

Training & Capacity Building

October 2015

Voices from the Field: Air Pollution Research in Mexico City

This month, Allan Just, Ph.D., assistant professor in preventive medicine, Icahn School of Medicine at Mount Sinai in New York, shares his experience of conducting air pollution research in Mexico City.

On my last trip to Mexico City, the largest city in North America, I discovered a neighborhood in which all of the streets are named after U.S. states and places — where Pennsylvania intersects with Philadelphia. As in the U.S., urban environmental health challenges in Mexico are the focus of a large governmental, academic, and non-governmental research community. In Mexico, where the burden of environmental exposures and disease sometimes resembles those of the U.S. and sometimes is strikingly higher, researchers and policy makers rely on scientific evidence to promote action toward preventing ill health.



Situated in a valley, and relying heavily on automobiles, Mexico City often suffers from poor air quality. (Photo courtesy of Wikimedia)

As an environmental epidemiologist and co-investigator in a research collaboration, I regularly meet with my collaborators and policy makers in Mexico City to learn more about this region and its environmental health concerns. There is a long history of collaboration between researchers at the Mexican Instituto Nacional de Salud Pública (INSP) and the Instituto Nacional de Perinatología, with NIEHS-funded researchers — originally at the Harvard T.H. Chan School of Public Health but now including many collaborators at the Icahn School of Medicine at Mount Sinai and the University of Michigan.

I joined this collaboration as a postdoctoral fellow at Harvard in 2012, when I began working on a project to develop an air pollution model for exposure estimates in the ongoing Mexico City Programming Obesity Growth and Social Stressors (PROGRESS) cohort led by Robert Wright, M.D., now at the Icahn School of Medicine at Mount Sinai. There were challenges. In the earliest stages of the project, we had difficulty finding commonly used spatial data, including classified roadways, or any information on traffic density in this megalopolis. This led us to try new approaches, for example, substituting crowd-sourced information from OpenStreetmap. Because these types of data are so readily available in the U.S., we needed to explain why these sources of data were not included in our research to peer-reviewers who may not be aware of these challenges faced by researchers working on global environmental health issues.

Making an Impact

Working with the team at INSP was critical to understanding the local context and finding the right

datasets as well as learning about how policy makers might use our results, so that we could work to make the greatest impact. Our project involving air-pollution modeling has now evolved as an ancillary part of the PROGRESS study and is being incorporated into other projects led by team members from both the U.S. and Mexico. For example, this year, Martha Ma (Mara) Téllez Rojo, Ph.D., of the INSP led a successful proposal to the Mexican National Council of Science and Technology that will combine our exposure model with data from a large population-based survey in Mexico City, to understand the link between particulate matter less than 2.5 microns in diameter (PM2.5) exposure, socio-economic disadvantage, and health outcomes. In addition, two doctoral students at the INSP are building on our work by applying the air pollution model in their dissertation research. I'm honored to join their dissertation committees and play a role in their training. Mentoring these students aids one of the long-term objectives of the collaboration to build local capacity in environmental health and creates a new set of collaborators who may continue with this study and similar bi-national efforts — just as my mentors in the U.S. brought me into the project.

Although there are challenges in working across cultures and languages, crossing borders in research is now easier than ever before. In contrast to the old conference call lines filled with static and microphone problems, our teams now have weekly web conferences, and we exchange ideas and results back and forth in frequent dialogue.

Frequent communication is also crucial to develop culturally appropriate questionnaires for use by

participants in our study. Although Mexico City is a flight away from New York, when working with the PROGRESS cohort we are mindful of the extra time it takes to get things done like ordering supplies or filling out paperwork required to ship biologic samples to U.S. labs for analysis.

Like many scientific projects, our efforts have evolved and taken longer than we first estimated. Besides the many benefits of a successful collaboration, adapting to the ground realities and letting them guide the research has brought us new ideas and scientific developments that we surely would have missed running similar studies here in the U.S.



Taking a break, the INSP and Harvard team pose for a photo.

(Photo courtesy of Allan Just, back row, 2nd from left)