

Assessing weights collected by electronics collection sites registered with E-Cycle Wisconsin

Executive Summary

Introduction and background

This project sought to understand what variables influence the amount of electronics (weight) collected and reported by collection sites (collectors) registered with E-Cycle Wisconsin. E-Cycle Wisconsin was established in 2009 and it ensures there is a recycling network where members of the public and K-12 schools can recycle their old and broken electronics. There are collection sites throughout Wisconsin and they report their weights annually.

Methods

I limited my analysis to collectors that were active from 2016-2017 that were willing to accept televisions. I also eliminated some of the larger recyclers that also serve as collectors because of the scale of their operations. I suspected the size of the population the site is providing a service for, how many other collection sites were located nearby, the fees charged to customers, the number of locations each collector ran and the number of one-day events held by the collector were influenced the weight of electronics collected. I created a dataset of these variables using ArcMap and the numbers reported by the annual report. I used global multiple linear regression for my analysis.

Results and discussion

The global multiple linear regression model was not a good fit for this dataset. There also could be important variables that were not included in this project. I was unable to find a combination of variables that went above 0.5191 for the R squared value. Ultimately, the result was when all variables were included in the regression. Additional variables that could have mattered are the number of days sites are open or the cost of recycling other electronics.

The variable with the most positive influence was the population size of the collector's service area. I was expecting to have the cost associated with recycling large cathode ray tube televisions be an influence, but it was not. This could be because recycling electronics is unpleasant and there's limited access, so people may accept the more expensive fees.