OU Medicine's

2020 Community Health Needs Assessment

OU Medicine

contents

Executive Summary iii

Introduction 1

What is a Community Health Needs Assessment? 2

Approach 3
Engagement Strategies 3
Geographic Coverage 6
Data Collection 9
Methods to Prioritize Needs 10
Social Determinants Of Health (SDOH) 11
Built Environment 15
Education 17
Employment 19
Housing 21
Social Environment 24
Violence 27
Summary 31

Access to Care 32
Barriers to care 32
Characteristics of Health Care Delivery System 33
Characteristics of Populations and Health Care Utilization 34
Characteristics of Population At-Risk: Neighborhood Demographics 36
Summary 43

Overall Conclusions and Significant Needs 44
Community Assets 44
Community Suggestions for Future Work 44
Key Themes and Prioritized Health Needs 44
Prioritized Patient Types 44
Prioritized Health Outcomes 47
Prioritized Social Determinants of Health 49
Implementation Planning Process 50

Appendix A: Engaged Organizations 52

Appendix B: Pre-Existing Community Benefits Highlights 53

Appendix C: Cost Calculation Methods and Caveats 55
Years of Potential Life Lost 55
Example Formulas for Estimating Costs: Cancer 55

2020 Community Health Implementation Plan 58

OU Medicine 2020 Community Health Needs Assessment Executive Summary

Community Demographic Context

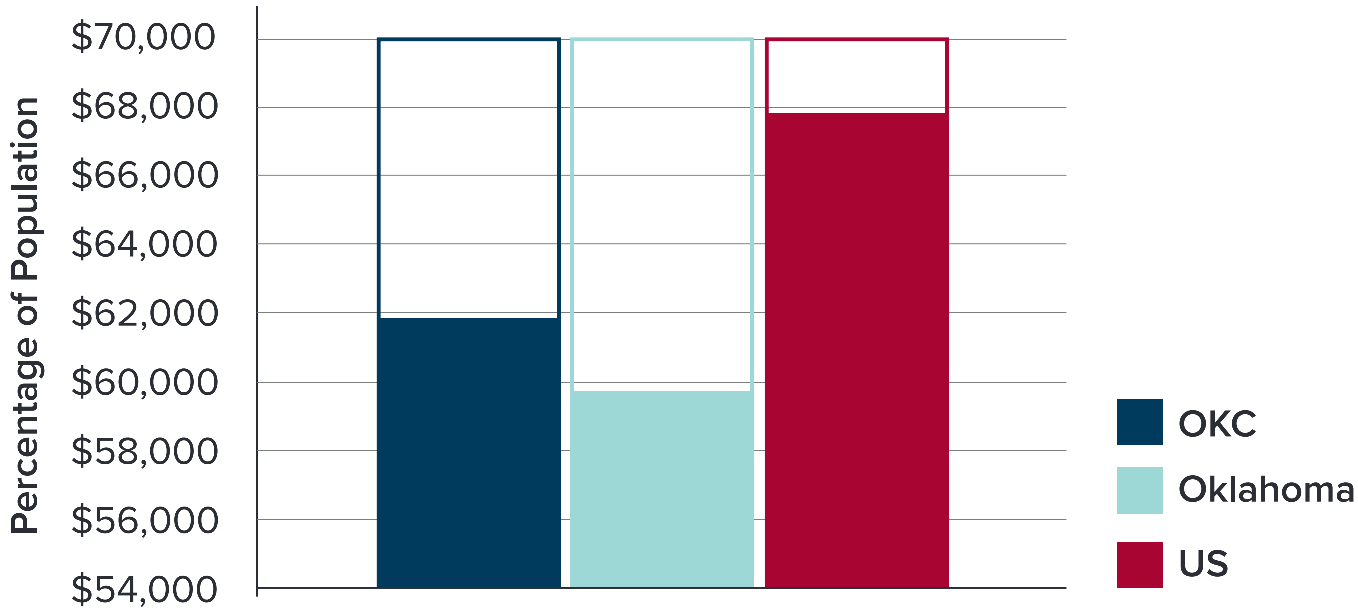
Overall, Oklahoma's growth is steady, but slower than the national average. With approximately 34% of Oklahoma's population living in rural settings and 20% in suburban settings, Oklahoma is more rural and suburban than most other states in the country. Additionally, across the state those rural and suburban communities are less racially diverse than the national average; however, in Oklahoma County, diversity is greater than what would be expected nationally.[1] Today, the neighborhoods of color surrounding Oklahoma Health Campus still experience the residual effects of historic displacement and systemic redlining.[2,3,4]

As highlighted in COVID 19's disproportionate impact throughout Oklahoma and the country, this history innately impacts housing stability – significant because shelter is among the most basic of human needs. For many Oklahomans, Oklahoma City residents, and Oklahoma Health Campus neighbors housing is all too often unstable which results in poor living conditions, crowding or homelessness.

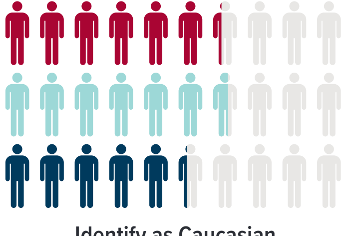
While over the past decade Oklahoma has maintained a consistently lower unemployment rate than the national average, underemployment and the availability of quality, safe jobs seem to be prevalent issues. With a notably lower median income than the national average, many Oklahoma households struggle to feed all family members and more Oklahoma children grow up in poverty than what would be expected given the national average.5,6 Due to COVID 19, it is unclear how this landscape will change. Additionally, Oklahoma workers tend to be at higher risk of occupation-related fatalities than in most other states.[7] In the social environment, Oklahoma ranks well with the religiosity of the population when compared to other states.[8] However, when we think of social efficacy, voting activity emerges as a potential metric, and Oklahoma has a lower percentage of registered voters than the national average.[9] Unfortunately, we also know that people in Oklahoma are more likely to experience an aggravated assault than the national average.[10]

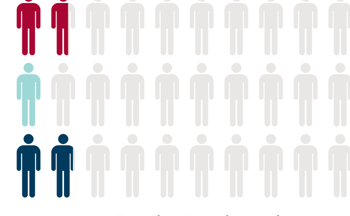
Furthermore, due to Oklahoma's rural nature, the state has abundant green spaces and natural habitats, which innately promote health; however, if we consider the built environment, we see that urban sprawl predominates the inhabited landscape. In addition, amenities that promote healthy behaviors, including physical activity and healthy eating, are limited.

Median Family Income[11]



Percentage[12] of People Who ...



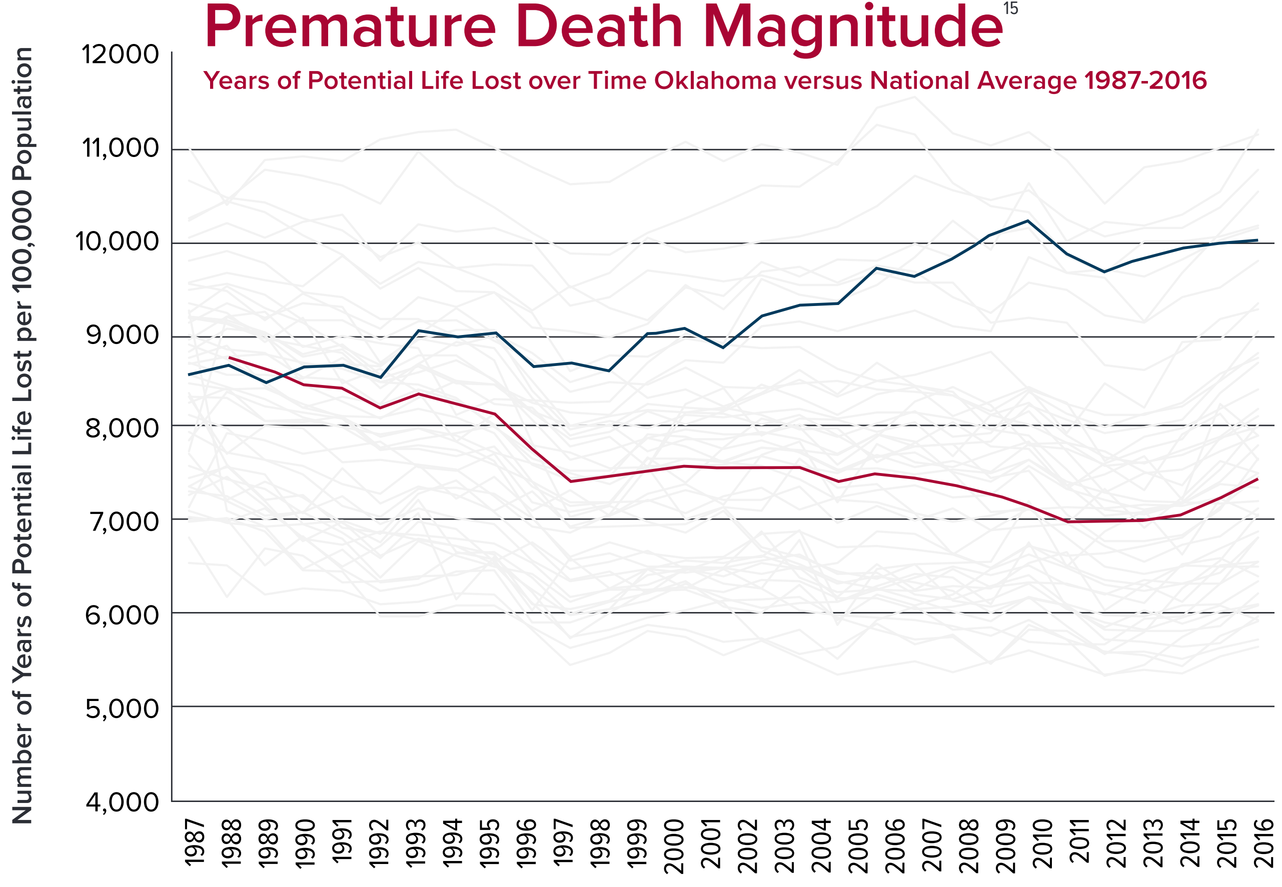


Employment Safety[13]

Occupational-related deaths per 100,000 workers

Oklahoma	Nationally
7.2	4.4

Oklahomans' life expectancy, 76.1 years, is 3 years shorter than the national average, 79.1 years.[14]



Key Themes & Prioritized Health Needs

In Oklahoma, life expectancy is less than the national average. This represents an economic loss to the state — an estimated $16 billion in lost productivity annually due to high incidence of premature death. Likewise, regardless of age, in Oklahoma we see markedly higher rates of death associated with cardiovascular disease, cancers, chronic lung disease, diabetes and more.[16]

When exploring origins of the leading causes of death in Oklahoma, participants in the needs assessment process identified diabetes, chronic diseases overall, and cancers as highly prevalent diseases that contributed to the leading causes of death. When we consider chronic disease and cancer hospitalizations alone, Oklahoma's employers are losing more than $700 million in productivity annually. Based on community input and the prioritized criteria, the following list shows the prioritized health needs in Oklahoma, Oklahoma County and neighborhoods adjacent to Oklahoma Health Campus. ■

Location of Children Under Age 18 Living in Deep Poverty

(under 50% of Federal Poverty Level)

Language Access[16]

People 5 years and older who speak other languages at home outside of English

20.3%

Oklahoma City

10.3%

Oklahoma

21.5%

Nationally

Child Health

In addition to a strikingly high need among Oklahoma's youth, many stakeholders highlighted the health of Oklahoma children as a priority area. When discussing determinants of health, stakeholders across the board noted the need to improve conditions for our children. The inequities observed across the state and in neighborhoods adjacent to the Oklahoma Health Campus disproportionately impact children from families experiencing poverty and other forms of systemic discrimination.

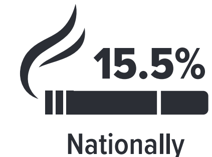
For almost all leading causes of death among 5-14 year-olds, mortality rates in Oklahoma are higher than the national average. In order of magnitude, these disparities include: unintentional injuries, malignant neoplasms, intentional self-harm (suicide), congenital malformations, assault (homicide), chronic lower respiratory disease, influenza and pneumonia.[18] We see that respiratory disorders, including asthma and pneumonia, are extremely common reasons for hospital admissions among children.[19] Making matters worse, Oklahoma children are exposed to heightened levels of adverse childhood events (28.5%) compared to the national average (20.5%).[20]

Additionally, Oklahoma children aged 19-35 months are less likely to receive recommended vaccinations than the national average, with only 67.3% of Oklahoma children being immunized compared to 70.4% nationwide.

Children in Smoking Households[22]

22.9%

Oklahoma



15.5%

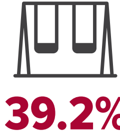
Nationally

Percentage of Children Who ...[23]

Live near amenities such as parks or recreational facilities

18.4%

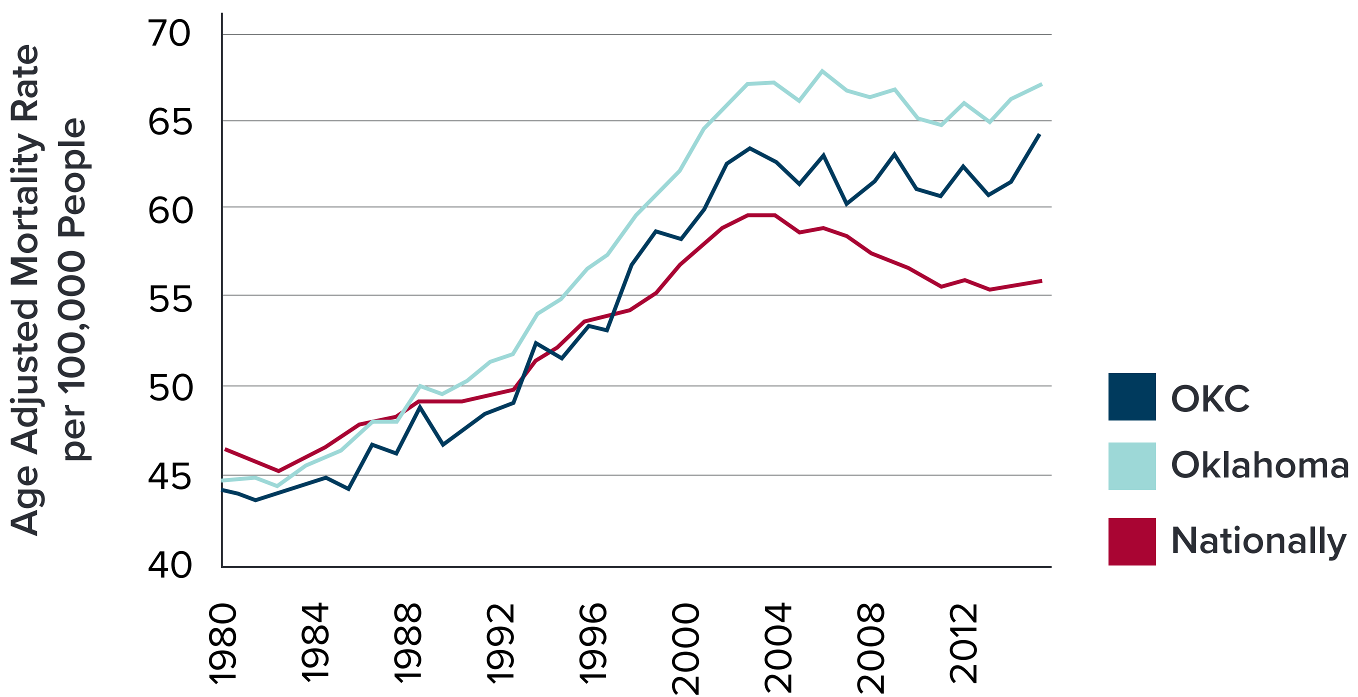
Oklahoma



39.2%

Nationally

Historical Diabetes Deaths[24]



Diabetes

Diabetes is a growing problem in Oklahoma. Many stakeholders cited diabetes and its compounding effects on health outcomes in the state: the rate of diabetes in Oklahoma and its contribution to the leading causes of death made it an obvious priority for the needs assessment. Additionally, diabetes-related deaths disproportionately impact people who identify as black or Native American as compared to Asian and white Americans.[25] Overall, the American Diabetes Association estimates that diabetes and prediabetes cost Oklahomans more than $3.7 billion dollars annually.[26]

Maternal Health

Throughout conversations around the health of Oklahomans, maternal health emerged as a common concern among stakeholders. Oklahomans experience heightened levels of risk behaviors at the beginning of pregnancies, with many mothers lacking health insurance and unable to access prenatal care in the first trimester.[27]

Once enrolled in insurance, pregnant Oklahomans tend to seek care and their risk behaviors improve well beyond the national average. The only exceptions are the frequency of smoking among pregnant Oklahoma women and dental care.[28] With these striking risk factors, it is therefore predictable that more women die of pregnancy-related causes than would be expected given national trends.[29] Maternal mortality inequitably and disproportionately impacts communities of color and rural communities in the state. Additionally, the neighborhoods adjacent to Oklahoma Health Campus are home to higher numbers of single-mother households when compared to the rest of the city, which is a critical concern for the OU Medicine enterprise.

Older Adults

When we look at Oklahoma's aging population, we also see that a higher percentage of older adults report experiencing poor health and are living with a disability than we see nationally. When considering the number of people in the state who are experiencing housing instability, it seems clear that those affected will experience compounding effects as they age.

Trauma

The state loses approximately $34.9 million in workforce productivity annually due to injuries that result in hospitalization. Oklahoma is the fifth worst state in the nation for deaths associated with injuries, and injuries are a leading cause of death for children in Oklahoma.[30]

To illustrate economic impact of these deaths, we could add $25.4 million annually to the Oklahoma economy if we brought the injury death rate down to the national average. Motor vehicle fatalities are a major contributor to this statistic. While the state overall has seen a slow but steady decrease in those fatalities over the past five years, urban motor vehicle deaths have steadily increased. For intentional injuries, Oklahomans are more likely to die from homicide or suicide than the average American.[31] Those statistics are more dire among Oklahoma City residents. In particular, gun-related deaths are most common in neighborhoods adjacent to the Oklahoma Health Campus.[32]

Cancer

When we consider costs of cancer treatment, lost productivity in employment and overall losses within communities, cancer prevalence costs the state more than $3.8 billion annually. When exploring cancer prevalence in Oklahoma, malignant cancers disproportionately impact American Indian or native communities than other population groups.[33] Overall estimates for 2020 suggest there will be 20,530 new cancer cases in Oklahoma and 8,430 people will die because of cancer.[34] In addition to being a leading cause of death for Oklahomans, cancer-related deaths disproportionately impact people of color in Oklahoma.

Mental Health

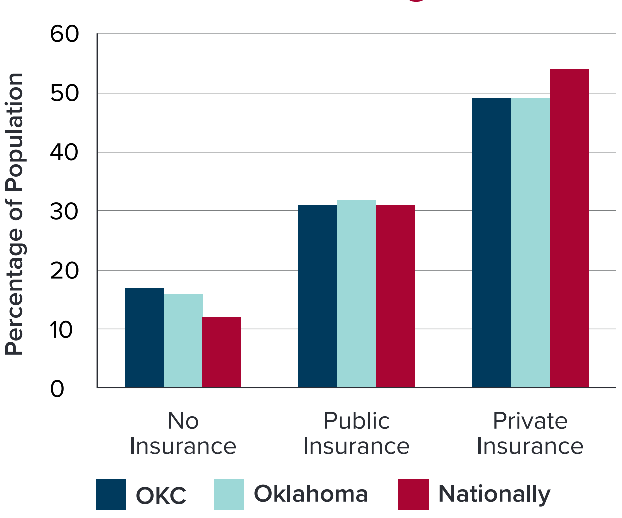
Given the heightened levels of Adverse Childhood Events (ACEs) and high suicide and homicide rates, it is unsurprising that most stakeholders cited mental health for priority consideration in the 2020 needs assessment.[35] This is particularly notable with the ongoing historical and structural trauma experienced in neighborhoods surrounding the Oklahoma Health Campus, but mental health is a statewide priority and an issue exacerbated by the COVID 19 pandemic.[36, 37, 38]

Prioritized Social Determinants of Health

Through our outreach with service-providing organizations from different sectors, it seems well understood that the health outcomes we experience are tied to determinants of health; there are specific needs related to these determinants of health that Oklahomans must first meet in order to improve health. As our collective understanding deepens in this field, it becomes clearer that exposures experienced outside the doctor's office influence health outcomes more than the experience within the doctor's office. Housing quality, opportunities to exercise, access to affordable and healthy food, and earning capacity can have tremendous impact on individual and family health.[39] During the needs assessment process, the external, cross-sectorial advisory committee identified three prioritized social determinants of health, through which we can begin to target specific needs in our community:

Access to Care

Stakeholders identified a need for improved access to care. Identified barriers to care included the closure of rural hospitals; low numbers of insured individuals; too few physicians and specifically physicians of color; statewide shortage of providers at all levels; absence of a health information exchange; certification challenges and licensures, to name a few. It is not surprising that the percentage of Oklahomans who are uninsured is far higher than the national average.[41] Likewise, Oklahoma has fewer primary care



physicians per person than the national average. These conditions affect wait times, access to preventative services and more. Reduced access to care has a tremendous economic effect on the state's healthcare institutions and the state's overall productivity.

Education

The external advisory committee recognized that bettering education is key to improving the health outcomes of residents locally and throughout the state. Education is linked to longer, healthier and more satisfying lives. Education not only includes one's ability to receive formal education but also informal education via interactions with institutions and people. It also includes educational opportunities with non-traditional venues of learning found in organizations or groups. For longer-term educational attainment numbers we see that Oklahomans above the age of 25 have an average American level of high school attainment; however, when we look at Oklahoma City that number decreases but the percentage of college-educated people increases.[42] In other words, educational attainment in Oklahoma City and county bifurcates with highly educated and less-educated people living in proximity. Looking at short-term outcomes, we see a slightly different story emerge with fewer Oklahoma teenagers completing high school in four years than the national average.[43] When discussing barriers that Oklahomans, Oklahoma City residents, and Oklahoma Health Campus neighbors face when trying to obtain education, several themes emerged:

- Limited funding and resources
- Low levels of educational attainment for many Oklahomans
- Limited after-school programs
- Limited connection to larger workforce pipeline efforts, and more

Housing

Housing was also prioritized by cross-sectorial partners. Housing is the dwelling in which a person or household resides and consists of many different characteristics. Quality, affordability and stability are just a few ways in which housing and housing access affect a person's health. In Oklahoma, crowding and homelessness are the results of housing instability. About 3.8% of Oklahoma children experience homelessness as they grow up, with lasting effects on health.[44] In contrast, Oklahomans are more likely than the national average to own their homes; however, when we look more specifically at Oklahoma City, we see fewer owner-occupied households than the national average.[45]

When discussing gaps of the housing ecosystem in Oklahoma, Oklahoma County and adjacent neighborhoods, several issues were identified:

- Truly affordable housing is limited
- A perpetuated myth that affordable housing developments are unsustainable
- People who have histories with the criminal justice system and eviction have restricted access
- Most affordable housing offers limited or no access to health-promoting environments
- When considering ways to improve the health and wellness of Oklahomans, housing for Oklahoma County residents and those in neighboring communities ought to be a key component of that work.

Next Steps

Building on community engagement, the scientific evidence examined and the incorporated population metrics, this CHNA documents community health priorities. The ongoing implementation-planning phase of the community health improvement process will provide an opportunity to incorporate the learning from the CHNA to efficiently use our resources and align strategies with these prioritized populations, outcomes and determinants of health. Due to 2020's COVID 19 pandemic, the implementation planning phase will involve continual evaluation of ways OU Medicine can better serve the ever-evolving needs of the community. ■

End Notes & Citations

1 Percent of total population of Oklahoma and United States, U.S. Census Bureau, Decennial Census, 2010.

2 James M. Smallwood, "NAACP," The Encyclopedia of Oklahoma History and Culture, www.okhistory.org/publications/enc/entry.php?entry=NA001.

3 Ackerman, L. (2016, March 19) Bricktown and Deep Deuce, Oklahoma City (1889-). Retrieved from www.blackpast.org/african-american-history/bricktown-and-deep-deuce-oklahoma-city-1889/

4 The Bricktown Association, "The History of Bricktown." Oklahoma News 9, 2013, www.news9.com/story/7690410/the-history-of-bricktown, Accessed 2020.

5 America's Health Rankings analysis of U.S. Census Bureau, Current Population Survey, Annual Social and Economic Supplement, United Health Foundation, AmericasHealthRankings.org, Accessed 2020.

6 Percentage of children who live in households below the poverty threshold; U.S. Census Bureau, American Community Survey, 2018

7 Number of fatal occupational injuries in construction, manufacturing, trade, transportation, utilities, and professional and business services per 100,000 workers (3-year estimate); U.S. Bureau of Labor Statistics, Census of Fatal Occupational Injuries; U.S. Bureau of Economic Analysis, 2015-2017

8 Religious Landscape Study www.pewforum.org/religious-landscape-study/ Accessed February 2020

9 U.S. Census Bureau, Current Population Survey, Voter Registration, 2018

10 Number of murders, rapes, robberies and aggravated assaults per 100,000 population; U.S. Department of Justice, Federal Bureau of Investigation, 2018

11 America's Health Rankings analysis of U.S. Census Bureau, Current Population Survey, Annual Social and Economic Supplement, United Health Foundation, AmericasHealthRankings.org, Accessed 2020.

12 Percent of total population of Oklahoma and United States, U.S. Census Bureau, Decennial Census, 2010.

13 Number of fatal occupational injuries in construction, manufacturing, trade, transportation, utilities, and professional and business services per 100,000 workers (3-year estimate); U.S. Bureau of Labor Statistics, Census of Fatal Occupational Injuries; U.S. Bureau of Economic Analysis, 2015-2017

14 Life expectancy trends (1980 to 2014) for Oklahoma and the United States (IHME 2017).

15 CDC WONDER Online Database, Underlying Cause of Death, Multiple Cause of Death files, Longitudinal Data collected by America's Health Rankings

16 Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2017 on CDC WONDER Online Database, released December, 2018. Data are from the Multiple Cause of Death Files, 1999-2017, as compiled from data provided by the 57 vital statistics jurisdictions through the Vital Statistics Cooperative Program. Accessed at wonder.cdc.gov/mcd-icd10.html in 2020

17 U.S. Census Bureau, American Community Survey, 5-year estimate, 2014-2018

18 CDC WONDER Online Database, Underlying Cause of Death, Multiple Cause of Death files, Longitudinal Data collected by America's Health Rankings

19 Oklahoma State Department of Health (OSDH), Center for Health Statistics, Health Care Information, Oklahoma Inpatient Discharge Data 2016, on Oklahoma Statistics on Health Available for Everyone (OK2SHARE). www.health.ok.gov/ok2share Accessed: January 2020.

20 Embrace OKC Presentation to Board of Oklahoma City Public School board, September 24, 2018. www.okcps.org/Page/3482 Accessed: January 2020.

21 CDC, National Immunization Survey-Child, 2017; America's Health Rankings analysis of CDC, National Immunization Survey-Child, United Health Foundation, AmericasHealthRankings.org, Accessed January 2020

22 Percentage of children ages 0-17 who live in households where someone uses cigarettes, cigars or pipe tobacco (2-year estimate), America's Health Rankings analysis of U.S. HHS, HRSA, Maternal and Child Health Bureau (MCHB), Child and Adolescent Health Measurement Initiative (CAHMI), National Survey of Children's Health Indicator Data Set, Data Resource Center for Child and Adolescent Health, United Health Foundation, AmericasHealthRankings.org, Accessed 2020.

23 Percentage of children ages 0-17 with access to a park or playground; recreation center, community center or boys' and girls' club; library or bookmobile; and sidewalks or walking paths (2-year estimate), U.S. HHS, HRSA, Maternal and Child Health Bureau (MCHB), Child and Adolescent Health Measurement Initiative (CAHMI), National Survey of Children's Health Indicator Data Set, Data Resource Center for Child and Adolescent Health, 2016-2017

24 Age-adjusted mortality from 1980 to 2014 for the 4-county area (IHME 2016).

25 Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. Chronic Disease Indicators (CDI) Data [online]. 2016 [Accessed 2020]. URL: nccd.cdc.gov/cdi.

26 URL: main.diabetes.org/dorg/PDFs/Advocacy/burden-of-diabetes/oklahoma.pdf Accessed January 2020.

27 Approximately 53.7% (95% CI: 50.2-57.2) of pregnant Oklahomans had private insurance as they were becoming pregnant when compared to the national average of 63.0% (95% CI: 62.2-63.7). These numbers are similar for public insurance, where we see only 15.8% (95% CI: 13.4-18.6) of Oklahomans compared to) 23.0% (95% CI: 22.3-23.6) nationally.

28 CDC, Pregnancy Risk Assessment Monitoring System data for 2016-2017

29 Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2017 on CDC WONDER Online Database, released December, 2018. Data are from the Multiple Cause of Death Files, 1999-2017, as compiled from data provided by the 57 vital statistics jurisdictions through the Vital Statistics Cooperative Program. URL: wonder.cdc.gov/mcd-icd10.html Accessed: January 2020

30 Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2017 on CDC WONDER Online Database, released December, 2018. Data are from the Multiple Cause of Death Files, 1999-2017, as compiled from data provided by the 57 vital statistics jurisdictions through the Vital Statistics Cooperative Program. URL: wonder.cdc.gov/mcd-icd10.html Accessed: January 2020

31 Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2017 on CDC WONDER Online Database, released December, 2018. Data are from the Multiple Cause of Death Files, 1999-2017, as compiled from data provided by the 57 vital statistics jurisdictions through the Vital Statistics Cooperative Program. wonder.cdc.gov/mcd-icd10.html Accessed: January 2020

32 Oklahoma City County Health Department, WellnessScore Report, www.occhd.org/WellnessScore Accessed January 2020

33 Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. Chronic Disease Indicators (CDI) Data [online]. 2016. URL: nccd.cdc.gov/cdi. Accessed: January 2020

34 American Cancer Society, 2020

35 U.S. HHS, HRSA, Maternal and Child Health Bureau (MCHB), Child and Adolescent Health Measurement Initiative (CAHMI), National Survey of Children's Health Indicator Data Set, Data Resource Center for Child and Adolescent Health, 2016-2017

36 James M. Smallwood, "NAACP," The Encyclopedia of Oklahoma History and Culture, www.okhistory.org/publications/enc/entry.php?entry=NA001.

37 Ackerman, L. (2016, March 19) Bricktown and Deep Deuce, Oklahoma City (1889-). Retrieved from www.blackpast.org/african-american-history/bricktown-and-deep-deuce-oklahoma-city-1889/

38 The Bricktown Association, "The History of Bricktown." Oklahoma News 9, 2013, www.news9.com/story/7690410/the-history-of-bricktown, Accessed 2020.

39 Tarlov, A. (1999). Public Policy Frameworks For Improving Population Health. Annals Of The New York Academy Of Sciences. 896. 281-93.

40 U.S. Census Bureau, Health Insurance Coverage in the United States, 2017-2018

41 America's Health Rankings analysis of Special data request for information on active state licensed physicians provided by Redi-Data, Inc., Sept. 23, 2019; U.S. Census Bureau Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2018, United Health Foundation, AmericasHealthRankings.org, Accessed 2020.

42 Percentage of Adults Aged 25 and Above with HS education for Oklahoma City, Oklahoma, and US. U.S. Census Bureau, American Community Survey, 5-year estimates 2014-2018

43 U.S. Department of Education, National Center for Education Statistics

44 Percentage of public school students who lack a fixed, regular and adequate nighttime residence; America's Health Rankings analysis of U.S. Department of Education, National Center for Education Statistics, Digest of Education Statistics, United Health Foundation, AmericasHealthRankings.org, Accessed 2020.

45 Percentage of Owner-Occupied Units; U.S. Census Bureau, American Community Survey, 5-year estimates 2014-2018. www.census.gov/quickfacts/fact/table/oklahomacitycityoklahoma,US,OK/PST045219 Accessed: January 2020

46 Percentage of Adults Aged 25 and Above with HS education for Oklahoma City, Oklahoma, and US. U.S. Census Bureau, American Community Survey, 5-year estimates 2014-2018. www.census.gov/quickfacts/fact/table/oklahomacitycityoklahoma,US,OK/PST045219 Accessed: January 2020

47 Percentage of Owner-Occupied Units; U.S. Census Bureau, American Community Survey, 5-year estimates 2014-2018. www.census.gov/quickfacts/fact/table/oklahomacitycityoklahoma,US,OK/PST045219 Accessed: January 2020

Introduction

About OU Medicine

OU Medicine — along with its academic partner, the University of Oklahoma Health Sciences Center — is the state's only comprehensive academic health system of hospitals, clinics and centers of excellence. With 11,000 employees and more than 1,300 physicians and advanced practice providers, OU Medicine is home to Oklahoma's largest physician network with a complete range of specialty care. OU Medicine serves Oklahoma and the region with the state's only freestanding children's hospital, the only National Cancer Institute-designated Stephenson Cancer Center and Oklahoma's flagship hospital, which serves as the state's only Level 1 trauma center. OU Medicine is the No. 1 ranked hospital system in Oklahoma, and its oncology program at Stephenson Cancer Center and OU Medical Center ranked in the Top 50 in the nation, in the 2019-2020 rankings released by U.S. News & World Report.
OU Medicine's mission is to lead healthcare in patient care, education and research. To learn more, visit oumedicine.com.

What is a Community Health Needs Assessment?

Non-profit hospitals are required to complete community health needs assessments (CHNA) and implementation strategies by the Patient Protection and Affordable Care Act. By performing needs assessments, we ensure that hospitals and other community stakeholders can strategically invest resources into work that meets our community's needs and align with other efforts that are already improving our community's health. By law, the CHNAs must seek input from "persons who represent the broad interests of the community served by the hospital facility, including those with special knowledge of, or expertise in, public health."

When considering the health of a community, it is important to know that matters outside the doctor's office impact more than 80% of health outcomes.[1] Housing quality, opportunities to exercise, access to affordable and healthy food, and individual earning capacity can have a tremendous impact on whether or not our community is healthy. A CHNA is an opportunity to identify and plan community-based solutions for our health needs. By thinking about actions that produce and maintain health in concert with cross-sectorial experts who know how to influence the determinants of health, we can strategically plan and implement health enhancements in our community.

[1] Tarlov, A. (1999). Public Policy Frameworks for Improving Population Health. Annals of The New York Academy of Sciences. 896. 281-93.

Approach
Engagement Strategies

What is Engagement?

The community engagement requirement as a part of OU Medicine's CHNA[2] is an opportunity to strengthen the ongoing relationship between OU Medicine and community-based organizations, public health players, community stakeholders, patients, consumers, residents near OU Medicine facilities and OU's campuses and others.

Engagement activities and processes can vary in level and depth of engagement, the OU Medicine team utilized a modified version of the International Association for Public Participation's spectrum of public participation in order to communicate an intentional and transparent level of engagement.[3]

Using this continuum and the associated explanations of the differing engagement levels when reaching out to internal and external stakeholders, the OU Medicine team attempted to involve or collaborate with stakeholders from different backgrounds. Throughout the engagement process, there were variable levels of engagement due to the need to efficiently move the CHNA report production forward. For a long-term goal, the OU Medicine team sees this engagement as an opportunity to deepen our involvement and relationships, moving toward greater collaboration.

It is well understood that relationships with stakeholders can vary in depth and quality. During the development of OU Medicine's 2020 CHNA the OU Medicine team employed a grasstops[4] engagement strategy. Although this means that the team did not directly seek out individuals who are experiencing poor health outcomes, the approach allowed the team to gain a broad sense of needs and assets from community members across OU Medicine's catchment area.

[2] https://www.irs.gov/charities-non-profits/community-health-needs-assessment-for-charitable-hospital-organizations-section-501r3 Accessed Nov. 10, 2019

[3] https://iap2usa.org/resources/Documents/Core%20Values%20Awards/IAP2%20-%20Spectrum%20-%20stand%20alone%20document.pdf Accessed Nov. 10, 2019

[4] Grasstops implies engaging representatives of organizations rather than grassroots community members.

Figure I. The Public Participation Spectrum

External Outreach

The OU Medicine team used a snowball sampling[5] method for the external stakeholder outreach: initially targeting outreach by organization type, then asking the resulting group to recommend others for inclusion, and inviting the larger group to be a part of the process. As a result, the stakeholder group grew throughout the needs assessment process.

Initial Outreach

To begin the outreach process, the OU Medicine team listed the types of stakeholders sought for engagement. This list was built from pre-existing literature on what impacts community health outcomes.[6] This included organizations working in the following sectors:

- Education
    - For children
    - For youth
    - For adults
- Economic Development
- Employment
- Health Systems and Services
- Housing
- Philanthropic Organizations
- Physical Environment (Parks, Environmental Protection)
- Public Safety
- Social Environment
- Transportation

The OU Medicine team worked to identify people and organizations that would represent each of the different sectors (n=64) and began initial outreach with many organizations. That initial outreach ranged from an email or phone call to a more comprehensive site visit. The site visits[7] (n=23 meetings) provided OU Medicine team members an opportunity to learn more about stakeholders' efforts and gauge interest in contributing to development of OU Medicine's inaugural CHNA.

Expanded Outreach

An initial external advisory meeting was held on October 16, 2019, with the identified and engaged stakeholders (n=26). The group participated in several feedback-seeking exercises. One such exercise involved asking the participants to identify other agents of change that likely have an impact on the social determinants of health (SDoH). The output of that exercise is visualized below.

After that first meeting, the OU Medicine team expanded its outreach to the suggested groups and people. The larger group was invited to the second of the external advisory meetings. In January and March of 2020, more than 40 external committee members participated in the second and third meetings. Included in the Appendix A of this document is the list of all organizations represented by attendees at least one of our external advisory committee meetings or through meeting(s) advised the team on community efforts. During the COVID 19 pandemic, OU Medicine has continued to work with community partners in order to ensure our response is in synergy with larger community-wide efforts. Likewise, as the impacts of the pandemic continue to evolve, OU Medicine will continue its outreach.

[5] Goodman, L. A. (1961). Snowball sampling. The Annals of Mathematical Statistics, 148-170.

[6] Tarlov, A. R. (1999). Public policy frameworks for improving population health. Annals of the New York Academy of Sciences, 896(1), 281-293.

[7] The site visits and meetings included the following organizations: Homeless Alliance, Food Bank of Central Oklahoma, Oklahoma City Community Foundation, Oklahoma City-County Health Department, State Department of Health, Variety Care, Potts Family Foundation, The Oklahoma State Senate, Oklahoma City – City Hall, THRIVE, and more.

Internal Oklahoma Health Center Outreach

Due to the scale of and expertise found at the OU Health Sciences Center in Oklahoma City and OU's health-related colleges in Tulsa and Lawton, it became apparent that an internal OU Health Sciences Center committee was necessary. This group consisted of several individuals from different organizations located on the OU Health Sciences Center campus. The OU Medicine planning team felt that this approach was critical because of all the valuable community health improvement work originating from stakeholders across the OU Health Sciences Center. Many of these stakeholders come from different sectors within the clinical, research and educational environments including the following:

- Child-Specific Education
- Community Health Clinics
- Family Medicine
- Health Information Technologies
- Healthcare Quality
- Nursing
- Nutrition
- Public Health
- Social Work

During that initial meeting, the OU Medicine team presented on the CHNA process and provided an opportunity for the internal OU Health Sciences Center stakeholders to provide feedback on that process, e.g. insight into the prioritization criteria and others to include. Additionally, a goal for that meeting was to begin an asset mapping process to identify community health improvement activities. The team began a discussion around developing an inventory of community health improvement activities in an effort to support collective efforts across OU Health Sciences Center. Due to the COVID 19 pandemic, one internal OU Health Sciences Center meeting was postponed but will serve as an opportunity to present the findings and continue to learn from stakeholders' expertise to inform implementation efforts.

Geographic Coverage

The needs assessment covered three different geographies in its analysis. It included statewide data, countywide indicators, and neighborhoods adjacent to the Oklahoma Health Center. More information around the definitions of these geographies and the rationale for the different levels follows.

Statewide

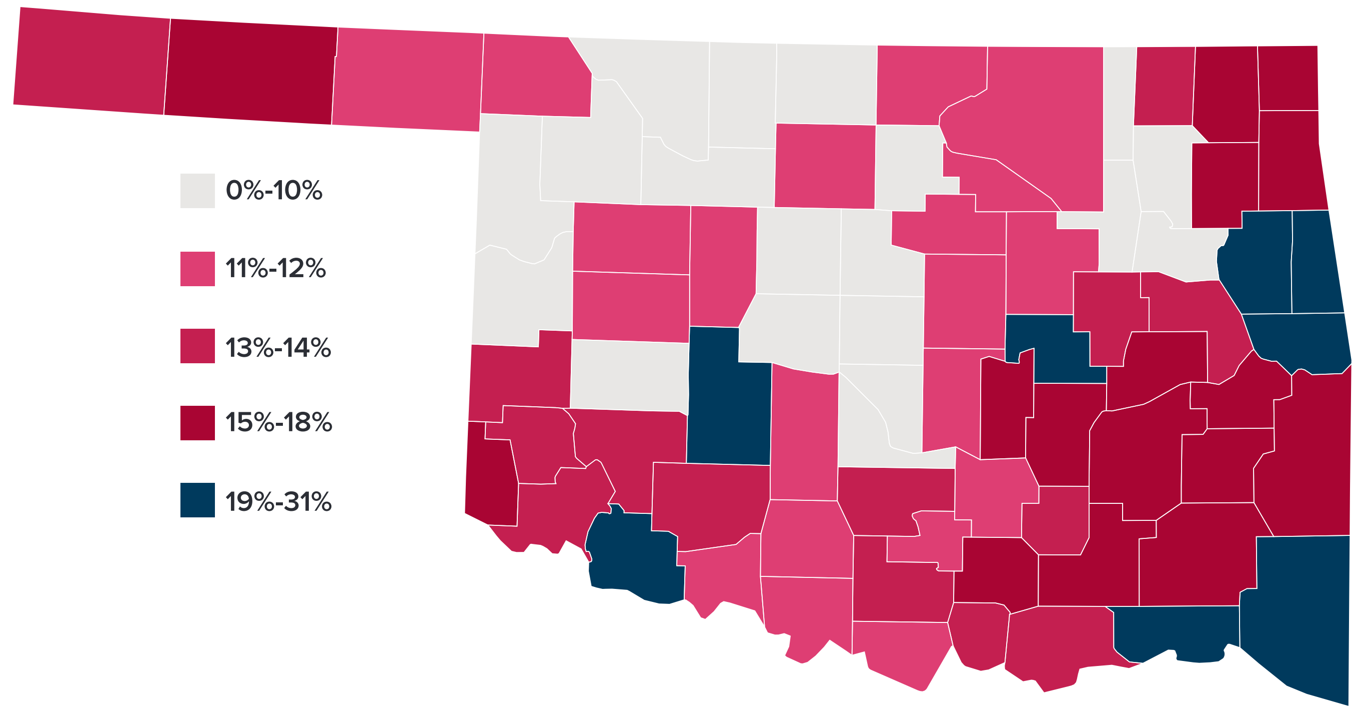
OU Medicine serves the state of Oklahoma. When attempting to define what geography the needs assessment would explore, although daunting, it was abundantly clear that a statewide analysis was necessary because of OU Medicine's clinical and research reach, rural connections, and educational impact. This is evident because when exploring the service area, which includes most of the state of Oklahoma, OU Medicine serves approximately 11% of the healthcare consumers. OU Medicine's strong presence in the state provides insight into the potential opportunities and roles for the health system across the state.

Oklahoma County

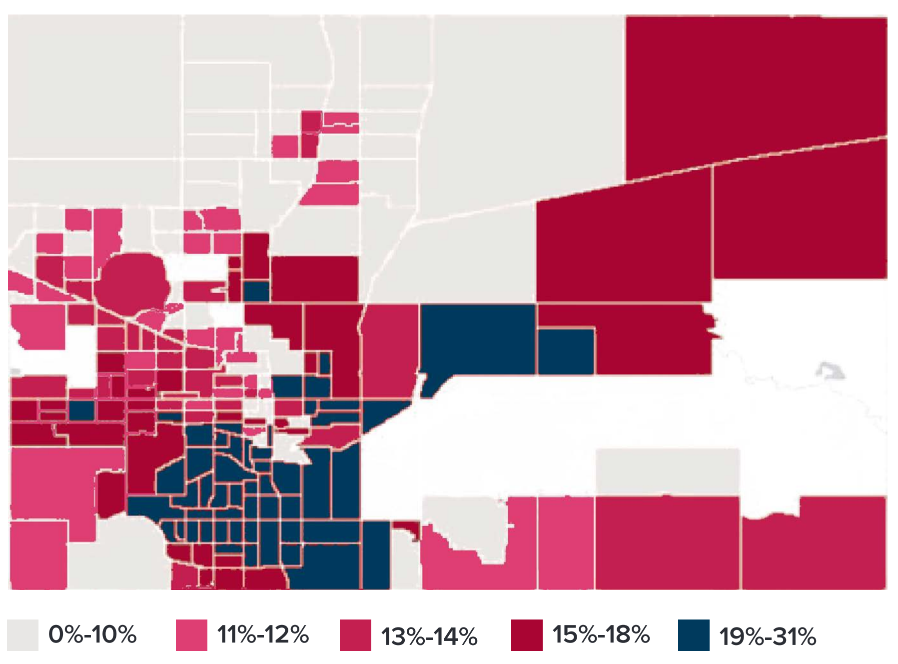
In addition to serving the entire state of Oklahoma, OU Medicine has a distinct presence in Oklahoma County and the Oklahoma metropolitan statistical area, which is the largest metropolitan area in the state of Oklahoma and includes the cities and towns within a roughly 25-mile radius of downtown Oklahoma City. Not only does it serve as a healthcare institution, it also is a large employer and purchaser. Additionally, with its role as the healthcare system affiliated with the seven colleges on the Oklahoma Health Center campus, OU Medicine's impact to the regional economy is multiplied several times over through contributions to the health workforce pipeline.

When considering the community health improvement ecosystem, there are several other needs assessments that focus on the county. By exploring the needs in the county, OU Medicine is able to collaborate with pre-existing alliances including Oklahoma City-County Health Department's Wellness Now coalition as well as the Central Oklahoma Health Impact Team (COHIT), which consists of the county's major healthcare systems.

Figure III. Percent of Adults Reporting They Experience Poor Health



Percent of Adults Indicating They Experience Poor Health in Oklahoma County



Source: University of Wisconsin Population Health Institute. County Health Rankings & Roadmaps 2019. www.countyhealthrankings.org

Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. 500 Cities Project Data [online; Accessed: Jan. 5, 2020]

Adjacent Neighborhoods

Surrounding OU Medicine are a variety of middle and low income neighborhoods which include some of the most disadvantaged neighborhoods in the city. The poverty level among people living in proximity to the OU Medicine and Oklahoma Health Center campus is a contributing factor to their experience with also some of the worst health outcomes in the state and, at times, even nationally. All the evidence of these outcomes indicate that this is not happenstance. There is a long history of federal, state and local policy decisions that contribute to the geographic disparities we see in health and demographic data as well as the complexity of the health needs in the surrounding neighborhoods. It is that history and the resulting impact on adjacent neighborhoods that necessitate the specific inclusion of the neighborhoods as a geographic focus.

In Oklahoma City's early years through Jim Crow era laws, people of color were relegated to areas of town that are currently called Deep Deuce and Bricktown. By the time the United States Supreme Court ruled the overtly discriminatory law as unconstitutional in 1935, people of color had already developed a healthy, thriving business district in the area.[8,9]

Like many cities and towns across the country, the development of the interstate system and other urban renewal efforts continued to disproportionately impact communities of color. In the 1940s and 50s much of Deep Deuce and Bricktown was taken to create the interstates I-40 and I-235. , In the decades following interstate development, several districts throughout Oklahoma City, similar to most other American cities, were redeveloped through Urban Renewal. The city, state and federal government used imminent domain to seize property and develop the areas in various ways. The area now known as the Oklahoma Health Center was one of the many areas in town where this occurred. While it is unclear how many people were impacted from the earlier and other displacements, from 1966-1974 through the use of imminent domain, 731 families were impacted. Of those displaced, 90% were families of color.

The associated historical trauma of an entire community being repeatedly displaced is palpable. In producing this CHNA, the CHNA team understood that it would it would be remiss if they failed to acknowledge this history and how it impacts community members, their residual economic opportunities and environmental exposures in Northeast Oklahoma City. As with community relationships, it is only natural that OU Medicine's relationship with community members can be improved. Through this acknowledgement, an intended outcome of the community health improvement planning process is to support the work of others and, wherever possible, work in partnership to lay the groundwork for improved long-term relationships with community members and community leaders. These relationships must then serve as the foundations for OU Medicine and it's neighbors to communally dismantle the root causes of poor health outcomes. ■

---

[8] Anita G. Arnold, "Second Street," The Encyclopedia of Oklahoma History and Culture, https://www.okhistory.org/publications/enc /entry.php?entry=SE004.

[9] James M. Smallwood, "NAACP," The Encyclopedia of Oklahoma History and Culture, https://www.okhistory.org/publications/enc/ entry.php?entry=NA001.

[10] Ackerman, L. (2016, March 19) Bricktown and Deep Deuce, Oklahoma City (1889-). Retrieved from https://www.blackpast.org/ african-american-history/bricktown-and-deep-deuce-oklahoma-city-1889/

[11] The Bricktown Association, "The History of Bricktown." Oklahoma News 9,

[12] 2013, http://www.news9.com/story/7690410/the-history-of-brick town.

Data Collection

Most of the data collection for the needs assessment occurred prior to the COVID 19 pandemic. With that in mind, data collection informing community-related work will continue as the impacts of the pandemic continually evolve.

Secondary Data Analysis

The needs assessment is an opportunity to view previously collected data through a new lens. As such, the CHNA team used secondary data to paint a clearer image of health outcomes experienced across various greographic levels.

The team accessed health data from traditional, secondary public health data sources including the Behavioral Risk Factors Surveillance System from the Centers for Disease Control and Prevention(CDC) and the Oklahoma Department of Health, OK2Share data warehouse, CDC's Wonder database, America's Health Rankings for historical data, National Center for Health Statistics and more. Additionally, determinants of health data from sources including the U.S. Census American Community Survey, Housing and Transportation Affordability Index, Area Deprivation Index (ADI) developed by Health Resources and Services Administration (HRSA), Bureau of Labor and Statistics, USDA Food Environment Atlas, and more. These different data sets provided unique images of Oklahoma, Oklahoma County and the adjacent community to the Oklahoma Health Center.

Primary Data Analysis: Partnerships

Partnerships were critical to the development of the CHNA. During the external and internal advisory committee meetings, members of the committees provided insight on how prioritization should take place as well as what the greatest needs are in OU Medicine's catchment areas. Partners provided guidance and in some cases provided access to relevant data.

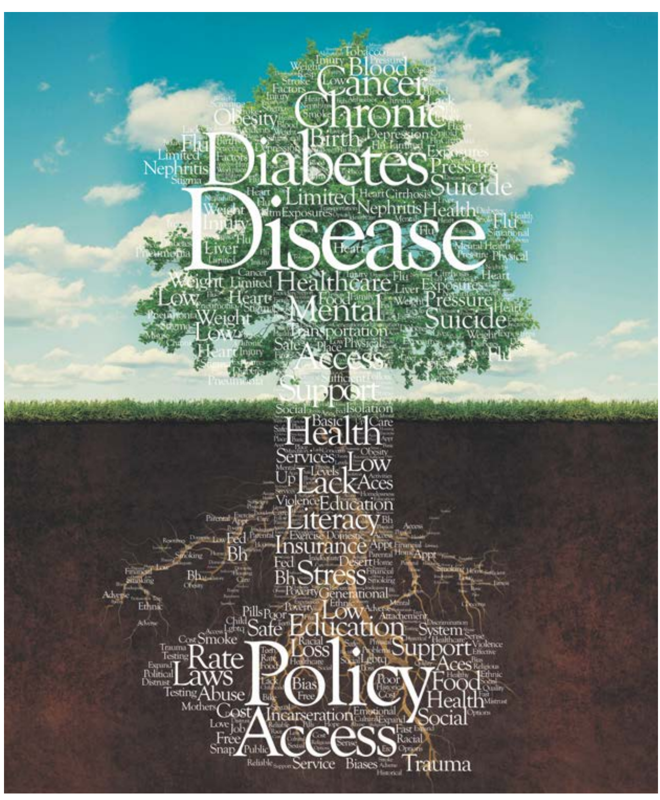


Figure IX. Tree Diagram of Stakeholder Responses to "In our community, what influences our leading causes of death?"

Advisory Meeting Exercises

During initial advisory meetings, with internal Oklahoma Health Center advisors and external advisors, the advisory groups collectively worked through two open-ended exercises to elucidate the pathways through which health outcomes are impacted in OU Medicine's catchment areas. The outcome of one of those exercises is depicted in the tree diagram shown in Figure IX.

OU Medicine's Internal Discharge Data

The OU Medicine CHNA team used de-identified discharge data from OU Medicine in order to better understand the catchment area for OU Medicine in defining the CHNA's focus geographies, as well as confirming length of stay in the hospital for disease-specific outcomes and exploring how OU Medicine's patient population is geographically distributed. Uniquely, the OU Medicine team used the Centers for Medicare and Medicaid Services (CMS) Chronic Conditions Data Warehouse definitions to further explore the catchment area of the system.

Health Need	Resulting Rank			
Criteria & Definition Presented	1st External Meeting	Internal Meeting	2nd External Meeting	Average Rank
Equity Definition: Prioritizing a need based on its inequitable impact on specific population groups.	1	3	1	1.67
Size of the problem Definition: Number or percentage of people affected by a health condition in a particular area	2	2	2	2.00
Seriousness of the problem Definition: Potential of health problem to result in severe disability or death	2 (tied)	1	3	2.00
Urgency of solving problem	4	7	3 (tied)	4.67
Political will to address issue	5	4	7	5.33
Social Impact of Problems	7	5	5	5.67
Economic impact and/or Return on Investment	6	6	6	6.00

Table X. The resulting criteria ranks to be used in prioritizing need

Cost Estimation

OU Medicine's community health needs assessment is unique because in order to not duplicate partners' work, the needs assessment provides a look at the estimated costs of poor health for the service areas. The CHNA team saw an opportunity to use parsimonious, easily understandable methods to calculate the costs. This allows for the methods to be communicated simply and improves replicability of the cost estimate.

While the true cost of poor health is challenging to fully estimate, when exploring the costs holistically and theoretically, it becomes clear the impacts of sickness likely include:

- Direct cost of care
- Individual and family productivity loss
- Employer direct and indirect costs
- Community level productivity loss
- Impact on comorbidities
- Impact on insurance premiums and coverage
- Clinical staff's opportunity costs
- Lost local and state revenue

The CHNA team focused on estimating the individual productivity loss, employer direct costs, and lost state revenue. For other costs and drivers of poor health, the team cited reputable organizations and publications who have estimated those costs. The economic costs of COVID 19 are an acute, quite clear example of this; however, the chronic state of having an unnecessarily high premature death rates also cost Oklahomans billions of dollars annually.

Methods to Prioritize Needs

In order to prioritize need, 17 prioritization criteria were presented to the external advisory committee; seven for identifying need and 10 for selecting interventions. In the first meeting the participants were asked to select as many criteria as they deemed important to use in prioritizing the need. This allowed for successive selection and voting rounds to identify and refine priority needs and potential interventions based on those selected needs. Above is a table describing the results of the criteria selection which indicated how need would be prioritized. These criteria then informed further analysis of specific areas.

As a result of this exercise, the team used equity, the size of the problem, and the seriousness of the problem

Social Determinants of Health (SDoH)

Many factors influence people's health outcomes. When we are sick, we want to receive the best healthcare possible. It goes without saying that OU Medicine seeks to provide the highest level of care across the enterprise. However, the more we learn about the etiology of disease, the more we understand that care we receive in the doctor's office only impacts a small portion of the factors that make us healthy.[13] Economic, behavioral, physical and social factors impact the majority of community health outcomes. Figure XI. shows a single estimation of factors that influence our health.

Using this framework, 80% of our community's health outcomes are likely impacted by the SDoHs. The SDoHs can be grouped into six, often overlapping categories:[14]

- Built environment
- Education
- Employment
- Housing
- Violence
- Social Environment

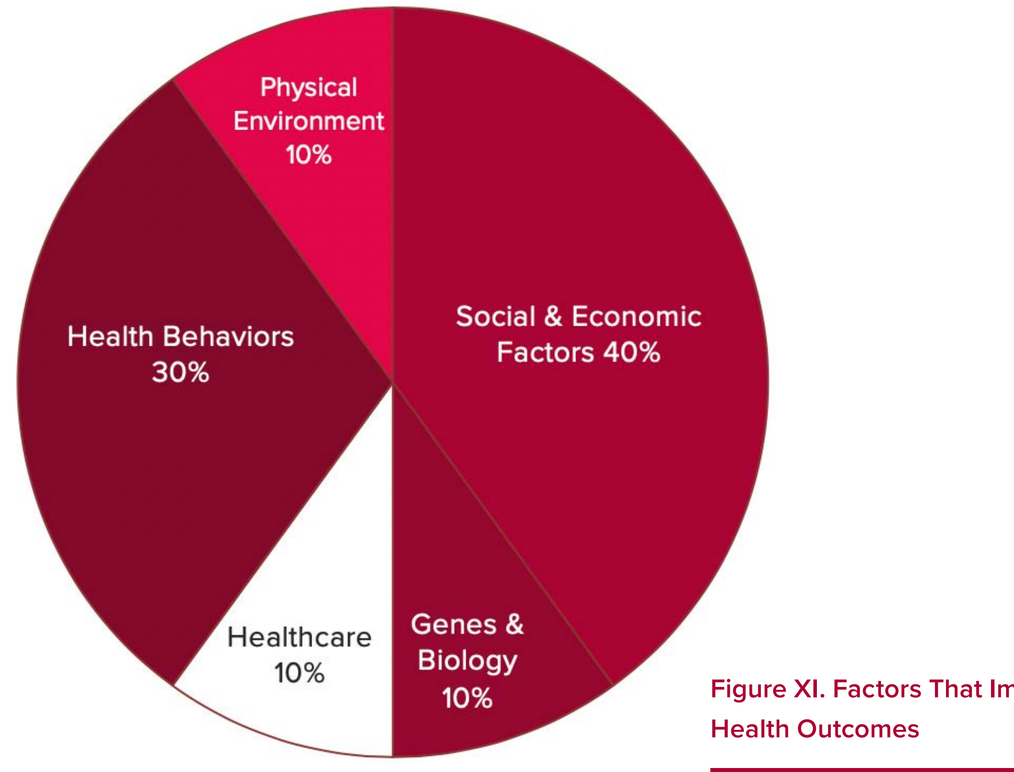
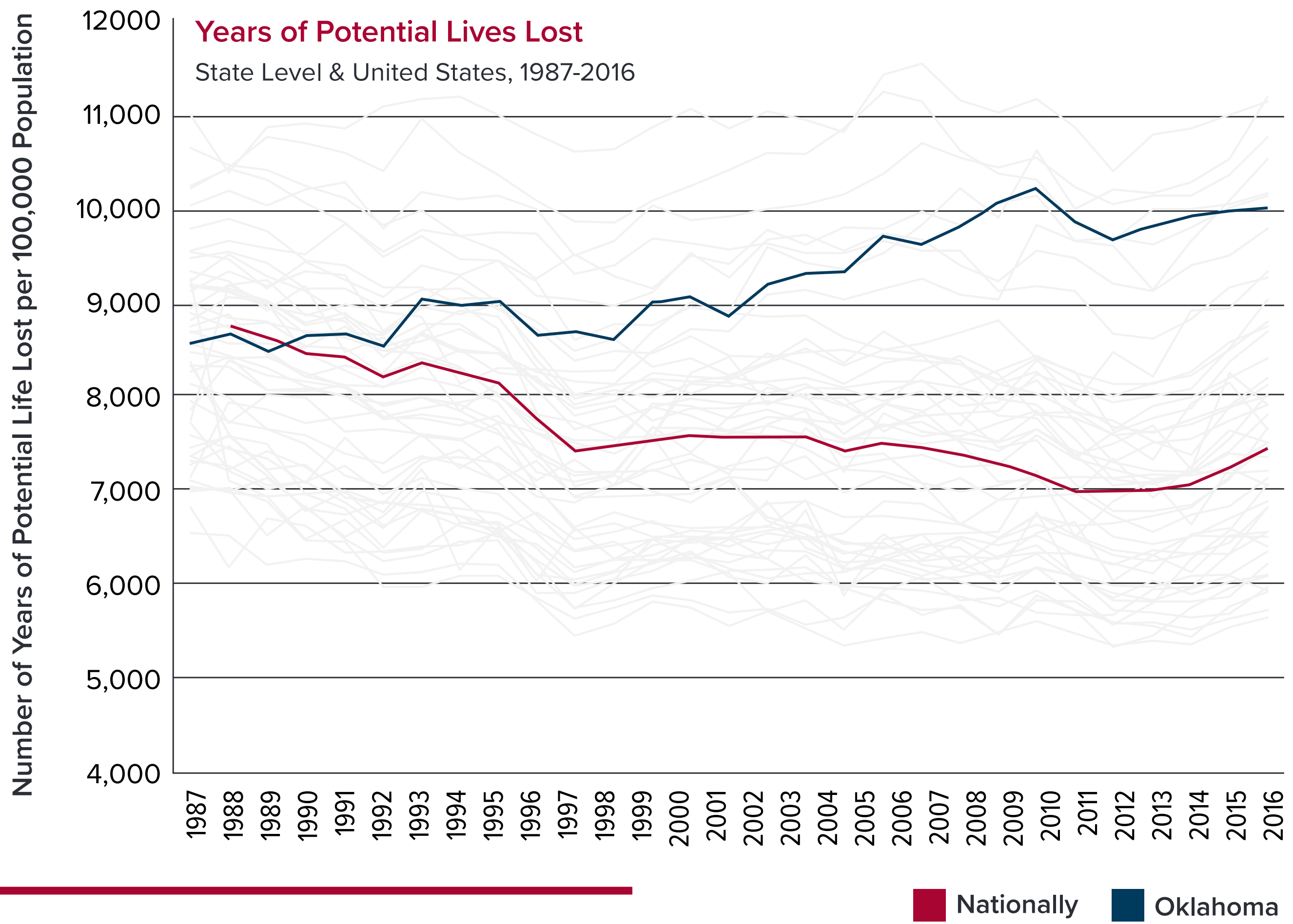


Figure XI. Factors That Impact Community Health Outcomes

Source: Tarlov, A. (1999). Public Policy Frameworks For Improving Population Health. Annals of The New York Academy Of Sciences. 896. 281-93.



Source: CDC WONDER Online Database, Underlying Cause of Death, Multiple Cause of Death files, Longitudinal Data collected by America's Health Rankings

At OU Medicine, it is common knowledge that many of the health outcomes we treat are the result of the SDoH. And across the state, SDoHs influence Oklahomans' variable opportunities to experience good health. It is therefore easy to understand that the SDoHs are frequently out of an individual's control and often determined by histories, structures, policies, institutions, systems and environments.

Despite improvements in healthcare delivery and innovation over the past three decades, Oklahoma has seen an increase in years of potential life lost (YPLL) compared to the national t trend of fewer YPLL. [15] In fact, there are parts of the state where more people are dying young than they previously did. When we look at a metric that measures the magnitude of premature death, YPLL, we see that Oklahomans are experiencing more premature death than almost every other state in the union. This divergent trend is evident with the below longitudinal data:

When seeing such a staggering trend, it is helpful to consider the geographic distribution of those premature deaths. The Figure XIII. map illustrates that people living in specific rural counties in Oklahoma are more likely to die prematurely than those generally living in the urban counties.

[13] Final Grant Reports 1951-1981, General Records of the Department of Housing and Urban Development 1931-2003, Record Group 207, National Archives, College Park, Md.

[14] https://www.preventioninstitute.org/sites/default/files/publications/Measuring%20What%20Works%20to%20Achieve%20Health%20Equity-%20Metrics%20for%20the%20Determinants%20of%20Health_Executive_Summary.pdf

[15] Years of Potential Life Lost is a metric to explore the magnitude of premature death. For instance, if a person dies at the age of 24, there would be more years of potential life lost than if that person had died at age 64.

Average Life Expectancy

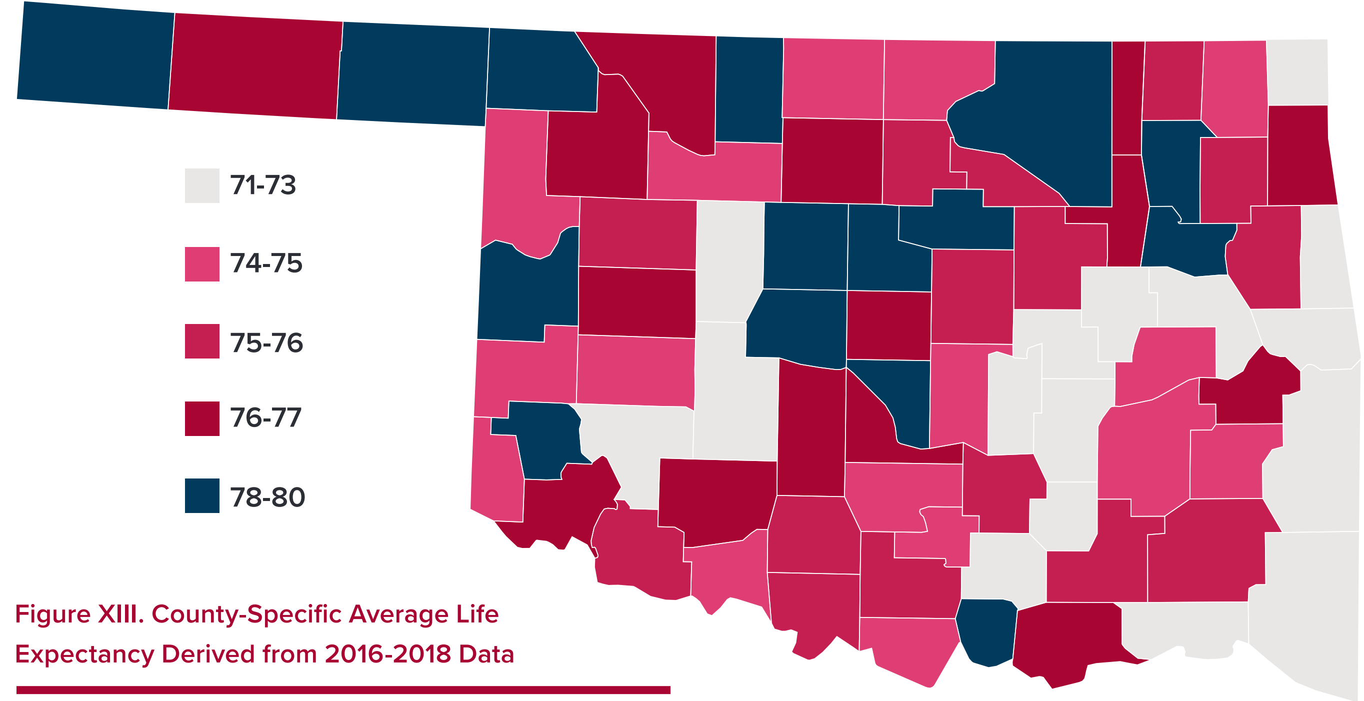


Figure XIII. County-Specific Average Life Expectancy Derived from 2016-2018 Data

Source: University of Wisconsin Population Health Institute. County Health Rankings & Roadmaps 2019. www.countyhealthrankings.org

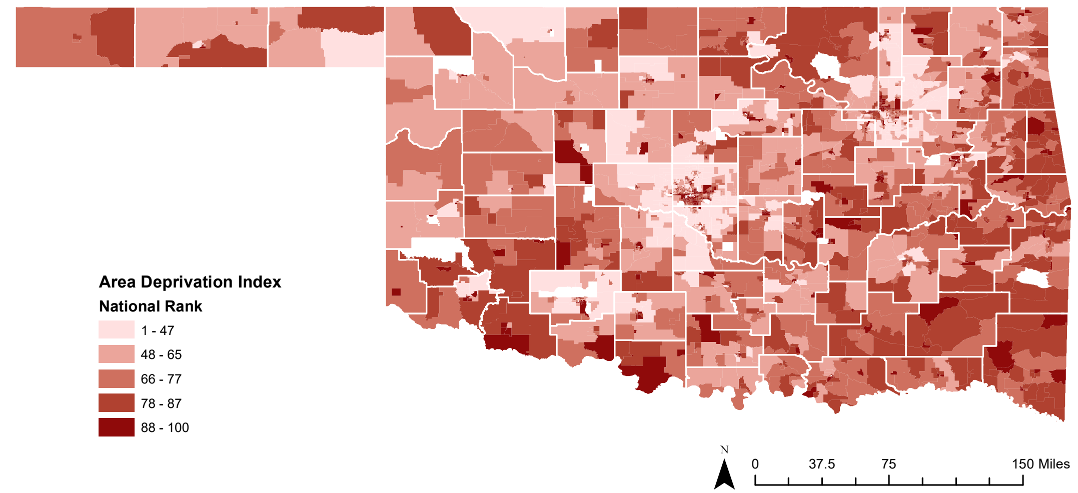
The Figure XIII. map shows that the distribution premature death is geographically specific. When one travels across Oklahoma or more notably across Oklahoma City, it becomes abundantly clear that people living in certain areas of the state and city have access to cleaner environments, higher quality homes, better grocery stores, higher quality educational opportunities and likely better paying, more stable jobs. It is therefore easy to understand that a child born into an area with better jobs, better schools and higher quality homes with fewer environmental hazards will, in turn, likely live a longer life. While most often it's not the fault of the individual, the variable access to health-promoting SDoHs are frequently created by historical, institutional and interpersonal systems.

In Oklahoma City, we see this lived out with the inequitable distribution of life expectancy. For neighborhoods in zip code 73145, we see that the average life expectancy from 2013 to 2015 was approximately 64 years, while in zip code 73131 the average life expectancy was 82 years.[16]

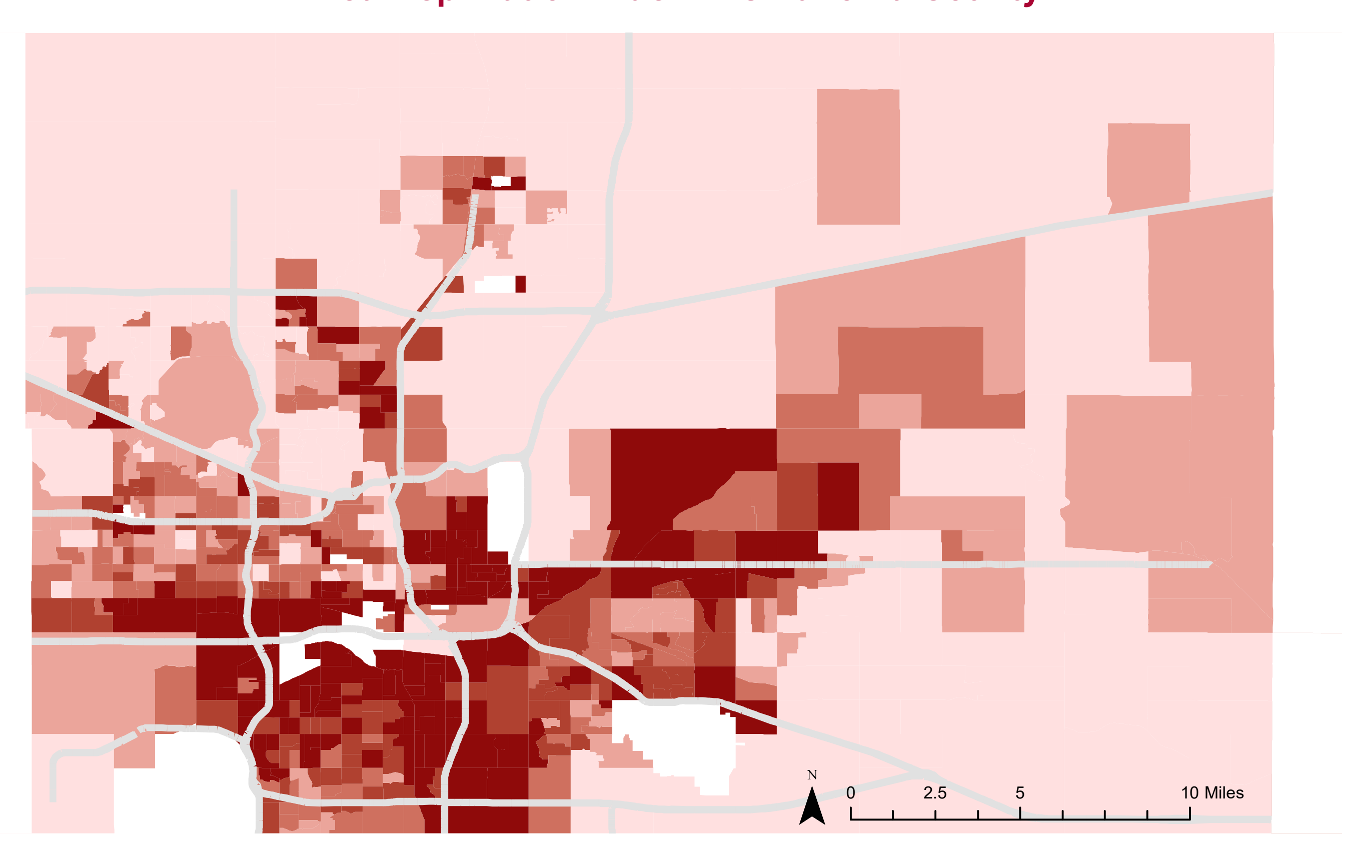
The Area Deprivation Index(ADI) for Oklahoma visually, displays how Oklahoma is a high-poverty state. Developed by the Health Resources and Services Administration (HRSA) and the University of Wisconsin, this tool supports data-informed healthcare payment reform, risk adjustment approaches, infrastructure prioritization, and community benefits targeting.[17] For needs assessment purposes, the ADI is useful as a combined view of SDoH including housing, employment, and more. Figure X. Area Deprivation Index Maps for Oklahoma and Oklahoma City-County.

When using indices that combine SDoHs, solutions to address these entrenched problems can appear daunting or impossible. However, through the exploration of each determinant and particularly the factors within the each determinant, areas of high potential for impact become more evident.

Figure XIV. Area Deprivation Index National Ranking



Area Deprivation Index in Oklahoma County



Source: Kind, Amy JH, and William R. Buckingham. "Making neighborhood-disadvantage metrics accessible—the neighborhood atlas." The New England journal of medicine 378.26 (2018): 2456.

[16] Oklahoma City-County Wellness Score, Oklahoma City-County Health Department. Accessed: Jan. 2020

[17] The Area Deprivation Index (ADI) ranks neighborhoods by socio economic status disadvantage in a region of interest (e.g. at the state or national level). It includes factors for the theoretical domains of income, education, employment, and housing quality. It can be used to inform health delivery and policy, especially for the most disadvantaged neighborhood groups.

Built Environment

The built environment includes those human-made and -modified elements of the environment where we worship, live, work, learn and play.[18] More specifically, this includes access to healthy foods, environmental exposures, community open spaces, transportation systems, infrastructure, buildings, and the geography of those elements. Our community is impacted by resource distribution, environmental exposures and whether or not a service is accessible.

The built environment impacts individual behaviors like smoking, eating habits and more. And unsurprisingly, it also relates to accidents and injuries and other disease outcomes including chronic disease, exposures to harmful substances, and prevention, treatment, and mortality. Generally, communities experience better health outcomes with healthier built environments: more resources, enhanced open spaces, safer transportation options and greater access to healthy food.

However, a combination of historical and structural discrimination has resulted in severely limited options in terms of health-promoting built environments. In particular, people of color and the financially disadvantaged have fewer choices.[19] One example of this is how food insecurity disproportionately impacts certain groups.

Inequitable or unequal access to a healthy built environments is perpetuated through historical residential locations and current policies and practices including the location of brownfields, bank lending patterns and the quality of transportation options.[20] Like most communities of

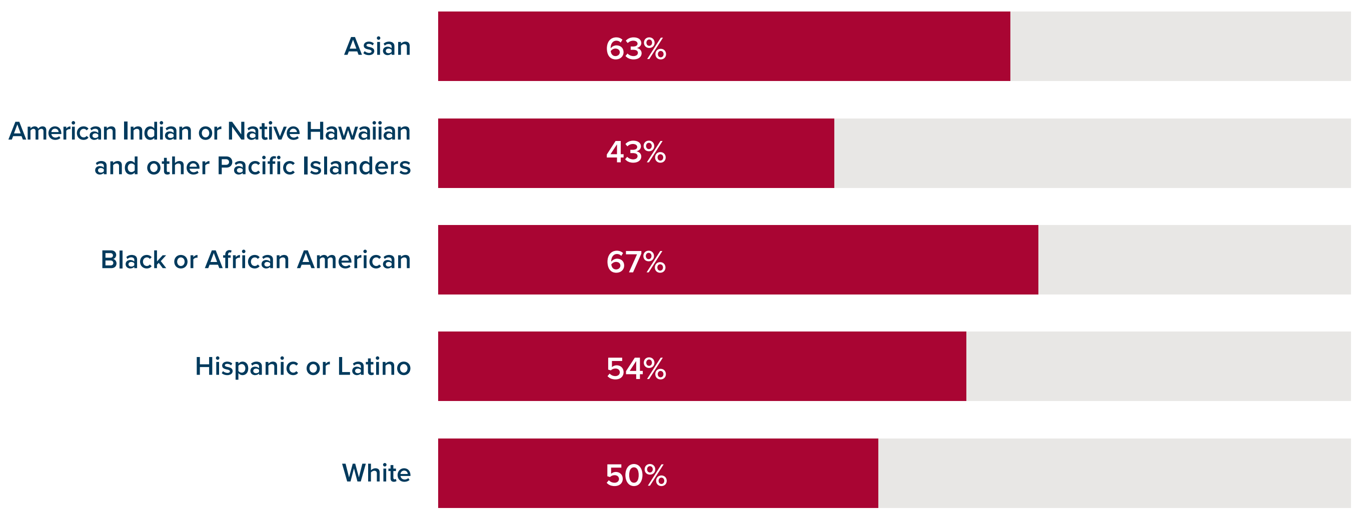


Figure XV. Percent of People with Low Food Access in Oklahoma by Racial Group (2017)

Source: USDA ERS. (2017). USDA ERS Food Access Research Atlas Documentation. Retrieved April 17, 2019, from https://www.ers.usda.gov/data-products/food-access-research-atlas/download-the-data/

Figure XVI. Map of the Oklahoma displaying where households are without access to transportation and are further than a half mile from a grocery store.

Source: Food Access Research Atlas (USDA FARA 2017).

color in the United States, the area surrounding OU Medicine's downtown campus is a food desert without direct access to healthy foods.[21, 22]

When seeing the geographic spread of food deserts, it becomes clear that more than 100,000 people are hungry on a regular basis in Oklahoma County alone.[23] To provide a sense of the overall food system's impact on the Oklahoma economy, it is estimated that hunger costs Oklahoma more that $1.4 billion annually when only including the decreased academic achievement and the associated poor health outcomes.[24] Not only is food insecurity an issue, food safety practice is also an area needing improvement. In Oklahoma we also experience high levels of food-borne infectious disease transmission. More Oklahoman's are impacted by salmonella outbreaks (23.4 per 100,000 people) than what would be expected if our incidence rate matched that of the national average (16.7 per 100,000 people).[25]

[18] Roof, K. & Oleru, N. (2008) Public Health: Seattle and King County's Push for the Built Environment; Journal of Environmental Health. 71(1) 24-27

[19] Kawachi, Ichiro, and Bruce P. Kennedy. "Income inequality and health: pathways and mechanisms." Health services research 34.1 Pt 2 (1999): 215

[20] Williams DR, Collins C. (2001.) "Racial Residential Segregation: A Fundamental Cause of Racial Disparities in Health." Volume: 116 issue: 5, page(s): 404-416 DOI:https://doi.org/10.1093/phr/116.5.404.

[21] Oklahoma Food Banks. (2017). An Overview of Food Deserts in Oklahoma: June 2017.

[22] Schindler S. Architectural Exclusion: Discrimination and Segregation through Physical Design of the Built Environment. Yale Law Journal. 2015; 124 (6). http://www.yalelawjournal.org/article/architectural-exclusion.

[23] https://www.regionalfoodbank.org/uploads/hunger-in-ok/Oklahoma%20County.pdf Accessed Jan. 5, 2020

[24] https://hungerfreeok.org/theissueoklahomaishungry/ Accessed: Jan. 4, 2020

[25] CDC, National Notifiable Diseases Surveillance System

Education

Education not only includes opportunities for formal education but also informal education via interactions with institutions and people as well as educational opportunities with organizations or groups that are not traditional schools. Notably however, when exploring the determinants of health however educational attainment.[26]

Not only does education predict health, but educational outcomes are also dependent on how healthy a person is while they are being educated. Less healthy children experience greater learning challenges, tend to have more behavioral problems and are more likely to have poor grades. School systems around the country and in Oklahoma, where possible, have been adopting policies and programs that support student health in order to improve outcomes. This includes after school programming, school lunch and breakfast programs, physical activity opportunities, and school-based healthcare resources including chronic-disease management and health screenings.[27] During the COVID 19 pandemic many of the school systems in the state have been supporting children at home through food distributions. Students typically spend most of the day in school. During that time, the environment provides basic necessities - including but not limited to food, water, shelter, sanitary facilities and chaperoned socialization opportunities. These services and exposures if administered in safe, health-promoting school environments are associated with better educational performance as well as improved health outcomes.[28, 29, 30, 31, 32]

Oklahoma's graduation rate (82.6 % of ninth graders who graduate in four years) is lower than the national average (84.6%).[31] Our lower graduation rate has implications for our health. For instance, when one leaves the school setting, their educational attainment impacts health outcomes throughout life. Higher levels of educational attainment often equate with higher incomes, better quality jobs and economic stability. Even without a higher wage, achieving higher educational levels can provide an individual an improved sense of control over one's life as well as stronger social networks, which has been shown to be linked to better health outcomes and people being able to engage in healthy behaviors.

In Oklahoma, regrettably, quality can vary significantly from one school to another. Often, in both highly rural and urban areas, students of color and low-income students can experience differential quality in educational institutions, after-school programs, resources, transportation issues and inequitable disciplinary practices.

85% **of people in Oklahoma City have graduated high school**

87% **of people in the US have graduated high school**

Figure XVII. Percent of the Population with High School Education

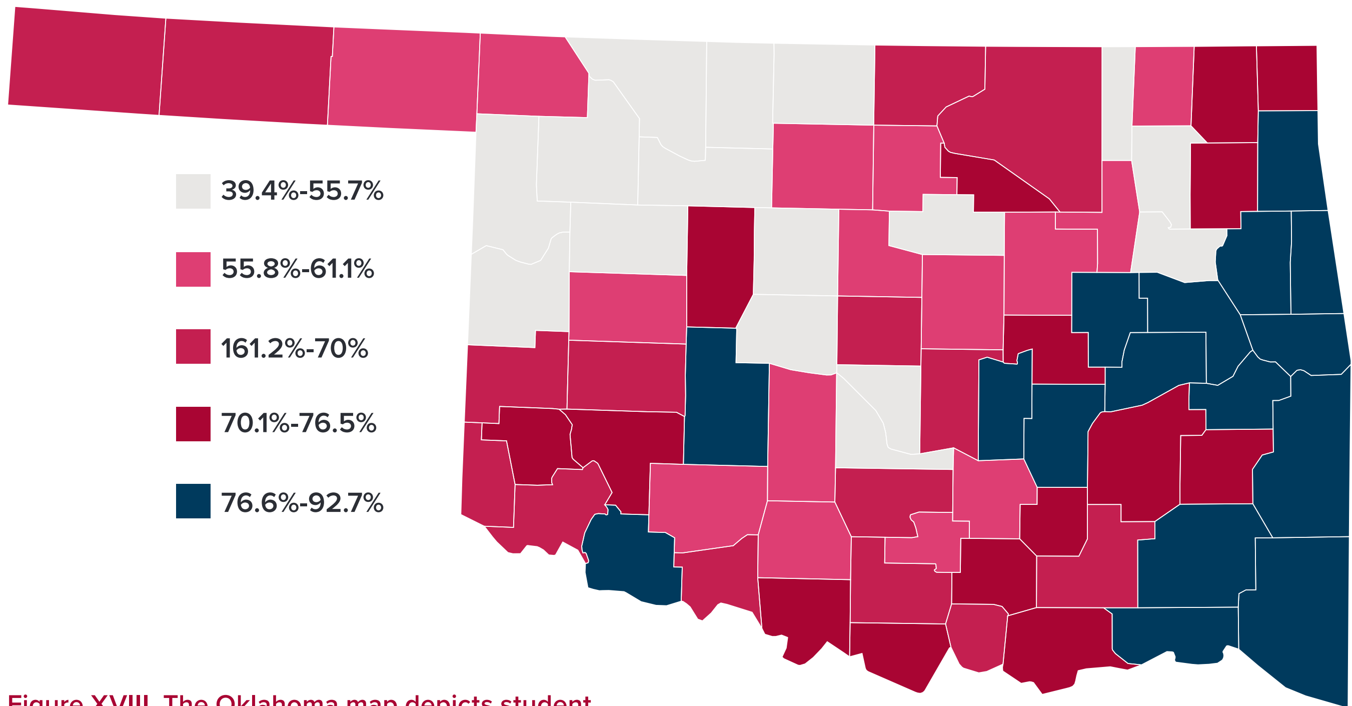
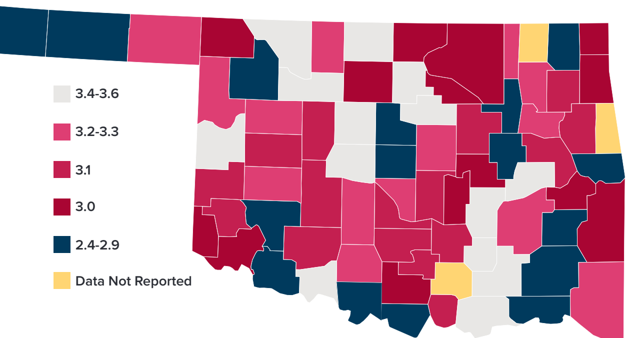


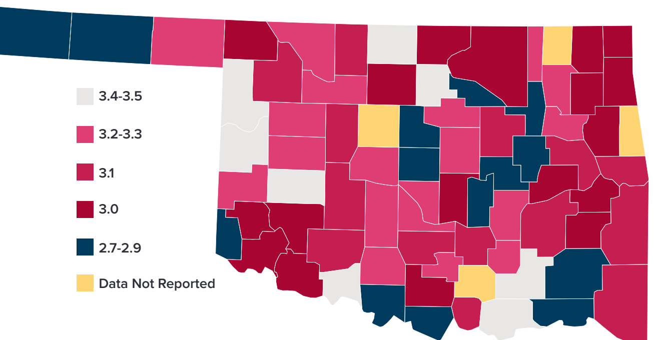
Figure XVIII. The Oklahoma map depicts student participants in the 'Free and Reduced Lunch' program and can serve as an indicator of need.

Source: University of Wisconsin Population Health Institute. County Health Rankings & Roadmaps 2019. www.countyhealthrankings.org

School Performance: Math



School Performance: English



[26] Braveman PA, Cubbin C, Egerter S, Williams DR, Pamuk E. Socioeconomic disparities in health in the United States: What the patterns tell us. American Journal of Public Health. 2010; 100: S186-S196.

[27] https://www.cdc.gov/policy/hst/hi5/index.html Accessed Jan. 4, 2020

[28] City of New York. (2010). Active design guidelines: Promoting physical activity and health in design. Retrieved from http://centerforactivedesign.org/dl/guidelines.pdf.

[29] Cutler, C. & Lleras-Muney, A. (2006). Education and health: Evaluating theories and evidence. National Poverty Center, Gerald R. Ford School of Public Policy, University of Michigan. Retrieved from http://npc.umich.edu/publications/policy_briefs/brief

[30] Centers for Disease Control and Prevention. (2011). School health guidelines to promote healthy eating and physical activity. MMWR 2011: 60 (5). Retrieved from http://www.cdc.gov/mmwr/pdf/rr/rr6005.pdf.

[31] Centers for Disease Control and Prevention. (2010). The association between school based physical activity, including physical education, and academic performance. Atlanta, GA: U.S. Department of Health and Human Services. Retrieved from http://www.cdc.gov/healthyyouth/health_and_ academics/pdf/pape_executive_summary.pdf.

[32] U.S. Department of Education, National Center for Education Statistics

Employment

Health is inherently linked to income, unemployment, and poverty. Good health is more often than not dependent on the income associated with, stability of and the benefits of quality employment.[33] Income often determines whether a family has access to preventive healthcare, where a family is able to obtain food, and whether or not they are able to participate in physical activity. Jobs provide people the opportunity to access important healthcare services and screenings, engage in healthy behaviors and ultimately live long lives.

Employment's impact on health goes beyond just income. A worker's health is directly impacted by the quality of the physical workplace, employee benefits and employer policies. Unsafe working conditions and hazards can influence levels of stress, incidence of injuries, spread of disease and even death. Poor job stability and environments including long working hours can lead to increased levels of stress, decreased sleep, constant injuries, unhealthy eating behaviors and reduced leisure time which impacts the overall health of an individual. This is an important issue to consider as Oklahoma's occupation-related mortality rate (7.2 deaths per 100,000 workers) is far higher than the national average (4.4 deaths per 100,000 workers).[34] Additionally, individuals and their families' ability to maintain good health can be positively impacted if they receive work benefits including personal time off, wellness programs, savings and retirement options, and health insurance.

Likewise, unemployment has tremendous implications for a person's ability to achieve good health. General poor health, depression, substance use, heightened stress levels, hypertension, heart disease, arthritis, stroke and overall mortality are all associated with unemployment.[35, 36] Unemployment's related financial uncertainty can influence foreclosure, eviction and homelessness all of which have implications on a person's health outcomes. With the recent COVID 19 pandemic and economic fluctuations have led to large numbers of people applying for unemployment benefits. The OU Medicine CHNA team anticipates unemployment to have a tremendous impact on the health of Oklahomans.

Underemployment is a term used to describe people who are employed but not adequately. Lower positive self-concept, chronic conditions and depression are all linked to underemployment.[37] As an example of underemployment, in Oklahoma City, with the minimum wage being $7.25 an hour, a person would need to work 80+ a week in order to afford the average one-bedroom rent of $776 per month.[38] Underemployment can easily drive a person into homelessness or to live in unsafe living conditions.[39]

The definition of "working poor" is workers with income at or below poverty level. These individuals are more likely to have unstable, low-paying jobs with limited or no health insurance, contributing to poor health outcomes.[40] Not only is poverty detrimental to the worker, poverty can have life-long, deleterious impact on the worker's dependent family members. More Oklahoma children grow up in poverty, than should as our poverty rate among children (an estimated 21.7% equating to more that 200,000 children) is significantly higher than the national average (an estimated 18%).[41] However, childhood poverty rates vary widely from county to county, ranging from 12% to 34%.[42] The graphic below illustrates where concentrations of children live in poverty.

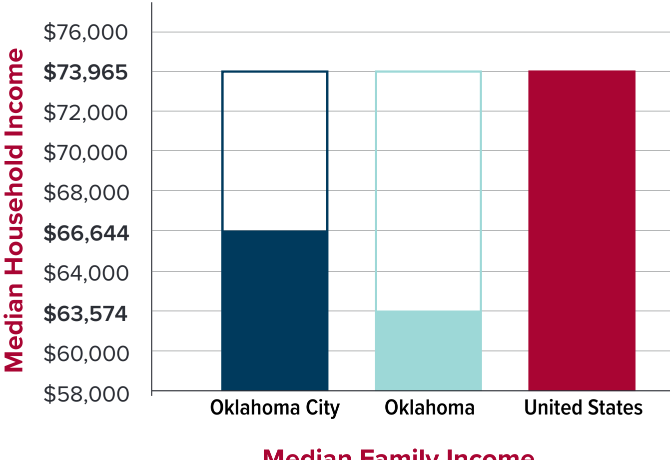


Figure XX. Estimated Median Household Income

Source: Estimated median family income for the Oklahoma City area, state and nation (U.S. Census Bureau, American Community Survey 5-year estimates (2018)).

Geographic Distribution of Children Living Below Poverty

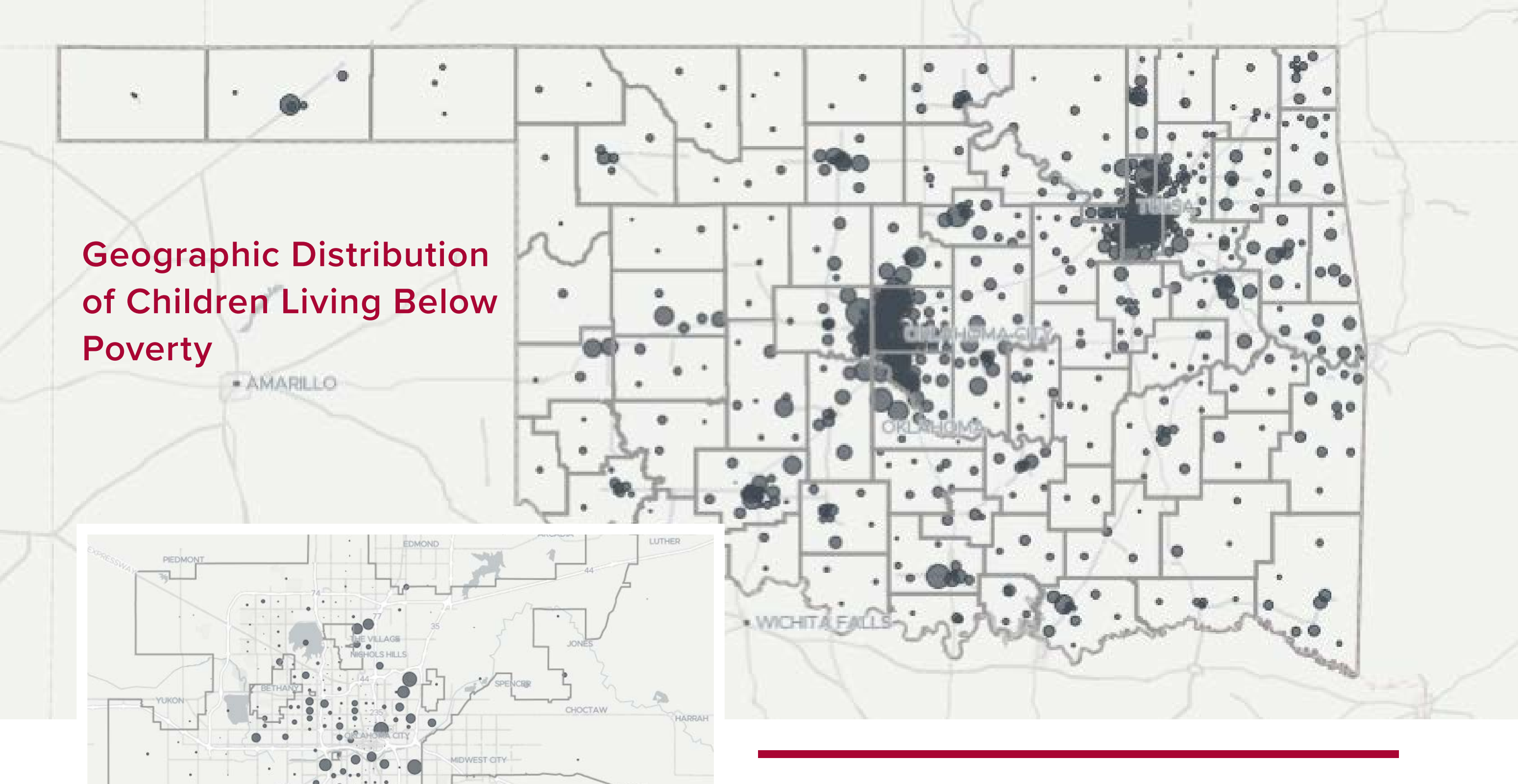


Figure XXII. Geographic Distribution of Children Living Below Poverty in Oklahoma City

Source: US Census Bureau - American Community Survey 5-year estimates (ACS 2013-2017).

Poverty restricts access to safe communities with safe homes, opportunities for quality education and limits access to healthy food. For all members of a family living in poverty, health outcomes grow worse as poverty and associated stresses increase. In Oklahoma, almost half of children living in poverty (44%) are in households where more than half of household income is spent on housing. This fact creates barriers to transportation, medical care and healthy foods.

In Oklahoma, our high incarceration rate also has implications for people's ability to access jobs.[43] People who have histories with the criminal justice system are further limited due to employer policies that deny people employment. Unequal access to workforce development pipelines as well as explicit and implicit discriminatory hiring practices impact workers of color by limiting their ability to secure stable, quality employment.[44, 45]

[33] Braveman PA, Cubbin C, Egerter S, Williams DR, Pamuk E. Socioeconomic disparities in health in the United States: What the patterns tell us. American Journal of Public Health. 2010; 100: S186-S196.

[34] U.S. Bureau of Labor Statistics, Census of Fatal Occupational Injuries; U.S. Bureau of Economic Analysis

[35] Henkel D. Unemployment and Substance Use: A Review of the Literature (1990-2010). Current Drug Abuse Reviews. 2011 Mar; 4(1):4-27.

[36] How does Employment--or Unemployment--Affect Health? (2013). Health Policy Snapshot Public Health and Prevention. Robert Wood Johnson Foundation. Retrieved from: http://www.rwjf.org/content/dam/farm/reports/issue_briefs/2013/rwjf403360.

[37] Friedland DS, Price RH. Underemployment: Consequences for the Health and Well-Being of Workers. American Journal of Community Psychology. 2003; 32, 1 /2, 33-45. http://sites.lsa.umich.edu/ricprice/wp-content/uploads/sites/381/2016/04/Friedland-Price-2003-Underemployment-Consequences.pdf.

[38] https://www.okc.gov/home/showdocument?id=14828 Accessed Jan. 5, 2020

[39] https://nationalhomeless.org/issues/economic-justice/ Accessed Jan. 1, 2020

[40] Kim M. Problems Facing the Working Poor. Department of Labor Studies and Employment Relations. 1999.https://www.dol.gov/oasam/programs/history/herman/reports/futurework/conference/workingpoor/workingpoor_toc.htm.

[41] U.S. Census Bureau, American Community Survey 5-year estimates

[42] University of Wisconsin Population Health Institute. County Health Rankings 2019.

[43] https://nicic.gov/state-statistics/2015/oklahoma Accessed: Jan. 5, 2020

[44] Proctor, Sherrie L. "Introduction to the special issue: Encouraging racial and social justice throughout the pre-k to graduate school pipeline." School Psychology Forum. Vol. 10. No. 3. 2016.

[45] Ziegert, Jonathan C., and Paul J. Hanges. "Employment discrimination: the role of implicit attitudes, motivation, and a climate for racial bias." Journal of Applied Psychology 90.3 (2005): 553.

Housing

Housing is the dwelling in which a person or household resides and encompasses many characteristics, including quality, affordability and stability. All of these factors may have dynamic impacts on physical and mental health. These varied elements of housing are linked to known risk factors including the following health impacting elements:

- Environmental exposures (asbestos, lead, second-hand smoke, carbon monoxide, toxins)
- Chronic conditions (obesity, hypertension, allergies)
- Mental health conditions
- Infectious diseases Cancers
- Use of drugs, tobacco and/or other substances

While the cost of healthcare when uninsured can cause people to lose their homes, homelessness also can have negative effects on a person's health. According to Oklahoma City Public Schools (OKCPS), approximately 7% (3,200 of 45,000) of children enrolled in the state's largest school system experienced homelessness in the 2017 school year. Homelessness places individuals at increased risk for chronic diseases, infectious diseases and acute health problems, while also making management of these issue far more difficult.[45]

Throughout the 20th century, and associated with creation of the 30-year mortgage, homeownership emerged as a systemic strategy for Americans to build personal and familial wealth.[46] In Oklahoma, 66% of all homes are occupied by their owners, varying from 50% to 81% across counties.[47] Notably, there is a stark difference across racial groups, ranging from 38% to 70%, which is not surprising, given the history of discriminatory lending practices throughout the nation.[48, 49] People of color simply have not had the same access to funding source as their white counterparts.[50]

When people spend more on housing there are fewer remaining dollars to purchase necessities, such as healthcare, education, clothing, transportation and food. 12% of households in Oklahoma devote more than half of available income on housing.

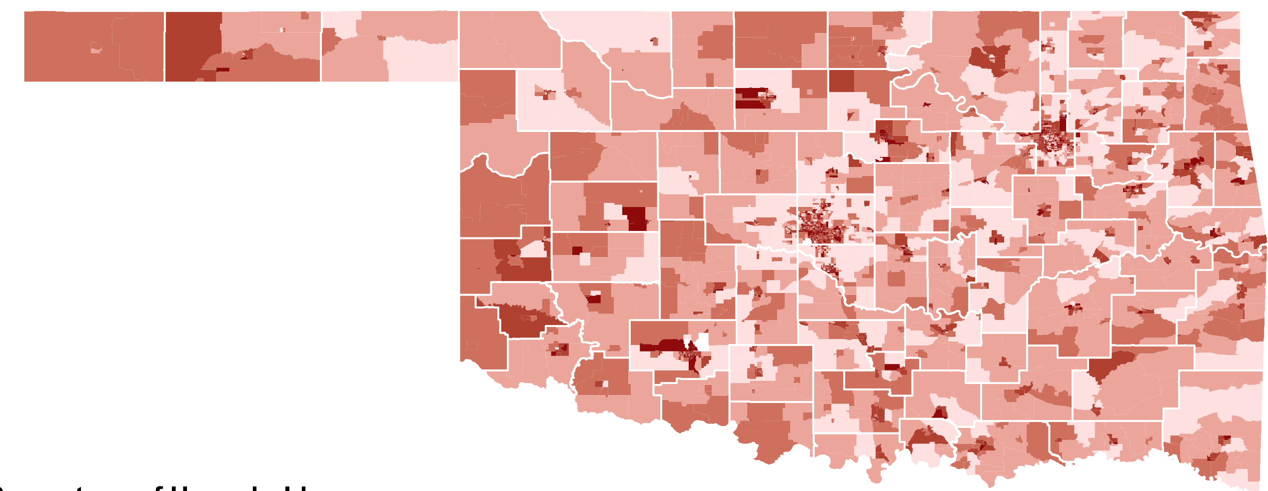
The table below shows a comparison of health differences between people experiencing homelessness and general population in the United States.

Figure XXIII. Health Conditions among the People experiencing Homelessness in Comparison to the General US Population

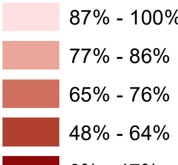
Homeless	Outcome Type	Housed
18%	Diabetes	9%
50%	Hypertension	29%
35%	Heart Attack	17%
20%	HIV	<1%
36%	Hepatitis C	1%
49%	Depression	8%
58%	Substance Used Disorders	16%

Source: https://nhchc.org/wp-content/uploads/2019/08/homelessness-and-health.pdf Accessed January 1, 2020. Please note that these numbers may not be representative of Oklahoma populations in 2020 because the data originated from the Health Center Patient Survey in 2009; however, the comparison illustrates the increased risk that homelessness poses.

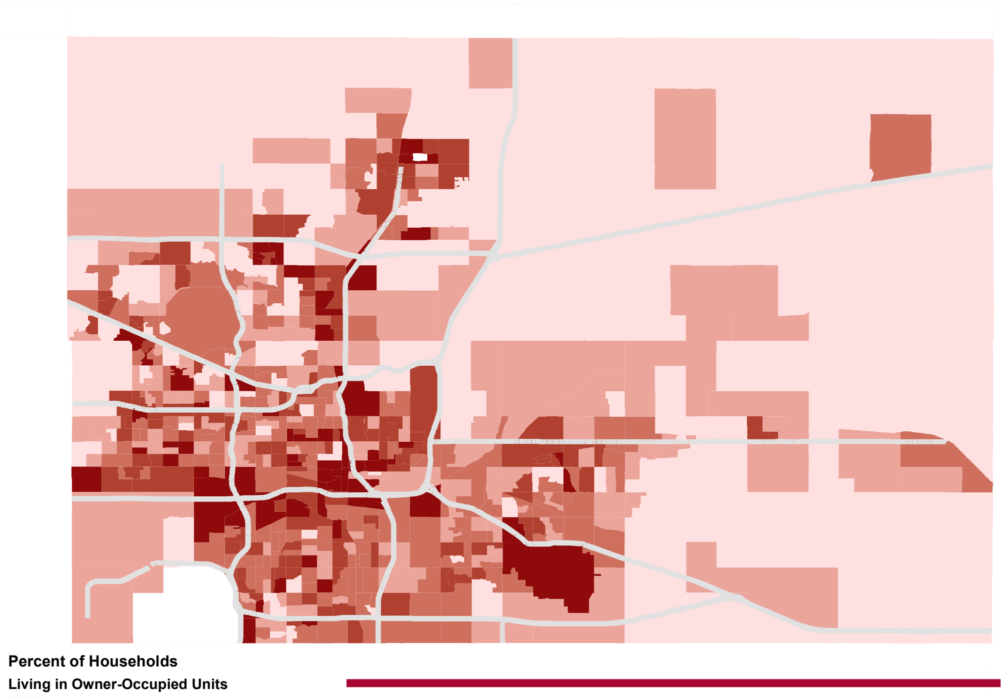
Figure XXIV. Percent of Households Living in Owner Occupied Units



Percentage of Households Living in Owner Occupied Units



Percent of Households Living in Owner Occupied Units in Oklahoma County



[46] Turner, Tracy M., and Heather Luea. "Homeownership, Wealth Accumulation and Income Status." Journal of Housing Economics 18.2 (2009): 104-114.

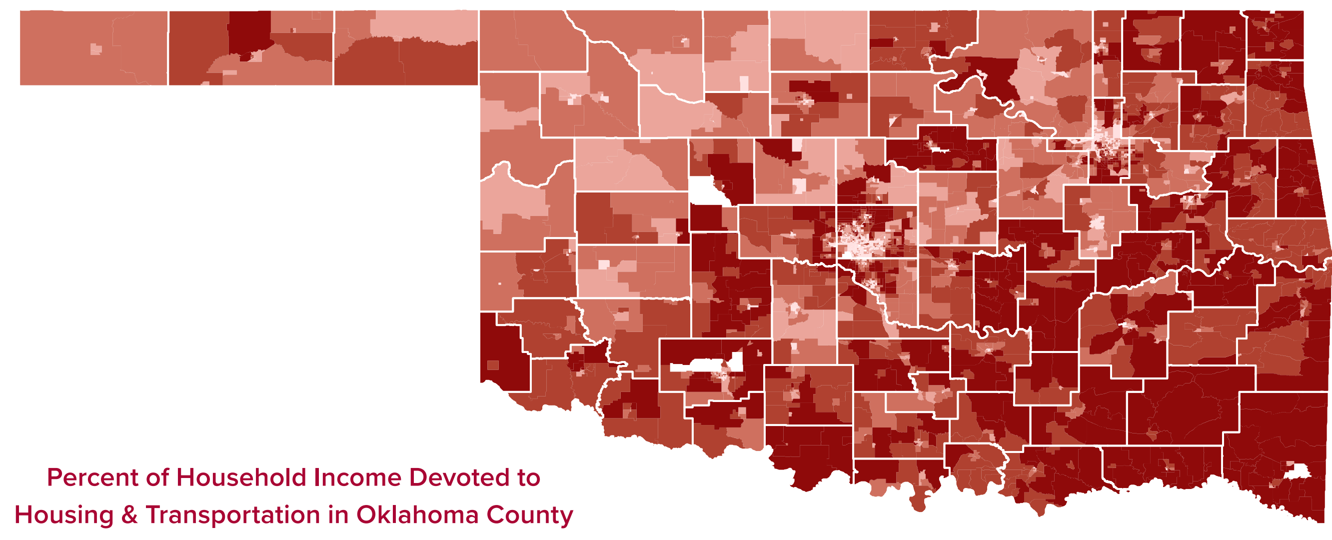
[47] U.S. Census Bureau, American Community Survey 5-year estimates

[48] U.S. Census Bureau, American Community Survey 5-year estimates

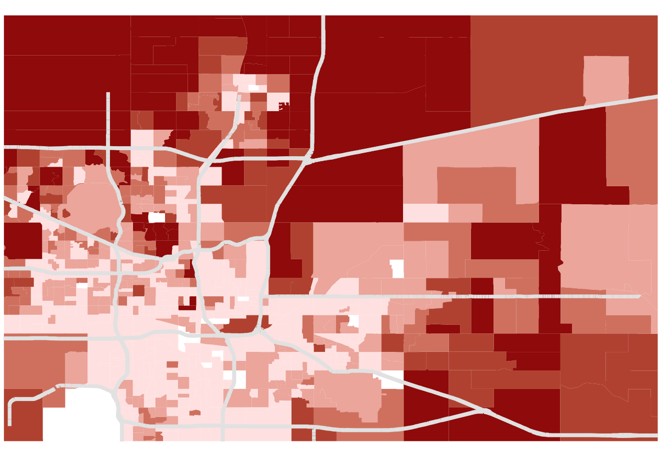
[49] Shapiro, Thomas M. "Race, homeownership and wealth." Wash. UJL & Pol'y 20 (2006): 53.

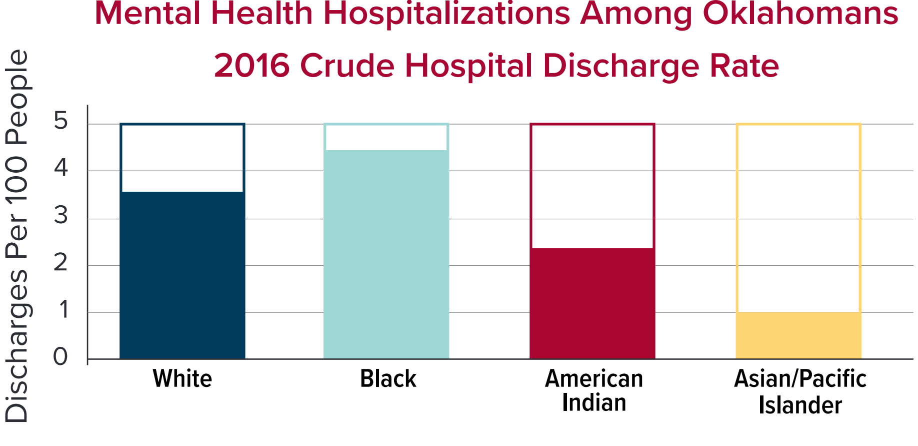
[50] Long, James E., and Steven B. Caudill. "Racial Differences in Homeownership and Housing Wealth, 1970–1986." Economic Inquiry 30.1 (1992): 83-100.

Percent of Household Income Devoted to Housing & Transportation



Percent of Household Income Devoted to Housing & Transportation in Oklahoma County





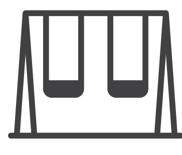
Source: Oklahoma State Department of Health (OSDH), Center for Health Statistics, Health Care Information, Vital Statistics 2018, on Oklahoma Statistics on Health Available for Everyone (OK2SHARE). Accessed at http://www.health.ok.gov/ok2share.

The Housing and Transportation Index is one metric developed for examining the geography of how people are financially impacted by the compounded effects of transportation and housing costs.

Percentage of Children Who ...[58, 59]

Live near amenities such as parks or recreational facilities

18.4%
Oklahoma



39.2%
Nationally

Stress levels and mental health can be improved by consistent access to quality housing.[51] Housing instability is linked to poor access to healthcare, childhood malnourishment, developmental disabilities, poor mental health outcomes and drug use. For Oklahomans, the uneven distribution of housing-cost burdened homes ranges from 4% to 23% of households from county to county.[52] Combining the percentage of income spent on housing and transportation paints a more complete picture of remaining income available for behaviors and resources that promote health.
In addition, the neighborhood and general location of housing have tremendous impact on health outcomes.[53] Those who reside in neighborhoods with access to quality amenities, including parks, fresh and healthy food options, stable employment opportunities and a variety of transportation options, tend to experience more positive health outcomes. When exploring the accessibility of healthy outdoor activity space, we find that on average, Oklahoma neighborhoods provide fewer amenities for their residents than the national average. Only 18.4% of Oklahoma children have access to neighborhood amenities such as a park or a playground compared to the national average of 39.2%.[54, 55]

Housing instability in a neighborhood can reduce the strength of social networks and has impacts associated with chronic disease outcomes.[56] The proximity of housing to toxic environments including heavily polluting industries and heavily trafficked roads can devalue housing and simultaneously have clear implications for health outcomes.[57]

Social Environment

Much about our personal identities, including ability status, age, gender identity, race and more, have impact upon, and are impacted by, our social environment. Social environment may be described at three levels: societal, community and interpersonal. The social environment thus impacts outcomes, including risk behaviors like drug and tobacco use, physical health, mental health and violence, among others. While social environment is a determinant that is challenging to measure, Oklahoma City has uniquely focused efforts to explore risk behaviors and social environment indicators among school-aged children. Information supplied through the EmbraceOKC initiative and Oklahoma Prevention Needs Assessment regretfully indicates about 32% of students report parental support for their child's pursuit of high-risk behaviors. This compares to state and national averages of about 27% and 28%, respectively.[60, 61]

Systems of oppression, including gender bias and racism, operate through all social environment levels, and influence mortality rates across poor health and mental health outcomes, social exclusion, isolation, heightened exposure to violence, greater incidents of

---

[51] University of Wisconsin Population Health Institute. County Health Rankings 2019.

[52] University of Wisconsin Population Health Institute. County Health Rankings 2019.

[53] Shaw M. Housing and Public Health."Annu Rev Public Health, 25: 397-418, 2004.

[54] This number represents the percentage of children ages 0-17 with access to a park or playground; recreation center, community center or boys' and girls' club; library or bookmobile; and side walks or walking paths (2-year estimate)

[55] U.S. HHS, HRSA, Maternal and Child Health Bureau (MCHB), Child and Adolescent Health Measurement Initiative (CAHMI), National Survey of Children's Health Indicator Data Set, Data Resource Center for Child and Adolescent Health, 2016-2017

[56] Daley, Dorothy M., et al. "Foreclosure Risk and Community Health: Does Social Capital Have a Protective Effect?." Policy Studies Journal (2018).

[57] Pratt GC, Vadali ML, Kvale DL, Ellickson KM. Traffic, Air Pollution, Minority and Socio-Economic Status: Addressing Inequities in Exposure and Risk. Caulfield B, ed.International Journal of Environmental Research and Public Health. 2015;12(5):5355-5372. doi:10.3390/ijerph120505355.

[58] This number represents the percentage of children ages 0-17 with access to a park or playground; recreation center, community center or boys' and girls' club; library or bookmobile; and side walks or walking paths (2-year estimate)

[59] U.S. HHS, HRSA, Maternal and Child Health Bureau (MCHB), Child and Adolescent Health Measurement Initiative (CAHMI), National Survey of Children's Health Indicator Data Set, Data Resource Center for Child and Adolescent Health, 2016-2017

[60] Embrace OKC Presentation to Board of Oklahoma City Public School board, September 24, 2018. https://www.okcps.org/Page/3482 Accessed: Dec. 30, 2019

[61] Oklahoma Prevention Needs Assessment 2018 report. https://www.ok.gov/odmhsas/documents/State_of_Oklahoma_Profile_Report%20-%202018.pdf Accessed Dec. 30, 2019

hospitalization and extended recovery times.[62, 63, 64, 65, 66, 67] As a result, these systems act more frequently in low-income communities and communities of color, which leads to fewer connections to external resources and influencers. In turn, it becomes more difficult for impacted communities to mobilize group action aimed at improving conditions.[68] There are many examples seen in communities surrounding the Oklahoma Health Center, such as the years-long struggle of the John F. Kennedy neighborhood against adverse impact of industries located just south of the area.[69, 70]

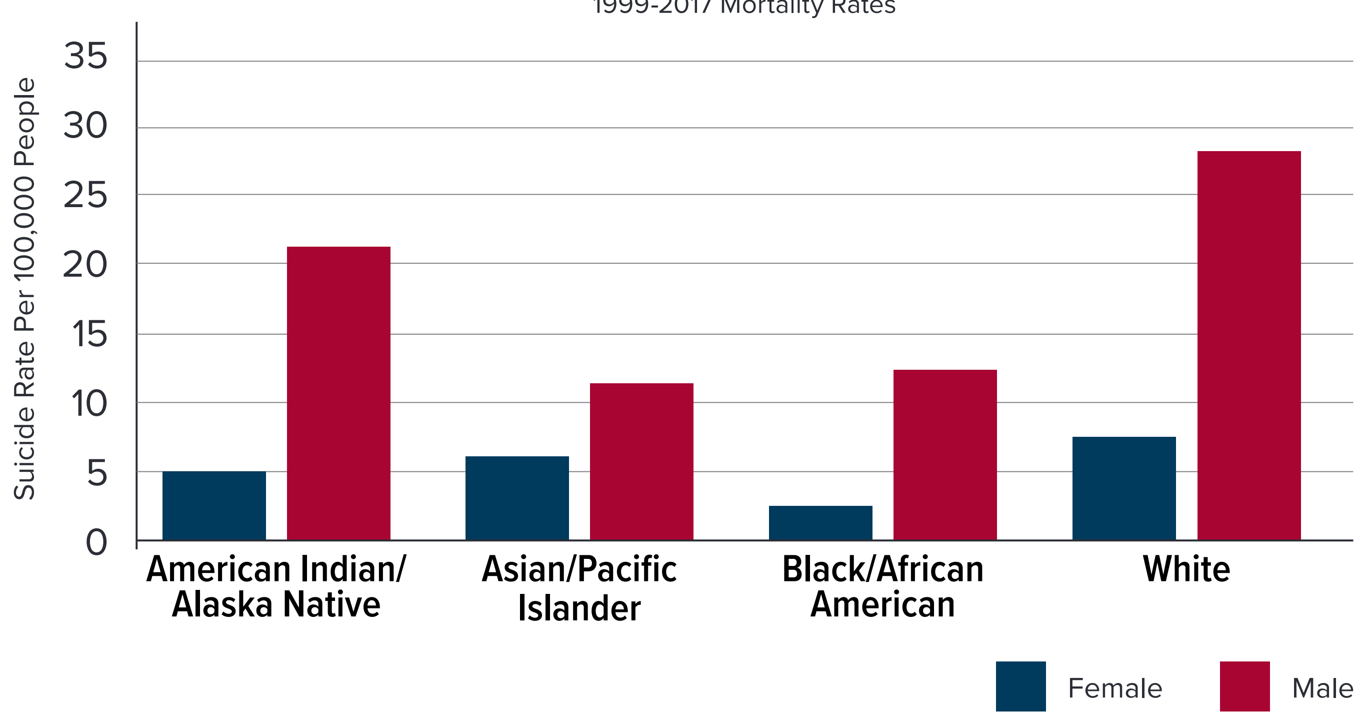
If an individual identifies with multiple impacted groups, they are likely to experience an adverse compounding effect called “intersectionality.” For example, in Oklahoma, maternal mortality is more likely to occur among black women, and white men are more likely to die by suicide than any other subpopulation, as illustrated in the graphs below.

Socially connected neighborhoods create safer environments and people there experience improved health outcomes. These improved outcomes include reduced risk of depression, anxiety and homicide. When neighborhoods have higher levels of social cohesion, residents are more likely to enjoy cleaner and safer public spaces and schools while also more likely to work together for a common goal. Additionally, residents are able to exchange resources and information about jobs, childcare, and health-influencing and healthcare-related resources. High levels of social cohesion and social capital in a neighborhood are connected to heightened levels of volunteerism and voting.[71] The percent of the population who is registered to vote provides an approximation of the civic participation for a neighborhood.[72]

For immigrants, social isolation is often experienced through few culturally appropriate services, discrimination, language barriers, social insecurity and unemployment.[74] These factors heighten an immigrant’s likelihood of

Figure XXVII. Suicide Death Rates in Oklahoma Stratified by Race

1999-2017 Mortality Rates

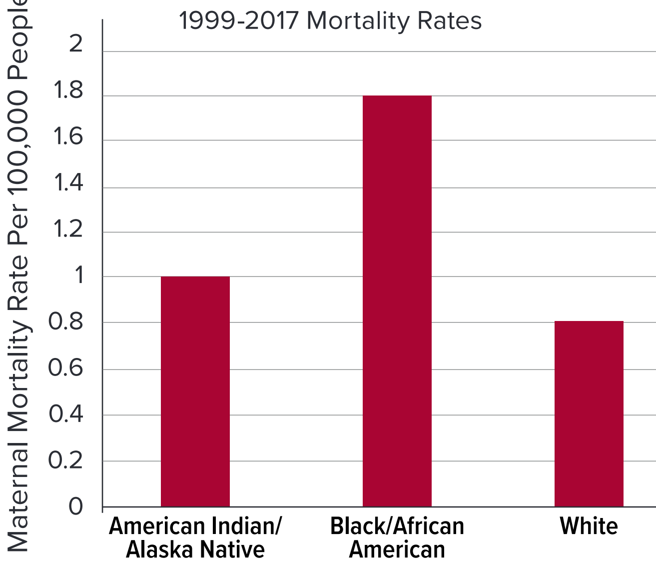


Source: Centers for Disease Control and Prevention, National Center for Health Statistics. Underlying Cause of Death 1999-2017 on CDC WONDER Online Database, released Dec. 2018. Data are from the Multiple Cause of Death Files, 1999-2017, as compiled from data provided by the 57 vital statistics jurisdictions through the Vital Statistics Cooperative Program. Accessed at http://wonder.cdc.gov/ucd-icd10.html on Dec. 31, 2019

being socially isolated, reduce willingness to access health services and can put a person at increased risk for poor health outcomes. For undocumented immigrants, these risks are perpetuated through separation of family members. As a result of these behaviors, immigrants can be at increased risk for poor mental health outcomes including behavioral disorders, post-traumatic stress disorder and depression.[75]

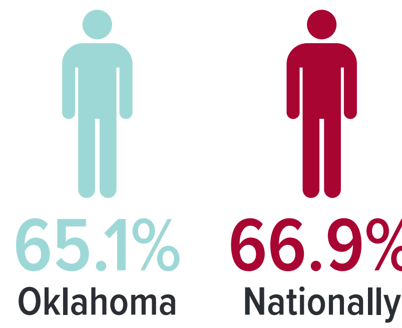
Health inequities in Oklahoma are connected to socio-economics, immigration status, location, gender, race and ethnicity, and more. Only by using a lens that considers exposures related to these unique intersectionalities can we begin to tease out ways in which we address root causes of poor health. Identifying areas of greatest need and tailoring our interventions to work for those at highest risk, allow us to more strategically target of health issues that plague our state.[76]

Figure XXVIII. Maternal Mortality Rate for Different Racial Identities



Source: Centers for Disease Control and Prevention, National Center for Health Statistics. Underlying Cause of Death 1999-2017 on CDC WONDER Online Database, released Dec. 2018. Data are from the Multiple Cause of Death Files, 1999-2017, as compiled from data provided by the 57 vital statistics jurisdictions through the Vital Statistics Cooperative Program. Accessed at http://wonder.cdc.gov/ucd-icd10.html on Dec. 31, 2019

Figure XXIX. Adults Registered to Vote



[62] Danso, Ransford. "Cultural competence and cultural humility: A critical reflection on key cultural diversity concepts." Journal of Social Work 18.4 (2018): 410-430.

[63] Mertens, Donna M. "Transformative research: personal and societal." International Journal for Transformative Research4.1 (2017): 18-24.

[64] Scheer, Jillian R., and Nadav Antebi-Gruszka. "A Psychosocial Risk Model of Potentially Traumatic Events And Sexual Risk Behavior Among LGBTQ Individuals." Journal of Trauma & Dissociation 20.5 (2019): 603-618.

[65] Green, Mark A., Clare R. Evans, and Subu V. Subramanian. "Can intersectionality theory enrich population health research?." (2017).

[66] López, Nancy, and Vivian L. Gadsden. "Health inequities, social determinants, and intersectionality." NAM Perspectives(2016).

[67] Burnette, Catherine Elizabeth, and Charles R. Figley. "Historical oppression, resilience, and transcendence: can a holistic frame work help explain violence experienced by indigenous people?." Social Work (2016): 1-8.

[68] Hobson-Prater T, Leech T. The Significance of Race for Neighborhood Social Cohesion: Perceived Difficulty of Collective Action in Majority Black Neighborhoods. J. Sociol. Soc. Welfare. 2012;XXXIX(1): 89-109.

[69] https://oklahoman.com/article/3868077/oklahoma-city-neighbor-hoods-a-brief-history-of-jfk-neighborhood Accessed Jan. 5, 2020

[70] https://www.okgazette.com/oklahoma/boom-town/Content?oid=6177000 Accessed Jan. 5, 2020

[71] Michener, Jamila. 2013. "Neighborhood Disorder and Local Participation: Examining the Political Relevance of 'Broken Windows.'" Political Behavior 35: 777-806.

[72] Knack, Stephen, and Martha E. Kropf. "For shame! The effect of community cooperative context on the probability of voting." Political Psychology 19.3 (1998): 585-599.

[73] U.S. Census Bureau, Current Population Survey, Voter Registration, 2018

[74] Stewart M, Anderson J, Beiser M, Mwakarimba E, Neufeld A, Simich L, Spitzer D. Multicultural Meanings of Social Support among Immigrants and Refugees. International Migration. 2008; 46: 123–159. doi:10.1111/j.1468-2435.2008.00464.x

[75] American Psychological Association. Undocumented Americans. http://www.apa.org/topics/immigration/undocumented-video.aspx#vii

[76] Centers for Disease Control and Prevention. CDC health disparities and inequalities report: United States, 2013. Morbidity and Mortality Weekly Report. 2013: 62(3); 1-187. Available at: https://www.cdc.gov/mmwr/pdf/other/su6203.pdf. Accessed Dec. 30, 2019.

Violence

Safe communities are connected to improved health outcomes. Violence is defined as the intentional use of power or physical force, actual or threatened, against an individual or a group which is likely to cause psychological or physical harm.[77, 78] The effects of violence can go beyond its victims' immediate experience to influence the overall health of the individual, their families and communities. Violence occurs on interpersonal levels, between two individuals, may be self-directed or collective. Collective violence occurs explicitly, e.g. during times of war or territorial battles between gangs, and in-explicitly, when entire groups are excluded from resources and access to power.[79] The World Health Organization developed the diagram below to demonstrate typologies of violence.

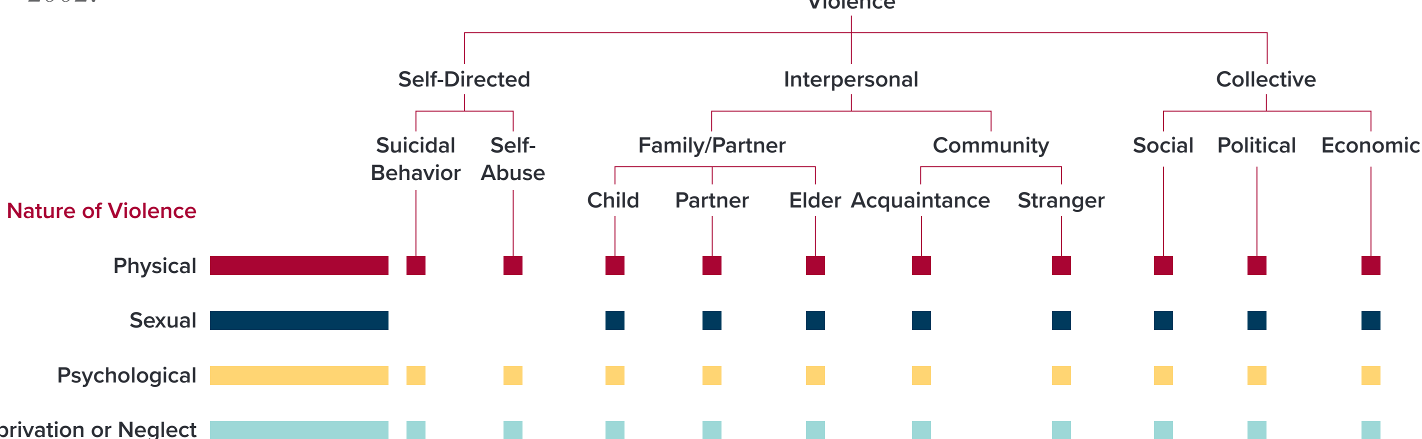
Metrics for capturing violent behavior are nebulous in nature. For instance, most incidents of sexual violence (SV) are not reported, therefore a comprehensive picture of SV incidents is impossible to depict. Often, only the most overt violent acts are reflected in an aggregate format. Additionally, erratic reporting practices may include significant built-in biases. For instance, the Federal Bureau of Investigation's Uniform Crime Reporting Program collects information only from police departments that report data to the federal government. As a result, what appears to be a negligible crime rate in a community may be the result of a local law enforcement agency's limited capacity to report.

As previously noted, certain mixtures of identities are associated with suicide. Exposure to interpersonal violence, poor mental health behaviors including depression and posttraumatic stress disorder, and substance-use disorders can also lead to higher rates of self-harm and suicide. Below is a map of the suicide rate in Oklahoma.

In 2017, Oklahoma had an age-adjusted suicide mortality rate of 19.1 per 100,000 people compared to the national average of 14.0 per 100,000 people.[81] Self-harm is not strictly an issue that Oklahoma adults face however. Of 7,074 students anonymously surveyed through the Oklahoma City Public School's EmbraceOKC initiative, 361 students reported that they had attempted suicide one or more times within the last year. To illustrate the

Figure XXX. The Typology of Violence

Source: Krug EG et al., eds. World Report on Violence and Health. Geneva, World Health Organization, 2002.



sobering nature of these data: suicide is the second leading cause of death among Oklahoma youth.[82] When examining the deaths by suicide and homicide in Oklahoma, it is apparent there is a disproportionate impact among different racial groups.

Additionally, interpersonal violence can negatively impact health outcomes over the life span. A child whose life includes multiple adverse childhood experiences (ACES) is more likely to interact with the criminal justice system as well as experience a host of poor health outcomes, such as heart disease and depression, or adopt behaviors that undermine health, such as drug use and/or smoking.

Examples of interpersonal violence include SV and intimate partner violence (IPV). Both forms of violence are more likely among individuals living with disabilities, people who identify with non-traditional genders and women. IPV and SV are also likely to result in adverse outcomes that may include circulatory conditions, sexually transmitted infections and bladder infections, among others.[84] Survivors of SV and IPV also are more likely to experience social, psychological and reproductive ramifications of their trauma and as a result, they are highly susceptible to high-risk sexual behaviors and overuse of healthcare services, contributing to increased healthcare costs.[85, 86, 87]

Age-Adjusted Suicide Mortality Rate

(2017, per 100,000 people)[80]

19.1
Oklahoma

14.0
National Average

Violent Crimes

(per 100,000 people)[83]

466
Oklahoma

381
National Average

[77] Preventing Violence and Reducing Injury. Prevention Institute web site. https://www.preventioninstitute.org/focus-areas/preventing-violence-and-reducing-injury/preventing-violence-and-reducing-injury. Accessed Dec. 30, 2019

[78] School-Based Violence Prevention. Centers for Disease Control and Prevention web site. https://www.cdc.gov/policy/hst/hi5/violenceprevention/index.html Accessed Dec. 30, 2019.

[79] World Health Organization. World Report on Violence and Health: Summary. 2002. http://www.who.int/violence_injury_prevention/violence/world_report/en/summary_en.pdf.

[80] https://stateofstateshealth.ok.gov/ Accessed: Dec, 19, 2019.

[81] https://stateofstateshealth.ok.gov/ Accessed: Dec, 19, 2019.

[82] Embrace OKC Presentation to Board of Oklahoma City Public School board, September 24, 2018. https://www.okcps.org/Page/3482 Accessed: 1/1/2019

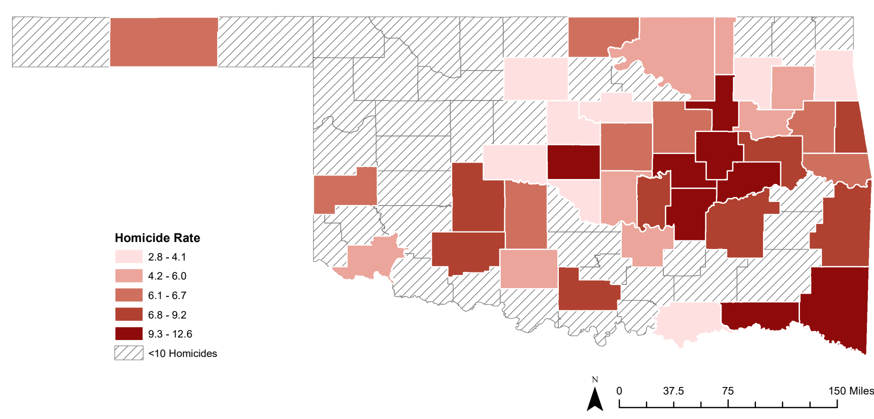
[83] Number of murders, rapes, robberies and aggravated assaults per 100,000 population; U.S. Department of Justice, Federal Bureau of Investigation, 2018

[84] Corso PS, Mercy JA, Simon TR, Finkelstein EA, Miller TR. Medical Costs and Productivity Losses Due to Interpersonal and Self-directed Violence in the United States. Am J Prev Med. 2007;32(6):474-482.

[85] Corso PS, Mercy JA, Simon TR, Finkelstein EA, Miller TR. Medical Costs and Productivity Losses Due to Interpersonal and Self-directed Violence in the United States. Am J Prev Med. 2007;32(6):474-482.

[86] Smokowski PR, Kopasz KH. Bullying in school: An Overview Of Types, Effects, Family Characteristics, And Intervention Strategies. Children & Schools. 2005;27:101–109.

[87] Bellis MA, Hughes K, Leckenby N, Hardcastle KA, Perkins C, Lowey H. Measuring Mortality And The Burden Of Adult Disease Associated With Adverse Childhood Experiences In England: A National Survey. J Public Health(Oxf). 2015 Sep;37(3):445-54.

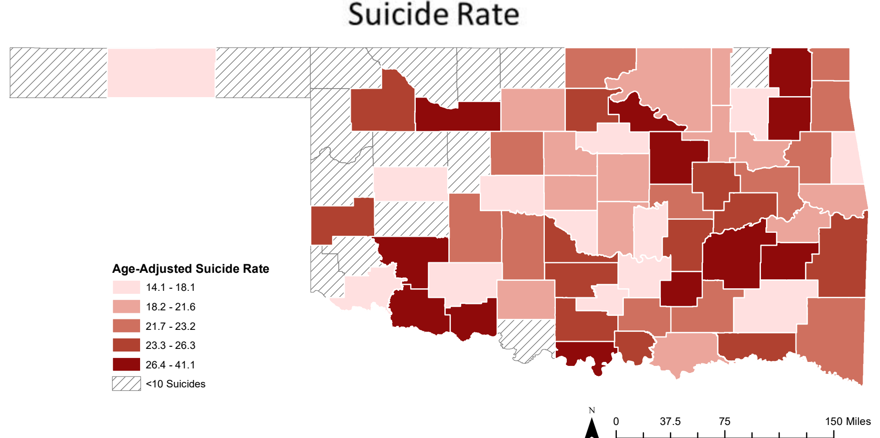


Sexually Transmitted Infections

(per 100,000 people living with Chlamydia)

553.4
Oklahoma

524.6
National Average

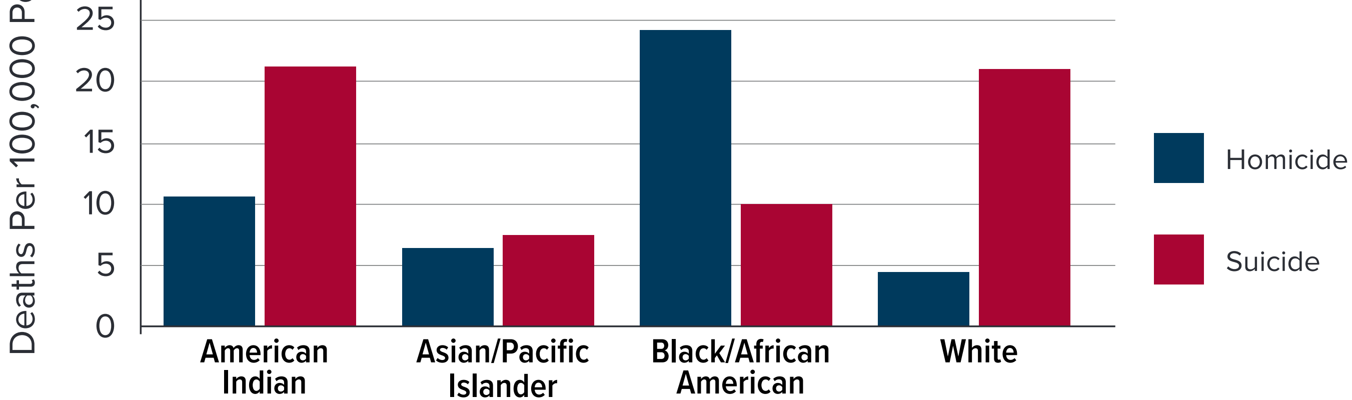


In 2018, it was estimated that Oklahoma taxpayers could realize annual tax savings of more than

$160 Million

if the incarceration rate was reduced to national level.[92]

Figure XXXII. 2018 Age-Adjusted Death by Homicide or Suicide in Oklahoma by Race



Source: Oklahoma State Department of Health (OSDH), Center for Health Statistics, Health Care Information, Vital Statistics 2018, on Oklahoma Statistics on Health Available for Everyone (OK2SHARE). Accessed at http://www.health.ok.gov/ok2share.

Maslow's hierarchy of needs shows the critical importance of a supportive, collective environment in promoting self-actualization and development of productive members of society. When basic needs are not met, the risk of property theft increases, substance use becomes prevalent and conflict is more frequent. Anxiety, posttraumatic syndrome, premature mortality and substance use are among conditions and behaviors strongly linked to collective violence.

Inequitable power distribution and unequal opportunities have created an environment where economically disadvantaged people, non-dominant genders and people of color experience collective violence, which includes substandard housing, low property values, under-privileged educational institutions, limited opportunities for quality jobs and low social capital. Mass incarceration is an evident example of collective violence. Over the last 30 years, the nation has seen increased numbers of people imprisoned for non-violent drug offenses as well as a disproportionate rise of drug-related arrests among people of color.[89, 90] Having community members imprisoned can impact economic, political, familial structures and community functioning around normative risk behaviors. All of these intermediate impacts have consequences for community health.[91]

Despite the recent commutation of several hundred prisoners, Oklahoma still has one of the highest incarceration rates in the country. In 2018, it was estimated that Oklahoma taxpayers could realize annual tax savings of more than $160 million if the incarceration rate was reduced to national level.[93, 94] Based on current projections of prison population growth, estimates place the state's capital expenditures at no less than $1.2 billion with $700 million in operating costs over the next decade.[95]

Figure XXXIII. Maslow's Hierarchy of Basic Needs

Over the lifespan, the different types of violence disproportionately impact people living with disabilities, older adults, children, LGBTQ[96] communities, communities of color, and communities with lower incomes.[97, 98, 99] Contemporary and historical policies, systems and environments perpetuate health inequities throughout the social environment.[100, 101]

---

[88] McLeod, Saul. "Maslow's hierarchy of needs." Simply Psychology 1 (2007).

[89] National Research Council. (2014). The Growth of Incarceration in the United States: Exploring Causes and Consequences. Committee on Causes and Consequences of High Rates of Incarceration, J. Travis, B. Western, and S. Redburn, Editors. Committee on Law and Justice, Division of Behavioral and Social Sciences and Education. Washington, DC: The National Academies Press.

[90] Freudenberg, Nicholas. "Jails, prisons, and the health of urban populations: a review of the impact of the correctional system on community health." Journal of Urban Health 78.2 (2001): 214-235.

[91] Freudenberg, Nicholas. "Jails, prisons, and the health of urban populations: a review of the impact of the correctional system on community health." Journal of Urban Health 78.2 (2001): 214-235.

[92] https://okpolicy.org/the-cost-of-maintaining-the-worlds-highest-incarceration-capitol-update/ Accessed Jan. 1, 2020

[93] https://okpolicy.org/the-cost-of-maintaining-the-worlds-highest-incarceration-capitol-update/ Accessed Jan. 1, 2020

[94] https://www.tulsaworld.com/opinion/columnists/oklahoma-s-incarceration-rate-makes-us-million-poorer-not-safer/article_675e466d-c8a7-54c9-a5cf-665c50a3f6e7.html Accessed Jan. 1, 2020

[95] The Oklahoma Justice Reform Task Force, Oklahoma Justice Reform Task Force Final Report, Feb. 2017

[96] LGBTQ is an acronym for lesbian, gay, bisexual, transgender and queer

[97] Mallett, Christopher A. "The school-to-prison pipeline: Disproportionate impact on vulnerable children and adolescents." Education and urban society 49.6 (2017): 563-592.

[98] Freudenberg, Nicholas. "Jails, prisons, and the health of urban populations: a review of the impact of the correctional system on community health." Journal of Urban Health 78.2 (2001): 214-235.

[99] Cahill, Sean. "The disproportionate impact of antigay family policies on Black and Latino same-sex couple households." Journal of African American Studies 13.3 (2009): 219-250.

[100] Stevens, Tia, and Merry Morash. "Racial/ethnic disparities in boys' probability of arrest and court actions in 1980 and 2000: The disproportionate impact of "getting tough" on crime." Youth violence and juvenile justice 13.1 (2015): 77-95.

[101] Sharkey, Patrick T., et al. "The effect of local violence on children's attention and impulse control." American journal of public health 102.12 (2012): 2287-2293.

Summary

The social determinants of health drive many of the community health outcomes we see. Globally this has become more publicly visible with the outbreak of COVID 19: Certain individual and societal attributes make people more susceptible to catching the disease while other attributes increase a person's risk of dying from the disease. Through the development of OU Medicine's community-benefits initiatives, incorporating a social determinants of health lens and targeting those efforts towards people who are most severely impacted by the determinants of health will be innately critical to their success of more strategically improving health outcomes.

Access to Care

Across the board, people understand that access to care is critical to the health outcomes experienced by individuals. The OU Medicine team built its understanding of access to care through the community engagement process, using scientific literature and data to further examine the complexities. Moving forward the OU Medicine team will continue to monitor these elements as the access to care ecosystem changes due to larger policies, pandemic response and change in the local and state regional economies.

Barriers to care

A nationally recognized definition of access to healthcare is "timely use of personal health services to achieve the best possible health outcomes."[102] Barriers to healthcare often perpetuate poor health outcomes and health inequities.[103] Through the external advisory process, several Oklahoma-specific barriers to care were identified including:

Access to Resources

The external advisory group was very clear to note that in recent years many rural hospitals closed and providers left, reducing the number of wrap-around services in rural Oklahoma. Additionally, the time of day during which care is available is challenging, related to availability of childcare for providers as well as patients. Likewise, there are hurdles to receiving SNAP and other food funds for people who are food insecure, thus making healthcare resources more difficult to attain.

Healthcare Delivery System

Among external stakeholders, it was also acknowledged that limited data sharing and accessibility make integrated care models challenging in Oklahoma. Fragmentation of the medical system is related to the lack of integrated social services within the current medical model and does not meet the aim of team-based care. Lastly, stakeholders identified how biases against racial and ethnic groups disrupt the efficacy of care provided in Oklahoma.

Provider Shortage

Oklahoma ranks very poorly in the United States for healthcare providers per capita and is even poorer when our rates are compared to the international community. External stakeholders identified this as a multi-faceted healthcare access issue. The components identified in the external stakeholder meetings are as follows:

- Many doctors in Oklahoma age out and retire but the replacement rate has not keep pace with attrition.
- The certificate and licensure process in Oklahoma is described as cumbersome and overly time-intensive.
- It is unclear whether RNs and other clinicians are able to work to the top of their license limiting their capacity to provide necessary care.
- The physical distance of rural, low-density environments makes accessing physicians challenging. This access becomes particularly notable when seeking physicians from differing demographics and specialties.
- Medical education loans create a significant financial burden not commensurate with limited earning capacity found in most rural areas.

Patient Population Influencers

Insurance coverage was the biggest influencer of the patient population identified by external stakeholders. Also mentioned were limited health literacy and inability of the patient population to navigate the highly complex health system, e.g. many people are not equipped to identify the array of medical specialties, making navigation a challenge.

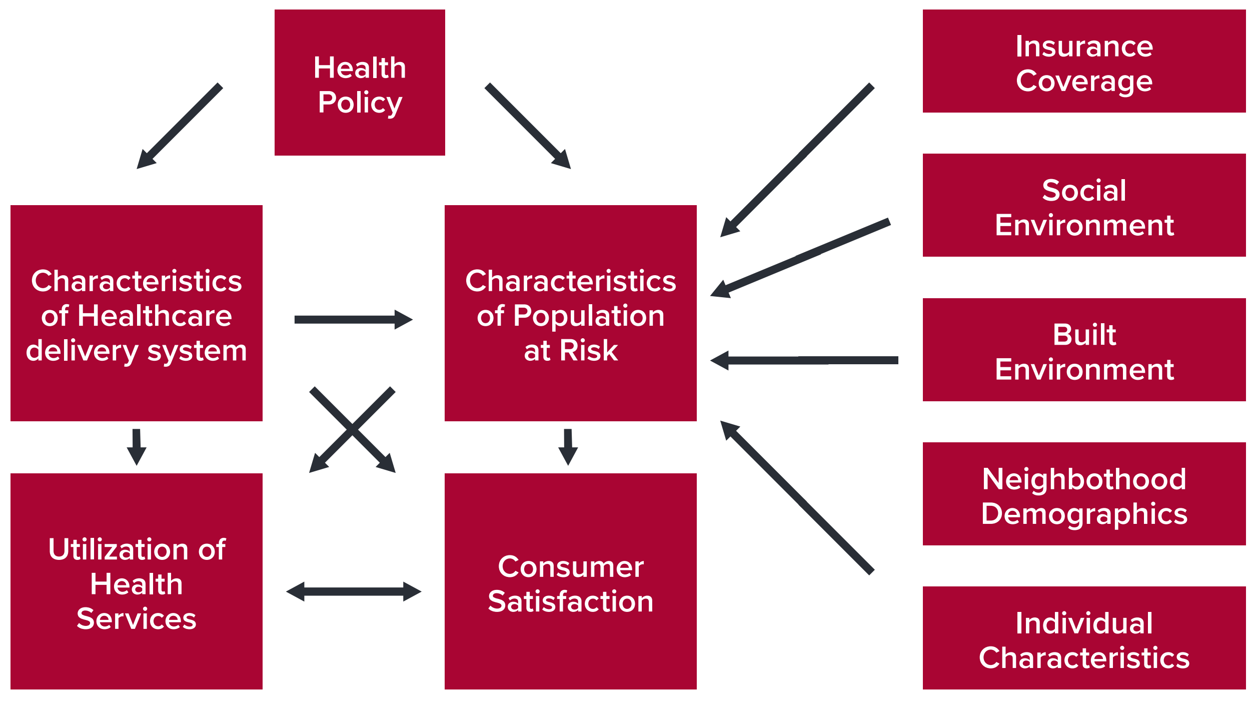
---

[102] Milliman M, editor. Access to Health Care in America. Institute of Medicine (US) Committee on Monitoring Access to Personal Health Care. Washington (DC): National Academies Press (US); 1993.

[103] Institute of Medicine (US) Committee on Understanding and Eliminating Racial and Ethnic Disparities in Health Care. Smedley BD, Stith AY, Nelson AR, editors. Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care. Washington (DC): National Academies Press (US); 2002.

Health Care Access Model

Scientific literature explaining access to care begins to describe how these elements interact. The OU Medicine team combined two different peer-reviewed logic models creating the following conceptual diagram to describe how access to care is understood through this needs assessment:



Adapted from:
Aday, Lu Ann, and Ronald Andersen. "A Framework for the Study of Access to Medical Care." Health services research 9.3 (1974): 208.
Khan, Abdullah A., and Surinder M. Bhardwaj. "Access to Health Care: A Conceptual Framework and Its Relevance to Health Care Planning." Evaluation & the Health Professions 17.1 (1994): 60-76.

Characteristics of Health Care Delivery System

The availability of healthcare services or providers also is associated with reduced access to care, which may heighten a community's burden of disease.[104, 105, 106] For example, reduced physician numbers can increase patient wait times and as a result, increase the prevalence of postponed treatment and its potential adverse impact.[107] Oklahoma has 131.2 primary care physicians per 100,000 people compared to the national average of 159.6 per 100,000 people.[108] This also is evident among dentists, with Oklahoma's rate being 49 dentists per 100,000 people compared to the national average of 61 per 100,000. The prevalence and availability of providers influence wait times, use of preventive services and more. Approximately only 60.4% of adults receive annual dental exams, while the national average is 67.6%.[109]

OU Medicine is committed to high-quality, patient-centered care, regardless of insurance status. However, among providers across the country type of insurance may impact the care provided. In locations where fewer providers accept Medicaid, often associated with reimbursement rates, people with Medicaid or are uninsured are less likely to receive appropriate, preventive clinical services.[110,111,112] Given the limited number of healthcare providers in Oklahoma, more efficient healthcare delivery is critical.[113,114,115]

Characteristics of Populations and Health Care Utilization

Social Environment

Health is often influenced by interpersonal relationships among family members, social connections, neighbors, colleagues and friends. During difficult times, forms of social support including the emotional, instrumental and informational, are critical to maintain mental and physical health.[117] Interpersonal relationships may decrease the impact of stress.[118] A person with stronger social support is likely to engage in healthier behaviors and as a result, may experience improved immune function and cardiovascular health outcomes.[119] Additionally, those who live in a highly connected social environment may more easily exchange information about healthcare resources when needs arise.

[104] National Association of Community Health Centers and the Robert Graham Center. Access Denied: A Look at America's Medically Disenfranchised. Washington (DC): National Association of Community Health Centers and the Robert Graham Center; 2007.

[105] Douthit N, Kiv S, Dwolatzky T, Biswas S. Exposing Some Important Barriers to Healthcare Access in the Rural USA. Public Health. 2015;129(6):611–20. doi:10.1016/j.puhe.2015.04.001

[106] Call K, McAlpine D, Garcia C, Shippee N, Beeba T, Adeniyi T, et al. Barriers to Care in an Ethnically Diverse Publicly Insured Population: Is Health Care Reform Enough? Med Care. 2014;52:720–27.

[107] Bodenheimer T, Pham HH. Primary care: current problems and proposed solutions. Health Aff (Millwood). 2010;29(5):799–805. doi: 10.1377/hlthaff.2010.0026

[108] America's Health Rankings analysis of special data request for information on active state licensed physicians provided by Redi-Data, Inc., Sept. 23, 2019; U.S. Census Bureau Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2018, United Health Foundation, AmericasHealthRankings.org, Accessed 2020.

[109] CDC, Behavioral Risk Factor Surveillance System, 2018

[110] Decker SL. In 2011 nearly one-third of physicians said they would not accept new Medicaid patients, but rising fees may help. Health Aff (Millwood). 2012;31(8):1673–79

[111] Buchmueller T, Grumbach K, Kronick R, Kahn J. The effect of health insurance on medical care utilization and implications for insurance expansion: a review of the literature. Med Care Res Rev. 2005;62(1):3–30. doi:10.1177/1077558704271718

[112] Bodenheimer T, Pham HH. Primary care: current problems and proposed solutions. Health Aff (Millwood). 2010;29(5):799–805. doi: 10.1377/hlthaff.2010.0026

[113] Green LV, Savin S, Lu Y. Primary care physician shortages could be eliminated through use of teams, nonphysicians, and electronic communication. Health Aff (Millwood). 2013; 32(1):11–19.

[114] Bodenheimer T, Pham HH. Primary care: current problems and proposed solutions. Health Aff (Millwood). 2010; 29(5):799–805. doi: 10.1377/hlthaff.2010.0026

[115] Rieselbach RE, Crouse BJ, Frohna JG. Teaching primary care in community health centers: addressing the workforce crisis for the underserved. Ann Intern Med. 2010; 152(2):118–22.

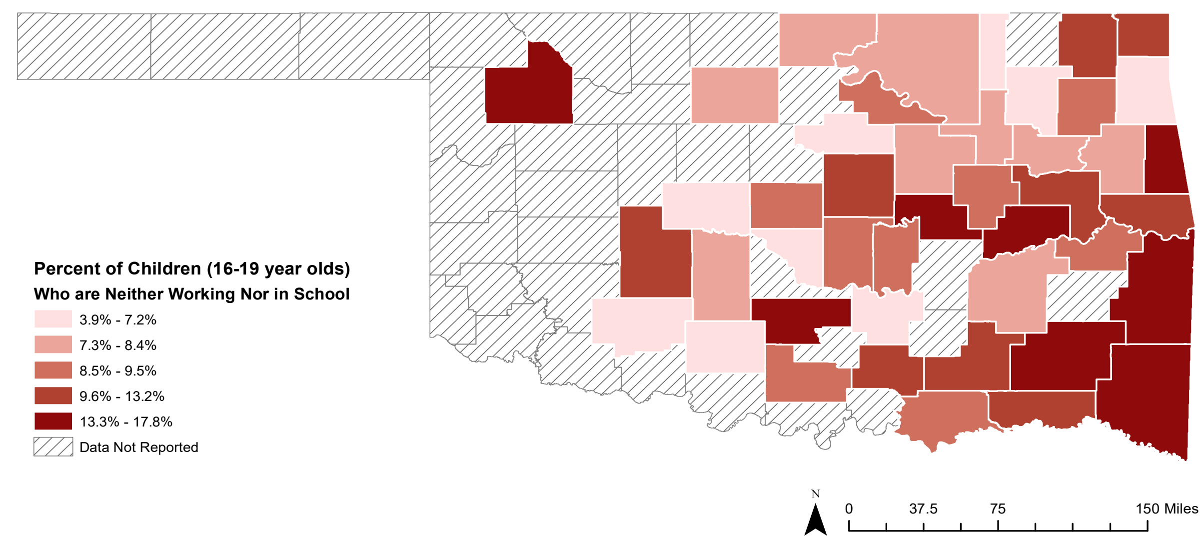
[116] Med.upenn.edu. (2018). Health Behavior and Health Education | Part Three, Chapter Nine: Key Constructs Social Support. [online] Available at: http://www.med.upenn.edu/hbhe4/part3-ch9-key-constructs-social-support.shtml [Accessed 21 Jan. 2020].

[117] Galea, S., Tracy, M., Hoggatt, K. J., DiMaggio, C., & Karpati, A. (2011). Estimated Deaths Attributable to Social Factors in the United States. American Journal of Public Health, 101(8), 1456–1465. http://doi.org/10.2105/AJPH.2010.300086

[118] Galea, S., Tracy, M., Hoggatt, K. J., DiMaggio, C., & Karpati, A. (2011). Estimated Deaths Attributable to Social Factors in the United States. American Journal of Public Health, 101(8), 1456–1465. http://doi.org/10.2105/AJPH.2010.300086

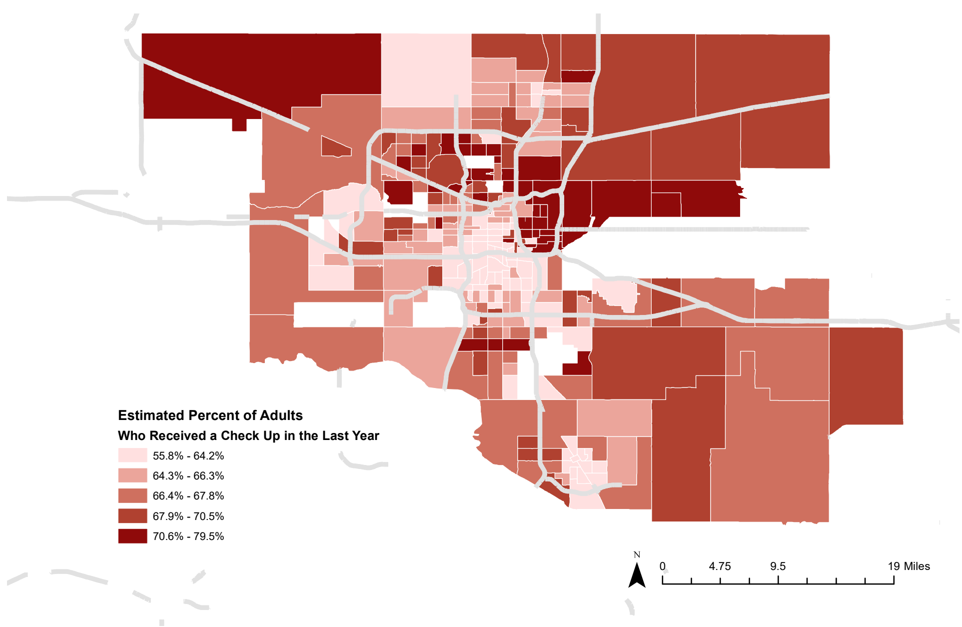
[119] Religious Landscape Study https://www.pewforum.org/religious-landscape-study/ Accessed Feb. 2020

Disconnected Youth: Percent of 16-19 Year Olds Not Attending School or Working



Source: University of Wisconsin Population Health Institute. County Health Rankings & Roadmaps 2019. www.countyhealthrankings.org

Percent of Adults Reporting They Did Not Have a Health Check Up in The Last Year in Oklahoma City



Source: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. 500 Cities Project Data [online; Accessed: Jan. 5, 2020]

Oklahoma is home to a high volume of churches and other faith communities. In 2014, 79% of Oklahomans believed in a higher power than themselves, and ~64% of Oklahomans consider religious faith as highly important in their lives.[120] A community reinforced by strong belief may offer a more resilient social environment; Oklahomans maintain tremendous strength through those community-oriented organizations.

When social supports and relationships, are limited, people may be at increased risk for poor health outcomes, including myocardial infarction, autonomic disregulation, cardiovascular disease,[121] cancer and high blood pressure. Older adults who are socially isolated are at increased risk for depression and Alzheimer's disease as well as heightened risk for falls.[122, 123] Social isolation among younger populations decreases the likelihood of long term educational success, lifelong earning potential and more. Additionally, youth who are disconnected are more likely to engage in smoking, alcohol and drug use, as well as violent activities.[124, 125, 126]

A person's nativity can also impact how they interact with the healthcare system. Immigrants may experience healthcare-limiting social isolation through many mechanisms: limited culturally appropriate services, unemployment and language barriers.[127] Approximately 31,000 households in Oklahoma are considered limited English-speaking households.[128]

Characteristics of Population At-Risk: Neighborhood Demographics

Age

Biological and genetic factors that influence health outcomes can be impacted by age. Cognitive and physical changes increase an older person's likelihood of experiencing poor health.[129] Age also may be related to use of Medicare and Medicaid resources. [130]

In Oklahoma City, the median age is 34 years, while the average age in the United States is 37.9 years. Among other factors, this likely is related to Oklahoma's shorter life expectancy.[131]

[120] Morrell, S., Taylor, R., & Kerr, C. (1998). Jobless. Unemployment and young people's health. Medical Journal of Australia., 168(5), 236-240

[121] Umberson D, Montez JK. Social Relationships and Health: A Flashpoint for Health Policy. Journal of health and social behavior. 2010; 51(Suppl):S54-S66.doi:10.1177/0022146510383501.

[122] Research Summary 2: Social Inclusion as a determinant of mental health and wellbeing (2005). VicHealth. Retrieved from: http://www.copmi.net.au/images/pdf/Research/social-inclusion-fact-sheet.pdf

[123] Pohl JS. Falls and the Social Isolation of Older Adults in the National Health and Aging Trends Study. Nursing – Seattle. http://hdl.handle.net/1773/37198

[124] Mendelson, T., Mmari, K., Blum, R. W., Catalano, R. F., & Brindis, C. D. (2018). Opportunity youth: insights and opportunities for a public health approach to reengage disconnected teenagers and young adults. Public Health Reports, 133(1_suppl), 54S-64S

[125] Vancea, M., & Utzet, M. (2017). How unemployment and precarious employment affect the health of young people: A scoping study on social determinants. Scandinavian Journal of Public Health, 45(1), 73-84.

[126] Besharov DJ, Gardiner KN (1998): Preventing Youthful Disconnectedness. Children and Youth Services 20, 797-818.

[127] Stewart M, Anderson J, Beiser M, Mwakarimba E, Neufeld A, Simich L, Spitzer D. Multicultural Meanings of Social Support among Immigrants and Refugees. International Migration. 2008; 46: 123–159. doi:10.1111/j.1468-2435.2008.00464.x

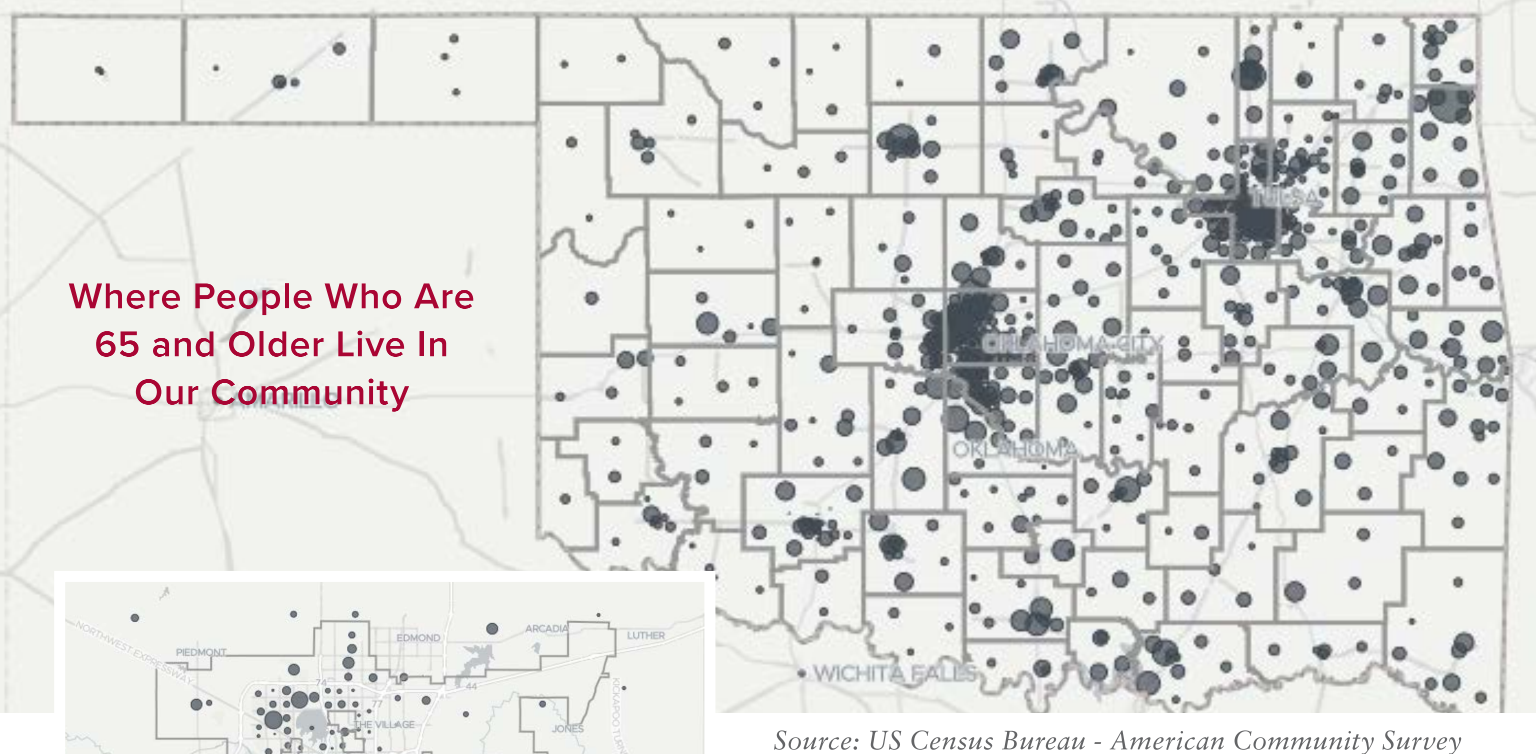
[128] Source: US Census Bureau, American Community Survey 5-year estimates (2018)

[129] Timiras, Paola S. Physiological basis of aging and geriatrics. CRC Press, 2002.

[130] Gaffney, Adam, et al. "Coverage Expansions and Utilization of Physician Care: Evidence From the 2014 Affordable Care Act and 1966 Medicare/Medicaid Expansions." American Journal of Public Health 109.12 (2019): 1694-1701.

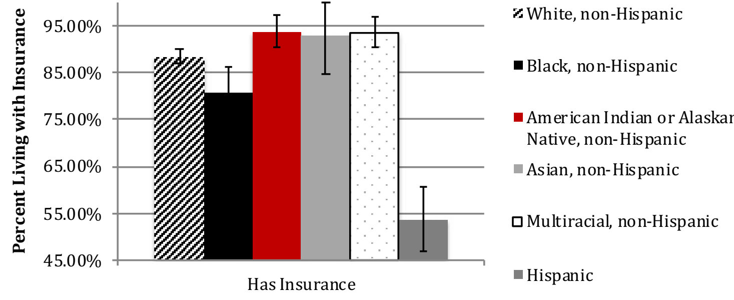
[131] Currie, Janet, and Hannes Schwandt. "Inequality in mortality decreased among the young while increasing for older adults, 1990–2010." Science 352.6286 (2016): 708-712.

Where People Who Are 65 and Older Live In Our Community



Source: US Census Bureau - American Community Survey 5-year estimates (ACS 2013-2017).

Insurance Coverage in Oklahoma Stratified by Race (2018)



Source: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. BRFSS Prevalence & Trends Data [online]. 2015. [accessed Jan. 10, 2020]. URL: https://www.cdc.gov/brfss/brfssprevalence/.

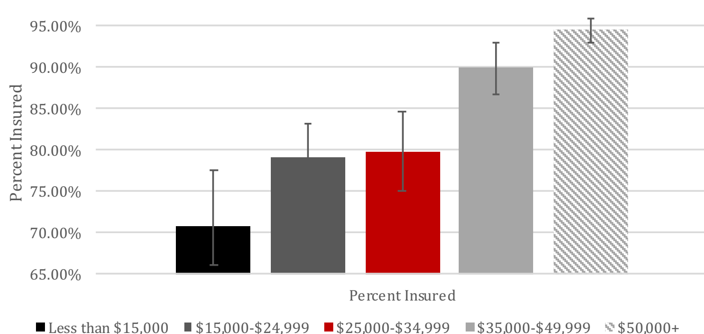
Race

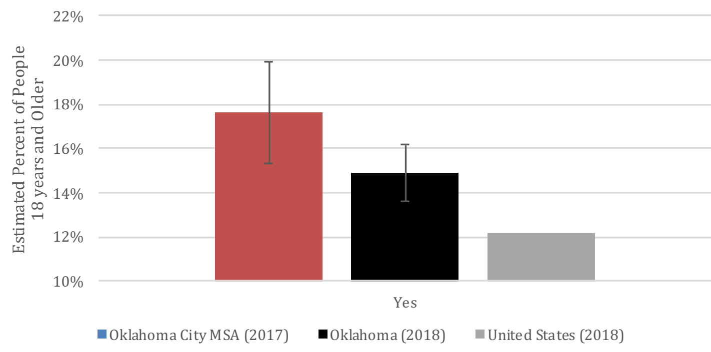
Race has real implications for healthcare access.[132] It is well known that insurance rates between races differ, largely due to financial inequities.[133] Studies also show when individuals receive care from providers of the same race, they have improved experiences. However many of the race-specific perceptions among patients of color may be related to individual experiences outside of the healthcare institution.[134] Our shared history of racial exclusion may impact communities through a legacy of poverty, discrimination and racial segregation; it may also subject individuals to what is called historical trauma, the "multigenerational trauma experienced" by a specific group of people.[135] Families that have experienced discrimination, genocide, poverty, severe trauma and war are likely to live with historical trauma, which may burden future generations.[136, 137, 138] Chronic conditions including hypertension, diabetes, and cardiovascular disease may be the result of trauma through anxiety, chronic stress, and post-traumatic stress disorder.[139] A review of segregation indices shows a legacy of exclusion, with implications for an individual's trust and experience in receiving healthcare.

Poverty Levels

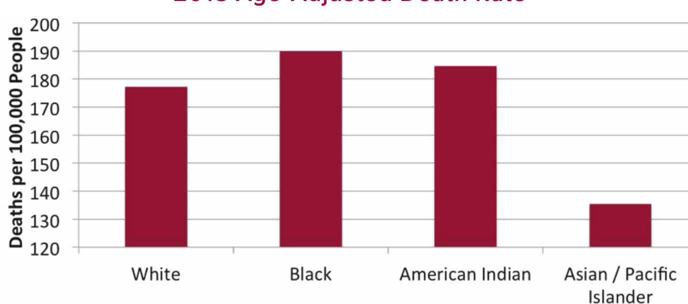
Poverty is known to create barriers to healthcare access.[140] Studies identify three prevalent barriers: transportation, childcare and information about free and discounted healthcare options.[141] Additionally, poverty has undeniable impacts on individual health, which impacts care utilization, including: poor overall physical health, low birth weight, lead poisoning, depression, stunted growth, learning disabilities and developmental disabilities.[142]

The percentage of the population living at or below poverty level provides insight into increased risk for poor health outcomes and limited access to insurance





Source: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. BRFSS Prevalence & Trends Data [online]. 2015. [accessed Jan. 10, 2020]. URL: https://www.cdc.gov/brfss/brfssprevalence/.



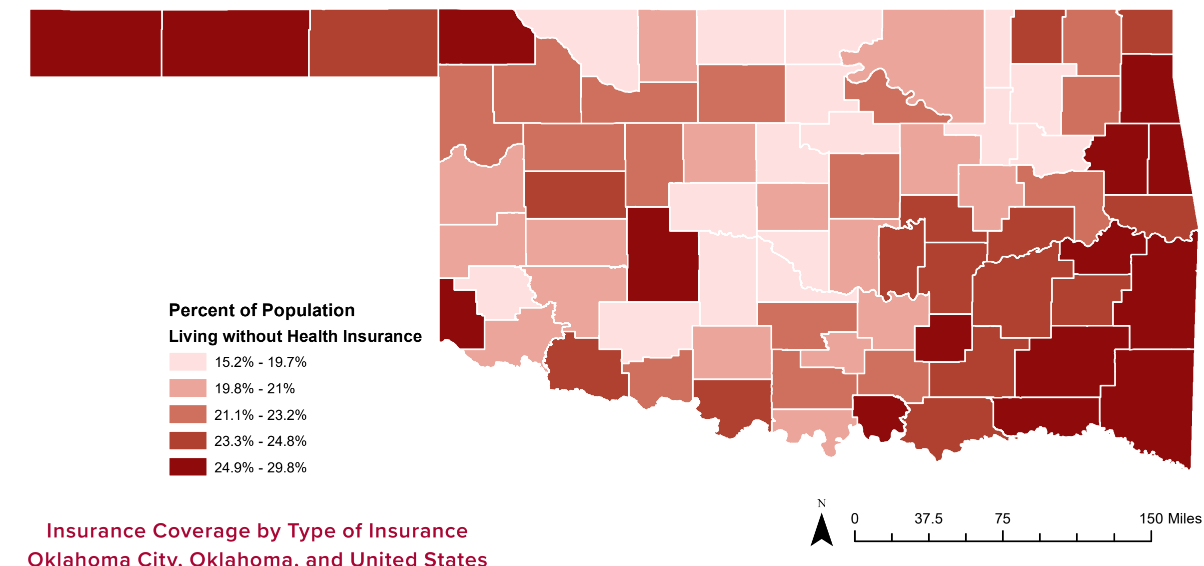
coverage or ability to pay for care. On average, annual income in Oklahoma households ($54,434.00) is less than the national average ($63,179.00).[143] Overall, 28% of Oklahomans earn low incomes compared to the national average of 24%. . In Oklahoma City, 29% of residents are considered low income.[144]

Disability status

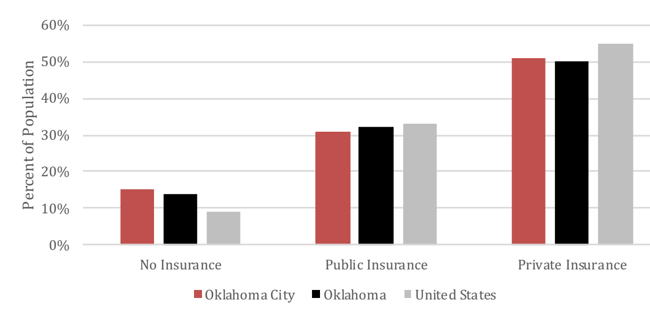
Disabilities may impact health outcomes, due in large part to external determinants of health and insufficient or inconsistent practices and policies that might support individuals living with disabilities. In healthcare settings, the result may be restricted access.[145] Disabilities may be associated with discrimination and social isolation. Disability is more likely to result in physical inactivity and smoking, both of which heighten the risk of obesity and cardiovascular disease.[146] It is estimated that 13.6% (+/- 0.3%) of Oklahoma County residents and 16%(+/- 0.1%) of the Oklahoma population live with a disabilities. In the United States, it is estimated that only 12.6% (+/- 0.1%) of the population lives with a disability. [146]

[132] Stone, John. “Race and healthcare disparities: overcoming vulnerability.” Theoretical medicine and bioethics 23.6 (2002): 499-518.
[133] Mueller, Keith J., Kashinath Patil, and Eugene Boilesen. “The role of uninsurance and race in healthcare utilization by rural minorities.” Health Services Research 33.3 Pt 1 (1998): 597.
[134] Malat, Jennifer, and Michelle van Ryn. “African-American preference for same-race healthcare providers: the role of healthcare discrimination.” Ethnicity and Disease 15.4 (2005): 740.
[135] Ross K. Impacts of Historical Trauma on African-Americans and Its Effects on Help-seeking Behaviors. PowerPoint Presentation. Missouri Psychological Association. http://www.umsl.edu/services/cps/files/ross-presentation.pdf
[136] Eyerman, Ron. Cultural trauma: Slavery and the formation of African American identity. Cambridge University Press, 2001.
[137] Sotero, Michelle. “A conceptual model of historical trauma: Implications for public health practice and research.” Journal of Health Disparities Research and Practice 1.1 (2006): 93-108.
[138] Ross K. Impacts of Historical Trauma on African-Americans and Its Effects on Help-seeking Behaviors. PowerPoint Presentation. Missouri Psychological Association. http://www.umsl.edu/services/cps/files/ross-presentation.pdf
[139] Sotero M, A Conceptual Model of Historical Trauma: Implications for Public Health Practice and Research. Journal of Health Disparities Research and Practice. 2006; 1(1), 93-108, https://ssrn.com/abstract=1350062
[140] Litaker, David, Siran M. Koroukian, and Thomas E. Love. “Context and healthcare access: looking beyond the individual.” Medical care (2005): 531-540.
[141] Ahmed, Syed M., et al. “Barriers to healthcare access in a non-elderly urban poor American population.” Health & social care in the community 9.6 (2001): 445-453.
[142] Brooks-Gunn J, Duncan G. The Effects of Poverty on Children. The Future of Children. 1997; 7(2), 55-71. doi:10.2307/1602387
[143] America’s Health Rankings analysis of U.S. Census Bureau, Current Population Survey, Annual Social and Economic Supplement, United Health Foundation, AmericasHealth Rankings.org, Accessed 2020.
[144] Percent of population living below 150% federal poverty level for Oklahoma and United States (ACS 2012-2016).
[145] Percent of population living below 150% federal poverty level in the 1-city area (ACS 2012-2016).
[146] https://www.cdc.gov/ncbddd/disabilityandhealth/features/unrecognizedpopulation.html

Percent of Population Living without Health Insurance



Insurance Coverage by Type of Insurance
Oklahoma City, Oklahoma, and United States



Source: Percent of the population by insurance status for Oklahoma City, Oklahoma and the U.S. (U.S. Census Bureau, American Community Survey 5-year estimates (2018)).

Source: Estimated Percent of Population Living without Insurance (U.S. Census Bureau, American Community Survey 5-year estimates (2018)).

Built Environment: Transportation

Inadequate health insurance coverage is only one barrier to health care.[147] Disadvantaged populations routinely face transportation barriers. Lack of transportation is associated with adverse health outcomes directly related to poor medication adherence and missed or delayed appointments for healthcare services.[148, 149] People who cannot obtain transportation services are more likely to experience late-stage diagnosis of medical conditions, including different cancer types.[150, 151, 152] As a result, treatment may become more complex and/or less effective.

Despite providing unique levels of independence, our car dependency among other factors has limited levels of physical activity and increased levels of obesity.[153]

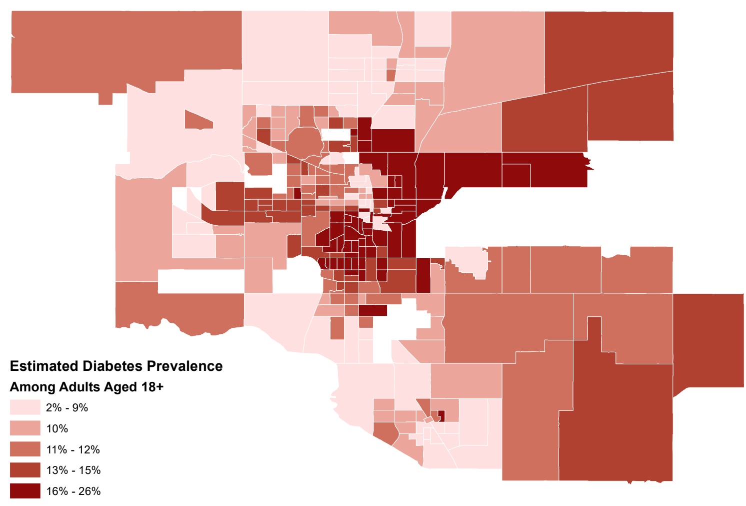
Regular, utilitarian physical activity is promoted through bicycling, walking and use of public transportation.[154] Increased levels of physical activity are associated with reduced likelihood of some cancers, obesity, cardiovascular disease and diabetes.[155]

Insurance Coverage

In order to reduce disparities in health outcomes, improving access to care is critically important. While factors such as geographic, cultural, social and economic barriers to care must be addressed, expanding health insurance coverage ought to also be considered to address access to care issues considered.[156, 157] The percent of uninsured Oklahomans (14.2%) is far higher than the national average (8.8%).[158] Access to care has a tremendous economic impact on the state's healthcare institutions as well as overall productivity. Now that Oklahoma has expanded Medicaid through State Question 802, we will continue to monitor insurance coverage in Oklahoma.

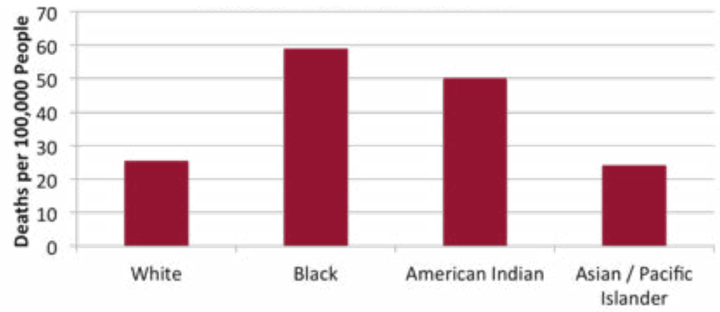
Communities where people lack adequate health insurance are also often those same communities that face barriers to other health-promoting determinants of health.[159, 160] It is in those communities where health insurance coverage is seen as one of the most pronounced barriers to receiving adequate healthcare.[161]

Diabetes Prevalence in Oklahoma City

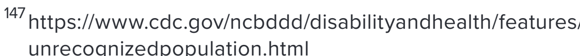


Source: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. 500 Cities Project Data [online; Accessed: Jan. 5, 2020]

Diabetes in Oklahoma 2018 Age-Adjusted Death Rate



Source: Oklahoma State Department of Health (OSDH), Center for Health Statistics, Health Care Information, Vital Statistics 2018, on Oklahoma Statistics on Health Available for Everyone (OK2SHARE). Accessed at http://www.health.ok.gov/ok2share.



[147] https://www.cdc.gov/ncbddd/disabilityandhealth/features/unrecognizedpopulation.html

[148] Call K, McAlpine D, Garcia C, Shippee N, Beeba T, Adeniyi T, et al. Barriers to care in an ethnically diverse publicly insured population: is health care reform enough? Med Care. 2014;52:720–27.

[149] Syed S, Gerber B, Sharp L. Traveling towards disease: transportation barriers to health care access. J Community Health. 2013;38(5):976–93.

[150] Syed S, Gerber B, Sharp L. Traveling towards disease: transportation barriers to health care access. J Community Health. 2013;38(5):976–93.

[151] Dai D. Black residential segregation, disparities in spatial access to health care facilities, and late-stage breast cancer diagnosis in metropolitan Detroit. Health Place. 2010;16(5):1038–52.

[152] Wang F, McLafferty S, Escamilla V, Luo L. Late-stage breast cancer diagnosis and health care access in Illinois. Prof Geogr. 2008;60(1):54–69.

[153] Tarlov E, Zenk SN, Campbell RT, Warnecke RB, Block R. Characteristics of mammography facility locations and stage of breast cancer at diagnosis in Chicago. J Urban Health. 2008;86(2):196–213.

[154] Frank, Lawrence D., Martin A. Andresen, and Thomas L. Schmid. “Obesity relationships with community design, physical activity, and time spent in cars.” American journal of preventive medicine 27.2 (2004): 87-96.

[155] Syed, S. T., Gerber, B. S., & Sharp, L. K. (2013). Traveling Towards Disease: Transportation Barriers to Health Care Access. Journal of Community Health,38(5), 976–993. http://doi.org/10.1007/s10900-013-9681-1

[156] Centers for Disease Control and Prevention. Physical Activity and Health. (2015, June 4) Retrieved from: https://www.cdc.gov physicalactivity/basics/pa-health/

[157] Call K, McAlpine D, Garcia C, Shippee N, Beeba T, Adeniyi T, et al. Barriers to care in an ethnically diverse publicly insured population: is health care reform enough? Med Care. 2014;52:720–27.

[158] Douthit N, Kiv S, Dwolatzky T, Biswas S. Exposing some important barriers to health care access in the rural USA. Public Health. 2015;129(6):611–20. doi:10.1016/j.puhe.2015.04.001

[159] U.S. Census Bureau, Health Insurance Coverage in the United States, 2017-2018

[160] Institute of Medicine (US) Committee on Understanding and Eliminating Racial and Ethnic Disparities in Health Care. Smedley BD, Stith AY, Nelson AR, editors. Unequal treatment: confronting racial and ethnic disparities in health care. Washington (DC): National Academies Press (US); 2002.

[161] Call K, McAlpine D, Garcia C, Shippee N, Beeba T, Adeniyi T, et al. Barriers to care in an ethnically diverse publicly insured population: is health care reform enough? Med Care. 2014;52:720–27.

Without adequate insurance, routine, preventive and less-costly care is often foregone due to the fear of unnecessary medical bills.[162]

Due to the connection between quality jobs and healthcare coverage, people who earn lower wages are also less likely to have health insurance.[163, 164, 165, 166] Additionally, inequitable access to quality jobs with the associated health insurance drives poor health outcomes among communities of color, which accounts for approximately half of the people uninsured in the US.[167]

A lack of health insurance is connected to negative health outcomes.[168, 169] Children with no form of insurance who have conditions like asthma or other chronic disease are not as likely to experience necessary treatments or utilize preventive care including well-child

visits to ensure appropriate growth and development, immunizations and dental care.[170] Likewise, uninsured or underinsured adults also don't receive necessary preventive care that may reduce the burden of diseases such as cardiovascular disease, cancers and diabetes.[171,172] Oklahomans who avoid preventive care and disease management because of limited insurance are more likely to experience higher-acuity incidences related to chronic diseases. This is evident in higher-than-average hospitalization rates for chronic diseases in Oklahoma. Oklahoma businesses lose an estimated $94 million dollars a year through absenteeism associated with hospitalization.

Additionally, the state could potentially realize $88 million in increased annual productivity if the mortality rate related to chronic conditions were reduced to the national average.[173]

Improved health insurance coverage may contribute to early, preventive health monitoring, which would facilitate earlier intervention and less costly healthcare services.[174,175,176] In one study, when a previously uninsured adult population received Medicaid, they were able to receive appropriate preventive care. Many with undiagnosed diabetes received a diagnosis, and began appropriate disease management.[177] Suitable treatment is likely to avert more serious conditions, including cardiovascular disease, stroke and potentially, premature death.[178] Another study found that Medicare-eligible adults were more likely to access basic, preventive care, affording opportunities to address issues before they became chronic or acute.[179] For children, health insurance has proven to be critical for appropriate management of any chronic condition.[180,181] Oklahoma businesses lose $62 million annually due to absenteeism among employees being hospitalized related to cardiovascular disease and stroke. We also estimate that Oklahoma loses approximately $115 million annually in productivity due to cardiovascular and stroke hospitalizations.[182]

---

[162] Pryor C, Gurewich D. Getting care but paying the price: how medical debt leaves many in Massachusetts facing tough choices. Boston (MA): Access Project; 2004.

[163] Zhu J, Brawarsky P, Lipsitz S, Huskamp H, Haas JS. Massachusetts health reform and disparities in coverage, access and health status. J Gen Intern Med. 2010;25(12):1356–62.

[164] Hadley J. Sicker and poorer—the consequences of being uninsured: a review of the research on the relationship between health insurance, medical care use, health, work, and income. Med Care Res Rev. 2003;60(2 Suppl):3S–75S.

[165] DeNavas-Walt C, Proctor BD, Smith J. Income, poverty, and health insurance coverage in the United States: 2009. Washington (DC): U.S. Census Bureau; 2010. Available from: www.census.gov/prod/2010pubs/p60-238.pdf

[166] Franks P, Clancy C, Gold M. Health insurance and mortality: evidence from a national cohort. JAMA. 1993;270(6):737–41.

[167] Majerol M, Newkirk V, Garfield R. The uninsured: a primer: key facts about health insurance and the uninsured in America. Menlo Park, CA: Kaiser Family Foundation; 2015.

[168] Institute of Medicine (US) Committee on Health Insurance. America's uninsured crisis: consequences for health and health care. Washington (DC): National Academies Press (US); 2009.

[169] Majerol M, Newkirk V, Garfield R. The uninsured: a primer: key facts about health insurance and the uninsured in America. Menlo Park, CA: Kaiser Family Foundation; 2015.

[170] Institute of Medicine (US) Committee on Health Insurance. America's uninsured crisis: consequences for health and health care. Washington (DC): National Academies Press (US); 2009.

[171] Ayanian JZ, Weissman JS, Schneider EC, Ginsburg JA, Zaslavsky AM. Unmet health needs of uninsured adults in the United States. JAMA. 2000;284(16):2061–69.

[172] Institute of Medicine (US) Committee on Health Insurance. America's uninsured crisis: consequences for health and health care. Washington (DC): National Academies Press (US); 2009.

[173] See Appendix C for an explanation of the methods used to determine these cost estimates.

[174] Baicker K, Taubman S, Allen H, Bernstein M, Gruber J, Newhouse J, et al. The Oregon experiment—effects of Medicaid on clinical outcomes. N Engl J Med. 2013;368(18):1713–22.

[175] McWilliams JM, Zalavsky AM, Meara E, Ayanian J. Impact of Medicare coverage on basic clinical services for previously uninsured adults. JAMA. 2003;290(6):757–64.

[176] Buchmueller T, Grumbach K, Kronick R, Kahn J. The effect of health insurance on medical care utilization and implications for insurance expansion: a review of the literature. Med Care Res Rev. 2005;62(1):3–30. doi:10.1177/1077558704271718

[177] Baicker K, Taubman S, Allen H, Bernstein M, Gruber J, Newhouse J, et al. The Oregon experiment—effects of Medicaid on clinical outcomes. N Engl J Med. 2013;368(18):1713–22.

[178] Campbell, R. Keith, and Teresa M. Martin. "The chronic burden of diabetes." American Journal of Managed Care 15.9 (2009): S248.

[179] McWilliams JM, Zalavsky AM, Meara E, Ayanian J. Impact of Medicare coverage on basic clinical services for previously uninsured adults. JAMA. 2003;290(6):757–64.

[180] Institute of Medicine (US) Committee on Health Insurance. America's uninsured crisis: consequences for health and health care. Washington (DC): National Academies Press (US); 2009.

[181] Skinner AC, Mayer ML. Effects of insurance status on children's access to specialty care: a systematic review of the literature. BMC Health Serv Res. 2007;7:194.

[182] See Appendix C for an explanation of the methods used to determine these cost estimates.

Summary

With its mission to lead healthcare, OU Medicine is fully engaged in improving the lives of all Oklahomans. Access to care is complex and goes beyond what occurs within OU Medicine facilities. During the COVID 19 pandemic, this fact has been emphasized and community-levels of access to care will continue to be impacted in new ways. In order to make meaningful changes that improve access to care, we are exploring how to an active role to support initiatives that increase the number of providers serving Oklahoma; enhance insurance benefits to more Oklahomans; identify how the social environment can promote safer healthcare utilization; work toward eliminating physical barriers that limit access to effective healthcare; and support identified needs specific to the demographic characteristics of our community. The planning process to improve community health is a valuable opportunity to begin addressing these different components.

Overall Conclusions and Significant Needs

Community Assets

Community members engaged in the needs-assessment process indicated several different organizations working to improve lives and health outcomes locally and across the states. These organizations and their day-to-day positive impact on our community is undeniably a valuable community asset. Few of the identified assets were centralized in city or state or government resources. The handful of exceptions include Oklahoma Tobacco Settlement Endowment Trust, Oklahoma City Public Schools, EmbraceOKC, Oklahoma City Police Department, state-level Front Porch Initiative, Department of Human Services Hope Tour, MAPS 4 initiative, the WellnessNow initiative and the Oklahoma Healthcare Authority. Most assets were non-profits seeking to fill gaps in their specific areas and included a long list of active organizations and individuals. Due to the length of the list, we are not listing all of the organizations but rather incorporating those findings into the implementation planning process.

Community Suggestions for Future Work:

Through three rounds of voting, internal (Oklahoma Health Center) and external CHNA advisory committees consistently indicated that needs should be prioritized according to: inequities, magnitude of the problem and the severity of need. The committees favored prioritization of intervention strategies by availability of resources and feasibility of available interventions. Stakeholders additionally identified specific determinants of health - education, housing and access to care - that might serve as entry points for OU Medicine to address prioritized needs. For each determinant, stakeholders described work already underway in the state and Oklahoma City metropolitan area. Additional gaps were cited as potential opportunities for future work.

Key Themes and Prioritized Health Needs:

At 76.1 years, life expectancy in Oklahoma is below the national average of 79.1 years.[183] Regardless of age, we see similar trends among disease-specific mortality as Oklahomans experience higher rates of death associated with cardiovascular disease, cancers, chronic lung disease, diabetes and more.[184]

Prioritized Patient Types

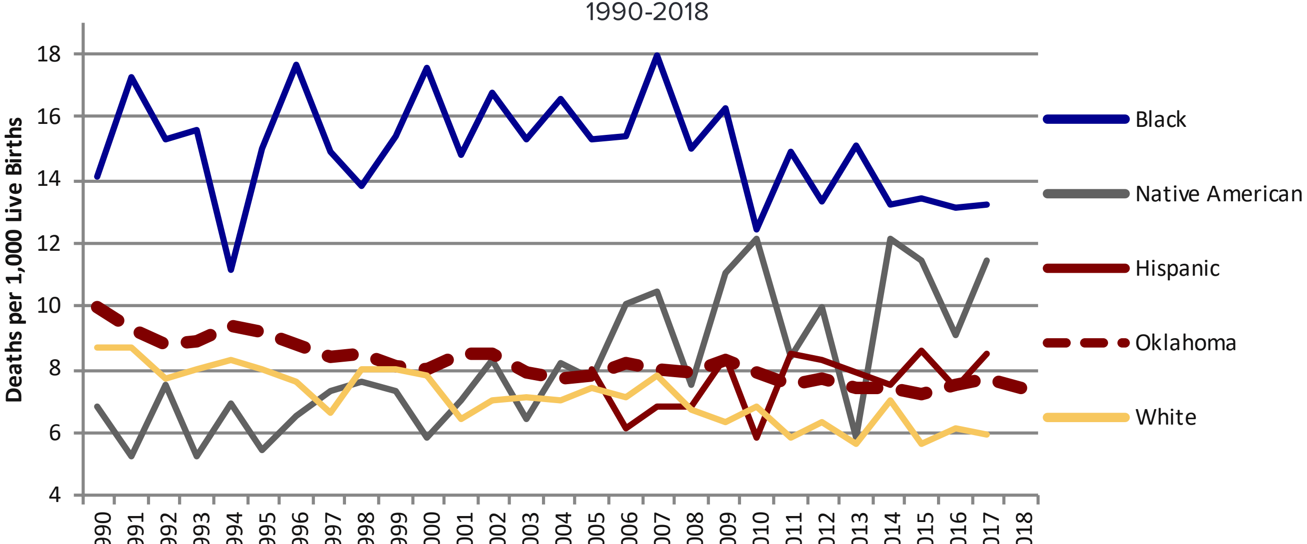
Child Health

Regarding determinants of health, stakeholders across the board noted the need to improve the conditions in which Oklahoma children live, learn, play and grow. Inequities present across the state disproportionately impact children, particularly in neighborhoods adjacent to the Oklahoma Health Center. Overall, Oklahoma's infant mortality rate is doing poorly at 7.6 per 1,000 live births compared to the national average of 5.8 per 1,000 live births.[185]

[183] Life expectancy trends (1980 to 2014) for Oklahoma and the United States (IHME 2017).

[184] Age-adjusted mortality rates for Oklahoma and the United States (IHME 2016).

[185] CDC, Behavioral Risk Factor Surveillance System



Source: CDC WONDER Online Database, Underlying Cause of Death, Multiple Cause of Death files, Longitudinal Data collected by America's Health Rankings

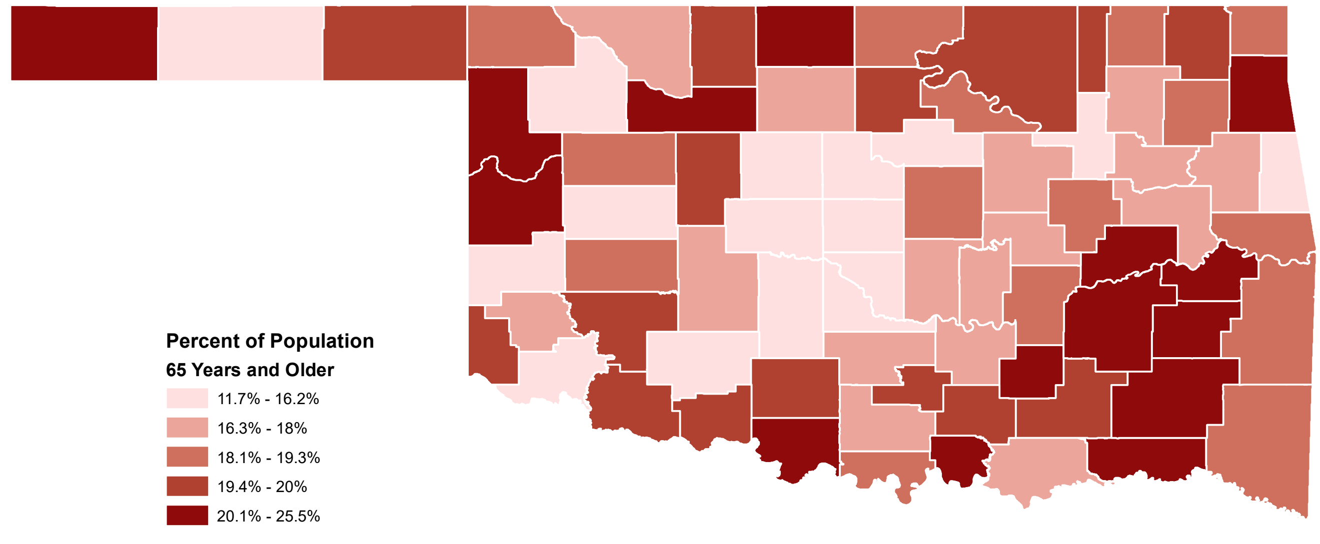
Additionally, mortality rates among youth between the ages of 5 and 14 years are higher than the national average in nearly every leading cause of death. In order of magnitude, these disparities include: unintentional injuries, malignant neoplasms, intentional self-harm (suicide), congenital malformations, assault (homicide), chronic lower respiratory disease, and influenza and pneumonia. Underscoring these staggering statistics, Oklahoma children are exposed to adverse childhood events at a rate higher than the national average (28.5% and 20.5% respectively).[186]

Maternal Health

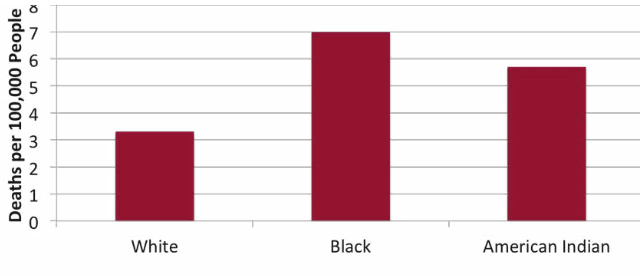
Maternal health became a recurring theme in ongoing conversations on health in Oklahoma in part due to the tremendous impact on children and intrinsic ties to childhood health. Fewer pregnant women in Oklahoma have public or private insurance when pregnancy occurs than the national average.[187,188] As a likely result, fewer pregnant women in Oklahoma seek prenatal care in the first trimester, have flu shots within 12 months before delivery or receive postpartum check-ups than the national average.[189] However, once enrolled in healthcare plans, pregnant Oklahomans tend to seek prenatal care, and risk behaviors improve well beyond the national average. Exceptions to this are smoking while pregnant and receiving dental care while pregnant. In Oklahoma, more mothers (approximately 12.7%[190]) smoked during pregnancy compared to the national average (~8.1%[191]). Additionally, fewer pregnant Oklahomans (~35.3%[192]) receive dental care while pregnant than the national average of 46.3%.[193,194] Both risk behaviors are associated with a range of negative outcomes, including increased risk for preterm birth and infant mortality, among others.[195]Approximately 53.7% (95% CI: 50.2-57.2) of pregnant Oklahomans had private insurance as they became pregnant, compared to the national average of 63.0% (95% CI: 62.2-63.7). These numbers are similar for public insurance, where only 15.8% (95% CI: 13.4-18.6) of Oklahomans compared to 23.0% (95% CI: 22.3-23.6) nationally.[196]

Maternal mortality inequitably and disproportionately impacts communities of color and rural communities in the state. Additionally, this is a notable local issue, as neighborhoods adjacent to the Oklahoma Health Center are home to more single-mother households when compared to the rest of the city. Below is an illustration of the inequitable distribution of maternal mortality in Oklahoma.

Percent of Population 65 Years and Older



Source: Estimated percent of the population in Oklahoma Counties (U.S. Census Bureau, American Community Survey 5-year estimates (2018)).



Source: Oklahoma State Department of Health (OSDH), Center for Health Statistics, Health Care Information, Vital Statistics 2018, on Oklahoma Statistics on Health Available for Everyone (OK2SHARE). Accessed at http://www.health.ok.gov/ ok2share.

Older Adults

More aging adults in Oklahoma report experiencing poor health and live with disabilities than the national average. Given the number of people in the state who are experiencing housing instability, it is likely that the effects will be compounded with advancing age. Additionally, as the impacts of COVID 19 unfold, we will likely also see greater need among older adults due to their increased vulnerability.

[186] This number represents the percentage of children ages 0-17 who experienced two or more of the following: economic hardship; parental divorce or separation; living with someone who had an alcohol or drug problem; neighborhood violence victim or witness; living with someone who was mentally ill, suicid al or severely depressed; domestic violence witness; parent served jail time; being treated or judged unfairly due to race/ ethnicity; or death of parent (two-year estimate)

[187] Approximately 53.7% (95% CI: 50.2-57.2) of pregnant Oklahomans had private insurance as they became pregnant when compared to the national average of 63.0% (95% CI: 62.2-63.7). These numbers are similar for public insurance, reflecting only 15.8% (95% CI: 13.4-18.6) of Oklahomans compared to) 23.0% (95% CI: 22.3-23.6) nationally.

[188] CDC, Pregnancy Risk Assessment Monitoring System data for 2016-2017

[189] CDC, Pregnancy Risk Assessment Monitoring System data for 2016-2017

[190] 95% Confidence Interval: 10.3-15.5

[191] 95% Confidence Interval: 7.7-8.6

[192] 95% Confidence Interval: 31.9-38.8

[193] 95% Confidence Interval: 45.5-47.0

[194] CDC, Pregnancy Risk Assessment Monitoring System data for 2016-2017

[195] CDC, Pregnancy Risk Assessment Monitoring System data for 2016-2017

[196] CDC, Pregnancy Risk Assessment Monitoring System data for 2016-2017

Longitudinal Unintentional Injury Deaths

Unintentional Injury Mortality Rate (per 100,000 people)

28, 26, 24, 22, 20, 18

1980 1985 1990 1995 2000 2005 2010 2014

United States
Oklahoma
Oklahoma County, Oklahoma

Longitudinal Cause of Neoplasm-Related Deaths

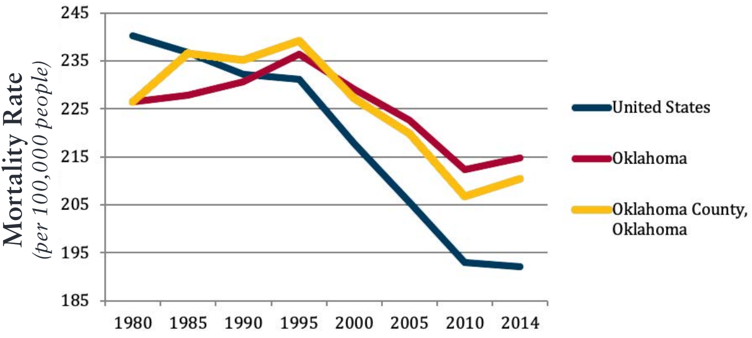
Suicide Mortality Rate (per 100,000 people)

20, 19, 18, 17, 16, 15, 14, 13, 12

1980 1985 1990 1995 2000 2005 2010 2014

United States
Oklahoma
Oklahoma County, Oklahoma

Longitudinal Suicide Mortality Rate



Source: Institute for Health Metrics and Evaluation (IHME). Causes of Death (COD) Analysis. Seattle, WA: IHME, University of Washington, 2016. Available from http://vizhub.healthdata.org/cod/. (Accessed Jan. 2020)

Prioritized Health Outcomes

Diabetes

Because diabetes is a growing problem in Oklahoma, many stakeholders identified diabetes and its compounding effects on health outcomes in the state: diabetes and related complications that contribute to leading causes of death make it a natural priority for the needs assessment. Additionally, in Oklahoma diabetes-related deaths disproportionately impact people who identify as black or Native American as compared to Asian and white Americans.[197]

Trauma

Oklahoma ranks fifth in the nation for deaths associated with injuries. Among Oklahomans young and old, injuries are the leading cause of death in the state when considering the years of potential life lost.[198] This trend holds true across different types of injuries and the injury mortality rate.

A major contributor to unintentional deaths is motor vehicle fatalities. Oklahomans are more likely to die as a result of motor vehicle accidents than the average American, with a mortality rate of 18.1 per 100,000 people compared to the national average of 12 per 100,000 people.[199] While the state overall has seen a slow but steady decrease in motor vehicle fatalities over the past five years, urban motor vehicle deaths have steadily increased over time.

Oklahomans additionally are at increased risk of dying from assault than people in most other states; in Oklahoma 6.9 per 100,000 people die from assault compared to the national rate of 5.7 deaths per 100,000 people.[200]

Oklahomans are more likely to die from intentional injuries - homicide or suicide - than the average American. Furthermore, those statistics worsen among Oklahoma City residents. In particular, gun-related deaths are most common in neighborhoods adjacent to the Oklahoma Health Center.

Cancer

The incidence of a cancer diagnosis disproportionately impacts American Indian or native communities than other segments of the population. Oklahomans who identify as black and Native American are significantly more likely to die from cancer than white, Hispanic or Asian Oklahomans.[201] Additionally, in Oklahoma and Oklahoma County, cancer mortality has decreased over time but at a slower rate than the national decrease.

Mental Health

Based on heightened levels of adverse childhood experiences (ACE) and high suicide and homicide rates, stakeholders recognized the need to prioritize mental health in the 2020 community health needs assessment. While improvement in mental health services is a statewide priority, the need is particularly notable in neighborhoods surrounding the Oklahoma Health Center, given historical and ongoing structural trauma in the area.[207]

[197] Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. Chronic Disease Indicators (CDI) Data [online]. 2016 [accessed Feb 03, 2020]. URL: https://nccd.cdc.gov/cdi.

[198] Oklahoma State Department of Health (OSDH), Center for Health Statistics, Health Care Information, Vital Statistics 2018, on Oklahoma Statistics on Health Available for Everyone (OK 2SHARE). Accessed at http://www.health.ok.gov/ok2share

[199] CDC Wonder 2017 Mortality Data, ICD-10 codes for underlying cause of death: V02-V04, V09.0, V09.2, V12-V14, V19.0-V19.2, V19.4-V19.6, V20-V79, V80.3-V80.5, V81.0-V81.1, V82.0-V82.1, V83-V86, V87.0-V87.8, V88.0-V88.8, V89.0, V89.2.

[200] CDC Wonder 2017 Mortality Data

[201] Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. Chronic Disease Indicators (CDI) Data [online]. 2016 [accessed Feb 03, 2020]. URL: https://nccd.cdc.gov/cdi.

Summary Table of Needs Assessment Priorities		
Population-Specific Priorities	Health Outcome Priorities	Social Determinants of Health Priorities
Children's Health	Cancer	Access to Care
Maternal Health	Diabetes	Education
Older Adult Health	Mental Health	Housing
	Trauma	

Prioritized Social Determinants of Health:

As the body of public health research grows, it becomes increasingly clear that exposures beyond healthcare settings may have greater impact on health than that which occurs within them.[207,202] Housing quality, opportunities and environments conducive to exercise, access to affordable and healthy food, and earned income can have tremendous impact health. Therefore, through the needs assessment process, the external, cross-sectorial advisory committee identified three prioritized social determinants of health. These determinants aid in guiding us to target the specific needs in our community:

Access to care

Overwhelmingly, engaged stakeholders identified a need for improved access to care. Identified assets included several non-profits aiming to connect people to services, the Governor's Front Porch Initiative, TSET's Physician Manpower Training Commission (PMTC) loan repayment program, the Foundation for Oklahoma City Public Schools, EmbraceOKC, The Regional Food Bank of Oklahoma Food for Kids programs and more. This exploration clearly identified gaps, which present obvious opportunities for ongoing work. Factors that create barriers to care include closure of rural hospitals; high numbers of uninsured individuals/families; an overall shortage of healthcare providers at all levels; insufficient number of physicians to meet demands for care and specifically, too few physicians of color; absence of a health information exchange; state licensure and certification challenges, and more.

Through the COVID 19 pandemic, access to care certainly has been impacted by limiting physical access to care as well as people losing their employer-based insurance. This situation will continue to be monitored in order to identify ways we can intervene.

Education

The external advisory committee recognized that improving education is key to improving health outcomes. In general, higher levels of educational attainment correspond to longer, healthier lives. Education encompasses not only formal schooling but also includes life experience gained through a broad range of interactions with institutions and people. Educational opportunities also are found through involvement with organizations and/or groups that are not traditional schools. Oklahomans and Oklahoma City residents in particular, face barriers to educational achievement, identified recurrently in this assessment: limited funding and resources; low levels of educational attainment (both cause and outcome); limited after-school programs; restricted connection to larger workforce pipeline efforts; among others.

Housing

A focus on housing must be a key component of the work to improve health and wellness of Oklahomans. Quality, affordability and stability of housing have the capacity to influence health. For example, crowding and homelessness are the results of housing instability and can result in a multitude of poor health outcomes. Among notable gaps cited in the state's housing ecosystems was limited availability of housing that is

adequate and truly affordable. Access is even more limited to individuals with eviction or criminal histories. According to our key informant stakeholders, much of the affordable housing inventory offers limited or no access to health-promoting environments. As the COVID 19 Pandemic unfolds and tremendous numbers of people have been evicted, the need is anticipated to only grow.

Implementation Planning Process

In response to the prioritized needs found in this community health needs assessment document, OU Medicine, Inc. will adopt an updated version of the strategic plan that incorporates community health-related initiatives and activities. These strategic endeavors are being developed in partnership with stakeholders, reviewed by system leadership, and will be presented to the OU Medicine, Inc. board. Due to COVID 19, this work will be reflective of the ever-evolving environment.

[202] Ahnquist, Johanna, Sarah P. Wamala, and Martin Lindstrom. "Social determinants of health–a question of social or economic capital? Interaction effects of socioeconomic factors on health outcomes." Social Science & Medicine 74.6 (2012): 930-939.

Summary

Building on community engagement, the scientific evidence examined, and the incorporated population metrics, this community health needs assessment documents community health priorities for the state of Oklahoma, Oklahoma County and the neighborhood adjacent to the Oklahoma Health Center. The prioritized population areas are older adults, children, and maternal health. The prioritized health outcomes are diabetes, trauma, cancer and mental health. The prioritized social determinants of health are access to care, housing and education. As we move forward with the implementation-planning phase of the community health improvement process and in order to most efficiently use our resources, the strategies selected should align with these prioritized populations, outcomes and determinants of health.

Appendix A: Engaged Organizations

These organizations have been engaged throughout the needs assessment process, either through sending a representative to attend a meeting or by hosting the OU Medicine CHNA team at their sites for a discussion around strategies and health-improving work:

Alliance for Economic Development
American Indian Data Community of Practice
Association of Central Oklahoma Governments / Regional Transportation Authority
Central Oklahoma Health Impact Team City Care
City Manager's Office
Community Health Centers of Oklahoma
Community Service Council
Congressional Representatives
EMBARK
Foundation for Oklahoma City Schools
Greater Oklahoma City Chamber of Commerce
HeartLine
HMO Association
Homeless Alliance
Inasmuch Foundation
Indian Health Services
Infant Crisis Services
Innovation District
Institute for Child Advocacy
Kirkpatrick Family Foundation
Lynn Institute
Mary Mahoney
Metro Tech
Millwood school board
NAACP
Northeast OKC Renaissance Inc.
OG+E
OKC Black Eats
Oklahoma Center for Nonprofits
Oklahoma City Community College
Oklahoma City Community Foundation
Oklahoma City Councilors
Oklahoma City County Health Department
Oklahoma City Health Task Force
Oklahoma City Housing Authority Oklahoma City Indian Clinic (OKCIC)
Oklahoma City Office of Emergency Management
Oklahoma City Police Department
Oklahoma City Public School System
Oklahoma Healthcare Authority
Oklahoma Hospital Association
Oklahoma Policy Institute
Oklahoma State Department of Health
Oklahoma City Thunder
OSU Center for Health Systems Innovation
OU Institute for Quality Communities (OU School of Architecture)
Potts Family Foundation
Progress OKC
Regional Food Bank
State Legislators
Tobacco Settlement Endowment Trust
Uber Health
United Way
Urban Bridge
Variety Care

Appendix B: Pre-Existing Community Benefits Highlights

While employees throughout OU Medicine primarily focus efforts on providing the highest quality healthcare, OU Medicine staff at all levels give their time to help make Oklahoma a better place. Through our Live to Give program, OU Medicine volunteers are actively involved with numerous charitable causes and strive to make a positive difference throughout the community. Since its creation in 2008, more than 3,000 OU Medicine staff volunteers have supported over 70 organizations. In 2019 alone, more than 500 volunteers participated in Live to Give-coordinated activities to accomplish work to enhance and strengthen communities.

OU Medicine's summer feeding program has been operational since 2018 to ensure Oklahoma children continue to receive adequate nutrition during summer break. Participating in the U.S. Department of Agriculture Summer Food Service Program, OU Medicine has provided thousands of meals at The Children's Hospital since the beginning of the program. Meals and services are the same for all children up to age 18, regardless of race, color, national origin, sex, age or disability. Additionally, our **mobile food teaching cart** allows dialysis patients with extremely strict diets to learn how to cook appealing food that is easy to prepare and meets their dietary needs. Child Life supports the program and partners with food service on teaching.

Within The Children's Hospital, certified **Child Life specialists** provide age and developmentally appropriate activities that emotionally support children and their families. Working as part of the healthcare team, they anticipate the needs of families and prepare play and educational opportunities as part of the care plan. Toys, gaming, special events and activities serve to distract from the hospital environment and necessary medical treatments. Kids connect with peers in ways that are familiar and fun. **Bear in My Chair** is a school re-entry and support program for children who are hospitalized or out of school for an extended period due to injury or illness. To ensure confidence in caring for tiny NICU babies before discharging home, The Children's Hospital created a comprehensive **Baby-Care Class**, taught by certified Child Life specialists. The hands-on class provides in depth discharge information, education on healthy homes, safe sleep, smoking cessation and new-parent basics like diapering, soothing and support. Child Life was established in the late 1980s at The Children's Hospital and has a presence in every pediatric area, the NICU and by consult to adult services.

Above and beyond clinical care patients and their families receive, and in order to further support the socio-emotional needs of patients, several other initiatives are part of the OU Medicine care continuum. **Music Therapy** was established in 2016. As an extension of the patient's care plan, individualized music therapy for pediatric patients — from drumming, tapping and strumming to songwriting and heartbeat recordings — provides an outlet for self-expression and coping. Additionally, **Paws for Purpose** began as an OU Medicine institutionalized initiative in The Children's Hospital in 2017, extending from a strong volunteer pet therapy dog program—a patient favorite for more than 20 years. Many of the benefits associated with regular exercise – reduced stress and anxiety, decreased blood pressure and increased endorphins – also occur in connection with pet therapy. Strong connections are often made between animals and patients of all ages

who deal with serious medical conditions. Therapy animals also support siblings, other family members and caretakers. Paired with members of the clinical teams, Facility Dogs can be in more sensitive clinical situations than Volunteer Pet Therapy dogs—which focus on general well visits and events.

Injury prevention has proven to be a major need in our community. OU Medicine leads many injury-prevention efforts in the state including its falls prevention initiatives and its car seat safety effort. Falls are both a leading cause of death among older adults in Oklahoma as well as the most common reason patients are brought into our trauma center. Since 2010, OU medicine staff have trained over 354 new instructors in **Tai Chi Moving for Better Balance** curriculum. The program partners with many different community partners, including faith-based communities, senior-living centers, and many others. On the other end of the age spectrum, a leading cause of death among children is motor-vehicle crashes. OU Medicine's **car seat safety program** has been operational since 2008 and serves hundreds of Oklahomans annually. The evidence-based program is only possible because of OU Medicine's continued support and close collaboration with many county and state departments of health, community-based organizations and more.

OU Medicine proudly partners with the state's only NCI-designated cancer center. Central to Stephenson Cancer Center is its ongoing **community-based cancer prevention** work, focused on strong community engagement, building capacity with and for community partners, and connecting Oklahomans to advanced research and treatment options. In the 2019 calendar year alone, Stephenson Cancer Center hosted 19 speaker and educational events with over 4,000 attendees, as well as 12 cancer screening events with more than 550 people screened for various types of cancer.

Appendix C: Cost Calculation Methods and Caveats

Years of Potential Life Lost

Mortality Calculations:

- Estimated Lost GDP per Year= Consumer Spending Per Capita[203] *Number of Premature Deaths[204]

Limitations:

- Years of potential life lost (YPLL) is a widely accepted measure to capture the variable impact of premature death. It is a rate that is normalized by age, gender, race, and education. A limitation to the measure is that it cannot me stratified by income.[205, 206, 207]
- Assumes 60.8% of the Oklahoma population is working age, population 16+ years old.[208]
- Assumes that lost consumer spending is biggest driver to GDP changes in relation to poor health outcomes. This makes the estimate an underestimate because individuals contribute more than just their own spending.

Example Formulas for Estimating Costs: Cancer

Mortality Calculations:

- Location-Specific Attributable Risk (LSAR) = Oklahoma Mortality Rate[209] -Location Rate
- Population Attributable Risk=LSAR/100000* Oklahoma Population[7]
- Lost GDP from Consumer Spending= Consumer Spending per capita[210]*((Oklahoma Mortality Rate)/100,000*Oklahoma Population)

Morbidity Calculations:

- Ratio Weight=((Age Adjusted Rate of New Cancers Studied[211]-Age Adjusted Rate of Studied Cancer Mortaility[4]))/(Age Adjusted Rate of new cancers [212]-Age Adjusted Rate of Cancer Mortaility)
- Employee^' s Lost Income=(Annual Wage) /260*(Average Days Missed per Year-8)
- Employer^' s Cost =(Annual Wage)/260*8
- Estimation of Working Age Population with Cancer (WAPC)=Number of people living with Cancer* Percentage of Population which is working age
- Reduced Productivity Ratio=((Avg Days Missed per Year)/260)* OECD Productivity Ratio[213]
- Lost GDP from Productivity=(GDP per Working Age Person[214]*Reduced productivity ratio)*WAPC

Limitations:

- The population estimates contain uncertainty (between census years and estimate). Our estimate does not account for instability of intercensal estimates and standard errors built into those estimates.[215]
- Assumes 260 working days per year[216]
- Assumes Oklahoma workers receive average of 8 paid days of sick leave.[217]
- Average number of days missed per year is calculated as a weighted average based on various studies looking at different cross-sections of people diagnosed with cancer. This number has all the limitations of those studies built into it, but the weighting minimizes biases towards one particular type of cancer.[218, 219, 220, 221, 222]
- Employer's cost only considers the cost they incur for paying salaries for sick days. It does not consider productivity losses, benefits, and thus is an underestimate of total impact on GDP.

- Assumes 60.8% of the Oklahoma population is working age, population 16+ years old.[223]
- Assumes that lost consumer spending is biggest driver to GDP changes in relation to poor health outcomes. This makes the estimate an underestimate because individuals contribute more than just their own spending.
- Assumes GDP split evenly across all working age people.
- Assumes a standard population over time.
- The OECD productivity ratio is 1.05 which implies that the GDP outputs for an employee are 1.05 * \ that employee's inputs.

---

[203] Zemanek, Steven. "Personal Consumption Expenditures by State, 2018." Bureau of Economic Analysis. 2019.

[204] Oklahoma State Department of Health (OSDH), Center for Health Statistics, Health Care Information, Vital Statistics 1998, on Oklahoma Statistics on Health Available for Everyone (OK 2SHARE). Accessed at http://www.health.ok.gov/ok2share

[205] Centers for Disease Control and Prevention. Premature mortality in the United States: Public health issues in the use of years of potential life lost. MMWR Morb Mortal Wkly Rep. 1986;35(suppl 2):1S-11S.

[206] McDonnell S, Vossberg K, Hopkins RS, Mittan B. Using YPLL in health planning. Public Health Rep.1998;113:55-61.

[207] Dranger E, Remington P. YPLL: A Summary Measure of Premature Mortality Used in Measuring the Health of Communities. Madison, WI: University of Wisconsin Population Health Institute; 2004. Issue Brief 5(7)

[208] United States Census Bureau. Quick Facts – Oklahoma. 2018.

[209] America's Health Rankings analysis of CDC WONDER Online Database, Underlying Cause of Death, Multiple Cause of Death files, United Health Foundation, AmericasHealthRankings.org, Accessed 2019. Data Source & Year(s): CDC WONDER Online Database, Underlying Cause of Death, Multiple Cause of Death files, 2014-2016

[210] Zemanek, Steven. "Personal Consumption Expenditures by State, 2018." Bureau of Economic Analysis. 2019.

[211] U.S. Cancer Statistics Working Group. U.S. Cancer Statistics Data Visualizations Tool, based on November 2018 submission data (1999-2016): U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; www.cdc.gov/cancer/dataviz, June 2019.

[212] Bureau of Labor Statistics. May 2018 State occupational Employment and Wage Estimates – Oklahoma. April 2, 2019.

[213] OECD (2019), Labour productivity forecast (indicator). doi: 10.1787/cb12b189-en (Accessed on 14 November 2019)

[214] Siebeck, Todd and Wang, Catherine. "Gross Domestic Product by State." Bureau of Economic Analysis. 2019.

[215] Freedman, David, and K. Wachter. "Heterogeneity and census adjustment for the intercensal base." Statistical Science (1994): 476-485.

[216] Office of Personnel Management. Pay & Leave. Pay Administration.

[217] Barthold, Ross and Ford, Jason. "Paid Sick Leave: Prevalence, Provision, and Usage among Full-Time Workers in Private Industry." US Bureau of Labor Statistics. 2012.

[218] Tangka, Florence K et al. "State-level estimates of cancer-related absenteeism costs." Journal of occupational and environmental medicine vol. 55,9 (2013): 1015-20. doi:10.1097/JOM.0b013e3182a2a467

[219] Henry, D.H., Viswanathan, H.N., Elkin, E.P. et al. Support Care Cancer (2008) 16: 791. https://doi.org/10.1007/s00520-007-0380-2

[220] Bradley, Cathy et al. "Absenteeism from work: the experience of employed breast and prostate cancer patients in the months following diagnosis." 2005. https://doi.org/10.1002/pon.1016

[221] Moran, John R et al. "Long-term employment effects of surviving cancer." Journal of health economics vol. 30,3 (2011): 505-14. doi:10.1016/j.jhealeco.2011.02.001

[222] Guy, Gery P Jr et al. "Economic burden of cancer survivorship among adults in the United States." Journal of clinical oncology : official journal of the American Society of Clinical Oncology vol. 31,30 (2013): 3749-57. doi:10.1200/JCO.2013.49.1241

[223] United States Census Bureau. Quick Facts – Oklahoma. 2018.

Implementation Plan

Analyze Health Issues

Inventory Resources

Develop Health Improvement Strategy

Identify Accountability

Develop Indicator Set

Implement Strategy

Monitor Process and Outcomes

Community Health Improvement Process

Implementation Plan

As both a premier healthcare provider and a member of the Oklahoma City community it is our duty to prioritize the well-being of our community. Through a Community Health Needs Assessments (CHNAs) priority areas of community need are identified. An implementation plan is then used to serve as an action-oriented effort to address and alleviate these needs wherever possible. Implementation Plans are built out of Initiatives that serve to apply resources to these priority needs in an effort to mitigate the impact on our community.

System-Wide Health Need Priorities

Housing

Education

Access

Maternal Health

Child Health

Older Adult Health

Diabetes

Mental Health

Trauma

Cancer

The Community Health Needs Assessment prioritized the following needs: Housing, Education, Access to Care, Mental health, Cancer, Diabetes, Trauma, and Child, Maternal and Older adult health. Some overlap exists between these priority areas and some initiatives address multiple priority areas.

System-Wide Health Need Priorities

OU Medical Center	OU Medicine Edmond	The Children's Hospital
Older Adult Health	Older Adult Health	Child Health
Housing	Education	Maternal Health
Access	Access	Education
Mental Health	Cancer	Access
	Diabetes	Cancer
	Mental Health	Trauma
		Mental Health

Enhance Relationship with External Community Health Influencers

	Housing	Education	Access	Mental Health	Cancer	Diabetes	Trauma	Child Health	Maternal Health	Older Adults
Establish Anchor Institution Strategies within Enterprise	●	●	●	●	○	○	○	○	○	○
Further OPHIC / PARTNER Council Efforts		○	●	●	○	●	○	●	●	●
Develop Community Advisory Board (CAB)	○	○	○	○	○	○	○	○	○	○
Enhance Central Oklahoma Partnerships across Hospitals and Payers through joint Community Health Work	○	○	○	○	○	○	○	○	○	○
Deepen and formalize key partnerships with community based clinics/ clinicians that reflect the community served		○	●	●	○	●	○	●	●	●

Legend

- ● Likely Direct Impact on Priority
- ○ Likely Indirect Impact on Priority

Enhance Internal Community Health Influencers

	Housing	Education	Access	Mental Health	Cancer	Diabetes	Trauma	Child Health	Maternal Health	Older Adults
Develop an "All-Inclusive and Equitable OU Health" Initiative	○	●	○	●	○	○	●	○	○	○
Create Community Health Activity Catalog and Central Organizing Structure across Enterprise	○	○	○	○	○	○	○	○	○	○
Improve Care Coordination through EPIC Apollo Mission and coordination with community resources	○		●	●	●	●	●	●	●	●
Explore and Mitigate Role of Housing on Patient Outcomes	○			●	○	●	○	●	●	●

Legend

- ● Likely Direct Impact on Priority
- ○ Likely Indirect Impact on Priority

COVID-Specific Response

	Housing	Education	Access	Mental Health	Cancer	Diabetes	Trauma	Child Health	Maternal Health	Older Adults
Support Social Service Providers, Businesses, and Community Partners in Oklahoma	○	○	○	○			○	○	○	○
Support Isolation and Quarantine Sites among Vulnerable Populations	●	○	●	○				○	○	●
Enhance Data, Surveillance and Testing Ecosystem in Catchment Area			○					○	○	●

Legend

- ● Likely Direct Impact on Priority
- ○ Likely Indirect Impact on Priority

External Activities

Establish Anchor Institution Strategies within Enterprise

Anchor Institutions are organizations that invest in their community with the intention of building bridges between the organization and the members of the surrounding community. This process can occur through a variety of efforts and investments including the addressing of social needs and social determinants of health. Anchor institution strategies can influence housing through its many pillars of community wealth building as well as place based investments. By establishing anchor institution strategies, OU Health is engaging and exploring opportunities to better influence housing insecurity within the community.

Further OPHIC / PARTNER Council Efforts

Through alignment with existing clinical research efforts we aim to develop models by which to increase the overall impact of efforts on our community health goals. Through the aid of OPHIC, the PARTNER Council (Patient, Practice, & Academic Resource Team for New Evidence from Research) seeks to align community health related activities with their strategic direction. This work involves supporting the existing OU Health practitioners engaged in this work as well as expanding the number of providers engaged. It also means supporting the community involvement in the direction of the research activities.

External Activities

Develop OU Health Community Advisory Board (CAB)

Community Advisory Boards (CAB) are a common best practice of health systems across the country. By combining the CAB with efforts throughout the enterprise, the CAB can advise any project that needs community input during their regular meetings.

Developing a community advisory board will serve as a source of guidance for OU Health toward long-term positive and productive relationships with the community. Community members' ability to voice their concerns and questions creates a sense of investment in the organization and its efforts. Prospective members should be recruited to create a representative group of community members who will seek to improve the interactions of the OU Health with its neighbors and clients

Enhance Central Oklahoma Relationships across Hospitals and Payers through joint Community Health Work

Being one of a number of healthcare providers and payers within the Oklahoma City community it is crucial that we create lasting partnerships with other providers also striving to improve the lives of our community.

Building bridges between the major healthcare providers broadens the available resources for all parties and increases the potential impact on the overall well-being of all patients. Additionally, by employing a collective impact toward addressing community health needs and, at times, economies of scale we are able to more efficiently meet the needs of the communities we serve.

External Activities

Deepen and formalize key partnerships with community based clinics/ clinicians that reflect the community served

Deepening relationships with FQHCs through formalized agreements and community health initiatives can only open doors to innovation for the OU Health enterprise.

Enriching long-lasting and developing new partnerships with community based clinicians are needed to solidify bonds within the community and potentially heighten access to care for the communities we serve. Through the bonds built with these providers we can also identify co-beneficial efforts that may enhance the efficiencies of OU Health and partnering providers.

Internal Activities

Develop an "All-Inclusive and Equitable OU Health" Initiative

Equity and understanding across differences are necessary for creating an excellent clinical and administrative practice. As such, addressing inequitable outcomes for our community, staff and all members of the OU Health community is necessary to provide the best care possible for everyone OU Health serves.

Working across the enterprise, this initiative can serve to support, identify needs, and guide the direction of efforts seeking to improve accessibility of OU Health to any member of the community. The group will seek to engage members of the OU Health community seeking to improve outcomes for all members of the community and neighbors to the Oklahoma health center.

Create Community Health Activity Catalog and Central Organizing Structure across OU Health

Develop an organizational structure to compile and disseminate relevant information pertaining to "how" we as a healthcare provider and surrounding community serve the community at large.

In order to capitalize on all of the tremendous activities originating from the Oklahoma Health Center, the development of central community health activities headquarters allows for a compile relevant information pertaining to "how" we as a healthcare provider and surrounding community reach our broader community. This effort would encourage cross-campus collaboration because of similar activity areas of projects.

Internal Activities

Improve Care Coordination through EPIC Apollo Mission and coordination with community resources

In addition to the work within the Apollo mission within Epic's Healthy Planet, this effort is intended to build off of community-based resources and ongoing initiatives to further enhance patient care inside and outside of OU Health. Through this effort, OU Health care coordination staff will coordinate with the larger EPIC implementation to ensure there is a solid continuum of care for patients to have the highest level of access possible when working with providers around the community. This will also involve engaging with community stakeholders to determine strong communication between organizations as well.

Explore and Mitigate Role of Housing on Patient Outcomes

As a complicating factor for both the length of stay among our patients as well as a contributor to poor community health outcomes, housing is a new area that the University of Oklahoma Medical Center is exploring how to impact. During the COVID-19 Pandemic partnerships have deepened with the Oklahoma City Community Foundation, Oklahoma City County Health Department, other area hospitals and local housing `non-profits to develop a COVID-specific housing response. Building off of these efforts and by partnering with the community based organizations and localities, OU Health will develop a longer term approach to influence housing.

COVID-Specific Activities

Support Social Service Providers, Businesses, and Community Partners in Oklahoma

COVID-19 has shown us we are only as strong as our partnerships with our communities and as a premier healthcare provider for Oklahoma County we are in the unique position to act as a hub for these connections during this pandemic.

Developing a community advisory board can serve as a source of guidance for OU Health toward long-term positive and productive relationships with the community. Community members' ability to voice their concerns and questions creates a sense of investment in the organization and its efforts. Prospective members should be recruited to create a representative group of community members who will seek to improve the interactions of the OU Health with its neighbors and clients

Support Isolation and Quarantine Sites among Vulnerable Populations

Community safety centers on the ability to maintain health in these complex and uncertain times. Inability to self isolate can further the spread of COVID-19, endangering more lives within our community. OU Health has been working with community partners to promote safe places to isolate in the community for those who could otherwise not been able to isolate or quarantine.

COVID-Specific Activities

Enhance Data, Surveillance and Testing Ecosystem in Catchment Area

Consistent and thorough monitoring and evaluation is necessary to successfully adapt to the ever-evolving needs that arise due to this pandemic.

Developing a community advisory board can serve as a source of guidance for OU Health toward long-term positive and productive relationships with the community. Community members' ability to voice their concerns and questions creates a sense of investment in the organization and its efforts. Prospective members should be recruited to create a representative group of community members who will seek to improve the interactions of the OU Health with its neighbors and clients

For more information about this document and its contents,
please contact Halley Reeves, Vice President of Community Health Impact.
Halley.Reeves@oumedicine.com