

More grocery stores means less food waste—and a big carbon cut

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Elena Belavina. Credit: Cornell University

One strategy for reducing food waste's environmental impact is as counterintuitive as it is straightforward: Open more grocery stores.

That's according to new research from Elena Belavina, associate professor at the School of Hotel Administration in the Cornell University SC Johnson College of Business.

The spoiled milk, moldy vegetables and expired meat we discard when cleaning out the fridge make a surprisingly large contribution to global warming. One-third of all [food](#) produced is wasted, a problem responsible for carbon emissions equivalent to all road transportation, said Belavina.

"The more stores you have, the lower food waste is going to be," said Belavina, an expert in operations management and supply chains. "Very small increases in [store](#) density can have a very high impact."

When consumers can purchase perishable goods nearby, Belavina said, they shop more often but buy less each time, ultimately wasting less.

"There's less food sitting at home," Belavina said. "As a result, there is a much lower likelihood that something will be spoiled, and we'll actually be able to eat all of the stuff that we've purchased before its expiration date."

For example, Belavina found that in Chicago, which she said is typical of many American cities, adding just three or four markets within a 10-square-kilometer area (about four square miles) would reduce food waste by 6% to 9%.

That would achieve an emissions reduction comparable to converting more than 20,000 cars from fossil fuels to electric power, Belavina reports in "Grocery Store Density and Food Waste," published in the

journal *Manufacturing and Service Operations Management*.

Most big cities are well below the ideal density of [grocery stores](#) that would minimize food waste, the research determined. In Chicago, that would be about 200 markets within a 10-square-kilometer area—compared to 15 currently—but most of the benefit from reduced emissions would be achieved by about 50 stores. New York City, with its abundance of produce stands and neighborhood markets, comes closest to its ideal density.

Urban planners, [city governments](#) and activists should pursue policies encouraging an optimal [density](#) of grocery stores based on each city's population, she said. Retailers' sustainability plans should analyze how their store networks and supply chains contribute to food [waste](#) and emissions overall.

"We actually see some moves across the globe toward going a little bit back in time and reviving those small corner stores, mom and pop stores, smaller-format stores," she said.

More information: Elena Belavina, Grocery Store Density and Food Waste, *Manufacturing & Service Operations Management* (2020). [DOI: 10.1287/msom.2019.0800](#)

Provided by Cornell University

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