The existence of climate change and global warming may still be under debate in certain circles, but recent research by Joyce Klein Rosenthal and her colleagues aims to erase some of that doubt by exploring the relationship between heat and human health. Because health implications tend to resonate with the general public, it’s Rosenthal’s hope that revealing the harsh reality of heat-related mortality and morbidity in urban environments will change the perception of climate change and inform urban planning in a positive way.

Rosenthal, an assistant professor of urban planning at the Harvard Graduate School of Design and a Harvard Center for Population and Development Center (Pop Center) faculty member, has always been interested in how the built environment and cities can foster health, a healthy urban ecology and help the environment. Her research focus is very timely. “This is time of transition in our world, and there are many global, ecological challenges expressed at the local, urban-scale,” explains Rosenthal. “We’re in the urbanizing century. Most of the expected growth in population during the next decades will be in cities, especially in the developing world. As a result, cities need to be made habitable, healthy places.”

Prior to coming to Harvard, Rosenthal earned a PhD in urban planning, as well as the MPH in environmental health sciences from Columbia University. She served as director of the New York Climate and Health Project at Columbia’s Mailman School of Public Health. With an established network of colleagues in architecture, urban planning, landscape architecture, community groups and in public health in New York City, it was natural to focus some of her projects there.

One, entitled “Planning for Urban Climate Adaptation: Spatial and Social Determinants of Heat-related Mortality in New York City,” involves Rosenthal and her colleagues exploring the relationship between urban design and built environment characteristics and the risk of heat-related health impacts in two adjacent Bronx neighborhoods. The neighborhoods were chosen due to their similar demographic and socioeconomic characteristics and history, but widely varying urban design and built environment features. The research has created a model for understanding thermal risk in the outdoor environment based on urban design and the built environment characteristics (e.g., no safe, cool environment to walk to; no access to air conditioned spaces).

Heat: The “silent killer”
While Rosenthal is still compiling mounds of data, key takeaways have already been made clear.

Perhaps the most startling is the high mortality associated with heat waves. Heat events are responsible for more deaths than hurricanes, lightening, tornadoes, floods, and earthquakes combined.

“Heat has been a relatively unheralded urban health stressor, because it doesn’t leave the catastrophic damage of a hurricane or tornado,” explains Rosenthal. “But heat events can be major disasters, too, and the health toll can be very significant.”

Adding to its status as a “silent killer” is the fact that heat is not always coded as a contributing cause on death certificates. For example, a medical examiner may just list “heart attack” without taking note that the extreme heat may have provoked it. As a
LETTER FROM THE DIRECTOR

Refreshed and Ready for the Next Chapter

After an eight-month-long working sabbatical, it’s exciting to be back at the Pop Center, reinvigorated and planning for the future. I certainly missed my colleagues, but the perspective I gained while working away has already enhanced both my personal work and my vision for the Pop Center as a whole.

So what was I up to? I spent a great deal of time writing the second addition of the textbook Social Epidemiology, along with my co-editor, Ichiro Kawachi, who chairs the department of social and behavior sciences at HSPH. We plan to wrap that project up this December and look forward to a spring 2014 publication.

My winter was spent at the RAND Corporation in Santa Monica where I worked closely with colleagues on global aging studies in China and in Europe and the U.S. This collaboration has helped in the launch of the Pop Center studies in Sub-Saharan Africa.

In the final days of my leave, I journeyed to India as part of a Pop Center project on micro-financing and its impact on health. My colleagues and I spent time in the field training interviewers to collect dried blood spots taken from small finger sticks (see photo). Through these samples we can identify early risk factors related to anemia, cardiovascular disease and metabolic disorders. It was wonderful to end my sabbatical with such a meaningful endeavor.

Back here in Harvard Square, my Pop Center team has been focused on a number of important initiatives. First, I’m happy to announce that the Center has been awarded a large longitudinal program project (P01) from the National Institutes of Health called “Health and Aging in Africa: Longitudinal Studies in Three INDEPTH Communities (HAALS).”

Our project will use a multidisciplinary approach to examine the social, economic, and health systems that influence the onset and course of major cardiometabolic disorders and HIV in Sub-Saharan Africa. We also will look at physical and cognitive functioning in older adults and the productivity, wellbeing, social, and family consequences of disease. The Center is thrilled to partner on this project with colleagues at INDEPTH (a global network of health and demographic surveillance systems based in Ghana) and the University of the Witwatersrand. In ensuing years, we plan to expand our work beyond South Africa to Ghana and Tanzania.

We are also looking forward to next year, when we will be celebrating the 50th anniversary of the founding of the Pop Center. This anniversary will be a perfect time to look back and acknowledge all the contributions that have been made to population science thanks to the dedicated people who have walked through these doors. Festivities to mark this important milestone are being planned for the spring.

I hope to touch base with many of you in the coming months. It’s great to be back.

—Lisa Berkman
intergenerational Perspectives for Improving Malnutrition

Growth failure due to malnutrition among children in India and a majority of countries in Africa and South Asia remains a concerning public health issue. An astonishing 40 percent of children under age five were stunted in 2011.

Efforts to reduce under-nutrition in these countries, however, have traditionally only focused on improving the environmental and socioeconomic conditions of the mother and baby during the postnatal period. Too little emphasis has been placed on the prenatal social and environmental factors of parents, households and communities.

For example, increasing maternal education has been targeted as the primary means of achieving reductions in child under-nutrition. Higher levels of maternal education have shown positive effects on child health and nutrition due to improvements in parental care as well as greater access to treatments and preventive services from the health care system.

While improvements in maternal education should remain an intrinsic goal, our research has demonstrated that the instrumental role of such postnatal interventions are interdependent with other strategies aimed at economic development and poverty reduction. We believe that this focus on one strategy in isolation necessitates critical reflection. Our expanded work of looking at the entire life course of parents and children coinciding intergenerational factors, we hope, will better lead to understanding the determinants of, and thereby methods for reducing child mortality and under-nutrition in low income settings.

Intergenerational factors (the experiences and health of one generation affecting another) are associated with offspring mortality and growth failure in India and other countries. The influence of intergenerational factors warrants further attention. For example, a mother’s height can be a marker of what her early life nutritional and environmental conditions were and shape the subsequent health of her offspring’s. The effect of maternal education may be at least partially explained through intergenerational factors including socio-economic status which in turn is related to longer life expectancies, lower death rates, and improved child health and nutrition.

During the past year, I have developed a research program together with colleagues at Harvard and in India and the UK that will examine the role of intergenerational factors in reducing child mortality and under-nutrition with a particular focus on India. Using multiple datasets from India and other countries, the first step for us was to develop research methods that examine how parental body mass index (BMI) influences their children’s’ BMI and height from birth to 23 years.

Next, as a means to improving causal inferences in this field, we compared and contrasted the associations between maternal BMI and their children’s BMI with paternal BMI and their children’s BMI. These methods allow assessment of the plausibility of the maternal ‘programming’ hypothesis, whereby maternal nutrition is transferred to the child during the early stages of their life in utero. If there is a particular influence from the mother in utero, also known as the intrauterine environment, we hypothesized that the effects on child nutrition at older ages should then be much stronger for maternal BMI versus father’s BMI. Our results, however, have demonstrated that the effects of both parents’ BMI on child nutrition and growth are roughly equivalent. This also underscores the importance of having healthy genetic, social and environmental influences from fathers, as well as mothers.

The next phase of this work will investigate mechanisms for the intergenerational transmission of nutritional status in India using a pregnancy and birth cohort that has been established at the St. John’s Research Institute in Bangalore. Novel analytic strategies will be used to strengthen causal inferences for intrauterine and other mechanisms responsible for intergenerational association of height/nutritional status. We are in the final stages of further data collection within this cohort that would involve: 1) The collection of maternal and paternal height and weight; and 2) The height, weight, and adiposity (fat levels) measurement among children (who are now aged between 1 and 11 years).

In the longer term, the results from this study will be used as a basis for obtaining funding and then establishing a larger birth cohort in India. We could then more comprehensively determine causal mechanisms driving intergenerational aspects of height/nutrition, as well as explore the interrelationship between nutrition and cognitive outcomes among children.

—Daniel Corsi, PhD, is a second-year Bell Postdoctoral Fellow at the Harvard Pop Center
result, health scientists like Rosenthal can only see it by studying excess mortality on very hot days.

The urban heat island effect
The intensity of the urban heat island effect has an impact on the risk of heat mortality. Cities are warmer than surrounding rural areas because they have less vegetation and trees; streets and sidewalks have cover material that absorbs the heat of sun during the day and radiates it back at night. As a result, urban residents without air conditioning often cannot cool down to the extent that those living in non-urban areas can.

With research studies like Rosenthal’s, combined with extreme heat events in major world cities—such as the 2003 heat wave in Europe that killed over 50,000 people—the world is becoming much more aware of heat as a stressor. With this awareness comes an ability to educate the public and create programs and spaces that reduce heat hazards. In 2007, a comprehensive program called PlaNYC was launched with the goal of planning for the influx of one million new residents by 2030. Some of the many strategies include making buildings greener and more energy efficient, planting one million trees, and implementing an “Environmental Public Health Tracking” system to monitor neighborhood-level data on climate-related health outcomes and cancers.

Says Rosenthal, “The urban health and public health communities in major cities are beginning to be more proactive in their response to the realities of urban climate adaptation. New York City has been a leader in the creation of climate risk information and response.”

Improving urban ecology
“The field of ecology is urbanizing and the discipline of urban planning is becoming more ecologically cognizant,” says Rosenthal. “The confluence between these disciplines is really important for health reasons. Whether it’s shading the environment, or reducing the urban heat island effect or filtering air and water pollutants, we need to understand how ecology changes the urban environment and how that affects people living in neighborhoods.”

“What is important to me is that cities engaged in long-range planning for a changing environment, engage diverse stakeholders and seek ways to foster community-based solutions, which may ultimately increase resilience to the impacts of extreme weather events.

Rosenthal has a firm belief that health scientists, working with urban planners, can study these kinds of issues and use their findings to improve the environment.

“We need to study the ways that implementing solutions like green roofs, green walls, cool roofs, and urban forestry may create healthier environments and describe the multiple benefits for people and the environment. Public goods are often undervalued, and research can help inform urban managers as to the full benefits of natural systems.”

Poverty and the elderly
Elderly citizens are naturally more vulnerable to heat-related health impacts, and that vulnerability is exacerbated by poverty. The lack of access to air conditioning—or the inability to afford the electrical bill—and the scarcity of green spaces and tree canopy coverage in many low-income neighborhoods creates a greater health risk for all during heat-events, but much more so for the elderly poor.

For further information on extreme heat and its health effects, go to:

- www.gsd.harvard.edu/#/people/Joyce-Klein-Rosenthal
- www.cdc.gov/climateandhealth
- heatisland.lbl.gov
- www.epa.gov/climatechange/impacts-adaptation
Introducing the Pop Center’s Incoming Postdoctoral Research Fellows

Mariana Arcaya is a social epidemiologist whose work focuses on the intersection of urban planning and public health. She holds a ScD in social and behavioral sciences from the Harvard School of Public Health and a Master of City Planning from MIT. She previously managed the Public Health Division of the Metropolitan Area Planning Council, assisting Massachusetts municipalities in implementing community-based wellness initiatives and overseeing the agency’s Health Impact Assessment Practice. As a Yerby Fellow, she plans to continue her work studying neighborhood effects on health, health disparities, and correlated data analysis.

Adam Lippert is a sociologist and demographer interested in how social disadvantage impacts physical and mental health during key stages in the life course. He recently completed a dual-title PhD at the Pennsylvania State University. His dissertation investigates how combinations of life transitions experienced by adolescents entering adulthood coincide with mobility into and out of low-income neighborhoods, and how this mobility influences obesity. As a RWJF Health & Society Scholar, Adam will develop more refined measures of the health environment and examine how multiple spatial territories simultaneously influence health.

Selena Ortiz integrates a multidisciplinary research method called “frame analysis” to study how the public understands major social health issues and how public health can effectively address these health issues. She received her PhD in health policy and management from the University of California Los Angeles in 2013. As a RWJF Health & Society Scholar, Selena will expand on her work by examining how health care decision-making processes throughout the life course—including disease prevention and treatment-seeking behavior—are influenced by frames.

Fahad Razak is a physician who has a multidisciplinary background including biomedical engineering, epidemiology, and public health, and a medical degree with specialization in general internal medicine. He completed his Medical Doctorate at the University of Toronto. As a Bell Fellow, he plans to study the causes and consequences of the changing shape of chronic disease risk factor distributions at the population level, with special focus on body weight. His recent work showed that in low and middle income countries, reliance on conventional and widely used metrics of population change may underestimate the degree of weight gain among high-weight individuals and overestimate weight gain in low-weight individuals.

J.M. Ian Salas is an applied microeconomist with research interests in the fields of development, labor, demography, and health. He completed his PhD at the University of California, Irvine. He seeks to understand the causal explanations for high fertility in many developing countries, with an eye towards credibly identifying the contributions of several supply-side and demand-side factors in shaping fertility behavior. As a Bell Fellow, Ian will investigate the behavioral mechanisms behind the persistence of fertility differentials by SES and research the effects of recurring natural disasters on fertility and health at birth and early childhood, including its ramifications for later life outcomes.

Jessica Williams is a health policy and health economics researcher who examines the role of workplace psychosocial factors in health and how aspects of the Medicare Part D benefit affects prescription drug non-adherence. She received a PhD from the Fielding School of Public Health at UCLA in the Department of Health Policy and Management with a specialization in health economics. As a RWJF Health & Society Scholar, Jessica will examine the implications of interventions to improve the physical and psychosocial work environment and to look at the impacts of the Affordable Care Act on the health care offerings of employers.

Laura Yasaitis’ research focuses on geographic variations in health care services and their implications for population health. She completed a PhD in health policy and clinical practice at The Dartmouth Institute in 2013. She is currently exploring potential disparities in diabetes care by comparing ZIP code level measures of care quality with local population characteristics. As a Pop Center research fellow, she plans to extend these spatial analysis methods to help develop novel local measures of population health, with the aim of achieving greater understanding of the local factors that impact residents’ health care experiences and health outcomes.

Applications are currently being accepted for postdoctoral fellowships that start in 2014 at the Harvard Pop Center. Go to www.hsph.harvard.edu/cpds for more details.
### Upcoming Fall 2013 Events

**POP CENTER SEMINARS**
Pop Center, 9 Bow Street, Cambridge, 4:00 PM – 5:00 PM

These Monday sessions are open to everyone: faculty, research scientists, postdoctoral fellows and students.

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| September 23 | Beyond Taking Notice: It’s Time to Act on Preventing and Controlling Non-Communicable Diseases in Ethiopia  
Michelle Williams, Stephen B. Kay Family Professor of Public Health, and Chair, Department of Epidemiology, Harvard School of Public Health |
| *October 7  | Title TBA  
Dora L. Costa, Professor of Economics, UCLA; Associate Director, California Center for Population Research |
| October 21  | Under Color of Authority: Terror, Intergroup Violence and the Law: A Social Dominance Perspective  
James H. Sidanius, Professor of Psychology, Department of Psychology, and Professor of Africa and African American Studies, Department of African and African American Studies, Harvard University |
| *October 28 | The Underclass Debate 30 Years Later  
Douglas Massey, Henry G. Bryant Professor of Sociology and Public Affairs, Woodrow Wilson School, and Director, Office of Population Research, Princeton University |
| November 18 | FEATURED SEMINAR  
**A Dividing Dividend? Implications of World Demographic Change for Global Inequality**  
Parfait Eloundou-Enyegue, Associate Professor, Department of Development Sociology, College of Agriculture and Life Sciences, Cornell University |
| *December 2 | Title TBA  
Timothy B. Gage, Director, Statistics and Computing for the Center for Social and Demographic Analysis; Professor, Department of Anthropology, and Professor, Department of Epidemiology, School of Public Health, University at Albany, State University of New York |
| December 9  | Title TBA  
Richard Tedeschi, Professor of Psychology and Clinical Community Graduate Program Coordinator, University of North Carolina at Charlotte |

*Co-sponsored by the Program on the Global Demography of Aging

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### FEATURED EVENT

The Pop Center is pleased to welcome Parfait Eloundou-Enyegue as a visiting scientist at the Harvard Pop Center in fall 2013. He serves as associate professor of development sociology at Cornell University, where he investigates the consequences of demographic change on a range of socioeconomic outcomes including schooling, gender, and income inequality.

Professor Eloundou-Enyegue will lead the November 18 Pop Center seminar entitled **“A Dividing Dividend? Implications of World Demographic Change for Global Inequality.”** Global fertility transitions are expected to boost socioeconomic development. However, they could also foster inequality between and within countries. The seminar will present evidence of such divergence in Africa and discuss implications for the region’s sustainable development.

Eloundou-Enyegue received his PhD in demography and rural sociology from Penn State and was a postdoctoral fellow and a research consultant at the RAND Corporation prior to joining Cornell in 2000.
ROBERT WOOD JOHNSON FOUNDATION HEALTH & SOCIETY SCHOLARS SEMINARS
Harvard School of Public Health, 677 Huntington Ave, Kresge 708, Boston, 4:00 PM – 5:30 PM

These Thursday sessions are open to faculty, research scientists, and postdoctoral fellows. Advance readings are available at our website www.hsph.harvard.edu/cpds.

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| September 12 | **Meet the RWJF Health & Society Scholars**  
Courtney Cogburn, RWJF Health & Society Scholars (cohort 10)  
Adam Lippert, RWJF Health & Society Scholars (cohort 11)  
Selena Ortiz, RWJF Health & Society Scholars (cohort 11)  
Christina Roberto, RWJF Health & Society Scholars (cohort 10)  
Jessica Williams, RWJF Health & Society Scholars (cohort 11) |
| September 26 | **Intro to Population Health – Geoffrey Rose Revisited**  
Ichiro Kawachi, Professor of Social Epidemiology and Chair, Department of Social and Behavioral Sciences, Harvard School of Public Health |
| October 10 | **Thinking “Below the Skin”: Emerging Biomarkers and Implications for Epidemiology**  
Dani Fallin, Professor and Chair, Department of Mental Health, Bloomberg School of Public Health, Johns Hopkins University |
| November 7 | **Distress-Proneness and the Habit of Discontent: Childhood Origins of Cardiovascular Disease**  
Laura Kubzansky, Professor, Department of Social and Behavioral Sciences, Harvard School of Public Health |
| November 21 | **Population Health Policy: Metrics, Incentives and Partnerships**  
David Kindig, Emeritus Professor of Population Health Sciences and Emeritus Vice-Chancellor for Health Sciences, University of Wisconsin-Madison |
| December 12 | **Title TBA**  
Emily Broad Leib, Clinical Instructor and Lecturer on Law; Director of the Food Law and Policy Clinic; and Associate Director of the Center for Health Law and Policy Innovation, Harvard Law School |

**POP CENTER SPECIAL EVENTS**

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| October 2 | **Panel Discussion: “Women, Work and Health: In Need of a Redesign”**  
8:00 AM –10:00 AM, The New York Academy of Medicine, 1216 Fifth Avenue, Room 21, New York, NY 10029. See back cover for details. |
| November 6 | **Special Lecture: “Women and Health: A Cause for Optimism?”**  
Rebeca Grynspan, Under-Secretary-General, United Nations, and Associate Administrator, United Nations Development Programme. The presentation’s overarching theme will concern the Sustainable Development Goals after 2015, with attention to new movements within reproductive health, the gender dimensions of universal health coverage, experiences from HIV and emerging pandemics such as noncommunicable diseases (NCDs).  
The event is sponsored by the Women, Gender and Health Initiative at HSPH. Co-Sponsors include: Harvard Center for Population and Development Studies; Harvard Global Health Institute; Harvard School of Public Health Women & Health Initiative; Mary Horrigan Connors Center for Women’s Health and Gender Biology; and FXB Center for Health and Human Rights.  
12:30 PM – 1:30 PM, Harvard School of Public Health, Kresge Building, Room G2. |
| November 8 | **Exploratory Workshop: “Under What Conditions is Educational Attainment Causally Related to Health/Mortality?”**  
Hosted by David Cutler, Otto Eckstein Professor of Applied Economics, Harvard University; Jennifer Monteze, Assistant Professor of Sociology, Case Western Reserve University; and Esther Friedman, Associate Social Scientist, RAND University.  
8:00 AM – 5:00 PM, Harvard Pop Center, 9 Bow St, Cambridge. Seating is limited.  
Detail can be found at www.hsph.harvard.edu/population-development/events |
The life expectancy of American women has been stalled at the same level for the last 40 years and the United States now ranks at the bottom among industrialized countries—for both men and women. At the same time, the growing ranks of American women in the labor force enjoy fewer social supports than women in other industrialized countries.

The Harvard Pop Center will host a provocative panel discussion entitled “Women, Work and Health: In Need of a Redesign” on October 2 at the New York Academy of Medicine that will address current workplace practices and labor policies—flexible work schedules, childcare challenges, and supervisor attitudes among others—that clearly impact the health and well-being of employees and their families.

Leaders from academia, industry and government will lead the discussion and we welcome audience members from all sides of the equation to participate. Speakers include:

–Lisa Berkman, PhD, is the Thomas D. Cabot Professor of Public Policy at Harvard School of Public Health and director of the Harvard Center for Population and Development Studies. She is a principal investigator of The Work, Family & Health Network, which is exploring how changes in the work environment can improve the health of workers and their families while benefiting organizations.

–Jo Ivey Boufford, MD, is president of The New York Academy of Medicine and is professor of public service, health policy, and management at the New York University School of Medicine. In recent decades she has held many senior health care positions including president of the NYC Health and Hospitals Corporation.

–Karen Kornbluh was most recently US Ambassador to the Organisation for Economic Co-operation and Development (OECD) in Paris where she brokered global Internet Policy Principles, launched the Gender Initiative, and refocused the organization on emerging markets. She has held senior government positions at the FCC and the Treasury Department, and was President Obama’s policy chief in the US Senate.

–Pat Milligan is the president of Mercer’s North America region and a member of the company’s executive committee. She also leads the Women@Mercer Steering Committee. Prior to joining Mercer in 2005, Ms. Milligan led the worldwide markets business at Mellon, and at Towers Perrin, she was a member of the Board of Directors.

Seating is limited, but if you are interested in attending, please email Laura Price, program director at the Harvard Pop Center, at lprice@hsph.harvard.edu.