

2021

Understanding PARHM Geographies

Geographic visualizations of past RHRC studies pertaining to PARHM communities

PA **RURAL
HEALTH
MODEL**
A Federally-Funded Program

The Model Team

Pennsylvania Rural Health Redesign Center

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GEOGRAPHIC SUMMARIES OF KEY FINDINGS

The following document contains geographic visualizations of key findings presented in various RHRC studies which pertain to the Pennsylvania Rural Health Model and the communities it serves. These visualizations allow for further analysis as to whether certain regions, counties, and communities face more difficulties in comparison to others. In addition, it may also benefit those unfamiliar with areas where PARHM serves to become acquainted with the program's area of impact.

Some of the metrics portrayed include clinical health outcomes, social determinant of health factors, community demographics, and the areas served by the program and participant hospitals. Specific metrics looked at include the following: (*clickable links*)

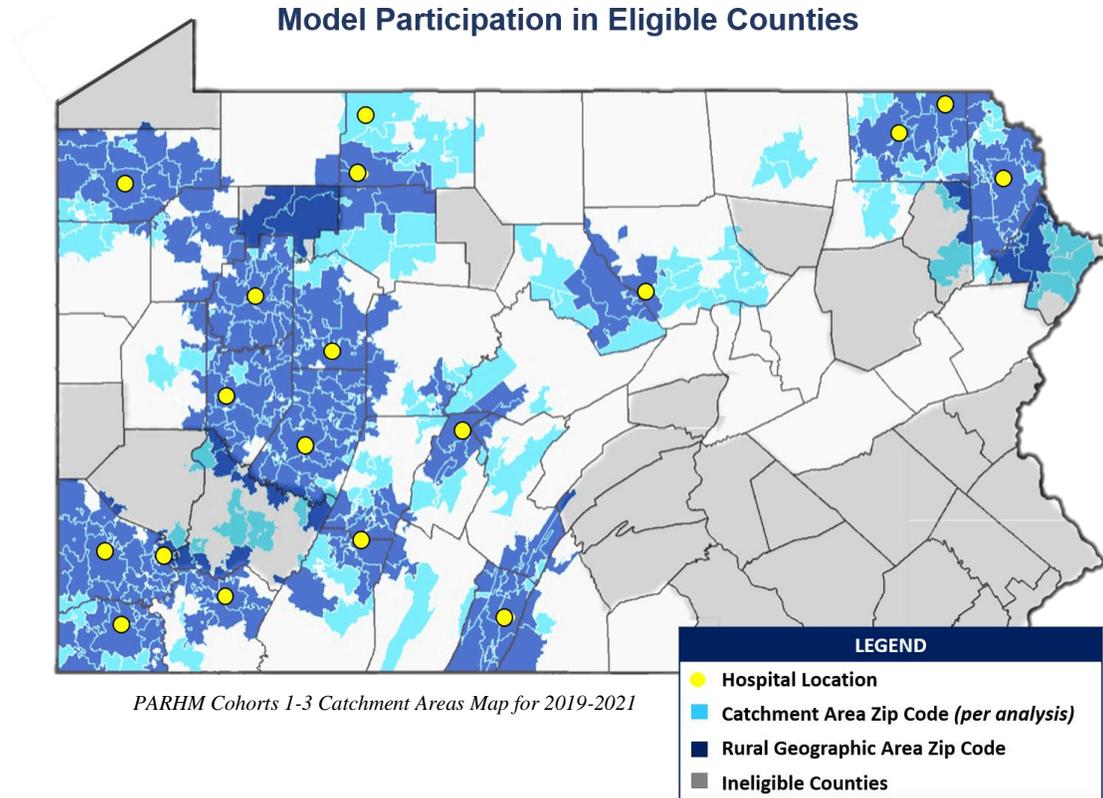
- [Map 1: Participant hospital catchment area by zip code](#)
- [Map 2: Percent Population Impact of PARHM](#)
- [Map 3: Minority Populations Served by PARHM](#)
- [Map 4: Inflated Poverty & Food Insecurity Throughout PA & In PARHM Communities](#)
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These maps are derived from data analysis reports configured by the RHRC and PARHM Model leadership. For a more in-depth understanding of the Model's footprint, social determinant of health factors and clinical outcomes in participant communities, refer to the reports below:

- [*"The Critical Reality of PARHM Communities: Social determinant of health and clinical outcomes compared to the rural state average"*](#) – June 2021
- [*"The Bridge Between Urban & Rural: A closer look at the inequities of rural communities and PARHM's impact on them."*](#) – May 2021
- *The Economic Impact of PARHM Participant Hospitals* – April 2021

MAP 1: CATCHMENT AREA OF PARTICIPANT HOSPITALS

The Pennsylvania Rural Health Model currently works with eighteen participant hospitals spanning across fifteen different rural Pennsylvania counties. The map below shows the geographic locations of participant hospitals along with the communities affected by each one.



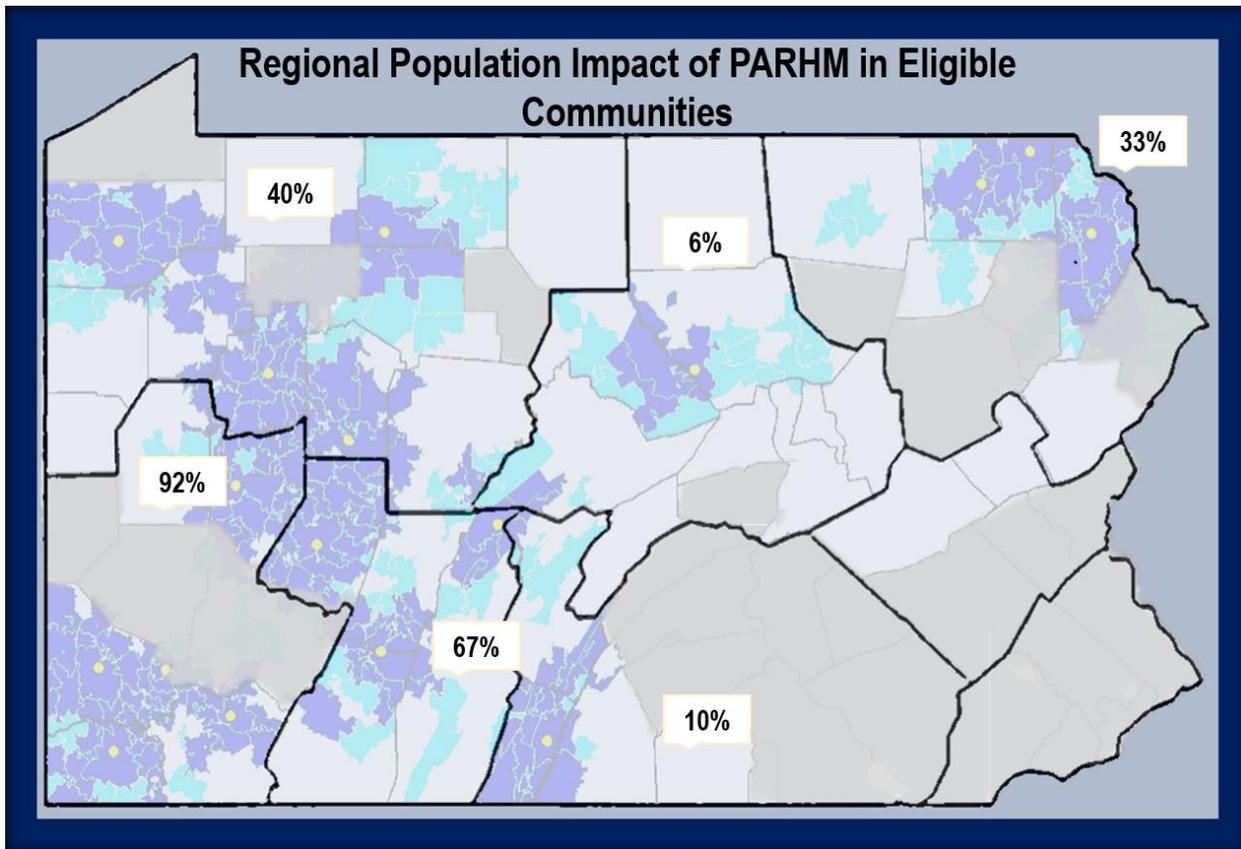
As shown in the map, the yellow icons represent a participant hospital. The blue shaded regions show the catchment area, or communities impacted by the model, which was determined using patient zip code data provided to the RHRC by the Center for Rural Pennsylvania. The counties that have been greyed out were deemed ineligible to participate based on program methodology. The primary reason for this ineligibility is due to not meeting the definition of “rural” as defined by the Center for Rural Pennsylvania.¹ In addition, some counties may have met the definition, but do not have any operating facilities within their borders.

It is evident on the map that the west accounts for most of the program participants. To be exact, fourteen of the eighteen are located in western regions. It should also be noted the majority of the southeastern region is deemed ineligible due to the mostly urban counties -i.e., Philadelphia, Lancaster, etc.



MAP 2: POPULATION IMPACT OF PARHM BY REGION

The Pennsylvania Rural Health Model currently works with eighteen participant hospitals spanning across fifteen different rural Pennsylvania counties. The map below shows the geographic locations of participant hospitals, the catchment areas of each one, and the percent of the population impacted by the program by region.



SOURCE: PARHM Cohorts 1-3 Catchment Areas Map for 2019-2021, coupled with the PA Regional map provided by PHC4

The blue shaded regions of this map show the catchment area, or communities impacted by participants, which was determined using patient zip code data provided to the RHRC by the Center for Rural Pennsylvania. The counties that have been greyed out were deemed ineligible to participate based on program methodology. The primary reason for this ineligibility is due to not meeting the definition of “rural” as defined by the Center for Rural Pennsylvania.

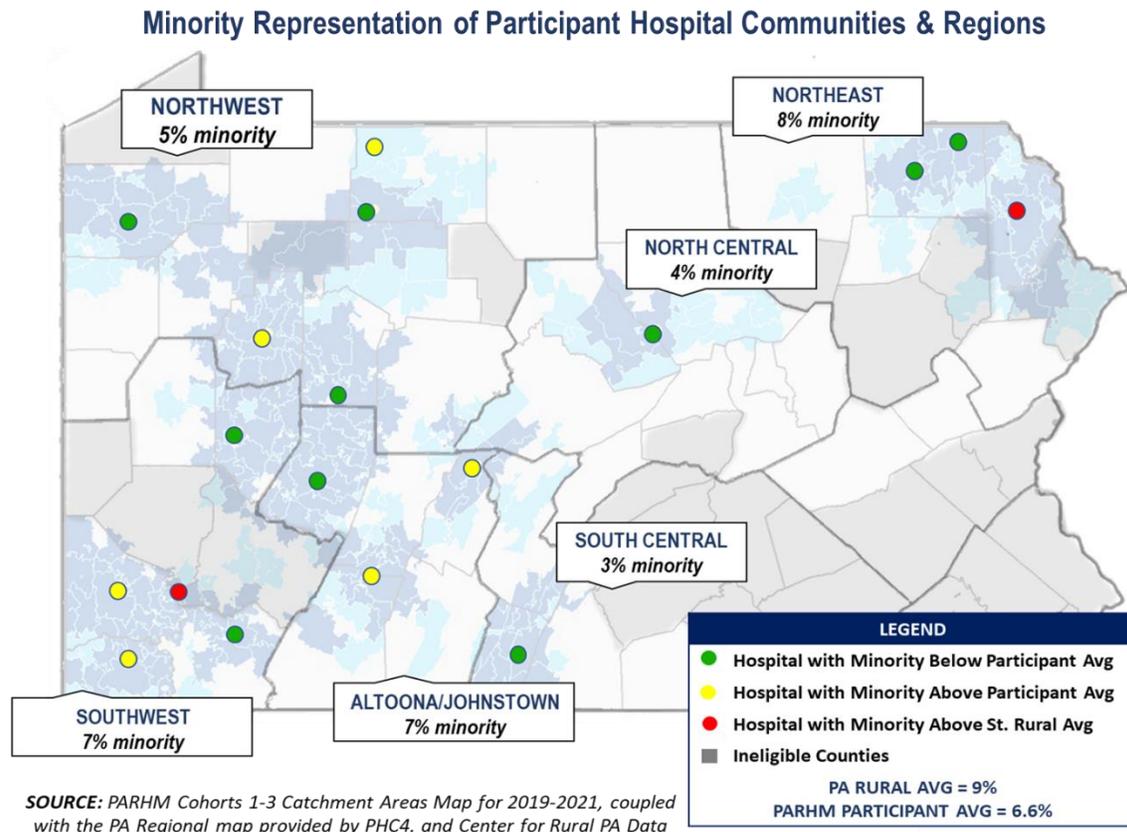
The callout percentages seen on the map represent the percent of the eligible region that the Model impacts. For example, the impact of PARHM can be seen in approximately 92% of the eligible southwest region. These measurements were calculated using the catchment area zip code data coupled with the county populations. The percentage of coverage directly correlated to the number of hospitals in certain geographies. This is evident by the higher percentages in the western regions which account for fourteen of the eighteen participant hospitals.

The findings presented in this map are further explored in the RHRC study [“The Economic Impact of PARHM Participant Hospitals”](#) which was inspired by HAP’s study on the economic impact of Pennsylvania hospitals.²



MAP 3: MINORITY REPRESENTATION WITHIN PARHM

In a recent RHRC study examining the disparities PARHM communities face, an analysis was completed to identify the number of minorities represented within the program. The below map presents the findings including the geographic location of PARHM participant hospitals and the minority populations within their catchment areas in comparison to state and participant averages. This map also shows the minority populations supported by PARHM on a regional level.



The blue shaded regions of this map show the catchment area, or communities impacted by participants, which was determined using patient zip code data provided to the RHRC by the Center for Rural Pennsylvania. This dataset also included the demographic information specific to minorities. The counties that have been greyed out were deemed ineligible to participate based on program methodology.

As shown in the legend, participant hospitals were broken down into three categories: those with minority representation below the participant average (6.6%), above the participant average, and above the state rural average (9%). It can be noted that many hospitals with populations above these rates are in the Pittsburgh proximity.

To read more about the inferences made in regards to minority populations within the program as well as the disparities these individuals are facing that impact their quality of life, refer to the recently released RHRC study [*“The Bridge Between Urban & Rural: A closer look at the inequities of rural communities and PARHM’s impact on them.”*](#)



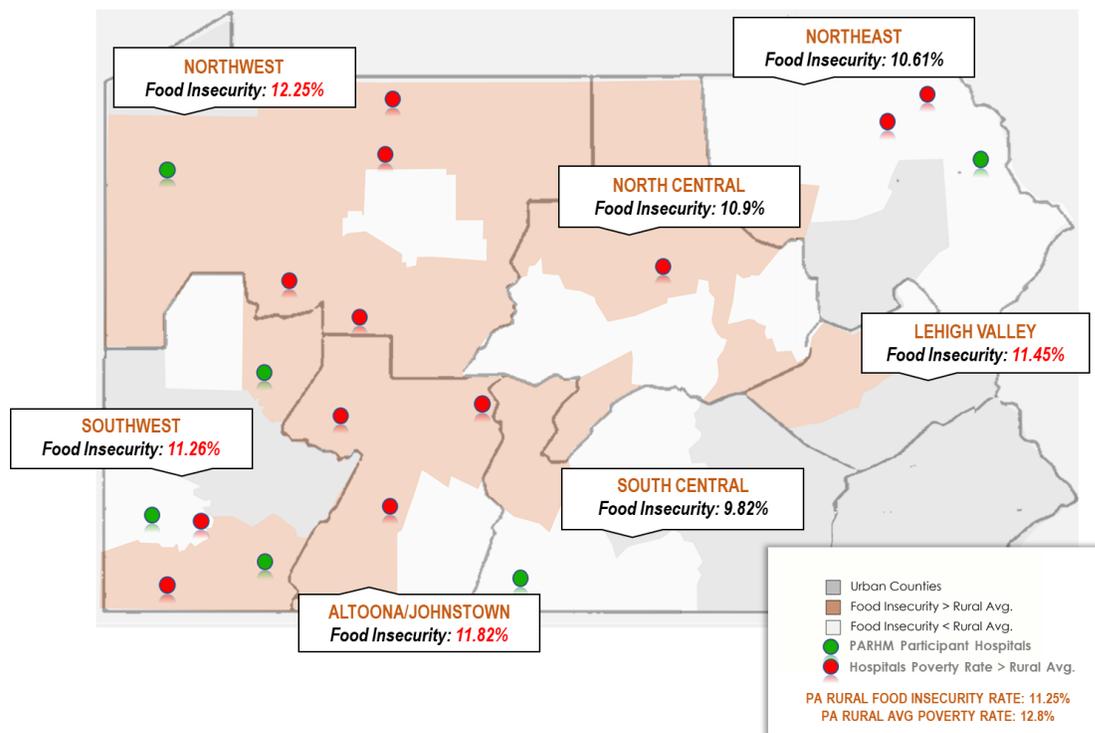
MAP 4: POVERTY & FOOD INSECURITY

This map below provides a visual representation of poverty and food insecurity rates in PARHM communities which were specific metrics examined in two recent RHRC studies. This map shows the food insecurities rates for rural counties and regions across PA, as well as the geographic location of PARHM hospitals with poverty rates above the rural state average. The two specific data point portrayed in this map and their sources include:

1. County level food insecurity rates – *Pennsylvania Department of Human Services Health Equity Analysis Tool*
2. Hospital level poverty rates – *Center for Rural Pennsylvania*

As shown in the legend, red shaded regions represent rural counties where the food insecurity rate surpasses that of the rural average. The values for the dark grey counties were not included in these findings as they represent urban areas outside the scope of the program.

INFLATED FOOD INSECURITY THROUGHOUT PA & POVERTY RATES IN PARHM COMMUNITIES



Source: Food insecurity data provided by the PA Department of Human Services (2018).
Poverty data provided by the Center for Rural Pennsylvania (2019).

Geographic locations of PARHM hospitals are also represented on the map. As shown, twelve of the eighteen hospitals report community poverty levels above the rural average (12.8%). It should also be noted that most of these hospitals also lie within red shaded regions, signifying food insecurity rates above the state's rural average (11.25%). In addition, it can be seen that rural counties in the western regions account for higher food insecurity rates than eastern regions based on the shaded and callouts.

Read More:

- [*The Critical Reality of PARHM Communities: Social determinant of health and clinical outcomes compared to the rural state average*](#) – June 2021
- [*"The Bridge Between Urban & Rural: A closer look at the inequities of rural communities and PARHM's impact on them."*](#) – May 2021



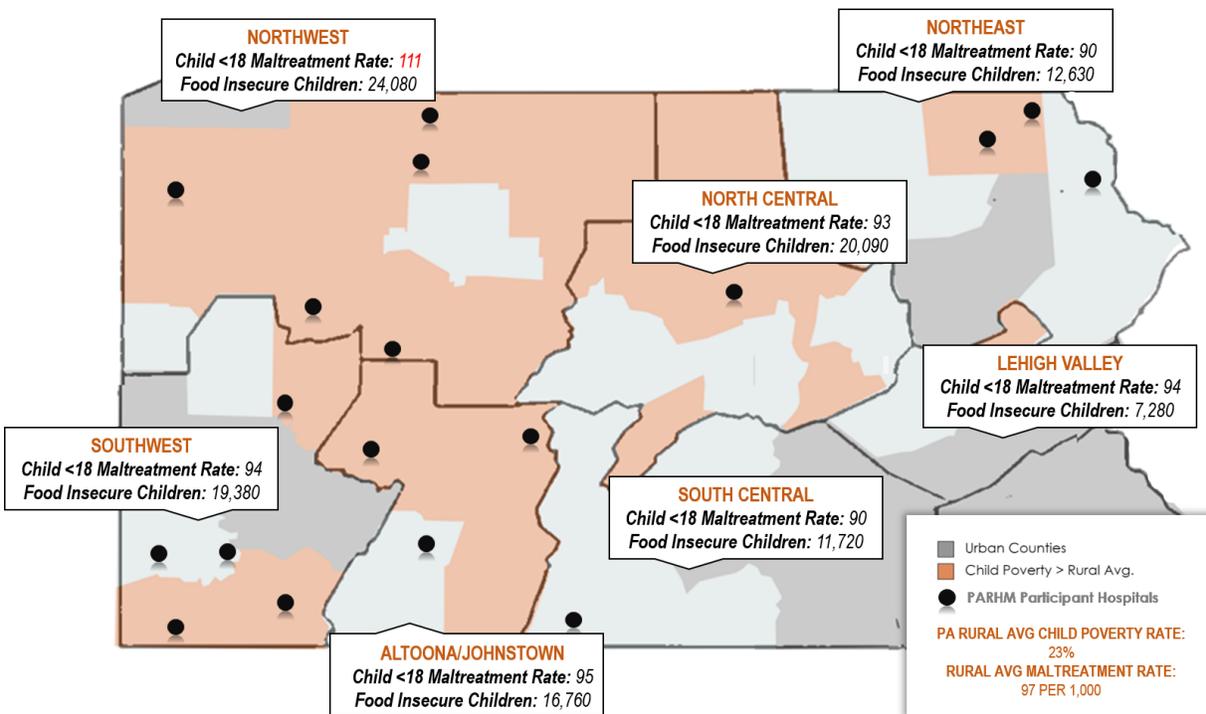
MAP 5: CHILD POVERTY, FOOD INSECURITY, AND MALTREATMENT

This map provides a geographic visualization of the previous findings regarding child poverty and food insecurity. The dataset used to create this map was provided by the Pennsylvania Department of Human Services Health Equity Analysis Tool.³ The three metrics portrayed include:

1. Children Under 5 Living in Poverty
2. The number of food insecure children according to 2018 data
3. The maltreatment rate per 1,000 children under the age of 18

As shown in the legend, red shaded regions represent rural counties where the percent of children living in poverty exceeds the state's rural average. The values for the dark grey counties were not included in these findings as they represent urban areas outside the scope of the program.

CHILD MALTREATMENT & FOOD INSECURITY IN RURAL PA COUNTIES



Source: Pennsylvania Department of Human Services

The callouts provide a regional summary of the maltreatment rates and the number of food insecure children. The rural average maltreatment rate per 1,000 children under the age of eighteen is 97. In addition, the rural average poverty rate for children under five is 23%. By examining the map, it can be seen that the northwest accounts for significantly higher rates and values in comparison to other regions. Also included in this map are the locations of PARHM hospitals, represented by the black dots. It should be noted, thirteen out of the eighteen hospitals are in counties with child poverty rates above the rural average.

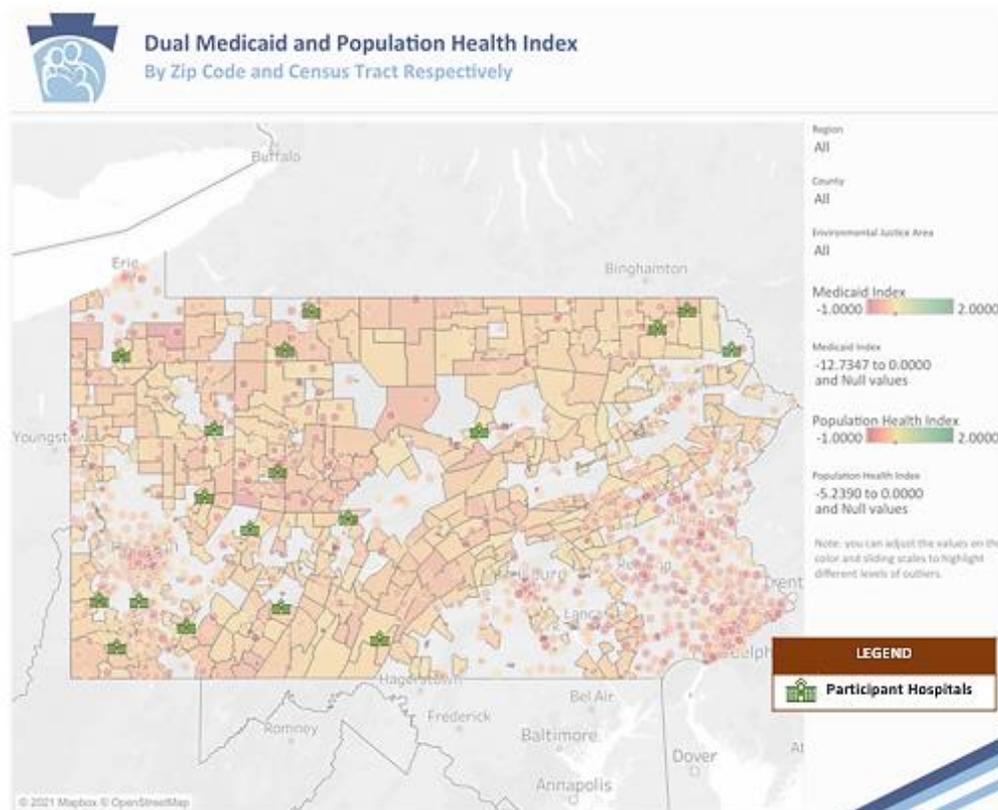
Read More:

- [The Critical Reality of PARHM Communities: Social determinant of health and clinical outcomes compared to the rural state average](#) – June 2021
- [The Bridge Between Urban & Rural: A closer look at the inequities of rural communities and PARHM's impact on them.](#) – May 2021



MAP 6: MEDICAID & POPULATION HEALTH INDEXES

The following map was provided by the DHS HEAT Dual Index Dashboard³. The map combines an index of Medicaid statistics at the zip code level with an index of population health statistics at the census tract level.



Source: PA Department of Human Services Dual Index Map Created by Medicaid Utilization Statistics at the zip code level coupled with an index of population health statistics at the census tract level, as well as the geographic location of PARHM hospitals.

For the purposes of identifying high-risk communities affected by PARHM, the filters on the right of the map were set to only include value less than zero. Lower values always equate to poorer health outcomes. If the shading is darker in a particular area, it means that the index values for that area are lower.

To apply this to PARHM, icons were placed in the geographic location of participant hospitals. It should be noted that most of these hospitals lie in darker shaded regions, meaning the health outcomes of these areas are often worse than in lesser shaded regions. This directly correlates to the previous findings of participant counties reporting lower population health and Medicaid index values in comparison to the rural and state averages.

Read More:

- [*The Critical Reality of PARHM Communities: Social determinant of health and clinical outcomes compared to the rural state average*](#) – June 2021



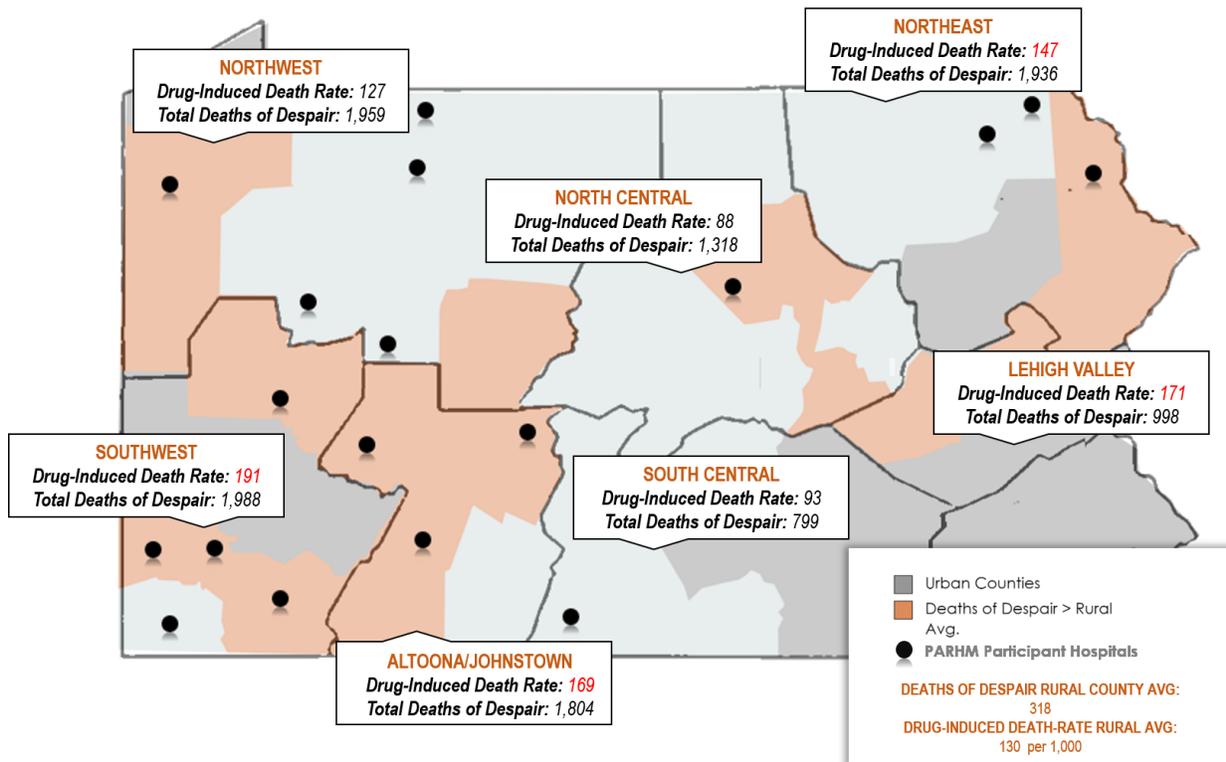
MAP 7: DEATHS OF DESPAIR & DRUG INDUCED DEATH RATES

This map provides a geographic visualization of the previous findings regarding death rates. The dataset used to create this map was provided by the Pennsylvania Department of Human Services Health Equity Analysis Tool.³ The two metrics portrayed include:

1. The county average and regional total deaths of despair
2. The rural average drug-induced age adjusted death rate per 1000 adults by region

As shown in the legend, red shaded regions represent rural counties where the average number of deaths of despair exceeds the state’s rural average. The values for the dark grey counties were not included in these findings as they represent urban areas outside the scope of the program.

DEATHS OF DESPAIR & DRUG-INDUCED DEATH RATES IN RURAL PA COUNTIES



The callouts provide a regional summary of the values. The rural average for deaths of despair is 318, while the average drug-induced death rate is 130 per 1,000 adults. After analysis, it was also found that the Southwest, Altoona/Johnstown, Lehigh Valley, and Northeast regions all reported this death rate to be above the rural average. With the definition of “deaths of despair” including suicides, overdoses, and alcohol-induced liver failure, it may come as no surprise that 79% of these counties with a high number of deaths of despair also had an above average number of drug-induced death rates.

Also included in this map are the locations of PARHM hospitals, represented by the black dots. It should be noted that over half of the participants are located in counties where the deaths of despair are above the rural average, with most of them being in the southwestern regions.

Read More:

- [*The Critical Reality of PARHM Communities: Social determinant of health and clinical outcomes compared to the rural state average*](#) – June 2021



SOURCES

- ¹The Center for Rural Pennsylvania. "Rural Pennsylvania Counties." Web. 07 May 2021.
<https://www.rural.palegislature.us/ruralcounties.html>
- ²Siegel, Sari, PhD, Ayse Yilmaz, MHA, and Obaid Zaman, MPP. *Beyond Patient Care: Economic Impact of Pennsylvania Hospitals. A White Paper Analysis of FY 2019 Data*. The Hospital and Healthsystem Association of Pennsylvania (HAP), Dec. 2020. PDF.
<https://haponlinecontent.azureedge.net/resourcelibrary/beyond-patient-care-economic-impact-white-paper-fy2019.pdf>
- ³Department of Human Services. *Health Equity*. Health Equity Analysis Tool. HEAT. (n.d.).
<https://www.dhs.pa.gov/HealthInnovation/Pages/HealthEquity.aspx>.
- ⁴Rural Health Redesign Center. *The Bridge Between Urban and Rural: A closer look at the inequities of rural communities & PARHM's impact on them*. May. 2021.
- ⁵Rural Health Redesign Center. *The Critical Reality of PARHM Communities: Social determinant of health and clinical outcomes compared to the rural state average* – June 2021