PolicyLink

PERE
USC Program for Environmental & Regional Equity

An Equity Profile of

Grand Rapids

Supported by:

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Equity Profiles are products of a partnership between PolicyLink and PERE, the Program for Environmental and Regional Equity at the University of Southern California.

The views expressed in this document are those of PolicyLink and PERE.

Summary

Grand Rapids is an increasingly diverse city. While it has experienced some overall population loss over the last decade, communities of color have significantly grown – and their ability to participate and thrive is central to the city's success. While the city demonstrates overall strength and resilience, gaps in income, employment, education, and opportunity by race and geography place its economic future at risk.

Equitable growth is the path to sustained economic prosperity in Grand Rapids. The region's economy could have been $4 billion stronger in 2014 if its racial gaps in income had been closed: a 10 percent increase. By creating pathways to good jobs, connecting younger generations with older ones, integrating immigrants into the economy, building communities of opportunity throughout the county, and ensuring educational and career pathways for all youth, Grand Rapids can put all residents on the path toward reaching their full potential, and secure a bright future for the whole city.

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Introduction
Overview

Across the country, community organizations and residents, local governments, business leaders, funders, and policymakers are striving to put plans, policies, and programs in place that build healthier, more equitable communities and foster inclusive growth.

These efforts recognize that equity – just and fair inclusion into a society in which all can participate, prosper, and reach their full potential – is fundamental to a brighter future for their communities.

Knowing how a community stands in terms of equity is a critical first step in planning for greater equity. To assist with that process, PolicyLink and the Program for Environmental and Regional Equity (PERE) developed an equity indicators framework that communities can use to understand and track the state of equity and equitable growth locally.

This document presents an equity analysis of the City of Grand Rapids. It was developed with the support of the W.K. Kellogg Foundation to assist local community groups, elected officials, planners, business leaders, funders, and others working to build a stronger and more equitable city. The foundation is supporting the development of equity profiles in 10 of its priority communities across Louisiana, Michigan, Mississippi, and New Mexico.

The data in this profile are drawn from a regional equity database that includes data for the largest 100 cities and 150 regions in the United States, as well as all 50 states. This database incorporates hundreds of data points from public and private data sources including the U.S. Census Bureau, the U.S. Bureau of Labor Statistics, the Behavioral Risk Factor Surveillance System, and Woods and Poole Economics. It also includes unique data on child and family well-being from the W.K. Kellogg Foundation Priority Communities Dashboard Database, contributed by The diversitydatakids.org Project based at the Institute for Child, Youth and Family Policy at the Heller School for Social Policy and Management at Brandeis University.

See the "Data and methods" section of this profile for a detailed list of data sources.

This profile uses a range of data sources to describe the state of equity in Grand Rapids as comprehensively as possible, but there are limitations. Not all data collected by public and private sources is disaggregated by race/ethnicity and other demographic characteristics. And in some cases, even when disaggregated data is available, the sample size for a given population is too small to report with confidence.

In the case of Grand Rapids, for example, the city's Native American population is less than 1,000. Though Native American communities face deep challenges and barriers to inclusion,[1] they are absent from some of the analysis presented here because the sample size is too small. Local data sources and the lived experiences of diverse residents should supplement the data provided in this profile to more fully represent the state of equity in Grand Rapids.

[1] David Cournoyer, "Native American Children in Michigan." W.K. Kellogg Foundation, 2012. Available at http://prime.mihealth.org/files/Native_ American_Children_in_Michigan.pdf

Introduction
What is an equitable city?

Cities are equitable when all residents – regardless of their race/ethnicity, and nativity, neighborhood of residence, or other characteristics – are fully able to participate in the city's economic vitality, contribute to the city's readiness for the future, and connect to the city's assets and resources.

Strong, equitable cities:

- Possess **economic vitality**, providing high-quality jobs to their residents and producing new ideas, products, businesses, and economic activity so the city remains sustainable and competitive.
- Are **ready for the future**, with a skilled, ready workforce, and a healthy population.
- Are **places of connection**, where residents can access the essential ingredients to live healthy and productive lives in their own neighborhoods, reach opportunities located throughout the city (and beyond) via transportation or technology, participate in political processes, and interact with other diverse residents.

Introduction
Why equity matters now

The face of America is changing.

Our country's population is rapidly diversifying. Already, more than half of all babies born in the United States are people of color. By 2030, the majority of young workers will be people of color. And by 2044, the United States will be a majority people-of-color nation.

Yet racial and income inequality is high and persistent.

Over the past several decades, long-standing inequities in income, wealth, health, and opportunity have reached unprecedented levels. Wages have stagnated for the majority of workers, inequality has skyrocketed, and many people of color face racial and geographic barriers to accessing economic opportunities.

Racial and economic equity is necessary for economic growth and prosperity.

Equity is an economic imperative as well as a moral one. Research shows that inclusion and diversity are win-win propositions for nations, regions, communities, and firms. For example:

- More equitable regions experience stronger, more sustained growth.[1]
- Regions with less segregation (by race and income) and lower income inequality have more upward mobility.[2]
- The elimination of health disparities would lead to significant economic benefits from reductions in health care spending and increased productivity.[3]
- Companies with a diverse workforce achieve a better bottom line.[4]
- A diverse population more easily connects to global markets.[5]
- Lower economic inequality results in better health outcomes for everyone.[6]

The way forward is an equity-driven growth model.

To secure America's health and prosperity, the nation must implement a new economic model based on equity, fairness, and opportunity. Leaders across all sectors must remove barriers to full participation, connect more people to opportunity, and invest in human potential.

Cities and regions play a critical role in building this new growth model.

Local communities are where strategies that foster equitable growth are being incubated: growing good jobs and new businesses while ensuring that all – including low-income people and people of color – can fully participate as workers, consumers, entrepreneurs, innovators, and leaders.

[1] Manuel Pastor, "Cohesion and Competitiveness: Business Leadership for Regional Growth and Social Equity," OECD Territorial Reviews, Competitive Cities in the Global Economy, Organisation For Economic Co-Operation And Development (OECD), 2006; Manuel Pastor and Chris Benner, "Been Down So Long: Weak-Market Cities and Regional Equity" in *Retooling for Growth: Building a 21st Century Economy in America's Older Industrial Areas* (New York: American Assembly and Columbia University, 2008); Randall Eberts, George Erickcek, and Jack Kleinhenz, "Dashboard Indicators for the Northeast Ohio Economy: Prepared for the Fund for Our Economic Future" (Federal Reserve Bank of Cleveland: April 2006), http://www.clevelandfed.org/Research/workpaper/2006/wp06-05.pdf.

[2] Raj Chetty, Nathaniel Hendren, Patrick Kline, and Emmanuel Saez, "Where is the Land of Economic Opportunity? The Geography of Intergenerational Mobility in the U.S." http://obs.rc.fas.harvard.edu/chetty/website/v2/Geography%20Executive%20Summary%20and%20Memo%20January%202014.pdf

[3] Darrell Gaskin, Thomas LaVeist, and Patrick Richard, "The State of Urban Health: Eliminating Health Disparities to Save Lives and Cut Costs." National Urban League Policy Institute, 2012.

[4] Cedric Herring. "Does Diversity Pay?: Race, Gender, and the Business Case for Diversity." *American Sociological Review*, 74, no. 2 (2009): 208-22; Slater, Weigand and Zwirlein. "The Business Case for Commitment to Diversity." *Business Horizons* 51 (2008): 201-209.

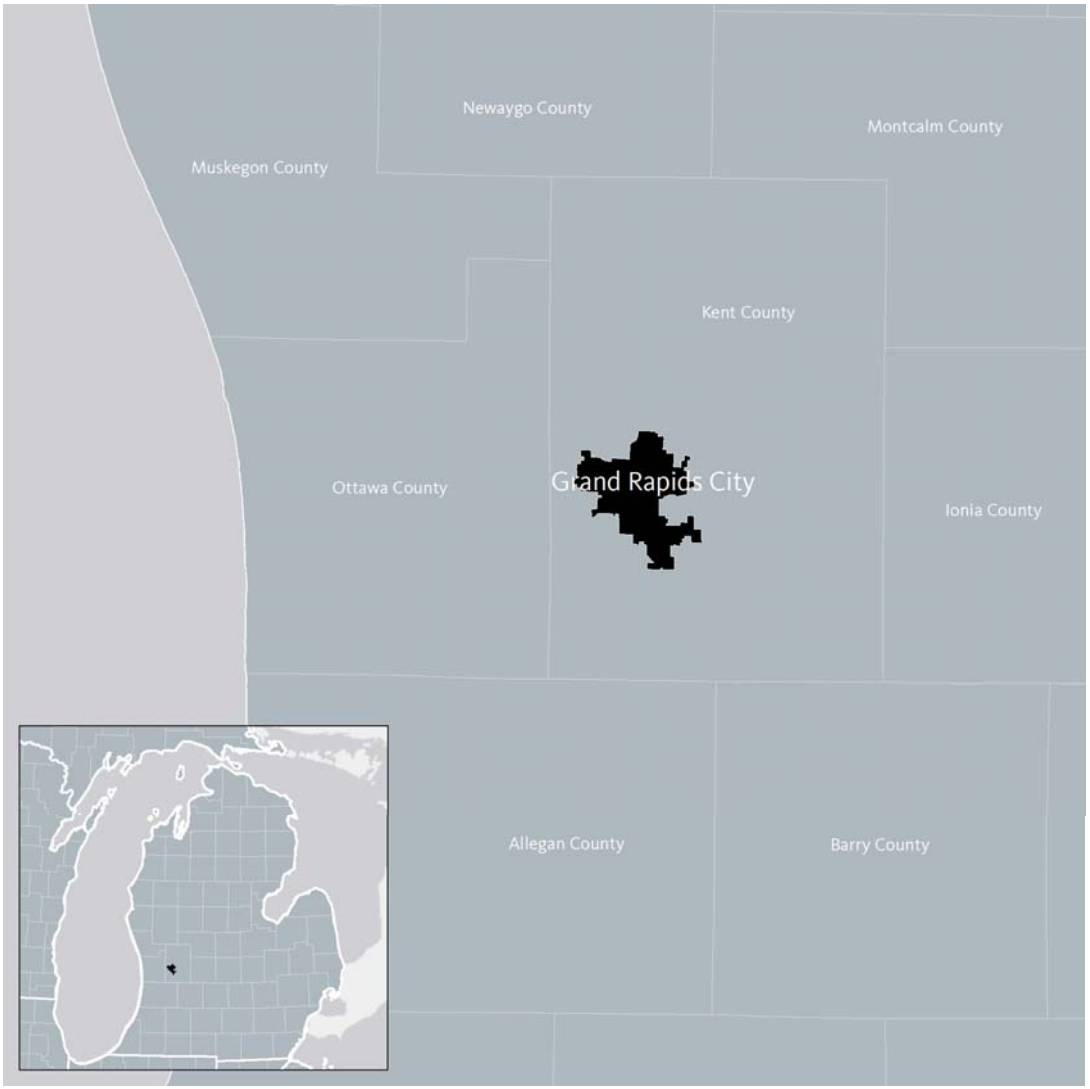
[5] U.S. Census Bureau. "Ownership Characteristics of Classifiable U.S. Exporting Firms: 2007" Survey of Business Owners Special Report, June 2012, http://www.census.gov/econ/sbo/export07/index.html.

[6] Kate Pickett and Richard Wilkinson, "Income Inequality and Health: A Causal Review." Social Science & Medicine, 128 (2015): 316-326

Introduction
Geography

This profile describes demographic, economic, and health conditions in the city of Grand Rapids, portrayed in black on the map to the right. Grand Rapids is situated in Kent County and is part of the Grand Rapids-Wyoming, Michigan metropolitan statistical area, which includes Barry, Ionia, Kent, and Newaygo counties.

Unless otherwise noted, all data follow the city geography, which is simply referred to as "Grand Rapids." Some exceptions due to lack of data availability are noted beneath the relevant figures or in the figures themselves. Information on data sources and methodology can be found in the "Data and methods" section beginning on page 94.



Introduction
Equity indicators framework

The indicators in this profile are presented in five sections. The first section describes the city's demographics. The next three sections present indicators of the city's economic vitality, readiness, and connectedness. The final section estimates the economic benefits of racial equity. Below are the questions answered within each of the five sections.

Demographics:

Who lives in the region and how is this changing?

- Is the population growing?
- Which groups are driving growth?
- How diverse is the population?
- What is the age distribution of the population?

Economic vitality:

How is the region doing on measures of economic growth and well-being?

- Is the region producing good jobs?
- Can all residents access good jobs?
- Is growth widely shared?
- Do all residents have enough income to sustain their families?
- Are race/ethnicity and nativity barriers to economic success?
- What are the strongest industries and occupations?

Readiness:

How prepared are the region's residents for the 21st century economy?

- Does the workforce have the skills for the jobs of the future?
- Are all youth ready to enter the workforce?
- Are residents healthy?
- Are health disparities decreasing?
- Are racial gaps in education decreasing?

Connectedness:

Are the region's residents and neighborhoods connected to one another and to the region's assets and opportunities?

- Do residents have transportation choices?
- Can residents access jobs and opportunities located throughout the region?
- Can all residents access affordable, quality, convenient housing?
- Do neighborhoods reflect the region's diversity? Is segregation decreasing?
- Can all residents access healthy food?

Economic benefits:

How would addressing racial inequities affect the regional economy?

- How would the region's gross domestic product be affected?
- How much would residents benefit from closing racial gaps in income and employment?

Demographics

Demographics
Highlights
Who lives in the city and how is it changing?

- By 2014, more than 40 percent of residents were people of color, double the share (20 percent) in 1980.
- Of the nearly 80,000 people of color in Grand Rapids, 48 percent are African American and 38 percent are Latino.
- Demographic change in Grand Rapids can be attributed to both population growth among people of color and steady declines in the city's White population.
- Diverse groups, especially Latinos and those of mixed/other races, are driving growth and change in the region and will continue to do so for the foreseeable future.

Racial generation gap:

42 percentage points

Latino residents who are immigrants:

1 in 3

Share of net population growth attributable to communities of color since 1980:

100%

Demographics
A moderately diverse city

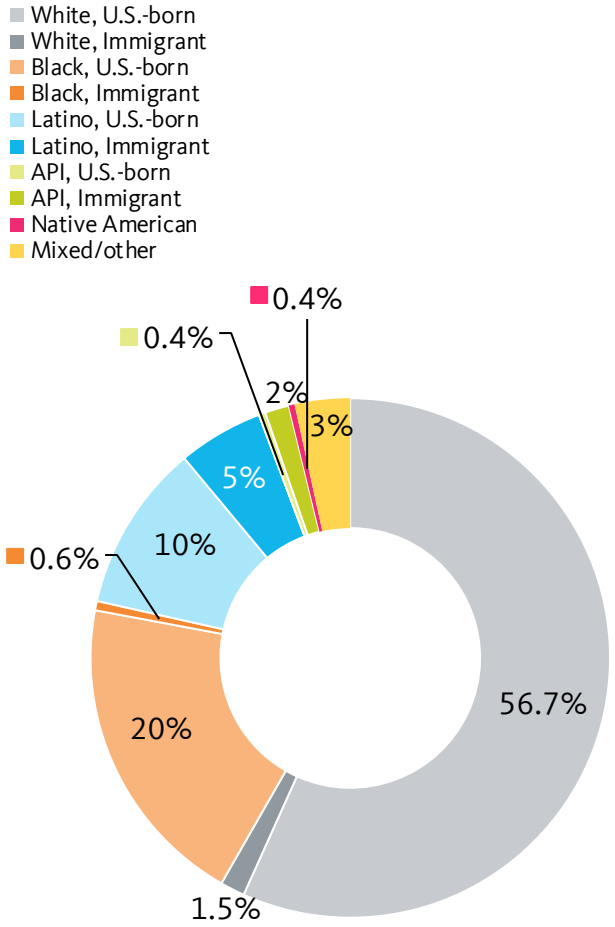
Forty-two percent of the city's residents are people of color, including a diverse mix of racial and ethnic groups. U.S.-born African American residents represent 20 percent of the Grand Rapids population and Black immigrants account for less than one percent.

Latinos make up 15 percent of the city population, and two-thirds of them were born in the U.S. More than half of the city's 30,000 Latinos are of Mexican ancestry. Guatemala and Puerto Rico are the next most commonly cited ancestries among the Latino population.

Asians and Pacific Islanders are largely immigrants and account for under three percent of the total population, with those of Vietnamese and Korean ancestry making up the largest API subgroups.

People of color make up 42 percent of the population

Race, Ethnicity, and Nativity, 2014



Source: Integrated Public Use Microdata Series (IPUMS); U.S. Census Bureau.
Note: Data represent a 2010 through 2014 average. The IPUMS American Community Survey (ACS) microdata was adjusted to match the ACS summary file percentages by race/ethnicity.

Mexicans account for more than half of all Latinos

Black, Latino, and Asian or Pacific Islander Populations by Ancestry, 2014

Black	Population
British	252
Jamaican	234
All other Blacks	37,631
Total	**38,117**

Latino	Population
Mexican	16,729
Guatemalan	4,329
Puerto Rican	2,158
Dominican	813
Cuban	501
All other Latinos	5,538
Total	**30,068**

Asian or Pacific Islander (API)	Population
Vietnamese	965
Korean	870
Nepali	524
Filipino	415
Indian	397
All other Asians	900
Total	**4,072**

Source: Integrated Public Use Microdata Series.
Note: Data represent a 2010 through 2014 average.

Demographics

Growth in communities of color uneven across the city

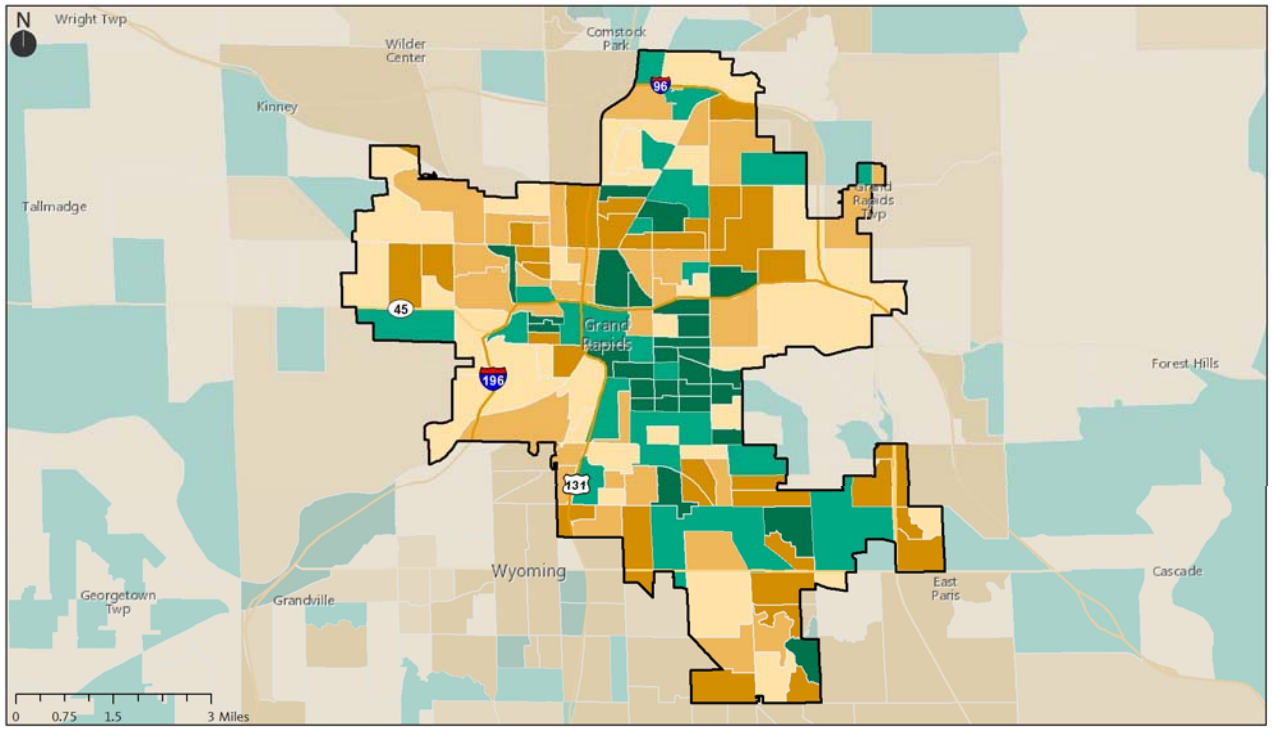
Mapping the growth in people of color by census block group illustrates how population change among communities of color varies throughout the region. The map highlights that the population of color has declined by 8 percent or more near downtown and east of downtown. The people of color population has increased, however, near East Beltline and in several areas north of Interstate 196.

Demographic change is uneven across the city. Around the South East Neighborhood, some block groups have experienced significant growth in people of color while neighboring block groups have seen significant declines.

Large net increases in people of color in the outskirts of the city more than offset declines in the central portion

Percent Change in People of Color by Census Block Group, 2000 to 2014

- Decline of 8% or more
- Decline of less than 8% or no growth
- Increase of less than 6%
- Increase of 6% to 12%
- Increase of 12% or more



Source: U.S. Census Bureau, GeoLytics, Inc.; TomTom, ESRI, HERE, DeLorme, MaymyIndia, © OpenStreetMap contributors, and the GIS user community.
Note: One should keep in mind when viewing this map and others that display a share or rate that while there is wide variation in the size (land area) of the census block groups in the region, each has a roughly similar number of people. Thus, a large block group on the region's periphery likely contains a similar number of people as a seemingly tiny one in the urban core, so care should be taken not to assign an unwarranted amount of attention to large block groups just because they are large. Data for 2014 represent a 2010 through 2014 average.

Demographics

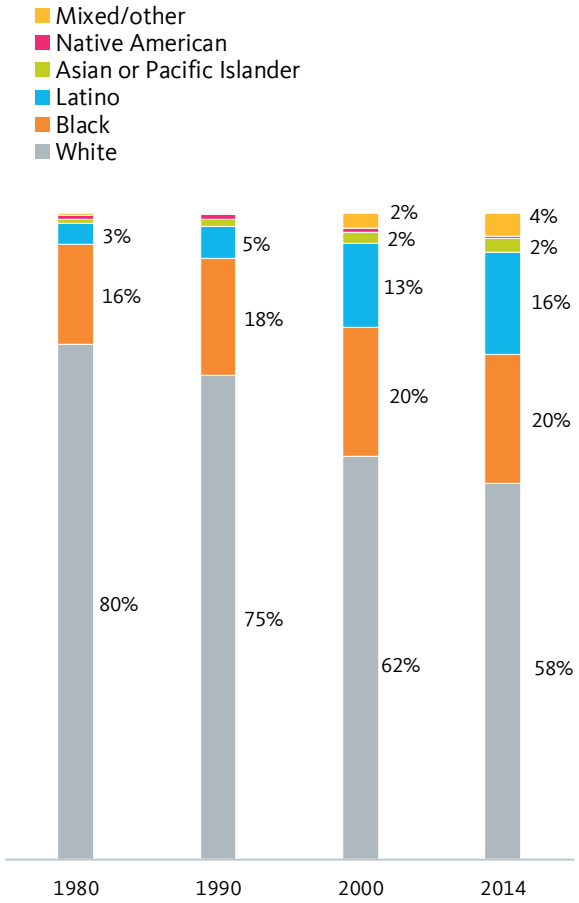
Steady demographic change over the past several decades

Growth of communities of color has fueled overall population growth in the city. In fact, the White population has declined in each decade since 1980. The city's diverse communities of color, on the other hand, have continued to grow at a steady pace. Over the past several decades, the people-of-color population in Grand Rapids has increased from 20 to 42 percent.

While the Black population has grown fairly steadily since 1980, the Latino population is five times as large as it was then, now comprising 16 percent of the city's residents.

The population is steadily diversifying

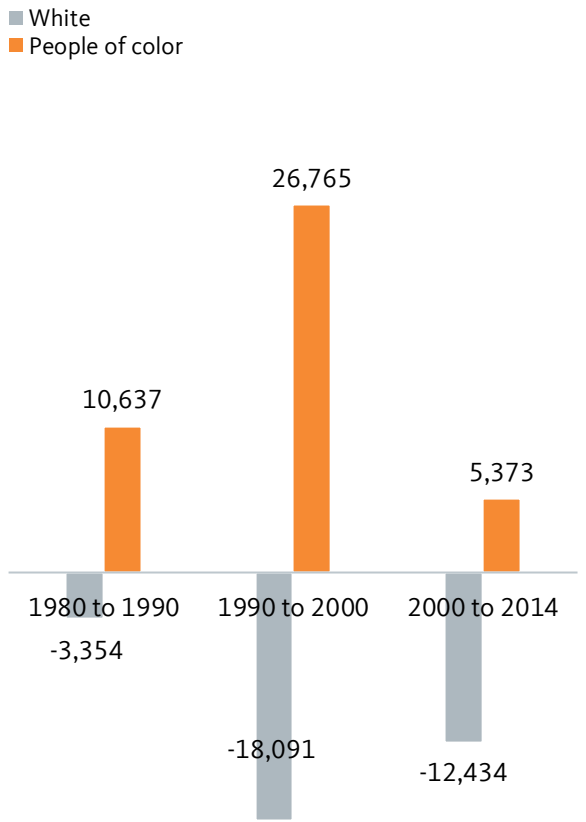
Racial/Ethnic Composition, 1980 to 2014



Source: U.S. Census Bureau.
Note: Data for 2014 represents a 2010 through 2014 average. Much of the increase in the Mixed/other population between 1990 and 2000 is due to a change in the survey question on race. Additionally, 2014 shares by race/ethnicity differ slightly from those reported on page 16 due to rounding.

The people-of-color population has grown since 1980, while the White population has significantly declined

Composition of Net Population Growth by Decade, 1980 to 2014



Source: U.S. Census Bureau.
Note: Data for 2014 represents a 2010 through 2014 average.

Demographics
Growth among some communities of color

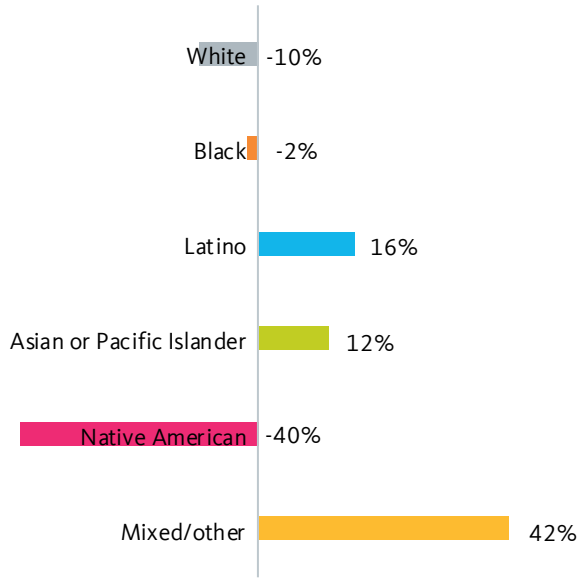
Although people of mixed/other races are a small share of the overall population, this population has grown by 42 percent since 2000 – the fastest rate of any major racial/ethnic group. Latino and Asian or Pacific Islander residents also saw significant growth, while the White, Black, and Native American populations declined.

The Latino population had the greatest overall population gain, increasing by 4,219 residents. Growth in the city's Latino population was entirely driven by increases in its U.S.-born residents; there was a net decline in the Latino immigrant population. Growth in the city's Asian or Pacific Islander population, on the other hand, was entirely driven by immigrants.

The city's Native American population fell by 40 percent, from a population count of 1,147 in 2000 to just under 700 in 2014.

Mixed/other races and Latinos grew the most in the 2000s, followed by Asian or Pacific Islanders

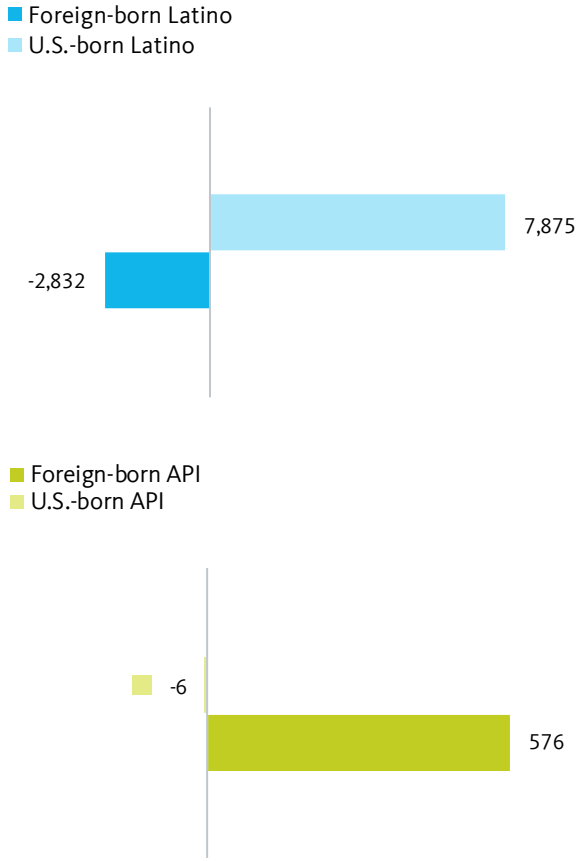
Growth Rates of Major Racial/Ethnic Groups, 2000 to 2014



Source: U.S. Census Bureau.
Note: Data for 2014 represents a 2010 through 2014 average.

Latino population growth was largely due to increases in U.S.-born Latinos, while Asian or Pacific Islander population growth was driven by immigration

Net Change in the Latino and Black Population by Nativity, 2000 to 2014



Source: Integrated Public Use Microdata Series.
Note: Data for 2014 represents a 2010 through 2014 average.

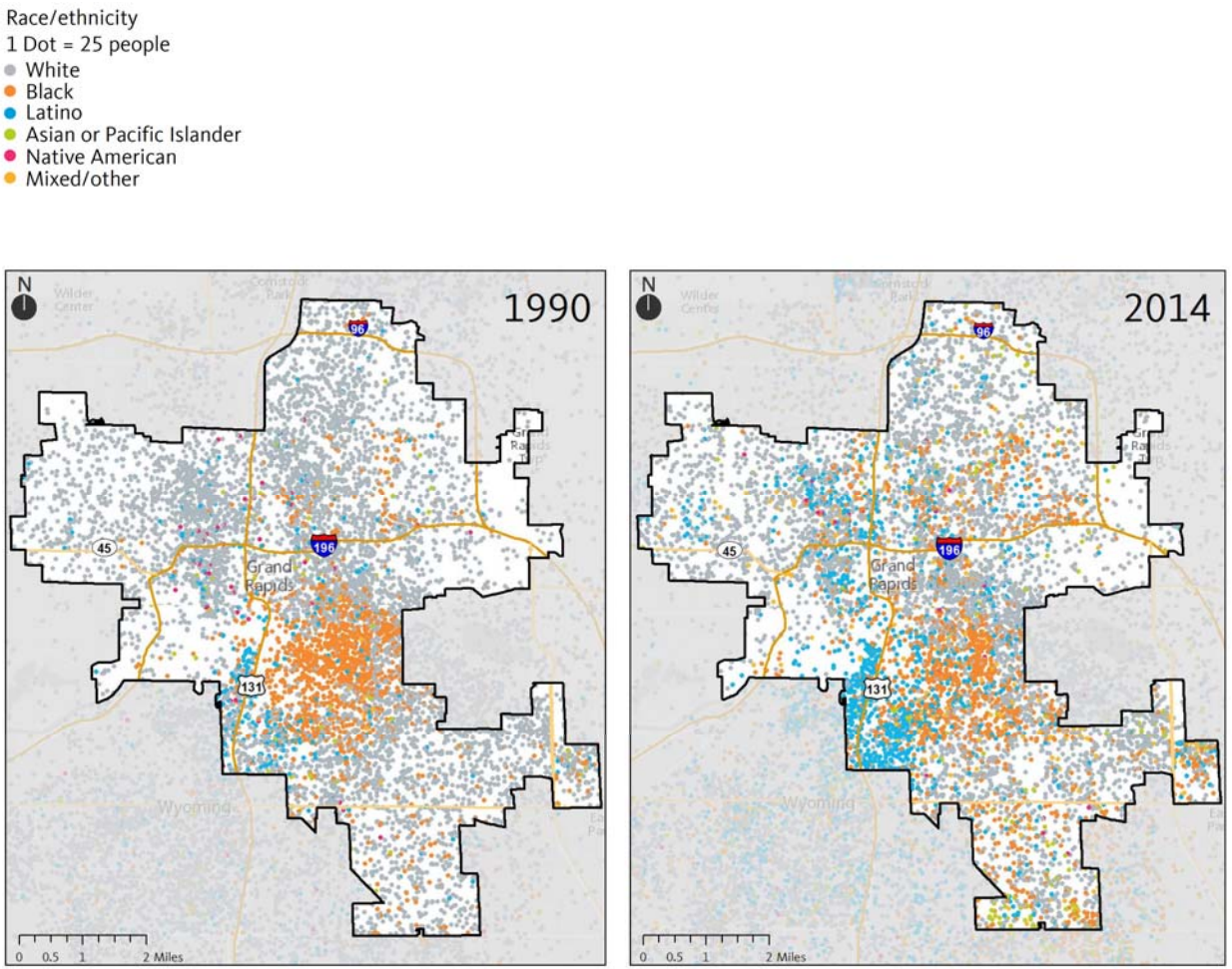
Demographics

Significant growth in the Latino population

Since 1990, the White population has declined by over 30,500 people. The decline is visible throughout the city as is the increase in the Latino population along the Interstate 131 corridor and in the largely Black areas southeast of downtown. The Black population has grown in the northeastern and southeastern part of the city.

The Latino population has increased in many different parts of the city

Racial/Ethnic Composition by Census Block Group, 1990 and 2014



Source: U.S. Census Bureau, GeoLytics, Inc.; TomTom, ESRI, HERE, DeLorme, MaymyIndia, © OpenStreetMap contributors, and the GIS user community.
Note: Data for 2014 represent a 2010 through 2014 average.

Demographics

The county (and likely the city) will continue to diversify

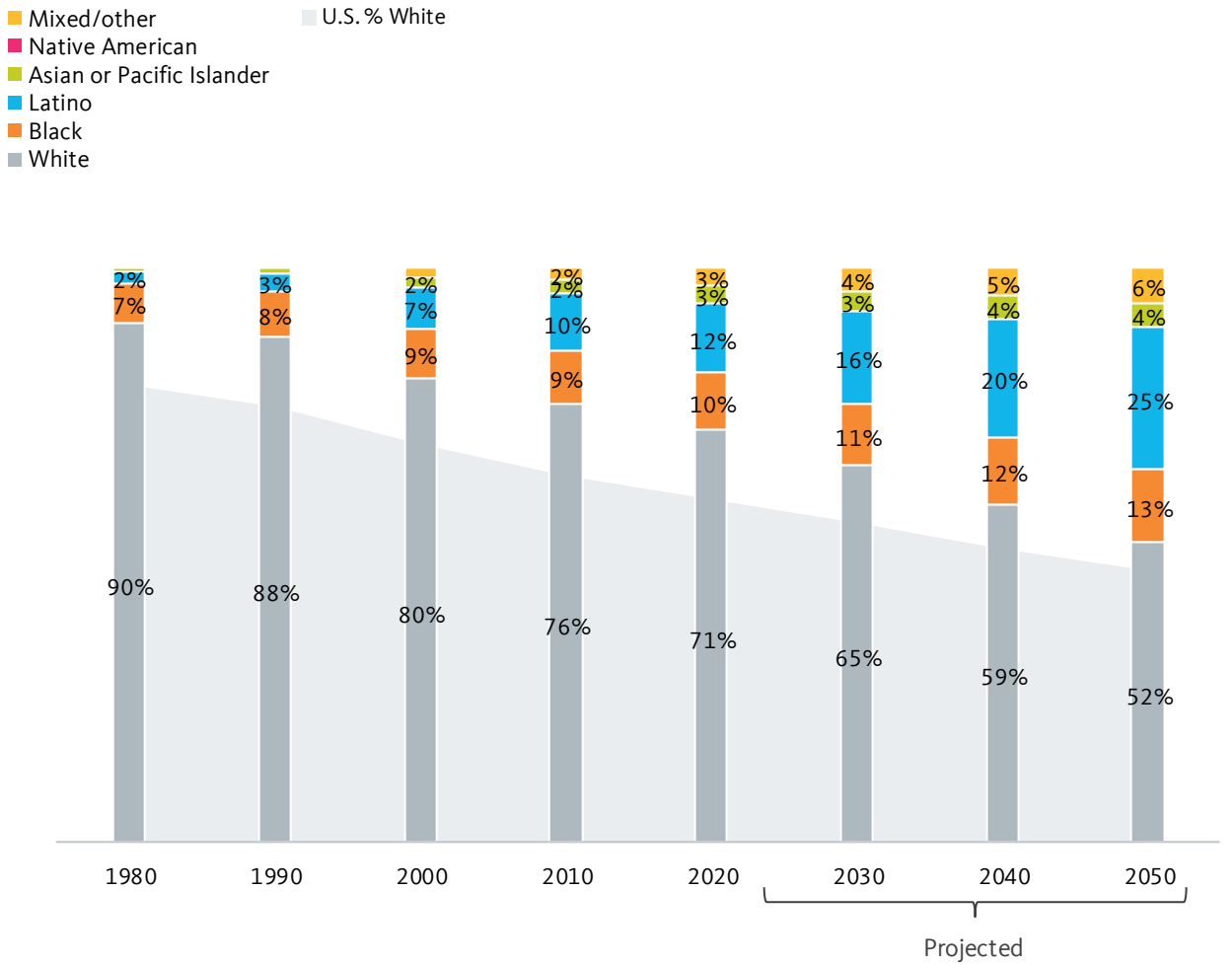
Due to lack of data on demographic projections for the city of Grand Rapids, here we examine projections for Kent County instead.

Demographic change in Kent County is occurring at a pace slightly faster than the nation as a whole. Based on the trend shown, the county could be expected to become majority people of color soon after 2050, less than a decade after the nation becomes majority people of color in the year 2044.

In 1980, the Latino population represented just 2 percent of the county's residents. By 2050 one out of every four residents will be Latino.

The share of people of color is projected to steadily increase through 2050

Racial/Ethnic Composition, 1980 to 2050



Source: U.S. Census Bureau; Woods & Poole Economics, Inc.
Note: Data is for Kent County, MI. Much of the increase in the Mixed/other population between 1990 and 2000 is due to a change in the survey question on race.

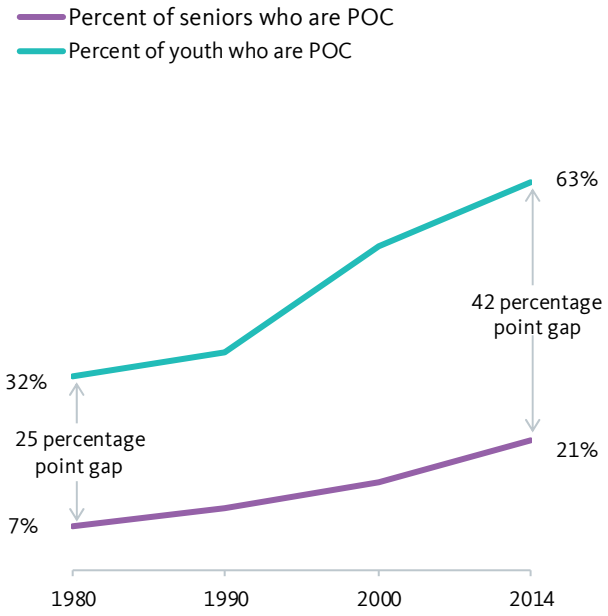
Demographics
A growing racial generation gap

Young people are leading the demographic shift in the city. As cities like Grand Rapids continue to diversify, many experience a racial generation gap, defined as the difference in the percent of youth and seniors in the city who are people of color. Today, 63 percent of Grand Rapids's youth (under age 18) are people of color, compared with 21 percent of the city's seniors (65 and older). This 42 percentage point difference measures the city's racial generation gap, which may negatively affect the region's economic outlook if seniors do not invest in the educational systems and community infrastructure needed to support a youth population that is more racially diverse.

The city's communities of color are also more youthful than its White population. People of mixed and other races, for example, have a median age of 15, while the median age of Whites is 35, a 20-year difference. Latino residents have a median age of 22 years old – 13 years younger than that of Whites.

The racial generation gap between youth and seniors continues to grow larger

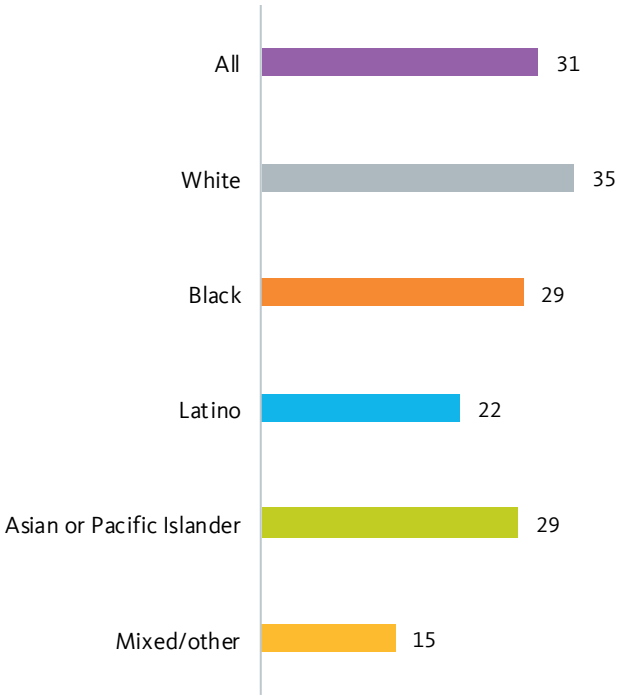
Percent People of Color (POC) by Age Group, 1980 to 2014



Source: U.S. Census Bureau.
Note: Data for 2014 represents a 2010 through 2014 average.

The city's communities of color are more youthful than its White population

Median Age by Race/Ethnicity, 2014



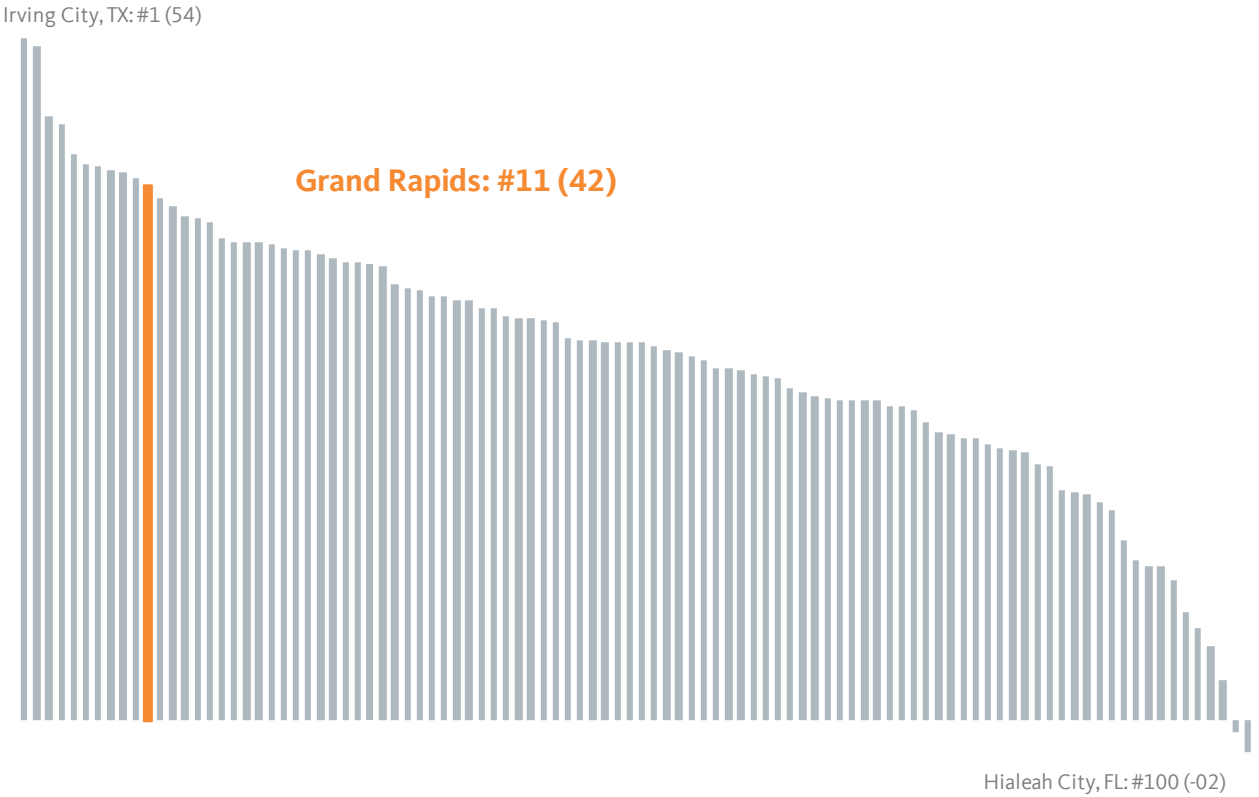
Source: Integrated Public Use Microdata Series.
Note: Data represent a 2010 through 2014 average.

Demographics
A growing racial generation gap

(continued)

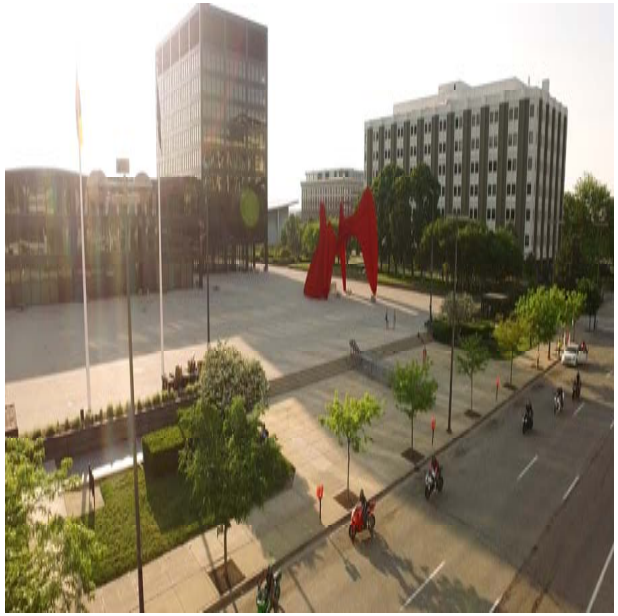
Grand Rapids's racial generation gap is relatively large at 42 percentage points. As compared to the largest 100 cities, Grand Rapids's racial generation gap is the 11th largest. Two other Midwestern cities, Milwaukee (#9 at 43 percentage points) and Minneapolis (#10, also at 43 percentage points), have similarly high racial generation gaps.

Grand Rapids's racial generation gap is relatively high compared to other cities
The Racial Generation Gap in 2014: Largest 100 Cities, Ranked



Source: U.S. Census Bureau.
Note: Data represent a 2010 through 2014 average

Economic vitality



Economic vitality

Highlights

How is the region doing on measures of economic growth and well-being?

- Kent County's job growth has consistently outpaced that of the nation as a whole, and its gross regional product (GRP) is catching up to the national average.
- Despite this growth, Black and Latino residents are more than twice as likely to be unemployed as White residents.
- Wages have declined since 1979 for all workers, but most drastically in the bottom half of the wage distribution.
- Grad Rapids's poverty rate is 11 percentage points higher than the national average.

Wage growth (since 1979) for workers at the 20th percentile :

-23%

Share of African Americans living in poverty:

47%

Unemployment among Latinos:

16%

Economic vitality

Economic recovery with job growth

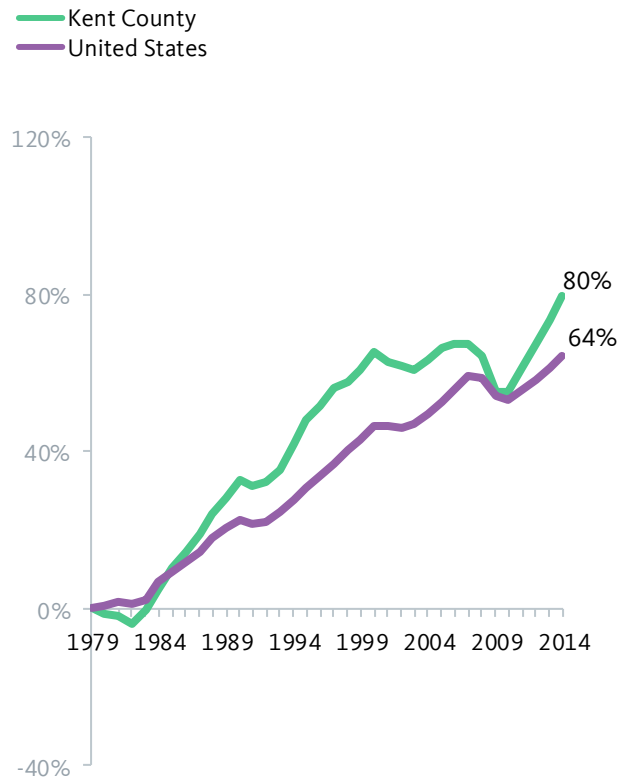
Economic growth as measured by increases in jobs and gross regional product (GRP) – the value of all goods and services produced within the region – has increased over the past several decades.

Despite falling sharply during the Great Recession, job growth in the region has consistently outpaced that of the nation since 1985, and has rebounded more quickly since the recession.

GRP growth, however, has not been as strong. While the region outpaced the nation between 1986 and 2004, regional production was hit harder by the recession than for the nation overall, and the region has lagged behind since 2005 (though it appears to be catching up in recent years).

Job growth has outpaced the national average since 1985

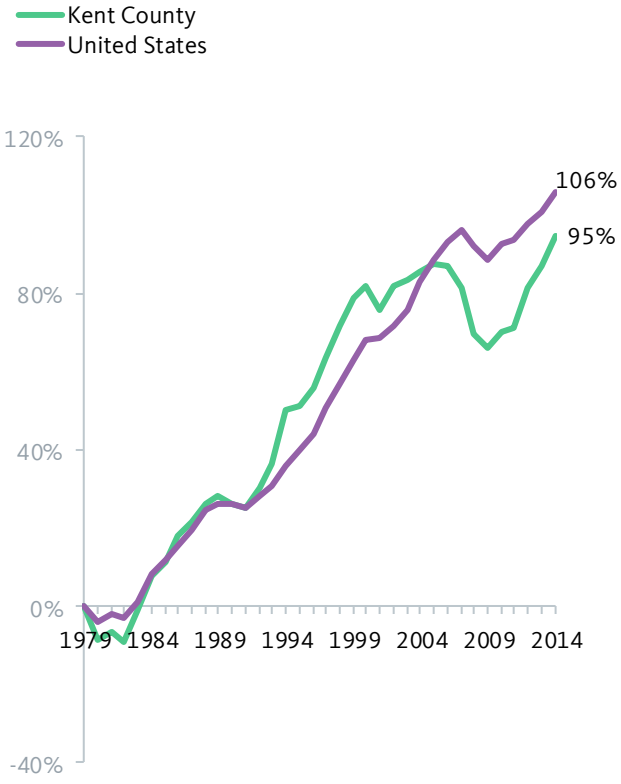
Cumulative Job Growth, 1979 to 2014



Source: U.S. Bureau of Economic Analysis.

Gross Regional Product (GRP) growth dropped well below the national average during the Great Recession

Cumulative Growth in Real GRP, 1979 to 2014



Source: U.S. Bureau of Economic Analysis.

Economic vitality

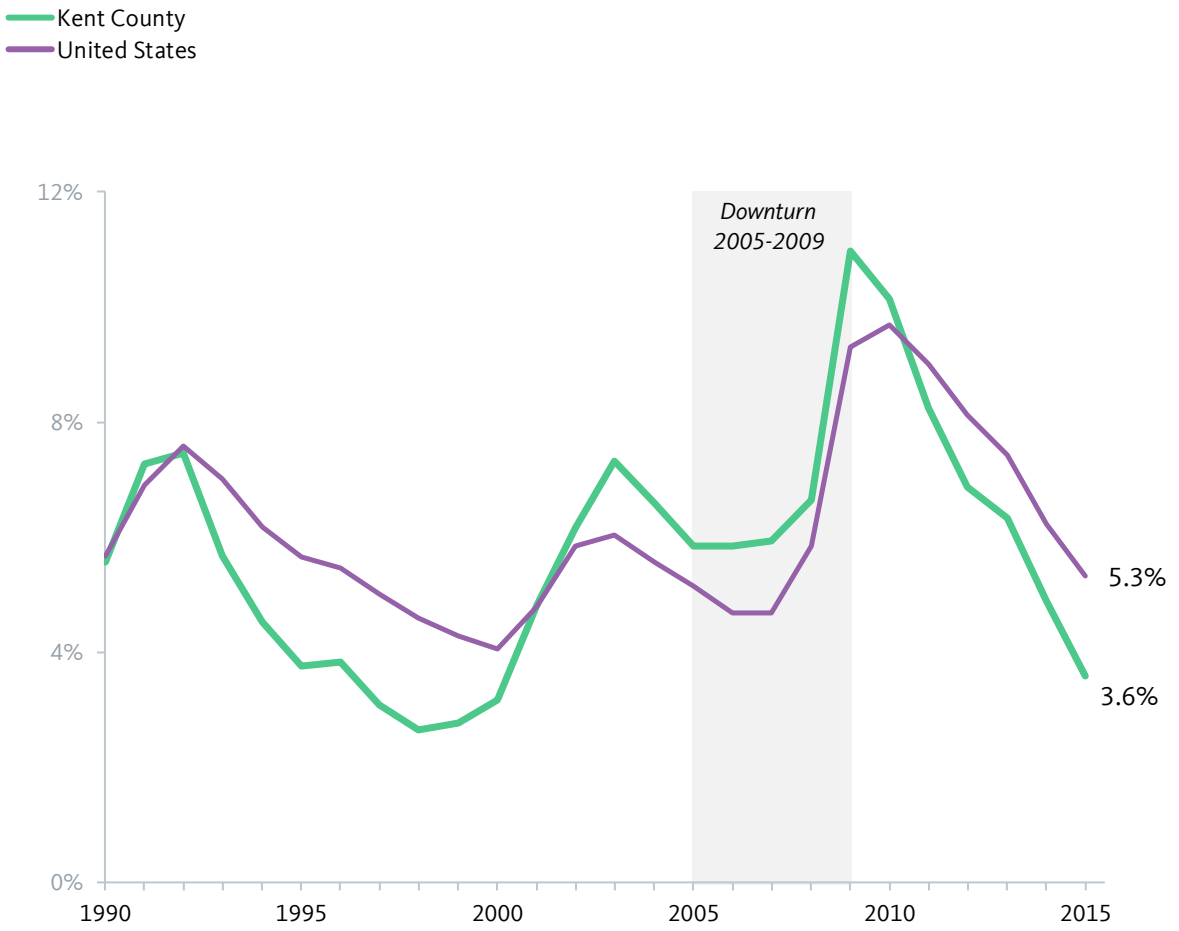
Economic resilience after the downturn

The regional economy struggled during the economic downturn but has recovered more quickly than the national economy. Unemployment spiked between 2009 and 2010, higher than the national peak. The region improved over the national average in 2011, however, and unemployment steadily decreased to 3.6 percent in 2015 – its lowest rate since 2000.

According to the most recent data from the Bureau of Labor Statistics, unemployment in the region was 3.6 percent as of February 2017.

Unemployment has been lower than the national average since 2011

Unemployment Rate, 1990 to 2015



Source: U.S. Bureau of Labor Statistics. Universe includes the civilian noninstitutional population ages 16 and older.

Economic vitality

Job growth is keeping up with population growth

While overall job growth is essential, it is important to consider whether the number of jobs is growing at a fast enough pace to keep up with population growth. Kent County's job growth per person has been higher than the national average since 1985, with the exception of 2009. The number of jobs per person has increased by 25 percent since 1979, while it has increased by only 16 percent for the nation overall.

While an increase in the jobs-to-population ratio is good, it does not speak to the quality of those jobs or whether they are equitably distributed across the working age population.

Job growth relative to population growth has been higher than the national average since 1985

Cumulative Growth in Jobs-to-Population Ratio, 1979 to 2014

Source: U.S. Bureau of Economic Analysis.

Economic vitality

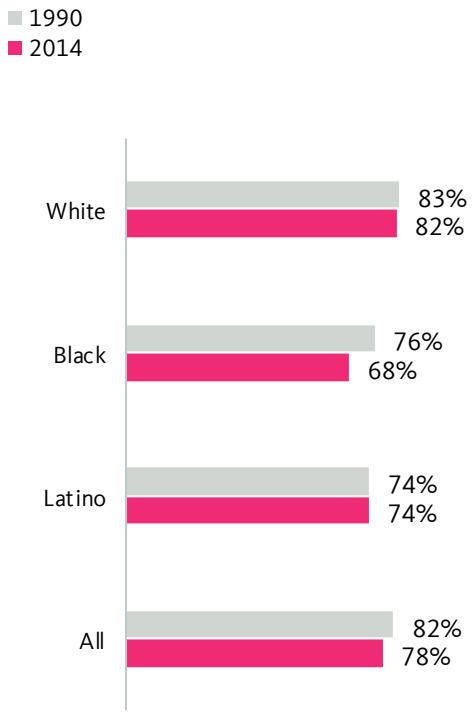
Decreased labor force participation rates among Black workers, with higher rates of unemployment

Although the region has experienced recent job growth and improved unemployment, racial employment gaps persist. African American and Latino workers face the most challenging employment situation. Latinos have experienced stagnant labor force participation, and the rate for Black residents has declined.

By 2014, unemployment among White residents was 7 percent, compared to 16 percent for Latinos, and 22 percent for African Americans. This suggests that, although the region's economy has improved, not all residents have benefitted equally.

Black residents have the lowest labor force participation rate

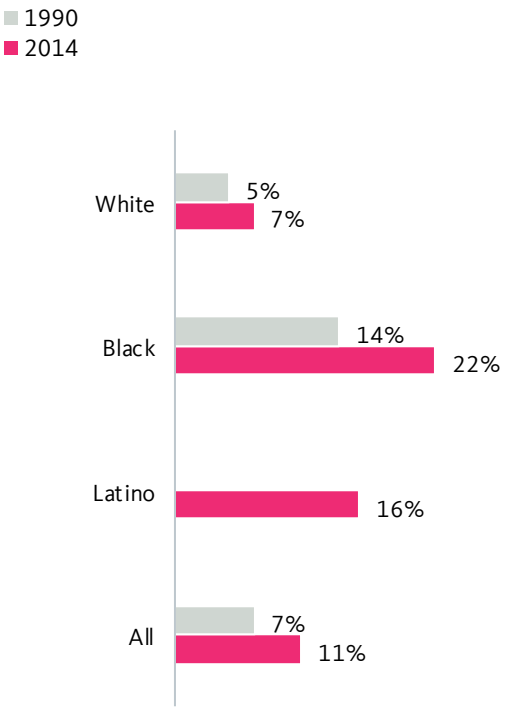
Labor Force Participation Rate by Race/Ethnicity, 1990 and 2014



Source: Integrated Public Use Microdata Series. Universe includes the civilian noninstitutional population ages 25 through 64.
Note: Data for 2014 represents a 2010 through 2014 average.

Blacks are three times as likely as Whites to be unemployed

Unemployment Rate by Race/Ethnicity, 1990 and 2014



Source: Integrated Public Use Microdata Series. Universe includes the civilian noninstitutional population ages 25 through 64. Note: Data for 2014 represents a 2010 through 2014 average. Data for some racial/ethnic groups in some years are excluded due to small sample size.

Economic vitality

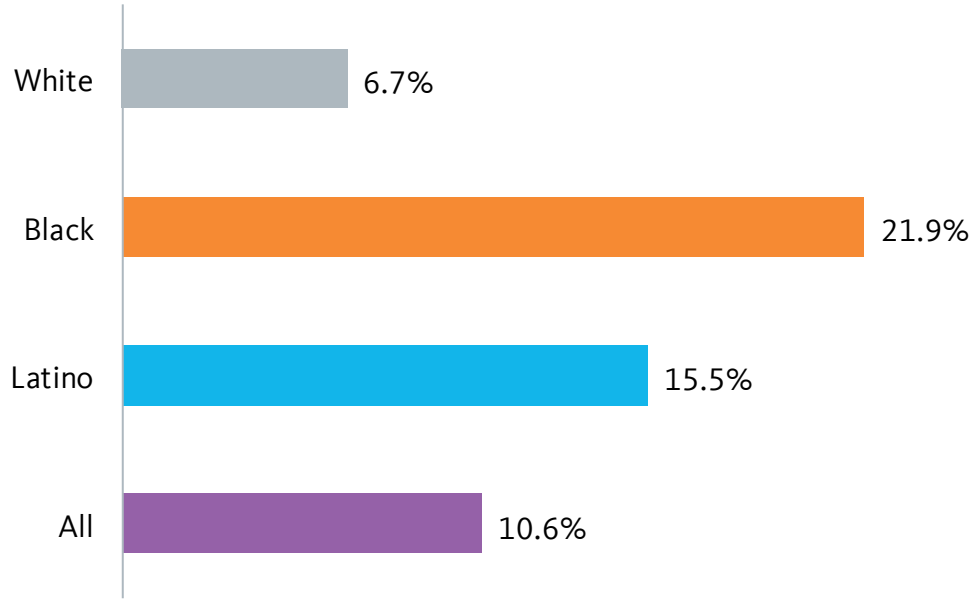
Unemployment highest for African American residents

African American residents are more likely than all other populations to be actively searching for work and unemployed. Nearly 22 percent of African American adults ages 25 to 64 are unemployed, compared to less than 7 percent of their White peers.

It's important to note that actual unemployment is likely even higher because only those who are *actively searching* for work are counted as unemployed, not those who have given up the search.

African Americans have the highest unemployment rates in the region

Unemployment Rate by Race/Ethnicity, 2014



Source: Integrated Public Use Microdata Series. Universe includes the civilian noninstitutional ized population ages 25 through 64.
Note: Data represent a 2010 through 2014 average.

Economic vitality

Unemployment concentrated in communities of color

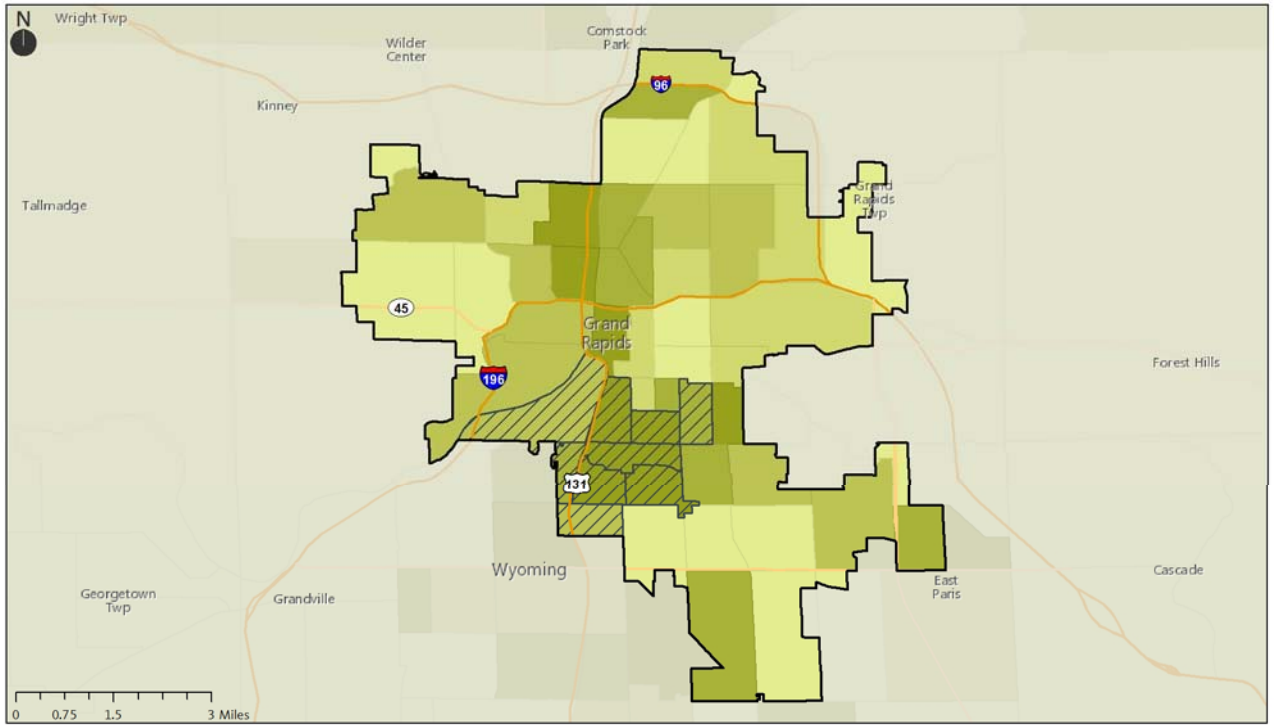
Knowing where high-unemployment communities are located can help city leaders develop targeted solutions.

As this map illustrates, concentrations of unemployment exist in pockets throughout the region, but are more prevalent in neighborhoods south of downtown and along the southeastern part of Interstate 131. The crosshatched tracts are neighborhoods where people of color make up more than three-fourths of the population. Of these tracts, more than half have an unemployment rate of 19 percent or more.

Clusters of high unemployment

Unemployment Rate by Census Tract, 2014

- Less than 7%
- 7% to 11%
- 11% to 14%
- 14% to 19%
- 19% or more
- 76% or more people of color



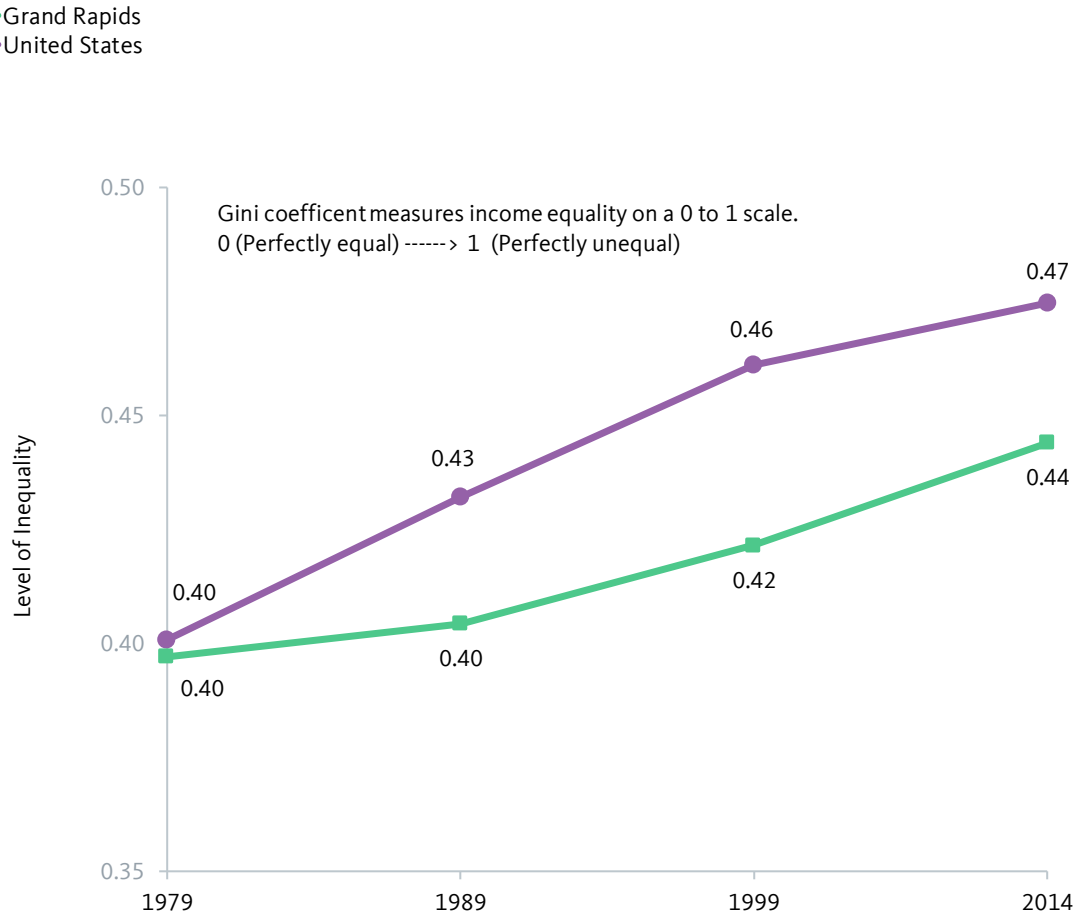
Source: U.S. Census Bureau; TomTom, ESRI, HERE, DeLorme, MaymyIndia, © OpenStreetMap contributors, and the GIS user community. Universe includes the civilian noninstitutional labor force age 16 and older. Note: Data represent a 2010 through 2014 average.

Economic vitality
Increasing income inequality

Income inequality has steadily grown in the city over the past 35 years, although at a slower rate than for the nation as a whole. Grand Rapids is ranked 80th among the 100 largest cities in terms of income inequality.

Inequality here is measured by the Gini coefficient, which is the most commonly used measure of inequality. The Gini coefficient measures the extent to which the income distribution deviates from perfect equality, meaning that every household has the same income. The value of the Gini coefficient ranges from zero (perfect equality) to one (complete inequality, one household has all of the income).

Household income inequality has steadily increased since 1979
Gini Coefficient, 1979 to 2014



Source: Integrated Public Use Microdata Series. Universe includes all households (no group quarters).
Note: Data for 2014 represents a 2010 through 2014 average.

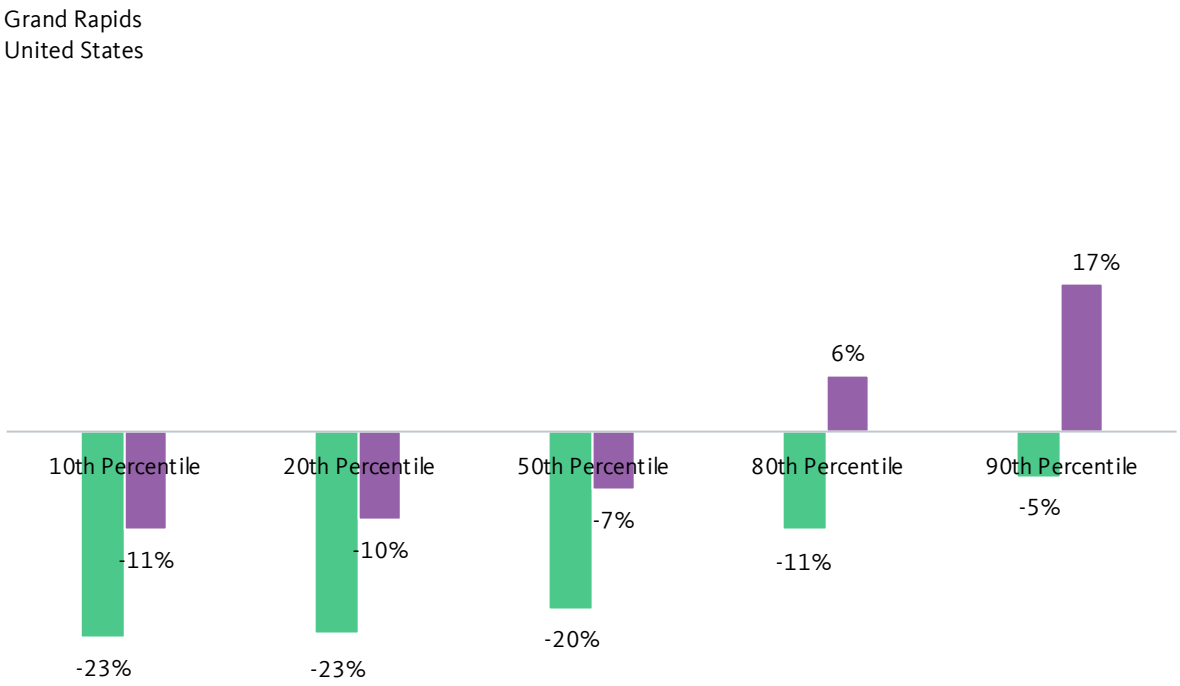
Economic vitality
Declining wages for all workers

Declining wages play an important role in the city's increasing inequality. After adjusting for inflation, wages have declined for all of the city's workers since 1979, but most strikingly for the poorest half of residents.

Wage decline has been much more severe in the city than it has been nationwide, and steepest for the lowest-paid workers. In Grand Rapids, wages fell by at least 20 percent for workers at the 10th, 20th and 50th percentiles.

Wages have decreased for all full-time workers

Real Earned Income Growth for Full-Time Wage and Salary Workers Ages 25-64, 1979 to 2014



Source: Integrated Public Use Microdata Series. Universe includes civilian noninstitutional full-time wage and salary workers ages 25 through 64.
Note: Data for 2014 represents a 2010 through 2014 average.

Economic vitality

Latino workers continue to earn the lowest wages

No race/ethnic group has a median wage high enough to be called a "living wage" for a family of one adult and two children living in Grand Rapids (based on the MIT Living Wage Calculator). The living wage for a family of three with one adult is almost $26/hour.

Median hourly wages have dropped for all residents since 2000, but there are considerable differences by race/ethnicity.

While African American workers saw the largest median wage decrease – over $3 per hour from 2000 to 2014 – Latino workers continue to earn the lowest median hourly wages.

Median hourly wages have declined considerably for people of color

Median Hourly Wage by Race/Ethnicity, 2000 and 2014

Source: Integrated Public Use Microdata Series. Universe includes civilian noninstitutional full-time wage and salary workers ages 25 through 64.
Note: Data for 2014 represents a 2010 through 2014 average. Values are in 2014 dollars.

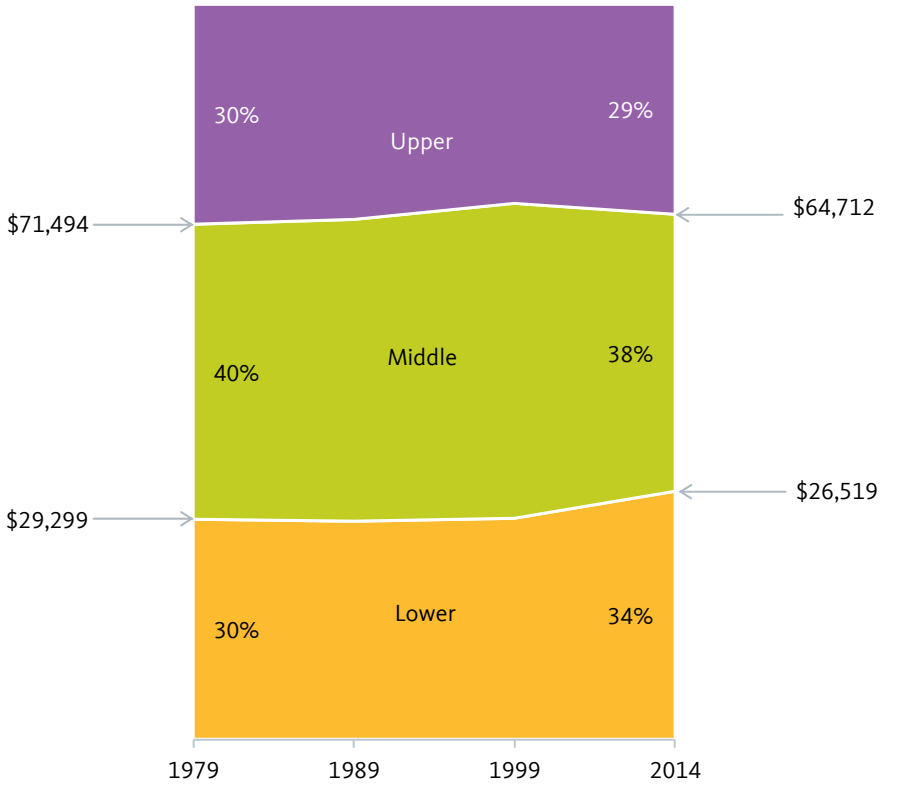
Economic vitality

The middle class is beginning to shrink

Although the city's middle class has stayed relatively stable since 1979, it is beginning to shrink. Since 1999, the share of both upper- and middle-income households has declined. The share of lower-income households in Grand Rapids has grown to 34 percent.

In this analysis, middle-income households are defined as having incomes in the middle 40 percent of household income distribution. In 1979, those household incomes ranged from $29,299 to $71,494. To assess change in the middle class and the other income ranges, we calculated what the income range would be today if incomes had increased at the same rate as average household income growth. Today's middle-class incomes would be $26,519 to $64,712, and 38 percent of households fall within that range.

The share of middle-class households is beginning to shrink
Households by Income Level, 1979 and 2014



Source: Integrated Public Use Microdata Series. Universe includes all households (no group quarters).
Note: Data for 2014 represents a 2010 through 2014 average. Dollar values are in 2014 dollars.

Economic vitality

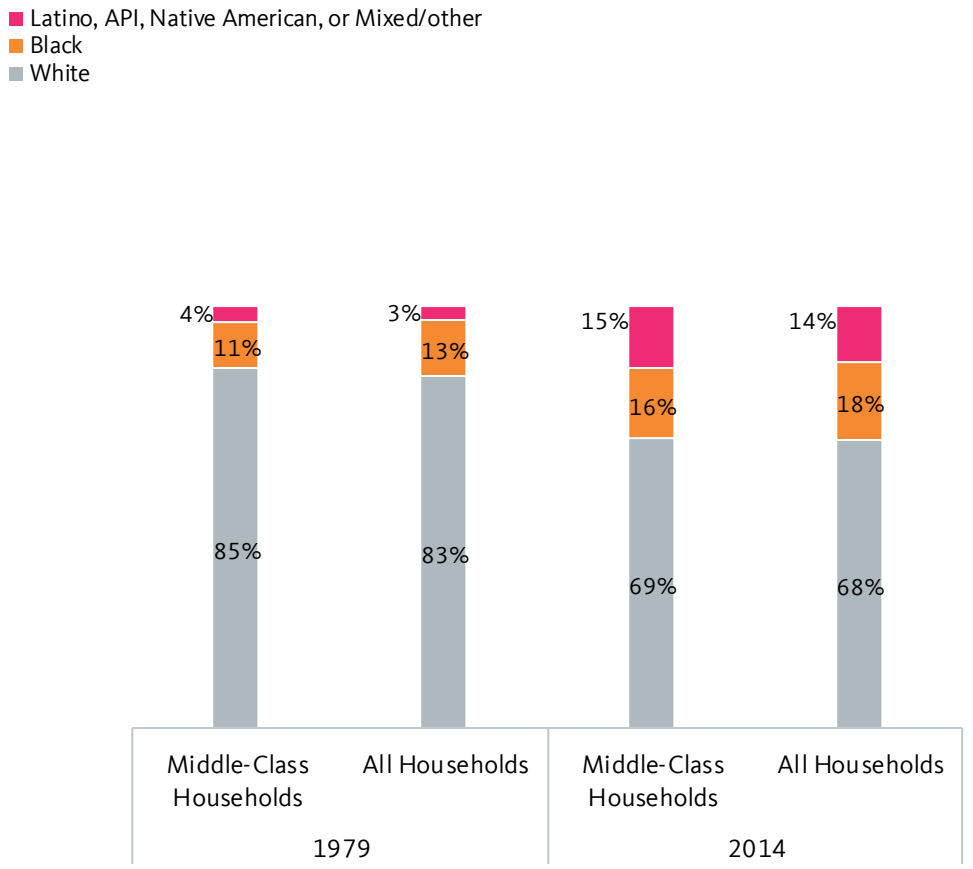
The middle class reflects the region's racial/ethnic composition

The demographics of the middle class reflect the region's changing demographics. While the share of households with middle-class incomes has declined since 1979, middle-class households have become more racially and ethnically diverse.

Black households are less likely than other groups to be among middle-income households – they make up 18 percent of all households but only 16 percent of middle-class households. White households, and all other households combined, are slightly overrepresented among middle-income households.

Black households are less likely to be in the middle class than other groups

Racial Composition of Middle-Class Households and All Households, 1979 and 2014



Source: Integrated Public Use Microdata Series. Universe includes all households (no group quarters).
Note: Data for 2014 represents a 2010 through 2014 average.

Economic vitality

Comparatively high and rising rates of poverty and working poverty

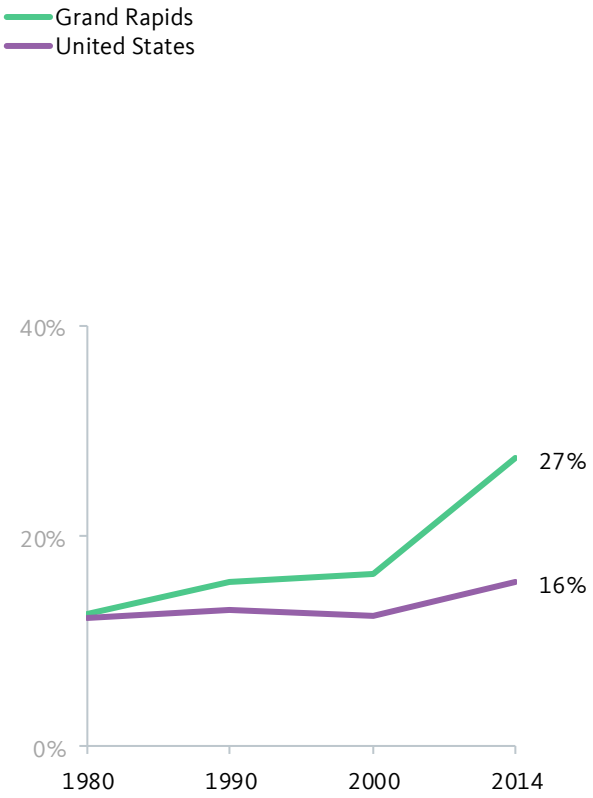
Grand Rapids's poverty and working poverty rates have both increased since 1990, outpacing national averages.

The city's poverty rate, measured as that share of the population falling below the federal poverty line, is more than 10 percentage points higher than the nation as a whole.

Working poverty, defined as working full-time with an income below 200 percent of the poverty level (roughly $48,000 for a family of four), has also risen. In Grand Rapids, 12 percent of 25- to 64-year-olds were working poor in 2014.

Poverty has risen drastically since 2000

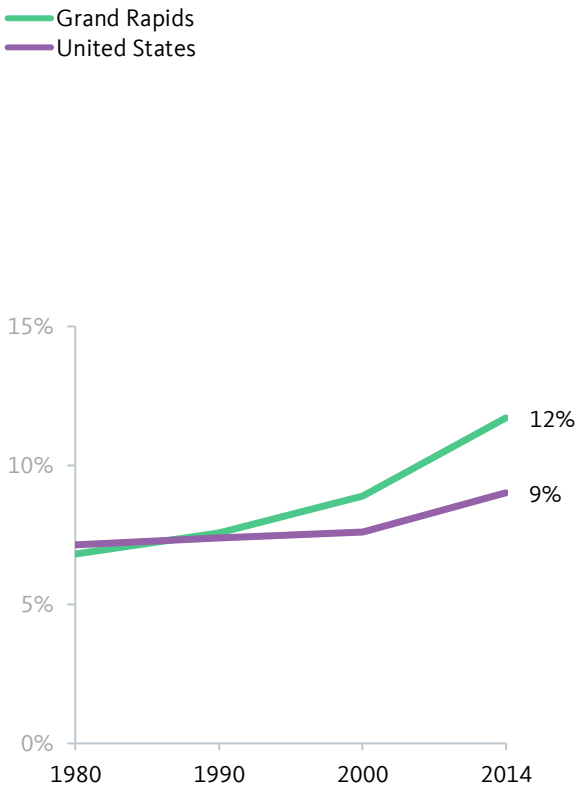
Poverty Rate, 1980 to 2014



Source: Integrated Public Use Microdata Series. Universe includes all persons not in group quarters.
Note: Data for 2014 represents a 2010 through 2014 average.

Working poverty is also increasing

Working Poverty Rate, 1980 to 2014



Source: Integrated Public Use Microdata Series. Universe includes the civilian noninstitutional population ages 25 through 64 not in group quarters.
Note: Data for 2014 represents a 2010 through 2014 average.

Economic vitality

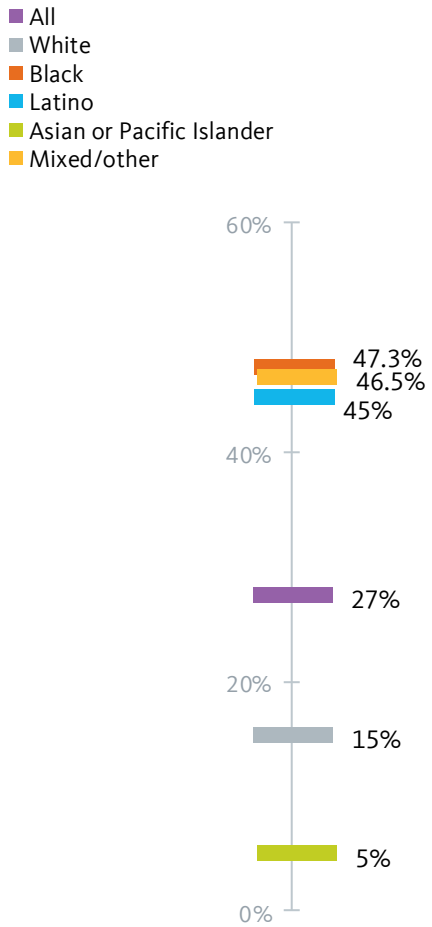
High rates of poverty and working poor among Black residents

Latino, Black, and mixed/other race residents of Grand Rapids experience poverty at rates that are about three times as high as their White peers.

The same is true for working poverty. Latinos have the highest rate of working poverty, at 26 percent, followed by African American residents at 15 percent.

Poverty is highest for African Americans, Latinos, and those of Mixed/other race

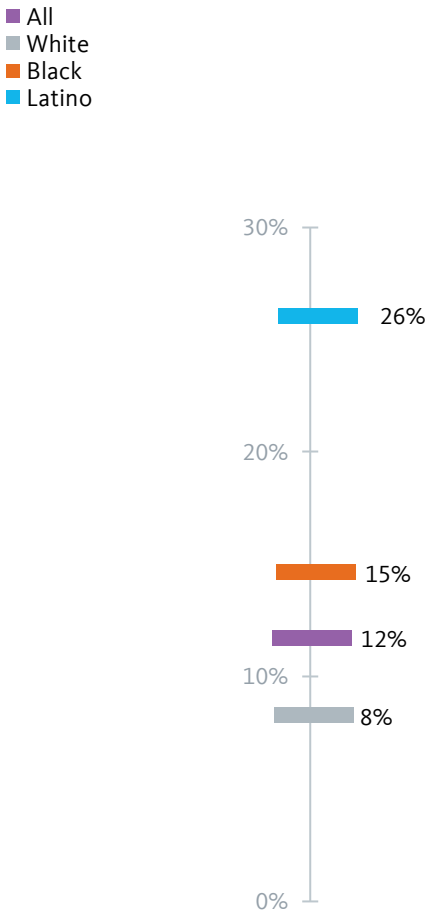
Poverty Rate by Race/Ethnicity, 2014



Source: Integrated Public Use Microdata Series. Universe includes all persons not in group quarters. Note: Data represent a 2010 through 2014 average.

Working poverty is highest for Latinos

Working Poverty Rate by Race/Ethnicity, 2014



Source: Integrated Public Use Microdata Series. Universe includes the civilian noninstitutional population ages 25 through 64 not in group quarters. Note: Data represent a 2010 through 2014 average.

Economic vitality

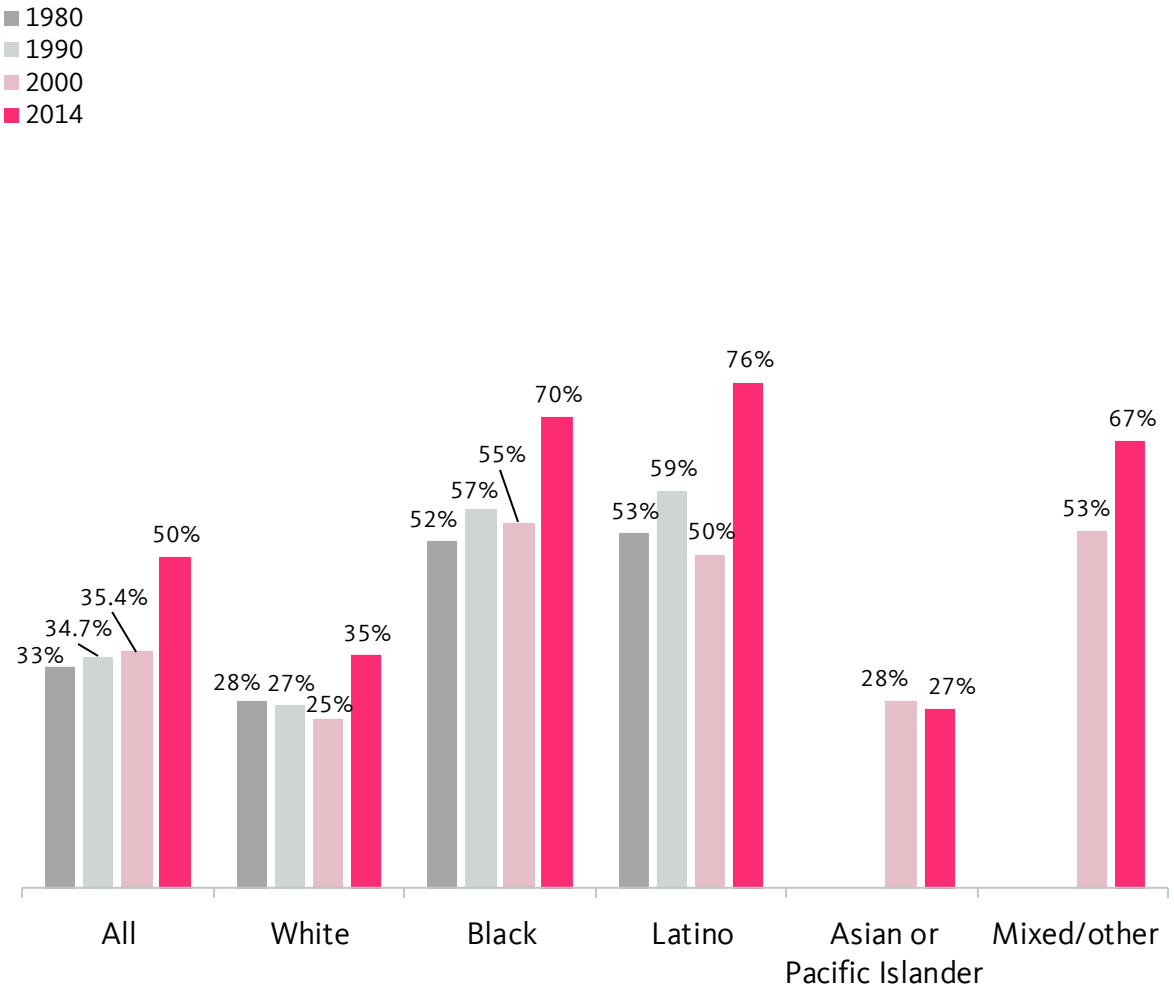
Economic insecurity is highest among the region's communities of color

Because the federal poverty level is so low, it's helpful to look at the share of the population living below 200 percent of poverty. In 2014, double the poverty line was $48,000 a year for a family of four—which is still well below a living wage. According to the MIT Living Wage Calculator, a living wage for a family of four with two adults and two children living in Grand Rapids would be more than $59,000 a year.

Residents of color have been consistently more likely to live below 200 percent of poverty. Alarmingly, Latinos are more than three times as likely to live below 200 percent of poverty than their White peers.

Poverty has increased each decade among race/ethnic groups

Percent of the Population Below 200 Percent of Poverty, 1980-2014



Source: Integrated Public Use Microdata Series. Universe includes all persons not in group quarters.
Note: Data for 2014 represents a 2010 through 2014 average. Data for some racial/ethnic groups in some years are excluded due to small sample size.

Economic vitality

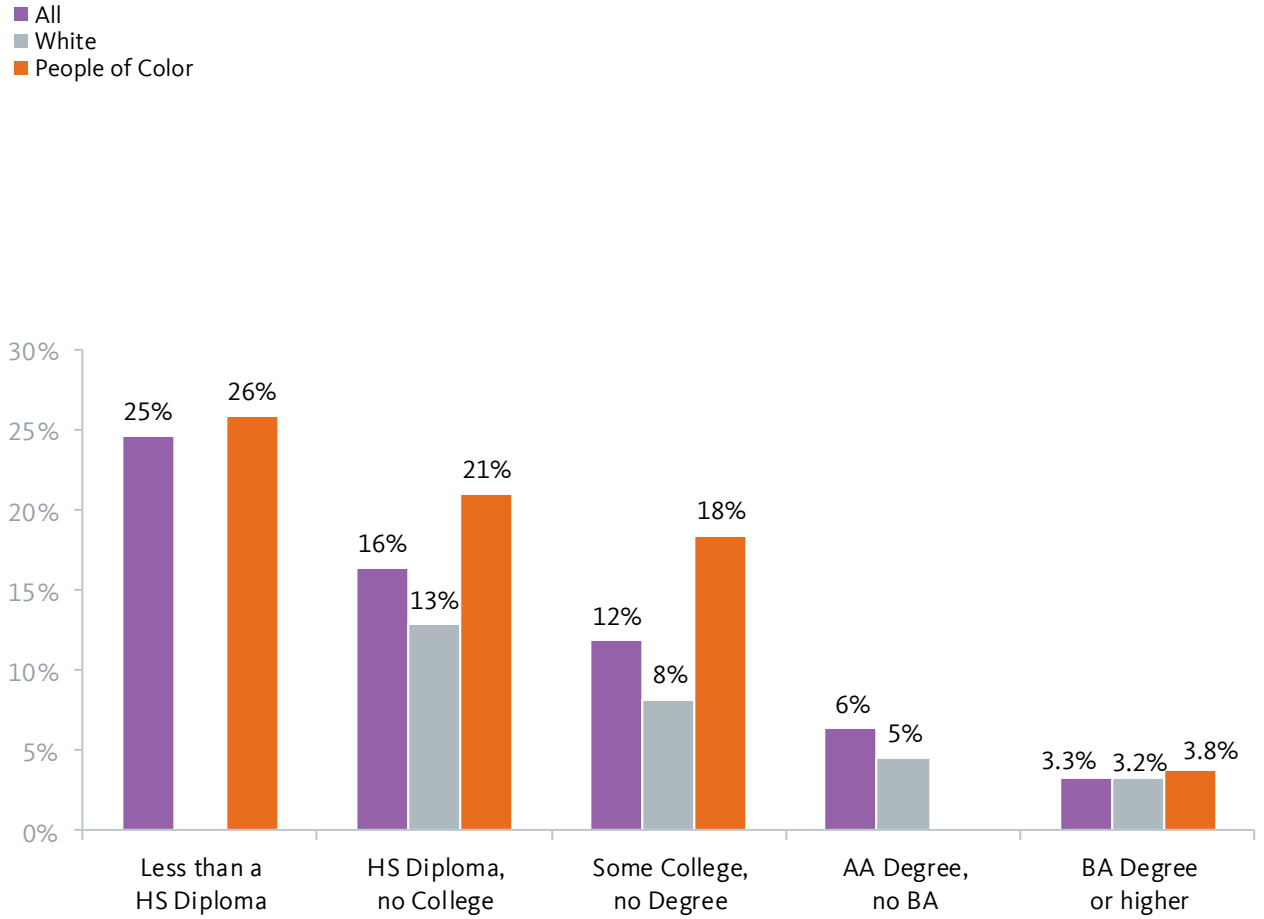
People of color have higher unemployment rates regardless of education level

In general, unemployment decreases as educational attainment increases. But people of color face higher rates of joblessness at all education levels compared to their White counterparts.

The largest gaps are among those with some college, but no degree: people of color are more than twice as likely to be unemployed than their White peers.

People of color have higher unemployment rates than Whites

Unemployment Rate by Educational Attainment and Race/Ethnicity, 2014



Source: Integrated Public Use Microdata Series. Universe includes the civilian noninstitutional labor force ages 25 through 64.
Note: Data represent a 2010 through 2014 average. Data for some racial/ethnic groups are excluded due to small sample size.

Economic vitality

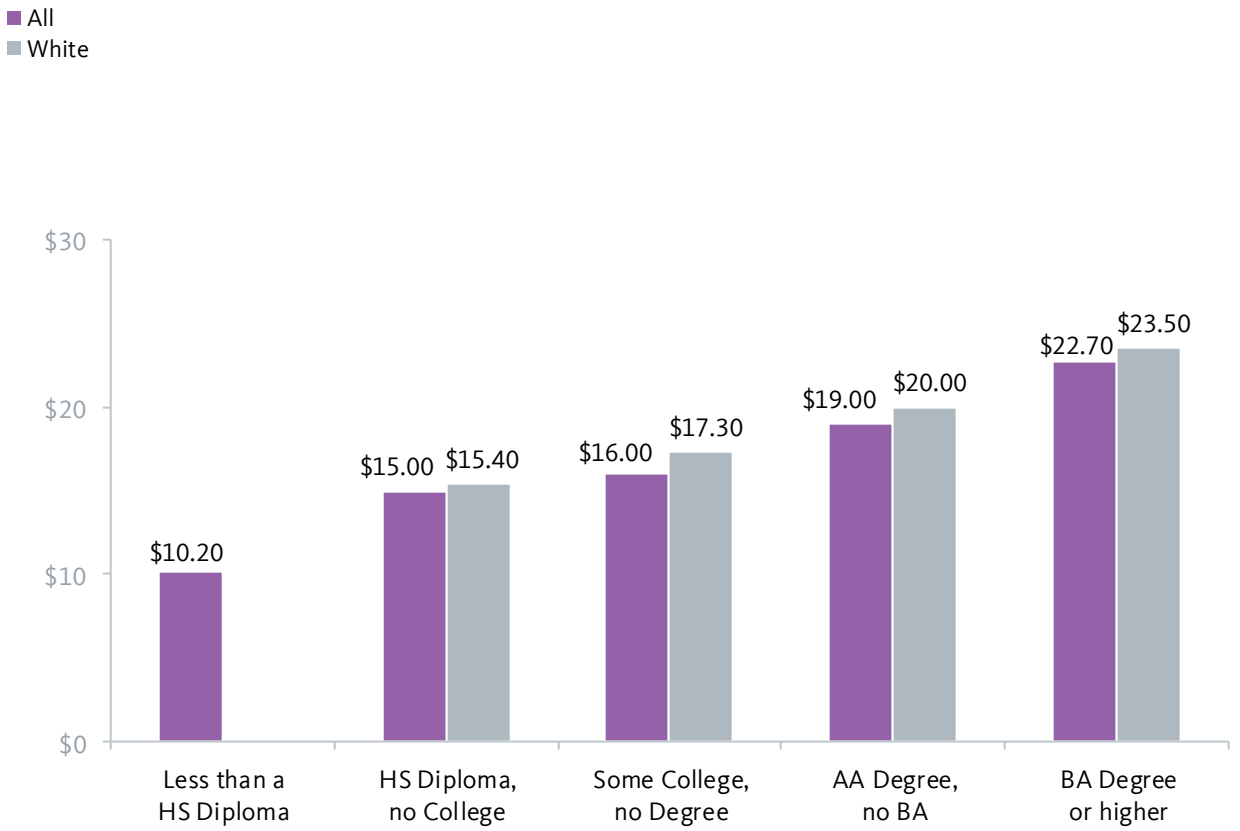
Racial disparities in wages are narrow across all levels of education

Although disparities exist, Grand Rapids residents do not appear to experience a significant racial wage gap within education cohorts.

On average, workers can expect to earn $4 more per hour after obtaining an associate's degree compared to those with just a high school diploma, and nearly $8 more with a bachelor's degree or higher.

Whites have above average wages at every education level

Median Hourly Wage by Educational Attainment and Race/Ethnicity, 2014



Source: Integrated Public Use Microdata Series. Universe includes civilian noninstitutional full-time wage and salary workers ages 25 through 64.
Note: Data represent a 2010 through 2014 average. Data for some racial/ethnic groups are excluded due to small sample size. Values are in 2014 dollars.

Economic vitality

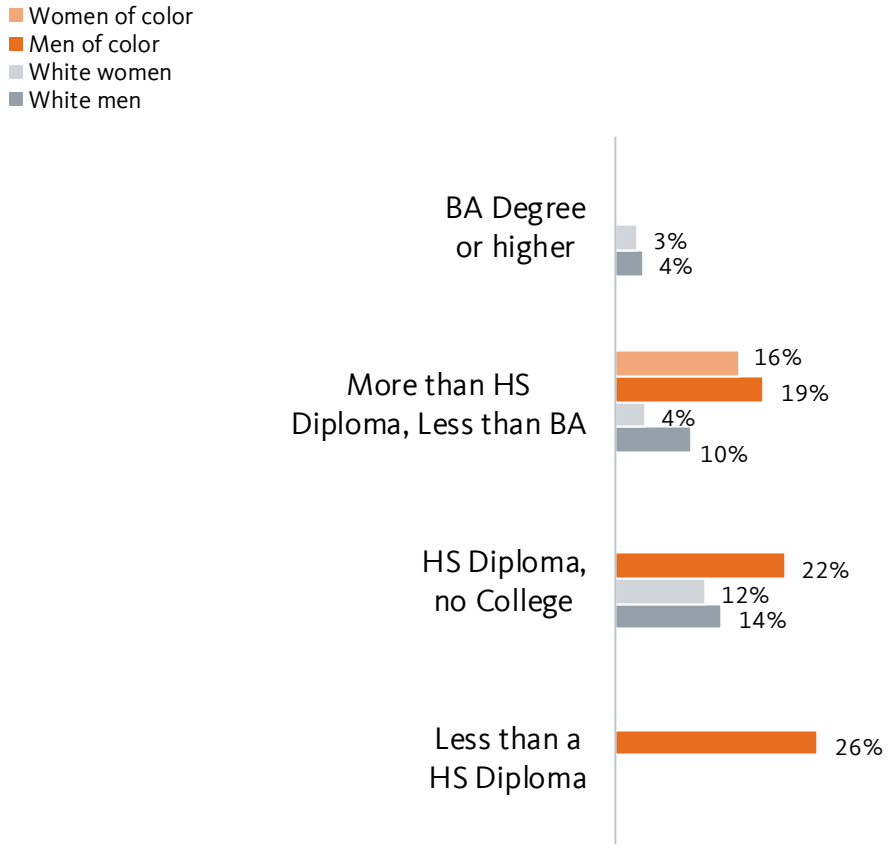
Men of color and White men have higher unemployment rates than their female counterparts

People of color typically experience higher unemployment rates than White workers with similar educational attainment. Sixteen percent of women of color with more than a high school diploma but less than a bachelor's degree are unemployed, compared to just 4 percent of their White peers.

Men of color have the highest unemployment rates across education levels for which data is available. One in every four men of color who have not completed high school are unemployed.

Men of color tend to have highest unemployment rates regardless of education

Unemployment Rate by Educational Attainment, Race/Ethnicity, and Gender, 2014



Source: Integrated Public Use Microdata Series. Universe includes the civilian noninstitutional labor force ages 25 through 64.
Note: Data represent a 2010 through 2014 average. Data for some racial/ethnic and gender groups are excluded due to small sample size.

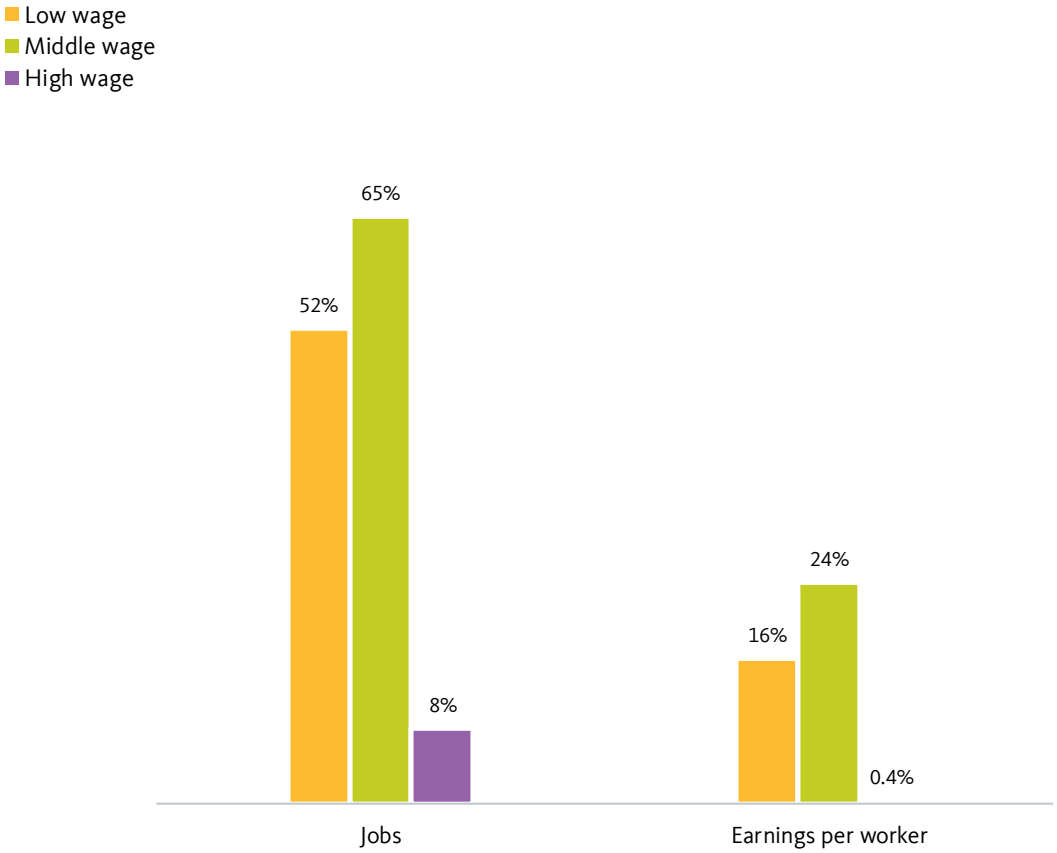
Economic vitality
Growing low and middle-wage jobs

Job growth in Kent County, like the U.S. economy as a whole, has been concentrated in low-wage industries. Middle-wage jobs have also increased considerably in Kent County.

Average earnings have increased for low- and middle-wage workers (by 16 and 24 percent, respectively) since 1990. Workers in high-wage industries have seen little to no increase in earnings.

Low- and middle- wage jobs grew the most and had the largest earnings growth

Growth in Jobs and Earnings by Industry Wage Level, 1990 to 2015



Source: U.S. Bureau of Labor Statistics; Woods & Poole Economics, Inc. Universe includes all private sector jobs covered by the federal Unemployment Insurance (UI) program. Note: Data is for Kent County, MI.

Economic vitality

Uneven wage growth across industry sectors

Low-wage industries in Kent County have the largest share of jobs, followed by high-wage industries, and then middle-wage industries, with the smallest share.

Wage growth in Kent County has been uneven across industry sectors since 1990. Among low-wage industries, changes in earnings have ranged from slight declines (in arts entertainment, and recreation) to 19 percent growth (in agriculture). Among middle-wage industries, which have tended to see the most earnings growth, the real estate industry actually saw a decline in average earnings of 3 percent while the management industry experienced earnings growth of 93 percent. Among high-wage industries, earnings have mostly fallen for half of the industries since 1990, and risen only modestly for the other half.

Slow to moderate wage growth for workers in many of the region's largest industries

Industries by Wage Level Category in 1990 and 2015

Wage Category	Industry	Average Annual Earnings 1990	Average Annual Earnings 2015	Percent Change in Earnings 1990-2015	Share of Jobs 2015
High	Utilities	$107,704	$80,284	-25%	33%
	Professional, Scientific, and Technical Services	$79,977	$57,744	-28%	
	Transportation and Warehousing	$72,645	$45,161	-38%	
	Mining	$58,534	$68,351	17%	
	Manufacturing	$53,876	$56,364	5%	
	Wholesale Trade	$51,206	$58,478	14%	
Middle	Construction	$48,790	$51,212	5%	31%
	Finance and Insurance	$48,236	$63,139	31%	
	Management of Companies and Enterprises	$47,350	$91,402	93%	
	Information	$39,890	$53,067	33%	
	Health Care and Social Assistance	$39,726	$47,325	19%	
	Real Estate and Rental and Leasing	$35,799	$34,789	-3%	
	Education Services	$31,936	$32,909	3%	
Low	Other Services (except Public Administration)	$27,205	$28,351	4%	36%
	Retail Trade	$25,335	$29,178	15%	
	Administrative and Support and Waste Management a	$23,073	$25,834	12%	
	Agriculture, Forestry, Fishing and Hunting	$22,016	$26,136	19%	
	Arts, Entertainment, and Recreation	$18,519	$18,113	-2%	
	Accommodation and Food Services	$13,427	$14,689	9%	

Source: U.S. Bureau of Labor Statistics; Woods & Poole Economics, Inc. Universe includes all private sector jobs covered by the federal Unemployment Insurance (UI) program. Note: Data is for Kent County, MI. Dollar values are in 2015 dollars.

Economic vitality

Educational and health services industry projected to provide the most jobs in 2022

While the largest projected increases in jobs are in the educational and health services industry, professional and business services is projected to add over 18,000 jobs and manufacturing will add nearly 13,000 jobs by 2022

Industry Employment Projections, 2012-2022

Industry	2012 Estimated Employment	2022 Projected Employment	Total 2012-2022 Employment Change	Annual Avg. Percent Change	Total Percent Change
Total Self-Employed and Unpaid Family Workers, Non-Agriculture	32,610	36,030	3,420	1.0%	10%
Natural Resources and Mining	16,820	18,940	2,120	1.2%	13%
Construction	23,330	28,790	5,460	2.1%	23%
Manufacturing	131,910	144,560	12,650	0.9%	10%
Trade, Transportation, and Utilities	114,250	122,200	7,950	0.7%	7%
Information	6,350	6,440	90	0.1%	1%
Financial Activities	28,710	31,630	2,920	1.0%	10%
Professional and Business Services	86,440	104,910	18,470	2.0%	21%
Educational and Health Services	141,290	164,270	22,980	1.5%	16%
Leisure and Hospitality	57,520	62,810	5,290	0.9%	9%
Other Services (Except Government)	28,390	31,190	2,800	0.9%	10%
Government	29,580	29,380	-200	-0.1%	-1%
Total, All Industries	697,190	781,130	83,940	1.1%	12%

Source: Michigan Department of Technology, Management and Budget, Bureau of Labor Market Information and Strategic Initiatives.
Note: Data is for the West Michigan Prosperity Alliance region, including Mason, Lake, Osceola, Oceana, Newaygo, Mecosta, Muskegon, Kent, Montcalm, Ottawa, Ionia, Allegan, and Barry Counties. Figures may not sum to total due to rounding.

Economic vitality

Health-care occupations will see the greatest growth in the region

While production occupations are predicted to add the most jobs by 2022, health-care practitioners and technical occupations as well as health-care support occupations will see the fastest growth, adding another 13,000 jobs

Occupational Employment Projections, 2012-2022

Occupation	2012 Estimated Employment	2022 Projected Employment	Total 2012-2022 Employment Change	Annual Avg. Percent Change	Total Percent Change
Management Occupations	38,760	43,210	4,450	1.1%	11%
Business and Financial Operations Occupations	27,265	31,050	3,785	1.3%	14%
Computer and Mathematical Occupations	11,250	13,335	2,085	1.7%	19%
Architecture and Engineering Occupations	14,825	16,700	1,875	1.2%	13%
Life, Physical, and Social Science Occupations	3,710	4,160	450	1.2%	12%
Community and Social Service Occupations	10,100	11,640	1,540	1.4%	15%
Legal Occupations	2,805	3,125	320	1.1%	11%
Education, Training, and Library Occupations	44,125	48,935	4,810	1.0%	11%
Arts, Design, Entertainment, Sports, and Media Occupations	9,635	10,660	1,025	1.0%	11%
Healthcare Practitioners and Technical Occupations	38,470	46,980	8,510	2.0%	22%
Healthcare Support Occupations	21,260	26,150	4,890	2.1%	23%
Protective Service Occupations	10,070	10,605	535	0.5%	5%
Food Preparation and Serving Related Occupations	53,525	58,600	5,075	0.9%	9%
Building and Grounds Cleaning and Maintenance Occupations	23,370	26,595	3,225	1.3%	14%
Personal Care and Service Occupations	20,610	23,490	2,880	1.3%	14%
Sales and Related Occupations	67,040	72,735	5,695	0.8%	8%
Office and Administrative Support Occupations	95,740	102,425	6,685	0.7%	7%
Farming, Fishing, and Forestry Occupations	10,700	12,155	1,455	1.3%	14%
Construction and Extraction Occupations	23,505	27,995	4,490	1.8%	19%
Installation, Maintenance, and Repair Occupations	26,415	30,260	3,845	1.4%	15%
Production Occupations	97,055	108,535	11,480	1.1%	12%
Transportation and Material Moving Occupations	46,955	51,795	4,840	1.0%	10%
Total, All Occupations	697,190	781,135	83,945	1.1%	12%

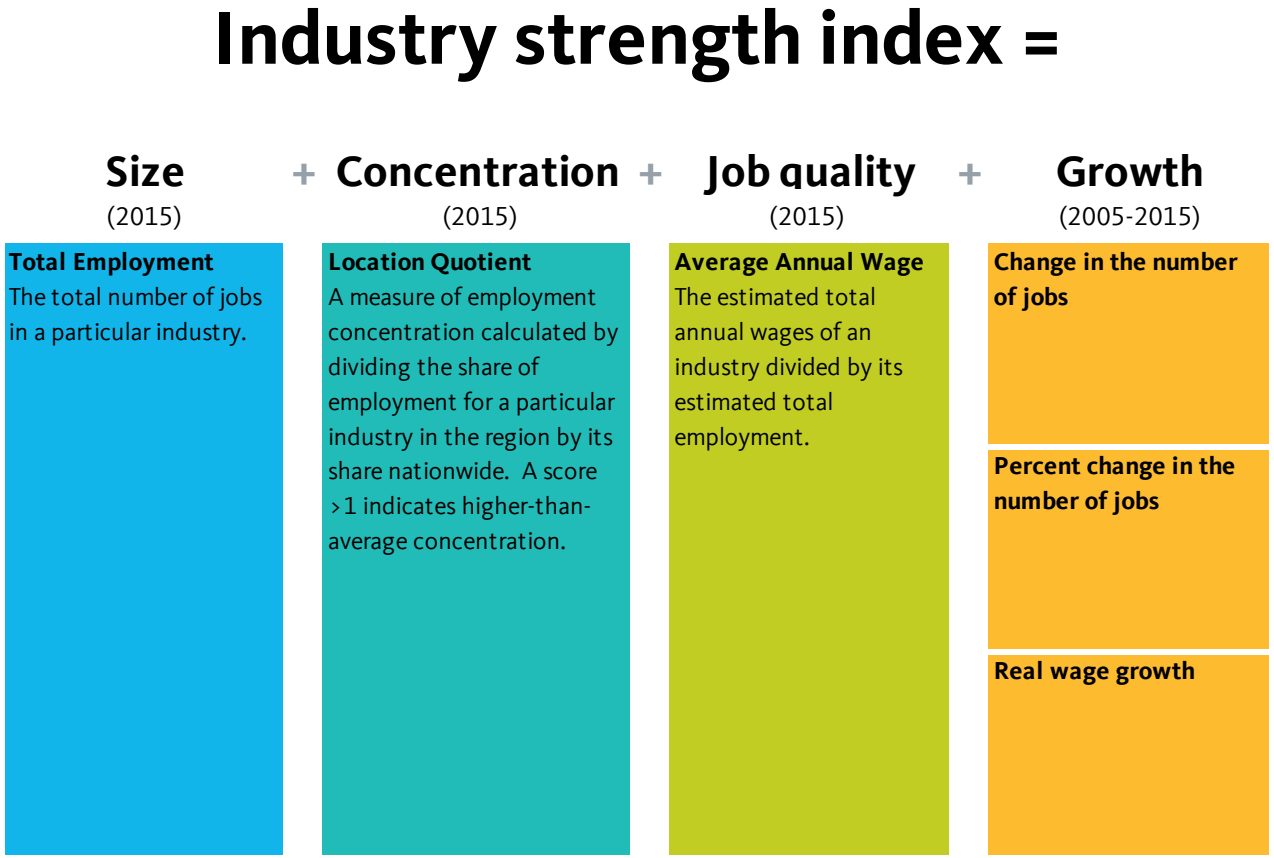
Source: Michigan Department of Technology, Management and Budget, Bureau of Labor Market Information and Strategic Initiatives.
Note: Data is for the West Michigan Prosperity Alliance region, including Mason, Lake, Osceola, Oceana, Newaygo, Mecosta, Muskegon, Kent, Montcalm, Ottawa, Ionia, Allegan, and Barry Counties. Figures may not sum to total due to rounding.

Economic vitality

Identifying the region's strong industries

Understanding which industries are strong and competitive in the region is critical for developing effective strategies to attract and grow businesses. To identify strong industries in the region, 19 industry sectors were categorized according to an **"industry strength index"** that measures four characteristics: size, concentration, job quality, and growth. Each characteristic was given an equal weight (25 percent each) in determining the index value. "Growth" was an average of three indicators of growth (change in the number of jobs, percent change in the number of jobs, and real wage growth). These characteristics were examined over the last decade to provide a current picture of how the region's economy is changing.

Given that the regional economy has experienced widespread employment decline in almost all industries, it is important to note that this index is only meant to provide general guidance on the strength of various industries. Its interpretation should be informed by examining all four metrics of size, concentration, job quality, and growth.



Note: This industry strength index is only meant to provide general guidance on the strength of various industries in the region, and its interpretation should be informed by an examination of individual metrics used in its calculation, which are presented in the table on the next page. Each indicator was normalized as a cross-industry z-score before taking a weighted average to derive the index.

Economic vitality

Manufacturing and health care are the strongest industries

According to the industry strength index, the region's strongest industries are manufacturing, health care and social assistance, and administrative and support and waste management and remediation services. The health-care industry added over 15,000 jobs to the region from 2005 to 2015, the most of any industry, followed by administrative support which added nearly 13,000 jobs. Management of companies and enterprises saw the greatest real wage growth, with wages rising by 22 percent.

Despite a decrease in employment, manufacturing ranked highest on the industry strength index

Industry Strength Index

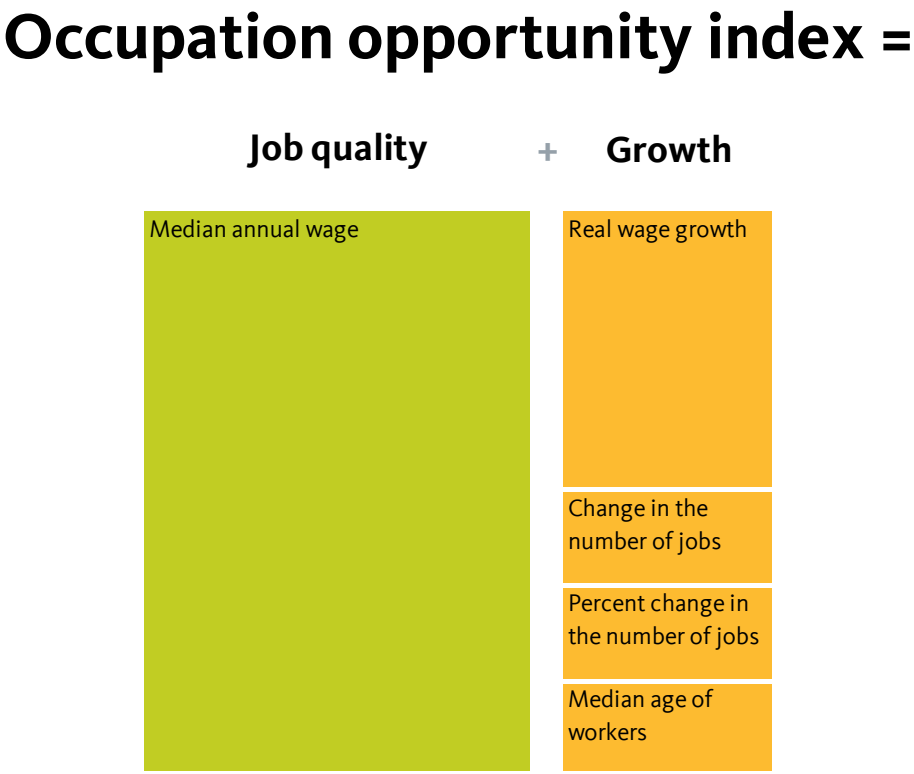
	Size	Concentration	Job Quality	Growth			Industry Strength Index
	Total employment	Location Quotient	Average annual wage	Change in employment	% Change in employment	Real wage growth	
Industry	(2015)	(2015)	(2015)	(2005 to 2015)	(2005 to 2015)	(2005 to 2015)	
Manufacturing	64,265	2.0	$59,098	-887	-1%	0%	117.9
Health Care and Social Assistance	56,292	1.2	$52,048	15,329	37%	9%	112.7
Administrative and Support and Waste Management and Remediation Services	41,798	1.8	$27,661	12,930	45%	-4%	83.2
Wholesale Trade	22,902	1.5	$59,646	3,445	18%	-1%	51.5
Management of Companies and Enterprises	5,889	1.0	$90,566	11	0%	22%	50.1
Finance and Insurance	13,953	0.9	$68,817	-998	-7%	10%	12.3
Utilities	821	0.6	$85,947	-99	-11%	18%	4.0
Professional, Scientific, and Technical Services	15,489	0.7	$64,312	-118	-1%	9%	0.4
Other Services (except Public Administration)	11,633	1.0	$34,880	643	6%	19%	-6.7
Education Services	10,207	1.4	$33,417	1,430	16%	-4%	-7.7
Construction	14,315	0.8	$56,964	-1,660	-10%	8%	-9.9
Accommodation and Food Services	28,507	0.8	$16,724	3,425	14%	13%	-12.5
Transportation and Warehousing	9,606	0.8	$48,542	1,440	18%	5%	-13.7
Retail Trade	35,550	0.9	$30,387	-1,129	-3%	-3%	-18.5
Real Estate and Rental and Leasing	3,748	0.7	$39,318	-61	-2%	11%	-43.5
Mining	92	0.0	$75,832	-31	-25%	9%	-52.0
Information	3,687	0.5	$55,915	-1,539	-29%	-2%	-62.1
Arts, Entertainment, and Recreation	4,441	0.8	$19,125	573	15%	1%	-63.2
Agriculture, Forestry, Fishing and Hunting	1,877	0.6	$27,430	111	6%	10%	-63.9

Source: U.S. Bureau of Labor Statistics; Woods & Poole Economic, Inc. Universe includes all private sector jobs covered by the federal Unemployment Insurance (UI) program.
Note: Data is for Kent County, MI. Dollar values are in 2015 dollars.

Economic vitality
Identifying high-opportunity occupations

Understanding which occupations are strong and competitive in the region can help leaders develop strategies to connect and prepare workers for good jobs. To identify "high-opportunity" occupations in the region, we developed an **"occupation opportunity index"** based on measures of job quality and growth, including median annual wage, real wage growth, job growth (in number and share), and median age of workers. A high median age of workers indicates that there will be replacement job openings as older workers retire.

Job quality, measured by the median annual wage, accounted for two-thirds of the occupation opportunity index, and growth accounted for the other one-third. Within the growth category, half was determined by wage growth and the other half was divided equally between the change in number of jobs, percent change in jobs, and median age of workers.



Note: Each indicator was normalized as a cross-occupation z-score before taking a weighted average to derive the index.

Economic vitality

Top executives and lawyers, judges and related workers dominate

According to the occupation opportunity index, top executives, lawyers, judges, and related workers, and advertising, marketing, promotions, public relations, and sales managers are the most competitive. Social scientists and related workers and law enforcement workers saw the largest increases in real wage growth while health diagnosing and treating practitioners and other teachers and instructors saw the greatest absolute increases in employment.

Top executives and lawyers, judges, and related workers rank highest on the occupation opportunity index

Occupation Opportunity Index

	Employment	Job Quality	Growth				Occupation Opportunity Index
		Median Annual Wage	Real Wage Growth	Change in Employment	% Change in Employment	Median Age	
Occupation	(2011)	(2011)	(2011)	(2005-11)	(2005-11)	(2010)	
Top Executives	6,180	$111,803	10%	600	11%	48	2.60
Lawyers, Judges, and Related Workers	1,050	$106,499	15%	-260	-20%	45	2.41
Advertising, Marketing, Promotions, Public Relations, and Sales Managers	1,640	$89,565	-2%	20	1%	42	1.60
Operations Specialties Managers	4,130	$86,763	2%	420	11%	42	1.59
Health Diagnosing and Treating Practitioners	12,920	$80,446	2%	2,500	24%	41	1.48
Other Management Occupations	5,530	$76,322	0%	1,070	24%	44	1.27
Social Scientists and Related Workers	370	$67,193	29%	-880	-70%	38	1.22
Law Enforcement Workers	1,010	$66,069	28%	-1,510	-60%	35	1.10
Engineers	4,980	$69,336	-2%	930	23%	41	0.97
Financial Specialists	6,270	$57,482	7%	870	16%	42	0.73
Computer Occupations	7,010	$63,293	-4%	780	13%	38	0.70
Other Construction and Related Workers	520	$56,028	11%	-180	-26%	38	0.63
Business Operations Specialists	11,300	$55,416	0%	1,970	21%	40	0.58
Supervisors of Production Workers	2,320	$57,370	1%	-770	-25%	42	0.52
Postsecondary Teachers	1,990	$54,978	-13%	1,420	249%	43	0.52
Supervisors of Construction and Extraction Workers	1,180	$58,140	-5%	80	7%	42	0.52
Other Teachers and Instructors	2,430	$40,176	3%	2,090	615%	39	0.50
Sales Representatives, Wholesale and Manufacturing	6,800	$52,631	-11%	1,220	22%	42	0.30
Legal Support Workers	630	$47,334	-1%	80	15%	43	0.23
Supervisors of Installation, Maintenance, and Repair Workers	1,120	$53,280	-16%	-290	-21%	47	0.21
Supervisors of Office and Administrative Support Workers	2,600	$46,440	0%	-360	-12%	42	0.18
Preschool, Primary, Secondary, and Special Education School Teachers	8,740	$50,558	-7%	-1,230	-12%	41	0.15
Health Technologists and Technicians	8,580	$41,159	-1%	1,810	27%	39	0.08
Drafters, Engineering Technicians, and Mapping Technicians	2,520	$45,758	-9%	0	0%	42	0.04
Supervisors of Transportation and Material Moving Workers	920	$47,896	-13%	-320	-26%	43	0.03

Source: U.S. Bureau of Labor Statistics; Integrated Public Use Microdata Series. Universe includes all nonfarm wage and salary jobs.
Note: Analysis reflects the Grand Rapids-Wyoming, MI Metropolitan Statistical Area as defined by the U.S. Office of Management and Budget. Dollar values are in 2011 dollars.

Economic vitality

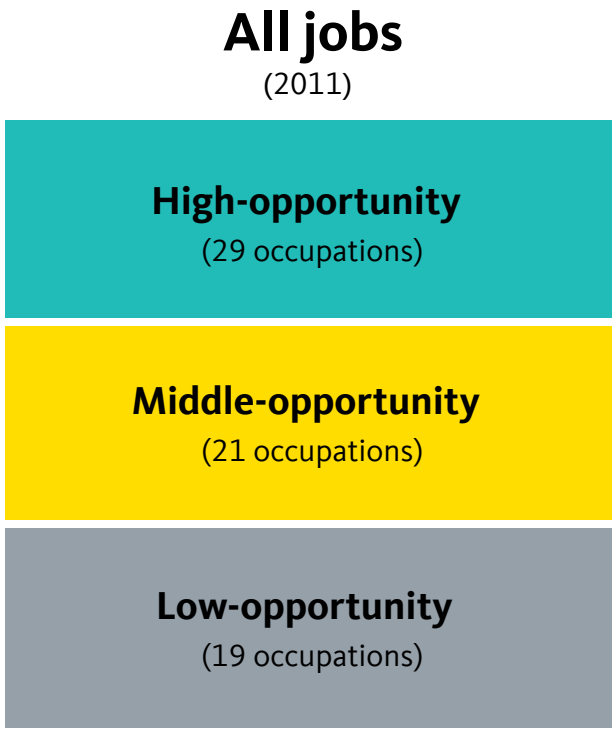
Identifying high-opportunity occupations

(continued)

Once the occupation opportunity index score was calculated for each occupation, occupations were sorted into three categories (high-, middle-, and low-opportunity). The average index score is zero, so an occupation with a positive value has an above average score while a negative value represents a below average score.

Because education level plays such a large role in determining access to jobs, we present the occupational analysis for each of three educational attainment levels: workers with a high school degree or less, workers with more than a high-school degree but less than a BA, and workers with a BA or higher.

Given that the regional economy has experienced widespread employment decline across many occupation groups, it is important to note that this index is only meant to provide general guidance on the strength of various occupations. Its interpretation should be informed by examining all metrics of job quality and growth.



Note: The occupation opportunity index and the three broad categories drawn from it are only meant to provide general guidance on the level of opportunity associated with various occupations in the region, and its interpretation should be informed by an examination of individual metrics used in its calculation, which are presented in the tables on the following pages.

Economic vitality

High-opportunity occupations for workers with a high school degree or less

Construction and related workers, supervisors of production workers, and supervisors of construction and extraction workers are high-opportunity jobs for workers without postsecondary education

Occupation Opportunity Index: Occupations by Opportunity Level for Workers with a High School Degree or Less

		Employment	Job Quality	Growth				Occupation Opportunity Index
			Median Annual Wage	Real Wage Growth	Change in Employment	% Change in Employment	Median Age	
	Occupation	(2011)	(2011)	(2011)	(2005-11)	(2005-11)	(2010)	
High-Opportunity	Other Construction and Related Workers	520	$56,028	11.0%	-180	-25.7%	38	0.63
	Supervisors of Production Workers	2,320	$57,370	0.8%	-770	-24.9%	42	0.52
	Supervisors of Construction and Extraction Workers	1,180	$58,140	-5.2%	80	7.3%	42	0.52
	Supervisors of Transportation and Material Moving Workers	920	$47,896	-13.2%	-320	-25.8%	43	0.03
Middle-Opportunity	Woodworkers	1,460	$34,086	-5.4%	910	165.5%	42	-0.14
	Other Installation, Maintenance, and Repair Occupations	8,020	$39,501	-7.7%	-660	-7.6%	42	-0.18
	Motor Vehicle Operators	11,050	$33,632	-7.3%	-410	-3.6%	47	-0.30
	Construction Trades Workers	8,090	$38,651	-10.9%	-2,240	-21.7%	35	-0.41
	Vehicle and Mobile Equipment Mechanics, Installers, and Repairers	3,010	$38,080	-12.1%	-1,220	-28.8%	34	-0.41
	Assemblers and Fabricators	10,090	$29,558	-6.6%	300	3.1%	44	-0.42
	Supervisors of Building and Grounds Cleaning and Maintenance Workers	670	$33,389	-10.3%	-20	-2.9%	37	-0.44
	Material Recording, Scheduling, Dispatching, and Distributing Workers	10,690	$31,269	-10.1%	-100	-0.9%	40	-0.48
	Supervisors of Food Preparation and Serving Workers	2,020	$28,336	-2.3%	-180	-8.2%	35	-0.51
	Food Processing Workers	2,240	$26,765	-11.1%	1,140	103.6%	40	-0.52
Low-Opportunity	Metal Workers and Plastic Workers	13,500	$33,947	-11.2%	-4,190	-23.7%	43	-0.58
	Other Protective Service Workers	3,120	$23,482	1.6%	400	14.7%	28	-0.63
	Personal Appearance Workers	1,530	$22,530	1.7%	70	4.8%	32	-0.65
	Other Transportation Workers	550	$19,087	3.6%	180	48.6%	36	-0.66
	Building Cleaning and Pest Control Workers	8,050	$21,932	-4.8%	80	1.0%	43	-0.66
	Textile, Apparel, and Furnishings Workers	1,120	$22,758	-8.8%	0	0.0%	45	-0.68
	Printing Workers	950	$29,309	-21.1%	-430	-31.2%	43	-0.72
	Other Production Occupations	12,400	$26,141	-12.5%	-1,550	-11.1%	41	-0.75
	Nursing, Psychiatric, and Home Health Aides	7,250	$22,291	-10.1%	350	5.1%	32	-0.83
	Other Food Preparation and Serving Related Workers	3,500	$18,420	2.4%	-60	-1.7%	26	-0.84
	Grounds Maintenance Workers	2,210	$23,289	-12.4%	-320	-12.6%	34	-0.85
	Cooks and Food Preparation Workers	7,360	$19,843	-3.5%	230	3.2%	26	-0.87
	Other Personal Care and Service Workers	4,430	$19,498	-14.9%	1,660	59.9%	35	-0.87
	Food and Beverage Serving Workers	15,920	$18,227	4.9%	-1,060	-6.2%	22	-0.89
	Material Moving Workers	13,370	$24,532	-9.5%	-4,740	-26.2%	36	-0.96
	Retail Sales Workers	19,530	$21,149	-4.5%	-3,700	-15.9%	32	-0.97

Source: U.S. Bureau of Labor Statistics; Integrated Public Use Microdata Series. Universe includes all nonfarm wage and salary jobs for which the typical worker is estimated to have a high school degree or less.
Note: Analysis reflects the Grand Rapids-Wyoming, MI Metropolitan Statistical Area as defined by the U.S. Office of Management and Budget. Dollar values are in 2011 dollars.

Economic vitality

High-opportunity occupations for workers with more than a high school degree but less than a BA

Law enforcement workers and legal support workers are high-opportunity jobs for workers with more than a high school degree but less than a BA

Occupation Opportunity Index: Occupations by Opportunity Level for Workers with More Than a High School Degree but Less Than a BA

		Employment	Job Quality	Growth				Occupation Opportunity Index
			Median Annual Wage	Real Wage Growth	Change in Employment	% Change in Employment	Median Age	
	Occupation	(2011)	(2011)	(2011)	(2005-11)	(2005-11)	(2010)	
High-Opportunity	Law Enforcement Workers	1,010	$66,069	27.5%	-1,510	-59.9%	35	1.10
	Legal Support Workers	630	$47,334	-1.4%	80	14.5%	43	0.23
	Supervisors of Installation, Maintenance, and Repair Workers	1,120	$53,280	-15.7%	-290	-20.6%	47	0.21
	Supervisors of Office and Administrative Support Workers	2,600	$46,440	0.2%	-360	-12.2%	42	0.18
	Health Technologists and Technicians	8,580	$41,159	-1.2%	1,810	26.7%	39	0.08
	Drafters, Engineering Technicians, and Mapping Technicians	2,520	$45,758	-9.4%	0	0.0%	42	0.04
	Occupational Therapy and Physical Therapist Assistants and Aides	410	$38,754	-3.5%	260	173.3%	37	-0.03
	Supervisors of Sales Workers	3,700	$42,331	-8.1%	-90	-2.4%	40	-0.08
Middle-Opportunity	Secretaries and Administrative Assistants	7,400	$36,314	2.7%	-1,470	-16.6%	46	-0.13
	Other Education, Training, and Library Occupations	4,480	$30,912	-3.8%	360	8.7%	48	-0.29
	Financial Clerks	7,720	$33,102	2.4%	-2,070	-21.1%	43	-0.30
	Other Healthcare Support Occupations	3,770	$30,810	-2.7%	140	3.9%	36	-0.40
	Other Office and Administrative Support Workers	13,090	$28,783	-3.6%	740	6.0%	40	-0.41
	Electrical and Electronic Equipment Mechanics, Installers, and Repairers	930	$40,012	-22.3%	-310	-25.0%	37	-0.43
	Information and Record Clerks	13,750	$29,541	-1.4%	-640	-4.4%	36	-0.46
	Supervisors of Personal Care and Service Workers	370	$30,140	-9.5%	90	32.1%	41	-0.47
Low- Opportunity	Entertainment Attendants and Related Workers	1,020	$18,085	-3.2%	320	45.7%	21	-0.94

Source: U.S. Bureau of Labor Statistics; Integrated Public Use Microdata Series. Universe includes all nonfarm wage and salary jobs for which the typical worker is estimated to have more than a high school degree but less than a BA.
Note: Analysis reflects the Grand Rapids-Wyoming, MI Metropolitan Statistical Area as defined by the U.S. Office of Management and Budget. Dollar values are in 2011 dollars.

Economic vitality

High-opportunity occupations for workers with a BA degree or higher

Top executives, lawyers, judges, and related workers, and advertising, marketing, promotions, public relations, and sales managers are high-opportunity occupations for workers with a BA degree or higher

Occupation Opportunity Index: All Levels of Opportunity for Workers with a BA Degree or Higher

		Employment	Job Quality	Growth				Occupation Opportunity Index
			Median Annual Wage	Real Wage Growth	Change in Employment	% Change in Employment	Median Age	
	Occupation	(2011)	(2011)	(2011)	(2005-11)	(2005-11)	(2010)	
High-Opportunity	Top Executives	6,180	$111,803	9.6%	600	10.8%	48	2.60
	Lawyers, Judges, and Related Workers	1,050	$106,499	14.5%	-260	-19.8%	45	2.41
	Advertising, Marketing, Promotions, Public Relations, and Sales Managers	1,640	$89,565	-1.6%	20	1.2%	42	1.60
	Operations Specialties Managers	4,130	$86,763	2.0%	420	11.3%	42	1.59
	Health Diagnosing and Treating Practitioners	12,920	$80,446	2.1%	2,500	24.0%	41	1.48
	Other Management Occupations	5,530	$76,322	0.2%	1,070	24.0%	44	1.27
	Social Scientists and Related Workers	370	$67,193	29.0%	-880	-70.4%	38	1.22
	Engineers	4,980	$69,336	-2.3%	930	23.0%	41	0.97
	Financial Specialists	6,270	$57,482	7.0%	870	16.1%	42	0.73
	Computer Occupations	7,010	$63,293	-4.2%	780	12.5%	38	0.70
	Business Operations Specialists	11,300	$55,416	0.0%	1,970	21.1%	40	0.58
	Postsecondary Teachers	1,990	$54,978	-12.5%	1,420	249.1%	43	0.52
	Other Teachers and Instructors	2,430	$40,176	2.8%	2,090	614.7%	39	0.50
	Sales Representatives, Wholesale and Manufacturing	6,800	$52,631	-11.3%	1,220	21.9%	42	0.30
	Preschool, Primary, Secondary, and Special Education School Teachers	8,740	$50,558	-7.2%	-1,230	-12.3%	41	0.15
	Sales Representatives, Services	5,350	$41,663	-14.7%	2,730	104.2%	41	0.00
	Media and Communication Workers	1,050	$42,115	-4.0%	-880	-45.6%	37	-0.12
Middle-Opportunity	Art and Design Workers	1,940	$40,333	-9.6%	270	16.2%	39	-0.15
	Specialists	5,340	$38,883	-14.8%	1,230	29.9%	38	-0.24
	Media and Communication Equipment Workers	370	$35,025	-15.9%	70	23.3%	38	-0.44
Low- Opportunity	Other Sales and Related Workers	2,330	$29,716	-24.7%	260	12.6%	46	-0.67
	Entertainers and Performers, Sports and Related Workers	1,200	$27,512	-27.9%	610	103.4%	33	-0.85

Source: U.S. Bureau of Labor Statistics; Integrated Public Use Microdata Series. Universe includes all nonfarm wage and salary jobs for which the typical worker is estimated to have a BA degree or higher.
Note: Analysis reflects the Grand Rapids-Wyoming, MI Metropolitan Statistical Area as defined by the U.S. Office of Management and Budget. Dollar values are in 2011 dollars.

Economic vitality

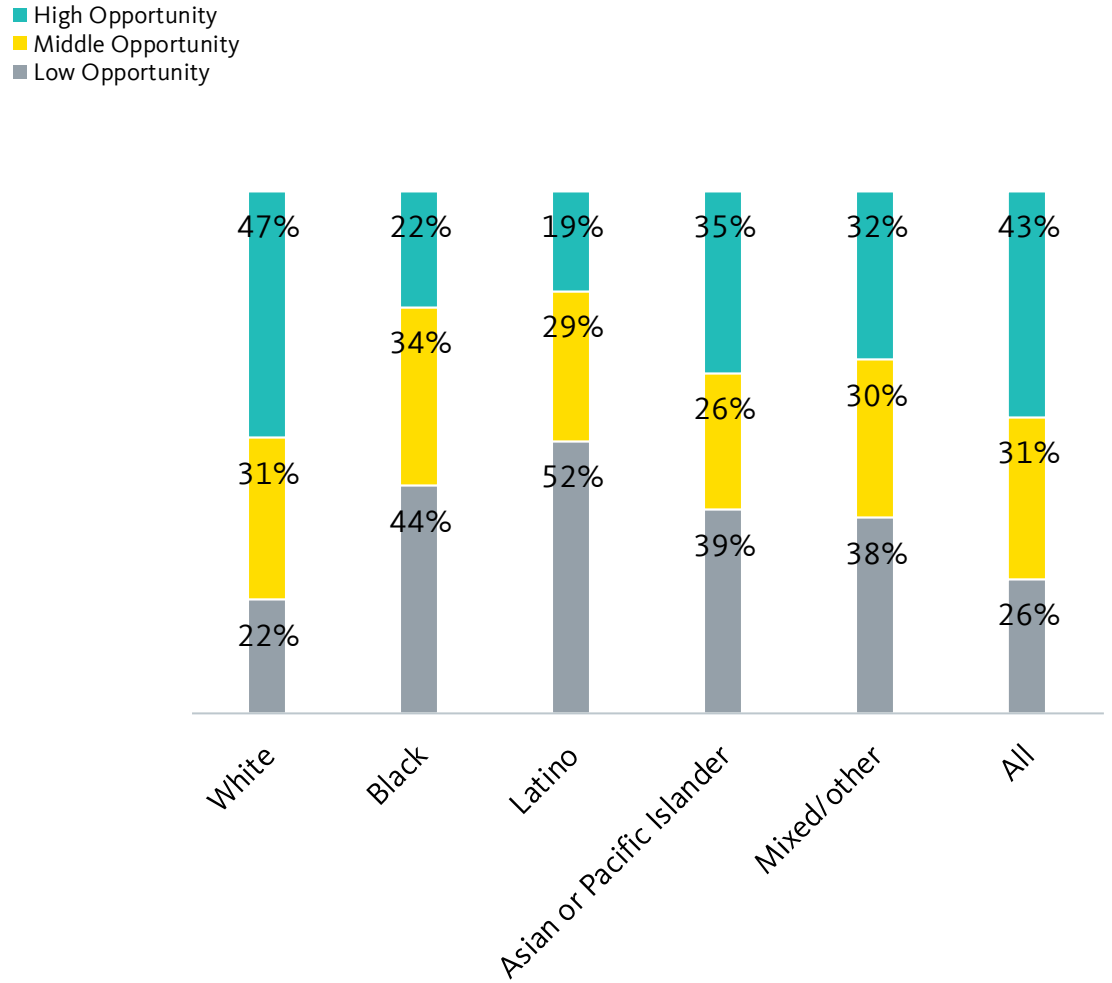
Latino workers among the most likely to have low-opportunity jobs

Examining access to high-opportunity jobs by race/ethnicity in the region, we find that Whites and Asian or Pacific Islanders are most likely to be employed in high-opportunity occupations. Blacks and Latinos are the least likely to be in these occupations.

Differences in education levels play a large role in determining access to high-opportunity jobs (this is examined next). Racial discrimination, work experience, social networks, and, for immigrants, legal status and English language ability are also contributing factors.

Latinos and African Americans are least likely to access high-opportunity jobs

Opportunity Ranking of Occupations by Race/Ethnicity, All Workers



Source: U.S. Bureau of Labor Statistics; Integrated Public Use Microdata Series. Universe includes the employed civilian noninstitutional population ages 25 through 64. Note: Analysis reflects the Grand Rapids-Wyoming, MI Metropolitan Statistical Area as defined by the U.S. Office of Management and Budget.

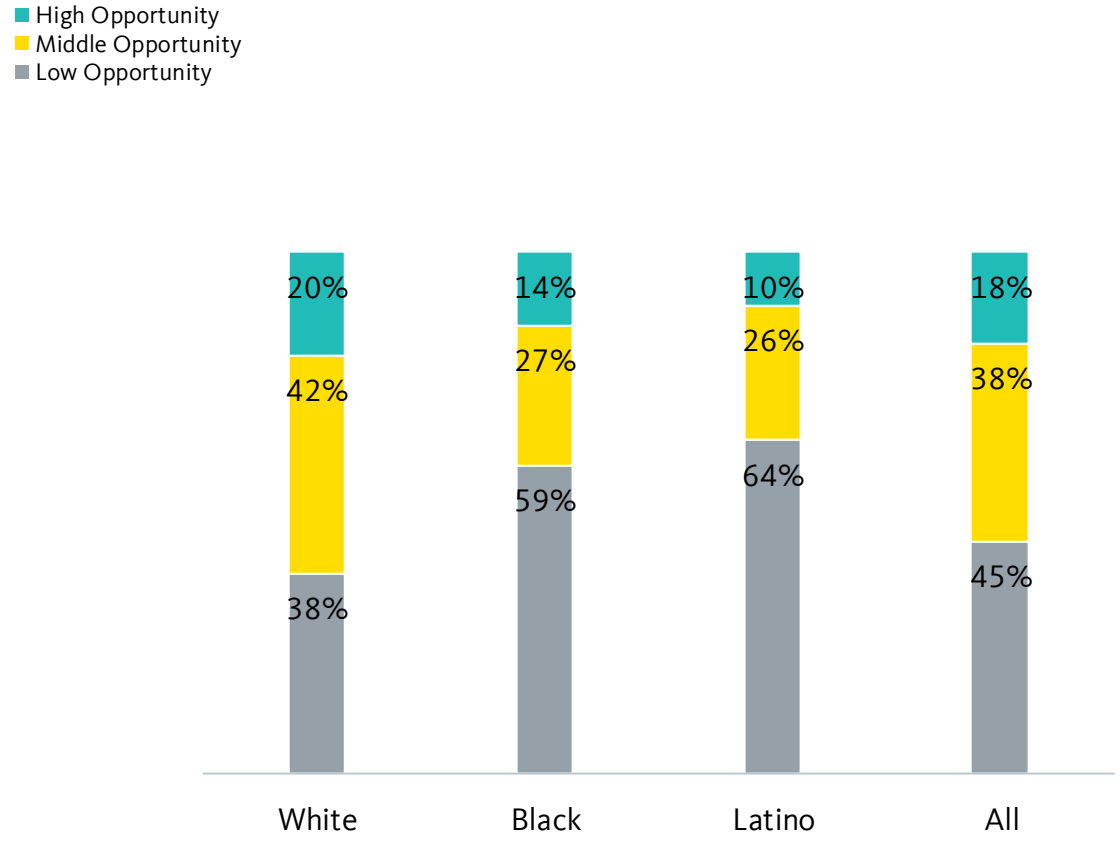
Economic vitality

Latino workers with a high school degree or less among most likely to have low-opportunity jobs

Among workers with a high school degree or less, Whites are most likely to be in the high-opportunity occupations, while their Latino counterparts are the least likely to be in these jobs. Latinos with high school degree or less are also most heavily represented within low-opportunity occupations.

Of those with low education levels, Latinos are least likely to hold high-opportunity jobs

Opportunity Ranking of Occupations by Race/Ethnicity, Workers with Low Educational Attainment



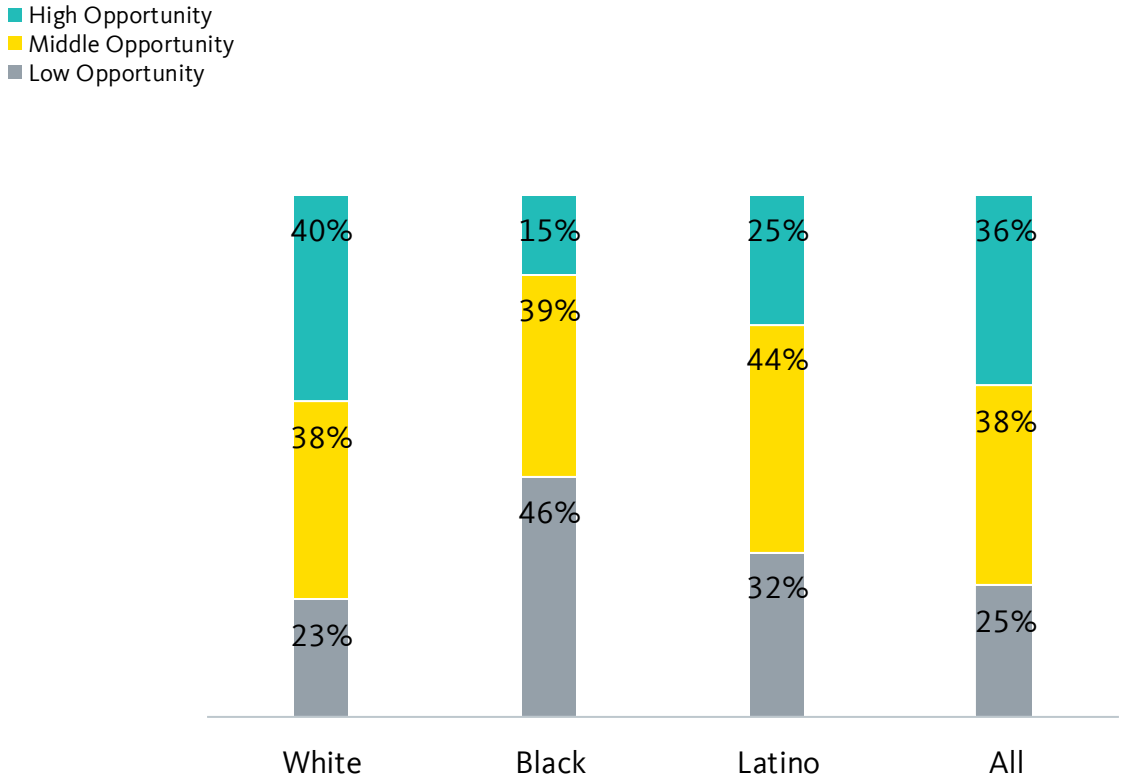
Source: U.S. Bureau of Labor Statistics; Integrated Public Use Microdata Series. Universe includes the employed civilian noninstitutional population ages 25 through 64 with a high school degree or less. Note: Analysis reflects the Grand Rapids-Wyoming, MI Metropolitan Statistical Area as defined by the U.S. Office of Management and Budget. Data for some racial/ethnic groups are excluded due to small sample size.

Economic vitality

Black workers with some higher education are most likely to have low-opportunity jobs

Among workers with middle education levels, Whites are most likely to be found in high-opportunity jobs. Latinos are most likely to be in middle-opportunity jobs, and Blacks are most heavily represented among low-opportunity jobs.

Of those with middle education levels, African Americans are least likely to access high-opportunity jobs
Opportunity Ranking of Occupations by Race/Ethnicity, Workers with Middle Educational Attainment



Source: U.S. Bureau of Labor Statistics; Integrated Public Use Microdata Series. Universe includes the employed civilian noninstitutional population ages 25 through 64 with more than a high school degree but less than a BA. Note: Analysis reflects the Grand Rapids-Wyoming, MI Metropolitan Statistical Area as defined by the U.S. Office of Management and Budget. Data for some racial/ethnic groups are excluded due to small sample size.

Economic vitality

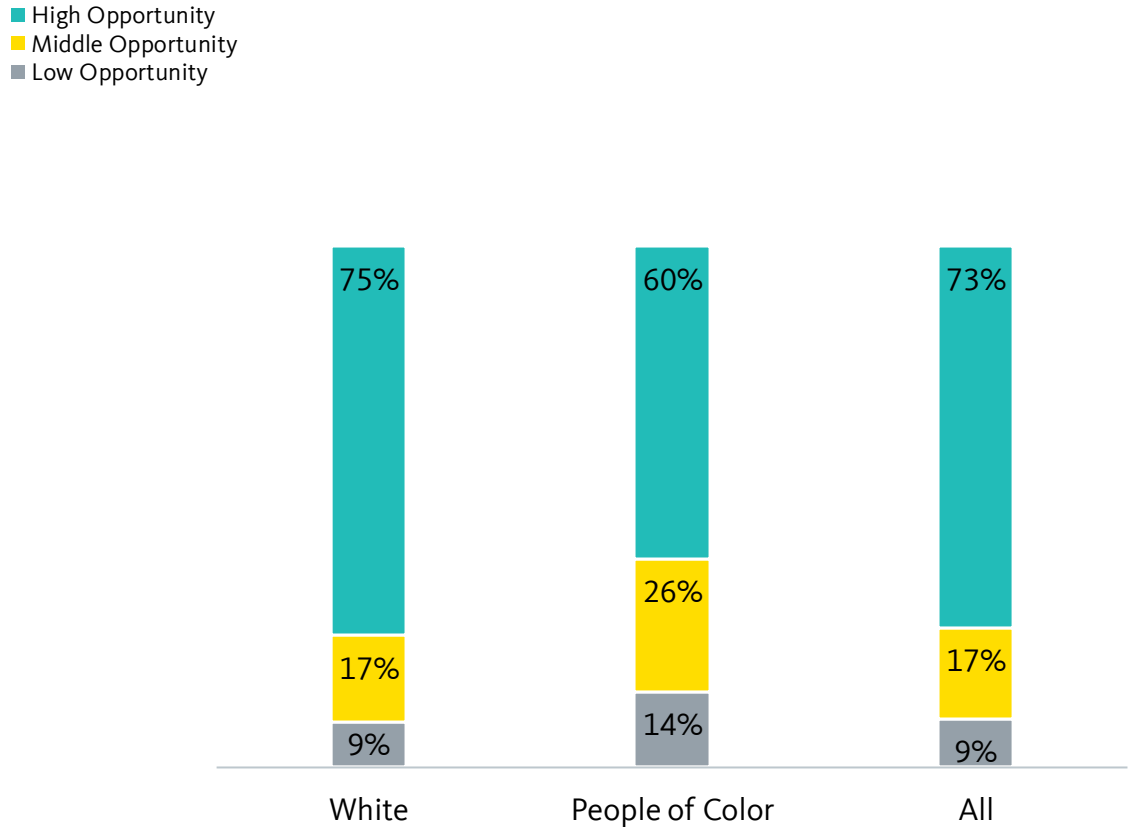
Workers of color with a BA or higher less likely to have high-opportunity jobs

Differences in access to high-opportunity occupations tend to decrease even more for workers with college degrees, though gaps across groups remain.

Among the most educated workers, Whites are the most likely to be in high-opportunity occupations. People of color with college degrees have less access to high-opportunity jobs compared to their White counterparts.

Among college-educated workers, White workers are more likely to be in high-opportunity jobs

Opportunity Ranking of Occupations by Race/Ethnicity, Workers with High Educational Attainment



Source: U.S. Bureau of Labor Statistics; Integrated Public Use Microdata Series. Universe includes the employed civilian noninstitutional population ages 25 through 64 with a BA degree or higher. Note: Analysis reflects the Grand Rapids-Wyoming, MI Metropolitan Statistical Area as defined by the U.S. Office of Management and Budget. Data for some racial/ethnic groups are excluded due to small sample size.

Readiness

Readiness

Highlights

How prepared are the region's residents for the 21st century economy?

- There is a looming skills and education gap for people of color. In 2020, 44 percent of jobs in Michigan will require at least an associate's degree. Just 17 percent of working-age Black residents, 24 percent of U.S.-born Latinos, and 9 percent of Latino immigrants have attained that level of education.

- Educational attainment for youth of color has improved over the past decade, but Latino youth are more likely to be behind.

- The number of disconnected youth, defined as those who are not working or in school, is on the rise, and 73 percent of disconnected youth are youth of color.

Percent of working-age people with at least an associate's degree:

40%

Number of youth who are disconnected:

4,600

Incidence of asthma among Black adults:

13%

Readiness

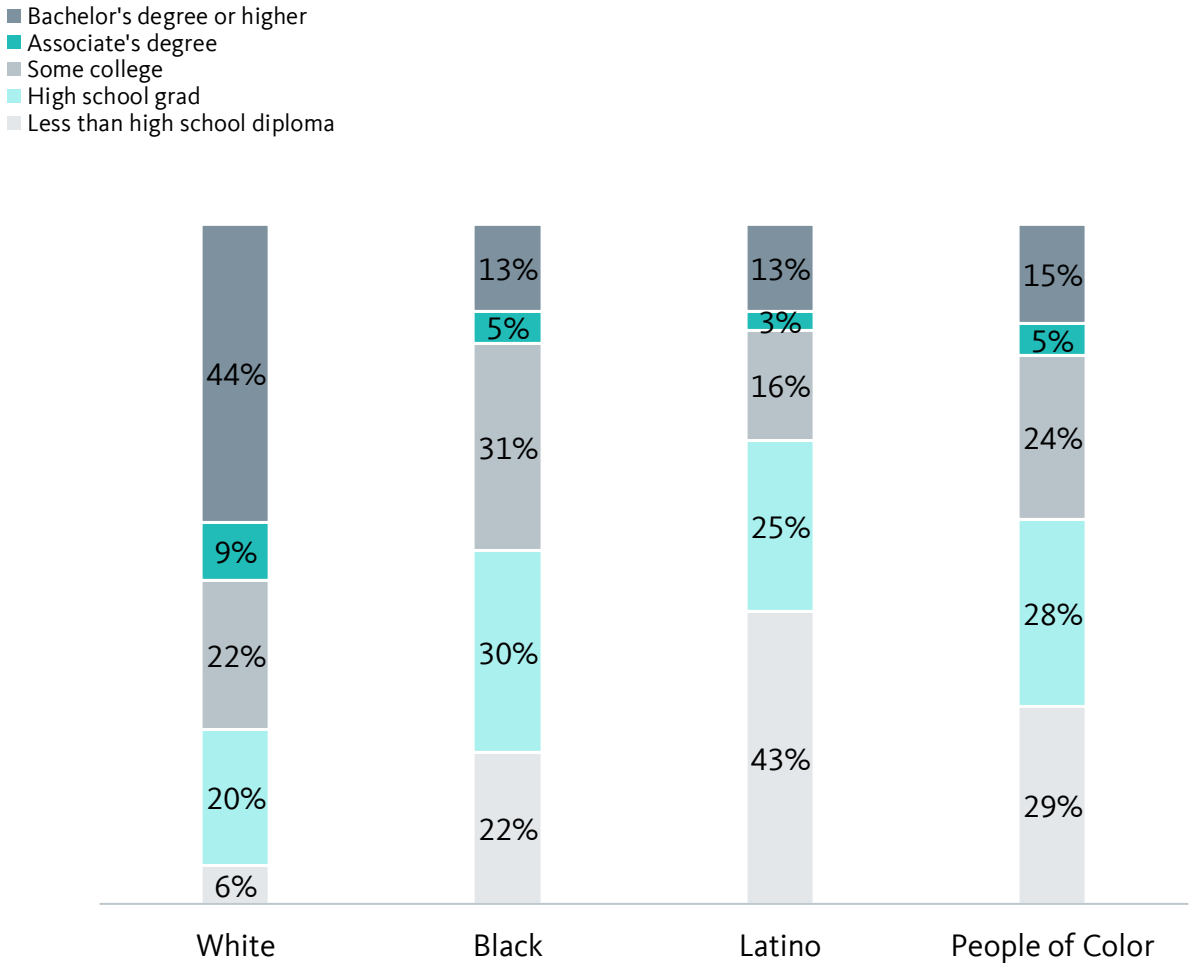
Significant opportunities to support higher educational attainment for residents of color

There are large disparities in educational attainment by race/ethnicity in Grand Rapids. Only 18 percent of African Americans and 16 percent of Latinos have an associate's degree or higher. Contrast this with 53 percent of white residents that have an associate's degree or higher.

Among people of color, nearly 30 percent have not completed high school while the share for White residents is only 6 percent.

There are wide gaps in educational attainment

Educational Attainment by Race/Ethnicity, 2014



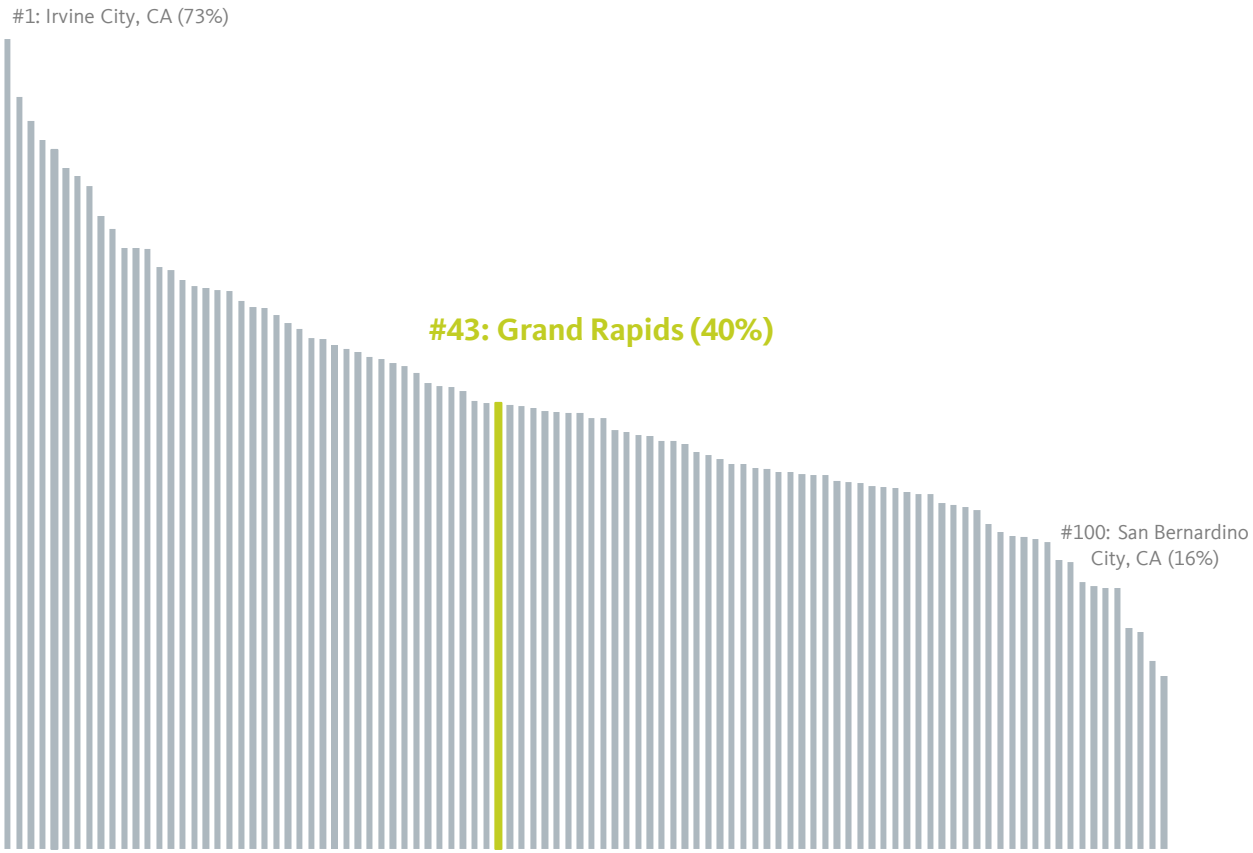
Source: Integrated Public Use Microdata Series. Universe includes all persons ages 25 through 64.
Note: Data represent a 2010 through 2014 average.

Readiness
Moderate education levels

Grand Rapids ranks 43rd among the largest 100 cities in the share of residents with an associate's degree or higher. Forty percent of adults ages 25 to 64 have at least an associate's degree. Compared to other cities in the Midwest, educational attainment is lower in Grand Rapids than in Madison (65 percent), Minneapolis (56 percent), St. Paul (48 percent), and Chicago (43 percent).

The city is among the top half of the largest 100 cities for residents with an associate's degree or higher

Percent of the Population with an Associate's Degree or Higher in 2014: Largest 100 Cities Ranked



Source: Integrated Public Use Microdata Series. Universe includes all persons ages 25 through 64.
Note: Data represent a 2010 through 2014 average.

Readiness

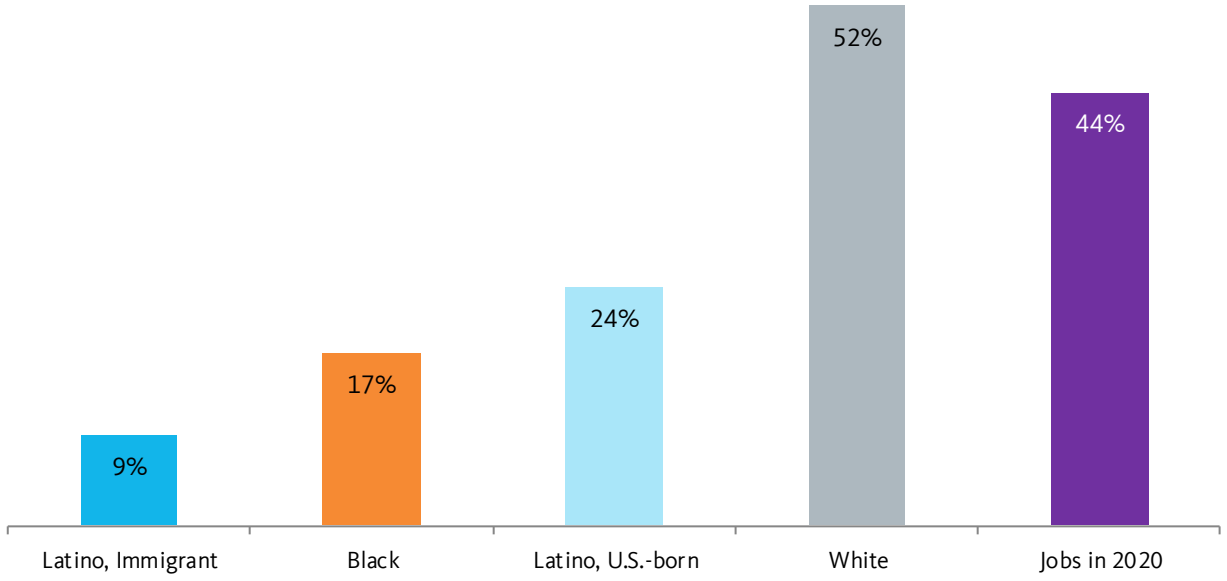
Racial inequities in adult educational attainment

Despite moderately high educational achievement, there are wide gaps in educational attainment across racial/ethnic and nativity groups, with potentially complicating repercussions for the city's workforce.

By 2020, 44 percent of Michigan's jobs will require an associate's degree or higher. There are large differences in educational attainment by race/ethnicity and nativity. While 52 percent of the White population has an associate's degree or higher, only 9 percent of Latino immigrants, 17 percent of African Americans, and 24 percent of U.S.-born Latinos have the same educational attainment.

Grand Rapids will face a skills gap unless education levels increase

Share of Working-Age Population with an Associate's Degree or Higher by Race/Ethnicity and Nativity, 2014, and Projected Share of Jobs that Require an Associate's Degree or Higher, 2020



Source: Georgetown Center for Education and the Workforce; Integrated Public Use Microdata Series. Universe for education levels of workers includes all persons ages 25 through 64. Note: Data for 2014 by race/ethnicity and nativity represent a 2010 through 2014 average for the city of Grand Rapids; data on jobs in 2020 represent a state-level projection for Michigan.

Readiness

Racial inequities in access to early education

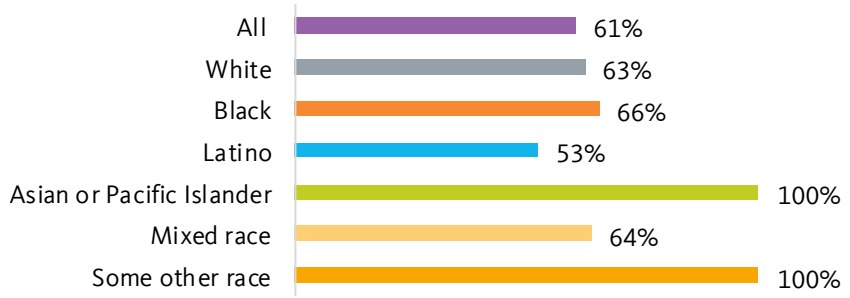
With the exception of Asians and Pacific Islanders, children living in Grand Rapids attend pre-kindergarten or kindergarten at low rates. Only about half of Latino children attend pre-kindergarten or kindergarten, which provides access to a critical early learning foundation.

Third grade reading proficiency levels are low for all students, but significantly worse for children of color: only 17 percent of Black students and 23 percent of Latino students meet grade-level proficiency at the end of third grade.

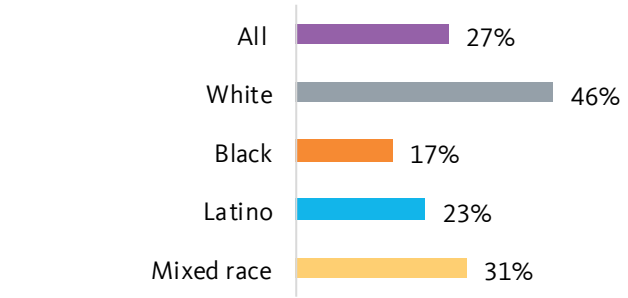
While elementary school attendance rates are fairly high for the city, 39 percent of Native American and 38 percent of Black students miss more than 5 percent of all school days, compared with 20 percent of White and 14 percent of Asian or Pacific Islander students.

There are stark racial disparities across indicators of early childhood learning

Public or Private Pre-Kindergarten or Kindergarten Attendance, 2010-2014



Share Achieving 3rd Grade Reading Proficiency, 2015



Share of Elementary Children Attending At Least 95% of School Days, 2014-2015

Source: diversitydatakids.org calculations of data from the American Community Survey, 2010-2014 and the Michigan Department of Education.
Note: Data for some racial/ethnic groups are excluded due to data availability. Estimates for pre-kindergarten and kindergarten attendance are derived from survey data and subject to sampling variability; please interpret accordingly. Estimates based on survey data are not reported if the margin of error at the 95 percent confidence interval is one-third of the estimate value or more.

Readiness

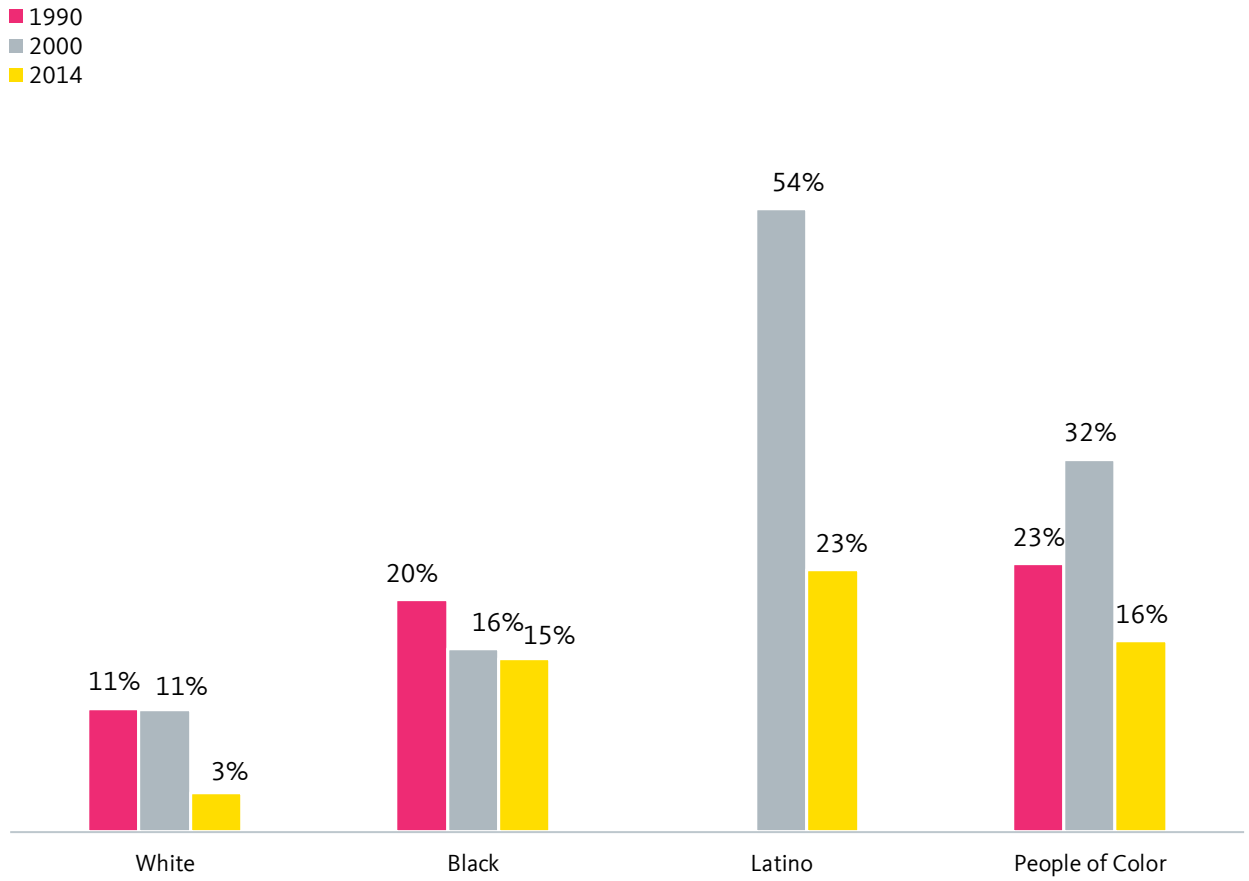
Racial disparities in high school completion rates

The share of youth who do not have a high school education and are not pursuing one has declined since 2000 for all racial/ethnic groups.

Despite the overall improvement, Black and Latino students are still five and seven times more likely than their White peers to drop out of high school.

High school drop out rates among youth have improved for all groups since 2000

Percent of 16- to 24-Year-Olds Not Enrolled in School and Without a High School Diploma, 1990 to 2014



Source: Integrated Public Use Microdata Series.
Note: Data for 2014 represents a 2010 through 2014 average. Data for some racial/ethnic groups are excluded due to small sample size.

Readiness

Black youth are most likely to be disconnected from work and school

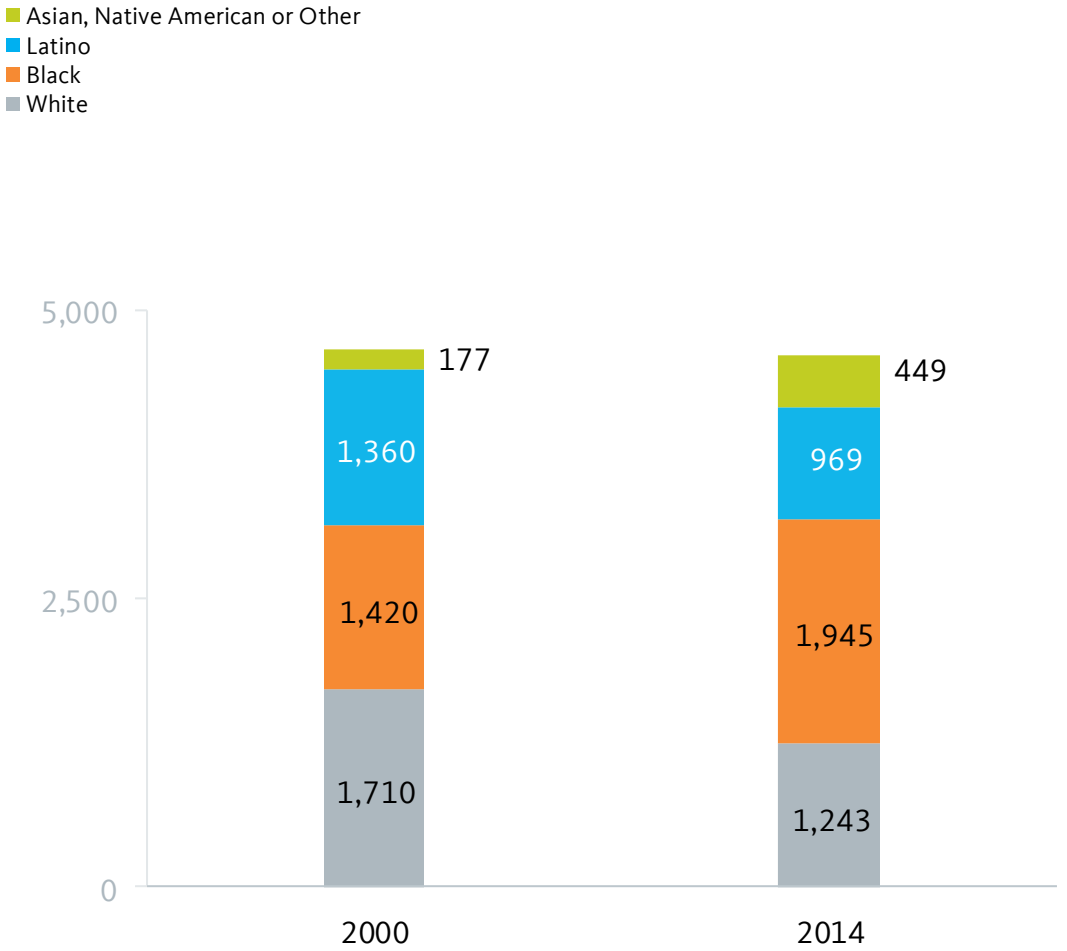
The total number of "disconnected youth" who are neither in school nor working has remained about the same since 2000. Of the city's 4,607 disconnected youth in 2014, the vast majority (73 percent) were youth of color.

While the overall number of disconnected youth in the city has remained stable since 2000, the number of disconnected White and Latino youth decreased while the number of disconnected Black youth increased by more than one-third.

Youth of color are far more likely to be disconnected than White youth. In 2014, only 7 percent of White youth were disconnected while 32 percent of Black youth and 23 percent of Latino youth were.

More than half of the region's disconnected youth are Black and Latino

Disconnected Youth: 16-24-Year-Olds Not in Work or School, 2000 to 2014



Source: Integrated Public Use Microdata Series.
Note: Data for 2014 represents a 2010 through 2014 average.

Readiness

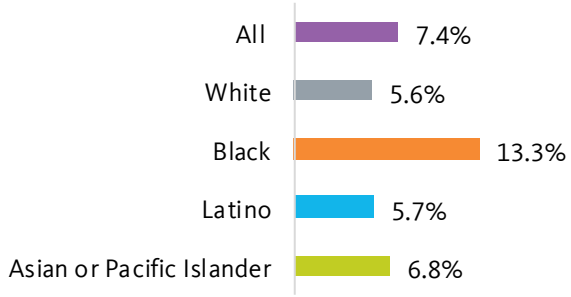
Racial disparities in early nutrition

While children born in the city tend to be born healthy and live past their first birthday, the vast majority are not breastfed – the nutrition option for infants recommended most by health professionals.

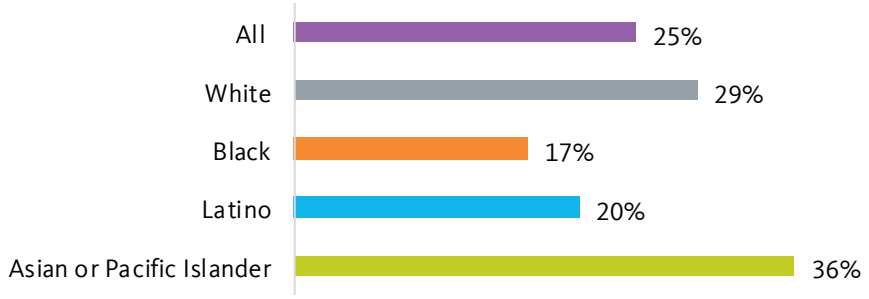
Breastfeeding is a universally uncommon practice across racial groups in Grand Rapids. Overall, roughly 1 in 4 children are breastfed. Rates are slightly higher for Asian or Pacific Islander (36 percent) and White (29 percent) children, while fewer than 1 in 5 Black and Latino children are breastfed.

Black children face some of the greatest health challenges

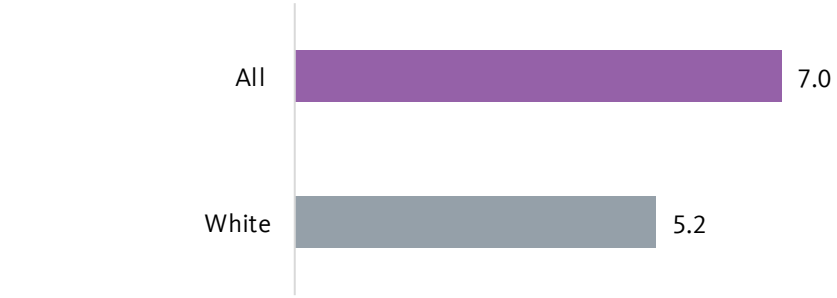
Low Birth-Weight Rate, 2011-2013



Share of Babies Breastfed at Hospital Discharge, 2011-2013



Infant Mortality Under Age 1 (per 1,000 live births), 2012-2014



Source: diversitydatakids.org calculations of data from the Michigan Department of Community Health and National Center for Health Statistics.
Notes: Individuals reporting multiple or other races were recoded to one of four single races in the source data from the National Center for Health Statistics. Low birth weight is defined as weighing less than 2.5kg and plural births are excluded. Data for some racial/ethnic groups are excluded.

Readiness

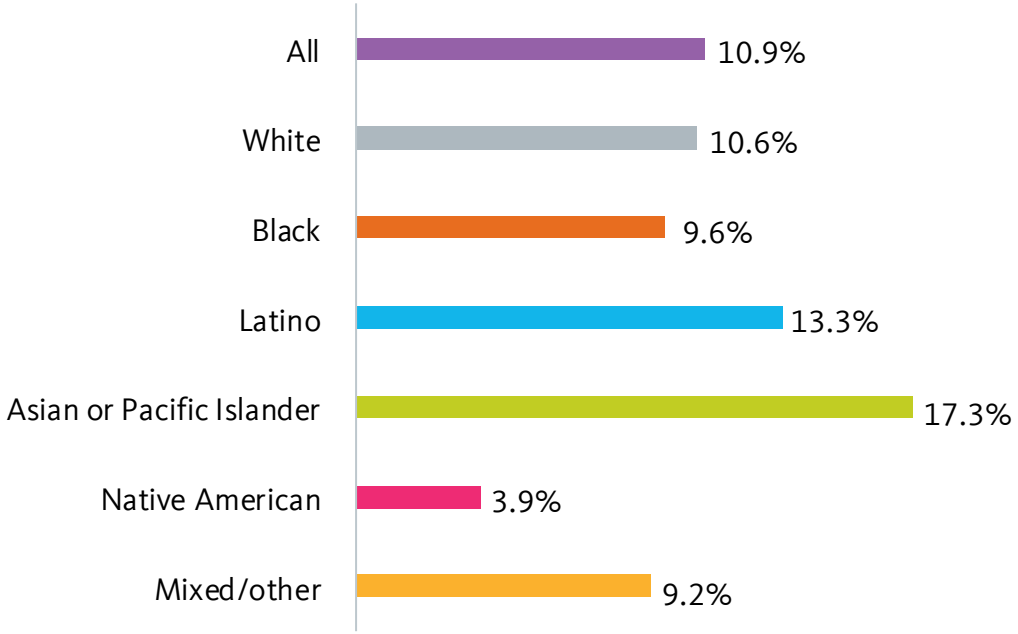
Healthy food access varies by race

Limited Supermarket Access areas (LSAs) are defined as areas where residents must travel significantly farther to reach a supermarket than the "comparatively acceptable" distance traveled by residents in well-served areas with similar population densities and car ownership rates.

Native American residents are more likely to live in reasonable proximity to supermarkets than most residents; only 4 percent of the population live in an LSA. Asian or Pacific Islanders are the most likely to live in LSAs using this measure despite having the lowest poverty rate of any racial group. However, supermarket access appears to be a challenge for many Grand Rapids residents (1 in 10), regardless of race/ethnicity.

Asian or Pacific Islanders are the most likely to live in neighborhoods with below average access to supermarkets

Percent Living in Limited Supermarket Access Areas by Race/Ethnicity, 2014



Source: U.S. Census Bureau; The Reinvestment Fund. See the "Data and methods" section for details.
Note: Data on population by race/ethnicity represent a 2010 through 2014 average.

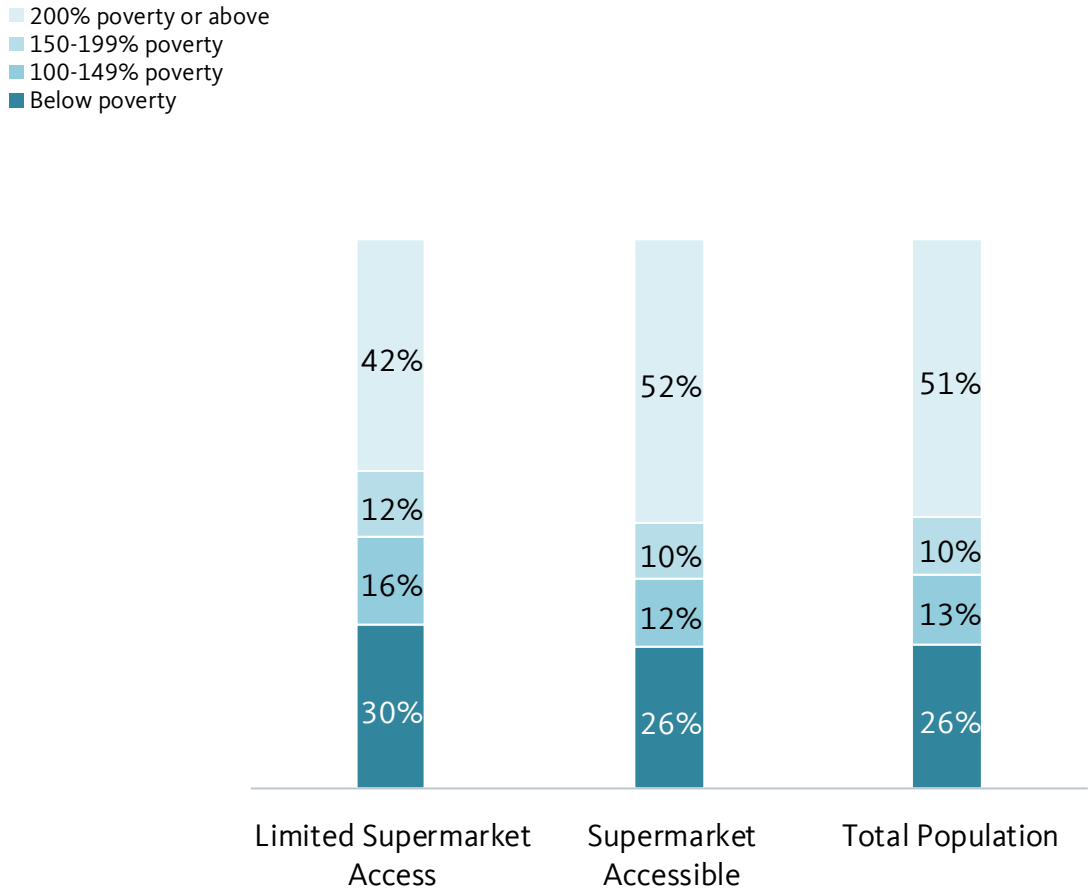
Readiness

Healthy food access varies by income

Those living in limited supermarket access areas (LSAs) are more likely to fall below 200 percent of the federal poverty level than those living in areas with better access to healthy food. While people at 200 percent of poverty or above make up 51 percent of the total population, they make up just 42 percent of LSAs. More than 20,000 Grand Rapids residents live in neighborhoods with below-average access to supermarkets.

Economically insecure residents are disproportionately represented in limited supermarket access areas

Poverty Composition of Food Environments, 2014



Source: U.S. Census Bureau; The Reinvestment Fund. See the "Data and methods" section for details.
Note: Data represent a 2010 through 2014 average.

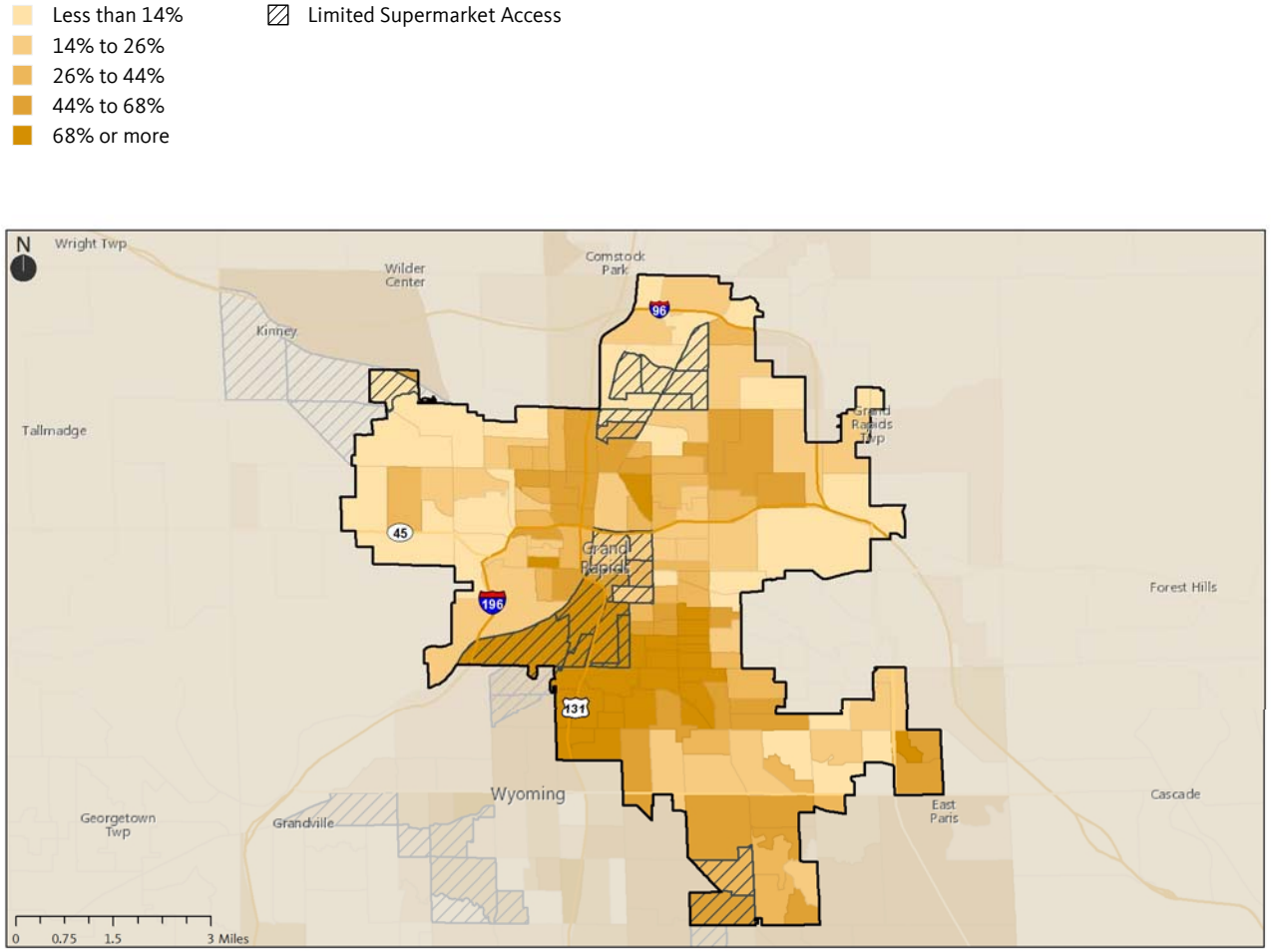
Readiness

Limited supermarket access areas exist in pockets across the city

While the predominately people-of-color tracts south of downtown are considered low supermarket access areas, there are also predominately White neighborhoods with limited access to supermarkets in the northern part of city.

Areas of low supermarket access tend to have high shares of people of color

Percent People of Color by Census Block Group and Limited Supermarket Access Block Groups, 2014



Source: The Reinvestment Fund, 2014 LSA analysis; U.S. Census Bureau; TomTom, ESRI, HERE, DeLorme, MaymyIndia, © OpenStreetMap contributors, and the GIS user community. Note: Data on percent people of color by block group represent a 2010 through 2014 average.

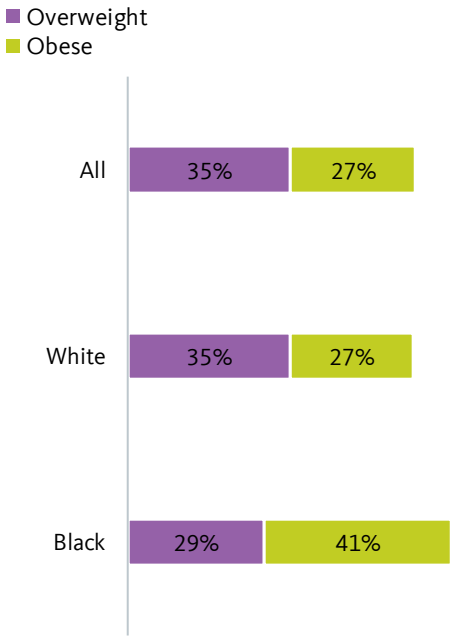
Readiness

Health challenges among the African American community

The adult obesity, diabetes, and asthma rates in Kent County are, overall, very similar to national averages. The rates for Black adults, however, are high as compared to county averages as well as averages for White adults. While 27 percent of White residents are obese, 41 percent of Black residents are. The relative differences between Black and White adults in the county are similar for asthma rates, and even greater for rates of diabetes. The social determinants of health – where people live, learn, work, and age – are increasingly recognized as influencing growing rates of chronic diseases such as obesity, diabetes, and asthma.

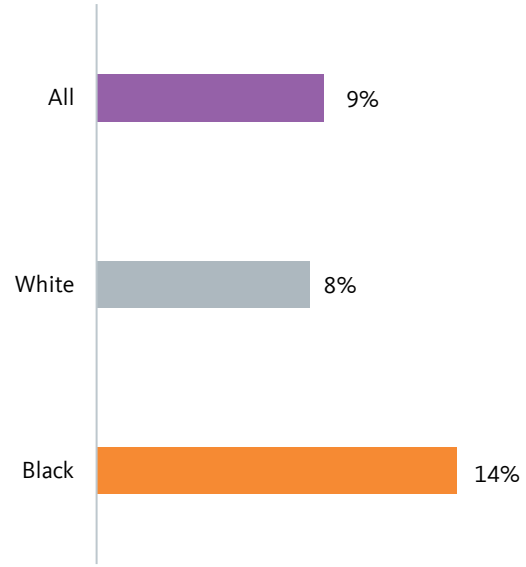
African Americans face above average obesity, diabetes, and asthma rates

Adult Overweight and Obesity Rates by Race/Ethnicity, 2012



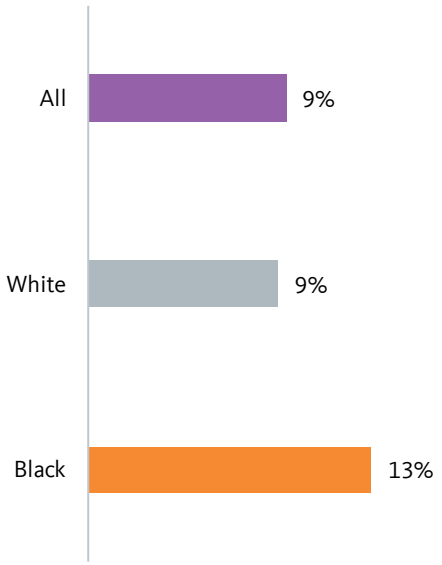
Source: Centers for Disease Control and Prevention. Universe includes adults ages 18 and older. Note: Data is for Kent County, MI. Data represent a 2008 through 2012 average.

Adult Diabetes Rates by Race/Ethnicity, 2012



Source: Centers for Disease Control and Prevention. Universe includes adults ages 18 and older. Note: Data is for Kent County, MI. Data represent a 2008 through 2012 average.

Adult Asthma Rates by Race/Ethnicity, 2012



Source: Centers for Disease Control and Prevention. Universe includes adults ages 18 and older. Note: Data is for Kent County, MI. Data represent a 2008 through 2012 average.

Readiness

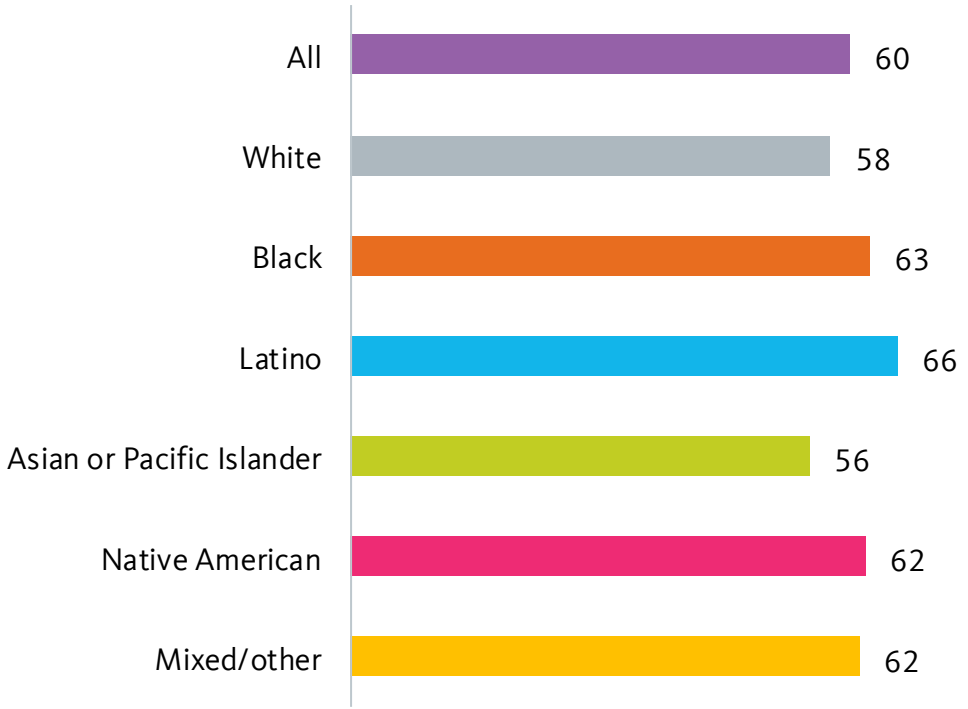
Air pollution is a concern for all residents, and especially for people of color

On average, Grand Rapids residents have a higher exposure to air pollution than 60 percent of neighborhoods in the United States. Exposure rates are fairly comparable across racial groups, but are definitively higher for Latino residents, who have an exposure rate of 66. This is 8 points higher than that of White residents.

The exposure index values range from 1 (lowest risk) to 100 (highest risk) on a national scale. The index value is based on percentile ranking each risk measure across all census tracts in the United States and taking the average ranking for each geography and demographic group.

Latino and African American residents in Grand Rapids have the greatest exposure to air pollution

Air Pollution: Exposure Index by Race/Ethnicity, 2014



Source: U.S. EPA, 2011 National Air Toxics Assessment; U.S. Census Bureau.
Note: Data on population by race/ethnicity represent a 2010 through 2014 average.

Readiness

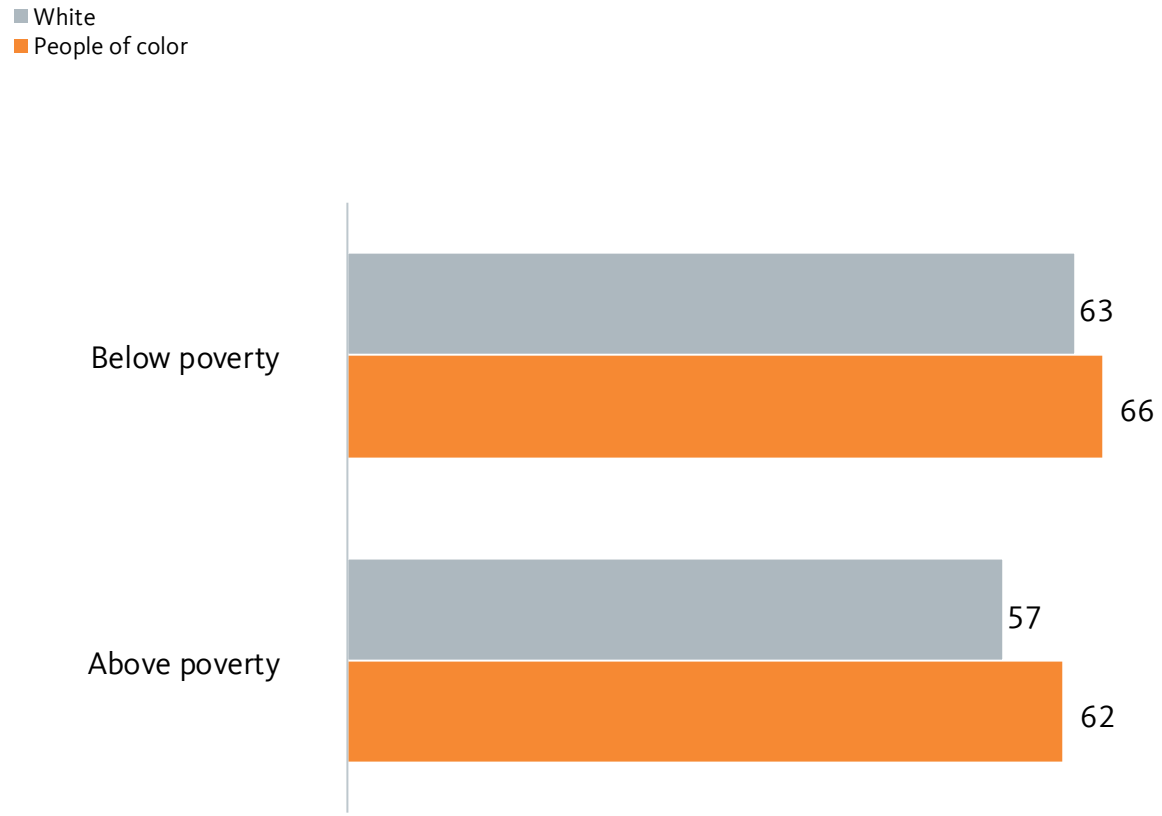
Exposure to air pollution varies slightly by income as well as race

Both race and socioeconomic status impact exposure to pollutants. Grand Rapids residents living below poverty have higher exposure rates than those living above poverty. People of color in each socioeconomic class have higher rates of exposure than their White peers.

The exposure index values range from 1 (lowest risk) to 100 (highest risk) on a national scale. The index value is based on percentile ranking each risk measure across all census tracts in the U.S. and taking the average ranking for each geography and demographic group.

Exposure to air pollution is impacted by both race and income

Air Pollution: Exposure Index by Poverty Status, 2014



Source: U.S. EPA, 2011 National Air Toxics Assessment; U.S. Census Bureau. Universe includes the
Note: Data on population by race/ethnicity represent a 2010 through 2014 average.

Connectedness

Connectedness

Highlights

Are the region's residents and neighborhoods connected to one another and to the region's assets and opportunities?

- Although residential segregation has generally declined over time, White-Latino segregation has increased and the city is far from full integration.
- Black households are the most likely to be carless, and low-income Black workers are far more likely to rely on public transit than other low-income workers.
- Grand Rapids ranks 19th of the largest 100 cities when it comes to high renter housing burdens.
- Renters of color are the most likely to be paying more than 30 percent of their incomes on rent.

Percent of Black households without a car:

26%

Share of Whites who would need to move to achieve integration with Blacks:

48%

Share of Black renters who pay too much for housing:

74%

Connectedness

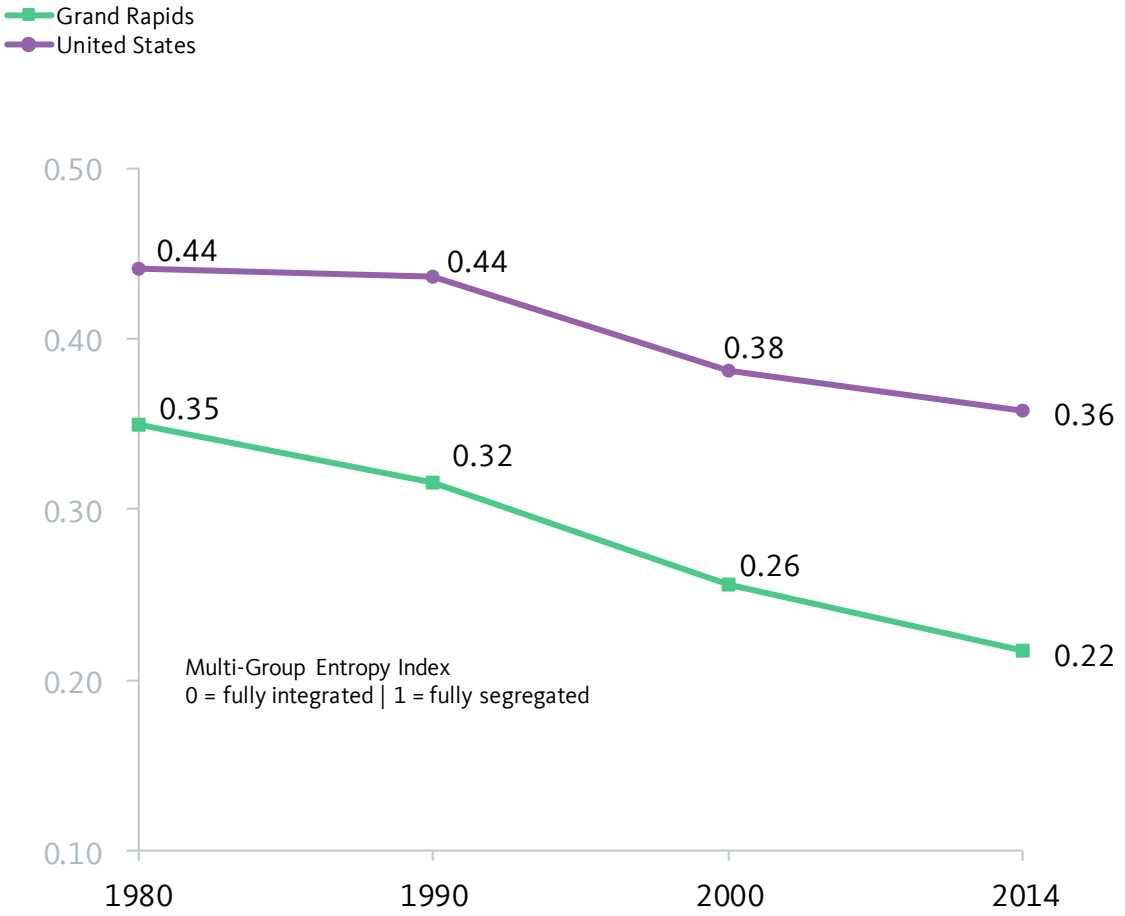
Segregation is decreasing

Based on the multi-group entropy index, Grand Rapids is less segregated by race/ethnicity than the nation overall. Similarly, segregation has declined more rapidly than the national average.

The entropy index, which ranges from a value of 0, meaning that all census tracts have the same racial/ethnic composition as the region overall (maximum integration), to a high of 1, if all census tracts contained one group only (maximum segregation).

Residential segregation in the city is lower than the national average, decreasing rapidly over time

Residential Segregation, 1980 to 2014



Source: U.S. Census Bureau; Geolytics, Inc. See the "Data and methods" section for details of the residential segregation index calculations.
Note: Data for 2014 represents a 2010 through 2014 average.

Connectedness

Increased integration for Black residents

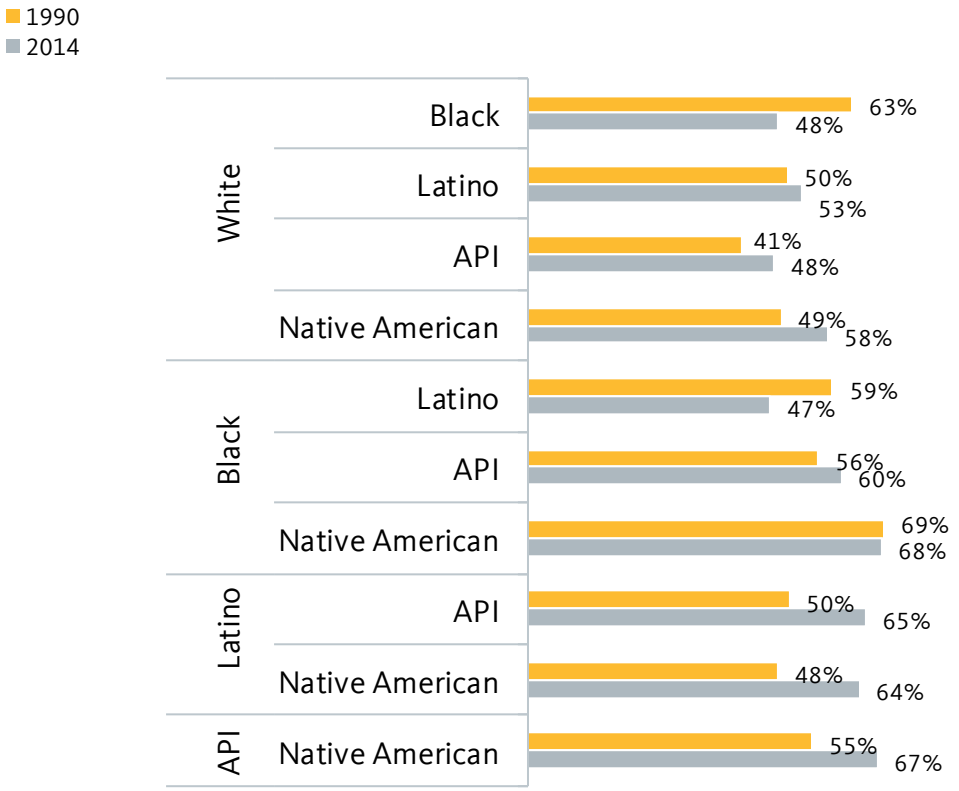
The dissimilarity index estimates the share of a given racial/ethnic group that would need to move to a new neighborhood to achieve complete residential integration. This measure shows that there has been a decline in segregation between Blacks and Whites, and between Blacks and Latinos, since 1990, driving the overall trend seen on the previous page.

However, segregation between most other groups has increased since 1990, particularly between Latinos and Asians or Pacific Islander, and between Latinos and Native Americans.

Despite the improved levels of integration between Blacks and Whites, 48 percent of White residents would have to move to achieve perfect Black-White integration in 2014.

Black residents have experienced improved integration, while segregation among other racial/ethnic groups has generally increased

Residential Segregation, 1990 and 2014, measured by the Dissimilarity Index



Source: U.S. Census Bureau; Geolytics, Inc. Data reported is the dissimilarity index for each combination of racial/ethnic groups.
See the "Data and methods" section for details of the residential segregation index calculations. Data for 2014 represents a 2010 through 2014 average.

Connectedness

Concentrated poverty (map)

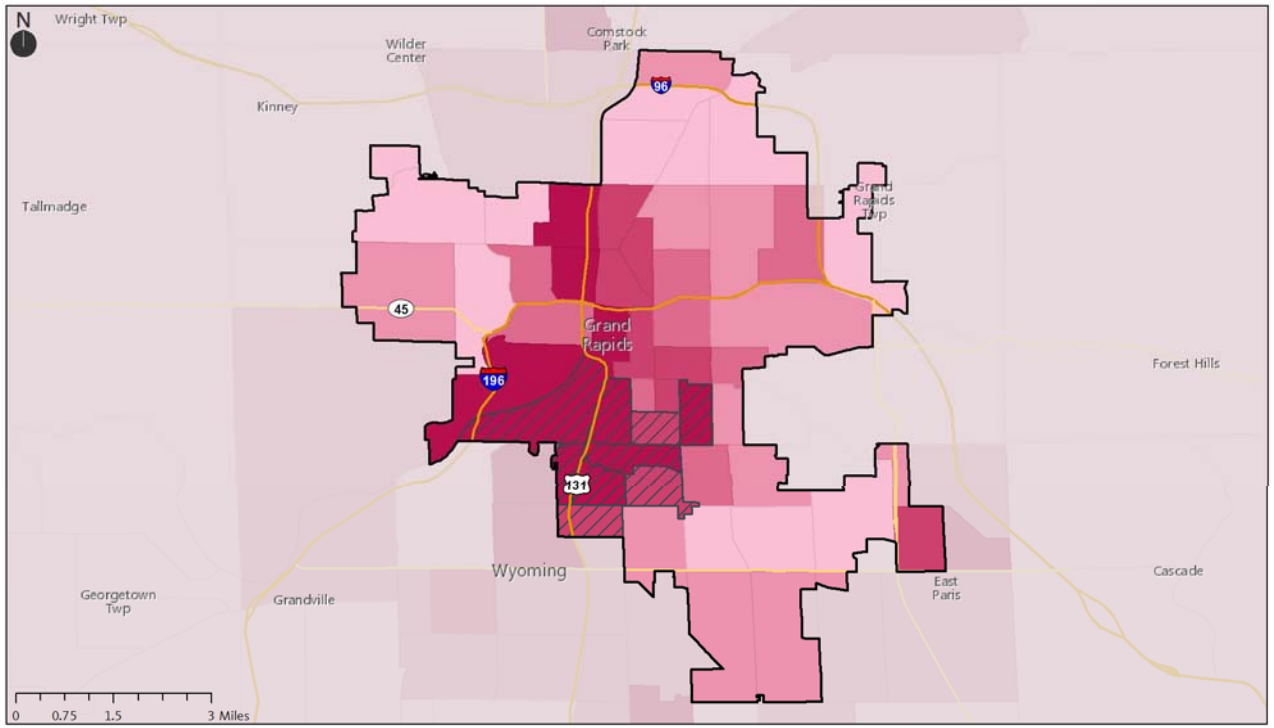
As the map illustrates, concentrated poverty in Grand Rapids is a challenge for neighborhoods directly south of downtown and along the Interstate 131 corridor.

About one-fifth of the census tracts in Grand Rapids are largely made up of people of color (76 percent or more); these neighborhoods tend to have the highest poverty rates.

Areas of high poverty (44 percent or higher) are found primarily in communities of color

Percent Population Below the Federal Poverty Level by Census Tract, 2014

- Less than 12%
- 12% to 22%
- 22% to 30%
- 30% to 44%
- 44% or more
- 76% or more people of color



Source: U.S. Census Bureau; TomTom, ESRI, HERE, DeLorme, MaymyIndia, © OpenStreetMap contributors, and the GIS user community. Universe includes all persons not in group quarters. Note: Data represent a 2010 through 2014 average.

Connectedness

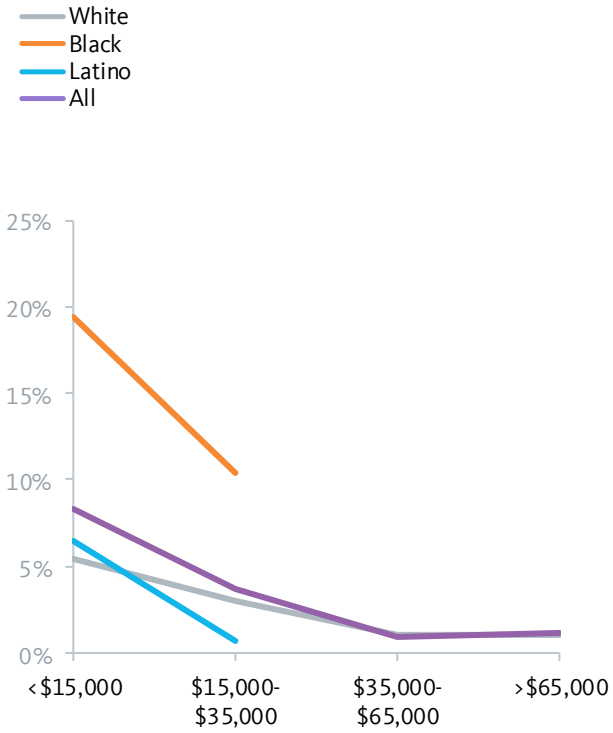
Black workers more likely to rely on the region's transit system

Income and race both play a role in determining who uses the region's public transit system to get to work. Among poor and low-income households, Whites are less likely to be dependent on public transit than Black workers and all workers in Grand Rapids combined. Use of public transportation declines as earnings increase.

Black households are far less likely to own cars than White and Latino residents**:** 26 percent of of Black households do not have a car, over three times the rate for White households (8 percent).

Transit use varies by income and race

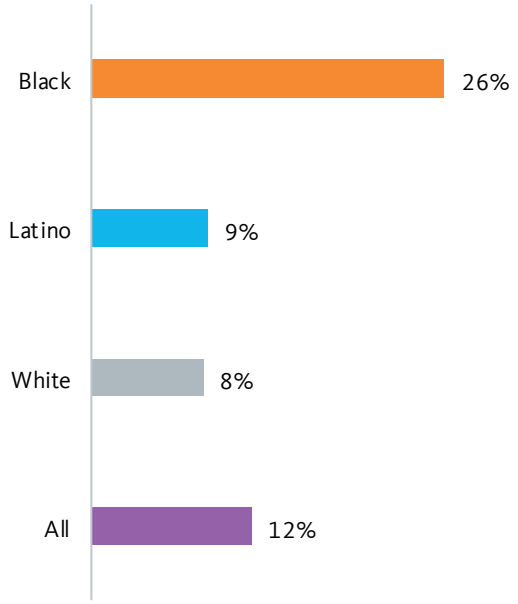
Percent Using Public Transit by Annual Earnings and Race/Ethnicity, 2014



Source: Integrated Public Use Microdata Series. Universe includes workers ages 16 and older with earnings.
Note: Data represent a 2010 through 2014 average. Data for some racial/ethnic groups are excluded due to small sample size.

Black households are least likely to have a car

Percent of Households without a Vehicle by Race/Ethnicity, 2014



Source: Integrated Public Use Microdata Series. Universe includes all households (no group quarters).
Note: Data represent a 2010 through 2014 average. Data for some racial/ethnic groups are excluded due to small sample size.

Connectedness

How residents commute varies by income

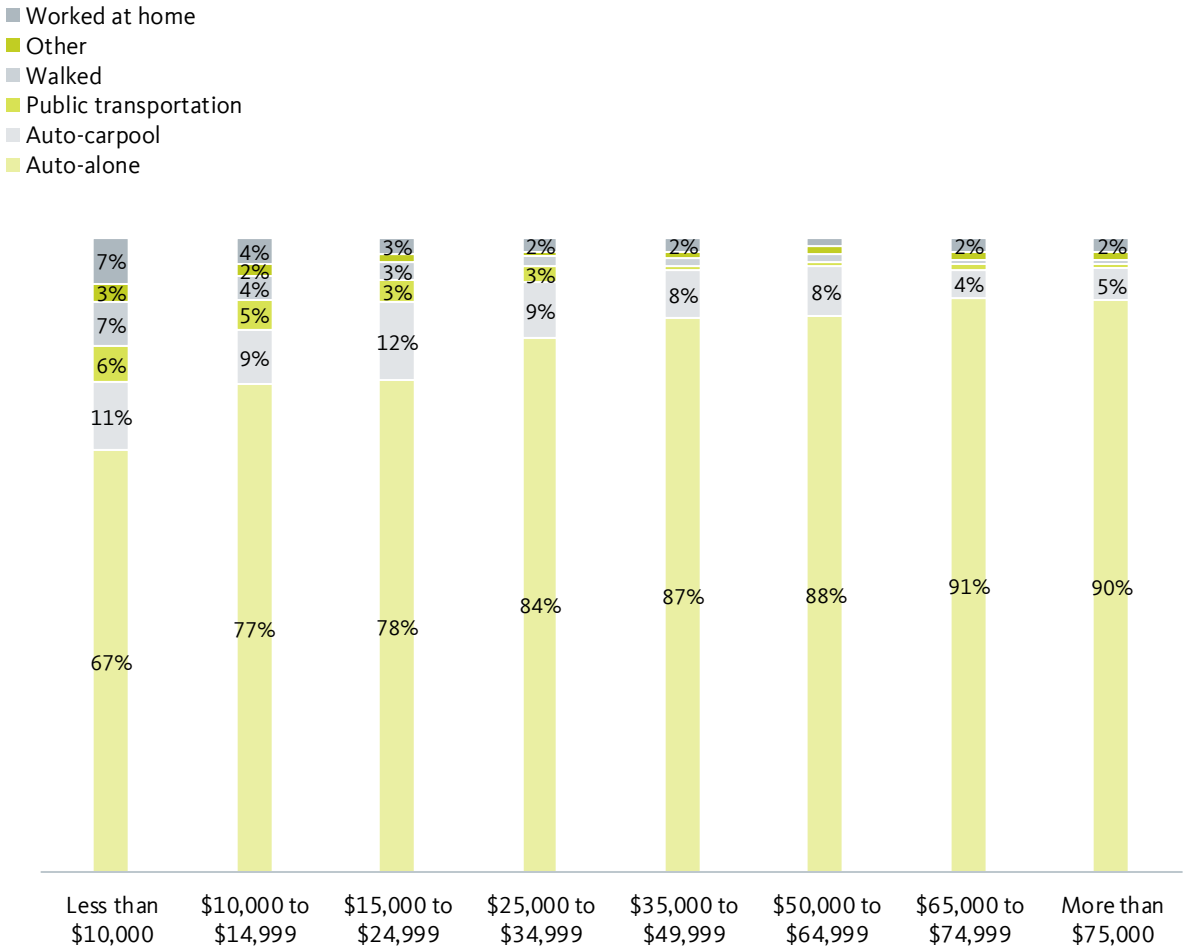
The vast majority – 82 percent – of Grand Rapids residents drive alone to work, followed by 9 percent who carpool.

Single-driver commuting, however, increases with income. Sixty-seven percent of workers in the lowest income band (those earning less than $10,000 per year) drive alone to work, compared to 90 percent of workers who make over $75,000 a year.

Lower income residents are more likely to use other transportation options such as carpooling, public transportation, and walking.

Lower-income residents are less likely to drive alone to work

Means of Transportation to Work by Annual Earnings, 2014



Source: Integrated Public Use Microdata Series. Universe includes workers ages 16 and older with earnings.
Note: Data represent a 2010 through 2014 average. Dollar values are in 2014 dollars.

Connectedness

Vehicle access varies across the city

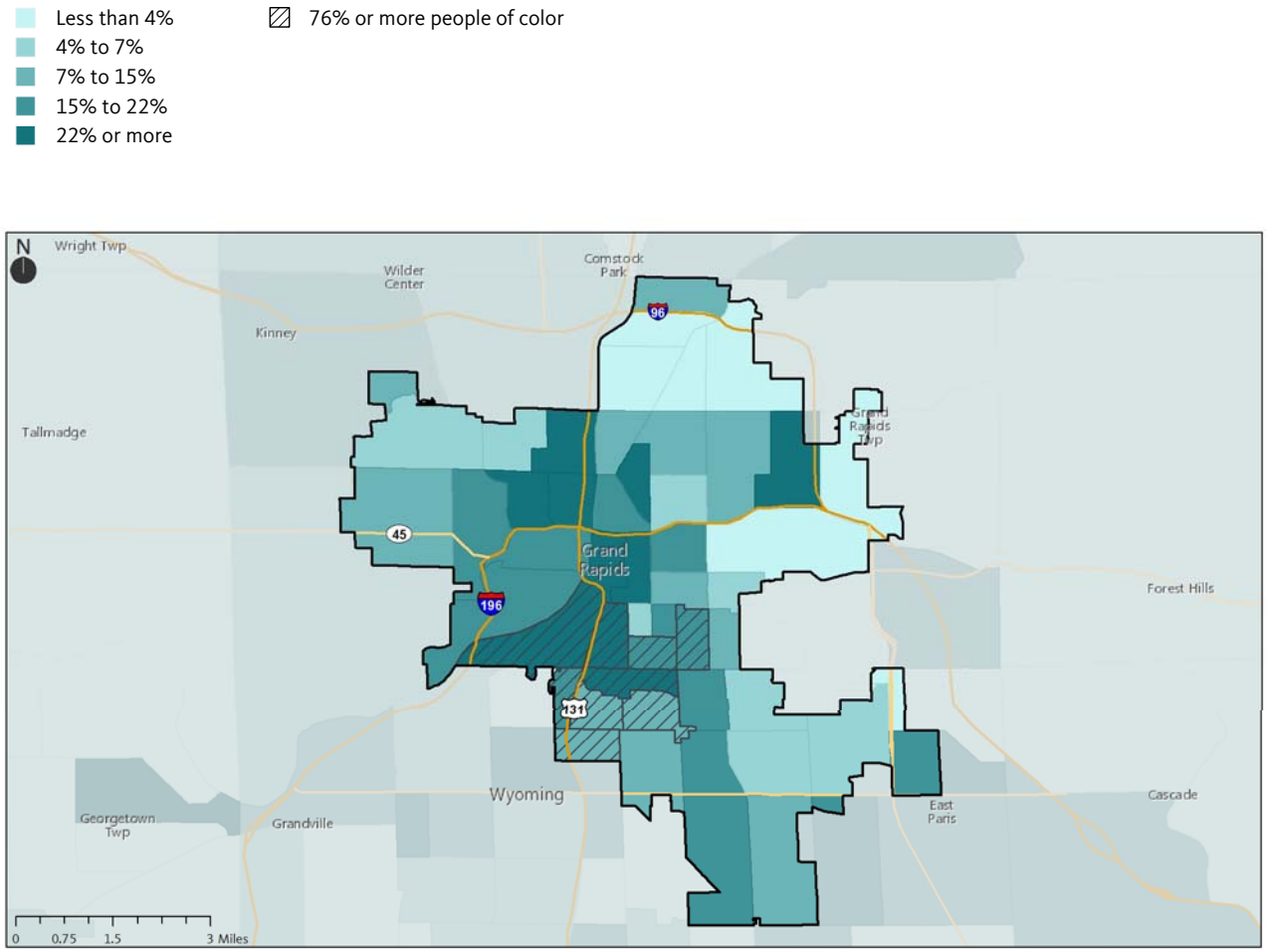
Car access varies across the city. In some neighborhoods, less than 4 percent of households are carless, while in others, more than 22 percent of households do not have a vehicle.

Households are least likely to have access to a vehicle in neighborhoods along the Interstate 131 corridor, though other pockets of carless households are scattered throughout the city.

Many of the neighborhoods that have high shares of people of color (76 percent or more) also have relatively low rates of car access.

Carless households are scattered throughout the region with higher concentrations along Interstate 131

Percent of Households Without a Vehicle by Census Tract, 2014



Source: U.S. Census Bureau; TomTom, ESRI, HERE, DeLorme, MaymyIndia, © OpenStreetMap contributors, and the GIS user community. Universe includes all households (no group quarters). Note: Data represent a 2010 through 2014 average.

Connectedness

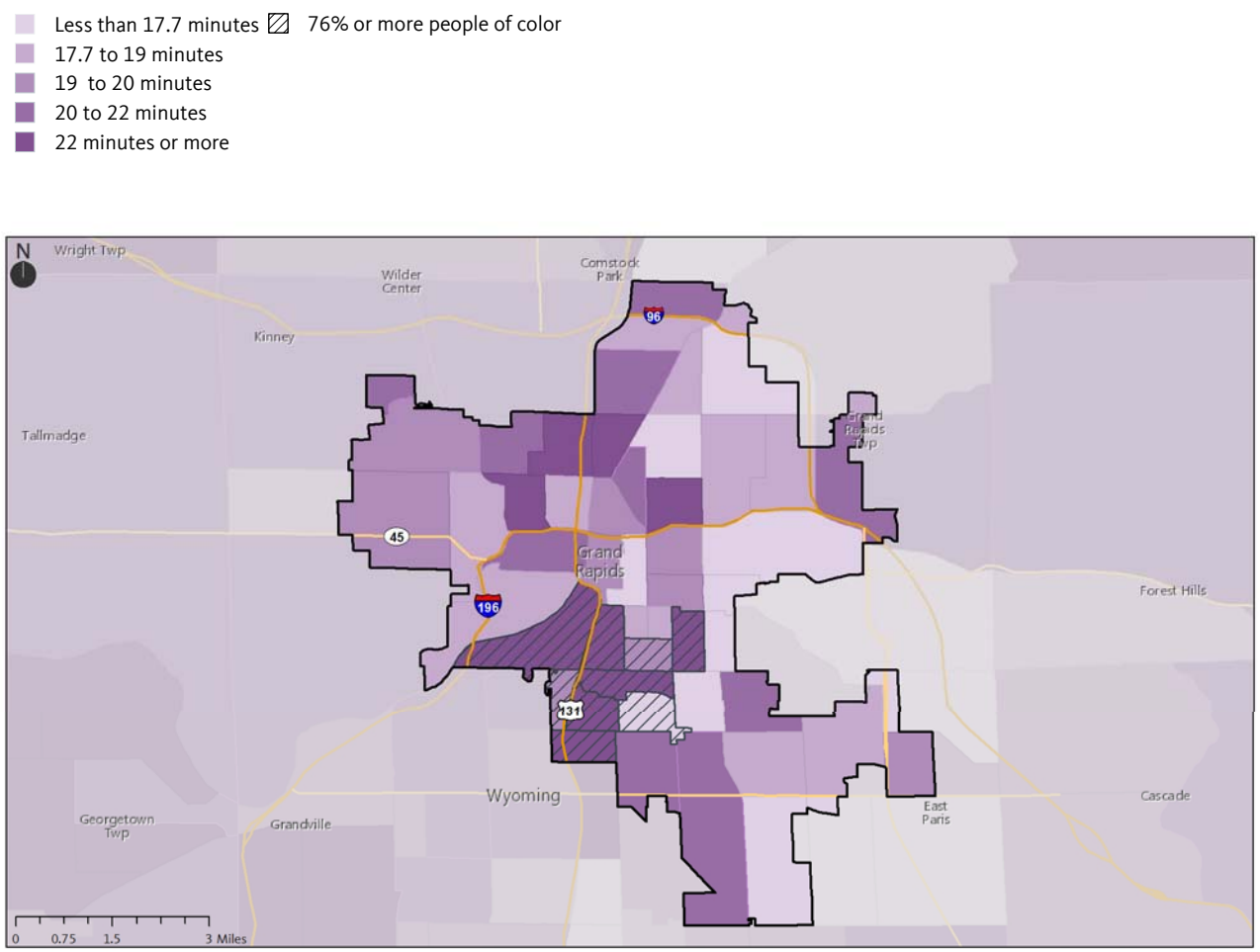
Commute times vary across the city

Average travel time is less than 17.7 minutes in some neighborhoods, particularly to the northeast and southeast of downtown, while it is 22 minutes or more in other neighborhoods, particularly those south of downtown along I-131.

Many of the neighborhoods with low car access also have higher average commute times, with a few exceptions, and these tend to correspond with the same neighborhoods that have the highest shares of people of color (76 percent or more).

Workers living south of downtown along Interstate 131 tend to have the longest commute times

Average Travel Time to Work by Census Tract, 2014



Source: U.S. Census Bureau; TomTom, ESRI, HERE, DeLorme, MaymyIndia, © OpenStreetMap contributors, and the GIS user community. Universe includes all persons ages 16 or older who work outside of home. Note: Data represent a 2010 through 2014 average.

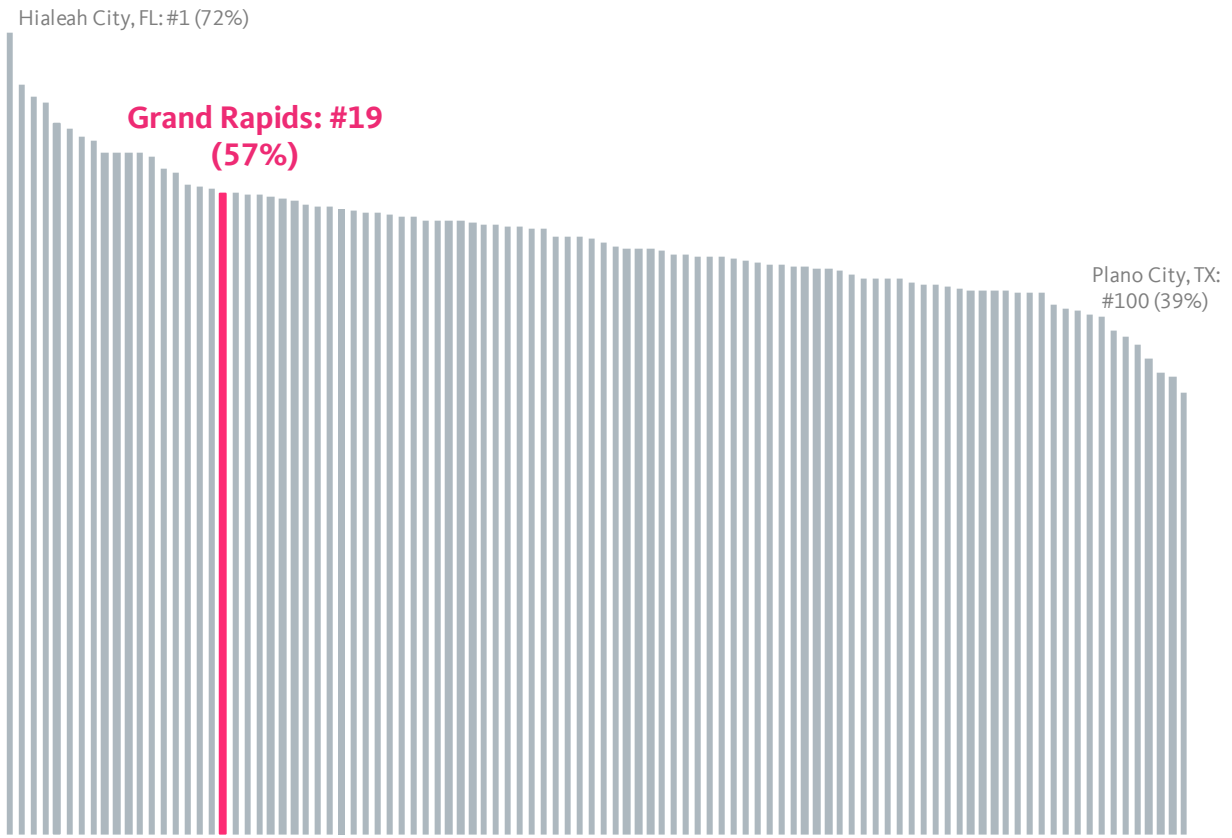
Connectedness
A high-cost housing market

Grand Rapids ranks relatively high in the share of households (both owners and renters) that are burdened by housing costs, defined as spending more than 30 percent of income on housing. The city ranks 19th among the largest 100 cities in terms of renter burden (57 percent).

Compared to other cities in the Midwest, Grand Rapids has higher renter burden than St. Paul (52 percent) and Minneapolis (50 percent).

Grand Rapids has a relatively high ranking for rent-burdened households

70. Share of Households that Are Rent Burdened, 2014: Largest 100 Cities Ranked



Source: Integrated Public Use Microdata Series. Universe includes renter-occupied households with cash rent (excludes group quarters).
Note: Data represent a 2010 through 2014 average.

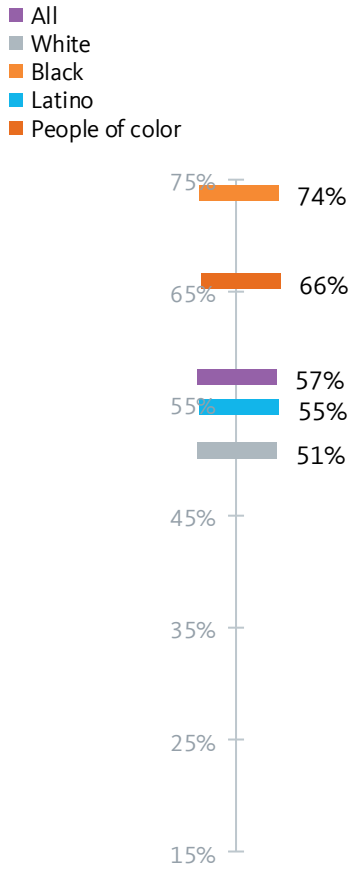
Connectedness

Black and Latino households face higher housing burdens

Communities of color in Grand Rapids are much more likely to experience housing burden – defined as paying more than 30 percent of their incomes toward housing costs – than their White peers. This is especially true for African American households; 74 percent of Black renters and 41 percent of Black homeowners are cost-burdened.

Nearly three in every four African Americans renters are housing burdened

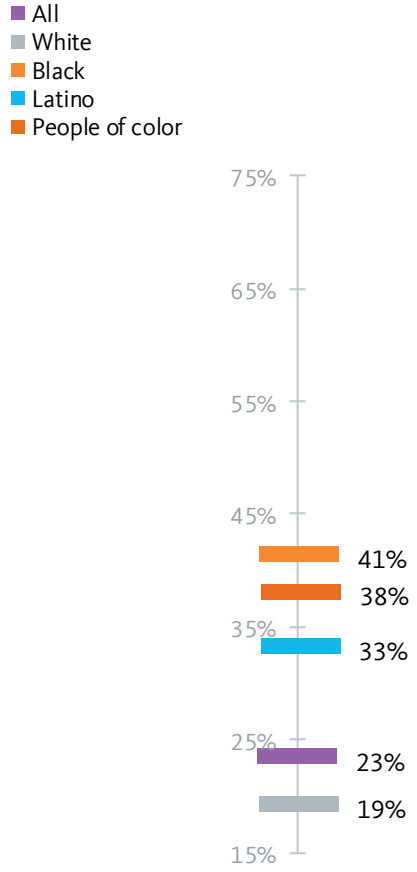
Renter Housing Burden by Race/Ethnicity, 2014



Source: Integrated Public se Microdata Series. Universe includes renter-occupied households with cash rent (excludes group quarters).
Note: Data represent a 2010 through 2014 average.

African American homeowners have the highest housing burden

Homeowner Housing Burden by Race/Ethnicity, 2014



Source: Integrated Public Use Microdata Series. Universe includes owner-occupied households (excludes group quarters).
Note: Data represent a 2010 through 2014 average.

Economic benefits

Economic benefits

Highlights

What are the benefits of racial economic inclusion to the broader economy?

- The Grand Rapids-Wyoming region stands to gain a great deal from addressing racial inequities. The region's economy could have been nearly $4 billion stronger in 2014 if its racial gaps in income had been closed: a 10 percent increase.
- In Grand Rapids, 60 percent of the racial income gap between all people of color and White residents is due to differences in employment.
- With racial equity, Latino residents in the city would see a 79 percent gain in average annual income, and Black residents would see an 89 percent gain.

Equity dividend in broader region:

$4 billion

Average income gains with racial equity for people of color:

81%

Increase in average Black income with racial equity:

$14k+

Economic benefits of inclusion

A potential $4 billion per year GDP boost from racial equity

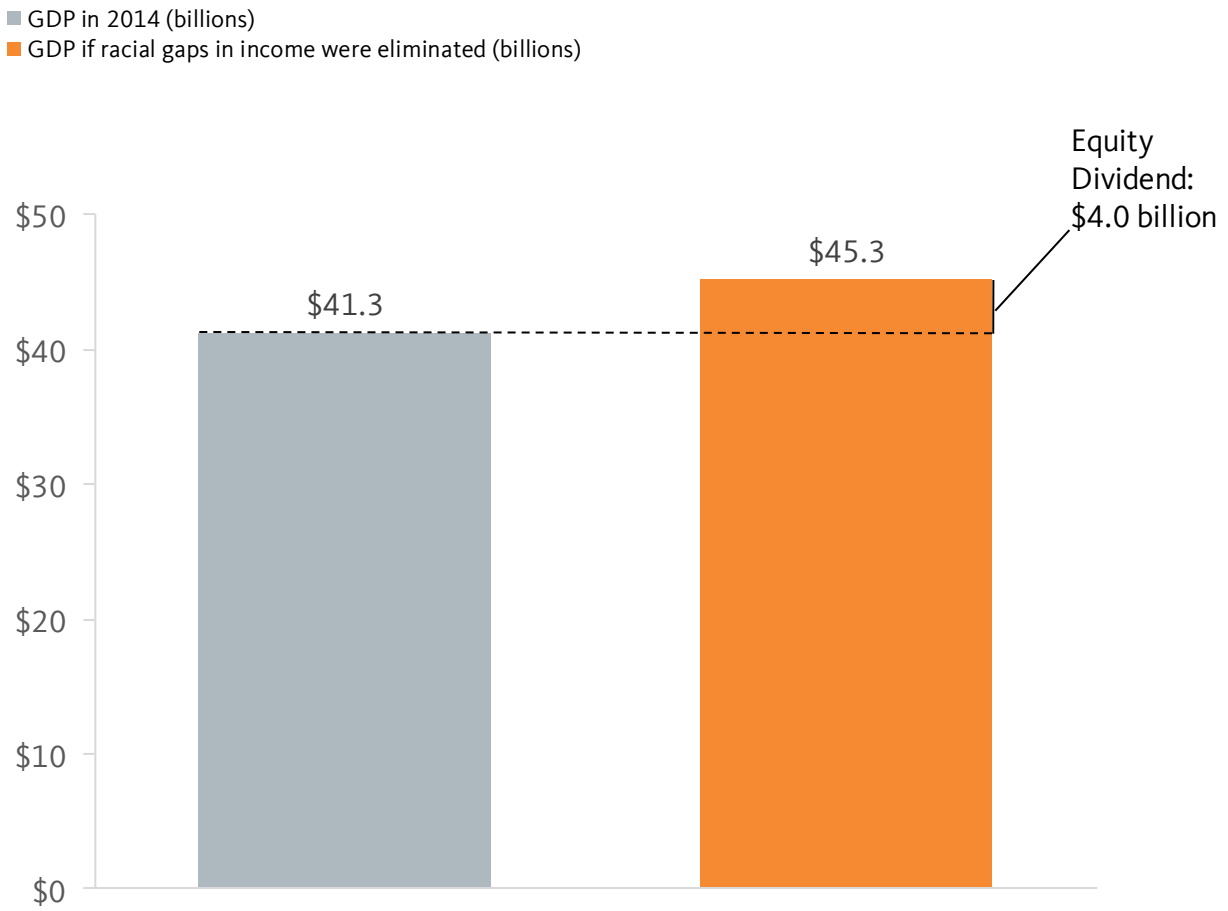
The Grand Rapids-Wyoming region stands to gain a great deal from addressing racial inequities. The region's economy could have been nearly $4 billion stronger in 2014 if its racial gaps in income had been closed: a 10 percent increase.

Using data on income by race, we calculated how much higher total economic output would have been in 2014 if all racial groups who currently earn less than Whites had earned similar average incomes as their White counterparts, controlling for age.

We also examined how much of the region's racial income gap was due to differences in wages and how much was due to differences in employment (measured by hours worked). Nationally, 36 percent of the racial income gap between all people of color and Whites is due to differences in employment. In the Grand Rapids region, that share is 50 percent.

Grand Rapids region's GDP would have been $4 billion higher if there were no racial gaps in income

Actual GDP and Estimated GDP without Racial Gaps in Income, 2014



Source: Bureau of Economic Analysis, Bureau of Labor Statistics, and Integrated Public Use Microdata Series.
Note: Analysis reflects the Grand Rapids-Wyoming Metropolitan Statistical Area as defined by the U.S. Office of Management and Budget. Data represent a 2010 through 2014 average. Values are in 2014 dollars.

Economic benefits of inclusion

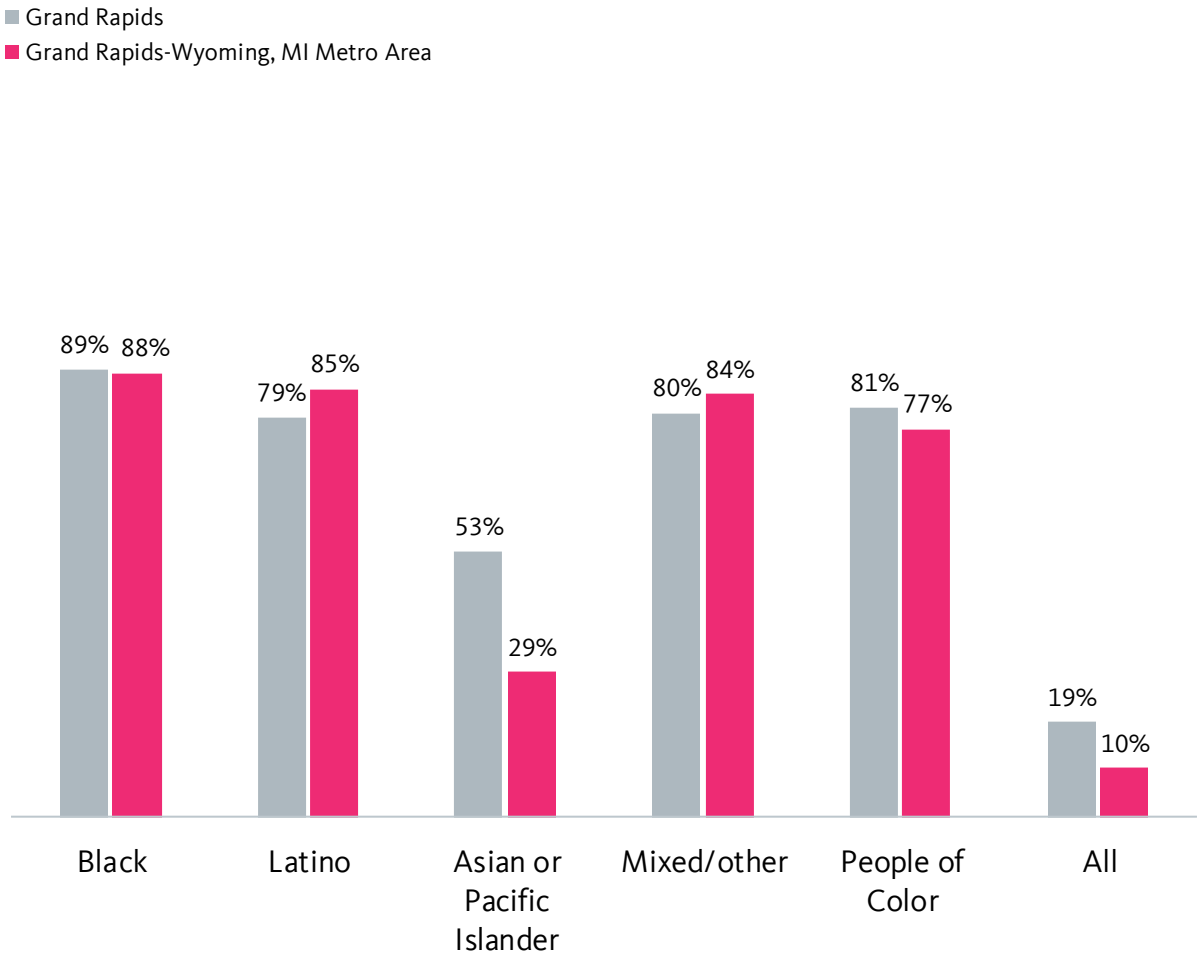
Average Black income would increase by 89 percent with racial equity

People of color as a whole in the city of Grand Rapids are projected to see their incomes grow by roughly 81 percent with racial equity. Latino residents in the city would see a 79 percent gain in average annual income, while Black residents would see an 89 percent gain.

Income gains were estimated by calculating the percentage increase in income for each racial/ethnic group if they had the same average annual income (and income distribution) and hours of work as non-Hispanic Whites, controlling for age.

Black residents would experience the largest income increases with racial equity

Percentage Gain in Income with Racial Equity by Race/Ethnicity, 2014



Source: Bureau of Economic Analysis, Bureau of Labor Statistics, and Integrated Public Use Microdata Series.
Note: Data represent a 2010 through 2014 average. Data for some racial/ethnic groups are excluded due to small sample size.

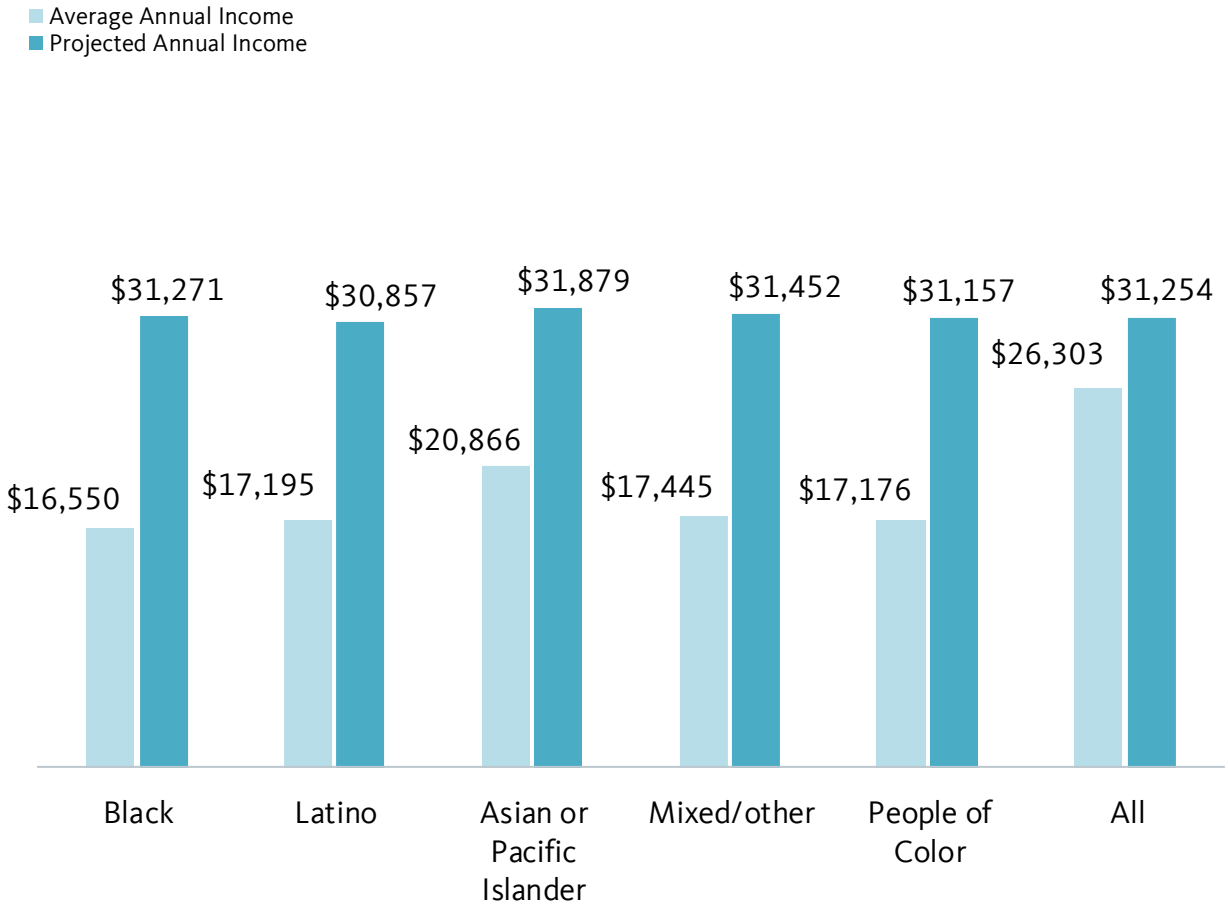
Economic benefits of inclusion

Average income for people of color would increase by $14,000

On average, people of color in the city are projected to see their incomes grow by $14,000 with racial equity. Latinos and African Americans would see similar increases, boosting their average incomes from roughly $17,000 to to $31,000 per year.

Latino and Black workers in Grand Rapids would experience the largest income increases with racial equity

Gain in Average Income with Racial Equity by Race/Ethnicity, 2014



Source: Bureau of Economic Analysis, Bureau of Labor Statistics, and Integrated Public Use Microdata Series.
Note: Data represent a 2010 through 2014 average. Values are in 2014 dollars.

Economic benefits of inclusion

Most of the potential income gains would come from closing racial gaps in employment

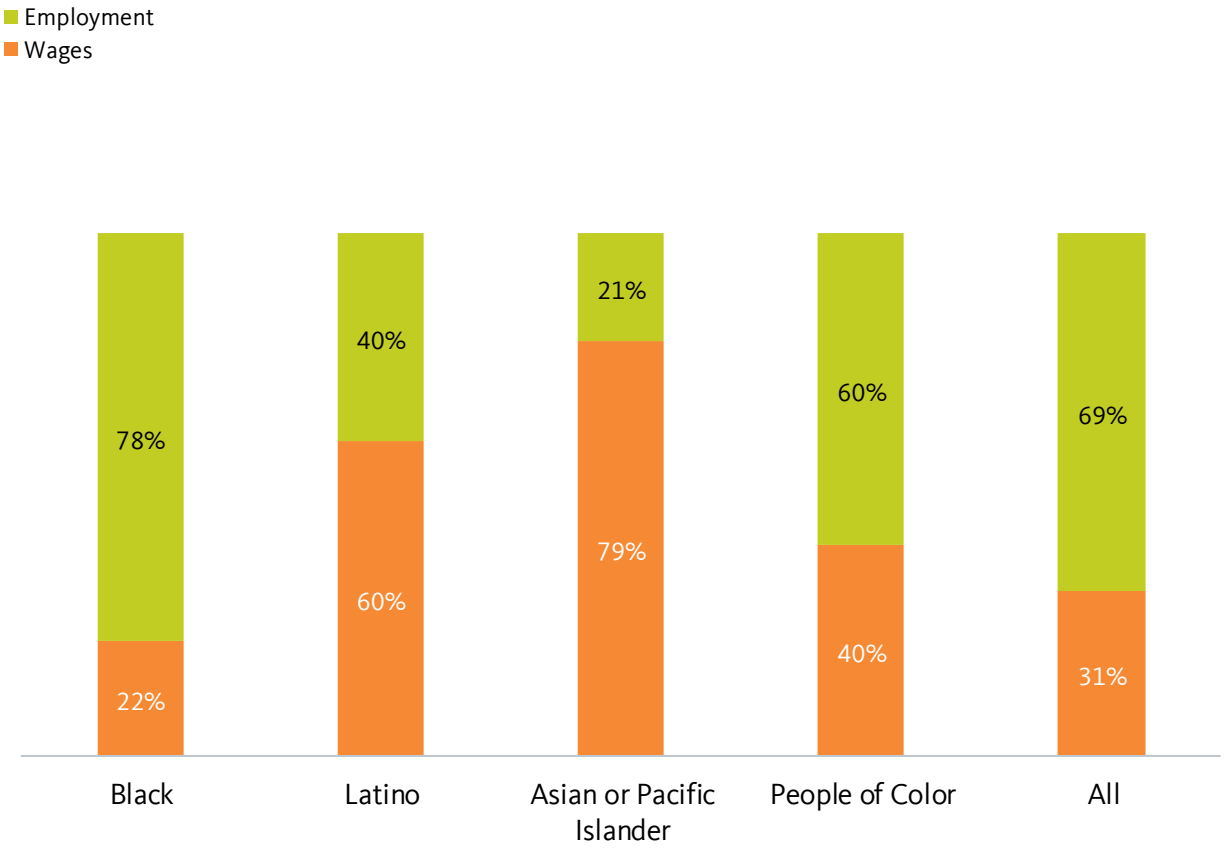
We also examined how much of the city's racial income gap was due to differences in wages and how much was due to differences in employment (measured by hours worked).

In Grand Rapids, a significant portion of the income gap experienced by Black residents – 78 percent – can be attributed to hours worked.

For Latino and Asian or Pacific Islander residents, however, the majority of the racial income gap is due to differences in wages.

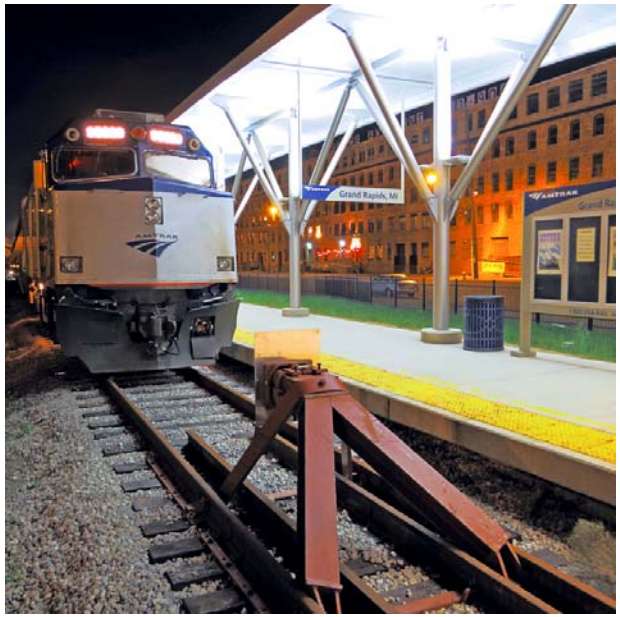
The racial wage gap affects racial/ethnic groups differently

Source of Gains in Income with Racial Equity By Race/Ethnicity, 2014



Source: Bureau of Economic Analysis, Bureau of Labor Statistics, and Integrated Public Use Microdata Series.
Note: Data represent a 2010 through 2014 average.

Implications



Implications
Advancing racial equity and inclusive growth

Grand Rapids's diverse population is a major economic asset that can help the city compete in the global economy, if the city's leaders invest in ensuring all of its residents can contribute their talent and creativity to building a strong next economy.

Grow good, accessible jobs that provide pathways to the middle class

Good jobs that are accessible to workers of color and other marginalized workers who are likely to live in poor, isolated neighborhoods form the bedrock of equitable cities. A job that pays enough to support one's family and put some away for the future, provides health care and other benefits, and safe, dignified, family-friendly working conditions is a universal foundation for well-being and prosperity. Grand Rapids should target its economic development efforts to grow high-road, inclusive businesses in high-opportunity sectors; leverage public investments to help entrepreneurs of color and triple-bottom-line businesses grow more good jobs; and set high standards for wages and benefits for all workers.

Increase the economic security and mobility of vulnerable families and workers

Economic security—having enough money to cover basic needs and enough savings to weather setbacks and invest for the future—is critical to the health and well-being of families, neighborhoods, and local economies. In Grand Rapids, nearly half of all Black, Latino, and residents who identify as mixed or another race are economically insecure (at or below 200 percent of the federal poverty line). The city can make strides to reduce this insecurity and strengthen its economy by connecting vulnerable residents with jobs and opportunities to save and build assets, removing discriminatory barriers to employment, and protecting families from predatory financial practices.

Cultivate homegrown talent through a strong cradle-to-career pipeline

A skilled workforce is the key to city success in the global economy, so Grand Rapids and other cities must prioritize equipping youth of color with the skills to excel in the 21st century workforce. By 2020, 44 percent of Michigan's jobs will require an associate's degree or higher. There are large differences in educational attainment by race/ethnicity and nativity. While 52 percent of the White population has an associate's degree or higher, only 9 percent of Latino immigrants, 17 percent of African Americans, and 24 percent of U.S.-born Latinos have the same educational attainment**.** Grand Rapids can nurture homegrown talent by taking a cradle-to-career approach that includes a strong workforce system to connect adult workers – including those facing barriers to employment – with employment opportunities.

Create healthy, opportunity-rich neighborhoods for all

High-quality neighborhoods are fundamental building blocks for health and economic opportunity. People who live in resource-rich neighborhoods with good schools, safe streets, parks, transit, clean air and water, and places to buy healthy food and other services are much more likely to live long, healthy, secure lives. The city should work to improve services and quality of life in its poorest neighborhoods and make catalytic investments that reconnect disinvested neighborhoods to the regional economy and spur equitable development that builds community wealth.

Implications

Advancing equity and racial inclusion (continued)

Build resilient, connected infrastructure

Infrastructure—roads, transit, sidewalks, bridges, ports, broadband, parks, schools, water lines, and more—is the skeletal support that allows cities to function and connects their residents to each other and to the regional and global economy. Grand Rapids should leverage investments in existing and new infrastructure investments, targeting resources to high-need, underserved neighborhoods to foster equitable growth and economic opportunity.

Increase access to high-quality, affordable homes and prevent displacement

Housing is the lynchpin for opportunity: the location and quality of the home you can afford not only affects your living space and your household budget—it determines the quality of your schools, the safety of your streets, the length of your commute, your exposure to toxics, and more. Grand Rapids must take proactive steps to ensure that working-class families of color can live in healthy homes that connect them to opportunity – and that they can afford to stay in those homes. Sixty-six percent of renters are housing burdened. A multi-strategy approach that includes funding sources, policy levers, code enforcement, and tenant protections and services can expand housing opportunity and protect low-income communities of color from displacement.

Conclusion

Community leaders in the public, private, and nonprofit sectors are already taking steps to connect its more vulnerable communities to educational and economic opportunities, and these efforts must continue. To secure a prosperous future, Grand Rapids should implement a growth model that is driven by equity – just and fair inclusion into a society in which everyone can participate and prosper. Concerted investments and policies for, and developed from within, communities of color will also be essential to ensure the city's fastest-growing populations are ready to lead it into the next economy.

Data and methods

Data and methods

Data source summary and regional geography

Unless otherwise noted, all of the data and analyses presented in this profile are the product of PolicyLink and the USC Program for Environmental and Regional Equity (PERE), and reflect the city of Grand Rapids, Michigan. The specific data sources are listed in the table shown here.

While much of the data and analysis presented in this profile are fairly intuitive, in the following pages we describe some of the estimation techniques and adjustments made in creating the underlying database, and provide more detail on terms and methodology used. Finally, the reader should bear in mind that while only a single city is profiled here, many of the analytical choices in generating the underlying data and analyses were made with an eye toward replicating the analyses in other cities and regions and the ability to update them over time. Thus, while more regionally specific data may be available for some indicators, the data in this profile draws from our regional equity indicators database that provides data that are comparable and replicable over time.

Source	Dataset
Integrated Public Use Microdata Series (IPUMS)	1980 5% State Sample
	1990 5% Sample
	2000 5% Sample
	2010 American Community Survey, 5-year microdata sample
	2010 American Community Survey, 1-year microdata sample
	2014 American Community Survey, 5-year microdata sample
U.S. Census Bureau	1980 Summary Tape File 1 (STF1)
	1980 Summary Tape File 2 (STF2)
	1990 Summary Tape File 2A (STF2A)
	1990 Modified Age/Race, Sex and Hispanic Origin File (MARS)
	1990 Summary Tape File 4 (STF4)
	2000 Summary File 1 (SF1)
	2010 Summary File 1 (SF1)
	2014 American Community Survey, 5-year summary file
	2010 TIGER/Line Shapefiles, 2010 Census Block Groups
	2014 TIGER/Line Shapefiles, 2014 Census Tracts
	2010 TIGER/Line Shapefiles, 2010 Counties
Geolytics	1980 Long Form in 2010 Boundaries
	1990 Long Form in 2010 Boundaries
	2000 Long Form in 2010 Boundaries
Woods & Poole Economics, Inc.	2016 Complete Economic and Demographic Data Source
U.S. Bureau of Economic Analysis	Gross Domestic Product by State
	Gross Domestic Product by Metropolitan Area
	Local Area Personal Income Accounts, CA30: Regional Economic Profile
U.S. Bureau of Labor Statistics	Quarterly Census of Employment and Wages
	Local Area Unemployment Statistics
	Occupational Employment Statistics
Centers for Disease Control and Prevention	Behavioral Risk Factor Surveillance System (BRFSS)
The Reinvestment Fund	2014 Analysis of Limited Supermarket Access (LSA)
U.S. Environmental Protection Agency	2011 National-Scale Air Toxics Assessment (NATA)
The diversitydatakids.org Project	W.K. Kellogg Foundation Priority Communities Dashboard Database
Louisiana Workforce Commission	2014-2024 Employment by Industry
	Long Term Projections for All Occupations to 2024
Georgetown University Center on Education and the Workforce	Updated projections of education requirements of jobs in 2020, originally appearing in: Recovery: Job Growth And Education Requirements Through 2020; State Report

Data and methods

Selected terms and general notes

Broad racial/ethnic origin

In all of the analyses presented, all categorization of people by race/ethnicity and nativity is based on individual responses to various census surveys. All people included in our analysis were first assigned to one of six mutually exclusive racial/ethnic categories, depending on their response to two separate questions on race and Hispanic origin as follows:

- "White" and "non-Hispanic White" are used to refer to all people who identify as White alone and do not identify as being of Hispanic origin.
- "Black" and "African American" are used to refer to all people who identify as Black or African American alone and do not identify as being of Hispanic origin.
- "Latino" refers to all people who identify as being of Hispanic origin, regardless of racial identification.
- "Asian American and Pacific Islander," "Asian or Pacific Islander," "Asian," and "API" are used to refer to all people who identify as Asian American or Pacific Islander alone and do not identify as being of Hispanic origin.
- "Native American" and "Native American and Alaska Native" are used to refer to all people who identify as Native American or Alaskan Native alone and do not identify as being of Hispanic origin.
- "Mixed/other" and "other or mixed race" are used to refer to all people who identify with a single racial category not included above, or identify with multiple racial categories, and do not identify as being of Hispanic origin.
- "People of color" or "POC" is used to refer to all people who do not identify as non-Hispanic White.

Nativity

The term "U.S.-born" refers to all people who identify as being born in the United States (including U.S. territories and outlying areas), or born abroad to American parents. The term "immigrant" refers to all people who identify as being born abroad, outside of the United States, to non-American parents.

Detailed racial/ethnic ancestry

Given the diversity of ethnic origin and large presence of immigrants among the Latino and Asian populations, we sometimes present data for more detailed racial/ethnic categories within these groups. In order to maintain consistency with the broad racial/ethnic categories, and to enable the examination of second-and-higher generation immigrants, these more detailed categories (referred to as "ancestry") are drawn from the first response to the census question on ancestry, recorded in the Integrated Public Use Microdata Series (IPUMS) variable "ANCESTR1." For example, while country-of-origin information could have been used to identify Filipinos among the Asian population or Salvadorans among the Latino population, it could do so only for immigrants, leaving only the broad "Asian" and "Latino" racial/ethnic categories for the U.S.-born population. While this methodological choice makes little difference in the numbers of immigrants by origin we report – i.e., the vast majority of immigrants from El Salvador mark "Salvadoran" for their ancestry – it is an important point of clarification.

Data and methods

Selected terms and general notes

(continued)

Other selected terms

Below we provide some definitions and clarification around some of the terms used in the profile:

- The term "region" is often used to describe the city of Grand Rapids and generally refers to metropolitan areas or other large urban areas (e.g. large cities and counties). The terms "metropolitan area," "metro area," and "metro" are used interchangeably to refer to the geographic areas defined as Metropolitan Statistical Areas under the December 2003 definitions of the Office of Management and Budget (OMB).
- The term "neighborhood" is used at various points throughout the profile. While in the introductory portion of the profile this term is meant to be interpreted in the colloquial sense, in relation to any data analysis it refers to census tracts.
- The term "communities of color" generally refers to distinct groups defined by race/ethnicity among people of color.
- The term "high school diploma" refers to both an actual high school diploma as well as high school equivalency or a General Educational Development (GED) certificate.

The term "full-time" workers refers to all persons in the IPUMS microdata who reported working at least 45 or 50 weeks (depending on the year of the data) and usually worked at least 35 hours per week during the year prior to the survey. A change in the "weeks worked" question in the 2008 American Community Survey (ACS), as compared with prior years of the ACS and the long form of the decennial census, caused a dramatic rise in the share of respondents indicating that they worked at least 50 weeks during the year prior to the survey. To make our data on full-time workers more comparable over time, we applied a slightly different definition in 2008 and later than in earlier years: in 2008 and later, the "weeks worked" cutoff is at least 50 weeks while in 2007 and earlier it is 45 weeks. The 45-week cutoff was found to produce a national trend in the incidence of full-time work over the 2005-2010 period that was most consistent with that found using data from the March Supplement of the Current Population Survey, which did not experience a change to the relevant survey questions. For more information, see: https://www.census.gov/content/dam/Census/library/working-papers/2012/demo/Gottschalck_2012FCSM_VII-B.pdf.

General notes on analyses

Below, we provide some general notes about the analysis conducted:

- In regard to monetary measures (income, earnings, wages, etc.) the term "real" indicates the data has been adjusted for inflation. All inflation adjustments are based on the Consumer Price Index for all Urban Consumers (CPI-U) from the U.S. Bureau of Labor Statistics.

Data and methods

Summary measures from IPUMS microdata

Although a variety of data sources were used, much of our analysis is based on a unique dataset created using microdata samples (i.e., "individual-level" data) from the Integrated Public Use Microdata Series (IPUMS), for four points in time: 1980, 1990, 2000, and 2010-2014 pooled together. While the 1980 through 2000 files are based on the decennial census and each cover about 5 percent of the U.S. population, the 2010-2014 files are from the ACS and cover only about 1 percent of the U.S. population each. Five years of ACS data were pooled together to improve the statistical reliability and to achieve a sample size that is comparable to that available in previous years. Survey weights were adjusted as necessary to produce estimates that represent an average over the 2010-2014 period.

Compared with the more commonly used census "summary files," which include a limited set of summary tabulations of population and housing characteristics, use of the microdata samples allows for the flexibility to create more illuminating metrics of equity and inclusion, and provides a more nuanced view of groups defined by age, race/ethnicity, and nativity for various geographies in the United States.

The IPUMS microdata allows for the tabulation of detailed population characteristics, but because such tabulations are based on samples, they are subject to a margin of error and should be regarded as estimates – particularly in smaller regions and for smaller demographic subgroups. In an effort to avoid reporting highly unreliable estimates, we do not report any estimates that are based on a universe of fewer than 100 individual survey respondents.

A key limitation of the IPUMS microdata is geographic detail. Each year of the data has a particular lowest level of geography associated with the individuals included, known as the Public Use Microdata Area (PUMA) for years 1990 and later, or the County Group in 1980. PUMAs are generally drawn to contain a population of about 100,000, and vary greatly in geographic size from being fairly small in densely populated urban areas, to very large in rural areas, often with one or more counties contained in a single PUMA.

The major challenge for our purposes is that PUMAs do not neatly align with the boundaries of cities and metro areas, often with several PUMAs entirely contained within the core of the city or metro areas but several other, more peripheral PUMAs straddling the boundary.

Because PUMAs do not neatly align with the boundaries of cities and metro areas, we created a geographic crosswalk between PUMAs and each geography for the 1980, 1990, 2000, and 2010-2014 microdata. For simplicity, the description below refers only to the PUMA-to-city crosswalk but the same procedure was used to generate the PUMA-to-metro area crosswalk.

We first estimated the share of each PUMA's population that fell inside each city using population information specific to each year

Data and methods

Summary measures from IPUMS microdata

(continued)

from Geolytics, Inc. at the 2000 census block group level of geography (2010 population information was used for the 2010-2014 geographic crosswalk). If the share was at least 50 percent, then the PUMAs were assigned to the city and included in generating our city summary measures. For most PUMAs assigned to a city, the share was 100 percent.

For the remaining PUMAs, however, the share was somewhere between 50 and 100 percent, and this share was used as the "PUMA adjustment factor" to adjust downward the survey weights for individuals included in such PUMAs when estimating regional summary measures. Finally, we made one final adjustment to the individual survey weights in all PUMAs assigned to a city: we applied a "regional adjustment factor" to ensure that the weighted sum of the population from the PUMAs assigned to city matched the total population reported in the official census summary files for each year/period. The final adjusted survey weight used to make all city estimates was, thus, equal to the product of the original survey weight in the IPUMS microdata, the PUMA adjustment factor, and the regional adjustment factor.

To measure geographic fit, we calculated three measures: the share of the city population in each year that was derived from PUMAs that were 80 percent, 90 percent, and 100 percent contained in the city (based on population counts in each year). For example, a city with perfect geographic fit would be one in which 100 percent of the population was derived from PUMAs for which 100 percent of the PUMA population was contained in that city. A city of dubious geographic fit thus might be one in which zero percent of its population was from 80-percent-contained PUMAs (indicating that all of the PUMAs assigned to it were somewhere between 50 and 80 percent contained, since a PUMA must be at least 50 percent to be assigned to the city in the first place).

The table shown below provides the above measures of fit for the city of Grand Rapids, along with the regional adjustment factor that was applied (which again, gives a sense of how much the population from PUMAs allocated to the city had to be adjusted to match the actual city population in each year).

Percentage of city population from:	**1980**	**1990**	**2000**	**2010-2014**
completely contained PUMAs	1.00	1.00	1.00	0.40
90% contained PUMAs	1.00	1.00	1.00	1.00
80% contained PUMAs	1.00	1.00	1.00	1.00
Regional adjustment factor:	1.01	1.00	1.00	0.99

As can be seen, except for the pooled 2010-2014 sample, the entire city population from which estimates are drawn is based on PUMAs that are completely contained in the city boundaries. For 2010-2014, the geographic fit is imperfect, but it is still very good, with all of the city population based on PUMAs that are at least 90 percent contained in the city. Moreover, a comparison of the percentage people of color, the poverty rate, and the percentage immigrant calculated from the IPUMS microdata and the ACS summary file shows that they are very similar, differing by less than one percentage point in 2010-2014.

Data and methods

Adjustments made to census summary data on race/ethnicity by age

For the racial generation gap indicator, we generated consistent estimates of populations by race/ethnicity and age group (under 18, 18-64, and over 64 years of age) for the years 1980, 1990, 2000, and 2014 (which reflects a 2010-2014 average), at the city and county levels, which were then aggregated to the regional level and higher. The racial/ethnic groups include non-Hispanic White, non-Hispanic Black, Hispanic/Latino, non-Hispanic Asian and Pacific Islander, non-Hispanic Native American/Alaska Native, and non-Hispanic Other (including other single race alone and those identifying as multiracial, with the latter group only appearing in 2000 and later due to a change in the survey question). While for 2000 and later years, this information is readily available in SF1 and in the ACS, for 1980 and 1990, estimates had to be made to ensure consistency over time, drawing on two different summary files for each year.

For 1980, while information on total population by race/ethnicity for all ages combined was available at the city and county levels for all the requisite groups in STF2, for race/ethnicity by age group we had to look to STF1, where it was only available for non-Hispanic White, non-Hispanic Black, Hispanic, and the remainder of the population. To estimate the number of non-Hispanic Asian/Pacific Islanders, non-Hispanic Native Americans, and non-Hispanic Others among the remainder for each age group, we applied the distribution of these three groups from the overall city and county populations (across all ages) to that remainder.

For 1990, the level of detail available in the underlying data differed at the city and county levels, calling for different estimation strategies. At the county level, data by race/ethnicity was taken from STF2A, while data by race/ethnicity and age was taken from the 1990 MARS file—a special tabulation of people by age, race, sex, and Hispanic origin. However, to be consistent with the way race is categorized by the OMB's Directive 15, the MARS file allocates all persons identifying as "other race alone" or multiracial to a specific race. After confirming that population totals by county (across all ages) were consistent between the MARS file and STF2A, we calculated the number of "other race alone" or multiracial people who had been added to each racial/ethnic group in each county by subtracting the number who were reported in STF2A for the corresponding group. We then derived the share of each racial/ethnic group in the MARS file (across all ages) that was made up of "other race alone" or multiracial people and applied it to estimate the number of people by race/ethnicity and age group exclusive of "other race alone" or multiracial people and the total number of "other race alone" or multiracial people in each age group.

For the 1990 city-level estimates, all data were from STF1, which provided counts of the total population for the six broad racial/ethnic groups required but not counts by age. Rather, age counts were only available for people by single race alone (including those of Hispanic origin) as well as for all people of Hispanic origin combined. To estimate the number of people by race/ethnicity and age for the six

Data and methods

Adjustments made to census summary data on race/ethnicity by age

(continued)

broad racial/ethnic groups that are detailed in the profile, we first calculated the share of each single-race alone group that was Hispanic based on the overall population (across all ages). We then applied it to the population counts by age and race alone to generate an initial estimate of the number of Hispanic and non-Hispanic people in each age/race alone category. This initial estimate was multiplied by an adjustment factor (specific to each age group) to ensure that the sum of the estimated number of Hispanic people across the race alone categories within each age group equated to the "actual" number of Hispanic origin by age as reported in STF1. Finally, an Iterative Proportional Fitting (IPF) procedure was applied to ensure that our final estimate of the number of people by race/ ethnicity and age was consistent with the total population by race/ethnicity (across all ages) and total population by age group (across all racial/ethnic categories) as reported in STF1.

Data and methods

Adjustments made to demographic projections

National projections

National projections of the non-Hispanic White share of the population are based on the U.S. Census Bureau's 2014 National Population Projections. However, because these projections follow the OMB 1997 guidelines on racial classification and essentially distribute the other single-race alone group across the other defined racial/ethnic categories, adjustments were made to be consistent with the six broad racial/ethnic groups used in our analysis.

Specifically, we compared the percentage of the total population composed of each racial/ethnic group from the Census Bureau's Population Estimates program for 2015 (which follows the OMB 1997 guidelines) to the percentage reported in the 2015 ACS 1-year Summary File (which follows the 2000 Census classification). We subtracted the percentage derived using the 2015 Population Estimates program from the percentage derived using the 2015 ACS to obtain an adjustment factor for each group (all of which were negative, except that for the mixed/other group) and carried this adjustment factor forward by adding it to the projected percentage for each group in each projection year. Finally, we applied the resulting adjusted projected population distribution by race/ethnicity to the total projected population from the 2014 National Population Projections to get the projected number of people by race/ethnicity in each projection year.

County and regional projections

Similar adjustments were made in generating county and regional projections of the population by race/ethnicity. Initial county-level projections were taken from Woods & Poole Economics, Inc. Like the 1990 MARS file described above, the Woods & Poole projections follow the OMB Directive 15-race categorization, assigning all persons identifying as other or multiracial to one of five mutually exclusive race categories: White, Black, Latino, Asian/Pacific Islander, or Native American. Thus, we first generated an adjusted version of the county-level Woods & Poole projections that removed the other or multiracial group from each of these five categories. This was done by comparing the Woods & Poole projections for 2010 to the actual results from SF1 of the 2010 Census, figuring out the share of each racial/ethnic group in the Woods & Poole data that was composed of other or mixed-race persons in 2010, and applying it forward to later projection years. From these projections, we calculated the county-level distribution by race/ethnicity in each projection year for five groups (White, Black, Latino, Asian/Pacific Islander, and Native American), exclusive of other and mixed-race people.

To estimate the county-level share of population for those classified as Other or mixed race in each projection year, we then generated a simple straight-line projection of this share using information from SF1 of the 2000 and 2010 Census. Keeping the projected other or mixed race share fixed, we allocated the remaining population share to each of the other five racial/ethnic groups by applying the racial/ethnic distribution implied

Data and methods

Adjustments made to demographic projections

(continued)

by our adjusted Woods & Poole projections for each county and projection year. The result was a set of adjusted projections at the county level for the six broad racial/ethnic groups included in the profile, which were then applied to projections of the total population by county from the Woods & Poole data to get projections of the number of people for each of the six racial/ethnic groups.

Finally, an Iterative Proportional Fitting (IPF) procedure was applied to bring the county-level results into alignment with our adjusted national projections by race/ethnicity described above. The final adjusted county results were then aggregated to produce a final set of projections at the regional, metro area, and state levels.

Data and methods

Estimates and adjustments made to BEA data on GDP

The data on national gross domestic product (GDP) and its analogous regional measure, gross regional product (GRP) – both referred to as GDP in the text – are based on data from the U.S. Bureau of Economic Analysis (BEA). However, due to changes in the estimation procedure used for the national (and state-level) data in 1997, and a lack of metropolitan area estimates prior to 2001, a variety of adjustments and estimates were made to produce a consistent series at the national, state, metropolitan-area, and county levels from 1969 to 2014.

Adjustments at the state and national levels

While data on gross state product (GSP) are not reported directly in the profile, they were used in making estimates of gross product at the county level for all years and at the regional level prior to 2001, so we applied the same adjustments to the data that were applied to the national GDP data. Given a change in BEA's estimation of gross product at the state and national levels from a standard industrial classification (SIC) basis to a North American Industry Classification System (NAICS) basis in 1997, data prior to 1997 were adjusted to prevent any erratic shifts in gross product in that year. While the change to a NAICS basis occurred in 1997, BEA also provides estimates under an SIC basis in that year. Our adjustment involved figuring the 1997 ratio of NAICS-based gross product to SIC-based gross product for each state and the nation, and multiplying it by the SIC-based gross product in all years prior to 1997 to get our final estimate of gross product at the state and national levels.

County and metropolitan area estimates

To generate county-level estimates for all years, and metropolitan-area estimates prior to 2001, a more complicated estimation procedure was followed. First, an initial set of county estimates for each year was generated by taking our final state-level estimates and allocating gross product to the counties in each state in proportion to total earnings of employees working in each county – a BEA variable that is available for all counties and years. Next, the initial county estimates were aggregated to metropolitan-area level, and were compared with BEA's official metropolitan-area estimates for 2001 and later. They were found to be very close, with a correlation coefficient very close to one (0.9997). Despite the near-perfect correlation, we still used the official BEA estimates in our final data series for 2001 and later. However, to avoid any erratic shifts in gross product during the years until 2001, we made the same sort of adjustment to our estimates of gross product at the metropolitan-area level that was made to the state and national data – we figured the 2001 ratio of the official BEA estimate to our initial estimate, and multiplied it by our initial estimates for 2000 and earlier to get our final estimate of gross product at the metropolitan-area level.

We then generated a second iteration of county-level estimates – just for counties included in metropolitan areas – by taking the final metropolitan-area-level estimates and allocating gross product to the counties in each metropolitan area in proportion to total earnings of employees working in each

Data and methods

Estimates and adjustments made to BEA data on GDP (continued)

county. Next, we calculated the difference between our final estimate of gross product for each state and the sum of our second-iteration county-level gross product estimates for metropolitan counties contained in the state (that is, counties contained in metropolitan areas). This difference, total nonmetropolitan gross product by state, was then allocated to the nonmetropolitan counties in each state, once again using total earnings of employees working in each county as the basis for allocation. Finally, one last set of adjustments was made to the county-level estimates to ensure that the sum of gross product across the counties contained in each metropolitan area agreed with our final estimate of gross product by metropolitan area, and that the sum of gross product across the counties contained in state agreed with our final estimate of gross product by state. This was done using a simple IPF procedure. The resulting county-level estimates were then aggregated to the regional and metro area levels.

We should note that BEA does not provide data for all counties in the United States, but rather groups some counties that have had boundary changes since 1969 into county groups to maintain consistency with historical data. Any such county groups were treated the same as other counties in the estimate techniques described above.

Data and methods

Middle-class analysis

To analyze middle-class decline over the past four decades, we began with the regional household income distribution in 1979 – the year for which income is reported in the 1980 Census (and the 1980 IPUMS microdata). The middle 40 percent of households were defined as "middle class," and the upper and lower bounds in terms of household income (adjusted for inflation to be in 2010 dollars) that contained the middle 40 percent of households were identified. We then adjusted these bounds over time to increase (or decrease) at the same rate as real average household income growth, identifying the share of households falling above, below, and in between the adjusted bounds as the upper, lower, and middle class, respectively, for each year shown. Thus, the analysis of the size of the middle class examined the share of households enjoying the same relative standard of living in each year as the middle 40 percent of households did in 1979.

Data and methods

Assembling a complete dataset on employment and wages by industry

Analysis of jobs and wages by industry, reported on pages 43-44, and 47-48, is based on an industry-level dataset constructed using two-digit NAICS industries from the Bureau of Labor Statistics' Quarterly Census of Employment and Wages (QCEW). Due to some missing (or nondisclosed) data at the county and regional levels, we supplemented our dataset using information from Woods & Poole Economics, Inc., which contains complete jobs and wages data for broad, two-digit NAICS industries at multiple geographic levels. (Proprietary issues barred us from using Woods & Poole data directly, so we instead used it to complete the QCEW dataset.)

Given differences in the methodology underlying the two data sources (in addition to the proprietary issue), it would not be appropriate to simply "plug in" corresponding Woods & Poole data directly to fill in the QCEW data for nondisclosed industries. Therefore, our approach was to first calculate the number of jobs and total wages from nondisclosed industries in each county, and then distribute those amounts across the nondisclosed industries in proportion to their reported numbers in the Woods & Poole data.

To make for a more accurate application of the Woods & Poole data, we made some adjustments to it to better align it with the QCEW. One of the challenges of using Woods & Poole data as a "filler dataset" is that it includes all workers, while QCEW includes only wage and salary workers. To normalize the Woods & Poole data universe, we applied both a national and regional wage and salary adjustment factor; given the strong regional variation in the share of workers who are wage and salary, both adjustments were necessary. Another adjustment made was to aggregate data for some Woods & Poole industry codes to match the NAICS codes used in the QCEW.

It is important to note that not all counties and regions were missing data at the two-digit NAICS level in the QCEW, and the majority of larger counties and regions with missing data were only missing data for a small number of industries and only in certain years. Moreover, when data are missing it is often for smaller industries. Thus, the estimation procedure described is not likely to greatly affect our analysis of industries, particularly for larger counties and regions.

The same above procedure was applied at the county and state levels. To assemble data at for regions and metro areas, we aggregated the county-level results.

Data and methods

Growth in jobs and earnings by industry wage level, 1990 to 2015

The analysis on pages 43-44 uses our filled-in QCEW dataset (see the previous page) and seeks to track shifts in regional job composition and wage growth by industry wage level.

Using 1990 as the base year, we classified all broad private sector industries (at the two-digit NAICS level) into three wage categories: low, middle, and high wage. An industry's wage category was based on its average annual wage, and each of the three categories contained approximately one-third of all private industries in the region.

We applied the 1990 industry wage category classification across all the years in the dataset, so that the industries within each category remained the same over time. This way, we could track the broad trajectory of jobs and wages in low-, middle-, and high-wage industries.

This approach was adapted from a method used in a Brookings Institution report by Jennifer S. Vey, *Building From Strength: Creating Opportunity in Greater Baltimore's Next Economy* (Washington D.C.: Brookings Institution, 2012).

While we initially sought to conduct the analysis at a more detailed NAICS level, the large amount of missing data at the three- to six-digit NAICS levels (which could not be resolved with the method that was applied to generate our filled-in two-digit QCEW dataset) prevented us from doing so.

Data and methods

Analysis of occupations by opportunity level

The analysis of occupations on pages 49-58 seeks to classify occupations in the region by opportunity level. To identify "high-opportunity" occupations, we developed an "occupation opportunity index" based on measures of job quality and growth, including median annual wage, wage growth, job growth (in number and share), and median age of workers (which represents potential job openings due to retirements). Once the "occupation opportunity index" score was calculated for each occupation, they were sorted into three categories (high, middle, and low opportunity). Occupations were evenly distributed into the categories based on employment.

There are some aspects of this analysis that warrant further clarification. First, the "occupation opportunity index" that is constructed is based on a measure of job quality and set of growth measures, with the job-quality measure weighted twice as much as all of the growth measures combined. This weighting scheme was applied both because we believe pay is a more direct measure of "opportunity" than the other available measures, and because it is more stable than most of the other growth measures, which are calculated over a relatively short period (2005-2011). For example, an increase from $6 per hour to $12 per hour is fantastic wage growth (100 percent), but most would not consider a $12-per-hour job as a "high-opportunity" occupation.

Second, all measures used to calculate the "occupation opportunity index" are based on data for metropolitan statistical areas from the Occupational Employment Statistics (OES) program of the U.S. Bureau of Labor Statistics (BLS), with one exception: median age by occupation. This measure, included among the growth metrics because it indicates the potential for job openings due to replacements as older workers retire, is estimated for each occupation from the 2010 5-year IPUMS ACS microdata file (for the employed civilian noninstitutional population ages 16 and older). It is calculated at the metropolitan statistical area level (to be consistent with the geography of the OES data), except in cases for which there were fewer than 30 individual survey respondents in an occupation; in these cases, the median age estimate is based on national data.

Third, the level of occupational detail at which the analysis was conducted, and at which the lists of occupations are reported, is the three-digit standard occupational classification (SOC) level. While considerably more detailed data is available in the OES, it was necessary to aggregate to the three-digit SOC level in order to align closely with the occupation codes reported for workers in the ACS microdata, making the analysis reported on pages 55-58 possible.

Fourth, while most of the data used in the analysis are regionally specific, information on the education level of "typical workers" in each occupation, which is used to divide occupations in the region into the three groups by education level (as presented on pages 52-54), was estimated using national 2010 IPUMS ACS microdata (for the

Data and methods

Analysis of occupations by opportunity level (continued)

employed civilian noninstitutional population ages 16 and older). Although regionally specific data would seem to be the better choice, given the level of occupational detail at which the analysis is conducted, the sample sizes for many occupations would be too small for statistical reliability. And, while using pooled 2006-2010 data would increase the sample size, it would still not be sufficient for many regions, so national 2010 data were chosen given the balance of currency and sample size for each occupation. The implicit assumption in using national data is that the occupations examined are of sufficient detail that there is not great variation in the typical educational level of workers in any given occupation from region to region. While this may not hold true in reality, it is not a terrible assumption, and a similar approach was used in a Brookings Institution report by Jonathan Rothwell and Alan Berube, *Education, Demand, and Unemployment in Metropolitan America* (Washington D.C.: Brookings Institution, September 2011).

We should also note that the BLS does publish national information on typical education needed for entry by occupation. However, in comparing these data with the typical education levels of actual workers by occupation that were estimated using ACS data, there were important differences, with the BLS levels notably lower (as expected). The levels estimated from the ACS were determined to be the appropriate choice for our analysis as they provide a more realistic measure of the level of educational attainment necessary to be a viable job candidate – even if the typical requirement for entry is lower.

Fifth, it is worthwhile to clarify an important distinction between the lists of occupations by typical education of workers and opportunity level, presented on pages 52-54, and the charts depicting the opportunity level associated with jobs held by workers with different education levels and backgrounds by race/ethnicity, presented on pages 56-58. While the former are based on the national estimates of typical education levels by occupation, with each occupation assigned to one of the three broad education levels described, the latter are based on actual education levels of workers in the region (as estimated using 2010 5-year IPUMS ACS microdata), who may be employed in any occupation, regardless of its associated "typical" education level.

Lastly, it should be noted that for all of the occupational analysis, it was an intentional decision to keep the categorizations by education and opportunity broad, with three categories applied to each. For the categorization of occupations, this was done so that each occupation could be more justifiably assigned to a single typical education level; even with the three broad categories some occupations had a fairly even distribution of workers across them nationally, but, for the most part, a large majority fell in one of the three categories. In regard to the three broad categories of opportunity level and education levels of workers, this was done to ensure reasonably large sample sizes in the 2010 5-year IPUMS ACS microdata that was used for the analysis.

Data and methods

Health data and analysis

Health data presented are from the Behavioral Risk Factor Surveillance System (BRFSS) database, housed in the Centers for Disease Control and Prevention. The BRFSS database is created from randomized telephone surveys conducted by states, which then incorporate their results into the database on a monthly basis.

The results of this survey are self-reported and the population includes all related adults, unrelated adults, roomers, and domestic workers who live at the residence. The survey does not include adult family members who are currently living elsewhere, such as at college, a military base, a nursing home, or a correctional facility.

The most detailed level of geography associated with individuals in the BRFSS data is the county. Using the county-level data as building blocks, we created additional estimates for the region, state, and United States.

While the data allow for the tabulation of personal health characteristics, it is important to keep in mind that because such tabulations are based on samples, they are subject to a margin of error and should be regarded as estimates – particularly in smaller regions and for smaller demographic subgroups.

To increase statistical reliability, we combined five years of survey data, for 2008-2012. As an additional effort to avoid reporting potentially misleading estimates, we do not report any estimates that are based on a universe of fewer than 100 individual survey respondents. This is similar to, but more stringent than, a rule indicated in the documentation for the 2012 BRFSS data of not reporting (or interpreting) percentages based on a denominator of fewer than 50 respondents (see: https://www.cdc.gov/brfss/annual_data/2012/pdf/Compare_2012.pdf). Even with this sample size restriction, county and regional estimates for smaller demographic subgroups should be regarded with particular care.

For more information and access to the BRFSS database, see: http://www.cdc.gov/brfss/index.html.

Data and methods

Analysis of access to healthy food

Analysis of access to healthy food is based on the 2014 Analysis of Limited Supermarket Access (LSA) from the The Reinvestment Fund (TRF). LSA areas are defined as one or more contiguous census block groups (with a collective population of at least 5,000) where residents must travel significantly farther to reach a supermarket than the "comparatively acceptable" distance traveled by residents in well-served areas with similar population densities and car ownership rates.

The methodology's key assumption is that block groups with a median household income greater than 120 percent of their respective metropolitan area's median (or nonmetro state median for nonmetropolitan areas) are adequately served by supermarkets and thus travel an appropriate distance to access food. Thus, higher-income block groups establish the benchmark to which all block groups are compared, controlling for population density and car ownership rates.

An LSA score is calculated as the percentage by which the distance to the nearest supermarket would have to be reduced to make a block group's access equal to the access observed for adequately served areas. Block groups with an LSA score greater than 45 were subjected to a spatial connectivity analysis, with 45 chosen as the minimum threshold because it was roughly equal to the average LSA score for all LSA block groups in the 2011 TRF analysis.

Block groups with contiguous spatial connectivity of high LSA scores are referred to as LSA areas. They represent areas with the strongest need for increased access to supermarkets. Our analysis of the percent of people living in LSA areas by race/ethnicity and poverty level was done by merging data from the 2014 5-year ACS summary file with LSA areas at the block group level and aggregating up to the city, county, and higher levels of geography.

For more information on the 2014 LSA analysis, see: https://www.reinvestment.com/wp-content/uploads/2015/12/2014_Limited_Supermarket_Access_Analysis-Brief_2015.pdf.

Data and methods

Air pollution data and analysis

The air pollution exposure index is derived from the 2011 National-Scale Air Toxics Assessment (NATA) developed by the U.S. Environmental Protection Agency. The NATA uses general information about emissions sources to develop risk estimates and *does not* incorporate more refined information about emissions sources, which suggests that the impacts of risks may be overestimated. Note, however, that because the analysis presented using this data is relative to the U.S. overall in the case of exposure index, the fact that the underlying risk estimates themselves may be overstated is far less problematic.

The NATA data include estimates of cancer risk and respiratory hazards (noncancer risk) at the census tract level based on exposure to outdoor sources. It is important to note that while diesel particulate matter (PM) exposure is included in the NATA noncancer risk estimates, it is not included in the cancer risk estimates (even though PM is a known carcinogen).

The index of exposure to air pollution presented is based on a combination of separate indices for cancer risk and respiratory hazard at the census tract level, using the 2011 NATA. We followed the approach used by the U.S. Department of Housing and Urban Development (HUD) in developing its Environmental Health Index. The cancer risk and respiratory hazard estimates were combined by calculating tract-level z-scores for each and adding them together as indicated in the formula below:

$$COMBINED_i = \left(\frac{c_i - \mu_c}{\sigma_c}\right) + \left(\frac{r_i - \mu_r}{c_r}\right)$$

Where *c* indicates cancer risk, *r* indicates respiratory risk, *i* indexes census tracts, and μ and σ represent the means and standard deviations, respectively, of the risk estimates across all census tracts in the United States.

The combined tract level index, $COMBINED_i$, was then ranked in ascending order across all tracts in the United States, from 1 to 100.

Finally, the tract-level rankings were summarized to the city, county, and higher levels of geography for various demographic groups (i.e., by race/ethnicity and poverty status) by taking a population-weighted average using the group population as weight, with group population data drawn from the 2014 5-year ACS summary file.

For more information on the NATA data, see http://www.epa.gov/national-air-toxics-assessment.

Data and methods

Measures of diversity and segregation

In the profile, we refer to measures of residential segregation by race/ethnicity (the "multi-group entropy index" on page 76 and the "dissimilarity index" on page 77). While the common interpretation of these measures is included in the text of the profile, the data used to calculate them, and the sources of the specific formulas that were applied, are described below.

Both measures are based on census-tract-level data for 1980, 1990, and 2000 from Geolytics, and for 2014 (which reflects a 2010-2014 average) from the 2014 5-year ACS. While the data for 1980, 1990, and 2000 originate from the decennial censuses of each year, an advantage of the Geolytics data we use is that it has been "re-shaped" to be expressed in 2010 census tract boundaries, and so the underlying geography for our calculations is consistent over time; the census tract boundaries of the original decennial census data change with each release, which could potentially cause a change in the value of residential segregation indices even if no actual change in residential segregation occurred. In addition, while most of the racial/ethnic categories for which indices are calculated are consistent with all other analyses presented in this profile, there is one exception. Given limitations of the tract-level data released in the 1980 Census, Native Americans are combined with Asians and Pacific Islanders in that year. For this reason, we set 1990 as the base year (rather than 1980) in the chart on page 77, but keep the 1980 data in the chart on page 76 as this minor inconsistency in the data is not likely to affect the analysis.

The formula for the multi-group entropy index was drawn from a 2004 report by John Iceland of the University of Maryland, *The Multigroup Entropy Index (Also Known as Theil's H or the Information Theory Index)* available at: https://www.census.gov/topics/housing/housing-patterns/about/multi-group-entropy-index.html. In that report, the formula used to calculate the multi-group entropy index (referred to as the "entropy index" in the report) appears on page 8.

The formula for the dissimilarity index is well established, and is made available by the U.S. Census Bureau at: https://www.census.gov/library/publications/2002/dec/censr-3.html.

Data and methods

Estimates of GDP without racial gaps in income

Estimates of the gains in average annual income and GDP under a hypothetical scenario in which there is no income inequality by race/ethnicity are based on the 2014 5-Year IPUMS ACS microdata. We applied a methodology similar to that used by Robert Lynch and Patrick Oakford in chapter two of *All-In Nation: An America that Works for All,* with some modification to include income gains from increased employment (rather than only those from increased wages). As in the Lynch and Oakford analysis, once the percentage increase in overall average annual income was estimated, 2014 GDP was assumed to rise by the same percentage.

We first organized individuals aged 16 or older in the IPUMS ACS into six mutually exclusive racial/ethnic groups: White, Black, Latino, Asian or Pacific Islander, Native American, and Mixed/other (with all defined non-Hispanic except for Latinos, of course). Following the approach of Lynch and Oakford in *All-In Nation*, we excluded from the non-Hispanic Asian/Pacific Islander category subgroups whose average incomes were higher than the average for non- Hispanic Whites. Also, to avoid excluding subgroups based on unreliable average income estimates due to small sample sizes, we added the restriction that a subgroup had to have at least 100 individual survey respondents in order to be included.

We then assumed that all racial/ethnic groups had the same average annual income and hours of work, by income percentile and age group, as non-Hispanic Whites, and took those values as the new "projected" income and hours of work for each individual. For example, a 54-year-old non-Hispanic Black person falling between the 85th and 86th percentiles of the non-Hispanic Black income distribution was assigned the average annual income and hours of work values found for non-Hispanic White persons in the corresponding age bracket (51 to 55 years old) and "slice" of the non-Hispanic White income distribution (between the 85th and 86th percentiles), regardless of whether that individual was working or not. The projected individual annual incomes and work hours were then averaged for each racial/ethnic group (other than non-Hispanic Whites) to get projected average incomes and work hours for each group as a whole, and for all groups combined.

One difference between our approach and that of Lynch and Oakford is that we include all individuals ages 16 years and older, rather than just those with positive income. Those with income values of zero are largely non-working, and were included so that income gains attributable to increased hours of work would reflect both more hours for the those currently working and an increased share of workers – an important factor to consider given differences in employment rates by race/ethnicity. One result of this choice is that the average annual income values we estimate are analogous to measures of per capita income for the age 16- and-older population and are thus notably lower than those reported in Lynch and Oakford. Another is that our estimated income gains are relatively larger as they presume increased employment rates.

Data and methods

Estimates of GDP without racial gaps in income (continued)

Note that because no GDP data is available at the city level (partly because economies tend to operate at well beyond city boundaries), our estimates of gains in GDP with racial equity are only reported at the regional level. Estimates of income gains and the source of gains by race/ethnicity, however, are reported for the profiled geography.

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Headquarters:
1438 Webster Street
Suite 303
Oakland, CA 94612
t 510 663-2333
f 510 663-9684

Communications:
55 West 39th Street
11th Floor
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t 212 629-9570
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University of Southern California
950 W. Jefferson Boulevard
JEF 102
Los Angeles, CA 90089
t 213 821-1325
f 213 740-5680

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