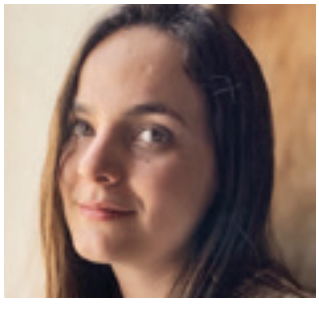
SOMETHING IN THE AIR

PHD CANDIDATE SANDRA AGUILAR-GÓMEZ INVESTIGATES THE ECONOMIC, POLICY, AND ENVIRONMENTAL-JUSTICE IMPLICATIONS OF MEXICO CITY'S AIR-QUALITY WARNINGS.

BY BRETT ESSLER

MEXICO CITY'S REPUTATION FOR POOR AIR QUALITY IS NOTORIOUS. THROUGHOUT THE 1970S AND '80S, THE METROPOLIS'S RAPIDLY EXPANDING POPULATION, INCREASED AUTOMOBILE TRAFFIC, AND GEOGRAPHIC LOCATION IN A HIGH-ALTITUDE VALLEY SURROUNDED BY MOUNTAINS RESULTED IN THE UNITED NATIONS NAMING IT "THE MOST POLLUTED CITY ON THE PLANET."



Sandra Aguilar-Gómez

Policymakers took steps to curb the pollution—reducing automobile traffic, imposing stricter emissions standards, improving access to public transportation, and instituting an air-quality-alert system.

The Mexico City Environmental Alert System now publishes pollution warnings and implements a series of strong measures to reduce emissions, including driving restrictions and closing schools, government offices, gas stations, and factories.

For Sandra Aguilar-Gómez, a PhD candidate in Sustainable Development at SIPA, the air-quality warnings posed a number of interesting research questions. So she began digging into the data to look at the economic impact of the policy on factors including pollution and public health. Her findings thus far (the research is still in progress) could have implications for policy both in Mexico and in other countries with pervasive air-quality problems.

"There is established evidence of how one day of very bad pollution can have massive health impacts," Aguilar-Gómez explains from Mexico City during a July interview. "So, one day of pollution changes the rate of hospitalization, changes the rate of overall mortality, and specific mortality on cardio and respiratory diseases."

Aguilar-Gómez says that given these strong impacts on health, governments needed to take a short-run policy to protect people on very polluted days, as measured by ozone levels.

Aguilar-Gómez's research so far has shown that the policies have had only a modest effect on air pollution. Drivers, over time, have found ways to adapt and subvert driving restrictions. The greater impact, she says, is from regulating high-pollution industries like refineries and thermoelectric plants.

"I think that there should be more emphasis on this kind of policy, shifting responsibility from individuals to industries, and specifically, to these very dirty state-owned plants," Aguilar-Gómez says. "The government took steps in this direction last year."

"When you implement a pollution control policy," she continues, "you may be shifting the geographical dispersion of pollution, so good policy design has to consider this. So potentially, for this particular policy, you stop pollution in some parts of the city, but then you generate a cockroach effect—that people go to places with less enforcement."

"INEQUALITY AND ENVIRONMENTAL JUSTICE IS DEFINITELY SOMETHING THAT HASN'T BEEN LOOKED AT A LOT IN MEXICO. AND I THINK THAT NEW FIELD OF RESEARCH IS FASCINATING."

She found that the health effects are also modest. When traffic restrictions are in place, Aguilar-Gómez explains, another health hazard emerges.

"If people can't drive and they're [using] public transportation, then they're walking more on those days," she says. "And they're spending a lot of time in bus stops [exposed to pollution]. It looks like these kinds of changes in exposure are counteracting the changes in pollution. That's where this discussion of policy objectives enters into play."

"By looking at how the policy was designed in response to the fluctuations in pollution, the policy is always triggered by ozone," Aguilar-Gómez explains. "But ozone varies throughout the day and reaches its maximum around 4 p.m. The policy is almost always declared late in the day, at the time when many other pollutants are already decreasing anyway."

Aguilar-Gómez's research into these policies began before the COVID-19 pandemic, but the public health risks the pandemic has exposed are very much related to the air-quality policy.

"It resonates a lot with what is happening with COVID, that some people can stay home," she stresses. "Those are the people for whom the policy is going to be more effective."

As Aguilar-Gómez — who studied economics at Instituto Tecnológico Autónomo de México (ITAM) and has an MA in sustainable development from Columbia — continues fine-tuning her dissertation remotely from Mexico City, she has also found time to present her findings on correlations between COVID and air quality.

"More research has to be done on this important topic," she says, "but the places that saw the first and worst outbreaks were also the most polluted places."

Aguilar-Gómez's research interests have always lived at the intersection of economics, public policy, and social justice — from the impact of cigarette taxes on mortality rates in low-income areas to the influence of boys on destigmatizing menstruation in Tanzania.

John Mutter, director of the PhD program at SIPA, says Aguilar-Gómez's work is "flawless."

"She has a keen eye for novel and important areas of research that have been neglected by others," he says. "Her dedication to work in her home country of Mexico is laudable."

"I will definitely, in the future, start looking at environmental justice in Mexico and other developing countries, linked to these kinds of policies," says Aguilar-Gómez. "Right now, I'm centered around Mexico City, but I would like to use satellite data to measure pollution to extend these analyses to other regions. Environmental justice is a topic that is gaining traction in the US, but in my view, it is still neglected in other parts of the continent that also present large historical inequalities in exposure to pollution and other forms of environmental degradation.

"Inequality and environmental justice is definitely something that hasn't been looked at a lot in Mexico. And I think that new field of research is fascinating."