

Residents' Attitudes Toward a Bus Network Redesign in Chattanooga, Tennessee



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Abstract

Many transit agencies are considering or implementing bus network redesigns. In light of this growing trend, this study investigates local residents' attitudes toward a bus network redesign in Chattanooga, Tennessee. This study used survey data collected by the Chattanooga Area Regional Transportation Authority as part of their bus network redesign process. This study estimated three logit models to explore residents' attitudes toward different bus network redesign philosophies, transit network improvements, and willingness to pay for transit improvements and expansion. Three main findings were revealed. First, respondents that ride the bus prefer access to more places over frequent bus service while non-riders prefer more frequent transit service. Second, this study showed that younger generations are more supportive of transit improvements than older age groups. Third, people living near bus routes and those with higher income levels are more willing to pay for transit improvements. The findings of this study should inform transit agencies that are considering or are in the process of redesigning their bus networks

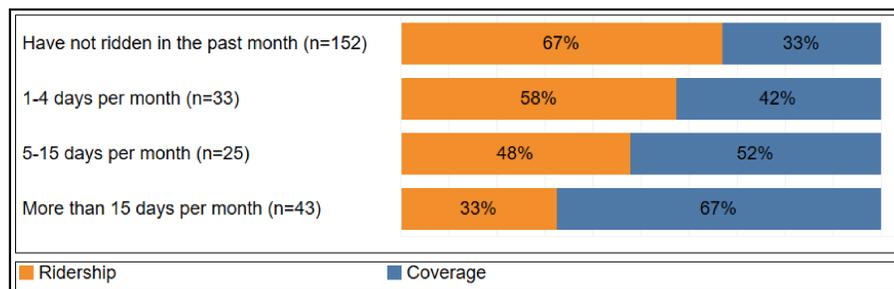
Method

- This study used survey data collected in Chattanooga as part of their bus network redesign planning process
- 302 responses were collected
- This study explored rider versus non-rider preferences
- Three different logit models were estimated to explore residents' attitudes toward a bus network redesign

Results

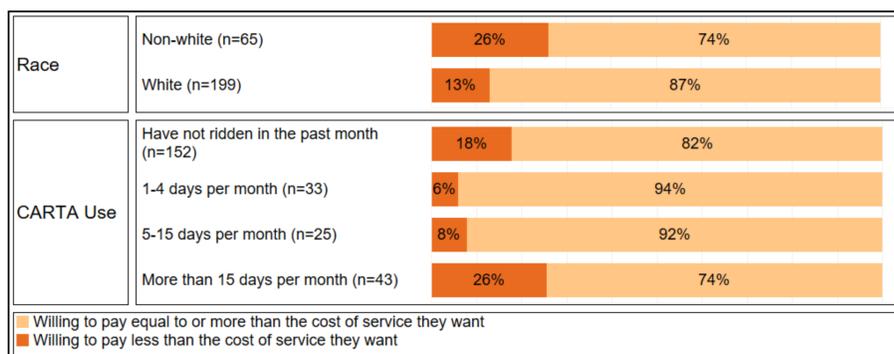
Comparison of Rider and Non-rider Preferences

- Two-thirds of the participants who did not ride CARTA buses in the past month preferred the **ridership** scenario
- Two-thirds of frequent riders who rode more than 15 days in the past month preferred the **coverage** scenario



Willingness to Pay Compared to the Preferred Amount of Additional Service

- Residents from minority groups typically wanted additional transit service; however, they were often hesitant to pay additional fees/fares for transit
- Cities should consider revenue streams that do not add more burden to underrepresented groups



Model Estimates

Model	(1) Ridership versus Coverage	(2) Additional Transit Service	(3) Willingness to Pay for Transit Improvement
Model Type	Binary Logistic Regression	Ordered Logistic Regression	Ordered Logistic Regression
Race	White (Reference)	-	-
	Non-White	-0.629**	-
Income	Under \$15,000 (Reference)	-	-
	\$15,000 - \$24,999	-	0.403
	\$25,000 - \$49,999	-	0.884
	\$50,000 - \$74,999	-	1.18**
	\$75,000 - \$99,999	-	0.755
	\$100,000 or more	-	1.43***
Age	Under 25 (Reference)	-	-
	25-34	-1.37**	-
	35-49	-1.40**	-
	50-64	-1.68**	-
	65 or older	-2.00***	-
Household Size	One (Reference)	-	-
	Two	0.935**	-0.471
	Three	0.727	-0.789*
	Four or more	0.926**	-0.35
CARTA Usage	Have not ridden in the past month (Reference)	-	-
	1-4 days per month	-0.700*	-
	5-15 days per month	-0.906**	-
	More than 15 days per month	-1.61***	-
Other Variables	Walk Score	0.0113*	-
	Number of Transit Routes within 0.5 mile	-	0.0452*
Summary Statistics	Intercept	-0.213	-4.25
	Number of Observations	245	252
	Log Likelihood at Convergence	-151	-409
	Log Likelihood at Zero	-166	-419

*p<0.10; **p<0.05; ***p<0.01. Odds ratios available upon request.
The sample size for these models is less than full survey sample size (302) since some of the participants did not answer all the questions

Conclusions

(1) Ridership versus Coverage

CARTA users typically prefer coverage

People living in walkable areas generally prefer ridership

Larger households often prefer ridership

(2) Additional Transit Service

Younger people generally prefer more service

People living near transit routes often prefer more service

Non-whites may prefer keeping current service levels (no change)

(3) Willingness to Pay for Transit Improvement

Higher income people are often more willing to pay more for transit improvements

People living near transit routes are more likely to pay more for transit improvements

Larger households are less willing to pay more for transit improvements

Ridership or Coverage?

Ridership

Coverage

Limited Access

Access to More Places

Higher Frequency

Lower Frequency

Shorter Waits

Longer Waits

Research Questions

- Which groups of residents prefer the coverage focused network? And which groups prefer ridership focused network?
- Which groups of residents want additional transit service?
- Which groups of residents are willing to pay for transit improvements?

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