NICOLE NGO
http://www.columbia.edu/~nsn2106
nsn2106@columbia.edu

COLUMBIA UNIVERSITY
Sustainable Development

Contact Information

526 W 112th St, Apt. 41A
New York, NY 10025
T: 9494130393

Undergraduate Studies

B.A. in Economics, University of California, Irvine (cum laude), 2006
B.S. in Earth and Environmental Science, University of California, Irvine (cum laude), 2006

Graduate Studies

Columbia University, 2007 to present
M.A. Sustainable Development 2010
M.A. Thesis title: Impacts of Roadway emissions on urban fine particle exposures: the Nairobi Area Traffic Contribution to Air Pollution (NATCAP) Study
Expected Completion Date: Spring 2013

Teaching and Research Fields

Primary fields: Health economics and Development economics
Secondary fields: Atmospheric science

Teaching Experience

Spring 2011 & Fall 2011	Teaching fellow, "Energy Economics," School of International Public Affairs (SIPA), Columbia University
Spring 2010	Teaching fellow, "Sustainable Development Seminar," SIPA, Columbia University
Fall 2009 & Fall 2010	Teaching fellow, "Introduction to International Development," SIPA, Columbia University
Fall 2010	Tutor, "Microeconomic and Policy Analysis," SIPA
Summer 2010	Instructor, "Quantitative Methods," SIPA, Columbia University
Fall 2008	Teaching fellow, "Challenges of Sustainable Development," Columbia College, Columbia University

Research Experience and Other Employment

2009-present	Research Assistant, Center for Sustainable Urban Development, Columbia University
2009-2011	Research Assistant, Mesoscale and Microscale Meteorology Division, National Center for Atmospheric Research
2010	Research Assistant, Professor Jose Antonio Ocampo, SIPA
2008-2009	Research Assistant, Earth Institute, Columbia University,

Publications

Kinney, PL, Gatari, M., Volavka-Close, N., Ngo, N., Ndiba, PK., Law, A., Gachanja, A., Mwaniki, S., Chillurd, SN., Scalar, E. 2011: "Traffic Impacts on $PM_{2.5}$ Air Quality in Nairobi, Kenya," *Environmental Science and Policy*, 14, p. 369-78.

Ngo N.S. and Pataki D.E. 2008: "The energy and mass balance of Los Angeles County."*Urban Ecosystems*, **11**, 2, 121-139.

Grants and Honors

2011-2012	Center for International Business Education and Research Doctoral Research Grant (with Jacqueline Klopp): "Business Innovations and the Sustainable City: The Case of Nairobi"
2011-2012	Institute for Social and Economic Research and Policy (Seed grant) (with Patrick Kinney and Jacqueline Klopp): "Air quality, socio-economic status, and policy"

Research Papers in Progress

"Evaluating health impacts of environmental regulations to reduce pollution emissions from New York City's public transit bus fleet"—Abstract: Since the late 1980's, New York City Transit (NYCT) and the U.S. Environmental Protection Agency have made major efforts to reduce pollution emissions from their bus fleet. Between 1995 and 2005, emissions of particulate matter from buses decreased by 97%; buses built more recently emit much less relative to buses built earlier and are currently being phased out. I exploit the random distribution of public transit buses using detailed data on bus shifts provided by NYCT and use bus age as a measure of street level bus emissions. Using data on individuals discharged for respiratory illnesses from the emergency department and birth outcomes in NYC, including patients' exact street addresses, I measure the association between street level bus emissions and health outcomes. Finally, I calculate a cost-benefit ratio of these environmental policies to reduce pollution emissions from public transit buses.

"Health impacts of industrial pollution emissions in Sub-Saharan Africa: Evidence from an energy-rationing program in Nairobi"—Abstract: By 2050 more than half the population is expected to live in urban areas in sub-Saharan Africa (SSA), yet there is little information concerning urban air pollution in SSA as a potential public health risk. A lack of reliable health data and consistent air pollution monitoring in SSA make it difficult to ascertain if air quality regulations are needed. This study examines the case in Kenya, where currently no air quality regulations are enforced, and exploits an energy-rationing program that occurred in August 2011 and targeted industrial areas in Nairobi. Using local clinic data on cases of respiratory illness from informal settlements located near one of two industrial areas in Nairobi, this paper attempts to look at the health impacts of reducing industrial pollution emissions in SSA.

"Measurements of occupational exposure to PM2.5 from roadways and informal settlements in sub-Saharan Africa: A case study in Nairobi" (with Patrick Kinney and Michael Gatari)—Abstract: Few studies examine urban air pollution in SSA, yet urbanization rates in this region are currently the highest in the world. By 2020, half the population in Kenya, a country where no air quality regulations are enforced, is expected to live in urban areas. To improve our understanding of potential health impacts of urban air quality, this studies measures 8-hr average occupational exposure levels to PM2.5 for low-income, vulnerable occupations located near roadways in Nairobi, specifically bus drivers, garage workers, and street vendors. As a comparison group we also measured exposure levels for women who reside and, for the most part, work in Mathare, an informal settlement in Nairobi. Results indicate that bus drivers in Nairobi experience 2 to 5 times the amount of PM2.5 as bus and truck drivers in cities in developed countries. While exposure levels for garage workers, street vendors, and women in Mathare were not statistically different from each other, suggesting strong pollution sources in informal settlements as well.

"Health risk perceptions of urban air pollution in informal settlements in sub-Saharan Africa" (with Simon Kokoyo and Jacqueline Klopp)—Abstract: There is a prominent gap in the literature on the

public's understanding and health risk perceptions of urban air pollution in SSA, especially in low-income neighborhoods where individuals may be more vulnerable to exposure. It would be unfair to assume that those residing in informal settlements would see air pollution as problem because 1) to the authors' knowledge there is little work, if any, on risk perceptions of air quality in informal settlements and 2) the lack of expert knowledge of indoor and outdoor air pollution in informal settlements in SSA. In this pilot study, we examine health risk perceptions of urban air quality from vulnerable populations in informal settlements in SSA through focus group discussions and surveys (n=40), using Nairobi as a case study. We found 1) more than half our sample spent > 6 hrs outside each day, suggesting outdoor air pollution as an important source, 2) many associate air pollution with bad odor (e.g., sewage) or poor breathing, and 3) individuals were less likely to view smoke from cook stoves as a health risk relative to other sources like dust or trash burning. We then discuss their views on the role of their local community, government, and academics in improving air quality in their settlement.

"The effects of convective clouds on transport of pollutants using a numerically simulated flow field" (with Chin-Hoh Moeng and Jeff Weil) —Abstract: In the planetary boundary layer (PBL) (loosely defined as the layer < 1 km above the surface), pollutants travel smaller distances and have shorter residence times relative to those in the upper troposphere. As a result, understanding the processes by which pollutants can be transported to the upper troposphere is critical. One way this can occur is by deep convective cloud systems. In this study, we observe how deep convection influences the distribution of an insoluble or less soluble chemical species, like carbon monoxide (CO), O3, and NOx within the troposphere. This is done by using a Lagrangian approach that traces particles along a simulated time-evolving, three-dimensional wind field associated with a deep convection system.

"Remote sensing techniques to measure urban air pollution in Sub-Saharan Africa" (with Daven Henze, Darby Jack, and Patrick Kinney) —Abstract: Population is expected to increase rapidly in the urban areas of sub-Saharan Africa (SSA). As such, there is increasing concern over urban planning and coping with a growing urban population including mitigating health and climate impacts of environmental problems. Of particular concern is air pollution. One possible alternative to measuring urban air pollution in SSA without in-situ observations is remote sensing. In this project, we use satellite data to identify sources of pollution over urban areas in SSA.

Languages
Swahili (Basic)