

NCHRP 08-144

Rural Transit Fleet Mix and Vehicle Size Decision Tools

National Transportation in Indian Country Conference
August 29, 2024

Jeremy Mattson – North Dakota State University

Michia Casebier – M.G. Tech-Writing, LLC

David Kack – Montana State University

Agenda

- Purpose of the study
- Study findings to date
 - Previous research
 - Data analysis
 - Survey and interview findings
 - Main takeaways
- Future research efforts
- Roundtable discussion



Background

- Challenges in determining the proper mix of vehicle types and sizes
- Factors to consider: demand, passenger characteristics, types of trips, service area characteristics, trip patterns, driver availability, cost, etc.
- Limited funding
- Emerging issues: alternative fuels/electric vehicles, supply chain disruptions



Objective

The objective of this research is to develop a procedure or guide to help state DOTs and rural and tribal public transit providers decide what types of vehicles will best serve their communities.



Previous Research

- The Transit Capacity and Quality of Service Manual (TCQSM) states that capacity needs for demand response transit depends on:
 - Ridership demand
 - Peak-period demand
 - Passenger characteristics
 - Service area size
 - Service area characteristics
 - Trip pattern type
 - Service policies



Previous Research

- The Ohio DOT lists the following factors to consider when selecting the proper vehicle
 - Capacity needs/safety
 - Client needs/comfort
 - Purchase price
 - Type of service/environment
 - Operating and maintenance cost
 - Future needs
 - Regulatory requirements
 - ADA requirements
 - Ability to train or hire drivers with a CDL



Previous Research

- CTAA survey of state DOTs in 2022 found significant delays in vehicle delivery, price increases, and terminated bus contracts.
- As a result, vehicles may be in operation much longer than their intended useful life.

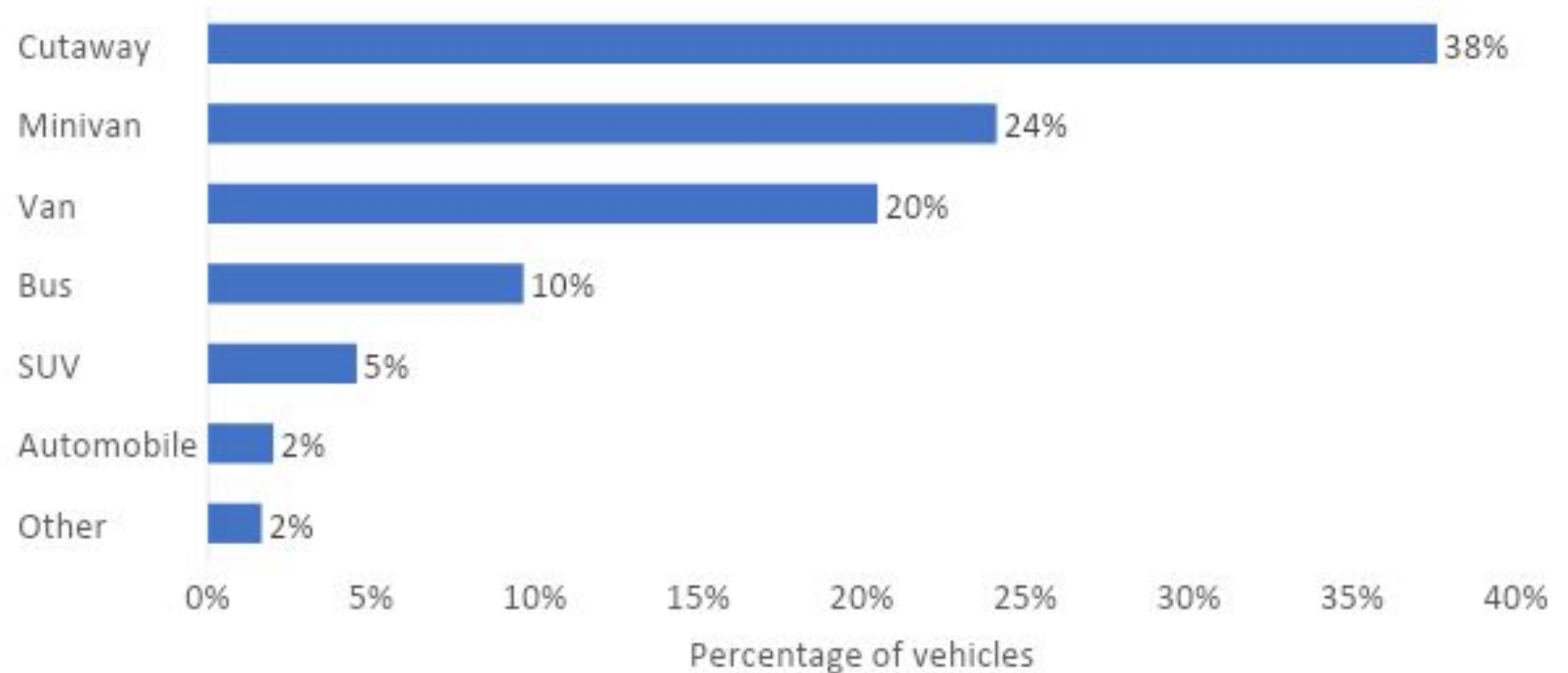


Data Analysis: Rural Transit Fleet Data

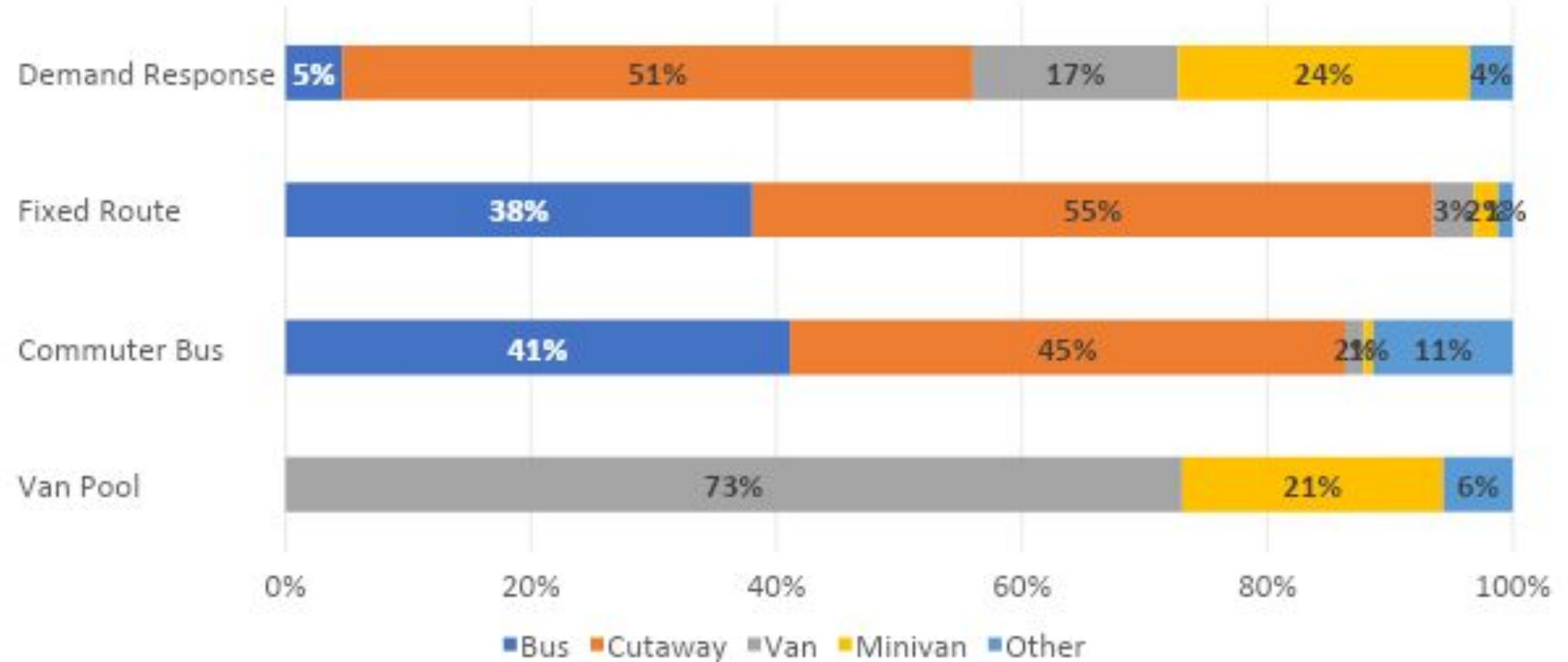
- Fleet composition
- Vehicle size
- State and tribal fleet statistics
- Fleet size
- Vehicle costs



Composition of Tribal Transit Vehicles



Fleet Composition by Mode

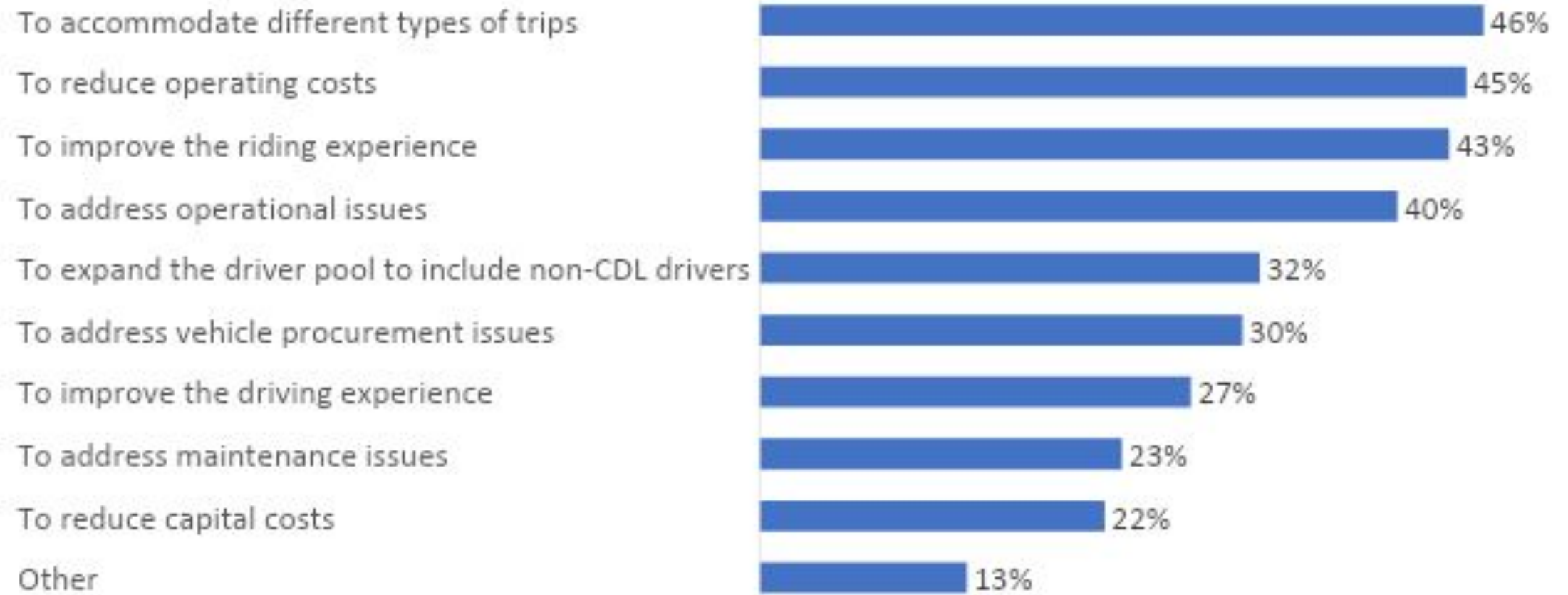


Survey of Transit Agencies

- Responses from 181 rural transit agencies in 39 states
- Asked questions about
 - Satisfaction with current fleet
 - Recent or anticipated fleet changes
 - Vehicle procurement decisions
 - Vehicle costs
 - Challenges
 - Procurement support

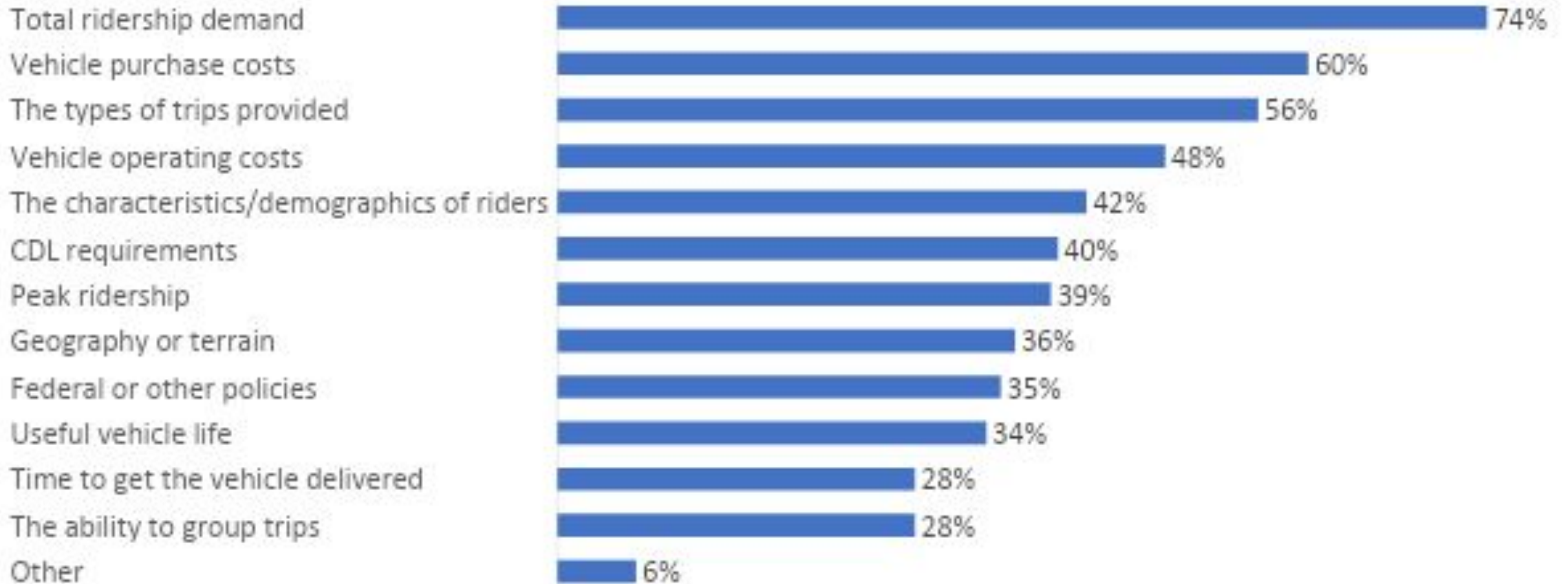


Reasons for Changing Fleet Configurations



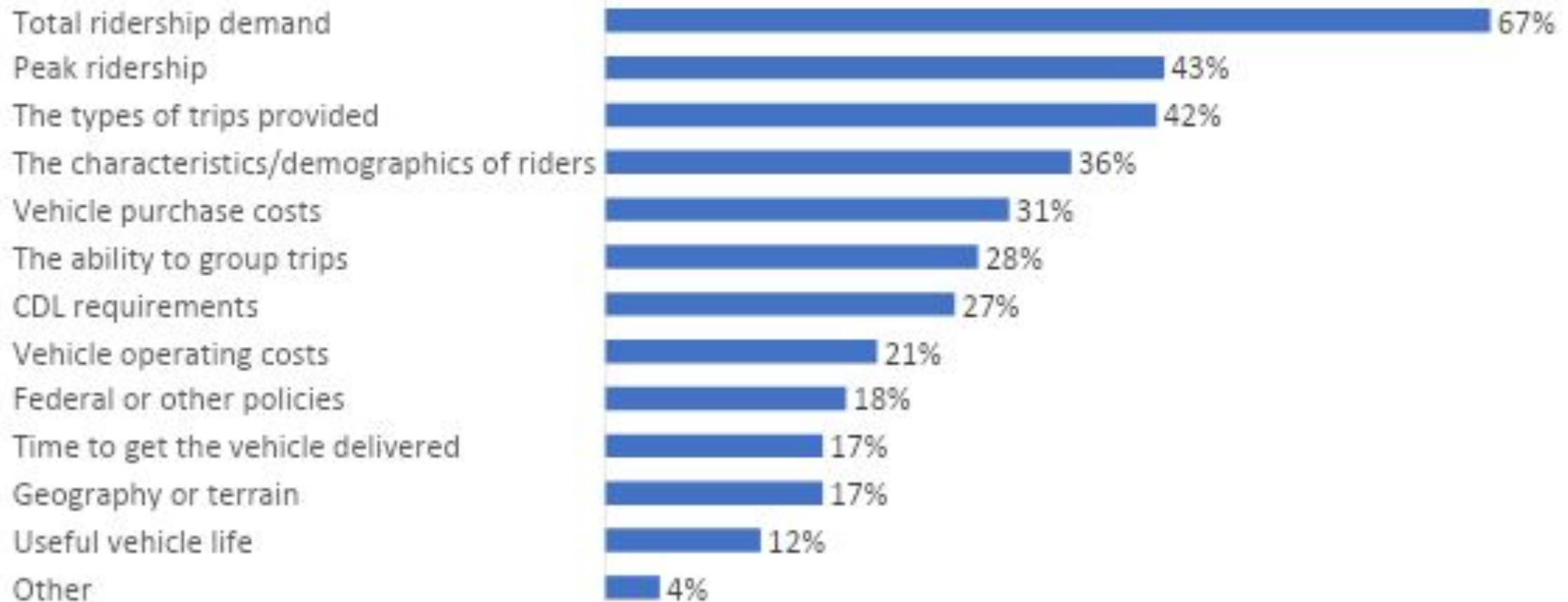
Factors Considered by Transit Agencies When Choosing Type of Vehicle to Purchase

Which factors do you consider when choosing the type of vehicle to purchase?



Factors Considered by Transit Agencies When Choosing Seating Capacity

Once you have chosen the type of vehicle, what factors do you consider when choosing the seating capacity?



Challenges

- Procuring the type of vehicles that are needed
- Long procurement times
- Keeping vehicles in service longer than desired
- Increased costs for maintaining older vehicles
- Hiring and retaining drivers
- Securing financial commitments from local sources
- State DOT limitations on types of vehicles available for purchase



Survey of State DOTs

- State DOTs ranked vehicle purchase costs as most important
- CDL requirements and geography/terrain are highly important for vehicle type.
- CDL requirements, characteristics of riders, and ridership demand are important for determining seating capacity.



Survey Conclusions

- Many factors play a role in determining the type and size of vehicle to purchase
 - Vehicle purchase costs
 - Availability of funding
 - Rider needs
 - Total ridership demand
 - Peak ridership
 - Operating costs
 - CDL requirements
 - Geography
 - Climate
 - Vehicle availability



Survey Conclusions

- Challenges place significant constraints on tribal and rural transit operators
 - Rising vehicle costs
 - Availability of funding
 - Availability of drivers
 - Long procurement times
 - Vehicle availability
 - Federal and state policies
- Many agencies are moving toward smaller vehicles that do not require a CDL to operate, and many are trying to right-size their fleet.



Next Steps

- Interviews
- Develop tools
- Case studies
- Final report/guidebook





INTERVIEWS

Questions

How do you decide what types and sizes of vehicles to procure? For example, how do you decide between a cutaway, van, or minivan, and how do you decide the seating capacity? What factors do you consider?

Are these factors driven more by aspirational goals; i.e., goals for your agency's future service or by successful vehicle procurement choices in the past?



Questions

Are you satisfied with your current vehicle fleet? Are the vehicles meeting your needs? If not, what changes would you make and why?

What vehicles work best for you?



Questions

What challenges do you face with regard to procuring or operating vehicles (examples could include long lead time, lack of vehicle options available, driver shortages, lack of CDL drivers, lack of local matching funds, federal or state policies, road conditions, travel distances, rider needs, etc.)?

Do you have any unique solutions or effective practices that you have used to address these challenges?



Questions

What are your trusted, go-to guidance resources?



Questions

How do federal public transportation and health care-related policies affect vehicle procurement decisions?

How challenging is it to secure local matching funds for new vehicles? How do you obtain those funds, and does a lack of funds affect your ability to procure the vehicles you need?



Questions

Do demographic changes in your area influence the types of vehicles that you purchase, either due to the needs of your riders or due to the changing demographics of your drivers?



Questions

What types of tools or information do you think would be helpful for making vehicle procurement decisions?



Jeremy Mattson –

jeremy.w.mattson@ndsu.edu

Michia Casebier – mgtecwtg@gmail.com

David Kack – dkack@montana.edu

Thank you!