The Value of Transportation for Improving the Quality of Life of the Rural Elderly

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Numerous factors contribute to the quality of life for the elderly[1]. One such factor is mobility, a person's ability to travel (Robson 1982) or the freedom, independence, and convenience of movement for non-medical activities (Burns 1999). Mobility of the elderly will become an increasingly important public policy issue as the U.S. population ages. The U.S. Census Bureau (2008) projected that the elderly cohort will increase to approximately 55 million by 2020. The trend in Texas elderly population is consistent with this national trend. Although all age groups within the Texas elderly cohort are growing in absolute numbers, the percentage of those aged 65-75 has decreased, while the percentage of people over the age of 80 has increased relative to the entire elderly cohort (Figure 1).

Because today's elderly are healthier than in the past, they have a greater ability to be engaged in community activities throughout their lives. Since the elderly are living longer, to sustain an active life and remain independent, they may be more likely to need mobility assistance at some point in their life (He et al. 2005; Rosenbloom 2004). Demographers project elderly Americans will be an increasingly important cohort in rural regions. Cromartie and Nelson (2009) state a 30% growth rate is expected for people aged 55-75 living in rural and small-town areas through 2020.

An elderly individual living in a rural community who loses the ability to drive might suffer from isolation and a lower quality of life. Resultant issues that come with living in an rural area (i.e. limited access to health services, shopping, and social activities) can be exacerbated when one can no longer drive. Most existing rural public transportation options, however, do not promote an independent lifestyle if used as the primary form of transportation

[1] In this paper, the terms elderly, senior citizens, elderly population, elderly cohort, etc. refer to individuals who are 65 years of age or older.

for daily activities (Foster et al. 1996; Glasgow and Blakely 2000; Mattson 2010a; Rosenbloom 2004). Public transportation that supports elderly individuals may be an important issue for rural communities to consider in creating an aging-friendly community and maintaining quality of life for residents who are no longer able to drive.

This paper explores transportation options for the increasing number of elderly people living in rural areas. Taxpayers will most likely fund any modification to the rural public transportation benefitting the elderly. An understanding of taxpayers' preferences and willingness-to-pay (WTP) for transportation options, therefore, is essential. The objective is to obtain a better understanding of the WTP for transportation options through an additional vehicle registration fee.

Brief Literature Review

The majority of previous studies have addressed elderly mobility from a sociological perspective using surveys that are usually limited to responses from elderly individuals (Foster et al. 1996; Glasgow and Blakely 2000; Grant and Rice 1982; Mattson 2010b). The focus of these studies has been the availability of transportation for medical needs (Mattson 2010b). One exception is Eby et al. (2011 p. 9), which include the recommendation "Paratransit and specialized transportation services should explore cost effective ways to provide more than just trips for medical purposes. As part of this effort, trip-making flexibility should be expanded by increasing opportunities for multipurpose trips." To our knowledge, no study has addressed the problem from the perspective of the public's WTP for services that enhance the nonmedical emergency mobility of the elderly.

Methodology

To achieve the study's objective, researchers created a survey to be self-administered by

respondents and distributed the survey by U.S. mail to residents of Atascosa and Polk Counties, Texas. The choice survey format, which is in the family of choice modeling approaches, provides a useful methodology to obtain welfare consistent estimation for evaluating the monetary value of different attributes (Hanley, Mourato, and Wright 2001). The Random Utility Model (RUM) provides the basis for an economic model that is estimated using conditional logit methods.

Survey Design

Researchers used three focus groups and a professional editor to refine the survey instrument that consisted of two sections: socio-demographic and background questions and choice valuation questions. The mailing included the questionnaire and a letter, signed by all involved researchers and endorsed by the county judge in each respective county, to explain the purpose of the survey. Before distribution, researchers secured approval for the study by the Texas A&M University Institutional Review Board. Researchers distributed the questionnaire to 3,200 residents equally divided between Atascosa and Polk counties. Dillman's (1991) total design survey method was the basis for the mailing design. A first mailing made on September 15, 2011 included the questionnaire and a letter informing the recipient of the issue and inviting them to participate. Recipients of the initial questionnaire who had not responded to the first mailing received a postcard, mailed on September 25, reminding them to participate. Finally, on October 5, researchers mailed a second copy of the questionnaire to people who had not responded. In addition, the local newspapers in Atascosa (*The Pleasanton Express*) and Polk (*The Polk County Enterprise*) counties each printed a news story describing the survey and reminding people to participate.

Atascosa County is located in South Texas near San Antonio, whereas, Polk County is located in the Piney Woods region of east Texas. The 2010 population of Atascosa County was 44,911 with the elderly population making up 11% of the total population (U.S. Census Bureau 2010d). Polk County's population of 45,413 has a higher percentage of elderly at 20% (U.S. Census Bureau 2010c). Both counties are among the Texas rural counties with the fastest growing elderly populations. From 2000-2009, the elderly population grew by 25% in Polk County and 20% in Atascosa County (U.S. Census Bureau 2000b, 2000c, 2010a, 2010b, 2010c, 2010d). A rural public transportation system serves each county, Alamo Regional Transit (Atascosa) and the Brazos Transit District (Polk).

Socio-demographic / Background Questions

The socio-demographic questions included common inquiries like age, sex, race, and income. Additional questions were how far away each of the respondent's children live from the resident's home. The survey also asked respondents about their knowledge of and opinions about local public transit opportunities. Finally, the questionnaire asked respondents to provide the subjective probability that they would live to be over 75, live in a rural community, and need assistance with transportation. The subjective probability questions were similar to questions asked by the Health and Retirement Study (Institute for Social Research 2010).

Survey Choice Scenario Questions

Respondents were presented with the hypothetical scenario of funding expanded public transportation options that benefit rural elderly by adding an additional fee to the current costs of registering their vehicle. Each respondent was given six choice scenarios; in each scenario the respondent was asked to choose between two public transportation options that contained the same attributes but differed in the levels of the attributes (Figure 2 contains one such scenario).

Respondents choose either Option A, Option B or Neither. Options A and B would be funded by this fee. The option of Neither, the baseline or status quo, is necessary to interpret the results in standard welfare economic terms (Hanley, Mourato, and Wright 2001).

Public transportation options A and B consist of five attributes: 1) days of operation; 2) hours of operation; 3) type of route; 4) fare discount for senior citizens, and 5) additional annual vehicle registration fee. Three levels included for the four non-fee attributes were: Days of Operation (Monday, Wednesday, Friday (MWF), Monday through Friday (M-F), and Seven Days a Week); Hours of Operation (7AM – 12 Noon, 7AM – 5PM, and 8AM – 12AM); Type of Route (Fixed Route Service, Flexible Route Service, and Door-to-Door Service); and Senior Citizen Transportation Fare per Ride (Full Fare, 50% Discount, and Free).

The additional fee was a continuous, uniformly distributed variable between $1 and $30. Previous surveys in the literature provided the basis for the attributes and levels, although these surveys did not employ a choice survey format (Foster et al. 1996; Glasgow and Blakely 2000; Gombeski and Smolensky 1980; Grant and Rice 1983). In each choice scenario faced by a respondent, the level of each attribute was independent, randomly drawn with equal probability.

Survey Response Rate

Researchers randomly selected respondents from addresses obtained from open record requests of the Atascosa and Polk County Appraisal Districts. For Atascosa County, 235 returned questionnaires were complete enough to be included in the analysis, giving a usable response rate of 15%. One hundred sixty-three returned surveys from Polk County were complete enough for the survey database, giving a response rate of 10%. A mix-up in addresses for Polk County in the first mailing may have contributed to the lower response rate. The general state of the

economy is another reason for the low response rate; many of the non-usable responses indicated the economy as a reason for their answers.

The Random Utility Model

The RUM, which provides the theoretical basis for this study, is based on the notion that an individual derives more utility from the chosen alternative than from those alternatives not chosen. The indirect utility function, U_{in}, forms the basis for the RUM framework. In this framework, the utility that individual *i* receives from choosing alternative *n* can be obtained from a set of explanatory variables z_{in} and an unknown random component ε_{in}. We denote $z_{in} = [x_{in}, w_i]$ where w_i represent individual characteristics that vary across individuals but are the same for all alternatives presented to the same individual; and x_{in} include attributes of alternatives that vary across alternatives and individuals. Given this information, the linear RUM for individual *i* choosing alternative *n* in a choice scenario *t* is (Greene 2003):

$$(1) \qquad U_{int}(x_{int}, w_{int}) = z'_{int}\beta + \varepsilon_{int} = x'_{int}\delta + w'_{it}\gamma + \varepsilon_{int}$$

where β, δ, and γ are vectors of parameters to be estimated and the error term is denoted as ε_{int}.

The RUM assumes utility maximization such that decision maker *i* will choose alternative *m* over *n* in the choice scenario *t*, if and only if:

$$(2) \qquad U_{imt}(x_{imt}, w_{imt}) > U_{int}(x_{int}, w_{int}) \; \forall \; m \neq n.$$

Assumptions made about the distribution of the disturbance term and whether the coefficients are fixed or varying across individuals in the RUM model lead to the use of various qualitative models to estimate the RUM.

Conditional Logit Model

For a given choice set *t*, the probability that respondent *i* prefers alternative *m* over *n* is stated as the probability that the utility associated with alternative *m* exceeds the utility associated with all

the other alternatives indexed by *n*:

(3) $$P(U_{imt} > U_{int} \forall\, m \neq n) = P\{(z'_{imt}\beta - z'_{int}\beta) > (\varepsilon_{int} - \varepsilon_{imt})\}.$$

To derive the probability in equation (3), the random errors ($\varepsilon_{int,}\ \varepsilon_{imt}$) are assumed to be identically and independently distributed with an extreme-value (Greene 2003):

(4) $$F(\varepsilon_{int}) = \exp\left(-\varepsilon_{int}^{-\varepsilon_{int}}\right).$$

Using this assumption, McFadden (1974) specified the conditional logit model. The probability of any specific alternative *n* being chosen as the most preferred among J alternatives by individual *i* can be expressed as follows:

(5) $$P_{int} = \frac{e^{z_{int}'\beta}}{\sum_j e^{z_{ijt}'\beta}}.$$

Each respondent chooses his/her preferred transportation option out of a total of J alternatives (Options A, B, or Neither). Let y_{ijn} take a value of one if respondent *i* selects choice *j* in the choice scenario *t*, and zero otherwise. Because the error term is assumed to be independent over choice sets, the likelihood of individual *i* (L_i) to make the sequence of choices y_{ijn}, where j=1,…,J and t = 1,…,T, is the product:

(6) $$L_i = \prod_{\mathrm{t=1}}^{\mathrm{T}} \prod_{\mathrm{j=1}}^{\mathrm{J}} P_{ijt}^{y_{ijt}}.$$

Maximum likelihood is used to estimate the parameters by maximizing the following log likelihood function:

(7) $$\log(L) = \sum_{i=1}^{I} \log(L_i) = \sum_{i=1}^{I} \sum_{t=1}^{T} \sum_{j=1}^{J} y_{ijt} \log(P_{ijt}).$$

Economic WTP for the transportation option attributes are (Hanley, Mourato, and Wright 2001):

(8) $$\text{Premium} = -\frac{\hat{\beta}_k}{\hat{\beta}_s}$$

where $\hat{\beta}_s$ represents the estimated coefficient associated with the additional vehicle registration

fee and $\hat{\beta}_k$ the estimated coefficient associated with transportation attribute *k*. The premium is the additional fee that the respondent is willing to pay to receive a transportation option over the base option.

Estimation Results

The procedure to estimate the conditional logit for the choice model involves creating three alternatives for each choice scenario. The potential total number of observations for Atascosa County is 4,230 (235 usable respondents x 6 scenarios x 3 alternatives). For Polk County, potential number of observations is 2,934 (163 x 6 x 3). One hundred sixty-five observations are dropped for Atascosa County and 200 for Polk County because the respondents did not complete all six choice scenarios. Variables used in the estimation are described in Table 1. A summary of the respondents' answers to the socio-demographic questions is in Table 2.

To determine whether it would be appropriate to estimate a single combined model or independent models for each county, researchers conducted the following test. Data for both counties were arranged in a block format with block zeros on the off-diagonal block. A conditional logit model was estimated that included coefficients for both Polk and Atascosa counties. A joint Chi-squared test was used to determine if the Polk County coefficients were statistically different from the Atascosa counterparts with a null hypothesis that the coefficients are jointly equal between two counties. The null hypothesis was rejected at the 0.00 level of significance; as such, separate models are estimated for each county.

Most of the estimated coefficients are significant at the five percent level of significance or less (Table 3). For both counties, the additional fee's coefficient is negative (fee enters the models as a positive value), indicating the respondent is less likely to choose an option as the fee increases on a transportation choice. The coefficients of all other transportation options are

positive, statistically significant at the five percent level, except Flexible in the Atascosa model. Positive coefficients indicate an increase in the likelihood of choosing a transportation option with a specific attribute level relative to the base level. Using chi-squared tests, researchers conducted tests to determine whether coefficients within an attribute category and model are significantly different from each other. For the Atascosa County model, coefficients associated with Flexible and Door-to-Door are significantly different from each other. Similarly, coefficients associated with 50% discount and free fares are significantly different. Coefficients associated with days of operation (M-F and Seven Days a Week) along with hours of operation (7AM-5PM and 8AM-12PM) are not significantly different. For Polk County, only Flexible is significantly different from the other coefficient (Door-to-Door) within an attribute.

Differences between the two county models appear in the socio-demographic variables. For many of the socio-demographic variables, not only does the statistical significance differ, but also the sign on the coefficient varies. For example, within the Atascosa County model, the coefficient associated a respondent being white (Choose*White) is insignificant suggesting that being white does not increase or decrease the likelihood of choosing transportation options over Neither compared with other population groups. In the Polk County model, this coefficient, however, is significant and indicates a lower probability of choosing a transportation option over Neither for whites than for other population groups. Being single increases the probability of choosing a transportation option over Neither in Atascosa County, but decreases the probability in Polk County. The coefficient is significant in both counties. Other socio-demographic variables reflect similar discrepancies.

Three subjective probabilities are included in the models. For both counties, the respondent's subjective probability of living to be over 75 years old is insignificant

(Choose*Old). As a respondent's subjective probability of living in the country (Choose*Country) increases, the respondent is less likely to choice a transportation option over Neither. The third subjective probability included is the probability of using alternative forms of transportation as the respondents get older (Choose*Transport). Although significant in both county models, the inference differs between the two counties. For Atascosa County, increasing probability leads to an increased likelihood of choosing a transportation option over Neither, whereas for Polk County an increased probability leads to a decreased likelihood of choosing a transportation option. Experience a respondent has with elderly individuals who have transportation issues is positive and significant in the Atascosa County model, but insignificant in the Polk County model.

WTP for the various transportation options are given in Table 4. For each attribute category, the calculated WTP increases for the more flexible option over the least flexible except for hours of operation for Polk County. To elaborate, consider the category days of operation that has a base of Monday, Wednesday, and Friday as the days of operation. Respondents are willing to pay an annual amount of $5.96 for a Monday through Friday service and $7.65 for seven days a week service. Between the counties, WTP are generally similar with differences being less than 20%. Two exceptions are in the days of operation category and Flexible route where the differences are over 33%. For additional results, see Israel (2012).

Discussion

Given space limitations, the following discussion focuses on the four transportation attributes. For all variables, except Flexible in the Atascosa model, the coefficients associated with transportation option attributes are statistically significant. Respondents generally prefer a more flexible transportation option than given by the base. Estimated WTP are higher for the more

flexible attribute in each category, except for the Polk County hours of operation. The estimation results indicate respondents prefer the more flexible options; however, the statistical significance of these preferences is another consideration. Consider the days of operation category. As previously noted, the coefficients for M-F and Seven Days a Week are significantly different from zero or the base of MWF. However, the coefficient for M-F is not significantly different from the coefficient associated with Seven Days a Week. The respondents preferred a service that operated more than three days a week, but respondents are indifferent between five and seven days a week.

Hours of operation have a similar interpretation to days of operation. Respondents preferred an option that included more than just a morning service, but are indifferent at the additional hours of service after 5 PM. Although maybe not statistically significant, for Polk County the WTP for the 8AM-12AM service is less than for the 7AM-5PM service. Inference for the type of route differs from the days and hours of operation categories. In the Atascosa model, there is no statistical difference between the Fixed and Flexible routes as indicated by the coefficient associated with Flexible not being significant. Polk County respondents did distinguish between Fixed and Flexible. For both county models, the coefficients associated with Flexible and Door-to-Door are statistically different. Respondents see a value to a Door-to-Door service and are willing-to-pay more for this service. WTP for Atascosa and Polk counties for Door-to-Door service over a Fixed service are approximately $14 and $13 per year. One difference between the two counties appears in the senior discount category. Both counties respondents preferred some type of discount to full fare. In the Atascosa model, the coefficients between 50% Discount and Free Fare for seniors are significantly different, which is not the case for the Polk County model.

Using the previously mentioned test based on a block diagonal set up of the data, two additional tests are conducted: 1) only the coefficients at the choice variables (fees, days, hours, route, and discount) are considered; and 2) only the socio-demographic variables coefficients are considered. For the choice variables, Atascosa County coefficients do not jointly differ from Polk County at the 0.77 level. The socio-demographic variables' coefficients, however, differed at the 0.00 level. Combining these results with the above discussion, respondents in the two counties generally replied similarly to the choice variables. Differences between the two counties appear to be how the socio-demographic variables affect the probability of choosing a transportation option over Neither. Such differences may confirm the general notion that South Texas is different from the Piney Woods area. Respondents' average household income is higher for Atascosa than for Polk County (Table 2). Average income in the survey is in line with Census data. For example, 2010 median family income was $37,918 in Polk County and $48,182 in Atascosa County and (U.S. Census Bureau, 2011). Other differences between the samples are percent of white respondents and were their home was located. These differences may help explain variations in inferences associated with the socio-demographic variables between the two models. These findings imply that while the choice variables are consistent across counties, local input is important to customizing transportation systems to meet local expectations. More work is necessary concerning transportation for elderly. Findings indicate that expanding public transportation to improve the quality of life for elderly is potentially a viable alternative. Local differences may have an impact on the acceptance of such expansions.

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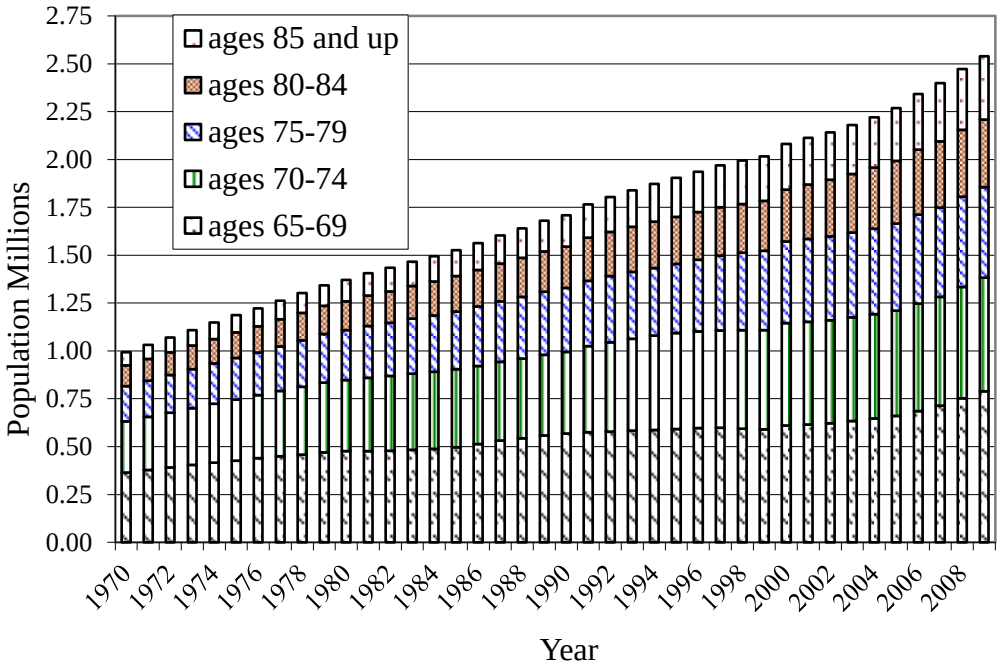

Figure 1. Distribution of Texas Elderly by Age Grouping

	Option A	Option B	
Addition to Annual Registration Fee ($)	3	22	
Days of Operation	Monday through Friday	Seven Days a Week	
Hours of Operation	8AM – 12 Midnight	7AM – 5PM	
Type of Route	Fixed Route Service	Flexible Route Service	
Senior Citizen Transportation Fare per Ride	50% discount off of full fare	50% discount off of full fare	
I prefer (check one)	☐ Option A	☐ Option B	☐ Neither

Figure 2. Example of a Transportation Option Choice Set.

Table 1. Variables used in Logit Models – Atascosa and Polk Counties.

Name	Description
	Qualitative Variables
M-F	1, if transportation option operates Monday – Friday, 0 otherwise
Seven	1, if transportation option operates seven days a week, 0 otherwise
7AM-5PM	1, if transportation option operates 7AM to 5PM, 0 otherwise
8AM-12AM	1, if transportation option operates 8AM to 12AM, 0 otherwise
Flexible	1, if transportation option has flexible-route service, 0 otherwise
Door-to-Door	1, if transportation option has door-to-door service, 0 otherwise
Fifty	1, if transportation option has 50% discount for senior citizens, 0 otherwise
Free	1, if transportation option is free for senior citizens, 0 otherwise
Choose	1, if respondent chose a transportation option (Option A or Option B), 0 if the respondent did not choose a transportation option
Male	1, if respondent was a male, 0 otherwise
White	1, if respondent's ethnicity was white, 0 otherwise
Single	1, if the respondent was single, divorced, or separated, 0 otherwise
Income_1	1, if the respondent's before-tax household income was below $25,000, 0 otherwise – dropped as the base
Income_2	1, if the respondent's before-tax household income was between $25,000 and $49,999, 0 otherwise
Income_3	1, if the respondent's before-tax household income was between $50,000 and $74,999, 0 otherwise
Income_4	1, if the respondent's before-tax household income was more than $75,000, 0 otherwise
College	1, if the respondent attended college, 0 otherwise
Only Far Children	1, if the respondent's children live more than 51 miles away from the respondent's home, 0 otherwise
City	1, if the respondent's home was located within the city limits, 0 otherwise
Voted	1, if the respondent voted in their most recent national, state, or local election, 0 otherwise
Aware Public Transit	1, if the respondent was not aware of their home county's public transportation system, 0 otherwise
	Continuous Variables
Fee	The additional registration fee ($/year)
Age	The respondent's age (years)
Old	The probability (0%-100%) that the respondent believes he/she will live to be 75

Cont.

Table 1**. Continued.**

Name	Description
Country	The probability (0%-100%) that the respondent believes he/she will live in the country if he/she lives to be over the age of 75
Transport	The probability (0%-100%) that the respondent believes he/she will use alternative forms of transportation if he/she lives to be over the age of 75.
Experience[2]	A number between 2 and 10 which indicates the amount of the experience that the respondent has with elderly individuals who have transportation issues.

[1] A respondent's home county was classified as rural if the county employed a rural transit system as specified in Eschbach et al. (2010).

[2] This variable was acquired by summing the respondent's answers to Likert scale question concerning their knowledge of elderly transportation issues.

Table 2. Atascosa and Polk County Respondents' Characteristics

	Atascosa County	Polk County	Difference
Percent of Respondents for Qualitative Characteristics			
Attained at most a high school diploma or GED	35.3	23.8	11.5
Attained at least some college experience	64.7	76.2	-11.5
Less than $24,999 before-tax household income	18.3	25.6	-7.3
$25,000 to $49,999 before-tax household income	28.5	24.4	4.1
$50,000 to $74,999 before-tax household income	21.7	22.6	-0.9
More than $75,000 before-tax household income	31.5	27.4	4.1
Marital status of single	26.4	28.1	-1.7
White	58.3	91.5	-33.2
Male	57.5	47.6	9.9
Female	42.6	52.4	-9.8
Described home as being inside city or town limits	45.1	14.0	31.1
Voted in the last national, state, or local election	83.4	87.8	9.9
Was aware of public transportation provider in his/her home town	33.2	37.8	-9.8
Mean Response for Quantitative Characteristics			
Age (year)	56.6	60.1	-3.5
The percent chance that the respondent will live to be 75 or older	77.0	78.4	-1.4
The percent chance the respondent will live in a rural town or in the country when over the age of 75	80.7	84.2	-3.5
The percent chance that when over 75 the respondent will use alternative forms of transportation	57.0	62.1	-5.1

Table 3. Conditional Logit Model Results.

	Atascosa County			Polk County		
Variable	Coefficient	Standard Error	z	Coefficient	Standard Error	z
Fee ($/year)	-0.0491	0.0052	-9.38*	-0.0583	0.0067	-8.69*
Days of Operation Choice (Base = MWF)						
M-F	0.2923	0.1098	2.66*	0.5910	0.1394	4.24*
Seven	0.3750	0.1082	3.47*	0.5941	0.1401	4.24*
Hours of Operation Choice (Base = 7AM-12PM)						
7AM-5PM	0.6384	0.1108	5.76*	0.8210	0.1414	5.81*
8AM-12AM	0.7306	0.1112	6.57*	0.7383	0.1423	5.19*
Type of Route Choice (Base = Fixed Route)						
Flexible	0.1683	0.1126	1.49	0.2999	0.1421	2.11*
Door to Door	0.7061	0.1090	6.48*	0.7543	0.1347	5.60*
Senior Citizen Discount Choice (Base = Full Fare)						
Fifty	0.6384	0.1128	5.66*	0.8108	0.1414	5.73*
Free	0.9480	0.1124	8.43*	0.9420	0.1431	6.58*
Qualitative Interaction Variables						
Choose*Male	-0.2175	0.1637	-1.33	-0.7761	0.1867	-4.16*
Choose *White	0.2564	0.1609	1.59	-0.8046	0.3247	-2.48*
Choose *Single	1.9717	0.3573	5.52*	-0.7190	0.3701	-1.94
Choose *Income_2	0.4630	0.2238	2.07*	0.5002	0.2801	1.79
Choose *Income_3	1.2849	0.2473	5.20	-0.4744	0.2725	-1.74
Choose *Income_4	1.1205	0.2461	4.55	-0.5453	0.2825	-1.93
Choose *College	-0.3807	0.1839	-2.07*	0.4260	0.2250	1.89
Choose*Only Far Children	0.2541	2.9728	0.12	-6.3065	2.0386	-3.09*
Choose*Only Far Children*Age	-0.0160	0.0350	-0.46	0.1062	0.0315	3.38*
Choose *City	1.1146	0.1561	7.14*	0.6895	0.2633	2.62*
Choose *Voted	-0.3404	0.2160	-1.58	-0.2903	0.2900	-1.00

Cont.

Table 3. Continued.

Variable	Coefficient	Standard Error	Z	Coefficient	Standard Error	Z
Choose * Aware Public Transit	0.2586	0.1658	1.56	0.4073	0.1951	2.09*
Continuous Interaction Variables						
Choose *Age	-0.0307	0.0062	-4.98*	-0.0030	0.0082	-0.37
Choose *Old	-0.0026	0.0035	-0.75	0.0004	0.0035	0.11
Choose *Country	-0.0010	0.0029	-3.40*	-0.0098	0.0035	-2.76*
Choose *Transport	0.0068	0.0024	2.81*	-0.0094	0.0033	2.89*
Choose* Experience	0.0878	0.0293	3.00*	-0.0532	0.0347	-1.53
Model Summary Statistics						
Number of Observations	4065			2752		
Cluster (Number of Respondents)	235			163		
McFadden's R^2	0.1213			0.1232		
Akaike Information Criterion (AIC)	3938.791			2669.761		
Bayesian Information Criterion (BIC)	4102.855			2823.683		

* Significant at the 5% level.

Table 4. Willingness-to-Pay (WTP) for Transportation Options by County.

	Atascosa	Polk	Absolute Value of the Difference (% of Polk County WTP)
Days of Operation Choice (Base = MWF)			
M-F	5.96	10.14	4.18 (41%)
Seven	7.65	10.20	2.55 (25.0%)
Percent Increase[1]	28.4%	0.59%	
Hours of Operation Choice (Base = 7AM-12PM)			
7AM-5PM	13.01	14.09	1.08 (7.7%)
8AM-12AM	14.89	12.67	2.22 (17.5%)
Percent Increase[1]	14.5%	-10.1%	
Type of Route Choice (Base = Fixed Route)			
Flexible	3.43	5.15	1.72 (33.4%)
Door-to-Door	14.40	12.95	1.45 (11.2%)
Percent Increase[1]	319.8%	151.5%	
Senior Citizen Discount Choice (Base = Full Fare)			
Fifty	13.01	13.92	0.91 (6.5%)
Free	19.33	16.17	3.16 (19.5%)
Percent Increase[1]	48.6%	16.2.1%	

1) Percentage increase in WTP between the first and second attribute listed.