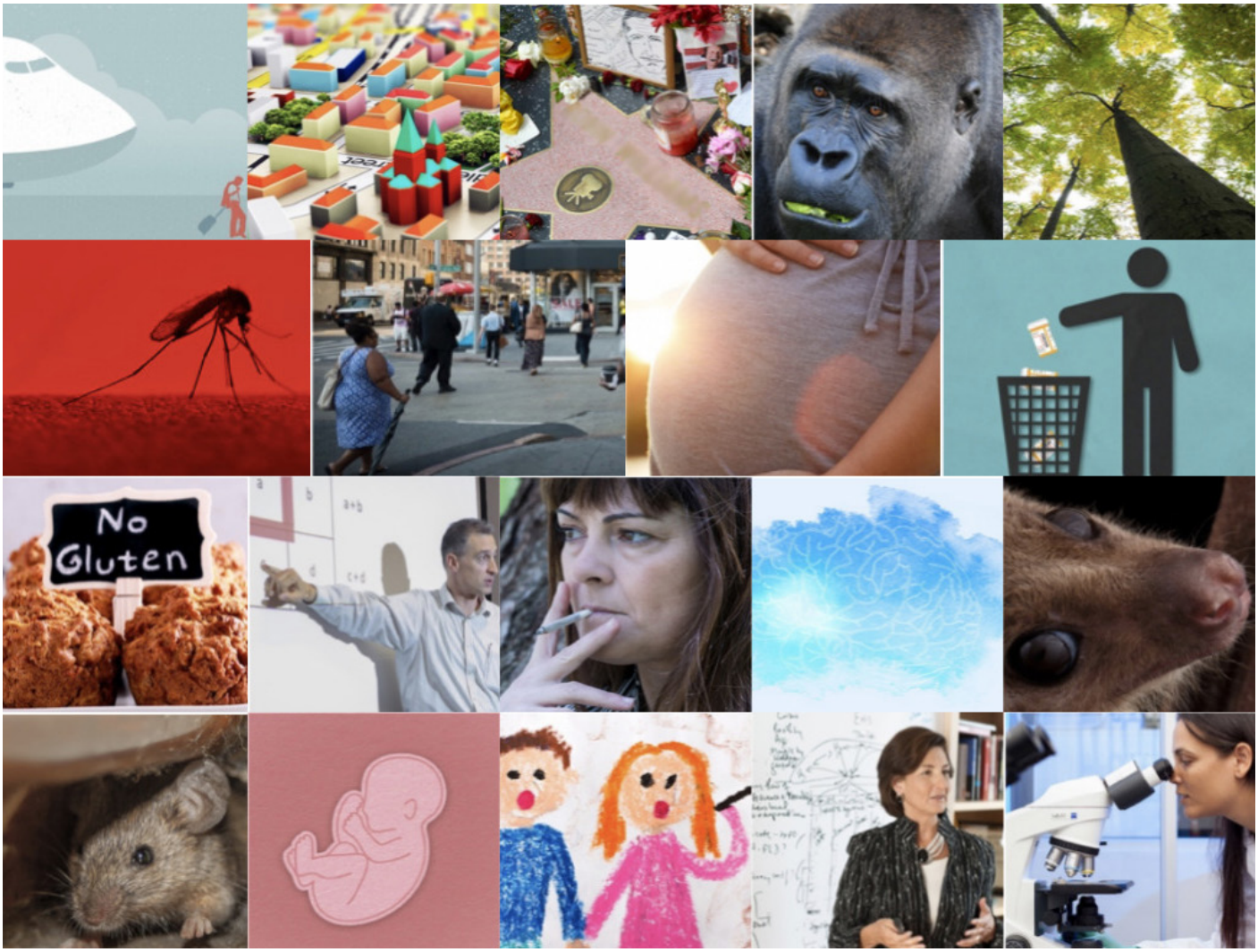
Epidemiology 2018



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EPIDEMIOLOGY

FROM THE DEPARTMENT OF EPIDEMIOLOGY
COLUMBIA UNIVERSITY MAILMAN SCHOOL OF PUBLIC HEALTH

2018 ANNUAL REPORT

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Colleagues,

Welcome to Epidemiology 2018, the annual report for the Department of Epidemiology at Columbia University's Mailman School of Public Health. This report reflects the lasting achievements of our growing department over a productive and exciting year.

In my role as head of the Department of Epidemiology, I have the privilege of being surrounded with exceptional individuals, both master educators and leaders of groundbreaking science. Over the past year, we welcomed over a dozen new scientists into our Epidemiology community, our faculty and staff were awarded some of the most prestigious honors in their respective fields and, alongside our many trainees and graduates, continue to take their passion and curiosity for new discoveries and improving the public's health to the world.

The Department continues to show that Epidemiology is a world-class science with real-world impact. In 2018, we explored a wide array of topics including the ramifications of the opioid epidemic and gun violence, the impact of lifestyle on cancer and other chronic diseases, the identification of never-before-seen emerging infectious diseases, and many others. Our faculty, staff, and students produced over 1,000 scientific publications in every top scientific outlet, and our work was covered by every leading news outlet, a clear bridge to policymakers and the public.

With your support, the new year will bring with it our continued and indomitable scientific efforts to advance health for us all, and improve our world for generations to come.

Best Regards,

Charles C. Branas

Charles C. Branas, PhD

Feel Anxious? Have Trouble Sleeping? You May Be Traveling for Business Too Often

People who travel for business two weeks or more per month report more symptoms of anxiety and depression and are more likely to smoke, be sedentary, and report trouble sleeping than those who travel one to six nights a month, according to a study conducted by researchers at Columbia University's Mailman School of Public Health and City University of New York. Among those who consume alcohol, extensive business travel is also associated with symptoms of alcohol dependence. Poor behavioral and mental health outcomes significantly increased as the number of nights away from home for business travel rose. The results are published online in the Journal of Occupational and Environmental Medicine.

The Global Business Travel Association Foundation estimates there were nearly 503 million business trips taken in 2016 in the United States, up from 488 million the previous year."

Although business travel can be seen as a job benefit and can lead to occupational advancement, there is a growing literature showing that extensive business travel is associated with risk of chronic diseases associated with lifestyle factors," said Andrew Rundle, DrPH, associate professor of Epidemiology at the Mailman School of Public Health.

"The field of occupational travel medicine needs to expand beyond its current focus on infectious disease, cardiovascular disease risks, violence, and injury to bring more focus to the behavioral and mental health consequences of business travel.

The study, one of the first studies to report the effects of business travel on non-infectious disease health risks, was based on the de-identified health records of 18,328 employees who underwent a health assessment in 2015 through their corporate wellness work benefits program provided by EHE International, Inc.

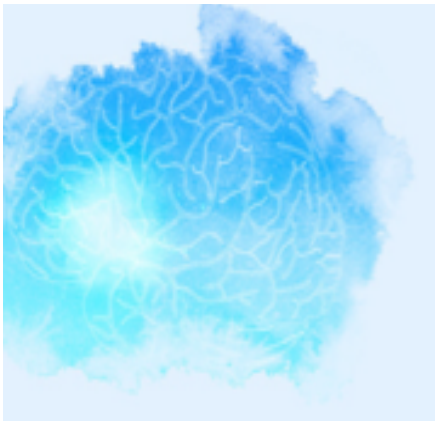
The EHE International health exam measured depressive symptoms with the Patient Health Questionnaire (PHQ-9), anxiety symptoms with the Generalized Anxiety Scale (GAD-7) and alcohol dependence with the CAGE scale.

A score above 4 on the Generalized Anxiety Scale (GAD-7) was reported by 24 percent of employees, and 15 percent scored above a 4 on the Patient Health Questionnaire (PHQ-9), indicating that mild or worse anxiety or depressive symptoms were common in this group. Among those who consume alcohol, a CAGE score of 2 or higher was found in 6 percent of employees who drank, indicating alcohol dependence. GAD-7 and PHQ-9 scores and CAGE scores of 2 or higher rose in relation to the duration of business travel. These findings are consistent with analyses of medical claims data from World Bank employees which found that the largest increase in claims from their business travelers was for psychological disorders related to stress.

Employers and employees should consider new approaches to improve employee health during business trips that go beyond the typical practice of providing immunizations and medical evacuation services, according to Rundle, whose earlier research found that extensive business travel was associated with higher body mass index, obesity, and higher blood pressure.

"At the individual level, employees who travel extensively need to take responsibility for the decisions they make around diet, exercise, alcohol consumption, and sleep," he says. "However, to do this, employees will likely need support in the form of education, training, and a corporate culture that emphasizes healthy business travel. Employers should provide employees who travel for business with accommodations that have access to physical activity facilities and healthy food options."

Co-authors are Tracey Revenson, The Graduate Center, City University of New York; and Michael Friedman, EHE International, Inc. Medical Advisory Board.



Study Examines Genetic Link Between Epilepsy and Mood Disorders

Mood disorders including depression, are the most common comorbid conditions in individuals with epilepsy, but the cause remains unclear, according to a latest study by researchers at Columbia University's Mailman School of Public Health and Rutgers University. The findings suggest that there may be a shared genetic susceptibility to these conditions, expressed only in people with focal epilepsy, in which seizures start in one part of the brain. Results of the study are published in the journal Epilepsia.

"While the comorbidity of mood disorders and epilepsy has been known for a long time, mood disorders are under-recognized and under-treated among people with epilepsy, noted Ruth Ottman, PhD, professor of Epidemiology at the Mailman School of Public Health and deputy director for Research at the G.H Sergievsky of Columbia University.

In the study, which included 60 families containing multiple individuals with epilepsy, the lifetime prevalence of mood disorders was significantly increased in people with focal epilepsy but not in people with generalized epilepsy. Prevalence of mood disorders was also increased in people with epilepsy who had relatives with focal epilepsy.

Among family members who did not have epilepsy, the lifetime prevalence of mood disorders appeared to be higher than in the general population, but this result did not reach statistical significance.

Taken together, the findings are consistent with the hypothesis of shared genetic susceptibility to epilepsy and mood disorders, but the effect may be restricted to focal epilepsy and may only be expressed in individuals whose epilepsy susceptibility-related genes are 'penetrant'—that is, in people who have epilepsy, according to the authors.

In the U.S., about 2.3 million adults and more than 450,000 children and adolescents have epilepsy, and anyone can develop the disorder. In 2015, an estimated 16.1 million adults at least 18 years old in the U.S. had at least one major depressive episode in the past year, according to federal figures.

"This study points to the importance of screening and treatment," Ottman said. "Additional research is needed to identify specific genes that raise risk for both disorders, and may lead to development of promising new treatments."

The study was funded by National Human Genome Research Institute, P50 HG007257; Epilepsy Foundation; National Institute of Neurological Disorders and Stroke, K23 NS054981; and National Institutes of Health, R01 NS078419, P50 HG007257.

Co-authors are Beverly Insel, Mailman School of Public Health and Gary Heiman, Rutgers University.

Suicides Spiked After Death of Robin Williams

In the months after Robin Williams committed suicide in 2014, researchers at Columbia University's Mailman School of Public Health documented a marked 10 percent increase in of suicides. While excess suicides were observed across gender and age groups, males aged 30 to 44 were particularly affected. The data also showed there was a 32 percent increase in suffocation suicides in the five months that followed Williams' death by the same method, compared to a 3 percent rise for all suicides from other methods. The findings are reported online in the journal PLOS ONE.

"Research has shown that the number of suicides increases following a high-profile celebrity suicide, but this is the first study, to our knowledge, that has examined the effect of a high-profile suicide on the general population within the modern era of the 24-hours news cycle," said David S. Fink, MPH, MPhil, in the Department of Epidemiology.

Celebrity suicide effects have led to the World Health Organization to establish media guidelines for reporting a high-profile celebrity death, including sensitivity around the method of suicide, the precipitating factors, and the risk factors for suicide apparent in the deceased. In the case of Williams, popular news media headlines suggest that media guidelines for suicide reporting tended to deviate from the established suicide reporting guidelines.

According to the researchers, 16,849 suicides would be expected from August to December 2014, compared to the 18,690 suicides that were reported for these months following Williams' death. This increase in the number of suicides per month appeared to remain consistent during this period.

"Although we cannot determine with certainty that these deaths are attributable to the death of Robin Williams, we found both a rapid increase in suicides in August 2014, and specifically suffocation suicides, that paralleled the time and method of Williams' death," observed Fink. The details of Williams' suicide were widely reported in the media in the days and weeks that followed. Although he had struggles with a form of dementia, the initial reports on Williams' death did not mention the condition.

To conduct the study, the researchers analyzed U.S. monthly suicide rates from the Centers for Disease Control from January 1999 to December 2015 by sex, age, and method. They also used Bloomberg Terminal's news trend function to identify the number of global English-language news media reports on suicide and Robin Williams compared to news media reports from June 2013 to January 2015.

News media reports with the terms "suicide" and "dead," and the name "Robin Williams" drastically increased in the weeks after Williams' suicide. His death was also followed by an increased number of online posts in the "SuicideWatch" forum, a suicide support platform on Reddit, and also with changes in posted content linked to suicidal ideation.

Fink says it is also important to point out the role of social media as a new and emerging risk factor for how information is disseminated after the death of a celebrity. For example, in the case of Kurt Cobain's suicide in 1994, there was minimal change in suicide rates.

"Williams' death may have provided the necessary stimulus for high-risk segments of the U.S. population, especially middle-aged men in despair, to move from suicidal ideation to attempt," said Fink.

Co-authors are Julian Santaella-Tenorio and Katherine Keyes of the Mailman School of Public Health.

The study was funded by a training grant from the National Institute of Drug Abuse (5T32DA031099-03).

Citywide Social Experiment Reduces Gun Violence and Stabilizes Neighborhoods

People living near vacant land that had been restored reported a significantly reduced perception of crime and vandalism, as well as increased feelings of safety and increased use of outside spaces for socializing, according to a new study by researchers at Columbia University's Mailman School of Public Health. Police reports matched these perceptions, showing significant reductions in overall crime, including gun violence and nuisances. The findings are published online in the Proceedings of the National Academy of Sciences. The study conducted in Philadelphia is believed to be the first randomized controlled trial to test inexpensive interventions that restore vacant urban land and reduce violence and fear among residents. "Our findings showed that restoration of vacant land helps to deter crime and violence and represents a pragmatic upstream infrastructural investment strategy to address complex social issues in cities," said Charles Branas, PhD, chair of Epidemiology and lead author. "We found that police reports accurately reflected residents' perceptions, and revealed significant reductions in overall crime, gun violence, and nuisances.

Vacant space comprises approximately 15 percent of the land in U.S. cities. These areas can foster criminal activity, and urban residents, especially those in low-income neighborhoods, often view vacant land as a threat to their health and safety. To analyze the relationship between restoring vacant plots and crime in Philadelphia, Branas and colleagues at Penn, UCLA, Rutgers, and the U.S. Forest Service randomly selected 541 vacant lots that were then randomly assigned to receive restoration or as control sites. Crime data were gathered from police reports and 445 randomly sampled residents living near the lots were repeatedly interviewed. Data was analyzed 18 months before and after the restorations were completed. The researchers also placed anthropologists in two of the neighborhoods to learn in even greater detail what residents were experiencing and how neighborhoods had been affected by the restorations.

Residents living near treated vacant lots reported significantly reduced perceptions of crime (37 percent less), vandalism (39 percent less), and safety concerns when going outside their homes (58 percent less).

More than three-quarters of the residents said they significantly increased their use of outside spaces for relaxing and socializing.

In addition to a significant overall reduction in crime, police reports also indicated as much as a 29-percent reduction in gun violence, a 22-percent decrease in burglaries, and a 30-percent reduction in nuisances for neighborhoods below the poverty line, including vandalism, noise complaints, public drunkenness, and illegal dumping."

Given a city like Philadelphia's prior experience with gun violence, the 29-percent reduction in crime reported in this trial could translate into hundreds of fewer shootings each year if the vacant land interventions tested here were scaled beyond just the locations of the study," said Branas.

The cleaning and greening of vacant lots included trash and debris removal, grading the land, planting new grass via a rapid hydroseeding method, and maintaining the lot throughout the post-intervention period. This vacant land restoration approach has been shown to be quick, inexpensive, and with a high return on investment. Many cities have focused on more expensive responses to the poor living conditions brought on by large inventories of vacant properties. These strategies can have the unintended consequence of displacing people who do not want to move and may not reflect residents' needs and preferences. The vacant land restoration strategy tested in this study was specifically chosen to improve local neighborhood conditions, block-by-block, and encourage residents to stay in their home neighborhoods.

"Our study shows that direct changes to vacant urban spaces may hold great promise in breaking the cycle of abandonment, violence, and fear in our cities and do so in a cost-effective way that has broad, citywide scalability," said Branas.

Co-authors include John MacDonald, Eugenia South, and Douglas Wiebe at the University of Pennsylvania; Philippe Bourgois at the University of California, Los Angeles; Michelle Kondo at the U.S. Forest Service; and Bernadette Hohl at Rutgers University.

The study was funded by the National Institutes of Health (R01DA037820) and the Centers for Disease Control (R49CE002474).

Genital Inflammation Reduces Efficacy of Tenofovir Gel

Why do some women get HIV infection even though they are using tenofovir gel for prophylaxis? A new study by scientists at the Centre for the AIDS Programme in Research in South Africa (CAPRISA) and Columbia University's Mailman School of Public Health shows that genital inflammation significantly reduces the effectiveness of tenofovir gel in preventing HIV infection in women. These findings indicate that both genital inflammation and adherence need to be addressed to improve the effectiveness of topical pre-exposure prophylaxis strategies for HIV prevention in women. The findings are published online in Nature Medicine.

The researchers measured small proteins, known as cytokines, in the vagina. Raised cytokines levels in the vagina indicate the presence of inflammatory immune responses, even in the absence of clinical symptoms.

HIV infection rates and cytokine levels as a marker of genital inflammation were studied in 774 women over 2.5 years. The researchers found that women with genital inflammation were at higher risk of subsequently contracting HIV compared to women without inflammation. The study further showed that tenofovir gel provided 57 percent protection against HIV acquisition in women who had no evidence of vaginal inflammation but provided no protection in women with genital inflammation, even if they used the gel consistently."

This study gives us an important clue to enhance HIV prevention in women," said Salim Abdool Karim, PhD, director of CAPRISA and professor of Epidemiology at the Mailman School of Public Health. "It is not only adherence-related behaviors but also biological processes in the vaginal that need to be addressed to prevent HIV and enhance the effectiveness of topical PrEP."

In the study, nine pro-inflammatory cytokines were measured in specimens collected at over 2,139 clinic visits at a rural and urban clinic in KwaZulu-Natal, South Africa, to define the levels of genital inflammation. In women who had no genital inflammation, women assigned to tenofovir gel had an HIV incidence rate of 2.3 per 100 person-years, compared to 5.4 per 100 person-years in women assigned to placebo gel. Conversely, in women with genital inflammation, the HIV incidence rate in those assigned to tenofovir gel was 6.8 per 100 person-years, compared to 7.0 per 100 person-years in women assigned to placebo gel.

The study found that among women who used the gel most of the time (>50 percent of sex acts), tenofovir gel was 75 percent protective in those women who had no genital inflammation, as compared to no protection in women with evidence of genital inflammation.

In 2010, a CAPRISA trial provided the first evidence that tenofovir can prevent sexual transmission of HIV. Tenofovir gel reduced HIV acquisition by 39 percent overall. Two subsequent studies found that tenofovir gel was not effective, most likely because most of the women in the trials did not use the gel consistently. A subgroup analysis of two trials showed that the gel was just over 50 percent effective in consistent users, highlighting the importance of high adherence. The new evidence emerging from this genital inflammation study indicates that there may be a biological basis for the differing results as well. The causes of genital inflammation are not well understood at present. Previous studies have shown that there are many possible causes of genital inflammation in women, including imbalances in the bacteria of the vaginal microbiome, sexually transmitted infections, and vaginal practices.

Commenting on the study, Jo-Ann Passmore, head of the CAPRISA mucosal immunology laboratory, professor at the University of Cape Town, and principal investigator of this research said, "Genital inflammation, which is present in up to a third of women, makes it harder to protect women from HIV infection. The next step is to expand our results to assess how genital inflammation might affect the efficacy in HIV prevention trials of vaccines, passive immunization with antibodies, and antiretroviral PrEP administered through pills, rings, and implants."

The study was funded by the U.S. National Institutes of Health. The original CAPRISA tenofovirstudy was funded by USAID and conducted by CAPRISA in partnership with FHI360, CONRAD, and Gilead Sciences.

New Test Extends Window for Accurate Detection of Zika

Diagnosis of Zika infection is complex. Molecular tests for exposure are only reliable in the first two to three weeks after infection while the virus is circulating in the bloodstream. Antibody tests are confounded by cross-reactivity of antibodies to Zika with dengue, yellow fever, and Japanese encephalitis viruses following infection or vaccination. A new blood test called ZIKV-NS2B-concat ELISA is faster, less expensive, and extends the window of accurate detection from weeks to months after the onset of infection, giving clinicians a powerful new tool to screen for Zika throughout pregnancy.

The new Zika test is detailed in the scientific journal mBio and was developed by scientists at the Center for Infection and (CII) at Columbia University's Mailman School of Public Health and their colleagues at the University of California, Berkeley; Ministry of Health of Nicaragua; Walter Reed Army Institute of Research; Erasmus University Medical Centre; New York City Department of Health and Mental Hygiene; New York State Department of Health; and Roche Diagnostics.

To develop and evaluate the test, the researchers used blood samples collected from children in the Nicaraguan Pediatric Dengue Cohort Study, all of whom had previously tested positive for Zika virus. Using a microarray, they identified a unique peptide sequence—a short section of amino acids—that binds with antibodies to Zika virus but not with antibodies to similar viruses like dengue, yellow fever, and Japanese encephalitis. Next, the researchers customized a low-cost testing technology called enzyme-linked immunosorbent assay (ELISA) to work with the sequence—improving on current versions of the ELISA test which use larger sections proteins that bind to the virus. (The researchers recently used the same method to build the first multiplex test for tick-borne diseases.

ZIKV-NS2B-concat ELISA is both highly specific and sensitive, with rates of false positives and false negatives of less than 5 percent in the two to three weeks after acute illness, even without symptoms. The new test quickly detects up to 200 samples in four hours and the researchers anticipate its cost will be similar to other ELISA tests used in clinical settings.

"Many people infected by Zika have only mild illness, or are unable to see a clinician in the early, acute phase of infection," says lead author Nischay Mishra, PhD, an associate research scientist at the Center for Infection and Immunity.

"Our new test greatly extends the window during which an individual can be assessed with accuracy."

Infection with Zika virus during pregnancy raises risk for neurodevelopmental problems in the offspring, including fetal microcephaly in at least one in ten pregnancies. In adults, Zika can trigger Guillain-Barré syndrome, which causes the immune system to attack the nerves. Since the emergence of Zika virus in the Americas in 2015, 583,144 cases have been reported to World Health Organization, with costs estimated as high as $18 billion between 2015 and 2017. However, long-term costs will likely be much higher given the additional, as-yet-unknown complications from congenital infections.

"An affordable and accurate test for Zika virus is critical for public health," says senior author W. Ian Lipkin, MD, director of CII and John Snow Professor of Epidemiology at Columbia's Mailman School of Public Health. "Even absent symptoms of illness or evidence of birth defects, Zika may inflict long-term harm on the person infected or their offspring."

Co-authors include Adrian Caciula, Adam Price, Riddhi Thakkar, James Ng, Lokendra V. Chauhan, Komal Jain, Xiaoyu Che, Rafal Tokarz, Thomas Briese, CII; Diego A. Espinosa, Magelda Montoya Cruz, and Eva Harris, University of California, Berkeley; Angel Balmaseda, Ministry of Health, Managua, Nicaragua; Eric H. Sullivan and Jigar J. Patel at Roche Madison, Madison, Wisconsin; Richard G. Jarman, Walter Reed Army Institute of Research, Silver Spring, Maryland; Jennifer L. Rakeman, New York City Department of Health and Mental Hygiene; Christina T. Egan, New York State Department of Health; Chantal BEM Reusken, and Marion PG Koopmans, Erasmus University Medical Centre, Rotterdam, the Netherlands. The research was supported by grants from the National Institutes of Health (NIH), including a grant by the National Institute of Allergy and Infectious Diseases' Center for Excellence in Translational Research (Center for Research on Diagnostics and Discovery, U19AI109761), and NIH grants P01AI106695, U19AI118610, RO1AI099631. Sullivan and Patel are full-time employees of Roche. The other authors declare no competing financial interests. CII has filed an invention report and provisional patent application for the technology.

Where You Live, Walk, and Eat Are Important for Controlling Diabetes

In the first study to directly examine the relationship between the urban environment and individuals' ability to control their diabetes, researchers at Columbia University's Mailman School of Public Health and the New York City Department of Health and Mental Hygiene found a link between the neighborhood food, built, and economic environment where they live, and their ability to achieve glycemic control. Their results are consistent with the premise that areas with greater resources to support healthy eating and physical activity are associated with improved glycemic control in persons with diabetes. The results are published in the American Journal of Epidemiology.

The odds of individuals achieving glycemic control in the most advantaged residential neighborhoods were two and a half times greater than in the least advantaged. Furthermore, individuals living in the most advantaged residential neighborhoods achieved glycemic control in a shorter timeframe (14 percent shorter) than individuals living in the least advantaged neighborhoods."

Our study is the first to look at a wide range of built and economic features of a residential environment and how they may affect a person's ability to control their diabetes," said Andrew Rundle, DrPH, associate professor of Epidemiology at the Mailman School of Public Health. "And until now, no study had evaluated whether these cumulative exposures were associated with glycemic control in a large multiracial, multiethnic population." The researchers analyzed multiple hemoglobin A1C measurements through time from 182,756 New York City adults with diabetes over a 7-year period. Reductions in A1C levels through time, to below 7 percent, indicated that an individual with diabetes had achieved glycemic control. Living in neighborhoods with more advantaged socioeconomic conditions, a greater ratio of healthy food outlets to unhealthy food outlets, and higher neighborhood walkability were all associated with achieving glycemic control.

Individuals who lived continuously in more advantaged residential areas with high-quality environment resources had lower average A1C values and better control of their diabetes compared to the individuals who lived continuously in less advantaged residential areas with low-quality environment resources. Moving from less advantaged residential areas to more advantaged residential areas was related to improved diabetes control, while moving from more advantaged residential areas to less advantaged residential areas was related to worsening diabetes control.

In 2006, the New York City Department of Health and Mental Hygiene implemented mandatory reporting of hemoglobin A1C tests to the A1C Registry, which enabled public health surveillance of diabetes trends in New York City. Consistent with the American Diabetes Association's diagnostic criteria, diabetes was defined as at least two A1C tests with a value of greater or equal to 6.5 percent since the Registry was launched. NYC residents with diabetes 18 years of age and older who had at least one A1C test every year in the Registry between January 1, 2007, and December 31, 2013, were included in the study.

"It is possible also, that the environments around where a person works may also affect their ability to achieve glycemic control," said Rundle. "However, since the A1C registry does not include information on work locations we were not able to test this idea with these data."

Bahman P. Tabaei, with the New York City Department of Health and Mental Hygiene, was a co-principal investigator of the study. Additional co-authors include Winfred Y. Wu and Shadi Chamany, New York City Department of Health and Mental Hygiene; Daniel M. Sheehan, Mailman School of Public Health; Carol R. Horowitz and Victoria Maye, Icahn School of Medicine at Mt. Sinai.

Of Mice and Disease: Antibiotic-Resistant Bacteria Discovered in NYC Mice

A study by W. Ian Lipkin and colleagues at the Center for Infection and Immunity (CII) at Columbia University's Mailman School of Public Health finds New York City house mice carry bacteria responsible for mild to life-threatening gastroenteritis in people, and some of these bacteria may be resistant to antibiotics. Findings appear in the journal mBio.

The researchers collected 416 mice from residential buildings at seven sites across New York City over a period of one year. A genetic analysis of their droppings revealed that the mice carry several gastrointestinal disease-causing bacteria, including C. difficile, E. coli, Shigella, as well as Salmonella, a leading cause of bacterial food poisoning in the U.S. with 1.4 million reported cases annually along with 15,000 hospitalizations and 400 deaths. They also found evidence of genes mediating antimicrobial resistance to several common antibiotics. "From tiny studios to penthouse suites, New York City apartments are continually invaded by house mice," says lead author Simon H. Williams, BSc, a research scientist at CII. "Our study raises the possibility that serious infections—including those resistant to antibiotics—may be passed from these mice to humans, although further research is needed to understand how often this happens, if at all."

According to the researchers, it is well known that salmonella infections can be the result of food contaminated with animal waste—including mouse feces. C. difficile infections, while mostly acquired in healthcare settings, could also be spread in the community by the mice that harbor the pathogens.

A second study, also published in mBio, provides a detailed look at viruses present in the mice droppings. The researchers found 36 viruses, including six new viruses, none of which are known to infect humans. However, they identified genetic sequences matching viruses that infect dogs, chickens, and pigs, suggesting the possibility that some of the viruses had crossed over from other species. Mice from the Chelsea neighborhood, heavier than mice from other sites, also carried more viruses. A previous study of rats in New York by investigators at CII found several of the same pathogens, including E. coli, Salmonella, and C. difficile.

"New Yorkers tend to focus on rats because they are larger and we see them scurrying around in streets or subways; however, from a public health vantage point, mice are more worrisome because they live indoors and are more likely to contaminate our environment, even if we don't see them," says senior author W.Ian Lipkin, MD, senior author of both papers, John Snow Professor of Epidemiology, and director of CII.

Additional co-authors of the bacteria paper include Xiaoyu Che, Cheng Guo, Bohyun Lee, and Dorothy Muller at CII; Ashley Paulick at the Centers for Disease Control and Prevention; Anne-Catrin Uhlemann and Franklin D. Lowy; and Robert M. Corrigan of RMC Pest Management Consulting. Additional co-authors of the virus paper include Xiaoyu Che, Joel A. Garcia, Bohyun Lee, Dorothy Muller, and Komal Jain at CII; John D. Klena and Stuart Nichol at the Centers for Disease Control and Prevention; Werner Ulrich, Nicolaus Copernicus University, Torun´ , Poland; and Robert M. Corrigan, RMC Pest Management Consulting.

Both studies were supported by grants from the National Institutes of Health (U19AI109761: Center for Research in Diagnostics and Discovery) and from the Alfred P. Sloan Foundation.

Cannabis Use Up Among Parents with Children in the Home

Cannabis use increased among parents who smoke cigarettes, as well as among non-smoking parents, according to a latest study from researchers at Columbia University's Mailman School of Public Health and City University of New York. Cannabis use was nearly four times more common among cigarette smokers compared with non-smokers. Until now, little had been known about current trends in the use of cannabis among parents with children in the home, the prevalence of exposure to both tobacco and cannabis, and which populations might be at greatest risk. The findings will be published online in the June issue of Pediatrics.

"While great strides have been made to reduce children's exposure to second-hand cigarette smoke, those efforts may be undermined by increasing use of cannabis among parents with children living at home," said Renee Goodwin, PhD, in the Department of Epidemiology at the Mailman School of Public Health, and corresponding author.

Analyzing data from the National Survey on Drug Use and Health from 2002 to 2015, the researchers found past-month cannabis use among parents with children at home increased from 5 percent in 2002 to 7 percent in 2015, whereas cigarette smoking declined from 28 percent to 20 percent. Cannabis use increased from 11 percent in 2002 to over 17 percent in 2015 among cigarette-smoking parents and from slightly over 2 percent to 4 percent among non-cigarette-smoking parents. Cannabis use was nearly 4 times more common among cigarette smokers versus nonsmokers (17 percent vs 4 percent), as was daily cannabis use (5 percent vs 1 percent). The overall percentage of parents who used cigarettes and/or cannabis decreased from 30 percent in 2002 to 24 percent in 2015.

"While use of either cigarettes or cannabis in homes with children has declined, there was an increase in the percent of homes with both. Therefore, the increase in cannabis use may be compromising progress in curbing exposure to secondhand smoke," noted Goodwin, who is also at the Graduate School of Public Health and Health Policy at CUNY.

Cannabis use was also more prevalent among men who also smoked compared to women (10 percent vs 6 percent) and among younger parents with children in the home (11 percent) compared with those 50 and older (4 percent). The strength of the relationship between current cannabis use and cigarette smoking was significant and similar for all income levels."

The results of our study support the public health gains in reducing overall child secondhand tobacco smoke but raise other public health concerns about child exposure to secondhand cannabis smoke and especially high risk for combined exposures in certain subpopulations," observed Goodwin.

Noteworthy, according to Goodwin, is that there remains a lack of information on the location of smoking, whether it occurs in the house or in the proximity of children. Unlike cigarettes, smoking cannabis outdoors and in a range of public areas is illegal in most places. Therefore, there is reason to believe that cannabis use is even more likely to occur in the home than cigarette smoking given their differences in legal status."

Efforts to decrease secondhand smoke exposure via cigarette smoking cessation may be complicated by increases in cannabis use," said Goodwin. "Educating parents about secondhand cannabis smoke exposure should be integrated into public health education programs on secondhand smoke exposure."

The study was funded by the National Institutes of Health and National Institute on Drug Abuse (DA20892).

Co-authors are Melanie Wall, Deborah Hasin, and Samantha Santoscoy, Mailman School of Public Health; Keely Cheslack-Postava, Columbia University College of Physicians and Surgeons; Nina Bakoyiannis, CUNY; and Bradley Collins and Stephen Lepore, Temple University.

What Gorilla Poop Tells Us About Evolution and Human Health

A study of the microbiomes of wild gorillas and chimpanzees offers insights into the evolution of the human microbiome and might even have implications for human health. The research project was led by scientists at the Center for Infection and Immunity (CII) at Columbia University's Mailman School of Public Health. Findings appear in the journal Nature Communications.

The researchers used genetic sequencing to analyze fecal samples collected by the Wildlife Conservation Society WCS) from wild African great apes living the Sangha region of the Republic of Congo over the course of three years. Their goal was to understand the mix of gut microbes living in gorillas and chimpanzees and compare them to those already documented in other non-human primates and human populations. They found that gorilla and chimpanzee microbiomes fluctuate with seasonal rainfall patterns and diet, switching markedly during the summer dry period when succulent fruits abound in their environment and make up a larger proportion of their diet, as opposed to their usual, more fiber-rich diet of leaves and bark.

These seasonal shifts in the microbiomes of gorillas and chimpanzees are similar to seasonal microbiome changes observed in the human Hadza hunter-gatherers from Tanzania, who also rely heavily on the seasonal availability of foods in their environment. Seasonal shifts in the microbiomes of human industrialized cultures, such as the United States, are likely less prevalent owing to reduced reliance on seasonally available foods and globalization of the food supply, as evident in any grocery store."While our human genomes share a great deal of similarity with those of our closest living relatives, our second genome (the microbiome) has some important distinctions, including reduced diversity and the absence of bacteria and archaea that appear to be important for fiber fermentation," says first author Allison I. Hicks, MS, a researcher at CII. "Understanding how these lost microbes influence health and disease will be an important area for future studies."

"We observed dramatic changes in the gorilla and chimpanzee microbiomes depending on seasons and what they are eating," says senior author Brent L. Williams,, PhD, assistant professor of Epidemiology at CII. "Bacteria that help gorillas break down fibrous plants are replaced once a year by another group of bacteria that feed on the mucous layer in their gut during the months they are eating fruits.

"The fact that our microbiomes are so different from our nearest living evolutionary relatives says something about how much we've changed our diets, consuming more protein and animal fat at the expense of fiber," says Williams. "Many humans may be living in a constant state of fiber deficiency. Such a state may be promoting the growth of bacteria that degrade our protective mucous layer, which may have implications for intestinal inflammation, even colon cancer."

All great apes are endangered or critically endangered. Down to fewer than 500,000, their numbers have been reduced through deforestation—which destroys their habitat—and through hunting, including for meat. Even infectious disease is a major factor—as many as one-quarter of the world's gorilla population has died because of Ebola.

"We are losing biodiversity on a global scale," cautions co-author Sarah Olson, PhD, associate director of wildlife health at WCS. "In fact, our own human microbiome is not immune to this phenomenon. There is an ever growing need for conservation efforts to preserve environments that are vital to the health of animal populations."

"This study underscores the importance of a One Health framework in focusing not only on diseases but also on understanding more about normal physiology," said co-author W. Ian Lipkin, MD, John Snow Professor of Epidemiology and director of CII. "It also provides evidence to support the adage that you are what you eat."

Additional study co-authors include Kerry Jo Lee, Mara Couto-Rodriguez, Juber Patel, Rohini Sinha, and Cheng Guo, CII; Tracie A. Seimon, Alain U. Ondzie, Patricia Reed, and Kenneth N. Cameron, Wildlife Conservation Society, Bronx, NY; William B. Karesh, EcoHealth Alliance, New York, NY; and Anton Seimon, Appalachian State University, Boone, NC.

Funding was provided by the National Institute of Health Centers of Excellence for Translational Research (grant no. U19AI109761), the United States Fish and the Wildlife Great Ape Conservation Fund (grant nos. 98210-5-G195, 98210-6-G107, 98210-7-G292, 98210-8-G643, 98210-0-G280), the Neu Foundation, and Mr. and Mrs. Bradley L. Goldberg.

Public Health Explainer: How Cities Shape Your Health

From the air you breathe to your proximity to the local grocery store, everything around you impacts your health. And in a time when increasing numbers of people are living in cities—an estimated 70 percent of the world's population will be city dwellers by 2050—researchers across the Mailman School are investigating the urban factors that make us healthier or sicker, from the streets of New York City to projects spanning the globe.

Faculty in the Mailman School's Built Environment and Health Research Group (BEH) examine how urban design, retail environments, land use, and accessibility of public transportation shape aspects of our health—physical activity, diet and obesity, risk of pedestrian injury, cardiovascular disease, cancer, and more. One study by Andrew Rundle, DrPH, associate professor of Epidemiology, found people with diabetes are better able to control their blood sugar if they live in neighborhoods with resources that support healthy eating and physical activity. Other ongoing research by Rundle uses Google Street View to help locate pedestrian danger zones throughout New York City.

The quality of your urban surroundings plays a role in your safety and well being. According to research by Charles Branas, PhD, chair of the Department of Epidemiology, greening vacant lots and remediating urban blight leads to reduced gun violence and people feeling more connected to their community. "The key thing is changing people's context, and we now have the strongest scientific evidence that changing the context is what really makes a difference in our health," Branas says.

THE AIR YOU BREATHE

No matter your age, urban air pollution, largely from automotive emissions, is bad news for your health. Andrea Baccarelli, MD, chair of the Department of Environmental Health Sciences, examined the health risks in older populations, including cardiovascular disease, respiratory disease, cancer, and osteoporosis. Meanwhile, an interdisciplinary team of researchers at the Columbia Center for Children's Environmental Health (CCCEH) has followed a group of youngsters in Northern Manhattan and the Bronx since 1998 to understand the effects of early life exposures to urban pollutants on everything from asthma to behavioral problems to obesity. Armed with these findings, CCCEH community partner WE ACT successfully lobbied the New York City Transit Authority to switch city buses from diesel to electric, prioritizing disadvantaged neighborhoods uptown.

YOUR HOME ENVIRONMENT

Even before we leave our front doors, our urban environment is a factor in our health. A study in New York City apartment buildings by Ian Lipkin, MD, and colleagues in the Center for Infection and Immunity found house mice carry bacteria responsible for mild to life-threatening gastroenteritis. Diana Hernandez, PhD, assistant professor of Sociomedical Sciences, examines the uptake and enforcement of smoke-free policies in 12 local affordable housing developments. As a member of Columbia University's Trauma-Free NYC initiative, Virginia Rauh, professor of Population and Family Health, works to prevent New York City children from being exposed to adversity and chronic stress, in and out of the home, that inflicts lasting damage on developing brains.

POLICY MATTERS

Taxes on sugar-sweetened beverages, which vary by city, may make a difference in how you spend your grocery budget, as investigated by Y. Claire Wang, MD, associate professor of Health Policy and Management. Similarly, whether or not your area participates in menu calorie labeling might sway you to eat certain foods and not others, as Sociomedical Sciences professors James Colgrove, PhD, and Rachel Shelton, ScD, have described. Beyond food, Daniel Giovenco, PhD, also in Sociomedical Sciences, investigates the links between tobacco marketing and smoking rates.

Internationally too, faculty are active in advancing urban health. In Medellín, Columbia, Peter Muennig, MD, MPH, professor of Health Policy and Management, advised the city on a cable car system serving a low-income hillside community. In the slums of Dhaka, Bangladesh, Lynn Freedman, JD, MPH, professor of Population and Family Health, has investigated ways to improve access to maternal and newborn healthcare.

The urban environment shapes all aspects of health, from the chemicals and animals you are exposed to, the things you consume, your risk of getting into an accident or being subject to violence, and much more. At the Mailman School, researchers continue to learn what important transformative steps need to be taken to ensure our environment promotes healthy lives for all of us.

Daily Cannabis Use is on the Rise in American Adults

Cannabis use may be decreasing among teens, but a new study by researchers at Columbia University's Mailman School of Public Health showed that American adults have increasingly used cannabis daily since 2007. The findings are published online in the Journal of Studies on Alcohol and Drugs.

The legal status of cannabis for medicinal and recreational use rapidly evolved between 2007 and 2014, with the number of states with medical cannabis laws doubling from 12 to 24. As of September 2017, 29 states and the District of Columbia had medical cannabis laws, and 8 states and the District of Columbia had recreational cannabis laws.

The study found that nondaily cannabis use decreased among those aged 12 to 25 and 35 to 49 before 2007, increased among all adults after 2007, particularly among adults 26 to 34—the latter by 4.5 percent. Daily cannabis use decreased among those 12 to 17 years of age before 2007 and increased among adults in general after 2007. Daily cannabis use was highest among 18 to 34-year-olds but overall, the rate of daily cannabis use increase did not differ significantly and ranged between one and two percentage points among adults 18 to 54."

Increases in daily and nondaily cannabis use among adults after 2007 could be due to increasingly permissive cannabis legislation, attitudes, and lower risk perception," said Pia M. Mauro, PhD, assistant professor of Epidemiology at the Mailman School of Public Health and first author.

Using the National Survey on Drug Use and Health, a survey of individuals ages 12 and older, the researchers examined trends in cannabis use among six age categories between 2002 and 2014. They compared change over time to identify ages that may have disproportionately increased use of cannabis. Daily use was defined as 300 days or more in the past year."

We saw a steady increase in more frequent use among people who reported cannabis use, including young people," Mauro noted.

"We found significant increases in daily cannabis use across adult age categories after 2007 that contrasted with stable prevalence before 2007 and decreases among adolescents."

"Not all adults use cannabis at the same rate," said Silvia Martins, MD, PhD, Mailman School associate professor of Epidemiology and senior author. "Understanding the ages at which young people and adults use cannabis can help target appropriate reduction or prevention interventions."

Middle-age adults ages 50 to 64 were the only group with increases in nondaily cannabis use both before and after 2007. If trends continue, prevalence estimates of cannabis use among ages 50 to 64 could surpass those of adults ages 35 to 49."

Research about the patterns and consequences of cannabis use in baby boomers in particular is needed, since use is high in this birth cohort and is expected to continue to increase," said Martins. "Moreover, significant increases in nondaily cannabis use among adults 65 and older defy perceptions that older adults do not use cannabis, although daily use in this age group remains rare."

The study was funded by the National Institute on Drug Abuse (grants T32DA031099, R01DA037866, and R01DA034244); and the New York State Psychiatric Institute. The authors report no competing interests.

Co-authors are Hannah Carliner, Qiana Brown, and Melanie Wall, Mailman School of Public Health; Deborah Hasin, Mailman School of Public Health and New York State Psychiatric Institute; Dvora Shmulewitz, Reanne Rahim-Juwel, and Aaron Sarvet, New York State Psychiatric Institute and Department of Psychiatry, Columbia University Irving Medical Center.

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Opioid Overdose Survivors Face Continued Health Challenges, Higher Death Rate

Survivors of opioid overdose are at great risk of dying in the year after overdose, but the deaths are not always caused by drug use, a new study reveals. In addition to succumbing to drug use, survivors were much more likely to die from respiratory diseases, viral hepatitis, and suicide. The study by lead author Mark Olfson, MD, MPH, professor of Epidemiology at Columbia University's Mailman School of Public Health, is the first to evaluate causes of death in opioid overdose survivors. The findings are published in JAMA Psychiatry."

We found that adults who survive an opioid overdose have an exceptionally high risk of dying from a wide range of medical diseases and suicide," said Olfson, who is also professor of Psychiatry at Columbia University Vagelos College of Physicians and Surgeons. "While it was not surprising that adults who survive opioid overdoses have high ongoing risks of drug related death and dying from HIV or viral hepatitis, I was taken aback by their markedly elevated risks of dying from so many other conditions including circulatory, respiratory, and digestive system diseases. These findings underscore the overall medical frailty of this patient population and show us that instead of just focusing on survivors' drug use, we need to coordinate addiction treatment for survivors with general medical and mental health care."

The researchers analyzed Medicaid records from 45 states to look for causes of death in more than 75,000 adults who were treated for an opioid overdose between 2001 and 2007. More than 5,000 of the adults died within the first year following an overdose—24 times the death rate found in the general population. The most common causes of death were those related to drug use (25 percent), diseases of the circulatory system (13 percent), and cancer (10 percent). The data show that adults in this population are substantially more likely to die of these causes than adults in the general population.

Compared to the general population, the opioid overdose group was 130 times more likely to die of a drug-use related cause, 40 times more likely to die of chronic respiratory diseases, 30 times more likely to die of viral hepatitis, and 25 times more likely to die of suicide. Women who survived an opioid overdose were nearly 50 times more likely to die of suicide."

Some of the mortality in this group likely reflects health risk factors that are common in individuals with opioid use disorders, such as cigarette smoking, which can lead to respiratory diseases, cardiovascular, disease, and cancer; and needle sharing, which can lead to hepatitis and HIV," said Olfson.

Opioid use has greatly increased in all sectors of society since the data were collected. "Given the substantial and diverse mortality risks following opioid overdose, it's critically important that clinicians coordinate addiction treatment, general medical care, and mental health care in individuals with opioid use disorders."

Co- authors are Melanie Wall of the Mailman School of Public Health; Shang-Min Liu and Shuai Wang, Columbia University Irving Medical Center; Stephen Crystal, Rutgers University; and Carlos Blanco, National Institute on Drug Abuse.

The study was funded by the Agency for Healthcare Research and Quality (U19 HS021112).

research highlight

Greening Vacant Lots Reduces Feelings of Depression in City Dwellers

Greening vacant urban land significantly reduces feelings of depression and improves overall mental health for the surrounding residents, researchers from Columbia University's Mailman School of Public Health and the Perelman School of Medicine and the School of Arts & Sciences at the University of Pennsylvania show in a new randomized, controlled study published in JAMA Network Open. The findings have implications for cities across the United States, where 15 percent of land is deemed "vacant" and often blighted or filled with trash and overgrown vegetation.

For the first time, the research team measured the mental health of Philadelphia residents before and after nearby vacant lots had been converted into green spaces, as well as residents living near untreated abandoned lots, and those who just received trash clean-up. They found that people living within a quarter of a mile radius of greened lots had a 41.5-percent decrease in feelings of depression compared to those who lived near the lots that had not been cleaned. Those living near green lots also experienced a nearly 63-percent decrease in self-reported poor mental health compared to those living near lots that received no intervention. The findings add to the growing body of evidence showing how revitalized spaces in blighted urban areas can help improve safety and health, such as by reducing crime, violence, and stress levels. The most recent study from the same team in February found up to a 29-percent decrease in gun violence near treated lots. This latest work is believed to be the first experimental study to test changes in the mental health of residents after nearby vacant lots were greened."

Greening vacant land is a highly inexpensive and scalable way to improve cities and enhance people's health while encouraging them to remain in their home neighborhoods," says senior author Charles C. Branas, PhD, Chair and Anna Cheskis Gelman and Murray Charles Gelman Professor of Epidemiology at the Mailman School of Public Health and an adjunct professor in the department of Biostatistics and Epidemiology at Penn's Perelman School of Medicine. "While mental health therapies will always be a vital aspect of treatment, revitalizing the places where people live, work, and play, may have broad, population-level impact on mental health outcomes."

For the trial, 541 vacant lots throughout Philadelphia were randomly assigned to one of three study arms: greening intervention, a trash clean-up intervention, or a control group with no intervention. The greening intervention involved removing trash, grading the land, planting new grass and a small number of trees, installing a low wooden perimeter fence, and regular monthly maintenance. The trash clean-up involved removing trash, limited grass mowing where possible, and regular monthly maintenance. The Pennsylvania Horticultural Society LandCare program performed the greening, trash clean-up, and maintenance.

Two sets of pre-intervention and post-intervention mental health surveys were performed among 342 people, 18 months before revitalization and 18 months after. Researchers used the Kessler Psychological Distress Scale (K6), a widely used community screening tool, to evaluate the prevalence of serious mental illness in the community. Participants were asked to indicate how often they felt nervous, hopeless, restless, depressed, that everything was an effort, and worthless.

Results were most pronounced when looking only at neighborhoods below the poverty line, with feelings of depression among residents who lived near green lots decreasing significantly—by more than 68 percent. Analyses of the trash clean-up intervention compared to no intervention showed no significant changes in self-reported mental health. "The lack of change in these groups is likely because the trash clean-up lots had no additional green space created," says co-author John MacDonald, PhD, a professor of criminology and sociology at Penn. "The findings support that exposure to more natural environments can be part of restoring mental health, particularly for people living in stressful and chaotic urban environments."

The study shows transforming blighted neighborhood environments into green space can improve the trajectory of the residents' mental health, the authors said. Adding green space to neighborhoods should be considered alongside individual treatments to address mental health problems in low resource communities. Additionally, greening is an affordable approach, costing about $1,600 per vacant lot and $180 per year to maintain. For these reasons, the authors said, vacant lot greening may be an extremely attractive intervention for policymakers seeking to address urban blight and promote health. "Dilapidated and vacant spaces are factors that put residents at an increased risk of depression and stress, and may explain why socioeconomic disparities in mental illness persist," says lead author Eugenia C. South, MD, MSHP, an assistant professor of Emergency Medicine and a member of the Center for Emergency Care and Policy Research at Penn. "What this new data shows us is that making structural changes, like greening lots, has a positive impact on the health of those living in these neighborhoods. And that it can be achieved in a cost-effective and scalable way—not only in Philadelphia but in other cities with the same harmful environmental surroundings."

Co-authors on the study Bernadette C. Hohl, PhD, from Rutgers University, and Michelle C. Kondo, PhD, from the U.S. Department of Agriculture's Forest Service.

The study was supported by the by National Institutes of Health (R01AA020331 and R01DA010164) and Centers for Disease Control and Prevention (R49CE002474).

First Biomarker Evidence of DDT-Autism Link

Study of more than 1 million pregnancies in Finland reports that elevated levels of a metabolite of the banned insecticide DDT in the blood of pregnant women are linked to increased risk for autism in the offspring. An international research team led by investigators at Columbia University's Mailman School of Public Health and the Department of Psychiatry published these results in the American Journal of Psychiatry. The study, conducted in collaboration with investigators at the University of Turku and the National Institute of Health and Welfare in Finland, is the first to connect an insecticide with risk for autism using maternal biomarkers of exposure.

Researchers identified 778 cases of childhood autism among offspring born from 1987 to 2005 to women enrolled in the Finnish Maternity Cohort, representing 98 percent of pregnant women in Finland. They matched these mother-child pairs with control offspring of mothers and offspring without autism. Maternal blood taken during early pregnancy was analyzed for DDE, a metabolite of DDT, and PCBs, another class of environmental pollutants.

The investigators found the odds of autism with intellectual disability in offspring were increased by greater than twofold for the mother's DDE levels in the top quartile. For the overall sample of autism cases, the odds were nearly one-third higher among offspring exposed to elevated maternal DDE levels. The findings persisted after adjusting for several confounding factors such as maternal age and psychiatric history. There was no association between maternal PCBs and autism.

While DDT and PCBs were widely banned in many nations over 30 years ago, including the U.S. and Finland, they persist in the food chain because their breakdown occurs very slowly, as long as several decades, resulting in continuing exposure to populations. These chemicals are transferred across the placenta in concentrations greater than those seen in the mother's blood."

We think of these chemicals in the past tense, relegated to a long-gone era of dangerous 20thCentury toxins," says lead author Alan S. Brown, MD, MPH, professor of Epidemiology at Columbia University's Mailman School of Public Health and of Psychiatry at Columbia University Medical Center. "Unfortunately, they are still present in the environment and are in our blood and tissues. In pregnant women, they are passed along to the developing fetus. Along with genetic and other environmental factors, our findings suggest that prenatal exposure to the DDT toxin may be a trigger for autism."

The researchers offer two reasons for their observation that maternal exposure to DDE was related to autism while maternal PCB exposure was not. First, maternal DDE is associated with low birthweight, a well-replicated risk factor for autism. In contrast, maternal PCB exposure has not been related to low birthweight. Second, they point to androgen receptor binding, a process key to neurodevelopment. A study in rats found DDE inhibits androgen receptor binding, an outcome also seen in a rat model of autism. In contrast, PCBs increase androgen receptor transcription.

Study co-authors include Andre Sourander, Columbia University Medical Center, New York State Psychiatric Institute, and Turku University, Finland; Keely Cheslack Postava, Columbia University Medical Center, New York State Psychiatric Institute; Panu Rantakokko and Hannu Kiviranta, National Institute for Health and Welfare, Finland; Susanna Hinkka-Yli-Salomäki, University of Turku, Finland; Ian W. McKeague, Columbia's Mailman School of Public Health; and Heljä-Marja Surcel, University of Oulu, Finland.

The research was supported by the National Institute of Environmental Health Sciences (grant ES019004). The authors report no competing interests.

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Ebola Species Found in Bats Ahead of Any Potentential Outbreak

For the first time, scientists discovered a new ebola virus species in a host prior to detection in an infected human or sick animal.

The discovery of the Bombali virus in bats in Sierra Leone and the sequencing of the complete genome was officially published today in the journal Nature Microbiology. The Sierra Leone government announced preliminary findings in late July. The discovery was made by scientists at the University of California Davis' One Health Institute and the Center for Infection and Immunity (CII) at the Columbia University Mailman School of Public Health, working with the government of Sierra Leone and the University of Makeni and Metabiota. The work is part of the PREDICT Ebola Host Project, funded by the United States Agency for International Development.

PREDICT IN ACTION

The discovery illustrates the mission of USAID's PREDICT project, which aims to find viruses before they spill over into humans. The Bombali virus has the potential to infect human cells, but it is unknown if the virus has already caused human infections or if it is harmful to humans. "Identifying new viruses like Bombali ebolavirus in wildlife and testing their capacity for human infection can enhance our understanding of the pre-emergent viral diversity circulating in animals," said co-lead author Simon Anthony, PhD, a virologist and assistant professor of Epidemiology at Columbia Public Health. "We want to discover viruses that have the genetic prerequisites for human infection and then prioritize them for further study and intervention."

BATS LIKELY HOSTS OF EBOLAVIRUSES

Prior to the discovery of Bombali virus, five ebolavirus species had been described. For instance, Bombali virus is different from the Zaire ebolavirus, which killed thousands of people between 2013-2016. Despite more than 40 years of research, the reservoir hosts for these viruses is still unknown. But the discovery of Bombali virus adds to growing evidence that bats are the likely hosts of these viruses."If you want to prevent Ebola outbreaks, it's important to know which species are hosts and can shed the virus," said co-lead author Tracey Goldstein, PhD, an associate director of the One Health Institute at the UC Davis School of Veterinary Medicine.

"Then we can help target changes in behavior so we can protect people, which is the overarching goal of our work." The PREDICT team sampled more than 6,000 animals in Sierra Leone and performed laboratory tests to look for both known and unknown ebolaviruses. Bombali virus was found in five individual bats belonging to two different species of insectivorous bats that were found roosting inside people's houses.

DON'T KILL BATS

The researchers emphasize that people should not attempt to kill or eradicate bats in response to the discovery. In fact, killing bats can actually increase the risk of virus transmission, not halt it. Bats also play important ecological and agricultural roles for pollination. Insectivorous bats eat thousands of insects each night, helping to control pests that can transmit disease and damage crops.

REDUCING EXPOSURE

Researchers have been engaging with local communities throughout the project. They continue to share results, answer questions and discuss with communities how they can live safely with bats and reduce their risk of exposure to the virus. Infected bats are not known to show signs of illness but can shed the virus in their saliva and feces. As a result, other animals and people may be exposed if they touch live or dead bats, ingest food or water on which bats have fed or if they come into contact with the urine or feces of infected bats.

Additional co-authors include Aiah Gbakima, Brian H Bird, James Bangura, Alexandre Tremeau-Bravard, Manjunatha N. Belaganahalli, Heather L Wells, Jasjeet K Dhanota, Eliza Liang, Michael Grodus, Rohit K. Jangra, Veronica A. DeJesus, Gorka Lasso, Brett R. Smith, Amara Jambai, Brima O Kamara, Sorie Kamara, William Bangura, Corina Monagin, Sagi Shapira, Christine K. Johnson, Karen Saylors, Edward M. Rubin, Kartik Chandran, W. Ian Lipkin, and Jonna A.K. Mazet.

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research highlight

Preventing Gun Violence Begins in the Classroom

It's a topic rarely covered in a public health classroom, but hopefully, one day it will become more common. Columbia Mailman School's "Gun Violence in the United States: Evidence and Action," one of the country's few public health courses on preventing firearm injury and death, invites students to examine the science on gun violence within the political and legal contexts that support or stymie collective action.

On a recent Monday afternoon, Ted Alcorn, one of the course's instructors, told the class a tragic story of a young woman who was about the same age as the students when she was shot and killed by a former boyfriend. The tragedy, which was devastating to her family and friends, is unfortunately just one part of a national picture of largely unchecked violence, dominated by firearms. Each year, 34,000 people in the United States are killed by guns—including in intimate partner violence, community violence, suicide, mass shootings, and those that the legal system deems "justifiable."

"Once seen strictly as a criminal justice concern, gun violence is increasingly understood to be a public health issue," says Alcorn, a journalist and former research director at the advocacy group Everytown for Gun Safety. "We designed this course to equip students to engage not just with the science of preventing gun violence, but to understand how that science intersects with our political realities. The goal is getting to a place where we can marshal the evidence to effect change."

At the Monday afternoon class, Alcorn described the murder of the young woman, students reviewed a collection of studies on intimate partner gun violence, which like every other type of gun violence is a far greater problem in the United States than in other comparable countries. Unlike other gun homicides or gun suicide, in which men are more often the victims, domestic violence homicides disproportionately affect women. Nationally, half of women killed by guns are killed by intimate partners and family members. When an abuser has access to a firearm, his partner is five times more likely to be murdered.

Charles Branas, chair of the Epidemiology Department and the course's co-instructor, invited the class to take a close look at a 2003 research study that identified risk factors for female homicides in the context of abusive relationships, including the perpetrator's access to a gun. He asked students to consider questions: how the study was designed, how terms like domestic abuse are defined, and what conclusions can be drawn from it. Perhaps the biggest takeaway: guns are highly lethal. "It may seem obvious," said Branas, "but in situations where guns are present the chances of dying are excessive and we seem to overlook this." Groups working to prevent domestic violence have used evidence like this to restrict abusers' access to guns as a top priority.

For more than a decade, Branas's own research has challenged conventional thinking, presenting evidence that the risk of gun death is disproportionally high in rural areas, where suicides are the biggest contributor, and actually at higher rates than urban areas where homicide risk is more common. His research was cited in the landmark 2008 Supreme Court decision, District of Columbia v. Heller that upheld the individual right to possess firearms but affirmed the constitutionality of reasonable restrictions. In another prominent study, he found that people who carried guns were more likely to be shot than those who were unarmed. In recent years, even as federal funding for gun violence research dried up, his research has continued, zeroing in on creative ways to reduce urban gun violence by restoring vacant and abandoned spaces in cities.

Over the last 50 years, despite sustained rates of gun violence above other developed nations punctuated by high-profile mass shootings, policymakers have done little to address the problem. During the class, Alcorn walked students through a half century of federal efforts, from the 1968 Gun Control Act, signed into law after the assassinations of Robert Kennedy and Martin Luther King Jr., to more recent initiatives to address domestic gun violence, including the 1997 Lautenberg Amendment, which restricts access to firearms by people convicted of misdemeanor crimes of domestic violence. That Congress even took that step reflects the unique status of domestic gun violence as an area of greater consensus. "There is a lot of bipartisan support to address this issue," Alcorn told the class. "Yet we still have a lot of gaps to fill."

Through the fall, the Columbia Mailman course covers gun violence from multiple angles: the beliefs and behaviors that constitute American gun culture; the roles played by government, the legal system, and mass media; and various interventions aimed at prevention. Along the way, students, whose interests span injury prevention, chronic disease, and health policy, write briefs as if they were outlining the issues for policymakers, drawing on the best available science to support their positions.

Justin Lee, an MPH student in Epidemiology, relishes the opportunity to pull back the curtain on gun violence."

I want to see the issue in an unfiltered way," Lee said. "Everyone needs to take the issue of gun violence seriously to evolve as a country. To do that, it's important to understand what the research is saying."

One-Third of "Gluten-Free" Restaurant Foods in U.S. Test Positive for Gluten

One-third of the "gluten-free" foods sold in American restaurants tested positive for trace levels of the substance, according to new research conducted at the Columbia University Irving Medical Center and Columbia Mailman School of Public Health. The finding will be of particular concern to the 1 percent of Americans with celiac disease for whom gluten—the protein in wheat and other grains—can damage their intestinal lining."

As awareness of celiac disease and the gluten-free diet have increased in recent years, restaurants have sought to offer selections that are compatible with these restrictions," said study author Benjamin Lebwohl, MD, assistant professor of Medicine and Epidemiology. "But some establishments do a better job than others at preventing cross-contamination."

For the study, more than 800 users of a portable gluten sensor uploaded test results on the gluten content of dishes listed as gluten-free on menus. Based on more than 5,600 gluten tests over 18 months, this crowdsourced analysis found that 27 percent of gluten-free breakfast meals tested positive for gluten. At dinner time, this figure increased to 34 percent. The rise could reflect a steady increase in gluten contamination risk throughout the day, Lebwohl and colleagues said.

According to Lebwohl, some gluten-free foods are riskier than others. For example, more than half of all purportedly gluten-free pastas and pizzas tested positive for gluten."The fact that gluten was so often found in pizza suggests that sharing an oven with gluten-containing pizza is a prime setting for cross-contamination," explained Lebwohl, who leads the Columbia University's Celiac Disease Center. "Gluten-free pasta can be contaminated if prepared in a pot of water that was used to prepare gluten-containing pasta."

Although the U.S. Food and Drug Administration regulates packaged foods with gluten-free labeling, there is no federal oversight of gluten-free claims in restaurants, noted Lebwohl."This estimate of gluten contamination rates in restaurant food is just that: an estimate,"cautioned Lebwohl. "The estimate may be affected by multiple factors, including the possibility that the device sometimes detects gluten at concentrations under 20 parts per million, which is the clinically relevant cutoff for considering a food gluten-free. And most importantly, these results were voluntarily uploaded by users, who may be more likely to share results that show gluten contamination."

"These results underscore the need for education in food preparation at restaurants and the need for diners to inquire about these precautions," Lebwohl said.

The study was presented at the American College of Gastroenterology annual meeting in Philadelphia, October 8–10.

research highlight

Study Uncovers Evidence of Natural Selection in the Womb

Conditions encountered in the womb when the embryo consists of only about 100 cells can have a lifelong impact on health. Scientists previously assumed that this happened because embryos respond to adverse conditions by programming their gene expression. Now an international team of researchers at the Leiden University Medical Center, Wageningen University and Research, Lund University, and Columbia University Mailman School of Public Health propose a radically different alternative. Rather than being programmed by the environment, random differences in gene expression may provide some embryos with a survival advantage, in particular when conditions are harsh. By studying DNA methylation, an important mechanism to control gene activity and known to be involved in development and metabolism, the researchers found that a specific part of the DNA methylation pattern was missing among famine-exposed individuals. The findings are published in the journal Cell Reports.

The new research was motivated by the observation that people conceived during the Dutch Hunger Winter of 1944-1945 suffer from reduced cardiovascular health in their sixties. This can be attributed to persistent changes in how genes are expressed, through so-called epigenetic modification of the DNA. "We know that a lack of nutrition decreases the likelihood of an embryo surviving. Our new study indicates that surviving famine in the uterus hinged on having a DNA methylation pattern allowing continued growth of the embryo in spite of limited resources. But those same methylation patterns may have adverse health effects much later in life," says Bas Heijmans, epigeneticist at the Leiden University Medical Center.

To understand the interplay between epigenetics and survival of the embryo, the researchers took inspiration from evolutionary biology. In evolution, random genetic variation is filtered by natural selection, resulting in accumulation of variants that best "fit" the environment. A computer model showed that random epigenetic variation between embryos is inevitable, just like genetic mutation. Some of the random DNA methylation variants may enhance an embryo's chance to survive on low nutrition. As a consequence, those epigenetic variants will become more common in cohorts that were exposed to a famine as embryos. "We have always struggled to explain how early embryos would be able to modify specific epigenetic marks in response to nutrition. It is fascinating that selective survival based on random epigenetic variation fits the data best", says Tobias Uller, an evolutionary biologist at Lund University.

Some health effects of the Dutch Famine only show later in life and those exposed during early gestation seem to be most affected. "These findings have often been interpreted as conclusive proof of fetal adaptations in the womb that will lead to adult disease if the adult environment changes for the better. But our findings point to a different mechanism", says L.H. Lumey, MD, an epidemiologist at Columbia Mailman School and principal investigator of the Dutch Hunger Winter Families study.

The research was supported by The European Union's Seventh Framework Program IDEAL, Per-Eric and Ulla Schyberg's Foundation, and the U.S. National Institutes of Health (HL067914, G042190). Funding was also provided by the Royal Society of London, the John Templeton Foundation, the Knut and Alice Wallenberg Foundations, and the Netherlands Organization for Scientific Research.

The Science of Healthy Aging

Dr. Linda P. Fried, Dean of Columbia's Mailman School of Public Health since 2008, is a leader in the fields of epidemiology and geriatric medicine. She is an active faculty member in the Department of Epidemiology.

Dean Fried was interviewed by Columbia Magazine in Winter 2018.

What are some of the important findings so far?

One of the biggest breakthroughs in the field of gerontology in recent years has been to show how surprisingly resilient our minds and bodies are. For instance, Columbia scientists have demonstrated that we can continue to improve our cognitive abilities until very late in life, even accessing and strengthening parts of our brains that we'd long left dormant. And my own research has shown that many of the physical ailments that are associated with aging — weight loss, muscle weakness, exhaustion, slow walking, and balance problems, along with heart disease and stroke — are not an inevitable part of growing old, as physicians used to think, but are actually preventable.

How can you prevent them?

The single most important thing a person can do as he or she gets older is to remain physically active. Diet is important too, but physical activity is crucial. Exercise is the closest thing we've found to a magic pill for combating the effects of aging. That's because it works on every physiological system and keeps your entire body fine-tuned. It even stimulates your brain and helps to prevent cognitive decline.

That said, the prevalence of Alzheimer's disease has been rising. Do you think we're prepared as a country?

Unless we invest more money in studying the disease, both as a medical problem and as a public-health challenge, it could be a truly devastating situation. Right now, the US government spends about $600 million a year on Alzheimer's research, which is less than it spends studying AIDS or cancer and is a pittance compared to the $225 billion that the disease is estimated to cost our country annually. Meanwhile, the number of Alzheimer's cases in the US is expected to triple, to sixteen million, by 2050.

Research may point a way forward, though. The Health and Retirement Study, a longitudinal survey funded by the National Institute on Aging, has recently shown that among Americans with high levels of education, rates of Alzheimer's disease have actually plummeted since 2000. Now, the fact that the decline is occurring only among better-educated people is problematic, obviously, but it should motivate us to figure out exactly what resources, activities, and environments protect against dementia. In the meantime, I think we ought to be investing more money in public-health programs that encourage participation in the simple things that we already know are beneficial for long-term cognitive health: reading, learning new tasks, exercising, eating healthfully, and leading an active life.

More and more Americans are working past the official retirement age. Is your faculty studying that issue?

Yes, adults over the age of fifty-five are the fastest growing segment of the workforce, and we've done extensive research on the topic. Older people remain on the job for many different reasons. Some can't afford to retire. Others simply love what they do and want to keep doing it. As scientists, we're looking at the situation agnostically and asking: if an older person chooses to continue working, regardless of her motivations, how can she accomplish that in a way that's beneficial to both her and her employer?

What have you learned so far?

Our research has debunked a lot of myths about older workers. For example, we've found that workers in many industries continue to be productive well past the age of sixty-five and that the wealth of experience they bring into the workplace improves a team's performance. This is true in a range of settings, from white-collar workplaces to production lines. One study in a German automobile factory showed that employees on a production line make fewer mistakes if the team is multigenerational.

The Science of Healthy Aging

We know the US population is aging. Can you give us a little perspective on this demographic shift?

Today, 15 percent of all Americans are sixty-five or older, and by 2030 that number will reach 20 percent. This isn't a temporary bump caused by the aging of baby boomers. It's primarily the result of major public-health achievements that, over the past century, have added more than three decades to the average American lifespan. Many people are now living well into their eighties or nineties, which means that we have an entirely new stage of life to explore. It's amazing. It's what we always wanted: for everybody to live longer. And yet we've declared it a disaster — "Oh, no, we can't afford it; how terrible to have all these old people around."

So you don't share the concerns of people who warn that this cohort will bankrupt our Social Security and Medicare systems?

It's true that Social Security and Medicare will soon need to be tweaked because more people are now drawing benefits out of those programs relative to the number paying taxes into them. But the situation can be addressed with some combination of minor tax increases and adjustments in the programs' eligibility ages. What I find perplexing is the attitude that older people represent a financial burden on society. I see them as a great untapped resource. Psychological research has shown that older people have a strong desire to make a difference in the world. Many of them are eager to remain involved in work or in volunteer activities. So why not connect these large numbers of wise and experienced older Americans with important social initiatives that could use their help?

You designed a nationwide program, the AARP Foundation Experience Corps, that assigns older Americans to serve as tutors in public schools.

Yes, the inspiration came from work I did as a young physician in Baltimore back in the 1980s. I saw a lot of depression, anxiety, and feelings of social isolation in otherwise healthy older people, and so I encouraged them to find something meaningful to do and report back to me. Nine times out of ten, I would hear that they couldn't find suitable roles for themselves out in the community. So in the 1990s I designed a new approach, and later I teamed up with a social activist named Marc Freedman to create a volunteer program in which older people can serve in public schools to improve children's success. Today, Experience Corps includes two thousand volunteers tutoring thirty thousand students a year in twenty-one US cities. Studies have shown that children in the participating schools earn better grades, have fewer behavior problems, and are more likely to go on to complete high school. The volunteers benefit, too, in terms of both their physical and mental health.

Since joining Columbia in 2008, you've established the Mailman School as a major hub of research on aging.

Our school now hosts the Robert N. Butler Columbia Aging Center, which promotes interdisciplinary research on nearly every aspect of aging. Mailman School scientists are investigating questions like: How do you prevent or delay the onset of Alzheimer's disease? How can older people remain active even when they begin to experience health problems? And how might we redesign our cities, workplaces, and social policies to better serve people of all ages?

Are employers getting the message?

Ageism is still a problem in many workplaces, unfortunately. But more and more companies are recognizing the advantages of hiring and retaining older workers. Some big corporations, like CVS drugstores and Fidelity Investments, have recruited older people because they realize that older customers prefer discussing their health needs or retirement plans with people closer to them in age. And many small companies, where staff turnover can be especially disruptive, are hanging on to older workers because they value their institutional knowledge and experience. Overall, the research indicates that the multigenerational workplace is a win-win: good for the companies and good for the workers.

The Science of Healthy Aging

Some have suggested that older workers take jobs away from young people.

That's another myth that's been disproved. In fact, several studies have shown that older workers provide a boost to our economy and create jobs for young people, since they have more disposable income. One serious challenge that does exist is that companies are often reluctant to pay for their older workers' health-care plans, which tend to be more expensive. I proposed a solution to this in a recent paper: older workers ought to be able to receive full Medicare coverage, which is currently available only to retirees. This would lower companies' health-care costs and encourage them to keep on their older workers.

Are only industrialized nations seeing their populations age?

The same demographic shift is occurring throughout the world. In some ways, the changes will be more difficult for low- and middle-income nations. Many of them lack the robust social safety nets that we have for older people. And some of them have rising rates of smoking, alcohol abuse, diabetes, stroke, and heart disease, as well as less access to education — all risk factors for frailty, dementia, and other serious health problems that strike people in old age. Many of my Columbia colleagues and I are now collaborating with public-health experts overseas to strategize about how developing nations can best prepare for this transition, based on what we've learned works, or doesn't, in our own countries.

What are some of the lessons you've shared?

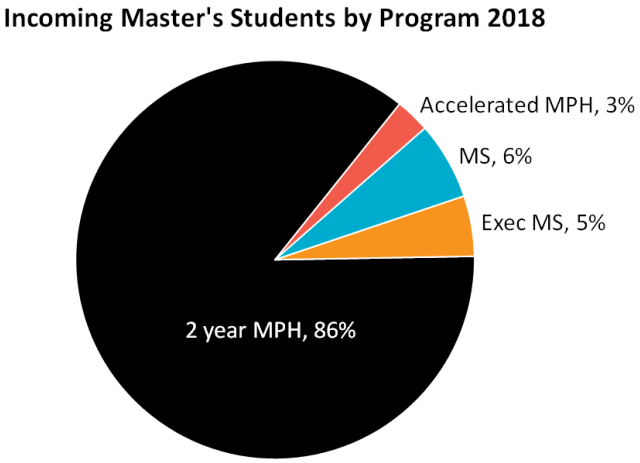
There are so many. Some may seem small, but they're important. For example, Mailman School researchers have been looking at how urban infrastructure and public policy can affect the lives of older city dwellers. We've shown that installing more street benches, giving older people free access to public transportation, and inviting them to take classes at local universities and at other institutions through which they can stay engaged can dramatically increase their levels of physical, social, and mental activity, and thereby improve their overall health. These are enormously cost-effective measures that can be implemented in cities around the world. And then there are larger-scale interventions. My Mailman colleague Kavita Sivaramakrishnan is now working in India, China, and Kenya to understand culturally relevant approaches to long-term-care programs for older people. We believe that expanding such programs is a critical need, because these and many other developing nations are undergoing social changes similar to those that occurred in the US many decades ago, when grown children began moving far away from their parents and so were no longer available to directly care for them in their later years. China has the most urgent need for new approaches, as a result of its one-child policy.

To get back to the US, what work must still be done here?

We are still in the process of defining what we want our lives to look like in our seventies, eighties, nineties, and beyond. While many people are truly happy retiring and devoting their time to family, hobbies, and leisure, others feel the urge to do more. We know this is true because Experience Corps, along with a handful of other nationwide volunteer programs for older people, always has long waiting lists of would-be participants. I'm an advocate for these programs not because I think doing volunteer work is the only way to age healthfully but because I've seen firsthand what it can mean for older people to know that their lives still have a larger purpose. I've sat with retired police officers, plumbers, lawyers, corporate CEOs, and others who, after mentoring children, have looked me in the eye and said things like, "This is the most important work I've ever done." That conviction inspires them to get out of bed every day, to walk to a nearby school, and to stay physically and mentally fit. And as a result, a child who might otherwise have dropped out of school goes on to graduate. Two lives are changed. We need to design more roles like this for older people, whether that means having them serve as community health advocates, companions for homebound people, or mentors to younger employees at their companies. We need to stop bemoaning the challenges posed by our population's aging and instead ask ourselves a bold question: how could this transition be great?

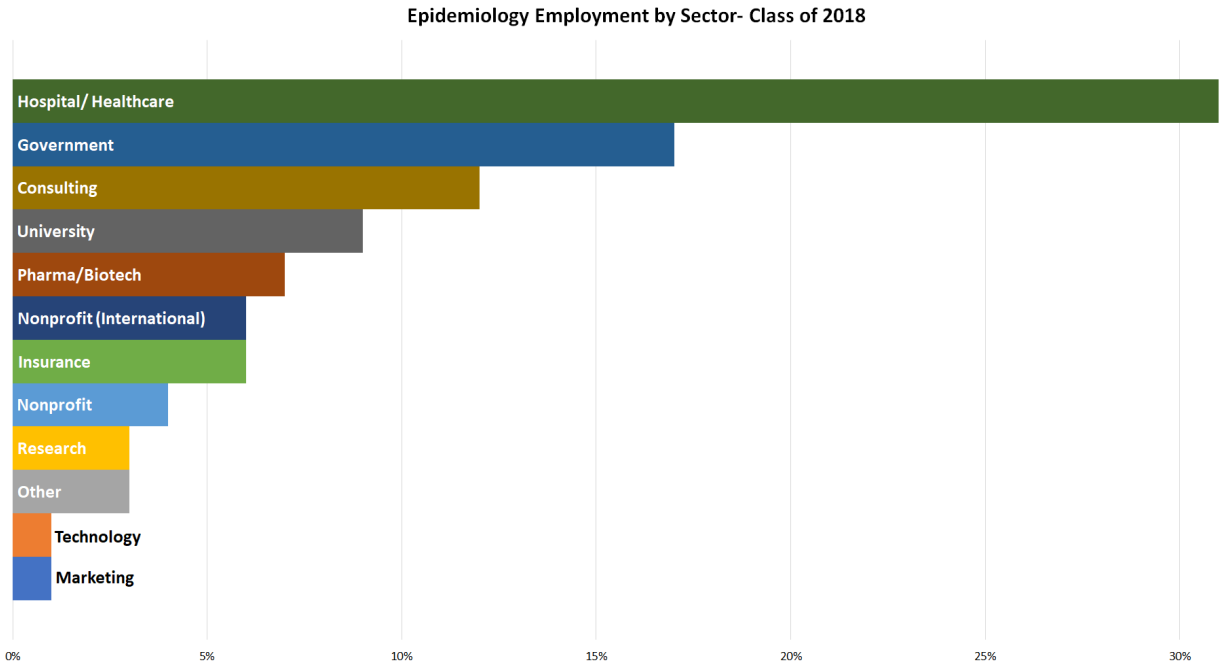
Fall 2018 incoming students

We welcomed 15 doctoral students (11 PhD, 4 DrPH) in Fall 2018. We also welcomed 143 new epidemiology master's students in Fall 2018, and 14 percent of the incoming cohort hails from outside the United States. Columbia's epidemiology department grants more MPH degrees than any other department within Mailman.



Epidemiology graduates: Employment outcomes

Our graduates are in high demand. Ninety-five percent of Columbia Department of Epidemiology graduates are employed at least part-time or pursuing additional education six months after earning their degrees.



Epidemiology graduates: Work type

Columbia epidemiology graduates find work in a variety of sectors. Among the 2018 graduating classes, the most popular sectors were hospital/healthcare and government. The schoolwide and epidemiology department data below show employment outcomes for the classes of 2018.

SECTOR	EPIDEMIOLOGY	SCHOOLWIDE
HOSPITAL/HEALTHCARE	31%	38%
GOVERNMENT	17%	12%
CONSULTING	12%	10%
UNIVERSITY	9%	8%
PHARMA/BIOTECH	7%	6%
NONPROFIT (INTERNATIONAL)	6%	6%
INSURANCE	6%	3%
NONPROFIT	4%	7%
RESEARCH	3%	3%
OTHER	3%	3%
MARKETING	1%	2%
TECHNOLOGY	1%	2%

awards

Quarraisha Abdool Karim, PhD

Quarraisha Abdool Karim received the 2018 Ward Cates Spirit Award, for which she was acknowledged for her "outstanding contirbutions to HPTN's mission through public health advocacy, leadership, and mentoring." She also appeared in the film "The Last Mile," which was made in recognition of World AIDS Day to celebrate the 25th anniversary of the iconic film "Philadelphia."

Salim Abdool Karim, MBChB, PhD

Salim Abdool Karim received the prestigious Al-Sumait prize from the Amir of Kuwait for his contributions to science in HIV treatment and prevention. The Al-Sumait prize "honors individuals or institutions who help to advance economic and social development, human resources development and infrastructure on the African continent."

Wafaa El-Sadr, MD, MPH, MPA

Wafaa El-Sadr was presented the "Stephen Smith Award for Distinguished Contributions to Public Health" from NYAM. Additionally, she received the President's Global Innovation award and the President's Global Innovation Fund for her research titled "Addressing Gender-Based Violence: A Public Health and Law School Partnership in Kisumu, Kenya." She was also inducted as a Fellow of the African Academy of Sciences.

Pam Factor-Litvak, PhD

Pam Factor-Litvak won the Dean's Excellence in Leadership Award. Since 2008, Dean Linda P. Fried has bestowed the Excellence in Leadership Award upon senior leaders of the school whose efforts extend beyond the expectations of their individual role.

awards

Andrea Howard, MD, MS

Andrea Howard received the President's Global Innovation award for her research titled "Implementation Science and Global Health: Taking Knowledge to Action." The fund is designed to support faculty who are developing projects that enable global opportunities for research, teaching, and service.

Katherine Keyes, PhD

Kerry Keyes was elected as a new Member-at-large on the Society for Epidemiologic Research (SER) Board. Founded in 1968, SER "is the oldest and largest general epidemiology society in North America."

Ebony King

Ebony King received the Mailman School's Staff Award for Excellence, which recognizes individuals whose service to their community stands as an example of excellence.

Elaine Larson, PhD, RN

Elaine Larson received the 2018 Walsh McDermott Medal "for distinguished service to the National Academy of Medicine and the National Academies over an extend-ed period of time."

awards

Ben Lebwohl, MD, MS

Ben Lebwohl was ranked in the top 10 celiac disease experts worldwide. In 2010, he joined the faculty of the Celiac Disease Center at Columbia University. Presently, he is collaborating with the Clinical Epidemiology Unit at the Karolinska Institute in Stockholm, Sweden, focusing upon risk factors and outcomes related to celiac disease.

Harriet Nuwagaba-Biribonwaha, PhD

Harriet Nuwagaba-Biribonwaha received the CUGH Hall-Sewankambo Mid-career leadership award, which acknowledges the achievements and advancements of dedicated individuals within the field of Public Health.

Andrew Rundle, DrPH

Andrew Rundle received the AJE Editors' Choice award for his paper on "How Neighborhood Affects Glycemic Control" The American Journal of Epidemiology Editors' Choice award recognizes outstanding papers based upon research and developments in the field of Epidemiology.

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