

Transportation Needs and Current Service in Mille Lacs/Kanabec Counties

*East Central Regional Development Commission
July 10, 2025*

Presentation Agenda

- **Welcome/Introductions**
 - **East Central Regional Transportation Coordinating Council**
 - **Lighthouse Child & Family Services**
 - **Center for Transportation Studies' Empowering Small Minnesota Communities Program**
 - UMN Project Team
 - What is Empowering Small Minnesota Communities, why we chose and combined the EC RDC and Lighthouse projects
 - Goals for the project
- **Current transportation services**
- **Qualitative research:** Focus group process and discoveries
- **Quantitative research:** Transit coverage, gap and directional analysis
- **Recommendations**
- **Questions**



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Regional Advocacy, Economic Development, and Transportation



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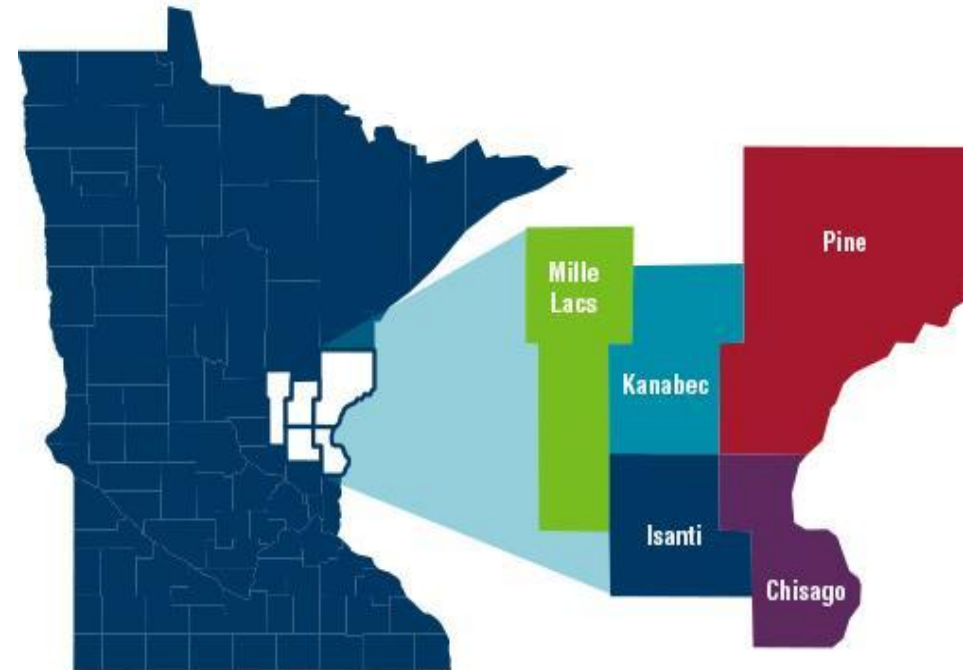
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EAST CENTRAL REGIONAL TRANSPORTATION COORDINATING COUNCIL, PROGRAM OF ECRDC

Counties served:

- Chisago
- Isanti
- Kanabec
- Mille Lacs
- Pine





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WHAT IS EAST CENTRAL TRANSIT?

Michelle and Karen are the East Central Regional Transportation Coordinating Council (ECRTCC) Mobility Managers working with local stakeholders to identify and resolve our region's transportation issues.

Efforts are dedicated to impacting coordination between transportation providers, service agents, and the private sector to fill gaps, streamline services, and provide further options for those traveling – the emphasis is on those who are transportation disadvantaged.



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WHY DID THE ECRDC/ECRTCC ENLIST THE ASSISTANCE OF THE UNIVERSITY OF MINNESOTA CENTER FOR TRANSPORTATION STUDIES?





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WHY DID THE ECRDC/ECRTCC ENLIST THE ASSISTANCE OF THE UNIVERSITY OF MINNESOTA CENTER FOR TRANSPORTATION STUDIES?

1. 2022 Local Human Services Transportation Coordination Plan (LCP)
REVELATIONS...



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The logo for the Minnesota Department of Transportation, featuring a blue square with a white 'm' and the text 'DEPARTMENT OF TRANSPORTATION' below it.

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WHY DID THE ECRDC/ECRTCC ENLIST THE ASSISTANCE OF THE UNIVERSITY OF MINNESOTA CENTER FOR TRANSPORTATION STUDIES?

1. 2022 Local Human Services Transportation Coordination Plan (LCP) *REVELATIONS...*
2. Provision of EVIDENCE DEMONSTRATING THE NEED...



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WHY DID THE ECRDC/ECRTCC ENLIST THE ASSISTANCE OF THE UNIVERSITY OF MINNESOTA CENTER FOR TRANSPORTATION STUDIES?

1. 2022 Local Human Services Transportation Coordination Plan (LCP) *REVELATIONS...*
2. Provision of EVIDENCE DEMONSTRATING THE NEED...
3. Method to obtain CREDIBLE information...



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WHY DID THE ECRDC/ECRTCC ENLIST THE ASSISTANCE OF THE UNIVERSITY OF MINNESOTA CENTER FOR TRANSPORTATION STUDIES?

1. 2022 Local Human Services Transportation Coordination Plan (LCP) *REVELATIONS...*
2. Provision of EVIDENCE DEMONSTRATING THE NEED...
3. Method to obtain CREDIBLE information...
4. Availability of the Empowering Small Minnesota Communities (ESMC) CTS Project for application.



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Contact Us - via email or online

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EastCentralTransit.com





It is our mission to promote good mental health for all area persons by providing quality programs and services, delivered with professional integrity, based on client needs.



Julie Hanenburg, MSW, LICSW
Executive Director



RaeAnn Hagen, MSW, LICSW
Day Treatment Program Director



Jessica Peterson, BA
Day Treatment Program
Coordinator

WHAT IS LIGHTHOUSE CHILD AND FAMILY SERVICES?

Providing quality mental health services in the communities we serve with passion, healthy communication and respect.

- DC:0-5 Diagnostic Assessment for Young Children
- Child-Parent Psychotherapy (CPP)
- Play Therapy
- Day Treatment (DT)
- Individual Therapy
- Family Therapy
- Couples Therapy and Marriage Counseling
- School-Linked Behavioral Health (SLBH)
- Eye Movement Desensitization Reprocessing (EMDR)
- Intensive Outpatient Dialectical Behavior Therapy (DBT)
- Trauma-Focused Cognitive Behavioral Therapy (TF-CBT)
- Adult Rehabilitative Mental Health Service (ARMHS)
- Community Support Programs (CSP)

Each of us has a light within, so let it shine!



SERVING CLIENTS LIVING IN CHISAGO, ISANTI, KANABEC, MILLE LACS & PINE COUNTIES

OFFICES LOCATED IN:

- Milaca for Outpatient Services
- Cambridge for Outpatient Services
- Princeton for Day Treatment for children 3-12 years
- St Cloud for Day Treatment for children 3-6 years

Both Day Treatment programs are receiving referrals from an increasing variety of counties due to the specialized nature of service including clients living in: Wright, Anoka, Sherburne, Stearns, Benton and Morrison



LIGHTHOUSE CHILD AND FAMILY SERVICES HAS GROWING TRANSPORTATION NEEDS

Why?

- Expanding service area with additional locations
- Expanding Day Treatment programs that include year-round services
- Increasing referrals from a variety of areas for specialty services



TRANSPORTATION HAS BECOME INCREASINGLY DIFFICULT FOR CLIENTS GETTING TO/FROM THEIR APPOINTMENTS

Why?

- School transportation varies within each district and offers no summer transportation
- Limited or No transportation providers are available for Non-Emergency Medical Transportation/taxi in the area
- Inconsistent insurance coverage to schedule/pay
- About 30% of referrals are denied due to no transportation



WHY DID LIGHTHOUSE APPLY FOR THIS GRANT?

Opportunity Meets!

- Needs/opportunity/community demographics lined up with the application for ESMC Program criteria
- Partnered with ECRDC
- Common goal in increasing sustainable transportation to rural communities





Jessica Peterson, BA

Day Treatment Program

Coordinator

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Improving Transit for Young, Old, and Everyone in East Central Minnesota

An ESMC Project

Presenters

Frank Douma

Alireza Khani



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MN Legislation that Launched ESMC

House Bill 2499/Senate Bill 2650

“...to provide support and technical assistance to small communities on infrastructure project analysis and development...including...consideration of sustainability, resiliency, and adaptation to the impacts of climate change; and...efficiencies through coordinated investments in other infrastructure or assets.”



Minnesota State Legislature

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Our vision: To assist small Minnesota communities develop resilient infrastructure and strengthen their social, environmental, and economic fabric.



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Our goal: To work with small Minnesota communities on efforts that add value to the community and get more benefit from local and state investments.

Add capacity to support small communities in pursuit of their goals.

Support development of projects that could be competitive for a wide range of future funding.



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Goals for this project

- Articulate the key transit needs in the area, noting in particular those related to youth transportation and non-emergency medical trips, as data reveals
- Note key legal and policy constraints currently operating to create these gaps
- Note areas where data is still needed to enhance current service plans in an effort to close transportation gaps
- Provide suggestions for addressing some of these needs, including identifying potential funding sources, if appropriate.

Research Team



Frank Douma
Researcher

Humphrey School
of Public Affairs

Transportation
Planning



Alireza Khani
Associate Professor

Civil, Environmental
and Geo-Engineering

Transportation
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Michael Darger
Community
Economics
Specialist

Extension
Community
Engagement



Kwangho Baek
Research Assistant

Civil, Environmental
and Geo-Engineering

Transportation
Engineering



Ted Jessup
Research Assistant

Humphrey School of
Public Affairs

Urban and Regional
Planning

** Previous team members: Sahas Sok (transit agency service area data collection), Andrea Brewe (city/town pairs travel time data collection)*

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Additional ESMC Contact / Support



Molly Zins
Executive Director
Central Regional Sustainable
Development Partnership
Extension



Constance Carlson
Assistant Statewide Director
Regional Sustainable
Development Partnerships
Extension

Introduction of Transit Services in ECRDC

- **Arrowhead Transit** (General Transit)
- **Timber Trails** (General Transit)
- **Tri-CAP** (General Transit)
- **SchuTran** (Medical)
- **Stark Transport** (Medical)
- **Jefferson Lines** (Intercity Bus)



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Three Types of General Transit Services in the Area



Demand-Responsive Transit (DRT)

- Accommodates **any origin and destination** (curb-to-curb) within the service area
- **Timetable-free** pickup/drop-offs at any time during business hours



Route Deviation

- **Fixed route**, but with a **deviation for flexible** pickups/drop-offs
- **Timetable-based** operation

➔
Example Route (Isanti County)



Hybrid Service

- Same as the route deviation but...
- **Flexible dispatch (semi-timetable-based)** during operation hours

Braham Express

Morning Run:

- 6:00 AM – Depart Cambridge
- 6:20 AM – Arrive Braham
- 6:40 AM – Arrive Stanchfield
- 6:55 AM – Arrive Grandy
- 7:15 AM – Return to Cambridge

Middy Run:

- 12:00 PM – Depart Cambridge
- 12:20 PM – Arrive Braham
- 12:40 PM – Arrive Stanchfield
- 12:55 PM – Arrive Grandy
- 1:15 PM – Return to Cambridge

Afternoon Run:

- 4:00 PM – Depart Cambridge
- 4:15 PM – Arrive Grandy
- 4:30 PM – Arrive Stanchfield
- 4:45 PM – Arrive Braham
- 5:30 PM – Return to Cambridge

Source: Arrowhead Transit

All pick-up and drop-off **arrangements** are **reservation-based**



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Transit Service Area Map

(Arrowhead, Tri-Cap, Timber Trails)

DRT Services (5 total)

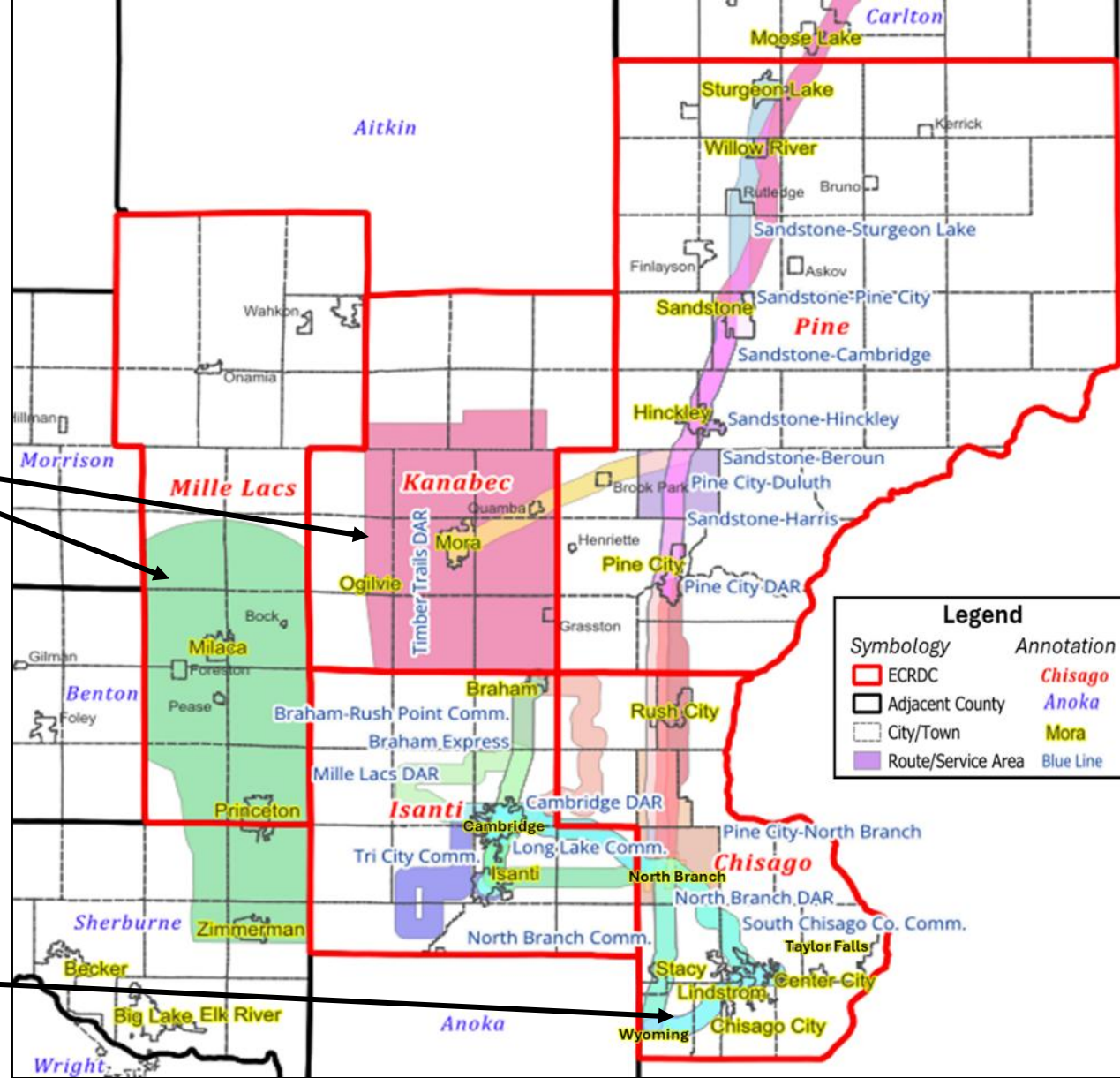
- **Within-city:** Pine City, Cambridge, North Branch
- **County-wide:** Mille Lacs County *DAR*, Kanabec County's *Timber Trails DAR* (with some service area addition/restriction)

Route Deviation Services (18 total)

- Pine City-based (Pine County)
- Sandstone-based (Pine County)
- Cambridge-based (Isanti County)
- North Branch-based (Chisago County)
- Two Saturday routes between/in Isanti-Chisago Counties

Hybrid Service (1 total)

- Only one instance: *Chisago Lake's Commuter Route*



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Executive Summary of the Qualitative Findings

- **Key Gaps Identified:** Residents face major access barriers to St. Cloud, Duluth, the Twin Cities, and regional hubs like Pine City and Princeton, especially for food access, medical, and educational needs.
- **Evening and Weekend Gaps:** Services are mostly unavailable outside weekday business hours, limiting access for shift workers and weekends.
- **Volunteer Driver Strain:** Vital but unsustainable due to low reimbursement, driver shortages, aging volunteers, and lack of oversight and accountability for poor driver behavior.
- **Service Awareness is Low:** Many residents are unaware of existing options; digital only outreach misses seniors and low-connectivity households.

Description of the Focus Group Research Process

- Participants recruited by ECRDC and Lighthouse agencies
- UMN researchers facilitated discussions among the participants using question sets (slides below).
- Meetings were recorded and the transcripts analyzed.
- Groups 1-3 participants (riders) received \$75 VISA gift cards as a nominal consideration for their time. Groups 4-6 participants participated as professionals.
- Used methods developed by Richard Krueger, et al for qualitative research.



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Description of the Focus Group Research Process (6 groups)

- (1) **People who cannot drive.** Non-emergency medical and other transit-dependent riders / stakeholders / people who arrange rides. This includes Lighthouse families (Mille Lacs), veterans and others. Focus Group 1 held October 21, 2024 in Milaca with 7 participants. Used methods developed by Richard Krueger, et al for qualitative research.
- (2) and (3) **Adult riders, or would-be riders. from Kanabec and Mille Lacs counties** (We think of these participants as those who choose or need transit for any kind of trip . Focus Group 3 was held in Mora on November 13, 2024 with 10 participants. Almost all were senior citizens. Focus Group 2 was held in Onamia on December 17, 2024 with 4 participants, including parents with young children at home.

Description of the Focus Group Research Process (6 groups)

- (4) and (5) **Two groups of "mixed stakeholders," which we could also define as "non-transit-provider partners."** Focus Group 5 was held in Mora on October 31, 2024 with 6 participants, representing agencies, employers, and nonprofit organizations who need their clients to get transportation. Focus Group 4 was held in Milaca on November 4, 2024. Several Mille Lacs County professionals and two others attended (7 participants).
- Group (6) gathered the **transit providers** themselves. Focus Group 6 was held on November 21, 2024 in Mora with about six participants.



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Focus Group Sites



East Central Regional
Development Commission
Mora



Rolf Olsen Center
Onamia



Mille Lacs County Community & Veterans Services
Milaca



Lighthouse Child & Family Services
Milaca

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Focus Group Research Questions – for riders, would-be riders, advocates, agencies, etc. (Groups 1-5)

1. What is that you like about this community? Why do you choose to live here?
2. How are transportation services here working for you/your clients?
 - a) Which times can you get rides? Weekdays, weeknights, weekends.
 - b) Which places can you get rides to?
 - c) Do you need to transfer to get there? If so, how many times?
 - d) Does this meet your needs? How does it meet your needs?
 - e) Are there other things you want to tell us?
3. How are transportation services here NOT working for you/your clients?
 - a) Which times can you NOT get rides? Weekdays, weeknights, weekends.
 - b) Which places can you NOT get rides to? Why not?
 - c) Are there are specific obstacles or barriers to meeting your transportation needs?
 - d) Are there other things you want to tell us?
4. What are your needs or desires for transportation services that are unfulfilled?
5. What advice or ideas would you provide to transportation service providers and planners in this area?

Focus Group Research Questions – Providers

1. Please describe the territory that your organization serves and which types of rides are provided. Especially as it relates to Kanabec and Mille Lacs Counties.
2. What transportation services does your organization do well? Note: we're talking about what is working; let's save what's NOT working for the next question.
 - a) At which times do you provide rides? Weekdays, weeknights, weekends?
 - b) Which places do you provide rides to?
 - c) Are transfers needed to get there? If so, how many transfers?
 - d) If you (or another provider) do not offer transfers, what are the obstacles? (e.g. insufficient demand, lack of resources, or difficulty from an operational perspective)
 - e) Does this meet user needs? How does it meet their needs?
 - f) Are there other things you want to tell us?

Focus Group Research Questions – Providers (Continued)

3. Are there transportation services that could be done better?
 - a) Better times of rides? Weekdays, weeknights, weekends?
 - b) More places you could provide rides to?
 - c) How would this better meet user needs?
 - d) Are there other things you want to tell us?
4. Could your organization meet these unfulfilled needs or opportunities if you had the appropriate resources? What are the resources (money, infrastructure, technology, policy, other)?
5. If not your organization, which entity could fill the unfulfilled needs or opportunities?
6. Are you aware of any inter-agency collaborations in the past or now? What was the collaboration trying to accomplish? (e.g. provide transfer, synchronizing schedule, etc.). Was it successful? Why and why not?
7. What advice or ideas would you provide to planners and government officials at whatever levels (county, regional, city, state, federal)?

Medical vs Non-Medical

- Disparity between availability and accessibility of medical rides and non-medical
- Medical trips benefit from:
 - more flexible services and range limits
 - expanded time frames
 - subsidized cost structures
- Individuals who use medical rides also often struggle with food security, but medical rides do not technically allow stops at grocery stores as part of their services
- Participants shared desires that:
 - Medical rides allow for additional stops
 - Non-medical rides expand to match medical service areas

“Some of us plan our appointments just so we can get into town and pick up food.”

“Sometimes the driver will stop at the store after a medical ride, but only if they’ve got nothing after you. That’s just them being kind.”

Geographic Disparities

- North-South services are well-used
 - Milaca to Princeton
 - Mora to Cambridge
- Some residents live just outside of city limit service areas, which participants reported as feeling arbitrary
- East-West routes are a critical service gap in the region
 - Milaca to St. Cloud
 - Mora to Pine City / Hinckley
- Northern Mille Lacs County is a transportation desert in the region
 - Food and medical access is a severe concern for residents

“I’m a five-minute walk from town and I can’t get picked up because of the line.”

“If you could just get to Pine [City], you’d be golden - you’ve got Jefferson, you’ve got the cities.”

“If you’re in Onamia, you’re out of luck. There’s no bus, no nothing.”

“We need a bus bad. Just any bus - even once or twice a month - just to get groceries even.”

Service Time Limitations

- Current hours of operation for non-medical rides exclude:
 - Second-shift workers
 - Night-shift workers
 - Part-time workers
- Limited service hours prevent access to social and recreational activities
 - Contributes to isolation and decreased quality of life for transit-dependent residents

“If you work past 5, you’re on your own. And forget weekends.”

“You can’t get a ride in the evening or weekend. So if your car’s down, that’s it. You’re stuck.”

Volunteer Driver Programs

- Volunteer Driver Programs are essential to the regional transportation infrastructure
- Most riders and providers spoke highly of both the services and the individual drivers
- Some concerns around driver misconduct and accountability were raised
- Future security of the program was questioned in discussions of an aging volunteer base and decreased volunteerism
- Recommendations for increased accessibility and training were made by several participants

“They waited until I got inside my appointment, every time.”

“We had a guy who just didn’t show. I missed my doctor’s appointment because of it.”

“He yelled at me for being late, but he showed up early.”

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Operational Inefficiencies

- Service providers face operational challenges as a result of rural, multi-county service area
 - Unloaded miles (deadheading)
 - vehicle travel without passengers
 - Technological differences between providers for scheduling and payments
 - Limited communication between providers
- Participants consistently shared that they did not know of any transfer services between providers that would allow for multi-county transportation

“We drive 20 minutes to get someone and 20 back with an empty van. It’s not sustainable.”

“They go way out, pick up one person, then deadhead home. That’s gas and time wasted.”

Innovations Proposed From Focus Groups

- Development of mobility hubs, vehicle-sharing programs, and subsidized ride-sharing programs
- Shared pick-up hubs across county boundaries could reduce “deadheading”
- Ride-matching services based on rider input and destination requests
- Enhanced outreach through a variety of mediums

"If we had a central location for pickups, even if the bus only came a few times a month, people would use it. We just don't have any options right now."

"We need something like a website where you put in what you need, and someone who can help sees it and can make it happen."

Executive Summary of the Quantitative Findings

1. Transit Service Availability

- Uneven ride opportunities were found; limited in rural areas, frequent in regional centers
- Compared the availability to show a lack of flexible service hours (e.g., evening rides)

2. Transit Coverage

- Assessed accessibility from county centers by measuring within-county and regional connectivity

3. Transit Service Directionality

- Quantified the transit network's strong north-south orientation

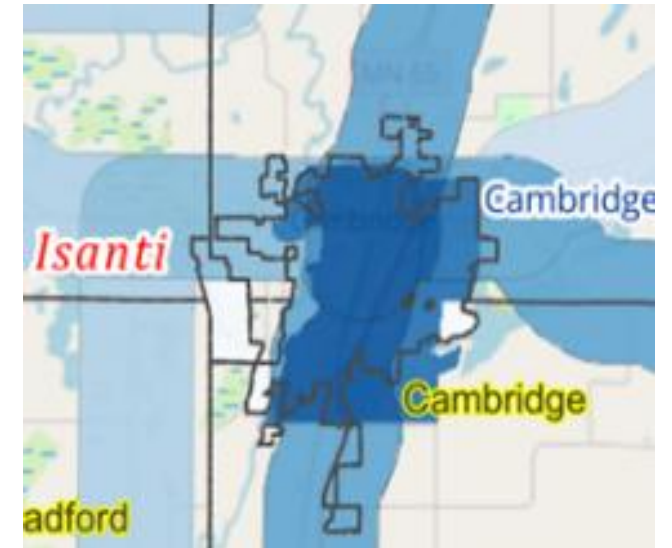
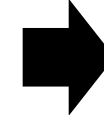
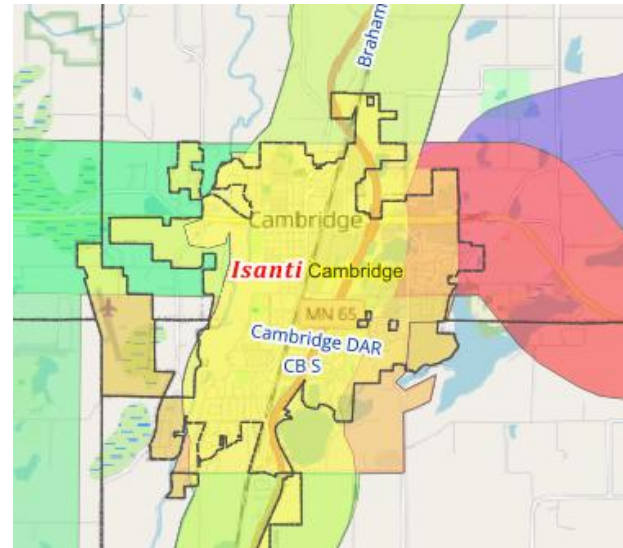
4. Transit Gap (Potential Travel Demand vs. Current Transit Infrastructure)

- Gaps were identified, especially for high-potential cross-county pairs (e.g., Cambridge-Princeton)
- Existing services' expansion or transfer facilitation can be more effective than service frequency increases

1. Transit Service Availability

- For each route, the practical **number of trips per day** is retrieved from **timetables** if available*
- **Assigned** the estimated number of trips and service times **to the service area polygons** we digitized
- **Overlaid the polygons** to estimate each point's transit availability (trips/day) **by different times of day**

Route Name	Service Type	From	To	Trips /Day
Cam. DAR	DRT	7 AM	6 PM	22
Braham Exp.	RD	8 AM	4 PM	3
B-RP Comm.	RD	8 AM	2 PM	2
PB-G Comm.	RD	8 AM	4 PM	2
Long Lk. Comm.	RD	8 AM	4 PM	2



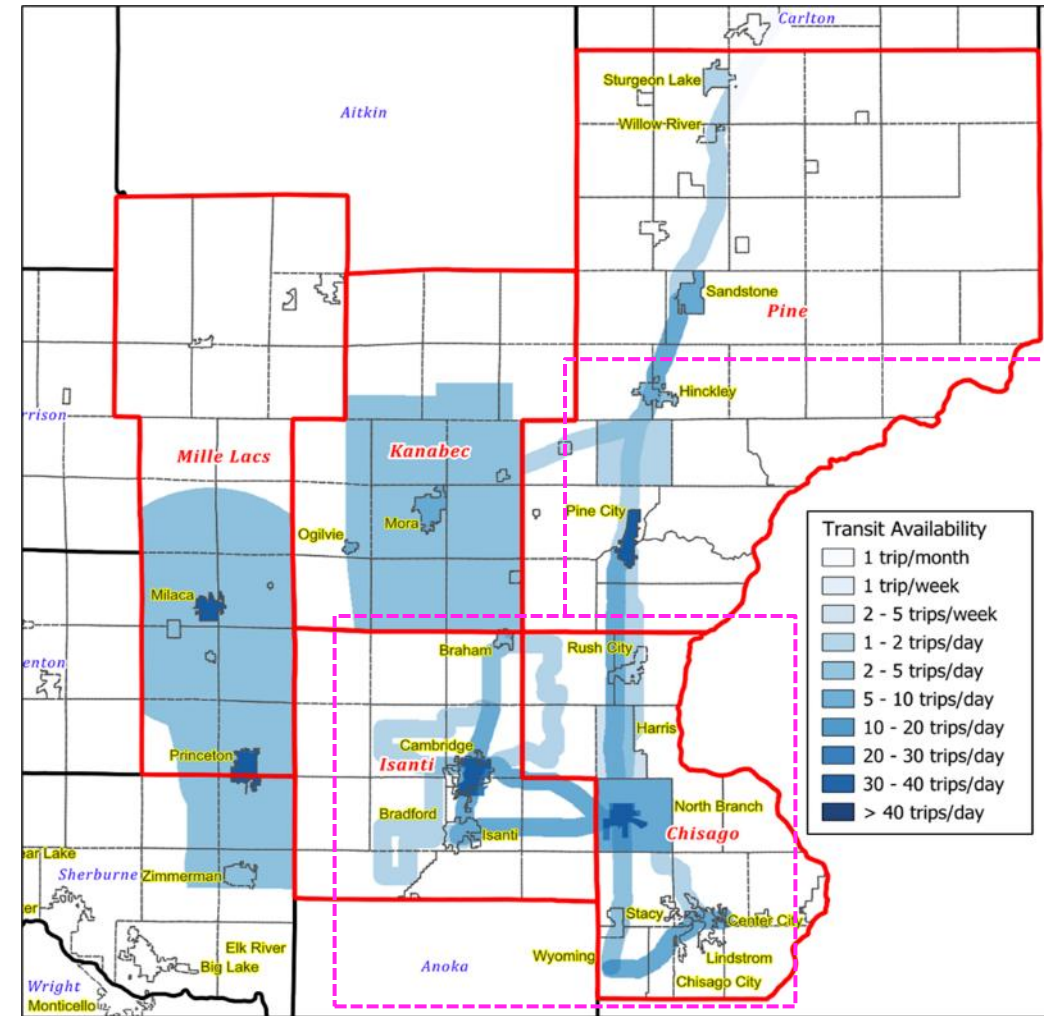
Collected Hours Info and Estimated Trips/day

Service Areas Digitized

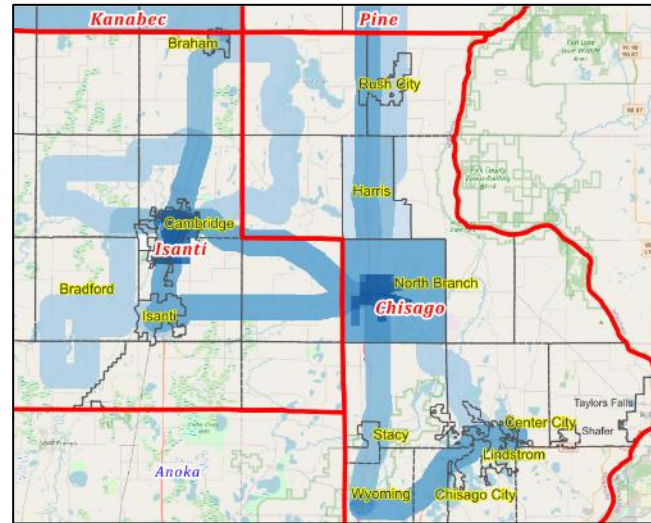
Availability Computation by Overlaying

(Note: If timetable is not available (i.e., for DRT services), used the answers from the following question asked to the providers: "If two trips are requested with the same origin-destination but different departure times, how much time difference between the two would you require in order to dispatch two different vehicles (trips)?")

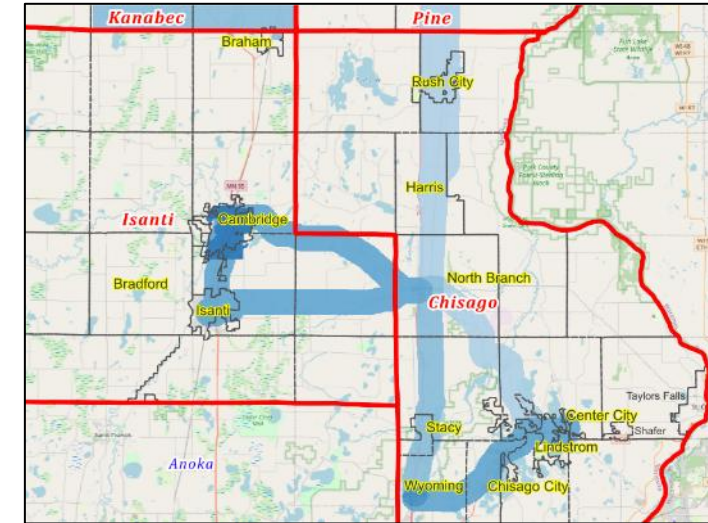
1. Transit Service Availability



All Routes



Routes After 5 PM



The result supports some of the focus group interview findings

- Rural areas often have limited daily or only monthly services
- Regional centers enjoy practical transit access with over 40 daily trips
- Discrepancies in day-of-week and time-of-day service coverages

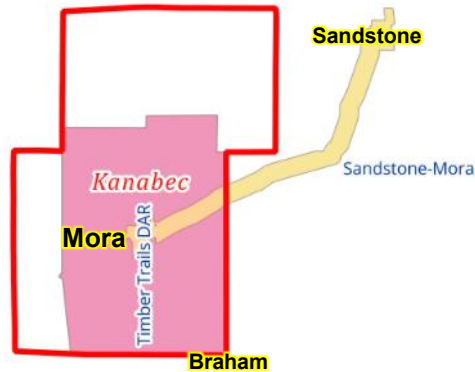
2. Transit Coverage

We measured from the five **county seat cities and North Branch**, the following **transit coverage**:

- **Within-County Coverage**: Count and percentage of subdivisions (city/town) with direct transit access.
- **Regional Coverage**: Number of all subdivisions accessible via direct or one-transfer transit.
- **Intercity Service Connectivity**: # of transit transfers needed to reach intercity routes (available in the report)

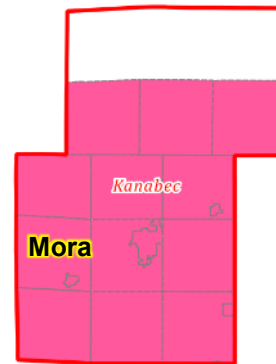
Coverage Computation Example (Kanabec County; Seat: Mora)

Input: Mora's Transit Service Area (2 routes)



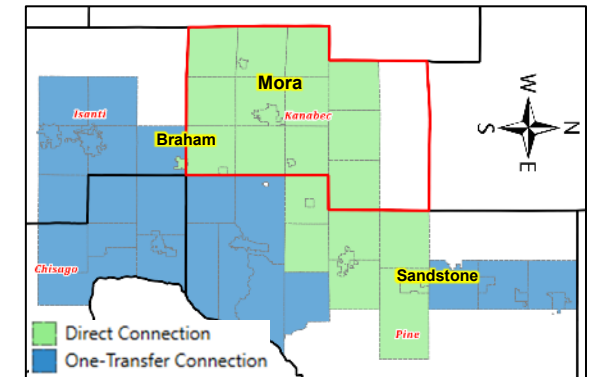
Two transit routes are serving from the county government in Mora

Result 1: Within-county Coverage



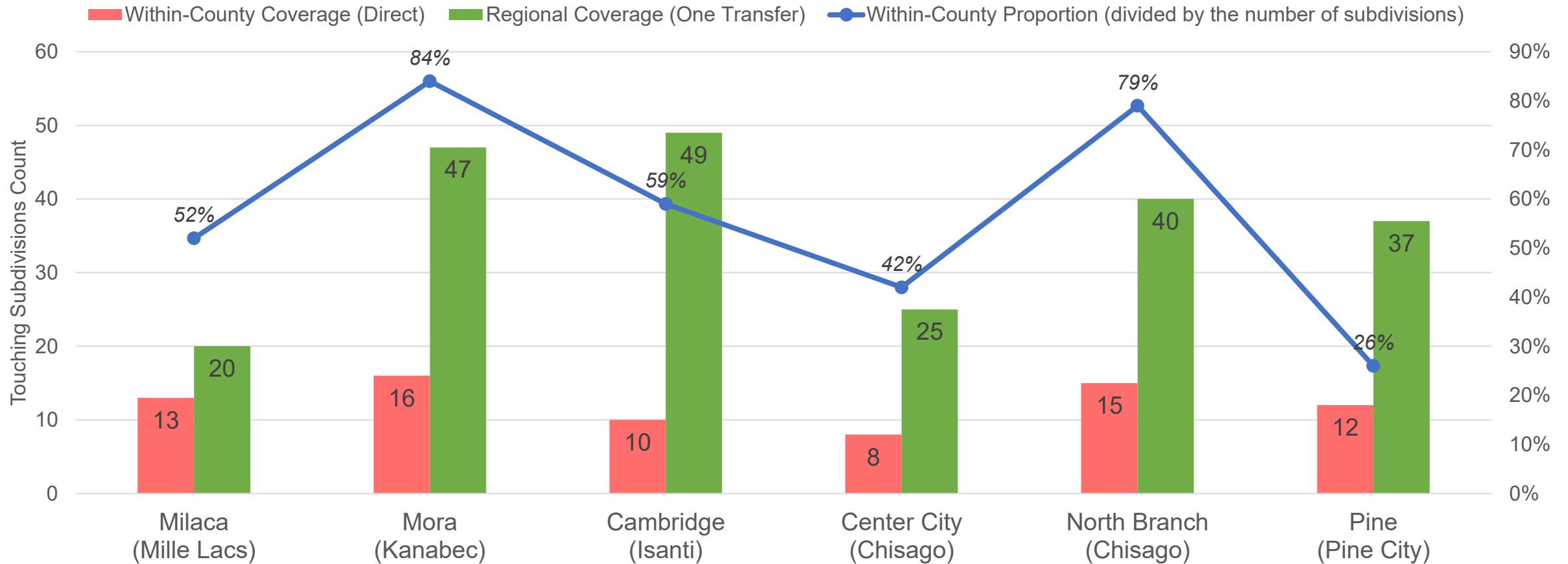
The two routes touch 16 out of 19 (84%) subdivisions in Kanabec Co.

Result 2: Regional Coverage



Including out-of-county areas, they touch 25 (direct) and 47 (when transferred) subdivisions

2. Transit Coverage



(Note: Chisago County's government is located at Center City, but the most populous city is North Branch)

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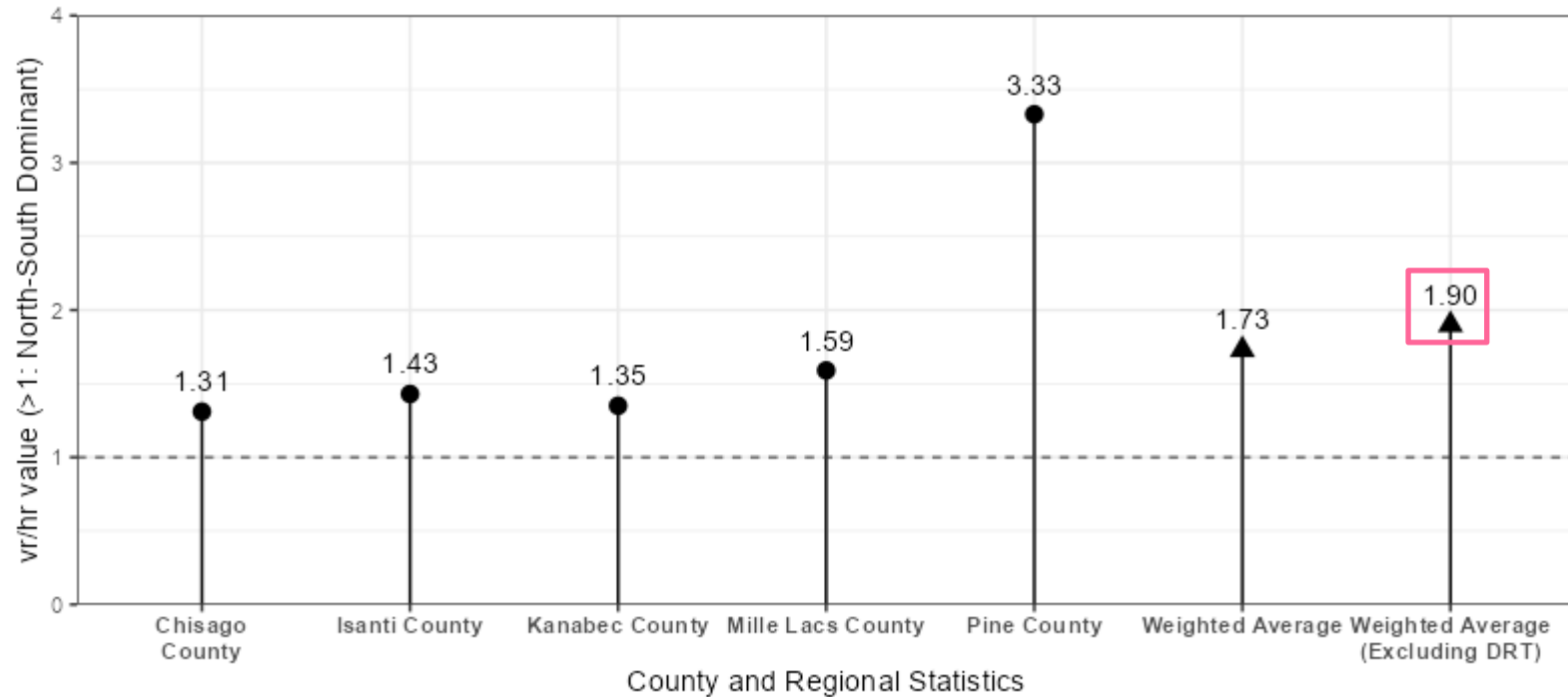


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3. Transit Service Directionality (a support of the focus group interview)

Measured the North-South (v_r) vs. East-West (h_r) transit directionality imbalance

- Enumerated all highway segments in a service area, then decomposed each to horizontal (East-West) and vertical (North-South) components.
- Multiplied Transit Service Availability (trips/day) for each route r for both components to get v_r, h_r .
- Get statistics by county/regional levels.
- **More vertical connection:** points **located above the dashed line** ($v_r/h_r > 1$).



- The result clearly shows the **dominance of north-south transit movement (above the dash)** in terms of the weighted mileage
- The aggregated v_r/h_r shows **nearly double (at 1.9) north-south connection compared to that of east-west**

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4. Transit Gap

Applying the Trip Distribution Theory (Gravity Model)

“The **number of trips between two places** (origin-destination) grows with the **size of their populations** (bigger cities send and attract more travelers) and **shrinks as the (typical) travel time** between them increases...



Travel Demand Index × Transit Impedance (# of transit transfers required) = Transit Gap

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4. Transit Gap

(↙)Gap Rank (↗)	Sandstone	Pine City	North Branch	Lindstrom -Ctr. City	Cambridge	Braham	Mora	Milaca	Princeton
Sandstone		30	25	23	18	29	31	14	13
Pine City	1.67		35	27	21	17	26	10	9
North Branch	4.08	0.60		28	32	24	15	5	2
Lindstrom -Ctr. City	4.88	3.72	2.41		20	22	16	11	7
Cambridge	6.99	4.93	1.16	5.61		34	19	3	1
Braham	1.73	7.32	4.56	4.90	0.72		36	12	8
Mora	1.39	3.92	9.86	9.18	5.61	0.25		4	6
Milaca	10.60	12.60	20.80	12.05	23.80	11.65	22.45		33
Princeton	11.35	14.75	27.70	18.00	32.65	14.75	20.45	0.78	

Values in the lower left triangle:

- **Transit Gap**: the pairwise multiplication of the demand index and the practical # of transfers
- **The higher, the more significant** the gap: a high number indicates that the **current transit supply is insufficient** for the **given demand**

Values in the upper right triangle:

- The **rank of the transit gap**

*(Note: key cities' 15*15-sized matrix is available in the report)*




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4. Transit Gap

 City pairs with an existing direct transit connection are ranked low, even when the high demand is considered

Mille Lacs Co.

(↙)Gap Rank (↗)	Sandstone	Pine City	North Branch	Lindstrom -Ctr. City	Cambridge	Braham	Mora	Milaca	Princeton
Sandstone		30	25	23	18	29	31	14	13
Pine City	1.67		35	27	21	17	26	10	9
North Branch	4.08	0.60		28	32	24	15	5	2
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Values in the lower left cells:

- Transit Gap: the pairwise multiplication of demand index and the practical # of transfers
- The higher, the more significant the gap: a high number indicates that the current transit supply is insufficient for the given demand

Values in the upper right cells:

- The rank of the transit gap

Observations:

- Mille Lacs County needs inter-county transit
- Improvements on connection (expansion) should be prioritized than the ride quantity

(Note: key cities' 15*15-sized matrix is available in the report)

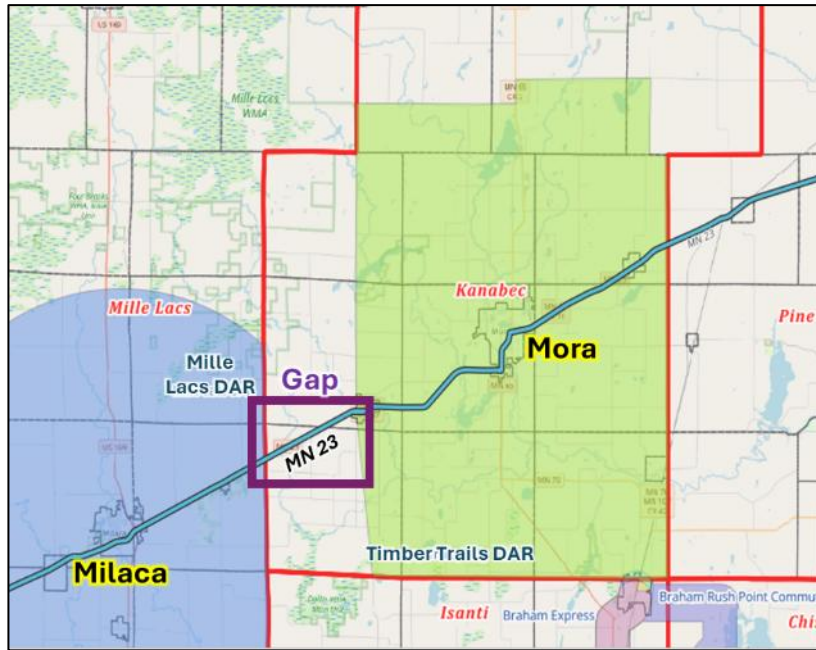


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Recommendations to Address the Identified Transit Gaps

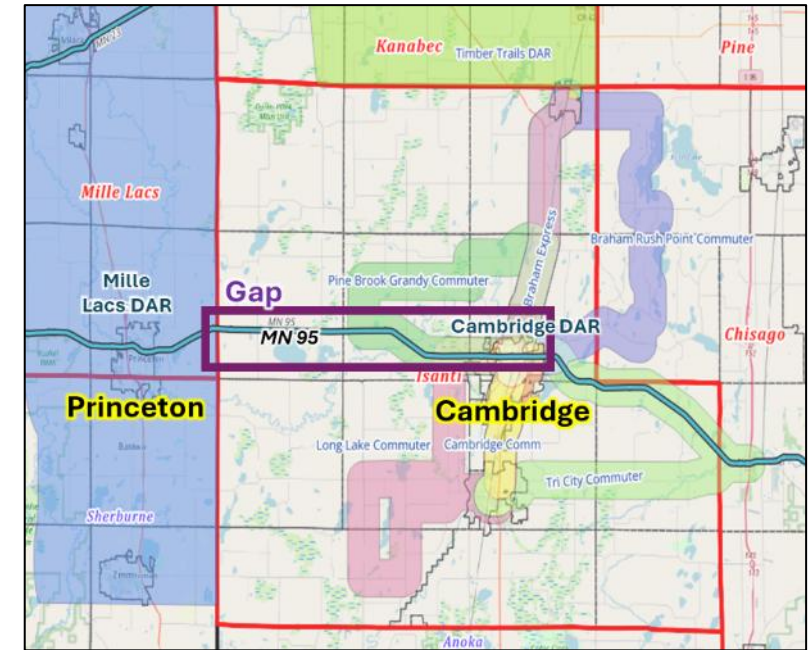
1. Milaca-Mora (new route or DRT expansion)

- **What:** 21-mile new route or 4.4-mile DRT expansion via MN 23
- **Gap:** Addresses the second-largest transit gap
- **How:** Connects Mille Lacs County to other transits
- **Implication:** Enhances East-West connections



2. Princeton-Cambridge (new route)

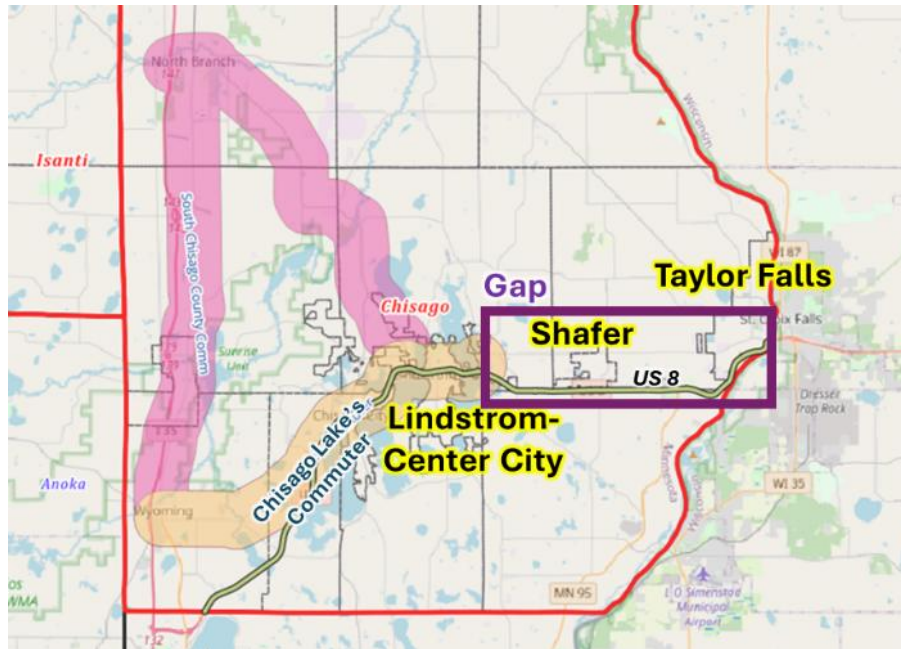
- **What:** 19-mile new route via MN 95
- **Gap:** Addresses the largest transit gap
- **How:** Connects Mille Lacs County to other transits
- **Implication:** Enhances East-West connections



Recommendations to Address the Identified Transit Gaps

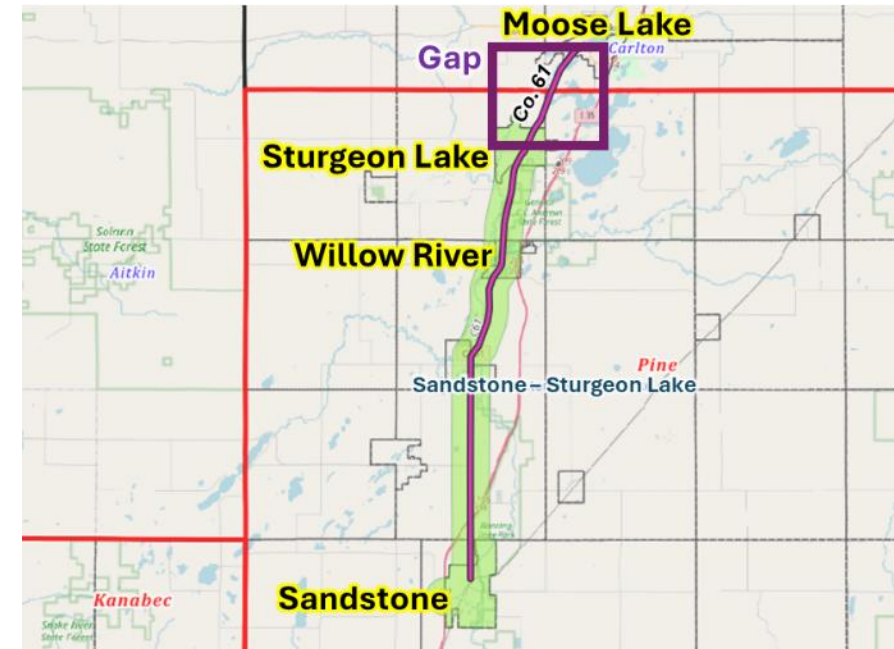
3. To Shafer and Taylor Falls (new route or extension)

- **What:** 9-mile new route or extension via US 8
- **How:** Connects Taylor Falls & Shafer to Chisago Lakes
- **Implication:** Addresses high demand and current service lack; enhances East-West connections



4. To Moose Lake (extension)

- **What:** Less than 7 miles extension from Sturgeon Lake
- **How:** Benefits Sturgeon Lake & Willow River by connecting to closer Moose Lake (than Sandstone)
- **Implication:** Moose Lake has a Jefferson Line Stop/DRT



Conclusions

- **Focus Group (Qualitative)**

- Some travel needs are not being met, esp. for non-medical trips
- Some needs are covered informally, which is not ideal

- **Transit Gap Analysis (Quantitative)**

- Review of current service areas reveals under- and unserved areas
- Analysis shows 4 immediate opportunities

Conclusions

- **Combined**
 - 4 immediate opportunities are only the beginning
 - Continued input from users, collaboration and creativity between stakeholders and providers will be needed to identify and implement additional solutions





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QUESTIONS?



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End of Presentation (Contacts)



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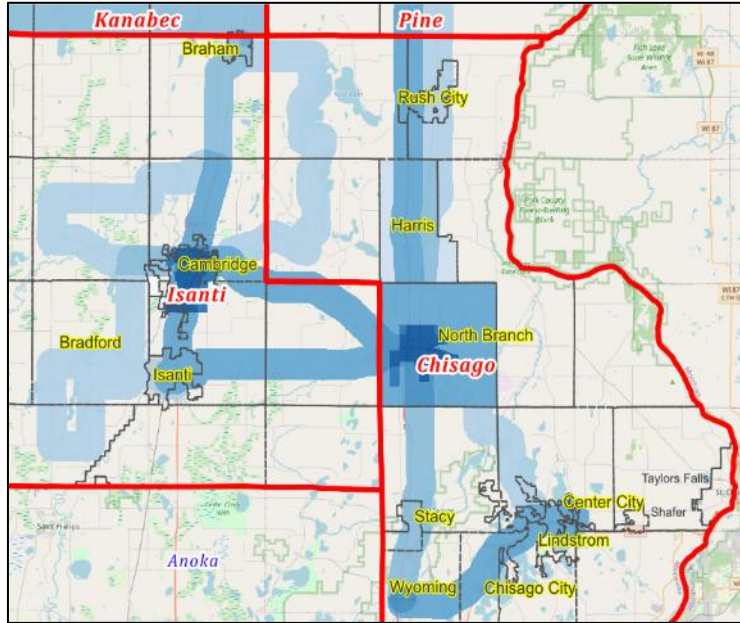
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Frank Douma: douma002@umn.edu

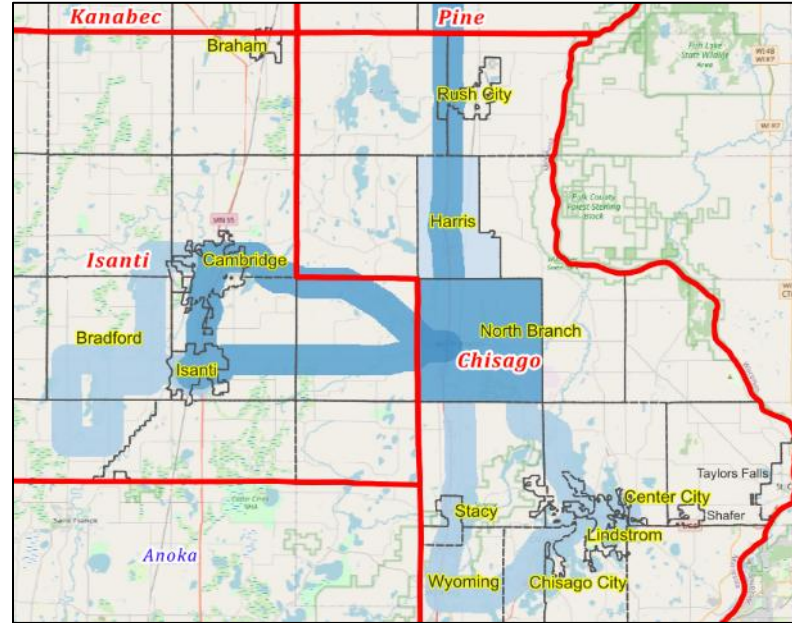
Alireza Khani: akhani@umn.edu

(Backup) Transit Service Availability: Time of Day

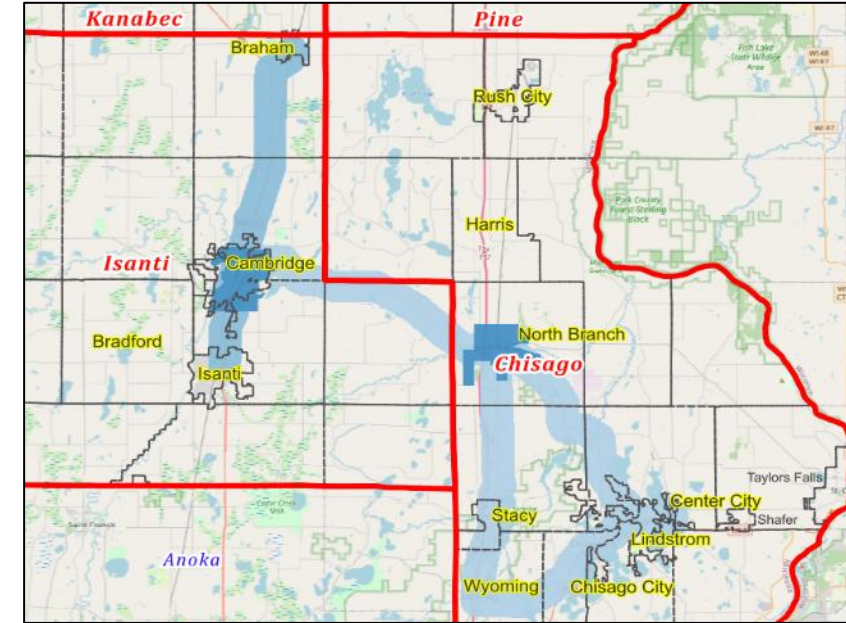
Weekday (All routes)



Weekday (before 7 AM)



Saturday

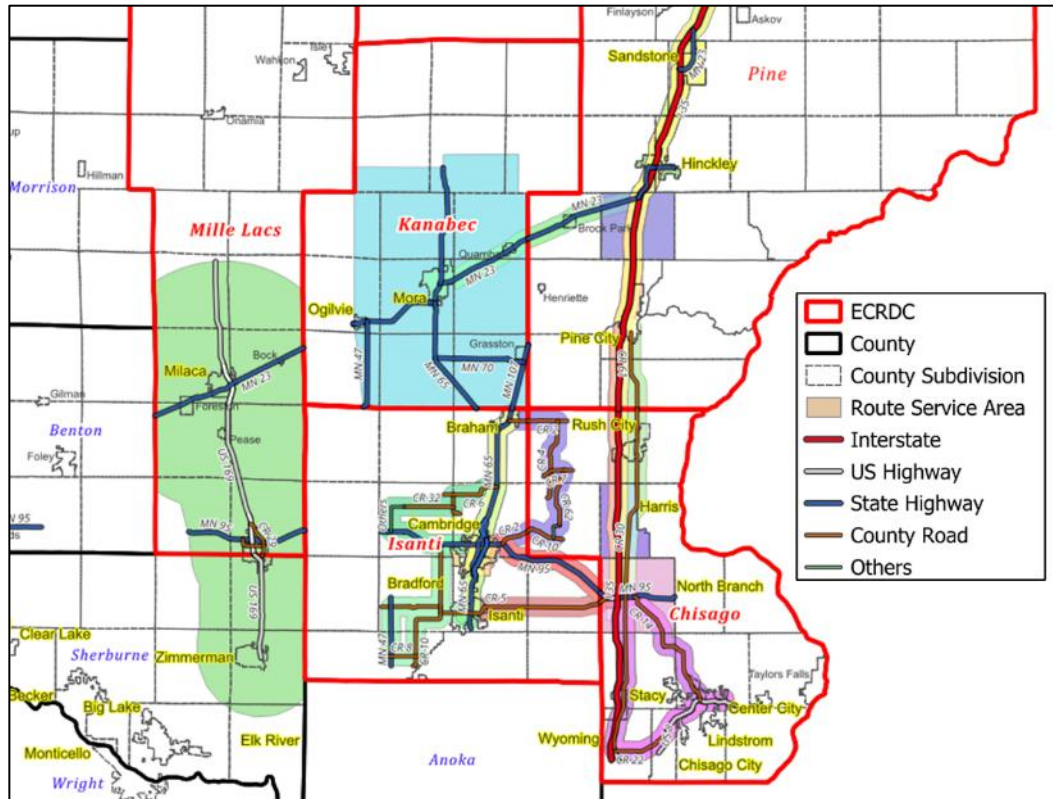


Key Findings

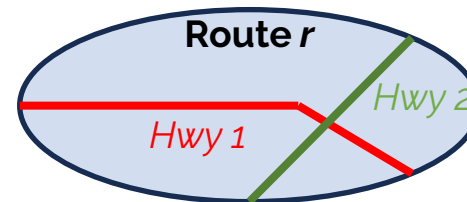
- Not only are the service areas shrinking, but also the number of available hours is decreasing for off-peak times
- This is a support for the focus group interview (“Service Time Limitation”)

(Backup) Directional Analysis Explanation

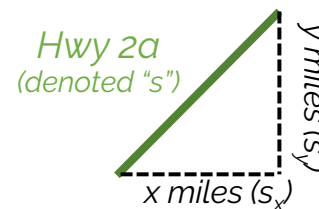
- Measured the East-West vs. North-South transit connection imbalance



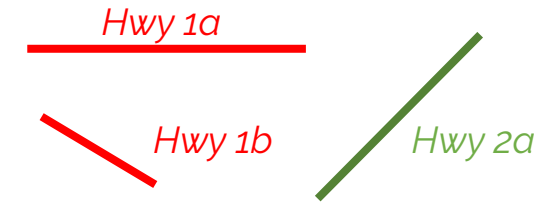
1. Find a route service area and highway paths within it



3. For each segment, measure horizontal/vertical mileages



2. Decompose the paths into multiple line segments



4. Sum all x, y distances and multiply by daily # of trips or n_r

$$h_r = n_r \sum_{s \in r} |s_x| ; v_r = n_r \sum_{s \in r} |s_y|$$

$$|s| = \sqrt{s_x^2 + s_y^2}$$

Then, we get h_r (horizontal movement of route r in miles) and v_r (vertical)

(Backup) Transit Gap Analysis: Intermediate Values

(↙)Supply Demand (↗)	Sandstone	Pine City	North Branch	Lindstrom -Ctr. City	Cambridge	Braham	Mora	Milaca	Princeton
Sandstone		3.83	4.28	2.44	3.58	1.73	3.47	2.12	2.27
Pine City	0.43		6.04	3.72	4.93	3.66	3.92	2.52	2.95
North Branch	0.95	0.10		7.24	8.15	4.56	4.93	4.16	5.54
Lindstrom -Ctr. City	2.00	1.00	0.33		5.61	2.45	3.06	2.41	3.6
Cambridge	1.95	1.00	0.14	1.00		5.74	5.61	4.76	6.53
Braham	1.00	2.00	1.00	2.00	0.13		3.95	2.33	2.95
Mora	0.40	1.00	2.00	3.00	1.00	0.06		4.49	4.09
Milaca	5.00	5.00	5.00	5.00	5.00	5.00	5.00		5.45
Princeton	5.00	5.00	5.00	5.00	5.00	5.00	5.00	0.14	

Values in the upper right cells:

- Travel demand index
- Introduced in the last page

Values in the lower left cells:

- Practical number of transfers required to fulfill the trip (less than 1: direct)
- Higher value: less current transit supply
- See our report for more details

Notable demand indices out of the matrix:

- Lindstrom-Shafer: 6.2
- Lindstrom-Taylor Falls: 5.0
- Ogilvie-Milaca: 2.5

- Cambridge to North Branch: 8.15
 - North Branch to Milaca: 4.15
- (Note: the difference 4 between the two indices represents $2^4=16$ times difference in potential travel demand; i.e., log-scaled)



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