



# **Commuting Analysis and Workforce Dynamics: DeForest, Wisconsin**

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## EXECUTIVE SUMMARY

Prior to COVID-19 related shutdowns, Dane County, Wisconsin had been experiencing historically low unemployment rates. Employers in the Village of DeForest, a Dane County municipality on the outskirts of Madison, had communicated having challenges accessing labor in this tight market and had met with a group developing a grant proposal to explore employment transportation options for their workforce. This paper provides employment and transportation data and analysis to support further efforts by the Village to better understand the commuting dynamics and population demographics of their existing and potential workforce.

The Village of DeForest has experienced significant growth in both residential population and employment. Nearly 90% of its residents, however, are employed outside of the municipality and nearly 90% of its workers commute in from other areas. Of the industries in which these inbound commuters are employed, the three with the greatest disparity between DeForest jobs and DeForest resident's employed in those jobs are:

1. Transportation and Warehousing (1,352 more area jobs),
2. Agriculture, Forestry, Fishing and Hunting (404 more area jobs), and
3. Wholesale Trade (123 more area jobs).

Within these three industries, inbound commuters come from areas of the state of Wisconsin that consist primarily of white homeowners with annual incomes roughly 20% above state averages who commute to work via single occupant vehicles. The fact that these areas skew heavily toward homeownership may be an indicator that they are less mobile and less likely to relocate for work in DeForest. In contrast, workers relying on a grant-funded transportation program to access employment in DeForest in 2019 came from areas with a broader racial makeup, average annual incomes 30% lower than the predominant inbound commuting population, higher percentages of renter-occupants and less reliance on single occupant vehicles. The housing characteristics and cost burdens of these areas may be an indicator that residents are mobile and may be amenable to relocate for work in DeForest.

A sector analysis of these three industries shows that the Village of DeForest has economic specialization in them compared to Dane County. These industries make up nearly 50% of employment in the Village. Their average annual wages, however, fall in the bottom 50% of all industries.

The 2019, grant-funded program connected transportation-burdened residents to employment in the DeForest area, thereby expanding labor pool access for area businesses. If Village officials seek to sustainably expand the labor pool for their businesses, they may want to undertake a more comprehensive labor-shed survey process in order to better understand barriers to their potential workforce. This paper may serve as a conversation starter between Village officials and local businesses.

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## INTRODUCTION AND BACKGROUND

In the fall of 2018, Union Cab Co-op, the largest taxi company in the Madison area, received funding to implement a workforce transportation program. Through Commute to Careers (CTC), a grant program jointly developed by Wisconsin's Department of Workforce Development and Department of Transportation, over \$130,000 were given to the taxi company to provide reduced-fare rides for low-income workers to access employment opportunities over a period of two years.

Union Cab began serving CTC rides in December 2018, offering a fixed rate of \$5 per ride. The program's intent was to partner with employers and have them subsidize their employees' fares, creating a sustainable, community-focused transportation model (Allon et al., 2019). There was a particular focus on providing workers with access to employment centers within Dane County that are not easily accessible by public transit.

In the summer of 2019, Union Cab reached out to several workforce transportation stakeholders within Dane County to gauge their interest in partnering on another grant proposal to develop a more comprehensive employment transportation system. The Alliance for the American Dream initiative, known as DreamUp Wisconsin within Dane County, sought proposals that would increase the net income of 10,000 county households by 10% by the end of 2020. Ideal proposals would aim to increase income directly or reduce costs of living, incorporate and benefit a diversity of people and communities, and rely on interdisciplinary coordination. Union Cab's *MobilizeDane* proposal would hinge on a comprehensive employment transportation system and brought together a team consisting of research partners from the University of Wisconsin - Madison, the Director of Employment Services and Transit for YWCA Madison, a technology entrepreneur, a transportation planner for the Madison Area Transportation Planning Board (MATPB) and the Community Development Director for the Village of DeForest, a Dane County municipality on the outskirts of Madison.

As part of the business engagement process in developing the proposal, the official from DeForest organized a meeting with representatives from fifteen employers in and around the Village who communicated the issues they experience with employee turnover due to transportation barriers and the difficulty they have had accessing labor pools in an historically tight labor market. The solutions outlined in the grant proposal were attractive to these employers in that they aimed to provide rides for people who could not otherwise access job centers outside Madison's core urban area. This paper is a response to the need for employment and transportation data in developing further workforce initiatives and employment transportation programs in DeForest. The commuting dynamics contained herein may serve to begin a conversation about community development between Village officials and local businesses in addressing labor access challenges.

## GROWTH AND EMPLOYMENT DYNAMICS IN DEFOREST AND DANE COUNTY

Since 2010, Dane County has been the fastest growing county in Wisconsin and has outpaced national growth rates (Wisconsin Department of Workforce Development, 2019). Municipalities on the suburban fringes of Madison have experienced the highest population growth rates within the county. Six of these suburbs had double digit increases, including the Village of DeForest (14.38%). Employment is also projected to substantially increase around the periphery of Madison. The 2050

Planning Forecast put out by Madison’s metropolitan planning organization anticipates the outer urbanized area to have double the employment growth rate of the central urbanized area, with DeForest experiencing the 3rd highest rate of these peripheral municipalities at 61% (Madison Area Transportation Planning Board, 2017). Between 2002 and 2017, employment in DeForest grew from roughly 4,000 jobs to 5,500 jobs, a 38% increase.

The period prior to societal shutdowns in response to COVID-19 had seen historically low unemployment rates in the United States, Wisconsin and Dane County (DWD, 2017). A 2019 Dane County Workforce Profile report describes the challenges that businesses experienced in filling open positions due, in part, to a shallow labor pool. Dane County has the third highest number in the state of inbound commuters from surrounding counties. These inbound commuters have alleviated some of the pressure from the county’s tight labor pool and are projected to continue to do so in the future, with a forecasted increase of 135% from current numbers (MATPB, 2017). The fact that employment density has been shifting from Madison’s urban core to municipalities on its periphery makes it an easier commute for these workers from other counties to access employment opportunities.

The location of the Village of DeForest is advantageous not only for its proximity to other inbound commuting counties, but it is situated along I-39/90/94, a major interstate highway connecting the metropolitan areas of Minneapolis, Milwaukee and Chicago. This transportation corridor, along with its proximity to a class 1 railroad, has likely played a large role in the industry makeup of the municipality as well (Village of DeForest, 2015). Like other areas outside of Madison’s urban core, however, DeForest is not accessible by the Madison Metropolitan public transit bus system. This is a significant limiting factor for peripheral employers looking to tap into a larger labor pool.

It is important to note that the municipal boundaries of the Village of DeForest are non-contiguous: the Village of Windsor splits DeForest in two. The two villages have a close working relationship, established intergovernmental agreements, and share a joint chamber of commerce. Major employers whose physical locations are within the boundaries of the Village of Windsor are even highlighted in the Village of DeForest’s Comprehensive Plan and on their government’s economic development website. A labor-shed analysis for DeForest would be incomplete without taking into consideration the employment base in the Village of Windsor as well. Some sections of analysis in this report,

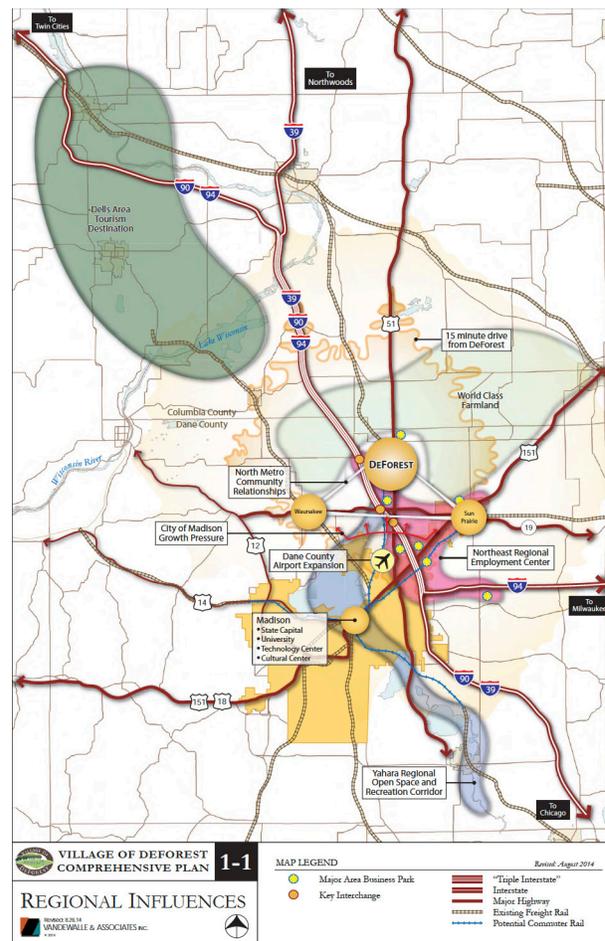


Figure 1. Village of DeForest Comprehensive Plan, Regional Influences  
 Source: Vandewalle & Associates, Inc., 2014

therefore, include data for inbound commuters working in select Windsor businesses. The addition of this data is noted in these areas of the report.

## **LABOR SHED ANALYSIS**

A traditional labor-shed analysis has a primary focus of determining the availability of labor to a particular geographic area (Iowa Workforce Development, 2020). Often, they begin by defining the geographic “boundary” from which workers commute into the area through the use of employer-provided zip codes of their workers and mapping their locations. A survey is then developed and sent out to residents within the labor-shed soliciting information about wage preferences, current and desired occupations, willingness to change or accept employment, and any other information deemed useful in helping community developers make data-driven land use decisions and access and maintain a quality workforce.

Rather than use employer-provided zip codes, the analysis in this report relies primarily on public data at the census block group level. This more granular approach allows for a detailed demographic profile of the areas from which commuters travel. This report does not include the survey process typical of a comprehensive labor-shed analysis, but may be considered an input to future evaluation.

## **FOCUS OF THE REPORT**

The data analysis in this report examines several important dynamics for the Village of DeForest. First, the report contains a comparison between the employment characteristics of residents of the Village of DeForest and the employment characteristics of individuals actually employed in the Village of DeForest. Second, a sector analysis is presented to show the relative strengths and growth rates of industries within DeForest. Next, I provide a breakdown of inbound and outbound commuting by location. I then present select demographics of commuters inbound to both DeForest and Windsor working in the three industries that had the greatest disparity of jobs versus residents employed in those jobs and compare that to the demographics of a group of DeForest and Windsor workers who used the CTC employment transportation program to access job opportunities within the three industries in those communities.

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## **METHODS**

This paper contains analyses of economic industries, commuting patterns, and commuter demographics. Certain commuting data was unavailable after 2017 and in the interest of consistency, all other data sourced for this paper uses 2017 as a base year as well. I focus most of the analysis on dynamics within the three main industries that have the greatest disparity between DeForest employment and DeForest residents employed in those industries:

1. Transportation and Warehousing,
2. Agriculture, Forestry, Fishing and Hunting, and
3. Wholesale Trade.

## SECTOR ANALYSIS

Data for industry sector analysis was downloaded from the US Department of Commerce's Bureau of Economic Analysis (BEA), which provides employment numbers by industry in a given location. I then performed location quotient analysis in order to categorize industries by relative strength and relative growth. To do this, I divided the percent share of employment in an industry in DeForest by the percent share of employment in that same industry in Dane County. This gives an indicator of the relative strength of the DeForest industry compared to Dane County. To determine industry growth trends, I calculated the percent change in location quotient for each industry between 2002 and 2017.

To my knowledge, publicly available databases with annual wage rates are only available for occupations and not for industries. I performed a series of steps to create industry-level data. The National Employment Matrix from the US Bureau of Labor Statistics (BLS) lists occupations by industry and the percent share of employment that each occupation has in that industry at a national level. In order to move forward with analysis, I operated under the assumption that the percent share of occupations comprising these same industries in DeForest was identical to the national mix. I then obtained the average annual wages for each occupation in the Madison metropolitan statistical area (MSA) from the BLS Metropolitan and Nonmetropolitan Area Occupational Employment and Wage Estimates that are calculated with data collected from employers in all sectors. The MSA level data was the most local dataset I could access. I, again, made the assumption that Madison MSA wages were identical to DeForest. I then weighted these average wages by the percent share of each occupation in an industry, then summed and averaged those to obtain the mean annual household wage for each industry in DeForest.

## COMMUTE ANALYSIS

The origin-destination data for commute analysis was obtained from the US Census LEHD Origin-Destination Employment Statistics (LODES) dataset. I include industry-specific businesses in both the Village of DeForest and the Village of Windsor as destinations when analyzing the demographics of inbound commuters. I used the ReferenceUSA US Business datasets for DeForest and Windsor in order to obtain business coordinate locations and industry NAICS code classifications. Official NAICS codes are based upon an entity's primary business activity. The ReferenceUSA list included not only primary NAICS codes, but secondary through tertiary as well. I used primary NAICS code designations except in instances where personal judgement indicated that secondary codes were appropriate to include. For example, the ReferenceUSA list shows that Great Lakes Coca Cola Bottling in Windsor has a primary NAICS code classification in Manufacturing and a secondary NAICS code classification in Wholesale. For purposes of commute analysis, I included this business in Wholesale, one of three industries of focus in this report. In order to identify the Census block groups in which these businesses were located, I input the coordinates from ReferenceUSA into the Federal Communications Commission (FCC) Block Finder API.

Lastly, I obtained demographic statistics from the US Census website's 2017 American Community Survey 5-year estimates. I used descriptive statistics at the Census block group level and paired that data with the block groups from which inbound commuters were coming to create a profile of the areas of residence of these workers. I weighted the descriptive statistics for each block group by the percent share of employment coming from that respective group into DeForest and Windsor in each industry of focus and calculated averages. I also performed this process for the group of workers who received rides through the CTC transportation program.

## DATA AND ANALYSIS

### INDUSTRIES OF EMPLOYMENT

Figure 2 shows the differences between the industries in which DeForest residents are employed and the industries in which DeForest businesses employ people. The top three industries in which employment within DeForest is greatest compared to the number of DeForest residents employed in those jobs are:

1. Transportation and Warehousing (1,352 more area jobs),
2. Agriculture, Forestry, Fishing and Hunting (404 more area jobs), and
3. Wholesale Trade (123 more area jobs).

These industries will be used as a focus for examination in further detail throughout the report. Appendix A contains a table with example occupations and businesses for each industry.

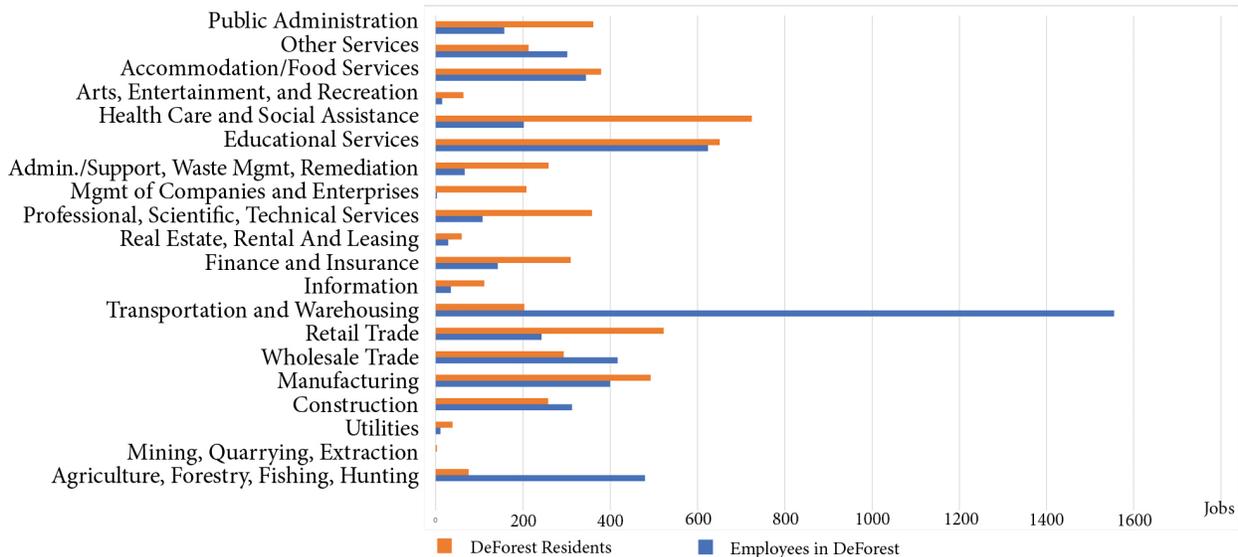


Figure 2. Comparison of Employment by Industry (DeForest Residents vs. Employees in DeForest)

The top three industries in which DeForest residents' employment is greatest compared to the number of industry jobs in DeForest are:

1. Health Care and Social Assistance (523 more residents employed),
2. Retail Trade (280 more residents employed), and
3. Professional, Scientific and Technical Services (251 more residents employed).

Other industries of note in which DeForest residents' employment is significantly greater than DeForest jobs are Management of Companies and Enterprises (205) and Public Administration (204).

## SECTOR ANALYSIS

I employ a location quotient analysis in order to determine the comparative strength of industries within DeForest. A location quotient (LQ) is the proportion of economic activity in a given sector compared to a reference economy, in this case Dane County. LQs with a value greater than one indicate a specialization in that industry compared to the reference economy, while a value less than one indicates a lack of specialization compared to the reference economy. The higher or lower the LQ, the greater or lesser the degree of specialization. Examining the change in location quotient over time also shows the degree to which specialization in an industry has increased or decreased.

Table 1. Village of DeForest Sector Analysis

	LQ (2017)	ΔLQ (2002 - 2017)	% of DF Jobs (2017)	% of Residents in Sector (2017)	Mean Annual Household Wages (2017)
<b>Economic Strength and Growing</b>					
Agriculture, Forestry, Fishing, and Hunting	29.56	62%	8.8%	1.4%	\$52,242.96
Wholesale Trade	2.37	42%	7.6%	5.3%	\$51,284.90
Construction	1.25	82%	5.7%	4.6%	\$57,099.57
Manufacturing	1.25	42%	7.3%	8.8%	\$50,792.57
Other Services	1.17	196%	5.5%	3.8%	\$46,417.71
<b>Economic Strength and Declining</b>					
Transportation and Warehousing	11.70	-43%	28.53%	3.6%	\$42,483.95
Educational Services	6.24	-34%	11.45%	11.6%	\$56,737.60
<b>Economic Weakness and Growing</b>					
Accommodation and Food Services	0.91	115%	6.33%	6.8%	\$29,701.46
Utilities	0.72	691%	0.20%	0.7%	\$58,818.84
Finance and Insurance	0.44	23%	2.62%	5.5%	\$59,893.81
Health Care and Social Assistance	0.39	62%	3.71%	13%	\$55,501.31
Admin. and Support, Waste Mgmt and Remed.	0.25	96%	1.23%	4.6%	\$45,906.21
Public Administration	0.15	48%	2.90%	6.5%	\$56,727.80
Management of Companies and Enterprises	0.02	13%	0.06%	3.7%	\$70,891.27
<b>Economic Weakness and Declining</b>					
Retail Trade	0.50	-32%	4.46%	9.4%	\$46,545.36
Professional, Scientific and Technical Services	0.25	-4%	1.98%	6.4%	\$71,418.87
Information	0.16	-39%	0.64%	2.0%	\$62,374.73
Real Estate and Rental and Leasing	0.13	-27%	0.53%	1.1%	\$55,221.34
Arts, Entertainment, and Recreation	0.11	-12%	0.28%	1.1%	\$41,893.00

The three industries of focus in this report are all found to be economic strengths and have the first, third and fourth largest shares of employment in the DeForest economy, respectively. Each also has their respective average annual wages in the bottom 50% of all industries.

Conversely, the three industries identified in the previous section that had the greatest disparity between employed DeForest residents and DeForest jobs – Health Care and Social Assistance, Retail

Trade, and Professional, Scientific and Technical Services - are all found to be economic weaknesses. The lattermost of those industries garners the highest average annual wage of all industries. Appendix B includes two graphic representations of DeForest industries and their relative strengths and growth rates.

## COMMUTE PATTERNS

Tables 2 and 3 contain the locations of DeForest inbound and outbound commuters by both county and place.

Table 2. Village of DeForest Commuter Flows by County (2017)

County of Residence (Inbound Workers)			County of Employment (Outbound Residents)		
	Count	Share of Total		Count	Share of Total
Dane	3,072	56.4%	Dane	4,413	78.9%
Columbia	581	10.7%	Milwaukee	181	3.2%
Milwaukee	156	2.9%	Columbia	163	2.9%
Fond du Lac	121	2.2%	Waukesha	110	2.0%
Sauk	116	2.1%	Sauk	97	1.7%
Dodge	108	2.0%	Rock	81	1.4%
Waukesha	108	2.0%	Jefferson	42	0.8%
Rock	104	1.9%	Outagamie	34	0.6%
Brown	67	1.2%	Brown	33	0.6%
Jefferson	66	1.2%	Dodge	31	0.6%
All Others	951	17.4%	All Others	406	7.3%

Table 3. Village of DeForest Commuter Flows by Place (2017)

Place of Residence (Inbound Workers)			Place of Employment (Outbound Residents)		
	Count	Share of Total		Count	Share of Total
Madison city	765	14%	Madison city	2,165	38.7%
DeForest village	630	11.6%	DeForest village	630	11.3%
Sun Prairie city	350	6.4%	Middleton city	231	4.1%
Windsor village	298	5.5%	Sun Prairie city	220	3.9%
Waunakee village	143	2.6%	Windsor village	201	3.6%
Lake Wisconsin CDP	81	1.5%	Waunakee village	176	3.1%
Milwaukee city	80	1.5%	Monona city	135	2.4%
Poynette village	76	1.4%	Milwaukee city	104	1.9%
Fond du Lac city	62	1.1%	Fitchburg city	97	1.7%
Fitchburg city	61	1.1%	Janesville city	45	0.8%
All Others	2,904	53.3%	All Others	1,587	28.4%

Of particular note is the fact that 88.7% of DeForest residents commute to work in other municipalities. Of these outbound commuters, the majority work in the City of Madison. Over three quarters of these DeForest residents still maintain employment within Dane County. This stands in contrast to the nearly 50% of inbound commuters working in DeForest that hail from counties outside Dane. This county level commuting dynamic is consistent with the projections from Madison’s MPO outlined earlier in this paper which paint Dane County as a regional employment hub.

**COMMUTER DEMOGRAPHICS**

In order to better understand the characteristics of the workforce present in DeForest, I examine employee demographics for the three industries of focus. This section of analysis includes employees of businesses in these industries that are located in the Village of Windsor as well. Table 4 is a comparison of inbound commuter demographics (from LODES data) to the demographics of the general population in both Dane County and Wisconsin.

Table 4. Comparison of Demographics of the Areas of Residence of Commuters Inbound to DeForest-Windsor (LODES Dataset) with County and State Averages

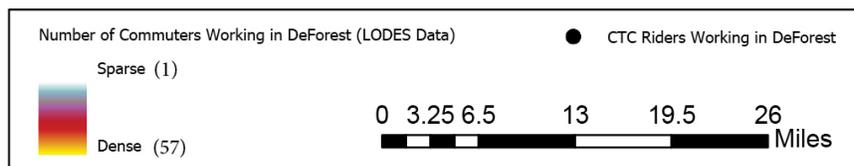
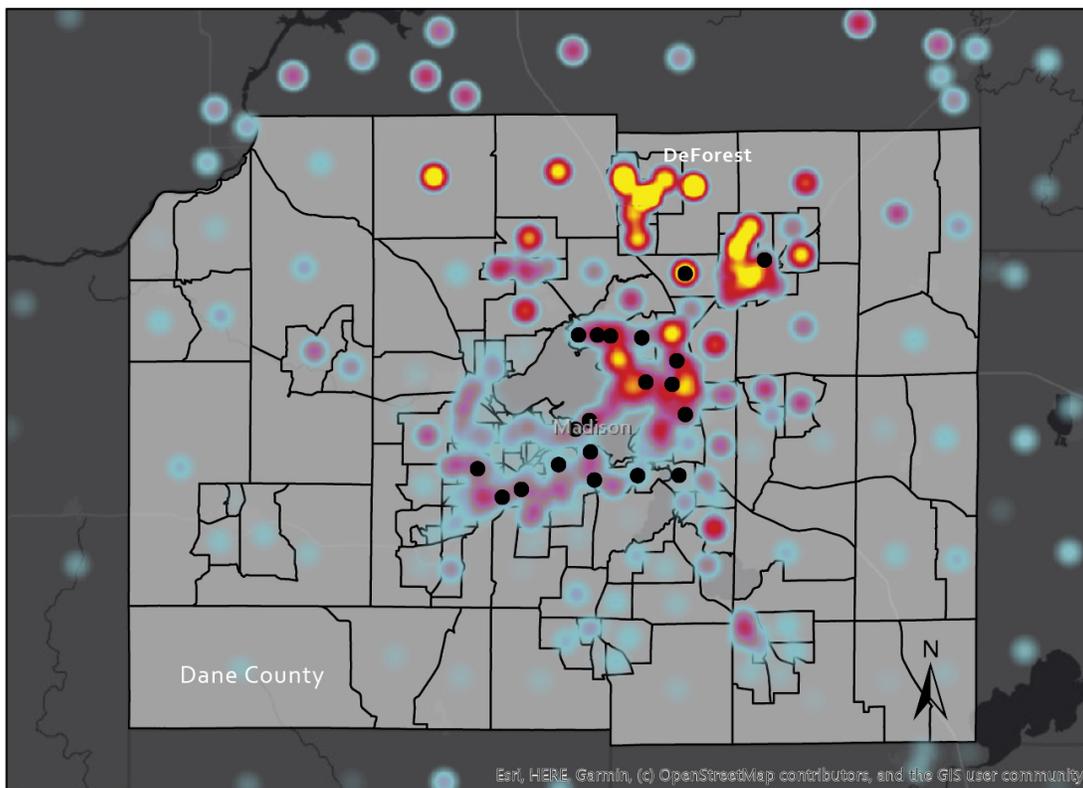
	DeForest-Windsor Commuters	Dane County	Wisconsin
Median household income in the past 12 months*	\$68,300	\$72,268	\$56,759
Percent Owner Occupied Housing Units	68.23%	58.60%	66.96%
Percent Renter Occupied Housing Units	31.77%	41.40%	33.04%
Median Gross Rent	\$904.64	\$1,053.00	\$847.00
Median Gross Rent as a Percentage of Household Income	27.12%	28.40%	27.20%
Median Selected Monthly Owner Costs as a Percentage of Household Income in the Past 12 months			
Units With a Mortgage	21.73%	20.20%	19.80%
Units without a Mortgage	12.77%	11.80%	12.30%
Race			
Percent White Alone	88.18%	83.95%	85.27%
Percent Black or African American Alone	4.08%	5.11%	6.38%
Percent Asian Alone	2.59%	5.70%	2.84%
Means of Transportation			
Percent Car, Truck or Van - Drove Alone	80.30%	74.87%	80.87%
Percent Car, Truck or Van - Carpooled	8.83%	6.22%	8.09%
Percent Public Transit	3.70%	4.65%	1.85%
Percent Bicycle	0.69%	2.61%	0.73%
Percent Walked	2.68%	6.05%	3.19%
Percent Worked from Home	4.45%	4.45%	4.36%

\*2017 inflation adjusted dollars

I selected statistics that would provide DeForest and Windsor community and economic development practitioners with information that could input to housing and transportation studies. Workers in these industries come from areas that consist predominantly of white homeowners, making 20% more money annually than the state average and commuting to work via single occupant vehicles.

The commuter data from the LODES dataset includes estimates of the number of DeForest and Windsor workers traveling from each block group in the state. Proprietary data from Union Cab includes origin and destination addresses of its riders. Figure 3 is a map comparing the Dane County origin locations of commuters from the LODES data to those of the 22 CTC riders traveling to DeForest and Windsor for work. Dane County block groups containing commuters to DeForest from the LODES data ranged from having one single commuter to 57 commuters. Two block groups containing CTC riders had two workers each while the remaining 18 block groups had one each. Appendix D contains a map of origin locations of commuters from the LODES data for the entire state of Wisconsin. Roughly half of the CTC riders traveling to DeForest and Windsor originated from block groups that had commuter estimates in the bottom third of commuter-counts in the LODES data.

Figure 3. Comparison of Dane County Areas of Residence of Commuters Working in DeForest (LODES data) with CTC Riders Working in DeForest



The information in Table 5 is a comparison between the demographics of DeForest-Windsor, inbound commuters’ areas of residence from the LODES data and the demographics of the areas of residence of CTC riders commuting to DeForest-Windsor.

Table 5. Comparison of Demographics of the Areas of Residence of Commuters Inbound to DeForest-Windsor (LODES Dataset) with Demographics of the Areas of Residence of CTC Grant Program Riders

	DeForest-Windsor Commuters	CTC Grant Program Riders (n=22)
Median household income in the past 12 months*	\$68,300	\$47,664
Percent Owner Occupied Housing Units	68.23%	41.20%
Percent Renter Occupied Housing Units	31.77%	58.80%
Median Gross Rent	\$904.64	\$940.75
Median Gross Rent as a Percentage of Household Income	27.12%	33.21%
Median Selected Monthly Owner Costs as a Percentage of Household Income in the Past 12 months		
Units With a Mortgage	21.73%	22.65%
Units without a Mortgage	12.77%	17.37%
Race		
Percent White Alone	88.18%	73.33%
Percent Black or African American Alone	4.08%	14.51%
Percent Asian Alone	2.59%	4.40%
Means of Transportation		
Percent Car, Truck or Van - Drove Alone	80.30%	69.87%
Percent Car, Truck or Van - Carpooled	8.83%	10.29%
Percent Public Transportation	3.70%	6.98%
Percent Bicycle	0.69%	2.47%
Percent Walked	2.68%	5.89%
Percent Worked from Home	4.45%	2.76%

\*2017 inflation adjusted dollars

CTC riders came from areas that have an average household income that is roughly 30% less than commuters in the LODES data. These areas are also dominated by rental housing and, while median gross rents are roughly equal, have a population that experiences a greater housing cost burden. By the HUD definition, these areas have populations that are housing burdened. The racial makeup of these areas is less homogeneous than the commuting population from the LODES dataset and uses more alternative means of transportation than single-occupancy vehicle travel.

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## DISCUSSION

### *Transportation*

The population commuting into DeForest to work in the three industries of focus comes from areas that are largely comprised of white homeowners with ample vehicle access and median household incomes above the Dane County average. These individuals reside in areas where, prior to the shutdowns stemming from the spread of COVID-19, unemployment rates were low, tracking state and county rates. This may have created an additional incentive to commute longer distances to work.

The workers who used CTC to access employment in DeForest and Windsor resided in areas that were underrepresented in the LODES data in this report. This is unsurprising in that these areas are characterized as having residents that may face transportation barriers in accessing employment outside the service area of Madison's public transit system.

Some of these individuals would face a 25-mile commute; individuals from outlying counties with car access may see this level of distance as less of a barrier. However, even a 10-mile trip to DeForest-Windsor from the east side of Madison, at \$2.80/mile in a cab becomes expensive and can equate to \$140/week. For an employee with the average annual wage of \$42,000 in DeForest's largest industry, these rides would amount to 17% of income.

These individuals were temporarily able to make these trips due to the presence of the grant-funded transportation program. Employers in DeForest and Windsor were interested in examining whether they could support this program because it opened up greater access to labor. Economic development practitioners in DeForest and Windsor may want to explore similar transportation programs or initiatives should their employers continue to experience challenges associated with tight labor markets. Appendix C is an informational flyer outlining the benefits of creating a Transportation Management Association - the strategy for coordinating employment transportation in the grant proposal introduced at the outset of this paper.

This type of coordination is also consistent with the goals in the economic development chapter of DeForest's comprehensive plan. Working with employers to creatively gain access to a broader labor pool would fit with the goal of supporting existing businesses to grow and thrive. Additionally, the Village's goal of advancing transportation projects with major economic impacts may arguably include workforce transportation programs and services to bolster area businesses.

### *Housing and DeForest Industry Wage Rates*

The average annual wage of the three industries examined in this report is roughly \$48,600. This is slightly below the average wage across all industries of \$52,300. The data in this report shows that the areas of residence for inbound commuters in these three industries skew toward homeownership instead of renting. This may be an indicator that this commuting population is less mobile and, therefore, less likely to relocate for work, choosing instead to assume higher transportation costs. While it is uncertain whether those actually commuting into the Village of DeForest have the same demographic characteristics as the averages of their areas of residence, the Village may want to take this into consideration in any forthcoming housing or workforce development studies.

It may also be an indicator, however, that the wage rates offered by DeForest and Windsor businesses in these industries may support homeownership within the community if affordable

options are available. This may present an opportunity to explore development of affordable, single-family housing in accordance with the Village Comprehensive Plan's goals of having at least 65% of its units single-family housing by 2035. This may also be an excellent chance to provide individuals with the opportunity to enter homeownership who may currently face prohibitive costs and barriers throughout Madison's urban core.

### **Equity**

The commuting data shows that the majority of both residents and workers in DeForest are white, home- and car-owners with annual incomes above state averages. It should be noted that the areas of Dane County from which CTC riders originated their commutes are more racially diverse with lower rates of home and vehicle ownership. The Village may want to conduct public engagement across Dane County in order to better understand the barriers that the labor pool faces and determine how to facilitate better access to jobs. This may include exploring alternative ways to disseminate information about employment opportunities to individuals in areas who may not otherwise have access to robust job search tools.

### **COVID-19**

In the aftermath of COVID-19 layoffs, the historically low unemployment rates have been shattered. Uncertainty is the prevailing sentiment in the labor market and, although employment was near full in the areas where inbound commuters have been shown to reside, that may no longer be the case. There may eventually be an opportunity for DeForest to further tap into the labor pool from these areas. Additionally, with a destabilized housing and rental market, many individuals may be looking to, or may be forced to, relocate. Pundits are also anticipating a desire for housing outside denser urban areas and an increased reliance on private vehicle travel. It is difficult to distinguish between data-driven forecasting and simple speculation in this regard, but the Village may want to monitor trends going forward.

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## **LIMITATIONS**

It is important to note that the analysis contained in this report relies primarily on data that are estimates and not hard figures. Demographic characteristics describe the area of residence of commuters, not the commuters themselves. Any inference about the actual workers commuting to DeForest and Windsor should be made with this understanding.

The industry NAICS codes used in this report are self-reported and can change from year to year. Indeed, I questioned some businesses that were categorized in the ReferenceUSA list into the industries of focus in this paper. For example, Pizza Hut in DeForest is classified as Transportation and Warehousing at the secondary level in the ReferenceUSA data. This is, perhaps, due to its role as a food delivery service, but is a very different business than others in the industry. When necessary, I exercised personal judgement in including or excluding businesses for analysis based on my personal knowledge about their business activities. Further analysis may necessitate defining a standard for approaching these classifications.

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## CONCLUSION

This paper provides employment and transportation data and analysis for the Village of DeForest, a high-growth suburb of Madison, to develop workforce and transportation initiatives. The challenges DeForest businesses have experienced accessing a shallow labor pool led to their interest in a grant-funded transportation program giving rides to residents from areas that otherwise might not have had easy access to DeForest jobs. The data in this report highlights the demographic differences between residents from these areas and residents from other areas that commute to DeForest and gives indications of the barriers that residents in the former areas may face. I recommend that the data and analysis presented in this report be used by Village officials as a starting point to engage local businesses in performing a more comprehensive labor-shed analysis and to determine what, if any, employment transportation programs would merit support.

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## REFERENCES

Allon, A., McAndrews, C., Marie Ruth, A. Cabs to careers? Lessons learned from a traditional taxicab firm's implementation of a ride service for low-income workers. *Transportation Research Record*. 2019.

Iowa Workforce Development. Laborshed Survey Methodology. 2020. Retrieved from <https://www.iowaworkforcedevelopment.gov/laborshed-survey-methodology>.

Madison Area Transportation Planning Board. 2035 Regional Transportation Plan Update. 2012.

Madison Area Transportation Planning Board. 2050 Regional Transportation Plan. 2017.

United States Census Bureau. North American Industry Classification System Frequently Asked Questions. Retrieved from <https://www.census.gov/eos/www/naics/faqs/faqs.html#q4>.

Wisconsin Department of Workforce Development. 2019 Workforce Profile Dane County. 2019.

Village of DeForest. Village of DeForest Comprehensive Plan Vision and Directions Volume. 2015.

## APPENDIX A

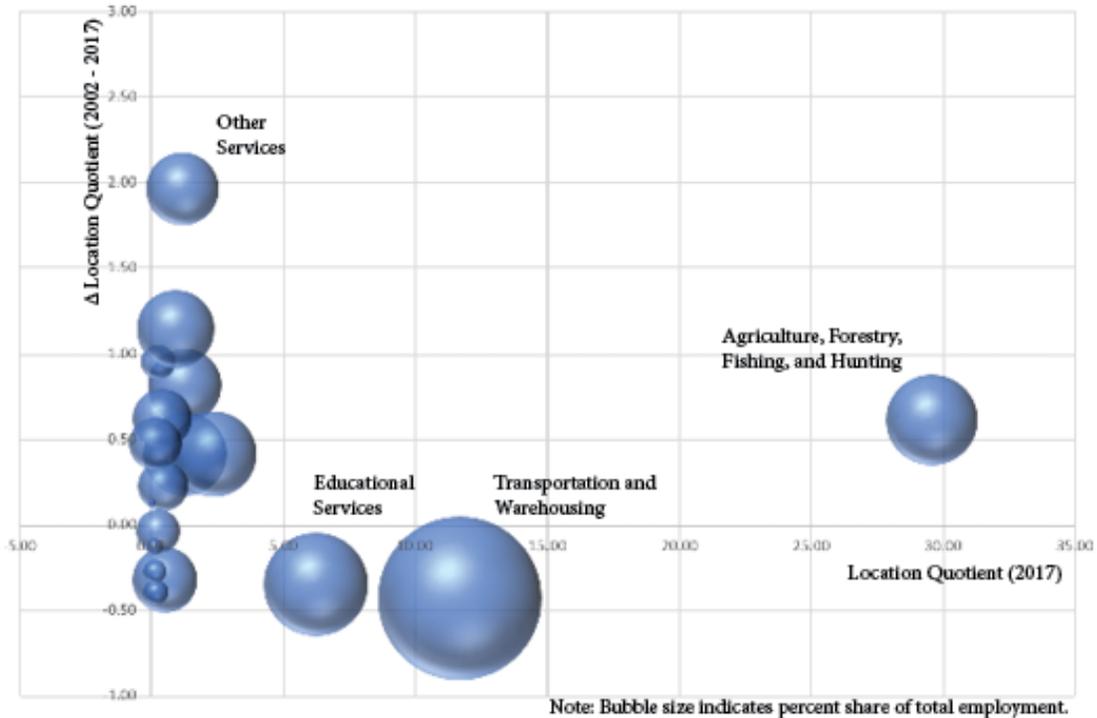
### Occupations by Selected Industry

	Business Activities	Occupations
Transportation and Warehousing	<ul style="list-style-type: none"> <li>Transporting passengers and cargo</li> <li>Warehousing/storage for goods</li> <li>Scenic/Sightseeing Transportation</li> <li>Support activities related to modes of transportation</li> </ul>	<ul style="list-style-type: none"> <li>Airplane pilot</li> <li>School bus driver</li> <li>Truck Driver</li> <li>Railroad Personell</li> <li>Sailor</li> </ul>
Agriculture, Forestry, Fishing and Hunting	<ul style="list-style-type: none"> <li>Farming, Ranching, Dairy</li> <li>Raising Animals</li> <li>Harvesting timber</li> <li>Harvesting Fish</li> <li>Greenhouses and Nurseries</li> </ul>	<ul style="list-style-type: none"> <li>Equipment Operator</li> <li>Farmworker</li> <li>Logger</li> <li>Truck Driver</li> <li>Business Owner</li> </ul>
Wholesale Trade	<ul style="list-style-type: none"> <li>Wholesaling merchandise without transformation</li> <li>Rendering services incidental to the sale of merchandise</li> </ul>	<ul style="list-style-type: none"> <li>Laborer</li> <li>Material Handler</li> <li>Sales Representative</li> <li>Truck Driver</li> <li>Wholesale Buyers</li> </ul>
Health Care and Social Assistance	<ul style="list-style-type: none"> <li>Ambulatory Health Care Services</li> <li>Hospitals</li> <li>Nursing and Residential Care</li> <li>Social Assistance</li> </ul>	<ul style="list-style-type: none"> <li>Home Health Aid</li> <li>Nurses</li> <li>Doctors</li> <li>Case Managers</li> </ul>
Retail Trade	<ul style="list-style-type: none"> <li>Retailing merchandise without transformation</li> <li>Rendering services incidental to the sale of merchandise</li> <li>Final step in the distribution of merchandise</li> </ul>	<ul style="list-style-type: none"> <li>Cashiers</li> <li>Customer Service</li> <li>Managers</li> <li>Salespersons</li> <li>Stock Management</li> <li>Supervisors</li> </ul>
Prof., Scientific and Technical Services	<ul style="list-style-type: none"> <li>Legal Services</li> <li>Accounting</li> <li>Architecture and Engineering</li> <li>Consulting</li> <li>Scientific Research/Development</li> <li>Advertising</li> </ul>	<ul style="list-style-type: none"> <li>Lawyers</li> <li>Accountants</li> <li>Auditors</li> <li>Architect/Engineers</li> <li>Business Analysts</li> <li>Scientists</li> </ul>

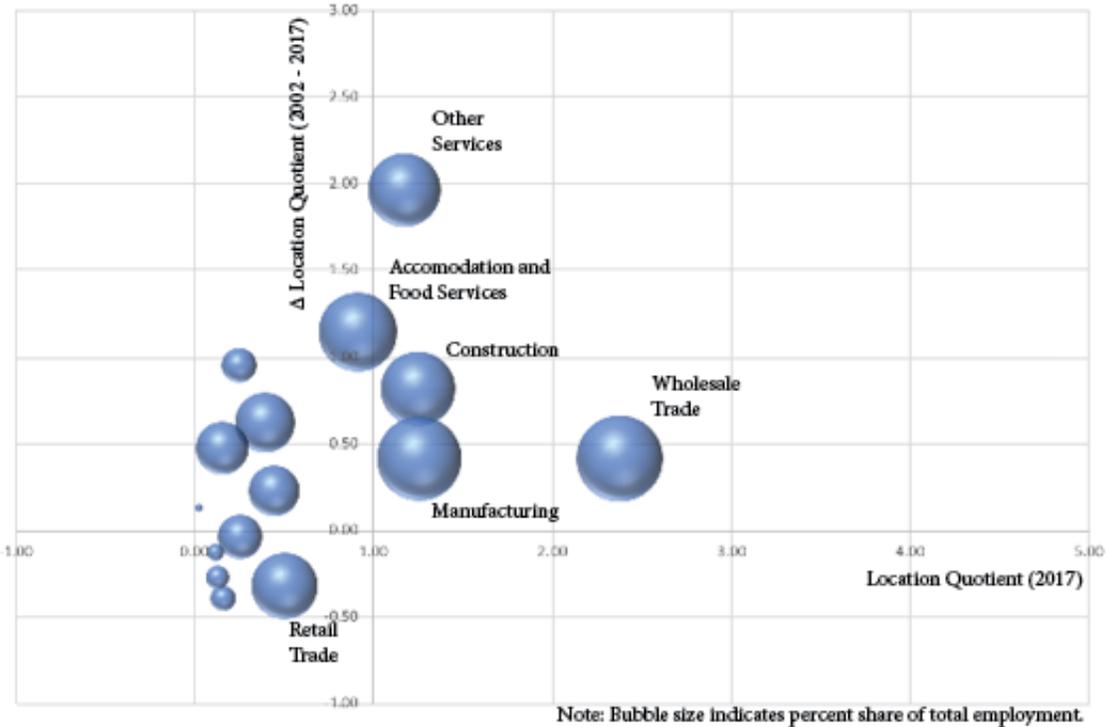
Source: BLS, 2020

**APPENDIX B**

Sector Employment Analysis (Excluding Utilities Industry)



Sector Employment Analysis  
(Excluding Utilities, Agriculture, Forestry, Fishing and Hunting, Transportation and Warehousing and Educational Services)



**APPENDIX C**



**DEFOREST** *Wisconsin*

**Transportation Management Association**

"An organized group applying carefully selected approaches to facilitating the movement of people and goods within an area. TMAs are often legally constituted and frequently led by private sector in partnership with the public sector to solve transportation problems."

-TMA Handbook: A Guide to Successful Transportation Management Associations

***First Steps in Planning a TMA***

- Clearly and explicitly identify the nature of the transportation problem
- Identify user markets, understand travel patterns and user needs
- Define geographic scope as it relates to the problem, markets, and travel patterns
- Establish a clear organizational mission
- Determine if a public-private partnership can address the problem
- Gauge level of support for developing a TMA
- Identifying possible funding sources

***Traditional TMA Activities***

- *Exchanging Information:* The "eyes and ears" of local transportation issues for members
- *Providing transportation services:* Carpool, vanpool, commute alternatives, busses/shuttles, transit, transit pass sales, coordinating employer TDM.
- *Promoting Transportation Services:* Informational materials and PR
- *Advocating for improved transportation services:* Contacting transit agencies; lobbying local and state government
- *Offering Consulting Services to Members:* Help develop site-specific TDM and meet ordinance requirements; guide development of new services (ride-share, guaranteed ride home, etc.)



***Who Benefits from TMA Implementation?***

**Employers**

Cost savings through centralized transportation programs.  
 Assistance on transportation related problems.  
 Access to transportation info.  
 Access to local gov'ts for input in planning/programs.  
 Advocacy on local/regional transportation issues.  
 Opportunity for developing new business contacts.

**Developers**

Cost savings through centralized transportation programs.  
 Assistance on transportation related problems.  
 Access to transportation info.  
 Opportunity for developing new business contacts.  
 Mechanism for implementing additional transportation services for prospective tenants.

**Local Government**

Assistance in development of area-wide TDM programs for local gov't employees, area businesses, residents.  
 Access to cohesive group of businesses to implement municipal transportation services, programs, legislation.  
 Forum for developing business support for future programs.  
 Mechanism to respond to growth concerns.

**APPENDIX D**

Appendix D. Wisconsin Origin Locations of DeForest Inbound Commuters

