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RESIDENTIAL WATER CONSUMER BEHAVIOR UNDER INCREASING WATER PRICES

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ABSTRACT: Conventional wisdom has been that residential water consumers are unresponsive to price changes and, because of inelastic demand, price is an ineffectual conservation policy tool. Regardless, many water utilities have begun to increase price in attempts to change consumption choices and to reduce water use. A difficulty in setting efficient pricing policy is that the prices being considered are, in many cases, outside the historic range and so our ability to forecast is limited. Furthermore, consumers are heterogeneous and different customer types may respond to price changes differently. In order to develop effective policies, a better understanding of customer response and heterogeneity is necessary. We conducted economic experiments with almost 300 residential water customers of the Albuquerque Bernalillo County Water Utility Authority. The experiment was seeded for each participant based on an inventory of their household's water devices, household characteristics, actual water consumption, and reported water use activities and levels (e.g., four loads of clothes per week). Through ten experimental rounds of increasing prices (from ~\$1.00 to almost \$24 per 748 gallons), participants were asked to either alter their water consumption by changing their use levels for the individual water devices in their household, and/or have a higher expenditure for water, which was offset by reduced expenditures in other consumption categories, which they had also previously reported. We analyze this response data econometrically and nonparametrically. We find there are a number of different response patterns and that participants chose to cutback in different areas. Some reduced use in early rounds, but then hit a minimum tolerable level of consumption. Others only responded when water expenditures significantly impacted their ability to consume in other areas, while still other participants never reduced their use. Some chose indoor over outdoor uses, while other cutback uniformly. Preliminary econometric analysis suggests educational level, age, and attitudes towards scarcity impact consumption choices. Location in the city does also. These results suggest that prices increases will not impact consumer choices equally and policies aimed at water conservation will need to take into account the range of customer types and response in order to be effective.

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