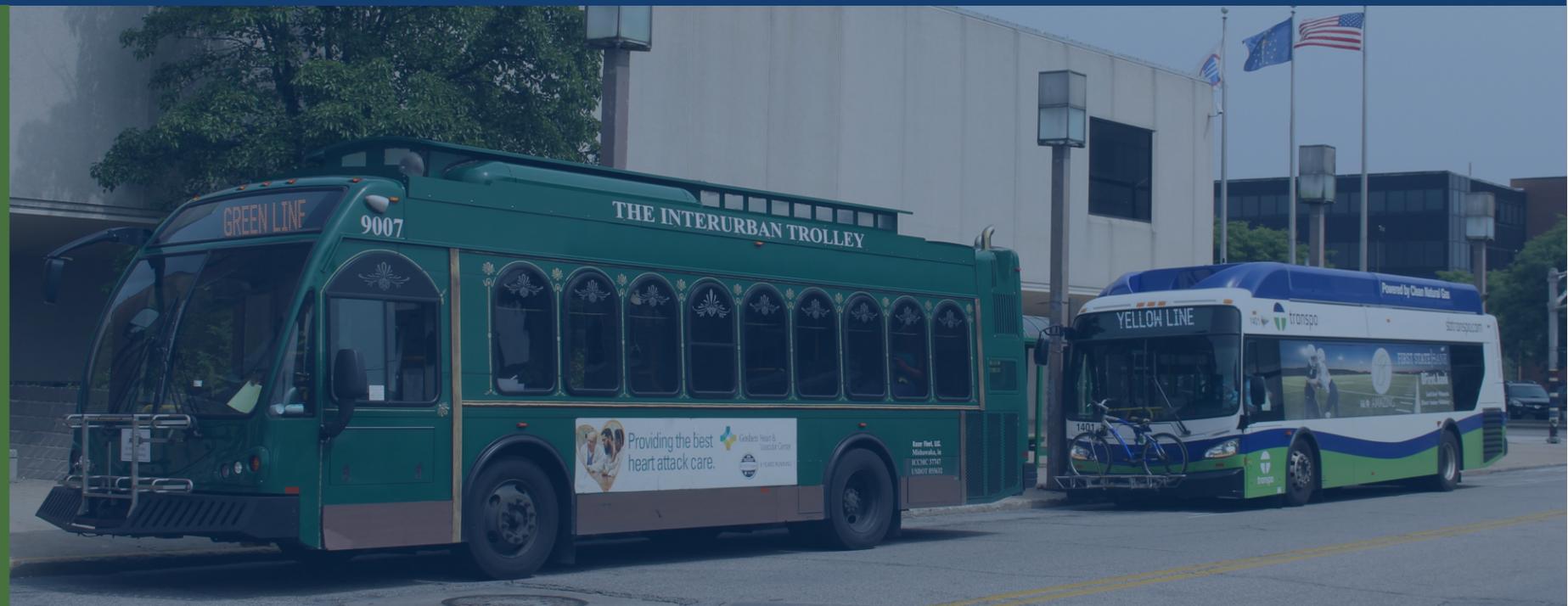
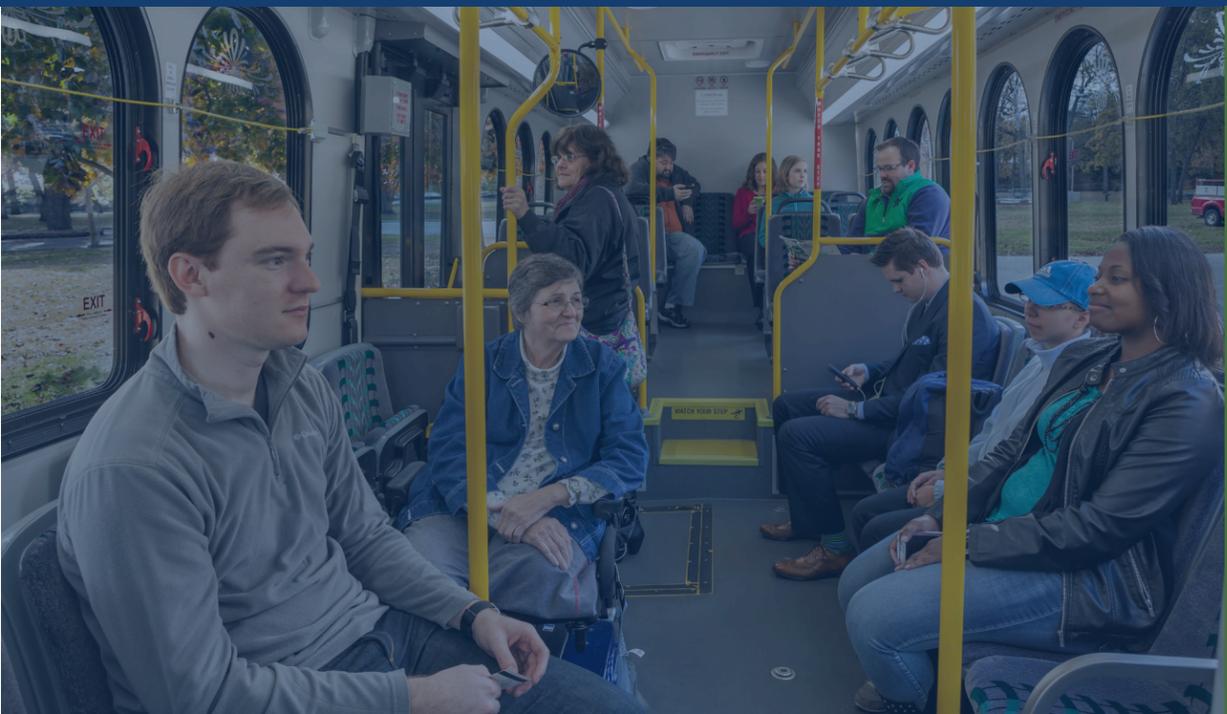




Choices Report



CONNECT Transit Plan: Choices Report

FEBRUARY 2022



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1 Introduction

What is CONNECT?

A Regional Transit Plan

CONNECT: Moving Communities Together is a collaborative regional transit planning initiative to

- evaluate the existing fixed-route transit systems in the region, specifically the Interurban Trolley and Transpo networks;
- consider a range of mobility options to design an improved transit network;
- engage the public, stakeholders, and elected officials in a conversation around trade-offs between different goals and priorities for transit to guide the process; and
- develop a 10-year plan for improvements to the transit network guided by the engagement process and data analysis.

This regional transit plan is a collaborative effort to decide where bus service should go, when it should run, and how frequently it should operate. This project is a collaboration between the Michiana Area Council of Governments (MACOG), which operates the Interurban Trolley primarily within Elkhart County, and the South Bend Public Transportation Corporation which operates Transpo, primarily within South Bend and Mishawaka. This process will engage riders, the general public, and key stakeholders in conversation about how the region’s transit network should serve its residents, businesses, and visitors.

Today’s bus network is the result of decades of cumulative small changes and adjustments. The resulting network may not be meeting the goals and priorities of today’s residents, employers, and institutions. Redesigning the Transpo or Interurban Trolley networks is an opportunity to review existing and potential transit demand and need, and to design a network that meets those demands and needs most effectively. It is also

a key opportunity to carefully think through and weigh competing goals for transit and whether the level of investment in transit is sufficient to meet the communities overall goals and priorities.

Redesign does not mean changing every bus route and stop. The key point is that thinking is not constrained by the existing network. Where the analysis suggests that existing service patterns make sense, those elements would be retained. Ultimately, the goal is a network designed for the region of today and tomorrow, not one based on solely on the past.

What is the Purpose of this Choices Report?

This Choices Report is the first step in **CONNECT**. It is meant to spark a conversation about transit needs and goals in St. Joseph and Elkhart Counties. The Report helps lay out relevant facts about transit and development in the region, and draws the reader’s attention to major choices that these facts force us to weigh.

The goal of this report is to assess the existing transit network and the geometry of the region today and engage the public, stakeholders and elected officials in a conversation about the goals of transit.

Reasonable people can disagree about the purpose of transit in their own community. Transit can deliver many different outcomes, but some of these outcomes trade-off against others.

Learning how the community values different outcomes is an essential step in deciding where to run service, what kind of service to run, and how to define success. This report explains some of those trade-offs and helps the reader identify which choices are most consistent with his or her own values for transit.

This Choices Report represents the first step in a three phase process of thinking about balancing goals and priorities for the region’s transit network. This report serves as a basis of information for public meetings, surveys, and outreach for what we call the “Choices Phase” of the CONNECT Transit Plan. The public, stakeholders, and riders will be invited to respond to these key questions.

For more information about the survey and public meeting dates, go to:

connecttransitplan.com

Technical and Design Work

Questions to the Public

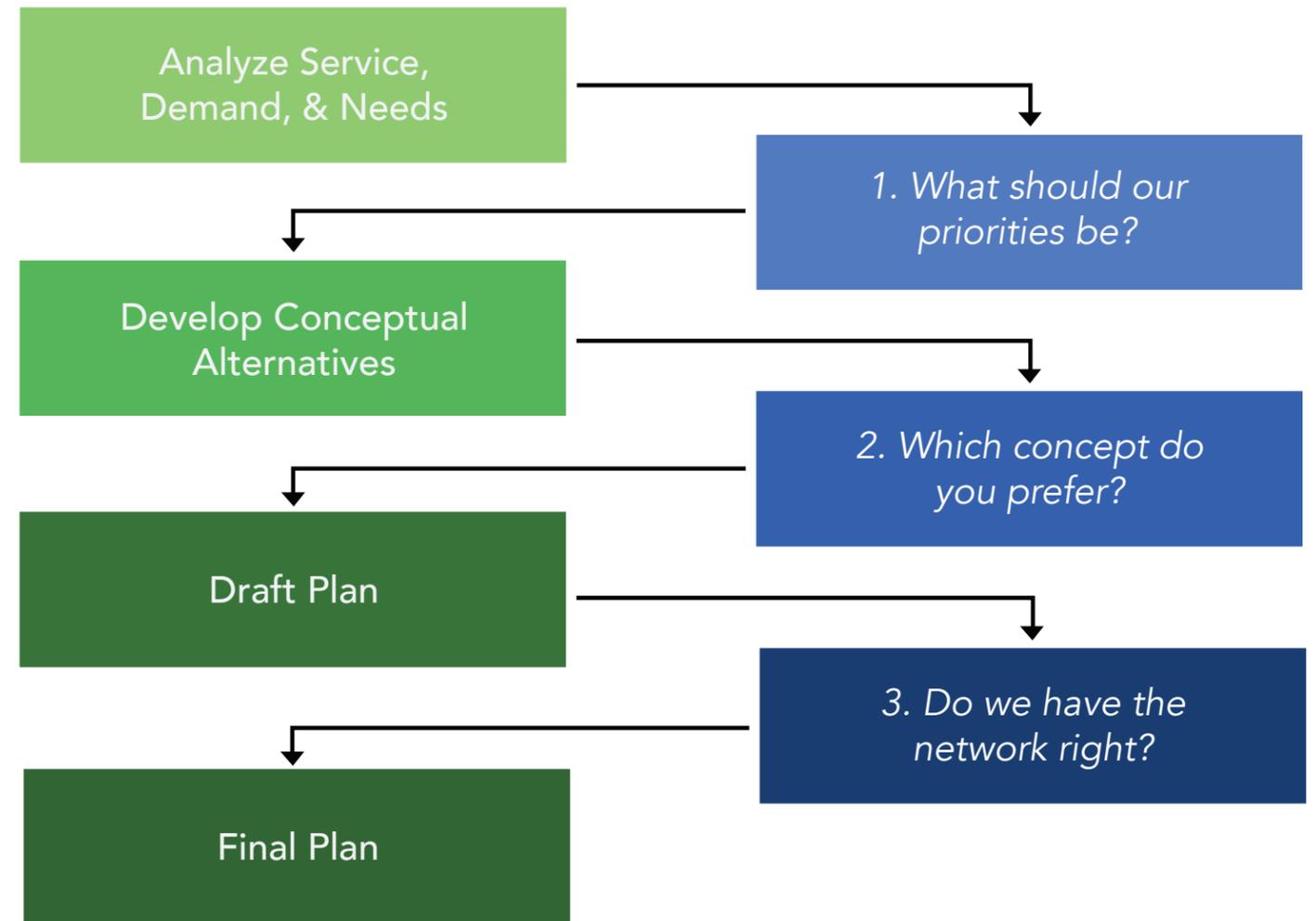


Figure 1: The process of technical work and public engagement that will guide CONNECT.

What goals should transit serve?

Possible Goals for Transit

Public transit can serve many goals, but different people and communities value these goals differently. Understanding which goals matter most in the region is a key step in designing future Transpo and Interurban Trolley service.

Possible goals for transit include:



Economic Opportunity

Transit can give businesses access to more workers; workers access to more jobs and supportive services like childcare; and students more access to education and training.



Support Essential Needs

Transit can help meet the needs of people who are economically insecure, with access to essential services and jobs.



Congestion Mitigation

Because buses carry more people than cars, transit use can mitigate traffic congestion by reducing Vehicle Miles Travelled (VMT).



Climate & Environmental Benefits

By reducing VMT, transit use can reduce air pollution and greenhouse gas emissions. Frequent transit can also support compact development and help conserve land.



Health

Transit can support physical activity, partly because most riders walk to their bus stop, but also because riders tend to walk more in between their transit trips.



Personal Liberty

By providing people the ability to reach more places than they otherwise would, transit can empower people to make choices and fulfill their individual goals.



Figure 2: Is a mostly empty bus failing? It depends why you are running it.

Transit can serve many different purposes; which purposes it should serve depends on your values.

Some of these goals are only served if many people use transit. For example, transit can only mitigate congestion and pollution if many people ride the bus rather than drive. We call such goals “ridership goals” because they are achieved through high ridership.

Other goals are served by the simple presence of transit. A bus route through a neighborhood provides residents insurance against isolation. A route may fulfill political or social obligations, for example by getting service close to every taxpayer or into every municipality. We call these types of goals “coverage goals” because they are achieved in large part by covering geographic areas with service, rather than by high ridership.

High ridership is not transit’s only goal

Transit agencies are often accused of failing to maximize ridership, as if that were their only goal. But in many cases, transit agencies are intentionally operating coverage services in areas that are not expected to generate high ridership. Coverage services are sometimes visible to the public as mostly-empty buses.

If Transpo and MACOG wanted to maximize transit ridership, they would focus service where and when it could be useful to the most potential riders. They would then be thinking like a business, focusing on places where its service is competitive for a large number of people.

Businesses are under no obligation to operate where they would spend a lot of money to reach few customers. For example, a retail chain is under no obligation to provide a store within a mile of everyone in the region. If it were, then the company would have to add many additional locations, and most of them would operate at a loss.

People understand that less populated areas will naturally have fewer stores. We don’t describe this as the retail chain being *unfair* to those areas; they are just acting like a business. The retail chain has no obligation to cover all areas with its stores.

Transit agencies are not private businesses. Most transit agencies decide they do have some obligation to cover most or all of their service area. The officials who make public transit decisions hear their constituents say things like “We pay taxes too” and “If you cut this bus line, I will be stranded.” So they decide that some coverage, even in low-ridership places, is an important transit outcome.

Ridership and coverage goals conflict.

All transit agencies must balance the competing goals of high ridership and extensive coverage. Within a limited budget, if an agency wants to do more of one, it must do less of the other.

Consider the fictional town illustrated at right. The little dots are homes and job locations. The lines are roads. As in many towns, most activity is concentrated around a few roads.

A transit agency pursuing only ridership would run all its service on the main streets, since many people are nearby, and buses can run direct routes. Service would be very frequent and convenient, but only for certain areas. This would result in a network like the one at bottom left.

If the same agency were pursuing only coverage, it would spread its routes out so every street had some service, as in the network shown at bottom right. Service would be available but infrequent everywhere, even on the main streets.

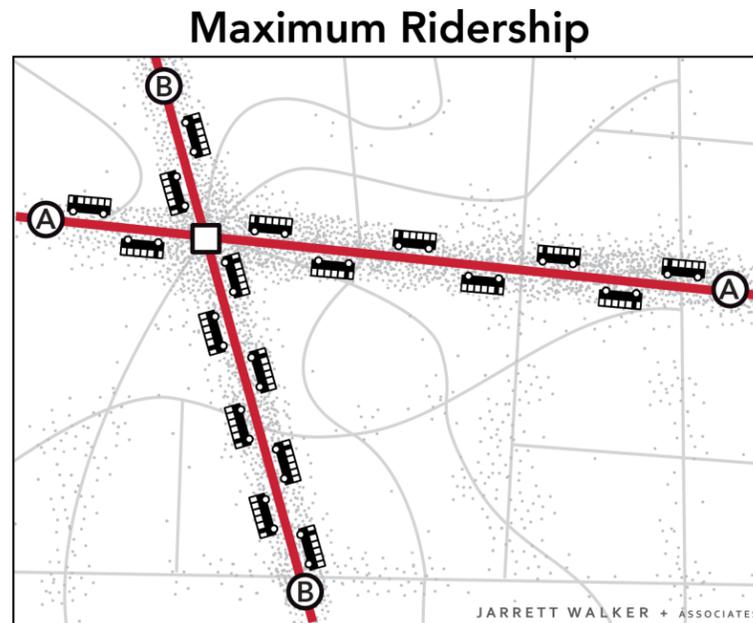
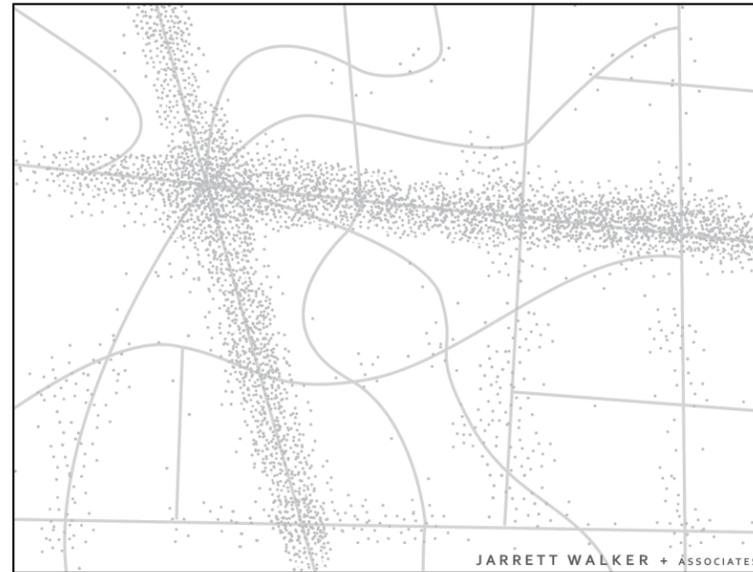
These two scenarios require the same number of buses and cost the same amount to operate, but deliver very different outcomes.

The choice between pursuing ridership and coverage is not binary. All transit agencies spend some portion of their budget on each type of goal.

A particularly clear way for transit agencies to set a policy balancing ridership and coverage is to decide what percentage of their service budget should be spent in pursuit of each.

The “right” balance of ridership and coverage goals is different in every community. It can also change over time as the values and ambitions of a community change.

These illustrations also show a relationship between coverage and complexity. Networks offering high levels of coverage – a bus running down every street – are naturally more complex.



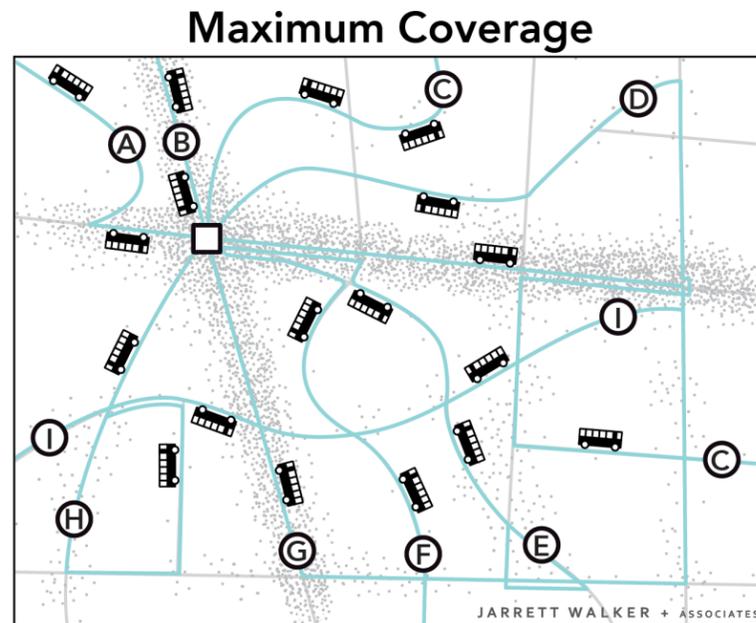
All 18 buses are focused on the busiest area. Waits for service are short but walks to service are longer for people in less populated areas. Frequency and ridership are high, but some places have no service.

Imagine you are the transit planner working in this fictional neighborhood.

The dots scattered around the map are people and jobs.

The 18 buses are the resources the town has to run transit.

Before you can plan transit routes, you must first decide: What is the purpose of your transit system?



The 18 buses are spread around so that there is a route on every street. Everyone lives near a stop, but every route is infrequent, so waits for service are long. Only a few people can bear to wait so long, so ridership is low.

Figure 3: Comparing an imaginary town where transit is run with the goal of maximizing frequency and ridership vs. the same town where transit is run with the goal of providing a little service near everyone.

What is in this Report?

Transit Geometry

In Chapter 2, we summarize the basic principles of transit geometry, how they affect the access and opportunities that transit can provide to residents, workers, and visitors, and how the underlying geometry forces every community to grapple with some key value trade-offs in the design of its transit system.

Markets and Needs

In Chapter 3, we assess the markets for transit in the region, the potential for high ridership, and the areas where the need for transit is high but the density of demand is not.

By “market” we are referring specifically to the demands for transit that result in high ridership relative to cost. This way of thinking about a transit market is similar to the way a private business thinks about its market for sales—how many potential customers there are, how useful they will find the product, and how well the product competes for their business.

The need for transit can be defined in many ways, but in most communities, people in need of transit usually includes those in poverty, people who are less likely to be able to drive, like seniors and youth, or households without cars.

Existing Network

In Chapter 4, we analyze the fixed route transit network performance including the frequency of service, productivity of service and how the network performs on measures like access to jobs.

Latent Demand

In Chapter 5, we analyze the areas of the region

where some factors like density, or need, or commute demand suggest that transit service could prove particularly useful, if added or improved.

Key Choices

In Chapter 6, we summarize key value choices that only the community and its leaders can make about how transit should serve the region. These value choices cannot be answered by technical experts because they are questions about what goals and values the communities prioritizes. There is not a technically correct answer to these value questions.

Balance Between Ridership and Coverage?

What should the balance between ridership goals and coverage goals be? Divide 100% between these goals:

- Maximizing ridership by providing high-frequency, useful services to dense places. This will put more people near the most useful services, but the number of people across the region with access to transit may reduce.
- Maximizing coverage by extending lower-frequency services to reach more of the region. This will increase the number of people with access transit service, but reduce the number of people with access to frequent, useful transit services.

Walking or Waiting?

There is a limit to how much a transit agency can increase ridership, within a fixed budget, without increasing walking distances to service and thereby increasing frequencies. This choice, between walking and waiting, relates to a larger choice about how to balance ridership and coverage goals.

Regional or Local Service?

Longer regional routes like the Yellow Line and Red Line serve longer-distance, interurban trips that are very important, but the per trip costs for these services is relatively high, because of the time they take. Dollars spent on these services might be spent on shorter routes within urbanized areas and serve more people, but for shorter trips. Is it more important to serve more people making shorter trips, or to serve fewer people making longer trips?

Does the Region Have Enough Service?

The amount of transit service available in the region, on a per person basis, is relatively low compared to peer regions. This is particularly true for Elkhart and Goshen. Also, relatively few people in the region have access to useful service, meaning service that is frequent enough and operates across most of the day and week. **IF** the region wants transit to be more useful and more relevant to the community’s needs, part of the answer may be providing more service overall with additional investment.

Next Steps

This Choices Report represents the first step in a three phase process of thinking about balancing goals and priorities for the region’s transit network. This report is the basis for public meetings, surveys, and outreach for the “Choices Phase” of the CONNECT Transit Plan. The public, stakeholders, and riders will be invited to respond to these key questions and provide other input on their preferences around how transit serves St. Joseph and Elkhart Counties. This input will be gathered through public meetings, an online survey, and other engagement events. The public health conditions mean that our study team may adjust our outreach events and processes depending on changes in guidelines and conditions. Details on the latest event and the online surveys will be available at:

connecttransitplan.com

The overall project timeline and future phases of work for CONNECT are shown below in Figure 4.

Figure 4: The timeline of engagement and technical activities for CONNECT.



2 What makes transit useful?

Transit is useful because it expands where people can go.

Access and Freedom

Wherever you are, there is a limited number of places you could reach in a given amount of time. These places can be viewed on a map as a blob around your location, as in Figure 5.

You can think of the edges of this blob as a “wall around your life.” Beyond this area are things you can’t do on most days because it simply takes too long to get there. The size of this area affects your options in life: for employment, school, shopping, or any other places you might want to reach.

The technical term for this is access, but it’s also fair to call it freedom, in the physical sense. If you can go to more places, you have more choices, so in an important sense you are more free.

How Transit Expands Access

Transit provides value when it increases people’s freedom. That happens by increasing the number of useful places people can access in a reasonable amount of time without driving.

On transit, the extent of your access is determined by:

- The **network**, including transit lines with their frequency, speed, and span. These features determine how long it takes to get from any point on the network to any other point.
- The **layout of the city**. This determines how many useful destinations can be located near transit stops. For example, where there are more people or useful destinations near a given stop, good access from that point is of value to more people.
- Your **location**. This determines which routes are close and frequent enough to be useful to you.

Access and Ridership

On an individual level, access represents convenience and the ability to do the things you need. As such, **the level of access transit provides is part of what determines ridership, but it is also something that many people will see as a worthy goal in itself.** For example:

- Access to jobs is a key concern for keeping people employed.

- Access to many amenities from a particular location gives that location value. Real estate firms routinely outline where you can get to by car from a particular development parcel, and this is the same analysis for transit. In cities, transit access can be an important factor in overall value.

If you are deciding where to live based on whether you’ll be able to get to your job, school, or relatives, you are asking a question about access. Access by transit may be a factor in that decision.

How the Pandemic Changes This

Many people who used transit before the pandemic have stopped while it goes on. It’s unclear when many people will come back to transit in the future. So the link between high levels of access and high ridership is weaker at this time than it has been in the past.

Regardless of when more people choose to ride again, no network can achieve high ridership without providing high access.

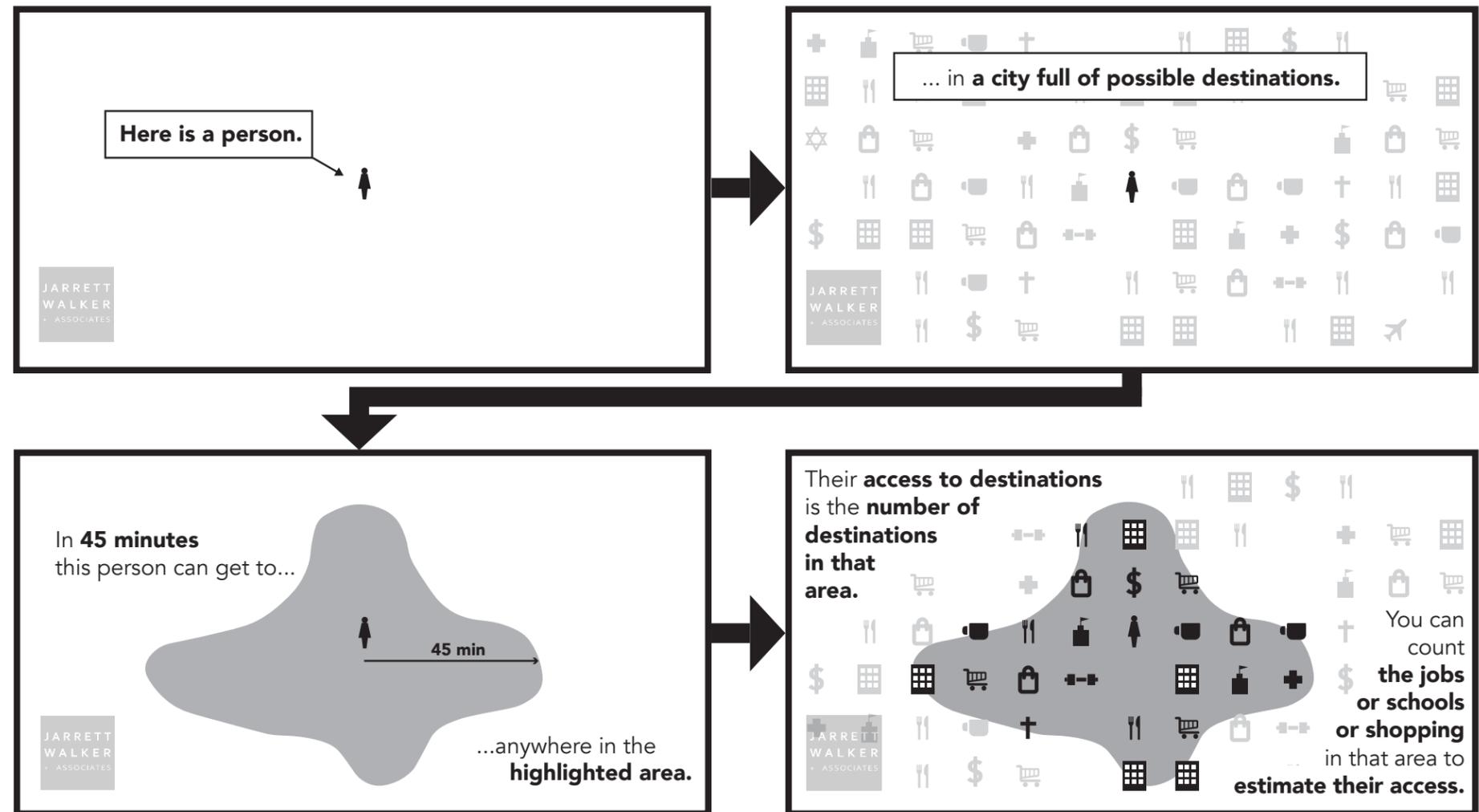
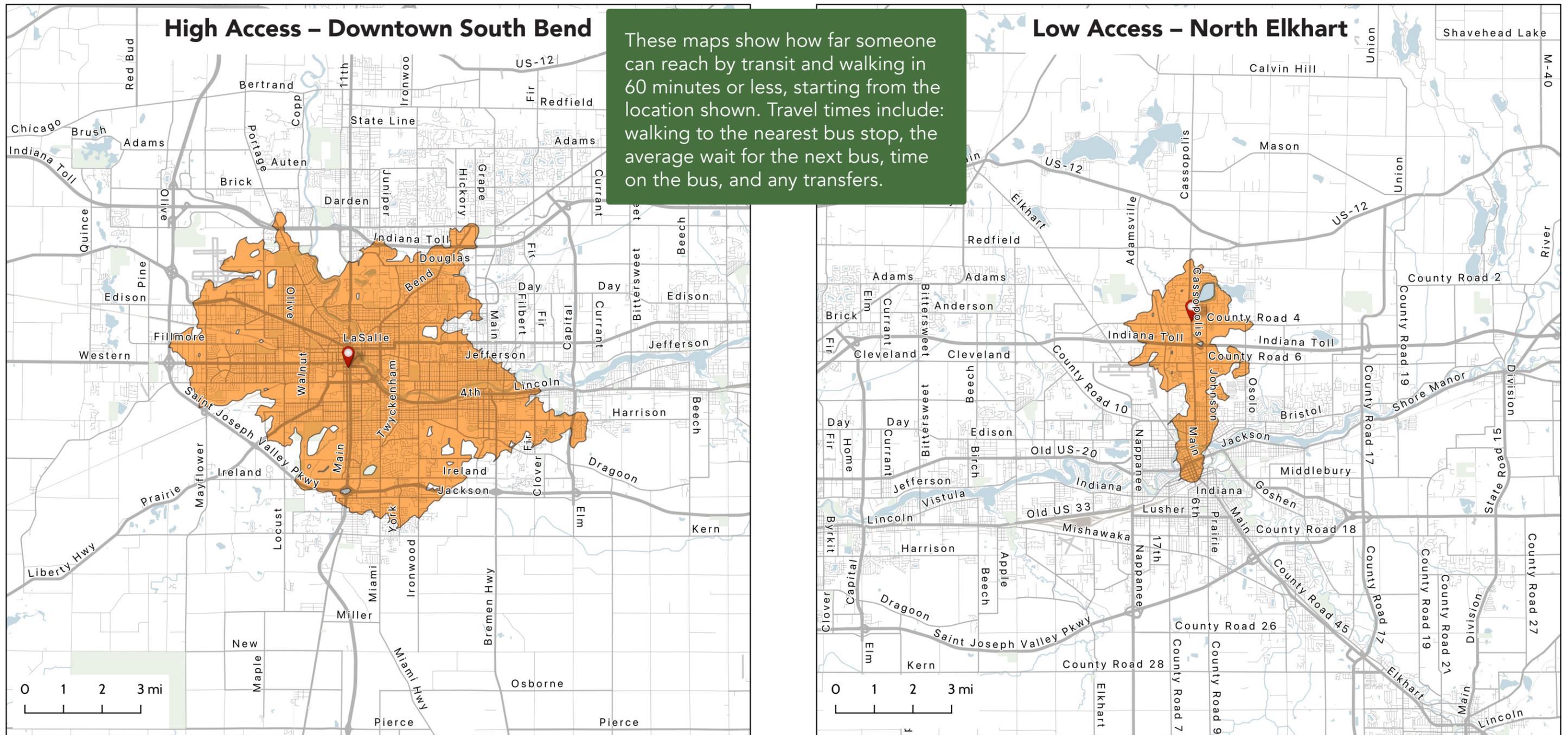


Figure 5: Access is the ability to get from your current location to places you need to go. The more places you can access in a reasonable amount of time, the more freedom you have to live your life in the way you need.

How far can I go in a reasonable amount of time?

Figure 6: An example of travel-time maps from two locations in the region - Downtown South Bend and North Elkhart.



This Downtown location features direct service to the majority of South Bend’s outer neighborhoods. Even though none of the routes are very frequent, the direct services and central location make it possible to **reach over 97,000 jobs and over 128,000 residents in 60 minutes or less.**

This is 4 miles from Downtown Elkhart, and is the northernmost destination on the Interurban Trolley’s Blue Line. Because the Blue Line makes a one-way counter-clockwise loop, the only areas accessible from this point are those within walking distance along the Blue Line route heading south from this location. **This makes the area reachable within 60 minutes or less much smaller: a person could reach about 13,000 jobs and 12,000 residents.**

Frequent transit is useful to more people and for more trips.

A transit network is a pattern of routes and services, where each line:

- follows a **path**,
- at certain days and times (its **span**),
- at a given average **speed**, and
- buses come every certain number of minutes. This is known as the headway or **frequency**.

Frequency is invisible and easy to forget, and yet on transit it is often the most important factor determining where you can get to in a given amount of time.

Frequency Is Freedom

More frequent service dramatically improves access. High frequency reduces travel time by providing several linked benefits:

- **Shorter Waits.** Unless you plan your life around a bus schedule, the average wait for transit is half the frequency. If a bus comes every 30 minutes, your average wait will be 15 minutes. But if it comes every 15 minutes, your average wait will be 7.5 minutes.
- **Faster Transfers.** To go further than the places on the bus route you happen to be on, you'll need to connect to another route. Better frequency makes this kind of connection easy, because the next bus is always coming soon.
- **Easier Recovery from Disruption.** Frequent service is more reliable, because if a bus breaks down you don't have to wait as long until the next one shows up.
- **Spontaneity and Freedom.** When transit comes every few minutes, there's no need to build your day around a bus schedule. You can turn up at the stop and go whenever you want.

Frequency and Ridership

The plot in Figure 7 shows all the routes operated by transit agencies in 36 different U.S. cities, at various points in the last ten years.

Each route is located on the plot based on its frequency and its productivity (boardings per service hour). More frequent service is to the left, and more productive service is higher up. The shade of each hexagon indicates the number of routes in that place on the graph.

The plot shows that higher productivity is correlated with higher frequency, even though higher frequencies require more service hours. In other words, **ridership appears to rise exponentially as frequency increases.**

This is a two-way street: transit agencies rarely run high frequency service in places where they expect low ridership. But conversely, if frequency isn't very high, the amount of ridership transit can attract is fundamentally limited.

The red dots show that all the Transpo and Interurban Trolley routes have mid- to low-frequencies, and yield relatively lower levels of productivity.

What is frequent enough?

Frequency is expensive, so it's important to think about just how frequent service needs to be.

A frequency of 15 minutes or better has a good chance of being useful to someone whenever they need to travel, especially if that frequency extends over many hours of the day, every day. In the MACOG Region, where there are currently no lines running every 15 minutes, 30-minute frequencies still provide a much higher level of freedom than 60-minute frequencies.

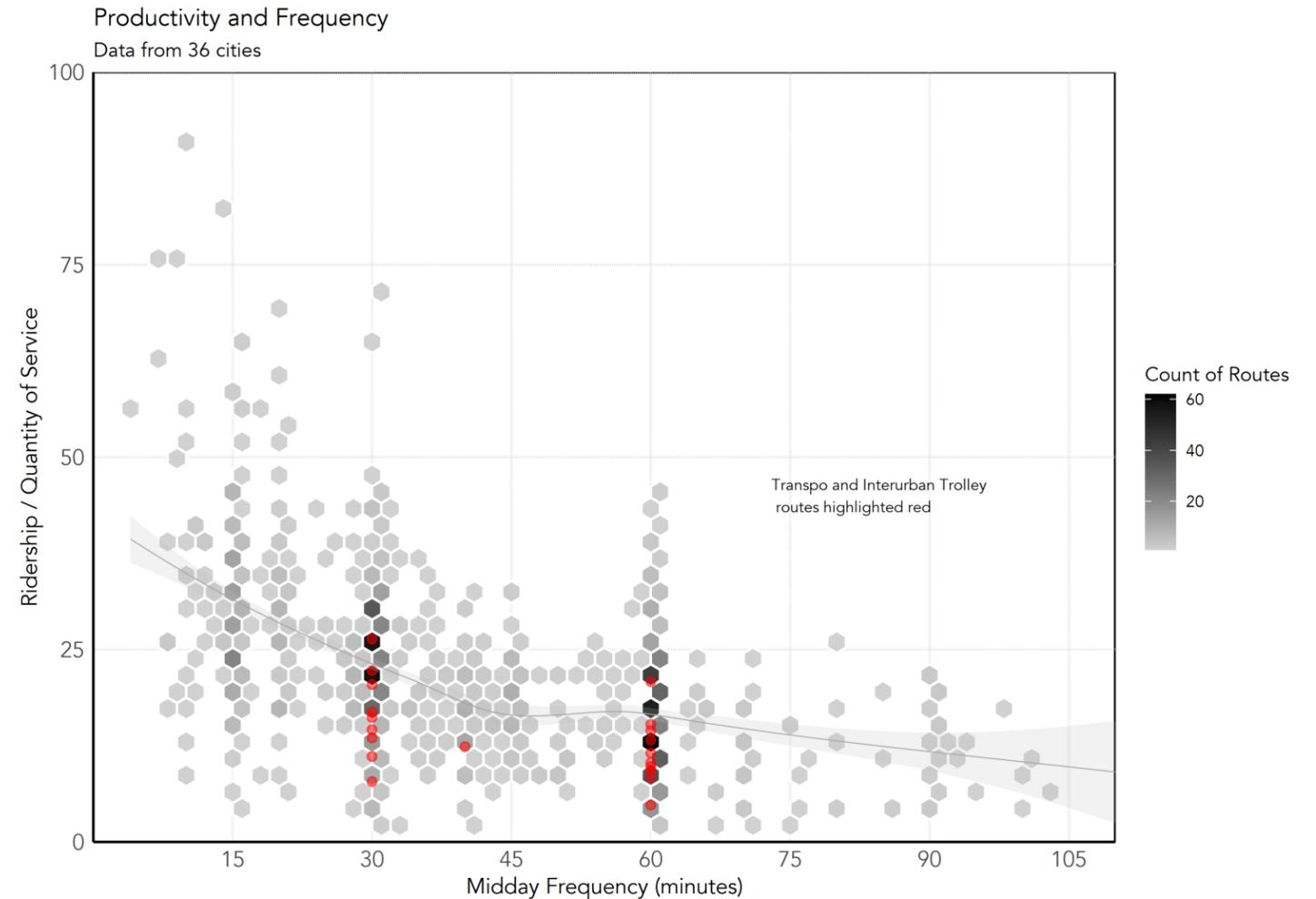


Figure 7: Transit Productivity and Frequency in 36 cities across the USA. Routes that operate more frequently tend to attract a higher number of riders per hour of service. This is because frequency makes transit trips shorter and more reliable.

Adequate frequency depends on trip length, because it doesn't make sense to wait long to go a short distance. For many people, it wouldn't make sense to wait 15 minutes to go half a mile, because you could probably walk to your destination in that time. But it might make sense to wait that long to go several miles across town.

Frequency is invisible and easy to forget, but on transit it is often the most important factor determining where you can get to in a given amount of time.

Access isn't just about service. It also depends on the built environment.

Creating a high-access transit network isn't just about faster or more frequent service. Many factors outside the control of MACOG and Transpo—such as land use, development, urban design, and street networks—affect transit's usefulness. This is why **land use and infrastructure decisions made by cities and other agencies are an essential part of transit's success.**

The built environment factors shown in Figure 8 are critical to facilitating a broadly useful transit network:

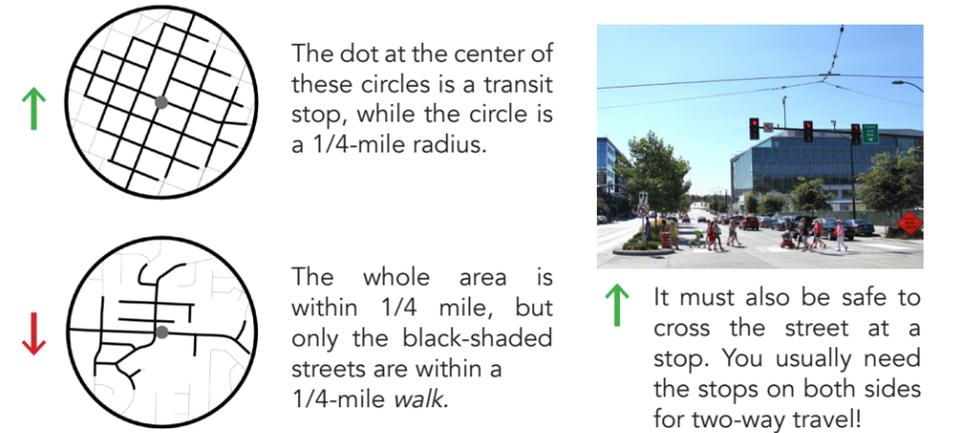
- **Density.** Where there are many residents, jobs and activities in an area, there are many places people might want to go.
- **Walkability.** An area only becomes accessible by transit if most people can safely and comfortably walk to and from the nearest transit stops.
- **Linearity.** Direct paths between many destinations are faster and cheaper for Transpo and MACOG to operate, relative to the number of places served. Linear routes are also easier to understand and more appealing to most potential riders.
- **Proximity.** The longer the distance between two places that Transpo or MACOG want to serve, the more expensive it is to connect them. Areas with continuous development are more cost-effective to serve than areas where there are large, undeveloped gaps between destinations.
- **Mix of Uses.** When there is a mix of land-uses along a direct path, transit can provide direct access to a broad range of destinations. Mixed-use transit corridors also tend to be very productive, because people ride in both directions at many times of the day.

Even within the context of a larger regional geography, these five elements determine where transit can be useful for many people, at a relatively low cost.

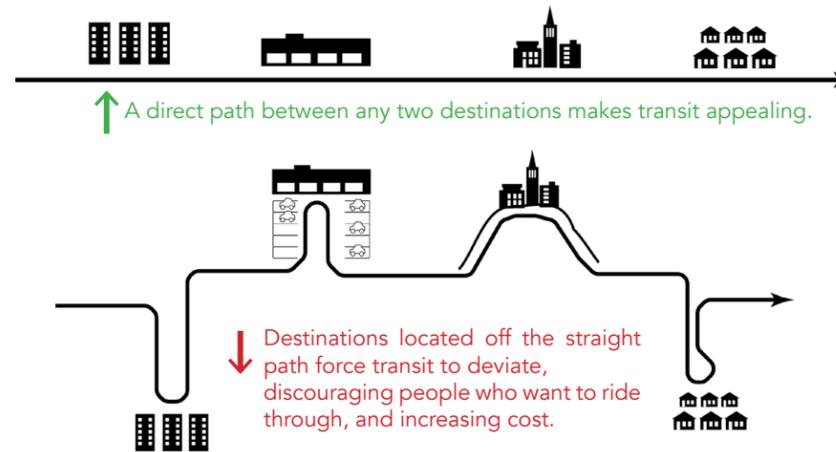
DENSITY How many people, jobs, and activities are near each transit stop?



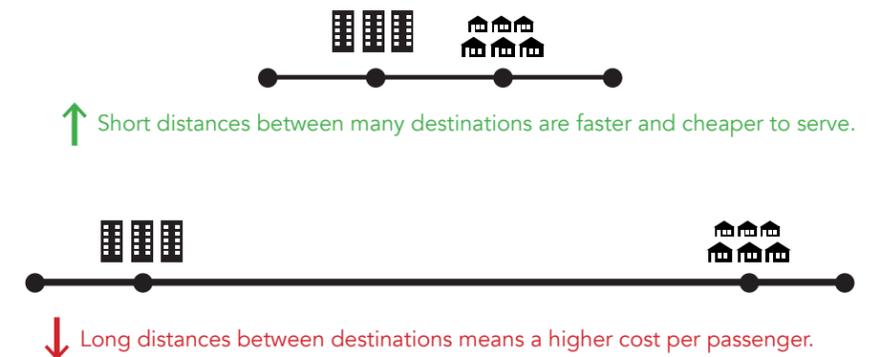
WALKABILITY Can people walk to and from the stop?



LINEARITY Can transit run in reasonably straight lines?



PROXIMITY Does transit have to traverse long gaps?



MIX OF USES Do people travel in both directions, all day?



These geometric facts pose a difficult political challenge. A transit system focused on cost-effectively providing the most useful service possible tends to serve its city or region unevenly, concentrating service in well-connected areas where demand is high.

Figure 8: More Freedom, Lower Costs - Five key built environment factors that determine how useful a transit network can be.

Local Examples - Density and Walkability

Dense areas often support multiple land uses in close proximity; density and walkability often go hand in hand. Nonetheless, there's nothing inherently walkable about a high-density neighborhood. There's also no specific reason why a low-density neighborhood can't feature good pedestrian connections.

The examples in Figure 9 show four ends of the density and walkability spectrum in the region:

- **High density & high walkability:** Downtown South Bend. This area is among the densest parts in the region, particularly in terms of employment. It features a traditional street grid and many street crossings.
- **High density & low walkability:** Osolo Road. High density doesn't only come in the form of multi-story apartments. This area in North Elkhart with several mobile home communities, has a density of over 5,000 residents per square mile. Its disconnected street network limits access to transit, and access to nearby jobs. Some lots are nearly 1/2 mile from Osolo Road. Walls and fences separating adjacent communities also make it impossible in some cases to walk to the next nearest street.
- **Low density & high walkability:** Edison at Mayflower. This area just south of the airport is mostly filled with detached houses on large lots. The gridded streets allow for extensive walking access for the relatively few people who live there.
- **Low density & low walkability:** Goshen Avenue. This area of eastern Elkhart includes detached houses on long dead-end streets. The river adds an additional barrier to streets just on the other side.

Because these four neighborhoods are built very differently, providing the exact same amount of transit service in each area will result in very different access and ridership outcomes.

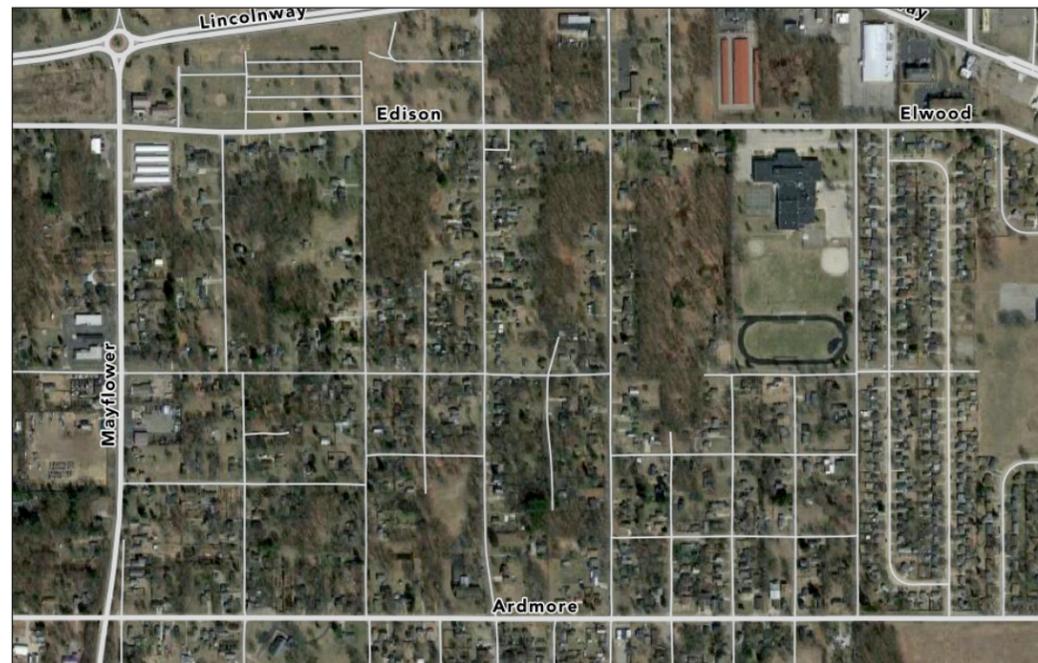
Downtown South Bend
High Density; High Walkability



Osolo Road at Henke Street, North Elkhart
High Density; Low Walkability



Edison at Mayflower, South Bend
Low Density; High Walkability



Goshen Avenue, East Elkhart
Low Density; Low Walkability

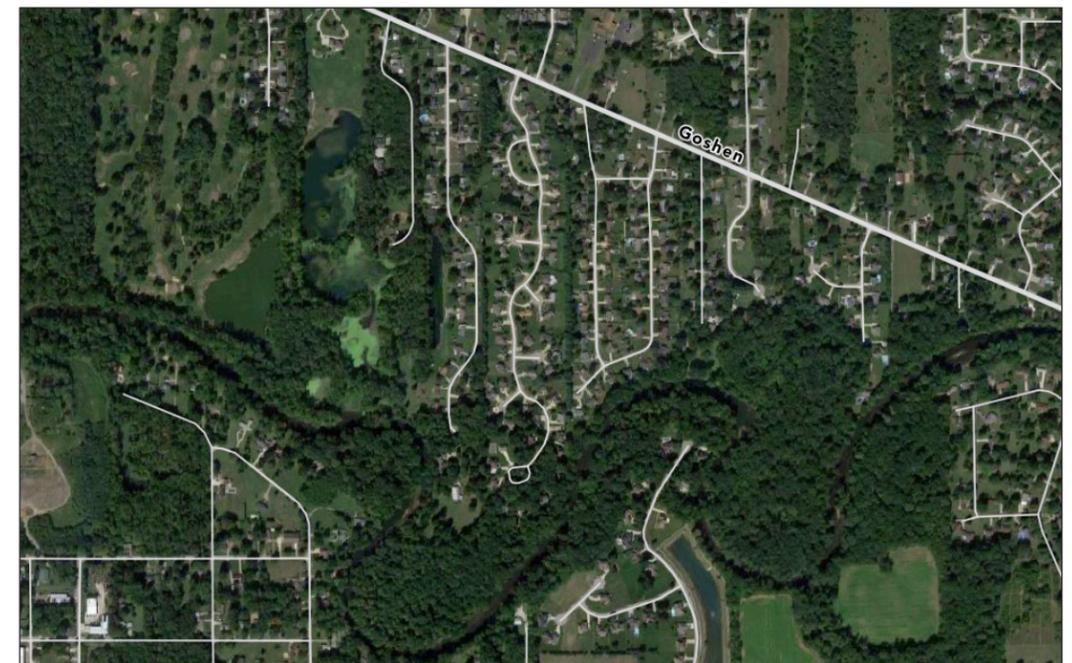


Figure 9: Examples of Density and Walkability in the region.

Imagery ©2021 Google, Imagery ©2021, Maxar Technologies, USDA Farm Service Agency, © OpenStreetMap

Local Examples - Linearity

Due to geographic constraints, like rivers, and the historic pattern of regional development, some major destinations can be served very directly by transit, while others require the bus to twist and turn off its path.

The examples in Figure 10 contrast two situations where connecting to a major destination requires significantly different levels of deviation from a straight path:

- **Very Linear: South of Downtown South Bend.** Main and Michigan offer straight, efficient paths into downtown. Along the way, both Routes 6 and 12 serve many destinations within walking distance.
- **Not Linear: Northwest South Bend.** The Amtrak train station and The Excel Center, an adult education institution, are more than 1/2 mile away from the nearby main roads. As a result, Route 4 has to make a long mid-route deviation off of Lincolnway in order to provide transit service to these destinations, and others, in the neighborhood.

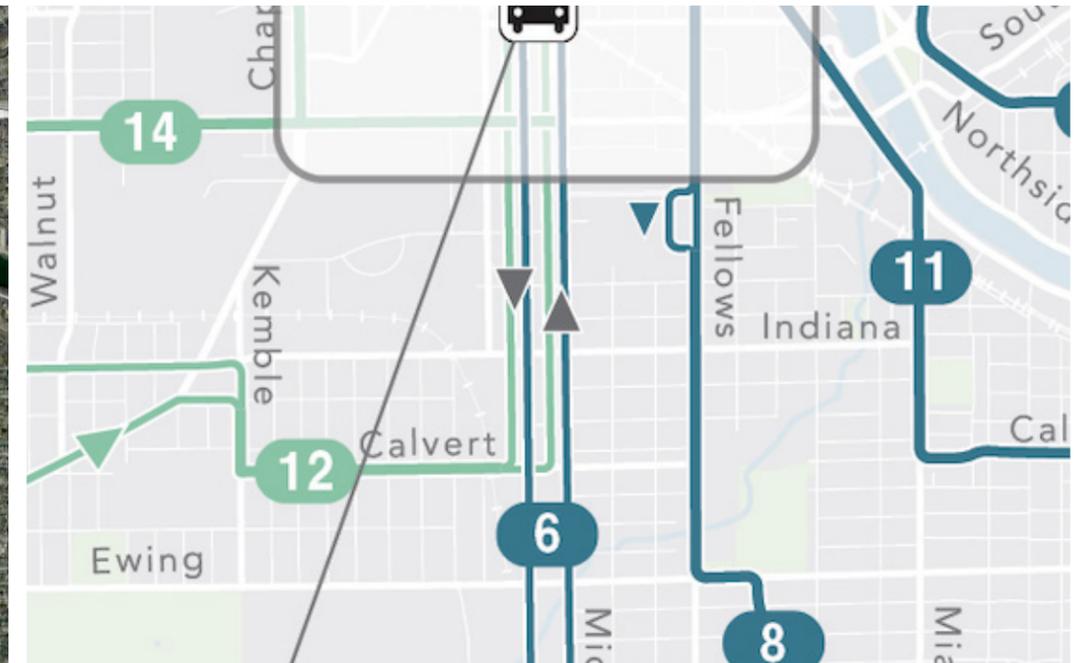
Passengers on a bus traveling along Lincolnway out of downtown South Bend need to sit through a deviation that adds more than a mile off of the straight path, so it takes longer to get to and from other places on the way. In contrast, passengers on a bus heading into or out of downtown South Bend from the south can essentially ride straight through.

A linear street pattern is an important component of linear transit routes, but beyond that, a linear pattern of density is also important. See page 14 for more on this.

South of Downtown South Bend - Very Linear



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Northwest South Bend - Not Linear



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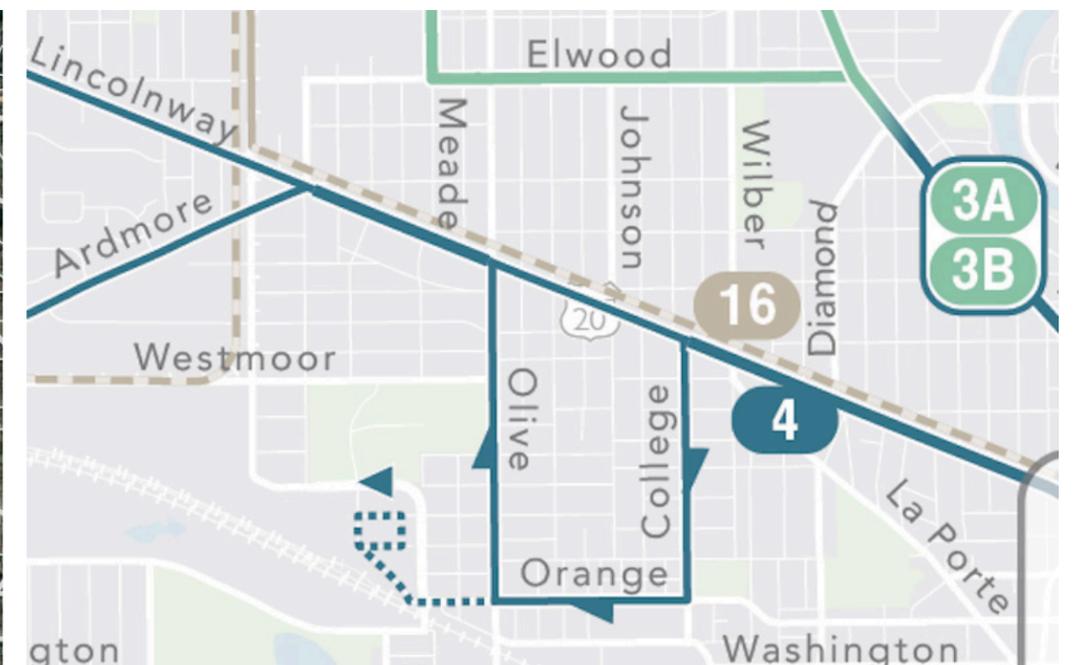


Figure 10: Examples of Linearity in South Bend.

Local Examples - Proximity and Mix of Uses

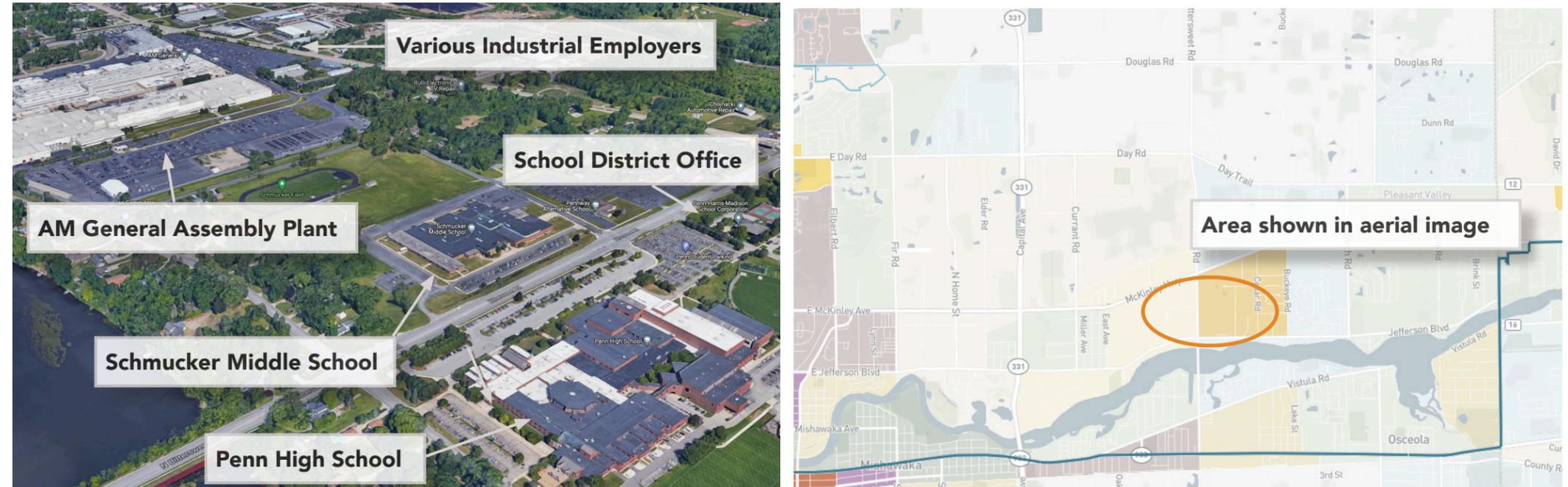
There are clusters of density throughout St. Joseph County and Elkhart County, but how efficiently these areas can be served by transit depends on how “proximate” they are to nearby areas of high activity, and also the diversity of land-uses, as we outlined on the previous pages.

The examples on this page show two areas with high employment density, but pose challenges for transit.

- Not Proximate to other dense areas:** McKinley Highway at Filmore. This area between Mishawaka and Elkhart has several major employers close together - a major regional high school, a middle school, a school district office, and the AM General vehicle assembly plant, and various other industrial employers. Its distance from other areas of high density makes it expensive to serve by transit and consequently, it is not served today. For transit, distance is time, and time is money. Areas with continuous development are more cost-effective to serve than areas with big gaps.
- Lacking a mix of land-uses:** Middlebury and Middleton Run. This eastern area of Elkhart has a lot of employers but no housing at all. Buses serving purely employment areas tend to be full in one direction and empty in the other.

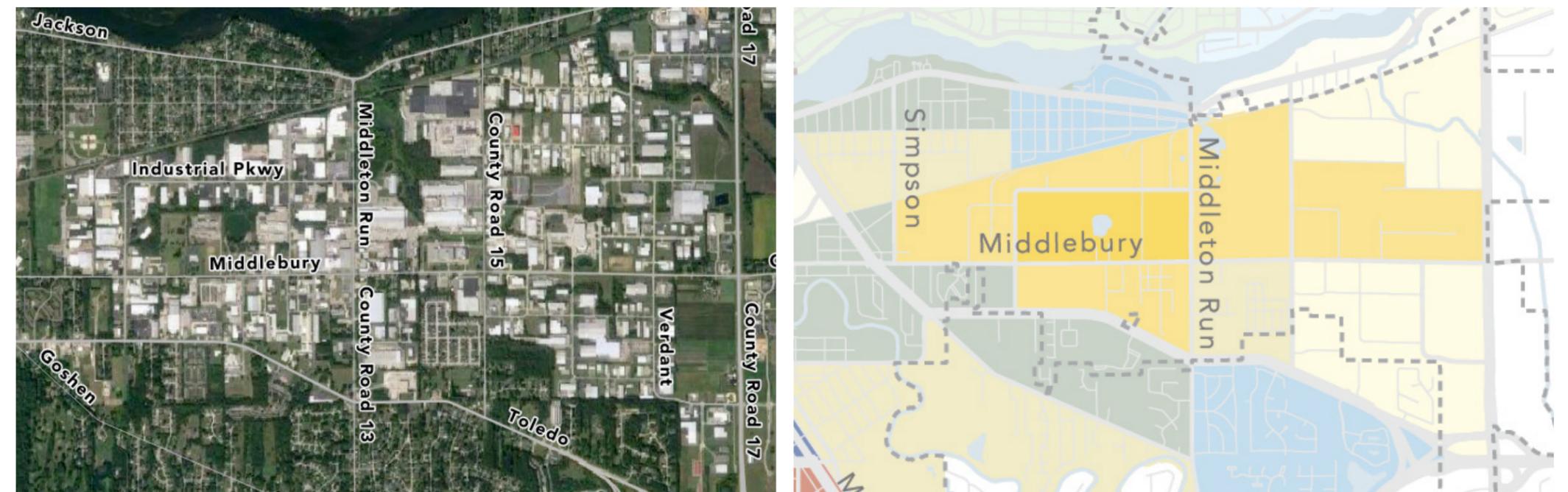
For transit, distance is time, and time is money. Areas with continuous development are more cost-effective to serve than areas with big gaps.

McKinley Highway at Filmore - Many jobs, but far from other areas with significant density.



Imagery ©2021 Google, Imagery ©2021 , Maxar Technologies, USDA Farm Service Agency
 Figure 12: Example of the lack of proximity in an area east of Mishawaka. On the activity density map at the right, yellow indicates a high density of jobs.

East Elkhart - Non-Diverse Land-Uses



Imagery ©2021 Google, Imagery ©2021 , Maxar Technologies, USDA Farm Service Agency
 Figure 11: Example of the lack of mix-of-uses in East Elkhart. On the activity density map at the right, yellow indicates job density and blue indicates residential density

What about on-demand transit?

You may have heard about new service concepts consisting of small vehicles that pick you up when and where you request them, rather than running fixed routes. You may hear these called “micro-transit” or “TNC partnerships,” where “TNC” (Transportation Network Company) refers to companies like Uber and Lyft.

The basic idea isn’t new. Taxis have always responded to customer requests, and shared-ride demand-response services, often called Dial-a-Ride, have been used for decades by US transit agencies. Special services for the disabled, called paratransit, also work this way.

The Trouble with Fixed Route Transit

There are obvious inconveniences in relying on fixed transit routes:

- **Long Walks.** Depending on where you are located, it may not be easy to get to the

nearest transit stop. It might be far away, or require you to walk down streets where you don’t feel as safe as you’d like.

- **Long Waits.** Even on frequent routes, you may have to wait 15 minutes to get a bus. On some routes, you could wait an hour or longer. And you’ll wait twice if your trip requires a transfer.
- **Buses run even if empty.** When demand is extremely low, scheduled trips still have to run at the promised frequency.

The Trouble with On-Demand Transit

It may seem obvious that transit would be more convenient if it were provided on-demand, precisely when and where each person wanted to travel. It would then be more like a taxi or traditional “dial-a-ride” transit. Smartphones have raised the possibility that more transit could be this responsive, with great real-time information.

Apps have made these service more responsive, so that they can be called on shorter notice.

- **Traveling out of direction.** Using on-demand transit means riding through deviations to drop off and pick-up other passengers on a path that’s not the fastest way to your destination.
- **Scalability.** On-demand services usually can only manage to serve 6 to 7 pick-ups every hour. When demand increases, they can easily be overwhelmed, leading to long wait times

Comparing Strengths

The applicability of on-demand transit depends on its cost-effectiveness. The costs of a fixed route are fixed, so more useful services are cheaper (per rider) to operate. Transpo and MACOG knows how much a bus route costs to operate, because the schedule tells us how many vehicles are needed, how many miles will be driven, for how many hours. **So the more people ride fixed route transit, the less expensive it becomes to provide each ride.**

In contrast, the costs of on-demand service tend to rise as more people use it. There is a low ceiling on how many rides per hour an on-demand vehicle can serve, even with the most efficient algorithms for dispatching drivers and vehicle. Imagine driving your car (or a bus) around St. Joseph and Elkhart County, picking people up and dropping them off in different places.

As service becomes more flexible, it takes longer to serve each passenger, because each rider’s destination is rarely on the way. The longer it takes to transport each passenger, the higher the cost of each ride.

How many times could you do this before an hour passed?

On-demand services run by public agencies generally report averages of no more than 6.5 boardings per vehicle per hour. In contrast, even low-performing fixed-route buses in South Bend handle 9 boardings per hour on average over a weekday¹. Moving fewer riders per hour means a service is more expensive per passenger.

For these reasons, demand-responsive services are never high-ridership services, when accounting for the full costs and the lack of scalability.

On-demand transit is the most cost-effective in low-demand areas, or at low demand times like late at night, as coverage services, where maximum ridership is not the goal. In isolated areas with poor walkability where fixed-route services would be very unproductive, on-demand transit may offer better service at a lower cost.

So **IF** Transpo or MACOG decided to expand coverage, then on-demand transit might be the right tool in some parts of the region to provide that coverage service in the most cost-effective manner. **IF** Transpo and MACOG decided to emphasize ridership goals in their network designs, then on-demand transit would not be the right tool, particularly at the current levels of investment.

¹ Based on February 2020 ridership. The exception is Route 1, which had just under 5 boardings per revenue hour in 2020. Productivity on Route 1 rebounded to 8 boardings per hour in 2021. The Red and Yellow lines have somewhat lower productivity, at about 8 boardings per hour due to much longer travel distances and lower passenger turnover. On-demand services running over the same distances would be able to serve even fewer passengers per hour.

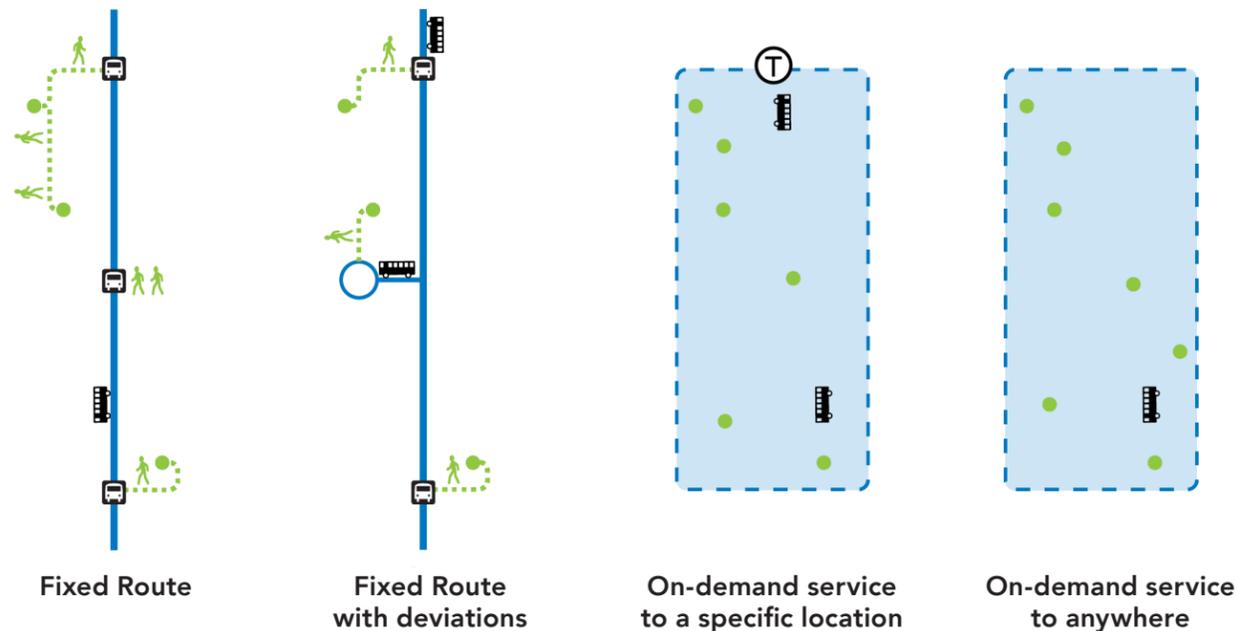


Figure 13: The spectrum of service, from a traditional fixed route to a fully on-demand service.

3

The Geography of the Region's Transit Challenge

The Market and Need for Transit

In this chapter, we present and discuss data that inform two different types of considerations in transit planning:

- **Where are the strongest markets for transit, with potential for high ridership and low operating costs per rider?**
- **Where are there moderate or severe needs for transit, where coverage services may be important even if they do not attract high ridership relative to cost?**

A "strong transit market" is mostly defined by where people are, and how many of them are there, rather than by who people are.

We learn about transit needs mostly by examining *who* people are and what life situation they are in.

Measuring Demand and Need

The maps and diagrams on the following pages help us visualize potential transit markets and needs based on the following considerations:

- **Residential density**
- **Job density**
- **Activity density** (combined residential and jobs)
- **Walkability** of an area
- **Zero-Vehicle Households**
- **Poverty** density
- Density of **Senior Residents**
- Density of **Residents Under Age 18** (Youth)

For each category, this chapter typically includes a map of the South Bend and Mishawaka area followed by a map of the Elkhart and Goshen area.¹

How to Use These Measures

No one measure tells us that a place has high ridership potential or high needs. Rather, we must consider them in combination.

Designing for Ridership

If you asked a transit planner to draw you a very high-ridership bus route, that planner would look mostly at densities of all residents and jobs; at the walkability of streets and neighborhoods; and at the cost of running a bus route long enough to reach them.

Only secondarily would that planner look into the income or age of those residents or workers. However, the "who" attribute that has the strongest influence on transit ridership potential is income. A lower-income person is often more likely to choose transit than someone with a higher income. This is especially true in outlying areas where driving and parking cars is so easy, so transit tends to be used mostly by people who don't have the option to drive.

Designing for Coverage

If you asked a transit planner to draw you a route that helped as many people with severe needs as possible, they would look at where low-income people, seniors, youth and people with disabilities live and where they need to go.

The densities at which these people live matters, because at higher densities a single bus stop can

¹ The maps in this chapter are based on data from the U.S. Census Bureau (2010 Census and 2019 American Community Survey), and from MACOG's 2020 Travel Demand Model.

Where there are moderate or severe needs for transit, coverage may be important even if it does not serve a large total number of people.

be useful to more people in need. However, the transit planner might also try getting the route closer to small numbers of people. In fact, the more distant and scattered people are, the more isolated they can be and the more they might need access to transit.

Civil Rights and Equity

Another important set of maps in this chapter is not strictly related to *need* but rather to civil rights. These maps show **where people of color live**.

Unequal treatment on the basis of race, ethnicity, or national origin is prohibited by the Civil Rights Act of 1964. Regulations by the Federal Transit Administration require that MACOG and Transpo consider the benefits and burdens that people of color experience from transit service and in the process of planning for transit and transportation projects.

While person's race or ethnicity does not tell us directly if they need transit, or if they have a propensity to use transit, we know that there is a correlation between race and ethnicity and income and wealth. If you are a person of color in the United States you are more likely to be low-income and less likely to own a car.

In addition, the historic impacts of segregation and discrimination have had long lasting effects on the patterns of housing, development, and investment across the region. Therefore, knowing

where people of color live helps us see where there are intersections between patterns of historic segregation and concentrations of people in poverty today. Providing affordable transportation options for low-income communities and communities of color is an important strategy in addressing economic insecurity, and may be an important goal, more broadly, for addressing racial and social equity goals that the community may have.

Seeing where people of color live helps to see how much of the population lives in places that are dense, linear, and proximate, and would therefore be well served by a high ridership network design. It also helps us see neighborhoods that are predominately people of color that are not dense, linear, or proximate and would therefore be relatively expensive to serve, but might be important to serve to achieve a coverage goal.

It is also important to understand where large numbers of people of color, people in poverty, and other historically-marginalized populations live so that public outreach during this project can maximize opportunities for participation for those historically vulnerable communities that have not traditionally participated in the transportation planning process. This requires being sensitive to language and cultural barriers to participation and offers an opportunity for historically vulnerable communities to share their perspective and voice in the contemplation of service changes and how those service changes have an impact on their community.

Indicators of Demand: Residential Density

Residential density is a key metric in assessing the strength of transit markets, since most people's daily travel behavior begins and ends at home.

The maps on this page and the next show the residential densities in the region.

South Bend and Mishawaka

Higher residential densities are spread throughout the western part of the region, with the highest densities in the **western neighborhood of South Bend** particularly along and south of Western Avenue. In **Mishawaka**, the areas immediately south and east of downtown have high residential density. In both of these areas, the density levels are achieved mostly through small lot residential neighborhoods with a mixture of single-family, duplex, and occasional multi-family housing structures.

Outside of these areas, there are pockets of moderate densities still capable of generating substantial transit demand. In the Near Northwest Neighborhood of South Bend along Portage Avenue are continuous, moderate density residential neighborhoods of single family, duplex, and small apartments.

On the Southside of South Bend along Fellows Street and Miami Street, there are similarly dense neighborhoods north of Ewing Avenue, but the pattern changes significantly south of there and becomes less dense, less connected, but is punctuated with occasional apartment complexes like Southmore, Irish Hills, and Fairington. While these individual complexes can be quite dense, the overall density levels are much lower due to larger distances between buildings and lower density surrounding neighborhoods.

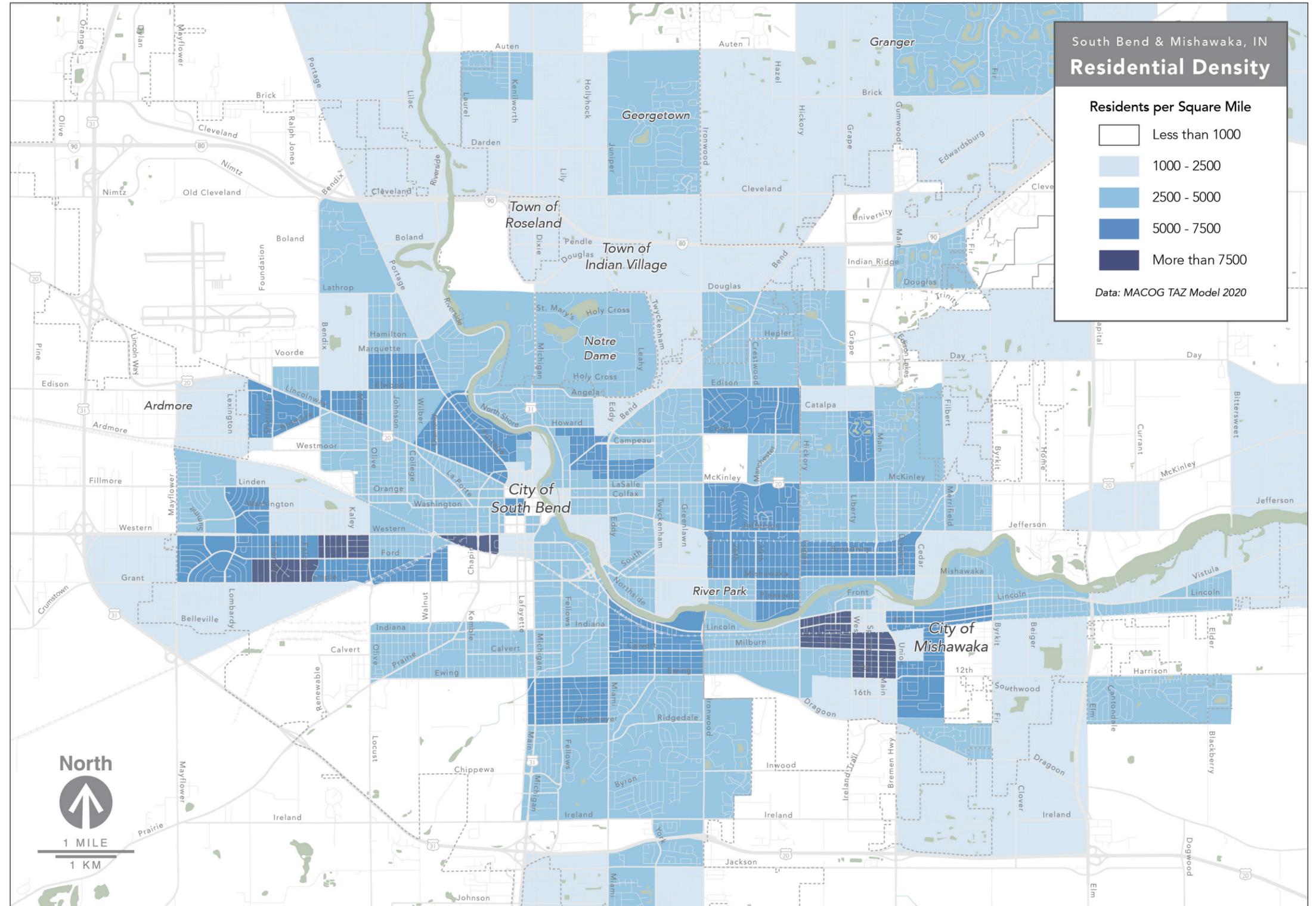


Figure 14: Residential Density in South Bend and Mishawaka. The darker the color, the more residents in the area.

Elkhart and Goshen

This map shows the residential densities in the eastern half of the region. **The areas with the highest densities are concentrated in the central parts of Elkhart and Goshen.** Within Elkhart, the highest density areas are

- just northwest of downtown between 3rd Street and the St. Joseph River,
- along West Marion Street,
- east of downtown along Middlebury Street to the Elkhart River where the River Run Apartments are located, and
- along and west of Main Street between Indiana and Lusher Avenues.

In general residential density declines as you head away from downtown Elkhart, but there are two pockets of moderate density somewhat isolated from the city center: Parke Place Estates off Osolo Road and the apartments and manufactured home communities north of Elkhart High School off County Road 3.

In Goshen, residential density is relatively high from downtown southward to College Avenue. There are relatively isolated pockets of moderate residential density along Old County Road 17 including Roxbury Park and Brookside Manor subdivisions. Similarly, Broadmore Estates, off Highway 15 at County Road 20, is another moderately dense manufactured home subdivision that is particularly far from other dense parts of Elkhart County.

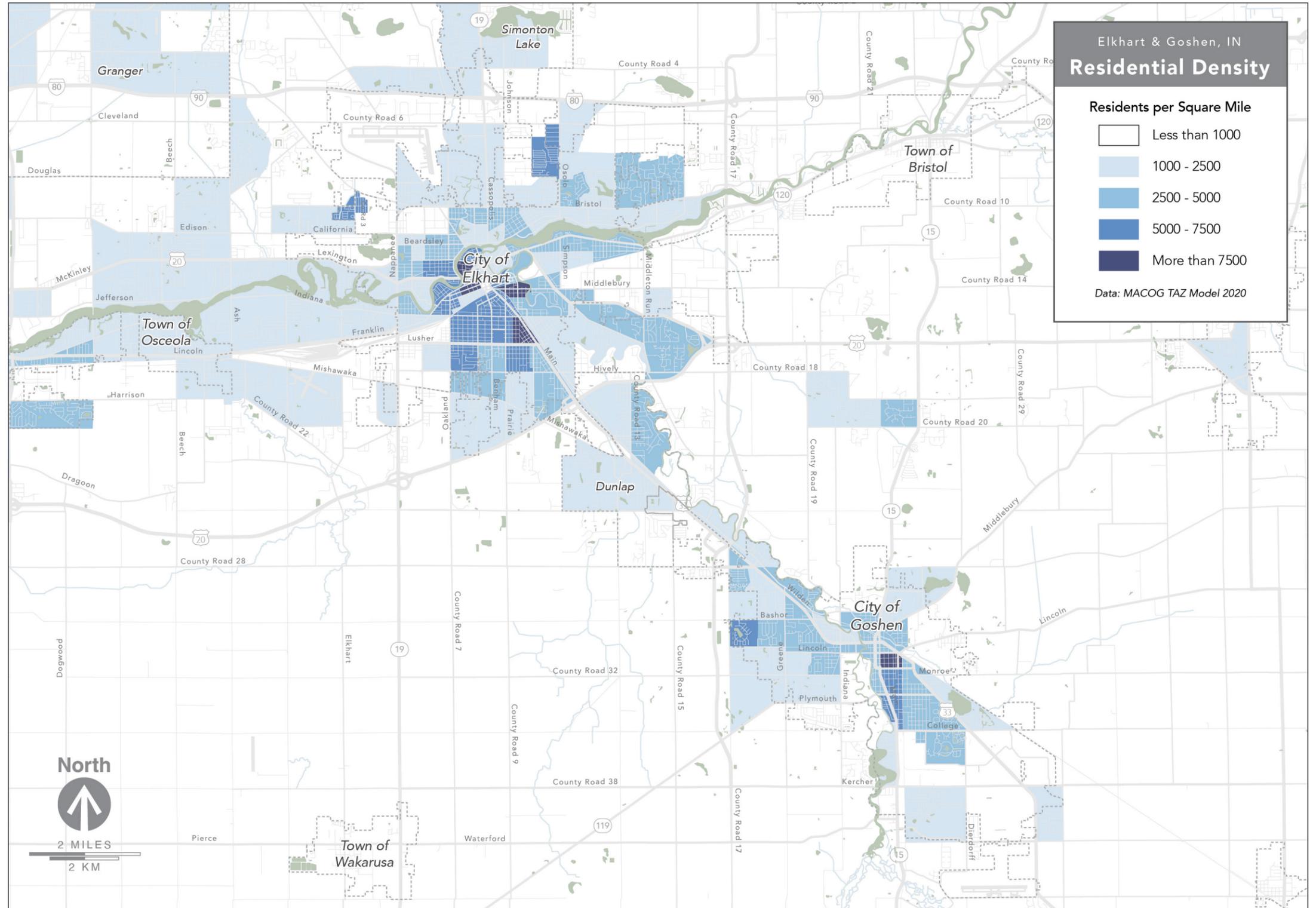


Figure 15: Residential Density in Elkhart and Goshen. The darker the color, the more residents in the area.

Indicators of Demand: Job Density

Employment density can tell us not just about where people might be going to work, but also about important destinations people travel to. Particularly in the retail and service sectors, high employment density also indicates places that are likely to have a high density of customers.

The maps on this page and the next show employment densities in the region.

South Bend and Mishawaka

The largest concentrations of job density in St. Joseph County are found in significant employment locations including:

- **Downtown areas** in South Bend and Mishawaka
- **Universities** such as Notre Dame and Bethel University
- **Industrial centers** south of the South Bend Airport
- **Retail centers** in north Mishawaka along the Main and Grape corridors and in the far Southside

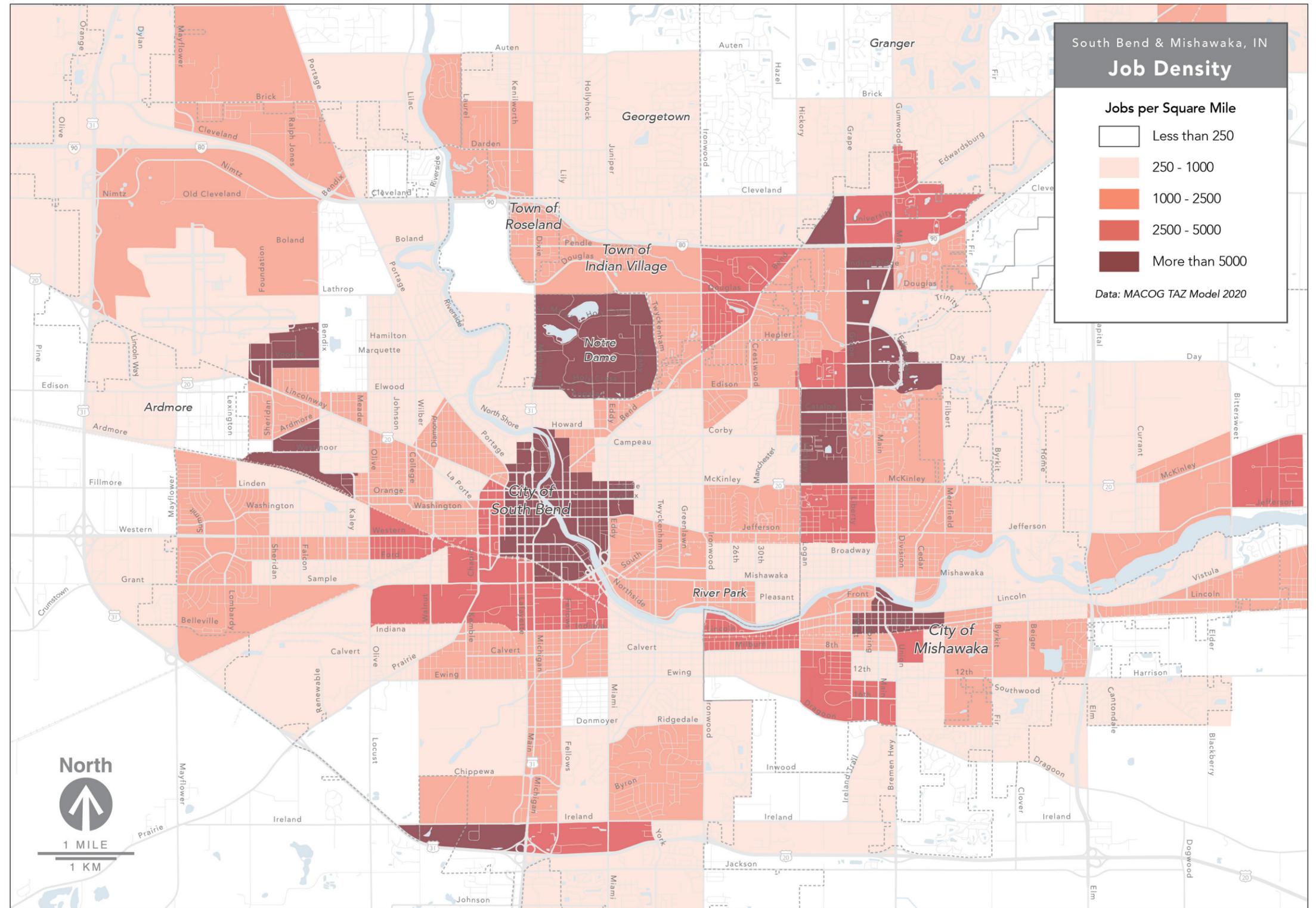


Figure 16: Employment Density in South Bend and Mishawaka. The darker the color, the more jobs in the area.

Elkhart and Goshen

The highest job density areas in Elkhart County are found in the Elkhart and Goshen **downtowns** as well as **industrial and retail centers** in the outer areas of Elkhart. Job density tends to decline consistently as one goes outward from downtown Goshen, though there is a large area of moderate density jobs in the area of Goshen College and the large industrial areas near the intersection of Kercher Road and Lincolnway.

Around Elkhart, there are a multiple relatively dense job areas scattered around the city. **Elkhart General Hospital** is a major employment concentration just east of downtown Elkhart. Just north, the industrial areas along West Beardsley and Lexington Park Drive also have a high density of jobs. East of town, the industrial areas along Middlebury Street, likewise, have a high density of jobs.

The large retail district in north Elkhart at Cassopolis Street and the Toll Road has many jobs, with a high concentration around the Menards on Windsor.

Note that different types of employers trigger different levels of transit demand. While retail and service job sites are also attractants for numerous customers and visitors, industrial and logistics job sites attract hardly anyone other than employees (often at only a few shift-change times a day) and suppliers (who generally arrive in a truck, with supplies). So while some of the industrial areas highlighted have high job concentrations, the retail, hospital, and colleges that have many jobs are likely to produce a greater level of transit demand.

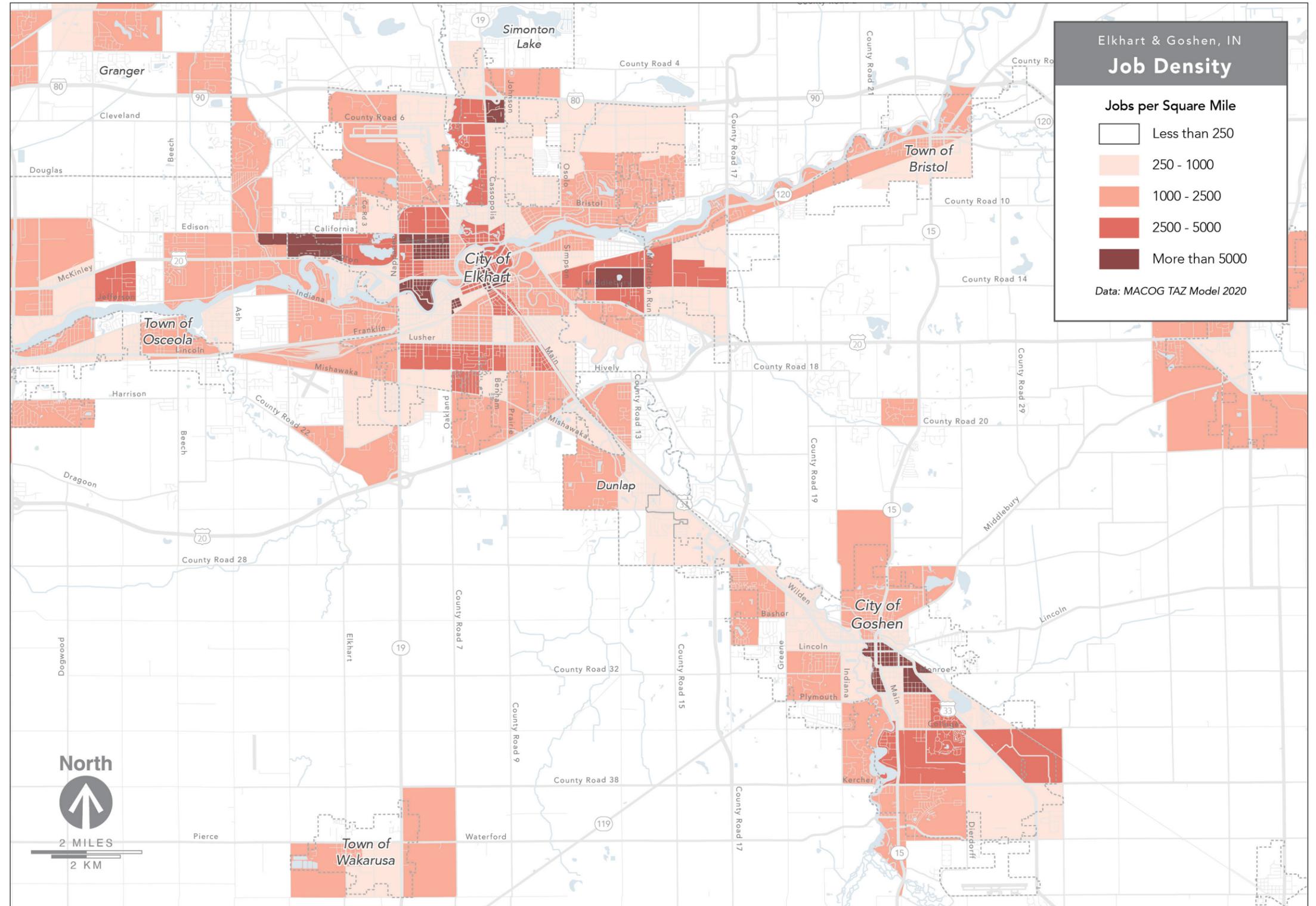


Figure 17: Employment Density in Elkhart and Goshen. The darker the color, the more jobs in the area.

Indicators of Demand: Activity Density

Activity density maps, like the ones on this and the following two pages, **depict not only high density, but also the mix of activities in an area.**

Transit routes serving purely residential neighborhoods tend to be used mostly in only one direction each morning and evening rush hour.

In contrast, **where residential, commercial and other uses are mixed, people are traveling in both directions so buses can be full in both directions.** Corridors which straddle a purely residential and purely employment area see some of the benefits of mixed land-uses.

Regional

This map shows the activity density and mix of land uses across the entire region. South Bend, Mishawaka, Elkhart and Goshen provide **dispersed centers of high job and residential activity** throughout the east and west parts of the region. Two-way demand between these activity centers are more likely to result in fuller buses in both directions.

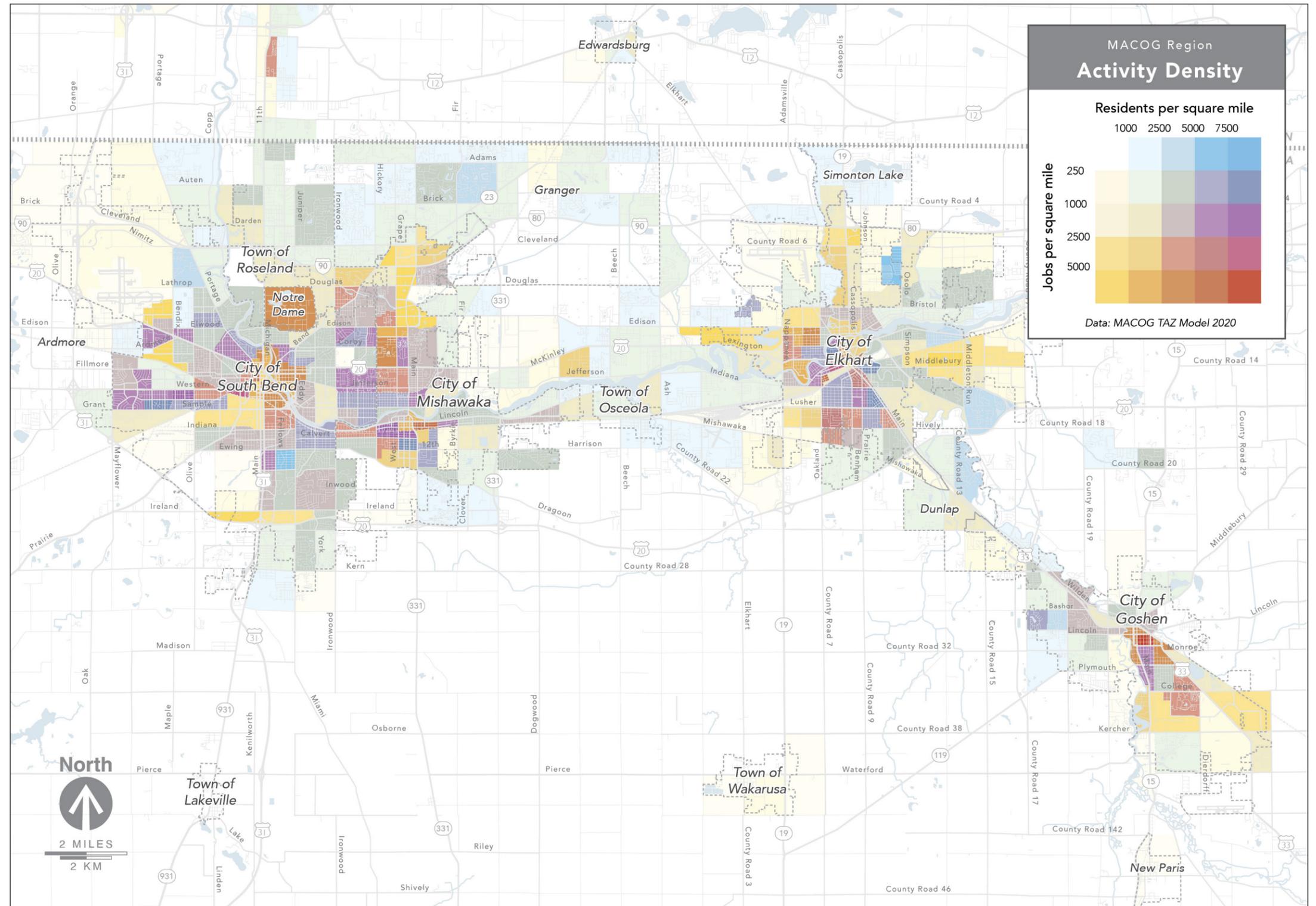


Figure 18: Activity Density in the whole region. Residential density is shown in shades of blue, job density is shown in shades of yellow, and places where residents and jobs are both present are shown in shades of red. The darker the color, the greater the number of jobs or residents in the area.

South Bend and Mishawaka

In Transpo's service area, there are **high job densities in the South Bend and Mishawaka city centers as well as parts of the periphery**, with residential areas located in between. The Western Avenue corridor stands out as having relatively continuous mixed, high density. Contrast that corridor with the Jefferson Boulevard corridor from South Bend into Mishawaka, where areas of relatively high activity density are separated by lower density pockets.

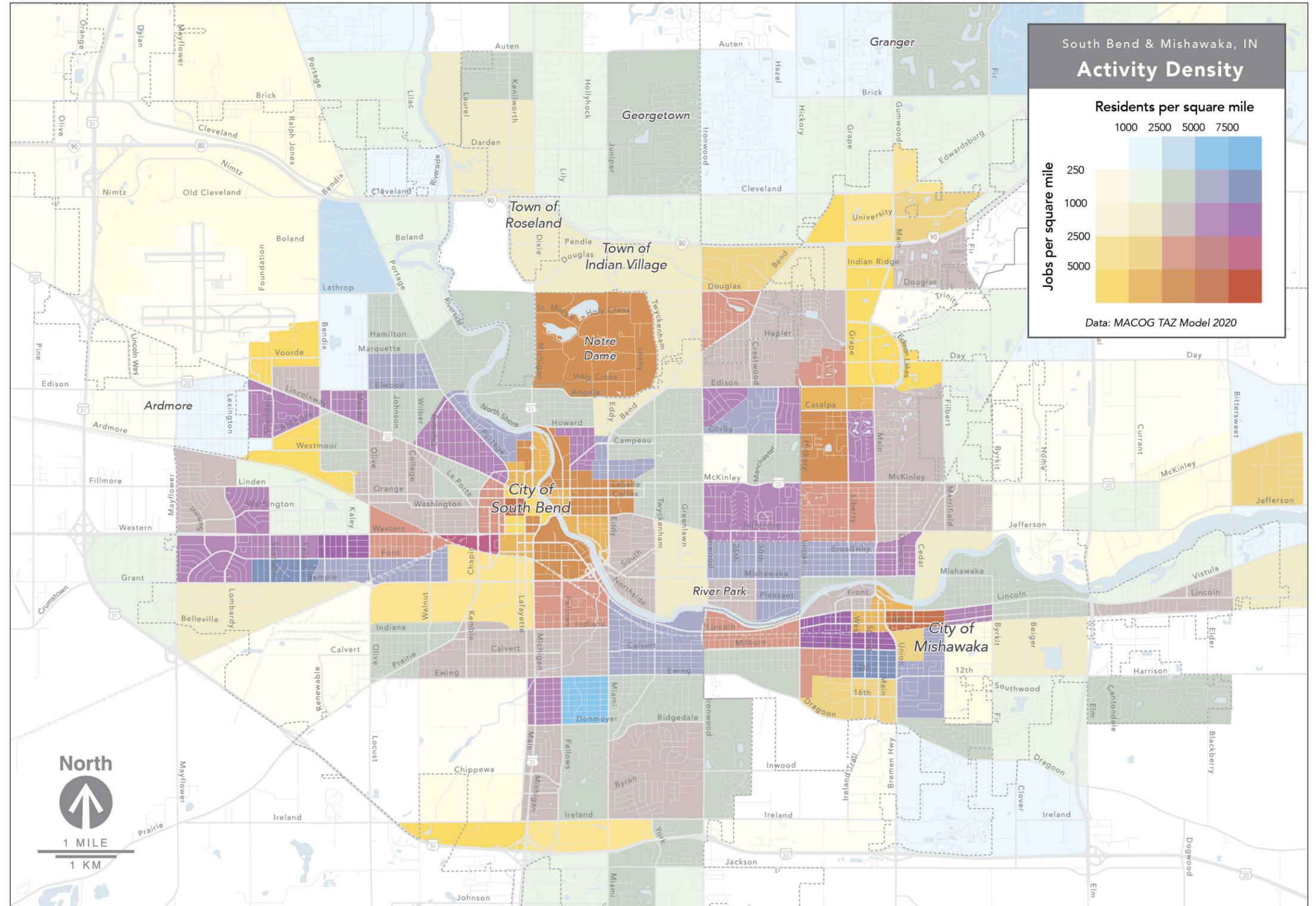


Figure 19: Activity Density in South Bend and Mishawaka. Residential density is shown in shades of blue, job density is shown in shades of yellow, and places where residents and jobs are both present are shown in shades of red. The darker the color, the greater the number of jobs or residents in the area.

Elkhart and Goshen

In the eastern half of the region served by MACOG's Interurban Trolley provides similar opportunities for two-way travel demand, both within parts of Elkhart and Goshen, as well as between the two cities. There are high job densities in both Elkhart and Goshen city centers and their peripheries, with residential areas in between, both in the two cities as well as other surrounding towns.

One exception is the area directly north of downtown Elkhart, served by the Blue Line. The vast majority of this transit corridor contains employment areas, but almost no residential land with the exception of the mobile home park west of Osolo.

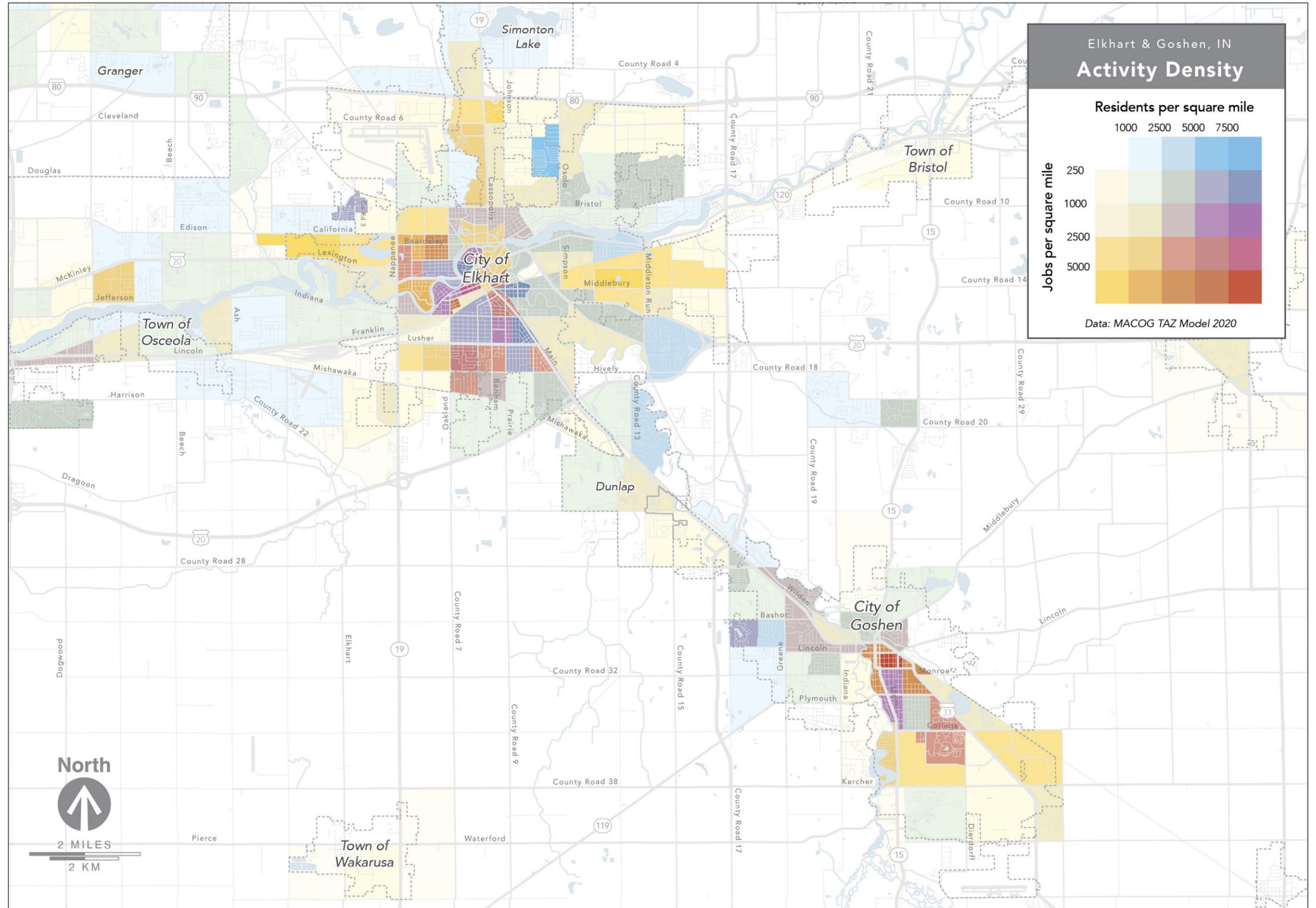


Figure 20: Activity Density in Elkhart and Goshen. Residential density is shown in shades of blue, job density is shown in shades of yellow, and places where residents and jobs are both present are shown in shades of red. The darker the color, the greater the number of jobs or residents in the area.

Indicators of Demand: Walkability

The maps on this page and the next show an estimate of how walkable different parts of the region are.

Neighborhoods built before 1950 tend to be more walkable, made of dense street grids with many intersections that make it easier to walk to bus stops.

Newer developments can have high street connectivity, even without a traditional grid of streets. However, many newer developments are designed to minimize car traffic past the most valuable real estate. This is done in part with intentionally poor street connectivity. If streets don't go through, only residents will drive down them, forcing others to use the nearest arterial road to get anywhere. In most cul-de-sac developments, walking routes are long and circuitous, making it hard for people to reach transit if the bus routes stick to the major, linear roads.

Areas around freeways, rivers and railways tend to have few streets or paths that allow people to cross them, limiting access to transit stops just on the other side.

South Bend and Mishawaka

Neighborhoods built before 1950 in the core of South Bend and Mishawaka as well as **Notre Dame's campus** provide more walkable areas within St. Joseph County. However, the **highways and railways** that run through and surround South Bend and Mishawaka, as well as the **St. Joseph River**, provide physical barriers that create less walkable zones on both sides.

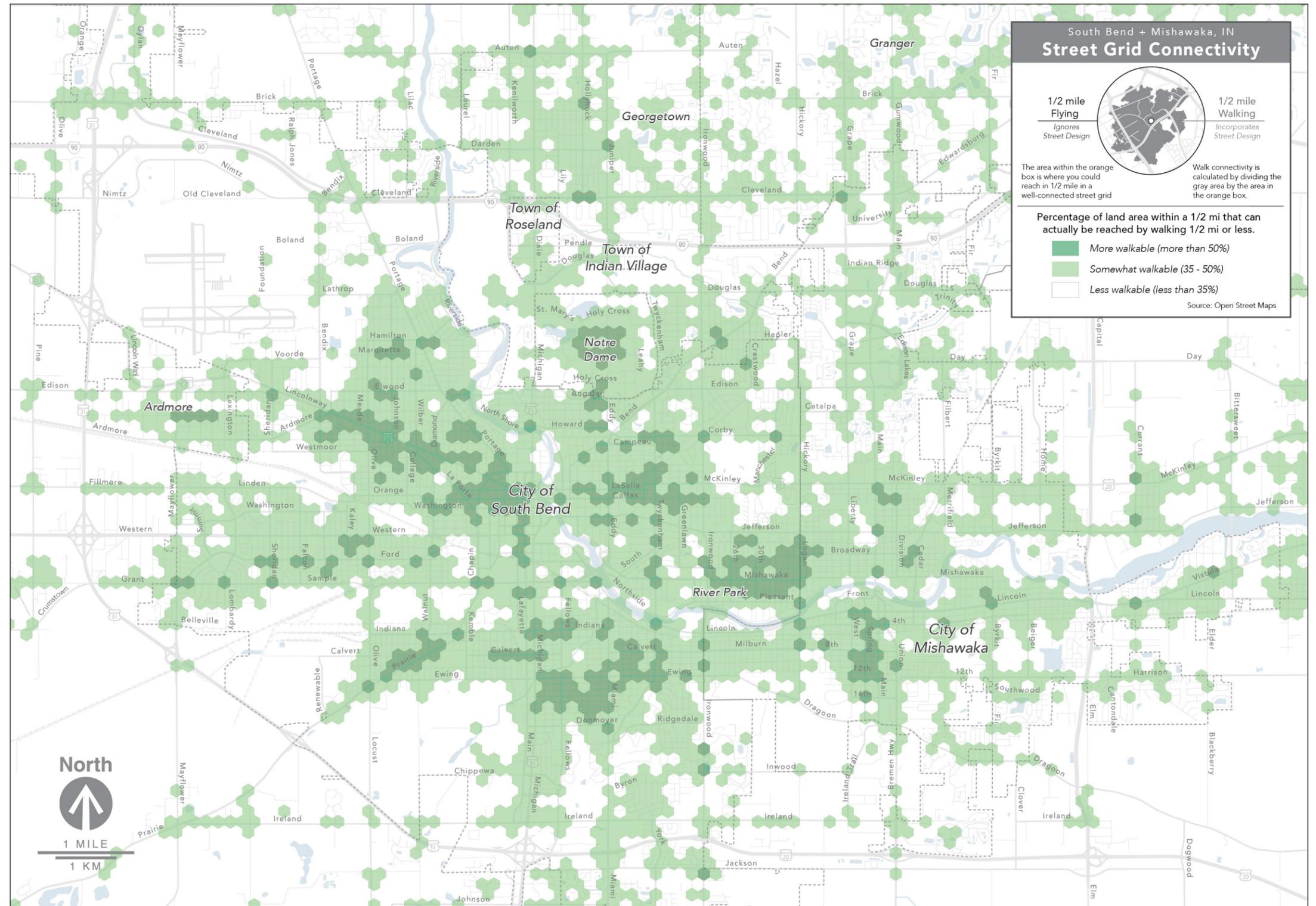


Figure 21: Map of street grid connectivity in South Bend and Mishawaka. This estimates walkability based on the percentage of the land area within a half-mile of any given point that can actually be reached by walking a half-mile, using available streets and pedestrian paths. The darker the color, the more walkable the area.

Elkhart and Goshen

The Cities of Elkhart and Goshen provide the majority of the walkable areas in the eastern part of the region, with **neighborhoods built before 1950 near the historic downtowns** again showing up as the more walkable areas in Elkhart County. The **St. Joseph and Elkhart Rivers** are sometimes a barrier between walkable areas on either side through Elkhart and Osceola. Major **highways** also create less walkable areas, although less so along **US Route 33** running through Elkhart and Goshen.

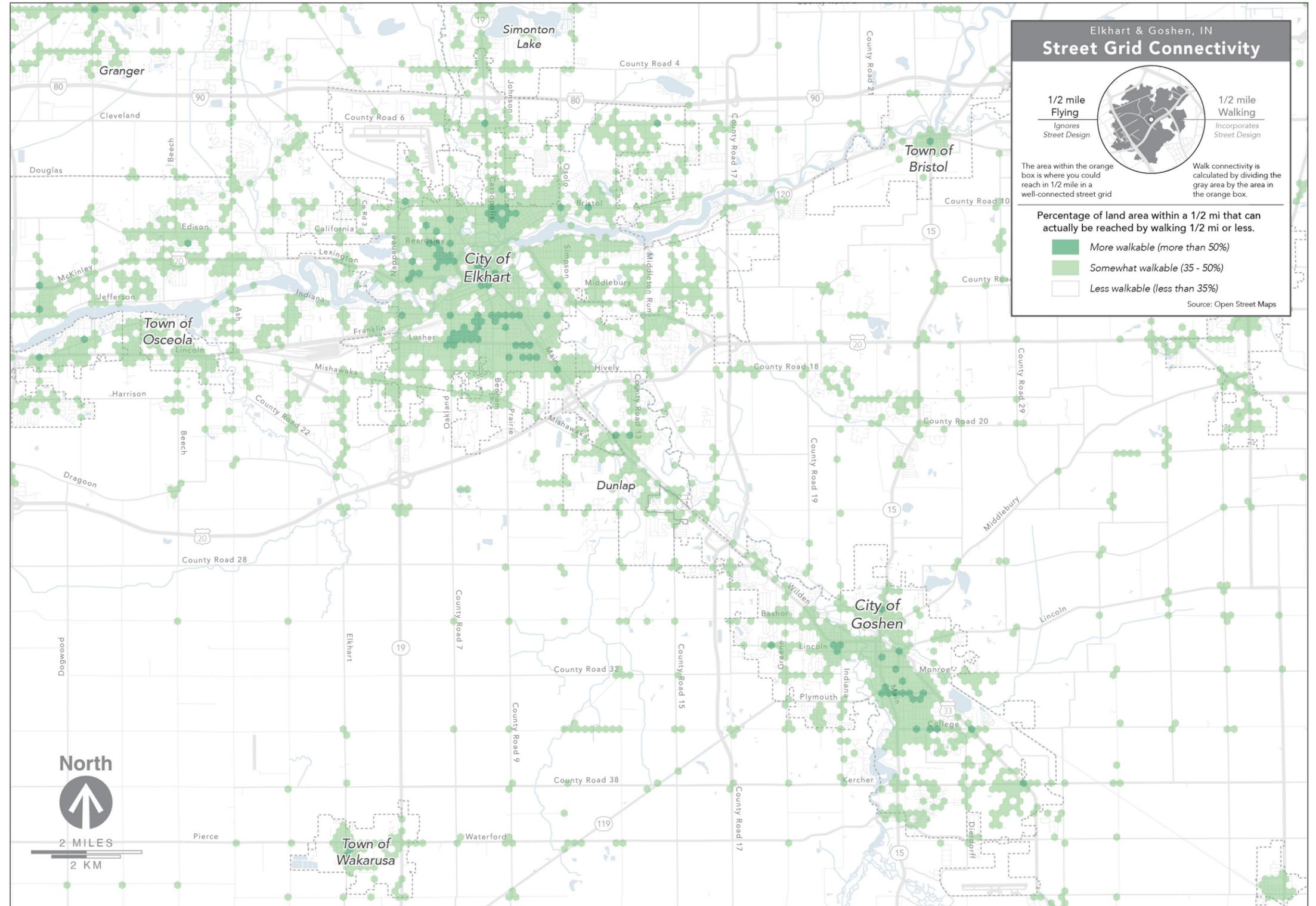


Figure 22: Map of street grid connectivity in Elkhart and Goshen. This estimates walkability based on the percentage of the land area within a half-mile of any given point that can actually be reached by walking a half-mile, using available streets and pedestrian paths. The darker the color, the more walkable the area.

Indicators of Demand: Zero-Vehicle Households

Another factor affecting transit's competitiveness and need in an area is the availability of personal cars. The map on this page and the next show the density of households with zero vehicles.

People without cars do not necessarily default to using transit. Generally, people without vehicles have fewer options than those who do have access to personal cars. So if transit is a useful—reasonably fast, reliable, available when needed—and people can use it to reach the places they need to go, it can be a compelling option.

If transit does not present a realistic travel option, then people without cars will find other ways to reach the places they need to go, by getting rides from friends or family members, cycling, using electric scooters, walking, or using taxis or TNCs. Alternatively, some people may not travel, thereby limiting their access to the economic, social, and other opportunities in the region.

South Bend and Mishawaka

The areas with the absolute highest densities of zero-vehicle households are found in the **South Bend and Mishawaka downtowns** as well as the **neighborhoods east of Notre Dame** and near the large **commercial development in north Mishawaka**.

Although these latter two areas of high density correspond to high densities of low-income populations (see page 32), there is not a high correlation between these two factors in the rest of the area shown. This suggests that **transit does not meet the travel needs of other low-income populations** within this part of the region, despite high levels of need.

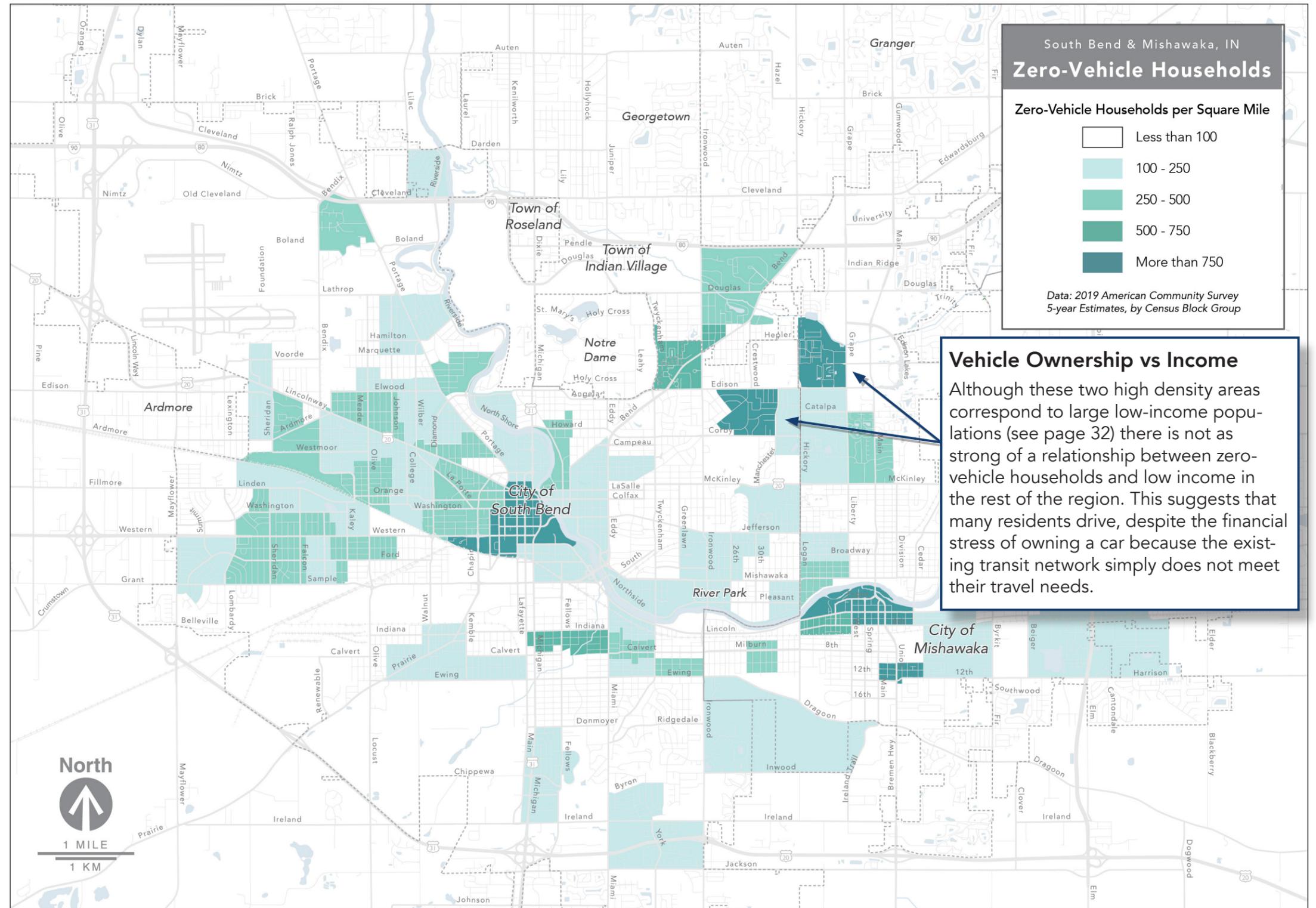


Figure 23: Density of Zero-Vehicle Households in South Bend and Mishawaka. The darker the color, the more zero-vehicle households in the area.

Elkhart and Goshen

In the eastern part of the region, the highest density of zero-vehicle households is in **downtown Elkhart**. There are also moderately high densities in the **northern part of Elkhart** near Johnson and Bristol.

There are no areas within Goshen that fall within the highest category of zero-vehicle household density. There are some areas with moderately high densities in and near **downtown Goshen** as well as by **Goshen College** and the **Greencroft Goshen retirement community**.

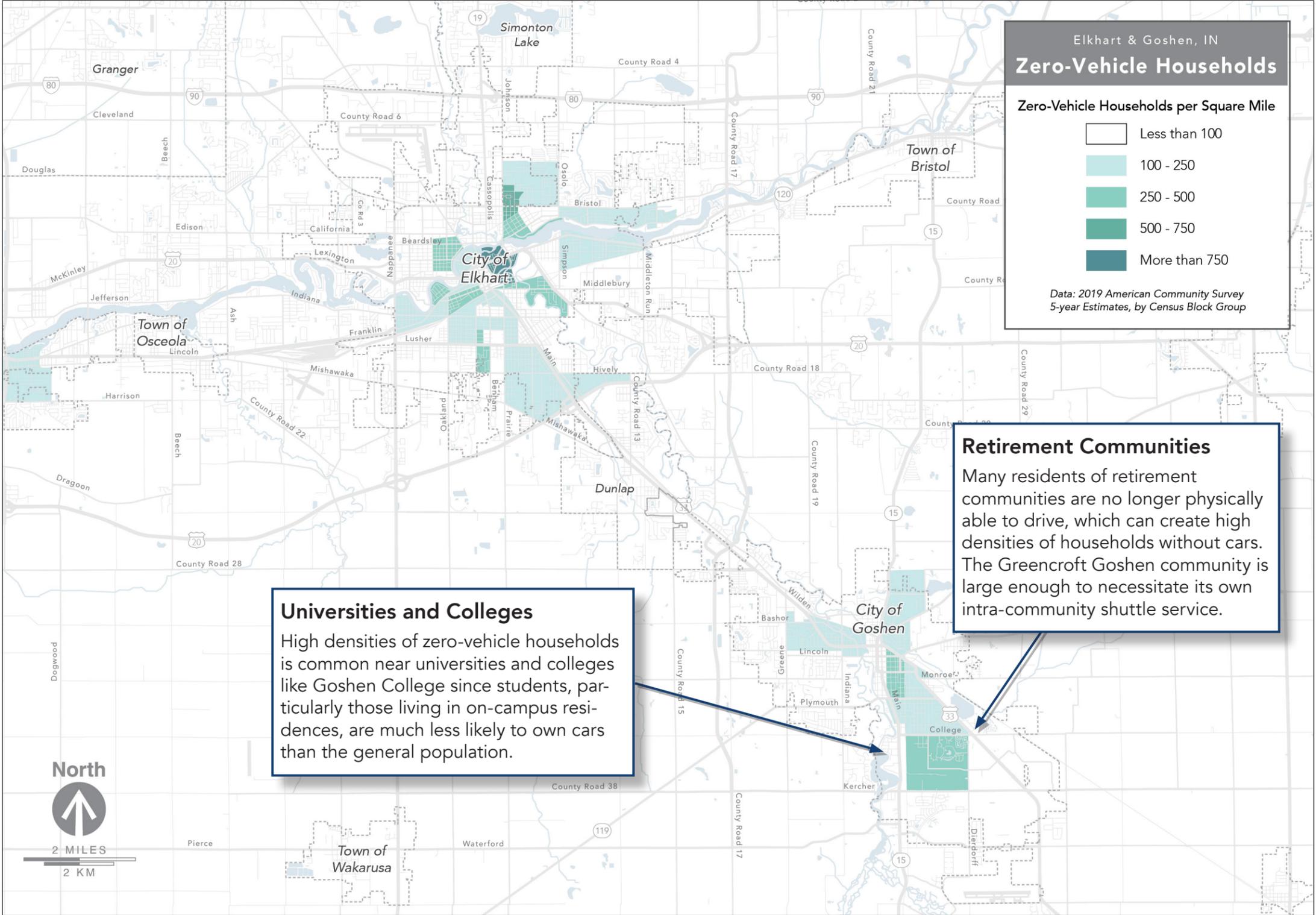


Figure 24: Density of Zero-Vehicle Households in Elkhart & Goshen. The darker the color, the more zero-vehicle households in the area.

Indicators of Demand: Commute Patterns

More people are commuting from homes in South Bend and Mishawaka, to Elkhart than the other way around.

Regional Travel

Figure 25, at the right, shows the major pre-pandemic (2019) commute patterns in the major cities and towns of St. Joseph and Elkhart Counties. Specifically, this map shows:

- For each community, a square sized according to the number of people who commute daily within their community. For example, about 16,000 people commuted daily from a home in South Bend to a workplace in South Bend.
- Between communities, arrows that show where people commute to and from. For example, over 2,000 people commuted on a daily basis from South Bend to Elkhart.

To make this map more legible, we only show communities with at least 100 daily intercity commutes.

This map tells us several important things:

- Goshen has a significant internal commute market, even though its only existing route is oriented towards regional travel.
- Many people are commuting between South Bend, Mishawaka, Elkhart, and Goshen, but few are commuting the full distance between Goshen and South Bend.
- More people are commuting from homes in South Bend and Mishawaka to Elkhart than the other way around. This imbalance is the result of planning policy and private sector investment that has added more jobs than housing in Elkhart.

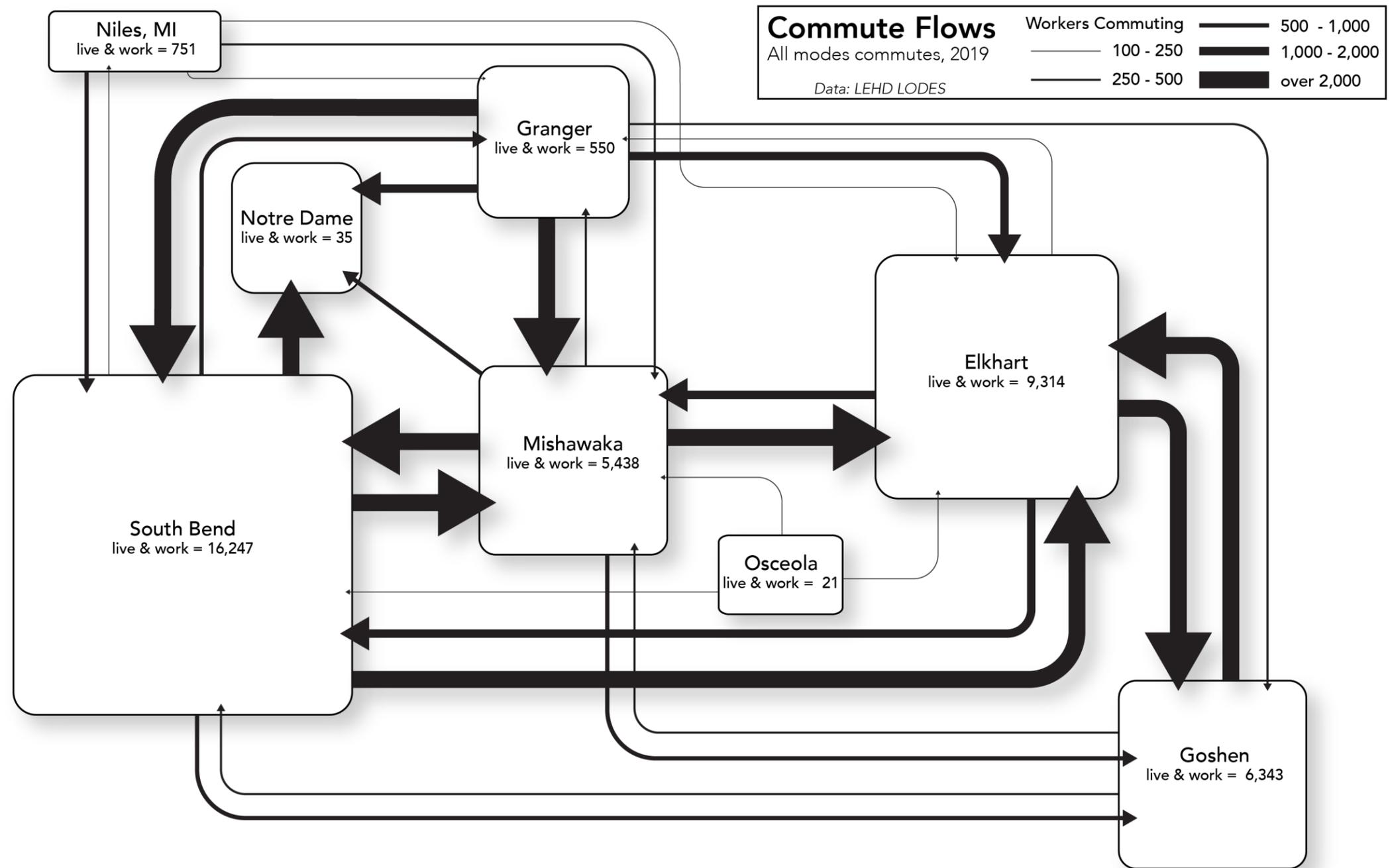


Figure 25: Regional map of major commute patterns based on 2019 census data

Indicators of Demand and Need: Low-Income Households

A frequently-cited goal for transit service is to provide affordable transportation for lower-income people, who are less likely to own cars. Understanding where low-income populations are located is also a key civil rights requirement.

Transit can be an attractive option for low-income people due to its low price. In medium to high density areas with walkable street networks, this can produce high ridership.

However, if transit doesn't actually allow people to make the trips they need in a reasonable amount of time, even lower-income people will not use it. They will seek other options, such as buying a used car or getting a ride from a friend, even if it causes financial or social stress.

South Bend and Mishawaka

In the western part of the region depicted in this map, the **density of households in poverty correlates with areas of higher densities of non-White populations** (see page 41).

There are also high densities of households in poverty near Bethel University in Mishawaka and more moderate densities near Notre Dame. This likely corresponds to the schools' **student populations**. For many students, this type of poverty is a temporary circumstance, and while their independent income may be low or negligible, their spending power is likely higher due to family support.

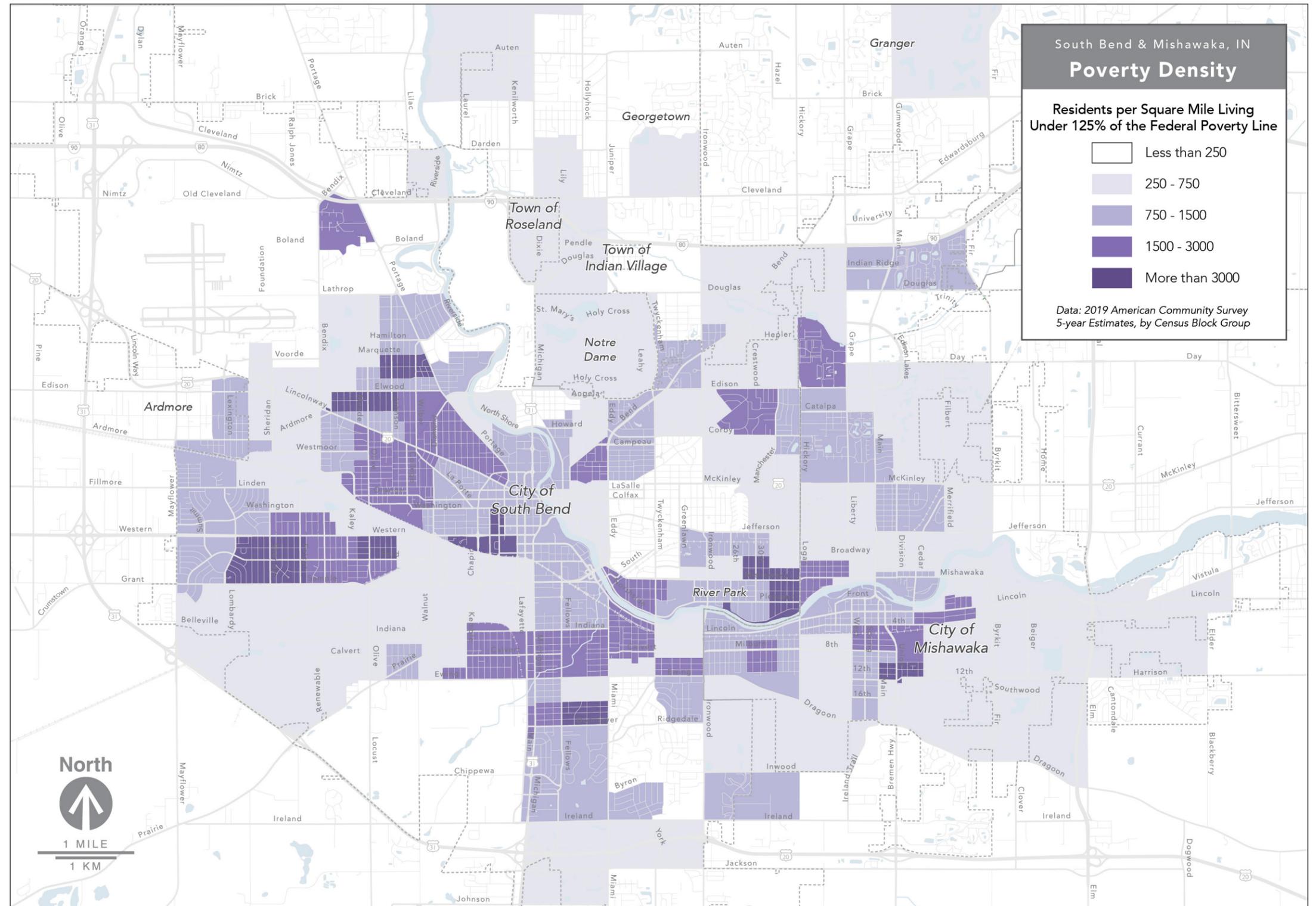


Figure 26: Density of Residents in Poverty in South Bend and Mishawaka. Poverty is defined as 125% of the Federal poverty level. The darker the color, the more residents living in poverty in the area.

Elkhart and Goshen

The higher concentrations of people living in poverty in **Elkhart** corresponds to the areas where there are high concentrations of people of color. In particular, the areas with the highest densities of people in poverty correspond to those areas where the majority of residents are Black, as shown in the map on page 39.

In **Goshen**, the highest densities of people living in poverty seem to generally correspond with the overall population densities in the map on page 21.

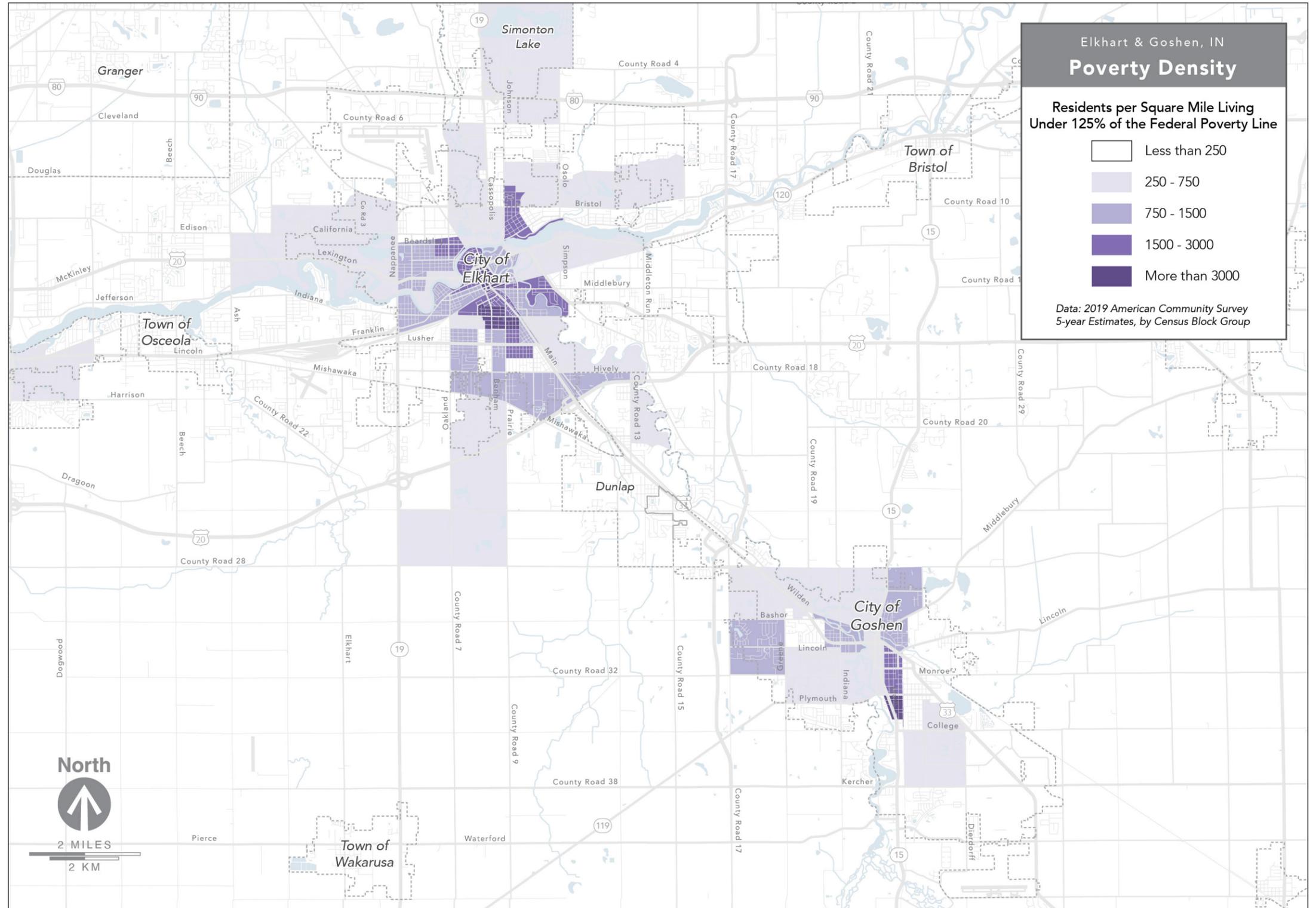


Figure 27: Density of Residents in Poverty in Elkhart and Goshen. Poverty is defined as 125% of the Federal poverty level. The darker the color, the more residents living in poverty in the area.

Indicators of Need: Senior Residents

The maps on this page and the next show the density of senior residents (aged 65 and older) in the western part of the region.

Some seniors cannot drive and may be more likely to use transit. And as a group, senior-headed households are less likely to own cars than the general population.

Seniors tend to have different preferences for transit than younger people. Seniors are more likely to be sensitive to walking distance. On average, seniors also tend to be less sensitive to long waits and slow or indirect routes, because many are retired and have relatively flexible schedules. Most riders who are employed, in school or caring for kids in school will find service with long waits and slow or indirect routes to be intolerable.

Due to these factors, transit service designed primarily to meet the needs of seniors rarely attracts high overall ridership relative to cost. Thus, **the amount of focus that transit agencies place on meeting the needs of seniors should be carefully balanced with the needs and desires of the rest of the community.**

South Bend and Mishawaka

The map at right shows the density of senior residents in the western part of the region. **Some areas with high densities of seniors correspond to high poverty areas** in the map on page 32, especially outside of the South Bend and Mishawaka city centers.

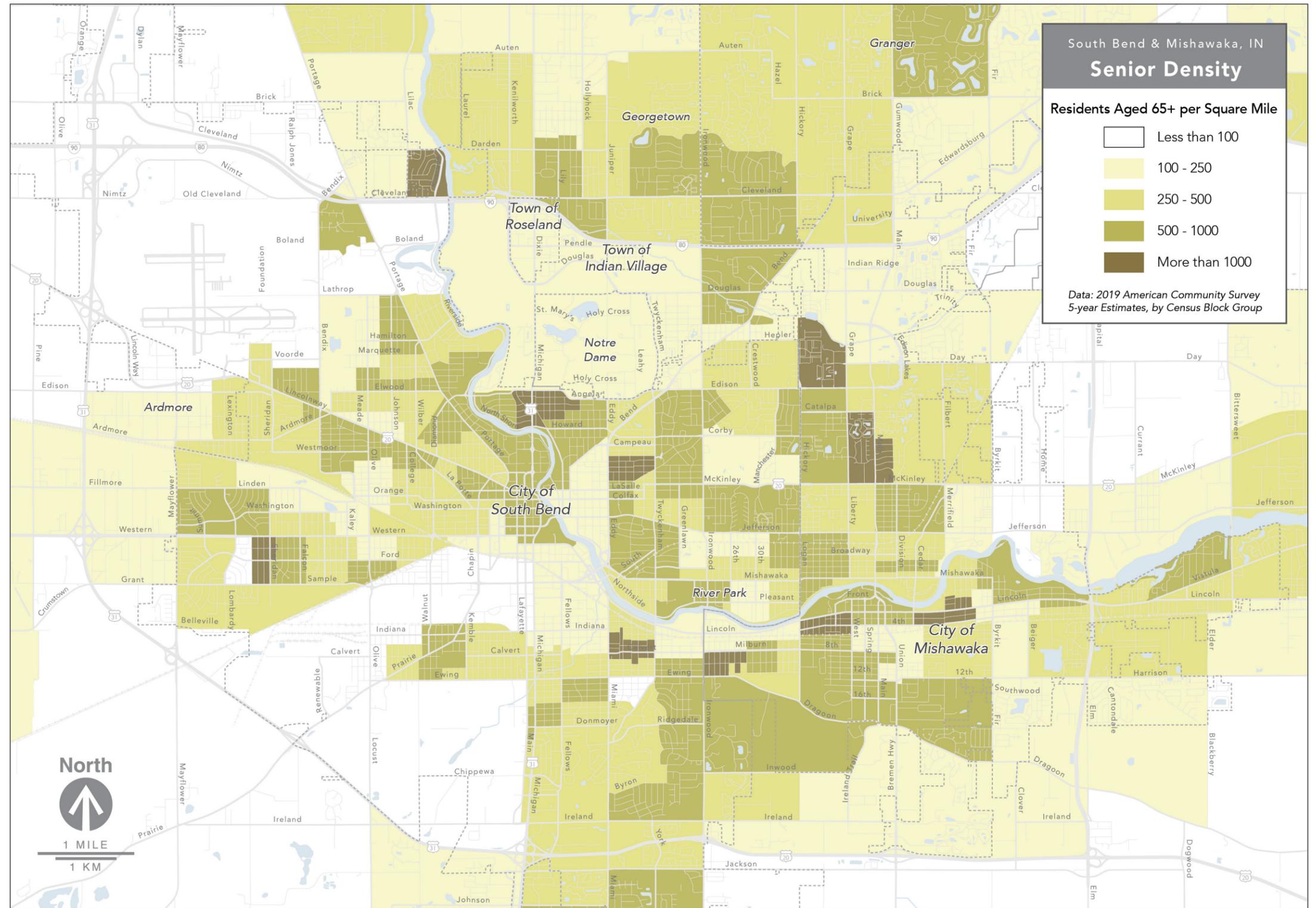


Figure 28: Density of Senior Residents at or over age 65 in South Bend and Mishawaka. The darker the color, the more Senior Residents living in the area.

Elkhart and Goshen

In the eastern part of the region, senior residents are spread throughout the cities and towns. However, there are pockets of high concentration of seniors outside of the city centers in Elkhart and Goshen where **retirement communities or nursing homes** are located. For example, the area along East Beardsley Avenue shows up due to the Greenleaf Health Campus. Also, the area along Franklin Street near Bridge Street stands out due to the Riverside Village nursing home. In Goshen, the highest density area near College and Dierdorff represents the Greencroft Goshen retirement community mentioned in the zero-vehicle density map on page 30.

There is no noticeable correlation between areas with high densities of senior residents and areas with high densities of poverty.

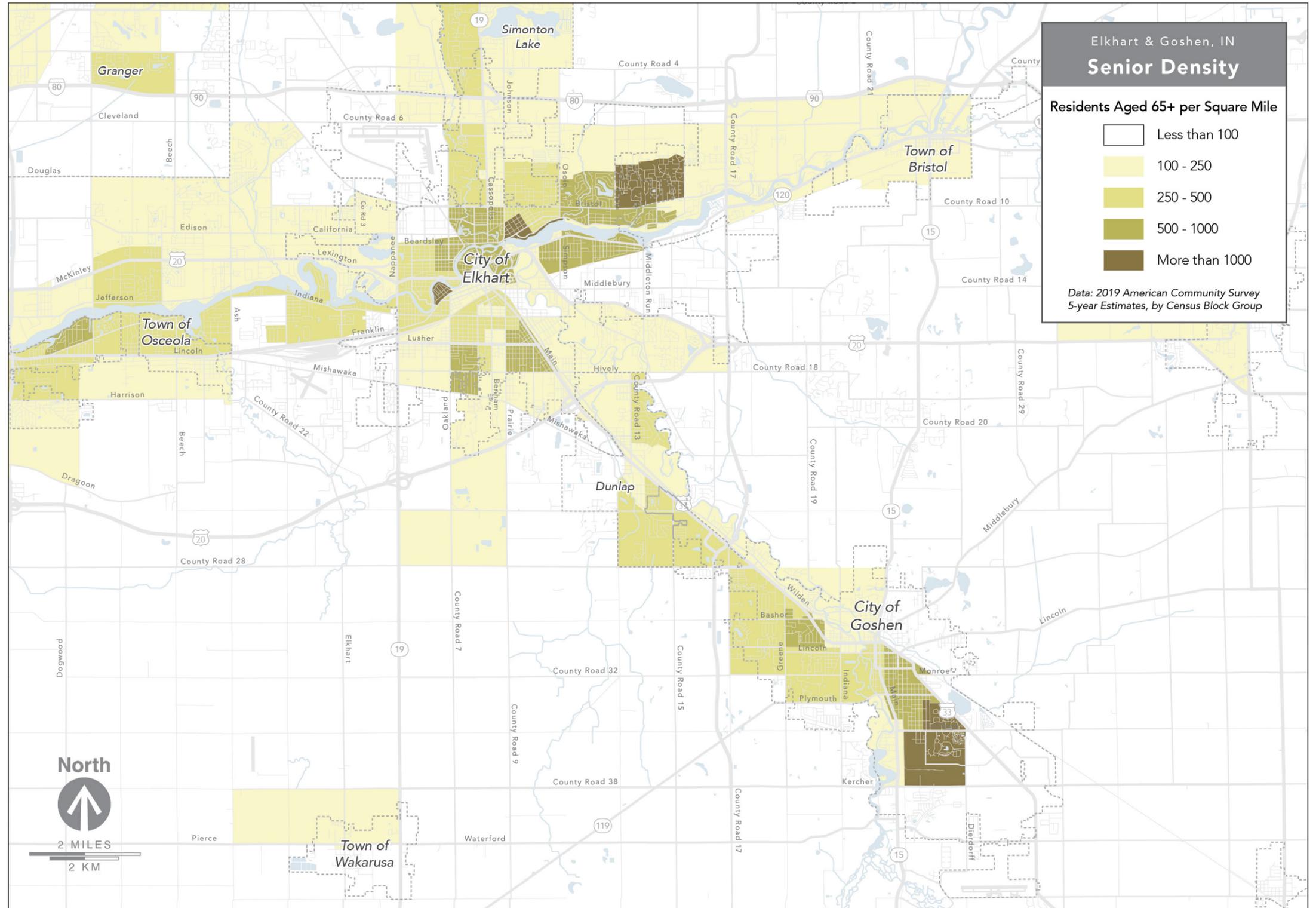


Figure 29: Density of Senior Residents at or over age 65 in Elkhart and Goshen. The darker the color, the more Senior Residents living in the area.

Indicators of Need: Residents under 18

Just as transit coverage can meet the needs of seniors who cannot or choose not to drive, transit coverage can also meet the needs of children and teenagers who are too young to drive.

This map and the next show the density of residents under the age of 18 in the western and eastern parts of the region.

South Bend and Mishawaka

The pattern of youth density is similar to the pattern of overall residential density in the city, with a few exceptions.

- **Downtown South Bend and Mishawaka** show up in the lowest category, because they are likely dominated by younger adults without children.
- **Areas with a high density of low-income households** also tend to also have many residents under age 18.

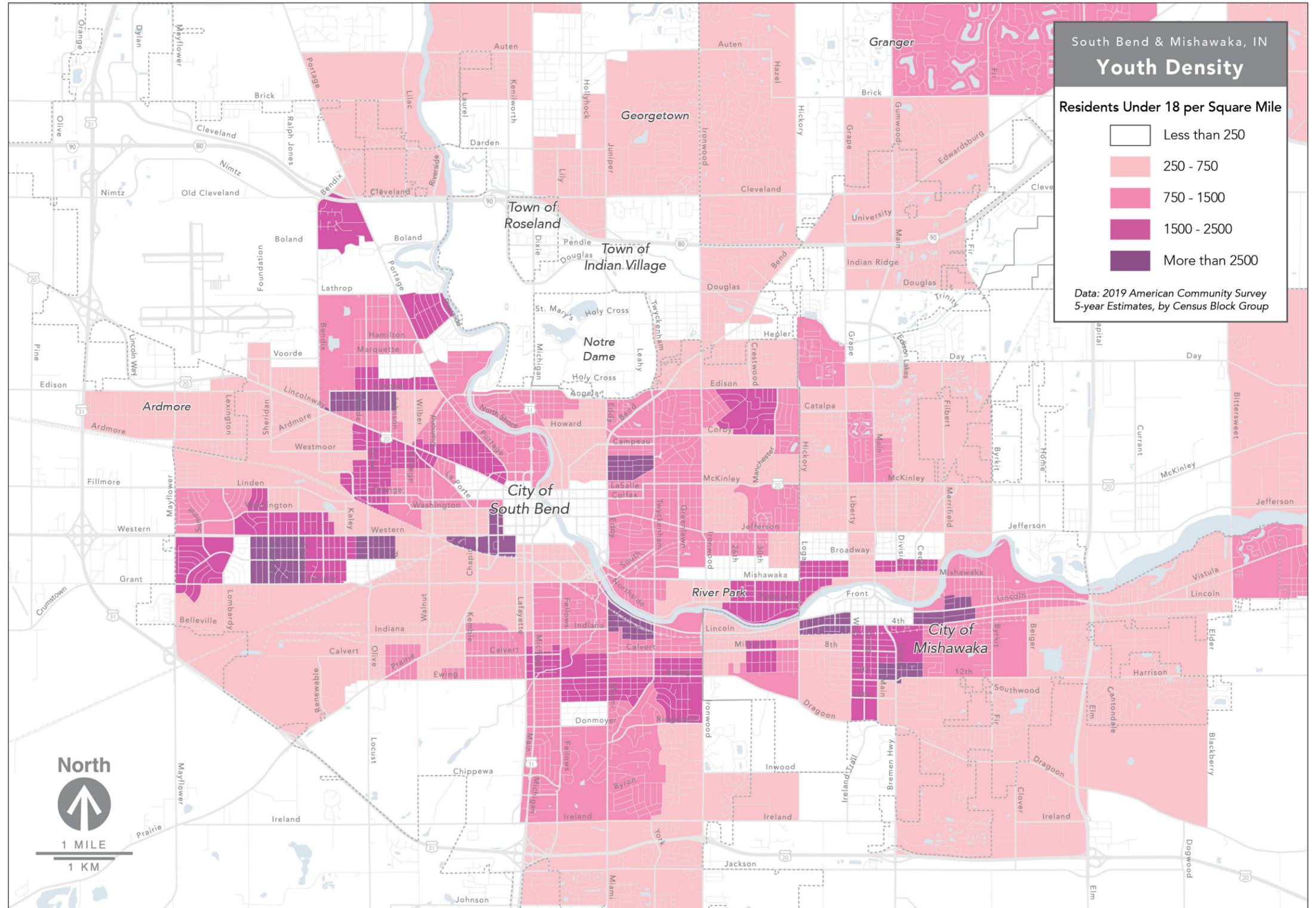


Figure 30: Density of Residents under age 18 in South Bend and Mishawaka. The darker the color, the more Residents under 18 living in the area.

Elkhart and Goshen

As in the eastern part of the region, many of the areas with a **high density of low-income households** tend to also have many residents under age 18.

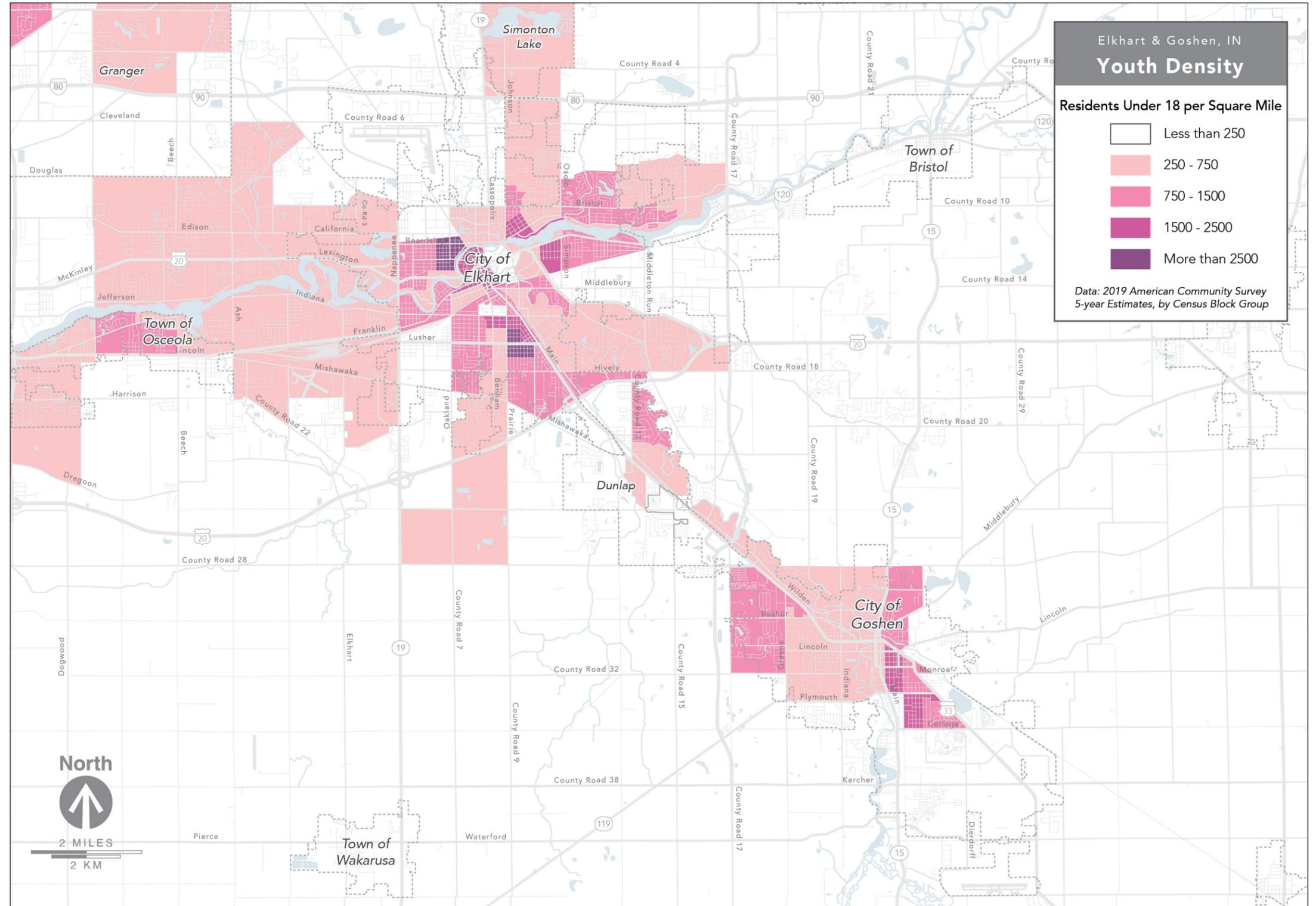


Figure 31: Density of Residents under age 18 in Elkhart and Goshen. The darker the color, the more Residents under 18 living in the area.

Civil Rights: Race and Ethnicity

The maps on this page and the next show where people of different racial and ethnic identities live.

As described on page 19, understanding where people of color live is critical to fulfilling the obligations of Title VI and other federal requirements to consider the benefits and burdens of transit service for historically-marginalized populations. As described on page 40, the region, like most in the US, has a history of discriminatory practices that have led to significant racial segregation. Recognizing this fact and considering it alongside the location and needs of low-income communities within the region is a key aspect of developing a more equitable transportation system.

This means that when Transpo or the Interurban Trolley makes decisions about where to provide service, down which streets and in which neighborhoods, those choices have a racial dimension. These agencies cannot assume that any bus route going down any road serves people of all different races, just because the region as a whole is diverse. Intentional planning to address historic inequalities can be an important goal beyond just meeting federal requirements.

South Bend and Mishawaka

This map and the corresponding map on page 39 show that most of the Transpo service area in South Bend and Mishawaka has a majority of white residents. However this changes in the western parts of South Bend which have much higher densities of people of color, in particular Black and Hispanic residents.

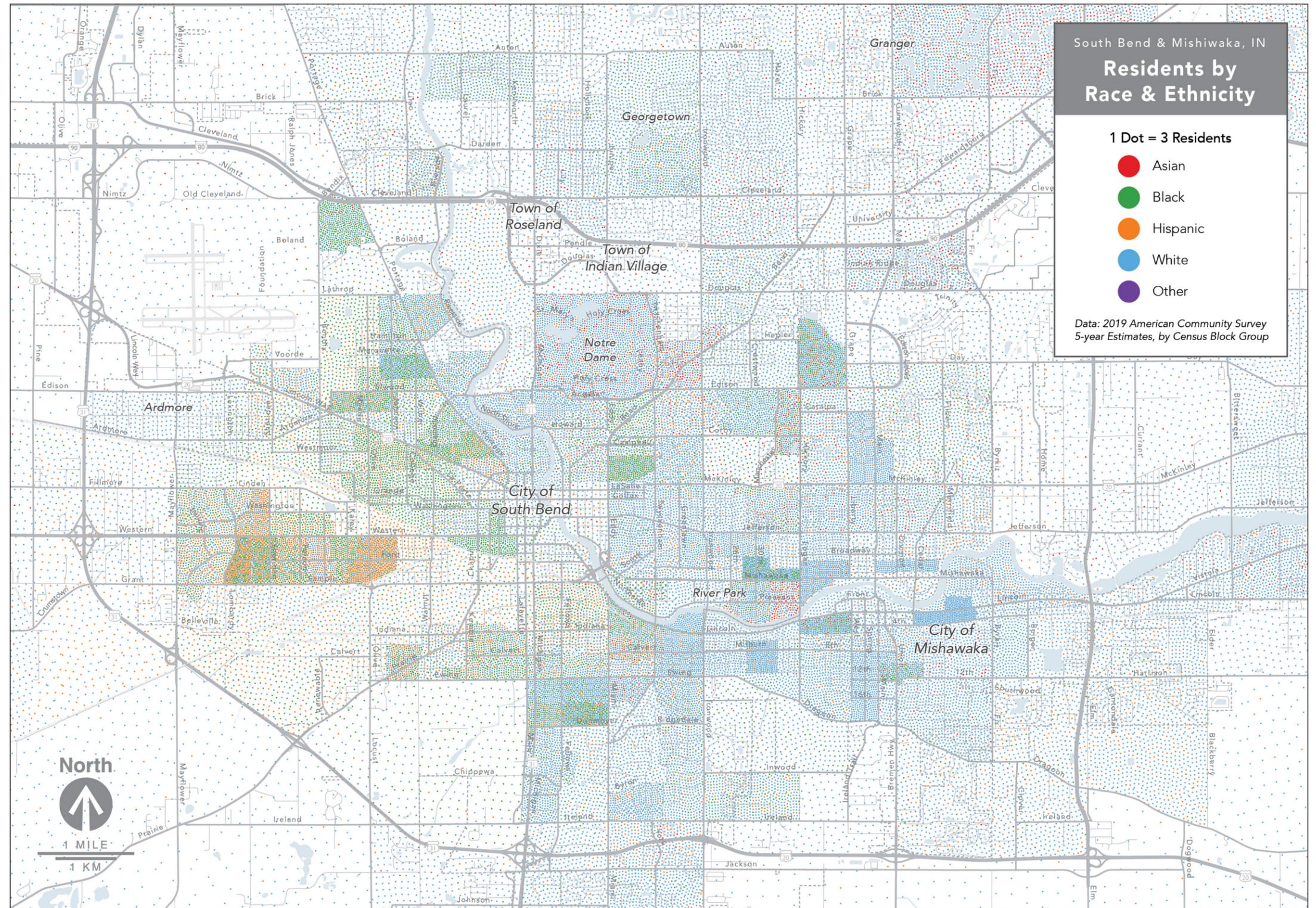


Figure 32: Race / Ethnicity map of South Bend and Mishawaka. Where many dots are very close together, the overall density of residents is higher. Where dots of a single color predominate, people of a particular race or ethnicity make up most of that area's residents.

Elkhart and Goshen

While there is a mix of people of different racial or ethnic identities throughout Elkhart, Goshen, and surrounding areas, this map and the map on page 42 show a few trends:

- In **Elkhart**, people of color are much more highly concentrated in the southern as opposed to the northern parts of the city.
- There is a noticeably large Hispanic population throughout the City of **Goshen**, largely spread across the city.

At a regional level, comparing these maps and the chart on page 31, a significant issue stands out: a large portion of the region's low-income residents and residents of color live in the western parts of South Bend. A large portion of the jobs and commute activity is in eastern South Bend, Mishawaka, and in Elkhart County. Thus those most in need tend to be farthest from the existing jobs and growing job areas of the region.

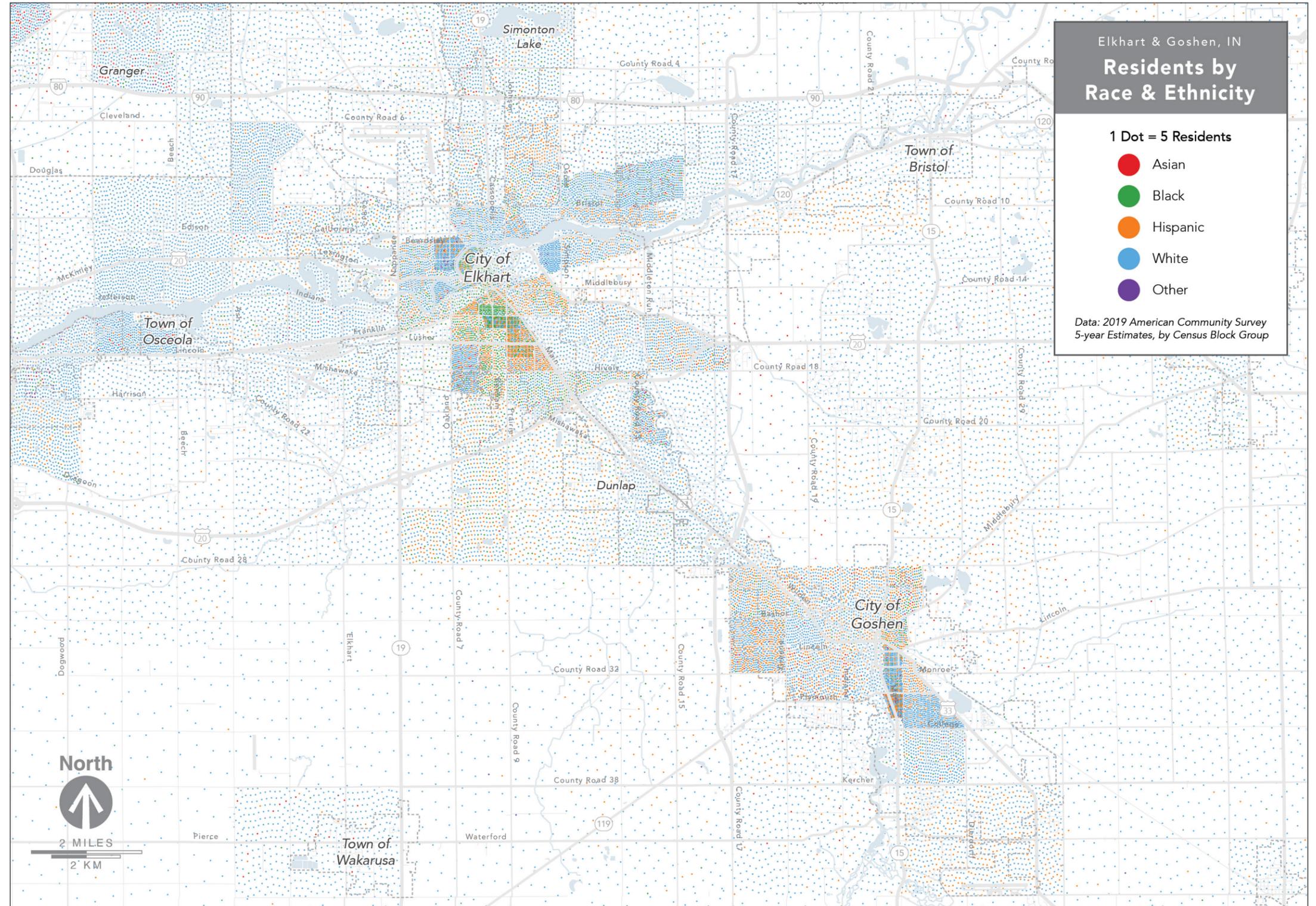


Figure 33: Race / Ethnicity map of Elkhart and Goshen. Where many dots are very close together, the overall density of residents is higher. Where dots of a single color predominate, people of a particular race or ethnicity make up most of that area's residents.

Historic Patterns of Segregation

The map in Figure 34 shows neighborhoods in South Bend and Mishawaka in 1937, color-coded based on assessments of their relative “security.” Maps like these were produced by the Home Owners’ Loan Corporation (HOLC), a New Deal-era federal agency tasked with standardizing loan practices. These maps were developed so that banks could consider the quality or security of neighborhoods in their assessment of risk before making a loan to purchase a home or mortgage an existing property.

In general, neighborhoods with higher rates of people of color were rated at lower levels, meaning that it was harder to get loans to buy or renovate property in those neighborhoods. For example, D5 on this map, known at the time as Beck’s Lake, was noted for having 90% Black residents and 10% foreign born.

Comparing this map to the map on page 38 shows that there is substantial correlation with the areas marked in red on this map and the areas where people of color live today. This correlation is quite strong in many other communities across the US and is the reason that the term “redlined” is common for the ways that historic practices of discrimination continue to affect how and where people live and their access to opportunity.

As described by Richard Rothstein in *The Color of Law*: “until the last quarter century, racially explicit policies of federal, state, and local governments defined where whites and African Americans should live. Today’s residential segregation in the North, South, Midwest, and West is not the unintended consequence of individual choices and of otherwise well-meaning law or regulation but of unhidden public policy that explicitly segregated every metropolitan area in the United States.” These HOLC maps are one example of a myriad

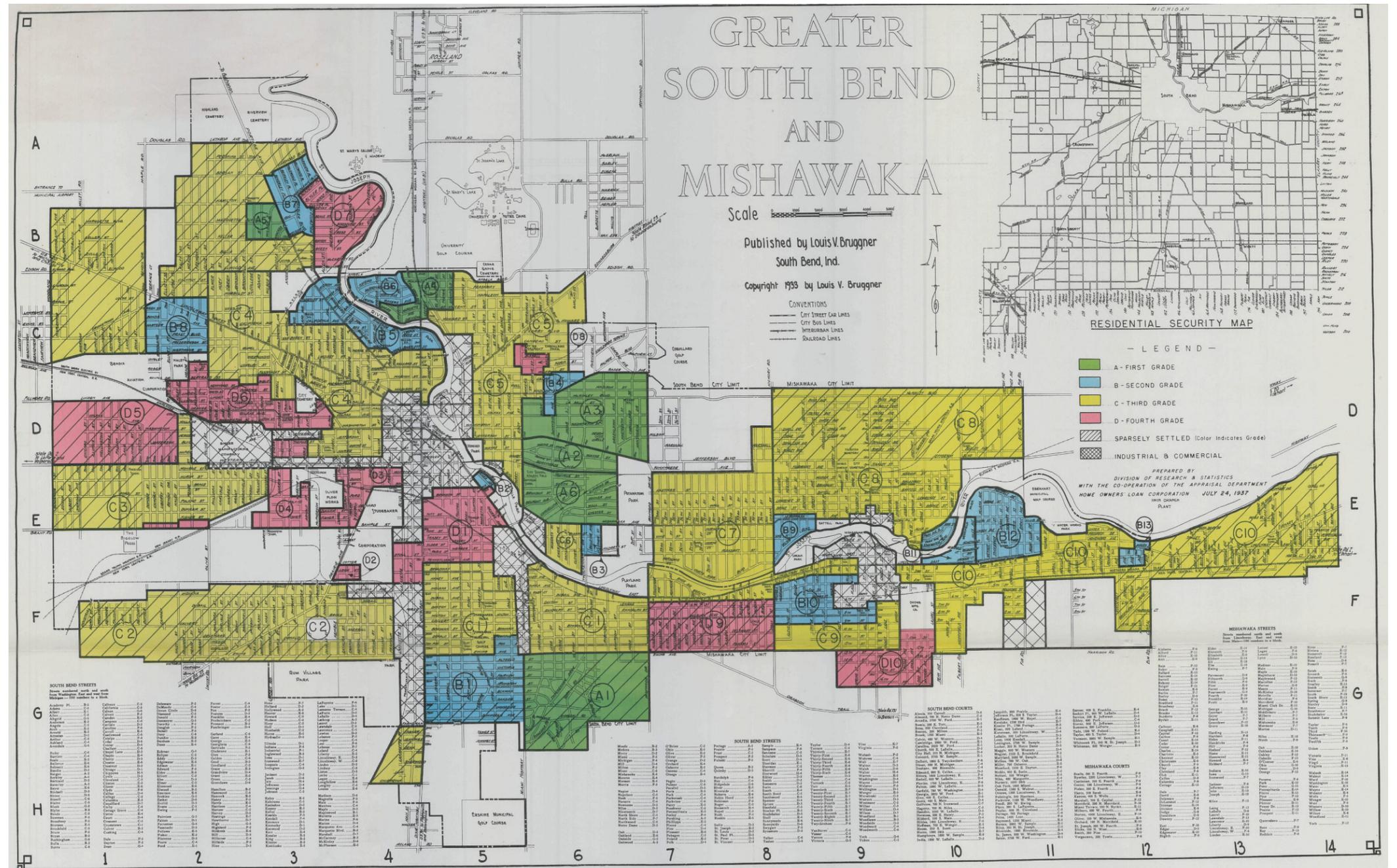


Figure 34: Historic map of “Residential Security” by HOLC that defined the relative “security” of investing in each neighborhood and neighborhoods with higher rates of people of color tended to get much lower ratings.

of the many laws and regulations that have led to the current patterns of where people live in the region and the disparate levels of access to opportunity available to different people in the region. While similar HOLC maps for Elkhart and

Goshen are not available to help illuminate the historic patterns in those communities, we know that these policies affected nearly every community in the US and therefore would have similar impacts on the patterns in those communities.

Where people of color live in relatively dense, linear, and proximate neighborhoods, it is often a clear place for transit to serve as it would likely achieve high ridership relative to cost. Where people of color live in neighborhoods that are not dense, and not linear, and not proximate, the challenge for transit is weighing the need to serve that neighborhood over others that might achieve higher ridership relative to cost.

Transit agency policies that protect people of color from negative impacts are one type of coverage goal, because they pursue an outcome that is valuable regardless of ridership. Such policies might state, for example, that service to neighborhoods with high proportions of people of color should be prioritized even if such service would not maximize ridership.

In order to highlight contrast with the previous two maps, this map and the next only show the density of people of color.

Racial and Ethnic Minorities in South Bend and Mishawaka

As mentioned with the poverty density map on page 32, the areas with high densities of people of color in this western part of the region generally correspond to areas with high densities of people living in poverty. As such, the areas along Western Avenue, for example, are places where transit would serve many people of color and achieve relatively high ridership relative to cost.

By contrast, the residential areas along Prairie Avenue, west of Locust Road, while predominately people of color, is much less dense, less walkable, less linear, meaning that serving this area would be less justified on ridership terms, but might be justified on coverage terms.

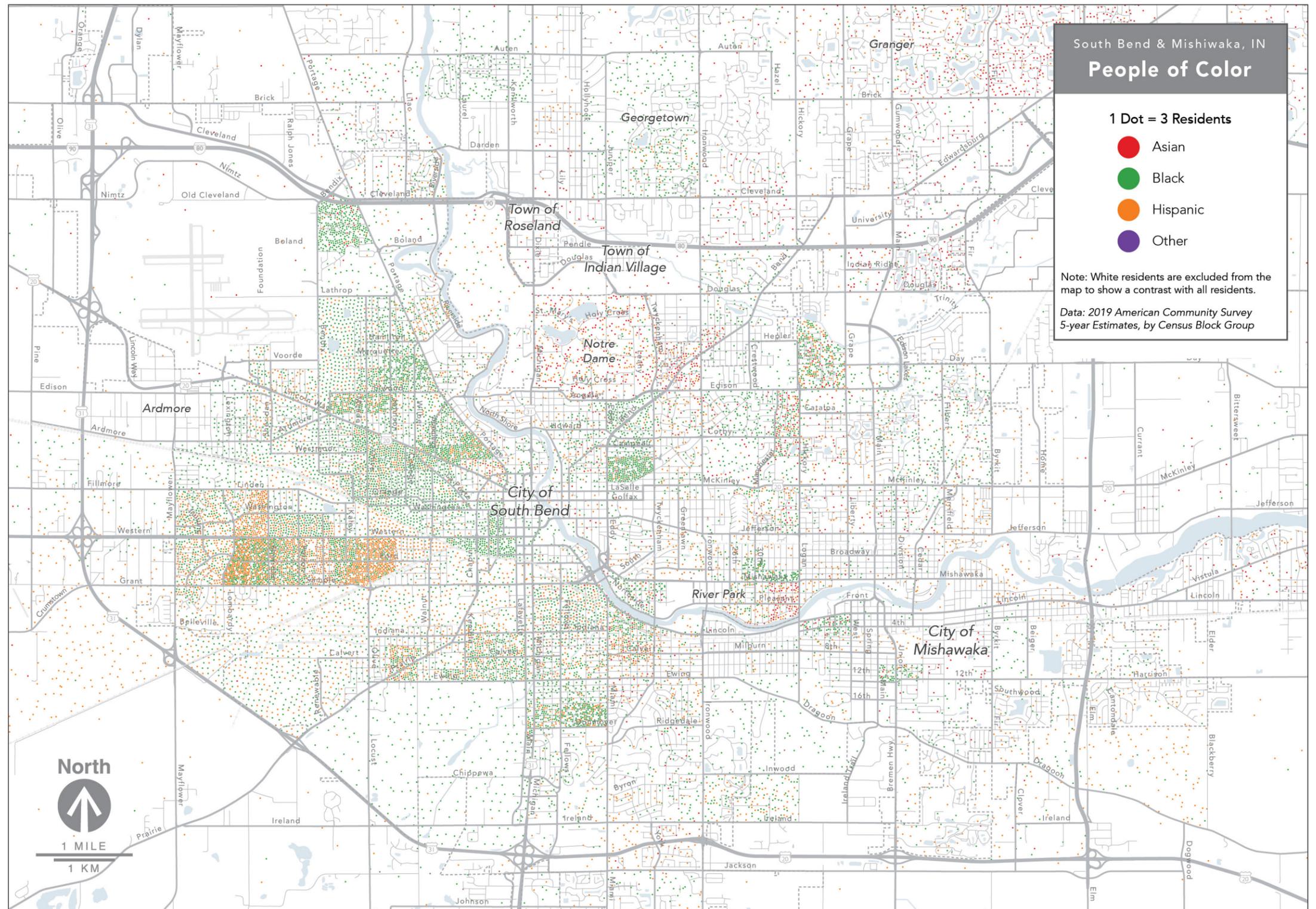


Figure 35: Race / Ethnicity map of South Bend and Mishawaka with dots representing only non-White residents. Where many dots are very close together, the overall density of residents is higher. Where dots of a single color predominate, people of a particular race or ethnicity make up most of that area's residents.

Racial and Ethnic Minorities in Elkhart and Goshen

The same pattern visible in the western part of the region is evident in Elkhart and Goshen in the eastern part: the areas with high densities of people of color generally correspond to areas with high densities of people living in poverty shown on page 33.

As the region considers the challenges of how to connect low-income residents and people of color to jobs and other opportunities, it is also important to consider the type of growth the region is encouraging. The region has apartments, low-wage jobs and essential services spread across enormous distances. Every time new developments are put far away from existing development and existing transit, the people of the region bear the cost of that distance:

- Transit riders spend hours on transit, and hours waiting, to cover that distance.
- Transpo and Interurban Trolley spends more budget on distance, which means less can be spent on high frequencies or long hours of service. This undermines ridership potential.
- More people have to own and maintain cars, to access opportunities that in other regions are accessible by transit.

A long cascade of social, health, economic and environmental problems follow from those. The grim news is that transit cannot solve this problem quickly or easily. At current transit funding levels Transpo and Interurban Trolley can hardly make a dent. Distance must be crossed, which takes time and money that can't be spent towards other things people value.

CONNECT will examine ways that transit access can be increased, or valuable coverage can be added, despite the high cost of distance, yet the region can also assist by making different development choices.

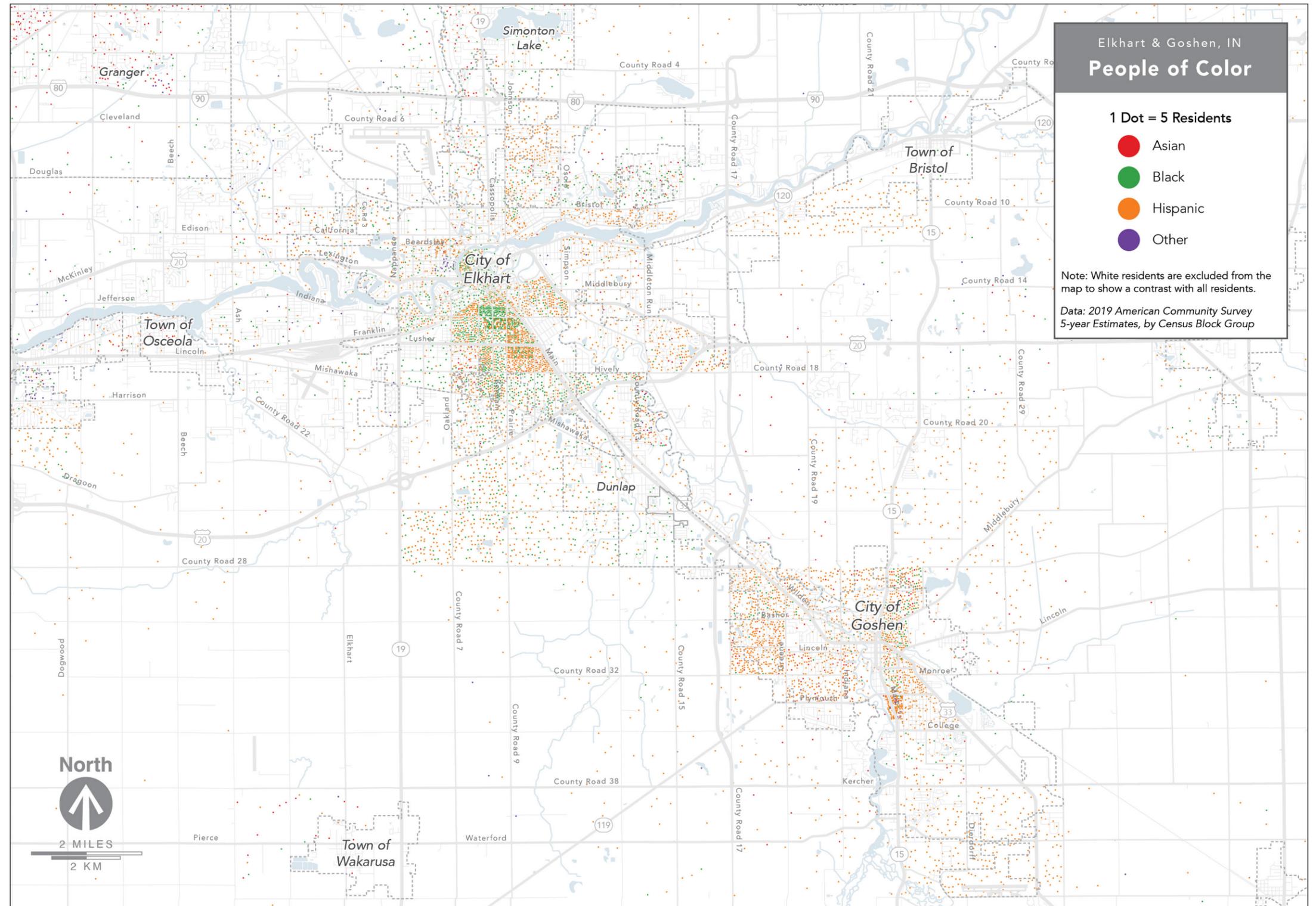


Figure 36: Race / Ethnicity map of Elkhart and Goshen with dots representing only non-White residents. Where many dots are very close together, the overall density of residents is higher. Where dots of a single color predominate, people of a particular race or ethnicity make up most of that area's residents.

4 Transpo and Interurban Trolley Networks

Introduction to the Regional Transit Network

Two fixed-route transit systems operate in the region, with Transpo primarily serving South Bend and Mishawaka and the Interurban Trolley primarily serving Elkhart and Goshen.

Transpo Network Map

As of late 2021, South Bend and Mishawaka's transit network includes 21 bus routes¹. There is currently no service on Sundays.

- 16 routes that operate all day, Mondays through Saturdays. Service typically starts between 5 and 6 AM, and ends around 10 PM.
- 2 weekday-only routes, including route 16, that only runs in the morning and afternoon rush hours, and route 17, that serves the Notre Dame campus area throughout the day.
- 3 Evening/Saturday-only routes. These routes each combine two weekday routes to expand the area covered by a single bus during evenings and on weekends.

These routes appear on the maps in Figure 37 and Figure 39. On all route maps in this report

- **Blue** means about every **30 minutes** in the middle of the day. Some routes in this category have headways of up to 35 minutes.
- **Green** means about every **60 minutes**
- **Gold** means this route operates **peak-only** or otherwise **limited service** (e.g. evening-only, weekend-only).

Segments where many routes overlap are marked in grey, under a semi-transparent white box. More detail for these segments appears in Figure 39 on page 46, a map of transit service in downtown South Bend.

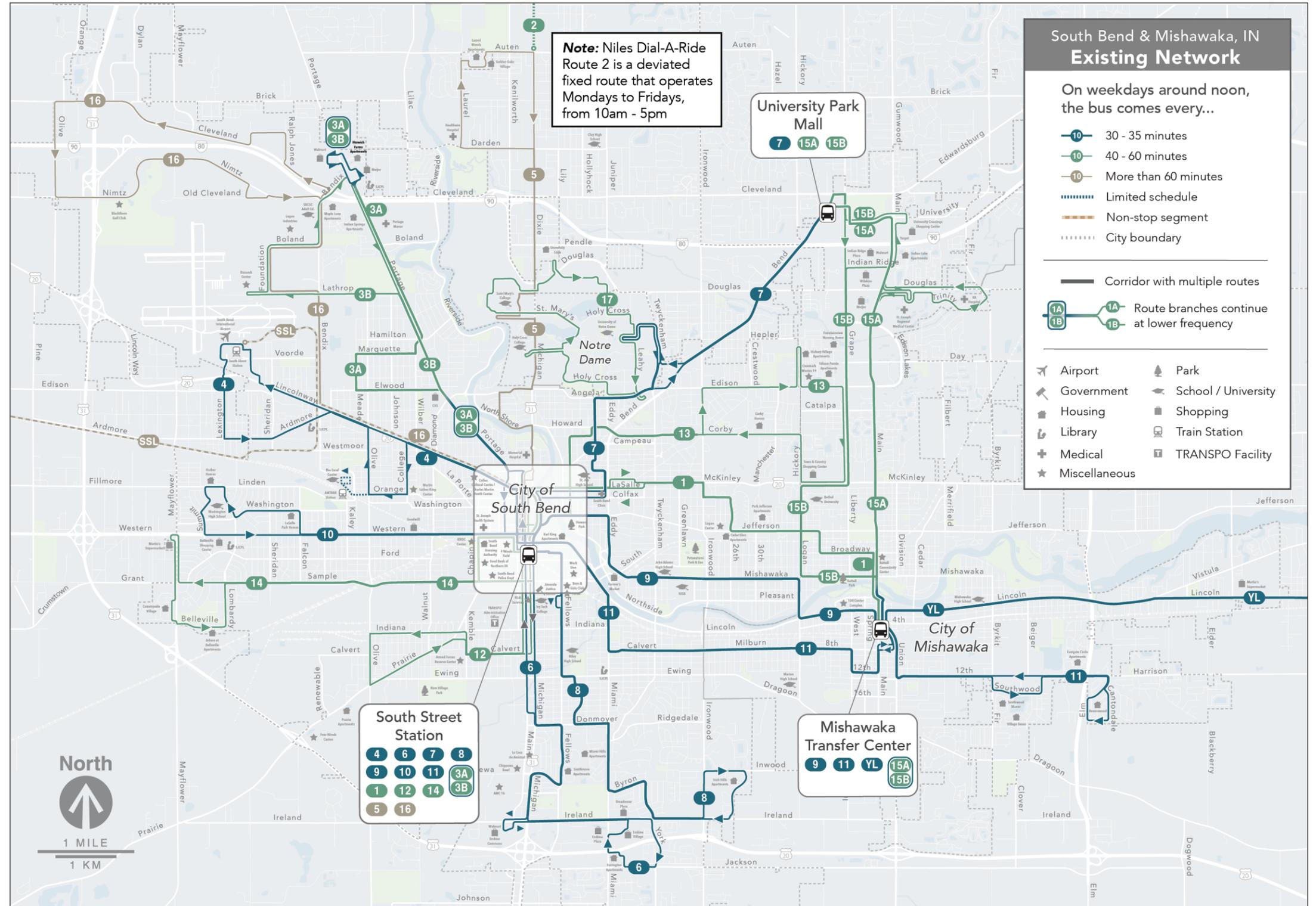


Figure 37: Transpo network of bus routes, as of 2021.

¹ Transpo also operates paratransit services for qualifying members of the public. This plan focuses on general public transit, and does not foresee any changes to paratransit.

MACOG Interurban Trolley Network Map

The Interurban Trolley transit network includes 5 color coded bus routes¹.

- All Interurban Trolley routes operate Mondays through Saturdays. There is currently no service on Sundays.
- The Interurban Trolley network uses a fleet of modern accessible diesel buses styled as historic trolley rail cars.
- The Yellow Line from Mishawaka to Elkhart is operated by both Interurban Trolley and Transpo, with each operator providing half of the service.

These routes appear on the maps in Figure 38 and Figure 40. As a reminder:

- **Blue** means about every **30 minutes** or better in the middle of the day.
- **Green** means about every **60 minutes**

More detail for the central part of the Interurban Trolley network appears in Figure 40 on page 46, a map of transit service in Elkhart.

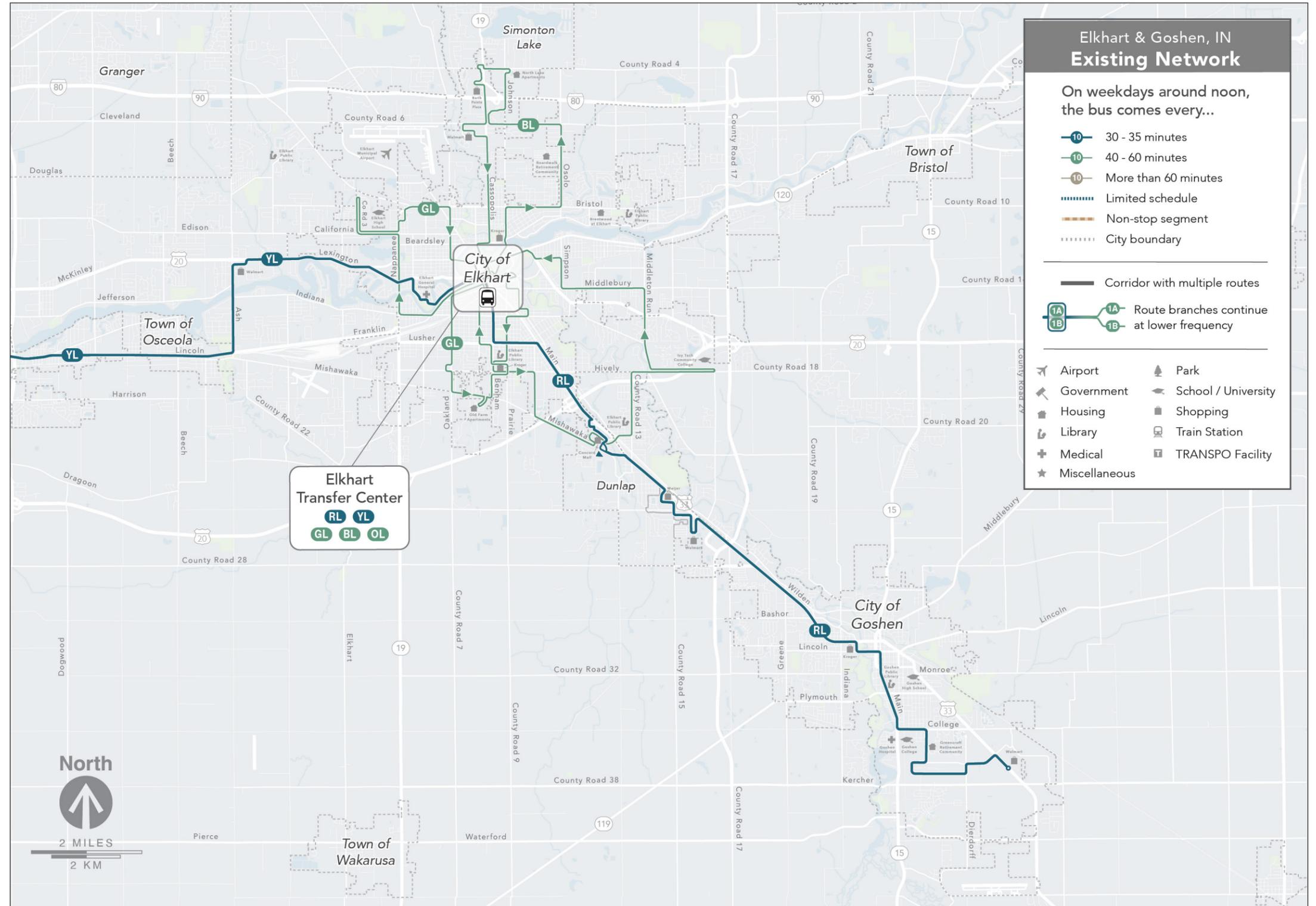


Figure 38: Interurban Trolley network of bus routes, as of 2021.

¹ Interurban Trolley also operates paratransit services for qualifying members of the public.



Figure 39: Transpo network in the central areas of South Bend, IN, Many routes converge and coming from many directions and terminating at South Street Station.

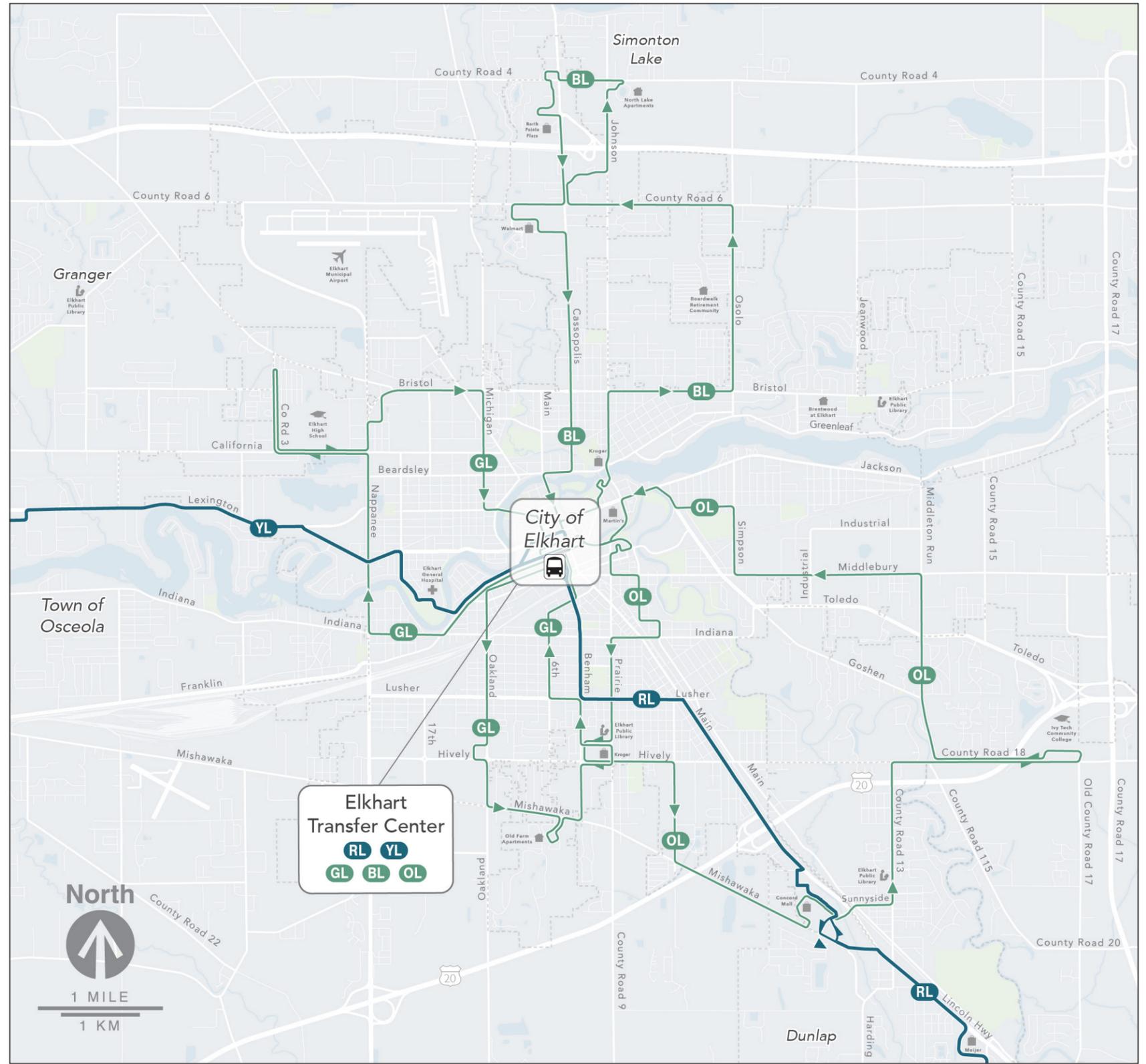


Figure 40: Above, Interurban Trolley network in Elkhart, IN. The local routes - Blue, Green, and Orange Lines, circulate the city and center around Elkhart Transfer Center. The Yellow Line and the Red Line serve regional connections to South Bend and to Goshen.

Radial network structure allows for connections despite low frequencies

Radial vs. Grid Network

There are two basic network shapes that can be found in most transit systems, illustrated at right.

“Radial” networks have a central point, and nearly all routes go to that point. A radial network design ensures that anyone looking to travel downtown can make their trip without the need to transfer. Anyone going to another outlying place can get there with a single transfer at the center. Radial networks arose naturally in pre-car cities because so much commerce and culture was centralized.

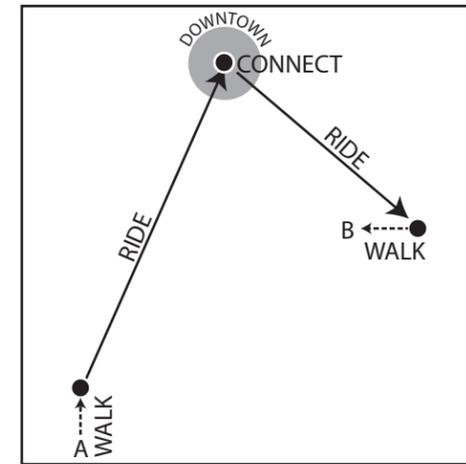
“Grid” networks also offer people a way to travel from anywhere to anywhere with a single transfer. But unlike in a radial network, the transfers in a grid network happen wherever two routes intersect.

In large cities with many centers (such as LA, Chicago or Houston) a large frequent grid requires much less out-of-direction travel than a radial network would. A frequent grid offers the simplicity and reliability of a street network. It’s easy to keep the map in your head. The key to the usefulness, however, is the frequency of service. When every route in grid network is frequent, then it is easy to transfer at any point where two routes cross. When routes are infrequent, grid networks become much less useful, because the waiting time for transfers become intolerable.

In this region, low frequencies and a wide coverage area means that a radial orientation is the only way to enable quick connections between most routes.

The street grid in South Bend is itself radially organized, so a radial transit network fits naturally. Other parts of the region, like Elkhart, have a grid of streets, with fewer diagonal streets, so transit routes need to be contorted to form a radial network across the grid pattern.

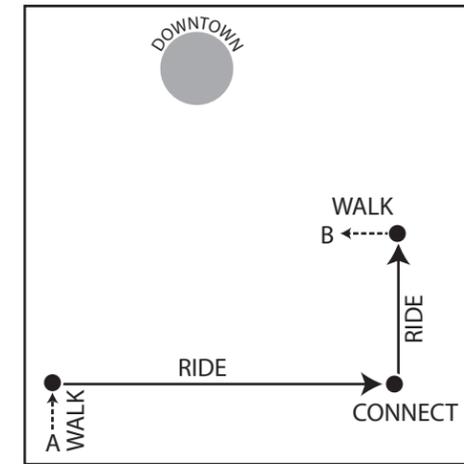
Network Structure



Radial Network

Most routes lead to and from downtown. Anyone wishing to travel from one non-central location to another must pass through downtown and transfer to another route there.

A radial structure makes sense when one part of a city (typically the downtown) is a dominant destination all day – for work, for play, and for commerce. Often, routes are scheduled to converge at a set time (called a “pulse”) to reduce transfer times between routes.



Grid Network

Parallel east-west routes and parallel north-south routes intersect all across the city, not only downtown.

A grid structure is most suited to a city with multiple activity centers and corridors, where many people are traveling to many different destinations. Grid networks are only effective when intersecting routes operate at high frequencies, generally every 15 minutes or better, so that connections between routes do not require long, inconvenient waits.

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Figure 41: Radial Transit Networks vs. Grid Networks



Figure 42: Above left, a map of South Bend, centered around downtown, shows that its streets are radially organized. Above right, a map of Elkhart, shows that its streets are organized in a grid pattern.

Radial routes connect inner areas to Downtown.

Radial Routes

The majority of the transit routes in the region can be categorized as radial routes. These lines travel relatively direct paths, converging downtown.

From South Street Station:

- Route 1 -> Madison/Mishawaka
- Route 3 has two patterns:
 - 3a -> Portage (via Lathrop)
 - 3b -> Portage (via Elwood)
- Route 4 -> Lincolnway West / Airport
- Route 5 -> North Michigan / Laurel Woods
- Route 6 -> South Michigan / Erskine Village
- Route 7 -> Notre Dame / University Park Mall
- Route 8 -> Miami / Scottsdale
- Route 9 -> Northside Mishawaka
- Route 10 -> Western Avenue
- Route 11 -> Southside Mishawaka
- Route 12 -> Rum Village
- Route 14 -> Sample / Mayflower
- Route 16 -> Blackthorn Express (*This is the Region's only limited-stop express route*)

From Elkhart Transfer Center:

- Yellow Line -> Mishawaka / Elkhart
- Red Line -> Elkhart / Goshen

Each core route follows a unique path to Downtown, converging and terminating at South Street Station, for timed connections. This design results in two key outcomes:

- **Many connections are possible through Downtown,**
- **Few trips are served more frequently than every 30 minutes.** While many buses enter and leave downtown every half-hour, they all arrive at roughly the same time, on parallel streets.

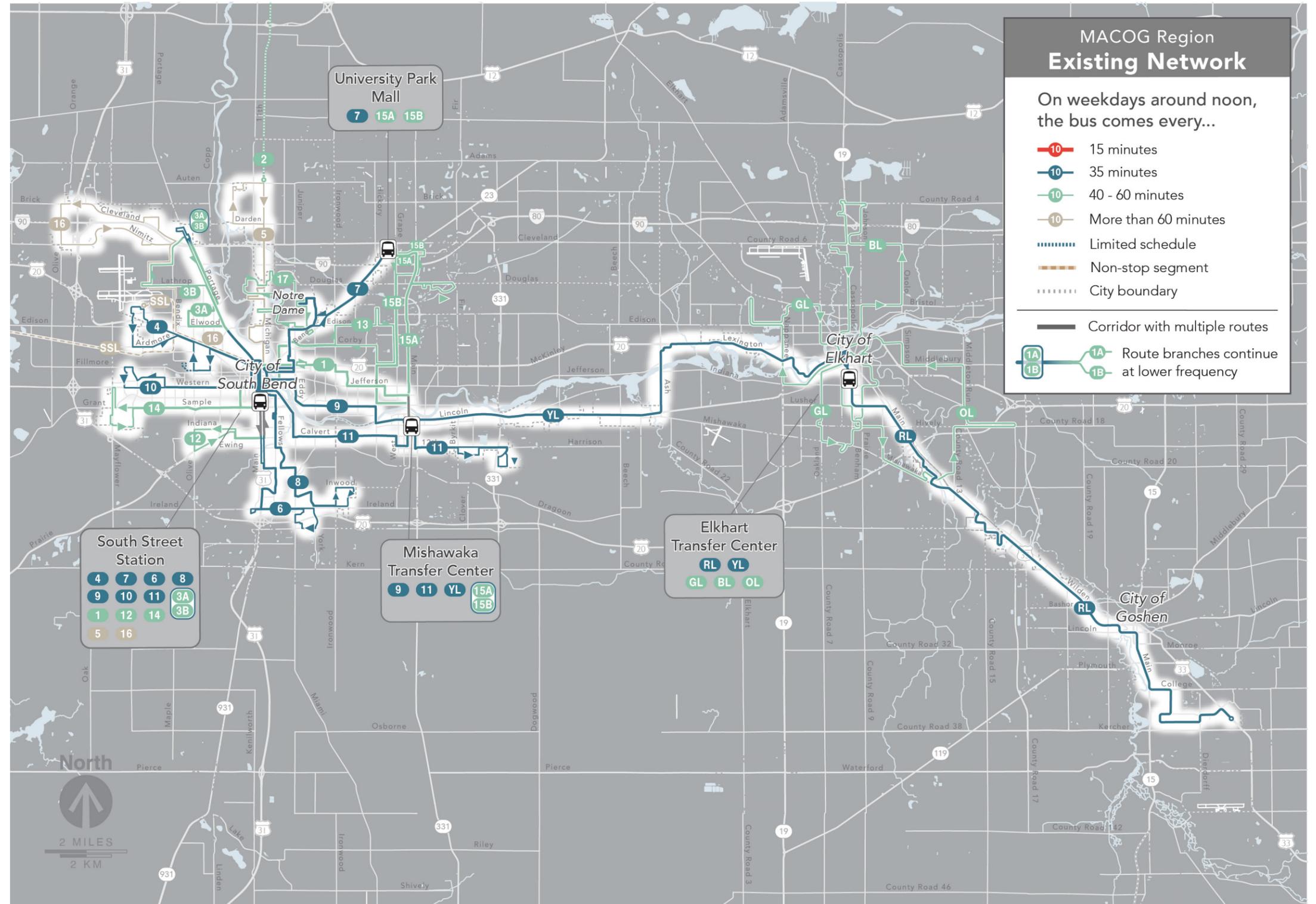


Figure 43: Transpo and Interurban Trolley bus routes, as of 2021, with radial routes and their surrounding areas highlighted.

Circulator routes cover many areas, but aren't very direct.

Circulator Routes

Some areas are served by large one-way loops, most of which terminate at South Street Station or Elkhart Transfer Center.

From South Street Station:

- Route 3b -> Portage (via Elwood)
- Route 13 -> Corby / Town & Country

From Elkhart Transfer Center:

- Blue Line -> North Pointe
- Green Line -> Southwest and Northwest Loops
- Orange Line -> East

Notre Dame University:

- Route 17 -> The Sweep

Circulator routes provide coverage to these areas, but **because they run infrequently, circulator routes can be difficult to use** without consulting a schedule in advance.

Long one-way loops are another factor that can make it difficult to use some feeder routes. These patterns exist so Transpo and Interurban Trolley can cover more area at a lower cost, but present significant challenges to riders who usually need to travel in both directions. One-way loops take passengers on circuitous paths, either from their trip to their destination, or on their return trip.

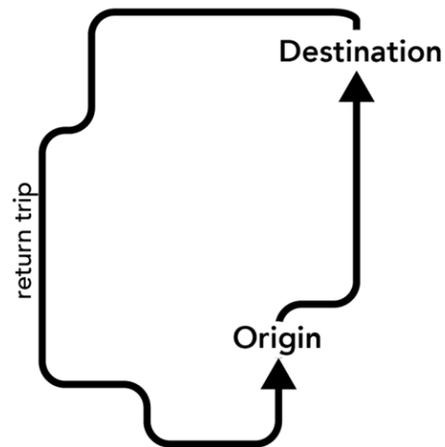


Figure 45: In a one-way loop, the more direct the service from A to B, the more circuitous it's likely to be on the return trip.

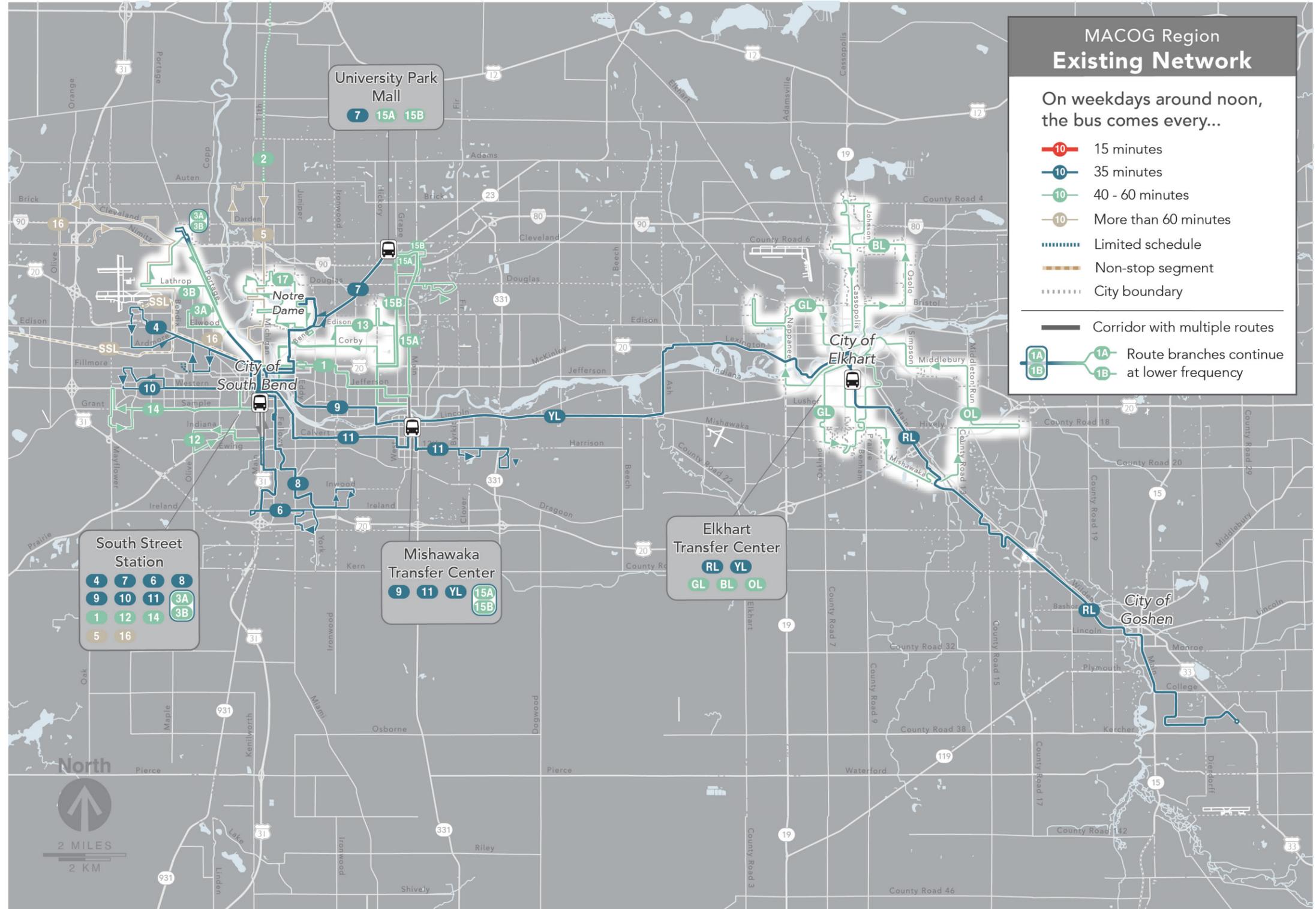


Figure 44: Transpo and Interurban Trolley bus routes, as of 2021, with circulator routes and their surrounding areas highlighted.

Combined routes on evenings and Saturdays add complexity for users

Shapeshifting Routes

During the evenings and on Saturdays, some of Transpo's radial routes operate as combined circulators, providing minimal coverage to these areas with fewer buses but making some trips much longer. The maps in Figure 46 shows the combined Route 6/8, Route 9/11, and Route 12/14. This design creates several problems for riders:

- These combined routes are long one-way loops.
- Coverage areas can change drastically. The outermost parts of Routes 6, 8 and 11 aren't serviced during Evenings. 12/14 has service on Saturdays only.
- A transit user's ride to work may be completely different from their way home at the end of the day.

These problems increase the difficulty of understanding the transit network. Riders cannot simply return to a stop across the street from where they departed the bus. And riders have no guarantee they'll be able to return home on the same route.

These shapeshifting routes add significantly to the complexity of the Transpo network. Remembering and navigating that complexity requires substantial cognitive effort and can be quite a burden on existing riders. While some existing riders depend on elements of this complexity for their service, there are likely far more people who tried the transit network once and found it too complicated and too unreliable, and then decided to not become regular customers. In the long run, complexity is a barrier to transit access by large numbers of people across the region.

The complexity described above arises, in part, when transit agencies need to provide coverage to many places, within a budget stretched thin. Transpo's very limited supply of service has likely generated more complexity over time, as staff do their best to meet various requests for coverage with constrained resources.

If a community highly values the coverage-related outcomes of transit, the transit network that serves those values will tend to be more complex (though with sufficient funding, it needn't be as complex as the existing network). If a community values ridership and productivity outcomes more highly, then the transit network will tend to be more frequent and simpler.

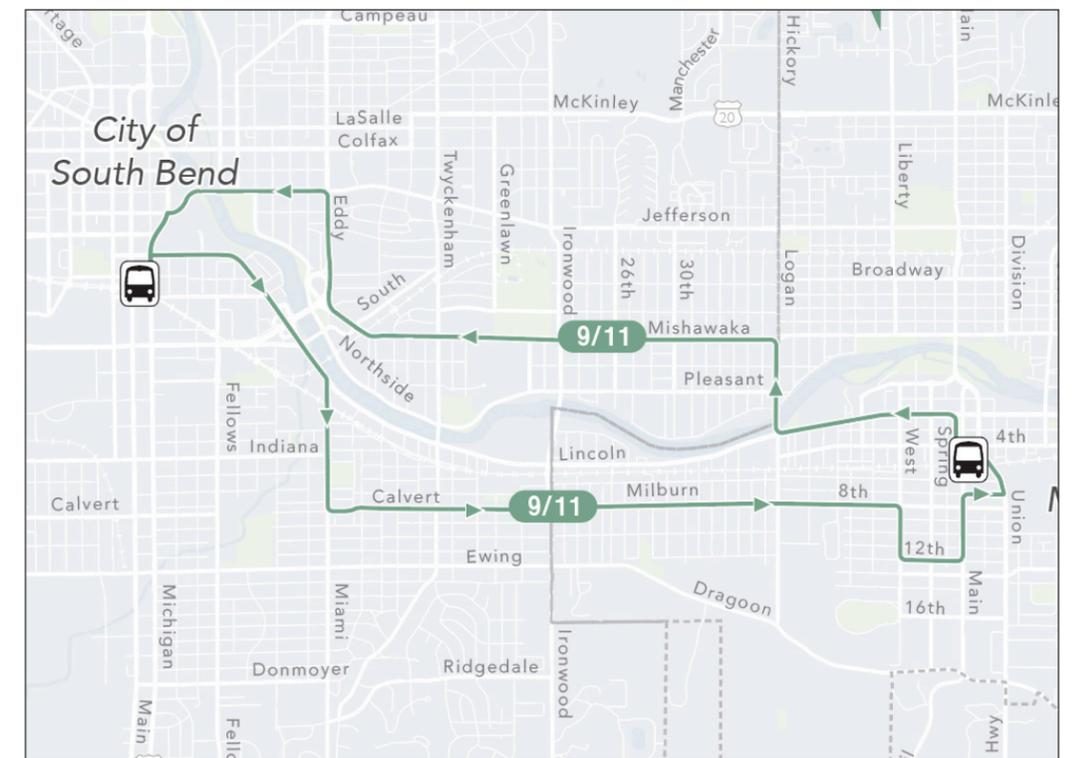
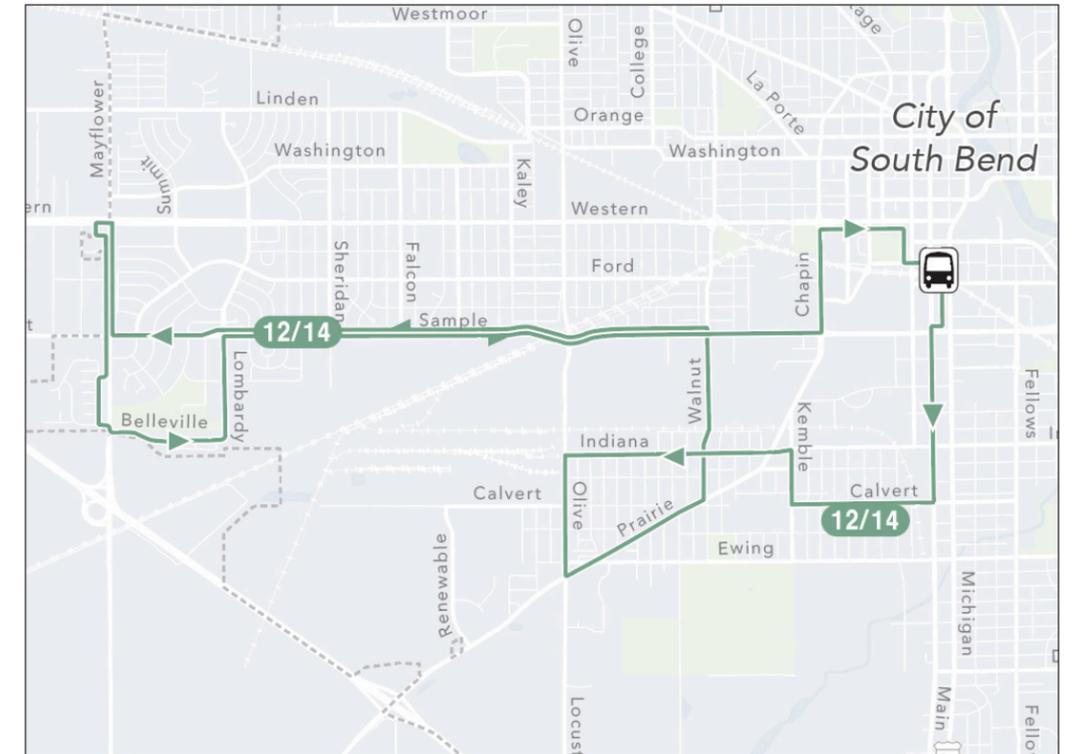
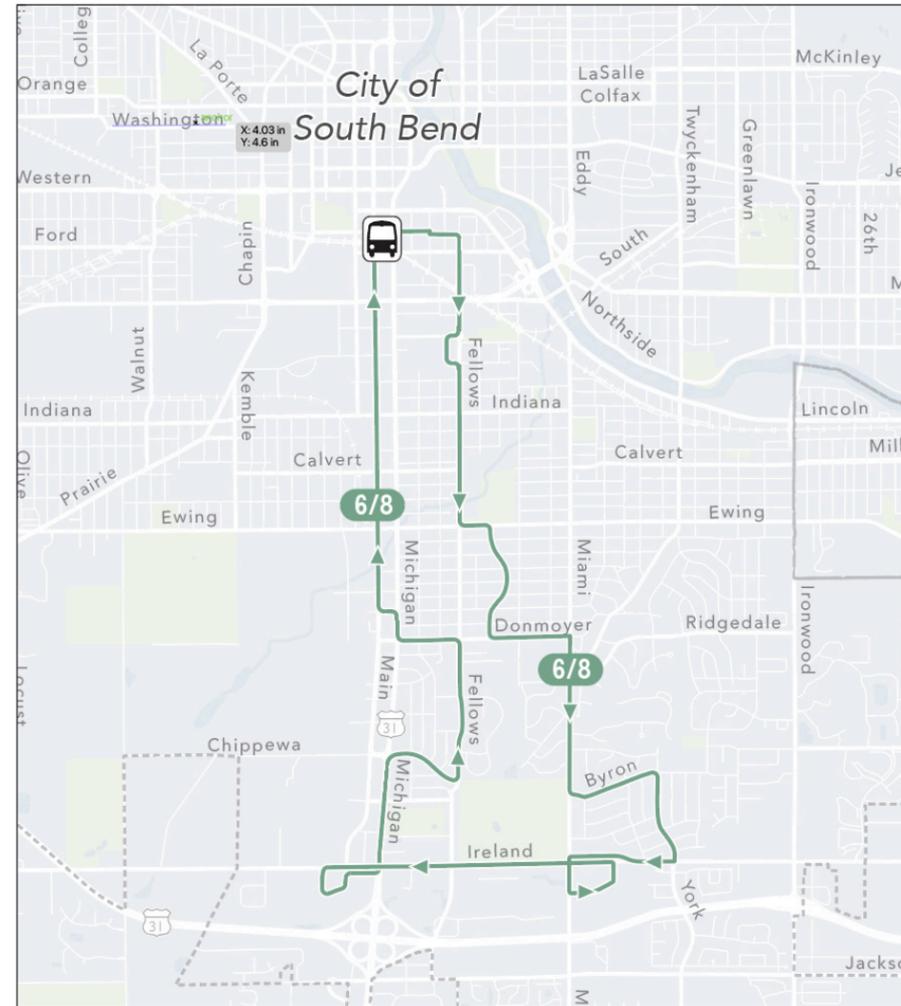


Figure 46: Routes 6/8, 9/11, and 12/14 are special patterns that run only on evenings and on Saturdays. A person living along Milburn Road who works at near Mishawaka Transfer Center might be able to get to work easily in the morning, but if their shift ends at 8pm, their way home could be much more difficult. In the morning, they would take Route 11, which comes every 30 minutes, but in the evening, they would have to take the combined 9/11 counterclockwise, into South Bend, and back out to Mishawaka.

Orbital routes connect the secondary nodes to each other.

Orbital Routes

Transpo operates a pair of orbital routes that link secondary nodes but do not enter downtown South Bend to connect at South Street Station. These include:

- Route 15 University Park Mall / Mishawaka has two patterns:
 - 15a -> via Main Street
 - 15b -> via Grape Road

These routes operate about every 60 minutes on weekdays and with provide a combined 30-minute frequency between Mishawaka Transfer Center and University Park Mall.

Users of the orbital routes face some of the same difficulties as users of the feeder routes, and some unique ones as well.

- **Route Deviations** along route 15a, allow for service to St. Joseph Regional Medical Center and the VA Clinic at the expense of longer travel times for through-trips. While these are major destinations, and important medical facilities, their locations are particularly out of the way relative to other major destinations.
- **Additional transfers**, are necessary for getting from the areas served by the orbital routes to destinations near or west of downtown South Bend. For example, someone coming from Beacon Heights Apartments near Lincolnway who might need to go to the VA Clinic would have to wait on average 15 minutes to catch Route 4, then ride to South Street Station, transfer to Route 1 or 9 to Mishawaka Transit Center, and then transfer to Route 15a. Some of these transfers are timed to minimize waits, but total travel time is about an hour. Each additional transfer comes with uncertainty about the reliability of a connection and the risk for a significant amount of lost time.

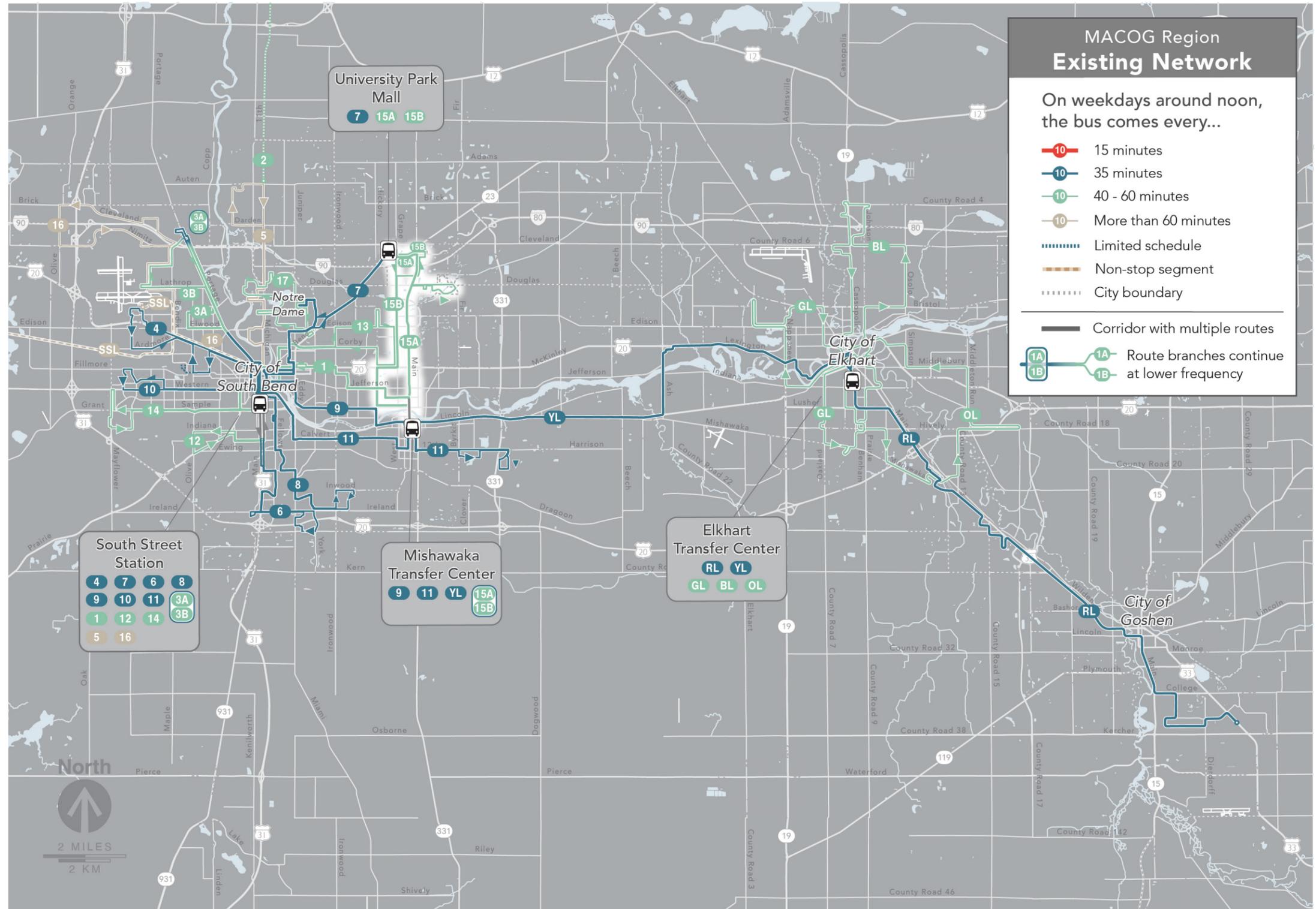


Figure 47: Transpo and Interurban Trolley bus routes, as of 2021, with orbital routes and their surrounding areas highlighted.

Some routes provide regional connections over long distances

Regional Routes

Two of the Interurban Trolley's radial routes serve a regional connections over long distances. These include:

- Yellow Line -> Mishawaka to Elkhart
- Red Line -> Elkhart to Goshen

The long distances of these routes have several unique implications

- On an hourly basis, each bus serves fewer passengers, but serves the average passenger for longer. This results in a comparatively lower productivity outcome when measured in boardings per revenue hour.
- Some local destinations are located off of these two corridors so the usefulness of these regional connections is partially dependent on efficient connections with radial and circulator routes.
- Any deviations added to regional routes is likely to inconvenience through-riders and make transit travel times less competitive with driving.

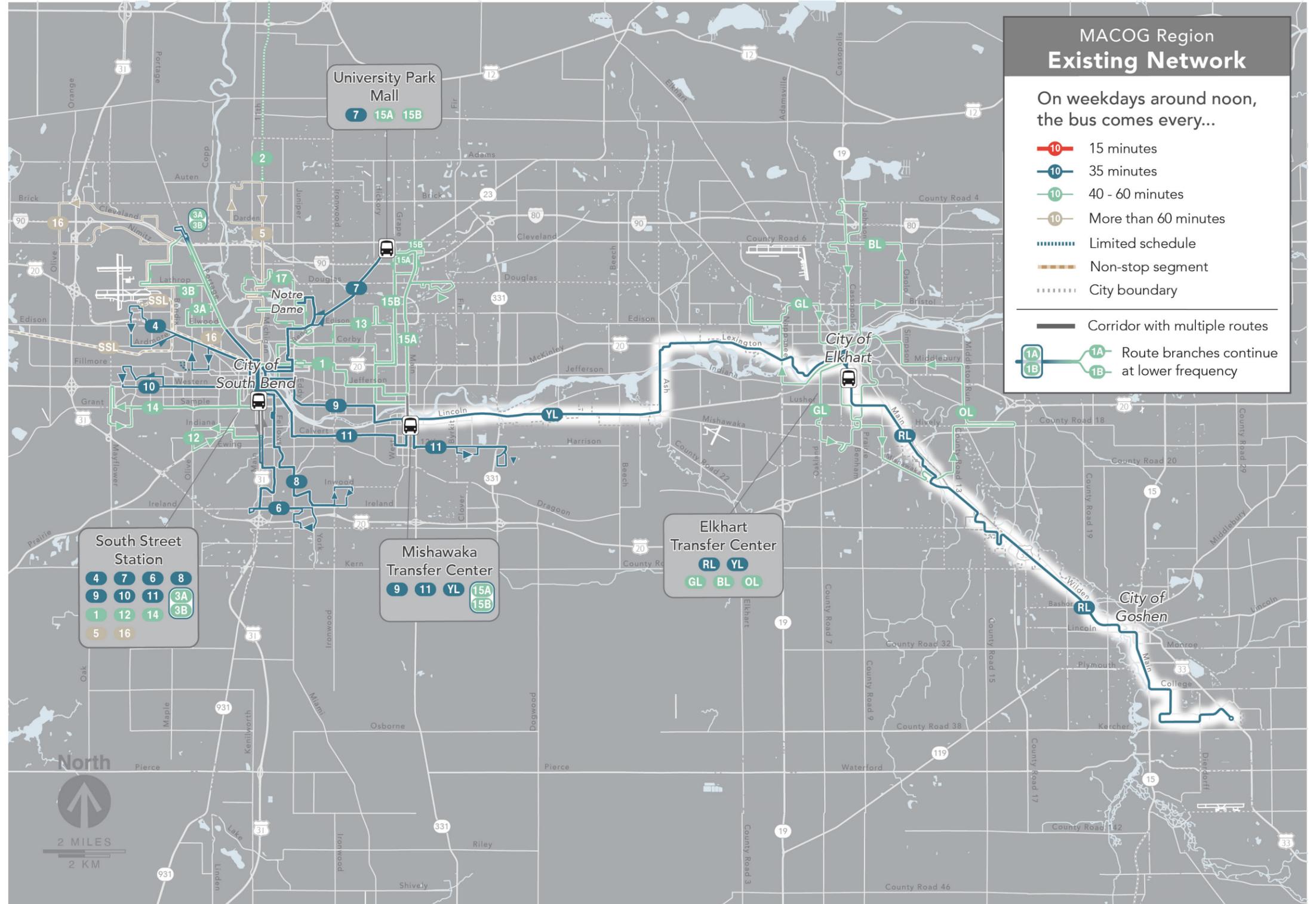


Figure 48: Transpo and Interurban Trolley bus routes, as of 2021, with regional routes and their surrounding areas highlighted.

Most Routes are designed to “Pulse” at Transfer Centers

Timed Connections at Transfer Centers

Connections allows people to travel in many directions but the amount of time a transfer takes depends largely on the frequency of the connecting routes. For an untimed connection in a large city like Chicago, transferring to a frequent route which comes every 5 minutes, would take on average just 2.5 minutes. However, transferring to a route that comes every 60 minutes could require a 30-minute wait, on average, and in the worst case a 59-minute wait!

To make connections between low-frequency routes more tolerable, transit networks are often operated with a “pulse” at a few key locations. To offer a pulse, an agency must design its routes to be a certain length so that buses can all arrive at the central hub at the same time, each hour or half-hour. The buses dwell together for a few minutes, passengers connect among them, and then they depart again. This can happen at any regular interval, though half-hourly and hourly pulses are common in most networks with a timed connections.

Most routes in the Transpo and Interurban Trolley systems converge at one of three Transfer Centers: South Street Station, Mishawaka Transfer Center, and Elkhart Transfer Center. Many of these routes, as described on page 48 and page 49, pulse with one another, allowing for relatively quick connections despite low frequencies.

Pulses don’t always work perfectly

In theory, pulse timing at Transfer Centers means that every bus arrives five minutes before the departure time, drivers take a quick break, and then at the top of the hour (or whenever the pulse is scheduled for), every bus departs at the same time, allowing for every transfer to be made with just a five minute wait.

In practice, schedules are rarely perfect. Timed connections between half-hourly routes and hourly routes can only exist half the time. That means your connection is available only as often as the least frequent route on your trip.

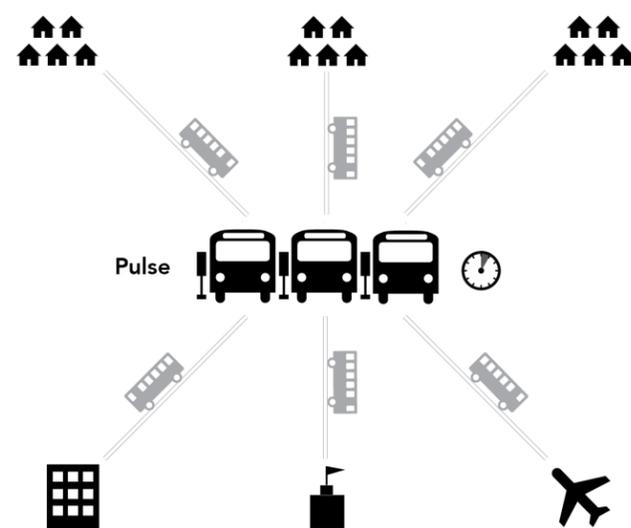


Figure 49: In a pulse, multiple low-frequency routes are scheduled to come together regularly, dwell for a few minutes so that passengers may transfer among them, and then depart again.

Loops don’t pulse well unless they are the perfect length

Unless at a perfect length, a route that operates as a loop, cannot be made to both depart from a Transfer Center on time, and return exactly five minutes before the next departure time without adding a layover somewhere along the route that inconveniences some people.

Transpo’s Route 4 is an example of this. It departs at :20 and :50 after the hour from South Street Station, travels out Lincolnway towards the airport, completes a one-way loop around Lexington and Ardmore, and returns to South Street Station 15 minutes before the next departure. This means that many trips which involve a transfer from Route 4 require a 15-minute wait at South Street Station, a travel time penalty that is especially onerous for short trips.

Routes that pulse at two locations can’t always be scheduled to pulse perfectly at both ends.

Similar to loops, routes that serve two pulse locations don’t always pulse well if they happen to be the perfect length. In the Transpo network, Routes 1, 9, and 11 all connect South Street Station and Mishawaka Transfer Center. Route 1 takes the longest path at 24 minutes, while Route 9 takes the shortest, at 20 minutes. They all have trips that depart South Street Station at exactly :20 after the hour, but they all arrive at Mishawaka Transfer Center at slightly different times. For all routes to pulse, each route must wait until the others arrive, adding extra layover and waiting time to routes with shorter travel times between the two transfer centers.

Pulses are fragile

There is a cost to pulsing. First, the routes must be designed so that they can make a round trip in the right amount of time to get back to the pulse with all of the other routes. This makes it hard to lengthen a route just a tiny bit in response to requests.

This inflexibility also means that any reduction in the speed of the bus can be threatening to the pulse, since that bus may not be able to do its round trip in the required amount of time. While traffic congestion has generally decreased during the Covid-19 pandemic, economic recovery and future growth in the region is likely to erode transit travel times and reliability over time.

The consequences of a bus arriving late to a pulse are more severe than that of an untimed connection. For an hourly route that arrives six minutes late and just misses a pulse, connecting passengers have to wait an extra 59 minutes for the next bus.

We’ll take a look at how often buses arrive late at the system’s three Transfer Centers in on page 55.

On-Time Performance

On-time performance is a measure of how reliably buses depart when customers expect them to depart. Reliability is particularly important when a transit network is built of infrequent routes. Yet reliability is inherently challenging to achieve since many causes of delay- traffic congestion, road closures, and weather are out of a transit agency's control.

MACOG defines a bus as being "on-time" if it departs from a bus stop between 1 minute earlier to 5.5 minutes later than scheduled. Systemwide as of September 2021, Transpo's buses depart on-time about 75% of the time while Interurban Trolley's buses depart on time just under 70% of the time. Transpo buses depart late less than 10% of the time while Interurban Trolley buses depart late about 15% of the time. This compares favorably with many other transit agencies.

Early Departures from Timepoints

For passengers, an early departure can be much worse than a late one. If a route that comes every 60-minutes is 8 minutes late, someone might be 8 minutes late to work, and that is bad. But if it's 8 minutes early, they probably weren't at the bus stop in time to catch it, and they have to catch the next bus...which means they are now 60 minutes late to work.

One of the impacts of the Covid-19 pandemic has been the widespread adoption of remote work by some industries, and the corresponding decrease in rush-hour traffic congestion. For transit, higher travel speeds combined with, lower-than-normal ridership allowing buses to stop less often is resulting in a significant number of early departures. Automatic Vehicle Location data from September 2021 suggests that nearly 20% of departures from timepoints are occurring more than one minute earlier than scheduled. Figure 50 to the right, shows on-time performance by route. In it, we can see that some routes such as Routes 13 and 16, depart early nearly over 30% of the time.

Early departures can be reduced by two methods. The first is by adjusting schedules to reduce "slack". The near absence of late departures on some routes suggests that most buses would likely still be able to keep to their schedules even if there was less run time in the schedules. The second method is to direct drivers to consistently wait at all timepoints, and to ensure that there is space for buses to wait without obstructing traffic.

Weekday On-Time Performance Departures from Time Points (Sept 2021)

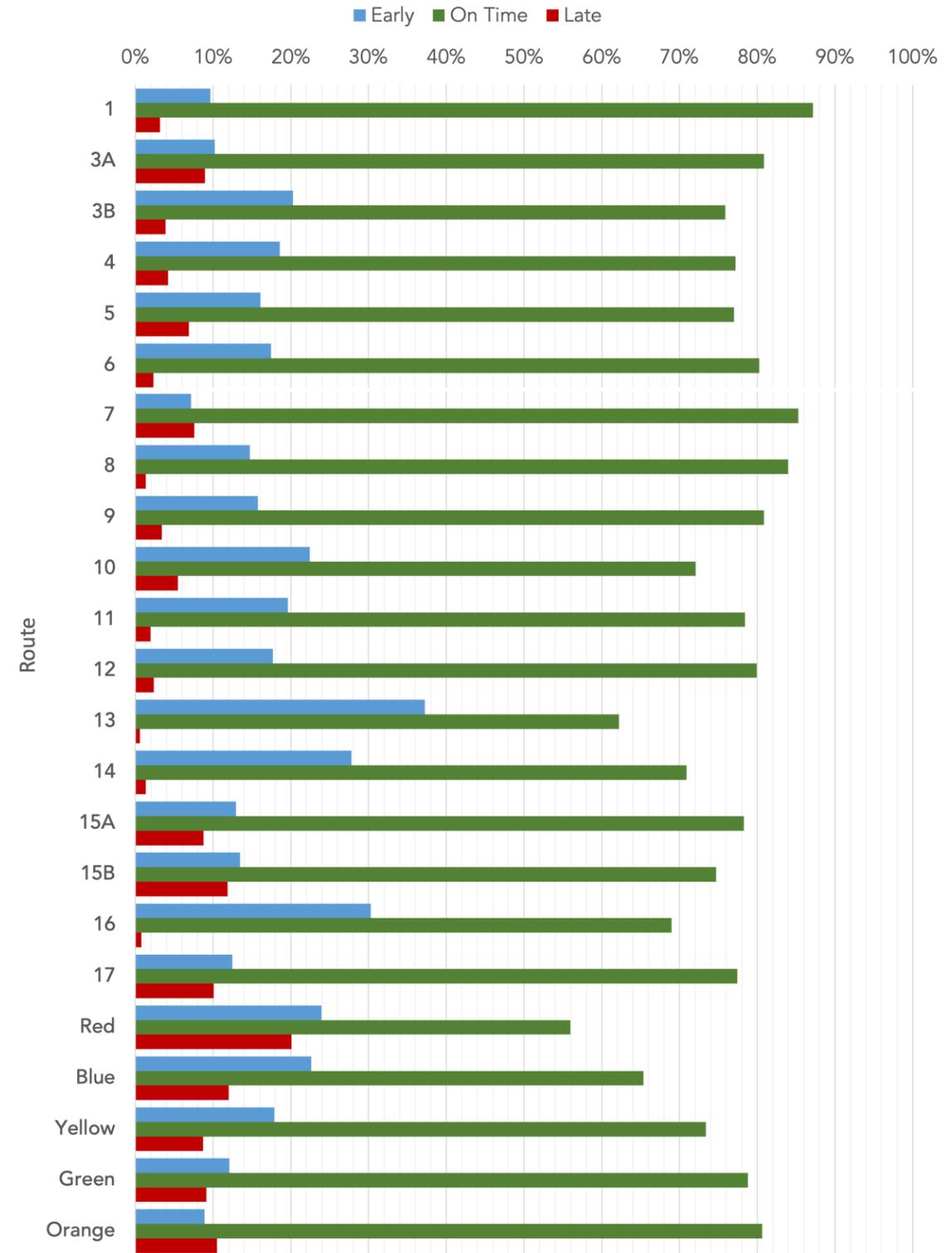


Figure 50: Early, on-time, and late departures from time points by route as of September 2021. On-time is defined as between one minute early and five minutes behind scheduled times.

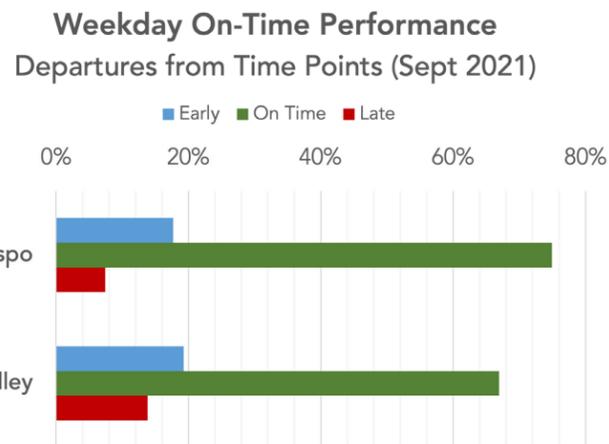


Figure 51: Systemwide on-time performance as of September 2021. On-time is defined as between one minute early and five minutes behind scheduled times.

On-Time-Performance at Transfer Centers

Timed connections, or “pulses”, as we referred to them on page 53, are designed to reduce waiting times in a system where buses are infrequent. But planning for transfers between two routes that come every hour is inherently risky. If a bus arrives late to a transfer center, passengers have the potential to be stuck for an entire hour.

To a certain extent, this risk can be mitigated by radio communications—bus drivers arriving late can request that other drivers delay their departure by a few minutes so that nobody misses their connection.

Figure 52, at right, is a chart of on-time arrivals at three key locations in the Transpo and Interurban Trolley networks: South Street Station, Mishawaka Transfer Center, and Elkhart Transfer Center. This data from September 2021 suggests that:

- Buses reliably arrive on time for timed connections at South Street Station and at Mishawaka Transfer Center.
- On-time performance is the lowest at Elkhart Transfer Center, with the Red Line arriving late nearly 20 percent of the time and the Orange Line arriving late 10 percent of the time.
- Longer routes like the Red Line, the Yellow Line, and Route 3, have a tendency to arrive late more often than shorter routes.

The prevalence of late arrivals at Elkhart Transfer Center suggests that given the unreliability of real-world traffic conditions, the schedules of some Interurban Trolley routes may not be achievable throughout the day.

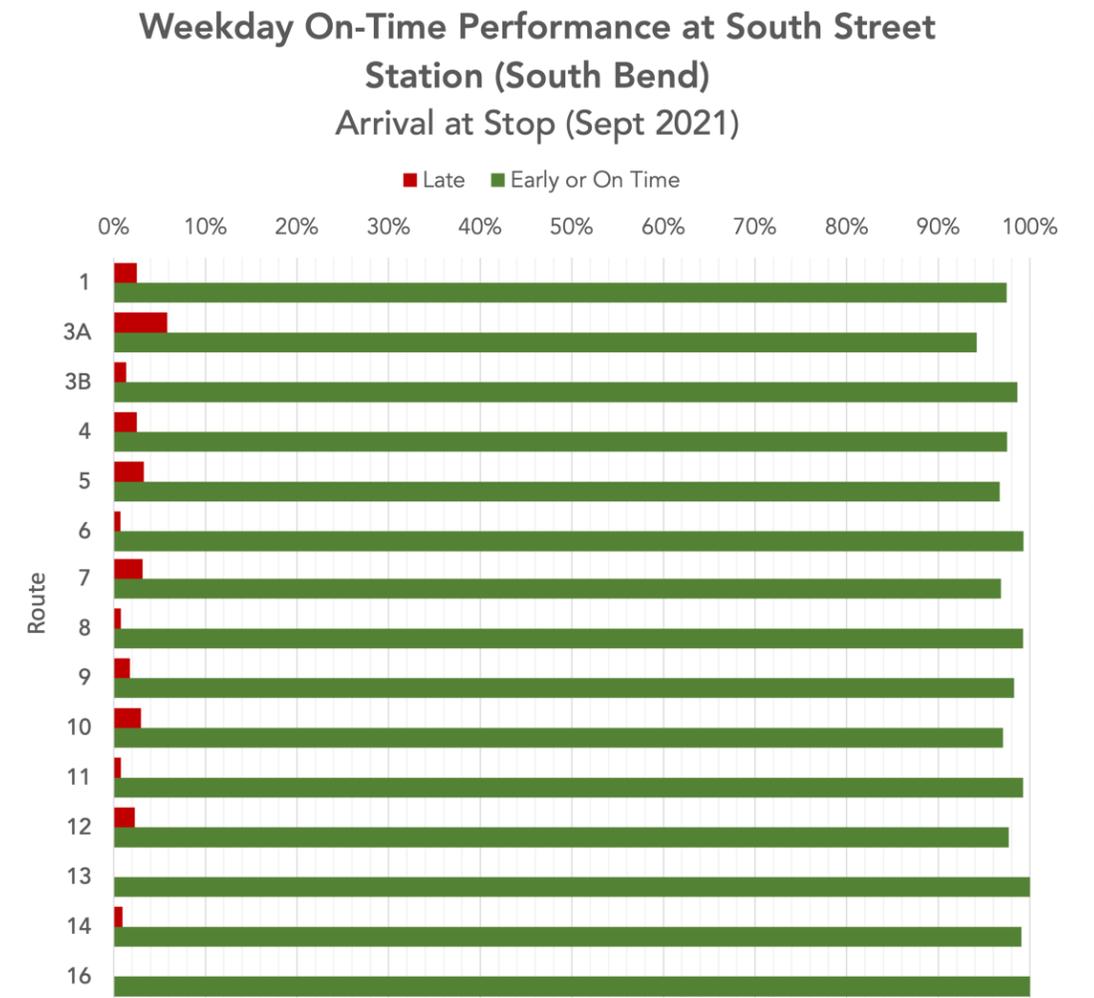
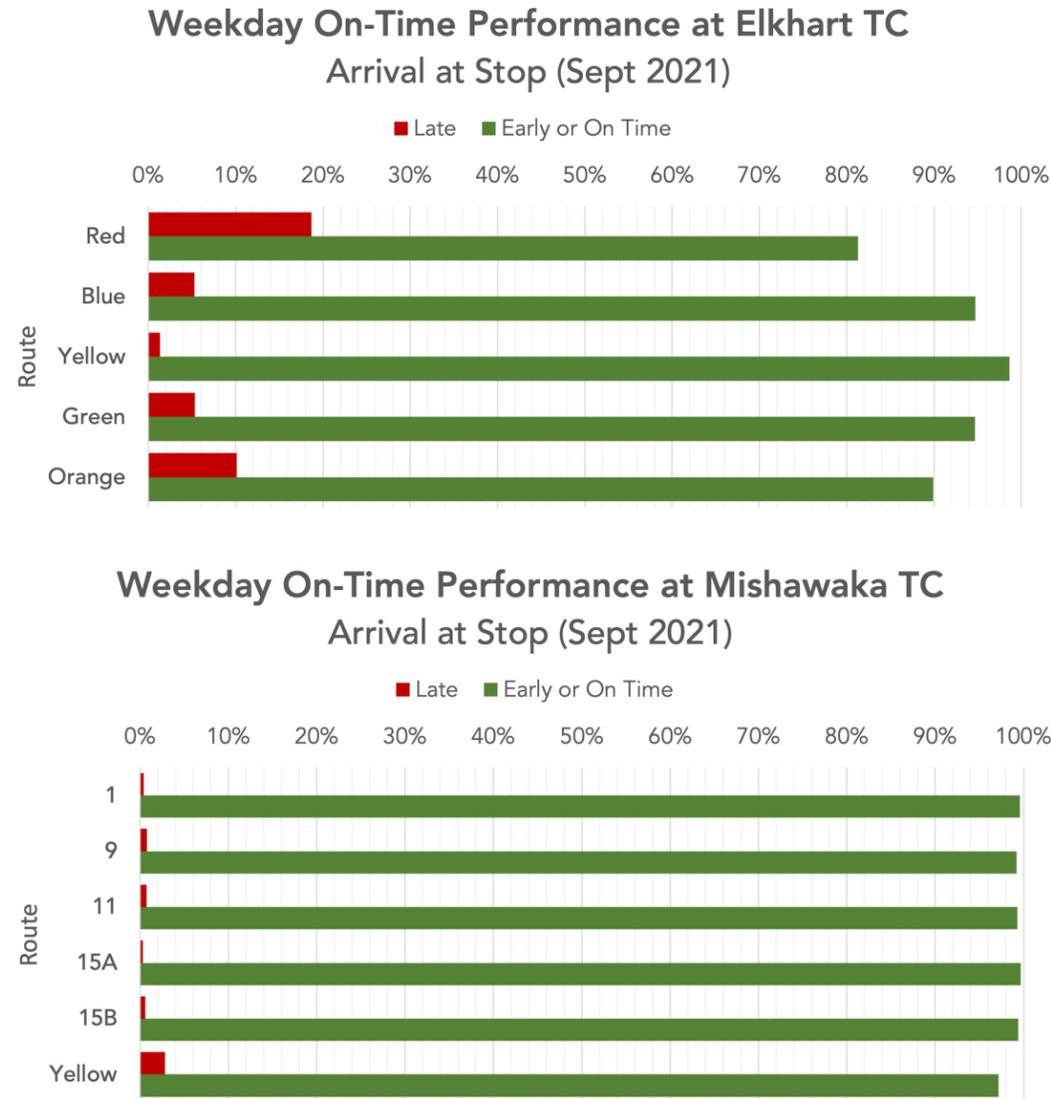


Figure 52: On-time arrivals to transfer centers as of September 2021. On-time is defined as between one minute early and five minutes behind scheduled times.

How many people are near transit service?

Proximity to Transit in South Bend and Mishawaka

A commonly held goal for transit is to provide lifeline access for many people, and measuring how many people or jobs are served by transit tells us something about how well the transit network is meeting that coverage goal. The charts at right report proximity to services of different frequencies in South Bend and Mishawaka. The distinction is important because frequent service is most liberating for people. Key findings include:

- 78% of the two cities' residents and 78% of jobs are within 1/2-mile walk of a bus stop that offers at least some transit service
- Only 53% of residents and 58% of jobs are located within a 1/2-mile of service every 30-minutes.¹
- There is currently no transit service in the region more frequent than every 30 minutes.

The bar charts showing proximity for people of color and low-income residents indicate that transit service is distributed relatively equitable across income and race: 84% of people-of-color live near transit, compared to 78% of all residents. While this suggests that as a whole, people of color are more likely to be located near transit, the experience of specific racial and ethnic groups vary significantly. The race and ethnicity dot-density map on Figure 32 on page 38 sheds some light on these differences.

- 83% of residents with low income live near transit²
- 61% of residents with low income live near bus

¹ Some services in the existing network have uneven headways. For the purposes of this analysis, stops with 35 minute headways are placed in the 30-minute category.

² Residents in households making less than 125% of the Federal Poverty Level are considered low-income.

service that comes at least every 30 minutes. This stands in contrast with just 53% of the general population near 30-minute or better service.

These conditions are not static and may change as a result of a changing economy and a changing city. Changes in the pattern of demand for housing or location of jobs may shift the patterns of who has access to what kind of transit, without any changes to the transit network. Many cities have seen an increase in housing demand near transit and in walkable, urban areas. If this increasing demand is not matched by increases in the supply of housing, then people living on low incomes may move away from frequent transit or any transit service to seek lower housing costs. Land use planning, growth permitting, and affordable housing policies at local jurisdictions affect the long-term on access to useful transit as much as the transit service itself.

Seniors have lower access to transit, reflecting the fact that seniors are spread out throughout the region at relatively lower density than other demographic groups. Only 72% of seniors live near any transit service, compared to 78% of all residents. Only 46% of seniors live near 30-minute service, compared to 53% of all residents.

The vast majority of South Bend and Mishawaka residents and jobs are near some transit service, but only 53% of residents and 58% of jobs are near service that arrives every 30-minutes or better.

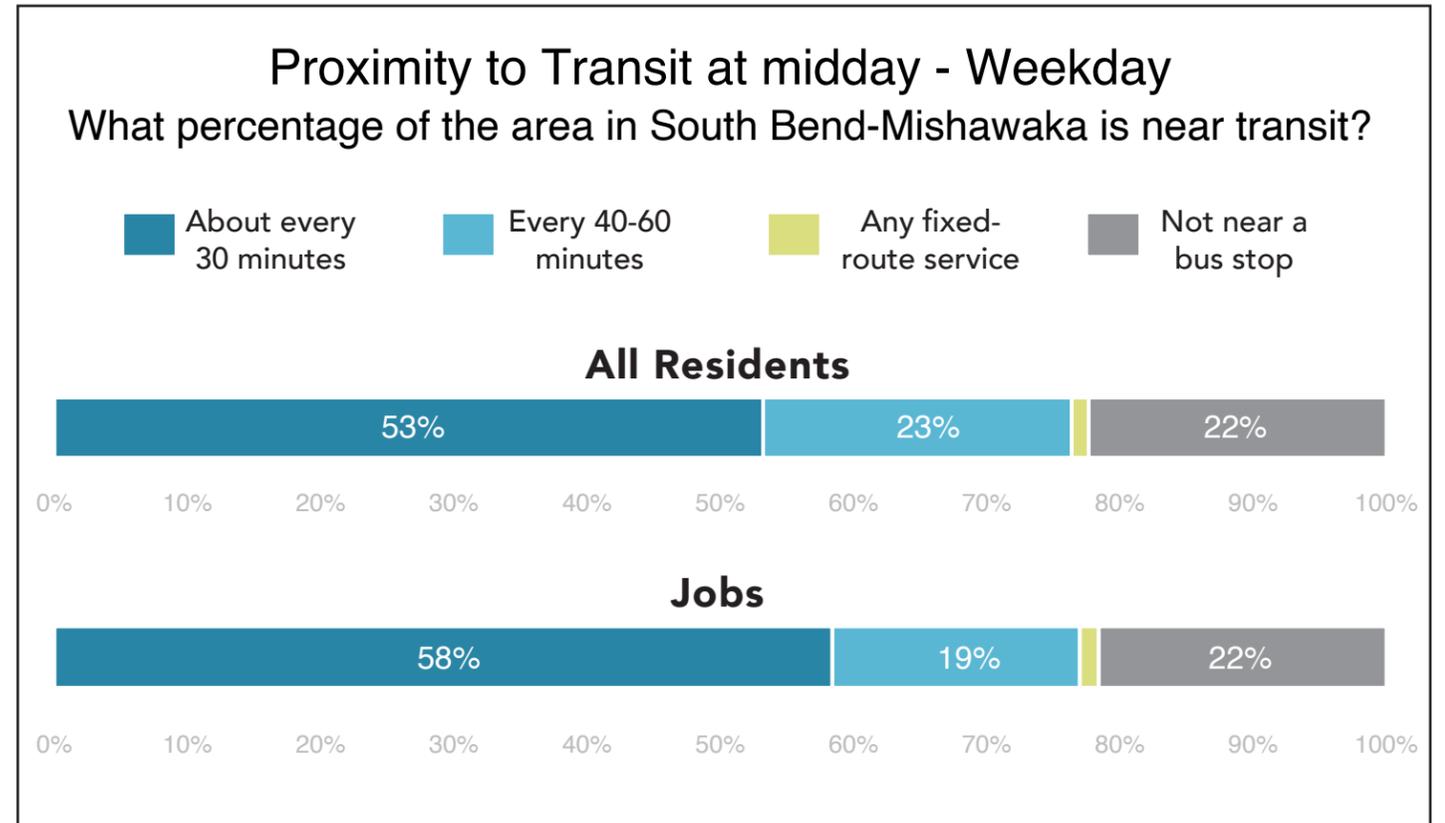


Figure 53: Proximity of Residents, Jobs, and Demographic sub-groups to transit. This chart shows percentage of people and jobs near service of different frequencies.

Proximity to Transit in Elkhart and Goshen

Relative to the South Bend-Mishawaka area, fewer people are near transit in Elkhart and Goshen.

- 56% of the city's residents and 51% of jobs are within 1/4-mile of a bus stop that offers at least hourly service. In contrast to South Bend and Mishawaka, fewer jobs in Elkhart and Goshen are near transit than residents, likely because a higher share of jobs are located in less dense industrial areas or suburban retail areas rather than near downtown.
- Only 32% of residents and 32% of jobs are located within a 1/2-mile of 30-minute service
- There is currently no service that runs every 15-minute or better.

Looking at proximity to transit in Elkhart and Goshen by race and ethnicity and income shows that those most likely to be in need of transit are more likely to be served by transit than the average resident.

- 61% of the area's residents of color are within a 1/2 mi walk of transit compared to 56% of the general population.
- 40% of residents of color are near 30-minute service compared to just 32% of all residents.
- 64% of residents with low income live near transit service

Despite this, a significant portion of Elkhart and Goshen residents are still located beyond 1/2 mi of transit.

- The majority (51%) of senior residents are located beyond 1/2 mi of transit.

About half of Elkhart and Goshen's residents and jobs are located near transit service.

Proximity to Transit at midday - Weekday

What percentage of the area in Elkhart-Goshen-Dunlap is near transit?

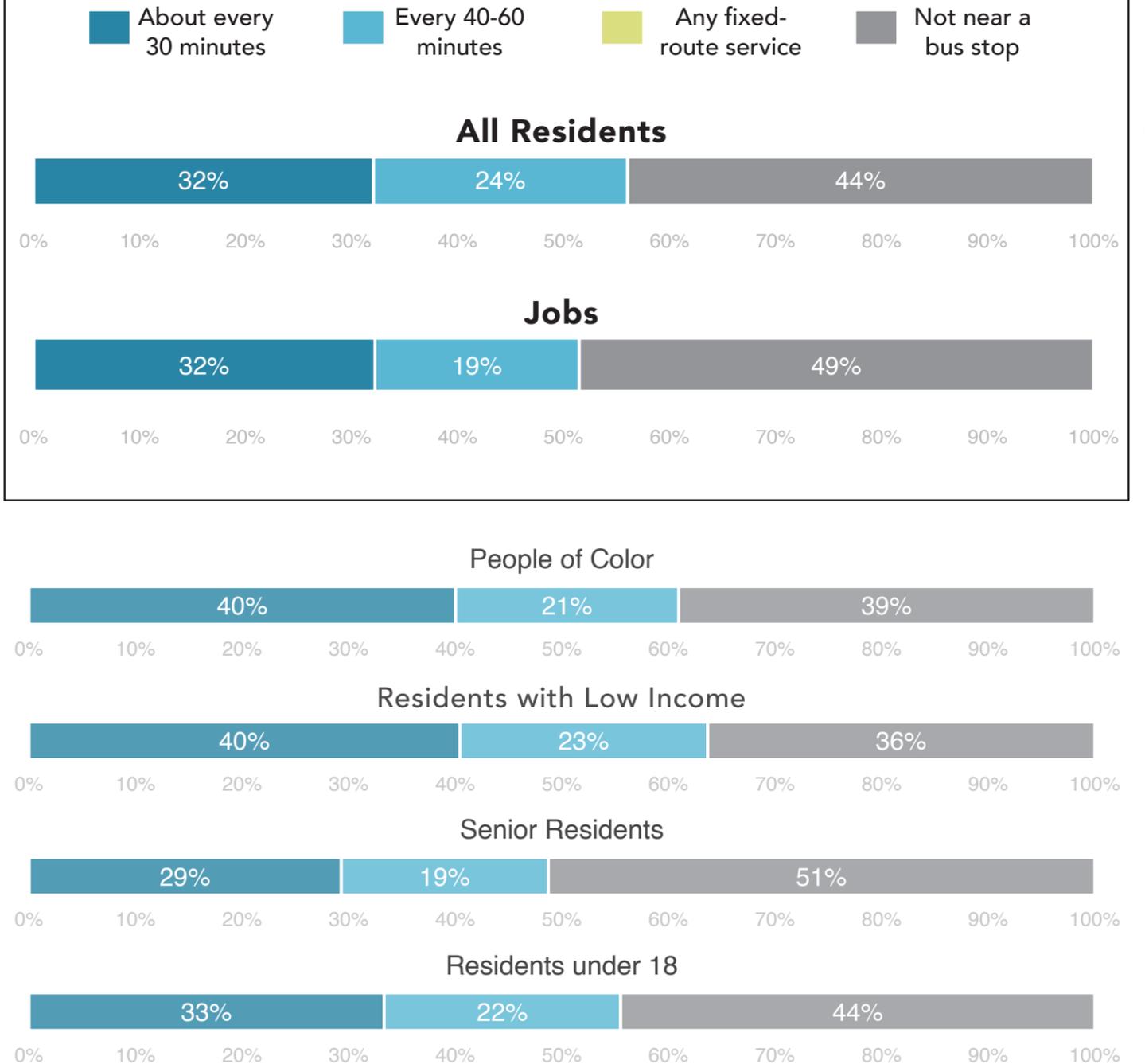


Figure 54: Proximity of Residents, Jobs, and Demographic sub-groups to transit. This chart shows percentage of people and jobs near service of different frequencies.

There is much less service on weekends and evenings than during weekdays.

When is Service Available?

The table to the right summarizes each route's frequency and span for the existing Transpo and Interurban Trolley network. This graphic illustrates how much less service is available during evenings and on weekends.

Short spans and lack of service on Sundays limits the usefulness of the transit network in several ways:

- **Service worker shifts tend to start early in the morning, or to end late at night.** Many service workers are changing shifts at times when service is infrequent, such as in the very early morning or the late evening.
- **People working in retail or restaurants often need to commit to working on weekend days.** A route that runs very infrequently or doesn't exist on weekends (and at night) is useless to most low-income service workers.
- **People appreciate more flexibility in their lives.** Even among rush hour commuters, anyone taking an evening class, pursuing a hobby, going to worship, or occasionally working late wants the flexibility to get home outside of the traditional 8-to-5 workday.

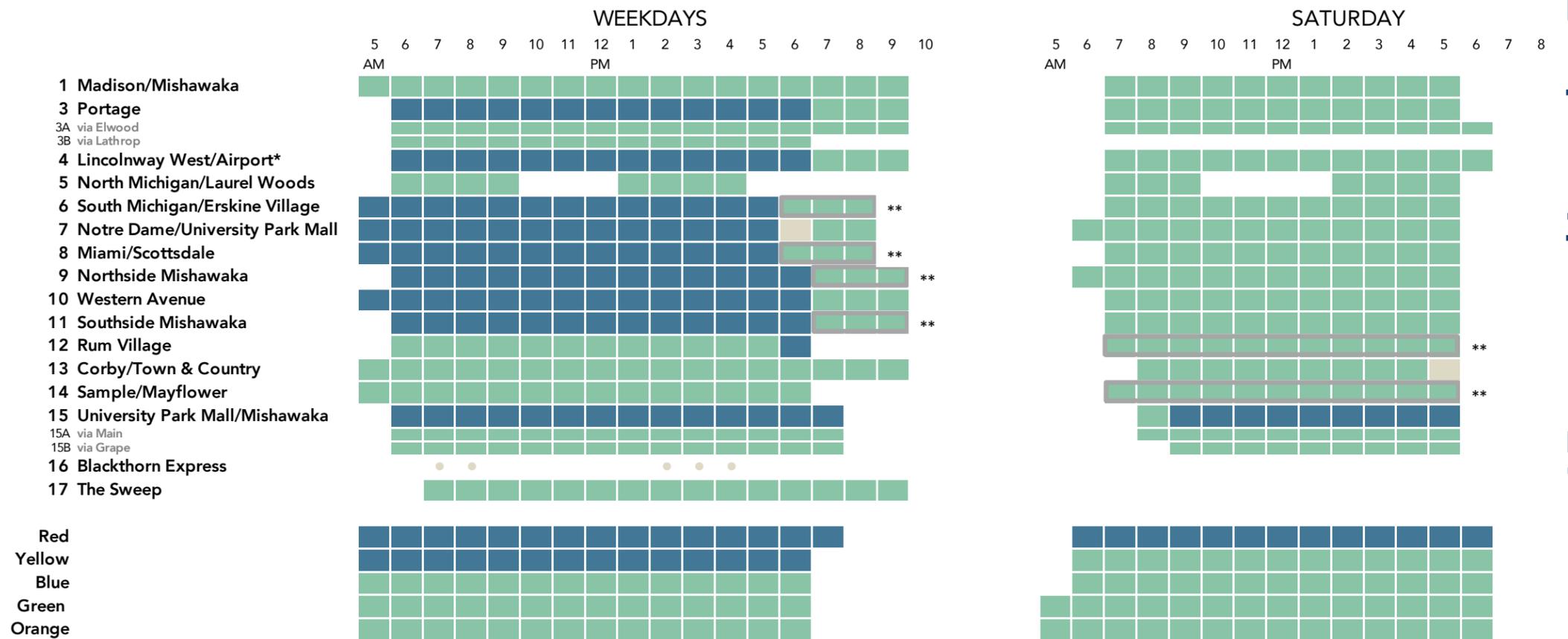
Ultimately, offering long hours of service seven days a week is key to increasing and maintaining ridership over time. These are the conditions necessary for large numbers of people to build their lives around transit and forgo car ownership.

Low frequencies on Saturdays and the lack of service on Sundays make it less likely for transit to be useful for many retail and service sector workers.

South Bend Transpo and Interurban Trolley - September 2021 Route Frequencies

The bus comes about every:

- about every 30 minutes
- 40-60 minutes
- Over 60 minutes
- Limited (6 trips or less per day)
- Combined Service Hours



* Select trips serve Excel Center
 ** Operated as combined service: 6/8, 9/11, 12/14

Figure 55: This chart shows approximately how often the bus runs throughout the day, on weekdays and weekends, on each Transpo and Interurban Trolley route. Most Transpo routes with service every 30 minutes go to every 60 minutes after 7 PM and on Saturdays. Interurban Trolley routes end service at about 7pm on weekdays. There is no service on Sundays.

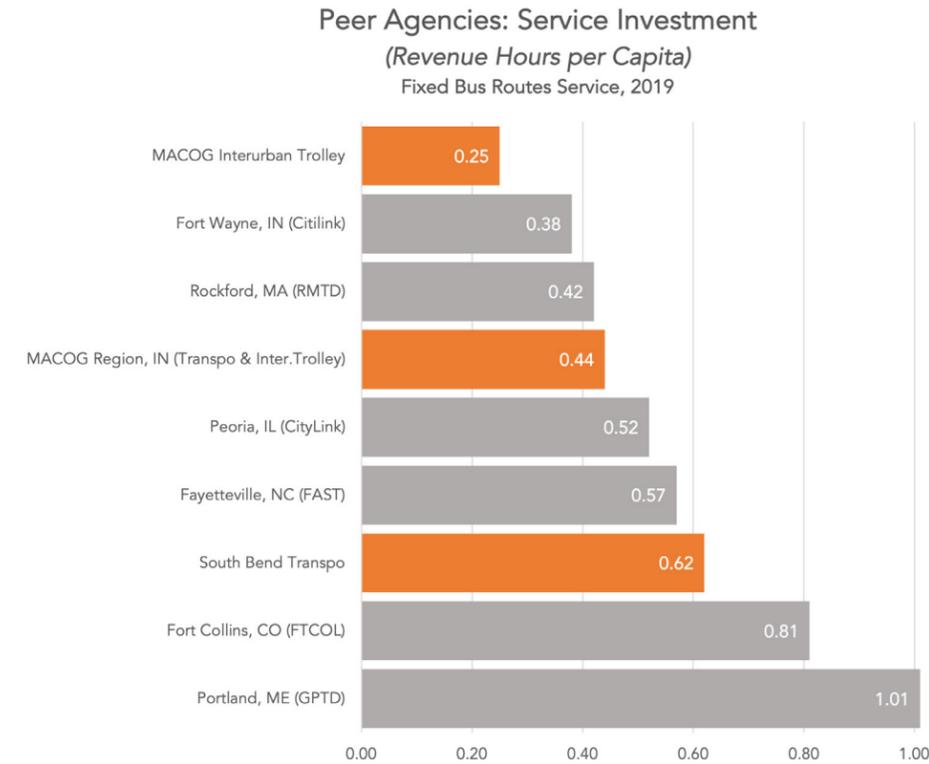
The current transit service levels and ridership are low compared to peers.

In preparing this report, the project team compared Transpo and Interurban Trolley to agencies serving similarly-sized communities. We focused on agencies with a relatively large service area, in mid-sized counties, at the edges or just outside major metro areas. Specifically, we compared Transpo and Interurban Trolley to:

- Fort Wayne Citilink in Fort Wayne, IN.
- Rockford Mass Transit District in Rockford, MA.
- CityLink in Peoria, IL.
- Fayetteville Area System of Transit in Fayetteville, NC.
- TransFort in Fort Collins, CO.
- Greater Portland Transit in Portland, ME.

This analysis reveals that:

- **The region provides relatively little service.** None of the 7 peers compared provided less service per capita than MACOG's Interurban Trolley. Even when grouped together with Transpo for a regional comparison, only Fort Wayne and Rockford provides fewer annual revenue hours per capita.
- **Ridership is correspondingly low.** Studies comparing many agencies over time show that the single largest contributor to ridership is the amount of service provided. So it is not surprising that, among the agencies we compared, those that provide more service generate more ridership.
- **Both Transpo and Interurban Trolley's productivity is very low.** We have seen how the region's transit ridership has likely been suppressed by low frequencies. As a result, both agencies' average productivity has tended to be lower even than other agencies who provide similar total amount of service.



These facts are not permanent, nor are they inevitable. They reflect conditions in pre-pandemic times, and while the pandemic has changed activity patterns, it is likely that these patterns would continue if not much changes in Transpo and Interurban Trolley's funding model and service planning practices post-pandemic. But this trajectory can still change.

Transpo and Interurban Trolley provides the amount of service it can afford within existing public funding sources. Local governments could allocate more towards transit, and voters could approve more, as they have done in other communities over the past decade.

And both transit system's relatively low productivity compared to peers could change as a result of a network redesign that more deliberately matched service location and frequency with ridership potential.

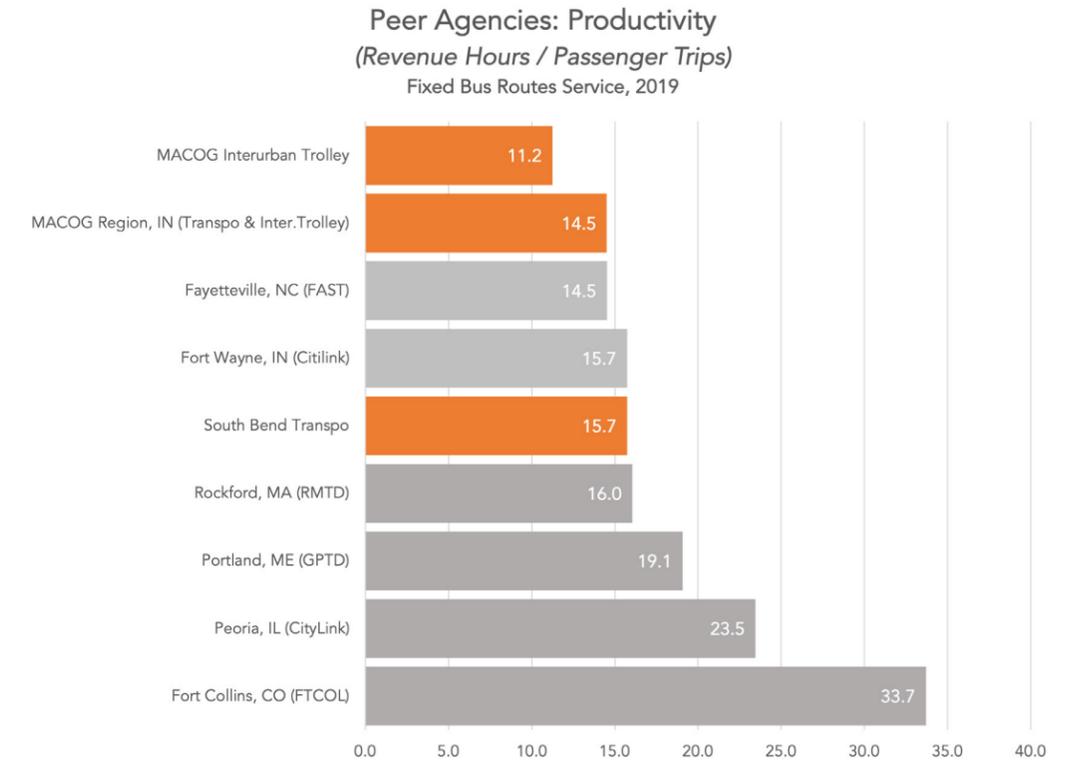
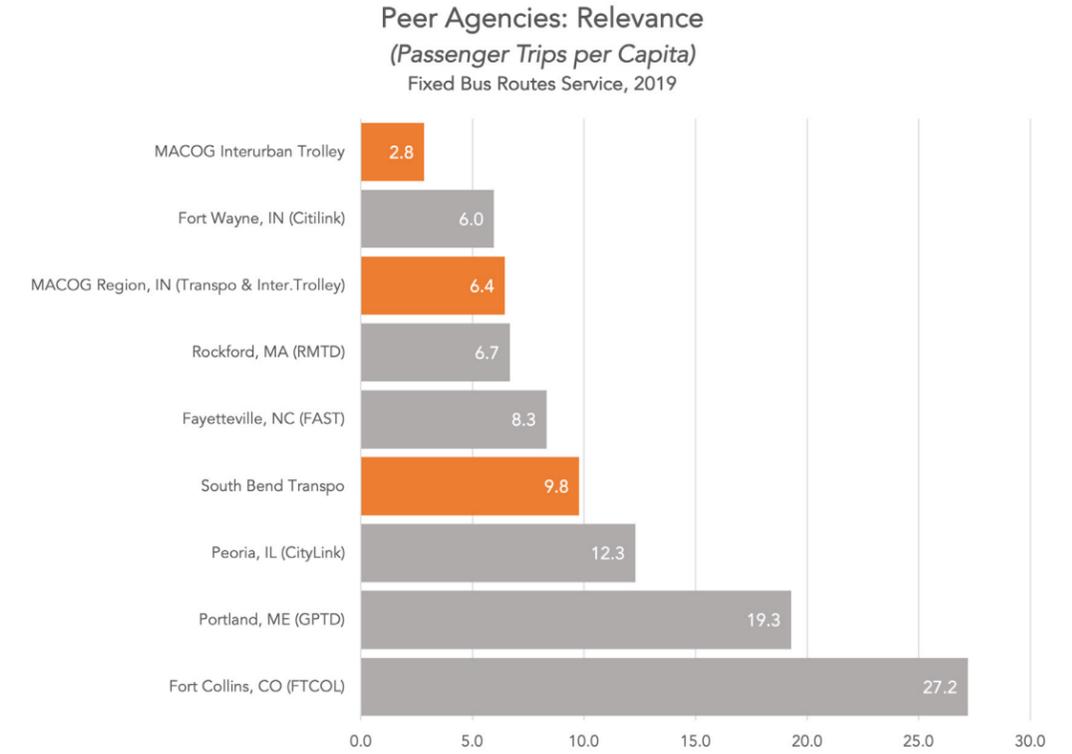


Figure 56: Charts comparing Transpo and Interurban Trolley to peer agencies on three measures: service investment per capita (top left), relevance in annual boardings per resident (top right), and productivity in boardings per hour (bottom right).

Where are people riding transit?

Ridership in South Bend and Mishawaka

Figure 57 at the right shows the weekday transit ridership in South Bend and Mishawaka as of February 2020. This represents pre-pandemic conditions as significant Covid-19 disruptions generally did not begin in South Bend until March 2020.

High ridership routes and areas can appear in two ways on this map: either as large dots or as multiple medium-sized dots that are very closely spaced. Looking for those patterns we can observe that the highest boardings occur:

- At Transit nodes like South Street Station, Mishawaka Transfer Center
- Near hospitals and malls, in general.
- At educational institutions like Notre Dame, St. Mary's College, and the Excel Center

There are also smaller clusters or large dots, or single large dots, that are farther away from other large boardings dots. Most of them are attributable to big apartment buildings or social service providers.

Looking at this map, we must keep in mind that not every stop is offering the same level of service.

- A small dot on a low-frequency route may simply reflect the low level of service.
- A small dot on a more frequent route would suggest low demand for transit near that stop.
- A large dot on an infrequent route means that ridership is high despite a low level of service, which suggests that nearby transit demand may be high.

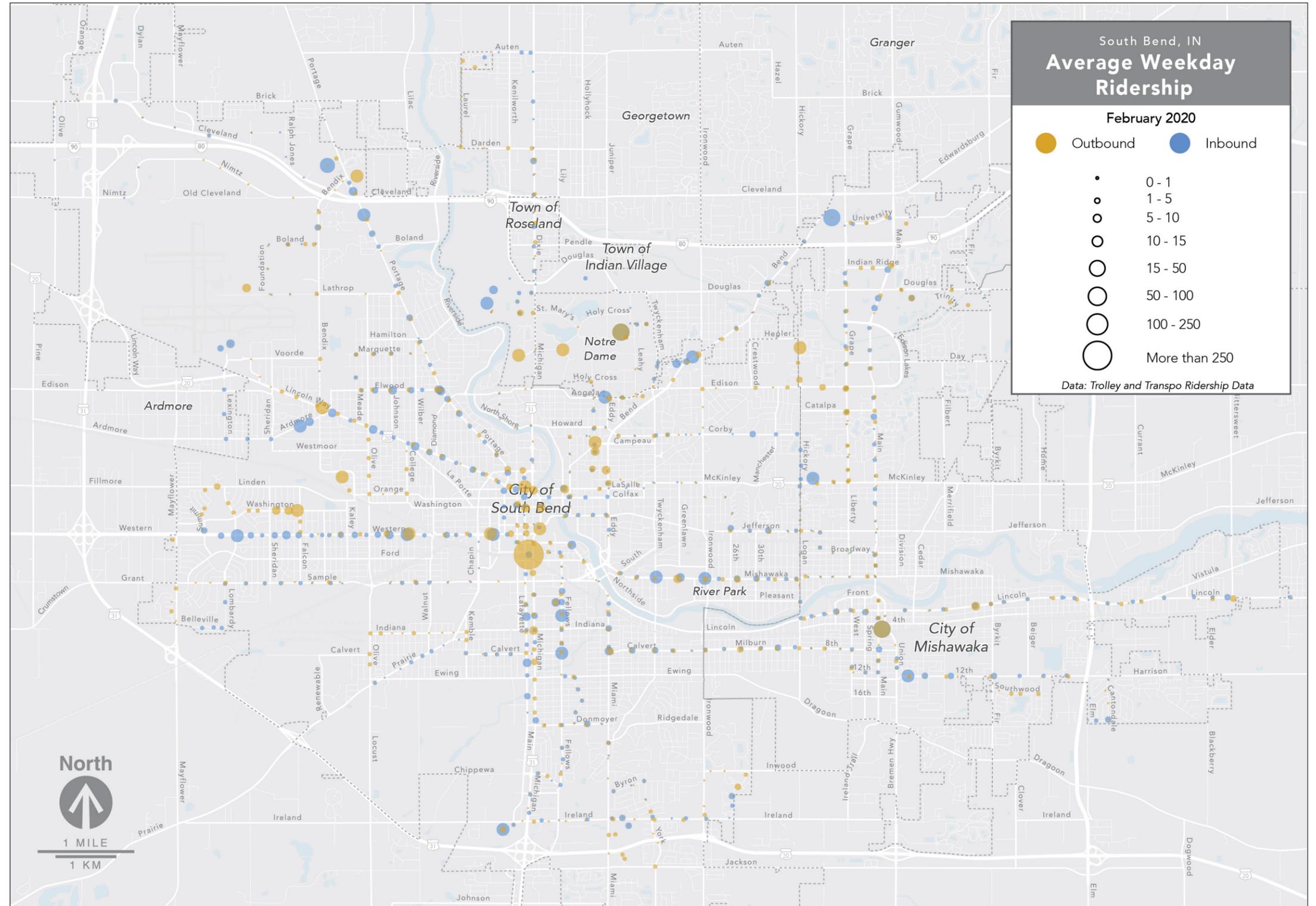


Figure 57: Average weekday boardings in South Bend and Mishawaka as of February 2020. This represents pre-pandemic conditions.

Ridership in Elkhart and Goshen

Figure 58 at the right shows the weekday transit ridership in Elkhart and Goshen. Here we see strong ridership at:

- Elkhart Transfer Center, likely as a result of bus to bus transfers
- Major shopping destinations such as Walmart Supercenters
- Educational institutions like Ivy Tech Community College and Goshen College

When compared with South Bend’s ridership on the previous page, it is obvious that ridership even in central areas with comparable densities, are much lower. One likely cause of this lower ridership is the relatively low amount of transit service through much of the Interurban Trolley service area. With only two routes offering 30-minute service and a lower percentage of jobs and people covered in the Interurban Trolley service area, transit service in Elkhart and Goshen is much less useful than in South Bend and Mishawaka, and therefore ridership is understandably lower.

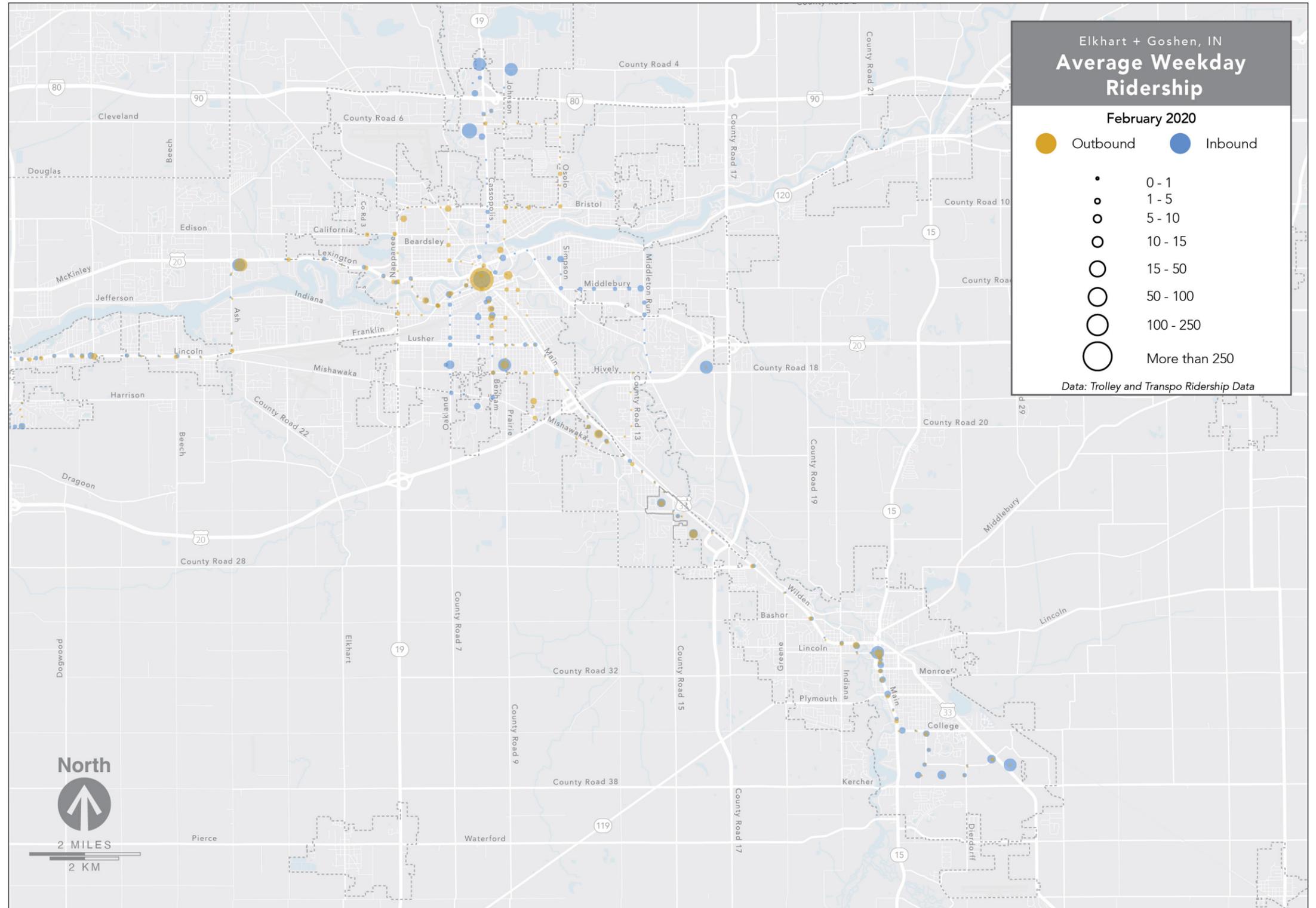


Figure 58: Average weekday boardings in Elkhart and Goshen as of February 2020. This represents pre-pandemic conditions.

Route-level Ridership and Productivity

The chart at the left in Figure 59 shows the total weekday boardings for the average of weekdays in February 2020 for each route in the Transpo and Interurban Trolley networks. The chart shows that Route 7 had the highest weekday ridership, on average, followed by Routes 10 and 11. At the other end of the chart, Routes 12, 14 and 1 showed the lowest total weekday ridership. Among Interurban Trolley Routes, the Red Line has the highest total ridership, followed by the Yellow, Blue, Green, and then Orange Routes.

Some transit agencies and cities have adopted a goal of “maximizing ridership.” Implicit in this statement, however, is a constraint: there is a limit to how much funding is available to increase ridership. The transit agency cannot spend infinite amounts of money pursuing each additional rider in pursuit of “maximum” ridership.

The more specific way to state this goal, then, is “maximize ridership within a fixed budget.” Even if the budget grows, it is and will always be limited.

People who value the environmental, business, or development benefits of transit will talk about ridership as the key to meeting their goals. Since their transit agency is operating under a fixed budget, the measure they should be tracking is not sheer ridership but **ridership relative to cost**. They would not be satisfied simply by a large dot on the boardings map on the previous page, or a high ridership number for a route in the chart below, until they knew what it cost the transit agency to achieve that large dot.

The cost of a transit route relates primarily to the time spent by operators running the route, since most of the cost of transit is in the wages paid to everyone running the system day-to-day. In the transit business, the measurement of time spent operating service is called “service hours” or sometimes “revenue hours of service”. One bus operating on a route, picking up and dropping of passengers has spent one “service hour”.

The service hours provided on any particular route, and to any particular stop, will depend on a few factors:

- The length of the route.
- The operating speed of the bus (since a slower operating speed means that covering the same distance takes more time).
- The frequency of service along the route or to the stop (since higher frequency is supplied by more buses and operators out driving the route).
- The span of service along the route each day and each week.

The middle chart below shows the total weekday service hours spent on each route. It shows that the Red Line has the highest total service hours, followed by the Yellow Line. These routes are the longest in the system. Both provide 30 minute frequency and therefore are costly to operate. Routes 12 and 14 have the fewest service hours.

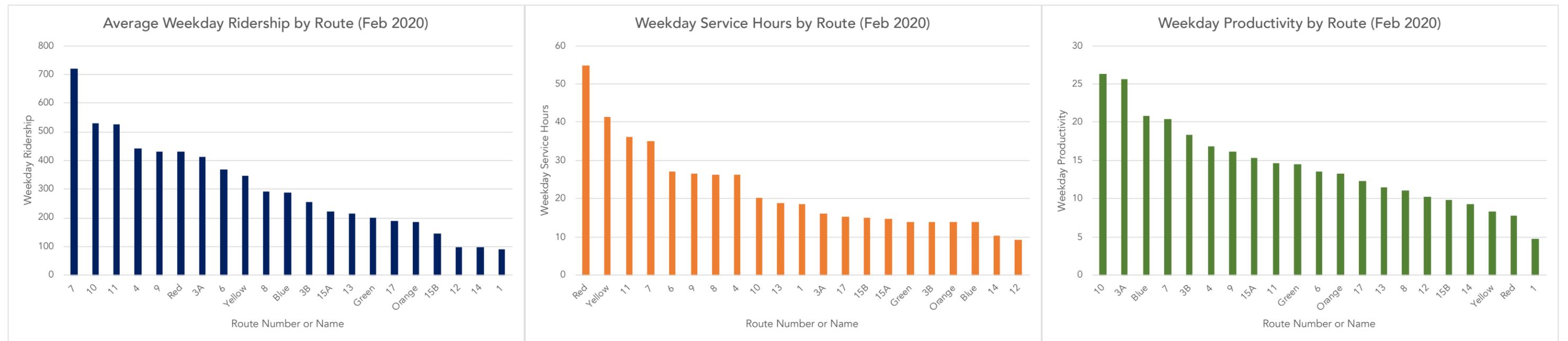
Ridership relative to cost is called “productivity.” In this report, productivity is measured as boardings per service hour.

$$\text{Productivity} = \text{Ridership} / \text{Cost} = \text{Boardings} / \text{Service hours}$$

Productivity is strictly a measure of achievement towards a ridership goal. Services that are designed for coverage goals will likely have low productivity. This does not mean that these services are failing or that the transit agency should cut them. It just means that their funding is not being spent to maximize ridership.

The chart on the right below shows the productivity outcome of dividing boardings by service hours. By this measure, Route 10 has the highest productivity in the system, followed closely by Route 3A. Route 1 has the lowest productivity. The Red Line has the second lowest productivity, in large part because the long distances that this route covers raise the denominator of the productivity calculation so much.

Figure 59: Average weekday boardings by route, weekday scheduled service hours by route, and weekday productivity by route for February 2020.



Productivity and Frequency Relate

The scatterplot at right shows the individual routes from Transpo and Interurban Trolley, each plotted according to their midday frequency (on the horizontal axis) and their productivity (on the vertical axis).

The data points form a curve, up and to the left. More frequent services tend to have higher productivity (ridership per service hour), even though providing high frequency requires spending more service hours. (This is true not only in the MACOG region but also all over the world.)

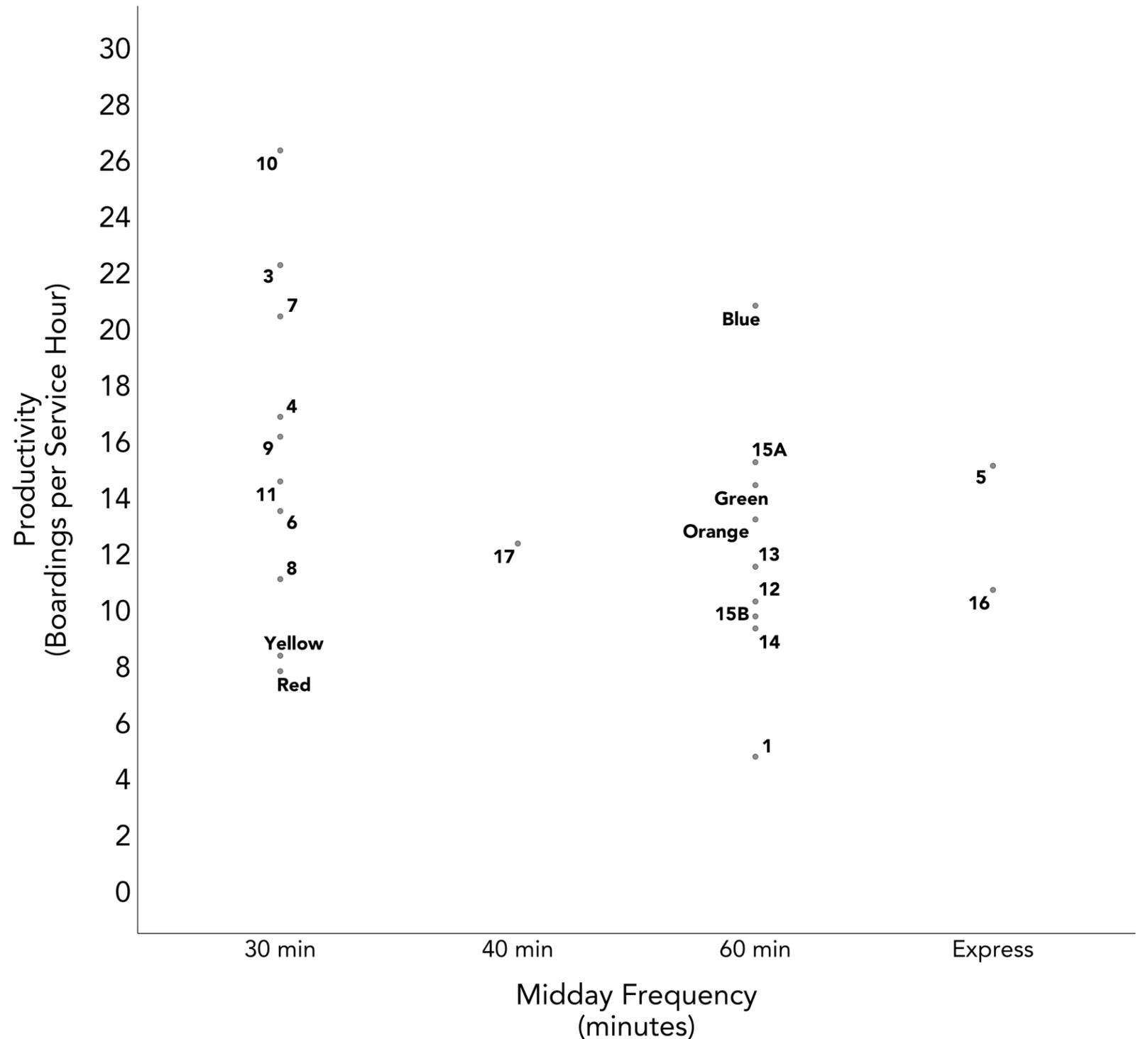
This happens because frequent service is the most useful and convenient service for riders; thus, transit agencies typically target this most expensive service towards their strongest markets. When frequent service is available to people in a suitably dense, walkable environment, high ridership is a common result.

As always, the “outliers” are the most interesting parts of this graph:

- The Yellow and Red Lines are less productive than “peer” routes at the same frequency. These routes are much longer than other 30 minutes routes that are primarily within South Bend and Mishawaka. Longer routes cost more to operate at the same frequency, but provide a different kind of service: regional connectivity. They also provide higher levels of job access than shorter, circulator routes and are part of a larger, systemwide ridership strategy. Boarding data shows that many riders are transferring from the Blue, Green, and Orange lines to the Yellow and Red. Therefore, the relatively higher productivity of those routes relies on the access provided by the Red and Yellow lines. Nevertheless, the “gap” in productivity here raises an important value question: **should the region focus more on interurban trips which may cost more to serve, or on shorter trips, which would achieve higher productivity.**

- The Blue Route is highly productive compared to other 60 minute services, suggesting that the northern portions of Elkhart are significantly underserved by transit today.
- Route 1 appears to have very low productivity, however, the September 2021 ridership data shows that this route improved its performance during the pandemic and achieved 8 boardings per service hour, which is more in line with the performance of other 60 minute services.
- Routes 5 and 16 are limited services that only run at rush hours. Route 5 has four trips in the AM and PM peaks and Route 16 has three trips in the AM and PM peaks. Their productivity levels are comparable to the average for 60 minutes services. Yet peak-only services have some hidden costs that are not fully accounted for in the productivity calculations:
 - Peak services can have higher labor cost, specifically for split shifts—where operators work in the morning and evening rush hours with a long break in between.
 - The agency must maintain a larger fleet of buses for the peaks, a fleet that sits idle at all other times. For each extra bus that is run during peak times, the agency had to purchase the bus, find land to store it on, pay people to maintain it.
 - Short peak runs require drivers to go to and from the operating base with a bus twice a day. This time is called deadhead, and costs an agency extra time to pay drivers for non-service time.

MACOG Region - Route Frequency and Productivity
February 2020

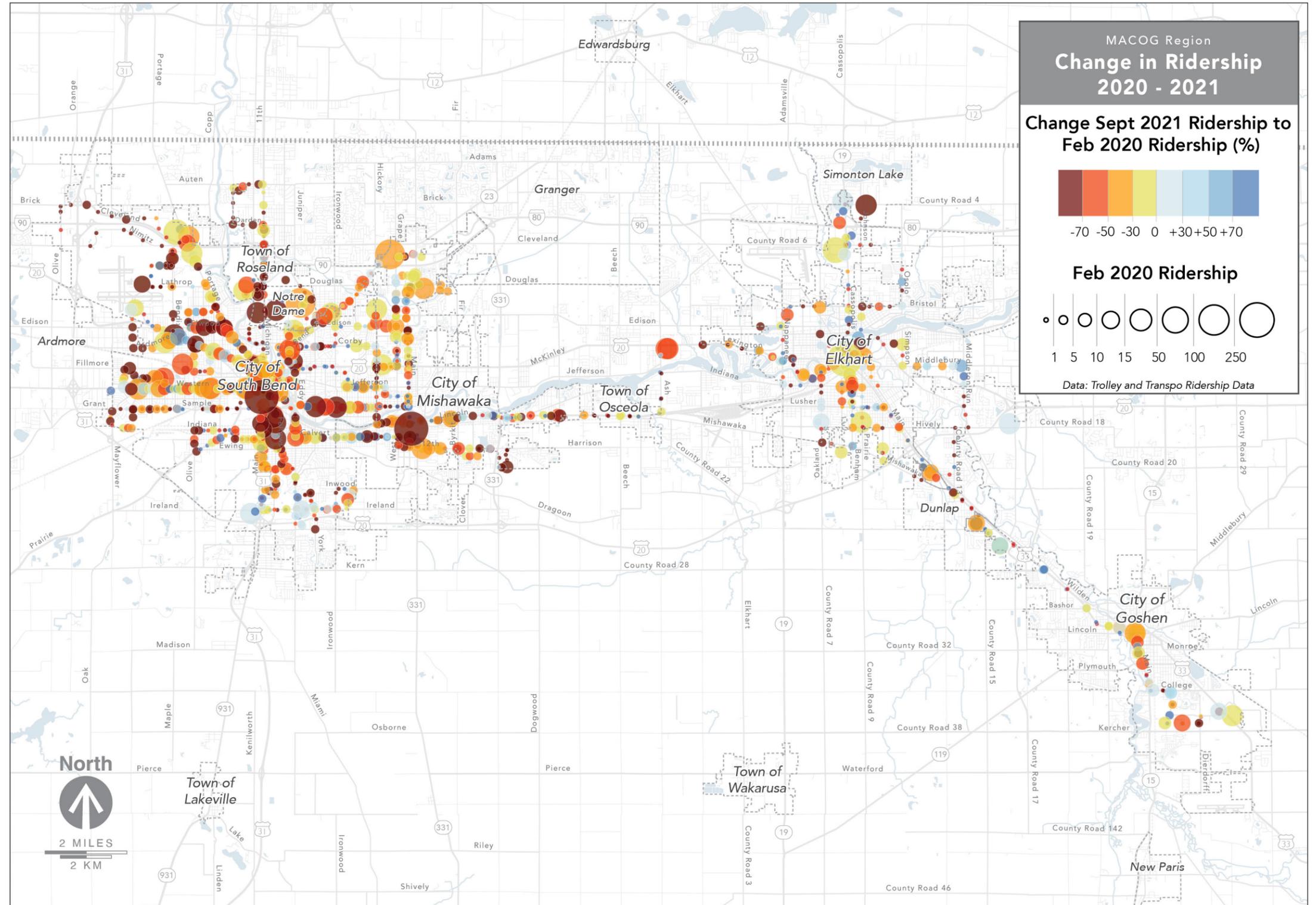


How has the pandemic impacted the region's service and ridership?

The MACOG region was largely spared from the transit service cuts that many larger cities faced at the start of the pandemic. Despite that, ridership has dropped systemwide and has not fully recovered as of September 2021. This drop is much more severe for Transpo than Interurban Trolley, suggesting that **many Interurban Trolley riders are likely essential workers with daytime hours, and people on non-work trips.**

Figure 60 shows ridership changed from Fall 2019 to Fall 2020. Each dot represents one bus stop. The larger the dot, the more people used this bus stop in February 2020. Red dots are stops where ridership fell the most from 2019 to 2020. Yellow dots are stops where ridership fell the least. Blue dots are the rare cases where ridership increased in 2021. We can see that:

- Ridership losses in Downtown South Bend and University of Notre Dame are particularly acute. This is likely due to the increase in remote work and study.
- Ridership at essential destinations like grocery stores are relatively stable.
- Some industrial areas, like along Middlebury Road in Elkhart, and some commercial areas in South Bend, saw an increase in ridership.



Average Weekday Ridership
2020 vs 2021

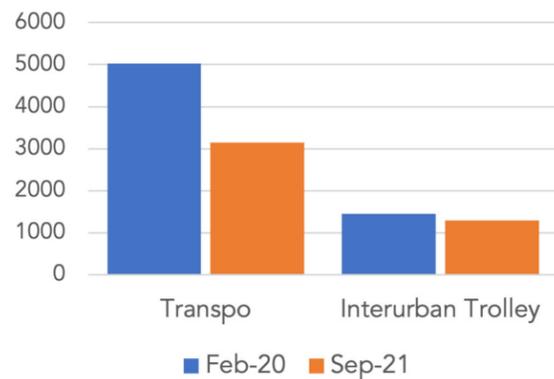


Figure 60: Map of the change in ridership between February 2020 and September 2021.

What parts of the region are near many jobs?

Wherever you are, there is a limited area you could reach within a reasonable amount of time. The extent of this area affects your options in life: for employment, school, shopping, health care or whatever other places you might want to reach.

The number of destinations you can reach within a set amount of time is called access, and we discuss this concept in more detail in Chapter 2 on page 10.

Transit is useful when it increases the number of useful places people can access in a reasonable amount of time. In order to quantify the usefulness of transit, our first step is to see who lives near jobs to begin with.

The map at right shows how many jobs are within a 3 mile walk. Areas in blue have many jobs nearby, and areas in white have few. Jobs that are close enough that someone might be able to walk or bike to them are reflected on this map.

Transpo and Interurban Trolley decides where transit goes, but it has little control over where jobs, housing and opportunities are located. Housing and job locations are decided by cities, counties, state and federal authorities, banks, businesses, and the private market in general.

In the case of this region, job locations are distributed such that those in the Northeast quadrant of South Bend, as well as the adjacent areas in Mishawaka are the closest to a large number of jobs. This reflects the high job density in downtown South Bend, at Notre Dame, and along the retail corridors in northern Mishawaka.

Some areas of Elkhart and Goshen also have a moderately high number of jobs nearby, with job access higher on the western side of Elkhart and on the southern side of Goshen, reflecting the relatively high levels of industrial jobs in outer areas of these cities.

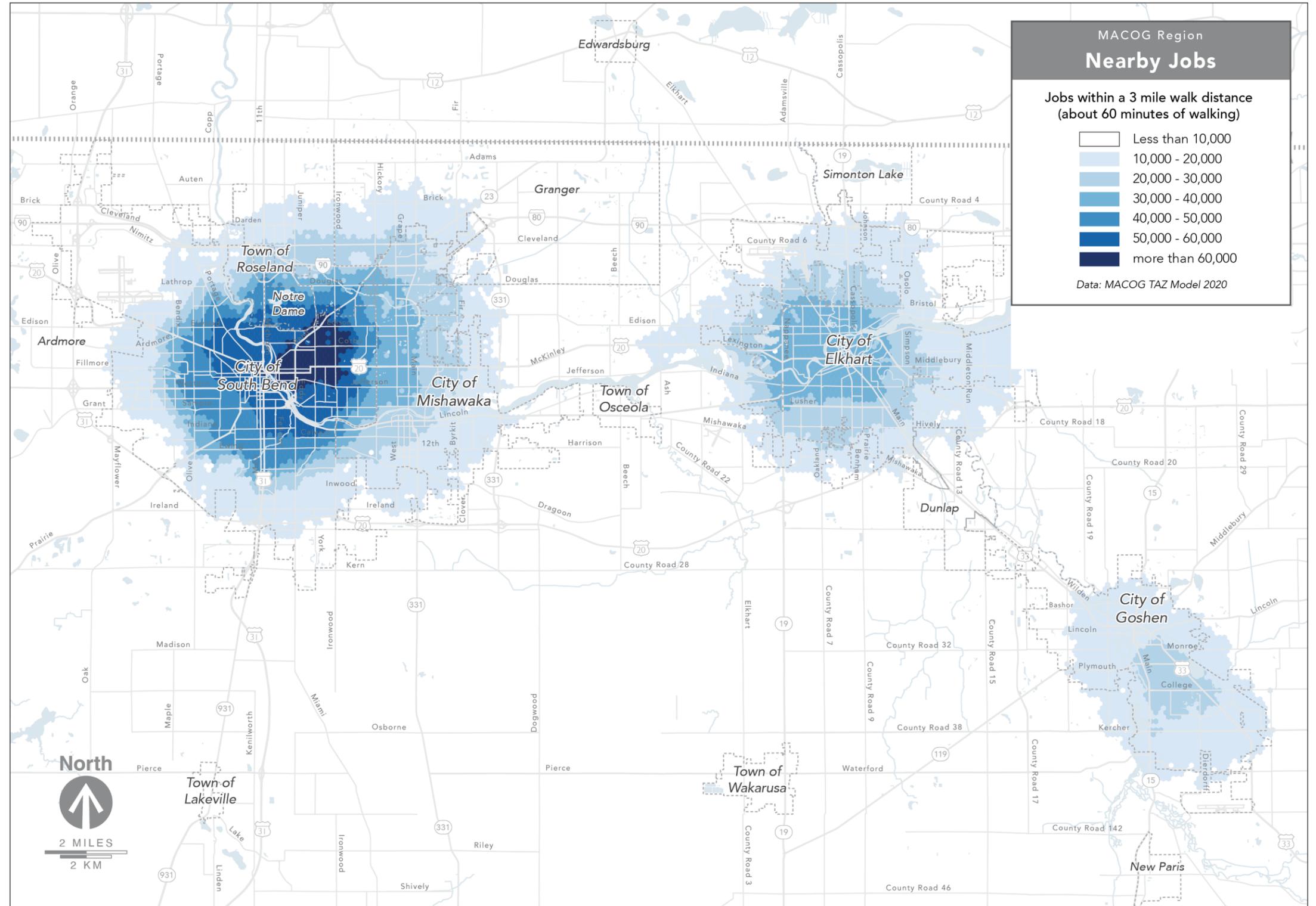


Figure 61: Map showing the number of jobs within 3 miles of different parts of the region.

From where can you reach many jobs by transit?

The maps on page 27 and page 28 showed how many jobs are *nearby* in different parts of the region. Those jobs could be reached by walking alone.

The map at right shows how many jobs a person can reach within 60 minutes, by walking and transit.¹ Dark red represents many jobs, while white areas represents much fewer jobs.

Most of the dark red is within South Bend because there are so many jobs within in the city and the transit network is optimized for travel to South Street Station. Mishawaka Transfer Center shows up clearly as well, as do all corridors with 30-minute bus service. Corridors with higher frequency show up with higher access because your waiting time is much shorter, and you can therefore spend more of your travel budget moving, rather than waiting.

However, some of the dark red areas offer a great deal of job access because, as shown on page 22, people living there could walk to more than 60,000 jobs nearby! This is particularly the case within a mile of Downtown South Bend, west of the river.

¹ This one hour travel budget includes time spent waiting for transit.

People along corridors where the bus comes every 30-minutes can access many more jobs than those near hourly service.

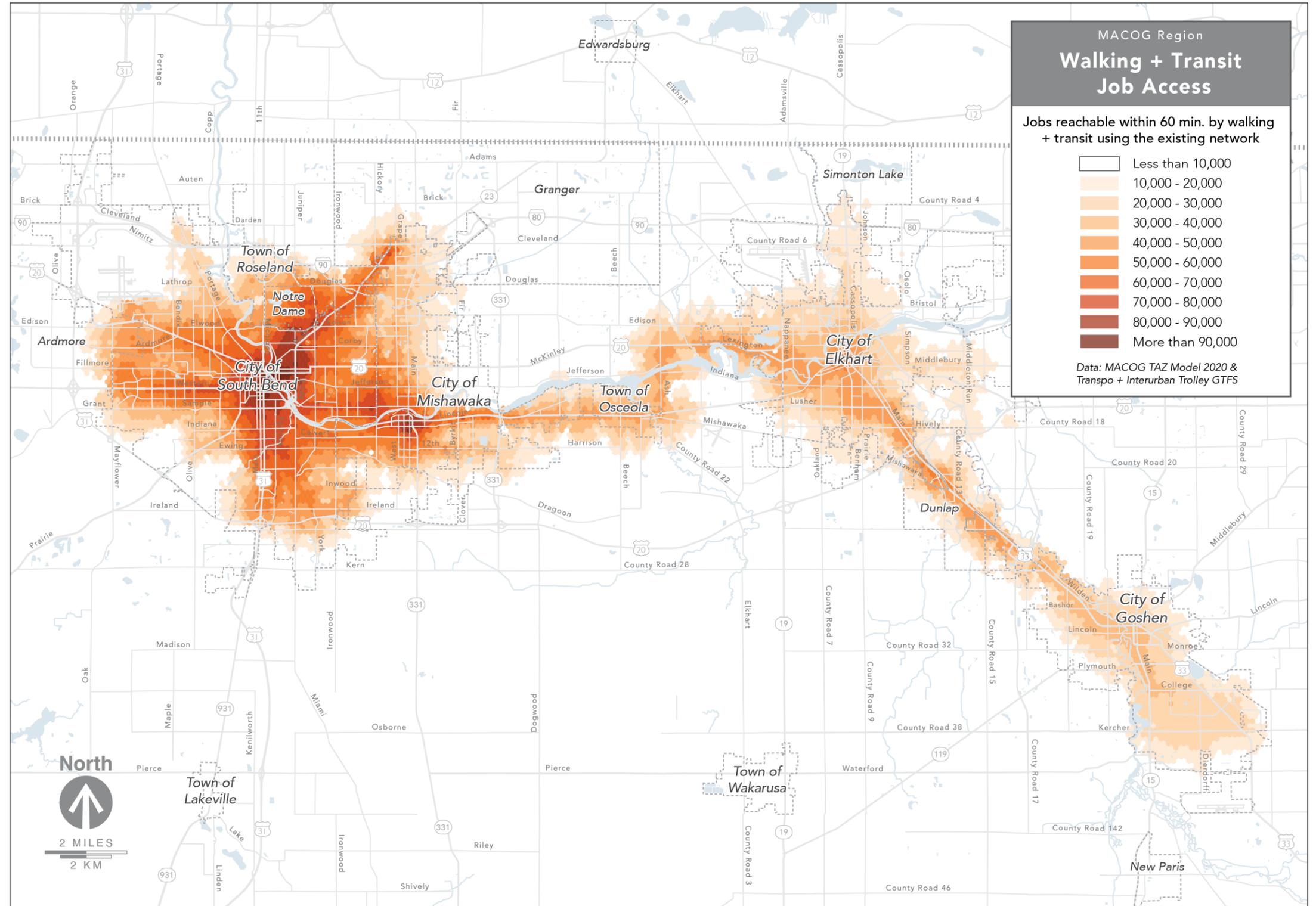


Figure 62: Map showing the number of jobs accessible in 60 minutes or less by transit and walking, on a weekday at noon.

Who Has Transit Access to Jobs?

The charts at right shows the number of jobs accessible by the average person, and by different sub-groups in the region.

Residents of South Bend and Mishawaka

By a combination of walking and using the existing transit network, the average resident of South Bend and Mishawaka can reach about 53,200 jobs within 60 minutes. There are approximately 191,000 jobs across the whole transit service area of the region. Driving time across the region from the edge of Goshen to the edge of South Bend is about 60 minutes. So the average resident relying on transit can reach only about 28% of the jobs that someone using a car could reach in the same amount of time.

The average resident of color, as well as the average resident with low income can reach about 59,300 jobs and the average resident with low income can reach about 60,800 jobs within 60 minutes. More residents of color, and residents with low-income are located near the city center, and along transit corridors with higher frequency service. This favorable pattern is not universal among American cities, particularly those where development pressure, housing policies, and housing costs have pushed more people of color and those in poverty towards peripheral areas. So while the job access is limited, Transpo and Interurban Trolley are providing access to people in need at a higher rate than the average person.

Residents of Elkhart and Goshen

By walk and transit, the average resident of Elkhart and Goshen can reach about 28,100 jobs within 60 minutes. This is much lower than in South Bend and Mishawaka because there are fewer jobs nearby, and because there is much

less transit service here. So the average resident relying on transit can reach only about 15% of the regional jobs that someone using a car could reach in the same amount of time.

The average resident of color can reach about 33,400 jobs within an hour, and the average resident with low income can access about 34,300 jobs. Here again, people with the greatest need are getting better job access, but the access is still quite limited compared to the alternative transportation options.

How Transit Access may Change with a Redesign

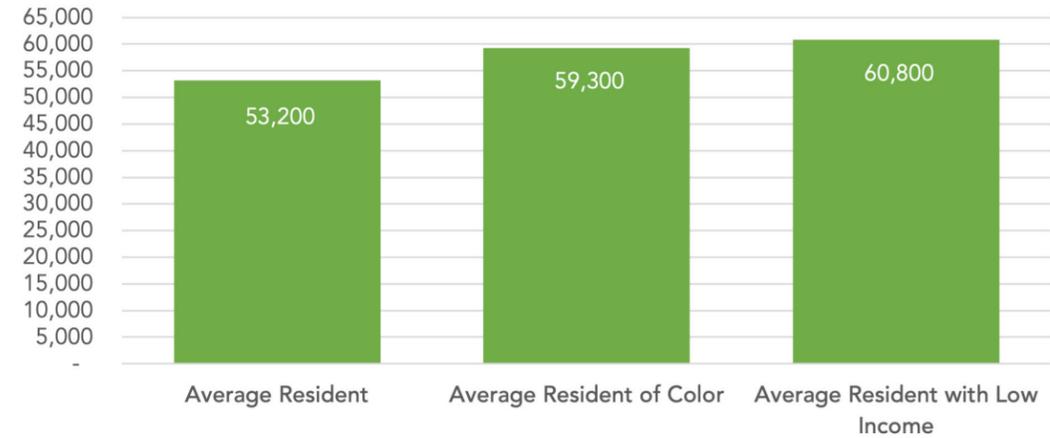
If Transpo or Interurban Trolley wishes to maximize its transit ridership, then a key goal would be to increase the number of jobs accessible to the average person, and it would do that by increasing the number of jobs accessible to the areas that have the most people in them.

Likewise, if Transpo and Interurban Trolley were to redesign service with an emphasis on racial equity and to maximize opportunities for those with low-income, a key goal would be to increase the number of jobs accessible to Residents of Color and Residents with Low Income.

On the other hand, if Transpo and Interurban Trolley were to redesign service with a stronger focus on coverage goals, we should expect to see a decrease in overall job access. Within a fixed budget, when service is spread out to reach farther out, that service is spread thin with lower frequencies and longer wait times, so the average person would be able to reach fewer destinations within an hour.

Jobs Accesible by Residents of South Bend and Mishawaka within 60-minutes

Access to jobs by transit + walking during Weekday midday



Jobs Accesible by Residents of Elkhart, Dunlap, and Goshen within 60-minutes

Access to jobs by transit + walking during Weekday midday

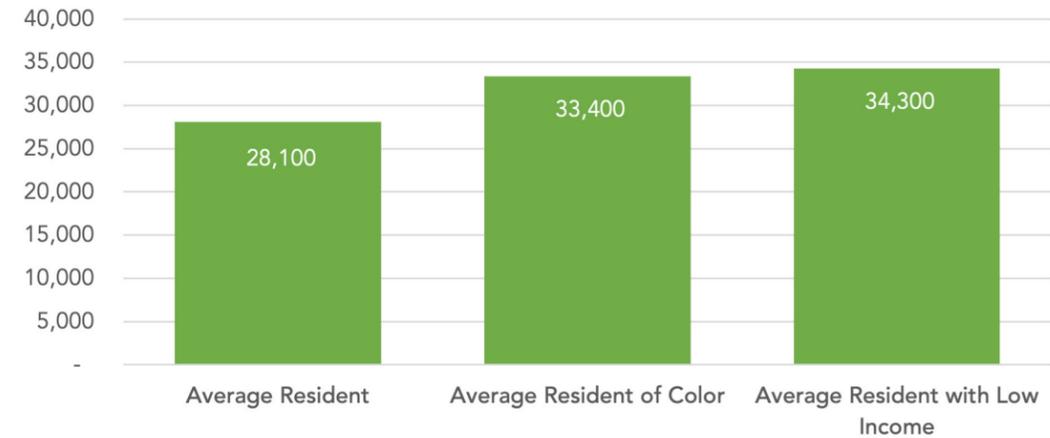


Figure 63: The average number of jobs reachable by walking and transit in 60 minutes or less by transit and walking, on a weekday at noon, is quite limited.

If Transpo or Interurban Trolley wishes to maximize its transit ridership, then a key goal would be to increase the number of jobs accessible to the average person.

Where does transit provide job access beyond what's reachable by walking?

Transit-accessible Jobs vs. Nearby Jobs

This map shows the difference between the job access offered by transit and the jobs that are simply nearby.

Like the map on page 66, this job access map highlights corridors where the bus comes every 30 minutes. But this map illustrates an additional story about the existing transit network.

Long wait times and circuitous routing in the existing network mean that in many parts of the region, transit travel times are not competitive, even against walking. This is particularly true in areas with 60-minute transit service, like Sample Street and Portage in South Bend, and throughout much of Elkhart, where most transit lines run every 60 minutes in one-way patterns.

Long wait times and circuitous routing in the existing network mean that in many parts of the city, transit travel times are not competitive, even against walking.

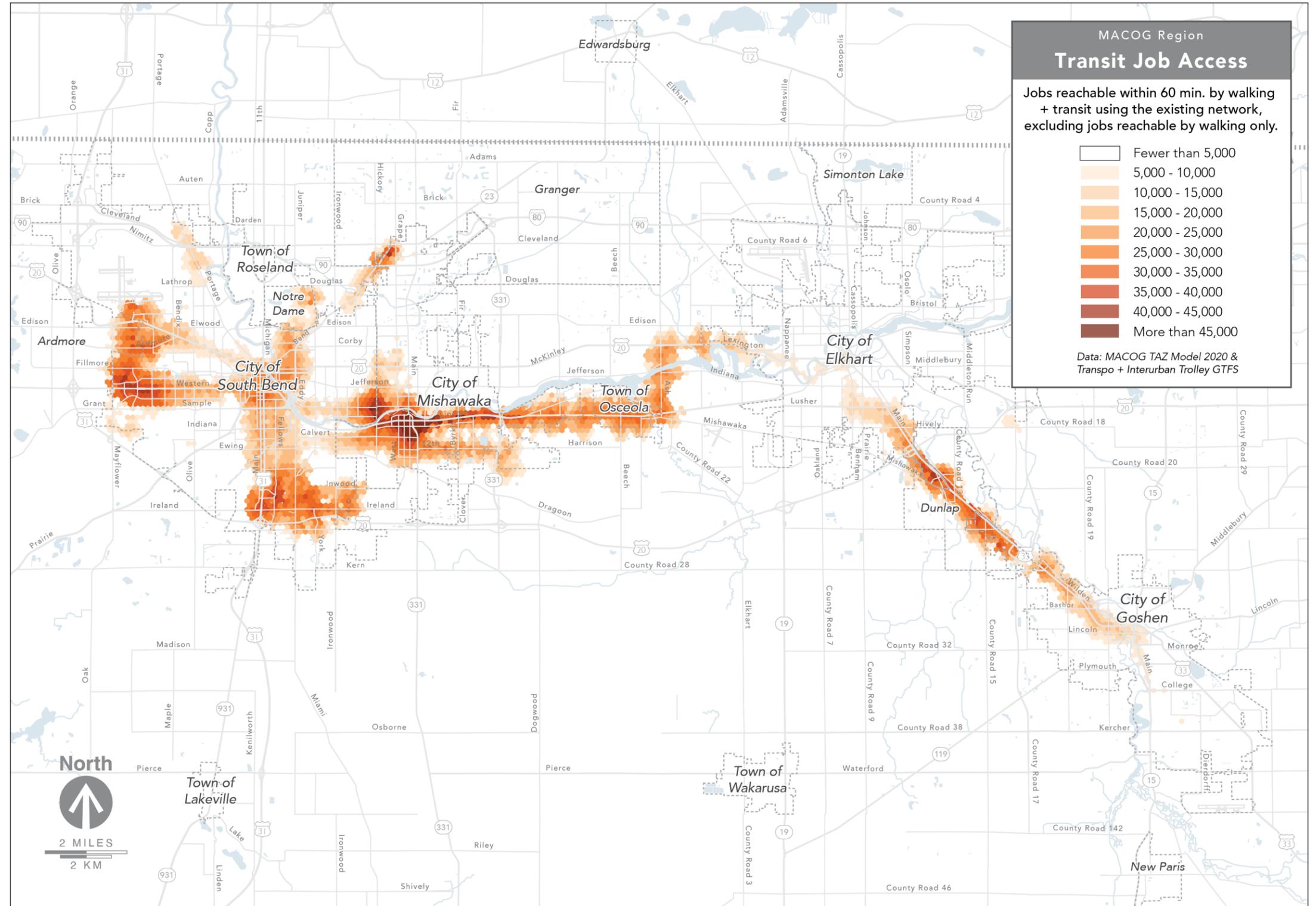


Figure 64: Map showing the additional jobs made reachable by transit within 60 minutes, beyond what could have been reached by walking alone.

5 Latent Demand Analysis

Where is there Latent Demand?

In this chapter, we examine specific parts of the region where the potential of expanded or improved transit services appear likely to generate relatively high ridership relative to cost. Taking into account overlapping indicators of demand, we can see areas in the region where additional transit investment is likely to generate significant ridership.

To be clear, these transit investments are not likely to pay for themselves through additional fare revenues. There are almost no examples of transit services in mid-sized communities where transit fare revenues fully cover the cost of operations. Similarly there are very few examples of road expansions or extensions that pay for themselves. The areas highlighted in this chapter identify places where transit investments would likely achieve relatively higher productivity compared to existing services in the region.

Focusing on areas of high demand

At the beginning of Chapter 2, we outlined how transit can serve many goals but that these goals are in conflict with each other.

Some of these goals are only served if many people use transit. For example, transit can only mitigate congestion and pollution if many people ride the bus rather than drive. We call such goals “ridership goals” because they are achieved through high ridership.

Other goals are served by the simple presence of transit. A bus route through a neighborhood provides residents insurance against isolation. A route may fulfill political or social obligations, for example by getting service close to every taxpayer or into every municipality. We call these types of goals “coverage goals” because they are achieved in large part by covering geographic areas with service, rather than by high ridership.

We discussed on page 7 how all transit agencies must balance the competing goals of high ridership and extensive coverage. Within a limited budget, if an agency wants to do more of one, it must do less of the other.

This chapter is about where Transpo and Interurban Trolley may want to invest in additional service IF the goal is high ridership.

Is existing transit service enough?

Many of the areas we’ve identified as areas of latent demand already has some form of transit service but not all transit is equal in usefulness. Some routes drive relatively direct paths, while other have many deviations or loops which reduce their usefulness to through-riders. Some lines currently run every 30 minutes, while some only run every 60. Frequency is invisible and easy to forget, but on transit it is often the most important factor determining where you can get to in a given amount of time.

In the areas we’ve highlighted, we are confident that frequency improvements, and route design changes have strong potential to attract ridership. Refer to Figure 7 on page 12 for a chart that shows the general relationship between higher frequencies and much higher ridership across the transit systems in the USA.

New routes where there is currently no service.

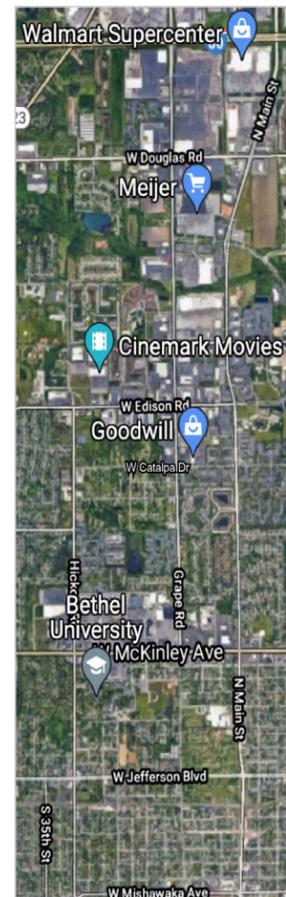
The existing transit network spreads service out throughout many parts of the region, and as a result, it spreads it thin. A service expansion strategy that focuses on areas with high latent demand would likely result in a lot more frequent service in areas currently already served by transit.

Yet the region is growing, and some of that growth is horizontal, meaning it is stretching out into rural and undeveloped areas. Some new resident and jobs are being located farther from city centers, in areas that are beyond the reach of the existing transit network. In some of these cases, where there are many overlapping indicators of demand, we discuss how new service might attract high ridership relative to cost.

Area of Latent Demand: North Mishawaka

This area of potential latent transit demand in Mishawaka is centered around Grape and Main, between the St. Joseph River and the Toll Road.

The maps and images on this page help to understand the level of latent demand in this example. The excerpt of the satellite map (below right) illustrates two ingredients of the ridership recipe: linearity and walkability. The excerpt of the activity density map (below center) shows the other three ingredients: density, mix of uses, and proximity. The excerpt of the transit map (below right) shows the amount of service provided. The maps to the right of activity density (right) and the existing network (far right) provide context to compare the density and service levels of the example area to the rest of the nearby region.



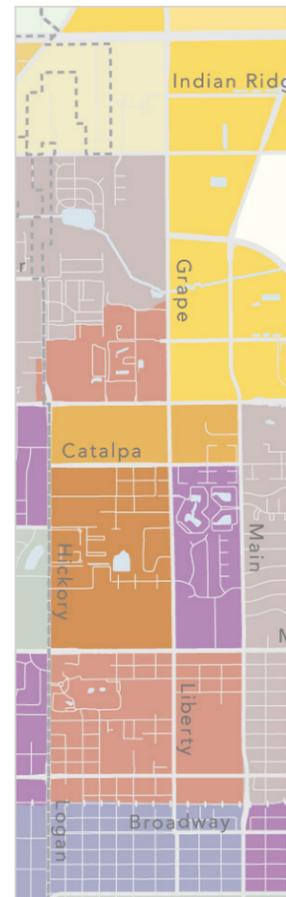
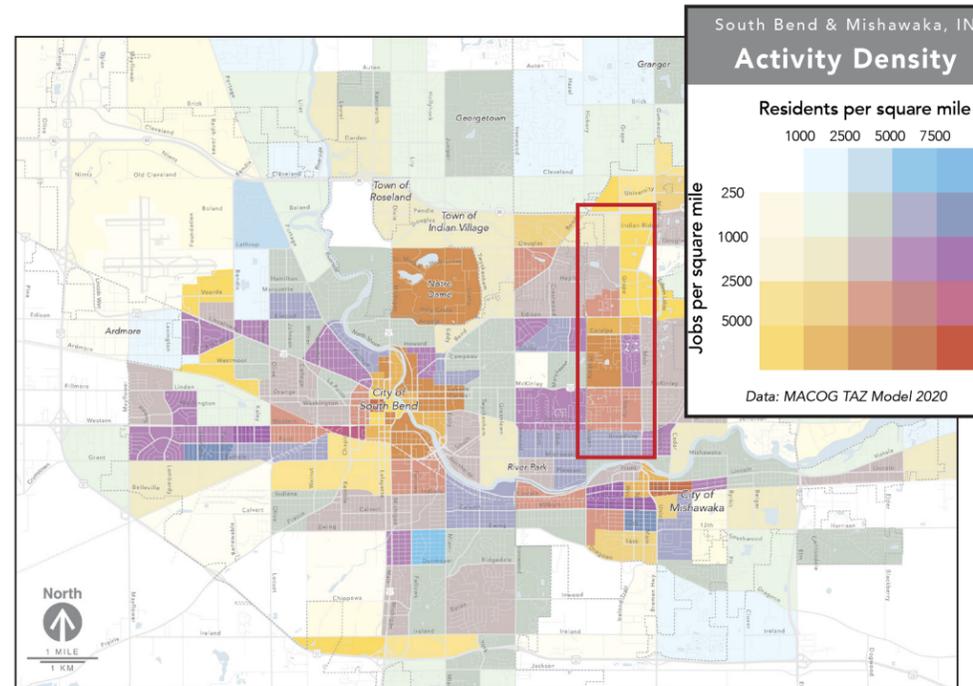
Linearity - High

Both Grape and Main provide long linear streets with lots of destinations along the way.

Walkability - Medium

The walkability of this area is about average compared to other developed parts of the region depicted in the map. The areas south of McKinley Ave are more walkable, on average, but private apartment complexes fenced off from adjacent properties, as well as big-box retail establishments to the north, feature less connective street grids and present barriers to easy walk access to bus stops. Walkability is further restricted north of Catalpa, on both Grape and Main, by the lack of actual sidewalks.

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Density - High

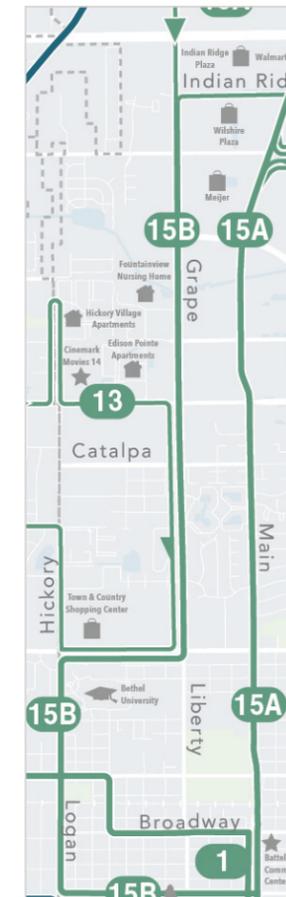
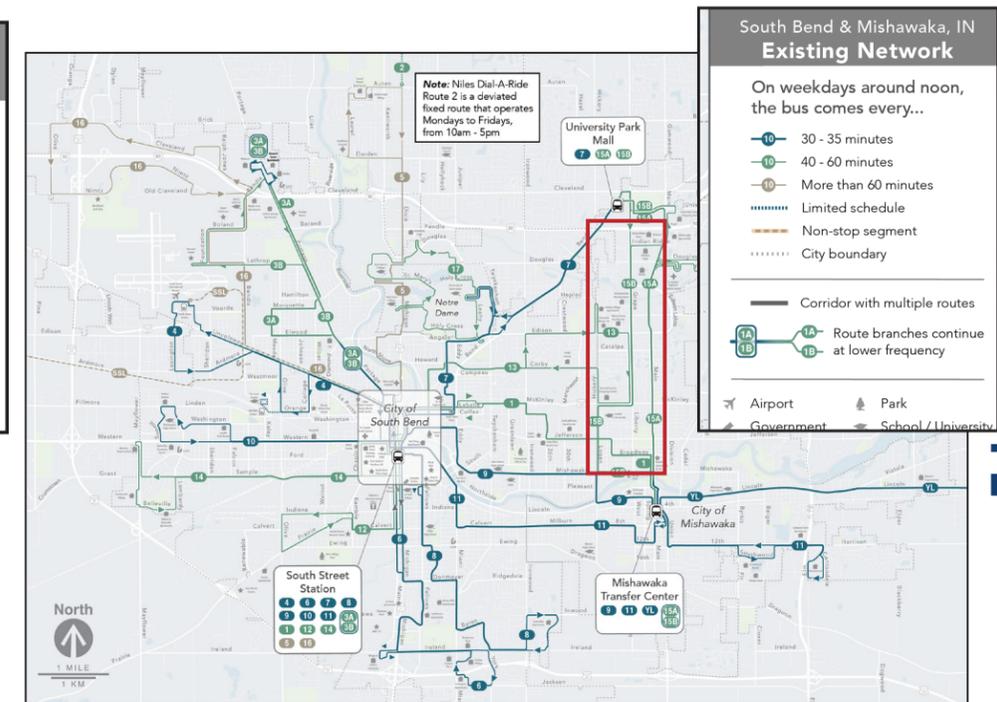
The darkness of the colors on this activity density map indicates that this area has some of the highest overall activity density levels in the region. There are many multi-unit apartment complexes throughout the area and an assortment of retail destinations.

Mix of Uses - High

The combination of oranges and yellows with purples and blues in the activity density map shows that there is a mix of employment and residential uses. This mix of uses allow for all-day transit demand in both directions.

Proximity - Favorable

This area is within a few miles of other areas of high activity density, including the city centers of both South Bend and Mishawaka.



Current Service and Future Potential

This area is currently being served by Transpo Routes 13, 15A, 15B. All of these routes have 60 minute frequencies and Route 13 operates as a one-way loop in this area, limiting its usefulness. This is less frequent service than other areas of similarly high densities, like the South Bend neighborhood south of Western that gets 30 minute frequencies from Route 10.

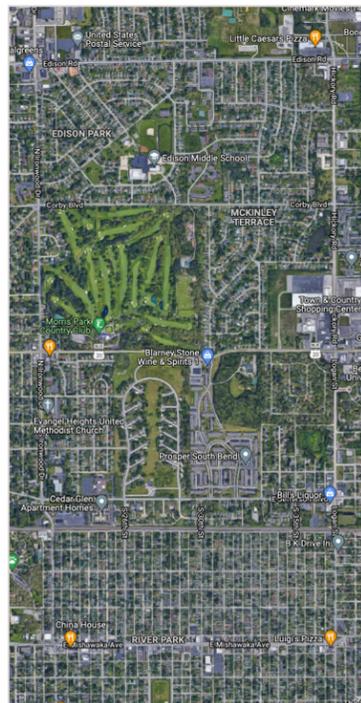
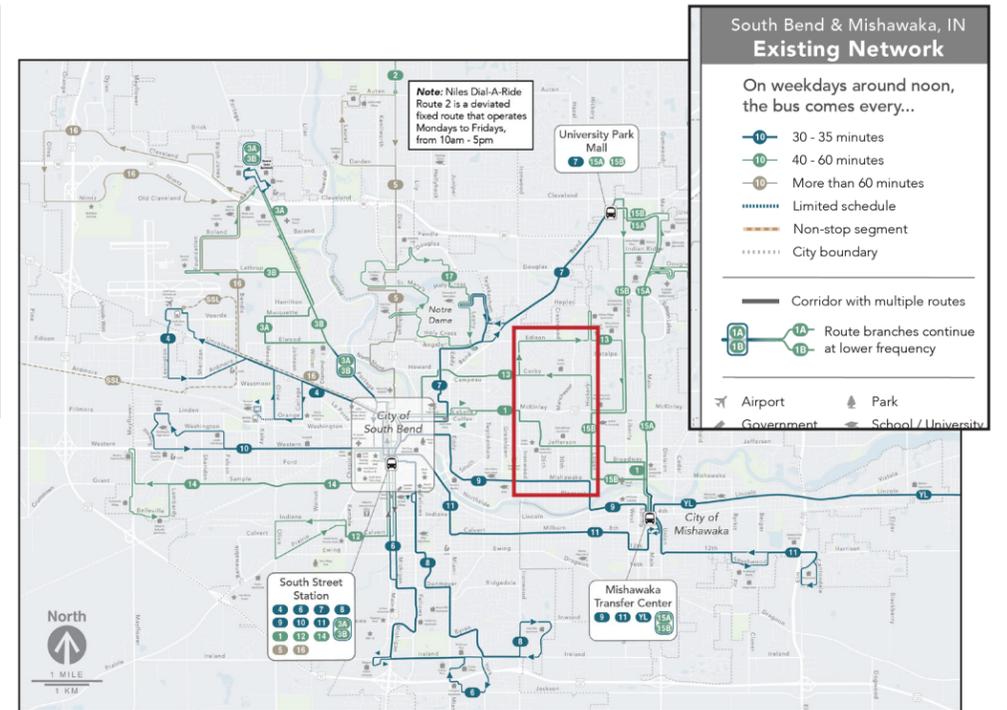
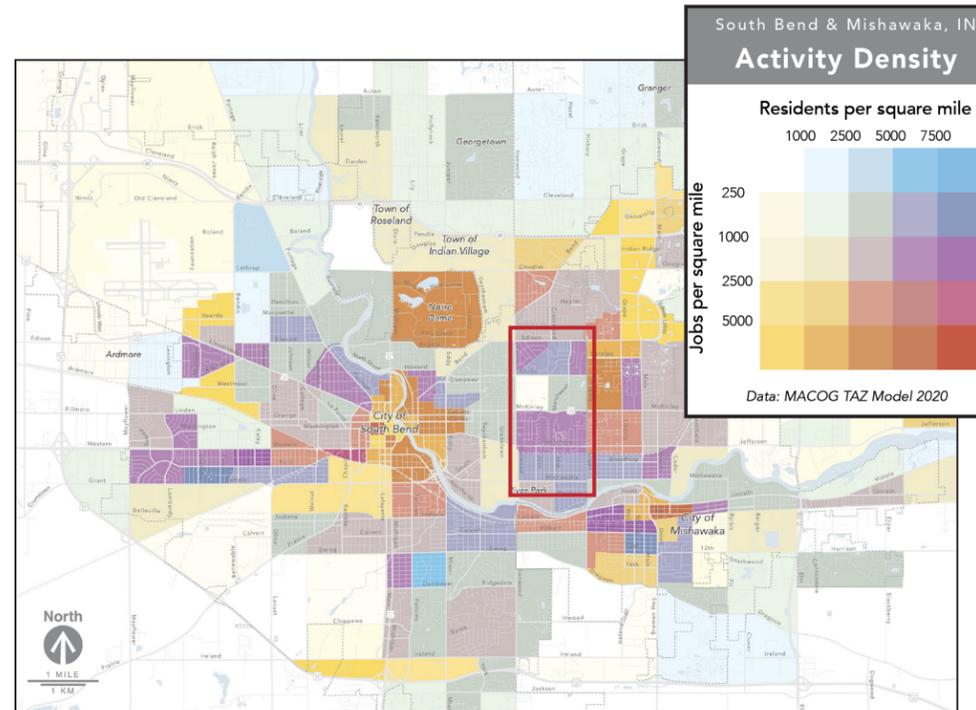
The commercial and hospitality sector destinations along this corridor means that added service on Sunday would be useful to many people.

A key challenge for these corridors is that they are perpendicular to the primary radial pattern toward downtown South Bend. Therefore, most people who might come from western parts of South Bend to these corridors will likely have to transfer twice to reach Routes 15A or 15B.

Example of Latent Demand: East South Bend

This area of latent transit demand in South Bend is centered on east-west corridors bounded by Corby Boulevard, Mishawaka Avenue, Ironwood Drive, and Hickory Road.

This area has many transit supportive demographic features similar to other central parts of South Bend but it currently is currently served only by 60 minute routes.



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Linearity - High

Both Ironwood and Hickory/Logan provide long linear streets. Ironwood runs primarily through residential neighborhoods, with some commercial and educational destinations. Hickory/Logan has more high density residential, commercial, and educational destinations.

Walkability - Varied

The walkability of this area is about medium compared to the rest of the region depicted in the map. Half of it is somewhat walkable (with small pockets being more walkable), but the other half is less walkable.



Density - Moderate

The darkness of the colors on this activity density map indicates that this area has some of the highest densities in the region. The golf course is an exception to this density.

Mix of Uses - High

The combination of oranges and yellows with purples and blues shows that there is a mix of employment and residential areas.

Proximity - Favorable

This area is within a few miles of other areas of high activity density, including the city centers of both South Bend and Mishawaka.



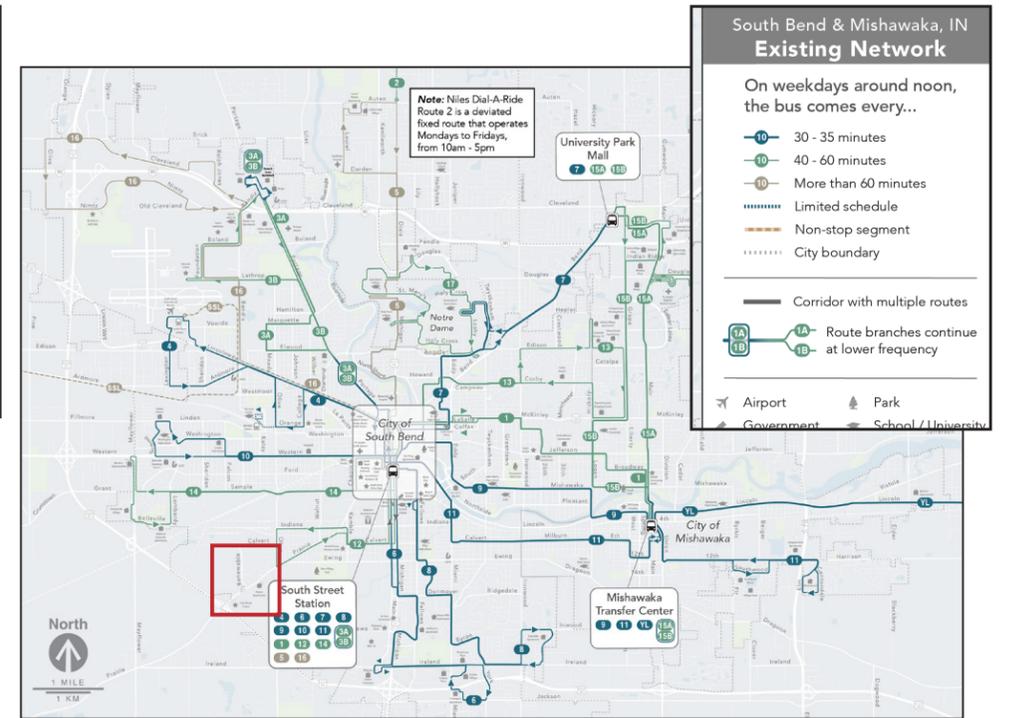
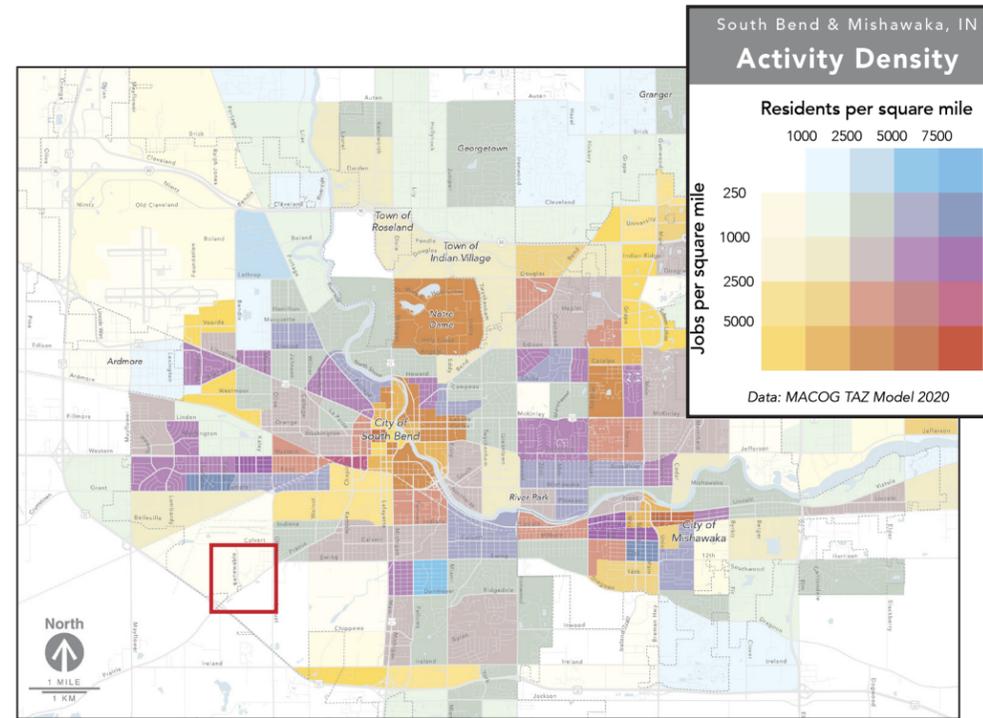
Current Service and Future Potential

This area is currently being served by Transpo Routes 11, 9, 13, and 15B. Route 9 operates every 30 minutes but the remainder of these routes have 60 minute frequencies and Route 13 operates as a one-way loop. This is less frequent service than other areas of similarly high densities.

Example of Latent Demand: Southwest South Bend

This area of potential latent transit demand in South Bend is centered around the new Four Winds Casino and Hotel at the intersection of Prairie Ave and Lincoln Highway.

While a single major destination being built outside of the reach of existing transit services does not always justify transit service expansion, the size of this development and its proximity to existing transit service makes it a potential market for transit. When it fully opens, this development will include a 23-story hotel.



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Linearity - Medium

Prairie Avenue is a somewhat linear corridor with commercial destinations and multi-family apartments along the way. There are two limiting factors:

- Four Winds Casino's front is set back from the Prairie Avenue and the only way to access it is by looping its private driveway. A transit line might be able to terminate at the casino, but service along Prairie Avenue cannot be further extended in an efficient way in the future.
- Existing development between Indiana Avenue and Prairie Avenue is not arranged in a linear way.

Walkability - Poor

The walkability of this area is poor and street connectivity is low.



Density - Moderate

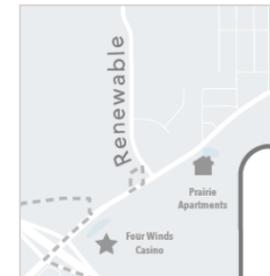
Density in this area is not visible in the activity density map because it was recently constructed but is expected to be moderately high.

Mix of Uses - High

Transit service that reaches the casino resort will have passed through a variety of residential and other employment areas along the way.

Proximity - Moderate

Although at the edge of the city, this area is near existing development, including a cluster of apartment buildings just to the east and it is less than four miles from downtown South Bend.



Current Service and Future Potential

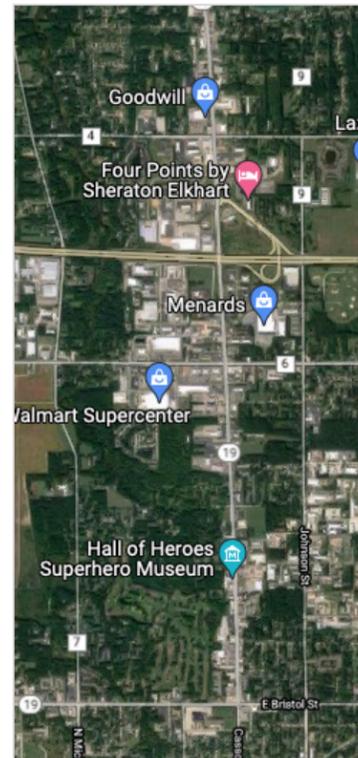
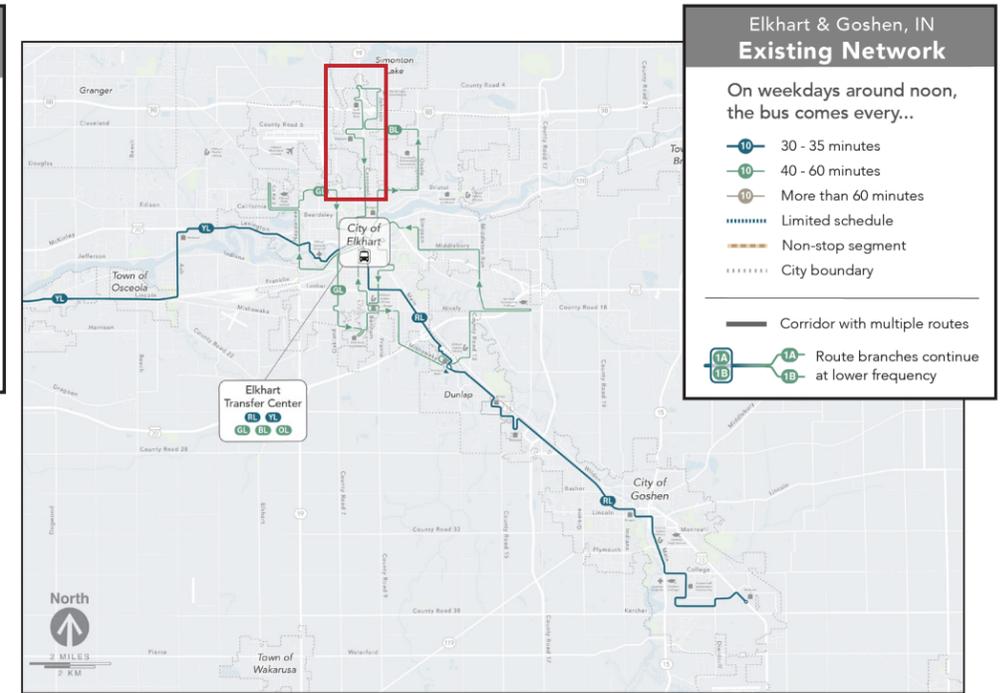
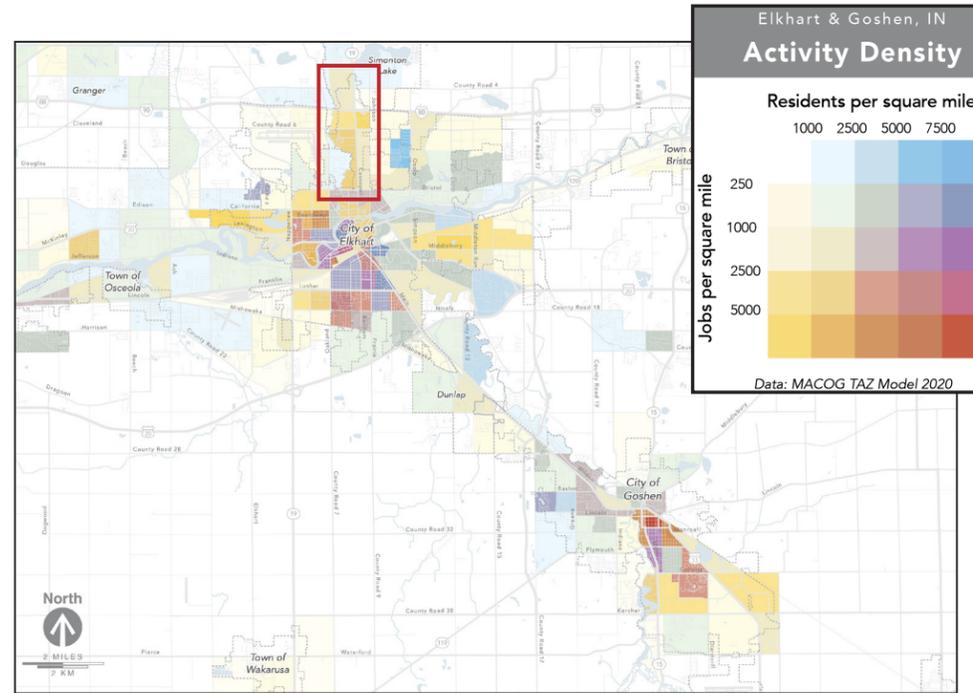
This area is currently being served by Transpo Route 12 which operates as a one-way loop every hour during weekdays.

As a part of the entertainment and hospitality industry, expanded evening service and new service on Sundays would likely attract ridership.

Example of Latent Demand: North Elkhart

This area of potential latent transit demand in Elkhart is centered along Cassopolis Street, between County Road 4 and Bristol Street.

The area includes a mix of apartments, big-box retail destinations, restaurants, and several hotels. It is also within walking distance of an industrial area to the east.



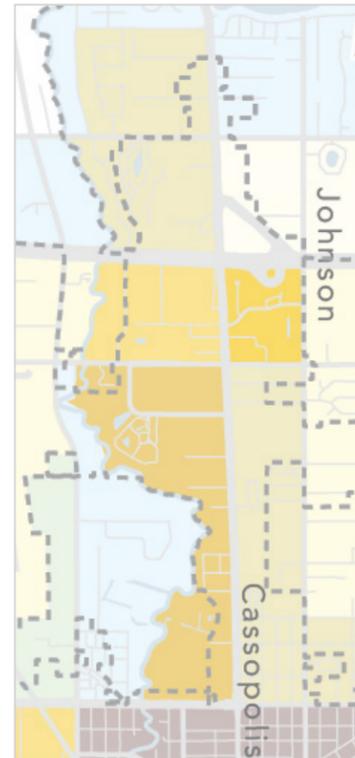
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Linearity - Medium

Many shopping and employment destinations are situated along Cassopolis Street but a Walmart Supercenter, the Highland Apartment complex, and an under construction Meijers store are all set back by a 1/4 mile off of Cassopolis. This requires a time-consuming deviation along the main route.

Walkability - Medium

The walkability of this area is less favorable than compared to many other developed parts of the region. Large buildings and parking lots prevent pedestrian connectivity in many parts of this area. Cassopolis Street itself has a sidewalk most of the way, but there is only a sidewalk on one side of the Indiana Toll Road overpass.



Density - Moderate

Employment density is moderately high in the context of densities in Elkhart County.

Mix of Uses - Low

This area is mostly comprised of commercial and industrial. There are a few apartments and hospitality sector businesses which may slightly spread out peak travel times.

Proximity - Favorable

This area is within a few miles of Elkhart's city center.



Current Service and Future Potential

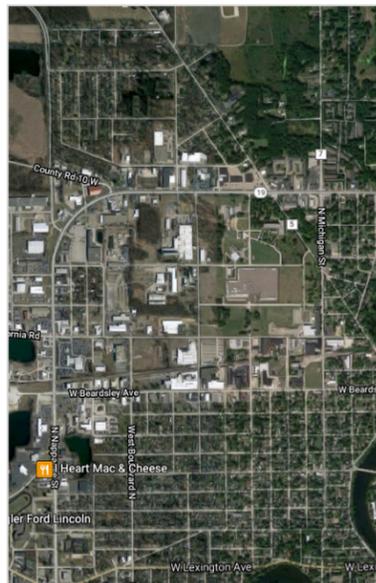
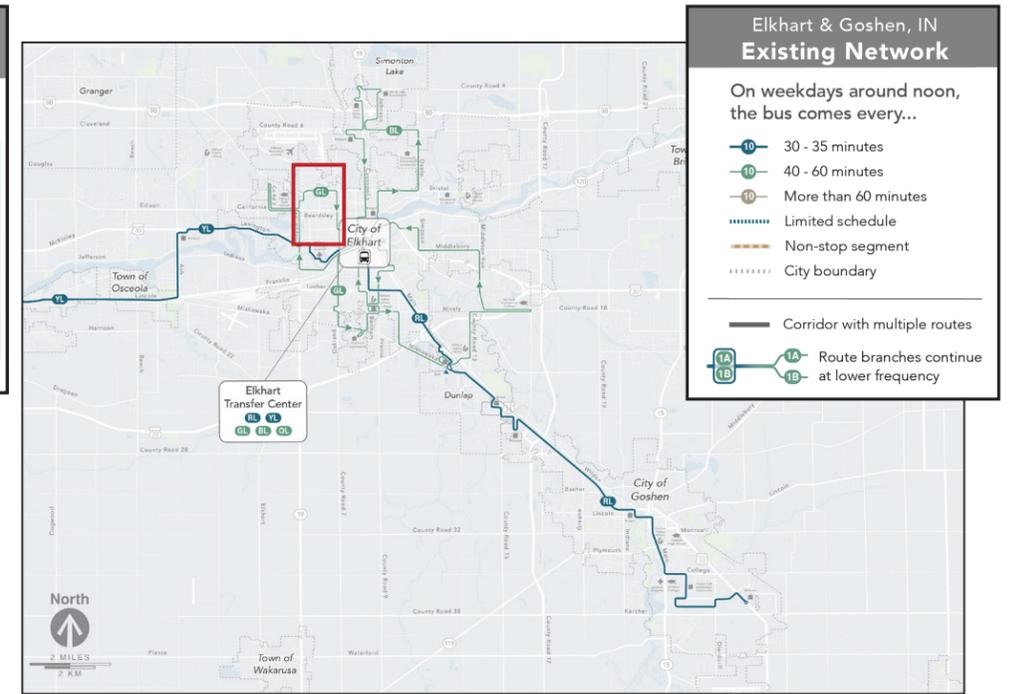
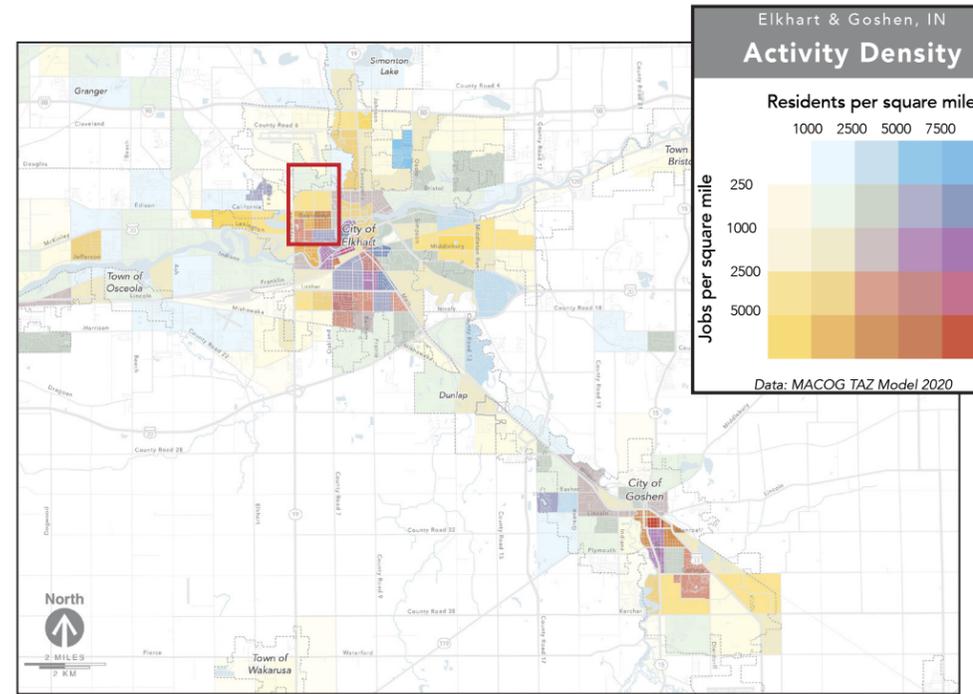
This area is currently being served by the Interurban Trolley's Blue Line. The route operates as a one-way loop every 60 minutes so some passengers must ride around the "long way" in one direction.

With many retail and hospitality sector destinations along this corridor later evening service and Sunday service would be useful to many people who work along this corridor.

Example of Latent Demand: Inner West Elkhart

This area of potential latent transit demand in Elkhart is centered along Beardsley and Oak Street.

The area includes a mix of industrial sites, independent retail locations and detached residential housing on small lots.



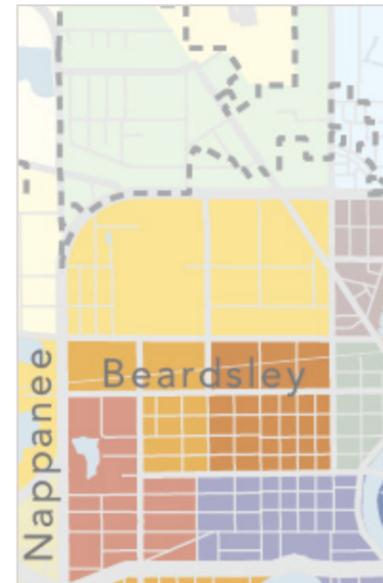
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Linearity - Low to Medium

Due to its proximity to Elkhart city center, this area functions more as a cluster of density near the city core than a linear corridor. With the exception of the Yellow Line, which is a regional route extending beyond Elkhart, any transit route that serves this area likely cannot run in a long straight line.

Walkability - Medium-High

The walkability of this area is higher than average compared to similar areas in the rest of the region. The southern half features a fine residential street grid but even the industrial areas to the north features a connective street network.



Density - High

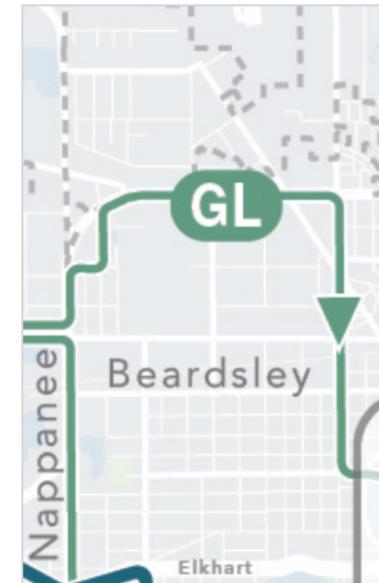
The darkness of the colors on this activity density map indicates that this area has some of the highest densities in Elkhart County.

Mix of Uses - Moderate to High

The combination of oranges and yellows with purples and blues shows that there is a mix of employment and residential areas.

Proximity - Favorable

This area is very near the center of Elkhart.



Current Service and Future Potential

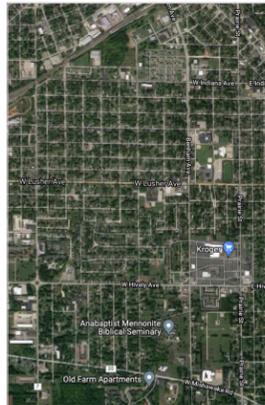
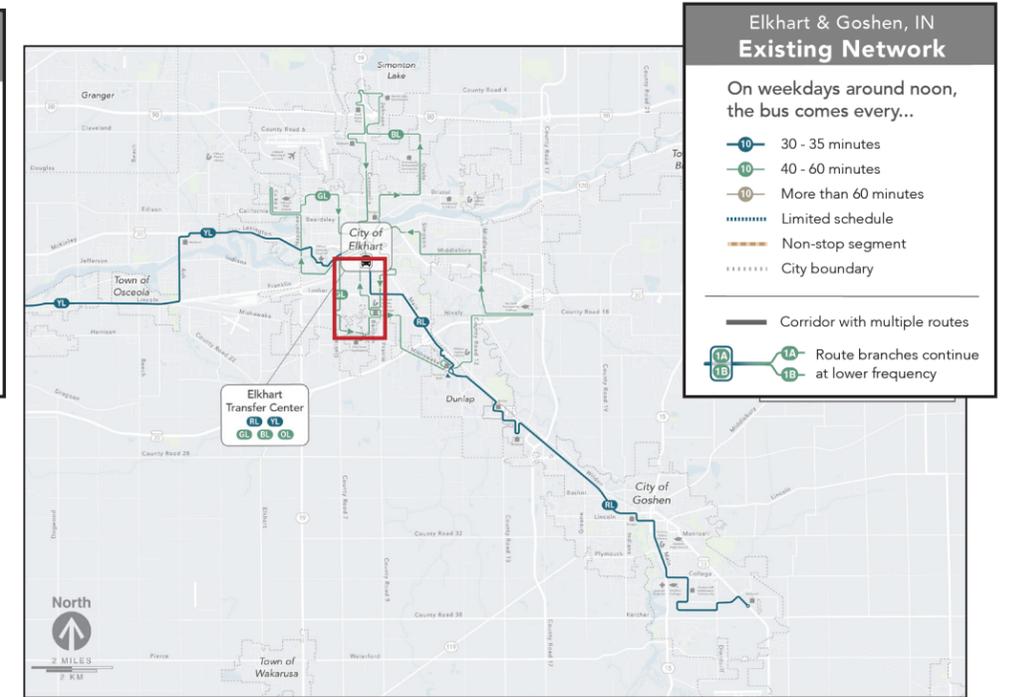
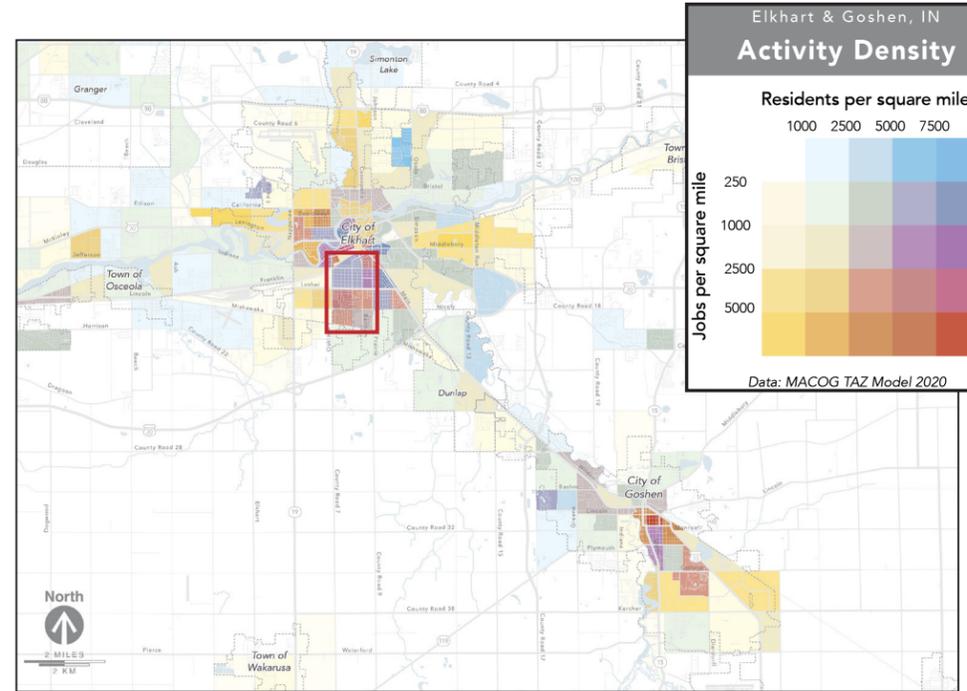
This area is currently being served by Interurban Trolley's Green Line, running every 60 minutes as a one-way loop. This means that riders have to travel out-of-direction going the long-way either half the time. Additionally, the Northwest Loop of the Green Line leaves the Elkhart Transit Center at the bottom of the hour, so anyone transferring from the Blue or Orange Lines must wait a half-hour in downtown Elkhart to get to jobs along this part of the Green Line

The commercial destinations along this corridor suggests that added service on Sunday would be useful to many people.

Example of Latent Demand: Southwest Elkhart

This area of potential latent transit demand in Elkhart is centered around Lusher Ave and Benham Ave.

This area has many of the density, walkability and land-use characteristics of the central areas of Elkhart but most transit lines running through this area run infrequently and only in one direction.



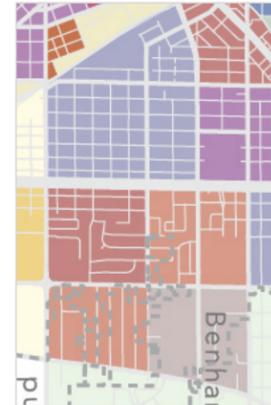
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Linearity - Moderate

Due to its proximity to Elkhart city center, this area functions more as a cluster of density near the city core than a linear corridor.

Walkability - High

This area features a dense connective street grid, typical of pre-war development built before the proliferation of private automobiles. Even by walking alone, people can reach more area from each transit stop because of the dense street grid.



Density - High

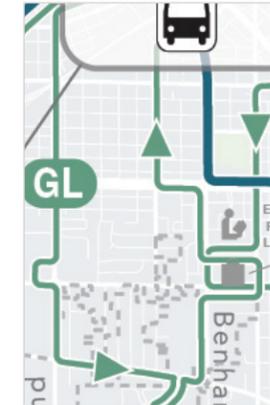
This area has residential densities of up to 7,000 people per square mile and job densities of up to 2,500 jobs per square mile. These densities are comparable to much of the central areas of South Bend.

Mix of Uses - High

This area has a diverse mix of land uses, with housing, schools, a Kroger grocery store, Oaklawn medical center, and various businesses along the major streets.

Proximity - Favorable

This area is adjacent to Elkhart city center.



Current Service and Future Potential

This area is currently served by Interurban Trolley's Green Line, which operates every 60 minutes as a one-way loop. The 60-minute Orange Line and the 30-minute regional Red Line cross the northeastern corner of this area.

With medical facilities, restaurants, grocery and retail stores in this area, additional evening and Sunday service would be useful for some employees and customers.

Example of Latent Demand: Northeast Elkhart

This area of potential latent transit demand in Elkhart is centered around a County Road 6, between Osolo Rd and the future Amazon facility on the north side of the Indiana Toll Road between County Road 17 and County Road 19.

This area includes a densely populated mobile-home community to the west, a cluster of industrial facilities along County Road 6, and a future Amazon facility at its northeast edge.

While a single major destination outside of the reach of existing transit services does not always justify transit service expansion, the sheer number of jobs at this single location, along with the corridor of existing industry to west, makes it a potential market for fixed route service or vanpool services. To maximize the efficiency of either, it would be best if employers in the area could cooperate on shift times to allow transit services to efficiently meet the needs of workers.



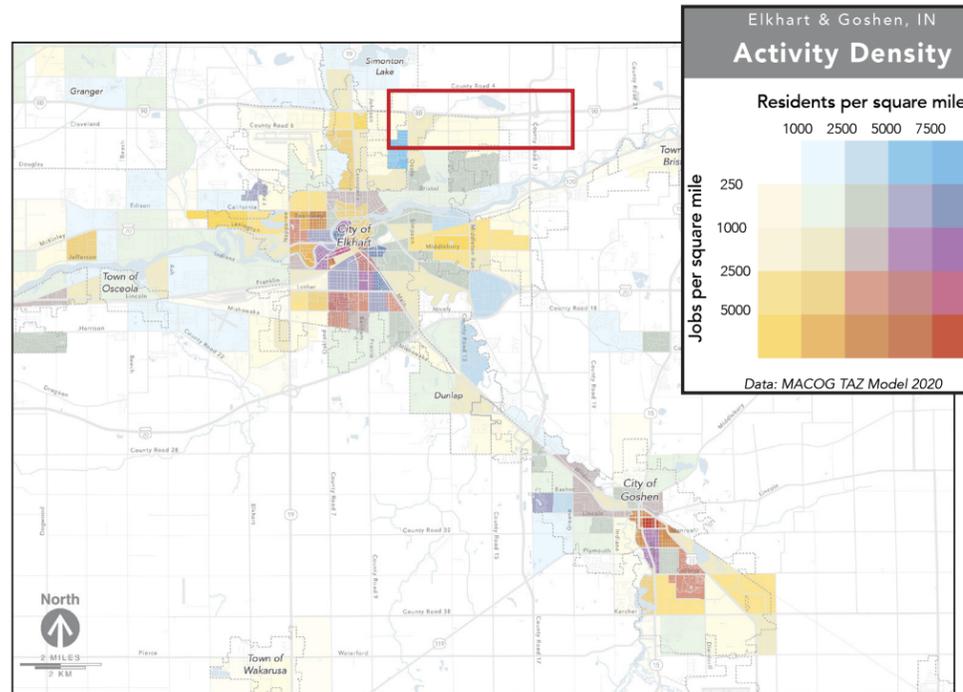
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Linearity - Medium

Development around County Road 6 offers a reasonably linear path for transit, but the location of the future Amazon facility north of Indiana Toll Road limits the ability to further extend future service in a linear path without out-of-direction travel.

Walkability - Low

Long block lengths, the grade-separated Indiana Toll Road, and the lack of sidewalks and the presence of drainage ditches limits walkability in this area.



Density - Moderate

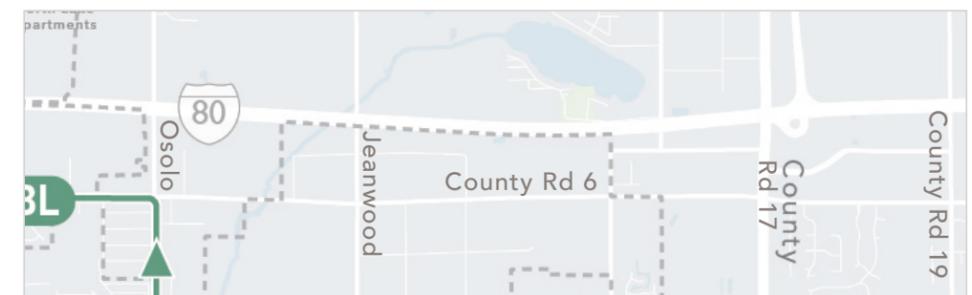
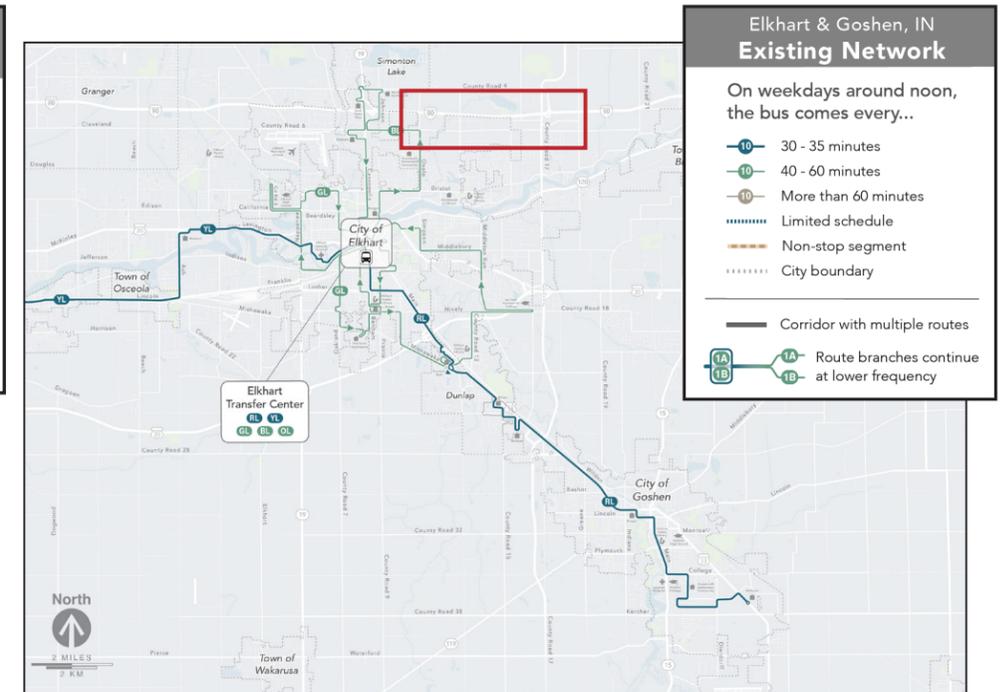
Employment density in this area will be high in specific locations. For examples, when the Amazon facility fully opens in 2023, it is expected to host about 1,000 jobs. However, buses serving this area would have to traverse through gaps of very low density.

Mix of Uses - Low

With the exception of the mobile home community along Osolo Road, this area will exclusively be used for employment. This may cause imbalanced directional travel demand.

Proximity - Unfavorable

This area is not near existing service and is relatively far from Elkhart city center. There are significant gaps in the development pattern with very low density levels along the corridor.



Current Service and Future Potential

This area is not currently served with transit. Future service may travel east-west on County Road 6 but would have to cross to the north side of Indiana Toll Road to reach the Amazon facility.

Fixed route service along County Road 6 may attract ridership at certain times of the day, industrial employment centers tend to have highly directional travel demand. Organized vanpool service may be an option as well, particularly if employers along County Road 6 can coordinate their shift times.

Example of Latent Demand: East Elkhart

This area of potential latent transit demand in Elkhart is centered along Middlebury Street, east of Goshen Avenue and west of County Road 17.

This area is home to many manufacturing and logistics facilities as well as some restaurants and retail facilities to the south. While not the area in Elkhart with the strongest indicators of transit demand, densities remain moderate even east of Middleton Run and some employees and employers would benefit from additional transit service investment here.



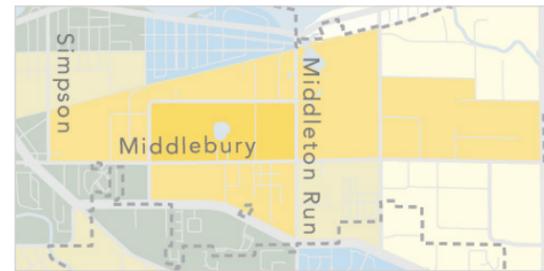
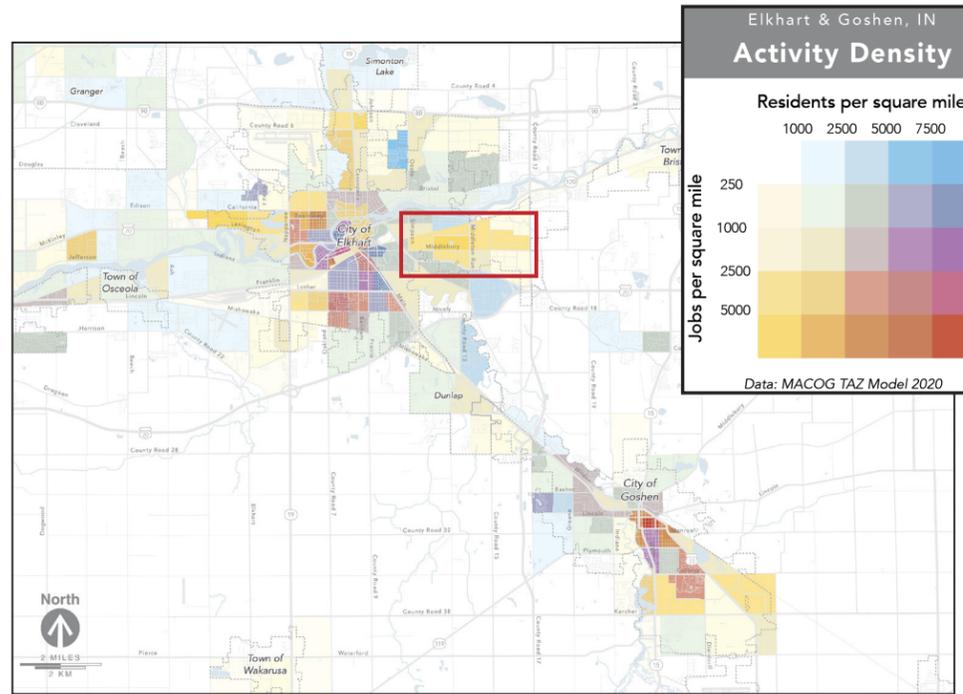
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Linearity - High

Middlebury Street is a linear transit-operable path closest to the densest parts of the area. One geometric challenge for transit in area is that the conical shape of the developed area. The edge of the industrial area is only half a mile from Middlebury Road on the western end, but nearly a mile at the eastern end. Transit designed to get any closer to businesses on the edge of the area would have to deviate from the natural linear path to do so.

Walkability - Low to Medium

The walkability of this area is comparable to industrial areas in the rest of the region. With large block sizes, but a generally connective street grid, transit users can reach limited area on foot from each bus stop.



Density - Moderate to High

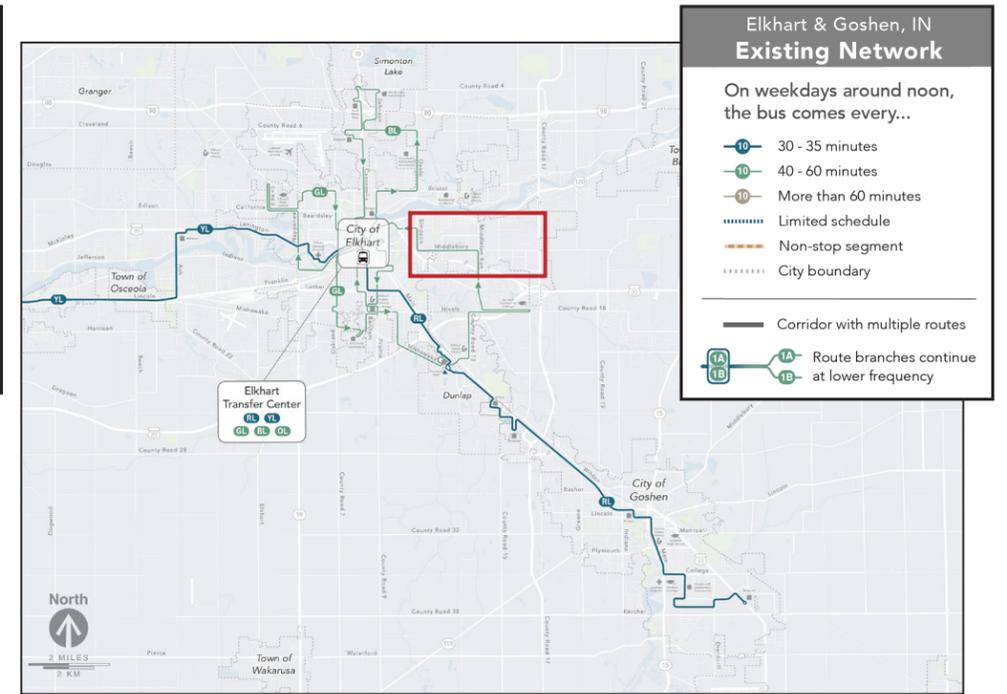
Employment density is moderately high in this area, with many manufacturing and logistics facilities located close together.

Mix of Uses - Low

While the area is almost exclusively used for employment uses, there is one mobile home community on County Road 15, as well as a few apartment complexes south of Toledo Road.

Proximity - Favorable

This area is within a few miles of downtown Elkhart, were there is high activity density.



Current Service and Future Potential

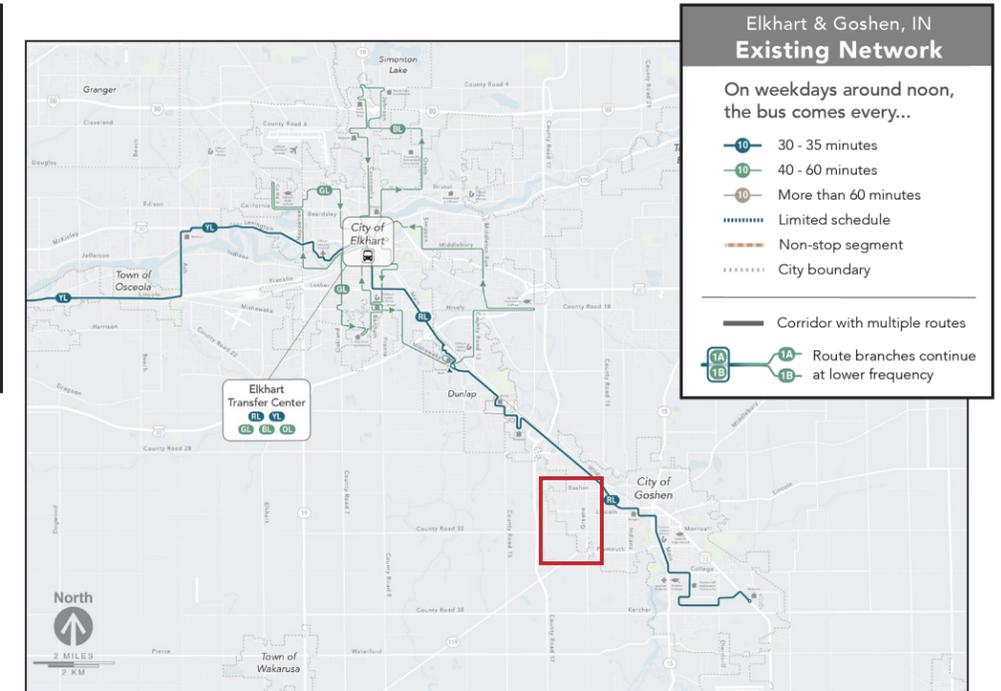
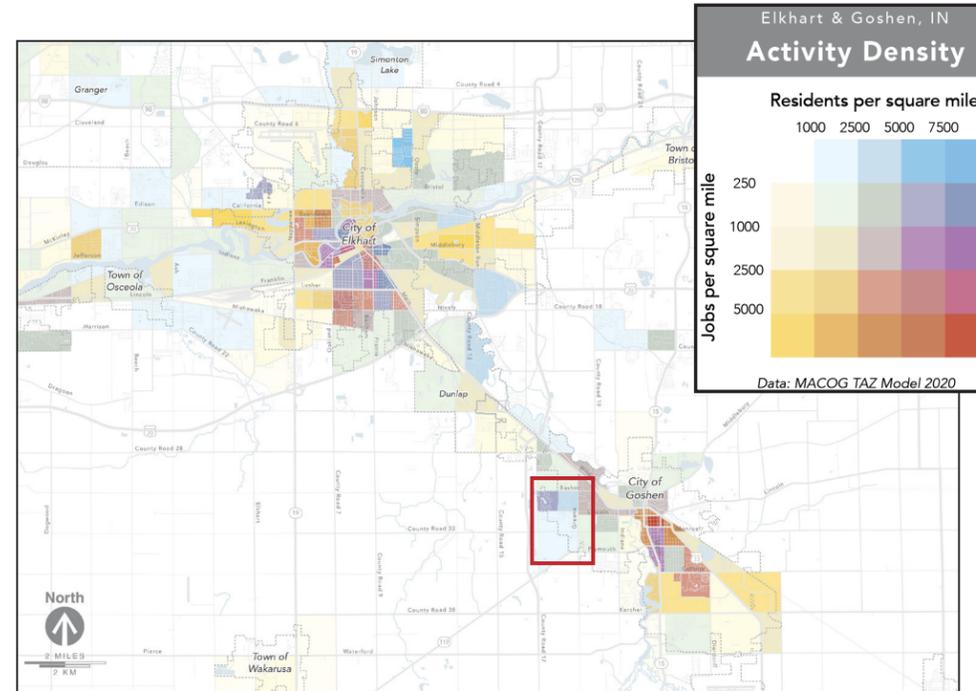
This area is currently served by Interurban Trolley's Orange Line, which operates every 60 minutes as a counter-clockwise one-way loop. The orange line is a particularly long loop, and half of the trips along it have to go the "long way". Some parts of the area are nearly two miles away from a bus stop.

With some manufacturing facilities likely operating in shifts, longer spans would likely attract some ridership, although there may be limited demand between shift changes.

Example of Latent Demand: Northwest Goshen

This area of potential latent transit demand in Goshen is centered around Clinton Street and Greene Road.

This part of Goshen consists of moderately dense residential units, some of which were built in the last ten years. Density is particularly high at Roxbury Park, a mobile home community at the western edge of the area, as well as at several townhouse and apartment complexes along Clinton Street. The lack of linearity relative to the path of existing Red Line route presents a challenge for transit service here. Future service to this area would almost certainly have to involve out-of-direction travel for some people, and a transfer somewhere in Goshen.



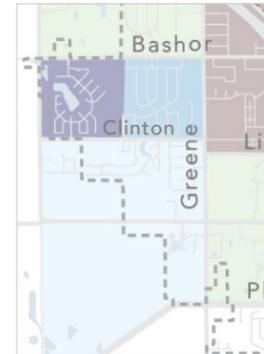
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Linearity - Low

The western portions of this area are about 2 miles from path of the existing Red Line route. Any deviation added to the Red Line to serve this area would negatively impact existing riders, but a separate route serving this area would require out-of-direction travel for some people, and a transfer in Goshen.

Walkability - Low

Street connectivity in this area is low. One example of this is how Lincoln Avenue and Clinton Street are parallel streets just 450 feet apart but are separated by strip of private property 1/2 mile long. There are cul-de-sacs and dead-end streets throughout the area.



Density - Medium

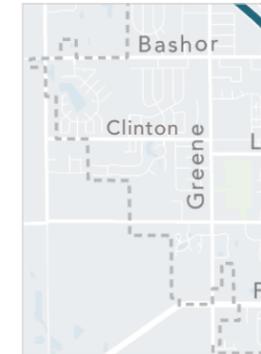
Residential density is moderate compared to other developed parts of the region.

Mix of Uses - Low

This area is mostly residential, although there are a few churches, freestanding retail establishments and dental offices along Lincoln Ave.

Proximity - Moderately Favorable

This area is within a few miles of other areas of high activity density, including Goshen's City Center



Current Service and Future Potential

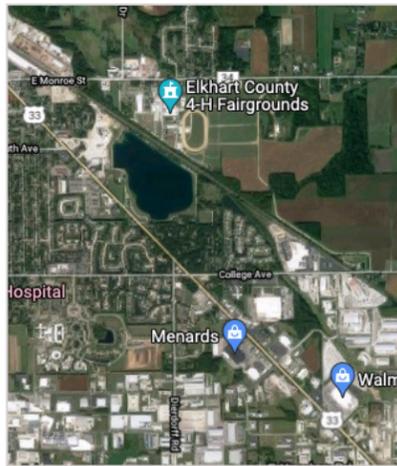
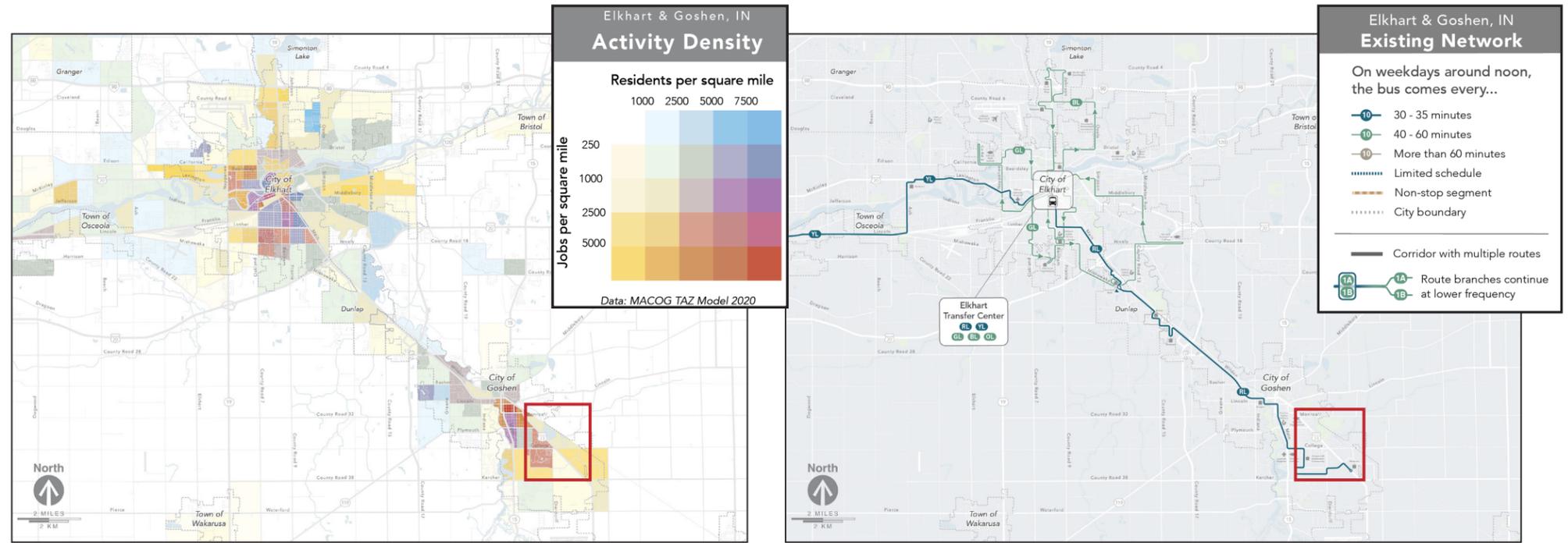
This area is not currently served by any transit service. The Red Line, linking Elkhart and Goshen bisects the northeastern corner of this area but is beyond a short walk of many people here.

Residents in this area, particularly those with low income who may find car ownership to be financially onerous, may benefit from any level of transit service to this area. Those working non-traditional schedules would benefit most from transit that runs all day, seven days a week.

Example of Latent Demand: Southeast Goshen

This area of potential latent transit demand in Goshen is centered around Lincolnway East and College Ave.

The southern developed parts of Goshen is wedge shape, making it difficult for it to be served by a single linear transit route. Densities are highest where the Red Line currently operates, but there are still many residents and jobs along Lincolnway East, which is about 3/4 of a mile from the Red Line.



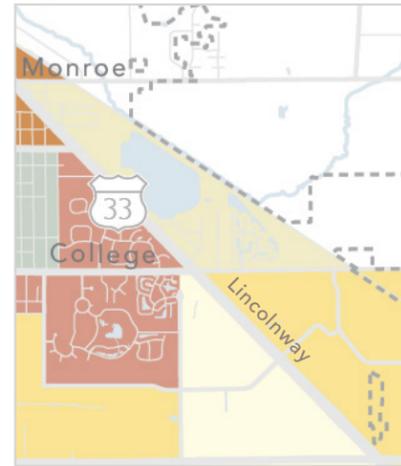
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Linearity - Medium to High

Lincolnway East is a continuous, linear path within walking distance of many residents and jobs in the area. But the “wedge shape” of the developed parts of Goshen makes it difficult to offer widespread coverage with a single linear route.

Walkability - Low to High

The western parts of this area features a connected traditional street grid but some newer housing developments have been built with cul-de-sacs and dead end streets that severely limit walk access to major streets where transit would operate.



Density - Medium to High

With many townhouse and apartment complexes west of Lincolnway, parts of this area have high residential density. There is also high employment density throughout, but particularly on the southeastern half of the area.

Mix of Uses - Medium to High

The areas west of Lincolnway feature a diverse mix of land uses, from residential, to retail to senior care facilities. Hospitality and retail businesses line Lincolnway itself. The mix of uses is lower on the south eastern half of the area, with only large format, big box retailers and industrial uses.

Proximity - Favorable

This area is very close to the central parts of Goshen.



Current Service and Future Potential

The existing Interurban Trolley Red Line regional route serves parts of this area. It operates every 30 minutes but like the rest of the system, it does not operate on Sundays.

The diverse mix of land uses in this area, including retail and hospitality services suggest that there would be significant demand for additional transit service on evenings and on weekends.

6 Key Choices

Key Choice: Ridership vs. Coverage

The **CONNECT Transit Plan** is a unique opportunity to rethink the purpose of the Transpo and Interurban Trolley transit system, and how it relates to other ways of getting around such as cycling and driving.

The most basic choice is the degree to which the transit system should be pursuing ridership or coverage.

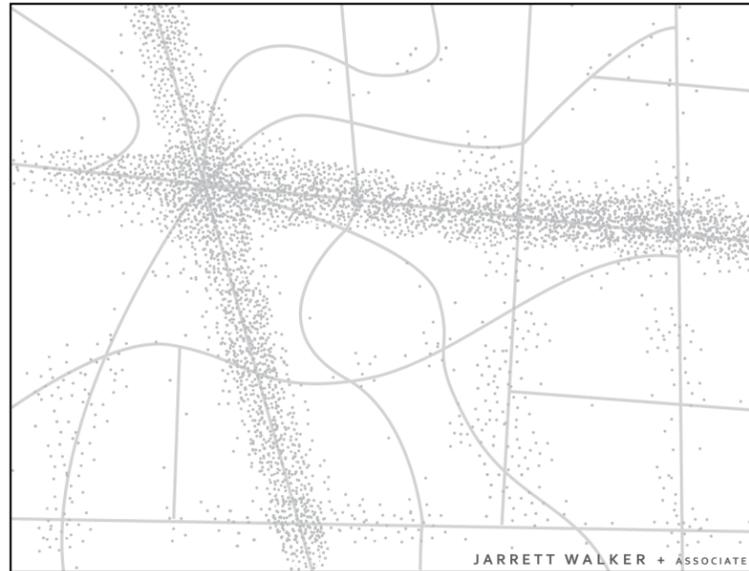
Designing a transit system for **high ridership** serves several popular goals, including:

- Competing more effectively with cars, so that the region can grow without increasing traffic congestion.
- Reducing the public subsidy needed for each ride by carrying more passengers and by collecting more fare revenue.
- Minimizing climate impact by replacing single-occupancy vehicle trips with transit trips, reducing greenhouse gas emissions.
- Supporting dense and walkable development.

On the other hand, many other popular goals for transit don't require high ridership. Designing a transit system for **high coverage** serves these goals:

- Ensuring that most people in the service area have access to some transit service, even if they live in low density areas.
- Providing access for people without access to personal vehicles.

A transit agency can pursue high ridership and extensive coverage at the same time, but the more it pursues one, the less it can provide of the other. Every dollar that is spent providing high frequency along a dense corridor is a dollar that cannot be spent bringing transit closer to each person's home or reaching less dense areas on the fringe, and vice versa.



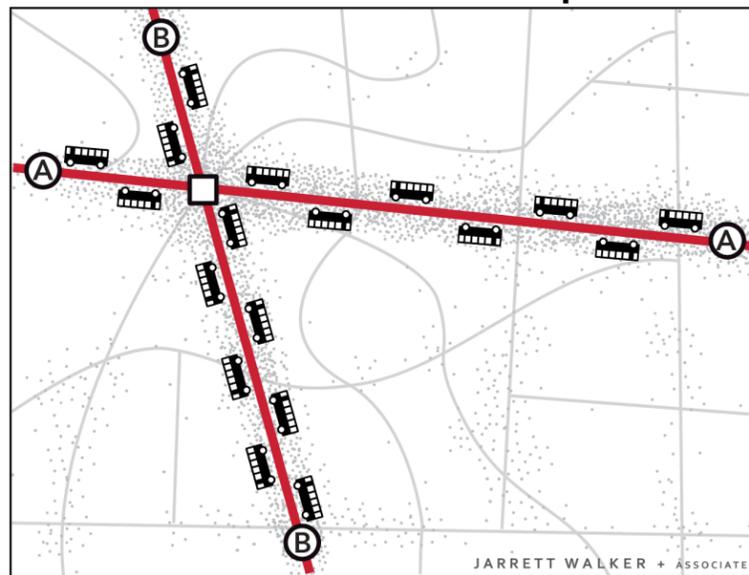
Imagine you are the transit planner working in this fictional neighborhood.

The dots scattered around the map are people and jobs.

The 18 buses are the resources the town has to run transit.

Before you can plan transit routes, you must first decide: What is the purpose of your transit system?

Maximum Ridership



Maximum Coverage

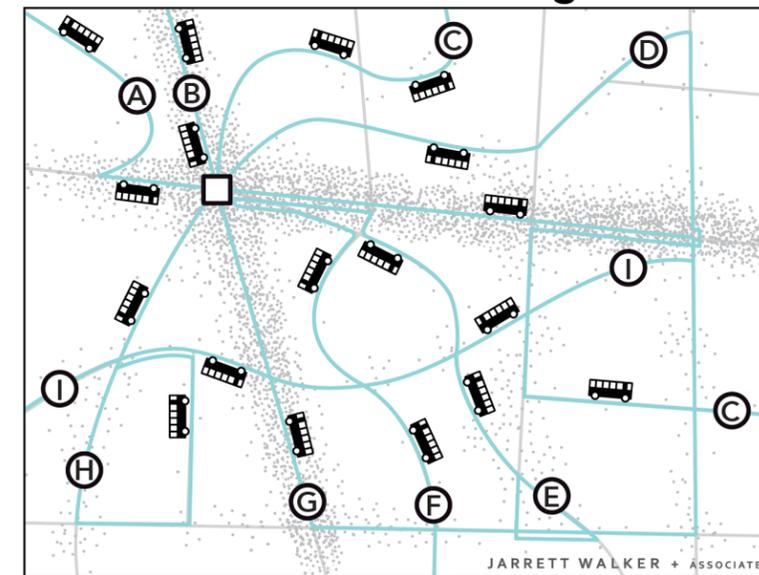


Figure 65: Comparing an imaginary town where transit is run with the goal of maximizing frequency and ridership (left) vs. the same town where transit is run with the goal of providing a little service near everyone (right). The maximum ridership (left) network has very frequent service, but only on the roads where the most people live and work. The maximum coverage network has service on every road, but it doesn't come very often. Transpo and Interurban Trolley's existing network looks more like the one on the right. Should a redesigned network focus more on frequency, even if some people will have to walk farther to reach service?

How the Pandemic Changes This

Some people who used transit before are not during the pandemic. It's unclear when many people will once again need to travel and when they'll consider transit as an option.

So a more frequent network might not result in higher ridership immediately. Those effects take time. For example, some people will choose where to live based on bus service, and only then begin to ride.

But regardless of ridership, a more frequent network would increase the amount of access provided between different parts of the MACOG region, and make transit useful for more trips.

The key challenge remains whether it is acceptable for some people to walk further to reach their bus stop, or for some areas not to receive service.

Ridership-Coverage Choices

As described on the previous page, a transit agency needn't choose one extreme or the other between Ridership goals and Coverage goals—the choice is not binary. However, the two goals trade-off against one another. This means that **within a fixed budget, a shift towards one goal is necessarily a shift away from the other.** Providing higher frequencies and achieving higher ridership would require reducing geographic coverage, and vice versa.

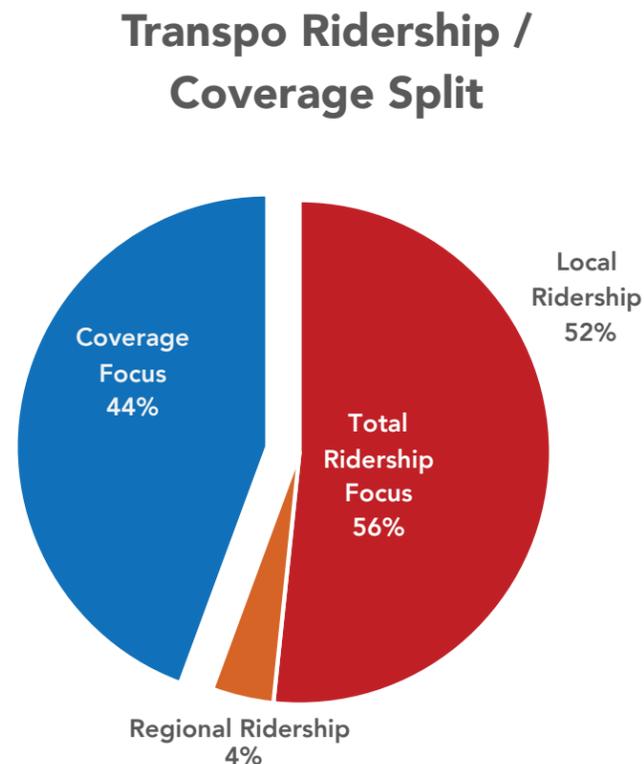
If a transit agency wants to pursue higher ridership within its limited budget, it will consider strategies like:

- Looking at routes with the most ridership relative to cost, where existing riders are showing that the service is pretty useful, and finding ways to make those routes even more useful to more people.
- Doing more things that result in additional riders at a low subsidy per rider, and fewer things that result in additional riders at a high subsidy per rider.
- Making transit as time-competitive against driving as possible, by offering higher frequencies, more direct trips and higher speeds.
- Offering sustained all-week services that allow large numbers of households to give up a car (or stop hiring cars for certain trips), so that a greater number of people choose to depend on transit every day.
- Sending clear signals to existing riders, businesses, social services, developers and future riders about where the most permanent and useful transit service is. People and organizations that value transit can choose to locate near it, and in doing so they help the region continue to build permanent transit markets around the most cost-effective services.

Current Budget Split

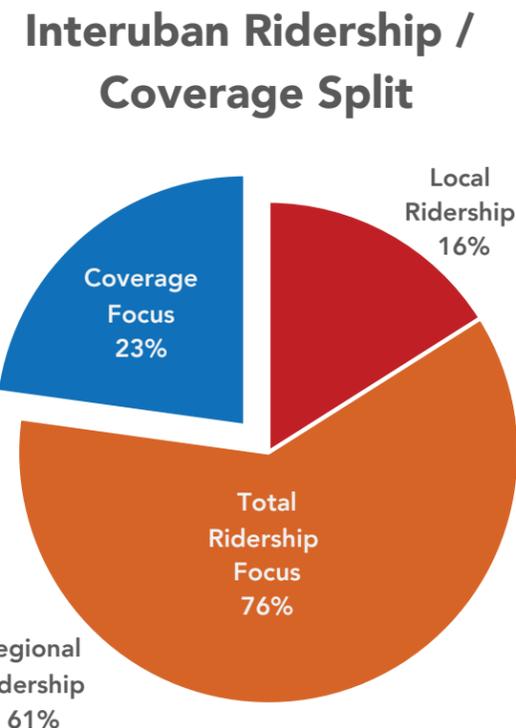
Many agencies find it helpful to set a policy about how much of their budget they will set aside to provide coverage while focusing the rest of their budget on the pursuit of higher ridership. Although this is a regional study, it is helpful to think about the Ridership-Coverage budget split separately for each of the two agencies, since each operates in a relatively different land use context, has a different set of local funding streams, and separate governance and decision-making structures.

Of the **Transpo** bus budget, about 56% (Regional + Local) is currently spent providing higher ridership service and 44% on coverage services, services that do not get high ridership relative to their costs.



Of the **Interurban Trolley** bus budget, about 77% (Regional + Local) is currently spent providing higher ridership service and 23% on coverage services, those that do not get high ridership relative to their costs. The portion of the pie devoted to Regional Ridership is much higher for Interurban Trolley because so much of the budget is devoted to the Red and Yellow Lines, two routes that cover much longer distances than most other transit routes in the region. While these routes have lower productivity compared to other 30-minute services, their interurban nature means they provide a greater level of access across long distances and are part of an overall system-wide higher ridership strategy.

This balance between Ridership and Coverage goals at each agency does not reflect an explicit policy. It has arisen from many years of public input, requests from riders, staff judgements and direction from the each agency's Board on smaller service changes.



This plan will give the both the Transpo and MACOG Boards an opportunity to affirm or update this balance of purposes in the bus budget. This plan also gives the public, riders and stakeholders an opportunity to give input on this major trade-off and inform the Board's policy decision.

The other key choices arising in this plan and described in this section relate to ridership outcomes. Some people will not have an opinion about the right balance of spending on ridership and coverage goals, but their input on more concrete choices — such as walking vs. waiting, and the importance of rush hours — can inform the Board's decision about the ridership/coverage balance.

Nothing we say in this report should be taken to imply that Transpo or Interurban Trolley should strike a different balance than it does today. When we describe potential high-ridership strategies, there is always an implied "if" statement: **"IF Transpo** wanted to increase ridership, here are some things that could be done, and here are some trade-offs involved." The choice about how to balance ridership and coverage goals will rest with the public, stakeholders and ultimately the each agency's Board of Directors.

Furthermore, the key choice around the level of investment in transit also plays a role in this decision. While changing the balance between these two sets of goals can entail significant impacts to riders or the community in a fixed budget, when a transit service budget grows it is much easier to expand either the ridership emphasis or the coverage emphasis without facing tough trade-offs.

Key Choice: When we run coverage service, what should our priorities be?

The second critical question in this process is about the purpose of coverage service. There are many important social objectives of transit that can be served through coverage focused planning. None of these are goals that can be expected to generate high ridership, but all of them are important and valuable functions that the transit network can provide, if the community and its leaders directs the transit agency to do so. But, a network plan's coverage component will look very different depending upon which coverage goal is the focus.

Prioritize providing transportation options for people who can't drive?

The first of these, "access for people who can't drive", is about what people often call the social service function of transit: providing a transportation option to people with few other choices, and who are located in places where high-ridership service would not go.

This could include sites like senior living communities in suburban areas, isolated lower-income communities where vehicle ownership rates are low, or important destinations like community colleges or social service agencies that have chosen to build facilities in environments that are difficult for transit to serve efficiently. These are all places where some people need the service, however fewer would use the service compared to higher-density areas that are more efficiently integrated into the rest of the transit network.

The design process for a coverage network focused on this goal would identify the factors most associated with critical mobility needs, and design services targeting those places. That means a plan that is designed around the goal of providing access for people who can't drive. This includes responding to the density of seniors and senior-living facilities, zero-vehicle households, lower-income people, and places like social service facilities, and other destinations located in places that would not otherwise be served if maximizing transit ridership were the only goal.

Try to provide some service for everyone who pays?

Everyone who pays taxes to the city or other entity that funds transit could reasonably expect some service in return. One way of evaluating how fairly public transit resources are distributed is in terms of how many people have direct access to service (regardless of whether that service is very useful), within a reasonable walking distance of their home. This is the second common argument for coverage services, and many agencies define a minimum coverage standard in response to this goal.

For example, services could be designed to try to ensure that 100% of all residents within the Transpo taxing district or within the cities that fund Interurban Trolley are within 1/4 mile of a bus stop. That would be a measurable outcome of the success of network designed to meet this goal, and would provide an insurance policy of some kind of transit access for nearly everyone, but many people would not use the service as it would be less useful and many would have better transportation options.

A service plan designed around this goal would be focused only on population density. It would seek to draw the most efficient lines to get as near to as many people as possible, irrespective of their need, even if frequencies were very low. This would have the impact of expanding the overall coverage area and number of people near a transit stop. Without additional funding for transit service, pursuing this kind of goals would also likely result in less frequent service along relatively dense and busy corridors.

Prioritize supporting future suburban development?

The last reason is about the future. Offering a transit service today in places that are expected to develop in a way that will generate high ridership in the future. Developers of new neighborhoods often want transit to be there early, before there are many people, so that it is available right as people and jobs move in. This is a low-ridership service until there are enough residents or employees there. A service plan intended to support future development would be designed in response to information on where that development is likely to occur.

Similarly, major employers may want a commitment of transit service to a peripheral industrial area they are considering expansion, even though these areas may not have the density and land-uses to generate high ridership in the initial development phases.

What should we prioritize when designing coverage-oriented transit service?

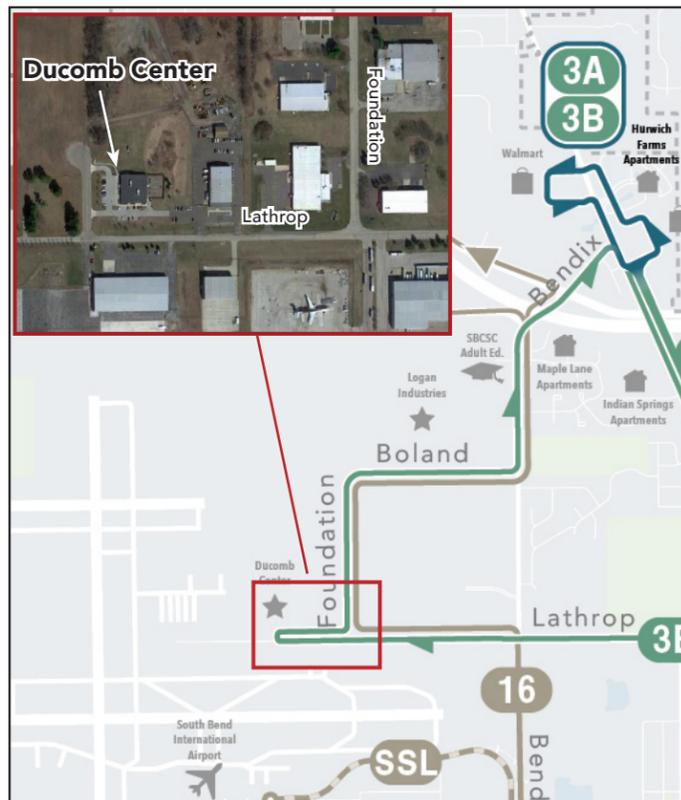


Figure 66: Some destinations, like the DuComb Center community-based corrections program, are located out of the way for transit. A coverage-oriented transit network would continue to include deviations to provide basic coverage to places like these.

Key Choice: Walking vs. Waiting

Is it more important for bus service to be more frequent, or for service to be available nearby within a shorter walk?

Most people in the region live and work close to bus service, but very little of that service is coming soon.

- 78% of residents in South Bend / Mishawaka and 56% of residents in Elkhart / Goshen are located within 1/2-mile of a bus stop.
- But only 53% of residents in South Bend / Mishawaka and 32% of residents in Elkhart / Goshen are near a route where the bus comes every 30 minutes or better throughout the day.

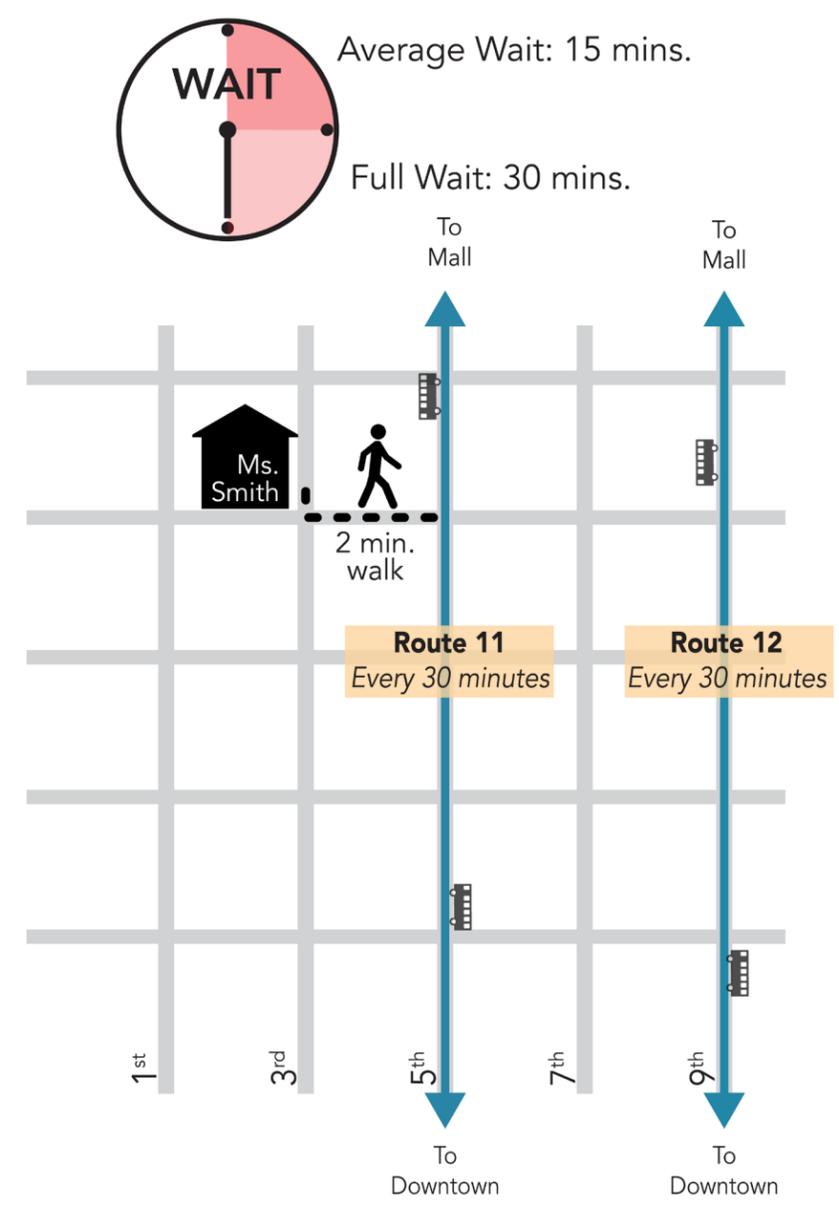
These two facts are connected. Both transit networks, particularly Interurban Trolley, are designed to provide a bus stop within a 10 minute walk of most front doors. As a result, the network is stretched thin. Most routes run every 30 to 60 minutes, and many streets only have bus service in one direction.

If Transpo and Interurban Trolley planned transit service around longer walks to service, more bus routes could operate more frequently, every 30 minutes, or even 15 minutes on some corridors. In turn, many riders would wait less and would get to their destination sooner.

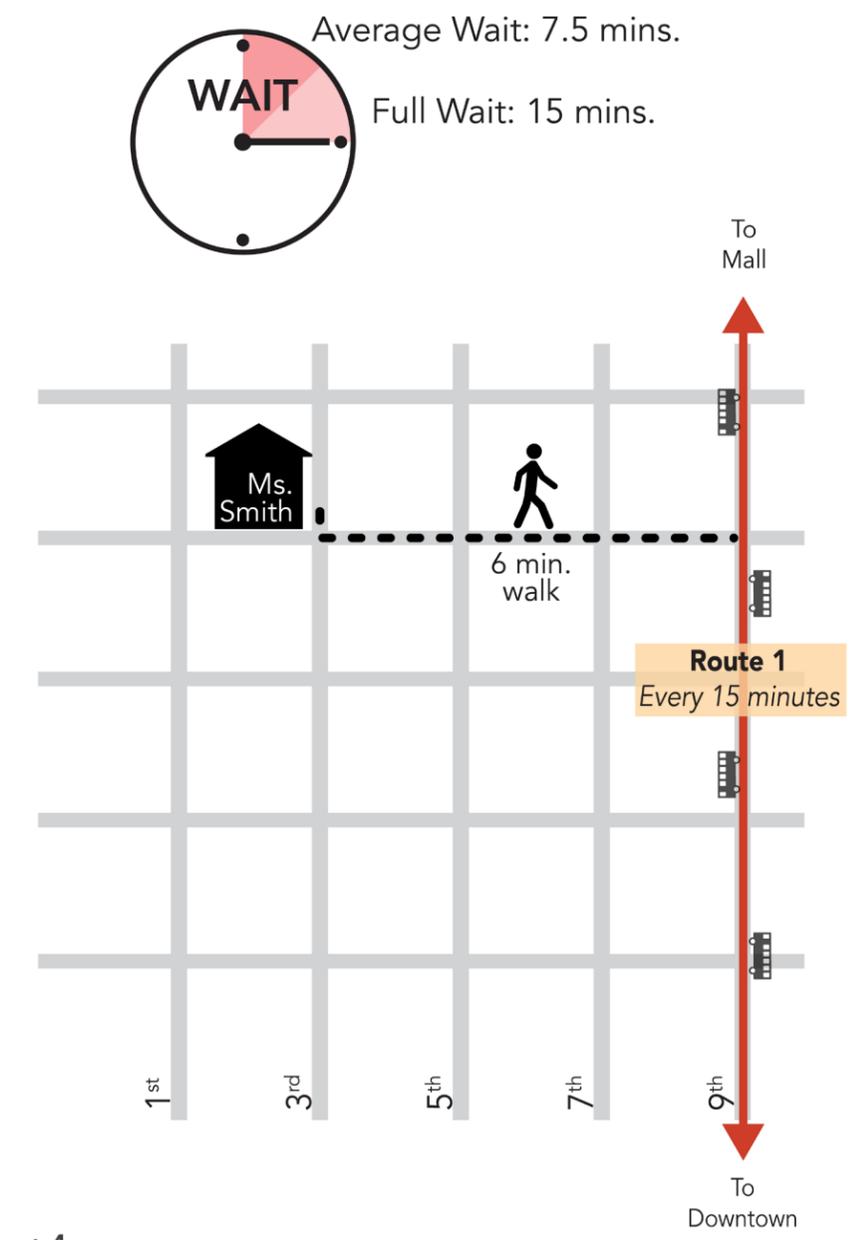
But longer walks can be challenging for many people, including some who really need transit. This includes some people who experience physical disabilities, but also people traveling with young children, older adults, or anyone carrying groceries or a large bag.

Frequent service that gets people where they are going sooner tends to generate higher ridership, even when it requires longer walks.

Minimize Walking
with closely-spaced routes coming every 30 mins.



Minimize Waiting
with routes coming every 15 mins., more widely spaced.



+4 MORE MINUTES WALKING
-7.5 FEWER MINUTES WAITING ON AVERAGE =
3.5 MINUTES FASTER ON AVERAGE

Figure 67: In some situations, consolidating parallel routes onto fewer streets can make the average person's trip faster. There are many areas where Transpo or Interurban Trolley could consider doing this, but only if people value shorter waits and longer spans of service more than they value shorter walks.

Key Choice: Local vs. Regional Service

Is it more important to serve more people making shorter trips, or to serve fewer people making longer trips?

St. Joseph and Elkhart Counties are large and have many lower density areas between the more dense communities of South Bend, Mishawaka, Elkhart, and Goshen. In particular, the distances and gaps in development between Mishawaka and Elkhart and Elkhart and Goshen are relatively significant. Additionally, there is a substantial and imbalanced commute demand for workers who live in St. Joseph County to go to jobs in Elkhart County as described on Figure 25 on page 31.

Interurban Trolley and Transpo work together to provide regional services with the Yellow Line between Mishawaka and Elkhart. The Interurban Trolley Red Line provides the interurban service between Elkhart and Goshen. There will always be a tension in deciding how much transit service should be provided for:

- Local trips, mostly within the developed areas in the cities of South Bend, Mishawaka, Elkhart, and Goshen.
- Regional trips connecting each of these communities, and in particular serving the job commutes from St. Joseph County to Elkhart

County.

This tension is inevitably bound up in the rider-ship vs. coverage trade-off, because:

- Longer lines cost more to operate at the same frequency than shorter lines.
- Longer lines cross large areas where few people get on the bus, so they serve fewer riders for every hour the bus runs.

This means that regional bus service tends to be more expensive to operate, while serving fewer passengers, than local lines. On the other hand, these regional services often provide more value to each person who uses them because they serve trips that are otherwise very difficult to make without owning a car. Friends or family might be able to give you a ride every day if you work or study only two miles away, but they are less likely to drive you across the county on a regular basis. You might also be able to walk or ride a bicycle to a destination within the same city, but few people would be willing to bike across the county every day throughout the year.

This is especially true for the Red Line—linking Goshen to Elkhart—and the Yellow Line—linking Elkhart to Mishawaka and South Bend.

The more each transit agency spends on regional service, the fewer resources are available to provide lower-cost, higher-rider-ship lines within urbanized areas. But these regional routes are important to many people, and they provide an alternative to long drives in personal vehicles which are both costly to people and costly to the environment.

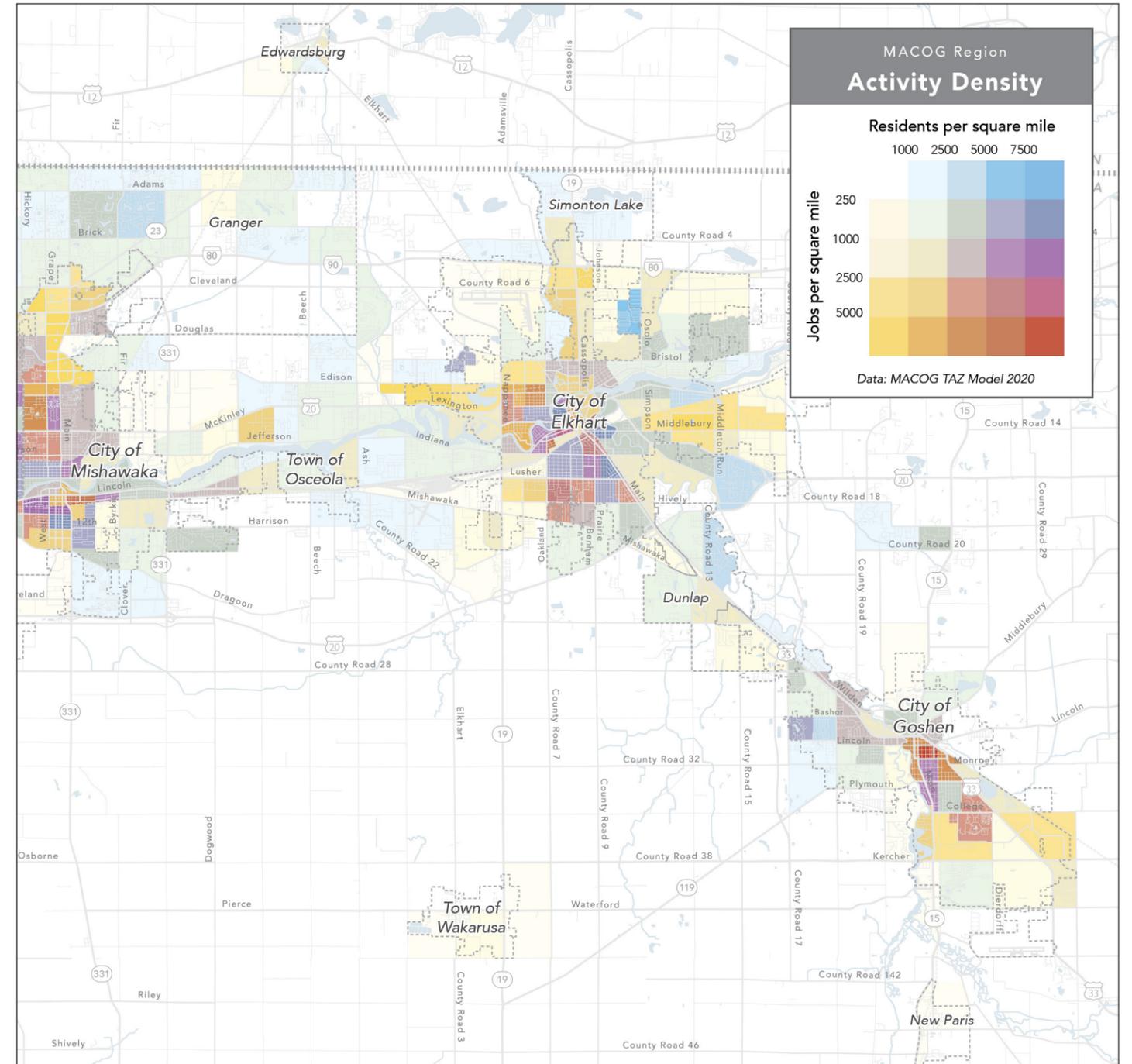


Figure 68: Map of Activity Density (Residents and Jobs per square mile) in Elkhart County. Regional routes have to traverse long distances where few people live and work, so each bus serves fewer people per hour than local routes.

Key Choice: Is there enough service altogether?

Wrestling with the first choice—how to balance ridership and coverage—and altering the transit network to meet new, clearer goals and match community values, may improve people’s sense that the transit network is delivering on their goals and is therefore worth further investment.

Yet it is also worth considering whether the current investment level is sufficient to meet the community’s overall transportation and economic development goals. The charts in Figure 69 show the total service hours provided by Transpo (top) and Interurban Trolley (bottom) from 2003 to 2019. For Transpo, the peak year for total service hours provided was 2007, and since that time service has declined by about 24%, with a sharp decline from 2008 to 2011 during the depths

of the Great Recession but a small increase since 2014. During this time, the population of the South Bend and Mishawaka service area has increased slightly, so the per capita level of service has declined even more.

Total service provided by the Interurban Trolley has increased over the period from 2003 to 2019, peaking in 2011, declined slightly until 2017 and has risen recently. Overall service levels are down about 4% from the peak in 2011.

On a per capita basis, Interurban Trolley has the lowest service levels compared to any peers. Transpo’s service per capita is a little above average compared to peers, but well below more generous peers like Fort Collins, Colorado or Portland, Maine.

The relationship between investment and relevance in Figure 70 demonstrates the principle of “you get what you pay for”, more service generally leads to more ridership. People can’t ride bus routes that don’t exist.

The region could increase transit frequency and ridership without investing in more service. However, this would require cutting and reallocating low-ridership services. There is no way around this basic geometric fact.

There are only two paths forward, if the region wants to increase transit frequency, transit usefulness, and transit ridership:

- Cut low-ridership coverage services, or
- Supply more transit service.

When there is new revenue available for transit, ridership can be increased without cutting coverage. The growing resource pot protects the community from having to make painful trade-offs between competing, but closely-held, values.

The questions of how to balance frequency with coverage, and how much service to pay for, both relate to public trust in Transpo and Interurban Trolley and people’s feelings that the transit network is valuable and relevant to their lives. If the goals for transit that the agencies are pursuing are not currently aligned with the goals of the community, or if people do not understand what goals the agencies are trying to achieve, then there will be some natural reluctance to increase investment in the transit system.

Figure 69: Total service hours provided by Transpo and Interurban Trolley from 2003 to 2019

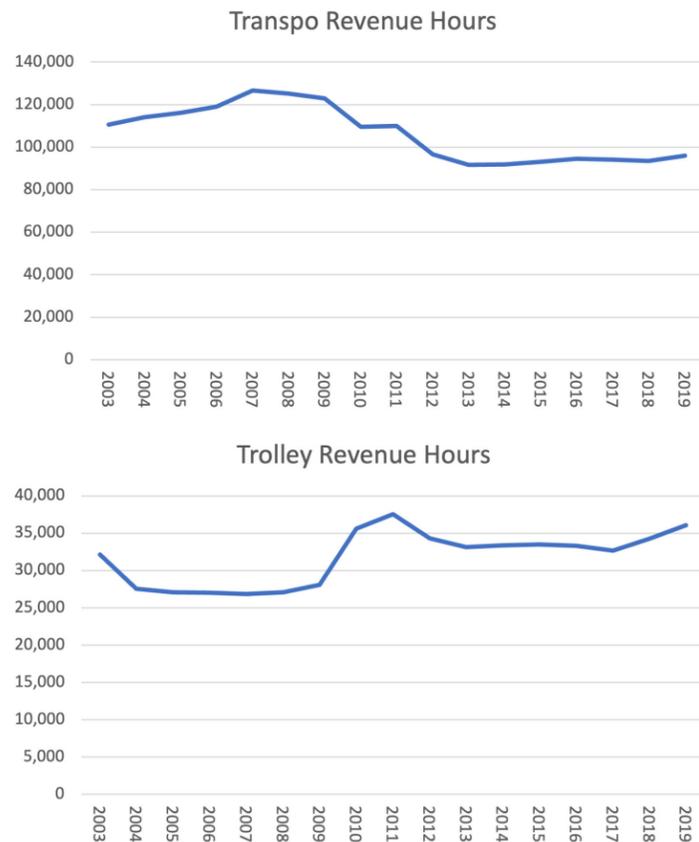
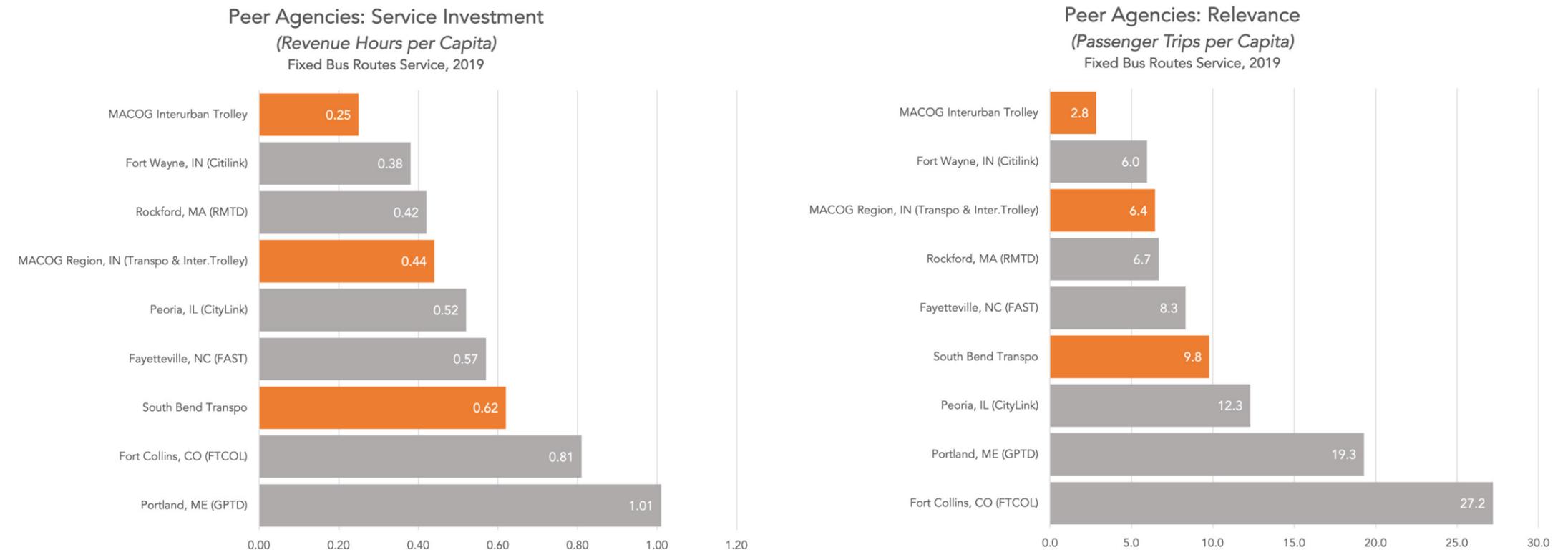


Figure 70: Service hours per capita (Investment) and Trips per Capita (Relevance) for the region compared to peers shows that in general, you get what you pay for in terms of transit ridership compared to transit service provided.



Next Steps

Next Steps

This Choices Report represents the first step in a three phase process of thinking about balancing goals and priorities for the region’s transit network. This report is the basis for public meetings, surveys, and outreach for the “Choices Phase” of the CONNECT Transit Plan. The public, stakeholders, and riders will be invited to respond to these key questions and provide other input on their preferences around how transit serves St. Joseph and Elkhart Counties.

The overall project timeline and future phases of work for CONNECT are shown below in Figure 71.

Input will be gathered through public meetings, an online survey, and other engagement events. The public health conditions mean that our study team may adjust our outreach events and processes depending on changes in guidelines and conditions. Details on the latest event and the online surveys will be available at: connecttransitplan.com

Who will be consulted?

Many different people will be involved in guiding this plan:

- Transit riders
- People living on low incomes
- People of color and non-English speakers
- Civic and neighborhood leaders
- Employers and businesses
- Municipal staff
- Local elected officials
- Members of the MACOG TTAC and Policy Boards, and Transpo Board of Directors

How to get involved

For more information and to stay involved in the project, go to www.connecttransitplan.com and:

Learn More

- Get more background on the project
- See scheduled events
- Sign up for project emails

Give Input

- Take the [online survey](#)
- Join an online webinar
- Connect via social media

Share with Others

- Find videos, articles and reports to share
- Request a community presentation

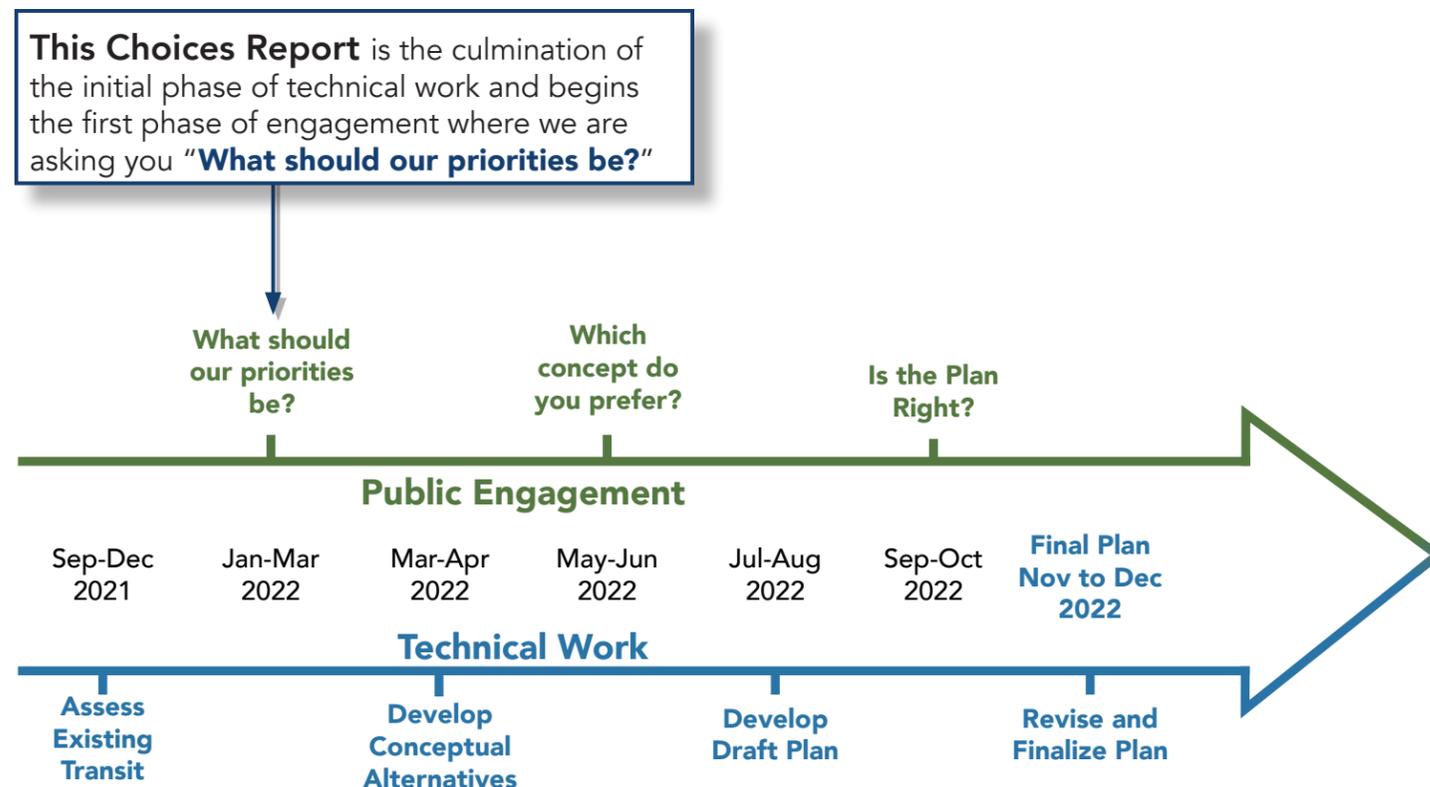


Figure 71: The timeline of engagement and technical activities for CONNECT.