Spatial and Skills Mismatch of Unemployment and Job Vacancies

Opportunities for Integrated Transit Planning and Workforce Development

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16. Abstract (Limit: 250 words)

Disadvantaged urban workers often find themselves in a double bind. They may be qualified for many entry-level jobs, but have no way of reaching suburban employment centers; they may also be easily able to reach many jobs nearby, but lack the qualifications for them. These two statements describe the interconnected problems of spatial mismatch and skills mismatch. This report studies the current state of spatial and skills mismatch in the region, as well as coordination between transit planning and workforce development and opportunities to improve that coordination. The research finds greatly varying transit access to job vacancies across the region, with some disadvantaged areas having relatively low access. Proposed transit improvements would have modest regional effects on spatial mismatch, but large localized benefits in disadvantaged areas. Important "sweet spots" for workforce development exist, defined as in-demand occupations with low education requirements that are likely to pay a living wage. Transit planners and workforce development professionals both call for greater coordination between their fields. The report recommends redefining "accessible jobs" based on transit access, not geography, considering every stage of connecting workers with jobs, from what skills they have, to what training is available, to what jobs can be reached by transit, as well as collecting regional data on job seekers' skills. The report also recommends identifying employers with labor supply problems, considering disadvantaged workers' complex schedules, engaging with TMO's and pursuing creative first mile/last mile solutions to connect workplaces with transit lines, as well as pursuing transit-oriented economic development.

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Executive Summary

Disadvantaged urban workers often find themselves in a double bind. They may be qualified for many entry-level jobs, but have no way of reaching suburban employment centers; they may also be easily able to reach many jobs nearby, but lack the qualifications for them. These two statements describe the interconnected problems of spatial mismatch and skills mismatch.

With a growing regional economy juxtaposed against persistent disadvantage in specific areas, and the accelerating buildout of the regional transit system, now is an opportune time to study the relationships between spatial mismatch and skills mismatch, between transit planning and workforce development in the Twin Cities. The current situation also offers an opportunity to influence the course of both for decades to come.

To this end, the authors studied the current state of spatial and skills mismatch in the region, as well as coordination between transit planning and workforce development and opportunities to improve that coordination by analyzing patterns and magnitudes of mismatch, identifying in-demand occupations with low education requirements and interviewing transit planners and workforce development professionals.

Access to job vacancies via transit varies greatly by industry and location within the region. While transit access is generally good in the inner city, some areas of intense disadvantage, such as North Minneapolis, Brooklyn Park and Midway have relatively poor access. Proposed regional transit improvements would offer local benefits to disadvantaged areas; the greatest benefits by far would come from implementing the proposed regional transitway system in its entirety. The overall regional impacts of proposed improvements would be considerably less, underscoring the need for transit-focused workforce and economic development.

Important "sweet spots" exist for locally-targeted workforce development efforts in the Twin Cities. In high-demand sectors, there are a significant number of occupations in which most job vacancies do not require postsecondary education and offer a livable median hourly wage—such as coaches and scouts in the educational services sector, customer service representatives in the financial services sector, nursing assistants in the health care and social assistance sector, customer service representatives in the management of companies and enterprises sector, machinists in the manufacturing sector, customer service representatives in the professional, scientific and technical services sector and heavy and tractor-trailer truck drivers in the transportation and warehousing sector. In addition, a number of occupations recur across sectors, presenting opportunities for combined training programs.

Both transit planners and workforce development professionals lend support to the basic premise of this project: while successful coordination of transit and workforce development is consistently acknowledged as beneficial, there is a strong perception of need for more such coordination. This appears to be particularly true in suburban areas where transit has traditionally had less relevance to workforce development than in urban areas with at least high levels of traditional bus service. There is also a broad realization that workforce development efforts cannot simply give clients a bus card and send them on their way in suburban areas—even assuming future transit improvements. Urban areas suffer less from this issue on the home end of disadvantaged workers' commutes, but connecting urban

workers with suburban jobs requires addressing the same issues at the workplace end, especially in terms of the first mile-last mile problem.

The report concludes with policy recommendations centered on finding "sweet spots" for coordinated transit planning and workforce development and on creating a future transit system to serve the needs of disadvantaged workers:

Redefine "accessible" to focus on the jobs easiest to reach for workers without cars, both tightening focus on transit station areas and broadening focus as the regional transit system expands.

Consider the entire pipeline from individual workers, to transit-accessible jobs they can be trained for, by asking the following questions:

- What skills do the people who live in an area have?
- What jobs are they willing to do?
- What jobs fitting people's skills and willingness can we provide training for?
- Which of those jobs can we connect people with via transit?
- How can we interest employers in hiring participating workers for those jobs?

Collect data on skills to help select occupations for training programs to focus on, tailor those programs to participants' capabilities and needs, and make the case to employers that engagement will connect them with workers they need.

Identify employers who stand to benefit from engaging with workforce development and transit planning efforts. The employers may include those facing labor supply problems due to inaccessible suburban locations as well as those with ambitious goals for diverse hiring.

Redefine flexible transportation to take into account disadvantaged workers' often complex lives and non-traditional schedules. Serving disadvantaged workers well with transit will mean fast, frequent, regular regional service, and local connections tailored to demand.

Engage with Transportation Management Organizations (TMOs) in addressing the important first mile/last mile problem. TMOs have an existing structure of coordinating diverse transportation options among a wide variety of stakeholders. This fact positions them well for further coordination with workforce development efforts.

Pursue diverse first mile/last mile solutions potentially including employer or district shuttles, car and/or bicycle sharing, or partnerships with transportation networking companies. First mile/last mile connections will need to be tailored to the spatial patterns of the industries in question as well.

Pursue transit-oriented economic development to direct future job growth to transit-friendly areas. Engaging with major employers facing labor supply problems and a need to attract talented young workers can be a starting point for job growth at all levels.

In closing, great challenges remain in the way of addressing the Twin Cities region's spatial and skills mismatch issues, but the present is a uniquely opportune time to lay the groundwork for a new, coordinated approach to doing so. Transit corridors hold great potential to serve as leverage points to

bring diverse stakeholder groups to the table, but the acceleration of the regional transit system buildout calls for making such contacts sooner rather than later.

1 Introduction

Disadvantaged urban workers often find themselves in a double bind. They may be qualified for many entry-level jobs, but have no way of reaching suburban employment centers; they may also be easily able to reach many jobs nearby, but lack the qualifications for them. These two statements describe the interconnected problems of spatial mismatch and skills mismatch. Both problems stem from a lack of alignment between disadvantaged workers and available jobs. The "available" part is critical: an overall, regional lack of suitable employment opportunities is not the issue. Spatial and skills mismatch mean that job growth alone (at least according to current patterns) will not solve the problem of long-term unemployment in the inner city.

At its heart, spatial mismatch essentially stems from a lack of mobility (often particularly automobility) on the part of disadvantaged workers (Fan, 2012). As a result, it should come as no surprise that efforts to address it often focus on transportation, whether through car access programs (Goldberg, 2001) or improved and/or specialized public transit services (Bania, Leete, & Coulton, 2008; Cervero, Sandoval, & Landis, 2002; Sanchez, Shen, & Peng, 41; Thakuriah & Metaxatos, 2011; Yi, 2006). However, broad-based car access promotion programs face serious difficulties due to funding and political constraints, while the effectiveness of conventional transit service in alleviating spatial mismatch is hampered by suburban built forms.

Workforce development programs aiming to remedy skills mismatch, on the other hand, may entirely succeed in preparing disadvantaged workers for jobs, but fall short of their potential to actually improve those workers' lives if their transportation circumstances limit their access to those jobs. Often, workforce centers may decide not to steer a client into an otherwise ideal training program if that applicant lacks transportation access to the jobs it is for.

These unfortunately complementary situations call for a new approach to addressing long-term unemployment: one which coordinates transit planning and workforce development efforts. With a growing regional economy juxtaposed against persistent disadvantage in specific areas, and the accelerating buildout of the regional transit system, now is an opportune time to study the relationships between transit planning and workforce development in the Twin Cities. The current situation also offers an opportunity to influence the course of both for decades to come.

To this end, the authors studied the current state of spatial and skills mismatch in the region, as well as coordination between transit planning and workforce development and opportunities to improve that coordination through three major research tasks:

- A regional Geographic Information System (GIS) analysis of spatial patterns of mismatch over time and across multiple transit development scenarios;
- A "sweet spot" analysis identifying in-demand occupations with low education requirements and living wages as focal points for workforce development;
- A set of regional dissimilarity indexes to measure the magnitude of mismatch over time and across those scenarios; as well a

- A series of in-depth neighborhood level case studies to provide localized qualitative detail on the issues at hand.

The following report reviews the literature on the intersection of transit planning and workforce development, with special focus on existing efforts to link the two, details the methods and results of the four primary research tasks, reviews regional and national best practices for implementing integrated transit planning and workforce development and presents recommendations to proceed with that integration in the Twin Cities, as well as for generalizing the research findings to regions elsewhere.

2 Literature Review

The issues of spatial and skills mismatch are two of the most prevalent labor market explanations of unemployment (Fan, 2012; Houston, 2005). Spatial mismatch highlights the lack of job opportunities within the commuting and job search spheres of the unemployed (Gobillon, Selod, & Zenou, 2007). The spatial mismatch hypothesis was first proposed by John F. Kain (1968) in the 1960's specifically as an explanation for persistent, intergenerational poverty among inner-city African Americans. In its original form, the hypothesis proposed that a combination of housing discrimination, employment suburbanization and low rates of automobile ownership trapped poor Black people in segregated, inner city neighborhoods far from entry-level employment opportunities with no way to reach them (Kain, 1968). Since its initial proposal, the focus of the spatial mismatch hypothesis has broadened to include a wide variety of intersecting identities among the urban poor, including immigrants, Latinos, single mothers, welfare recipients and others (Fan, 2012).

Lack of transportation access is often identified as an important barrier to stable employment for long-term unemployed workers. Transportation can manifest itself as a barrier to employment in terms of lack of access to an automobile (Blumenberg, 2002), in terms of financial difficulty with the upkeep of an automobile (Fletcher, Garasky, & Nielsen, 2005), as well as a lack of effective transit options. The effects of transportation barriers to employment can be pronounced: welfare recipients with poor transportation access take longer to leave welfare and are more likely to reenter the system (Nam, 2005). Blumenberg (2002) finds transit dependency had a stronger negative relationship with welfare recipients finding employment than having less than a high school education, as nearly as strong a negative relationship as serious health problems. While attribution of declines in unemployment following transit improvements is often problematic, research on New York neighborhoods that saw a sudden, temporary suspension of transit service in the aftermath of Hurricane Sandy found a closely related increase in unemployment, strongly suggesting a causal link (Tyndall, 2015).

Given the significance of transportation barriers to employment, one might expect transportation programs—particularly improved public transit—to be effective in alleviating spatial mismatch. Certainly, many such programs have been tried, but often with limited or inconclusive success. As one example, Ong and Miller (2005) found automobile ownership to be a considerably stronger predictor of employment outcomes than the availability of transit service in a study of Los Angeles. Kawabata (2003), however, found that transit job access did significantly predict employment outcomes in Los Angeles and San Francisco. One differentiating factor between the two studies appears to be methodological: the former measures simple proximity to transit stops (Ong & Miller, 2005), while the latter makes use of a sophisticated measure of the jobs accessible by transit (Kawabata, 2003). Accessibility—as differentiated from simple location—also explains a significant portion of persistent racial differences in job searches and employment outcomes (Johnson, 2006). Other research on areas as diverse as Atlanta, Los Angeles and urban areas in England corroborates the finding that spatial mismatch significantly constrains job searches—even restricting the universe of vacancies for which a disadvantaged worker competes (Patacchini & Zenou, 2005; Stoll, 2005).

The underlying concept of a mismatch between the circumstances of disadvantaged workers has proven useful for understanding long-term unemployment from other perspectives as well. One particularly

important such perspective is skills mismatch. Skills mismatch highlights a mismatch between the skills of the unemployed and the skills demanded by employers. Research broadly comparing job proximity and skills mismatch, as well as poverty deconcentration, local economic development, mobility promotion and workforce development has found skills mismatch to be a stronger predictor of employment outcomes than spatial mismatch (Chapple, 2006; Immergluck, 1998). Houston (2005), however, finds both to be significant, but that skills mismatch alone ignores system inequalities that stretch far beyond individual workers.

Conventional wisdom among policy makers has led to separate efforts addressing these two issues (Handel, 2003; McQuaid, 2006). Efforts to mitigate spatial mismatch often include spatially targeted poverty dispersal and job creation as well as transportation improvements for the poor, while efforts to mitigate skills mismatch tend to focus on skill-building and occupational training programs for low-income job seekers (Giloth, 2000).

Recently, a handful of cities and regions have seen cross-sectoral efforts that simultaneously mitigate spatial and skills mismatch. These efforts often occur in metropolitan regions with ambitious investments in new rail and bus services. For example, The Mile High Connects Job Access Initiative in the Denver, Colorado region has led regional stakeholders to incorporate economic and workforce development into light rail station areas and neighborhood plans (Mile High Connects, 2016a). The initiative also calls for outreach programs to employers, workforce training providers and other supportive service providers about the benefits of transit. The Corridors 2 Careers project in the Minneapolis-St Paul, Minnesota region aligns employment needs of existing and emerging businesses along the Metro Green Line light rail corridor with skills assessment, training, and employment services provided to corridor residents (District Councils Collaborative, 2014) .

Although these cross-sectoral efforts have pointed to new opportunities for integrated transit and workforce development, they tend to target specific transit corridor areas and are not systems level solutions for mitigating spatial and skills mismatch in a region. This despite an understanding in existing research that spatial and skills mismatch are metropolitan region-level problems (Bauder & Perle, 1999; Houston, 2005; Stoll, 2005). In addition, these efforts often focus on industry sectors that have high levels of employment concentration in the targeted corridor areas. In reality, the sectors with high employment concentrations in an area do not necessarily also have high levels of job vacancies in the area. It is most appropriate to identify workforce training areas based upon job vacancy data than actual employment data (Yashiv, 2007).

3 Regional GIS Analysis

Spatial and skills mismatch both have crucial spatial components to them. While the spatial component of spatial mismatch is fairly self-explanatory, skills mismatch can reveal itself spatially as well. Considering the spatial distribution of both types of mismatch is an important basis for understanding the problems. To this end, the authors mapped concentrations of job vacancies and unemployed residents as a measure of overall patterns of spatial mismatch. In addition, they analyzed regional job vacancy data to determine in-demand occupations, and mapped concentrations of vacancies in each high-demand group of occupations relative to patterns of unemployment.

3.1 Overall Spatial Mismatch

Figure 3-1 to Figure 3-4 show regional concentrations of job vacancies and unemployment over time. Figure 3-1 shows concentrations of unemployment based on the 2000 Census and concentrations of job vacancies based on the 2002-2004 DEED job vacancy surveys. Concentrations of unemployment (according to the Federal definition of people who are actively looking for work) are rare in 2000—unemployment was quite low in general at the end of the economic expansion of the 1990's and before the recession of 2001. Job vacancies from 2002-2004 are concentrated in the downtowns, Midway and the 494 corridor in the south metro. Spatial mismatch is not strongly evident in this map, but this may be due in part to relatively low unemployment, as well as a sharp dichotomy at the time between members of the labor force and the long-term unemployed who had ceased looking for work.

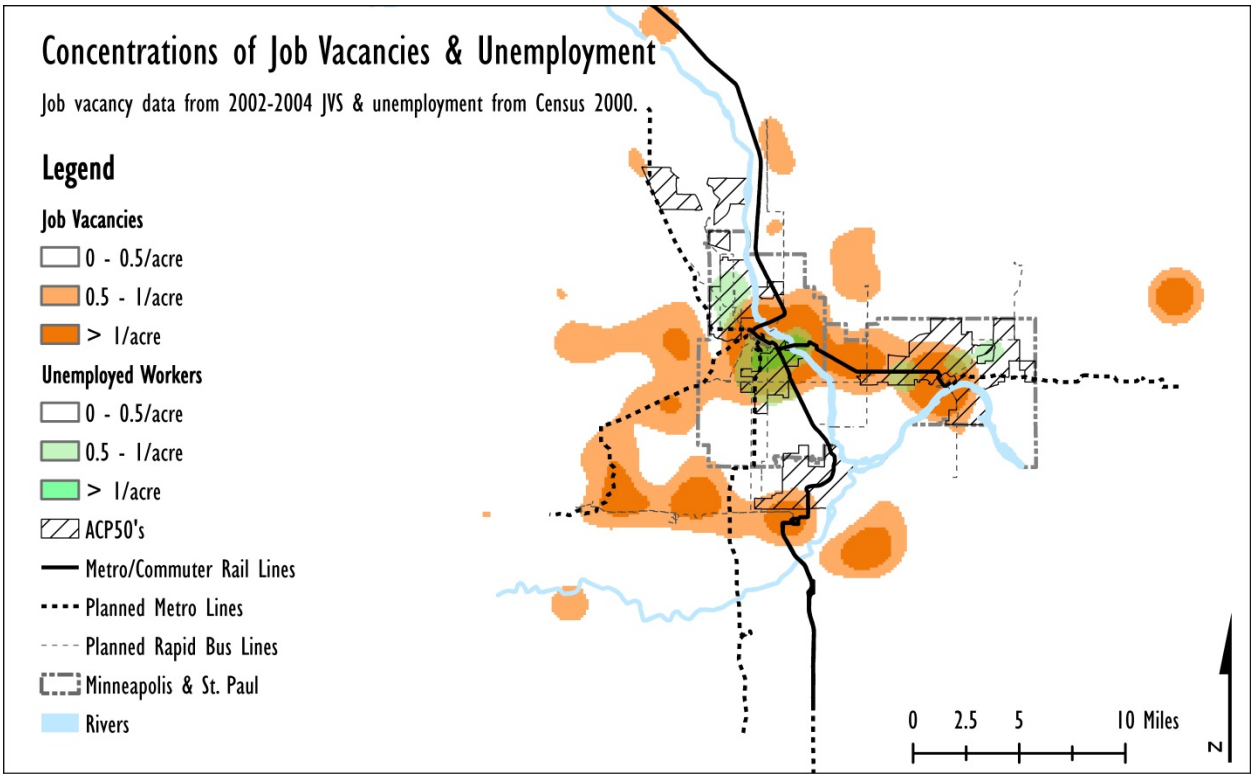

Figure 3-1: Job Vacancies (2000) and Unemployment (2002-2004)

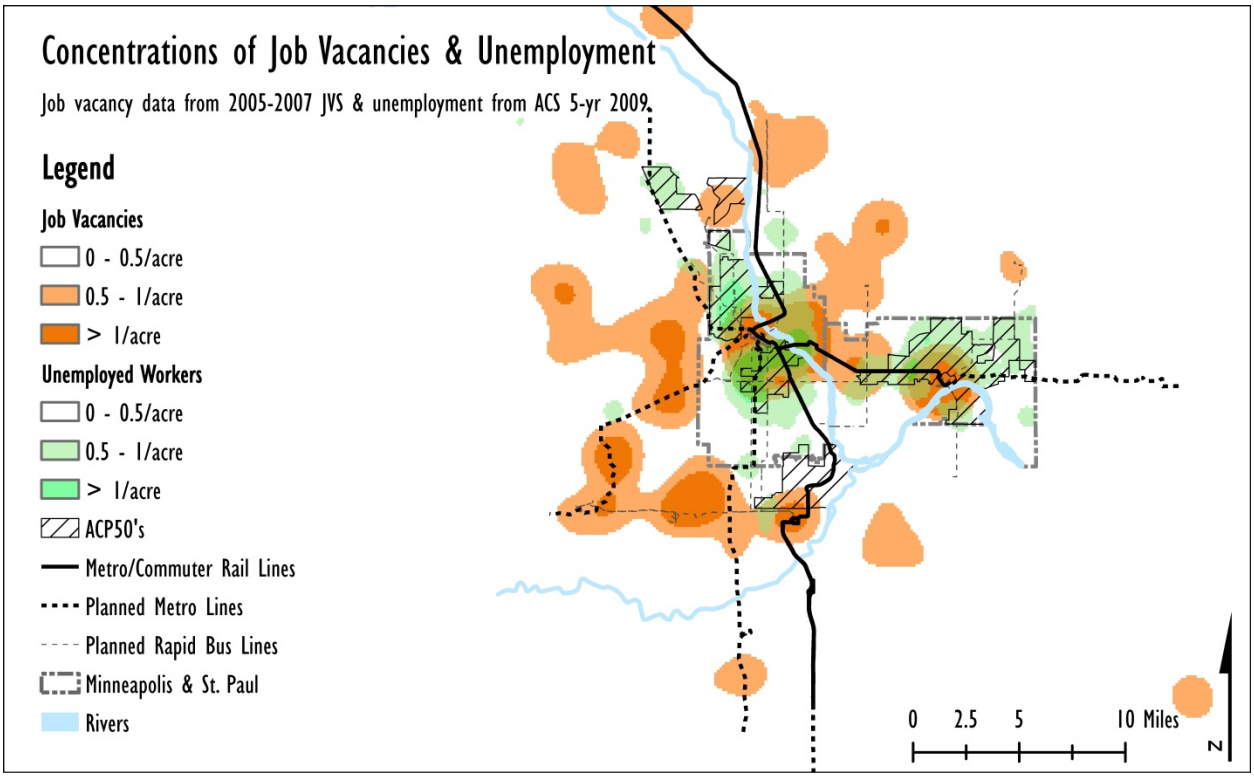

Figure 3-2: Job Vacancies (2005-2007) and Unemployment (2005-2009)

Figure 3-2 shows concentrations of unemployment based on the 2009 American Community Survey (ACS) and job vacancies from 2005-2007. Here there is a moderate density of unemployment throughout much of Minneapolis (and nearly all of North Minneapolis) as well as Midway and Eastside Saint Paul and some inner suburbs, particularly Brooklyn Center. Significant concentrations of job vacancies remain in the downtowns and the south 494 corridor; the west metro including Golden Valley and the Golden Triangle area in Eden Prairie also show significant concentrations of job vacancies. The density of job vacancies in Midway is significantly less here than in Figure 3-1, though. Spatial mismatch is somewhat more evident in this map than in the preceding one, on account of concentrations of unemployment in North Minneapolis and areas of Saint Paul without major concentrations of job vacancies.

Figure 3-3 shows concentrations of unemployment based on the 2011 5-year ACS and concentrations of job vacancies from 2008-2010, both periods including the Great Recession. The spatial distribution of concentrated unemployment is similar to Figure 3-2, though with a larger high concentration of unemployment near downtown Minneapolis. Concentrations of job vacancies, however, betray the depth of the recession: they are generally less dense (particularly along the 494 corridor) and cover considerably less of the region. In this map, spatial mismatch appears to worsen significantly for North Minneapolis, as several previous nearby concentrations of job vacancies vanish entirely, while others weaken markedly. With the exception of downtown, South Minneapolis also sees significant decline in nearby job openings.

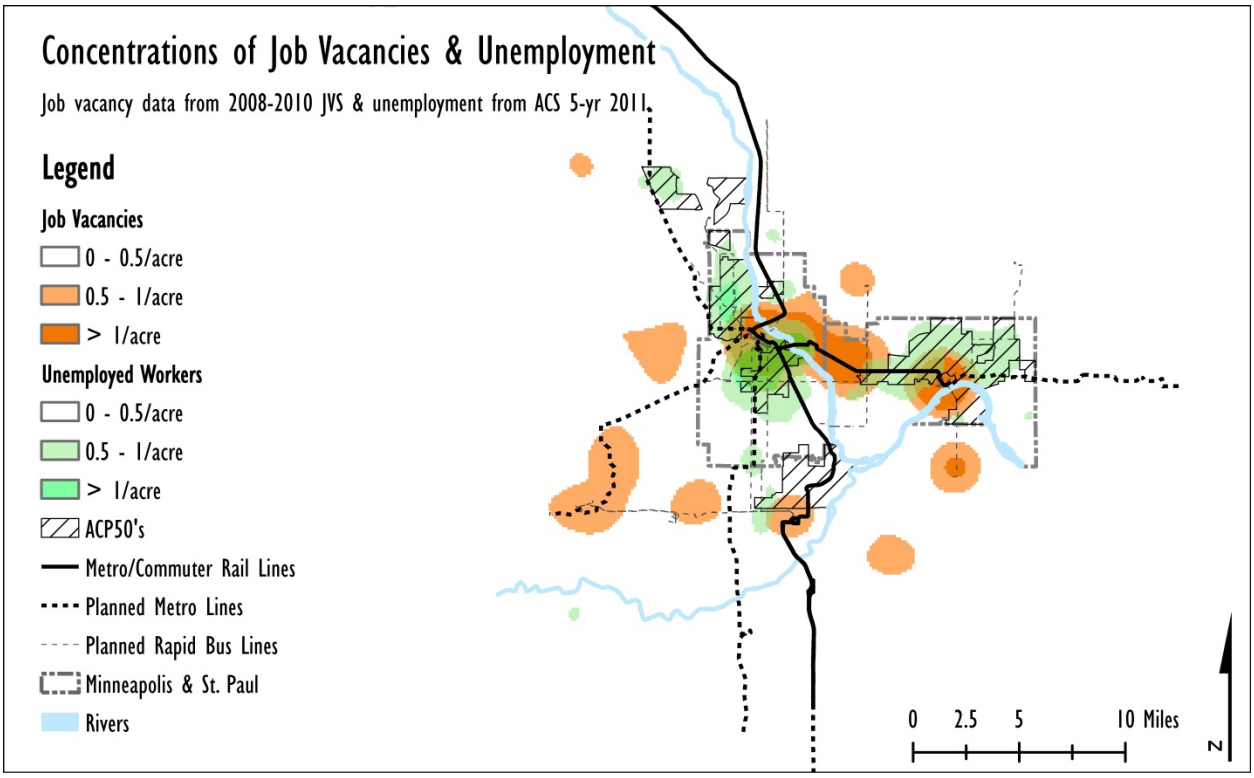

Figure 3-3: Job Vacancies (2008-2010) and Unemployment (2007-2011)

Figure 3-4 is based on the most current data available (2011-2014 job vacancy survey and 2014 American Community Survey 5-year estimates). Unemployment concentrates less in South Minneapolis than before, but the concentrations of unemployment in North Minneapolis and Saint Paul remain. In addition, Job vacancies currently tend to concentrate in the two downtowns and the south and west metro. Unemployed workers, are heavily concentrated in the inner cities, including North and South Minneapolis and the Midway and Eastside areas in Saint Paul. While Figure 3-4 shows the downtowns to be important centers of opportunity for job seekers, large concentrations of job vacancies in the suburbs, along with the residential patterns of unemployed workers align closely with the archetypal pattern of spatial mismatch. North Minneapolis and parts of Brooklyn Park and Brooklyn Center—areas of intense disadvantage—have especially severe spatial mismatch. In addition to relatively low spatial proximity to employment centers (especially suburban ones), North Minneapolis and Brooklyn Park/Brooklyn Center currently lack premium transit service. Both areas, however, would be served by proposed light rail and rapid bus improvements, as would the major concentrations of job vacancies in the southwest metro.

Overall, the regional mapping analysis shows a pattern of increasing spatial mismatch as urban and inner-suburban concentrations of unemployment expand and job vacancies suburbanize. This trend persists even through the recession; in fact, job vacancies appear to have shifted farther out into the suburbs as the economy has recovered.

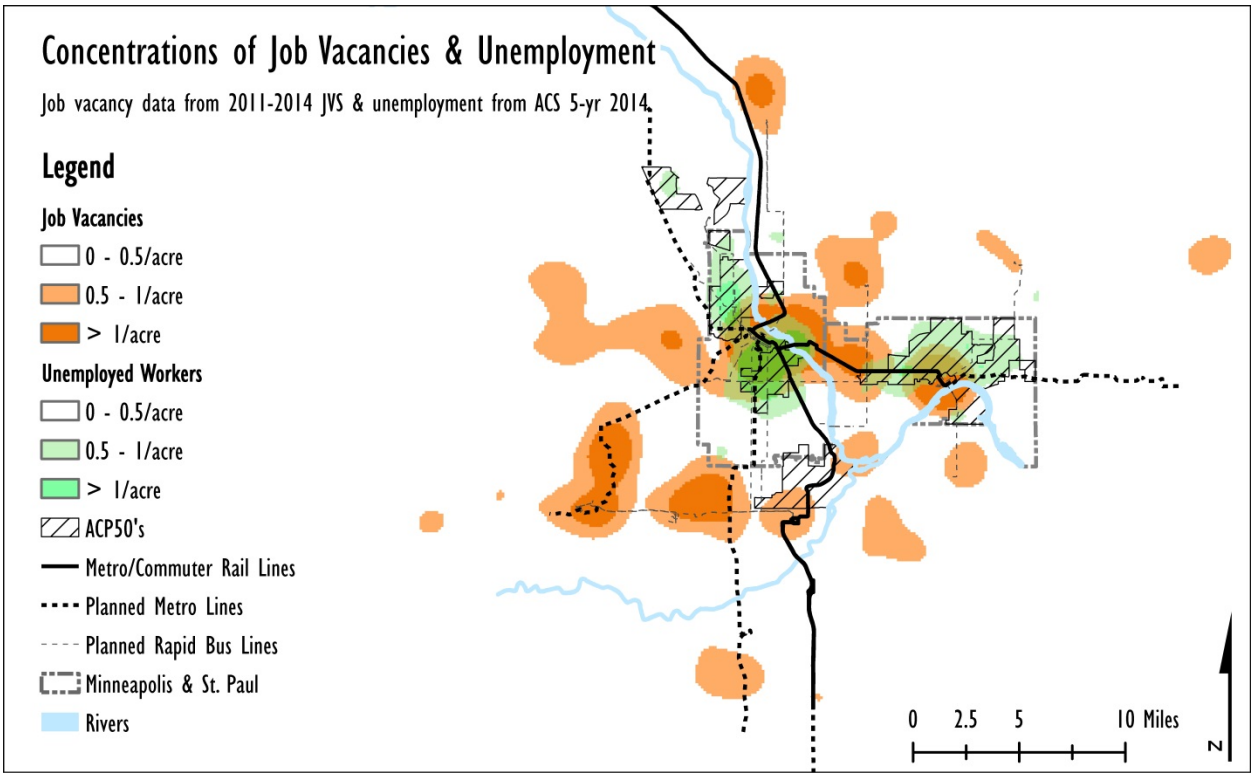

Figure 3-4: Job Vacancies (2011-2014) and Unemployment (2009-2014)

3.2 Job Vacancy Concentrations by Sector

Previous research on economic development and transit employment accessibility shows the certain sectors are disproportionately important to the regional economy (Tilahun & Fan, 2014). Just as regional economic demand is concentrated in some sectors, it is reasonable to expect job vacancies to be similarly concentrated as well. Identifying the sectors which provide the largest numbers of job vacancies in the region is an important first step in determining where coordinated transit planning and workforce development efforts are likely to have the greatest benefits.

Figure 3-5 shows employment in industry sectors (defined by 2-digit North American Industry Classification System [NAICS] codes) compared between the Twin Cities Metropolitan Area, the State of Minnesota and the United States as a whole. This comparison allows the identification of sectors that provide disproportionately high levels of employment in the region. The top seven sectors (above the dashed line on the graph) actually account for roughly 2/3 of all employment in the region.

The Twin Cities metro area has a higher percentage of Manufacturing, Educational Services and Finance and Insurance jobs, and a lower percentage of Health Care and Social Assistance, Retail Trade and Accommodation and Food Services jobs compared to the nation. Compared with Minnesota as a whole, the Twin Cities metro area has relatively more jobs in Educational Services, Professional, Scientific and Technical Services and Finance and Insurance. The metro area has relatively fewer jobs in Health Care and Social Assistance, Manufacturing, Retail Trade and Accommodation and Food Services than the state.

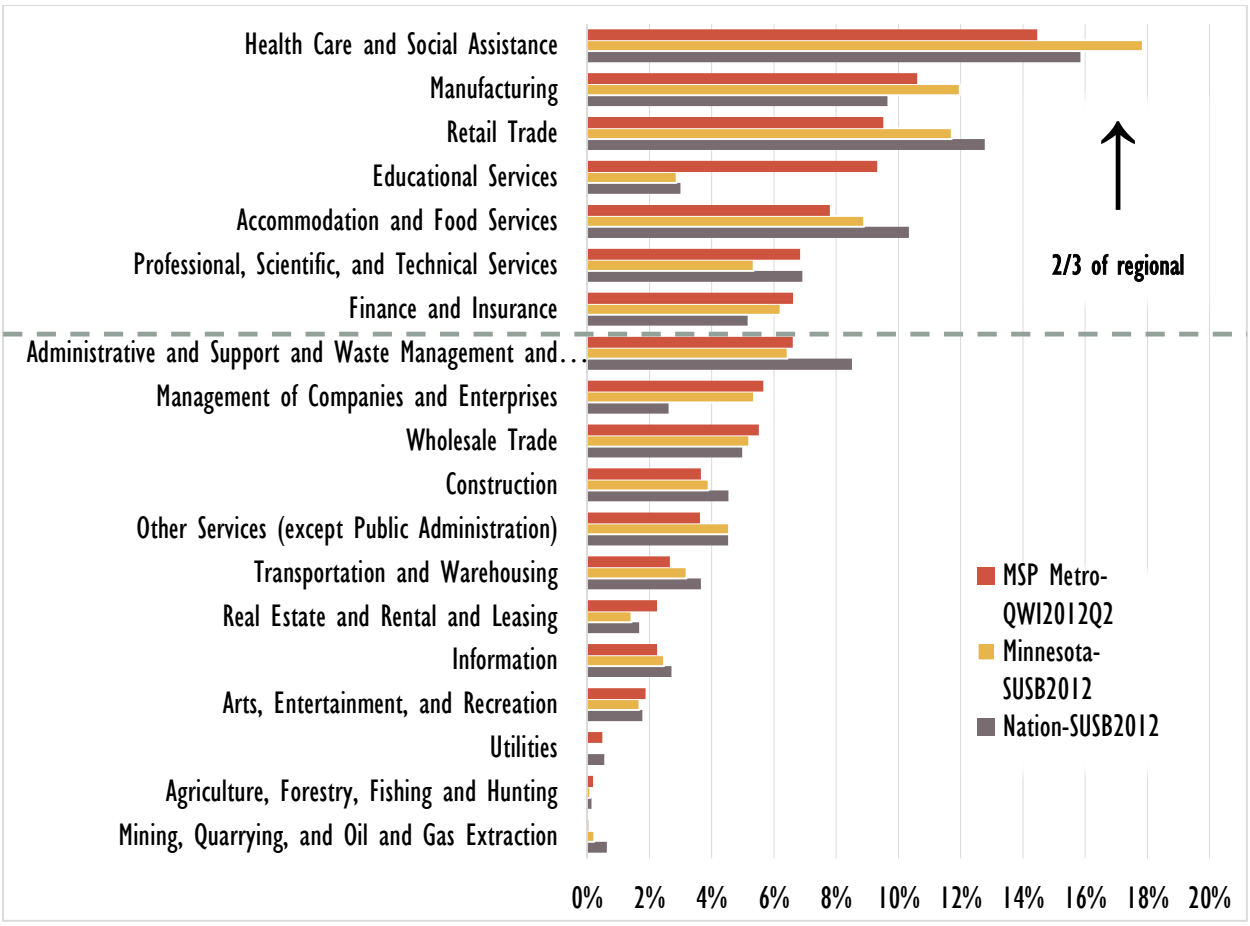

Figure 3-5: Percentage Distribution of Employment by Industry

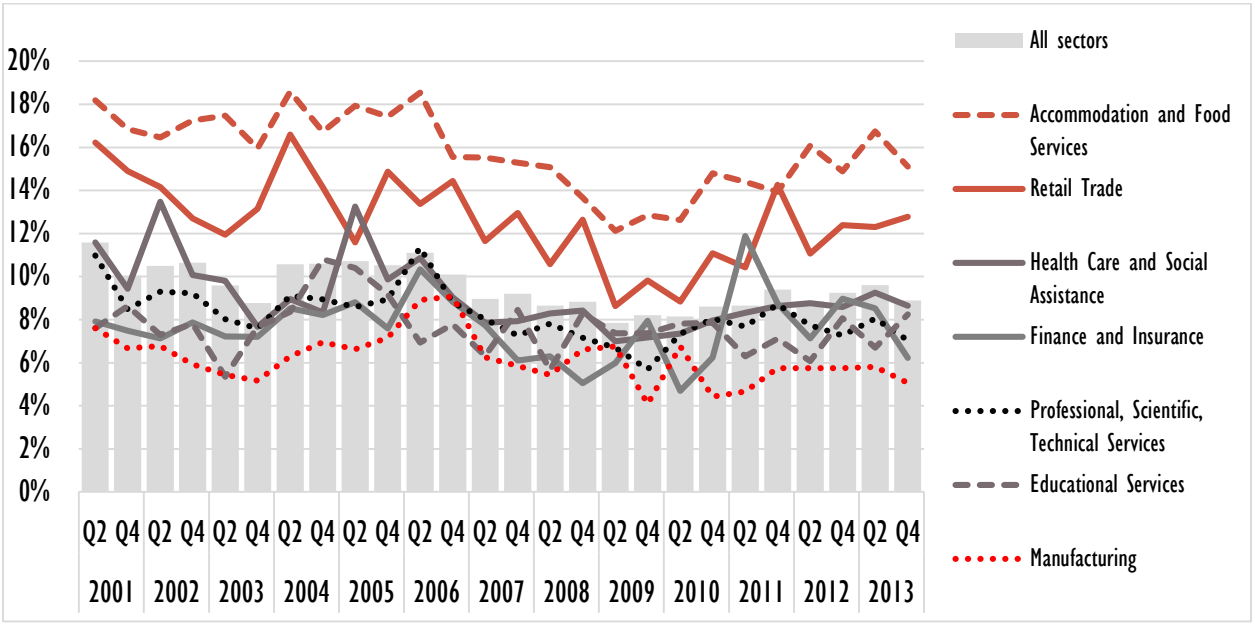

Figure 3-6: Turnover Rate by Industry Sector

While the Retail Trade and Accommodation and Food Services sectors each account for significant percentages of total jobs and job vacancies in the region, they tend disproportionately to provide insecure, low-wage employment, and their high number of vacancies tends to result from high turnover rates, as shown in Figure 3-6. As a result, these two sectors are excluded from further analysis.

Figure 3-7 shows spatial concentrations of jobs by sector using 2011 to 2014 job vacancy survey data for the six remaining sectors offering the most job vacancies in the region, as well as for the transportation and warehousing sector, added on the recommendation of the project's advisory panel due to generally high wages and low education requirements, as well as centers of employment in disadvantaged areas. Spatial patterns differ greatly between sectors. Some concentrate heavily in the central cities—or even one of the downtowns—to the exclusion of all other areas, while others favor the suburbs.

Manufacturing job vacancies are primarily suburban. They concentrate particularly in relatively small pockets in suburbs of the north, west, southwest and south metro. Transportation and warehousing job vacancies show a mix of urban and suburban locations, concentrating in Minneapolis, north inner suburbs, MSP international airport and Dakota County.

Finance and insurance, professional, scientific and technical services, educational services, and management of companies all concentrate strongly in the central city—particularly downtown Minneapolis. Educational services job vacancies tend more toward the University of Minnesota, while management of companies and enterprises has a secondary concentration in the east metro, aligned with 3M corporate headquarters.

Job vacancies in the health care and social assistance sector concentrate in both downtowns, as well as in the north and northeast suburbs.

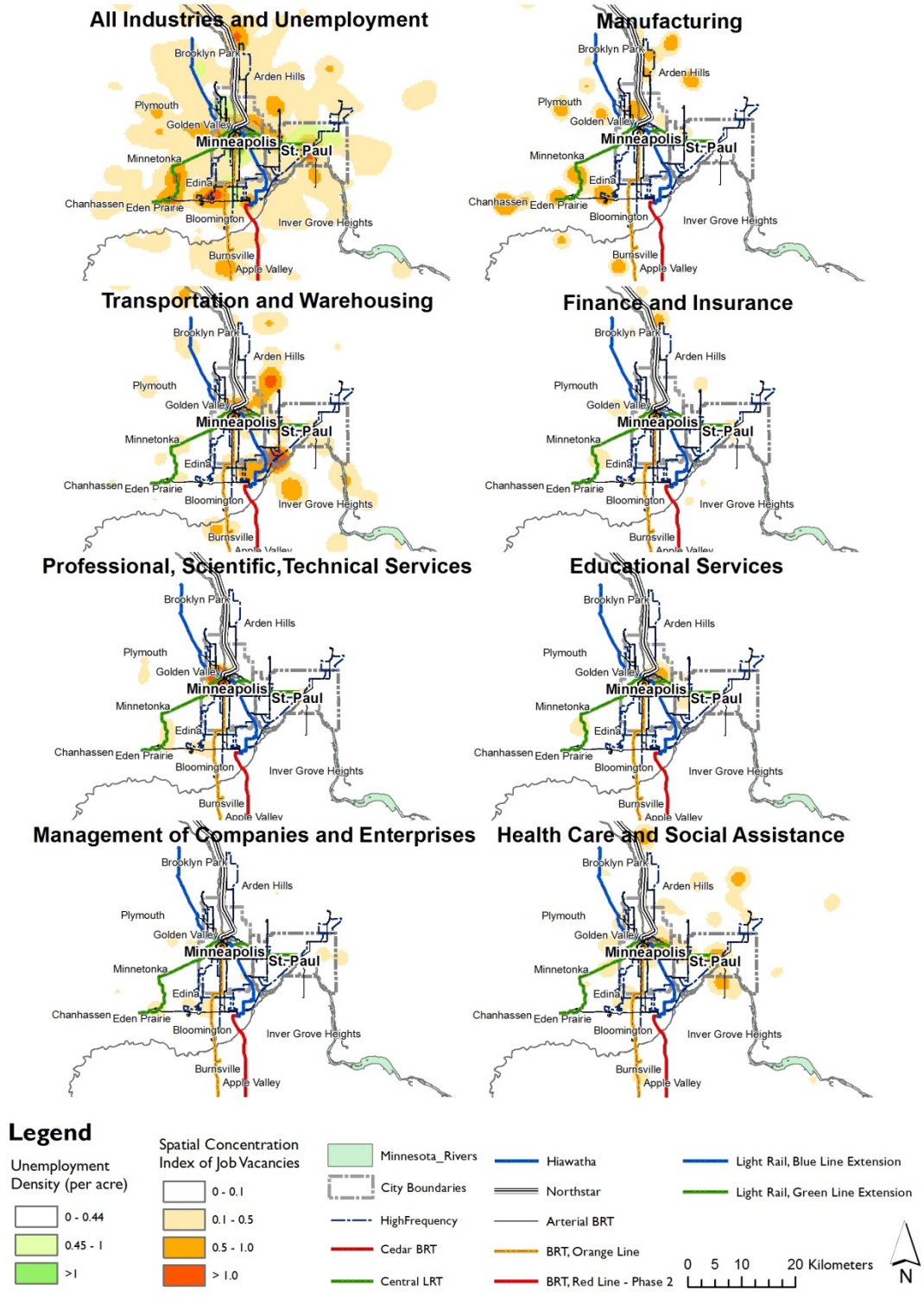

Figure 3-7: Spatial Concentration of Job Vacancies, 2011-2014

3.3 Job Vacancy Concentrations by Occupation

The ability to look at job vacancies in industrial sectors by occupation is extremely beneficial for the purposes of work force development as it provides additional insights into potential training requirements to fill the vacancies. For all industries (See Figure 3-8.), job vacancies in the top 20 occupations accounted for 34% of all job vacancies between 2011 and 2014 . The top two occupations were Retail Salesperson and Food Preparation and Serving Staff, potentially due to the high turnover in the two occupations.

The top 20 manufacturing occupations (shown in Figure 3-9) accounted for 43% of all job vacancies in the sector with Industrial Engineers and Production Workers (helpers) being the top 2. For Transportation and Warehousing (shown in Figure 3-10) the top 20 occupations accounted for 83% of all job vacancies in the sector with Heavy Tractor-Trailer Truck Drivers and Bus Drivers, School or Special Client Drivers being the top 2. The top 20 Finance and Insurance (shown in Figure 3-14) occupations accounted for 64% of all job vacancies in the sector with Customer Service Representatives and Personal Financial Advisors being the top 2 occupations. Industries with high percentages of total vacancies accounted for by a few occupations are important for regional targeting of workforce development efforts, as they maximize the number of workers who can be served with relatively few training and placement programs. Particularly where these common occupations do not require postsecondary degrees or long-term training, they offer one useful measure of "sweet spots", so to speak, for workforce development.

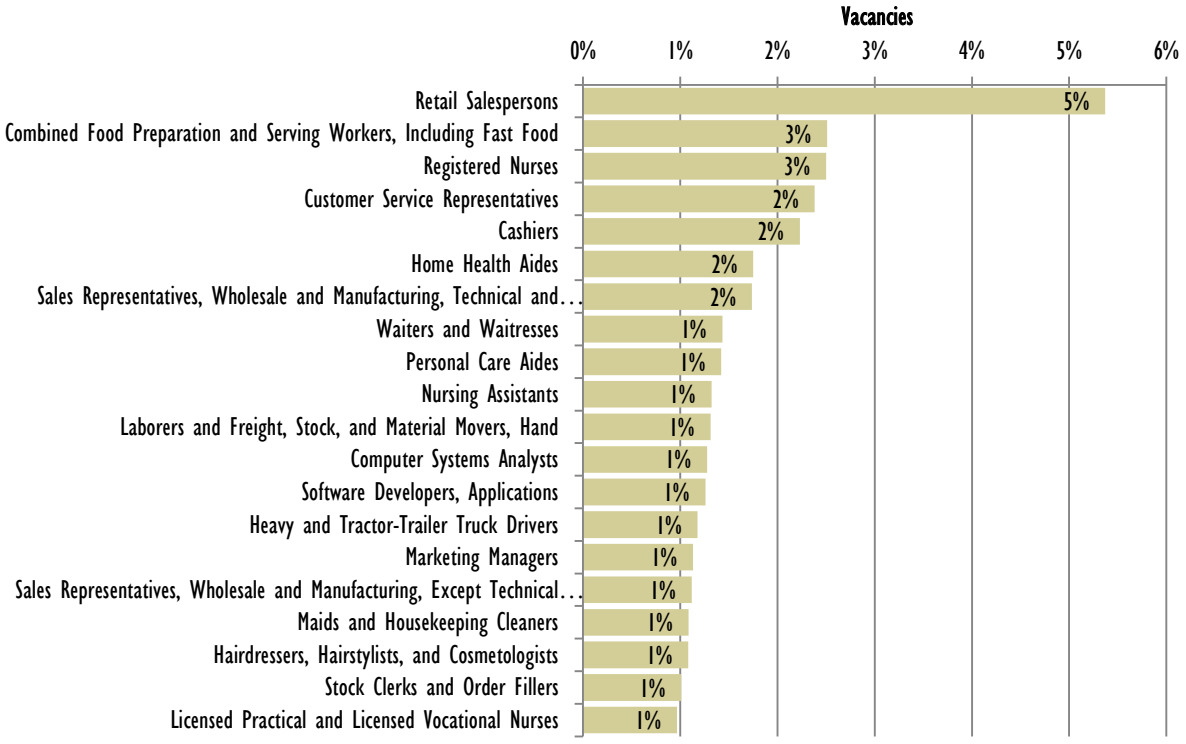

Figure 3-8: Top 20 Occupations- All Industries (34% of total job vacancies)

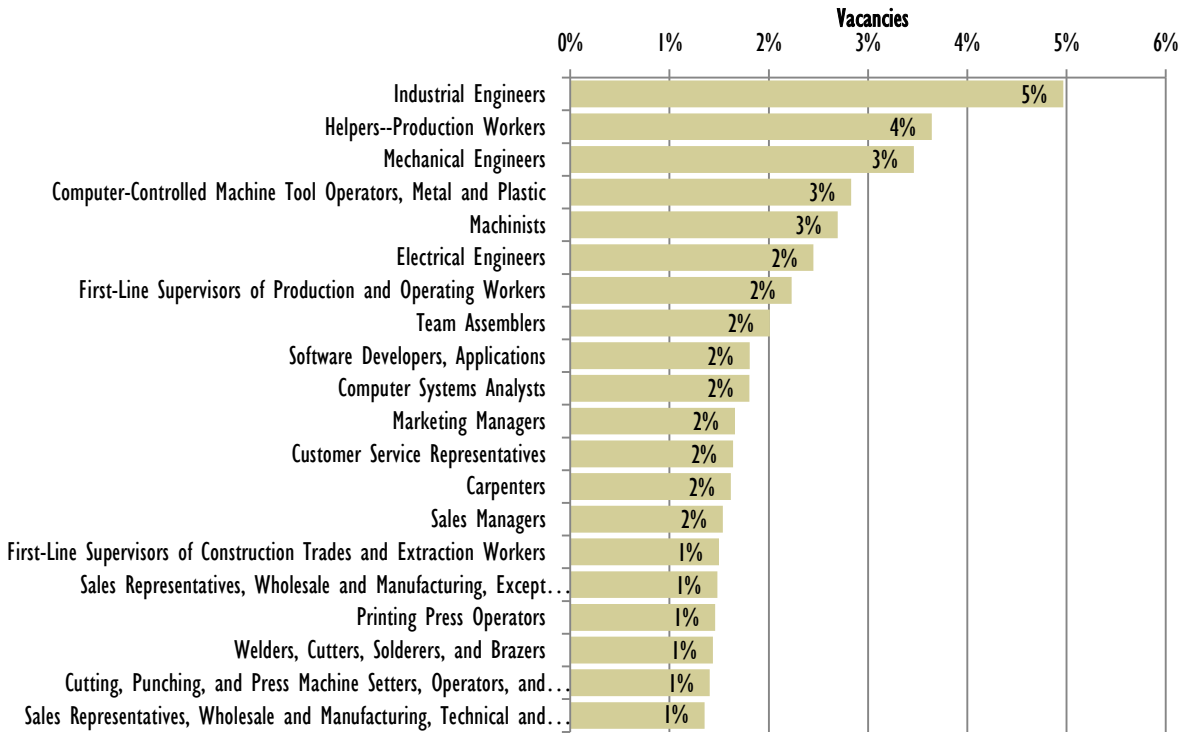

Figure 3-9: Top 20 Occupations- Manufacturing (43% of total job vacancies)

Top occupations in the manufacturing sector, as shown in Figure 3-9, have a mix of skill and/or training: Industrial engineers, mechanical engineers and electrical engineers generally require bachelor's degrees at the least, but helpers, production workers, computer-controlled machine tool operators and machinists generally do not. In addition, while such occupations may require specialized training, it is often of a type that can be provided effectively in a brief, intensive program. These occupations tend to provide relatively well-paid, stable jobs as well.

In the transportation and warehousing sector, as shown in Figure 3-10, not only do the twenty most common occupations account for 83% of total job vacancies, over half of all job vacancies appear in only four occupations: heavy truck drivers (itself 25% of total vacancies), school or special client bus drivers, laborers and freight, stock and material movers, and counter and rental clerks. Notably, none of occupations is likely to require either a college degree or training that cannot reasonably be provided in a short period of time. In addition, the top two occupations (accounting for 41% of job vacancies in the sector), as well as "bus drivers, transit and intercity" (the fifth most common, with 4% of total vacancies) all center on driving heavy vehicles, and generally require a Commercial Driver's License. As a result of these similarities, occupations accounting for 45% of transportation and warehousing job vacancies all require broadly similar training.

Not surprisingly, high-demand occupations in the educational services sector, as shown in Figure 3-11, tend to have relatively high education requirements (such as for teachers). It is worth noting, however, that the single occupation most in demand (teacher assistants, 11% of total vacancies) is one with lower educational requirements.

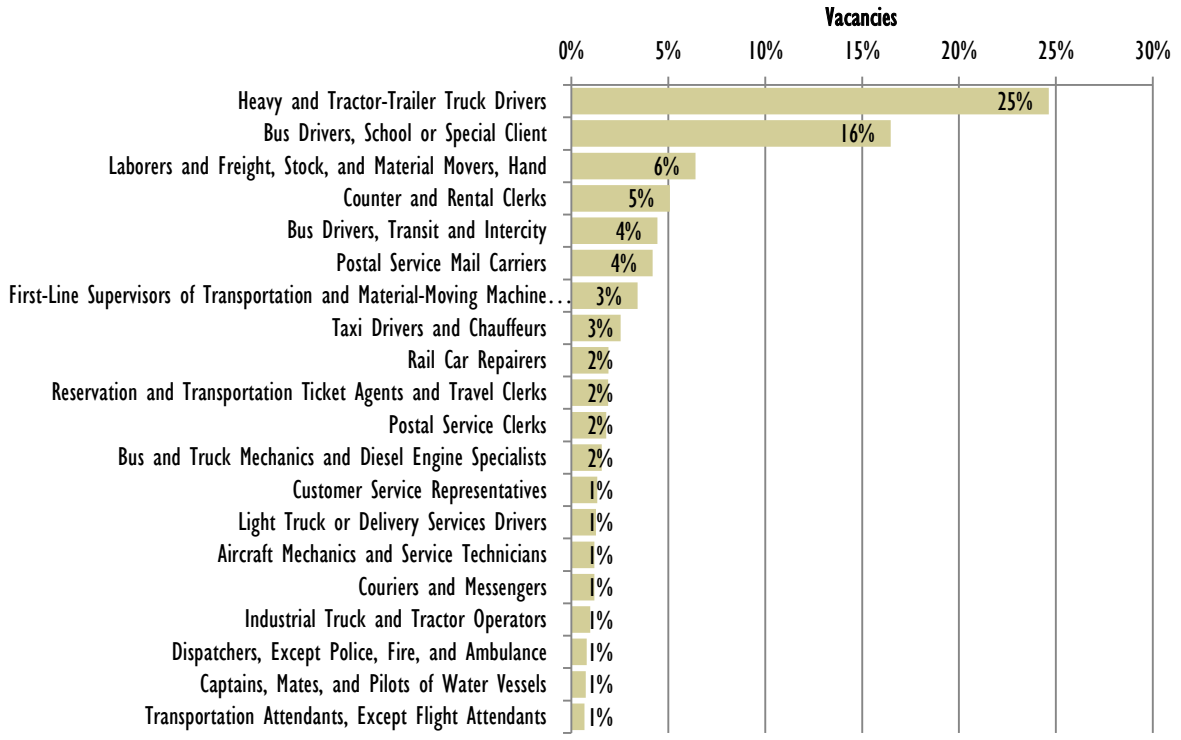

Figure 3-10: Top 20 Occupations- Transportation and Warehousing (83% of total job vacancies)

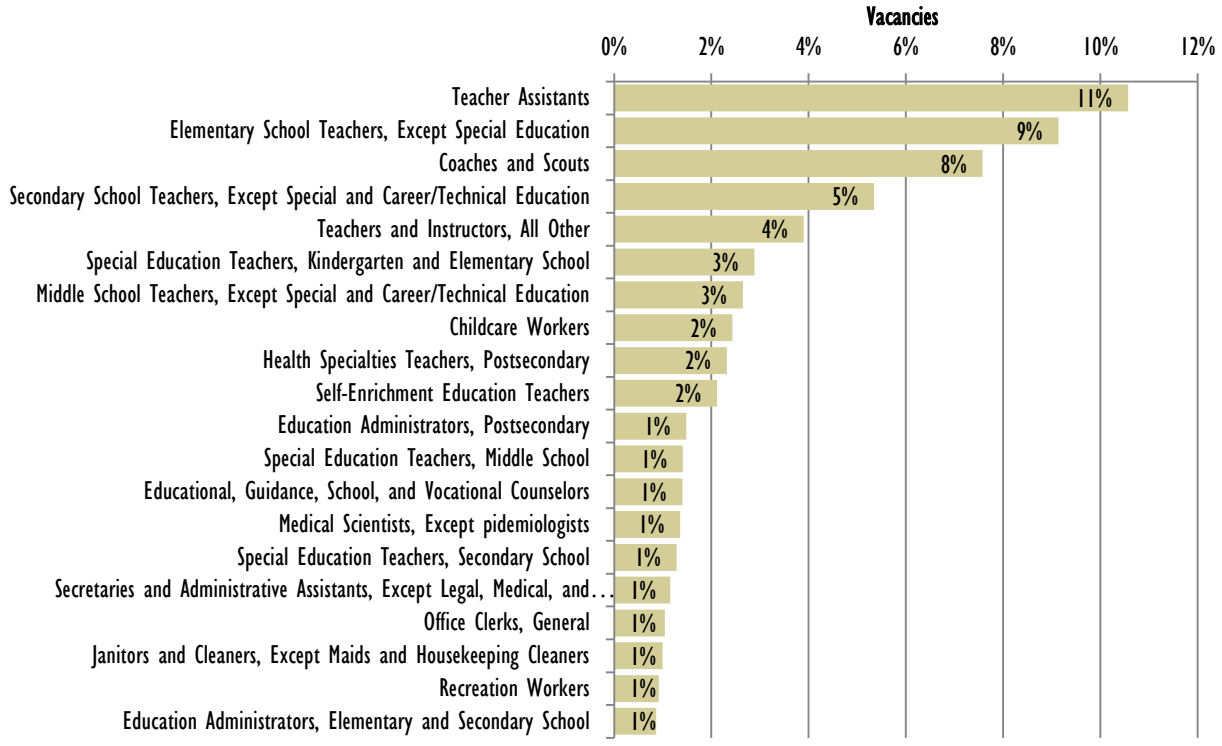

Figure 3-11: Top 20 Occupations- Educational Services (61% of total job vacancies)

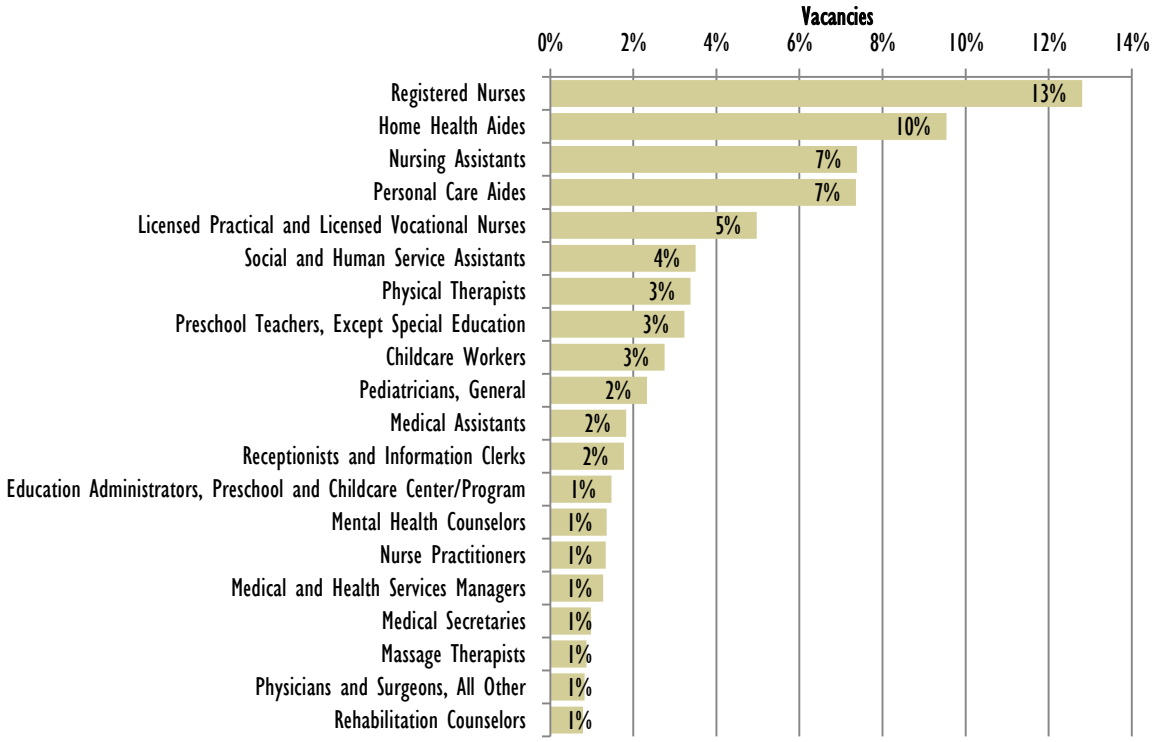

Figure 3-12: Top 20 Occupations- Health Care and Social Assistance (70% of total job vacancies)

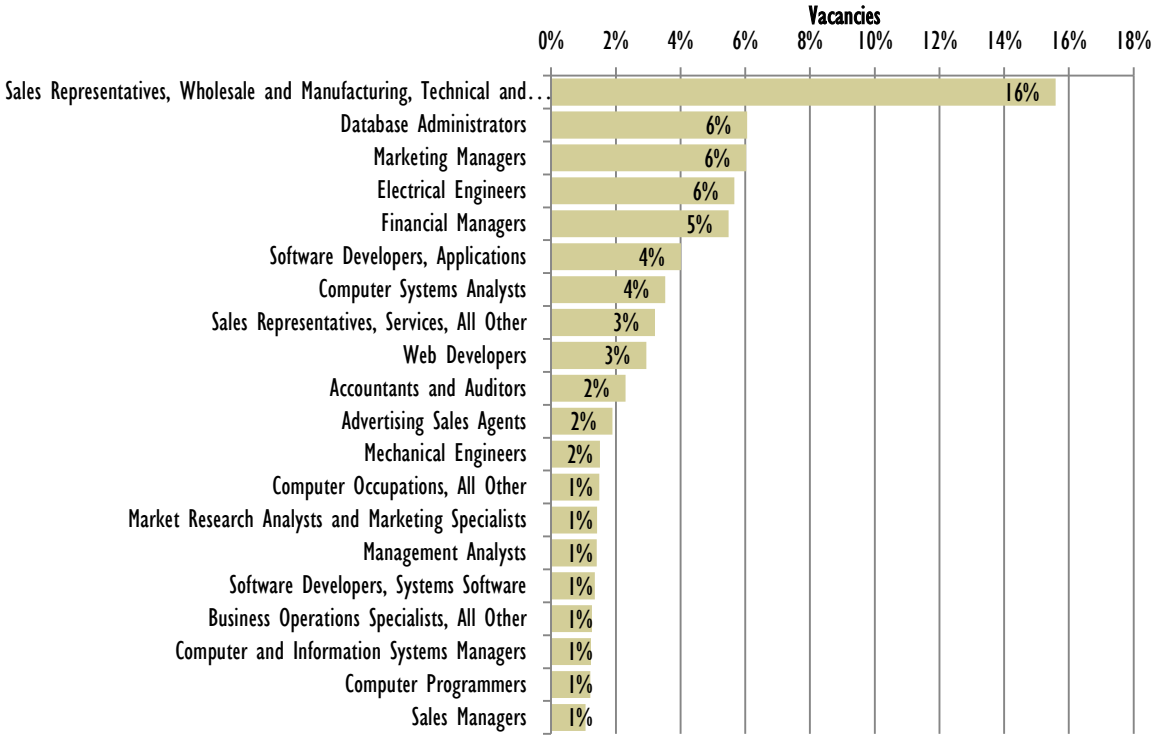

Figure 3-13: Top 20 Occupations- Professional, Scientific, and Technical Services (69% of total job vacancies)

Top occupations in the healthcare and social assistance sector likely demand a broad mix of qualifications, much as in the manufacturing sector. As may be seen in Figure 3-12, registered nurse (with high education requirements) is the most common occupation for job vacancies, but is followed closely by occupations with much lower education requirements, such as home health aides and personal care assistants.

Sales representatives are the most common occupation in the Professional, scientific and technical services sector by a significant margin. (See Figure 3-13.) It is also one of only a few common occupations in the sector that does not necessarily have high education requirements.

In the finance and insurance sector, as shown in Figure 3-14, occupations such as customer service representatives and tellers offer job vacancies with relatively low education requirements. Jobs in these occupations can also serve as gateways to managerial jobs in the finance and insurance industry. In the management of companies and enterprises sector, as shown in Figure 3-15, relatively few top occupations do not require long-term training.

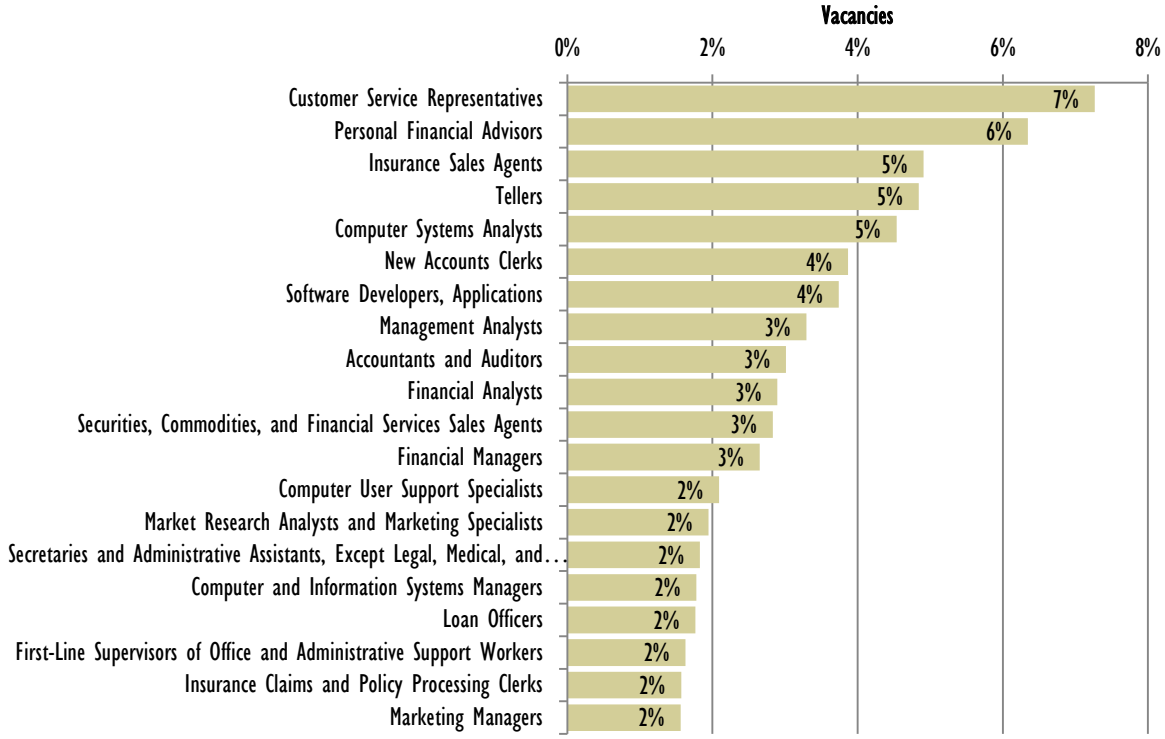

Figure 3-14: Top 20 Occupations- Finance and Insurance (64% of total job vacancies)

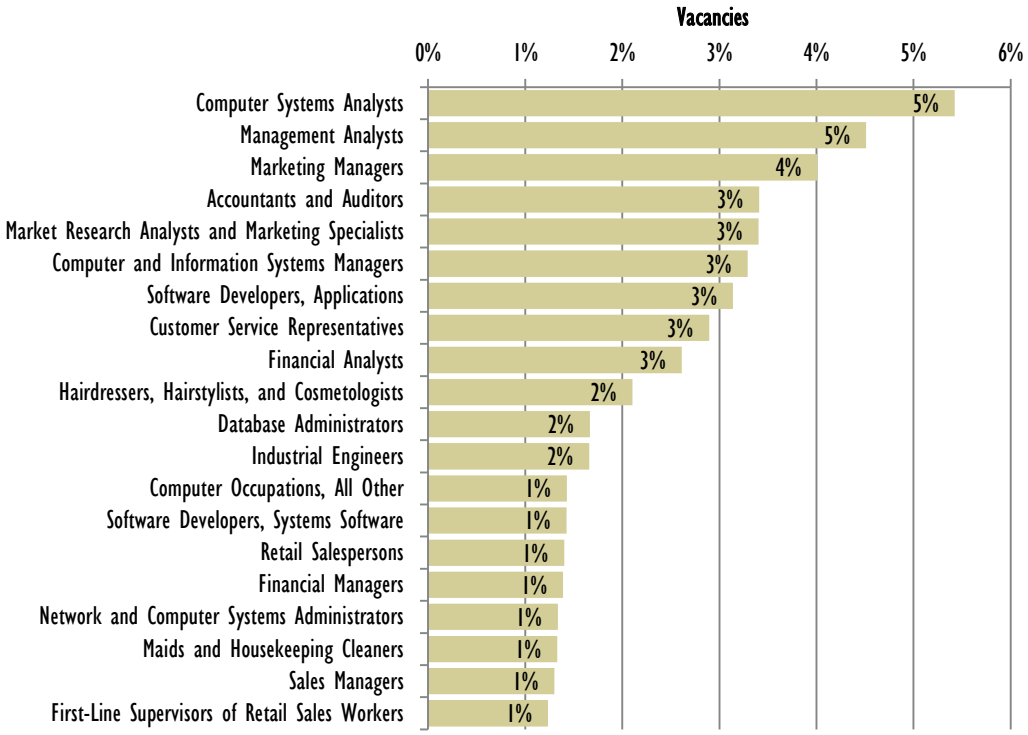

Figure 3-15: Top 20 Occupations- Management of Companies and Enterprises (49% of total job vacancies)

3.4 Educational Requirements

Next, we look at educational requirement by industrial sector. The bar on the left on each graph represents educational requirements for all job vacancies in the industrial sector. The remaining two bars represent educational requirements for all job vacancies in the city and the suburb. Using Manufacturing as an example, of the total job vacancies in the sector 23% are located in the central cities (i.e., Minneapolis and St. Paul) and 77% in the surrounding suburbs in the Metro area.

Overall, Professional/Scientific/Technical Services, Educational Services and Management of Companies and Enterprises have the highest educational requirements with at least 55% of all vacancies across industries and city/suburbs requiring a bachelor's degree or higher. Transportation and Warehousing job vacancies have the lowest educational requirements with under 10% of the jobs requiring a bachelor's degree or higher. Similarly, for Health Care/Social Assistance under 35% of the job vacancies require a bachelor's degree or higher. Lower education requirements in these two sectors make them good potential candidates to target in terms of workforce development due to the lower training requirements needed to enable unemployed residents to qualify to fill the vacancies.

It is also interesting to note that while looking at the cities vs. suburbs for Manufacturing, Finance and Insurance, Professional/Scientific/Technical Services, Educational Services and Management of Companies and Enterprises, city-based job vacancies typically have higher educational requirements compared to their suburban counterparts indicating the need to take into account geographic location when creating strategies for workforce development.

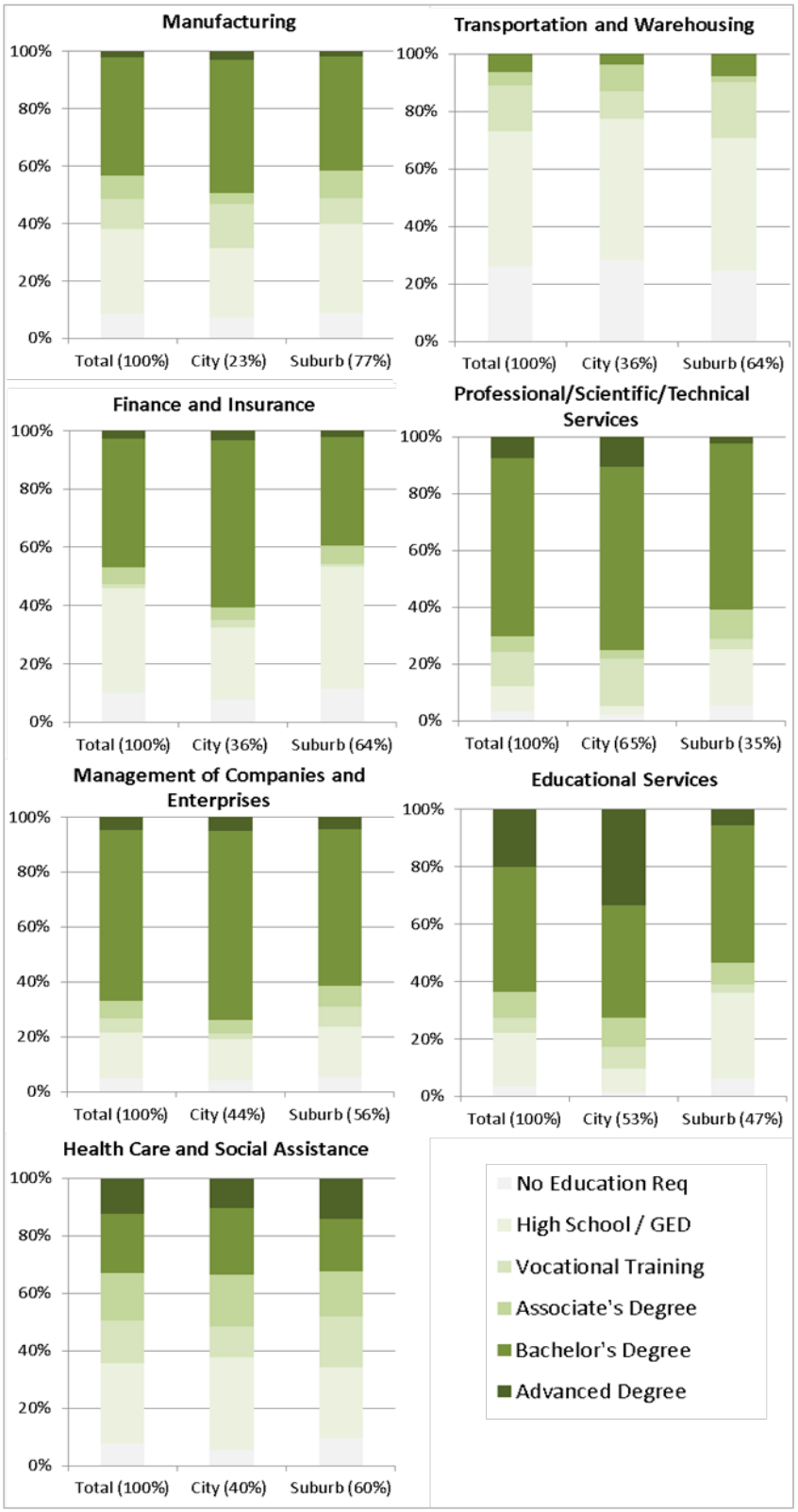

Figure 3-16: Education Requirements by Sector

3.5 Accessibility to Job Vacancies

One important measure of the usefulness of transit is the access it provides to destinations. More specifically in the context of this research: one important measure of the usefulness of transit for alleviating spatial mismatch is the access it provides from disadvantaged areas to job openings. Cumulative opportunity offers a simple, effective measure of the accessibility to destinations provided by transit: simply put, cumulative opportunity equals the number of destinations reachable from a given location in a given amount of travel time.

Figure 3-17 shows current transit accessibility to job vacancies by transit in the region. This map, as well as those below, shows transit accessibility at the census tract level—the color coding of each tract represents the number of jobs reachable by transit and/or walking in a total travel time of 45 minutes *from that tract.* Warm colors (red and orange) represent high accessibility; greens represent low accessibility. Not surprisingly, the highest levels of accessibility are concentrated in the central cities (particularly Minneapolis) where both transit service and job vacancies are fairly dense.

Striking, however, North Minneapolis has relatively low accessibility despite being in the central city, near the major employment center of downtown Minneapolis and an area of intense disadvantage. Other disadvantaged areas with poor transit access include Brooklyn Park in the northwest metro and Eastside Saint Paul.

Disadvantaged urban areas with low transit accessibility—particularly North Minneapolis—frequently have high levels of local bus service. However, this service is often quite slow, meaning that transit-dependent workers living in these areas face prohibitively long commutes even to spatially proximate jobs. In such cases, a transit-dependent worker may have a short walk to a bus stop and a short wait for a bus, but still face an unreasonable commute.

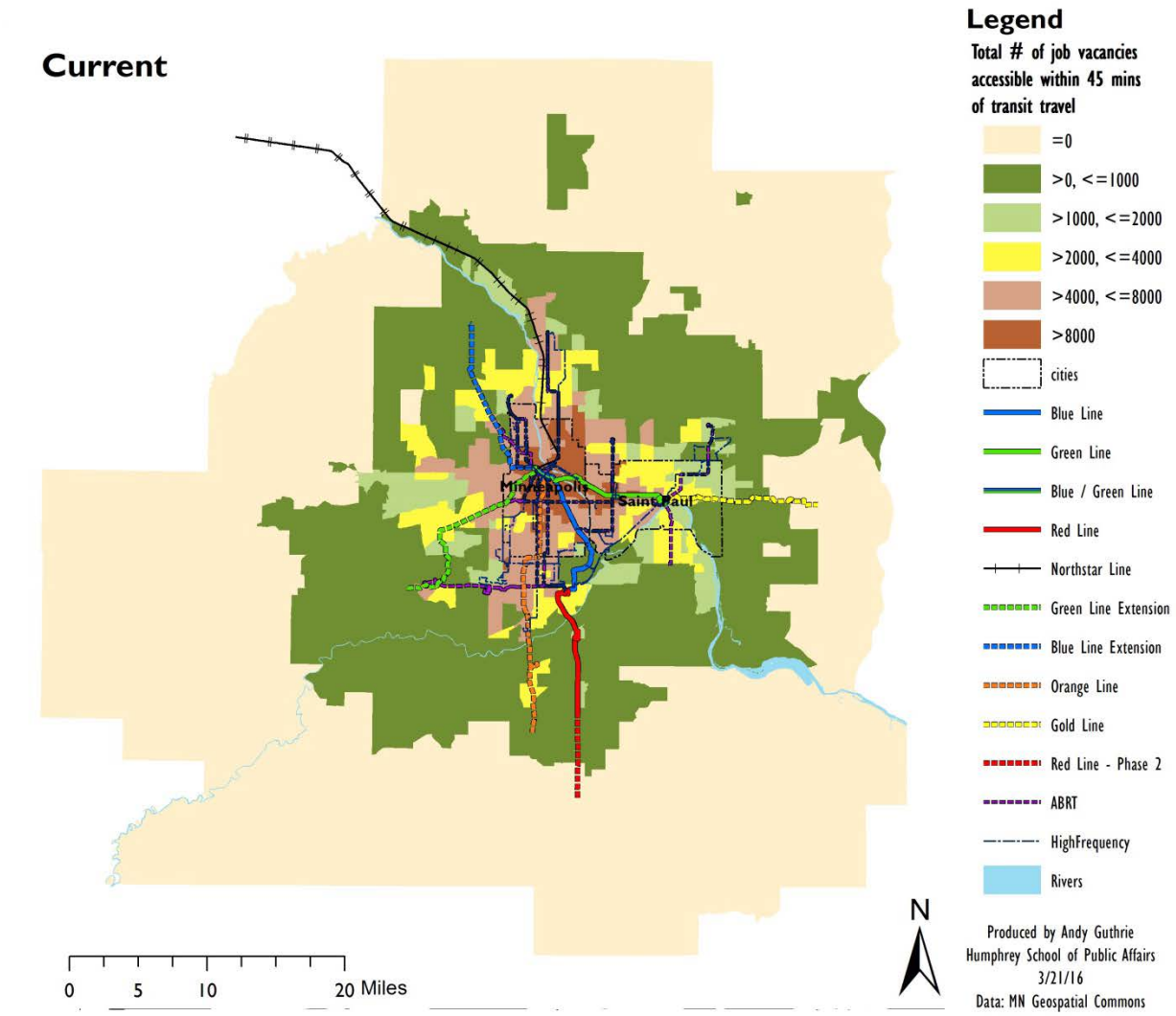

Figure 3-17: Current Transit Job Vacancy Accessibility

3.5.1 Effect of Proposed Improvements

Figure 3-18 shows what transit accessibility to job vacancies will be if the proposed 2040 regional transitway system is built. As many of the transit lines in this map do not yet exist, the alignments, station locations and schedules are, at times, based on the authors' best estimates, arrived at in consultation with transit agency and local government staff. In addition, while the hypothetical, future transit network includes the regular bus system, a lack of finalized plans for bus system changes precluded the full integration of bus connections into the future transit network. As a result, any accessibility gains found are likely to be somewhat conservative.

For the map of the proposed future transit system, accessibility (not surprisingly) increases noticeably along new transitway corridors. North Minneapolis in particular gains significantly, now falling almost entirely into the two highest accessibility categories. Despite greater distance from downtown Minneapolis, Brooklyn Center and Brooklyn Park see significant accessibility gains as well. Eastside Saint Paul gains in accessibility as well, but the gains are considerably smaller.

The accessibility benefits to disadvantaged areas largely accrue from faster regional mobility, bringing more employment centers within the allowable travel time. Though fewer in number than local bus routes, light rail and BRT lines allow transit users to cover distance sufficiently faster to have significant accessibility even beyond immediate station areas.

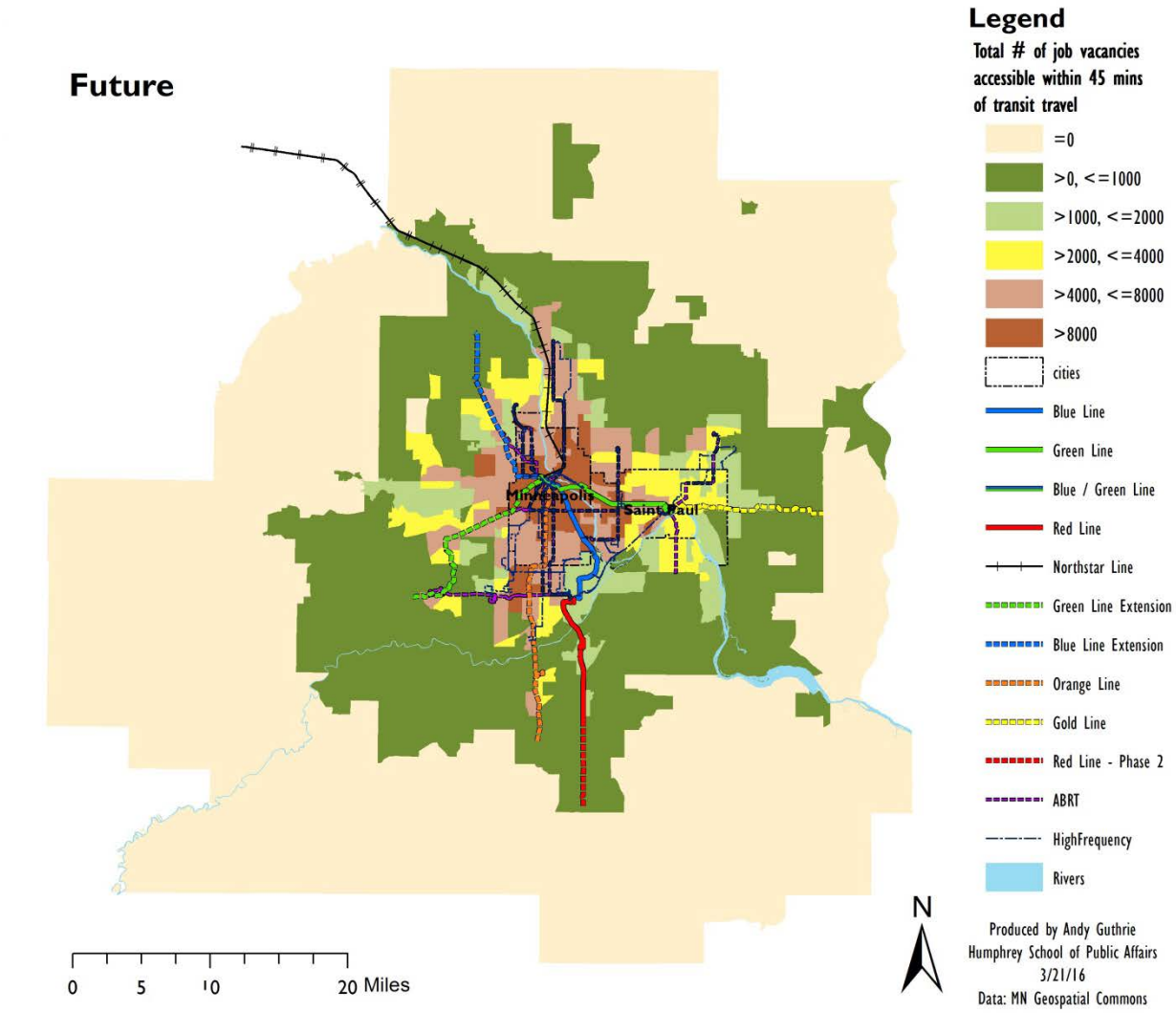

Figure 3-18: Future Transit Job Vacancy Accessibility

Figure 3-19 shows the *change* in accessibility between the present and full buildout of the proposed regional transitway system. Here, red and orange show large gains in accessibility while greens show little to no gain. This map makes some accessibility benefits easier to see by taking the present-day baseline into account in showing relative change. Here, the benefits that accrue to North Minneapolis and Brooklyn Park are even more apparent. Eastside Saint Paul actually shows strong growth in accessibility to job vacancies, despite having fewer nearby employment centers the North Minneapolis. In addition, the long-disadvantaged Phillips neighborhood in South Minneapolis sees strong accessibility gains, despite having high absolute accessibility currently.

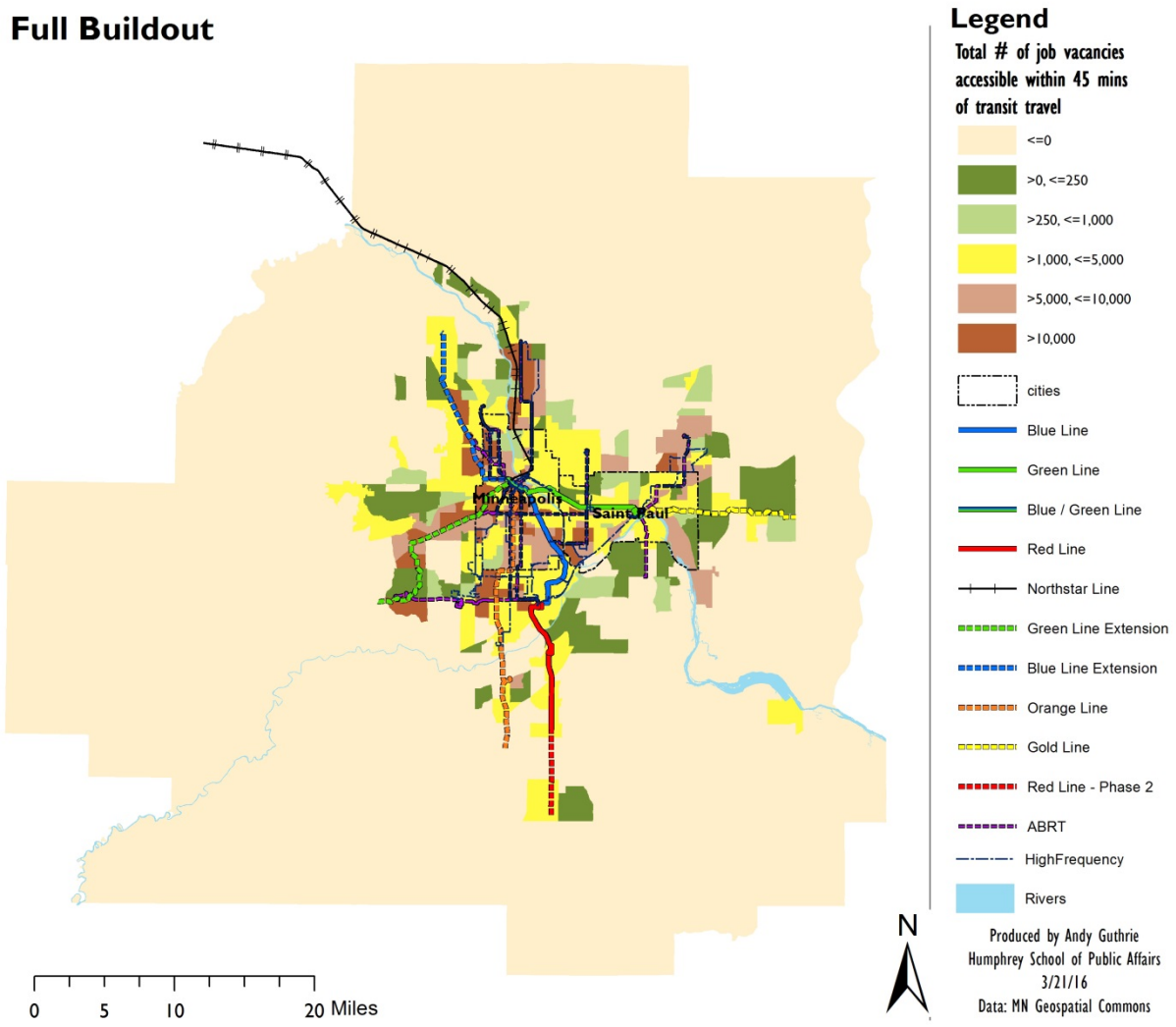

Figure 3-19: Change in Transit Accessibility to Job Vacancies

3.5.2 Accessibility by Sector

The following maps show accessibility to job vacancies broken down by sector. Figure 3-20 shows accessibility to manufacturing job vacancies. Currently, high transit accessibility to manufacturing jobs is strongly concentrated in the north metro, with isolated pockets in the Midway area of Saint Paul and the outer southwest metro. While North Minneapolis has generally good manufacturing job vacancy accessibility, there are pockets of poor access.

Full buildout of the proposed regional transitway system would significantly broaden transit accessibility to manufacturing jobs. Several areas in the south and southwest metro see moderate to strong accessibility gains, while North Minneapolis becomes an area of uniformly good accessibility.

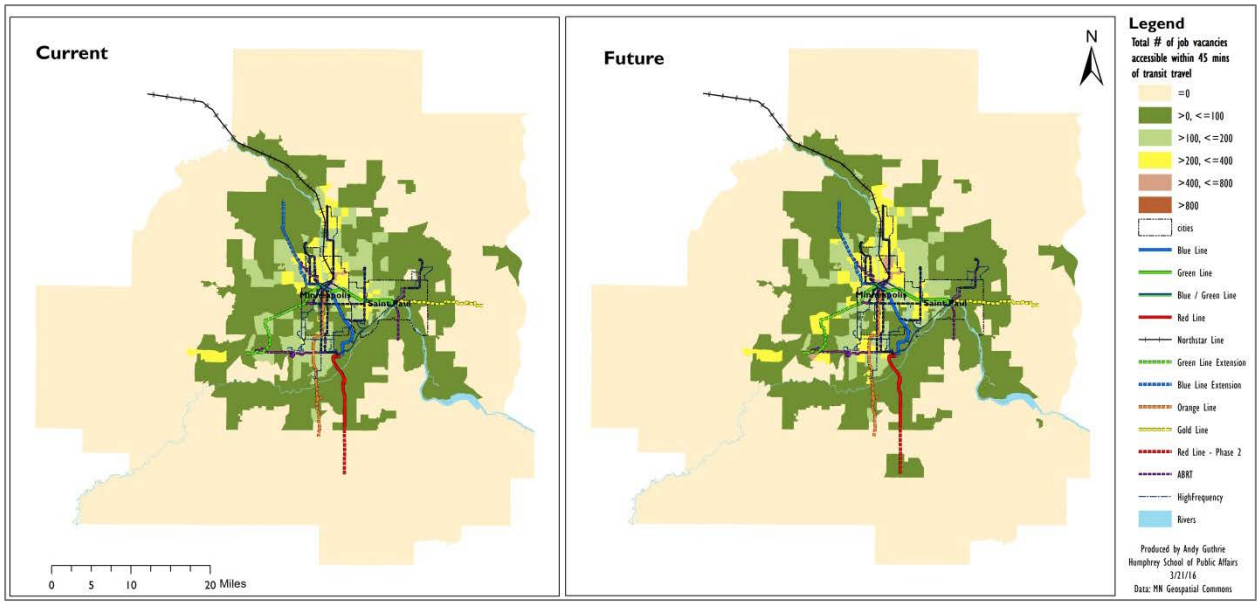

Figure 3-20: Transit Accessibility to Manufacturing Job Vacancies

Figure 3-21 shows transit job accessibility to jobs in the transportation and warehousing sector. Currently, high accessibility is concentrated in the Midway area, as well as the Phillips and Longfellow neighborhoods in South Minneapolis, as well as inner suburbs such as Roseville. The proposed future regional transit system would not dramatically change the geographic distribution of accessibility to transportation and warehousing job vacancies, though it would fill in gaps in generally good accessibility in Midway.

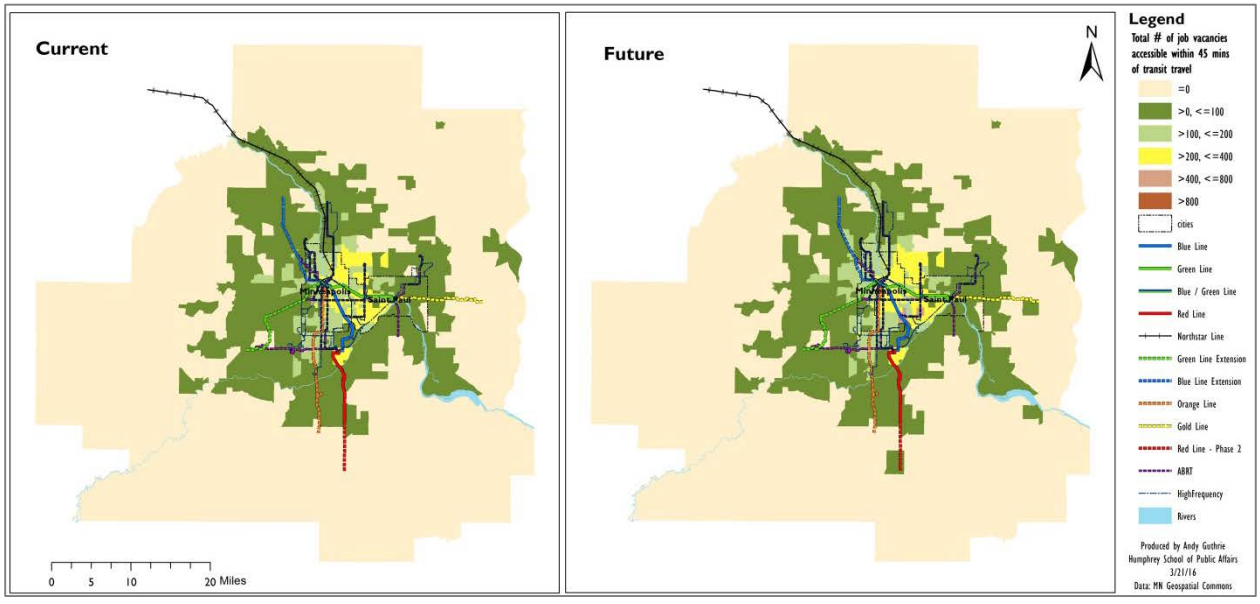

Figure 3-21: Transit Accessibility to Transportation and Warehousing Job Vacancies

Figure 3-22 shows accessibility to job vacancies in the educational services sector. Downtown Minneapolis, Southeast Minneapolis and parts of Saint Paul have the strongest accessibility to educational services job vacancies—likely due in large part to proximity to the University of Minnesota. With the exception of moderate accessibility gains in the southwest and north suburbs, relatively little changes with the implementation of the proposed regional transitway system.

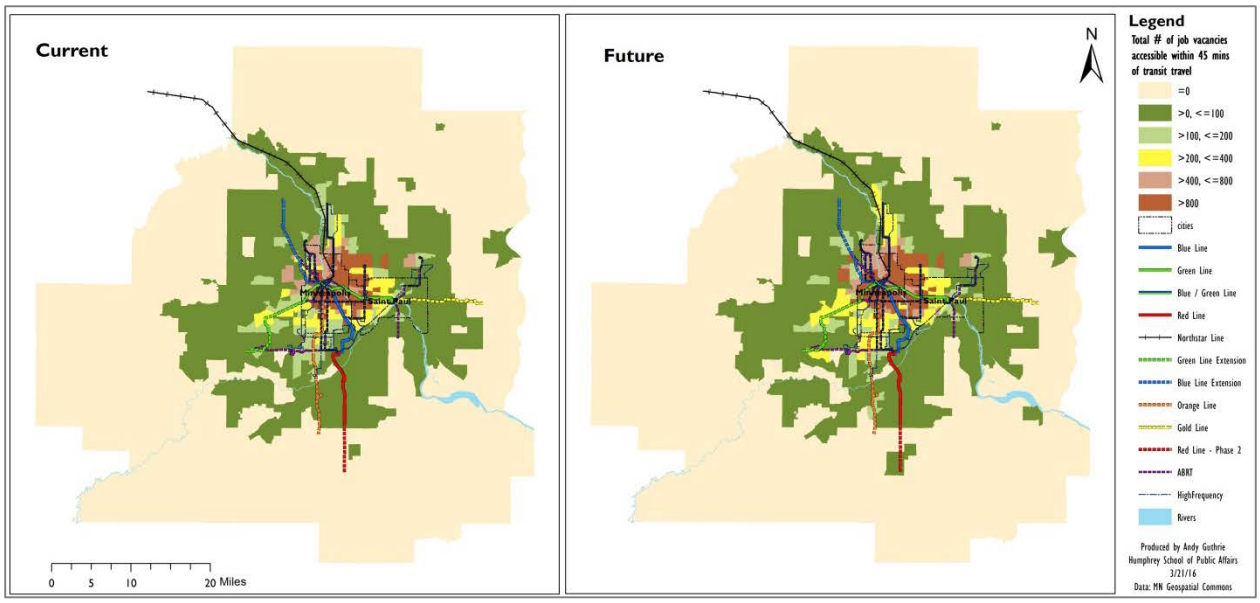

Figure 3-22: Transit Accessibility to Educational Services Job Vacancies

Figure 3-23 shows accessibility to job vacancies in the health care and social assistance sector. Accessibility is generally quite strong in areas of the region served by existing transitways and the core local bus system. With relatively few exceptions along proposed lines, few changes appear in the future.

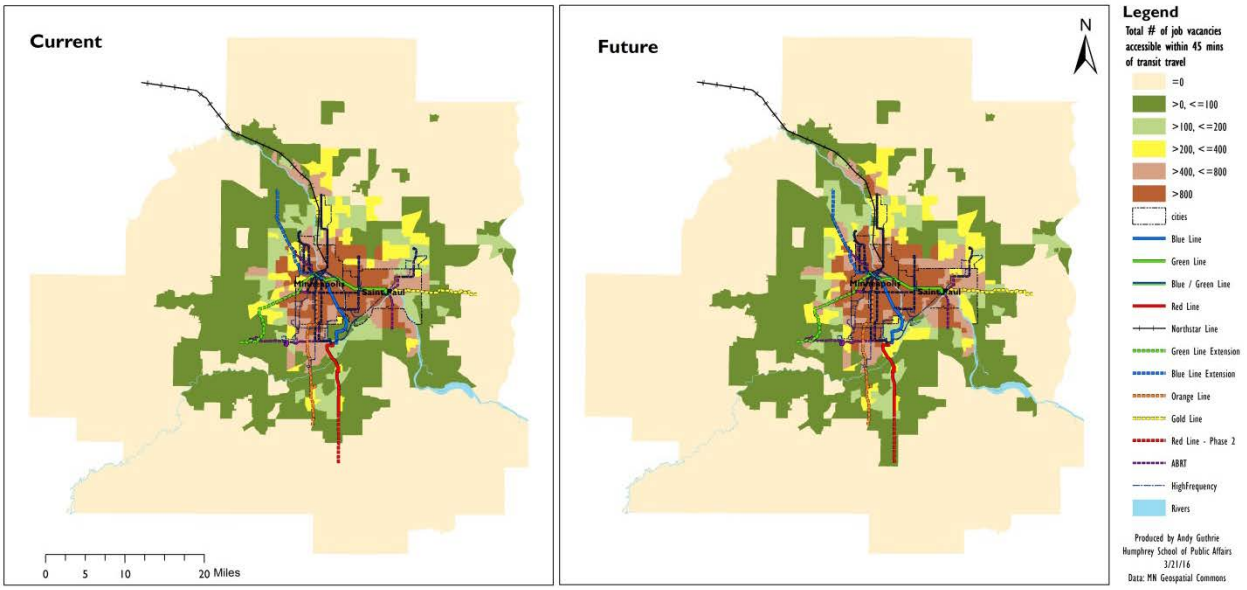

Figure 3-23: Transit Accessibility to Health Care and Social Assistance Job Vacancies

Figure 3-24 shows accessibility to job vacancies—which appears to be largely a function of proximity to downtown Minneapolis. While some areas directly along proposed transitways would see accessibility gains under the proposed future transit system, proximity to downtown Minneapolis would still appear to be the dominant factor.

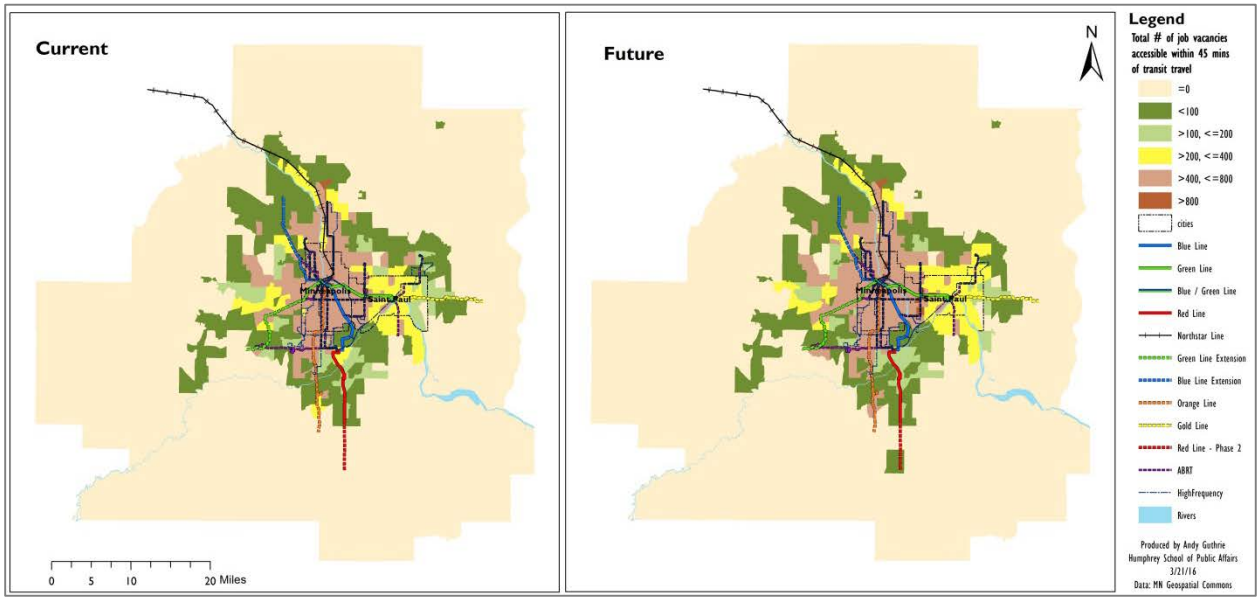

Figure 3-24: Transit Accessibility to Finance and Insurance Job Vacancies

Figure 3-25 shows accessibility to job vacancies in the management of companies and enterprises sector. Similar to the finance and insurance sector, high accessibility is largely a function of proximity to downtown Minneapolis both currently and in the future, though a full regional transitway buildout would bring moderate accessibility improvements in Saint Paul and the southwest metro.

Note that all sector accessibility maps use the same accessibility scale, and therefore allow direct comparisons between sectors. The educational services and health care and social assistance sectors have excellent overall accessibility, at least in the inner metro, while finance and insure and management of companies and enterprises have fewer areas of extremely high accessibility with more widely distributed areas of moderately high accessibility. Manufacturing and transportation and warehousing have considerably lower transit accessibility overall.

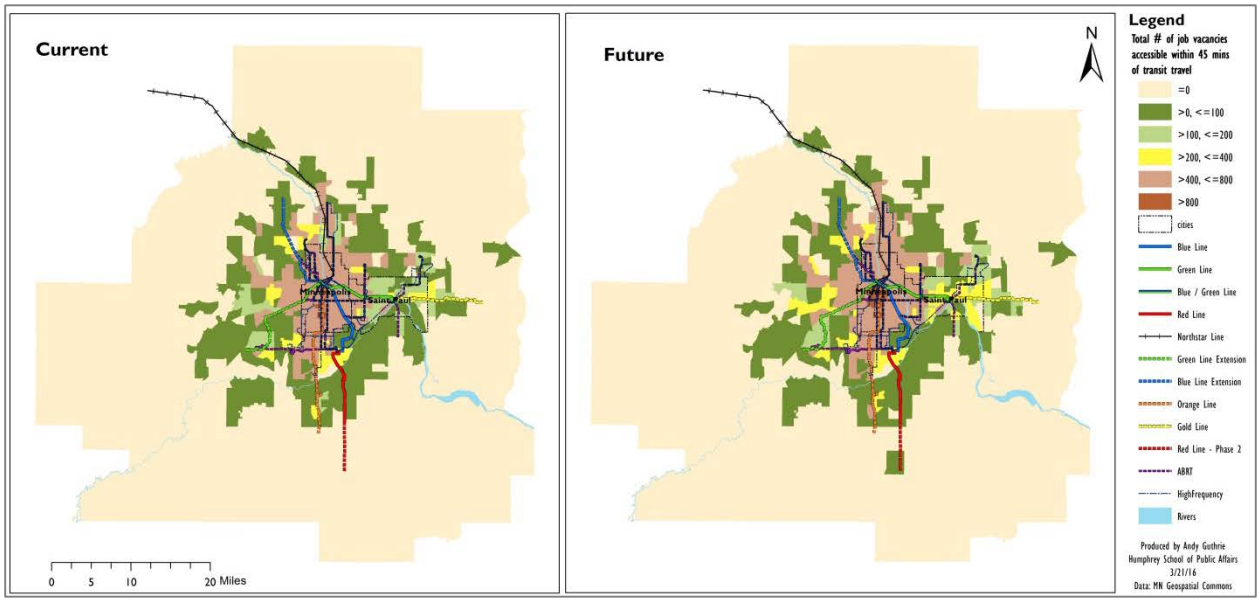

Figure 3-25: Transit Accessibility to Management of Companies and Enterprises Job Vacancies

3.6 Transit Build-Out Scenarios

The maps in the previous section compare current transit accessibility to job vacancies with future accessibility assuming the proposed regional transitway system is implemented in its entirety. Funding difficulties, convoluted processes and the vagaries of politics, however, mean that full implementation is far from assured. What might the result be if only some proposed transit corridors are implemented? To answer this question, the following section shows accessibility changes under three partial transitway buildout scenarios, specifically:

- *No Green Line Extension or Blue Line Extension*—Under this scenario, the region's next two light rail lines (serving Minneapolis and the southwest and northwest metro) are not implemented.
- *No Arterial BRT*—Under this scenario, the already-under-construction A Line opens as planned, but no further arterial Bus Rapid Transit is implemented.
- *No East Metro Improvements*—Under this scenario, the proposed Metro Gold Line, as well as the Rush Line and Red Rock corridors are not implemented.

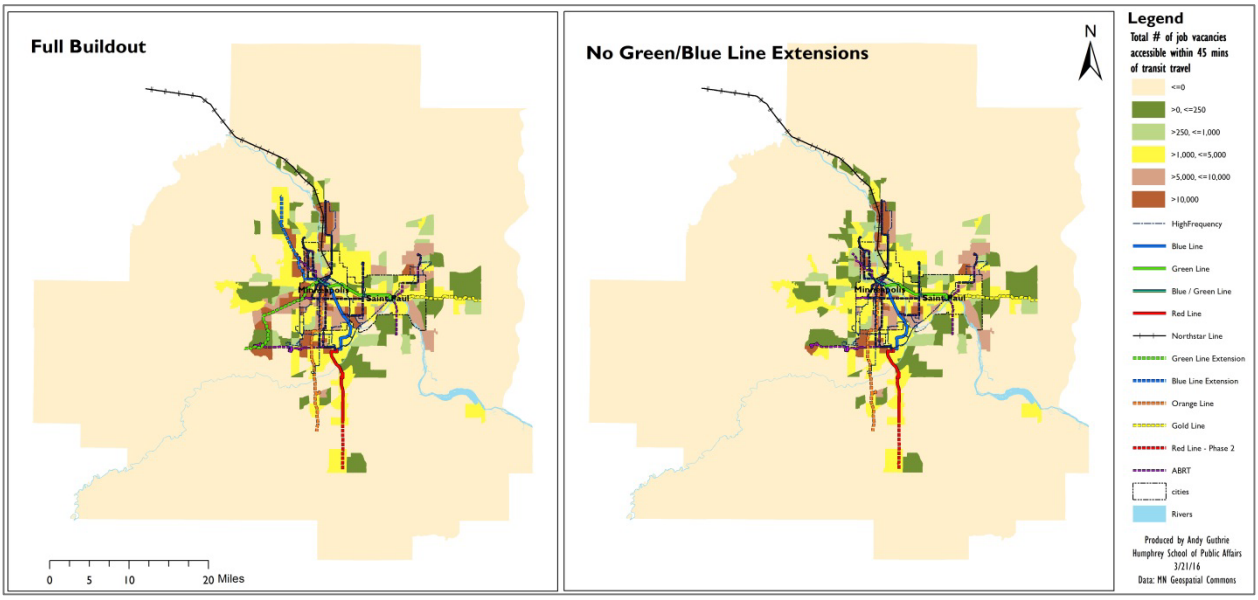

Figure 3-26: Change in Job Vacancy Accessibility by Transit: Full Buildout vs. No Green/Blue Line Extension

Figure 3-26 compares change in accessibility to job vacancies under the full buildout scenario with change in accessibility to job vacancies if the Metro Green Line Extension and Metro Blue Line Extension light rail projects are not implemented. The difference in accessibility gains for North Minneapolis and the Brooklyn Center/Brooklyn Park area is especially stark: weak accessibility gains in these areas under the partial buildout scenario underscore the importance of the Green and Blue Line Extensions in alleviating spatial mismatch in these intensely disadvantaged areas.

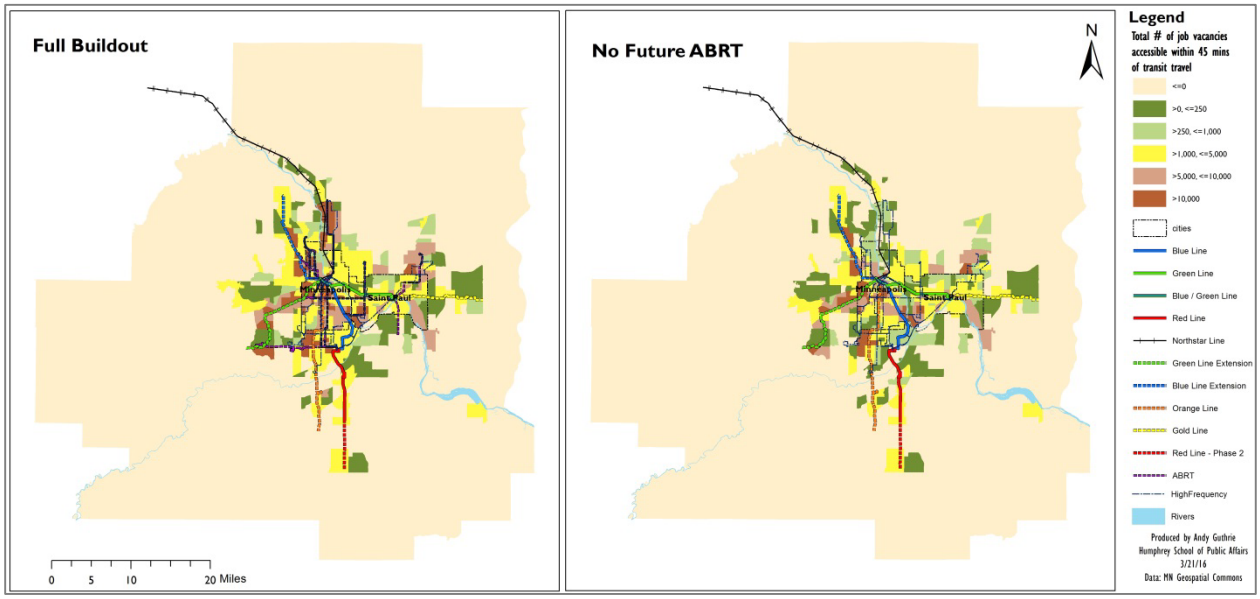

Figure 3-27: Change in Job Vacancy Accessibility by Transit: Full Buildout vs. No Further ABRT

Figure 3-27 compares changes in transit accessibility to job vacancies under the full buildout scenario with changes in accessibility if no arterial bus rapid transit beyond the A Line (which is already under construction) is implemented as part of future transit improvements. Most major areas of accessibility gains remain in the partial buildout scenario, but, once again, North Minneapolis gains significantly less accessibility, especially to the east, where most improvements will come in the form of arterial bus rapid transit. Eastside Saint Paul also sees noticeably lesser accessibility gains. While the localized impacts of not continuing arterial BRT implementation appear less intense than those of not continuing light rail implementation, they still disproportionately fall on disadvantaged communities.

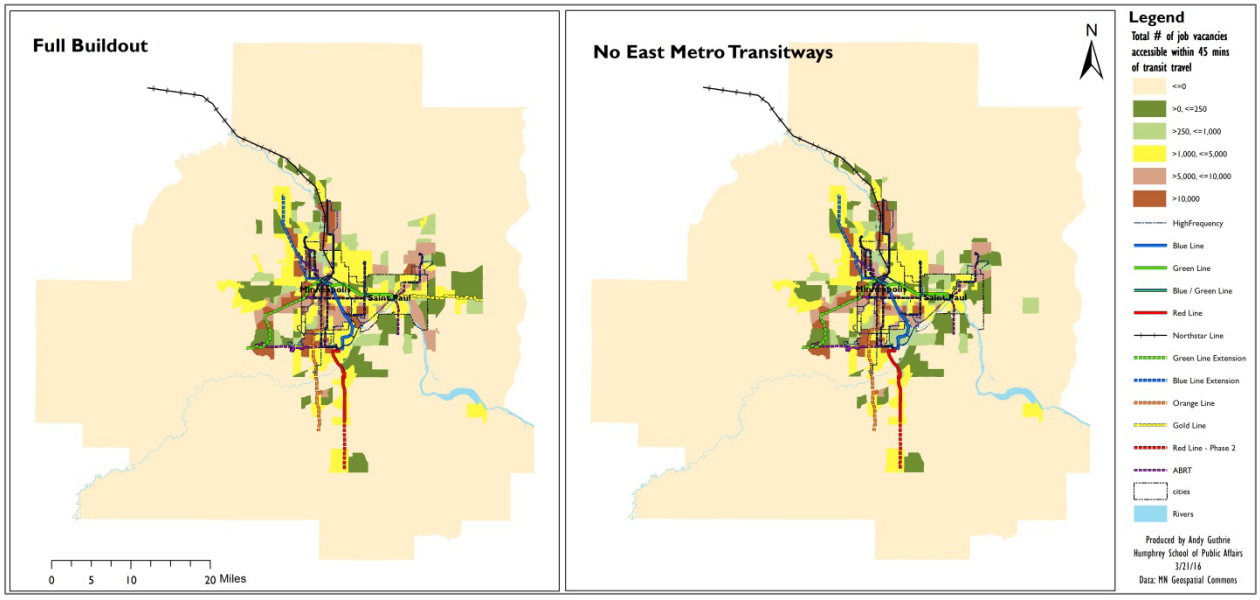

Figure 3-28: Change in Job Vacancy Accessibility by Transit: Full Buildout vs. No East Metro Transitways

Figure 3-28 compares changes in job vacancies accessible by transit assuming a full buildout of proposed transitways with changes in accessibility if the Metro Gold Line, the Rush Line and the Red Rock Corridor (all in the east metro) are not implemented. Not surprisingly, the greatest difference in accessibility changes appears in the east metro, but the differences extend to other parts of the region as well. In particular, the Midway area of Saint Paul gains significantly less accessibility to job vacancies without proposed east metro transitways. Some disadvantaged areas of Eastside Saint Paul also gain little or no accessibility under the partial buildout scenario.

Figure 3-29 shows population-weighted average accessibility for current conditions, full buildout and the three partial buildout scenarios. Weighting for population takes into account the numbers of people affected by accessibility changes, in addition to the underlying changes themselves. In other words, an accessibility gain affecting many people has more impact on the average than an equivalent accessibility gain affecting few people. Population weighting also takes into account the fact that the transit system primarily serves the most heavily-populated parts of the region. The full buildout weighted average of 2,712 represents a moderately significant increase over the current weighted average of 2,390. This the greatest difference—between current conditions and the entire proposed system—with the partial buildout scenarios all falling between 2,621 and 2,696, reflecting the fact that each of them represents building most of the proposed future system.

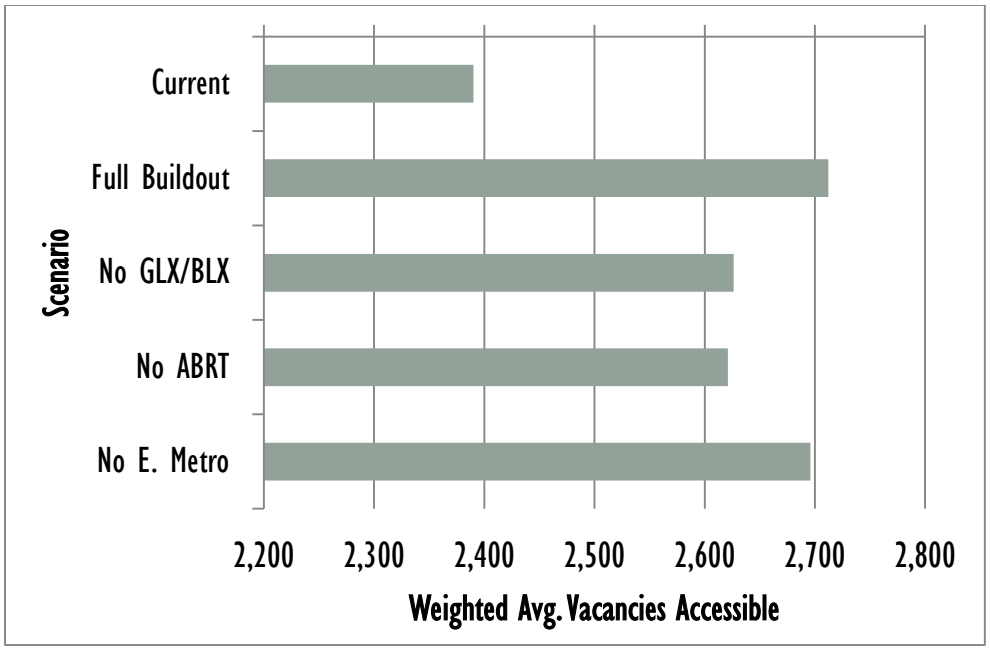

Figure 3-29: Population-Weighted Average Accessibility by Scenario

From an accessibility standpoint (though not necessarily from a demand or operational perspective), no specific transitway is indispensable—any improvements will improve accessibility in some areas. Even so, the greatest benefits come from the full buildout scenario. Most significantly for this research, a full buildout provides the greatest benefits to disadvantaged communities and goes farthest in alleviating spatial mismatch.

3.7 Discussion

Spatial mismatch is a serious problem in the Twin Cities region, and it appears to have gotten worse since the turn of the millennium due to suburbanization of job vacancies and the lingering effects of the Great Recession. As things stand now, the greatest concentrations of unemployed workers (often located in historically marginalized areas) lack functional transit access to some of the richest concentrations of job vacancies, particularly in the south and southwest metro.

In addition, while the authors lack a regional dataset for the specific qualifications of unemployed workers, comparison of spatial concentrations of job vacancies by sector with high-demand occupations in those industries suggests a way for coordination of workforce development and transit planning to simultaneously address spatial and skills mismatch. Focusing on high-demand, low education occupations common in important sectors, in areas with good transit access to concentrations of job vacancies in those areas (such as production workers in areas with good access to the southwest metro or drivers of heavy vehicles in areas with good access to Midway and/or MSP Airport), may allow workforce development professionals to significantly broaden the spatial extent of their efforts to align clients with jobs they might do well in and could be trained for. Such a broadening could also allow the placing of transportation-disadvantaged clients in more diverse industries and occupations that would otherwise be possible.

Access to job vacancies by transit is far from even in the region. While many disadvantaged areas in the inner city have high levels of transit access, North Minneapolis, Eastside Saint Paul and parts of Midway—all areas of intense disadvantage—have relatively low levels of accessibility for their location in the region. Such areas stand to benefit significantly from proposed regional transit improvements, most strongly so if *all* proposed future transitways are implemented.

4 Sweet Spots

Figure 4-1 shows the most common words mentioned in the occupation field of the Job Vacancy Survey data from 2011 to 2014 in the seven high-demand sectors identified in Chapter 3. More frequently mentioned words appear in larger, heavier type. While many of the prominent words appear to refer to occupations likely to require long-term training or postsecondary degrees, words such as "assistants", "workers", "clerks", "health", "drivers" and "manufacturing" point to common vacancies in occupations likely to pay a living wage, yet only require a high school education or vocational training. More than that, the word cloud suggests that living wage job vacancies disadvantaged workers are likely to be qualified or easily trainable are concentrated in a relatively small number of occupations. Such concentration would allow for large benefits from training programs focused on a relatively small number of high-demand occupations.

Figure 4-1: Most Common Words—Occupations in High-Demand Sectors

Differences in education and training requirements, and local differences in transit accessibility by occupation and sector mean there are certain areas of the region where workforce development efforts aimed at preparing disadvantaged workers for jobs in specific occupations will have especially high prospects for broad success. These areas and occupations represent "sweet spots" for workforce development and transit planning—paths of least resistance along which any level of investment may help a disproportionate number of people. The following chapter identifies the most prominent such

sweet spots in the seven high-demand industry sectors identified in Chapter 3 and discusses their importance to integrated transit planning and workforce development in the region.

4.1 Educational Services

Table 4-1 shows occupations in the upper quartile of total job vacancies *and* the upper quartile by percentage of vacancies not requiring a postsecondary degree *and* which offer a median wage of at least $11.00 per hour—defined as a living wage for the Minneapolis-Saint Paul metropolitan area by the Glasmeier living wage calculator at the Massachusetts Institute of Technology. All columns in this tables (and the following tables for other sectors) are based on job vacancy data from 2011 to 2014 in the second and fourth quarters of each year. As such the occupations that result are occupations in high demand that are relatively unlikely to require education beyond a high school diploma and/or vocational training and that are likely to pay well. These occupations represent sweet spots for workforce development in the educational services sector in the Twin Cities metropolitan area. All values in this and the following tables represent totals for the entire dataset from 2011 to 2014. Job vacancies captured by the job vacancy survey in any given sector/occupation pairing are relatively infrequent occurrences, due simply to sample size. While the weights provided in the survey data allow for an accurate representation of job vacancies at a large scale, fine divisions such as a specific occupation within a specific sector are more reliably represented by aggregating all four years' data.

Table 4-1: Sweet Spot Occupations - Educational Services

Occupation	No Postsecondary Degree Req'd	Median Wage	# of Positions	% of sector
Food Preparation Workers	100%	$11.31	101	0.45%
Cooks, Institution and Cafeteria	87%	$13.26	80	0.36%
Maintenance and Repair Workers, General	85%	$15.70	52	0.23%
Office Clerks, General	80%	$14.02	233	1.04%
Security Guards	74%	$12.97	28	0.12%
Coaches and Scouts	73%	$15.00	1,696	7.58%
Bookkeeping, Accounting, and Auditing Clerks	70%	$14.94	42	0.19%
Recreation Workers	69%	$12.00	206	0.92%
Childcare Workers	66%	$11.85	544	2.43%
Customer Service Representatives	65%	$13.91	96	0.43%
Receptionists and Information Clerks	58%	$15.13	53	0.24%
Executive Secretaries and Executive Administrators	55%	$14.97	123	0.55%
Medical and Clinical Laboratory Technicians	52%	$15.30	34	0.15%
Teacher Assistants	49%	$13.48	2,365	10.57%
Social and Human Service Assistants	41%	$16.00	147	0.66%

Support staff, such as food service and maintenance workers are least likely to require higher education. Some clerical occupations have high percentages of jobs with lower education requirements as well. Percentages of vacancies not requiring a postsecondary degree decline quickly, indicating an understandable prevalence of vacancies with high education requirements in the educational services

sector. Teacher assistants, coaches and scouts, and childcare workers have the greatest total numbers of vacancies; coaches and scouts are the least likely of these to require a postsecondary degree.

4.2 Finance and Insurance

Table 4-2 shows sweet spot occupations in the Finance and Insurance sector. Tellers are the least likely to require a postsecondary degree, with 99% of all vacancies in the sector not doing so. Clerical and administrative positions make up most of the other occupations most likely to have low education requirements. Though loan officers are somewhat more likely to require a postsecondary degree, 60% of vacancies do not, and the occupation pays especially well, with a median hourly wage of $21.01. Other sweet spot occupations in the finance and insurance sector other than tellers and bill and account collectors offer median hourly wages in the high teens. Occupations with the greatest numbers of vacancies are generally more likely than not to require a postsecondary degree, with the exceptions of tellers and customer service representatives (the common occupation in terms of vacancies). Starting wages range from the $11.00/hour cutoff to nearly double that amount.

One encouraging aspect of sweet spot occupations in this sector is that many of them appear likely to require similar basic skill sets. It may be possible to train workers for a number of different clerical positions with a single vocational training program, for example.

Table 4-2: Sweet Spot Occupations - Finance and Insurance

Occupation	No Postsecondary Degree Req'd	Median Wage	# of Positions	% of sector
Tellers	99%	$11.00	964	4.84%
Bill and Account Collectors	87%	$14.42	171	0.86%
Loan Interviewers and Clerks	86%	$18.27	184	0.92%
Secretaries and Administrative Assistant	79%	$16.49	364	1.83%
Insurance Claims and Policy Processing Clerks	77%	$15.91	312	1.57%
Executive Secretaries and Executive Administrators	75%	$18.75	185	0.93%
Bookkeeping, Accounting, and Auditing Clerks	75%	$17.34	114	0.57%
Customer Service Representatives	73%	$15.07	1,447	7.27%
Loan Officers	60%	$21.01	352	1.77%
Computer User Support Specialists	49%	$19.76	417	2.09%
Personal Financial Advisors	45%	$15.39	1,264	6.34%
Securities, Commodities, and Financial S	43%	$19.76	564	2.83%
Insurance Sales Agents	42%	$19.09	977	4.91%
Claims Adjusters, Examiners, and Investigators	39%	$19.95	234	1.17%

4.3 Health Care and Social Assistance

Table 4-3 show sweet spot occupations in the health care and social assistance sector. Relatively lower paid occupations, such as home health aides, cooks, nursing assistants and security guards are most likely not to require postsecondary degrees. Occupations with 90% or below of vacancies not requiring a

postsecondary degree pay noticeably better, such as Maintenance and Repair Workers, General ($14.00/hour), Medical Secretaries ($15.00/hour) and Emergency Medical Technicians and Paramedics ($18.00/hour). Interpreters and Translators may offer an especially good option for immigrant workers who speak languages in demand: 83% of vacancies do not require a postsecondary degree, and the median wage offered is $23.00 per hour. For native speakers of in-demand languages such as Spanish, Somali and Hmong, English-as-a-second-language classes, basic soft skills training or even merely the information that speaking their native tongue is a marketable skill could be the gateway to a well-paying job. In terms of sheer numbers, this sector performs quite well, and many of the highest demand occupations are also among the least likely to require a postsecondary degree. Though their median starting wages are relatively low, home health aides and nursing assistants stand out in terms of vacancies and few postsecondary education requirements.

Table 4-3: Sweet Spot Occupations - Health Care and Social Assistance

Occupation	No Postsecondary Degree Req'd	Median Wage	# of Positions	% of sector
Home Health Aides	98%	$11.00	5,306	9.54%
Cooks, Institution and Cafeteria	96%	$12.00	208	0.37%
Nursing Assistants	96%	$11.42	4,109	7.39%
Security Guards	94%	$12.60	85	0.15%
Receptionists and Information Clerks	91%	$12.02	989	1.78%
Healthcare Support Workers, All Other	90%	$11.50	238	0.43%
Maintenance and Repair Workers, General	90%	$14.00	83	0.15%
Medical Secretaries	87%	$15.00	547	0.98%
Medical Equipment Preparers	84%	$17.08	98	0.18%
Emergency Medical Technicians and Paramedics	83%	$18.00	75	0.13%
Interpreters and Translators	83%	$23.00	100	0.18%
Billing and Posting Clerks	82%	$15.00	65	0.12%
Office Clerks, General	80%	$12.07	144	0.26%
Interviewers, Except Eligibility and Loa	77%	$14.00	113	0.20%
Secretaries and Administrative Assistant	77%	$16.00	177	0.32%
Recreation Workers	76%	$13.25	176	0.32%

4.4 Management of Companies and Enterprises

Table 4-4 shows sweet spot occupations for the Management of Companies and Enterprises sector. While none of the sweet spot occupations are as likely not to require a postsecondary degree as in other sectors, there are still eight in which a majority of vacancies do not. The Executive Secretaries and Executive Administrative Assistants occupation is notable for its relatively high percentage of vacancies which do not require a postsecondary degree (80%) and for its exceptionally high median hourly wage ($26.44). While the 20% of vacancies which do require higher education may account for many of the above-median hourly wages, sheer weight of number indicates this occupation offers a significant number of well-paying jobs for less well-educated workers. While somewhat more likely to require a

postsecondary degree, Human Resources Assistants, Except Payroll and Bookkeeping, Accounting and Auditing Clerks both also offer median wages over $20 per hour. Billing and Account Collectors and Secretaries and Administrative Assistants pay in the mid to high teens, but have higher percentages of vacancies that do not require a college degree and are also occupations that show up as sweet spots for other sectors as well, potentially allowing for economies of scale and improved chances of success in training programs focused on them. Relatively few of the identified occupations in the management sector have large numbers of vacancies. One exception, however, is customer service representatives, with 436 vacancies, 62% of which do not require a postsecondary degree.

Table 4-4: Sweet Spot Occupations - Management of Companies and Enterprises

Occupation	No Postsecondary Degree Req'd	Median Wage	# of Positions	% of sector
Receptionists and Information Clerks	89%	$12.02	35	0.23%
Bill and Account Collectors	87%	$17.00	48	0.32%
Executive Secretaries and Executive Administrative Assistants	80%	$26.44	95	0.63%
Secretaries and Administrative Assistant	79%	$14.00	114	0.75%
Social and Human Service Assistants	63%	$13.00	29	0.19%
Customer Service Representatives	62%	$13.97	436	2.90%
Human Resources Assistants, Except Payroll	61%	$23.08	31	0.21%
Bookkeeping, Accounting, and Auditing Clerks	55%	$21.64	91	0.61%
Sales Representatives, Services, All Other	50%	$16.83	83	0.55%
Billing and Posting Clerks	47%	$17.00	25	0.17%
Medical Records and Health Information Technicians	41%	$14.42	63	0.42%
Computer User Support Specialists	40%	$24.00	89	0.59%
First-Line Supervisors of Retail Sales Workers	38%	$12.75	186	1.24%
Production, Planning, and Expediting Clerks	35%	$24.13	36	0.24%
Sales Representatives, Wholesale and Managerial	28%	$21.64	42	0.28%

4.5 Manufacturing

Table 4-5 shows sweet spot occupations for the manufacturing sector. The manufacturing sector is notable for including a large number of in-demand occupations offering a living wage in which the overwhelming majority of job vacancies do not require a postsecondary degree. Indeed, no less than seven of the most in-demand occupations in manufacturing have no vacancies at all that require a postsecondary degree. Occupations like Cutting, Punching and Press Machine Setters, Welders, Cutters, Solderers and Brazers, and Tool and Die Makers stand out particularly in having very few higher education requirements (or none at all) and paying hourly wages in the high teens or better. While most individual occupations have small numbers of vacancies, this fact is offset by the large number of occupations fitting the selection criteria. The machinists occupation stands out in terms of offering a large number of vacancies, with a high median starting wage and few vacancies requiring a postsecondary degree.

Many of the better paid occupations in the manufacturing sector may require either prior experience or vocational training, but it may be possible to place inexperienced workers in lower skilled positions, such as Assemblers and Fabricators, Team Assemblers or Helpers, Production Workers as a bottom rung on a career ladder.

Table 4-5: Sweet Spot Occupations – Manufacturing

Occupation	No Postsecondary Degree Req'd	Median Wage	# of Positions	% of sector
Assemblers and Fabricators, All Other	100%	$12.03	250	1.01%
Cutting, Punching, and Press Machine Set	100%	$17.71	348	1.41%
Food Batchmakers	100%	$11.63	219	0.88%
Laborers and Freight, Stock, and Materials Workers	100%	$13.07	275	1.11%
Machine Feeders and Offbearers	100%	$14.00	53	0.21%
Molding, Coremaking, and Casting Machine	100%	$15.00	153	0.62%
Team Assemblers	100%	$12.75	498	2.01%
Welders, Cutters, Solderers, and Brazers	97%	$16.83	356	1.44%
Shipping, Receiving, and Traffic Clerks	97%	$13.96	117	0.47%
Electrical and Electronic Equipment Asse	96%	$15.00	233	0.94%
Helpers--Production Workers	96%	$11.28	903	3.64%
Tool and Die Makers	96%	$21.00	69	0.28%
Multiple Machine Tool Setters, Operators	95%	$15.00	166	0.67%
Computer-Controlled Machine Tool Operators	95%	$18.00	702	2.83%
Stock Clerks and Order Fillers	93%	$15.00	107	0.43%
Production Workers, All Other	92%	$13.20	188	0.76%
Printing Press Operators	91%	$16.30	362	1.46%
Machinists	86%	$20.00	667	2.69%
Maintenance Workers, Machinery	72%	$21.64	196	0.79%
Secretaries and Administrative Assistant	71%	$16.00	122	0.49%
Industrial Machinery Mechanics	70%	$20.19	147	0.59%

4.6 Professional, Scientific and Technical Services

Table 4-6 shows sweet spot occupations for the Professional, Scientific and Technical Services sector. Only four occupations in this sector even have a majority of vacancies that do not explicitly require a postsecondary degree. The most likely occupations by far not to require higher education by far are Receptionists and Information Clerks and File Clerks. Two other clerical occupations—Payroll and Timekeeping Clerks, and Bookkeeping, Accounting and Auditing Clerks make the upper quartile of in-demand occupations in the sector in terms of low education requirements. This commonality suggests training for clerical occupations as a potentially fruitful approach to this sector, especially considering the fact that Professional, Scientific and Technical Services job vacancies are strongly concentrated in downtown Minneapolis, much as with vacancies in the Finance and Insurance sector, which also has a number of clerical sweet spots. This situation suggests significant value in workforce development

programs training disadvantaged workers with good transit access to downtown Minneapolis for clerical work. Numbers of vacancies in occupations meeting the selection criteria are relatively small, though one exception is customer service representatives, especially given how frequently this occupation appears in other sectors as well.

Table 4-6: Sweet Spot Occupations - Professional, Scientific and Technical Services

Occupation	No Postsecondary Degree Req'd	Median Wage	# of Positions	% of sector
Receptionists and Information Clerks	88%	$15.13	95	0.35%
File Clerks	72%	$13.67	39	0.14%
Executive Secretaries and Executive Administrators	50%	$14.97	112	0.41%
Human Resources Assistants, Except Payroll	50%	$17.31	55	0.20%
Customer Service Representatives	44%	$13.91	224	0.82%
Payroll and Timekeeping Clerks	43%	$15.24	28	0.10%
Bookkeeping, Accounting, and Auditing Clerks	40%	$14.94	105	0.38%
Computer Network Support Specialists	39%	$28.64	124	0.45%
Computer User Support Specialists	34%	$19.16	180	0.66%

4.7 Transportation and Warehousing

Table 4-7 shows sweet spot applications for the Transportation and Warehousing sector. The occupations shown in this sector deviate slightly from the selection criteria used for the other six high-demand sectors: the Transportation and Warehousing Sector contains a relatively small number of occupations overall, and yet contains a large number of occupations in which few, if any, vacancies require a postsecondary degree. Constraining the sweet spots for this sector to only those occupations in the upper quartile based on percentage of vacancies not requiring a postsecondary degree would have excluded a number of occupations in which the overwhelming majority of vacancies do not, in fact require a postsecondary degree. To compensate for the relatively low education requirements common to the sector,

Table 4-7 includes all occupations in which at least 90% of job vacancies do not require a postsecondary degree. (The bottom row of Table 4-7 is the 62nd percentile of job vacancies in the sector.)

Air Traffic Controllers is notable both for its high median hourly wage ($17.00) and for the excellent transit accessibility most vacancies in this occupation are likely to have, due to the probable prevalence of Metro Blue Line-served MSP International Airport as a workplace. Bus and truck drivers are prominent as well, and offer potential to train marginalized workers for multiple occupations through a single training program, as many of the skills and qualifications involved likely transfer between these occupations.

Heavy and tractor-trailer truck drivers stands out in terms of number of vacancies (with 2,866). In addition, drivers of other types of vehicles account for a further 780 vacancies, lending support to efforts to train disadvantaged workers to be professional drivers.

The prominence of both Bus Drivers, Transit and Intercity and Bus and Truck Mechanics and Diesel Engine Mechanics suggest an unusually close nexus between transit and workforce development in at least one area of intense disadvantage in the Twin Cities. Given these findings, it is impossible to ignore the proximity to and excellent transit access from North Minneapolis of Metro Transit's Heywood Garage facility—a major base of both bus drivers and mechanics, whom Metro Transit prefers to train in-house.

Table 4-7: Sweet Spot Applications - Transportation and Warehousing

Occupation	No Postsecondary Degree Req'd	Median Wage	# of Positions	% of sector
Air Traffic Controllers	100%	$17.00	9	0.08%
Bus Drivers, Transit and Intercity	100%	$16.83	517	4.44%
Couriers and Messengers	100%	$16.08	138	1.19%
Industrial Truck and Tractor Operators	100%	$15.12	114	0.98%
Light Truck or Delivery Services Drivers	100%	$16.32	149	1.28%
Postal Service Mail Carriers	100%	$15.30	489	4.20%
Shipping, Receiving, and Traffic Clerks	100%	$14.90	30	0.26%
Transportation Attendants, Except Flight	100%	$12.50	79	0.68%
Heavy and Tractor-Trailer Truck Drivers	99%	$20.00	2,866	24.63%
Laborers and Freight, Stock, and Materials Workers	99%	$12.60	745	6.40%
Bus and Truck Mechanics and Diesel Engine Mechanics	96%	$17.00	182	1.57%
Transportation Inspectors	95%	$19.98	39	0.34%
Dispatchers, Except Police, Fire, and Ambulance	94%	$18.00	92	0.79%

4.8 Discussion

The findings related in this chapter show that important paths of least resistance exist for locally-targeted workforce development efforts in the Twin Cities. In each of the seven highest demand sectors in the region, there are a significant number of occupations in which most job vacancies do not require postsecondary education and offer a livable median hourly wage. In addition, it appears possible to combine training programs across occupations and, in some cases, across sectors as well. It also appears that the region's primary transit agency itself may have a role to play in employing workers from one of the region's most disadvantaged areas.

5 Regional Dissimilarity Index

Mapping effectively shows local patterns of spatial mismatch, along with clues to local patterns of skills mismatch. It does not, however, offer an easy measure of the total *amount* of spatial mismatch in the region. This is particularly true of attempts to evaluate the spatial mismatch implications of proposed transit improvements. One can see clear changes in accessibility, and, as described in the preceding chapter, that disadvantaged areas benefit; on cannot clearly see the overall regional implications of those changes. For example—how do accessibility gains around proposed arterial bus rapid transit stations compare with accessibility losses around local bus stops that will see service cuts as ABRT is implemented? How do both compare with the large areas of the region that see little or no change in transit service at all?

A map reader's eye cannot readily answer these questions. A regional dissimilarity index, however, can. A dissimilarity index measures how homogenous or heterogeneous the distribution of two groups is among small geographic units of a larger region. Dissimilarity indices are frequently used as a measure of racial segregation, measuring how many residents of the average neighborhood would have to move to achieve uniform, regional integration. This study modifies the traditional dissimilarity index to compare the distributions of unemployed residents and *access* to job vacancies. Of course, having effective access to a job vacancy does not require that one live in the same neighborhood (here defined by census tract) as it, merely that one can reach it within a reasonable period of time by a mode of transportation to which one has access. (For this study's purposes: 30 minutes' travel by public transit with pedestrian access and egress.) Bearing this fact in mind, this chapter measures the dissimilarity between unemployed workers living in a given census tract and jobs accessible *from* that census tract.

5.1 Dissimilarity Index Defined

Specifically, the authors employ the formula: $\frac{1}{2}\sum_{i=1}^{N}\left|\frac{b_i}{B}-\frac{w_i}{W}\right|$ where:

b_i=the unemployed population of census tract *i*,

B=the total unemployed population of the region,

w_i=the number of job vacancies accessible by transit from census tract *i, and*

W=the total number of job vacancies in the region.

The value of a dissimilarity index always falls between zero and one. A value of zero would mean perfect heterogeneity—all unemployed workers would live in census tracts with no job accessibility by transit and vice-versa. A value of one would mean perfect homogeneity: all census tracts in the region would have the same unemployment rate and the same job accessibility as the overall averages for the region as a whole.

Note that the dissimilarity index does not measure how good one's access to employment is, either from the perspective of the region as a whole or the perspective of an unemployed worker; it merely measures how equitably access to employment is distributed with respect to unemployed workers. For

example, a region with poor transit access in disadvantaged areas can have a low dissimilarity index as long as transit access is poor elsewhere, and a region with good transit access in disadvantaged areas can have a high dissimilarity index as long as transit is even better elsewhere.

There is value, however, in measuring equity of access, especially in the context of a transit system which plans to make major improvements in the near future. The following chapter will detail the methods used to calculate the regional dissimilarity index, present the results and discuss their transportation equity implications.

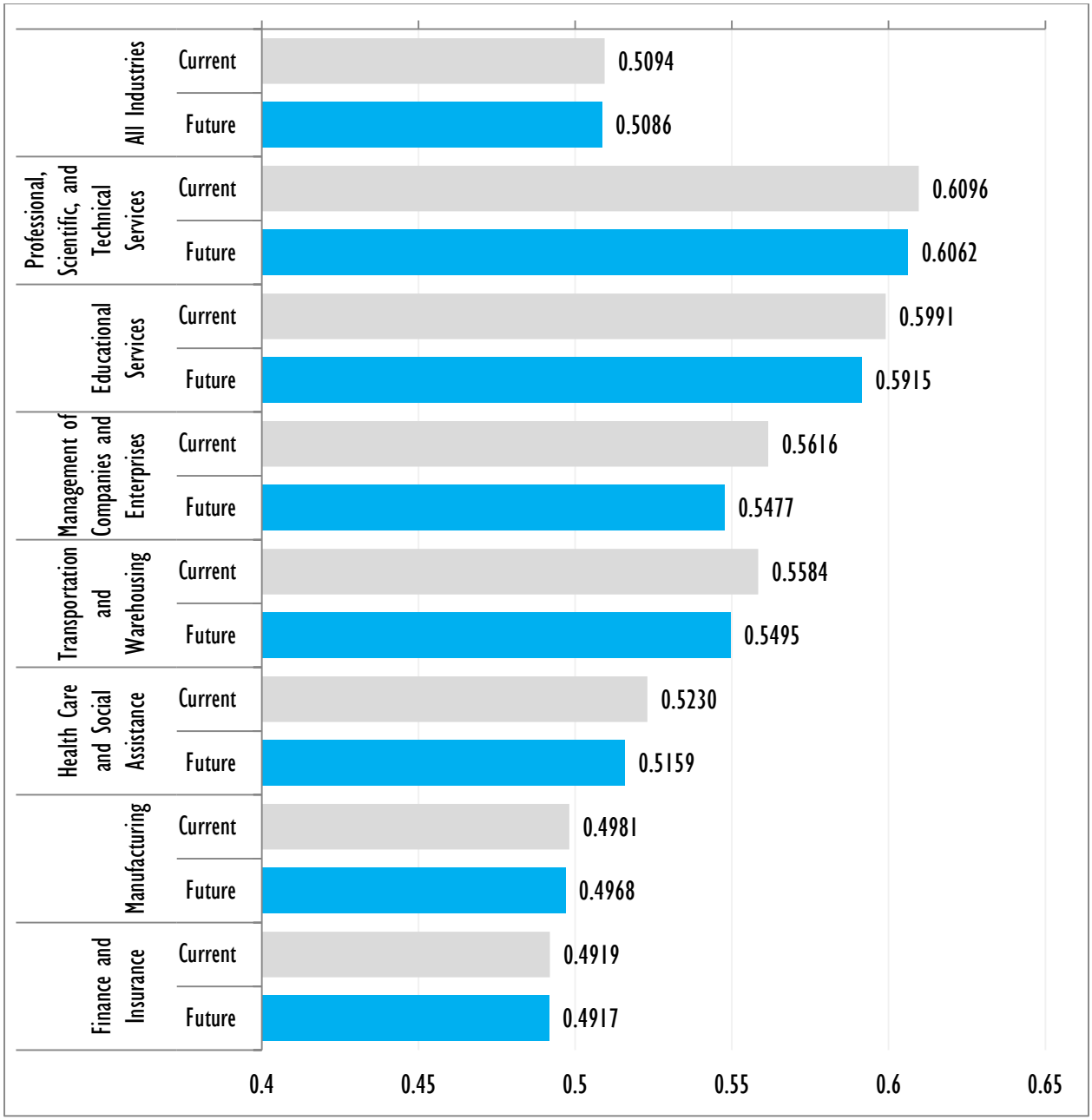

Figure 5-1: Regional Dissimilarity Indices

5.2 Results

Figure 5-1 shows regional dissimilarity indices currently and with a full buildout of the proposed regional transit system. In this chart, high dissimilarity is taken as an indicator of high spatial mismatch. Overall, the region shows a moderate level of spatial mismatch. The dissimilarity index is smaller under the full regional transit build out scenario, but only very slightly so. In other words, improving transit alone will not solve the spatial mismatch problem in the Twin Cities region.

Spatial mismatch differs markedly between sectors: from high mismatch in the professional, scientific and technical services (heavily concentrated in downtown Minneapolis) and educational services (heavily concentrated at the University of Minnesota) sectors, to relatively low in the manufacturing and finance and insurance sectors, both of which are distributed throughout the region. In all sectors, regional spatial mismatch would be reduced by full buildout of the proposed regional transitway system. As with spatial mismatch between unemployment and all job vacancies, transit improvements alone will not solve the problem of spatial mismatch between unemployment and access to job vacancies in specific sectors.

6 Neighborhood Case Studies

As a counterpart to the region-scale, empirical analyses discussed in the preceding chapters, the authors also conducted a series of seven neighborhood-scale, qualitative case studies. These case studies provide a greater depth of detail about the issues facing practicing transit planners and workforce development professionals. They also highlight how those issues can differ dramatically as a function of local social and political factors, as well as location within the region.

The authors interviewed 16 transit planners, workforce development professionals and other stakeholders. The interviews were semi-structured, lasting from 30 minutes to over an hour, with interview subjects largely allowed to define the conversation. While interviewers worked from prepared questions, these were not rigidly followed, and use primarily to start conversations and ensure all needed topics were covered. Table 6-1 shows the positions held by interview subjects and the organizations they work with.

Table 6-1: Interview Subjects

Positions		Organizations	
Workforce Development Professionals	4	Local/State Government	7
Workforce & Economic Development Professionals	3	Transit Agency	7
Transit Planners	8	Private/Non-Profit Sector	2
Elected Officials	1		

6.1 Case Selection Matrix

The table on the following page shows our selection matrix for the case studies to be included in the final report. Rows show areas with either an ample supply of suitable jobs for disadvantaged workers and limited affordable housing, or areas with few suitable jobs and plentiful affordable housing. The latter are important as areas workers to be served are likely to *live* (the origins of their commutes), the former as areas they are likely to *work* (the destinations of their commutes).

Table 6-2: Case Selection Matrix

		Transit Services		
		Poor	Poor, yet planned improvements	Good
Extent of spatial and skills mismatch	Ample jobs, limited affordable housing nearby	*Shakopee*	*Golden Triangle/ Gateway*	*Mall of America*
	Ample affordable housing, limited suitable jobs nearby	*N/A*	*North Mpls/ Brooklyn Park*	*Phillips*

The matrix has been compressed by eliminating absent and/or irrelevant rows, columns and cells. For example, regionally important concentrations of affordable housing invariably have at least a moderate level of transit service, as they are excellent markets for transit. In addition, areas with little affordable housing and few suitable nearby jobs certainly exist in the region, they are uninteresting to this research as they neither represent disadvantaged populations to be employed, nor jobs to employ them in.

We selected specific cases primarily on the principle of maximizing variation on each dimension. We did not specifically attempt to maximize the spread of case studies throughout the metro, or the inclusion of cases suggested by members of the advisory panel; fulfilling the typology created by the selection matrix largely accomplished both without much need for our intervention. We include two cases for each cell in the "Poor, yet planned improvements" transit service column due to special interest in major transit projects.

Since transit service levels, affordable housing concentrations and job concentrations covary, the relationship between columns is consistent within rows but not necessarily between rows (and vice-versa). For example: North Minneapolis and Brooklyn Park both have better current transit service than Golden Triangle and the Gateway corridor, but North Minneapolis and Brooklyn Park have worse current service than Phillips, while Golden Triangle and Gateway have worse current service than the Mall of America area.

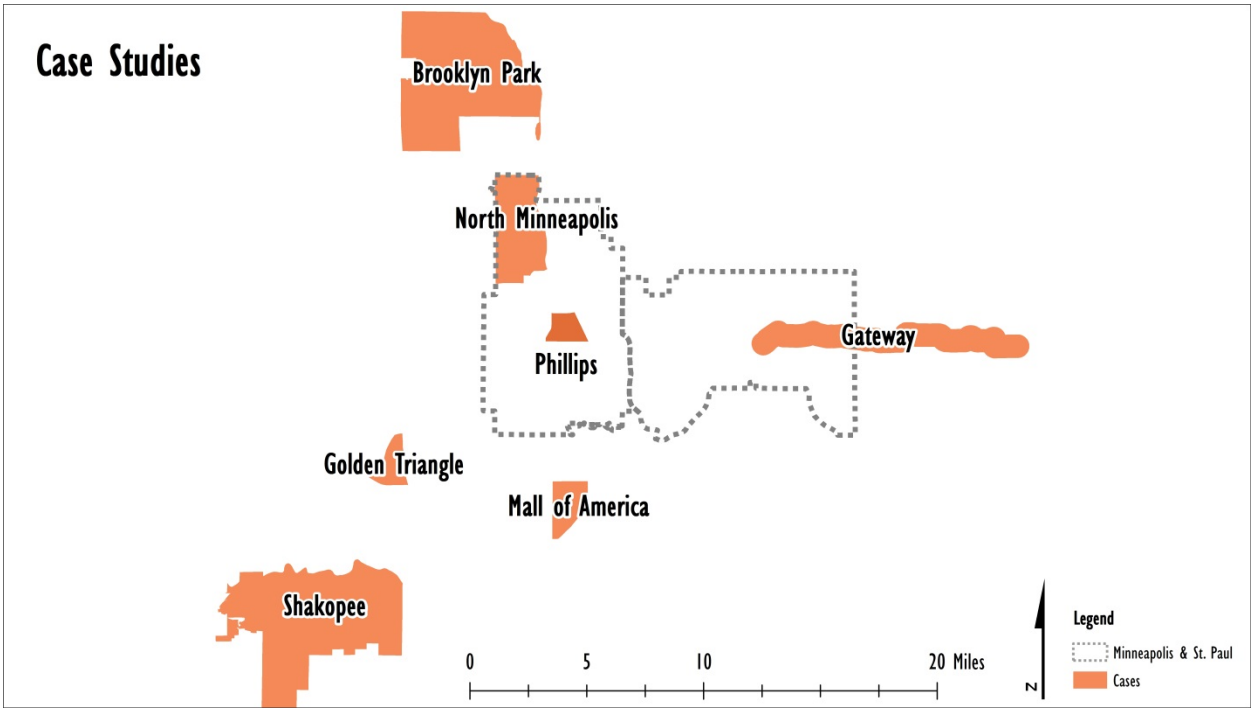

Figure 6-1: Case Study Areas

6.2 Cases in the Region

Figure 6-1 shows the case study area locations in the seven county Twin Cities metropolitan region. Case studies include urban neighborhoods (North Minneapolis and Phillips), inner suburbs (Mall of America and Brooklyn Park) and outer suburbs (Golden Triangle and Shakopee). The Gateway Corridor includes urban neighborhoods, inner and outer suburbs.

Figure 6-2 shows the case study areas in the context of the current regional transitway system and bus routes offering at least a basic level of all-day, regular service, here defined as at least hourly, bidirectional service from morning peak through late evening. Regular, all-day service is especially important for disadvantaged workers due to often complex travel patterns and family obligations.

Two case studies (Phillips and the Mall of America area) are served by existing light rail and/or bus rapid transit lines. Shakopee has extremely limited bus service, oriented primarily to park-and-ride commuters bound for downtown Minneapolis. The remaining cases have varying degrees of existing bus service, as well as planned LRT and/or BRT service as seen in Figure 6-3.

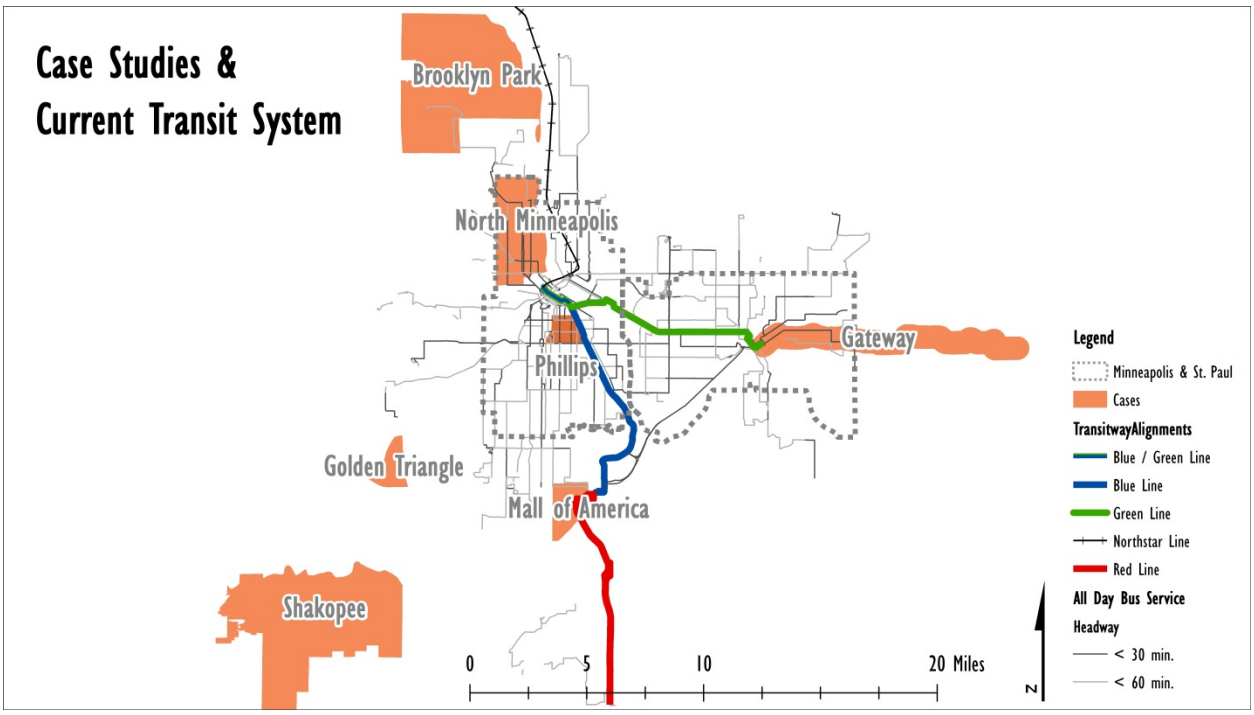

Figure 6-2: Case Study Areas and Current Transit System

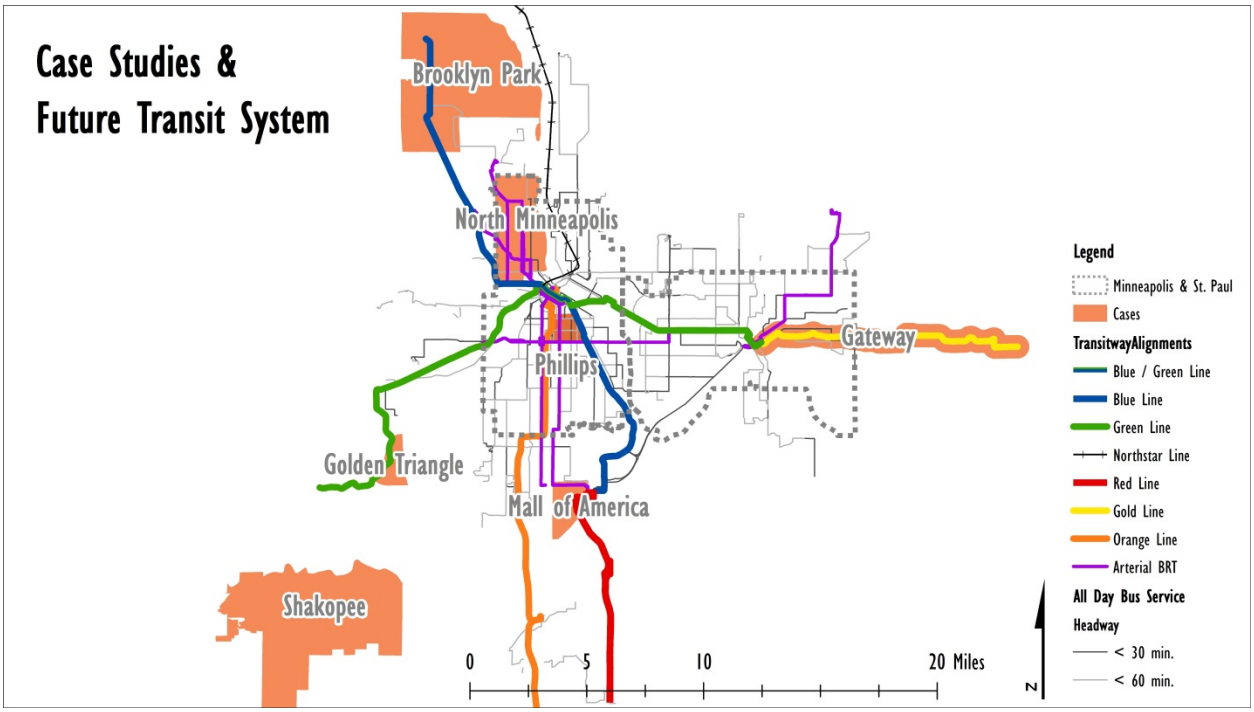

Figure 6-3: Case Study Areas and Proposed Future Transit System

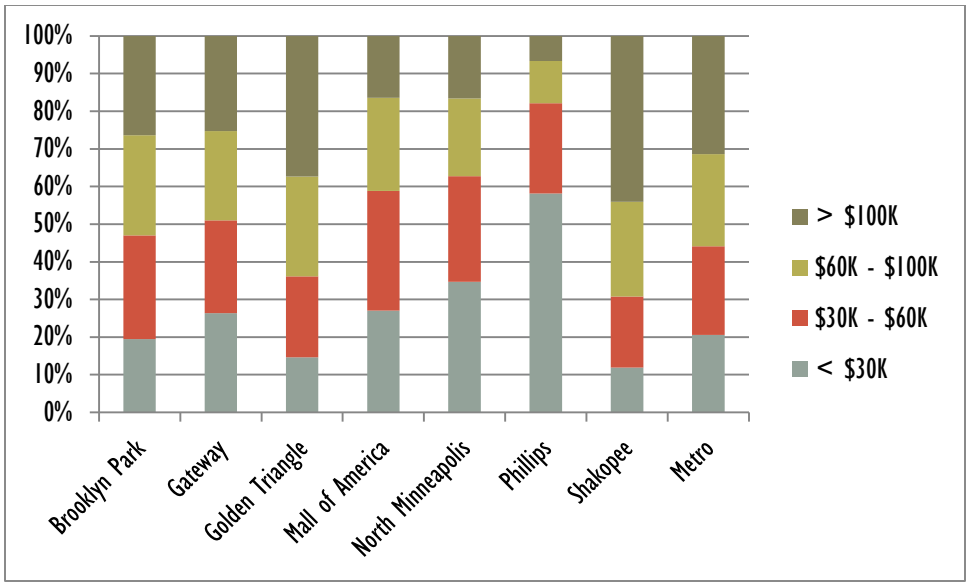

Figure 6-4: Household Income

6.2.1 Demographics

Figure 6-4 through Figure 6-9 show basic demographic, economic and social characteristics of the case study areas based on the 2014 American Community Survey. As the cases are not defined by census geographies and vary significantly in size, each case study area for the purposes of this section is defined as all census tracts which intersect the case as shown in the maps above.

In addition to geographic diversity, the case study areas are highly diverse in terms of economics and demographics as well: Figure 6-4 shows the distribution of household income in the case study areas, with the seven-county metropolitan area included in the right-most column for reference. Most cases have lower incomes overall than the region as a whole: the only exceptions are Shakopee and Golden Triangle. Phillips is by far the lowest-income case, with nearly 60% of households having incomes of less than $30,000/year. While North Minneapolis is second lowest income case, the very poorest households are significantly less common than in Phillips, while higher income households are more common; while initially surprising, this pattern may reflect accelerating gentrification in the Near North area adjacent to downtown.

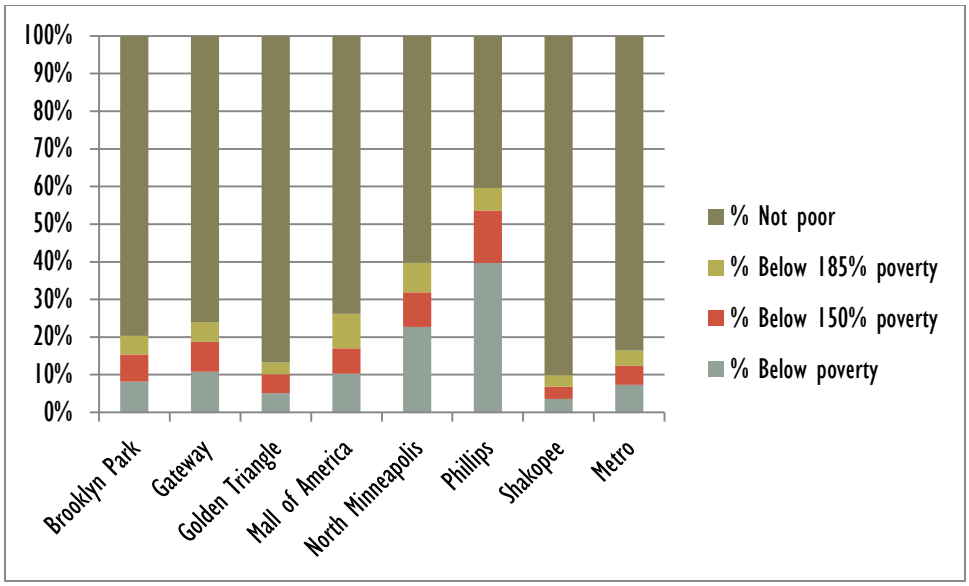

Figure 6-5: Poverty

Figure 6-5 shows poverty rates (at the family level) and ratios of family incomes to the Federal poverty standards for the cases and the region as a whole. Echoing the pattern in Figure 6-4, most cases have significantly higher poverty rates than the region, as well as significantly higher percentages of low-income families. Phillips has by far the highest poverty rate of all the cases, with 40% of families living below the poverty line. A further 20% of families live on incomes between 100% and 185% of poverty. North Minneapolis has the second-highest poverty rate and stands out from the remaining cases somewhat more in terms of poverty than income: in interpreting this difference it is important to note that poverty considers both income and family size (as a measure of need).

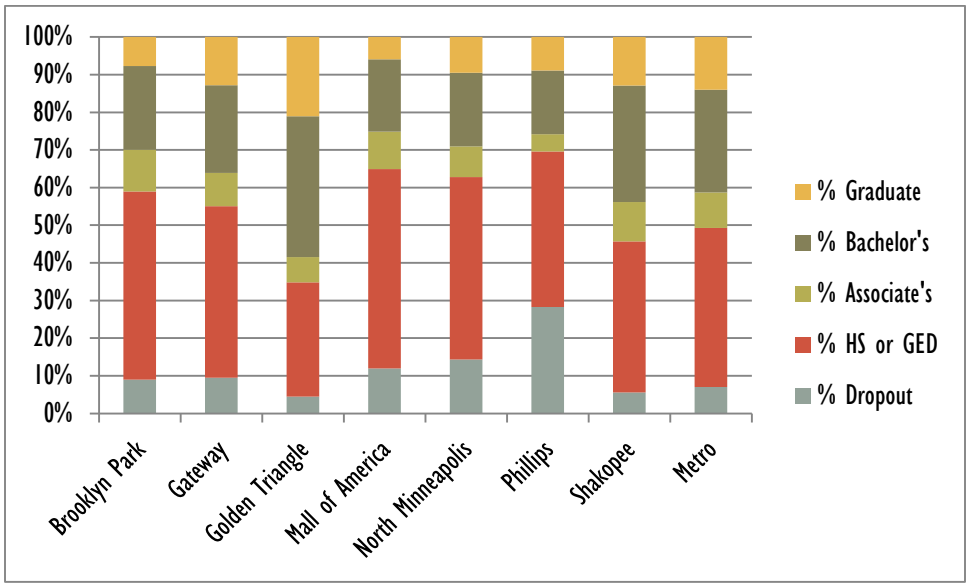

Figure 6-6: Educational Attainment

Figure 6-6 shows rates of educational attainment in each case study area. Phillips and North Minneapolis once again show high levels of disadvantage, though Brooklyn Park and the Mall of America area in Bloomington show a similar pattern, despite their different outcomes in terms of income and poverty rates. Phillips, however, does have an exceptionally high rate of adults without either a high school diploma or GED. All cases other than Golden Triangle and Shakopee have lower rates of educational attainment than the region.

The racial diversity among cases is particularly striking. As shown in Figure 6-7, race is also one dimension on which Phillips and North Minneapolis differ especially dramatically from other cases and the region as a whole. Both are majority nonwhite, with large Black populations, as well as especially large Hispanic and Native American populations in Phillips. Most other cases show a generally similar pattern of greater racial diversity than the region as a whole but significantly less than Phillips and North Minneapolis. Only Shakopee is actually whiter than the region as a whole, due in part to a large Asian population in the Golden Triangle area.

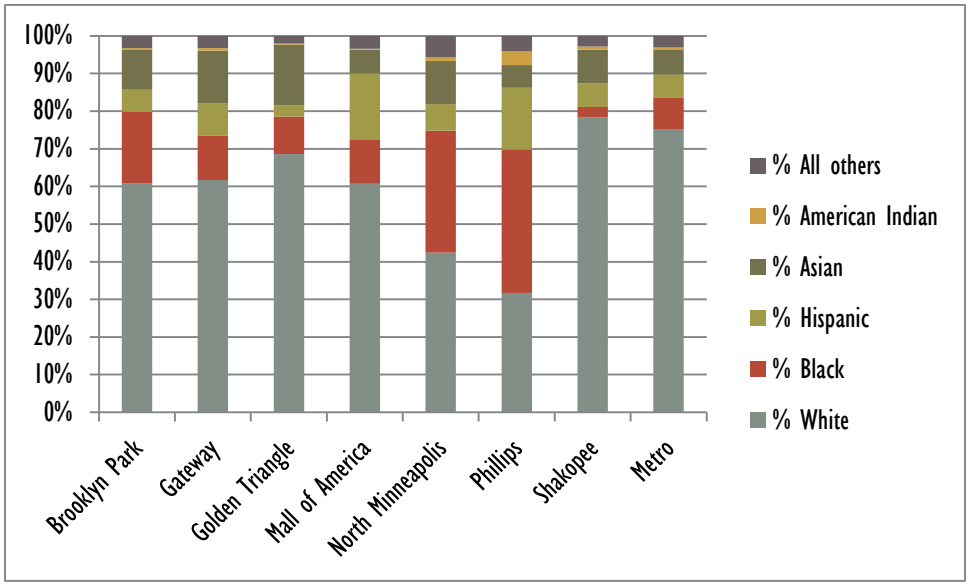

Figure 6-7: Racial Mix

Figure 6-8 shows percentages of foreign born residents in each case study area, as well as in the metro area. Once again, Phillips stands out from the other cases and from the region as a whole, with roughly a third of its residents born outside the United States. North Minneapolis actually has a relatively low percentage of foreign born residents, underscoring a large, native-born African American population. Large immigrant populations do not appear to equate directly with measures of disadvantage such as income or poverty: the relatively affluent Golden Triangle area has one of the highest percentages of foreign born residents, for example. In a similar pattern to that found for racial mix, all cases except Shakopee have higher percentages of foreign born residents than the region.

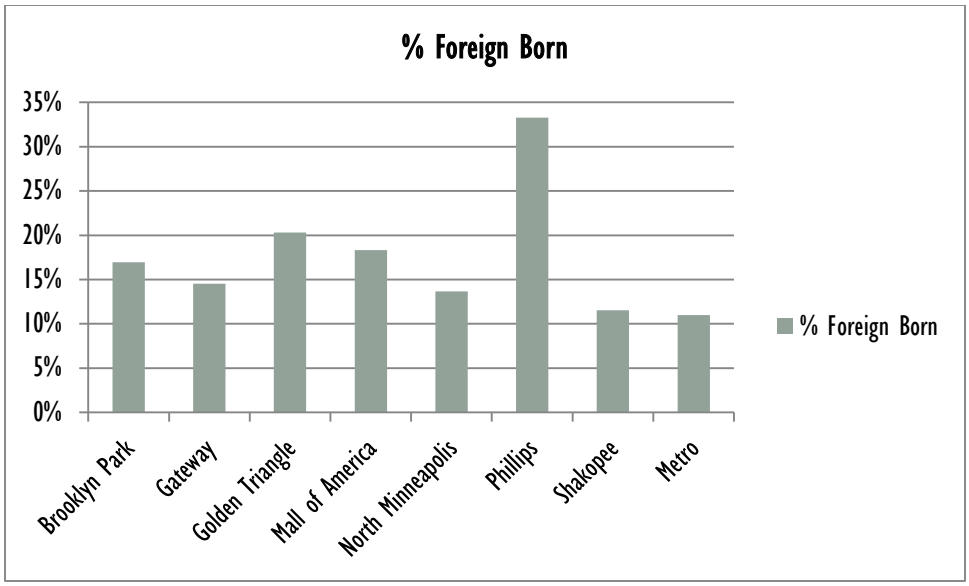

Figure 6-8: Nativity Status

Finally, Figure 6-9 shows percentages of families headed by single mothers in each case study area and the region, with total percentages of families with children included for reference. North Minneapolis and Phillips both stand out from the other cases (as well as from the region) with one in six families headed by single mothers in each. North Minneapolis also has a relatively high percentage of families with children in general, as do the suburban cases of Brooklyn Park and Shakopee.

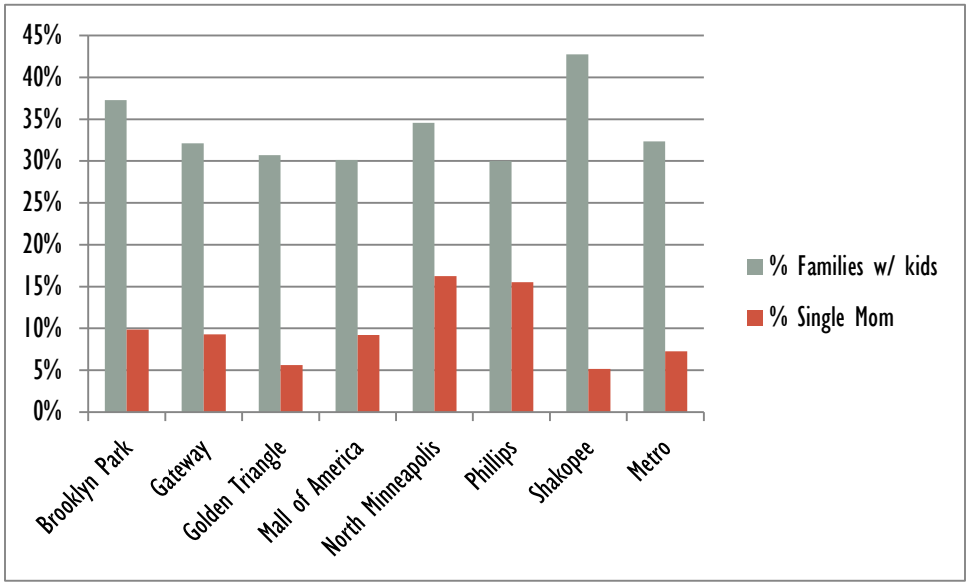

Figure 6-9: Single Mothers

6.2.2 Accessibility

Figure 6-10 shows current accessibility to job vacancies by transit overlaid by the case study areas, as well as the regional transit system. Accessibilities differ widely between cases: North Minneapolis and

Phillips have generally good accessibility. Golden Triangle, the Mall of America area and the Gateway Corridor have much more modest accessibility, while Brooklyn Park and Shakopee have little or none.

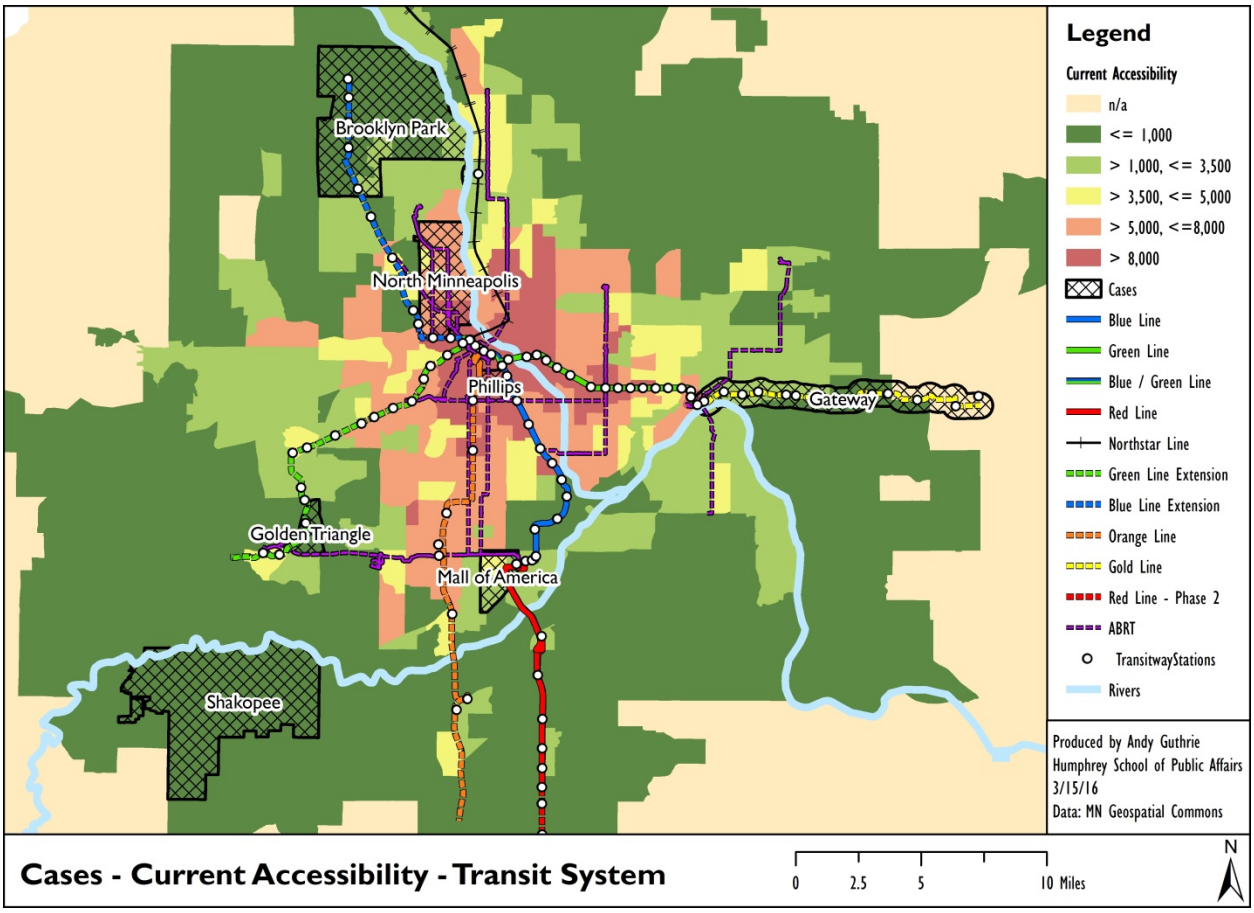

Figure 6-10: Cases and Accessibility

Table 6-3 shows the population weighted average transit accessibility for each case study. If anything, the differences appear even starker: while accessibility is excellent in Phillips and good in North Minneapolis, it is considerably less so in suburban areas—even the light rail-served Mall of America area.

Table 6-3: Weighted Average Accessibility by Case

Case	Current System	Proposed Future	Change
Brooklyn Park	1,365	1,677	23%
Gateway Corridor	1,270	1,489	17%
Golden Triangle	616	625	1%
Mall of America	2,930	3,364	15%
North Minneapolis	5,609	6,617	18%
Phillips	9,810	10,800	10%
Shakopee	78	78	0%

It is interesting to note the difference in accessibility between North Minneapolis and Phillips, as both are central city areas, with similar average distance to downtown Minneapolis. While accessibility in North Minneapolis is better than in much of the region, it is not exemplary compared with similar areas—a concerning fact considering high transit use and rate of transit dependency. The lack of functional transit accessibility from Golden Triangle and Shakopee is apparent. What little accessibility Shakopee appears to have is most likely an artifact of the accessibility calculation which counts jobs accessible within 45 minutes travel via transit and/or walking—here, the few job vacancies accessible are probably those within a 45-minute walk.

Both North Minneapolis and Phillips—the most deeply disadvantaged cases in the study—both stand to benefit significantly from proposed improvements, North Minneapolis in particular relatively speaking. With the exception of Shakopee, all cases see improved transit accessibility to job vacancies as a result of proposed regional transit expansions. Relative improvements range from 1% (for Golden Triangle) to 23% (for Brooklyn Park). As found in the dissimilarity index analysis, the benefits are noticeable but generally modest: coordination between transit planning and workforce and economic development is a necessity for the case study areas.

6.3 What people are saying: Most Commonly Used Words

Figure 6-11 shows the most commonly used words in interviews—the larger the type, the more often the word was mentioned. **Get** is prominent in two important contexts—getting a job and getting to needed destinations. The prominence of **jobs** is no surprise, given the subject matter, but the near-equal size of **people** (which most commonly appears in terms of employers needing people) shows the perception among interview subjects that spatial mismatch is a problem for Twin Cities businesses as well as workers. The appearance of words like **know** and **think** illustrates subjects' perception of a lack of communication between transit planners and workforce development professionals—especially considering that "know" is frequently proceeded by "I don't". Finally, **need** underscores the common perception that the coordination this research deals with is needed, but not happening.

Figure 6-11: Most Commonly Mentioned Words in Interviews

6.4 Brooklyn Park

6.4.1 At a glance

Brooklyn Park is a northwest suburb of Minneapolis. Though it does not share a border with Minneapolis, the southern parts of Brooklyn Park are characteristic of older, mid-to-late 20th century suburban development, with rigidly segregated land uses, strip commercial and aging housing stock. Though Brooklyn Park is not, strictly speaking, an inner ring suburb, these areas show signs of inner ring decline. They also provide a significant stock of affordable housing, however, especially in the forms of older garden apartments and small single family homes. Brooklyn Park is currently served primarily by local bus transit, with limited express service focused primarily on traditional commutes to downtown Minneapolis. Brooklyn Park is on the route of the planned Metro Blue Line Extension, which will offer

light rail service to downtown Minneapolis and south-suburban employment centers including MSP International Airport and the Mall of America area.

Table 6-4: Top Coding Intersections - Brooklyn Park

Transit Planning	*First Mile-Last Mile, Coordination w/ Workforce Development, Healthcare Job Accessibility, Manufacturing Job Accessibility*
Workforce Development	*Soft Skills, Benefits of Transit, Spatial Mismatch*

6.4.2 Coding Analysis

The theme of a need for stronger coordination between transit planning and workforce development efforts (especially in terms of providing transit access to jobs in the manufacturing and healthcare sectors) is a prevalent one in Brooklyn Park, as may be seen in Table 6-4. Examples of existing coordination appear as well—one example being a collaborative effort between Metro Transit and a local industrial park experiencing labor supply problems to extend a bus route to serve the park. This example highlights possibilities and limitations of transit service to suburban entry-level employment centers: while the route succeeded in attracting a base of ridership, first mile-last mile problems created by the low density and automobile-oriented built form of the park limit both the number of trips per day and the total ridership. The limited number of trips in turn can cause problems for workers lacking in soft skills. For example, even a modest lack of punctuality can be dramatically magnified (and even lead to missing a day of work) if the worker in question depends on a bus route with long headways and limited service.

> *They had a lot of entry level mechanical and industrial and entry level positions and they had a hard time getting people to reliably come to work, and so we worked with them to extend a route right through their area and worked with them on recruitment and training. The biggest challenge even then was getting enough people to make that trip and that have the soft skills to keep the job. Sometimes it was „I'm sorry I missed my bus, or I lost my keys." Single trip options are really good for really organized people who plan on that one trip, you got to plan it!*

6.5 North Minneapolis

6.5.1 At a Glance

North Minneapolis (located north of downtown and west of the Mississippi River) is the traditional heart of the city's African American community, as well as some of the most deeply disadvantaged areas of the city. Although served by a dense network of local bus routes, North Minneapolis has historically been bypassed by major transportation investments. Planned transit projects promise to change this: the Metro Blue Line extension will run along the south and west borders, and two proposed rapid bus lines will raise the quality of local service. One further corridor is in development as either streetcar or rapid bus. Despite proximity to the major employment center of downtown Minneapolis, Northside traditionally suffers from both spatial and skills mismatch: many residents lack both transportation options to suburban jobs and qualifications for jobs downtown.

Table 6-5: Top Coding Intersections - North Minneapolis

Transit Planning	*Coordination w/ Workforce Development, Healthcare Job Accessibility, Manufacturing Job Accessibility, Mechanic Job Accessibility*
Workforce Development	*Spatial Mismatch, Commute Length, Soft Skills, Coordination w/ Transit Planning*

6.5.2 Coding Analysis

In North Minneapolis, as shown in Table 6-5, the need for coordination with workforce development efforts stands out from other topics discussed together with transit planning. To put it simply, North Minneapolis already has a high level of local transit service, and large numbers of jobs relatively nearby, particularly in the healthcare and manufacturing sectors. At least in terms of the jobs currently reachable by transit from North Minneapolis, transit planners see more skills mismatch than spatial mismatch. In an unusually direct correspondence between transit and workforce development, both Metro Transit staff members and multiple workforce development professionals point to Metro Transit's large Heywood Garage—located at the border between downtown and North Minneapolis and served by a large number of bus routes—as a promising opportunity to connect disadvantaged workers with jobs as either mechanics or drivers. Metro Transit is unusual in training mechanics in-house, without requiring specialized training beforehand.

Workforce development professionals see opportunities for local jobs, but also somewhat more spatial mismatch than transit planners do; transit planners are quick to point out high levels of local bus service in North Minneapolis, while workforce development professionals emphasize lack of regional accessibility. Planned transit improvements including the Metro Blue Line light rail extension and the C-Line rapid bus corridor are seen as promising for improving access to jobs and training opportunities from North Minneapolis. In an interesting connection between cases, a former leader of a collaborative workforce and community development project in Phillips , pointed out the difficulties (in terms of time and reliability) reliance on current local buses created for North Minneapolis residents seeking to participate in training programs for jobs in Phillips; he also pointed to planned rapid bus lines connecting the two areas as beneficial for addressing this problem.

> *You can get mechanics at Heywood, healthcare at HCMC, you can get—Hennepin County is facing huge numbers of retirement, and many in the areas of social workers. How do you train people in the area of social work? Well what about Metro State, MCTC or partnership between MCTC, Hennepin County, and people in that neighborhood and it's all accessible via transit!*

6.6 Phillips

6.6.1 At a Glance

The Phillips neighborhood, located in South Minneapolis is an area of diversity, history and change. Traditionally home to one of the largest urban Native American communities in the nation, and has recently seen an influx of Hispanic immigrants. The neighborhood is home to several major employers in the healthcare sector. While long a prime example of skills mismatch—with relatively few residents qualified to work for the largest neighborhood employers—starting in 1997, it benefitted from the Project for Pride in Living—an innovative partnership between major employers, workforce

development service providers and local government to prepare neighborhood residents for career-building jobs in the neighborhood. Along with a network of radial and cross-town local bus routes, Phillips is served the Metro Blue Line (offering connections to downtown Minneapolis, MSP International Airport and the Mall of America), and will be served by the Metro Orange Line BRT corridor.

Table 6-6: Top Coding Intersections - Phillips

Transit Planning	*Coordination w/ Workforce Development, Coordination w/ Economic Development, Costs of Driving*
Workforce Development	*Costs of Driving, Rethinking Qualifications, Healthcare Employment*

6.6.2 Coding Analysis

Table 6-6 shows the most common coding intersections for the Phillips case study. Phillips represents something of a success story in terms of coordination—at least between workforce development professionals and local employers. While interview subjects identified little direct collaboration between workforce development and transit planning efforts, the neighborhood has excellent local and regional transit, both of which are important due to a need to connect significant numbers of transit-dependent residents with jobs. Given the workforce development focus on nearby employers, the neighborhood's dense local bus network has proven particularly important. A former director of the Project for Pride in Living pointed to the importance of local bus service. Another success of the Project for Pride in Living was convincing employers to systematically rethink their required qualifications for entry-level jobs. In doing so, employers in the healthcare sector were able to jettison requirements that were not necessary and presented barriers to disadvantaged workers in the neighborhood.

> *They present their job description information and we see „you've got to have this, you've got to have that". No way! We want the employer to re-tool that. [...] Instead of having all these kind of [hiring] practices which just build up over the years, [we work with them] to support customized training..*

6.7 Gateway Corridor

6.7.1 At a Glance

The Gateway Corridor stretches east from downtown Saint Paul alongside I-94 most of the way to the Wisconsin border. On the way, it passes through low-income, disadvantaged neighborhoods in Eastside Saint Paul, and through increasingly affluent suburbs such as Woodbury and Lake Elmo. The corridor is planned to be served by the Metro Gold Line, currently in development as a dedicated guideway BRT line, which will serve the 3M corporate campus, as well as the major commercial corridor along I-94. Surrounding built forms range from traditional in Saint Paul to increasingly automobile-oriented farther out in the suburbs. The corridor is almost a self-contained example of spatial mismatch, with few entry-level jobs near the Saint Paul neighborhoods it serves, and little affordable housing near its suburban employment centers.

Table 6-7: Top Coding Intersections - Gateway Corridor

Transit Planning	*Need Transit, First Mile-Last Mile, Affordable Housing, Labor Supply, Spatial Mismatch*
Workforce Development	*Transit Benefits (Park and Ride), Spatial Mismatch, Manufacturing Employment*

6.7.2 Coding Analysis

The prominence of "Need Transit" (as seen in Table 6-7) in discussion of transit planning in the Gateway Corridor underscores the current low level of transit service in the area, as well as the problems both transit planners and workforce development professionals see it creating for attempts to connect either disadvantaged corridor residents with jobs or disadvantaged workers from elsewhere with jobs in the corridor. The first mile-last mile problem is prominent as well, both in general and in terms of needed coordination: between transit, local governments, social service providers and employers to provide connected, walkable street networks, low-income car purchase and maintenance assistance and workplace shuttles. Car access programs may at first seem incongruous in a discussion of transit, but workforce development professionals in the corridor point out that even with assistance many of their clients can only afford inefficient, unreliable older model cars which are unsuitable for long freeway commutes, but could be perfectly adequate to access a nearby park and ride facility. Transit planning is frequently mentioned in terms of a lack of affordable housing near entry-level jobs in the corridor, leading to labor supply problems for employers and spatial mismatch problems for workers.

Discussions of workforce development emphasize the manufacturing sector as an important provider of living wage employment in the area. Despite the current general lack of transit service, workforce development professionals see large potential benefits from transit improvements as area employers face increasing labor shortages. Finally, spatial mismatch is seen as a major problem in the area, with poor alignment between affordable housing and entry level employment increasing workers' need to travel. One interview subject described rush hour in the corridor as a virtual swap of residents and workers.

> *If I know my car is old and if I drive it 50 miles per day—you know that's going to put a lot of miles weekly on my car versus driving 2 miles to a park and ride. That's going to save me car repairs first of all, it's going to save me on gas. I mean, there's a whole host of things that I can save [...] parking costs, too [...] So yeah, I think it would make a heck of a difference if I knew I could drive five miles and park, and I could go to Minneapolis if that's where I want to work.*

6.8 Golden Triangle

6.8.1 At a Glance

The Golden Triangle area in the southwest suburb of Eden Prairie—named for a triangle of major higways and a dense concentration of successful businesses—is a major employment center, with large numbers of entry-level and higher jobs. Golden Triangle has little affordable housing nearby, but will be served by the planned Metro Green Line extension. Though Golden Triangle should boast a light rail station by 2020, it has an overwhelmingly automobile-oriented built form.

Table 6-8: Top Coding Intersections - Golden Triangle

Transit Planning	*First Mile-Last Mile, Coordination w/ Workforce Development, Coordination w/ Economic Development*
Workforce Development	*Non-Transportation Barriers, Back Office Employment, Wages, Transit Difficulties, Work Schedules*

6.8.2 Coding Analysis

The first mile-last mile problem dominates discussion of transit planning in the Golden Triangle area, as seen in Table 6-8. In fact, most mentions of a need for coordination reflect a widely-perceived need for coordination between regional and local transit, between transit providers and employers, and potentially between transit providers and car sharing services such as Uber and Lyft in addressing the first mile-last mile problem.

Due to the lack of affordable housing nearby, discussion of workforce development concerning Golden Triangle deals mainly with preparing disadvantaged workers from other areas—such as North Minneapolis and Phillips—for Golden Triangle jobs, especially with an eye to the dramatic increase in access from both areas light rail will offer. Non-transportation related barriers to employment such ability to access child care and accomplish needed personal business—especially in the context of long, regional commutes are prominent, as well as training for entry-level "back office" jobs. Wages, and to a slightly lesser extent work schedules appear repeatedly in a context of weighing whether a given job is worth a long, cross town commute. In this sense, light rail is seen as highly beneficial (by putting much more of the region within reasonable transit commuting distance) yet not a panacea. Expectations of genuine benefits from light rail are also tempered by the inherent difficulty of using transit to access automobile oriented, suburban workplaces.

> *I think that's where the transportation networking companies, the Lyfts come in, because it's not a scheduled thing. [Transit riders] don't need to worry about that because it's not a scheduled thing. When somebody gets to the [suburban light rail] station, they call up and get a ride or they've got it prearranged, so boom! It doesn't matter whether [a] bus is running there or not, because they've got another option.*

6.9 Mall of America

6.9.1 At a Glance

The Mall of America in the inner suburb of Bloomington is a regional shopping destination and major center of retail employment, along with its surrounding area. It is also a major regional transit hub, served by the Metro Blue Line, Metro Red Line and a large number of bus routes. Currently featuring a very large-scale, automobile dominated built form with single-story office buildings and several vacant lots, the area immediately to the east of the mall is the center of a major transit-oriented redevelopment plan from the City of Bloomington.

Table 6-9: Top Coding Intersections - Mall of America

Transit Planning	*Coordination w/ Workforce Development, Coordination w/ Affordable Housing, Retail Job Accessibility*
Workforce Development	*Coordination w/ Transit Planning, Mature Employment Center, Labor Supply, Benefits of Transit*

6.9.2 Coding Analysis

Table 6-9 shows the most common coding intersections for the Mall of America case study. Coordination between transit planning and workforce development appears for the Mall of America area largely in terms of the implications of future transit investments that stand to broaden regional access to the mall. Interview subjects see taking full advantage of these investments as requiring coordination across a larger area of the region, particularly regarding workforce development. Discussion of transit planning also often touched on a need to coordinate transit to the mall with affordable housing in the area—the mall itself already has exceptionally good transit for a suburban employment center. The mall is currently a mature employment center—most job growth associated with the mall itself happened years ago, and transit-oriented redevelopment of the area nearby is only just now beginning. As a result, workforce development professionals currently view the Mall of America area in terms of connecting individual clients with single jobs. It is also important to note that the prevalence of retail employment minimizes skill mismatch where the Mall of America is concerned. As more of the region gains reasonable transit access to the Mall of America, most workers living in the areas that benefit will already be qualified for jobs there.

> *One site event here, for seasonal openings all the businesses at Mall of America, I mean we had hundreds of people coming through here, Macy's and others there were doing hiring that day. People would come in and interview. Transit, I don't think it was a piece of it but the individual company would be talking to them, saying „This is where we're at, this is what's available." It wasn't a conscious decisions to promote that. Could it be? Sure, it could. But there again, it's for individual openings. And the time you're going to have the most impact is when a new business is moving in or when a new operation's taking shape.*

6.10 Shakopee

6.10.1 At a Glance

Shakopee is an outer southwestern suburb, characterized by generally affluent housing as well as manufacturing and warehousing employment. In particular, a major Amazon regional fulfillment center as well as a large Shutterfly facility have recently added a large number of entry level jobs in an area with no transit service and very little nearby affordable housing.

Table 6-10: Top Coding Intersections - Shakopee

Transit Planning*	*Affordable Housing, First Mile-Last Mile, Labor Supply, Spatial Mismatch*
Workforce Development	*Labor Supply, Spatial Mismatch, Benefits of Transit, Commute Length, Coordination w/ Transit Planning*

*Discussion of transit planning was very limited for the Shakopee case study. There is no current transit service to the main area of interest, and no advanced plans for future transit.

6.10.2 Coding Analysis

Table 6-10 shows the most common coding intersections for Shakopee. The Shakopee case study produced relatively little direct discussion of transit planning, due to the lack of both existing and planned transit in the primary area of interest to this research. The exceptions were in terms of a lack of nearby affordable housing leading to labor supply problems for area employers, who suffer from a spatial mismatch with many potential workers. These issues lead to interest in potential partnerships with large employers to provide last mile connections from existing transit routes—Metro Transit in particular saw strong interest on the part of area employers due to labor supply problems.

In terms of workforce development, coordination with transit planning is mentioned mainly as a lack thereof—especially in terms of a lack of coordination between major, growing employers facing labor supply issues and transit. Both transit planners and workforce development professionals perceive a near-total lack of consideration of employee commutes in general and transit access in particular in the location choice processes of major Shakopee employers of entry-level workers. Shakopee presents an extreme example of the workplace side of spatial mismatch, as well as the problems it creates for employers as well as workers: given limited affordable housing and large numbers of entry-level jobs, Shakopee employers would stand to benefit significantly from being able to recruit from areas such as Phillips and even North Minneapolis (to say nothing of benefits to workers from those areas). Distance and lack of transit options severely curtail that natural connection.

> *One example would be Valley Fair, and Mystic Lake casino and Canterbury Downs, they're actually all really interested in having better transit service, and they're in a place where there isn't that much. [...] So they're interested in working with the transit providers to provide that last mile connection, and not have us do it or have MVTA do it but, they're saying „Just get us to this point, we'll meet you at your transit center park and ride, and we'll take them the last ¾ mile."*

6.11 Overall

Looking across all seven case studies, both transit planners and workforce development professionals lend support to the basic premise of this project: while successful coordination of transit and workforce development is consistently acknowledged as beneficial, there is a strong perception of need for more such coordination. This appears to be particularly true in suburban areas where transit has traditionally had less relevance to workforce development than in urban areas with at least high levels of traditional bus service. There is also a broad realization that workforce development efforts cannot simply give clients a bus card and send them on their way in suburban areas—even assuming future transit improvements. Urban areas suffer less from this issue on the home end of disadvantaged workers' commutes, but connecting urban workers with suburban jobs requires addressing the same issues at the workplace end, especially in terms of the first mile-last mile problem.

Findings from the interviews also strongly support several key findings from earlier qualitative analysis tasks including:

- The prominence of spatial mismatch as a hindrance to employment for disadvantaged workers in the region,
- The importance of locally-tailored workforce development, oriented to transit access,

- The benefits of focusing on occupations that do not require extensive training—or where employers will train,
- The benefits proposed transit improvements offer for disadvantaged communities, and
- The importance of both regional transit improvements (i.e. LRT) and local transit improvements (i.e. rapid bus).

7 Recommendations

7.1 Best Practices

Several practical examples exist already of integrating aspects of workforce development and transit planning on a regional scale. While no standard approach to this integration has yet emerged, there are valuable lessons to be learned for the Twin Cities region from these innovative programs.

7.1.1 Mile High Connects

The Mile High Connects program in Denver, Colorado is one of the best known and most well-established programs linking transit planning and workforce development—as well as economic development and workforce development. The program arises out of a rapid, region-wide buildout of the Denver regional light rail, commuter rail and bus rapid transit system, and a strong desire on the part of policy makers and community stakeholders for that buildout to benefit the Denver region in as socially equitable a manner as possible.

Its initiatives related to transit and workforce development include connecting disadvantaged workers with jobs through "anchor institutions"—large employers with a public purpose, such as universities, hospitals and city governments that are located in disadvantaged and/or transit-served areas. These institutions can provide job training in-house and/or represent large enough numbers of vacancies to justify targeted public/non-profit training programs tailored to them. In addition to providing employment, anchor institutions provide employees with marketable skills and may influence smaller concerns' hiring practices (Mile High Connects, 2016b).

In a particularly direct correspondence between transit planning and workforce development, Mile High Connects also works to place disadvantaged workers in medium-skilled jobs in the construction industry, with a special focus on community-level workforce development efforts tied to TOD construction (Wert, 2015). Focusing on construction jobs in a TOD context not only allows neighborhood residents to benefit directly from revitalization efforts, but also opens good, blue collar jobs to workers without access to an automobile. Mile High Connects also works to promote first mile/last mile pedestrian infrastructure around transit stations in both disadvantaged residential neighborhoods and employment centers (Mile High Connects, 2016b).

7.1.2 Ladders of Opportunity

The United States Department of Transportation's Ladders of Opportunity program also focuses, in part, on using federally funded transit projects as nexus points between transit and workforce development, specifically in terms of the Local Hire Initiative, which allows state and municipal-led projects to specifically recruit local residents. Applicable to both highway and transit projects, the Initiative is a step away from a long-standing USDOT policy of expressly forbidding local hiring preferences (USDOT, 2016). While transit construction jobs are temporary, long-term regional transit visions can lead to transit construction providing employment for years, even decades, somewhere in the region. In addition, transit projects involve a wide variety of occupations, many of them skilled

trades; connecting local residents with such jobs (along with appropriate training) can open up career pathways that would otherwise have been closed to them (LeRoy & Cafcas, 2014).

7.1.3 Project for Pride in Living

In a Twin Cities context, the Project for Pride in Living (mentioned in the Phillips case study in Chapter 6) has long practiced spatially targeted workforce development, employing a similar anchor institution model to the Mile High Connects program. While Project for Pride in Living has primarily focused on neighborhood scale connections between local residents and anchor institutions (while also including strong affordable housing and general education components), its work presents an accessible, local example of a highly successful implementation of the anchor institution model. Adapting PPL's methods to an integrated workforce development and regional transit planning approach would be a simple matter of defining the target population based on transit access to anchor institutions as opposed to simple spatial proximity. In addition, PPL's mutually beneficial outcomes for workers (who gain skills and career opportunities) and employers (who gain a dependable, local labor supply pipeline) could offer a powerful incentive for other Twin Cities employers to participate in transit access-based targeted workforce programs.

In addition to training community residents for initial, entry-level positions, PPL also provides professional development training for entry-level employees to assist them in converting an entry level job into a career pathway. These training programs also focus on occupations in high demand in areas PPL serves, including banking, Certified Nursing Assistants, as well as maintenance, human service and administrative occupations for the public sector, focused specifically on Hennepin County. Context-appropriate similar programs implemented with a transit accessibility focus could be a valuable component of coordinated transit planning and workforce development.

7.1.4 Corridors 2 Careers

Also in the Twin Cities, the Corridors 2 Careers pilot project undertaken by the Minneapolis and Saint Paul District Councils Collaborative sought to connect both employers and long term unemployed residents along the Metro Green Line corridor in Minneapolis and Saint Paul with already present workforce development programs. Part of the Corridors of Opportunity Initiative, the pilot project took place in the three years leading up to the Green Line's opening. When the project ended, it was showing successes in terms of making connections between employers, the long-term unemployed and workforce services, in demonstrating the value to employers of hiring from local workforce programs, and, to a limited extent, in terms of actually placing long-term unemployed corridor residents in stable jobs with local employers. While its total impacts were limited by the finite (and short) term of the pilot project, Corridors 2 Careers offers valuable lessons for integrating transit planning and workforce development in the future: First, significant benefits can be achieved by an integrated approach to connecting residents and employers with existing workforce programs—employers in particular were often unaware of even the existence of the workforce development programs involved. Second, major transit projects can serve as an effective catalyst to bring normally isolated stakeholder groups together. Third, the spatial focus of a corridor (as opposed to a neighborhood) is a workable model for connecting marginalized workers with training and job opportunities. Combined with the neighborhood-focused successes of the Project for Pride in Living, Corridors 2 Careers offers a proof of concept for the basic components of a transit-focused workforce development strategy.

7.1.5 Northside Job Creation Team

One of the most innovative economic and workforce development programs in the Twin Cities region is the Northside Job Creation Team. This public-private-nonprofit partnership is convened by the University of Minnesota's Urban Research and Outreach-Engagement Center (UROC) and led by a group of North Minneapolis business leaders, workforce development and social service providers, as well as local government staff. It aims to create at least 1,000 living wage jobs in North Minneapolis by 2018. The Northside Job Creation Team seeks to achieve this goal through an uncommonly close coordination between economic and workforce development efforts. Their initiative is based on identifying sectors and occupations in which businesses could prosper in North Minneapolis and for which North Minneapolis residents either have the needed skills or could quickly be trained for.

Specific Northside Job Creation Team efforts based on this model include attracting food production and distribution businesses, ranging from Minneapolis Public Schools sandwich production to an innovative vertical aeroponics venture focused on efficient, year-round local produce, exploring a makers district focused on attracting manufacturing, potentially in the textile and shoe subsectors, and working towards land assembly for the creation of a North Minneapolis business park in collaboration with the Minnesota Department of Employment and Economic Development and the City of Minneapolis. Recent efforts also focus on the transportation sector, specifically in terms of truck and bus drivers, including medium and heavy trucks as well as private bus companies and Metro Transit.

This area-, population- and business-focused, collaborative approach to both economic and workforce development holds great promise for the type of collaboration called for in this report. While the intense, fine-grained collaboration achieved by the Northside Job Creation Team will be considerably more complex to achieve with the regional, transit system-level focus advocated here, it is nonetheless a model worth emulating to the greatest degree possible.

7.2 Finding the "Sweet Spots"

If one thing should be apparent from this research, it is that opportunities for connecting disadvantaged workers with jobs via transit are not evenly distributed throughout the region. Having the greatest positive impact on people's lives calls for finding "sweet spots" for integrating transit planning and workforce development. The following sections present recommendations for finding these sweet spots:

7.2.1 Redefine "accessible"

The accessibility analysis of this research clearly shows that accessibility to job vacancies by transit is not even throughout the region, particularly with respect to accessibility to job vacancies in specific sectors. This creates a very different functional meaning of access for transit-dependent workers than for workers with access to cars. While automotive accessibility is essentially universal, transit accessibility is not: in some places in the region, a job two miles distant may be functionally inaccessible, for others, a job twenty miles distant may be easily accessible, and for others still, both may be true for different jobs for the same person. While the basic idea of tailoring workforce development efforts to nearby jobs that do not require long-term training is nothing new, this research calls for a refinement of that idea to consider accessibility to job vacancies, rather than physical proximity. This refinement would increase efficiency by avoiding the placement of transit dependent workers in jobs where poor access makes them unlikely to succeed; it would also open up new opportunities to connect workers with more

physically distant jobs that are actually "nearby" in terms of transit travel time. For example: once the Green Line Extension is implemented, many Midway residents may have better effective transit access to jobs in Golden Triangle than in much physically closer Roseville.

7.2.2 Consider entire pipeline

Reconsidering the meaning of access as it relates to workforce development for transit-dependent workers will play a valuable role in alleviating spatial mismatch in the region, but dealing with skills mismatch calls for a simultaneous assessment of the skill sets and prior experience of disadvantaged worker. Such an assessment will allow planning for transit service and workforce development while considering both ends of the commute. Workforce development professionals and transit planners would ask the following series of questions as a unified set:

- What skills do the people who live in an area have?
- What jobs are they willing to do?
- What jobs fitting people's skills and willingness can we provide training for?
- Which of those jobs can we connect people with via transit?
- What employers in those occupations have diverse hiring practices?
- How can we interest those employers in hiring participating workers for those jobs?

The sweet spot occupations identified in Chapter 4 fit right into this process. Particularly at the training stage, knowledge of high-demand occupations with low education requirements that offer living wages will be crucial in effectively connecting individual workers with the regional economy. For example, the prevalence of clerical and administrative occupations among the sweet spots of multiple sectors calls for assessing what types of training would best prepare residents of a given area for such jobs, based on the results of the skills assessment. Placing disadvantaged workers in certain sweet spot occupations will depend particularly heavily on the skills assessment—such as Interpreters and Translators in the Health Care and Social Assistance field. This approach also calls for a considerably expanded role for employers in both workforce development and transit planning, particularly in terms of employers considering their potential workforce and its transportation needs in making site selection and relocation decisions. This in turns points to the importance of cooperation with economic development efforts as a way of both forming early connections with employers and gradually shifting the region's geography of work into a more transit-friendly pattern.

The approach suggested here also calls for employers to participate directly in the workforce development process. This level of partnership between public, non-profit and private sectors exists—many of the Project for Pride in Living's central efforts are examples—but this recommendation calls for a significant expansion of such partnerships. Such an expansion will hinge on convincing employers this kind of partnership is in their own interest; labor supply issues facing employers—and often most acute in inaccessible, suburban locations—may offer an entry point.

This unified system creates an aggregate, nuanced, integrated understanding of labor supply and transit demand. It represents a broader approach to workforce development, by taking advantage of transit accessibility (or the potential to add it) to reach the greatest feasible number of suitable job vacancies. It also represents a more individualized approach to transit planning: current predictions of transit demand

depend heavily on basic demographics and general accessibility, without direct consideration of residents' qualifications or what specific jobs they can reach via transit.

7.2.3 Collect data on skills

Implementing the previous recommendation will require detailed information on disadvantaged workers' skill sets and work experience. Currently, no such data exist at the regional level. Skills data would refine the selection of sweet spot occupations, by allowing workforce development programs to focus on occupations for which populations to be served already have some appropriate skills. Skills data could also inform the design of training programs for specific occupations based on what skills participants will tend to come in with. While understandably difficult in a fiscally constrained budgetary climate, a periodic "Job Seeker Survey" would provide a crucial counterpart to the existing Job Vacancy Survey. It might also be possible to involve institutions such as high schools and community colleges in surveying workers' skills. Such a survey could provide fine-grained, geospatial data on specific skills, education and work experience, and potentially on interest in certain types of jobs, as well. It could also prove invaluable in tailoring training programs to complement the existing skills of workers being trained for sweet spot occupations as identified in Chapter 4.

7.2.4 Identify employers who stand to benefit

Especially as unemployment declines overall and employment continues to suburbanize, the assumption that employees can be expected to go wherever the jobs are increasingly no longer holds. Case study interview subjects had a common understanding that suburban employers experience labor supply problems as a result. These problems provide an opening to bring employers to the table. Engaging with employers who have strong diverse and/or community hiring goals could play a valuable role in this process: workforce development programs focused on disadvantaged workers offer natural allies to employers in meeting these goals. Reaching out to employers in high-demand sectors and occupations may be especially promising as competition for workers may make labor supply problems all the more keenly felt. In this sense, the sweet spot occupations identified in Chapter 4 may also serve as sweet spots for forging partnerships with the private sector. Efforts like Hennepin County's training program for county employees could be adapted to a private sector context to broaden the group of workers qualified for job openings. In addition, employers could participate in transportation, through shuttles or other means of getting their workers to and from the nearest point served by the transit system.

Employers, however, will only take such actions if they believe they stand to benefit from them. As such, the first critical step in connecting with employers is identifying those who are likely to benefit, and making the case to them that they would. This could potentially be done by tracking job postings, taking an unusually long-posted (or repeatedly re-posted) position as an indicator of labor supply problems. In addition to their inherent interest in labor recruitment, human resource departments are important points of contact due to interest in transit access found in previous research on Twin Cities employers. Employers interested in transit access tend to have concerns about a tightening labor market and an impending need to replace large numbers of baby boomer employees. These concerns offer one particular entry point to starting the conversation with employers (Fan & Guthrie, 2013). Some employers may be targeted as anchor institutions, while others will require different strategies. Manufacturing employers, for example, might be targeted at the district or industrial park level. With data on transit accessibility and the skills of unemployed workers (as recommended above), employers could be emphatically shown the benefits of collaborating with the public sector.

7.3 Shaping the New Transit System

The regional GIS analysis shows promise for proposed transit improvements to better the lives of disadvantaged workers in the region. The case study interviews brought out a great sense of optimism about those improvements as well. However, as the regional dissimilarity index shows, and as interview subjects' consistent perceptions of obstacles in the way of transit improvements reaching their full potential foreshadows, building the lines themselves will be insufficient. The following sections offer recommendations for shaping the Twin Cities transit system to benefit marginalized workers as it continues to grow:

7.3.1 Redefine "flexible"

Transit is often considered the antithesis of "flexible" in transportation, fixed-guideway transit, with its unalterable route and common need for transfers even more so. In terms of time, however, fixed-guideway transit offers excellent flexibility, due to high frequencies and long spans of service, as well as the ability to travel at congested times of day without delay. This time flexibility is often crucial to marginalized workers due to nontraditional schedules and family commitments. Greater route flexibility can be highly beneficial for marginalized, residentially mobile workers, but in many cases this may be best provided by local transit or other transportation services connecting with time-flexible fixed-guideway transit. Planning transportation for disadvantaged workers to serve complicated local travel patterns and yet provide effective regional mobility may take the form of route-flexible, small vehicle local services combined with time-flexible regional transit services.

7.3.2 Engage with Transportation Management Organizations

The problem of first mile/last mile connections to transit came up throughout the research, particularly in the neighborhood case studies. Interview subjects from a broad variety of organizations and backgrounds shared a strong belief that the trips from home to transit stop and from transit stop to workplace were among the most serious obstacles to overcome in using transit improvements to alleviate spatial and skills mismatch. Especially given the highly automobile-oriented, and often necessarily dispersed built forms of many areas of entry-level employment, efforts to solve the first mile/last mile problem must look beyond traditional feeder service: in many areas disadvantaged workers need to be connected with, a regular city bus will simply never be the ideal solution. Transportation Management Organizations (TMOs) may often be well-positioned to coordinate transportation solutions connecting transit centers and transitway stations with workplaces in transit-unfriendly areas. TMOs first arose as a response to highway congestion in the 1970s and 1980s, and have traditionally offered a variety of services such as coordinating carpools, establishing vanpools, advising commuters on using the transit system and/or advising employers on commute benefit programs (Ferguson, 2007).

Given their focus on coordinating varied actors to expand transportation options in specific, sub-regional geographic areas, TMOs are natural allies in advancing coordinated transit planning and workforce development efforts. There are currently four TMOs active in the Twin Cities region, covering downtown Minneapolis, the City of Saint Paul, Anoka County (in the northern suburbs) and the 494 corridor (a major employment center in the southern suburbs). Especially in the 494 corridor, due to its status as a regional employment center, TMOs existing relationships and structures for reaching out to employers may offer a valuable starting point for employer outreach. In addition, the TMO structure of working with a variety of stakeholders united by a geographic location may allow for the

coordination of transportation demand to the point of justifying medium-intensity transportation services such as community bus- or van-based shuttles.

7.3.3 Pursue diverse first mile/last mile solutions

While TMOs will be important points of coordination in connecting workers and employers with transit, the sheer size of the first mile/last mile problem calls for a further diversity of solutions, potentially including employer or district shuttles, car and/or bicycle sharing, or partnerships with transportation networking companies, such as Lyft or Uber. When bringing employees to environments designed for the automobile, services that allow a reverse park-and-ride user experience—or something like it—will likely prove as necessary as traditional park-and-ride access is for bringing suburban workers to urban jobs.

It will also be crucial to consider the specific spatial and schedule patterns of high-demand sectors and sweet spot occupations in planning first mile/last mile service. More dispersed sectors may need a larger number of smaller vehicles with more route flexibility, while more concentrated sectors may be well served with somewhat larger vehicles and more regular routings.

7.3.4 Pursue transit-oriented economic development

At heart, creativity in solving the first mile/last mile problem is required by inherently transit-unfriendly built forms in many employment centers. One way to avoid this problem in the first place is to focus economic development efforts on station areas as well. Previous research on equitable employment accessibility in the Twin Cities shows large, regional accessibility gains from even a moderate concentration of jobs in station areas, larger even than from an equivalent concentration of housing (Tilahun & Fan, 2014). Previous research also shows potential for job growth in station areas, particularly around stations on light rail and bus rapid transit lines providing fast, regional mobility (Guthrie & Fan, 2016). In addition, large employers and employers competing for in-demand Millennial professionals already express interest in transit-served locations; they are often presented from following through on this interest by automobile-focused land use planning regimes. Planning reforms allowing higher densities, greater mixing of uses and lower parking ratios are valuable strategies to encourage job growth near transit (Fan & Guthrie, 2013).

7.3.5 Use transitways as leverage points

In closing, great challenges remain in the way of addressing the Twin Cities region's spatial and skills mismatch issues, but the present is a uniquely opportune time to lay the groundwork for a new, coordinated approach to doing so. The magnitude of the public investments and planning efforts surrounding the buildout of the regional transitway system mean that transit is on the minds of planners, workforce development professionals, elected officials, employers and other stakeholders throughout the region. These groups see transit investments as opportunities for transformative change. What's more, there is at least an implicit understanding that transformative change is needed if these major public investments are to succeed. Transit corridors hold great potential to serve as leverage points to bring diverse stakeholder groups to the table, but the acceleration of the regional transit system buildout calls for making such contacts sooner rather than later.

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