

# 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**

<b>Profile</b>	<b>Vital Records Births</b>	<b>Survey Data</b>	<b>Vital Records Deaths</b>	<b>Hospital/ER</b>	<b>Population Estimates</b>	<b>STDs</b>	<b>WIC</b>	<b>Other</b>	<b>Non-DHSS Website</b>
<b>County Level Study Comparison</b>		✓						No Health Coverage	
<b>County Level Study</b>		✓						No Health Coverage	
<b>Alcohol and Drug Abuse Problems</b>		✓	✓	✓	✓	✓		Traffic Crashes – Impaired Driver, School Attendance, Employment, Vocational Rehabilitation, Juvenile Court Referrals, Police Reports, Criminal Justice, Substance Abuse Programs, Primary Drug Problems	✓
<b>Assault Injury</b>			✓	✓					
<b>Child Health</b>			✓	✓	✓	✓	✓	Lead Testing, Divorces Involving Children, Probable Cause Child Abuse/Neglect	
<b>Chronic Disease Comparisons</b>			✓	✓					
<b>Leading Causes of Death</b>			✓			✓			
<b>Delivery</b>	✓		✓	✓				Delivery Types, Abortions	
<b>Diabetes</b>	✓	✓	✓	✓				Hospital Utilization	
<b>Emergency Room</b>				✓					
<b>Heart Disease</b>		✓	✓	✓				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	
<a href="#">Submit</a>						
State: Missouri						
Child Health						
	Data Years	Count	Rate	Graphics Link	Download Data	
<b>Population Estimates</b>						
Ages 1 - 4	2017	301,462	4.93	<a href="#">Graphics</a>		
Ages 5 - 14	2017	771,771	12.62	<a href="#">Graphics</a>		
Ages 15 - 17	2017	236,721	3.87	<a href="#">Graphics</a>		
Ages 18 - 19	2017	156,535	2.56	<a href="#">Graphics</a>		
<b>WIC</b>						
WIC Participation: Ages 12 to 59 months - Inclusive	2016	72,465	24.21	<a href="#">Graphics</a>		
WIC Children Ages 24 to 59 Months Obese (BMI)	2016	6,136	14.31	<a href="#">Graphics</a>		
<b>Lead Testing</b>						
Lead Testing: Under Age 6	2017	84,834	18.88	<a href="#">Graphics</a>		
Blood Lead Elevations >= 10 ug/dL: Under Age 6 Tested	2017	543	0.12	<a href="#">Graphics</a>		
<b>Selected Indicators Under Age 18</b>						
Under Age 18: Asthma ER Visits	2015	12,769	9.18	<a href="#">Graphics</a>		
Under Age 18: Asthma Hospitalizations	2015	1,844	13.25	<a href="#">Graphics</a>		
Divorces Involving Children	2015	9,188	47.53	<a href="#">Graphics</a>		
Probable Cause Child Abuse/Neglect	2015	6,295	4.52	<a href="#">Graphics</a>		
<b>Selected Indicators Ages 1 - 14</b>						
Ages 1 - 14: Self Pay/No Charge ER Visits	2015	25,827	6.83	<a href="#">Graphics</a>		
Ages 1 - 14: Self Pay/No Charge Hospitalizations	2015	774	3.05	<a href="#">Graphics</a>		
Injury ER Visits	2015	105,515	9,800.37	<a href="#">Graphics</a>		
Injury Hospitalizations	2015	1,391	129.20	<a href="#">Graphics</a>		
<b>Deaths Ages 1-14</b>						
All Causes	2007 - 2017	2,352	19.67	<a href="#">Graphics</a>		
Total Unintentional Injuries	2007 - 2017	772	6.46	<a href="#">Graphics</a>		
Motor Vehicle Deaths	2007 - 2017	359	3.00	<a href="#">Graphics</a>		
All Cancers (Malignant Neoplasms)	2007 - 2017	274	2.29	<a href="#">Graphics</a>		
Birth Defects	2007 - 2017	189	1.58	<a href="#">Graphics</a>		
Homicide	2007 - 2017	219	1.83	<a href="#">Graphics</a>		
Heart Disease	2007 - 2017	88	0.74	<a href="#">Graphics</a>		
<b>Selected Indicators Ages 15 - 19</b>						
Ages 15 - 19: Self Pay/No Charge ER Visits	2015	24,023	15.44	<a href="#">Graphics</a>		
Ages 15 - 19: Self Pay/No Charge Hospitalizations	2015	1,354	6.22	<a href="#">Graphics</a>		
Injury ER Visits	2015	43,877	11,051.56	<a href="#">Graphics</a>		
Injury Hospitalizations	2015	1,666	419.63	<a href="#">Graphics</a>		
<b>STDs Ages 15-19</b>						
Chlamydia	2008 - 2017	91,997	2,254.20	<a href="#">Graphics</a>		

## 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.

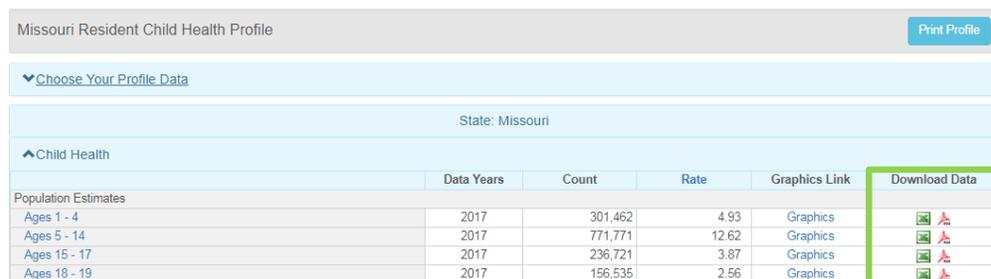
Clinical Classifications Software (CCS) Categories: 225-244.  
International Classification of Diseases (ICD-9) codes: 716.10-716.19, 717.0-718.09, 718.30-718.39, 796.0, 799.0, 800.00-994.9, 995.1-995.2, 995.4-995.59, 995.80-999.9, V15.5, V15.6, V54.0, V64, V67.4, or V71.3-V71.6.

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	<b>Missouri Resident Child Health Profile</b>							
2	<b>Indicator: Population Estimates - Ages 1 - 4</b>							
3	<b>Geography</b>	<b>Geography Type</b>	<b>Data Years</b>	<b>Count</b>	<b>Rate</b>	<b>Lower 95% Confidence Limit</b>	<b>Upper 95% Confidence Limit</b>	<b>Significantly Different</b>
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	
<b>Population Estimates</b>									
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		
<b>WIC</b>									
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		
<b>Lead Testing</b>									
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		
<b>Selected Indicators Under Age 18</b>									
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		
<b>Selected Indicators Ages 1 - 14</b>									
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.”<sup>1</sup> 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 <span style="float: right;">Print Profile</span>								
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.

<sup>1</sup> 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:

Number of Events ÷ Population at Risk x Constant = Rate  
**288 ÷ 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.”<sup>2</sup> 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						

<sup>2</sup> CDC “Suppression for Reliability” Suppression of Rates and Counts  
[https://www.cdc.gov/cancer/npcr/uscs/technical\\_notes/stat\\_methods/suppression.htm](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

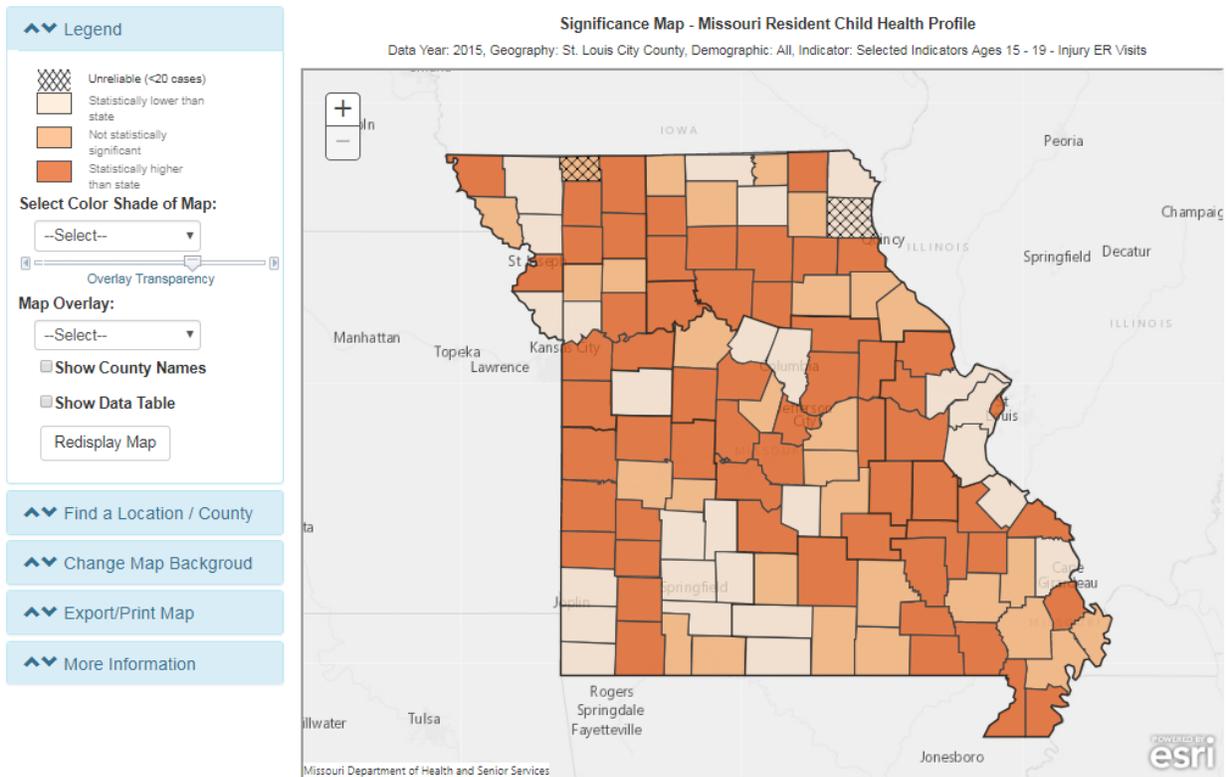
Rates per 100,000

Missouri      St. Louis City

Geography

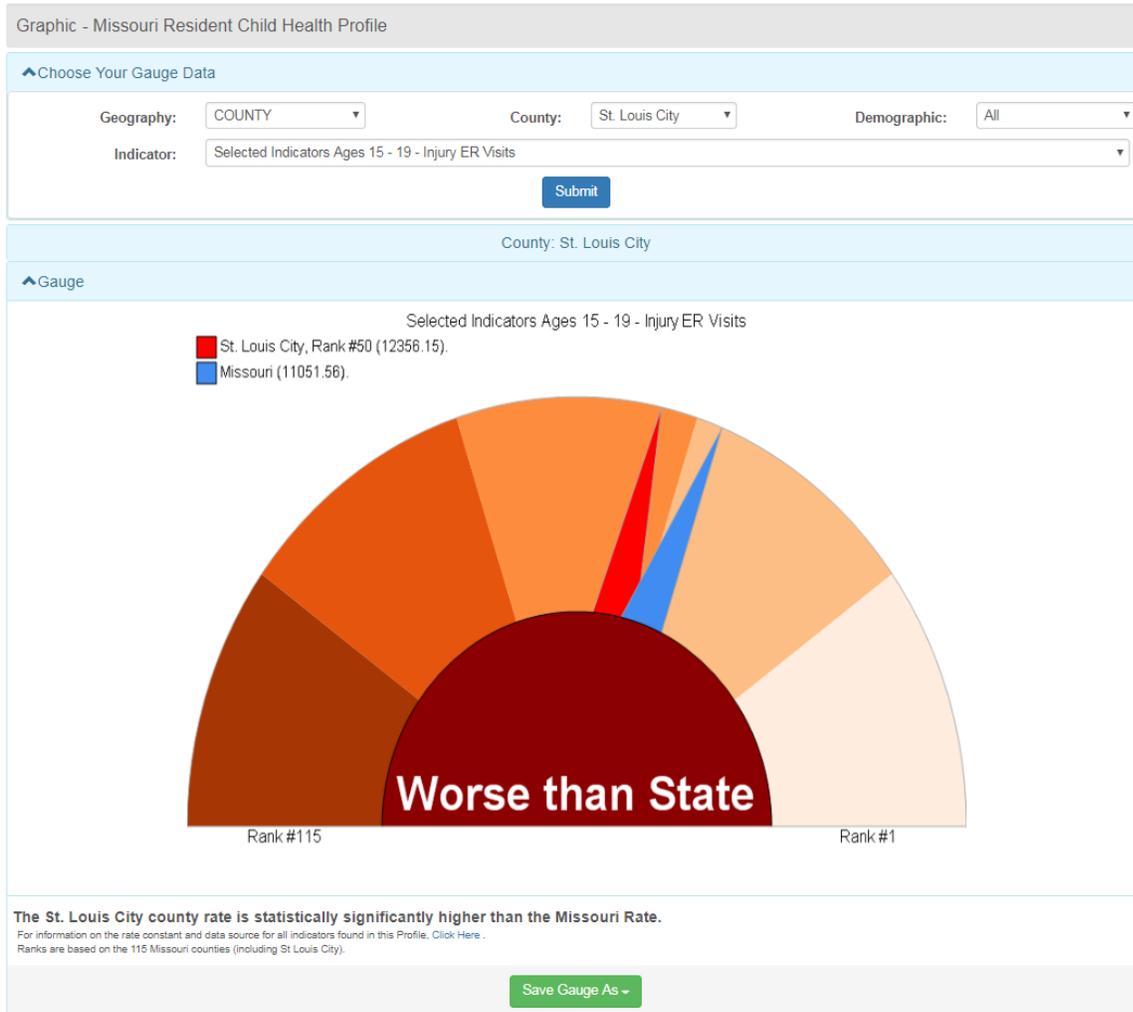
[Full Version](#)

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.

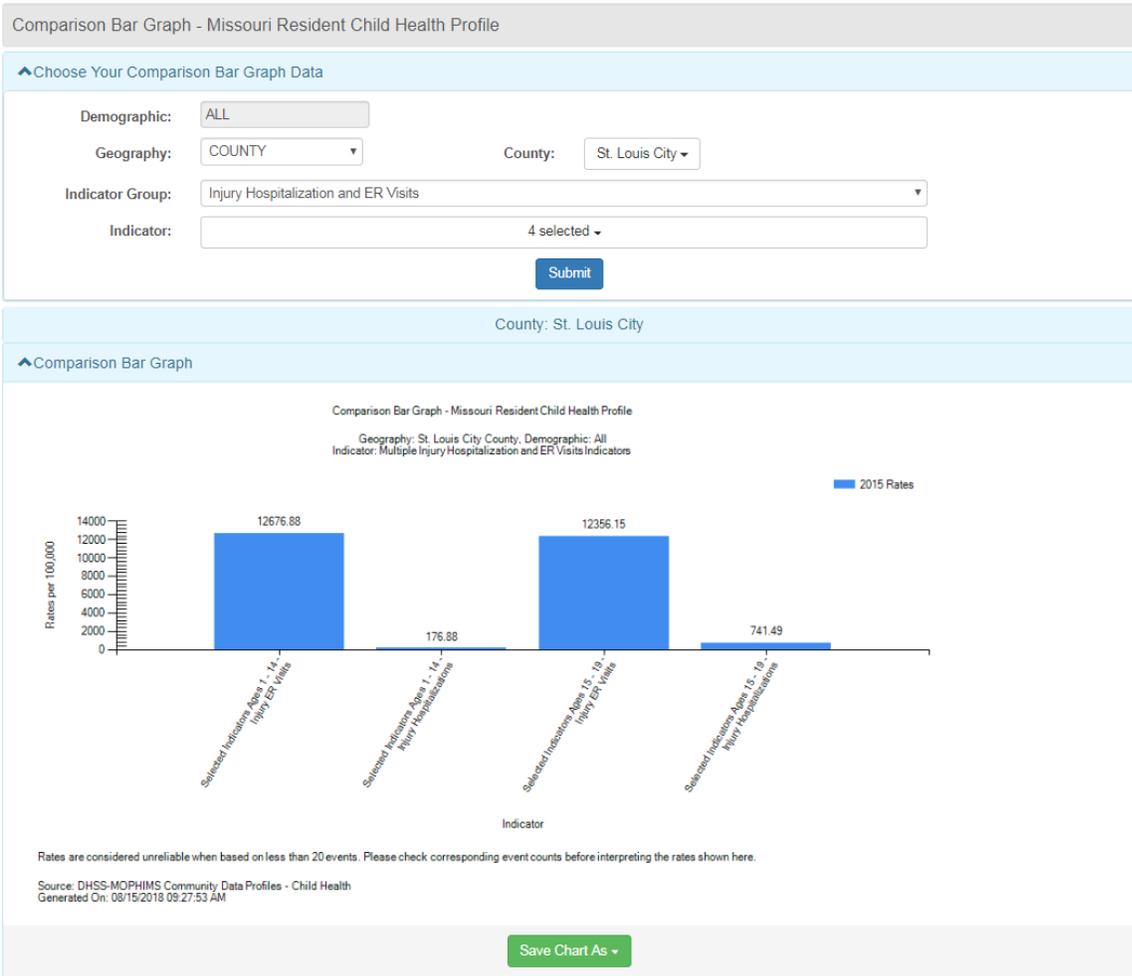


**Quintile Maps** offer many of the same customization opportunities as the Significance Maps. However, instead of displaying significance, these maps group counties into groups of 23 based on their quintile ranking.

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 50<sup>th</sup> 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.

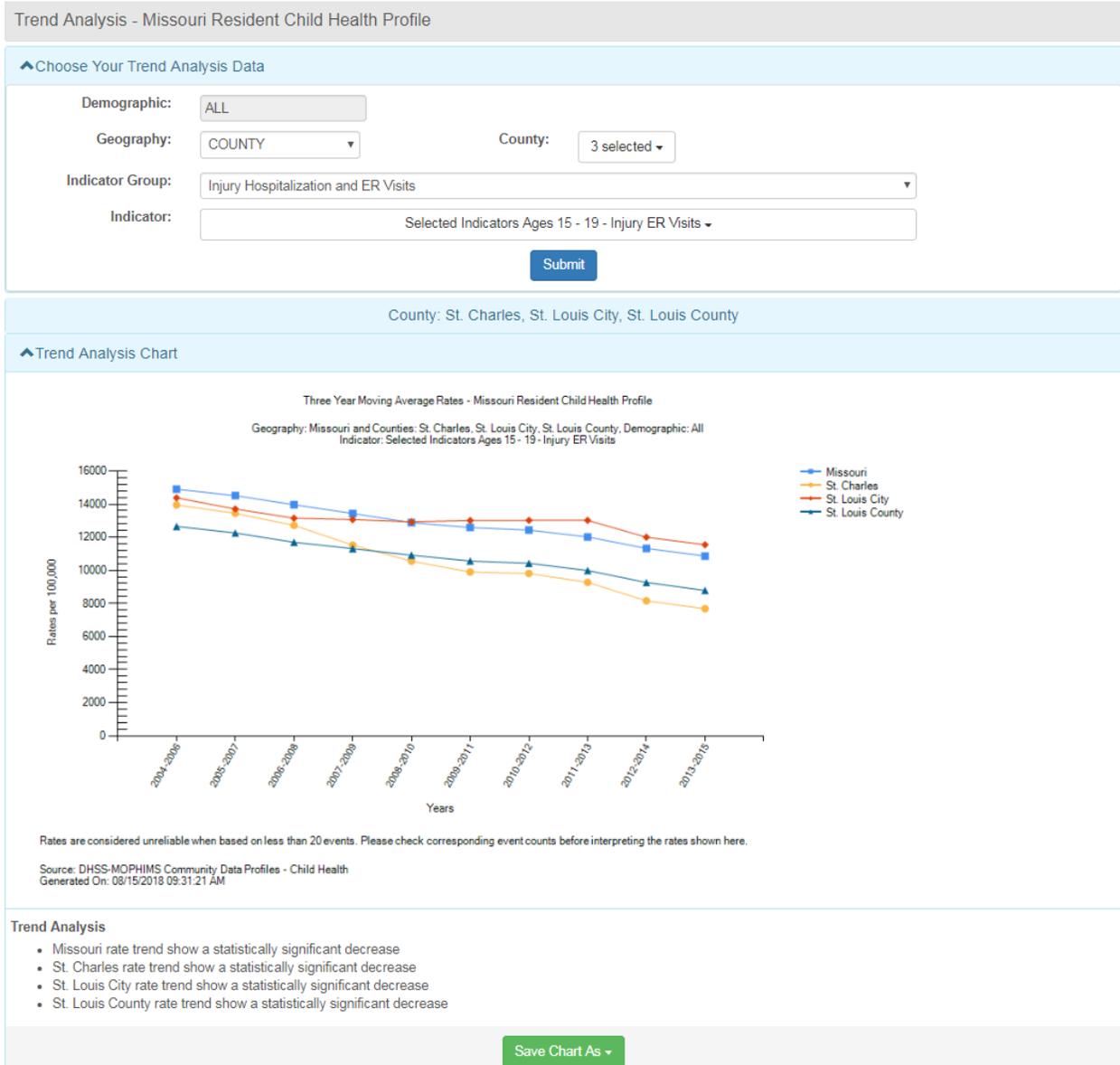
Other additional features are available in the Full Version graphics. For example, on the **Trend Line Analysis** line graph, background statistics compare three-year moving averages to determine whether an indicator has seen significant increases or decreases over time.

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	<b>Profile: Missouri Resident Child Health Profile</b>			
2	<b>Chart Type: Three Year Moving Average Rates Trend Line</b>			
3	Geography: Missouri and Counties: St. Charles, St. Louis City, St. Louis County, Demographic: All, Indicator: Selected Indicators Ages 15 - 19 -			
4	<b>Geography Name</b>	<b>Data Year</b>	<b>Rate</b>	<b>State Rate</b>
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	<b>FootNotes</b>			
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				

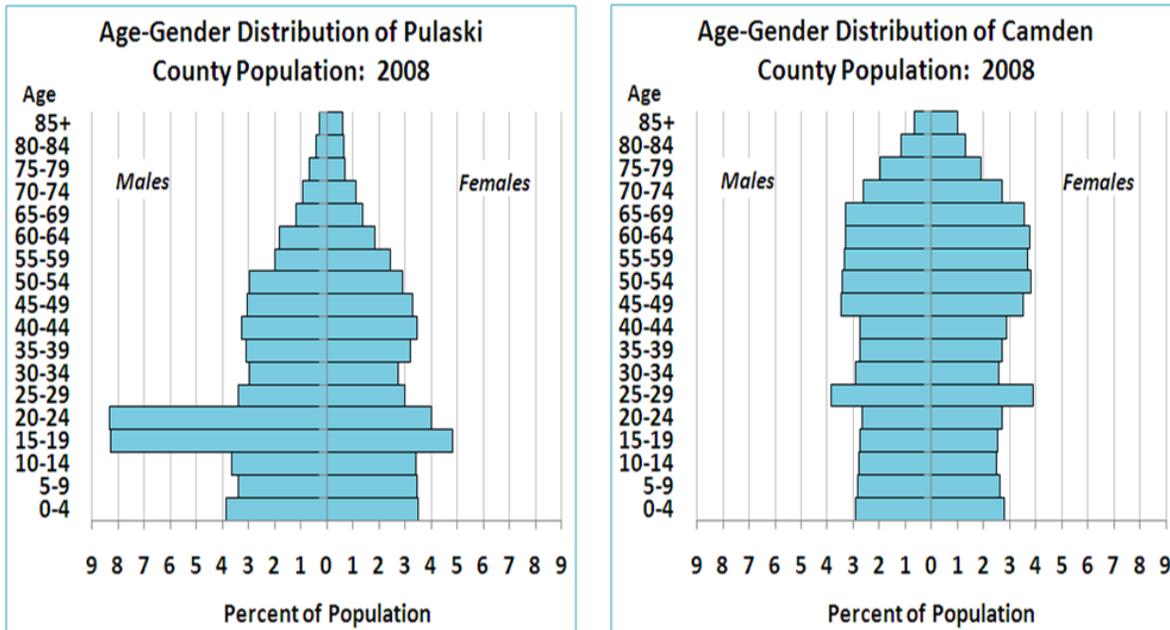
Clicking this file will immediately open the table in an Excel workbook. Please note that the trend line chart does not download into Excel, only the data table. Once the data are downloaded, Excel's Line Chart tools can be used to recreate and customize the trend line.

## 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.”<sup>3</sup> 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.”<sup>4</sup>

<sup>3</sup> 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](http://www.flhealthcharts.com/Charts/documents/CHARTS_USER_GUIDE_8_2012.pdf) Accessed April 10, 2014.

<sup>4</sup> 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**

	Community A			Community B		
Age	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
<b>Total</b>	<b>500</b>	<b>10,000</b>	<b>50</b>	<b>400</b>	<b>10,000</b>	<b>40</b>

**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
<b>Total</b>	<b>10000</b>		<b>420,000</b>		<b>520,000</b>
<b>Age-Adjusted Rate per 1,000</b>			<b>42</b>		<b>52</b>

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:

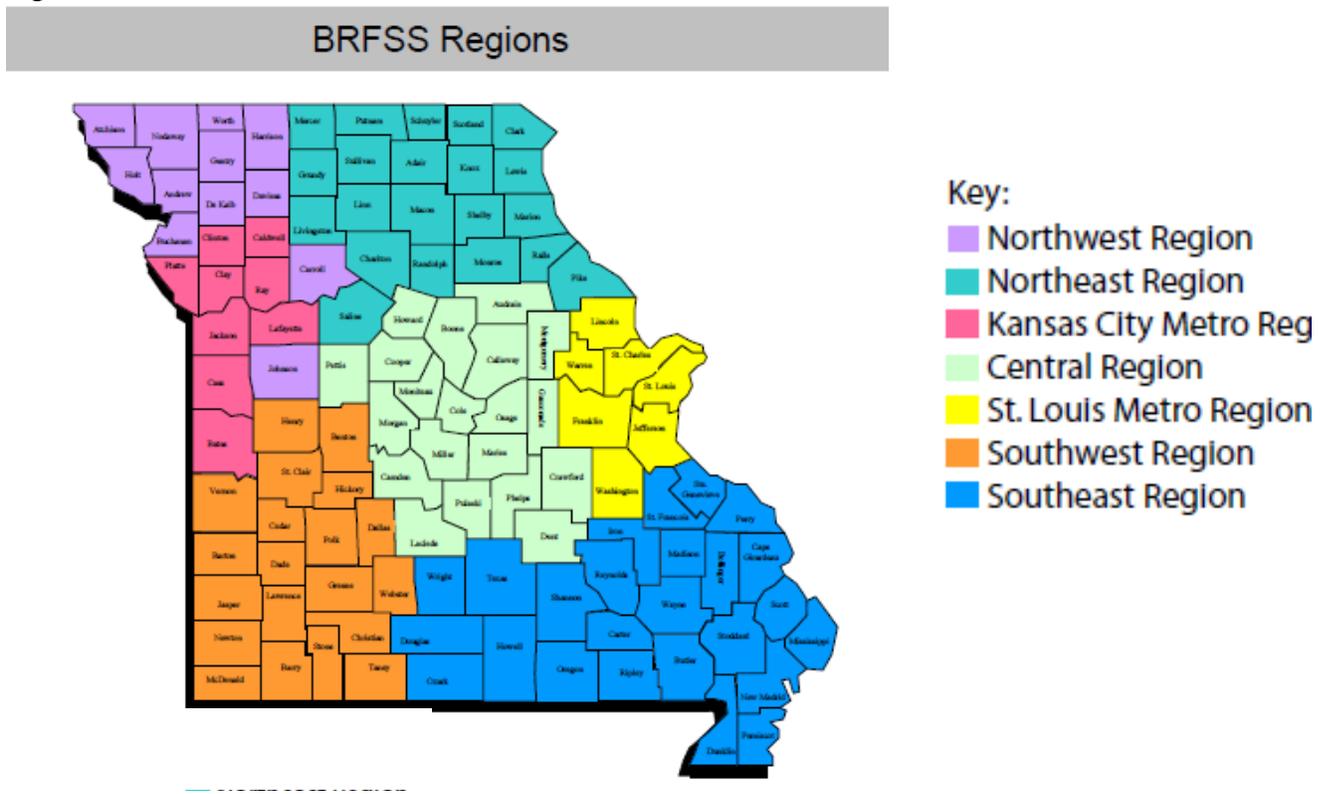
- age group by gender
- detailed race/ethnicity
- educational level
- marital status
- home owner or renter status
- gender by race/ethnicity
- age group by race/ethnicity
- telephone source (landline telephone only, both landline and cell phone, or cell phone only)

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 Resident County-Level Study Profile

Print Profile

## Choose Your Profile Data

CLS Year: 2016

Rate Type: Weighted Percent

Geography: STATEWIDE

State: Missouri

Demographic: All

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

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Missouri Resident County-Level Study Profile
Print Profile

Choose Your Profile Data

CLS Year:

Geography:

Rate Type:

County:

Demographic:

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				
<b>General Health</b>								
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	
<b>Access to Care</b>								
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      Rate Type: Weighted Percent

Geography: COUNTY      County: Bates      Demographic: All

[Submit](#)

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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     
 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
<b>Risk factors for stroke</b>								
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	
<b>County Level Study ‡</b>								
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	
<b>Stroke prevalence (non-institutional)***</b>								
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 <a href="#">here</a>            * 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	
<a href="#">Download Profile</a>	

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