

Office of Research

colorado school of public health

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Publication Highlights

COLORADO STATE UNIVERSITY



High Impact Journal Recognition: Environmental Health (Impact Factor 7.123)

Using non-parametric Bayes shrinkage to assess relationships between multiple environmental and social stressors and neonatal size and body composition in the Healthy Start cohort

Martenies, Sheena E.; Hoskovec, Lauren; Wilson, Ander; Moore, Brianna F.; Starling, Anne P.; Allshouse, William B.; Adgate, John L.; Dabelea, Dana; Magzamen, Sheryl
Environmental Health

Both environmental and social factors have been linked to birth weight and adiposity at birth, but few studies consider the effects of exposure mixtures. This study's objective was to identify which components of a mixture of neighborhood-level environmental and social exposures were driving associations with birth weight and adiposity at birth in the Healthy Start cohort. Exposures were assessed at the census tract level and included air pollution, built environment characteristics, and socioeconomic status. Prenatal exposures were assigned based on address at enrollment. Birth weight was measured at delivery and adiposity was measured using air displacement plethysmography within three days. Non-parametric Bayes (NPB) models identified prenatal exposures to ozone and temperature as predictors of birth weight, and mothers who identify as a race or ethnicity other than non-Hispanic White might be disproportionately impacted. However, NPB models may have limited applicability when non-linear effects are present. Future work should consider a two-stage approach where NPB is used to reduce dimensionality and alternative approaches examine non-linear effects.

LIFECOURSE EPIDEMIOLOGY OF ADIPOSITY & DIABETES CENTER

Vaccination Trends and Family-Level Characteristics Associated With Incomplete or Delayed Childhood Immunizations: The Healthy Start Study

Zell-Baran, Lauren M.; Starling, Anne P.; Glueck, Deborah H.; Bekelman, Traci A.; Norris, Jill M.; Adgate, John L.; Brown, Jared M.; Dabelea, Dana
American Journal of Health Promotion

The purpose of this study was to assess family-level factors associated with childhood immunization schedule adherence. The Healthy Start study enrolled 1,410 pregnant women in Denver, Colorado 2009-2014. Subjects Children with available vaccination data in medical records (0-6 years old) were enrolled in the study. Most immunizations required in Colorado for school entry were below national completion goals with 61.8% of participants completing the full vaccination series. Most participants received the first dose of individual vaccines on time but fewer received all doses on time. Factors associated with not completing the vaccination series included: in-utero exposure to cigarette smoke, single parent household, children identified as non-White, mothers not working outside the home, and household income <\$70,000 per year. Conversely, families with more educated mothers and older parents were significantly more likely to complete the series. These findings may help identify groups at risk of immunization schedule non-adherence and may be used to target education/advocacy campaigns to reduce hesitancy and increase access in these populations.

ENVIRONMENTAL & OCCUPATIONAL HEALTH

The Association Between Rainfall, Temperature, and Reported Drinking Water Source: A Multi-Country Analysis

Buchwald, Andrea G.; Thomas, Evan; Karnauskas, Kristopher B.; Grover, Elise; Kotloff, Karen; Carlton, Elizabeth J.
Geohealth

Climate change may alter access to safe drinking water, with important implications for health. The authors assessed the relationship between temperature and rainfall and utilization of basic drinking water (BDW) in The Gambia, Mozambique, Pakistan, and Kenya. The outcomes of interest were (a) whether the reported drinking water source used in the past 2 weeks met the World Health Organization definition of BDW and (b) use of a BDW source that was always available. Temperature and precipitation data were compiled from weather stations and satellite data and summarized to account for long- and short-term weather patterns and lags. The researchers utilized random forests and logistic regression to identify key weather variables that predicted outcomes by site and the association between important weather variables and BDW use. Higher temperatures were associated with decreased BDW use at three of four sites and decreased use of BDW that is always available at all four sites. Increasing rainfall, both in the long- and short-term, was associated with increased BDW use in three sites. They found evidence for interactions between household wealth and weather variables at two sites, suggesting lower wealth populations may be more sensitive to weather-driven changes in water access. Changes in temperature and precipitation can alter safe water use in low-resource settings-investigating drivers for these relationships can inform efforts to build climate resilience.

Understanding the relationship between nonprofit hospital community benefit spending and system membership: An analysis of independent hospital acquisitions

Owsley, Kelsey M.; Lindrooth, Richard C.
Journal of Health Economics

The Internal Revenue Service (IRS) requires nonprofit hospitals to report community benefit spending to justify their nonprofit tax exemption. The authors examined whether nonprofit hospital acquisitions influence the amount and type community benefit spending. They analyzed 2011-2018 data on urban, nonprofit hospitals. The analysis dataset included 57 hospitals that were acquired and a matched control group. They estimated difference-in-differences specifications to measure the effect of acquisitions on total community benefit spending, and three subcategories - clinical, population health, and other spending types. They found that acquisitions led to decreased population health spending and other spending categories, but no significant change in total or clinical spending. If the acquirer was located out-of-state, total community benefit spending declined by \$2.4 million. These findings support the need for community benefit spending to be considered, along with quality, efficiency, and prices, when evaluating the welfare impact of acquisitions.

COLORADO STATE UNIVERSITY

Observations of parent-adolescent interactions relate to food parenting practices and adolescent disordered eating in adolescents at risk for adult obesity

Smith, Amy D.; Sanchez, Natalia; Harrison, Kady; Bourne, Caitlin; Clark, Emma L. M.; Miller, Reagan L.; Melby, Christopher L.; Johnson, Sarah A.; Lucas-Thompson, Rachel G.; Shomaker, Lauren B.
Family Process

Adolescent disordered eating and obesity are interrelated and adversely relate to mental and metabolic health. Parental feeding practices have been associated with adolescent disordered eating and obesity. Yet, observable interactions related to food parenting have not been well characterized. To address this gap, 30 adolescents at risk for adult obesity due to above-average body mass index or parental obesity participated in a video-recorded parent-adolescent task to discuss a food/eating-related disagreement. Reported parenting practices were correlated with multiple interaction qualities, with the most consistent correspondence between parent-reported pressure to eat and negative aspects of parent-adolescent interactions. Greater adolescent problem-solving related to less adolescent global disordered eating, shape, and weight concern; adolescent autonomy related to less weight concern. Better parent communication skills were associated with less adolescent eating concern, and observed dyadic mutuality related to adolescents' lower insulin resistance. Parent-adolescent interaction qualities during food/eating-related disagreements show associations with parent-reported food practices and adolescent disordered eating. This method may offer a tool for measuring the qualities of parent-adolescent food/eating-related interactions. A nuanced understanding of conversations about food/eating may inform family-based intervention in youth at-risk for adult obesity.

EPIDEMIOLOGY

Association of falls and fear of falling with objectively-measured driving habits among older drivers: LongROAD study

DiGuseppi, Carolyn G.; Hyde, Hailey A.; Betz, Marian E.; Scott, Kenneth A.; Eby, David W.; Hill, Linda L.; Jones, Vanya C.; Mielenz, Thelma J.; Molnar, Lisa J.; Strogatz, David; Li, Guohua; AAA LongROAD Res Team
Journal of Safety Research

Falls in older adults are associated with increased motor vehicle crash risk, possibly mediated by driving behavior. The authors examined the relationship of falls and fear of falling (FOF) with subsequent objectively measured driving habits. This multi-site, prospective cohort study enrolled 2990 active drivers aged 65-79 (53% female). At enrollment, they assessed falls in the past year and FOF (Short Falls Efficacy Scale-International). Driving outcomes included exposure, avoidance of difficult conditions, and unsafe driving during one-year follow-up, using in-vehicle Global Positioning System devices. Past-year falls were associated with more hard braking events (HBE). High FOF was associated with driving fewer days, miles, and trips, driving nearer home and more HBE. Differences were attenuated and not significant after accounting for health, function, medications and sociodemographics. Differences in objectively measured driving habits according to past-year fall history and FOF were largely accounted for by differences in health and medications. Rather than directly affecting driving, falls and FOF may serve as markers for crash risk and reduced community mobility due to age-related changes and poor health.

COMMUNITY & BEHAVIORAL HEALTH

Psychometric properties of the empathy questionnaire for children and adolescents in a sample of Tanzanian adolescents

Cherewick, Megan; Dahl, Ronald E. E.; Leiferman, Jenn A. A.; Hipp, Emily; Schmiede, Sarah
Frontiers in Psychology

Construct definitions of empathy have sought to distinguish between different domains of empathetic capacity that are related to psychological distress or wellbeing. This study aims to validate the psychometric properties of the Empathy Questionnaire for Children and Adolescents (EmQue-CA) and to test for measurement invariance by gender in a sample of 579 very young adolescents (270 boys and 309 girls) ages 9-12 from Tanzania. Exploratory and confirmatory factor analysis were completed to assess the factor analytic structure of the EmQue-CA, indicating a three-factor model fit these data well. Concurrent validity was demonstrated through strong significant correlations with prosocial behavior and generosity measures. Convergent validity indicated the behavioral subdimension of empathy, intent to comfort, was significantly and negatively associated with externalizing behaviors. Measurement invariance by gender was not supported for these data due to configural invariance in covariance between cognitive empathy and intent to comfort latent constructs. These findings confirm the EmQueCA is an important measure of three dimensions of empathy; affective empathy, cognitive empathy, and behavioral empathy (intent to comfort) in a sample of Tanzanian adolescents.

CENTERS FOR AMERICAN INDIAN & ALASKA NATIVE HEALTH

Explanatory models of hypertension in Guatemala: recognizing the perspectives of patients, family members, health care providers and administrators, and national-level health system stakeholders

Figueroa, Juan Carlos; Paniagua-Avila, Alejandra; Cuc, Ingrid Sub; Cardona, Sayra; Ramirez-Zea, Manuel; Irazola, Vilma; Fort, Meredith P.

BMC Public Health

Uncontrolled hypertension is a major public health burden and the most common preventable risk factor for cardiovascular diseases in Guatemala and other low- and middle-income countries. Prior to an initial trial that evaluated a hypertension intervention in rural Guatemala, the authors collected qualitative information on the needs and knowledge gaps of hypertension care within Guatemala's public healthcare system. This analysis applied Kleinman's Explanatory Models of Illness to capture how patients, family members, community-, district-, and provincial-level health care providers and administrators, and national-level health system stakeholders understand hypertension. Health providers and administrators, and patients described hypertension as an illness that spurs from emotional states like sadness, anger, and worry; is inherited and related to advanced age; and produces symptoms that include a weakened body, nerves, pain, and headaches. Patients expressed concerns about hypertension treatment's long-term consequences, despite trying to comply with treatment. Patients stated that they combine biomedical treatment (when available) with natural remedies (teas and plants). Health providers and administrators and family members stated that once patients feel better, they often disengage from treatment. National-level health system stakeholders referred to lifestyle factors as important causes, considered patients to typically be non-compliant, and identified budget limitations as a key barrier to hypertension care. The three groups of participants identified structural barriers to limited hypertension care (e.g., limited access to healthy food and unaffordability of medications). As understandings of hypertension vary between types of participants, it is important to describe their similarities and differences considering the role each has in the health system. Considering different perceptions of hypertension will enable better informed program planning and implementation efforts.

BIOSTATISTICS & INFORMATICS

Reaping what you SOW: Guidelines and strategies for writing scopes of work for statistical consulting

Peterson, Ryan A.; Hochheimer, Camille J.; Grunwald, Gary K.; Johnson, Rachel L.; Wood, Cheyret; Sammel, Mary D.

STAT

Statistical consulting has the potential to be remarkably rewarding or frustratingly fruitless. Attentive and careful execution of a statistical scoping process will yield top-caliber research and collaborative partnerships. The authors provide guidelines and strategies for how to write effective statistical scopes of work (SOWs) and build this procedure into a statistical consulting workflow, using illustrative case studies along the way. Effective SOWs provide a solid foundation on which to build fruitful research partnerships, to avoid common pitfalls and to weather turbulent situations successfully.