

Kansas ZIP Code Health Rankings



Population health is defined as strategies that link clinical and non-clinical approaches (such as housing or access to food) to improve the health of a group of individuals, including the distribution of such outcomes within the group. These groups can be geographically defined (e.g., ZIP code or city), or they may share some characteristics such as age or income level.

SEPTEMBER 2022 • Miles Away, Worlds Apart:
Assessing Community Health Needs with Kansas ZIP Health Rankings



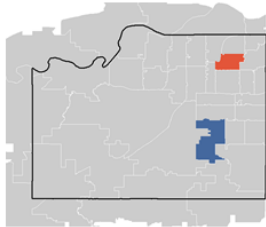
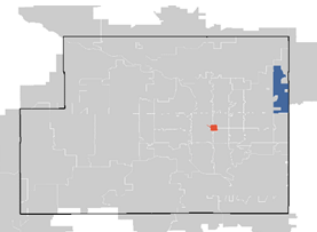
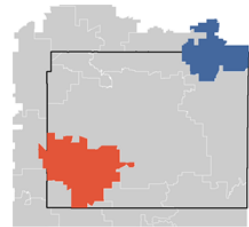
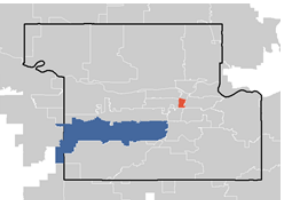
Executive Summary

The places where we live, work, learn and play affect our health. Communities throughout Kansas often are separated by a distance of a few miles, but they are worlds apart in terms of upstream health factors like tobacco use that result in downstream health outcomes including poor quality of life and premature mortality (Figure 1). The more that is known about these places, the better hospitals, clinicians and community-based partners can identify and address the influence of social factors on health. Assessing hundreds of community health and social factors at the ZIP code-level within counties across Kansas is a powerful strategy for optimizing the allocation of scarce resources intended to maximize the effectiveness of community health improvement efforts. In addition to the ZIP code data in this report, community health-related statistical data, local resources and additional information to understand the health of your community can be found at [KansasHealthMatters.org](https://www.kansashealthmatters.org).

Powering Population Health with Data

Population health improvement requires communitywide partnerships to address social, economic, environmental, clinical and behavioral factors that affect health and impact health outcomes. In their annual report, Americas Health Rankings now publishes statewide performance on each of five categories rather than just one overall score. In 1991, Kansas was ranked the eighth healthiest state. In 2021, Kansas ranked between 24th and 39th in the five categories: social and economic factors, physical environment, clinical care, behaviors and health outcomes. As a state, our strengths include environmental and social factors such as air quality and lower childhood poverty; however, our limitations include constrained access to health care providers and high rates of physical inactivity and obesity. Understanding how these strengths and limitations affect Kansas communities differently is a critical step toward improving population health.

Figure 1: Top Four Most Variant Kansas Counties in Range of ZIP Health Rankings and Largest Social and Health-Related Disparities Detected in Standardized Census and Hospital Discharge Data Between Top and Bottom-Ranked ZIP Codes

Seven Miles Away, Worlds Apart in Johnson County (2021 CHR&R Rankings: Health Outcomes = 1st, Health Factors = 1st out of 105)		66221 Overland Park	66204 Overland Park	Disparity Factor
	Overall ZIP Health Ranking out of 667	1	363	363x
	Teen Pregnancy Hospital Visits per 1,000	0.09	12.71	135.5x
	Less Than High School Education	1%	6%	7.8x
	Dental Caries Hospital Visits per 1,000	0.61	3.09	5.1x
	Medicaid Hospital Visits per 1,000	49.77	246.05	4.9x
	Childhood Poverty	3%	14%	4.8x
	Assault Hospital Visits per 1,000	0.70	2.98	4.3x
	Substance Use Disorder Hospital Visits per 1,000	1.86	6.55	3.5x
Seven Miles Away, Worlds Apart in Sedgwick County (2021 CHR&R Rankings: Health Outcomes = 71th, Health Factors = 55th out of 105)		67228 Wichita-East	67202 Wichita-Downtown	Disparity Factor
	Overall ZIP Health Ranking out of 667	7	665	95x
	COPD Hospital Visits per 1,000	1.92	96.22	50.1x
	Smoking Hospital Visits per 1,000	19.76	595.02	30.1x
	Uninsured Hospital Visits per 1,000	10.84	317.18	29.3x
	Cervical Cancer Hospital Visits per 1,000	0.28	7.28	26x
	Mental Health Hospital Visits per 1,000	2.74	68.21	24.9x
	Sexually Transmitted Infections Hospital Visits per 1,000	1.65	33.16	20.1x
	Preventable Emergency Visits Hospital Visits per 1,000	21.44	430.38	20.1x
Fifteen Miles Away, Worlds Apart in Miami County (2019 CHR&R Rankings: Health Outcomes = 10th, Health Factors = 19th out of 105)		66013 Bucyrus	66064 Osawatomie	Disparity Factor
	Overall ZIP Health Ranking out of 667	11	580	52.7x
	Substance Use Disorder Hospital Visits per 1,000	0.37	4.37	11.8x
	Medicaid Hospital Visits Hospital Visits per 1,000	60.98	332.45	5.5x
	Teen Pregnancy Hospital Visits per 1,000	2.58	11.63	4.5x
	Cervical Cancer Hospital Visits per 1,000	6.54	21.93	3.4x
	Assault Hospital Visits per 1,000	1.48	4.87	3.3x
	One Parent Households	2%	7%	3.2x
	Dental Caries Hospital Visits per 1,000	1.29	3.76	2.9x
Three Miles Away, Worlds Apart in Shawnee County (2021 CHR&R Rankings: Health Outcomes = 64th, Health Factors = 47th out of 105)		66610 Topeka-SW	66612 Monroe/East Topeka	Disparity Factor
	Overall ZIP Health Ranking out of 667	22	667	30.3x
	Teen Pregnancy Hospital Visits per 1,000	2.94	85.71	29.1x
	Substance Use Disorder Hospital Visits per 1,000	0.66	14.54	22.1x
	Medicaid Hospital Visits per 1,000	40.88	625.18	15.3x
	Vacant Housing	1%	15%	13.7x
	Assault Hospital Visits per 1,000	1.20	14.54	12.2x
	Premature Hospital Deaths (Before Age 75) per 1,000	0.48	4.96	10.4x
	Less Than High School Education	1%	14%	10.2x

Source: County Health Rankings and Roadmaps and Kansas Hospital Association, 2022

Data on health and social determinants are widely available at the county level. However, as geographic units, counties often are too large to effectively identify and pinpoint population health challenges to inform targeted community health improvement interventions. As a result, increased attention is being given to geographic variation in health at the sub-county level.

The Affordable Care Act expanded emphasis on population health, transitioning the model of health care beyond the hospital’s “four walls” and into communities where patients live, work, learn and play. As a result, providers are increasingly focusing on upstream social, environmental and contextual determinants of health that often result in poor physical and emotional downstream health outcomes.

The concept of an individual’s ZIP code being a more powerful predictor of health than their genetic code is gaining acceptance among the medical community. The focus on population health also is leading to an increased demand for meaningful community-based health and social factors data. The shift from volume to value is expected to continue; and as a result, the demand for population health data is expected to grow.

Community Health Needs Assessments are perhaps the most common strategy hospitals use to identify the upstream clinical and social factors affecting downstream health outcomes in their service areas. CHNAs provide hospitals an opportunity to identify, form and strengthen relationships with other community stakeholders for the purpose of improving population health. The assessments are based in part on the evaluation of data that identify pressing health and social factors, such as rates of chronic disease and poverty that contribute to community vibrancy. Oftentimes, a common barrier to the successful identification of a community's most acute need is the lack of geographic data granular enough to identify localized areas in most need of intervention. Typically, health-related data are only available at the county level which, across 105 Kansas counties, range in population size from more than 600,000 in Johnson County, to approximately 1,200 in Greeley County.

A commonly used source of secondary

data for hospital CHNAs is the Robert Wood Johnson Foundation's County Health Rankings & Roadmaps, developed by researchers at the University of Wisconsin Public Health Institute.

County Health Rankings and Roadmaps offers a robust set of measures and data on social, environmental and clinical health factors for counties with sufficient data across the U.S. The data are gathered from multiple sources and grouped into two domains — health factors and health outcomes. All health factors and health outcomes measures are standardized within each state, weighted, and then converted into indices to rank each county for comparative purposes within the same state. The population health model underlying the County Health Rankings and Roadmaps measurement construct suggests that local policies and programs influence health factors within populations, such as rates of behavioral characteristics and socioeconomic conditions. These, in turn, result in differences in health

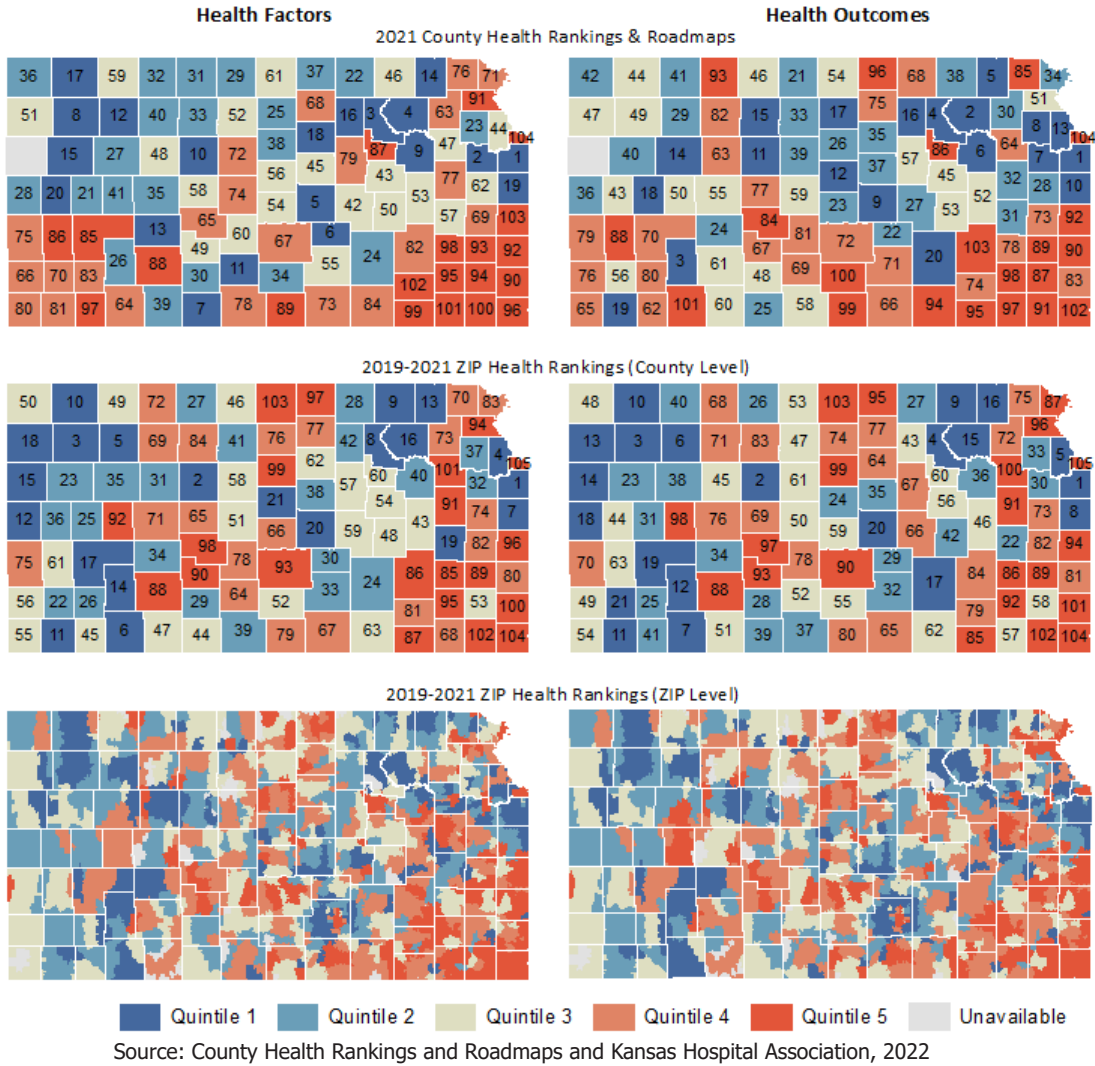
outcomes, which are measured by mortality and morbidity, or how long and how well individuals live.

In support of community health improvement efforts, the Kansas Health Institute annually produces individual county profiles that include a five-year trend of County Health Rankings data and the measures with the greatest impact on the rankings in each county. The [2022 county health profiles](#) are available on KHI's webpage.

The lack of availability of health data at the sub-county level reduces opportunities to target scarce interventional resources to communities with the greatest need. A common concern for hospitals is basing their CHNAs solely on county-level data because in smaller



Figure 2: Kansas ZIP Health Rankings Compared to the Robert Wood Johnson Foundation's 2021 County Health Rankings and Roadmaps



communities, county-level data may be less likely to produce measurable differences following a community health improvement intervention.

With these issues in mind, the Kansas Hospital Association has worked to expand the availability of sub-county-level community health data to improve health outcomes in Kansas by informing health improvement initiatives and the targeted allocation of scarce population health resources. The Kansas ZIP Health Rankings initiative uses hospital and census-based data at the ZIP code-level to evaluate measures across domains and

subdomains included in the County Health Rankings and Roadmaps model of population health.

Health Outcomes

- Length of life
- Quality of life

Health Factors

- Health behaviors
- Clinical care
- Socioeconomic factors
- Physical environment

Data and Methods: The Kansas County Health Rankings data are based on a model of community health that

emphasizes the many factors that influence how long and how well we live. The rankings use more than 30 measures that help communities understand how healthy their residents are today (health outcomes) and what will impact their health in the future (health factors).

The County Health Rankings provide annual data and ranked indices on the overall health outcomes and health factors domains in addition to the contributing subdomains of length of life, quality of life, health behaviors, clinical care, socioeconomic factors, and the physical environment for all

105 counties in Kansas.

The Kansas ZIP Health Rankings are designed to assist hospitals and community health stakeholders identify high-risk communities within individual counties to optimize the effectiveness of community health improvement interventions. The ZIP Health Rankings 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 and Roadmaps model of population health.

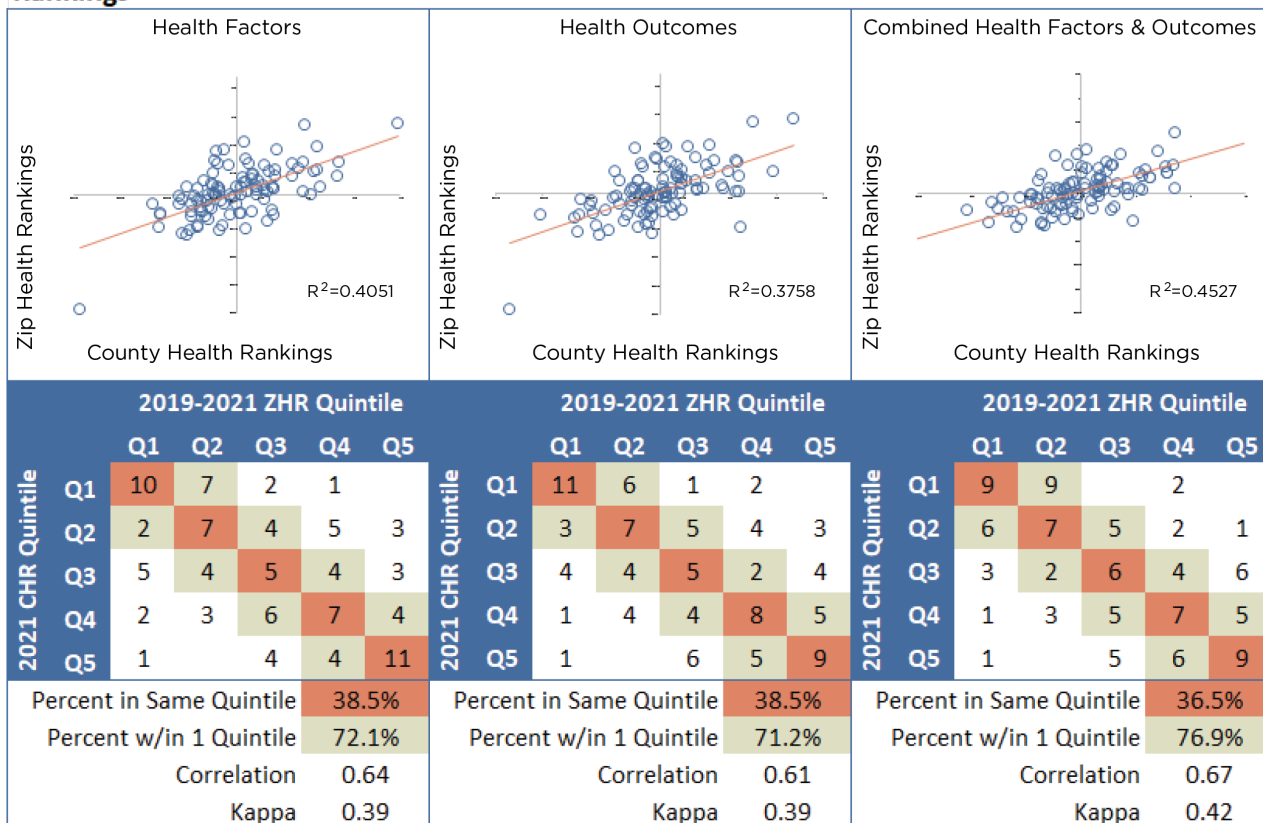
The project was funded by The Robert Wood Johnson Foundation through a 2015 County Health Rankings Research Grant award.

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.

The methodological approach for the ZIP Health Rankings is based on fitting hospital discharge and social factor data to each of the County Health Rankings and Roadmaps domains and subdomains. The health outcomes domain consists of two subdomains including quality of life (morbidity) and length of life (mortality). The health factors



Figure 3: County-Level Agreement Between County Health Rankings and Kansas ZIP Health Rankings



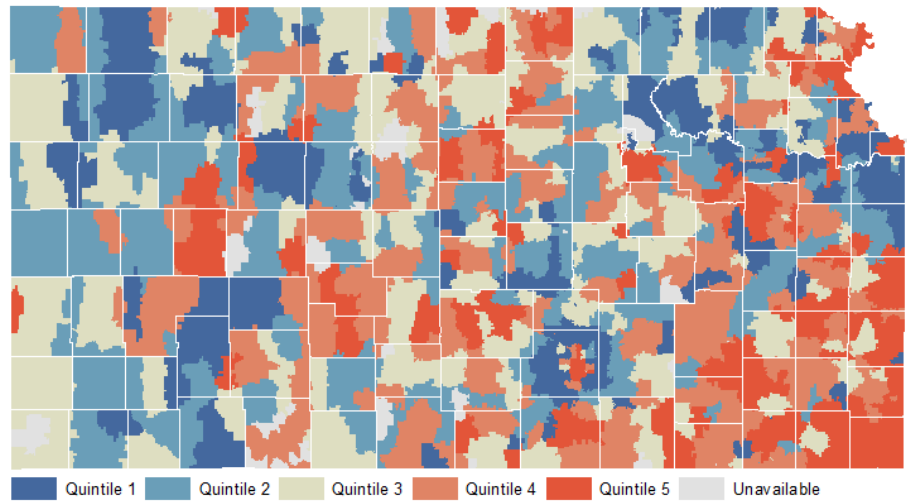
Source: County Health Rankings and Roadmaps and Kansas Hospital Association, 2022

domain that contributes to differences in morbidity and mortality consist of four subdomains including health behaviors, social determinants, clinical care and environmental factors.

Hospital inpatient and emergency department 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 are then used to calculate rates of the affected population group for each measure evaluated, and then standardized in units of deviation from mean (z-scores). Rates for each ZIP code and indicator are subjected to a re-identification risk assessment and top-coding (winsorization) is applied if tolerance thresholds are exceeded.

Principal components analysis is used to derive ranked indices for each ZIP code in Kansas with respect to each County Health Rankings and Roadmaps 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 County Health Rankings and

Figure 4: 2019-2021 Overall Kansas ZIP Health Rankings, Combined Health Factors and Health Outcomes Scores



Source: Kansas Hospital Association

Source: Kansas Hospital Association, 2022

Roadmaps results for validity testing. The ZIP Health Rankings data include more than 100 indicators on health factors and outcomes for each Kansas ZIP code with representative data.

Results: The 2019-2021 Zip Health Rankings data are based on 13.6 million inpatient, outpatient and emergency department claims from Kansas and Missouri hospitals for Kansas residents with discharge dates between Oct. 1, 2018 and Sept. 30, 2021. In addition to hospital claims data, the ZIP Health

Rankings data draw from five-year estimates from the 2020 American Community Survey of the U.S. Census Bureau. 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 American Community Survey data, standardized and used in regression-weighted principal components analyses to derive indexed scores for each domain



and subdomain described above.

Figure 2 includes maps of health factor and health outcome quintiles and ranks from the 2021 County Health Rankings and Roadmaps data compared to the 2019-2021 ZIP Health Rankings data at both the county and ZIP code levels. The ZIP code-level results were reapportioned to the county level using MABLE GeoCorr to account for overlapping ZIP and county boundaries and compared to the 2021 County Health Rankings and Roadmaps results for validity testing.

Across all 105 Kansas counties, the health factors domain of the two rankings systems shared a Pearson's correlation coefficient of 0.64, with 40.5 percent of the variance in the ZIP-derived scores being explained by the County Health Rankings and Roadmaps scores. For health outcomes, the correlation was 0.61 with an R2 value of 0.376 (Figure 3).

Evaluating agreement across quintiles between the ZIP Health Rankings and County Health Rankings and

Table 1: Top and Bottom Five Ranked ZIP Codes in Kansas: 2019-2021 ZIP Health Rankings

ZIP Code	2020 Population	Health Factors	Health Outcomes	Overall Rank out of 667
66221, Overland Park in Johnson County	22,379	1	1	1
66224, Overland Park in Johnson County	56,117	2	2	2
66211, Leawood in Johnson County	1,965	3	3	3
66220, Lenexa in Johnson County	23,790	4	5	4
66206, Leawood in Johnson County	20,467	5	4	5
66607, East End/East Topeka in Shawnee County	17,626	663	663	663
67214, Northeast Wichita in Sedgwick County	528	664	664	664
67202, Downton Wichita in Sedgwick County	273	665	665	665
66603, East Topeka in Shawnee County	6,329	666	666	666
66612, Monroe/East Topeka in Shawnee County	3,693	667	667	667

Source: County Health Rankings and Roadmaps and Kansas Hospital Association, 2022

Roadmaps measures resulted in 38.5 percent of Kansas counties falling in the same quintile for the health factors domain, and 72.1 percent were within one quintile in each measurement construct. For the health outcomes domain, 38.5 percent of counties were in the same quintile according to both the County Health Rankings and Roadmaps and ZIP Health Rankings measures, while 71.2 percent were within one quintile (Figure 3).

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 2021 County Health Rankings and Roadmaps and reapportioned 2019-2021 ZIP Health Rankings data with a correlation coefficient of 0.67, 36.5 percent of counties being ranked in the same quintile and 76.9 percent ranked within one quintile (Figure 3). Figure 4 shows the overall ZIP health rankings for 2019-2021 distributed by quintiles for 667 Kansas ZIP codes with sufficient data during the study period.

Conclusion

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 Kansas.

The Kansas ZIP Health Rankings data are designed to facilitate the exploration of unique hyperlocal health data for a better understanding of the factors influencing outcomes across Kansas communities. Table 1 contains the five healthiest and least-healthy ZIP codes identified by the Kansas ZIP Health Rankings Project.

For additional information on the Kansas ZIP Health Rankings data, contact [Sally Othmer](mailto:sothmer@kha-net.org) at sothmer@kha-net.org.



1. Kindig, D., Stoddart, G. What is Population Health? American Journal of Public Health. March 2003. Vol. 93 No. 3.
2. United Health Foundation. America's Health Rankings Annual Report 2021.
3. Castrucci BC, Rhoades EK, Leider JP, Hearne S. What gets measured gets done: an assessment of local data uses and needs in large urban health departments. J Public Health Management and Practice. 2015;21(1 suppl):S38-S48.
4. Manchada, R. What makes us get sick? Look upstream. TED Talk.
5. U.S. Census Bureau, Population Division. 2020 Annual Estimates of the Resident Population for Counties in Kansas: April 1, 2020 to July 1, 2021 (CO-EST2021-POP-20), March 2022.
6. County Health Rankings. 2021.
7. County Health Rankings & Roadmaps. University of Wisconsin Population Health Institute. Robert Wood Johnson Foundation. County Health Rankings Model.
8. County Health Rankings & Roadmaps. University of Wisconsin Population Health Institute. Robert Wood Johnson Foundation. Our Methods.
9. Nagasako, E., Waterman, B., Reidhead, M., Lian, M., Gehlert, S. Measuring Subcounty Differences in Population Health Using Hospital and Census-Derived Data Sets: The Missouri ZIP Health Rankings Project. J Public Health Management and Practice. July/August 2018. doi: 10.1097/PHH.0000000000000578.
10. United States Census Bureau. 2020 American Community Survey.
11. County Health Rankings & Roadmaps. University of Wisconsin Population Health Institute. Robert Wood Johnson Foundation. 2021 data for Kansas.
12. Missouri Census Data Center. Geocorr 2018: Geographic Correspondence Engine.
13. Vuik, S., Siegel, S. & Darzi, A. (2017, March 17). How should we measure the distribution of health in a population?

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