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Economic Vitality Index: Mapping Ohio's 88 Counties

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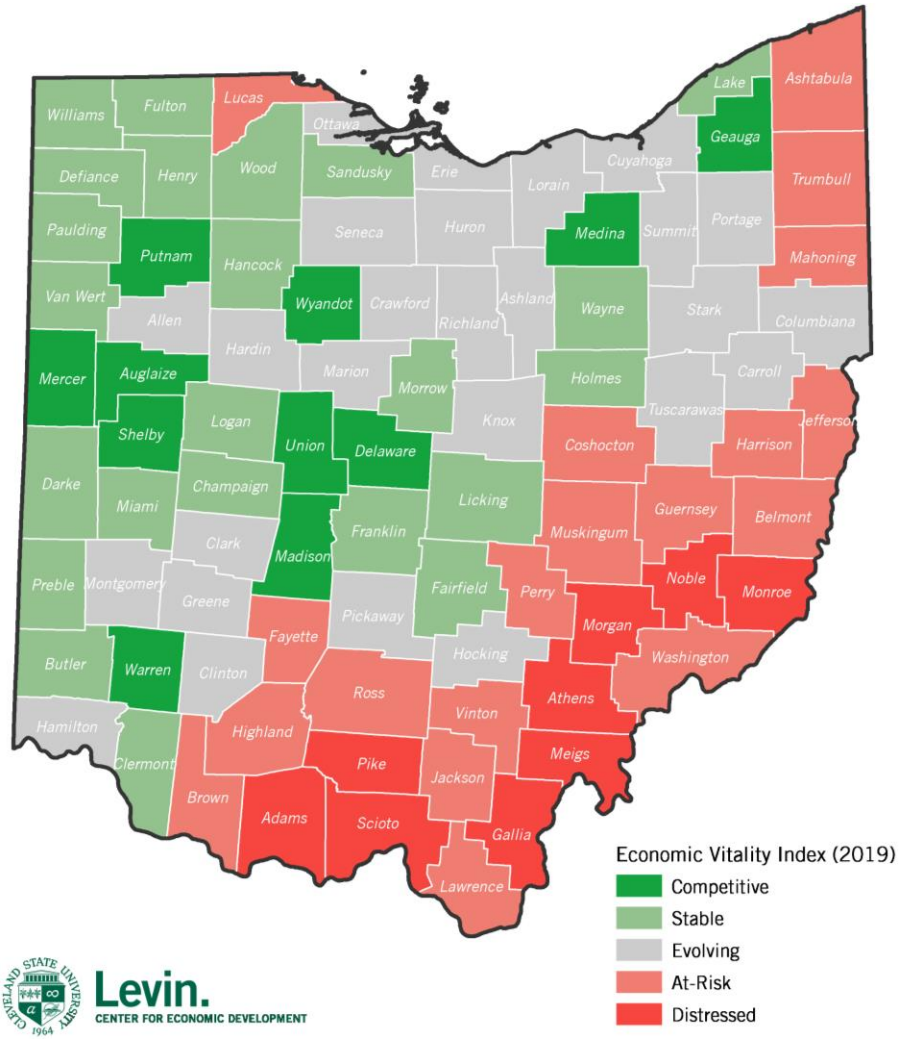
ECONOMIC VITALITY INDEX: MAPPING OHIO'S 88 COUNTIES

INTRODUCTION

Along with the unimaginable death of hundreds of thousands, the COVID-19 pandemic has caused economic hardship for many more millions of Americans and hundreds of thousands of businesses, large and small. After experiencing the longest economic expansion in U.S. history, we are now faced with an unprecedented contraction in modern times as workers see their hours reduced – or jobs eliminated – and businesses scale down operations or close their doors altogether. As part of its effort to aid in responding to Ohio's economic downturn resulting from the pandemic, the Center for Economic Development (Center) is tracking the overall economic vitality of counties in Ohio. A first step in commencing this research is to establish a baseline evaluation of performance prior to the pandemic's start as a benchmark measurement to compare against post-pandemic. This brief illustrates 2019 baseline data and will be updated annually as economic stimuli, policy responses to the pandemic, and their economic impacts progress.

Ohio's 88 counties have all seen varying levels of success and stability for their residents and the businesses that employ them; how these counties have responded and will continue to respond to hardships arising from COVID-19 will affect each of them in different ways. The Center has constructed an **Economic Vitality Index (EVI)** for Ohio, an approach that can be used to evaluate overall stability in each of the state's counties through one comparable score. The EVI is a single factor composite of six variables evaluated through statistical analysis.

Figure 1: Economic Vitality Index score, 2019



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METHODOLOGY AND VARIABLES

To create the index, the research team first reviewed the literature on economic vitality and indexes that show economic prosperity.[1] From these sources, the team identified variables for an EVI and methodology on standardization and factor analysis. Factor analysis is a data reduction technique that finds commonalities across all selected data and then "weights" them by their importance to the factor. In this analysis, only one factor was used to create the final EVI.

The six variables that make up the EVI were assembled from a variety of state and federal sources. In all, these six variables explained 44.9% of the variance in the data (each variable's factor loading weight shown in parenthesis).

- **Percent below poverty threshold** (48.9%): Data from the U.S. Census Bureau,[2] defined as family units with an annual income before taxes (and not including capital gains or noncash benefits) below federally identified poverty thresholds (e.g., $13,011 for a single individual or $25,926 for a household with two adults and two children, in 2019).
- **Unemployment rate** (19.2%): Data from the U.S. Bureau of Labor Statistics,[3] defined as the total number of unemployed divided by the civilian labor force (all people age 16 or older either working or looking for work).
- **Median household income** (15.0%): Data from the U.S. Census Bureau,[4] defined as the middle point of the combined income of the householder and all other individuals 15 years and older in the household in the past 12 months.
- **Percent employed in select traded industries** (10.7%): The percent of total employed working in one of Ohio's specialized traded industries, as defined by the U.S. Cluster Mapping Project,[5] and calculated using Moody's Analytics 4-digit NAICS[6] employment figures. Specialized traded clusters illustrate each regional economy's own distinct portfolio of strongly performing groups of related industries that serve markets beyond their region; they are the "engines" that drive economic performance. As of 2017, the project outlined 14 such industry clusters in Ohio.
- **Change in average annual employment** (4.0%): Data from the U.S. Bureau of Labor Statistics,[7] comparing 2019 annualized quarterly census data against the same data from 2018. Employment data reports those who worked during, or received pay for, the 12th day of the month.
- **Net real estate taxes charged** (2.2%): Data from the Ohio Department of Taxation;[8] compiled tax data on real estate and public utility property taxes charged. This data is viewed as a positive variable for this analysis – as property taxes, in part, support local schools and public programs.[9]

All 88 Ohio counties and their scores across these six variables, as well as their final Economic Vitality Index score, can be seen in **Table 1**.

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[1] Appalachian Regional Commission. (2021). *Classifying economic distress in Appalachian counties*.
The Brookings Institution. (2021). *Exploring the geography of prosperity | The Hamilton Project*.
Economic Innovation Group. (2020). *Introduction to the Distressed Communities Index (DCI)*.
Indiana Business Research Center. (2016). *Innovation 2.0: StatsAmerica*. Indiana University's Kelley School of Business.
North Carolina Department of Commerce. (2020). *NC commerce: County distress rankings (Tiers)*.
South Carolina Department of Revenue. (2019). *SC revenue ruling #19-11: Job Tax Credit–Increased credit amount for tier III and IV counties [PDF]*.
Swickard, K., & McKissick, J. C. (2005). *Economic vitality index and human vitality index data summaries and calculations*. University of Georgia.

[2] U.S. Census Bureau. (2020). *2015-2019 American Community Survey 5-year estimates; Poverty status in the past 12 months, Table B17001 [Data]*.

[3] U.S. Bureau of Labor Statistics. (2020). *Local area unemployment statistics, labor force data by county, 2019 [Data]*.

[4] U.S. Census Bureau. (2020). *2015-2019 American Community Survey 5-year estimates; Selected economic characteristics, Table DP03 [Data]*.

[5] Institute for Strategy and Competitiveness. (2018). *Ohio | U.S. Cluster Mapping*. Harvard Business School.

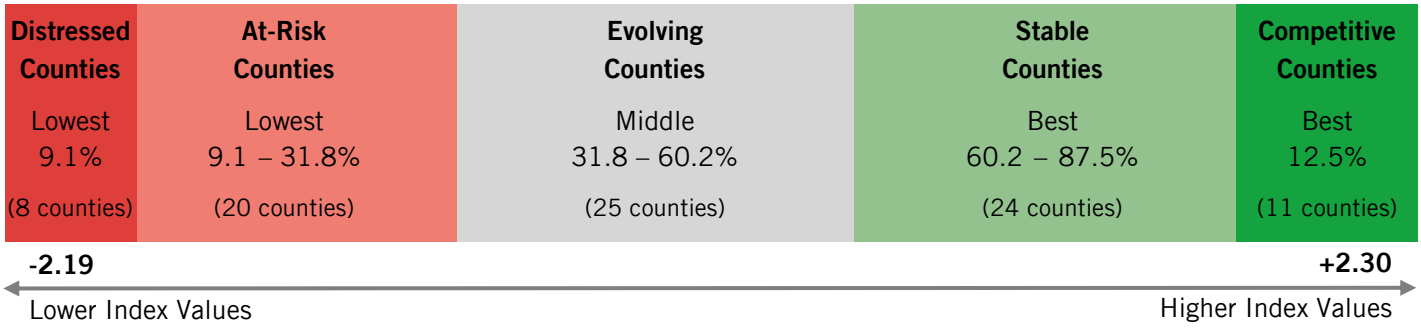
[6] The North American Industry Classification System (NAICS) is the standard used by federal statistical agencies to classify business establishments.

[7] U.S. Bureau of Labor Statistics. (2020). *Quarterly census of employment and wages [Data]*.

[8] Ohio Department of Taxation. (2020). *Real estate and public utility property taxes, Table PD23 [Data]*.

[9] To account for outlier counties (Cuyahoga and Franklin), top 10 counties were selected for highest classification, with remaining 78 counties distributed by natural breaks.

Figure 2: Ohio Economic Vitality Index rankings[10]



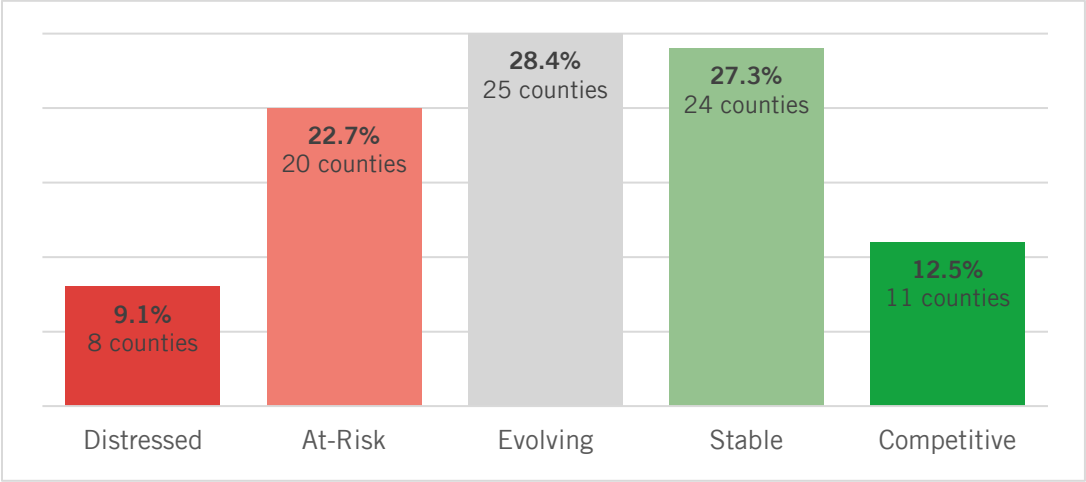
THE CLASSIFICATIONS OF THE EVI

Ranging from as low as -**2.19** to as high as **+2.30** (the higher number points to a greater economic vitality), the Economic Vitality Index score has been divided into five intervals using natural breaks in the data, as derived through GIS analysis (see **Figures 2 and 3**). Those five intervals illustrating economic vitality from lowest to highest are:

- **Distressed** counties are those that have the lowest EVI scores compared to their peers (the bottom 8 counties – 9%). They often have a large percentage of residents living below the poverty threshold, a high unemployment rate, and a low representation in traded industries.
- **At-Risk** counties have a higher EVI score than distressed counties but are below Ohio's median EVI score (20 counties – 23%).
- **Evolving** counties are at a crossroads in performance; with the right assistance programs in place, they may be able to bring their outlook in line with higher-performing counties (middle 25 counties – 28%).
- **Stable** counties have EVI scores above the state median; the majority have above-average employment and median household income (24 counties – 27%).
- **Competitive** counties are the top-performing; these counties by-and-large have great scores for many of the six variables, with low poverty levels and unemployment rates, high median household incomes, and employment in traded industries (the top 11 counties – 13%).

Following the statistical factor analysis, a map displaying each county's EVI score was generated, as seen in **Figure 1**. Please click on the above map (or visit bit.ly/CED_EVI) to view an interactive online map series of the Economic Vitality Index, all six associated variables, and related change-over-time maps that provide additional context.

Figure 3: Ohio Economic Vitality Index histogram



[10] Adapted from: Appalachian Regional Commission. (2021). *Classifying economic distress in Appalachian counties*.

Table 1: Variables and final Ohio Economic Vitality Index score, 2019

County	Below Poverty Threshold	Unemploy-ment Rate	Median Household Income	Employed in Select Traded Industries	Change in Average Annual Employment[11]	Net Real Estate Taxes Charged	Economic Vitality Index Score
Adams	20.7%	6.8%	$39,079	7.0%	-2.8%	$23.4 M	-2.09
Allen	13.9%	4.0%	$53,131	19.1%	-1.3%	$113.2 M	0.00
Ashland	13.8%	4.2%	$52,823	18.4%	3.0%	$74.6 M	0.08
Ashtabula	19.9%	4.8%	$46,700	21.4%	-0.2%	$113.3 M	-0.69
Athens	30.2%	5.3%	$40,905	5.0%	0.9%	$71.7 M	-2.19
Auglaize	8.4%	3.0%	$64,074	33.0%	1.8%	$51.5 M	1.52
Belmont	12.3%	5.6%	$50,904	7.1%	-2.2%	$105.9 M	-0.83
Brown	15.3%	5.0%	$54,575	11.6%	-3.4%	$35.1 M	-0.68
Butler	12.5%	3.8%	$66,117	25.8%	1.8%	$513.0 M	0.87
Carroll	12.3%	5.0%	$55,267	18.8%	2.6%	$51.7 M	0.02
Champaign	10.1%	3.7%	$60,112	31.5%	0.1%	$46.8 M	0.98
Clark	14.9%	4.3%	$50,873	20.3%	-0.3%	$163.2 M	-0.13
Clermont	9.0%	3.7%	$66,968	15.6%	0.5%	$292.5 M	0.75
Clinton	14.8%	4.7%	$52,815	16.7%	1.1%	$45.9 M	-0.26
Columbiana	14.3%	4.8%	$48,345	18.8%	0.5%	$103.6 M	-0.32
Coshocton	14.4%	5.8%	$46,606	15.1%	-0.6%	$39.7 M	-0.82
Crawford	14.9%	4.7%	$44,971	21.0%	2.3%	$61.7 M	-0.29
Cuyahoga	17.5%	4.2%	$50,366	16.3%	0.8%	$2,721.7 M	-0.15
Darke	10.5%	3.7%	$55,620	18.9%	-1.1%	$56.8 M	0.38
Defiance	10.2%	4.2%	$59,931	20.9%	-2.0%	$57.0 M	0.40
Delaware	4.8%	3.1%	$106,908	14.0%	2.2%	$590.7 M	2.30
Erie	11.7%	4.9%	$54,226	14.7%	-2.1%	$143.6 M	-0.25
Fairfield	9.2%	3.7%	$67,609	9.5%	0.4%	$247.0 M	0.54
Fayette	16.2%	3.9%	$47,308	15.5%	-3.5%	$42.8 M	-0.49
Franklin	15.7%	3.5%	$61,305	16.2%	1.1%	$2,439.4 M	0.43
Fulton	7.8%	4.1%	$63,092	23.8%	-1.6%	$71.2 M	0.79
Gallia	20.7%	5.4%	$44,858	4.7%	-0.8%	$32.5 M	-1.54
Geauga	5.8%	3.5%	$82,303	23.1%	1.5%	$224.3 M	1.71
Greene	11.6%	3.7%	$68,720	5.4%	0.7%	$317.7 M	0.29
Guernsey	19.9%	5.5%	$45,917	17.2%	-1.2%	$50.6 M	-1.08
Hamilton	15.8%	3.8%	$57,212	13.3%	0.5%	$1,552.1 M	0.04
Hancock	10.8%	3.2%	$58,450	27.1%	1.1%	$98.5 M	0.93
Hardin	13.9%	4.2%	$50,506	19.1%	-0.8%	$31.6 M	-0.12
Harrison	16.0%	5.3%	$49,689	11.8%	-4.2%	$56.2 M	-0.96
Henry	8.4%	4.6%	$59,695	18.6%	-1.9%	$60.0 M	0.33
Highland	19.4%	5.2%	$44,169	15.0%	-1.7%	$33.7 M	-1.11
Hocking	13.3%	4.6%	$52,363	11.7%	0.2%	$46.5 M	-0.34
Holmes	10.0%	3.0%	$63,753	19.8%	0.4%	$50.7 M	0.91
Huron	13.2%	5.7%	$52,560	20.0%	0.4%	$58.3 M	-0.35
Jackson	18.8%	6.2%	$47,550	17.5%	-1.0%	$27.7 M	-1.15
Jefferson	17.5%	5.9%	$46,581	10.6%	1.5%	$85.2 M	-1.13
Knox	13.1%	3.9%	$57,749	21.0%	0.4%	$76.4 M	0.33
Lake	8.1%	3.7%	$64,466	20.1%	1.6%	$459.1 M	0.95
Lawrence	18.1%	5.2%	$45,118	6.5%	5.5%	$52.4 M	-1.00
Licking	10.5%	3.7%	$64,589	19.5%	6.1%	$272.6 M	0.93
Logan	11.4%	3.6%	$56,754	33.4%	-2.8%	$65.6 M	0.79
Lorain	13.5%	4.3%	$58,427	18.6%	0.7%	$494.5 M	0.18
Lucas	18.7%	4.7%	$48,736	16.0%	0.0%	$671.6 M	-0.65

County	Below Poverty Threshold	Unemploy-ment Rate	Median Household Income	Employed in Select Traded Industries	Change in Average Annual Employment[11]	Net Real Estate Taxes Charged	Economic Vitality Index Score
Madison	9.1%	3.4%	$68,022	31.1%	3.4%	$56.8 M	1.46
Mahoning	17.5%	5.7%	$46,042	15.0%	0.6%	$297.8 M	-0.96
Marion	14.8%	4.1%	$47,498	19.0%	-0.5%	$61.5 M	-0.22
Medina	6.0%	3.4%	$76,600	17.7%	0.3%	$347.3 M	1.36
Meigs	19.6%	6.9%	$44,899	2.9%	2.1%	$18.8 M	-1.84
Mercer	6.4%	2.6%	$62,952	24.3%	-1.6%	$51.1 M	1.31
Miami	9.2%	3.7%	$61,041	24.1%	0.3%	$126.9 M	0.84
Monroe	17.1%	8.3%	$45,289	5.0%	3.9%	$60.6 M	-1.90
Montgomery	16.6%	4.2%	$51,542	15.4%	0.5%	$912.6 M	-0.27
Morgan	19.2%	6.5%	$42,341	13.1%	-2.1%	$17.8 M	-1.59
Morrow	9.7%	4.1%	$59,452	11.9%	3.9%	$41.4 M	0.38
Muskingum	16.0%	4.9%	$47,254	9.7%	-0.2%	$99.4 M	-0.83
Noble	15.6%	6.9%	$46,897	8.7%	-2.5%	$32.7 M	-1.49
Ottawa	10.1%	5.6%	$59,099	13.5%	-0.1%	$91.5 M	-0.17
Paulding	9.9%	3.8%	$55,330	24.7%	-2.7%	$22.6 M	0.51
Perry	19.1%	5.2%	$50,150	17.3%	3.0%	$43.6 M	-0.68
Pickaway	12.1%	4.0%	$63,633	12.9%	-0.9%	$79.3 M	0.20
Pike	18.7%	6.2%	$42,832	14.8%	-1.3%	$21.9 M	-1.37
Portage	12.8%	4.2%	$57,618	20.1%	0.8%	$239.8 M	0.26
Preble	10.1%	3.8%	$58,957	24.5%	-1.1%	$42.1 M	0.65
Putnam	7.6%	3.1%	$64,822	28.0%	0.7%	$39.9 M	1.35
Richland	13.5%	4.5%	$49,547	19.5%	-1.1%	$161.6 M	-0.18
Ross	17.3%	4.2%	$51,092	9.8%	1.5%	$72.1 M	-0.55
Sandusky	11.6%	4.3%	$54,089	30.6%	-1.7%	$86.7 M	0.46
Scioto	22.6%	6.3%	$41,330	6.0%	0.3%	$60.2 M	-1.93
Seneca	12.8%	4.1%	$52,500	19.9%	0.6%	$79.5 M	0.12
Shelby	8.8%	3.5%	$63,806	40.2%	0.7%	$55.2 M	1.54
Stark	13.6%	4.5%	$53,860	16.6%	-0.5%	$515.7 M	-0.12
Summit	13.2%	4.3%	$57,181	16.9%	0.2%	$953.9 M	0.13
Trumbull	17.2%	6.1%	$47,280	17.6%	-4.2%	$227.4 M	-1.12
Tuscarawas	12.8%	4.3%	$53,243	20.0%	0.7%	$116.1 M	0.10
Union	5.9%	3.2%	$86,715	28.5%	-2.3%	$125.1 M	1.93
Van Wert	11.1%	3.3%	$54,254	27.0%	5.6%	$31.7 M	0.93
Vinton	19.0%	5.6%	$45,673	10.0%	3.0%	$17.3 M	-1.14
Warren	4.6%	3.5%	$87,125	18.5%	3.1%	$435.3 M	1.85
Washington	14.2%	5.4%	$50,021	13.6%	0.8%	$76.7 M	-0.60
Wayne	11.3%	3.2%	$58,300	22.8%	1.9%	$174.9 M	0.79
Williams	11.2%	3.3%	$53,183	32.8%	0.2%	$43.7 M	0.88
Wood	12.9%	3.7%	$62,390	24.8%	2.7%	$236.7 M	0.74
Wyandot	7.4%	3.1%	$55,767	31.4%	2.8%	$22.3 M	1.31
MEDIAN	**13.2%**	**4.2%**	**$53,975**	**18.1%**	**0.4%**	**$71.9 M**	**0.03**

[11] Change in Average Annual Employment is from 2018 to 2019

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Your comments and questions are valued and encouraged; please share them with Matthew Ellerbrock at m.ellerbrock@csuohio.edu

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