

## *Preliminary study suggests Chicago's bag tax reduces disposable bag use by over 40 percent*

**Summary.** In November 2016, the Chicago City Council repealed its ban on disposable plastic bags and replaced it with a seven-cent tax on disposable paper and plastic bags, effective February 1, 2017.<sup>i,ii</sup> The City of Chicago commissioned a joint study with the behavioral design lab ideas42 and researchers from New York University and the University of Chicago Energy & Environment Lab to track bag use at large grocery chains in Chicago and surrounding suburbs before and after the tax went into effect.

Preliminary results from this study show that Chicago's bag tax has already led to a significant decrease in both the number of disposable bags used and number of customers using disposable bags. Prior to implementation, customers shopping in the study's sample stores in Chicago used an average of just over two disposable bags per trip, with over 80 percent of customers using at least one disposable bag. After the tax was implemented, the average number of disposable bags used per shopping trip decreased by roughly one bag per trip—over a 40 percent decrease. Additionally, less than 50 percent of customers in Chicago used any disposable bags after the tax was implemented—a decrease of more than 30 percentage points.

**Background.** One hundred billion plastic bags are used annually in the United States.<sup>iii</sup> While plastic bags are often recyclable, only a small percentage actually are recycled (just over five percent according to one of the latest studies from the EPA).<sup>iv</sup> Most plastic bags that are not recycled end up in landfills, where estimates suggest it can take them up to 1,000 years to decompose. Paper bags also have significant environmental impacts; for example, the paper industry—including paper bags and other paper products—contributed to 20 percent of all toxic air releases in the US in 2015.<sup>v</sup>

Starting in 2015, in an effort to curb disposable bag use, the City of Chicago banned chain stores from providing disposable plastic bags at checkout. However, the ban excluded plastic bags that met certain requirements, including but not limited to being at least 2.25 mils thick.<sup>vi</sup>

In November 2016, the Chicago City Council repealed the ban on plastic bags and replaced it with a seven-cent tax on all paper and plastic checkout bags, starting on February 1, 2017.<sup>vii</sup>

**Reasons for a Tax Instead of a Ban.** While the 2015 ban eliminated the use of certain types of disposable bags, it left others unregulated. As a result, many stores chose to offer the permitted thicker plastic checkout bags rather than eliminate plastic bags altogether,<sup>viii</sup> which may have minimized the environmental impact of the law.<sup>ix,x</sup> Since stores simply substituted one type of plastic bag for another, there was no strong cue to customers to change their behavior, and many continued to use the thicker, “reusable” plastic bags as single-use bags. Separate from the ban, some Chicago stores use small rewards to incentivize reusable bag use, but previous research has shown that these rewards are similarly ineffective.<sup>xi</sup>

In contrast, disposable bag taxes have been shown to have a significant behavioral impact. For example, a five-cent tax on disposable paper and plastic bags in the Washington, D.C. area led to a large reduction in overall disposable bag use.<sup>xii</sup> The differential impact of the tax on disposable bag use and a

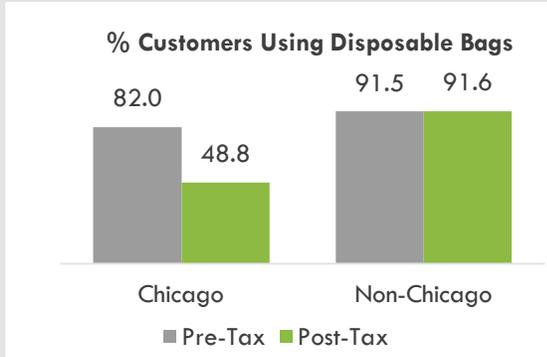
reward for reuseable bag use is consistent with the concept of loss aversion, i.e., individuals experience losses more strongly than they do gains of the same amount.<sup>xiii</sup>

Additionally, although Chicago’s seven-cent tax is a small fee, it was designed to be more salient than the ban. While customers may not notice that their grocery store has switched to providing thicker plastic bags as a result of the ban, research suggests that customers are likely to notice when an item that they previously received for free now comes at a price,<sup>xiv</sup> thus bringing their bag use to the top of their minds.

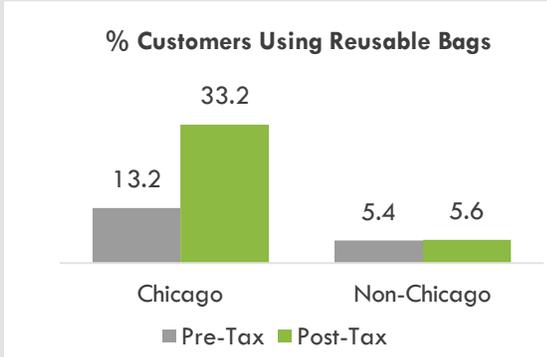
**Results.** This study compares shopping bag use for 14,168 customers shopping at large grocery store chains in Chicago and surrounding suburbs in the months just before and after the bag tax implementation. The results reported here are based on raw, unadjusted data. The results remain robust after controlling for various demographic and neighborhood factors.<sup>xv</sup>



Prior to the implementation of the tax, customers in Chicago used an average of 2.3 disposable bags per shopping trip. Preliminary analysis suggests that the average number of disposable bags used per shopping trip decreased by 1.3 bags in the first month that the tax was in effect in Chicago, but only 0.3 bags in the stores outside of Chicago that were not subject to the tax. Taken together, this suggests that the tax led to a 42 percent reduction in the average number of disposable bags used per trip.

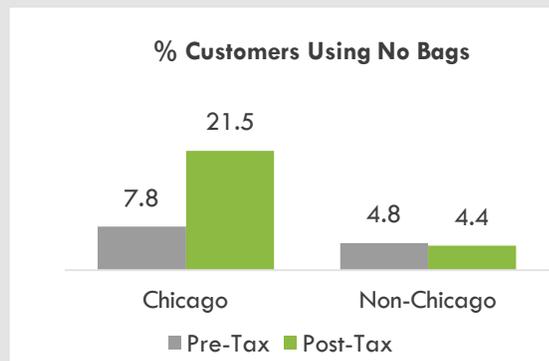


While the majority of customers in Chicago (82 percent) used at least one disposable bag prior to the implementation of the tax, only 49 percent used a disposable bag in the first month after the tax was in effect—a decrease of 33 percentage points. In contrast, there was no significant change in disposable bag use in stores outside of Chicago.



After the tax was implemented, many customers in Chicago switched from disposable bags to reusable bags. Reusable bag use in Chicago jumped from 13 percent to 33 percent after the tax was implemented—an increase of 20 percentage points.

Note: around 3 percent of customers used both a disposable bag and a reusable bag.



Some customers in Chicago also opted to not use any bags at all. The percent of customers choosing to not use a bag in Chicago stores increased from just under 8 percent to 21.5 percent. The percentage of customers outside of Chicago who did not use bags remained nearly unchanged with under 5 percent of customers using no bag in both time periods.

**Discussion.** This year, Chicago joined Washington, D.C., Los Angeles, San Francisco, and Seattle as one of the largest cities in the U.S. to implement a tax on disposable paper and plastic bags.<sup>xvi</sup> While the debate about the effectiveness of disposable bag taxes continues,<sup>xvii</sup> this preliminary evaluation in Chicago contributes to the growing literature of evidence-based research on the effectiveness of disposable bag regulations. In commissioning this study, the City has been proactive in determining the extent and magnitude of the effects of its policies on Chicago customers. Moreover, the study provides information that can assist other municipalities in making decisions about the use of different policy tools aimed at decreasing disposable bag use.

This study suggests that the Chicago bag tax significantly decreased disposable bag use in the first month after implementation. Additional data collection and analysis are planned in 2017 to estimate the longer-term behavioral effects of the tax.

### Research Team

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