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A Road Map for Asset Based Investing in Central Appalachia

PREPARED FOR
Appalachia Funders Network

BY
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A Road Map for Asset Based Investing in Central Appalachia

Executive Summary

Central Appalachia is home to a rich diversity of people and places united by historical experiences of living, working and building communities in this mountainous region of the Eastern United States. From the Allegheny Mountains of West Virginia and Southeast Ohio, to the Cumberland Gap in Eastern Kentucky, to the Shenandoah Valley of Virginia, to the Smoky Mountains of Eastern Tennessee, all the way to the Blue Ridge in North Carolina, the lives of people in these communities and the land are deeply woven together. The communities built along these places have shaped the region's past and present, and it is those communities that can inform what lies ahead.

In Summer 2022, the Appalachia Funders Network (AFN) engaged Reinvestment Fund and the University of Kentucky's Community and Economic Development Initiative of Kentucky (CEDIK) to conduct an asset scan of the six-state, 257-county region designated by the Appalachian Regional Commission (ARC) as Central Appalachia. The primary goal for conducting the asset scan was to create a data-informed framework for potential funders to guide targeted investments to enhance the quality of life in Central Appalachian communities.

The study team gathered publicly available data from dozens of sources and engaged a diverse range of technical and practical experts across the region to create a collection of indicators representing the Economic Wellbeing and Population Health of residents throughout the region, as well as indicators of key community assets: Economic Infrastructure, Health Facilities, Public Investment, Housing Burden, Non-Profit Organizations, and Civic Engagement. Examining the relationships between these dimensions of wellbeing and community assets to understand how and where these assets intersect across the region generated important findings; findings that can help increase the likelihood that potential funders' efforts to support Central Appalachian communities will generate the desired results. These findings include:

Central Appalachia is diverse, but durable patterns of relative strength and distress define substantial portions of the region. Within Central Appalachia, elevated levels of wellbeing and community assets are distributed throughout the region with the most consistently strong pockets of Economic Wellbeing and Population Health concentrated in North Carolina, eastern Tennessee, parts of Virginia and eastern Ohio. Central and eastern Kentucky and portions of West Virginia that have been most heavily impacted by the decline of the coal industry over the past half century consistently exhibit the most elevated levels of economic and public health distress across the region.

Strong community assets tend to support elevated levels of wellbeing. Analyses from the asset scan identified significant, positive relationships between Economic Wellbeing and Population Health with Economic Infrastructure, Public Investment, and Civic Engagement. These analyses also identified significantly negative relationships between elevated Housing Burden with Economic Wellbeing and Population Health, as well as a negative relationship between certain measures of health infrastructure and Economic Wellbeing.

Civic Engagement matters. Elevated levels of Civic Engagement were most strongly associated with higher levels of Economic Wellbeing and Population Health. In many respects, a healthy civic sector is likely a necessary pre-condition for successful deployment of investments to diversify the local economy or attract new amenities that can enhance overall Economic Wellbeing and Population Health. In fact, there was only one instance

across all 257 counties where there was a low level of Civic Engagement but a high level of Economic Wellbeing. Places with strong Civic Engagement are likely more 'ready' for investments to enhance the strength of key assets that support Economic Wellbeing and Population Health, whereas places with weak Civic Engagement likely need a 'both/and' approach to building physical assets while also bolstering their civic sector.

Economic infrastructure and improved housing conditions are also important for economic wellbeing and population health. The findings suggest that activities such as improving the speed of broadband connections, increasing the area of 4G LTE coverage, and supporting the diversification of the local economy would all bolster the local Economic Infrastructure to create the conditions for improved Economic Wellbeing and Population Health. At the same time, any investments to improve housing affordability and conditions are likely to support improvements in the Economic Wellbeing and Population Health of residents.

Place matters. The strength of the relationships between community assets and wellbeing varied across the different types of counties in the region: metro counties; non-metro counties; and remote counties. In the most remote counties, elevated levels of Civic Engagement tend to be even more important for elevated levels of Economic Wellbeing and Population Health. These findings suggest that in the most remote parts of the region investments in Civic Engagement activities should be considered alongside more traditional economic development and public health strategies to support improvements in Economic Wellbeing and Population Health.

These findings provide a nuanced framework for thinking about potential approaches to enhance the quality of life (and life prospects for residents) in Central Appalachian communities – a framework that recognizes the diversity of prevailing levels of wellbeing and the distribution of community assets across the region and how the intersection of these characteristics can point to strategies, or combinations of strategies, to enhance the quality of life throughout the region.

As readers of reports like this know – analytic tools like the results of this asset scan are only as useful in so far as they are used. We invite you to review the findings presented in the full report, and to visit the online story map presenting the results of the analyses here:

https://storymaps.arcgis.com/stories/5e0257e41eb94f55ab6bfb0c797a92fa

ACKNOWLEDGMENTS

Understanding Community Assets in Central Appalachia Starts in Central Appalachia

In Summer 2022, the Appalachia Funders Network (AFN) engaged Reinvestment Fund's Policy Solutions group (Policy) and researchers from the University of Kentucky's Community and Economic Development Initiative of Kentucky (CEDIK) to conduct an asset scan of Central Appalachian counties that would support development of an investment strategy for AFN members and other private investors in the region. While the creation of community asset indexes and typologies is not new, national-scale studies of community assets tend to represent Central Appalachia as a homogeneous region with little asset variability across places.

For example, The Urban Institute recently published a comprehensive resource, "Re-envisioning Rural America", to better categorize the assets of rural America beyond simply designating these places as "not urban."[1] The findings for Central Appalachia suggest that many of the rural places in Central Appalachia fall into one of three categories: accessible energy-rich hubs, remote energy-rich tracts, or remote recreational and cultural areas – and about half of Central Appalachia is excluded from this metric all together for those counties classified as 'metropolitan'.[2] In addition, Argonne National Laboratory (Argonne) developed an Economic Development Capacity Index (EDCI) as a tool to assist economic development stakeholders by characterizing local economic development capacity across the United States.[3] The EDCI is a collection of human capital, financial, infrastructure, institutions and partnerships, and industry indices; and the EDCI results suggest that Appalachia has only two levels of assets where the entire region was operating at limited or low capacity, washing away any heterogeneity in the region. And the ARC's most recent Chartbook release provides an overabundance of descriptive socio-demographic and economic data for their entire Appalachian footprint – from New York to Mississippi.[4]

A primary goal of this study was to advance the work of The Urban Institute, Argonne National Laboratory, and bringing an asset-based lens to understanding the diversity of places and opportunities within the Central Appalachian region and then examining associations between these assets and key dimensions of wellbeing. By focusing narrowly within Central Appalachia, the rich variation in local assets is not dwarfed by national averages, and it becomes possible to arrive at a more nuanced understanding of opportunities in communities within the region. The following three goals guided the development of the Central Appalachia Community Asset scan:

1. Create a data-informed framework for private investors to guide the selection of targeted investments in Central Appalachian community assets that will enhance the quality of life in these communities.

2. Develop a shared understanding among Central Appalachian investors of the existing opportunities for private investment that can complement public funding to create sustained improvements to the quality of life in Central Appalachian communities.

3. Assess the readiness of Central Appalachian communities to absorb private investments in local assets that enhance wellbeing.

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[1] https://reenvisioning-rural-america.urban.org/
[2] https://www.ers.usda.gov/data-products/rural-urban-continuum-codes.aspx
[3] https://disgeoportal.egs.anl.gov/portal/apps/experiencebuilder/experience/?id=2f5c49623f354a8cbc95414784ca3e34
[4] https://www.arc.gov/wp-content/uploads/2023/05/PRB_ARC_Chartbook_ACS_2017-2021_FINAL_2023-06.pdf

Map 1 presents the Appalachian Regional Commission's (ARC) designated counties that comprise the study region across six Central Appalachian states: Ohio, West Virginia, Virginia, Kentucky, Tennessee, and North Carolina.
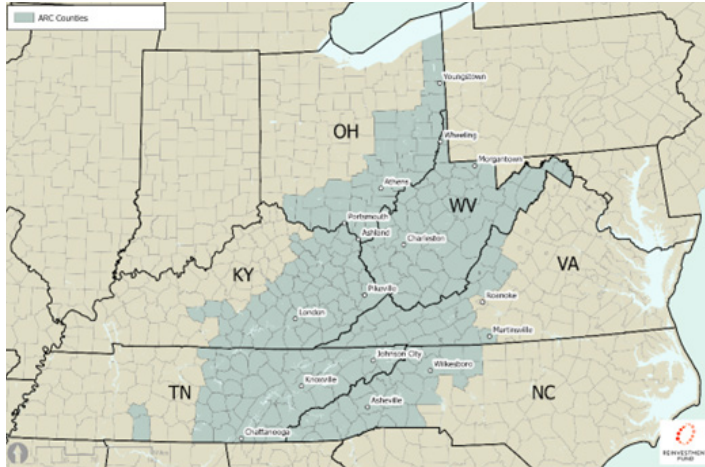
Map 1. The Central Appalachian Study Region.

The six-state Central Appalachian region includes 257 counties that fall into three broad groups along an urban-rural axis using USDA's Economic Research Service Rural Urban Continuum Codes.[5] Map 2 represents the distribution of Metro, Non-Metro, and Remote counties across the region. The table below provides the total number of counties and the average population for each County type.
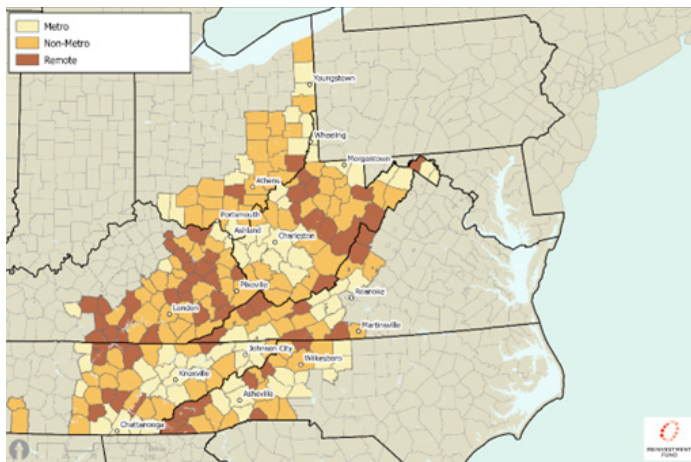
Map 2. Metro, Non-Metro, and Remote Central Appalachian Counties.

County Type	Number of Counties	Average Population
Metro Counties	81	72,456
Non-Metro Counties	113	35,654
Remote Counties	63	11,927

[5] https://www.ers.usda.gov/data-products/rural-urban-continuum-codes.aspx

Creating Virtuous Cycles of Wellbeing Requires Public and Private Investment

Private investment into key community assets is essential to enhancing the wellbeing of individuals and communities in Central Appalachia. This fundamental premise underpins the approach developed for the asset scan. The figure below presents the importance of public and private sector contributions to a diverse portfolio of investments in the region. These investments are designed to create, enhance, and sustain complex systems of interdependent community assets. Some of these assets are more public in nature and as a result are government funded, others attract a variety of funding streams. These assets are by nature cross–sectoral and mutually reinforcing determinants of wellbeing.

Multi–Layered Investments in Central Appalachia:

Public Sector
Federal; State; Local

Private Sector
Business; Philanthropy; Non-Profit; Private Investment

Can Bolster…

…Systems of Community Assets that are Cross–Sectoral & Mutually Reinforcing Determinants of Wellbeing

Health Facilities & Practitioners
Business Environment
Non-Profit Sector
Civic Engagement
Housing

Economic Wellbeing
Population Health

Challenge: Identifying those places where private investments to bolster specific community assets can improve key dimensions of wellbeing.

The central idea is that it is possible to identify and measure the presence and strength of key community assets that contribute to wellbeing. The presence and strength of these assets would represent a community's ability to absorb public and private investment in a way that generates positive outcomes. Understanding the variation in the presence and strength of key community assets as well as their associations with key dimensions of wellbeing can provide a way to shed light on how investments into particular assets, in specific places, could contribute to the overall health and wellbeing of different communities.

The findings from the asset scan can provide insights to inform the selection of individual strategies, or combinations of strategies, to deploy public and private capital to strengthen community assets. These findings also provide a starting point for a shared understanding among Central Appalachian investors of the existing opportunities for private investment to complement public funding in a way that catalyzes sustained improvements to the quality of life in Central Appalachian communities.

Community Assets Enhance the Quality of Life in Central Appalachian Communities

AFN's vision of a healthy, equitable, and vibrant region guided the identification of key dimensions of wellbeing and community assets for the study. In recognition of the tremendous diversity across the Central Appalachian region – both in terms of community assets and wellbeing – the study team conducted a series of working meetings with the Subject Matter Experts and Community Advisory Board members to narrow the focus of the study. Two primary dimensions of wellbeing were ultimately selected as the primary 'outcomes' to structure the analyses of associations between the presence and strength of community assets and wellbeing: Economic Wellbeing and Population Health.

The selection of community assets was informed by two overarching criteria:

1. Focus on those features of a local community where private investment could make a substantial contribution. For example, a 4-lane highway might be an important asset to a community's Economic Wellbeing. However, this type of public good, by definition, would not attract private investment and therefore it was excluded from the analysis.

2. All the data must be publicly available, and generally understood as a reliable measure of community assets and/or wellbeing.

Using these criteria, the selection of community assets narrowed to the following categories: Health Facilities, Economic Infrastructure, Housing Burden, Non–Profit Organizations, Civic Engagement, and Public Investment.[6] Table 1 presents the Wellbeing Dimensions and Community Assets operationalized for the asset scan.

Table 1. Wellbeing Dimensions and Community Asset Indexes.

Wellbeing Dimensions	
Economic Wellbeing	A measure of existing and potential economic capacity of county residents.
Population Health	A measure of the overall health of county residents.

Community Assets	
Economic Infrastructure	A measure of the overall economic capacity of a place - diversity of jobs, access to educational institutions, access to childcare, wireless and internet connectivity.
Health Facilities	A measure of the presence of, and access to, medical facilities, health providers and grocery stores.
Non-Profit Organizations	A measure of the presence of Non-Profit organizations that focus on the arts, education, religion, or are philanthropic organizations.
Public Investment[7]	A measure of select public sector capital flows (ARPA funding; PPP lending; SBA Lending; Rural Development Grants; EDA Grants; LIHTC Projects; CDFI Lending).
Housing Burden	A measure of the cost and condition of owner and renter-occupied housing.
Civic Engagement	A measure of how engaged the local population is in their local communities and public life.

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[6] Other categories of assets were considered including natural resources (land coverage, active and abandoned coal mines), food insecurity, and measures of diversity. However, these measures were not included due to data reliability or a clear link to private investment opportunities. Additional maps representing the presence of abandoned and active coal mines, and private philanthropic investments are included in Appendix II. See Technical Appendix for detailed descriptions of the data and methodologies used to create each wellbeing and community asset index presented in this section.

[7] The ARC provided detailed data related to their grant making in the region for this study. However, it was not possible to accurately align ARC investments to individual counties, and these data are not publicly available as the other sources relied on for the study. For these reasons, ARC grant making was not included in this study.

Wellbeing & Community Assets Vary Considerably Across Central Appalachia

This section presents maps that represent county–level variation in the dimensions of wellbeing and community assets. Each map presents an index of data measures, listed to the right of the map. The Central Appalachian counties are broken into five equal groupings along a strongest to weakest continuum. The map legend explains that the strongest counties for a measure are in shades of purple, while the weakest counties are shades of orange.

Wellbeing | *Economic Wellbeing*

Map 3 presents the spatial distribution of Economic Wellbeing across Central Appalachian counties. The Economic Wellbeing measure represents the potential and actual participation of county residents in the local, or broader, economy.

Counties with elevated levels of Economic Wellbeing are counties that on average, tend to have residents with higher incomes, more residents with bachelor's degrees, higher labor force participation and employment rates, and lower poverty levels.

Economic Wellbeing Measures
- Median Household Income
- Households with Investment Income
- Population with Bachelor's Degree
- Population with High School Diploma
- Labor Force Participation Rate
- Employment Rate
- Poverty Rate
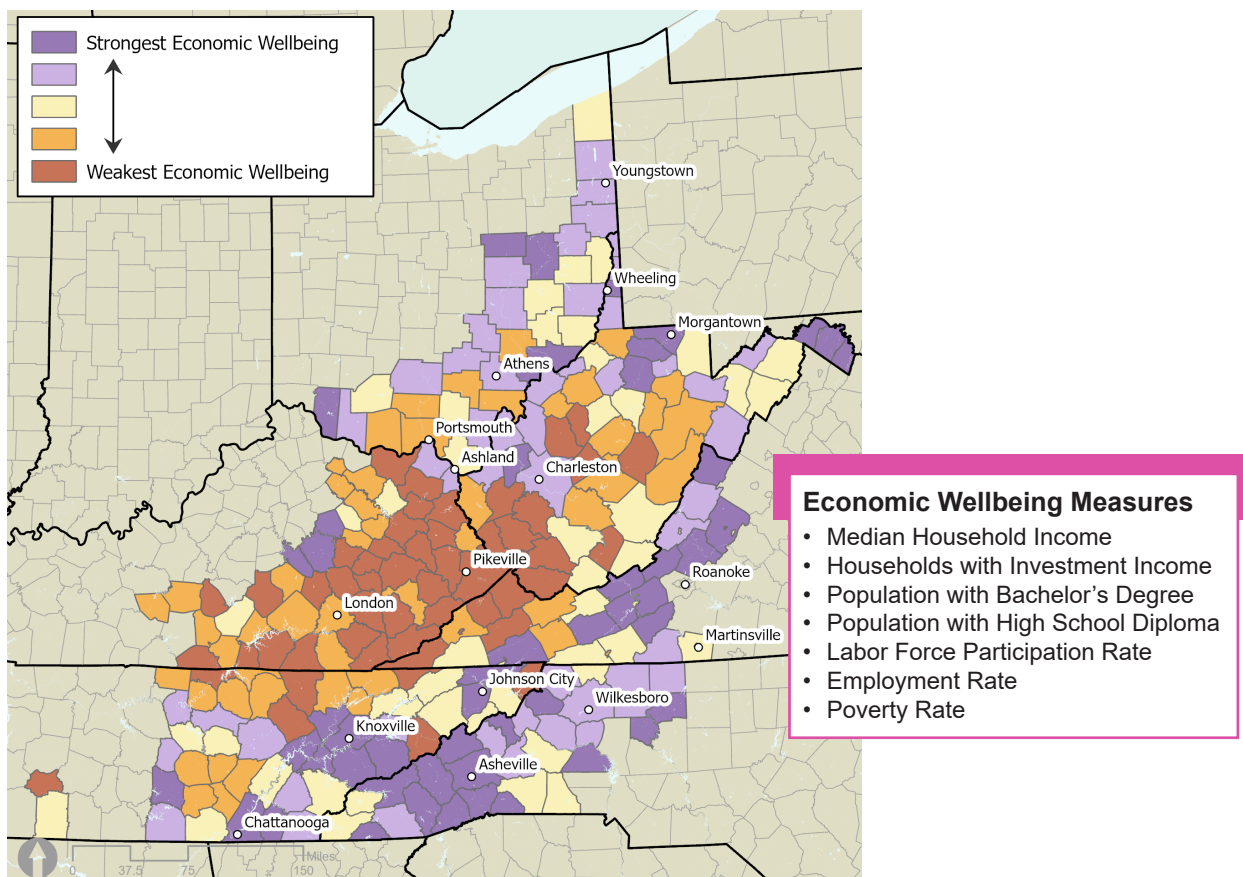
Map 3. Economic Wellbeing.

WHAT THE MAP ABOVE SHOWS

There is a fair amount of variation in economic wellbeing across the region. The large majority of Kentucky is dark orange (weakest Economic Wellbeing), whereas West Virginia and Tennessee have counties that are strong, while others that have fared poorly. The larger cities identified on the map have higher degrees of Economic Wellbeing, except for Pikeville and London, Kentucky and Portsmouth, Ohio.

Wellbeing | *Population Health*

Map 4 presents the spatial distribution of Population Health across Central Appalachian counties. The Population Health measure represents the overall health of county residents.

Counties with elevated levels of Population Health are those counties that on average, tend to have the higher life expectancy rates, and lower levels of the other adverse health conditions listed.

Population Health Measures
- Life Expectancy
- Obesity Rate
- Share of Seniors with No Teeth
- Physical Inactivity Rate
- Poor/Fair Health Rate
- Asthma Rate
- Diabetes Rate
- Heart Disease Rate
- Poor Mental Health Rate
- Smoking Rate
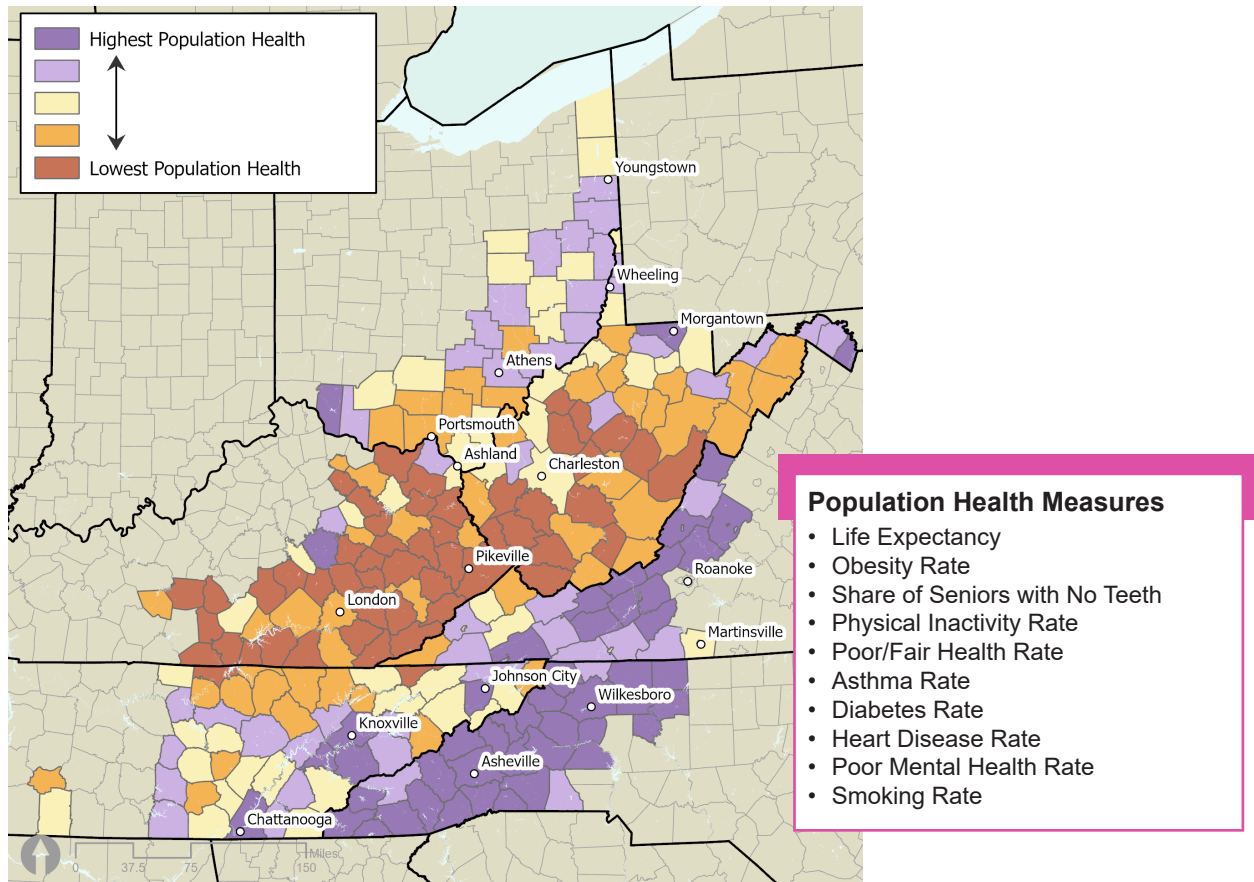
Map 4. Population Health.

WHAT THE MAP ABOVE SHOWS

Overall, North Carolina and Virginia (purple) fare better than Appalachian Kentucky and West Virginia (dark orange), while there is more variability in Population Health in Ohio and Tennessee. The larger cities identified in the map tend to be healthier, with the exceptions of the larger cities in Kentucky and Portsmouth, Ohio.

Community Assets | *Economic Infrastructure*

Map 5 presents the spatial distribution of Economic Infrastructure across Central Appalachian counties. The Economic Infrastructure measure represents the opportunity structure for county residents to participate in local economic activity as a measure of industry diversity, access to educational opportunities, access to childcare as well as wireless and internet connectivity.

Counties with the strongest Economic Infrastructure on average, tend to be those with the most diverse mix of businesses, the nearest proximity to 2 and 4–year higher educational institutions,[8] and the highest levels of internet and wireless connectivity.

Map 5. Economic Infrastructure.

Economic Infrastructure Measures
- Industry Diversity of Businesses
- Agricultural Employment
- Mining Employment
- Manufacturing Employment
- Distance to Nearest 4-Year College/ University
- Distance to Nearest 2-Year College
- Broadband Capacity
- Wireless Capacity
- Early Childhood Education Capacity
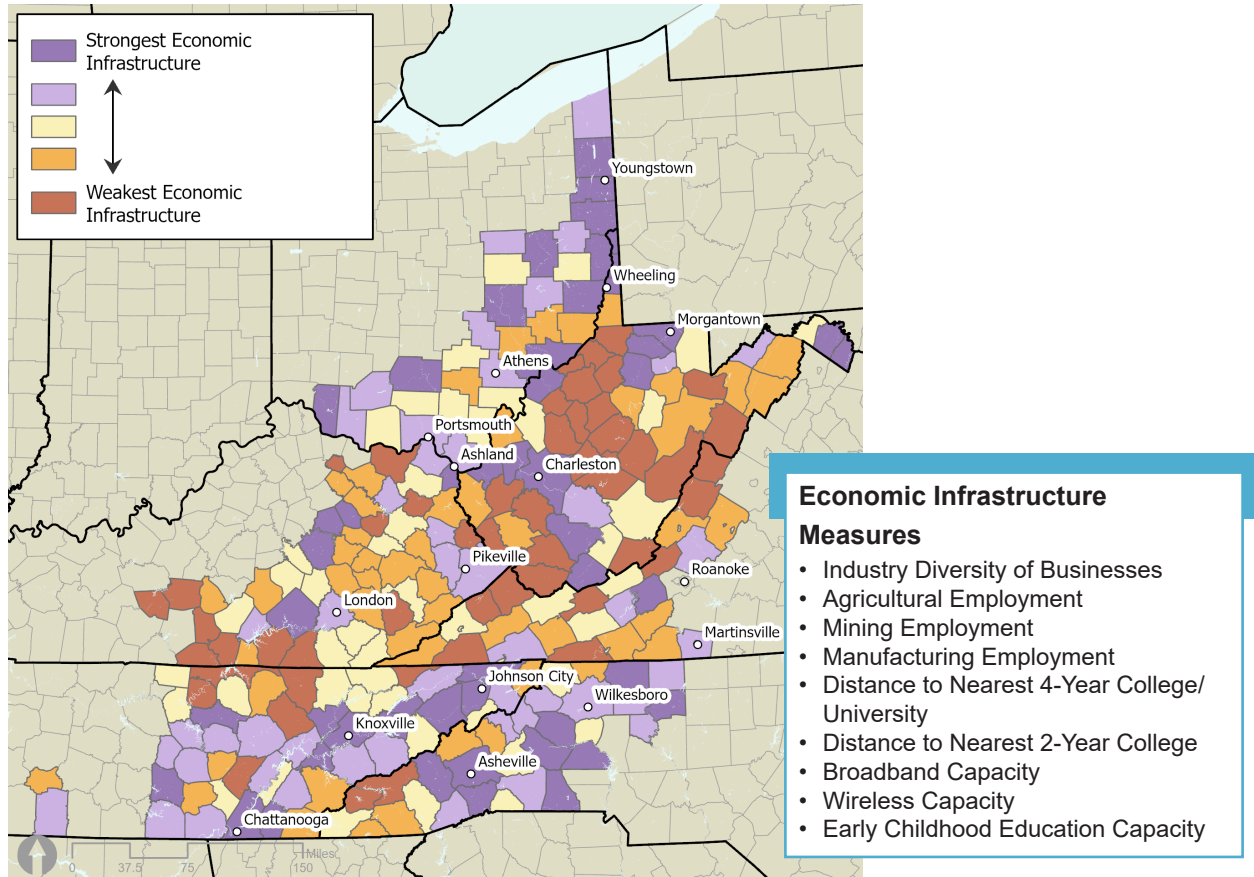
WHAT THE MAP ABOVE SHOWS

The Economic Infrastructure map reflects a great deal of variability across places and within states. Tennessee, North Carolina, and Ohio tend to have higher scores and there are places in Eastern Kentucky and Southwest West Virginia with elevated scores. In this instance, all identified cities have elevated levels of Economic Infrastructure compared to their more rural counterparts.

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[8] Distance measures represent a population weighted average street-network distance in miles to the closest two-year or four-year higher education institution measured from the centroid of each census block.

Community Assets | *Health Facilities*

Map 6 presents the spatial distribution of Health Facilities across Central Appalachian counties. The Health Facilities measure represents local residents' access to health care facilities and professionals as well as access to grocery stores. Importantly, the distance measures included in the Health Facilities measure reflect street-network distances, accounting for considerable challenges posed by the topography in different parts of the region.

Counties with the most access to Health facilities on average, tend to be those with the greatest concentrations of hospitals, medical and obstetrics providers, and those with the shortest distances to the nearest healthcare facility, emergency room, or full-service grocery store.[9]

Health Facilities Measures
- Healthcare Providers per Household
- Distance to Nearest Fire/EMS Station
- Distance to Nearest Emergency Room
- Distance to Nearest Hospital
- Distance to Nearest Grocery Store
- Access to Maternal Care
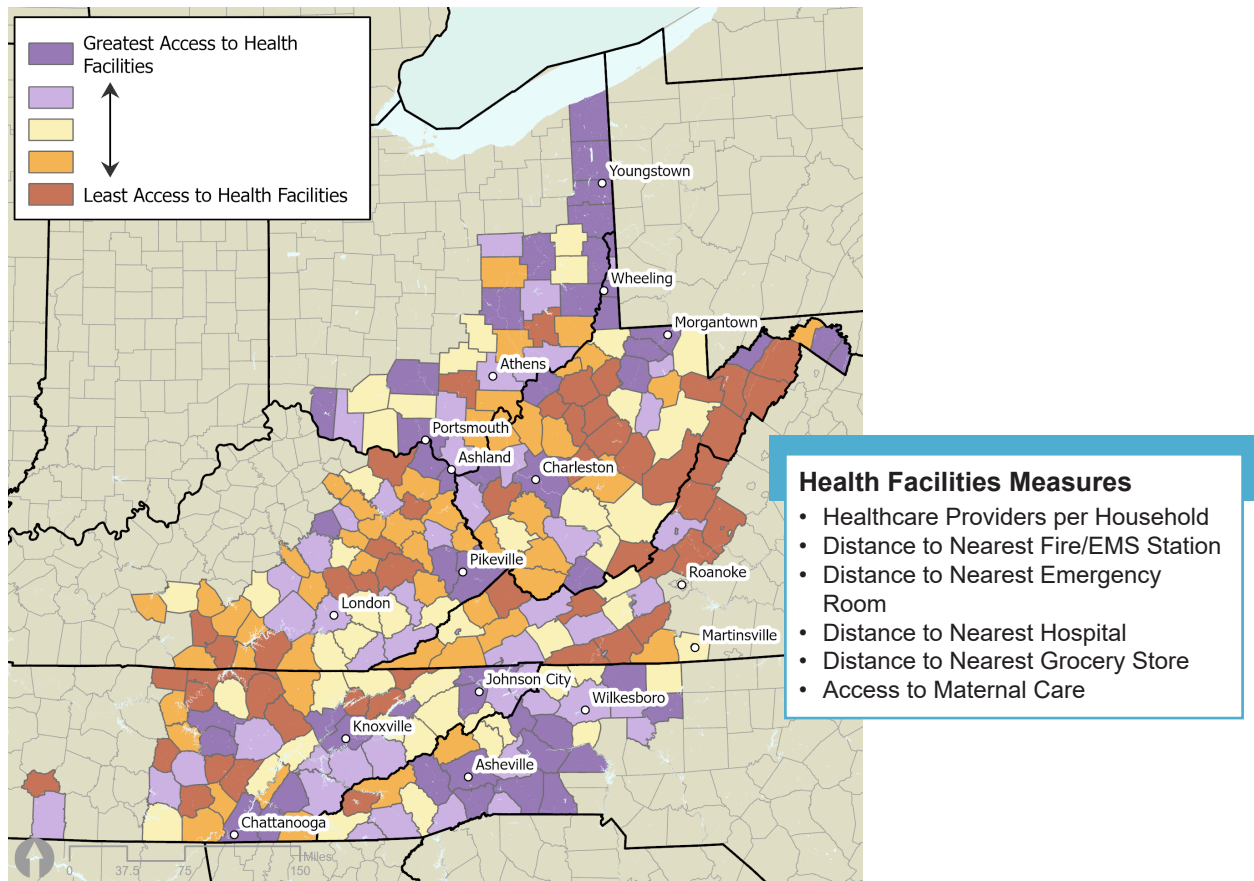
Map 6. Health Facilities.

WHAT THE MAP ABOVE SHOWS

There is significant variability in access to Health Facilities across the region. The large cities across the region, and nearby counties, tend to have the highest levels of access to Health Facilities; while the counties with the lowest levels of access to Health Facilities tend to be those in more remote parts of the region.

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[9] Distance measures represent a population weighted average street-network distance in miles to the closest healthcare facility, emergency room, or full-service grocery store measured from the centroid of each census block.

Community Assets | *Non-Profit Organizations*

Map 7 presents the spatial distribution Non-Profit Organizations across Central Appalachian counties. The Non-Profit Organizations measure represents the per capita number of arts organizations, education organizations, religious organizations, and philanthropic organizations. These organizations are conceptualized as public serving organizations with mission imperatives to support key dimensions of quality of life aligned with their programmatic areas of focus.

Non-Profit Organizations Measures
- Arts Organizations
- Educational Organizations
- Religious Organizations
- Philanthropic Organizations
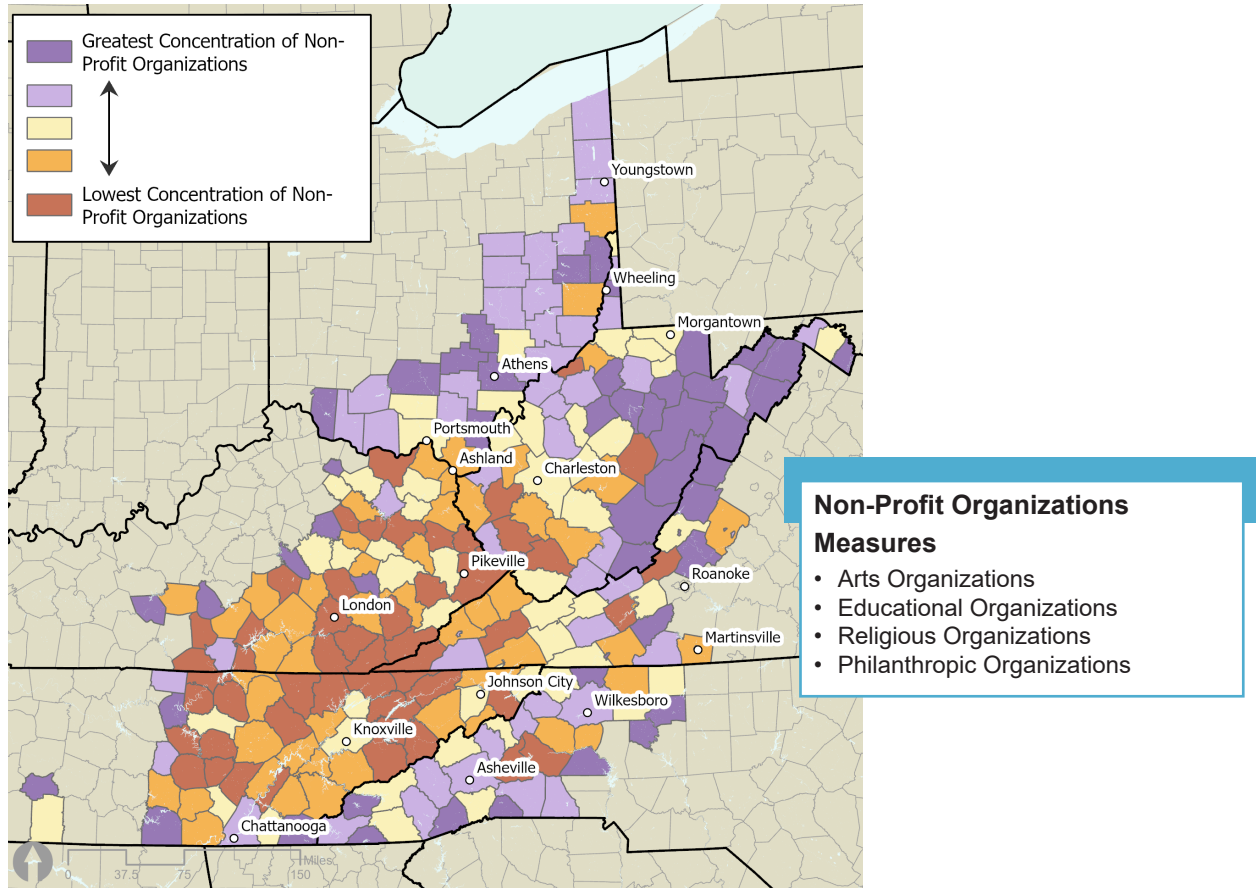
Map 7. Non-Profit Organizations.

WHAT THE MAP ABOVE SHOWS

Counties with elevated levels of Non-Profit Organizations are those with elevated concentrations of these organizations per capita. Eastern West Virginia, Ohio, and North Carolina generally have the greatest concentrations of Non-profit Organizations per capita throughout the region; while Kentucky and Tennessee tend to have the most counties with very few of these organizations per capita.

Community Assets | *Public Investment*

Map 8 presents the spatial distribution of Public Investments across Central Appalachian counties. The Public Investment measure represents total per capita investments from select public sector capital flows into each county, including: American Rescue Plan Act funding; Paycheck Protection Plan Lending; Small Business Administration Lending; Rural Development Grants; Economic Development Association Grants; Low Income Housing Tax Credit Projects; and Community Development Financial Institution Lending.

Public Investment Measures
- American Rescue Plan Act Funding
- Payment Protection Program Funding
- Small Business Administration Lending
- Rural Development Grants
- Economic Development Association Grants
- Low Income Housing Tax Credit Projects
- Community Development Financial Institution Lending
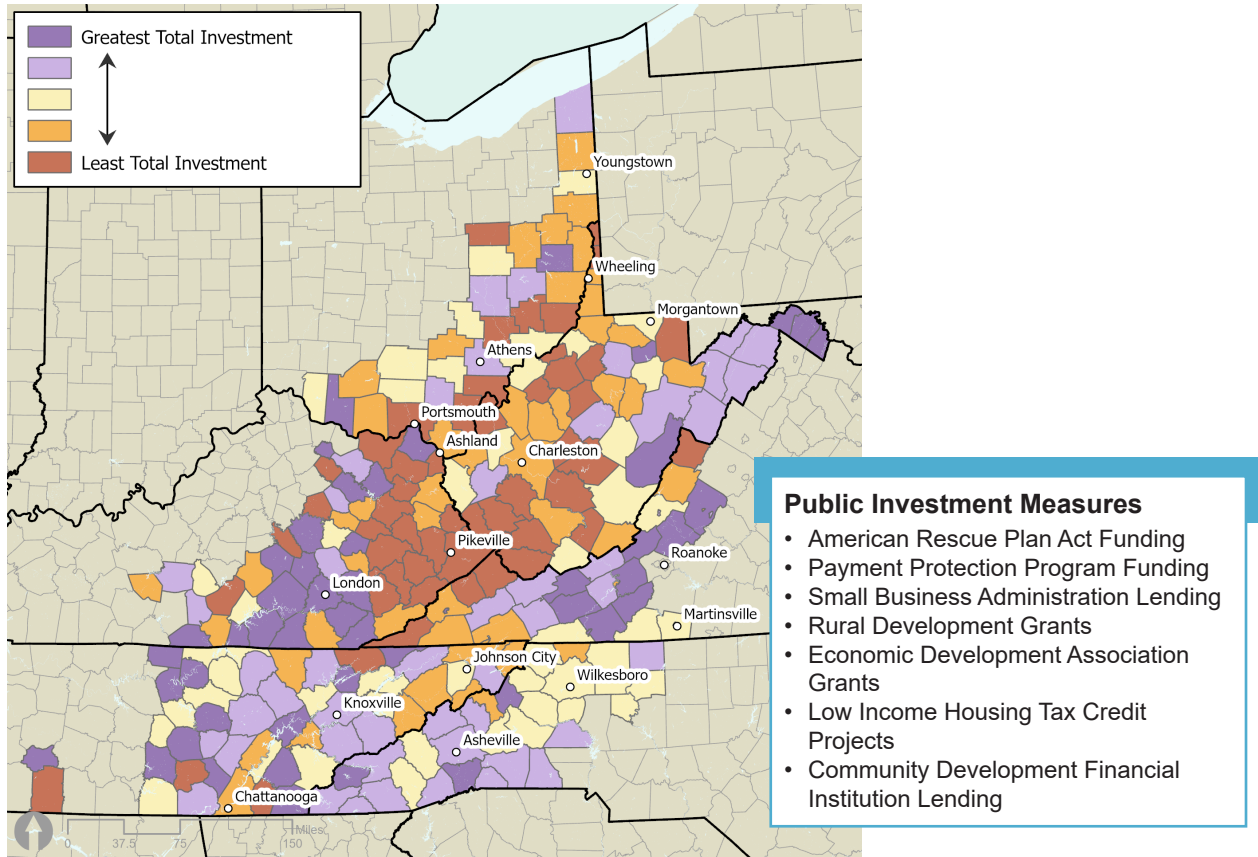
Map 8. Public Investment.

WHAT THE MAP ABOVE SHOWS

Across all six states, there is quite a bit of variation in the distribution of public investments into local communities; although the most consistently underfunded parts of the region are located in Eastern Kentucky and central West Virginia.

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Community Assets | *Housing Burden*

Map 9 presents the spatial distribution of Housing Burden for homeowners and renters across Central Appalachian counties. The Housing Burden measure identifies counties where local homeowners and renters experience challenges with the affordability and the conditions of their homes.

Counties with elevated levels of Housing Burden are places that on average, tend to have an elevated share of homeowners and renters that are cost burdened and have serious housing issues.

Housing Burden Measures
- Share of Cost-Burdened Homeowners
- Share of Cost-Burdened Renters
- Share of Homeowners with Serious Maintenance Issues
- Share of Renters with Serious Maintenance Issues
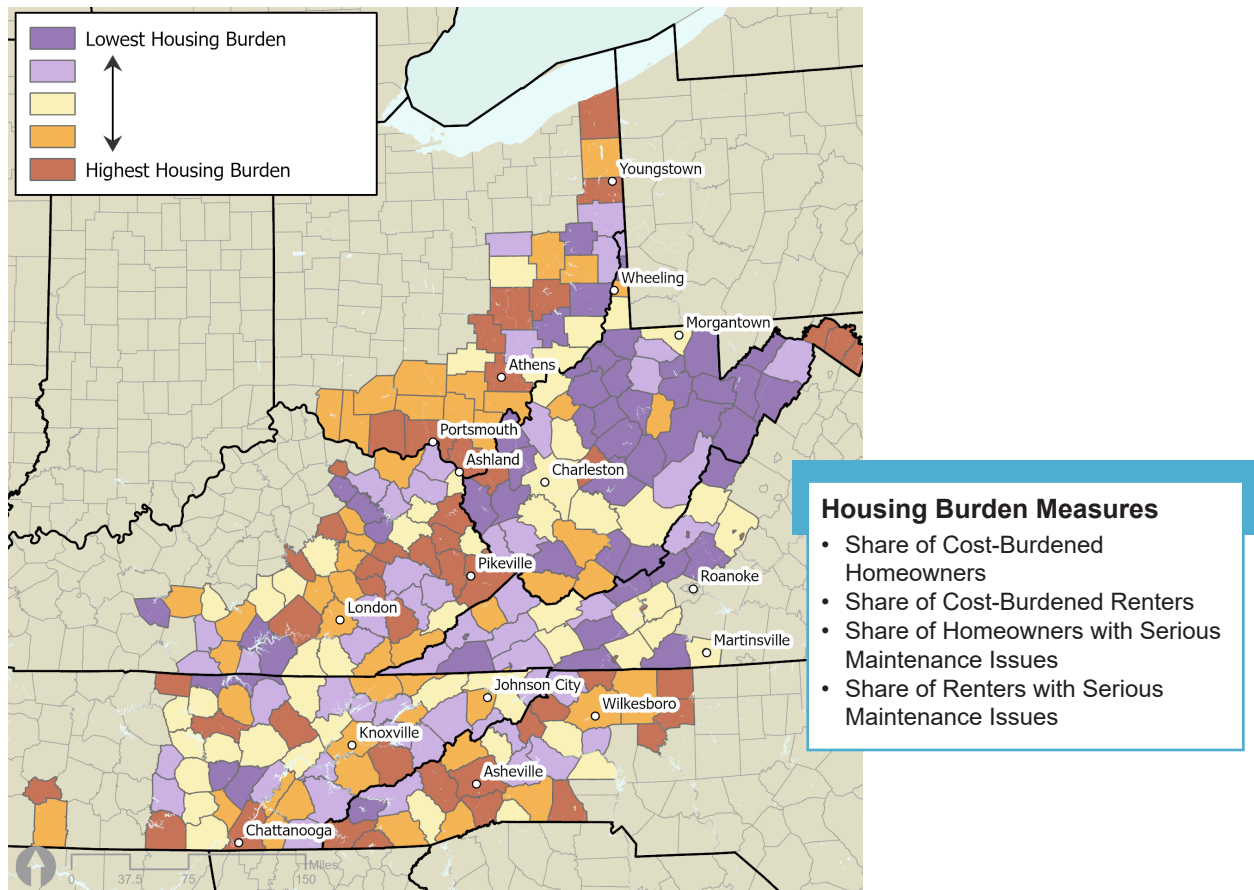
Map 9. Housing Burden.

WHAT THE MAP ABOVE SHOWS

The areas with the most acute Housing Burden are predominately distributed throughout Ohio, Eastern Kentucky, and North Carolina. On the other hand, the greatest concentrations of counties with the lowest Housing Burden are clustered in West Virginia and Western Virginia.

Central Appalachian residents in counties that have substantial urban (city) locales (e.g., Chattanooga in Hamilton County, Tennessee or Youngstown in Mahoning County, Ohio) experience elevated levels of Housing Burden.

Community Assets | *Civic Engagement*

Map 10 presents the spatial distribution of Civic Engagement across Central Appalachian counties. The Civic Engagement measure represents the degree to which county residents voluntarily participate in civic activities such as voting and volunteering as well as the presence of key civic institutions like volunteer-run Non-Profit organizations, philanthropies, and public libraries.

Counties with elevated levels of Civic Engagement are those places that on average, tend to have elevated participation in elections, higher levels of volunteerism, high concentrations of volunteer-run organizations, substantial Foreign-Born populations and relatively close proximity to public libraries.

Map 10. Civic Engagement.

Civic Engagement Measures
- Voter Participation Rate
- Share of the Foreign-Born Population
- Participation in Volunteer Organizations
- Presence of Volunteer Organizations
- Presence of Philanthropic Organizations
- Distance to Nearest Library
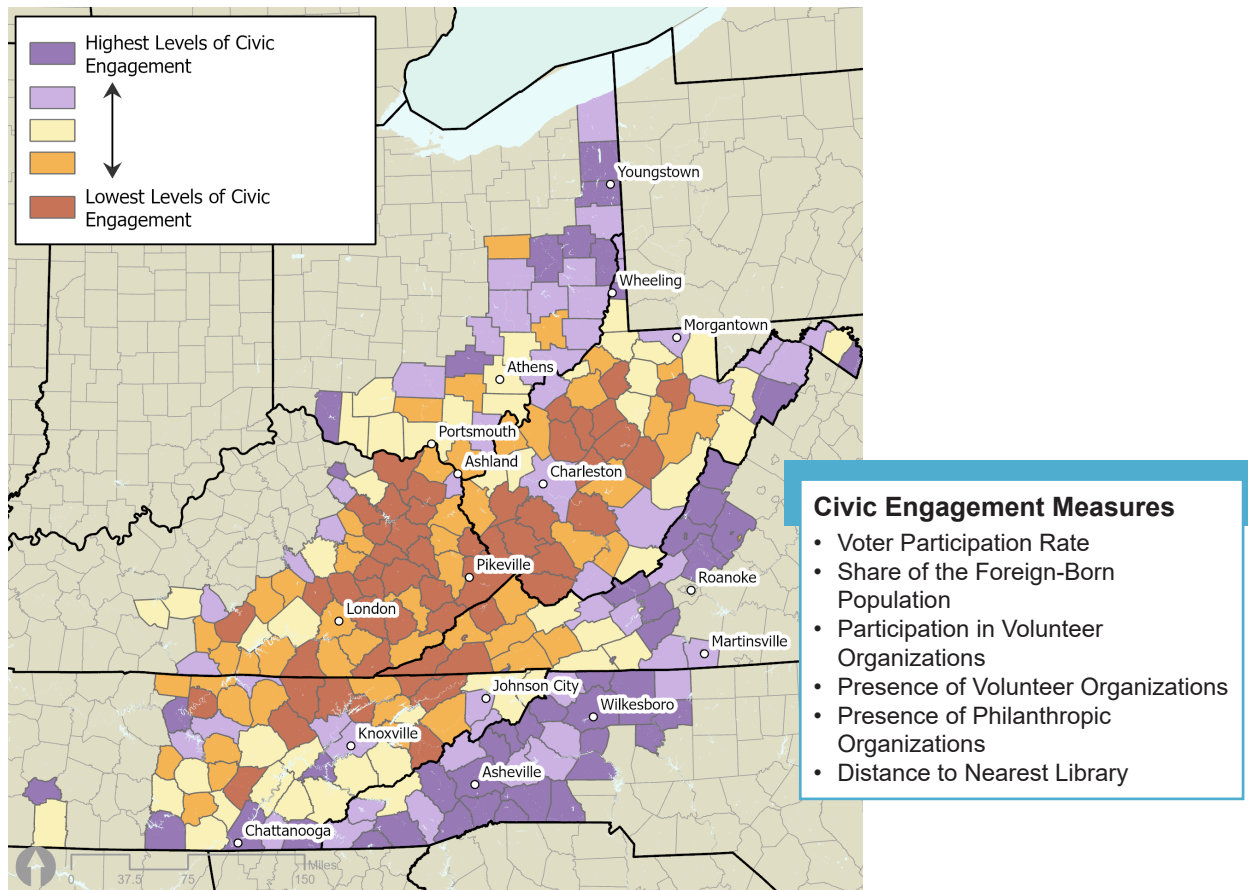
WHAT THE MAP ABOVE SHOWS

The distribution of Civic Engagement is similar to the distribution of Economic Wellbeing, where North Carolina, Virginia, and many Ohio counties fare quite well. On the other hand, Kentucky and West Virginia counties tend to have the lowest levels of Civic Engagement; and there is quite a bit of variation across counties in Tennessee.

Understanding Associations Between Wellbeing & Community Assets Can Narrow the Search for Investment Opportunities

Visualizing how these dimensions of Wellbeing and community assets are distributed across the region is an important initial step; but a primary purpose of this work is to identify opportunity areas for investment. Specifically, it is critically important to understand the relationships between community assets and the distribution of Economic Wellbeing and Population Health across the region.

The study team examined the relationships between Economic Wellbeing and Population Health with each of the community assets presented in the previous section. Findings from these analyses suggest that **places with the most elevated levels of Civic Engagement also have the most elevated levels of Economic Wellbeing and Population Health**, on average. In addition, there are significant relationships between Economic Infrastructure, Public Investment, Health Facilities, and Housing Burden with Economic Wellbeing and Population Health. Importantly, the strength of these relationships varied by the rurality of the county.

For example, the relationship between Civic Engagement and Economic Wellbeing was significantly stronger in remote rural areas than urban areas, suggesting that investments in Civic Engagement activities should be considered alongside more traditional economic development strategies to support improvements in Economic Wellbeing. Table 2 presents the direction of statistically significant associations from OLS regression models developed to assess the associations between community assets for each dimension of Wellbeing – Economic Wellbeing and Population Health, respectively.[10] Dark gray cells represent statistically significant, positive associations between community assets and Economic Wellbeing or Population Health, while light gray shaded cells represent statistically significant, negative associations.

Table 2. Significant Associations between Community Assets, Wellbeing and Populations.

	Economic Wellbeing	Population Health
Civic Engagement	+***	+***
Economic Infrastructure	+***	
Health Facilities	-*	
Public Funding	+*	+*
Housing Burden	-***	-*
Non-Metro Counties#	-***	-*
Remote Counties#	-^	
County Population	+***	+*

N = 256 counties.   #Metro Counties are the excluded reference group.

*^p<.10; *p<.05; **p<.01; ***p<.001*

Civic Engagement had the strongest positive relationship with both Economic Wellbeing and Population Health. In both instances, there was a significant, positive statistical interaction between higher levels of Civic Engagement and Remote Counties – suggesting that elevated levels of Civic Engagement are particularly important in the most remote parts of the region for supporting both Economic Wellbeing and Population Health.

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[10] See Appendix III - Technical Appendix for full model results.

Public Investments also had positive relationships with Economic Wellbeing and Population Health; and Economic Infrastructure was positively associated with Economic Wellbeing. Housing Burden and living in a non-Metro County had very strong and negative associations with both Economic Wellbeing and Population Health. Health Facilities was negatively associated with Economic Wellbeing and did not have a significant relationship with Population Health.

Understanding the Intersections of Wellbeing and Community Assets Can Provide Insights to Guide Future Investments

To visualize some of the relationships identified in the analyses described above, this section presents maps showing the relationships between Economic Wellbeing and Population Health and select community assets.

The color scheme for these maps represents the overlap between each dimension of Wellbeing and each community asset:

- Dark purple counties are those counties with the highest levels of Wellbeing and the most elevated levels of a community asset.
- Light colored counties are those counties with the lowest levels of a dimension of Wellbeing and the lowest elevated levels of a community asset.
- Bright pink counties are those counties with the highest levels of Wellbeing and the lowest levels of a community asset.
- Bright teal counties are those counties with the lowest levels of Wellbeing and the highest levels of a community asset.

Economic Wellbeing & Civic Engagement

Map 11 presents the intersection of Economic Wellbeing and Civic Engagement.

Economic Wellbeing Measures
- Median Household Income
- Households with Investment Income
- Population with Bachelor's Degree
- Population with High School Diploma
- Labor Force Participation Rate
- Employment Rate
- Poverty Rate

Civic Engagement Measures
- Voter Participation Rate
- Share of the Foreign-Born Population
- Participation in Volunteer Organizations
- Presence of Volunteer Organizations
- Presence of Philanthropic Organizations
- Distance to Nearest Library

Map 11. Economic Wellbeing & Civic Engagement.

WHAT THE MAP ABOVE SHOWS

The greatest concentrations of counties with elevated levels of Economic Wellbeing and Civic Engagement (purple counties) appear primarily in the eastern part of the region (North Carolina, Virginia), whereas counties with lower levels of both (white counties) are concentrated in Eastern Kentucky and Southwestern West Virginia.

It is important to note that there is only one county (Lewis County, TN) with elevated levels of Civic Engagement and low levels of Economic Wellbeing (teal county) and only two counties (Doddridge County, WV and Cannon County, TN) with elevated levels of Economic Wellbeing and low levels of Civic Engagement (bright pink counties), illustrating the positive relationship between Civic Engagement and Economic Wellbeing.

Economic Wellbeing & Economic Infrastructure

Map 12 presents the intersection of Economic Wellbeing and Economic Infrastructure.

Economic Wellbeing Measures
- Median Household Income
- Households with Investment Income
- Population with Bachelor's Degree
- Population with High School Diploma
- Labor Force Participation Rate
- Employment Rate
- Poverty Rate

Economic Infrastructure Measures
- Industry Diversity of Businesses
- Agricultural Employment
- Mining Employment
- Manufacturing Employment
- Distance to Nearest 4-Year College/University
- Distance to Nearest 2-Year College
- Broadband Capacity
- Wireless Capacity
- Early Childhood Education Capacity

Map 12. Economic Wellbeing & Economic Infrastructure.

WHAT THE MAP ABOVE SHOWS

Counties with elevated levels of Economic Wellbeing and Economic Infrastructure (purple counties) appear primarily in Ohio, North Carolina and eastern Tennessee. Throughout much of Kentucky and part of West Virginia there are substantial concentrations of counties with low levels of Economic Wellbeing and low to moderate levels of Economic Infrastructure.

There are a number of counties scattered through West Virginia, Virginia and North Carolina with elevated levels of Economic Wellbeing and low levels of Economic Infrastructure (pink counties), although there are very few counties in the region with high levels of Economic Infrastructure and low levels of Economic Wellbeing (teal counties).

Population Health & Civic Engagement

Map 13 presents the intersection of Population Health and Civic Engagement.

Population Health Measures
• Life Expectancy
• Obesity Rate
• Share of Seniors with No Teeth
• Physical Inactivity Rate
• Poor/Fair Health Rate
• Asthma Rate
• Diabetes Rate
• Heart Disease Rate
• Poor Mental Health Rate
• Smoking Rate

Civic Engagement Measures
• Voter Participation Rate
• Share of the Foreign-Born Population
• Participation in Volunteer Organizations
• Presence of Volunteer Organizations
• Presence of Philanthropic Organizations
• Distance to Nearest Library

Map 13. Population Health & Civic Engagement.

WHAT THE MAP ABOVE SHOWS

Counties with elevated levels of Population Health and Civic Engagement (purple counties) are primarily located in the eastern part of the region (North Carolina and Virginia) and Ohio. Counties with the lowest levels of Population Health and Civic Engagement (white counties) are concentrated in Eastern Kentucky and Southwestern West Virginia.

There is only one county in Western Virginia (Scott County, VA), and one county in Eastern Tennessee (Cannon County, TN) with the highest levels of Population Health and the lowest levels of Civic Engagement (bright pink), pointing to the strong association between Civic Engagement and Population Health throughout the region.

Population Health & Health Facilities

Map 14 presents the intersection of Population Health and Health Facilities.

Population Health Measures
- Life Expectancy
- Obesity Rate
- Share of Seniors with No Teeth
- Physical Inactivity Rate
- Poor/Fair Health Rate
- Asthma Rate
- Diabetes Rate
- Heart Disease Rate
- Poor Mental Health Rate
- Smoking Rate

Health Facilities Measures
- Healthcare Providers per Household
- Distance to Nearest Fire/EMS Station
- Distance to Nearest Emergency Room
- Distance to Nearest Hospital
- Distance to Nearest Grocery Store
- Access to Maternal Care

Map 14. Population Health & Health Facilities.

WHAT THE MAP ABOVE SHOWS

Counties with the most elevated levels of Population Health and Health Facilities (purple counties) are primarily located in North Carolina, Ohio, and Virginia. Throughout much of Kentucky and western portions of West Virginia there are large concentrations of counties with moderate to elevated levels of Health Facilities and the lowest levels of Population Health (light blue and teal counties).

Implications for Investment

The findings from the asset scan point to important implications for potential investors considering the best approaches and places to support Central Appalachian communities. The community assets described in this study are distributed throughout the region with the most consistent pockets of economic strength and population health tending to be concentrated in North Carolina, Eastern Tennessee, parts of Virginia and Ohio. Central and Eastern Kentucky and portions of West Virginia that have been most heavily impacted by the decline of the coal industry over the past half century consistently exhibit the most elevated levels of economic and population health distress across the region.[11]

Findings from the asset scan also reveal important implications about the relationships between community assets with Economic Wellbeing and Population Health, and while some of these relationships are fairly straight forward, others require more nuanced understandings. For example, elevated levels of Housing Burden were strongly associated with lower levels of Economic Wellbeing and Population Health. When 'the rent/mortgage eat first,' a household's ability to meet other needs such as utilities, healthy food, health care, education, transportation, childcare, etc… is directly, and inversely, related to their ability to maintain housing. The consistently negative association between housing burden and both Economic Wellbeing and Population Health suggests than any efforts to improve the affordability and quality of local housing stock virtually anywhere in the region will likely make a difference for people living in these communities – and not just for keeping a roof over their heads.

Additionally, the positive association between Economic Infrastructure and Economic Wellbeing is instructive, and intuitive. The Economic Infrastructure measure reflects the diversity of the different types of firms operating within a county, proximity to higher education, access to childcare, and connectivity to wireless and broadband infrastructure. These features collectively represent the opportunity structure for people in a place to participate in the local economy; and the most diverse and connected places are also places with higher levels of Economic Wellbeing. Activities such as improving the speed of broadband connections, increasing the area of 4G LTE coverage, and supporting the diversification of the local economy would all bolster the local Economic Infrastructure to create the conditions for improved Economic Wellbeing. Furthermore, while creating new 2- and 4-year higher education campuses to improve access for rural populations is unlikely and largely cost prohibitive, improving online and/or hybrid offerings (perhaps in locally established satellite locations, or even at public libraries which are widely distributed across the region) could minimize the burden of student travel and have a significant impact on Economic Wellbeing.

At the same time, there are also potentially interesting lessons to learn from the handful of places in rather remote parts of Virginia, North Carolina and Tennessee where Economic Wellbeing was found to be high, but Economic Infrastructure was very low. These are places that appear to deviate from an overall pattern that would suggest well-developed Economic Infrastructure was a necessary condition for elevated Economic Wellbeing. Understanding the dynamics of these communities' assets and how they support elevated levels of Economic Wellbeing could provide important insights for other parts of the region where it may not be feasible or appropriate to make large scale investments in Economic Infrastructure but more narrowly targeted approaches are more appropriate in more remote parts of the region.

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[11] The presence of abandoned and active coal mines were not included in asset scan since they do not represent the types of investable assets that private investors would support to promote local economies or population health. However, throughout the region there is a very strong and negative relationship between the presence of active and abandoned coal mines with Economic Wellbeing and Population Health; an enduring legacy that will continue to inform economic development and public health efforts to support the region for the foreseeable future. See Appendix II for maps of the presence of active and abandoned coal mines and their intersections with Economic Wellbeing and Population Health.

An important finding that cuts across some conventional understandings of the intersection between public health and economic development was **the absence of any significant relationship between the presence of Health Facilities and Population Health and the *significantly negative* relationship between the presence of Health Infrastructure and Economic Wellbeing.** These findings suggest that access to health facilities and professionals doesn't *make* people healthy, rather the elevated presence of Health Facilities likely exists to meet the needs of communities with persistently unhealthy populations – i.e., large swaths of central/eastern Kentucky and West Virginia. Additionally, concentrations of Health Facilities and the jobs it supports also do not appear to generate positive outcomes for the overall Economic Wellbeing of the population in these places – which may have to do with the types of jobs created and who can access them, among other factors.

Perhaps the most intriguing, and consistent finding was the positive association between elevated levels of Civic Engagement with Economic Wellbeing and Population Health. The measures included in Civic Engagement primarily represent a mix of individual behaviors (voting and volunteering) and civic organizations (volunteer-run organizations, philanthropies, and libraries). These are behaviors and organizations that represent the social glue of communities – they are the types of places and activities beyond home and work where people make connections with one another, share common interests, and work together to improve their communities.

These findings suggest that **approaches to improve Economic Wellbeing and Population Health through investments in the creation or enhancement of local assets in these communities can be augmented by simultaneous investments to promote Civic Engagement.** Investments to bolster Economic Infrastructure by creating connectivity with broadband/wireless expansion, seeding new industries, re/up-skilling the local workforce to support new types of businesses, and attracting new business and industries – can be enhanced by simultaneous investments to foster civic engagement in local communities.

In many respects, a healthy civic sector is likely a necessary pre-condition for successful deployment of investments to diversify the local economy or attract new industries that will enhance the overall Economic Wellbeing and Population Health of a place. Places with strong Civic Engagement are likely more 'ready' for investments in Economic Infrastructure or other assets, whereas places with weak Civic Engagement likely need a 'both/and' approach to building assets while also bolstering their civic sector.

The findings presented in this asset scan provide a nuanced framework for thinking about potential approaches to enhance the quality of life in Central Appalachian communities. But these results are only as useful to the degree that they help investors coordinate and refine their strategies and target their investments. Appendix I presents examples from each state in Central Appalachia to illustrate recent investments to create community assets that support the health and vitality of communities across the region.

All the maps, indexes and underlying county-level data used to conduct the asset scan are also available here:

https://storymaps.arcgis.com/stories/5e0257e41eb94f55ab6bfb0c797a92fa

Recommendations for Future Research

The findings from this exploratory study point to important insights into the relationships between a community's assets and its wellbeing, while also highlighting clear opportunities for further research to better understand these relationships. Further research could include:

- **Operationalizing Civic Engagement.** The consistently positive associations between elevated levels of Civic Engagement with Economic Wellbeing and Population Health deserve further attention. Additional research to better understand how the underlying conditions that facilitate elevated levels of civic engagement are associated with elevated levels of Population Health and Economic Wellbeing would make valuable contributions to potential investors' decision making.

- **Analyzing the relationship between land ownership and key dimensions of wellbeing.** The history and culture associated with resource extraction and land ownership continue to dominate conversations around generational wealth, poverty, and equity in Central Appalachia. Future research that could begin to document the relationships between land ownership and wellbeing would represent an important step forward.

- **Examining the direct relationship between housing and wellbeing.** Housing is a critically important asset that structures an individual's ability to access other resources in their local communities. At the county level, data are very limited to understand local housing costs and conditions that contribute to housing burdens and opportunities for Central Appalachian residents. Further research to better understand the distribution of housing costs, quality, and access across the region is critically important to developing holistic approaches to supporting residents' wellbeing.

- **Identifying opportunities to update and create climate–resilient infrastructure.** Recent extreme weather events in the region highlight that several of the assets included in this study (Housing, Nonprofit Organizations, and Economic Infrastructure) were severely impacted. The static measures that were included in this study do not capture assets' ability to withstand natural and man–made disasters.

- **Following private investment flows.** Future research should further explore the distribution of national and local foundation giving and investment. There tend to be regional hubs that attract and disburse money to places and people where it is needed most but the data only capture the physical locations of those hubs. To truly measure the impact of philanthropic investment, it is vital to track the flow of these funds to the place–based beneficiaries of these investments.

Appendix I – Investment Profiles

Investments in Community Assets Can Improve Wellbeing in Central Appalachia

This section presents six profiles (one from each state) of investments into community assets that are designed to improve the health and Wellbeing of individuals and communities throughout Central Appalachia. Although each of the profiles describe an example of investments that connect community assets and Wellbeing, the investments themselves were not always made with these connections in mind.

The selection of the examples presented were made in consultation with input from the SMEs and CAB members, and other informal referrals from the study team's professional networks – they are not intended to be representative of the types of investments that may be more or less appropriate or effective in different parts of the region. They were selected only to provide tangible examples of how private investments made to create or bolster community assets can make positive contributions in the Wellbeing of individuals and communities.

Each example includes a brief description of the investment itself, a summary of the relative strength of key dimensions of Wellbeing and community assets in the county (or counties), and a narrative account of how the investments are intended to enhance the quality of life for individuals and communities in Central Appalachia. Map A1 presents the location of the counties represented in the examples that follow.
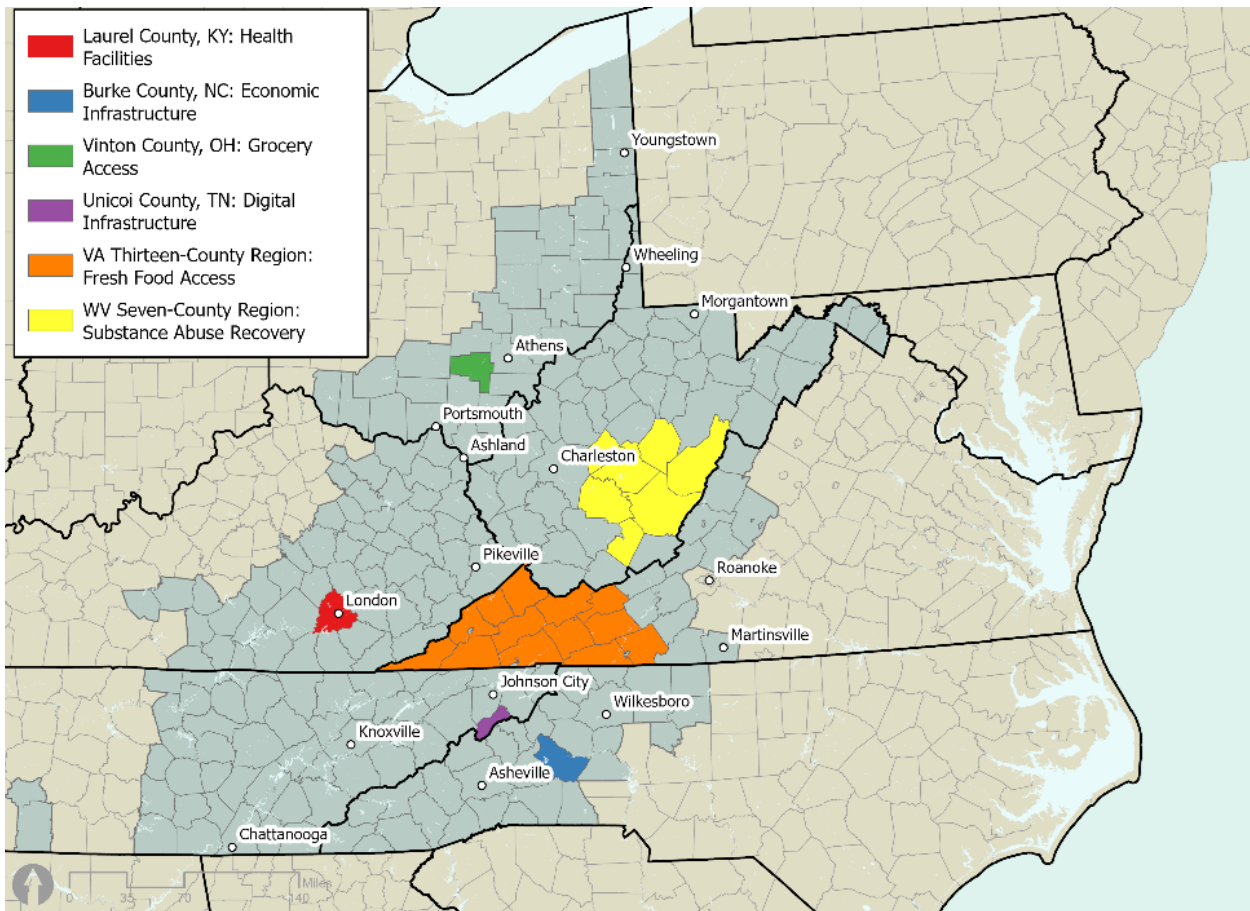
Map A1. Counties Served by Profiled Investments.

Building Health Infrastructure to Improve Health Outcomes for Mothers and Infants (Kentucky)

Sources: Appalachian Regional Commission (October 2020). "POWER Project Summaries by State." Available: https://www.arc.gov/wp-content/uploads/2020/10/POWER-Project-Summaries-by-State-Awarded-October-2020-1.pdf; CHI Saint Joseph Health. "Critical Need for NICU." Available: https://www.chisaintjosephhealth.org/chi-saint-joseph-health/ways-to-help/saint-joseph-london-foundation/events/hope-for-newborns

Just like other industries, a robust and effective public health system requires infrastructure to support positive outcomes for residents. Although Laurel County, Kentucky ranks among the top half of Central Appalachian counties for Economic Infrastructure, the county ranks among the lowest in the region for Population Health. Moreover, over the past several years, this county in southeastern Kentucky has seen a rise in babies born with neonatal abstinence syndrome and other adverse conditions that require specialized care.

A $990,510 POWER grant from ARC and private donations are helping the Saint Joseph London Foundation address a critical gap in the region's public health infrastructure by building a level II Neonatal Intensive Care Unit (NICU) in Laurel County, Kentucky.

The absence of a facility to address the health needs of the community not only presents a public health challenge, but also major quality of life issue for families. Prior to the construction of the Saint Joseph London NICU, there was only one other hospital in southeastern Kentucky with a birthing center and NICU. For parents whose babies needed specialized treatment, the closest option was a 90-minute drive to a hospital in Lexington. The distance not only created a financial hardship for families, but also made it difficult for parents to be close to their children during a time when bonding is critical for the physical and emotional health of both mothers and babies. The new NICU will have the capacity to serve 100 newborns a year and create 19 full-time jobs.

Laurel County, Kentucky
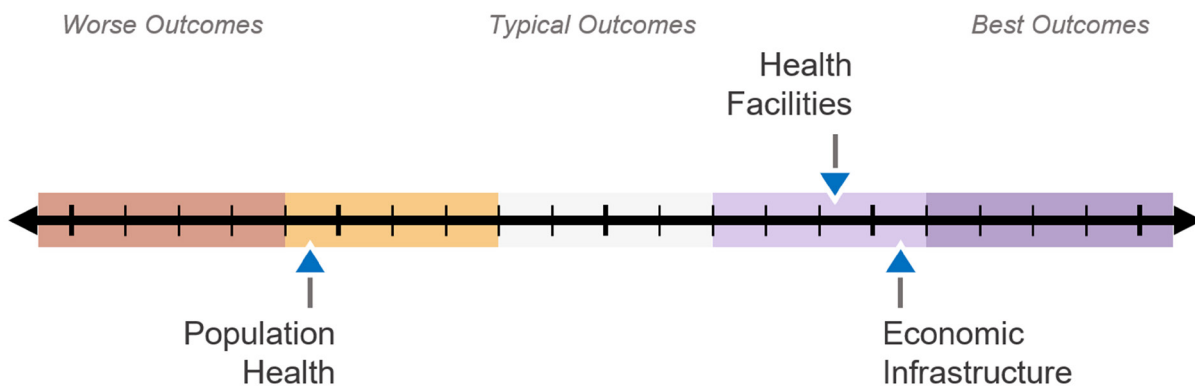
How to read this graphic:
This graphic shows how community assets and Wellbeing measures in the target area compare with other counties in Central Appalachia. For example, the measure of Population Health in Laurel County is substantially below other counties in the region.

Financing Grocery Access to Support Economic Wellbeing and Population Health (Ohio)

Source: Finance Fund. "Campbell's Market" Available: https://www.financefund.org/project/camp/

When the only full-service grocery store in Vinton County, Ohio closed in 2013, residents were required to travel across county lines to purchase fresh produce, meats, and dairy. To help address the community's food access and support the county's economic development, local leaders worked with a CDFI to secure financing for a new grocery store.

Compared with the rest of central Appalachia, Vinton County has some of the worst Population Health outcomes in the region and lags behind other counties when it comes to Economic Infrastructure and Economic Wellbeing. The loss of a grocery store not only threatens a community's access to healthy food, but also its economic vitality. Grocery stores are important community assets. They carry the variety of fresh fruits and vegetables that residents need to support a healthy diet, and they also play a role in the local economy—providing good jobs with flexible hours—and help anchor commercial developments that attract additional business and stores.

With support from the Ohio-based Finance Fund's Healthy Food for Ohio program, a local grocery store operator was able to secure $1,575,000 in flexible financing (which included New Markets Tax Credits) to build out a 12,000 square foot full-service grocery store. The new store serves the entire county and provides 15 full-time and 15 part-time jobs for residents in the local community.

Vinton County, Ohio
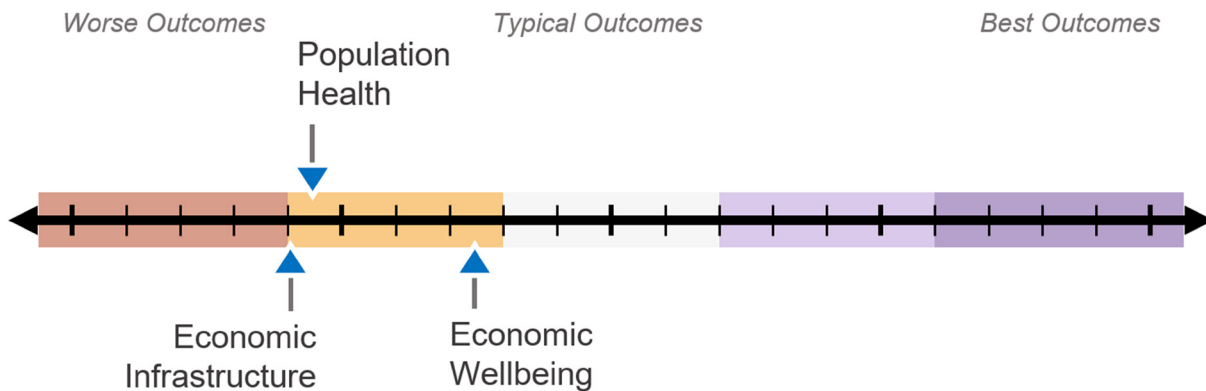
How to read this graphic:
This graphic shows how community assets and Wellbeing measures in the target area compare with other counties in Central Appalachia. For example, the measure of Economic Infrastructure in Vinton County is substantially below other counties in the region.

Investing in Digital Infrastructure to Support Community Development (Tennessee)

Sources: Appalachian Regional Commission. "Erwin Utilities: Enhancing Broadband in Unicoi County." Available: https://www. arc.gov/investment/erwin-utilities-enhancing-broadband-in-unicoi-county/; Appalachian Regional Commission (October 2020). "POWER Project Summaries by State." Available : https ://www.arc.gov/wp-content/uploads/2020/10/POWER-Project-Summaries-by-State-Awarded-October-2020-1.pdf

Unicoi County, Tennessee ranks in the middle of the region for Economic Wellbeing and Population Health, but among the lowest for its Public Investments, Housing Burden, and Non-profit Organizations. Although the county's Economic Infrastructure has served the region well, modern economic development often requires a different set of infrastructure. For example, when a local CSX rail yard closed, local leaders were faced with the challenge of replacing nearly 300 lost jobs. In looking for new businesses or industries to attract, leaders realized that the county's lack of digital infrastructure was a major barrier to redevelopment. Only about 25% of Unicoi County residents had access to any form of broadband.

To address these challenges, the county used an ARC POWER grant to fund a new utility project to install 35 miles of fiberoptic cable throughout the county. With a $400,333 grant from ARC, the County was able to connect 30 businesses and 680 homes in underserved areas with high-speed internet. The project was also designed to run near two of the county's critical assets: Flag Pond and Rocky Fork State Park, both important draws for the county's budding tourism industry.

County leaders hope this new infrastructure will help attract new businesses and economic growth to the area, but the project is also paying dividends in other ways. The County Hospital, which is connected to the new fiberoptic network, relied heavily on this new service to participate in a multi-hospital network and offer telemedicine services during the COVID-19 pandemic. As the community continues to recover from COVID-19, leaders are hoping that their health system's upgraded digital capacity will help them build on the innovations developed during the pandemic: increasing collaboration with other hospital systems and expanding access to telehealth for the community.

Unicoi County, Tennessee
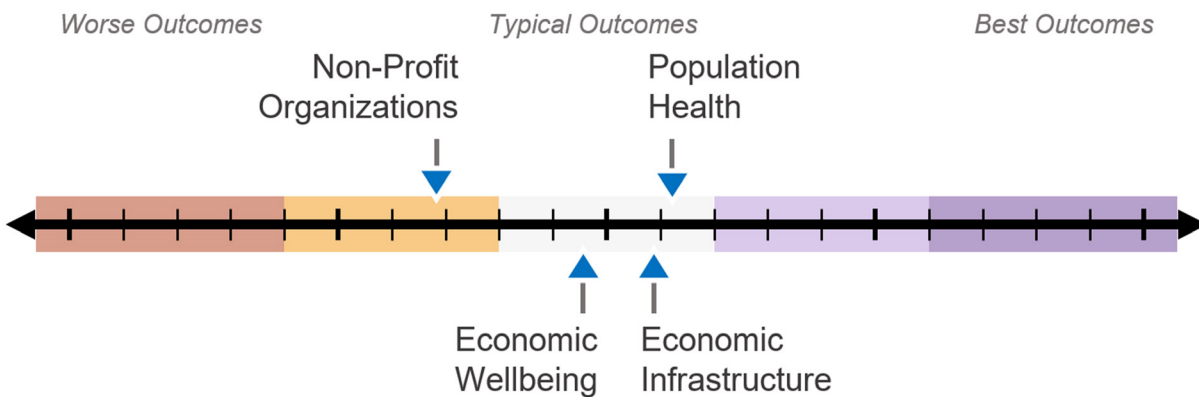
How to read this graphic:
This graphic shows how community assets and Wellbeing measures in the target area compare with other counties in Central Appalachia. For example, the measure of Economic Wellbeing in Unicoi County is close to the average of other counties in the region.

Rethinking Economic Infrastructure to Grow New Community (North Carolina)

Sources: The News Herald. (May, 2022) "Grant to Help Bring New Life For the Former Drexel 3&5 Site." Available: https:// morganton.com/business/grant-to-help-bring-new-life-for-the-former-drexel-3-5-site/article_48497848-d882-11ec-a905-9b586078992c.html#tracking-source=home-top-story; eTextile Communications (May, 2022) "The Industrial Commons receives $500,000 EPA Grant to Assist with Creation of Innovation Campus." Available: https://www.etextilecommunications. com/news/the-industrial-commons-receives-500-000-epa-grant-to-assist-with-creation-of-innovation-campus/article_ de1f371e-d80e-11ec-a464-af016addd818.html

Burke County has some of the strongest Economic Infrastructure in the region, but its Economic Wellbeing is only average, and the county's Non-profit Organizations lag far behind other counties in Central Appalachia. Led by The Industrial Commons (TIC), the county is working to leverage its existing and legacy Economic Infrastructure to attract new jobs and bolsters its community organizations.

The Drexel Furniture factory, for example, was a fixture of Morganton, North Carolina in the early 1990s. The factory and its manufacturing facilities provided economic opportunity for the small town until a series of acquisitions ultimately shut down the plant in 2004. Five years later, a fire destroyed the vacant site, turning what was once an economic engine into blight.

The Drexel Furniture factory revitalization plan, which is funded in part with a $500,000 Brownfields Cleanup Grant will transform the former Drexel Furniture factory into a 27-acre work-oriented, multi-functional "Innovation Campus." Local leaders hope the plan will not only reactivate the site as an economic engine, but also become a community asset that can bolster the county's industrial and non-profit infrastructure.

In designing the redevelopment plan, TIC worked closely with the local manufacturing community to identify the type of infrastructure that the next generation of manufacturers and businesses need to power the region's future economic growth. In addition to office and manufacturing space, TIC is also setting aside land for other community uses. The draft master plan includes craft and creative art spaces, a public park, a new business incubator, childcare, and a job training facility where residents can learn the skills they need to work in the industrial sewing and furniture manufacturing industries. Local leaders anticipate that the Innovation Campus will generate 170 new jobs and $22 million in annual economic impact.

Burke County, North Carolina
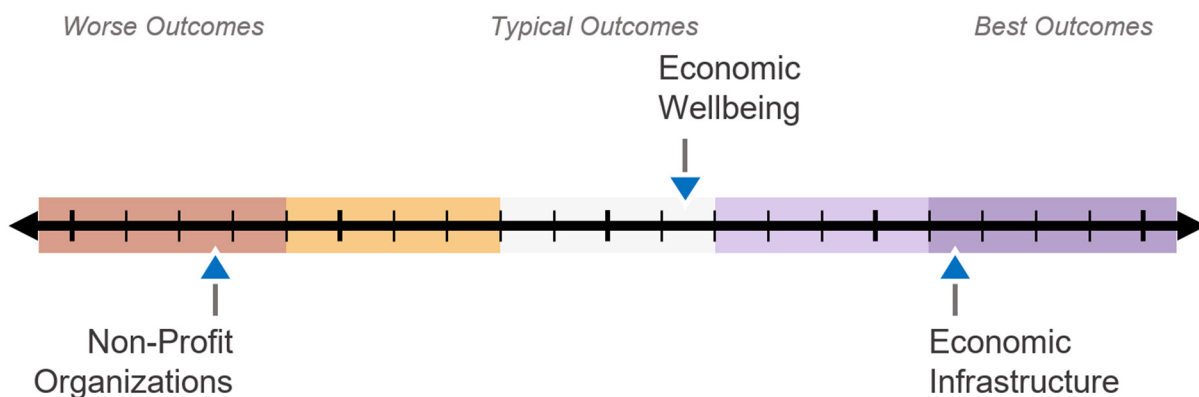
How to read this graphic:
This graphic shows how community assets and Wellbeing measures in the target area compare with other counties in Central Appalachia. For example, the measure of Economic Infrastructure in Burke County is substantially higher than other counties in the region.

Expanding Fresh Food Access to Support Small Businesses and Population Health (Virginia)

Sources: Appalachian Sustainable Development. (March, 2022). "Appalachian Sustainable Development Offers Virginia Fresh match Incentives to Farmers Markets and General Stores in Southwest Virginia." Available: https://www.asdevelop.org/news/ appalachian-sustainable-development-offers-virginia-fresh-match-incentives-to-farmers-markets-and-general-stores-in-southwest-virginia/

In Virginia, Appalachian Sustainable Development (ASD) is leveraging state and federal funding to encourage 160 new food retailers to start participating in SNAP/EBT through financial incentives and technical assistance. The thirteen-county region targeted by the program includes counties with a range of community assets and varying levels of Wellbeing. On average, the region has among the best Population Health in central Appalachia, despite only moderate to average Economic Wellbeing and Health Facilities.

Food insecurity affects all types of communities across central Appalachia. Although federal programs like SNAP/EBT exist to help alleviate the cost of food, in communities where retail participation in SNAP/EBT is limited or where participating retailers don't carry fresh fruits and vegetables, low-income families experience challenges to access healthy foods.

The initiative targets small retailers located in thirteen southwestern counties of the state, like farmers markets and general stores. Through a network of 10 regional food access organizations, ASD is recruiting and coaching new retailers to accept SNAP/EBT benefits and stock fresh fruits and vegetables. Training and technical assistance also help new retailers sign up for Virginia's Fresh Match program, which doubles the value of customers' SNAP/EBT benefits, benefiting both retailers and customers. Along the way, ASD is working to understand barriers that prevent more retailers in rural communities from participating in federal food programs and working to refine a model that can be replicated in other communities.

Thirteen County Region, Virginia

Counties: Bland, Buchanan, Carroll, Dickenson, Grayson, Lee, Russell, Scott, Smyth, Tazewell, Washington, Wise, and Wythe.
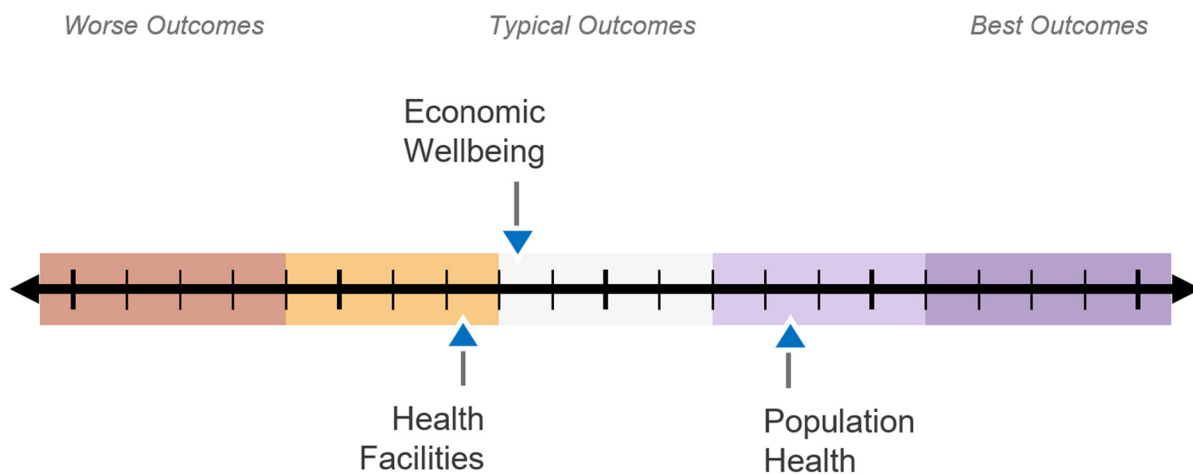
How to read this graphic:
This graphic shows how community assets and Wellbeing measures in the target area compare with other counties in Central Appalachia. For example, the measure of Health Facilities in the Thirteen County Region is just below the average of other counties in the region.

Leveraging A Robust Nonprofit Sector to Improve Health and Economic Wellbeing (West Virginia)

Source: Appalachian Regional Commission (Sept 2022). "INSPIRE Award Summaries by State." Available: https://www.arc.gov/wp-content/uploads/2022/09/INSPIRE-Award-Summaries-As-of-September-2022.pdf

Substance abuse disorders affect communities in every part of the country; West Virginia has the highest rate of drug overdose deaths in the nation. Although treating substance abuse disorders involves clinical interventions, individuals working through recovery also often encounter economic challenges. In addition to medical services, individuals recovering from addiction also need social and economic support to help them stay connected to the workforce and secure gainful, and reliable, employment. With support from an ARC INSPIRE grant, the West Virginia University Research Corporation and the Institute for Community and Rural Health are working to expand the recovery ecosystem in a seven-county area in central West Virginia to include clinical, social and economic supports.

The seven counties targeted by the program have among the worst Population Health and Economic Wellbeing in Central Appalachia. Although the region as a whole has a typical concentration of Non-Profit Organizations some of the individual counties have high concentrations of non-profits, which suggests that while the region faces many challenges, there are mission-driven organizations available for partnerships and new initiatives.

The $499,176 grant will build on the region's strengths and fund non-profit community partners to build out a system of support that helps individuals going through recovery connect with the social services and job training they need. The 49 individuals who will benefit from the grant will each be paired with training and job placement services as well as a series of additional wrap around social services like counseling, housing services, and transportation assistance to address the full spectrum of supports they need to obtain and sustain employment.

Seven County Region, West Virginia

Counties: Clay, Fayette, Greenbrier, Nicholas, Pocahontas, Summers, and Webster.
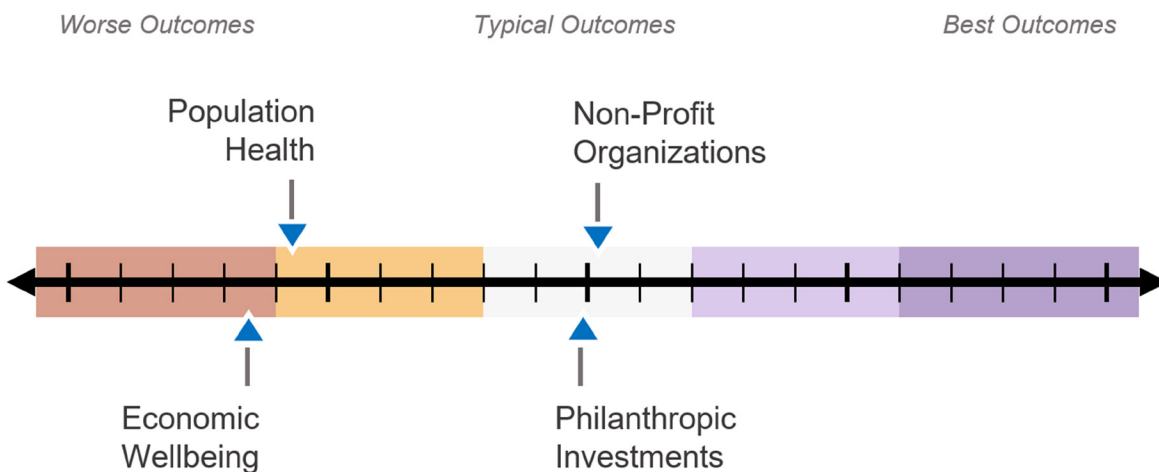
How to read this graphic:
This graphic shows how community assets and Wellbeing measures in the target area compare with other counties in Central Appalachia. For example, the measure of Economic Wellbeing in the Seven County Region is substantially lower than other counties in the region.

Appendix II – Supplemental Maps and Tables
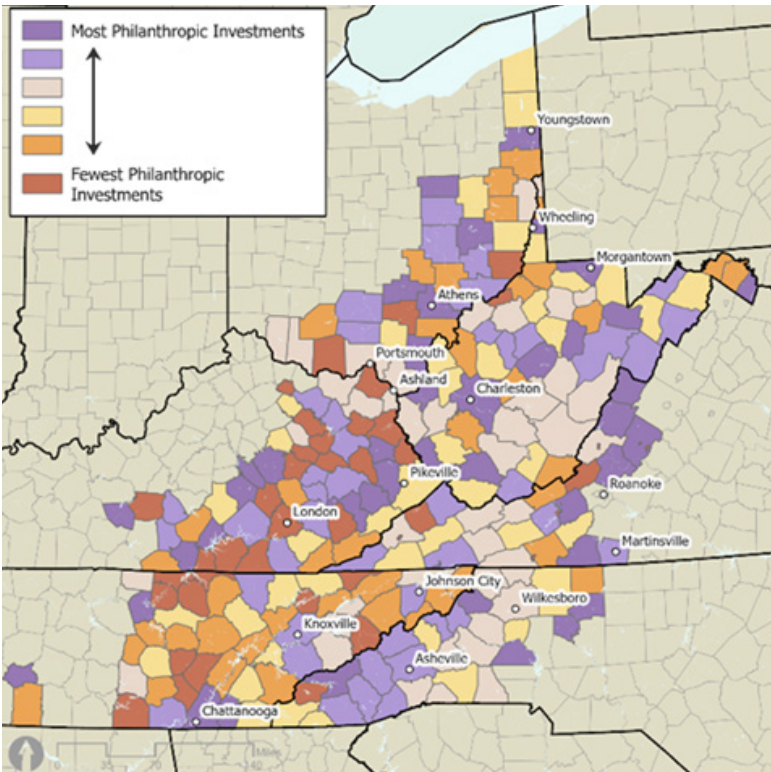
Map A2. Philanthropic Investments[12]
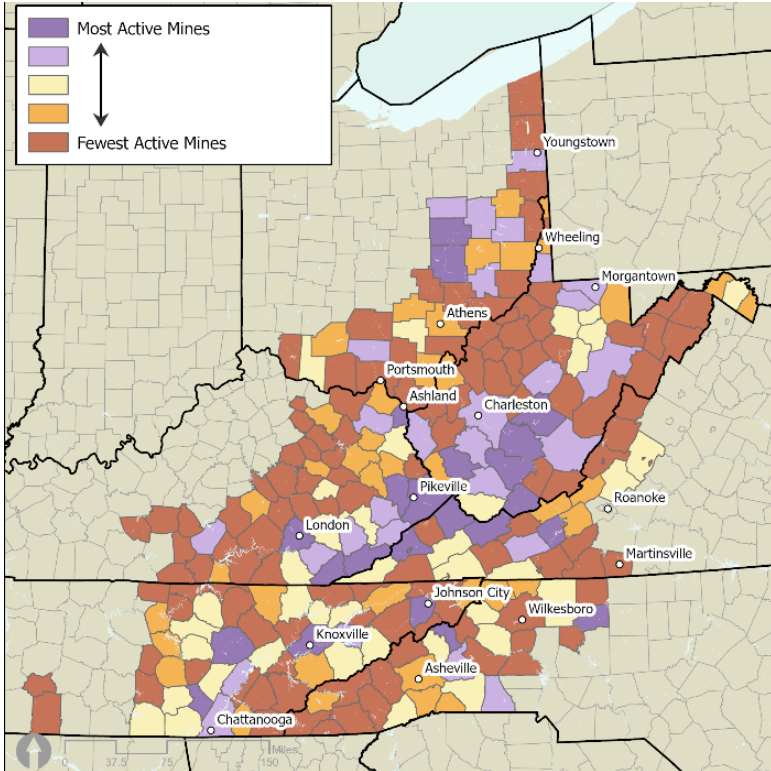
Map A3. Location of Active Coal Mines

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[12] The philanthropic investments presented in Map A2 represent the per-capita dollar value of gifts and contributions recently received by 990-filing non-profit organizations in each county.
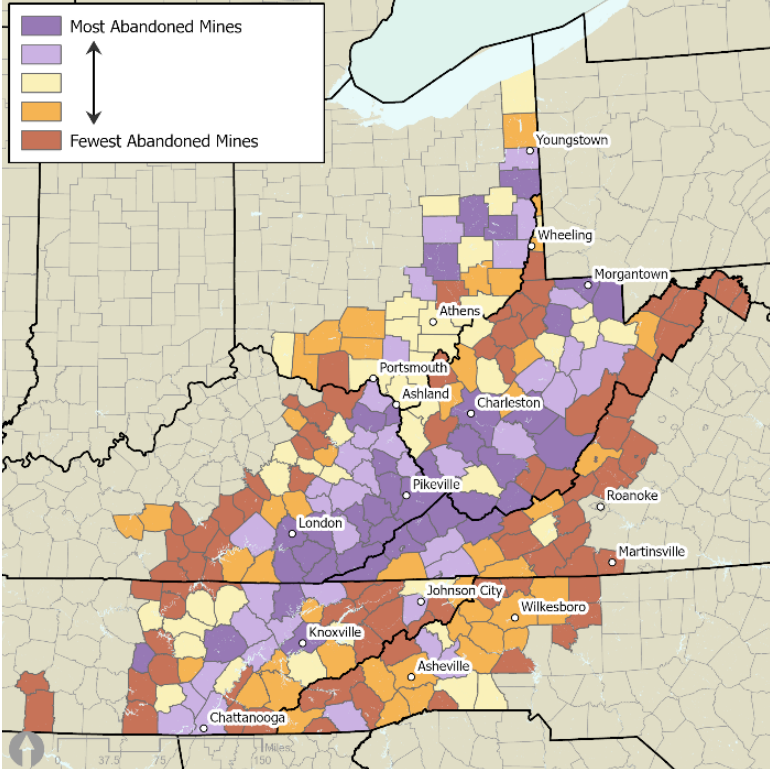
Map A4. Location of Abandoned Coal Mines
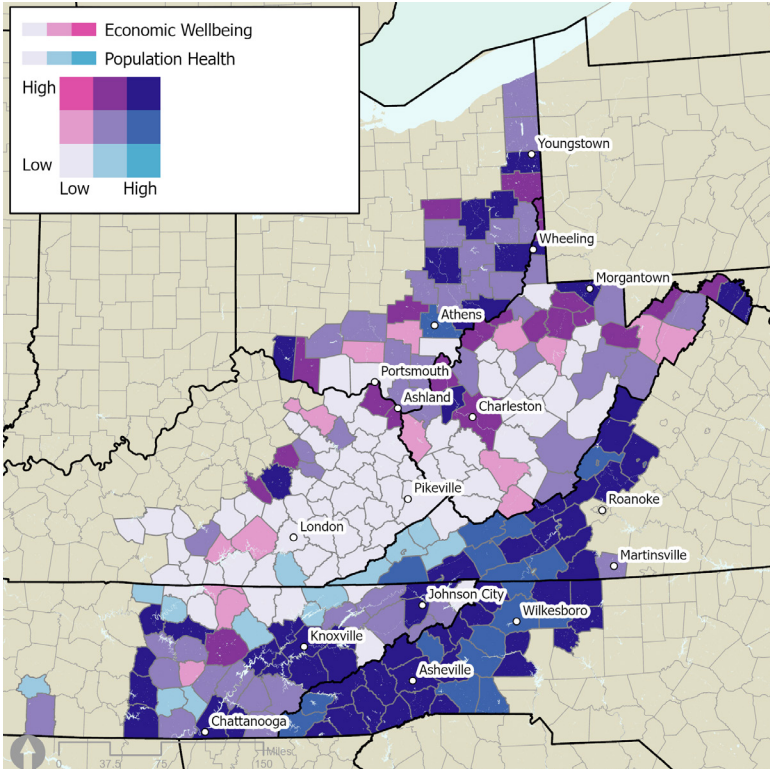
Map A5. Economic Wellbeing & Population Health

Economic Wellbeing Measures
- Median Household Income
- Households with Investment Income
- Population with Bachelor's Degree
- Population with High School Diploma
- Labor Force Participation Rate
- Employment Rate
- Poverty Rate

Population Health Measures
- Life Expectancy
- Obesity Rate
- Share of Seniors with No Teeth
- Physical Inactivity Rate
- Poor/Fair Health Rate
- Asthma Rate
- Diabetes Rate
- Heart Disease Rate
- Poor Mental Health Rate
- Smoking Rate
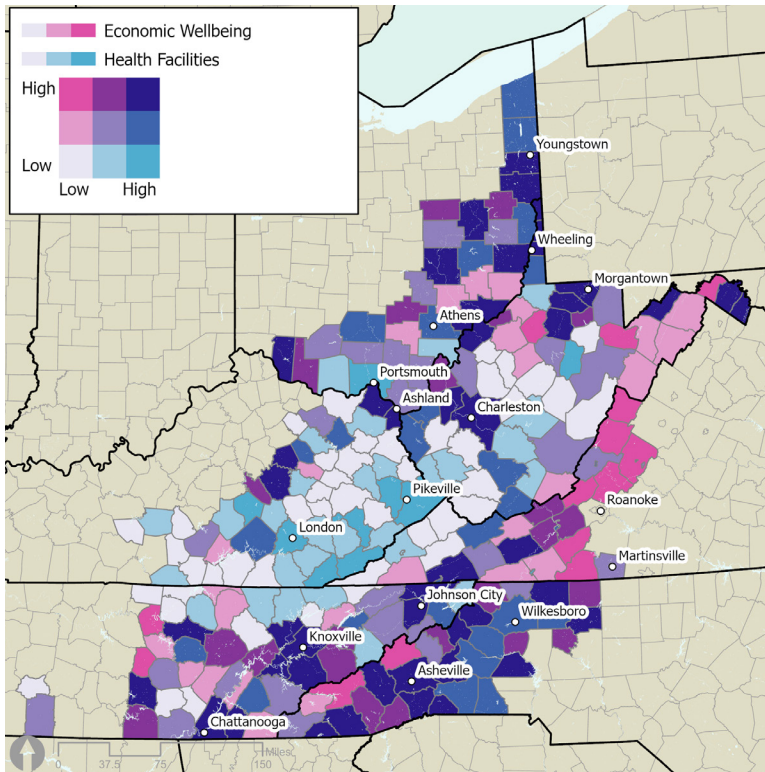
Economic Wellbeing Measures
- Median Household Income
- Households with Investment Income
- Population with Bachelor's Degree
- Population with High School Diploma
- Labor Force Participation Rate
- Employment Rate
- Poverty Rate

Health Facilities Measures
- Healthcare Providers per Household
- Distance to Nearest Fire/EMS Station
- Distance to Nearest Emergency Room
- Distance to Nearest Hospital
- Distance to Nearest Grocery Store
- Access to Maternal Care

Map A6. Economic Wellbeing & Health Facilities
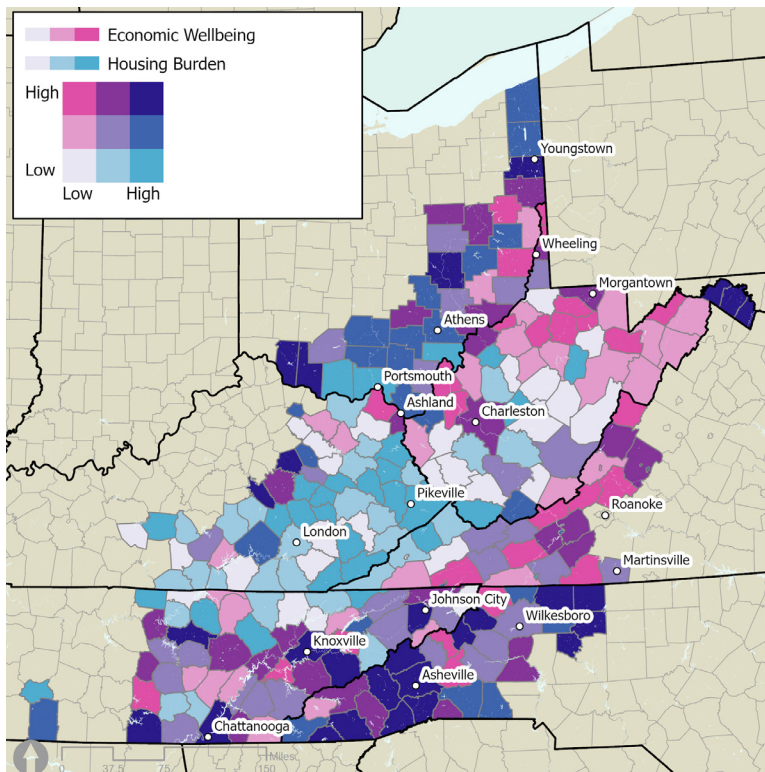
Housing Burden Measures
- Share of Cost-Burdened Homeowners
- Share of Cost-Burdened Renters
- Share of Homeowners with Serious Maintenance Issues
- Share of Renters with Serious Maintenance Issues

Map A7. Economic Wellbeing & Housing Burden
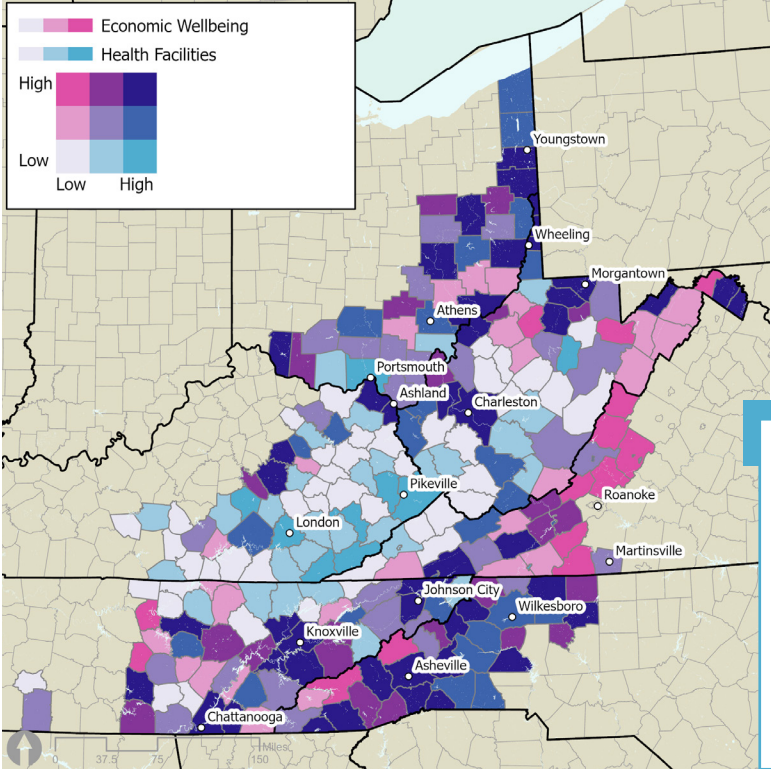
Economic Wellbeing Measures
- Median Household Income
- Households with Investment Income
- Population with Bachelor's Degree
- Population with High School Diploma
- Labor Force Participation Rate
- Employment Rate
- Poverty Rate

Public Investment Measures
- American Rescue Plan Act Funding
- Payment Protection Program Funding
- Small Business Administration Lending
- Rural Development Grants
- Economic Development Association Grants
- Low Income Housing Tax Credit Projects
- Community Development Financial Institution Lending

Map A8. Economic Wellbeing & Public Investment
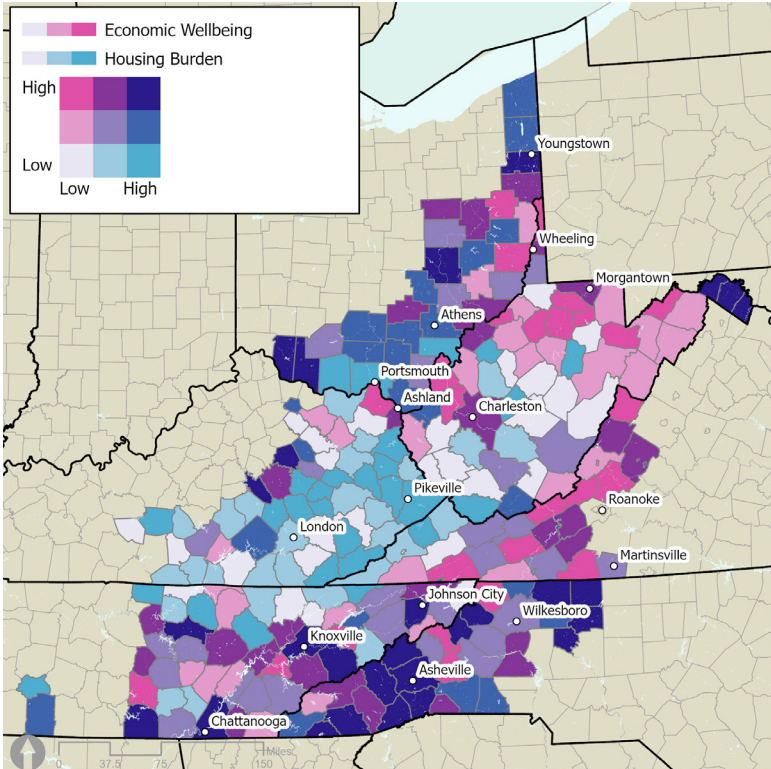
Non-Profit Organizations Measures
- Arts Organizations
- Educational Organizations
- Religious Organizations
- Philanthropic Organizations

Map A9. Economic Wellbeing & Non-Profit Organizations
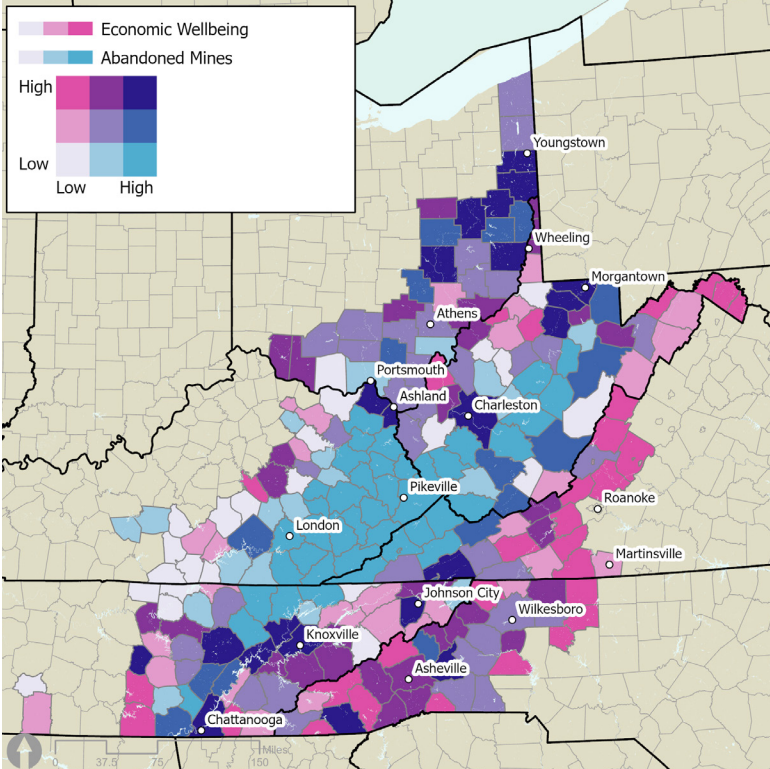
Map A10. Economic Wellbeing & Abandoned Mines

Economic Wellbeing Measures
- Median Household Income
- Households with Investment Income
- Population with Bachelor's Degree
- Population with High School Diploma
- Labor Force Participation Rate
- Employment Rate
- Poverty Rate
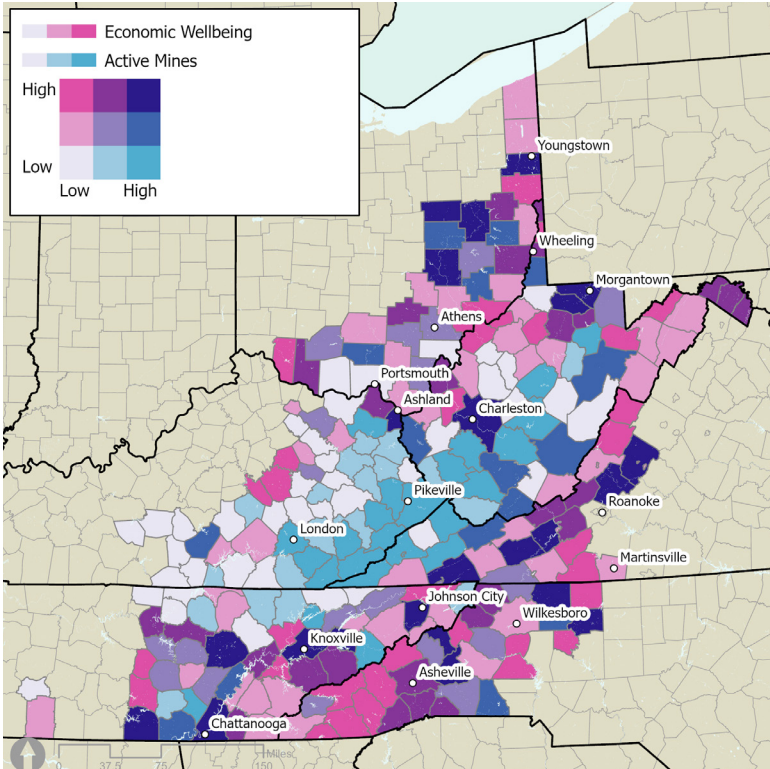
Map A11. Economic Wellbeing & Active Mines
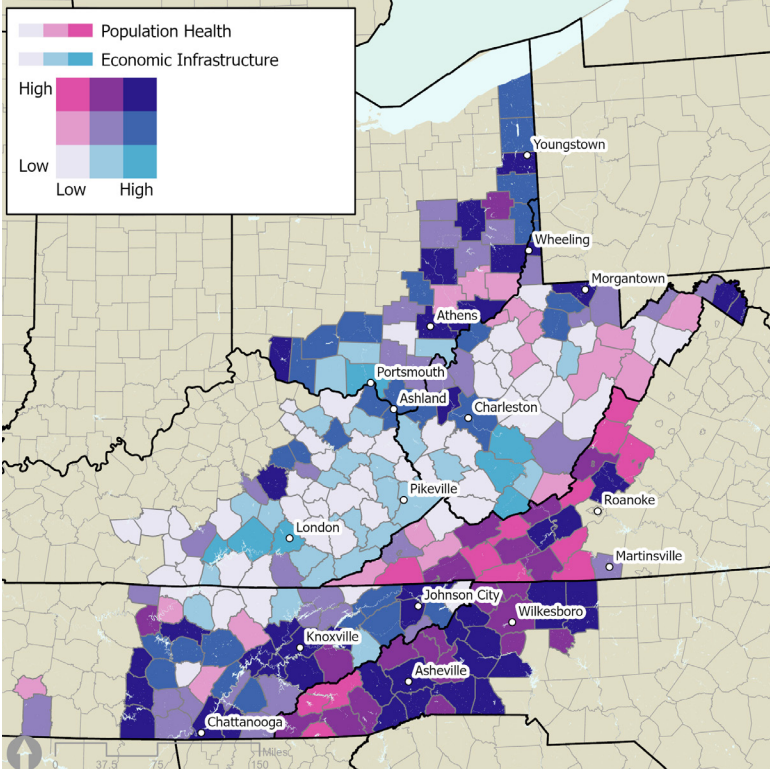
Map A12. Population Health & Economic Infrastructure

Population Health Measures
- Life Expectancy
- Obesity Rate
- Share of Seniors with No Teeth
- Physical Inactivity Rate
- Poor/Fair Health Rate
- Asthma Rate
- Diabetes Rate
- Heart Disease Rate
- Poor Mental Health Rate
- Smoking Rate

Economic Infrastructure Measures
- Industry Diversity of Businesses
- Agricultural Employment
- Mining Employment
- Manufacturing Employment
- Distance to Nearest 4-Year College/ University
- Distance to Nearest 2-Year College
- Broadband Capacity
- Wireless Capacity
- Early Childhood Education Capacity
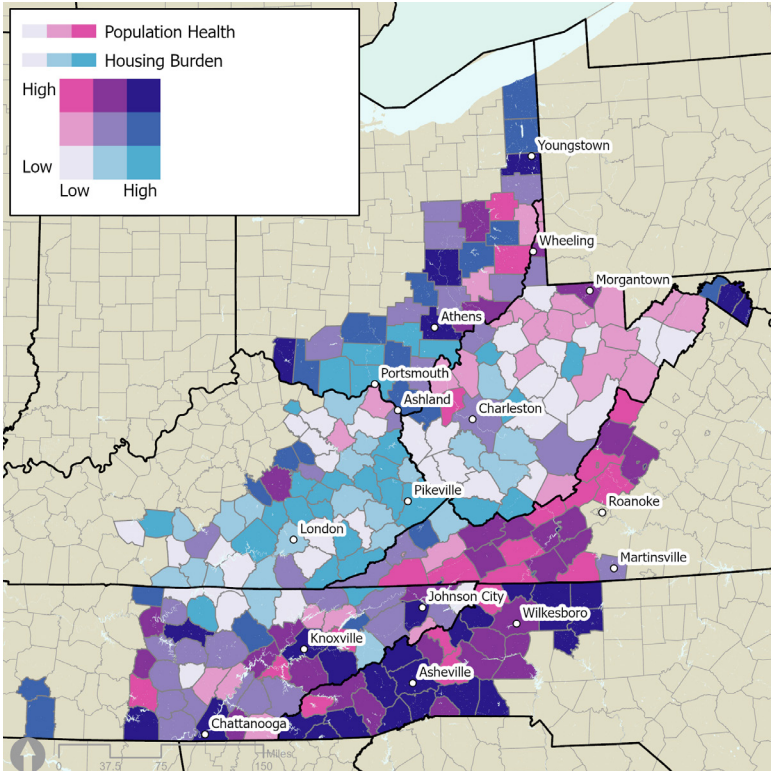
Map A13. Population Health & Housing Burden

Housing Burden Measures
- Share of Cost-Burdened Homeowners
- Share of Cost-Burdened Renters
- Share of Homeowners with Serious Maintenance Issues
- Share of Renters with Serious Maintenance Issues
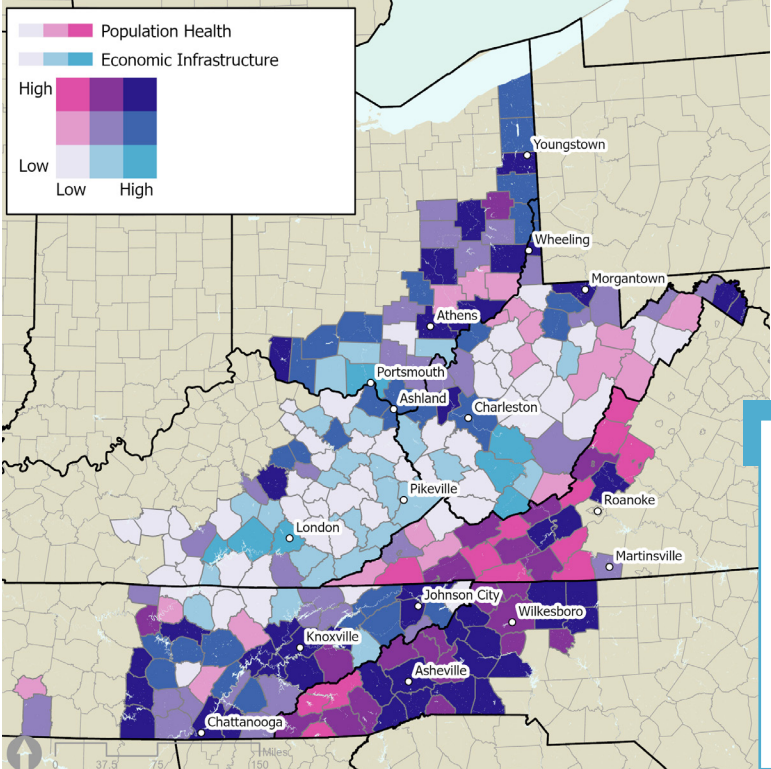
Population Health Measures
- Life Expectancy
- Obesity Rate
- Share of Seniors with No Teeth
- Physical Inactivity Rate
- Poor/Fair Health Rate
- Asthma Rate
- Diabetes Rate
- Heart Disease Rate
- Poor Mental Health Rate
- Smoking Rate

Public Investment Measures
- American Rescue Plan Act Funding
- Payment Protection Program Funding
- Small Business Administration Lending
- Rural Development Grants
- Economic Development Association Grants
- Low Income Housing Tax Credit Projects
- Community Development Financial Institution Lending

Map A14. Population Health & Public Investment
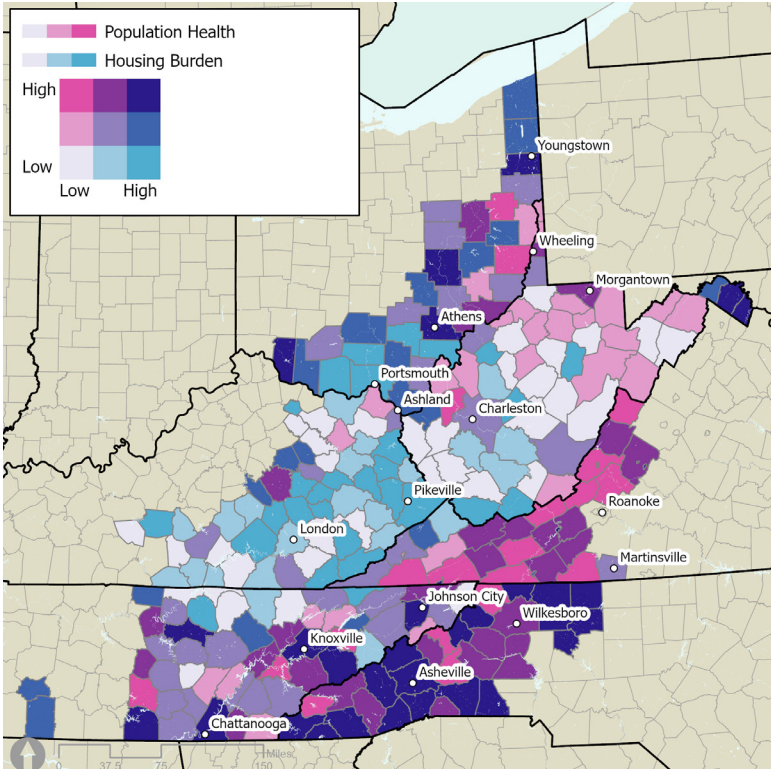
Non-Profit Organizations Measures
- Arts Organizations
- Educational Organizations
- Religious Organizations
- Philanthropic Organizations

Map A15. Population Health & Non-Profit Organizations
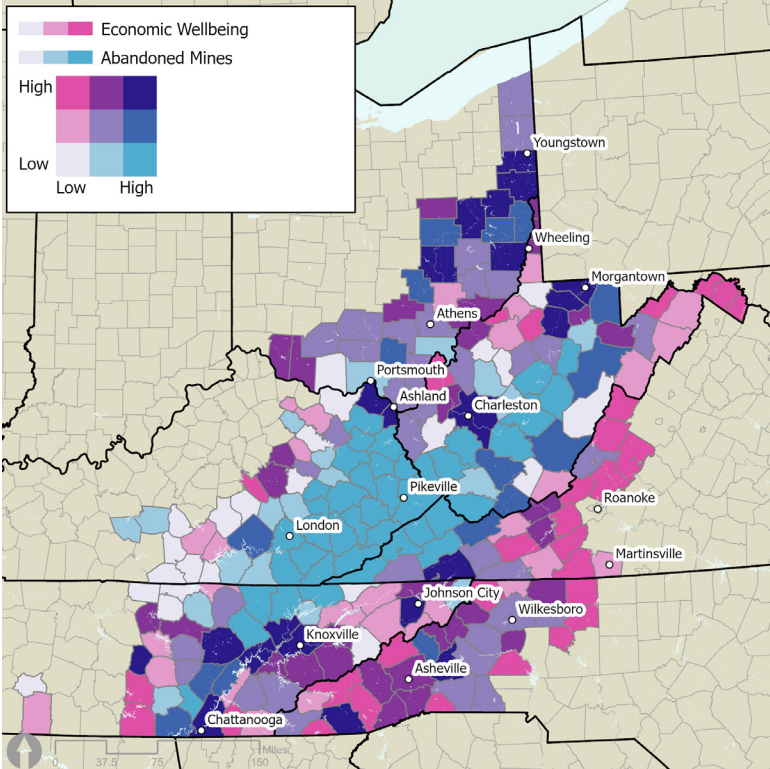
Map A16. Population Health & Abandoned Mines

Population Health Measures

- Life Expectancy
- Obesity Rate
- Share of Seniors with No Teeth
- Physical Inactivity Rate
- Poor/Fair Health Rate
- Asthma Rate
- Diabetes Rate
- Heart Disease Rate
- Poor Mental Health Rate
- Smoking Rate
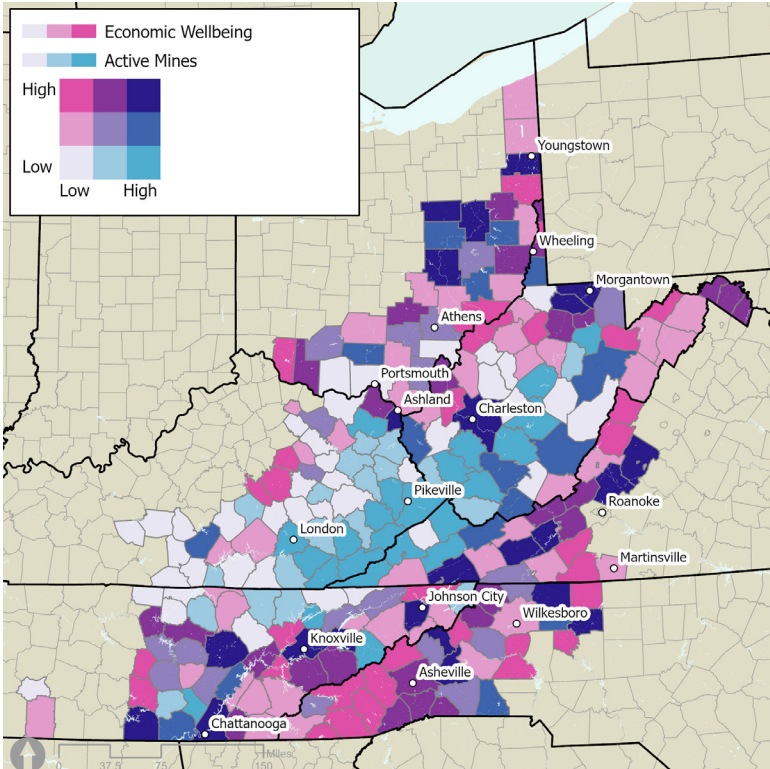
Map A17. Population Health & Active Mines

Table A1. Kentucky: County-Level Quintiles for Wellbeing & Community Asset Metrics[13]

| County	Civic Engagement Quintile	Economic Infrastructure Quintile	Health Infrastructure Quintile	Non-Profit Organizations Quintile	External Funding Quintile	Population Health Quintile	Housing Burden Quintile	Economic Wellbeing Quintile	Abandonded Mines Quintile	Active Mines Quintile	Philanthropic Investments Quintile
Adair County	1	3	2	2	1	3	4	3	1	4	2
Bath County	1	2	2	2	5	1	1	2	1	1	1
Bell County	1	3	4	1	5	1	4	1	5	5	2
Boyd County	4	5	5	2	1	3	3	4	5	5	4
Breathitt County	1	2	1	3	1	1	2	1	4	1	4
Carter County	1	3	2	3	1	1	2	1	5	4	4
Casey County	2	2	3	3	2	1	3	1	1	1	3
Clark County	4	5	5	5	1	4	5	5	4	1	2
Clay County	1	2	3	2	5	1	2	1	5	4	4
Clinton County	2	2	2	1	5	1	2	1	1	3	1
Cumberland County	2	1	1	4	2	1	4	2	1	1	5
Edmonson County	3	1	2	5	2	2	1	2	3	1	5
Elliott County	1	1	1	3	1	1	3	1	4	3	1
Estill County	2	2	3	3	3	1	4	1	1	1	1
Fleming County	3	2	3	3	4	2	2	2	1	3	4
Floyd County	2	4	5	3	1	1	5	1	5	5	5
Garrard County	4	3	2	5	1	3	5	5	1	1	5
Green County	4	2	2	5	3	1	3	1	1	1	4
Greenup County	2	4	5	2	5	4	2	4	4	3	1
Harlan County	2	2	4	1	2	1	4	1	5	5	2
Hart County	3	1	3	2	4	1	4	2	2	1	1
Jackson County	1	2	1	1	4	1	4	1	2	1	2
Johnson County	2	4	4	1	2	1	5	1	5	3	5
Knott County	1	2	2	1	1	1	2	1	5	4	5
Knox County	2	3	3	1	5	1	2	1	5	5	3
Laurel County	2	4	4	1	5	2	4	2	5	5	1
Lawrence County	2	2	2	2	2	1	5	1	4	4	1
Lee County	1	2	2	2	5	1	5	1	4	4	4
Leslie County	1	1	3	1	1	1	5	1	4	5	1
Letcher County	1	2	3	3	1	1	3	1	5	4	3
Lewis County	1	1	1	1	1	1	4	1	1	1	3
Lincoln County	2	3	4	1	5	1	3	2	1	3	5
Madison County	3	5	4	3	5	5	3	5	3	1	5
Magoffin County	1	2	2	2	1	1	5	1	4	3	1
Martin County	1	1	2	1	1	2	3	2	4	1	1
McCreary County	1	1	2	2	5	1	3	1	3	1	1
Menifee County	1	1	2	1	2	1	1	2	2	1	1
Metcalfe County	2	1	1	1	4	1	2	2	1	1	5
Monroe County	4	1	2	1	5	1	2	1	1	1	1
Montgomery County	2	5	4	1	4	3	4	3	1	1	4
Morgan County	1	3	2	1	1	2	3	1	4	3	5
Nicholas County	4	2	2	3	1	1	1	2	2	1	2
Owsley County	1	2	1	5	2	1	5	1	4	1	4
Perry County	2	3	4	2	1	2	2	2	5	4	5
Pike County	1	4	5	1	1	1	5	1	5	5	2
Powell County	2	2	2	2	2	2	4	2	3	3	1
Pulaski County	3	5	4	2	5	2	5	2	4	1	4
Robertson County	5	1		5	5	2	5	2	1	1	1
Rockcastle County	1	3	2	2	5	1	4	1	2	1	1
Rowan County	1	4	4	4	5	3	2	3	3	1	4
Russell County	3	4	2	1	3	2	1	2	1	1	5
Wayne County	2	1	1	2	5	1	1	1	2	1	1
Whitley County	2	3	3	1	2	2	3	2	5	4	4
Wolfe County	1	3	1	3	1	1	5	1	4	1	1

[13] In table A1 and those that follow, Quintile 1 represents the 'lowest' level of each metric and Quintile 5 represents the 'highest' level of each metric.

Table A2. North Carolina: County-Level Quintiles for Wellbeing & Community Asset Metrics

County	Civic Engagement Quintile	Economic Infrastructure Quintile	Health Infrastructure Quintile	Non-Profit Organizations Quintile	External Funding Quintile	Population Health Quintile	Housing Burden Quintile	Economic Wellbeing Quintile	Abandonded Mines Quintile	Active Mines Quintile	Philanthropic Investments Quintile
Alexander County	5	3	3	2	3	5	2	4	3	1	2
Alleghany County	5	2	3	5	2	4	5	3	1	3	3
Ashe County	4	3	3	3	3	5	2	4	1	3	3
Avery County	5	4	5	4	5	5	5	4	3	1	4
Buncombe County	5	5	5	4	4	5	5	5	3	3	4
Burke County	4	5	5	1	3	5	2	3	2	1	3
Caldwell County	4	5	5	2	3	5	3	4	3	4	4
Catawba County	5	5	5	5	4	5	3	5	1	1	5
Cherokee County	4	3	3	4	4	5	5	3	3	1	3
Clay County	5	2	4	5	4	5	5	5	1	1	3
Cleveland County	5	5	5	4	4	4	5	3	4	4	3
Davie County	5	4	4	5	3	5	5	5	1	1	5
Forsyth County	5	5	5	5	3	5	5	5	1	5	5
Graham County	4	1	1	5	5	5	1	3	1	3	1
Haywood County	5	5	5	4	3	5	5	5	2	1	4
Henderson County	5	5	5	3	5	5	5	5	3	3	4
Jackson County	4	3	3	4	3	5	3	5	1	1	5
Macon County	5	3	4	3	4	5	4	4	4	1	4
Madison County	4	2	2	3	4	5	4	5	1	1	5
McDowell County	4	3	4	1	3	5	2	4	4	5	3
Mitchell County	5	4	3	3	2	5	2	5	4	5	4
Polk County	5	3	4	5	4	5	3	5	1	3	3
Rutherford County	5	4	5	4	4	5	4	3	3	4	2
Stokes County	4	4	3	3	4	5	5	4	1	1	2
Surry County	5	5	5	2	3	5	4	4	2	4	3
Swain County	3	1	2	3	4	4	2	5	1	1	5
Transylvania County	5	4	4	5	4	5	4	5	2	4	4
Watauga County	5	4	4	4	3	5	5	5	3	4	5
Wilkes County	5	4	4	4	3	5	4	4	2	1	3
Yadkin County	5	4	4	3	3	5	4	4	2	4	3
Yancey County	5	2	3	4	4	5	3	4	4	4	3

Table A3. Ohio: County-Level Quintiles for Wellbeing & Community Asset Metrics

County	Civic Engagement Quintile	Economic Infrastructure Quintile	Health Infrastructure Quintile	Non-Profit Organizations Quintile	External Funding Quintile	Population Health Quintile	Housing Burden Quintile	Economic Wellbeing Quintile	Abandonded Mines Quintile	Active Mines Quintile	Philanthropic Investments Quintile
Adams County	3	3	3	4	2	2	5	2	1	1	1
Ashtabula County	4	4	5	4	4	3	5	3	3	1	2
Athens County	3	4	4	5	4	4	5	4	4	3	5
Belmont County	4	5	5	2	2	4	1	4	5	3	2
Brown County	3	4	4	4	5	4	4	4	2	4	4
Carroll County	5	4	3	4	2	4	1	4	4	3	2
Clermont County	5	5	5	5	3	5	4	5	3	1	3
Columbiana County	4	5	5	2	2	4	2	4	5	1	2
Coshocton County	4	3	2	4	3	3	3	4	5	5	4
Gallia County	4	3	2	5	1	3	4	4	4	3	5
Guernsey County	4	4	4	4	4	3	5	3	4	3	5
Harrison County	4	3	3	5	5	3	4	3	5	4	2
Highland County	3	4	3	4	2	3	4	3	2	3	2
Hocking County	5	3	3	5	2	4	3	4	4	3	5
Holmes County	2	4	4	4	1	3	3	5	4	5	5
Jackson County	3	3	4	4	4	2	4	3	4	1	3
Jefferson County	5	5	5	5	2	4	2	3	5	1	4
Lawrence County	2	4	4	2	2	3	5	3	4	1	3
Mahoning County	5	5	5	4	3	4	5	4	4	4	5
Meigs County	3	3	2	3	1	2	4	2	3	1	1
Monroe County	4	2	2	4	1	4	3	3	2	1	1
Morgan County	3	2	2	3	1	2	2	2	1	1	2
Muskingum County	4	5	5	4	4	4	5	4	5	5	4
Noble County	2	2	1	4	1	3	1	3	3	4	4
Perry County	4	4	3	5	3	4	5	4	4	1	2
Pike County	2	3	3	3	3	2	4	2	3	4	4
Ross County	4	5	5	5	3	3	4	4	2	1	4
Scioto County	3	4	5	3	1	2	5	2	3	1	3
Trumbull County	5	5	5	4	2	3	4	4	2	1	3
Tuscarawas County	5	5	5	4	2	4	4	5	5	5	3
Vinton County	2	2	1	4	3	2	4	2	4	4	1
Washington County	4	5	4	4	3	4	3	5	3	1	4

Table A4. Tennessee: County-Level Quintiles for Wellbeing & Community Asset Metrics

County	Civic Engagement Quintile	Economic Infrastructure Quintile	Health Infrastructure Quintile	Non-Profit Organizations Quintile	External Funding Quintile	Population Health Quintile	Housing Burden Quintile	Economic Wellbeing Quintile	Abandonded Mines Quintile	Active Mines Quintile	Philanthropic Investments Quintile
Anderson County	4	5	5	2	3	4	3	5	4	1	2
Bledsoe County	1	1	1	1	4	3	1	2	4	4	1
Blount County	3	4	4	2	4	5	4	5	3	3	4
Bradley County	4	5	5	3	1	4	4	5	1	3	5
Campbell County	1	3	3	1	4	2	2	2	5	4	2
Cannon County	2	4	1	4	3	4	2	4	5	1	2
Carter County	3	4	4	1	4	3	3	3	1	1	2
Claiborne County	2	3	3	1	1	3	4	2	4	1	3
Clay County	2	1	1	1	3	1	1	1	1	1	1
Cocke County	1	3	3	1	2	2	2	1	1	4	1
Coffee County	3	5	4	2	5	4	2	5	1	1	3
Cumberland County	3	4	4	2	4	4	3	4	5	5	2
DeKalb County	4	4	2	1	3	3	3	3	1	3	1
Fentress County	2	2	1	2	4	2	2	2	3	1	2
Franklin County	5	4	3	5	3	4	5	4	1	4	1
Grainger County	2	3	1	1	3	3	2	3	1	4	2
Greene County	2	5	3	2	2	3	2	3	1	1	1
Grundy County	2	2	1	2	1	2	3	2	3	4	2
Hamblen County	3	5	5	1	3	3	4	3	1	1	3
Hamilton County	5	5	5	4	2	5	5	5	5	4	5
Hancock County	1	1	1	1	5	1	4	1	1	1	1
Hawkins County	1	4	3	1	4	3	3	3	1	3	2
Jackson County	1	1	1	1	5	2	3	2	1	1	1
Jefferson County	2	5	3	1	3	4	2	4	3	5	4
Johnson County	3	2	4	3	2	2	2	1	3	3	2
Knox County	4	5	5	3	4	5	4	5	5	5	5
Lawrence County	3	4	4	3	1	3	4	3	1	1	2
Lewis County	5	2	1	5	5	2	5	1	1	1	5
Loudon County	5	5	4	2	2	5	2	5	2	1	2
Macon County	2	3	1	4	5	3	5	2	1	1	4
Marion County	3	4	2	2	4	3	3	3	4	4	5
McMinn County	3	4	5	2	5	4	4	4	2	1	2
Meigs County	3	3	2	1	3	3	4	3	1	1	1
Monroe County	3	2	4	2	3	3	2	3	3	1	2
Morgan County	1	1	1	1	4	2	5	1	4	1	3
Overton County	2	3	3	1	3	2	4	2	3	4	1
Pickett County	4	1	1	2	3	2	1	2	1	1	1
Polk County	5	2	2	5	5	3	2	4	1	1	3
Putnam County	4	5	5	3	3	4	5	4	3	4	3
Rhea County	3	4	3	2	2	3	2	3	4	4	2
Roane County	3	4	3	2	5	4	3	5	5	4	2
Scott County	1	1	2	1	2	2	3	1	5	3	4
Sequatchie County	3	3	2	3	5	3	4	2	4	5	1
Sevier County	3	4	4	1	4	4	5	5	2	4	3
Smith County	5	3	2	5	5	4	3	4	3	3	5
Sullivan County	3	5	5	2	2	4	3	5	4	1	3
Unicoi County	4	3	3	2	2	3	2	3	1	1	1
Union County	1	3	1	3	5	2	2	2	3	4	1
Van Buren County	2	2	1	1	4	2	1	2	2	1	1
Warren County	3	4	4	1	5	3	3	2	1	3	3
Washington County	4	5	5	3	3	5	4	5	5	5	5
White County	2	4	5	1	5	3	3	3	4	4	1

Table A5. Virginia: County-Level Quintiles for Wellbeing & Community Asset Metrics

County	Civic Engagement Quintile	Economic Infrastructure Quintile	Health Infrastructure Quintile	Non-Profit Organizations Quintile	External Funding Quintile	Population Health Quintile	Housing Burden Quintile	Economic Wellbeing Quintile	Abandonded Mines Quintile	Active Mines Quintile	Philanthropic Investments Quintile
Alleghany County	5	2	4	3	3	5	2	4	3	1	4
Bath County	5	1	1	5	2	4	3	4	1	1	5
Bland County	4	1	1	3	5	5	2	3	1	1	4
Botetourt County	5	4	1	5	5	5	1	5	1	4	5
Bristol city	5	3	4	3	2	4	4	3	4	4	5
Buchanan County	2	1	1	2	1	2	2	1	5	5	4
Buena Vista city	2	3	3	4	4	4	5	3	1	1	1
Carroll County	3	2	1	2	5	4	3	3	1	1	1
Covington city	5	3	4	5	4	4	1	3	1	1	1
Craig County	4	1	1	1	5	5	1	5	1	3	1
Dickenson County	1	1	2	2	1	3	4	1	5	1	1
Floyd County	5	2	1	5	5	5	3	5	1	1	3
Galax city	5	3	4	5	5	3	5	2	2	1	1
Giles County	5	3	3	4	4	5	1	5	2	3	1
Grayson County	3	1	1	3	3	4	1	3	2	4	3
Henry County	4	4	3	2	3	3	3	3	1	1	4
Highland County	5	1	1	5	1	5	1	5	1	1	5
Lee County	1	2	2	1	1	2	2	1	5	4	4
Lexington city	5	4	3	5	2	5	5	5	1	1	1
Martinsville city	5	4	3	5	5	2	5	2	1	1	1
Montgomery County	5	5	4	3	5	5	3	5	1	3	5
Norton city	1	3	4	4	5	3	1	1	5	5	1
Patrick County	4	2	2	4	3	4	1	4	1	1	5
Pulaski County	4	4	3	1	4	5	3	5	3	5	4
Radford city	3	4	5	2	2	5	5	3	1	1	1
Rockbridge County	5	2	1	2	5	5	3	5	1	4	5
Russell County	2	2	2	1	4	3	2	1	5	4	3
Scott County	1	1	2	4	2	4	1	3	2	1	3
Smyth County	3	2	3	3	4	4	3	2	2	1	3
Tazewell County	3	3	4	3	4	4	3	2	5	5	3
Washington County	2	4	4	2	2	5	2	5	5	4	5
Wise County	2	3	3	2	2	4	2	2	5	5	4
Wythe County	3	3	4	4	5	5	1	5	1	4	3

Table A6. West Virginia: County-Level Quintiles for Wellbeing & Community Asset Metrics

County	Civic Engagement Quintile	Economic Infrastructure Quintile	Health Infrastructure Quintile	Non-Profit Organizations Quintile	External Funding Quintile	Population Health Quintile	Housing Burden Quintile	Economic Wellbeing Quintile	Abandonded Mines Quintile	Natural Gas Wells Quintile	Active Mines Quintile	Philanthropic Investments Quintile
Barbour County	1	2	2	5	3	2	1	2	4	1	4	2
Berkeley County	3	5	5	3	5	4	5	5	1	1	4	2
Boone County	1	1	2	2	1	1	3	1	5	1	5	2
Braxton County	1	1	1	3	4	1	1	2	4	1	4	5
Brooke County	4	5	4	4	1	4	1	4	4	1	1	2
Cabell County	3	5	5	4	2	3	5	4	4	1	1	5
Calhoun County	1	1	1	3	2	1	1	1	1	1	1	4
Clay County	1	1	1	3	1	1	5	1	3	1	1	2
Doddridge County	1	1	1	5	1	2	1	4	1	1	1	3
Fayette County	1	4	3	3	1	1	3	2	5	1	5	3
Gilmer County	1	1	1	5	1	4	1	3	3	1	1	4
Grant County	3	2	1	4	4	2	1	3	2	1	1	3
Greenbrier County	4	3	3	5	3	2	3	3	5	1	5	3
Hampshire County	4	2	1	5	4	2	2	3	1	1	1	3
Hancock County	4	5	5	3	1	3	2	4	3	1	3	4
Hardy County	5	2	1	5	4	2	1	3	1	1	1	5
Harrison County	3	5	5	4	4	3	2	5	5	1	4	3
Jackson County	2	3	2	3	2	3	2	4	2	1	1	2
Jefferson County	5	5	5	5	5	5	5	5	1	1	3	5
Kanawha County	4	5	5	3	2	3	3	4	5	1	5	5
Lewis County	3	2	3	5	2	2	1	3	3	1	1	3
Lincoln County	1	1	1	1	4	1	1	1	1	1	1	3
Logan County	1	2	3	1	1	1	2	1	4	1	5	2
Marion County	3	5	5	3	2	4	2	5	4	1	4	3
Marshall County	3	2	5	4	2	3	3	4	1	1	5	2
Mason County	2	2	2	3	1	3	1	4	1	1	3	2
McDowell County	1	1	2	3	1	1	4	1	5	1	4	2
Mercer County	4	5	5	4	3	2	4	3	5	1	5	4
Mineral County	4	4	5	5	4	4	1	4	1	1	1	4
Mingo County	1	1	2	4	1	1	2	1	5	1	3	5
Monongalia County	4	5	5	3	3	5	3	5	5	1	5	5
Monroe County	3	1	1	5	3	2	1	3	1	1	1	2
Morgan County	4	3	2	4	5	4	5	5	1	1	3	2
Nicholas County	2	1	2	2	1	2	1	2	5	1	5	3
Ohio County	5	5	5	5	2	4	4	5	2	1	3	5
Pendleton County	3	1	1	5	4	2	1	4	1	1	1	4
Pleasants County	3	1	2	1	1	3	1	4	1	1	1	1
Pocahontas County	3	1	1	5	5	1	2	2	1	1	1	4
Preston County	3	3	3	5	1	3	1	3	5	1	3	2
Putnam County	3	5	4	2	3	4	1	5	2	1	1	2
Raleigh County	2	5	4	2	2	2	4	3	5	1	5	4
Randolph County	2	2	3	5	4	2	1	2	5	1	4	4
Ritchie County	2	1	1	4	1	2	1	3	1	1	1	3
Roane County	1	1	2	4	2	1	3	1	3	1	1	2
Summers County	2	3	3	4	1	1	1	1	1	1	1	3
Taylor County	2	4	4	3	5	3	1	4	4	1	4	3
Tucker County	4	1	1	5	2	4	1	4	4	1	1	5
Tyler County	2	1	2	2	3	3	1	3	1	1	1	1
Upshur County	2	3	4	5	2	2	4	2	4	1	4	5
Wayne County	2	2	4	2	3	2	1	2	4	1	5	3
Webster County	1	1	1	1	3	1	1	1	4	1	1	4
Wetzel County	3	1	3	3	2	2	1	2	1	1	1	2
Wirt County	1	1	1	4	1	1	4	2	1	1	1	4
Wood County	4	5	5	4	3	3	3	4	3	1	1	4
Wyoming County	1	1	2	1	1	1	1	1	4	1	5	5

Appendix III – Technical Appendix

Data Sources & Inputs

The final data set is a compilation of several different sources including the U.S Census, the American Community Survey, County Health Rankings, PLACES Data, among others. Most of the data covered the period between 2020 and 2022, but due to data availability a few of the measures are slightly older. See the final pages of Appendix III for a full list of data elements and sources.

Estimating Wellbeing and Community Asset Indices

The team measured the correlation of assets within each group to observe the strength of these relationships. This was followed by conducting a factor analysis to determine the degree to which each variable was contributing to the asset index. If a variable did not contribute to the index in a statistically meaningful way, it was excluded from the analysis. The Wellbeing indexes tend to be comprised of people- or household-based measures, whereas the Community Assets tend to be more place-based.

This technical appendix presents the following summary statistics for each of the Wellbeing and Community Asset indexes created as part of the asset scan:

1. Summary statistics for the inputs

2. Correlation matrix for the inputs

3. Factor loadings of each input into the single factor created for each index – factor loadings represent the correlation between each individual indicator with the index created.

Following these descriptive statistics for the index development we present the results of a set of associational analyses between the Wellbeing and Community Asset indexes created:

1. Correlation matrix of all Wellbeing and Community Asset indexes,

2. Regression model results estimating the associations between Community Asset indexes and Wellbeing indexes.

The final table in the Technical Appendix presents the list of data sources used to construct the Wellbeing and Community Asset measures developed for the study.

Conceptualizing and Operationalizing Wellbeing and Community Asset Indexes

Economic Wellbeing is comprised of data that captures the economic conditions of residents in each county, including median household income; college education (share of population over 25 with a bachelor's degree); high school education (share of population over 25 with a high school diploma); labor force participation rate; employment rate; share of population with investment and/or dividend income; and poverty rate. Counties with elevated levels of Economic Wellbeing are counties that on average, tend to have higher incomes, more residents with bachelor's degrees, higher labor force participation and employment rates, and lower poverty levels.

Table A7. Economic Wellbeing Descriptive Statistics

Economic Wellbeing	Mean	Standard Deviation	Min	Max
Population with a Bachelor's Degree	17.42%	7.16%	6.56%	49.95%
Population with a High School Diploma	39.14%	6.42%	20.81%	52.70%
Labor Force Participation Rate	51.75%	6.68%	28.65%	66.89%
Employment Rate	93.71%	2.66%	74.57%	98.26%
Population in Poverty	17.99%	5.54%	5.78%	35.24%
Households with Investment Income	16.08%	5.00%	6.54%	34.56%
Median Household Income	$44,839	$8,426	$22,292	$82,551
Number of observations = 257.				

Table A8. Economic Wellbeing Correlation Matrix

Economic Wellbeing	Population with a Bachelor's Degree	Population with a High School Diploma	Labor Force Participation Rate	Employment Rate	Population in Poverty	Households with Investment Income	Median Household Income
Population with a Bachelor's Degree	1						
Population with a High School Diploma	-0.7052	1					
Labor Force Participation Rate	0.4801	-0.2749	1				
Employment Rate	0.3097	-0.176	0.4613	1			
Population in Poverty	-0.359	0.0737	-0.5913	-0.5096	1		
Households with Investment Income	0.5555	-0.3204	0.3846	0.3625	-0.609	1	
Median Household Income	0.4984	-0.1896	0.6956	0.4672	-0.8015	0.5941	1

Table A9. Economic Wellbeing Factor Loadings

Economic Wellbeing	Factor 1
Population with a Bachelor's Degree	0.7393
Population with a High School Diploma	-0.4484
Labor Force Participation Rate	0.7439
Employment Rate	0.5551
Population in Poverty	-0.8057
Households with Investment Income	0.7137
Median Household Income	0.8712

Population Health is comprised of data measuring the health of county residents, including life expectancy, obesity rate, share of population over 65 with no teeth, physical inactivity, reported fair or poor physical health, asthma rates, diabetes rates, coronary heart disease rates, mental health 'bad days,' and smoking rates. Counties with elevated levels of Population Health are those that on average, tend to have the highest life expectancy rates, and lower levels of the other adverse health conditions.

Table A10. Population Health Descriptive Statistics

Population Health	Mean	Standard Deviation	Min	Max
Adults who are Obese	38.2%	3.5%	26.1%	47.6%
Adults with All Teeth Lost	16.5%	3.7%	8.7%	27.7%
Adults who Report No Physical Activity	30.8%	4.9%	19.3%	44.6%
Adults who Report Poor Health Status	21.4%	4.4%	12.1%	35.6%
Adults with Asthma	10.8%	1.0%	8.6%	13.4%
Adults with Diabetes	14.4%	1.9%	7.9%	21.5%
Adults with Coronary Heart Disease	9.6%	1.3%	5%	13.6%
Adults who Report Poor Mental Health	16.9%	2.0%	11.6%	21.5%
Adults who Smoke	23.6%	3.8%	13.2%	33.9%
Life Expectancy (Years)	74.52	2.59	66.98	81.25
Number of observations = 257.				

Table A11. Population Health Correlation Matrix

Population Health	Adults who are Obese	Adults with All Teeth Lost	Adults who Report No Physical Activity	Adults who Report Poor Health Status	Adults with Asthma	Adults with Diabetes	Adults with Coronary Heart Disease	Adults who Report Poor Mental Health	Adults who Smoke	Life Expectancy (Years)
Adults who are Obese	1									
Adults with All Teeth Lost	0.7572	1								
Adults who Report No Physical Activity	0.8327	0.9129	1							
Adults who Report Poor Health Status	0.8090	0.9276	0.9484	1						
Adults with Asthma	0.7811	0.8578	0.8651	0.8691	1					
Adults with Diabetes	0.7110	0.7445	0.7415	0.8312	0.6072	1				
Adults with Coronary Heart Disease	0.6132	0.6844	0.705	0.7677	0.4866	0.9282	1			
Adults who Report Poor Mental Health	0.7143	0.8698	0.824	0.7915	0.9488	0.4747	0.3733	1		
Adults who Smoke	0.7834	0.9334	0.8951	0.8448	0.7885	0.6844	0.6269	0.8285	1	
Life Expectancy (Years)	-0.5953	-0.6409	-0.6299	-0.6443	-0.6271	-0.5288	-0.354	-0.5973	-0.6555	1

Table A12. Population Health Factor Loadings

Population Health	Factor 1
Adults who are Obese	0.8511
Adults with All Teeth Lost	0.9611
Adults who Report No Physical Activity	0.9608
Adults who Report Poor Health Status	0.9704
Adults with Asthma	0.9042
Adults with Diabetes	0.8278
Adults with Coronary Heart Disease	0.7461
Adults who Report Poor Mental Health	0.8597
Adults who Smoke	0.9252
Life Expectancy (Years)	-0.6774

Economic Infrastructure represents the collection of institutions and amenities that create opportunity structures for individuals to participate in local economies. This measure includes an industry diversity measure (the more diverse the higher the score), a measure of industry specialization in either farming, mining jobs or manufacturing jobs, distance to 4-year higher educational institutions, distance to 2-year higher educational institutions, early childcare education capacity, high speed internet connectivity, and 4G wireless connectivity. Distance calculations represent the population weighted average street-network distance in miles to the closest two or four-year higher education institution measured from the centroid of each census block. Counties with the strongest economic infrastructure are those that on average, tend to have the most diverse mix of businesses, the nearest proximity of 2 and 4-year higher educational institutions, and the highest levels of internet and wireless connectivity.

Table A13. Economic Infrastructure Descriptive Statistics

Economic Infrastructure	Mean	Standard Deviation	Min	Max
Farming Dependent County	0.077821	0.268412	0	1
Mining Dependent County	0.143969	0.351743	0	1
Manufacturing Dependent County	0.198444	0.399606	0	1
Economic Diversity Index	-106.166	19.08087	-155.74	-46.86
Distance to 4-year Higher Ed	30.86573	16.44571	1.735257	77.65258
Distance to 2-year Higher Ed	33.49695	16.35474	4.727947	82.57099
Residential Fixed Broadband Connections	1.042802	0.766815	0	2
Area with 4G LTE Data Coverage	0.778206	0.179898	0.1023	1
Children Per Childcare Capacity	1.994483	0.987784	0.395939	8.071429
Number of observations = 257.				

Table A14. Economic Infrastructure Correlation Matrix

Economic Infrastructure	Farming Dependent County	Mining Dependent County	Manufacturing Dependent County	Economic Diversity Index	Distance to 4-year Higher Ed	Distance to 2-year Higher Ed	Residential Fixed Broadband Connections	Area with 4G LTE Data Coverage	Children Per Childcare Capacity
Farming Dependent County	1								
Mining Dependent County	-0.1191	1							
Manufacturing Dependent County	-0.0717	-0.1207	1						
Economic Diversity Index	-0.2682	-0.1468	-0.0179	1					
Distance to 4-year Higher Ed	0.1297	-0.0656	0.0203	-0.305	1				
Distance to 2-year Higher Ed	0.1375	-0.0309	-0.0175	-0.3832	0.1026	1			
Residential Fixed Broadband Connections	-0.1681	-0.0953	0.1251	0.3484	-0.1484	-0.2123	1		
Area with 4G LTE Data Coverage	0.026	-0.339	0.1616	0.4165	-0.2172	-0.2669	0.3206	1	
Children Per Childcare Capacity	0.1439	0.1004	0.0183	-0.2568	0.0339	0.0501	-0.1769	-0.2175	1

Table A15. Economic Infrastructure Factor Loadings

Economic Infrastructure	Factor 1
Farming Dependent County	-0.256
Mining Dependent County	-0.2322
Manufacturing Dependent County	0.121
Economic Diversity Index	0.7012
Distance to 4-year Higher Ed	-0.3263
Distance to 2-year Higher Ed	-0.4258
Residential Fixed Broadband Connections	0.4933
Area with 4G LTE Data Coverage	0.6186
Children Per Childcare Capacity	-0.3209

Civic Engagement represents county resident participation in civic activities and voluntary associations as well as the presence of volunteer-run organizations, philanthropies and civic institutions. Indicators included in the Civic Engagement measure include voter participation rate, the share of the population that is foreign born, rate of memberships in voluntary social associations, the number of volunteer-run organizations (postcard 990 filers), presence of philanthropic organizations, and distance to nearest public library. Distance calculations represent the population weighted average street-network distance in miles to the closest public library measured from the centroid of each census block. Counties with elevated levels of civic engagement are those with elevated participation in elections, higher levels of volunteerism, high concentrations of volunteer-run organizations, substantial foreign-born populations and residents have relatively close proximity to public libraries.

Table A16. Civic Engagement Descriptive Statistics

Civic Engagement	Mean	Standard Deviation	Min	Max
Voter Participation Rate	58.9%	0.071545	0.392857	0.809826
Foreign Born Rate	1.82%	0.016808	0	0.085182
Revenue in Social Welfare Organizations	10.06%	5.011519	0	37.91983
Count of Non-Profits Filing 990 Postcards, per capita	0.0024	0.002373	0	0.025538
Count of Philanthropic Non-Profits, per capita	0.0001	0.000153	0	0.001409
Distance to Public Library (miles)	41.90	25.62512	1.652362	100
Number of observations = 257.				

Table A17. Civic Engagement Correlation Matrix

Civic Engagement	Voter Participation Rate	Foreign Born Rate	Revenue in Social Welfare Organizations	Count of Non-Profits Filing 990 Postcards, per capita	Count of Philanthropic Non-Profits, per capita	Distance to Public Library (miles)
Voter Participation Rate	1					
Foreign Born Rate	0.24	1				
Revenue in Social Welfare Organizations	0.2443	0.3457	1			
Count of Non-Profits Filing 990 Postcards, per capita	0.0917	0.1732	0.3399	1		
Count of Philanthropic Non-Profits, per capita	0.269	0.2602	0.2992	0.4522	1	
Distance to Public Library (miles)	-0.3771	-0.2368	-0.0546	0.0659	-0.186	1

Table A18. Civic Engagement Factor Loadings

Civic Engagement	Factor 1
Voter Participation Rate	0.5049
Foreign Born Rate	0.5183
Revenue in Social Welfare Organizations	0.5868
Count of Non-Profits Filing 990 Postcards, per capita	0.5254
Count of Philanthropic Non-Profits, per capita	0.6456
Distance to Public Library (miles)	-0.3577

Health Facilities represents access to healthcare facilities, health professionals, and grocery stores. The metrics in the Health Facilities measure include: medical providers per household, hospital capacity per household, distance to nearest fire station/EMS, distance to nearest emergency operation center, distance to nearest healthcare facility, distance to the nearest grocery store, and maternal care access. Distance calculations represent the population weighted average street-network distance in miles to the closest health care facilities, emergency rooms, fire stations, and grocery store measured from the centroid of each census block. Counties with the most access to health facilities are those that on average, tend to have the greatest concentrations of hospitals, medical providers and obstetrics providers, and those with the shortest distances to the nearest healthcare facility, emergency room, or full-service grocery store.

Table A19. Health Facilities Descriptive Statistics

Health Facilities	Mean	Standard Deviation	Min	Max
Health Provider to Population Ratio^	3.542921	2.972539	0.183307	26.97
Average Miles to Fire/EMS station	3.215271	1.118149	0.779847	7.142951
Average Miles to Emergency Operations Center	4.179556	1.766474	0.803908	13.73452
Average Miles to Hospital	12.82757	7.166274	3.548673	42.52023
Average Miles to Grocery Store	6.40144	3.637912	1.74	25
Maternity Desert (0 = low access to maternity care, -3 = full access to maternity care)	-1.50195	1.378191	-3	0
^Number of observations for Health Provider to Population Ratio is 256. For all other metrics, number of observations is 257.				

Table A20. Health Facilities Correlation Matrix

Health Facilities	Health Provider to Population Ratio	Average Miles to Fire/EMS station	Average Miles to Emergency Operations Center	Average Miles to Hospital	Average Miles to Grocery Store	Maternity Desert
Health Provider to Population Ratio	1					
Average Miles to Fire/EMS station	0.309	1				
Average Miles to Emergency Operations Center	0.4497	0.7019	1			
Average Miles to Hospital	0.2496	0.397	0.3007	1		
Average Miles to Grocery Store	0.1517	0.2315	0.1475	0.504	1	
Maternity Desert	0.4189	0.4043	0.4359	0.3168	0.2828	1

Table A21. Health Facilities Factor Loadings

Health Facilities	Factor 1
Health Provider to Population Ratio	0.5469
Average Miles to Fire/EMS station	0.7771
Average Miles to Emergency Operations Center	0.787
Average Miles to Hospital	0.5959
Average Miles to Grocery Store	0.4428
Maternity Desert	0.6149

Non–Profit Organizations measures the number of arts organizations, education organizations, religious organizations, and philanthropic organizations. These organizations are conceptualized as public–serving organizations with mission imperatives to support key dimensions of quality of life aligned with their programmatic areas of focus. Non–Profit organizations were grouped into categories using the National Taxonomy of Exempt Entities codes published by the IRS.[14] Counties with elevated levels of Non–Profit organizations are those that on average, tend to have greater concentrations of these organizations per capita.

Table A22. Non-Profit Organizations Descriptive Statistics

Non-Profit Organizations^	Mean	Standard Deviation	Min	Max
Count of Arts Organizations	0.0003	0.00024	0	0.0019
Count of Education Organizations	0.0006	0.00063	0	0.0051
Count of Philanthropic Organizations	0.0001	0.00015	0	0.0014
Count of Religious Organizations	0.0003	0.0002	0	0.0022
^All metrics are presented per capita. Number of observations = 257.				

Table A23. Non-Profit Organizations Correlation Matrix

Non-Profit Organizations	Count of Arts Organizations	Count of Education Organizations	Count of Philanthropic Organizations	Count of Religious Organizations
Count of Arts Organizations	1			
Count of Education Organizations	0.6059	1		
Count of Philanthropic Organizations	0.3985	0.3576	1	
Count of Religious Organizations	0.5132	0.4397	0.3745	1

Table A24. Non-Profit Organizations Factor Loadings

Non-Profit Organizations	Factor 1
Count of Arts Organizations	0.8116
Count of Education Organizations	0.7276
Count of Philanthropic Organizations	0.5266
Count of Religious Organizations	0.6546

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[14] https://www.irs.gov/pub/irs-tege/p4838.pdf

Public Investment is a measure of a community's ability to attract, or being eligible for, public investments. These investments include the per–capita dollar amount of Low–Income Housing Tax Credit (LIHTC) investments, Small Business Association (SBA) lending, Paycheck Protection Program (PPP) Lending, USDA Rural Development (USDA RD) investments, Community Development Financial Institution (CDFI) lending, and Economic Development Administration (EDA) grants. This measure excluded Appalachian Regional Commission investments in the region due to an inability to accurately assign ARC investments to individual counties, and due to the non–public nature of these data. However, this quasi–federal agency is a major funder in the region and their investment activity is an important capital flow for the region and is featured in prior Investment Profiles.

Table A25. Public Investment Descriptive Statistics

Public Investment^	Mean	Standard Deviation	Min	Max
Total Public Funding	$581.47	$519.52	$21.26	$5,136.47
SBA Loans 2022	$93.70	$110.064	$0	$725.41
USDA RD Funding 2021-2022	$363.33	$466.29	$0	$5,136.47
LIHTC 2016-2020	$6.67	$21.71	$0	$186.59
CDFI 2013-2019	$100.07	$249.19	$0	$3,112.88
PPP Loans	$0.01	$0.004	$0.0006	$0.024
EDA Grants	$17.70	$44.57	$0	$428.28
^All metrics are presented per capita. Number of observations = 257.				

Table A26. Public Investment Correlation Matrix

Public Investment	Total Public Funding	SBA Loans 2022	USDA RD Funding 2021-2022	LIHTC 2016-2020	CDFI 2013-2019	PPP Loans	EDA Grants
Total Public Funding	1						
SBA Loans 2022	-0.1542	1					
USDA RD Funding 2021-2022	-0.0281	-0.0381	1				
LIHTC 2016-2020	0.0175	-0.0326	-0.0728	1			
CDFI 2013-2019	0.3763	-0.1675	0.134	-0.0385	1		
PPP Loans	-0.0194	-0.0394	0.0049	0.079	0.0094	1	
EDA Grants	0.1179	-0.0772	-0.0056	-0.0273	0.283	-0.0319	1

The Public Investment measure is the sum of the per capita funding from each source in each county.

Housing Burden represents the relative challenges owners and renters face related to housing affordability and conditions. This measure is comprised of the owner cost burden rate, percentage of owner units with serious issues (could include physical issues, overcrowding, or cost issues), the renter cost burden rate, and percentage of renter units with serious issues (could include physical issues, overcrowding, or cost issues). Counties with elevated levels of Housing Burdens are places that on average, tend to have an elevated share of homeowners and renters who are cost-burdened and experiencing serious housing issues.

Table A27. Housing Burden Descriptive Statistics

Housing Burden	Mean	Standard Deviation	Min	Max
Owners Who Are Cost Burdened	16.29%	3.33%	5.04%	26.58%
Owners with Serious Maintenance Problems	17.02%	3.40%	6.50%	30.08%
Renters Who Are Cost Burdened	34.58%	7.37%	14.69%	56.57%
Renters with Serious Maintenance Problems	36.46%	6.92%	15.37%	57.03%
Number of observations = 257.				

Table A28. Housing Burden Correlation Matrix

Housing Burden	Owners Who Are Cost Burdened	Owners with Serious Maintenance Problems	Renters Who Are Cost Burdened	Renters with Serious Maintenance Problems
Owners Who Are Cost Burdened	1			
Owners with Serious Maintenance Problems	0.9299	1		
Renters Who Are Cost Burdened	0.1731	0.0804	1	
Renters with Serious Maintenance Problems	0.1888	0.1338	0.903	1

Table A29. Housing Burden Factor Loadings

Housing Burden	Factor 1
Owners Who Are Cost Burdened	0.7897
Owners with Serious Maintenance Problems	0.7418
Renters Who Are Cost Burdened	0.6861
Renters with Serious Maintenance Problems	0.7065

An initial measure of 'housing conditions' also included measures of home values, housing age, housing type and occupancy status. This initial measure was heavily influenced by owner-occupancy rates in counties throughout the region resulting in a measure that simply reflected owner-occupancy across the region. The Housing Burden measure was developed to account for the challenges owners and renters associated with the affordability and conditions of their living arrangements, regardless of tenure.

Regression Models Results

Table A30 presents a correlation matrix for the inputs included in a set of regression models to assess the significance of associations between Economic Wellbeing and Population Health with the following community assets: Civic Engagement; Economic Infrastructure; Health Facilities; Non–Profit Organizations and Housing Burden. The overall county Population is also included in Table A30 as well as the regression models that follow as a control variable; and as seen in Table A30 the county Population has a moderate, and positive association with both Economic Wellbeing and Population Health.

Table A30. Community Assets and Wellbeing Correlation Matrix

	Population	Economic Wellbeing	Population Health	Civic Engagement	Economic Infrastructure	Health Facilities	Non-Profit Organizations	Housing Burden
Population	1							
Economic Wellbeing	0.461	1						
Population Health	0.3599	0.8832	1					
Civic Engagement	0.2964	0.7063	0.7227	1				
Economic Infrastructure	0.6024	0.5125	0.4424	0.3946	1			
Health Facilities	0.552	0.4007	0.3533	0.3526	0.8212	1		
Non-Profit Organizations	-0.0227	0.3355	0.267	0.567	-0.0461	-0.0334	1	
Housing Burden	0.2544	0.0091	0.0691	0.1517	0.4163	0.347	0.0079	1

Tables A31 and A32 on the following page presents results from OLS regression models developed to assess the associations between community assets and Economic Wellbeing and Population Health. Each model includes the following community asset measures: Civic Engagement, Economic Infrastructure, Health Facilities, Public Investment, Housing Burden, and the overall county Population. Additionally, the county population and dummy variables for Non–Metro and Remote counties with Metro counties as the reference group were also included in the base models. In the second set of model results two interaction terms were included to estimate the multiplicative effect of Civic Engagement in Non–Metro and Remote counties.

Table A31. Regression Results – Economic Wellbeing

Economic Wellbeing	B	RSE	B	RSE
Civic Engagement	0.661***	0.048	0.560***	0.075
Economic Infrastructure	0.247*	0.097	0.252**	0.094
Health Facilities	-0.184*	0.077	-0.177*	0.073
Public Investment	0.075*	0.038	0.074*	0.038
Housing Burden	-0.227***	0.046	-0.225***	0.046
Non-Metro Counties+	-0.296***	0.079	-0.321***	0.079
Remote Counties+	-0.211^	0.111	-0.165	0.110
County Population	0.318***	0.077	0.323***	0.076
Civic Engagement x Non-Metro Counties	-	-	0.080	0.102
Civic Engagement x Remote Counties	-	-	0.263*	0.103
Constant	0.180	0.062	0.202	0.061
r²	0.674		0.682	
n	256		256	
^p<.10; p<.05; **p<.01; ***p<.001				
+Metro Counties are the excluded reference group				

Table A32. Regression Results – Population Health

Population Health	B	RSE	B	RSE
Civic Engagement	0.730***	0.064	0.556***	0.098
Economic Infrastructure	0.145	0.122	0.149	0.119
Health Facilities	-0.136	0.093	-0.121	0.084
Public Investment	0.105*	0.046	0.104*	0.045
Housing Burden	-0.126*	0.056	-0.124*	0.055
Non-Metro Counties+	-0.209*	0.095	-0.251**	0.094
Remote Counties+	-0.221	0.144	-0.155	0.140
County Population	0.209*	0.094	0.222*	0.096
Civic Engagement x Non-Metro Counties	-		0.169	0.130
Civic Engagement x Remote Counties	-		0.404**	0.126
Constant	0.148	0.079	0.186	0.077
r²	0.641		0.630	
n	256		256	
^p<.10; p<.05; **p<.01; ***p<.001				
+Metro Counties are the excluded reference group				

Table A33. Data Indicators and Sources

Indicator	Description	Data Source	Index
Adult Diabetes Diagnoses	Share of adults (over 18) who report ever having been told they have diabetes (excluding during pregnancy) in the county	CDC, PLACES Database, 2022	Population Health
Adults Reporting Current Smoking	Share of adults (over 18) who report having smoked over 100 cigarettes in their lifetime and currently smoke every day or some days in the county	CDC, PLACES Database, 2022	Population Health
Adults with Asthma	Share of adults (over 18) who report ever having been told they have asthma and still have asthma in the county	CDC, PLACES Database, 2022	Population Health
Adults with Coronary Heart Disease	Share of adults (over 18) who report ever having been told they have coronary heart disease in the county	CDC, PLACES Database, 2022	Population Health
Arts Organizations	Total 990 organizations with Arts, Culture, or Humanities purpose per capita	RF Analysis of IRS 990 Filing Database, 2019 & 2020	Nonprofit Organizations
Bachelor's Degrees	Share of adults with a bachelor's degree or more in the county	American Community Survey, Five Year Estimates, 2016-2020	Economic Wellbeing
Broadband Connections	Residential fixed broadband connections with a downstream speed of at least 25 Mbps per 1,000 household units	Federal Communications Commission, 2022	Economic Infrastructure
Childcare Capacity	Ratio of children under five in families where all parents are working or in school to aggregate capacity in full-time licensed childcare programs	RF Analysis of BPC Childcare Gap Report, 2023; RF Analysis of Tennessee Department of Human Services Licensed Childcare Database, 2023	Economic Infrastructure
County Considered Farming	Counties classified as farming dependent on ERS County Typology	USDA Economic Research Services. County Typology, 2017	Economic Infrastructure
County Considered Manufacturing	Counties classified as manufacturing dependent on ERS County Typology	USDA Economic Research Services. County Typology, 2017	Economic Infrastructure
County Considered Mining	Counties classified as mining dependent on ERS County Typology	USDA Economic Research Services. County Typology, 2017	Economic Infrastructure

Indicator	Description	Data Source	Index
Distance to 2-Year Higher Education Institution	Population weighted average street-network distance in miles to the closest two-year higher education institution measured from the centroid of each census block	RF Analysis of IPEDS Database	Economic Infrastructure
Distance to 4-Year Higher Education Institution	Population weighted average street-network distance in miles to the closest four-year higher education institution measured from the centroid of each census block	RF Analysis of IPEDS Database	Economic Infrastructure
Distance to Emergency Operation Centers	Population weighted average street-network distance from block centers to closest emergency operation center in miles	RF Analysis of Homeland Infrastructure Foundation-Level Data, 2022	Health Facilities
Distance to Fire or EMS Facilities	Population weighted average street-network distance from block centers to closest fire or EMS facility in miles	RF Analysis of Homeland Infrastructure Foundation-Level Data, 2022	Health Facilities
Distance to Grocery Stores	Population weighted average street-network distance from block centers to closest full-service grocery store in miles	RF Limited Supermarket Analysis, 2023	Health Facilities
Distance to Healthcare Facilities	Population weighted average street-network distance from block centers to closest healthcare facility in miles	RF Analysis of Homeland Infrastructure Foundation-Level Data, 2022	Health Facilities
Distance to Libraries	Population weighted average street-network distance in miles to the closest public library measured from the centroid of each census block	RF Analysis of IMLS Library Database, 2023	Civic Engagement
Economic Diversity	Diversity of county industries and businesses	Chmura Economics and Analysis, 2023	Economic Infrastructure
EDA Grants, 2019 to 2022	Total number of EDA grants awarded in the county between 2019 to 2022	RF Analysis of US Economic Development Administration Awards, 2019 to 2020	Public Investment
Educational Organizations	Total 990 organization with Education or Youth Development purpose in each county per capita	RF Analysis of IRS 990 Filing Database, 2019 & 2020	Nonprofit Organizations
Employment Rate	Adults currently employed as a share of adults in the labor force	American Community Survey, Five Year Estimates, 2016-2020	Economic Wellbeing

Indicator	Description	Data Source	Index
Foreign-Born Residents	Share of population that is foreign born in the county	American Community Survey, Five Year Estimates, 2016-2020	Civic Engagement
Healthcare Professionals	Healthcare professionals (i.e., physicians, dentists, mental health providers) per 100 households in the county	CDC PLACES Database, 2021	Health Facilities
High School Diplomas	Share of adults with only a high school degree or equivalent in the county	American Community Survey, Five Year Estimates, 2016-2020	Economic Wellbeing
Homeowner Cost Burden	Share of owner-occupied homes where housing costs are over 30% of household income	American Community Survey, Five Year Estimates, 2016-2020	Housing Burden
Homeowner Housing Issues	Owner occupied homes with two or more serious issues (i.e., lacking complete plumbing facilities, lacking complete kitchen facilities, having 1.01 or more occupants per room, having selected monthly owner costs as a percentage of household income greater than 30 percent)	American Community Survey, Five Year Estimates, 2016-2020	Housing Burden
Household Income	Median household income in the county	American Community Survey, Five Year Estimates, 2016-2020	Economic Wellbeing
Households with Dividend Income	Share of households with investment or dividend income in the county	American Community Survey, Five Year Estimates, 2016-2020	Economic Wellbeing
Labor Force Participation	Share of adults in the labor force	American Community Survey, Five Year Estimates, 2016-2020	Economic Wellbeing
Life Expectancy	Average number of years an individual can expect to live in each county	County Health Rankings, 2022	Population Health
LIHTC Unit Awards 2016 to 2020	Total number of LIHTC units in projects awarded in the county between 2016 and 2020	RF Analysis of HUD LIHTC Database, 2022	Public Investment
Maternity Care	County classification based on level of access to maternal care	March of Dimes (2020) "Maternity Care Deserts Report."	Health Facilities

Indicator	Description	Data Source	Index
Mobile 4G LTE Service	Share of county land area where providers report 4G LTE mobile broadband service in an outdoor stationary environment	Federal Communications Commission, 2022	Economic Infrastructure
Obesity Rate	Share of adults (over 18) who have a body mass index above 30.0 kg/m2 in the county	CDC, PLACES Database, 2022	Population Health
Philanthropic Nonprofits	Count of nonprofits in the county filings 990s and classified as philanthropic organizations	RF Analysis of IRS 990 Filing Database, 2019 & 2020	Civic Engagement
Philanthropic Organizations	Total 990 organizations with Philanthropic, Voluntarism, or Grantmaking purpose in each county per capita	RF Analysis of IRS 990 Filing Database, 2019 & 2020	Nonprofit Organizations
Physical Activity Among Adults	Share of adults (over 18) who report they did not participate in physical exercise outside of their job in the county	CDC, PLACES Database, 2022	Population Health
Postcard 990 Filings	Nonprofit organizations with 990 postcard filings in the county	RF Analysis of IRS 990 Filing Database, 2019 & 2020	Civic Engagement
Poverty Rate	Share of people in households earning below federal poverty level	American Community Survey, Five Year Estimates, 2016-2020	Economic Wellbeing
Religious Organizations	Total 990 organizations with Religious purpose in each county per capita	RF Analysis of IRS 990 Filing Database, 2019 & 2020	Nonprofit Organizations
Rental Housing Issues	Renter occupied homes with one or more serious issue (i.e., lacking complete plumbing facilities, lacking complete kitchen facilities, having 1.01 or more occupants per room, having gross rent as a percentage of household income greater than 30 percent)	American Community Survey, Five Year Estimates, 2016-2020	Housing Burden
Renter Cost Burden	Share of renter occupied homes where housing costs are over 30% of household income	American Community Survey, Five Year Estimates, 2016-2020	Housing Burden
Rural Development Awards, 2021 to 2022	Aggregate value of Rural Development Awards issued between 2021 and 2022 in each county	RF Analysis of USA Spending. Gov Database, 2021 to 2022	Public Investment
Self-rated Health Status	Share of adults (over 18) who report their general health status is fair or poor in the county	CDC, PLACES Database, 2022	Population Health

Indicator	Description	Data Source	Index
Self-Reported Mental Health Status	Share of adults (over 18) who report 14 or more days in the past 30 during which their mental health was not good in the county	CDC, PLACES Database, 2022	Population Health
Senior Dental Health	Share of seniors (65+) reporting having lost all of their natural teeth due to tooth decay or gum disease	CDC, PLACES Database, 2022	Population Health
Total PPP Loans Awarded	Total PPP awards issued to businesses in each county	RF Analysis of Small Business Administration Data, 2022	Public Investment
Total SBA Jobs 2020 to 2022	Aggregate number of jobs created or pre-served as a result of SBA loans to businesses located in the county	RF Analysis of Small Business Administration Data, 2020 to 2022	Public Investment
Total SBA Loans 2020 to 2022	Total number of SBA 7a and 504 loans issued to businesses located in the county between 2020 and 2022	RF Analysis of Small Business Administration Data, 2020 to 2022	Public Investment
Value of 990 Gifts	Aggregate value of gifts to nonprofits filing 990s and located in the county	RF Analysis of IRS 990 Filing Database, 2019 & 2020	Philanthropic Investment
Value of CDFI Loans, 2013 to 2019	Aggregate value of CDFI issued loans originated in the county between 2013 and 2019	RF Analysis of CDFI Fund AMIIS Database, 2013 to 2019	Public Investment
Value of EDA Grants, 2019 to 2022	Aggregate value of EDA grants awarded in the county 2019 to 2022	RF Analysis of US Economic Development Administration Awards, 2019 to 2020	Public Investment
Value of SBA Loans 2020 to 2022	Aggregate value of SBA 7a and 504 loans issued between 2020 and 2022 to businesses located in the county	RF Analysis of Small Business Administration Data, 2020 to 2022	Public Investment
Voluntary Social Association Participation	Membership associations per capita in the county	County Health Rankings, 2022	Civic Engagement
Voter Participation	Total votes in the 2020 presidential election divided by population 18 or older in each county	RF Analysis of MIT Elections Lab; ACS, 2016-2020	Civic Engagement