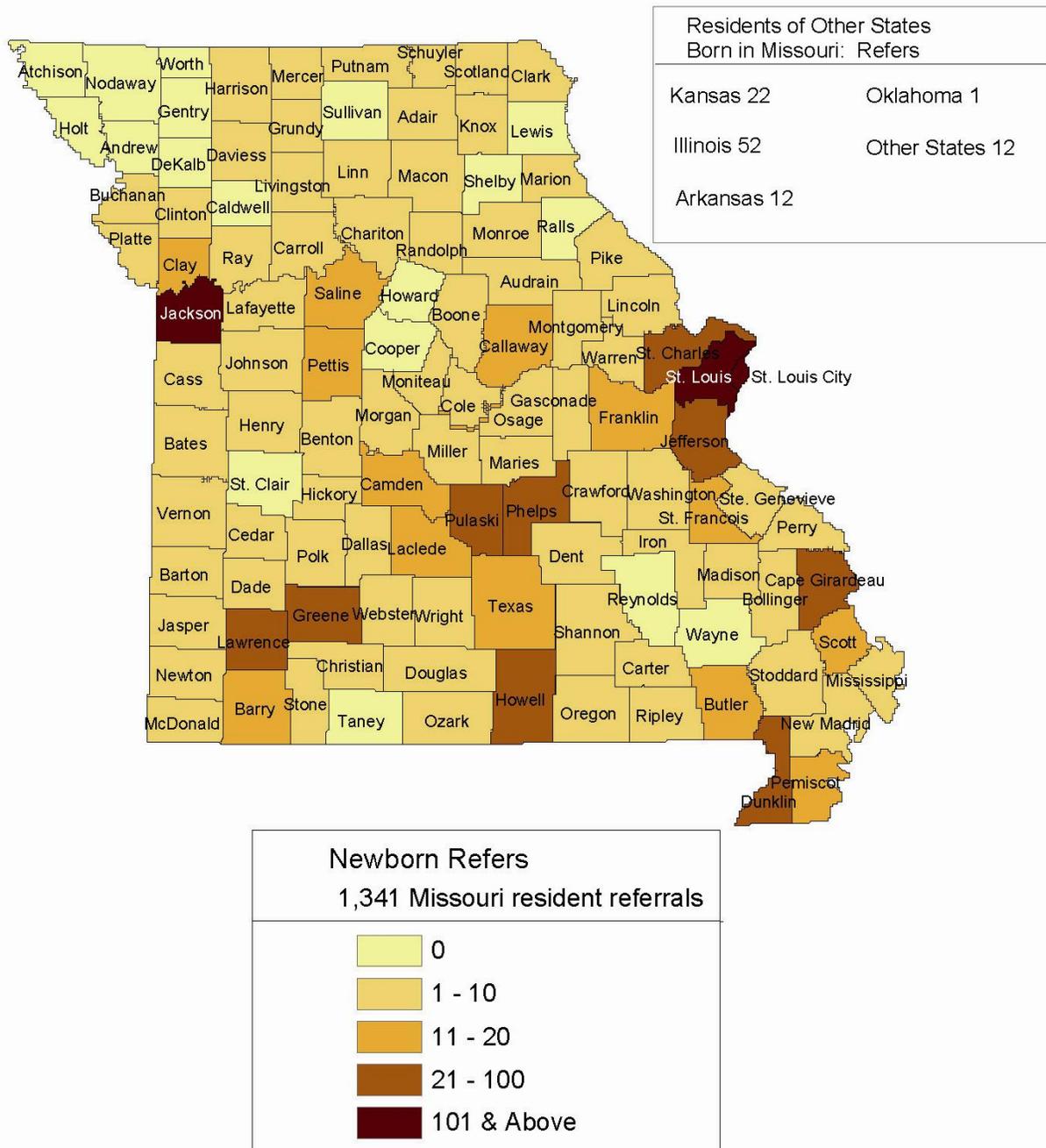


Figure 68. 2008 Refers from Missouri Newborn Hearing Screening



3.2.3 Immunization Program

The Missouri Immunization Program is managed by the department’s Bureau of Immunization Assessment and Assurance. The Immunization Program provides education and guidance to Missourians promoting immunization against vaccine preventable diseases. The program receives federal grant funding to administer the federal entitlement Vaccines for Children (VFC) Program, a program which, through community providers, ensures vaccine is available to eligible children. The program also provides education and immunization record assessments for health care providers to increase coverage rates; develops and maintains a central immunization

registry; tracks immunizations mandatory for school and day care; and forecasts need and gives technical assistance to providers and the general public regarding recommendations, vaccine safety, schedules, and other general vaccine information.

The Immunization Program also focuses on the provision of services to prevent and control influenza outbreaks in vulnerable populations through immunization of VFC-eligible children and some adult populations. The program is an integral participant in pandemic influenza planning, vaccine distribution provider education, communication, data management and reporting.

Achievements in the Past Five Years

- Because of changes in guidelines for the Vaccines for Children (VFC) program, the annual vaccine wastage went from a high of 4.5% in 2005 to a low of 1.6% in 2008.
- The number of doses of vaccines administered by the VFC program increased by 19.6% from 1,064,540 doses in 2004 to 1,272,663 doses in 2008.
- The number of Missourians 65 and over who received flu vaccine increased by 7.4% from 530,283 in 2004 to 569,421 in 2008.
- Expansion of the Missouri Hepatitis B Initiative
- New training opportunities such as Vaccine University

Changes in the Number of VFC Providers in the Past Five Years

The number of VFC providers went from a high of 715 providers in 2006 to a low of 659 in 2008. This drop in the number of providers is due to stricter guideline changes required of providers that were made in 2007.

Changes in the Services Provided in Past Five Years

- Second dose varicella requirement for kindergarten entry
- Tetanus-diphtheria-pertussis (Tdap) requirement for eighth grade entry
- Age appropriate pneumococcal conjugate vaccine (PCV) for preschool age children
- Stricter storage and handling requirements for vaccines
- Redesign of immunization Web site to become more informative and user-friendly

3.2.4 State Response to the 2009-2010 H1N1 Influenza Pandemic

Mass Vaccination Campaign

The linchpin to Missouri's overall H1N1 response has been the effort to conduct a statewide Mass Vaccination Campaign. To ensure that an adequate supply of H1N1 vaccine was available to all Missourians, the Missouri DHSS ordered vaccine doses directly from manufacturers that were shipped to Missouri's local public health agencies for distribution in their communities. Since October 2009, more than 1.6 million doses of the H1N1 vaccine have been shipped to Missouri and preliminary reports indicate that more than 750,000 doses of the H1N1 vaccine have been administered across the state. A multi-partner Mass Vaccination Coordination Team with partners from various federal, state and local agencies helped develop the vaccine distribution strategy based on priority guidelines set forth by the CDC. To accompany these efforts, a comprehensive statewide communication and public education campaign was launched to encourage Missourians to protect themselves and their families by getting vaccinated. The

campaign included print advertisements, radio and television messages, billboards, mass transit advertisements, newsletter articles, news releases, Facebook and other on-line advertisements. Many of the advertisements were translated in Spanish and Bosnian and a strong emphasis was placed on targeting hard-to-reach populations in rural areas of the state.

H1N1 Vaccine InfoLine

The establishment of the H1N1 Vaccine InfoLine by the Missouri DHSS in partnership with the Poison Control Center proved immensely valuable in handling the H1N1 pandemic. Missouri's InfoLine has been operating since October 2009. The InfoLine provides Missouri citizens and health care practitioners with up-to-date, consistent information and recommendations regarding the H1N1 flu and influenza vaccines 24 hours a day, seven days a week. The InfoLine telephone number is 1-877-FLU-4141. One important benefit of this partnership was the establishment of a near real-time data feed from the Poison Center that transmits all call information to DHSS for surveillance. Since the first InfoLine call was received in October 2009, the Poison Center has managed over 10,000 influenza-related calls.

Data Collection of H1N1 Vaccine Uptake among Pregnant Women and Young Children

In order to monitor H1N1 vaccination rates among high risk populations such as pregnant women and young children, both the Missouri PRAMS and the Missouri Child Health Assessment Program Survey (MoCHAPS) included questions with respect to H1N1 vaccine uptake and any potential barriers to this extent.

3.2.5 Bureau of HIV, STD, and Hepatitis

The Bureau of HIV, STD, and Hepatitis' purpose is to provide prevention activities designed to control and reduce HIV, STD, and viral hepatitis morbidity throughout the state, maintain a quality surveillance system to assure disease case reporting and analysis of morbidity and trends, and to assure HIV infected persons receive care and case management services.

Specific activities include intensive investigation of HIV, AIDS, syphilis, gonorrhea, chlamydia, hepatitis B, and hepatitis C cases that involve counseling, partner elicitation and notification, testing, referral for treatment, vaccination, and care with the primary goal of stopping the spread of disease, prevent re-infection, and prevent health threatening sequela. Testing is made available at no cost for most of these diseases in Missouri's local public health agencies and a variety of other agencies that serve high risk populations. Case management services are provided for women who are pregnant and infected with hepatitis B to prevent perinatal transmission. Additional activities include community planning, health education, social marketing, behavioral interventions, outreach screening and education, and research projects. The program links low-income Missourians living with HIV disease to various health and supportive services including lifesaving medications through a statewide HIV case management system. In addition, Missourians are linked to existing federal, state, and local assistance programs based on an assessment of need and client eligibility. The program serves as a payer of last resort for clients who have no other access to care and treatment and provides medications, medical care, dental services, transportation to physician offices, and emergency housing assistance to HIV+ clients.

The bureau is dedicated to the identification of these infections in pregnant women for the purpose of preventing mother-to-child transmission of any of these infections during pregnancy, during the birthing process and after birth. Program goals are to compel birthing hospital labor and delivery staff to review a pregnant woman's infection status as soon as possible upon admission for labor and delivery and to provide timely preventive services as warranted to mom and her newborn. The bureau promotes the CDC's recommendations for HIV/STD screening of pregnant women. Missouri statute requires prenatal screening for syphilis and hepatitis B, and during outbreak conditions, a second test during the third trimester of pregnancy. The bureau is actively working with medical providers to make HIV testing a part of routine health care, especially during pregnancy. Rapid HIV testing has been adopted in a few birthing centers to test women without prenatal care who present for delivery.

Perinatal HIV, Syphilis, and Hepatitis B Screening Project

In 2005 the Missouri Viral Hepatitis Prevention Program in collaboration with the Perinatal Hepatitis B Case Management Program embarked on a five year project to provide hepatitis education to health care providers who wanted it; to establish prenatal hepatitis B, HIV, and syphilis testing baseline rates; and to determine whether Missouri's birthing hospitals had policies and practices consistent with current guidelines related to HIV, syphilis and hepatitis B diseases. The five year project provided hepatitis education to health care providers; established prenatal hepatitis B, HIV and syphilis testing baseline rates; and assessed whether Missouri's birthing hospitals had policies and standing orders in place consistent with currently accepted guidelines. The findings indicated that health care providers need, want and request viral hepatitis education; prenatal providers are largely conducting prenatal testing for hepatitis B (98%); HIV (85%) and syphilis (98%) and are communicating the test results to the labor and delivery staff. Yet, there remains room for improvement for testing pregnant women of unknown infection status upon admission to Labor and Delivery. Opportunities for prevention have been missed when pregnant women of unknown infection status go untested, and their babies are the ones who risk contracting chronic debilitating infections. Clearly, birthing hospitals who implemented a universal hepatitis B vaccine birth dose policy with standing orders vaccinate infants prior to discharge, and birthing hospitals who had written policies and/or standing orders to check the infection status of their obstetric patients were more likely to provide appropriate preventative interventions to prevent mother-to-child transmission of these diseases. With the HIV, syphilis and hepatitis B prenatal testing baseline established in Missouri, future surveys and medical record review findings can be compared; communities where prenatal testing and testing of pregnant of unknown status upon admission for labor and delivery can be easily identified; and education and prevention messages can be tailored and targeted to areas who need it. Health care provider education requires ongoing attention especially in the areas where women of unknown diseases are not being tested at delivery in order to help prevent transmission of HIV, syphilis and/or hepatitis B infection to babies when they are most vulnerable immunologically.

Missouri Infertility Prevention Program

CDC, in collaboration with the Office of Population Affairs of the Department of Health and Human Services, supports a national Infertility Prevention Program (IPP) that funds chlamydia and gonorrhea screening and treatment services for low-income, sexually active women attending family planning, STD and other women's health care clinics. The project focuses on

Missouri Department of Health and Senior Services
2010 Title V Maternal and Child Health Needs Assessment

the CDC recommendations of women under the age of 25 to be annually screened for chlamydia, as this disease is prevalent in this age group. Many women are asymptomatic and if left untreated, chlamydia can cause infertility. This program has shown that routine screening of women can reduce chlamydia prevalence and pelvic inflammatory disease (PID) incidence in women.

Missouri is part of Region VII along with Kansas, Nebraska and Iowa. Federal funds also support the regional advisory committees and their collaborative work, including the chlamydia prevalence monitoring surveillance system to monitor trends in disease and to evaluate program impact. The program works closely with high prevalence contracted sites to conduct screening, provide treatment, and conduct partner management.

On average the MIPP program has 80 sites that conduct annual screening on women 25 years and younger; symptomatic males or those males who are known sexual contacts to infected patients.

Between 2004 and 2008, clients at MIPP clinics submitted 242,721 samples for chlamydia and gonorrhea testing (Table 33). Of these samples 22,982 (9.5%) were found to be positive for at least one of the diseases. Positivity rates were highest among clients ages 13-29 years, males and African-American individuals.

Table 33. Number of Samples Submitted by Clients at MIPP Clinics and Positive Percentage (%) for Chlamydia or Gonorrhea

	2004		2005		2006		2007		2008	
	Samples	Positive	Samples	Positive	Samples	Positive	Samples	Positive	Samples	Positive
Total	56,018	10.0%	50,546	9.5%	45,493	9.2%	44,849	9.2%	45,815	9.4%
Sex										
Female	48,282	8.2%	44,007	7.9%	41,644	8.0%	41,254	7.9%	41,843	8.0%
Male	7,736	20.9%	6,539	20.6%	3,849	22.4%	3,595	23.4%	3,972	23.6%
Age Group (Years)										
0-12	38	13.2%	34	5.9%	29	10.3%	20	5.0%	40	7.5%
13-18	14,632	11.2%	12,940	11.0%	11,915	10.6%	11,090	10.4%	10,891	10.6%
19-25	32,785	9.9%	30,901	9.1%	28,348	8.9%	27,735	9.0%	27,934	9.2%
26-29	2,959	11.7%	2,381	12.0%	2,091	10.5%	2,450	11.0%	2,877	11.6%
30-34	2,101	8.6%	1,627	9.3%	1,207	9.0%	1,390	8.0%	1,641	7.4%
35-39	1,427	5.4%	1,069	6.7%	787	6.1%	923	5.1%	975	6.6%
40+	2,076	4.5%	1,594	3.5%	1,116	3.2%	1,241	2.5%	1,457	3.0%
Race										
White	39,440	6.8%	36,993	6.8%	34,884	6.9%	34,426	7.2%	34,518	7.3%
African-American	14,412	18.7%	11,545	18.5%	8,704	18.3%	8,483	17.5%	8,815	17.2%
American Indian	135	7.4%	159	9.4%	129	4.7%	139	5.0%	138	12.3%
Asian	317	6.3%	263	4.6%	272	5.1%	291	5.8%	308	6.5%
Native Hawaiian	77	10.4%	91	11.0%	89	6.7%	124	14.5%	97	14.4%
Multi-Racial	222	13.5%	247	12.1%	25	24.0%	16	6.3%	404	11.9%

Source: Missouri DHSS. Bureau of HIV/STD and Hepatitis

3.2.6 Newborn Health Program

The Newborn Health Program promotes healthy birth outcomes and healthy infants by increasing awareness of recommended maternal and child health practices through statewide outreach education that targets all women of childbearing age, their partners, families and communities. Educational activities and materials emphasize the importance of preconception health care and early entry into prenatal care; consumption of folic acid to reduce the risk of birth defects; avoidance of smoking, alcohol and other drug use; appropriate birth spacing; breastfeeding; safe infant sleep practices; preventive health screenings; and other healthy behaviors.

Program activities include:

- Outreach education through literature distribution and conference exhibits.
- Collaboration with the March of Dimes Missouri Chapter to provide prevention interventions in Missouri schools and local public health agencies based on the *An Ounce of Prevention: Addressing Birth Defects Related to Folic Acid, Alcohol and Tobacco* curriculum.
- Correspondence with the mothers/caregivers of infants born with spina bifida, a cleft defect, or Down syndrome to assure awareness of available resources.
- Coordination of activities related to the Missouri Folic Acid Advisory Committee, which includes medical providers, public health professionals and educators. The purpose of the Advisory Committee is to facilitate timely information exchange regarding birth defects prevention and folic acid education in Missouri.

Outreach Education

Distribution of Baby Your Baby Keepsake Books and “This Side Up” T-shirts as well as visits to the Baby Your Baby, Birth Defects, and Healthy Children Web sites have typically served as the measures of service for Newborn Health outreach education activities and the number of clients/individuals served during each year. The Baby Your Baby Web site promotes prenatal and well-child care for all Missouri families, the Birth Defects Web site targets the preventive value of folic acid to reduce the risk of serious birth defects, and the Healthy Children Web site reinforces the importance of regularly scheduled health care visits for all children. A five year summary of these measures is presented in Table 34.

Table 34. Measures of Outreach Education Services

Measure of service	FY 05	FY 06	FY 07	FY 08	FY 09
Baby Your Baby Keepsake Books	22,542	29,224	32,486	31,871	32,407
“This Side Up” T-shirts	4,317	7,641	3,895	4,000	2,600
Baby Your Baby Web site Visits	36,265	39,050	29,723	57,966	110,850
Birth Defects Web site Visits	13,074	6,916	6,499	20,656	28,048
Healthy Children Web site visits		6,502	4,679	9,086	11,847

Since 2008, the Bureau of Genetics and Healthy Childhood has collaborated more closely with local community resource providers to assure that educational outreach at exhibits and other community events targets the unique needs of the target audience.

The program has introduced several new educational topics since 2005. A new focus on the importance of preconception health care was initiated in 2006 with an emphasis on folic acid consumption and abstinence from alcohol, tobacco and other drugs prior to and during the first weeks of pregnancy when a woman may not realize she is pregnant. Educational literature addressing the importance of preconception health care was ordered for distribution through the DHSS warehouse. Postpartum depression (PPD) was targeted in 2007 to help new mothers, family members and health care providers address this serious mental health problem. New literature items with facts about this condition and helpful hints to assist affected moms and families were ordered in English and Spanish. A Postpartum Depression Web site is also available for additional information.

In 2009, the program collaborated with the Office of Community Health Information to create several new publications for public distribution at conference exhibits and health fairs. These included four car seat safety cards - Safe Ride Pregnancy, Safe Ride Child Booster, Safe Ride Toddler and Safe Ride Teen. Two additional cards reinforce the dangers of second hand smoke to pregnant women and babies - Mom Smoke Post Card and Dad Smoke Post Card. These cards provide a new format that is very cost-effective and informative.

Since 2005, several special projects have also been conducted, including the following:

- In 2005, statewide radio messages were aired to promote breastfeeding, safe sleep, the importance of family history and family safety were aired through a contract with the Missouri Broadcasters Association.
- The Missouri Folic Acid Billboard Campaign was implemented in the Kansas City Metropolitan and southeast regions of the state from mid-June to mid-July 2005. Billboard placement was based on data from the Missouri Birth Defects Registry indicating highest rates by quartile of neural tube defects (NTDs) in Missouri as well as data from the Behavioral Risk Factor Surveillance System (BRFSS) pertaining to rates of folic acid consumption in Missouri among women ages 18-44. An evaluation consisting of a pre-campaign and a post-campaign survey was implemented to determine the effectiveness of the billboard campaign. Although the data suggest that the Folic Acid

Billboard Campaign did not have an effect on the target populations with regards to increasing awareness or use of folic acid to prevent birth defects, it is possible that the billboards had a re-enforcement effect on respondents that were already aware of the importance of folic acid. Sixty-one percent of respondents who reported taking a vitamin or supplement with folic acid identified a health care provider as their primary source of folic acid information.

- A statewide “Folic Acid across a Lifespan” media campaign targeted Mother’s Day 2007. Campaign media resources included billboards, bus transit tail lights and interior cards, radio and television interviews, print advertisements and a flier promoting the importance of folic acid for all women through their lifespan.

Folic Acid Education/An Ounce of Prevention Curriculum Training

In 2005, the DHSS received a program grant from the March of Dimes, Greater Missouri Chapter, in the amount of \$12,923 for implementation of the *Ounce of Prevention* evaluation project. Approximately 175 educators from Missouri schools and local health departments participated in the curriculum training and obtained a copy of the curriculum for their school agency. Six Missouri school districts also participated in the project and three of these implemented three evaluation tests—pre, post and six-month follow-up—with students in the classroom. Based on student evaluation scores, 100% of those participating did increase their awareness of what folic acid is and that there is a relationship to one’s health. These evaluation results established the curriculum as an evidence-based intervention for folic acid education, justifying continued use and promotion. The remaining school districts completed the evaluation process in 2006.

In 2008, DHSS was awarded a March of Dimes community grant for the *An Ounce of Prevention* Community Curriculum Intervention project, which targeted central Missouri Family and Consumer Sciences (FACS) educators and school nurses, high school students, and University of Missouri Sinclair School of Nursing (SON) senior nursing students using the *An Ounce of Prevention* evidence-based curriculum. Based on an educating-the-educators model, the project paired Sinclair SON senior students with central Missouri high school educators and/or school nurses who together attended one day curriculum implementation training. Nursing students collaborated with their assigned high school teacher and/or school nurse to plan and implement a birth defects prevention unit in the classroom focusing on the preventive value of folic acid consumption. Pre, post and two-month follow-up tests, for both perception and knowledge, were conducted with the high school students to evaluate the project’s success.

An evaluation analysis of test results confirms the effectiveness of the curriculum. Students’ perception and knowledge significantly improved through the training, and although perception and knowledge scores after three months were lower than scores from the post-test, they remained significantly higher than scores prior to the training. Significant behavior changes also resulted from the project. Consumption of a multivitamin daily increased from 16% at the pre-test to 25% at follow-up, and knowledge that folic acid is contained in the multivitamin increased from 4% at the pre-test to 22% at follow-up.

Birth Defects Intervention

A Birth Defects Grant awarded to DHSS by the CDC was approved but not funded for 2005. The grant supported telephone interviews with the parents of infants born with spina bifida, oral-facial clefts and Down Syndrome to assure they are aware of resources to enhance the development of their child and to provide folic acid education to reduce the risk of birth defect recurrence in future pregnancies. A no cost extension was awarded to April 30, 2005.

Since 2006 the families of infants with spina bifida, oral-facial clefts and Down Syndrome have received written follow-up correspondence and resource referral information. Families are invited to contact the Bureau of Genetics and Healthy Childhood or the DHSS Birth Defects Web site for further information. The parent letter was revised in 2009 and no longer includes folic acid educational literature. Several mothers reported that they felt the letter blamed them for their affected child. The Bureau of Special Health Care Needs brochure is now enclosed with the letter to assure families are aware of the programs offered by this Bureau for special needs children.

The program also coordinates activities related to the Missouri Folic Acid Advisory Council, which includes medical providers, public health professionals and educators who facilitate timely information exchange regarding birth defect prevention and folic acid awareness in Missouri. The council has met annually for the past five years and exchanges other pertinent folic acid information electronically throughout the year. Recent meetings have focused on outcomes from the Missouri Pregnancy Risk Assessment Monitoring System (PRAMS) coordinated by Dr. Venkata Garikapaty. Several council members have also been instrumental in *An Ounce of Prevention* curriculum training projects.

Prevention of Sudden Infant Death Syndrome (SIDS) and Sudden Unexplained Infant Death (SUID) from Unsafe Infant Sleep Environment

While the number of deaths of infants under the age of 1 year from SIDS has decreased in the past five years from 46 in 2004 to 16 in 2008, the number of deaths determined to be caused by asphyxiation, suffocation or roll-over due to an infant sleeping in an unsafe environment has increased more than 200%. Based on this data, the Bureau of Genetics and Healthy Childhood has not only been focusing its prevention efforts on the “back to sleep” campaign to continue to reduce the incidence of SIDS, but also to expand the campaign to include more information on the importance of a “safe sleep” environment for infants and the dangers of parents or caregivers co-sleeping with an infant or placing an infant on a sleep surface not made for an infant such as an adult bed, sofa or chair.

In 2007, DHSS held a “Safe Sleep” Conference in Jefferson City in collaboration with SIDS Resources Inc., with more than 150 health care professionals attending. In 2008, the bureau, in cooperation with the Office of Community Health Information, redesigned the “Safe Sleep for Your Baby” brochure to include the 2005 AAP Policy Statement on this topic. This brochure is widely distributed by health care providers both prenatally and by hospitals at delivery.

The bureau continues to contract with the St. Louis and Kansas City Maternal and Child Health Coalitions to implement the Fetal and Infant Mortality Review Program in two regions of the state. Sites are strongly encouraged to abstract all infant deaths related to SIDS or suffocation or

asphyxia and to help obtain maternal interviews to ascertain whether or not there was a crib in the home at the time of the incident.

A Public Health Consultant Nurse serves as a member of the State Child Fatality Review Team, and beginning in 2009, the Section for Healthy Families and Youth held quarterly meetings with the STAT Team leaders to coordinate injury and violence prevention efforts between DHSS and DSS.

Prematurity Awareness

House Bill 716 was passed during the 2009 session of the Missouri legislature and enacted as *RSMo 191.711*. The legislation requires DHSS to prepare written educational publications with information about possible complications, proper care and support associated with premature infants; distribute the materials to children's health and maternal care providers, hospitals, public health departments, and medical organizations; and encourage those organizations to provide the publications to parents or guardians of premature infants. The Newborn Health Program collaborated with experts in this field, in the development of these educational publications including a safe ride card for premature infants and a Missouri resource list. This information is available on the department's Web site at <http://www.dhss.mo.gov/prematureinfants/guide.html>.

Strengths and Weaknesses

Strengths, assets and resources of the Newborn Health Program include the following:

- Collaboration with the March of Dimes Missouri Chapter and the University of Missouri-Columbia Sinclair School of Nursing are essential strengths of the Folic Acid Education initiative, which features the *An Ounce of Prevention* curriculum. A vital opportunity is provided to educate Missouri high school students and senior nursing students about the importance of daily folic acid consumption to maintain optimal preconception health and reduce the risk of birth defects.
- The program's support from national partners such as CDC and the National Council on Folic Acid (NCFA) is important to the program's success. The program relies heavily on these partners for resource materials that are available at no cost to certain entities, including state government.

Weaknesses, service/support gaps and barriers of the Newborn Health Program include the following:

- Barriers include inadequate funds to continue this project without March of Dimes support and difficulty engaging some school districts in the project due to overwhelming existing responsibilities.
- The greatest barrier to outreach education has been limited funds.
- The greatest barrier to the birth defects intervention is the lack of funds to continue personal contact with affected families. It is difficult to convey information about sensitive issues in written correspondence. On several occasions the intent of correspondence has been misunderstood, causing the affected family unnecessary hurt and stress.

3.2.7 FREE Prescription Prenatal Vitamins through *Schnucks Pharmacies*

Schnucks is one of the largest grocery chains in midwestern U.S. with headquarters in suburban St. Louis. Joining in the fight against birth defects, *Schnucks Pharmacies* now offer FREE prescription prenatal vitamins making it easier for pregnant women and their babies to get the protection they need. Beginning January 18, 2010, all 103 *Schnucks Pharmacies* have offered 13 of the most often prescribed vitamins absolutely free.

3.2.8 Breastfeeding Program

The Missouri Department of Health and Senior Services currently provides a statewide program to promote breastfeeding. The purpose of the Breastfeeding Program is to improve the health of infants and their mothers through the promotion and support of breastfeeding initiation, exclusive breastfeeding for the first 6 months of life and continuation for at least the first year of life. This program also provides technical assistance, training and educational materials to health care providers and the general public regarding breastfeeding as appropriate for all infants. Breastfeeding is one of the most important contributors to infant health. Despite the well-recognized benefits of breastfeeding, according to the most current data available nationwide, 73.9% of all mothers breastfeed in the early postpartum period, and 43.4% were still breastfeeding at 6 months postpartum. There are significant disparities in rates of breastfeeding among various ethnic and racial groups: while whites initiated breastfeeding at a rate of 76%, and continued at age 6 months at a rate of 43%, African American rates were 61% and 29% respectively. According to the CDC's Breastfeeding National Immunization Data-birth cohort 2006, the number of women in Missouri who initiate breastfeeding is 65.3%, the number of babies in Missouri who continue to breastfeed at six month of age is 33.1%, and the number of babies in Missouri who are breastfeeding at 1 year of age is 14.9%. The breastfeeding program collaborates with: WIC agencies, hospitals, home visiting programs, PAT, Parent Link, and the Missouri Chapter AAP. The program uses evidence-based practices. One evidence-based intervention is providing the Breastfeeding Peer Counselor Programs in WIC, there are 48 agencies throughout the state of Missouri. The Statewide Breastfeeding Coordinator serves as a coalition member on the State Breastfeeding Coalition and the National Breastfeeding Coalition. Each year Breastfeeding Month is celebrated in August through the use of media events and educational materials. Lactation rooms are made available to the DHSS employee's in five locations in the department's offices and State Health Lab. An on-going collaborative project between the department and the Missouri Chapter of the AAP has provided professional training to health care providers from FY 2005-2010. Currently four Missouri Hospitals are reviewing the "Ten Steps to Becoming a Baby Friendly Hospital" and are making changes in their maternity care practices in their hospitals to possibly become "Baby Friendly." Another Missouri hospital, Hannibal Regional Hospital in Hannibal, Mo., became "Breastfeeding Friendly" and received their certification in mid 2009. The department is currently working with Dr. Thomas Tryon, breastfeeding champion from the Missouri Chapter of the AAP to promote Missouri's "Show Me Five." This program promotes breastfeeding in Missouri's birthing hospitals and recognizes the work of those hospitals on a statewide level.

3.2.9 Alternatives to Abortion

The Alternatives to Abortion (A2A) Program is aimed at providing support for coordinated services to qualified pregnant women to achieve healthy birth outcomes and to assist women in carrying their pregnancies to term instead of having abortions. Services and counseling are available during pregnancy and continuing for one year postpartum to assist women in caring for their new born babies or placing the babies for adoption. The services provided are need-based and include: case management; prenatal education and parenting skills; job training and placement; drug and alcohol testing and treatment; protection from domestic abuse; adoption assistance; child care; clothing; educational services; food; housing; medical care; ultrasound; supplies; transportation; prenatal care and delivery; newborn/infant care; mental health care; utilities; and other services related to pregnancy, newborn care and parenting. Services are delivered through competitively bid contracts with regional coalitions and community providers in Missouri. All women who enroll in the program are referred to MO HealthNet to determine eligibility. The program is the payer of last resort for these services. Every county has at least one service center supported by the program.

From October 1 through December 31, 2008, a participant satisfaction survey was administered to participants enrolled in the program at one of the 27 contractor sites during this time period. A total of 529 completed surveys were returned. The participants ranged from 14 to 43 years of age. A majority of the participants (40.7%) were in the 20-24 years of age group, followed by the 15-19 years of age group (26.2%). Of the 498 participants who indicated their race, 59.8% were white, 35.1% were African-American, and 2.2% were Hispanic. More participants in urban areas than in rural areas completed and returned their surveys, which indicates the need to expand outreach to rural areas in the state. Overall, the participants gave high rankings on satisfaction of the services and the quality of the program and services.

3.2.10 Adolescent Health Program

The Adolescent Health Program (AHP) works with various DHSS programs and many other organizations to address the unique developmental health needs of adolescents and young adults (10-24 years of age). The AHP addresses many of the national and state performance measures (i.e., reducing teen births, suicide, injuries, obesity, and tobacco use). In 2006 and 2009, the AHP facilitated department-wide adolescent health system capacity assessments to identify strengths, needs and opportunities among 30 DHSS programs serving adolescents. Over the three years, staff commitment and expertise in adolescent health and collaboration increased; more programs were enhanced and few programs were discontinued. However in 2010, budget cuts directly impacting capacity and services are anticipated.

Abstinence Education Grant Program (AEGP)

The AEGP provides education to adolescents with the purpose of delaying involvement in sexual activity until marriage and to decrease out of wedlock pregnancies, adolescent pregnancy and birth rates, and sexually transmitted diseases. This initiative reinforces the A2A Program by reducing unintended pregnancies and the need to even consider abortion as an alternative. The program also educates parents and family members on talking with their adolescent children about sex, abstinence and other healthy decisions.

Missouri Department of Health and Senior Services
2010 Title V Maternal and Child Health Needs Assessment

The AHP administered the State Title V AEGP from 1998 until it ended June 30, 2009. Contractors provided school and community-based abstinence education to 19,000-30,000 adolescents (ages 12-15) and their families annually. A statewide media campaign encouraged parents to talk with their kids about sex, abstinence and other healthy decisions.

In 2009, programs were conducted in: Clay, Jackson, Taney, Laclede, Texas, Jasper, Newton, Barton, Lawrence, Cape Girardeau, Greene, Barry, and Christian Counties and Kansas City and St. Louis City. No other funding source to address teen pregnancy prevention has replaced the AEGP.

Teen Outreach Program (TOP)

This nationally recognized evidence-based program for 12-17-year-olds has proven successful in reducing teen pregnancy, decreasing school dropout rates, fostering school success, and promoting healthy behaviors. TOP is conducted as an afterschool program that includes interactive discussions about issues of interest to teens and service learning opportunities. DHSS contracts with five local public health agencies to implement TOP with school and community partners.

In Missouri, TOP is being implemented in St. Louis City, and the counties of Phelps, Washington, Lafayette, Boone, Mississippi, Clay, and Hickory.

Teen Pregnancy, STD, and HIV Prevention Initiatives

- Missouri's State-Local Team is one of five in the nation selected by the Association of Maternal and Child Health Programs (AMCHP) and the National Association of County and City Health Officials (NACCHO) to develop a state-community model for promoting evidence-based programs. DHSS (Adolescent Health Program and Center for Local Public Health Services staff), Mississippi County Health Department and community partners are increasing local support for implementing proven programs and strategies. Priority needs identified by the coalition are increasing parent involvement and increasing youth involvement in addressing issues related to teen pregnancy. In 2009, the replication of the Teen Outreach Program (TOP) began in collaboration with the Susanna Wesley Family Learning Center.
- Missouri's DHSS/DESE Team was among the four state teams selected for the Reconvene Initiative to strengthen state public health and education collaborative efforts to address HIV/AIDS, STD, and unintended teen pregnancy. DHSS Adolescent Health, HIV and STD program managers, and DESE HIV Prevention Education and Health Education consultants are Missouri Team members worked on a plan to:
 - Identify and serve youth in non-traditional public education settings
 - Review data on STDs, HIV, pregnancies of school-age students to inform allocation of resources
 - Promote medically accurate education and science-based approaches and characteristics of effective programs

Team members have proposed changes in the new DESE Missouri School Improvement Program (MSIP) accreditation standards to assure that HIV, STD and sexuality education is "medically accurate."

Preconception Health for Adolescents Action Learning Collaborative (ALC)

Missouri is one of six states selected to participate in the ALC initiative with AMCHP, the Association of State and Territorial Health Officials (ASTHO), the CDC and fellow innovative states on integrating preconception health recommendations into adolescent health efforts. Key DHSS and DESE programs that address preconception health related issues provided input into the development of the application. Missouri's plan proposes to: 1) reframe "preconception" health for adolescents; 2) enhance existing school-offered curricula that address preconception health issues with teens in Family and Consumer Sciences and Health classes; and 3) inform future state-wide initiatives that address preconception health. Missouri's travel team includes the state adolescent health coordinator, the chief of the Office on Women's Health, the director of the Family and Consumer Sciences and Human Services Section, a youth representative, the executive director of the Teen Pregnancy and Prevention Partnership, and the team leader for the Missouri Foundation for Health Women's Health Funding Program. The state action plan was developed in 2009 and will be implemented through 2011.

Strengths and Weaknesses

Strengths, assets and resources of the Adolescent Health Program include the following:

- The Council for Adolescent and School Health (CASH) of adolescent experts advises the department and expands capacity through the various organizations represented.
- Expertise includes services of board-certified adolescent medical specialists to provide medical consultation to the program, education and specialized training for public health, school nursing, and other youth-serving professionals statewide.
- An assessment of the department's adolescent health system capacity was conducted to strengthen coordination of services among 30 public health programs.
- Teen Outreach Program (TOP), an evidence-based healthy youth development model, is being successfully implemented by five local public health agencies, schools, and community partners to increase success in school and reduce health risks such as teen pregnancy.
- Missouri has three nationally recognized collaborative teams addressing teen pregnancy, STD, and HIV prevention and preconception health promotion. These initiatives increase interagency expertise, pool available staff and program resources to collaboratively address these issues, and prepare the state to leverage future funding opportunities.

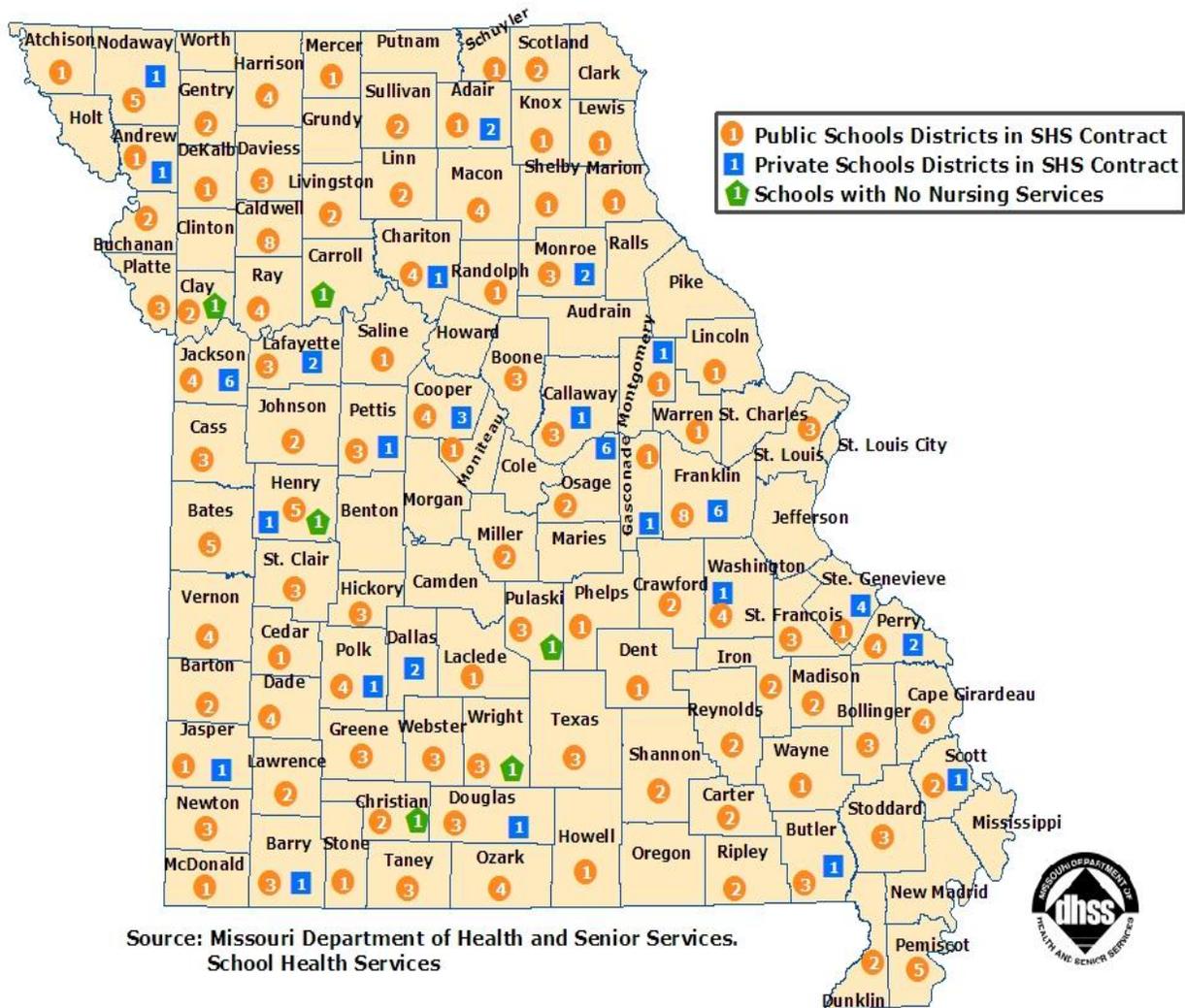
Weaknesses, service/support gaps and challenges of the Adolescent Health Program include the following:

- Additional funding to replicate TOP in other counties with high teen pregnancy and dropout rates.
- While the national, state, and community collaborative efforts provide opportunities for technical assistance from national experts and forums for planning efforts to collectively address adolescent health, there is very little funding to implement the plans and achieve outcomes.
- Uncertainty of funding for adolescent health-related programs and services. Most funding and programs are categorical and target single-issue health deficits of adolescents instead of supporting comprehensive healthy adolescent development.
- Federal, state and community policy makers' understanding of adolescent health needs.

3.2.11 School Health Services

Through the School Health Services (SHS) Program, contracts are provided to public schools and local public health agencies in order to establish or expand population-based health services for school-age children in areas of high poverty and with high nurse to student ratio. The program focus is on increasing access to primary and preventive health care, attention to CYSHCN, early detection of medical and emotional problems, and reduction of absenteeism and dropout rate. The program is a collaborative effort of the DHSS/DCPH, DSS and DESE. When this program began in 1994, 50% of the public schools in Missouri did not employ school nurses. Currently, 99% have a formal School Health Services Program. MCH funds were used in 2002-2007 to address the 30 small rural school districts with no health services. These school districts ranged in size from 44-300 students. Currently, as displayed in Figure 69, there are five remaining school districts in Missouri without a formal SHS Program. The SHS contract supported in part, or fully, 384 staff positions.

Figure 69. Schools Participating in the School Health Services Contract, FY 2009

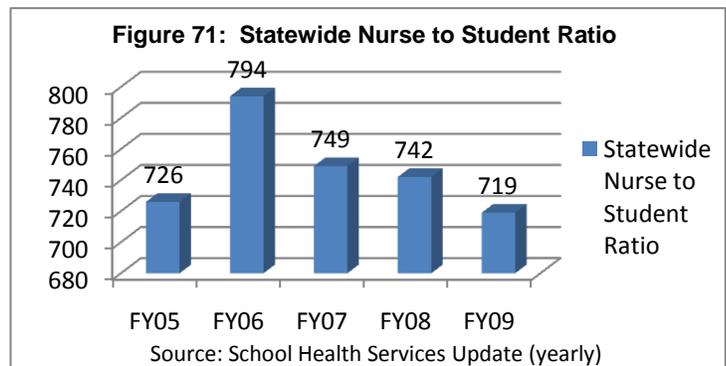
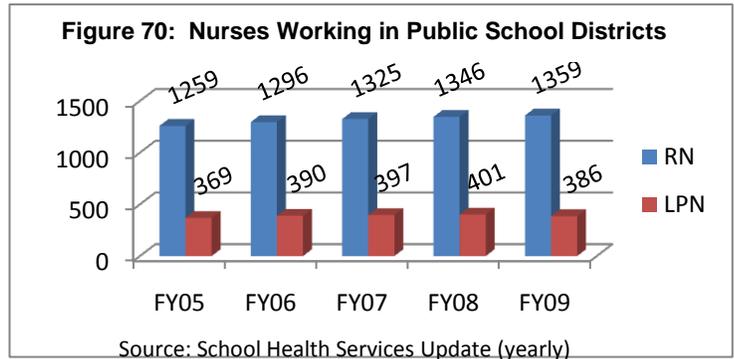


Source: Missouri Department of Health and Senior Services.
 School Health Services

Source: Missouri Department of Health and Senior Services, School Health Services

Selected outcomes from the School Health Contract for children in the SHS program from 1995 to present include:

- Increase from 33.3% to 84.9% of children with access to a regular source of medical care
- Increase from 16.1% to 65.6% of children with a dental exam within the past 12 months
- Increase from 38.1% to 95.5% of children with an Individualized Health Care Plan in place
- Increase from 49.8% to 95.8% of children with asthma, having an Asthma Action Plan in place
- Increase from 42.0% to 88.0% of children with referral completion for hearing screening
- Increase from 39.5% to 80.0% of children with referral completion for vision screening deficits

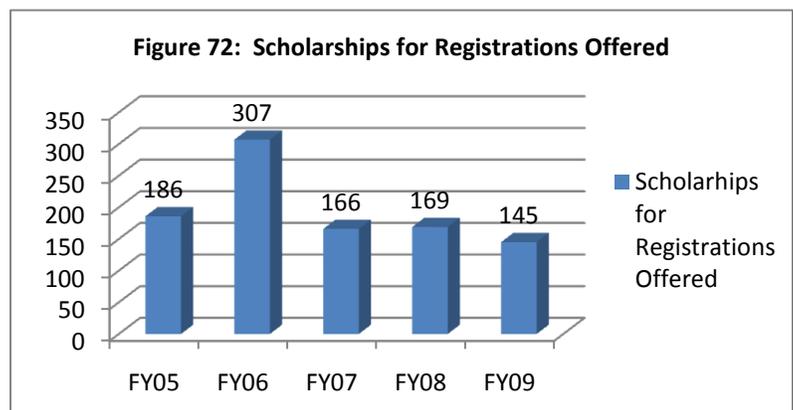


Statewide, the number of school nurses in Missouri has steadily increased (Figure 70).

For the past five years, Missouri public schools have exceeded the HP 2010 goal of one school nurse for every 750 students four out of five years (Figure 71).

This program understands the importance of infrastructure development and capacity building, and offers scholarships for conference registration to school nurses and social workers as funding allows (Figure 72).

The program supports the belief that schools and communities must work together to provide safe school environments for our children and families. The School Health Program partners with others to provide the *School Nurse Emergency Care* workshop for all school nurses. Over 300 school nurses have been trained, and there are 100 nurses on the waiting list. The impact evaluations are strong. This two-day workshop prepares the school nurse to:



- Provide competent emergency care to individuals in the school setting.
- Plan for children with SHCN.
- Develop an emergency action plan for the SHS Program.

Missouri Department of Health and Senior Services
2010 Title V Maternal and Child Health Needs Assessment

- Participate in the development and maintenance of the school district crisis response plan. Every public and private school district was sent *Guidelines for Emergency Care in the School or Daycare*. The guidelines were developed to help school personnel respond to common injuries and illnesses occurring in schools until parents, health staff or emergency response personnel arrive.

The School Health and MCH programs frequently partner to offer combined workshops in regional settings. DHSS blended resources from an MCHB Technical Assistance grant, a HRSA grant and local resources to develop a statewide initiative around issues of mental health promotion. Georgetown University, University of Missouri, St. Louis University, departments of Elementary and Secondary Education, and Mental Health supported the initiative. The MCH document, *Bright Futures in Practice: Mental Health* was the foundation of the regional workshops for local public health agencies, school districts, parents, and community mental health providers. More than 800 entities participated in the two year initiative to promote mental health resiliency for children.

In 2006, the School Health Program and the Section for Healthy Families and Youth partnered with the Department of Mental Health to offer Olweus Bullying Prevention programs for schools in Missouri. Two DHSS staff members are certified Olweus trainers and are currently working with three school districts.

The School Health Program recognizes the value of a well prepared workforce. Professional development opportunities offered, or co-sponsored, by the program include:

- New school nurse orientation
- Poverty simulation activities
- Social marketing
- Cultural diversity
- Role of schools in suicide prevention
- Managing children in the school setting with chronic conditions such as asthma, diabetes, sickle cell disease, and epilepsy
- Role of the school staff in IDEA and 504 planning
- Confidentiality in the school setting: laws and ethics
- Standards of school nursing practice
- Developing nursing care plans for CYSHCN

In 2008-2009 the SHS Program partnered with Ben Francisco, PhD, PNP, AE-C, Research Assistant Professor and Asthma Clinician at the University of Missouri Hospital and Clinics, to provide training to all school nurse program managers. This training was based on the National Heart, Lung and Blood Institute's 2007 Expert Panel Report 3 (EPR3). Nurses were educated to identify the symptoms of "persistent asthma" and given new assessment tools to monitor a student's respiratory flow and assessment of inhaled medication technique.

Figure 73. Contractor Successes from FY 05-09

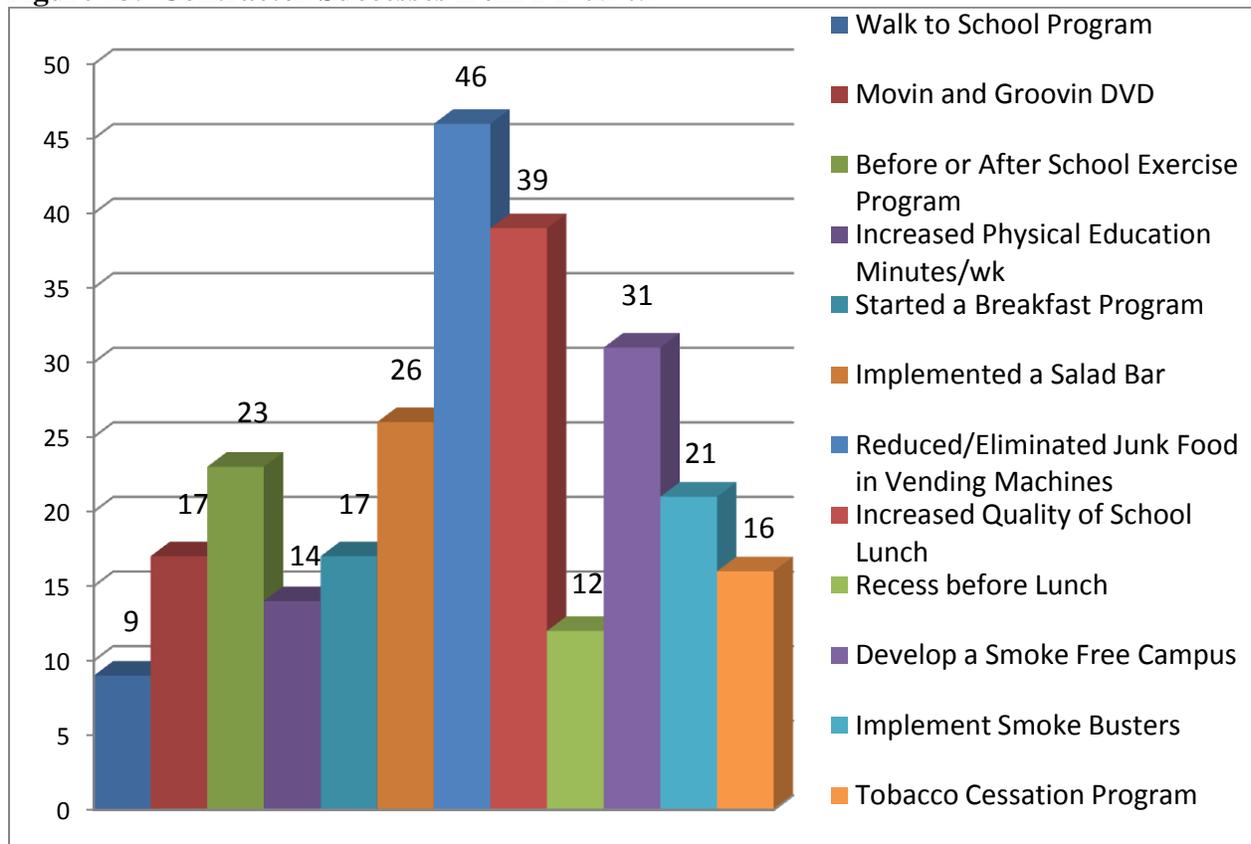


Figure 73 shows the results from a survey of SHS Contract Program Managers with 51 responses of their “Success Stories” over the past five years. The success stories are directly related to using the CDC School Health Index to assess the school environment and practices related to physical activity, healthy eating, smoking, and injury control.

Additional written responses:

- Eleven contracts were awarded grants to improve student dental health, student asthma management and staff training, emergency preparedness, and community programs to address physical activity and nutrition education.
- Safety programs have been implemented to address bullying, suicide prevention and student self esteem.
- Implementation of tobacco education/prevention programs, which have been reported to be the stimulus needed to adopt “Smoke-Free Campus” policies.
- Advancement in the “Missouri Eat Smart” guidelines.
- Adoption of district policies to promote healthy non-food school fundraisers and non-food classroom rewards.
- Policies to discourage taking away recess time as a consequence for behavior or missing classroom assignments.
- Increase in the diversity of types of physical education program activities to promote an increase in student participation and adoption of healthy/active lifestyles.

Missouri Department of Health and Senior Services
2010 Title V Maternal and Child Health Needs Assessment

- Promotion of exercise programs during classroom time to stimulate the learning environment.
- Promotion of community use of school fitness facilities/equipment and “Family Fitness Nights.”
- Staff wellness programs involving physical activity and nutrition which have, in some instances, resulted in a measurable decrease in sick days, as well as positive role modeling for students.
- Health risk assessment programs for staff resulting in improved overall wellness scores.
- Implementation of “Back Pack” programs to provide food on weekends.
- Strengthened relationships between school districts, local public health departments, and local community organizations/businesses due to collaboration on School Health Advisory Councils.

Strengths and Weaknesses

Strengths, assets and resources of the School Health Services program include the following:

- One hundred and twenty three school districts began with the School Health Services (SHS) program and are now fully self-supporting and following the program, indicating community buy-in and expanding local effort.
- This program provides contracts for school health services in 279 (out of 522) school districts serving 270,000 school-age children.
- The program focus is on increasing access to primary and preventative care, attention to CYSHCN, early detection of medical and emotional problems, and reduction of absenteeism and dropout rate.
- Many external and internal stakeholders (asthma, Medicaid outreach, diabetes, Missouri School Boards’ Association, child abuse and prevention programs, immunization and lead programs, physical activity and nutrition programs) actively collaborate in the School Health Program.
- The program has baseline data for health indicators for contractors to use in developing work plans for their contract setting own goals for program improvement.
- All performance measures are based on evidence-based practices.
- Local public health agencies and community members are involved in all decisions at the local school level by way of School Health Advisory committees that meet at a minimum, four times a year. Minutes of the meetings and decision making process are shared with the department so that trends and needs can be identified.
- The nurse-to-student ratio in Missouri’s public schools is one nurse to 719 children, which exceeds the Healthy People 2010 objective for one nurse to 750 children.

Weaknesses, service/support gaps and challenges of the School Health Services program include the following:

- Parochial schools are not well represented in the contract.
- The nurse-to-student ratio in private/parochial schools is not measured.
- In Missouri, there are six small rural school districts representing less than 500 children without a school nurse.

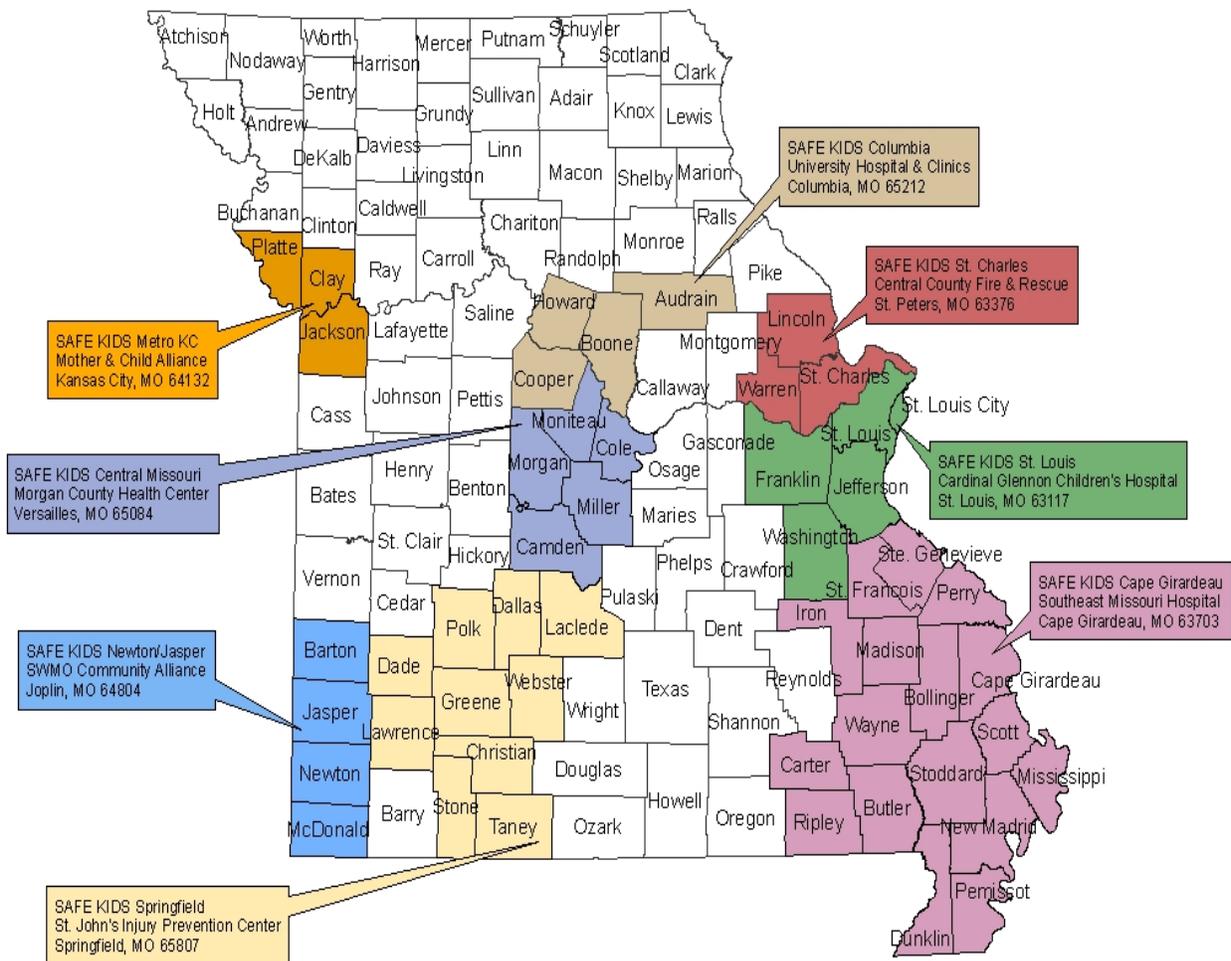
Missouri Department of Health and Senior Services
 2010 Title V Maternal and Child Health Needs Assessment

- Schools not in the SHS contract do not receive the professional development/mentoring or structure provided to those in the contract. Nearly 600,000 children have health services, but the services are not monitored by the SHS program.
- Two large urban districts (St. Louis and Kansas City) do not participate in school health contracts, and there is no reporting regarding the urban population.
- Lack of funding to address the remaining school districts without services.
- A need to constantly provide professional development to school nurses with no budget.
- Move to statewide data collection regarding the same indicator as school health contractors.

3.2.12 Injury Prevention Network

The Injury Prevention Program supports activities to reduce the incidence of fatal and non-fatal injuries in Missouri. The program supports the implementation of injury prevention programs in communities statewide. Strategic priorities are being developed to address the major injury areas in Missouri. SAFE KIDS of Missouri has established coalitions to provide injury prevention and intervention to children ages 0-14. The SAFE KIDS Coalitions of Missouri and their respective service areas are depicted in Figure 74.

Figure 74. Missouri SAFE KIDS Coalitions



Strengths and Weaknesses

Strengths, assets and resources of the Injury Prevention Program include the following:

- Eight Safe Kids coalitions provide targeted injury prevention activities to children ages 0-14 in 50 counties and the City of St. Louis in Missouri.
- Activities and interventions include safety fairs, child passenger safety checks, crib safety information, water safety, and more. Specific activities and interventions depend on the coalition location and funding availability.
- The SAFE-CARE network provides education and training to providers of forensic examinations for children of alleged sexual maltreatment.
- Development of a web-based system for child forensic exam case reviews and mentoring.

Weaknesses, service/support gaps and challenges of the Injury Prevention Program include:

- With 50 counties and the City of St. Louis covered by the eight Safe Kids coalitions, this still leaves 64 counties in Missouri not receiving Safe Kids services.
- Northeast Missouri ceased providing services in March 2009 and this coalition needs to be reestablished.
- Lack of adequate funding to better support existing coalitions and the establishment of new ones.
- Need for a fully developed and implemented statewide tiered system of care for child sexual maltreatment.
- Need for clarification and/or completion of an injury prevention strategic plan.
- Challenges maintaining and securing lead agencies for Safe Kids coalitions.
- Uncertainty of funding for ongoing SAFE-CARE activities (training, education, tiered system, case review, mentoring).

3.2.13 Childhood Lead Poisoning Prevention Program (CLPPP)

The Childhood Lead Poisoning Prevention Program's (CLPPP) mission is to assure the children of Missouri a safe and healthy environment through primary prevention, detection, surveillance, and environmental and case management for lead exposures that may cause illness or death.

Case Management

CLPPP works to assure that health care providers have the right information and tools available to screen patients under age 6 for lead. State guidelines describe proper treatment of children with elevated blood lead levels (EBLs) of at least 10 µg/dL, which is the level of concern recommended by the CDC. Follow-up activities and case management are provided for children with an EBL > 10 µg/dL. Follow-up activities assist in helping the family understand the causes and health effects of childhood lead poisoning along with interventions that can reduce the current elevation, and help prevent repeated exposures and elevations.

Environmental Management

Lead Risk Assessments, provided through regional contracts, are performed for children with an EBL ≥ 15 µg/dL. These assessments provide the family with information about where lead hazards exist in and around their home, and how best to reduce these hazards and the risks associated with them. Environmental management and follow-up is provided to ensure lead hazards are reduced or eliminated in and around the child's home.

Education and Outreach

CLPPP conducts lead poisoning prevention education and outreach activities across the state. Educational materials are developed and distributed to create an awareness of lead poisoning. Outreach and education efforts have been targeted toward pregnant women to raise awareness that lead can be passed from mother to her unborn child. CLPPP works with the LPHAs, the medical community, other state agencies, businesses, schools, and community organizations in efforts to prevent childhood lead poisoning. The program created Leadosaurus, a dinosaur character, to promote lead poisoning prevention. The Leadosaurus costume is available to any organization in Missouri wanting to increase lead poisoning prevention education and blood lead testing. Outreach and health education, annual reports, data, maps, screening tools, program manual, laws and regulations, and other related lead poisoning prevention information is available for anyone to access on the DHSS CLPPP Web site at <http://www.dhss.mo.gov/ChildhoodLead/>.

Surveillance

The program currently uses the Missouri Health Strategic Architectures and Information Cooperative (MOHSAIC) database to collect lead-specific data from medical and lead program activities pertaining to children under the age of six. This database is part of a tracking system to provide medical testing, case management and environmental assessments statewide. The data are used to provide comprehensive lead case management services and statistical information.

During 2008, the following numbers of blood lead tests were reported in Missouri: 6,139 infants; 84,010 children between ages 1-5; 4,515 children between ages 6-18; and 556 women (blood lead tests for individuals 6 years of age and over is obtained from the Adult Blood Lead Epidemiology and Surveillance (ABLES) program).

Program Changes in the Past Five Years

Several changes have occurred in CLPPP in the past five years. Upon notification of a qualifying venous blood lead result, CLPPP notifies the LPHA in the county the child resides and also notifies the appropriate regional contractor to conduct a Lead Risk Assessment. The definition of a qualifying venous blood lead result has changed in the last five years. Initially, a qualifying venous blood lead level was ≥ 20 $\mu\text{g}/\text{dL}$ or a second venous blood lead result of ≥ 15 $\mu\text{g}/\text{dL}$ at least three months after the first. Currently, a single venous blood lead result of ≥ 15 $\mu\text{g}/\text{dL}$ indicates that a Lead Risk Assessment must be conducted within specific timelines.

Re-evaluation of Universal and Targeted Testing areas is conducted annually to determine reconfiguration. Each year, counties and/or ZIP codes may be re-designated from Universal to Targeted Testing areas. For example, during 2008, Nodaway, Grundy and McDonald counties, along with Kansas City zip code 64132, were able to go from Universal to Targeted screening areas because the number of children tested increased and the percentage of children identified as having an elevated blood lead level decreased. An updated Universal Testing map is published every year and is available at www.dhss.mo.gov/ChildhoodLead/Maps.html.

3.2.14 Asthma Prevention and Control Program

The Missouri Asthma Prevention and Control Program (MAPCP) began in 2001 with a planning grant from CDC and currently is funded as an Enhanced Intervention Program. In 2009,

Missouri became one of nine states receiving supplemental intervention funds. The MAPCP has three programmatic areas – partnerships, surveillance, and interventions with the following goals:

- Build and maintain relationships among organizations and individuals for alignment of effort and resources (*Partnerships*).
- Establish and maintain data sources that inform public health planning and intervention effectiveness (*Surveillance*).
- Promote a systems-based approach to delivering optimal asthma care and self-management support without barriers for people with asthma (*Interventions*).

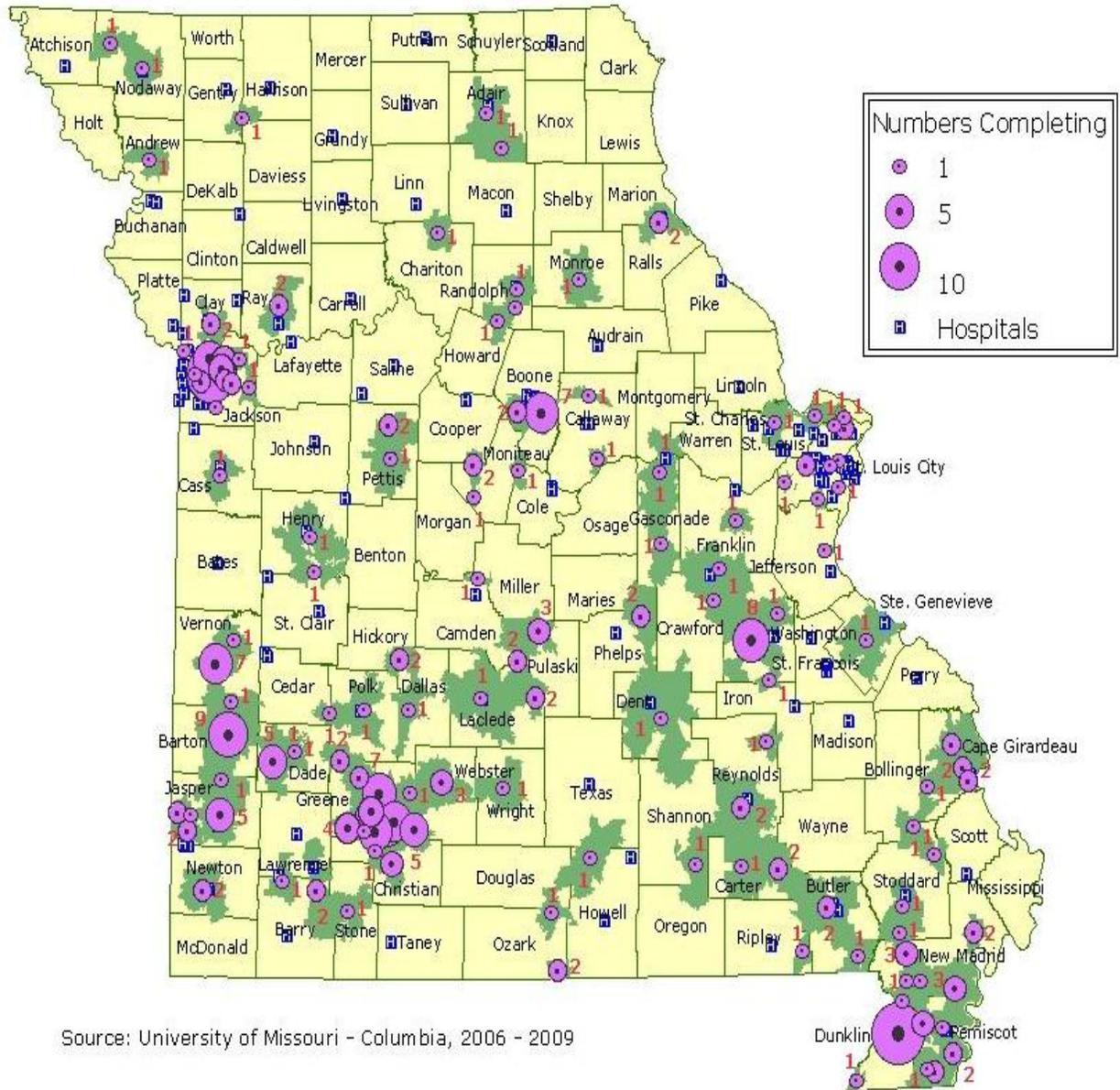
Within these goals are objectives to reduce asthma related deaths, ED visits and hospitalizations, number of school and work days missed, activity limitations and disparities in asthma outcomes. Multi-level interventions include improving asthma outcomes in school-aged children through asthma action plans, school nursing manuals, awards programs and education of school staff (e.g., teachers, school board members, etc.); education of child care health consultants and child care workers; Asthma Ready Hospitals, Schools and Clinics; and county-wide community asthma action and resource linkage initiatives.

The program has many accomplishments to date and include: 1) The workforce development initiative has trained nearly 700 health professionals (Figure 75); 2) Nearly 2000 Asthma School Manuals and in-service DVDs have been distributed; 3) Through the School Health Contract (covers nearly 300,000 children and shown in Figure 76), 96% of children that have medication at school have an asthma action plan; 4) Every newly elected school board member in the state receives training that includes asthma; 5) The 2007 Missouri County-level Study was completed interviewing a total of 49,513 adults to produce state and county-level prevalence rates of behavioral risk factors and chronic diseases, including asthma; 6) Three years of the Asthma Adult and Child call-back study data has been collected; 7) Hospital and emergency room data are available on line since 1993; 8) The School Nursing Award's over 200 recipients have implemented community-based projects in 60% of Missouri counties 9) The asthma module for Intervention Missouri for Community Interventions and Assessments is complete; 10) Childcare Health Consultants have provided Asthma Management Training to a total of 3,175 child care providers; 11) the MAPCP received the 2008 Governor's Award for Quality and Productivity for Innovation; and 12) The Missouri Foundation for Health is investing \$8.5 million in asthma over the next five years.

Air Pollution and Asthma

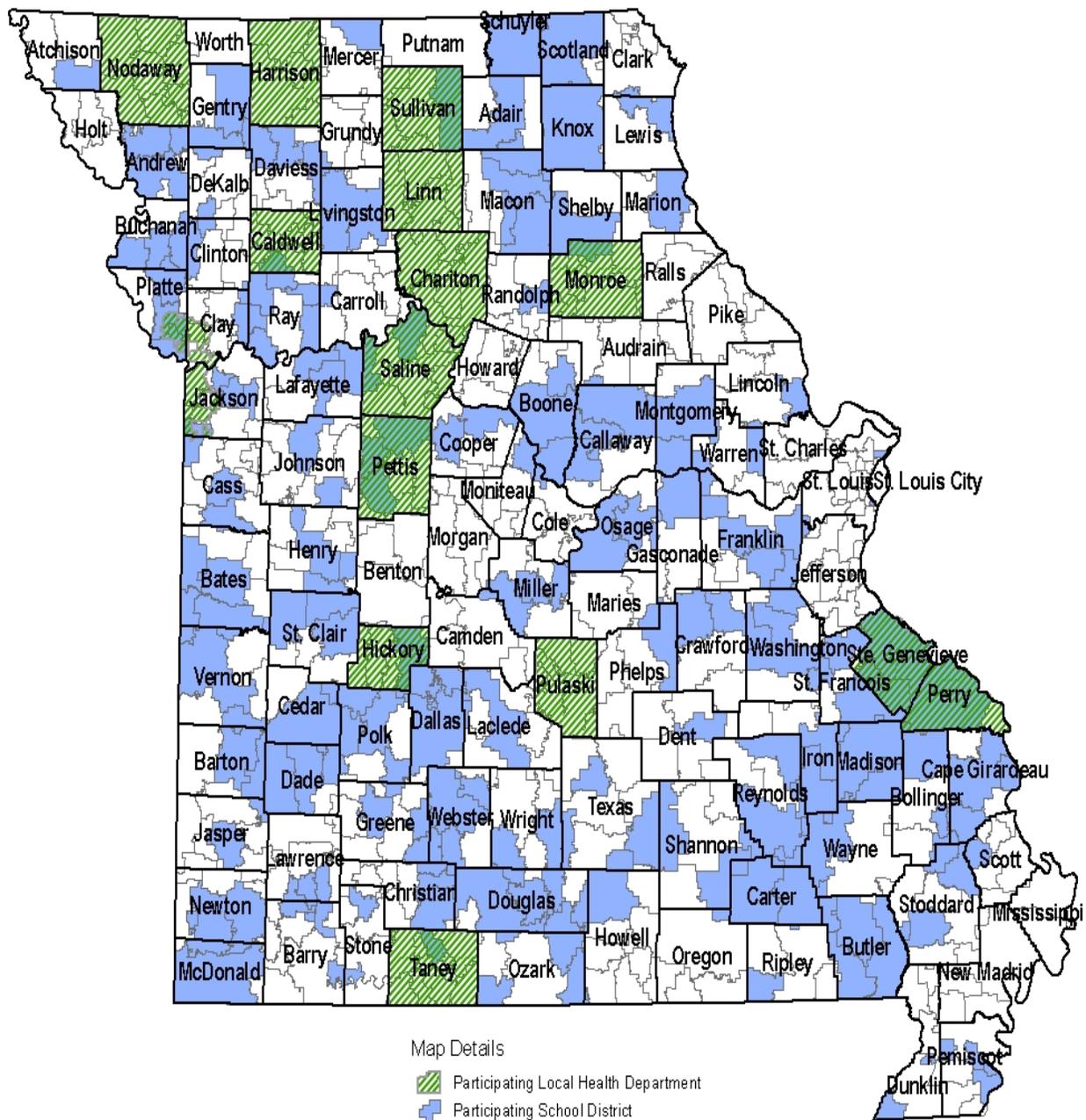
A number of studies have reported exposure to air pollution associated with increased use of asthma medications and an increased rate of ER visits and hospitalizations for asthma. Based on the most recent air quality data (2006), the U.S. Environmental Protection Agency (EPA) has determined that all areas in Missouri meet the National Ambient Air Quality Standards for fine particles (PM_{2.5}), measured over a 24-hour period. EPA has taken significant actions that will reduce fine-particle pollution locally, regionally and nationally. The Clean Diesel Program, for example, will dramatically reduce particle-forming emissions from highway, non-road and stationary diesel engines. The American Recovery and Reinvestment Act of 2009 provided \$300 million in new funding for programs to support the implementation of verified and certified diesel-emission reduction technologies.

Figure 75. Missouri Workforce Development, Becoming an Asthma Educator and Care Manager (Number of People Completing the Course 2006-2009)



Source: University of Missouri - Columbia, 2006 - 2009

Figure 76. School Health Program Participants 2009



Source: Missouri Department of Health and Senior Services, School Health Services

3.2.15 Diabetes Prevention and Control Program (DCPC)

Nationally, more than 13,000 children are diagnosed with type 1 diabetes (originally called Juvenile Diabetes) each year and the number diagnosed with type 2 diabetes is on the rise in parallel to the obesity epidemic. Overall, about 5-10% of diabetes is type 1 and 90-95% is type 2. Rates for Type 2 diabetes are higher in American Indians, African-Americans and Hispanics at higher rates when compared to whites. Rates are also affected directly by socio-economic factors like income and education levels, low income and education levels are associated with higher prevalences of diabetes.

In Missouri, 4.2% of women questioned through the BRFSS survey reported that they had been told by a physician that they had pregnancy-related diabetes. About 8.2% of all women had been told they had any type of diabetes in their lifetime.

The DPCP program reduces the burden (e.g., secondary complications, health care costs) of diabetes by partnering at the community and health care system level to provide screenings, referrals, care management and reducing primary risks (e.g., obesity and physical inactivity). Some services of this program are provided to women of childbearing age in Missouri.

Over the past several years, the DPCP has worked collaboratively with the Heart Disease and Stroke Prevention Program; Tobacco Control Program; Blindness Education, Screening, and Treatment (BEST) Program; and the Missouri Primary Care Association (MPCA) to improve patient care in 18 of the 21 Federally Qualified Health Centers (FQHCs) in the state. Scorecards were provided to each FQHC to monitor performance toward individual quality improvement goals, and technical assistance was offered to those centers demonstrating minimal progress. Additionally, the DPCP used the Assessment of Chronic Illness Care (ACIC) tool to monitor organizational changes in the FQHCs based on their implementation of the Planned Care Model and related quality improvement activities.

Data from the FQHCs was entered and tracked in a statewide diabetes registry which captured information on 15,034 patients as of May 2009. In conjunction with this work, the MDPCP developed and promoted the statewide use of consensus-based diabetes screening and treatment guidelines, and conducted media campaigns on flu/pneumococcal vaccinations in 2005-2006 and again in 2008-2009. Through collaboration with the BEST Program, funding was also made available to FQHCs to provide diabetic eye exams for uninsured patients in need.

3.3 Infrastructure Building Services

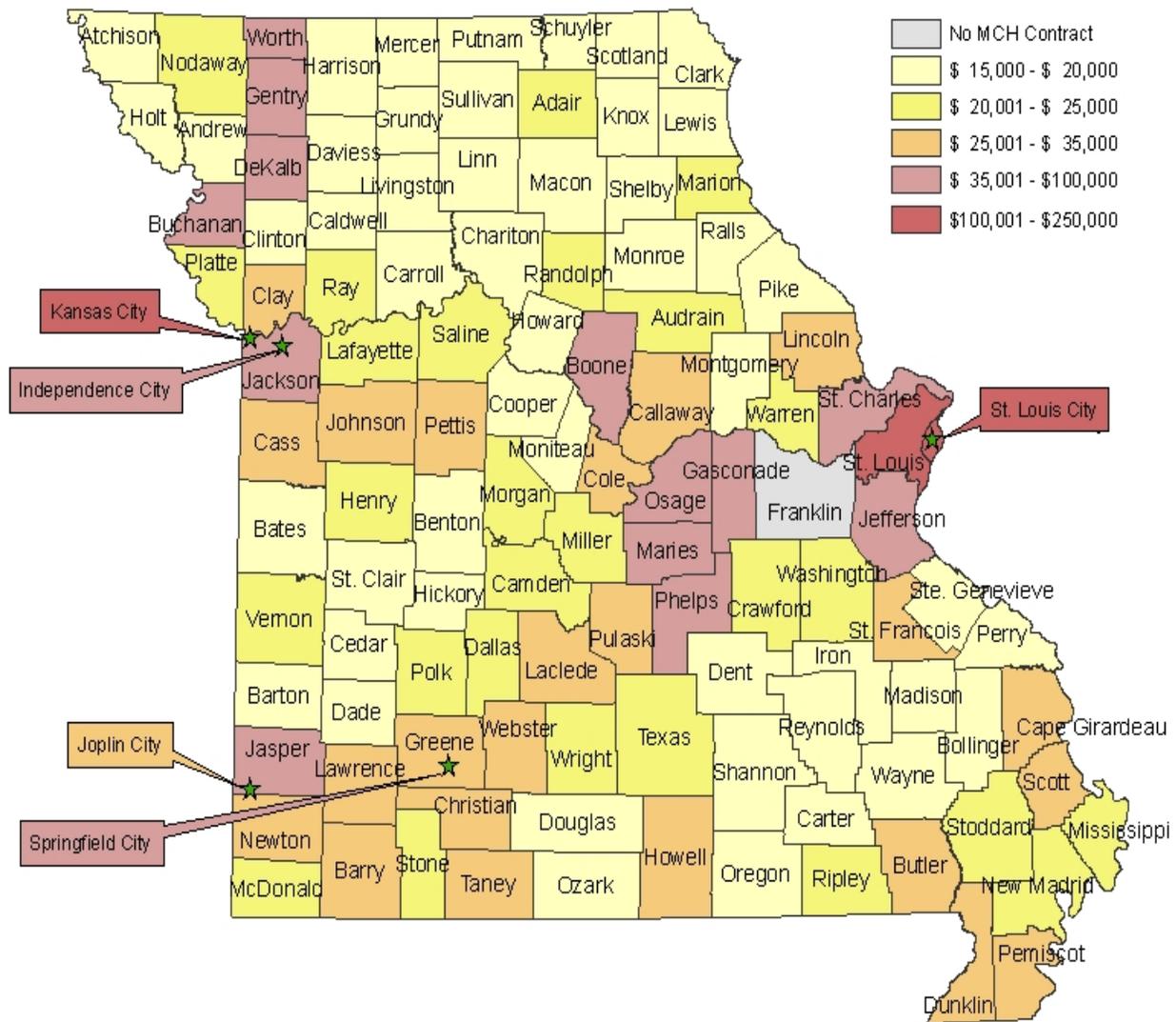
3.3.1 Maternal and Child Health Coordinated System

The MCH Coordinated System distributes a portion of MCH Title V Block Grant funds to LPHAs through the MCH services contract. The contracts emphasize partnerships and coalitions at the local level to build MCH systems and expand the resources those systems can use to respond to priority MCH health needs. While the contractor is required to select one of three priority indicators to address during the contract period, funding can be used to expand or enhance other activities that improve the health of mothers and children and address local MCH issues. The priority health issues addressed during the four-year contract include:

- Reduce *obesity* among children, adolescents and women
- Prevent and reduce *smoking* among adolescents and women
- Reduce *intentional and unintentional injuries* among infants, children and adolescents in Missouri

The following map (Figure 77) shows levels of funding that various local communities in Missouri receive through the MCH contracts. The funding formula for MCH contracts is primarily population-based, where counties with the largest number of MCH population groups receive corresponding levels of MCH (contract) funding.

Figure 77. FFY 2009 Maternal and Child Health Contracts

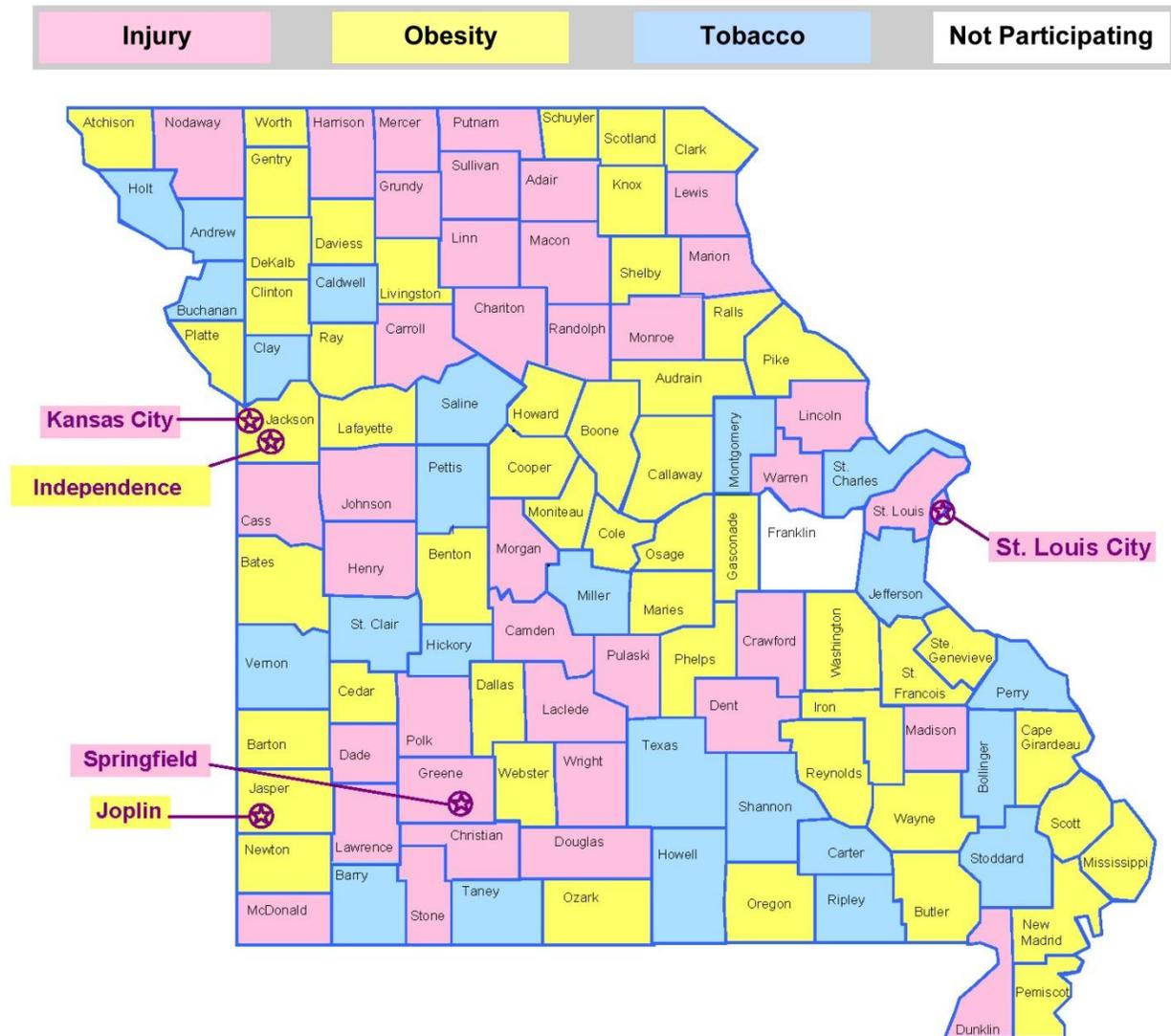


Note: Map from 2009 program budget template.

The map below (Figure 78) represents the final two years of this four-year contract with Missouri's LPHAs and the priority health issues they have selected to address with their community partners. The contract design and focus changed two years ago after a comprehensive evaluation. The result was a multiple year contract, narrowing the focus to address one priority health issue, requiring an improved coordinated systems approach with their community partners, and with those partners, to select interventions based on their data that are evidence-based, field-tested or validated by expert opinion. Examples of environmental and policy changes in the past two years have been in areas such as a bicycle helmet law passed in a large urban county, smoke-free policies on school campuses and in communities, community gardens in rural and urban areas; development and promotion of walking/biking trails; and policy changes in nutrition and physical activity in schools and child care facilities. Six regional District Nurse Consultants provide technical assistance and consultation to the LPHAs and communities. Community development staff assisted with training on how to engage

community partners in health issues. Contractors have used this funding to leverage additional funding to expand efforts. Challenges continue with some agencies around the systems approach and in engaging community partners to build sustainability, rather than implementing individual interventions.

Figure 78. Maternal Child Health Services Contract 2009-2011 Priority Health Issues



Source: Missouri Department of Health and Senior Services. Centers for Local Public Health Agencies

3.3.2 Early Childhood Comprehensive System

Since its inception in 2003, the mission of the Early Childhood Comprehensive System (ECCS) Steering Committee has been to build and implement a statewide early childhood comprehensive system that supports families and communities in their development of children that are healthy and ready to learn at school entry. Through the development of an early childhood comprehensive system (including CYSHCN), the ECCS Steering Committee has identified strategies for strengthening current collaborations and partnerships, as well as implementing new ones with public and private entities. Members of the steering committee advise the state's

Coordinating Board for Early Childhood (CBEC) and the CBEC formally adopted the ECCS State Early Childhood Plan as their strategic plan and approved it in January 2009. They began work on a strategic plan for the CBEC's work and application as the State Advisory Council. Work is currently progressing on joining the ECCS State Early Childhood Plan and the CBEC strategic plan. Continued development of local infrastructure to correspond with state efforts to adopt and implement the ECCS plan continues to build upon the work of previous years work with the ECCS. Developing a formal communication plan between the local stakeholder teams and the ECCS Steering Committee and/or CBEC is a next step of the ECCS Initiative to help insure sustainability.

3.3.3 Missouri Pregnancy Risk Assessment Monitoring System (PRAMS)

PRAMS, the Pregnancy Risk Assessment Monitoring System, is a surveillance project of CDC and state health departments. PRAMS collects state-specific, population-based data on maternal attitudes and experiences before, during and shortly after pregnancy. PRAMS was initiated in 1987 because infant mortality rates were no longer declining as rapidly as they had in prior years. In addition, the incidence of low birth weight infants had changed little in the previous 20 years. Research has indicated that maternal behaviors during pregnancy may influence infant birth weight and mortality rates. The goal of the PRAMS project is to improve the health of mothers and infants by reducing adverse outcomes such as low birth weight, infant mortality and morbidity, and maternal morbidity. PRAMS provides state-specific data for planning and assessing health programs and for describing maternal experiences that may contribute to maternal and infant health. The PRAMS project collects data not available through any other resources and is currently considered as a gold standard for emerging maternal and child health epidemiology data needs. The importance of PRAMS as a nationally recognized premier data source on maternal and child health is further substantiated by the fact that PRAMS in partnership with California's Maternal Infant Health Assessment (MIHA) has been chosen as a data source for six Healthy People 2020 objectives. As of 2009, 37 states, New York City and South Dakota (Yankton Sioux Tribe) participate in PRAMS.

DHSS along with seven other new grantees became a CDC PRAMS state in 2006. Prior to becoming a CDC PRAMS state in 2006, the department conducted a yearlong pilot PRAMS project – Missouri Pregnancy Related Assessment and Monitoring System (MoPRA). The successful implementation and completion of a year-long pilot PRAMS project helped the department receive the five year CDC PRAMS grant. The Missouri PRAMS project began data collection in 2007 and is currently in the third year of data collection with one more year to go. For data to be used in the multi-state analyses, CDC PRAMS recommends that states attain a 65% weighted response rate. For the first two years (2007 & 2008) of data collection Missouri PRAMS had a weighted response rate of 65% and 64% respectively. While Missouri PRAMS fell short of the CDC PRAMS mandated response rate in the second year of data collection, the data could be used by the Missouri PRAMS project to analyze select maternal and child health indicators in Missouri.

PRAMS Supplemental Flu Data Collection

Pregnant women are at increased risk for severe complications from influenza. Since 2004, Advisory Committee on Immunization Practice and the American College of Obstetricians and Gynecologists (ACOG) has recommended that pregnant women be vaccinated with the seasonal

flu vaccine any time during pregnancy. Existing data show that the immunization rates for seasonal influenza vaccine among pregnant women is very low. Accompanying the issue of seasonal influenza vaccination during the 2009-2010 season was an additional threat posed by the Pandemic influenza A (H1N1) virus. Initial reports, based on national data, showed that pregnant women were particularly vulnerable to H1N1 infection and associated adverse pregnancy outcomes. The PRAMS surveillance system in collaboration with the CDC Immunization Program collected data using the multimode methods employed by PRAMS. The Missouri PRAMS project is participating in the supplemental flu data collection module and data collection has begun to this extent.

3.3.4 Pediatric Nutrition Surveillance System (PedNSS) and Pregnancy Nutrition Surveillance System (PNSS)

Pediatric Nutrition Surveillance System (PedNSS)

PedNSS is a national surveillance system created and maintained by CDC. The purpose of this system is to survey the growth status of children of low-income families in federally funded maternal and child health programs. This allows PedNSS to monitor progress toward national health objectives and to evaluate interventions to improve the nutritional health of children. Currently, the Missouri PedNSS is composed of data collected exclusively from infants and children from birth up to the 5th birthday participating in the Special Supplemental Nutrition Program for Women, Infants and Children (WIC). The data on growth (birthweight, short stature, underweight, overweight) and anemia (low hemoglobin/hematocrit) status of infants and children, and the breastfeeding practices of their mothers is collected in local WIC clinics and analyzed by CDC. Currently, the following information is generated and analyzed:

- Health and nutrition indicators of children ages 0-5 who participated in the WIC program of Missouri in 2008
- Socio-demographic characteristics of the children in the WIC program
- Prevalence rates of selected health and nutrition indicators for 2008
- Trends of prevalence rates of health and nutrition indicators from 1999

Pregnancy Nutrition Surveillance System (PNSS)

PNSS is a national surveillance system created and maintained by CDC. PNSS surveys health and behavioral risk factors among low-income, pregnant, prenatal and postpartum women enrolled in federally funded public health programs. This allows PNSS to monitor progress toward national health objectives and to evaluate interventions designed to improve the nutritional and behavioral health of women of childbearing age. Currently, the Missouri PNSS is composed of data collected exclusively from WIC. The data includes complete information on prenatal and postpartum records with demographics, health and behavior risk factors, and infant birth outcomes. Currently, the following information is generated and analyzed:

- Demographic information on race/ethnicity, education, and age distributions in the 2008 Missouri PNSS population
- Prevalence rates of selected health and nutrition indicators for 2008
- Mutual influences among factors of maternal behavior, mothers' health situation, and birth outcome

3.3.5 Pregnancy Associated Mortality Review (PAMR)

The department's Division of Community and Public Health investigated the feasibility of a more extensive maternal death review process in Missouri than it had utilized in the past. Pregnancy associated mortality review (PAMR) programs in other states were reviewed, along with past methods of review utilized by DHSS. In establishing a more extensive maternal review process in Missouri, a decision was made to expand the traditional definition of maternal mortality by including CDC and American College of Obstetrics/Gynecology (ACOG) definition of pregnancy associated and pregnancy related deaths. The department's plan was to use the expanded definition to assess statewide maternal mortality, to recommend an approach to evaluate the causes of maternal mortality, and to develop strategies to effect change. Based on data collected by other states it was felt the data collected in Missouri would probably mirror that of the other states concerning the demographics and causes of death.

Between 1999 and 2003, the Missouri PAMR project identified 228 pregnancy related deaths and examined the characteristics and causes. The Missouri PAMR project identified maternal deaths that were missed by the conventional reporting systems. Descriptive analysis of the PAMR data identified not only the leading causes of maternal death in Missouri but also areas of the health care delivery system that could be improved. These recommendations include: 1) the encouragement of health care providers to accurately complete the death certificate to indicate if pregnancy contributed to the death, and 2) the timely diagnosis and management of high risk conditions such as cancer, hypertension and postpartum depression.

3.3.6 Birth Defect Registry

The department has maintained a birth defect registry since 1985, which includes births since 1980. Because of registry improvements beginning in 1993, most data analyses for Missouri birth defects use 1993 as the earliest year. The registry is passive and utilizes a multiple source approach. Data are population-based and collected statewide, although some data sources vary in completeness by area of residence due to out-of-state hospital utilization. The birth defect registry is birth certificate based. It is the record to which all other data are linked. All data items recorded on the certificate are included in the registry. Birth certificates for births to Missouri residents occurring out of state are included.

Birth defects data are collected via the check-box format specified for the U.S. standard certificate, but case ascertainment from the birth certificate is low. Because of this underreporting, DHSS appends the birth defects from the following additional sources: 1) Death Certificates: Includes data for all deaths occurring up to the first birthday into the registry. 2) Newborn Patient Abstracts: These are the major source of data on both major and minor birth defects; 66% of total birth defect cases have a newborn abstract listing one or more defects. Submission of patient abstract data is mandatory for all non-federal Missouri hospitals. Limited patient abstract data for Missouri residents discharged from surrounding states are also obtained, improving coverage for some border counties with a substantial proportion of births occurring in out-of-state hospitals. Linkage is accomplished by automated linkage and follow-up visual examination of unlinked records and those with multiple potential links. 3) Pediatric Patient Abstracts: Most inpatient and selected outpatient admissions through the first year of life are included; 48% of total birth defect cases had a pediatric abstract listing one or more defects. Linkage is by computer algorithm, with limited manual matching of unlinked and multiple linked

records. The department maintains individual records for each linked hospital encounter. 4) Program Databases: Includes data from the DHSS administrative database for departmental programs, e.g., CYSHCNP; and Missouri's newborn hearing screening, cystic fibrosis, sickle cell anemia, hemophilia, metabolic, and biochemical disease assistance programs.

DHSS collects data for all diagnoses included in the 740-759 section of the *International Classification of Diseases-9th Revision*, plus additional conditions primarily of prenatal or genetic origin, e.g., congenital infections, metabolic disorders. For most analyses, birth defects are defined by National Birth Defect Prevention Network (NBDPN) recommended categories.

Most data analysis is for live births only. The sole source of defect data is the fetal death certificate, completed for fetal deaths of 20+ weeks gestation. For 2002-2006, birth defects were reported for 12.4% of fetal deaths, either a birth defect as the listed cause of death, or a birth defect indicated on the check-off list. Elective terminations are not included in the registry. Missouri has an abortion reporting system, but no information is currently available for defects diagnosed in the aborted fetus.

Birth Defect Registry Utilization

The Birth Defect Registry (BDR) works closely with the department's bureau of Genetics and Healthy Childhood. Birth defect data are provided to support preventive and supportive activities. Among these are a contact program, in which the programs identify surviving infants with spina bifida, oral-facial clefts, and Down syndrome. Parents are contacted to provide information on state programs for which the child may qualify, including the CYSHCNP and First Steps early intervention programs.

Registry data are also used to monitor for unusual patterns of birth defects. The BDR provides yearly county-level data for 12 birth defects to the environmental health tracking program. Birth defects data are included in health assessments of populations surrounding uncontrolled or abandoned hazardous waste sites, as well as baseline and follow-up assessments required of applicants for permits to treat, store, or incinerate hazardous waste (three to four times per year). Additionally, the BDR responds to community concerns about perceived clusters of anomalies. On a yearly basis, county-level data for 12 birth defect categories are provided to the environmental public health tracking program for inclusion in the state Web portal.

County-level data on overall birth defects and neural tube defects are published on the DHSS infant health profile Web site. The department is developing a major revision to the birth defects report, restructuring it to be more user-friendly and organizing data based on the birth defect categories recommended by the National Birth Defect Prevention Network (NBDPN). Adding additional sources of data, such as Medicaid claims data, is a goal for the registry and will require additional resources.

3.3.7 Behavioral Risk Factor Surveillance System (BRFSS)

The BRFSS is an annual telephone survey of approximately 5,300 adults age 18 and over. BRFSS provides a wide range of data on health conditions, risk factors, preventive practices and emerging issues. Because of the sample size, only state and regional data are available. Data are available on the Missouri BRFSS Web site at <http://cntysvr1.lphamo.org/pubdocs/brfss/index.php>. Regional data are available in annual

reports and may be accessed through the Data and Statistical Reports link on the home page or at <http://www.dhss.mo.gov/BRFSS/Data.html>.

BRFSS data are used for some of the Maternal and Child Health Indicators. The following are the indicators included in the needs assessment:

(Percentage of Women ages 18-44)

- Has any health care coverage
- Could not see a doctor because of cost when needed to in past year
- Computed asthma status – current, former and never
- Ever been told by a doctor they have diabetes
- Ever been told by a health professional they have high blood pressure
- Computed body mass index categories – neither overweight or obese, overweight and obese
- No leisure time physical activity
- Currently smoke and smoking status – current, former and never
- Engaged in binge drinking on one or more occasions in the past 12 months (Women four or more drinks)
- Multivitamin use - women ages 18-44 that take a pill or supplement with folic acid daily
- Teeth last cleaned by a dentist or hygienist
- Have had one or more permanent teeth removed
- Ever been tested for HIV
- Frequent mental distress - mental health was not good for more than 14 of the past 30 days

Additional BRFSS indicators are used for the annual MCH grant application and progress reporting including mammography use, Pap testing and childhood asthma.

3.3.8 Community Health Improvement Resources (CHIR) Web Site

The department provides a unique web-based assessment and planning tool that can be of great value to maternal and child health programs. The Community Health Improvement Resources (CHIR) Web site (<http://www.dhss.mo.gov/CHIR/>) integrates data and intervention tools in a public health planning process designed to assist practitioners and community stakeholders with improving the health of their communities. The following department tools are included with CHIR:

- Community Profiles - state, regional, county and city data profiles
- Data MICA (Missouri Information for Community Assessment) - a state and local data query system
- Priorities MICA - an interactive priority-setting tool
- Intervention MICA - information for identifying and developing evidence-based interventions to address priority health issues

Community Profiles

A Community Data Profile, developed by the department's Bureau of Health Informatics (BHI), is county specific for a particular topic such as chronic disease, women's health, prenatal health,

etc. It is a static report. Within each profile there are 15-30 indicators pertaining to that topic. Most profiles have a common format providing information on data years, number of events, rate, statistical significance (compared to the state), quintile ranking, state rate and links to additional graphing functions. For selected counties with a large enough African-American population, data by race are also provided. Each indicator is linked to a resource page that provides a definition for that indicator at <http://www.dhss.mo.gov/CommunityDataProfiles/>.

Missouri Information for Community Assessment (MICA)

For health professionals and other interested users who are in need of additional analytic tools, BHI developed a web-based interactive system—Missouri Information for Community Assessment (MICA). By accessing MICA, an individual can follow a few simple steps to summarize health data, obtain rates, and prepare information in a graphic format for presentation. Users can choose from many conditions and generate ad hoc data tables of percentages or age-adjusted rates by year of occurrence, age, gender, race, county, or zip code of residence. Once the basic table structure is selected, the user may easily constrain the table by other variables. Clicking on table headers opens additional tables to show more detailed data on the category. Age-adjusted and age-specific rates and row or column percentages may also be displayed at the user's option at <http://www.dhss.mo.gov/MICA/index.html>.

Once a data table is created, the user has the ability to download the data into Microsoft EXCEL to produce a chart or graph. Definitions of data and documentation on the data file, along with information on variables contained within the MICA, can also be found here. The user can even produce a map with counties shaded according to user-defined criteria.

In the fall of 2009, BHI finished redesigning the MICA portion of the Web query tools. The new MICA2 system offers increased process efficiency, allows for enhanced functionality and improves on the design structure for easier maintenance.

Priorities MICA

BHI developed Priorities MICA to provide a structured process for determining the priority health needs of a community. It gives the user an objective method of ranking health concerns. Priorities MICA allows a user to select diseases or risk factors for prioritization and then choose criteria for determining the priority health needs among those diseases or risk factors. Users can rate the level of community support for each disease/risk factor and the importance of each criterion. There are 42 diseases available for ranking and 20 risk factors. Priorities can be determined for the state of Missouri, individual counties, or selected cities/areas. A total weight is given to each disease/risk factor based on the user's choices, and the diseases/risk factors are then presented as a ranked list.

Intervention MICA

Intervention MICA includes the following topics:

- | | | |
|---------------------------|------------------------------|-----------------------------|
| 1. Asthma | 5. Nutrition | 9. Heart Disease and Stroke |
| 2. Diabetes | 6. Oral Health | 10. Immunizations |
| 3. Injury from Falls | 7. Physical Activity | 11. Tobacco Control |
| 4. Motor Vehicle Injuries | 8. Sexual Assault Prevention | 12. Colorectal Cancer |

Missouri Department of Health and Senior Services
2010 Title V Maternal and Child Health Needs Assessment

Each Intervention MICA topic provides information needed to plan an intervention for specific populations, including women and children, in a variety of settings using one or more of six evidence-based strategies. Detailed information about example evidence-based interventions is also provided for each topic.

Chapter 4. Selection of State MCH Priorities

4.1. Process of Selection of State MCH Priorities

In 2010, the Title V agency for Missouri (Missouri Department of Health and Senior Services [DHSS]/Division of Community and Public Health [DCPH]) completed the statewide five-year maternal and child health (MCH) and Children and Youth with Special Health Care Needs (CYSCHN) needs assessment. The study was designed to enable Title V to assess its services in relation to the MCH needs of the state, which were identified through secondary data from the census, related data, population surveys, input from others in the community with expertise on the issues of the population served and focus groups with consumers and providers across Missouri. On April 6, 2010, selected MCH “stakeholders” from across Missouri gathered in Jefferson City to review quantitative and qualitative data compiled towards the needs assessment and selection of state MCH priorities. The stakeholders were presented with data from statewide focus groups and epidemiological trends on select MCH indicators to help guide them with an idea of Missouri’s standing with respect national performance measures, current state performance measures and current state MCH priorities. The process yielded 14 MCH priorities based on nominal ranking by stakeholders – all of which underscore the importance of a life course perspective rather than a fragmented approach to improve MCH.

The following section summarizes the 14 MCH priority needs identified by the stakeholders:

1. Enhance primary/preventive health care access for MCH populations, particularly the uninsured, health care education services and support to navigate the complexities associated with health care access.
2. Enhance access to mental health care services for MCH populations. Reduce the stigma associated with maternal and child mental health issues. The need for enhanced mental health practitioners in the state and promoting the emotional/social development of children.
3. Reduction of disparities in health care access and outcomes. The need to reduce racial and economic disparities in MCH populations and the need for a comprehensive life course approach to improving MCH rather than a fragmented approach.
4. The need to reduce obesity and other chronic health conditions among MCH populations and promote education of healthy lifestyles among all sub groups of MCH populations, particularly the socially disadvantaged populations.
5. The need to create conditions conducive to the development of healthy, empowered and educated children in an effort to stop the cycle of adverse life course experiences that are adversely impacting the health and well being of children, women and families.
6. The need to educate parents, particularly from at-risk families, on parenting skills and early childhood development.
7. The need to promote preconception care among all women of childbearing age and early prenatal care to reduce adverse pregnancy outcomes. Emphasis on

- promoting healthy lifestyles among women and children and male involvement in maternal health improvement programs.
8. The need to enhance access to health care services for CYSHCN populations, especially in early childhood for timely diagnosis and routing to appropriate interventions. Services and service coordination for disabled children need to be further enhanced for life course development.
 9. The need to enhance coordination between various programs/agencies to support comprehensive healthy lifestyle programs with a goal to build healthy communities and healthy populations. Focus on reducing chronic conditions among at-risk communities.
 10. The need to improve efforts on reducing teen pregnancies and births through comprehensive adolescent sexual health education and educate women/communities on effects of unplanned versus planned pregnancies.
 11. The need to reduce tobacco use among MCH populations, especially smoking during pregnancy and tobacco use among children and youth. The need for enhanced smoking cessation programs for pregnant women and policies to reduce smoking among MCH populations.
 12. The need to eliminate/reduce child abuse and neglect for adequate early childhood development through comprehensive education and services for vulnerable populations.
 13. The need to reduce intentional and unintentional injuries among MCH populations through implementation of evidence based programs. Emphasis on primary seat belt law and child seat safety compliance.
 14. The need to focus on early childhood development through educating women and families prenatally. Emphasis on improving child mental health and training/education for early child care providers to monitor indicators predictive of adequate early childhood development.

Without losing the original intent the preceding 14 MCH priority needs identified by the stakeholders were further consolidated to identify the top ten Missouri MCH priorities by the Title V Agency in relation to the MCH pyramid of health services.

4.2. Summary of State MCH Priorities

LIFE COURSE PERSPECTIVE – Theme of Missouri MCH Priorities

MCH INFRASTRUCTURE

- **Support Adequate Early Childhood Development and Education** – Collaborate to coordinate efforts through a leadership role in an interagency coalition for the purpose of better targeting existing resources for early childhood development and education, identifying gaps in service delivery and infrastructure, and pursuing necessary resources to address these identified areas.
- **Improve the Mental Health Status of MCH Populations** – Collaborate with state and local partners to develop/enhance mental health infrastructure. Identify strategies to streamline existing resources and integration of mental health services into primary care.

Focus will be on preventive mental health services particularly among new mothers, children and adolescents.

POPULATION BASED MCH SERVICES

- **Reduce the rate of teen pregnancies and births** – Collaborate with state, local and non-profit agencies involved with teen pregnancy prevention activities through technical and programmatic support. Focus will be on comprehensive education as part of the life course perspective to prevent teen births/pregnancies.
- **Prevent and Reduce Smoking Among Women and Adolescents** – Collaborate with statewide partners to reduce the number of women who smoke during pregnancy using evidence-based practice.
- **Reduce Obesity Among Women, Children and Adolescents** – Collaborate with statewide partners to achieve healthy weight among an increased percentage of children and adolescents through increased physical activity and healthy eating habits.
- **Reduce Disparities in Adverse Birth and Pregnancy Outcomes** – Collaborate with state and national partners to examine the causes of adverse pregnancy outcomes, particularly the associated racial disparities. Implementation of evidence based interventions and novel initiatives with a life course approach will be the center piece to reduce disparities in birth outcomes.
- **Reduce Intentional and Unintentional Injuries Among Women, Children, and Adolescents** – Collaborate with statewide partners to implement environmental supports and local, regional, and state policies to positively impact motor vehicle accidents/deaths among adolescents; suicide attempts/completions among adolescents; and intentional/unintentional injuries among infants and children.

DIRECT/ENABLING MCH SERVICES

- **Improve Health Care Access for MCH populations** – Provide technical assistance and resources in collaboration with other statewide partners to assure adequacy and cultural competency of provider networks which support reproductive health, primary health, oral health, and mental health/substance abuse services for women, infants/children, adolescents, and special health care need populations, with an emphasis on medical/oral health home.
- **Improve preconception health among women of childbearing age** – Collaborate with state and local partners on the importance of preconception care and the need to educate women on the importance of preconception care. Enhance public health education efforts encouraging women of child bearing age to seek preconception and interconception care as part of the life course perspective
- **Enhance access to oral health care services for MCH populations** – Collaborate with statewide partners to identify and address gaps in oral health service delivery system; conduct oral health surveillance to inform the oral health systems enhancement

Missouri Department of Health and Senior Services
2010 Title V Maternal and Child Health Needs Assessment

initiatives; support the training and placement of oral health professionals in underserved areas to better meet the oral health needs of MCH populations in Missouri; encourage the integration of oral health preventive services into primary care and school health settings.

MCH priorities carried over into the 2010- 2014 five-year cycle:

- Improve Access to Health Care (now listed as Improve Healthcare Access for MCH populations)
- Prevention of Smoking Among Children and Adolescents (now listed as Prevent and Reduce Smoking Among Adolescents and Women)
- Reduction of Child and Adolescents Injuries(now listed as Reduce Intentional and Unintentional Injuries Among Infants, Children and Adolescents)
- Minority Health Disparities (now listed as Reduce Disparities in Birth and Pregnancy Outcomes as racial disparities are observed both in birth and pregnancy outcomes such as fetal deaths)

MCH priorities no longer listed among Missouri's top ten MCH priority need areas

- Reduction of Child Abuse and Neglect
- Enhance Environmental Supports and Policy Planning/Development for the Prevention of Chronic Disease (this priority is an integral part of the preconception are priority)

MCH priorities that emerged for the first time in the 2010 MCH Needs Assessment

- Reduction of teen pregnancies/births in Missouri
- Improvement of preconception care among Missouri women of child bearing age

The preceding priorities and the associated state and national performance measures, health system capacity indicators and the national health outcome measures cover all the three major MCH population groups:

1. Preventive and primary care services for pregnant women
2. Mothers and infants
3. Preventive and primary care for services for children; and, services for CYSHCN

PRIORITY NEEDS AND STATE/NATIONAL PERFORMANCE MEASURES:

Top Ten Missouri MCH Priorities	State (SPM) and National Performance Measures (NPM) linked to MCH Priorities
<p>1. Improve health care access for MCH populations</p>	<p>NPM # 1: The percent of screen positive newborns who received timely follow up to definitive diagnosis and clinical management for condition(s) mandated by their State-sponsored newborn screening programs.</p> <p>NPM # 2: The percent of children with special health care needs age 0 to 18 years whose families' partner in decision making at all levels and are satisfied with the services they receive.(CSHCN Survey)</p> <p>NPM # 3: The percent of children with special health care needs age 0 to 18 who receive coordinated, ongoing, comprehensive care within a medical home. (CSHCN Survey)</p> <p>NPM # 4: The percent of children with special health care needs age 0 to 18 whose families have adequate private and/or public insurance to pay for the services they need. (CSHCN Survey)</p> <p>NPM # 5: Percent of children with special health care needs age 0 to 18 whose families report the community-based service systems are organized so they can use them easily. (CSHCN Survey)</p> <p>NPM # 6: The percentage of youth with special health care needs who received the services necessary to make transitions to all aspects of adult life, including adult health care, work, and independence. (CSHCN Survey)</p> <p>NPM # 7: Percent of 19 to 35 month olds who have received full schedule of age appropriate immunizations against Measles, Mumps, Rubella, Polio,</p>

Missouri Department of Health and Senior Services
 2010 Title V Maternal and Child Health Needs Assessment

	<p>Diphtheria, Tetanus, Pertussis, Haemophilus Influenza, and Hepatitis B.</p> <p>NPM # 9: Percent of third grade children who have received protective sealants on at least one permanent molar tooth.</p> <p>NPM # 12: Percentage of newborns that have been screened for hearing before hospital discharge.</p> <p>NPM # 13: Percent of children without health insurance.</p> <p>NPM # 17: Percent of very low birth weight infants delivered at facilities for high-risk deliveries and neonates.</p> <p>NPM # 18: Percent of infants born to pregnant women receiving prenatal care beginning in the first trimester.</p> <p>SPM # 10: Percent of children ages 0-19 years old who received health care at a FQHC/CHC.</p>
<p>2. Prevent and reduce smoking among women and adolescents</p>	<p>NPM # 15: Percentage of women who smoke in the last three months of pregnancy.</p> <p>SPM # 1: Percentage of women aged 18-44 years who are current cigarette smokers.</p> <p>SPM # 2: Percent of cigarette smoking among high school students.</p>
<p>3. Reduce obesity among women, children and adolescents</p>	<p>NPM # 14: Percentage of children, ages 2 to 5 years, receiving WIC services with a Body Mass Index (BMI) at or above the 85th percentile.</p> <p>SPM # 3: Percentage of live births to women who are pre pregnancy overweight or obese.</p> <p>SPM # 4: Percent of high school students who met currently recommended levels of physical activity.</p>

Missouri Department of Health and Senior Services
2010 Title V Maternal and Child Health Needs Assessment

<p>4. Improve the mental health status of MCH populations</p>	<p>SPM # 8: Percentage of women with a recent live birth who reported frequent postpartum depressive Symptoms.</p>
<p>5. Enhance access to oral health care services for MCH populations</p>	<p>NPM # 9: Percent of third grade children who have received protective sealants on at least one permanent molar tooth.</p> <p>SPM # 6: Percentage of women aged 18-44 years who visited a dentist or a dental clinic for any reason within the past year.</p>
<p>6. Improve preconception health among women of childbearing age</p>	<p>SPM # 3: Percentage of live births to women who are pre pregnancy overweight or obese.</p> <p>SPM # 7: Percentage of women with a recent live birth who reported taking a multivitamin or a prenatal vitamin four or more times per week in the month prior to pregnancy.</p>
<p>7. Reduce the rate of teen pregnancies and births</p>	<p>NPM # 8: The rate of birth (per 1,000) for teenagers aged 15 through 17 years.</p> <p>SPM # 5: Birth rate (per 1,000) among teenage girls Aged 15-19 years.</p>
<p>8. Reduce disparities in adverse birth and pregnancy outcomes</p>	<p>NPM # 17: Percent of very low birth weight infants delivered at facilities for high-risk deliveries and neonates.</p> <p>NPM # 18: Percent of infants born to pregnant women receiving prenatal care beginning in the first trimester.</p> <p>SPM # 10: Percent of children ages 0-19 years old who received health care at a FQHC/CHC.</p>
<p>9. Reduce intentional and unintentional injuries among women, children and adolescents</p>	<p>NPM # 10: The rate of deaths to children aged 14 years and younger caused by motor vehicle crashes per 100,000 children.</p> <p>NPM # 16: The rate (per 100,000) of suicide deaths among youths aged 15 through 19.</p>
<p>10. Support adequate early childhood development and education</p>	<p>NPM # 1: The percent of screen positive newborns who received timely follow up to definitive diagnosis and clinical</p>

Missouri Department of Health and Senior Services
 2010 Title V Maternal and Child Health Needs Assessment

	<p>management for condition(s) mandated by their State-sponsored newborn screening programs.</p> <p>NPM # 7: Percent of 19 to 35 month olds who have received full schedule of age appropriate immunizations against Measles, Mumps, Rubella, Polio, Diphtheria, Tetanus, Pertussis, Haemophilus Influenza, and Hepatitis B.</p> <p>NPM # 12: Percentage of newborns that have been screened for hearing before hospital discharge</p> <p>SPM # 9: Percent of infants with permanent hearing loss and enrolled in appropriate early intervention services that are enrolled in those services by 6 months of age.</p>
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To monitor progress towards the top ten MCH priorities the Missouri Title V agency will rely on state/national performance measures, health systems capacity indicators and national MCH outcome measures. There are no state outcome measures.

These priorities establish a framework for the allocation of Title V MCH block grant resources over the next five years. While the importance of life course perspective is evident across all priorities, the overriding MCH priority need for Missouri that emerged based upon data analysis, focus groups results, MCH stakeholders meeting and Missouri Title V programs was to improve access to care for MCH population groups in Missouri. Improved access to MCH services will require a much larger commitment of State resources beyond Title V MCH Block Grant funding.