



Benchmarking the Ann Arbor Region — 2020

an economic competitiveness assessment

September 2020

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Conclusions and Key Findings

The Headlines

Executive Summary

Takeaways and Major Changes for 2020

The goal of this report is to continue to take the pulse of the Ann Arbor region in comparison to a specific competitive set of technology-driven communities and their economies on a regular basis. The objective is not to make policy recommendations, but to provide clear, unbiased data with regional analysis on a series of metrics that are often applied without context.

Ann Arbor SPARK worked with various groups of stakeholders to produce the initial list of regions and metrics in 2017 and updated that report in 2018. This **2020 update** has the same goal: develop a comprehensive, accurate picture of the region in comparison to competitor regions. It's important to note that the data used in this report does not include the effects from the coronavirus pandemic. Therefore, it can be used as a snapshot of the region before it hit, and perhaps as a baseline to aim for after the fact. The data and analysis for each metric answer some questions, but pose many new ones:

University R&D Expenditure – 1st

- No change in ranking among competitive set.
- This ranking was expected; the University of Michigan is a world-class institution with a well-funded, nationally recognized research complex.
- The U.S. trend for university R&D expenditure is increasing dramatically.
- Question to consider as a result of COVID-19: what happens to the money (as most of it comes from federal sources) in the context of a recession?

Population Movement – 3rd

- Washtenaw County moved up from 5th to 3rd, a significant jump in ranking for net migration.
- Washtenaw County is still the most popular destination for movers within Michigan.
- **Washtenaw County is no longer losing people out of state. We are gaining more than we are losing. This is a notable change from the previous report.**

Share of Remote Jobs – 3rd

- New metric due to the COVID-19 pandemic.
- **The high ranking implies that a lot of existing jobs within Washtenaw County are tech-based and easily done from home**, which is in line with the increasing amount of tech-based jobs in Washtenaw County's economy. However, the impacts on the people-facing businesses (restaurants, transportation, retail) that had grown significantly since the last recession are significant and severe.
- This ranking indicates a "readiness" to shift to remote work – the communities ranked highest on this metric include those regarded as "tech hubs" like Austin, Boulder, and San Francisco.
- The implications of this metric are still being played out by the pandemic – some companies in costly cities (like San Francisco) are allowing all employees to work remotely indefinitely and recruiting people from all over the world. For a market like Ann Arbor, the final consequences remain to be seen.
- Due to the high ranking, **the worst effects of COVID-19 on the Washtenaw County economy may be muted for a larger share of the population. However, this share is not equally distributed by industry, race, or socioeconomic status.**

Venture Capital Activity – 3rd

- Ann Arbor moved up one spot in the rankings, to 3rd from 4th.
- Berkeley and Boulder's levels of VC activity continue to skyrocket; in this analysis they are almost outliers, requiring a much larger range and rendering the differences between the rest of the pack nearly indistinguishable.
- As a result of controlling for population, Ann Arbor continues to rise above the rest.

Takeaways continued

Housing Affordability – 4th

- Despite housing prices going up, the Ann Arbor area moved up five spots in rankings for housing affordability from 9th to 4th.
- **There is a perception of Washtenaw County as an expensive housing market. This is borne out in the data when comparing to midwestern and rust belt cities. However, when comparing to Austin, Berkeley, Boulder, and Portland, Ann Arbor is relatively cheap.**
- The overall trend is toward a more expensive housing market, and this is not unique to Washtenaw County. Still, Washtenaw County is decidedly less affordable within Michigan.

Percentage of Population Below the Poverty Level & ALICE Population – 4th

- This is a new metric, previously termed ‘income inequality’ and measured using the Gini coefficient (ranked 13th in 2018).
- The 2017 poverty rate in Washtenaw County was 12.9%, while the three-year average percentage of ALICE respondents was 21%. This means that for 2017, 33.9% of respondents were either very low income or could not earn enough money for necessities for themselves and their families. **Note that since we do not have 2018 data for ALICE or anything beyond 2018 data for poverty statistics, we cannot conclude anything regarding poverty and access to opportunity for 2020.*
- This is a new way of measuring equality and access to opportunity. **Paired with other metrics like housing affordability and unemployment, this paints a significantly different picture of the competitive set.** Including it in the report is necessary to understand that **while many of these regions are listed on “best places” lists and touted as high growth technology economies, these benefits are not enjoyed by everyone.** There is a tendency to overlook large segments of the population whose financial position prevents them from accessing basic opportunities and building wealth.
- The range of values is much starker than the discussion of inequality in the previous study, where the difference between the top and bottom was very small. Here, the top ranked community has approximately 25% of the population as either ALICE or in poverty – and the lowest ranked community is closer to 45%. This may indicate many things, including the extent of historical geographic segregation by socioeconomic status and race.
- In the context of a pandemic recession, these disparities will grow. The future success of these communities is directly tied to the financial stability of fragile households.

Driving Industry Employment – 9th

- Washtenaw County dropped from 7th to 9th.
- There are possible data issues this year, as data.census.gov launched with new search functionality. Some things improved while others decidedly did not.
- For all years of data, it’s important to note that Hennepin County (Minneapolis) is home to many Fortune 500 headquarters with lots of employees. It may be worth examining which industries make up the bulk of this employment, and whether the driving industry is a key component of that or not.

The Labor Market – 10th for Labor Force Participation, 6th for Unemployment

- Washtenaw County stayed steady in the rankings for unemployment but rose in the rankings for labor force participation. We are at around the same levels as before, but now with the correct relationship between metrics; inversely proportional rather than directly proportional. Unemployment went down and labor force participation went up.
- Before the COVID-19 pandemic, the unemployment rate in Washtenaw County was low and falling, but we remained steady in the unemployment rankings because labor was tighter in other places (unemployment fell further in other places than in Washtenaw). In addition, in order to provide some labor, it appeared that more people were rejoining the labor force (meaning the labor force participation rate [LFPR] was trending upward).
- In the context of a pandemic recession, the unemployment rate is increasing rapidly while the participation rate is dropping. There are more questions than answers. How long will these trends continue? What does recovery look like?

Key Findings

Updated 2020

Metric	Current rank	1 Year Trend (rank)	2018 rank	Level/ Previous Level	MI Level	US Level	Top Community
University R&D Expenditure	1 st	↔	1 st	\$1.53 B/ \$1.44 B	\$2.3 B	\$75.3 B	U-M/ Ann Arbor, MI
Population Movement	3 rd	↑	5 th	+11,669/ +10,635 net migration	-10,575 net migration	N/A	Raleigh/ Wake County, NC
Share of Remote Jobs	3 rd	N/A	N/A	44.9%	N/A	37%	Boulder/ Boulder County, CO
Venture Capital Activity	3 rd	↑	4 th	10.9/ 5.1	0.5	1.0	Boulder/ Boulder County, CO
Housing Affordability	4 th	↑	9 th	3.9/ 3.6	2.8	3.7	Pittsburgh/ Allegheny County, PA
% in Poverty and ALICE	4 th	N/A	N/A	33.9%	39.1%	N/A	Greenville/ Greenville County, SC
Driving Industry Employment	9 th	↓	7 th	14.3%/ 18.4%	15.0%	11.7%	Minneapolis/ Hennepin County, MN
<i>Labor Market</i>							
Unemployment	6 th	↔	6 th	3.0%/ 3.4%	3.9%	4.1%	Minneapolis/ Hennepin County, MN
Labor Force Participation Rate	10 th	↑	11 th	64.3%/ 63.9%	61.5%	63.3%	Austin/ Travis County, TX

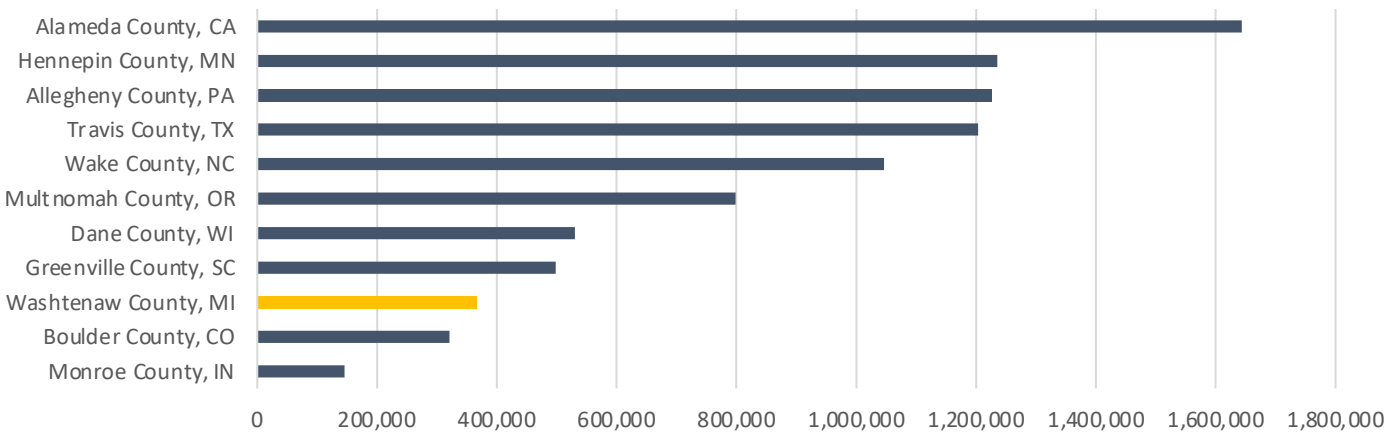
Population and Context

Setting the Stage

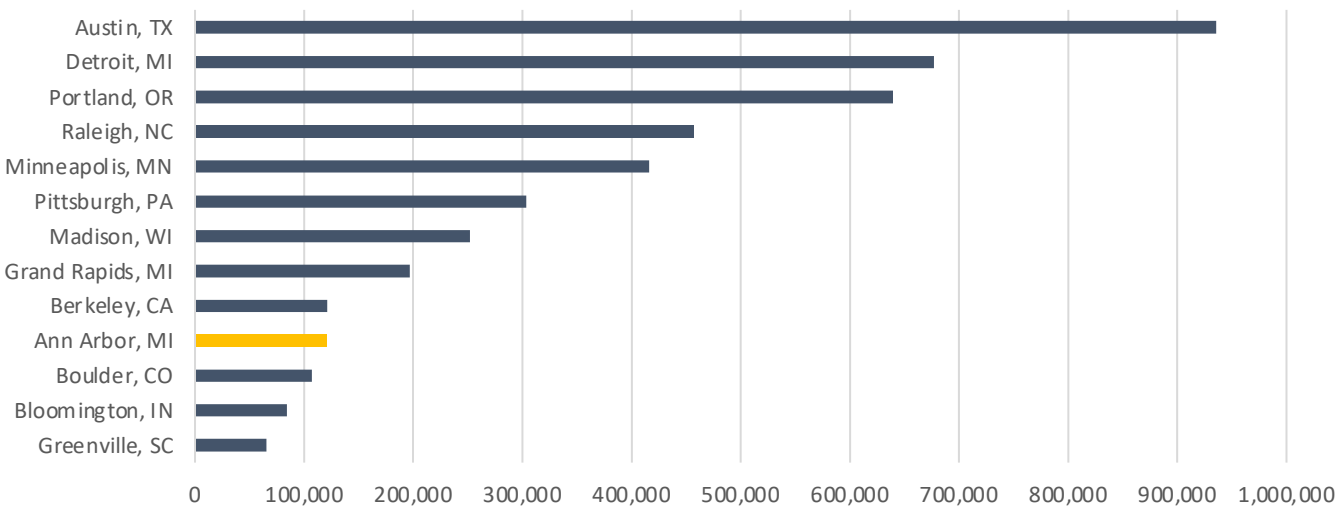
Population and Context – County and City

Many of the selected regions were chosen due to their inclusion in anecdotal comparisons to the Ann Arbor region. Austin, TX, is a perfect example. There are many similarities to Ann Arbor, but when comparing available services and city policy, it is helpful to remember that Austin is eight times larger than Ann Arbor. Where possible, the data have been normalized for population. This is not always feasible, and the following graphs can be used as contextual reference points.

County Population

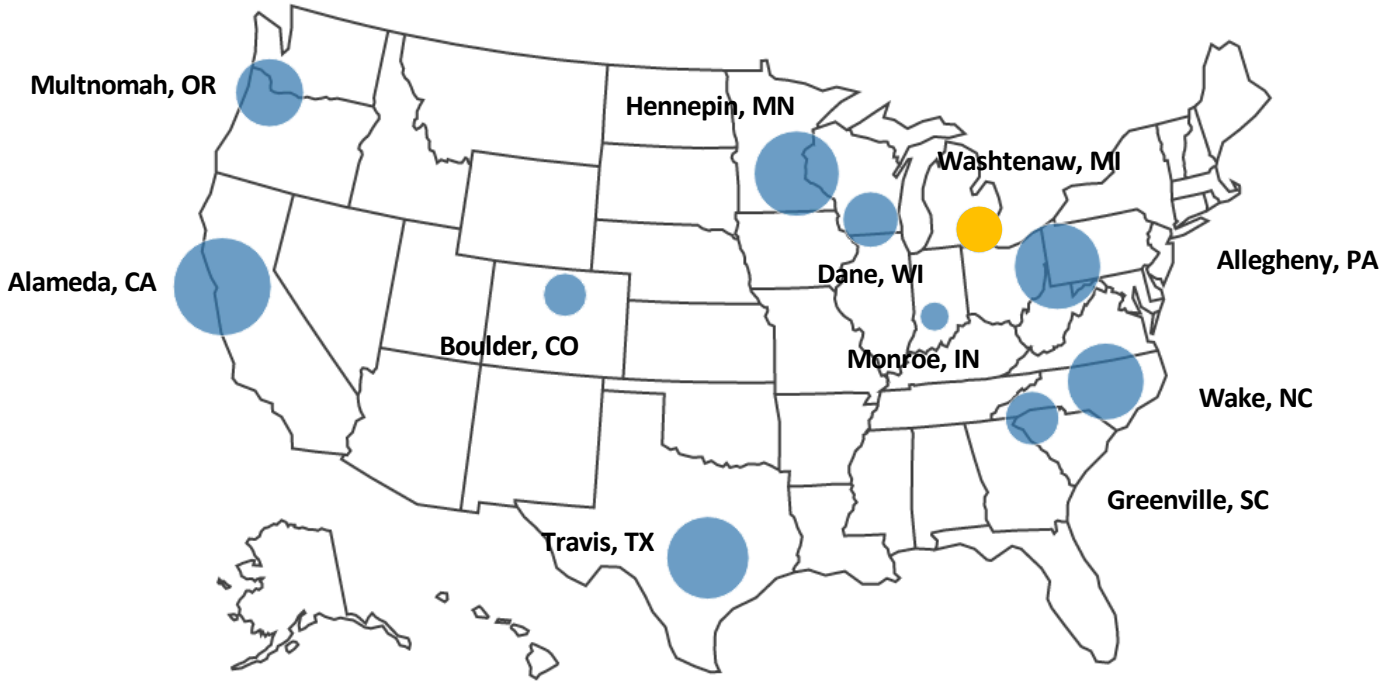


City Population

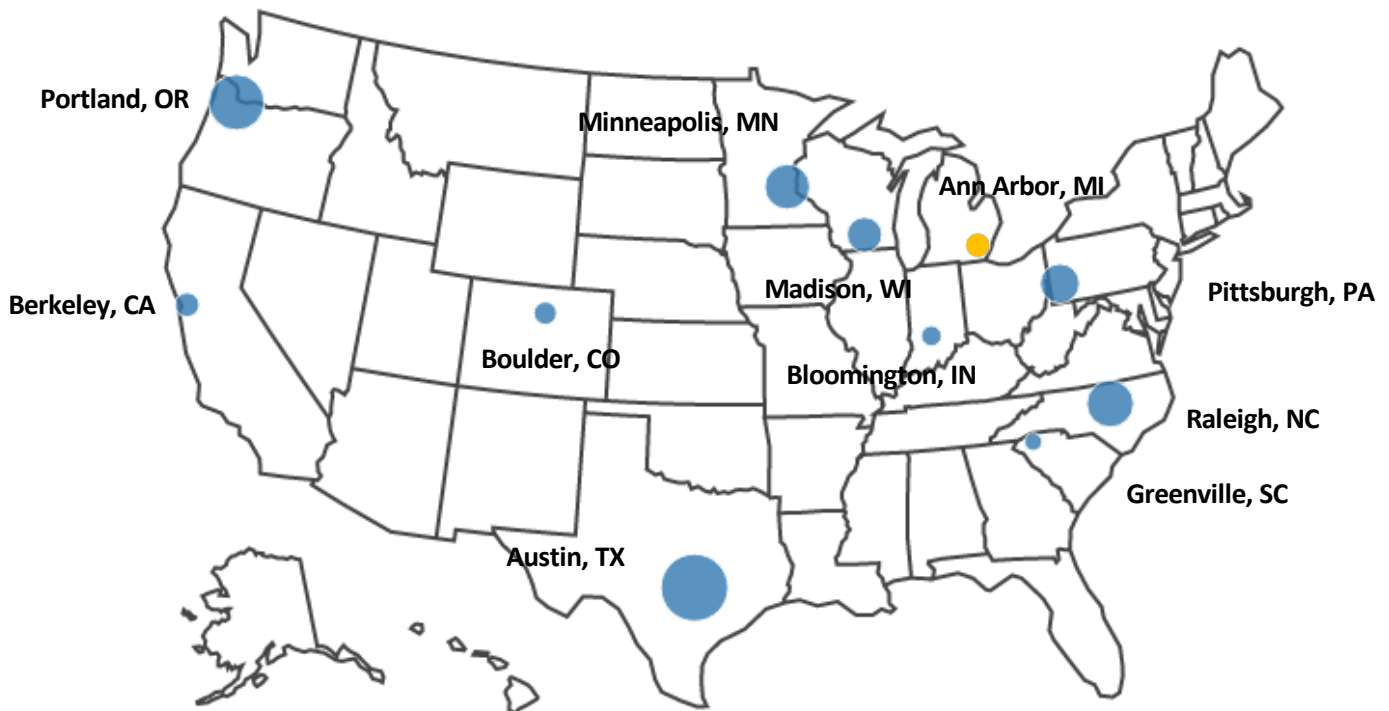


Population continued

County Population



City Population




Metrics and Rankings

The main event

University R&D Expenditures

Rank: **1st** of 14

level: \$1.53 billion

trend: 

top 5 average: \$1.17 billion

What it is:

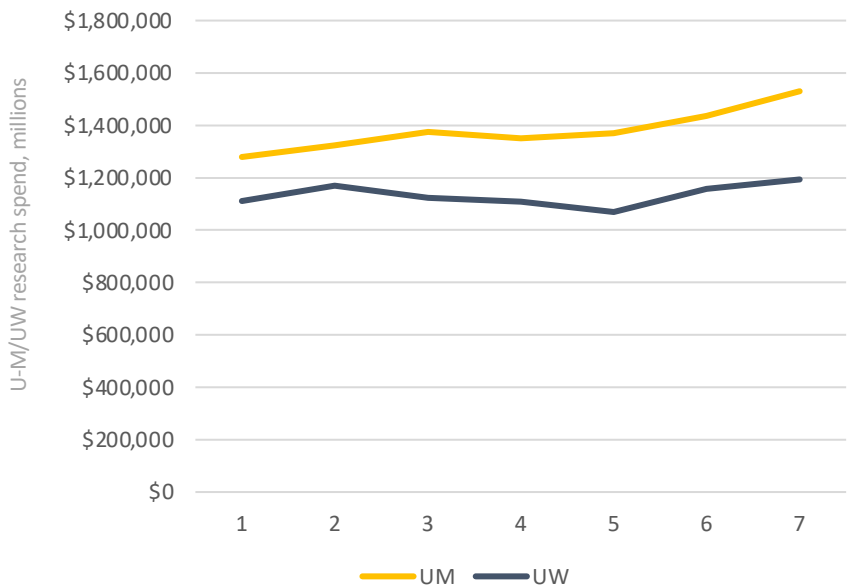
The amount each university spends on research and development. Much of this funding comes directly from the federal government and other grant sources, as well as university sources.

Why it matters:

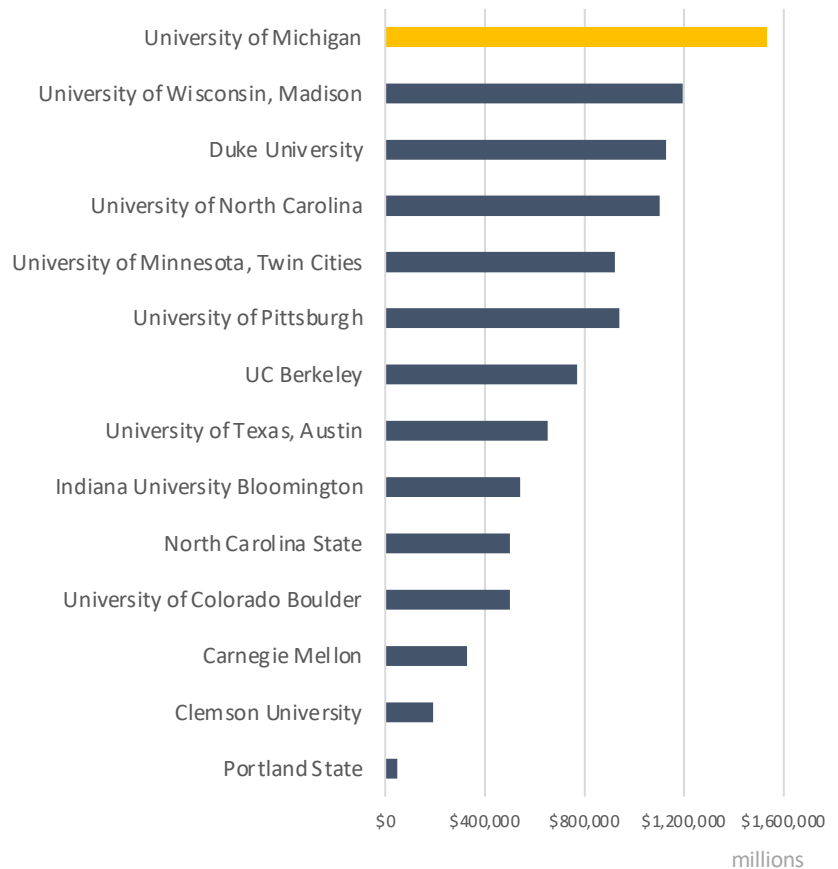
University R&D expenditures are important because they provide opportunities for risk taking, proving ideas, and add to the innovation pipeline. R&D funding helps to build a conduit of research for future innovations. Nationally, levels of university R&D spending have been growing in the last ten years at a greater pace than U-M.

The University of Michigan is ranked #1 against the competitive set in this metric with R&D expenditures at over \$1.5 billion. Nationally, the University of Michigan is ranked #2 for research spending (behind Johns Hopkins).

5-Year Trend – top 2



University R&D Spend



Population Movement

Rank: 3rd of 11

level: +11,669 (3.3% of pop.)

trend: ↑

top 5 average: +12,273

What it is:

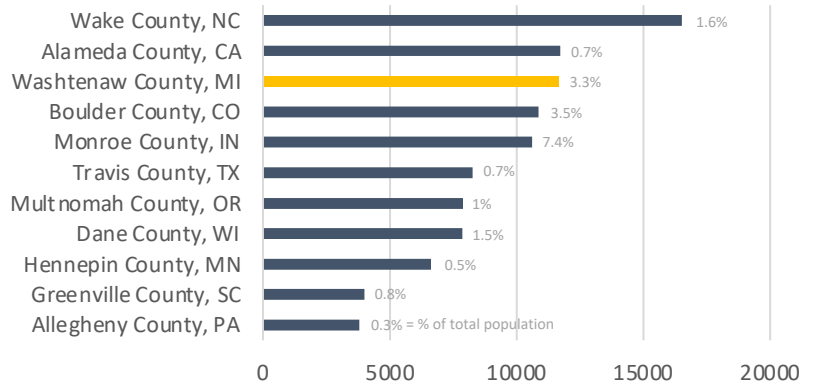
These are period estimates that measure where people lived when surveyed (current residence) and where they lived one year prior (residence one year ago). The data are collected continuously over a five-year period (in this case 2013-2017). The flow estimates resemble the annual number of movers between counties for a five-year period.

Why it matters:

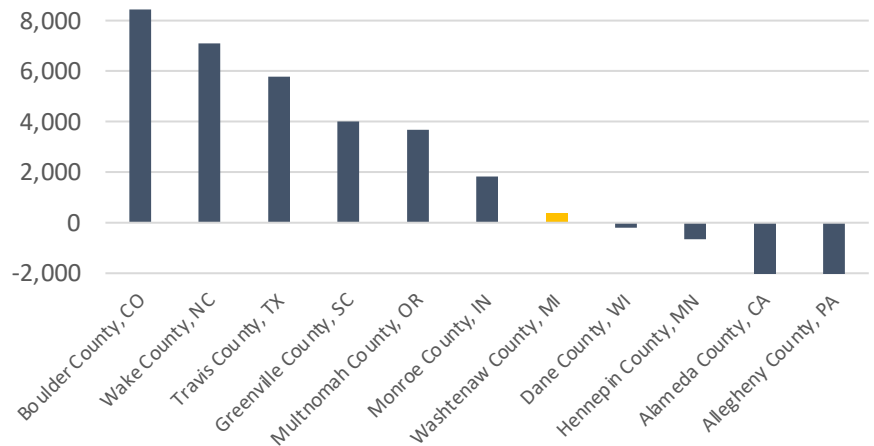
To be considered an innovation hub, the Ann Arbor region must be attractive to outside talent. Net population movement, both inter and intrastate, can potentially indicate the attractiveness of a region to outside talent, especially when viewed as proportional to population.

Washtenaw County benefits from significant intrastate movement (movers to a different county, same state), and is now attracting more people from out of state. In terms of net migration, Washtenaw county sees a higher net inflow proportional to its population than most competitor regions.

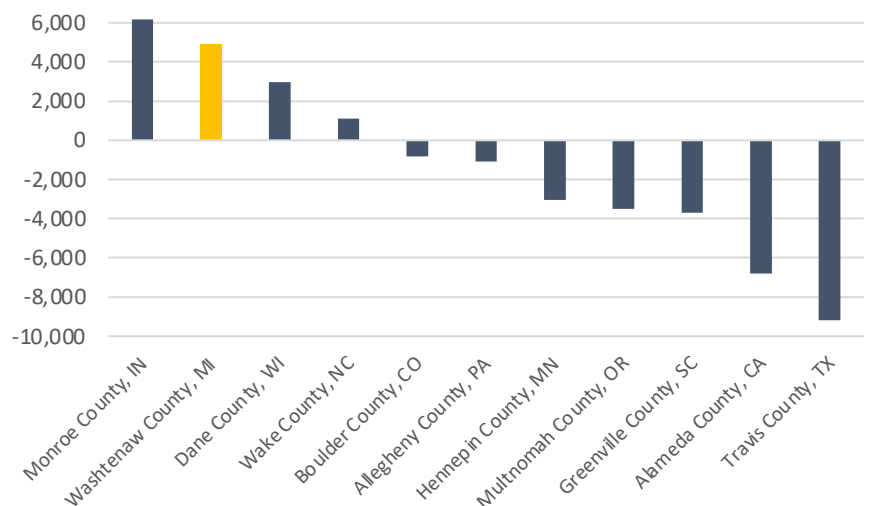
Net Migration



Movers Between States



Movers Between Counties – Same State



Share of Remote Jobs

Rank: 3rd of 13

level: 44.9%

trend: N/A (new metric)

top 5 average: 45.2%

What it is:

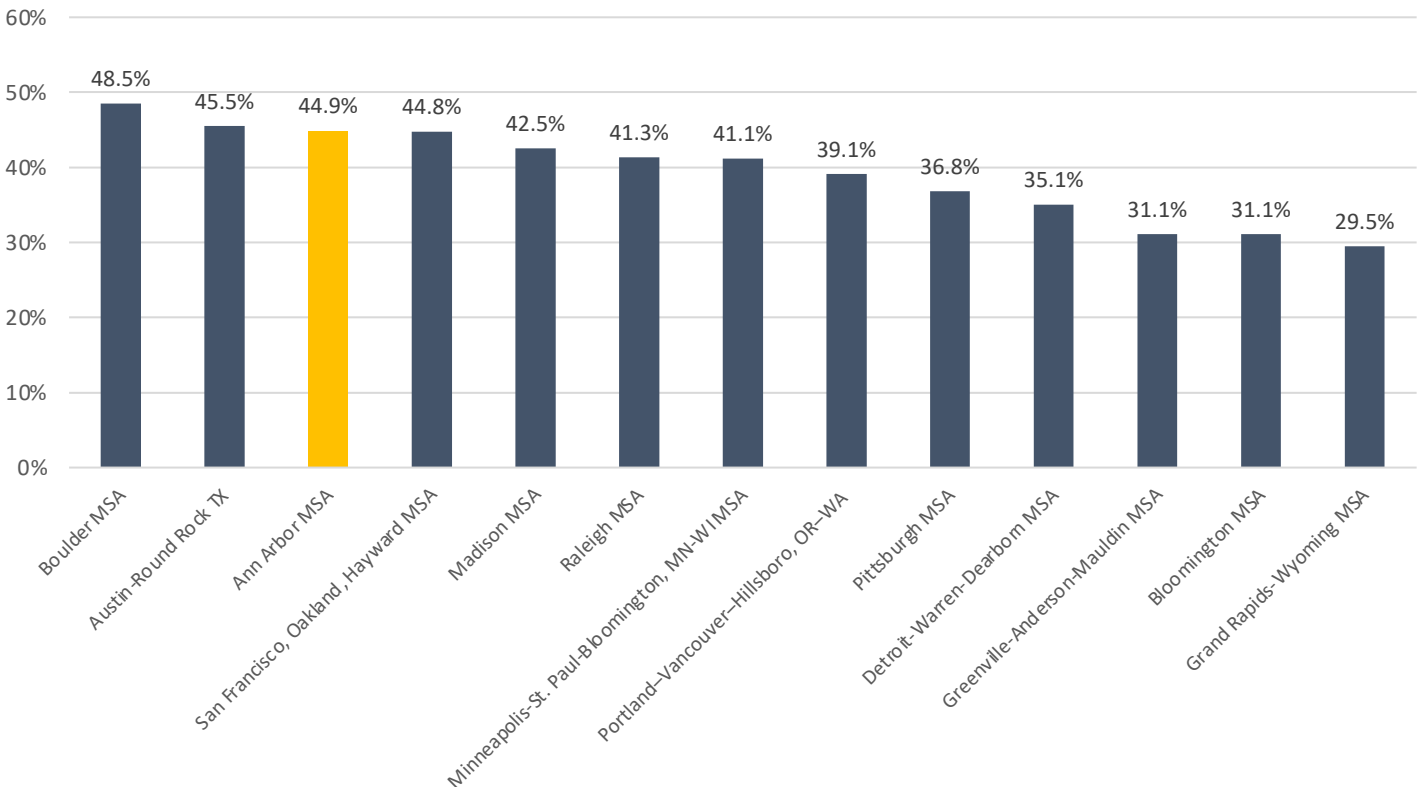
The percentage of the jobs in a metropolitan statistical area that can be performed at home, based on research from the University of Chicago Booth School of Business (see methodology). According to this research, 37% of US jobs can plausibly be performed at home (accounting for 46% of all wages).

Why it matters:

This ranking indicates a “readiness” to shift to remote work, which in the context of a pandemic recession may indicate resilience. The communities ranked highest on this metric are regarded as tech hubs (Boulder, Austin, and San Francisco). Note that the geography for this metric is different than all other metrics. The metropolitan statistical area that encompasses Ann Arbor is known as the Ann Arbor MSA and has identical boundaries to Washtenaw County. However, the boundaries of the other MSAs are sometimes much bigger, including multiple counties and cities.

Ann Arbor’s presence in the top 5 indicates a high concentration of these jobs in a relatively small population, which may shield the county from the worst effects of the pandemic recession. However, this share of jobs is not equally distributed in the population.

Share of Jobs that can be Performed Remotely



Also included: Detroit-Warren-Dearborn and Grand Rapids-Wyoming MSAs to provide context within Michigan

Venture Capital Activity

Rank: 3rd of 11

level: 10.9

trend: ▲

top 5 average: 19.8

What it is:

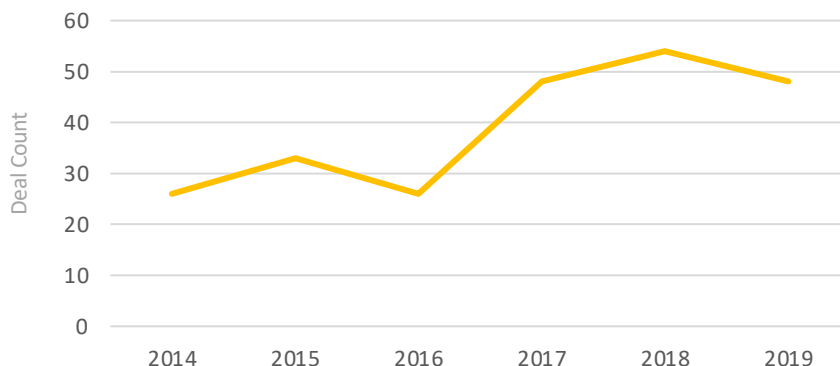
Regional concentration of venture capital deals, normalized for population. The location quotient measures a region's performance relative to the nation. 1.0 means the region and the nation are equally specialized, anything above 1.0 indicates the region has a higher concentration than the nation. This particular metric measures venture capital deal count concentration (as opposed to value).

Why it matters:

High levels of venture capital activity indicate areas of innovation. Venture capital is important for the growth of startups as venture investors tolerate more risk than conventional investors and lending institutions. Regions like Silicon Valley, New York City, and Boston often get more national attention for large venture capital activity, but smaller regions often have higher than average levels of activity when normalized for population.

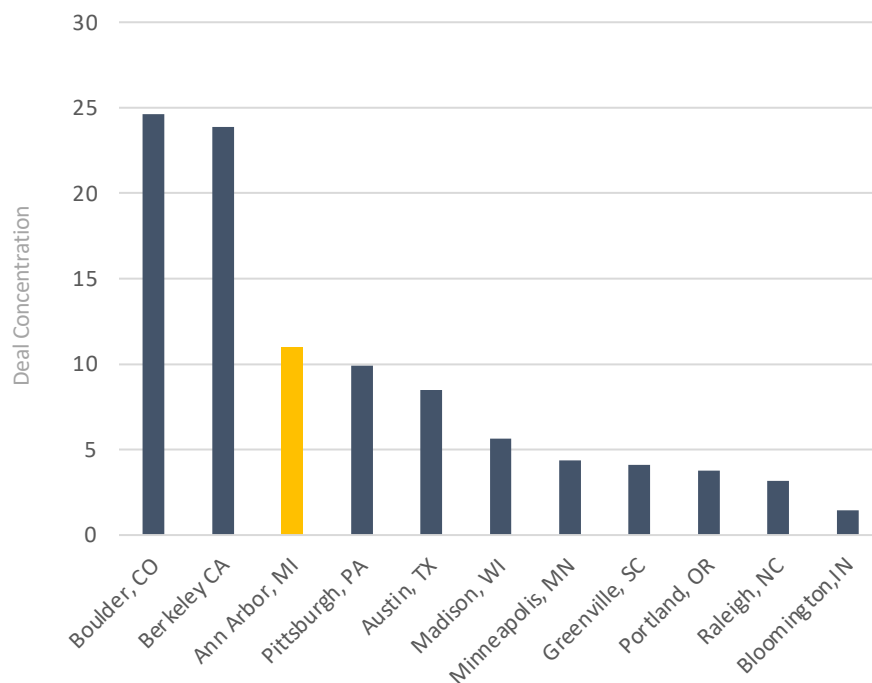
The city of Ann Arbor ranks third in this metric, with venture capital activity at 10.9 times the national levels.

Long Term Trends - Venture Capital Deals - Ann Arbor



NB: at the time of publication, Venture Capital data existed for 2019, population data did not.

Deal Concentration Normalized by Population



Housing Affordability

Rank: 4th of 11

level: 3.9

trend: ↑

top 5 average: 3.5

What it is:

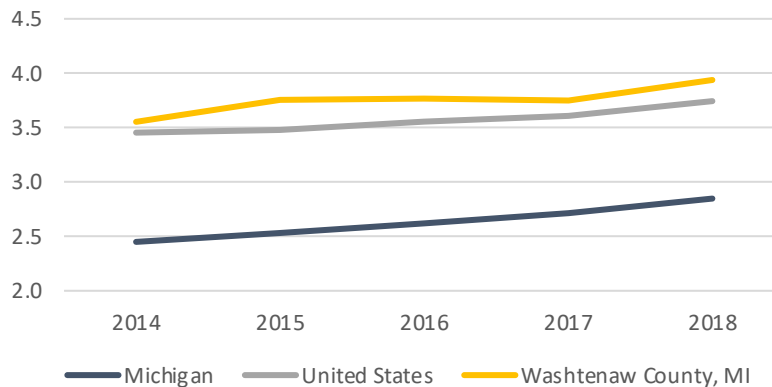
This ratio measures affordability by dividing the median home price by the median income. A ratio of 3.9 means that median home prices are 3.9 times the median income.

Why it matters:

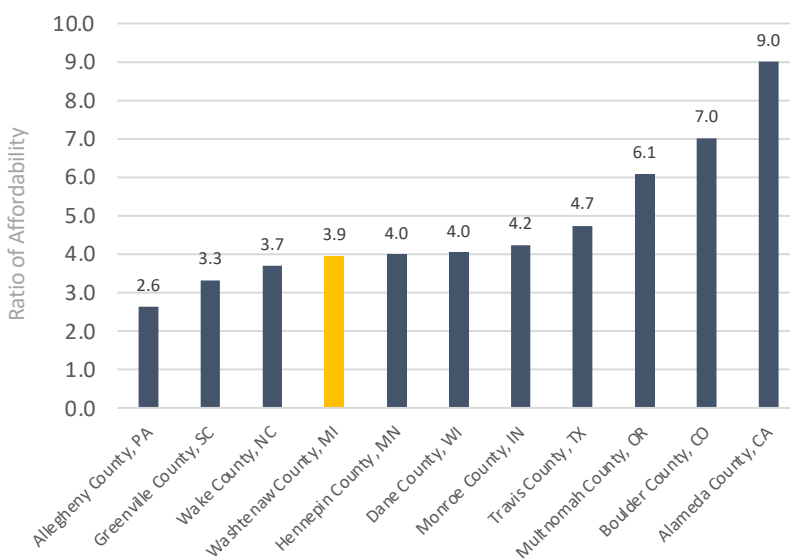
Housing cost is a key factor influencing quality of life, which affects a region's ability to attract and retain talent. Housing affordability is also a measure of inequality and access to opportunity; if the ratio is high it can indicate a highly segregated real estate market, and a high level of income inequality. Conversely, it is also an indicator of attractiveness of a housing market.

Washtenaw County's home prices have risen over the past five years, but prices have risen more dramatically elsewhere in the competitive set. However, within Michigan, Washtenaw County is the least affordable housing market.

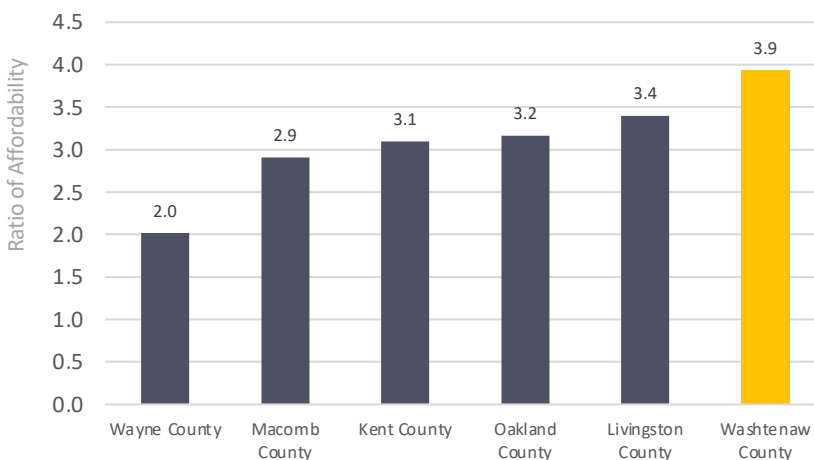
5-Year Trends - Housing Affordability



Housing Affordability



Michigan Housing Affordability



% in Poverty and ALICE

Rank: 4th of 11

level: 33.9%

trend: N/A (new metric)

top 5 average: 31%

What it is:

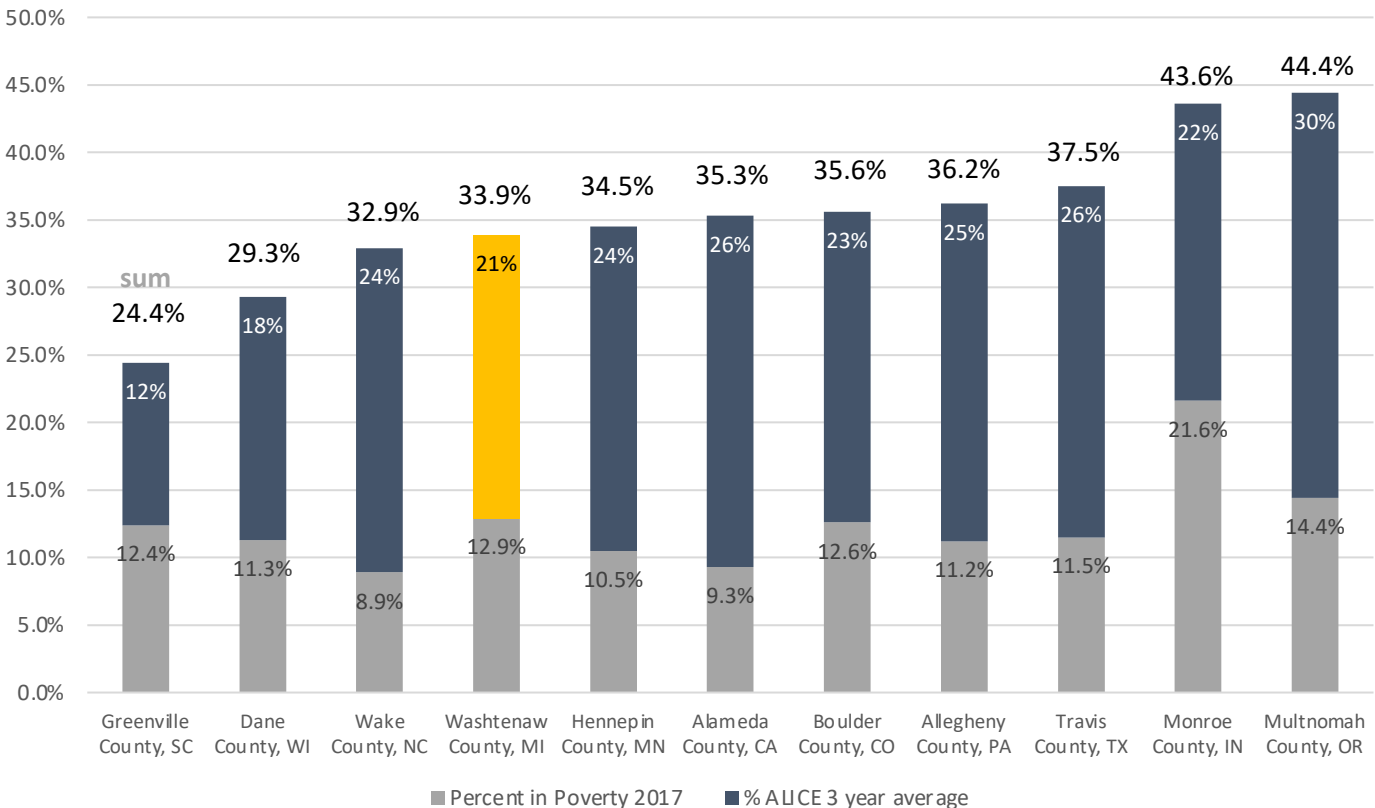
The percentage of the population in each county that lives at or below the poverty line or within the asset-limited-income-constrained-employed group (ALICE) outlined by United Way. This group contains households that earn above the federal poverty level, but not enough to afford a bare-bones household budget.

Why it matters:

A growing body of research shows strong links among inequality, poverty, and opportunity. For example, of the factors most cited as driving poverty in America—education, family structure, race, and more—the number-one factor by far is the growth in inequality. There is a significant negative relationship between living in an area with greater income inequality and a child’s expected upward mobility. Therefore, it can be an illuminating metric to track the accessibility of economic opportunity. Many of the regions most associated with the tech boom are also the most unequal. Including ALICE percentages along with poverty highlights segments of the population that are often overlooked when it comes to policy solutions.

Washtenaw County is in the middle of the pack, barely outperforming some of our competitive set.

Percent of Population Living in Poverty or under ALICE Threshold



Driving Industry Employment

Rank: 9th of 11

level: 14.3%

trend: ↓

top 5 average: 20.5%

What it is:

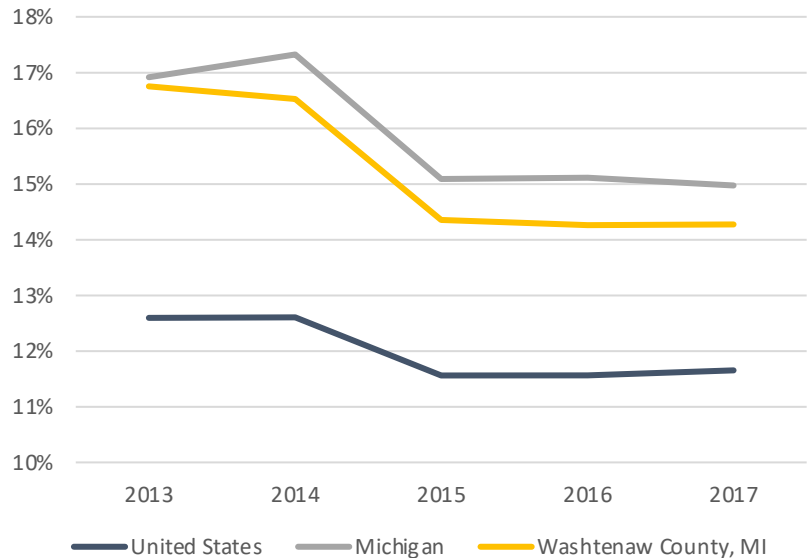
The percentage of the total employed population of a region employed in driving industries (see page 23 for NAICS codes defining driving industries).

Why it matters:

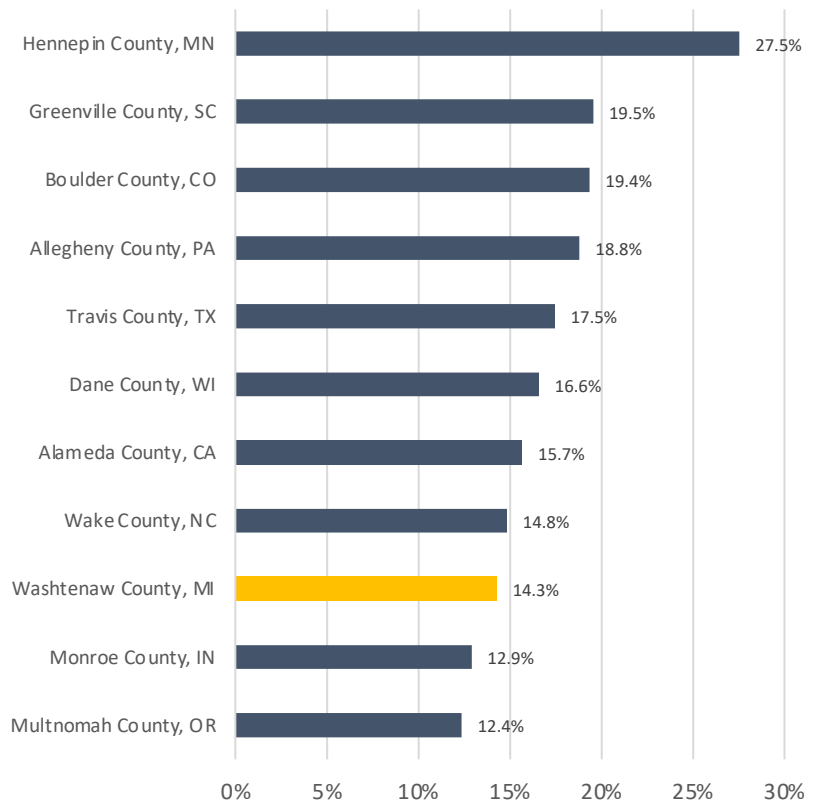
Economies grow and prosper by their ability to make products and deliver services to people and businesses outside their geographic regions, i.e., by exporting. Driving industry jobs create and support jobs in other local industries and propel economic growth. Within this competitive set, driving industry employment is much higher than the national average, indicating a potential area for policy focus.

Washtenaw County performs lower than many of its competitor regions in driving industry employment, though higher than the national average.



5-Year Trends - Driving Industry Employment



% Driving Industry Employment



The Labor Market

Rank: 10th of 11 - Labor Force
 6th of 11 - Unemployment
 level: 63.9%, 3.4%
 trend: Labor Force  Unemployment 
 top 5 average: 71.3%, 4.5%

What it is:

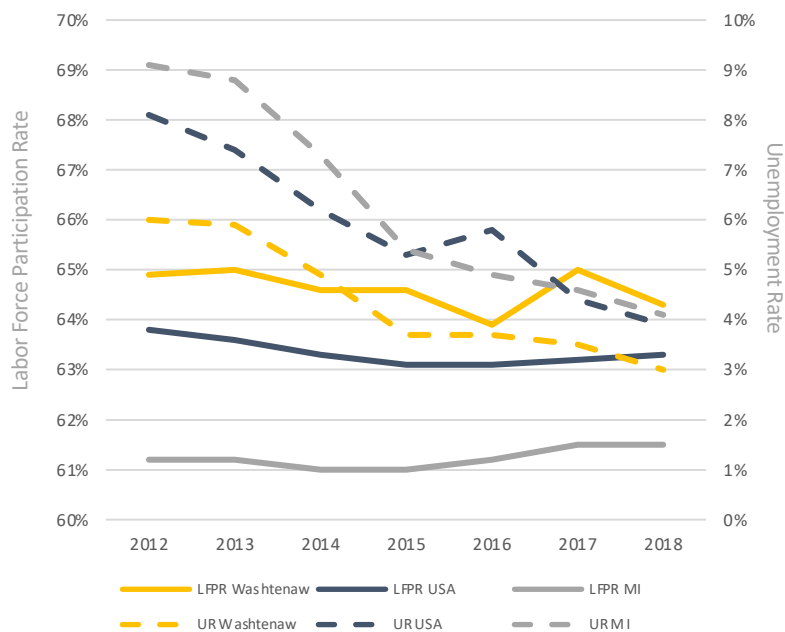
The national unemployment rate reflects the number of unemployed people as a percentage of the labor force. The labor force participation rate measures the number of people in the labor force as a percentage of the civilian noninstitutionalized population 16 years old and over. In other words, it is the percentage of the population either working or actively seeking work. The picture of the labor market is incomplete without both metrics.

Why it matters:

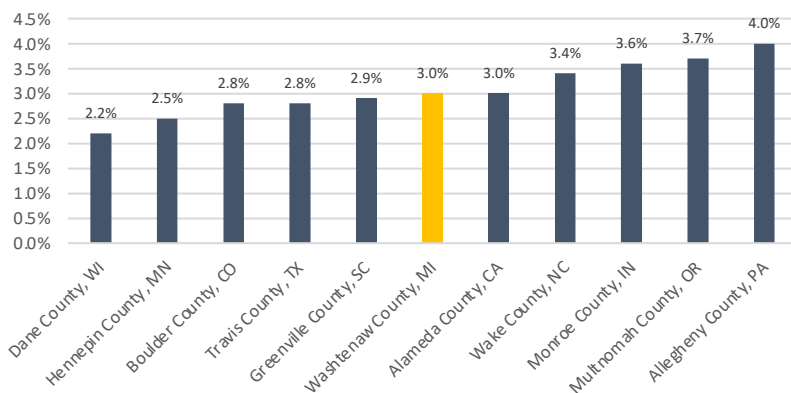
Before the pandemic, the unemployment rate was steadily decreasing everywhere, and labor force participation had finally started to increase, barely. However, the labor market was tight across the competitive set, with some regions reporting unemployment near 2%. In the context of a recession, this becomes the baseline that all regions are trying to get back to.

Pre-pandemic, Washtenaw County enjoyed positive job growth and a steady decline in unemployment, with a slow increase in the participation rate.

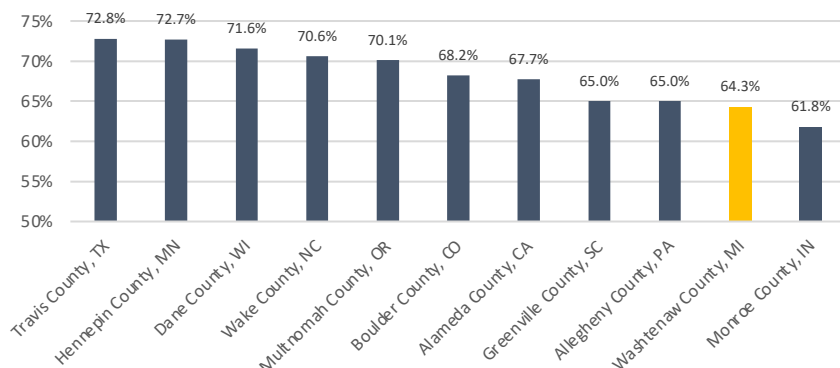
Unemployment and Labor Force Participation Rates – USA, MI, Washtenaw



Unemployment Rate



Labor Force Participation Rate



Benchmarking the Gaps

Untangling the aggregate

Benchmarking the Gaps

Do the benefits apply to all?

“The concept and practice of equity matters more than ever for economic development work.”¹

Aggregate statistics are sometimes useful, but they tend to hide disparities in opportunity. Many of our competitor regions were chosen because they appear in the same “best-of” lists as Ann Arbor. Minneapolis, for example, often shows up as one of the best, most affordable cities to live in America. However, it is evident given the events of the summer of 2020 (and long before), that these benefits do not apply to all. In this section, we attempt to tease out some of the racial differences in the metrics presented and let the data speak for itself. Not every metric is feasibly split, so we focus specifically on poverty rate, housing affordability, and unemployment.

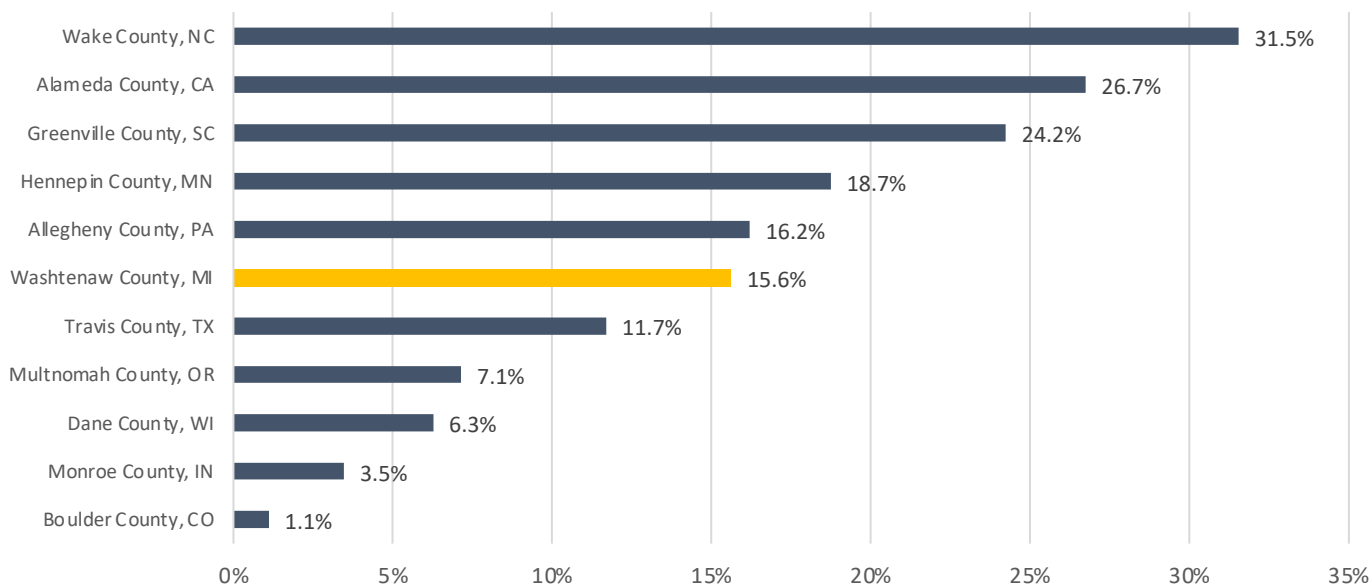
This subject is delicate. To highlight the gaps present, we focused specifically on the differences between Black and African American residents and White residents of the chosen regions (using the terminology of the Census).

Instead of benchmarking the raw levels of each metric, we benchmark the gaps between those two groups. The wider the gap, the lower the ranking.

“You can’t manage what you don’t measure.”¹

First things first – setting the context in terms of population. In 2018, 13% of the US population identified as Black or African American. Looking at our competitive set, some regions exceed the national average, while others fall far below:

% Population Black or African American



¹Karp, R., & Sutherland-Brown, A. (2020). Data, People and Place. *Economic Development Journal*, 19(3), 5-11.

Gap: % in Poverty

Rank: 6th of 9 - tied
 level: 12.7%
 top 5 average: 9.4%

What it is:

The difference between the percentage of the Black or African American population and the percentage of the White population in each county that lives at or below the poverty line. In every single county chosen, that difference is positive.

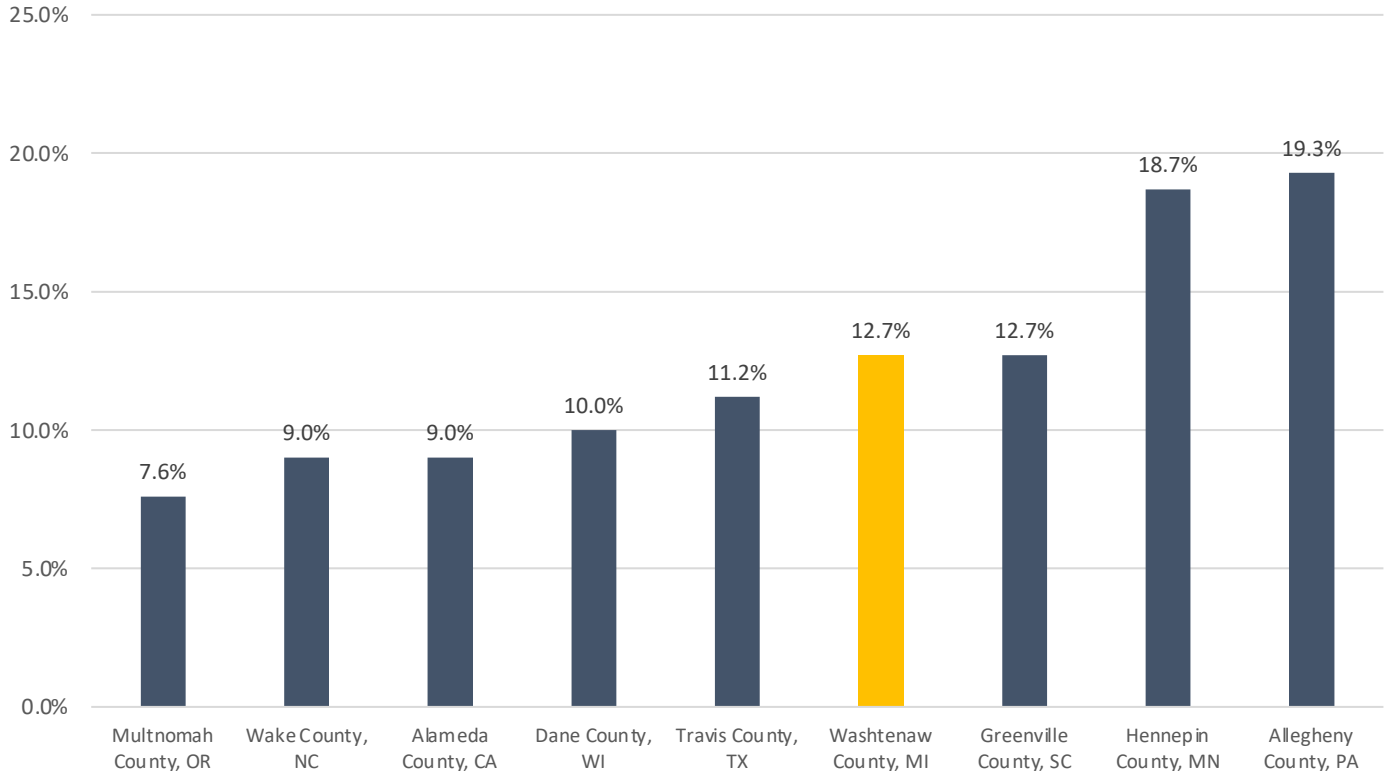
Why it matters:

In each region, a larger percentage of the Black or African American population experiences poverty than the White population. Any policy aimed at reducing poverty should consider the systemic drivers of this gap. Notably absent from this evaluation are Boulder, CO, and Bloomington, IN, whose Black populations are too small and there is no data present in the census at that level.

The percentage of African-American households Washtenaw County in poverty is 12.7% higher than White households.

In none of the competitive set is the result of the equation (Poverty Rate[Black] – Poverty Rate[White]) negative. The effects of poverty are clearly borne more by one group than another.

Gap in Poverty Level



Gap: Housing Affordability

Rank: 6th of 11

level: 3.3

top 5 average: 2.3

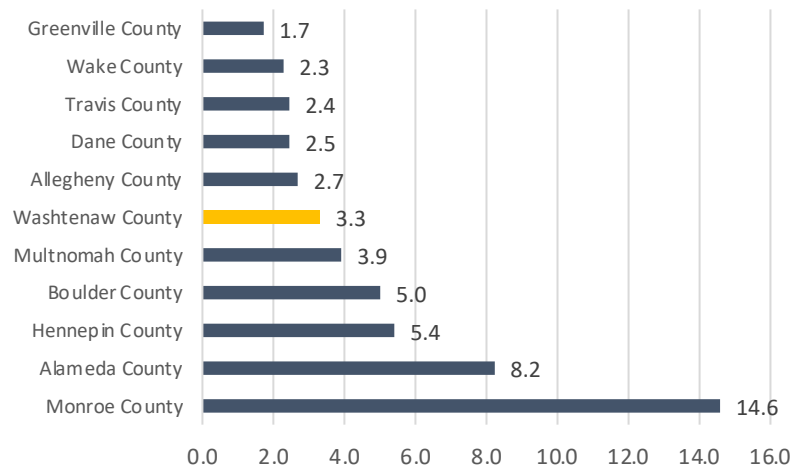
What it is:

The difference between the housing affordability ratio for the White population and the Black or African American population. This ratio measures affordability by dividing the median home price (which is the same for both groups) by the median income (which differs widely between groups).

Why it matters:

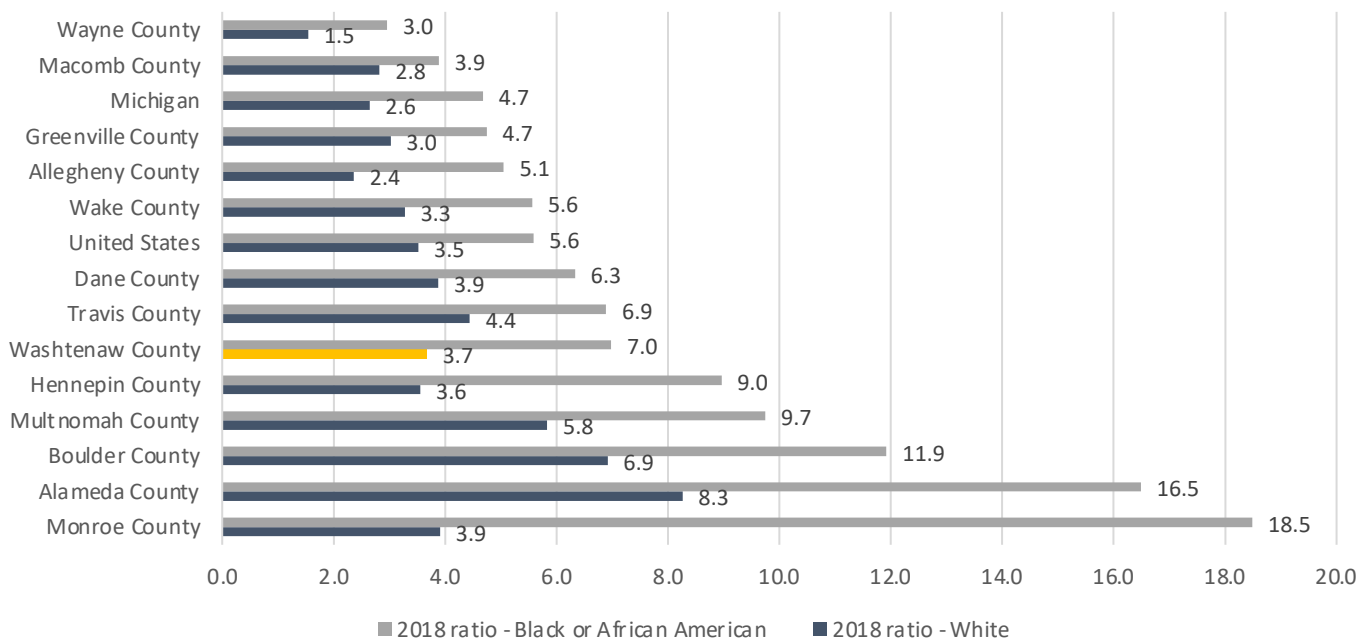
Buying a home is one of the steppingstones toward building wealth. Poverty rate and housing affordability highlight some of the major generators of the racial wealth gap. The differences highlighted here illustrate a high level of income inequality across the board.

Gap in Housing Affordability



In every county in the competitive set, income inequality makes housing less affordable for Black people, regardless of home price. In Washtenaw County, house prices are 3.7x the median income for the White population and 7x the median income for the Black and African American population.

Housing Affordability by Group



NB: this chart includes Wayne County, Macomb County, the state of Michigan, and the US for further context and clarity.

Gap: Unemployment

Rank: 6th of 9
 level: 2.9%
 top 5 average: 1.18%

What it is:

The national unemployment rate reflects the number of unemployed people as a percentage of the labor force. This metric reflects the difference between the White population unemployment rate and the Black or African American unemployment rate in each county.

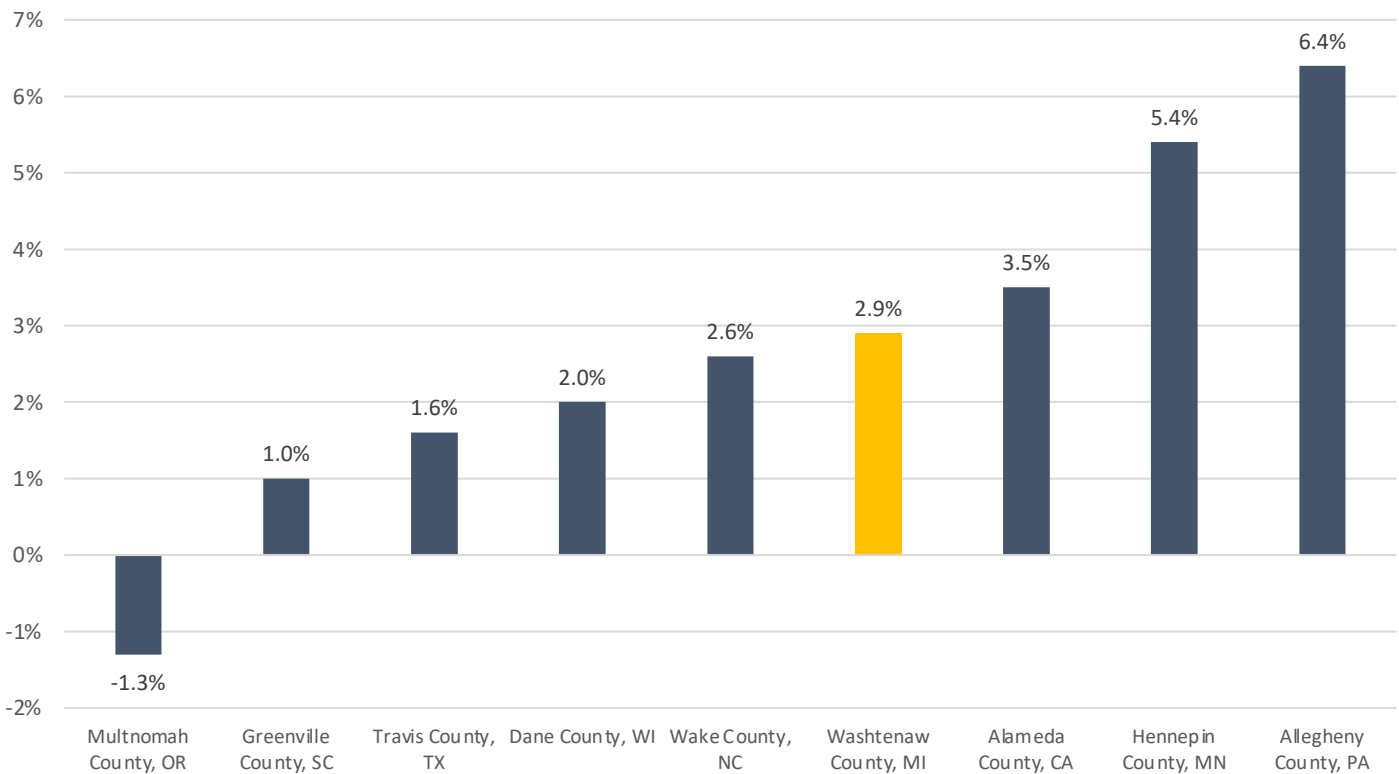
Why it matters:

Unemployment is often discussed in the aggregate, lumping everyone in a region together. Policy decisions are made from these aggregations, perhaps leaving some people behind. Again, this data is pre-pandemic, indicating economic recovery rather than recession. Notably absent from this evaluation are Boulder, CO, and Bloomington, IN, whose Black populations are too small and there is no data present in the census at that level.

Black and African American unemployment in Washtenaw County is 2.9% higher than White unemployment.

Even pre-pandemic, when all counties in the competitive set were enjoying positive job growth and a steady decline in unemployment, the Black and African American segments of the population experienced unemployment at a higher rate than the average for every region except Portland, OR.

Gap in Unemployment Level



Final Thoughts

None of these metrics operates in a vacuum. The metrics chosen for this study all influence one another.

Envision an idea which originates in the University of Michigan as a result of R&D funding and makes its way into the community by way of venture-funded startup. The fledgling company does well in its first few years, growing quickly and hiring a diverse group of people. Due to the complex nature of its product, new recruits are often brought in from other regions—and must grapple with a unique housing market. The company may encounter difficulties in hiring people from out of state and must raise awareness of the region and its attributes. At a certain point, local economic development will take notice of the company and its growth, marking its impact on the ecosystem. As the company continues to grow, it encounters scarcity of labor and decides to hire both locally and remotely. Underpinning the community's response to meeting the needs of such a growing company to stay and flourish here will be its efforts to reduce income disparities that hold back a portion of the region's population from fully participating in an expanding economy.

Pre-pandemic, Washtenaw County had finally begun to import more people from out of state than it was losing. Though housing prices were increasing, the county managed to remain competitive relative to the chosen group (and expensive within Michigan). The region was experiencing a persistent decline in unemployment, finally accompanied by a rise in labor force participation rate, and the University continued to invest heavily in research and development.

In the context of a pandemic recession, benchmarking based on older data might seem fruitless. On the contrary – if the goal is to make real progress in the recovery, it's important to know the baseline. Some of the issues brought to head in the current recession were present beforehand, some were not.

Appendices

Key Findings

Full dashboard 2020

Region (alpha order by city)	University R&D Expenditure Rank	Population Movement Rank	Share of Remote Jobs	Venture Capital Activity Rank	Housing Affordability Rank	% in Poverty and ALICE	Driving Industry Employment Rank	Unemployment Rate Rank	Labor Force Participation Rate Rank	Gap: % in Poverty	Gap: Housing Affordability	Gap: Unemployment
Ann Arbor, MI/Washtenaw County, MI	1 st	3 rd	3 rd	3 rd	4 th	4 th	9 th	6 th	10 th	6 th	6 th	6 th
Austin, TX/Travis County, TX	8 th	6 th	2 nd	5 th	8 th	9 th	5 th	4 th	1 st	5 th	3 rd	3 rd
Berkeley, CA/Alameda County, CA	7 th	2 nd	4 th	2 nd	11 th	6 th	7 th	7 th	7 th	3 rd	10 th	7 th
Bloomington, IN/Monroe County, IN	9 th	5 th	12 th	11 th	7 th	10 th	10 th	9 th	11 th	Not enough data	11 th	Not enough data
Boulder, CO/Boulder County, CO	11 th	4 th	1 st	1 st	10 th	7 th	3 rd	3 rd	6 th	Not enough data	8 th	Not enough data
Greenville, SC/Greenville County, SC	13 th	10 th	11 th	8 th	2 nd	1 st	2 nd	5 th	8 th	7 th	1 st	2 nd
Madison, WI/Dane County, WI	2 nd	8 th	5 th	6 th	6 th	2 nd	6 th	1 st	3 rd	4 th	4 th	4 th
Minneapolis, MN/Hennepin County, MN	5 th	9 th	7 th	7 th	5 th	5 th	1 st	2 nd	2 nd	8 th	9 th	8 th
Pittsburgh, PA/Allegheny County, PA	6 th , 12 th	11 th	9 th	4 th	1 st	8 th	4 th	11 th	9 th	9 th	5 th	9 th
Portland, OR/Multnomah County, OR	14 th	7 th	8 th	9 th	9 th	11 th	11 th	10 th	5 th	1 st	7 th	1 st
Raleigh, NC/Wake County, NC	3 rd , 4 th , 10 th	1 st	6 th	10 th	3 rd	3 rd	8 th	8 th	4 th	2 nd	2 nd	5 th

Methodology

how to read this report

In this report, we use a series of common measures to determine the strength of the Ann Arbor region in comparison to select competitor regions in the United States.

Each region and metric was chosen with input from community members, local CEOs, and a review of the existing benchmarking literature from local economic development agencies, think tanks, and academics. Depending on the metric, county data or city data may be used. Each metric is evaluated using the data available at the time of collection. Most often the data available is from no later than 2017. It is dependent upon the data source and whether the metric has been normalized for population.

The regions:

Ann Arbor, MI / Washtenaw County, MI

- The Ann Arbor region, home of the University of Michigan and Eastern Michigan University, recognized for expertise in research and development, automotive and mobility innovation, and a growing technology sector.

Berkeley CA / Alameda County, CA

- Home of UC Berkeley, nationally recognized as a center for innovation (producing a large portion of Silicon Valley founders) and has a high concentration of venture capital investment.

Pittsburgh, PA / Allegheny County, PA

- Home of Carnegie Mellon and the University of Pittsburgh, a rising eastern innovation hub, and well-known specifically for mobility research.

Boulder, CO / Boulder County, CO

- Home of CU Boulder, an established and nationally recognized startup ecosystem and venture capital landscape, and an historic R&D base originating from national laboratories.

Madison, WI / Dane County, WI

- Home of the University of Wisconsin, a state capital known for its college town atmosphere, proactive science park development, and frequent Ann Arbor comparison.

Greenville, SC / Greenville County, SC

- An up-and-coming cluster of automotive and aerospace R&D and mobility technology, not far from Clemson University.

Minneapolis, MN / Hennepin County, MN

- Home of the University of Minnesota, a Great Lakes neighbor with an innovation hub and active entrepreneurial ecosystem.

Bloomington, IN / Monroe County, IN

- Home of the University of Indiana, Bloomington, and a state competitor for incentives and manufacturing talent.

Portland, OR / Multnomah County, OR

- A vibrant city with an established entrepreneurial ecosystem, home to several high caliber educational institutions, and competes with Ann Arbor for lifestyle rankings.

Austin, TX / Travis County, TX

- A common anecdotal comparison, Austin is home to the University of Texas and also a dynamic and internationally recognized entrepreneurial hub of startups and venture capital activity, as well as the capital of Texas.

Raleigh, NC / Wake County, NC

- The Raleigh/Durham region in North Carolina is a nationally recognized innovation nucleus on the east coast that includes the seminal Research Triangle Park, with multiple research universities and competitive incentives.

Methodology continued

The metrics:

University R&D Expenditure

- Measured using the National Science Foundation rankings by total R&D expenditures.

Venture Capital Activity

- Measured using a location quotient analysis, which normalizes the number of venture capital deals by population. The quotient represents the level of venture capital activity as a multiplier of the national average. A region with a venture capital quotient of 1.0 has a level of activity for its population equivalent to the national average; a region with a quotient of 2.0 is twice as concentrated as the US average.

Population Movement

- Measured using the US Census Flowmapper. These are period estimates that measure where people lived when surveyed (current residence) and where they lived one year prior (residence one year ago). The data are collected continuously over a five-year period. The flow estimates resemble the annual number of movers between counties for a five-year period.

Share of Remote Jobs

- The percentage of the jobs in a metropolitan statistical area that can be performed at home, based on research from the [University of Chicago Booth School of Business](#). According to this research, 37% of US jobs can plausibly be performed at home (accounting for 46% of all wages).

Housing Affordability

- Measured using a ratio of median income to median home sale price. The higher the ratio, the less likely someone earning the median income can afford a house.

Percent Living in Poverty and under ALICE Threshold

- The percentage of the population in each county that lives at or below the poverty line or within the asset-limited-income-constrained-employed group (ALICE) outlined by [United Way](#). This group contains households that earn above the Federal Poverty Level, but not enough to afford a bare-bones household budget.

Driving Industry Employment

- SPARK defines driving industries as those represented by NAICS codes in exporting industries with economic multipliers. In other words, a job in a driving industry will support (multiply) jobs in other industries by selling goods and services outside our home region.

The Labor Market

- Measured using both the unemployment rate and the labor force participation rate.

Each page represents a single metric or a family of metrics.

Each page also contains a quick reference box spotlighting the Ann Arbor region's performance:

The Ann Arbor region's rank among the chosen competitor regions, with #1 being top performance and #15 being worst performance in the category. Some metrics do not include data for all regions, so the lowest rank may change accordingly.

Rank: 9th
of 11
level: 17.1%
trend: ↔
top 5 average: 21.8%

The Ann Arbor region's level of performance for the most recent year.

One-year trend for the Ann Arbor region:

 Positive  Negative  No Change

The average performance of the top five regions for this metric.

Sources

Raw Population

Source: US Census data.census.gov, most recent data is 2018

Notes:

Technically, Austin TX has population in 3 counties in Texas, but the bulk of its population is located in Travis County.

University R&D Expenditure

Source: [National Science Foundation](https://www.nsf.gov), most recent data is 2017

Venture Capital Activity

Sources: [Brookings](https://www.brookings.edu), [Pitchbook](https://pitchbook.com), [US Census](https://data.census.gov) (for population), author's calculations

Notes:

Location quotient of venture capital deals calculated using the following equation:

$$LQ = (e_i / e) / (E_i / E)$$

Where e_i = # of local deals
 e = local population
 E_i = # of national deals
 E = national population

Population Movement

Source: US Census [Flowsmapper](https://www.census.gov/flowmapper), most recent data 2013-2017

Notes:

Net migration is the inbound migration to the reference county from the second county minus the outbound migration from the reference county to the second county. If net migration is negative, then the reference county is losing people to the second county. If net migration is positive, then the reference county is gaining people from the second county.

Housing Affordability

Sources: [Zillow](https://www.zillow.com), US Census data.census.gov, most recent data for median income is 2018

Share of Remote Jobs

Sources: data comes directly from the University of Chicago Booth School of Business, Becker Friedman Institute for Economics [white paper by Jonathan Dingel and Brent Neiman](https://www.bfi.uchicago.edu/white-paper-by-jonathan-dingel-and-brent-neiman)

Poverty Level and ALICE

Sources: US Census data.census.gov, United for ALICE [National Overview](https://www.unitedforalice.org/national-overview) statistics, most recent ALICE data is 2017

Driving Industry Employment

Sources: University of Michigan [RSQE](https://www.rsoe.org), US Census data.census.gov, most recent data is 2018

NAICS codes used for Driving Industries:

- 323 Printing and Related Support Activities
- 325 Chemical Manufacturing
- 326 Plastics and Rubber Products Manufacturing
- 332 Fabricated Metal Product Manufacturing
- 333 Machinery Manufacturing
- 334 Computer and Electronic Product Manufacturing
- 336 Transportation Equipment Manufacturing
- 339 Miscellaneous Manufacturing
- 484 Truck Transportation
- 511 Publishing Industries (except Internet)
- 517 Telecommunications
- 518 Data Processing, Hosting, and Related Services
- 51o Other Information Services
- 54133 Engineering Services
- 54138 Testing Laboratories
- 5415 Computer Systems Design and Related Services
- 5416 Consulting
- 54171 R&D in Biotech, Physical, Engineering, and Life Sciences
- 55 Management of Companies and Enterprises

The Labor Market

Sources: US Census data.census.gov, and [Bureau of Labor Statistics](https://www.bls.gov), most recent data 2018

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