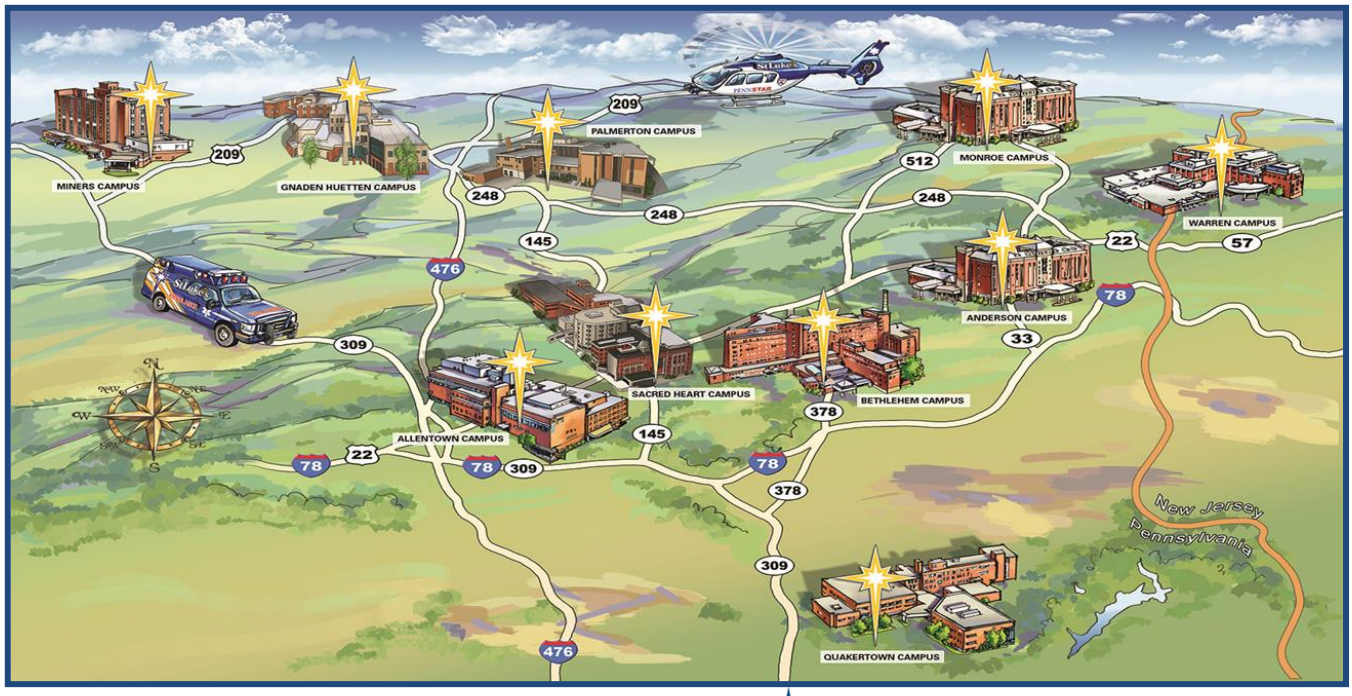

St Luke's
UNIVERSITY HEALTH NETWORK

Community Health Needs Assessment

June 2019

Department of Community Health & Preventive Medicine

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Introduction

Background

As part of the Patient Protection and Affordable Care Act, all nonprofit hospitals are required to conduct a Community Health Needs Assessment (CHNA) every three years to remain a tax-exempt organization under section 501(c)(3) of the Internal Revenue Code. The goal of the assessment is to identify critical health disparities faced by residents within St. Luke's University Health Network (SLUHN) service areas. It is required to state every health priority addressed by community stakeholders, hospital professionals or public health experts. Additionally, regional implementation plans will be crafted to build collaborative partnerships to determine the allocation of resources to address the specified health needs. To view our previous CHNA reports, please refer to the following link:
http://www.slhn.org/Conditions-Services/Community-Health/Community-Health-Needs-Assessment/

If you have any questions regarding any of these reports, please contact the Department of Community Health & Preventive Medicine at (484) 526-2100.

Methodology

This CHNA is comprised of both primary and secondary data. The primary data were collected through three methods. First, key informant interviews were with stakeholders were conducted within each campus community. A list of interview questions can be found in Appendix A. Second, SLUHN convened community forums at each campus community. Dr. Christopher Borick of the Muhlenberg College Institute of Public Opinion moderated all the sessions. A list of organizations represented at each campus forum can be viewed in Appendix B. Third, approximately 10,234 voluntary community health surveys were administered in our eleven campus geographic regions, where the main priority health needs were identified for each entity. We used snowball sampling to reach respondents, especially those represented in our vulnerable populations. Surveys were completed in either paper or digital format. The survey data document, also posted online, lists questions and responses recorded from CHNA surveys conducted in 2012, 2016 and 2019. Secondary data included the use of hospital network data, as well as county, state and national level data obtained via the U.S. Census, the Robert Wood Johnson Foundation, Vital Statistics, Community Commons, the American Community Survey (ACS), U.S. Department of Labor, the Behavioral Risk Factor Surveillance System as well as other data sources, which can be found in Appendix C. The needs identified in the interviews and community forums were supplemented by the survey data and secondary data to provide a more comprehensive picture of the needs in the community and the factors impacting those needs.

St. Luke's Network Community

Population

For the purposes of the CHNA, we defined the top zip codes as those which make up at least 80% of the population served by St. Luke's University Health Network (18017, 18015, 08865, 18102, 18103, 18018, 18042, 18064, 18951, 18045, 18020, 18104, 18252, 18360, 18055, 18013, 18040, 18301, 18052, 18014, 18109, 18036, 18062, 18067, 18235, 18353, 18049, 18232, 18091,

18229, 07882, 18072, 07823, 18302, 18073, 18034, 18240, 18218, 08886, 18330, 18466). A total of 819,608 people live in the 1,177.97 square mile report area defined for this assessment as per five-year estimates from the U.S. Census Bureau's American Community Survey[1]. The population density for this area, estimated at 695.78 persons per square mile, falls above the 89.61 persons per square mile in the nation and 285.62 in Pennsylvania, but below the 1,212.07 in New Jersey (Figure 1).

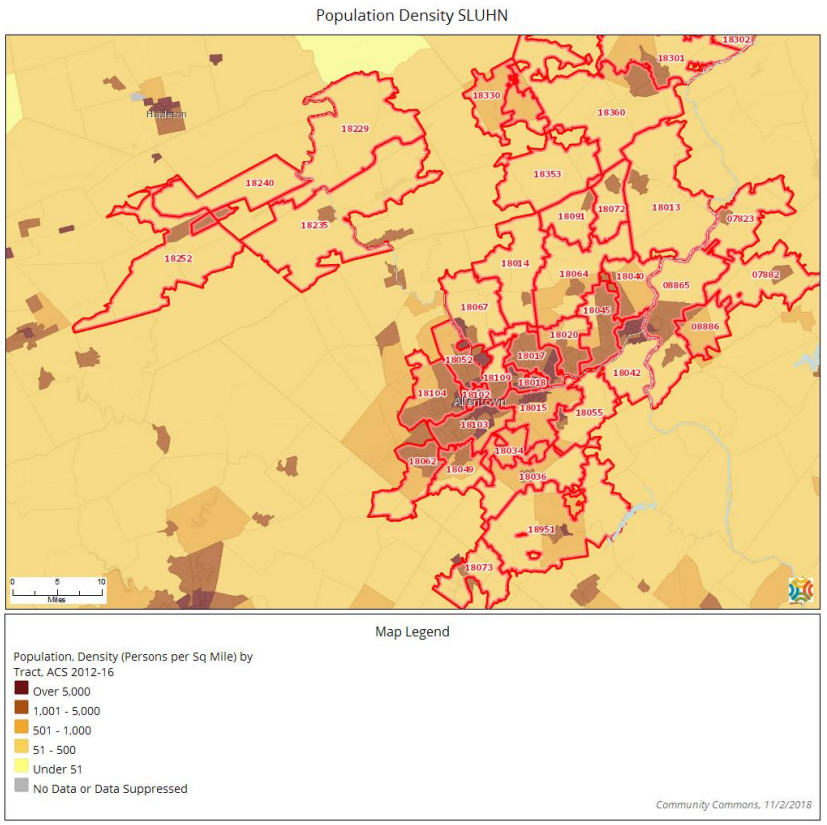


Figure 1

Analyzing the environment of the service area can indicate livability. The urban/rural population indicator reports the percentage of population living in urban and rural areas. According to the U.S. Census Bureau Decennial Census, 85.3% of the SLUHN patients reside in urban areas, and the remaining 14.7% in rural locations[2]. These percentages are more polarized than what is seen in the state and the country. The United States is 19.1% rural and 80.9% urban, the state of Pennsylvania is 21.3% rural and 78.7% urban. However, the state of New Jersey is 5.3% rural and 94.7% urban[3].

Demographics

The following sections give a brief overview of the populations served by the St. Luke's network. Understanding the demographics of the service area is essential to address and improve upon the region's health needs.

Age:

The ACS reports 21.7% of the service area's population falls under the age of 18, and 16.4% are 65 or older (Figure 2). This leaves 61.9% between the ages of 18 and 65[4]. When comparing these data to survey data, 64.7% of respondents reported being between the ages of 18 and 64, and 35.3% reported being over the age of 65 (Figure 3). The survey was not administered to community members under the age of 18, therefore there are no responses to indicate that age range.

[1] https://www.census.gov/
[2] https://www.census.gov/
[3] https://www.census.gov/
[4] https://www.census.gov/

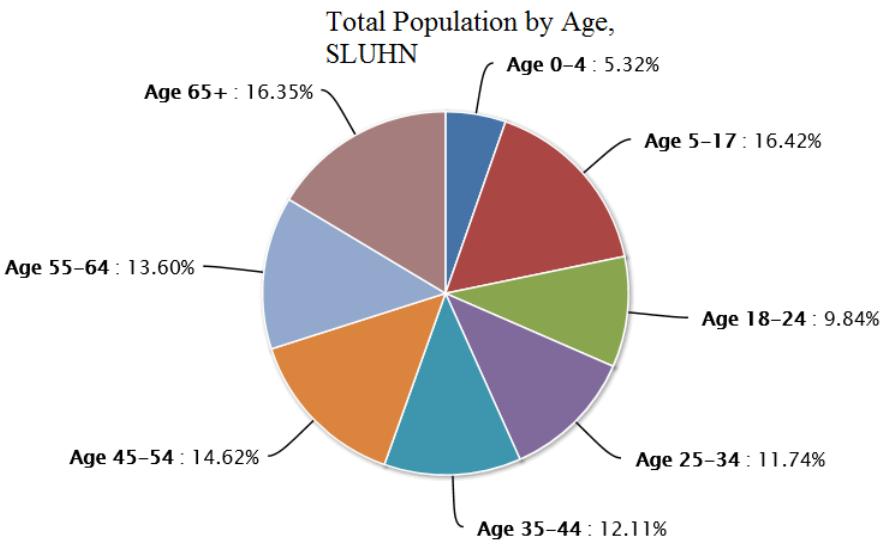


Figure 2

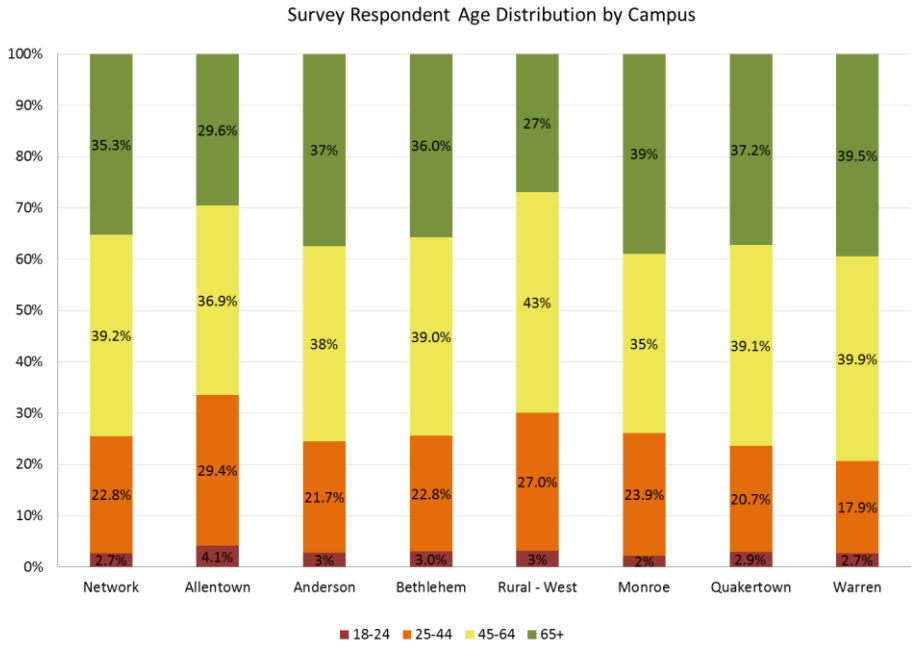


Figure 3

Sex:

According to the five-year estimates by the ACS, the percentage of females in the St. Luke's network is roughly 51.3%, and 48.7% is male.

This is close to national trends, where 50.8% of the population is female and 49.2% is male[5]. The majority of

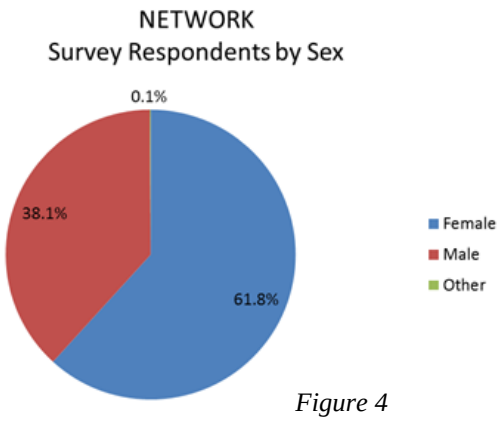


Figure 4

[5] https://www.census.gov/

respondents to our 2019 community health survey were female. In the St. Luke's network for the year 2017, 61.7% of respondents were female and 38.1% were male. Additionally, 0.1% of respondents identified their sex as Other (Figures 4 & 5).

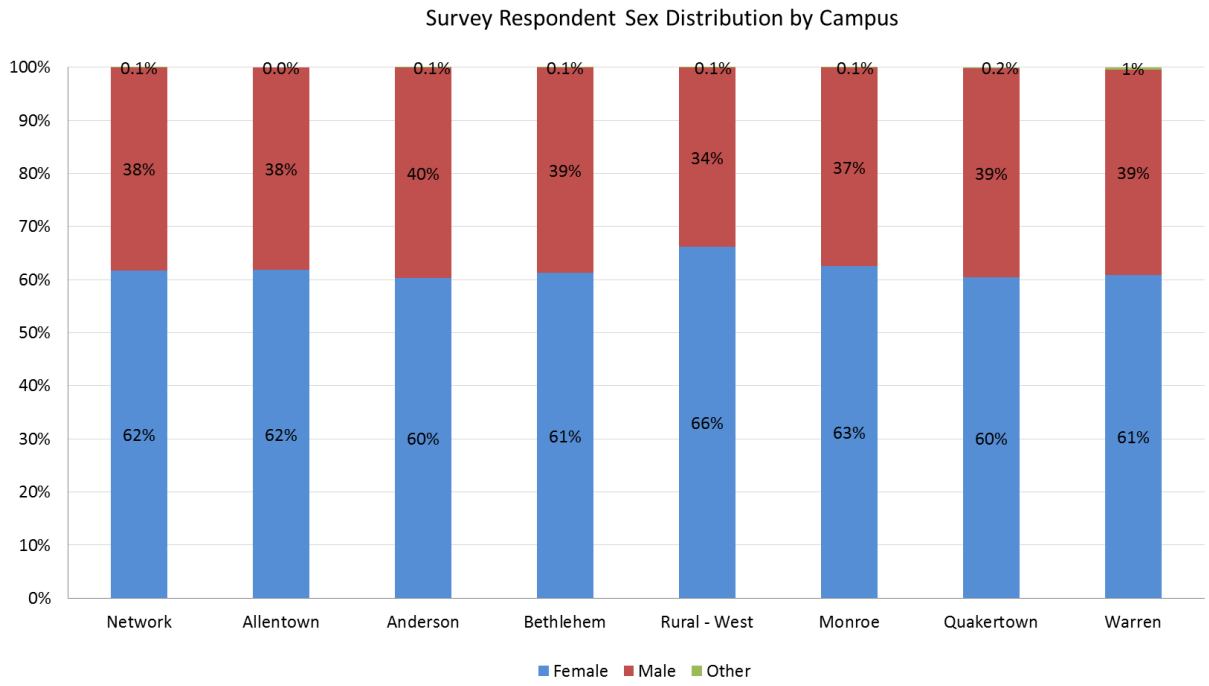


Figure 5

Race:

In breaking down the top 80% of ZIP codes by race, we can see that most individuals identify as White, constituting 82.1% of the service area (Figure 6). The second largest population identify as Black, representing 7.1% of the population. About 2.7% identify as Asian, 0.3% as Native American or Alaskan Native, 0.03% as Native Hawaiian or Pacific Islander, 4.8% as some other race, and 3% as multiple races[6].

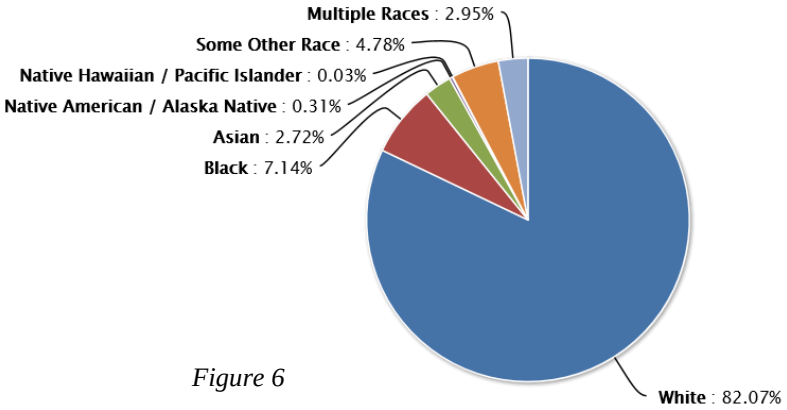


Figure 6

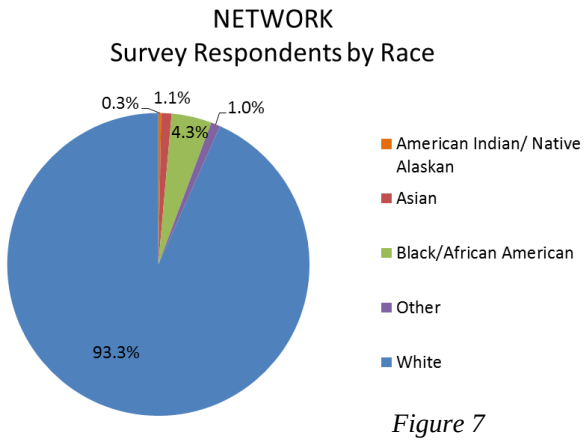


Figure 7

[6] https://www.census.gov/

Our 2019 community health survey found slightly different patterns in its respondents when broken down by race. As seen in Figures 7 & 8, 93.3% of respondents identified as White and 4.3% identified as Black. According to the same figure, 2.4% of respondents identified their race as Other.

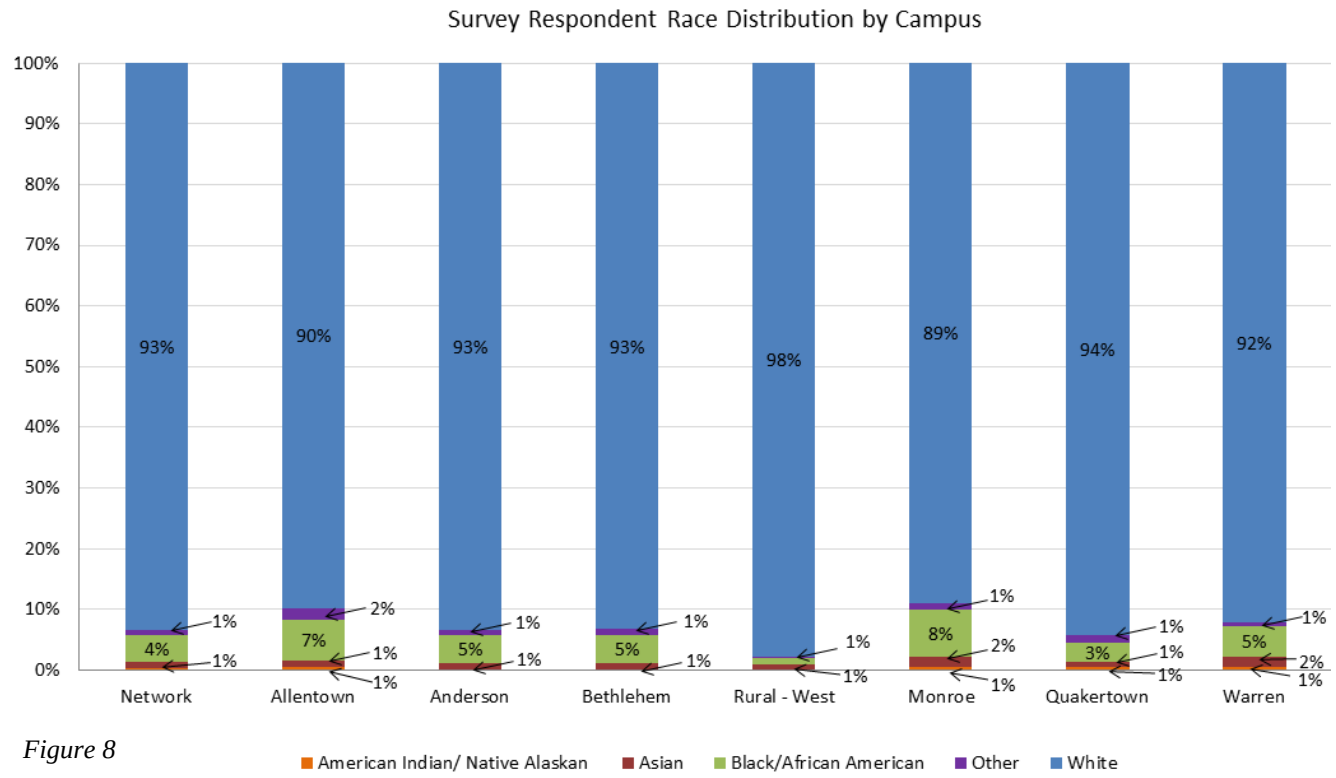


Figure 8

Ethnicity:

Recent data indicate 84% of the St. Luke's network identifies their ethnicity as non-Hispanic, with the remaining 16% identifying as Hispanic/Latino (Figure 9). This breakdown is closer to the 17.1% of individuals in the nation and 19.2% in New Jersey who identify as Hispanic, than the 6.4% in Pennsylvania identifying as Hispanic/Latino[7]. Survey data illustrated in Figure 10 capture this population in our data. There was a smaller proportion of Hispanic/Latino respondents – 8.8% – compared to New Jersey, but larger proportion compared to Pennsylvania.

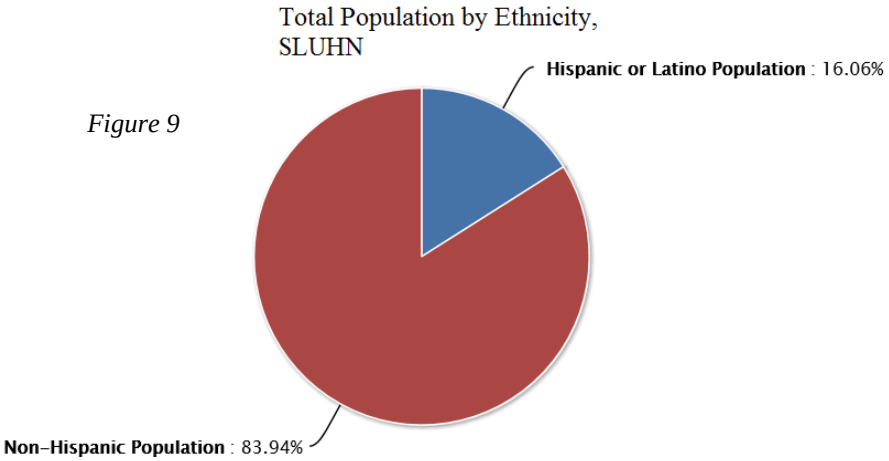


Figure 9

[7] https://www.census.gov/

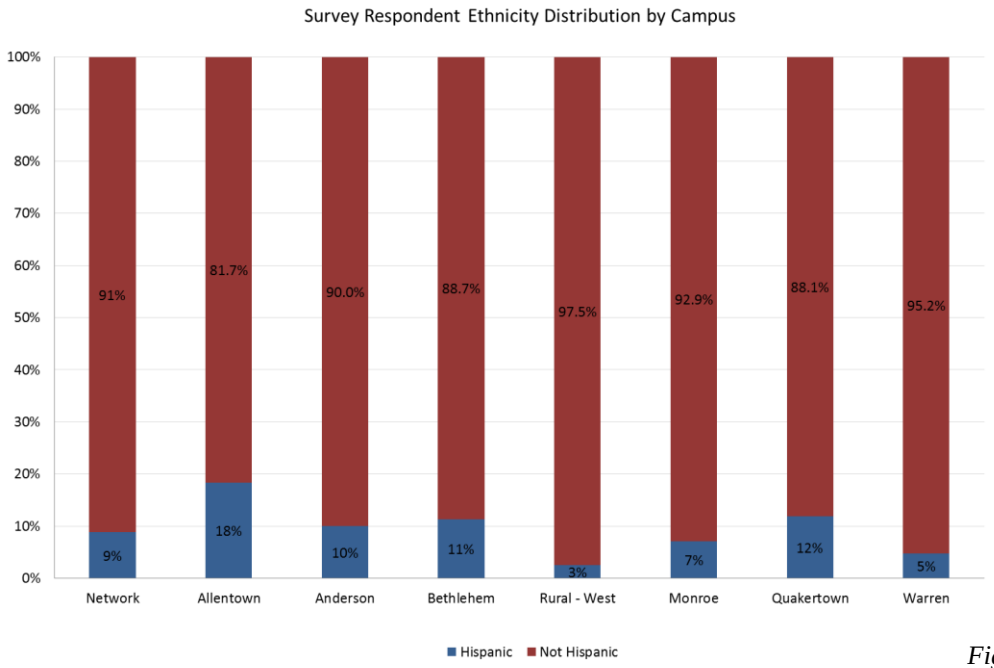


Figure 10

Vulnerable Populations

Intersecting with the aforementioned populations, there are groups within our service area with specific needs that must be considered.

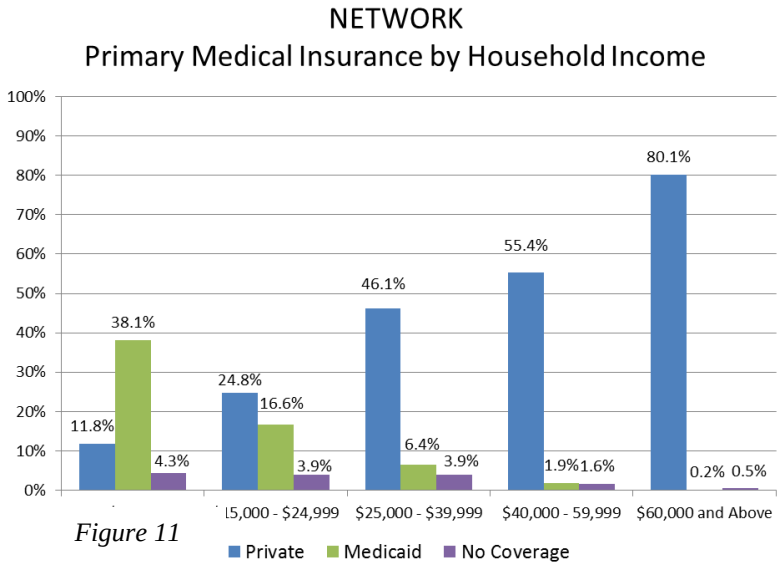


Figure 11

Marmot's longitudinal Whitehall Study identified a relationship between income and health outcomes, where higher income is linked with better health outcomes. Similarly, 2019 CHNA survey response data indicate that there is a clear relationship between income and insurance status, where 42.4% of respondents in the $14,999 or less annual income category reported that their primary insurance was Medicaid, or that they were uninsured, compared to 0.7% of respondents in the $60,000 or above income category (Figure 11). One population facing many disparities in our community is our Hispanic population, with high levels of inequity in access to social determinants of health (i.e. income, insurance, employment, education, housing, etc.). This population is frequently identified as a disparate population in the community.

Similarly, survey data showed a clear relationship between ethnicity and insurance status, where 31.8% of Hispanic respondents reported that their primary insurance was Medicaid, or were uninsured, compared to 6.1% of non-Hispanic respondents (Figure 12).

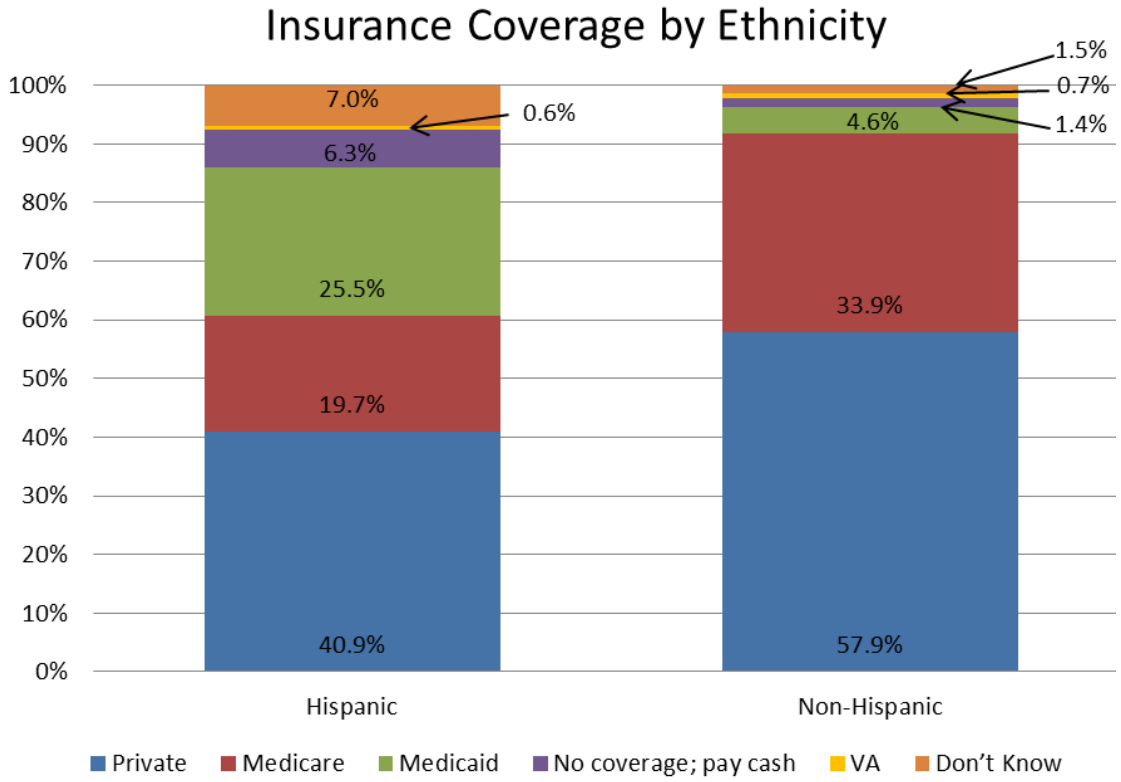


Figure 12

Another population that requires additional consideration in our community is the senior (age 65+) population. According to Data USA, the median age in the United States is 37.9, where the median age in Pennsylvania and New Jersey is 40.6 and 39.5, respectively. Furthermore, according to the Lehigh Valley Planning Commission, the senior population in Lehigh and Northampton Counties is projected to grow by approximately 100% in the 70-74 and 75+ age groups, and by approximately 60% in the 65-69 age group[8].

Similarly, there are growing Middle Eastern, Asian, and refugee populations within our Network service area, with diverse cultural backgrounds and needs.

The ACS five-year estimates indicate that 8.4% of residents in the SLUHN service area are veterans. 0.7% of survey respondents identified that their primary source of medical insurance was Veteran's Administration[9].

According to the Williams Institute at UCLA School of Law data, approximately 3.3% of Pennsylvania residents and 3.8% of New Jersey residents identify as Lesbian, Gay, Bisexual, or

[8] https://institutionalplanninglv.files.wordpress.com/2012/07/lvpc-pop-projections-2012.pdf
[9] https://www.census.gov/topics/population.html

Transgender (LGBT)[10]. In 2018, the Pennsylvania Department of Health partnered with Bradbury-Sullivan LGBT Community Center to conduct a statewide Community Health Needs Assessment focused specifically on LGBT health needs[11].

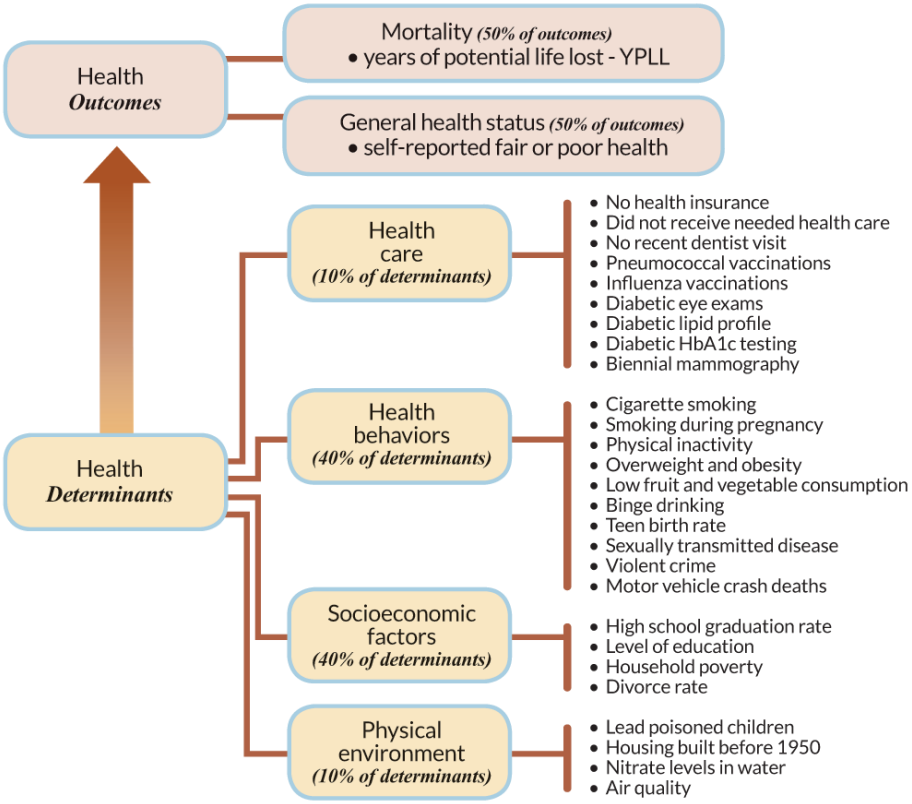
According to the Pennsylvania 2018 LGBT Health Needs Assessment, 26.2% of respondents had not advised any provider that they are LGBT; furthermore, 56.8% of all respondents indicated that they sometimes, often, or always feared a negative reaction from a provider upon coming out as LGBT. This fear was especially prominent among the transgender and gender non-conforming respondents, where 75.1% of transgender and gender non-conforming respondents reported fear of a negative provider response. Additionally, 32.5% of all survey respondents reported that their providers are, on average, slightly or not at all competent in LGBT issues[12]. This lack of LGBT-competent care was also reflected in our SLUHN 2019 CHNA survey. Lack of LGBT-competent care was cited as a reason for missed medical appointments in the 2019 CHNA community survey, and that respondents travel to Philadelphia to access LGBT-competent care.

In addition to access to LGBT-competent care, overall health, mental health and substance use were identified as areas of need in the Pennsylvania 2018 LGBT Health Needs Assessment. 35.6% of all survey respondents reported their overall health status as fair, poor, or very poor. Additionally, when looking at overall life satisfaction, 27.4% of Pennsylvania LGBT survey respondents reported being dissatisfied or very dissatisfied, and 16.2% reported rarely or never getting the help that they need. Reported smoking rates were incredibly high among the LGBT survey respondents, with 30.2% of all survey respondents and 36.9% of transgender and gender non-conforming respondents reporting smoking. Both of these reported smoking rates are significantly higher than the Pennsylvania average of 18.0%. However, in the LGBT survey, about 24.3% of smokers reported that they were looking to quit within the next 6 months[13]

Findings

The findings suggest a focus on the social determinants of health and lifestyle medicine interventions in order to address the three priority areas related to improving access to care, preventing chronic disease and improving mental and behavioral health. This will be achieved using a network-wide framework of wellness and prevention, care transformation and research and partnerships to systemically approach the issues and trigger sustainable changes that influence health outcomes. To analyze our findings in these areas, SLUHN has adopted the categorization system from the Robert Wood Johnson Foundation. The social determinants of health shape the status of a person's health. When addressing the priority health needs, it is crucial to consider the social determinants of health and lifestyle behaviors to effectively tackle the service area's health disparities.

[10] https://williamsinstitute.law.ucla.edu/visualization/lgbt-stats/#density
[11] https://www.livehealthypa.com/docs/default-source/toolkits/lgbt/pennsylvania-2018.pdf?sfvrsn=0
[12] http://www.phmcresearch.org/work/data-and-publications
[13] http://www.phmcresearch.org/work/data-and-publications



Source: http://www.whatcountsforamerica.org/portfolio/chapter-4-the-county-health-rankings-a-treasure-trove-of-data/

Every year, the Robert Wood Johnson Foundation releases data that compare counties to state averages, as well as U.S. top performers. The table on the following page depicts select health indicators for 2018 for each of the counties in SLUHN's service area. The indicators are color-coded using a stoplight approach, in which green indicates that the value is better than both state and national levels, yellow indicates that the value is in between state and national levels, and red indicates that the value is worse than both state and national levels. In looking at the 2018 data table, only 9% of the values are green, and 49% are red. Additionally, Carbon and Schuylkill counties have no green values, indicating that there are opportunities for improvement across all counties, but especially our rural counties. When looking at overall health rankings, with 1 being the best and 50 being the worst, America's Health Rankings ranked New Jersey 12th and Pennsylvania 28th out of 50 in 2017.

2018	U.S. Top Performers*	Pennsylvania (PA)	Bucks (BU) County, PA	Carbon (CR) County, PA	Lehigh (LH) County, PA	Monroe (MO) County, PA	Northampton (NO) County, PA	Schuylkill (SC) County, PA	New Jersey (NJ)	Warren (WA) County, NJ
Unemployment	3.2%	5.4%	4.6%	6.0%	5.4%	6.3%	5.2%	6.2%	5.0%	4.6%
Uninsured	6%	8%	6%	7%	9%	9%	7%	8%	10%	8%
Primary care physicians	1,030:1	1,230:1	1,120:1	2,000:1	1,040:1	2,190:1	1,170:1	1,740:1	1,180:1	1,620:1
Dentists	1,280:1	1,480:1	1,210:1	2,360:1	1,180:1	2,600:1	1,850:1	2,280:1	1,190:1	1,420:1
Poor physical health days	3	3.9	3.2	3.5	3.5	4	3.3	3.6	3.5	3.7
Food environment index	8.6	8.2	8.8	8.5	8.6	8	8.6	8.3	9.2	8.5
Physical inactivity	20%	24%	21%	26%	25%	28%	26%	27%	23%	24%
Access to exercise opportunities	91%	68%	84%	59%	70%	43%	74%	50%	95%	98%
Adult obesity	26%	30%	27%	34%	31%	31%	29%	33%	26%	28%
Excessive drinking	13%	21%	21%	20%	20%	19%	20%	20%	17%	19%
Adult smoking	14%	18%	12%	17%	15%	17%	15%	18%	14%	16%
Poor mental health days	3.1	4.3	3.7	4	3.9	4	3.6	4.1	3.4	3.7
Mental health providers	330:1	560:1	450:1	2,190:1	600:1	1,070:1	530:1	1,480:1	530:1	610:1
Low birthweight	6%	8%	8%	8%	8%	9%	8%	7%	8%	7%
Teen births	15	21	9	23	26	13	16	26	15	11
Sexually transmitted infections	145.1	418.1	199.8	195.5	455.5	182.2	322.6	148.8	350.6	218.9
High school graduation	95%	85%	92%	81%	84%	89%	73%	89%	90%	92%
Children in poverty	12%	18%	8%	21%	20%	18%	14%	18%	15%	11%
Severe housing problems	9%	15%	15%	15%	17%	22%	16%	11%	23%	17%
Social associations	22.1	12.1	7.7	15	10.5	7.6	10.7	13.5	8.3	9

Key	Better than both state and national levels	Between state and national levels	Worse than both state and national levels

Another way to identify community needs is to look at utilization of the United Way's 2-1-1 system. 2-1-1 is a free resource through which community members are able to be connected to community resources in their area. When examining 2-1-1 reports from the counties in SLUHN's service area, housing-related inquiries made up the vast majority of inquiries during fiscal year 2018. With the exception of Monroe County, housing-related inquiries and utility assistance inquiries were the top two categories for all counties in our service area. Housing Assistance inquiries ranged from 87% of inquiries in Lehigh County to 22% in Monroe County. Other frequently utilized categories included: Utility Assistance; Mental Health/Addictions; Food/Meals; Individual/Family/Community Support; Basic Needs; and Transportation. The top community gaps identified across all counties were: community shelters and transitional housing; utility payment assistance; rent payment assistance; and extreme cold weather shelters.

Social and Economic Environment

Employment

While health insurance is a tangible barrier to accessing healthcare, there are many "invisible" barriers patients also face. Income, poverty and unemployment factor heavily into an individual's ability to access care. In examining these demographics, we can see a correlation between income level and accessing or affording care. An unemployed person likely has limited income, which may potentially lead to being unable to pay for insurance, not to mention out-of-pocket

fees for health care services. The unemployment rate for civilian, non-institutionalized adults in the St. Luke's network is 5.6, compared to 5.2 in Pennsylvania, 4.8 in New Jersey, and 4.4 nationwide. On average, residents of the top 80% of ZIP codes have a higher rate of unemployment[14].

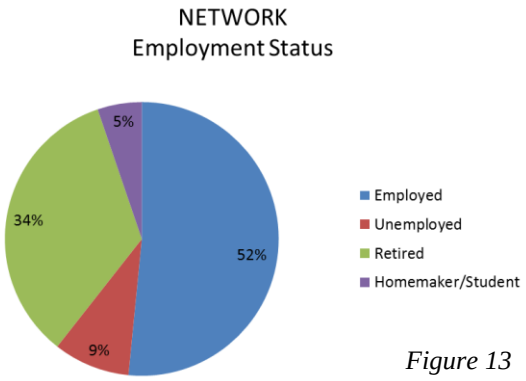


Figure 13

To take a deeper dive into this issue, we can observe the data pulled from our 2019 community survey. In Figure 13, an estimated 9.0% of respondents were unemployed. This is higher than the 5.2% in Pennsylvania, the 4.6% in New Jersey, and the 4.8% in the country[15]. While 51.3% of respondents were employed or self-employed, it is still imperative to remain cognizant of the high unemployment rate given by respondents, especially among our vulnerable populations.

Household Income and Poverty

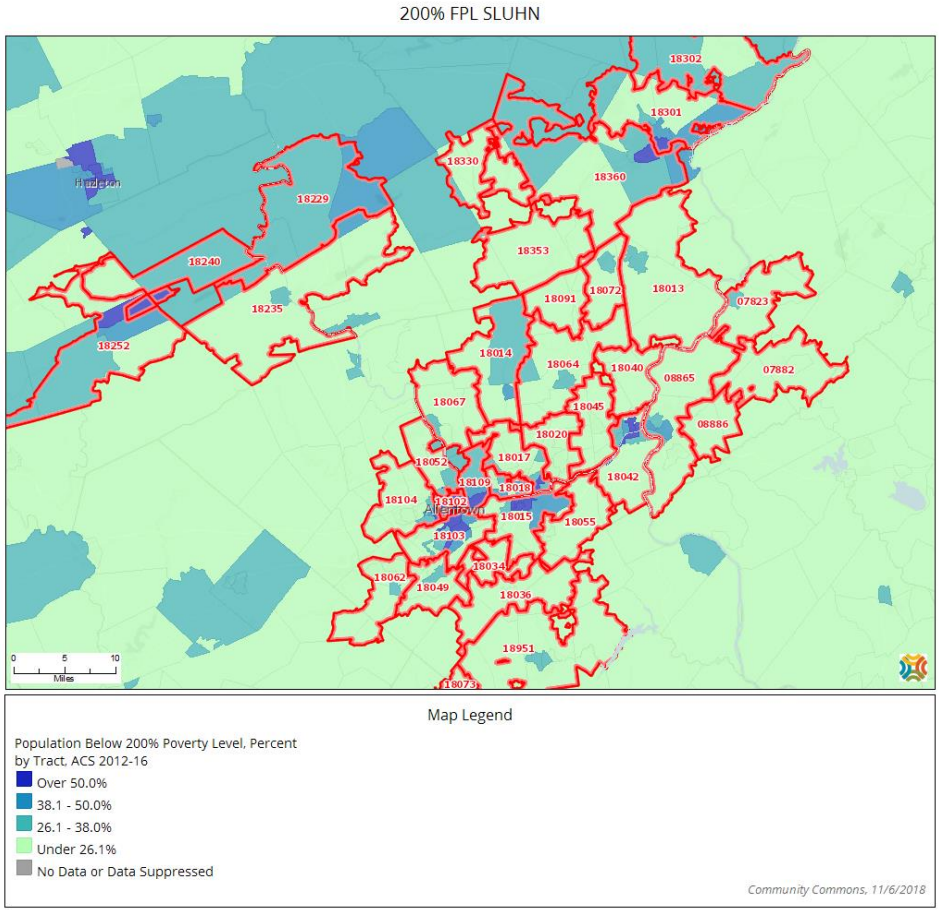


Figure 14

Poverty is inherently linked to unemployment, as those without jobs likely have limited incomes, and therefore may be unable to pay for healthcare services. Not only do unemployment and poverty levels affect one's ability to access care, but they influence mental health as well. Job instability, combined with the stress of providing for oneself and one's family, are risk factors for poor mental health. The Federal Poverty Level (FPL) is $24,600 for a family of four[16]. Roughly 28.7% of St. Luke's network residents have incomes that fall at or below 200% of the FPL (Figure 14). This statistic falls between the 24.5 of New Jersey, 30.6% of Pennsylvania, and 34.3% of the nation that fall at or below 200% of the FPL[17].

[14] https://www.bls.gov/eag/eag.pa.htm
[15] https://www.bls.gov/eag/eag.us.htm
[16] https://aspe.hhs.gov/poverty-guidelines
[17] https://www.census.gov/topics/poverty.html

Childhood and adolescence are formative and vulnerable years for growing children, where they must be cared for and nurtured. For a family in poverty, there is a significant strain on being able to provide youths with necessities. In the St. Luke's network, 38.3% of the population under age 18 live at or below 200% of the FPL, compared to 31.8% in New Jersey, 39.1% in Pennsylvania, and 43.3% nationwide[18].

Education

The Healthy People 2020 initiative sets ideal benchmarks for health behaviors, health outcomes, and social and economic factors to reach by the year 2020. The organization suggests 82.4% of a region's high school cohort should graduate each year. The rate is 85 in Pennsylvania, 90 in New Jersey, and 95 for the country[19].

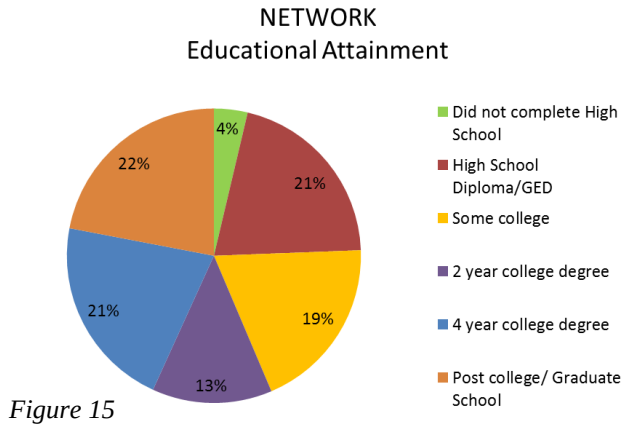


Figure 15

Research suggests there are correlations between education and earning capacity. Reports such as the renowned Whitehall Study have directly correlated socio-economic status with health outcomes. Our 2019 community survey revealed that the highest percentage of respondents in the network reported education beyond high school (75.6%), followed by those with only a high school diploma or GED (20.7%). Additionally, 3.7% of respondents reported having less than a high school education. Educational attainment levels are higher within St. Luke's network than in Pennsylvania, New Jersey, and the country (Figure 15)[20].

Language

In our 2016 CHNA cycle, focus group members identified language barriers as another prevalent source of health disparities. Without effective communication, access to health services and efforts to educate patients on health issues are significantly impaired. The population over the age of five with Limited English Proficiency (LEP) is roughly 6.2%, compared to 4.1% in Pennsylvania, 12.2% in New Jersey, and 8.6% in the nation[21]. This percentage of individuals with limited English proficiency indicates a need for doctors and nurses in the St. Luke's network who are proficient in Spanish.

Barriers can arise in healthcare when proper translation/interpreting services are not provided. Figure 16 on the next page illustrates this region's diversity by breaking down the multilingualism of its community members based on internal data. Translators and interpreters are required in locations where either 1,000 individuals or 5% or more of the community speaks a different language.

[18] http://www.countyhealthrankings.org/app/pennsylvania/2018/overview
[19] http://www.countyhealthrankings.org/app/pennsylvania/2018/overview
[20] https://www.census.gov/topics/education.html
[21] https://www.census.gov/topics/language.html

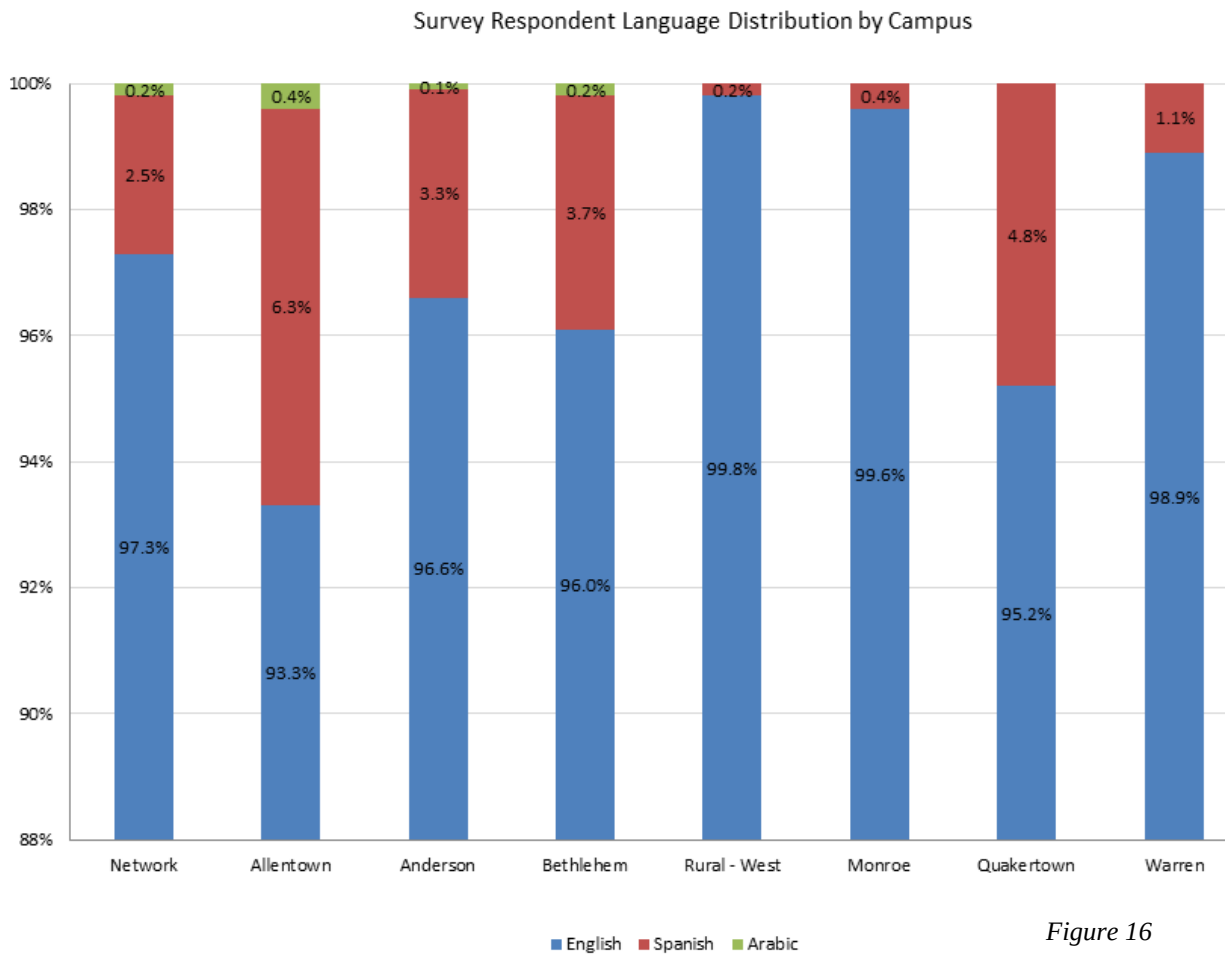


Figure 16

Safety

An individual's perception of safety in a community can affect one's physical health for better or worse. Individuals and families who perceive their neighborhood to be unsafe are less likely to pursue outdoor activities or engage in their communities, which may lead to becoming less physically active or isolated. The top-performing counties in the nation have a violent crime rate of 62 crimes per 100,000 persons, compared to 333 in Pennsylvania and 280 in New Jersey[22].

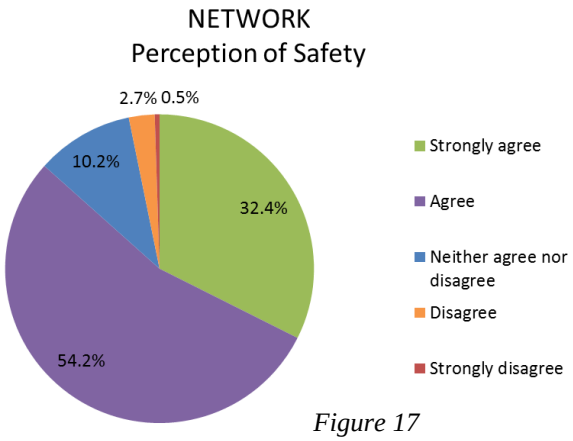


Figure 17

According to our 2019 community survey, 86.6% of survey respondents either agreed or strongly agreed that their community is a safe place to live. The majority of respondents network-wide conveyed they agree (54.2%) or strongly agree (32.4%) that their community is a safe place to live in (Figure 17).

[22] http://www.countyhealthrankings.org/app/pennsylvania/2018/overview

Social Associations

Social and emotional support is vital to maintaining positive mental health and general confidence in getting through everyday barriers. If we are able to indicate whether certain counties are lacking in social associations, we can address these shortcomings by increasing mental health programming and care.

The "social associations" indicator looks at a lack of social or emotional support in adults over the age of 18. We can look at the County Health Rankings "social associations" indicator, which measures the number of membership associations per 10,000 population. Pennsylvania has 12.1 associations, New Jersey has 8.3 associations, and the U.S. top performers have a rate of 22.1[23].

Physical Environment

Housing and Blight

There is a well understood link between housing quality and public health. Poor living situations are connected to a number of different health conditions including, but not limited to, respiratory infection, lead poisoning, asthma, and poor mental health[24]. For well over a century public health officials have focused on factors like overcrowding, sanitation, and ventilation in the home to combat infectious diseases. Housing conditions are still a major point of focus for many health agencies due to their impact on the overall health status of the community.

In 2014, the LVRC published a report on housing in the Valley. With over 1,000 surveys distributed over the phone, online and on paper, a few major trends were found. Neighborhood quality; safety; and convenience to work, leisure, or family were most cited as influencing housing choice. The most frequent reason for not owning a home was financial instability, from not being able to afford a down payment or qualify for a mortgage. Few reported issues with their current homes, and those that did cited concerns with bug infestation and broken doors or windows. Results imply those with disabilities are not able to easily access their current dwellings. In addition, most employed respondents traveled 16 to 30 minutes to work by car. Travel costs and traffic congestion were noted as transportation issues influencing job choice[25].

Housing instability can have detrimental effects on the health of individuals, families, and communities[26]. Eviction, or the legal process of a landlord removing a tenant from their property, is one form of housing instability that can seriously impact the wellbeing of the person or family being removed. Formal eviction, and even the threat or process of removal, has statistically significant negative consequences on both mental and physical health[27]. It is also intimately tied to other determinants of health like job security, schooling, and safety. Once a family has undergone eviction, the health side-effects can last for years[28]. As such, eviction rate, or the number of formal evictions as a factor of total occupied housing units, is an important metric of

[23] http://www.countyhealthrankings.org/app/pennsylvania/2018/overview
[24] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1447157/
[25] http://lvpc.org/comprehensive-plan.html
[26] http://www.npc.umich.edu/publications/policy_briefs/brief29/NPC%20Policy%20Brief%20-%2029.pdf
[27] https://www.ncbi.nlm.nih.gov/pubmed/28107704
[28] https://scholar.harvard.edu/files/mdesmond/files/desmondkimbro.evictions.fallout.sf2015_2.pdf

public health. We used the Eviction Lab's nation-wide database out of Princeton University to determine the eviction rate for each of the ten lowest income census tracts that our hospital campuses service. We have at least 18 census tracts in our region that have a higher eviction rate than the national average. Four of those tracts, all in Allentown, have eviction rates more than double the national average of 2.34%. Lehigh County census tracts 18, 10, 20, and 8 have respective eviction rates of 5.99%, 5.90%, 5.94%, and 5.30% (Figure 18). Unofficial, and often extra-legal, methods of eviction are common place in low income neighborhoods[29], and thus these eviction rates might not fully encapsulate the actual housing instability of the census tracts reported.

SLUHN Campus	Lowest Income Census Tracts (lowest first)	Median Family Income	Eviction Rate (2016)
SLUHN Entire Region	LC 10; Center City Allentown	$19,318	5.90%
	NC 105; Northeast Bethlehem	$22, 008	1.92%
	LC 97; Center City Allentown	$23,382	4.39%
	LC 8; Center City Allentown	$23,566	5.30%
	LC 16; Center City Allentown	$24,116	2.15%
	NC 112; South Side Bethlehem	$27,548	2.85%
	LC 18; Center City Allentown	$29,100	5.99%
	NC 111; South Side Bethlehem	$29,375	4.17%
	LC 96; East Side Allentown	$29,620	4.47%
	LC 20; Center City Allentown	$29,683	5.94%
	AVG of 10 Lowest Income Tract	**$26,190**	**4.31%**
National		$55,322	2.34%
PA		$54,895	1.77%

Figure 18

Another metric we examined was the percentage of monthly income that goes towards housing costs. US Department of Housing and Urban Development (HUD) considers any household paying more than 30% of their monthly income towards housing as "cost burdened". Being cost burdened means that these households "may have difficulty affording necessities such as food, clothing, transportation and medical care"[30]. Although little research exists linking the status of "cost burdened" to health outcomes, there is robust literature connecting lower incomes with worse health[31]. It would then follow that households that are struggling to afford housing would have limited disposable income to spend on healthier food, physical activities like a gym membership, and out of pocket health expenses. High housing cost burden is a problem across

[29] https://www.jstor.org/stable/10.1086/666082?seq=1#page_scan_tab_contents
[30] https://www.hud.gov/program_offices/comm_planning/affordablehousing/
[31] https://www.bls.gov/opub/mlr/2017/beyond-bls/income-and-health-outcomes.htm

the nation and state, but it is particularly acute in the communities we serve. We service at least 40 unique census tracts that have a higher cost burden rat than the national average of 34.20%. Of our ten lowest income census tracts, nine have a cost burden rate of over 50% (Figure 19).

SLUHN Campus	Lowest Income Census Tracts (lowest first)	Median Family Income	**Cost Burdened Households (30% or more of household income goes towards housing costs) 2012-2016**
SLUHN Entire Region	LC 10; Center City Allentown	$19,318	62.08%
	NC 105; Northeast Bethlehem	$22, 008	45.51%
	LC 97; Center City Allentown	$23,382	58.52%
	LC 8; Center City Allentown	$23,566	67.60%
	LC 16; Center City Allentown	$24,116	56.64%
	NC 112; South Side Bethlehem	$27,548	59.22%
	LC 18; Center City Allentown	$29,100	51.41%
	NC 111; South Side Bethlehem	$29,375	46.00%
	LC 96; East Side Allentown	$29,620	56.92%
	LC 20; Center City Allentown	$29,683	62.18%
	AVG of 10 Lowest Income Tract	**$26,190**	**56.61%**
National		$55,322	34.20%
PA		$54,895	31.3%

Figure 19

A final metric we looked at was units lacking complete kitchen facilities. Without complete kitchen facilities, families have less of an ability to cook nutritious meals and thus rely more heavily on processed and packaged foods or eating outside of the home. Households that cook more frequently are shown to consume lower amounts of calories, fat, and sugar[32]. The St. Luke's University Hospital Network services at least 24 unique census tracts that have rates of housing units lacking complete kitchen facilities that are higher than both the state and national average. Some tracts, like Northampton County 111 and 142, and Schuylkill County 5, have rates four times higher than both the national and state average. In Northampton County tract 111 nearly one in every five households lacks a complete kitchen facility (Figure 21).

[32] https://www.cambridge.org/core/journals/public-health-nutrition/article/is-cooking-at-home-associated-with-better-diet-quality-or-weightloss-intention/B2C8C168FFA377DD2880A217DB6AF26F

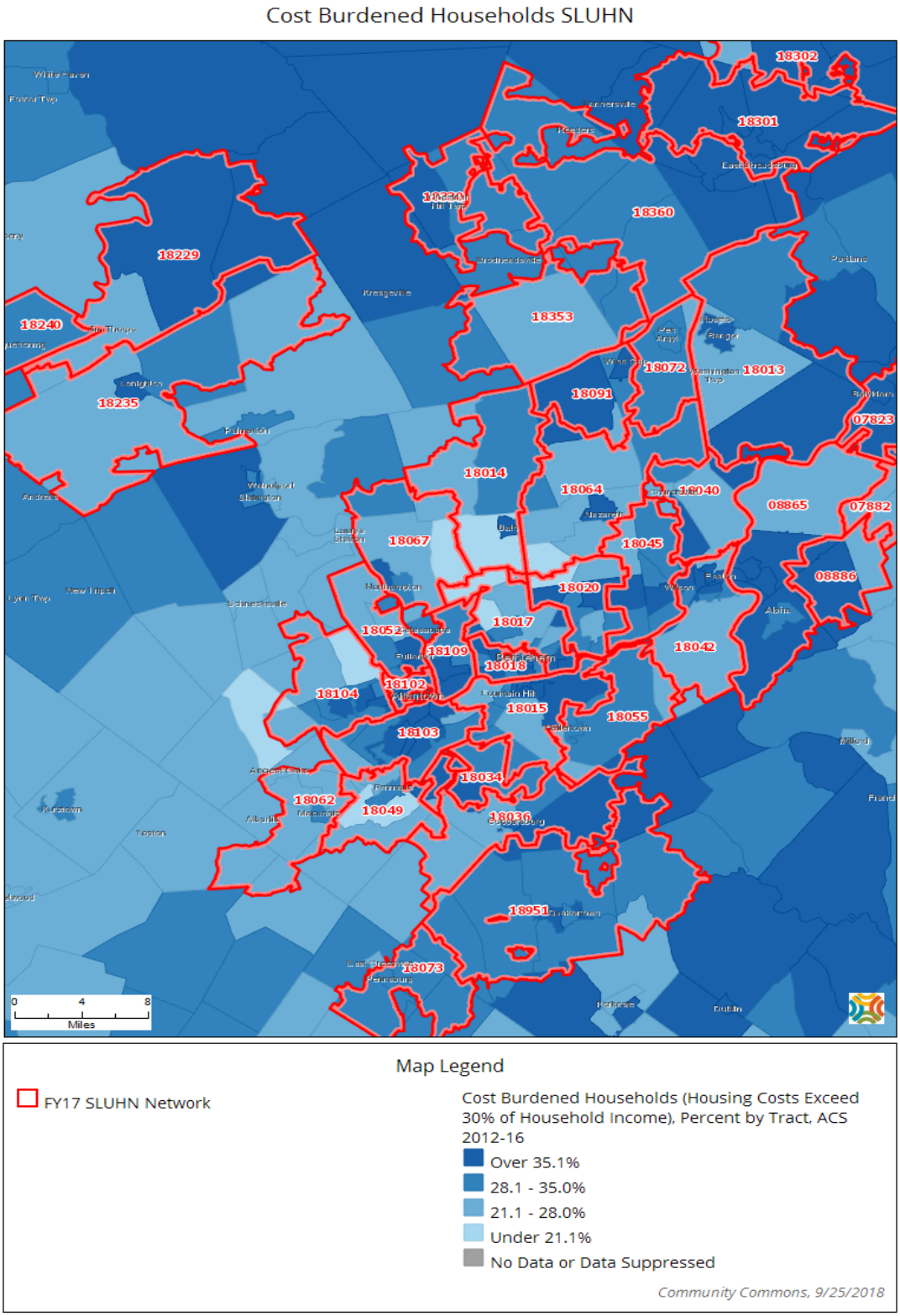

Cost Burdened Households SLUHN
18302
18301
18360
18229
18240
18353
18235
18072
18013
18091
07823
18014
18064
18040
08865
07882
18067
18045
08886
18020
18017
18042
18109
18018
18102
18104
18015
18055
18103
18034
18062
18049
18036
18951
18073
0
4
8
Miles
Map Legend
FY17 SLUHN Network
Cost Burdened Households (Housing Costs Exceed 30% of Household Income), Percent by Tract, ACS 2012-16
Over 35.1%
28.1 - 35.0%
21.1 - 28.0%
Under 21.1%
No Data or Data Suppressed
Community Commons, 9/25/2018

Figure 20

SLUHN Campus	Lowest Income Census Tracts (lowest first)	Median Family Income	**Housing Units Lacking Complete Kitchen Facilities,% by Tract, ACS 2012-16**
SLUHN Entire Region	LC 10; Center City Allentown	$19,318	2.45%
	NC 105; Northeast Bethlehem	$22, 008	1.71%
	LC 97; Center City Allentown	$23,382	4.38%
	LC 8; Center City Allentown	$23,566	4.81%
	LC 16; Center City Allentown	$24,116	1.51%
	NC 112; South Side Bethlehem	$27,548	5.54%
	LC 18; Center City Allentown	$29,100	3.34%
	NC 111; South Side Bethlehem	$29,375	19.35%
	LC 96; East Side Allentown	$29,620	0.00%
	LC 20; Center City Allentown	$29,683	3.49%
	AVG of 10 Lowest Income Tract	**$26,190**	**4.66%**
National		$55,322	2.84%
PA		$54,895	3.41%

Figure 21

Recent key informant interviews and community forums revealed an area-wide need to address housing conditions and affordability. One informant stated, "We have one of the worst relationships between housing costs and income levels in the country." In support of this claim an attendee from the health care field said, "I can't afford a two bedroom apartment in downtown Allentown and I'm a nurse and have two degrees. I know a couple with factory jobs and they can't afford two months rent and a security deposit." Another forum participant added, "The housing situation for young professionals in the area is as bad as I have ever seen."

A participant from a social service organization identified accessibility challenges noting, "There are a growing number of senior and disabled individuals that are struggling to find housing around here. They need access to transportation and that limits their options even more." Another participant from the health care field added, "Housing for people who need some kind of support for their complex illness whether it be physical, mental or related to addiction, are finding that the available stock is getting smaller and smaller." The participant added, "We can't discharge a patient because there's no housing that can address his needs. He can't qualify for any hospice programs because he's too healthy for that option but he's not healthy enough for the housing available. So how do we deal with this in a respectful and effective way in the community?"

The housing challenges were also tied together with the prevalence of homelessness in and around SLUHN service area. A public health official stated, "For the homeless population going straight into an apartment is not a healthy transition and we need better transitional programs available. To allow individuals to be integrated to a more normal population, learning how to pay bills and go grocery shopping, we need more programs like that. When you put people into an

apartment without such programs, some have died within a year due to isolation and lack of help."

According to HUD's Point-In-Time Count, which due to methodology is almost certainly an underrepresentation of the true number, there were 396 homeless individuals in Lehigh County in 2018. This number is a 10.9% increase from 2017, and a 15.1% increase from 2016. Equally troubling, while the number of sheltered individuals seems to be expanding, the number of unsheltered homeless people has also grown precipitously over the past two years, meaning even more Lehigh County residents are braving cold winter nights outdoors or in other locations unfit for human habitation like a bus station. Carbon County had 14 homeless individuals, Monroe County had 244, Northampton had 379, and Schuylkill County had 95. This count is limited because it only considers individuals in shelters, transitional housing, or sleeping in spaces defined as uninhabitable for humans. Someone who was doubled up in an overcrowded house temporarily, for example, would not be counted.

Another source of source to quantify the need for housing affordability comes from the Coordinated Entry System, a platform through which residents can be connected with social service providers. Between January and June of 2018, 862 residents of the Lehigh Valley used the CES to inquire about social services and reported spending the previous night in a homeless shelter, on the street, in a car, on a friend's couch, or in transitional housing.

The Robert Wood Johnson Foundation produces County Health Rankings on a number of important social determinants of health. One that we looked at, percentage of population with severe housing problems, is defined by having one of the following four housing conditions: over-crowding, high housing costs, lack of complete kitchen facilities, or lack of complete plumbing facilities. Throughout the state 15% of all households are considered having severe problems. Our lowest county was Schuylkill with 11% and our highest was Monroe with 22%.

Air and Water Quality

Air quality, especially in urban and industrial areas, is a significant public health concern. Poor air quality is associated with increased breathing stress for people with asthma and COPD, and increased risk of stroke or heart attacks for people dealing with heart disease[33]. One measurement of importance is the amount of ozone (O3) in the air. High levels of ozone can damage and inflame people's airways, make lungs more susceptible to infection, increase the frequency of asthma attacks, damage the lungs, and cause COPD[34]. Another dangerous air pollutant is particulate matter (PM(2.5)). PM(2.5) is microscopic pollution in the air, typically caused by exhaust from combustion, which can lacerate the lungs causing pulmonary developmental consequences, lung cancer, and heart disease[35]. Both of these are measured on the county level by the EPA and DEP, and reported out by the American Lung Association. Of the counties we service, only Lehigh, Northampton, Bucks, Monroe, and Warren counties track data. Accordingly, the county with the worst ozone count was Bucks County, having 26 days in 2017 that were considered unhealthy to sensitive populations and 2 days that were considered unhealthy to the general population. Monroe and Warren counties tied for best air quality with

[33] https://www.cdc.gov/air/air_health.htm
[34] https://www.epa.gov/ozone-pollution/health-effects-ozone-pollution
[35] https://www.lung.org/our-initiatives/healthy-air/outdoor/air-pollution/particle-pollution.html

only 4 days being unhealthy for sensitive populations. Northampton scored worst on PM(2.5) with 6 days considered unhealthy for sensitive populations. Monroe and Warren counties tied for best PM(2.5) counts with no days worse than "moderate".

Asthma rates are a related indicator when examining physical environment and air quality. 9.8% of survey respondents indicated having an asthma diagnosis. However, there are notable differences in reported asthma rates in survey respondents based on reported income levels. 18.6% of respondents in the $14,999 or less income category reported having an asthma diagnosis, as compared to 7.7% of respondents in th $60,000 or greater income category (Figure 22). As previously discussed, there are identified issues in our region with access to adequate housing, and the increased asthma rates among lower income populations illustrate a direct health outcome of those housing issues.

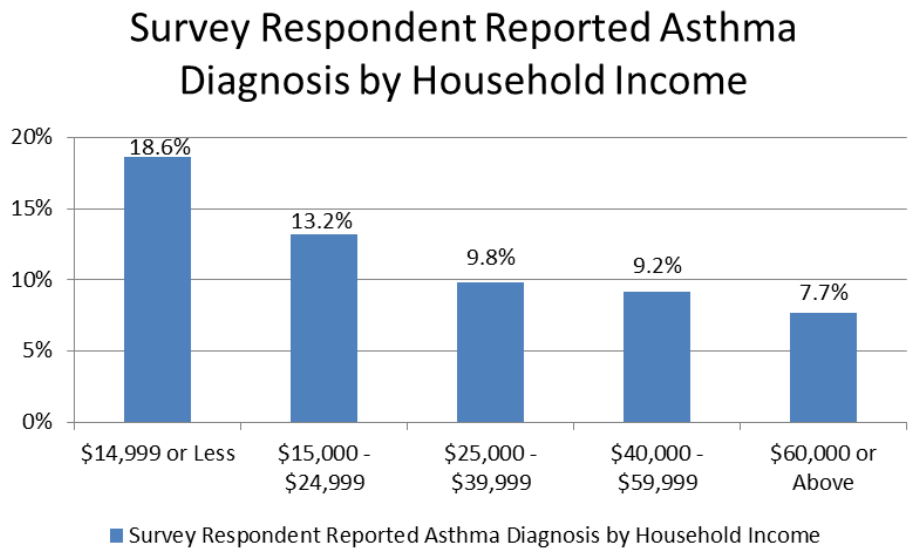


Figure 22

The water quality of our region can be broken down into two categories. One is municipal authorities, which provide and treat the water in their districts, and the other is well water. Because there is less regulation and testing of well water, it is hard to comprehensively asses the quality of all the households that rely on well water in our region. Monroe County commissioned a study of the surface water in their county to assess the quality of the water in the watershed. The results were generally positive with only a few streams not meeting healthy attaining stream status. Those citations were mostly due to flow issues, not toxic contaminants.

The municipal authorities are required to do extensive testing on the water they treat and make the data public. Excepting the Bucks County Water and Sewage Authority, no major water authority tested higher than legal limits for any of the measured contaminants in 2017. BCWSA tested over the legal limit for haloacetic acids (a byproduct of chlorination). While every other contaminant was measured under maximum levels set by government regulators, a few categories across the authorities did fall short of the Maximum Contaminant Level Goal. The distinction between the Maximum Contaminant Level (MCL) and the Maximum Contaminant Level Goal (MCLG) is that maximum levels are set according to calculated and reasonable risk. Under the MCL threshold, known risk may exist, but it is limited and reasonable. The MCLG threshold, however, is the level under which *there is no known or expected risk to health.* Every major water authority reported multiple contaminants exceeded the MCLG threshold, while remaining under the MCL. These typically, but not uniformly included radium, lead, and

turbidity (cloudiness due to runoff) levels. Vanadium and chlorate were common contaminants found in multiple authorities' water, but are unregulated by the EPA and DEP.

Clinical Care

Primary Care Providers

When medical issues arise, primary care providers (PCPs) are generally the first point of contact before a patient begins to move through a health network. PCPs are often the ones who initially identify major health problems, such as chronic disease or mental illness. When individuals lack a consistent primary care doctor, they may face disadvantages in terms of their present and future health, from delaying potential diagnoses to lacking proper health education.

To assess PCP accessibility, we can look at the "access to primary care" indicator, which denotes the ratio of primary care physicians per 100,000 individuals in the population. The lower the ratio is, the more manageable a PCP's caseload becomes. Top performers in the country who fall in the 90th%ile have a ratio of 1,030:1. Pennsylvania's ratio is 1,230:1, and New Jersey's ratio is 1,180:1[36]. Social determinants of health such as poverty, education, and unemployment may all factor into an individual's ability to acquire care, even if it is available.

Across the St. Luke's network, we observed trends between the type of insurance used by a respondent and their last PCP visit. From our 2019 community survey, we found that most respondents in the network had visited their PCP within the past year (81.8%) (Figure 23). Another 9.1% saw their PCP within the past two years, 3.7% within the last five years, and 2.6% more than five years ago. Some did not know, or did not have a PCP (2.8%).

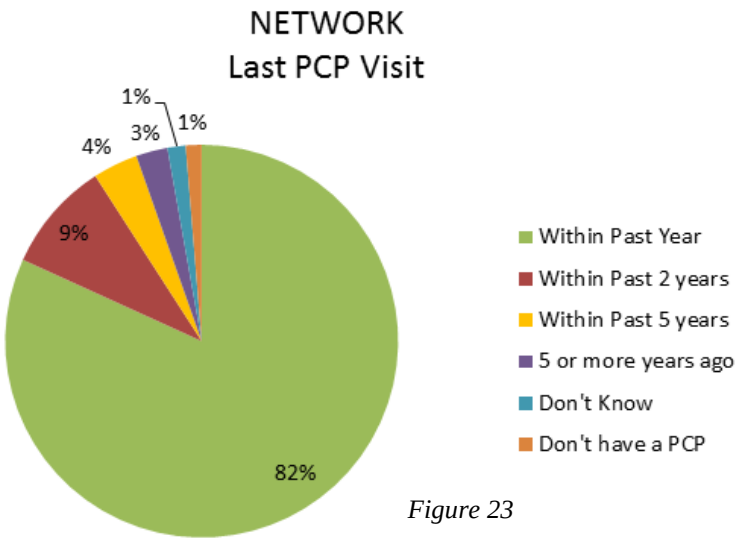


Figure 23

We then cross-referenced this information with respondents' insurance type. About 77.5% of respondents with private insurance saw their PCP within the last year, compared to 50.0% of respondents with no coverage. About 79.6% of those with Medicaid and 92.3% with Medicare saw their PCP in the last year (Figure 24).

[36] http://www.countyhealthrankings.org/app/pennsylvania/2018/overview

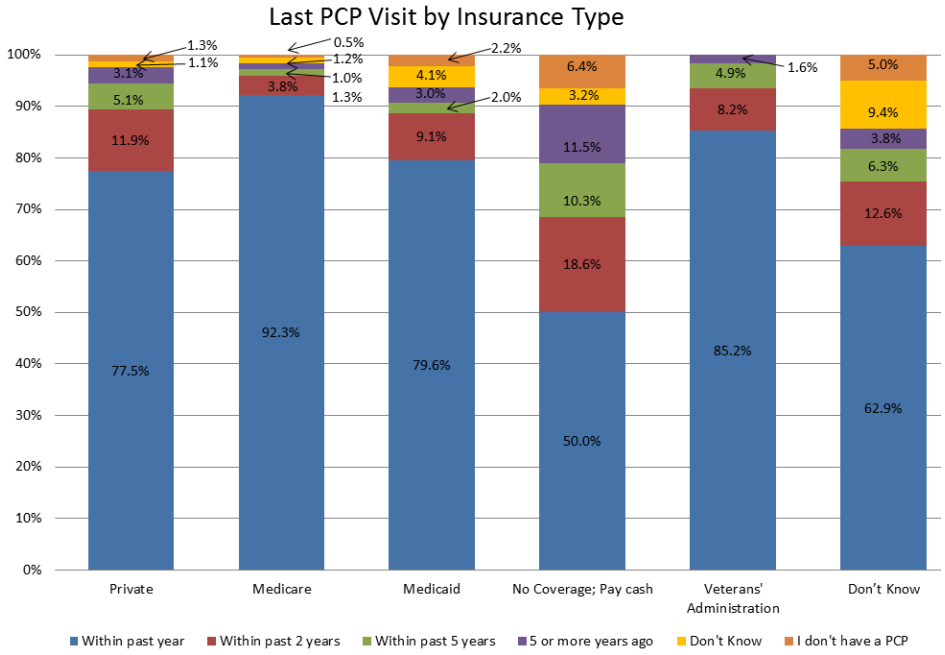


Figure 24

Emergency room (ER) utilization can also be used as an indicator to gauge lack of PCP coverage. According to community survey data, 67.6% of all respondents had not visited the ER in the past year, and only 1.4% had visited 5 or more times. It is important to note that many surveys were completed in clinics or sites where people are more likely to be connected to care, thereby underestimating the true number of folks who are not accessing care at all. However, survey data also indicate that there are differences in ER utilization based on income. Figure 25 depicts ER utilization by income category among all Network respondents, and clearly indicates that as income decreases, ER utilization increases. This inverse relationship between income and ER utilization suggests that there may be disparities in access to PCP among lower income populations in our service area community.

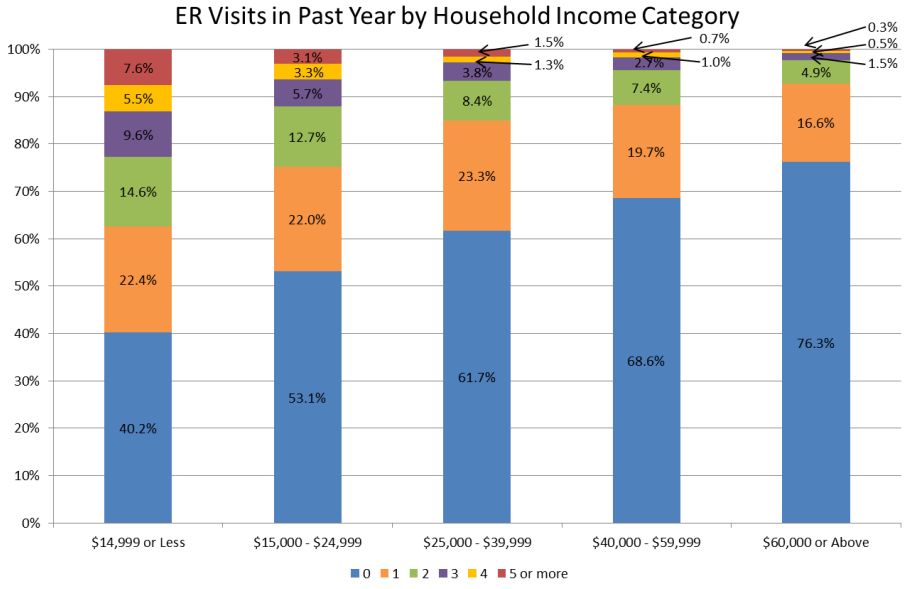


Figure 25

Dentists

Not only does oral healthcare affect dental health, but directly impacts an individual's overall health, from cardiovascular disease to one's ability to eat nutritious food. A lack of preventative and restorative dental services can result in higher risk for tooth decay, gum disease, heart disease or stroke, diabetes and some types of cancers.

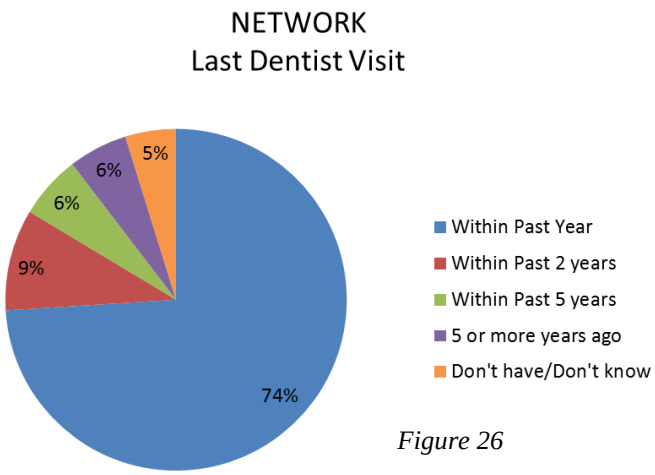


Figure 26

Measuring a community's access to dentists is one way to examine the ability for an area to receive quality dental care. Akin to the methodology for primary care providers, the "access to dentists" indicator denotes the ratio of dentists per 100,000 individuals in the population. Top performers in the country who fall in the 90th%ile have a ratio of 1,280:1. Pennsylvania's ratio is 1,480:1, and New Jersey's ratio is 1,190:1[37].

In our 2019 community survey, we assessed the last time respondents visited the dentist, as well as the type of dental insurance that they used, to gauge the limits of dentist availability and insurance coverage. As evidenced by Figure 26, most respondents in the network had seen their dentist within the past year.

To further explore this topic, we examined the type of dental insurance used by respondents network-wide, comparing data gathered from our previous surveys conducted in 2012 and 2016. The percentage of respondents using private insurance for dental care was recorded at 51.0% in 2012, increased to 62.4% in 2016, and decreased to 59.6% in 2019. Those using Medicaid moved from 6.3% in 2012, to 14% in 2016, to 8.4% in 2019. The percentage of those who had no coverage or paid cash greatly decreased, from 39.9% in 2012, to 19.3% in 2016, then increased to 31.5 % in 2019 (Figure 27). It is evident that less people are uninsured or having to pay with cash, which ultimately should help boost access to dental care.

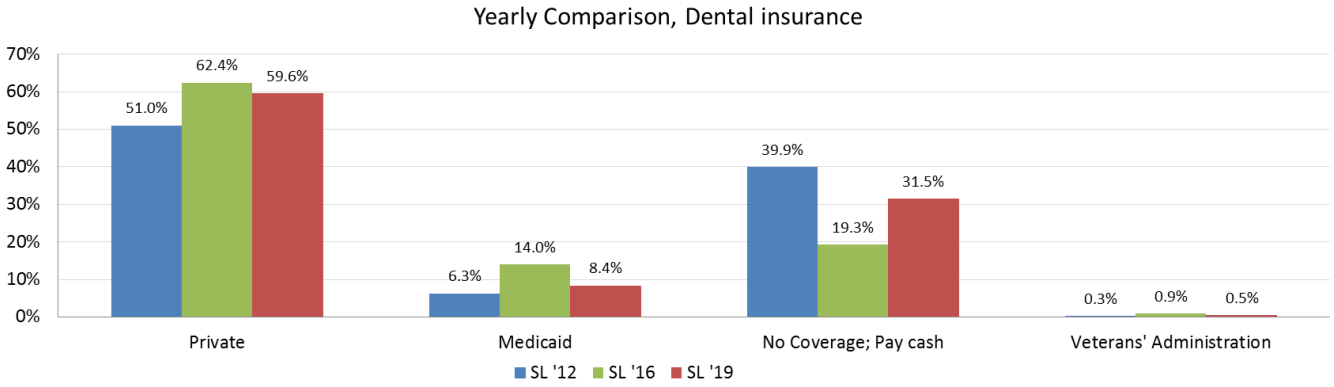


Figure 27

[37] http://www.countyhealthrankings.org/app/pennsylvania/2018/overview

Mental Health Providers

Limited access to mental health professionals is a huge barrier to improving mental health. In the same way PCP and dentist availability impacts access to care, so too does a region's accessibility to mental health providers. To assess this accessibility, we can utilize the "mental health providers" indicator, which analyzes the ratio of the county population to the number of mental health professionals. Top performers in the country who fall in the 90th percentile have a ratio of 330:1, Pennsylvania's ratio is 560:1, and New Jersey's ratio is 530:1[38].

Health Insurance

A major barrier to receiving health care is a lack of insurance – without it, services are costly and difficult to attain. Even if an individual has Medical Assistance, it can be hard to find primary care providers and dentists who accept their coverage. Small Area Health Insurance Estimates found roughly 7.9% of the adult population is uninsured[39]. According to the ACS, 13.21% of the nation's population is without health insurance; 8.9% of Pennsylvanians and 12.2% of those from New Jersey are uninsured. Statistics show Hispanic and Latino populations are roughly twice as likely to be uninsured than non-Hispanic populations[40].

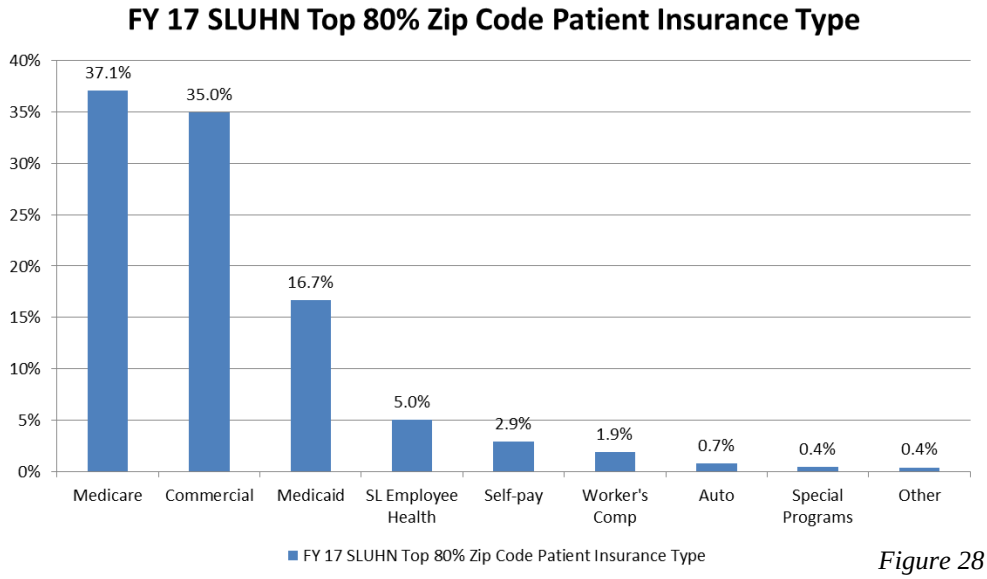


Figure 28

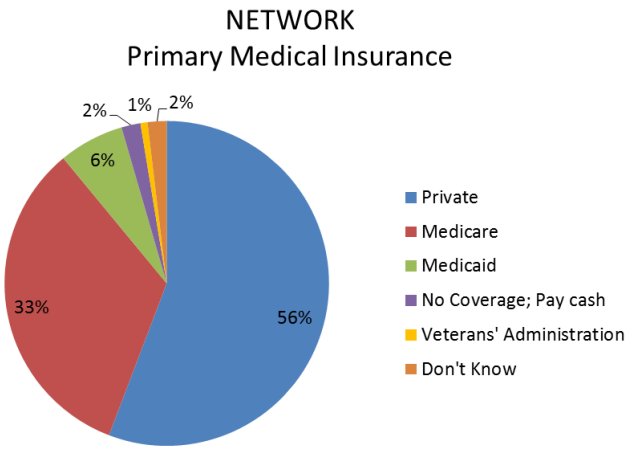


Figure 29

The cost of medical services in the United States is high, making it difficult to pay out-of-pocket for care. If children are not covered by insurance, they are especially likely to have restricted access to healthcare services. Our patients utilize a variety of methods of payment to cover their healthcare needs. According to our internal reviews, the highest percentages of our patients use medical assistance plans or Medicare to cover their healthcare costs (Figure 28). This distribution

[38] http://www.countyhealthrankings.org/app/pennsylvania/2018/overview
[39] https://www.census.gov/
[40] https://www.census.gov/

of insurance plans mirrors the pattern seen throughout the network considering all types of care, with Medicare, Commercial (Private) and Medicaid as the three most popular forms of insurance used. Additionally, charity care is included in the self-pay category, which represents 2.9% of the coverage methods our patients utilize, which is lower than the 5.45% seen in the 2016 CHNA. A total of 19.6% of patients utilized Medicaid or were uninsured, which is lower than the 24.7% seen in the 2016 CHNA. Figure 29 looks at the primary insurance types used by survey respondents. Roughly 55.8% of respondents from the service area used private insurance, whereas 1.9% of respondents were uninsured and paid out-of-pocket for their medical expenses.

A lack of insurance or comprehensive coverage affects a patient's willingness to pursue getting medical treatment for their ailments. Our 2019 community survey clearly illustrated this: the top reason for postponing care was that their share of the cost was too high (12.3%), they didn't think the problem was serious (7.7%) as the second top reason, and insurance didn't cover what they needed (7.6%) as the third (Figure 30). These findings echo what was shown in the 2012 and 2016 surveys, where the top three reasons for missed medical appointments among survey respondents were: they didn't think the problem was serious, their share of the cost was too high, and they didn't have health insurance. Access to quality health insurance is a social determinant that alters one's ability to receive care in a timely and efficient manner.

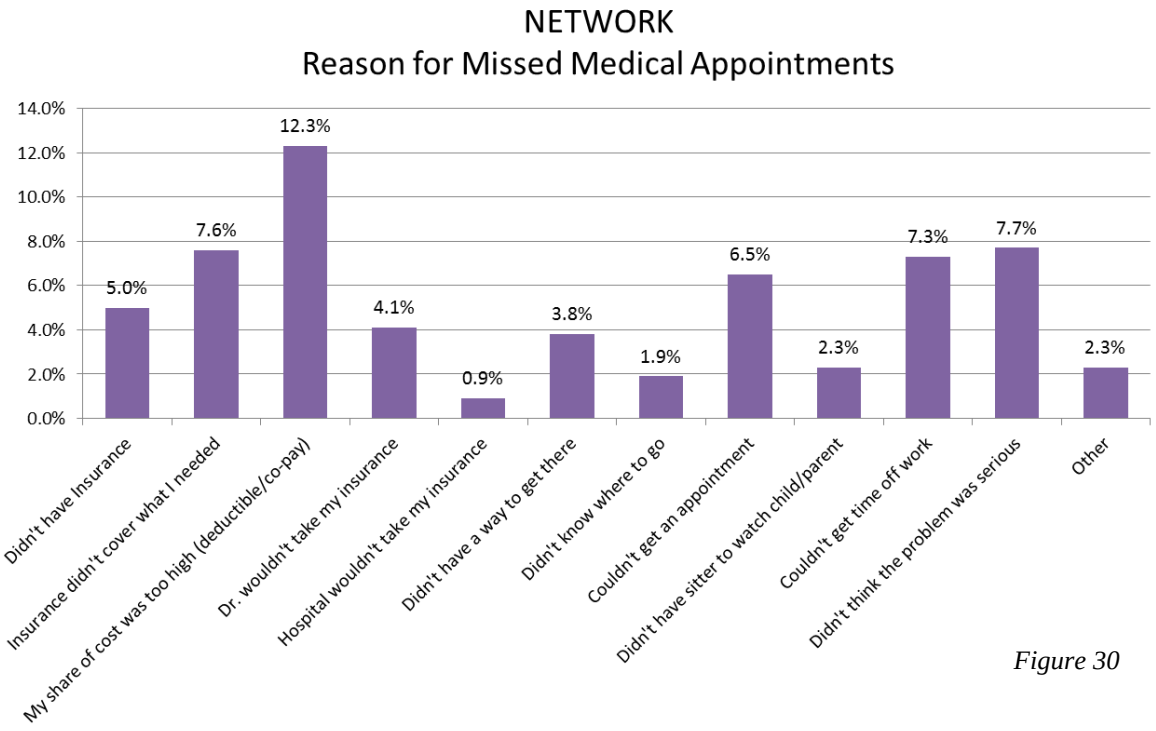


Figure 30

Health Behaviors

Access to Healthy Food and Transit

The Food Environment Index from County Health Rankings ranks factors that contribute to a healthy food environment, from 0 being the worst to 10 being the best. Pennsylvania has an index of 8.6, New Jersey has an index of 9.2, and U.S. top performers have an index of 8.6[41]. Access to nutritious food directly impacts one's ability to maintain a healthy lifestyle and prevent chronic disease. Nutritious foods are often less available at convenience stores than they are at full-service groceries and supermarkets[42]. By examining a community's access to supermarkets, both in terms of proximity and ease of commute, we can map out the availability of healthy foods in a service area. To explore some of the most under-resourced neighborhoods we serve, we examined the availability of supermarkets in the ten lowest income census-tracts that send patients to our hospitals. We found that the average rate of residents in these areas living more than half a mile from a supermarket *and* without a vehicle is 13.2% across the ten tracts. This means that they are left to either shop at corner-stores - which tend to provide less healthy options[43] -, navigate the public transit system, or walk over a mile round-trip with their purchases in-tow. While this 13.2% represents an average of the ten lowest income census tracts, there are neighborhoods in which up to 47% of residents live more than half a mile and do not have a vehicle. This is considerably higher than both the Pennsylvania (5.4%) and US (4.2%) averages (Figure 31).

SLUHN Campus	Lowest Income Census Tracts (lowest first)	Median Family Income	**Share of tract housing units that are without vehicle and beyond 1/2 mile from supermarket (2015)**	**Percentage of Tract Households Using SNAP from 2012-2016 ACS**
SLUHN Entire Region	LC 10; Center City Allentown	$19,318	0.7%	58.50%
	NC 105; Northeast Bethlehem	$22, 008	9.3%	56.20%
	LC 97; Center City Allentown	$23,382	47.3%	56.40%
	LC 8; Center City Allentown	$23,566	0.0%	49.30%
	LC 16; Center City Allentown	$24,116	0.0%	52.70%
	NC 112; South Side Bethlehem	$27,548	20.5%	48.80%
	LC 18; Center City Allentown	$29,100	23.8%	47.60%
	NC 111; South Side Bethlehem	$29,375	7.7%	27.00%
	LC 96; East Side Allentown	$29,620	20.0%	39.20%
	LC 20; Center City Allentown	$29,683	2.2%	31.90%
	AVG of 10 Lowest Income Tract	**$26,190**	**13.2%**	**46.76%**
National		$55,755	4.2%	13.20%
PA		$55,702	5.4%	12.90%

Figure 31

[41] http://www.countyhealthrankings.org/app/pennsylvania/2018/overview
[42] http://thefoodtrust.org/uploads/media_items/grocerygap.original.pdf
[43] https://www.cdc.gov/nccdphp/dnpao/state-local-programs/pdf/Healthier-Food-Retail-guide-chapter-3.pdf

These ten lowest income census tracts also rely heavily on the Supplemental Nutrition Assistance Program (SNAP). Administered by the USDA, SNAP is meant to bolster families' resources by providing additional funding for food purchases each month. Eligible households fall below 160% the federal poverty level. For a family of four in Pennsylvania this means a maximum gross monthly income of $3,280 – or $39,360 pre-tax annually[44]. The average monthly benefit a resident of Pennsylvania receives is $122.02[45]. For lower income families this benefit is the difference between eating and going without food. Of our ten lowest income census tracts, four of them have SNAP utilization rates of over half the population. The ten tracts together average 46.7% usage, with our lowest income tract having 58.5% of residents on SNAP. This is much higher than the 12.9% usage rate in Pennsylvania and 13.2% nationally (Figure 31).

We found that, in general, the census tracts with the highest SNAP usage rates are the same ones that have high rates of residents living over half a mile from a grocery store and lacking a vehicle. For example, Lehigh County Census Tract 97, located in center city Allentown, has 47.3% of residents living beyond half a mile from a grocery store without a vehicle, and a 56.4% SNAP utilization rate. This area would be ideal for targeted interventions. Because the median family income, of which half of all families make less than, is $1,718 *below* the federal poverty level for a family of four, and SNAP eligibility extends to 130% that threshold, there is likely a significant gap between all the families that qualify for SNAP and those that actually receive the benefit. SNAP enrollment interventions in this census tract could help mitigate this disparity and help families who are entitled to this benefit actual receive it. Another intervention would be expanding the healthy options available at corner stores like Melo Deli & Grocery, located in the middle of the census tract. This area is far removed from grocery stores, and thus many residents without a car rely on these types of stores to purchase their food. Partnering with these stores through interventions like the Healthy Corner Store Initiative, which works to ensure corner stores are stocking and selling healthy foods, could have a demonstrable impact on the quality of food to which residents in this area have access[46]. A third intervention, most effectively implemented in conjunction with the former two, would be to enlist stores in this census tract to offer the Food Insecurity Nutrition Incentive (FINI), a program that incentivizes the purchase of healthy produce by giving a dollar-for-dollar match on produce purchased using SNAP. All three of these interventions would increase the access to healthy food in this census tract that is currently lacking it.

Furthermore, Figure 32 maps the regions of the St. Luke's service area and designates regions considered to be "food deserts." Areas shaded in red denote low-income census tracts where a large portion of the residents live one mile away (for urban areas) or 10 miles away (for rural areas) from a grocery store[47]. These food deserts are another ideal place to implement strategic interventions to increase the availability of healthy food. Of our ten lowest income census tracts, only Lehigh County 96 is located in a food desert as defined by 1 mile from a grocery store. When that is narrowed to half a mile from a grocery store – another metric used by the USDA to show lack of access – six of our ten census tracts become food deserts.

[44] http://www.dhs.pa.gov/citizens/supplementalnutritionassistanceprogram/snapincomelimits/index.htm
[45] https://www.kff.org/other/state-indicator/avg-monthly-snap-benefits/
[46] http://thefoodtrust.org/uploads/media_items/healthy-corner-store-overview.original.pdf
[47] https://www.ers.usda.gov/data-products/food-access-research-atlas/go-to-the-atlas.aspx

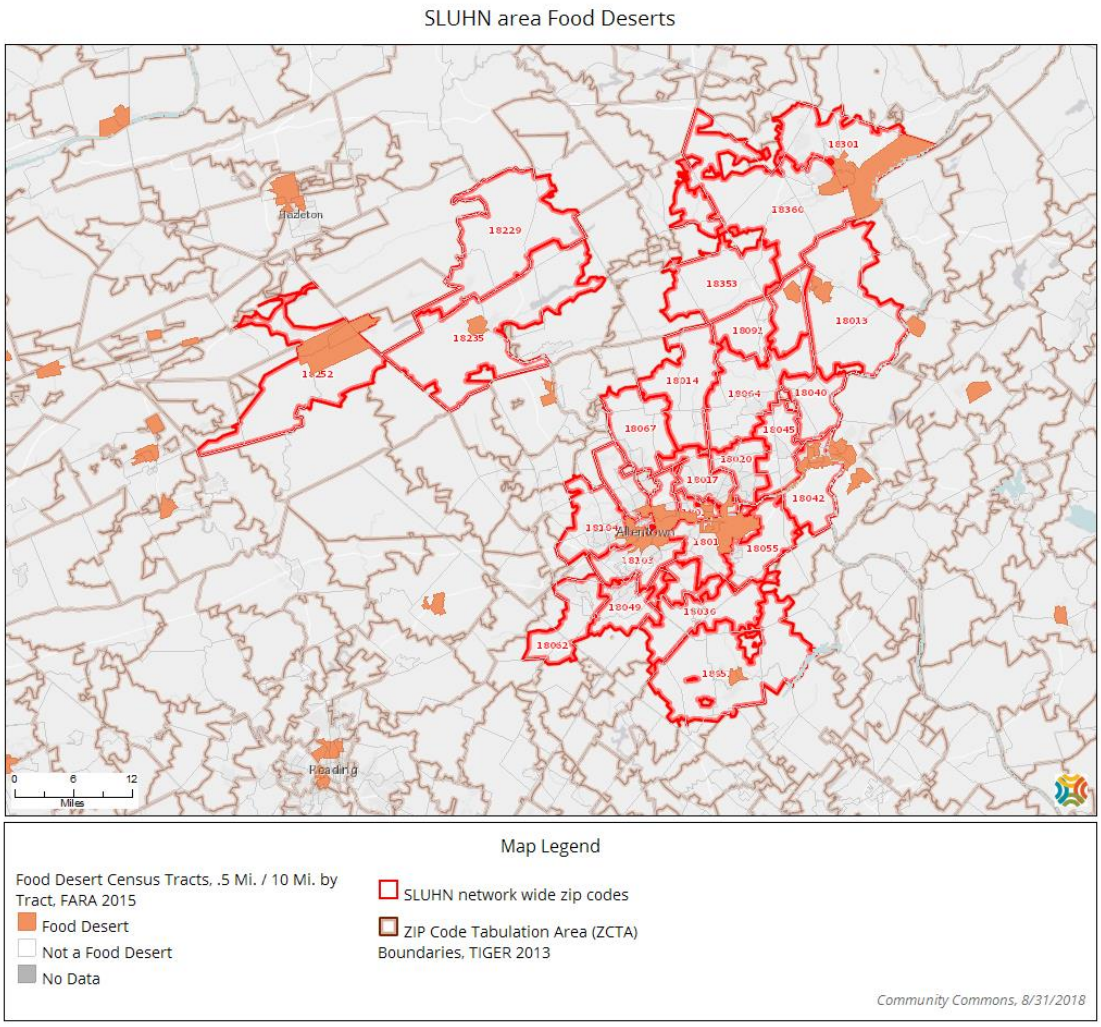


Figure 32

If a region is "food insecure," its residents have limited or inconsistent access to healthy food options. Identifying food insecure populations highlights an area's inability to provide all necessities for their families; therefore, individuals may have to resort to buying fast food instead of healthy options, such as fruits and vegetables. According to Feeding America, 13% of the nation's population is food insecure. In Lehigh County, 9.5% are food insecure, and 12.5% are food insecure in the state[48]. And according to the CDC's 2018 State Indicator Report on Fruits and Vegetables, the state of Pennsylvania has 2.4 farmers markets per 100,000 residents.

Figure 33 depicts the neighborhoods of SLUHN's service area that have limited food access. The darker shading of brown represents a higher percentage of low-income residents living beyond the USDA's distance thresholds for food accessibility. As evident by the figure, many neighborhoods in the area have over 50% of residents with limited access.

[48] http://www.feedingamerica.org/research/map-the-meal-gap/2016/2016-map-the-meal-gap-all-modules.pdf

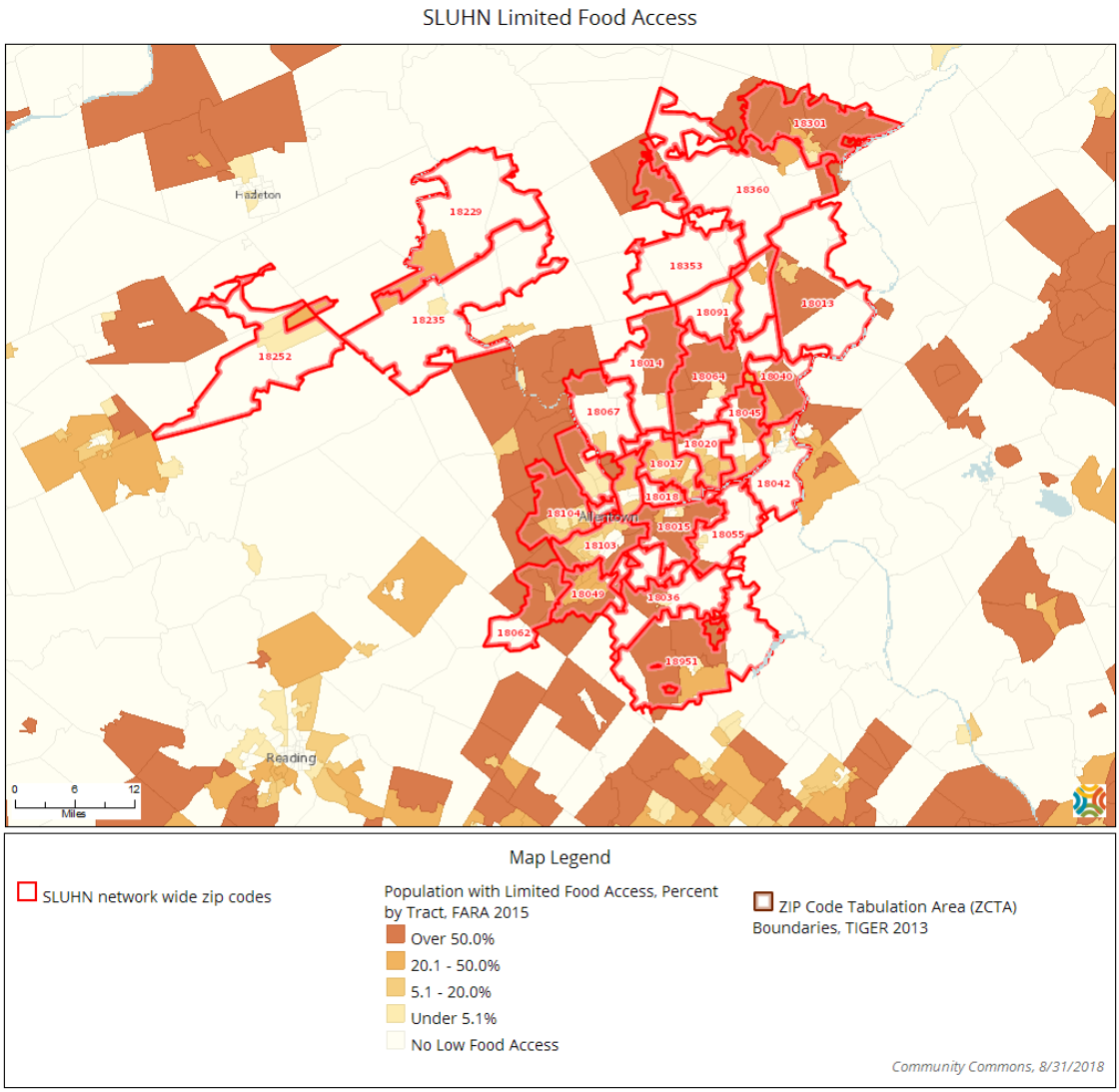


Figure 33

Key informants reiterated these findings, describing how few healthy food options or grocery stores are accessible. Community members are then forced to rely on unhealthy options, such as fast food. These insufficiencies create a window for developing chronic diseases, such as diabetes, obesity or heart disease. A recent community forum also echoed these sentiments. Hunger and food insecurity challenges were prominent in the forum discussion. A participant that works for a local non-profit indicated that, "Demand at food banks is very strong and there are many in [the Lehigh Valley] that are struggling daily with food insecurity." Another participant from a community organization noted, "Hunger issues are persistent and the need for nutrition programs for kids this summer are high."

If grocery stores are few and far between, residents need reliable transportation to access these food sources. Across the nation, roughly 9% of residents do not have cars, compared to 11.2% in

Pennsylvania and 11.6 in New Jersey[49]. If they live in areas with low food access, it becomes nearly impossible to obtain healthy food in an environment with so few grocery stores.

Concerns with transportation were also among the most commonly identified factors that are undermining quality of life in the area. While participants stated that existing public transportation entities such as the Lehigh and Northampton Transportation Authority (LANTA) provide core bus service that meets the needs of a number of residents, the coverage of routes and frequency of services are limited and not sufficiently meeting the needs of many residents. A representative of a regional social services organization noted, "It can take up to a couple hours to get somewhere by using the public transportation system and thus many residents simply can't do the things that require access to a car." Another attendee that works in the area of social services reported, "Transportation challenges are exasperating all of the other challenges we are trying to solve; there are food pantries waiting to be utilized but because of bus transportation issues such as late arrivals, the food pantry may be closed, and these people then cannot utilize these services provided for them." A forum attendee that works in local government added that the "local transportation infrastructure needs significant attention and that the growing number of trucks from warehouses is straining the system."

Public transit like LANTA is crucial for many of our low income neighborhoods. Of the ten lowest income census tracts that we service, 32.3% of all households do not have a car, according to the USDA's FARA. Nearly one in three households in these neighborhoods need to rely on the public transportation system, ridesharing, or walking to meet daily needs like food.

Furthermore, the County Health Rankings report the percentage of workers who commute alone over 30 mins a day. This is an important metric because prolonged commutes are associated with higher blood pressure, BMI, and physical inactivity[50]. The state's average is 36%. Our lowest county is Lehigh at 30% and our highest is Carbon at 51%.

Food insecurity and access to grocery stores likely limit an individual's ability to meet the United States Department of Agriculture (USDA) recommendations for daily fruit and vegetable consumption. The USDA advises five or more servings of fruits and vegetables per day[51]. In the SLUHN region, only 9.6% of respondents were consuming the recommended five or more servings of fruits and vegetables a day. The largest number of respondents reported consuming one or two servings in a day (49.2%), followed by 33.8% consuming three to four servings (Figure 34).

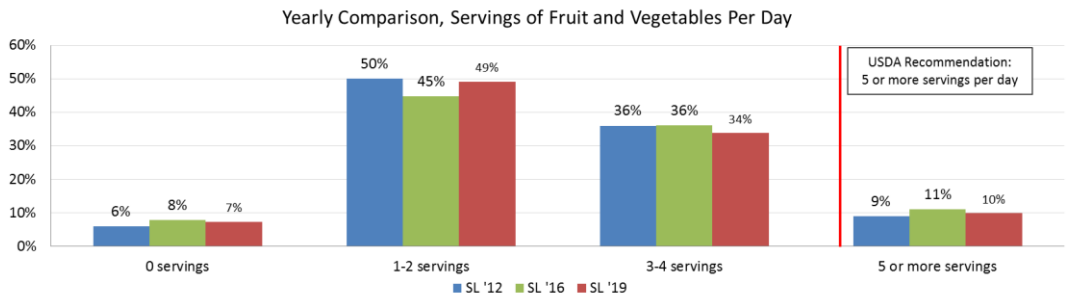


Figure 34

[49] https://www.census.gov/

[50] https://www.ajpmonline.org/article/S0749-3797%2812%2900167-5/abstract

[51] https://www.choosemyplate.gov/

Furthermore, when looking at fruit and vegetable consumption by income category, 2019 CHNA survey data show that fruit and vegetable consumption increases with income. According to survey respondents, approximately 15% of respondents in the $14,999 or less category and 13% of those in the $15,000 to $24,999 category reported consuming no servings of fruits and vegetables, compared to 5% of respondents in the $60,000 or greater category (Figure 35).

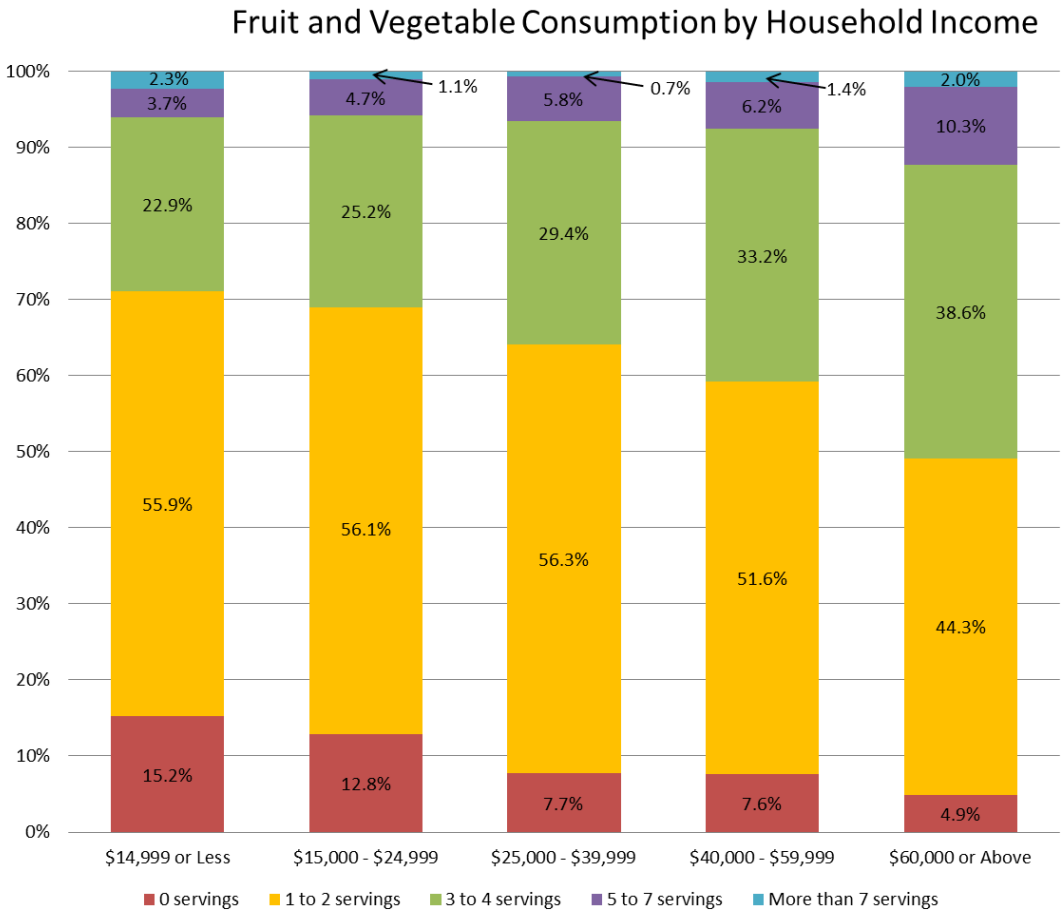


Figure 35

Free or Reduced Lunch

A consistent diet high in nutrients is pivotal to personal health, especially during childhood. For children living at or below the poverty level, access to healthy foods is more difficult. The National School Lunch Program (NSLP) operates in public and private schools to provide free or reduced price lunches to children in poverty. Looking at populations eligible for this program may indicate children who are vulnerable to poor nutrition and other health-related issues. About 41.6% of children in the network are eligible for free or reduced price lunch, compared to 52.6% of the nation, 48.2% of Pennsylvania, and 37.6% of New Jersey[52]. These numbers reveal a high

[52] https://nces.ed.gov/

percentage of children who may not be able to receive the nutritional meals they need at home, and may also indicate children who are vulnerable to health issues stemming from malnutrition.

Days of Exercise per Week

Lack of physical activity among community members is a major barrier in promoting healthy lifestyles and preventing chronic disease. Consistent exercise has been shown to improve both physical and mental health, and is vital to decreasing rates of obesity and cardiovascular problems. Healthy People 2020 advocates for 150 minutes of exercise per week for adults – an average of 30 minutes per day for five days a week. County Health Rankings reports 24% of Pennsylvania, 23% of New Jersey, and 20% of the nation have no leisure time physical activity[53].

From our 2019 community survey data, we found 27.9% of respondents reported no days of exercise per week in the service area. 39.6% of survey respondents reported exercising more than three days per week (including three to four days and five or more days) (Figure 36). These data show that since there are few people who are exercising consistently, a higher percentage are not living an active lifestyle or participating in enough physical activity to stay healthy. Our survey data also indicate only 14.7% of respondents network-wide are exercising at least five times per week and meet the Healthy People 2020 recommendation.

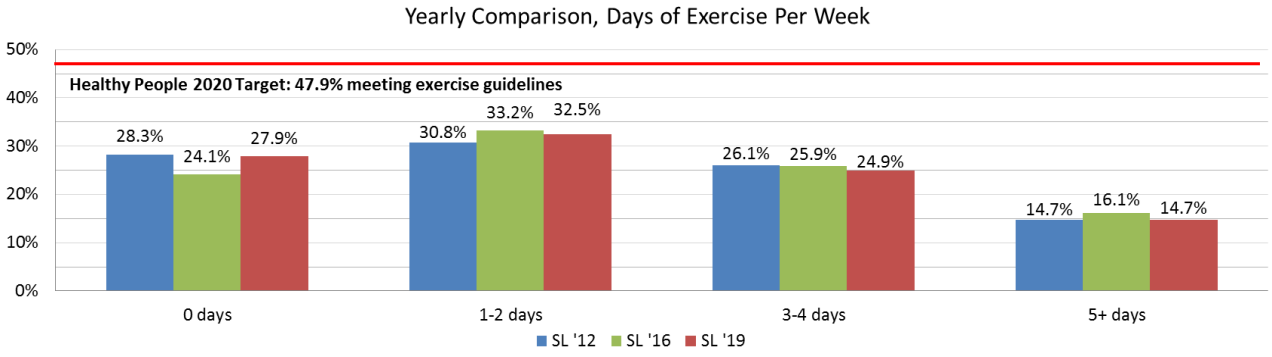


Figure 36

Access to Exercise Opportunities

In order to maintain an active lifestyle, a region must provide ample access to exercise opportunities within the built environment. One of the indicators from County Health Rankings extracts the percentage of individuals in a county who live reasonably close to a location which can be used for physical activity, such as outdoor parks or recreational facilities. According to 2018 data, 68% of Pennsylvania, 95% of New Jersey, and 91% of the nation have access to exercise opportunities[54].

Obesity

Obesity is a prevalent health issue in our community in particular. High poverty levels, physical inactivity and limited access to healthy foods result in increased levels of obesity. If an

[53] http://www.countyhealthrankings.org/app/pennsylvania/2018/overview
[54] http://www.countyhealthrankings.org/app/pennsylvania/2018/overview

individual is obese, they are at a higher risk of developing diabetes, high blood pressure, heart disease, stroke, some cancers, and breathing problems.

With 51 being the least obese state and one being the most obese, Pennsylvania is ranked at 25 and New Jersey at 36[55]. Recent data show 30% of Pennsylvania residents, 26% of New Jersey residents, and 26% of the nation are obese, compared to 42% of the network[56]. In calculating survey respondents' BMI using their weight and height, we found 41.7% of respondents were obese (Figure 37), and an additional 32.7% were overweight.

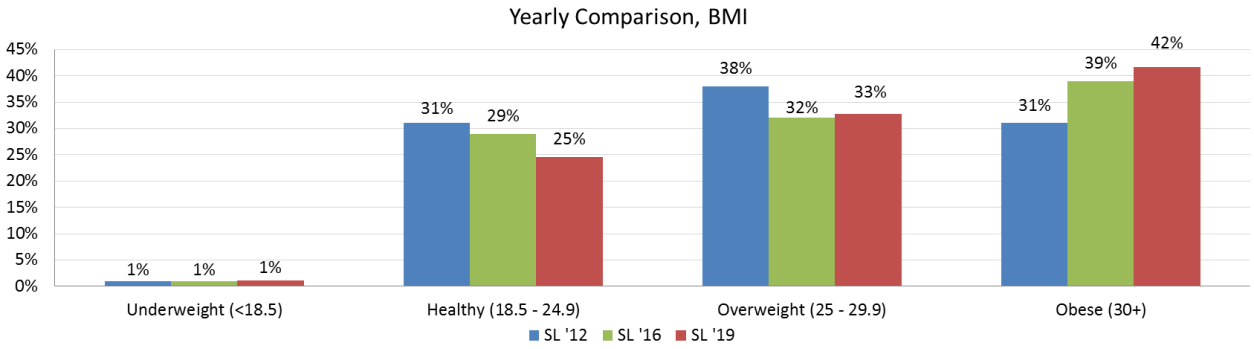


Figure 37

Results from our 2019 community survey identified demographic characteristics network-wide that were correlated with a respondent's BMI. When looking at the relationship between income and BMI, the income category with the highest percentage of respondents who were morbidly obese (having a BMI over 40) earned $15,000 to $24,999 per year (13.0%). Conversely, 6.9% respondents who reported having an annual income of $60,000 or greater were morbidly obese. The income range with the highest percentage of obesity was those earning less than $25,000 at 47.8%, while the lowest percentage of obesity was 37.9% for those making $60,000 or more annually (Figure 38). These trends suggest a link between BMI and income level, giving example to how social determinants of health directly affect health outcomes. This connection emphasizes the importance of taking social determinants of health into consideration when making action plans to improve community health. Making connections between social determinants of health and obesity is necessary when developing initiatives to reduce rates of obesity in the region.

[55] https://www.tfah.org/reports/

[56] http://www.countyhealthrankings.org/app/pennsylvania/2018/overview

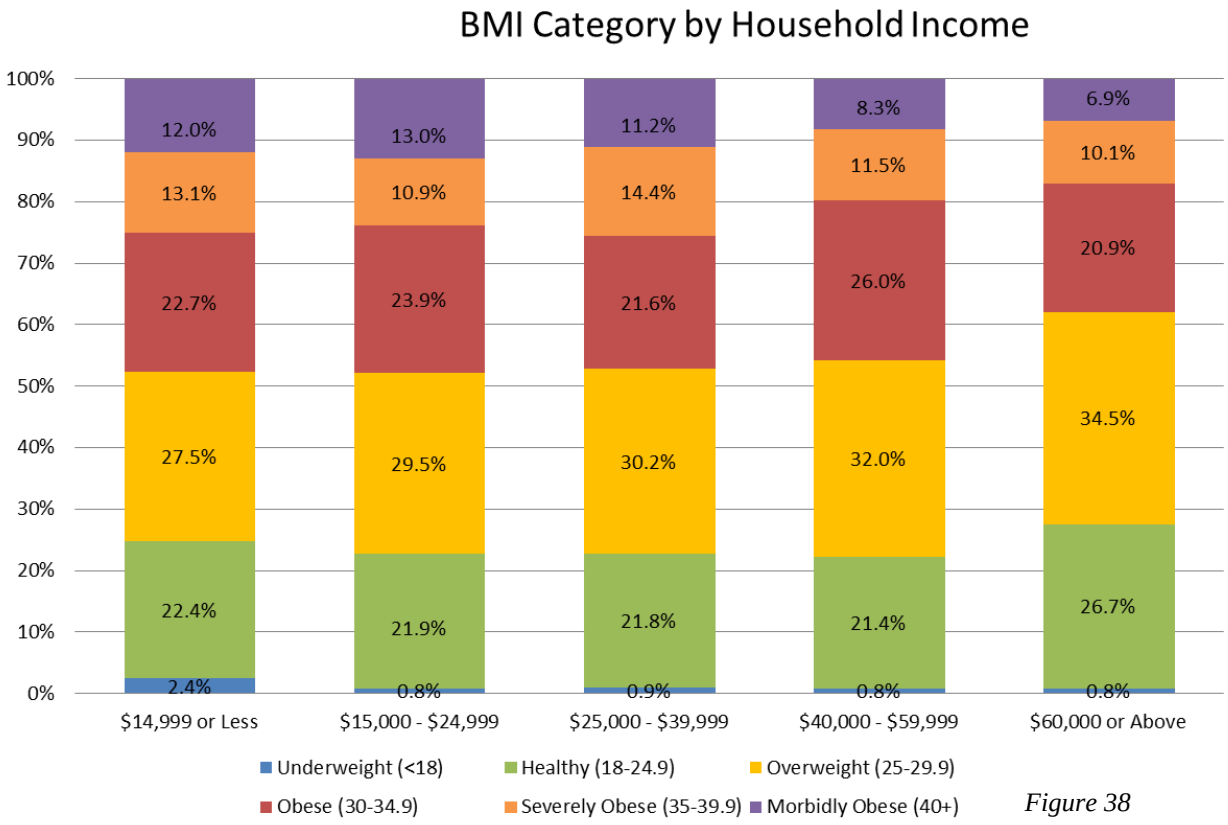


Figure 38

Diabetes

Diabetes lies tantamount to obesity, and has become a prevalent health concern in our community. While it has its own set of detriments, having diabetes can also contribute to health issues such as blindness, kidney disease, foot problems, and heart disease. There are treatments for type II diabetes – such as better diet, exercise and medications. As per the National Diabetes Statistics Report (2017), an estimated 30.3 million people in the United States have diabetes, with 23.8% of those individuals being undiagnosed. What's more, a staggering 33.9% of the adult U.S. population has prediabetes.

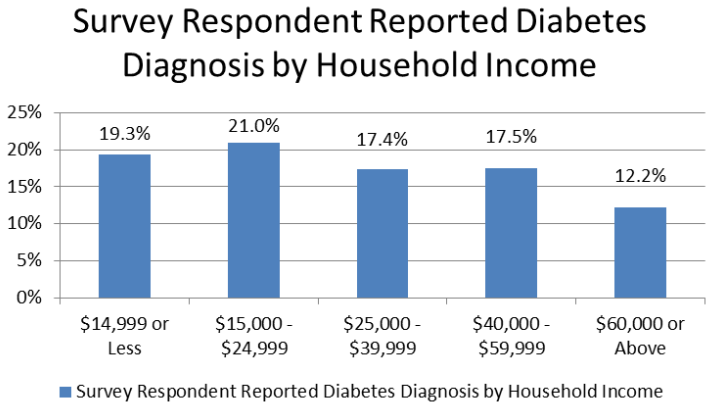


Figure 39

In examining rates of obesity, Trust for America's Health discovered rates of diabetes in the nation almost doubled since the beginning of its studies, moving from 6.1% in 1990 to 11.3% in 2016. At its current pace, however, there may be a projected 1,731,248 cases of diabetes nationwide by 2030 – an increase of 34%[57].

Additionally, 2019 survey results indicated that there is an inverse relationship between diabetes prevalence and annual income, as evidenced by the fact that respondents in the $14,999

[57] https://www.tfah.org/reports/

or less (19.3%) and $15,000 to $24,999 (21.0%) income categories had higher reported diabetes diagnosis rates than those in the $60,000 or above income category (12.2%) (Figure 39). Similar to BMI, it is important to keep this relationship between social determinants of health and disease status in mind when planning interventions to target diabetes in the community.

Tobacco Usage

Smoking contributes to illnesses such as cardiovascular disease, cancers, and breathing conditions. In order to promote healthy living, cutting down on tobacco usage within the community is a necessity. According to County Health Rankings, 14% of adult U.S. citizens smoke, compared to the 18% in Pennsylvania and 14% in New Jersey[58].

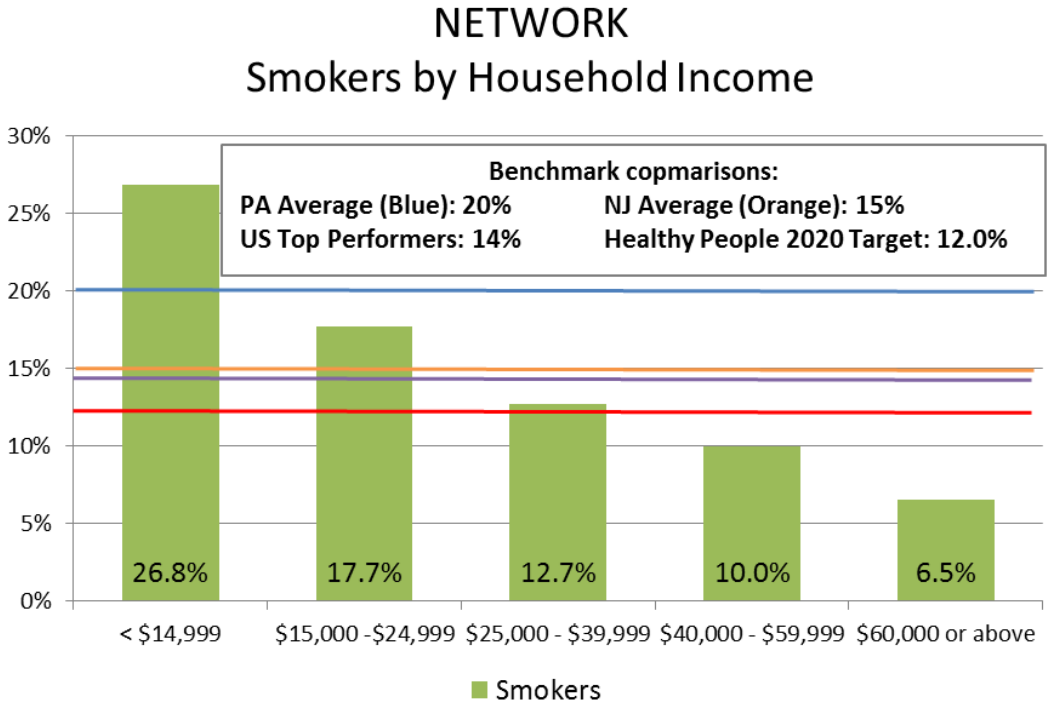


Figure 41

For the SLUHN service area, 10.9% of adults over the age of 18 reported to our community survey that they currently smoke (Figure 40). This is lower than the Healthy People 2020 goal of having only 12% of adults smoking by 2020, however efforts at improvement should continue to be made, especially among our vulnerable populations. Survey responses indicated that smoking rates are inversely related to annual income level. 26.8% of respondents reporting incomes of $14,999 or less reported smoking, compared to 6.5% of those reporting incomes of $60,000 or above (Figure 41).

[58] http://www.countyhealthrankings.org/app/pennsylvania/2018/overview

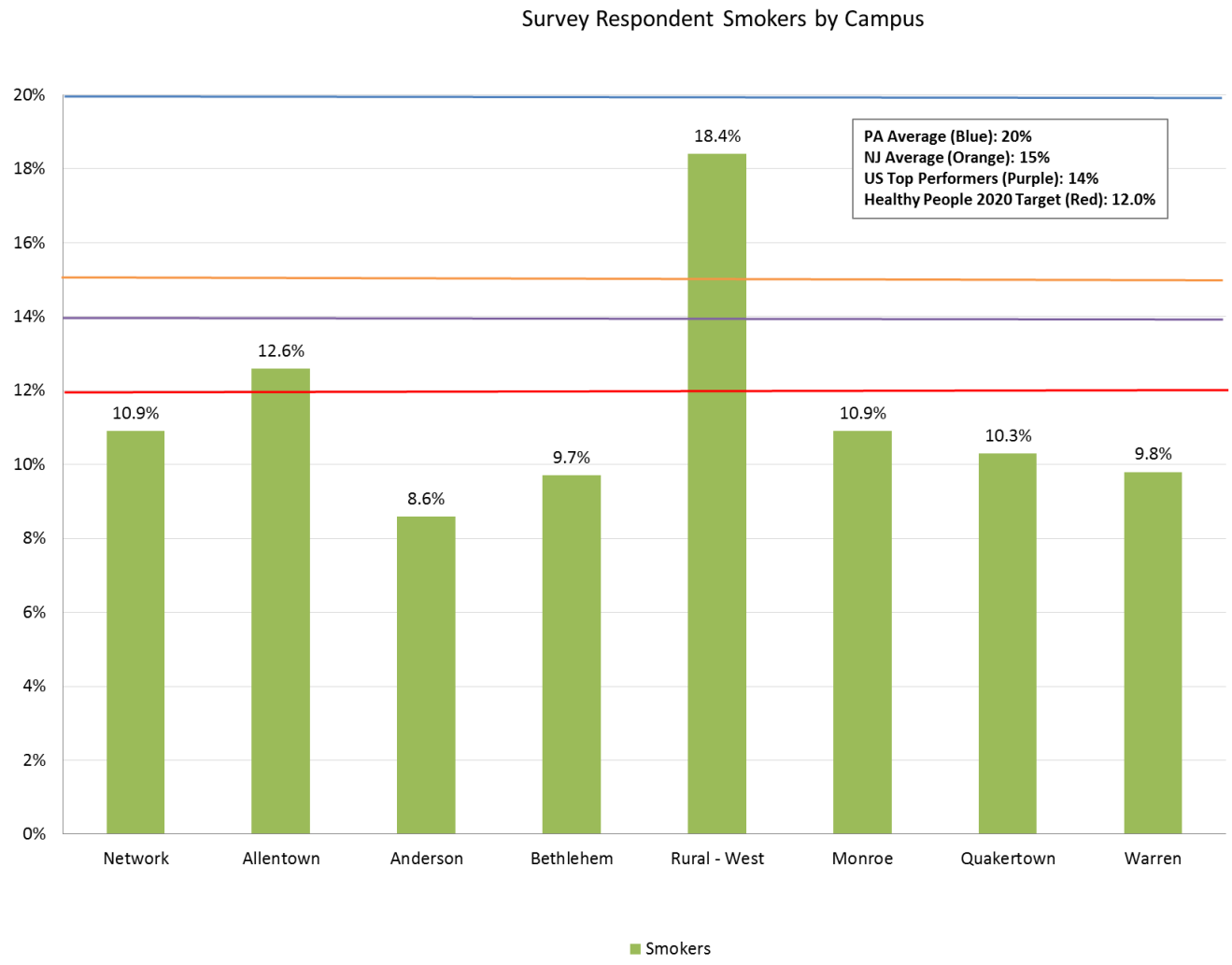


Figure 40

According to the Pennsylvania LGBT Health Needs Assessment, 30.6% of survey respondents reported being current smokers, which is significantly higher than the 18% average in Pennsylvania, and 10.9% smoking rate reported in our CHNA survey[59]. Additionally, Figure 42 compares the reported use of different tobacco products among LGBT survey respondents and SLUHN CHNA survey respondents.

[59] http://www.phmcresearch.org/work/data-and-publications

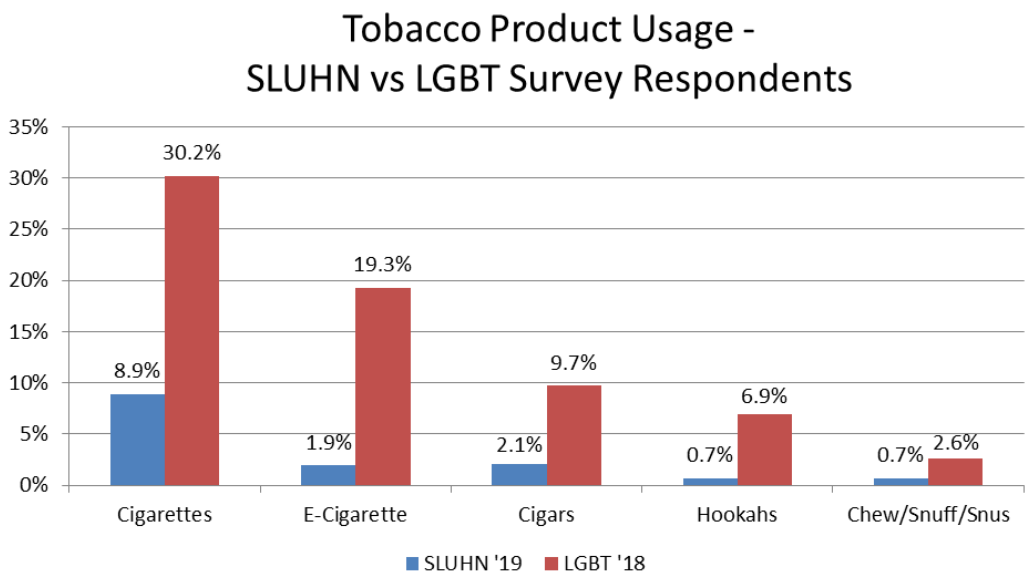


Figure 42

Substance Abuse

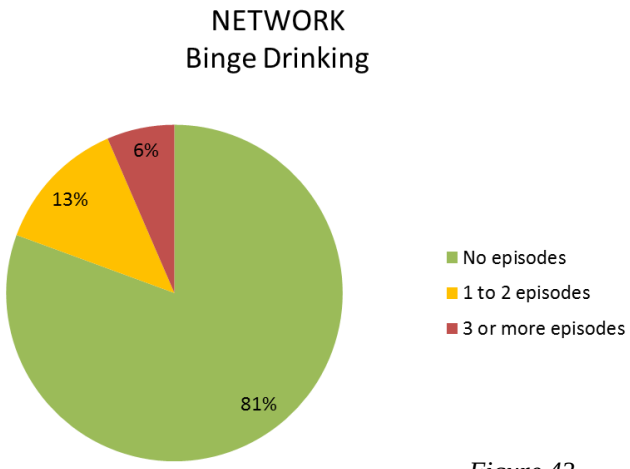


Figure 43

It is imperative to discuss excessive drinking and substance abuse disorders, since they are recognized as comorbidities with mental health issues. In many cases, mental health issues go undetected because alcoholism and substance abuse can overshadow mental illness. According to County Health Rankings, 21% in Pennsylvania, 17% in New Jersey, and 13% nationally engage in excessive or binge drinking (2018). As shown in our 2019 community survey, 80.6% of service area respondents reported no episodes of binge drinking in the past month. However, 19.4% reported having one or more episodes of binge drinking, and 6.5% had three or more episodes (Figure 43). When looking at binge drinking by sex, 83.3% of female respondents reported no episodes of binge drinking, compared to 76.5% of male respondents.

Also, in 2018 Muhlenberg College Institute of Public Opinion published their findings on substance abuse in the Lehigh Valley. The report found higher levels of disparities in those misusing or abusing opiates or heroin, compared to those using other substances such as alcohol and marijuana. About 74% of employers reported having a major or minor concern about opioid abuse, and 70% were concerned about heroin abuse. In terms of misuse and abuse at work, 28% of employers reported employee use of drugs at work, with 21% reporting employees using painkillers. About 15% of employers reported employee absenteeism due to use, and 12% were impaired in their work performance. The most popular approach to employees abusing or misusing alcohol or marijuana was to allow the employee to return to work after treatment

(40%), whereas 34% of employers choose to dismiss employees who abuse or misuse heroin. Over one-fourth of employers (28%) indicated employee abuse and misuse of drugs makes it hard for their organizations to hire and retain qualified employees[60]. Please see addendum for additional data related to substance abuse.

*Please see the Substance Abuse Addendum included at the end of this assessment.

Child and Adolescent Health

Health behaviors in childhood and adolescent years tend to carry over into adulthood. If we can identify what risky health behaviors are prevalent among youths, we can target these behaviors and determine how to reduce their frequency. The Pennsylvania Youth Survey (PAYS) looks at youth attitudes, knowledge and behavior regarding drugs and alcohol, as well as mental health. The data are county level and exclusive to Pennsylvania. We looked at Bucks, Carbon, Schuylkill, Monroe, Northampton, and Lehigh counties because a substantial number of our clients live in these counties. We then used data from local health and community development organizations to supplement Warren County data.

Alcohol, the most commonly used substance by the students surveyed, was consumed most frequently in Bucks County and least frequently in Monroe County. The table below shows student's answers from Bucks County. The students answered that alcohol was used at least three times in the past month by 20.8% of all 12th graders, 9.6% of all 10th graders, and 1.7% of all 8th graders (Figure 44). Early exposure to alcohol is one of the strongest known links to alcohol abuse later in life[61]. While there still remains debate over the physiological effects of alcohol on adolescent development, there is some theoretical and empirical evidence that suggests that alcohol usage can have detrimental impacts on neurologic and endocrine development[62]. There is, however, stronger evidence to conclude that alcohol usage at younger ages is associated with poorer performance in school and riskier sexual behavior[63]. When asked how they got alcohol in the past year the three most common responses were: 1) Sibling, friend, or friend's sibling, 2) Gave someone older money to buy it, 3) Parents or friend's parents.

Bucks County - How many times in the past 30 days have you had beer, wine, or hard liquor?							
Grade	0 Times	1 - 2 Times	3 - 5 Times	6 - 9 Times	10 - 19 Times	20 - 39 Times	40 + Times
6th	97.10%	2.50%	0.20%	0.10%	0.10%	0.00%	0.00%
8th	91.70%	6.80%	0.90%	0.40%	0.20%	0.10%	0.10%
10th	74.90%	15.50%	5.70%	2.40%	0.90%	0.30%	0.30%
12th	58.30%	20.90%	11.70%	5.50%	2.20%	0.70%	0.70%

Figure 44

Additionally, CHNA survey data indicate that the young adult (18-24 year old) age group reported the highest amounts of binge drinking, with nearly 18% of respondents reporting 3 or more episodes of binge drinking in the past 30 days (Figure 45).

[60] https://www.muhlenberg.edu/main/aboutus/polling/surveys/pennsylvania/publichealthsurveys/
[61] https://pubs.niaaa.nih.gov/publications/arh26-4/287-291.htm
[62] https://pubs.niaaa.nih.gov/publications/arh26-4/287-291.htm
[63] https://pubs.niaaa.nih.gov/publications/AA67/AA67.htm

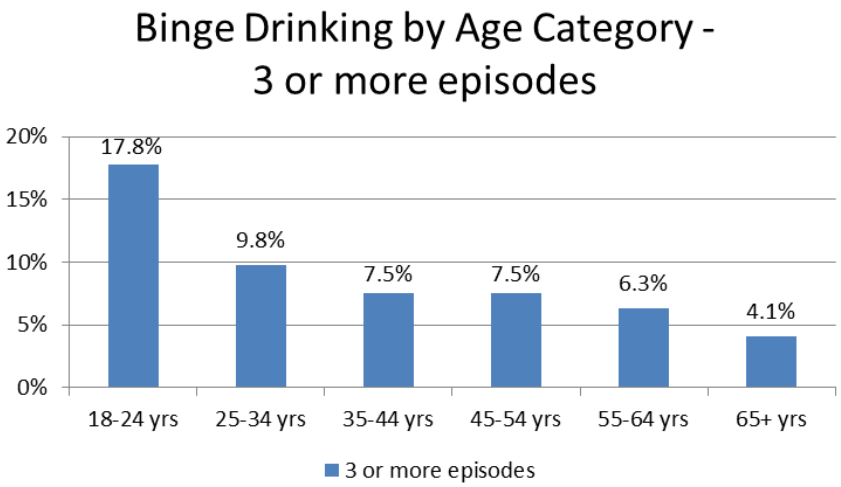


Figure 45

Another established risky behavior in adulthood and adolescence is cigarette smoking. Cigarette smoking causes nearly half a million deaths every year in the United States in the form of its influence on cases of lung cancer, COPD, stroke, and heart disease[64]. It is important to reduce the rates of young people smoking because, according to the World Health Organization, "most young people who smoke regularly will continue to smoke through adulthood", compounding and exacerbating the short-term effects of cigarette smoking into even more fatal long-term consequences. Students from Schuylkill County reported using cigarettes the most frequently and students in Monroe County reported using it the least. In Schuylkill County, over 10.4% of all 12th graders surveyed reported smoking traditional cigarettes during the past 30 days (Figure 46).

Schuylkill County - How frequently have you smoked cigarettes during the past 30 days?					
Grade	0 Times	1 - 2 Times	1 - 2 A Week	Once a Day	More Than Once a Day
6th	98.90%	0.70%	0.30%	0.00%	0.10%
8th	94.70%	3.90%	0.20%	0.40%	0.70%
10th	90.60%	4.90%	1.30%	0.90%	2.30%
12th	83.30%	6.30%	2.10%	1.80%	6.50%

Figure 46

Similar to binge drinking, CHNA survey data indicate that reported smoking rates decrease with age, with the 18-24 age group having the highest rate and the 65+ age group having the lowest rate (Figure 47).

[64] https://www.cdc.gov/tobacco/data_statistics/fact_sheets/health_effects/effects_cig_smoking/index.htm

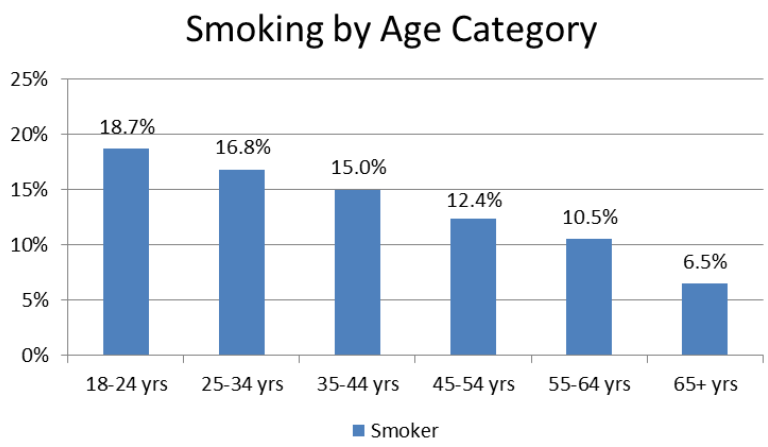


Figure 47

An emerging trend is youth substituting traditional cigarettes for electronic-vapor products including e-cigarettes, e-cigars, vape pipes, vape pens, e-hookah, and hookah-pens. From 2011 to 2015 there was 900% increase in the usage of e-cigarettes among high school students nationally[65]. In 2016 the Surgeon General declared youth usage of vapor products to be a significant public health concern. While the exact chemicals in the vapor vary greatly between products and brand, many have nicotine, known to impact brain development, and other detectable toxic and cancer-causing chemicals[66]. Students from Bucks County report using electronic vapor products the most frequently and students in Monroe County report using them the least. In Bucks County, the usage of electronic-vapor products is much more prevalent among youth surveyed than traditional cigarettes. Over 19.3% of 12th graders reported using a vapor product at least once a week in the past month (Figure 48).

Bucks County -How frequently have you used an electronic vapor product such as e-cigarettes, e-cigars, e-pipes, vape pipes, vaping pens, e-hookahs, or hookah pens during the past 30 days?					
Grade	0 Times	1 - 2 Times	1 - 2 Times a Week	Once a Day	More Than 1 a Day
6th	98.3%	1.50%	0.10%	0.00%	0.00%
8th	89.1%	7.50%	1.90%	0.50%	0.90%
10th	72.2%	14.80%	6.00%	2.30%	4.70%
12th	62.8%	17.80%	7.80%	3.30%	8.20%

Figure 48

This reported utilization of electronic vapor products among young adults is also seen in the CHNA survey responses. Figure 49 depicts reported tobacco product usage by age group, and it is evident that the highest rates of electronic vapor products are among the younger age groups.

[65] U.S. Department of Health and Human Services. E-Cigarette Use Among Youth and Young Adults: A Report of the Surgeon General. 2016

[66] https://www.lung.org/stop-smoking/smoking-facts/e-cigarettes-and-lung-health.html#sources

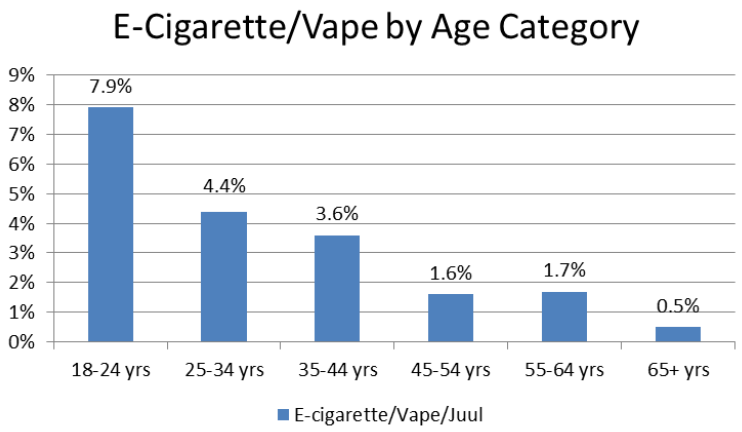


Figure 49

Another area of serious concern is mental health. PAYS report a number of alarming statistics related to depression, self-harm, and suicide rates among surveyed students. Students from Northampton County report the highest rates of self-harm and students from Bucks County report the lowest rates. For example, in Northampton County, 19% of 8th graders report having inflected self-harm in the form of cutting, scraping, or burning themselves in the past year. Rates vary by grade, with 11.7% of 6th graders reporting self-harm, 17.6% of 10th graders, and 15.1% of 12th graders. Self-injury is commonly the result of depressive, anxious, confused, or distressed feelings[67]. When asked about feeling depressed *most days* in the past year, students from Monroe County report the highest rates with over 43.6% of youth responded some degree of "yes". 48% of 10th graders agree that they have felt depressed *most days* in the past year, 21.6% expressing a strong agreement. Monroe County also had the highest rate of students entertaining suicidal ideations with at least 20% of all 8th, 10th, and 12th graders surveyed reported having "seriously considered attempting suicide" (Figure 50).

Monroe County - Did you ever seriously consider attempting suicide?		
Grade	no	Yes
6th	91.70%	8.30%
8th	80.00%	20.00%
10th	79.90%	20.10%
12th	77.60%	22.40%

Figure 50

Youth who report being bullied have an increased risk for suicide-related behavior[68]. Bullying also has long-term effects on youths' mental and physical health, likelihood of substance abuse, involvement in inter-personal and/or sexual violence, poor scholastic performance, and poor social functioning[69]. As such, prevalence of bullying in and out of schools is an important factor for youth and adolescent health. Students from Carbon County report the highest rate of bullying

[67] http://www.mentalhealthamerica.net/conditions/self-injury-and-youth
[68] https://www.cdc.gov/violenceprevention/pdf/bullying-suicide-translation-final-a.pdf
[69] https://www.cdc.gov/violenceprevention/pdf/bullying-suicide-translation-final-a.pdf

while students from Schuylkill County report the lowest. In Carbon County 22.5% of 6th graders report being bullied occasionally or more frequently, with 7% reporting having been bullied at least several times a week (Figure 51). Furthermore, the bullying doesn't have to occur in-person, with at 19.7% of respondents aggregated across grades reporting that they have been bullied through text or social media in the last year.

Carbon County - If you have been bullied in the past 12 months, how frequently were you bullied?						
Grade	No	Yes, Very Rarely	Yes, Now and Then	Yes, Several Times a Month	Yes, Several Times a Week	Yes, Almost Daily
6th	62.60%	14.80%	13.70%	1.80%	2.70%	4.30%
8th	59.50%	16.60%	12.80%	3.60%	4.80%	2.70%
10th	73.80%	8.90%	10.10%	2.10%	1.30%	3.80%
12th	80.20%	7.40%	9.90%	1.00%	1.50%	0.0%

Figure 51

Another important metric of youth health is safety. Exposure to school violence increases the likelihood of drug and alcohol usage, suicide, depression, and anxiety[70]. It also impacts student's ability to learn and get good grades. Students from Lehigh County report the highest rates of school violence while students from Bucks County report the lowest. In Lehigh County, nearly 17% of all 6th graders reported being "attacked, hit, or beaten up on school property" (Figure 52). Additionally, gang affiliation is highest among students from Monroe County with 6.1% of all students surveyed report having belonged to a gang at some point.

In the past 12 months, how often have you: Been attacked and hit by someone or beaten up on school property?						
Grade	No	Once	Two or Three Times	Four or Five Times	Six to Nine Times	Ten or More Times
6th	82.90%	7.40%	2.30%	0.30%	0.40%	0.40%
8th	87.10%	8.30%	2.80%	0.30%	0.30%	1.20%
10th	92.90%	4.40%	1.60%	0.40%	0.10%	0.50%
12th	95.40%	2.90%	1.30%	0.10%	0.00%	0.20%

Figure 52

According to the County Health Rankings produced by the Robert Wood Johnson Foundation, Carbon County has the highest rate of children living below the poverty line with 21% and Bucks Count has the lowest at 8%. The state average is 18%. Childhood poverty is not distributed evenly throughout our district, with much of it existing in and around Allentown, Bethlehem, and Easton, as well as more diffusely spread out in the rural regions near Palmerton and East Stroudsburg (Figure 53). In fact, the median household income in the highest income

[70] https://www.cdc.gov/violenceprevention/pdf/schoolviolence-factsheet.pdf

census tract we serve, Lehigh County 69.05 in Upper Saucon Township, is nearly six times greater than the median income in the lowest income census tract, Lehigh County 10 in center city Allentown. The range of median income in all census tracts we serve is bookended by these two tracts, stretching from $111,117 a year to $19,318 a year. This disparity means that public health interventions need to be targeted to prioritize our lower income neighborhoods. Lehigh County had the lowest high school graduation rate during the 2015-2016 school year with 85.1% of the high schoolers graduating within four years[71]. Bucks and Warren Counties tied for the highest rate of counties we serve each at 92.9%. 81.5% of students within our network service area graduate in four years. This is lower than Pennsylvania's rate of 88.5%, New Jersey's rate of 88.9%, and the national rate of 86.1%, during that same school year. In the 2016 – 2017 school year, Pocono Mountain School District reported the highest graduation rate among the districts with which we work at 96.09%. Allentown School district was the lowest at 71.12%. Even within the district there was wide inequality of outcomes, with White students graduating at a rate of 84.42% and Black students graduating at a rate of 68.18%. Furthermore, 59.82% of students who were categorized as "English language learners" graduated within four years. These disparities point to a need for more English language support within the district's schools. Lastly the teen birth rate stretches from 12.1 teenage mothers out of every 1,000 teenage women in Bucks County, to 34.8 out of every 1,000 teenage women in Lehigh County. New Jersey's rate was 21.6 out of 1,000 and Pennsylvania's was 28 out of 1,000, while the national rate was 36.6 out of 1,000[72].

Schools districts manage student homelessness on vastly different scales. The Allentown School District typically has between 620 and 640 students experiencing homelessness in a year. Panther Valley School District has 3 students dealing with homelessness. In 2017, due to an influx of students relocated to the Lehigh Valley after Hurricane Maria, both Allentown and Bethlehem Area school districts reported a major bump in students experiencing homelessness, up over 1,000 and 500 respectively. Students experiencing homelessness have complex needs and additional challenges that the district isn't always equipped to deal with. Homelessness can impact mental and physical health, school performance, behavior, and attendance.

When assessing school performance, the guidepost of third grade reading proficiency is often employed. According to the National School Boards Association, "if children cannot read proficiently by the end of third grade, they face daunting hurdles to success in school and

[71] https://www.education.pa.gov/Data-and-Statistics/Pages/Cohort-Graduation-Rate-.aspx
[72] https://wonder.cdc.gov/

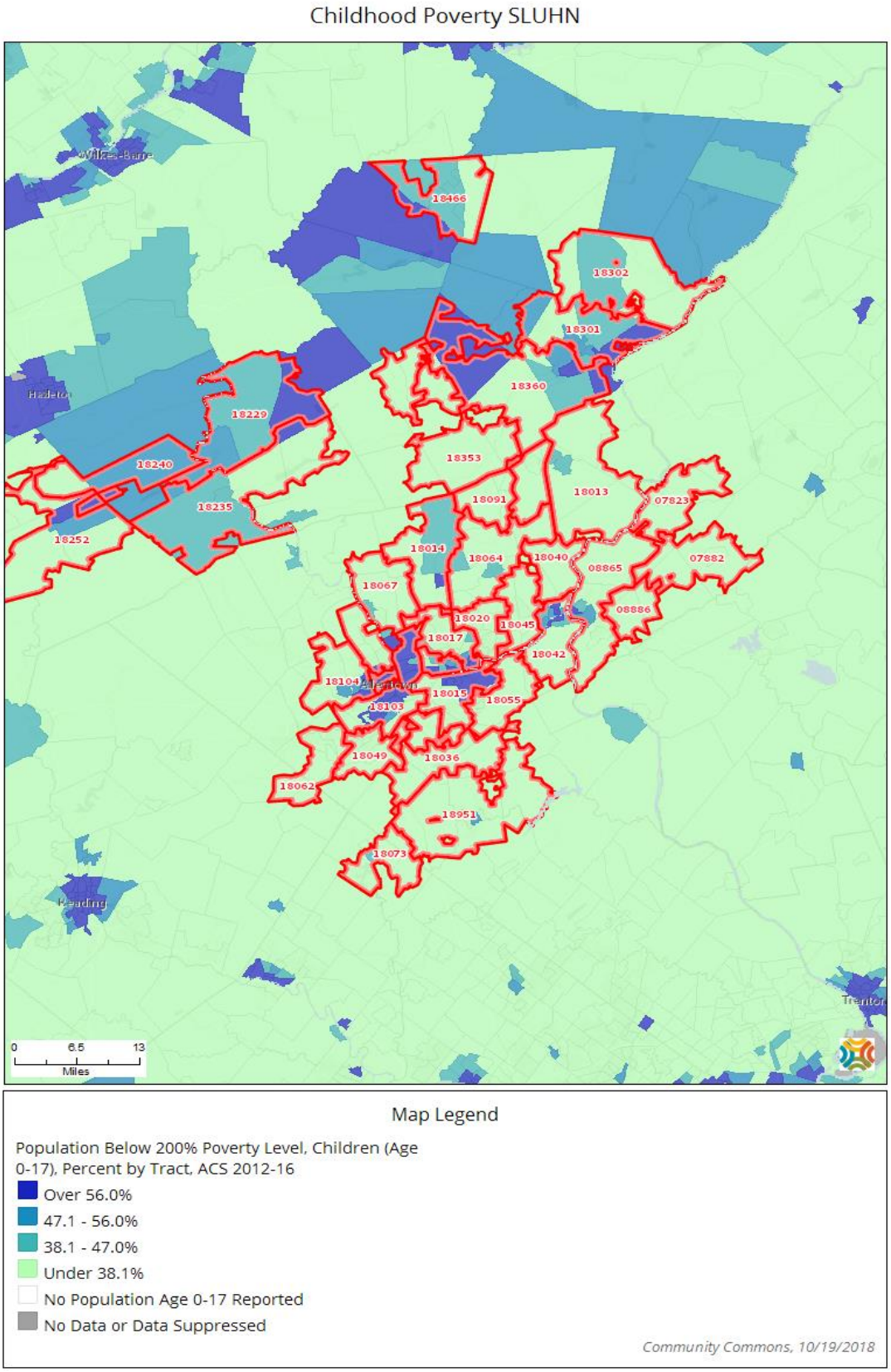

Childhood Poverty SLUHN
Wilkes-Barre
Hazleton
Reading
Trenton
18466
18302
18301
18360
18229
18353
18240
18091
18013
07823
18235
18252
18014
18064
18040
08865
07882
18067
18020
18045
08886
18017
18042
18104
Allentown
18015
18055
18103
18049
18036
18062
18951
18073
0
6.5
13
Miles
Map Legend
Population Below 200% Poverty Level, Children (Age 0-17), Percent by Tract, ACS 2012-16
Over 56.0%
47.1 - 56.0%
38.1 - 47.0%
Under 38.1%
No Population Age 0-17 Reported
No Data or Data Suppressed
Community Commons, 10/19/2018

Figure 53

beyond"[73]. In Pennsylvania, 64.7% of all third grade students scored either proficient or advanced on the PSSA reading comprehension section in the 2016-2017 school year. That year, Allentown School District scored the lowest among the districts with which we partner with an average of proficiency or advanced proficiency rate of 42%. Quakertown Community School District scored the highest with an average of 73.9% proficient or advanced. The highest preforming school was Asa Packer Elementary school from the Bethlehem Area School District with 89.5% of 3rd graders scoring proficient or advanced. The lowest scoring school was Marvine Elementary, of the same district, with only 16.3% scoring proficient and no students scoring advanced.

Low birth weight infants are most often caused by being born prematurely. While not necessarily indicative of an unhealthy infant, being born low weight can be accompanied by many serious health problems including infection, nervous system problems, trouble feeding, immature lungs, developmental delay, and even death[74]. As such, low birth weight rates are an important metric of childhood community health. The lowest county we service is Schuylkill County with a rate of 7% and the highest is Monroe County at 9%. The state average is 8.3% and the national average is 8.2%. Health People 2020 targets aim to reduce that rate to 7.8%.

Bucks County had the lowest rate of uninsured children in 2016 with 2.3% lacking medial insurance. The highest rate we see was in Schuylkill County with 5.5% lacking insurance. New Jersey's rate was 4.5% and Pennsylvania's was 4.8 %[75]. According to the State of the Child county profile through the Annie E. Casey Foundation, 80.3% of children eligible for publically funded, high quality pre-school, are considered unserved in Carbon County. That's significantly higher than the state average of 63.9%. Similarly, across the country, comparable urban counties have a rate of 64.8%. Our lowest rate of unserved children is in Schuylkill County with 56.9% of children eligible for publically funded, high quality pre-school, not receiving the service.

Women, Infants, and Children (WIC), a program through the USDA's Food and Nutrition Services (FNS) offers supplemental food, healthcare referrals, and nutrition education to pregnant women through when their children turn five years of age. State-level data show that in 2018 Pennsylvania had an average monthly participation rate of 48,507 women. 6,934 of them were fully breastfeeding and an additional 3,367 were partially breastfeeding. Unless there are medical reasons to abstain, FNS strongly encourages all mothers participating in WIC to breastfeed their children. Breastfeeding is shown to provide essential nutrients to infants and lower their risk for some common childhood infections and diseases[76].

Protective factors, unlike the risk factors presented above, are positive assets for children, families, and communities in providing a safe and nurturing environment to raise youth. High prevalence of protective factors increases the health and well-being of children raised in those environments[77]. Some of these protective factors include rewards for prosocial involvement in the community, family attachment, and opportunities for prosocial involvement in school. The

[73] https://www.nsba.org/sites/default/files/reports/NSBA_CPE_Early_Literacy_Layout_2015.pdf
[74] https://www.urmc.rochester.edu/encyclopedia/content.aspx?contenttypeid=90&contentid=p02382
[75] https://factfinder.census.gov/
[76] https://www.nichd.nih.gov/health/topics/breastfeeding/conditioninfo/benefits
[77] https://www.childwelfare.gov/topics/preventing/promoting/protectfactors/

"Total Protection" of a community represents, in the aggregate, the percentage of students who have at least three protective factors operating in their lives. Lehigh County and Monroe County have the lowest total score at 49% and Bucks has the highest at 58 (Figure 54). The Pennsylvania "Total Protection" for all youth throughout the state is 55.3%.

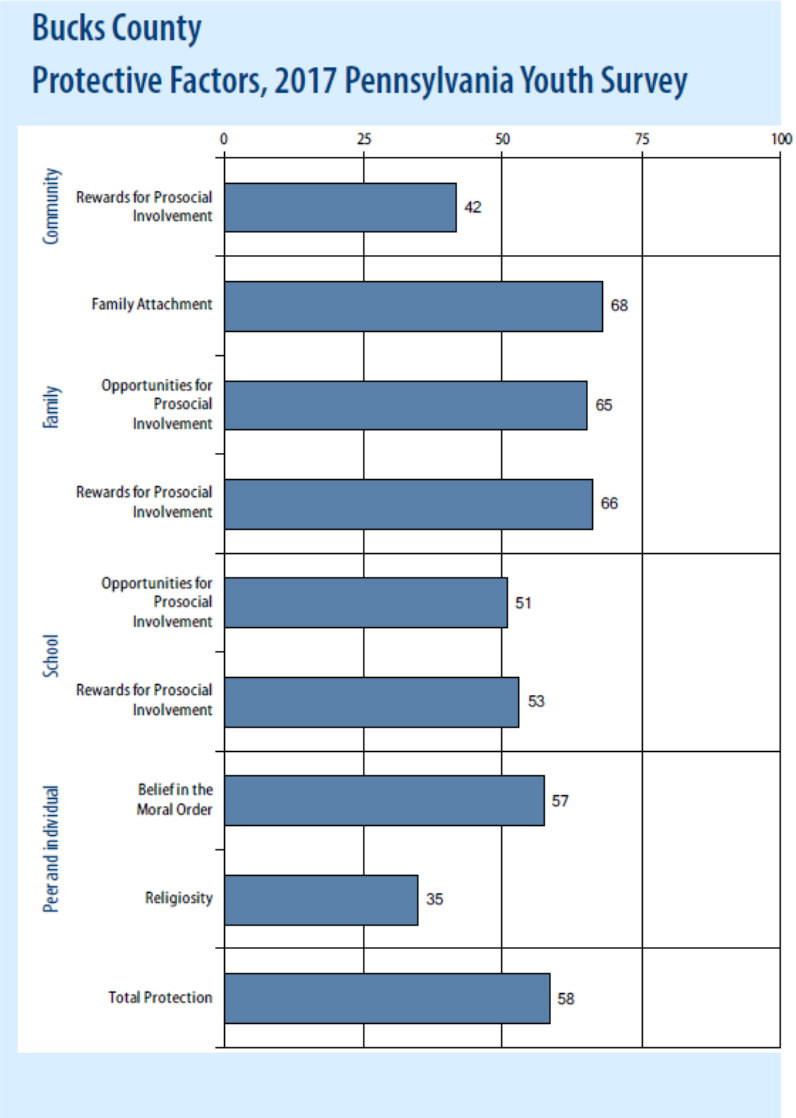


Figure 54

Warren County has better indicators for child birth than the New Jersey and national averages. Low birth weight, teenage birth rates, and infant mortality are all lower than the state and national rates. Infant mortality, at 5 deaths per 1,000 births, is lower than the Healthy People 2020 target mortality rate of 6 per 1,000. The on-time high school graduation rate average in the 2017 – 2018 school year in Warren County was 93.4%, considerably higher than state and national averages[78]. Breastfeeding rates for women on WIC are much higher in New Jersey, at 43.2%, than they are throughout the region and nation. Unless there are medical reasons to

[78] https://www.state.nj.us/education/data/grate/2017/

abstain, FNS strongly encourages all mothers participating in WIC to breastfeed their children. Breastfeeding is shown to provide essential nutrients to infants and lower their risk for some common childhood infections and diseases[79].

Senior Health

134,007 seniors live in the area St. Luke's University Hospital Network serves. This is 16.35% of the total population with which we work. Planning commissions and coalitions for aging are projecting double-digit senior population growth in the coming years for many of the counties we serve including Lehigh, Northampton, Bucks, and Monroe. As such, senior healthcare will become an increasingly important aspect of the services we offer.

Currently there are 341,821 people in the seven counties we serve are insured through Medicare, 298,153 of whom are 65 years of age or older. Only 1.7% of the senior population in these counties isn't insured through Medicare. Because of the considerable overlap between our senior population and our Medicare population, we'll use Center for Medicare and Medicaid Services data as a proxy for senior data.

In the entire hospital network, 18.5% of our Medicare population reports being depressed. This is higher than the state average of 17.8% and the national average of 16.7%. 28.31% of our Medicare population has heart disease. This is higher than the national average of 26.46% and the state average of 27.49% (Figure 55).

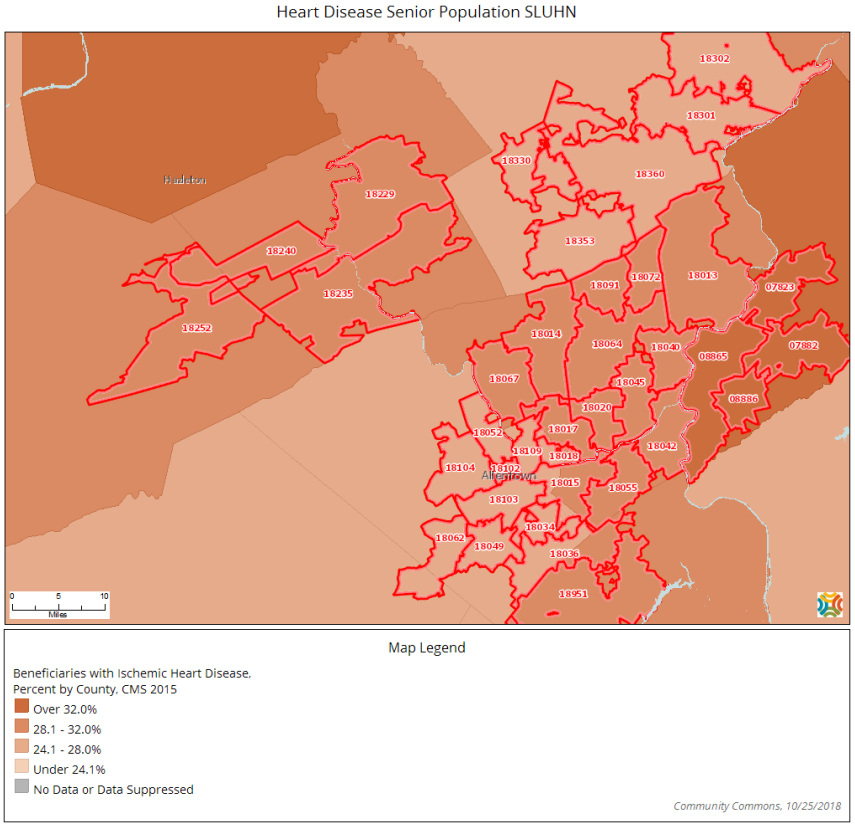


Figure 55

[79] https://www.nichd.nih.gov/health/topics/breastfeeding/conditioninfo/benefits

Another health outcome of concern is diabetes. 27.11% of the Medicare population in our service area has diabetes. This is higher than the 25.79% state average and 26.55% national average. Type II Diabetes, the most common form, is caused by a combination of genetics and lifestyle factors like physical activity levels and body weight[80]. As risk factors to contracting diabetes, and important components in managing it, physical activity and diet are vital public health concerns. According to the USDA's Food Access Resource Atlas, many census tracts that send patients to our campuses have rates of limited food access for seniors over 50%. For example, in Lehigh County tract 67.01, 80.74% of the seniors are considered to have low access to food. This means a higher reliance on less healthy processed foods. High blood pressure and high blood cholesterol are also serious medical conditions prevalent in the senior population (Figure 56).

	SLUHN	PA	US
High Blood Pressure	60.66%	56.62%	54.99%
High Cholesterol	52.73%	48.85%	44.61%

Figure 56

According to America's Health Rankings 2018 Senior Report, through the United Health Foundation, Pennsylvania ranks 17th out of the nation's 50 states in overall senior health. This is a drastic improvement over their 2017 ranking where Pennsylvania placed 26th. The states are assessed according to senior "behaviors", "community and environment", "policy", "clinical care", and "health outcomes". Pennsylvania scored best, 3rd overall, in the policy section. It scored worst, 32nd overall, in health outcomes. Policy factors in things like the number of geriatricians in the state, prescription drug coverage (Figure 57), and percentage of the state's senior population on SNAP. Health outcomes look at falls, frequent mental distress, and hip fractures.

According to CDC data, Pennsylvania ranked 20th out of the states for deaths related to senior falls. Falling is a major concern for senior populations. Over 25% of seniors nationally report falling each year leading to approximately 3 million emergency room visits[81]. In 2016 nearly 30,000 seniors died from falling, a number that steadily increased by 3% annually during the proceeding decade[82]. The Mayo Clinic advises senior populations to remove hazards from common walkways, maintain physical activity levels, and consult with their doctors to reduce the risk of fall-related injuries and death. According to 2019 CHNA survey data, 22.0% of respondents age 45 years or older reported falling at least one time in the past 12 months. The average number of falls among respondents age 45 years or older was 2.63, with an average of 1.51 resulting in injury.

Another health issue particularly salient for senior populations is polypharmacy. While there is no exact definition, it has been categorized by the use of five or more drugs simultaneously, or the unnecessary prescription of drugs[83]. Senior populations, particularly in nursing home

[80] https://www.niddk.nih.gov/health-information/diabetes/overview/symptoms-causes
[81] https://www.cdc.gov/mmwr/volumes/67/wr/mm6718a1.htm#F2_down
[82] https://www.cdc.gov/mmwr/volumes/67/wr/mm6718a1.htm#F2_down
[83] https://www.jamda.com/article/S1525-8610(15)00477-6/abstract

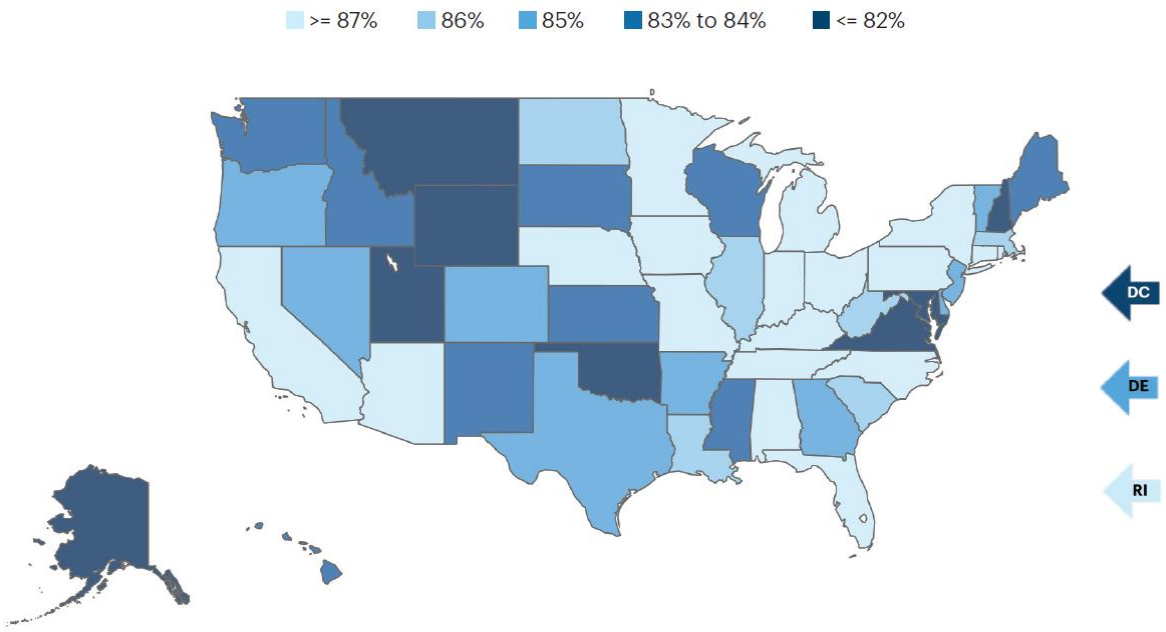


Figure 57

facilities are vulnerable to this type of over prescription. Multiple studies have found that it is common for up to half the population of nursing homes to be on nine drugs simultaneously[84]. This has become increasingly prevalent lately due, in part, to more available drugs and patients having multiple diseases at once. Economic considerations aside, there are serious clinical consequences to polypharmacy. Due to the interplay between different drugs, increased numbers of prescriptions is shown to lead to drastic increases in adverse drug events. Non-adherence is another concern due to the complicated scheduling that can result from taking multiple drugs daily[85].

The AARP promotes some core principals for age-friendly communities. Some of their recommendations include: ensuring access to the built environment by making public spaces and homes accommodating for seniors, ensuring access to community based long term supports and services (LTSS) through CMS, and keeping older residents active through volunteer and community based arts programs. Keeping seniors active and socially engaged has long-term benefits to their health and the community in general[86].

[84] https://www.jamda.com/article/S1525-8610(15)00477-6/abstract
[85] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3864987/
[86] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4889622/

Health Outcomes

Mortality and Morbidity

When thinking about Health Outcomes it is important to examine mortality and morbidity rates. According to the 2018 National Vital Statistics Report, across the nation a total of 2,744,248 resident deaths were registered in the United States, yielding an age-adjusted death rate of 728.8 deaths per 100,000 U.S. standard population, accounting for the aging of the population. When broken down further we see that the age-adjusted rate was 155.8 per 100,000 for malignant neoplasms, 165.5 per 100,000 for diseases of the heart and 47.4 per 100,000 for accidents/unintentional injuries.

Additionally, life expectancy at birth was 78.6 years. And the 10 leading causes of death in 2016 were:

1. Diseases of heart (heart disease)
2. Malignant neoplasms (cancer)
3. Accidents (unintentional injuries)
4. Chronic lower respiratory diseases
5. Cerebrovascular diseases (stroke)
6. Alzheimer's disease
7. Diabetes mellitus (diabetes)
8. Influenza and pneumonia
9. Nephritis, nephrotic syndrome and nephrosis (kidney disease)
10. Intentional self-harm (suicide)

In Pennsylvania, a total of 133,040 resident deaths were registered, yielding an age-adjusted death rate of 770.1 deaths per 100,000. When delving further into the Pennsylvania data, we see that the age-adjusted rate was 164.7 per 100,000 for malignant neoplasms, 176.2 per 100,000 for diseases of the heart and 61.8 per 100,000 for accidents/unintentional injuries. Death rates overall, as well as for the top three leading causes of death, are significantly higher in Pennsylvania when compared to the national rates.

In New Jersey, a total of 73,155 resident deaths were registered, yielding an age-adjusted death rate of 668.5 deaths per 100,000. When delving further into the New Jersey data, we see that the age-adjusted rate was 149.7 per 100,000 for malignant neoplasms, 164.7 per 100,000 for diseases of the heart and 40.8 per 100,000 for accidents/unintentional injuries. Death rates overall, as well as for the top three leading causes of death, are significantly lower in New Jersey when compared to Pennsylvania and national rates.

Overall America's Health Rankings places Pennsylvania at 28th in the nation for 35 different health measures in 2017, citing high levels of air pollution, high drug death rates and low per capita public health funding as being primary challenges. Highlights include:

- In the past year, air pollution decreased 8% from 11.0 to 10.1 micrograms of fine particles per cubic meter
- In the past two years, excessive drinking increased 16% from 17.7% to 20.5% of adults
- In the past five years, diabetes increased 19% from 9.5% to 11.3% of adults

- In the past seven years, infant mortality decreased 20% from 7.5 to 6.0 deaths per 1,000 live births
- In the past 10 years, drug deaths increased 80% from 12.3 to 22.2 deaths per 100,000 population

Whereas America's Health Rankings, places New Jersey at 12th in the nation for 35 different health measures in 2017, citing a high prevalence of physical inactivity, large disparity in health status by educational attainment and low per capita public health funding as challenges. Highlights include:

- In the past two years, chlamydia increased 10% from 319.6 to 350.6 cases per 100,000 population
- In the past five years, physical inactivity increased 13% from 26.4% to 29.8% of adults
- In the past seven years, premature death decreased 5% from 6,152 to 5,875 years lost before age 75 per 100,000 population
- In the past 10 years, drug deaths increased 83% from 8.1 to 14.8 deaths per 100,000 population
- In the past 15 years, violent crime decreased 36% from 384 to 245 offenses per 100,000 population

Perceptions of Health

It is important to assess a community's perceived sense of health status to interpret their overall wellbeing, as well as highlight areas where health education would benefit the community. According to our 2019 community survey, most individuals in the service area reported very good or excellent health, followed by good health, and then by poor or very poor health (Figure 58).

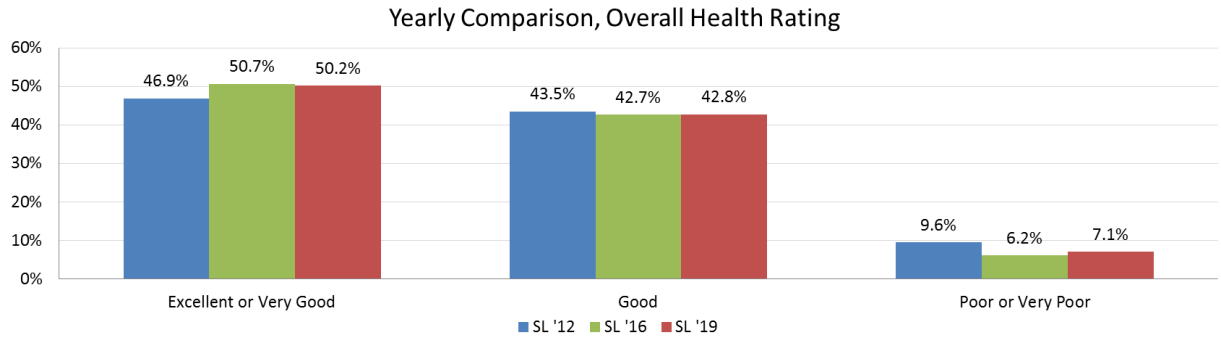


Figure 58

Chronic Health Problems

Upon examining self-perceptions of health, it is important to look at the prevalence of specific health conditions to assess the health status and needs of the community. Our 2019 survey results conveyed that the highest percentage of patients in the service area reported having high blood pressure at 40.6%, followed by 28.1% with high cholesterol and 21.6% with arthritis or rheumatic disease (Figure 59).

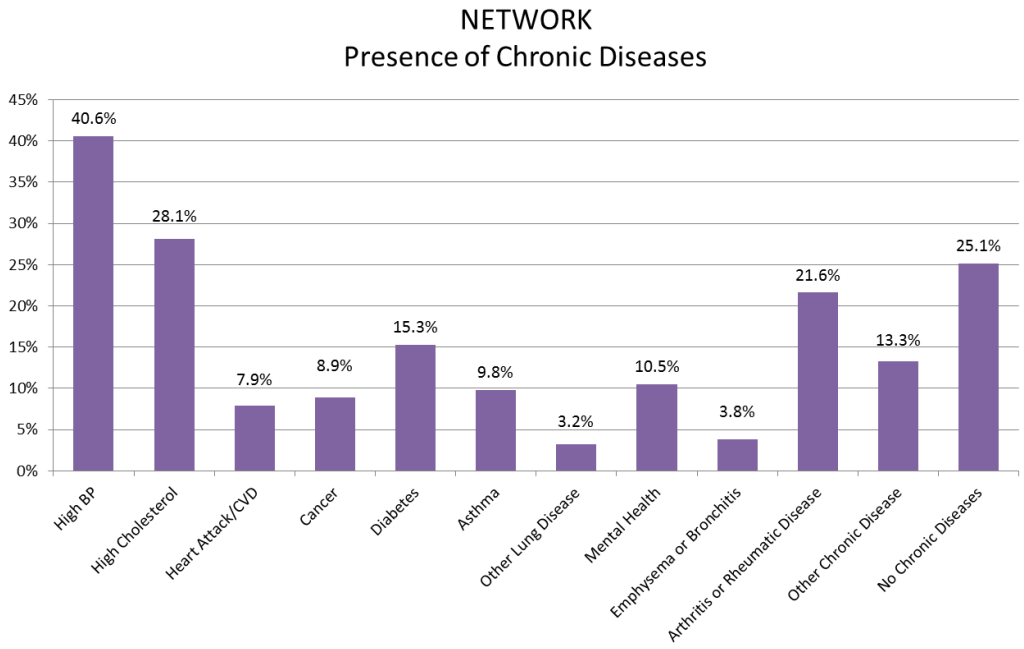


Figure 59

According to the ACS, 13.7% of individuals in the top 80% of ZIP codes have a disability, compared to 12.5% in the nation, 10.4% in New Jersey, and 13.7% in Pennsylvania.

Cancer

When looking at cancer statistics for the SLUHN service area, it is evident that cancer is a significant health concern across all populations. However, there are specific groups within our service area that are of particular concern.

Figure 60 examines cancer incidence rates by age and indicates that all counties, as well as both states, and the U.S. as a whole followed the trend that increasing age was associated with much higher cancer incidence rates. When looking specifically at counties in our service area, 27 (96%) of the 28 counties and age groups were worse than the national incidence rate, and 21 of those 27 (78%) were worse than both the U.S and their respective state[87]. The population less than 50 years in in Monroe County was the only county and age group that had incidence rates that were lower than both the state and national rates[88].

Similarly, when comparing cancer incidence between males and females, it is evident that males have a much higher incidence rate than females in both Pennsylvania and New Jersey, as well as in the U.S. in general, as seen in Figure 61. Additionally, females in all counties in our service area except for Monroe have higher incidence rates than both the state and U.S., where males in all of the counties except for Carbon and Monroe have higher rates than both their state and the

[87] https://www.statecancerprofiles.cancer.gov/incidencerates/
[88] https://www.statecancerprofiles.cancer.gov/incidencerates/

U.S. Females in Monroe County, as well as males in Carbon and Monroe Counties, had cancer incidence rates that were higher than the U.S. rate but still lower than their respective state rate[89].

Cancer Incidence Rate by Age and County (Per 100,000 population) National Cancer Institute State Cancer Profiles, 2011-2015					
Location	All Ages	Age <50	Age 50+	Age <65	Age 65+
United States	441.2	102.8	1331.3	222.8	1951.0
New Jersey	477.5	109.4	1441.4	235.8	2148.5
Warren	497.8	110.9	1511.1	235.1	2313.5
Pennsylvania	481.7	116.7	1441.9	247.4	2101.4
Bucks	488.2	118.1	1461.1	247.7	2150.6
Carbon	477.0	107.0	1451.0	233.1	2162.8
Lehigh	492.2	118.5	1474.3	248.4	2177.8
Monroe	472.7	99.6	1453.5	227.0	2171.2
Northampton	516.4	121.7	1555.0	256.1	2316.1
Schuylkill	489.2	115.1	1474.0	246.9	2164.5
Key					
Better than both state and national levels		Between state and national levels		Worse than both state and national levels	

Source: National Cancer Institute, State Cancer Profiles 2011-2015

Figure 60

Cancer Incidence Rate by Sex and County (Per 100,000 population) National Cancer Institute State Cancer Profiles, 2011-2015			
Location	All Sexes	Females	Males
United States	481.7	412.5	483.8
New Jersey	477.5	447.6	525.2
Warren	497.8	475.1	532.9
Pennsylvania	418.7	455.2	524.3
Bucks	488.2	457.7	532.4
Carbon	477.0	458.3	508.9
Lehigh	492.2	458.6	544.5
Monroe	472.7	437.4	515.6
Northampton	516.4	472.0	583.2
Schuylkill	489.2	459.4	538.9
Key			
Better than both state and national levels	Between state and national levels	Worse than both state and national levels	

Source: National Cancer Institute, State Cancer Profiles 2011-2015

Figure 61

When looking at cancer incidence rates by race, it is apparent that cancer rates in our region are higher than state and national levels among all races; however, this is especially true among the white population, which has higher rates of cancer incidence than the White population in the United States as a whole (475.9 and 488.0 versus 442.8, respectively) (Figure 62). Furthermore, the White population in Bucks, Lehigh, Monroe, Northampton, Schuylkill, and Warren (NJ)

[89] https://www.statecancerprofiles.cancer.gov/incidencerates

counties had higher rates of cancer incidence than both state and national rates. Carbon had higher than the national but lower than the Pennsylvania rate[90].
In New Jersey, the Black population had slightly lower cancer incidence rates than the U.S. Black population (441.5 versus 447.9, respectively). In Pennsylvania, however, the Black population had a noticeably higher cancer incidence rate (492.7). Lehigh and Northampton Counties had higher incidence rates among Black community members, compared to the national rate, but lower than the state rate. All other counties in our service areas had rates that were lower than both state and national levels[91].

Because of the small population size for American Indian/Native Alaskans, data for cancer incidence rates among this racial group were suppressed. Suppressed data means that the statistics were not released because the numbers were small, so there was a possibility of revealing personal information. At the state level, American Indians/Native Alaskans in Pennsylvania had lower cancer incidence rates than those in the U.S. as a whole[92].

Asian/Pacific Islanders in Bucks and Monroe Counties had incidence rates that were lower than both state and national rates; however, all other counties in our region had rates that were higher than both state and national rates. Data for Carbon County were suppressed, due to the small number of Asian/Pacific Islander community members in that county[93].

Figure 62

Cancer Incidence Rate by Race/Ethnicity and County (Per 100,000 population) National Cancer Institute State Cancer Profiles, 2011-2015

Location	All Races	White (Includes Hispanic)	Black (Includes Hispanic)	American Indian/Native Alaskan	Asian/Pacific Islander	Hispanic (Any Race)
United States	441.2	442.8	447.9	283.0	285.4	340.9
New Jersey	477.5	488.0	441.5	**	263.4	385.6
Warren	497.8	495.6	408.9	**	303.7	498.3
Pennsylvania	481.7	475.9	492.7	159.4	270.8	353.5
Bucks	488.2	482.2	427.4	**	242.4	278.6
Carbon	477.0	470.8	366.1	**	**	**
Lehigh	492.2	481.9	484.5	**	292.7	398.5
Monroe	472.7	477.5	370.9	**	165.4	323.5
Northampton	516.4	511.7	473.2	**	292.4	446.1
Schuylkill	489.2	485.6	432.2	**	387.6	245.3
Key	** Data suppressed due to small sample size					
	Better than both state and national levels		Between state and national levels		Worse than both state and national levels	

When comparing cancer incidence rates between races in the U.S., it can be seen that the Black population had a slightly higher rate (447.9) than the White population (442.8), and the American Indian/Native Alaskan (283.0) and Asian/Pacific Islander (285.4) populations had noticeably lower rates than both of the other racial groups, and all races combined (441.2). Pennsylvania followed the same pattern, with Black having the highest rate (492.7), White the second highest (475.9), Asian/Pacific Islander as the third (270.8), and American Indian/Native Alaskan as the lowest (159.4)[94].

According to Pennsylvania Department of Health's Surveillance, Epidemiology, and End Results (SEER) Program, males and females in Bucks, Carbon, Lehigh, Northampton, and Schuylkill

[90] https://www.statecancerprofiles.cancer.gov/incidencerates
[91] https://www.statecancerprofiles.cancer.gov/incidencerates
[92] https://www.statecancerprofiles.cancer.gov/incidencerates
[93] https://www.statecancerprofiles.cancer.gov/incidencerates
[94] https://www.statecancerprofiles.cancer.gov/incidencerates

counties had significantly higher incidence of all cancers than expected from 2008-2012[95]. Figure 63 shows the primary sites that were significantly higher than expected, as well as which county and gender the significantly higher values were found in. It is evident that Bucks County has the greatest amount of cancers that were significantly higher than expected.

Counties with Significantly Higher than Expected Cancer Levels by Cancer Type and Gender, 2008-2012	
Primary Site	County and Gender with Significantly Higher than Expected Cancer Levels
All Sites	Bucks, Carbon, Lehigh, Northampton, and Schuylkill
Lung/Bronchus	Carbon, Lehigh, Northampton, Schuylkill
	Bucks, Monroe
Breast	Bucks
Colon and Rectum	Schuylkill
Oral Cavity and Pharynx	Schuylkill
	Bucks
Melanoma of Skin	Bucks
Testis	Bucks
Urinary Bladder	Bucks, Carbon, Lehigh, Northampton, Schuylkill
Kidney/Renal Pelvis	Bucks, Carbon
	Northampton, Schuylkill
	Lehigh
Thyroid	Carbon
	Bucks, Lehigh, Northampton
Non-Hodgkin Lymphoma	Northampton
	Bucks
Hodgkin Lymphoma	Lehigh
Larynx	Monroe
Cervix Uteri	Monroe, Schuylkill
Corpus, Uterus, NOS	Bucks, Carbon, Northampton, Schuylkill
Esophagus	Bucks
Leukemia	Northampton
Key	Both Males and Females
	Females Only
	Males Only

Figure 63

Figure 64 shows disease-specific incidence and mortality rates in our counties and compares them to state and national levels. The table indicates that Lung and Colorectal cancers are significant issues in our area, since no counties had incidence rates that were lower than both state and national levels[96]. Furthermore, breast cancer is also a significant issue in our service area, since only two counties have rates that are better than state and national levels[97].

[95] http://www.ehsf.org/sites/default/files/2017-09/An_Analysis_of_Cancer_Incidence_in_PA_Counties_2008_2012.pdf
[96] https://www.statecancerprofiles.cancer.gov/incidencerates
[97] https://www.statecancerprofiles.cancer.gov/incidencerates

According to the U.S. Department of Health and Human Services, Healthy People provides science-based, 10 year national objectives for improving the health of all Americans. In addition to county, state and national comparisons, cervical cancer and colorectal cancer incidence both have a Healthy People 2020 comparison. Bucks, Northampton, and Warren counties had cervical cancer incidence rates that were lower than both state and national comparisons, as well as below the Healthy People 2020 target (7.1 per 100,000)[98]. Conversely, Lehigh, Monroe, and Schuylkill counties had cervical cancer incidence rates that were higher than both state and national levels, and well above the Healthy People 2020 target.

Bucks, Carbon, Lehigh, Monroe, and Northampton Counties had colorectal cancer screening rates that were between state and national levels, while Schuylkill and Warren counties had colorectal cancer screening rates that were below state and national levels. All counties fell below the Healthy People 2020 target of 70.5%, as well as the American Cancer Society target of 80% by 2018[99].

2018	United States	Pennsylvania (PA)	Bucks (BU) County, PA	Carbon (CR) County, PA	Lehigh (LH) County, PA	Monroe (MO) County, PA	Northampton (NO) County, PA	Schuylkill (SC) County, PA	New Jersey (NJ)	Warren (WA) County, NJ
Breast Cancer Incidence [1]	123.5	129.8	137.3	125.1	124.2	123.5	137.3	114.2	132	129.7
Cervical Cancer Incidence [2]	7.62	7.6	5.3	No Data	8.5	9.3	6.5	10.8	7.9	6.6
Colorectal Cancer Incidence [1]	39.8	43.1	39.6	41.7	42.7	40.4	41.1	51.2	42.3	43.3
Lung Cancer Incidence [1]	61.2	65.4	61.9	67.4	63.1	73.0	64.5	68.0	57.8	64.9
Prostate Cancer Incidence [1]	114.8	117.5	120.8	111.6	124.3	109.2	141.6	94.2	139.4	135.4
Cancer Mortality [3]	160.9	169.48	157.3	189.9	159.6	178.4	164.5	190.9	154.54	169.8
Sources										
1. State Cancer Profiles, 2010-14										
2. State Cancer Profiles, 2009-13										
3. Centers for Disease Control and Prevention, National Vital Statistics Program, Accessed via CDC WONDER, 2012-16										
Key		Better than both state and national levels			Between state and national levels			Worse than both state and national levels		

Figure 64

In looking at cancer mortality rates, Bucks, Lehigh, and Northampton counties have cancer mortality rates below state and national levels, while Carbon, Monroe, Schuylkill, and Warren counties have cancer mortality rates that are higher than state and national levels[100].

[98] https://www.statecancerprofiles.cancer.gov/incidencerates/

[99] Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System. Accessed via the Health Indicators Warehouse. US Department of Health & Human Services, Health Indicators Warehouse. 2006-12.

[100] Centers for Disease Control and Prevention, National Vital Statistics System. Accessed via CDC WONDER. 2012-16.

Figure 65 illustrates cancer screening rates for colorectal, cervical, and breast cancer. The data indicate that screening rates are relatively low in our service area, especially in Schuylkill, Warren, Monroe, and Carbon counties.

Cancer Screenings in SLUHN Service Area

2018	United States	Pennsylvania (PA)	Bucks (BU) County, PA	Carbon (CR) County, PA	Lehigh (LH) County, PA	Monroe (MO) County, PA	Northampton (NO) County, PA	Schuylkill (SC) County, PA	New Jersey (NJ)	Warren (WA) County, NJ
Sigmoidoscopy or Colonoscopy	61.3%	62.1%	71.1%	43.0%	70.3%	66.1%	63.9%	52.3%	60.1%	57.6%
Pap Test	78.5%	78.8%	72.6%	78.0%	82.6%	74.5%	80.1%	76.8%	81.5%	79.8%
Mammogram	63.1%	64.8%	66.4%	58.3%	65.9%	62.4%	65.4%	59.9%	61.5%	59.3%

Sources

1. Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System. Accessed via the Health Indicators Warehouse. US Department of Health & Human Services. Health Indicators Warehouse, 2006-12
2. Dartmouth College Institute for Health Policy & Clinical Practice. Dartmouth Atlas of Health Care. 2014

Key	Better than both state and national levels	Between state and national levels	Worse than both state and national levels

Figure 65

In addition to CDC data, we looked at breast cancer screening rates among 2019 community survey respondents. Figure 66 depicts that 82% of 2019 community survey female respondents between ages 50-74 reported being up to date on breast cancer screenings. Approximately 82% of respondents indicated that they had been screened for breast cancer within the past 2 years, which is higher than the national rate (71.6%) and Healthy People 2020 target of 81.1%. Internal data indicate that our SLUHN screening rate is approximately 67.47%, which is lower than survey respondent reported rates.

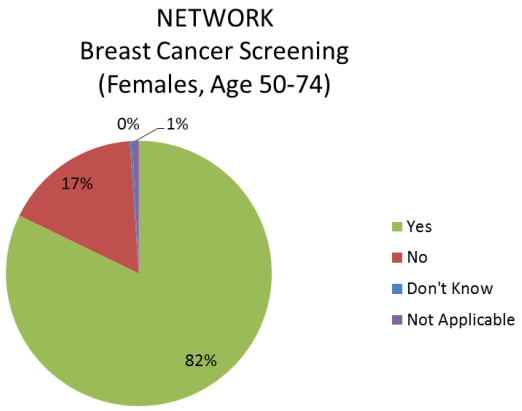


Figure 66

Figure 67 depicts survey respondents' reported screening rates by campus area. Based off of these findings, there is room for improvement in screening rates among all campus areas; however, there are especially low rates among our rural populations. Similarly, internal data show vast differences in breast cancer screening rates between differing practice types. The SLUHN average colorectal cancer screening rate (67.47%) is higher than our internal medicine and family medicine clinic rates.

Additionally, our 2019 community survey asked about colorectal cancer screening. Two questions were included to determine if respondents were up to date on colorectal cancer screening. The first question asked respondents age 50-74 to indicate which of the following ways they had been screened for colorectal cancer: colonoscopy; sigmoidoscopy; stool blood test (i.e: FIT/FOBT); don't know; never been screened; or Not Applicable. Respondents were then

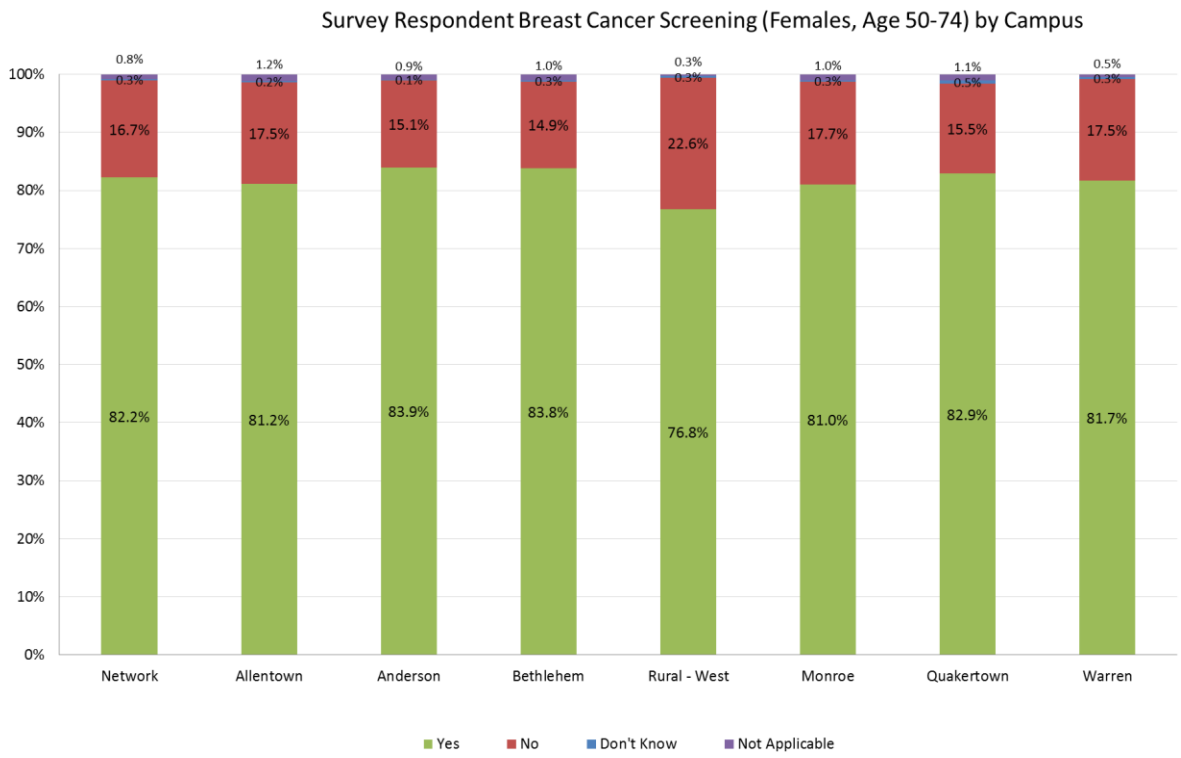


Figure 67

asked the approximate date of their last screening. In order to be considered up to date with screenings for this analysis, respondents must have had a screening date fall in the recommended time frame for their screening type (Figure 68). If a respondent was missing an answer to one of the questions, their screening status was marked "Unknown".

Time Frame for Colorectal Screening based on Screening Type	
Colonoscopy	Within 10 years
Sigmoidoscopy	Within 5 years
Stool Blood Test (i.e.: FIT/FOBT)	Within 1 year

Figure 68

Figure 69 depicts colorectal cancer screening rates among survey respondents age 50 to 74. Approximately 65% of respondents indicated that they were up to date with colorectal cancer screening, which is (lower than the national rate (66.4%) and the Healthy People 2020 goal of (70.5%), and American Cancer Society goal of 80% by 2018. Internal data indicate that our SLUHN screening rate is approximately 55.17%, which is lower than survey respondent reported rates[101].

[101] http://www.healthypeople.gov/

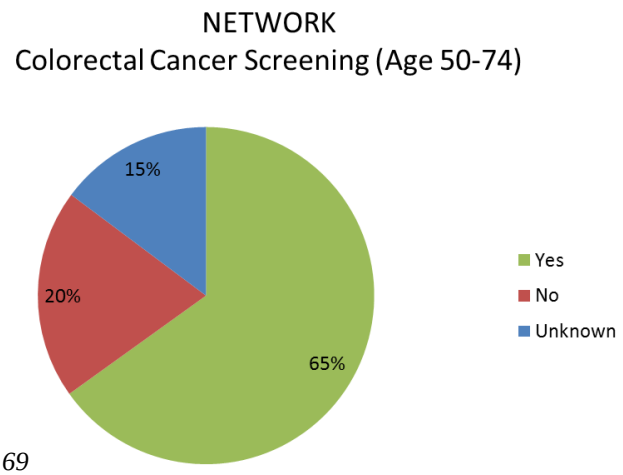


Figure 69

Figure 70 depicts survey respondents' reported screening rates by campus area. Based off of these findings, there is room for improvement in screening rates among all campus areas; however, there are especially low rates among our rural populations. Similarly, internal data show vast differences in colorectal cancer screening rates between differing practice types. The SLUHN average colorectal cancer screening rate (55.17%) is higher than our internal medicine and family medicine clinic rates. What is especially striking is that within our clinics, our rural population has the lowest screening rates, which mirrors the findings from our survey responses.

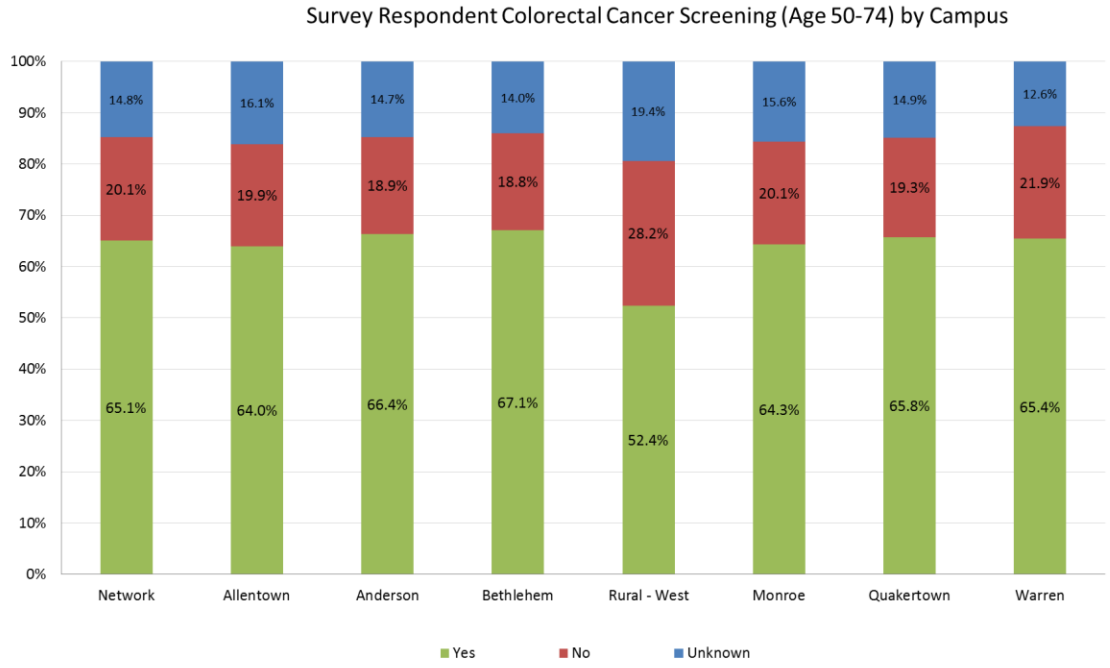


Figure 70

When looking at how insurance coverage influences breast screening rates among 2019 community survey respondents, it is evident that there are vast differences in screening rates based on insurance type. Figure 71 shows that women with private insurance (84.1%) and Medicare (82.4%) have much higher reported screening rates than women who are insured through Medicaid (67.0%) or who are uninsured (48.8%).

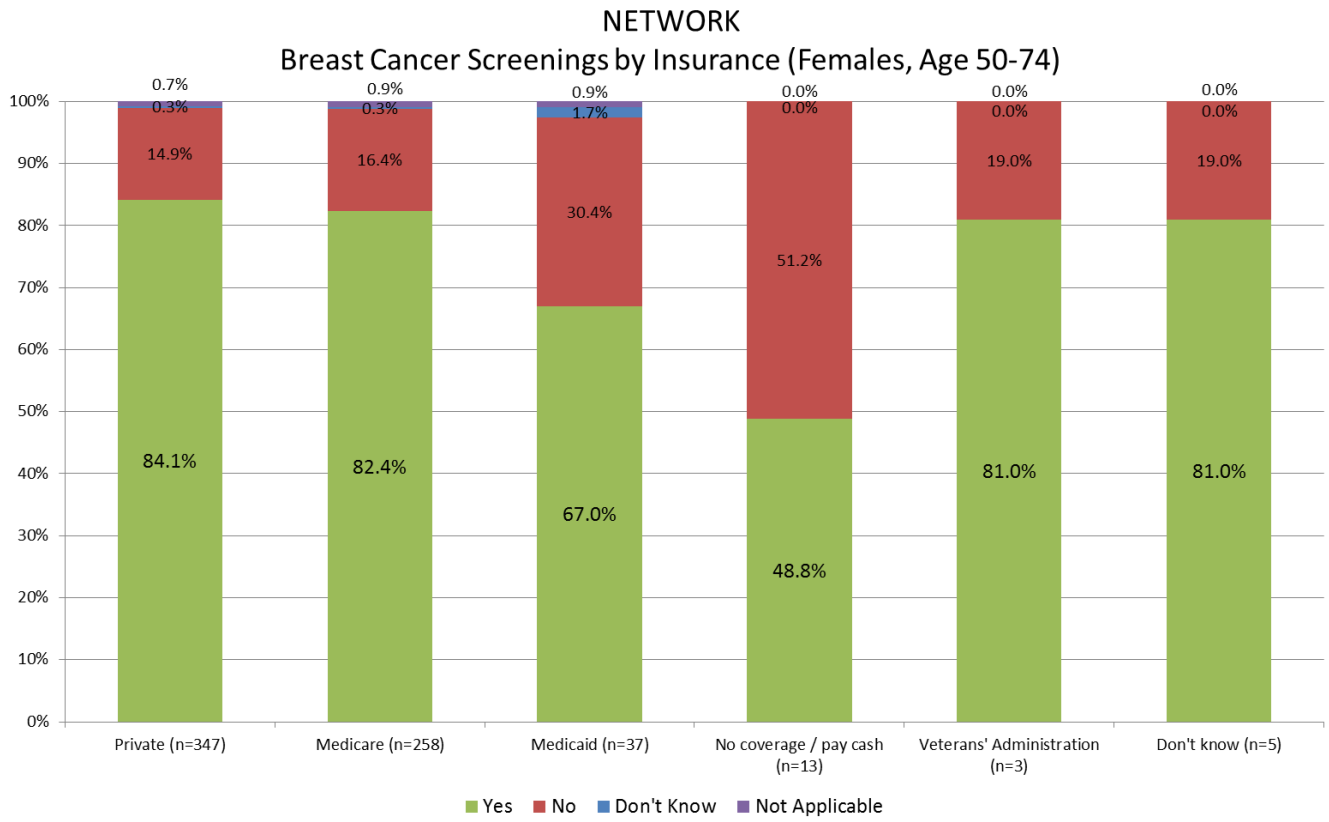


Figure 71

A similar pattern can be seen within colorectal cancer screening rates. According to survey results, respondents with private insurance (68.0%) or Medicare (65.6%) had much higher screening rates compared to those who were uninsured (45.5%) or who were insured through Medicaid (28.3%). However, as previously mentioned, this indicator shows if respondents were up to date on colorectal cancer screening, based off of their reported screening type and approximate date of last screening. Many respondents did not respond to one of the questions, therefore their status could not be calculated. Thus, there are a high number of respondents whose screening status is "Don't Know".

As shown in Figure 72, the state and national levels for colon cancer screening fell around 66.4%, so this shows that our patients with private insurance or Medicare were better or the same as the state and national screening averages, but that the uninsured and Medicaid populations were lower than the state and national screening levels. These cancer breakdowns, especially among screened cancers is highly important to note because it makes it evident that there are some barriers with our uninsured and Medicaid populations being screened, most notably for colorectal and breast cancer.

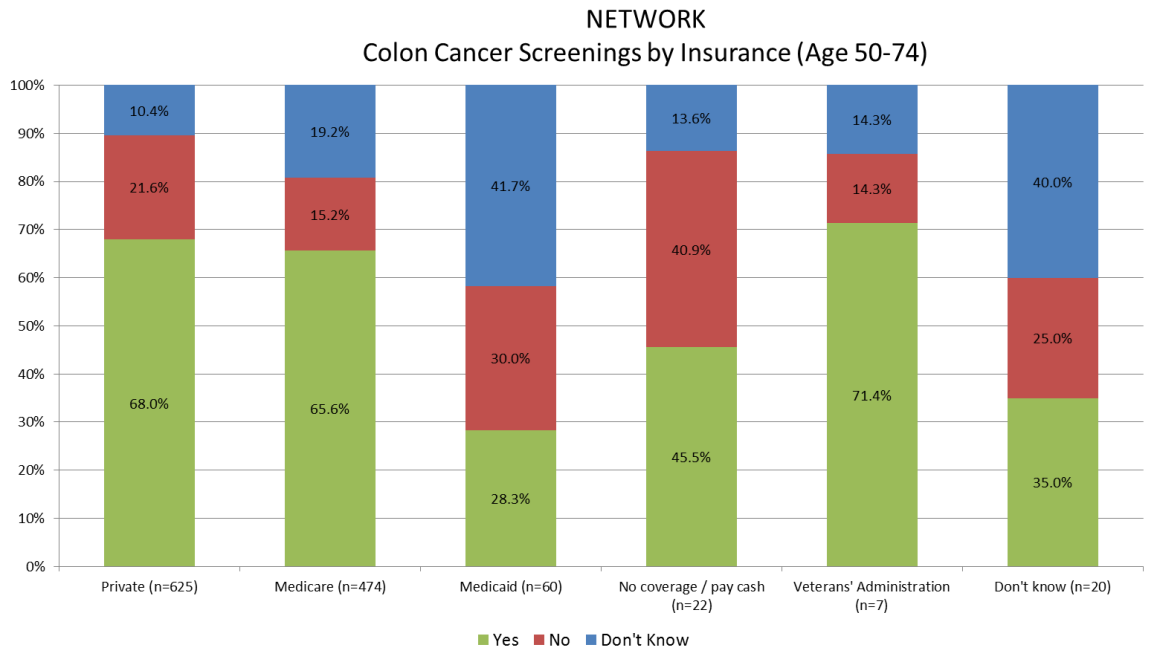


Figure 72

Days of Poor Physical Health

If an individual has not visited their primary care physician for a routine checkup within the past year, their physical health could be compromised by unknown medical conditions being left untreated. To better illustrate the service area's health status, we can examine the number of days respondents of our 2019 survey could not perform daily functions due to physical health issues. As shown in Figure 73, 45.6% of respondents reported missing one or more days of normal activity in the past month due to poor physical health.

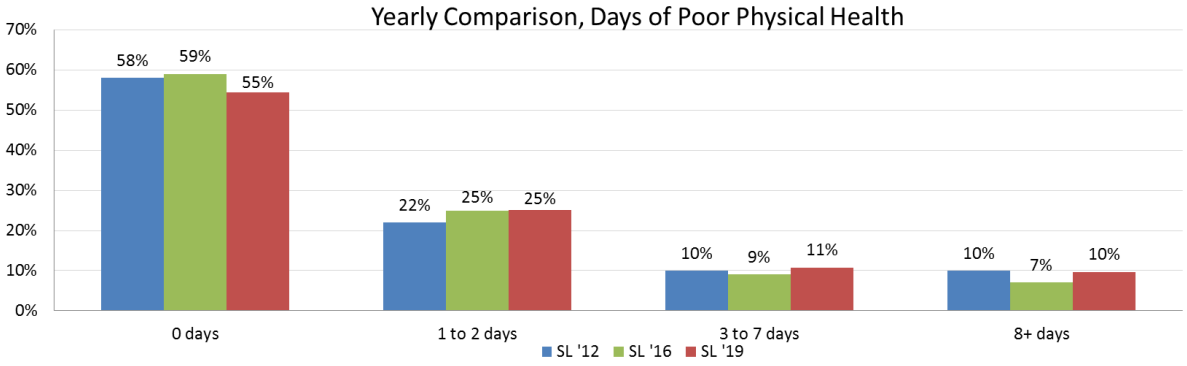


Figure 73

Days of Poor Mental Health

In an effort to assess the overall well-being of the service area, we can look to the average number of days of poor mental health. According to our 2019 survey data, 37.1% of respondents reported having missed one or more days of normal activity due to poor mental health within the past month of their being surveyed (Figure 74). Those who are missing days of normal activity due to poor mental health may not be receiving any type of medical attention, leaving their condition untreated.

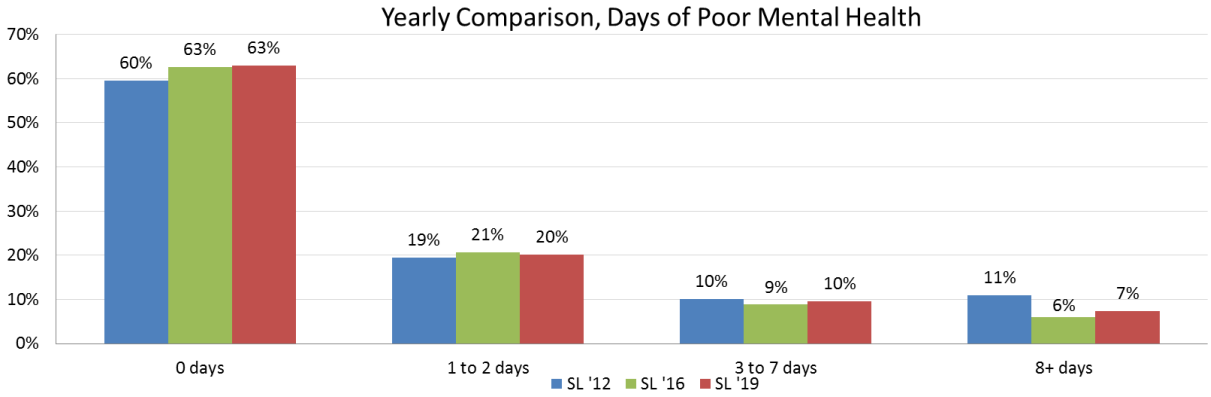


Figure 74

Top Reasons for Hospitalization

Examining the most frequent reasons for hospital admissions can indicate common health disparities, thereby allowing us to develop programming to treat or prevent these disparities before inpatient hospitalization is required. Figure 75 delineates the top 10 reasons for inpatient hospitalization at St. Luke's in 2017. The top three causes were child birth, sepsis and acute kidney failure.

FY17 Network - Top 10 Principal Diagnoses for Inpatient Encounters
(From Zip Codes Comprising Top 80% of Network Encounters)

Principal Diagnosis	Ranking
Z38.00 - Single liveborn infant, delivered vaginally	1
A41.9 - Sepsis, unspecified organism	2
N17.9 - Acute kidney failure, unspecified	3
Z38.01 - Single liveborn infant, delivered by cesarean	4
I13.0 - Hypertensive heart and chronic kidney disease with heart failure and stage 1 through stage 4 chronic kidney disease, or unspecified chronic kidney disease	5
J18.9 - Pneumonia, unspecified organism	6
I11.0 - Hypertensive heart disease with heart failure	7
I21.4 - Non-ST elevation (NSTEMI) myocardial infarction	8
J44.1 - Chronic obstructive pulmonary disease with (acute) exacerbation	9
E66.01 - Morbid (severe) obesity due to excess calories	10

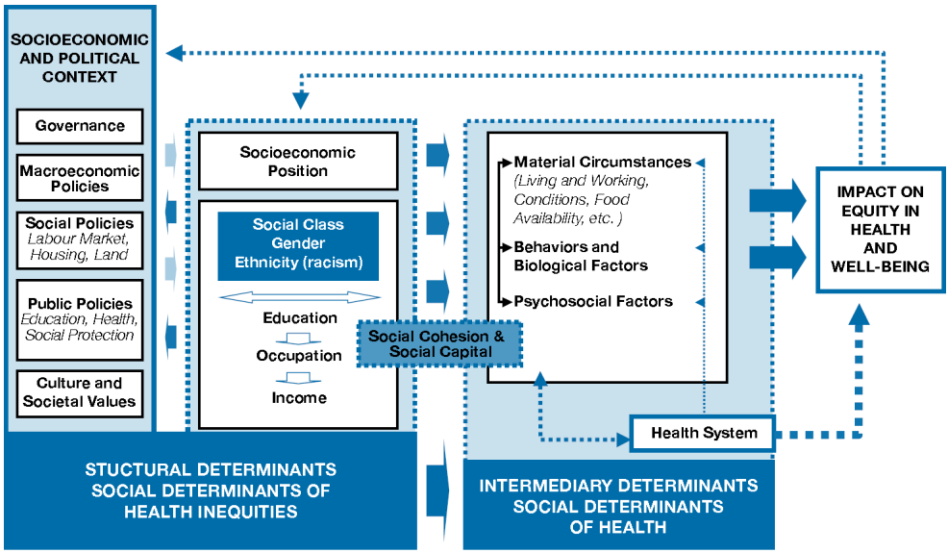
Figure 75

According to internal data, the majority of trauma-related incidents in 2017 resulted in falls at 55.7%, followed by motor vehicle accidents at 19.3%. The fewest instances of trauma resulted from gunshot wounds, at 1.1%.

Conclusion and Key Findings

In reviewing the extensive primary and secondary data, it is evident that there are significant needs to address within our communities. For the upcoming three-year (2019-2022) cycle, St. Luke's University Health Network will continue to work toward addressing the health priorities identified network-wide, in order to improve the community's health. The three main priorities identified include: improving access to care; preventing chronic disease; and improving mental and behavioral health. The upstream factors related to the social determinants of health and individual lifestyle behaviors contribute to the poor health status of our communities.

These three health priorities will be addressed using the social determinants of health framework in conjunction with Lifestyle Medicine interventions in order to influence the overall health of our communities. Lifestyle Medicine interventions are related to behaviors such as – not smoking, eating sufficient amounts of fruits and vegetables, exercising regularly and maintaining a healthy weight. The following is the social determinants of health framework developed by the World Health Organization (WHO) which outlines the structural components (social determinants) that need to be considered in relationship to the intermediary determinants (lifestyle based behavior modification interventions) in order to achieve desirable health outcomes.



The social determinants of health and lifestyle behaviors are the barriers that impact a wide range of health, function and quality of life. While there are many that need to be addressed, overall this CHNA found the most pressing needs to be specifically in areas related to:

- Housing
- Transportation

- Food insecurity
- Obesity reduction
- Physical activity promotion
- Opioids and other substance use
- Child/Adolescent mental health

The needs discussed within the health categories outlined in this document will serve as our guide in creating a detailed campus specific implementation plan to best address the specific needs of the St. Luke's University Health Network campuses' service areas using the three buckets of: Wellness and Prevention; Care Transformation; and Research and Partnerships. We will work collaboratively in partnership with our community and network partners in order to create a more equitable society with better health outcomes, especially among our most vulnerable populations such as our Hispanic communities, seniors, women and children.

Addendum

Substance Abuse

Over the past two decades an estimated 700,000 people died of drug overdoses in the United States[102]. In October of 2017, the federal government declared a national Public Health Emergency in response to the astronomical rise in overdose deaths[103]. The precipitous increase in overdose deaths is primarily driven by the over 600% increase in synthetic opioid deaths, predominately fentanyl, since 2013 (Figure 1)[104]. The Centers for Disease Control's (CDC) *Annual Surveillance Report of Drug-Related Risks and Outcomes* breaks the opioid crisis into three phases. The first phase, starting in the 1990's, was defined by rising overdose deaths from a sharp increase in prescribed opioids for chronic pain[105]. The second wave of the crisis is thought to have started in 2010 with an increase in overdose deaths from heroin. People struggling with opioid addiction can transition to heroin due to its similar effects on the body and cheaper price. 80% of Americans using heroin report having misused prescription opioids first[106]. The third, and deadliest, phase of the opioid crisis started in 2013 when synthetic opioids like fentanyl dramatically increased overdose deaths and hospitalizations[107]. With the most recent data showing the highest number of overdose deaths to date in both Pennsylvania and New Jersey, as well as nationally, we are very much still in the midst of the third phase[108].

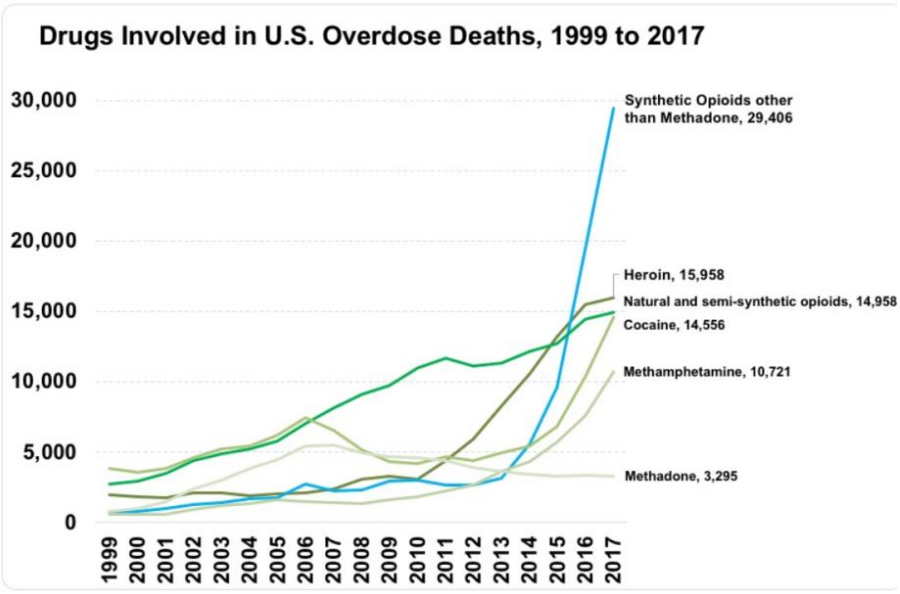


Figure 1

Pennsylvania is particularly affected by this national crisis. According to data from the Substance Abuse and Mental Health Services Administration, under the US Department of Health and Human Services, Pennsylvania is in the top cohort of states for heroin usage in every age bracket in 2016 and 2017. It's one of only nine states with rates of adult heroin usage above 450 out of every 100,000 adults (Figure 2)[109]. New Jersey is in the top 18 with rates higher than 390 out of every 100,000 adults.

[102] https://www.cdc.gov/nchs/products/databriefs/db329.htm
[103] https://www.whitehouse.gov/opioids/
[104] https://www.drugabuse.gov/related-topics/trends-statistics/overdose-death-rates
[105] https://www.cdc.gov/drugoverdose/pdf/pubs/2018-cdc-drug-surveillance-report.pdf
[106] https://www.drugabuse.gov/publications/drugfacts/heroin#ref
[107] https://www.cdc.gov/drugoverdose/pdf/pubs/2018-cdc-drug-surveillance-report.pdf
[108] https://www.cdc.gov/drugoverdose/data/statedeaths.html
[109] https://www.samhsa.gov/data/report/2016-2017-nsduh-national-maps-prevalence-estimates-state

***Heroin Use in the Past Year among Adults Aged 26 or Older*, by State: Percentages, Annual Averages Based on 2016 and 2017 NSDUHs**

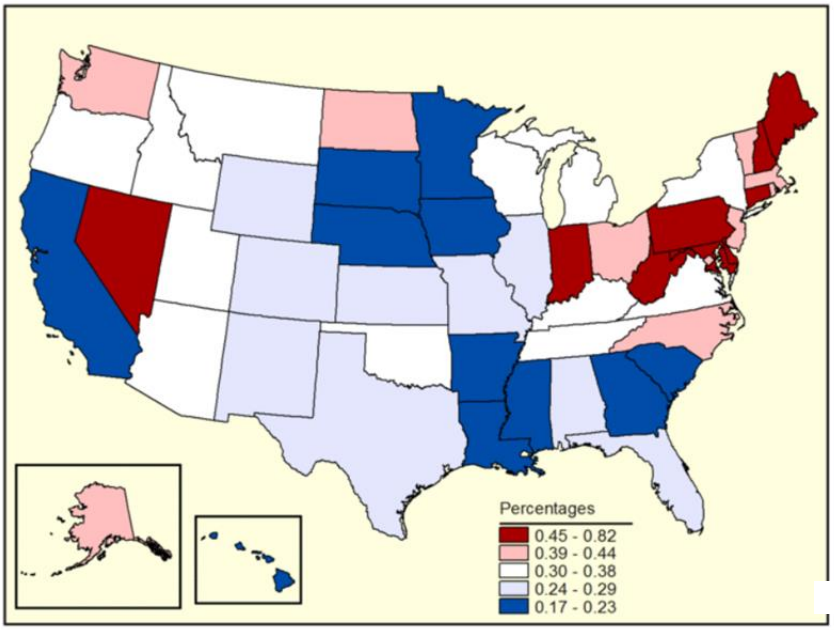


Figure 2

In 2017, Pennsylvania recorded the third most drug overdose deaths after only West Virginia and Ohio[110]. In total, there were 5,456 drug-related overdose deaths, meaning an overdose death rate of 43 out of every 100,000 residents, which is nearly double the national average of 22 out of every 100,000 residents[111]. New Jersey ranked twelfth in the nation in overdose deaths. Both states had statistically significant increases in overdose deaths between 2016 and 2017. Similarly, Pennsylvania was one of only six states to see a statistically significant increase in the amount of non-fatal overdose hospitalizations between 2016 and 2017[112]. New Jersey did not have a statistically significant increase in non-fatal overdose hospitalizations.

According to data from the National Center for Health Statistics through the CDC, Lehigh, Northampton, Bucks, Schuylkill, Carbon, Monroe and Warren counties had a combined 1,846 overdose deaths between 2012 – 2016[113]. All of the counties in with St. Luke's hospitals saw increases in the number of opioid overdose deaths since 2007. The largest two increases were in Schuylkill and Warren counties (Figure 3). Schuylkill County went from 3.9 opioid deaths per 100,000 residents in the 2007 – 2011 timeframe to 24.5 opioid deaths per 100,000 residents in the 2012-2016 timeframe. Warren County went from 7.0 per 100,000 residents to 26.7 deaths per 100,000 residents. These two counties have the highest rates of opioid overdose deaths by a considerable margin as of 2016. The lowest rate is in Bucks County at 8.1 deaths per 100,000 residents. Only Bucks and Lehigh counties have rates lower than the national and state averages, 14.1 per 100,000 and 15.9 per 100,000 respectively.

[110] https://www.cdc.gov/drugoverdose/data/statedeaths.html
[111] https://www.dea.gov/sites/default/files/2018-10/Opioid%20threat%20in%20Pennsylvania%20FINAL.pdf
[112] https://www.cdc.gov/drugoverdose/data/nonfatal.html
[113] https://opioidmisusetool.norc.org/

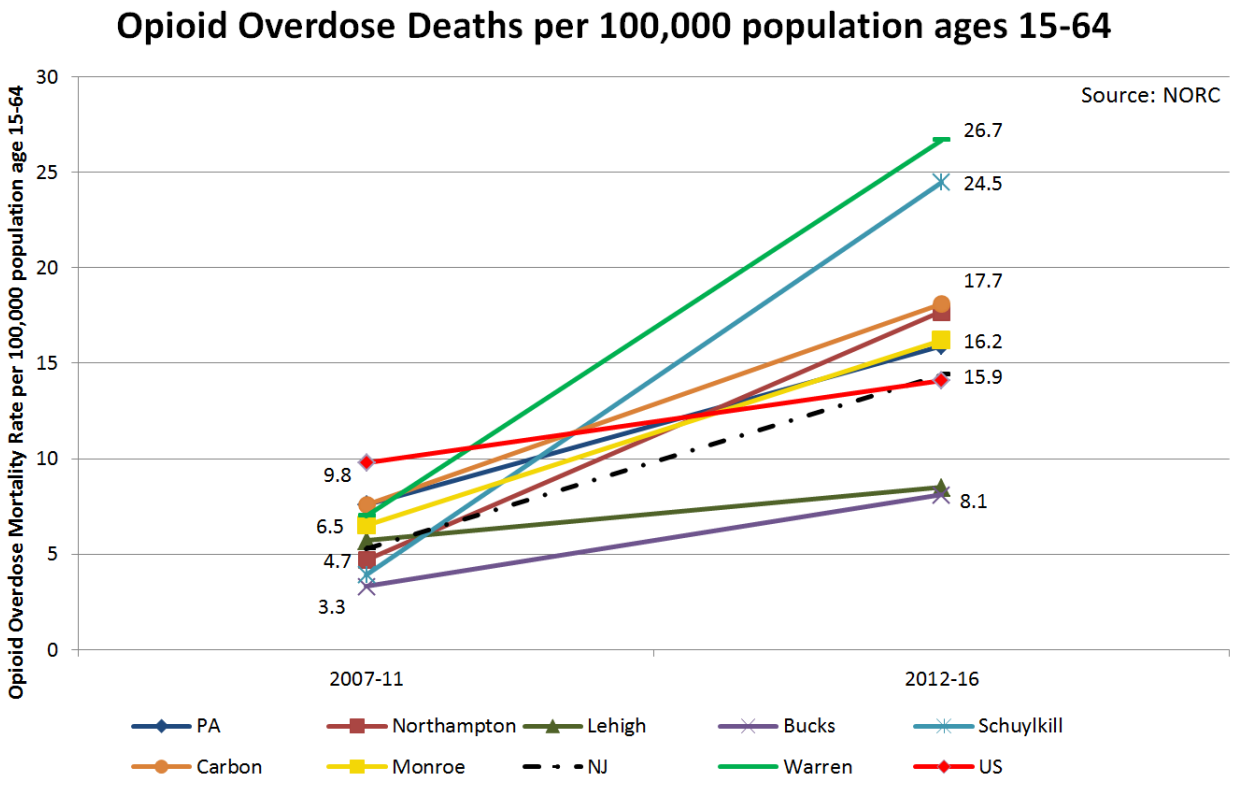


Figure 3

County level data from the Pennsylvania Opioid Data Dashboard and the Pennsylvania Healthcare Cost Containment Council shows the number of newborns on Medicaid born with Neonatal Abstinence Syndrome (NAS), a group of medical conditions resulting from withdrawal a newborn experiences when exposed to certain drugs in the womb, predominantly opioids[114]. In 2016 Monroe County saw the highest rate of infants covered by Medicaid and born with NAS at 19.4 incidents out of every 1,000 newborn hospital stays covered by Medicaid[115], and Lehigh County saw the lowest with 4.6 incidents per 1,000 newborn stays (Figure 4)[116].

Schuylkill County saw the highest rate of residents covered by Medicaid with Opioid Use Disorder (OUD), colloquially called addiction, at 998.1 per 100,000 residents, while Northampton County reported the lowest at 514.8 per 100,000 residents[117]. Bucks County had the highest rate of residents on Medicaid who received Medically-Assisted Treatment (MAT), a combination of behavioral therapy and medications to treat individuals with OUD, at 498.1 per 100,000 residents. Northampton County had the lowest with 261.4 residents on Medicaid receiving MAT per 100,000[118].

[114] https://www.stanfordchildrens.org/en/topic/default?id=neonatal-abstinence-syndrome-90-P02387
[115] http://www.phc4.org/reports/researchbriefs/neonatal/17/docs/researchbrief_neonatal2017.pdf
[116] https://data.pa.gov/stories/s/Treatment/fvkx-eumb
[117] https://data.pa.gov/stories/s/Treatment/fvkx-eumb
[118] https://data.pa.gov/stories/s/Treatment/fvkx-eumb

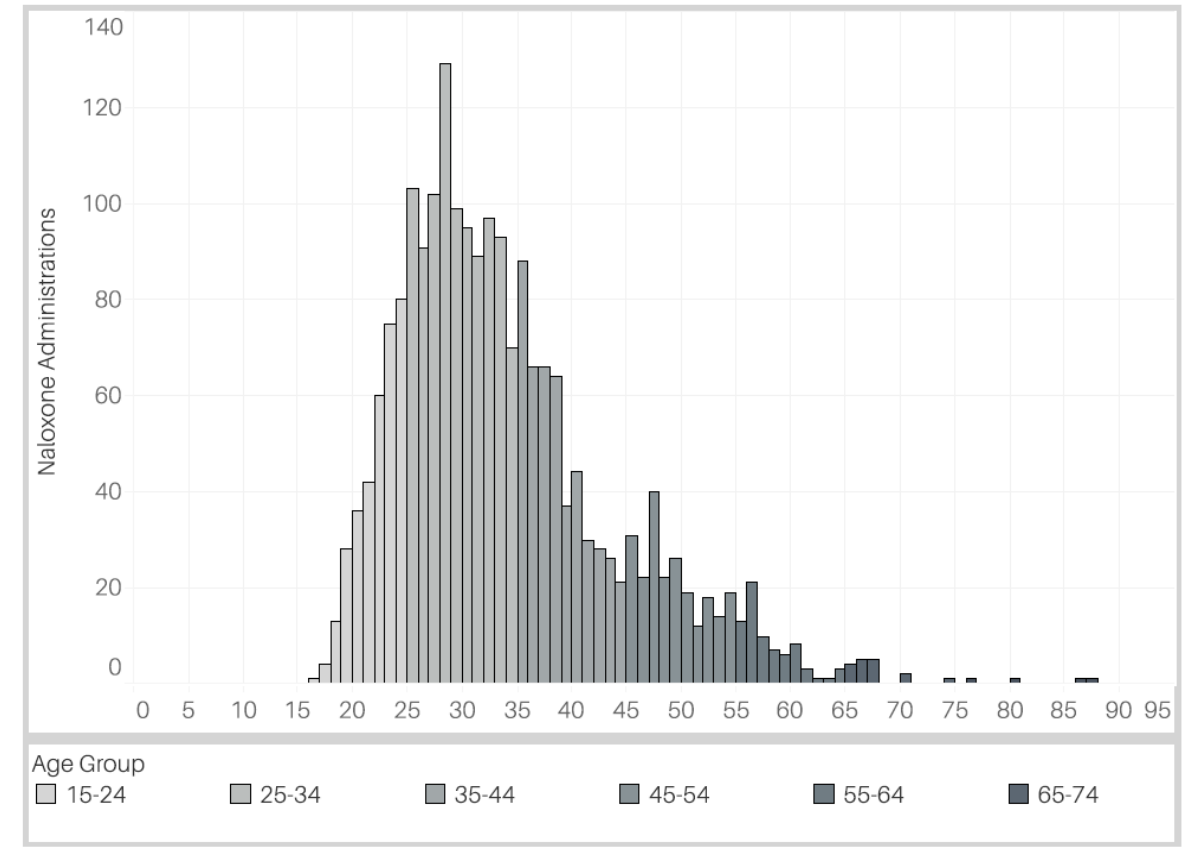
Pennsylvania County-Level Opioid Data 2016. Sources: PA Opioid Data Dashboard & PA Healthcare Cost Containment Council

	Lehigh	Northampton	Schuylkill	Carbon	Monroe	Bucks
Newborns on Medicaid Born with Neonatal Abstinence Syndrome (Per 1,000 newborn hospital stays with Medicaid)	4.6	8.4	13.6	19.0	19.4	16.1
Number of Successful Naloxone Reversals (Per 100,000)	13.4	28.0	9.8	34.5	0.0	20.2
Pennsylvanians Covered by Medicaid with Opioid Use Disorder (Per 100,000)	656.5	514.8	998.1	892.7	762.9	820.7
Pennsylvanians Covered by Medicaid Receiving Medically-Assisted Treatment (Per 100,000)	302.1	261.4	480.5	463.6	441.0	498.1

Figure 4

In 2016, Carbon County saw the highest rate of successful Naloxone reversals with 34.5 incidents per 100,000 residents and Monroe County had the lowest with 0[119]. Naloxone is opioid-antagonist medication that can rapidly reverse an opioid overdose by binding to opioid neurological receptors to prevent further uptake and restoring normal respiration[120]. It can be administered by paramedics, first responders, and emergency room doctors. Additionally, physicians can write third-party prescriptions for friends and family close to residents experiencing OUD. Furthermore, the Pennsylvania Secretary of Health, Dr. Rachel Levine, issued a standing order for Naloxone[121]. This serves as a prescription for any interested Pennsylvania residents who can pick up Naloxone at general pharmacies in order to use it to save someone experiencing an opioid overdose. Data from the Drug Enforcement Administration (DEA) shows that statewide in 2017 the most likely residents to reportedly receive Naloxone were between the ages of 25 and 35, comprising 46% of all treatments (Figure 5)[122]. Over two thirds of all treatments were administered to males, and 89% where to recipients identified as White[123]. Both of these percentages represent a significant disparity with the composition of the general Pennsylvania population where 49% of the population identifies as male and 78% identifies as White[124]. These disparities could indicate disproportionate usage of opioids and/or disproportionate access to the life-saving medicine Naloxone.

[119] https://data.pa.gov/stories/s/Treatment/fvkx-eumb
[120] https://www.drugabuse.gov/related-topics/opioid-overdose-reversal-naloxone-narcan-evzio
[121] https://www.health.pa.gov/topics/Documents/Opioids/General%20Public%20Standing%20Order.pdf
[122] https://www.dea.gov/sites/default/files/2018-10/Opioid%20threat%20in%20Pennsylvania%20FINAL.pdf
[123] https://www.dea.gov/sites/default/files/2018-10/Opioid%20threat%20in%20Pennsylvania%20FINAL.pdf
[124] https://www.dea.gov/sites/default/files/2018-10/Opioid%20threat%20in%20Pennsylvania%20FINAL.pdf



Source: Liberty Mid-Atlantic HIDTA

Figure 5

Disparities exist between the data reported by different governmental agencies and nonprofits. In this report we've opted to use the most localized data available for each section. Part of managing this public health crisis requires accurate and uniform access to data such that the issues can be clearly understood and more effectively redressed. Local, state, and national agencies, as well as nonprofit organizations, should look to better collaborate in the sharing of opioid-related mortality and morbidity data. There have been some effective interventions reducing the fatalities experienced across Pennsylvania and New Jersey communities. In addition to the standing order, Pennsylvania has also implemented a "warm hand-off" program where healthcare providers work with county Drug and Alcohol offices to facilitate a direct referral from emergency opioid overdose care to OUD treatment programs[125]. Furthermore, since 2016 Pennsylvania has funded 45 Centers of Excellence (CoE) across the state which offer "whole person" focused community-based healthcare management for residents suffering from OUD. The centers manage a patient's physical and mental healthcare, offer care navigators, and link the patient up with resources like housing, food, and employment. In the first year the centers engaged 15,000 residents, over 70% of whom were entered into treatment[126]. The Lehigh Valley has one CoE provider, Neighborhood Health Centers of the Lehigh Valley. According to the Drug Enforcement Administration's "The Opioid Threat in Pennsylvania" report, legislation

[125] https://www.ddap.pa.gov/SiteAssets/Pages/Warm-Hand-Off/Clinical%20Pathways%20Letter_2018.pdf
[126] https://www.governor.pa.gov/governor-wolf-announces-year-one-successes-centers-excellence/

targeting the prescription of medical opioids has decreased the overall availability of opioids; however, it remains unclear if this has decreased the demand for prescription opioids. While all of these treatment methods are crucial for individuals and families struggling with addiction, it is important to address the community supports/resources that can prevent addiction in the first place. Healthy communities must offer social cohesion, meaningful employment, recreational activities, and a sense of hope in order to interdict residents who might otherwise become addicted to opioids or other harmful drugs.

Appendix A

2019 CHNA Key Informant Interview

St. Luke's University Health Network (SLUHN) is a nationally recognized non-profit health network that has facilities serving counties in both Pennsylvania (Lehigh, Northampton, Carbon, Schuylkill, Bucks, Monroe) and New Jersey (Warren). As part of the Patient Protection and Affordable Care Act, all non-profit hospitals are required to conduct a Community Health Needs Assessment (CHNA) every three years. In order to accomplish our goals, St. Luke's is conducting key informant interviews to identify health needs within the community. Since you are a vital member of our community, you are being asked for your feedback to assist us in data collection. Your answers will be compiled by St. Luke's to determine health needs in the community.

Please note that your name will not be associated with your responses. Additionally, please complete your responses in a word document and email responses to the Community Health Needs Assessment Liaison for facilitated follow up during the interview.

1. Name:
2. Title:
3. Organization:
4. How long have you been a part of this community?
5. When thinking about others you interact with here, do you feel a sense of community?
6. Do you work and live in this community? Please explain.
7. How would you describe your community?
8. What are the major needs/challenges within this community?
9. What are some of the challenges specific to your organization?
10. How do you feel this community has been successful in meeting its needs?
11. What improvements in policy and community infrastructure would assist you in meeting community needs?

12. Who are some of the key players in your community and what organization do they belong to?

13. What are some of the strengths and resources of your community?

14. Do you feel these strengths are shared and evenly distributed throughout the community? Please explain.

15. What are some concrete examples of strengths and challenges related to the following topics in your community:

    a. Health disparities/Access to care (example: access to medical, mental, dental and vision care)

    b. Healthy Living (example: diet and physical activity)

    c. Chronic Disease (example: diabetes, heart disease and cancer)

    d. Mental/Behavioral Health (example: substance abuse, depression and anxiety)

    e. Child/Adolescent Health (example: physical and mental wellness)

    f. Elder Health (example: falls, medications and isolation)

16. What are the top three issues that need to be addressed in our community?

17. Any additional Comments

Appendix B

2019 CHNA Community Forum Invited Organizations – All Campuses

- ABC Tamaqua Hi-Rise Apartments
- Abilities of Northwest Jersey
- Allentown Health Bureau
- Allentown Promise Neighborhood
- Allentown Police Department
- Allentown School District
- Alternatives Inc.
- American Cancer Society
- American Red Cross
- Area Health Education Center, East Central and Northeast PA
- ArtsQuest
- Bangor Area School District
- Bangor Block Watch
- Bangor Police Department
- BCHIP
- Bethlehem Area School District
- Bethlehem Health Bureau
- Bethlehem Housing Authority
- Big Brothers Big Sisters
- Borough of Tamaqua
- Bridgeway PACT
- Bucks County Opportunity Council
- Capital Blue Cross
- Carbon County Board of Commissioners

- Carbon County Community Foundation
- Carbon – Monroe – Pike Mental Health
- Cathedral Church of the Nativity
- Cedar Crest College
- Centenary College
- Center for Humanistic Change
- Child Advocacy Center, Monroe County District Attorney's Office
- Child and Family Resource Services, NORWESCAP
- Child Development Inc, Schuylkill County
- Community Action Committee of the Lehigh Valley
- Community Prevention Resources of Warren County
- Cross Roads
- City of Easton
- Daybreak
- Department of Human Services – Easton Coach
- DeSales University
- Domestic Abuse and Sexual Assault Crisis Center
- Domestic Violence Service Center serving Carbon County
- Easton School District
- Easton/Phillipsburg Branch of the Greater Valley YMCA
- East Stroudsburg University
- East Stroudsburg University Police Department
- Ecumenical Soup Kitchen at Our Lady of Mount Carmel
- Eldred Township Community Center
- ESSA Bank & Trust
- Faith Fellowship Network

- Family Connections in Easton
- Family Guidance Center of Warren County
- Family Life Community Center
- Family Promise of Carbon County
- Florio Perucci Steinhardt & Cappelli Law Firm
- Food Bank, NORWESCAP
- Former Jim Thorpe School District Superintendent
- The Friendly Community Center
- Good Shepherd Rehabilitation
- Habitat for Humanity Lehigh Valley
- Hamilton Jackson Pocono Parks & Open Space Commission
- Haven House
- HCC
- Head Start Monroe County
- Head Start, NORWESCAP
- Head Start, Pathstone Coaldale
- Healthy Smiles, Happy Kids Dental Van Blue Mountain High School
- Hispanic Center of the Lehigh Valley
- Hispanic Chamber of Commerce
- Holland Counseling Associates
- Hometown RHC Mental Health
- The Hoot Group
- Independent Living Service
- Just Born, Inc.
- Kellyn Foundation
- Lansford Alive – Lansford Police Department

- Laros Foundation
- Legal Services of Northwest Jersey – Warren County
- Lehigh and Northampton Transportation Authority
- Lehigh Carbon Community College
- Lehigh Conference of Churches Soup Kitchen at St. Paul's
- Lehigh County
- Lehigh County Department of Drug and Alcohol Services
- Lehigh County Jail
- Lehigh County Mental Health
- Lehigh University
- Lehigh Valley ACT
- Lehigh Valley Business Coalition on Healthcare
- Lehigh Valley Chamber of Commerce
- Lehigh Valley Community Foundation
- Lehigh Valley Health Network Street Medicine
- Magellan Behavioral Health of PA, Inc.
- Majestic House Apartments
- McKinley Elementary School
- Meals on Wheels
- Mental Health Recovery Services of Warren and Clinton Counties
- Merchants Bank – Bangor
- Mid Atlantic Rehabilitation Services
- Milford Township
- Monroe County Court
- Monroe County United
- Moravian College

- Morris Black & Sons
- Muhlenberg College
- NAACP
- Nacci Printing
- Neighborhood Health Centers of the Lehigh Valley
- New Bethany Ministries
- New Beginnings Social Work
- New Life Assembly of God, Tamaqua
- North Jersey Health Care Collaborative
- Northampton Community College
- Northampton Community College – Monroe Campus
- Northampton County Department of Human Services, Area Agency on Aging
- Northampton County Department of Human Services, Mental Health
- Northampton County Drug and Alcohol Unit
- Northampton County Health and Human Services
- Northampton County Medical Society Alliance
- Northampton County Mental Health
- Northampton County Prison Advisory Board
- Northampton County Veterans Affairs
- Nurse Family Partnership
- Office of the Prosecutor Warren County
- Office of Senator Bob Mensch
- The Open Link
- Operation Chillout
- Opioids in Warren County
- PA Treatment and Healing

- Palisades School District
- Panther Valley School District
- Pathstone Lehighton
- Pen Argyl School District
- Penn Foundation, Inc.
- Penn Kidder Library
- Pennsylvania Department of Health
- Pennsylvania Health Access Network
- Phillipsburg Area School District
- Phillipsburg Housing Authority
- Pinebrook Family Answers
- Pleasant Valley Ecumenical Network
- Pocono Alliance
- Pocono Area Transitional Housing
- Pocono Country Place
- Pocono Family YMCA
- Pocono Mountain School District
- Pocono Services for Families and Children
- Poole Trust
- PratyushSinha Foundation
- Pride of Quakertown
- Quakertown Alive!
- Quakertown Borough
- Quakertown Community Center
- Quakertown Community School District
- Quakertown Food Pantry

- Recovery Revolution
- The RedCo Group
- Resources for Human Development
- Resurrected Life Community Church
- The Retired Seniors Volunteer Program
- Salvation Army
- Schuylkill Community Action
- Schuylkill County Drug and Alcohol Program
- Schuylkill County Transportation Authority
- Schuylkill County Vision
- Second Harvest Food Bank
- Senior Life Lehigh Valley
- SHINE After School Program
- Slate Belt Chamber of Commerce
- Slater Family Network
- SLUHN New Jersey Physicians Group
- SLUHN Warren Coventry Family Practice
- SLUHN Warren Emergency Department
- State Representatives
- State Representative Peter Schweyer
- Street to Feet
- STS Transit
- Suddenly Samantha Salon
- Summit Hill Lions Club
- Swick Law Office
- St. Luke's Allentown Family Health Center

- St. Luke's Allentown Nursing
- St. Luke's Anderson Emergency Department
- St. Luke's Anderson NICHE
- St. Luke's Internal Medicine
- St. Luke's Miners Hospital Oncology
- St. Luke's Miners Nursing & Rehabilitation
- St. Luke's Miners VPMA
- St. Luke's Nesquehoning Rural Health Center
- St. Luke's Patient Care Services
- St. Paul's Parish Nursing
- St. Luke's Senior Care
- St. Luke's Visiting Nurse Association
- Tamaqua Library
- Tamaqua Area Adult Day Care Center
- Tamaqua Area School District
- Tamaqua Community Arts Center
- Tamaqua Family Practice
- Tamaqua Police Department
- Tamaqua YMCA
- TransOptions
- Turn To Us
- Two Rivers Health and Wellness Foundation
- United Way of Bucks County
- United Way of the Greater Lehigh Valley
- United Way of Monroe County
- United Way of Northern New Jersey

- United Way Schuylkill County
- Upper Bucks Chamber of Commerce
- Upper Bucks Senior Citizens Center
- Upper Bucks YMCA
- Upper Perkiomen School District
- Upper Perkiomen YMCA
- Valley Youth House
- Valor Clinic Foundation
- Visiting Homemaker Service of Warren County
- Warren County Community College
- Warren County Division of Aging and Disability
- Warren County Department of Human Services
- Warren County Health Department
- West End Food Pantry
- Women's Resources of Monroe County
- Youth Empowerment Services
- Zufall Health Center