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**A Mixed Logit Analysis of the Willingness to Pay for Improved Transportation
Options for the Rural Elderly**

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A Mixed Logit Analysis of the Willingness to Pay for Improved Transportation Options for the Rural Elderly

Introduction

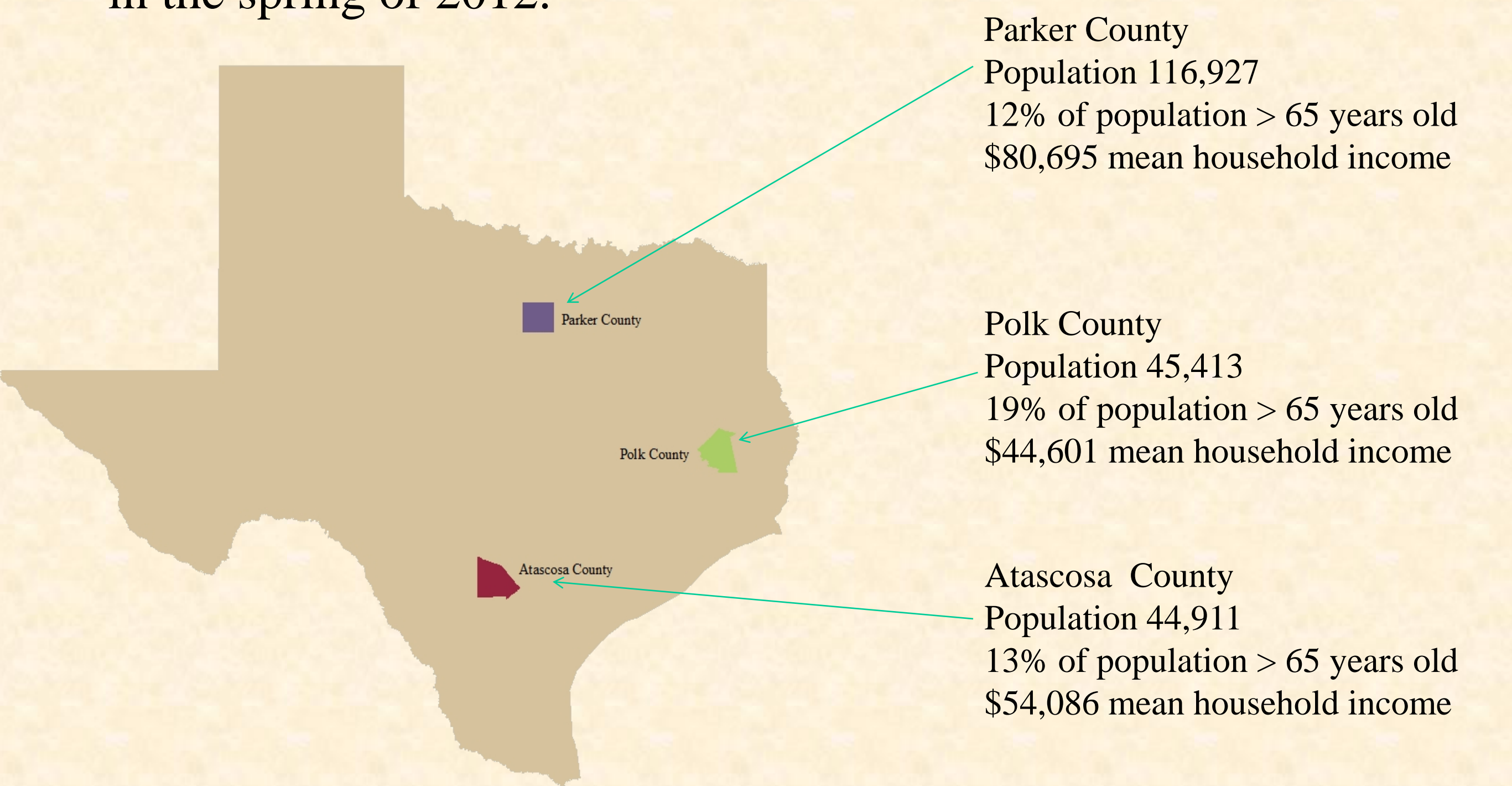
- Mobility is an undeniably important issue for the expanding elderly population in the United States, especially those living in rural areas. If an elderly individual is no longer able to drive, the individual may experience a decrease in his or her quality of life.
- Any improved rural transportation system benefiting the elderly will most likely be funded by taxpayers. An understanding of taxpayers’ willingness to pay (WTP) for transportation options, therefore, is essential.

Objectives

- To estimate the WTP for improving transportation options through an additional vehicle registration fee.
- To partially assess the validity of an initial transportation survey.

Methods

- A choice survey was mailed to residents in Atascosa and Polk Counties in Texas, in the fall of 2011. Parker county was surveyed in the spring of 2012.

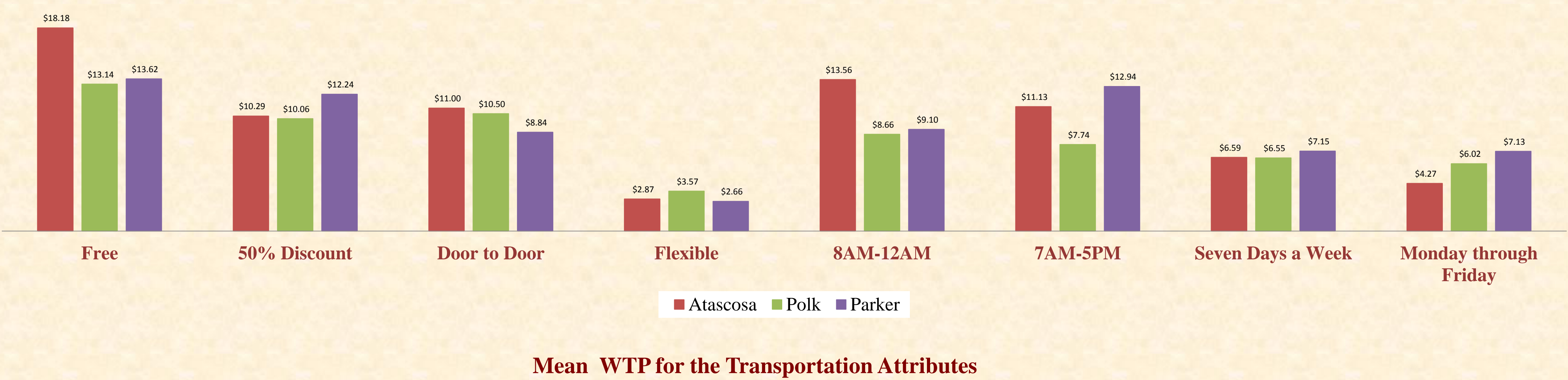


Transportation Attributes Considered and Their Levels Base Level Listed First for each Attribute

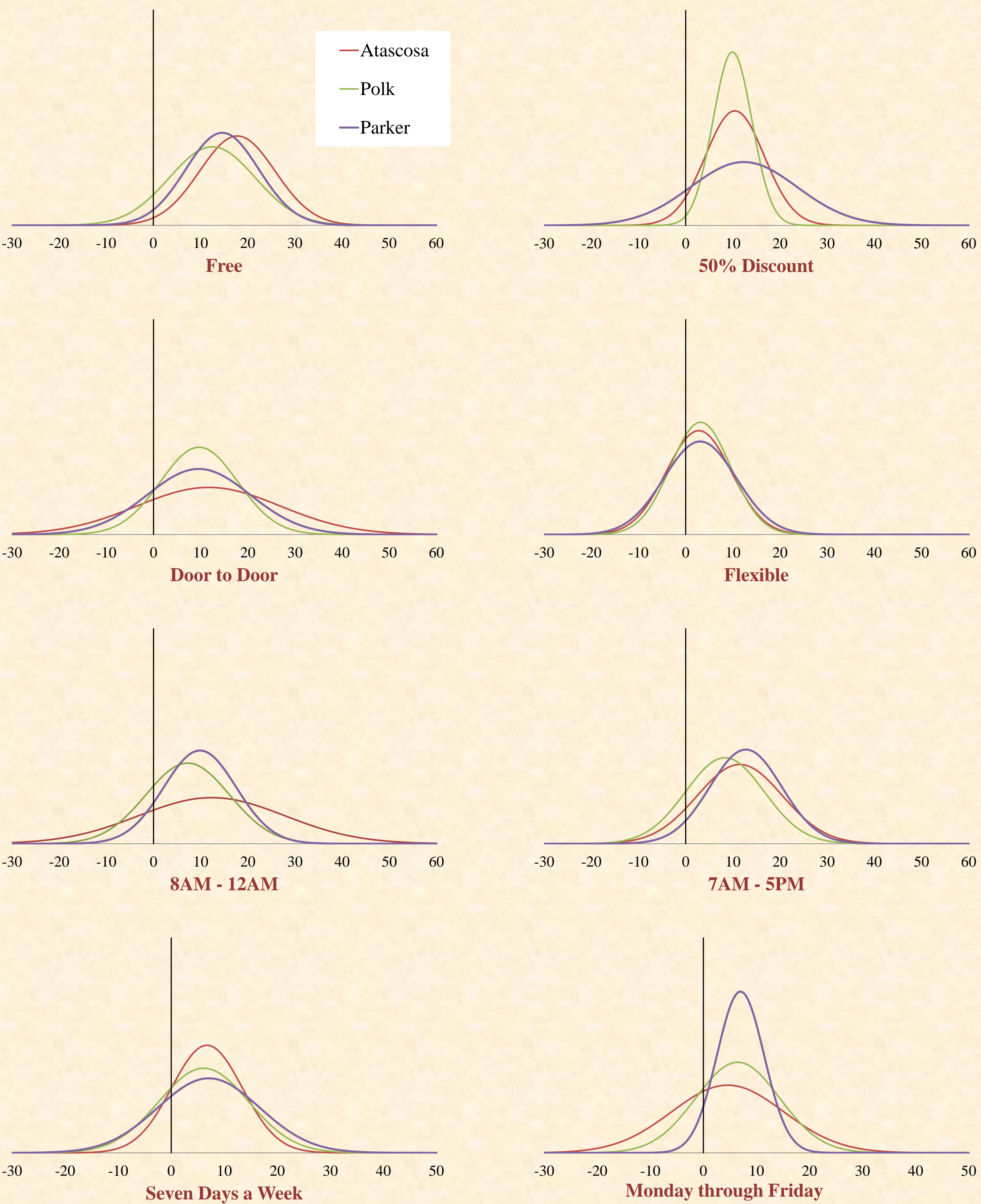
| Attributes | Attribute Levels | | |
|--|--|-----------------------|-------------------|
| Addition to Annual Registration Fee (\$) | Uniformly distributed value between \$1 and \$30 | | |
| Days of Operation | Monday, Wednesday, and Friday | Monday through Friday | Seven Days a Week |
| Hours of Operation | 7AM-12 Noon | 7AM-5PM | 8AM-12AM |
| Type of Route | Fixed | Flexible | Door to Door |
| Senior Citizen Transportation Fare | Full Fare | 50% Discount | Free |

Results — Mixed Logit Estimation

- The attributes are significant factors in explaining the respondents’ preferred transportation options.
- The mean WTPs are similar among the three counties; several WTPs differ by less than 5%.



- As indicated by the WTP distributions, not all respondents have a positive WTP (preferred) for each transportation option.



- More Atascosa and Polk residents prefer the base (Monday, Wednesday, and Friday) over Monday through Friday service than Parker residents, as given by larger percentages of negative WTPs.
- WTP distributions for flexible routes are the most similar among the counties.
- Wilcoxon-Mann-Whitney pairwise comparison tests indicate 10 of the 24 comparisons among the three counties’ WTP distributions are statistically different from each other.
- Chi-squared tests suggest that the differences in the county models are more from the effect of socio-demographic variables than how the transportation attributes affect respondents’ answers.

Conclusions

- The average residents from the three counties value rural public transportation services similarly and are willing to pay for improved transportation services.
- Respondents preferred transportation options that are more flexible than the base attributes, but not necessarily the most flexible options.
- Similar WTPs among the counties indicate they value rural transportation similarly, but differences in socio-demographic variables indicate that transportation systems may need to be tailored for each region.
- The aggregate mean WTP for a seven-day-a-week service in Atascosa County is \$96,555 (\$6.59 * 14,500 registered vehicles).

WOULD ENOUGH FUNDS BE GENERATED TO PAY FOR THE INCREASED SERVICES?

Limitations / Further Research

- The usable response rates were low (15% in Atascosa, 10% in Polk, and 16% in Parker). Many respondents returned questionnaires but did not provide answers, instead adding a note offering an opinion about the difficult economic and political times.
- Implementing WTP studies during or soon after an economic recession may be problematic, affecting response rates and the quality of answers.
- Mean WTP cannot be summed to get a total WTP; more research on choice experiments methodology is necessary.



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The picture of the elderly is used with permission from the Transportation Agency for Monterey County.