HIDI HealthStats

Statistics and Analysis From the Hospital Industry Data Institute

County Health Rankings & Roadmaps
Building a Culture of Health, County by County

A Robert Wood Johnson Foundation program

Miles Away, Worlds Apart: Assessing Community Health Needs With exploreMOhealth.org

In celebration of National Public Health Week 2021, the exploreMOhealth community health needs assessment platform was updated and relaunched on April 7. The Missouri ZIP Health Rankings data included on the site were updated to reflect the most recent information on the health and social well-being of populations living in 939 Missouri ZIP codes. The latest ZHR data were generated by Missouri hospitals between fiscal years 2018 and 2020, and by the 2019 American Community Survey of the U.S. Census Bureau.

In addition to updating the ZIP code-level data, new county-level data from the Robert Wood Johnson Foundation's 2021 County Health Rankings & Roadmaps program now are available on exploreMOhealth, in addition to the Missouri Foundation for Health's 2016 Missouri County-Level Study data.
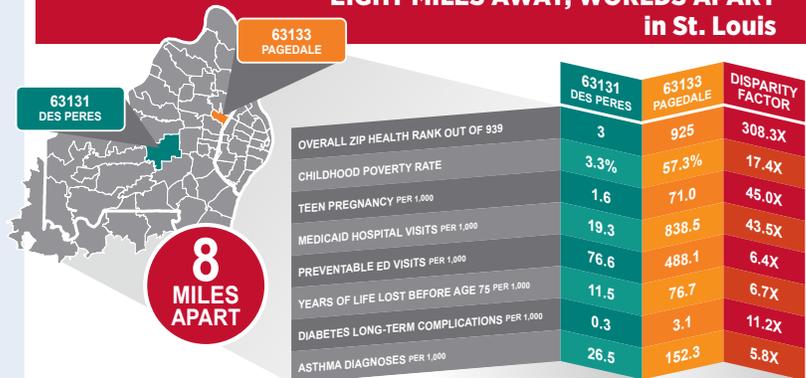
Combining both health factors and outcomes, the state's healthiest ZIP code during the 2018-2020 study period was 63073 — the community of Saint Albans in northeastern Franklin County, which borders St. Louis County. At the opposite end of the distribution — ranked 939th — was 63955, the census-designated place of Oxly, Mo., in southeastern Ripley County with a population of only 208. The new data for Missouri's 114 counties and St. Louis City, in addition to 939 ZIP codes with sufficient information, now is available on exploreMOhealth.org.

63131 DES PERES   63133 PAGEDALE

EIGHT MILES AWAY, WORLDS APART in St. Louis

8 MILES APART

	63131 DES PERES	63133 PAGEDALE	DISPARITY FACTOR
OVERALL ZIP HEALTH RANK OUT OF 939	3	925	308.3X
CHILDHOOD POVERTY RATE	3.3%	57.3%	17.4X
TEEN PREGNANCY PER 1,000	1.6	71.0	45.0X
MEDICAID HOSPITAL VISITS PER 1,000	19.3	838.5	43.5X
PREVENTABLE ED VISITS PER 1,000	76.6	488.1	6.4X
YEARS OF LIFE LOST BEFORE AGE 75 PER 1,000	11.5	76.7	6.7X
DIABETES LONG-TERM COMPLICATIONS PER 1,000	0.3	3.1	11.2X
ASTHMA DIAGNOSES PER 1,000	26.5	152.3	5.8X

Background

The places where we live, work, learn and play affect our health. Examples throughout this brief show that communities separated by a distance of a few miles can be worlds apart in terms of upstream health factors that result in downstream health outcomes, such as poor quality of life and premature mortality. The more that is known about these places, the better hospitals, clinicians and community-based partners can identify and address the influence of these factors on health. Assessing hundreds of community health and social factors across and within Missouri counties is a powerful strategy for optimizing the allocation of scarce resources to maximize the effectiveness of community health improvement efforts.

The traditional delivery of health care is moving beyond just treatment within the walls of hospitals and into managing the health of populations in the community. Health care providers

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are beginning to increase their focus on upstream social determinants of health that often lead to poor health outcomes. This shift is being driven in part by new regulations that require hospitals to work with public health experts, such as local public health agencies, to develop community health needs assessments and improvement plans to maintain their not-for-profit status. These factors are expediting the collaborative delivery of care across the continuum — integrating voices from public health, social service and community action organizations. It is critical that these collaborative efforts are founded on insightful, firm data that identify areas of need within different populations and across geographic locations.

In March 2018, the Missouri Hospital Association and Missouri Foundation for Health released exploreMOhealth, a community health needs assessment platform developed through a partnership with the University of Missouri's Center for Applied Research and Engagement Systems. The platform is designed to assist community heath

stakeholders in the development of impactful CHNAs using two rich sources of health-related data that are unique to Missouri — the Missouri County-Level Study from MFH and the Missouri ZIP Health Rankings from the Hospital Industry Data Institute and Washington University School of Medicine.

Through a new partnership with the Robert Wood Johnson Foundation's County Health Rankings & Roadmaps Program and the University of Wisconsin Population Health Institute, the exploreMOhealth platform now offers the latest CHR data for Missouri's 114 counties and St. Louis City.

Since its launch, exploreMOhealth has been queried more than 30,000 times by 17,600 individual users, resulting in nearly 80,000 page views. Community health stakeholders from a variety of disciplines — hospitals, regional health commissions, local public health and community action organizations — are using the site to gain hyperlocal insights on the health and social well-being of their communities.

About the Data

The Missouri ZIP Health Rankings are designed to assist hospitals and community health stakeholders with identifying high-risk communities within counties to optimize the effectiveness of community health improvement interventions. Developed through a partnership between researchers at HIDI, Washington University School of Medicine and BJC HealthCare, the ZHR provide a unique approach to measuring community health at the ZIP code level using hospital discharge and American Community Survey data applied to the County Health Rankings model of population health. The project was funded by The Robert Wood Johnson Foundation through a 2015 County Health Rankings Research Grant award. The research team was guided by advisory committee members from academia, local public health, hospital community benefit specialists and philanthropic organizations. Findings of the original study were presented at the annual meeting of the American Public Health Association and published in the *Journal of Public Health Management and Practice.*[iii]
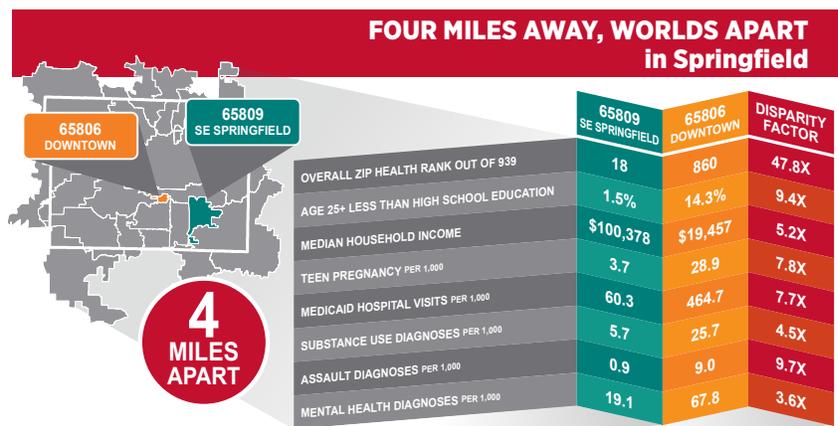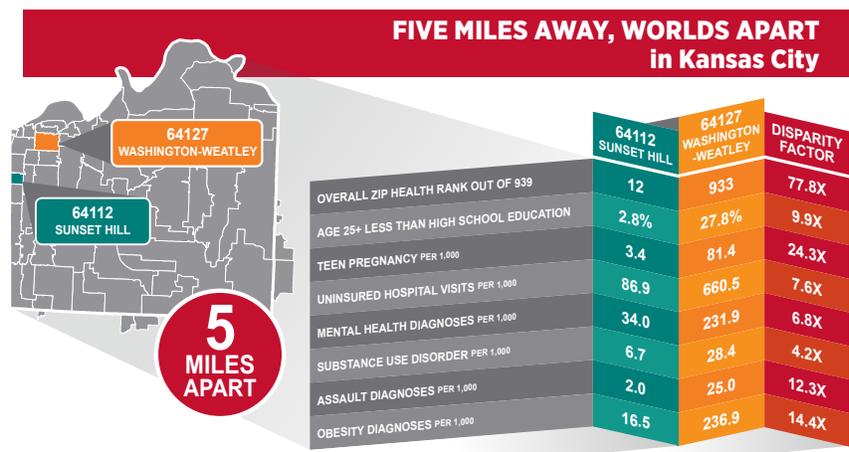
The methodological approach for the ZHR is based on fitting hospital discharge and social factor data to each of the CHR domains and subdomains. The health outcomes domain consists of two subdomains, including quality of life (morbidity) and length of life (mortality). The health factors domain that contributes to differences in morbidity and mortality consist of four subdomains, including health behaviors, social determinants, clinical care and environmental factors.

Table 1: Data Domains and Subdomains Available on exploreMOhealth by Source	ZIP HEALTH RANKINGS	COUNTY HEALTH RANKINGS	COUNTY-LEVEL STUDY	ACS & OTHER NATIONAL SOURCES
Health Rankings	X	X		
Health Factors	X	X	X	
Behaviors	X	X	X	
Clinical Care & Access	X	X	X	
Environment	X	X	X	
Socioeconomic Status	X	X		X
Health Outcomes	X	X	X	
Quality of Life (Morbidity)	X	X	X	
Length of Life (Mortality)	X	X		
Demographic				X

Hospital discharge data are compiled throughout a three-year study period, and counts of selected diagnoses are aggregated at the ZIP code level for each subdomain. The counts then are calculated as rates of the affected population group for each measure evaluated, and then standardized in deviations from mean. Rates for each ZIP code and indicator are subjected to a reidentification risk assessment and top-coded (i.e., winsorized) if tolerance thresholds are exceeded. Principal components analysis is used to derive ranked indices for each ZIP code in Missouri with respect to each CHR domain and subdomain. The ZIP code-level scores are reapportioned to the county level to account for overlapping ZIP code and county boundaries, and compared to CHR results for validity. The ZHR data include more than 100 indicators on health factors and outcomes for each Missouri ZIP code with representative data.

The County Health Rankings & Roadmaps program is a collaboration between the Robert Wood Johnson Foundation and the University of Wisconsin Population Health Institute. CHR&R provides data, evidence, guidance and examples to build awareness of the multiple factors that influence health and connect community leaders working to improve health and equity. The annual County Health Rankings measure vital health factors, including high school graduation rates, obesity, smoking, unemployment, access to healthy foods, the quality of air and water, income inequality, and teen births in nearly every U.S. county, and provide a revealing snapshot of how health is influenced by where we live, learn, work and play. CHR&R offers many pathways for self-directed and peer learning, web-based content, and virtual interactive forums that are designed to accelerate learning and action in communities to help build healthier communities and

FIVE MILES AWAY, WORLDS APART in Kansas City

	64112 SUNSET HILL	64127 WASHINGTON-WEATLEY	DISPARITY FACTOR
OVERALL ZIP HEALTH RANK OUT OF 939	12	933	77.8X
AGE 25+ LESS THAN HIGH SCHOOL EDUCATION	2.8%	27.8%	9.9X
TEEN PREGNANCY PER 1,000	3.4	81.4	24.3X
UNINSURED HOSPITAL VISITS PER 1,000	86.9	660.5	7.6X
MENTAL HEALTH DIAGNOSES PER 1,000	34.0	231.9	6.8X
SUBSTANCE USE DISORDER PER 1,000	6.7	28.4	4.2X
ASSAULT DIAGNOSES PER 1,000	2.0	25.0	12.3X
OBESITY DIAGNOSES PER 1,000	16.5	236.9	14.4X

FOUR MILES AWAY, WORLDS APART in Springfield

	65809 SE SPRINGFIELD	65806 DOWNTOWN	DISPARITY FACTOR
OVERALL ZIP HEALTH RANK OUT OF 939	18	860	47.8X
AGE 25+ LESS THAN HIGH SCHOOL EDUCATION	1.5%	14.3%	9.4X
MEDIAN HOUSEHOLD INCOME	$100,378	$19,457	5.2X
TEEN PREGNANCY PER 1,000	3.7	28.9	7.8X
MEDICAID HOSPITAL VISITS PER 1,000	60.3	464.7	7.7X
SUBSTANCE USE DIAGNOSES PER 1,000	5.7	25.7	4.5X
ASSAULT DIAGNOSES PER 1,000	0.9	9.0	9.7X
MENTAL HEALTH DIAGNOSES PER 1,000	19.1	67.8	3.6X

advance equity. To learn more, visit countyhealthrankings.org.

The Missouri County-Level Study is a periodic survey of the health-related behaviors and attitudes of Missourians ages 18 and older. The survey design is based on questionnaires and methods employed by the Behavioral Risk Factor Surveillance System of the U.S. Centers for Disease Control and Prevention.[iv]

The most recent CLS survey was conducted during 2016 and produced detailed health-related information from approximately 52,000 Missouri adults who were randomly selected to participate in the study via telephone interview. Administered by the University of Missouri Health and Behavioral Risk Research Center, the interviews generated data on the county-specific prevalence of

behavioral risk factors, existing medical conditions, environmental health factors and preventive practices.

The information gathered from residents of all 114 Missouri counties and the City of St. Louis is intended to assist community health stakeholders and researchers with identifying variation in health priorities and correlates at the county level. The study is funded by MFH and conducted in collaboration with the Missouri Department of Health and Senior Services.

Demographic and Socioeconomic data from the U.S. Census Bureau's American Community Survey and other national sources also are available to assist users in characterizing the populations of Missouri counties and ZIP codes.
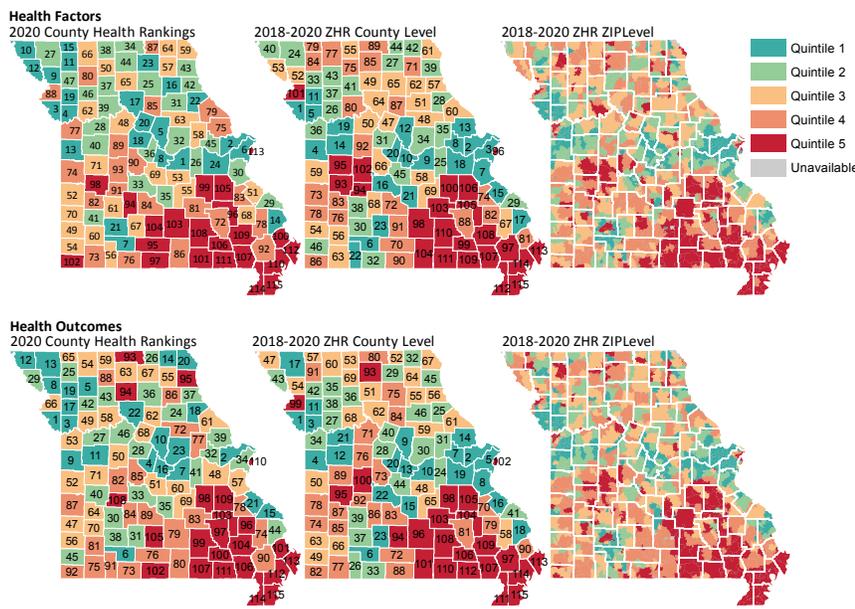
2018-2020 Missouri ZIP Health Ranking Results

The updated 2018-2020 ZHR data are based on more than 40 million inpatient, outpatient and emergency department claims for Missouri residents with discharge dates between Oct. 1, 2017, and Sept. 30, 2020. In addition to hospital claims data, the updated ZHR data draw from five-year estimates from the 2019 American Community Survey of the U.S. Census Bureau.[v] The claims data were scanned for arrays of diagnostic and other administrative codes to identify instances of included health factors and health outcomes, calculated as rates of the population of each ZIP code denominated by ACS data, standardized, and used in regression-weighted principal components analyses to derive index scores for each domain and subdomain as described above.
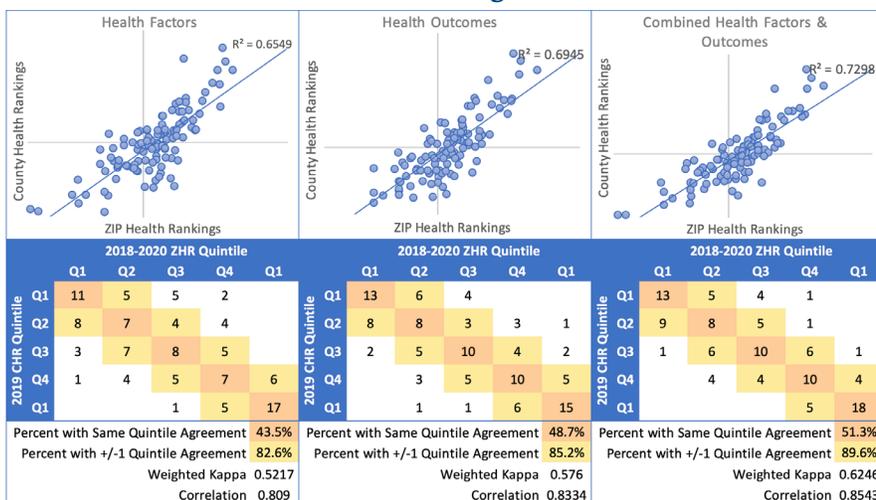
Figure 1 includes maps of health factor and health outcome quintiles and ranks from the 2020 CHR data[vi] compared to the 2018-2020 ZHR data at both the county and ZIP code levels. The ZIP code-level results were reapportioned to the county level using MABLE GeoCorr to compare the ZHR results with the 2020 CHR data.[vii] Across all 114 Missouri counties and St. Louis City, the health factors domain of the two rankings systems shared a Pearson's correlation coefficient of 0.81, with 65.5% of the variance in the ZIP code-derived scores being explained by the CHR scores. For health outcomes, the correlation was 0.83 with an R^2 value of 0.69 (Figure 2).

Evaluating agreement across quintiles between the ZHR and CHR measures resulted in 44% of Missouri counties falling in the same quintile for the health factors domain, and 83% were within one quintile in each measurement construct. For the health outcomes domain, 49% of counties were in the same quintile according to both the CHR and ZHR measures, while 85% were within one quintile (Figure 2).

Overall health rankings were calculated with the mean index scores of the health factors and health outcomes domains. The combined rankings featured the strongest agreement and linear association between the 2020 CHR and reapportioned 2018-2020 ZHR data with a correlation coefficient of 0.85, 51% of counties being ranked in the same quintile and 90% ranked within one quintile (Figure 2). Figure 3 shows the overall ZIP health rankings for 2018-2020 distributed by quintiles for 939 Missouri ZIP codes with sufficient data during the study period.

Figure 1: Missouri ZIP Health Rankings Compared to the Robert Wood Johnson Foundation's County Health Rankings

Figure 2: County-Level Agreement Between 2020 County Health Rankings and 2018-2020 Missouri ZIP Health Rankings

Health Factors

2019 CHR Quintile	2018-2020 ZHR Quintile				
	Q1	Q2	Q3	Q4	Q1
Q1	11	5	5	2	
Q2	8	7	4	4	
Q3	3	7	8	5	
Q4	1	4	5	7	6
Q1			1	5	17

Percent with Same Quintile Agreement	43.5%
Percent with +/-1 Quintile Agreement	82.6%
Weighted Kappa	0.5217
Correlation	0.809

Health Outcomes

2019 CHR Quintile	2018-2020 ZHR Quintile				
	Q1	Q2	Q3	Q4	Q1
Q1	13	6	4		
Q2	8	8	3	3	1
Q3	2	5	10	4	2
Q4		3	5	10	5
Q1		1	1	6	15

Percent with Same Quintile Agreement	48.7%
Percent with +/-1 Quintile Agreement	85.2%
Weighted Kappa	0.576
Correlation	0.8334

Combined Health Factors & Outcomes

2019 CHR Quintile	2018-2020 ZHR Quintile				
	Q1	Q2	Q3	Q4	Q1
Q1	13	5	4	1	
Q2	9	8	5	1	
Q3	1	6	10	6	1
Q4		4	4	10	4
Q1				5	18

Percent with Same Quintile Agreement	51.3%
Percent with +/-1 Quintile Agreement	89.6%
Weighted Kappa	0.6246
Correlation	0.8543

THIRTEEN MILES AWAY, WORLDS APART in Bollinger County

	63760 LEOPOLD	63787 ZALMA	DISPARITY FACTOR
OVERALL ZIP HEALTH RANK OUT OF 939	73	811	11.1X
CHILDHOOD POVERTY RATE	1.5%	34.5%	23.2X
MULTILINGUAL HOUSEHOLDS	0.5%	3.1%	6.7X
UNEMPLOYMENT	0.7%	15.4%	20.7X
MEDIAN HOME VALUE	$195,200	$80,100	2.4X
SKIN CANCER DIAGNOSES PER 1,000	2.5	6.9	2.7X
LUNG CANCER DIAGNOSES PER 1,000	12.6	38.5	3.04X
COPD DIAGNOSES PER 1,000	58.7	155.7	2.7X

13 MILES APART

Figure 3: 2018-2020 Overall Missouri ZIP Health Rankings, Combined Health Factors and Health Outcomes
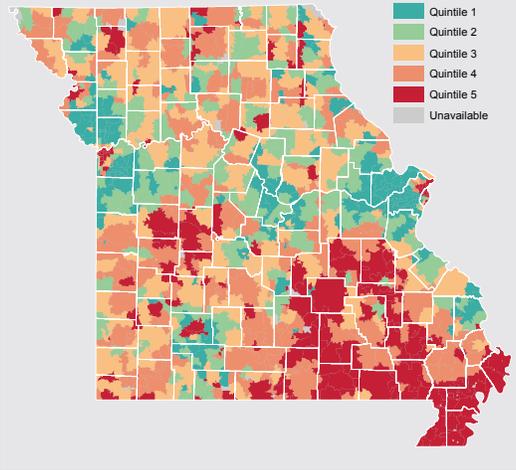
Table 2: Top- and Bottom-Five Ranked ZIP Codes: 2018-2020 Missouri ZIP Health Rankings

ZIP Code	County	Top Health Factor (+/- Standard Deviations from State Average)	Top Social Factor (+/- Standard Deviations from State Average)	Rank out of 939
63073 Saint Albans	Franklin	350 High Risk Mammographies per 1,000 (3.17)	$244,205 Median Household Income (9.8)	1
63124 Ladue	St. Louis	245.1 High Risk Mammographies per 1,000 (1.5)	$791,300 Median Home Value (9.4)	2
63131 Des Peres	St. Louis	268.2 High Risk Mammographies per 1,000 (1.9)	$589,500 Median Home Value (6.5)	3
63005 Chesterfield	St. Louis	66.4 Inpatient Visits per 1,000 (-1.7)	-6.4 Socioeconomic Deprivation Index (-6.4)	4
63105 Clayton	St. Louis	14.6 Obesity per 1,000 (-1.7)	90.0% College Educated (2.8)	5
63107 St. Louis-Fairgrounds	St. Louis City	154.7 Asthma per 1,000 (6.2)	24 Assaults per 1,000 (3.6)	935
64128 Kansas City-Palestine East	Jackson	221.5 Asthma per 1,000 (5.9)	27.33 Assaults per 1,000 (5.7)	936
63851 Hayti	Pemiscot	44.8 Substance Use Disorder per 1,000 (6.1)	21.9% One Parent Households (2.8)	937
65479 Hartshorn	Texas	217.10 Opioid Use Disorder per 1,000 (6.8)	337.7 Inpatient Visits per 1,000 (5.4)	938
63955 Oxly	Ripley	469.6 Inpatient Visits per 1,000 (10)	75.3% Unemployed (8.8)	939

Conclusions

Location has a profound impact on health. The ability to examine targeted health data for a specific county, and the ZIP codes contained therein, enables health care providers and other community stakeholders to identify issues and take action to help create and sustain a healthier Missouri. exploreMOhealth is designed to facilitate the exploration of unique hyperlocal health data for a better understanding of the factors influencing outcomes across Missouri communities. Table 2 features the five most- and least-healthy ZIP codes identified in the latest Missouri ZIP Health Rankings. For more insights into the health factors and health outcomes driving the results for these, and all ZIP codes in Missouri, visit exploreMOhealth.org. Questions, comments and feedback on the site or data are welcome at exploreMOhealth@mhanet.com.

Suggested Citation

References

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