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Poster Title: Anything They Can Do We Can Do Better: Examining Major Retailer's Pricing Trends to Optimize an Efficiency Marketplace

Abstract: New products enter the market daily and traditional evaluation methods cannot account for the rapidly changing options available to consumers. Webscraping is an innovative and inexpensive tool that can be used to provide frequent updates on pricing, features, and regional availability of appliances and other products of interest to program administrators. This tool can be used to monitor price changes for products in existing programs as well as collect data in advance of planning for future programs or other market interventions. Utilizing webscraping in place of manual data collection procedures cuts time and resources by 75%; for other applications, it expands the scope and efficiency of a project beyond what is feasible through traditional collection methods.

The authors harnessed this tool for a Northeastern utility, which provides an online marketplace for its customers where customers may purchase energy-saving products, or claim rebates offered for a variety of products covered by their programs. This utility periodically surveys the market to collect pricing information on these products. The authors identified online retailers that also sold products available on the marketplace and automated the data collection, providing price updates more frequently and efficiently than prior manual efforts. In this case, the authors confirmed the stated retail price on most products in the utility's marketplace catalog is similar to the average price at other retailers, affording a measure of confidence that the online platform was offering products at competitive prices. For the small portion of products with an average retail price lower than the marketplace, the authors recommended these products as candidates for a price reduction.

The authors also utilized webscraping to collect data on pricing and features from six product categories at two major home improvement retailers. Because these major retailers offer location-specific services to their customers, notifying them of in-store sales and availability, the authors collected product data from retailer locations within the utility's service area. The authors analyzed trends in pricing and features which revealed some notable findings, including: • The relationship between price and ENERGY STAR qualification is imprecise for air conditioners, air cleaners, and dehumidifiers. For clothes washers, dryers, and ductless mini-splits, ENERGY STAR-qualified products and products with higher CEE Tier qualifications are more expensive than less efficient products with similar features. • For accurate price comparisons, products with smart features (Wi-Fi enabled, connected, or learning devices) should be considered separately, regardless of ENERGY STAR status. Products that are Wi-Fi enabled or app-compatible are more expensive than products with similar sizes or functions that do not have smart features. Webscraping enabled the authors to collect all product data to see which features were most influential in predicting price; a traditional data collection approach would limit the number of variables to be considered for analysis. This project demonstrates that webscraping is a useful "big data" application that can be leveraged for projects, including questions about program design at the local level.