

# Transportation and Health Care Use for Older Adults in Rural and Small Urban Areas

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# Overview

- Health care use in rural areas
- Modeling health care use
- Survey
- Estimated impacts of distance and transportation factors on use of health care



# Previous Research

- Health care utilization is lower in rural areas
  - Fewer physicians in rural areas
  - Differences in individual characteristics
  - Longer travel distances (Nemet and Bailey 2000, Arcury et al. 2005, ...)
- Transportation and health care
  - Those who can drive make more trips (Arcury et al. 2005)
  - Provision of NEMT has net societal benefits (Wallace et al. 2006)



# Modeling Health Care Use

- Health Behavior Model says use of health services is determined by:
  - Predisposition to use services
    - Demographic characteristics
    - Health beliefs
  - Enabling factors
    - Availability of services
    - Income
    - Health insurance
    - Regular source of care
    - Transportation
  - Need for care



# Survey

- Random mail survey
- Ages 60 or older
- Four states: North Dakota, South Dakota, Montana, Wyoming
- 543 responses, 20% response rate



# Survey Questions

- Number of health care trips taken over last year
  - Routine health checkups
  - Chronic care visits
  - Emergency care
- Number of health care trips missed or delayed over last year
- Distance to health care facilities
- Transportation options available
- Demographic characteristics
- Propensity to seek care
- Health status



# Demographics of Survey Respondents

- Age range: 60-95
- Median age: 70
- 53% female
- 64% married; 23% widowed; 13% divorced, separated, or never married
- Size of community
  - 32% metropolitan area (small urban)
  - 19% micropolitan area
  - 10% town 2,500-10,000
  - 39% rural (<2,500)



# Distances Traveled to Health Care Services

		Percentiles				
	Avg.	10th	25th	Median	75th	90th
	-----miles one way-----					
<b>Routine health checkups</b>	17	0.5	2	5	20	41
<b>Chronic health care visits</b>	42	1	2.5	9	55	120
<b>Emergency care</b>	17	0.5	2	5	22	43





# Transportation Characteristics

- Has driver's license and can drive
  - Age 60-69: 98%
  - Age 70-79: 94%
  - Age 80+: 86%

## Another member of household has current driver's license and can drive

Age	Men	Women
60-69	89%	73%
70-79	71%	52%
80+	61%	45%

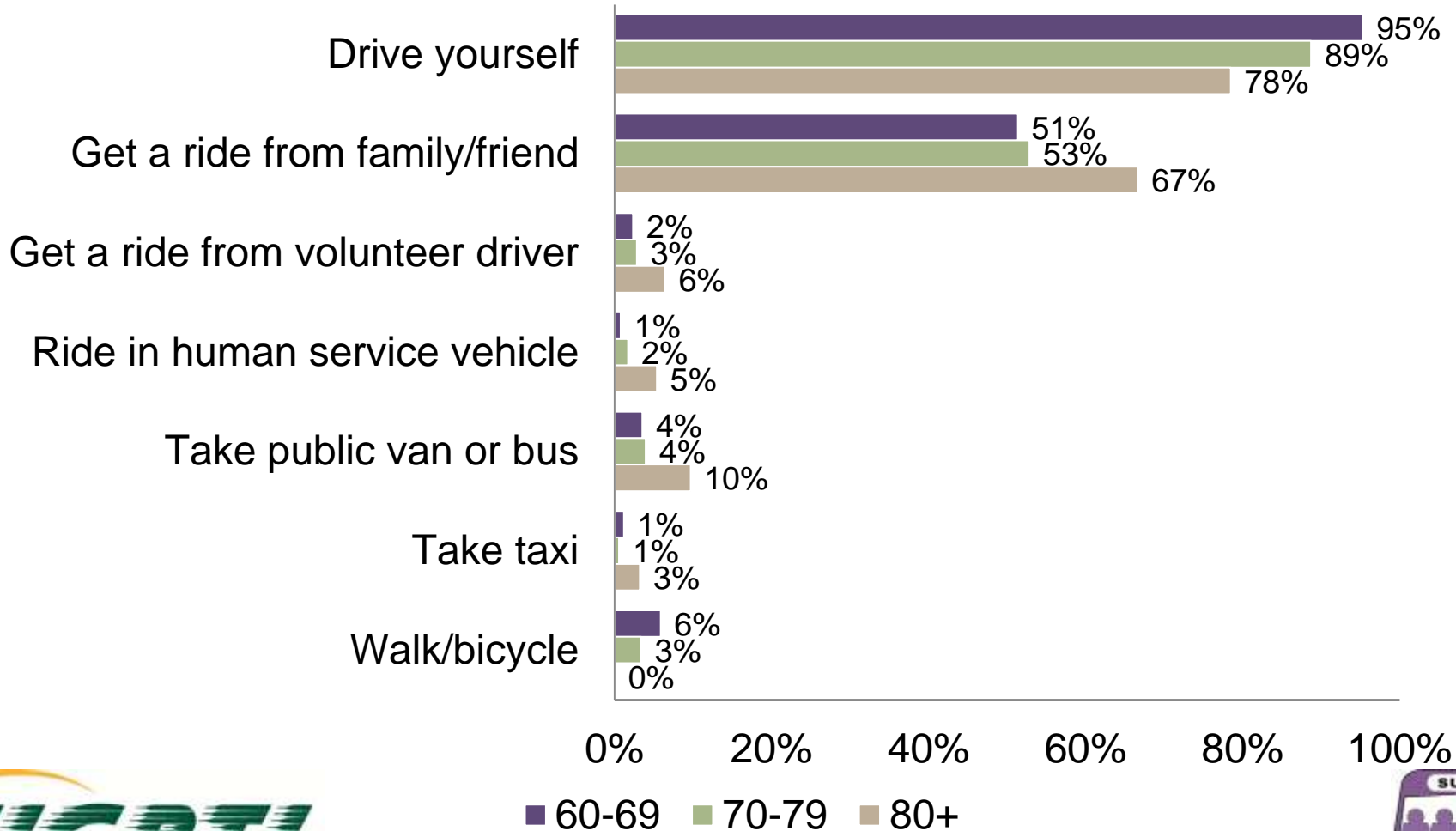


# Reported Access to Public Transportation

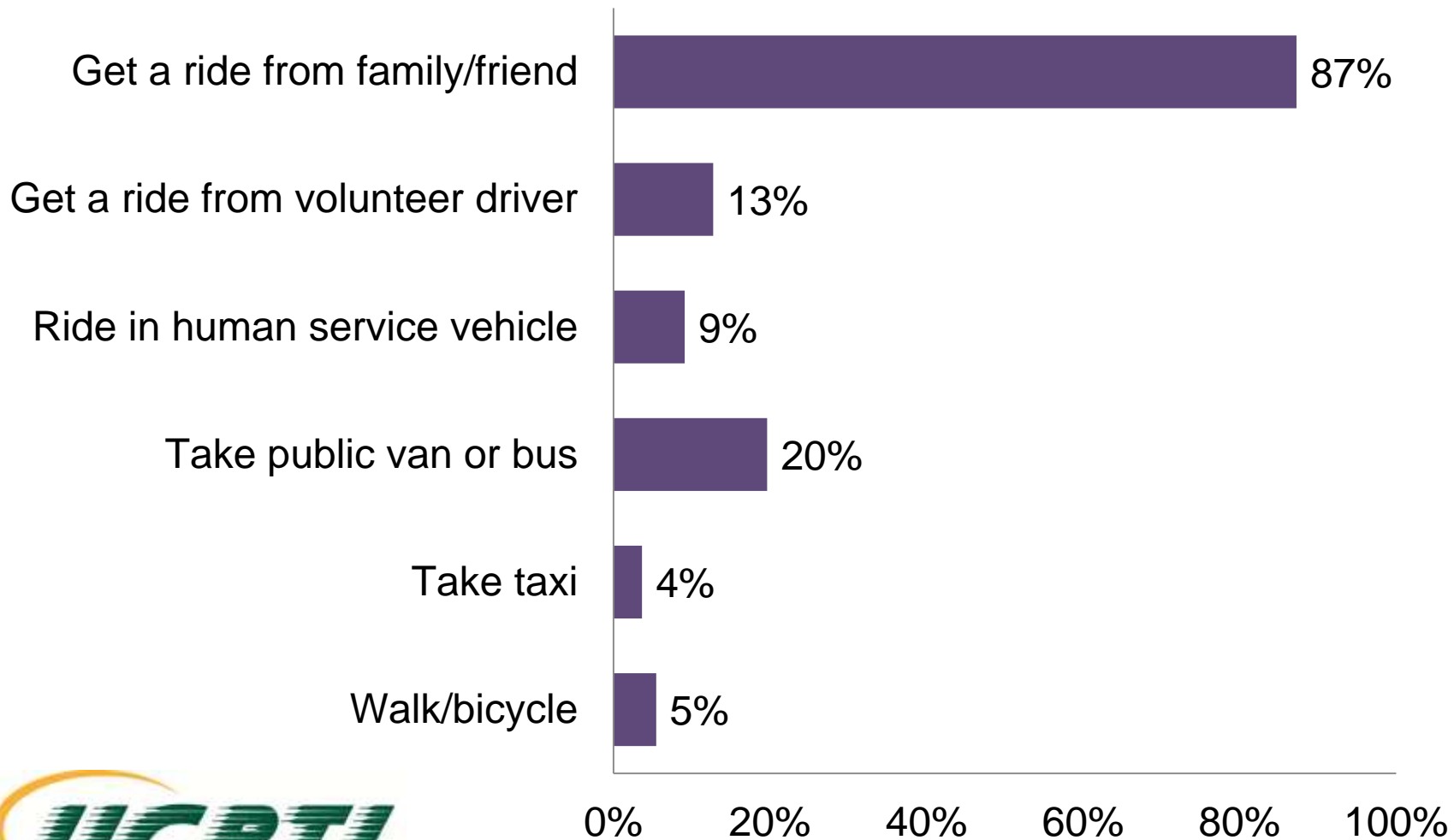
	Yes	No	Don't know
<b>Taxi</b>	50%	46%	5%
<b>Demand response transit service</b>	42%	44%	14%
<b>Fixed-route service within 1/4 mile of home</b>	31%	62%	6%
<b>Transit to out-of-town health care appointments</b>	31%	49%	20%



# Transportation Used to Access Health Care



# Transportation Used to Access Health Care for those Who Do Not Drive



# Empirical Analysis

- Trip frequency
  - Ordered probit model
- Missed or delayed trips
  - Binary probit model
- Difficulty getting transportation
  - Ordered probit model



# Analysis of Trip Frequency: Results from Ordered Probit Model

Variable	Routine (n=430)	Chronic Care (n=212)	Emergency Care (n=411)
	-----Odds Ratio-----		
Age	1.02**	1.01	1.01
Male	1.03	0.97	0.95
Propensity to seek care	1.13**	1.05	1.04
Distance	1.00	1.00	1.00
Transportation variables			
Can drive	1.44	0.87	1.01
Transportation options	1.02	1.13	1.24**
Trans. options*cannot drive	1.10	1.17	1.55***
Type of insurance			
Public	2.55**	3.68**	-
Private	2.28*	3.12*	-
Public and private	2.84**	3.77**	-
Other enabling factors			
Income	0.98	1.05	1.09
Regular doctor	2.58***	0.62	0.95
Health status	0.63***	0.61***	0.59***
Disability	0.82	1.00	0.94

# Health Care Trip Frequency for Individuals who Do Not Drive

Variable	Routine (n=46)	Chronic Care (n=41)	Emergency Care (n=47)
	-----Odds Ratio-----		
Age	1.06***	1.05**	1.01
Male	1.22	1.19	0.74
Propensity to seek care	1.17	1.38*	1.07
Distance	1.00	1.00	0.99**
Transportation variables			
Household driver	2.27*	2.36**	1.61
Use transit	0.75	0.70	1.82
Health status	0.52*	0.47**	0.36***
Disability	0.28***	1.01	0.27***

\*denotes significance at 10% level, \*\* at 5% level, and \*\*\* at 1% level

# Analysis of Missed or Delayed Trips

Variable	Routine (n=431)	Chronic Care (n=214)	Emergency Care (n=420)
	-----Odds Ratio-----		
Age	0.96**	0.97*	0.96
Male	0.82	0.78	0.86
Propensity to seek care	0.80*	0.92	0.86
Distance	1.01***	1.00	1.00
Transportation variables			
Drives	0.24***	0.19***	0.25**
Household driver	0.43***	0.49**	0.80
Uses transit	1.62	1.68	2.71
Transportation options	1.39*	1.22	0.78
Income	1.04	0.86	0.48*
Disability	1.30	1.14	0.46

\*denotes significance at 10% level, \*\* at 5% level, and \*\*\* at 1% level

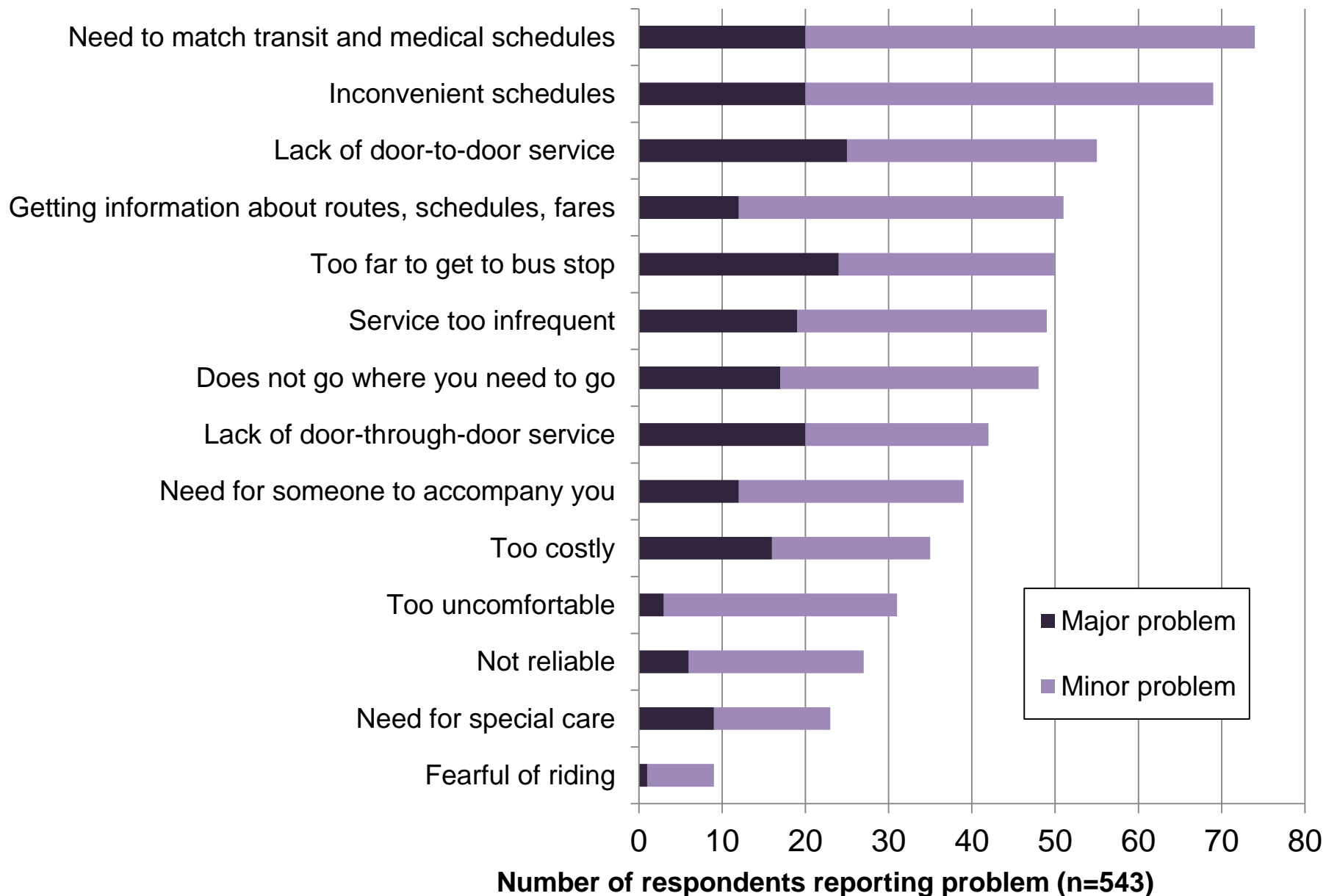


# Factors Impacting the Difficulty for Getting Transportation

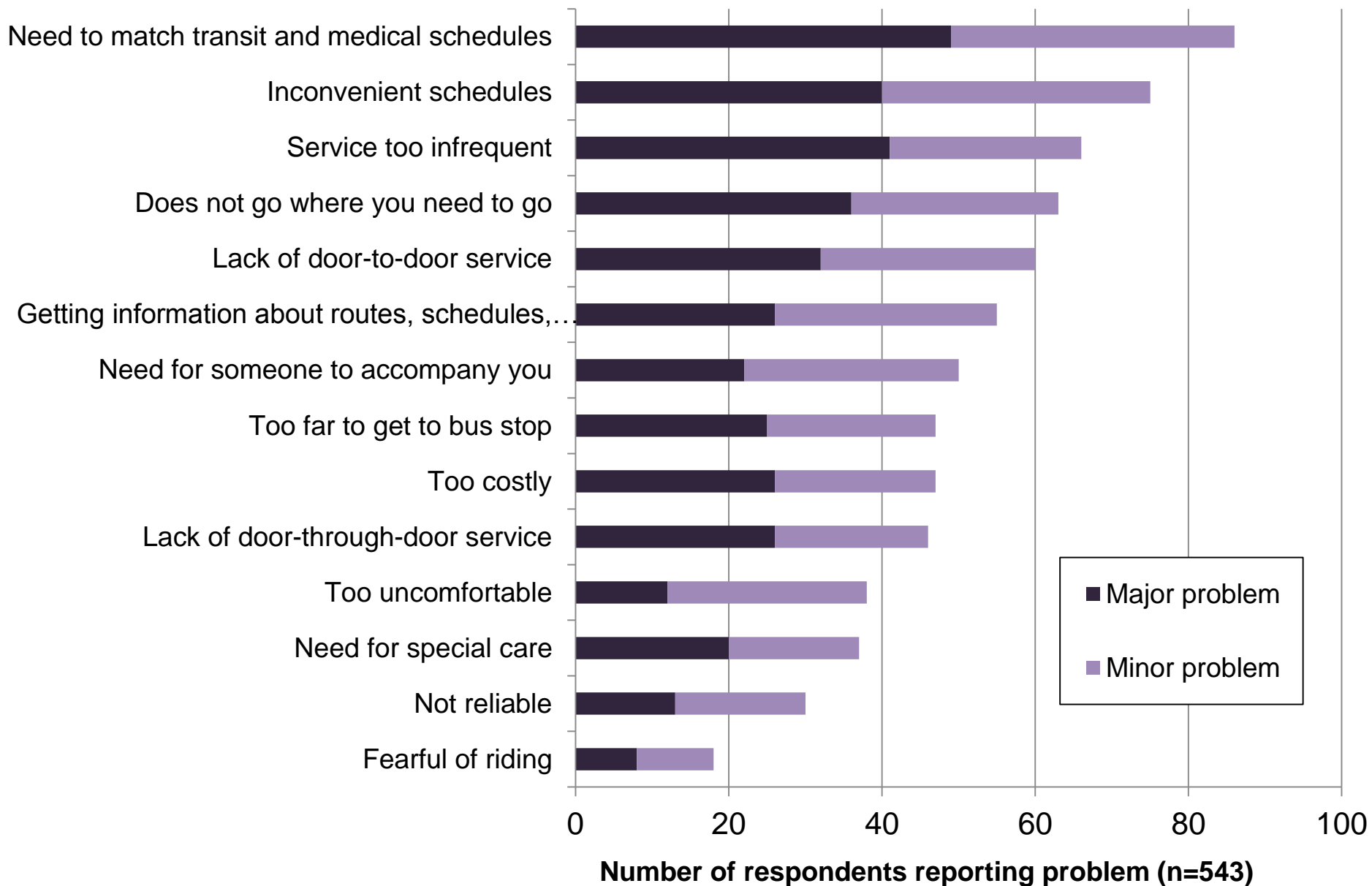
		Out-of-Town (n=369)	In-Town (n=426)
		-----Odds Ratio-----	
Age		1.03***	0.99
Male		0.98	1.00
Distance		1.00***	1.01**
Means of transportation			
	Drive	1.17	0.40***
	Ride with friend or family	1.56***	1.17
	Ride with volunteer driver	2.29**	1.82*
	Human services vehicle	1.49	1.24
	Transit	1.53	1.35
	Taxi	2.34	0.00
	Walk/bicycle	1.31	1.43
Income		0.88*	0.89
Disability		1.63***	1.81***

\*denotes significance at 10% level, \*\* at 5% level, and \*\*\* at 1% level

# Problems with Public Transportation for In-Town Medical Trips



# Problems with Public Transportation for Out-of-Town Medical Trips



# Other Comments

- “Although I do not need it at this point, I feel it is extremely important that it is available for those who do need it.”
- “At this stage of my life I do not need it yet. But should it be a necessity, I would be very lucky if I had access to it.”
- “My son has to take time off work to take me.”
- “This year my daughter lost her job so therefore she was able to take me to my appointments.”
- “Would probably need to move into town if critical health conditions were to develop.”
- “If I were unable to drive, all medical would be a problem! Being realistic, that could happen at any time!”



# Conclusions

- Those who cannot drive make more health care trips if someone else in the household can drive.
- Distance and access to transportation impact the likelihood that someone will miss or delay a trip. If trips are delayed, the level of care required may become more severe and more costly.
- Difficulty reported in making trips is significantly affected by distance and availability of transportation options.
- The type of transit service provided needs to be convenient and frequent enough, and the transit and medical schedules need to be coordinated.



# QUESTIONS?

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