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PLEASE NOTE: *The Bureau of Health Care Analysis and Data Dissemination periodically updates the community health assessment and intervention planning tools. The exact screen captures presented in this handbook may not be available in the future.*

Microsoft Excel screenshots were created using the 2010 version of the software. Screens may differ in later versions of Microsoft Excel.

DHSS Resources

DHSS Home Page

An easy way to locate the community health assessment and intervention planning tools is to access the **Data & Statistics** link from the DHSS home page.

<http://www.health.mo.gov/>

Missouri Department of Health & Senior Services

MO.gov Governor Parson Find an Agency Online Services Search

Healthy Living Senior & Disability Services Licensing & Regulations Disaster & Emergency Planning **Data & Statistics**

Combating the OPIOID CRISIS in Missouri

How Do I...

- find opioid crisis response
- find my local health department
- request a birth & death certificate
- find transportation to health care appointments
- find child care provider inspections
- apply for WIC
- become a licensed child care provider
- learn about the Adoptee Rights Act
- find the latest food recalls
- see more...

Recent News |

Find a program for...

Families Seniors Agencies Professionals Providers

(WIC) Information for Families
Infant and Child Health
Food Programs
Wellness & Prevention
Minority Health
Immunizations
Organ/Tissue Donation & Registry
Child Care
Women's Health
Food Safety

Oral Health
Adolescent & Teen Health
School Health
Show Me Healthy Women
Men's Health
Lead Poisoning & Prevention
Rural Health

see more programs for families...

Missouri Health Videos

Be Sun Smart When Outdoors
Be Sun Smart
Summer Safety Tips
health.mo.gov

About DHSS

- Office of the Director
- Boards and Commissions
- DHSS Organization
- Directory of Services
- Employment Opportunities
- ADA, FMLA and Civil Rights
- HIPAA
- Recent News and Public Notices
- Contact Information
- Nondiscrimination Notice (Translations Available)

Useful Links

- Site A to Z
- Proposed Rules
- State Public Health Laboratory
- Local Public Health Agencies
- Birth and Death Records
- Child Care Information
- Family Care Safety Registry

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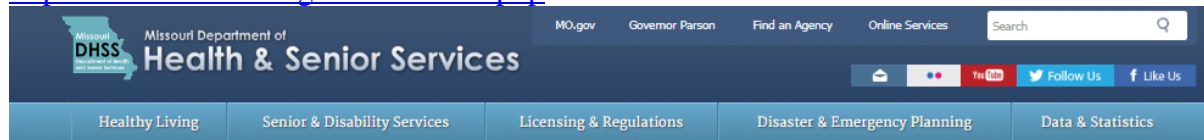
Governor Michael L. Parson Director Randall W. Williams, MD, FACOG

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Data, Surveillance Systems & Statistical Reports

The first section of this webpage contains the community health assessment and intervention planning tools: Community Data Profiles, MICA (Missouri Information for Community Assessment), Priorities MICA, and Community Health Improvement Resources (CHIR), which includes Intervention MICA. Other data resources are also listed on this page. These tools are described in the next section of this handbook.

<http://www.health.mo.gov/data/index.php>



Data, Surveillance Systems & Statistical Reports

DHSS Home » Data & Statistics » Home

- [Data Release Policies, Procedures and Guidelines \(VR & PAS\)](#)
- [Institutional Review Board Guidelines](#)

Community Health Assessment and Intervention Planning

- [Missouri Health Assessment](#)
- [Missouri Health Improvement Plan NEW!](#)
- [MOPHIMS \(Missouri Public Health Information Management System\)](#)
- [Community Data Profiles \(State, County and City Profiles\)](#)
- [MICA \(Missouri Information for Community Assessment\)](#)
- [Priorities MICA](#)
- [Health Data Training](#)
- [Community Health Improvement Resources \(CHIR\)](#)
- [Opioid Crisis Response NEW!](#)
- [Life Expectancy Data](#)
- [Years of Potential Life Lost \(YPLL\) Data](#)
- [Age Adjustment Worksheet 📄](#)
- [Affordable Care Act Maternal, Infant and Early Childhood Home Visiting Program Needs Assessment 📄](#)
- [The Burden of Chronic Diseases in Missouri - Progress and Challenges 📄](#)

Data and Surveillance Systems

- | | |
|--|--|
| <ul style="list-style-type: none"> Abortions Adult Blood Lead Epidemiology and Surveillance (ABLES) Bioterrorism Sentinel Surveillance Birth Certificate Data Birth Defects Registry Behavioral Risk Factor Surveillance System (BRFSS) Carbon Monoxide Poisoning Surveillance Childhood Lead Communicable Disease County-level Study Deaths Divorces (Dissolutions of Marriages) Emergency Room Visits Environmental Public Health Tracking ESSENCE Fetal Deaths Geocodes for Missouri Cities Geographic Information Systems (GIS) Head & Spinal Cord Injury HIV/STD/AIDS Surveillance Hospitalizations Hyperthermia Hypothermia Influenza Lead Poisoning Live Births | <ul style="list-style-type: none"> Managed Care Data and Consumer Guides Marriages Missouri Cancer Registry 📄 Health Care-Associated Infection Reporting (HAI) Missouri Child Health Assessment Program Survey (MoCHAPS) Missouri Hazardous Material Incident Surveillance (MHMIS) Missouri Health Care-Associated Infection Reporting System (MHIRS) Missouri Pregnancy Risk Assessment Monitoring System (PRAMS) Missouri School Health Profiles Office of Surveillance Diseases/Conditions Annual Reports Patient Abstract System Pediatric Nutrition Surveillance System (PedNSS) Pregnancy Associated and Maternal Mortality Review (PAMR) Pregnancy Nutrition Surveillance System (PNSS) Population Estimates Rabies Sexually Transmitted Diseases (STDs) Tuberculosis Disease and Infection Vital Statistics Youth Risk Behavior Surveillance System Youth Tobacco Survey (YTS) |
|--|--|

Data & Statistics

- Missouri Public Health Information Management System (MOPHIMS)
- Profiles
- MICA
- Priorities MICA
- Community Health Improvement Resources (CHIR)
- Births
- Deaths
- Patient Abstract System (PAS)
- Behavioral Risk Factor Surveillance System (BRFSS)
- County-Level Study (CLS)
- Healthcare-Associated Infection Reporting (HAI)
- ESSENCE

Related Links

- [Cancer Registry 📄](#)
- [Communicable Disease Reporting & Surveillance](#)
- [Birth Defects Registry](#)
- [Environmental Public Health Tracking](#)

Community Health Assessment and Intervention Planning Tools

MOPHIMS (Missouri Public Health Information Management System) is the umbrella system that houses three of the Department's most utilized statistical tools. These tools are meant to be used by local public health agencies, non-profits, researchers, and members of the general public to access health related data. These data can then be utilized to complete community health assessments, plan interventions, generate funding, complete evaluations, et cetera. All tools within this system are freely available to all users and some have multiple levels of access that users can gain by generating a username and password.

Community Data Profiles are available for various subject areas. Each Community Data Profile table provides data on 15-30 indicators for the geography (state, county, city, or region) selected. Information provided includes data year(s), number of events, geography rate, state rate, statistical significance (compared to the state), quintile ranking, links to additional graphing functions, and multiple downloading options.





MICA (Missouri Information for Community Assessment) datasets provide information on health conditions and associated topics. Users can choose from among the many conditions, generate data tables by year of occurrence, age, gender, race, and county or ZIP code of residence, and obtain age-adjusted rates. MICA also allows users to create and download tables, charts, and maps into other applications. Data for the MICAs are extracted and summarized from files maintained by the Missouri Department of Health and Senior Services. Confidentiality rules have been developed to protect the privacy of individuals.

Together these tools can assist health professionals with the process of continuous community health improvements.







The Data, Surveillance Systems & Statistical Reports page also provides other data resources, such as FOCUS articles, special reports, and links to the data release policies for record-level data.

- [Data Release Policies, Procedures and Guidelines](#) (VR & PAS)
- [Institutional Review Board Guidelines](#)

Special Reports










- [The Burden of Chronic Diseases in Missouri - Progress and Challenges](#) 
- [FOCUS Articles](#)
- [2004 MO Health Care Insurance & Access Survey: Select Results](#) 
- [Missouri Health Care Safety Net Report 2005](#) 
(Complete Report: Make sure to use bookmarks to view different Sections and Appendices of the report.)
- [Missouri Nosocomial Infection Reporting Data: Report to the Governor and General Assembly 2015](#) 
NEW
- [Missouri KIDS COUNT](#) **NEW**

We have also broken out the Sections and Appendices of this report for faster loading and viewing. Each Section has its Tables, Figures and GIS Maps contained within in the section.

- [Missouri Pregnancy Related Assessment and Monitoring System 2005 Data Report](#) 
- [Missouri Senior Report](#)
- [MS/ALS Prevalence Study Jefferson County 2006](#) 
- [The State of Missourians' Health Report](#)  **Revised**
- [Weldon Spring Cancer Inquiry Report](#) 
- [2011 Weldon Spring Update Report](#) 
- [Worksite Wellness](#) 

Archived Reports

Missouri Nosocomial Infection Reporting Data: Report to the Governor and General Assembly

- [2014](#) 
- [2013](#) 
- [2012](#) 
- [2011](#) 
- [2010](#) 
- [2009](#) 
- [2008](#) 
- [2007](#) 
- [2006 Report to the Governor and the General Assembly on the Implementation of Missouri Nosocomial Infection Reporting Act of 2004](#) 

The **Vital Statistics** website (accessible from a link near the bottom of the Data, Surveillance Systems & Statistical Reports page) includes definitions of the various types of vital events as well as data release and data request policies. Vital Statistics publications are available through the Data & Statistical Reports link.

Vital Statistics

Home » Data, Surveillance Systems & Statistical Reports » Vital Statistics

"Vital statistics", the data derived from certificates and reports of birth, death, spontaneous fetal death, marriage, dissolution of marriage and related reports. (**Missouri Revised Statute, Chapter 193, Section 015**).

- **Deaths**
- **Dissolutions of Marriages** (Divorce, Annulment & Legal Separation)
- **Fetal Deaths**
- **Live Births**
- **Marriages**
- **National Vital Statistics System**
- **Life Expectancy Data**
- **Years of Potential Life Lost (YPLL) Data**
- **Data & Statistical Reports**
- **Data Release Policies, Procedures & Guidelines**
- **Data Request Fee Schedule** 

The *Annual Reports* provide finalized vital statistics tables for counties and selected cities in Missouri. The *Monthly Vital Statistics Reports* include only state-level data but are posted periodically throughout the year, before final data are uploaded to the Profiles or MICAs. These provisional reports show how birth, death, marriage, dissolution, and other related data for a particular month and cumulative twelve-month period compare to data from the same time periods in previous years. Provisional data have not been completely reviewed or adjusted and do not include data that are reported late to Vital Records. All provisional data are subject to change.

Data & Statistical Reports

Home » Data, Surveillance Systems & Statistical Reports » Vital Statistics

The following annual and monthly reports are state-wide. The **Community Data Profiles** and **MICA** provide state and sub-state statistics.

Annual Reports (Historical editions can be found on the **EPARC webpage**.)

2015  [Color] Print-Friendly	2010  [Grayscale] Print-Friendly	2006 	2002 
2014  [Color] Print-Friendly	2009 	2005 	2001 
2013  [Color] Print-Friendly	2008 	2004 	2000 
2012  [Grayscale] Print-Friendly	2007 	2003 	1999 
2011  [Color Grayscale] Print-Friendly			

Monthly Vital Statistics (Provisional)

 **2016**

 **2015**

Links to other Data & Statistics tools are provided along the right side of the page and are highlighted in the green box. In addition, as shown on the Patient Abstract System webpage, the mailing address, phone number, and email address for the Bureau of Health Care Analysis and Data Dissemination (BHCADD), which maintains the Profiles and MICA tools, is listed in the lower right corner



Patient Abstract System

DHSS Home » Data & Statistics » patientabstractsystem » Home

- [Data Release Policy](#)
- [Fee Schedule](#)
- [Data Elements](#)
- [MICA](#)
- [Community Data Profiles](#)

Missouri started collecting hospital discharge data in 1963 using a key sort card system. These data were converted to tape but were never adequately edited. The Cooperative Health Statistics System contract made it possible for the Missouri Center for Health Statistics (MCHS) to update the hospital discharge collection procedures in 1975 by instituting a fully computerized data system called the Missouri Hospital Discharge Data Program. The new system collected the Uniform Hospital Discharge Data set.

From 1975 to 1977, about 41 percent of the 165 short-term, non-federal hospitals in Missouri participated in the Missouri Hospital Discharge Data Program. To augment the program data file, MCHS contracted with another 21 percent of the state hospitals that participated in a Professional Activities Study program operated by the Commission on Professional and Hospital Activities at Ann Arbor, Michigan. Data available from the Missouri Hospital Discharge Data Program's combined sources represented about half of the total yearly patient discharges from Missouri hospitals.

In January 1977, the Missouri Hospital Discharge Data Program system became fully operational within MCHS. During this time MCHS contracted with the Iowa Hospital Association to produce patient discharge reports for the participating hospitals. These reports are generated monthly, semi-annually and annually were based on data collected from hospitals on their discharged patients and served an important management function by providing the hospitals with information about the age, sex, diagnosis, procedure and length of stay characteristics of their patients.

In 1978, operation of the discharge program was assumed by the Missouri Health Data Corporation. The Missouri Health Data Corporation operated both the Professional Standards Review Organization data system and its own hospital discharge data collection system. In addition, it purchased data from the Commission on Professional and Hospital Activities, from other commercial data collection agencies and from hospitals capable of producing their own electronic data tapes. MCHS obtained from the Missouri Health Data Corporation the data from the various abstracting systems.

The Hospital Industry Data Institute, a unit of the Missouri Hospital Association, replaced Missouri Health Data Corporation in 1985. Hospital Industry Data Institute collected the hospital discharge data through 1992. The data were loaned to MCHS for research purposes. Requests for **1985-1992 data must be addressed to the Hospital Industry Data Institute, Missouri Hospital Association.**

In 1993, following the enactment of **192.665-192.667**, RSMo, the Patient Abstract System was implemented. It includes outpatient data as well as inpatient data. The outpatient data include emergency room patients, observation patients, and patients receiving invasive procedures on an outpatient basis, as well as patients receiving certain specified diagnostic procedures. The data collected since 1993 are maintained by the Department of Health and Senior Services. Since January 1, 1994, ambulatory surgical centers have also been required to report.

Data & Statistics

[Missouri Public Health Information Management System \(MOPHIMS\)](#)

[Profiles](#)

[MICA](#)

[Priorities MICA](#)

[Community Health Improvement Resources \(CHIR\)](#)

[Births](#)

[Deaths](#)

[Patient Abstract System \(PAS\)](#)

[Behavioral Risk Factor Surveillance System \(BRFSS\)](#)

[County-Level Study \(CLS\)](#)

[Healthcare-Associated Infection Reporting \(HAI\)](#)

[ESSENCE](#)

Related Links

- [Cancer Registry](#)
- [Communicable Disease Reporting & Surveillance](#)
- [Birth Defects Registry](#)
- [Environmental Public Health Tracking](#)

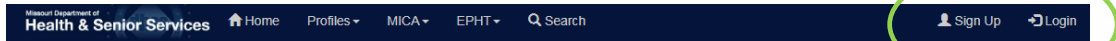
Contact Information

Bureau of Health Care Analysis & Data Dissemination
Missouri Department of Health and Senior Services
PO Box 570
Jefferson City, MO 65102

Telephone: 573-751-6272
Email: info@health.mo.gov

Missouri Public Health Information Management System (MOPHIMS)

Overview



The Missouri Public Health Information Management System (MOPHIMS) provides a common means for users to access public health related data to assist in defining the health status and needs of Missourians.



MISSOURI INFORMATION
FOR COMMUNITY ASSESSMENT

DATA PROFILES

Community Data Profiles are available on various subject areas and provide data on 15-30 indicators for each geography selected.

- Maternal, Infant and Child Health Profiles
- Chronic Disease Profiles
- Injury Profiles
- Death Profile
- Hospital and Emergency Room Visit Profiles
- Special Demographic Profiles
- County-Level Study Profiles



MISSOURI INFORMATION
FOR COMMUNITY ASSESSMENT

DATA MICAS

The Missouri Information for Community Assessment (MICA) allows users to summarize data, calculate rates, and prepare information in a graphic format.

- Maternal, Infant and Child Health MICAs
- Chronic Disease MICAs
- Injury MICA
- Death MICA
- Hospital and Emergency Room Visit MICAs
- Population MICA
- Medicaid/TANF MICAs



Environmental Public Health
Tracking Program

EPHT

The Missouri Environment Public Health Tracking (EPHT) program was developed to assist the public, communities, policymakers, and scientists, answer fundamental questions about the relationships between environmental exposures and health effects. Data on this site also include hazard and disease surveillance.

- Health Data
 - Blood Lead Levels
 - Asthma
 - Birth Defects
 - Myocardial Infarction
 - Carbon Monoxide Poisoning
- Environmental Data
 - Agriculture
 - Air Quality
 - Water Quality
- Community Data
- National Data

[Click Here](#) for sign up and login instructions.

[Click Here](#) for health data training information and opportunities.

[Click Here](#) for more information about confidentiality and suppression in MOPHIMS.

DHSS recently moved some of the community health assessment and intervention planning tools described on earlier pages of this handbook to a new umbrella system, MOPHIMS. The eventual goal is to bring all of the data systems housed on the DHSS website into this system. The long-term goal is that data on the DHSS website will share a similar look and feel and location, making it simpler for users to access all of the data available. Right now the three spokes of the MOPHIMS umbrella are the Community Data Profiles, the Data MICAs, and Environmental Public Health Tracking (EPHT). Each of these systems will be explored in more detail through this handbook.

MOPHIMS User Levels

While MOPHIMS has many exciting new features, the most prominent is the introduction of different user levels within the Data MICAs and EPHT. Data is available for free to all Public users. Additionally, users could choose to sign up to become a Registered user (which is still cost-free). The rightmost banner at the top of the MOHPIMS home page shows the location of the Sign Up and Login buttons.

Links at the bottom of the MOPHIMS home page direct the user to a webpages with registration instructions, specifics about training opportunities, and more detailed information about how confidentiality and suppression are applied in the MOPHIMS system.

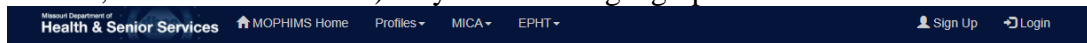
Registered users will have access to enhanced features and pieces of data not available to Public users. Some of these features include the ability to create 2x2 tables, more granular geographic detail, enhanced mapping and charting abilities, seasonal data, and the ability to save queries. **Throughout this manual, orange text indicates additional options for Registered users. Some of these features will be highlighted in more detail during the follow-up ‘MOPHIMS: Health Data Analysis’ course.**

Community Data Profiles

Overview

The Community Data Profiles are located at <https://webapp01.dhss.mo.gov/MOPHIMS/ProfileHome>. Each Community Data Profile table provides data on 15-30 indicators for the geography (state, county, city, or region) selected. Information provided includes data year(s), number of events, geography rate, state rate, statistical significance (compared to the state), quintile ranking, links to additional graphing functions, and multiple downloading options. Profiles can be viewed for the state as a whole, each of Missouri’s 115 counties (including St. Louis City), Eastern Jackson County (which excludes Kansas City and Independence), and the cities of Independence, Joplin, and Kansas City. Data by BRFSS (Behavioral Risk Factor Surveillance System), LPHA (Local Public Health Agency), and RPC (Regional Planning Commission) regions are also available.

Due to limitations and challenges associated with survey-based data, some Profiles (notably **County Level Study** and **County Level Study Comparison, Diabetes, Heart Disease, and Stroke Profiles**) may have fewer geographic choices available.



Community Data Profiles

Community Data Profiles are available on various subject areas such as cause of death, chronic diseases, unintentional injuries, prenatal and others. Each Community Data Profile table provides data on 15-30 indicators for each geography selected. Information provided includes the number of events, rate for the selected geography, statistical significance compared to the state, quintile ranking (for counties) and the state rate.



Maternal, Infant and Child Health Profiles

- Child Health
- Delivery
- Infant Health
- Prenatal



Chronic Disease Profiles

- Chronic Disease Comparisons
- Alcohol and Substance Use Disorder
- Diabetes
- Heart Disease
- Stroke



Injury Profiles

- Assault Injury
- Self-Inflicted Injury
- Unintentional Injury



Death Profile

- Leading Causes of Death



Hospital and Emergency Room Visit Profiles

- Emergency Room
- Hospital Revenue
- Inpatient Hospitalization



Special Demographic Profiles

- Minority Health
- Women's Health
- Women's Reproductive Health
- Social and Economic Indicators



County-Level Study Profiles

- County Level Study
- County Level Study Comparisons

Some Profiles contain data from a single data system. For example, the **Leading Causes of Death Profile** only contains data from the death certificate system. Other Profiles combine data from multiple data systems. For instance, the **Minority Health Profile** provides data from Vital Records, Hospital/ER Visits, and STDs. The following table shows the data sources included in each Profile.

Community Data Profiles – Topic Overview

Profile	Vital Records Births	Survey Data	Vital Records Deaths	Hospital/ER	Population Estimates	STDs	WIC	Other	Non-DHSS Website
County Level Study Comparison		✓						No Health Coverage	
County Level Study		✓						No Health Coverage	
Alcohol and Drug Abuse Problems		✓	✓	✓	✓	✓		Traffic Crashes – Impaired Driver, School Attendance, Employment, Vocational Rehabilitation, Juvenile Court Referrals, Police Reports, Criminal Justice, Substance Abuse Programs, Primary Drug Problems	✓
Assault Injury			✓	✓					
Child Health			✓	✓	✓	✓	✓	Lead Testing, Divorces Involving Children, Probable Cause Child Abuse/Neglect	
Chronic Disease Comparisons			✓	✓					
Leading Causes of Death			✓			✓			
Delivery	✓		✓	✓				Delivery Types, Abortions	
Diabetes	✓	✓	✓	✓				Hospital Utilization	
Emergency Room				✓					
Heart Disease		✓	✓	✓				Hospital Utilization	

Profile	Vital Records Births	Survey Data	Vital Records Deaths	Hospital/ER	Population Estimates	STDs	WIC	Other	Non-DHSS Website
Hospital Revenue				✓				Balance Sheet, Operating Margin, Markup, Hospital Utilization	
Inpatient Hospitalization				✓					
Infant Health	✓		✓	✓			✓	Infants on Medicaid	
Minority Health	✓		✓	✓		✓			
Prenatal	✓						✓	Prenatal Medicaid, Food Stamps	
Social and Economic Indicators		✓	✓		✓			Housing, Household Types, Language Spoken at Home, Citizenship Status, Disability, Poverty, Employment, Income, Agriculture/Farming, Work/Commuting Patterns, Education, School Enrollment	✓
Self-Inflicted Injury			✓	✓					
Stroke		✓	✓	✓				Hospital Utilization	
Unintentional Injury			✓	✓					
Women's Health			✓	✓					
Women's Reproductive Health	✓					✓		Fertility Rates, Abortions, Teen Pregnancies and Births	

Child Health Profile

The **Child Health Profile** contains a variety of indicators related to the health of individuals ages 1-19 years. A portion of the **Child Health Profile** for Missouri follows.

Missouri Resident Child Health Profile						Print Profile
Choose Your Profile Data						
Geography:	STATEWIDE	State:	Missouri	Demographic:	All	
Submit						
State: Missouri						
Child Health						
	Data Years	Count	Rate	Graphics Link	Download Data	
Population Estimates						
Ages 1 - 4	2017	301,462	4.93	Graphics		
Ages 5 - 14	2017	771,771	12.62	Graphics		
Ages 15 - 17	2017	236,721	3.87	Graphics		
Ages 18 - 19	2017	156,535	2.56	Graphics		
WIC						
WIC Participation: Ages 12 to 59 months - Inclusive	2016	72,465	24.21	Graphics		
WIC Children Ages 24 to 59 Months Obese (BMI)	2016	6,136	14.31	Graphics		
Lead Testing						
Lead Testing: Under Age 6	2017	84,834	18.88	Graphics		
Blood Lead Elevations >= 10 ug/dL: Under Age 6 Tested	2017	543	0.12	Graphics		
Selected Indicators Under Age 18						
Under Age 18: Asthma ER Visits	2015	12,769	9.18	Graphics		
Under Age 18: Asthma Hospitalizations	2015	1,844	13.25	Graphics		
Divorces Involving Children	2015	9,188	47.53	Graphics		
Probable Cause Child Abuse/Neglect	2015	6,295	4.52	Graphics		
Selected Indicators Ages 1 - 14						
Ages 1 - 14: Self Pay/No Charge ER Visits	2015	25,827	6.83	Graphics		
Ages 1 - 14: Self Pay/No Charge Hospitalizations	2015	774	3.05	Graphics		
Injury ER Visits	2015	105,515	9,800.37	Graphics		
Injury Hospitalizations	2015	1,391	129.20	Graphics		
Deaths Ages 1-14						
All Causes	2007 - 2017	2,352	19.67	Graphics		
Total Unintentional Injuries	2007 - 2017	772	6.46	Graphics		
Motor Vehicle Deaths	2007 - 2017	359	3.00	Graphics		
All Cancers (Malignant Neoplasms)	2007 - 2017	274	2.29	Graphics		
Birth Defects	2007 - 2017	189	1.58	Graphics		
Homicide	2007 - 2017	219	1.83	Graphics		
Heart Disease	2007 - 2017	88	0.74	Graphics		
Selected Indicators Ages 15 - 19						
Ages 15 - 19: Self Pay/No Charge ER Visits	2015	24,023	15.44	Graphics		
Ages 15 - 19: Self Pay/No Charge Hospitalizations	2015	1,354	6.22	Graphics		
Injury ER Visits	2015	43,877	11,051.56	Graphics		
Injury Hospitalizations	2015	1,666	419.63	Graphics		
STDs Ages 15-19						
Chlamydia	2008 - 2017	91,997	2,254.20	Graphics		

Documentation

Throughout the Profiles, many labels are linked to additional information about the data. Simply click on any hyperlinked label to view a definition and/or source information. For example, the following description is linked to Selected Indicators Ages 1-14: Injury Hospitalizations.

Injury Hospitalizations

[Resident](#) emergency room visits or hospitalizations with a primary diagnosis of fractures, wounds, dislocations, poisonings, or injuries due to external causes, as well as medical, drug or other complications of care. Rate is per 100,000 ED visits or hospitalizations in a given age group.

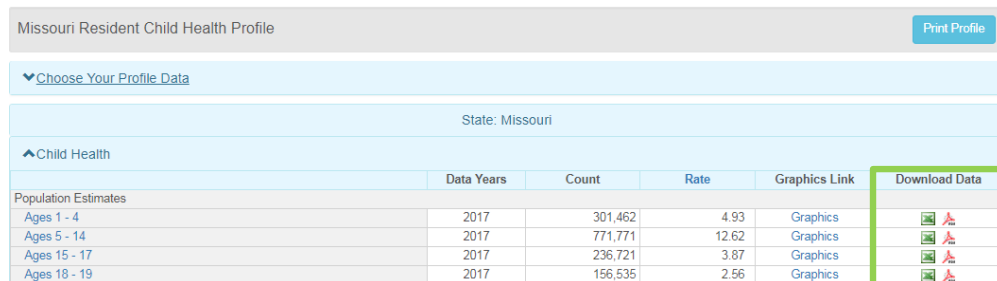
Clinical Classifications Software (CCS) Categories: 225-244.
International Classification of Diseases (ICD-9) codes: 716.10-716.19, 717.0-718.09, 718.30-718.39, 796.0, 799.0, 800.00-994.9, 995.1-995.2, 995.4-995.59, 995.80-999.9, V15.5, V15.6, V54.0, V64, V67.4, or V71.3-V71.6.









Additional information can also be found in the footnotes. The footnotes to the **Child Health Profile** contain the following explanation of Injury Hospitalization rates:

Injury ER Visits/Hospitalizations rates are per year per 100,000 specified age population.

Downloads

The **Download Data** column allows users to download the data for each geography available for the indicator chosen to Excel or as a PDF.

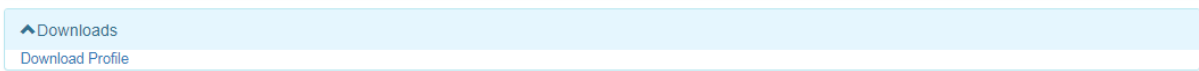


	Data Years	Count	Rate	Graphics Link	Download Data
Population Estimates					
Ages 1 - 4	2017	301,462	4.93	Graphics	 
Ages 5 - 14	2017	771,771	12.62	Graphics	 
Ages 15 - 17	2017	236,721	3.87	Graphics	 
Ages 18 - 19	2017	156,535	2.56	Graphics	 

Additional data not shown on the webpage, like confidence intervals, are available in these downloads, as shown on the next page.

	A	B	C	D	E	F	G	H
1	Missouri Resident Child Health Profile							
2	Indicator: Population Estimates - Ages 1 - 4							
3	Geography	Geography Type	Data Years	Count	Rate	Lower 95% Confidence Limit	Upper 95% Confidence Limit	Significantly Different
4	Missouri	Statewide	2016	299,294	4.91	4.89	4.93	
5	Central	BRFSS Region	2016	34,594	4.79	4.74	4.84	L
6	Kansas City Metro	BRFSS Region	2016	64,538	5.23	5.19	5.27	H
7	Northeast	BRFSS Region	2016	11,933	4.76	4.67	4.85	L
8	Northwest	BRFSS Region	2016	11,388	4.75	4.66	4.84	L
9	Southeast	BRFSS Region	2016	27,604	4.82	4.76	4.88	L
10	Southwest	BRFSS Region	2016	45,429	4.87	4.83	4.91	N/S
11	St. Louis Metro	BRFSS Region	2016	103,808	4.85	4.82	4.88	L
12	A	LPHA Region	2016	71,590	5.22	5.18	5.26	H
13	B	LPHA Region	2016	8,383	4.65	4.55	4.75	L
14	C	LPHA Region	2016	109,432	4.83	4.8	4.86	L
15	D	LPHA Region	2016	43,790	4.91	4.86	4.96	N/S
16	E	LPHA Region	2016	16,309	4.93	4.85	5.01	N/S
17	F	LPHA Region	2016	23,272	4.67	4.61	4.73	L
18	G	LPHA Region	2016	6,531	4.72	4.61	4.83	L
19	H	LPHA Region	2016	11,016	4.68	4.59	4.77	L
20	I	LPHA Region	2016	8,971	4.95	4.85	5.05	N/S
21	Boonslick	RPC Region	2016	5,236	5.2	5.06	5.34	H
22	Bootheel	RPC Region	2016	7,682	5.2	5.08	5.32	H
23	East-West Gateway	RPC Region	2016	97,922	4.83	4.8	4.86	L
24	Green Hills	RPC Region	2016	4,680	4.95	4.81	5.09	N/S
25	Harry S Truman	RPC Region	2016	11,284	5.31	5.21	5.41	H
26	Kaysinger Basin	RPC Region	2016	4,912	4.46	4.34	4.58	L
27	Lake of the Ozarks	RPC Region	2016	5,869	4.68	4.56	4.8	L
28	Mark Twain	RPC Region	2016	6,537	4.72	4.61	4.83	L
29	Meramec	RPC Region	2016	9,462	4.75	4.65	4.85	L
30	Mid-America	RPC Region	2016	60,901	5.27	5.23	5.31	H
31	Mid-Missouri	RPC Region	2016	16,221	4.74	4.67	4.81	L
32	Mo-Kan	RPC Region	2016	6,638	4.76	4.65	4.87	L
33	Northeast Missouri	RPC Region	2016	2,485	4.48	4.3	4.66	L
34	Northwest Missouri	RPC Region	2016	1,671	4.07	3.87	4.27	L
35	Ozark Foothills	RPC Region	2016	3,983	4.84	4.69	4.99	N/S
36	Pioneer Trails	RPC Region	2016	7,817	5.15	5.04	5.26	H
37	South Central Ozark	RPC Region	2016	6,013	4.78	4.66	4.9	N/S
38	Southeast Missouri	RPC Region	2016	9,926	4.57	4.48	4.66	L
39	Southwest Missouri	RPC Region	2016	30,055	4.8	4.75	4.85	L
40	Eastern Jackson County	City	2016	14,292	5.42	5.33	5.51	H
41	Independence	City	2016	6,486	5.54	5.41	5.67	H
42	Joplin	City	2016	2,716	5.2	5	5.4	H
43	Kansas City	City	2016	27,170	5.64	5.57	5.71	H
44	Adair	County	2016	943	3.72	3.48	3.96	L

Additional **Download** options at the bottom of the Profile allow the entire Profile to be loaded into an Excel spreadsheet.



To print the Profile, select the **Print Profile** link in the upper right corner of the screen.

County, city, and regional level Profiles will differ in appearance from the state level Profiles with additional columns and features. To access these tables, simply select your geography type (i.e. county) and place name (i.e. New Madrid County) and click submit. A portion of the **Child Health Profile** for New Madrid County is shown below.

Missouri Resident Child Health Profile										Print Profile
Choose Your Profile Data										
Geography:	COUNTY	County:	New Madrid	Demographic:	All					
Submit										
County: New Madrid										
Indicators										
	Data Years	Count	Rate	State Rate	Significantly Different	Ranking Quintile	Graphics Link	Download Data		
Population Estimates										
Ages 1 - 4	2015	911	5.00	4.92	N/S	2	Graphics			
Ages 5 - 14	2015	2,423	13.31	12.78	N/S	2	Graphics			
Ages 15 - 17	2015	753	4.14	3.94	N/S	3	Graphics			
Ages 18 - 19	2015	371	2.04	2.58	L	4	Graphics			
WIC										
WIC Participation: Ages 12 to 59 months - Inclusive	2015	449	49.29	25.21	H	1	Graphics			
WIC Children Ages 24 to 59 Months Obese (BMI)	2015	34	12.01	13.87	N/S	2	Graphics			
Lead Testing										
Lead Testing: Under Age 6	2016	423	30.94	19.57	H	1	Graphics			
Blood Lead Elevations >=10 ug/dL: Under Age 6 Tested	2016	0	0.00	0.13			Graphics			
Selected Indicators Under Age 18										
Under Age 18: Asthma ER Visits	2015	15	3.48 *	9.18	L	2	Graphics			
Under Age 18: Asthma Hospitalizations	2015	5	11.60 *	13.25	N/S		Graphics			
Divorces Involving Children	2015	34	48.57	47.53	N/S	3	Graphics			
Probable Cause Child Abuse/Neglect	2015	37	8.59	4.52	H	4	Graphics			
Selected Indicators Ages 1 - 14										
Ages 1 - 14: Self Pay/No Charge ER Visits	2015	40	4.43	6.83	L	1	Graphics			
Ages 1 - 14: Self Pay/No Charge Hospitalizations	2015	1	1.11 *	3.05	N/S		Graphics			
Injury ER Visits	2015	288	8,638.27	9,800.37	L	2	Graphics			
Injury Hospitalizations	2015	5	149.97 *	129.20	N/S		Graphics			

Statistics

Several statistical measures are used to describe each indicator. These measures are located as headers along the columns in the Profiles.

Missouri Resident Child Health Profile										Print Profile
County: New Madrid										
Indicators										
	Data Years	Count	Rate	State Rate	Significantly Different	Ranking Quintile	Graphics Link	Download Data		
Injury ER Visits	2015	288	8,638.27	9,800.37	L	2	Graphics			
Injury Hospitalizations	2015	5	149.97 *	129.20	N/S		Graphics			

Data Years reflect the years of data that the corresponding row of statistics are based on. Because the Profiles draw from multiple data sources, the data years might not always be consistent throughout a Profile. For example, birth data might be updated before hospitalization data, which would be reflected in the data years. Additionally, in cases where frequencies are low, data years are often combined to produce more reliable rates.

Count is also commonly referred to as the number of events or frequency. In the indicator above (Injury ER Visits of children ages 1 through 14 years), the number of events for New Madrid County in 2015 was 288.

The **Rate** is the number of events (numerator) divided by the population at risk (denominator) multiplied by a constant. The rate allows comparisons to be made among different counties that have different populations. In the New Madrid County example, the count is 288, but the population at risk must still be determined.

Population at risk is “a term applied to all those to whom an event could have happened, whether it did or not.”¹ It may or may not consist of the entire population. In this example, the population at risk would be all New Madrid County residents ages 1 through 14 years. Looking at the Population Estimates section of the Profile, this population consists of 3,334 individuals (911 children ages 1-4 years + 2,423 children 5-14 years).

Missouri Resident Child Health Profile										Print Profile
County: New Madrid										
Indicators										
	Data Years	Count	Rate	State Rate	Significantly Different	Ranking Quintile	Graphics Link	Download Data		
Population Estimates										
Ages 1 - 4	2015	911	5.00	4.92	N/S	2	Graphics			
Ages 5 - 14	2015	2,423	13.31	12.78	N/S	2	Graphics			
Ages 15 - 17	2015	753	4.14	3.94	N/S	3	Graphics			
Ages 18 - 19	2015	371	2.04	2.58	L	4	Graphics			

The appropriate constant to use depends on the rarity of the event. The **constant** converts the decimal that results from dividing the frequency by the population into a more useable number. It will always be a multiple of 10, such as 1,000 or 100,000. The constant should convert the smallest rate into a number approaching or greater than 1. Most types of data already have a “standard” constant that should be used. For example, death data (a rare event) are usually reported per 100,000 population. In the Profiles and MICAs, the constant used for each indicator will be listed in a footnote or definition. The following table provides examples of the appropriate constant to use in different situations.

¹ Austin DF, Werner SB. *Epidemiology for the health sciences: A primer on epidemiologic concepts and their uses*. Springfield, IL: Charles C. Thomas; 1974.

Frequency ÷ Population	Constant to Use	Rate	Indicator	Source
.0822	100	8.22	Low Birth Weight (<2,500 grams)	Infant Health Profile, State Rate, 2012-2016
.00918	1,000	9.18	Asthma ER Visits for Children Under 18	Child Health Profile, State Rate, 2015
.000607	10,000	6.07	Neural Tube Defect Births	Infant Health Profile, State Rate, 2009-2013
.0000257	100,000	2.57	Cancer Deaths for Children 15-19	Child Health Profile, State Rate, 2006-2016

The resulting rate of Injury ER Visits for New Madrid County children ages 1 through 14 years is:

$$\text{Number of Events} \div \text{Population at Risk} \times \text{Constant} = \text{Rate}$$

$$288 \div 3,334 = .0863827 * 100,000 = 8,638.27$$

The **State Rate** is provided in the next column for comparison.

When using rates, *always* specify the constant in the text or in a footnote. This allows others to determine the pervasiveness of the indicator and also to ensure that they are using the same constant if comparing rates from two different sources. In the example above, the rate of Injury ER Visits by New Madrid County Children ages 1 through 14 years is **8,638.27 per 100,000 resident children ages 1 through 14 years**.

The Injury ER Visit rate is a **crude rate** because the exact number of events and the exact population were used. Since a specific age group was inspected, no adjustments for the county's age structure were necessary. If adjustments had been made, that information should be stated, as well. (Adjusted rates are covered in more detail on pages 30-31 of this handbook.)

When comparing two different geographies or two different time periods, rates should be used in most cases because they control for differences in population size whereas frequencies do not (in MOPHIMS the frequency column is labeled 'Count', as the terms are used interchangeably). However, frequencies cannot be completely ignored because a rate based on a small number of events may be unreliable. **Unreliable rates** may be encountered when analyzing data for small areas such as counties or with low frequency events such as cause-specific mortality or birth defects.

For example, suppose that in 2007, one case of influenza occurred in a community of 1,000 people. The rate of flu incidence in 2007 was 1/1,000, or 0.1%. In 2008, the population was still 1,000 people, but two persons caught the flu. The rate of flu incidence in 2008 was thus 2/1000, or 0.2%. The rate of flu incidence doubled, even though the number of cases only increased by 1.

Hypothetical Example of Flu Cases in Small County, MO			
Year	Number of Events	Population	Rate*
2007	1	1,000	1.0
2008	2	1,000	2.0
*Rate is per 1,000 population			

As this example illustrates, analysts must be very careful when drawing conclusions using rates based on small numbers. “When the numbers of cases or deaths used to compute rates are small, those rates tend to have poor reliability.”² In Profile and MICA tables, rates based on numerators of less than 20 events are usually flagged as unreliable, as shown in the example below. Profile and MICA maps are suppressed if more than half the counties have unreliable rates. If the use of data from one specified year is not required, combining multiple years of data can sometimes produce reliable rates. Similarly, data from several counties can be combined to create a reliable regional rate. At the very least, if a numerator is less than 20, it is wise to examine the data for several years to see how the numbers or rates have fluctuated.

Title: Missouri Resident Deaths						
Data selected in addition to rows and columns below:		Cause: Influenza and pneumonia#:				
Year:	2008	2008	2009	2009	Total for selection	Total for selection
Statistics:	Count	Rate	Count	Rate	Count	Rate
County						
St. Francois	12	16.81 *	19	26.47 *	31	21.63
Missouri	1,428	21.49	1,346	19.94	2,774	20.71
Rate:	Death rates are annualized per 100,000 residents and are age adjusted to the U.S. 2000 standard population.					
Source:	DHSS - MOPHIMS - Death MICA					
Generated On:	8/28/2017 4:00:37 PM					
	* Rate is unreliable; numerator less than 20					

² CDC “Suppression for Reliability” Suppression of Rates and Counts
https://www.cdc.gov/cancer/npcr/uscs/technical_notes/stat_methods/suppression.htm, June 30, 2017

Returning to the New Madrid County Injury ER Visit example, both the New Madrid County and the state Injury ER Visit rates are stable, so meaningful comparisons between the two can be made. The New Madrid County rate of 6,885.15 is quite a bit less than the Missouri rate of 10,189.68. However, the rates alone do not reveal if there is a statistically significant difference between New Madrid County and the state for Injury ER Visits. Instead, the Significantly Different column must be referenced.

The **Significantly Different** column indicates whether the difference between the county rate and the corresponding state rate is probably the result of chance factors or if the difference is meaningful. Significant difference can only be determined with the use of a statistical significance test. The result of this test is displayed on the Profile.

- “H” – 95% confidence that the county rate is statistically higher than the state rate
- “L” – 95% confidence that the county rate is statistically lower than the state rate
- “N/S” – cannot state with confidence that the difference between the county rate and the state rate is not due to random variations. The difference is not statistically significant and is probably not meaningful.

In this example, at 95% confidence, New Madrid County’s rate of Injury ER Visits for children ages 1 through 14 years is meaningfully lower than the Missouri rate. There is a statistically significant difference between the county rate and the state rate.

Ranking Quintiles provide a general idea of how a particular county ranks for an indicator compared to the rest of the counties in Missouri. A quintile is one-fifth of a ranked list. The 115 counties of Missouri (including St. Louis City) are ordered by rate. They are then divided into five quintiles, with 23 counties in each quintile ($115 \div 5 = 23$).

Quintile Ranks	
1	1-23
2	24-46
3	47-69
4	70-92
5	93-115

Geographies with a ranking quintile of 1 have some of the best health outcomes in the state; however, the indicator being ranked determines whether the ideal rate is the lowest rate or the highest statewide. **Indicators have been identified as having positive/neutral or negative outcomes, which determines whether a low rate is ideal (e.g., Injury ER Visits) or if a higher rate corresponds to healthier community models (i.e., Lead Testing).** For example, New Madrid County has a ranking quintile of 1 for Injury ER Visits by children ages 1 through 14, which indicates it is one of the top 23 counties (or said another way, New Madrid has one of the lowest rates) in Missouri for this indicator of health.

Be aware that quintiles do not indicate statistical significance or meaningful difference; they simply rank the counties. If the rates for a particular indicator are similar across the state, the rates in the highest quintile may not differ much from the rates in the lowest quintile. In cases where the numbers of events are small and rates are unreliable, a county may fall into the highest or lowest quintile on the basis of a few events, even if the underlying “true” rate is not particularly high or low. For this reason, quintiles are not shown if more than half of the counties have fewer than 20 events.

Demographic: Race Profiles are available for the state of Missouri and the following counties/cities that have large African-American populations: Boone, Buchanan, Cape Girardeau, Cass, Clay, Cole, Dunklin, Jackson, Jasper, Kansas City, Mississippi, New Madrid, Pemiscott, Platte, Pulaski, St. Charles, St. Louis County, St. Louis City, and Scott. Select the **Race** dropdown in the Demographic box in the **Choose Your Profile Data** section and click submit. (If race data are not available, this option will not appear.) To return to the overall population data, select **All** in the Demographic box. Don’t forget to hit submit!

Missouri Resident Child Health Profile Print Profile

^ Choose Your Profile Data

Geography: COUNTY County: Clay Demographic: Race

[Submit](#)

County: Clay

^ Indicators

	Data Years	White			Black or African-American			Graphics Link	Download Data
		Count	Rate	State Rate	Count	Rate	State Rate		
Population Estimates									
Ages 1 - 4	2016	10,828	5.09	4.61	1,358	7.91	6.69	Graphics	
Ages 5 - 14	2016	28,412	13.35	12.18	3,216	18.72	15.91	Graphics	
Ages 15 - 17	2016	8,354	3.93	3.80	1,020	5.94	4.75	Graphics	
Ages 18 - 19	2016	4,524	2.13	2.46	559	3.25	3.16	Graphics	
WIC									
WIC Participation: Ages 12 to 59 months - Inclusive	2015	1,378	13.24	22.58	404	34.47	31.20	Graphics	
WIC Children Ages 24 to 59 Months Obese (BMI)	2015	102	12.83	14.49	31	12.11	11.64	Graphics	
Lead Testing									
Lead Testing: Under Age 6	2016	1,932	12.05	14.79	445	22.29	30.59	Graphics	
Blood Lead Elevations >=10 ug/dL: Under Age 6 Tested	2016	1	0.01 *	0.07	0	0.00	0.27	Graphics	
Selected Indicators Under Age 18									
Under Age 18: Asthma ER Visits	2015	169	3.37	4.09	105	18.52	31.68	Graphics	
Under Age 18: Asthma Hospitalizations	2015	45	8.99	6.79	14	24.69 *	38.36	Graphics	
Probable Cause Child Abuse/Neglect	2015	119	2.38	4.13	22	3.88	4.91	Graphics	
Selected Indicators Ages 1 - 14									
Ages 1 - 14: Self Pay/No Charge ER Visits	2015	474	5.83	6.17	117	7.70	7.75	Graphics	
Ages 1 - 14: Self Pay/No Charge Hospitalizations	2015	16	2.06 *	2.90	1	0.83 *	2.92	Graphics	
Injury ER Visits	2015	2,750	7,052.73	8,834.94	311	7,036.20	11,957.10	Graphics	
Injury Hospitalizations	2015	31	79.50	112.56	6	135.75 *	142.86	Graphics	

Graphics

The Community Data Profiles now have enhanced data visualization opportunities. Clicking on the **Graphics** link, available for most indicators, will take users to a separate tab showing the Community Data Profiles Dashboard. This dashboard features up to five data visualizations for the indicator specified. Using Ages 15-19: Injury ER Visits for St. Louis City, for example, will generate a dashboard showing a Significance Map, a Quintile Map, a Dashboard Graphic/Fuel Gauge, a Trend Analysis line graph, and a Comparison Bar Graph. These graphics can be modified or downloaded by clicking the Full Version button located on each graphic thumbnail.

Indicators - Selected Indicators Ages 15 - 19 - Injury ER Visits

Choose Your Dashboard Data

Geography: COUNTY County: St. Louis City Demographic: All

Indicator: Selected Indicators Ages 15 - 19 - Injury ER Visits

Submit

County: St. Louis City

Dashboard Results

Significance Map

Full Version

Quintile Map

Full Version

Dashboard Graphic

Selected Indicators Ages 15 - 19 - Injury ER Visits

- St. Louis City, Rank #50 (12356.15)
- Missouri (11051.56)

Worse than State

Rank #115 Rank #1

Full Version

Trend Analysis

Three Year Moving Average Rates

Geography: Missouri and St. Louis City County, Demographic: All

Indicator: Selected Indicators Ages 15 - 19 - Injury ER Visits

Full Version

Comparison Bar Graph

Comparison Bar Graph

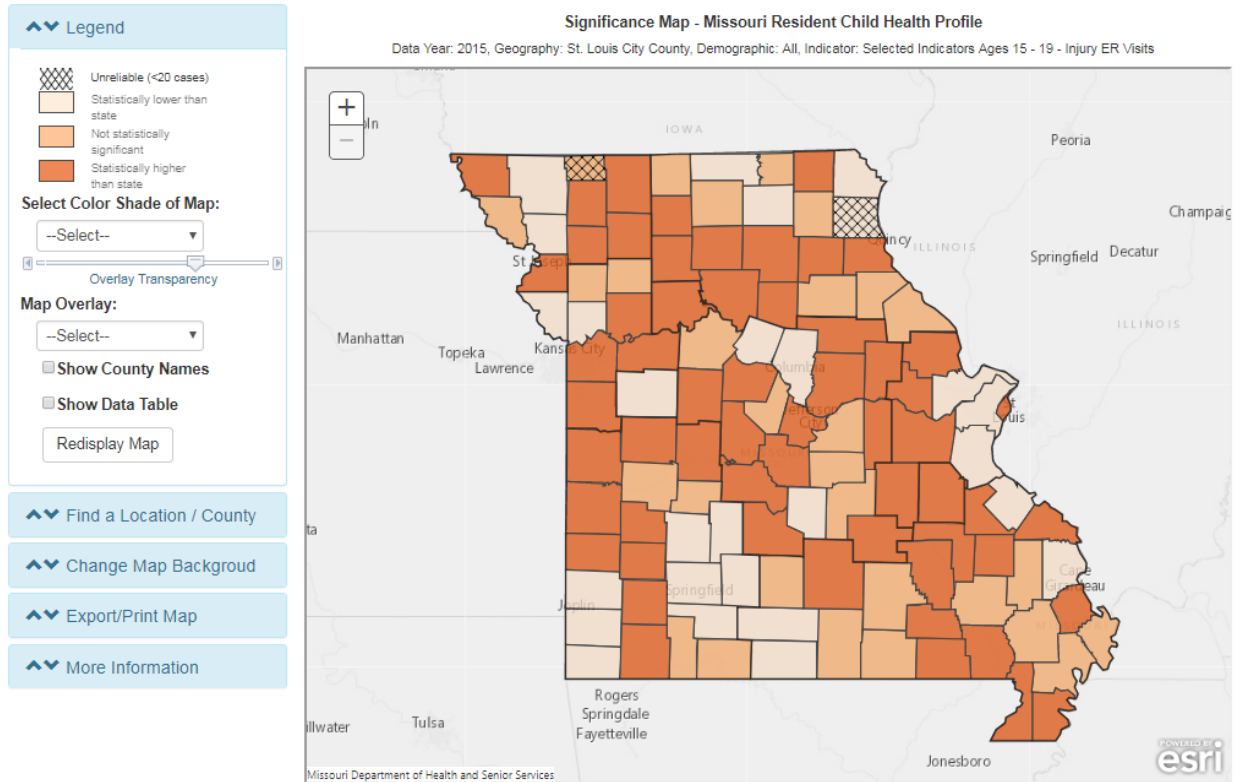
Geography: Missouri and St. Louis City County, Demographic: All

Indicator: Selected Indicators Ages 15 - 19 - Injury ER Visits

2015 Rates

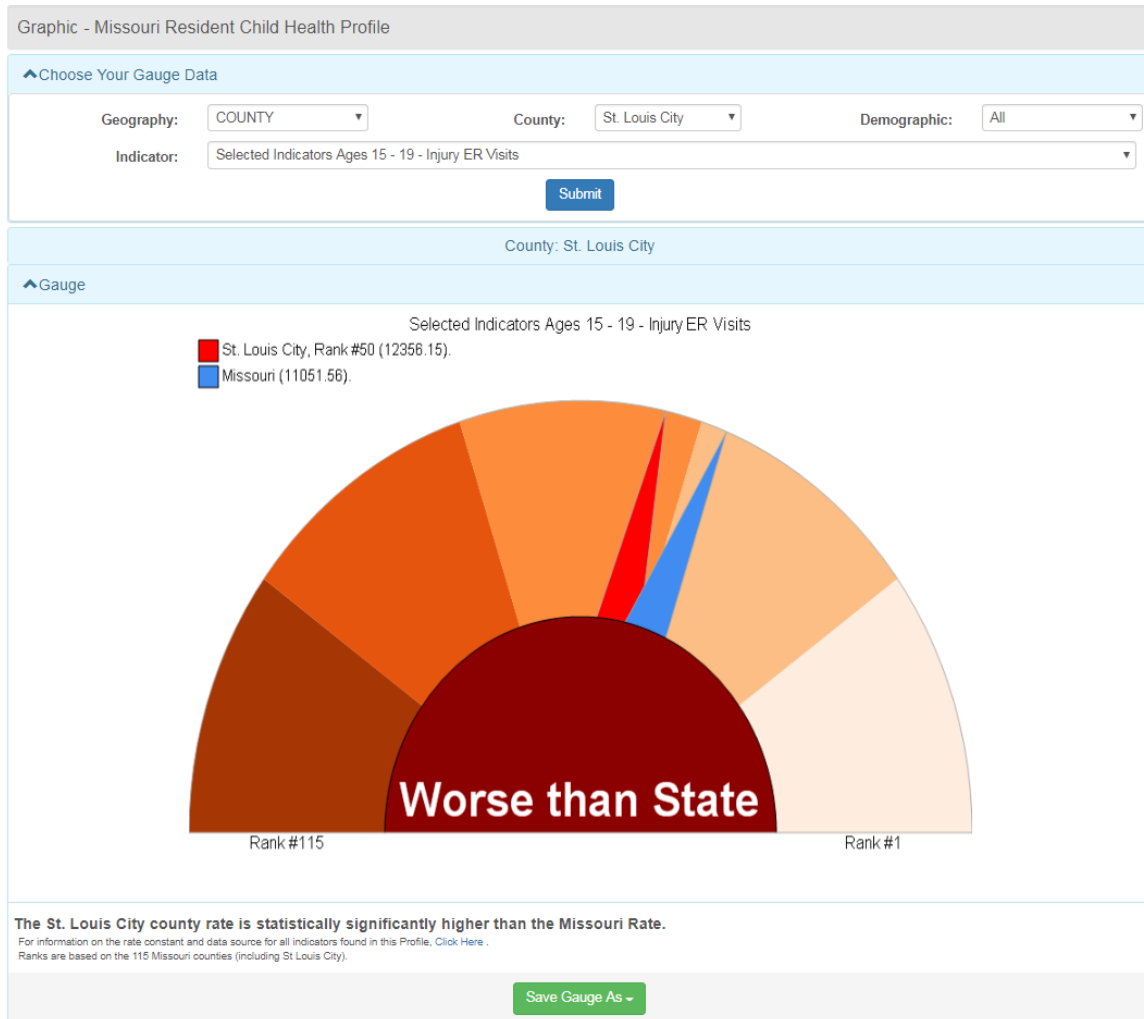
Full Version

The first available graphic, **Significance Maps**, use the Significantly Different calculation to map each indicator as Higher (darkest shade), Lower (lightest shade), or Not Significantly Different from the state rate. Counties where fewer than 20 events occurred are crosshatched to indicate rate unreliability, as is the case for Lewis and Worth Counties in the following map. In the Full Version, users can change the color of the maps, select a map overlay, and choose to display or hide county names, among other options. The maps can be exported or printed and the underlying data tables are available for download.

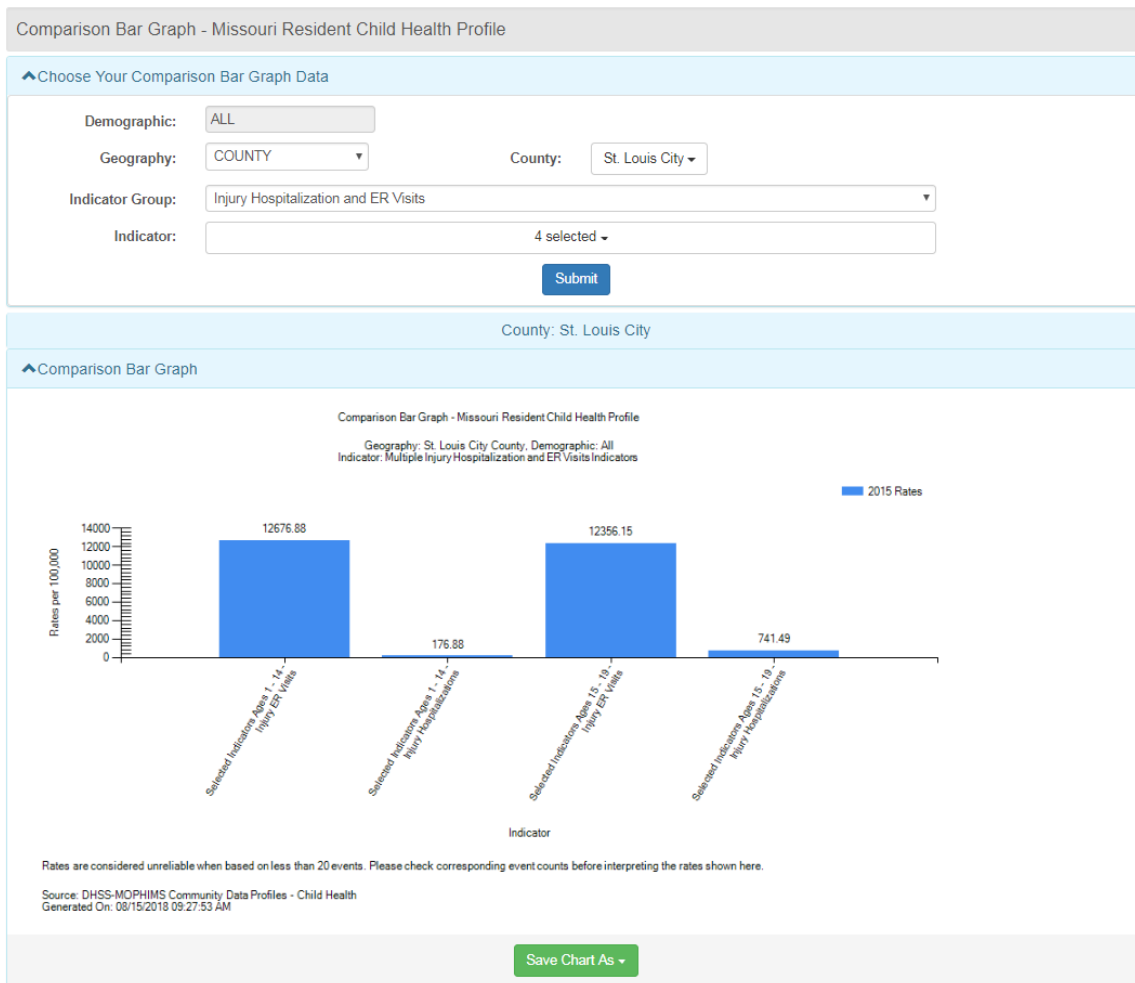


Quintile Maps offer many of the same customization opportunities as the Significance Maps. However, instead of displaying significance, these maps group counties into groups of 23 based on their quintile ranking.

A **Dashboard Graphic**, or fuel gauge, is also available on the Dashboard Results. This graphic imparts a lot of information quickly and easily. Users can see how a rate ranks compared to the state and in which ranking quintile it falls. The legend also displays exactly where it ranks (compared to others in the chosen geography type). In this example, the Full Version shows St. Louis City has an Injury ER rate for ages 15-19 that ranks 50th for the state (out of 115 counties), which is significantly worse than the state rate.



By clicking Full Version on the **Comparison Bar Graph** users can chart the rates of a single indicator for several counties or several indicators for a single county. Users simply click on the drop down list at the bottom of the **Choose Your Comparison Bar Graph Data** section to select additional counties/indicators. This functionality is also available in the **Trend Line Analysis** line graph.



We can now see that St. Louis City Injury ER Visit rate is higher for the 1-14 age group than the 15-19 age group. Though the age group pattern is flipped for hospitalizations, it is also very clear that ER Visit rates are much higher than Injury Hospitalization rates—more children are discharged from emergency rooms than from the hospital.

Comparison Bar Graph Data

Profile: Missouri Resident Child Health Profile
 Chart Type: Comparison Bar Graph
 Geography: St. Louis City County, Demographic: All, Indicators: Selected Indicators Ages 1 - 14 - Injury ER Visits, Selected Indicators Ages 1 - 14 - Injury Hospitalizations, Selected Indicators Ages 15 - 19 - Injury ER Visits, Selected Indicators Ages 15 - 19 - Injury Hospitalizations

Indicator Name	Data Year	Count	Rate	Significantly Different	Ranking Quintile	State Rate	Lower 95% Confidence Limit	Upper 95% Confidence Limit
Selected Indicators Ages 1 - 14 - Injury ER Visits	2015	6,307	12,676.88	H	4	9,800.37	12364.01	12989.75
Selected Indicators Ages 1 - 14 - Injury Hospitalizations	2015	88	176.88	H		129.20	141.86	217.92
Selected Indicators Ages 15 - 19 - Injury ER Visits	2015	2,083	12,356.15	H	3	11,051.56	11825.52	12886.78
Selected Indicators Ages 15 - 19 - Injury Hospitalizations	2015	125	741.49	H		419.63	617.21	883.45

Rates are considered unreliable when based on less than 20 events. Please check corresponding event counts before interpreting the rates shown here.

Source: DHSS-MOPHIMS Community Data Profiles - Child Health
 Generated On: 08/15/2018 09:27:53 AM

Download Chart Data

Users will notice that not all indicators from the **Child Health Profile** can be compared to one another in the **Comparison Bar Charts** or the **Trend Line Analysis**. This is because, as noted on page 16, many of the indicators use different constants in the rate calculations. It would be inappropriate to show these indicators together on a single graph without converting all of the statistics to the same rate constant.

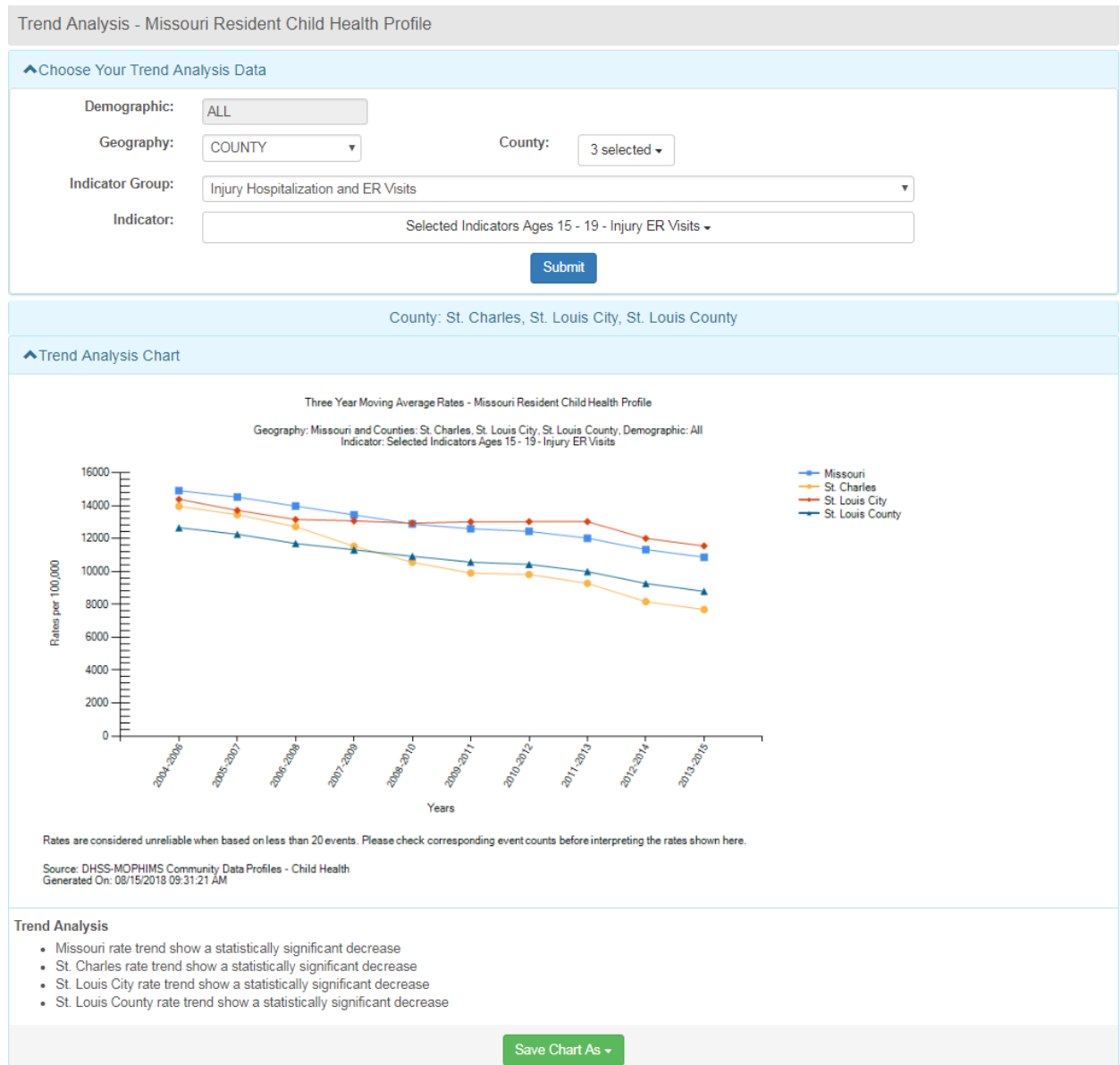
The Full Version also shows the underlying data table for each graphic, as well as additional information like confidence limits, where applicable, for some of the graphics. This data table is also available for download, allowing users to further customize graphics or conduct additional analyses.

Other additional features are available in the Full Version graphics. For example, on the **Trend Line Analysis** line graph, background statistics compare three-year moving averages to determine whether an indicator has seen significant increases or decreases over time.

Trend lines graphically show the rate of occurrence of a disease or risk factor over time. They also illustrate the direction and acceleration of changes in that rate. In general, indicators which have trend lines with steep upward slopes may be considered more urgent than those with trend lines which are also increasing but have more gradual slopes. As with rates themselves, there can be random variation in the trend lines of rates, so that a line that slopes upward may not represent a statistically significant increase, particularly if it is based on small numbers. For that reason, significance tests are run to determine whether or not, with at least 95% confidence, what appears to be an increase or decrease is meaningful and not just the result of random fluctuation. The results of these significance tests are explained in the **Trend Analysis**, which appears below the trend line chart.

Three-Year Moving Averages are used to calculate the trend lines in order to smooth any random variation that may occur within a particular year. When a new year of data becomes available, the oldest year from the prior three-year period is dropped, and the new year is added. For example, the earliest year of injury data included in this **Child Health Profile** example is 2004. The first three-year moving average was calculated using 2004, 2005, and 2006. When the 2006 data became available, 2003 was dropped and 2006 was added to calculate the next three-year moving average. Trends are available only if each three-year period has an average of 20 or more events. In other words, trend lines are only available for stable rates. These three-year moving averages are listed in a table below the **Trend Analysis**.

In the trend line chart below, the crude rate of Injury ER Visits for ages 15-19 for St. Louis City residents declined somewhat in earlier years (from 14,376.90 per 100,000 residents in 2004-2006 to 12,929.27 in 2008-2010) before rising in 2011-2013 to 13,018.48 and falling again in subsequent years. The **Trend Analysis** reveals that the changes across the entire trend line are statistically significant. In other words, Injury ER Visits in St. Louis City for this specific age group has significantly decreased since 2004, in spite of a few periods of increase.



To download the **Trend Line Analysis** graph, click the green **Save Chart As** button, shown above. Three download options are available: PDF, JPEG, and PNG. Any of these will allow the entire image to be saved and placed in a document without further manipulation. This feature is available for each of the data visualization options on the Profiles Dashboard.

▲ Trend Analysis Chart Data

Profile: Missouri Resident Child Health Profile
 Chart Type: Three Year Moving Average Rates Trend Line
 Geography: Missouri and Counties: St. Charles, St. Louis City, St. Louis County, Demographic: All, Indicator: Selected Indicators Ages 15 - 19 - Injury ER Visits

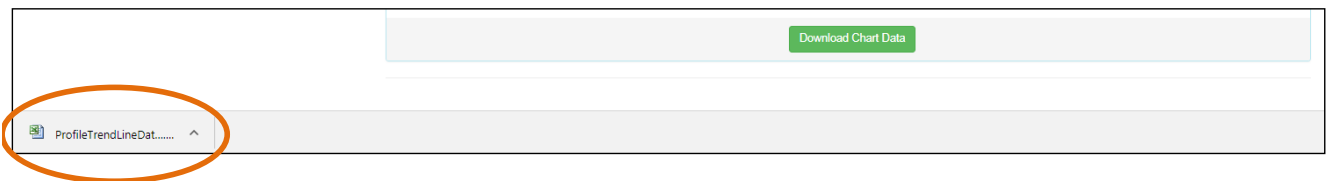
Geography Name	Data Year	Rate	State Rate
St. Charles	2004-2006	13,950.26	14,897.64
St. Charles	2005-2007	13,443.71	14,512.37
St. Charles	2006-2008	12,715.30	13,962.98
St. Charles	2007-2009	11,521.47	13,433.32
St. Charles	2008-2010	10,551.40	12,876.47
St. Charles	2009-2011	9,896.12	12,584.79
St. Charles	2010-2012	9,806.97	12,428.12
St. Charles	2011-2013	9,271.16	12,018.41
St. Charles	2012-2014	8,157.22	11,321.90
St. Charles	2013-2015	7,673.86	10,861.78
St. Louis City	2004-2006	14,376.90	14,897.64
St. Louis City	2005-2007	13,707.37	14,512.37
St. Louis City	2006-2008	13,149.63	13,962.98
St. Louis City	2007-2009	13,064.37	13,433.32
St. Louis City	2008-2010	12,929.27	12,876.47
St. Louis City	2009-2011	13,009.54	12,584.79
St. Louis City	2010-2012	13,020.67	12,428.12
St. Louis City	2011-2013	13,018.48	12,018.41
St. Louis City	2012-2014	11,999.20	11,321.90
St. Louis City	2013-2015	11,545.57	10,861.78
St. Louis County	2004-2006	12,649.13	14,897.64
St. Louis County	2005-2007	12,256.11	14,512.37
St. Louis County	2006-2008	11,693.16	13,962.98
St. Louis County	2007-2009	11,310.22	13,433.32
St. Louis County	2008-2010	10,912.13	12,876.47
St. Louis County	2009-2011	10,559.04	12,584.79
St. Louis County	2010-2012	10,422.11	12,428.12
St. Louis County	2011-2013	9,984.81	12,018.41
St. Louis County	2012-2014	9,263.88	11,321.90
St. Louis County	2013-2015	8,780.88	10,861.78

Rates are considered unreliable when based on less than 20 events. Please check corresponding event counts before interpreting the rates shown here.

DHSS-MOPHIMS Community Data Profiles - Child Health
 Generated On: 08/15/2018 09:31:21 AM

[Download Chart Data](#)

To download the three-year moving averages table into Microsoft Excel, simply click the green **Download Chart Data** button at the bottom of the screen.



Be sure that pop up blockers are disabled. An Excel file will appear at the bottom of the browser. An example is circled in orange above.

	A	B	C	D
1	Profile: Missouri Resident Child Health Profile			
2	Chart Type: Three Year Moving Average Rates Trend Line			
3	Geography: Missouri and Counties: St. Charles, St. Louis City, St. Louis County, Demographic: All, Indicator: Selected Indicators Ages 15 - 19 -			
4	Geography Name	Data Year	Rate	State Rate
5	St. Charles	2004-2006	13,950.26	14,897.64
6	St. Charles	2005-2007	13,443.71	14,512.37
7	St. Charles	2006-2008	12,715.30	13,962.98
8	St. Charles	2007-2009	11,521.47	13,433.32
9	St. Charles	2008-2010	10,551.40	12,876.47
10	St. Charles	2009-2011	9,896.12	12,584.79
11	St. Charles	2010-2012	9,806.97	12,428.12
12	St. Charles	2011-2013	9,271.16	12,018.41
13	St. Charles	2012-2014	8,157.22	11,321.90
14	St. Charles	2013-2015	7,673.86	10,861.78
15				
16	St. Louis City	2004-2006	14,376.90	14,897.64
17	St. Louis City	2005-2007	13,707.37	14,512.37
18	St. Louis City	2006-2008	13,149.63	13,962.98
19	St. Louis City	2007-2009	13,064.37	13,433.32
20	St. Louis City	2008-2010	12,929.27	12,876.47
21	St. Louis City	2009-2011	13,009.54	12,584.79
22	St. Louis City	2010-2012	13,020.67	12,428.12
23	St. Louis City	2011-2013	13,018.48	12,018.41
24	St. Louis City	2012-2014	11,999.20	11,321.90
25	St. Louis City	2013-2015	11,545.57	10,861.78
26				
27	St. Louis County	2004-2006	12,649.13	14,897.64
28	St. Louis County	2005-2007	12,256.11	14,512.37
29	St. Louis County	2006-2008	11,693.16	13,962.98
30	St. Louis County	2007-2009	11,310.22	13,433.32
31	St. Louis County	2008-2010	10,912.13	12,876.47
32	St. Louis County	2009-2011	10,559.04	12,584.79
33	St. Louis County	2010-2012	10,422.11	12,428.12
34	St. Louis County	2011-2013	9,984.81	12,018.41
35	St. Louis County	2012-2014	9,263.88	11,321.90
36	St. Louis County	2013-2015	8,780.88	10,861.78
37				
38				
39	FootNotes			
40	Rates are considered unreliable when based on less than 20 events. Please check corresponding event counts before interpreting the rates shown here.			
41				
42	DHSS-MOPHIMS Community Data Profiles - Child Health			
43	Generated On: 08/15/2018 09:42:41 AM			
44				
45				
46				

Clicking this file will immediately open the table in an Excel workbook. Please note that the trend line chart does not download into Excel, only the data table. Once the data are downloaded, Excel's Line Chart tools can be used to recreate and customize the trend line.

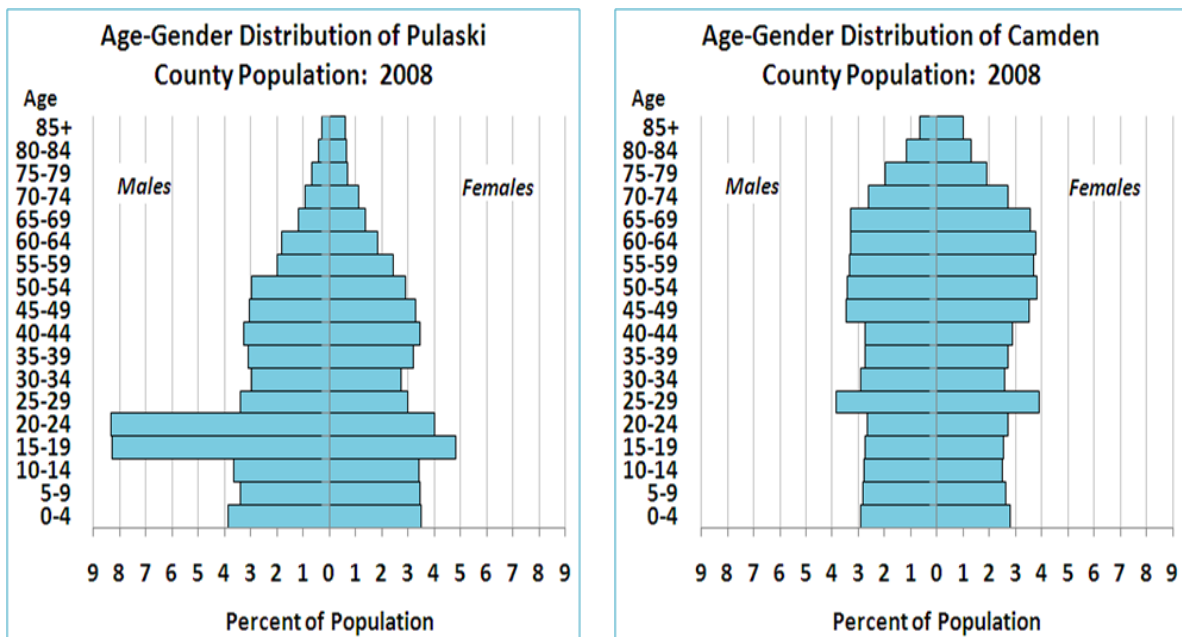
Profiles Exercises – Part I

1. You have been asked to compile some basic information about the incidence (new cases) of birth defects in Cass County and Jasper County.
 - a. Which Profile contains data on birth defects? _____
 - b. What is the population constant for birth defects? _____
 - c. List two sources of birth defects data. _____

 - d. What is the birth defects rate for Cass County? _____
For Jasper County? _____
 - e. Is Cass County's rate significantly different from the state rate? _____
If yes, how? _____
Is Jasper County's rate significantly different from the state rate? _____
If yes, how? _____
 - f. What is the neural tube defect rate for Cass County? _____
For Jasper County? _____ Are these rates significantly different from the state rate, and, if yes, how? _____

Age-Adjusted Rates

The **Child Health Profile** contains only crude rates because it focuses on a specific age group, children aged 0-19 years. In many situations, however, analysts are required to compare total populations and different geographic areas that may have wildly different age compositions that could affect such comparisons. For example, consider the age pyramids of Pulaski and Camden Counties shown below. Pulaski County includes many young adults, while Camden County is home to many older adults. When comparing total populations for different areas or even for different time periods within the same area, age-adjusted rates should be used instead of crude rates.



Source: MODHSS, Adapted from Population MICA

An age-adjusted rate “removes differences in the age composition of two or more populations to allow comparisons between these populations independent of their age structure.”³ Stated another way, age-adjusting allows users to make fairer comparisons between populations with different age structures. Age is the variable most commonly adjusted because the onset of many health conditions is strongly correlated with age. After age adjusting, we can “be sure that any difference [is] not due to a difference in the age distributions. . . We could also adjust for differences in sex, race and economics if we wanted to exclude those effects.”⁴

³ Florida Department of Health. *FloridaCHARTS user's guide: Empowering communities with health information*. Florida CHARTS. http://www.flhealthcharts.com/Charts/documents/CHARTS_USER_GUIDE_8_2012.pdf Accessed April 10, 2014.

⁴ Austin DF, Werner SB. *Epidemiology for the health sciences: A primer on epidemiologic concepts and their uses*. Springfield, IL: Charles C. Thomas; 1974.

A standard population distribution is used to adjust rates. The age-adjusted rates are the rates that would have existed if the population under study had been distributed in the same way as the 'standard' population. Notice the difference between the crude and the age-adjusted rates for Pulaski and Camden Counties.

2008 Death Rates per 100,000 Population

Pulaski Crude Rate = 612.8

Camden Crude Rate = 1,003.2

Pulaski Age-Adjusted Rate* = 1,029.2

Camden Age-Adjusted Rate* = 791.6

*Adjusted to the US 2000 standard population

The following example illustrates the process of age adjusting rates. Community B has a higher death rate for each age category than Community A, but Community A's overall crude death rate is higher. However, after the rates are age-adjusted, Community B has the higher overall death rate, which better reflects the true risk of death in Community B.

Crude Death Rates

Age	Community A			Community B		
	Deaths	Population	Rate per 1,000	Deaths	Population	Rate per 1,000
0-34	20	1,000	20	180	6,000	30
35-64	120	3,000	40	150	3,000	50
65+	360	6,000	60	70	1,000	70
Total	500	10,000	50	400	10,000	40

Age-Adjusted Death Rates

Age	Standard Population	Community A		Community B	
		Crude Rate	Rate * Population	Crude Rate	Rate * Population
0-34	3000	20	60,000	30	90,000
35-64	3000	40	120,000	50	150,000
65+	4000	60	240,000	70	280,000
Total	10000		420,000		520,000
Age-Adjusted Rate per 1,000			42		52

Source: Curtin & Klein, 1995

NOTE: The same standard population must be used on both sides of the comparison. It is not legitimate to compare adjusted rates which use different standard populations.

The US 2000 standard population is currently used by all federal agencies and should be selected in most situations. If comparing to older reports, the 1940 or 1970 standard populations may be used. MICA allows for age adjusting based on all three of these standard populations. The standard population must be cited with the rate, either in the text or in a footnote, as in this example from the Community Data Profiles.

Mortality rates are per year per 100,000 population and are age-adjusted to the U.S. 2000 standard population.

Survey Data

Most of the data in the Profiles and MICAs are based on counts of actual events. These counts are taken from surveillance systems or registries that attempt to record each relevant incident, such as births in the birth certificate system or new cases of cancer in the Cancer Registry. However, for many conditions and risk factors there are no specific registries; therefore, there are no complete counts. For example, no registry records every person diagnosed with asthma. Asthma sufferers who die from the condition are captured in the death certificate system but relatively few people die from asthma. The Patient Abstract System captures hospital and emergency room visits for asthma but not every asthma sufferer requires hospital treatment. Many are treated by general practitioners or in urgent care centers. Likewise, there are no registries for most risk factors, such as smoking or high blood pressure. For conditions and risk factors such as these, surveillance systems based on survey data have been established.

Behavioral Risk Factor Surveillance System (BRFSS)

The **Behavioral Risk Factor Surveillance System (BRFSS)** is a state-based surveillance system conducted in all 50 states, the District of Columbia, and several US territories in collaboration with the U.S. Centers for Disease Control and Prevention (CDC). Interviews are conducted annually with adults ages 18 and older through randomly selected landline and cell phone telephone numbers. The purpose is to collect data on chronic diseases, conditions, risk factors, preventive health practices and other health-related topics. Most of the interview questions remain the same from year to year, but some questions are only asked every other year. Questions may be added as new trends emerge, and states have the opportunity to select optional modules in addition to the core questions asked in all states. A list of BRFSS topics is available in the Appendix. The CDC and some states recently piloted the use of mail and web surveys for telephone non-respondents to study the impact on response rates. At this time, there is no plan to add the modalities to the BRFSS.

In the BRFSS, a proportion of adults age 18 or older are randomly selected to participate in the survey and the data are weighted to be representative of all adults in the entire population. Demographic dimensions used in the weighting method to produce state prevalence estimates are as follows:

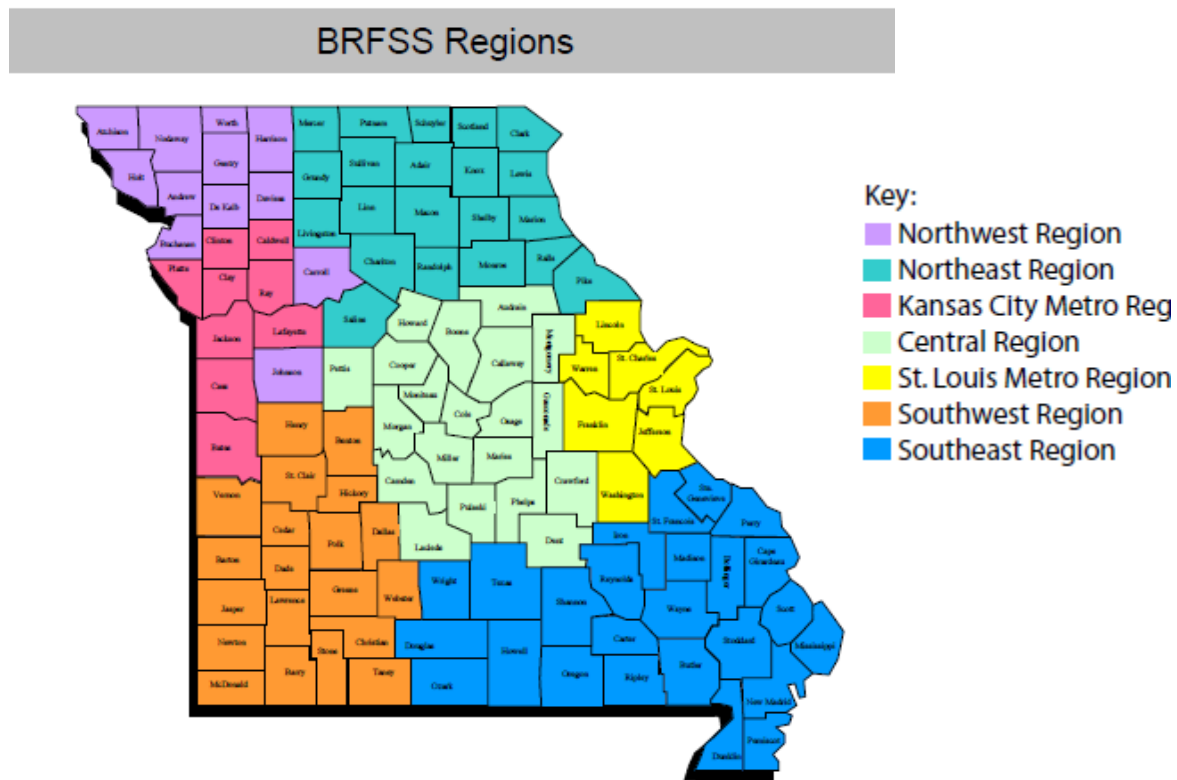
- age group by gender
- detailed race/ethnicity
- educational level
- marital status
- home owner or renter status
- gender by race/ethnicity
- age group by race/ethnicity
- telephone source (landline telephone only, both landline and cell phone, or cell phone only)

For states that collect and report data according to regions, such as Missouri's seven BRFSS regions shown below, the weighting procedure includes these additional dimensions:

- region
- region by age group
- region by gender
- region by race/ethnicity

Because of a difference in weighting methodologies, prior years of BRFSS data may not be compared to 2011 data.

Currently in Missouri, approximately 4,200 landline and 3,000 cell phone interviews are conducted annually. Prevalence estimates are available for the state overall and the seven regions shown below.



Several BRFSS indicators are included in the **Diabetes, Heart Disease, and Stroke Profiles**. All Missouri BRFSS data can be accessed directly from <http://www.health.mo.gov/data/brfss/index.php> or through the Data, Surveillance Systems & Statistical Reports website. BRFSS data from all states may be obtained from the Centers for Disease Control and Prevention website at <http://www.cdc.gov/brfss/>.

BRFSS is a valuable public health surveillance system at both the national and state levels. It provides upstream indicators — prevalence of risk behaviors, chronic

conditions, and diseases — which are crucial to public health program planning and progress monitoring. There are some limitations to the BRFSS-type survey, including the ability of respondents to recall information accurately and lack of representation of individuals not included in the sampled population, such as those institutionalized. Regardless of these limitations, the value of BRFSS is unquestionable because of its timeliness, its coverage, and its upstream indicators that would not be available without BRFSS.

Missouri County Level Study

The Missouri County Level Study (CLS) is a special BRFSS-like survey that has been conducted four times – in 2003, 2007, and 2011, and 2016. The study purpose is to produce county-specific prevalence estimates of chronic diseases, conditions, risk factors and preventive practices of Missouri adults ages 18 and older. Telephone interviews were conducted with approximately 15,000 adults in 2003, 52,000 in 2011, and 50,500 in 2016. The 2011 survey included 4,880 interviews with cell phone only users which increased to 25,000 cell phone only households in 2016. The 2007, 2011, and 2016 studies were funded by the Missouri Foundation for Health.

The 2011 CLS data are available through the Community Data Profiles website at <https://webapp01.dhss.mo.gov/MOPHIMS/ProfileBuilder?pc=14>. Because the 2011 CLS combined landline and cell phone data were weighted using CDC's new BRFSS methodology, 2011 data may not be compared to 2003 or 2007 data unless the older data are re-weighted.

NOTE: The 2003 CLS data have been removed from the DHSS website. The 2007 CLS data were re-weighted and are now available through the 2007-2011 County Level Study Comparison Profiles. Eventually, a similar option to compare the 2016 CLS results will be added.

Additional information about the CLS can be accessed at <http://www.health.mo.gov/data/cls/index.php> or through the Data, Surveillance Systems & Statistical Reports website.

Missouri County Level Study Profile

Two Profiles (the **County Level Study Profile** and the **County Level Study Comparison Profile**) were designed specifically to present CLS data. Each of these Profiles are divided into sections based on relevant survey questions. Data from questions on access to care, health behaviors, health conditions, screening, health policy and environment, and health literacy may be found at the top of the **County Level Study Profile**. The **County Level Study Comparison Profile** has a slightly different format, but is very similar to the **County Level Study Profile**. A portion of the 2016 **County**

Level Study Profile follows. The exact survey questions and potential responses may be viewed by selecting the hyperlinked indicator labels.

Missouri Department of Health & Senior Services
Home
Profiles ▾
MICA ▾
EPHT ▾
Search
Sign Up
Login

Missouri Resident County-Level Study Profile
Print Profile

Choose Your Profile Data

CLS Year:

Geography:

Rate Type:

State:

Demographic:

Submit

State: Missouri

Health, Risk Factors, and Preventive Practices Indicators

Indicator	All				Graphics Link	Download Data
	Number of Respondents	Prevalence (%)	95% CI Lower	95% CI Upper		
General Health						
Fair or Poor General Health Status	50,790	19.71	18.93	20.49	Graphics	
Activity limitation	50,081	23.28	22.41	24.14	Graphics	
Access to Care						
No health care coverage - Ages 18-64	30,295	13.81	12.96	14.66	Graphics	
Did not get medical care because of cost or no insurance - Among those who needed medical care but could not get it in the past 12 months	8,160	52.72	50.16	55.28	Graphics	
Last had a routine physical checkup more than 2 years ago	47,047	16.26	15.42	17.10	Graphics	
No dental care coverage	47,292	60.95	59.92	61.98	Graphics	
Needed to see a dentist in past 12 months but could not due to cost	48,392	18.95	18.11	19.78	Graphics	
Last visited a dentist more than 2 years ago	47,942	24.44	23.56	25.32	Graphics	
Health Behaviors						
Binge alcohol drinking	48,148	18.38	17.46	19.31	Graphics	
Heavy alcohol drinking	48,039	7.12	6.49	7.74	Graphics	
Current cigarette smoking	49,675	21.88	20.99	22.77	Graphics	
Current cigarette smokers who made a quit attempt in past year	10,215	57.05	54.77	59.33	Graphics	
Current electronic cigarette use (vaping)	49,340	5.29	4.79	5.78	Graphics	
Current smokeless tobacco use	49,838	5.03	4.62	5.44	Graphics	
Inadequate sleep	47,880	32.67	31.63	33.72	Graphics	
No leisure-time physical activity	48,983	25.86	24.95	26.77	Graphics	
Less than 5 fruits and vegetables per day	46,911	88.47	87.75	89.19	Graphics	
Chronic Diseases and Conditions						
Ever been told had arthritis	50,645	28.32	27.43	29.21	Graphics	
Current Asthma	50,555	9.69	9.06	10.32	Graphics	

The CLS Profiles are set up somewhat differently than most of the other Community Data Profiles. The CLS data are estimates based on survey responses, not complete counts of actual events. The **Number of Respondents** for each indicator shown on the CLS Profiles is the number of people asked a question about that indicator, NOT the total number of residents affected by that indicator. For example, 30,295 adults were asked if they had health care coverage. Based on their responses, it is estimated that 13.81% of adult Missouri residents did not have health care coverage in 2016. This 13.81% is a

Prevalence rate. For the CLS, data were weighted to be representative of the adult (18 years of age and older), non-institutionalized population of the area covered. Age-Adjusted Prevalence rates are available in the **Rate Type** dropdown in the **Choose Your Profile Data** section of the screen and allow for fairer comparisons to be made between different geographies that may have different age structures. Age-adjusted rates are discussed in more detail in an earlier section of this handbook. Download features include the ability to download state, regional, county, and city data for an indicator to an Excel table, PDF document, or a map. The **Demographic** dropdown at the top of the table segment allows users to parse the indicators by demographic characteristics. Available demographics include: Race, Gender, Age, Income, Rural-Urban, Education Status, and Health Insurance Status.

Below is the **County Level Study Profile** for Adair County. A portion of the Adair County Profile is shown below. On each county level Profile, the prevalence rate for each indicator is compared to the region and state prevalence rates to determine if there are statistically significant differences. Notice that only one **Demographic** choice is available, **Demographic: All**. Due to the survey design, the data could not be stratified for most counties. Available **Demographic** choices will vary depending on the geography selected.

Missouri Department of Health & Senior Services
Home Profiles MICA EPHT Search
Sign Up Login

Missouri Resident County-Level Study Profile
Print Profile

Choose Your Profile Data

CLS Year:	2016	Rate Type:	Weighted Percent
Geography:	COUNTY	County:	Adair
		Demographic:	All

Submit

County: Adair

Health, Risk Factors, and Preventive Practices Indicators

Indicator	Number of Respondents	Prevalence (%)	All		Regional Significance	State Significance	Graphics Link	Download Data
			95% CI Lower	95% CI Upper				
General Health								
Fair or Poor General Health Status	375	19.41	13.77	25.06	NS	NS	Graphics	
Activity limitation	366	20.78	15.07	26.49	NS	NS	Graphics	
Access to Care								
No health care coverage - Ages 18-64	231	15.22	8.80	21.63	NS	NS	Graphics	
Did not get medical care because of cost or no insurance - Among those who needed medical care but could not get it in the past 12 months	59	48.03	29.58	66.48	NS	NS	Graphics	
Last had a routine physical checkup more than 2 years ago	344	20.58	13.89	27.27	NS	NS	Graphics	
No dental care coverage	351	57.80	50.25	65.36	NS	NS	Graphics	
Needed to see a dentist in past 12 months but could not due to cost	358	15.36	10.02	20.69	NS	NS	Graphics	
Last visited a dentist more than 2 years ago	354	23.84	17.67	30.01	NS	NS	Graphics	

Indicator constants and denominators for this Profile can be found [here](#)
* Percents are not provided for indicators with less than 50 respondents.

Downloads

[Download Profile](#)

Missouri County Level Study Comparison Profile

The **County Level Study Comparison Profile** compares results from the 2007 and 2011 studies. For these Profiles, the 2007 data have been re-weighted using the CDC's new BRFSS methodology for combined landline and cell phone data. As a result, the numbers currently presented in the Comparison Profile may not match the numbers previously displayed on the 2007 County-Level Study Profile, which have been removed from the DHSS website. A portion of the **County Level Study Comparison Profile** for Bates County follows.

Missouri Resident County-Level Study Comparisons Profile Print Profile

▲ Choose Your Profile Data

Comparison Year: 2007 - 2011

Geography: COUNTY

Rate Type: Weighted Percent

County: Bates

Demographic: All

Submit

▲ Health and Preventive Practices Indicators

	2007 Number of Respondents	2007 Prevalence (%)	2011 Number of Respondents	2011 Prevalence (%)	Prevalence Different 2007-2011 (%)	Significant Change 2007-2011 H/L/NS	Download Data
Fair or Poor General Health Status	380	27.07	395	29.97	2.90	NS	
Activity Limitation	380	30.68	396	29.99	-0.69	NS	
No health care coverage Ages - 18-64	253	22.37	225	22.68	0.32	NS	
Could not get needed Medical care in past 12 months	380	7.51	395	5.14	-2.38	NS	
Did not get medical care because of cost or no insurance - among those who needed medical care but could not get it in the past 12 months	0	*	0	*	*	*	
Did not get medical care because of lack of transportation - among those who needed medical care but could not get it in the past 12 months	0	*	0	*	*	*	
Did not get medical care because of other reasons - among those who needed medical care but could not get it in the past 12 months	0	*	0	*	*	*	
Current cigarette smoking	378	28.89	394	18.62	-10.27	L	
No leisure time physical activity	379	31.94	397	26.70	-5.24	NS	
Ate fruits and vegetables less than 5 times per day	359	78.29	396	91.93	13.64	H	
Overweight(25.0-29.9 BMI)	368	33.38	371	33.22	-0.16	NS	
Obese(>= 30 BMI)	368	32.39	371	29.78	-2.61	NS	
Ever told had high blood pressure (Among those that had ever blood pressure checked)	375	22.50	392	43.97	21.46	H	
Ever had blood cholesterol checked - among age 35 and older	322	86.28	354	88.55	2.28	NS	
Current asthma	380	7.38	395	8.75	1.36	NS	

Indicator constants and denominators for this Profile can be found here
 * Percents are not provided for indicators with less than 50 respondents.

The Comparison Profile provides the number of people asked each question and the weighted percent of the population (or prevalence) for each year. The **Prevalence Difference 2007-2011 (%)** column shows the change over time. The **Significant Change 2007 to 2011 H/L/NS** column indicates whether any statistically significant change occurred between the two data years. For example, the *Ate fruits and vegetables less than 5 times a day* rate for Bates County increased significantly between 2007 and 2011.

Stroke Profile

Several CLS indicators are included in the **Diabetes, Heart Disease, and Stroke Profiles**, which are part of the Chronic Disease section of the Community Data Profiles. As an example, **Stroke Profile** contains information on risk factors, prevalence, mortality, hospitalizations, ER visits, and hospital utilization indicators for stroke.

The following examples explore the **Stroke Profile** for Pettis County.

The first section of the Stroke Profile contains data about the risk factors for stroke and stroke prevalence. These data were collected from the Behavioral Risk Factor Surveillance System (BRFSS) and the 2011 County Level Study surveys. Additional information about these surveys can be found in an earlier section of this handbook.

Missouri Resident Stroke Profile
Print Profile

▲ Choose Your Profile Data

Geography:

County:

Demographic:

Submit

County: Pettis

▲ Risk factors and prevalence rates for stroke among adults 18 years and older

	Data Years	Population Estimate	Weighted Percent	State Weighted Percent	Significantly Different	Ranking Quintile	Graphics Link	Download Data
Risk factors for stroke								
BRFSS † (Central)								
Angina or coronary heart disease	2015	34,273	6.10	4.80	N/S		Graphics	
Prior heart attack	2015	26,479	4.70	5.30	N/S		Graphics	
No cholesterol screening	2015	401,448	73.60	80.30	L		Graphics	
Binge drinking	2015	103,838	19.40	16.70	N/S		Graphics	
Heavy drinking	2015	41,029	7.60	6.20	N/S		Graphics	
Heavy drinking among males	2014	19,553	7.80	6.80	N/S		Graphics	
Heavy drinking among females	2014	5,756	2.30	3.70	N/S		Graphics	
Incorrectly answered signs and symptoms of stroke	2009	377,609	79.80	78.90	N/S		Graphics	
County Level Study ‡								
High blood pressure	2011	9,934	35.30	34.40	N/S	2	Graphics	
High cholesterol	2011	9,777	34.80	39.60	N/S	1	Graphics	
Diabetes	2011	3,172	11.30	10.70	N/S	3	Graphics	
Obesity	2011	8,521	30.30	30.10	N/S	2	Graphics	
Overweight	2011	8,859	31.50	34.50	N/S	2	Graphics	
Current smoking	2011	6,486	23.10	23.10	N/S	3	Graphics	
Physical inactivity	2011	7,485	26.60	23.70	N/S	3	Graphics	
Low fruit and vegetable intake	2011	24,957	88.80	87.50	N/S	3	Graphics	
Stroke prevalence (non-institutional)***								
BRFSS † (Central)								
Adults age 18 and older	2015	12,870	2.30	4.50	L			

Indicator constants and denominators for this Profile can be found [here](#)
 ‡ County Level Study is a large sample survey that provides Missouri county-specific rates.
 † Behavioral Risk Factor Surveillance System (BRFSS) annual survey provides state and regional rates. Note that for county profiles, rates are provided at the regional level.
 *** Prevalence estimates for stroke are likely to be underestimated because they are based on a telephone survey of residences. Some persons who have had strokes may be unable to respond to a telephone survey; many reside in nursing homes or other institutions.

The presentation of survey data in most of the Profiles differs from that used in the CLS Profiles. In the CLS Profiles, the **Number of Respondents** column represented the number of adults asked each question. However, in most Profiles, the number listed is a

Population Estimate. For example, the BRFSS estimates that the Central Region has 26,479 adult residents who have experienced a prior heart attack, while the CLS estimates that 6,486 adult residents of Pettis County currently smoke.

Remember that CLS rates are county specific, but BRFSS rates represent *regions* of the state, not individual counties. BRFSS data are not statistically stable below the regional level, so regional data are provided even for county level Profiles. The appropriate region will be identified next to the BRFSS heading. For example, Pettis County is part of the Central Region. All of the counties in the Central Region will have the same rates listed for the BRFSS indicators. To view the counties included in a region, click on the region label.

Missouri Resident Stroke Profile Print Profile

Choose Your Profile Data

Geography: COUNTY County: Pettis Demographic: All

Submit

County: Pettis

Risk factors and prevalence rates for stroke among adults 18 years and older

	Data Years	Population Estimate	Weighted Percent	State Weighted Percent	Significantly Different	Ranking Quintile	Graphics Link	Download Data
Risk factors for stroke								
BRFSS † (Central)								
Angina or coronary heart disease	2015	34,273	6.10	4.80	N/S		Graphics	
Prior heart attack	2015	26,479	4.70	5.30	N/S		Graphics	

The second section of the **Stroke Profile**, Mortality/PAS (Hospitalization and ER Indicators) is organized in the same way as the **Child Health Profile**. However, the rates used in this section are age-adjusted because the entire population is included.

Mortality/PAS (Hospitalization and ER indicators)

	Data Years	Count	Rate	State Rate	Significantly Different	Ranking Quintile	Graphics Link	Download Data
Mortality								
Stroke/other cerebrovascular disease	2006 - 2016	277	47.33	43.85	N/S	4	Graphics	
Hospitalizations								
Stroke/other cerebrovascular disease (CVD)	2011 - 2015	758	30.07	27.85	N/S	4	Graphics	
Acute stroke	2011 - 2015	618	24.56	21.75	H	5	Graphics	
Ischemic stroke	2011 - 2015	536	21.28	18.27	H	5	Graphics	
Hemorrhagic stroke	2011 - 2015	82	3.28	3.48	N/S	4	Graphics	
Late effects and other CVD	2011 - 2015	46	1.86	1.70	N/S		Graphics	
Transient ischemic attack (TIA)	2011 - 2015	94	3.64	4.40	N/S	3	Graphics	
Emergency room visits								
Stroke/other cerebrovascular disease	2011 - 2015	306	1.25	0.77	H	4	Graphics	
Transient ischemic attack (TIA)	2011 - 2015	141	0.58	0.31	H	4	Graphics	

Indicator constants and denominators for this Profile can be found [here](#).
Mortality rates are per year per 100,000 population and are age-adjusted to the U.S. 2000 standard population.
Hospitalization rates are per year per 10,000 population and are age-adjusted to the U.S. 2000 standard population.
Emergency room rates are per year per 1,000 population and are age-adjusted to the U.S. 2000 standard population.
Trends are available only if each 3-year period of the moving average has an average of 20 or more events.

The third section of the **Stroke Profile** contains Hospital Utilization data. These data show the total charges and total days of care for the different types of strokes, as well as other data specific to particular types of strokes.

Hospitalization Utilization indicators						
	Data Years	Count	Percent	State Percent	Graphics Link	Download Data
Hospital Utilization Indicators						
Stroke/other cerebrovascular disease						
Total charges	2015	6,646,485	-	-		
Age 65 and older	2015	3,872,264	-	-		
Total days of care	2015	760	-	-		
Age 65 and older	2015	507	-	-		
Ischemic stroke						
Total charges	2015	3,563,486	-	-		
Total days of care	2015	397	-	-		
Discharge status @						
Home	2011 - 2015	283	52.80	56.22		
Other LTC facility	2011 - 2015	139	25.93	14.90		
Rehabilitation	2011 - 2015	64	11.94	18.19		
Died	2011 - 2015	21	3.92	3.65		
Thrombolytic agent (tPA) given	2011 - 2015	18	3.36 *	6.44		
Hemorrhagic stroke						
Total charges	2015	2,052,245	-	-		
Total days of care	2015	175	-	-		
Discharge status @						
Home	2011 - 2015	24	29.27	31.73		
Other LTC facility	2011 - 2015	19	23.17 *	17.18		
Rehabilitation	2011 - 2015	9	10.98 *	19.83		
Died	2011 - 2015	22	26.83	21.56		
TIA hospitalizations admitted through ER	2011 - 2015	11	11.70 *	76.77		
<small>Indicator constants and denominators for this Profile can be found here * Fewer than 20 events in numerator; rate is unreliable. Percentages for discharge status will not add to 100% because of transfers, unknown and other discharge dispositions.</small>						

As with the **Child Health Profile**, the entire **Stroke Profile** can be downloaded using the link at the bottom of the screen. Individual indicators for all geographies are also downloadable from the **Download Data** column.

Downloads
Download Profile

Data by Race are also available for counties/cities with large African-American populations.

Profiles Exercises – Part II

2. You decide to graph the birth defects data you gathered in the exercise on page 29. Create a trend line graph to see how Neural Tube Defect (NTD) rates have changed over time in Cass County. Were you able to generate a trend line graph? _____
Why or why not? _____

3. You are writing a report on mothers in Texas County. You are interested in comparing births by age of mothers 15-17 for the years 2013 through 2017 for Texas County and its neighbors, Shannon and Howell Counties.
- Which Profile did you use? _____
 - Which of these counties have rates that are statistically significantly lower than the state rate?

 - Which of these counties have rates that are not statistically significantly different from the state rate?

 - Which of these counties have rates that are statistically significantly higher than the state rate?

 - Do any of the counties have unstable rates

 - Into which ranking quintile does Texas County fall? _____ What does this tell us about Texas County's rate compared to the rates of the other 114 counties in Missouri?

4. A coalition in your county is interested in working on decreasing tobacco use among adults. You have been asked to begin compiling information to educate the coalition on this topic and how they should focus their time and resources. Use the **2016 County-Level Study Profiles** to obtain the answers to the following questions:
- What is the prevalence of current cigarette smoking among adults in your county?

 - Is there a significant difference when comparing the age-adjusted prevalence of current cigarette smoking in your county to the region? To the state?

 - In what quintile ranking does current cigarette smoking in your county fall? Where did you find this information?

- d. What related data from the 2016 County-Level Study might you want to consider regarding local tobacco use problems?

MICA (Missouri Information for Community Assessment) Part I

Overview

The MICA tools allow users to create and download customized tables based on selected variables. To access the MICAs, we could return to the Data, Surveillance Systems & Statistical Reports page using the Data & Statistics tab or choose one of the MICA links on the Community Data Profiles site.

Missouri Department of Health & Senior Services

MO.gov Governor Parson Find an Agency Online Services Search

Healthy Living Senior & Disability Services Licensing & Regulations Disaster & Emergency Planning **Data & Statistics**

Data, Surveillance Systems & Statistical Reports

DHSS Home » Data & Statistics

- Data Release Policies, Procedures and Guidelines (VR & PAS)
- Institutional Review Board Guidelines

Community Health Assessment and Intervention Planning

- Missouri Health Assessment
- Missouri Health Improvement Plan **NEW!**
- MOPHIMS (Missouri Public Health Information Management System)
- Community Data Profiles (State, County and City Profiles)
- MICA (Missouri Information for Community Assessment)**
- Priorities MICA
- Health Data Training
- Community Health Improvement Resources (CHIR)

Data & Statistics

- Missouri Public Health Information Management System (MOPHIMS)
- Profiles
 - MICA**
- Priorities MICA
- Community Health Improvement Resources (CHIR)
- Births
- Deaths

If a user is already in the MOPHIMS system, click on the MICA logo or the appropriate link in the toolbar. Select either to navigate to the MICAs: <https://webapp01.dhss.mo.gov/MOPHIMS/MICAHome/>.

Health & Senior Services Home Profiles MICA EPHT Search Sign Up Login

MOPHIMS

The Missouri Public Health Information Management System (MOPHIMS) provides a common means for users to access public health related data to assist in defining the health status and needs of Missourians.

DATA PROFILES

Community Data Profiles are available on various subject areas and provide data on 15-30 indicators for each geography selected.

- Maternal, Infant and Child Health Profiles
- Chronic Disease Profiles
- Injury Profiles
- Death Profile
- Hospital and Emergency Room Visit Profiles
- Special Demographic Profiles
- County-Level Study Profiles

DATA MICAS

The Missouri Information for Community Assessment (MICA) allows users to summarize data, calculate rates, and prepare information in a graphic format.

- Maternal, Infant and Child Health MICAs
- Chronic Disease MICAs
- Injury MICA
- Death MICA
- Hospital and Emergency Room Visit MICAs
- Population MICA
- Medicaid/TANF MICAs

EPHT

The Missouri Environment Public Health Tracking (EPHT) program was developed to assist the public, communities, policymakers, and scientists, answer fundamental questions about the relationships between environmental exposures and health effects. Data on this site also include hazard and disease surveillance.

- Health Data
 - Blood Lead Levels
 - Asthma
 - Birth Defects
 - Myocardial Infarction
 - Carbon Monoxide Poisoning
- Environmental Data
 - Agriculture
 - Air Quality
 - Water Quality
- Community Data
- National Data

[Click Here for sign up and login instructions.](#)
[Click Here for health data training information and opportunities.](#)
[Click Here for more information about confidentiality and suppression in MOPHIMS.](#)

Each MICA data set contains data from a single data system. For example, the **Birth MICA** only contains data from the birth certificate system, while the **Inpatient Hospitalization MICA** contains only data from the Patient Abstract System (PAS).

MICA

The Missouri Information for Community Assessment (MICA) is an interactive system that was developed to make health data accessible at the local level through an easy-to-use format. It allows users to summarize data, calculate rates, and prepare information in a graphic format. Data MICA users can access statistics on various health conditions and associated topics. Users can choose from among the many conditions, generate data tables by year of occurrence, age, gender, race, and county or zip code of residence, and obtain age-adjusted rates. Data MICAs also allow users to create charts and maps. All forms of output are available for download.



Maternal, Infant and Child Health MICAs

- Birth
- Fertility and Pregnancy Rate
- Pregnancy
- WIC Child
- WIC Infant
- WIC Prenatal
- WIC Postpartum
- WIC Linked Prenatal-Postpartum



Chronic Disease MICAs

- Cancer Incidence
- Chronic Disease Death
- Chronic Disease Emergency Room
- Chronic Disease Inpatient Hospitalization



Injury MICA

- Injury



Death MICA

- Death



Hospital and Emergency Room Visit MICAs

- Emergency Room
- Inpatient Hospitalizations
- Preventable Hospitalizations
- Procedures



Population MICA

- Population



Medicaid/TANF MICAs

- Mo Healthnet (Medicaid) MICA
- Temporary Assistance for Needy Families (TANF) MICA

Population MICA

One of the simplest MICAs to use is the **Population MICA**.

Population MICA

Choose Your Data

Year: Single Year(s) 2015 Multi-Year Groups

Geography: Statewide

Age: Single Age Basic Expanded Custom Group All selected (5)

Sex: All selected (2)

Race: Basic Expanded All selected (2)

Ethnicity: All selected (2)

Reset Your Data

Build Your Results

Build a Table | Make a Map | Create a Chart | Documentation / Metadata

Main Row: Geography Row Totals: Main Column: Year Column Totals:

Statistics: Counts only

Submit Query

Table Results

To retrieve Table Results: Choose Your Data, Build Your Results, and click the Submit Query button above.

Side by Side Comparison

To view results in the Side by Side Comparison: Once results are displayed in the Results panel above, click its Send to Side by Side button.

My Side by Side Comparison

Missouri Information for Community Assessment (MICA)
Data MICA

Submitting the default query shown above returns the following table.

Table Results

Save Table As

Title:	Missouri Resident Estimated Population
Data selected in addition to rows and columns below:	None
Year:	2015
Statistics:	Count
Statewide	
Missouri	6,083,672
Source:	DHSS - MOPHIMS - Population MICA
Generated On:	10/2/2017 12:13:17 PM

In the **Choose Your Data** section of the screen users set up a query. Both **Year** and **Geography** are set to the default selections, the most recent single year of data available (in this case, 2015) and Statewide. No optional selections were made in the demographic categories.

Geography was selected as the **Main Row** variable in the **Build Your Results** section of the screen. As a result of selections made in the **Choose Your Data** section (Geography= Statewide), Missouri is the only geography listed on the rows.

Year was selected as the **Main Column**. The most recent year was then selected in the **Choose Your Data Section** as the default year of interest. The table has only one column, for 2015.

Counts only is the default **Statistic** in the **Build Your Results** section of **Population MICA**. Thus, the resulting table shows only the total population of Missouri for 2015.

Suppose an organization is planning to implement a program for youth in Clark, Lewis, and Knox Counties. Analysts need to estimate how many children under the age of 15 live in each of these three counties. The analysts decide to look at five years of data, 2011 through 2015, to determine if this population is stable. To perform this query, the following selections should be made:

Choose Your Data: Select a Year Group and Years of Interest. Analysts must determine if the “population is stable,” so the population for each year must be reviewed to see if changes are occurring. Choose **Single Year** so that each year will be listed separately in the table. (If **Multi-Year Groups** is selected, the annual population estimates will be added together.) In the dropdown, check 2015, 2014, 2013, 2012, and 2011.

Choose Your Data: Select a Geography. The population in “each of these three counties,” is needed, so choosing **County** ensures that the individual counties will be listed in the table. (If **County** is not selected, the county populations will be added together to form a regional total.) De-select the ‘Select all’ checkbox and choose Clark, Lewis, and Knox. Leave the ‘Show State Totals’ box checked for now.

Choose Your Data: Select Filters. Customize the query by choosing the Ages, Sex, Races, or Ethnicity for the data pull. Because analysts are only interested in residents under the age of 15, select **Basic Age** and check Under 15 in the Age section. (Remember to de-select ‘Select all’.)

Build Your Results: Build a Table: Main Row. Leaving the default ‘Geography’ as the **Main Row** selection will show each selected county on the rows of the table. Leave ‘Row Totals’ checked to generate an aggregate population total for each county for the five years selected.

Build Your Results: Build a Table: Main Column. Again, by leaving the default ‘Year’ as the **Main Column** selection, the table will list each of the selected years as columns. Leaving the ‘Column Totals’ selected will generate a regional total for each year.

Build Your Results: Build a Table: Statistics. Analysts are only interested in the number of children, so **Counts only** should be selected.

Build Your Results: Build a Table: Submit the query by clicking the blue ‘Submit Query’ button at the bottom of the **Build Your Results** section.

There is no single “right” way to set up a MICA table. Often, several different variations will return the same data. For example, if preferred, the row and column variables could be reversed. However, there will often be methods that are more efficient than others.

In general, if data are needed for multiple categories within a particular variable, such as different races, age groups, counties, years, etc., place those variables on the rows or columns in the Build Your Results section. In this example, individual counties and the individual years needed to be reviewed, so those became our row/column variables. Only one age category was specified, so it was more efficient to choose Under 15 as a filter, chosen in the **Choose Your Data** portion of the query screen. We COULD have chosen Age as either the **Main Row** or **Main Column** variable. In that case, there would have been rows or columns for Under 15, as that was the selection made when choosing filters. If the analyst had left the Basic Age defaulted to ‘Select all’ and then chose Age as the **Main Row** or **Main Column**, then the table would have had rows or columns for ages Under 15, 15-24, 25-44, 45-64, and 65 and Over. The drawback of this approach is that BOTH the individual counties and the individual years could not have been shown on a single table. *However, Registered Users could generate a 2x2 table option would have showed all age groups, the selected counties, and the selected years on the same table. More on this later.*

Once the query is submitted, the following table is produced. Notice that the counties appear on rows and the years appear on columns, as specified in the **Build Your Results** section of the query screen. A heading just below the table title informs us that these Missouri resident data only apply to Age: Under 15. The Total for selection row is a “regional” total for the counties selected, which could be very helpful since the analysis is for a multi-county project. The Total for selection column sums the annual population estimates. These figures are useful when calculating multi-year rates. Because the ‘Show State Totals’ box remained checked when choosing the geographies, there is also a Missouri comparison row in the table. While this may not be the most useful feature in this example, it is often extremely advantageous to compare a population of interest to the statewide figures to put that output in context.

Table Results

Save Table As ▾ Send Table to Side by Side

Title: Missouri Resident Estimated Population						
Data selected in addition to rows and columns below: Age: Under 15;						
Year:	2011	2012	2013	2014	2015	Total for selection
Statistics:	Count	Count	Count	Count	Count	Count
County						
Clark	1,359	1,367	1,350	1,335	1,276	6,687
Knox	848	821	796	780	772	4,017
Lewis	1,983	1,919	1,895	1,876	1,896	9,569
Total for selection	4,190	4,107	4,041	3,991	3,944	20,273
Missouri	1,172,262	1,165,977	1,160,821	1,155,706	1,151,685	5,806,451
Source: DHSS - MOPHIMS - Population MICA						
Generated On: 10/3/2017 9:18:15 AM						

If the Years should appear as row variables and the Geographies appear as column variables, we can simply change our selections in the **Build Your Results** section that is immediately above the Table Results on the query screen.

MICA tables have a download option, similar to that available in the Community Data Profiles. By clicking the green 'Save Table As' button users can choose to export the table as a CSV or Excel file.

Table Results

Save Table As **Send Table to Side by Side**

Title: Missouri Resident Estimated Population

Data selected in addition to rows and columns below: Age: Under 15;

County:	Clark	Knox	Lewis	Total for selection	Missouri
Statistics:	Count	Count	Count	Count	Count
Year					
2011	1,359	848	1,983	4,190	1,172,262
2012	1,367	821	1,919	4,107	1,165,977
2013	1,350	796	1,895	4,041	1,160,821
2014	1,335	780	1,876	3,991	1,155,706
2015	1,276	772	1,896	3,944	1,151,685
Total for selection	6,687	4,017	9,569	20,273	5,806,451

Source: DHSS - MOPHIMS - Population MICA

Generated On: 10/3/2017 9:34:58 AM

The tables download in the chosen format and allow them to be imported into reports or presentations. A screen capture of the Excel download of the previously generated **Population MICA** table follows.

Table 2017-10-03 09:34:58 - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View Developer Add-Ins

Clipboard Font Alignment Number Cells Editing

A1 Title: Missouri Resident Estimated Population

1 Title: Missouri Resident Estimated Population

2 Data selected in addition to rows and columns below: Age: Under 15;

3

4 County: Clark Knox Lewis Total for selection Missouri

5 Statistics: Count Count Count Count Count

6 Year

7 2011 1,359 848 1,983 4,190 1,172,262

8 2012 1,367 821 1,919 4,107 1,165,977

9 2013 1,350 796 1,895 4,041 1,160,821

10 2014 1,335 780 1,876 3,991 1,155,706

11 2015 1,276 772 1,896 3,944 1,151,685

12 Total for selection 6,687 4,017 9,569 20,273 5,806,451

13

14 Source: DHSS - MOPHIMS - Population MICA

15 Generated On: 10/3/2017 9:34

Birth MICA

The next examples will highlight the **Birth MICA**, which contains data concerning births of Missouri residents.

MICA

The Missouri Information for Community Assessment (MICA) is an interactive system that was developed to make health data accessible at the local level through an easy-to-use format. It allows users to summarize data, calculate rates, and prepare information in a graphic format. Data MICA users can access statistics on various health conditions and associated topics. Users can choose from among the many conditions, generate data tables by year of occurrence, age, gender, race, and county or zip code of residence, and obtain age-adjusted rates. Data MICAs also allow users to create charts and maps. All forms of output are available for download.



Maternal, Infant and Child Health MICAs

- Birth
- Fertility and Pregnancy Rate
- Pregnancy
- WIC Child
- WIC Infant
- WIC Prenatal
- WIC Postpartum
- WIC Linked Prenatal-Postpartum



Chronic Disease MICAs

- Cancer Incidence
- Chronic Disease Death
- Chronic Disease Emergency Room
- Chronic Disease Inpatient Hospitalization



Injury MICA

- Injury



Death MICA

- Death



Hospital and Emergency Room Visit MICAs

- Emergency Room
- Inpatient Hospitalizations
- Preventable Hospitalizations
- Procedures



Population MICA

- Population



Medicaid/TANF MICAs

- Mo Healthnet (Medicaid) MICA
- Temporary Assistance for Needy Families (TANF) MICA

The **Birth MICA** query page is shown below. All of the data contained in this MICA comes from the birth certificate. To read more about the specifics for each MICA, users can simply click on the **Documentation/Metadata** tab and the associated hyperlinks in the **Build Your Results** section of the query page.

The screenshot shows the 'Birth MICA' query page. At the top, there is a navigation bar with 'Missouri Department of Health & Senior Services', 'MOPHIMS Home', 'Profiles', 'MICA', and 'EPHT'. On the right, there are 'Sign Up' and 'Login' links. Below the navigation bar, the page title is 'Birth MICA' and the MICA logo is displayed. The main content area is divided into three sections: 'Choose Your Data', 'Build Your Results', and 'Side by Side Comparison'. The 'Choose Your Data' section contains various filters: 'Year' (Single Year(s) selected, 2014), 'Geography' (Statewide), 'Mother's Age' (Basic selected, All selected (9)), 'Infant's Sex' (All selected (2)), 'Race' (Basic selected, Expanded), 'Ethnicity' (All selected (2)), 'Select' (Indicator selected, Optional Variables), and 'Indicator' (Live Births). A 'Reset Your Data' button is located at the bottom right of this section. The 'Build Your Results' section has four tabs: 'Build a Table', 'Make a Map', 'Create a Chart', and 'Documentation / Metadata', which is circled in orange. Below the tabs, there is a text box with the instruction: 'Please click the link to find [Documentation/Metadata](#)'. The 'Side by Side Comparison' section contains the text: 'To view results in the Side by Side Comparison: Once results are displayed in the Results panel above, click its Send to Side by Side button. My Side by Side Comparison'. At the bottom of the page, the text reads: 'Missouri Information for Community Assessment (MICA) Data MICA'.

The query screen in the **Birth MICA** is very similar to the query screen in the **Population MICA**. However, the **Birth MICA** contains additional filters, **Indicators** and **Optional Variables**. These options allow users to create tables based on specific maternal and child health indicators reported on the birth certificate.

To show some of the flexibility with the query pages users should use the **Indicator** variable to look at several table examples which will use the following selections from the **Choose Your Data** section:

Years: **2014-2016**

Geography: Select **County** and **Lincoln, St Louis County, St Louis City, St Charles**

Indicators: **Birth Weight: Low, Education Status: Less than 12 Years, Gestation: Preterm, and Prenatal Care Adequacy (Missouri Index): Inadequate**

For *Example #1*, in the **Build Your Table** section, select **Geography** as the row variable and **Indicator** as the column variable. With those selections, the following table is generated.

Title: Missouri Resident Births								
Data selected in addition to rows and columns below:								
Single Year(s): 2016, 2015, 2014;								
Indicator:	Birth Weight: Low (less than 2500 g)	Birth Weight: Low (less than 2500 g)	Education Status: Less Than 12 Years	Education Status: Less Than 12 Years	Gestation: Preterm (less than 37 completed weeks)	Gestation: Preterm (less than 37 completed weeks)	Prenatal Care Adequacy (Missouri Index): Inadequate	Prenatal Care Adequacy (Missouri Index): Inadequate
Statistics:	Count	Rate	Count	Rate	Count	Rate	Count	Rate
County								
Lincoln	176	8.03	264	12.09	211	9.63	330	15.53
St. Charles	962	7.10	632	4.67	1,336	9.86	1,281	9.96
St. Louis City	1,746	12.86	2,289	16.95	1,743	12.83	3,205	26.86
St. Louis County	3,272	9.34	2,534	7.25	3,813	10.88	4,701	14.91
Total for selection	6,156	9.57	5,719	8.91	7,103	11.04	9,517	16.28
Missouri	18,932	8.43	29,397	13.12	22,425	9.99	41,105	19.59

So with this query, individual counties are displayed by indicator, however, even though individual years were selected, since **Year** was not chosen as a row or column variable, the years show up in the filter box. In this case, users do not get the data by individual year, but instead the three years selected are aggregated.

For *Example #2*, leave the selections unchanged in the **Choose Your Data** piece. Modify the **Build Your Table** and make **Year** the row variable and keep **Indicator** as the column variable.

Title: Missouri Resident Births								
Data selected in addition to rows and columns below:		County: Lincoln, St. Charles, St. Louis City, St. Louis County;						
Indicator:	Birth Weight: Low (less than 2500 g)	Birth Weight: Low (less than 2500 g)	Education Status: Less Than 12 Years	Education Status: Less Than 12 Years	Gestation: Preterm (less than 37 completed weeks)	Gestation: Preterm (less than 37 completed weeks)	Prenatal Care Adequacy (Missouri Index): Inadequate	Prenatal Care Adequacy (Missouri Index): Inadequate
Statistics:	Count	Rate	Count	Rate	Count	Rate	Count	Rate
Year								
2014	2,000	9.26	2,071	9.62	2,330	10.78	3,208	16.14
2015	2,047	9.51	1,907	8.88	2,357	10.95	3,182	16.16
2016	2,109	9.95	1,741	8.24	2,416	11.39	3,127	16.57
Total for selection	6,156	9.57	5,719	8.91	7,103	11.04	9,517	16.28

In *Example #2* above, the resulting table is modified where the four counties are now aggregated. Notice how the rates for the four county region have changed over the past three years. The tradeoff from *Example #1* is that users can no longer see differences between the individual counties.

For *Example #3*, again make no changes to the **Choose Your Data**. For the **Build Your Table**, modify the selection by making **Indicator** the row variables and **Race** the column variable.

Title: Missouri Resident Births						
Data selected in addition to rows and columns below:		County: Lincoln, St. Charles, St. Louis City, St. Louis County; Single Year(s): 2016, 2015, 2014;				
Race:	White	White	Black or African-American	Black or African-American	All Races	All Races
Statistics:	Count	Rate	Count	Rate	Count	Rate
Indicator						
Birth Weight: Low (less than 2500 g)	2,797	6.93	2,966	15.21	6,156	9.57
Education Status: Less Than 12 Years	2,048	5.08	2,974	15.35	5,719	8.91
Gestation: Preterm (less than 37 completed weeks)	3,816	9.45	2,865	14.69	7,103	11.04
Prenatal Care Adequacy (Missouri Index): Inadequate	3,351	8.87	5,372	32.42	9,517	16.28

In the previous example, since the row/column variable is not selecting geography or year, both variables are aggregated. In the filter box above the data table the aggregated years and geographies are identified. So, in this example users can now look at the aggregated totals for the four counties selected and the three years of data. Users can now see what the differences for these varied birth risk factor indicators are by race.

Up to this point users have only been utilizing **Indicator** variables. The strength of the **Indicator** variable option is that an analyst can view several different kinds of birth data all in one table. For instance, in the table generated for Example #3 data in one table included data related to birth weight, mother’s education, length of mother’s gestation period and mother’s prenatal care adequacy.

Optional Variables work differently. With **Optional Variables** users can view the entire range of information for a given topic. For example, suppose a user was interested in how many live births fell into each category for Birth Weight. Choosing the **Optional Variables** radio button and selecting the specified indicator and then clicking the green ‘Display Above’ button will produce the desired results. As shown below, births for this indicator falls into one of five categories: Low Birth Weight (which includes the Very Low Birth Weight and Moderately Low Birth Weight subcategories), Normal Birth Weight, and High Birth Weight.

Missouri Department of Health & Senior Services | MOPHIMS Home | Profiles | MICA | EPHT | Sign Up | Login

Year: Single Year(s) Multi-Year Groups | 3 selected

Geography: County | Show State Totals:

County: 4 selected

Mother's Age: Single Age Basic Custom Group | All selected (9)

Infant's Sex: All selected (2)

Race: Basic Expanded | All selected (2)

Ethnicity: All selected (2)

Select: Indicator Optional Variables

Birth Weight: To select or expand within the list, click the applicable checkbox or link.

Select All Major Items | Expand Major Items

Select All Intermediate Items (If Major Item is selected)

More specific selections will override more general selections.

- All
 - Low Birth Weight (Less than 2,500g)
 - Very Low Birth Weight (Less than 1,500g)
 - Moderately Low Birth Weight (1,500 – 2,499g)
 - Normal Birth Weight (2,500 – 4,499g)
 - High Birth Weight (Greater than 4,499g)

Preview Selections

Remove

Optional Variables: None selected | Display Above

Reset Your Data

After making the above selections, slide down to the **Build Your Results** section and choose **Birth Weight** as the row variable and **Race** as the column variable. With those selections made, *Example #4* is generated.

Title: Missouri Resident Births			
Data selected in addition to rows and columns below:			
County: Lincoln, St. Charles, St. Louis City, St. Louis County; Single Year(s): 2016, 2015, 2014;			
Race:	White	Black or African-American	All Races
Statistics:	Count	Count	Count
Birth Weight			
Low Birth Weight (Less than 2,500g)	2,797	2,966	6,156
Normal Birth Weight (2,500 – 4,499g)	37,045	16,451	57,554
High Birth Weight (Greater than 4,499g)	526	79	635
Total for selection	40,368	19,496	64,345

As promised, the full spectrum of birth weight classes (low, normal and high) for the combined four counties covering the three year time period is shown. The other big difference is analysts are receiving counts but no rates. This is a quirk of the MOPHIMS system. Rates are only generated if the column variable is something other than a demographic variable. For practical purposes any variable listed below Ethnicity in the drop down menu for the main column will need to be selected to generate rates on a data table.

HT Sign Up Login

Above Reset Your Data

The variable selected for the Main Column: Totals

Main Column: **Birth Place**

Statistics
 Geography
 Year
 Age
 Sex
 Race
 Ethnicity
Birth Place
 Birth Spacing
 Birth Weight
 Delivery Method
 Delivery Method: VBAC
 Diabetes
 Marital Status
 Mother Education Level
 Number Born Alive
 Pregnancy Weight Change
 Prenatal Care Adequacy MO Index
 Prenatal Care Kotelchuck Index
 Prenatal Care Trimester
 Prenatal Utilization: FoodStamps
 Prenatal Utilization: Medicaid
 Prenatal Utilization: WIC
 Prepregnancy Weight for Height
 Prepregnancy WeightforHeight BMI
 Prior Live Births
 Smoking Status

Submit Query

For *Example #5*, switch the row and column variable by making **Race** the row variable and **Birth Weight** the column variable. Now users can see both counts, which match the counts from *Example #4*, and also rates.

Title: Missouri Resident Births								
Data selected in addition to rows and columns below:		County: Lincoln, St. Charles, St. Louis City, St. Louis County; Single Year(s): 2016, 2015, 2014;						
Birth Weight:	Low Birth Weight (Less than 2,500g)	Low Birth Weight (Less than 2,500g)	Normal Birth Weight (2,500 – 4,499g)	Normal Birth Weight (2,500 – 4,499g)	High Birth Weight (Greater than 4,499g)	High Birth Weight (Greater than 4,499g)	Total for selection	Total for selection
	Count	Rate	Count	Rate	Count	Rate	Count	Rate
Race								
White	2,797	6.93	37,045	91.77	526	1.30	40,368	99.89
Black or African-American	2,966	15.21	16,451	84.38	79	0.41	19,496	99.92
All Races	6,156	9.57	57,554	89.45	635	0.99	64,345	99.90

Rate Interpretation

Interpreting rates with **Optional variables** can be a little tricky. The MOPHIMS team has developed a formula to assist in making sure that the statistic is correctly reported when written in sentence format. That formula is outlined below:

Rate of Row Category (from/with/in filters) had Column Category.

To illustrate, say a user needs to report on the value of 6.93 in the table in Example #5 (circled in red above). The following are the pieces of data and label names needed to plug into the formula:

Rate=6.93%

Row Category=White Births

Filters= St Louis area (or you could write out the four counties specifically) and 2014-2016 time period

Column Variable=Low Birth Weight

With those inputs, the sentence could be written as follows:

6.93% of white births from the St. Louis area in 2014-2016 had a low birth weight.

For *Example #6*, continue to work with **Optional variables**. Suppose an analyst needs to find the cumulative count and rate of babies born to mothers utilizing Medicaid in Kansas City for the years 2001 through 2009. The analyst would like to see this information by race and also by the trimester in which prenatal care began. To perform this query, select the following options:

Choose Your Data: Year. Single year>>2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009

Choose Your Data: Geography. City>>Kansas City

Choose Your Data: Filters. Race>>Basic

Choose Your Data: Optional Variables. Prenatal Utilization Medicaid>>Receiving Medicaid

Build Your Results: Main Row. Race

Build Your Results: Main Column. Prenatal Care Trimester

Build Your Results: Statistics: Counts and Rates

The following table is produced once the query is submitted.

Table Results

Save Table As Send Table to Side by Side

Title: Missouri Resident Births

Data selected in addition to rows and columns below:
 City: Kansas City;
 Single Year(s): 2009, 2008, 2007, 2006, 2005, 2004, 2003, 2002, 2001;
 Prenatal Utilization: Medicaid: Receiving Medicaid;

Prenatal Care Trimester:	No Prenatal Care	No Prenatal Care	Began First Trimester	Began First Trimester	Began Second Trimester	Began Second Trimester	Began Third Trimester	Began Third Trimester	Total for selection	Total for selection
Statistics:	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate
Race										
White	138	0.98	11,093	78.64	2,541	18.01	334	2.37	14,106	94.59
Black or African-American	284	1.85	11,800	76.86	2,835	18.47	434	2.83	15,353	91.53
All Races	446	1.43	24,234	77.57	5,727	18.33	833	2.67	31,240	92.91

Rate per 100
 Numerator: Prenatal Care Trimester
 Denominator: Live Births with Known Prenatal Care Status
 Rate:
 How to interpret the Rate:
 The Rate is the percent of the live birth denominator stated above with the Race and any selected filters that had the Prenatal Care Trimester category.

Source: DHSS - MOPHIMS - Birth MICA
 Generated On: 10/3/2017 12:02:31 PM

When interpreting the table, keep in mind that the rate shown is out of all live births with the characteristics indicated on the row and column variables. Kansas City public health workers will be pleased to know that less than 1% of White mothers receiving Medicaid had no prenatal care. While the number is slightly higher for Black or African American mothers, it is still under 2%. The majority of women utilizing Medicaid (77.57%) began prenatal care in their first trimester. In Kansas City, 91.53% of Black or African American women utilizing Medicaid also had a prenatal care trimester noted on the birth certificate (or accompanying documentation).

Note that the only races shown in the previous table are White and Black/African-American. To generate data for some other racial group, select the **Expanded Race** button in the **Choose Your Data** section to produce the following table showing all racial categories.

Table Results

Save Table As Send Table to Side by Side

Title: Missouri Resident Births

Data selected in addition to rows: City: Kansas City; Single Year(s): 2009, 2008, 2007, 2006, 2005, 2004, 2003, 2002, 2001; and columns below: Prenatal Utilization: Medicaid: Receiving Medicaid;

Prenatal Care Trimester:	No Prenatal Care	No Prenatal Care	Began First Trimester	Began First Trimester	Began Second Trimester	Began Second Trimester	Began Third Trimester	Began Third Trimester	Total for selection	Total for selection
Statistics:	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate
Race										
White	138	0.98	11,093	78.64	2,541	18.01	334	2.37	14,106	94.59
Black or African-American	284	1.85	11,800	76.86	2,835	18.47	434	2.83	15,353	91.53
American Indian and Alaska Native	x	x	x	x	x	x	x	x	202	96.65
Asian/Native Hawaiian and Other Pacific Islander	15	1.95 *	561	72.86	160	20.78	34	4.42	770	89.12
Some Other Race	x	x	x	x	x	x	x	x	317	95.20
Data Unavailable	x	x	x	x	x	x	x	x	492	92.83
All Races	446	1.43	24,234	77.57	5,727	18.33	833	2.67	31,240	92.91

Confidentiality: The "x" symbol indicates the confidentiality rule has been triggered.

Rate: Rate per 100
 Numerator: Prenatal Care Trimester
 Denominator: Live Births with Known Prenatal Care Status
 How to interpret the Rate:
 The Rate is the percent of the live birth denominator stated above with the Race and any selected filters that had the Prenatal Care Trimester category.

Source: DHSS - MOPHIMS - Birth MICA

Generated On: 10/3/2017 12:10:51 PM

* Rate is unreliable; numerator less than 20

(Note that Hispanic is not listed as a Race. Hispanic data are listed under the variable Ethnicity. Rates by Ethnicity are available by statewide geography only.)

Confidentiality

As shown in the previous query, the small counts for races other than White and Black/African-American triggered a **confidentiality rule**. These rules are in place to protect individuals from being identified in cases where only a small number of observations occur. Many conditions are quite rare, and some common conditions may occur infrequently among certain demographic groups or in some geographic areas. When only a small number of cases occur, the privacy of affected individuals may be at risk if these small numbers are reported.⁵ For example, consider a small town in which only five Asian persons reside. If the local health department publishes a table showing

⁵ Ballard J. *Basic concepts of data analysis for community health assessment: Presenting public health data*. Northwest Center for Public Health Practice; 2009.
http://phlearnlink.nwphp.org/kc/login/login.asp?kc_ident=kc0001&strUrl=http://phlearnlink.nwphp.org/Default.asp Accessed September 24, 2009.

that one Asian person died of HIV/AIDS during a certain year, some individuals in that community would likely be able to identify that person.

Due to privacy concerns, BHCADD suppresses some small numbers in its web data query tools. These suppressions depend on the likelihood of personal data being revealed. The following example illustrates the application of confidentiality rules in MICA. Suppose that in a given county only one Asian woman gave birth during the previous year. MICA allows production of a table showing the one pregnancy for an Asian woman. However, any table that reveals additional health data, such as maternal drug use or smoking during pregnancy by an Asian woman, is suppressed due to the risk that a user could identify the specific woman. In this scenario there is too great a threat that information not publicly known could be revealed and that the woman's privacy would be violated.

Data stewards must determine an appropriate level of suppression. It is a balancing act to determine at what threshold individual confidentiality is protected but the public's access to information is also assured. The confidentiality thresholds in MICA differ for some data sets but for the most part are consistent. Users can read more about the MOPHIMS confidentiality rule by clicking on the appropriate link on the MOPHIMS home page. Other sources of data may follow very different procedures regarding confidentiality and cell suppression. However, confidentiality must always be a concern when releasing any type of health data, and, as a publisher of this data, you also are responsible for ensuring that individual privacy is protected.

Sometimes small numbers that might have been suppressed themselves, or caught up in suppression for another table cell, might be necessary for program planning purposes. To this end, MOPHIMS features a user level that is available to those epidemiologists, researchers, and local public health authorities that have been pre-approved to view suppressed data. This Partner level access may be obtained by contacting BHCADD representatives and undergoing a review process. Once approved, Partner level users will be able to view unsuppressed data tables with data to be used for planning and intervention purposes only. When Partner level access is granted, that user becomes a steward of the data and will be required to uphold the same rules of confidentiality as BHCADD representatives. At a minimum, access to the unsuppressed data can be revoked if suppressed numbers are reported to the public.

When logged in at Partner level, any numbers appearing in red italics would have been suppressed for lower-level MOPHIMS users. The following example, from **Injury MICA**, shows a sex-specific multi-year table focusing on Motor Vehicle Traffic injuries in select Missouri counties. The highlighted 2014 Worth County value triggered suppression and the other red figures were also suppressed so that users could not use algebra to discern those values that triggered suppression.

Table Results

Save Table As Send Table to Side by Side Save Query

Title: Missouri Resident Injuries

Data selected in addition to rows Sex: Female; and columns Mechanism: Motor Vehicle Traffic; below:

Year:	2010	2010	2011	2011	2012	2012	2013	2013	2014	2014	Total for selection	Total for selection
Statistics:	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate
County												
Washington	212	1,826.07	174	1,547.23	199	1,780.85	132	1,187.77	165	1,517.92	882	1,575.03
Wayne	75	1,242.56	59	1,097.56	83	1,448.03	74	1,246.38	60	1,069.86	351	1,225.35
Webster	174	1,070.48	174	1,055.70	179	1,085.18	162	960.02	154	899.58	843	1,014.72
Worth	20	2,551.05	4	462.20 *	9	1,104.33 *	8	1,143.64 *	3	469.61 *	44	1,157.09
Wright	105	1,224.86	91	1,108.17	71	888.77	94	1,106.81	80	980.91	441	1,064.10
Total for selection	586	1,353.83	502	1,188.85	541	1,276.73	470	1,092.12	462	1,085.97	2,561	1,200.85
Missouri	30,795	1,041.15	29,970	1,013.18	28,904	975.20	28,111	948.98	25,884	871.84	143,664	970.12
Confidentiality:	The red italic figures would be suppressed if the confidentiality rule were in effect. They should not be released or published, nor should the table above be released or published with only the highlighted cells suppressed.											
Rate:	Injury rates are annualized per 100,000 residents and are age adjusted to the U.S. 2000 standard population.											
Source:	DHSS - MOPHIMS - Injury MICA											
Generated On:	10/3/2017 1:44:25 PM											
	* Rate is unreliable; numerator less than 20											

This is how the same table would appear to lower-level MOPHIMS users with 'x's replacing the values in red font. This example highlights the importance of not releasing any of the numbers shown in red italics. Also note these font conventions will be carried over to any downloads that a user may create.

Table Results

Save Table As Send Table to Side by Side

Title: Missouri Resident Injuries

Data selected in addition to rows Sex: Female; and columns Mechanism: Motor Vehicle Traffic; below:

Year:	2010	2010	2011	2011	2012	2012	2013	2013	2014	2014	Total for selection	Total for selection
Statistics:	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate
County												
Warren	137	906.14	148	990.42	116	755.04	135	914.23	105	690.33	641	852.00
Washington	212	1,826.07	174	1,547.23	199	1,780.85	132	1,187.77	165	1,517.92	882	1,575.03
Wayne	x	x	x	x	x	x	x	x	x	x	351	1,225.35
Webster	174	1,070.48	174	1,055.70	179	1,085.18	162	960.02	154	899.58	843	1,014.72
Worth	x	x	x	x	x	x	x	x	x	x	44	1,157.09
Wright	x	x	x	x	x	x	x	x	x	x	441	1,064.10
Total for selection	723	1,239.13	650	1,136.62	657	1,141.51	605	1,043.06	567	982.17	3,202	1,109.69
Missouri	30,795	1,041.15	29,970	1,013.18	28,904	975.20	28,111	948.98	25,884	871.84	143,664	970.12
Confidentiality:	The "x" symbol indicates the confidentiality rule has been triggered.											
Rate:	Injury rates are annualized per 100,000 residents and are age adjusted to the U.S. 2000 standard population.											
Source:	DHSS - MOPHIMS - Injury MICA											
Generated On:	10/3/2017 1:56:55 PM											

Confidence Intervals

Another feature available in many of the MICAs is the ability to select confidence intervals for rates. Confidence intervals are ranges of rates in which the “true” rate would fall a specified percentage of the time if the same method were used to measure the observed rate.⁶ In MICA, both 95% and 99% confidence intervals are available. The

⁶ Redelings MD, Sorvillo, F, Smith LV, Greenland S. Why confidence intervals should be used in reporting studies of complete populations. *The Open Public Health Journal* 2012;5, 52-54. <http://benthamsience.com/open/tophj/articles/V005/52TOPHJ.pdf> Accessed April 10, 2014.

Indicator example on page 63 can be modified use confidence intervals to explore regional differences.

Add two Southwest Missouri counties, Greene County and Christian County, to the analysis and selected 95% confidence intervals in the **Build Your Results** section.

Birth MICA **M I C A**
MISSOURI INFORMATION FOR COMMUNITY ASSESSMENT DATA MICA

Choose Your Data

Build Your Results

Build a Table | Make a Map | Create a Chart | Documentation / Metadata

Main Row: Indicator | Row Totals: | Main Column: Geography | Column Totals:

Statistics: Counts and Rates

Confidence Intervals: 95% Confidence Intervals

Submit Query

Table Results

Save Table As | Send Table to Side by Side

Title: Missouri Resident Births

Data selected in addition to rows and columns below: Single Year(s): 2014;

County:	Christian	Christian	Christian	Christian	Greene	Greene	Greene	Greene	Missouri	Missouri	Missouri	Missouri
Statistics:	Count	Rate	Lower 95% Conf Limit	Upper 95% Conf Limit	Count	Rate	Lower 95% Conf Limit	Upper 95% Conf Limit	Count	Rate	Lower 95% Conf Limit	Upper 95% Conf Limit
Indicator												
Birth Weight: Low (less than 2500 g)	58	5.79	4.34	7.23	265	7.31	6.47	8.16	6,163	8.21	8.02	8.41
Education Status: Less Than 12 Years	78	7.80	6.14	9.46	440	12.21	11.14	13.28	10,271	13.72	13.47	13.97
Gestation: Preterm (less than 37 completed weeks)	75	7.49	5.86	9.11	361	9.98	9.00	10.95	7,322	9.76	9.55	9.97
Prenatal Care Adequacy (Kotelchuck Index): Inadequate	156	16.99	14.56	19.42	603	18.52	17.19	19.85	11,743	16.80	16.53	17.08

Rate per 100
 Numerator: Birth Weight: Low (less than 2500 g)
 Denominator: Live Births with Known Birth Weight
 Numerator: Education Status: Less Than 12 Years
 Denominator: Live Births with Known Maternal Education Status
 Numerator: Gestation: Preterm (less than 37 completed weeks)
 Denominator: Live Births with Known Gestational Age
 Numerator: Prenatal Care Adequacy (Kotelchuck Index): Inadequate
 Denominator: Live Births with Known Adequacy Prenatal Care (Kotelchuck Index)

Source: DHSS - MOPHIMS - Birth MICA

Generated On: 10/11/2017 10:58:34 AM

Confidence Intervals: 95% confidence intervals are displayed.

Consider a situation in which a coin is flipped ten times. The “true” rate or chance of the coin landing on either heads or tails for each flip is 50% because we can count the two options (heads or tails). However, if we flip a coin 10 times, we may or may not get heads exactly 5 times, which would equal our “true” rate of 50%. Suppose we get 7 heads. If we then flip the coin another ten times, we may get 7 heads again, or 5 heads, or some other number. Suppose we get 4 heads. Although we know the “true” rate is 50%, our observed rates were 70% and 40%. This is due to random variation or chance.

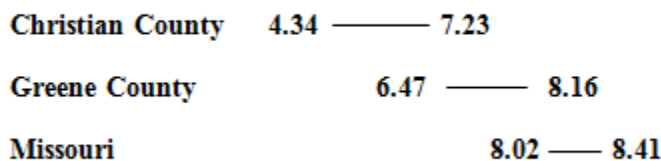
When working with health data, the “true” rate is virtually never known because, unlike the two sides of the coin, there could be incalculable possibilities. Instead, observed rates and confidence intervals are used to provide a range in which the “true” rate is likely to fall. Usually, a range with 95% or 99% confidence intervals is reported. Thus, reporters are 95% or 99% confident that the “true” rate falls somewhere within the range provided. By definition, 99% confidence intervals will be wider than 95% confidence intervals because one must be even more confident that the “true” rate falls within the range provided.

Even when the exact rate of a particular event is fairly certain in a population, random variation can be observed. Referring to the **Birth MICA** example, the first rate listed on the previous table (5.79) applies to babies born to Christian County residents at low birth weight. The rate for 2014 is 5.79 because it was calculated based on actual cases where the birth weight was listed on the official birth certificate. However, choosing a slightly different period of time, would result in a slightly different rate, even if the two time periods were equal in length. For example, the table above uses the calendar year (January 1 through December 31) to calculate rates. Selecting a different twelve-month period (such as February 1 through January 31), would likely return a slightly different rate due to random chance or variation. Calculating confidence intervals is a way to account for this random variance that is expected when computing the rate multiple times over similar time periods. Results show that 95% of the time, the “true” rate of births with low birth weight in Christian County would fall between 4.34 and 7.23 per 100 live births.

As the number of events (or count) increases, the confidence interval narrows because the rate becomes more reliable. Confidence intervals based on small numbers are much wider due to unreliable rates. A wide confidence interval, such as the one for low birth weight babies born in Christian County (4.34 to 7.23) decreases the likelihood that the calculated rate is close to the “true” rate. When the confidence interval is narrower, babies born at low birth weight statewide (8.02 to 8.41), the calculated rate is more likely to be close to the “true” rate.

Confidence intervals are useful for determining if there is a statistically significant difference between any two rates. If the confidence intervals overlap, there is no statistically significant difference. In theory, the “true” rate could be the same for both variables. For example, low birth weight counts for Christian and Greene Counties, show no statistically significant difference between the two geographies. The confidence intervals overlap. For example, the “true” rate may have been 7.00 for both counties.

Low Birth Weight



However, the confidence interval for mothers with less than a high school education (Education Status: Less than 12 years) in Christian County does not overlap with the confidence intervals for Greene County for the same indicator. Therefore, there is a statistically significant difference between the rates of these two counties for the indicator. Greene County has a significantly higher rate of live births to mothers with less than a high school education than its neighbor, Christian County. The “true” rate could not have been the same for the two geographies.

Less than High School Education

Christian County 6.14 — 9.46

Greene County 11.14 — 13.28

Missouri 13.47–13.97

Death MICA

One of the most frequently used MICAs is the **Death MICA**. All data in the **Death MICA** are obtained from the death certificate system and apply to Missouri residents.

Missouri Department of Health & Senior Services MOPHIMS Home Profiles MICA EPHT Sign Up Login

Death MICA MISSOURI INFORMATION FOR COMMUNITY ASSESSMENT DATA MICAs

Choose Your Data

Year: Single Year(s) 2015 Multi-Year Groups

Geography: Statewide

Age: Single Age Basic All selected (6) Expanded Custom Group

Sex: All selected (2)

Race: Basic All selected (2) Expanded

Ethnicity: All selected (2)

Cause: To select or expand within the list, click the applicable checkbox or link.

Select All Major Items Expand Major Items

Select All Intermediate Items (If Major Item is selected)

More specific selections will override more general selections.

A pound sign (#) marks causes designated by the CDC/NCHS as rankable in choosing leading causes of death.

All

- Enterocolitis due to Clostridium difficile#
- Septicemia#
- Other Infections-Parasites
- Cancer#
- Benign/in situ neoplasms and neoplasms of uncertain behavior#
- Diabetes#
- Parkinson's disease#
- Alzheimer's disease#
- Heart disease#
- Essential hypertension#
- Stroke (cerebrovascular diseases)#

Preview Selections Reset Your Data

This MICA provides a query screen that is similar to those used in the **Population** and **Birth MICAs**. However, there are a few differences. The **Cause** section of the **Choose Your Data** portion of the screen features causes of death as the indicators for this MICA, shown in an expandable and collapsible scroll screen. Under **Cause**, the 'Select All Major Items' box is checked as a default. This means that every cause of death included in the **Death MICA** will be used in generating a query. This is the equivalent of querying 'All Causes' in the previous MICA system.

Because **Death MICA** features more than 100 specific causes of death, they are grouped in broad categories and users can utilize the plus/minus boxes to query more specific causes. For example, if a user was interested in generating a data table to show the rate of heart attack mortality for Greene County over the past 5 years, they would need to

expand the Heart Disease category to find Acute myocardial infarction as an Intermediate item. First, though, be sure to de-select 'Select All Major Items'.

Cause: To select or expand within the list, click the applicable checkbox or link.

- Select All Major Items** [Expand Major Items](#)
- Select All Intermediate Items (If Major Item is selected)**

More specific selections will override more general selections.

A pound sign (#) marks causes designated by the CDC/NCHS as rankable in choosing leading causes of death.

- Benign/in situ neoplasms and neoplasms of uncertain behavior#
- Diabetes#
- Parkinson's disease#
- Alzheimer's disease#
- Heart disease#**
 - Rheumatic heart diseases: acute and chronic
 - Hypertensive heart disease
 - Hypertensive heart and renal disease
 - Acute myocardial infarction**
 - Other acute ischemic heart diseases
 - Atherosclerotic cardiovascular disease (so described)
 - All other forms of chronic ischemic heart disease

[Preview Selections](#)

Users can then make the appropriate selections in the **Choose Your Data** and **Build Your Results** sections to generate a table with the desired results.

Build Your Results

Build a Table | **Make a Map** | Create a Chart | Documentation / Metadata

Main Row: Year | Row Totals: | Main Column: Geography | Column Totals:

Statistics: Counts and Rates | Age Adjustment Options: 2000 Standard Population

Confidence Intervals: 95% Confidence Intervals

[Submit Query](#)

Table Results

[Save Table As](#) | [Send Table to Side by Side](#)

Title: Missouri Resident Deaths

Data selected in addition to rows and columns below: Cause: Heart disease#: Acute myocardial infarction;

County:	Greene	Greene	Greene	Greene	Missouri	Missouri	Missouri	Missouri
Statistics:	Count	Rate	Lower 95% Conf Limit	Upper 95% Conf Limit	Count	Rate	Lower 95% Conf Limit	Upper 95% Conf Limit
Year								
2011	126	39.90	33.24	47.51	4,022	57.86	56.07	59.65
2012	76	22.11	17.42	27.67	4,031	56.78	55.02	58.53
2013	59	18.03	13.73	23.26	3,807	52.72	51.05	54.40
2014	68	19.07	14.81	24.18	3,960	54.02	52.34	55.70
2015	58	16.04	12.18	20.74	3,707	49.65	48.05	51.25
Total for selection	387	22.87	20.65	25.27	19,527	54.14	53.38	54.90

Rate: Death rates are annualized per 100,000 residents and are age adjusted to the U.S. 2000 standard population.

Source: DHSS - MOPHIMS - Death MICA

Generated On: 10/3/2017 2:54:41 PM

Confidence Intervals: 95% confidence intervals are displayed.

The National Center for Health Statistics (NCHS) categorizes causes of death into groupings, some of which are designated as “rankable.” These rankable causes may be used to create a ‘leading causes of death’ listing as is produced in the Missouri Annual Statistics publications, shown on page 5 (see Table 18, in 2015 edition). Leading cause of death rankings are based on numbers of deaths, not death rates. The rankable causes in the **Death MICA** are designated by a pound sign (#).

Age-Adjusted Rates in MICA

The MICAs that have been viewed thus far have presented only crude, or unadjusted, rates. The rate box (which describes the rate generated in a query) is located below the data table on the query screen. The **Build Your Results** section of the **Death MICA** includes an **Age Adjustment Option**, located below the **Main Column**, shown below. As described on pages 30-31, a "standard" population distribution is used to adjust death and hospitalization rates. Age-adjusted rates are the rates that would have existed if the population under study had the same age distribution as the "standard" population. The U.S. 2000 standard population is recommended by the National Center for Health Statistics and is used as the default setting in MICA. The 1940 and 1970 U.S. standard populations are also available, as are crude (unadjusted) rates. The rate box below the data table notes which type of rate is presented.

Again, if comparing rates from different sources, it is very important to use the same standard population on both sides of your comparison. It is not legitimate to compare adjusted rates which use different standard populations. While most current documents will reference the U.S. 2000 standard population, if making comparisons to older documents, the 1940 or 1970 populations may be needed.

Additional documentation regarding age-adjusted rates can be found by clicking the **Age Adjustment Options** hyperlink in the **Build Your Results** portion of the query screen.

The screenshot shows the 'Death MICA' interface. At the top right is the MICA logo with the text 'MISSOURI INFORMATION FOR COMMUNITY ASSESSMENT DATA MICAS'. Below the logo are two expandable sections: 'Choose Your Data' and 'Build Your Results'. The 'Build Your Results' section is active and contains several tabs: 'Build a Table', 'Make a Map', 'Create a Chart', and 'Documentation / Metadata'. Under the 'Build a Table' tab, there are several settings: 'Main Row:' set to 'Geography', 'Row Totals:' checked, 'Main Column:' set to 'Year', and 'Column Totals:' checked. The 'Statistics:' dropdown is set to 'Counts and Rates'. The 'Confidence Intervals:' dropdown is set to 'No Confidence Intervals'. The 'Age Adjustment Options:' dropdown is highlighted with a red circle and is set to '2000 Standard Population'. A 'Submit Query' button is located at the bottom right of the settings area.

Confidence Intervals Exercises

1. As an employee of the Macon County Health Department, you have been asked to analyze your county's fertility rate for women age 15-44 over the past few years (**Fertility & Pregnancy Rate MICA**).
 - a. What is Macon County's fertility rate for the 2006-2009 time period? _____

 - b. What is the 95% confidence interval for the rate in a.? _____
 - c. What is the 99% confidence interval for the rate in a.? _____
 - d. What is the state's fertility rate for this time period? _____
 - e. What is the 95% confidence interval for the rate in d.? _____
 - f. What is the 99% confidence interval for the rate in d.? _____
 - g. With 95% confidence, is Macon County's rate significantly different from the state rate? _____ If yes, is it statistically significantly higher or lower? _____
How do you know this? _____

 - h. With 99% confidence, is Macon County's rate significantly different from the state rate? _____ If yes, is it statistically significantly higher or lower? _____

2. The St. Louis City Health Department has provided pneumonia prevention education to city residents for over a decade and would like to see if these efforts have been effective. Use the **Preventable Hospitalizations MICA** to answer the following questions.
 - a. What is the 95% confidence interval for bacterial pneumonia occurring in 2004? _____
In 2014? _____
 - b. With 95% confidence, does St. Louis City have a significantly lower rate of pneumonia hospitalizations for 2014 compared to 2004? _____
 - c. You worked on an ad campaign that started at the end of 2007 and ran through 2013. You are interested to see if there was a significant difference between the 2007 rate for pneumonia hospitalization and the rate in 2013. What is the 95% confidence interval for 2007? _____
 - d. What is the 95% confidence interval for 2013? _____
 - e. With 95% confidence, does St. Louis City have a significantly lower rate of pneumonia hospitalizations for 2013 compared to 2007? _____

Inpatient Hospitalizations MICA

The **Inpatient Hospitalizations MICA** can provide insight into the occurrence of certain health problems in Missouri. This MICA contains three different types of data:

- 1) Total number of hospital discharges for each diagnosis
- 2) Total dollar amount charged for each diagnosis
- 3) Total number of days patients were hospitalized for each diagnosis

Users select the type of data near the top of the **Choose Your Data** section of the query screen, shown below. Note that choosing the type of data is unique to this MICA and the selection made will impact how the table, chart, or map is displayed. For instance, selecting Hospital Charges will yield a dollar amount. Likewise, no rate information is provided if Hospital Days of Care is selected.

The screenshot displays the 'Inpatient Hospitalization MICA' query interface. At the top, there is a navigation bar with 'Missouri Department of Health & Senior Services' and 'MOPHIMS Home'. The main header includes 'Inpatient Hospitalization MICA' and the MICA logo. The 'Choose Your Data' section is highlighted with a light blue background. It contains several filter options: 'Year' (radio buttons for 'Single Year(s)' and 'Multi-Year Groups', with a dropdown set to '2014'), 'Geography' (dropdown set to 'Statewide'), 'Type of Data' (radio buttons for 'Hospital Discharges', 'Hospital Charges', and 'Hospital Days of Care', with 'Hospital Discharges' selected and highlighted by a green box), 'Age' (radio buttons for 'Single Age', 'Basic', 'Expanded', and 'Custom Group', with a dropdown set to 'All selected (6)'), 'Sex' (dropdown set to 'All selected (2)'), 'Race' (radio buttons for 'Basic' and 'Expanded', with a dropdown set to 'All selected (2)'), and 'Ethnicity' (dropdown set to 'All selected (2)'). Below these are 'Diagnosis' options with checkboxes for 'Select All Major Items', 'Select All Intermediate Items (If Major Item is selected)', and 'Select All Minor Items (If Intermediate Item is selected)'. A list of diagnosis categories is shown with checkboxes, including 'Blood and blood forming', 'Bone- connective tissue- muscle', 'Brain - spinal cord - eyes - ears', 'Congenital anomalies', 'Digestive system', 'Heart and circulation', 'Infection', 'Injury and poisoning', 'Kidneys - bladder - genitalia', 'Mental disorders', and 'Neoplasms - malignant (cancer)'. At the bottom, there are 'Optional Variables' (dropdown set to 'None selected'), 'Display Above', 'Preview Selections', and 'Reset Your Data' buttons.

ZIP Code and Census Tract Geographies

Some MICAs include the ability to view data by ZIP Code or Census Tract, allowing users to generate data based on zip codes rather than counties/cities or regions. **Census Tract data are only available to users who are signed in at the Registered user level.**

While access to this data is both important and useful, there are a few caveats to keep in mind, specifically related to the generation of rates and **Year** selections on the **Choose Your Data** portion of the query screen. At this time, the U.S. Census Bureau does not release annual population estimates by ZIP Code or Census Tract. Because of this limitation, for population based MICAs (which includes Death, Cancer Incidence, Fertility and Pregnancy Rate and all hospital and chronic disease-related MICAs) only counts are provided for ZIP Code and Census Tract geographies.

A second restriction limits the years that can be viewed on a single table for both the ZIP Code and Census Tract geographies. Due to boundary changes that occur during the Decennial Census every ten years, users may only view ZIP Code or Census Tract data within a single decennial year grouping. This is because the record-level data, used behind the scenes to generate the data tables, uses the boundaries from either the 2000 or 2010 Census to determine the Census Tract and ZIP Code fields. In MOPHIMS, data from the 2000-2010 time period use the boundaries established during the 2000 Census and for the data from 2011-Present uses boundaries from the 2010 Census.

Multiple process of selecting ZIP Codes for analysis in **Inpatient Hospitalization MICA** follows. Other MICAs use a similar process for ZIP Code/Census Tract selection. Notice how the query screen changes immediately after a user selects **Geography: Zip/ZCTA**.

Inpatient Hospitalization MICA

Choose Your Data

Year: Single Year(s) Multi-Year Groups | 2014

Geography: Zip / ZCTA

Zip / ZCTA County: Adair | Zip / ZCTA: All selected (9) | Add=>

Type of Data: Hospital Discharges Hospital Charges Hospital Days of Care

Age: Single Age Basic Expanded Custom Group | All selected (6)

Sex: All selected (2)

Race: Basic Expanded | All selected (2)

Ethnicity: All selected (2)

Diagnosis: To select or expand within the list, click the applicable checkbox or link.

Select All Major Items | Expand Major Items

Select All Intermediate Items (If Major Item is selected) | Expand Intermediate Items

Select All Minor Items (If Intermediate Item is selected)

More specific selections will override more general selections.

- All
- Blood and blood forming
- Bone- connective tissue- muscle
- Brain - spinal cord - eyes - ears
- Congenital anomalies
- Digestive system
- Heart and circulation
- Infection
- Injury and poisoning
- Kidneys - bladder - genitalia
- Mental disorders

Optional Variables: None selected | Display Above

There are a few important things to note when using ZIP Code or Census Tract. If, for example, an analyst chooses a **Year** range that crosses the decennial boundaries, you'll receive an error message like the one circled in orange below will appear. For this example, by modifying the years selected to either 2011-2014 or 2009-2010 the analyst can avoid receiving this error message.

Inpatient Hospitalization MICA

1 Message
Year(s) must be within the Zip / ZCTA Decennial

Choose Your Data

Year: Single Year(s) Multi-Year Groups | 6 selected

Geography: Zip / ZCTA

Zip / ZCTA County: | Zip / ZCTA: All selected (1) | Add=>

Type of Data: Hospital Discharges Hospital Charges Hospital Days of Care

Age: Single Age Basic Expanded Custom Group

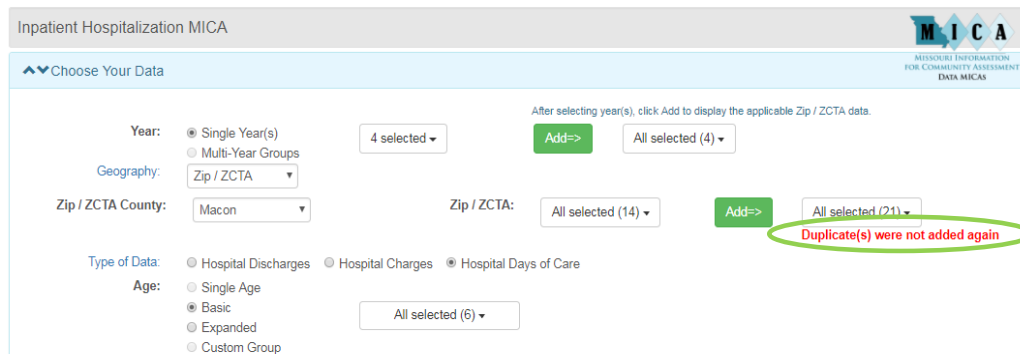
Sex: All selected (2)

Race: Basic

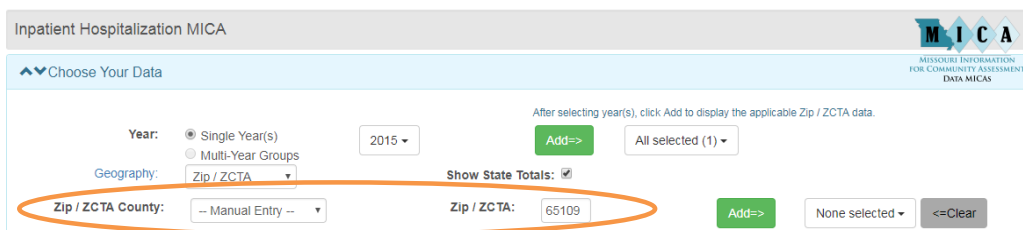
After selecting year(s), click Add to display the applicable Zip / ZCTA data.

- Select all
- 2014
- 2013
- 2012
- 2011
- 2010
- 2009
- 2008
- 2007
- 2006

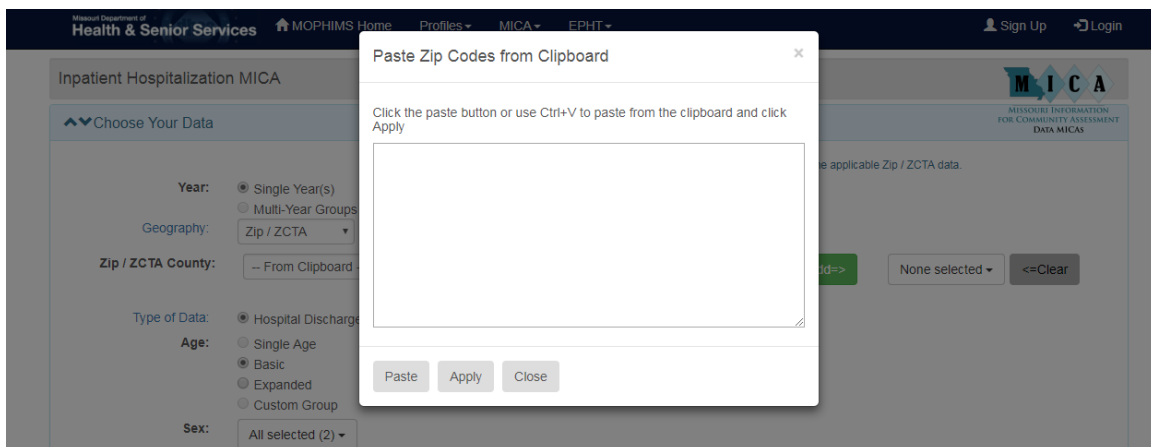
Another common message occurs when a user selects ZIP Codes or Census Tracts that fall in more than one county. For instance, ZIP Code 63557 is located in both Adair and Macon Counties in Northeast Missouri. MOPHIMS is not designed to parse out how many hospitalizations occurred to those living in the Adair County portion of ZIP 63557 separate from those who resided in Macon County. In MOPHIMS, ***all ZIP Code data shown are totals for the entire ZIP Code*** (regardless of which county was used to make your initial selection). An informational note is displayed when a user attempts to add a ZIP Code that has already been selected from a different county listing.



Users can also use the B option to key in specific ZIP Codes.



Another option is to choose **From Clipboard** and paste a number of ZIP Codes into the text box that appears. Be sure to click Apply!



Rates by ZIP Code or Census Tract cannot be calculated in MOPHIMS. However, there are options for users to export data from the MOPHIMS system into a spreadsheet (which could then be taken to a statistical analysis package) to generate rates, especially if a user is confident that the geographic boundaries in their area did not change during the time period of interest. The numerator data (number of events) can be obtained in MOPHIMS through the process described previously and shown in the following screen capture.

Inpatient Hospitalization MICA

Table Results

Save Table As - Send Table to Side by Side

Title: Missouri Resident Inpatient Hospitalizations

Data selected in addition to rows and columns below:

Type of Data: Hospital Discharges.

Year:	2011	2012	2013	2014	Total for selection
Statistics: Count	Count	Count	Count	Count	Count
Zip / ZCTA					
63501	2,204	2,262	2,008	1,969	8,443
63533	89	67	67	84	307
63540	5	10	12	20	47
63544	116	118	95	95	424
63546	161	165	149	145	620
63547	44	35	36	50	165
63549	296	328	321	288	1,233
63557	29	14	17	19	79
63559	178	168	125	118	589
63431	28	33	33	25	119
63437	178	166	167	185	696
63530	90	88	87	95	360
63532	144	152	156	149	601
63534	98	116	101	99	414
63536	28	21	31	22	102
63539	31	24	21	27	103
63552	1,067	1,135	1,178	1,123	4,521
63558	73	97	84	104	358
64631	114	146	137	140	537
65247	52	62	52	48	214
65260	84	78	60	62	284
Total for selection	5,129	5,285	4,935	4,867	20,216

Source: DHSS - MOPHIMS - Inpatient Hospitalization MICA

Generated On: 10/4/2017 11:08:03 AM

The denominator, or population data, could be retrieved from a variety of sources. The Population MICA does contain population data by ZIP Code and Census Tract, but it is only available for the years of 2000 and 2010. Alternatively, population data by ZIP Code and Census Tract from the American Community Survey is also available through the Census Bureau’s Fact Finder query tool or the Missouri Census Data Center Profiles. Data from these sources use 5 years of data to develop an estimate. Users will need to use caution in determining if either of these options, or other possible data sources, are appropriate denominators. The ACS 5-year estimates come with very high error margins for small are geographies, particularly when looking at estimates by age and gender. The high error margins are why those estimates are not used as the denominators for rate calculations in MOPHIMS.

Once the numerator and denominator data have been accessed, use the formula for rate calculation described in the Profiles section of this handbook to generate crude rates. Additional steps would be necessary to calculate age adjusted rates.

MICA Exercises

1. A co-worker shows you the following table and asks if you could help recreate it using 2008 data. What criteria should be used to create the updated table?

Title: Missouri Resident Inpatient Hospitalizations								
Data selected in addition to rows and columns below:		Type of Data: Hospital Discharges; Single Year(s): 2004; Pay Source: Medicaid;						
Diagnosis:	Blood and blood forming: Anemia: Acute posthemorrhagic anemia	Blood and blood forming: Anemia: Acute posthemorrhagic anemia	Blood and blood forming: Anemia: Deficiency and other anemia	Blood and blood forming: Anemia: Deficiency and other anemia	Blood and blood forming: Anemia: Sickle cell anemia	Blood and blood forming: Anemia: Sickle cell anemia	Total for selection	Total for selection
Statistics:	Count	Rate	Count	Rate	Count	Rate	Count	Rate
Age								
Under 1	0	0.00	6	0.77 *	6	0.77 *	12	1.54 *
1 - 4	1	0.03 *	30	1.01	37	1.24	68	2.29
5 - 9	0	0.00	14	0.37 *	99	2.62	113	2.99
10 - 14	1	0.02 *	5	0.12 *	148	3.55	154	3.69
15 - 17	0	0.00	12	0.48 *	85	3.39	97	3.87
18 - 19	0	0.00	13	0.77 *	120	7.09	133	7.85
20 - 24	0	0.00	15	0.36 *	151	3.64	166	4.01
25 - 29	1	0.03 *	11	0.31 *	81	2.28	93	2.62
30 - 34	4	0.11 *	25	0.67	64	1.72	93	2.50
35 - 39	3	0.08 *	34	0.89	81	2.11	118	3.07
40 - 44	5	0.11 *	45	1.00	83	1.85	133	2.96
45 - 49	2	0.05 *	34	0.78	9	0.21 *	45	1.03
50 - 54	3	0.08 *	33	0.86	1	0.03 *	37	0.96
55 - 59	3	0.09 *	39	1.18	8	0.24 *	50	1.52
60 - 64	3	0.11 *	50	1.89	0	0.00	53	2.01
65 - 69	0	0.00	7	0.33 *	0	0.00	7	0.33 *
70 - 74	0	0.00	4	0.22 *	0	0.00	4	0.22 *
75 - 79	1	0.06 *	0	0.00	0	0.00	1	0.06 *
80 - 84	0	0.00	2	0.17 *	0	0.00	2	0.17 *
85 and Over	0	0.00	5	0.50 *	0	0.00	5	0.50 *
Unknown	0	0.00	0	0.00	0	0.00	0	0.00
Total for selection	27	0.05	384	0.66	973	1.74	1,384	2.45
Rate:	For each Age: Crude Rate per 10,000 Total for selection: Age Adjusted Rate per 10,000 using 2000 Standard Population							
Source:	DHSS - MOPHIMS - Inpatient Hospitalization MICA							
Generated On:	10/11/2017 9:55:42 AM							
	* Rate is unreliable; numerator less than 20							

- MICA: _____
- Type Data: _____
- Age: _____
- Sex: _____
- Race: _____
- Ethnicity: _____
- Diagnosis: _____
- Optional Variables: _____
- Pay Source: _____

2. Your supervisor attends one of our presentations and is fascinated by our discussion of the significance map showing asthma ER visit rates for Missouri residents. She asks you to further research asthma prevalence among different demographic groups in Missouri. Use the **Emergency Room MICA** to perform your analysis on 2014 data.
- a. How did you find asthma? _____

 - b. Look at sex first. Which sex has a higher rate of asthma? _____
 - c. Now add basic age to your analysis. Which age-sex group has the highest rate of asthma?

Does this surprise you based on your response to b.? _____
 - d. You decide to look more closely at the group listed in c. and add race to your analysis. Which race (White or Black/African-American) has the highest rate of asthma for the age-sex group you listed in c.? _____
 - e. Your supervisor remembers from our discussion that three counties had 2014 asthma ER visit rates that were significantly higher than the state rate: Jackson County, St. Louis City, and St. Louis County. She asks you to add these counties to your analysis. Change your geography to county and make necessary selections. Note the age group selection will have to be reselected for ages 15 and under. Create a Geography by Race table. Which area has the highest rate of asthma for the race-age-sex group you listed in d.? _____

Environmental Public Health Tracking Program (EPHT)

EPHT Home Page

Environmental Public Health Tracking (EPHT) is one way to collect data for analysis and research to establish links between disease and exposure to environmental hazards. The goal of EPHT is to provide information that can be used to plan, apply and evaluate ways to prevent and control environmentally-related diseases. EPHT's web page provides data on health, environment, and community demographics. The health data we collect includes lead poisoning, asthma, carbon monoxide, heat and cold related illnesses, cancer, birth defects, occupational health, community profiles, and more.

The EPHT MOPHIMS home page can be accessed from clicking on the 'Data Queries' icon that is located on the EPHT home page
http://ephtn.dhss.mo.gov/EPHTN_Data_Portal/ .

Missouri Department of Health & Senior Services

Gov. Eric Greitens

Search EPHTN Data Portal Search

Healthy Living Senior & Disability Services Licensing & Regulations Disaster & Emergency Planning Data & Statistics Online Services

Environmental Public Health Tracking

Home » Environmental Public Health Tracking

HEALTH DATA ENVIRONMENTAL DATA NATIONAL DATA FEEDBACK REFERENCE MATERIALS COMMUNITY DATA TRAINING DATA QUERIES

Healthy Living

- Environmental Factors
- Chronic Diseases
- Communicable Diseases
- Healthy Families
- Women, Infants & Children (WIC)
- Genetic Disease & Early Childhood
- Food Programs
- Wellness & Prevention
- Local Public Health Agencies
- Immunizations

Related Information

- Health Data
- Community Data
- Environmental Data
- Bridgeton Landfill
- Carbon Monoxide Poisoning
- Hazardous Substances & Sites
- Indoor Air
- Lead
- Mercury
- Missouri Fish Advisories
- Onsite Sewage Systems
- Private Drinking Water
- Radon

EPHT MOPHIMS Home Page



The Missouri Public Health Information Management System (MOPHIMS) provides a common means for users to access public health related data to assist in defining the health status and needs of Missourians.



MISSOURI INFORMATION FOR COMMUNITY ASSESSMENT

DATA PROFILES

Community Data Profiles are available on various subject areas and provide data on 15-30 indicators for each geography selected.

- Maternal, Infant and Child Health Profiles
- Chronic Disease Profiles
- Injury Profiles
- Death Profile
- Hospital and Emergency Room Visit Profiles
- Special Demographic Profiles
- County-Level Study Profiles



MISSOURI INFORMATION FOR COMMUNITY ASSESSMENT

DATA MICAS

The Missouri Information for Community Assessment (MICA) allows users to summarize data, calculate rates, and prepare information in a graphic format.

- Maternal, Infant and Child Health MICAs
- Chronic Disease MICAs
- Injury MICA
- Death MICA
- Hospital and Emergency Room Visit MICAs
- Population MICA
- Priorities MICA
- Medicaid/TANF MICAs



Environmental Public Health Tracking Program

EPHT

The Missouri Environment Public Health Tracking (EPHT) program was developed to assist the public, communities, policymakers, and scientists, answer fundamental questions about the relationships between environmental exposures and health effects. Data on this site also include hazard and disease surveillance.

- Health Data
 - Blood Lead Levels
 - Asthma
 - Birth Defects
 - Myocardial Infarction
 - Carbon Monoxide Poisoning
- Environmental Data
 - Agriculture
 - Air Quality
 - Water Quality
- Community Data
- National Data

[Click Here](#) for sign up and login instructions.

Much like the MICA tools, most of the icons on the EPHT MOPHIMS page provide a **Choose Your Data** screen, which allows the users to select variables, data years, and geographic areas in order to customize your queries. The only options that do NOT provide the user to create a customized query are: Agriculture, Air Quality, Water Quality, and Community Data.

Blood Lead Levels: Tables, Charts, and Maps

For example, our user is inquiring as to how many children under the age of 5 have had their blood lead tested in their county for the last 5 years, as compared to their surrounding counties.



To create that customized table the user would select the **Blood Lead Levels: Tables, Charts, and Graphs** and identify their selected criteria within the Choose Your Data screen.

Choose Your Data: Year: Multi-Year Groups>>2010-2011, 2012-2013, and 2014-2015

Choose Your Data: Geography: County>>Taney, Stone, Ozark, Douglas, Christian

Choose Your Data: Client Type: 0-5 Years (<72 Months)

Choose Your Data: Test Outcome: 5 ug per dL Test Level

Build Your Results: Main Row: Geography

Build Your Results: Main Column: Year

Build Your Results: Statistics: Counts and Percents of Population

Build Your Results: Confidence Intervals: No Confidence Intervals

Build Your Results: Submit Query

Title:		Missouri EPHT Blood Lead						
Data selected in addition to rows and columns below:		Client Type: 0-5 Years (< 72 Months);						
Year:	2010-2011	2010-2011	2012-2013	2012-2013	2014-2015	2014-2015	Total for selection	Total for selection
Statistics:	Count	Percent of Population	Count	Percent of Population	Count	Percent of Population	Count	Percent of Population
County								
Christian	1,964	14.22	1,856	14.14	1,830	14.19	5,650	14.18
Douglas	564	29.33	577	30.66	549	29.82	1,690	29.93
Ozark	281	23.89	220	19.47	237	22.27	738	21.90
Stone	539	16.18	510	15.89	425	13.64	1,474	15.26
Taney	1,097	14.51	1,095	14.18	817	10.83	3,009	13.18
Total for selection	4,445	15.99	4,258	15.73	3,858	14.58	12,561	15.44
Missouri	189,651	20.33	180,539	19.75	172,827	19.19	543,017	19.76
Percent of Population:		Numerator: Number Tested / Denominator: Population						
Source:		DHSS - MOPHIMS - EPHT Blood Lead						
Generated On:		9/8/2017 9:11:54 AM						

If a user would prefer to view different data within the rows and columns, they can simply modify the **Main Row** and **Main Column** selections in the **Build Your Results** section. The user also has the option to create a map or chart, instead of solely generating a table.

MICA Part II

Cancer Incidence MICA

The **Cancer Incidence MICA** provides cancer incidence data for Missouri residents. It operates somewhat differently from the other MICAs. Data for the **Cancer Incidence MICA** are provided by the Missouri Cancer Registry. The data submitted to DHSS each year include updated files for all previous years back to 1996. Therefore, numbers reported for prior years may change.

Missouri Department of Health & Senior Services | MOPHIMS Home | Profiles | MICA | EPHT | Sign Up | Login

Cancer Incidence MICA

MISSOURI INFORMATION FOR COMMUNITY ASSESSMENT DATA MICAs

Choose Your Data

Year: Single Year(s) Multi-Year Groups | 2013

Geography: Statewide

Age: Single Age Basic Custom Group | All selected (12)

Sex: All selected (2)

Race: Basic Expanded | All selected (2)

Stage at Diagnosis: In Situ or Invasive Stage | All selected (2)

Site: To select or expand within the list, click the applicable checkbox or link.

Select All Major Items | Expand Major Items

Select All Intermediate Items (if Major Item is selected)

More specific selections will override more general selections.

- All
 - Bones and Joints
 - Brain and other nervous system
 - Breast
 - Digestive System
 - Endocrine system
 - Eye and orbit
 - Female genital system
 - Kaposi sarcoma
 - Leukemia
 - Lymphoma

Optional Variables: None selected | Display Above

Select all
 Grade

Reset Your Data

Some of the filters and **Optional Variables** in **Cancer Incidence MICA** are especially helpful in generating specific data queries and are highlighted here. The **Stage at Diagnosis** (in the green box above) allows users to customize their query based on whether the cancer was in situ or invasive, and if it was invasive, at which stage it was discovered.

For instance, if an analyst was interested in determining how many males and females living in the Southwest BRFSS Region were diagnosed with localized breast cancer 2009-2013 the following **Choose Your Data** and **Build Your Results** selections would be made:

Choose Your Data: Year: Multi-Year Groups. Years Per Group: 5. Latest Year: 2013. Go.

Choose Your Data: Geography: BRFSS Region>>Southwest

Choose Your Data: Stage at Diagnosis: Stage. Localized

Choose Your Data: Site: Breast

Build Your Results: Main Row: Sex

Build Your Results: Main Column: Stage at Diagnosis

Build Your Results: Statistics: Counts and Rates

Build Your Results: Confidence Intervals: 95% Confidence Intervals (default in Cancer Incidence MICA)

Build Your Results: Submit Query

Cancer Incidence MICA

MISSOURI INFORMATION FOR COMMUNITY ASSESSMENT DATA MICA

Choose Your Data

Build Your Results

Build a Table | Make a Map | Create a Chart | Documentation / Metadata

Main Row: Sex | Row Totals: | Main Column: Stage at Diagnosis | Column Totals:

Statistics: Counts and Rates | Age Adjustment Options: 2000 Standard Population

Confidence Intervals: 95% Confidence Intervals

Submit Query

Table Results

CAUTION: Most breast cancer cases occur in females. Rates will be very different for females compared to males or the overall population.

Save Table As | Send Table to Side by Side

Title: Missouri Resident Cancer Incidence

Data selected in: BRFSS Region: Southwest;
 addition to rows and columns below: Multi-Year Groups: 2009-2013;
 Site: Breast;

Stage at Diagnosis:	Localized	Localized	Localized	Localized
Statistics:	Count	Rate	Lower 95% Conf Limit	Upper 95% Conf Limit
Sex				
Male	10	0.42	0.20	0.77
Female	1,987	67.71	64.73	70.68
Total for selection	1,997	36.11	34.53	37.70

Rate: Cancer incidence rates are annualized per 100,000 residents and are age adjusted to the U.S. 2000 standard population.

Source: DHSS - MOPHIMS - Cancer Incidence MICA

Generated On: 10/4/2017 11:53:42 AM

*Rate is unreliable; numerator less than 20

Confidence Intervals: 95% confidence intervals are displayed.

There are several important things to note when interpreting the data table generated above. First, there is a red warning that reminds users that breast cancer predominantly occurs in females, which will affect rates by sex. Notice that the female rate of 67.71 per 100,000 is much higher than the male rate of 0.42. The Total for selection, or all persons rate, uses both male and female populations in the denominator, resulting in a rate of 34.53. However, when presenting this data it might be important to decide whether to use the all persons denominator to show the broad burden of breast cancer in the community

or to focus in on the female-only rate—which is more representative of the specific condition.

Another feature that should be considered when reporting this data is that the male rate is based on only 10 cases, rendering it unreliable. As discussed on pages 17-18, any rate based on a numerator less than 20 is not considered reliable and should be used with caution. These cases are flagged in the MOPHIMS system using an asterisk and a footnote below the data table.

Procedures MICA

The **Emergency Room** and **Inpatient Hospitalization MICAs** provide data on diagnoses but not on treatments provided. The **Procedures MICA**, on the other hand, provides information on specific procedures performed. An additional difference is that **Procedures MICA** tracks every procedure performed, instead of the primary procedure as is the case for diagnosis in the other hospital-based data MICAs.

If users are interested in how many procedures are performed on an inpatient versus an outpatient setting, the appropriate selections using the **Setting Optional Variable** will

allow that type of granular analysis. For example, hip replacements are more commonly performed on an outpatient basis for younger patients, while older patients undergo the procedure in an inpatient setting.

Procedures MICA **M I C A**
MISSOURI INFORMATION
FOR COMMUNITY ASSESSMENT
DATA MICAS

Choose Your Data

Build Your Results

Build a Table Make a Map Create a Chart Documentation / Metadata

Main Row: Age Row Totals: Main Column: Setting Column Totals:

Statistics: Counts and Rates Age Adjustment Options: 2000 Standard Population

Confidence Intervals: No Confidence Intervals

Table Results

Title: Missouri Resident Procedures

Data selected in addition to rows and columns below: Single Year(s): 2013; Procedures: Operations on the musculoskeletal system: Hip replacement: total and partial;

Setting:	Inpatient	Inpatient	Outpatient	Outpatient	Unknown	Unknown	Total for selection	Total for selection
Statistics:	Count	Rate	Count	Rate	Count	Rate	Count	Rate
Age								
Under 15	3	0.03 *	5	0.04 *	0	0.00	8	0.07 *
15 - 24	37	0.44	190	2.28	0	0.00	227	2.72
25 - 44	490	3.20	336	2.20	0	0.00	826	5.40
45 - 64	4,577	28.36	192	1.19	0	0.00	4,769	29.55
65 and Over	7,933	87.41	45	0.50	0	0.00	7,978	87.91
Unknown	0	0.00	0	0.00	0	0.00	0	0.00
Total for selection	13,040	18.12	768	1.34	0	0.00	13,808	19.46

Rate: For each Age: Crude Rate per 10,000
Total for selection: Age Adjusted Rate per 10,000 using 2000 Standard Population

Source: DHSS - MOPHIMS - Procedures MICA

Generated On: 10/4/2017 1:41:49 PM

* Rate is unreliable; numerator less than 20

WIC (Women, Infants, and Children) MICAs

The **WIC MICAs** include five separate MICA data sets: WIC Child, WIC Infant, WIC Prenatal, WIC Postpartum, and WIC Linked Prenatal-Postpartum. Each data set contains maternal and child health indicators pertaining to that particular WIC population. Data in the **WIC MICAs** is available from 2009 forward. In 2009, the data system used to collect the WIC data changed dramatically, so comparisons to earlier years are not advised.

MICA

The Missouri Information for Community Assessment (MICA) is an interactive system that was developed to make health data accessible at the local level through an easy-to-use format. It allows users to summarize data, calculate rates, and prepare information in a graphic format. Data MICA users can access statistics on various health conditions and associated topics. Users can choose from among the many conditions, generate data tables by year of occurrence, age, gender, race, and county or zip code of residence, and obtain age-adjusted rates. Data MICAs also allow users to create charts and maps. All forms of output are available for download.



Maternal, Infant and Child Health MICAs

- Birth
- Fertility and Pregnancy Rate
- Pregnancy
- WIC Child
- WIC Infant
- WIC Prenatal
- WIC Postpartum
- WIC Linked Prenatal-Postpartum



Chronic Disease MICAs

- Cancer Incidence
- Chronic Disease Death
- Chronic Disease Emergency Room
- Chronic Disease Inpatient Hospitalization



Injury MICA

- Injury



Death MICA

- Death



Hospital and Emergency Room Visit MICAs

- Emergency Room
- Inpatient Hospitalizations
- Preventable Hospitalizations
- Procedures



Population MICA

- Population



Medicaid/TANF MICAs

- Mo Healthnet (Medicaid) MICA
- Temporary Assistance for Needy Families (TANF) MICA

The WIC query pages themselves most closely resemble the **Birth MICA**. As discussed in a previous section of this handbook, **WIC** and **Birth MICAs** use internal denominators, based on known status, so instead of having **Optional Variables** to be used as filters like in the other MICAs, these systems have both **Indicators** and **Optional Variables**.

Many new indicators have been added to the **WIC MICAs**. In the **WIC Child MICA**, users can now gather data related to food and drink consumption and screen time, as well as more traditional indicators like birth weight, immunization compliance, and household smoking practices. Some of this new data is available only for more recent years- selecting older years will result in the following error message.


The screenshot displays the WIC Child MICA web application interface. At the top, there is a header with the text "WIC Child MICA" and the MICA logo (Missouri Information for Community Assessment Data MICAs). Below the header, a "3 Messages" section contains three red error messages: "Daily fruit consumption data are not available for years prior to 2014", "Daily vegetable consumption data are not available for years prior to 2014", and "Daily sweetened beverage consumption data are not available for years prior to 2014".

The main area is titled "Choose Your Data" and contains several filter sections:

- Year:** Radio buttons for "Single Year(s)" and "Multi-Year Groups". A dropdown menu shows "2 selected".
- Geography:** A "County" dropdown menu and a "Show State Totals: checkbox.
- County:** A dropdown menu showing "4 selected".
- Age:** Radio buttons for "Single Age", "Basic", and "Custom Group". A dropdown menu shows "All selected (4)".
- Sex:** A dropdown menu showing "All selected (2)".
- Race:** Radio buttons for "Basic" and "Expanded". A dropdown menu shows "All selected (2)".
- Ethnicity:** A dropdown menu showing "All selected (2)".
- Select:** Radio buttons for "Indicator" and "Optional Variables".
- Indicator:** A dropdown menu showing "3 selected". A dropdown menu is open, listing various indicators with checkboxes:
 - Receiving Food Stamps
 - Receiving Medicaid
 - Receiving TANF
 - Smoking in household
 - Daily fruit consumption – less than two times
 - Daily vegetable consumption - less than two times
 - Daily sweetened beverage consumption – two or more times
 - Daily diet soda/coffee/tea consumption – one or more times
 - Daily screen time exceeds recommendation for age
 - Daily active play/exercise – less than 60 minutes

Below the filters, there is a "Build Your Results" section with "Build a Table" and "Make a Map" buttons. The "Main Row:" section has "Main Column:" set to "Year" and "Column Totals: . A "Submit Query" button is visible. A "Reset Your Data" button is also present in the top right of the filter area.

Though only two data years are currently available, a four county region in Central Missouri (including Boone, Callaway, Cole, and Moniteau Counties) seems to have stable rates of less than ideal fruit, vegetable, and sweetened beverage consumption, though the rate of sweetened beverage consumption seems to have decreased slightly.

WIC Child MICA  MISSOURI INFORMATION FOR COMMUNITY ASSESSMENT DATA MICAS

Choose Your Data

Build Your Results

Build a Table Make a Map Create a Chart Documentation / Metadata

Main Row: Indicator Row Totals: Main Column: Year Column Totals:

Statistics: Counts and Rates

Confidence Intervals: No Confidence Intervals

Table Results

Title: Missouri Resident WIC Child Participants

Data selected in addition to rows and columns below: County: Boone, Callaway, Cole, Moniteau;

Year:	2014	2014	2015	2015	Total for selection	Total for selection
Statistics:	Count	Rate	Count	Rate	Count	Rate
Indicator						
Daily fruit consumption – less than two times	566	15.74	464	15.83	1,030	15.78
Daily vegetable consumption - less than two times	760	21.13	625	21.32	1,385	21.22
Daily sweetened beverage consumption – two or more times	1,695	47.12	1,358	46.33	3,053	46.77

Crude Rate per 100
 Numerator: Daily fruit consumption – less than two times
 Denominator: Known fruit consumption
 Rate: Numerator: Daily vegetable consumption - less than two times
 Denominator: Known vegetable consumption
 Numerator: Daily sweetened beverage consumption – two or more times
 Denominator: Known sweetened beverage consumption

Source: DHSS - MOPHIMS - WIC Child MICA
 Generated On: 10/4/2017 2:41:39 PM

TANF (Temporary Assistance for Needy Families) MICA

The **TANF MICA** contains data about the number of Missouri residents receiving welfare assistance. Tables are available for four types of residents: families, adults, children, and persons. **TANF MICA** appears to have the distinction of featuring the smallest **Choose Your Data** section of all the MICAs, but the selection of different **Relationship** choices will display additional data filters, depending on the **Relationship** selected.

For instance, **Month** is the only filter available for the Family **Relationship**, but **Age, Sex, Race, Month**, and two **Optional Variables** (Education and Time on TANF) are available for the Adult **Relationship**. **Month** will always be a filter variable because TANF data are calculated based on participation on the last day of each month. If a user selects more than one **Month** of data and then neglects to put that variable on either the **Main Row** or the **Main Column** in the **Build Your Results** section, the following error message will display. This is because it is not appropriate to aggregate months of data to generate, say, an annual total. Because participation frequencies are generated monthly, it's extremely likely that participants would be counted multiple times in annual totals, once for each month that they participated in the program.

TANF Region is a geography that is available only for the **TANF MICA**. Different Service Areas, based on total population, are composed of various groups of Missouri counties. To determine which Service Area your county belongs, click on the **Documentation/Metadata** tab in the **Build Your Results** section of the query page.

Temporary Assistance for Needy Families (TANF) MICA

MICA MISSOURI INFORMATION FOR COMMUNITY ASSESSMENT DATA MICAS

Choose Your Data

Build Your Results

Build a Table | Make a Map | Create a Chart | **Documentation / Metadata**

Main Row: Geography | Row Totals: | Main Column: Year | Column Totals:

Statistics: Counts and Percents of Column Totals

Submit Query

Table Results

Save Table As | Send Table to Side by Side

Title: Missouri Resident Families/Cases on TANF

Data selected in addition to rows and columns below: Relationship: Adult; Month: January;

Year:	2012	2012
Statistics:	Count	Percent of Column Total
TANF Region		
Service Area 1	4,334	11.82
Service Area 2	5,024	13.70
Service Area 3	5,198	14.18
Service Area 4	7,366	20.09
Service Area 5	5,227	14.26
Service Area 6	4,970	13.56
Service Area 7	4,545	12.40
Total for selection	36,664	100.00
Missouri	36,664	100.00

Source: DHSS - MOPHIMS - Temporary Assistance for Needy Families (TANF) MICA

Generated On: 10/4/2017 3:06:43 PM

Month: Monthly counts reflect a snapshot of participants on the last day of the month.

Citations

Whenever data are presented in a table, on a chart, or in narrative, the source must be cited. These citations are necessary for several reasons. First of all, citations can be extremely useful to the author of a report or presentation. They allow the author to document exactly when and where a source was accessed so that he or she can check for updates to the data at a later time. Furthermore, community health assessments and grants tend to be long-term projects. If the main author must be out of the office or moves on to a different position, citations can guide other staff members to appropriate source material.

Citations are also useful to readers. They allow readers to verify data that they may doubt. For instance, a concerned citizen may question the agency about a statistic that does not appear to match data from another source. With a citation, that reader and/or the author can locate the original source material to research possible differences in the collection, analysis, or interpretation of the data and determine the differences between the two sources. Thus, the use of citations can enhance readers' perceptions of the validity and reliability of a report. Citations can also lead readers to more in-depth information on specific topics that may interest them. For example, readers of this handbook can refer to the footnotes and the References section if interested in a particular topic covered in this course.

Perhaps most importantly, citations can help writers avoid charges of plagiarism. Plagiarism is "the uncredited use (both intentional and unintentional) of somebody else's words or ideas. . . . A charge of plagiarism can have severe consequences, including . . . loss of a job, not to mention a writer's loss of credibility and professional standing."⁷ A citation is necessary if another person's idea is used, even if it is restated and not directly quoted.

Several different style sheets exist, but BHCADD analysts use the American Medical Association (AMA) style to cite works published by our unit. Major peer reviewed public health journals require this style be used when submitting abstracts for potential publication. The AMA publishes manuals explaining AMA style and offers free brief tutorials and quizzes on its website, located at <http://www.amamanualofstyle.com/>.

⁷ Stolley K, Brizee A, Paiz JM. Overview and contradictions. Purdue University Online Writing Lab (OWL). <http://owl.english.purdue.edu/owl/resource/589/01/> Updated June 7, 2013. Accessed April 10, 2014.

BHCADD recommends that in-text citations of the Profiles and MICAs list the specific MICA or Profile as the specific item cited, followed by MOHIMS as the name of the website. Bibliography entries should include the tool used as the specific item cited, MOPHIMS as the website used, the appropriate URL, and the date accessed.

Profile in-text citation:

A total of 95,514 Missouri children under the age of 6 were tested for lead poisoning in 2010.¹

1. DHSS, Child Health Profile.

Profile bibliography entry:

Missouri Department of Health and Senior Services (DHSS). Child Health Profile. MOPHIMS (Missouri Public Health Information Management System). <https://webapp01.dhss.mo.gov/MOPHIMS/ProfileBuilder?pc=1>. Accessed October 11, 2017.

MICA in-text citation:

The death rate for Barry County residents decreased from 992.7 (per 100,000 residents) in 2008 to 800.1 in 2009.²

2. DHSS, Death MICA.

MICA bibliography entry:

Missouri Department of Health and Senior Services (DHSS). Death MICA. MOPHIMS (Missouri Public Health Information Management System). <https://webapp01.dhss.mo.gov/MOPHIMS/QueryBuilder?qbc=DM&q=1&m=1>. Accessed October 11, 2017.

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