Using best-worst scaling to understand public perception of municipal water conservation tools. By Michael Reilley\(^1\), Tracy Boyer\(^2\), and Damian Adams\(^3\).

The main objective of this study was to determine household water conservation preferences associated with drought constraints. In Oklahoma in 2006, statewide drought led to widespread municipal water shortages, forcing communities to adopt water short term conservation practices. These practices often took the form of watering bans. However, cities could have adopted a wide array of market incentive or command and control measures including smart meters, temporary ordinances (restriction on watering times), changes in water rate structure, public information campaigns, rebates for drought tolerant landscaping, rebates for low-flow appliances, and home audits. Because these water conservation techniques are often controversial and can be considered too restrictive, there is an explicit need to determine homeowner preferences for these techniques.

In order to fully understand individuals’ preferences and apply a ranking scheme to the water conservation techniques listed above, a best-worst methodology was applied, also called maximum difference scaling (Louviere and Woodworth, 1990; Lusk and Briggeman, 2009). Using SAS, a main-effects random design was created so that each respondent saw no two similar choice sets thus removing any bias resulting from the ordering of the characteristics within the choice sets. Two methods will be implemented to analyze the best-worst choice sets. The first method used was a count-based analysis which consisted of counting each time a conservation practice was chosen as most preferred and least preferred. In order to confirm the results of the count based analysis method and to produce probabilities, a conditional logit will be estimated in SAS using the data produced from the best-worst choice sets. Parameter estimates will be used to determine a ranking compared to the count-based analysis.

Three versions of an internet survey were distributed in July 2010 with accompanying information on the costs and efficacy of the water conservation tools. Approximately one third of the sample was asked which water conservation techniques they preferred the most and the least. One third of the sample was asked which technique they the average homeowner would most and least prefer. Lastly, one third of the sample was asked which water conservation technique would be most effective and least effective. All homeowners were given information on the price and average expected efficacy of the different conservation tools. We hypothesize that the first sample will illustrate homeowner’s strategic bias against block pricing toward the least effective policies, that homeowners will express different preferences on behalf of the average homeowner, and, finally, that respondents will respond more accurately when asked to assess the efficacy of the water instruments.

References:

\(^1\) Research Assistant, 308 Agriculture Hall, Dept of Agricultural Economics, Oklahoma State University, Stillwater, OK 74078; Michael.reilley@okstate.edu, 864-356-1828

\(^2\) Associate Professor, 321 Agriculture Hall, Dept of Agricultural Economics, Oklahoma State University, Stillwater, OK. 74078; Tracy.boyer@okstate.edu, 405-744-6169

\(^3\) Assistant Professor, 355 Newins-Zeigler Hall, School of Forest Resources and Conservation, University of Florida, Gainesville, FL. 32611; dcadams@ufl.edu, 352-846-0872