



BOW STREET BULLETIN

News and Ideas from the
**Harvard Center for Population and
Development Studies**

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Neighborhood Crime and Social Networks

Sociologist Andrew Papachristos uses innovative methods to capture who's most at risk for being a victim of violence

As a teenager growing up on the north side of Chicago in the 1990s, Andrew Papachristos and his family were not only eyewitnesses to one of the most dangerous chapters in the windy city's history; they were also victims.

In 1992 – one year before Chicago reached its highest murder rate in its history with more than 1,000 casualties – the restaurant owned by Papachristos' Greek immigrant parents was burned to the ground by gang members as a form of retaliation. As Papachristos outlines in a forthcoming book, gang members resented the family's refusal to succumb to extortion as well as their efforts to help local youth escape gang life.

Today, nearly 20 years later, Papachristos has built an impressive body of work as a sociologist whose research is focused on street gangs, urban neighborhoods, social networks, and gun violence. As a Robert Wood Johnson Health and Society Scholar who is spending two years at Harvard's Center for Population and Development Studies (HCPDS), Papachristos is expanding his use of network analysis to study crime epidemics in U.S. cities, paying particular attention to the way violence diffuses among populations of youth.

"I've always wanted my research to be relevant in real ways, and a lot of the goal was to work with violence reduction strategies, in particular gun violence," says Papachristos, who is currently on leave from his position of assistant professor of sociology at the University of Massachusetts, Amherst. "For African American men, there is a 6-year gap in life expectancy compared

to white men ... and the third leading cause of death is gun violence, which is preceded by cardiovascular disease and cancer."

The origins of Papachristos' own field work dates back to high school, when he



Andrew Papachristos

began efforts to assist fellow urban youth by age 15 and joined the Guardian Angels at 16. While an undergraduate at Loyola University in Chicago, he started a nonprofit that was focused on aiding gang members via positive role-model mentoring, referrals to social service agencies, and anger-management classes.

"When I went to college, I thought I would be a cop," says Papachristos. "After graduation, I had an offer to enter the police academy or to go to a Ph.D. program. I decided to pursue sociology at the University of Chicago, and today I spend one-third of my time with students, one-third of my time

with gang members, and one-third of my time with law enforcement. It is really energizing to do that."

Given the HCPDS focus on population health, Papachristos says he saw an opportunity through the Robert Wood Johnson fellowship to expand his research to Boston-based projects and to delve into a subject matter that is "not part of your typical health framework."

"Gun violence is a behavior more akin to cigarette smoking," says Papachristos, who received his Ph.D. in sociology from the University of Chicago in 2007. "Asking why people pick up guns is very similar to asking why people smoke. People use guns due to peer influence as well as the perception that this is what keeps you safe."

His research – which has appeared in *Foreign Policy*, the *American Journal of Sociology*,

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Pop Center Celebrates Krieger's Book Publication

On March 9, the Center for Population and Development Studies and the Department of Society, Human Development and Health at HSPH hosted a special event celebrating Professor Nancy Krieger's newly published book, "Epidemiology and the People's Health: Theory and Context." Faculty, students, and friends packed the conference room to hear Krieger, a world renowned social epidemiologist, discuss the book's impetus and evolution. The evening culminated with a lively reception and successful book signing. ■



Photo: Ned Brown/Harvard School of Public Health



Photo: Mack Ramsey/HCPDS

News Briefs:

We send hearty congratulations to the following Pop Center faculty, fellows, and staff for their recent achievements:

Rocio Calvo, Bell Research Fellow, has accepted a position of assistant professor of social work at the Graduate School of Social Work at Boston College. Rocio and her husband, Tomeu, also were excited to welcome their first child, Pablo, in May.

Associate Director **David Canning** has been named the Saltonstall Professor of Population Science at the Harvard School of Public Health.

Summer Hawkins, RWJF Health and Society Scholar, was awarded an NIH K99 Pathway to Independence Award for her research project, "Early determinants of childhood obesity: etiology, disparities, and policy analysis." Summer and her husband, Dan, also welcomed their beautiful daughter, Iris, in February.

In August, RWJF Health and Society Scholar, **Jennifer Jennings**, heads to New York University where she will begin her tenure as an assistant professor of sociology.

Bell Research Fellow, **Santosh Kumar**, departs the Pop Center to begin a new position as lecturer at the University of Washington School of Medicine and School of Public Health.

Haili Muse, program assistant, graduated from Harvard College with a concentration in economics. She will begin a sales analyst position at Barclay's Capital in July.

Emily O'Donnell, program coordinator, has been accepted into the doctoral program in the Department of Society, Human Development and Health at the Harvard School of Public Health. ■

Neighborhood Crime and Social Networks, *continued from page 1*

Criminology & Public Policy, as well as other peer-reviewed journals and edited volumes – uses social network analysis in the study of interpersonal violence, criminal organizations, and neighborhood level social processes.

Papachristos recently finished a project on unraveling crime epidemics in Boston, where he utilized social network analysis of known gang members to determine the probability of close associates falling victim to gun violence. “It is to identify who is at risk,” says Papachristos, who worked closely with the Boston Police Department’s Gang Unit as well as Anthony A. Braga, a senior research fellow in Harvard’s Program in Criminal Justice Policy and Management. “We know that young black men in the city are at a greater risk of being shot, but the vast majority of black men in the city are not shot, so it is about determining that risk. You can identify who are the members of that network and you want to identify who is most at-risk in this population.”

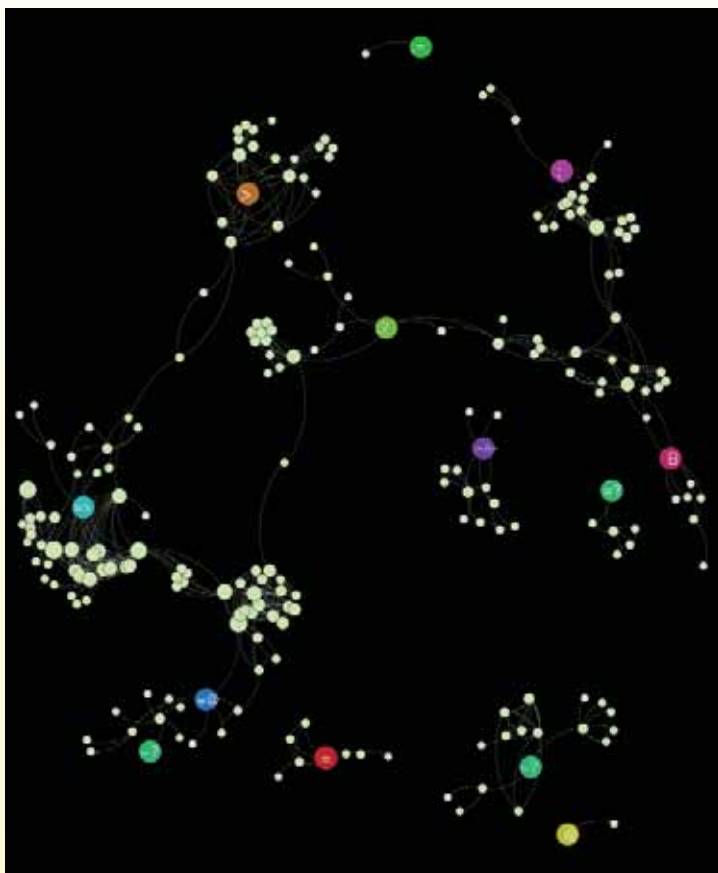
“The primary prevention around smoking and sexually transmitted diseases is around education, and it is the same with violence,” says Papachristos. “To say that networks can move past simply primary prevention and toward more directed prevention and intervention efforts can ultimately help identify people at immediate risk of getting shot.”

Additional research projects include the application of social network analysis to the study of crime, violence, and social control, which involves “looking at ‘negative’ interactions, such as violent disputes, gang beefs, interorganizational conflict, and murder.” *Project Safe Neighborhoods* evaluates several of Chicago’s gun reduction programs while *Chicago’s Outfit* details organized crime in Chicago from 1908 to the 1980s. *Neighborhood, Crime and Public Health* explores the relationship between gentrification and neighborhood crime.



“The primary prevention around smoking and sexually transmitted diseases is around education, and it is the same with violence.”

“Andy has a really innovative approach to empirical methodology, and he is the person who can take a concept and make it work empirically,” says Tracey L. Meares, the deputy dean and Walton Hale Hamilton Professor of Law at Yale University who hired Papachristos as a research assistant during his doctorate work at the University of Chicago. “It takes a very creative mind for this type of work, and some of Andy’s creativity is grounded in his own personal experience. Ivory tower thinking is often abstract but there is a way to come up with ideas that relate to the reality on the ground ... and I think because he has



Courtesy of Andrew Papachristos

This faction map shows a network of violent gun offenders on Chicago’s Westside that are part of an ongoing Violence Reduction Strategy (VRS) coordinated by the National Network for Safe Communities. Each one of the nodes represents a unique individual. Each one of the lines represents an instance in which two individuals were arrested together. The nodes that are different colors and numbered signify those individuals who are part of the intervention; different colors signify unique gangs. Individuals were selected as part of the intervention, in part, because of their position in the various clusters and subnetworks.

the capability of doing that kind of grounded tactile and texturized work that he puts things together in a way that is pretty unique.”

For the young assistant professor who says he would “like to change the world one class at a time,” Papachristos has also been recognized for his exemplary teaching, receiving the title of Professor of the Year in 2008 by the Student Sociological Council of UMass, Amherst, where he was also nominated for the Distinguished Teaching Award, the highest faculty honor.

“The Robert Wood Johnson Health and Society Scholar program is an incredibly prestigious fellowship and it is something that people in the top of his field get to do,” says Meares. “Andy is going to be a major player in his field and probably one of the long-lasting stars ... in fact, he already is.” ■

For more information on Andrew’s forthcoming book and his research projects, visit his website at www.papachristos.org.

Study Links Vaccinations with Children's Educational Outcomes

With an increasing realization that health may be an important form of human capital that leads to economic success, researchers have been interested for quite a while on the effects of health on income.

"Evidence now suggests that the provision of interventions in early childhood health have long-term effects on education and earnings, so by making people in developing countries healthier, you can make them wealthier as well," says David Canning, Ph.D., the Saltonstall Professor of Population Science at the Harvard School of Public Health and associate director of the Center for Population and Development Studies.



"While this idea is well known, there is a limited evidence base on the size of this since we need to follow an initial intervention in children over the course of their lives to see the long-term effects."

To this end, the Global Alliance for Vaccination and Immunization (GAVI) provided funding for a study of the long-run effects of childhood vaccination and used the Matlab study of 1974 by the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B) as its starting point. ICDDR,B has been running a Cholera Research Laboratory and demographic surveillance site in Matlab – a rural area in the Division of Chittagong, Bangladesh – since 1963. In 2008, Canning and Damian Walker from Johns Hopkins University visited the ICDDR,B and initiated a research program. Working with investigators Abdur Razzaque, Peter Streatfield, and Mohammad Yunus from ICDDR,B, the team put together a data set

linking childhood vaccination to later educational achievement.

In one study, the team followed up on Matlab's 1974 randomized trial of women who received a tetanus vaccination, looking at outcomes for their children born in a five-year period from 1975-1979. Maternal vaccination prevents the child from acquiring tetanus at birth through blood infection and substantially reduces infant mortality. Though relatively rare, about 6 percent of children are infected with tetanus in this population if not vaccinated. The consequences of acquiring tetanus at birth are serious with a 30- to 70-percent case fatality rate and major physical and cognitive impairments in children who survive. In addition, measles

vaccination for children under five was gradually rolled out in the Matlab site in different areas from 1982 to 1985. Without vaccination, measles is widespread and is particularly harmful in malnourished children.

The hypothesis was that these vaccinations reduced cognitive impairment in children and the research team set out to look at how many years of schooling the children in the treatment groups attained relative to the control groups.

The demographic surveillance data from Matlab allowed the researchers to match children born to mothers from the 1974 tetanus trial and children born during the 1980s rollout of measles vaccination to schooling outcomes for these children in 1996 and 2008 surveys. Analyzing the data along with Julia Driessen from Johns Hopkins University, the team found significant increases in educational attainment for children from both the tetanus and

measles vaccinations. For tetanus only a small number of children benefited from the intervention, but the benefit to each child was quite large. In fact, for children from lower-income families, the gain to a child from avoiding tetanus was about 8-years of schooling. This affects approximately 3 in 100 children and translates into a gain of about a quarter of a year of schooling on average for the population. "For measles vaccination we find a larger average effect, with a greater number of children benefiting but the benefits to each child being smaller," says Canning.

In general, a year of education translates to approximately a 10-percent gain in earnings, but the team would like to see these economic benefits directly. "Having seen an effect on education, we are planning a follow-up survey of employment and earnings for the next stage of the study. This would allow us to see if the better educational outcomes from early childhood health interventions translate into better economic outcomes."

From a policy perspective, this study aids the argument – as supported by the World Health Organization's policy on vaccinations – that vaccinations not only have significant effects on childhood health and mortality, but can improve educational and economic outcomes. ■

"The Effect of Maternal Tetanus Immunization on Children's Schooling Attainment in Matlab, Bangladesh: Follow-Up of a Randomized Trial" was recently published in the May 2011 edition of *Social Science and Medicine*.* A paper on the measles study is forthcoming.

*Canning, David, Abdur Razzaque, Julia Driessen, Damian G. Walker, Peter Kim Streatfield, and Mohammad Yunus, "The Effect of Maternal Tetanus Immunization on Children's Schooling Attainment in Matlab, Bangladesh: Follow-up of a Randomized Trial, *Social Science and Medicine*, 2011, 72(9), pp 1429-1436.



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