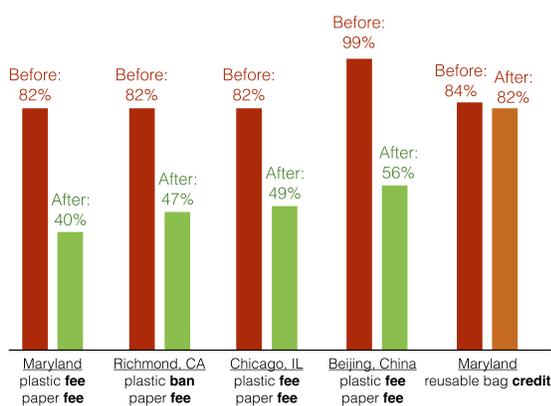


# Brief on effectiveness of plastic regulation around the world

This report was compiled by the [Scientist Action and Advocacy Network](#) and summarizes evidence from academic and government-commissioned studies. For questions or comments, email [info@scaan.net](mailto:info@scaan.net).

Revision Apr 15, 2019

Plastic pollution represents a critical threat to both wildlife that gets trapped or poisoned by ocean- and wind-borne litter, as well as the humans who eat food that has been contaminated by plastic microparticles.<sup>1,2</sup> Abating the flow of lightweight plastics, such as plastic carrier bags, into the environment is thus an urgent matter for policy intervention. Most commonly, this regulation takes the form of a ban or charge for single-use plastics. This brief and table aim to summarize the impact of different types of policies around the world on reducing plastic usage.



**Figure 1:** The percentage of customers using single-use bags drops in response to bans and fees, but not in response to reusable bag credits. Data reported in studies for the following locations: Maryland,<sup>3</sup> Richmond,<sup>4</sup> Chicago,<sup>5</sup> and Beijing.<sup>6</sup>

Across multiple countries and continents, the common feature among effective plastic carrier bag regulations is a charge on the bag itself, via fee or tax. The fees in various implementations have ranged from the equivalent of 3 to 20 US cents,<sup>6,7</sup> and can reduce the usage of these bags by half (Figure 1). Support for these poli-

cies tend to increase over time after implementation as people acclimate.<sup>8,9</sup> Evidence also suggests that these behavior-changing policies increase consumers' support for other environmentally friendly policies,<sup>10</sup> as well as their likelihood to make environmentally conscious product choices.<sup>11</sup>

Plastic bag regulation is often ineffective when stores offer an alternative type of bag not explicitly prohibited by the regulation, such as paper bags or thick plastic bags that evade the regulation. This occurs most often with "ban-only" type legislation. Consumers will switch to using this alternative type of bag, failing to reduce overall single-use bag consumption. This occurred in Austin<sup>12</sup> and San Francisco,<sup>13</sup> with thicker bags and paper bags, respectively. Other ineffective policies include a plastic bag ban implemented in Delhi, India<sup>14</sup> that failed because it was not effectively enforced, and a 5 cent credit to Maryland customers who brought reusable bags to the grocer, which resulted in no behavior change (Figure 1).<sup>3</sup>

Taken together, these studies in diverse locales amply demonstrate the power of charging for plastic on consumers' behavior. However, more work is needed to examine the effectiveness of these policies on the environment. A study on California's state-wide plastic ban and fee found policy "leakage" effects, namely an increase in purchases of unregulated small trash bags after implementation, though it still had a net impact of eliminating 28 million pounds of plastic from the waste stream.<sup>15</sup> As plastic regulation reaches new regions, we entreat researchers and governments to conduct thorough studies on the before and after effects of the policies on the local ecosystem, via litter analysis and other outcome measures. These studies are critical to quantifying the specific environmental impact of these regulations.

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