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Urban Health Literature Review

March-May 2006

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Topic A: Urban epidemiology and health effects of urbanization and urbanicity

- (1) **Wang SJ, Lengeler C, Smith TA, Vounatsou P, Cisse G, Tanner M. Rapid urban malaria appraisal (RUMA) III: epidemiology of urban malaria in the municipality of Yopougon (Abidjan). *Malar J* 2006 Apr 4;5(1):28 [Epub ahead of print].**

BACKGROUND: Currently, there is a significant lack of knowledge concerning urban malaria patterns in general and in Abidjan in particular. The prevalence of malaria, its distribution in the city and the fractions of fevers attributable to malaria in the health facilities have not been previously investigated. **METHODS:** A health facility-based survey and health care system evaluation was carried out in a peripheral municipality of Abidjan (Yopougon) during the rainy season of 2002, applying a standardized Rapid Urban Malaria Appraisal (RUMA) methodology. **RESULTS:** According to national statistics, approximately 240,000 malaria cases (both clinical cases and laboratory confirmed cases) were reported by health facilities in the whole of Abidjan in 2001. They accounted for 40% of all consultations. In the health facilities of the Yopougon municipality, the malaria infection rates in fever cases for different age groups were 22.1% (under one year-olds), 42.8% (one to five years-olds), 42.0% (> five to 15 years-olds) and 26.8% (over 15 years-olds), while those in the control group were 13.0%, 26.7%, 21.8% and 14.6%, respectively. The fractions of malaria-attributable fever were 0.12, 0.22, 0.27 and 0.13 in the same age groups. Parasitaemia was homogeneously detected in different areas of Yopougon. Among all children, 10.1% used a mosquito net (treated or not) the night before the survey and this was protective (OR=0.52, 95% CI 0.29-0.97). Travel to rural areas within the last three months was frequent (31% of all respondents) and associated with a malaria infection (OR=1.75, 95% CI 1.25-2.45). **CONCLUSIONS:** Rapid urbanization has changed malaria epidemiology in Abidjan and endemicity was found to be moderate in Yopougon. Routine health statistics are not fully reliable to assess the burden of disease, and the low level of the fractions of malaria-attributable fevers indicated substantial over-treatment of malaria.

- (2) **Davis JC, Clark TD, Kemble SK et al. Longitudinal study of urban malaria in a cohort of Ugandan children: description of study site, census and recruitment. *Malar J* 2006 March 21;5:18.:18.**

BACKGROUND: Studies of malaria in well-defined cohorts offer important data about the epidemiology of this complex disease, but few have been done in urban African populations. To generate a sampling

frame for a longitudinal study of malaria incidence and treatment in Kampala, Uganda, a census, mapping and survey project was conducted. METHODS: All households in a geographically defined area were enumerated and mapped. Probability sampling was used to recruit a representative sample of children and collect baseline descriptive data for future longitudinal studies. RESULTS: 16,172 residents living in 4931 households in a densely-populated community (18,824 persons/km²) were enumerated. A total of 582 households were approached with at least one child less than 10 years of age in order to recruit 601 children living in 322 households. At enrollment, 19% were parasitaemic, 24% were anaemic, 43% used bednets, and 6% used insecticide-treated nets. Low G6PD activity (OR = 0.33, P = 0.009) and bednet use (OR = 0.64, P = 0.045) were associated with a decreased risk of parasitaemia. Increasing age (OR = 0.62 for each year, P < 0.001) and bednet use (OR = 0.58, P = 0.02) were associated with a decreased risk of anaemia CONCLUSION: Detailed surveys of target populations in urban Africa can provide valuable descriptive data and provide a sampling frame for recruitment of representative cohorts for longitudinal studies. Plans to use a multi-disciplinary approach to improve the understanding of the distribution and determinants of malaria incidence and response to therapy in this population are discussed.

- (3) **Tang S, Li X, Wu Z. Rising cesarean delivery rate in primiparous women in urban China: Evidence from three nationwide household health surveys. *Am J Obstet Gynecol* 2006 May 2; [Epub ahead of print].**

OBJECTIVE: To examine the trend in the rate of cesarean delivery in primiparous women and to analyse individual socioeconomic factors driving the escalation of cesarean delivery rates in urban China. STUDY DESIGN: Data were drawn from three national household health surveys conducted in 1993, 1998, and 2003. This analysis was based on data from the primiparous women only. RESULTS: The cesarean delivery rate in urban cities of China rose from 18.2% in 1990 to 1992 to 39.5% in 1998 to 2002. The adjusted odds ratio for cesarean delivery associated with living in a large city, having university/colleague education, and having health insurance were respectively 2.39, 4.46, and 1.25 in 1998 to 2002. CONCLUSION: The cesarean delivery rate in urban cities of China has been rising dramatically since 1990. Many nonmedical causes related to individual social and economic factors might have played an important role in such a rapid rise of cesarean delivery rates.

- (4) **Claudio L, Stingone JA, Godbold J. Prevalence of childhood asthma in urban communities: the impact of ethnicity and income. *Ann Epidemiol* 2006 May;16(5):332-40.**

PURPOSE: The goal of this study was to assess the relationship between hospitalization rates and asthma prevalence in New York City children and investigate the role that sociodemographic factors play in asthma. METHODS: A parent-report questionnaire was distributed in 26 randomly selected New York City public elementary schools, stratified according to neighborhood hospitalization rates. RESULTS: The overall student response rate was 76.9% (5250 students). Prevalence of current asthma was 17.9%, 9.59%, 6.39% (p < .001) in areas of high, median, and low asthma hospitalization rates, respectively. The overall prevalence of current asthma was 13.0%. Children living in predominantly low socioeconomic status (SES) communities had a 70% greater risk of current asthma, independent of their own ethnicity and income level. Asthma prevalence within different ethnic and income groups was consistently lower in neighborhoods of greater socioeconomic status, except among Puerto Rican children, who had high asthma prevalence, regardless of school attended or income. CONCLUSIONS: Prevalence of current asthma is strongly associated with attending a school in a low-income neighborhood. Although hospitalization rates have been used as an indicator of the burden of asthma in a neighborhood, it alone does not reflect the level of disparities that exist among communities with different socioeconomic backgrounds.

- (5) **Inciardi JA, Surratt HL, Kurtz SP. HIV, HBV, and HCV infections among drug-involved, inner-city, street sex workers in Miami, Florida. *AIDS Behav* 2006 March;10(2):139-47.**

This study describes the rates of HIV, HBV, and HCV seropositivity among drug-involved, female street sex workers in low-income, inner-city sections of Miami, Florida; further, their sociodemographic characteristics, drug use, and sexual risk behaviors were assessed; and predictors of infection were

reported. A sample of 586 sex workers was recruited through targeted sampling methods, interviewed, and counseled and tested for the presence of antibody to HIV, HBV, and HCV. Respondents' median age was 38 years, median time in sex work was 14 years, all were heavily involved in the use of alcohol and drugs, and 42% were homeless. More than half (51.0%) had engaged in unprotected vaginal sex in the past month. Prevalences were HIV, 22.4%; HBV, 53.4%; HCV, 29.7%. A multidimensional public health program must address not only issues related to unsafe sex, but also the problems of drug abuse, homelessness, and other lifestyle factors that contribute to risk behaviors.

- (6) **Slone LB, Norris FH, Rodriguez FG, Rodriguez JD, Murphy AM, Perilla JL. Alcohol use and misuse in urban Mexican men and women: An epidemiologic perspective. *Drug Alcohol Depend* 2006 May 28; [Epub ahead of print].**

Consumption patterns and misuse of alcohol were examined in adults sampled from three cities in Mexico (n=1933). The sample was divided into groups of persons who abstained from alcohol, drank but endorsed no misuse, or drank and endorsed at least some misuse of alcohol. Half of the entire sample was categorized as drinkers (12 or more drinks in lifetime). Mexican men drank more per occasion and reported more problems with alcohol rather than did Mexican women. Low socioeconomic resources, not being married, and female gender were related to whether Mexicans abstained from alcohol rather than drank without misuse. Lifetime posttraumatic stress disorder (PTSD) or depression increased the likelihood of misusing alcohol versus drinking without misuse, as did greater amount of drinks consumed per occasion and male gender. Younger age and not being married were also related to misuse, although this was true mostly for women. The number of traumatic experiences in childhood and lower socioeconomic resources also predicted misuse, although mostly for men. Specific traumatic experiences and their relationship to alcohol use and misuse were also examined.

- (7) **McVeigh KH, Galea S, Thorpe LE, Mulsby C, Henning K, Sederer LI. The epidemiology of nonspecific psychological distress in new york city, 2002 and 2003. *J Urban Health* 2006 May;83(3):394-405.**

The 30-day prevalence of nonspecific psychological distress (NPD) is 3%, nationwide. Little is known about the prevalence and correlates of NPD in urban areas. This study documents the prevalence of NPD among adults in New York City (NYC) using population-based data from the 2002 and 2003 NYC Community Health Surveys (CHS) and identifies correlates of NPD in this population. We examined two cross-sectional random-digit-dialed telephone surveys of NYC adults (2002: N = 9,764; 2003: N = 9,802). Kessler's K6 scale was used to measure NPD. Age-adjusted 30-day prevalence of NPD declined from 6.4% [95% Confidence Interval (CI): 5.8-7.0] in 2002 to 5.1% [95% CI: 4.5-5.6] in 2003. New Yorkers who were poor, in poor health, chronically unemployed, uninsured, and formerly married had the highest prevalence of NPD. Declines occurred among those who were married, white, recently unemployed, and female. NPD prevalence in NYC is higher than national estimates. A stronger economy and recovery from September 11th attacks may have contributed to the 2003 decline observed among selected subgroups. The excess prevalence of NPD may be associated with substantial economic and societal burden. Research to understand the etiology of this high prevalence and interventions to promote mental health in NYC are indicated.

- (8) **Neria Y, Gross R, Olfson M et al. Posttraumatic stress disorder in primary care one year after the 9/11 attacks. *Gen Hosp Psychiatry* 2006 May;28(3):213-22.**

OBJECTIVE: To screen for posttraumatic stress disorder (PTSD) in primary care patients 7-16 months after 9/11 attacks and to examine its comorbidity, clinical presentation and relationships with mental health treatment and service utilization. **METHOD:** A systematic sample (n=930) of adult primary care patients who were seeking primary care at an urban general medicine clinic were interviewed using the PTSD Checklist: the Primary Care Evaluation of Mental Disorders (PRIME-MD) Patient Health Questionnaire and the Medical Outcome Study 12-Item Short Form Health Survey (SF-12). Health care utilization data were obtained by a cross linkage to the administrative computerized database. **RESULTS:** Prevalence estimates of current 9/11-related probable PTSD ranged from 4.7% (based on a cutoff PCL-C score of 50 and over) to 10.2% (based on the DSM-IV criteria). A comorbid mental disorder was more

common among patients with PTSD than patients without PTSD (80% vs. 30%). Patients with PTSD were more functionally impaired and reported increased use of mental health medication as compared to patients without PTSD (70% vs. 18%). Among patients with PTSD there was no increase in hospital and emergency room (ER) admissions or outpatient care during the first year after the attacks.

CONCLUSIONS: In an urban general medicine setting, 1 year after 9/11, the frequency of probable PTSD appears to be common and clinically significant. These results suggest an unmet need for mental health care in this clinical population and are especially important in view of available treatments for PTSD.

- (9) **Banauch GI, Hall C, Weiden M et al. Pulmonary Function After Exposure to the World Trade Center in the New York City Fire Department. *Am J Respir Crit Care Med* 2006 April 27; [Epub ahead of print.**

Rationale: On September 11(th) 2001, the World Trade Center collapse created an enormous urban disaster site with high levels of airborne pollutants. First responders, rescue/recovery workers and residents have since reported respiratory symptoms and developed pulmonary function abnormalities. Objectives: To quantify respiratory health effects of World Trade Center exposure in the New York City Fire Department. Measurements: Longitudinal study of pulmonary function in 12,079 New York City Fire Department rescue workers employed on or before 09/11/2001. Between 01/01/1997 and 09/11/2002, 31,994 spirometries were obtained and the forced expiratory volume in one second (FEV1) and forced vital capacity (FVC) were analyzed for differences according to estimated World Trade Center exposure intensity. Adjusted average FEV1 during the first year after 09/11/2001 was compared to the 5 years before 09/11/2001. Median time between 09/11/2001 and a worker's first spirometry afterwards was 3 months; 90% were assessed within 5 months. Main Results: World Trade Center-exposed workers experienced a substantial reduction in adjusted average FEV1 during the year following 09/11/2001 (372ml; 95% confidence interval 364-381ml; $p < 0.001$) This exposure-related FEV1 decrement equaled 12 years of aging-related FEV1 decline. Moreover, exposure intensity assessed by initial arrival time at the World Trade Center site correlated linearly with FEV1 reduction in an exposure intensity-response gradient ($p = 0.048$). Respiratory symptoms also predicted a further FEV1 decrease ($p < 0.001$). Similar findings were observed for adjusted average FVC. Conclusions: World Trade Center exposure produced a substantial reduction in pulmonary function in New York City Fire Department rescue workers during the first year following 09/11/2001.

- (10) **Bell ML, Davis DL, Gouveia N, Borja-Aburto VH, Cifuentes LA. The avoidable health effects of air pollution in three Latin American cities: Santiago, Sao Paulo, and Mexico City. *Environ Res* 2006 March;100(3):431-40.**

Urban centers in Latin American often face high levels of air pollution as a result of economic and industrial growth. Decisions with regard to industry, transportation, and development will affect air pollution and health both in the short term and in the far future through climate change. We investigated the pollution health consequences of modest changes in fossil fuel use for three case study cities in Latin American: Mexico City, Mexico; Santiago, Chile; and Sao Paulo, Brazil. Annual levels of ozone and particulate matter were estimated from 2000 to 2020 for two emissions scenarios: (1) business-as-usual based on current emissions patterns and regulatory trends and (2) a control policy aimed at lowering air pollution emissions. The resulting air pollution levels were linked to health endpoints through concentration-response functions derived from epidemiological studies, using local studies where available. Results indicate that the air pollution control policy would have vast health benefits for each of the three cities, averting numerous adverse health outcomes including over 156,000 deaths, 4 million asthma attacks, 300,000 children's medical visits, and almost 48,000 cases of chronic bronchitis in the three cities over the 20-year period. The economic value of the avoided health impacts is roughly 21 to 165 billion Dollars (US). Sensitivity analysis shows that the control policy yields significant health and economic benefits even with relaxed assumptions with regard to population growth, pollutant concentrations for the control policy, concentration-response functions, and economic value of health outcomes. This research demonstrates the health and economic burden from air pollution in Latin American urban centers and the magnitude of health benefits from control policies.

- (11) **Spauwen J, Krabbendam L, Lieb R, Wittchen HU, van OJ. Evidence that the outcome of developmental expression of psychosis is worse for adolescents growing up in an urban environment. *Psychol Med* 2006 March;36(3):407-15.**

BACKGROUND: The urban environment may increase the risk for psychotic disorder in interaction with pre-existing risk for psychosis, but direct confirmation has been lacking. The hypothesis was examined that the outcome of subclinical expression of psychosis during adolescence, as an indicator of psychosis-proneness, would be worse for those growing up in an urban environment, in terms of having a greater probability of psychosis persistence over a 3.5-year period. **METHOD:** A cohort of 918 adolescents from the Early Developmental Stages of Psychopathology Study (EDSP), aged 14-17 years (mean 15.1 years), growing up in contrasting urban and non-urban environments, completed a self-report measure of psychotic symptoms at baseline (Baseline Psychosis) and at first follow-up around 1 year post-baseline (T1). They were again interviewed by trained psychologists for the presence of psychotic symptoms at the second follow-up on average 3.5 years post-baseline (T2). **RESULTS:** The rate of T2 psychotic symptoms was 14.2% in those exposed to neither Baseline Psychosis nor Urbanicity, 12.1% in those exposed to Urbanicity alone, 14.9% in those exposed to Baseline Psychosis alone and 29.0% in those exposed to both Baseline Psychosis and Urbanicity. The odds ratio (OR) for the combined exposure was 2.46 [95% confidence interval (CI) 1.46-4.14], significantly greater than that expected if Urbanicity and Baseline Psychosis acted independently. **CONCLUSION:** These findings support the suggestion that the outcome of the developmental expression of psychosis is worse in urban environments. The environment may impact on risk for psychotic disorder by causing an abnormal persistence of a developmentally common expression of psychotic experiences.

- (12) **Ramos RG, Talbott EO, Youk A, Karol MH. Community urbanization and hospitalization of adults for asthma. *J Environ Health* 2006 April;68(8):26-32, 44.**

Asthma research has traditionally focused on children and the elderly, the two populations considered most susceptible to complications. The prevalence of asthma in the adult population (19-64 years of age) is, however, gaining recognition as a formidable clinical and public health problem. Few studies have compared the incidence of adult asthma hospitalizations in urban and nonurban areas. The study reported here, using population size, population density, and traffic-related factors to define urban versus nonurban environments, selected six Pennsylvania counties to test the hypothesis that the degree of urbanization influences the asthma hospitalization rate for adults. The study group comprised adults 19-64 years of age who were hospitalized for asthma (as the primary diagnosis) from 1999 to 2001. To define urbanization in relation to traffic, the study used daily vehicular traffic count and miles of roads/highways for each of the six counties. The authors found a decrease in the adult asthma hospitalization rate as urbanization decreased in some of the counties. For other counties, however, the rate increased as urbanization decreased. The counties in which the latter was observed had depressed measures of socioeconomic status. These findings suggest that depressed socioeconomic conditions may supersede exposure to traffic-related pollution as a factor associated with asthma hospitalizations.

- (13) **Siervo M, Grey P, Nyan OA, Prentice AM. Urbanization and obesity in The Gambia: a country in the early stages of the demographic transition. *Eur J Clin Nutr* 2006 April;60(4):455-63.**

OBJECTIVE: To investigate the distribution of overweight and obesity and its relationship with socio-economic and behavioural factors in a developing-country population undergoing rapid nutritional transition. **DESIGN:** Cross-sectional house-to-house survey in urban Gambia. **SUBJECTS:** Four groups of 50 subjects were sampled as follows: young men (YM, 14-25 years), young women (YW, 14-25 years), older men (OM, 35-50 years) and older women (OW, 35-50 years). **MEASUREMENTS:** Several socio-economic and behavioural factors were investigated. Composite indices for socio-economic status, education, healthy lifestyle and western influences were created. Body weight, height, waist and hip circumferences were measured and body mass index (BMI) was calculated. Body composition was assessed by leg-to-leg bioimpedance. Overweight was defined as BMI=25.0-29.9 kg/m² and obesity as BMI>or=30.0 kg/m². **RESULTS:** There were highly significant gender and age differences in overweight (YM=0%, YW=10%, OM=6% and OW=34%) and obesity (YM=0%, YW=4%, OM=6% and OW=50%). Only 16% of OW were neither overweight nor obese compared to 88% of OM. OW had a higher fat mass

percent (38.4%) than other groups, while fat-free mass (kg) was significantly higher in males than females with YW having the lowest value. Young generations were more educated and more influenced by western ideals than OM and OW. Weight gain was not always associated with weight concern and many overweight/obese subjects did not perceive themselves as overweight. CONCLUSION: Social and behavioural changes are already creating a perceptible 'generational gap' among this population undergoing rapid transition. The improved education and current lean status of the younger adults offers opportunities for preventative interventions. These need to be specially targeted at women.

- (14) **Al-Moosa S, Allin S, Jemai N, Al-Lawati J, Mossialos E. Diabetes and urbanization in the Omani population: an analysis of national survey data. *Popul Health Metr* 2006 Apr 24;4:5.**

BACKGROUND: The prevalence of type 2 diabetes in Oman is high and appears to be rising. Rising rates of diabetes and associated risk factors have been observed in populations undergoing epidemiological transition and urbanization. A previous study in Oman indicated that urban-dwellers were not significantly more likely to have diabetes. This study was undertaken to determine if a more accurate urban and rural categorization would reveal different findings. METHODS: This study included 7179 individuals aged 20 years or above who participated in a cross-sectional interviewer-administered survey in Oman including blood and anthropomorphic tests. Multiple logistic regression analyses were conducted to analyze the factors associated with diabetes, first in the whole population and then stratified according to region. RESULTS: The prevalence of diabetes (fasting blood glucose ≥ 7 mmol/l) in the capital region of Muscat was 17.7% compared to 10.5% in rural areas. The prevalence of self-reported diabetes was 4.3%. Urban residence was significantly associated with diabetes (adjusted odds ratio (OR) = 1.7, 95% confidence interval (CI): 1.4-2.1), as was age (OR = 1.2, 95% CI: 1.1- 1.2), obesity (abnormal waist circumference) (OR = 1.8, 95% CI: 1.5-2.1), and systolic blood pressure (SBP) 120-139 (OR = 1.4, 95% CI: 1.04-1.8), SBP 140-159 (OR = 1.9, 95% CI: 1.4-2.6), SBP ≥ 160 (OR = 1.7, 95% CI: 1.2-2.5). Stratified analyses revealed higher education was associated with reduced likelihood of diabetes in rural areas (OR = 0.6, 95% CI: 0.4-0.9). CONCLUSION: A high prevalence of diabetes, obesity, hypertension and high cholesterol exist in the Omani population, particularly among urban-dwellers and older individuals. It is vital to continue monitoring chronic disease in Oman and to direct public health policy towards preventing an epidemic.

Topic B: Frameworks, definition, and theoretical and methodological considerations

- (15) **Hall SA, Kaufman JS, Ricketts TC. Defining urban and rural areas in U.S. epidemiologic studies. *J Urban Health* 2006 March;83(2):162-75.**

Among epidemiologists, there has been increasing interest in the characteristics of communities that influence health. In the United States, the rural health disparity has been a recent focus of attention and made a priority for improvement. While many standardized definitions of urban and rural exist and are used by social scientists and demographers, they are found in sources unfamiliar to health researchers and have largely not been used in public health studies. This paper briefly reviews some available definitions of urban and rural for American geographic subunits and their respective strengths and weaknesses. For example, some definitions are better suited than others for capturing access to health care services. The authors applied different definitions to breast cancer incidence rates to show how urban/rural rate ratio comparisons would vary by choice of definition and found that dichotomous definitions may fail to capture variability in very rural areas. Further study of the utility of these measures in health studies is warranted.

- (16) **Glouberman S, Gema M, Campsie P et al. A framework for improving health in cities: a discussion paper. *J Urban Health* 2006 March;83(2):325-38.**

This paper considers health in cities from the perspective of complex adaptive systems. This approach has a number of important implications for intervention that do not emerge in traditional accounts of cities and health. The paper reviews various accounts of the nature of cities and of health as well as the

traditional urban health and Healthy Cities movements. It then provides a framework for intervention and tests it against an actual case study. It concludes that a complex adaptive systems framework opens up fresh possibilities for improving health in urban contexts.

- (17) **Frye V, Latka MH, Koblin B et al. The urban environment and sexual risk behavior among men who have sex with men. *J Urban Health* 2006 March;83(2):308-24.**

Increasingly, studies show that characteristics of the urban environment influence a wide variety of health behaviors and disease outcomes, yet few studies have focused on the sexual risk behaviors of men who have sex with men (MSM). This focus is important as many gay men reside in or move to urban areas, and sexual risk behaviors and associated outcomes have increased among some urban MSM in recent years. As interventions aimed at changing individual-level risk behaviors have shown mainly short-term effects, consideration of broader environmental influences is needed. Previous efforts to assess the influence of environmental characteristics on sexual behaviors and related health outcomes among the general population have generally applied three theories as explanatory models: physical disorder, social disorganization and social norms theories. In these models, the intervening mechanisms specified to link environmental characteristics to individual-level outcomes include stress, collective efficacy, and social influence processes, respectively. Whether these models can be empirically supported in generating inferences about the sexual behavior of urban MSM is underdeveloped. Conceptualizing sexual risk among MSM to include social and physical environmental characteristics provides a basis for generating novel and holistic disease prevention and health promotion interventions.

- (18) **Trayers T, Deem R, Fox KR, Riddoch CJ, Ness AR, Lawlor DA. Improving health through neighbourhood environmental change: are we speaking the same language? A qualitative study of views of different stakeholders. *J Public Health (Oxf)* 2006 March;28(1):49-55.**

OBJECTIVE: To explore the perspectives of four groups of stakeholders to proposed improvements to the built environment—a neighbourhood renewal consisting of a home zone development and an extension of the National Cycle Network (NCN). **Design** Qualitative focus group study. **Setting** A deprived neighbourhood. **Sample** Four focus groups were conducted with 10 residents from the neighbourhood undergoing change, nine pupils from a local primary school, 10 students and tutors from a local further education college and three local authority planners overseeing the developments. **RESULTS:** We identified four main themes relating to the impact of environmental change. These were safety, space, antisocial behaviour and physical activity and health, the latter being the least important to all groups. A mismatch regarding environmental change emerged in perspectives between different stakeholders. The residents were most concerned about home and car (parking) safety and in particular felt that the new cycle/walk way would reduce their safety, whereas the planners felt that the environmental change would provide a safer and healthier environment for the residents. **CONCLUSION:** The assumption that planned provision of supportive environments will improve levels of physical activity, health and lifestyle may not be true if the developments do not take account of community concerns regarding personal safety.

- (19) **Pollio DE, North CS, Eyrich KM, Foster DA, Spitznagel EL. A comparison of agency-based and self-report methods of measuring services across an urban environment by a drug-abusing homeless population. *Int J Methods Psychiatr Res* 2006 March;15(1):46-56.**

Abstract: The purpose of this paper is to advance the methodology for studying service assessment by comparing self-report and agency-generated methods. This study compares 30-day self-reported service use for homeless individuals (N = 229) randomly recruited from a single urban environment (St Louis, Missouri) with similar data collected from a broad array of service agencies providing homeless, substance abuse and outpatient mental health services across the same environment. Comparisons were made between self-report and agency-based data on shelter use, outpatient mental health service use (case management, psychiatric treatment, group therapy), outpatient substance abuse service use (case management, counselling, group therapy) and drop-in/day treatment use. Consistently low levels of kappa scores (all under 0.4) and correlation coefficients (only shelter use demonstrated significant agreement) were found. Findings demonstrated that the two methods of collecting service data are generally not concordant at the individual level. Certain demographic characteristics (increased age,

being male, non-white ethnicity) and diagnoses (cocaine abuse/dependence, mania, schizophrenia) were associated with decreased reliability between the two methods of data collection. The two methods of assessment appeared to capture overlapping but not identical information. Each method of assessment has different utility to researchers and providers wishing to assess service use.

- (20) **Hoehner CM, Ivy A, Ramirez LB, Meriwether B, Brownson RC. How reliably do community members audit the neighborhood environment for its support of physical activity? Implications for participatory research. *J Public Health Manag Pract* 2006 May;12(3):270-7.**

Environmental audits are used to assess supports for physical activity in the community. Understanding the suitability of such instruments for use by community members is crucial for advocacy and participatory research. This study examined the reliability of an audit instrument filled out by trained researchers and untrained community members. Two researchers and five community members conducted environmental audits on a total of 335 street segments in lower-income areas in St Louis, Missouri (representing a "low-walkable city"), and Savannah, Georgia (representing a "high-walkable" city). The audit tool consisted of six major sections--land use environment, recreational facilities, transportation environment, aesthetics, signage, and social environment. Interrater agreement between researchers and community members was assessed using percent observed agreement and the kappa statistic. According to observed agreement, the majority of audit items (67 of 76) had substantial to almost perfect agreement (> or =0.60) between researchers and community members. However, much lower agreement was observed using the kappa statistic (only 8 of 76 items with kappas > or =0.60). With some formal training, this audit tool may be useful for advocacy and participatory research to assess the activity friendliness of neighborhood environments.

- (25) **Israel BA, Schulz AJ, Estrada-Martinez L et al. Engaging urban residents in assessing neighborhood environments and their implications for health. *J Urban Health* 2006 May;83(3):523-39.**

Researchers have worked to delineate the manner in which urban environments reflect broader social processes, such as those creating racially, ethnically and economically segregated communities with vast differences in aspects of the built environment, opportunity structures, social environments, and environmental exposures. Interdisciplinary research is essential to gain an enhanced understanding of the complex relationships between these stressors and protective factors in urban environments and health. The purpose of this study was to examine the ways that multiple factors may intersect to influence the social and physical context and health within three areas of Detroit, Michigan. We describe the study design and results from seven focus groups conducted by the Healthy Environments Partnership (HEP) and how the results informed the development of a survey questionnaire and environmental audit tool. The findings from the stress process exercise used in the focus groups described here validated the relevance of a number of existing concepts and measures, suggested modifications of others, and evoked several new concepts and measures that may not have been captured without this process, all of which were subsequently included in the survey and environmental audit conducted by HEP. Including both qualitative and quantitative methods can enrich research and maximize the extent to which research questions being asked and hypotheses being tested are driven by the experiences of residents themselves, which can enhance our efforts to identify strategies to improve the physical and social environments of urban areas and, in so doing, reduce inequities in health.

Topic C: Geospatial techniques

- (26) **Lee C, Moudon AV, Courbois JY. Built environment and behavior: spatial sampling using parcel data. *Ann Epidemiol* 2006 May;16(5):387-94.**

PURPOSE: The quality and economy of inferential research rely heavily on the sampling method. This paper addresses a methodological challenge in environment-behavior research: sampling respondents in relation to their built environmental characteristics. **METHODS:** A discussion of issues related to

traditional neighborhood-based sampling serves to introduce a new spatial sampling strategy. Spatial sampling consists of defining conceptual population of interest, constructing spatial sample frame using parcel-level environmental data in GIS, examining the sample frame, determining the sampling design and size, and drawing the samples. An application of this method is illustrated using a recent study examining environmental correlates of walking and biking. RESULTS: Spatial sampling with parcel-level data ensures sufficient variations in and proper distributions of the environmental variables of interest, while controlling for the conditions of no interest. The use of the individual as unit of analysis offers an economic, generalizable, and easily interpretable approach to environment-behavior research, and discourages the potentially erroneous a priori definition of neighborhoods and aggregation problems. CONCLUSIONS: With its capacity to consider a broad range of detailed environmental variables, spatial sampling contributes to finding new or stronger environment-behavior associations and to the growing number of studies using the social ecologic model.

- (27) **Zhang X, Christoffel KK, Mason M, Liu L. Identification of contrastive and comparable school neighborhoods for childhood obesity and physical activity research. *Int J Health Geogr* 2006 March 30;5(1):14.**

BACKGROUND: The neighborhood social and physical environments are considered significant factors contributing to children's inactive lifestyles, poor eating habits, and high levels of childhood obesity. Understanding of neighborhood environmental profiles is needed to facilitate community-based research and the development and implementation of community prevention and intervention programs. We sought to identify contrastive and comparable districts for childhood obesity and physical activity research studies. We have applied GIS technology to manipulate multiple data sources to generate objective and quantitative measures of school neighborhood-level characteristics for school-based studies. GIS technology integrated data from multiple sources (land use, traffic, crime, and census tract) and available social and built environment indicators theorized to be associated with childhood obesity and physical activity. We used network analysis and geoprocessing tools within a GIS environment to integrate these data and to generate objective social and physical environment measures for school districts. We applied hierarchical cluster analysis to categorize school district groups according to their neighborhood characteristics. We tested the utility of the area characterizations by using them to select comparable and contrastive schools for two specific studies. RESULTS: We generated school neighborhood-level social and built environment indicators for all 412 Chicago public elementary school districts. The combination of GIS and cluster analysis allowed us to identify eight school neighborhoods that were contrastive and comparable on parameters of interest (land use and safety) for a childhood obesity and physical activity study. CONCLUSIONS: The combination of GIS and cluster analysis makes it possible to objectively characterize urban neighborhoods and to select comparable and/or contrasting neighborhoods for community-based health studies.

- (28) **Chaix B, Leyland AH, Sabel CE et al. Spatial clustering of mental disorders and associated characteristics of the neighbourhood context in Malmo, Sweden, in 2001. *J Epidemiol Community Health* 2006 May;60(5):427-35.**

STUDY OBJECTIVE: Previous research provides preliminary evidence of spatial variations of mental disorders and associations between neighbourhood social context and mental health. This study expands past literature by (1) using spatial techniques, rather than multilevel models, to compare the spatial distributions of two groups of mental disorders (that is, disorders due to psychoactive substance use, and neurotic, stress related, and somatoform disorders); and (2) investigating the independent impact of contextual deprivation and neighbourhood social disorganisation on mental health, while assessing both the magnitude and the spatial scale of these effects. DESIGN: Using different spatial techniques, the study investigated mental disorders due to psychoactive substance use, and neurotic disorders. PARTICIPANTS: All 89,285 persons aged 40-69 years residing in Malmo, Sweden, in 2001, geolocated to their place of residence. MAIN RESULTS: The spatial scan statistic identified a large cluster of increased prevalence in a similar location for the two mental disorders in the northern part of Malmo. However, hierarchical geostatistical models showed that the two groups of disorders exhibited a different spatial distribution, in terms of both magnitude and spatial scale. Mental disorders due to substance consumption showed larger neighbourhood variations, and varied in space on a larger scale, than

neurotic disorders. After adjustment for individual factors, the risk of substance related disorders increased with neighbourhood deprivation and neighbourhood social disorganisation. The risk of neurotic disorders only increased with contextual deprivation. Measuring contextual factors across continuous space, it was found that these associations operated on a local scale. CONCLUSIONS: Taking space into account in the analyses permitted deeper insight into the contextual determinants of mental disorders.

- (29) **Schlundt DG, Hargreaves MK, McClellan L. Geographic clustering of obesity, diabetes, and hypertension in Nashville, Tennessee. *J Ambul Care Manage* 2006 April;29(2):125-32.**

To better understand how neighborhood environments contribute to health outcomes by encouraging or discouraging healthy lifestyles, we studied the clustering of health outcomes, health behaviors, and environmental characteristics in Nashville, Tenn. Data from 2 large telephone surveys (N = 7606) were geocoded and linked to the long-form census data at the census-tract level. Cluster analysis was used to create 12 scales that measured neighborhood characteristics using census variables. A geographic information system was used to map patterns of health, health behavior, and neighborhood characteristics at the census-tract level. Pearson correlations across the 129 census tracts were in the 0.20 to 0.60 range and provided evidence for spatial clustering of health outcomes, health behaviors, and neighborhood characteristics.

- (30) **Gruenewald PJ, Freisthler B, Remer L, Lascala EA, Treno A. Ecological models of alcohol outlets and violent assaults: crime potentials and geospatial analysis. *Addiction* 2006 May;101(5):666-77.**

AIMS: Empirical tests of relationships between alcohol outlets and violence are generally conducted with statistical controls for correlates related to characteristics of people and the places in which they live. Crime potentials theory asserts that certain subpopulations are disposed to participate in criminal activities (population potentials) and certain neighborhoods are more likely to be places where crimes occur (place potentials). The current study assesses the degree to which measures of the different geographic distributions of these potentials contribute to violent crime. DESIGN: Cross-sectional data on hospital discharges for violent assaults were obtained for residents of 1637 zip code areas in California. Assault rates were related to measures of population and place characteristics using spatial statistical models corrected for spatial autocorrelated error. FINDINGS: Rates of assault were related to population and place characteristics within zip code areas, and with characteristics of populations living in adjacent zip code areas. Assault rates were greater in densely populated, poor minority urban areas with greater residential instability. Assault rates were also greater in zip code areas adjacent to densely populated urban areas. Assault rates were related significantly to local densities of off-premise alcohol retail establishments, not bars. However, densities of bars moderated substantially effects related to local population characteristics. Bars were related significantly to violence in unstable poor minority areas and in rural middle-income areas of the state. CONCLUSION: Population and place characteristics are associated with rates of violence across spatial areas. Alcohol outlets directly affect and moderate potentials for violence associated with socio-demographic groups.

- (31) **Santos SM, Barcellos C, Sa CM. Ecological analysis of the distribution and socio-spatial context of homicides in Porto Alegre, Brazil. *Health Place* 2006 March;12(1):38-47.**

Over the last decade, the number of homicides in Porto Alegre has increased to the point where external causes are now the main group of causes of death in the 5-34-year age group. Preventing these deaths depends fundamentally on identifying factors related to excess violence in population groups. The overall aim of this study is to analyse the spatial distribution of homicide victims by place of residence in Porto Alegre, the capital of the southernmost Brazilian State of Rio Grande do Sul, in 1996, in order to identify and understand the socio-spatial context. Demographic and socioeconomic indicators based on the 1991 census and 1996 population count were used to build a multivariate classification characterizing the 1851 census tracts. Homicides occurring in 1996 were located using the municipality's Geographic Information System. Four socioeconomic groups were identified, mainly differentiated by housing indicators. Small areas on the urban periphery in which slums (favelas) are concentrated presented higher homicide rates. Homicide rates were lower in the two groups with higher income and educational level. The second step

was to classify the census tracts according to the homicide indicator. In this case, areas were differentiated by the number of household inhabitants per room, income, schooling, and median age. We conclude that the multivariate socioeconomic classification presents a limited capacity to identify populations exposed to homicides, suggesting that socioeconomic conditions themselves do not determine violent behaviour. On the other hand, the spatial methods allowed us to identify small areas where deaths are concentrated and whose populations should receive special attention in planning measures to prevent violent deaths.

- (32) **Messer LC, Kaufman JS, Dole N, Herring A, Laraia BA. Violent crime exposure classification and adverse birth outcomes: a geographically-defined cohort study. *Int J Health Geogr* 2006 May 17;5(1):22.**

BACKGROUND: Area-level socioeconomic disparities have long been associated with adverse pregnancy outcomes. Crime is an important element of the neighborhood environment inadequately investigated in the reproductive and public health literature. When crime has been used in research, it has been variably defined, resulting in non-comparable associations across studies. **METHODS:** Using geocoded linked birth record, crime and census data in multilevel models, this paper explored the relevance of four spatial violent crime exposures: two proximal violent crime categorizations (count of violent crime within a one-half mile radius of maternal residence and distance from maternal residence to nearest violent crime) and two area-level crime categorizations (count of violent crimes within a block group and block group rate of violent crimes) for adverse birth events among women in living in the city of Raleigh NC crime report area in 1999-2001. Models were adjusted for maternal age and education and area-level deprivation. **RESULTS:** In black and white non-Hispanic race-stratified models, crime characterized as a proximal exposure was not able to distinguish between women experiencing adverse and women experiencing normal birth outcomes. Violent crime characterized as a neighborhood attribute was positively associated with preterm birth and low birth weight among non-Hispanic white and black women. No statistically significant interaction between area-deprivation and violent crime category was observed. **CONCLUSIONS:** Crime is variably categorized in the literature, with little rationale provided for crime type or categorization employed. This research represents the first time multiple crime categorizations have been directly compared in association with health outcomes. Finding an effect of area-level violent crime suggests crime may best be characterized as a neighborhood attribute with important implication for adverse birth outcomes.

Topic D: Spatial accessibility and equity

- (33) **Moore E, Richter BA, Patton CK, Lear SA. Mapping stairwell accessibility in Vancouver's downtown core. *Can J Public Health* 2006 March;97(2):118-20.**

BACKGROUND: The increase in obesity is due in part to changes in the environment that affect behaviours such as physical activity. Stairwells in buildings present an opportunity to increase physical activity in the workplace. We characterized the stairwell accessibility in business buildings in the downtown core of Vancouver. **METHODS:** Characteristics of the stairwells in business buildings with two or more floors were obtained. Stairwells were characterized based on their visibility from the main entrance, signage, presence of physical door, and interior lighting and space. Building completion year was obtained from the Vancouver City Hall. **RESULTS:** A total of 138 buildings in the pre-designated area were eligible for characterization. Due to security concerns, only 123 were assessed. Of those assessed, 54% had stairwells visible from the main entrance, 33% had locked doors and only 18% had signs on the stairwell doors. Of the 83 stairwells that were accessible, 54% and 36% were considered brightly lit and spacious enough for two people, respectively. Only 11% of the buildings studied had accessible stairwells that met all of our accessibility criteria. More recently built buildings tended to have a higher proportion of locked stairwell doors; otherwise, building completion year was not associated with any of the accessibility criteria. **INTERPRETATION:** Based on their environmental characteristics, very few buildings were set up in a way that encouraged stair use. For the work environment to be conducive to increased physical activity, building policy will need to consider the implications of design on activity patterns.

- (34) **Wu YC, Batterman SA. Proximity of schools in Detroit, Michigan to automobile and truck traffic. *J Expo Sci Environ Epidemiol* 2006 April; [Epub ahead of print].**

Exposure to traffic-related air pollutants, which has been associated with a range of adverse health effects, often is represented using indirect proxies or surrogate exposure measures, most commonly, the proximity to busy roads. This study examines the proximity of grade K-12 schools to high traffic roads in Wayne County, Michigan, an area including the industrialized city of Detroit as well as outlying urban and suburban communities. Unlike earlier studies, commercial and non-commercial traffic is distinguished, and effects of school type (public, charter, private), socio-economic variables, demographic factors, and mapping errors are evaluated. We find that total traffic flow, as measured by annual average daily traffic (AADT), does not reflect the substantial differences between trucking and commuting routes. Thus, AADT alone may inadequately capture traffic-related exposures, especially given the large differences between diesel and gasoline emissions. Based on close proximity (school-road distance ≤ 150 m) to heavy traffic (AADT $\geq 50,000$), 4.9% of the 845 Wayne County schools are traffic exposed at school. In the urban core area, 7.2% of schools and 7.6% of students are traffic exposed at school. A larger proportion of grade 7-12 students in public schools are exposed than K-6 students. Considering truck emissions, 2.8% of the schools are within 150 m of roads with 5000 or more trucks per day. In Wayne County, students attending schools near high traffic roads are more likely to be Black or Hispanic, to be enrolled in a meal program, and to reside in a poor area. Many of these results are driven by the large minority population in the densely populated core area of Detroit. The findings show that a large fraction of children have high exposures to traffic-related pollutants, especially in Detroit, and the need for exposure measures that account for both the composition and volume of traffic.

- (35) **Teach SJ, Guagliardo MF, Crain EF, McCarter RJ, Quint DM, Shao C, Joseph JG. Spatial accessibility of primary care pediatric services in an urban environment: association with asthma management and outcome. *Pediatrics*. 2006 Apr;117(4 Pt 2):S78-85.**

BACKGROUND: Disadvantaged urban children with asthma depend heavily on emergency departments (EDs) for episodic care. We hypothesized that among an urban population of children with asthma, higher spatial accessibility to primary care pediatric services would be associated with (1) more scheduled primary care visits for asthma, (2) better longitudinal asthma management, and (3) fewer unscheduled visits for asthma care. **METHODS:** We enrolled children aged 12 months to 17 years, inclusive, who sought acute asthma care in an urban pediatric ED. Eligibility criteria included a history of unscheduled visits for asthma in the previous year. We collected comprehensive data on each participant's asthma medical management and prior health care utilization. In addition, we calculated each participant's spatial accessibility to primary care pediatric services, reported as a provider-to-population ratio at their place of residence. Patients then were stratified by their spatial accessibility to care and compared with respect to measures of medical management and health care utilization. **RESULTS:** Among the 411 eligible participants, the spatial accessibility of primary care ranged from 7.4 to 350.2 full-time pediatric providers per 100,000 children <18 years of age, with a mean of 57.7 \pm 40.0. Patients in the middle and highest tertiles of spatial accessibility made significantly more scheduled visits for asthma care than patients in the lowest tertile. There were no differences among tertiles of accessibility with respect to asthma management or with respect to unscheduled visits for asthma care. **CONCLUSIONS:** Within this highly urban, largely disadvantaged and minority population of children with chronic asthma, patients with higher spatial accessibility to primary care services made significantly more scheduled visits for asthma care.

- (36) **Zenk SN, Tarlov E, Sun J. Spatial equity in facilities providing low- or no-fee screening mammography in Chicago neighborhoods. *J Urban Health* 2006 March;83(2):195-210.**

Recent research suggests living in an economically disadvantaged neighborhood is associated with decreased likelihood of undergoing mammography and increased risk of late-stage breast cancer diagnosis. Long distances and travel times to facilities offering low- or no-fee mammography may be important barriers to adherence to mammography screening recommendations for women living in economically disadvantaged urban neighborhoods, in which African-Americans are disproportionately represented. The purpose of this study was to examine whether the spatial distribution of facilities providing low- or no-fee screening mammography in Chicago, Illinois, is equitable on the basis of

neighborhood socioeconomic and racial characteristics. We found that distance and travel times via automobile and public transportation to facilities generally decrease as neighborhood poverty increases. However, we also found that the strength of the association between neighborhood poverty level and two of the spatial accessibility measures—distance and public transportation travel time—is less strong in African-American neighborhoods. Among neighborhoods with the greatest need for facilities (i.e., neighborhoods with the highest proportions of residents in poverty), African-American neighborhoods have longer travel distances and public transportation travel times than neighborhoods with proportionately fewer African-American residents. Thus, it appears that the spatial accessibility of low- and no-fee mammography services is inequitable in Chicago. In view of persistent social disparities in health such as breast cancer outcomes, these findings suggest it is important for researchers to examine the spatial distribution of health resources by both the socioeconomic and racial characteristics of urban neighborhoods.

- (37) **Jacobson JO. Do drug treatment facilities increase clients' exposure to potential neighborhood-level triggers for relapse? A small-area assessment of a large, public treatment system. *J Urban Health* 2006 March;83(2):150-61.**

Research on drug treatment facility locations has focused narrowly on the issue of geographic proximity to clients. We argue that neighborhood conditions should also enter into the facility location decision and illustrate a formal assessment of neighborhood conditions at facilities in a large, metropolitan area, taking into account conditions clients already face at home. We discuss choice and construction of small-area measures relevant to the drug treatment context, including drug activity, disadvantage, and violence as well as statistical comparisons of clients' home and treatment locations with respect to these measures. Analysis of 22,707 clients discharged from 494 community-based outpatient and residential treatment facilities that received public funds during 1998-2000 in Los Angeles County revealed no significant mean differences between home and treatment neighborhoods. However, up to 20% of clients are exposed to markedly higher levels of disadvantage, violence, or drug activity where they attend treatment than where they live, suggesting that it is not uncommon for treatment locations to increase clients' exposure to potential environmental triggers for relapse. Whereas on average both home and treatment locations exhibit higher levels of these measures than the household locations of the general population, substantial variability in public treatment clients' home neighborhoods calls into question the notion that they hail exclusively from poor, high drug activity areas. Shortcomings of measures available for neighborhood assessment of treatment locations and implications of the findings for other areas of treatment research are also discussed.

Topic E: The neighborhood context

- (38) **Nandi A, Galea S, Ahern J, Bucciarelli A, Vlahov D, Tardiff K. What explains the association between neighborhood-level income inequality and the risk of fatal overdose in New York City? *Soc Sci Med* 2006 April 3; [Epub ahead of print].**

Accidental drug overdose is a substantial cause of mortality for drug users. Using a multilevel case-control study we previously have shown that neighborhood-level income inequality may be an important determinant of overdose death independent of individual-level factors. Here we hypothesized that the level of environmental disorder, the level of police activity, and the quality of the built environment in a neighborhood mediate this association. Data from the New York City (NYC) Mayor's Management Report, the NYC Police Department, and the NYC Housing and Vacancy Survey were used to define constructs for the level of environmental disorder, the level of police activity and the quality of the built environment, respectively. In multivariable models the odds of death due to drug overdose in neighborhoods in the top decile of income inequality compared to the most equitable neighborhoods decreased from 1.63 to 1.12 when adjusting for the three potential mediators. Path analyses show that the association between income inequality and the rate of drug overdose mortality was primarily explained by an indirect effect through the level of environmental disorder and the quality of the built environment in a neighborhood.

Implications of these findings for the reduction of drug overdose mortality associated with the distribution of income are discussed.

- (39) **Sundquist K, Theobald H, Yang M, Li X, Johansson SE, Sundquist J. Neighborhood violent crime and unemployment increase the risk of coronary heart disease: a multilevel study in an urban setting. *Soc Sci Med* 2006 April;62(8):2061-71.**

Little is known about the association between neighborhood social disorganization and coronary heart disease (CHD). This study used the theoretical frameworks of the Chicago school and the Stirling County group in order to analyze the impact of neighborhood violent crime and neighborhood unemployment on CHD in an urban setting, the capital of Sweden. The entire population of Stockholm County aged 35-64 years on January 1, 1998 was included in the study. All individuals were followed for CHD until December 31, 1998. Small area neighborhood units were used to define neighborhoods. The neighborhood-level variables were calculated as rates of violent crime or unemployment in the small area neighborhood units, categorized in quintiles. Multilevel logistic regression was used to estimate odds ratios and neighborhood-level variance in three different models. When rates of neighborhood violent crime or neighborhood unemployment increased, the risk of CHD increased among both women and men. In neighborhoods with the highest rates of violent crime (quintile 5), the odds ratios were 1.75 (CI=1.37-2.22) and 1.39 (CI=1.19-1.63) for women and men, respectively. In neighborhoods with the highest unemployment rates, the corresponding odds ratios were 2.05 (CI=1.62-2.59) and 1.50 (CI=1.28-1.75). These average neighborhood effects on CHD (fixed effects) remained almost unaltered after inclusion of the individual-level variables. The neighborhood-level variance indicated significant differences in CHD between neighborhoods, and the neighborhood-level and individual-level variables partly explained the variance between neighborhoods (random effects). Public safety and social stability in socially disorganized neighborhoods need to be improved in order to promote cardiovascular health.

- (40) **Weir LA, Etelson D, Brand DA. Parents' perceptions of neighborhood safety and children's physical activity. *Prev Med* 2006 May 17; [Epub ahead of print].**

OBJECTIVE.: The obesity epidemic disproportionately affects minority and poor children. Negative perceptions of neighborhood safety in poor communities may affect overweight by inhibiting children's physical activity. This study investigates the degree to which parents in a poor inner city vs. a middle-class suburban community limit their children's outdoor activity because of neighborhood safety concerns. **METHOD.:** Parents of children aged 5-10 years from an inner city family practice in a poor community and from a suburban pediatric practice in a middle-class community completed a 20-item questionnaire. Parents estimated the amount of their child's activity in various situations and indicated their level of anxiety concerning gangs, child aggression, crime, traffic, and personal safety in their neighborhood. **RESULTS.:** Inner city children (n = 204) engaged in less physical activity than suburban children (N = 103) (P < 0.001). Inner city parents expressed much greater anxiety about neighborhood safety than suburban parents (P < 0.0001). In the inner city population, children's physical activity levels were negatively correlated with parental anxiety about neighborhood safety (r = -0.18, P < 0.05). **CONCLUSIONS.:** Inner city parents have high levels of anxiety about neighborhood safety. While these concerns may not entirely explain the discrepancy in activity levels between inner city and suburban children, a safe environment is crucial to increasing opportunities for physical activity.

- (41) **Gracia E, Herrero J. Perceived neighborhood social disorder and residents' attitudes toward reporting child physical abuse. *Child Abuse Negl* 2006 April;30(4):357-65.**

OBJECTIVE: This study aimed to explore the relationship between perceived neighborhood social disorder and attitudes toward reporting child physical abuse. **METHOD:** Data from a national probabilistic sample (N=9,759) were used. Responses about the perception of neighborhood social disorder, perceived frequency of child physical abuse in Spanish families, and willingness to report a case of child physical abuse to the police were collected through face-to-face interviews in respondents' homes. **RESULTS:** Multivariate logistic regression analysis showed that perceived neighborhood social disorder was negatively related to residents' attitudes toward reporting child physical abuse. These results take into account the potential confounding effects of gender, age, socio-economic status, educational level,

size of city, and perceived frequency of child physical abuse on reporting attitudes. **CONCLUSION:** Results illustrate the important role that community characteristics may play in processes relevant to the prevention of child maltreatment such as residents' attitudes towards reporting child physical abuse, and suggest that especially disadvantaged communities characterized by high levels of social disorder need to be specifically targeted if the aim is to increase the capacity to prevent child maltreatment in the community.

- (42) **Caughy MO, O'campo PJ. Neighborhood poverty, social capital, and the cognitive development of african american preschoolers. *Am J Community Psychol* 2006 March;37(1-2):141-54.**

In this investigation, we examine the impact of the ecological context of the residential neighborhood on the cognitive development of children by considering social processes not only at the family-level but also at the neighborhood-level. In a socioeconomically diverse sample of 200 African American children living in 39 neighborhoods in Baltimore, we found that neighborhood poverty was associated with poorer problem-solving skills over and above the influence of family economic resources and level of positive parent involvement. Sampson has theorized that neighborhood poverty affects child well-being by altering levels of neighborhood social capital as well as family social capital. Although we found that indicators of neighborhood and family social capital were associated with cognitive skills, these factors did not explain the association between neighborhood poverty and problem-solving ability. Implications for future research in the area of neighborhoods and child development are discussed.

- (43) **Wight RG, Aneshensel CS, Miller-Martinez D et al. Urban Neighborhood Context, Educational Attainment, and Cognitive Function among Older Adults. *Am J Epidemiol* 2006 May 17; [Epub ahead of print].**

Existing research has not addressed the potential impact of neighborhood context--educational attainment of neighbors in particular--on individual-level cognition among older adults. Using hierarchical linear modeling, the authors analyzed data from the 1993 Study of Assets and Health Dynamics Among the Oldest Old (AHEAD), a large, nationally representative sample of US adults born before 1924. Data from participants residing in urban neighborhoods (n = 3,442) were linked with 1990 US Census tract data. Findings indicate that 1) average cognitive function varies significantly across US Census tracts; 2) older adults living in low-education areas fare less well cognitively than those living in high-education areas, net of individual characteristics, including their own education; 3) this association is sustained when controlling for contextual-level median household income; and 4) the effect of individual-level educational attainment differs across neighborhoods of varying educational profiles. Promoting educational attainment among the general population living in disadvantaged neighborhoods may prove cognitively beneficial to its aging residents because it may lead to meliorations in stressful life conditions and coping deficiencies.

- (44) **Prentice JC. Neighborhood effects on primary care access in Los Angeles. *Soc Sci Med* 2006 March;62(5):1291-303.**

Individual health outcomes differ greatly between neighborhoods, and recent research has begun to examine how neighborhood environment affects individual health. A common hypothesis is that the inequitable distribution of healthcare resources limits access to health care for individuals in disadvantaged neighborhoods, causing poorer long-term health. Yet, research has not examined if neighborhood environment actually affects an individual's ability to access primary care. Data from the Los Angeles Family and Neighborhood Survey suggests there is significant variation between neighborhoods in an individual's ability to access primary care. This neighborhood-level effect is not explained by the composition of individuals living in the neighborhood. Four mechanisms through which neighborhood environment could affect an individual's ability to access primary care are examined: (1) neighborhood information networks, (2) neighborhood health behavior norms, (3) neighborhood social capital and (4) neighborhood healthcare resources. Social capital and healthcare resources significantly predict an individual's primary care access. Since differences in primary care access may explain

individual-level health disparities between neighborhoods, policies designed to improve primary care access must account for both individual and neighborhood effects.

- (45) **Laraia BA, Messer L, Kaufman JS et al. Direct observation of neighborhood attributes in an urban area of the US south: characterizing the social context of pregnancy. *Int J Health Geogr* 2006 March 17;5:11.**

BACKGROUND: Neighborhood characteristics have been associated with poor maternal and child health outcomes, yet conceptualization of potential mechanisms is still needed. Census data have long served as proxies for area level socioeconomic influences. Unique information captured by neighborhood inventories, mostly conducted in northern US and Canadian urban areas, has shown important aspects of the community environment that are not captured by the socioeconomic and demographic aggregated individual statistics of census data. In this paper, we describe a neighborhood data collection effort tailored to a southern urban area. **METHODS:** This study used data from the Pregnancy, Nutrition and Infection (PIN) prospective cohort study to describe neighborhoods where low- and moderate-income pregnant women reside. Women who participated in the PIN study and who resided in Raleigh, NC and its surrounding suburbs were included (n = 703). Neighborhood attributes captured by the inventory included litter, housing condition, road condition, and social interactions that informed theoretical constructs of physical incivility, territoriality and social spaces. US Housing and Population Census 2000 data at the block group level were also assessed to identify the unique contribution of directly observed data. We hypothesize that neighborhood environments can influence health through psychosocial mediated pathways that lead to increased stress, or through disadvantage leading to poor neighborhood resources, or by protective attributes through increased social control. **RESULTS:** Findings suggest that directly observed neighborhood attributes distinguished between different types of areas in which low-income pregnant non-Hispanic white and non-Hispanic black women lived. Theoretically informed scales of physical incivilities, territoriality and social spaces were constructed and found to be internally consistent. Scales were weakly associated indicating that these constructs capture distinct information about these neighborhoods. Physical incivilities, territoriality and social spaces scales were poorly explained by traditional census variables used to proxy neighborhood environment. **CONCLUSION:** If neighborhoods influence health through psychosocial mediated pathways then careful detailing of neighborhood attributes that contribute to stress or deterioration, beyond traditional socioeconomic status, are needed. We believe that measuring physical incivility, territoriality and social spaces as expressions of underlying issues of maintenance and social communication make important contributes to this field.

- (46) **Latham J, Moffat T. Determinants of variation in food cost and availability in two socioeconomically contrasting neighbourhoods of Hamilton, Ontario, Canada. *Health Place* 2006 March 14; [Epub ahead of print].**

This study addresses links between economic and nutritional variation in an urban North American setting. We employed a mixed-methods approach including mapping, semi-structured interviews, and food outlet surveys to investigate the public health impact of variation in the cost and availability of food between two socioeconomically distinct neighbourhoods of the City of Hamilton, Ontario, Canada. Food cost in supermarkets was not found to be higher in the low-income neighbourhood, though it was much higher in the variety stores that predominate in the low-income neighbourhood. Moreover, there was a very low availability of produce in the variety stores. Reduced fresh produce availability and lower incomes have the potential to negatively influence public health in the less-affluent study area by increasing the difficulty of acquiring healthy foods.

- (47) **Nowell BL, Berkowitz SL, Deacon Z, Foster-Fishman P. Revealing the cues within community places: stories of identity, history, and possibility. *Am J Community Psychol* 2006 March;37(1-2):29-46.**

Place-based approaches to community change have become increasingly popular strategies for addressing significant social problems. With their intentional focus on 'place,' most efforts have sought to gain greater understanding into how neighborhood contexts affect people. However, while both aggregate characteristics and social dynamics of neighborhoods have been subject to scrutiny in the literature, less

attention has been paid to understanding how the environmental characteristics of neighborhoods and communities as places have meaning for residents. The present study used an innovative methodology called Photovoice to obtain a greater understanding of the meanings residents ascribe to the salient characteristics of their neighborhoods and communities. As part of a place-based initiative, 29 adult and youth residents in seven distressed urban neighborhoods photographed and dialogued about the meaningful physical attributes of their community. According to participants, place characteristics provided cues about their personal histories as members of the community; communicated messages about the value and character of the community and its residents; defined social norms and behavior within the community; and provided markers that could remind residents of who they are and inspire a sense of possibility for who they could become. Implications for practice are discussed.

- (48) **Whitley R, Prince M. Can urban regeneration programmes assist coping and recovery for people with mental illness? Suggestions from a qualitative case study. *Health Promot Int* 2006 March;21(1):19-26.**

Researchers and policy-makers are increasingly recognizing that urban socio-environmental conditions can affect the development and course of numerous health problems. The aim of this paper is to investigate the impact an urban regeneration programme can have on everyday functioning, coping and recovery for people with a mental illness. We were also interested in discerning which component parts of the regeneration are the most important in positively affecting people with mental illness. These questions were explored through an in-depth qualitative case study of the Gospel Oak neighbourhood in London, which recently underwent an intensive urban regeneration programme. Interviews and focus groups were conducted with residents living with a mental illness (n = 16). Relevant participant observation was also conducted. Participants reported that interventions that improved community safety were by far the most important in affecting everyday coping and functioning. Interventions that improved the quantity and quality of shared community facilities had a positive, but milder effect on mental health. Component parts that appeared to have little effect included environmental landscaping and greater community involvement in decision-making processes. Most participants reported that their mental illness was a consequence of severe insults over the life-span, for example childhood neglect or family breakdown. Thus, the regeneration was seen as something that could assist coping, but not something that could significantly contribute to complete recovery. Our results thus suggest that urban regeneration can have a mild impact on people with mental illness, but this appears to be outweighed by life-span experience of severe individual-level risk factors. That said, some of our findings converge with other studies indicating that community safety and community facilities can play a role in positively affecting mental health. Further ethnographic and epidemiological research is necessary to explore these two factors.

Topic F: At-risk and special populations

- (49) **Bryant WK, Ompad DC, Sisco S et al. Determinants of influenza vaccination in hard-to-reach urban populations. *Prev Med* 2006 May 7; [Epub ahead of print].**

OBJECTIVE.: Influenza vaccination rates among disadvantaged minority and hard-to-reach populations are lower than in other groups. We assessed the barriers to influenza vaccination in disadvantaged urban areas. **METHODS.:** We conducted a cross-sectional study, using venue-based sampling, collecting data on residents of eight neighborhoods throughout East Harlem and the Bronx, New York City. **RESULTS.:** Of 760 total respondents, 461 (61.6%) had received influenza vaccination at some point in their life. In multivariable models, having access to routine medical care, receipt of health or social services, having tested positive for HIV, and current interest in receiving influenza vaccination were significantly associated with having received influenza vaccination in the previous year. Of participants surveyed, 79.6% were interested in receiving an influenza vaccination at the time of survey. Among participants who had never previously received influenza vaccination in the past, 73.4% were interested in being vaccinated; factors significantly associated with an interest in being vaccinated were minority race, lower annual income, history of being homeless, being uninsured/underinsured, and not having access to routine medical care. **CONCLUSIONS.:** Participants who are unconnected to health or social services or

government health insurance are less likely to have been vaccinated in the past although these persons are willing to receive vaccine if it were available.

- (50) **Zimmerman RK, Nowalk MP, Lin CJ et al. Interventions over 2 years to increase influenza vaccination of children aged 6-23 months in inner-city family health centers. *Vaccine* 2006 March 6;24(10):1523-9.**

The purposes of this study were to test the ability of tailored interventions to raise influenza immunization rates and assess the effect on timely receipt of other vaccines. We conducted a before/after trial over 2 years to increase influenza vaccination rates of patients 6-23 months old in five inner-city family health centers serving low-income children with a sixth site as a concurrent control. Influenza vaccination rates improved significantly from a baseline of 4.7-24.7% in the first year and 36.6% in the second year, $P < 0.001$. The increase in rates was greater in intervention sites than the control site (31.9% versus 25.7%, $P = 0.02$). In regression analyses of influenza vaccination, intervention year was associated with an odds ratio (OR) of 9.4 (95% confidence interval (CI) = 4.4-20.0) for the first intervention year and OR = 13.4 (95% CI = 6.5-28.0) for the second intervention year. Children vaccinated against influenza were more likely to have received DTaP 3 and MMR within 2 months of the recommended age than children not vaccinated against influenza ($P < 0.001$).

- (51) **Irigoyen MM, Findley S, Wang D et al. Challenges and successes of immunization registry reminders at inner-city practices. *Ambul Pediatr* 2006 March;6(2):100-4.**

OBJECTIVES: To assess the effectiveness of two serial registry reminder protocols and the interactive effects of reminders with child characteristics on immunization rates. **METHODS:** At an inner city practice network in New York City we randomized 1662 children aged 6 weeks-15 months due or late for a diphtheria-tetanus-pertussis (DTaP) to 3 groups: continuous reminders (as needed), limited reminders (up to 3) and controls, for 6 months. Reminders were triggered by the hospital registry and immunizations were tracked with both the hospital and city registries. Analyses were based on intention to treat. **RESULTS:** At randomization, the study groups were comparable (9.2 months of age, 77% Latino, 86% Medicaid, 49.3% up-to date). A quarter of the children were sent false reminders, 15% had incorrect contact information, and 15% had missed opportunities for vaccination. In the univariate analysis, reminders improved coverage rates, but only for the children sent continuous reminders (51.2% vs. 44.9% controls, $p < .01$). Multivariate analysis showed reminders had no independent effect on immunization outcomes. Age, up-to-date and Medicaid status at randomization were strong predictors of a child receiving any subsequent immunization. However, reminders interacted synergistically with Medicaid to increase the likelihood of receiving an immunization. **CONCLUSION:** At an inner city practice network, registry reminders were not effective at improving immunization outcomes due to major system barriers. Immunization registries are powerful vehicles for identifying children in need of immunizations and generating reminders but system challenges must be addressed if this promise is to be achieved in inner city practices.

- (52) **Atkins MS, Frazier SL, Birman D et al. School-based mental health services for children living in high poverty urban communities. *Adm Policy Ment Health* 2006 March;33(2):146-59.**

Studied the effectiveness of a school-based mental health service model, PALS (Positive Attitudes toward Learning in School), focused on increasing initial and ongoing access to services, and promoting improved classroom and home behavior for children referred for Disruptive Behavior Disorder (DBD) from three high poverty urban elementary schools. Classrooms were randomly assigned to PALS or referral to a neighborhood mental health clinic, with children identified by teacher referral and follow-up parent and teacher ratings. Results indicated significant service engagement and retention for PALS ($n=60$) versus families referred to clinic ($n=30$), with over 80% of PALS families retained in services for 12 months. PALS services were correlated with positive changes in children's behavior as rated by parents, and with improvements in children's academic performance as rated by teachers. Implications for the design and delivery of mental health services for children and families living in high-poverty urban communities are discussed.

- (53) **Sexton K, Adgate JL, Fredrickson AL, Ryan AD, Needham LL, Ashley DL. Using biologic markers in blood to assess exposure to multiple environmental chemicals for inner-city children 3-6 years of age. *Environ Health Perspect* 2006 March;114(3):453-9.**

We assessed concurrent exposure to a mixture of > 50 environmental chemicals by measuring the chemicals or their metabolites in the blood of 43 ethnically diverse children (3-6 years of age) from a socioeconomically disadvantaged neighborhood in Minneapolis. Over a 2-year period, additional samples were collected every 6-12 months from as many children as possible. We analyzed blood samples for 11 volatile organic compounds (VOCs), 2 heavy metals (lead and mercury, 11 organochlorine (OC) pesticides or related compounds, and 30 polychlorinated biphenyl (PCB) congeners. The evidence suggests that numerous VOCs originated from common sources, as did many PCBs. Longitudinal measurements indicate that between-child variance was greater than within-child variance for two VOCs (benzene, toluene), for both heavy metals (Pb, Hg), for all detectable OC pesticides, and for 15 of the measured PCB congeners (74, 99, 101, 118, 138-158, 146, 153, 156, 170, 178, 180, 187, 189, 194, 195). Despite the relatively small sample size, highest measured blood levels of 1,4-dichlorobenzene, styrene, m-/p-xylene, Pb, Hg, heptachlor epoxide, oxychlorane, dichlorodiphenyldichloroethene (p,p -DDE), trans-nonachlor, and PCB congeners 74, 99, 105, 118, 138, 146, 153, 156, 170, and 180 were comparable with or higher than 95th percentile measurements of older children and adults from national surveys. Results demonstrate that cumulative exposures to multiple environmental carcinogens and neurotoxins can be comparatively high for children from a poor inner-city neighborhood.

- (54) **Halm EA, Mora P, Leventhal H. No symptoms, no asthma: the acute episodic disease belief is associated with poor self-management among inner-city adults with persistent asthma. *Chest* 2006 March;129(3):573-80.**

OBJECTIVE: Asthma morbidity and mortality is highest among inner-city populations. Suboptimal beliefs about the chronicity of asthma may perpetuate poor asthma control among inner-city asthmatics. This study sought to characterize beliefs about the chronicity of disease and its correlates in a cohort of inner-city adults with persistent asthma. **DESIGN:** Prospective, longitudinal, observational cohort study. **PATIENTS:** One hundred ninety-eight adults hospitalized with asthma over a 12-month period at an inner-city teaching hospital. **MEASUREMENTS:** Sociodemographics, clinical history, disease beliefs, and self-management behaviors were collected by interview. Information on self-reported use of inhaled corticosteroids (ICS), peak flowmeters, and regular asthma visits was collected during hospitalization, and 1 month and 6 months after discharge. **RESULTS:** This cohort was predominantly low income and nonwhite, with high rates of prior intubation, oral steroid use, and emergency department visits and hospitalizations. Overall, 53% of patients believed they only had asthma when they were having symptoms, what we call the no symptoms, no asthma belief. Men patients, those > or = 65 years old, and those with no usual place of care had greater odds of having the no symptoms, no asthma belief, and those receiving oral steroids all or most of the time or with symptoms most days had half the odds of having this belief ($p < 0.05$ for all). The no symptoms, no asthma belief was negatively associated with beliefs about always having asthma, having lung inflammation, or the importance of using ICS, and was positively associated with expecting to be cured. The acute disease belief was associated with one-third lower odds of adherence to ICS when asymptomatic at all three time periods ($p < 0.02$ for all). **CONCLUSION:** The single question, "Do you think you have asthma all of the time, or only when you are having symptoms?" can efficiently identify patients who do not think about or manage their asthma as a chronic disease.

- (55) **Auerswald CL, Sugano E, Ellen JM, Klausner JD. Street-based STD testing and treatment of homeless youth are feasible, acceptable and effective. *J Adolesc Health* 2006 March;38(3):208-12.**

PURPOSE: Current Centers for Disease Control (CDC) guidelines recommend that sexually transmitted disease (STD) screening measures for high-risk populations such as homeless youth prioritize testing in out-of-clinic settings and incorporate new approaches to STD eradication, such as field-delivered testing and treatment and patient-delivered partner therapy (PDPT). Our non-medically trained research staff offered field-based STI testing, field-delivered therapy, and PDPT to homeless youth in the context of a

longitudinal study. **METHODS:** A total of 218 ethnically diverse (34% female) 15-24-year-old homeless youth recruited from street sites in San Francisco completed an audio computer-administered self-interview survey and provided a first-void urine sample for testing for chlamydia (CT) and gonorrhea (GC). Youth testing positive were offered field-delivered therapy and PDPT. A random subset of 157 youth was followed prospectively, of whom 110 (70%) were interviewed and 87 (55%) retested at six months. **RESULTS:** At baseline, 99% of youth in the study consented to STI testing, of whom 6.9% and .9% tested positive for CT and GC, respectively. Ninety-four percent of positive youth were treated, 50% within one week. The incidence rate for CT was 6.3 per 100 person-years (95% confidence interval [CI]: 1.3-18.4) and for GC was 4.2 per 100 person-years (95% CI: .5-15.2). None of the youth treated by study staff and tested six months later (n = 6) had CT or GC on follow-up testing (95% CI: 0-131.3). **CONCLUSIONS:** Field-delivered testing and field-delivered therapy are feasible, acceptable and effective interventions for the diagnosis and treatment of STDs in homeless youth. These measures along with PDPT may decrease rates of subsequent reinfection.

- (56) **van Olphen J., Freudenberg N, Fortin P, Galea S. Community reentry: perceptions of people with substance use problems returning home from new york city jails. *J Urban Health* 2006 May;83(3):372-81.**

Each year about 100,000 people return to New York City communities from municipal jails. Although about four-fifths report drug or alcohol problems, few have received any formal drug treatment while in jail. Researchers and practitioners have identified a number of policies related to corrections, income, housing, and drug treatment that may be harmful to the successful reintegration of people leaving jail. In order to explore the challenges to successful community reentry, six focus groups and one in-depth interview were conducted with 37 men and women who had been released from jail or prison in the last 12 months. Participants were asked to describe their experiences prior to and immediately following release from jail. Findings suggest that many people leaving jail are not prepared for release and, upon release, face a myriad of obstacles to becoming healthy, productive members of their communities. We discuss the implications of these findings for programs and policies that promote community reintegration of individuals returning from correctional facilities.

- (57) **Deverteuil G, Hinds A, Lix L, Walker J, Robinson R, Roos LL. Mental health and the city: Intra-urban mobility among individuals with schizophrenia. *Health Place* 2006 March 31; [Epub ahead of print].**

Intra-urban residential mobility of a cohort with schizophrenia was compared to a matched cohort with no mental illness using population-based administrative data. The percentage of individuals with one or more changes in postal code in the three-year mobility study period was examined, along with measures of the movement between different intra-urban areas. The schizophrenia cohort was more likely to move than the matched cohort; however, this depends on their age, income level, and area of residence at baseline. Age, gender, marital status, income quintile, and use of physicians and hospitalizations were associated with mobility. Individuals in the schizophrenia cohort were significantly more likely to move from the suburb to the inner city, and significantly less likely to move from the inner city to the suburb than those with no mental illness. Implications of the findings and directions for future research are discussed, with particular attention paid to the utility of administrative data for further mental health research.

Topic G: Accidents and Injuries

- (58) **Vorko-Jovic A, Kern J, Biloglav Z. Risk factors in urban road traffic accidents. *J Safety Res* 2006;37(1):93-8.**

INTRODUCTION: The urban road traffic accident (RTA) risks for the city of Zagreb, Croatia, from 1999 through 2000 were analyzed with the aim of reducing the increasing injury incidence. **METHOD:** Simple and bivariate analysis using chi(2), odds ratio, and confidence interval of 95% was used to determine

risks in three outcome groups: killed, severely, and mildly injured. RESULTS: There were 528 RTA victims consisting of 260 severely, 213 mildly injured, and 55 killed at the scene of an accident and during transportation. More fatal accidents occurred during night hours (OR=3.78; 95% CI, 2.08-6.85), on urban road links (OR=2.33; 95% CI, 1.30-4.19), and at exceeding speed limit (OR=2.56; 95% CI, 1.43-4.61). More people were injured than killed on urban junctions (OR=5.27; 95% CI, 2.21-12.57). The highest combined risk of dying or being severely injured was found in males, driving at excessive speed, on urban links, and during bad visibility (OR=16.15; 95% CI, 3.901-66.881). CONCLUSION: These results will influence the urban traffic police enforcement measures, which will change inappropriate behavior of drivers and protect the least experienced road users.

(59) **de Lapparent M. Empirical Bayesian analysis of accident severity for motorcyclists in large French urban areas. *Accid Anal Prev* 2006 March;38(2):260-8.**

The present article deals with individual probabilities of different levels of injury in case of a motorcycle accident. The approach uses an empirical Bayesian method based on the Multinomial-Dirichlet model, see [Leonard, T., 1977. A Bayesian approach to some Multinomial estimation and pretesting problems, *J. Am. Stat. Association*, 72, 869-874], to conduct an analysis of the probability distributions about the severity of accidents at the level of individuals in large and dense French urban areas during year 2003. We model accident severity using four levels of injury: material damages only, slight injury, severe injury, fatal injury. Our application shows that sociodemographic characteristics of motorcyclists and factors influencing their speed behaviors, the suddenness of their collision and the vigilance of road users play significant roles on the shapes of their probability distributions of accident severity. The computation of posterior distributions of the levels of injury for different groups of motorcyclists enables us to rank them with respect to their risk of injury using second order stochastic dominance orderings. It is found that women motorcyclists between 30 and 50 years old driving powerful motorcycles are the most exposed to risk of injury.

(60) **Guth AA, O'Neill A, Pachter HL, Diflo T. Public health lessons learned from analysis of New York City subway injuries. *Am J Public Health* 2006 April;96(4):631-3.**

Serious subway injuries are devastating to their young victims and have high rates of mortality and amputation. We identified the urban population at greatest risk for subway injuries and investigated the influence of local economies on injury rates. We propose using changes in social conditions as a "trigger" for increased vigilance and protective measures at times of higher risk.

(61) **Shai D. Income, housing, and fire injuries: a census tract analysis. *Public Health Rep* 2006 March;121(2):149-54.**

OBJECTIVES: This study investigates the social and demographic correlates of nonfatal structural fire injury rates for the civilian population for Philadelphia census tracts during 1993-2001. METHODS: The author analyzed 1,563 fire injuries by census tract using the 1990 census (STF 3) and unpublished data from the Office of the Fire Marshal of the Philadelphia Fire Department. Injury rates were calculated per 1,000 residents of a given census tract. Multiple regression was used to determine significant variables in predicting fire injuries in a given census tract over a nine-year period and interaction effects between two of these variables-age of housing and income. RESULTS: Multiple regression analysis indicates that older housing (prior to 1940), low income, the prevalence of vacant houses, and the ability to speak English have significant independent effects on fire injury rates in Philadelphia. In addition, the results show a significant interaction between older housing and low income. CONCLUSIONS: Given the finding of very high rates of fire injuries in census tracts that are both low income and have older housing, fire prevention units can take preventative measures. Fire protection devices, especially smoke alarms, should be distributed in the neighborhoods most at risk. Multiple occupancy dwellings should have sprinkler systems and fire extinguishers. Laws concerning the maintenance of older rental housing need

to be strictly enforced. Vacant houses should be effectively boarded up or renovated for residential use. Fire prevention material should be distributed in a number of languages to meet local needs.

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