

Do plastic bag charges really work?

When charges for plastic bags were first introduced, it was hoped consumers would stop buying them, or at least cut down. But can a small cost really make a big difference? Here's what the evidence shows



The image of a whale eating discarded plastic shown in the BBC documentary [Blue Planet II](#) was one of several highlighting the problems associated with the use of plastics. The problems affect all countries and industries.

It's a global problem that requires a global solution, but small actions can help. One way communities attempt to reduce plastic consumption is to charge a small fee for single-use plastic bags when shopping. Research suggests this is effective. The [latest research from the US](#) supports earlier work suggesting that a small charge halves the use of plastic bags.

Watching the neighbours

It is reasonable to think that a small charge should have a small effect on behaviour but that's not necessarily the case.

In 2012, Professor Tatiana Homonoff noted three neighbouring communities in the Washington Metropolitan Area in the US were about to treat plastic bag use differently. On 1 January 2012,

Montgomery County in Maryland introduced a five cent charge for each plastic bag used. This would be added when people paid. Meanwhile, Washington DC already had a plastic bag tax and Arlington County, Virginia never had a tax and did not introduce one during the study period.

By comparing how many plastic bags shoppers used in the three communities both before and after the introduction of the tax, it was possible to gain a more accurate estimate of how effective a small charge could be.

A number of techniques were used including having people watch whether people used bags when shopping, surveying people after they had shopped and examining till receipts.

The headline figure was stark. Plastic bag use in Montgomery County halved in the three months after the tax was introduced compared to the preceding three months. There was virtually no change in the other communities.

- The proportion of shoppers using plastic bags fell in Montgomery County from 82% before the tax to 40% afterwards.
- In Arlington, Virginia, where no tax was charged, plastic bag use was virtually unchanged from 82% before to 81% after the tax change.
- In Washington DC, it was also virtually unchanged from 45% to 46%.

There was also evidence people substituted for reusable bags. In Montgomery County, the percentage of shoppers using reusable bags increased from 16% to 49%. There was effectively no change in the other communities.

Wrapping with other research

Research in the past has suggested plastic bag taxes reduce their use.

A 2007 paper examining the 2002 introduction of a [plastic bag tax in Ireland](#) suggested a reduction of 90%.

A 2010 [study from South Africa](#) found plastic bag use dropped by around 44% when a levy started in 2003 - but crept up possibly as shoppers got used to paying. There were also different effects depending on the consumer's income level.

A 2010 study of a 2008 tax [introduced in China](#), found a 49% drop but the effectiveness varied depending on the degree of enforcement and public education.

[Data from the UK Department for Environmental and Rural Affairs](#) in 2018 noted that seven main retailers issued around 83% fewer plastic bags in 2016 to 2017 compared with a period before a plastic bag tax was introduced in October 2015.

The added bonus

Given that research tends to show a noticeable fall in plastic bag use when a small tax is introduced, the US study may not - at first glance - seem to add much additional insight. But the details suggest otherwise.

While other studies examined behaviour before and after the tax, the US study compared similar and neighbouring communities around the introduction of the tax, which allowed the researchers

to assess changes against unchanged and similar comparison points. As such, the results are more powerful than previous studies.

Further, a quirk in the way stores distributed plastic bags between the three communities enabled Professor Homonoff to calculate that, to have the same effect as the tax, people would need to be paid five times more than the tax to bring their own re-usable bags. In other words, people would need to be paid a bonus of 25 cents per bag rather than being taxed at five cents per bag to have the same reduction in use.

This estimate was possible because both before and after the introduction of the tax, some stores in some communities offered a bonus of five cents per bag (by reducing the amount paid at the till) if people bought their own bags.

Another important aspect of the US study was that it was able to confirm that a bonus policy alone had little effect on plastic bag use – irrespective of whether there was a tax.

Thinking small

That a charge as small as five cents could have such a large effect is important to recognise from both a policy and a personal perspective. The main reason for this appears to have been that [loss aversion](#) plays an important role in changing people's behaviour. This was a direct conclusion from the US study.

Publicity about the introduction of the tax and attitudes to the use of plastic bags were examined specifically in the study but did not play an important role. That is not to say that these factors would be important – even vital – in other places or for other interventions. But in this particular case, when it is highly transparent such as when you are paying at the checkout, money talks.