RustBelt ANALYTICA

Migration is Economic Development

A report commissioned by Global Cleveland

Executive Summary

The sponsor of this analysis, Global Cleveland, is an organization, but global Cleveland is also a reality. Elaborating, when it comes to the task of economic and community development, think of a city as a feather in the wind, or a stick in a rapid of water. Global forces push and pull at places, affecting a city's relevance, or it's standard of living. Yet some indicators are better measures of where a city fits into the global order of things than others. This analysis shows that standard measures of "success", like population size, are relics of a bygone era where size mattered. In today's idea economy, a better measure is gauging the quality of life in city, not the quantity of lives. This analysis looks at GDP per capita for the nation's large metros, defined as "the amount of output or income per person in an economy…that's indicative of average productivity or average living standards.[i]"

The GDP per capita in the Cleveland metro is currently $ 57,700 and ranks 78th out of 374 metros. This is up from an inflation-adjusted $51,320 in 2010. To the extent Cleveland can prepare for progress entails examining what explains progress. The analysis looked at what features are driving GDP per capita growth across America's metros from 2010 to 2019. To do this, Rust Belt Analytica deployed a machine learning algorithm called permutation feature importance. This is our "Progress Model". Out of hundreds of variables analyzed, two clusters of features dominated the model results: educational attainment and migration. That is, the rate of a metro's GDP per capita growth could be predictively explained by the educational attainment of a region, and the migration rates of a region. Migration features included the in-migration of college- and non-college-educated foreign born, and the in-migration of college- and non-college-educated native born, particularly if the domestic migrants were arriving from the Northeastern or Western parts of the U.S. This latter migration pattern of coastal-to-inland migration has been dubbed "The Rise of the Rest", characterized as the convergence of American tech labor from the costly coast into the American heartland.

It is a pattern of migration that highly-educated immigrants have in fact been doing for some time. The analysis found that the percent of Cleveland's immigrants with an advanced degree was 21.4%, which ranked 8th out the nation's largest 40 metros. Interestingly, 6 out of the top 10 most highly-educated cities for immigrants were in the geographic area of the Rust Belt, led by Pittsburgh.

The analysis finds that migration is crucial to the evolution of cities. Migration does not only allow for the accumulation of human capital, but for global connectivity as well. Connectivity is part and parcel with the act of migration, allowing for the deepening of a city's "thought bank". This depth of ideation is crucial to the process of innovation which, in turn, is crucial economic evolution. Put another way, migration is economic development. It is today. It was yesterday. And it will be tomorrow. The issue for Cleveland is whether the region can leverage its global assets to incur its global relevance, and ultimately the increased well-being of its people.

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Introduction: Globalization and the City

Life is interconnected. What you do—and what is done to you—is but part of a bigger story that has been called "globalization", a term used in its broadest sense to describe the fact we exist in a social whole. This social whole is most directly experienced in our house and in our neighborhood. But it does not stop there. Our neighborhood flows into our city, our city into our state, our state into our nation, and our nation into the world.

Yet while this social whole is experienced directly as a matter of one's daily routine—e.g., we buy what's global, are entertained by what's global, are cared for and taught by what's global—globalization is also experienced as a collective, or a city. In fact, cities are both "engines" and "vessels" of globalization. Simply, cities impact globalization, and they are impacted by globalization. Whether this impact is good or bad partly rests on the extent a city is on the right or wrong side of globalization. Is a city, like Cleveland, globally relevant?

Historically, the answer to that question was "yes". Cleveland and other Industrial Midwestern cities were epicenters of globalization during the Second Industrial Revolution[ii]: a transformational period in terms of innovation, production, and trade that happened in the late 19th century into the early 20th century. Due to the natural resource assets, Cleveland et al attracted entrepreneurs, investment, and migrants. It was, then, a vessel of globalization. Those inflows, in turn, would fuel Cleveland's prowess as a place that made the things that would modernize the world. It was, then, an engine of globalization. Taken together, Cleveland was globally relevant.

Cleveland 's global relevance was reflected in its demographics. In 1940, the Decennial Census showed that the county-seat of Cleveland—Cuyahoga County—had the 10th largest population nationally. Chicago's Cook County was 1st, Detroit's Wayne County was 4th, and Pittsburgh's Allegheny was 7th (See Table 1). Cuyahoga ranked 9th nationally in the number of people who were foreign born, just behind Queens County, NY. Cleveland's peer counties of Cook, Wayne, and Allegheny were also immigrant magnets, ranking 2nd, 5th, and 12th respectively (See Table 2). To put that in perspective, San Francisco County ranked behind each of those Rust Belt metros.

Table 1: Top 25 Counties by Total Population, 1940 Decennial Census

County	Total Population	Rank
Cook County, Illinois	4,063,342	1
Los Angeles County, California	2,785,643	2
Kings County, New York	2,698,285	3
Wayne County, Michigan	2,015,623	4
Philadelphia County, Pennsylvania	1,931,334	5
New York County, New York	1,889,924	6
Allegheny County, Pennsylvania	1,411,539	7
Bronx County, New York	1,394,711	8
Queens County, New York	1,297,634	9
Cuyahoga County, Ohio	**1,217,250**	**10**
Middlesex County, Massachusetts	971,390	11
Suffolk County, Massachusetts	863,248	12
Baltimore City County, Maryland	859,100	13
Essex County, New Jersey	837,340	14
St Louis City County, Missouri	816,048	15
Erie County, New York	798,377	16
Milwaukee County, Wisconsin	766,885	17
District of Columbia	663,091	18
Hudson County, New Jersey	652,040	19
San Francisco County, California	634,536	20
Hamilton County, Ohio	621,987	21
Westchester County, New York	573,558	22
Hennepin County, Minnesota	568,899	23
Providence County, Rhode Island	550,298	24
Harris County, Texas	528,961	25

Table 2: Top 25 Counties by Foreign-Born Population, 1940 Decennial Census

County	Foreign Born	Rank
Kings County, New York	767,638	1
Cook County, Illinois	767,305	2
New York County, New York	540,197	3
Bronx County, New York	460,476	4
Wayne County, Michigan	392,330	5
Los Angeles County, California	339,716	6
Philadelphia County, Pennsylvania	290,325	7
Queens County, New York	276,588	8
Cuyahoga County, Ohio	**222,978**	**9**
Suffolk County, Massachusetts	203,583	10
Middlesex County, Massachusetts	187,239	11
Allegheny County, Pennsylvania	179,352	12
Essex County, New Jersey	150,355	13
Hudson County, New Jersey	137,843	14
San Francisco County, California	130,271	15
Erie County, New York	118,942	16
Providence County, Rhode Island	112,793	17
Milwaukee County, Wisconsin	104,514	18
Westchester County, New York	104,436	19
Essex County, Massachusetts	98,655	20
Worcester County, Massachusetts	95,801	21
New Haven County, Connecticut	93,069	22
Hartford County, Connecticut	90,196	23
Fairfield County, Connecticut	83,566	24
Bristol County, Massachusetts	78,601	25

By 2019, however, Cleveland and peer cities have dropped down the ranks. While Cuyahoga County retained a fairly robust ranking of 33rd nationally in total population, its total foreign-born population slipped to 97th, as it did with its peers (Allegheny ranks 116th and Wayne ranks 59th). The exception was Chicago's Cook County, which remained in the top 5 nationally. It is no coincidence, then, that only one city in the Midwest, Chicago, is consistently ranked as a top "global city"[iii].

What's going on here? Did Cleveland and other Rust Belt cities become "bad" at attracting global migrants?

Not exactly. Global flows are constantly in flux. "Globalization is by definition what characterizes the world today insofar as it is different from yesterday," explains the University of Pennsylvania's Center for Globalization Studies in an Urban World[iv]. And what's changed from yesterday to today is largely an issue of how the global economy has evolved. That evolution can be succinctly described as a progression from an agricultural-, to industrial- to knowledge-intensive economy. Simply, the making of things has taken a back seat to the making of ideas, as that is where the value add is. After all, ideas fuel innovation, and innovation—through increasingly disruptive technologies—dictates *what* products are made, *how* they are made, and *where* they are delivered. These market forces, then, recontextualize our daily life, influencing what people buy, how people work, and where people live. One only needs to look at Zoom in the light of the global pandemic as exhibit A, B, and C, here, particularly as it relates to telecommuting and the subsequent downstream effect on commercial real estate, firm location, the housing market, etc. That said, those cities who are equipped for the new economy are today's engines of globalization. They are, in turn, the vessels of said globalization via the same influx of entrepreneurs, investment, and migrants that made Cleveland a "king" of the Second Industrial Revolution, but with migratory characteristics geared toward today's Fourth Industrial Revolution, described by the World Economic Forum's Klaus Schwab as the "fusing of the physical, digital and biological worlds, impacting all disciplines, economies and industries[v]." Think robotics, AI, and genomics.

To the extent Cleveland and other cities have been left out or left in this economic evolution will be discussed briefly below, but only in so far as analyzing whether immigrants are a driving force in keeping a city's economy up to date. Answering this question is a two-part process. Part 1 involves describing exactly what we mean when we say "progress"? What's a valid indicator of change? Part 2 involves creating a machine learning model that unpacks the predictive power immigrants have on the economic evolution of cities. Does migration explain progress?

Table 3 Top 25 Rank (including Cuyahoga) by Total Population, 5-Year ACS, 2019

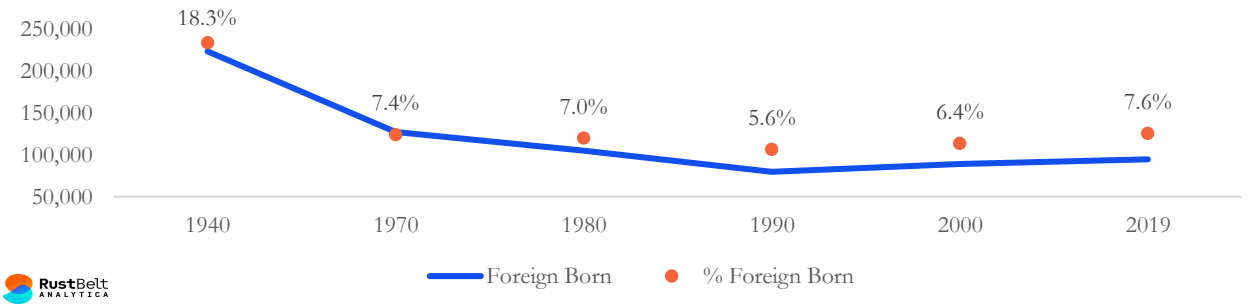
County	Total Population	Rank
Los Angeles County, California	10,081,570	1
Cook County, Illinois	5,198,275	2
Harris County, Texas	4,646,630	3
Maricopa County, Arizona	4,328,810	4
San Diego County, California	3,316,073	5
Orange County, California	3,168,044	6
Miami-Dade County, Florida	2,699,428	7
Dallas County, Texas	2,606,868	8
Kings County, New York	2,589,974	9
Riverside County, California	2,411,439	10
Queens County, New York	2,287,388	11
King County, Washington	2,195,502	12
Clark County, Nevada	2,182,004	13
San Bernardino County, California	2,149,031	14
Tarrant County, Texas	2,049,770	15
Bexar County, Texas	1,952,843	16
Santa Clara County, California	1,927,470	17
Broward County, Florida	1,926,205	18
Wayne County, Michigan	1,757,299	19
Alameda County, California	1,656,754	20
New York County, New York	1,631,993	21
Middlesex County, Massachusetts	1,600,842	22
Philadelphia County, Pennsylvania	1,579,075	23
Sacramento County, California	1,524,553	24
Suffolk County, New York	1,483,832	25
Cuyahoga County, Ohio	**1,247,451**	**33**

Table 4: Top 25 Rank (including Cuyahoga) by Total Foreign-Born Population, 5-Year ACS, 2019

County	Foreign Born	Rank
Los Angeles County, California	3,430,535	1
Miami-Dade County, Florida	1,450,123	2
Harris County, Texas	1,214,729	3
Cook County, Illinois	1,098,828	4
Queens County, New York	1,080,523	5
Orange County, California	954,106	6
Kings County, New York	934,371	7
San Diego County, California	774,859	8
Santa Clara County, California	755,006	9
Broward County, Florida	656,837	10
Dallas County, Texas	643,857	11
Maricopa County, Arizona	641,929	12
Alameda County, California	538,898	13
Riverside County, California	519,870	14
King County, Washington	507,576	15
Bronx County, New York	506,431	16
Clark County, Nevada	484,686	17
New York County, New York	468,820	18
San Bernardino County, California	451,036	19
Palm Beach County, Florida	371,893	20
Fairfax County, Virginia	358,824	21
Middlesex County, Massachusetts	342,181	22
Montgomery County, Maryland	337,188	23
Tarrant County, Texas	329,370	24
Sacramento County, California	319,362	25
Cuyahoga County, Ohio	**94,225**	**97**

Before proceeding, it is enough now to say that there is some indication that Cleveland is reestablishing itself as a foothold of globalization. Figure 1 shows that the total foreign-born population in Cuyahoga County has not only stabilized, but it has begun to increase—going from nearly 79,545 in 1990 to 94,225 in 2019. The percent of Cuyahoga County residents that are immigrants has also pivoted. Today, 7.6% of residents are foreign born, up from 5.6% in 1990—the highest it's been since 1970.

Figure 1: Total and Percent Foreign Born in Cuyahoga County, Decennial Census and 5-Year ACS, 2019



Measuring Progress: What Matters and Why

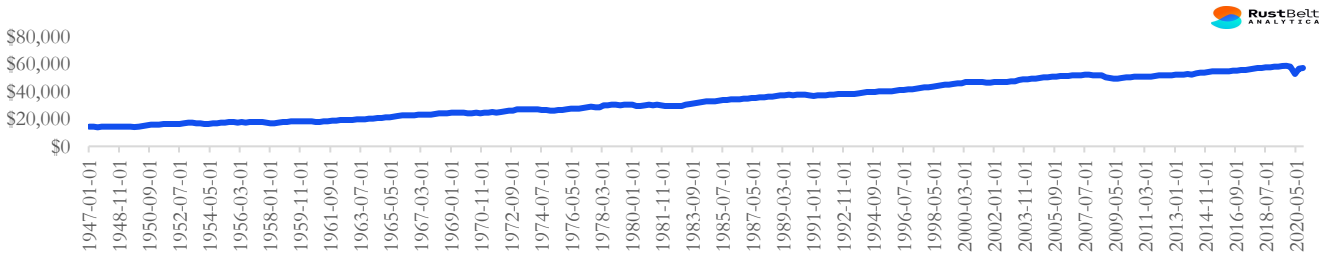
- *Quality of Life, Not the Quantity of Lives*

During the Second Industrial Revolution, the total size of a city's population mattered. Then, the main source of economic growth was manpower, and it was disproportionately from immigrants[vi] Robots didn't exist, nor did computers. This explains why cities in the Industrial Midwest were population growth epicenters. The factories needed filled, and thus the neighborhoods were filled. Today's economy is different. We do much more with much less. Robots exist, so does software, the "cloud", and artificial intelligence, all of which enhance human labor—be it manual or mental.

Nonetheless, when it comes to city building population growth has stubbornly remained the default metric of success. If a place is growing it's succeeding. If a place is shrinking it's not. This belief is fueled by a bigger-is-better bias that [vii] leads people to associate higher numbers with higher quality even in situations where it should not. After all, growth does not equal development. A place can add a quantity of people, yet still lose out on quality of life. And vice versa. It's important, then, to disaggregate misleading measures of success, such as population growth. "A rising population can create a false illusion of prosperity, "explains University of Toronto's Richard Florida. "The south and the west may be winning the demographic race, but America's economic winners are the places that have improved their productivity—something which doesn't turn on the sheer numbers of workers they have on tap, but rather on how skilled and innovative they are.[viii]"

A better measure of a city's progress is real Gross Domestic Product (GDP) per capita, calculated as total economic output divided by total population. It's the most commonly accepted measure of a place's productivity and standard of living[ix]. The figure below charts the inflation-adjusted per capita GDP for the U.S. from 1947 to 2020. It increases from $14,203 during the Second Industrial Revolution to a pre-pandemic peak of $58,490 during the Fourth Industrial Revolution. In other words, as the nation's economy evolved and modern technologies came online, the U.S. got more productive and prosperous.

Figure 2: Cleveland Metro GDP Per Capita, BEA (in 2012$)



How does Cleveland measure up? Figure 3 charts the Cleveland metro's GDP per capita from 2001 to 2019. It went from an inflation-adjusted $49,4000 to $57,700, with the latter figure ranking the region 78th out of 384 metros nationally (See Appendix A). Now, it's no secret the region is a population slowcoach. This is evidenced by Table 5 which shows the Cleveland metro has the slowest population growth rate from 2001 to 2019 out of the largest 40 metros, one spot below Pittsburgh. Does that matter?

A simple trend analysis detailing GDP per capita rates between the fastest- and slowest-growing metros helps shed light on the issue. Between 2001 and 2019, the 10 fastest-growing big-city metros were almost exclusively in the Sun Belt, led by Austin, Las Vegas, and Orlando (See Table 5). Conversely, the top 10 slowest-growing big-city metros were in the Rust Belt, but also included the gateway metros of New York and Los Angeles. In 2001, the inflation-adjusted per capita GDP was $56, 650 for the slowest-growing, while it was $48,200 for the fastest-growing. By 2019 that gap only increased, swelling to $69,750 for the slowest-growing compared to $56,060 for the fastest-growing.

Figure 3 Cleveland Metro GDP Per Capita, BEA (in 2012$) (in thousands)

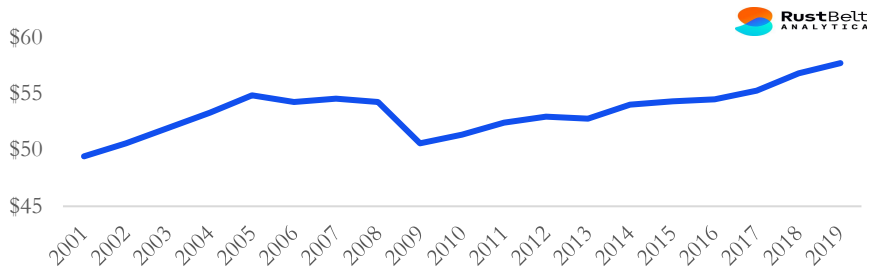
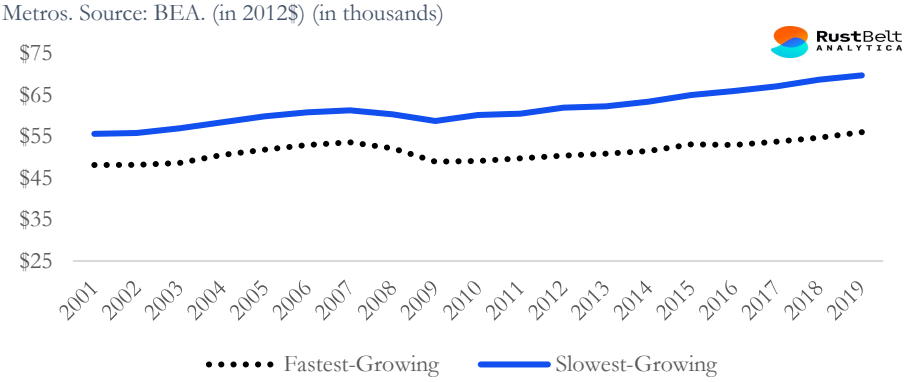


Figure 4: GDP Per Capita for the Slowest- and Fastest-Growing Big City Metros. Source: BEA. (in 2012$) (in thousands)



The same point can be made when comparing the big-city metros of Florida, or Miami, Orlando, Tampa, and Jacksonville, with the big-city metros of Ohio, or Cleveland, Columbus, and Cincinnati (See Figure 5). By 2019, the GDP per capita for Ohio's "Big 3" ($57,710) was over 7k more than Florida's "Big 4" ($50,240). This is larger than the gap in 2001.

Why is this happening? While productivity and prosperity can in fact increase in a growing population (See Seattle and Denver), it does so only in so far as those arriving are participating in the labor market. This is often not the case in Sun Belt due to the arrival of retirees who—while adding to the population rolls—aren't adding to the labor market. Also, the Sun Belt has economies centered around services industries which are not nearly as productive in terms of economic output as knowledge-based or manufacturing jobs[x].

Figure 5: GDP Per Capita for the Big-city metros in Ohio and Florida, BEA (in 2012$) (in thousands)

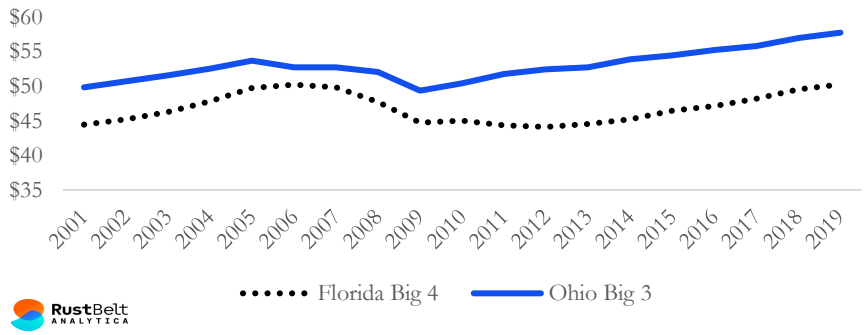


Table 5: Percent Change in Population for Top 40 Metros 2001-2019, ACS 1-Year	
Austin, TX	68.6%
Las Vegas, NV	**55.2%**
Orlando, FL	**52.5%**
Phoenix, AZ	**47.1%**
Charlotte, NC	**46.9%**
Houston, TX	**46.7%**
San Antonio, TX	**45.9%**
Dallas, TX	**42.2%**
Nashville, TN	**39.5%**
Riverside, CA	**37.7%**
Atlanta, GA	36.8%
Jacksonville, FL	35.8%
Denver, CO	33.7%
Tampa, FL	30.7%
Seattle, WA	28.7%
Sacramento, CA	26.7%
Portland, OR	26.4%
Washington, DC	26.0%
Columbus, OH	24.3%
Indianapolis, IN	23.0%
Miami, FL	20.7%
Minneapolis, MN	18.5%
Kansas City, MO	17.4%
San Diego, CA	16.3%
San Jose, CA	14.2%
San Francisco, CA	13.3%
Boston, MA	9.9%
Cincinnati, OH	9.2%
Virginia Beach, VA	8.8%
Baltimore, MD	8.7%
Philadelphia, PA	**6.8%**
Los Angeles, CA	**5.6%**
Milwaukee, WI	**4.5%**
St. Louis, MO	**4.2%**
New York, NY	**4.0%**
Chicago, IL	**3.2%**
Providence, RI	**1.8%**
Detroit, MI	**-3.2%**
Pittsburgh, PA	**-4.1%**
Cleveland, OH	**-4.4%**

The takeaway? When city strategizing, measure progress correctly. Only then can you take the next step: learning *how* that progress happened so that it can be acted upon. This brings us to the issue of talent, particularly that which is foreign born.

- *Highly-Educated Immigrants: A Leading Indicator of Change?*

The act of migration is in itself economic development. During the Second Industrial Revolution this meant a person leaving a less industrialized place where there was a surplus of labor and moving to a more industrialized place where there was a shortage of labor. In fact, a study called "Immigration and the Industrial Revolution From 1880 to 1920" found that immigrants and their children made up 50% of all manufacturing workers in the U.S. in 1920[xi]. The study's authors concluded immigration was a "necessary" condition of America's evolution from an agricultural- to industrial-based economy, and without immigrants it was "unlikely the American industrial revolution would have been achieved at the same pace, scale, and profitability that it did."

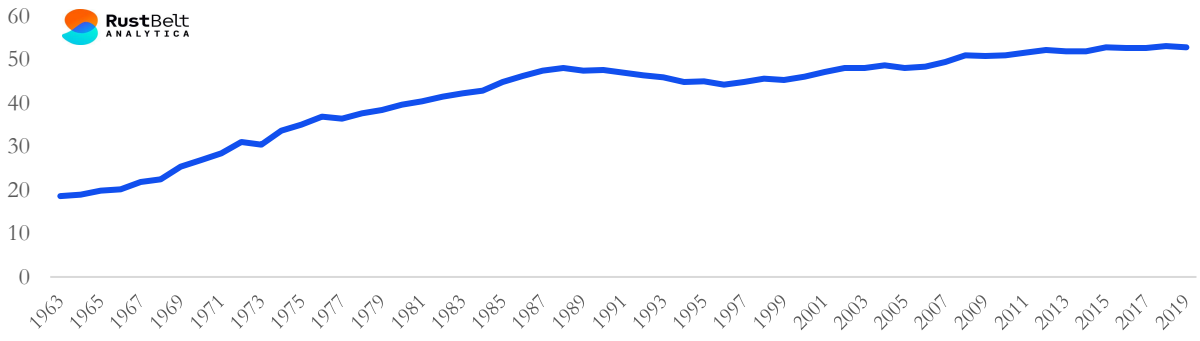
Migration in today's knowledge economy is just as crucial. Notes the authors of "Global Talent Flows" in the *Harvard Business Review*[xii]:

Highly skilled workers play a central and starring role in today's knowledge economy. Talented individuals make exceptional direct contributions—including breakthrough innovations and scientific discoveries— and coordinate and guide the actions of many others, propelling the knowledge frontier and spurring economic growth. In this process, the mobility of skilled workers becomes critical to enhancing productivity.

Productivity, or the ability to do more with less, is a function of two factors: the skill of an individual worker via education or training, and the technologies available to firms that then enhance said skilled workers' ability to do work. A city's economic evolution, in turn, rests on its ability to technologically innovate for firm competitiveness, *as well* as its ability to supply skilled workers to meet local labor demand. Both factors are influenced by migration. Researchers and entrepreneurs come to a city like Cleveland to keep the region competitive from a product and production standpoint. Skilled workers come to keep the region competitive from a labor market standpoint.

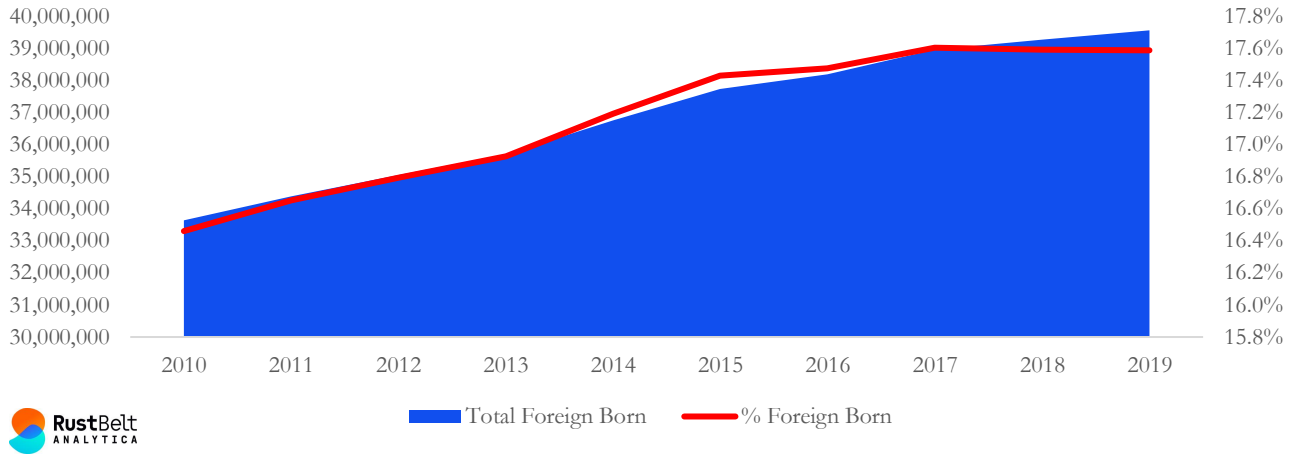
Yet not all migration is equal. When it comes to breakthrough innovations the foreign born are disproportionately impactful. Figure 6 shows the share of U.S. patents that originated from out of the country increased from 18.6% of all utility patents in 1963 to 52.8% in 2019. It's an astounding stat.

Figure 6: Utility Patent Applications, Foreign Origin Percent Share, USPO



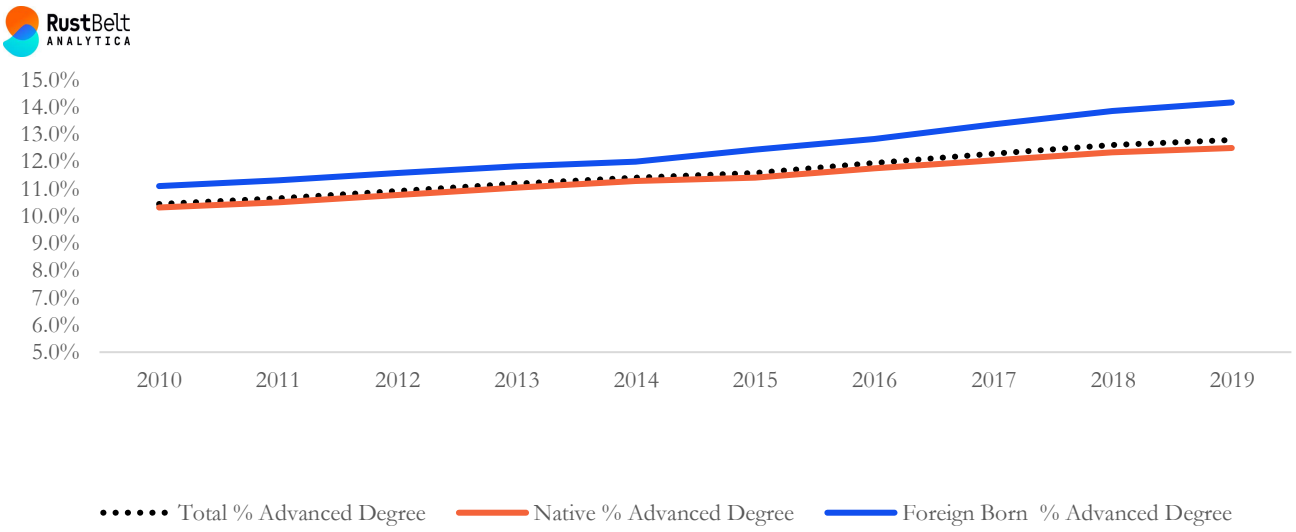
There's also the degree to which immigrants are highly educated, or have advanced degrees. Figure 7 shows that the total number of immigrants in the U.S. has increased from 33.6 million in 2010 to 39.5 million in 2019. The percent of people in the U.S. that are immigrants has increased as well, going from 16.5% to 17.6%. Though it has barely budged since 2015.

Figure 7. Total and Percent Foreign Born in the United States, ACS 1-Year.



Nonetheless, the concentration of foreign-born residents in the U.S. with an advanced degree has continued to rise, outpacing that of their native-born counterparts (See Figure 8). In 2010, 10.3% of native-born U.S. residents had an advanced degree, slightly lower than that of U.S. immigrants (11.1%). By 2019 that gap has widened, with 12.5% and 14.2% of native- and foreign-born residents having an advanced degree, respectively.

Figure 8: Percent of Native and Foreign Born in the United States with an Advanced Degree, ACS 1-Year.



Where do highly-educated immigrants reside in the U.S.? Figure 9 shows where the densest concentrations of immigrants with advanced degrees are clustering in the the largest 40 metros. Pittsburgh tops the list, with 34% of its immigrants having an advanced degree. This is a largely a reflection of the the region's burgeoning computer science scene that's rivaling Boston as the Northeast's top cluster of technology talent, as well as it "eds and meds" economy that disproportionately relies on immigrants to teach, research, and provide care. Unsurprisingly, San Jose, CA is second (28.4%). But then things get interesting. St. Louis is 3rd (26.6%), Cincinatti is 4th (24.3%), Baltimore is 5th (24.1%), Cleveland is 8th (21.4%), Columbus is 9th (20.7%), and Detroit is 10th (20.6%). So, nearly three-quarters of the top ten cities are in the Rust Belt. Conversely, the lowest concentrations of highly-educated immigrants are in the Sun Belt, led by Las Vegas, San Antonio, and Riverside, CA.

The influx of highly-educated immigrants into the Cleveland metro has held steady over the last several years (See Figure 10). The total number of highly-educated immigrants went from 21.3k to 23.3k. Cleveland's rate of immigrants with advanced degrees has also stayed steady, hovering in the 21% range over the last five years.

Figure 9: Concentration of Foreign-Born Population with Advanced Degree in Top 40 Metros. ACS-1Year. 2019.

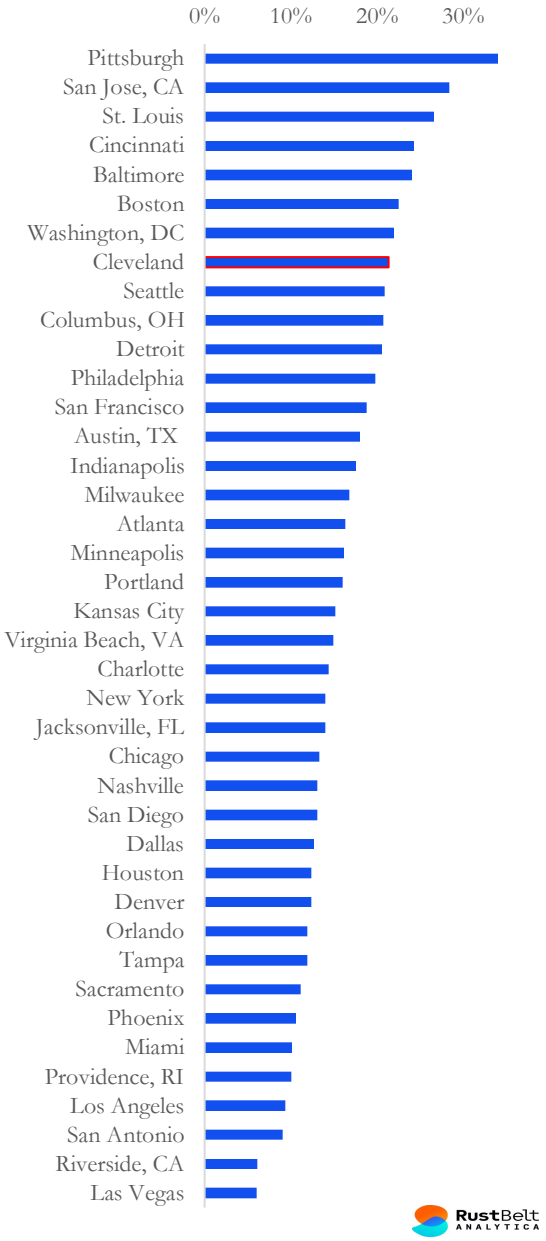
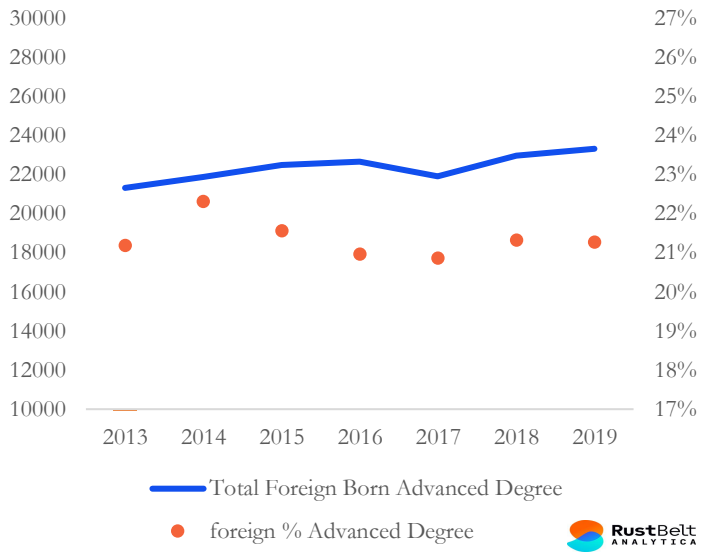


Figure 10: Total and Concentration of Immigrants in Cleveland Metro with Advanced Degree, ACS 1-Year

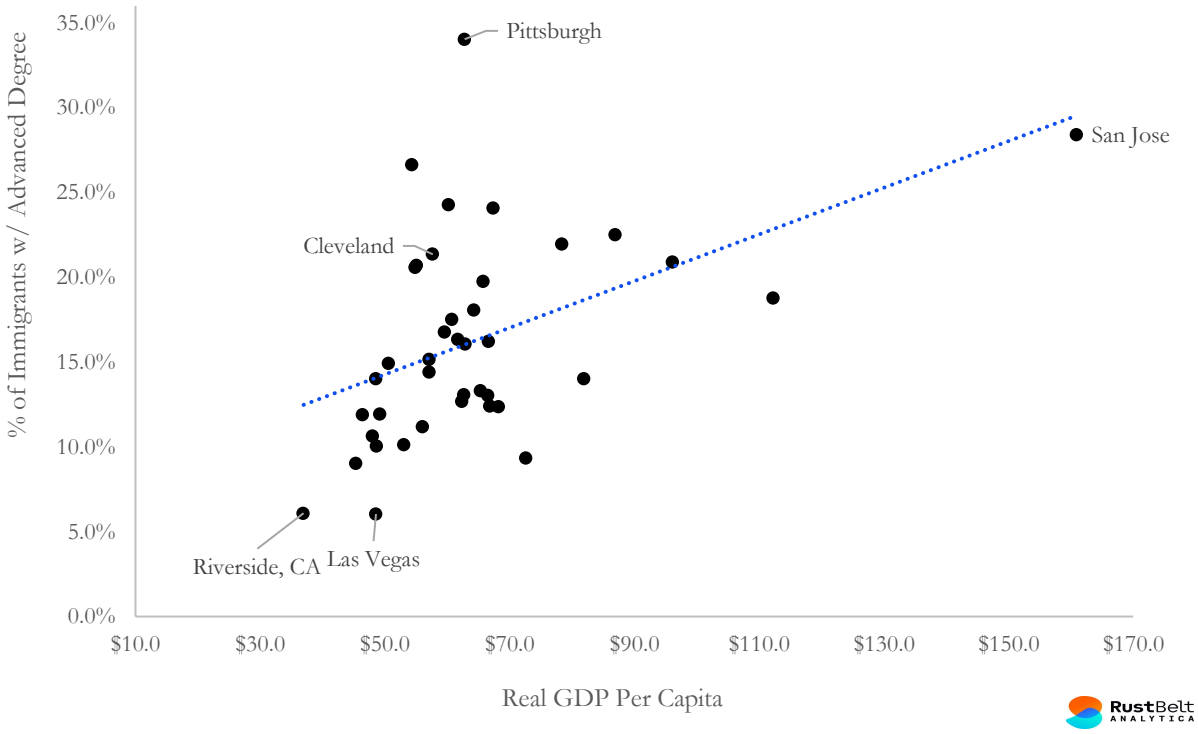


So far, we have looked at two indicators of a city's progress: (1) GDP per capita and (2) the concentration of a place's immigrants with an advanced degree. While the latter figure may seem specific, it has long been noted that highly-educated immigrants are important factors to economic development. The process by which this happens is via innovation Highly-educated immigrants enhance productivity and competitiveness at both the industry and firm level. An example, here, is artificial intelligence (AI) and how it is increasingly being deployed in manufacturing, finance, healthcare, retail, etc. Highly-educated immigrants founded over 33% of Silicon Valley's billion-dollar companies[xiii]. Immigrant talent also provides a pipeline for hi-tech labor demand. A recent study found that highly-educated foreign-born workers accounted for 55% of job growth in AI-related occupations since 2000[xiv]. Without these immigrants, cities couldn't technologically advance. "The results suggest that access to highly-skilled workers constrains AI-related job growth and that immigration of the college-educated helps relax this constraint".

Now, a question that begs asking is whether these measures are related? Do city's with higher GDP per capita's also have higher concentrations of immigrants with an advanced degree? Predictably, yes. Figure 11 shows there is a strong positive correlation between the two measures, with San Jose, CA an outlier in the upper-right quadrant (more productive, more educated) and the Sun Belt metros of Las Vegas and Riverside, CA outliers in the lower-left quadrant (less productive, less educated). Cleveland is in the middle of the pack.

That said, while Cleveland ranks 8th out of top 40 metros in concentration of immigrants with an advanced degree, it ranks 24th in Real GDP per capita, indicating other variables—outside of highly-educated immigrants—are at play. What are those variables? When added in, to what extent do factors of immigration matter when it comes to explaining why a given metro's GDP per capita is high or low? Insights to the issues are bellow. They are crucial from a policy standpoint. Not only for Global Cleveland, but for the broader economic development landscape locally.

Figure 11: Scatterplot, GDP Per Capita vs. Percent of Immigrants with Advanced Degree for Top 40 Metros, BEA 2019, ACS 1-Year 2019



How Progress Happens

- *The Progress Model*

The analysis has so far involved a descriptive analysis, which is simply the charting of trends across time. While that can tell us *what* is occurring, it does not tell us *how* it is occurring. The following analysis, or Permutation Feature Importance, will. The name of this algorithm is self-explanatory: We will be finding which features, or variables, are most important, or have the highest predictive power when it comes to explaining how GDP per capita develops across major metropolitan areas. We call this model the "Progress Model".

Perhaps the most fundamental question one can ask of a model is what features have the biggest impact on predictions. This is called "feature importance"[xv] and it is based on the idea that more important features have more impact. How can we tell how much impact a feature has on a prediction? To answer, we can look at the problem from a different perspective. If a feature is important, then if it's removed from a model the accuracy of that model would decrease. So, the higher the loss function that occurs when a given variable is removed, the more important that variable is to the fit, or accuracy, of the model. Interpreting this model is pretty straightforward. Features with a high calculated value are the most important. This value shows how much a model's performance decreased when a given variable was removed.

The number of variables included in our Progress Model were substantial, measuring well into the hundreds. This was done because if we want to know what impact migration has on a metro's productivity and standard of living, including only migration and immigration variables won't do. The error embedded in the model would be too high, as we know that outcomes like GDP per capita are multi-factored, or influenced by various strands of impacts. Through past academic work[xvi], Rust Belt Analytica is knowledgeable about the factors that influence a city's economic restructuring, or its evolution into a knowledge- and/or tech-based economy as measured by GDP per capita. Simply, the model wasn't constructed blindly, but with subject matter expertise.

What variables went into the model? What was the time horizon the model? What geographies were analyzed? And what were the results?

The geographies modeled included all of the 380 plus metropolitan statistical areas (MSA) in the United States as defined by the Congressional Budget Office[xvii]. The timeline studied was from 2010 to 2019. The model was run annually for each of those years and then reported out as an aggregate for the whole the time period. The outcome variable in the Progress Model was GDP Per capita. The explanatory variables, or features, that went in would be best described through a very truncated list of the categories and sources (See Table 6). Categories are wide-ranging, and include innovation and human capital indicators like R&D funding, characteristics of local college and universities, educational attainment, and immigration; to industry and occupation indicators; to individual-level factors like labor force participation, demographics, and socioeconomics. Environmental and health factors were

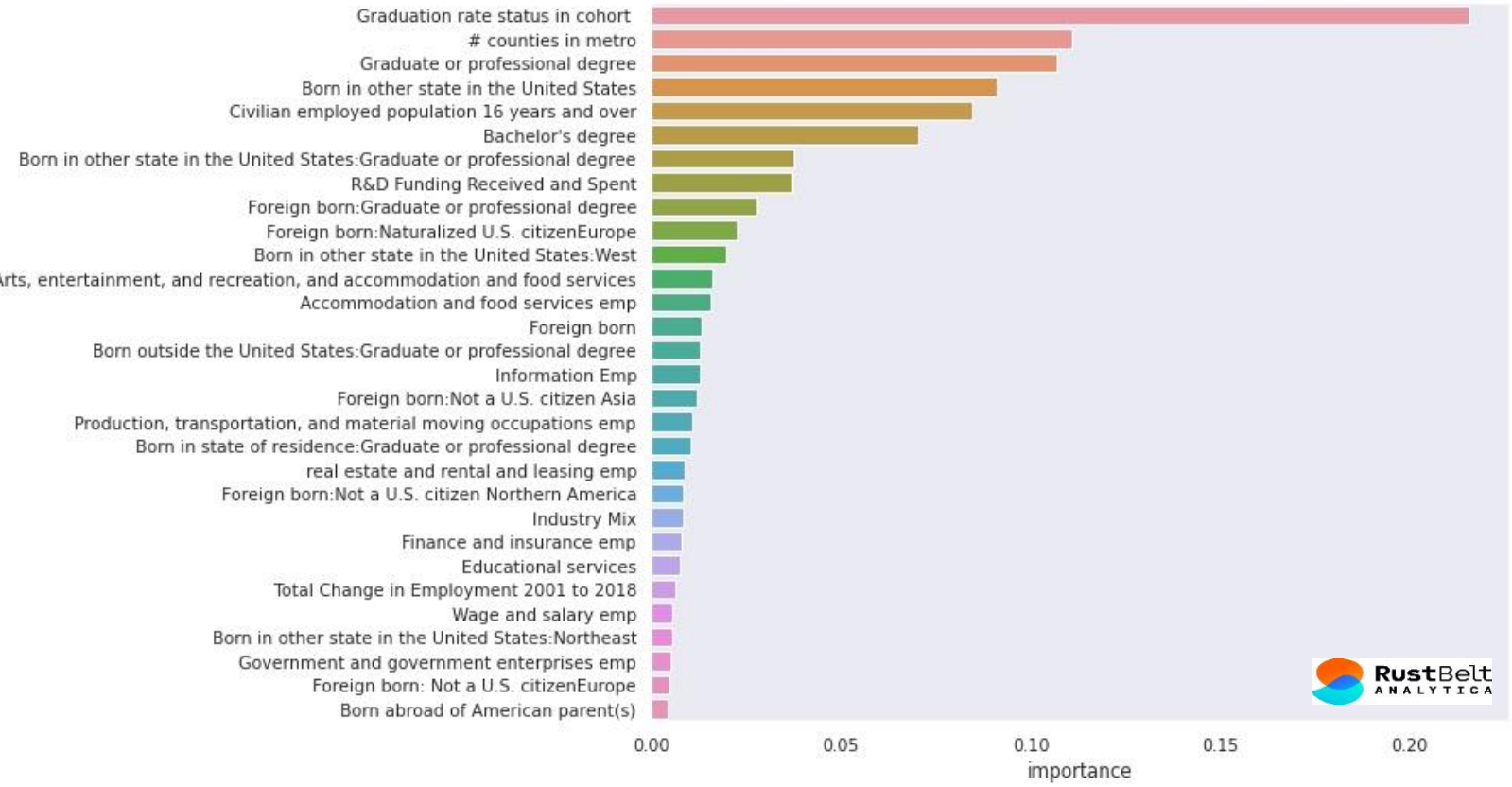
Table 6: Variables Modeled, Category and Source

Category	Source
Research and Development	National Science Foundation (NSF)
Higher Education Characteristics	Integrated Postsecondary Education Data (IPEDS)
Educational Attainment	American Community Survey (ACS)
Nativity	American Community Survey (ACS)
Place of Birth	American Community Survey (ACS)
Industry Composition GDP	Bureau of Economic Analysis (BEA)
Industry Composition Employment	Bureau of Economic Analysis (BEA)
Occupation by Industry	American Community Survey (ACS)
Labor Force Participation	American Community Survey (ACS)
Demographics	American Community Survey (ACS)
Socioeconomics	American Community Survey (ACS)
Environmental	Environmental Protection Agency (EPA)
Health	Environmental Protection Agency (EPA)

included as well. We controlled for population size of a metro by focusing on the concentration of a given indicator (e.g., what percent of your city has an advanced degree or is foreign born) as opposed to totals.

Figure 12 shows what features were most important for the nation's metros as a whole. Two types of variables dominate the list: (1) indicators of human capital, or educational attainment; and (2) indicators of migration, be it domestic or foreign. Those variables make up 50% of the top 30 variables from the Progress Model. (Migration variables make up about 33%.) This doesn't mean the other variables are less important. Rather, the variables *together* tell a story of how cities' economies evolve. This "how" overlaps across a number of policy domains. It's a data narrative, then, that is not only integral to Global Cleveland's organizational mission, but to the missions of many. This narrative is explained below.

Figure 12: Results of Permutation Feature Importance Model. Source: Author's Calculations



- *Migration is Economic Development*

Recently, Jobs Ohio, the State of Ohio's economic development agency, announced a partnership with a local consortium to build Cleveland's innovation district, which is set to run down the Health Tech Corridor in Cleveland's Midtown neighborhood[xviii]. The capital investment at play, here, is an opportunity Cleveland has got to get right. Getting it right entails explaining what is meant by "innovation" when it comes to economic development, including knowing what levers to pull to achieve the desired outcomes. Consider the items in Figure 12 a machine learning-construed list of what strategic levers stand out.

Elaborating, in economic development there are inputs and outcomes, or factors that are "upstream" and "downstream". Outcomes, like jobs and pay, are downstream effects that make-up the experience of daily living. Innovation, however, is an upstream process that influences how people work, what they get paid, and where they live. The features in Figure 12 are a mix of upstream and downstream factors.

Let's start with the upstream. Without human capital, there is no innovation. There are two ways for a city to accrue an educated population. Graduating more residents via the local higher ed system is one way. In fact, the top feature in the Progress Model was "graduation rates in cohort", which is calculated as the percent of entering freshman in a local higher ed system that graduate in 4 years. This speaks to the importance of a regional higher ed system that is efficacious in their educational services. Enrollment is not enough. It also speaks to the efficacy of a local K thru 12 system. Graduation is not enough.

The other way to gain educated people is via migration, or "brain gain". There are a number of variables that proved out the importance of migration, i.e., the percent of people foreign born, the percent foreign born with an advanced degree, the percent of people from another state with an advanced degree, the percent of non-naturalized immigrants from Asia, Europe, or North America; and the percent of residents that have moved from the West and Northeast. It is vital to note how migration adds to the innovation process. It's not just the gaining of "brains", but also the acquisition of experience and global connectivity. This "circulationist approach" to economic development "advances the idea that migrants are connected to one another…through a web of networks that propel the diffusion of new technologies, management and trade," notes the authors of the study "Skilled Migration, Knowledge Transfer and Development".[xix]. This helps explain why domestic migration into your city is particularly important if the migrant comes from the West or Northeast. These are areas of the world—e.g., New York, San Francisco—where knowledge workers go to "cut their teeth". Yet the pull of such places is lessening due to cost and other factors diminishing quality of life, hence the migration back into the heartland that AOL founder Steve Case calls "the rise of the rest"[xx]. This leveraging of migration as an economic development strategy is fully within the wheelhouse of Global Cleveland. "Migration is economic development" is a tagline that should lead and end conversations with local partners who inquire on the organization's reason to be.

That said, having a more educated populace is just that. What those people do with their knowledge is equally important. The variable "R&D received and spent" is calculated as the R&D funding per capita in a given metro, and it proved to be central in the Progress Model. This speaks to the importance of an innovation district, or a place where policymakers can convene and decide on which direction to "row" when it comes to investing in basic and applied research. How can Cleveland "skate to where the puck is going?" It also illuminates the reality that a city's local higher education system is not just about being a talent pipeline (how many can we graduate?), but also about fueling labor demand (how can our keep local industry competitive?).

Which brings us to the downstream effects. The Progress Model highlighted a number of industry composition variables that proved predictive in explaining productivity trends across metros. This includes the concentration of employment in information; production and transportation; education; and finance, insurance, and real estate. This is intuitive. IT and manufacturing have long been associated with innovating as a way to do more with less. With the rise of "fintech", finance is catching up as well. Educational services also makes sense, as the industry is literally in the business of making ideas. Less intuitive are the findings in the Progress Model showing a higher concentration of employment in arts and recreation and food and accommodations having high predictive power. Yet while those industries are associated with low productivity from a GDP per capita standpoint[xxi], a healthy local consumer economy can also be a sign of a region whose economy is advanced. Higher tech economies generate lots of disposable income. Austin, San Francisco, New York, Boulder, Nashville—these are all cities with renowned leisure and hospitality industries, but they are also emerging and/or emergent technology hubs.

The significance, here, is that while migration is upstream to innovation and innovation is upstream to a given city's industries being higher tech, the downstream effect doesn't stop at the level of the industry or the company but rather "ripples out" to job creation across all skill levels[xxii]. This multiplier effect explains why the variable "total percent change in employment" is predictive in The Progress Model. In fact, it is hard to be productive and prosperous if you can't find work. And when you can't find work, maintaining physical and mental well-being is tough. This brings us back to where we started, or that globalization is experienced individually, but also as a

collective. To the degree a city is on the right side of globalization is reflected in the well-being of the people living in it. To the degree it is not, the solution is not to navel gaze and pretend globalization doesn't exist. Rather, it's leveraging your global assets to incur your global relevance.

After all, migration is economic development.

RustBelt ANALYTICA

Appendix A: Real GDP Per Capita Rankings, All Metros. Source: BEA, 2019

Metro	Real GDP Per Capita	Rank
Midland, TX (Metropolitan Statistical Area)	$221,145	1
San Jose-Sunnyvale-Santa Clara, CA (Metropolitan Statistical Area)	$160,974	2
San Francisco-Oakland-Berkeley, CA (Metropolitan Statistical Area)	$112,272	3
Seattle-Tacoma-Bellevue, WA (Metropolitan Statistical Area)	$96,142	4
Wheeling, WV-OH (Metropolitan Statistical Area)	$88,156	5
Boston-Cambridge-Newton, MA-NH (Metropolitan Statistical Area)	$86,953	6
Trenton-Princeton, NJ (Metropolitan Statistical Area)	$85,643	7
Bridgeport-Stamford-Norwalk, CT (Metropolitan Statistical Area)	$84,652	8
Boulder, CO (Metropolitan Statistical Area) *	$84,336	9
New York-Newark-Jersey City, NY-NJ-PA (Metropolitan Statistical Area)	$81,903	10
Odessa, TX (Metropolitan Statistical Area)	$80,918	11
Lake Charles, LA (Metropolitan Statistical Area)	$80,720	12
Bloomington, IL (Metropolitan Statistical Area)	$80,333	13
Washington-Arlington-Alexandria, DC-VA-MD-WV (Metropolitan Statistical Area)	$78,359	14
Hartford-East Hartford-Middletown, CT (Metropolitan Statistical Area)	$77,630	15
Lima, OH (Metropolitan Statistical Area)	$77,384	16
Napa, CA (Metropolitan Statistical Area)	$74,657	17
Durham-Chapel Hill, NC (Metropolitan Statistical Area)	$73,202	18
Los Angeles-Long Beach-Anaheim, CA (Metropolitan Statistical Area)	$72,665	19
Columbus, IN (Metropolitan Statistical Area)	$72,155	20
Salt Lake City, UT (Metropolitan Statistical Area)	$71,514	21
Elkhart-Goshen, IN (Metropolitan Statistical Area)	$70,277	22
Casper, WY (Metropolitan Statistical Area)	$70,159	23
Madison, WI (Metropolitan Statistical Area)	$69,679	24
Beaumont-Port Arthur, TX (Metropolitan Statistical Area)	$68,723	25
Sioux Falls, SD (Metropolitan Statistical Area)	$68,473	26
Denver-Aurora-Lakewood, CO (Metropolitan Statistical Area) *	$68,231	27
Greeley, CO (Metropolitan Statistical Area) *	$67,861	28
Baltimore-Columbia-Towson, MD (Metropolitan Statistical Area)	$67,361	29
Houston-The Woodlands-Sugar Land, TX (Metropolitan Statistical Area)	$66,812	30
Minneapolis-St. Paul-Bloomington, MN-WI (Metropolitan Statistical Area)	$66,630	31
San Diego-Chula Vista-Carlsbad, CA (Metropolitan Statistical Area)	$66,582	32

Philadelphia-Camden-Wilmington, PA-NJ-DE-MD (Metropolitan Statistical Area)	$65,749	33
Chicago-Naperville-Elgin, IL-IN-WI (Metropolitan Statistical Area)	$65,403	34
Norwich-New London, CT (Metropolitan Statistical Area)	$65,400	35
Des Moines-West Des Moines, IA (Metropolitan Statistical Area)	$65,256	36
San Angelo, TX (Metropolitan Statistical Area)	$64,593	37
Austin-Round Rock-Georgetown, TX (Metropolitan Statistical Area)	$64,244	38
Albany-Schenectady-Troy, NY (Metropolitan Statistical Area)	$64,133	39
Barnstable Town, MA (Metropolitan Statistical Area)	$63,794	40
Santa Maria-Santa Barbara, CA (Metropolitan Statistical Area)	$63,632	41
Salinas, CA (Metropolitan Statistical Area)	$63,542	42
Portland-Vancouver-Hillsboro, OR-WA (Metropolitan Statistical Area)	$62,856	43
Pittsburgh, PA (Metropolitan Statistical Area)	$62,793	44
Urban Honolulu, HI (Metropolitan Statistical Area)	$62,689	45
Harrisburg-Carlisle, PA (Metropolitan Statistical Area)	$62,683	46
Nashville-Davidson--Murfreesboro--Franklin, TN (Metropolitan Statistical Area)	$62,667	47
Baton Rouge, LA (Metropolitan Statistical Area)	$62,403	48
Dallas-Fort Worth-Arlington, TX (Metropolitan Statistical Area)	$62,370	49
Cedar Rapids, IA (Metropolitan Statistical Area)	$61,955	50
Atlanta-Sandy Springs-Alpharetta, GA (Metropolitan Statistical Area)	$61,761	51
Manchester-Nashua, NH (Metropolitan Statistical Area)	$61,597	52
Decatur, IL (Metropolitan Statistical Area)	$61,532	53
Omaha-Council Bluffs, NE-IA (Metropolitan Statistical Area)	$61,085	54
Ann Arbor, MI (Metropolitan Statistical Area)	$61,020	55
Richmond, VA (Metropolitan Statistical Area) *	$60,920	56
Raleigh-Cary, NC (Metropolitan Statistical Area)	$60,886	57
New Orleans-Metairie, LA (Metropolitan Statistical Area)	$60,834	58
Indianapolis-Carmel-Anderson, IN (Metropolitan Statistical Area)	$60,783	59
Bellingham, WA (Metropolitan Statistical Area)	$60,234	60
Cincinnati, OH-KY-IN (Metropolitan Statistical Area)	$60,206	61
Mount Vernon-Anacortes, WA (Metropolitan Statistical Area)	$60,102	62
California-Lexington Park, MD (Metropolitan Statistical Area)	$59,962	63
Carson City, NV (Metropolitan Statistical Area)	$59,932	64
Midland, MI (Metropolitan Statistical Area)	$59,679	65
Weirton-Steubenville, WV-OH (Metropolitan Statistical Area)	$59,608	66

Milwaukee-Waukesha, WI (Metropolitan Statistical Area)	$59,605	67
Green Bay, WI (Metropolitan Statistical Area)	$59,192	68
San Luis Obispo-Paso Robles, CA (Metropolitan Statistical Area)	$58,849	69
Santa Rosa-Petaluma, CA (Metropolitan Statistical Area)	$58,794	70
Dubuque, IA (Metropolitan Statistical Area)	$58,704	71
Anchorage, AK (Metropolitan Statistical Area)	$58,651	72
Sheboygan, WI (Metropolitan Statistical Area)	$58,394	73
Syracuse, NY (Metropolitan Statistical Area)	$58,158	74
Rochester, MN (Metropolitan Statistical Area)	$58,104	75
Wausau-Weston, WI (Metropolitan Statistical Area)	$57,979	76
Walla Walla, WA (Metropolitan Statistical Area)	$57,827	77
Cleveland-Elyria, OH (Metropolitan Statistical Area)	$57,687	78
Oxnard-Thousand Oaks-Ventura, CA (Metropolitan Statistical Area)	$57,324	79
Kansas City, MO-KS (Metropolitan Statistical Area)	$57,122	80
Bakersfield, CA (Metropolitan Statistical Area)	$57,117	81
Charlotte-Concord-Gastonia, NC-SC (Metropolitan Statistical Area)	$57,109	82
Burlington-South Burlington, VT (Metropolitan Statistical Area)	$56,868	83
Williamsport, PA (Metropolitan Statistical Area)	$56,858	84
New Haven-Milford, CT (Metropolitan Statistical Area)	$56,587	85
Oshkosh-Neenah, WI (Metropolitan Statistical Area)	$56,574	86
Charlottesville, VA (Metropolitan Statistical Area) *	$56,336	87
Oklahoma City, OK (Metropolitan Statistical Area)	$56,282	88
Sacramento-Roseville-Folsom, CA (Metropolitan Statistical Area)	$56,056	89
Buffalo-Cheektowaga, NY (Metropolitan Statistical Area)	$55,876	90
Longview, TX (Metropolitan Statistical Area)	$55,765	91
Kahului-Wailuku-Lahaina, HI (Metropolitan Statistical Area)	$55,694	92
Huntsville, AL (Metropolitan Statistical Area)	$55,622	93
Billings, MT (Metropolitan Statistical Area)	$55,463	94
Appleton, WI (Metropolitan Statistical Area)	$55,377	95
Fargo, ND-MN (Metropolitan Statistical Area)	$55,148	96
Columbus, OH (Metropolitan Statistical Area)	$55,130	97
Evansville, IN-KY (Metropolitan Statistical Area)	$55,124	98
Ocean City, NJ (Metropolitan Statistical Area)	$55,093	99
Detroit-Warren-Dearborn, MI (Metropolitan Statistical Area)	$54,886	100

Shreveport-Bossier City, LA (Metropolitan Statistical Area)	$54,611	101
La Crosse-Onalaska, WI-MN (Metropolitan Statistical Area)	$54,407	102
Toledo, OH (Metropolitan Statistical Area)	$54,385	103
St. Louis, MO-IL (Metropolitan Statistical Area)	$54,367	104
Tulsa, OK (Metropolitan Statistical Area)	$54,307	105
Reno, NV (Metropolitan Statistical Area)	$54,265	106
Fairbanks, AK (Metropolitan Statistical Area) *	$53,870	107
Ithaca, NY (Metropolitan Statistical Area)	$53,779	108
Watertown-Fort Drum, NY (Metropolitan Statistical Area)	$53,474	109
Portland-South Portland, ME (Metropolitan Statistical Area)	$53,455	110
Mankato, MN (Metropolitan Statistical Area)	$53,419	111
Iowa City, IA (Metropolitan Statistical Area)	$53,398	112
Harrisonburg, VA (Metropolitan Statistical Area) *	$53,303	113
Lincoln, NE (Metropolitan Statistical Area)	$53,291	114
College Station-Bryan, TX (Metropolitan Statistical Area)	$53,254	115
Pittsfield, MA (Metropolitan Statistical Area)	$53,219	116
Sioux City, IA-NE-SD (Metropolitan Statistical Area)	$53,079	117
Wichita, KS (Metropolitan Statistical Area)	$53,069	118
Miami-Fort Lauderdale-Pompano Beach, FL (Metropolitan Statistical Area)	$53,050	119
Bismarck, ND (Metropolitan Statistical Area)	$53,041	120
Rochester, NY (Metropolitan Statistical Area)	$53,035	121
Cheyenne, WY (Metropolitan Statistical Area)	$52,990	122
Springfield, IL (Metropolitan Statistical Area)	$52,905	123
Davenport-Moline-Rock Island, IA-IL (Metropolitan Statistical Area)	$52,806	124
Santa Cruz-Watsonville, CA (Metropolitan Statistical Area)	$52,733	125
Grand Island, NE (Metropolitan Statistical Area)	$52,613	126
Enid, OK (Metropolitan Statistical Area)	$52,433	127
Fort Wayne, IN (Metropolitan Statistical Area)	$52,156	128
Lexington-Fayette, KY (Metropolitan Statistical Area)	$51,868	129
Duluth, MN-WI (Metropolitan Statistical Area)	$51,819	130
Fort Collins, CO (Metropolitan Statistical Area)	$51,184	131
Corpus Christi, TX (Metropolitan Statistical Area)	$51,162	132
Grand Rapids-Kentwood, MI (Metropolitan Statistical Area)	$51,097	133
Kankakee, IL (Metropolitan Statistical Area)	$51,050	134

Louisville/Jefferson County, KY-IN (Metropolitan Statistical Area)	$51,038	135
Peoria, IL (Metropolitan Statistical Area)	$50,994	136
Eau Claire, WI (Metropolitan Statistical Area)	$50,870	137
Birmingham-Hoover, AL (Metropolitan Statistical Area)	$50,831	138
Memphis, TN-MS-AR (Metropolitan Statistical Area)	$50,780	139
Waterloo-Cedar Falls, IA (Metropolitan Statistical Area)	$50,650	140
Virginia Beach-Norfolk-Newport News, VA-NC (Metropolitan Statistical Area) *	$50,609	141
Kennewick-Richland, WA (Metropolitan Statistical Area)	$50,583	142
Vallejo, CA (Metropolitan Statistical Area)	$50,571	143
Wenatchee, WA (Metropolitan Statistical Area)	$50,548	144
Greensboro-High Point, NC (Metropolitan Statistical Area)	$49,983	145
Grand Forks, ND-MN (Metropolitan Statistical Area)	$49,726	146
Savannah, GA (Metropolitan Statistical Area)	$49,666	147
Allentown-Bethlehem-Easton, PA-NJ (Metropolitan Statistical Area)	$49,657	148
Bloomsburg-Berwick, PA (Metropolitan Statistical Area)	$49,562	149
El Centro, CA (Metropolitan Statistical Area)	$49,558	150
Dayton-Kettering, OH (Metropolitan Statistical Area)	$49,533	151
Charleston-North Charleston, SC (Metropolitan Statistical Area)	$49,304	152
Lancaster, PA (Metropolitan Statistical Area)	$49,258	153
Orlando-Kissimmee-Sanford, FL (Metropolitan Statistical Area)	$49,237	154
Roanoke, VA (Metropolitan Statistical Area) *	$49,187	155
State College, PA (Metropolitan Statistical Area)	$49,158	156
Morgantown, WV (Metropolitan Statistical Area)	$48,976	157
Crestview-Fort Walton Beach-Destin, FL (Metropolitan Statistical Area)	$48,927	158
Salisbury, MD-DE (Metropolitan Statistical Area)	$48,864	159
St. Cloud, MN (Metropolitan Statistical Area)	$48,635	160
Providence-Warwick, RI-MA (Metropolitan Statistical Area)	$48,633	161
Jacksonville, FL (Metropolitan Statistical Area)	$48,584	162
Las Vegas-Henderson-Paradise, NV (Metropolitan Statistical Area)	$48,574	163
Kalamazoo-Portage, MI (Metropolitan Statistical Area)	$48,362	164
Worcester, MA-CT (Metropolitan Statistical Area)	$48,056	165
Chattanooga, TN-GA (Metropolitan Statistical Area)	$48,036	166
Phoenix-Mesa-Chandler, AZ (Metropolitan Statistical Area)	$47,992	167
Kokomo, IN (Metropolitan Statistical Area)	$47,910	168

Amarillo, TX (Metropolitan Statistical Area)	$47,908	169
Corvallis, OR (Metropolitan Statistical Area)	$47,902	170
Scranton--Wilkes-Barre, PA (Metropolitan Statistical Area)	$47,842	171
Greenville, NC (Metropolitan Statistical Area)	$47,835	172
Atlantic City-Hammonton, NJ (Metropolitan Statistical Area)	$47,762	173
Farmington, NM (Metropolitan Statistical Area)	$47,656	174
Champaign-Urbana, IL (Metropolitan Statistical Area)	$47,485	175
Fond du Lac, WI (Metropolitan Statistical Area)	$47,425	176
Ames, IA (Metropolitan Statistical Area)	$47,322	177
Spokane-Spokane Valley, WA (Metropolitan Statistical Area)	$47,269	178
Flagstaff, AZ (Metropolitan Statistical Area)	$47,148	179
Akron, OH (Metropolitan Statistical Area)	$47,033	180
Manhattan, KS (Metropolitan Statistical Area)	$46,979	181
Idaho Falls, ID (Metropolitan Statistical Area)	$46,872	182
Canton-Massillon, OH (Metropolitan Statistical Area)	$46,835	183
Redding, CA (Metropolitan Statistical Area)	$46,717	184
Gainesville, GA (Metropolitan Statistical Area)	$46,641	185
Jefferson City, MO (Metropolitan Statistical Area)	$46,636	186
Tampa-St. Petersburg-Clearwater, FL (Metropolitan Statistical Area)	$46,441	187
Altoona, PA (Metropolitan Statistical Area)	$46,354	188
Florence, SC (Metropolitan Statistical Area)	$46,172	189
Glens Falls, NY (Metropolitan Statistical Area)	$46,160	190
Greenville-Anderson, SC (Metropolitan Statistical Area)	$46,107	191
Columbia, SC (Metropolitan Statistical Area)	$46,083	192
Fresno, CA (Metropolitan Statistical Area)	$46,051	193
Colorado Springs, CO (Metropolitan Statistical Area)	$46,022	194
Niles, MI (Metropolitan Statistical Area)	$45,914	195
Spartanburg, SC (Metropolitan Statistical Area)	$45,890	196
Charleston, WV (Metropolitan Statistical Area)	$45,881	197
Knoxville, TN (Metropolitan Statistical Area)	$45,779	198
Winston-Salem, NC (Metropolitan Statistical Area)	$45,679	199
Macon-Bibb County, GA (Metropolitan Statistical Area)	$45,593	200
Topeka, KS (Metropolitan Statistical Area)	$45,529	201
Owensboro, KY (Metropolitan Statistical Area)	$45,354	202

San Antonio-New Braunfels, TX (Metropolitan Statistical Area)	$45,325	203
Rocky Mount, NC (Metropolitan Statistical Area)	$45,212	204
Victoria, TX (Metropolitan Statistical Area)	$45,199	205
Little Rock-North Little Rock-Conway, AR (Metropolitan Statistical Area)	$45,156	206
Chico, CA (Metropolitan Statistical Area)	$45,154	207
St. Joseph, MO-KS (Metropolitan Statistical Area)	$44,926	208
Mobile, AL (Metropolitan Statistical Area)	$44,872	209
Reading, PA (Metropolitan Statistical Area)	$44,716	210
Springfield, MA (Metropolitan Statistical Area)	$44,706	211
Lafayette-West Lafayette, IN (Metropolitan Statistical Area)	$44,684	212
Great Falls, MT (Metropolitan Statistical Area)	$44,682	213
Tyler, TX (Metropolitan Statistical Area)	$44,638	214
Laredo, TX (Metropolitan Statistical Area)	$44,637	215
Binghamton, NY (Metropolitan Statistical Area)	$44,625	216
Wilmington, NC (Metropolitan Statistical Area)	$44,621	217
Fayetteville-Springdale-Rogers, AR (Metropolitan Statistical Area)	$44,612	218
Winchester, VA-WV (Metropolitan Statistical Area) *	$44,605	219
Boise City, ID (Metropolitan Statistical Area)	$44,549	220
Longview, WA (Metropolitan Statistical Area)	$44,536	221
Panama City, FL (Metropolitan Statistical Area)	$44,487	222
Bremerton-Silverdale-Port Orchard, WA (Metropolitan Statistical Area)	$44,444	223
Rockford, IL (Metropolitan Statistical Area)	$44,160	224
Twin Falls, ID (Metropolitan Statistical Area)	$44,042	225
Olympia-Lacey-Tumwater, WA (Metropolitan Statistical Area)	$44,040	226
Houma-Thibodaux, LA (Metropolitan Statistical Area)	$44,019	227
Yakima, WA (Metropolitan Statistical Area)	$44,000	228
Columbia, MO (Metropolitan Statistical Area)	$43,910	229
Dalton, GA (Metropolitan Statistical Area)	$43,877	230
Bend, OR (Metropolitan Statistical Area)	$43,858	231
Tuscaloosa, AL (Metropolitan Statistical Area)	$43,824	232
Poughkeepsie-Newburgh-Middletown, NY (Metropolitan Statistical Area)	$43,799	233
Jackson, TN (Metropolitan Statistical Area)	$43,649	234
Battle Creek, MI (Metropolitan Statistical Area)	$43,592	235
Elmira, NY (Metropolitan Statistical Area)	$43,460	236

South Bend-Mishawaka, IN-MI (Metropolitan Statistical Area)	$43,359	237
Montgomery, AL (Metropolitan Statistical Area)	$43,340	238
Lansing-East Lansing, MI (Metropolitan Statistical Area)	$43,310	239
Waco, TX (Metropolitan Statistical Area)	$43,296	240
Lewiston, ID-WA (Metropolitan Statistical Area)	$43,236	241
Huntington-Ashland, WV-KY-OH (Metropolitan Statistical Area)	$43,232	242
Hanford-Corcoran, CA (Metropolitan Statistical Area)	$43,216	243
Utica-Rome, NY (Metropolitan Statistical Area)	$43,195	244
Gainesville, FL (Metropolitan Statistical Area)	$43,156	245
Modesto, CA (Metropolitan Statistical Area)	$43,068	246
Tallahassee, FL (Metropolitan Statistical Area)	$42,926	247
Cape Girardeau, MO-IL (Metropolitan Statistical Area)	$42,877	248
Madera, CA (Metropolitan Statistical Area)	$42,842	249
Athens-Clarke County, GA (Metropolitan Statistical Area)	$42,812	250
Albuquerque, NM (Metropolitan Statistical Area)	$42,756	251
York-Hanover, PA (Metropolitan Statistical Area)	$42,675	252
Naples-Marco Island, FL (Metropolitan Statistical Area)	$42,483	253
Janesville-Beloit, WI (Metropolitan Statistical Area)	$42,358	254
Columbus, GA-AL (Metropolitan Statistical Area)	$42,349	255
Danville, IL (Metropolitan Statistical Area)	$42,275	256
Missoula, MT (Metropolitan Statistical Area)	$42,162	257
Augusta-Richmond County, GA-SC (Metropolitan Statistical Area)	$41,755	258
Lafayette, LA (Metropolitan Statistical Area)	$41,635	259
Visalia, CA (Metropolitan Statistical Area)	$41,507	260
Jackson, MS (Metropolitan Statistical Area)	$41,321	261
New Bern, NC (Metropolitan Statistical Area)	$41,200	262
Gulfport-Biloxi, MS (Metropolitan Statistical Area)	$41,002	263
Blacksburg-Christiansburg, VA (Metropolitan Statistical Area) *	$40,974	264
Palm Bay-Melbourne-Titusville, FL (Metropolitan Statistical Area)	$40,901	265
Lubbock, TX (Metropolitan Statistical Area)	$40,854	266
Hinesville, GA (Metropolitan Statistical Area)	$40,805	267
Wichita Falls, TX (Metropolitan Statistical Area)	$40,688	268
Provo-Orem, UT (Metropolitan Statistical Area)	$40,652	269
Jacksonville, NC (Metropolitan Statistical Area)	$40,570	270

Eugene-Springfield, OR (Metropolitan Statistical Area)	$40,522	271
Yuba City, CA (Metropolitan Statistical Area)	$40,473	272
Erie, PA (Metropolitan Statistical Area)	$40,469	273
Kingsport-Bristol, TN-VA (Metropolitan Statistical Area) *	$40,323	274
Grand Junction, CO (Metropolitan Statistical Area)	$40,302	275
Tucson, AZ (Metropolitan Statistical Area)	$40,266	276
Dover, DE (Metropolitan Statistical Area)	$40,240	277
Saginaw, MI (Metropolitan Statistical Area)	$40,232	278
Rome, GA (Metropolitan Statistical Area)	$40,214	279
Asheville, NC (Metropolitan Statistical Area)	$40,209	280
Vineland-Bridgeton, NJ (Metropolitan Statistical Area)	$40,178	281
Carbondale-Marion, IL (Metropolitan Statistical Area)	$40,028	282
Stockton, CA (Metropolitan Statistical Area)	$40,001	283
Lewiston-Auburn, ME (Metropolitan Statistical Area)	$39,878	284
Lebanon, PA (Metropolitan Statistical Area)	$39,859	285
Joplin, MO (Metropolitan Statistical Area)	$39,829	286
Rapid City, SD (Metropolitan Statistical Area)	$39,808	287
Salem, OR (Metropolitan Statistical Area)	$39,753	288
Santa Fe, NM (Metropolitan Statistical Area)	$39,752	289
Racine, WI (Metropolitan Statistical Area)	$39,730	290
Ogden-Clearfield, UT (Metropolitan Statistical Area)	$39,701	291
Bangor, ME (Metropolitan Statistical Area)	$39,659	292
Abilene, TX (Metropolitan Statistical Area)	$39,594	293
Staunton, VA (Metropolitan Statistical Area) *	$39,377	294
Bloomington, IN (Metropolitan Statistical Area)	$39,261	295
Dothan, AL (Metropolitan Statistical Area)	$39,185	296
Medford, OR (Metropolitan Statistical Area)	$38,982	297
Warner Robins, GA (Metropolitan Statistical Area)	$38,905	298
Albany, GA (Metropolitan Statistical Area)	$38,843	299
Monroe, LA (Metropolitan Statistical Area)	$38,747	300
Logan, UT-ID (Metropolitan Statistical Area)	$38,739	301
Springfield, MO (Metropolitan Statistical Area)	$38,418	302
Decatur, AL (Metropolitan Statistical Area)	$38,169	303
Terre Haute, IN (Metropolitan Statistical Area)	$38,126	304

Hickory-Lenoir-Morganton, NC (Metropolitan Statistical Area)	$38,069	305
Pensacola-Ferry Pass-Brent, FL (Metropolitan Statistical Area)	$37,933	306
North Port-Sarasota-Bradenton, FL (Metropolitan Statistical Area)	$37,917	307
Cumberland, MD-WV (Metropolitan Statistical Area)	$37,772	308
Chambersburg-Waynesboro, PA (Metropolitan Statistical Area)	$37,737	309
Merced, CA (Metropolitan Statistical Area)	$37,394	310
Sebastian-Vero Beach, FL (Metropolitan Statistical Area)	$37,312	311
East Stroudsburg, PA (Metropolitan Statistical Area)	$37,296	312
Pueblo, CO (Metropolitan Statistical Area)	$37,216	313
Pine Bluff, AR (Metropolitan Statistical Area)	$37,120	314
Yuma, AZ (Metropolitan Statistical Area)	$37,078	315
Lawton, OK (Metropolitan Statistical Area)	$37,058	316
Killeen-Temple, TX (Metropolitan Statistical Area)	$37,033	317
Lynchburg, VA (Metropolitan Statistical Area) *	$36,960	318
Riverside-San Bernardino-Ontario, CA (Metropolitan Statistical Area)	$36,959	319
Flint, MI (Metropolitan Statistical Area)	$36,951	320
Youngstown-Warren-Boardman, OH-PA (Metropolitan Statistical Area)	$36,925	321
Kingston, NY (Metropolitan Statistical Area)	$36,864	322
Goldsboro, NC (Metropolitan Statistical Area)	$36,832	323
Clarksville, TN-KY (Metropolitan Statistical Area)	$36,677	324
Alexandria, LA (Metropolitan Statistical Area)	$36,673	325
Fayetteville, NC (Metropolitan Statistical Area)	$36,638	326
Cape Coral-Fort Myers, FL (Metropolitan Statistical Area)	$36,606	327
Bowling Green, KY (Metropolitan Statistical Area)	$36,544	328
Lawrence, KS (Metropolitan Statistical Area)	$36,447	329
Sierra Vista-Douglas, AZ (Metropolitan Statistical Area)	$36,446	330
Parkersburg-Vienna, WV (Metropolitan Statistical Area)	$36,407	331
Jonesboro, AR (Metropolitan Statistical Area)	$36,209	332
Albany-Lebanon, OR (Metropolitan Statistical Area)	$36,163	333
Mansfield, OH (Metropolitan Statistical Area)	$36,077	334
Hagerstown-Martinsburg, MD-WV (Metropolitan Statistical Area)	$36,020	335
Jackson, MI (Metropolitan Statistical Area)	$35,861	336
Monroe, MI (Metropolitan Statistical Area)	$35,794	337
Sherman-Denison, TX (Metropolitan Statistical Area)	$35,726	338

Anniston-Oxford, AL (Metropolitan Statistical Area)	$35,650	339
Michigan City-La Porte, IN (Metropolitan Statistical Area)	$35,433	340
Hilton Head Island-Bluffton, SC (Metropolitan Statistical Area)	$35,409	341
Johnstown, PA (Metropolitan Statistical Area)	$35,365	342
Cleveland, TN (Metropolitan Statistical Area)	$35,352	343
Brunswick, GA (Metropolitan Statistical Area)	$35,281	344
Valdosta, GA (Metropolitan Statistical Area)	$35,111	345
Coeur d'Alene, ID (Metropolitan Statistical Area)	$34,939	346
Fort Smith, AR-OK (Metropolitan Statistical Area)	$34,628	347
El Paso, TX (Metropolitan Statistical Area)	$34,585	348
Texarkana, TX-AR (Metropolitan Statistical Area)	$34,563	349
Elizabethtown-Fort Knox, KY (Metropolitan Statistical Area)	$34,520	350
Gettysburg, PA (Metropolitan Statistical Area)	$34,369	351
Lakeland-Winter Haven, FL (Metropolitan Statistical Area)	$34,270	352
Johnson City, TN (Metropolitan Statistical Area)	$33,896	353
Pocatello, ID (Metropolitan Statistical Area)	$33,822	354
Muskegon, MI (Metropolitan Statistical Area)	$33,747	355
Beckley, WV (Metropolitan Statistical Area)	$33,208	356
Hattiesburg, MS (Metropolitan Statistical Area)	$33,179	357
Burlington, NC (Metropolitan Statistical Area)	$33,178	358
Muncie, IN (Metropolitan Statistical Area)	$32,943	359
Sumter, SC (Metropolitan Statistical Area)	$32,571	360
Florence-Muscle Shoals, AL (Metropolitan Statistical Area)	$32,566	361
Springfield, OH (Metropolitan Statistical Area)	$32,276	362
Bay City, MI (Metropolitan Statistical Area)	$32,227	363
Morristown, TN (Metropolitan Statistical Area)	$32,097	364
Auburn-Opelika, AL (Metropolitan Statistical Area)	$32,002	365
Myrtle Beach-Conway-North Myrtle Beach, SC-NC (Metropolitan Statistical Area)	$31,859	366
Port St. Lucie, FL (Metropolitan Statistical Area)	$31,769	367
St. George, UT (Metropolitan Statistical Area)	$31,667	368
Las Cruces, NM (Metropolitan Statistical Area)	$31,431	369
Grants Pass, OR (Metropolitan Statistical Area)	$31,120	370
Hot Springs, AR (Metropolitan Statistical Area)	$30,502	371
Deltona-Daytona Beach-Ormond Beach, FL (Metropolitan Statistical Area)	$28,854	372

Gadsden, AL (Metropolitan Statistical Area)	$28,513	373
Hammond, LA (Metropolitan Statistical Area)	$28,398	374
Prescott Valley-Prescott, AZ (Metropolitan Statistical Area)	$28,040	375
Daphne-Fairhope-Foley, AL (Metropolitan Statistical Area)	$27,507	376
Punta Gorda, FL (Metropolitan Statistical Area)	$26,217	377
Homosassa Springs, FL (Metropolitan Statistical Area)	$25,921	378
Ocala, FL (Metropolitan Statistical Area)	$25,525	379
Sebring-Avon Park, FL (Metropolitan Statistical Area)	$24,728	380
Brownsville-Harlingen, TX (Metropolitan Statistical Area)	$24,514	381
Lake Havasu City-Kingman, AZ (Metropolitan Statistical Area)	$24,512	382
McAllen-Edinburg-Mission, TX (Metropolitan Statistical Area)	$22,754	383
The Villages, FL (Metropolitan Statistical Area)	$20,315	384

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