

# 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.

## MICA 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 Profiles
- Hospital and Emergency Room Visit Profiles
- Special Demographic Profiles
- County-Level Study Profiles

## MICA 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 Environmental Public Health Tracking Program

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**.

Submitting the default query shown above returns the following table.

Table Results

Save Table As Send Table to Side by Side

<b>Title:</b> Missouri Resident Estimated Population	
<b>Data selected in addition to rows and columns below:</b> None	
<b>Year:</b>	2015
<b>Statistics:</b>	Count
<b>Statewide</b>	
Missouri	6,083,672
<b>Source:</b> DHSS - MOPHIMS - Population MICA	
<b>Generated On:</b> 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.

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.

The screenshot shows the 'Table Results' header with two buttons: 'Save Table As' (circled in orange) and 'Send Table to Side by Side'. Below the buttons, the table title is 'Missouri Resident Estimated Population'. The data selected includes 'Age: Under 15'. The table data is as follows:

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.

The screenshot shows the Microsoft Excel interface with the downloaded data. The title bar reads 'Table 2017-10-03 09:34:58 - Microsoft Excel'. The data is displayed in the following format:

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

# Birth MICA

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

## MICA

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



### Injury MICA

- Injury



### Death MICA

- Death



### Hospital and Emergency Room Visit MICAs

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### 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.

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

### Birth MICA

**MICA**  
MISSOURI INFORMATION FOR COMMUNITY ASSESSMENT DATA MICAS

Choose Your Data

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

Geography: Statewide

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

Indicator: Live Births

Reset Your Data

Build Your Results

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

Please click the link to find [Documentation/Metadata](#)

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](#)

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
<b>County</b>								
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.

<b>Title: Missouri Resident Births</b>			
<b>Data selected in addition to rows and columns below:</b>		County: Lincoln, St. Charles, St. Louis City, St. Louis County; Single Year(s): 2016, 2015, 2014;	
<b>Race:</b>	White	Black or African-American	All Races
<b>Statistics:</b>	Count	Count	Count
<b>Birth Weight</b>			
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: **Birth Place** Totals:

Birth Query

- 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

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
<b>Race</b>								
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 City: Kansas City;  
 addition to rows 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
<b>Race</b>										
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.<sup>1</sup> For example, consider a small town in which only five Asian persons reside. If the local health department publishes a table showing 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.

<sup>1</sup> Ballard J. *Basic concepts of data analysis for community health assessment: Presenting public health data*. Northwest Center for Public Health Practice; 2009.  
[http://phlearnlink.nwcp.org/kc/login/login.asp?kc\\_ident=kc0001&strUrl=http://phlearnlink.nwcp.org/Default.asp](http://phlearnlink.nwcp.org/kc/login/login.asp?kc_ident=kc0001&strUrl=http://phlearnlink.nwcp.org/Default.asp) Accessed September 24, 2009.

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 MOPHIIMS 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	1,248.38	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	596	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.<sup>2</sup> In MICA,

<sup>2</sup> 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://benthamscience.com/open/tophj/articles/V005/52TOPHJ.pdf> Accessed April 10, 2014.

both 95% and 99% confidence intervals are available. The **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**

<b>Christian County</b>	<b>4.34</b>	————	<b>7.23</b>
<b>Greene County</b>		<b>6.47</b> ———	<b>8.16</b>
<b>Missouri</b>		<b>8.02</b> ———	<b>8.41</b>

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 four rows of settings: 'Main Row:' with a dropdown set to 'Geography' and a checked 'Row Totals:' checkbox; 'Main Column:' with a dropdown set to 'Year' and a checked 'Column Totals:' checkbox; 'Statistics:' with a dropdown set to 'Counts and Rates'; and 'Confidence Intervals:' with a dropdown set to 'No Confidence Intervals'. The 'Age Adjustment Options:' dropdown is set to '2000 Standard Population' and is circled in orange. A blue 'Submit Query' button is located at the bottom center of the form.

## 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.

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

### Inpatient Hospitalization MICA

**Choose Your Data**

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

Geography: Statewide

**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
- Neoplasms - malignant (cancer)

Preview Selections

Optional Variables: None selected [Display Above](#)

[Reset Your Data](#)

## **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=> | All selected (9)

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

Preview Selections

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: | Add=> | All selected (1)

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

Age:  Single Age  Basic  Expanded  Custom Group

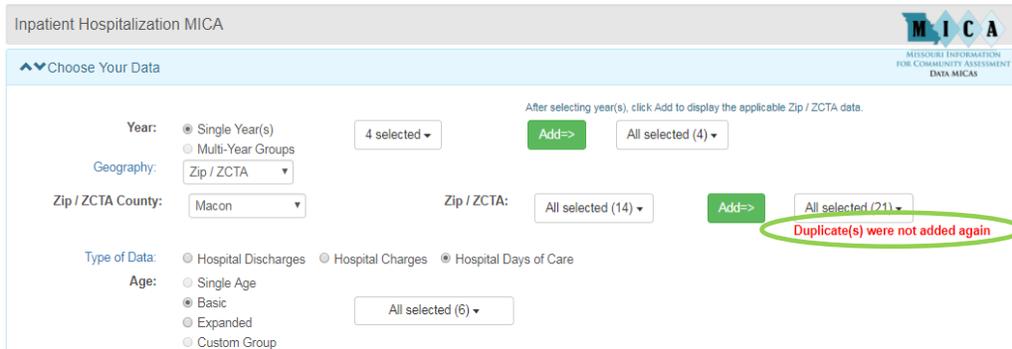
Sex: All selected (2)

Race:  Basic | (2)

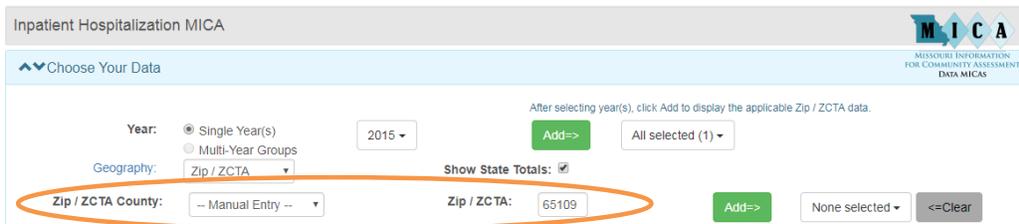
After selecting year(s), click Add to display the applicable Zip / ZCTA data.

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

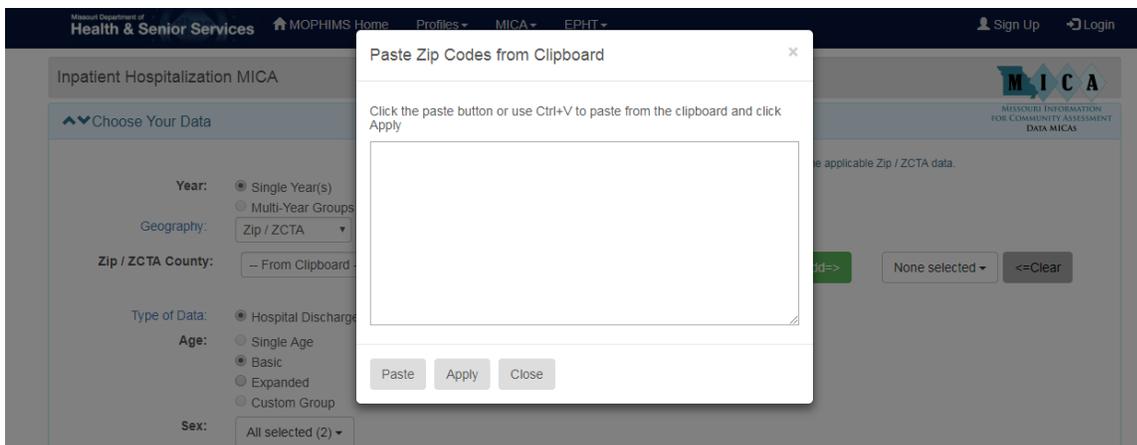
Another common message occurs when a user selects ZIP Codes or Census Tracts that fall in more than one county. For instance, ZIP Code 63557 is located in both Adair and Macon Counties in Northeast Missouri. MOPHIMS is not designed to parse out how many hospitalizations occurred to those living in the 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.

The screenshot shows a web interface for 'Inpatient Hospitalization MICA'. It includes a 'Table Results' section with 'Save Table As' and 'Send Table to Side by Side' buttons. The table title is 'Missouri Resident Inpatient Hospitalizations'. A note indicates that the data selected is 'Hospital Discharges'. The table has columns for 'Year' (2011, 2012, 2013, 2014) and 'Total for selection'. The rows represent ZIP codes (ZCTA) with their corresponding counts for each year and a total count.

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
63538	28	21	31	22	102
63539	31	24	21	27	103
63552	1,087	1,135	1,176	1,123	4,521
63558	73	97	84	104	358
64831	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		
<b>Age</b>										
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								

- a. MICA: \_\_\_\_\_
- b. Type Data: \_\_\_\_\_
- c. Age: \_\_\_\_\_
- d. Sex: \_\_\_\_\_
- e. Race: \_\_\_\_\_
- f. Ethnicity: \_\_\_\_\_
- g. Diagnosis: \_\_\_\_\_
- h. Optional Variables: \_\_\_\_\_
- i. 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.? \_\_\_\_\_  
\_\_\_\_\_