



Chapter 2:

# National and Regional Trends and Forecasts

# National and Regional Trends and Forecasts

## Introduction

National and regional trends and forecasts such as shifting demographics and growth provide insight into how best to invest in the transportation system to meet anticipated future needs while accommodating current travel demand. Demographic changes, commuting patterns, economic shifts, and land use development patterns all influence the type, location, and amount of demand on transportation facilities and services. It is particularly important to plan for these changes in the greater Madison region—the fastest growing and changing region in the state. The Madison area is outpacing the rest of the state in all key economic indicators, including job creation, business growth, and construction activity.<sup>1</sup> The area's population is also growing more rapidly than the rest of the state and becoming increasingly diverse. New and emerging technologies along with potential long-term impacts to travel from COVID-19, which will also have an impact on land use development and travel patterns, are discussed in Chapter 4.

<sup>1</sup> Connect Madison, City of Madison Economic Development Strategy (Dec. 2016).

## Demographics

Demographic projections are important for determining the overall growth in travel and the transportation solutions needed to serve the growing and changing population. When coupled with commuting patterns, economic forecasts, and projected future land use development it is possible to prepare forecasts for future travel demand, identify issues and needs, and make facility and service recommendations.

### POPULATION

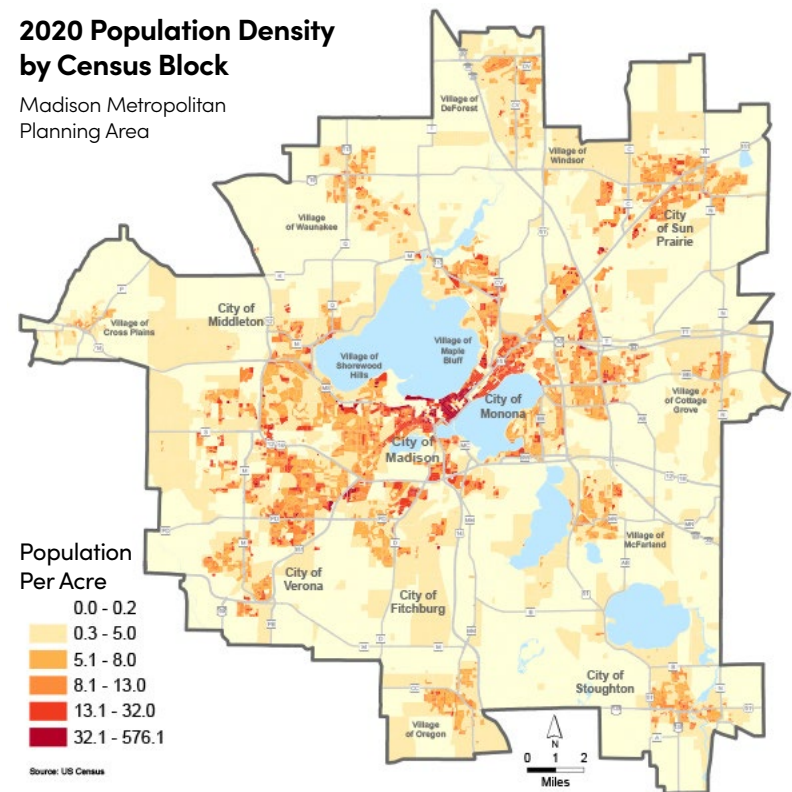
The country's population continues to grow, with a majority of this growth occurring in the southern and western states. Wisconsin is growing at a slower pace than other states due to high out-migration without comparable in-migration of either domestic or foreign-born immigrants. While Wisconsin's population grew just 4% between 2010 and 2020, Dane County's population grew by 15%, accounting for more than 1/3 of the state's total population growth.

Although the population growth rate of Dane County as a whole outpaced the City of Madison's growth from 1990–2010, Madison grew at about

the same rate as the county between 2010 and 2020, and its share of county population held steady at 48%. The most rapid rates of growth over the last decade occurred in Madison's suburban communities, which grew by about 20% collectively, led by the Village of Windsor (38%) and the City of Verona (32%). Rural areas and smaller urbanized areas in the county grew by 9% and 3%, respectively. Map 2-a shows 2020 population density by Census Block. While the greater Isthmus area has the highest

### 2020 Population Density by Census Block

Madison Metropolitan Planning Area



Map 2-a 2020 Population Density by Census Block



densities, there are multi-family housing developments with resulting high densities spread throughout the rest of the city of Madison and in suburban cities and villages.

Over the next three decades, Madison's outer suburbs are forecast to grow by 50%, adding 58,000 new residents, while the City of Madison and its closest suburban neighbors, are projected to grow by 36% or 124,000 residents, as shown in Figure 2-a. Population growth in smaller urbanized and rural areas

outside the Madison Metropolitan Planning Area is expected to be slower, totaling about 12,000 new residents.

### HOUSEHOLDS

While the population has continued to grow nationally and within the Madison region, the average household size has declined. In 1970, the average US household size was 3.14. By 2020, the average US household size had fallen to 2.53. Here the trends have been

similar; the average Dane County household size was 3.09 in 1970 and had dropped to 2.27 by 2020. Housing and household sizes are correlated, with average house and household sizes larger in villages and towns, smaller in suburban cities, and the smallest in the City of Madison. The historic trend of shrinking household sizes is projected to continue in the future albeit at a much slower rate, with Dane County's average household size projected to decline to 2.22 by 2050, as shown in Figure 2-b.

### Current and Forecast Population in Dane County Communities

Municipality	2010 Census		2020 Census		2050 Forecast		2020 - 2050 Change	
	Population	% of County	Population	% of County	Population	% of County	Number	Percent
Central Urbanized Area Total (CUSA)	298,080	61%	346,619	62%	470,960	62%	124,341	36%
City of Madison	233,209	48%	269,840	48%	362,513	48%	92,673	34%
City of Fitchburg	25,260	5%	29,609	5%	46,551	6%	16,942	57%
City of Middleton	17,442	4%	21,827	4%	29,057	4%	7,230	33%
Village of McFarland	7,808	2%	8,991	2%	13,264	2%	4,273	48%
Larger Outer Urbanized Area Total	95,395	20%	116,096	21%	174,168	23%	58,072	50%
City of Sun Prairie	29,364	6%	35,967	6%	54,028	7%	18,061	50%
City of Stoughton	12,611	3%	13,173	2%	19,621	3%	6,448	49%
City of Verona	10,619	2%	14,030	2%	20,965	3%	6,935	49%
Village of Cottage Grove	6,192	1%	7,303	1%	11,427	2%	4,124	56%
Village of Waunakee	12,097	2%	14,879	3%	23,228	3%	8,349	56%
Village of DeForest	8,936	2%	10,811	2%	16,796	2%	5,985	55%
Village of Windsor	6,345	1%	8,754	2%	11,720	2%	2,966	34%
Village of Oregon	9,231	2%	11,179	2%	16,383	2%	5,204	47%
Smaller Urbanized Areas Total	26,011	5%	28,305	5%	40,513	5%	12,208	43%
Rural Total	68,587	14%	70,484	13%	70,077	9%	-407	-1%
County Total	488,073		561,504		755,718		194,214	35%

Figure 2-a Current and Forecast Population in Dane County Communities

### Household Size in Dane County Communities

	1970	1980	1990	2000	2010	2020	2050 Forecast
Towns	3.73	3.01	2.80	2.59	2.57	2.48	2.52
Villages	3.17	2.85	2.74	2.72	2.61	2.52	2.37
Small Cities	3.26	2.54	2.29	2.35	2.37	2.26	2.24
City of Madison	2.88	2.38	2.30	2.19	2.17	2.12	2.11
Dane County	3.09	2.56	2.46	2.37	2.33	2.27	2.22

Figure 2-b Household Size in Dane County Communities

### Current and Future Households in the MPO area

Municipality	2010 Census		2020 Census		2050 Forecast		2020 - 2050 Change	
	Households	% of County	Households	% of County	Households	% of County	Number	Percent
Central Urbanized Area Total	130,313	64%	154,579	65%	213,314	64%	58,735	38%
City of Madison	102,516	50%	120,737	51%	165,063	50%	44,326	37%
City of Fitchburg	9,955	5%	12,612	5%	20,037	6%	7,425	59%
City of Middleton	8,037	4%	10,104	4%	13,918	4%	3,814	38%
Village of McFarland	3,079	2%	3,079	1%	5,779	2%	2,700	88%
Larger Outer Urbanized Area Total	36,967	18%	45,068	19%	74,302	22%	29,234	65%
City of Sun Prairie	11,636	6%	14,376	6%	22,924	7%	8,548	59%
City of Stoughton	5,133	3%	5,459	2%	8,652	3%	3,193	58%
City of Verona	4,223	2%	5,463	2%	9,196	3%	3,733	68%
Village of Cottage Grove	2,210	1%	2,673	1%	4,760	1%	2,087	78%
Village of Waunakee	4,344	2%	5,348	2%	9,686	3%	4,338	81%
Village of DeForest	3,400	2%	4,163	2%	7,212	2%	3,049	73%
Village of Windsor	2,432	1%	3,241	1%	4,915	1%	1,674	52%
Village of Oregon	3,589	2%	4,345	2%	6,957	2%	2,612	60%
Smaller Urbanized Areas Total	10,134	5%	11,215	5%	16,698	5%	5,483	49%
Rural Total	26,336	13%	27,555	12%	27,649	8%	94	0%
County Total	203,750		238,417		331,963		93,546	39%

Figure 2-c Current and Future Households in the MPO area

Figure 2-c details the projected change in households in Madison area communities through 2050. While the City of Madison's percentage share of households and population is projected to continue to slowly decline, it is expected to contribute over 44,000 new households within the Metropolitan Planning Area between 2016 and 2050. Of those, over 7,500 are forecast to be located within the greater Isthmus area, more than in any of the suburban communities.

Much like the rest of the state, Dane County has a large elderly population that is projected to grow in the future. The percentage of Dane county's population aged 65 and

older is expected to climb from 13% in 2020 to 20% by 2040. This population will require a transportation network that will allow for safe and convenient transportation to grocery stores and other shopping destinations, entertainment, healthcare facilities, and other destinations. It is important to ensure that our transportation system will be able to serve those who are no longer able to drive and those with disabilities.

### RACE AND ETHNICITY

The United States is becoming more racially and ethnically diverse. The Pew Research Center has projected that more than 80% of population growth between 2010 and 2050 will be attributable to immigrants and their

US-born descendants. This, in combination with the comparatively low birthrate among non-Hispanic Whites, is increasing the country's racial and ethnic diversity.

In the Madison region these trends are evident as well. Between 2010 and 2020, the overall population grew by 15% while the White population grew just 5%. This led Dane County's non-White population to grow from 15% of the population in 2010 to 22% in 2020, as seen in Figure 2-d.

See the Environmental Justice Analysis in Appendix C for more detailed information on the distribution of the minority population within the region and an analysis related to the equitable distribution of transportation resources.

### Race and Ethnicity of Dane County Residents

Race	Number 2010	Number 2020	Percent of Total 2010	Percent of Total 2020	Increase 2010-2020
White	413,631	435,458	85%	78%	5%
Black/African American	25,347	30,473	5%	5%	20%
Asian	23,035	35,758	5%	6%	55%
Other Minority	13,960	20,841	3%	4%	49%
Two or More Races	12,100	38,974	2%	7%	222%
Total Population	488,073	561,504	100%	100%	15%

Ethnicity	Number 2010	Number 2020	Percent of Total 2010	Percent of Total 2020	Increase 2010-2020
Hispanic	28,925	41,954	6%	7%	45%
Non-Hispanic	459,148	519,550	94%	93%	13%
Total Population	488,073	561,504	100%	100%	15%

Figure 2-d Race and Ethnicity of Dane County Residents

## Economy

Dane County's thriving and diverse economy has led to one of the lowest unemployment rates in Wisconsin, and to the county being a net importer of employees.

The economic strength of the region, relative to the rest of the state, is also evidenced by its surging tax base and GDP growth. According to the Wisconsin Department of Revenue, between 2014 and 2019, Dane County's tax base grew 35%, while the state's total tax base grew by 21%. During the same period, Dane County's gross domestic product (GDP) grew at an annual rate of 3.5%, the eighth fastest GDP growth rate in the state and the fastest among counties with populations over 100,000.<sup>2</sup> The onset of COVID exerted a dramatic effect on the economy beginning in early 2020. While GDP returned to pre-pandemic levels by mid-2021, and much of the economy has largely recovered, employment levels remain somewhat depressed.

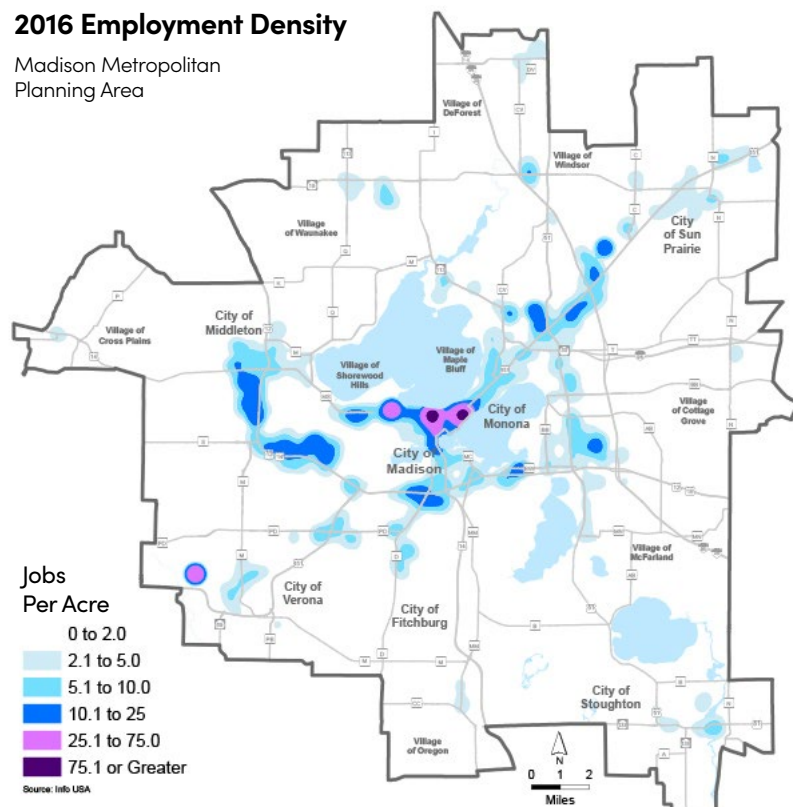
The highest concentration of the jobs in the MPO area is in central Madison, with other major employment clusters located along the Beltline and Interstate corridors on Madison's periphery and at the Epic Systems main campus in Verona. Map 2-b shows employment density as of 2016.

Figure 2-e details Dane County employment by industry. The largest of these, education and health services, accounts for nearly

<sup>2</sup> United States Bureau of Economic Analysis.

## 2016 Employment Density

Madison Metropolitan  
Planning Area



Map 2-b 2016 Employment Density

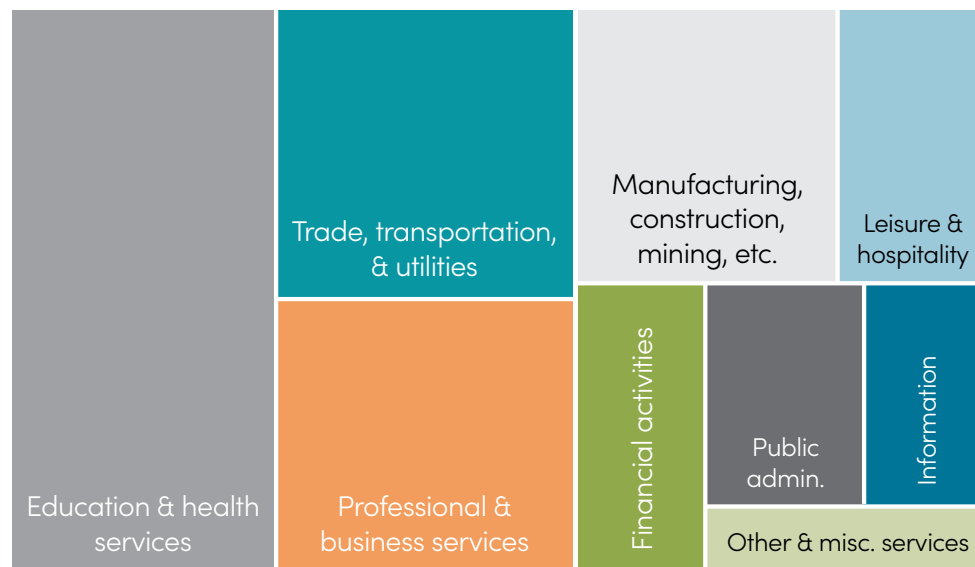
90,000 jobs, 27% of total employment, in both the public and private sectors.

Over the coming years, the Dane County economy is expected to continue its robust job growth. According to MadRep, the Madison region's economic development agency, the Madison region currently ranks 4th in the nation in its concentration of computer and mathematical occupations—behind only San Jose, Washington, D.C., and Seattle. MadRep forecasts that employment in this sector,

is expected to increase by more than 50% between 2010 and 2030. A number of other occupations in the areas of science, engineering, personal care, food service, and business, are expected to grow by at least 25% during this period.

According to pre-COVID US Census data estimates, around 50,000 workers traveled into Dane County per day from surrounding counties, and about 15,000 traveled from Dane County to surrounding counties for work. In the coming years, Dane County's

## Dane County Annual Average Employment by Industry, 2020



Source: US BLS, QCEW

Figure 2-e Dane County Employment by Industry

along with construction and extraction occupations, and healthcare practitioners and technical occupations,

surplus of jobs relative to workers is expected to continue growing.

Map 2-c illustrates the forecast employment growth areas. While the City of Madison's share of employment is forecast to decline somewhat, total employment within the city is projected to grow by nearly 84,000 between 2016 and 2050, accounting for over 50% of new employment within the Metropolitan Planning Area.

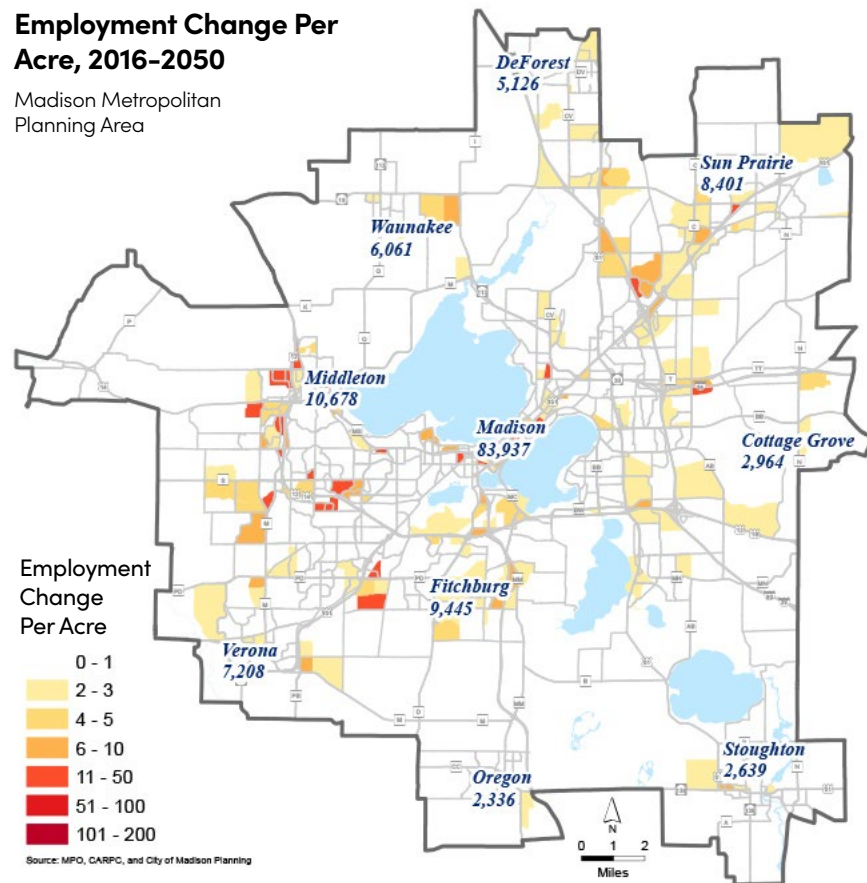
## Land Use and Development

Land use and transportation are inextricably linked. The mix, location, and density of land uses drive travel demand; interacting with one another to determine the cost



### Employment Change Per Acre, 2016-2050

Madison Metropolitan Planning Area



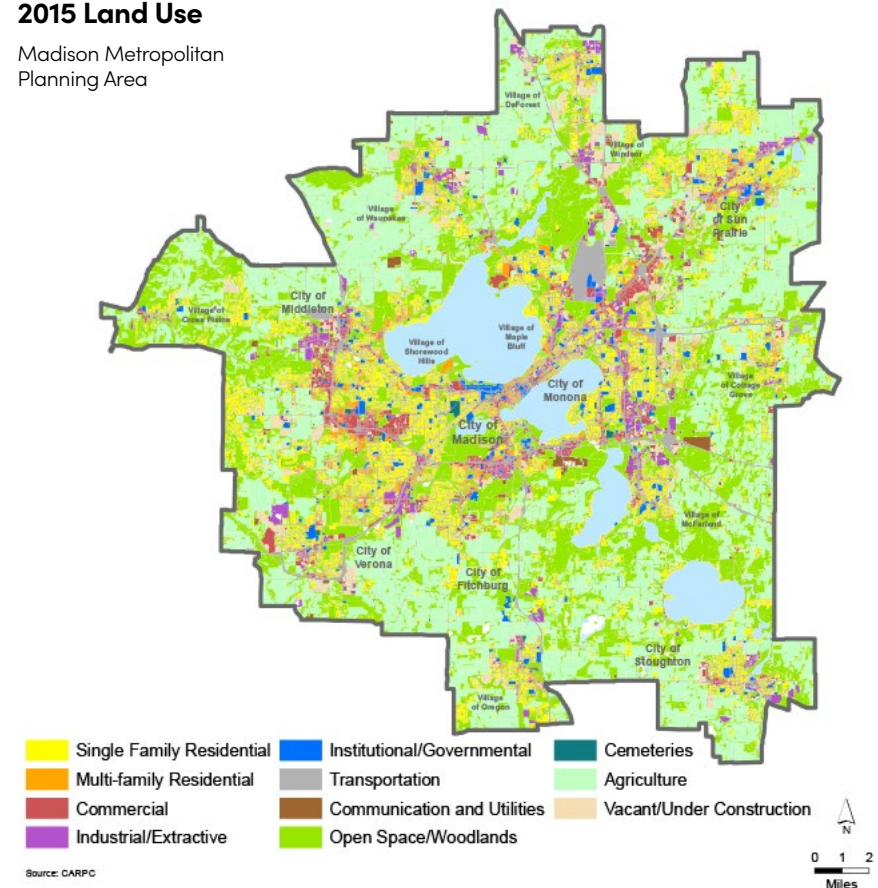
Map 2-c Employment Change per Acre 2016-2050

of transportation, viability of different transportation modes and investments, and ability of travelers to combine modes to complete trips. Transportation investments, in turn, affect the attractiveness of locations to residents and businesses and shape future land use development decisions.

Map 2-d shows the location of land uses in 2015 in the Madison Metropolitan Planning

### 2015 Land Use

Madison Metropolitan Planning Area



Map 2-d 2015 Land Use

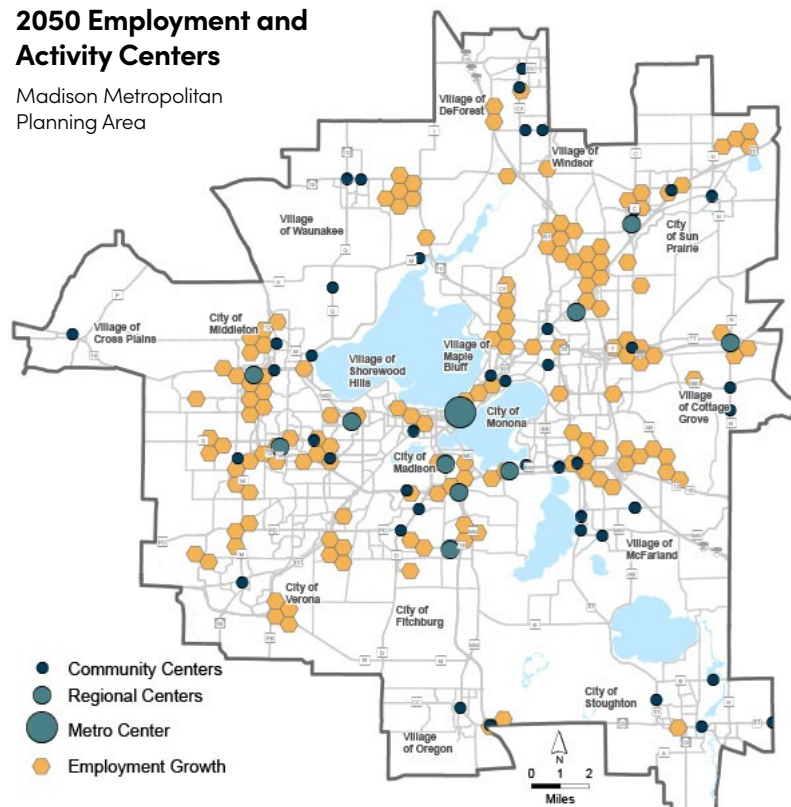
area. Multi-family residential, commercial, and institutional/governmental uses tend to be concentrated in central Madison and along major transportation corridors throughout the area. Retail sales/services and industrial uses, which depend on freight accessibility, cluster in areas with easy access to major roadways. Single-family homes occupy much of the rest of the developed

area, close enough to access jobs and services but usually far enough to reduce the noise and traffic impacts of more intense land uses.

A number of urban planning models have been developed to determine how land use, transportation facilities, and density interact. One prominent contemporary model, the Rural-to-Urban Transect, suggests that

## 2050 Employment and Activity Centers

Madison Metropolitan Planning Area



Map 2-e 2050 Employment and Activity Centers

urbanism occurs in symbiotic transects. The Transect describes levels of urbanization that range from a natural rural preserve to a dense urban core. Each of these typologies is symbolic of different development patterns and requires different transportation facilities. One of the benefits of this model is that it demonstrates the similarity between zones that may not appear to be similar, but have similar characteristics and require similar transportation treatments.

For instance, the Madison neighborhood of Hill Farms near University Avenue has similar transportation needs to that of the Schenk-Atwood-Starkweather-Yahara (SASY) neighborhood. Though the densest portion of Hill Farms would be viewed as a contemporary, transit-oriented development and SASY is an older neighborhood built around a defunct streetcar line, both require high-quality transit service, quality pedestrian and bicycle facilities, and regional transportation for moving residents, workers, shoppers, and freight. The Transect would identify them both as “urban center” zones that require similar facilities.

In the past, communities generally hewed to a centralized development pattern—an urban core buoyed a community, with urbanity transitioning into suburban and rural forms gradually as one moves away from the core. This configuration encourages driving in the periphery and forces traffic into one dense core. Contemporary configurations retrofit dense activity centers into areas that have been traditionally home to suburban or general urban development, or build them as part of new developments. This increases

pedestrian and bicycle activity, while making transit more viable in these mixed-use activity centers. The encouragement of development of high-density, mixed-use activity centers, primarily along existing and planned major transit corridors is a central recommendation of the Capital Area Regional Planning Commission’s 2050 Regional Development Framework, the City of Madison’s Madison in Motion Transportation Plan, and this RTP. Map 2-e details planned employment and activity centers in 2050.

## Travel Patterns

While the primary source of information about travel patterns has traditionally been provided by the US Census—which provides information only on travel to and from work, the MPO obtained local household travel survey data covering trips of all types for the RTP. The MPO conducted a household travel survey in conjunction with the National Household Travel Survey (NHTS) in 2016–2017, to gather additional household data in the Madison area, especially from minority and low-income households that are often under-represented in travel survey data, and to generate sufficient numbers of trips by alternative travel modes. This combined travel survey data provided a wealth of information about the travel habits of people in the Madison area, and was used to develop an updated and improved regional travel forecast model. The following are some general observations from the survey:



- Trips made by residents of the central Madison area (see Map 2-f) tend to be much shorter, for all trip purposes and modes, than trips made by residents of suburban communities. Trips made by residents of other parts of the City of Madison tend to be in the middle range in terms of distance.
- Commute trips, those between home and work, tend to be longer than other types of trips.
- Suburban residents' bicycle trips are more often between home and school, and less often for social-recreational or other trip purposes, than people living elsewhere. Residents of the central Madison area tend to bicycle for a wider variety of trip purposes compared to residents of other areas.
- Residents of the central Madison area are two to three times more likely to make trips by bike, walking, or transit than are people living in other areas.
- Respondents with annual household incomes below \$35,000 are much more likely to make trips by foot, bike, and bus.
- Minority respondents report traveling by bike and bus at about twice the rate of White respondents.
- The vast majority of car trips between home and work are made by drivers traveling alone, while more than half of other car trips to and from home involve drivers transporting at least one other person.

As shown in Figure 2-f, the percentage of trips made by bike, bus, and foot is far higher in the central Madison area, and declines for those living in other parts of Madison, and in other MPO communities. Single-occupant (SOV) and multiple-occupant (HOV) trips made by personal motor vehicles show the reverse pattern.

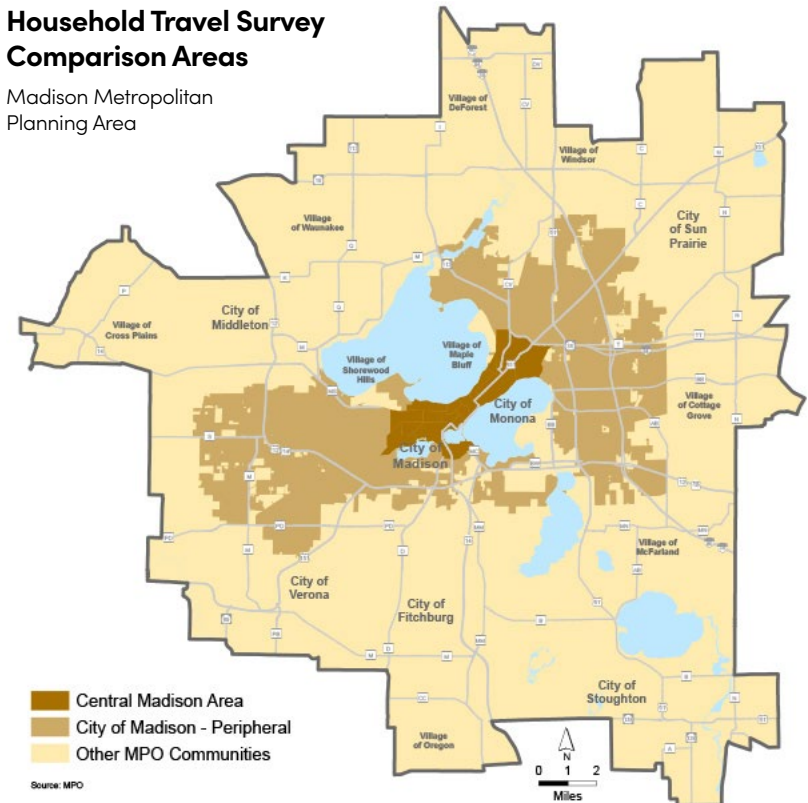
These disparities in travel habits by area are due in large part to the different development densities and design in different parts of the region. In the central area, residences, jobs, and services are closer together and buildings are oriented to the street, enabling residents in these areas to travel more easily by non-auto modes.

Access to vehicles is also a critical factor in how people travel to and from work. As shown in Figure 2-g, 10% of Dane County households have more workers than motor vehicles.

Unsurprisingly, travel time to work tends to be shortest in Madison and longer in more peripheral areas of Dane County. As shown in Figure 2-h, about 80% of Madison residents can travel from their home to their workplace in 30 minutes or less, compared to 75% of residents of other MPO communities, and 60%

### Household Travel Survey Comparison Areas

Madison Metropolitan Planning Area

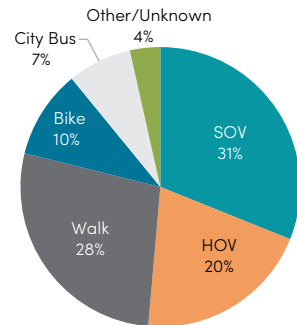


Map 2-f Household Travel Survey Comparison Areas

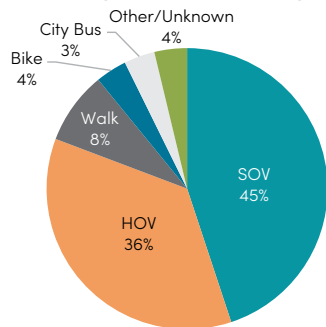
of Dane County residents living outside the MPO area. These percentages are virtually identical when restricted to travel by car, truck, or van. Commute trips by public transit exhibit a similar pattern with those made by City of Madison residents generally shorter than those by residents of other MPO area communities, see Figure 2-i.

As shown in Figure 2-j, walk trips to work exhibit the opposite pattern, with City of Madison residents making longer commutes

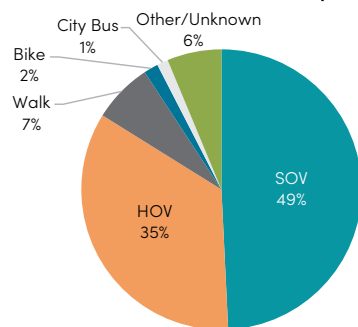
Central Madison Area Trips by Mode



Peripheral City of Madison Trips by Mode



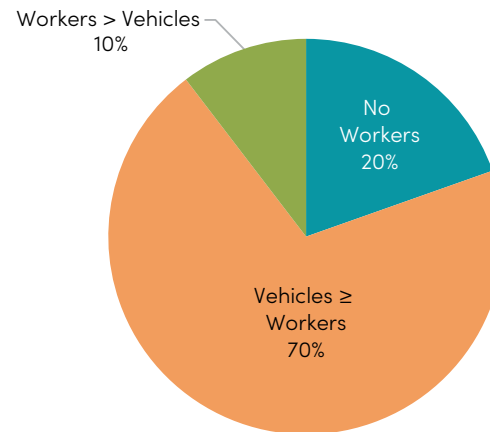
Other MPO Communities Trips by Mode



Weekdays; excludes loop trips and trips to/from outside Dane County.

Figure 2-f Trips by Mode by Area

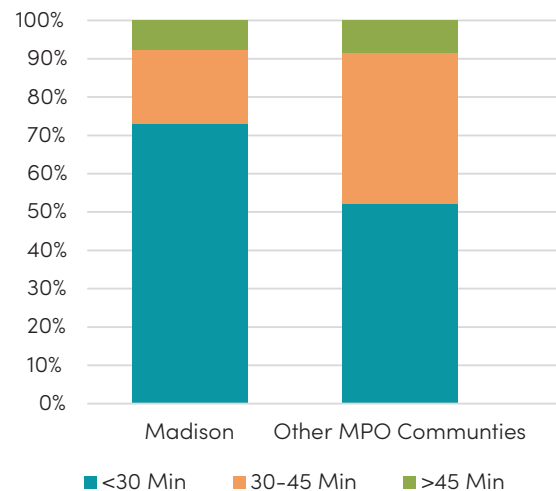
Household Vehicle Availability



Source: ACS 2019 5 yr est.

Figure 2-g Household Vehicle Availability by Worker

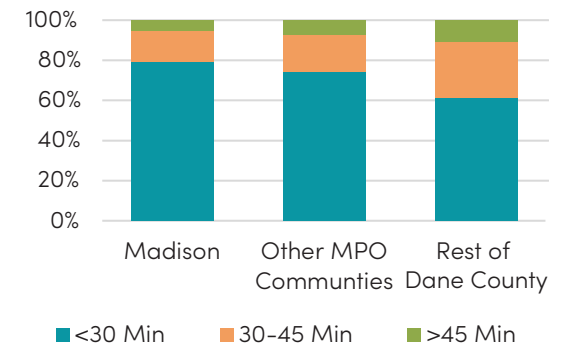
Travel Time to Work: Public Transportation



2019 5-yr estimate, American Community Survey

Figure 2-i Travel Time to Work: Public Transit

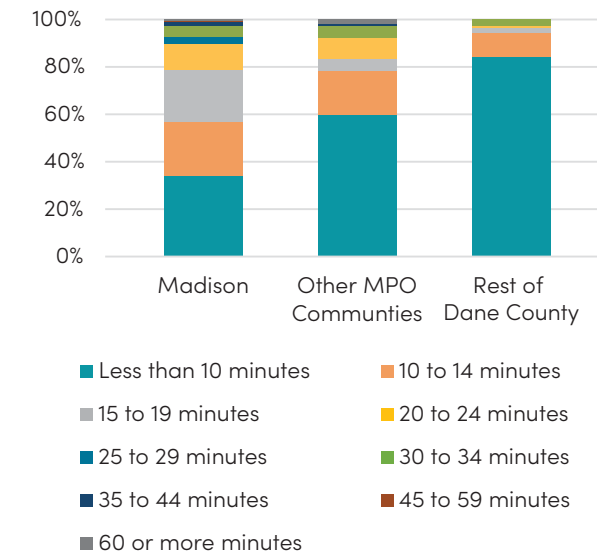
Travel Time to Work: All Modes



2019 5-yr estimate, American Community Survey

Figure 2-h Travel Time to Work: All Modes

Travel Time to Work: Walk



2019 5-yr estimate, American Community Survey

Figure 2-j Travel Time to Work: Walk

by foot than residents of other parts of the MPO area or the rest of the County, outside of the MPO area. This is likely due to the wealth of pedestrian infrastructure throughout the city, which makes walking more enjoyable. However, whether in the City, other MPO area communities, or in the rest of the County, over 90% of walk trips to work are less than 30 minutes in duration, and a majority are less than 15 minutes.

Historically, the Madison area has had two periods of peak weekday congestion coinciding with commuters’ trips to and from work—roughly 7:00–8:15 a.m. and 3:45–5:00 p.m. The COVID pandemic, and the resulting rise in telework and other changes to work and travel habits, has dramatically changed this long-standing pattern. As Figure 2-k shows, congestion (shown in shades of orange) during the AM peak period virtually disappeared in 2020 while PM peak period congestion remained.

In the Madison area, the most concentrated area of employment is in the downtown

Madison/UW-Madison campus area; however, over the last few decades most of the new employment growth has occurred in peripheral Madison and suburban job centers. As a result, travel patterns are becoming more disbursed throughout the region.

Over the last decade, a number of new apartment buildings have been constructed in downtown Madison and on the Isthmus. These new buildings have attracted a residential population of young professionals. While many of these new residents move downtown to be closer to work, others do so to live a more urban lifestyle while working in peripheral areas. Because most commuters travel from peripheral areas to centrally located jobs, the opposite is known as “reverse commuting.”

One popular reverse commute is between downtown Madison and the Epic Systems campus on the western edge of the City of Verona. In 2012, Epic employed more than 6,200 employees. Understanding that many

Epic employees were commuting from Madison to Verona, Metro Transit, the City of Verona, and Epic worked to add two new bus routes – one connecting the campus to downtown Madison and the other connecting to the West Transfer point. As of 2019, Epic had grown to more than 10,000 employees.

Dane County is a net importer of workers due to having a surplus of jobs and stronger economy than surrounding counties. Map 2-g shows 2017 county-to-county average daily commuter flows. Columbia and Rock Counties each supplied Dane County with over 11,000 workers per day, with every other adjacent county supplying at least 4,000. More than 2,000 workers per day left Dane County for jobs in Rock, Columbia, Sauk, and Jefferson Counties.

As the major employment hub, the City of Madison experiences a large influx of workers from other communities within the county as well as from outside the county. It is estimated that about 67,000 workers commuted to the City from other communities

in Dane County in 2017. Map 2-h shows the percentage of residents within each community that commuted to the City of Madison for work. Communities with the highest percentage of their workers commuting to Madison include: the Village of Shorewood Hills (64%); the Village of Maple Bluff (63%); the Town of Madison

Hours of Congestion 2020

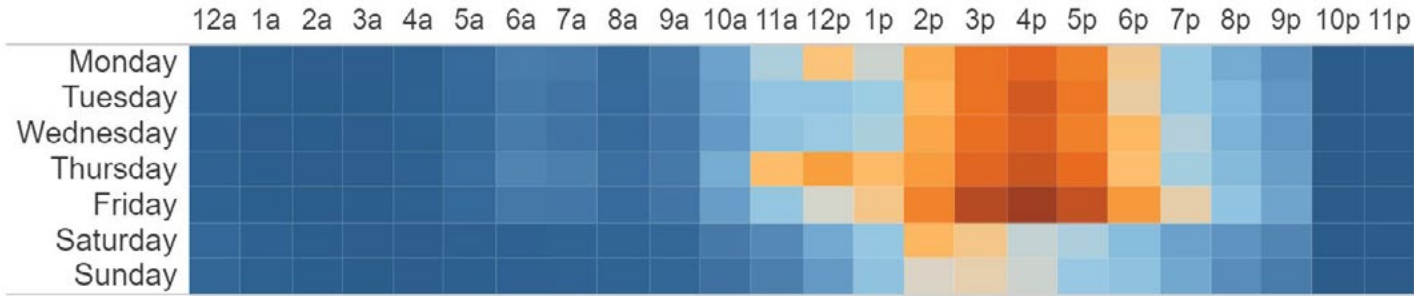
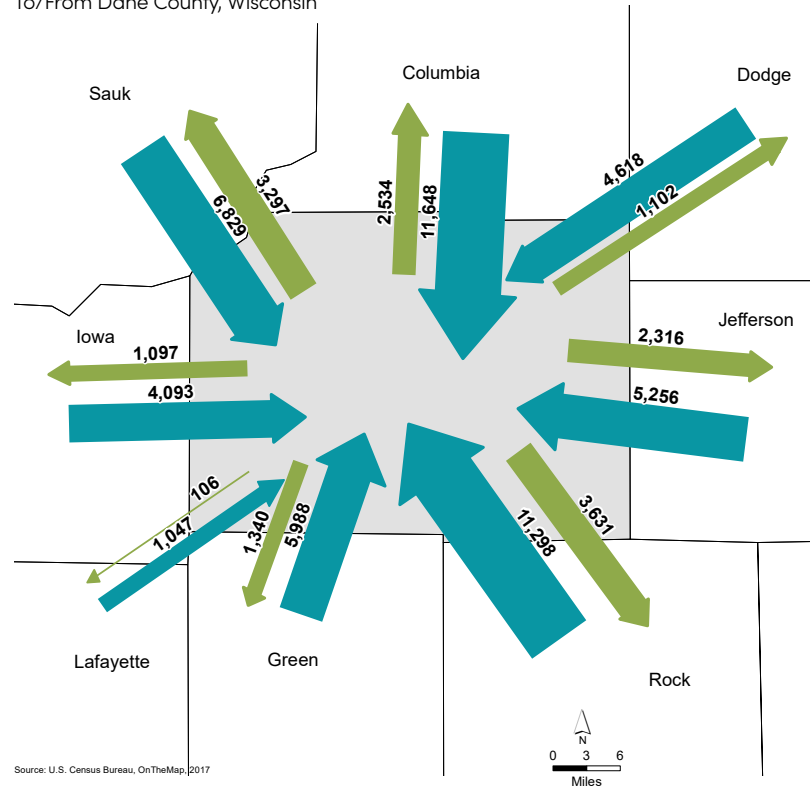


Figure 2-k Hours of Congestion 2020



### County to County Commuter Flows

To/From Dane County, Wisconsin



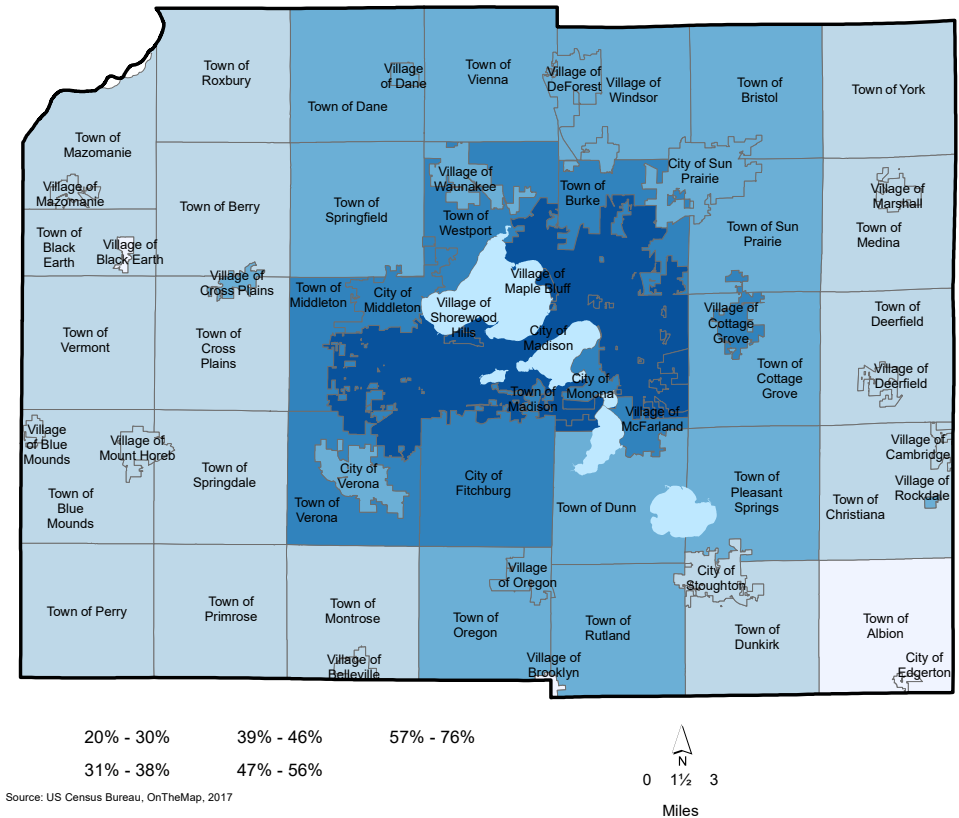
Map 2-g County to County Commuter Flows

(56%); the City of Monona (54%); the City of Middleton, and the City of Fitchburg (50%). 75,000 people both live and work in the City of Madison, 58% of all workers living in the City. With the increase in teleworking as a result of the pandemic, there are likely fewer commuters traveling into the county and city for work on a daily basis now. However, the trend of increasing numbers of commuters traveling into the county for work is expected to continue in the future.

One way that agency and community partners in the Madison region mitigate the impact of commuting is through the RoundTrip transportation demand management (TDM) program managed by the MPO. RoundTrip provides information and services for commuters and employers in Dane County to promote alternatives to driving alone. RoundTrip also works closely

### Percentage of Workers Commuting into the City of Madison

Dane County, Wisconsin



Map 2-h Percentage of Dane County Workers Commuting into the City of Madison

with Rideshare Etc., the TDM program managed by WisDOT, which serves employers and workers in other parts of Wisconsin, including Dane County residents working elsewhere in the state. For more information on the RoundTrip program and TDM in the Madison region, see chapters 3 and 4.