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Timeline
2020

Sample Size
Approximately 650 undergraduate and graduate students in Bogotá, Colombia

Research Implemented by IPA
Yes

Using Information and Communication Technologies to Address Air Pollution in Colombia

Abstract

Chronic severe air pollution in Bogotá, Colombia has serious human health impacts. Using information and communication technologies (ICTs) to disseminate information about air quality may enable citizens to reduce their exposure to air pollution by, for example, avoiding outdoor exercise on certain days an in certain locations, and may also help change their environmental attitudes and policy preferences. To investigate these linkages, researchers from Inter-American Development Bank have partnered with IPA and the Rosario Experimental and Behavioral Economics Lab to evaluate the impact on avoidance behaviors, environmental attitudes and policy preferences of air quality information disseminated through a smartphone application called AIRE BOGOTÁ.

Policy Issue

More than half of the population of Latin American and the Caribbean lives in places where air quality does not meet the standards recommended by the World Health Organization (WHO).[1] Poor air quality has been causally linked to premature mortality, loss of income for

poor households, and poor educational outcomes.[2]

Previous studies have shown that air quality alerts can lead people to reduce their exposure to air pollution, particularly those suffering from chronic illnesses or otherwise vulnerable to increased air pollution.[3] These studies have investigated the effects of air quality alerts delivered through radio, newspaper, and public media on health outcomes and avoidance behavior. However, less evidence exists about alerts delivered through interactive digital media platforms that can be personalized. Also prior studies have typically focused only on avoidance behaviors that are easy to observe in public, such as attendance at outdoor events.

This evaluation aims to provide evidence needed to design, administer, and implement information-oriented air pollution and climate change policies in Colombia by evaluating the effects of distributing accurate, real-time, salient air pollution information via a smartphone application.

Context of the Evaluation

In Colombia, the annual median concentration of particulate matter in urban areas ($PM_{2.5}$), a particularly dangerous type of air pollution, is 17 ug/m^3—higher than the World Health Organization's guideline levels of 10 ug/m^3.[4]

This study evaluates the effects of AIRE BOGOTÁ, a smartphone application developed by the Secretary of Environment (Secretaría de Ambiente) in Bogotá to disseminate air quality information. Developed alongside a website and other investments in air quality data collection and dissemination, this application aims to increase the salience of air quality information with personalized and interactive tools. Participants in the evaluation include undergraduate and graduate students from universities in Bogotá.

Details of the Intervention

Approximately 650 students participated in the study. Participants were randomly assigned at the lab session-level to either an intervention group or a comparison group. Those in the intervention group attend an information session focused on air pollution in Bogotá, avoidance behavior recommended by the City Government, and suggestions for using air pollution information for better decision-making. They were also encouraged to download and engage with the AIRE BOGOTÁ application.[5] In addition, participants assigned to the intervention group received an incentive structure for regular interaction with the application. Specifically, they received weekly emails asking them questions about air quality levels at a specific time and a specific geographic location—information displayed in AIRE BOGOTÁ. They could submit answers via SurveyCTO links included in the emails. Monetary incentives were provided for correct answers to questions. The comparison group, meanwhile, received a placebo information session and encouragement structure related to art history.

Data was collected between the third week of January 2020 and the last week of June 2020.

An initial survey was administered during the information sessions in REBEL, with follow-up survey sessions administered remotely two months later and with the email campaign administered between the baseline and endline. Researchers measured changes in avoidance behaviors, physical activity, health, air quality knowledge, environmental behaviors and attitudes, and policy preferences. After the follow-up survey, four focus groups of three participants each were held to elicit feedback about AIRE BOGOTÁ.

Results and Policy Lessons

Project ongoing; results forthcoming.

Sources

1 http://data.worldbank.org/indicator/EN.ATM.PM25.MC.ZS/countries/MX-XJ-CL?display=graph

2 (Arceo, Hanna, and Oliva, 2016; Hanna and Oliva, 2014; Miller and Ruiz-Tagle, 2015; Miller and Vela, 2013).

3 Matthew Neidell, "Information, Avoidance Behavior, and Health: The Effect of Ozone on Asthma Hospitalizations." *The Journal of Human Resources*, Vol. 44(2) (2009): 450-478.

4 https://apps.who.int/iris/bitstream/handle/10665/250141/9789241511353-eng.pdf?sequence=1

5 The App is available both as an android version and an iOS version.

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