



FULL REPORT



H.E.A.T.

Health Equity Action Transformation



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Health Equity Action Transformation

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INTRODUCTION

TO THE H.E.A.T. REPORT



For the past five years, Wyandotte County, Kansas, has consistently ranked last of the state's 105 counties for social determinants of health, according to the annual County Health Rankings published by the Robert Woods Foundation.

The **Health Equity Action Transformation (H.E.A.T.) project** is the culmination of curiosity and commitment of the many partners who have worked tirelessly over the past three years to answer the question “why”, and to provide a multi-view perspective of the health opportunities that exist (and where they do not exist) for the residents of Wyandotte County.

Communities Creating Opportunity and PICO National Network have each provided project management prior to the Community Health Council of Wyandotte County's leadership of H.E.A.T., while the University of Kansas Medical Center and Children's Mercy Hospital provided valuable data on select groups of their respective hospitals' patients. The Unified Government of Wyandotte County provided key geospatial data, while the University of Kansas School of Architecture, Design and Planning provided historical maps of Wyandotte County, which were key in tying the county's past with its present state.

Our philanthropic partners at the REACH Healthcare Foundation, Wyandotte Health Foundation and the Kansas Health Foundation have supported this project since its inception with financing, and their willingness to contribute strategic insight proved invaluable to project managers.

The analysis of data and the ensuing report is the work of the Kirwan Institute for the Study of Race and Ethnicity at The Ohio State University.



EXECUTIVE SUMMARY



Good health results from the interplay of several factors, only some of which are within an individual's control. By some estimates, what happens in the medical clinic provides only one-fifth of the total influence over health outcomes. Personal lifestyle choices- whether to smoke or consumer alcohol, whether to exercise or manage one's weight- comprise another quarter of influence. The remainder- more than one-half of what determines a person's health outcomes- results from influences in the social and built environments. These external factors are called the Social Determinants of Health (SDoH).

This report employs nearly 50 maps and data from numerous sources to explore many of the social determinants of health in Kansas City, KS and Wyandotte County and their distribution relative to the county's vulnerable populations. The report documents the uneven distribution of health outcomes across the county, demonstrating the high degree of geographic overlap between poor health outcomes and neighborhoods with limited resources. Case studies using patient data from two area healthcare providers identify neighborhoods with high levels of emergency room utilization and hospital returns- both indicators of a need for enhanced, neighborhood-level health care and social services intervention.

Historical maps and documents provide evidence of long-term neighborhood disinvestment rooted in discriminatory housing policy, spanning decades. Not surprisingly, these historically disinvested neighborhoods are the same areas that today experience the worst health outcomes. Policies and practices that extend beyond health interventions and reflect a commitment to health equity and "health in all policies" could go far in reversing many of these health disparities.

The report concludes with recommendations for further research and both short- and long-term, cross-sector initiatives to improve the health of Kansas City and Wyandotte County's residents.

KEY FINDINGS

Vulnerable Populations

Following the lead of the REACH/MARC 2015 Regional Health Assessment for Greater Kansas City, which identifies several vulnerable populations at the regional and county level, this report maps vulnerable populations in Wyandotte County by Census Tract. These vulnerabilities reflect the social determinants of health, and each one presents challenges for individual and public health. The highest concentrations of vulnerable populations are found in the following neighborhoods (American Community Survey, 5-Year Estimates, 2010-2-14, unless otherwise noted):

- Age: (A) Children under 18: portions of Northeast, Kensington and Argentine, with lower concentrations spreading west through Coronado. (B) Adults 65 and over: Quindaro Bluffs, Bethel-Wellborn, Victory Hills and Coronado, with smaller numbers in Argentine and Bonner-Loring.
- Poverty: Highest rates in Northeast Riverview, Coronado, Argentine and Rosedale; elevated rates in Northwest, Kensington and Armourdale.
- Race- African American: Northeast, Northwest, and extending west through Bethel-Wellborn; smaller communities in Shawnee Heights.
- Ethnicity- Hispanic/Latino: Kensington, Riverview, Armourdale, Shawnee Heights and Argentine (northern).
- Foreign-born (Including SE Asian): Armourdale, Riverview and Kensington, extending north into Northwest.
- Linguistic Isolation: Kensington, Riverview, Armourdale and Shawnee Heights, with portions of Rosedale, Argentine and Northeast.
- Less than a High School Diploma: Kensington, Riverview and Northeast.



- Unemployment: Northeast, Northwest, Riverview and Victory Hills.
- Persons with Disabilities: Northeast, Northwest and Riverview; slightly lower in Victory Hills.
- Persons Lacking Health Insurance (Overall and Children 17 and Under): Northeast, Riverview, Kensington, Armourdale, Argentine, Shawnee Heights and Bethel-Welborn.
- Prison Admissions/ Releases (2008 Justice Atlas; not included in the 2015 Health Assessment): Northeast, Northwest, Quindaro Bluffs, Bethel-Welborn, Coronado, Kensington, and Riverview.

The high degree of geographic overlap of many of these vulnerabilities confirms that these vulnerable “populations” are, in large part, the same individuals and families facing multiple challenges with cumulative, detrimental effects on health and well-being.

Social Determinants and the Kirwan Institute’s Opportunity Index

The Kirwan Institute pioneered the use of Opportunity Mapping to describe the geographic distribution of conditions that enable life success. Opportunity Maps for the Kansas City metropolitan area and Wyandotte County, which combine 19 indicators that reflect many of the Healthy People 2020 social determinants of health into a single index, reveal:

- Compared to the rest of the Kansas City Metropolitan area, Wyandotte County- and in particular the eastern half of the county- ranks Low or Very Low on Kirwan’s Opportunity Index.
- In Wyandotte County, Low and Very Low Opportunity census tracts cluster predominantly in the Northeast, Northwest, Quindaro Bluffs, Riverview, Coronado and Bethel-Welborn neighborhoods. These neighborhoods largely coincide with neighborhoods in northeastern Wyandotte County where vulnerable populations reside.
- To the extent that the Opportunity Maps reflects the social determinants of health, areas of Low and Very Low Opportunity would be expected to exhibit worse health outcomes than the rest of the city and county.

Wyandotte County Health Outcomes: Births, Deaths and Patient Case Studies

Data on births and death for the years 2009-2013, obtained from the Wyandotte County-Kansas City Unified Government Health Department, provide illuminating benchmarks to delineate the effects of growing up, and growing old, in less than ideal living conditions. Infant mortality and, to a lesser extent, preterm and low-birthweight births are recognized as sensitive indicators of a community’s overall health. Clustered areas characterized by high rates of heart disease and cancer point to cumulative stressors beyond genetics and personal choice as detriments to good health and long life.

Births and Deaths

- **Infant Mortality:** A baby’s death before her first birthday is a devastating tragedy for the family and a warning sign to the community. Because the number of infant deaths is low relative to the number of live births, infant mortality rate (IMR) calculations were performed on areas comprising census tracts aggregated according to their predominant race/ethnicity, to ensure adequate sample sizes to calculate stable rates. Predominantly Black neighborhoods exhibited the highest IMR of 11.6 infant deaths per 1,000 live births, more than double the IMR of 4.9 calculated for predominantly White neighborhoods. Predominantly Hispanic neighborhoods exhibited an IMR between these two extremes of 8.2.
- **Low Birthweight (LBW) and Preterm (PT) Births:** Medical and technological advancements have increased the survivability for babies born too small or too young. Nevertheless, higher incidences of either condition can point to areas at higher risk for infant death and higher rates of maternal infections, nutritional deficiencies, or smoking and alcohol use- conditions and behaviors that can themselves result from living in a high-stress, physically challenging environment. The highest rates of LBW and PT births (9.7% and 9.6%, respectively) were calculated for Wyandotte County’s predominantly Black neighborhoods. Lower rates were observed in neighborhoods what



were predominantly Hispanic (LBW, 8.1%; PT 8.5%) and predominantly White (LBW, 7.5%; PT, 8.5%)

- **Average Age at Death:** The Unified Government Public Health Department calculated average age at death, as recorded on individual death certificates, for persons over age 20 in each Wyandotte County census tract with a population over 100. Tract-level averages for ages at death range from a low of 59 years to a high of 80 years- a span of 21 years. Of the 15 tracts with an average death below 65 years, all but two are located in the Kensington, Riverview, Northwest, Northeast, Armourdale and Rosedale neighborhoods.
- **Major Causes of Death:** Mortality rates due to heart disease and cancer were calculated at the census tract level for Wyandotte County. Tracts with the highest rates of death due to heart disease are located in Bethel-Welborn, Northeast, Northwest and Riverview neighborhoods; higher than county-average rates occur in Quindaro Bluffs, Victory Hills, Coronado, Edwardsville and Muncie-Stony Point. Tracts with the highest rates of death due to cancer are located in Northeast and Riverview, adjacent to areas zoned for heavy industry; Higher than county-average rates occur in Coronado, Victory Hills, Argentine, Morris and the southeast quarter of I-435 West.

Patient Encounter Record Case Studies

Two Wyandotte County area health care systems- Children's Mercy Hospital (CMH) and the University of Kansas Medical Center (KUMed)- provided limited sets of patient encounter records for Wyandotte County patient groups of concern to each system. KUMed supplied encounter records for mostly adult emergency department returns and readmissions, the rates of which are important quality control measures influencing reimbursements for care. CMH shared data on patient visits to their pediatric emergency rooms. Mapping these patients' home locations allows an analysis of the neighborhood conditions in which they live and, therefore, the social determinants bearing on their health.

- Both patient groups were concentrated in the Riverview and Kensington neighborhoods. More sophisticated mapping analysis revealed additional, secondary clusters of patients in neighborhoods to the north and west as well as additional clusters of patients in Shawnee Heights and Argentine.
- About 75% of these patients of both health care systems reside within a 10-minute drive of both system's emergency departments. However, large percentages of households within these driving distances lack access to an automobile, suggesting that a lack of transportation may be an impediment to accessing care.
- CMH patients treated for ambulatory care sensitive conditions (ACSCs) clustered in Kensington, Riverview, Armourdale and Shawnee Heights. ACSCs- conditions for which an ED visit may not have been needed, had the condition been properly managed- are recognized in the literature as an indicator of lack of access to routine medical care.

Historical Disinvestment and the Creation of Health Equity Hotspots

Today's built environment is not a natural landscape. It resulted from the activity of people building streets, bridges, houses, stores, hospitals, churches, factories and all the other structures where community happens. Policy tools and real estate practices developed in the last century to manage growth and sanitation in cities also presented opportunities for discrimination in housing. This report examines the impact of two of these: home refinancing patterns established in the 1930's by the Federal Home Owners' Loan Corporation (HOLC) and reinforces through subsequent disinvestment in "redlined" neighborhoods, and municipal zoning.

- The Home Owners' Loan Corporation (HOLC) was created by the federal government during the Great Depression to provide loans and mortgage insurance to homeowners struggling to keep their home. HOLC assessors ranked neighborhoods on a scale of increasing mortgage default risk from A ("Desirable") to D ("Hazardous"). D-rated areas on the HOLC maps were colored red; they were "redlined" for home investment. Nearly all of Kansas City, KS, as it existed at that time, was rated C ("Declining") for D, making home loans difficult or impossible to obtain.



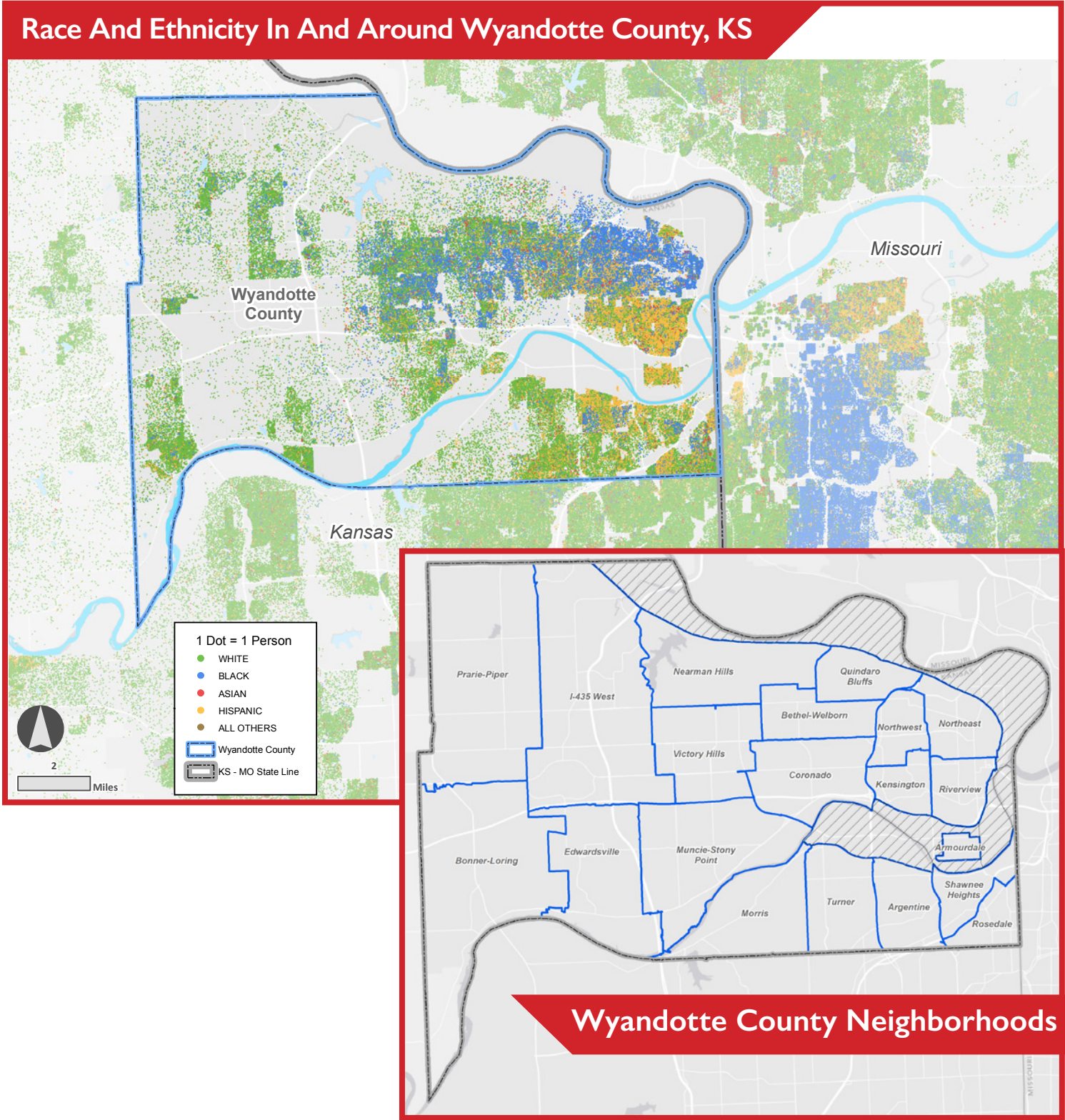
- The assessor's notes and forms on which the HOLC maps were based-including the notes and maps for Kansas City- were internal documents, not meant for public release. They contain unfiltered language that confirms the racial criteria used to assign neighborhood ratings. In the Kansas City assessor notes, the presence of "Negroes" in a neighborhood all but guaranteed a D-rating.
- Subsequent decades of disinvestment in C- and D-rated neighborhoods resulted in large swaths of poor housing stock where communities of color remain concentrated today.
- The depressed nature of housing stock in central Kansas City and Wyandotte County creates conditions leading directly to poor health outcomes. For example, nearly half of the county's residential parcels, through a combination of age and low assessed value, hold the potential for lead poisoning risk due to the presence of lead-based paint. Poorly maintained housing also potentially harbors asthma triggers like mold and infestations of insects and vermin.
- Extremely low rates of mortgage originations in central Kansas City compared to the rest of Wyandotte County reflect a continuation of minimal housing investment.
- Depressed housing stock is also located in proximity to areas near the Kansas and Missouri Rivers that are municipally zoned for heavy industry use, presenting health risks due to potential toxic exposures. In fact, two of the Census Tracts closest to these industrially zoned areas have the highest cancer death rates in Wyandotte County. As home to populations that constitute federally protected classes (minorities and low-income individuals), several of these neighborhoods may qualify as Environmental Justice populations.



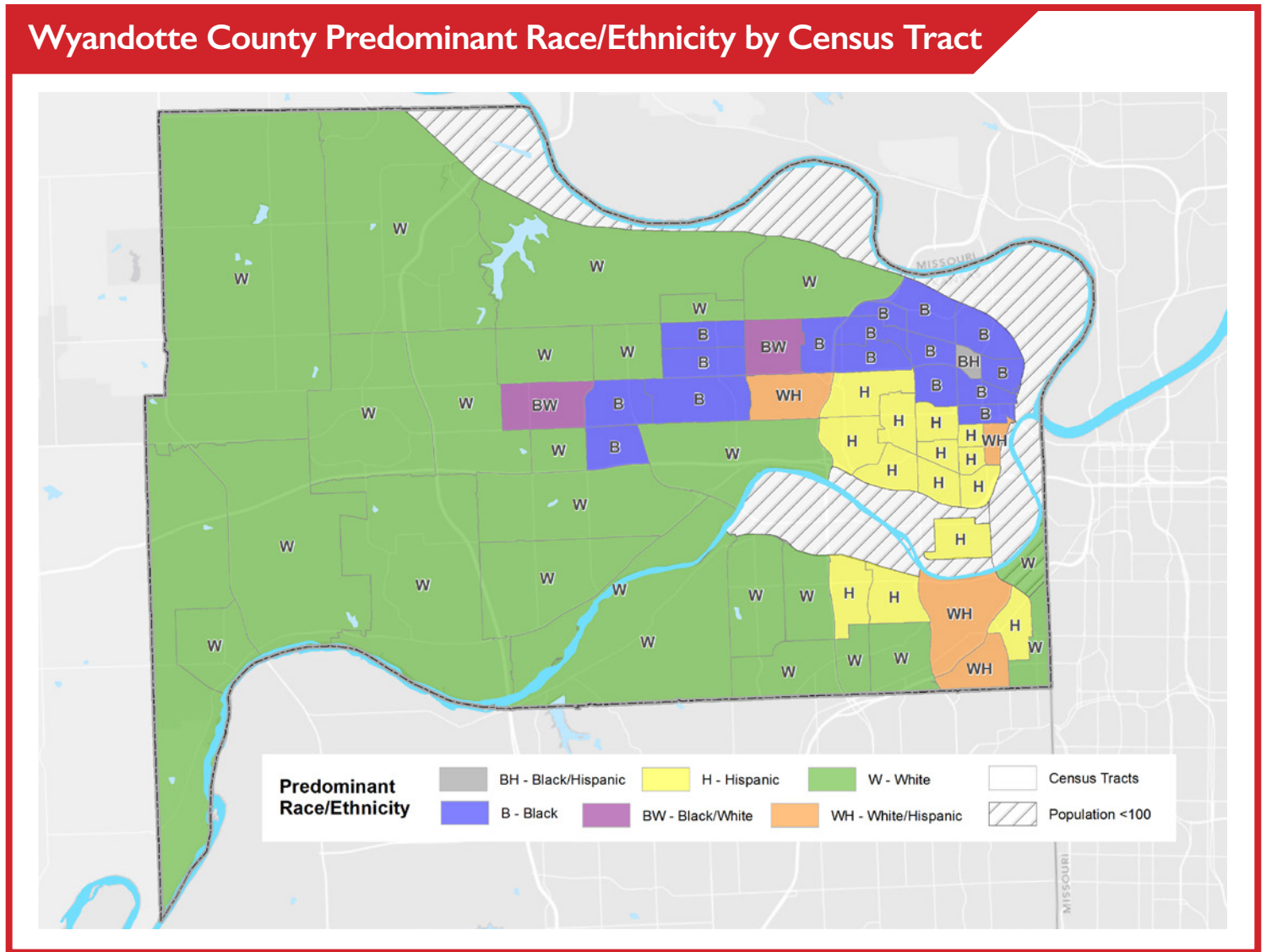
WYANDOTTE COUNTY

AT A GLANCE

This section provides an overview of KC and WyCo using Census demographic data and reference maps of WyCo neighborhoods, race/ethnicity dot-density, and predominant race/ethnicity, which will be referred to throughout the report.



The map below, which shows the predominant race in each census tract using data from the American Community Survey (2014), clarifies the distribution by race and ethnicity of the residents across Wyandotte County. The reader should refer back to this map when subsequent maps showing census tract level analyses are presented.



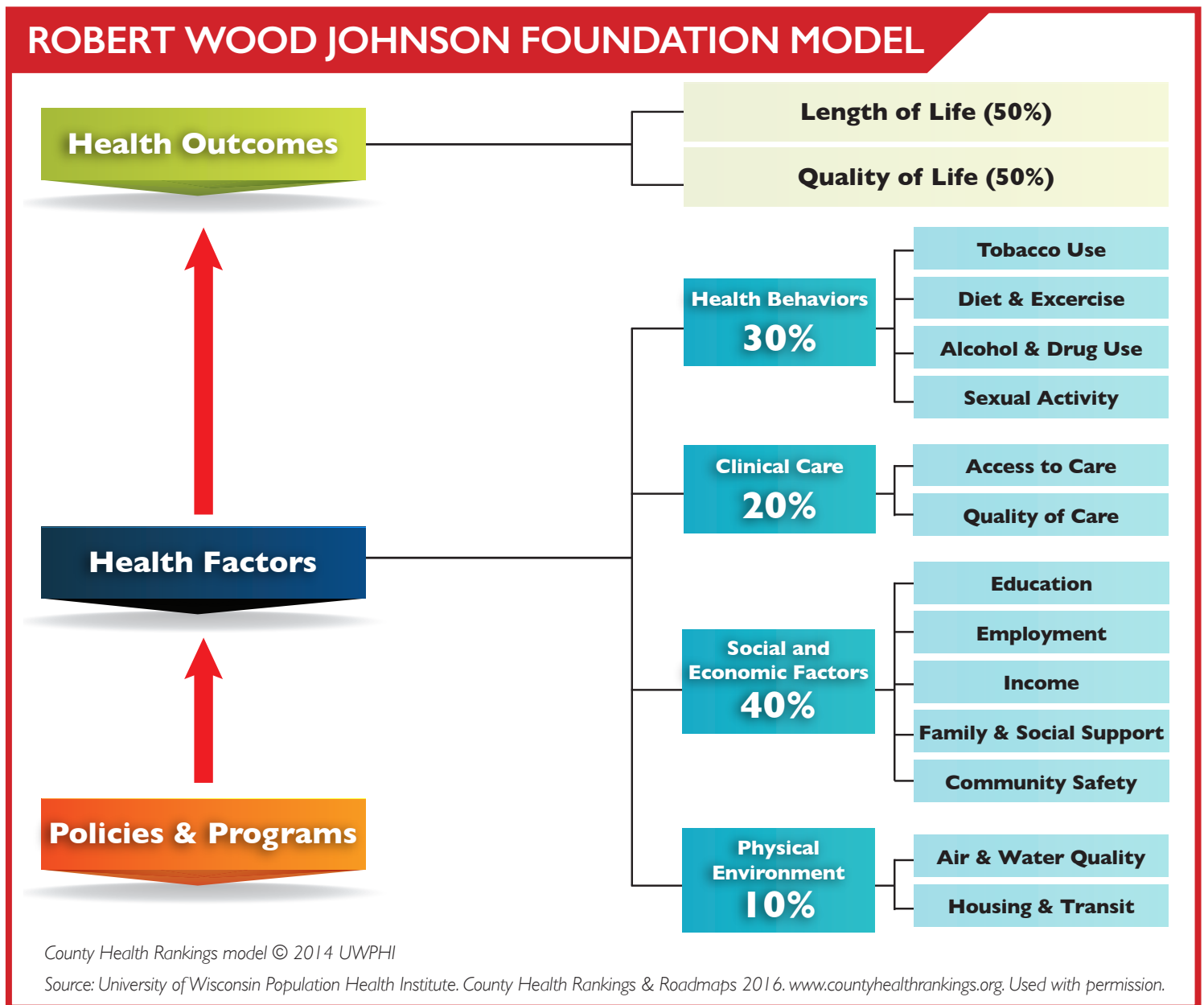
In Wyandotte County, White (W), Black (B) and Hispanic (H) are the three most prominent race/ethnic groups. The “predominant race/ethnicity” in a census tract is defined as the race/ethnic group comprising the largest percentage of the census tract population. Tracts were assigned a letter designation of W, B or H depending on whether Whites, Blacks or Hispanics were the predominant group in the tract. In tracts where the two largest groups differed by less than 5 percentage points, the tract was assigned a mixed race/ethnicity designation: Black/Hispanic (BH), Black/White (BW), or White/Hispanic (WH). Source: American Community Survey 2010-2014 5-Year Estimates.

PLACE AND HEALTH:

GEOGRAPHY AND THE SOCIAL DETERMINANTS OF HEALTH

Health outcomes result from the complex interplay of several factors. It is well-known that genetics and lifestyle choices play a role in determining one's health. A single gene mutation can lead to disease, as with cystic fibrosis, sickle cell anemia and phenylketonuria (PKU), while an array of genes can predispose toward other diseases with complex causes, like heart disease and cancer. Personal choices to smoke, to eat unhealthy foods, or to avoid exercise also can have detrimental effects on one's health. Less well-known is that structural and social forces, over which one may have little or no control, also influence health outcomes. Some of these forces act by limiting health behavior choices. It is more difficult to eat healthy if there are no stores near home that offer healthy food choices. Exercise is difficult if there are no parks or trails nearby, or if personal safety concerns keep you inside. Other forces act through larger structures, like education opportunity, access to good jobs, local air quality, or the availability of clinical care.

One model, devised by the Robert Wood Johnson Foundation's County Health Ratings and Roadmaps initiative, quantifies the relative contributions of each of these factors (except genetics) to a person's ultimate life outcomes, measured as length of life and quality of life. Their model is shown in the Robert Wood Johnson Foundation Model below.



According to this model, clinical care, while vital to good health, contributes only one-fifth of the total influence on health outcomes. Personal health behaviors make an additional 30% contribution to ultimate health outcomes. That leaves fully half of the influence on health outcomes in the realm of policies, program and community structures that determine the economic, physical and social, environment within which residents work, play, recreate and socialize.¹ Collectively, these factors are referred to as the social determinants of health (SDoH).²

Healthy People 2020, a set of 10-year national objectives for improving the health of all Americans developed by the U.S. Department of Health and Human Services, breaks the SDoH into five determinant areas, reflecting key components that must be addressed to close health equity gaps:

- **Education:** Key components include high school graduation, enrollment in higher education, language and literacy, and early childhood education and development.
- **Economic stability:** Poverty, employment, food security, and housing stability.
- **Health and Health Care:** Access to health care, access to primary care, and health literacy.
- **Neighborhood and Built Environment:** Access to healthy foods, quality housing, crime and violence, and environmental conditions.
- **Social and Community Context:** Social cohesion, civic participation, discrimination (both perceived and actual), and incarceration.

Residents of areas with favorable social determinants (for example, a low poverty rate, and abundance of jobs, stable housing and good schools) are expected to have better health outcomes, on average, than residents of areas with unfavorable social determinants (for example, a high poverty rate, few jobs, low-quality housing and poor-performing schools).



¹The RWJF model does not consider gene-specific diseases.

²A similar, recent national study of county-level quality of life and life expectancy health data concluded that in the state of Kansas, social and economic factors were the strongest significant predictors of health outcomes (Hood, Gennuso, Swain, & Catlin, 2015). The social and economic factors considered in that study included education, employment, income, family and social support, and community safety, mirroring Healthy People 2020 determinants.

REACH/MARC Vulnerable Populations

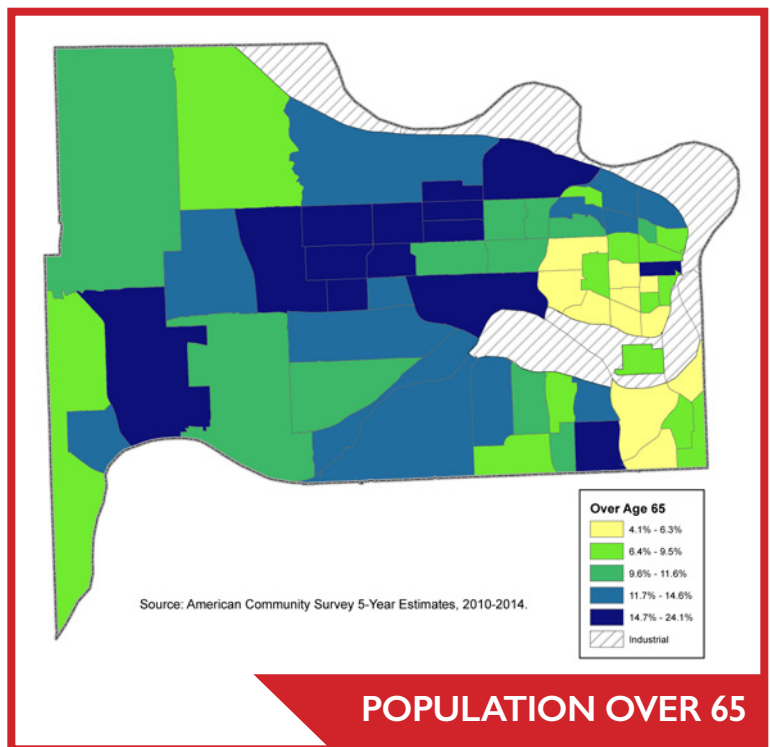
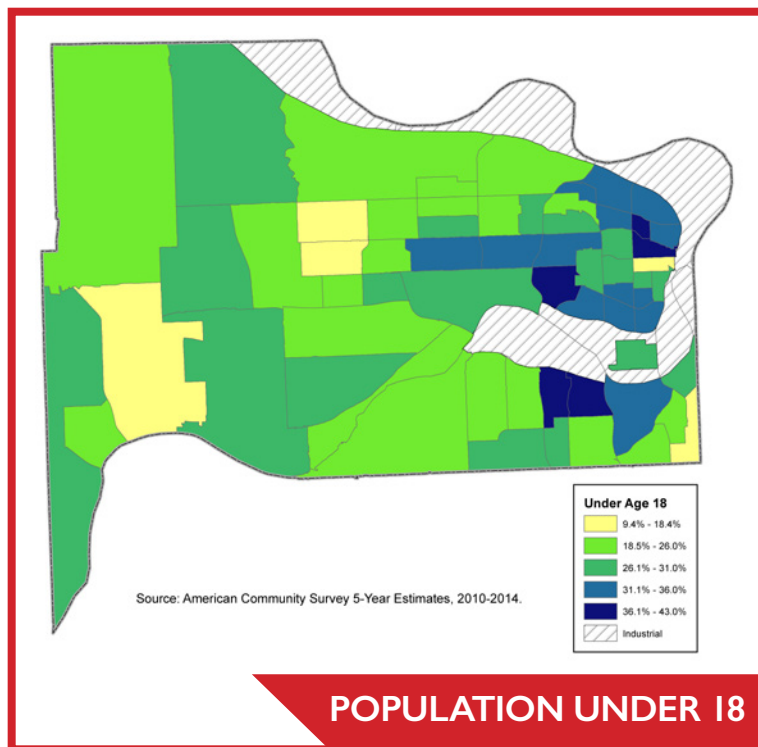
Many of the social determinants of health are captured at the regional and county level in 2015 Regional Health Assessment for Greater Kansas City; a third edition of a report prepared for the REACH Foundation by the Mid-America Regional Council (MARC). The Regional Health Assessment (RHA) identifies several vulnerable populations, each characterized by a single indicator that reflects a particular vulnerability, and maps these populations by county.

Vulnerable Populations: Age

Children, particularly the youngest children, are wholly dependent upon parents, guardians or others legally responsible for the child's welfare. Children are also vulnerable physically, both for their smaller physical size and for the fact their bodies are actively and rapidly growing and are therefore susceptible to injury and damage from anything that disrupts their body's growth processes.

People at the other end of the age continuum, adults aged 65 and older, are another vulnerable population. Advancing age increases the risk of developing debilitating illnesses or crippling injuries. Older adults are also economically vulnerable, often living on fixed incomes and lacking resources for everyday life necessities, like food and shelter, as well as those for following a prescribed treatment regimen or dealing with long-term illness.

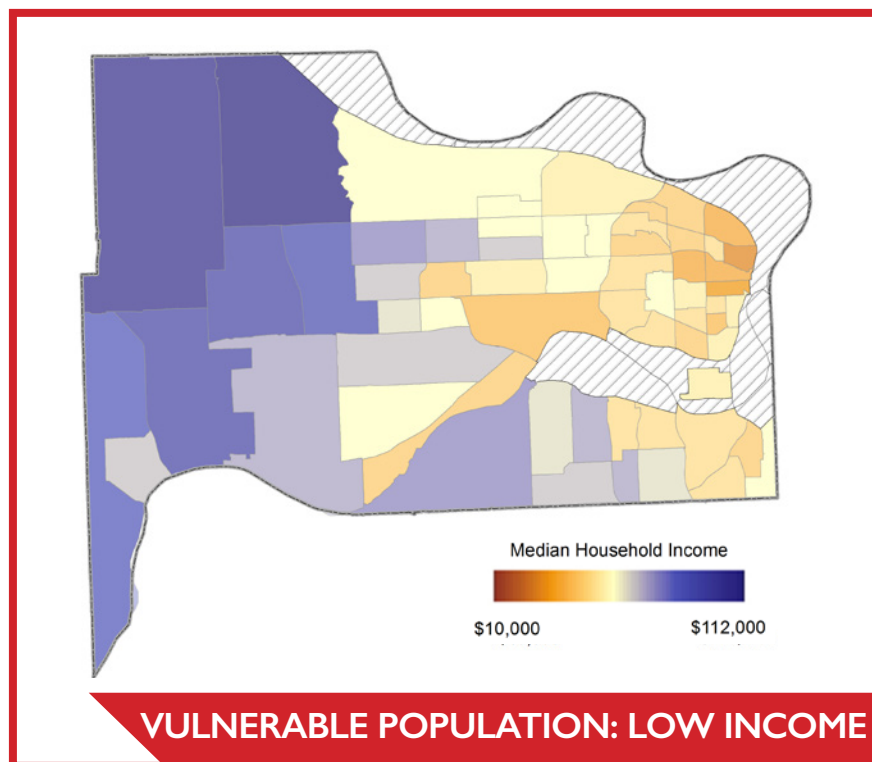
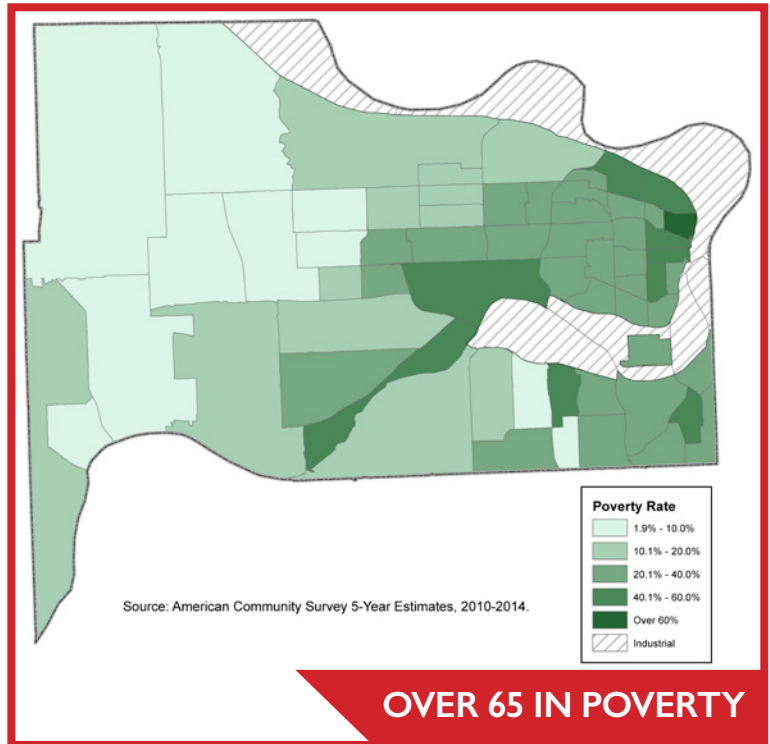
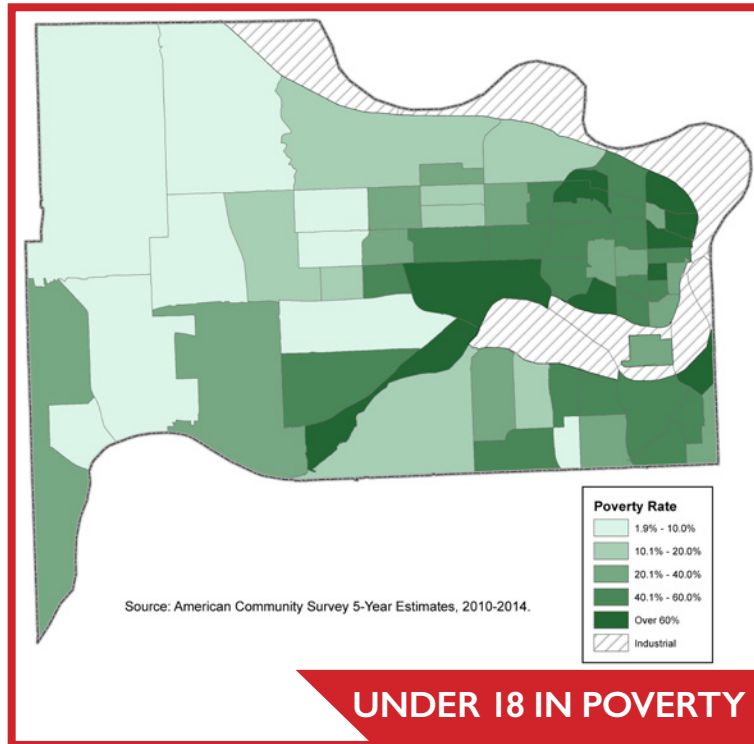
In Wyandotte County, young people make up a greater proportion of the population, by census tract, in the eastern third of the county, while the elder population is more prevalent in the inner suburbs and west-central part of the county.



Vulnerable Population: Poverty and Low Income

A limited income necessarily limits access to all other economic necessities of life. Individuals and families living at or below the federal poverty level face severe economic challenges. Once again, both children and the elderly are particularly at risk. Unlike adults of working age, young children lack the means to support themselves financially. The elderly, while perhaps still capable of working, generally do so in a reduced or diminished capacity, and may be precluded from work by mandatory retirement rules or poor health.

In Wyandotte County, both child and elder poverty exhibit similar distributions by census tract primarily in the eastern half of the county, with higher rates for children than for older adults.

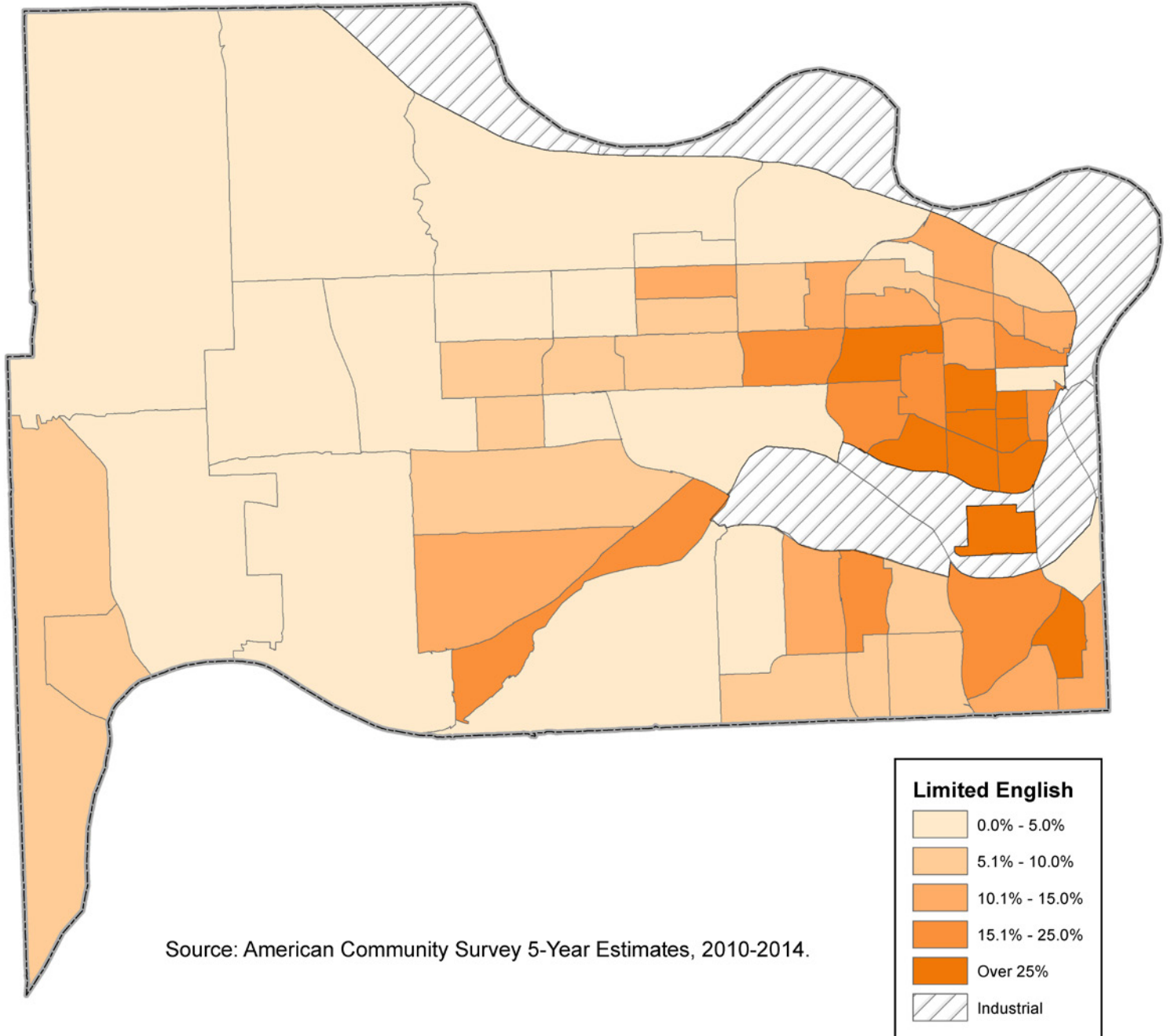


Vulnerable Population: Linguistic Isolation

A good command of English is necessary to navigate much of American society. Adults who cannot read, write, speak or understand English face challenges in finding and keeping work, accessing services and performing day-to-day, routine tasks. Children may be kept out of school to serve as translators for their parents, resulting in lost educational opportunities.

In Wyandotte County, areas of most limited English proficiency correspond with largely Hispanic and immigrant Asian populations.

VULNERABLE POPULATIONS: LIMITED ENGLISH PROFICIENCY

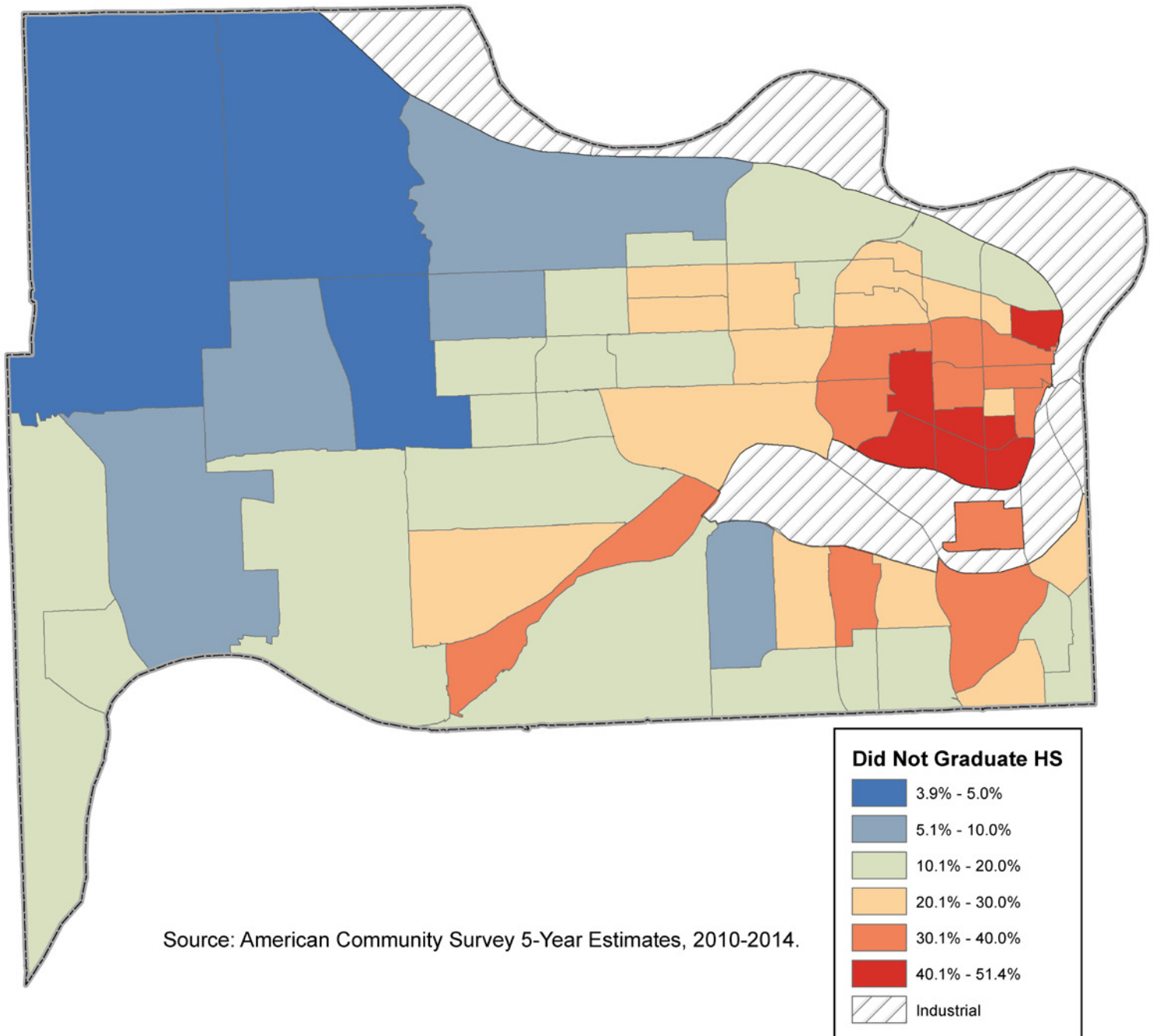


Vulnerable Population: Less than High School Education

Educational level correlated directly with lifetime earnings. A high school degree or its equivalent is the minimum credential required for admission to universities and community colleges and acceptance into many formal vocational apprenticeships. Those lacking a diploma are excluded from advancement through these educational and training opportunities. They will also be at a disadvantage competing with high school graduates for those jobs that do not require a diploma.

As with linguistic isolation, census tracts with the highest rates of adults lacking a high school degree align with Hispanic and immigrant neighborhoods, with lower rates in Black neighborhoods and the lowest in predominantly White areas.

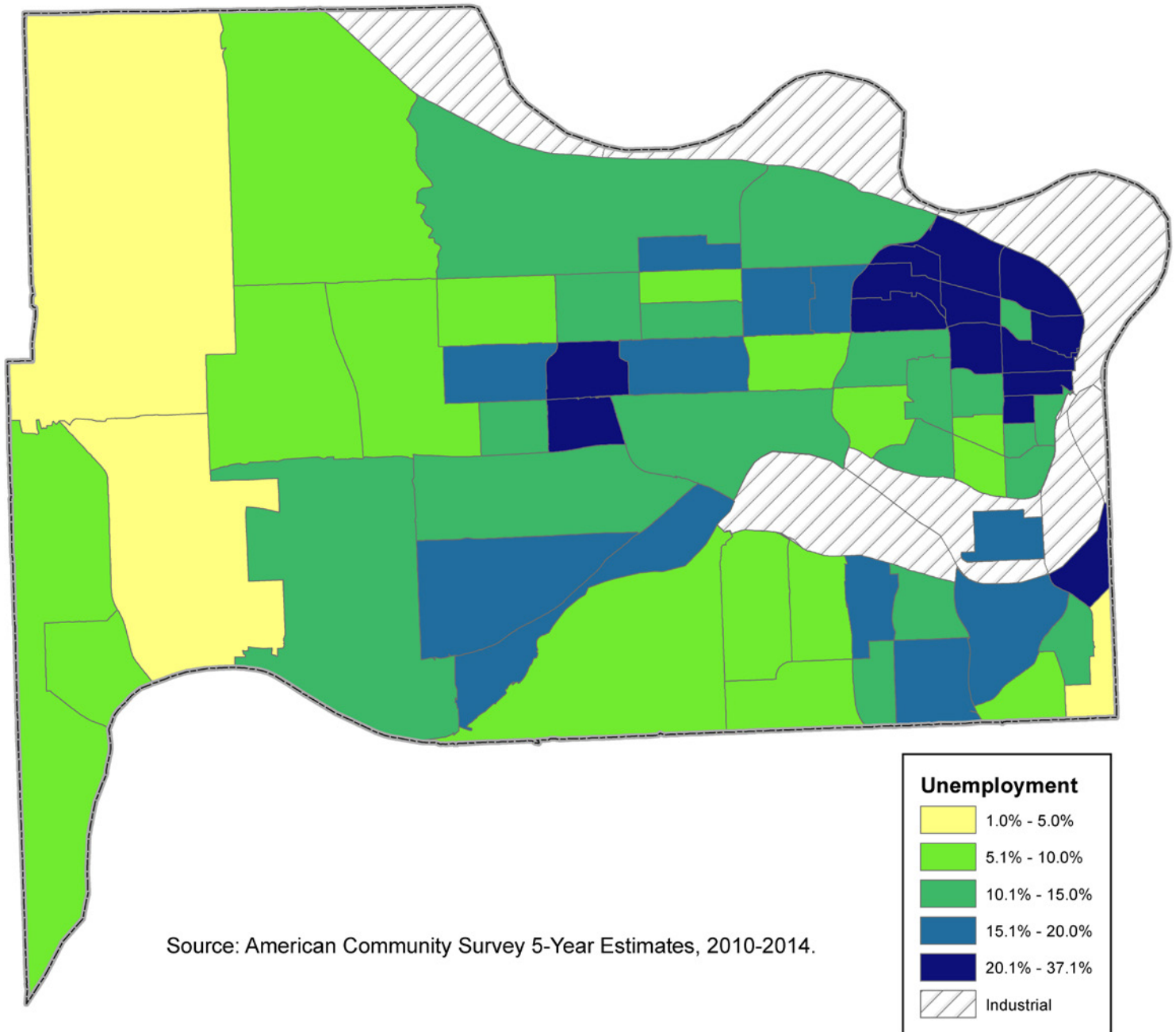
VULNERABLE POPULATIONS: ADULTS OVER 25 WITH NO HS DEGREE



Vulnerable Population: Unemployment

The lack of employment severely limits an individual's or family's access to vital resources including food and stable housing. Joblessness and the instability it engenders can also have detrimental emotional and psychological effects, including lack of self-worth, hopelessness and despair, for both the unemployed person and members of their family.

VULNERABLE POPULATIONS: UNEMPLOYMENT



Simply having a job does not guarantee against need, if that job pays a wage too low for provide for one’s family- a “living wage”. Low-wage workers often work multiple jobs to earn enough to meet family financial needs, at the expense of time away from family, time and expense to commute to multiple workplaces, and added stress, among other costs.

In Wyandotte County, a single adult with one child would need to earn \$22.16 per hour to cover her family’s living expenses- substantially higher than the Kansas minimum wage of \$7.25. Two adults would each need to secure full-time jobs paying \$14.07 per hour to meet the family needs. The Living Wage Calculator below shows living wages for Wyandotte County families of different size and composition.

A Living Wage for Wyandotte County Families								
Number of Children	1 Adult				2 Adults (Both Working)			
	0	1	2	3	0	1	2	3
Living Wage	\$10.18	\$22.16	\$25.57	\$31.48	\$8.81	\$12.28	\$14.07	\$16.28
Minimum Wage	\$7.25 (per Adult)							

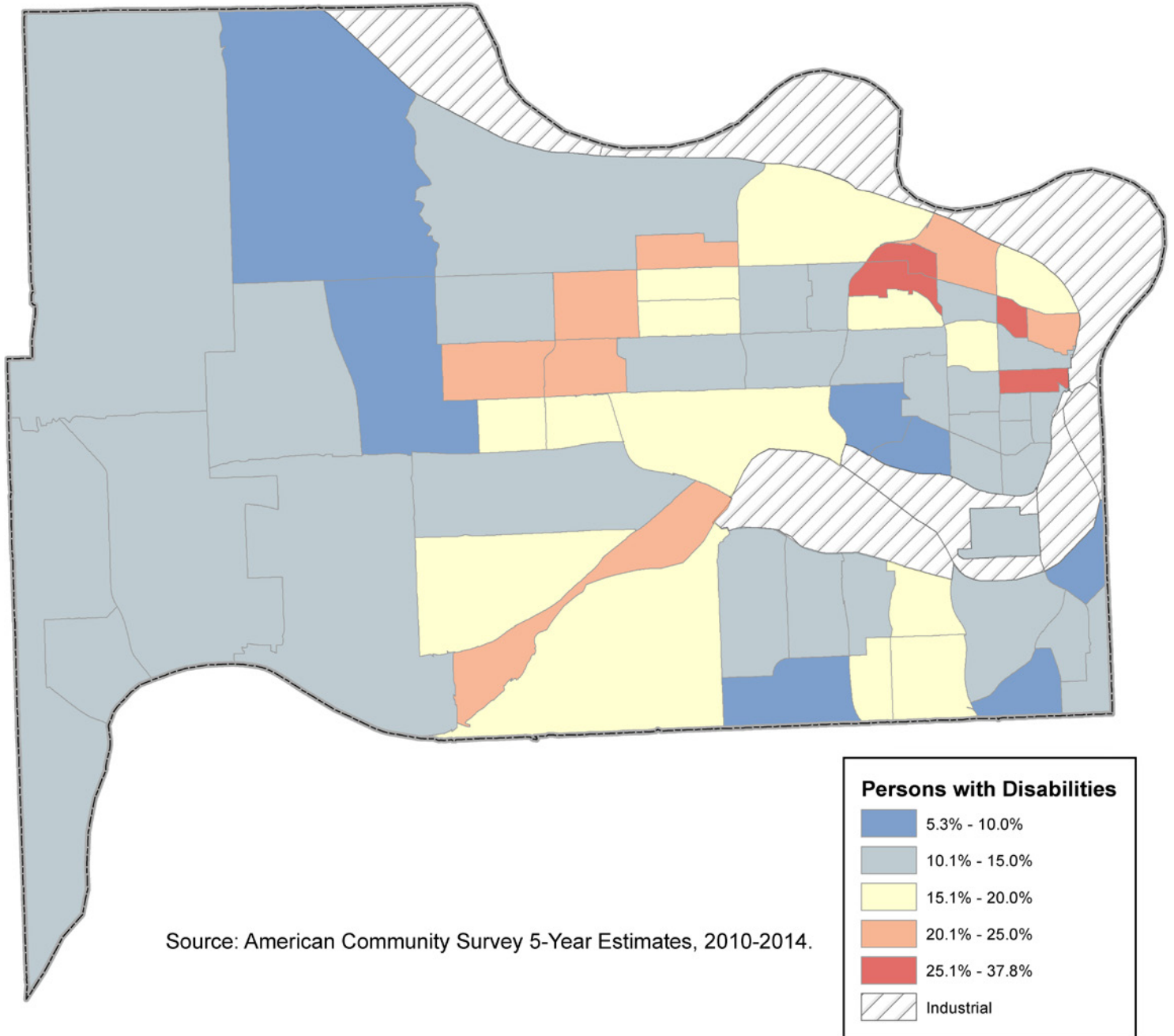
Source: The Living Wage Calculator, Dr. Amy Glasmeier, Massachusetts Institute of Technology (<http://livingwage.mit.edu>).



Vulnerable Population: People with Disabilities

People with disabilities- physical, cognitive and psychological- contend with obstacles not faced by those without disabilities. Assistive technologies, medical treatment, and physical or psychological therapy can help a disabled person to overcome obstacles and improve their quality of life, but access to these resources may be limited by the person's income or the availability of these resources in their community. Recent studies also suggest that the added stress and effort required to function with a disability can take a physical, life-shortening toll.

VULNERABLE POPULATIONS: PERSONS WITH DISABILITIES

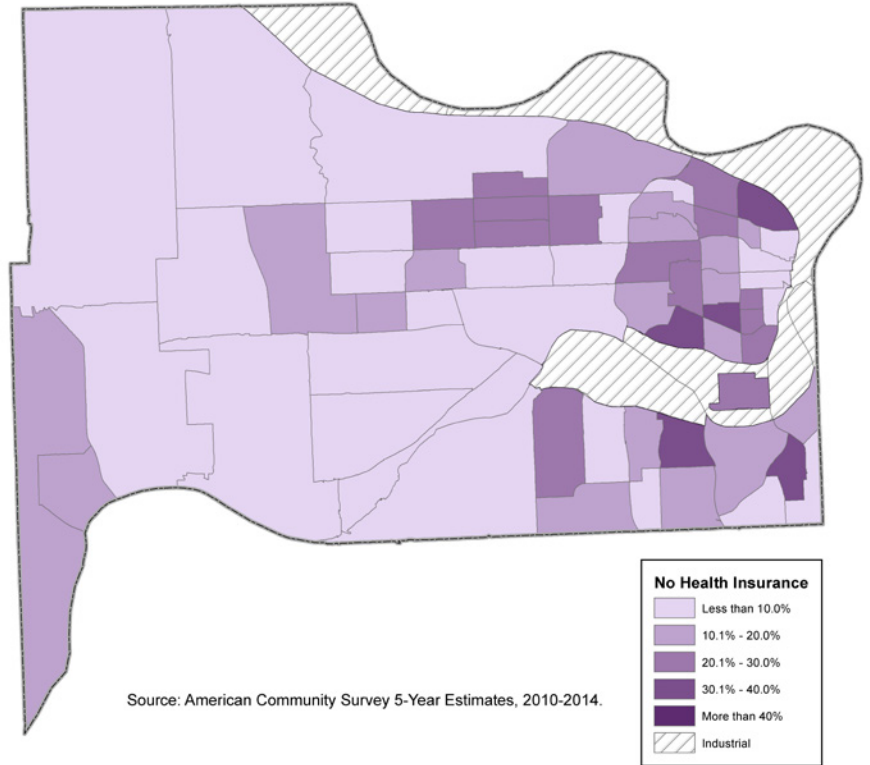


Vulnerable Population: The Uninsured

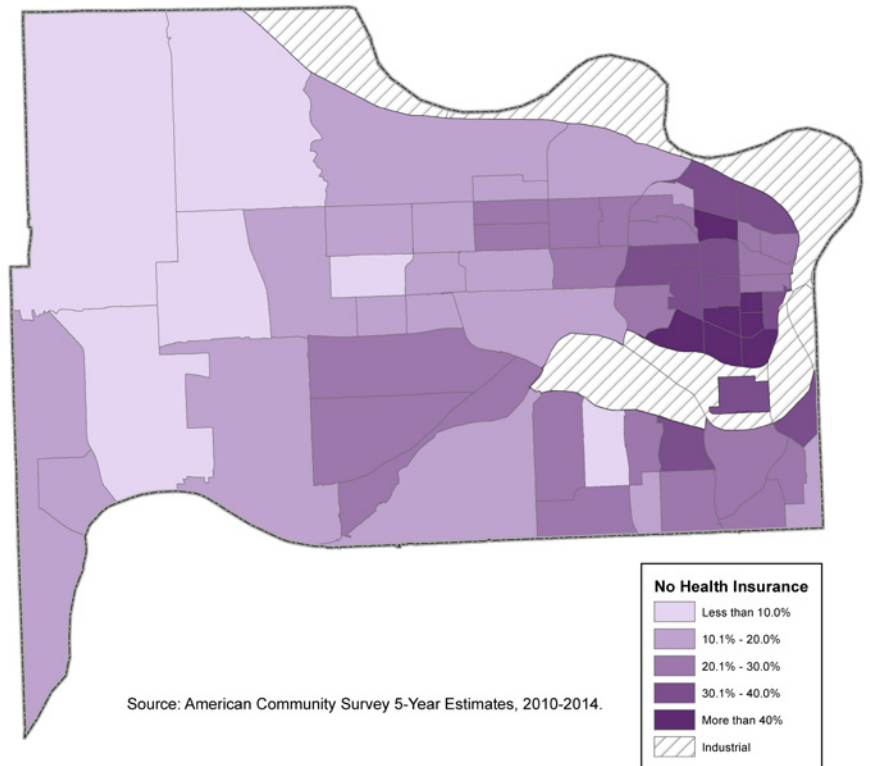
Health insurance covers much of the cost of health care, freeing up resources to provide for other life necessities. Coverage of routine, preventive care increases the chances that the insured will utilize routine care. Health insurance also provides security against a catastrophic illness that might otherwise saw or completely drain an individual or family's wealth or increase their indebtedness.



VULNERABLE POPULATIONS: UNINSURED Under 18



VULNERABLE POPULATIONS: UNINSURED Total Population



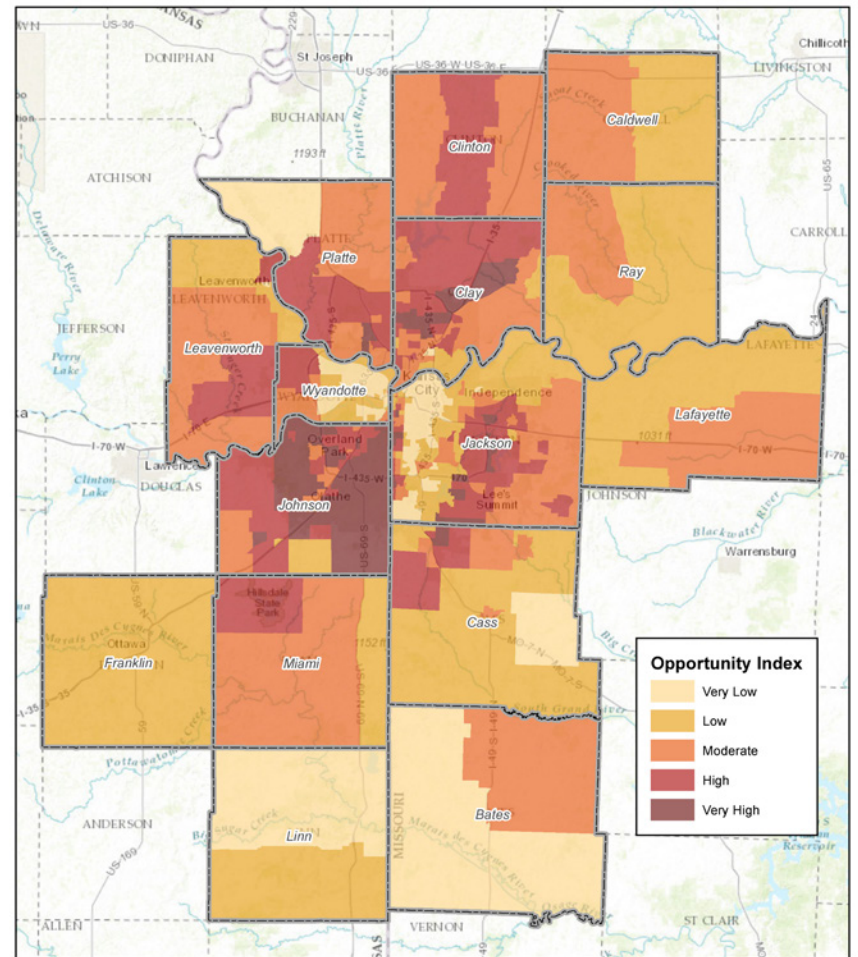
Many Vulnerabilities, but Only One Population

The preceding maps each describe a single vulnerable population, but in fact individuals often experience multiple vulnerabilities at once. Multiple vulnerabilities can have cumulative detrimental effects. A senior who is poor and uninsured deals with more stress than a senior with adequate retirement income and health coverage. An unemployed young mother faces greater hurdles to employment if she also lacks a high school diploma or cannot access childcare for her children while she trains for a new career.

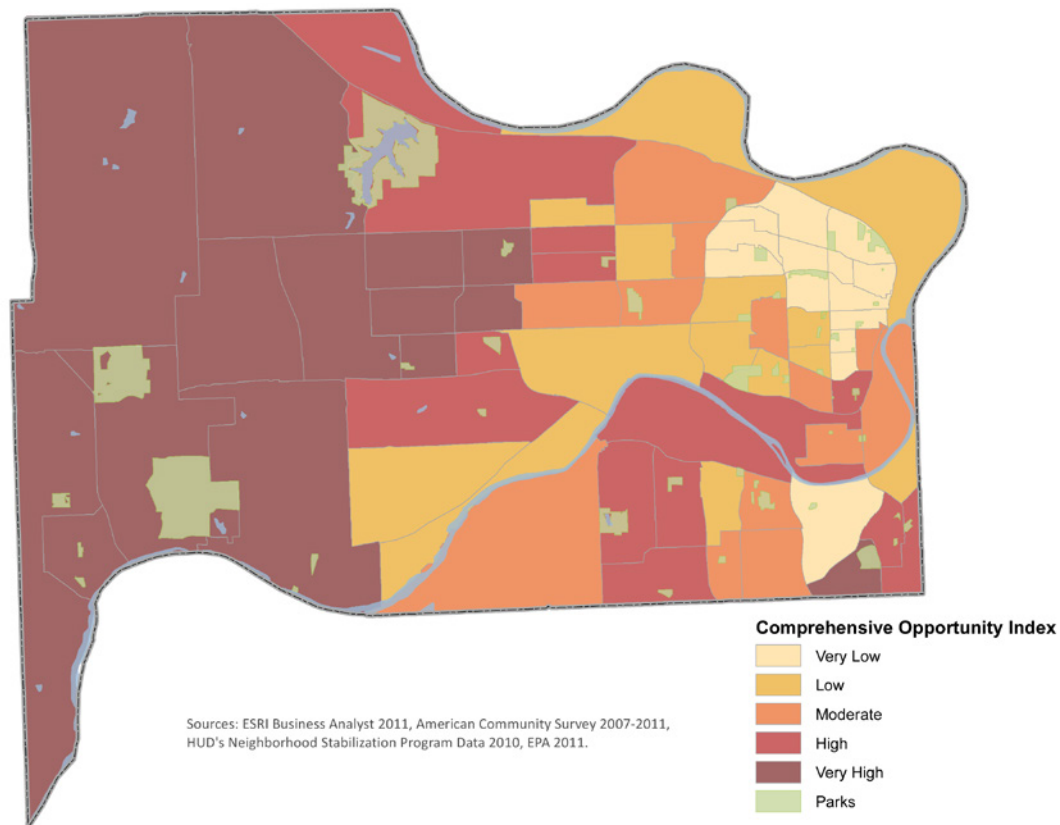
Using GIS software, the individual vulnerability maps can be “stacked” on top of one another to identify areas where residents are more likely to experience multiple vulnerabilities. The Kirwan Institute developed the technique of Opportunity Mapping to do just this sort of vulnerability stacking. First used in expert testimony for a housing discrimination case over 10 years ago, Opportunity Mapping has since been employed by Kirwan in over two dozen community engagements across the U.S., to identify areas of greater or lesser access to the resources needed for life success.

The Opportunity Map used in this report combines 19 indicators for the Kansas City metropolitan area into a single, composite Opportunity Index ranking, assigned by census tract.³ These indicators reflect many of the Healthy People 2020 social determinants. On the Opportunity Maps for the Kansas City Metropolitan Area (KC Metro) and Wyandotte County (WyCo), areas with the lightest shading have the lowest opportunity ranking (“Very Low” on the map legend), while the areas with the darkest shading have the highest ranking (“Very High”). In other words, these areas score either low or high, respectively, on most of the indicators in the index. Middle-ranked areas (“Low”, “Moderate”, “High”) may score near the middle on most indicators, or they may score lower on some indicators and higher on others.

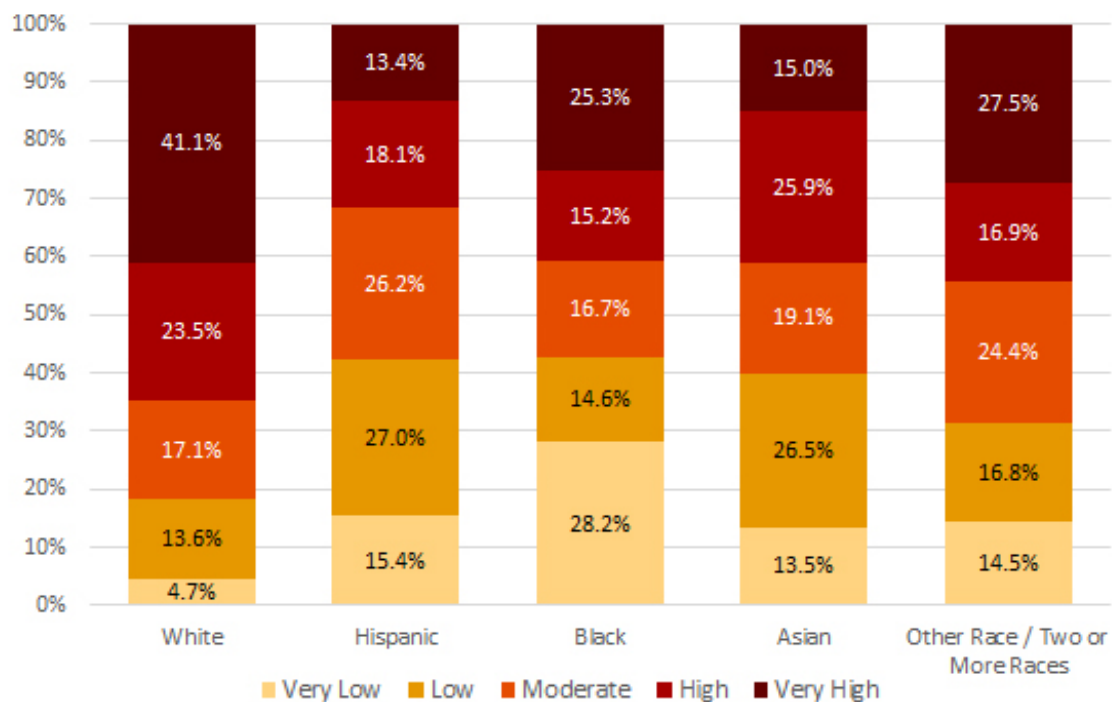
OPPORTUNITY MAP FOR THE KANSAS CITY METROPOLITAN STATISTICAL AREA (MSA)



COMPREHENSIVE OPPORTUNITY IN WYANDOTTE COUNTY



PERCENTAGE OF RACE/ETHNIC GROUP IN EACH OPPORTUNITY CATEGORY



PERCENTAGE OF RACE/ETHNIC GROUP IN EACH OPPORTUNITY CATEGORY

Educational Opportunity	
EDU	Student poverty rates in neighborhood schools (Free/Reduced Price Lunch Eligibility)
EDU	Student math/reading proficiency levels
EDU	Early childhood education (ECE) Indicators <ul style="list-style-type: none"> Proximity to licensed ECE centers and high-quality ECE centers Participation Patterns
EDU	High school graduation rates
EDU	Adult education attainment
Health & Environmental Opportunity	
HHC	Proximity to health facilities
NBE	Retail healthy food environment index
NBE	Proximity to toxic waste release sites
NBE	Volume of nearby toxic release
NBE	Proximity to parks and open spaces
NBE	Housing Vacancy Rates
Social & Economic Opportunity	
NBE	Foreclosure Rates
ES	Poverty Rates
ES	Unemployment Rates
ES	Public Assistance rates
ES	Proximity to employment



As can be seen on both the KC Metro map and the WyCo map, many neighborhoods in the eastern half of Wyandotte County rank Low or Very Low on the Opportunity Index, corresponding to the locations of many of the REACH/MARC vulnerable populations. As previously described, the Opportunity Map can be thought of as a summary of the “stacked” indicators that comprise it, reflecting areas of greater or lesser challenge regarding social determinants of health. It provides guidance for conversations around the distribution of community resources to address health inequities and for outreach and engagement efforts in challenged neighborhoods. And because it reflects the influence of multiple indicators across several sectors, the Opportunity Map serves as a convening tool, emphasizing the need for cross-sector collaboration among community stakeholders to address the root causes of health inequities.

The bar chart beneath the Wyandotte County Opportunity Map shows how each race/ethnic group in Wyandotte County is distributed across opportunity areas. According to the chart, almost 65% of the county’s White population resides in High or Very High opportunity tracts. By comparison, at least 40% of the county’s Black, Hispanic and Asian populations reside in Low or Very Low opportunity tracts. Racial and ethnic disparities exist, then, in access to the opportunities that enable one to succeed in life. To the extent that the Opportunity Map reflects the social determinants of health, one should also expect to see corresponding disparities in health outcomes.

Like any summary, the Opportunity Map loses some important detail about the individual component indicators at work in a particular neighborhood. For a more complete picture of conditions in any given neighborhood, the Opportunity Map should be considered alongside the separate vulnerability maps to determine the specific indicators that are “driving” opportunity in a given neighborhood. Put another way, the individual vulnerability maps describe specific, individual challenges faced by the residents of a given neighborhood, while the Opportunity Map shows where multiple challenges act in combination, and to what relative degree they do so.

It is also important to note that the Opportunity Map and the vulnerable populations maps do not include indicators for the social determinants in the “Social and Community Context” category (see SDoH diagram under the list of Opp indicators). These indicators of social cohesion, perceptions of neighborhood safety, and the like- are not readily available in public databases because they rely on data collection methods like surveys, focus groups and community meetings that are best performed in association with on-the-ground community engagements.

The maps also do not show community resources, like churches, hospitals, clinics, service centers, recreation centers and the like- resources that can be leveraged for the benefit of neighborhood residents. This information can be collected through neighborhood asset mapping, including map exercises involving the area residents to locate and identify the resources they rely on most.



PLACE AND PUBLIC HEALTH:

WYANDOTTE COUNTY VITAL STATISTICS



A large body of literature supports the role of the social determinants in health outcomes. The Kirwan Opportunity Map reflects the distribution of vulnerabilities that reflect many of the social determinants. So it is reasonable to expect that health outcomes in Wyandotte County would generally follow the geographic distribution of the Opportunity Index, with poorer outcomes in lower opportunity neighborhoods.

Birth Outcomes: Infant Mortality

Infant mortality serves as an important measure of a community's overall health. This is because factors that affect a community's health also have an impact on the mortality of its youngest, most vulnerable members. The U.S. infant mortality rate (IMR) varies by race, with mortality rates higher for Black babies than for White and Hispanic babies.

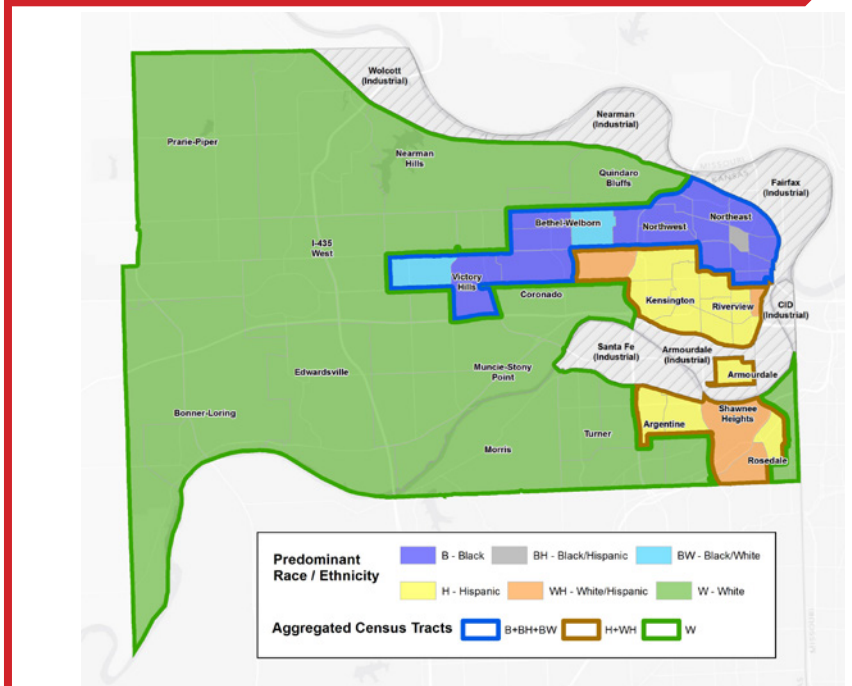
In Kansas, the 2014 IMR was 6.3 infant deaths per 1,000 births. This exceeds the Healthy People 2020 goal of 6.0. Broken out by race, the White (non-Hispanic) IMR for 2014 was 5.2, meeting the HP2020 target; however, the Black (non-Hispanic) and Hispanic rates- 11.0 and 6.5, respectively- did not. The Black IMR in Kansas has been more than twice that of Whites over the last 20 years.

According to data from the Wyandotte County Public Health Department, in the years 2009-2013 there were 13,719 live births and 110 infant deaths in Wyandotte County, for a countywide infant mortality rate of 8.0.

The data provided by WyCo Public Health did not include counts by race or ethnicity, and so the county IMR cannot be calculated by race in the same way that the statewide rates are reported. However, it is possible to combine WyCo census tracts on the basis of predominant race/ethnicity and the calculate IMRs for these sub-county areas. The map on page 10 shows the predominant race shows the predominant race or ethnicity for all Wyandotte County census tracts. Tracts with predominantly minority populations (B_OR_H_) were then combined to create these groups of aggregated Census Tracts: [B+BH+BW], [H+HW], and [W].

This was done to create areas with infant death sample sizes large enough to calculate stable, sub-county infant mortality rates.

PREDOMINANT RACE/ETHNICITY BY CENSUS TRACT



PREDOMINANT RACE/ETHNICITY BY CENSUS TRACT

Predominant Race/Ethnicity	Census Tracts	Total Births	LBW Births	PT Births	Infant Deaths	LBW Rate	PT Rate	IMR
B	16	2,455	241	238	29	9.8%	9.7%	11.8
BH	1	55	4*	1*	0*	7.3%*	1.8%*	0.0*
BW	2	427	41	43	5*	9.6%	10.1%	11.7*
B+BH+BW	19	2,937	286	282	34	9.7%	9.6%	11.6
H	14	4,079	322	346	33	7.9%	8.5%	8.1
WH	4	1,283	112	112	11*	8.7%	8.7%	8.6*
H+WH	18	5,362	434	458	44	8.1%	8.5%	8.2
W	26	5,312	400	454	26	7.5%	8.5%	4.9

Abbreviations: LBW, low birth weight; PT, preterm; IMR, infant mortality rate (number of infant deaths before 1 year of age per 1,000 live births); B, Black; H, Hispanic; W, White; BH, Black/Hispanic; BW, Black/White; WH, White/Hispanic; NC, Not Calculated. Numbers highlighted in red with asterisks(*) represent calculations with numerators that are too small to yield stable results for preterm/LBW rate or IMR. Source: Vital statistics, 2009-2013, Wyandotte County Public Health. Rate and IMR calculations by The Kirwan Institute.

The table above shows the total counts of live births, low birth weight births, preterm births and infant deaths and calculated infant mortality rates, preterm birth rates and low birth weight rates for the aggregated Census Tract areas (blue-, orange-, and green-shaded rows). Reflecting national and state trends, the IMR in the combined, predominantly Black neighborhoods of WyCo (blue row) exhibit an infant mortality rate of 11.6, higher than the IMR for the predominantly Hispanic neighborhoods (IMR= 8.2; orange row) and more than twice as high as that for predominantly White neighborhoods (IMR= 4.9; green row).

Of the 110 Wyandotte County infant deaths between 2009 and 2013, 56 (51.0%) occurred within one week of birth; 16 (14.5%), between 7 and 27 days; and 38 (34.5%), between 28 and 364 days. This is an important distinction because it speaks to potential causes of death and, therefore, potential interventions. Approximately half of all neonatal deaths (within the first 28 days) are caused by low birth weight, premature birth and congenital malformations. Post-neonatal deaths (between 28 and 364 days post-partum) arise primarily from sudden unexpected infant death (SUID), including sudden infant death syndrome (SIDS), accidental suffocation and strangulation in bed,⁴ and unknown causes, as well as from congenital malformations, infections and accidents.

Birth Outcomes: Preterm Births and Low Birth Weight Births

Babies who are born too early (preterm, before 37 week gestation) or too small (low birth weight, less than 2,500 grams) are at increased risk of immediate, and often life-threatening, health problems as well as long-term complications. Babies born early risk health complications from incompletely developed organs, especially lungs, which are among the last of a baby's systems to develop, as well as anemia, jaundice and infections. Longer term, these babies may experience learning and behavioral disabilities, cerebral palsy, vision and hearing problems. Preterm births are linked with maternal infections, vascular disease, diabetes and hypertension.

Low birth weight babies may also be preterm. For babies carried to term, low birth weight may result from fetal growth restriction possibly linked to maternal hypertension, tobacco use or failure to gain weight during pregnancy.

In all cases, access to quality prenatal care can help to ensure that expectant mothers have the best possible pregnancy experience, to give their babies the best chance at a normal, healthy birth.

In Wyandotte County, rates of preterm and low birth weight births are highest in the predominantly Black area, lower for predominantly Hispanic area, and lowest for the predominantly white area (TABLE).



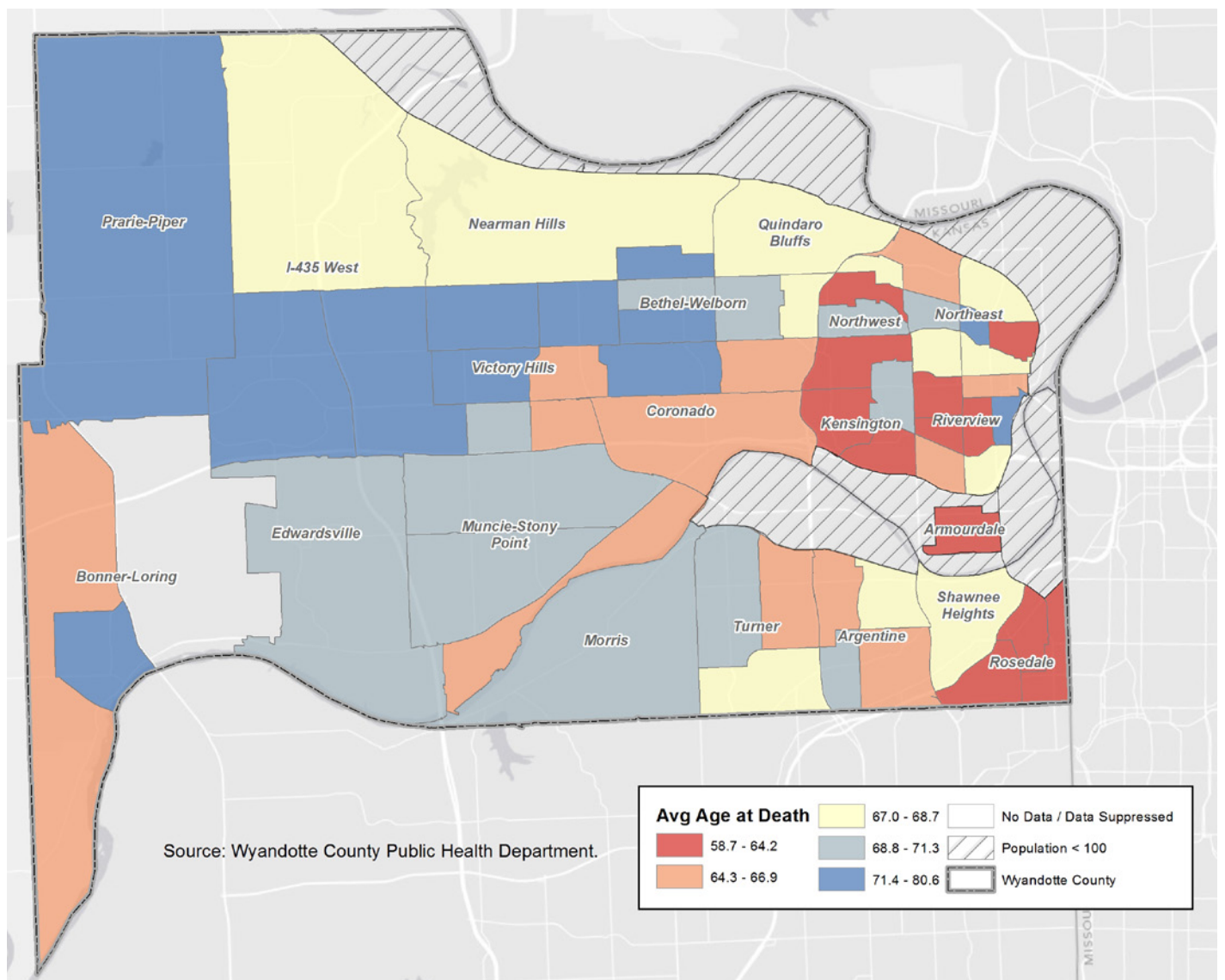
Longevity: The Ultimate Health Outcome

Length of life and quality of life were identified in the Robert Wood Johnson diagram on page 11 as the ultimate health outcomes. While quality of life is complex and difficult to quantify over a lifetime, length of life can be readily measured.

According to data from the Wyandotte County Public Health Department, from 2009 to 2013 there were 6,715 deaths in the county. The average age at death countywide was 69.1 years.

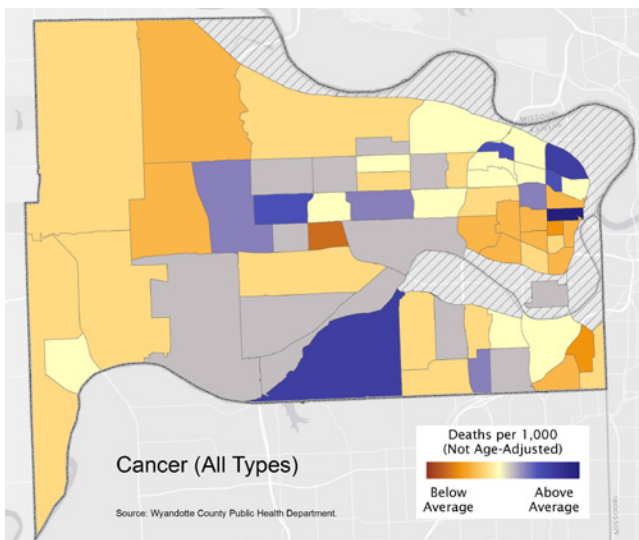
However, as shown in the Average Age at Death map on page 27, length of life varies dramatically from one part of Wyandotte County to another. In many central Kansas City neighborhoods, the average age at death ranges approximately 59 to 62 years. In neighborhoods just a few miles to the west, the average age at death ranges from 71 to 81 years- a difference of as much as 20 years. Although the county health department data did not include race, a comparison of the Average Age at Death map with the Predominant Race Map and the Wyandotte County Opportunity map shows a high degree of overlap among age at death, race, and the distribution of social determinants of health.

AVERAGE AGE AT DEATH IN WYANDOTTE COUNTY, 2010 - 2014

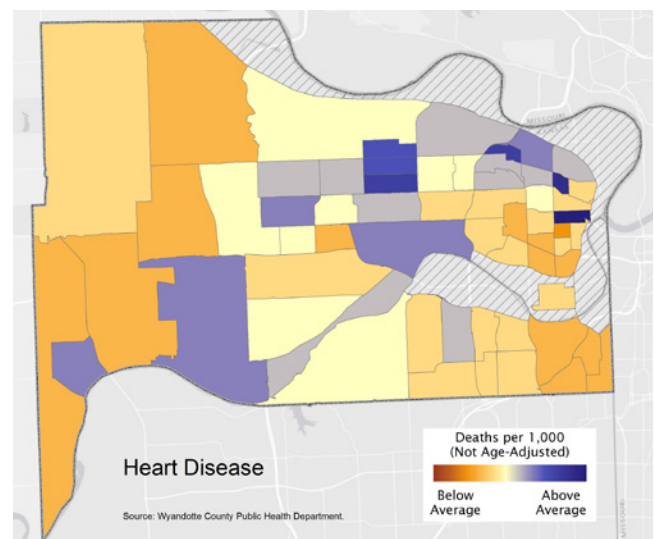


Many of the leading causes of death vary by race/ethnicity, with higher rates of heart disease, cancer and diabetes seen in African Americans compared to Whites, and lower rates of heart disease and cancer in Hispanics compared to Whites. The geographic distributions of these leading causes are shown in the maps below. Comparing these maps with earlier maps of predominant race [callout: predom race map], most census tracts with the highest rates of diabetes-related deaths line up with predominantly Black neighborhoods. Tracts with the highest death rates due to heart disease, while more broadly distributed across Wyandotte County, also tend to align most closely with Black neighborhoods, with some tracts in White neighborhoods as well. Cancer and heart disease death rates are lowest in census tracts in Hispanic neighborhoods.

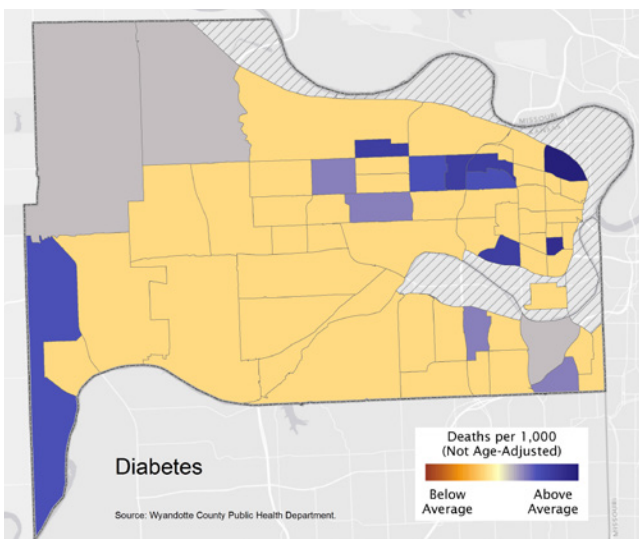
CAUSE OF DEATH: CANCER



CAUSE OF DEATH: HEART DISEASE



CAUSE OF DEATH: DIABETES



HEALTH CARE CASE STUDIES

THE INTERSECTION OF PATIENT DATA WITH THE SOCIAL DETERMINANTS OF HEALTH



Hospitalization data can provide insight into the health care landscape in resource-challenged neighborhoods. Knowing where patients live, and understanding the neighborhood conditions that bear on their health, can inform community outreach and intervention strategies to improve the health of residents.

This section summarizes an analysis of emergency department (ED) encounter records for two Kansas City, KS, health care providers: Children's Mercy Hospital (CMH) and the University of Kansas Medical Center (KUMed). These hospital systems graciously provided select sets of patient records as part of their community benefits assessment process, to determine where their patients live with respect to the social determinants described earlier in this report.

The data received describes two patient groups of interest:

- Children's Mercy Hospital: All Wyandotte County pediatric patients (ages 0-17) who visited one of CMH's two emergency departments over two time periods- July 1, 2011 to November 30, 2012; and July 1, 2013 to November 30, 2014- comprising 34,588 encounter records in all. After data cleaning, removal of duplicate addresses, and geocoding (conversion of street addresses to latitude/longitude coordinates for mapping), the resulting, combined record set contained 33,335 encounter records for 14,734 patients.
- KU Medical Center: Patient ED encounter records for the single time period between July 1, 2011, and November 30, 2012, for two patient groups:
 - ED Returns: Patients returning to ED within 365 days of discharge, comprising 23,392 encounter records.
 - Readmits: Patients readmitted to KUMed within 30 days of their initial discharge date between July 1, 2011 and October 30, 2012, comprising 8,840 encounter records.

After data cleaning, removal of duplicate addresses, and geocoding,⁵ the resulting record sets contained 14,458 encounter records for 4,597 ED Return patients, and 2,103 encounter records for 766 Readmit patients, for patients over 18 years of age residing in Wyandotte County.⁶

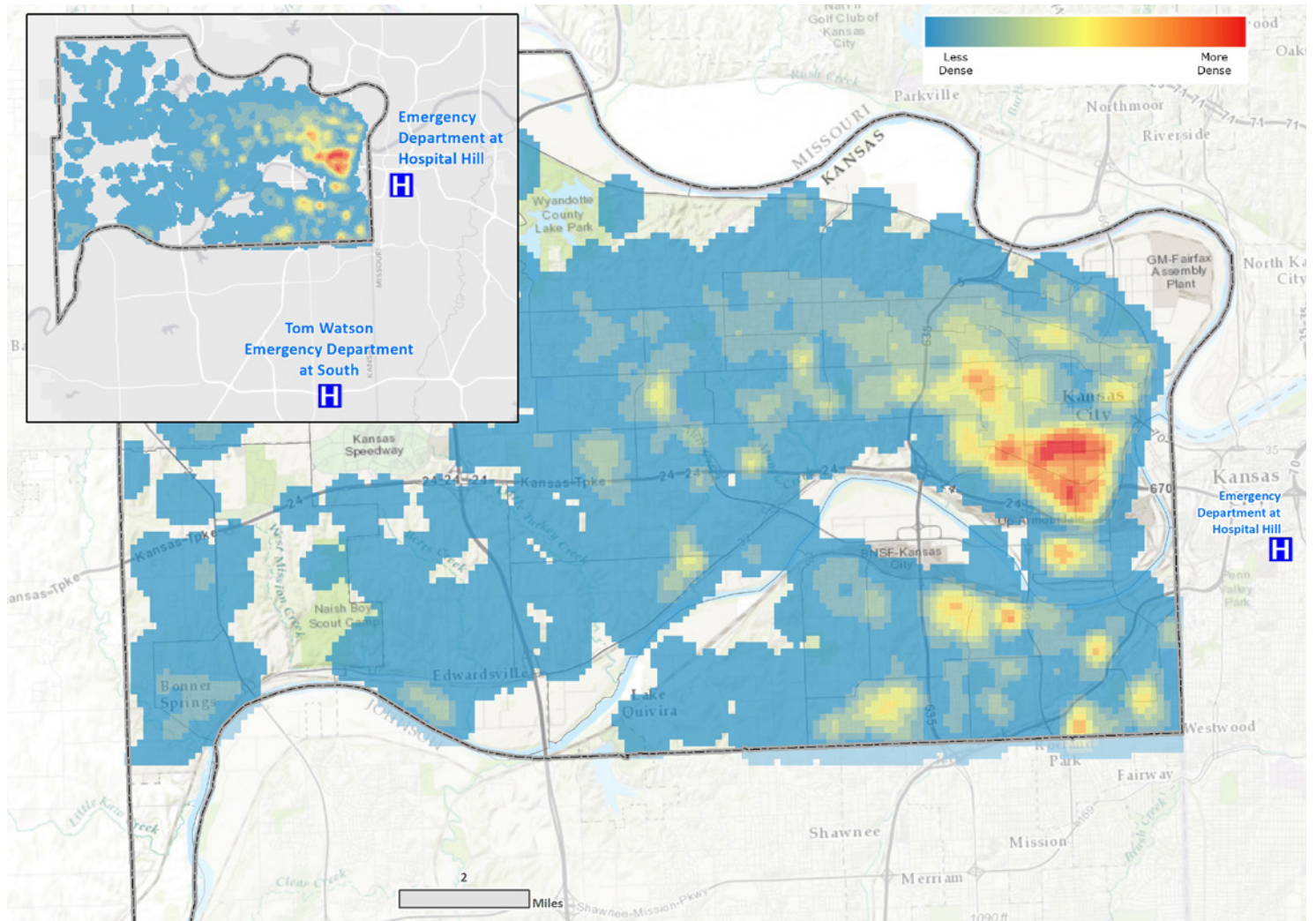
Three important limitations of these data sets should be noted:

1. These records were extracted from hospital billing databases, and not from the patients' complete medical records. Billing records only include conditions and procedures for which the patient was billed, and not the patient's entire treatment regimen or history.
2. These two hospitals' records were sufficiently different in format from one another that it was not possible to completely reconcile the two data sets in terms of patient diagnoses.
3. While these two systems provide ED care for many patients in the KCK area, the data from these two systems are not random samples of all Wyandotte County patients and are not sufficient to extrapolate to the entire population of Wyandotte County.

The correct way to view the analysis that follows is as a case studies that demonstrate the benefit to health care systems of mapping patient-level data with respect to social determinants that bear on health of their patients.

Each patient residence location (latitude/longitude pair) was plotted as a single point ("dot") on a map of Wyandotte County. To prevent the possibility of identifying individual patients by their location, these point maps were converted to dot-density maps showing where higher and lower concentrations of patients reside.

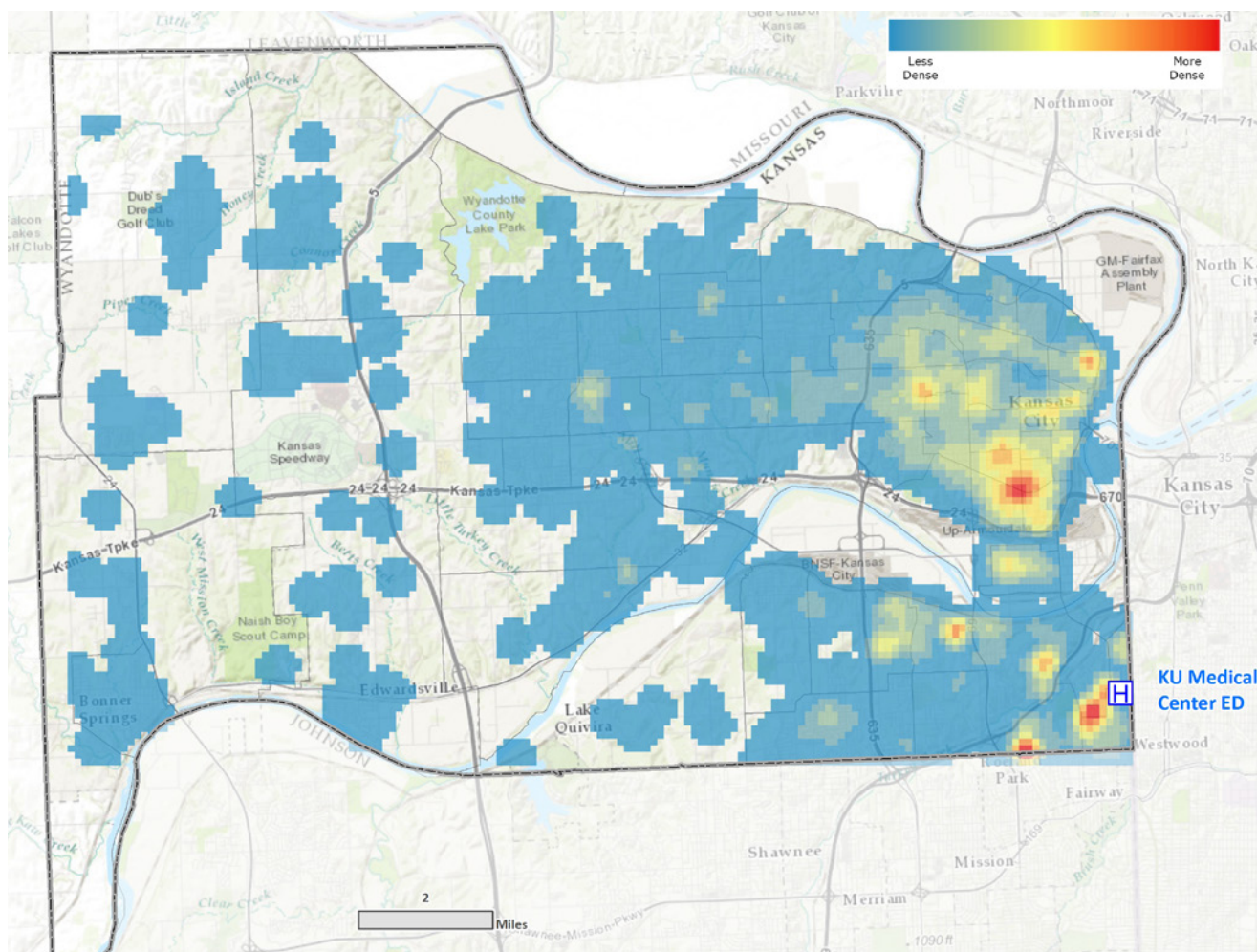
CMH ED PATIENT DENSITY IN WYANDOTTE COUNTY



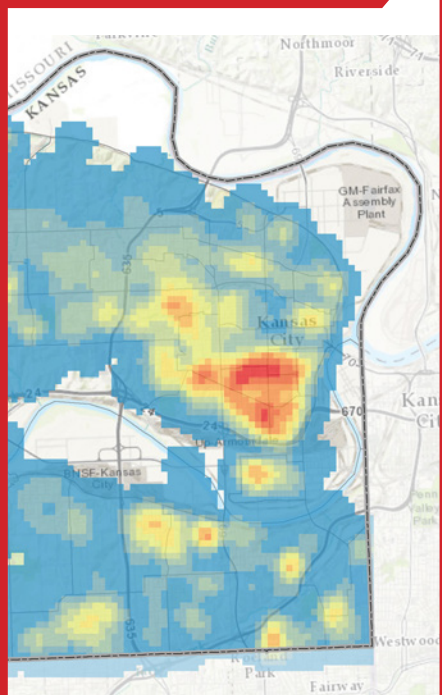
5 Addresses were geocoded using the Texas A&M Geoservices batch geocoder5 or ESRI's geocoding service. No personally identifiable patient data was transmitted to these online services.

6 The KUMed data were delivered in separate tables for encounters and patient addresses, with the patient's medical record number (MR) providing the sole link between addresses and encounters. For patients with two or more addresses in the address table, there was insufficient information in the data set to indicate which address to match with a specific encounter. It was therefore decided to use the first address listed for each MR (as sorted by KUMed in the address tables received) for all of that patient's ED encounters. This limitation also placed constraints on the analyses we could perform, particularly around the geographic distribution of diagnoses.

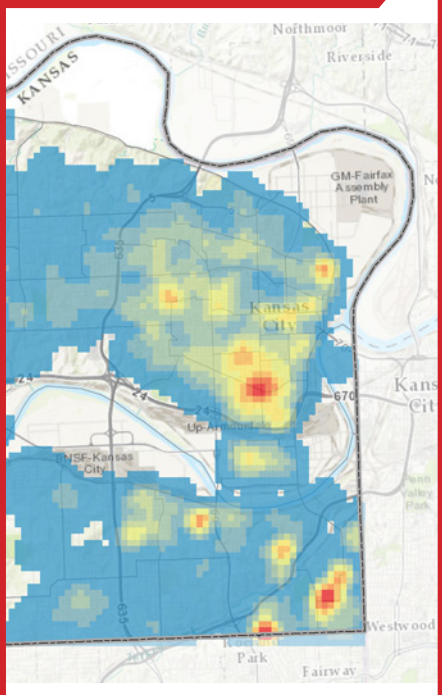
KU MEDICAL CENTER ED RETURN PATIENT DENSITY IN WYANDOTTE COUNTY



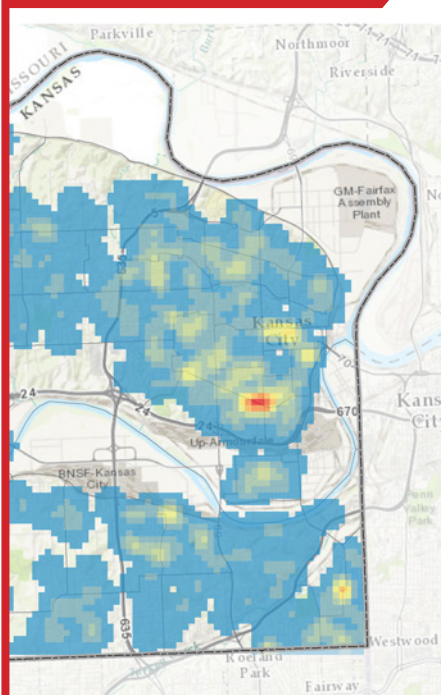
CMH ED PATIENTS



KUMED ED RETURN PATIENTS



KUMED READMIT PATIENTS



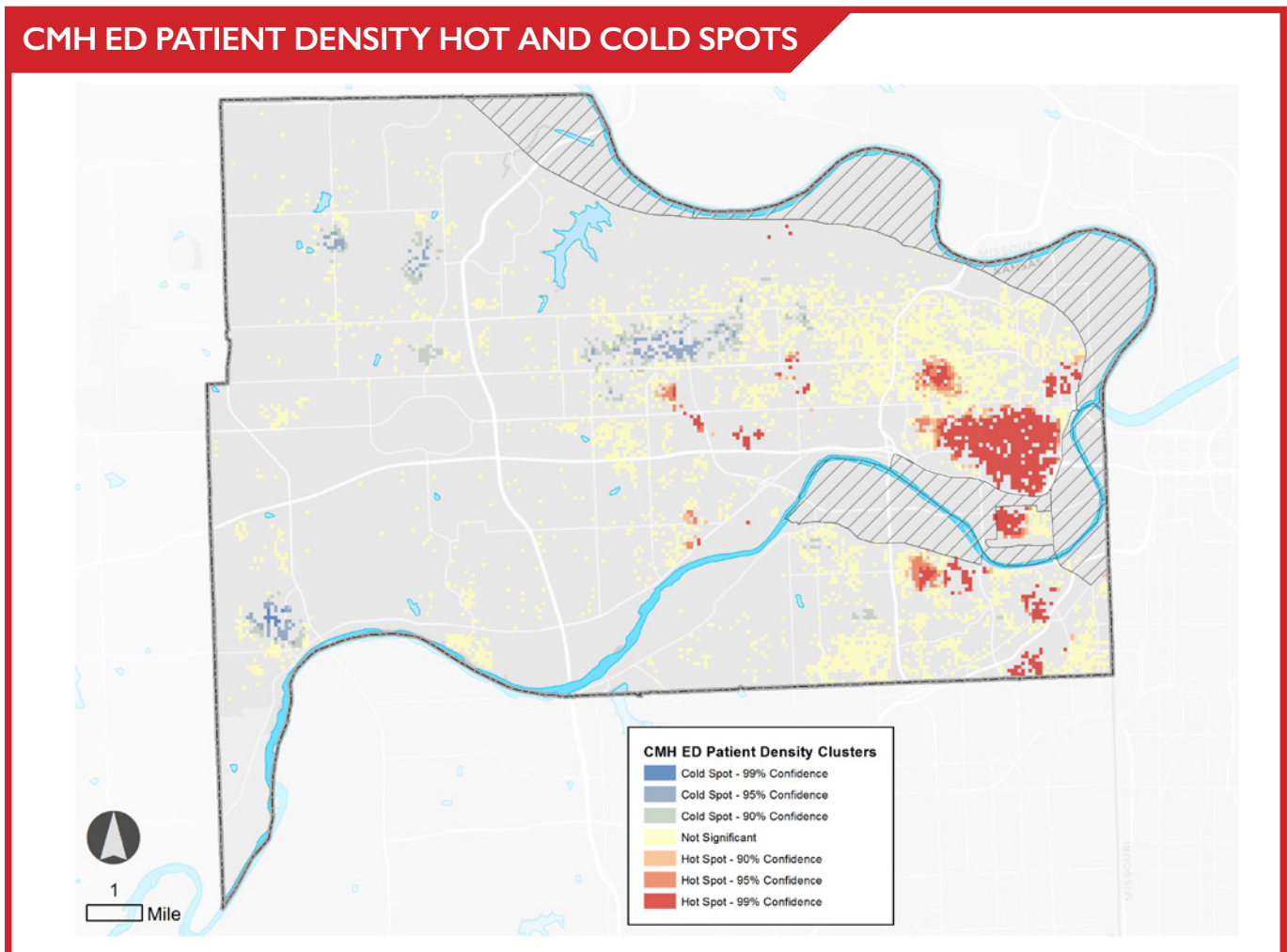
The maps above reflect the concentration of home address locations for each of the three patient groups. Areas of increasing patient density are shown progressing from blue through yellow to red. For the sake of clarity, areas with the fewest patients (lowest patient density) are shown without a color overlay.

At a glance, the density of CMH and KUMed ED patients appears to mirror Kansas City's population density, with the largest concentration of patients near the city's core. While total population density does figure into patient density, further analysis described below shows that ED patients are, in fact, more highly concentrated in some KC neighborhoods than in others.

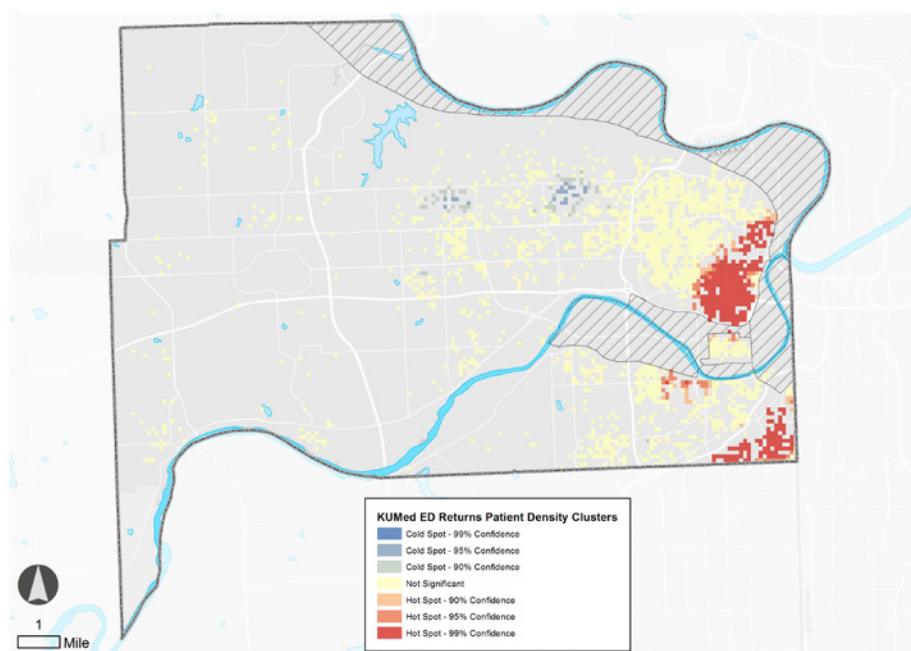
Patient density also falls off the further west one travels in Wyandotte County. This is most likely due to overall decreasing population density in the west, but distance to both hospitals' EDs could also play a role in some families' decisions to seek care closer to home through a community health center or urgent care clinic.

A more sophisticated geostatistical tool called optimized hotspot analysis takes the previous dot-density analysis one step further, to locate and identify on the map where patients are most and least densely clustered, compared to the surrounding patient distribution. This additional tool removes the subjectivity of "eyeballing" the dot-density map, using statistics to unambiguously identify the areas of greatest and least patient concentration.

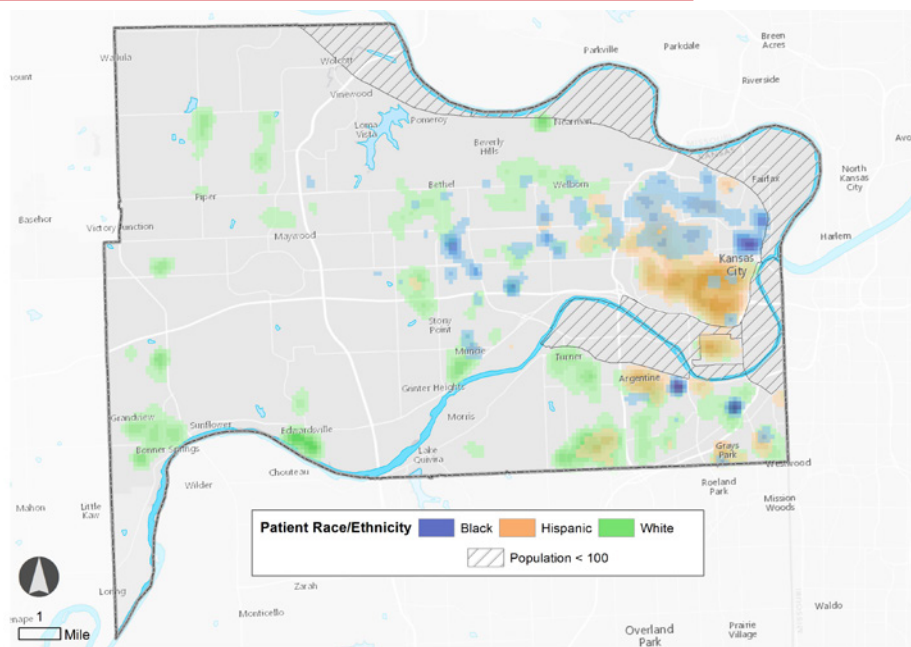
The following maps show the highest concentrations of patients in red, while blue areas show where patients are least concentrated. Hatch areas are census tracts with little or no population that were excluded from the statistical analysis. Comparing the two maps below reveals subtle differences in the distribution of the pediatric and adult ED patient populations. These differences are most evident in four areas: (1) Rosedale, immediately adjacent to KUMed Center; (2) immediately south of the Kansas River, (3) Armourdale; and (4) Northwest, Kensington and western Riverview.



KU MED ED RETURNS - PATIENT DENSITY HOT SPOTS



CMH ED PATIENTS BY RACE/ETHNICITY



As noted earlier, race and ethnicity figure prominently in one's access to medical and other resources in the U.S., with real consequences for healthy outcomes. Sensitivity to racial and cultural heritage also must be considered in designing and implementing racially/culturally sensitive interventions.

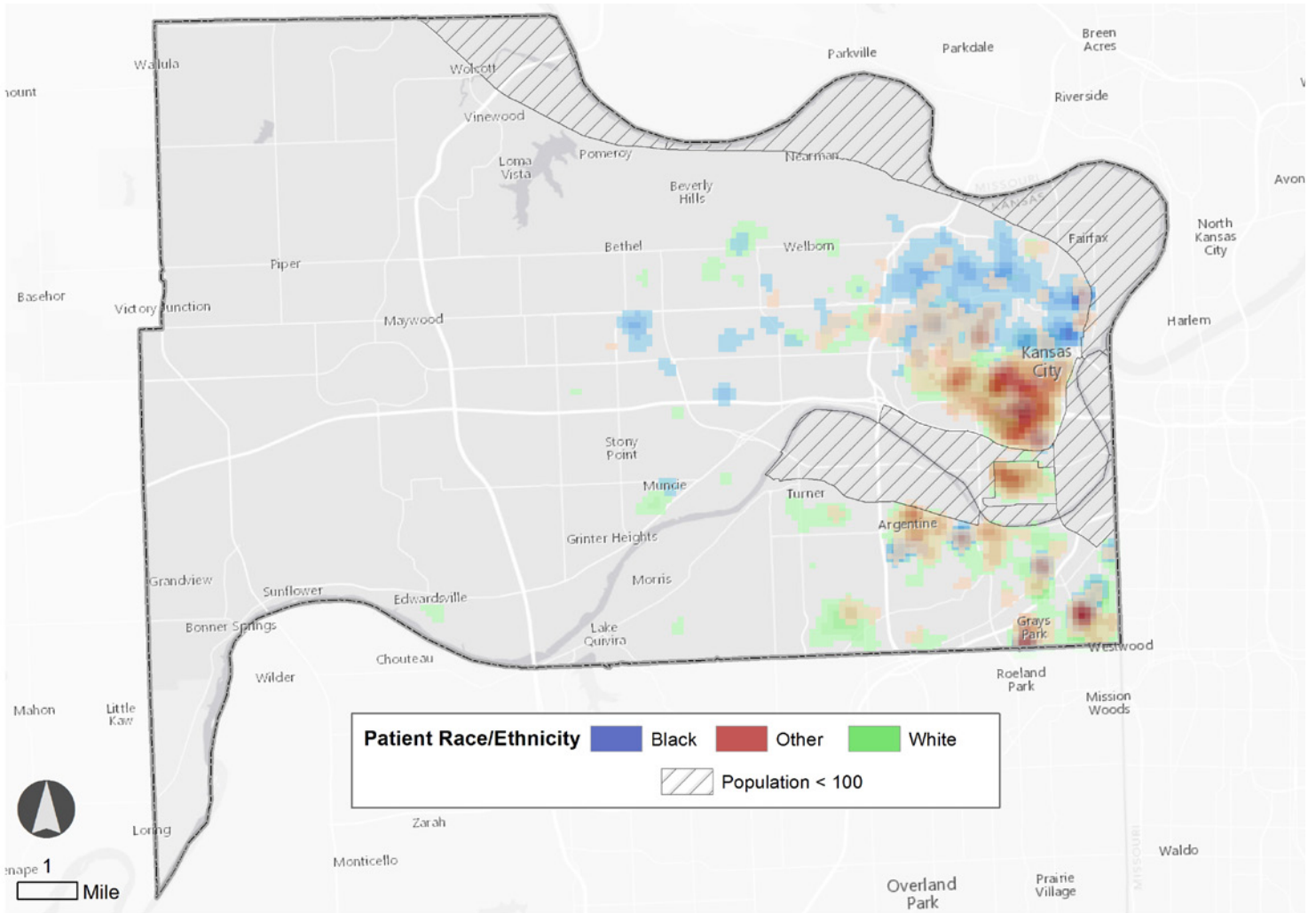
Racial and ethnic identity are particularly important distinctions for analysis of Hispanic/Latino populations. The U.S. Census asks respondents to report their race and ethnic identity in separate questions, allowing one to self-identify as single- or multiracial in combination with Hispanic/Latino ethnicity. The majority (about 2/3rds) of those who check "Hispanic/Latino" on their census form also self-identify as "White", while roughly one-quarter choose "Some Other Race".

The Children's Mercy patient records in this study differ from the Census practice by rolling race and ethnicity into a single entry for race. Although neither practice is inherently better than the other,⁷ the difference in reporting does introduce a degree of complexity in comparing race/ethnicity demographics the CMH data set with those from the Census.

This complication in racial and ethnic identity is evident in the map of CMH patient race and ethnicity as recorded in their medical records. Close examination of the map above reveals a split among patients in central Kansas City between identifying as White or Hispanic. This is shown on the map as a darkening of the orange shading to show where White and Hispanic patients overlap. This suggest two possibilities: (1) CMH patients living in this area comprise a mix of White and Hispanic persons, as defined by the Census; or (2) A significant proportion of Hispanic CMH patients' parents, limited to choosing either White (or another race) or Hispanic for their child's CMH medical record, follow the national trend and self-identify as White.

⁷ According to a recent report by the Pew Research Center, about two-thirds of Latinos consider "Hispanic" at least a part of their racial identity. Reflecting this trend and the ever-increasing size of the U.S. Latino population, the Census Bureau may combine race and ethnicity, including Hispanic/Latino, into a single question for the 2020 decennial census.

KU MED ED RETURN PATIENTS BY RACE/ETHNICITY



The KU Medical Center patient records in this study included five race categories: White, Black, Asian, Native American/Eskimo, and Other. No indication of patient ethnicity was included, and further inquiry revealed that this distinction was absent from KU medical records in the time period from which these data were pulled- a perplexing omission given Kansas City's significant Hispanic/Latino population, and one that KUMed Center has since corrected by adding the category "Hispanic/Latino" to their medical records form, lessening the confusion in identifying this important group in KUMed records.

KUMed Center patients who self-identify as "Other" are largely concentrated in areas known from Census data to be predominantly Hispanic, overlapping with a smaller group of KUMed patients who self-identify as White. Similar to the CMH patient race data, this could mean that KUMed patients in central Kansas City comprise either (1) a mix of White and Hispanic patients, the latter of whom identify as Other; or (2) mostly Hispanic KUMed Center patients who, lacking the choice to identify by their ethnicity on KU Medical Center forms, chose to self-identify as either White or Other.

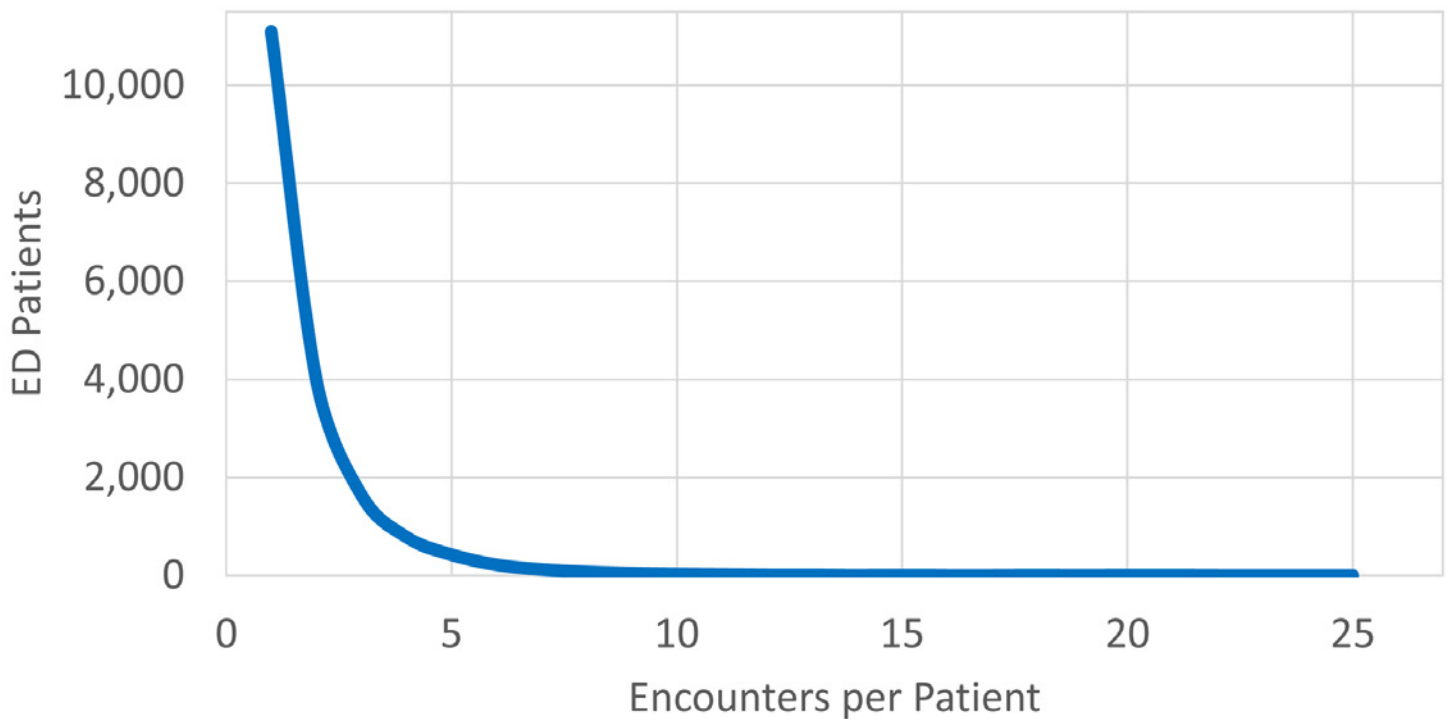
In summary, then, mapping patients from both medial systems provides a means to clarify ambiguities in the racial/ethnic identify of these patient groups by relying on the underlying demographics of the census tracts where these patients reside, as well as pointing to the importance of allowing patients a full range of choices on their medical records in how they self-identify.

Where Are CMH ED High Utilizers Located?

Identifying ED high-utilization patients and the conditions that bring them to the ED presents an opportunity to connect frequent ED visitors with more appropriate acute and routine medical care in alternative (and often lower cost) settings. Patient medical records provide the clinician with detailed information on a patient's condition, symptoms and treatment but generally do not give much insight into the patient's home environment and the availability of health care resources in their local community- factors that, from a social determinants perspective, figure prominently in health outcomes.

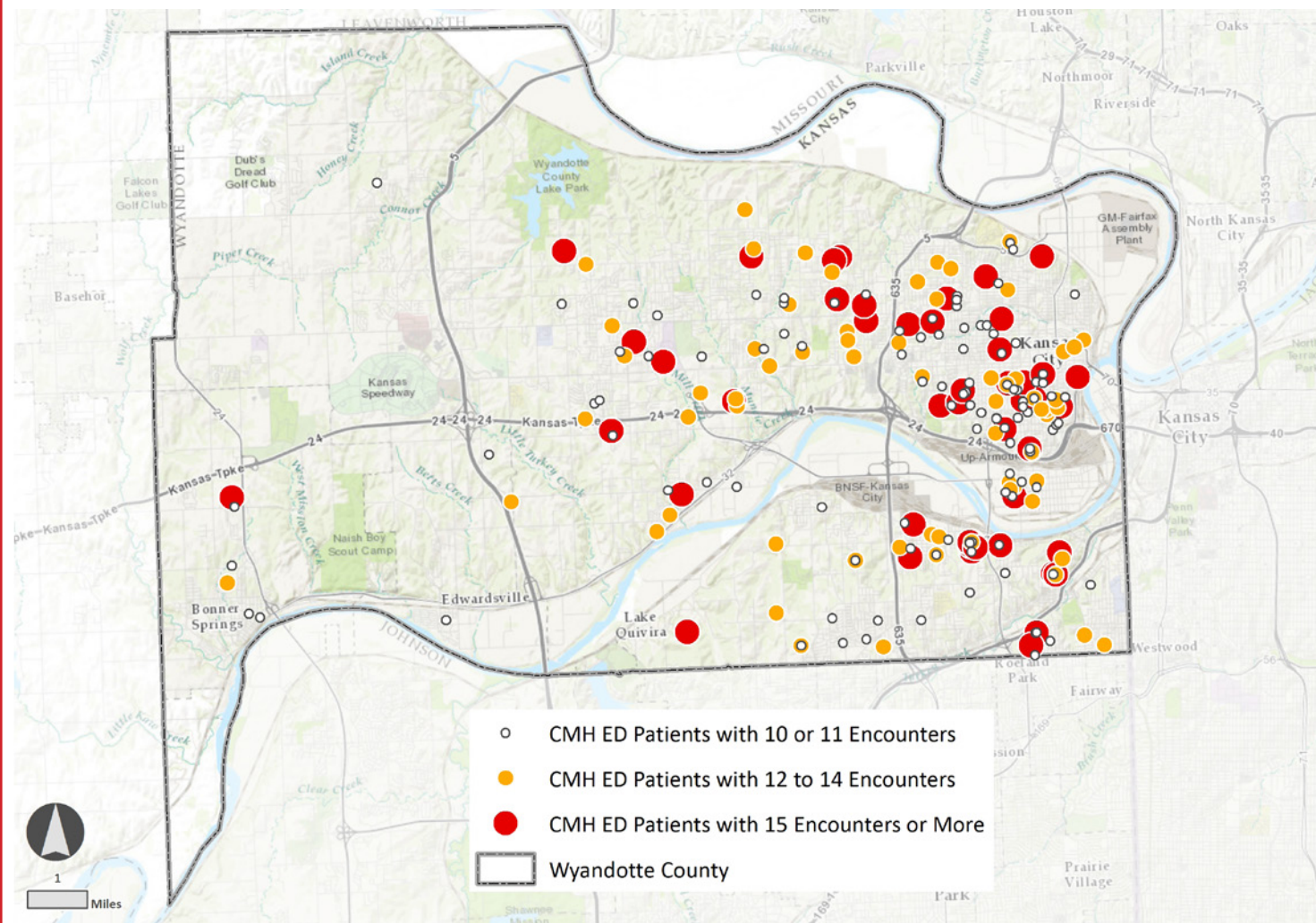
Locating high-utilization patients requires only that we know the patient's home address and the number of times the patient has visited the ED. The vast majority of CMH ED patients have five or fewer ED encounters over the periods covered by this study, tapering off as the number of encounters approaches 10.

ENCOUNTER PER CMH EH PATIENT (2011-12 and 2013 - 2014)



For ease of viewing, only patients with 10 or more visits are showing on the map below, although the pattern is the same for patients with 5 or more visits.

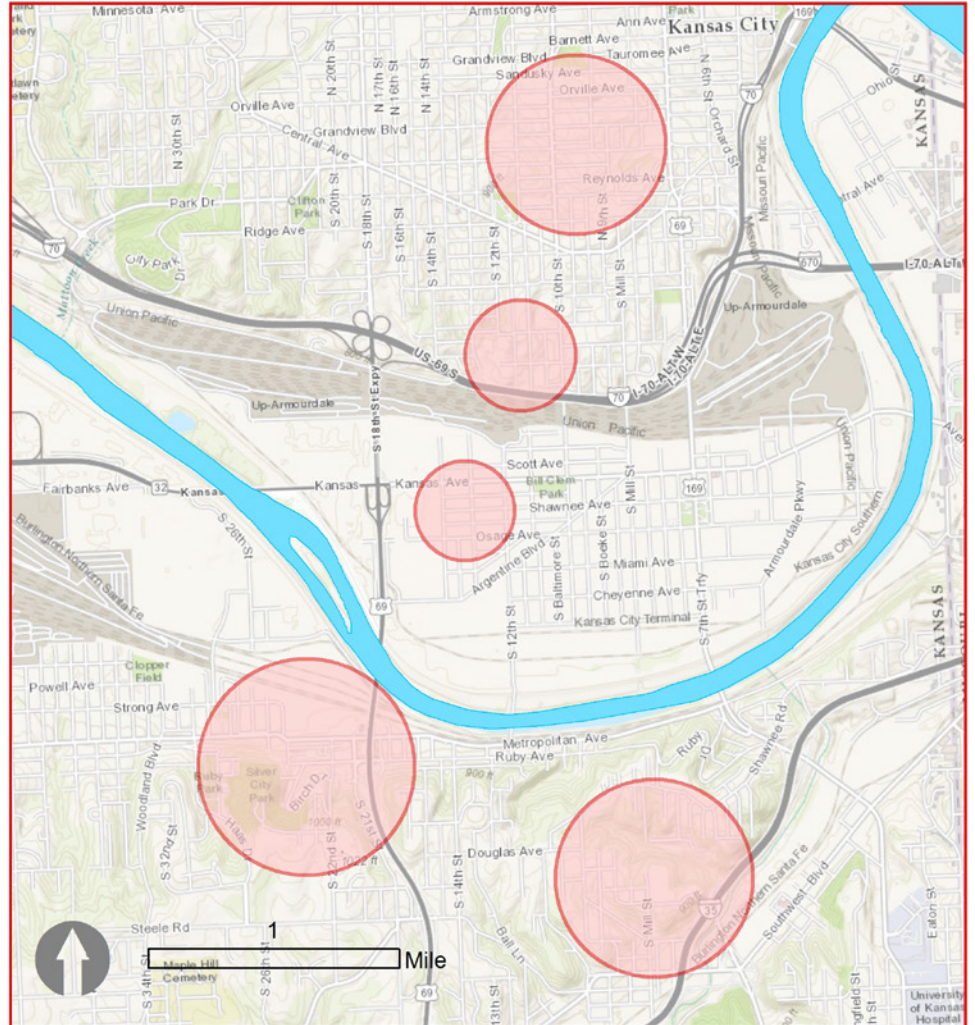
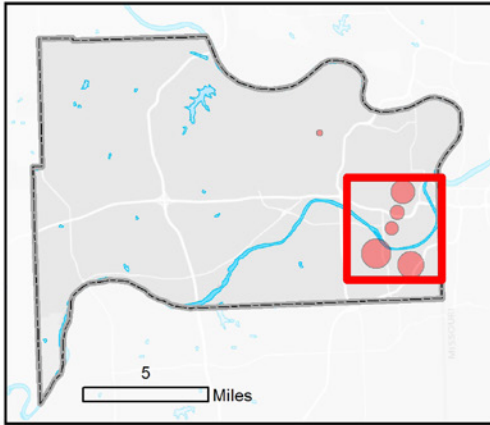
CMH ED FREQUENT PATIENTS - 10 OR MORE ENCOUNTERS



As with the earlier dot-density map, a glance at the encounters map appears to show clustering of high-utilization patients in the eastern end of Wyandotte County, but it is difficult to discern precise clustering patterns visually.

To identify statistically significant clusters of high-utilization patients, we repeated the hot and cold spot density analysis (“CMH ED Patient Density Hot and Cold Spots”), only in this case each patient location (“dot” or point) was weighed by that patient’s number of ED encounters (more encounters= greater weight). The weighting ensures that clusters of patients with high numbers of ED visits stand out from the rest of the mapped patients.

CMH ED STATISTICALLY SIGNIFICANT HIGH-UTILIZATION CLUSTERS



The results of this analysis are clusters of points on the map, corresponding to the home locations of high-utilization patients. To protect patient confidentiality on the close up map (below, right), we moved these clustered points, replacing each cluster with a blue circle that approximates the location and size of each high-utilization patient cluster.

Because the circles only approximate the high-utilization patient clusters, they should not be seen as hard boundaries but, rather, as guides to further investigating the local neighborhood conditions in these areas, as well as an exploration of the personal health care experiences of residents of these areas.

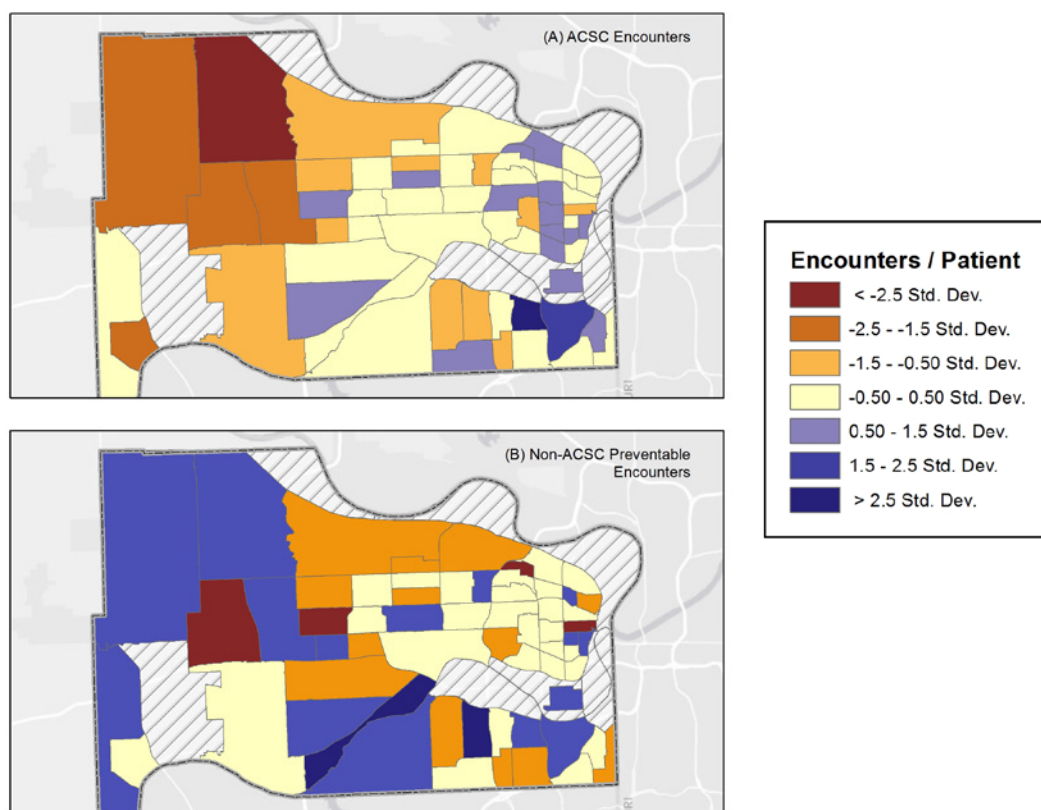
Patient Diagnoses in CMH ED Records and Local Access to Medical Care

The diagnoses recorded in emergency department encounter records can provide unique insight into the availability of adequate medical care in the neighborhoods where patients reside. A select set of diagnoses called Ambulatory Care Sensitive Conditions (ACSCs) are recognized in the literature as an indication of a potential lack of access to routine medical care. These conditions, while most likely warranting a trip to the hospital, might not have proceeded to the point of requiring an ED visit had the patient's condition been properly managed.⁸

CMH ED patient encounter records can contain up to five ICD-9 diagnosis codes. We counted by census tract the encounter records having an ACSC diagnosis code as the first diagnosis,⁹ 10 and identified tracts having significantly high and low rates of ACSC encounters. Areas with high ACSC rates are expected to demonstrate more limited health care access than other areas. As panel A in the following map shows, more of the high-ACSC areas are the same ones previously shown to be communities of color with clusters of high ED utilization,¹¹ implying that those areas lack access to routine health care.

At CMH's request,¹² as a check on the pattern seen in the distribution of the ACSC patients, we also analyzed the distribution of a second set of encounter records, not included in the ACSC encounters, which we refer to as non-ACSC Preventable conditions. These include primary diagnoses of conditions like broken bones; wounds, lacerations and abrasions; contusions; erythema; burns; and poisonings, among others. As can be seen in the panel below B, the distribution of these conditions differs markedly from that of the ACSC conditions, with few overlaps with areas of high ACSC rates.

ACSC AND NON-ACSC PREVENTABLE ENCOUNTERERS



⁸ The information contained in the billing records provided by CMH is limited in what it can say about the circumstances of a patient's ED visit. For example, without triage data we cannot assess the acuity and urgency of the condition that brought a patient to the ED. We also must rely on the billing codes in these records to infer the patient's primary diagnosis, rather than the physician's notes on primary diagnosis as recorded in the patient's medical record (although hopefully the billing and medical records should be in accord for the most part).

⁹ The literature generally supports using the first diagnosis in an analysis such as this. Second diagnoses are sometimes also used to infer comorbidities to the first diagnosis or to expand the sample size. We chose to use the first diagnosis exclusively.

¹⁰ The set of ACSC codes used in this study can be found in the Appendix.

¹¹ One additional tract in the southwest corner of Wyandotte County was excluded from the census tract level ACSC statistical analysis due to too few CMH admissions in the tract, a limitation that did not apply in the dot-density analyses.

¹² Thanks to Margo Quiriconi, MPH, RN, Director, Community Health Initiatives, Children's Mercy Hospitals & Clinics, for suggesting this line of inquiry and for painstakingly preparing the list of non-ACSC Preventable condition ICD-9 codes, included in the Appendix.

Drive Time to CMH EDs and Household Vehicle Access

It goes without saying that to receive ED services, a patient must be able to get to the ED. How the patient gets to the ED depends in large part on where the patient is coming from- home; and accident scene; another hospital, clinic or physician's office; or another location.

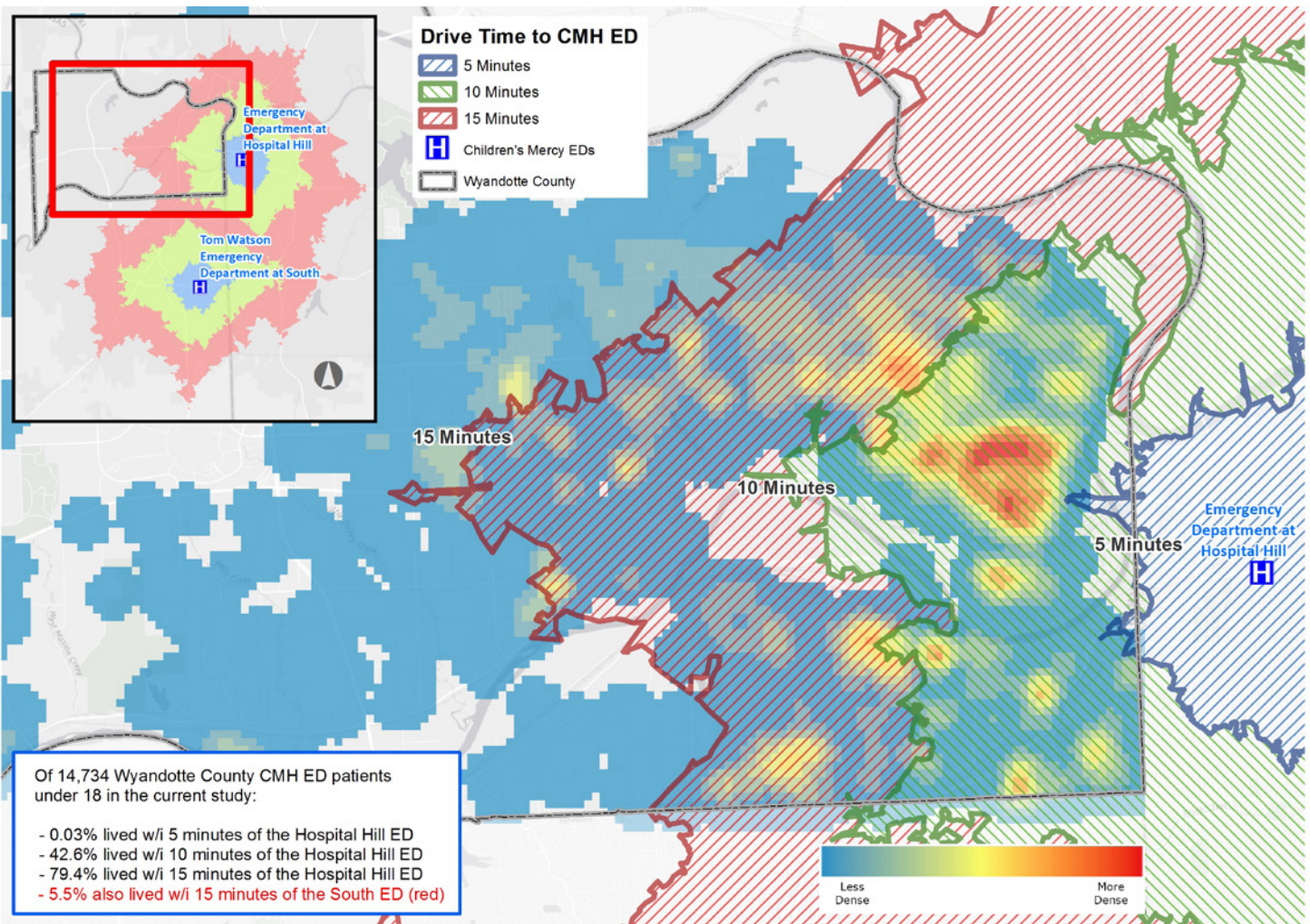
The CMH ED encounter records include a field for patient origin (i.e., the location from which the patient traveled to the CMH ED). According to the combined 2011-2012 and 2013-2014 CMH ED patient records, the overwhelming majority of these patients (at least 95%) arrive at the CMH ED from home.¹³

Drive time analysis shows the time it takes to drive along all possible routes to a given location. A map showing drive time to CMH's EDs, when overlaid on patient locations, reveals that under ideal conditions (good weather, no traffic):

- 0.03% of the Wyandotte County patients in this study live within 5 miles' drive time of a CMH ED;
- 42.6% of patients live between 5 and 10 minutes' drive time from a CMH ED; and
- 32.3% of patients live between 10 and 15 minutes' drive time from a CMH ED.

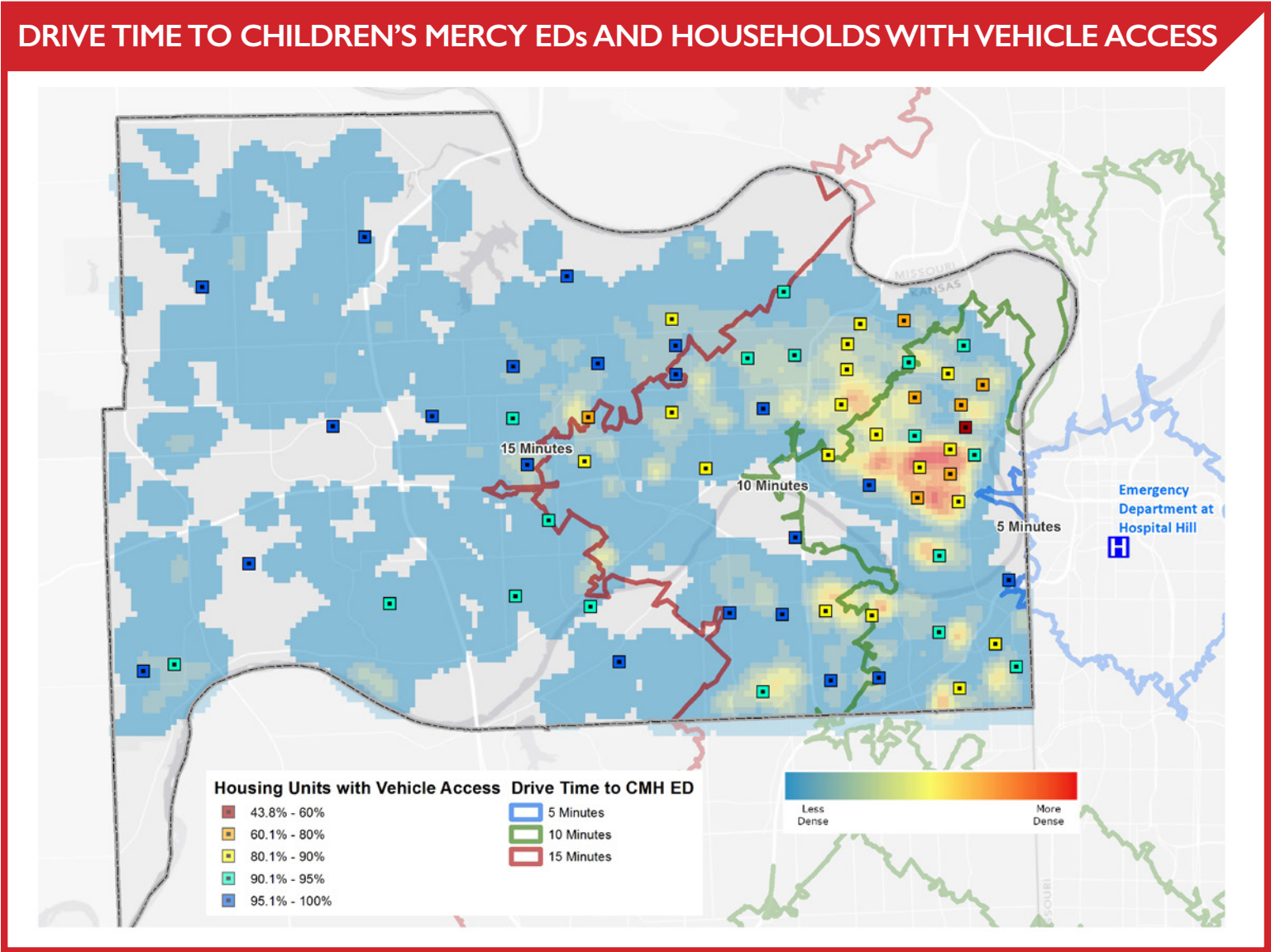
Taken together, nearly 80% of the CMH ED patients in this study live within a 15-minute drive of a CMH ED

DRIVE TIME TO CHILDREN'S MERCY EDs

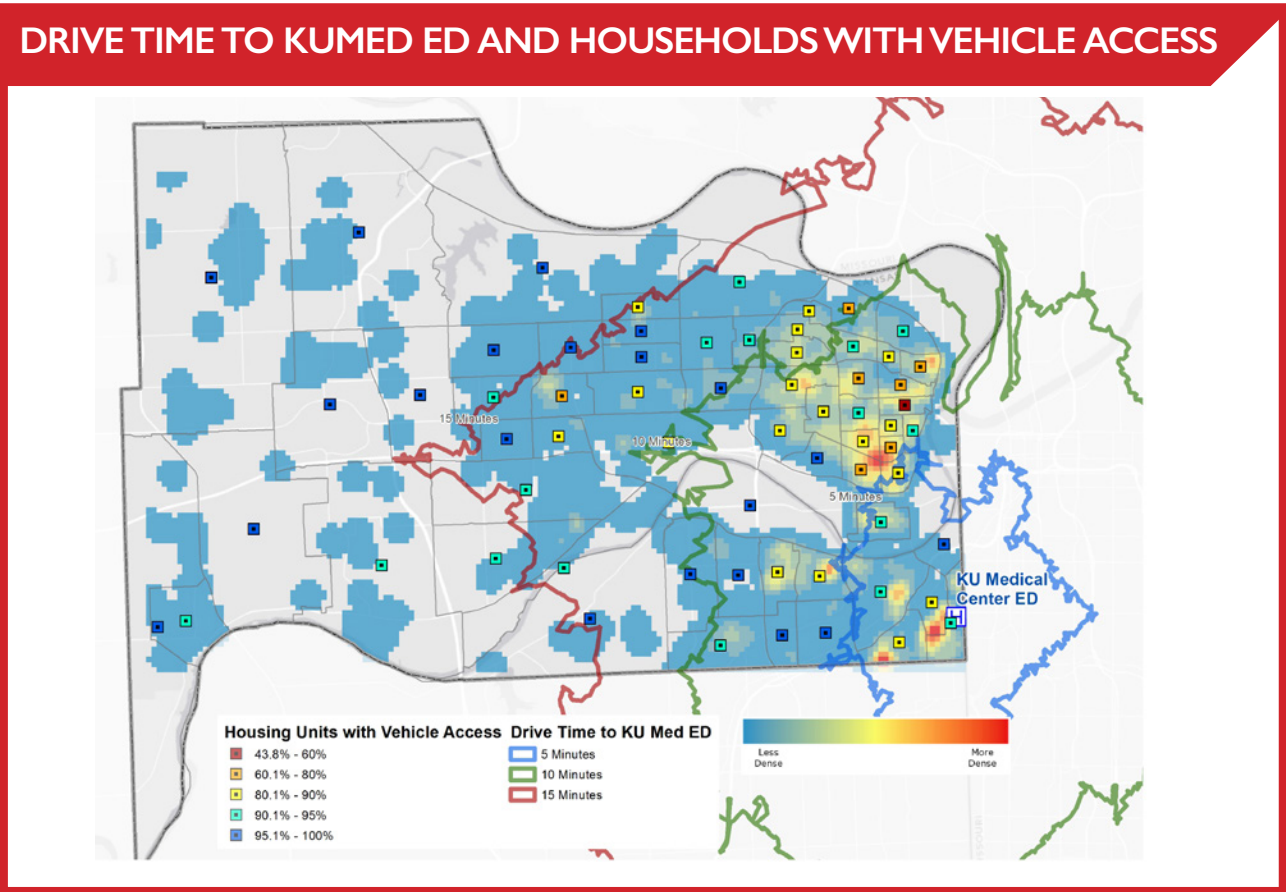
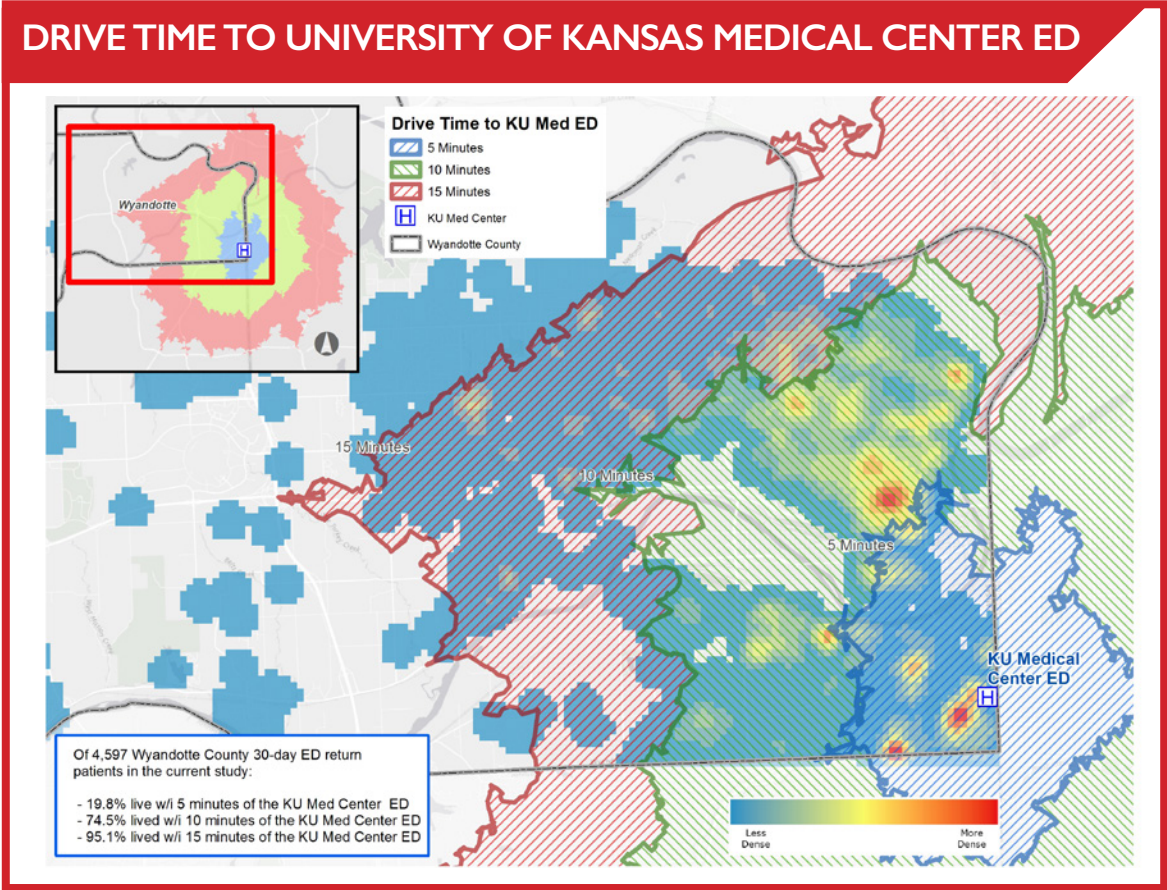


But proximity is only part of the story of ED access. Patients must have a means of transportation to make the trip, either by public transit or by private vehicle, either one's own or one belonging to a friend or relative.

The U.S. Census provides a measure of household access to a vehicle. Each square point on the map below represents the geographic center (centroid) of a census tract. The color of the point reflects the census estimate of the availability of a motor vehicle to households in the tract. From the map, it is clear that many of the households in driving distance from a CMH ED (particularly those within 10-minutes' drive time) lack ready access to private transportation, imposing a significant barrier to ED access.



Similar maps of drive time and vehicle access for KUMed Center ED Return patients suggest that patients within 10 minutes' drive time of KUMed Center ED may face similar barriers to transportation by private vehicle.



HISTORY MATTERS:

POLICIES THAT SHAPED THE LANDSCAPE OF HEALTH INEQUITY IN WYANDOTTE COUNTY



Today's built environment is not a naturally occurring landscape. It resulted over time from the activity of people building streets, bridges, houses, stores, hospitals, churches, factories and all the other structures where community happens. Before the turn of the last century, much of this activity happened ad hoc, when and where needed. In most U.S. cities, rich and poor, White and Black lived in much closer proximity than in today's cities. This was largely of necessity, dictated by the walking distance to work, to shop, to worship and to socialize.

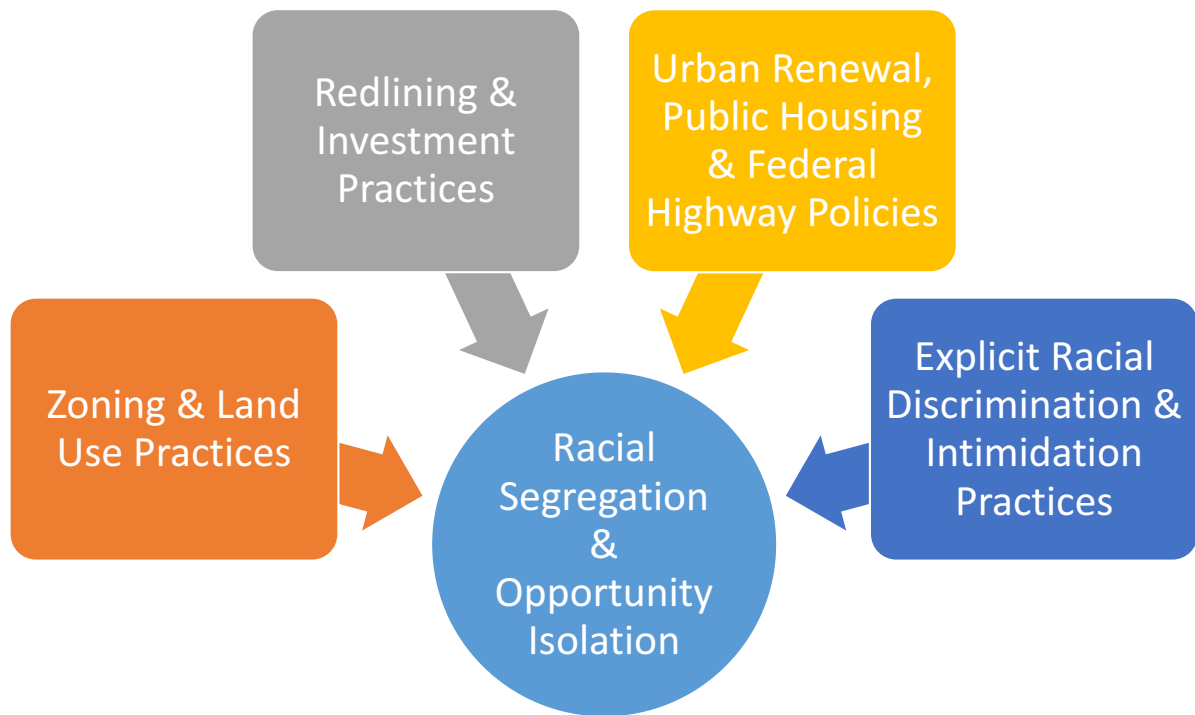
This began to change in the early decades of the 1900's with an increased emphasis on mechanized transportation and controlling urban growth. Cities developed systems of land use zoning to compartmentalize residential, commercial and industrial activities. Federal and state regulatory agencies developed projects, while private real estate boards worked to train member realtors in best practices to meet the demand for housing while maximizing profit.

Unfortunately, the policies and practices that were developed to manage growth also presented opportunities for abuse. New forms of zoning became the means to exclude lower income residents and people of color from more affluent, predominantly White neighborhoods or to site noxious and undesirable activities and public works, like sewage treatment plants, incinerators, and heavy industry, near existing low-income communities and communities of color. Federal public housing projects and the development of the federal highway system decimated neighborhoods and displaced residents while failing to provide alternative housing for those who were displaced. Realtors were trained to establish neighborhood associations to enforce racial covenants in their housing developments and to include restrictions in property deeds to prevent the future sale of homes to Blacks, the foreign-born, low-income Whites and other "undesirables".

Understanding how these policies and practices came into being- and the values that informed them- is a vital step in crafting more equitable strategies moving forward. While a comprehensive history of urban development in the twentieth century is beyond the scope of this report,¹⁴ two examples- one federal and one municipal- demonstrate how policy choices around housing and land use have perpetuated and reinforced an uneven distribution across Kansas City and Wyandotte County of the resources needed by residents to thrive.



HISTORICAL DRIVERS OF RACIAL SEGREGATION AND ISOLATION OF COMMUNITIES OF COLOR



FEDERAL POLICIES RADICALLY RESHAPED URBAN AMERICA

The Build-out of Suburbia

- The FHA and the creation of the standard mortgage 1934
- The GI Bill 1944
- Federal Highway Act 1953
- Infrastructure Subsidies for New Suburbs



The Demolition of Urban Areas

- Urban Renewal 1949
- High rise public housing
- Berman v Parker (1954): Justification of using eminent domain for blight removal
- Federal Highway Act 1953

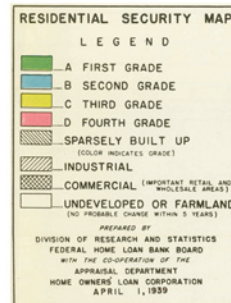
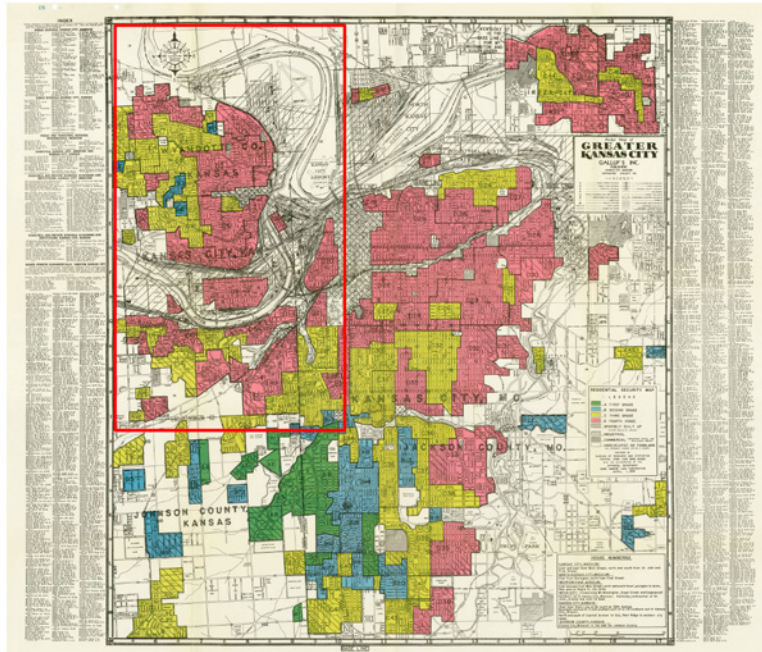


The Home Owner's Loan Corporation and Federally Sanctioned Housing Discrimination

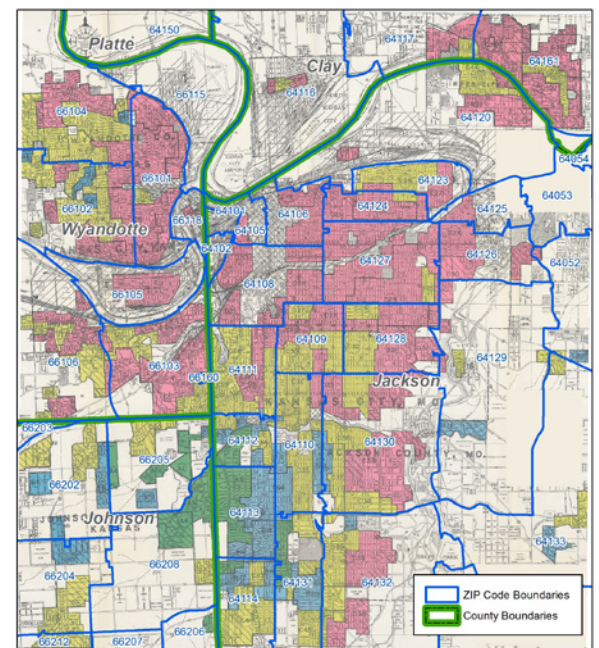
As in most American cities in the 1930's, residents of Kansas City and Wyandotte County suffered tremendous economic loss in the wake of the Great Depression. Home foreclosures were common as out-of-work breadwinners struggled to put food on the table and hold onto their homes. In an attempt to assist homeowners to save their homes through refinancing, the federal government created the Home Owner's Loan Corporation (HOLC). HOLC's chief purpose was to insure the refinance loans that lenders made to families desperate to keep their home.

To safeguard the taxpayer money used to insure these loans, HOLC initiated a neighborhood assessment process in 239 American cities, including Kansas City, MO/KS, to determine the relative risk of lending to residents in different sections of the city. HOLC engaged local realtors, mortgage lenders and others familiar with real estate landscape in their city to assess city neighborhoods for the risk that their residents might default on a home loan. HOLC standardized the assessment process by providing area-description forms, requiring assessors to evaluate neighborhoods and rate them A, B, C or D in increasing order of their insurance risk. Maps were drawn up reflecting these neighborhood risk ratings, with neighborhoods color-coded green (A, "First Grade", "Best"), blue (B, "Second Grade", "Still Desirable"), yellow (C, "Third Grade", "Declining") or red (D, "Fourth Grade", "Hazardous"). The highest risk, D-rated neighborhoods were considered "redlined" for home loans.

HOME OWNER'S LOAN CORPORATION (HOLC) MAP FOR GREATER KANSAS CITY



KANSAS CITY HOLC SECURITY MAP AND PRESENT-DAY COUNTY AND ZIP CODE BOUNDARIES



The HOLC assessments differed from modern tax assessment practices in two crucial ways:

- Current assessors evaluate parcels individually, within the context of surrounding property values; the HOLC assessors evaluated whole neighborhoods as a piece.
- Current assessors evaluate only the land and improvements on a parcel; HOLC assessors also took into consideration the neighborhood residents, basing their risk assessments on assumptions about the people who lived in the homes to be refinanced.

It is this second difference that made the HOLC assessments especially damaging to neighborhoods deemed high risk. Assessors ranked neighborhoods the lowest that had the highest number of Blacks (“Negroes”), poor Whites, foreign-born and other “undesirables”, reflecting majority White racial, ethnic and class biases. Notably, the federal HOLC assessor forms included a field specifically for the percentage of Blacks in the neighborhood, singling out the presence of Blacks in a neighborhood as particularly harmful to property values and the overall likelihood for loan repayment.

The HOLC forms also provided a notes field at the bottom of the assessment form to allow the assessor to elaborate on their reasoning for rating neighborhoods as they did, a point to which we will return.

HOLC AREA DESCRIPTION ASSESSOR'S FORM

AREA DESCRIPTION
Security Map of Greater Kansas City

1. POPULATION: a. Increasing _____ Decreasing _____ Static Yes _____
b. Class and Occupation _____ Industrial laborers _____
c. Foreign Families _____ % Nationalities _____ For mixed _____ d. Negro _____ 87 %
e. Shifting or Infiltration _____ Negroes _____

2. BUILDINGS: **FREDOMINATING** 100 % **OTHER TYPE** _____ %
a. Type and Size _____ Singles 4-10 rms _____
b. Construction _____ Frame _____
c. Average Age _____ 40-45 yrs. _____
d. Repair _____ Fair to poor _____
e. Occupancy _____ 95% _____
f. Owner-occupied _____ 60% _____
g. 1935 Price Bracket \$ 500 - 5000 % change _____ \$ _____ % change _____
h. 1937 Price Bracket \$ 500 - 5000 % _____ \$ _____ % _____
i. Current Price Bracket \$ 500 - 5000 % _____ \$ _____ % _____
j. Sales Demand _____ Up to \$2500 Fair _____
k. Predicted Price Trend _____ Static _____
l. 1935 Rent Bracket \$ 10 - 40 % change _____ \$ _____ % change _____
m. 1937 Rent Bracket \$ 10 - 40 % _____ \$ _____ % _____
n. Current Rent Bracket \$ 10 - 40 % _____ \$ _____ % _____
o. Rental Demand _____ White: \$25 - 30 _____
p. Predicted Rent Trend _____ Negro: \$15 - 20 _____
Static _____

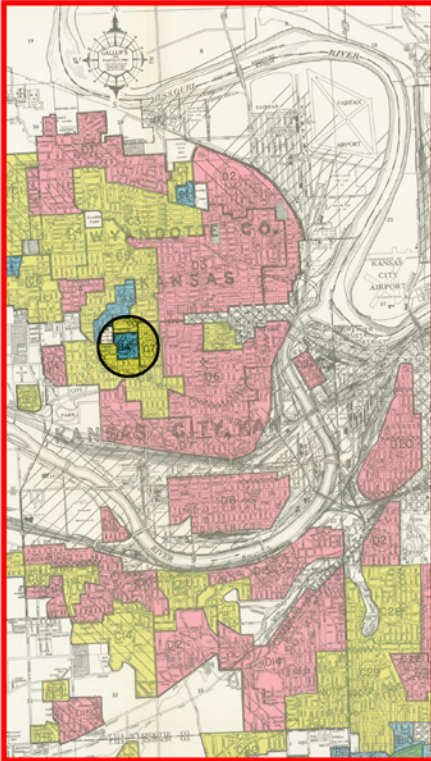
3. NEW CONSTRUCTION (past yr.) No. _____ 0 Type & Price _____ How Selling _____
PO 58 \$175,000
4. OVERHANG OF HOME PROPERTIES: a. HOLCIP 33 \$70,100 b. Institutions 97 \$125,200
5. SALE OF HOME PROPERTIES (2 yr.) a. HOLC 10 for \$16,23% Institutions _____
6. MORTGAGE FUNDS _____ Limited _____ 7. TOTAL TAX RATE PER \$1000 (193.8) \$ 59.50
HOLC LOANS - 443
as of 4-1-39

8. DESCRIPTION AND CHARACTERISTICS OF AREA:
This large rambling area is occupied almost entirely by negroes, there being a smattering of whites between 5th and 7th Streets and in the other parts of the outer fringe at the south and west. The ground is rolling to hilly with several draws and gullies, houses old and poorly kept as in all negro areas. It is spotty, there being between 5th and 7th Streets, from State north to Freeman, some good houses occupied largely by white people, with values depressed and sales very poor due to the negro influence and continued infiltration. Between Washington and Oakland, 11th to 13th Streets, is a small section of good houses several of which cost above \$10,000, occupied by the higher income negroes. Between Stewart and Cleveland from 3rd to 7th Streets, the houses are of much better grade than those found throughout the colored portions of the area excepting the spot just mentioned above. The area is adequately served in the matters of schools, transportation and utilities. Negroes in this large area wield important political influence with a wider latitude of freedom than is enjoyed by negroes on the Missouri side. As a whole it is a spotty section, a typical negro area with very little pride of ownership evident. Demand for property has been slow with the great majority of houses in the cheaper class, very few selling above \$3000.

9. LOCATION: Kansas City, Kansas SECURITY GRADE Fourth AREA NO. D-3 DATE 2-1-39



B-RATED AREA MAP AND DESCRIPTION



AREA DESCRIPTION

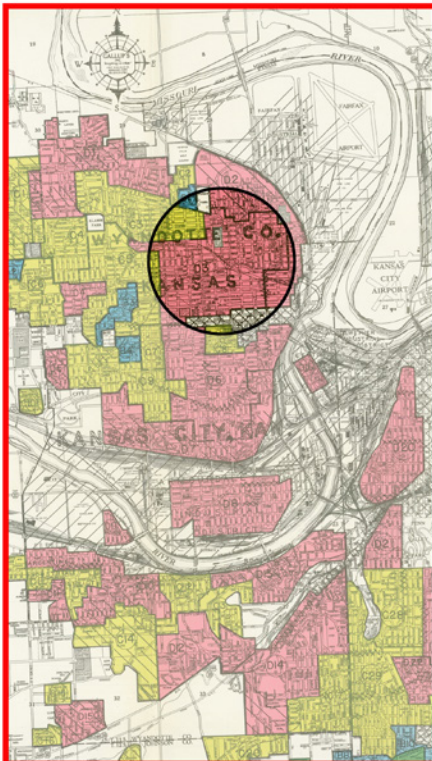
Security Map of Greater Kansas City

1. POPULATION: a. Increasing _____ Decreasing _____ Static Yes
- b. Class and Occupation Business and professional
- c. Foreign Families 0 % Nationalities _____ d. Negro 0 %
- e. Shifting or Infiltration None

A bungalow neighborhood known as Arickree Addition. Typical of the entire city the area is spotty, although the great majority of the houses are singles 4 to 6 rooms, one-story, constructed of frame and stucco. Transportation facilities are excellent, the area has all improvements and utilities. Wyandotte High School is a big advantage to the neighborhood. The section is popular with Roman Catholics due to the nearby church institutions. Property demand has been only fair. It is a good rent area because of its location. Local improvements assessments have been paid out.

9. LOCATION Kansas City, Kansas SECURITY GRADE Second AREA NO. B-4 DATE 2-1-39

D-RATED AREA MAP AND DESCRIPTION



AREA DESCRIPTION

Security Map of Greater Kansas City

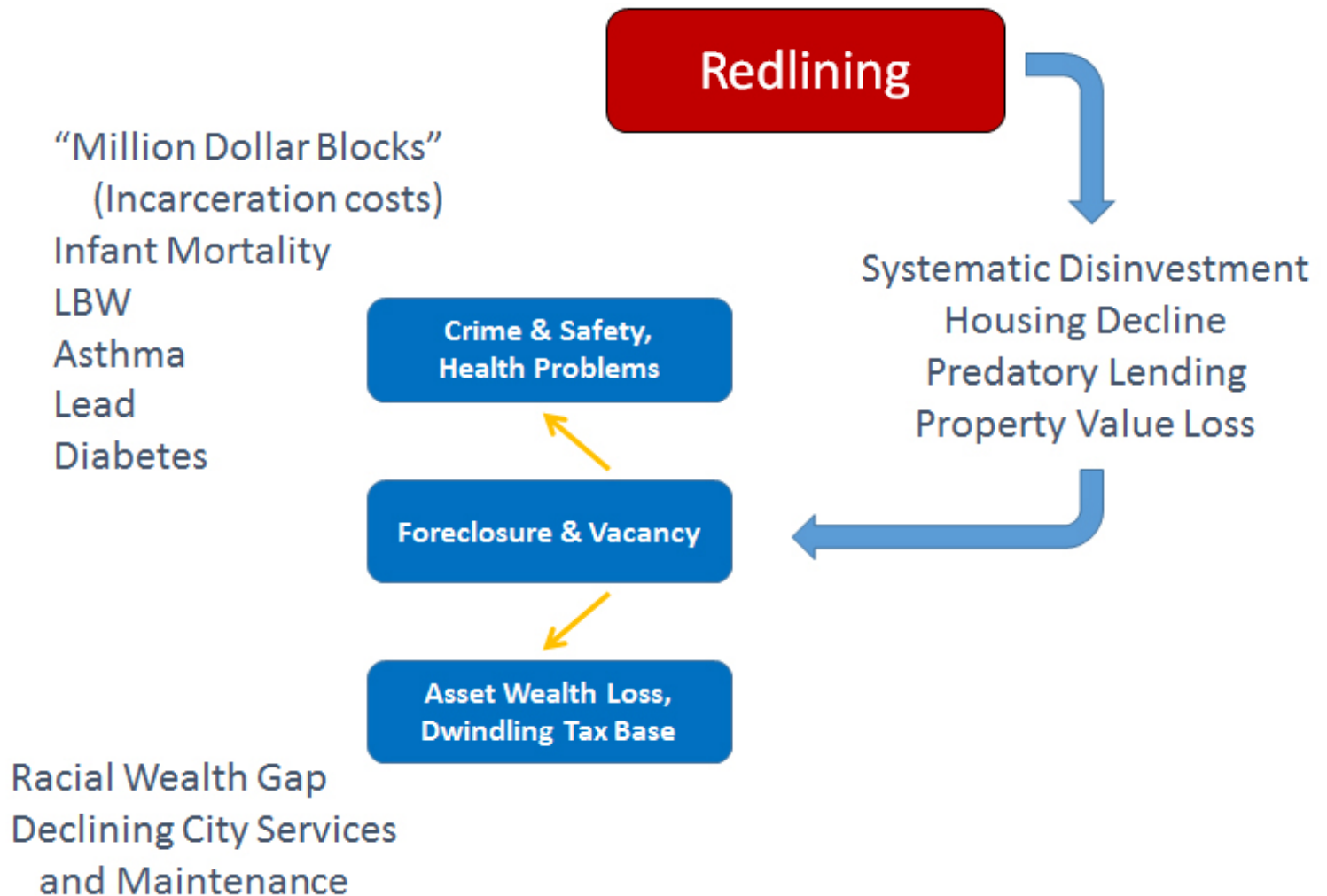
1. POPULATION: a. Increasing _____ Decreasing _____ Static Yes
- b. Class and Occupation Industrial laborers
- c. Foreign Families 1 % Nationalities Few mixed d. Negro 87 %
- e. Shifting or Infiltration Negroes

This large rambling area is occupied almost entirely by negroes, there being a smattering of whites between 5th and 7th Streets and in the other parts of the outer fringe at the south and west. The ground is rolling to hilly with several draws and gullies, houses old and poorly kept as in all negro areas. It is spotty, there being between 5th and 7th Streets, from State north to Freeman, some good houses occupied largely by white people, with values depressed and sales very poor due to the negro influence and continued infiltration. Between Washington and Oakland, 11th to 13th Streets, is a small section of good houses several of which cost above \$10,000, occupied by the higher income negroes. Between Stewart and Cleveland from 3rd to 7th Streets, the houses are of much better grade than those found throughout the colored portions of the area excepting the spot just mentioned above. The area is adequately served in the matters of schools, transportation and utilities. Negroes in this large area wield important political influence with a wider latitude of freedom than is enjoyed by negroes on the Missouri side. As a whole it is a spotty section, a typical negro area with very little pride of ownership evident. Demand for property has been slow with the great majority of houses in the cheaper class, very few selling above \$3000.

9. LOCATION Kansas City, Kansas SECURITY GRADE Fourth AREA NO. D-3 DATE 2-1-39

Over 80 years have passed since the creation of the HOLC maps,¹⁶ and it would be a mistake to say that a neighborhood's HOLC ranking sealed its fate. Redlined neighborhoods were not automatically and invariably condemned to failure, any more than favored A- or B- ranked neighborhoods were guaranteed never to decline. Nevertheless, when the HOLC maps of most cities, including Kansas City, were compared with contemporary maps of socioeconomic conditions, health outcomes and more, striking overlaps emerge, reflecting a pattern of historical neighborhood disinvestment documented in, and subsequently influenced by, the HOLC maps and the racialized practice of redlining. Disinvestment, in turn, cascaded into decreased property values and the erosion of the tax base, driving previously redlined neighborhoods into a spiral of decline where poor health outcomes are more likely.

NEIGHBORHOOD LIFE COURSE



¹⁵ The scarcity of surviving copies of the HOLC maps suggests that the maps were not widely distributed among lenders for daily use.

¹⁶ The California Newsreel documentary "Race: The Power of an Illusion" explores the concept of race as a social construct rather than biological reality. Episode 3, "The House We Live In", details America's history of racialized real estate policy and practice, including redlining. <http://newsreel.org/video/race-the-power-of-an-illusion>

Contemporary Consequences of Decades of Housing Disinvestment in Kansas City and Wyandotte County

Low-Value Housing Stock and Health Risks

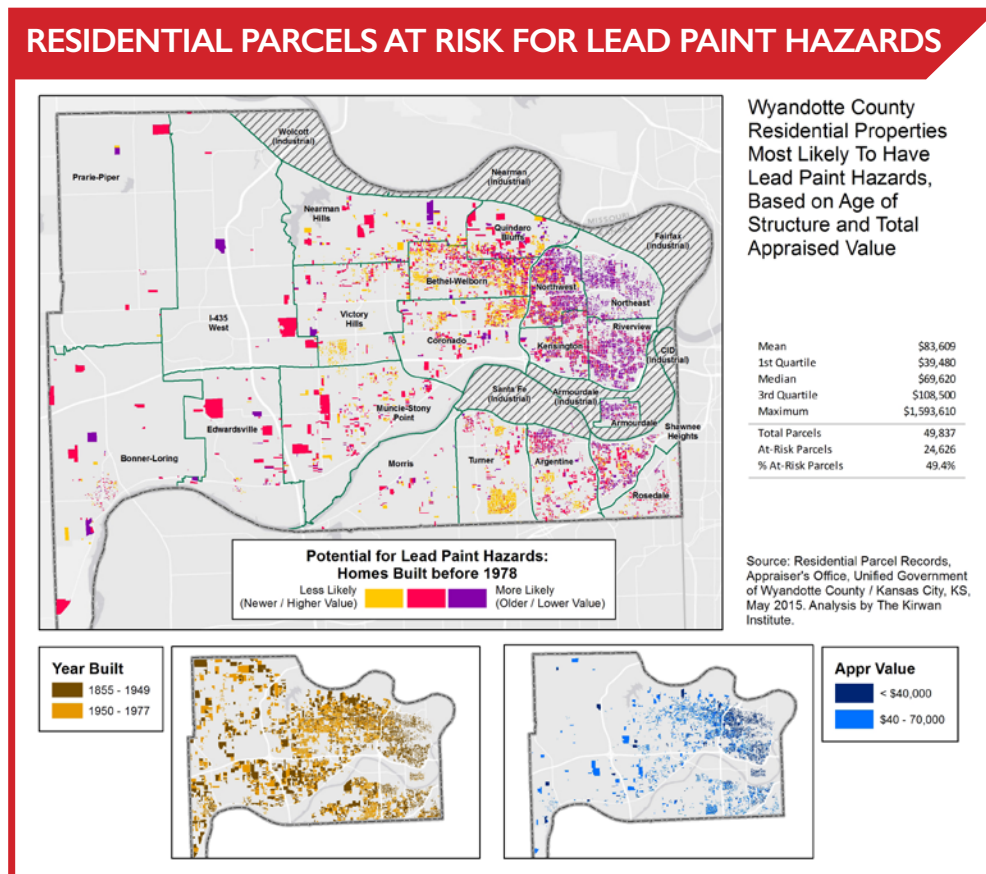
As previously stated, one of the lingering effects of systemic disinvestment in housing as a result of redlining has been the decimation of housing stock in previously redlined areas. Without investment, and with the loss of residents of means through outmigration to the suburbs, central-city housing has aged and declined, and replacement housing stock has not been built. Housing in these areas is therefore less likely to have been maintained or renovated to ameliorate or remove health threats like lead paint or to correct structural decline that can result in accidents and injuries, leaks and mold exposure.

Older homes, regardless of valuation, are more likely to contain surfaces with lead paint. The risk increases with age; homes built prior to 1950 are especially likely to contain lead paint, although the risk extends forward to the late 1970s when the sale and use of lead paint in home construction was finally outlawed. Whether a lead risk actually exists or not in these older homes is partially a function of home value: higher value properties are assumed to have had adequate maintenance and renovations to deal with lead hazards. In Addition to lead, older, low-value homes are also more likely to harbor mold or other indoor environmental risks, like insects and vermin, that create asthma triggers.

County parcel records provide two valuable pieces of information on residential properties that, taken together, can point to areas where the housing stock may present health risks:

- Residence age, recorded as the year the structure was built
- Assessed value of land and improvements

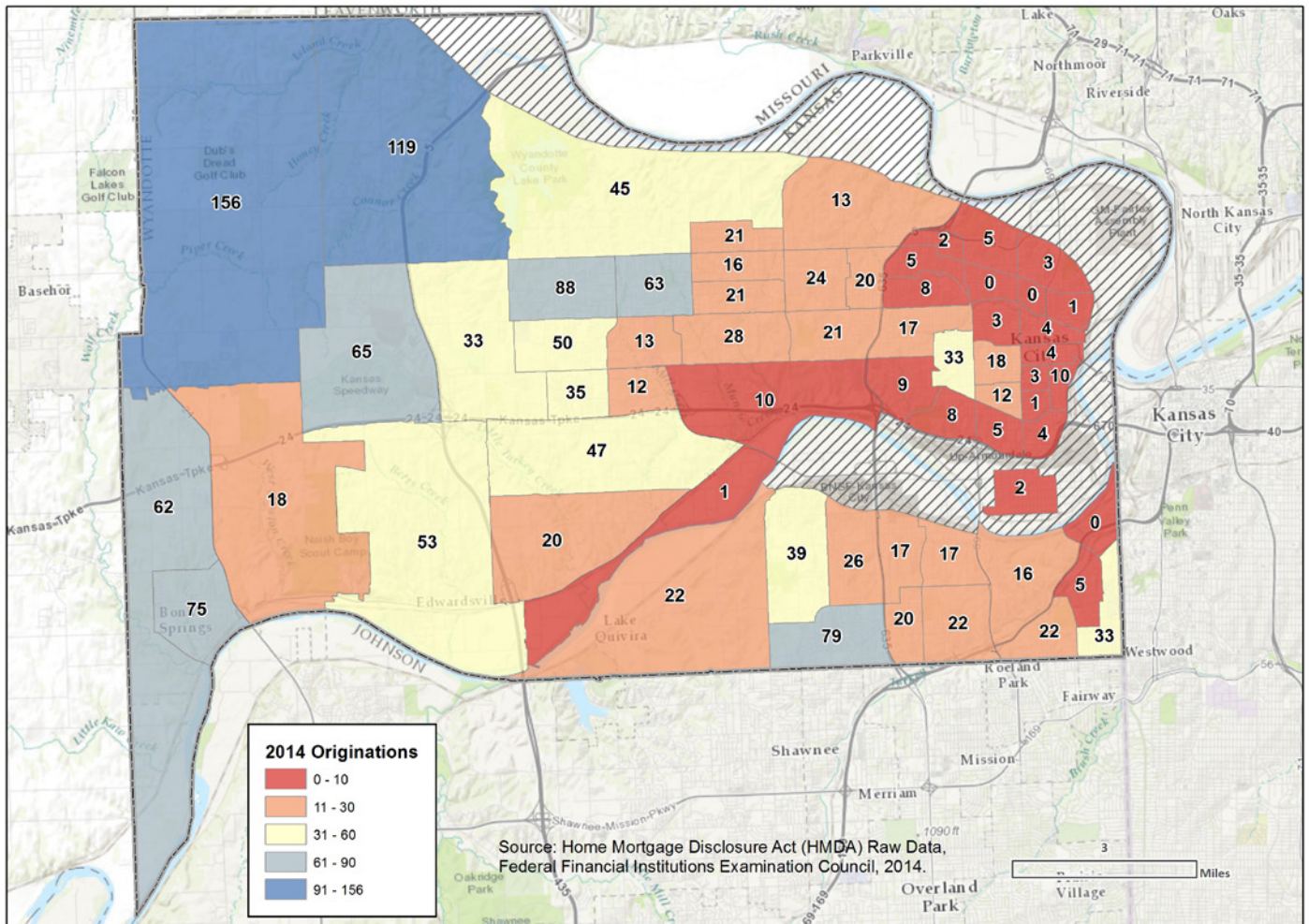
A residential parcel map for Wyandotte County combining home age and assessed value shows that the older, lower value properties most at risk for lead paint exposures overlap to a very large extent the areas of greater health risk identified on the high-risk population and Opportunity maps (i.e., the social determinants of health).



Low-Value Housing Stock and Mortgage Lending Activity

Foreclosures and high-cost loans, typically seen in contemporary, stressed housing markets, are surprisingly absent from Kansas City's central neighborhoods. A map of new mortgage loans using Home Mortgage Disclosure Act (HMDA) data reveals the reason why: most of these neighborhoods have very few mortgage-financed housing transactions for purchase refinance, or in some neighborhoods, none at all. Compared to areas in western Wyandotte County, the housing market in central Kansas City is virtually non-existent, with moderate activity in the intervening spaces. Once again, these very low activity neighborhoods correspond in large part with areas identified as having the greatest health risk.

2014 WYANDOTTE COUNTY HOME MORTGAGE LOAN ORIGINATIONS (PURCHASE AND REFINANCING)



LAND USE ZONING, HEALTH RISK AND ENVIRONMENTAL JUSTICE



Land-use zoning is a municipal-level policy that groups and segregates land parcels on the basis of the approved uses for the land, broadly categorizing parcels as agricultural, commercial, industrial and residential. Each of these land uses in turn breaks down into sub-categories. For example, residential parcels can be classified for single-unit, two-unit (duplex), three- or four-unit, or multi unit residences. Industrial parcels can be classified for light, moderate or heavy industry use. And so on.

Although instituted as a means of controlling growth and isolating residential properties from other land uses, certain types of zoning have also been employed historically to exclude low-income and minority families from White and affluent areas.

Exclusionary zoning, which in one form specifies density controls through minimum lot sizes, number of occupants per unit of land, and prohibition of multi unit construction, increases the cost of housing in these zoned areas, effectively pricing out lower income families from these housing markets. Openly race-based exclusionary zoning, which incorporated racialized language directly into the land use descriptions, also was instituted in some American cities in the first two decades of the last century, before it was outlawed by the Supreme Court in 1917.

1910, BALTIMORE: FIRST RACIAL ZONING ORDINANCE



- Used both economic and public health language as justification
- “Blacks should be quarantined in isolated slums in order to reduce the incidence of civil disturbance, to prevent the spread of communicable disease into the nearby White neighborhoods, and to protect property values among the White majority”
-Baltimore Mayor Bary Mahool, 1910
- Racial zoning struck down in 1917

ZONING: EXCLUSIONARY AND EXPULSIVE



LOOK At These Homes NOW!
An entire block ruined by negro invasion. Every house marked "X" now occupied by negroes. ACTUAL PHOTOGRAPH OF 4300 WEST BELLE PLACE.
SAVE YOUR HOME! VOTE FOR SEGREGATION!

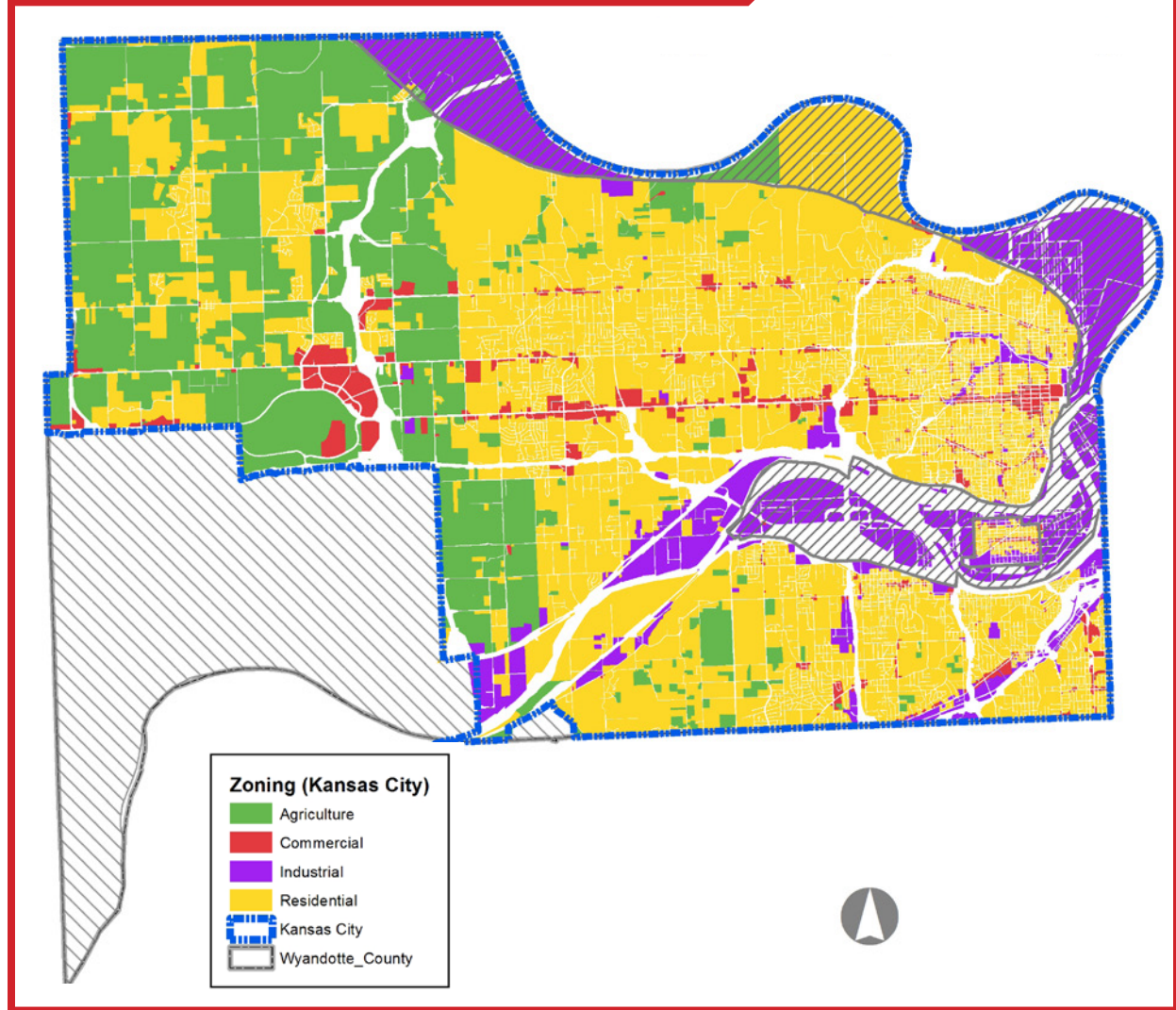
- Zoning used to prevent certain groups from living in a community.
- Exclusionary zoning: Used to restrict specific housing types (lot size, number of room)
- Expulsive zoning: Undesirable and uses targeted to low-income and racial/ethnic communities

Expulsive zoning is the practice of zoning land for industrial use in or near poor communities and communities of color, resulting in the disproportionate placement of toxic or hazardous facilities and industries in proximity to these communities. Expulsive zoning sets up a self-reinforcing, downward spiraling process: expanding industrial land use leads to a lowering of property values and quality of life in nearby neighborhoods, leading in turn to displacement of those residents who are able to leave. As property values decline, these areas become increasingly attractive for greater industrial use, further driving down property values and increasing the risk of toxic exposures for residents. The end result is an area of severely depressed residential properties, where the remaining residents are largely those lacking the means to leave and the resources to deal adequately with the health effects of potential exposures.

The history of Kansas City is, in large measure, the history of the Kansas and Missouri Rivers and their role in transportation, commerce, and civic life. The city grew up around the rivers and dependent upon them. Heavy industry, in particular, requires water, and lots of it, and so it is logical that the river corridor is lined with industrially zoned lands. As the preceding parcel and home mortgage activity maps show, the neighborhoods in proximity to heavy industry along the river corridor are characterized by low property values and limited home financing activity.



ZONING (GENERALIZED) IN KANSAS CITY, KS



As previously demonstrated, these areas are also home to significant concentrations of minority and low-income residents. Environmental justice, as defined by the U.S. Environmental Protection Agency (EPA), is the “fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.”¹⁷ In this definition, the phrases “fair treatment” and “meaningful involvement” are key:

- Fair treatment means all residents bear an equal burden for the environmental stressors placed on their community
- Meaningful involvement means that all citizens have an equal voice in determining how their community’s environmental burden is distributed.

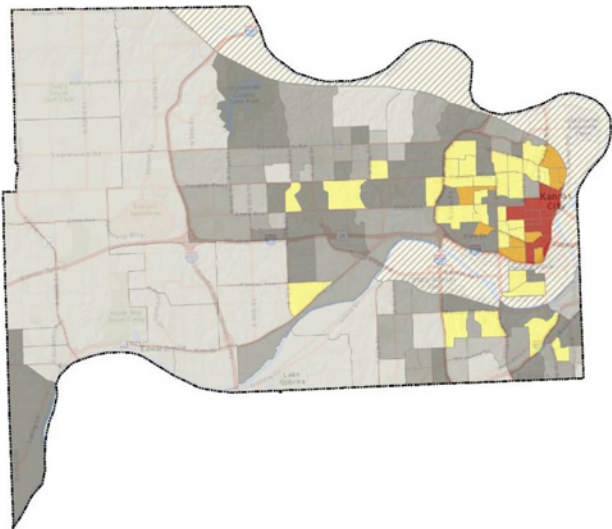
Low-income and minority residents have been historically excluded from the decision processes that place their neighborhoods at greater risk of toxic exposure. Environmental law provides legal means to empower these residents to seek remedy.

EPA provides an online tool called EJSCREEN [<http://www.epa.gov/ejscreen>] to assist communities in identifying neighborhoods where low-income and minority residents face increased odds of toxic exposures in the air, water and soil. EJSCREEN allows one to map Census block groups (the next smaller geographic division under Census tracts) according to a score called the EJ INDEX, which combines demographic measures (non-White population and income) with proximity to sources of specific pollutants into a single, national index score from 0 to 100. EPA uses the EJ INDEX to identify areas that are most likely to warrant further analysis or outreach as policies affecting the

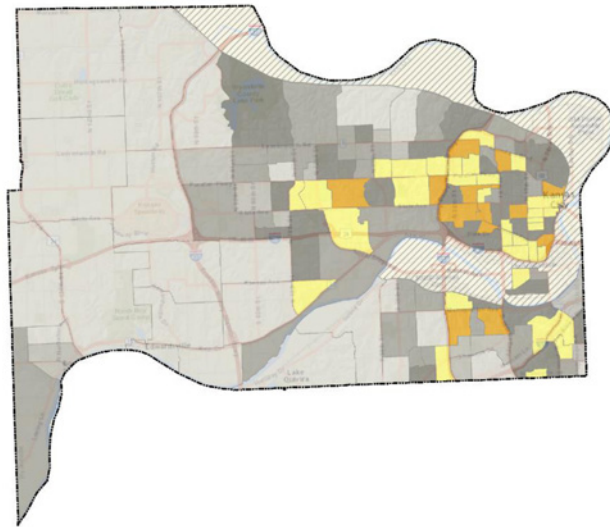
residents of these areas are considered.

Three examples of EJ INDEX maps are shown below. Once again, the areas identified on the EJ INDEX maps as candidate EJ areas correspond in large part with neighborhoods previously identified as vulnerable populations at increased risk for adverse health outcomes.

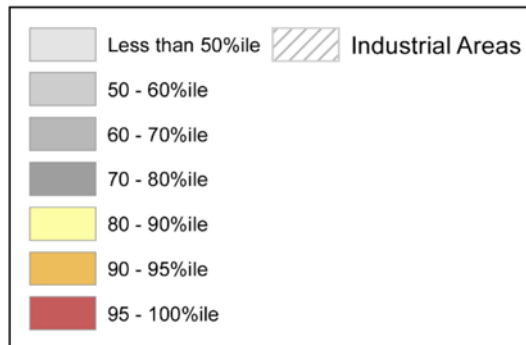
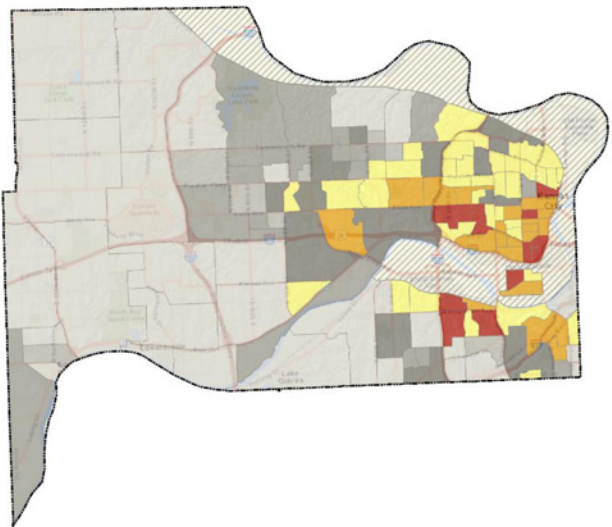
A. PROXIMITY TO MAJOR DISCHARGERS TO WATER



PARTICULATE MATTER IN AIR (PM2.5) (MICROGRAMS PER CUBIC METER)



PROXIMITY TO RISK MANAGEMENT PLAN (RMP) FACILITIES



CONCLUSION



Moving Forward: Building a Healthy and Equitable Wyandotte County Low-Value Housing Stock and Health Risks

This report began with neighborhood-level maps of several social determinants of health, distinct population vulnerabilities in Kansas City, KS, and Wyandotte County, reflecting many of those identified at the regional and county levels in the REACH/MARC 2015 Regional Health Assessment for Greater Kansas City. By some estimates, the social determinants account for at least half of the influence over one's lifetime health and life outcomes. The Kirwan Institute's Opportunity Index for Wyandotte County provided a useful summation of these various community vulnerabilities, recognizing that individuals and families may experience multiple vulnerabilities simultaneously depending on where they live. Patient-level data from two area health care providers served as examples of how mapping patient data can help to understand the social determinants bearing on the lives of patients. Two examples from the history of housing and public policy, at the federal (the Home Owner's Loan Corporation) and municipal (land-use zoning) levels, show how values-driven policy choices have shaped the current landscape of health inequity.

Several themes emerge from this historically framed analysis that should inform contemporary program planning and policymaking:

- There is nothing “natural” about today's community health landscape or the challenges it presents.
- Policies have long-term, residual and sometimes unforeseen impacts. Consideration of past policy choices can inform thoughtful design of present-day solutions.
- Values influence policy. Values-infused policies shape systems, which in turn can help either to produce health and prosperity for all or to create barriers to good health and opportunity for some.
- Significant change can begin through coordinated efforts focused on principles of equity and inclusion.
- Today's inequitable health landscape did not emerge overnight. Enduring solutions will require taking a long view of incremental progress and a commitment of the community will that extends beyond election cycles and institutional turnover in all sectors.

Although the data and analysis contained in this report provide a comprehensive picture of the social determinants of health in Kansas City and Wyandotte County- one that can inform community conversations and collective action- they are not sufficient for decision-making. Missing from the analysis is a detailed accounting of all the community resources available to residents to live full and healthy lives. Some assets are readily identified and quantified: supermarkets and pantries where families can obtain healthy food and fresh produce; daycare and early education centers that can care for children while their parents work or go to school; job training centers and programs to help adults and youth develop vocational skills to enter or progress in the workplace; churches and community centers that provide opportunities for recreation and spiritual or psychological supports; shelters that give refuge to people and families in need. Other community assets require more work to locate and understand, including so-called “third places” where people gather and community happens- coffee shops, parks and ball courts, barber shops and beauty parlors, markets, public spaces, and community events like festivals and street fairs.¹⁸ Less tangible still, but no less important, is information on residents' experiences and perceptions of their neighborhoods: feelings of personal security or lack of it; a sense of belonging to the community and pride in it, and in the context of health care, access to providers and an overall sense of health and well-being, or lack of it. These additional elements are best collected through community engagements like neighborhood meetings, focus groups, surveys, crowd sourcing (in the case of mapping physical assets), and other direct interactions with residents, service providers, community advocates and other stakeholders in the city and county's neighborhoods.

General principles to guide the Wyandotte County community in creating equitable access to resources and opportunities for all:

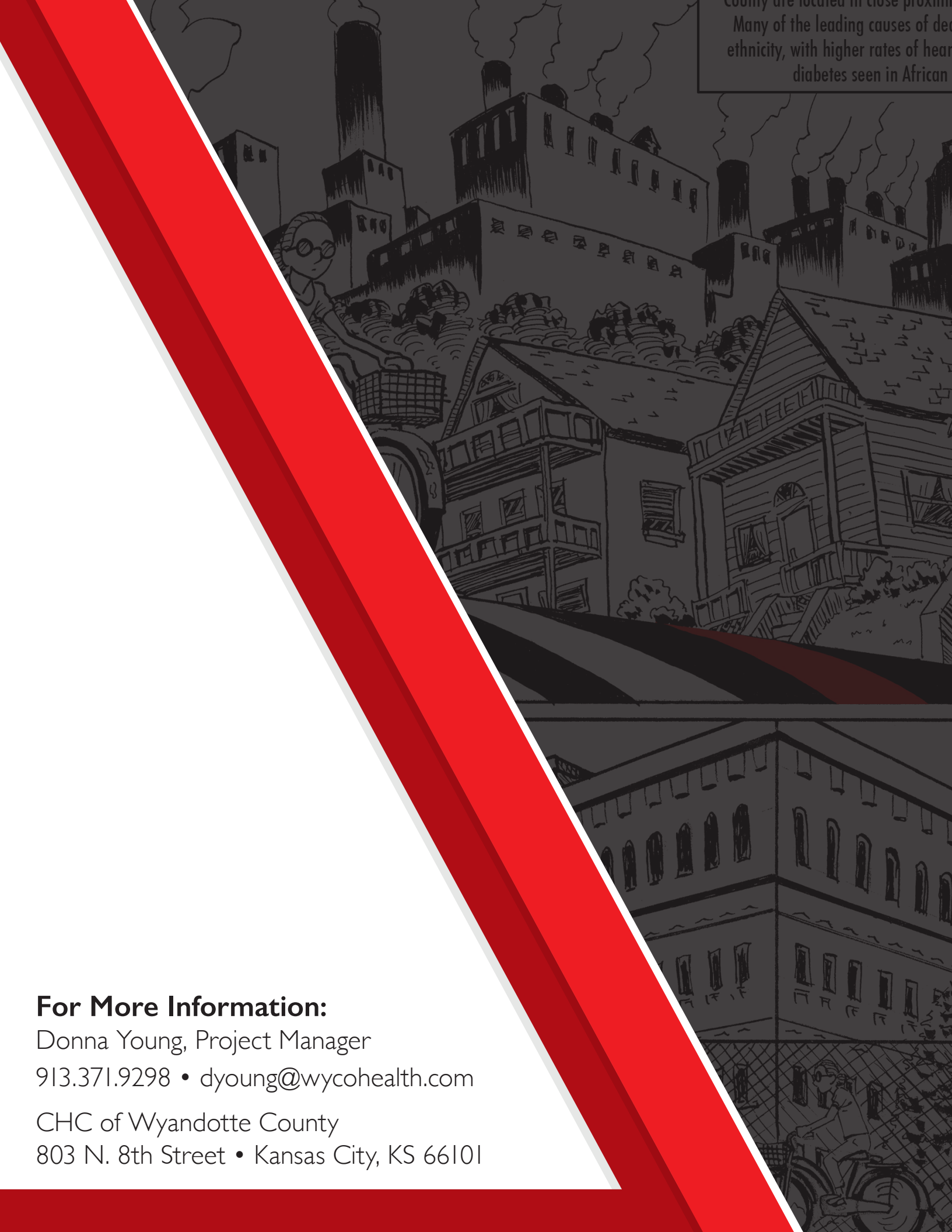
- **Equity-** Adoption of policies and practices that ensure no one is advantaged or disadvantaged because of ethnicity, race, gender, age, religion, or socioeconomic position.
- **Collective Impact-** Develop a common agenda and shared vision for change that coordinates stakeholders across sectors, aligns priorities and actions, mobilizes resources, and measures improvement.
- **Place-Making-** Recognize that “neighborhood” or “community” is the context in which health and well-being begins. Systems, institutions and community members must work collectively to create optimal neighborhood conditions, the context that enables people to thrive.
- **Policy and Advocacy-** Subscribe to the principle of “health and equality in all policies” and actively advocate for policies that engender (healthy) equality, racial and ethnic inclusion and cultural competency outcomes within systems, institutions, communities and neighborhoods, to improve economic, health and social conditions for all community members.
- **Community Member Capacity Building and Inclusion-** Draw upon community members’ capacity to identify and solve issues in their environments and intentionally support opportunities for community members and other groups to lead efforts that create strong and vibrant communities.
- **Data-Informed, Community-Level Health Care Decision-Making-** Hospital systems hold immense amounts of patient-level data on disease conditions, health care utilization, and patient home locations. The advent of electronic medical records, “big-data” analytics, and sophisticated spatial analysis tools enables secure, large-scale harvesting and analysis of this data, to benefit health care systems internal decision-making as well as to inform community action to address both neighborhood-level access to health care and community-wide public health policy and practice. Incorporating an awareness of place back into patient records also could enhance the clinical experience by providing clinicians with a window into the challenges and available resources in a patient’s neighborhood environment.

It is hoped that these principles, informed by the data, analysis and themes identified in this report, will equip all those who engage in the work of health equality in Wyandotte County to move forward toward a future of health and vitality for all the county’s residents.



Image from the We Are Wyandotte photo series.
Exploring how red lining harms communities.
To see more or watch the videos visit:
www.wearewyandotte.com





County are located in close proximity
Many of the leading causes of death
ethnicity, with higher rates of heart
diabetes seen in African

For More Information:

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CHC of Wyandotte County

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