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Consumer's Preference and Ranking of Different Turfgrass Varieties in the Southern Region of the United States

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Introduction

Turfgrass is a pervasive feature of the urban landscape in southern and south central regions of the USA. In arid and semiarid regions, 40-75% of household irrigation is accounted for turfgrass (Mayer et.al. 1999). Mandatory irrigation restrictions, water audits, and limits on turfgrass irrigation have been imposed in many cities to reduce water scarcity and to meet water demand for long term and during drought. In addition, a lack of freshwater or municipally treated water has compelled the use of effluent or other low quality water for turfgrass irrigation. The use of low quality water has resulted in salinity problems in turfgrass in areas of the southeastern USA. Intrusion of seawater in the coastal cities and use of salt for road thawing have also increased the problem of salinity in turfgrass. Thus, promoting efficient water use in turf areas has become a long term public strategy leading to an increased demand for environmental stress (*i.e.*, drought, salinity, shade) tolerant turfgrass species.

The non-traditional, low maintenance and stress resistant turfgrass varieties must be adopted to cope with these stresses, but they may cost more to purchase initially. Drought, saline, and shade-tolerant turfgrass varieties have potential to reduce turf maintenance and input costs. Thus, it is essential to identify how consumers value the stress resistant, low maintenance, and low priced turfgrass varieties in different places.

Objectives

- To determine the consumer's preference for different turfgrass varieties using two different stated choice methods: discrete choice and best-worst methods.
- To compare the turf attributes ranking obtained from discrete choice and best-worst methods.

Methods

- An internet based survey was conducted in November 2013 with 1,174 randomly selected homeowners from five states (Texas, Oklahoma, Florida, Georgia, and North Carolina) of the southern region of USA.
- The response rate of the survey was 97%.
- The survey composed of stated choice experiments and general and demographic questions. Two different stated choice methods, discrete choice and best-worst, were conducted within each survey.
- Two multinomial conditional logit models were used to determine the estimates of the attributes.

Results

Table 1. Summary of the demographics of the respondents

| States | Mean Age | Mean Household Income | % Female | Mean Lawn Size (acres) |
|----------------|----------|-----------------------|----------|------------------------|
| Florida | 53 | \$72,697 | 38% | 0.37 |
| Georgia | 49 | \$78,017 | 45% | 0.62 |
| Oklahoma | 50 | \$59,661 | 61% | 0.57 |
| North Carolina | 61 | \$79,437 | 46% | 0.66 |
| Texas | 49 | \$92,358 | 38% | 0.39 |



Table 2. Discrete choice parameter estimates and ranking of turfgrass attributes by states

| | Florida | Georgia | Oklahoma | North Carolina | Texas |
|------------------------------------|-----------|-----------|------------|----------------|-----------|
| Parameters | Estimate | Estimate | Estimate | Estimate | Estimate |
| Lawn Area Lost to Winter Kill | 0.001 | -0.001 | -0.006*** | -0.001 | 0.001 |
| Shade Tolerant | 0.431*** | 0.739*** | 0.60*** | 0.487*** | 0.461*** |
| Water Requirement per 1000 Gallons | -0.013*** | -0.009*** | -0.0074*** | -0.006*** | -0.011*** |
| Saline Tolerant | 0.341*** | -0.063 | 0.203*** | 0.102 | 0.111 |
| Average Maintenance Cost | -0.011*** | -0.011*** | -0.018*** | -0.016*** | -0.011*** |
| Average Purchase Price | -0.002 | -0.001 | -0.001 | -0.002 | -0.001 |
| Sample Size | 228 | 204 | 295 | 200 | 247 |

*** Significance at 1%, * Significance at 10%, Numbers in parentheses represent ranking of the attributes based on estimates for each state.

Fig. 1. Relative importance of turfgrass characteristics by states using the discrete choice method.

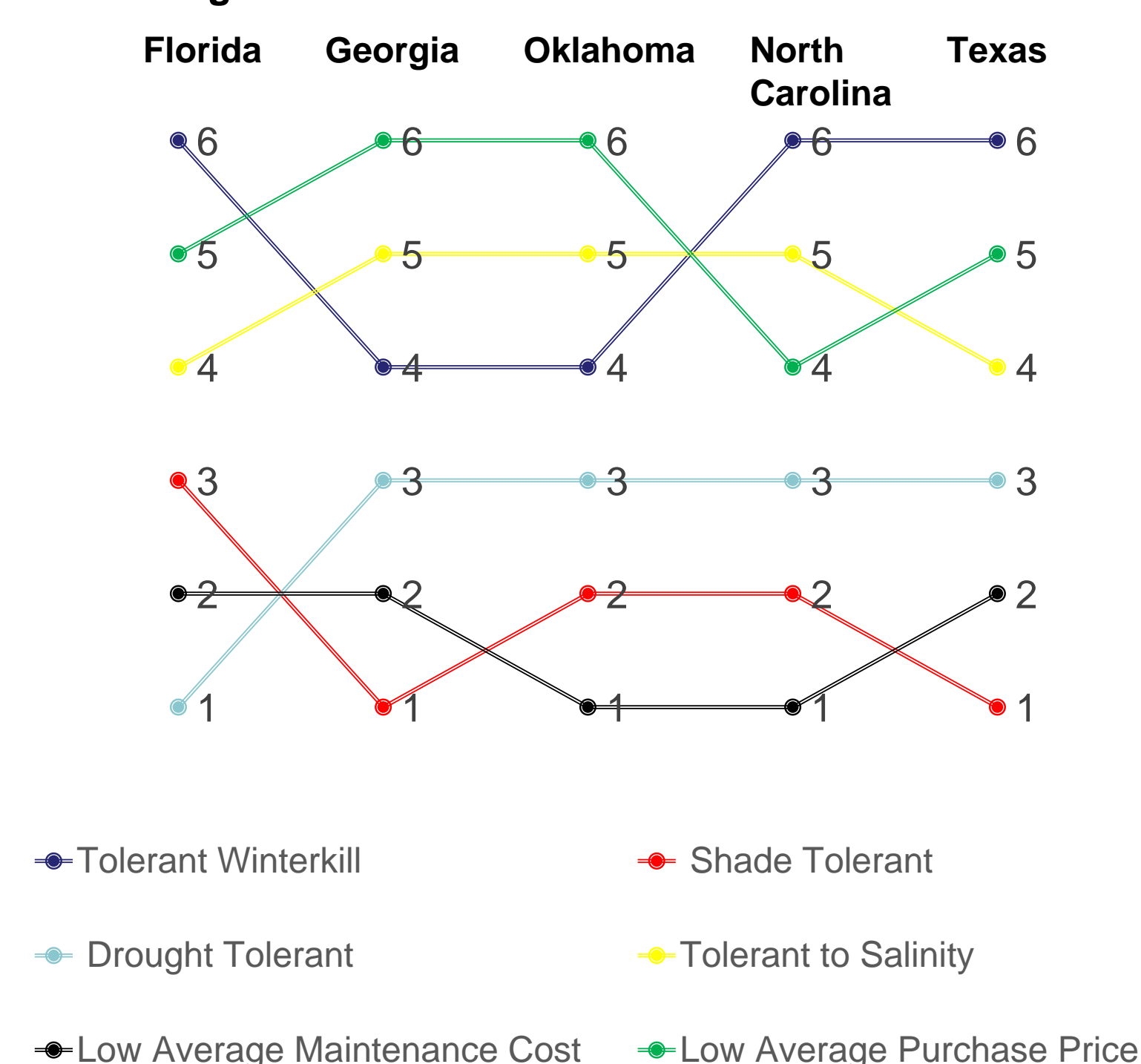
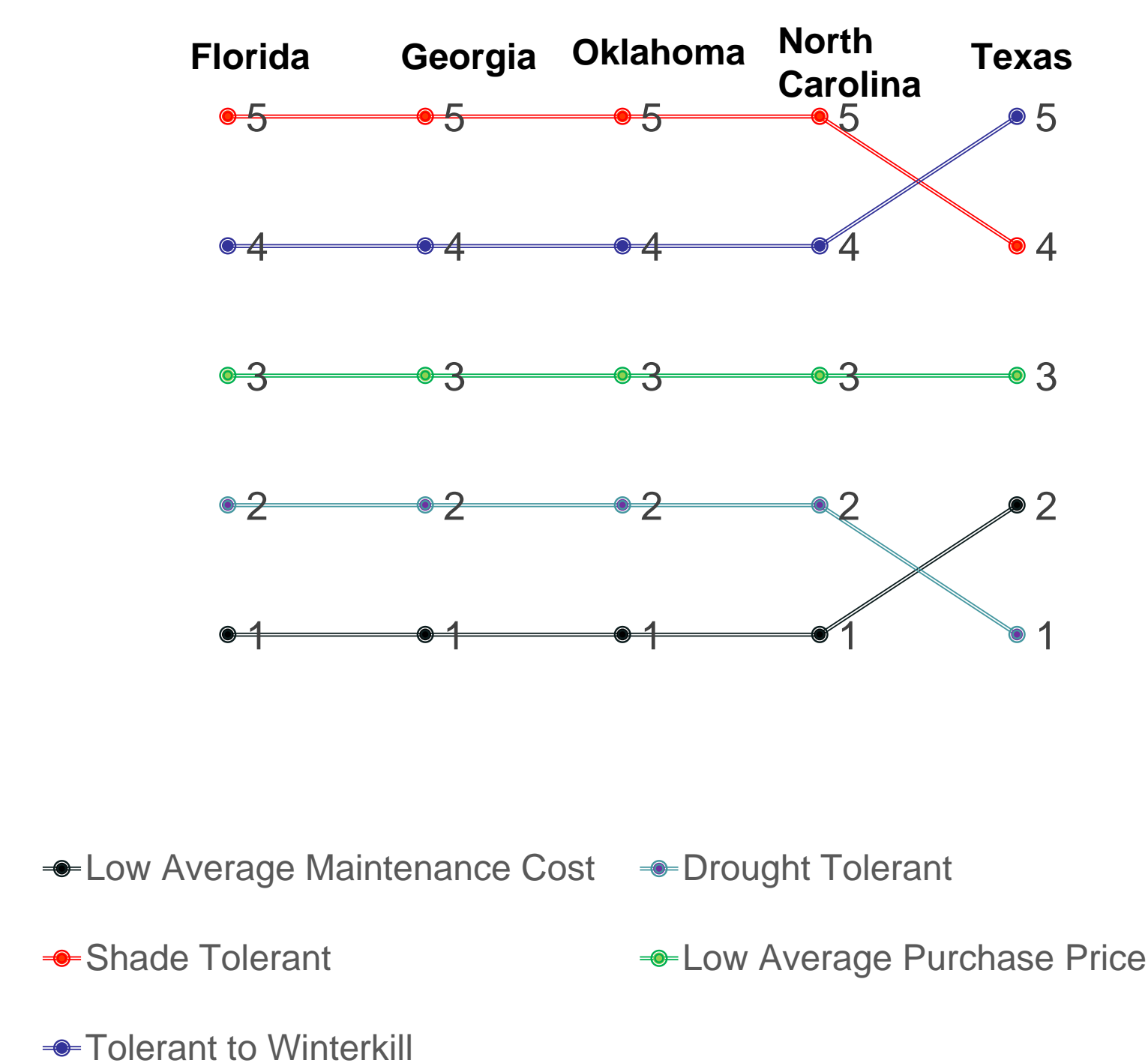


Fig. 2. Turfgrass characteristics ranking by states using the best-worst method.



Conclusions

Discrete choice

- The ranking of attribute for homeowners in terms of discrete choice estimates was slightly different for different states. However, three most important attributes in all states were low maintenance, shade tolerant, and drought tolerant turf.

Best-worst method

- The most important attribute was low maintenance turf followed by drought tolerance and low purchase price of turf for almost all states' homeowners. There was more homogeneity among states in the rankings than in the discrete choice.

These two methods yielded similar rankings for drought tolerant and low maintenance turf, but different rankings for shade tolerant and low purchase price turf. The low purchase price attribute was not significant and ranked fifth in discrete choice experiment while it was the third most important attribute in best-worst method. Likewise, shade tolerant attribute was one of the top three attributes in terms of discrete choice method, but it was ranked one of the least important attributes using best-worst method.



References

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