



County High-Level Economic Recovery and Resilience Index (CHERRI)

National Preparedness Analytics Center
Decision and Infrastructure Sciences Division

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Introduction

The COVID-19 pandemic has led to unprecedented ongoing impacts to the public health and financial stability of individuals and families, particularly those in socially vulnerable populations. It has also impacted the economic health of state, local, tribal, and territorial governments. As governments across the country face budget shortfalls and other impacts, data-based decision-making tools are needed to assist stakeholders in building plans to support an equitable economic recovery.

[According to the Centers for Disease Control and Prevention \(CDC\)](#), social vulnerability is defined as “a number of factors, including poverty, lack of access to transportation, and crowded housing [which] may weaken a community’s ability to prevent human suffering and financial loss in a disaster.” Contributing factors to social vulnerability, such as poverty, lack of transportation, [lack of broadband access](#), and crowded housing may weaken a community’s ability to prevent illness, or may create unmanageable financial burdens for these vulnerable communities. During the COVID-19 pandemic, pre-existing social vulnerabilities have been combined with significant job losses and healthcare disparities to create increased hardships for these vulnerable populations. These [growing hardships](#) have also increased the degree to which these populations rely on government assistance to provide necessities such as housing, food, and healthcare. At the same time, employment losses and other pandemic stresses have [significantly reduced local](#) and state government revenues, primarily those based on certain types of revenue sources. These converging community and pandemic-induced challenges have the potential to magnify overall strain on public finances and services.

Through engagement with federal agencies, national associations, and other partners Argonne and FEMA identified the need for a tool to help identify specific communities that face significant economic recovery challenges. With the variety of different – and constantly changing - impacts from COVID-19, it became clear that a holistic approach would be necessary to evaluate fiscal risk for communities. Argonne and FEMA specifically selected the CHERRI data sources in order to provide a clear picture of both the current impacts of COVID-19 on revenue generation and the underlying vulnerabilities of a community that may lead to a larger demand for public services and recovery assistance.

Argonne and FEMA created the [County High-Level Economic Recovery and Resilience Index \(CHERRI\)](#) to assist governments and other service providers with identifying and prioritizing support for communities that are especially vulnerable to the economic impacts of COVID-19. The CHERRI is specifically designed to:

- Provide a quick snapshot of counties that are particularly vulnerable to COVID-19 induced economic impacts through use of qualitative evaluation of quantitative data. This information can be used inform recovery planning and resource allocation decision making.

- Leverage existing COVID-19 economic impact analyses, which incorporate data related to employment, consumption and housing factors to estimate the effects on households, businesses, and local government finances.
- Consider baseline social vulnerability by integrating CDC Social Vulnerability Index (SVI) factors, which assess socioeconomic and demographic factors at the county level.

Index Methodology

The CHERRI is built on an existing body of research and is comprised of six indices. Three indices are metrics derived from the [CDC's Social Vulnerability Index](#). These indicators provide insight into the demographic, social, and economic profiles of a community. The other three indices are developed by Argonne National Laboratory and quantify current economic impacts, housing stability, and impacts to state and local revenue due to COVID-19.

Below are descriptions of the six indices:

- **CDC Social Vulnerability Index – Minority Status and Language:** Measures vulnerability based on percentage of non-English speakers and minority. The social and economic marginalization of certain racial and ethnic groups, including real estate discrimination, has rendered these populations more vulnerable at all stages of disaster. African Americans; Native Americans; and populations of Asian, Pacific Islander, or Hispanic origin are correlated with higher vulnerability rates.
- **CDC Social Vulnerability Index – Socioeconomic Status:** Measures vulnerability based on income, employment, poverty, and education percentages in a community. Economically disadvantaged populations are disproportionately affected by disasters. The poor are less likely to have the income or assets needed to prepare for a possible disaster or to recover after a disaster.
- **CDC Social Vulnerability Index – Household Composition and Disability:** Measures vulnerability household composition and disabled person percentages in community. People in any of these categories are likelier to require financial support, transportation, medical care, or assistance with ordinary daily activities during disasters.
- **Argonne's [County Economic Impact Index](#) (CEII):** Measures the monthly change in county-level GDP compared to a pre-pandemic baseline. It provides a current picture of economic impact from COVID-19, as well as the change in impact over time.



- **Argonne's [Housing Stability Index](#) (HSI):** Measures the real-time percentage of households that are at risk of eviction or foreclosure during the COVID-19 pandemic. Estimates are available for both rental and owner-occupied housing.
- **Argonne's [Local Government Revenue Vulnerability Index](#) (LGRVI):** Measures change in local government revenue, including taxes, fees, and intergovernmental transfers, based on baseline data and current data on consumption, travel trends and unemployment.

Figure 1: Scorecard Risk Ratings

The county-level data from each of these six indices were transformed to a 0 to 1 scale and combined using equal weighting to produce an overall risk index. The six individual indices and the combined index were then binned into quintiles within each individual state from lowest to highest risk/vulnerability as seen in Figure 1. Results are displayed in a scorecard format.

Results are displayed in an overall scorecard, which is within the main story map, as well as within a Geocortex automated reporting extension within the story map. In addition to the risk rating, the scorecard includes an overview of the community type and the county population.

County:	Converse County, WY
Community Type:	Mostly Rural
Population:	13,833
County Economic Index: ¹	Elevated*
Local Government Revenue Vulnerability Index: ²	Low*
Housing Stability Index: ³	High*
CDC Socio-Economic Index: ⁴	Elevated*
CDC Household Composite Indicator: ⁵	Elevated*
CDC Minority/Language Indicator: ⁶	Moderate*
Overall Community Risk:	Moderate*

Figure 2: CHERRI Scorecard for Converse County, Wyoming (from GeoCortex Report) (* indicates values that are binned into quintiles by State)

Scorecard Use

The CHERRI Scorecard can be used to assist local and state government stakeholders with:

- **Identifying** communities that are particularly vulnerable to the socio-economic impacts of COVID-19.
 - County-level ratings of SVI data from their socio-economic index, household composite indicator, and minority/language indicator can be used to understand general areas of social vulnerability within a county.
- **Informing** engagement efforts and long-term economic recovery planning.
 - Understanding county-level economic vulnerability at using the CEII, county-level tax revenue vulnerability through LGRVI ratings, and types of household vulnerabilities through SVI and HSI ratings can inform strategic planning efforts for community engagement and recovery.
- **Tracking** changes in community economic impacts over time.
 - LGRVI, SGRVI, and HSI ratings are updated monthly and can be captured and tracked to see trends over time.

The scorecard is updated monthly as new Argonne index values become available.

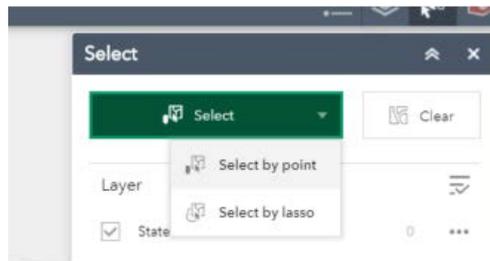
Appendix A: How to Create an Automated Report

You can use the story map to create your own downloadable GeoCortex report to print off scorecards for any selected counties. In order to create a "CHERRI Scorecard Report" please follow the steps below:

1. Use the select tool to select the county or counties of interest



2. When opening the Select Tool click on the green arrow within the select button to choose whether you want to select by point or by drawing a polygon on the map. To select more than one county using the "Select by Point" tool - hold down the SHIFT key.



3. When you have selected your county (or counties) click on the GeoCortex Report Generator Tool to open it.



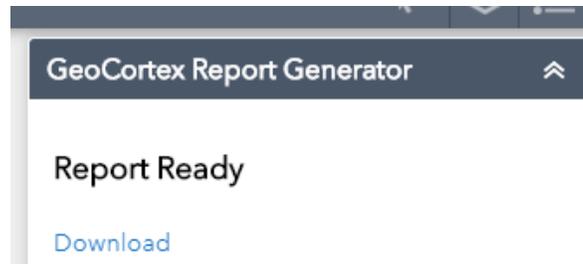
4. You should see a note that tells you how many features are selected, as in the image below.



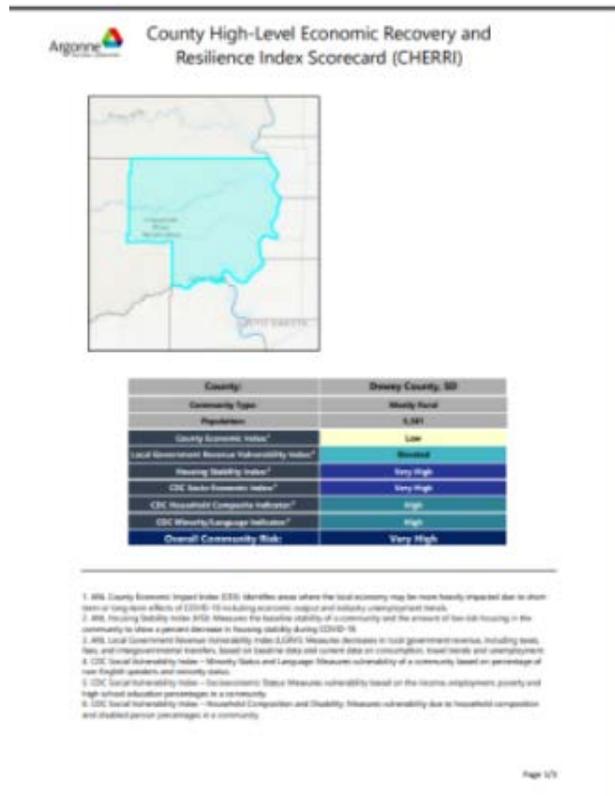
5. Once you are satisfied with the number of counties you have selected, click on the "CHERRI Scorecard Report" Text to run the report.
6. You will see a note that says your report is generating.



7. When your report is ready, click on "Download" to view your report



8. A sample report is shown below:



9. To run another report, Click "Done" on the GeoCortex Report Generator and return to the Select tool. Hit "Clear" to clear your selection. Select another county (or counties) and then return to the GeoCortex Report Generator to run the new report.



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