



2020 Annual Meeting

Abstract Contributed Session (ACS) and Poster Session Abstracts

Socioeconomic status**Educational disparities in disability incidence: The contributions of excess BMI, smoking, and manual labor involvement** Tarlise Townsend* Tarlise Townsend Neil Mehta

In the United States, educational disparities in disability are large and increasing, but the mechanisms underlying them are not well understood. We estimate the proportion of population-level educational disparities in disability incidence explained by excess body mass index (BMI), smoking, and manual labor.

We use waves 2003-2015 of the nationally representative, longitudinal Panel Study of Income Dynamics to calculate observed disability incidence and counterfactual incidence in the absence of each mediator, independently and jointly (3,129 individuals; 13,168 observations). By examining incidence, we avoid methodological limitations associated with prevalence, which has tended to be used in the literature. We take advantage of earlier-life measures, including childhood socioeconomic status, 1986 BMI, and occupational history between 1968 and 2001. To account for distinct processes in women and men at middle versus older ages, we stratify by gender and at age 65. Importantly, this approach sheds light on disability in middle life, which has received limited attention despite growing prevalence and educational disparities in this group.

Educational disparities in disability incidence were evident in women and men at younger and older ages, and were largest among older women. Together, the mediators of interest explained roughly 60% of disparities in younger women, 65-70% in younger men, 40% in older women, and 20-60% in older men. The main contributors to disparities appeared to be: excess BMI and smoking in younger women; manual labor and smoking in younger men; excess BMI in older women; and smoking in older men.

Excess BMI, smoking, and manual labor explain much of disparities in earlier-age disability; successful interventions to address these factors may substantially reduce them. However, a considerable proportion of disparities remained unexplained, particularly at older ages, reflecting the myriad pathways by which educational attainment can influence disability status.

Place/Communities**Complicating Educational Disparities in Health: Variations by Race/ethnicity and Characteristics of Early Life Counties** Taylor Hargrove* Taylor Hargrove Lauren Gaydosh

Educational disparities in health are well-documented. Yet, accumulating evidence suggests that the education-health relationship is not consistent across racial/ethnic groups, particularly among African Americans. These inconsistencies may stem from characteristics of the surrounding environments in which individuals navigate and experience educational attainment in early life. We evaluate such a possibility with two research questions: 1) do educational gradients in physical and mental health vary by race/ethnicity among young adults? 2) To what extent do racial/ethnic differences in the education-health relationship vary by the economic opportunities and sociodemographic characteristics of the county in which young adults were raised?

We use data from Waves I and IV of the National Longitudinal Study of Adolescent to Adult Health. Outcomes include cardiometabolic risk and depressive symptoms. Predictors of interest are educational attainment (college degree or more vs. less than college), race/ethnicity (white, African American, and Hispanic), and three characteristics of counties in which young adults lived during childhood and adolescence: absolute mobility prospects, proportion of residents living below the poverty level, and proportion of residents with less than a high school diploma or equivalency. Poisson and OLS regressions are used to address the research questions. All models are stratified by race/ethnicity.

Results indicate that education disparities in health are robust for whites—higher education is associated with better physiological and psychological health regardless of early life environments. For blacks and Hispanics, the health benefits of higher education depend on the characteristics of the county in which young adults lived during childhood/adolescence. Findings provide new evidence of place-based mechanisms that enhance or hinder the protective effects of higher education on health and well-being across various racial/ethnic groups.

Non-health institutions (business, political, education systems)**An upstream view of higher education as an institution with complex effects on population health.** Anna Zajacova* Anna Zajacova Elizabeth Lawrence

The aim of this presentation is to shift the perspective on higher education beyond the individualistic, functionalist paradigm that views this institution as a uniformly positive determinant of population health.

Over 80% of high school graduates attend college. The bachelor's degree is increasingly recognized as a critical threshold for health and longevity -- but half of college students never earn a bachelor's degree. Unfortunately, the effects of higher education on this group comprising 70 million US adults remains neglected. We posit that the complex nature of higher education in today's United States implies both positive and detrimental effects for population health, depending on the context.

We demonstrate the nuanced links between higher education and adult health outcomes. Using data from NHIS, we present the complex and sometimes anomalous physical and mental health outcomes for adults who attended college but did not earn a four-year degree. Applying counterfactual approaches to data from the NLSY97 and Add Health, we confirm associations between four-year degrees and adult health, but also report small or nonexistent returns to college attendance not culminating in a degree. Our analysis suggests that those attending but not completing college are very similar in backgrounds to adults who completed high school and never attended college, and they do not seem to reap significant returns to their earned college credits or subbaccalaureate degrees.

To better understand the role of higher education, we need to refocus research toward the multifaceted role of higher education as a neoliberal institution in a capitalist society, shaped by federal and state policies as well as the priorities of the wealthy elite. We conclude with a call for a more critical and inclusive perspective on higher education that considers the various ways college experiences shape health for cohorts recently reaching adulthood.

Policy**Childcare constraints and health in families with young children before and after implementation of a municipal universal pre-kindergarten initiative** Felice Le-Scherban**
Felice Le-Scherban Megan Todd* Anqi Wang Gabriella Grimaldi Mariana Chilton

Lack of access to quality, affordable childcare limits caregivers' ability to work or attend school, and/or requires caregivers to settle for inadequate childcare, all of which can exacerbate poverty and poor health. In 2017, Philadelphia implemented the PHLpreK universal pre-kindergarten initiative, funding free pre-K for 3- and 4-year-olds. We used repeated cross-sectional survey data to examine childcare constraints (childcare problems that make it difficult to work or study), caregiver employment, child developmental concerns, and child health status before and after PHLpreK implementation.

In 2011-2019 we surveyed caregivers of 7478 children aged < 4 years in English or Spanish in a pediatric emergency department in Philadelphia. This included 499 children age-eligible for pre-K. We compared caregiver-reported outcomes before (2011-2013, 2014-2016) and after (2017-2019) PHLpreK implementation for children who were age-eligible (3-4 years) and age-ineligible (< 3 years).

Caregivers were racially/ethnically diverse (52% Latinx, 36% Black), 44% worked \geq 20 hours/week, and 93% had public insurance. About half of the 3- and 4-year-olds were cared for in a childcare center or preschool. Compared to the pre-implementation period, in the post-implementation period caregivers reported lower rates of childcare constraints, developmental concerns, and poor child health status; and higher rates of working 20+ hours/week. These trends occurred for caregivers of both age-eligible and age-ineligible children.

Improvements reported by caregivers of age-ineligible children may be attributable to program participation by age-eligible siblings, on which we have limited data, or may indicate that something other than PHLpreK is driving these trends. To disentangle these possible explanations, we will conduct a difference-in-difference analysis that compares time trends in Philadelphia and the four other US cities where this survey was conducted (combined n = 37,726).

*Lê-Scherban and Todd co-presenters

Policy**Short-term effects of the earned income tax credit on children's physical and mental health and food security** Akansha Batra* Akansha Batra Rita Hamad

Introduction: Children in low-income households suffer from food insecurity and have poor physical and mental health. Yet there is little research on whether U.S. policies to alleviate poverty improve children's health. We examined the effects of the earned income tax credit (EITC), the largest U.S. poverty alleviation program, on children's health. We tested the hypothesis that the income transfer to poor working households, which is distributed as a lump sum at tax time, has short-term effects on food insecurity and physical and mental health outcomes in the months immediately after refund receipt.

Methods: The study sample was drawn from the 1997-2016 waves of the nationally representative National Health Interview Survey (NHIS, N = 122,921). The primary outcomes included food insecurity, mental health indicators, and body mass index calculated from parent-reported height and weight. We examined the effects of the EITC using a quasi-experimental difference-in-differences methodology. About ninety percent of the EITC-eligible population receives tax refunds in February, March, and April, while NHIS interviews occur throughout the year. We therefore took advantage of this seasonal variation to compare EITC-eligible families interviewed in February-April with those interviewed in the other months, "differencing out" seasonal trends in outcomes among non-eligible families. Analyses involved multivariable linear regressions, and we tested the robustness of results to alternative model specifications.

Results: Federal EITC refund receipt was associated with a 2 %-point reduction in the average food insecurity score (i.e., 1.2 % of a standard deviation) in the short term (β -0.023 per \$1,000 of EITC, 95% CI: -0.044, -0.002). We did not find a short-term effect of the EITC on mental health outcomes or body mass index. The results were robust to alternative specifications.

Conclusions: The EITC reduced food insecurity for eligible children in the months immediately after-tax refund receipt. As the EITC provides over \$60 billion annually to over 25 million families, this represents an important safety net program for vulnerable children. While we did not find an effect on mental health outcomes and body mass index, these may be less likely to change quickly in the months immediately after refund receipt; prior work has found that the EITC influences these outcomes in the long-term, highlighting the importance of both short- and long-term follow-up in policy evaluations. Future work should also examine the long-term impacts of reduced food insecurity on children's health and development.

Structural factors**LGBT-Specific Policies and Birth Outcomes among Sexual Minority Women** Bethany Everett*

Bethany Everett Virginia Jenkins Aubrey Limburg

Previous research has linked changes in social policies, such as the repeal of Jim Crow laws and the passing of the Civil Rights Act to improvements in maternal and child health among African Americans. No research to date has examined whether LGBT-specific social policies impact the maternal and infant health of SMW. This study uses data from the National Longitudinal Study of Adolescent to Adult Health (Add Health) to examine the impact of preconception exposure to LGBT-specific protective policies (e.g. legal same-sex marriage, same-sex adoption, hate crime protections, LGBT-housing protections) on birthweight and preterm birth outcomes for both heterosexual and sexual minority women (N=7,662 births among 4,315 women). Multivariate OLS and logistic regression models were used to assess the relationship between sexual identity and birth outcomes. Models used population weights and clustered on woman to account for non-independence of observations among women who reported multiple births.

Results show that the number of LGBT protective policies had no impact on the birth outcomes for heterosexual, mostly heterosexual, or bisexual identified women. Among women who identified as lesbian or gay, however, increases in the number of LGBT-specific policies were associated with increased birth weight ($B = 0.20$, $p < 0.01$), reduced risk of preterm birth ($OR = 0.19$, $p < .001$), and reduced risk of a low birth weight infant ($OR = 0.11$, $p < .01$). These results were robust to the inclusion of sociodemographic characteristics, preconception risk factors (e.g. early exposure to violence, BMI, self-rated health) and perinatal health behaviors (e.g. prenatal care use, tobacco use during pregnancy).

These results provide the first estimates that protective LGBT-specific policies are associated with improved birth outcomes among gay/lesbian women who were exposed to these policies prior to giving birth. The positive effects of the policies were not apparent among other sexual identity groups. Given that new research demonstrates that sexual minority women are more likely to report adverse outcomes, the policy implications of these results are critical and extend existing minority stress theory in a novel and important direction.

Gender**Association between State-Level Comprehensive Protections From Discrimination and Self-Reported Health Among Gender Minorities** Marcus Bennett* Marcus Bennett Gilbert Gonzales**Background**

In recent years, a growing body of research has demonstrated the negative impact that state and national policies have on LGBT populations. However, there is still little research estimating the impact that state-level policies may have on health outcomes among gender minorities (defined as transgender and gender nonconforming individuals).

Methods

Data from the 2014-2018 Behavioral Risk Factor Surveillance System (BRFSS) were used to document disparities in self-reported health among gender minorities compared to their cisgender counterparts. We used multivariable logistic regression models to estimate differences in the likelihood of self-reporting fair/poor health by gender, gender minority status, and state level policy environment. Unadjusted and adjusted odds ratios were reported first for adults in all 31 states that collect gender identity in the BRFSS. Then, we repeated these odds ratios for states with comprehensive protections as well as states with limited protections.

Results

We found significant differences in self-reported health between gender minorities and their cisgender peers. Gender minorities in all 31 states recording gender identity in the BRFSS had significantly greater odds of reporting fair/poor health compared to cisgender people. These disparities for gender minorities were attenuated further in states with limited or no legal protections.

Conclusion

Our results suggest that comprehensive legal protections, such as hate crime laws; non-discrimination in employment, housing, public accommodations, education; bans on insurance exclusions; and gender marker changes on birth certificates, have a significant positive impact on self-reported health for transgender and gender nonconforming individuals. These results corroborate similar findings among sexual minority individuals suggesting that gender minorities may similarly benefit from more comprehensive legal protections.

Environmental factors

Do the Effects of Childhood Lead Exposure Persist to Old Age? Mark Lee* Mark Lee John Robert Warren Joseph Ferrie

Background: Many U.S. children in the mid-20th century were exposed to dangerous levels of lead through public drinking water. Childhood lead exposure has negative cognitive and psychological outcomes that are measurable in adolescence and early adulthood. However, it is unclear whether differential exposure to lead-contaminated water in childhood explains variation in cognitive and psychological health among contemporary older adults.

Methods: Participants from four population-based aging and health surveys in the U.S. (the Wisconsin Longitudinal Study, the Panel Study of Income Dynamics, the Health and Retirement Study, the National Social Life Health and Aging Project) were linked to their household records in the 1940 Census, allowing us to know the city they lived in as children. Nationwide municipal water data (pH and service line material) is used as a proxy measure of lead exposure. Laboratory tests show that low pH water flowing through lead service lines becomes contaminated with lead. Therefore, lead exposure can be represented by a (water pH)*(lead pipe) interaction term. We will estimate the effect of childhood lead exposure on several validated cognitive and psychological outcomes measured in the three surveys, including: psychological stress, letter fluency, category fluency, digit order, number series task, and immediate and delayed word recall.

Preliminary Results: Estimates from the WLS show that lead exposure during the first year of life significantly reduced IQ measured during high school. However, there was no association between childhood lead exposure and any of the cognitive test scores measured in 2011 when participants were approximately age 70. Lead-exposed participants reported significantly higher psychological stress than their peers.

Next Steps: We will attempt to replicate findings from the WLS using the nationally representative PSID, HRS, and NSHAP cohorts. We will also adjust for possible confounders such as childhood SES and test for heterogeneous effects by SES, race, and sex.

Environmental factors

Effects of oil and gas production on ambient air quality in California David Gonzalez* David Gonzalez Marshall Burke

Background: An estimated 17.6 million U.S. residents live in within 1.6 km of active oil and gas wells, including 2.1 million Californians. Racial/ethnic minority groups have disproportionately high exposure. Recent studies report associations between residential proximity to well sites and adverse reproductive, cardiovascular, and mental health outcomes. These outcomes may be attributable to factors possibly associated with proximity to well sites, including air pollution. However, the effect of oil and gas production on air quality is not well characterized, constraining population health research.

Methods: We leverage longitudinal observations throughout California and applied a fixed effects (FE) regression approach to account for unobserved confounding. We obtained oil and gas data from Enverus and the California Geologic Energy Management Division (CalGEM) and air pollution data from the US EPA Air Quality System for 284 monitors throughout California for daily concentrations of CO, NO₂, O₃, SO₂, and particulate matter with a diameter of less than 10 μm (PM₁₀) and less than 2.5 μm (PM_{2.5}). For each air monitor and month during the study period (1999-2019), we assessed exposure to wells in preproduction and production using an inverse distance-squared weighted index for well sites within 10 km, binning monitor-months into exposure quartiles. For each pollutant, we fit crude linear regression models and models with FE for month and air basin-year.

Results: We observed higher concentrations of particulate matter for the most exposed monitor-months compared to unexposed in FE models, with 3.8 $\mu\text{g}/\text{m}^3$ increase in PM₁₀ concentrations ($p < 0.001$) and 1.3 $\mu\text{g}/\text{m}^3$ ($p < 0.001$) increase in PM_{2.5}.

Conclusion: We found evidence that exposure to well sites is associated with higher PM₁₀ and PM_{2.5} exposure, which may contribute to adverse health outcomes. This result supports the use of proximity-based methods to assess exposure to oil and gas wells in population health studies.

Environmental factors**Extreme Heat, Social Context, and Birth Outcomes in the United States** Ethan Raker* Ethan Raker

A well-documented symptom of anthropogenic climate change is extreme ambient air temperature, which can adversely impact population health. One potential consequence is the effect of extreme heat on a particularly vulnerable group: pregnant women. Over the past several decades, an interdisciplinary literature developed on the effect of *in utero* exposure to heat on birth outcomes, recently advancing to the use of sophisticated empirical methods that isolate causal effects. This research shows that exposure to heat can lead to the delivery of pre-term and low birth weight infants, although there is mixed evidence on the magnitude and timing of the effect.

In this paper, I exploit similar causal inference empirical strategies but adopt a sociological perspective. I posit that the effects of extreme heat on birth outcomes matters differently across space and social group, due to the history of marginalization that has rendered certain groups and certain types of places more vulnerable to hazard exposure. I hypothesize a moderating role of both maternal socioeconomic status and local socioeconomic factors, namely local measures of poverty and segregation. I rely on restricted-access natality data from the National Center for Health Statistics on the population of singleton births in the United States from 1990 to 2010 (n=84 million), including information on maternal education status and county of residence. To these data, I will link county-level data from the 1990 and 2000 decennial census on poverty and segregation. I will also link county-daily data on the average and high temperatures from over 400,000 weather stations in the United States using the PRISM dataset. My difference-in-difference estimation strategy will leverage the ~84 million births to estimate the causal effect of exposure to extreme heat on preterm birth and low birth weight and interact this effect with maternal education and county characteristics.

Health behaviors**The Cross National Distribution of Rural Health Lifestyles and Health Effects** Tom VanHeuvelen* Jane VanHeuvelen

Recent scholarship has called attention to the importance of health behaviors for explaining health disparities between rural and urban residents. However, much of this research has been restricted to a single country context, typically the United States. In the current study, we expand upon existing work by incorporating a theory of health lifestyles to examine the extent to which rural dwelling status is associated with health lifestyles across a variety of country contexts. We then move on to assess health differences across urban and rural residents, and how variation in health lifestyle participation helps explain these health outcomes. To examine these issues, we use information from the 2011 International Social Survey Programme and the 2014 European Social Survey to examine patterns of health lifestyles and subsequent associations with self-rated health for rural and urban residents in representative samples from 34 countries.

Health behaviors**Perceptions and Behaviors toward Blood Donation in Kampala, Uganda** Charles Katulamu*

Charles Katulamu Caroline Murtagh

Severe malaria, hemorrhage during childbirth, sickle cell anemia, road accidents, and other medical conditions that necessitate blood transfusions affect thousands of Ugandans every year. Unfortunately, only 0.3-0.5% of the population donates blood, which is less than half of the proportion recommended by the World Health Organization to maintain a sufficient supply in blood banks. In January 2018, Uganda faced crisis level blood shortages, increasing preventable deaths in the country as patients lacked access to life-saving transfusions. To understand the factors which impact a person's decision to give blood, and to inform public health campaigns which seek to promote donation, we collaborated with Uganda Blood Transfusion Services (UBTS) and the Uganda Red Cross Society (URCS), the primary actors in blood donation in Uganda, to conduct 72 semi-structured interviews and 4 focus group discussions with blood donors, non-donors, plus UBTS and URCS staff members. Through qualitative data analysis using Dedoose software, we identified several key motivations which influence donation, including altruism, civic duty, and opportunities for disease testing, as well as significant deterrents, such as fear of needles and blood, fear of learning one's HIV status, and lack of awareness of blood donation drives. Results have been shared with blood collection agencies to improve public health campaigns that seek to dispel fears and promote motivations toward a donation to increase the blood supply and decrease preventable deaths in Uganda.

Place/Communities**Geographic patterns and socioeconomic differences in the nutritional quality of household food purchases in the United States, 2008-2018** Allison Lacko* Allison Lacko Paul Delamater Shu Wen Ng

Background: Although diet-related diseases exhibit geographic patterns in the US, whether dietary quality also follows these patterns is unknown. Moreover, national estimates of socioeconomic disparities in diet may obscure regional variation.

Purpose: Determine whether geographic patterns in the nutritional quality of household packaged food purchases (PFPs) exist at the national level and if they differ by socioeconomic status (SES).

Methods: We used 2008-2018 data on household PFPs from Nielsen's Homescan Panel (n=672,821 household-year observations). Survey-weighted means of nutritional outcomes were calculated for Nielsen markets, our spatial area of analysis (n=88). We determined overall clustering using Global Moran's I and identified clusters using Local Indicators of Spatial Association. Finally, we used random effects models to test whether significant differences exist between markets after controlling for household characteristics. We also conduct state level sensitivity analysis (n=49).

Results: Significant clustering was found for most nutritional outcomes. Clusters of unhealthy purchases were predominantly in the Southeast and Appalachia, while clusters of healthy purchases were mainly on the West Coast. These patterns were similar when limited to low SES households, but clustering often decreased for high SES households. However, no significant clusters of high (or low) disparities were found. In our regression analysis, nutritional outcomes differed between markets even after controlling for household characteristics.

Conclusions: Significant clusters should inform future research on location-specific marketing and policies that may be driving unhealthy purchases, particularly for low SES groups. Conversely, "bright spots" (market areas with relatively healthier purchasing patterns than their neighbors), such as Atlanta, may help researchers and advocates identify policies and programs that support healthier purchases and could be replicated elsewhere.

Race/Ethnicity**Racial differences in distance to obesity-related resources and behaviors among college graduates** Caryn Bell* Caryn Bell

Black women have the highest rates of obesity in the U.S., and race differences in obesity are largest among college-educated Blacks and Whites. Scholars have pointed to structural racism that restricts opportunities for college-educated Blacks as indicated by lower incomes and wealth compared to Whites. College-educated blacks tend to have less wealth and live in poorer neighborhoods that are more obesogenic. This study will compare the association between distance to grocery stores, fast food restaurants, parks and access to sidewalks with obesity-related behaviors among college-educated Blacks and Whites. Using data collected in August 2019 on 1,237 Blacks and Whites who completed 4-year college degrees, logistic regressions were used to assess the associations between self-assessed distance to resources with dietary behaviors, body mass index (BMI) and physical inactivity by race and sex. Black men had lower odds of daily fruit (log-odds=-1.53, s.e.=0.71) consumption if the closest grocery store was >20 minutes from their home. Black women (log-odds=1.49, s.e.=0.69) and men (log-odds=2.12, s.e.=0.79) had higher odds of fast food consumption if a grocery store was >20 minutes away. Among white women, farther distance between residence and fast food restaurants was associated with lower odds of fast food consumption (log-odds, s.e.=-1.92, s.e.=0.77). Farther distances to parks was associated with higher BMI among white women ($\beta=9.81$, s.e.=0.73), but lower BMI among white men ($\beta=-9.81$, s.e.=0.73). The results suggest that perceived distance and access to obesity-related resources have associations with dietary behaviors, BMI and physical activity, but there are racial and gender differences. To fully address obesity among Blacks, the contexts in which college-educated Blacks should be addressed with regard to obesity-related resources.

Health equity**An in-depth investigation of the long-term implementation and sustainability of evidence-based tobacco policies in New York City: key informant interview findings from a retrospective and cross-sectional mixed methods case study** Matthew Lee* Matthew Lee

Simona Kwon Rachel Shelton

Despite some evidence of the successful implementation and scale-up of effective tobacco control policies in New York City (NYC) and nationally, research suggests that large smoking-related health inequities persist across diverse populations and settings, particularly among Asian Americans. To date, most research on sustainability in implementation science has focused on evidence-based programs and guidelines, with very little focusing on the sustainability of evidence-based policies. This research addresses this gap by generating a deep description of the extent to which tobacco policies and resources in NYC have been adapted and sustained, and the role that local health and advocacy organizations play in this process.

Drawing from a larger mixed methods case study, we present findings from key informant interviews (n=21) conducted with leaders at local organizations to understand whether these policies and resources have reached and impacted Asian American communities over time. Interviews focused on providing an in-depth understanding of multi-level factors related to equitable implementation and sustainability on the ground at the community and organizational levels, including efforts to engage decisionmakers along each step of the policy cycle. All interviews were recorded, transcribed, and analyzed using ATLAS.ti. Key themes include: 1) Asian Americans are not considered in policymaking until after a policy has been adopted; 2) Asian American health and health inequities have not been policy priorities for recent administrations; and 3) Asian American health and advocacy organizations have changed strategies in recent efforts to build political power. Our findings support the need to extend current conversations in population health research, policy, and practice beyond just achieving health equity, towards sustaining it. We present potential strategies to inform the development of policies that focus on equitable implementation and sustainability outcomes.

Aging**Lifecourse Experiences of Traumatic Events and Cognitive Decline over 10 years in the Health and Retirement Study** Rebecca Stebbins* Rebecca Stebbins Y. Claire Yang Joanna Maselko Brenda Plassman Jess Edwards

The etiology of dementias and cognitive decline remain largely unknown. There is evidence that traumatic experiences, such as abuse or the death of a child, influence later-life cognitive function and decline through chronic activation of the HPA axis. However, few studies have investigated whether there are sensitive periods of exposure outside of childhood, or whether total accumulation of experiences is a more salient measure. Using data on 10,440 participants aged 65 and older from the Health and Retirement Study, we investigated the association between traumatic events and cognition from 2006 to 2016. Linear mixed effects models with a random intercept were used to examine the association between experience of eight specific events across the lifecourse and trajectories of Telephone Interview for Cognitive Status (TICS) score. Inverse probability weights accounted for loss-to-follow-up and confounding by sex, education, comorbidities, race/ethnicity, and age. Overall, experiencing 1, 2, or 3+ traumatic events at any time was associated with accelerated decline compared to experiencing no events (e.g. $\beta = -0.02$ (95%CI: -0.03, -0.01) TICS units/year for 1 event). Furthermore, experiencing any events after age 64 was associated with a larger acceleration of decline ($\beta = -0.09$ (95%CI: -0.11, -0.07)), while experiencing events in childhood, young adulthood, or middle age was not associated with accelerated decline. The accelerated decline among the exposed supports our hypothesis of the detrimental effects of chronic stress on cognition, and the stronger relation with later-life events adds evidence to the previous literature of the importance of exposure timing. The small magnitude of the cumulative and earlier-life experiences may be a result of survival bias in our dataset. It is possible that those who experienced the worst events and were most affected by those events earlier in life did not survive to join the study, and those who did survive may be more resilient.

Aging**8-YEAR DEPRESSIVE SYMPTOM TRAJECTORIES AND RISK OF INCIDENT STROKE: A 10-YEAR FOLLOW-UP OF THE HEALTH AND RETIREMENT STUDY (HRS)** Yenee Soh* Yenee Soh
Henning Tiemeier Lisa F. Berkman Laura D. Kubzansky Ichiro Kawachi**Background**

Evidence suggests a link between depressive symptoms and risk of subsequent stroke, however the majority of studies assess depressive symptoms at only one timepoint. The dynamic relationship between depressive symptom trajectories and risk of incident stroke is not well understood.

Methods

Data are from the Health and Retirement Study (HRS), an ongoing cohort of U.S. individuals aged >50 years. The sample included individuals who were stroke-free at study baseline, covering the 8-year period over which depressive symptoms were assessed (N=12,343). Depressive symptoms were measured at 4 consecutive timepoints biennially, using the 8-item Center for Epidemiologic Studies Depression scale (high defined as ≥ 3 symptoms; low < 3 symptoms). Individuals were assigned to pre-defined trajectories based on their scores at each timepoint (consistently low, decreasing, fluctuating, increasing and consistently high). Incident stroke was assessed over a subsequent 10-year period, based on self-reported doctors' diagnoses. Analyses were conducted with Cox proportional hazards models adjusted for demographics, health behaviors and health conditions.

Results

During follow-up, 1,419 incident strokes occurred. Individuals with consistently high depressive symptoms (fully adjusted HR: 1.21, 95% CI: 1.03-1.41), increasing symptoms (fully adjusted HR: 1.28, 95% CI: 1.06-1.56), and fluctuating symptoms (fully adjusted HR: 1.29, 95% CI: 1.06-1.58) all had higher hazards of stroke onset, compared with participants with consistently low symptoms. Individuals in the decreasing symptom trajectory group did not show increased stroke risk relative to those with consistently low symptoms (fully adjusted HR: 0.96, 95% CI: 0.78-1.20). No evidence for effect modification by sex or race was found.

Conclusions

Trajectories of depressive symptoms patterned by high levels of symptoms at multiple time points, were associated with increased stroke risk. However, a trajectory with depressive symptoms that started high but decreased over time was not associated with a higher risk of stroke. These findings suggest a single measure of high depressive symptoms may not adequately determine high risk of stroke. Given the remitting-relapsing nature of depressive symptoms, it is important to understand the relationship between depressive symptoms and stroke risk over time through repeated assessments.

Aging**Disease and Despair in the US and UK** Jennifer Dowd* Jennifer Dowd George Ploubidis
Benedetta Pongiglione

Background: Recently, alarm bells have sounded as mortality improvements in the UK and other parts of Europe appear to have stalled after decades of improvement, while life expectancy in the US declined for three consecutive years since 2014. High profile work by Case and Deaton highlighted the huge increase in “deaths of despair” among middle-aged whites in the U.S. as an important driver of rising overall mortality, while others have pointed to changes in metabolic and CVD risk across cohorts. Previous work by Banks, et al (2006) comparing representative samples aged 55-64 in the US and England from 2002 found that the late middle-aged US population was significantly less healthy than the equivalent British population for chronic conditions as well as biomarkers of risk such as C-Reactive Protein (CRP). In light of recent trends in stalling mortality for the UK, we compare the mental and physical health of late-middle aged respondents in the UK relative to the US, to test whether the UK is following the US in the health deterioration of those in middle ages, especially those with lower socioeconomic status. **Data and Measures:** We use harmonized data from the 2016 U.S. Health and Retirement Study and English Longitudinal Study of Ageing, focusing on respondents aged 50-75. Outcomes include: self-reported health measures (hypertension, diabetes, chronic lung disease, cancer, stroke, heart disease, CESD-score/depression, chronic pain), health behaviors (smoking, alcohol consumption), limitations to instrumental activities of daily living (IADLs) and activities of daily living (ADLs), biomarker measures (BMI, HbA1c, C-Reactive Protein, HDL cholesterol, blood pressure), and physical functioning (grip strength, walking speed). We compare outcomes across countries by age group, sex, and level of education. **Results:** Preliminary results find significantly higher health risk among US older middle-aged adults, particularly for obesity and diabetes, both self-reported and clinically measured. Overall prevalence of high depressive symptoms was similar in the UK vs US, with some evidence that those in lower education categories fare better in the UK vs US. **Conclusion:** U.S. patterns of health risk continue to differ from those of similarly aged respondents in England, with metabolic risk factors showing stronger differences than measures of psychological well-being.

Place/Communities**Defining Rurality: Rural Culture's Role in Rural Health** Evangeline Warren* Evangeline Warren

Health research has long focused on the relationship between rurality and health disparities. In existing research, measures of rurality often focus on geographic and demographic factors such as remoteness, land use, or population size. These measures, however, shift the focus away from cultural factors of rurality and mask the lived experience of rural communities. This project seeks to address this gap by assessing existing measures of rurality and their suitability for understanding health disparities. These existing measures include the USDA's Rural Urban Continuum Codes and Rural Urban Commuting Area Codes and the OMB's Metropolitan Statistical Areas and Urban Core measurements. Additionally, this project improves on these measures by developing a model of rurality that acknowledges the role of culture. By doing so, this new model is able to account for counties that are culturally rural but might be missed by existing measures. This model also provides a different perspective on why these health disparities might exist, particularly in places that are not as remote but still identify as culturally rural. This project uses existing, county level health data to supplement previous research into health disparities, the social determinants of health, and, more broadly, community health.

Health behaviors**Cancer perceptions and self-reported mammography use among rural and urban women**

Jennifer Bird* Jennifer Bird Amy Trentham-Dietz Ronald Gangnon

In 2015, 30% of women aged 50 to 74 years had not received a mammogram within the past 2 years, as recommended by the U.S. Preventive Services Task Force. Understanding how individual perceptions relate to a woman's decision to have a mammogram should inform the development of communications regarding breast cancer screening. Using data from the Health Information National Trends Surveys (HINTS), we examined associations between perceived cancer susceptibility, control, worry, preferred information source, and trust in sources with mammography behavior among rural and urban women.

Using a sample of 10,200 women aged 50-74 from HINTS 1, 2, 4 and 5 (from years 2003-2019), logistic regression models were used to estimate odds ratios (OR) for having a mammogram, adjusted for age, education, income, insurance status, marital status, race/ethnicity, rural status, and year. 81% of women reported having a mammogram within the prior 2 years. Women were more likely to have a mammogram within the past 2 years if they worried more about getting cancer (OR 1.2, 95% CI: 1.1-1.4), had more trust in their doctors (OR for decreasing trust 0.8, CI: 0.7-1.0), or had less trust in charities (OR for decreasing trust 1.2, CI: 1.0-1.5).

Women from rural areas (RUCC 4-9, 17% of women) were more likely to go to their doctor first for cancer information compared to other sources (65% rural, 59% urban, $p=0.05$). Planned analyses will examine interaction terms for rural status defined by multiple approaches (RUCC, RUCA).

Preliminary results suggest that cancer worry may be important to address in breast cancer screening communications, and that doctors are often main sources of cancer information. Women from rural regions may benefit from breast cancer communications with different content and dissemination than urban women.

Health systems**Addressing Social Determinants of Health in Rural America: Lessons Learned from Critical Access Hospitals** Tongtan Chantarat* Tongtan Chantarat Megan Lahr Mariah Quick Ira Moscovice

Background: Rural America has higher rates of poverty and unemployment, transportation issues, and less access to economic and social resources for well-being. Critical Access Hospitals (CAHs) provide health care services to two-third of rural residents, and thus are in a unique position to engage in efforts to address these social determinants of health (SDOH).

Methods: We examined the availability of SDOH services in 1342 CAHs that were operational in 2018. Data was from the 2018 American Hospital Association Annual Survey. Of particular focus to our project were services that improve access to employment, housing, food, transportation to health facilities, and violence prevention. Additionally, we interviewed 14 CAH staff to gain in-depth understanding of their SDOH programs.

Results: Only 1.2% of CAHs provided employment and housing support services. Smaller proportions of CAHs provided SDOH services compared to the US hospitals overall. One exception was meal delivery service: 12% of CAHs provided this service compared to only 7.3% among the US hospitals. The SDOH run by the CAHs varied in focus, scope, and participant groups. Common challenges in maintaining these programs included funding, staffing, and developing partnerships with other organizations. Success of the CAH programs was often tied to support from hospital leadership, the development of strong partnerships and community engagement, and a work culture that supported the goals of the SDOH programs.

Conclusions: CAHs currently provide limited services that target SDOH of their patients, despite the greater demands in this population. Funding, community partnership, and institutional culture and support contribute to the success of such programs. An increased focus on SDOH from the federal programs, such as the Flex Program, and incorporating addressing SDOH into the hospital's mission and workflow will likely increase the number of CAHs that provide such programs and aid their success.

Place/Communities**Local Public Health Engagement with Healthcare Providers for Coordinating Population Health Improvement Efforts: Differences between Rural and Urban Areas** Tami Swenson*

Tami Swenson

Rural local public health departments, compared to their urban area counterparts, are more likely to have executives without public health graduate program training, staff without job descriptions related to health promotion or epidemiology, and revenue sources more dependent on clinical payments from Medicaid, Medicare, private insurers, and patient out-of-pocket fees than state and local tax revenue. As a result, rural public health agencies are more likely to provide direct clinical care services than to engage in population health initiatives that address social determinants of health or healthcare disparities.

Both urban and rural local health departments have varying degrees of collaborating, cooperating, coordinating, or networking levels of partnerships with other organizations within their communities to address population health and health promotion activities. Central to these initiatives for community-wide health improvement is engagement with health providers. The importance of these partnerships between public health and nonprofit hospitals increased in 2013 with the requirement of hospitals to complete a community health needs assessment at least every 3 years and implement strategies to address the identified health needs. Thus, nationally, the trend has been for increased engagement between public health and healthcare providers for population health improvement, but the increase in the rate of rural hospital closures potentially attenuates this trend in rural areas.

Increase in rural hospital closures further constrains the resources available to address population health within rural communities and limits the type of healthcare providers and expertise available for local public health to engage with on health improvement initiatives. Gaps within the health infrastructure may result in communities lagging behind in community health and prevention activities that address “upstream” factors of population health, such as social determinants. The purpose of this paper is to examine what has been the effect of rural hospital closures on the collaboration arrangements and shared personnel agreements between local public health and healthcare providers within the area.

The National Association of County and City Health Officials Profiles Survey and local public health county jurisdiction files for 2010, 2013, and 2016 are used to examine local health department partnership and collaboration patterns with health care providers, such as hospitals, physician practices, community health centers, mental health/substance abuse providers, and health insurers. Explanatory measures from the Area Resource File are merged by county FIPS codes and aggregated into corresponding local health jurisdictions. Measures related to rural hospital closures are used from the University of North Carolina’s Flex Monitoring program public data files. Logistic regression models with fixed effects examine local public health partnership with health providers and associated explanatory measures of local health department and health provider characteristics and system-level changes, such as rural hospital closures.

The findings from this paper will inform efforts to improve the engagement of local public health and healthcare providers in population health initiatives in rural and urban areas. Potential gaps in rural public health that limit their capacity to address social determinants of health and health equity will be identified as areas to be addressed by state or federal policy.

Reproductive health

Perceived racism, postpartum depression symptoms, and care seeking among non-white individuals delivering in the US, 2015-2017 Andrew Bossick* Andrew Bossick Hannah Johnson Cathea Carey Lisa Callegari Jodie Katon

Background: Systemic and interpersonal racism outside the postpartum period is associated with poorer mental health including anxiety, stress, and depression. Less is known regarding the role of racism in postpartum depression etiology and mental health care seeking.

Aims: To determine if emotional upset from perceived racism (EUPR) was associated in the postpartum period with 1) a positive postpartum screen for depression, 2) asking for help for depression, and 3) depression diagnosis.

Methods: Analysis of Pregnancy Risk Assessment Monitoring System (PRAMS; survey years 2015-2017) data from 11 states and New York City. We included all respondents identifying as Black or other non-white race (BPOC). Logistic regression and recycled predictions for predicted probabilities were used to estimate whether EUPR during 12-months before giving birth was associated with self-reported 1) depression screening, defined as score ≥ 3 on the PRAMS PHQ-2 score, 2) Asking for help for depression, and 3) depression diagnosis, all postpartum. Models used survey design weights and adjusted for race, ethnicity, rurality, state, pre-pregnancy depression diagnosis.

Results: Out of 585,614 total BPOC respondents, 71,453 (12.2%) BPOC reported EUPR in the 12 months preceding birth. In adjusted models, EUPR was associated with a 12.2 percentage point (%p) higher probability of positive postpartum depression screening (95% confidence interval [CI]; 7.7,16.8). EUPR was also associated with a 5.9%p higher probability of asking for help for depression (95% CI: 0.3,11.5), and 7.6%p higher probability of depression diagnosis (95% CI: 3.1,12.1).

Conclusions: EUPR before delivery is associated with depression symptoms, care seeking, and diagnoses in the postpartum period, a critical and vulnerable time for new parents. Further studies are needed to identify whether integration of EUPR questions improve identification of at risk parents, diagnosis, and connection to mental health services.

Infants/children/youth

Police exposure as a determinant of structural racism: An exploration of the association between preterm birth in neighborhoods with high police exposure Rachel Hardeman* Rachel Hardeman Tongtan Bert Chantarat Morrison Luke Smith J'Mag Karbeah David Van Riper Dara Mendez

Background

In the United States, Black infants are twice as likely than their White counterparts to be born prematurely (before 37 weeks gestation)- an inequity that has existed for decades and persists despite greater access to prenatal care. A growing body of research suggests that structural racism is fundamental cause of persistent racial and ethnic inequity in preterm birth. Structural racism manifests in many and complex ways. One such manifestation is in policing where Black Americans are nearly three times more likely to be killed by police than their white counterparts. The impact of police violence on the mental health of the Black community has been elucidated. However, less is understood about how simply living in a community that experiences disproportionate police contact may impact birth outcomes such as preterm birth.

Purpose

Given the body of research that has documented the association between stress and PTB, we must consider if the stress of living in a community with high police contact contributes to PTB.

Methods

Data come from the administrative and medical records of the Fairview Health System, one of the largest maternity care providers in the Minneapolis-St. Paul area. The analytic sample included Black and White women who gave birth to live singletons from January 1st to December 31st, 2016 and lived in one of the 116 census tracts that make up the City of Minneapolis plus the 15 bordering census tracts. Neighborhood police exposure was measured at the census tract level with police incident data extracted from the City of Minneapolis Police Incident Report from 2012 to 2016. The five-year cumulative count of police incidents of all offense types was calculated for each census tract. This cumulative count ranged from 10 to more than 9000 incidents during these five years which likely reflects heterogeneity in the level of neighborhood vigilance or simply the fact that census tracts with a larger number of residents were more likely to have more police incidents. To account for the latter, we categorized each census tract into neighborhoods with high (fourth quartile) vs. low (first to third quartile) police exposure and included census tract population estimate as a covariate along with marital status, maternal age at the time of delivery, insurance status, diagnosis of diabetes (both pre-pregnancy and gestational) and hypertension (including preeclampsia). All population estimates were from the 2016 American Community Survey 5-year estimates. We mapped the five-year cumulative police incident count and the proportion of Black residents to visually assess possible relationships. We also test for the correlation of the incident count and the proportion of Black residents. To examine the association between the neighborhood police exposure and PTB, we constructed multivariate multi-level generalized linear regression models, adjusting for correlated data of women who lived in the same census tract, and estimated robust standard errors with the sandwich estimator. Finally, we conducted mediation analyses to assess whether hypertensive condition mediates the relationship between neighborhood police exposure and PTB.

Preliminary Results

When the measure of neighborhood police exposure, census tract population estimate, and the woman's racial group were regressed on PTB, we observed an 83% increase in the odds of PTB among those who resided in the neighborhood with high police exposure relative to those in the low exposure neighborhood (OR=1.83, CI: 1.01-3.32). When maternal and census tract median household income were controlled for, we observed a slightly larger magnitude of our association of interest (OR=1.99, CI: 1.00-3.96).

Conclusion

Our results overall suggest that high level of neighborhood police exposure increases the risk of PTB among women of all racial groups. However, since neighborhoods with greater proportion of Blacks residents are more likely to be policed (Figure 1), the higher incident of PTB among Black than White women may be attributed to racialized pattern of exposure rather than differential effect between the two groups.

Reproductive health**Prepregnancy cardiometabolic risk factors and subsequent adverse birth outcomes: a finite mixture modeling approach** Megan Barry Barry* Megan Barry Carolyn Halpern

Premature birth is the leading cause of infant death in the United States and is a critical cause of disease later in life. Birth weight is also an important marker of infant health and a predictor of infant survival and subsequent health. There are large racial disparities in preterm and low birthweight births, with both occurring much more frequently among black versus white and Latinx infants.

Poverty, violence, and other cumulative life stress diminish health. Non-white Americans have worse health than white Americans, which stems from many factors including disparities in socioeconomic status, education, access to healthcare, and discrimination.

Drawing from literature on the effects of racial disparities in cumulative life stress on women's health and reproduction, this study will use population-based data from the National Longitudinal Study of Adolescent to Adult Health to examine the associations between ten biomarkers of maternal prepregnancy health (e.g., blood pressure, cholesterol, etc.; measured when respondents are 24-32 years old) and subsequent infant preterm birth and birthweight (reported when respondents are 34-43 years old). I will compare findings from two approaches: regression models using individual biomarkers, treating indicators as equally important, and latent class analysis, a more holistic technique that groups women with similar patterns of biomarker values, thereby capturing interactions between biomarkers. This is the first study to use population-based data to investigate the link between biomarkers of maternal prepregnancy health during ages 24 to 32 and subsequent birth outcomes. Worsening cardiovascular health at younger ages now intersects with childbearing. By improving identification of women most at risk for preterm birth or of having a low birthweight infant, findings from this study could increase time available to intervene to improve the health of mother and child, or, at the very least, closely monitor them during pregnancy.

Reproductive health**State and Race/Ethnic Variation in Shifting Gestational Age Distributions** Andrea Tilstra*

Andrea Tilstra Ryan Masters Zachary Cramer

Gestational age distributions have dramatically shifted in the United States. Recent increases in obstetric interventions, especially those occurring between gestational weeks 37 and 39, are contributing to these shifts, which ultimately were shown to be the primary cause of birthweight reductions in the United States (Tilstra and Masters 2020). Although Tilstra and Masters note the lack of substantive race/ethnic differences, it did not explore these differences in detail, nor did it examine state-based variation in the patterns. In this paper, we use National Vital Statistics Systems restricted natality birth data to explore state and race/ethnic differences in gestational age distribution shifts among U.S. first-born singletons for the years 1990-2015. We focus on births to non-Hispanic white, non-Hispanic black and Latina mothers, and find similar patterns of change across the three race/ethnic groups, whereby the greatest increase in births occurred at gestational week 39 and the greatest decrease occurred in gestational weeks 42 and greater. The magnitude of change at week 39 was greatest for non-Hispanic white mothers, with a median state increase of 6%; while median state increases for non-Hispanic black and Latina mothers were each 3%. The states with the largest gestational age distribution shifts were Mississippi for both white and black mothers, and Oklahoma for Latina mothers. Despite these small differences in the magnitude of change across states and maternal race/ethnicity, we highlight that the patterns are largely consistent. This suggests that the shifts in gestational age distributions, which are likely brought on by increases in cesarean deliveries and induction of labor, are a U.S.-wide phenomenon.

Health care/services**Barriers to gynecologic healthcare among people incarcerated in a women's prison: A content analysis using electronic health record (EHR) data** Joelle Atere-Roberts* Joelle Atere-Roberts Taylor Hargrove Whitney Robinson

BACKGROUND: Incarcerated women represent a socioeconomically disadvantaged group who may bear a high burden of gynecologic conditions characterized by debilitating pain symptoms. Yet, their incarcerated status may present unique barriers to healthcare quality and equity. Given their marginalized and vulnerable status and the unique constraints on their access to healthcare, it is important to understand barriers to healthcare among incarcerated people seeking gynecologic care. We draw on intersectionality theory and qualitative methodologies to provide a better understanding of how the intersection oppressive systems impact their healthcare experience.

METHODS: We conducted a content analysis of electronic health records (EHRs). Querying EHRs from a large not-for-profit health system in the U.S. South, we identified 35 people aged 18-44 years who underwent hysterectomy for a benign gynecologic condition while also incarcerated in the state women's prison from 2014-2017. Data were drawn from a centralized data warehouse and abstracted from operative notes, pathology reports, and other EHR records. We analyzed the text using inductive coding and categorization.

RESULTS: Preliminary results revealed themes around a lack of privacy and access to information and barriers to receiving timely care. Several records reported the presence of correctional facility guards and shackling during visits. Other records noted patients' difficulty receiving medical records, delays in scheduling surgery, and difficulty coordinating their care. Some records noted patients' considerations to decline surgery due to conflicts with family visitation.

DISCUSSION: Incarcerated status is an additional social identity that impairs access to timely, confidential, and patient-centered gynecological care. Our preliminary findings illustrate the need to address barriers to receiving adequate and timely healthcare in this population. Policy efforts to improve overall health in society must also improve access to quality health care services for incarcerated people.

Health care/services**Reconsidering the Role of Herbal Medicine Specialists in STI Prevention and Treatment for Adolescents and Young People in Rakai, Uganda** Erin Moore* Erin Moore William Ddaaki Alyssa Basmajian Neema Nakyanjo Fred Nalugoda Jennifer S. Hirsch John S. Santelli

BACKGROUND: Previous research in East Africa indicates that the entanglement of biomedical and herbal health systems affects the uptake of both bio- and herbal medicines. How do herbal medicine providers who diagnose and treat STIs, including HIV, contribute to adolescents and young adults' (AYA's) sexual and reproductive health (SRH) care?

METHODS: This presentation will draw on data regarding AYA's access to HIV and STI treatment and prevention services collected as part of a broader study investigating how social determinants and social transitions to adulthood shape AYA HIV risk. Between July - September 2019, researchers from Rakai Health Sciences Program and Columbia University conducted 114 semi-structured interviews (42=community leaders, 6=HERBAL MEDICINE PROVIDERS, 12=drug-shop operators, 6=biomedical providers, 48=young men and women), 28 focus group discussions, 62 participant observations, and 6 community mappings documenting availability of SRH services in six urban, rural, and fishing communities in Rakai District, Uganda. Informants answered open-ended questions regarding SRH stigma, cost, reasons for choice of SRH providers, and AYA's use of medicines and herbs. Data were entered into NVivo 12 and analyzed thematically using grounded theory: patterns were derived inductively until saturation was reached.

RESULTS: Three primary themes emerged: 1) Stigma, higher cost, and mistrust of biomedical services drove AYA to visit herbal medicine providers in addition to biomedical clinics. 2) Herbal medicine providers provided treatment for sexual enhancement, reflecting a sex-positive approach to STI prevention. 3) Herbal medicine providers diagnosed and prescribed treatment for STIs and provided counseling for HIV, often referring clients to biomedical clinics.

CONCLUSIONS: Our ethnographic research indicates community acceptance of herbalists, especially when informants also report mistrust of biomedical clinic providers. Herbal medicine providers, with SRH sensitization, could encourage AYA to visit biomedical providers; health systems stakeholders should explore this and other possibilities for collaboration between biomedical care providers and herbalists in STI prevention and treatment for AYA.

Health care/services**Health Care Expenditures and Financial Burden Among Same-Sex Couples and Different-Sex Couples in the United States** Kyle Gavulic* Kyle Gavulic Gilbert Gonzales

Background: Health disparities for lesbian, gay, bisexual, and transgender (LGBT) Americans due to both non-economic and economic barriers in access to care are well-documented. Yet, little research has examined health care expenditures and financial burden associated with health care spending for LGBT families and individuals.

Methods: Data from the 2014-2017 Medical Expenditure Panel Survey was used to compare health care expenditures and financial burden (out-of-pocket costs divided by family income) between adults in same-sex couples (n=514) and adults in different-sex couples (n=41,043). Multivariable logistic regression models estimated marginal effects in each outcome while controlling for sociodemographic characteristics. We also leveraged a two-part, econometric model to estimate changes in the probability of spending for each health service category.

Results: Compared to men in different-sex couples (\$3,994), men in same-sex couples (\$6,896) were more likely to have greater healthcare expenditures, most notably on pharmaceuticals. Although a larger proportion of men in same-sex couples reported out-of-pocket costs exceeding \$500, they did not experience a significant difference in financial burden. Women in both same-sex and different-sex couples reported similar health care expenditures (\$5,886 and \$5,619, respectively). However, women in same-sex couples were significantly more likely to experience financial burden compared to women in different-sex couples (25.7% versus 11.3%).

Conclusions: We speculate that the disparities reported here are due to several issues, including elevated health needs for LGBT men, lower incomes for LGBT women, and differences in dependent coverage for health insurance. Our study should motivate health care reforms to ensure that non-traditional family structures are not at a disadvantage when seeking health care. Further research is needed to understand patterns of health expenditures for LGBT populations.

Health care/services**How the Community Health Center Program Addresses Poverty, Inequality, and Stigma**

Emily Parker* Emily Parker

Since the 1965 War on Poverty, the Community Health Center (CHC) program has been one of few federal institutions to defy social class divisions by providing health care to the poor, regardless of ability to pay. Despite providing primary care to more than 29 million Americans who are predominantly low-income, little is known about how people experience this institution. Drawing upon in-depth interviews with patients and providers, this case study of a small-town health center identifies *interpersonal*, *organizational*, and *institutional* mechanisms to explain how CHCs address health and poverty in economically distressed communities. Although many patients described positive, intimate provider relationships and high-quality care, frequent turnover in physicians produced distress and anxiety among patients who had grown to trust their doctors with caring for complex health conditions. Contrary to expectations, poor patients did not perceive the health center to be “second-tier” or a “place for the poor,” and few were aware of the government’s involvement, resulting in a pronounced lack of stigma among poor patients. Providers identified explicit strategies the organization used to modify their formerly stigmatized image as a government-funded, low-income clinic. The results advance our understanding of how poor patients experience this widespread safety net institution, and also have broader implications for research on how policies targeting the poor can avoid stigma.

Interventions/Programs**Understanding the utility of the Environmental Justice Collaborative-Solving Model in building capacity to address environmental justice concerns** Dana Williamson* Dana Williamson Sheryl Good Na'Taki Osborne Jelks Dayna Johnson Kelli Komro Michelle Kegler

Within the context of environmental justice, building capacity is fundamental for promoting solidarity in the development of local solutions to problems and enacting broader policy change. The Collaborative Problem-Solving (CPS) Model is one approach to building capacity. This model represents a seven-step systematic method for bringing together various stakeholder groups to develop solutions to address local environmental and public health issues. This model has previously been advantageous as a strategic approach to address environmental justice issues and for intervention development; however, the utility of the framework for building an environmental justice curriculum has not been assessed. The CPS framework is the backbone of the U.S. EPA's Environmental Justice (EJ) Academy curriculum that focuses on cultivating the skills needed for community advocates to identify environmental challenges and accomplish environmental improvement goals.

This study reports the preliminary findings from an evaluation of the U.S. EPA's EJ Academy. Mixed methods data were collected from EJ Academy Fellows (N=34) that took part in training based on the CPS Model. Academy Fellows were asked to develop a project that identified an environmental challenge in their respective communities and apply their new skills towards designing and implementing solutions to engage their community to overcome this challenge. Standard measures for assessing the CPS model have not been previously developed, thus survey items and interview questions were author-created to assess model application and utility. The preliminary findings of this study provide an overview of participant community characteristics, desired environmental change, implemented strategies, and applied CPS model elements. It is our intention that evaluation findings will contribute to an evidence base that supports the utility of an asset-based approach, like the CPS model, in promoting and advocating for environmental justice.

Methodological approaches to studying public health**The Public Health Potential of a Clinic-Based Community Resource Referral Intervention**

Stacy Lindau* Jennifer Makelarski Emily Abramsohn David G. Beiser Kelly Boyd Elbert S. Huang
Kelsey Paradise Elizabeth L. Tung

Value-based payment is driving health, human and social services organizations to adopt information technology and other interventions that promote self-care by connecting individuals to information about health-promoting resources in their communities. Using mixed methods, this study describes patterns of resource information sharing after patient and clinician exposure to CommunityRx, a clinic-based intervention that provided patients with personalized information (a printed "HealthRx") for a wide range of basic and health-promoting resources. Data were generated 2015-2017 from a Chicago-based trial of CommunityRx with middle age and older adult ambulatory patients. Patients who shared HealthRx information (49%) shared with an average of 3.1 (range 1-14) others. Sharers were similar sociodemographically to non-sharers, yet were in poorer physical health (mean PCS 37.6 vs 40.8, p-value = 0.05). Also, patients who reported going to a HealthRx resource were significantly more likely than others to share (79% versus 41%, $p \leq 0.05$). When asked to describe sharing behaviors, most patients kept their HealthRx for themselves but showed it to or copied it for others. Patients used the HealthRx to legitimize information about resources they shared with others and many emphasized to others that the information was disease-specific (e.g. diabetes, Alzheimer's) and "in the neighborhood." Clinicians estimated that 25% of their time (range 5-90%) was spent addressing patients' unmet social needs. More than a third of nurses (42%) and 57% of physicians who delivered the intervention to patients shared HealthRx information with peers. Substantial clinician time is spent addressing patients' nonmedical needs. Information from a low intensity community resource referral intervention likely spread well beyond the clinicians and patients engaged in the intervention. Return on investment in community resource referral interventions should consider the impact of information spread.

Place/Communities**The Socioeconomic and Health Impacts of Community Gardens** Bess Biscocho* Bess Biscocho
Erica Chow Kaylinda Tran Chaya Prasad

The purpose of this paper was to examine the distribution of community gardens in disadvantaged communities, and how socioeconomic status affects utilization of the gardens. A review of the literature revealed 20 papers regarding community gardens (CGs) with consideration of income and social status. Six (6) of these papers presented self-reported income levels of its participants, while the remaining studies did not directly assess the income levels of the individual gardeners. Utilization trends were identified between high- and low-income gardeners. Higher-income gardeners identified their primary incentives for gardening as socialization, personal education and greater control of the quality and safety of their food. Lower-income gardeners cited food security and financial limitations as their primary priority in gardening. Additionally, low socioeconomic status neighborhoods that develop thriving CGs often find that the CG elevates neighborhood pride and perception, creating a process of gentrification that drives away many low-income families that the CGs are meant to help. We summarize the recommendations of the authors for promoting CG access to low socioeconomic communities through policy, future research, and collaborative community efforts to minimize these disparities.

Health equity**Operationalizing Equity: How Are Communities Creating Conditions That Promote Better Health and Opportunity For All?** Olivia Little* Olivia Little

Within the population health field there is growing attention to the importance of promoting equity. However, what does action toward equity look like in communities? This study highlights concrete approaches and strategies that local places are using to build more vibrant, resilient, healthy communities where all residents can thrive. From 2013-2019, a total of 44 communities have been awarded the Robert Wood Johnson Foundation (RWJF) Culture of Health Prize, which honors and elevates U.S. communities working at the forefront of advancing health, opportunity, and equity for all. Winners exemplify community-wide, collaborative, multisector work across six selection criteria. Key elements include improving local conditions, pursuing long-term policy and systems changes, and fostering leadership of those most directly impacted by challenges. Based on qualitative coding of Prize application and site visit documents, this analysis examines how concepts of equity are embedded across the Prize selection criteria and how winning communities demonstrate these concepts in action. For instance, winning communities focus on changing the social and economic conditions that underpin health disparities - such as improving access to good jobs, quality education, and stable housing. They also work to shift policies, systems, institutions, and structures to target the root causes driving disproportionate outcomes. Examples include redesigning systems within agencies and schools to tackle challenging issues such as trauma and racism; aligning funding and resource distribution with equity goals; and revitalizing neighborhoods by supporting resident-led solutions. Themes and strategies are summarized in a shareable resource document and specific examples from diverse places across the country will be featured to help inform and inspire others looking to accelerate efforts to give everyone in their communities a fair and just opportunity for better health and well-being.

Health equity**Effects of citizenship status and perceived discrimination on health among second-generation immigrant young adults** Kazumi Tsuchiya* Kazumi Tsuchiya Amy Schulz Cleopatra Caldwell

Immigrants experience numerous challenges and stressors through the immigration process and after they settle into the U.S., with profound implications for their health. Previous literature has primarily focused on cultural explanations for immigrant health outcomes. Recently, researchers have begun to argue that prominent and prevalent structural (e.g., social, economic, policy factors) and psychosocial determinants (e.g., psychosocial stress, discrimination) may be potential drivers of the decline in immigrant health. Legal status stratification connected to a hierarchy of entitlements and privileges has been posited to contribute to immigrant health disparities. Therefore, legal status as a marker of marginalization may be contributing to adverse health outcomes among immigrants.

Citizenship status and racial discrimination represent forms of social exclusion among immigrants. Social exclusion has been linked to adverse health outcomes. Few studies have considered these social determinants of health simultaneously among immigrant young adults. We examine associations between these factors and self-rated health among second-generation immigrant young adults (22-26 years old) using the Children of Immigrants Longitudinal Study (N = 3,344). In initial logistic regression models, those experiencing greater racial discrimination and noncitizens young adults were less likely to report excellent health. After adjusting for socio-demographic controls, citizenship was no longer significant, while perceived racial discrimination remained significant. However, an interaction term for perceived discrimination and citizenship status was significant; noncitizen young adults who experienced racial discrimination were less likely to report excellent health. Results suggest that discrimination and citizenship status influential for health among immigrant young adults. Implications for immigrant health across the life course will be discussed.

Health equity**Using Archival Sources to Document the Historical Origins of Modern Geographic Health Inequities** Steven Woolf* Steven Woolf

Research documents large geographic health inequities in the United States. These exist not only across regions and states but also localities. Life expectancy at the census tract level varies by 15-25 years in most U.S. cities. Such gaps are attributable to adverse socioeconomic and environmental conditions—to which people of color and the poor are disproportionately exposed—but uncovering the history that produced these inequities is of mounting interest. Redlining (prejudicial home loan policies that began in the 1930s) is commonly cited but represents only one facet of a longer history. A series of policies that began earlier and diversified over decades produced today's maps of health, racial, and economic inequities. Retracing this history and how it informs future policies to achieve health equity requires a new form of interdisciplinary research that engages historians and other experts with access to archival sources (e.g., historical records, maps, news reports, and photography that document what transpired and where it occurred on today's maps). This session presents one such study, focused on explaining 15 disadvantaged communities of color with low life expectancy, which exist amid affluent Virginia suburbs outside of Washington, D.C. Aided by historians and other researchers, we accessed data and archival materials from local historical societies, museums, and Federal, state, and local agencies to trace the history of African Americans in these suburbs. We begin with the Freedmen's Village, built after the Civil War near Arlington Cemetery to accommodate emancipated slaves, and document decades of later efforts to displace blacks and create and preserve white suburban communities for Federal workers. Planning commissions took action, black homeowners were evicted, homes were raised for trolley lines (and later interstate highways), the state constitution was rewritten, poll taxes were levied, land was rezoned, restrictive covenants barred "undesirable" residents, and violence erupted. Our maps locate these acts and how they align with today's geographic inequities in health, racial-ethnic composition, socioeconomic status, and property values. Such interdisciplinary research is vital not only to expose the past and inform future policies to address health and economic inequities but also to shift cultural narratives that blame neighborhoods for their living conditions.

Health equity**Social Determinants of Actigraphy-Assessed Sleep Efficiency among Black and White College Students** Thomas Fuller-Rowell* Thomas Fuller-Rowell Olivia Nichols Lydia Homandberg

Differences in sleep health between Black and White adults in the United States are well documented. However, much less is known about racial disparities in sleep among college students or the social determinants of these disparities. In light of accumulating evidence that Black students do not reap the same health benefits from higher educational attainment as Whites, sleep disparities among college students are of high significance and may be directly relevant to broader policy effects to reduce racial/ethnic health disparities. Using actigraphy-based sleep assessments, this study examined differences in sleep efficiency between Black and White students and considered social and behavioral determinants of group differences. Data were from 263 first and second year college students (53% female; Mean age=19.2 years, $SD = 1.01$) attending a large, predominantly white university in the Southeastern United States. Approximately equal numbers of Black ($N = 137$) and White ($N = 126$) students were recruited. Sleep efficiency were assessed from 8 nights of wrist actigraphy using established methods. Measures of discrimination, socioeconomic disadvantage, and health behaviors were considered. Results indicate that sleep efficiency was .49 SD units lower among Black students, as compared to White students ($B = -3.827$, $SE = .939$, $p < .001$). Contrary to expectation, family and neighborhood socioeconomic status in childhood were not associated with sleep efficiency and did not explain the racial disparity. However, experiences of vicarious racism—defined as witnessing unfair treatment directed towards individuals of one's race/ethnicity—were an important predictor of sleep efficiency ($B = -1.152$, $SE = .43$, $p = .006$) and mediated 23% of the race difference (indirect effect: $B = -.931$, $SE = .44$, $p = .033$). These results persisted after adjustment for health behaviors, depression, and body mass index. Results extend prior research on race differences in sleep and suggest that policies and interventions to improve racial climate at predominantly white institutions are warranted.

Infants/children/youth**Parental Union Membership and the Risk of Low Birth Weight** Savannah Larimore* Savannah Larimore Jake Rosenfeld Hedwig Lee

Maternal and infant health outcomes like low birth weight (LBW; weight of less than 2500 grams or approximately 5.5 pounds) are sensitive indicators of the health and well-being of populations and provide critical insights into the ways that macro-level social processes become embodied, contributing to disparities in health and socioeconomic status that manifest over the life course. Here, we turn our attention upstream to investigate the association between parental union membership and the risk of infant LBW. While the association between unionization and occupational health is well-established, we know far less about the potential health benefits of union membership outside of decreased risks in work-related injury or illness. Previous research shows that unionized workers experience increased wages, better access to health insurance, and increased job stability, all of which correspond to socioeconomic resources and stress exposure, two primary risk factors for LBW. Using data from the 1968-2017 waves of Panel Study of Income Dynamics (PSID), we ask three related questions. First, what is the association between parental union membership and LBW? Second, is the association between parental union membership diffuse in a given household or is the association specific to maternal union membership? That is, does paternal union membership influence the risk of LBW independent of maternal union membership? Our second research question intends to address the mechanisms that produce an association between union membership and LBW. For example, paternal union membership is likely to increase access to health care, regardless of maternal union membership. However, the relationship between work-related stress exposures and LBW is likely to be specific to maternal union membership. Lastly, we ask if these associations vary by maternal and paternal race and ethnicity. Given historical changes in rates of both union membership and LBW, the results of this proposed analysis may have substantial policy implications. Union membership declined considerably during the latter half of the twentieth century and this shift corresponds to increasing wage inequality between Black and White women. During this same period, rates of LBW increased for both Black and White infants, maintaining a racial disparity of two Black LBW births for every White LBW birth. Given that infants who are born LBW are at an elevated risk for numerous health outcomes including infant mortality (i.e., deaths within the first year of life), limited cognitive ability, behavioral problems in early childhood, and the development of numerous physical conditions in adulthood, the rising rates of LBW among infants in general and Black infants in particular, constitutes a primary public health concern. As researchers and politicians continue to draw attention to inequalities in maternal and child health, investigations into structural changes in the economy that potentially influence these inequalities, such as decreases in union membership, are both timely and warranted.

Environmental factors**Association Between Neighborhood Greenness and Lower Risk of Hypertensive Disorders of Pregnancy** Max Jordan Nguemini Tiako* Max Jordan Nguemini Tiako Heather Burris Zachary Meisel Michal Elovitz Eugenia South

Hypertensive disorders of pregnancy (HDP), defined as gestational hypertension and/or preeclampsia, are a leading cause of maternal morbidity and mortality. Neighborhood greenness has been associated with lower risk of cardiovascular disease in the general population, but few studies have evaluated links between greenness and HDP. We evaluated associations between residential greenness and HDP in an urban setting.

This is a secondary analysis of a prospective cohort of women who birthed at a tertiary hospital in Philadelphia, PA from 2013 to 2017. Inclusion criteria were geocodable address within Philadelphia. Exclusion criteria were history of chronic hypertension, delivery before 20 weeks of gestation, and spontaneous preterm birth. Greenness data was acquired from Philadelphia's Parks & Recreation open access databases on tree canopy and parks. Greenness was measured by percent tree canopy coverage (TCC) within 100m and 500m radius buffers from participant's homes. Participants individual covariates included age, medical history (type II & gestational diabetes, parity, pre-pregnancy BMI), health insurance status and neighborhood deprivation index at the census tract-level. We used a multilevel mixed-effects logistic regression.

The analysis included 1224 women, 71.2% (872) were Black, 61.7% and 23% (281) had HDP. Compared to 30% or more TCC in 500m buffers, women with 10% or less TCC were nearly 3 times as likely to develop HDP (adjusted OR 2.73, 95% CI 1.21-6.8, $P=0.02$). Compared to 30% or more TCC in 100m buffers, women with 10% or less TCC were over twice as likely to develop HDP (aOR 2.09, 95% CI 1.08-4.05, $P = 0.03$), and those with 10% to 20% TCC were almost twice as likely to develop HDP (aOR 1.93, 95% CI 1.03-3.64, $P = 0.04$).

Greater residential greenness is associated with lower odds of HDP. Cities may consider increasing neighborhood greenness as a strategy to reduce the burden of maternal and long-term cardiovascular morbidity and mortality.

Structural factors**Race, employment/occupation and breastfeeding duration: Path analysis using the Panel Study on Income Dynamics** Margaret Whitley* Margaret Whitley Annie Ro

BACKGROUND Breastfeeding (BF) is associated with improved infant and maternal health. BF duration differs by race and is typically shorter for black mothers than white mothers. Few studies have explored to what degree race differences in postpartum employment and occupation explain the black-white disparity in BF.

METHODS Using data from the Panel Study on Income Dynamics from 634 infants who initiated BF, we assessed BF duration, and mother's race, employment status and occupation for the first 6 months postpartum. We created a path model where race (black vs white; other races vs white) was both directly related to BF duration, and indirectly related via mothers' occupation (professional/managerial or service/labor work, both compared to not working).

RESULTS Median BF duration was 6 months. The sample was 28% black, 59% white; 12% other races. Two thirds of mothers were employed, with 49% in professional and 51% in service/manual occupations.

In the path model, black mothers were more likely than white mothers to hold a service/labor job ($\gamma=0.16$, $p<0.01$), and less likely to hold a professional job ($\gamma=-0.15$; $p<0.01$). Mothers in a service/labor job breastfed a mean 1.34 fewer months ($p<0.01$), compared to not working. The indirect effect of black vs white race on BF duration via occupation was significant (-0.20 months, $p<0.05$), as was the direct effect (-1.52 months, $p<0.01$). Model fit indices suggested a weak fit (RMSEA = 0.50).

DISCUSSION These results suggest that a small but significant part of the black-white difference in BF duration is due to occupation - specifically, that black women are more likely than white women to do service/labor work, which is associated with shorter BF duration. Service/labor jobs may afford workers less control over their workday and less ability to continue BF. Future path analyses should classify occupations by demand/control score and control for other factors to improve model fit.

Infectious or Microbial**Malaria exposure and pregnancy outcomes in Sub-Saharan Africa** Audrey Dorelien* Audrey Dorélien Kathryn Grace Frank Davenport

Recent news about Zika virus exposure and its impact on fetal and infant health remind us of the important role that infectious diseases can have on pregnancy outcomes. In this paper, we use regression models with fixed effects to estimate the impact of exposure to malarious conditions during different months of gestation on birth weight in sub-Saharan Africa. We also look at the impact of exposure on prenatal survival. Despite the high burden of malaria, past research has been hindered by a lack of detailed incidence data. We circumvent this problem by using detailed reproductive histories from the Demographic and Health Surveys and combine that data with an index of exposure to malaria based on climatic variables.

Preliminary results show that the relationship between exposure to malarious conditions and birthweight (BW) depends on context, specifically malaria endemicity and immunity. For instance, each additional month of malarious exposure in endemic area is associated with 21.8 grams increase in BW; each additional month of malarious exposure in epidemic area is associated with -7.7 grams decrease in BW; while each additional month of malarious exposure in malaria free area is associated with -34.3 grams decrease in BW.

The findings of this paper will delineate some of the relationship among environmental conditions, malaria, and pregnancy outcomes and provide a framework for predicting potential future impacts of climate change on malarial outbreaks and pregnancy outcomes.

Policy**SNAP and work-related policies: an in-depth analysis of low-wage worker experiences**

Caitlin Caspi* Caitlin Caspi Molly De Marco Lisa Harnack Rebekah Pratt Samuel Myers

A groundswell of work-related policies, such as minimum wage polices and changes to Supplemental Nutrition Assistance Program (SNAP) work requirements, have the potential to affect low-wage workers. We conducted an in-depth analysis of the experience of low-wage workers with the aims of: (1) understanding experience of eligibility for SNAP benefits in two distinct policy contexts (Minneapolis, MN and Raleigh, NC), and (2) exploring how, if at all, these experiences affect worker behavior, including employment decisions, financial planning, and health. The study is embedded in an ongoing NIH-funded natural experiment conducted in these two cities, in which 974 low-wage workers are followed for 5 years to evaluate the health effects of an increase in the Minneapolis minimum wage, in contrast to a locality with no change in minimum wage (Raleigh). In study Year 2, we conducted 112 semi-structured interviews among those who were either: (a) currently participating in SNAP, or (b) had participated in SNAP a year earlier, but were not currently participating. A multistage qualitative analysis used social constructionist grounded theory method. Emerging themes include: (1) SNAP participants experience frequent changes to their benefits for many reasons, including but not limited to wage increases and changes in SNAP work requirements; (2) Raleigh participants mostly, but not entirely, perceived the removal of SNAP work-requirement waivers as detrimental to attaining financial stability; (3) Minneapolis participants were pragmatically hopefully about the effect of new minimum wage policy on their households and communities; and (4) the major driver of behaviors surrounding employment, financial planning, and health was prevailing poverty, rather than a single program or policy. Early results suggest differences in policy perspectives across the two contexts. Findings also stress the importance of studying policy interactions to understand behavioral effects of policies.

Health equity**Diversity Policies as Health Policies: A Case Study of Healthcare Workers and Hypertension**

Tongtan Chantarat* Tongtan Chantarat Eva Enns Rachel Hardeman

Occupational status of workers influences levels of exposure to risk factors of hypertension. Past research has shown that exposure to job strain, characterized as high psychosocial job demand and low control over work activities, increases the risk of hypertension among workers. Job strain is more prevalent in low-status occupations (i.e., low earning and education requirements) than in high-status occupations. Low-status workers also face a higher threat of unemployment than high-status workers, putting them at a greater risk of loss of income and insurance coverage. In the US labor market, a disproportionate number of low-status occupations are held by Black workers. This likely contribute to the persistent racial disparity in hypertension.

We assess the extent to which diversity policies (e.g., affirmative actions), which improve access to high-status occupations for Black workers, affect racial trends in hypertension using healthcare workers as a case study. We develop a microsimulation that tracks employment dynamics and hypertension risk factors (e.g., smoking, physical activity, levels of job strain) among a cohort of Black and White healthcare workers and use these factors to predict their hypertension status over an 8-year period. Hypertension trends observed in the status-quo scenario where assignment of occupational classes for workers is informed by race-specific probabilities from the American Community Survey are compared to those observed in the scenario where assigning occupations for Black and White healthcare workers using non-discriminatory probabilities. Results of this study will inform policymakers about the impacts of diversity policies on health outcomes and provide evidence to policymakers seeking to strengthen these policies.

Policy**Political Controversy, Partisanship, and Health Care for the Poor: A Comparative Analysis of U.S. Policies, 1965-1989** Emily Parker* Emily Parker

Since 1965, the U.S. government has attempted to provide health care to the poor through two major policy interventions: Medicaid, a state-based health insurance program for low-income families, and the Community Health Center (CHC) program, a network of primary care clinics in impoverished places. While Medicaid has become a highly contentious and partisan policy, the CHC program has avoided controversy and become politically popular across party lines. Bipartisan support has allowed health centers to expand to more than 10,000 communities and serve 29 million Americans annually. This article seeks to understand how this widespread program for the poor has evaded controversy and partisanship, unlike Medicaid. I conduct a parallel case study, employing process tracing techniques and drawing upon a variety of historical data sources, including primary documents collected from five presidential archives. I find that the underlying *logics, structures, and political support* of these policies interact in a way that can largely explain the divergent outcomes. The structure of the CHC program, where policymaking authority is concentrated within the federal government, has enabled a greater degree of flexibility than Medicaid's federalist design. In tandem, the articulation of overlapping economic and moral logics has allowed the CHC program to resonate across ideological divides, whereas the pervasive framing of Medicaid as inequitable has inhibited its political support. With dual flexibility in structure and ideology, the CHC program has been able to readily adapt to changes in political power and develop a robust, multi-level advocacy network able to overcome political obstacles. The results have broader implications for how scholars think about the political development of health policy, and challenge assumptions about what makes policies for the poor contentious.

Place/Communities**Ranking the rankings: What place do city health rankings have for informing researchers, stakeholders, and policymakers?** Ahuva Jacobowitz* Ahuva Jacobowitz Charles Branas

With the growth of data availability and focus on the health of urban populations, it comes as no surprise that the need for benchmarking metrics has grown. This is often found in the form of composite indicators which are created by combining selected sub-indicators into a single metric. These composite measures, including indices and rankings, are frequently used by stakeholders and policymakers to guide decision making. However, while these measures have a certain value, they can also lead to a false sense of understanding. To explore the benefits and risks of these measures, we set out to assess the universe of city health indices and rankings. In an effort to clarify the many, and, at times, conflicting city health metrics available online, we created a meta-index which ranks the 100 largest U.S. cities by harmonizing six other city health composite measures. These measures were identified through a systematic search to find data intended to capture and compare the health of cities in the U.S. We calculated an unweighted average across the six to establish an average meta-rank value for each city—all six city health rankings were thus given equal weight in their contribution to the meta-index. These values were then ordered and ranked from smallest to largest to establish our meta-index ranking. We calculated an upper and lower bound based on a 95% confidence interval to indicate the range of values compatible with our estimate as well as relative standard errors (RSE) to provide a measure of statistical confidence. Cities with all six rankings that are close to one another have lower RSEs; cities with fewer of the six rankings far apart from one another have higher RSEs. We conducted additional sensitivity analyses to explore the variation across measures as well as the drivers of a given city's rank. In reviewing the different drivers of this variation, we seek to highlight the caution needed in utilizing these measures for evidence based decision making.

Place/Communities**Protective Places: Neighborhood Quality and Preterm Birth among Black Women in Oakland, California (2007-2011)** Rachel Berkowitz* Rachel Berkowitz Mahasin Mujahid Michelle Pearl Victor Poon Carolina Reid Amani Allen

Preterm birth (PTB) (birth before 37-weeks) is a leading cause of infant mortality and risk factor for adverse health outcomes. In the United States, Non-Hispanic Black women (hereafter Black women) are at higher risk for PTB than other racial/ethnic groups. Considering place as a possible point of intervention for addressing the inequity, scholars have turned to examining how neighborhoods matters for PTB. Many studies of neighborhood quality and PTB examine multiple neighborhood characteristics in a single model to assess independent effects. This approach masks the complexity of neighborhoods (where multiple characteristics influence and are influenced by each other) and potentially misclassifies a place's overall health-promoting quality. Our study examined whether living in a higher quality neighborhood was associated with reduced risk of PTB among Black women in Oakland, California. The study population (N=5416, ages 13-47) drew from California birth records of all singleton births in 2007-2011 to Black women in Oakland. Neighborhood quality was defined by the California Healthy Places Index (HPI), the weighted sum of eight domains: economic, education, housing, healthcare, transportation, neighborhood, environment, and social. Log-linear generalized estimating equation models assessed relationships between the HPI and PTB, each domain and PTB, and all domains and PTB, adjusting for maternal age, parity, nativity, education, WIC, and public insurance. In fully adjusted models, living in a neighborhood with a one-unit higher HPI score (range: -1.03,1.34) was associated with 23% lower risk of PTB (aRR: 0.77, 95% CI: 0.63,0.94). Four domains (education, housing, healthcare, and transportation) were associated with lower risk of PTB smaller in magnitude than overall HPI (e.g. housing aRR: 0.81, 95% CI: 0.67,0.99; transportation aRR: 0.80, 95% CI: 0.67,0.95). Findings have implications for place-based research and interventions to address racial inequities in PTB.

Place/Communities**Using latent profile analysis to explore a nationally representative residential neighborhood typology** Jamaica Robinson* Jamaica Robinson Brian Saelens Stephen Mooney

Background: While health behaviors and outcomes show strong geographic patterning by residential neighborhood, variability in neighborhood measurement precludes between-study comparison. National neighborhood typologies could resolve this inconsistency, but prior efforts to create typologies have used census tracts, which capture radically different spatial scales across different regions of the United States (US). We used a latent profile analysis (LPA) of American Community Survey (ACS) data to develop a residential neighborhood typology representative of neighborhoods in the coterminous US.

Methods: We used the newly developed Automated Context Measurement Tool (ACMT) to estimate six neighborhood variables - number of housing units, % non-Hispanic White residents, % residents over age 65 years, % US-born residents, % residents with no more than a high school education, % residents who commute by driving - within 1000m of centroids of a random national sample of 2500 block groups. We fit 1- to 6-profile LPA models using these data.

Preliminary Results: Model fit statistics supported a 4- versus 3-profile neighborhood typology, with profiles that we roughly labeled as “rural (low density, education, and racial/ethnic diversity),” “suburban 1 (moderate density and education, and low racial/ethnic diversity),” “suburban 2 (moderate density, education, and racial/ethnic diversity),” and “urban (high density and racial/ethnic diversity, and low commuting by driving)”. The 5- and 6-profile solutions lacked coherent interpretability.

Conclusion: Preliminary findings indicate that it is possible to use publicly available data to create a neighborhood typology that would be generally representative at the national level. Next steps, to be completed by the time of the 2020 IAPHS conference, include the addition of National Land Cover Database (NLCD) elements into the LPA and to test whether health outcomes differ by derived neighborhood profiles.

Place/Communities**The effects of U.S. school racial segregation on long-term cardiovascular health** Min Hee Kim* Min Hee Kim Justin White M Maria Glymour Daniel Collin Kiarri Kershaw Rita Hamad

School racial segregation remains a key feature of the US education system that may shape population health. In 1954, the Supreme Court ruling *Brown v. Board of Education* decision outlawed school racial segregation in public schools. Since 1991, however, local court decisions allowed school districts to be released from court-ordered desegregation, resulting in “resegregation” in hundreds of school districts across the US. Despite this troubling trend, few studies have examined the health effects of this resegregation. Leveraging timing in dismissal from the court order as a natural experiment, we estimated the long-term effects of school segregation on cardiovascular risk factors among black and white students. The sample was drawn from the Panel Study of Income Dynamics (waves 1991-2017), and data on childhood residence was geocoded and linked to school district measures of racial segregation from the Stanford Education Data Archive (1991-2013). We carried out an instrumental variables analysis using multivariable regression models, in which the presence of a court decision dismissing a school district from court-ordered desegregation served as the instrument for the primary exposure, school segregation as measured by the black:white isolation index. For black students, school segregation was associated with poorer mental health and reduced physical activity in later life, but not with self-reported cardiovascular disease. For whites, school segregation was associated with increased smoking, higher body mass index, and lower risk of stroke. These results suggest school segregation impacts later life cardiovascular health, perhaps through the accumulation of chronic stress and riskier health behaviors. The effects are non-linear for certain outcomes and different for blacks and whites.

Social/relational factors**Cumulative Stress across the lifecourse and adult mental and physical health outcomes**

Shakira Suglia* Shakira Suglia Rachel Shelton Brian Batayeh Pam Factor-Litvak Piera M Cirillo
Barbara Cohn Bruce Link

Significance: Economic, social and traumatic stressful experiences have been shown to impact mental and physical health. Characterizing stressors across time and encompassing multiple domains has proven difficult to do in epidemiological studies. Based on the accumulation of risk theory, we propose a characterization of stress across the lifecourse and across different dimensions (economic, social, traumatic) and examine its relation to mental and physical health in adulthood within the Child Health and Development Studies (CHDS) Disparities (DISPAR) Study.

Methods: At multiple timepoints (birth, age 9, 15 and 50) economic (income, education, financial strain), social (parent-child relations, caretaker responsibilities) and traumatic (death of a sibling or child, violence exposure) stressors were assessed. Stress dimensions were each composed of 8 components distributed across the life course, a mean standardized score for each dimension was calculated. At age 50 participants completed the Kessler psychological distress scale, self-reported health status, and participated in an in-home physical health assessment to determine allostatic load (AL).

Results. Adjusting for race and sex, higher scores on each of the three stress domains were statistically significantly associated with self-rated health, mental distress and AL. For example, higher trauma scores were associated with poor self-rated health (B 0.23 95%CI 0.15,0.30), higher distress (B 0.11 95% CI 0.05,0.17) and higher AL (B 0.57 95%CI 0.30, 0.85). Interactions by race were noted; increases in trauma and economic domains were associated with higher AL among whites but not blacks.

Conclusion. Cumulative stress across the lifecourse has been proposed as affecting multiple health outcomes as well as increasing wear and tear on the body. We empirically test this hypothesis and note that across multiple dimensions, higher cumulative stress across the lifecourse is associated with multiple dimensions of health.

Socioeconomic status**Epigenetic Pathways Linking Prenatal Socioeconomic Disadvantage to Offspring Health: An Examination Among Mothers and Babies in the Born in Bradford Cohort** Amanda M.

Simanek* Amanda Simanek Regina Manansala Jennifer Woo Kimber Meyer Helen Meier Belinda Needham Paul L. Auer

Objective: Prenatal socioeconomic disadvantage (SD) has been linked to DNA methylation in adulthood, even after adjusting for later life health behaviors and socioeconomic factors, suggesting a role for epigenetic programming of offspring health. Questions remain, however, as to whether such alterations are present *at birth* in those born into low socioeconomic environments. **Methods:** We carried out an epigenome-wide analysis of the association between several measures of individual- and area-level SD (i.e., maternal education level, employment status, receipt of means-tested benefits, home ownership, and index of multiple deprivation (IMD)) assessed in mothers of White British (N=455) and Pakistani (N=493) origin between 26-28 weeks gestation and DNA methylation assessed via the Infinium EpicBeadChip array in cord blood collected from newborns in the Born in Bradford cohort. Models were first adjusted for mother's age, ethnicity, and education level and then further adjusted for maternal health behaviors (i.e., smoking, alcohol use, and body mass index) as well as neonatal factors (i.e., gestational age and birthweight) and cell type distribution. Models were also stratified by mothers ethnicity and corrected for false discovery rate. **Results:** Among the total sample, renting versus owning a home was associated with DNAm of one CpG site and living in an area with an IMD score in the lowest quintile vs. 4th or 5th quintile was associated with DNAm of 9 CpG sites. Among mothers of White British origin (N=455), never being employed vs. employed was associated with 3 CpG sites and IMD score in the 4th or 5th quintile versus upper quintile was associated with DNAm of 3 CpG sites. Among mothers of Pakistani origin (N=493), only living in an area with an IMD score in the lowest quintile vs. all other quintiles was associated with DNAm of one CpG site. While some associations were attenuated after further adjustment, all remained statistically significant. Potential functional significance of DNAm for offspring health will be discussed. **Conclusions:** Our findings suggest that prenatal SD at both the individual- and area-level may play a role in shaping alterations to the neonatal epigenome, but that these associations vary across ethnic group and are mediated to a different extent by maternal health behaviors and neonatal factors.

Life-course/developmental**Double Jeopardy: The Cumulative Toll of Objective and Subjective Weight Status on Health from Early Life to Adulthood** Iliya Gutin* Iliya Gutin

There is an overwhelming body of research that speaks to the negative health consequences associated with obesity in early life and adulthood; more recent studies further emphasize the especially harmful nature of long-term obesity, as a growing proportion of the U.S. population spends the majority of their lives having excess body weight and potentially impaired physiological health. However, there is increasing recognition that the deeply stigmatizing aspects of being “overweight” may be a unique driving force underlying poor mental and physical health among many children, adolescents and adults. The extent to which adults negatively perceive themselves and their bodies in relation to their weight (i.e., subjective weight status) – in a society where so many are devalued and derogated on the basis of their physical appearance – can be psychologically damaging and stressful, leading not only to poor mental health, but also many of the harmful physical risk factors that we typically associate with objective weight. Yet, our knowledge of these interlinked mechanisms by which weight affects health is limited; to date, no studies have examined the longitudinal and intersecting relationship between objective weight, subjective weight, and different dimensions of health from early life to adulthood. Using five waves of the National Longitudinal Study of Adult to Adolescent Health, this study uses structural equation modeling to analyze the cumulative effect of both measured and perceived weight status on health, while allowing for cross-lagged associations between the two. By examining a mix of different health outcomes – both physical and mental – this study will be the first to compare the relative impact of objective and subjective weight on health throughout the life course. Critically, these analyses will help underscore the consequences of weight-related stigma as source of poor health that is almost entirely attributable to social norms and ideals about what constitutes a “health,” “normal,” and “good” body.

Life-course/developmental**The Effects of Income Dynamics across Childhood on Later-Life Health, Cognition, and Mortality** Jessie Himmelstern* Jessie Himmelstern John Robert Warren Liying Luo

Significance: The economic circumstances of families may have long-lasting consequences for children's health and well-being later in life. Most prior research has only considered the impact of family economic circumstances at a single point in children's early lives. Other research has focused on income dynamics across childhood but has not investigated their association with later-life health.

Aim: We assess the consequences of childhood family income (a) at birth and (b) in later adolescence for later life health, cognition, and longevity. We also consider the impact of income dynamics (that is, increases or decreases across childhood) on those outcomes.

Data: We use data from the Wisconsin Longitudinal Study (WLS) linked to the 1940 US Census. The WLS has followed 10,317 members of the Wisconsin high school class of 1957 through 2011. Most respondents were born in 1939, just before the 1940 enumeration. We focus on parental income in 1940 (age 1) and 1957 (age 18) to understand the importance of resources throughout the life course. Our outcomes include mortality and cognitive function, diseases, and physical function in 2011 (age 72).

Method: We use a newly developed multivariate regression model for estimating the effects of (1) family income at birth, (2) family income in late adolescence, and (3) changes in family income across childhood. Using this method permits us to identify the importance of the origin status (1940), destination status (1957), and the changes in socioeconomic status within the same model.

Preliminary Results: The absolute and relative importance of family income at birth and in late adolescence vary across outcomes. We find evidence that upward changes in family income across childhood matters for health and cognition net of family income at birth and in late adolescence. This work has theoretical implications for understanding the pathways through which early life economic circumstances shape later-life health and well-being.

Race/Ethnicity**A cross-disciplinary, systematic review of race and ethnicity in U.S. population health**

research Rae Anne Martinez* Rae Anne Martinez Nafeesa Andrabi Andrea N. Goodwin Rachel E. Wilbur Natalie R. Smith Paul N. Zivich Allison E. Aiello Robert A. Hummer

Race and ethnicity are recognized as key constructs in understanding social stratification and health in the US, however, the roles of race and ethnicity in population health research continue to appear ritualistic and absent of careful consideration. Moreover, population health sub-disciplines likely differ in their common practices concerning race and ethnicity. Given the increased need for interdisciplinary collaboration to address robust racial and ethnic health disparities in population morbidity and mortality, it is imperative to understand these differences. This study aims to evaluate the conceptualization, operationalization, and utilization of race and ethnicity over time in leading journals which capture disciplinary trends from three large population health fields: medicine, epidemiology, and medical sociology. We will systematically review randomly selected articles from prominent field-specific journals selected based on impact factor and reputation. This includes *Ann Intern Med*, *JAMA*, *Lancet*, *NEJM*, *BMJ* for medicine; *Am J Epidemiol*, *Ann Epidemiol*, *Epidemiology*, *J Clin Epidemiol*, *J Epidemiol Community Health* for epidemiology; *J Health Soc Behav*, *Soc Sci Med*, and *Sociol Health Illn* for medical sociology. From these, all original human-subjects research conducted in the US is eligible for review. Articles will be randomly selected from five, five-year periods spanning 1995-2019. Information on theoretical justification (conceptualization), measurement/coding (operationalization), and use in analysis (utilization) will be extracted. Data collection is complete for the medical literature and is ongoing for epidemiology and medical sociology. In order to promote critical interdisciplinary population health collaboration and improve health scholarship, it is of the utmost importance to understand field-specific norms concerning the conceptualization, measurement, and the use of race and ethnicity.

Social/relational factors

Linked lives and health: registry-based study of how parents' health shocks change healthcare use of adult children Lucie Kalousova* Lucie Kalousova Maciej Danko Henrik Brønnum-Hansen Anna Oksuzyan

Past literature has shown that a health shock in one member of a married couple is likely to lead to changes in the lifestyle and health of the other. Based on the linked lives theoretical perspective, we anticipate that such changes may extend further beyond the dyad: to children. We advance the literature by leveraging the unique registry-linked survey data REGLINK-SHAREDK collected in Denmark that includes administrative data on healthcare use of adult children. We ask the following questions. Is a parental health shock associated with changes in non-urgent health care use among their adult children? Do the changes in healthcare use of adult children following a parent's health shock vary by the shock's severity? Is the association between parental health shock and adult child's health shock modified by geographic and/or emotional closeness?

Our preliminary results show that adult children do not change their health care seeking behavior after their parent falls sick. The results to some extent contradict the medical sociology hypothesis that one family member's health will indirectly impact the health behaviors of other family members. Before the IAPHS meeting, we plan to examine whether more severe health shocks have more serious impact on health care seeking behaviors within the family. The results of this study will contribute to the theoretical advancement of the literature on the life course, social demography, and medical sociology. Furthermore, they will be a useful contribution to the policy literature on individual fluctuations in health care use over the life course, as they will advance us toward understanding whether and how a shock in the health of a close family member predicts changes in health care use of other, seemingly unaffected individuals.

Place/Communities**Living Alone in Rural Areas: Implications for Health and Wellbeing** Carrie Henning-Smith*

Carrie Henning-Smith

There has been a steady increase in the prevalence of living alone across the U.S. over the past century, with more people living alone today than ever before. Living alone is a primary risk factor for social isolation and has been associated with poorer health, especially for people who do not live alone by choice or who do not have adequate support and resources. However, very little is known about the prevalence and correlates of living alone for rural residents and implications that living alone has for the health and wellbeing of people in rural areas.

This study uses a mixed-methods approach to learn more about rural residents living alone, asking the following questions: 1.) How does the rate of living alone vary by rural and urban location; 2.) Are rural residents living alone more or less healthy than their urban counterparts; 3.) What are unique challenges and opportunities related to serving older rural residents with physical disabilities living alone? For the first two questions, we use data from the American Community Survey. For the second, we use a series of interviews with rural home-delivered meal providers.

More than one-quarter of all households across the U.S. consist of individuals living alone, constituting nearly one-tenth of all Americans. Preliminary results from this study indicate that living alone is more common in rural vs. urban counties and that rural residents living alone have higher rates of disability and poorer overall health than their urban counterparts. These findings hold up even after adjusting for age and gender. Unique challenges and opportunities to serving older rural residents living alone include transportation, geographic distances, efficiencies of scale, housing quality, and safety concerns related to isolation. These findings can inform policies and programs to address the health of the growing population of people living alone, as well as to shed light on a critical risk factor for social isolation and loneliness.

Social/relational factors**Social capital and woman's attitude toward intimate partner violence: Evaluation of norm-shifting intervention in Mozambique** Halkeno Tura* Halkeno Tura Armando Licoze

Norms, rules, or expectations of behavior within a cultural or social group can encourage violence against women. Interventions that increase women's level of social capital, such as Village Savings and Loan (VSL) group, can challenge the social norms supportive of violence in an intimate relationship.

We examined the association between VSL group membership and attitude toward IPV and whether this relationship is mediated by social capital. Logistic regression analysis was employed using Stata 16.0 to study the mechanisms through which VSL groups are associated with attitude justifying IPV.

After controlling for clustering and confounding factors, we found that social capital mediated the association between VSL group membership and attitude justifying IPV. Specifically, attitude toward IPV is mediated by financial support, social network support, and emotional support from the group.

This study suggests that the association between VSL groups and attitudes toward IPV operates through social capital in the study area. While our study shows a significant association between social capital and attitude toward IPV, further research is needed to understand why this relationship is true within patriarchal societies where the prevailing attitude condones acts of IPV.

Race/Ethnicity**Anxiety and Arousal: Individual Differences in Sympathetic Arousal to Racial Discrimination among College Students on a Predominately White Campus** Elizabeth Jelsma*
Elizabeth Jelsma Bridget Goosby Jacob Cheadle

Race-related stress contributes to many of the population-level health disparities observed between racial minorities and Whites in the United States, specifically by activating biological stress responses which, when chronic, can accelerate disease and aging processes. Highly anxious people tend to show exaggerated sympathetic arousal to general stress, which leads to negative downstream health and aging consequences. However, considering individual-level psychological differences factors, such as trait anxiety, has largely been neglected among research linking *race-related* stress (interpersonal discrimination, vicarious racism, and rumination on racial injustices) and physiology for racial and ethnic minorities in the United States. Given that experiencing daily discrimination on predominately White college campuses is common among racial and ethnic minority students and adversely affects mental and physical health, the current study investigates one biopsychosocial pathway through which trait anxiety may moderate sympathetic arousal in response to experiencing discrimination. Using intensive daily diaries and dynamic real-time assessment of sympathetic nervous system arousal among racial and ethnic minority college students ($N = 120$; 80% African American, first-generation Black, or Continental African; 20% Latinx), preliminary results show individuals with higher trait anxiety exhibit increased sympathetic nervous system arousal (measured via electrodermal activity) in response to interpersonal racial discrimination ($b = .19, p < .001$) and rumination ($b = .12, p < .01$) compared with individuals lower on trait anxiety. These differences persist across four measures of electrodermal activity (EDA). No significant moderation emerged for vicarious racism. Biopsychosocial mechanisms of cognitive appraisal and race-related stress and the potential implications for population-level health outcomes for racial and ethnic minorities will be discussed.

Race/Ethnicity**Major and Everyday Discrimination and Self-Rated Health Across Asian and Asian American Subgroups** Harvey Nicholson* Harvey Nicholson

Asians and Asian Americans experience high levels of discrimination on both interpersonal and structural levels as a racial/ethnic minority group. The discrimination faced by Asians is based on a variety of factors but is most commonly tied to their “perceived foreignness” and “threat” and numerous false stereotypes such as those tied to the “model minority” myth. Previous research has shown that everyday forms of discrimination (e.g. subtler forms of mistreatment and hassles) contribute to poorer health outcomes among this population. Studies have found that experiencing these daily stressors leads to significant wear and tear on the body over time, which, in turn, increases the risk of health complications. Moreover, these experiences increase healthcare avoidance, especially among the Asian population. Recent research has also revealed that experiences with major forms of discrimination (e.g. being denied a job, being mistreated by police, being denied the ability to move into a neighborhood/community) may be more toxic to the health of Asians in the United States (Nicholson, 2019). This may be as major forms of discrimination pose significant barriers to civil rights and socioeconomic advancement, two highly important social determinants of health. Nevertheless, the adverse effects of discrimination may indeed operate differently for certain Asian subgroups. Examining whether particular Asian subgroups are more vulnerable to everyday and major forms of discrimination is crucial to devise and inform policies necessary to reduce the negative health consequences of these experiences. Building on prior research in the area of discrimination and health among Asians in the United States and to further explore the health impact of major and everyday discrimination across Asian subgroups, this study examines the associations between major and everyday discrimination and self-rated health among a nationally representative sample of Asians from three geographic subgroups: Southeast Asian (n=1,302), East Asian (n=1,191), and South Asian (n=886). Data from the 2016 National Asian American Survey, the largest and most ethnically diverse national sample of this racial/ethnic group, was used for this research. A total of 10 ethnic subgroups were included in the sample, including the following: Vietnamese, Chinese, Korean, Cambodian, Indian, Bangladeshi, Hmong, Pakistani, Japanese, and Filipino. Ethnic subgroups were subsequently grouped into the aforementioned geographic subgroups. Three weighted logistic regression models stratified by geographic subgroup testing the concurrent and simultaneous associations between major discrimination (Model 1), everyday discrimination (Model 2), and both forms of discrimination adjusting for acculturation and demographic indicators were conducted. Preliminary analyses showed that South Asians reported the highest levels of major (m=0.95) and everyday discrimination (m=2.93), which were based on scales ranging from 0-6 to 0-10, respectively. Model 3 of the logistic regression tests found that everyday discrimination experiences were associated with higher odds of poor/fair self-rated health among only South Asians (OR=1.16, 95% CI 1.00-1.36). In contrast, Model 3 of the logistic regression tests showed that major discrimination experiences were associated with higher odds poor/fair self-rated health among only Southeast Asians (OR=1.45, 95% CI 1.15-1.83) and East Asians (OR=1.28, 95% CI 1.05-1.56). Overall, these findings demonstrate the need to further examine the complexities of the Asian experience in the United States concerning how discriminatory experiences negatively impact health outcomes. These results also highlight the need for more structural and interpersonal policies and advocacy efforts to reduce discrimination faced by Asians and minimize the health-related harms they often produce.

Nicholson, H. L. (2019). Associations Between Major and Everyday Discrimination and Self-Rated Health Among US Asians and Asian Americans. *Journal of racial and ethnic health disparities*, 1-7.

Mental health/function**Racial identity exploration, political activism, and mental health among Black and Latinx college students** Channing Mathews* Amel Omari Myles Durkee

Significance. Several dimensions of racial identity and critical consciousness, respectively, have been linked to mental health outcomes among children and adolescents (Godfrey, Burson, Yanisch, Hughes, & Way, 2019; Rivas-Drake et al., 2014). Though these concepts have often been studied separately, theoretical work (Mathews et al., 2019) has proposed that racial identity and critical consciousness may be interrelated in the experience of minority youth. Developing a better understanding of the relationship between critical consciousness and racial identity can help guide interventions supporting the mental wellness of youth of color who are managing hostile environments in pursuit of both social justice and success. Thus, integrating the two conceptual frameworks may be beneficial to understanding protective factors and positive development of youth navigating an oppressive sociopolitical context such as the contemporary United States.

Research question. Recently, Hope and colleagues (2018) used the Minority College Cohort Study (MCCS) to investigate how political activism, an operationalization of one dimension of critical consciousness, buffers the impact of racial microaggressions on mental health outcomes among Black and Latinx youth. We propose extending their work to ask: To what extent are the interactions between political activism, racial microaggressions, and mental health further moderated by racial identity exploration for Black and Latinx college students?

Data & methods. We will use multiple regression with the MCCS data to test whether a three-way interaction between racial identity exploration, political activism, and racial microaggressions significantly predicts mental health outcomes for Black and Latinx youth. For Latinx youth, we hypothesize that higher levels of racial identity exploration will bolster the positive buffering effect of political activism on the relationship between microaggressions and mental health. For Black youth, we hypothesize that higher levels of racial identity exploration will buffer the exacerbating effect of political activism on the relationship between racial microaggressions and poorer mental health outcomes.

Mental health/function

Resilience is Associated with Reduced Depression and Anxiety among Latina Immigrant Women Stephanie Tornberg-Belanger* Stephanie Tornberg-Belanger Daron Ryan Georgina Perez Serena Mauer Anh Tran Deepa Rao KC Gary Chan India Ornelas

Latina immigrant women are at increased risk of adverse mental health outcomes due to economic, political, cultural and social stressors related to migration and resettlement. Resilience, as the ability to recover from challenging experiences, is associated with better mental health. However, few studies have described the relationship between feeling the ability to overcome challenges, determination, pride, and other indicators of resilience with depression and anxiety symptoms among Latina immigrant women. **Methods:** Our study used data collected as part of the Amigas Latinas Motivando el Alma (ALMA) study, which is evaluating a community-based intervention to reduce stress, depression, and anxiety symptoms among Latina immigrant women (N = 109). Interviewers administer surveys that assess demographics, resilience, depression symptoms, and anxiety symptoms. We used independent sample t-tests to assess the mean resilience scores with descriptive statistics, depression, and anxiety symptoms in the sample. **Results:** Participants had a mean age of 41 years, 85% were from Mexico, and of 29% were United States Citizens or had another legal status permitting their stay. Most participants (80%) reported moderate to high resilience scores. Women over 40 and those not living with a partner had a higher mean resilience score compared to their counterparts, while no difference was seen across other demographic characteristics. Women with depression had a lower mean resilience score (136.5, 95% CI 127.4 - 145.7) versus those without depression (149.5, 95% CI 145.3 - 153.7). Those with anxiety also had a lower mean resilience score (135.5, 95% CI 126.9-144.0) than those without anxiety symptoms (150.9 95% CI 147.0-154.9). **Discussion:** Our findings demonstrate Latina immigrants with depression and anxiety symptoms have lower levels of resilience. Future research should further examine patterns of resilience and mental health in larger samples of Latinas across immigration status.

Life-course/developmental**Do Sleep Duration Trajectories from Adolescence to Mid-Adulthood Differ by Socioeconomic Background and Race?** Jess Meyer* Jess Meyer Kathleen Mullan Harris Sarah James Lauren Gaydosh

How long we sleep has important health consequences, with insufficient sleep predicting outcomes such as cardiovascular disease and mortality. Prior research shows that sleep duration changes from adolescence through early adulthood, but much remains to be understood regarding how sleep duration changes as we age—and whether these changes are uniform across the population. Evidence suggests that sleep duration is patterned by socioeconomic status and race; however, relatively little research has examined social patterning of sleep duration trajectories as we age. The present study investigates how sleep duration trajectories from adolescence to mid-adulthood vary by socioeconomic background and race. We use data from Add Health Waves I-V to model sleep duration from ages 13 to 40. We restrict analysis to respondents who identified as non-Hispanic White or non-Hispanic Black and use mixed effects regression models to predict sleep duration. Preliminary results suggest that sleep duration decreases from adolescence to early adulthood, plateaus somewhat in the mid-20's to mid-30's, and decreases in the late 30's. However, evidence suggests that sleep duration trajectories differ by race and socioeconomic background. Across all ages, non-Hispanic Blacks whose mother completed college had the shortest sleep duration, on average. Which group displayed the longest sleep duration varied over age, but non-Hispanic Whites whose mother completed college had the longest average sleep duration throughout most of the 30's. Within maternal education categories, differences in sleep duration by race decreased throughout adolescence and expanded at later ages, though the timing of this expansion differed by maternal education. To the best of our knowledge, this is the first study to examine how race and socioeconomic background interact to predict sleep duration trajectories. Our findings enhance understanding of which factors shape changes in sleep duration as we age.

Life-course/developmental**How much early infectious exposure was experienced by U.S. birth cohorts born 1900-1948?** Elizabeth Wrigley-Field* Elizabeth Wrigley-Field Jean Marie Maier

Diverse evidence suggests that infectious exposures in the first year of life can have lasting consequences for individual health and development, as well as altering population composition through intense early mortality selection. The cohorts born in the first half of the twentieth century United States experienced rapidly and unevenly changing infectious exposures. This paper establishes some basic descriptive facts about what portion of each cohort experienced high levels of exposure, for different thresholds of "high," at a low geographic scale. Results track the evolution of exposures over this period from uniformly high, to extremely mixed and variable, to uniformly low — albeit only for whites. In urban areas, where race-specific data are relatively complete, non-white exposures were uniformly high under all definitions at least through 1920, and possibly through 1940. Results also reveal vast differences in urban and rural exposures, with an "urban penalty" extending later than has previously been recognized (with prior data at a less detailed geographic scale). These results may ultimately be used to investigate what thresholds of exposure, within the range typically experienced by real cohorts, matter for subsequent health.

Life-course/developmental

When does BMI matter most for mortality? Kaitlyn Berry* Kaitlyn Berry Sarah Garcia John Robert Warren Andrew Stokes

Significance: There is disagreement as to whether overweight and obesity raise risks for mortality. While some studies have reported evidence of an obesity-mortality paradox, others attribute these findings to reverse causality or mortality selection.

Aim: We assess the mortality risks associated with being overweight and obese during midlife (age 54) and late life (ages 65 and 72) on mortality after age 72.

Data: We use data from the Wisconsin Longitudinal Study (WLS), a cohort study of Wisconsin high school graduates from 1957. Self-reported weight and height were gathered at the 1993, 2004, and 2011 surveys, allowing us to calculate BMI at approximately age 54, age 65, and age 72. All-cause mortality was assessed via linkage to the National Death Index.

Methods: Cox proportional hazard models were used to estimate the mortality risk of being overweight and obese compared to normal weight at age 54, 65, and 72. Models were sequentially adjusted for other BMI measures and early and midlife socioeconomic status to reduce confounding. Mediation was examined by adjusting the models for indicators of midlife and late life health.

Results: Compared to normal weight, participants who were overweight or obese at age 72 had no increased or reduced risk of mortality (HR overweight: 0.87; 95% CI: 0.68-1.13; HR obese: 1.21; 95%: 0.94-1.55). Conversely, being overweight (HR: 1.51; 95% CI: 1.20-1.90) or obese at age 54 substantially increased risk of dying between ages 72 and 78 (HR overweight: 1.51; 95% CI: 1.20-1.90; HR obese: 2.20; 95% CI: 1.70-2.84). The association between increased weight at age 54 and mortality was attenuated but remained significant when adjusting for other BMI measures, early and midlife socioeconomic factors, and midlife and late life health.

Conclusion: Midlife measures of BMI have a stronger association with mortality risk than late life measures, suggesting that midlife may be a more appropriate time to assess obesity as a predictor of mortality.

Life-course/developmental**Selected, Scarred and Strengthened: The Postwar Survival of World War I Prisoners of War**

Evan Roberts* Evan Roberts Amy Verrando

We provide new evidence on the long-term consequences of surviving traumatic events and periods of extended stress by examining the post-war survival of a cohort of World War I prisoners of war (POW). We constructed an original dataset of the complete population of POWs from New Zealand that includes measures of socioeconomic and health status at enlistment, military service and imprisonment. We obtained death dates for 98% of men who survived the war. On average men who survived imprisonment lived to 69.5 years, less than a year shorter than life expectancy for the average cohort from which the men were drawn. For men who survived the war, we examine how wartime experiences including wounding, illness, and the duration of imprisonment affected life expectancy after being released. We find that men imprisoned on the Western Front were more likely to survive imprisonment than men imprisoned in Turkey. But on return to civilian life, we find evidence of selection effects as Western Front prisoners did not live as long despite serving shorter prison spells. Marriage rates were lower among POW survivors. However, suicide rates were also significantly lower. Our results show that populations who have survived stressful events with high mortality are selected and scarred by the experience.

Reproductive health**Structural racism and pregnancy-related mortality rates in the US: an analysis of county-level data** Rachel Hardeman* Rachel Hardeman Dovile Vilda Lauren Dyer Maeve Wallace**Background**

Each year in the United States, 700-900 women die of pregnancy related causes which makes the US the only developed country in the world with the highest *and* increasing maternal mortality rate trend in the world. A closer look shows racial inequities carry the statistic: Black women are 3 to 4 times more likely to die of pregnancy related causes than non-Hispanic white women regardless of education levels and socioeconomic status. While structural racism has been widely discussed as the root cause of the Black Pregnancy Related Mortality (PRM) epidemic in the U.S., there does not yet exist any quantitative analyses examining the empirical relationship between structural racism and PRM.

Purpose

We aimed to identify associations between county-level indicators of structural racism and pregnancy related mortality (PRM) among non-Hispanic Black and white populations in the United States. PRM defined as maternal death during pregnancy or within 1 year from any cause related to or aggravated by the pregnancy or its management (CDC 2019).

Methods

Using vital records data from 2011-2015, we calculated 5-year (2011-2015) overall pregnancy-related mortality (PRM) ratio, Black PRM and white PRM in each county that had >1000 live births in the same period. Racially-stratified negative binomial regression models with robust standard errors estimated PRM rate ratios (RR) and 95% confidence intervals (CI) associated with an interquartile range (IQR) increase in indicators of structural racism, adjusting for county poverty and size of the black population. *County level structural racism indicators* included the white to black ratio in: Educational attainment; Employment; Median household income; Prison and jail incarceration rates (two separate variables). We also examine *Overall structural racism* in two ways: a dichotomized variable of high and low structural racism and the Index of Concentration at the Extremes (ICE) where higher scores indicate a larger concentration of high-income residents.

Preliminary Results:

Increasing racial inequity in median household income and educational attainment was associated with a 12% and 16% (aRR=1.12, 95% CI=1.01-1.23 and aRR=1.16, 95% CI=1.04-1.29, respectively) increase in overall PRM, independent of the county poverty level and the percentage of the black population. Counties with higher ICE scores had 21% lower overall PRM (aRR=0.79, 95% CI=0.66-0.95). In terms of racial differences, increasing racial inequity in median household income and county-level prison incarceration was associated with a 27% and 28% increase in Black PRM (aRR=1.27, 95% CI=1.05-1.53 and aRR=1.28, 95% CI=1.02-1.60, respectively). In addition, overall structural racism in the county was associated with a 37% increase in Black PRM (aRR=1.37, 95% CI=1.04-1.81). Racial inequity in prison incarceration rates was associated with 22% decrease in white PRM (aRR=0.78, 95% CI=0.67-0.92); however, none of the other structural racism measures were significantly associated with pregnancy-related mortality among whites.

Conclusions:

These findings highlight the ways in which structural racism at the county level is a critical determinant of pregnancy related mortality in the U.S. These findings to our knowledge represent the first empirical evidence of structural racism as a fundamental cause of the Black maternal mortality crisis in the U.S. Furthermore, our findings demonstrate a differential impact of structural racism on pregnancy related mortality across racial lines suggesting that targeted policy solutions will be necessary to improve these inequitable outcomes.

Structural factors**Investigating structural racism in Milwaukee: The legacy of historic disinvestment on current lending and health** Emily Lynch* Helen Meier

Background: While home ownership is a major source of wealth accumulation in the US, communities of color have faced decades of racial discrimination in the housing market that have prevented equal access to loans. However, research evaluating the legacy of discriminatory lending practices as a structural determinant of health is limited.

Methods: Weighted historic disinvestment scores for Milwaukee census tracts were calculated from 1930s Home Owners' Loan Corporation residential security grades. Linear regression was used to estimate the association between historic disinvestment and 1) 2018 Home Mortgage Disclosure Act data on average rate spread (i.e., high cost loans) and 2) indicators of community health from the 2014-2018 American Community Survey, 2017 500 Cities Project and the City of Milwaukee Health Department. The association between sustained housing discrimination over time, as measured by trajectories of neighborhood historic disinvestment and rate spread, and current health was also estimated.

Results: Greater historic disinvestment was associated with higher tract average rate spread (indicating more high loan costs; $\beta=0.14$, 95%CI: 0.06, 0.22) and more adults reporting poor physical ($\beta=1.34$, 95%CI: 0.40, 2.28) and mental ($\beta=1.34$, 95%CI: 0.40, 2.28) health. A graded association was observed between sustained housing discrimination and health such that neighborhoods with high historic disinvestment and high rate spread had worse current health outcomes than neighborhoods with low historic disinvestment and low rate spread (poor physical health: $\beta=6.47$, 95%CI: 4.78, 8.17; poor mental health: $\beta=4.90$, 95%CI: 3.48, 6.32; infant mortality rate: $\beta=0.54$, 95%CI: 0.21, 0.86).

Conclusion: Historic disinvestment is associated with current lending practices and health in Milwaukee neighborhoods, illustrating the lasting effects of structural racism. Lending practices actively reinforce the conditions that perpetuate health inequities.

Race/Ethnicity**Race-based metrics in occupational epidemiology: problems and implications for workers' compensation** Elizabeth McClure* Elizabeth McClure Whitney Robinson

Algorithmic bias in data-driven analytics is an increasing concern in epidemiology. Here we analyze economic implications of two algorithmically-based metrics widely used in occupational epidemiology. In U.S. epidemiologic data, whites tend to have better lung function and worse hearing than Blacks. Both poor lung function due to respiratory injury and impaired hearing are qualifying criteria for worker's compensation, which is ultimately paid by industry. We conducted analyses of how hypothetical changes to algorithmic race corrections for lung function and hearing affect award of worker's compensation. Workers' compensation for respiratory injury is determined by evaluating percent of predicted lung capacity, a comparison of a worker's lung capacity to an algorithmically predicted race-specific lung capacity. The algorithm sets predicted lung capacity to be 15% poorer for Black workers than White workers. For hearing loss, there is no race-specific adjustment. We estimated percent of predicted lung capacity distributions for 200 Black and 200 White workers, randomly selected from the demonstration database in the NIOSH Spirometry Longitudinal Data Analysis Software, under four race correction conditions. Using current algorithms, total compensation for the 400 workers would be \$967,500. Applying the Black race adjustment to all 400 reduced total compensation to \$772,500 while applying the White algorithm yielded the most compensation (\$1,190,000). Eliminating the race correction increased total compensation by \$70,000. In line with theories of "racial capitalism," the selective use of race-specific algorithms for deciding workers' compensation claims reduces industry economic liability for worker health. Widespread and unquestioning belief in the inherent physiological inferiority of Black Americans perpetuates systems that limit the size of industry payouts for workplace injuries.

Mental health/function**“When you’re so used to being exposed to something you think it’s normal”: The Mental Health Implications of Navigating a Racialized Space** Kaleea Lewis* Kaleea Lewis Nicole Jones

Historical acts of racial violence (e.g., slavery, lynching, and creation of sundown towns) have contemporary ramifications on health. Scholars have observed associations between the occurrence of these historical atrocities and an increased likelihood of experiencing poor educational, health, and economic outcomes for Black Americans who reside in these environments. Less attention has focused on mental health and there is a paucity of research that centers the lived experiences of Black Americans who are burdened with navigating these environments. This study uses qualitative methods to explore how Black Missourians manage their mental health while navigating and persisting within an environment shaped by multiple forms of racial violence.

Two research questions guided this study: (1) How do Black Missourians perceive the construction of their environment, and (2) How do Black Missourians make meaning of the ways in which their environment impacts their mental health? Through the triangulation of data collected from the Southern Poverty Law Center hate group database, archival work documenting lynchings in Missouri, and an online repository of sundown towns, four counties emerged as an environment with a documented history of racial violence (St. Louis, New Madrid, Scott, and Franklin). Individual, in-depth phone interviews were conducted with a convenience sample of Black Missourians (n=42) living in the counties of interest. Each audio-recorded interview ranged between 45-90 minutes in length.

Thematic analysis of the interview data revealed three overarching themes: (1) the embodiment of racism: becoming cautious and aware (2) strategies for navigating a white environment and (3) managing every racism-related stress.

Knowledge gained from this study has the potential to expand the literature exploring the intersections of race, racism, and the social determinants of health. The ways in which the participants’ negotiated their environment highlights the need for additional research that investigates the pathways that connect historical racial violence, contemporary manifestations of racism, and adverse mental health outcomes.

Race/Ethnicity**Skin Tone and Mental Health among African Americans and Caribbean Blacks in the U.S.**

Christina Bijou* Christina Hagan Bijou Cynthia Colen

Evidence suggests that skin tone is an important factor influencing physical health outcomes among African Americans. However, few studies have analyzed the relationship between skin tone and mental health for African Americans and there are currently no empirical analyses of the association between skin tone and mental health for Caribbean Blacks. Given the steadily increasing number of Black immigrants in the U.S. over the past two decades, further research comparing the differences between Black subpopulations in the U.S. is necessary. This study expands upon previous research by examining the relationship between skin tone and mental health among Black Americans and Black Caribbeans. There are three crucial differences between these two Black subpopulations that are likely to impact the relationship between skin tone and mental health: 1) nativity; 2) racial/ethnic identity; 3) the social organization of each group's home country. Using the National Survey of American Life (NSAL), I examine and compare the association between skin tone and mental health disorders among Black Americans and Black Caribbeans. In my analysis, I find a statistically significant relationship between skin tone and mental health outcomes for African Americans. African Americans with the lightest skin tones report worse mental health outcomes than those with medium complexions. Among Caribbean Blacks, skin tone is not associated with mental health, suggesting that Caribbean immigrants may be more resilient to mechanisms that contribute to disparities among African Americans. I plan to extend my analysis to investigate whether discrimination and/or racial identity plays a role in the relationship between skin tone and mental health for African Americans and Caribbean Blacks.

Policy**State Law Frameworks for CHW Funding, Payment, and Reimbursement** David Washburn*

Cason Schmit Timothy Callaghan Megan Lafleur Denise Martinez Emily Thompson

Background

Recent efforts have tried to integrate community health workers (CHWs) into the health workforce. Federal and state policies create formal funding mechanisms for CHW services, but payment structures funding CHWs vary from state to state. As a result of this variation, the method through which CHWs are paid for services is inconsistent, fundamentally shaping the role CHWs play state health systems.

Methods

We used Westlaw to identify laws relating to CHWs in effect on 2/11/2019, limited to U.S. states, territories, and the District of Columbia. We coded laws that identify payment mechanisms, including public assistance programs, Medicaid, and laws supporting CHW workforce development. A licensed attorney and a MPH student independently coded each law. Coding disagreements were resolved at meetings with a CHW subject-matter expert resolving ambiguous cases.

Results

We identified 371 laws within our scope. The average inter-coder agreement was 90%. Twenty-four states had laws providing CHW funding mechanism; 20 states had a Medicaid law relating to CHWs; 6 states provided funding for CHW workforce development; 3 excluded CHWs from overtime compensation; 15 provided CHW funding for specific activities, including mental and behavioral health, clinical trial recruitment, school-based services, maternal-child health, HIV and AIDS services, and education and health promotion

Discussion

A lack of stable funding is a top barrier to fully utilizing CHWs. Not all funding mechanisms described in state laws guarantee sustainable funding (e.g., grants or appropriation-dependent programs). In contrast, programs like Medicaid provide more stable funding for services rendered. Our findings show that states are making the policy determination that CHW services provide benefits, collective or individual, sufficient to justify state support through law. These finding suggest an expansion of legal funding mechanisms when compared to the 2016 study of CHW laws conducted by the CDC.

Structural factors**Trends in mental health in response to the U.S. political environment using BRFSS****2014-2018** Brittany Morey* Brittany Morey San Juanita Garcia Tanya Nieri Bruce Link

Background: The polarizing and emotionally charged political environment in the U.S. in recent years is likely to affect mental health in the population. This research examines fluctuations during the time period of 2014 to 2018 in poor mental health before, during, and after the 2016 presidential election. We posit that national U.S. politics will have greater effect on poor mental health for those targeted and/or disturbed by it (e.g. Latinx and blue states).

Methods: Using data from the Behavioral Risk Factor Surveillance System (BRFSS), we calculate age-standardized monthly rates of poor mental health—operationalized as number of poor mental health days, any poor mental health days, and mental distress in the past month. We examine rates by subpopulations based on state political affiliation and race/ethnicity. We analyze the trends in monthly rates of poor mental health between January 2014 and December 2018. In addition, we examine whether rates of poor mental health by subpopulation differ before and after the 2016 election, and before and after the 2017 inauguration of President Trump.

Preliminary results: Initial findings indicate that rates of poor mental health are increasing in the post-2017 period. In the total population, rates of poor mental health are higher in 2017-2018 than the rates in 2014-2016. Red states have higher rates of poor mental health on average than blue states. There appear to be different trends in poor mental health by race/ethnicity.

Significance: This research demonstrates how susceptible population mental health is to the national political environment during a contentious presidential election cycle. This study will show whether there are place-based and racial/ethnic patterns in how national politics affects trends in mental health.

Aging**The Impact of Population Movement on the Mental Health of Older Adults Left Behind in Puerto Rico** Amilcar Matos-Moreno* Amilcar Matos-Moreno Carlos Mendes de Leon

Background: The combined effects of increased life expectancy, low fertility, and increased migration have accelerated the aging of the Puerto Rican population and resulted in increased burdens associated with age-related diseases and risk factors. Previous studies have linked population exchange to the health and well being of those staying in place. However, at the time, no such research has been conducted among the Puerto Rican population. This study aims to estimate the effect of population migration on the mental health of older adults staying in place in Puerto Rico.

Methods: Data comes from the Puerto Rico Elderly: Health Conditions project (PREHCO) and the U.S Census population estimates. Migration for every municipality in Puerto Rico was estimated using the Population Balance Equation for the period 2000-2010. A multilevel linear mixed model was built to determine the effect of municipal migration on older adult's depressive symptoms controlling for individual sociodemographic characteristics as well as municipal characteristics.

Results: Overall, older adults in Puerto Rico reported having a mean of 3.24 depressive symptoms score. Females, those in lower levels of education, having frequent economic difficulties, and older, presented higher levels of depressive symptoms compared to their counterparts. Older adults residing in rural municipalities reported a higher average of depressive symptoms compared to older adults in urban municipalities (3.50 vs. 2.82: p value<.001). The multilevel linear mixed model resulted in no effect for migration on depressive symptoms adjusting for all covariates. However, we discovered that urbanicity acted as an effect modifier in the association. We stratified the model by urbanicity. The effect of migration on depression was statistically significant only within urban municipalities. Among urban municipalities, older adults residing in municipalities experiencing higher negative migration had an average depressive symptom score of 1.15 (p value=0.035) higher compared to those living in municipalities experiencing positive migration adjusting for all covariates.

Conclusion: Loss of population due to migration is associated with an increased average of depressive symptoms within the older adult population in Puerto Rico. However, the impact is dependent on urbanicity status. There is substantial heterogeneity in the reason for population exchange between municipalities and the changes in the social structures. Future research is needed to identify the fundamental causes of depression among Puerto Rican older adults and the role migration plays.

Structural factors**Integrating sociopolitical contexts and population health with a perspective of work: A conceptual framework and comparisons of work and health between the United States and European Union** Kaori Fujishiro* Kaori Fujishiro Emily Ahonen David Gimeno Ruiz de Porras

Fernando G Benavides

Work is deeply embedded in sociopolitical and economic contexts. Different societies structure work differently, and the differences are reflected in the health of employed people. Therefore, comparing working conditions and health across societies informs how work can be structured in health-enhancing ways. Because work is a major part of adult life, shaping work through policies contributes directly to population health. We propose a conceptual framework for investigating social contexts and health through an occupational perspective. The framework articulates that historical, cultural, and economic values and beliefs—not so tangible yet strong forces—underpin institutional features of society. They are tangible through policies and regulations, including those that govern working conditions, the quality of employment, resources for working people, and health.

As a starting point of applying the framework, we compare characteristics of paid work and health between the United States (US) and the 28 member states of the European Union (EU28) using the 2015 working conditions surveys. Virtually all poor health indicators as well as exposure to many occupational hazards differ between the US and EU28. The patterns of similarities and differences are so complex that in themselves they do not offer clear depictions of health in the US and EU28.

Both regions are highly developed and affluent, have overarching occupational safety agencies, and have similar industry profiles, labor force participation rates and gender ratios. The observed differences in health and working conditions, therefore, reflect differences in other aspects of society that are made visible in our analysis. The framework helps identify which sociopolitical contexts and their meso-level manifestations (i.e., policies and regulations), especially ones that surround work, must be examined systematically as crucial factors that influence population health.

Aging**Association between Healthy and Unhealthy Neighborhood Food Outlets, Aging in Place, and Myocardial Infarction Risk** Janene Brown* Janene Brown Allana Forde Jana Hirsch Suzanne Judd Gina Lovasi

The availability of healthy neighborhood food outlets varies spatially and have been linked to individual-level dietary outcomes. Healthy food outlet availability may have additional health effects mediated by healthy eating, such as cardiovascular disease prevention and support of healthy aging and independent living. We hypothesize that benefits of living within 1km of healthy food outlets (including supermarkets and produce markets) may extend to lower risk of incident cardiovascular events and more residential stability among older adults (i.e., aging in place). Further, we consider whether prior myocardial infarction (MI) modifies the effect of healthy food outlet availability on aging in place.

Data to be used are from the Reasons for Geographic and Racial Differences in Stroke study, a prospective cohort study conducted to measure risk factors related to incident stroke among adults 45+ living in the 48 contiguous United States. Recruitment occurred between 2003-2007, and follow-up through 2015 was used in our analyses. Food outlets were identified using the National Establishment Time Series from 1990 to 2014. Descriptive analyses revealed that around 30% of DASH diet scores were missing not at random, with black versus white race and lower incomes significantly predicting missing items on a food frequency questionnaire used to calculate diet score measures. Regression models were weighted for the inverse probability of missing these scores. Food store densities were also significantly skewed, and thus underwent a log transformation before being included in regression models.

A total of N=948 records were retained in the aging in place analysis and N=32,788 records were retained in the time-to-MI analysis. Density of food stores was not associated with time-to-MI or with aging in place. Density of unhealthy food outlets showed an association with less residential stability which approached significance ($p=0.056$).

Aging**The impact of long-term construction on the health of older adults in New York City's Chinatown** Yi-Ling Tan* Yi-Ling Tan Jennifer Wong Janet Pan Simona Kwon Stella Chong

Introduction: Recent proposed major construction projects in New York City's Chinatown often last multiple years. Little is known about the health impact of construction on vulnerable populations such as older adults. In Chinatown, approximately 20% of residents are older adults, live below the poverty level (34%), have a disability (47%), and nearly half report limited English proficiency.

Objectives: We are conducting a mixed methods study to describe possible health and psychosocial outcomes of construction on older adults in Chinatown. **Methods:** We used a community-engaged modified Delphi process to identify priority areas related to construction and older adults which included: 1) a scoping review of the health impact of long-term construction; 2) key informant interviews of academic experts; and 3) convened community stakeholder leaders to review key focus areas and evidence-informed, culturally-relevant mitigation strategies. Five priority topics were identified: 1) Construction site emissions; 2) Noise; 3) Outdoor nocturnal lighting; 4) Neighborhood changes; and 5) Relocation. **Results:** Long-term construction contributes to adverse effects of air pollution, noise, and changes in the environment, with exposure to particulate matter and unwanted noise associated with higher morbidity and mortality. Unsafe sidewalk due to construction increase the risk of falling, the leading cause of death among NYC seniors. Construction-related stressors may isolate older adults from vital services and social networks. **Conclusion:** Long-term construction poses serious health implications for older adults. Stakeholders should adopt a community-engaged approach and identify meaningful community priorities to inform practical solutions to mitigate the impact of construction on vulnerable Chinatown older adults.

Economic development**Income Sources Under Female Control and Household Food Security. Evidence from Malawi** Vedavati Patwardhan* Vedavati Patwardhan

Under the unitary household model in microeconomics, a household pools all income to jointly maximize utility, thus consumption does not depend on the source or recipient of income. A large body of evidence shows that households are not unitary decisionmakers, especially in developing countries. However, the extent to which individual decisionmaking over different sources of household income affects consumption remains underexplored. In this paper, I use household panel data (n=1512) from the 2013 and 2016 Malawi Living Standards Measurement Study (LSMS) to test the relationship between female control over different income sources and household hunger and dietary diversity. Panel regressions show that households with female control over income from crop sales face fewer months of hunger and consume more diverse foods. The findings align with literature on intrahousehold dynamics, which shows that households respond differently to a change in income according to who has control over the additional resources. The contribution of agricultural income towards household welfare suggests that mental accounting, that is, people's tendency to reserve certain income sources to specific uses, may be at play. The implications of the findings are twofold. First, gendered preferences of household members who control income may mitigate household hunger and improve diet quality. Second, agricultural income, specifically from crop sales, may play an important role for household food security.

Environmental factors**Data-driven approaches to advance California's Human Right to Water Law: Characterizing inequities in drinking water quality among domestic well communities and public drinking water systems** Clare Pace* Clare Pace Lara Cushing Carolina Balazs Rachel Morello-Frosch

In 2012, California became the first state to recognize the Human Right to Water. However, roughly 10% of California's public drinking water systems are currently out of compliance with federal and state drinking water quality standards, and an estimated 6 million Californians are served by systems that have been in violation at some point since 2012. A disproportionate number of water quality violations occur in smaller drinking water systems that serve rural, low income communities of color, where a lack of resources make it challenging to treat contaminated water and meet regulatory standards. Additionally, significant data gaps exist regarding the location and water quality of unregulated water sources, such as private domestic wells.

The UC Berkeley Water Equity Science Shop sought to characterize demographic differences in water quality for communities reliant upon domestic wells and community water systems. We integrated data from the Department of Water Resources; Tracking California's Drinking Water Systems Geographic Reporting Tool; and the US Census to identify the location of likely domestic well communities across California. Using water quality data from CalEnviroScreen 3.0 and the Groundwater Risk Index Tool, and demographic data from the American Community Survey, we estimate sociodemographic differences in water quality using multivariate analysis.

Results indicate that over 1.3 million Californians rely on private wells for drinking water. We estimate 49,000 and 102,000 people live in domestic well areas where drinking water is likely to exceed regulatory standards for nitrates and arsenic, respectively. Average contaminant concentrations of arsenic and nitrate are over 1.5 times higher in areas served by domestic wells than in community water systems. Multivariate statistical models indicate that area-level measures of race/ethnicity and poverty are associated with increases in drinking water contaminant concentrations in domestic well areas.

Environmental factors

How Does Social Inequality Shape Adoption of Lead-Filtering Water Systems by Americans? Connecting Inequality, Perceptions of Environmental Risk, and Risk-Mitigating Behaviors

Noelle Chesley* Noelle Chesley Helen Meier Jake Luo Immaculate Apchemengich W. Hobart Davies

Background: Water crises in Flint and Newark illustrate that lead exposure through drinking water impacts racial, ethnic, and SES public health disparities. As a result, concerns about lead exposure through water are increasing. One policy response to these concerns is to recommend or supply “point-of-use” (POU) water filtration systems that are certified to remove lead to the public. While research on the efficacy of POU systems as a public health intervention are promising, studies on their voluntary adoption and use are limited. There is a critical need to examine how social inequality may shape voluntary adoption or proper use of POU products and, if so, are these connections explained by greater exposure to lead-based plumbing or varying attitudes and knowledge about the risks associated with lead exposure.

Methods: Data on adoption and use of POU filtration systems were collected from a U.S. Mechanical Turk (MTurk) sample (N = 2,867) in March, 2018 . Use of MTurk for research is an innovative approach to data collection that is growing across disciplines including public health. We use logistic regression to assess the association of race/ethnicity, SES and individual lead-filtering POU system adoption, and to determine whether the association between SES and POU adoption varied by perceived lead exposure risk. We also examined key health behaviors related to this POU filtration system use.

Results: Race and SES are indirectly predictive of lead-filtering POU adoption through the propensity of some respondents to report a residence with a lead service line and levels of concern and knowledge about lead exposure. In addition, income effects condition concerns about drinking water. Individuals with similar levels of concern about lead in drinking water have lower odds of adopting a POU system if they have lower, rather than higher, incomes. Among adopters, while confidence in correct use of these devices is relatively high, reported frequency of use of filtered water for cooking is lower than that for drinking.

Conclusion: As awareness and concern about the safety of drinking water grows, public health action targeted at reducing health disparities in lead exposure, including outreach efforts, must consider social inequality.

Gender**Changing Demographics of the Transgender Population: Comparison of Generations among USTS Respondents** Loren Bauerband* Loren Bauerband Adrienne Frech**Research question and significance**

Transgender and gender nonconforming (TGNC) individuals are an increasing demographic that has grown more diverse as it has expanded over time. As such, there is a critical need to assess how the health care needs within this population have evolved as the population itself has changed. However, no prior study has examined the changing demographics of the TGNC population, including how gender, race/ethnicity, educational attainment, and rates of discrimination experiences vary across generation. We used the 2015 United States Transgender Survey (USTS), to compare demographics of TGNC representing Generation Z (N=6,001), Millennials (N=14,249), Generation X (N=3,955), and Baby Boomers (N=3,274). Birth year was not reported, therefore respondent generation was determined through expected age range in 2015. USTS respondents included TGNC individuals over the age of 18, thus Generation Z only included respondents aged 18-20.

Preliminary Results

The primary gender options included: transgender women, transgender men, assigned female nonbinary, assigned male nonbinary, and crossdresser. There were noticeable differences in gender across generations. A majority of Baby Boomers were transgender women (67.1%), meanwhile only 13.5% of Generation Z respondents were transgender women. With each younger generation, fewer respondents identified as crossdresser (11.2% of Baby Boomer vs. .5% among Generation Z). In contrast, the most consistent identity across generations were nonbinary individuals who were assigned male (5.7% - 7.9%). Future analyses will evaluate how demographic changes across generations may impact health needs of TGNC individuals within each generation.

Gender**An Analysis of Women's Empowerment Using the SWPER Index in India** David J. Washburn*

Leanne Fawkes Jay Maddock Brian Colwell

Background and Purpose: Women's empowerment is a critical priority area in global health and an important strategy to promote health for women, children, and families. Yet measuring women's empowerment is a challenge. The Survey-based Women's emPowERment Index (SWPER) has been developed and normed across 34 countries in Africa but has not been previously used in India. In the SWPER index, factors that contribute to women's empowerment include social independence, attitudes toward domestic violence, and decision-making authority. This study analyzes the social determinants of those factors in India.

Objectives: To assess the social determinants of women's empowerment in India.

Methods: Using the 2015-2016 Demographic and Health Survey (DHS) of India, this study included 86,586 currently partnered women aged 15-49. Covariates included age, education, religion, caste identity, urban/rural residence, and wealth. We used Chi-square tests & linear regression models to analyze the bivariate and multivariable relationships between women's empowerment scores (social independence, attitudes toward violence, and decision-making authority) and other social determinants.

Results: Wealthier, more educated women and those living in urban areas reported a greater degree of decision-making authority and stronger attitudes against domestic violence. Wealthier urbanites reported greater degrees of social independence. While older women reported a greater degree of social independence, they also exhibited less negative attitudes toward domestic violence and lower degrees of decision-making authority. Hindu women were more strongly against domestic violence than either Christians or Muslims. Christians reported a greater degree of social independence and decision-making authority than Hindus while Muslims reported less.

Conclusions: In the application of the SWPER women's empowerment index to India, several social determinants were found to be significantly associated with the index's three scores for social independence, attitudes toward domestic violence, and decision-making authority. Programs focusing on women's empowerment in India should consider focusing their efforts in rural and poor areas, with less educated women and, for certain programs, the elderly.

Health behaviors**Risky sexual behavior, self control, and the genetics of risk tolerance** Adam Lilly* Adam Lilly

Early sexual debut, risky sexual behavior in adulthood, and low self-control in adolescence have been shown to be interrelated (Santelli et al. 1998; Magnusson et al. 2015; Khurana et al. 2012; Curry et al. 2018). Using a structural equation modeling approach, Magnusson et al. show that early sexual debut partially explains the relationship between low self-control in adolescence and risky sexual behavior in early adulthood (2019). Risk tolerance, simply defined as the willingness to take risks, is an important component of self-control, and Magnusson et al. include a measure of risk tolerance as one of the indicators in their latent variable measure of self-control (2019). Risk tolerance is partially heritable, and a recent genome-wide association study (GWAS) has identified hundreds of genetic loci associated with the trait (Karlsson Linnér et al. 2019). A polygenic score (PGS) constructed using the results from this study has also been shown to predict number of sexual partners (a measure of risky sexual behavior) in Add Health (Karlsson Linnér et al. 2019). I plan to use a PGS for risk tolerance that is publicly available in the Add Health data to interrogate the model proposed by Magnusson et al. Specifically, I plan to include the PGS in equations predicting early sexual debut, self-control in emerging adulthood, and risky sexual behaviors in early adulthood, test the model fit, and further modify the model as necessary. I also plan to estimate sex-stratified models, as these relationships are likely to differ by gender. While I have not completed the analysis, the correlation matrix below shows the relationship between the risk tolerance PGS and a few of the indicators of the constructs described above. The correlations between variables in the Magnusson et al. model ranged from 0.10 to 0.26, so the correlations between the PGS and the indicators are notable.

	PGS	Risk tolerance	Age at first sex	# of sexual partners
PGS	1			
Risk tolerance	0.09***	1		
Age at first sex	-0.05**	-0.07***	1	
# of sexual partners	0.07***	0.07***	-0.06***	1

*p<.05 **p<.01 ***p<.001

Health behaviors

Whose cigarette smoking behavior is most affected by the Philippine Sin Tax Reform Act of 2012? Kent Jason Cheng* Kent Jason Cheng Miguel Antonio Estrada

A stick of cigarette was as cheap as one Philippine peso (PhP) or roughly a few US cents (Kaiser, Bredenkamp, & Iglesias, 2016) before 2012. But within this decade alone, the Philippine government had enacted two reforms on the sin tax law, effectively ending the long history of low cigarette prices. The first reform was enacted through Republic Act (RA) 10351 or the "Sin Tax Reform Act of 2012." The excise tax used to be categorized in four tiers based on net retail price (NRP), i.e. the price of a pack of cigarettes without tax and other charges. RA 10351 reduced the NRP tiers from four to two starting 2013 and eventually imposed a unitary tax in 2018 (see Estrada, 2018 for more information). The tax increase due to the 2012 reform is considerably sharp: a pack of cigarettes costing nine US cents (PhP 5 under a PhP 51 per USD 1 exchange rate) was taxed five US cents (PhP 2.72) in 2011 but because of the reform, it was taxed 24 cents (PhP 12) in 2013 which is almost five times the 2011 rate (Cheng & Estrada, 2020). Then, in June 2019, RA 11346 was enacted and it increased the excise tax to 88 US cents (PhP 45) by 2020 and eventually to USD 1.18 by 2024. After 2024, the tax will increase annually by 5%.

This study aims to assess test whether there are sociodemographic differences in the sensitivity to the 2012 excise tax reform among smokers using bivariate and multivariate analyses on the 2015 wave of the Global Adult Tobacco Survey (GATS). Our dependent variables (variable name in italics) are the following: (1) *Price* = whether the smokers felt that the increases in cigarette prices affected their smoking, and if yes to (1): whether they reacted by (2) *Stop* = making an attempt to stop smoking, (3) *Quit* = think about quitting smoking, (4) *Decrease* = decrease the number of sticks smoked per day, (5) *Switch* = switch to a cheaper brand, (6) *Bulk* = buy cigarettes in bulk/ reams, (7) *Ask* = ask for cigarettes from other smokers. On the other hand, our independent variables are age, age squared, sex (1=female, 0=male), education (no education or elementary graduate, elementary graduate, high school graduate with college graduate or higher as reference), employment (unemployed, student, not in the labor force with employed as reference), wealth index tertiles with lowest tertile as reference, type of residence (1=urban, 0=rural), addiction proxy (smokes within 6 to 30 min, 31 to 60 min, > 60 min, and not a daily smoker, with smokes within 5 min of waking as reference), and an index of exposure to media relating to harms of cigarette smoking. Since our dependent variables are dichotomous, we used logistic regression and presented our results in odds ratios. All analyses were adjusted to survey weights. We used listwise deletion to deal with missingness of responses.

Among the smokers (N=2,509) in our study, 63% or about 1,580 reported that they were affected by the price increase. Among those who were affected by the price increase, 64%, 70%, 82%, 40%, 7%, and 38% will consider stopping, attempt quitting, decrease sticks smoked, switch to cheaper brand, buy in bulk, and ask for cigarettes from other smokers, respectively.

The odds of the smoker being sensitivity to price is higher for those older while females are less likely to report that they were affected by the price change relative to males. Having elementary or high school education is associated with 1.64 times and 1.28 times higher odds of being sensitive to price compared to those with college or higher levels of education. Students are 1.87 times more likely to say they are influenced by the price change versus those employed. Being in the higher wealth tertiles is associated with less price sensitivity. Urban residents are 0.57 times affected by the price change versus rural dwellers. Those with the lowest level of addiction (i.e. smoking within >60

min of waking) are 1.42 times more likely to report that their behavior are influenced by the abrupt price change versus the most addicted (i.e. smoking within 5 min of waking) while the odds of those in the middle level of addiction are not any different than the most addicted.

There seems to be no discernable pattern in the relationship between specific reactions to the price change (i.e. quit, stop, etc.) and age, sex, education, employment, wealth, urbanicity of residence, and media exposure. However, differing levels of addiction remains to be strong predictors as those less addicted are more likely to consider quitting or decreasing consumption and are less likely to switch to cheaper brands, buy in bulk, or ask cigarettes from other smokers.

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Health behaviors

Nature Connect: Leveraging urban green space, behavioral economics, and mobile platforms to prevent postpartum depression Eugenia South* Eugenia South Kathleen Lee Kehinde Oyekanmi Max Tiako David Buckler Sindhu Srinivas

Background: Postpartum depression (PPD) is a common complication of childbearing, with negative consequences to mother, baby, and family. Spending time in nature is associated with mental health benefits, including reduced depression, but has not been studied as a PPD preventive measure. In fact, few studies rigorously test interventions to increase nature contact, and none use objective measures of green space use (GSU). We pilot tested Nature Connect (NC), a peer navigator intervention guided by insights from behavioral economics.

Methods: We randomized postpartum women at a tertiary hospital in Philadelphia, PA who were ≥ 18 yo, delivered a healthy term infant, and owned a smartphone to the NC intervention or control. NC involved a peer navigator home visit (education, goal-setting, brainstorming barriers and solutions, and a nature visit), followed by four weeks of weekly text message goal reminders and progression badges comparing set goals to actual GSU. GSU was determined by a smartphone GPS tracking app. PPD was measured at 2 and 8 weeks using the Edinburgh Postnatal Depression Scale.

Results: Thirty-six (36) participants were randomized, 17 to the NC intervention and 19 to control. Mean age was 28.3yo, 69% were Black, and 39% had an income of $< \$25$ K. The NC group had greater GSU compared to control [median min (IQR): 66 (0-206) vs 0 (0-11), $p = 0.013$]. Women who completed the initial home visit (13/17) had even greater GSU compared to control [median min (IQR): 102 (27-238) vs 0 (0-11), $p = 0.006$] and had more total nature visits [3 vs 0, $p=0.005$]. There was a non-significant trend toward lower PPD scores in the NC group compared to control.

Conclusions: The NC intervention significantly increased nature contact, measured objectively using GPS tracking data. A larger trial is needed to evaluate the impact on PPD. Influencing how people interact with their neighborhood environment is an important, but understudied area of population health.

Health behaviors**The effect of short-term subsidies on demand for potable water in rural Bihar, India: A randomized controlled trial** Drew Cameron* Drew Cameron

Short-term subsidies are a common tool used in low- and middle-income countries to increase the immediate adoption of essential health products. However, evidence of the impact of initial discounts on future demand is both limited and mixed. Reduced prices could be counterproductive, inducing anchoring effects in which recipients reference an initial low price, undervaluing products on future offer. Alternatively, subsidies might allow for positive learning to dominate, leading to higher future valuation, purchase and use.

This study examines the potential mechanisms through which subsidy provision operates in influencing these future purchase decisions for a novel health product - potable water delivery to 20-liter jugs - recently introduced in the Supaul region of rural Bihar by a local NGO and growing in popularity in the region. In this randomized controlled trial, we enrolled 526 families in a price subsidy experiment receiving either: a) a 50% subsidy on the regular price of water for four weeks or, b) no subsidies, paying the full cost of the regular water delivery for one month. Households in both arms were then followed weekly for an additional month to track water consumption, offer ongoing purchase and answer any questions or concerns.

We find that four weeks after subsidies expire, the proportion of customers among the treatment group was 14.5-percentage points higher than in the control group ($p < 0.001$). On the intensive margin, treatment households continued to purchase 24.6 more liters of water than control households ($p < 0.001$). Our findings show that short-term price subsidies (combined with social marketing and repeat household visits) can be a powerful tool in encouraging households to take up potable water delivery. These results are especially relevant to motivating health behavior change around the sale of non-durable, staple goods requiring ongoing purchase in order to realize health benefits. This study was preregistered (AEARCTR-0004323).

Health care/services**Gaps in access to dental care among people who use drugs in a publicly funded healthcare system** Kaitlyn Jaffe* Kaitlyn Jaffe JinCheol Choi Kanna Hayashi M-J Milloy Lindsey Richardson

In Canada, publicly funded healthcare provides no-cost coverage for all citizens to a large but not comprehensive suite of healthcare services. Dental care is largely funded by private insurers or out-of-pocket payments, creating income-dependent gaps in dental care access and utilization. Difficulties accessing and paying for dental care may be amplified among vulnerable populations, such as people who use drugs (PWUD), who may experience greater dental need, due to side effects of substance use, increased exposure to violence, and health comorbidities, as well as greater barriers to care, including discrimination, criminalization, and socioeconomic marginalization. We explore associations with accessing dental care among PWUD, using data from two ongoing prospective cohort studies of PWUD in Vancouver, Canada (2014-2018). Of 1638 participants at baseline, 246 (15%) reported never or only occasionally accessing adequate dental care in the last six months. In multivariable generalized linear mixed-effects models, there were significant negative associations between accessing dental care and homelessness (Adjusted Odds Ratio [AOR]=0.54, 95% Confidence Interval [CI]=0.42-0.70), opioid use (AOR=0.73, 95% CI=0.58-0.91), methamphetamine use (AOR=0.75, 95% CI=0.59-0.95), and cannabis use (AOR=0.78, 95% CI = 0.63-0.97), as well as street-based income generation (e.g. panhandling) (AOR=0.75, 95% CI=0.59-0.94). There were significant positive associations between accessing dental care and accessing opioid agonist treatment (OAT) (AOR=1.36, 95% CI=1.07-1.72) and receiving income assistance (AOR=1.70, 95% CI=1.05-2.77). These results highlight specific use patterns and structural risks that may hinder dental care access as well as how institutional engagement, such as income assistance and OAT, may facilitate access. These findings provide support to recent calls to expand universal coverage provisions to include oral health and address extensive dental care inequities.

Health care/services**Was that a commercial for...health insurance? Understanding the health insurance ad environment with a focus on the populations depicted and the implications for public opinion on health care reform.** Margaret Tait* Margaret Tait Cynthia Pando

Media play a complex role in shaping public understanding of health and social policy. Research has established that media provide cues to the public about how to interpret and form attitudes about policy (Petersen, 2010, Rose and Baumgartner 2013). Additional work suggests that media can initiate or reinforce beliefs of who deserves policy benefits (Brady and Sniderman, 1985; Gilens, 2009). The current health care policy debate in the United States offers motivation to further understand how the media depict those deserving of a social policy benefit (access to health insurance) and how this impacts attitudes about new or existing policies (Medicare for All or Medicaid). Health insurance ads, part of the broad media environment, are one way that messages about deservingness of health insurance get conveyed to the public.

A team of trained coders with expertise in health policy coded a sample [n=749] of health insurance ads from Kantar Media's Campaign Media Analysis Group that aired on local television or national cable during the 2019 open enrollment period, November 1 to December 15, 2018. For this analysis, we focus on overall trends in the populations represented and compare how populations portrayed differ by the type of insurance product advertised, Medicaid versus non-Medicaid plans. Preliminary findings indicate differences in the types of people and family structures depicted in ads by ad type. Non-Medicaid ads include more single females (55%) and single males (50%) than Medicaid ads (34% for each). No differences existed in the proportion of ads by type (Medicaid or non-Medicaid) featuring people of color. The next stage of the analysis will involve comparing representations in ads aired to those from national demographic data.

Depictions of people in marketing of insurance may affect public understanding of who currently benefits from Medicaid and who can benefit from policy changes, such as state-level expansions or Medicare for All policies.

Health care/services**Acceptability of Assessing for and Patterns of Patients' Health-Related Social Risks across Primary and Specialty Care Settings** Jennifer Makelarski* Jennifer Makelarski Emily Abramsohn Emilia De Marchis Kate Doyle Laura Gottlieb Olwen Hahn Nita Lee Stacy Tessler Lindau

The transition from fee-to-service to value-based payment models will facilitate prioritization of “whole person” care to promote health. Whole person care includes addressing unmet health-related social risks (HRSRs), like food and housing that are associated with poor health. A 10-site study in primary and emergency care settings found that the majority of patients find clinical assessment of HRSRs appropriate, but little is known about HRSR assessment in specialty care. We describe HRSR patterns and acceptability of HRSR assessment among 4 patient populations: primary care (general population [n=96] and patients with diabetes [n=102]), ob/gyn (n=102), and oncology (n=102). Adult patients completed the CMS Accountable Health Communities HRSR tool, which assesses food, housing, safety, transportation and utility risks, and items about the acceptability of clinical HRSR assessment. Patients received a printed list of relevant local resources. Patients on oncology care were predominantly non-Hispanic white (48%) whereas those seeking primary, ob/gyn or diabetes care were predominantly non-Hispanic black (66, 50, and 62%, $p<0.01$). Nearly two-thirds of patients with diabetes had incomes $< \$25K$ in contrast to $<40\%$ in primary care, ob/gyn and oncology (38, 38, and 27%, $p<0.01$). Nearly half of all patients (48%) reported ≥ 1 HRSR; 31% had ≥ 2 . The most common HRSRs were food (33%) and housing (28%). HRSR patterns were similar across clinical populations, but patients seeking diabetes care had the highest rate of food insecurity (45% vs 26% in cancer, 32% in ob/gyn and 32% in primary, $p=0.05$). The majority of patients (84%) agreed it was appropriate to assess HRSRs in a clinical setting; acceptability was similar by clinical setting ($p=0.19$). High rates of acceptability indicate assessment of HRSRs is appropriate in a variety of settings; the high rate of risk suggests resources may be optimized by connecting all patients to local resources to address these risks.

Health care/services**Dental Service Trends Associated with Dental Therapists and Dentists** Donald Chi* Donald Chi Lloyd Mancl Dane Lenaker

Objective. Dental therapists are mid-level dental care providers who are a relatively new workforce innovation in the U.S. The goal of this study was to evaluate longitudinal trends in dental service delivery associated with dental therapists and dentists in Alaska's Yukon-Kuskokwim (YK) Delta.

Methods. We analyzed electronic health record data for 27,459 individuals who received dental care through the Yukon-Kuskokwim Health Corporation in Alaska's YK Delta (2006-2015). Analyses presented were restricted to claims submitted by a dental therapist or dentist. Dental claims were classified into one of five service categories by CDT billing codes: diagnostic, preventive, restorative, endodontic, and oral surgery. The main outcomes were proportions of services provided by dental therapists versus dentists. We ran linear regression models to test if time trends varied by provider type (year by provider type interaction) and to estimate time trends by provider type for services ($\alpha=0.05$).

Results. During the 10-year study period, the number of dentists ranged from 10 to 16 and the number of dental therapists ranged from 1 to 10. The overall number of diagnostic, preventive, and restorative services delivered in the YK Delta increased, whereas the number of endodontic or oral surgery services remained constant or decreased. There were significant year by provider type interactions for all five service categories ($P<0.001$). For diagnostic services, there was a -3.5% annual decrease observed for dentists and a 4.1% annual increase for dental therapists ($P<0.001$). Similar trends were observed for restorative and oral surgery services. For preventive services, there was no change for dentists ($P=0.89$) and a 4.8% annual increase for dental therapists ($P<0.001$). Similar trends were observed for endodontic services.

Conclusions. There were significant increases in the annual proportion of all types of services delivered by dental therapists (diagnostic, preventive, restorative, endodontic, and oral surgery). For dentists, there were concomitant decreases in the annual proportion of diagnostic, restorative, and oral surgery services delivered - and no differences in preventive and endodontic services during the 10-year study period.

Health care/services**SOCIOECONOMIC FACTORS MODERATE THE RELATIONSHIP BETWEEN RACE/ETHNICITY AND BARRIERS TO HEALTHCARE AMONG WOMEN** Shetal Vohra-Gupta*
Shetal Vohra-Gupta Liana Petruzzi Casey Jones Catherine Cubbin

Purpose: It is well known that access to care depends on sociodemographic factors. However, little empirical research has examined racial/economic health disparities as they effect women's access to care. This study examines whether income, education and insurance status moderates the relationship between race/ethnicity and barriers to care for women.

Methods: Multivariate logistic regression models were used to analyze data from the Medical Expenditure Panel Survey (2005-2015) among women ages 18-74 (N = 128,831). Independent variables included race/ethnicity, education, income, and insurance status. Control variables included age and marital status. A dichotomous outcome variable called "any barrier to care" was created based on four MEPS access questions.

Findings: Income, education and insurance status significantly moderated the relationship between race/ethnicity and any barrier to care. Therefore, we stratified the sample by race/ethnicity to examine associations between socioeconomic variables and any barrier to care. Education was associated with any barrier for all groups, where women who did not complete high school vs. college graduates **had lower odds of** having any barrier, especially for Asian women. Income was associated with any barrier for all groups as well, but with a larger gradient for White compared to Black, Asian and Hispanic women. No insurance vs. private insurance was associated with any barrier for all groups, especially for Asian and Hispanic women. Public vs. private insurance was associated with any barrier for white Women only, while public vs. private insurance was associated with lower odds of any barrier for Asian women only.

Conclusions: The relationship between race/ethnicity and any barrier to care is significantly moderated by income, education and insurance. Future research should take an intersectional approach to examine the relationship between subgroups of race/ethnicity, socioeconomic variables and health outcomes.

Health equity**Comparison of Health Indicators among Transgender Women, Men, and Nonbinary Individuals in the 2015 USTS and 2016 BRFSS** Loren Bauerband* Loren Bauerband Claire Altman Michelle Teti

The health of transgender and gender nonconforming (TGNC) populations is a public health priority as documented by disparities in mental health and healthcare access. However, population estimates are difficult to determine due to the lack of probability data available that captures transgender or gender identity. In 2014, the Behavioral Risk Factor Surveillance System (BRFSS) provided states an optional module containing questions that can be used to identify transgender respondents. The availability of these data, and other population surveys asking gender identity provide researchers opportunities to investigate the health needs of TGNC individuals. Nonetheless, there are limitations to the BRFSS, such as response rate, among a stigmatized group. The current research compares the 2016 TGNC BRFSS respondents to respondents in the 2015 United States Transgender Survey (USTS). The USTS is a national community-based nonprobability sample, and focuses on experiences of discrimination and identity-related events, while the BRFSS is focused on assessing population-level behavioral risk, and does not include the level of depth of identity-specific experiences. Both studies represent important efforts towards data collection among an underserved population

Preliminary Results

Data included 17,762 USTS (2015) respondents and 786 BRFSS (2016) respondents representing the same 24 U.S. States and Guam. We compared critical health indicators including: being uninsured, not going to primary care in last year, HIV testing, current smoking status, and heavy drinking. We found minimal differences including low rates (6-7% for heavy drinking) in both samples. The greatest difference found was a higher proportion of transgender women in the BRFSS reported never being tested for HIV. Complete results and implications for sample utilization will be discussed.

Health equity**Getting Permission or Having Enough Money to See the Doctor: A Multivariable Analysis of Access Barriers for Nigerian Women 2008-2018** David Washburn* David Washburn Hao Zhang
Eniola Olatunji**Background**

Nigeria, the most populous country in Africa, instituted a National Health Insurance Scheme in 1999, yet the vast majority of the country remains uninsured. For many women, numerous barriers to accessing care remain, including having enough money or getting permission to go to the doctor. This study examines which women reported having difficulty accessing care for those reasons, and how the relationships between those variables and different social determinants of health have changed over a ten-year period.

Methods

Using three nationally representative datasets from Nigeria's Demographic and Health Surveys in 2008, 2013, and 2018, we studied women's responses to whether having enough money or getting permission to go to the doctor was a problem. We conducted bivariate and multivariable analyses to understand the relationship between many of the social determinants of health and responses to those questions.

Results

In the multivariable models, younger women reported getting permission being a problem in 2008 and 2013, but this relationship was no longer significant in 2018, except between the oldest and youngest age groups. More educated women and those who were widowed, separated or divorced were less likely to report permission as a problem in each of the three surveys. Rural residents reported permission being a problem only in 2013 (OR 1.13 $p < .05$) and 2018 (OR 1.50 $p < .01$). Wealthier women, married women, those with insurance and those with at least a high school education were less likely to report money as a problem in all three years. Those in rural areas reported money being a problem in each survey (2008: OR 1.22 $p < .01$; 2013: OR 1.30 $p < .01$; 2018: OR 1.09 $p < .01$).

Discussion

Strong relationships between important sociodemographic variables and barriers to accessing care have remained over a ten-year period for women in Nigeria. Policymakers should focus on expanding access especially for less educated vulnerable groups and rural residents.

Health equity**Examining racial disproportionality in the number of hospital security calls for real or perceived combative behaviors in a pediatric hospital** Lauren Gambill* Amanda Barczyk
Amanda Barczyk Karen Piper Kristian Jones Jorge Ganem Lorena Martinez

Implicit bias and racial disparities in healthcare have been well documented in the literature. Evidence shows that many healthcare providers have implicit bias that includes negative attitudes regarding people of color and positive attitudes towards white individuals. Growing evidence indicates that this bias impacts decisions regarding diagnosis and treatment, contributing to well documented racial disparity in health outcomes. Understanding biased behaviors and actions of health care professionals is necessary to address racism in healthcare. The purpose of this study is to examine racial disproportionality in the number of hospital security calls for real or perceived combative behaviors, commonly referred to as a “code grey” within a free standing children’s hospital. A code grey is defined as: A message announced over a hospital's public address system indicating the need for an emergency management response by hospital security to: (1) A combative person with no obvious weapon (2) Real or perceived act of terrorism from conventional, nuclear, biological or chemical agents, or other security emergency. Initiating code grey labels patients and/or family members as “disruptive” or “aggressive.” Evidence suggests that when a patient or family is labeled as “disruptive” clinicians spend less time focused on clinical factors regarding the patient and are more likely to make diagnostic errors. All code grey events in the hospital are recorded in the Event Reporting System. This study will abstract data from the Event Reporting System to examine code greys occurring over a two-year period (1/1/2018-12/31/2019). A qualitative content analysis of the narrative descriptions in our event reporting system will be conducted to identify themes of the reasoning “code greys” were called. A quantitative analysis will determine if there is racial disproportionality between patients for which a code grey is called compared to patients who did not have a code grey called.

Health systems**A Nationwide Survey of Community Health Workers and the Barriers that their Clients**

Face David Washburn* David Washburn Tim Callaghan Cason Schmit Denise Martinez Emily Thompson Megan LaFleur

Background

Over the past several years, the Community Health Worker (CHW) field in the United States has been growing and evolving rapidly. During this period of change, CHWs fill a variety of roles in different locations including hospitals, clinics, offices, and community settings. CHWs are very diverse and to this point, there are no nationally representative surveys of CHWs to provide a comprehensive picture of the field. Through a survey of CHWs across the country, this work helps to provide a better sense of the current state of CHWs in the US, where they are employed, who their clients are, and what types of barriers their clients face.

Methods

After building a database of organizations that work with CHWs, the research team sent an online survey to those groups and encouraged them to promote the survey with any CHWs in their network.

Results

1400 CHWs took the survey, 1291 in English and 109 in Spanish. 77% were employed full time, 13% part time, with another 10% reporting that they worked as on a volunteer basis. The majority reported their work setting as either a health clinic (24%), outreach in the community (23%), or non-profit (24%). Smaller percentages of CHWs reported working in hospitals (7%), government organizations (6%) or academic institutions (2%). Two thirds of the respondents had at least an associate degree. 43% of CHWs worked with mostly urban clients while 29% reported working with mostly rural clients. 35% of CHWs reported transportation being the most important barrier to accessing health for their clients, while 25% stated the cost of care.

Discussion

While there is no nationally representative survey of CHWs in the United States, these efforts represent an important step towards a better understanding of the varied efforts of CHWs across the country. CHWs have unique understanding of the barriers their clients face when accessing services they need and can provide insight into any efforts to address the social determinants of health.

Infants/children/youth

Are Social Determinants of Health for Single Mothers Associated with Low Maternal-Infant Relationship in a Home Visiting Program? Adrienne Frech* Adrienne Frech Franklin Woode Allison Kemner Julie Kapp

Research question and significance

The first 1,000 days of life are critical in the prevention of childhood obesity. Home visiting programs (HVPs) are early life course interventions that promote child development and reduce risk of negative outcomes. HVPs also represent a potentially powerful approach to early childhood obesity prevention because the in-home services effectively remove barriers that preclude disadvantaged populations from accessing other prevention programs (e.g. transportation, child care, etc.).

Understanding the relationships between social determinants of health (SDH), adverse early childhood experiences (ACEs), and low maternal-infant relationship (MIR), a consistent risk factor for early childhood obesity, may inform the implementation of HVPs, allowing tailored support to at-risk individuals within disadvantaged populations.

Preliminary results. Our sample includes 1,950 U.S. children ages 0-2 years living in single-mother households from the Parents as Teachers (PAT) home visiting program. The children were geographically dispersed, favoring the South and the Midwest. Low income was very prevalent (93%), and the sample is racially and ethnically diverse, with 25% Latino, 38% non-Latino Black, and 29% non-Latino White. The prevalence of low MIR is 19%, and is dichotomized from a 1-5 scale measuring maternal nurturing, bonding, and connectedness to the child. Among the variables tested in stepwise logistic regression models, ACE category for “physical,” captured as child abuse or neglect (OR = 3.94); “mental illness,” captured as maternal or parental mental health issues (OR = 1.65); “mother treated violently,” which here includes verbal abuse (OR = 1.88); and support of child development (OR = .19) were among the strongest associations with low MIR and may indicate possible points of intervention to improve MIR and subsequently early childhood obesity risk.

Infants/children/youth**The Association between Children's Participation in Out-of-School Time Programs and**

Physical Activity in Rural Communities Mary Von Seggern* Mary Von Seggern Michaela Schenkelberg Ann Essay Debra Kellstedt Robin High Gregory Welk Richard Rosenkranz David Dzewaltowski

Background: Out-of-school time (OST) settings, like afterschool programs (ASPs), have the potential to reduce children's health disparities by increasing physical activity (PA). However, unlike youth sport, PA is not the primary focus of many OST programs. The aim of the present study is to examine demographic factors associated with OST PA (3-6pm) among rural children.

Methods: As part of a community randomized-control trial, 418 3rd through 6th grade children enrolled in two rural public schools participated in the study. Children completed the Youth Activity Profile (YAP), an online 15-item self-report PA survey, where they also reported gender and grade. A subsample of 235 children (boy, $n=117$; girl, $n=118$) consented to providing free and reduced lunch status and reported number of days spent in activity outside of school. Average OST PA per weekday was estimated using an algorithm converting raw YAP scores into minutes of PA. Differences in OST PA by grade, gender, and socioeconomic status (SES) were examined using mixed model ANOVAs with school as a random effect.

Preliminary Results: In the past 12 months, 37%, 43%, and 47% of children participated in daily ASPs, clubs, and other organized activities (e.g., music lessons), respectively. Children in ASPs accumulated 2.99 ± 1.21 more minutes per day of OST PA compared to those who did not attend ASPs ($p=0.014$). Overall levels of PA were higher among 3rd grade children compared to 6th grade children ($p<0.05$). Regardless of OST setting and SES, males were significantly more active than females ($p<.001$). Males from lower SES were significantly less active when attending ASPs ($\text{mean}_{\text{diff}}=-4.64 \pm 2.01$), clubs ($\text{mean}_{\text{diff}}=-5.03 \pm 2.02$), and organized activities ($\text{mean}_{\text{diff}}=-4.85 \pm 2.04$) compared to those from higher SES ($p<0.05$).

Significance: Among children in rural communities, there were disparities in OST PA by demographic factors. Modifying these settings may aid in reducing such disparities in PA.

Infants/children/youth**Socioeconomic Status, Material Hardship, and Telomere Length among Latina/o Children**

Michael Niño* Michael Niño Michael Niño

Telomeres are repetitive DNA-protein structures that protect the end of chromosomes. Telomere length has been associated with a range of poor health outcomes such as diabetes, obesity, cardiovascular disease, and asthma and is considered a reliable marker of aging. Using genetic and survey data from the Fragile Families and Child Wellbeing Study, we examine whether socioeconomic status and measures of material hardship are associated with telomere length for Latina/o children. Results from survey-corrected Ordinary Least Squares regression analyses demonstrate that socioeconomic status measures (parents' education and income based poverty) were not significantly related to premature cellular aging, whereas some forms of material hardship played a significant role in telomere length. More specifically, medical hardship and difficulty paying bills were associated with a significant reduction in telomere length for Latina/o children. These findings demonstrate the measures of material hardship may better capture stressors associated with economic deprivation. Results also have implications for understanding, at the cellular level, how stressors associated with material hardship potentially accelerate the aging process for Latina/o children.

Infectious or Microbial

Analyzing the demographic, spatial, and temporal factors influencing social contacts in US and implications for infectious disease spread Audrey Dorélien* Audrey Dorélien Rachelle Hill Aparna Ramen Isabella Swanson

We know diseases such as the 2019 Novel Coronavirus (2019-nCoV) are spread through social contact. Moreover, interventions to control social contacts are required to stop disease spread in epidemics/pandemics for which vaccines have not yet been developed. However, existing data on US social contact patterns is limited. Consequently, we use American Time Use Survey (ATUS) data from 2003-2018 to describe and quantify the duration of social contacts, which influences the spread of airborne infectious diseases such as 2019 nCoV, influenza, or measles. Activities done with others or in social settings such as in a restaurant or traveling alone by bus are considered social contacts. After stratifying our sample by sex, we analyze the age pattern of the duration of social contacts using OLS regression techniques.

Since social distancing measures often require at home quarantine, we specifically analyze social contacts within the household. We are able to look at the age and sex pattern of duration of social contacts, total number of household contacts, as well as identify which age groups respondents are interacting with within the household. For instance we can identify which respondents have high rates of social contacts with the elderly in the household and how that pattern may differ across space and time in the US.

We expect to be able to identify key sociodemographic, temporal, and spatial determinants of social contact patterns in the US.

Interventions/Programs**Combating High Incidence of Sexually Transmitted Infections of Incarcerated Individuals at the Douglas County Department of Corrections** Koree Willer* Koree Willer Joseph Ayoub Claire Baweja Justin Brill Jacquelyn Ho Abigail Jones Pooja Varman

The incidence of sexually transmitted infections (STI) in incarcerated individuals is often much higher than that in the general population. Douglas County, in particular, has reported some of the highest gonorrhea and chlamydia rates in the nation for the last 25 years. Data collected in 2017 reveals gonorrhea rates at the Douglas County Department of Corrections (DCDC) to be 25 times the national average and chlamydia rates to be 15 times the national average. Furthermore, twice as many DCDC female inmates tested positive for STIs compared to male inmates. Many factors—social disruption, lack of access to healthcare resources, and high-risk sexual behaviors—contribute to this disparity. Do juSTIce is an organization of volunteer health professional students from Creighton University and the University of Nebraska Medical Center (UNMC), who are working to address the notoriously high incidence of STIs in Douglas County. Our efforts include educating inmates on STI transmission and prevention, testing and treating for gonorrhea and chlamydia, and distributing free condoms and testing information to inmates upon release. Following an evidence-based model, we utilize data collected from participant surveys as well as national STI data to update our methods. Accordingly, we have more than doubled the frequency of education and testing in female housing units to address the higher incidence in this population. Furthermore, we have revised our educational material to include LGBTQ sexual health topics to address nationally reported disparities affecting LGBTQ incarcerated individuals. Growing evidence-based programs like Do juSTIce show promise in confronting the high incidence of STIs in incarcerated populations.

Interventions/Programs**Association between CPC Preschool Attendance and Criminal Justice System Involvement**

Cynthia Pando* Cynthia Pando Jaime Slaughter-Acey Ellen Demerath Jeungeun Seo

Background: Black and Latinx Americans are disproportionately impacted by the criminal justice system (CJS) due to structural racism. Research suggests CJS involvement, either direct (e.g. serving time in prison) or indirect (e.g. family member serving time in prison) is associated with poorer education, employment, and health outcomes.

Objective: Describe whether participation in a school-based early childhood program model, Child-Parent Centers program (CPC), is associated with reduced CJS involvement in a sample of children (ages 3-5) followed thru age 35. CPC provides preschool education and comprehensive family support services to children from low-income families.

Method: Data is from the Chicago Longitudinal Study (CLS) - a prospective 30-year longitudinal cohort study of 1,531 participants, born 1979-1980, who grew up in low-income neighborhoods in Chicago. The CLS recruited preschool-age children who attended a CPC site or received the standard of care at the time of recruitment, 1983-1985. Using linear and logistic regression, we explored the relationship of CJS involvement (age of first arrest, number of arrests, incarceration length, and felony charges) and CPC enrollment. Models were adjusted for sex, race, and childhood socioeconomic status index. Our analytic sample is comprised of 1,465 participants: 60%- attended CPC, 50% -male, and 93% -Black.

Results: In adjusted models, CPC attendees served 1.4 (SE=0.48, p=0.004) fewer years of incarceration (SE=.48) relative to non-CPC participants. CPC participants, as compared to non-CPC participants, were also less likely to be incarcerated (OR=0.72, 95%CI: 0.54-0.95) or charged with a felony by age 27 (OR: 0.74, 95%CI: 0.56- 0.99). No association was found for the number of arrests or age of first arrest.

Conclusion: Participation in school-based early-childhood education and family support programs for preschool-age children, 3 to 5 years old, may serve as a protective factor against future interactions with the CJS.

Interventions/Programs**Implementing Adverse Childhood Experiences Screening in Pediatric Practice through a Quality Improvement Program: An Evaluation of the Strengthening Pediatric Partners: Adverse Childhood Experiences (SPPACES) Program** Cheryl McFarland* Cheryl McFarland Carly Worman Ryan Aldina Hodve

Adverse Childhood Experiences (ACEs) can have significant lifelong health and behavioral consequences. It's critical to examine ACEs exposure in pediatric populations to assess and mitigate the effects of toxic stress. For this reason, screening for ACEs in pediatric primary care settings is an important avenue of exploration. The SPPACES six-month Maintenance of Certification (MOC) Part 4 quality improvement program educated pediatricians on implementing ACEs screening and MOC evaluation focused on utilization of ACEs screening tools and level of risk in the population. Data were collected through a physician practice survey, pre/post physician surveys, monthly chart abstractions and progress reports. A total of 9 practices participated in the program and 1,067 medical charts were reviewed. Of charts reviewed, 51.6% (551) families were screened for ACEs. Using patient volume data and screening rates we estimate that 10,280 families were screened during the program.

Among children ages 6-12, the average ACE score was 1.9, with children from the Regional Diagnostic Treatment Centers (RDTCs) - patients already involved with child protective services - scoring higher than traditional practices with an average of 3.8 (compared to 0.4 for private practices). Among adolescents ages 13-18, the average ACE score was 2.8 with RDTC patients scoring an average of 5.0 (compared to 0.3 for private practices). Practices increased their rates of ACE screening by 84.3%, opportunities for identification of high-risk patients by 59%, and anticipatory guidance by 22%. By the end of the program, 100% of high-risk children/adolescents (score of 4+) were either engaged in or referred to services. Program results indicate pediatric practices can effectively introduce ACE screening tools into primary pediatric care with a variety of patient populations, prompting identification of high-risk children and appropriate referrals to community or child protective services as indicated.

Interventions/Programs

Tools for recruiting members of underrepresented populations: a comparison of different recruitment methods as part of 23andMe's Global Genetics Project Marie Luff* Marie Luff
Katelyn Kukar

Web-based studies allow research participation from any location with a reduced time commitment, removing many barriers to participation that are inherent to traditional studies. We explored the methods used to recruit participants from a diverse set of populations as part of 23andMe's Global Genetics Project (GGP), a program that aims to address ethnic disparities in genomics research. GGP recruits adults in the US who have four grandparents born in a single country that is underrepresented in the 23andMe database.

We sought insight into how different recruitment channels and community-based activities affect study enrollment. Identifying factors that lead to effective recruitment of underrepresented populations can inform recruitment strategies for future, similar studies.

Recruitment channels included: 23andMe-driven methods (blog posts, online ads, paid social media influencer sponsorships) and community-based methods of outreach (word-of-mouth through friends, family, and organic promotion by social media influencers). We explored recruitment trends by analyzing participants' self-reported method of recruitment and the impact of community influencer engagement.

47.8% of all participants heard about the study first from a friend/family member. Unexpectedly, organic social media posts from unpaid influencers were also important contributors to recruitment. In one instance, an influencer post resulted in 196 enrollments in 1 week for a single country; prior to the post, the typical enrollment cadence was 7 enrollments/week.

Although we expected study-specific, paid online ads to be the most effective mode of recruitment, word-of-mouth proved to be more successful for recruiting across populations. This suggests that in studies that aim to recruit underrepresented groups in the US, word-of-mouth and other organic, community-based mechanisms for outreach are powerful in accelerating recruitment and can be more effective than investigator-driven recruitment strategies.

Interventions/Programs**Local and Global in Public Health Messaging** Jasmine Blanks Jones* Jasmine Blanks Jones

Preliminary findings will be shared based on student and community member reflections from a Masters of Public Health course titled, "Health Messaging in Africa: Public Performance as Community Health Education". This course asks, What about performance offers a unique opportunity to learn from and with communities? How might dramatic performance be used to share information while learning from an audience and performers? This course examines the work and research of young artists from Liberia, West Africa who used street theatre to teach best practices for prevention during the Ebola crisis and considers how their use of dialogical performance contributed to the critical co-creation of knowledge with communities which iteratively informed interventions throughout their 1.5 year long awareness campaign. The visiting artists from Liberia will share their firsthand experiences with MPH students at the University of Pennsylvania and local Philadelphia youth in a combined Academically-Based Community Service course, and guide the class through use of their playwriting model for community change. MPH students and local youth will co-design public performance projects around community-based concerns such as HIV awareness using the tools they have learned. This course extends school year supplemental health education efforts through Philadelphia nonprofit AFAHO (African Family Health Organization) by providing innovative creative community-engaged and youth-centered health communication and awareness programming informed by a communications for development approach. Public health researchers who are looking for innovative ways to share their data will gain insights into this experimental ethnographic method and practitioners who want to offer their communities ways to connect best practices to lived experience will develop new pedagogical tools.

Findings will focus on the translatable aspects of this experimental methodological approach from the Liberian context to the local African immigrant (1-3 generation) in Philadelphia which will be implemented between May-August 2020. This project provides an innovative and important model for creating local understanding of global health issues and how we can engage communities on their own terms. It is an important intervention for interrupting a one-directional flow of researcher expertise to allow for more fluid ways of producing knowledge and sustaining change for improved health outcomes with communities.

Aligned with the conference theme on policies, places and manufacturing illness, there should be some strong take-aways regarding how communities globally and locally make sense of awareness and prevention messaging as it applies to their own lives.

Life-course/developmental**Implications of multigenerational households in the context of poverty on obesity among vulnerable African American families: A theoretical conceptual model and research framework** Abigail Gamble* Abigail Gamble Sharon Herring Justin Moore Bettina Beech

The structure of African American (AA) families living in poverty has been consistently characterized in the scientific literature as multigenerational, single-parent, female-headed households. The implications of multigenerational living have not been intentionally considered in conceptualizing obesity prevention for vulnerable populations. The Mississippi (MS) Delta is a geographically and culturally distinct region of MS where the majority of residents are socioeconomically disadvantaged AAs living in multigenerational households in under-resourced, rural communities. To explore how multigenerational living impacts obesity, we examined the literature for multigenerational life course frameworks and obesity prevention models and conducted surveys (N=281) and qualitative interviews (N=37) with perinatal adolescents and their parents in the MS Delta. A convergent parallel analysis revealed: 1) adolescent pregnancy (<20-years) is largely generational within AA Delta families; 2) adolescent mothers rely on their mothers and grandmothers as parental role models and caregivers; and 3) intervention approaches must consider the implications of multigenerational living on agentic and social determinants of obesity. Based on our findings, we developed a theoretical conceptual model bolstered by Family Systems Theory, Resilience Theory, Social Learning Theory and Social Cognitive Theory in the cultural context of personal, proximal, and collective agency. In conclusion, we propose a research agenda reflecting the research priorities of the National Institute of Aging and the National Institute of Minority Health and Health Disparities and the Robert Wood Johnson Foundation's Culture of Health Action Framework. A pillar of this agenda is the application of effectiveness-implementation hybrid study designs to test innovative multilevel intervention strategies while evaluating their uptake within real-world public health and health care settings serving vulnerable populations.

Life-course/developmental

The Relationship Between Adverse Childhood Experiences and Maternal Depression in Rural Pakistan Katherine LeMasters* Katherine LeMasters Brooke Staley Lisa Bates Esther Chung Ashley Hagaman Elissa Scherer Siham Sikander Joanna Maselko

Background: Adverse childhood experiences (ACEs) increase risk for depression in adulthood. While the prevalence of perinatal depression is nearly 20% in low- and middle-income countries, little work examines the relationship between ACEs and maternal depression in these settings. This study estimates the overall relationship between ACEs and depression and assesses which specific ACEs are associated with increased risk among women in rural Pakistan.

Methods: Data come from the 36-month postpartum wave of the Bachpan birth-cohort in rural Pakistan (n=889). Major depressive episodes (MDE) were assessed with the Structured Clinical Interview for DSM-IV (SCID) and depressive symptom severity with the Patient Health Questionnaire-9. ACEs were measured with an adapted ACE International Questionnaire, and both total ACEs and separate grouped domains (i.e., home violence) were analyzed. Multivariable Poisson and linear mixed models were used for analyses.

Results: About 23% of women had MDE and 17% had moderate depressive symptoms. The majority (58%) experienced at least one ACE domain, most commonly home violence (38%). Total ACE score was associated with poor mental health. Women experiencing four or more ACEs had the most pronounced increase in symptom severity (Mean Difference (MD)=3.37; 95% CI=1.67,5.06). Exposure to specific ACE domains, such as family distress, was also positively related to MDE (Prevalence Ratio=1.45; 95% CI=1.11,1.89) and symptom severity (MD=1.87; 95% CI=0.65,3.10).

Conclusions: These findings highlight women's lifelong experiences as important factors to understanding current mental health in rural Pakistan. They also signal the need for a life course perspective for addressing women's mental health. Global health practitioners should address women's ACEs within mental health interventions to ensure that they receive appropriate psychosocial and mental health support

Mental health/function**The Moderating Influence of APOE Genotype on Educational Differences in Dementia Risk**

Mark Lee* Mark Lee Timothy Hughes Kristen George Jeannette Simino Pamela Lutsey

Background: The APOE- ϵ 4 allele is a significant genetic risk factor for late-onset Alzheimer's disease dementia. However, this relationship is not deterministic and may be ameliorated by protective factors, like education. It is unclear from previous research whether APOE- ϵ 4 moderates the effect of education on dementia.

Research Questions: 1) Does the education gradient in dementia risk persist across groups stratified by genetic risk for the disease? 2) Does genetic risk magnify or diminish the influence of education on dementia?

Methods: Participants from the Atherosclerosis Risk In Communities (ARIC) study (N=15,064, 27.3% black, 55.1% female) aged 45-64 years were followed from 1987-89 to 2016-17 for incident dementia events. Using Cox proportional hazard regression, we estimated the main and interaction effects of educational attainment and APOE- ϵ 4 with risk of incident dementia.

Preliminary Results: Among participants, 30.9% had one or more copies of the APOE- ϵ 4 allele. APOE- ϵ 4 carriers had significantly higher risk of dementia than non-carriers (HR=1.92 [1.55-2.39]). Compared with the 23.9% who did not complete high school, the 40.7% who were high school graduates and the 35.4% with some college education were at lower risk (HR=0.72 [0.70-0.75] and HR=0.60 [0.54-0.67], respectively). Relative to those who did not complete high school, some college education was associated with lower dementia risk among both APOE- ϵ 4 carriers (HR=0.70 [0.62-0.79]) and non-carriers (HR=0.52 [0.43-0.63]). However, a significant interaction was observed ($p<0.05$), whereby the magnitude of the education gradient was slightly more pronounced among APOE- ϵ 4 non-carriers.

Summary: Higher educational attainment was associated with lower dementia risk among APOE- ϵ 4 carriers and non-carriers. However, the influence of education on dementia risk was somewhat lower among those who were carriers of the APOE- ϵ 4 risk allele. Next steps for this analysis will include using polygenic scores to define genetic risk groups and examining differences by race and sex.

Mental health/function**Trends in Positive Mental Health for Young Adults in the US** Eryn Piper Block* Eryn Piper Block Fred Zimmerman

A time of many biological, social and educational transitions, the path from adolescence into young adulthood is both riddled with risks and stocked with opportunity. The vast majority of mental illnesses emerge by young adulthood and an estimated 10-20 percent of adolescents and young adults struggle with mental illness in the US. Yet the absence of mental illness is only one part of complete mental health: the conceptually and empirically distinct construct of positive mental health, including a sense of purpose, belonging and joy, is a crucial, yet understudied component of overall wellbeing and a powerful protective factor for future challenges.

There is a growing interest in the construct of positive mental health, but very little research investigates the potential changing nature of positive mental health during the pivotal developmental period of young adulthood.

We use the Population Study of Income Dynamics (PSID) Transition to Adulthood Supplement (TAS) to investigate trends across age (18-26) and year (2005-2015) by demographic characteristics (race/ethnicity, sex, college/employment status, income) in positive mental health compared to depression (N=3,238).

We find that positive mental health is increasing slightly over time while depression levels seem to be remaining steady. We also find that there are several subpopulations that have both higher positive mental health and higher depression than their counterparts: women vs. men, Black individuals vs. White individuals, and college students vs. the employed. Our results provide further evidence that positive mental health and mental illness are separate constructs, thus reinforcing the need to measure both constructs when assessing the complete mental health of young adults. This work contributes to the important shift in our health system from focusing chiefly on treating disease to comprehensively promoting health and wellbeing.

Mental health/function

Longitudinal effects of perinatal social support on maternal depression: a marginal structural modelling approach Kathryn LeMasters* Kathryn LeMasters Katherine LeMasters Paul Zivich Siham Sikander Lisa Bates Sonia Bhalotra Esther Chung Ahmed Zaidi Joanna Maselko

Background: Depression during pregnancy or within one year of childbirth imposes a high burden on women with rippling effects through her and her child's lifecourse. Social support may be an important protective factor, but the complex bidirectional relationship with depression, alongside a paucity of longitudinal explorations, leaves much unknown about critical windows of social support exposure across the perinatal period and causal impacts on future depressive episodes.

Methods: This study leverages marginal structural models to evaluate associations between longitudinal patterns of perinatal social support and subsequent maternal depression at 6 and 12 months postpartum. In a cohort of women in rural Pakistan (n=780), recruited in the third trimester of pregnancy and followed up at three, six, and 12 months postpartum, we assessed social support with two instruments, the Multidimensional Scale of Perceived Social Support (MSPSS) and the Maternal Social Support Index (MSSI), and assessed Major Depressive Disorder with the Structured Clinical Interview for DSM IV.

Results: High levels of perceived social support through the perinatal period was associated with a decreased risk of depression at 12 months postpartum (0.51, 95% CI: 0.29, 0.88). We find signals that the recency of MSPSS also matters, but this finding is imprecise. We did not find evidence of a protective effect for MSSI.

Conclusions: This study highlights the protective effect of sustained perceived support on perinatal depression. Interventions targeting, leveraging, and maintaining this type of support may be particularly important for reducing postpartum depression.

Mental health/function**Implementing universal suicide risk screening and assessment: System wide changes to identify and support patients at risk for suicide** Amanda Barczyk* Amanda Barczyk Laura Kidd Angela Nguyen Lauren Do

Suicide is the 10th leading cause of death in the United States and is the second leading cause of death in people ages 10-34. Suicide attempts have shown to be even more prevalent. Suicide prevention efforts in multiple sectors are needed to combat this epidemic, and successful prevention efforts will require an interdisciplinary approach where sectors identify the effective methods to contribute to prevention efforts. This presentation will discuss national and statewide efforts made by one healthcare network to implement suicide screening and risk assessment guidelines, education, policies, and procedures. Healthcare is a particularly necessary point of intervention as research has shown that 83% of individuals who died by suicide received medical care in the year preceding their death. Of these individuals, 39% visited an emergency department without having a mental health diagnosis, making emergency departments a feasible site of intervention. This presentation will provide an overview of: The evolution of the development of a suicide risk assessment hospital policy; Methods to create evidence-based guidelines and education across a large healthcare network; and Strategies for integrating suicide screening, assessment, and surveillance into an electronic medical record. The goal of this presentation is to stimulate a discussion on how interdisciplinary teams can collaborate to develop strategies that identify and support patients at risk for suicide, ensure patient safety while in a healthcare setting, and utilize research to inform guidelines, education, policy and procedure development.

Methodological approaches to studying public health

Protecting and promoting mental health among research teams in public health research: context, practices, and recommendations Raquel Burgess* Raquel Burgess Kim Andrew Ashley Hagaman

As the field of global health expands and further research is conducted in areas where trauma, violence, and mental illness are highly prevalent, there is an increasing need for effective practices to protect and promote mental health among all members of a research team, especially those collecting data and accompanying participants as they relay their health problems. In the public health field, researchers do not have pragmatic guidance on providing supportive environments to their research teams who often hold different cultural understandings of trauma and mental health than those of the researcher. In this paper, we present a series of tactics used in two separate research studies (one studying suicide in Nepal and another studying the intergenerational transmission of trauma in South Africa) to protect the safety and mental well-being of research staff by providing structure and systems for emotional and psychosocial support. We provide an overview of the exposures research staff endure, protocol examples from the two research projects to support staff mental health, practices with promising efficacy, and continuing challenges. The presentation aims to also spur discussion in public health research, highlighting our ethical mandates as principal investigators to ensure the health and safety not only of our research participants, but also to our research staff.

Methodological approaches to studying public health

A short, valid, and flexible web-based screener for mild cognitive impairment Nicole Schmidt* Nicole Schmidt Eric Grodsky Chandra Muller John Robert Warren Jennifer Manly

Clinical assessments are valid for identifying the early stages of dementia (mild cognitive impairment, MCI), but these methods are costly and time-consuming. Few screeners for MCI exist that can be implemented quickly and outside of the clinic using flexible, cost-effective methods. Having short, valid, and flexible screeners for MCI that can be administered on computers, tablets, and smartphones would allow for cost-effective assessments to be incorporated into large-scale, population-based surveys. Using data from the Offspring study (N=34 with MCI, N=54 without MCI), we analyzed the sensitivity and specificity of several web- and telephone-based assessments used to identify MCI, adjusting for age and education. Web assessments included the Verbal Paired Associates (PA) and Visual PA tests. Phone assessments included the Number Series, Letter Fluency, Category Fluency, Number Span Forward & Backward, the Alzheimer's Disease 8 (AD8), and self-reported memory complaints. The discriminant ability of the web-based Visual PA test (ROC Area = .69) was comparable to other well-validated phone assessments of MCI, such as the Category Fluency (ROC Area = .69), Number Span Forward (ROC Area = .61), Number Span Backward (ROC Area = .67), and Letter Fluency (ROC Area = .68). The Visual PA strongly predicted MCI, with a 98% reduction in the odds of MCI for every additional correct answer (OR=0.02), but our results are imprecise (95%CI: .000 to .76). In expectation, the Visual PA appears comparable to phone assessments, although substantial uncertainty in its diagnostic precision remains. Yet, it is short, easily administered on a large-scale, and our evidence suggests that it can provide a sensitive and specific test to refer individuals for more thorough in person or phone assessments of MCI. This study has important implications for public health by providing a flexible tool to identify individuals at risk for early stage dementia who may benefit from targeted follow up.

Methodological approaches to studying public health**Life Course Trajectories of Subjective Health: Testing Longitudinal Models for Self-rated Health in Early Life** Iliya Gutin* Iliya Gutin Kenneth Bollen

Self-rated health (SRH) is ubiquitous in life course research, as one of the few consistently measured questions on health in most longitudinal studies. However, extant studies yield mixed results, and offer little guidance on the best models to capture its longitudinal trajectory. SRH has unique properties that may complicate its modeling in longitudinal analyses; while most studies conceptualize SRH as a spontaneous assessment that captures individuals' subjective health at time of survey, the fact that SRH also reflects constancy in how individuals view the overall trajectory of their health - past, present, and future - must be taken into account when using SRH to understand *changes* in health over time. The lack of empirical evidence on the appropriateness of a given model for SRH trajectories is especially troublesome when examining individuals who are transitioning across multiple stages of the life course, and whose perceptions and experiences of their health may be rapidly changing in tandem. Using five waves of Add Health data (ages 11-42), we employ structural equation modeling to correct for measurement error and identify the best-fitting longitudinal models describing SRH trajectories. Results support the use of autoregressive models - corresponding with the view of subjective health as an "enduring" concept - as SRH at one time is highly-predictive of SRH in the prior time without exhibiting evidence of more complex trajectories often used in research. This simple autoregressive structure consistently outperforms other models such as fixed effects, latent growth curve models, and the autoregressive latent trajectory model. Interestingly, comparisons of this autoregressive model across gender and race/ethnic groups suggests that there is very little variability in SRH trajectories from early life into adulthood, as individuals' initial SRH ratings appear to set them on a years-long trajectory that is fairly similar across demographic groups.

Migration**Institutional Gatekeepers and Models of Oppression in Perpetuating Immigrant Trauma: Implications for Cross-Sector Collaboration, Service Delivery Systems and Family-Based Interventions** Marcela Nava* Marcela Nava

Research Objective: Anti-immigrant sentiment has contributed extensively to federal and state restrictions on migrant eligibility for publicly-funded healthcare. Immigrants receive a disproportionate amount of health care through local safety nets of health services for the uninsured, including public hospitals, free or charitable clinics, federally qualified health centers and emergency rooms, as well as community-based social service organizations. Given the politicized nature of socioeconomic opportunities and public funding for migrant healthcare, many community health efforts have turned their attention to interventions that build on migrant social networks for economic resources. This study applies a political economy lens to develop a more nuanced understanding of migrant socioeconomic status and its relationship to health.

Study Design: Drawing on purposive sampling, the researcher conducted in-person semi-structured interviews with key informants who self-identified as professionals that work with immigrants in a field relevant to the study. In keeping with a grounded theory approach, analysis of interview transcripts began after the first data were collected and continued throughout the initial round of interviews. The researcher employed constant comparison to analyze and code data, approaching individuals for subsequent interviews through theoretical sampling to explore emergent research questions. This continued until reaching conceptual saturation and generation of a conceptual framework.

Population Studied: Study participants were 12 professionals that work with migrants in healthcare, social services, and advocacy sectors. The researcher drew on her personal, professional, political and scholarly network to identify key informants in a variety of roles such as case managers, therapists, community organizers, and program directors.

Principal Findings: The core category identified in the study was the role of institutions and gatekeepers. Specifically, the roles of healthcare and social service delivery systems, law enforcement, and public policy were presented as overarching systems influencing migrant health through the role of gatekeepers in each of these systems. Under this core category came several other major categories, including “models of oppression,” “trauma,” and “role of the family.” The financial structure of an institution (public/private/for-profit) was viewed as an important factor influencing the role of gatekeepers and barriers to health. Participants discussed various successful strategies to overcome barriers to health within these institutions, including cross-sector approaches to develop interventions and integrate advocates and navigators within service delivery systems such as education and mental health.

Conclusions: The nature of institutions and the gatekeepers within the health and social service sectors play a critical role in influencing migrant health. The significant impact of oppression, multi-

layered and multi-generational trauma, and family relationships necessitate collaborative approaches to migrant health, such as partnerships between schools and mental health providers, that include lay navigators and family-based interventions.

Implications for Policy or Practice: This study explored the perspectives of social service providers regarding socioeconomic status and migrant health. Participants in this study identified various opportunities for cross-sector collaborations and system integration to improve migrant health. A more nuanced understanding of the relationships between institutions, gatekeepers and migrant families can empower local policymakers in high-immigrant states such as Texas with innovative, collaborative and cost-efficient strategies to protect the health of migrants and other groups with extensive political and socioeconomic barriers to health.

Migration

Providers' perspectives on refugee women's utilization of sexual and reproductive health services in Georgia Milkie Vu* Milkie Vu Ghenet Besera Cam Escoffery Danielle Dimacali Amanda Burks Hyun Min Jang Kelli Hall

Background: Little research has examined multilevel influences on refugee women's utilization of sexual and reproductive health services (SRHS) in Georgia, a top destination for U.S. refugees in recent years. We qualitatively interviewed healthcare providers serving refugee women to understand barriers and strategies to promote SRHS utilization among this understudied population.

Methods: We conducted in-depth, semi-structured interviews with 17 providers (e.g., physicians, nurse practitioners, registered nurses, medical assistants), across different clinical settings. Socioecological Framework and Theory of Access guided interview guide development and analysis. Data were analyzed using inductive and deductive approaches and thematic analysis.

Results: Patient-level barriers included language, transportation, and cultural beliefs regarding gender roles, modesty, family planning, and voicing healthcare needs. Clinic-level barriers included funding constraints, limited SRHS offerings, time constraints, and a lack of interpreter and transportation services. The diversity of refugee populations made it challenging to fully address different communities' healthcare needs, particularly with understanding cultural beliefs and offering interpreter services. Providers frequently discussed referrals to/collaborations with other clinics as a mean to improve SRHS, but also noted challenges associated with referral systems. Strategies to promote SRHS utilization included improving SRHS awareness, cultural humility, patient education, and service integration across systems.

Discussion: In addition to considering unique needs and cultural backgrounds of refugee women, findings suggest that healthcare providers attend to patients' diversity of beliefs/practices. Interventions to promote SRHS can target interpreter and transportation services at healthcare practices. Future research should address best practices to improve referrals and integration of SRHS across health systems.

Migration**Countervailing Effects? Remittance Sending and the Physical and Mental Health of Migrants** Coralia Balasca* Coralia Balasca

Remittances, or monies sent to recipients in countries of origin, are prominent transnational economic ties providing many migrants with continued interaction with family and friends left behind. These transactions may be beneficial or detrimental to migrant mental and physical health. Using the New Immigrant Survey (NIS), I assess whether remittance-sending has countervailing associations, putting migrants at a physical health disadvantage by depleting incomes but providing a mental health bonus through fulfillment of family roles. Overall, I find that remittances are associated with a physical health disadvantage and only provide a mental health bonus under certain circumstances. That composition of migrants who select into remitting is consequential for health outcomes. My findings underscore the complexity of transnational ties, in terms of who selects into transnational economic behavior (i.e. remittance sending), the type of behavior (magnitude and type of remittance transfer), and the health consequences, both physical and mental, of that behavior.

Migration**Ties That Bind: Mixed-Status Immigrant Families, Stress-Response Dysregulation, and Cardiometabolic Health** Aresha Martinez-Cardoso* Aresha Martinez-Cardoso

Currently, 16.7 million children and adults in the United States live in a mixed-status immigrant family—families where some members are undocumented immigrants. An emerging body of research suggests that living in a mixed-status family can be consequential for children with undocumented parents or caretakers. In part, this may be because children are heightened to their family members' risk of immigration detainment and deportation and attuned to an increasingly anti-immigrant climate in the US. The embodiment of these stressors may trigger a cascade of physiological processes that disrupt stress-response systems in the body leading to poor cardiometabolic health. To date, however, links between living in a mixed-status household and stress-response biomarkers that are associated with cardiometabolic risk have largely been unexplored in the literature. This objective of this study was to fill this gap by analyzing the second wave of the Los Angeles Family and Neighborhood Study (LAFANS-2), a population-based survey with measures of children and parents' immigration documentation status, health, and socioeconomic characteristics. Leveraging this data, I employ multivariable regression models to assess the association between residence in MSHs and stress-biomarkers and test whether stress-biomarkers mediate the relationship between MSHs and cardiometabolic risk. This work advances research that explores how sociocontextual factors, such as immigration and legal status, shapes the lives and health of undocumented immigrants and their children.

Mortality**Effect of Binge Drinking on All-Cause and Cause-specific Mortality among US Adults, 1998 to 2015** Muntasir Masum* Muntasir Masum

Past studies have inconclusive findings of the association of light to moderate drinking with cause-specific mortality. However, this association has not been examined using binge drinking as a predictor in large, representative samples of U.S. adults. This study aims to determine the association of binge drinking to all-cause and cause-specific mortality risk in the U.S. population. The study analyzed nationally representative National Health Interview Surveys (1999 to 2008), linked to the National Death Index records through December 31, 2015. The total analytic sample of U.S. adults was 565,738 with 75,592 total deaths. The main outcome was all-cause, CVD, cancer, accidents, respiratory, and cerebrovascular disease mortality. The main exposure, frequency of binge drinking (the number of days consuming 5+ drinks), was categorized into categories of None, Monthly (1-12), Weekly (13-52), and More than Weekly (53 or more). Consistent with previous published work, preliminary results show that light binge drinking is associated with lower all-cause mortality, and heavy binge drinking, defined as more than weekly binge drinking, is associated with 27% increase in all-cause mortality risk (HR=1.263; 95%CI: 1.176, 1.355; $p<0.001$), compared with people who never drink. Heavy binge drinking is also found to be associated with an increased risk of cancer, accidents, and respiratory disease mortality. However, the preliminary analysis did not show any significant mortality risk for CVD and cerebrovascular diseases. Even though light or moderate binge drinking still shows a protective effect on mortality risk, heavy binge drinking significantly increases the all-cause and cause-mortality mortality risks among U.S. adults.

Mortality**Female Life Expectancy Trends for U.S. States and 16 Peer Countries, 1965-2016** Zachary Cramer* Zachary Cramer Ryan Masters

Female life expectancy in the U.S. is much lower than in peer countries and the gap has widened since the late 1970s. At the same time, between-state differences in U.S. life expectancy have increased. In this study, we aim to determine whether diverging female life expectancies between U.S. states are responsible for the increasing female life expectancy gap between the U.S. and peer countries. Further, we investigate the ages at which mortality differences contribute most to these trends. We analyze the United States Mortality Database and the Human Mortality Database for years 1965 through 2016 and calculate yearly life expectancy for female populations in each U.S. state and for 16 peer countries. Female life expectancy in every U.S. state is compared against the average female life expectancy in the United States and the average female life expectancy in peer countries. Arriaga decomposition is used to estimate the contribution of deaths at ages 0, 1-4, 5-9, ..., 95-99 to differences in female life expectancies in 1965, 1980, 1995, 2010, and 2016. Age-specific contributions to changes in life expectancy differences in 2016 and 1965 are examined to determine the ages most responsible for worsening life expectancy among U.S. women. We find that U.S. states' female life expectancies appear to have diverged substantially over time when compared to U.S. averages. However, when compared to peer countries, every U.S. state exhibits the same worsening trend in female life expectancy. Further, we find that mortality differences in older adulthood contribute most to the widening female life expectancy differences between U.S. states and peer countries. We conclude that the widening gap in female life expectancy between the U.S. and peer countries is not caused by rising mortality inequalities between U.S. states. Rather, all U.S. states are falling behind peer countries' life expectancies in similar ways, suggesting this mortality disadvantage is a nation-wide phenomenon.

Mortality**The Role of Cohort Size in U.S. Women's Suicide Rates** Julene Cooney* Julene Cooney

Suicide rates in the United States have been increasing since 1999 for men and women, but the increase has not been equal across age, period or cohort. While men's suicide rates follow the same upward trajectory by age that suicide researchers have come to expect, women's rates in older ages have stagnated, and suicides in the mid-life are spiking. Using U.S. vital statistics data and a quasi-Age Period Cohort model wherein cohort is estimated using cohort size, I find that the size of the baby boomer generation explains very little of the increase in mid-life suicide rates among women. Although suicide rates are higher for baby-boom generations, they remain high for smaller, younger generations.

Non-health institutions (business, political, education systems)**Toxic structures: Speculation and lead exposure in Detroit's single-family rental market**

Alexa Eisenberg* Alexa Eisenberg Eric Seymour Alex Hill Joshua Akers

Foreclosure sales following the 2008 mortgage and financial crisis permitted landlord-investors to acquire large volumes of low-cost residential properties, reshaping patterns of property ownership in racially segregated, low-income housing markets across the US. Growing research investigates recent corporate involvement in the private single-family rental market, including investors' methods for profiting from the marginal housing options of low-income families and the negative outcomes of these tactics for tenants and neighborhoods. Scholars have yet to examine whether the business practices of property speculators operating in distressed markets might also influence exposure to home-based lead hazards among marginally housed groups. Is there an association between bulk investor-ownership in foreclosed homes and the likelihood of lead poisoning among child occupants? To answer this question, we link post-foreclosure property acquisitions by investor-landlords to subsequent blood-lead poisoning cases among children under age six in Detroit, Michigan, a predominantly Black and low-income city with an aged housing stock that experienced a rise of bulk property ownership following high rates of mortgage and tax foreclosures. We find that children living in investor-owned homes purchased through tax foreclosure sale are more likely than children in other property arrangements to exhibit elevated blood lead levels ($\geq 5\mu\text{g/dL}$), net a wide range of multi-level covariates. We find that these risks are further elevated for children in properties that were purchased by investors in bulk, buying 10 or more tax-foreclosed properties within a 10-year period. Given that children in Detroit and other segregated cities bear disproportionately high levels of toxic disease burden, our results highlight the potential for property speculation in post-foreclosure housing markets to perpetuate and even exacerbate longstanding racial and spatial inequities in childhood lead poisoning.

Non-health institutions (business, political, education systems)**HIV Prevention Among Formerly Incarcerated Individuals: The Southern Pre-Exposure Prophylaxis (PrEP) Cohort Study** Katherine LeMasters* Katherine LeMasters Lauren Brinkley-Rubenstein Christopher Corsi Katie Mollan Sarah Morgan

One in 100 individuals in the United States (US) are under community supervision by the criminal justice (CJ) system, and the HIV prevalence among these individuals is three times that of the general population. Once CJ involved individuals enter back into their communities after being released from jail or prison, they experience multi-level barriers to HIV prevention at the individual (i.e., HIV risk behaviors), social (i.e., stigma), and structural (i.e., housing and employment barriers; reincarceration) level. The Southern Pre-Exposure Prophylaxis (PrEP) Cohort Study, (SPECS), is the first observational cohort that focuses on individuals on community supervision at disproportionately high risk for HIV. SPECS aims to understand HIV prevention in this population by assessing the multi-level factors that affect knowledge, accessibility, and uptake of PrEP, a daily pill that can reduce the risk of HIV infection among those at high risk via sexual transmission by over 90%. At three sites in North Carolina, Kentucky, and Florida, SPECS seeks to recruit 660 individuals for an 18-month study and has 205 participants to date. This exploratory analysis presents preliminary baseline data on this unique study population, their CJ history, multi-level barriers to health, HIV risk, and PrEP knowledge, accessibility, and uptake. Specifically, this presentation discusses individuals' lifetime history of trauma, perceived social support post-release, and adult well-being, integral factors to CJ-involved individuals' health during their high-risk window after incarceration. Through discussing the health of those under community supervision, this presentation aims to spark an interdisciplinary conversation about CJ policy, the multi-level barriers to equitable health that CJ involvement creates, and the ways in which public health researchers can work in collaboration to improve these multi-level determinants of health and reduce health inequities.

Non-health institutions (business, political, education systems)

Does child health act as a barrier to parental economic self-sufficiency? Results from a long-term housing policy experiment Nicole Schmidt* Nicole Schmidt Naomi Thyden Huiyun Kim Pamela Joshi Theresa Osypuk

Low income families experience myriad health problems and lower education that may act as barriers to employment and economic mobility. The current literature on barriers to work among low-income women has focused primarily on a woman's own work qualifications and health. Few studies have examined the role of children's health and development on a mother's employment, despite that children have a substantial impact on a mother's work trajectory, particularly if the child has special needs. This study examined how children's health and development impact parental labor market outcomes using the Moving to Opportunity (MTO) experiment. The MTO study randomized families (1994-1998) to receive a Section 8 housing voucher (which subsidizes rent and required a move to a private rental unit in lower poverty neighborhoods) versus a public housing control group. We tested whether MTO voucher (vs. control group) effects on self-sufficiency, total household income, and past 2-year employment (2008-2010; N=2600) were modified by children's baseline health using intent-to-treat regression. Child expulsion and having a disabled family member interacted with MTO voucher treatment to affect household income (interaction $p = .04$ and $p = .03$ respectively). The presence of these modifiers led to lower household income, for MTO voucher treatment vs. controls, while the absence of these health barriers led to higher household income, as hypothesized. For example, the treatment effect on household income was $B = -\$2747$, 95%CI: $-\$5772, \824 among families with an expelled child, and $B = \$1283$, 95%CI: $-\$283, \2848 among families without an expelled child. Similar patterns were observed for other child developmental variables and a parent's economic self-sufficiency, but interactions with treatment were non-significant. Low income families with health vulnerable children who utilize housing voucher programs may need additional supports to improve their economic outcomes.

Place/Communities**Neighborhood Disadvantage and Patterns of Unhealthy Alcohol Use Among Patients Served by the National Veterans Health Administration** Amy Edmonds* Amy Edmonds Isaac Rhew Jessica Jones-Smith Gary Chan Butch de Castro Anna Rubinsky John Blosnich Emily Williams

Background: Stressful conditions within structurally disadvantaged neighborhoods could shape unhealthy alcohol use and related harms. Yet, neighborhood disadvantage's role in more severe alcohol-related outcomes is underexplored. Aims: We used data from a national cohort of Veterans Health Administration (VA) patients with documented annual alcohol screening (via AUDIT-C) to assess associations between neighborhood disadvantage and patterns of unhealthy alcohol use and alcohol-specific conditions. Methods: For an NIAAA-funded parent study, VA electronic health record and administrative data from all patients with routine annual alcohol screening (2013-2017) were collated. For this secondary analysis, patients (n= 7,167,281) were linked by census block group to the Area Deprivation Index (ADI), a ranking based on 17 socio-demographic Census measures. ADI was dichotomized at the 85th percentile to compare those living in highly vs. less disadvantaged neighborhoods. Modified Poisson models were used to estimate Prevalence Ratios (PRs) for associations between neighborhood disadvantage and five outcomes: drinking above recommended limits (AUDIT-C ≥ 5), heavy episodic drinking (AUDIT-C Q3 > never), high-risk drinking (AUDIT-C ≥ 8), alcohol use disorder (AUD) diagnosis, and alcohol-specific conditions diagnoses. Models included a random intercept for neighborhood and were adjusted for covariates including individual SES indicators. Results: Residence in a highly disadvantaged neighborhood was associated with drinking above recommended limits (PR= 1.04, 95% CI=1.03-1.05), heavy episodic drinking (PR= 1.05, 95% CI= 1.04-1.05), high-risk drinking (PR= 1.12, 95% CI= 1.10-1.13), AUD (PR= 1.08, 95% CI= 1.07-1.09), and alcohol-specific conditions (PR= 1.10, 95% CI= 1.07-1.12). Conclusions: Neighborhood disadvantage was associated with all outcomes among veterans. Future research should investigate place-based inequities in alcohol-related harm and strategies to ameliorate them.

Place/Communities**Latent Profile Analysis of Census Tract Characteristics and Risk Factors for Disease Progression in the Black Women's Experiences Living with Lupus (BeWELL) Study** Connor Martz* Connor Martz

Disease outcomes among Black women with systemic lupus erythematosus (SLE) may be shaped by neighborhood contexts in which they reside. We examined associations between census tract typologies and risk factors for accelerated disease progression using data from the Black Women's Experiences Living with Lupus (BeWELL) Study. Participants were 437 Black women with validated SLE residing in 257 census tracts in the Atlanta, GA metropolitan area. Indicators used in latent profile analyses were zip code violent crime rate, tract-level housing unit density, and the percent of people: \leq poverty threshold, Black, White, unemployed, on SNAP, and with \leq high school degree. Perceived neighborhood disorder was a latent variable indexed by social disorder, physical disorder, neighborhood fear, and mistrust. Four distinct classes were identified: (1) White/high socioeconomic status (SES), (2) integrated/mid-SES, (3) Black/mid-SES, and (4) Black/low-SES. Structural equation models revealed that White/high-SES and integrated/mid-SES tracts were associated with lower perceptions of neighborhood disorder ($\beta = -.41$, $p < .001$) but more experiences of racial discrimination relative to Black/mid-SES ($\beta = .13$, $p < .001$) and Black/low SES tracts ($\beta = .12$, $p < .001$). Racial discrimination ($\beta = .08$, $p < .001$) and neighborhood disorder ($\beta = .05$, $p < .05$) were indirectly associated with disease activity via depression. Compared to those in Black/low-SES tracts, living in White/high-SES and integrated/mid-SES tracts was indirectly associated with disease activity through neighborhood disorder and depression ($\beta = -.02$, $p < .05$), and also through racial discrimination and depression ($\beta = .01$, $p = .05$). In summary, neighborhoods that Black women with SLE live in may shape their health indirectly through exposure to health risk factors, such as racial discrimination, perceived neighborhood disorder, and depression. Residence in higher SES neighborhoods may confer trades offs in exposure to risk factors for SLE progression.

Place/Communities**Feasibility of coordinating rural community stakeholders in implementing whole-of-community youth physical activity surveillance through school systems** Arissa Bavari*

Michaela Schenkelberg Ann Essay Sara Norgelas Ric Rosenkranz Greg Welk David Dzewaltowski

Background: There is a need to use populational-level data to drive community change promoting positive youth health behaviors such as physical activity (PA). Previous studies reported moderate reach when surveilling youth PA. Coordinating surveillance efforts with the local health departments (LHD) and community stakeholders may result in better response rates. The purpose of this study was to examine the feasibility of a protocol for coordinating community stakeholders to implement a populational-level online PA surveillance tool.

Methods: LHD from two rural communities and the research team collaborated to coordinate schools in implementing school-wide youth PA surveillance. A data-sharing agreement was established between all partners. School administrators and teachers attended in-person training sessions about the online youth PA survey and how to use the data. Following the training, students were provided individualized logins to complete the online youth PA survey once a semester over a two-year academic period.

Results: Across both communities, 23 teachers and administrators attended the training sessions that were facilitated by the LHD and research team. In Year 1 (Y1), a total of 465 3rd through 6th grade students were enrolled in the participating schools (community 1=227; community 2=238). Youth PA survey response rates ranged from 86.1% to 95.4% completion, depending on the community and semester. In Year 2 (Y2), a total of 501 3rd through 6th grade students were enrolled (community 1=260; community 2=241). Reach data for Y2 are currently being analyzed.

Conclusion and Significance: A protocol for coordinating LHD and community stakeholders in rural communities is a feasible strategy to move towards implementing population-level youth PA surveillance with high levels of reach. This approach will aid in driving community change.

Place/Communities

Individual and neighborhood-level relative income in relation to past-year mental disorders in five cities in Latin America Laura Sampson* Laura Sampson Shui Yu Ronald C Kessler Alan Zaslavsky Corina Benjet Laura Helena Andrade Sergio Aguilar-Gaxiola Marina Piazza Maria Elena Medina-Mora Juan Carlos Stagnaro Maria Yolanda Torres de Galvez Maria Carmen Viana Sandro Galea

Latin America is a rapidly urbanizing area with high levels of income inequality. While individual and neighborhood socioeconomic characteristics such as income have shown to be associated with mental disorders in other regions, these factors have not been studied as much in urban areas of Latin America. We ran multilevel models with data from the World Mental Health Surveys in Medellín, Colombia; São Paulo, Brazil; Lima, Peru; Buenos Aires, Argentina and Mexico City, Mexico to assess whether individual and neighborhood-level income were associated with individual past-year mental health disorders, grouped into internalizing (mood and anxiety) and externalizing (behavioral and substance use) disorders. In our pooled sample of 7,259 residents of these cities, 17% percent of respondents had a past-year internalizing disorder and 5% had a past-year externalizing disorder. After adjusting for city, age, sex, education, marital status and employment status, respondents in the top tertile of the ratio of individual income to weighted mean city income (i.e., those with higher income relative to their city average) had 19% lower odds of internalizing disorder (AOR: 0.81, 95% CI: 0.65, 1.00) compared to those in the lowest tertile. When adding neighborhood-level relative income to this model, respondents living in neighborhoods in the top tertile of the ratio of mean neighborhood income to mean city income had 24% lower odds of past-year internalizing disorder (AOR: 0.76, 95% CI: 0.57, 1.00, independent of one's own income). Relative individual income was not associated with externalizing disorder (AOR for the top tertile: 0.97, 95% CI: 0.69, 1.36), while neighborhood income was modestly associated with externalizing disorder (AOR for the top tertile: 0.77, 95% CI: 0.53, 1.13). This study indicates the importance of considering neighborhood socioeconomic context in addition to individual socioeconomic status in urban areas, particularly for internalizing mental disorders.

Place/Communities**Neighborhood deprivation and adolescent obesity risk: The role of recreational spaces**

David Curtis* David Curtis Yehua Dennis Wei Brittney Hayes Tessa Washburn Ken R Smith

Obesity risk is high for adolescents in economically deprived neighborhoods. This study tests location and attractiveness of recreational spaces (e.g., parks, trails) as predictors of adolescent obesity risk and an explanation for the link between neighborhood deprivation and obesity risk.

Data come from the Utah Population Database (UPDB). The sample includes adolescents aged 16-20 with a driver license issued 2013-2019 and residence in Davis and Salt Lake counties in Utah (n=50,422). Obesity is measured from weight and height self-reported at time of licensure. Proband covariates include sex, age at receipt of license, year of licensure, and race/ethnicity. Maternal education and obesity come from proband birth certificate records. Neighborhood deprivation was coded from Decennial Census indicators (Kind et al., 2014). Using geospatial data from <https://gis.utah.gov/data/>, total park acreage, absence of parks/schools, and absence of walking trails were coded for block groups ≤ 1.5 square miles. Block group covariates include population density, youth population, and race/ethnicity composition.

Models were fit using mixed effects logistic regression and account for neighborhood clustering. Adjusting for proband and block group covariates, 1 SD higher neighborhood deprivation was associated with 32% higher obesity odds (OR=1.32, 95% CI: 1.22, 1.42). This estimate was attenuated by ~5% due to recreational spaces. Total park acreage and absence of walking trail/s were associated with obesity risk (OR=.92, 95% CI: .87, .98; OR=1.18, 95% CI: 1.04, 1.35, respectively), whereas the absence of a park/school was not. Thus, obesity risk was 8% higher for each 1 SD unit in total park acreage and 18% higher when walking trails were absent.

Access to parks and trails has potential to reduce obesity risk, yet only a small portion of excess obesity risk in deprived neighborhoods is due to differential access. Park quality data will be integrated into the presentation.

Place/Communities**Non-profit hospitals and community health: hospital strategy under the Affordable Care Act's enhanced community benefit regulations** Henry Stabler* Henry Stabler

To better address the root causes of poor population health, US policymakers have advanced a range of policies meant to encourage greater cooperation between hospitals and local stakeholder organizations, centered on improving population health through investments addressing upstream determinants of health. This research utilizes public reporting associated with one such policy - expanded community benefit regulations for nonprofit hospitals (NPHs) under the Affordable Care Act - to examine how NPH investments in their community's health and their relationships with other organizations have assembled since 2010. Under the enhanced regulations, all NPHs must partner with community stakeholders (medically underserved populations; state/local health agencies) to conduct community health needs assessments (CHNAs) and create implementation plans based on those assessments every 3 years. These regulations rest on policymakers' assumptions that more expansive networks of involved community stakeholders engender a participative, community-oriented role for NPHs, which will make their community benefit investments more effective at improving community health. Using content analysis on a random selection of NPHs and their associated CHNAs, I have developed two measures characterizing NPHs' chosen strategies based on: (1) how community-oriented each of the activities and implementation strategies are in hospitals' CHNAs; and (2) the diversity and level of stakeholder involvement across seven CHNA activities. Both measures have been tracked over time to determine the extent to which nonprofit hospitals learn and adjust their strategies since the expanded community benefit requirements took effect. Initial results suggest that most hospitals have adjusted their strategies over time. Whether a hospital has adjusted their strategy and how they have adjusted their strategy is also dependent on a range of hospital-, community-, and state-level attributes.

Place/Communities**Can Social Places Modify Cognitive Decline? A Mixed-Methods Study of Aging Americans**

Jessica Finlay* Jessica Finlay Michael Esposito Philippa Clarke

In this exploratory sequential mixed-methods study, interviews with 125 adults aged 55-92 living in the Minneapolis (Minnesota) metropolitan area suggest that social infrastructure represent popular neighborhood destinations for older adults and sources of well-being. Local sites including coffee shops, restaurants, senior centers, churches, and barbershops are primary places to gather and socialize. They are also enfolded into everyday leisure activities as walkable destinations. Participants stated that these places support physical, mental, and social well-being. To test the hypothesis that access to sites of social infrastructure is systematically associated with cognitive well-being, we analyzed data from *Reasons for Geographic And Racial Differences in Stroke* study, a national sample of older Americans followed since 2003 ($n = 25,479$, average age at assessment 67 years). We used Bayesian multilevel generalized linear models to predict an individual's cognitive functioning score as a function of their neighborhood's density of senior centers, sites of worship, social organizations, personal care services, and food and drinking places. Additional controls included age, race, gender, marital status; as well as neighborhood socioeconomic status, population density and urban-rural classification. Results indicate a significant positive association between density of local social infrastructure sites and cognitive function. The study contributes new evidence towards an emerging ecological model of cognitive health. It highlights the multifaceted importance of neighborhood social places to well-being in later life.

Place/Communities**A Conceptual Roadmap for Incorporating Place into Quantitative Health Research** Xing

Gao* Xing Gao Rachel Berkowitz Eli Michaels Mahasin Mujahid

As evidence of the relationship between neighborhood environments and health mounts, more public health researchers are becoming interested in incorporating place-based measures and analysis in their examination of population health and health inequities. Given the expansive literature of place and health spanning across disciplines such as geography, sociology, and epidemiology, it can be challenging for researchers new to this area to effectively situate the place context in their work. We developed a roadmap to guide public health researchers through the conceptual and methodological stages of incorporating various dimensions of place into their quantitative health research. Based on our literature review of the breadth of work on place and health, the conceptual roadmap poses the following three questions to guide researchers considering incorporating place into their work: 1. *“WHY?”*: this question asks the researcher to formulate the motivating questions for assessing place and health; 2. *“WHAT?”*: this question guides the researcher in identifying the relevant place-based characteristics and specifying their link to health in accordance with their questions; and 3. *“HOW?”*: this question clarifies the researcher’s approach in measuring the identified characteristics and quantifying their effect on health. We applied this roadmap to three place and health research papers to illuminate its utility for guiding researchers during the design, implementation, and analysis stages. We conclude with recommendations for conducting rigorous place effects research that can aide in improving population health and addressing health inequities.

Place/Communities**Disparities in Nebraska Rural Community Youth Sport Participation and Physical Activity**

Debra K. Kellstedt* Debra K. Kellstedt Michaela A. Schenkelberg Ann M. Essay Richard R. Rosenkranz Gregory J. Welk Robin High David A. Dzewaltowski

Significance: Physical activity (PA), a high frequency health behavior associated with cancer prevention, varies by where youth live and play. Youth accumulate PA in adult-led in-school and out-of-school settings. Youth sport holds potential as a setting for PA, but current community youth sport systems may either support or hinder youth sport participation (YSP) and PA. Currently, 72% of Nebraska 3rd-6th graders reported YSP as compared to 64% of youth ages 6-17 at the national level. This study examines the relationship between grade, sex, family income, and YSP on PA of youth living in two rural Nebraska communities and discusses these findings in comparison to national results.

Methods: Youth (n=418 3rd-6th graders) living in rural Nebraska communities (n=2) completed after school activities questions drawn from the 2017-2018 National Survey of Children's Health (NSCH) and the Youth Activity Profile (YAP) in Spring of 2019 as part of Wellscapes, a whole-of-community cancer prevention randomized trial. Mixed model ANOVAs with community as a random effect examined main effects and interactions of grade, sex, family income, and YSP on PA. These findings were compared to NSCH national results (n=36,708).

Results: Main effects showed Nebraska females and 6th graders ($p < .05$) were lower in PA than comparison groups. An interaction between gender and YSP revealed males with YSP had greater PA. Results indicated males with higher family income had greater PA than females with higher family income and being a 6th grader with high family income had less effect on PA than similar 3-5th graders ($p < .01$). In addition to parallel results of significant impacts of sex, age group, and YSP on PA, the national level results revealed that black and Hispanic youth had significantly lower PA than whites ($p < .05$).

Conclusions: While a fairly high percentage of youth have YSP, there are disparities in Nebraska and nationally on PA outcomes based on age, sex, race, and family income.

Policing**The militarization of campus police** Tyler Jimenez* Tyler Jimenez

Through the 1033 Program, law enforcement agencies (LEAs) across the United States can acquire military equipment - including semiautomatic weapons and armored vehicles - free of charge. This militarization of police is a contributing factor to police violence, which results in thousands of civilian fatalities and injuries per year and is thus a population health concern. Understanding the motivating factors underlying police militarization is of pressing importance. Across 6 studies, I investigate individual- and institutional-level motivating factors, as well as introduce a methodological tool - *MRAP* - that facilitates future research on the 1033 Program.

At the individual-level, I collect survey data and find that prejudice and political ideology predict support for police militarization. At the institutional-level, I utilize 1033 Program data to examine transfers to campus LEAs, finding that at least 3,038 pieces of military equipment - primarily semiautomatic weapons - have been transferred to 112 campus LEAs. Using the same data, I further examine whether campus LEA participation in the 1033 Program is at least partly racially motivated by comparing the rates of participation among Predominantly White Institutions and Minority Serving Institutions. Historically Black colleges and universities were four times more likely to receive military equipment through the 1033 Program than were Predominantly White Institutions. I consider the theoretical frameworks likely useful for further research on the militarization of campus police, and police militarization more broadly, as well as introduce *MRAP*, an R package for accessing and analyzing 1033 Program data.

Policy

Association of recreational cannabis laws with self-harm and assault injuries Ellicott Matthay* Ellicott Matthay Mathew Kiang Holly Elser Keith Humphreys Laura Schmidt M. Maria Glymour

Background: Diverse forms of recreational cannabis laws (RCLs) are rapidly expanding across US states, yet evidence on population health impacts remains sparse. RCLs may stimulate or deter violence because cannabis can substitute or complement violence-promoting substances such as alcohol.

Methods: We calculated county-level rates of medical visits for self-harm and assault injuries by quarter 2009-2017 from a nationwide medical claims database of a private insurer covering over 60 million unique individuals. Because there is important heterogeneity in RCL content, we used latent class analysis to categorize policy exposure for each state-month based on 62 possible provisions including taxes; products permitted; warning labels and packaging requirements; restrictions on cultivation, distribution, and sales; and underage prohibitions. We estimated the association of each policy class with population-level self-harm and assault rates using panel fixed effects models with generalized estimating equations, controlling for state-specific time-varying confounders.

Results: We identified three classes of RCLs: least restrictive, moderately restrictive with high taxes, and moderately restrictive with modest taxes. Preliminary results suggest that, compared to non-legalizing states, least restrictive RCLs were associated with a 14% increase in self-harm (95%CI:6-21%) and a 9% increase in assault (CI:1-17%). Moderately restrictive RCLs with high taxes were associated with an 81% increase in self-harm (CI:63-101%) and a 53% increase in assault (CI:39-69%). Moderately restrictive RCLs with modest taxes were associated with a 13% decrease in self-harm (CI:10-17%) and a 6% decrease in assault (CI:2-10%).

Conclusions: The effect of RCLs on self-harm and assault may depend on the specific provisions. States should carefully consider optimal models for regulation. Heterogeneity in RCLs may explain conflicting results of prior research on cannabis legalization's effects on violence.

Policy**Exploration of attributes and sources of population-health awareness among US college seniors** Baishakhi Basu* Baishakhi Basu Stephen Bezruchka

Background: What do Americans think about the health of their country when compared to other rich nations? Existing research warns that Americans continue to live shorter lives as compared to other rich countries. However, most Americans are unaware of the underlying mechanisms of this anomaly. This qualitative study investigates the attributes and determinants of awareness among young Americans about America's current state of health.

Methods: We conducted semi-structured interviews of a purposeful sample of 12 college seniors at the University of Washington, from May to October of 2019. A thematic analysis was accomplished to derive themes for discussion. The study explored the level of awareness of the US population about 1) health fundamentals 2) America's current health status, 3) comparison to other rich countries, and lastly, 4) sources of health information.

Findings: College seniors displayed strong awareness of 'downstream' factors of population health conceptualized as obesity and mental health, stemming from poverty, stress, diet and inadequate healthcare access. However, awareness about 'upstream' determinants of population health (e.g. state and national policy) was significantly lacking. Western and Northern European countries and Japan were perceived as healthier nations. The college seniors' health information was obtained from seven proximate determinants - online news apps, Facebook newsfeeds, educated peers, coursework, professional mentors, healthcare providers and political campaigns.

Conclusion: Lack of awareness about the country's health status might influence public engagement around voting, activism, and state and national policy reforms. Policies should therefore be developed to modify proximate determinants responsible for population health awareness.

Policy**Saving 8 million lives - getting the FDA's Comprehensive Plan for Tobacco and Nicotine Regulation Back on Track** Joe Gitchell* Joe Gitchell

In July 2017, the US FDA announced their roadmap to avert 8 million premature deaths over this century—deaths caused by smoking cigarettes. The foundation of FDA's plan was that nicotine is delivered by wide range of products that carry a wide range of toxicities and harms: from cigarettes delivering thousands of chemicals and hundreds of toxins all the way to nicotine medications such as patch and gum, which FDA has judged to be so safe that they've been available without a doctor's prescription for almost 25 years. FDA laid out their intention to use their regulatory powers to move smokers away from combustible products to nicotine products that do not burn - transforming the nicotine marketplace. FDA's tandem approach to advance this transformation was to use their product standard authority to set a maximum level for nicotine in cigarettes so that cigarettes could no longer create or sustain addiction, while fostering the development of noncombustible nicotine products for those who were still seeking nicotine. As promising as this plan remains, three years in, we are *further* away from that life-saving destination than we were in 2017. This presentation will review the reasons for our lack of progress, drawing upon the themes of policies and profits and their intersection with "manufacturers of illness" laid out in McKinlay's commentary. The talk will conclude with potential steps to foster discussion to get back on track to saving 8 million lives.

Disclosure

My employer, PinneyAssociates, provides consulting services regarding tobacco harm minimization and vaping products to JUUL Labs, Inc, on an exclusive basis. I also own an interest in a nicotine gum that has not been developed nor commercialized.

Policy

Policies as manufacturers of (ill) health: The consequences of parental consent laws on sexual and gender minority youth Morgan Philbin* Morgan Philbin Heather Wurtz Benjamin Lane Adrian Guta

Background: Parental consent laws can impede diverse youths' access to health services (e.g., STD testing, pregnancy termination), but little work has explored how these laws affect youth across contexts (e.g., schools, homeless shelters). Sexual- and gender-minority youth (SGMY) are particularly vulnerable to a lack of familial support and related consequences (e.g., homelessness, poor mental health) yet remain understudied.

Methods: We conducted 68 interviews with community stakeholders at US agencies serving SGMY (n=30) and with SGMY in New York City (n=38) from March 2018-June 2019. Interviews were analyzed using thematic content analysis to explore how parental consent policies in non-health institutions affect SGMY' health and well-being.

Results: Parental consent laws often exacerbated SGMY' vulnerability and caused harm. These laws: 1) Often impeded SGMY' access to social services and resources (e.g., homeless shelters, mental health and SGMY-specific groups: "[Her dad] doesn't want her to have mental health services. There's nothing we can do unless he signs off;" 2) Hampered key aspects of youth development by limiting autonomy, peer support, and gender-affirming practices: "Two youth were pulled out of school by their parents because they do not want their child to be trans;" and 3) Could "out" marginalized individuals, such as when schools notify parents if students want to change their names: "That school counselor thinks they're being helpful, but it [parental notification] resulted in a kid being homeless or conflict at home."

Conclusion: Parental consent laws disproportionately affect SGMY and can limit their positive developmental trajectories. Increased attention to the consequences of parental consent laws is essential to reducing negative mental and physical health outcomes among this marginalized population. A sexual justice framework that promotes self-determination, bodily autonomy and sexual freedom is needed to advance SGMY rights.

Policy

Identifying groups of policymakers with similar communication preferences to better tailor public health- and nutrition-related research communications Natalie Smith* Natalie Smith
Stephanie Mazzucca Marissa Hall Shu Wen Ng Leah Frerichs

Introduction. Communicating research to policymakers is difficult, especially for diet and nutrition issues that impact a wide range of health outcomes and are intimately tied to social, cultural, and political values. Tailored communications could be a substantive improvement over universal dissemination (e.g., one policy brief for all policymakers). Researchers could tailor communications to groups of policymakers that share communication needs and preferences, but there is little work that empirically derives these groups of policymakers. To address this gap, we aim to (1) use latent class analysis (LCA) to group policymakers based on research communication preferences and (2) assess whether groupings differ between policymakers who prioritize diet/nutrition issues.

Methods. We will use data from 862 state legislators collected in 2012 via telephone interview. Legislators were majority male (74.5%), sampled from the entire US (23.5% Northeast, 25.4% Midwest, 32% South, and 18% West), and had spent ~9 years in their legislature. Forty-six percent identified as Democrats and 53% as Republicans.

We will use LCA to place legislators into mutually exclusive groups based on five dichotomous stated preferences for research presentation and communication (e.g., research is presented in a brief and concise way, research tells a story). Models will be fit using 1-5 group solutions, and the final model will be chosen based on interpretation and fit statistics (model AIC and BIC). We will then assess whether the optimal LCA solution differs between legislators who do and do not prioritize diet/nutrition issues. Within each analysis, we will use legislator demographic, social, and political characteristics to characterize the resulting groups. All analyses will be completed by August 2020.

Conclusion. Tailoring communication materials to groups of legislators with cohesive research needs and preferences could be used to translate research more effectively and efficiently.

Policy**Disparities in Food Access and Food Insecurity Among Lesbian, Gay, and Bisexual (LGB) Americans** Emilio Loret de Mola* Emilio Loret de Mola Gilbert Gonzales

Background: Approximately 40 million Americans rely on the Supplemental Nutrition Assistance Program (SNAP) for food assistance. Since 2008, adults aged 16-59 years and enrolled in SNAP are required to work 30 hours per week to maintain their SNAP benefits. In 2018, President Trump signed an executive order that requires governmental examination of federal policies to motivate individuals to become self-sufficient, resulting in changes to SNAP work requirements. This study examined food insecurity, SNAP participation, and the potential impact of new work requirements among lesbian, gay, and bisexual (LGB) Americans.

Methods: This study used data on adults aged 18-59 years (n=121,298) from the 2013-2018 National Health Interview Survey. We used descriptive statistics and multivariable regression to describe SNAP participation and the potential impact of work requirements on LGB adults.

Results: LGB adults were more likely to be considered food insecure compared to heterosexual adults (16.3% versus 10.6%, $p < 0.05$). Of the 7.1 million working-age sexual minority adults, 1.3 million (or 18.7%) received SNAP benefits in the past calendar year, which was lower for heterosexual adults (14.4%, $p < 0.05$). Approximately 18.8% of sexual minority adults and 11.8% of heterosexual adults on SNAP were unemployed and could potentially lose their SNAP benefits.

Discussion: Our study found LGB adults were more likely to be considered food insecure and more likely to rely on SNAP for food assistance compared to their heterosexual counterparts. However, LGB adults may be more likely to lose their SNAP benefits under new work requirement regulations because of their increased vulnerability to unemployment. Public health and community-based organizations should be equipped with a “farmacy” or other programs to provide nutritional assistance to sexual minorities and other vulnerable populations.

Policy

State Laws and CHW Professionalization David Washburn* Cason Schmit Timothy Callaghan
Megan Lafleur Denise Martinez Emily Thompson

Background

Community health workers (CHWs) are frontline public health workers who have a close understanding of the community served. There has been varied interest in the professionalization of CHWs, including certification as well as competency and training requirements. States have taken different approaches to the regulation and professionalization of CHWs. This study explores how states are using the law to regulate CHWs.

Methods

We used Westlaw to identify laws relating to CHWs in effect on February 11, 2019, limited to U.S. states, territories, and the District of Columbia. We coded laws that relate to the professionalization of CHWs, including certification, training, competencies, and professional discipline. Each law was independently coded by a licensed attorney and a MPH student. Coding disagreements were resolved at coding meetings with a CHW subject-matter expert resolving ambiguous cases.

Results

We identified 371 laws within our scope. The average inter-coder agreement was 90%. Our analysis found 34 states have inconsistent terminology for CHW-type work. Fifteen states have CHW certification laws, of which 11 are state-certified and 4 identify non-state entities. Twenty-two states describe CHW training requirements for certification or program participation. Fifteen states enumerate CHW roles or competencies. Nine states have CHW disciplinary mechanisms.

Discussion

The CHW community is divided on the value of CHW professionalization. Our study provides insight on how states are approaching this issue. The introduction of state certification mechanisms, training programs, enumerated competencies and roles, as well as disciplinary mechanisms to police CHWs suggest that some states are implementing laws to formalize the CHW profession. Regardless, thirty-four states lack consistent terminology for CHWs within their statutes and regulations, creating a major challenge for identifying funding mechanisms that will reimburse CHWs for services.

Policy

Health insurance coverage among the foreign-born following ACA implementation: Disparities by migration status Christal Hamilton* Christal Hamilton Claire Altman James Bachmeier Cody Spence

While studies have shown the ACA Medicaid eligibility expansion improved health insurance coverage and access to health care for some immigrant groups, no research to date has evaluated how this policy change has impacted disparities in health insurance coverage by legal/citizenship status. This study fills the gap in the research by evaluating changes in health insurance coverage disparities by legal /citizen status among the foreign-born population after the ACA Medicaid expansion. Using data from the 2008 and 2014 Survey of Income and Program Participation, the only nationally representative dataset with information on immigrant legal status, we impute the legal/citizen status of immigrants in the 2010-2015 Current Population Survey. We then employ a difference-in-difference model to identify differences in health insurance coverage before and after the policy change among naturalized citizens, legal permanent residents, legal nonimmigrants, and unauthorized immigrants. We anticipate that disparities in coverage among migrant groups would have exacerbated after the Medicaid expansion policy. This study will be the first to provide national estimates of the effect of the ACA Medicaid expansion policy on the insurance coverage by legal/citizenship status.

Race/Ethnicity

"Just Check 'Other'": The Health of Racially Ambiguous and Multiracial People Evangeline Warren* Evangeline Warren

Race, being socially constructed but also socially real, continues to impact health at individual and population levels. This project examines literature in the areas of critical race theory, social constructionism, demography of multiracial people, and the sociology of health and medicine to more fully understand the social assignment of race and how racially ambiguous people challenge the dominant racial hierarchies and structures of the United States. For racially ambiguous people, phenotype and ancestry do not always match and, as result, self-identified race and socially-assigned race do not consistently match. In health care settings, which are rife with race-based implicit biases, socially-assigned race carries direct health consequences. When racially ambiguous people enter these medical spaces, their socially assigned race makes them vulnerable to the positive and negative implicit biases that medical providers hold. These provider-patient interactions in which race is socially assigned to racially ambiguous people allow us to interrogate the mechanism through which race is constructed. This project, which is theoretical in nature, seeks to better understand the state of health for multiracial and racially ambiguous people in addition to providing a new framework for understanding the place of racially ambiguous people within the dominant racial hierarchies of the United States.

Race/Ethnicity**Multilevel socioeconomic status and breast cancer subtypes in a racially diverse cohort**

Candyce Kroenke* Candyce Kroenke Stephen P. Uong Scarlett Gomez Brittany Morey Lawrence H. Kushi Jacqueline M. Torres Bette J. Caan Stacey Alexeeff

Background and objective: Low socioeconomic status (SES) has been associated with a higher risk of aggressive breast cancer (BC) subtypes through stress/weathering mechanisms, but few studies have employed both neighborhood- and individual-level SES measures. We considered the influence of both place of residence and individual-level SES on molecular BC subtypes in a diverse cohort.

Methods: We included 3,853 (2,840 non-Latina white, 491 Latina, and 522 Asian/Pacific Islander) women from Kaiser Permanente Northern California and the Pathways and Life After Cancer Epidemiology cohorts who were diagnosed with stage I-IV BC. We used a multilevel modeling approach to examine associations between neighborhood-level (median household income of block group, % of block group with education \geq college degree) and individual-level (income, education) SES measures and cancer subtype: 625 Luminal B (LumB—ER+ or PR+, Her2+/-, high grade), 195 Her2-enriched (Her2-E, ER-, PR-, Her2+), and 456 triple negative (TNBC—ER-, PR-, Her2-) vs. the least aggressive 2577 Luminal A (LumA—ER+, PR+, Her2-, low grade) subtype. Analyses were adjusted for age, race, immigrant status, days from diagnosis to survey, cohort and simultaneously for neighborhood- and individual-level SES.

Results: Neighborhood-level income was significantly associated with the LumB (vs. LumA) subtype, even after adjustment for individual-level SES (OR=0.97, 95% CI: 0.95-0.99 per \$10,000 income). In contrast, neighborhood-level SES was not associated with either Her2-E or TNBC (vs. LumA) after adjusting for individual-level education, which was associated with each of these BC subtypes. Compared to those with less than a high school (HS) education, those with a HS degree/GED (OR=0.62, 95% CI: 0.31-1.23), some college (OR=0.64, 95% CI: 0.34-1.21), a college degree (OR=0.58, 95% CI: 0.30-1.12), or graduate education (OR=0.34, 95% CI: 0.16-0.73), p-trend=0.008, had a lower odds of Her2-E; we noted a similar association with TNBC. Neither neighborhood- nor individual-level income was associated with the odds of Her2-E or TNBC (vs. LumA).

Conclusions: In a multi-ethnic cohort, neighborhood-level income was related to the LumB breast cancer subtype but individual-level education was the strongest predictor of the Her2-E and TNBC (vs. LumA) subtypes.

Reproductive health

“They see it as if that is the end for you”: Cultural perceptions and consequences of adolescent pregnancy in western Kenya Abigail A. Lee* Abigail Lee William T. Story Nema C.M. Aluku

Significance. Adolescent pregnancy persists in Kenya, with 25% of women ages 25-49 giving birth by age 18. Adolescent pregnancy can cause perinatal morbidities including obstructed labor, fistula, stillbirth, and premature birth, and is associated with cultural norms around marriage, gender, and premarital sex. However, little is known about what perpetuates these practices and beliefs, and their impact on young women. This study explores the sociocultural factors which influence adolescent pregnancy and how adolescent pregnancy impacts the trajectory of young women’s lives socially, mentally, and physically. **Methods.** In partnership with Tangaza University College (Nairobi, Kenya) and Gynocare Women’s and Fistula Hospital (Eldoret, Kenya), our team conducted in-depth interviews with women ages 18-24 who became pregnant before 18 (n=15), key informants (n=5) and healthcare providers (n=5) in western Kenya. We developed interview guides exploring marriage, sexual and reproductive health (SRH), sexual initiation, decision making and experiences with adolescent pregnancy. Following the interviews, the audio recordings were transcribed and translated. We created an iterative codebook and analyzed the transcripts using a thematic coding process in NVivo 12.0. **Preliminary Results.** Early findings show a lack of functional SRH knowledge among young women, with little communication between parents and children. Girls lack agency in decision making around marriage and sexual initiation, yet they hold responsibility and fault when consequences arise. Girls lack equal opportunity to education and are prepared to become wives and mothers from early in life; however, they do not anticipate the realities of early pregnancy. Girls becoming pregnant outside of marriage are often judged and ostracized as a result, which negatively impacts their social, mental and emotional wellbeing. These findings illuminate girls’ struggles in western Kenya and call for further study and intervention.

Reproductive health

The relationship between female genital cutting and recent sexual activity in Nigeria Laura Drew* Laura Drew Kirsten Stoebenau Sangeetha Madhavan Mona Mittal Elisabeth Maring Marie Thoma

Background: Female genital cutting (FGC) is recognized as a violation of human rights. Despite international policies against FGC, currently more than 200 million women and girls have undergone FGC. In Nigeria, the national prevalence estimate is 25%. FGC is associated with long-term health consequences, including negative impacts on sexual health. Hospital-based studies have found FGC is associated with painful intercourse, reduced sexual satisfaction, and reduced sexual desire. National-level studies on this relationship are warranted. Therefore, we examined the association between FGC and recent sexual activity at the national-level in Nigeria.

Methods: We used 2013 Nigeria Demographic and Health Survey couples data and restricted analyses to couples with complete demographic and recent sexual activity data and for whom women had known FGC status and were not postpartum abstinent (N=5466). Bivariate analyses examined demographic characteristics and recent sexual activity by FGC status. We performed logistic regression to examine the association between FGC and recent sexual activity adjusting for ethnicity, age, urban/rural setting, religion, education, partners' age difference, and partners' education difference in tiered models.

Results: 36.4% of women in our analytic sample had undergone FGC. Women with FGC had lower odds of recent sexual activity (OR: 0.57, 95% CI: 0.45, 0.73). However, the odds of recent sexual activity were not significantly different between women with and without FGC in the fully adjusted model (AOR: 0.84, 95% CI: 0.65, 1.1).

Conclusion: Women with FGC may be less likely to engage in sex for many reasons. While the magnitude of association suggests women with FGC have a lower odds of recent sexual activity, a portion of this relationship was explained by confounding factors. Notably, tiered models showed adjusting for ethnicity changed the odds ratio of recent sexual activity from 0.57 (95% CI: 0.45, 0.73) to 0.81 (95% CI: 0.62, 1.05).

Reproductive health**Comparing Costs and Health Outcomes of Alternative Birth Settings versus Hospital Births**

Zakiya Haji-Noor* Zakiya Haji-Noor Jill Akiyama Sekesa Berry Leah Frerichs

Background: The vast majority of US births occur in hospitals, which is noted as costly to patients and the healthcare system. In 2012 only 1.36% of US births occurred out of the hospital, two-thirds of which occurred at home and one-third in birth centers (1). There is increased interest for these alternatives to hospital settings, an option available to low-risk, singleton pregnancies (2). Yet, little research in the US has assessed the relative costs and outcomes of these alternatives compared to hospital settings.

Methods: Estimates for probabilities, costs, and quality of life associated with hospital and home/birth center births were derived from extant literature. A decision tree was used to calculate total costs and quality adjusted life years (QALYs) for a cohort of 100,000 patients over a 9-month period. Costs per death averted and costs per QALY gained were calculated.

Results: We found home/birth center births averaged \$6,575.47 per person whereas hospital births averaged \$10,356.44 per person. For the cohort, there was a decrease of \$237,981.12 per QALY gained and savings of \$3,946,275.23 per death averted in home/birth center births.

Conclusions: Our model suggests alternative settings result in improved QALYs and decreased costs compared to hospital births. However, wide variation currently exists in access to alternative birth settings across the USA by income, state, and education (1). Further exploration and validation of these results should be used to inform policies that impact how care is delivered during birth, specifically in the USA where maternal mortality remains a major concern.

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Social/relational factors**GEOGRAPHIC VARIATION IN OPIOID RELATED DEATHS AND SOCIAL CAPITAL INDICATORS IN COOK COUNTY, ILLINOIS** Megan Key* Megan Key

Since the late 1990s, the United States has been in the midst of an opioid crisis, described first with prescription opioids, then heroin, and now synthetic opioids, specifically fentanyl, fuels this crisis. At the beginning of the epidemic, it was thought of as a crisis of the white suburbs and rural areas, fueled by over-prescribing of prescription opioids and the economic downturn of the mid 2000s. But in many cities, including Chicago, the narrative tells a different story, one of racial inequality. This paper examines social cohesion and neighborhood characteristics in relation to race in the spatial distribution of opioid related deaths in Cook County, Illinois in 2017. Generalized additive models (GAMs) were used to analyze census tract opioid overdose risk while adjusting for covariates, including neighborhood cohesion and race. A spatial relationship exists for overdose deaths in Cook County. Populations living in neighborhoods where residents have lived for less time have an increased risk of opioid death than those neighborhoods where residents have lived for more time. Populations living in census tracts of high percentage of white residents have a decreased risk of opioid related deaths by than populations living in census tracts with a lower percent of people identifying as white alone. Fully adjusting for both covariates has similar geographic variation as the model adjusting for race, racial differences explained a large portion of the spatial variability of opioid deaths across census tracts. This research can use these results to give resources and support to communities at risk in the opioid crisis.

Socioeconomic status**Racial disparities in the association between neighborhood socioeconomic index and blood lead levels in Milwaukee County, Wisconsin Children, 2014-2016** Sarah Laurent* Helen Meier

Introduction: Milwaukee County, one of the most segregated metropolitan areas in the US, has the highest rate of elevated childhood lead levels in Wisconsin and contains areas of concentrated socioeconomic disadvantage. We examined the effect of neighborhood socioeconomic disadvantage on blood lead levels in children in Milwaukee County between 2014 - 2016.

Methods: Data comes from the Wisconsin Department of Health Services childhood lead surveillance program (N=45,717) and the U.S. Census Bureau's American Community Survey. Neighborhood composite socioeconomic index (CSI) was generated from 9 indicators, including percent poverty, median household income, educational attainment, median housing value, homeownership, occupation, unemployment, households with a vehicle, median gross rent. Logistic regression was used to model the association between elevated tract average blood lead level ($\geq 5\mu\text{g/dL}$) and neighborhood CSI quintiles (Very Low, Low, Middle, High, Very High). A hierarchical linear model was then used to evaluate neighborhood differences in individual blood lead levels. Both models were adjusted for age, race/ethnicity, and sample type.

Results: More than 50% of children with elevated blood lead levels live in the lowest CSI neighborhoods. Minority children are disproportionately represented in the lowest CSI neighborhoods which have the highest poverty rates and poor-quality housing stock. Children in high CSI neighborhoods had 40% lower odds of elevated average blood lead levels compared to children living in low CSI neighborhoods (OR=0.60, 95% CI: 0.60, 0.59). Approximately 4% of the total variability in blood lead levels exists at the neighborhood level (ICC=3.7%).

Conclusion: Children are not equally exposed to lead in Milwaukee County. Minority and low CSI communities bear a higher burden of lead exposure. Lead exposure prevention efforts should be targeted to protect these vulnerable populations.

Socioeconomic status**The Contribution of Family Background to the Education-Cognition Association** Yuan

Zhang* Yuan Zhang Elizabeth Frankenberg Duncan Thomas

As the production of human capital, education and cognitive development greatly depend on inputs from families in childhood. This study aims to examine the extent to which the association between cognition as an adult and educational attainment reflects the effects of family background and local area environment as a child. Using rich data on adult siblings, this study finds that the shared family background among siblings accounts for a substantial proportion of the education-cognition association, confirming the critical role of families in human capital accumulation in the early years. However, educational attainment is not just indicative of family background. A majority of the education-cognition association is due to education itself and factors that are related to education but that are not components of shared family background in childhood. This study unpacks the contribution of education to cognition and provides evidence of the pathways leading from early-life experiences to cognitive health in adulthood.

Socioeconomic status**Diminished return of healthy immigrant effects and socioeconomic status on suicide mortality in Canada** Chungah Kim* Chungah Kim Chungah Jim

Background: It is well known that suicidal behavior is overrepresented among those with lower socioeconomic status. Previous studies have also indicated that immigrant populations have better physical and mental health, compared to non-immigrant populations. Nevertheless, no study has examined how healthy immigrant effects change depending on their socioeconomic status on suicide mortality. This study investigated immigrant status in the effects of socioeconomic status on subsequent suicide mortality in Canada.

Method: We used data from the 1991 Canadian Census Health and Environment Cohort. The data is a linkage of the Canadian Census conducted in 1991 and the mortality database that followed the respondents of the Census by 2011. We conducted Cox Hazard regressions to examine the interaction effects among immigration status and level of education, after controlling for other sociodemographic variables.

Results: Results show that the gaps between the immigrant and the non-immigrant population in suicide mortality have decreased as the levels of education and household income increased. The results of the interaction effects showed that the effects of healthy immigrants are significant across the range of educational and household income level. With immigrant population always being predicted to be exposed to lower suicide risks than the non-immigrant population; however, the gap starts off relatively great and decreases in size at higher socioeconomic status. For example, the gap between non-immigrant and immigrant populations was much greater in those with lower secondary degree (AME for nativity=362 per 100,000; AME for immigrants=204) than those with college graduates (AME for nativity=194; AME for immigrants=147).

Conclusion: A smaller return of education and income on suicide mortality among the immigrant population compared to non-immigrants, was observed.

Socioeconomic status**Food insecurity and type 2 diabetes among Latinos: Examining neighborhood cohesion as a protective factor** Brandon Osborn* Brandon Osborn Annie Ro

Recent qualitative literature has found that Latino food pantry recipients shared food and reciprocally provided social support to their food-insecure neighbors. These findings suggest that neighborhood cohesion (NC) may serve as an important community-level resource that Latinos utilize as a coping mechanism when food-insecure. High levels of NC may be a proxy for instrumental support outside the household and act as a buffer against the adverse health effects of food insecurity including type 2 diabetes (T2D). We empirically tested this theory, quantitatively, by examining whether NC moderated the association between T2D and food security (FS) status among Latinos in California. We used data from the California Health Interview Survey (2012-2017) and included Latinos who lived below 200% of the federal poverty line (n=16,254). We conducted a series of logistic regressions. We first examined the association between FS status and T2D prevalence after controlling for covariates and found Latinos were significantly more likely to have T2D if they reported low FS (OR=1.44, p<.01) or very low FS (OR=1.87, p<.001) compared to their FS counterparts. We then tested the interaction between NC and FS status on T2D. However, these results were not significant. Additionally, we stratified our analyses by low and high levels of NC. Latinos living in neighborhoods with low levels of cohesion were more likely to have T2D if they reported very low FS (OR=1.90, p<0.03) compared to their counterparts living in neighborhoods with high cohesion (OR=1.72, p<.001). Our stratified results suggest that Latinos reporting the lowest levels of FS are less likely to have T2D when reporting high levels of NC compared to those reporting low levels of NC. However, an adjusted Wald test found the difference between these results to be non-significant. We plan to replicate this study using more robust measures of NC and nationally representative data.

Socioeconomic status**Feedback Consequences of Spurious Associations of Advantage in the Generation of Health Inequalities** Jessica Polos* Jessica Polos

In the 25 years since Link and Phelan's seminal work, "Social Conditions as Fundamental Causes of Disease," progress to reduce health inequalities has been uneven. To explain continued health inequalities, I expand fundamental cause theory, building upon the concept of 'flexible resources' to outline a complementary process responsible for producing health inequalities and stigma. Flexible resources embody various forms of capital that can be used to ameliorate multiple health risks and disease outcomes. Fundamental cause theory predicts that advantaged groups, with disproportionately more flexible resources, use them to successfully pursue better health outcomes. I take this point as given and introduce the possibility that the advantaged also use flexible resources to pursue health strategies with no true benefit. Here, advantage acts as a common cause confounder. The advantaged have better health and also pursue ineffectual health strategies, creating a *spurious association of advantage*. Researchers, governments, and individuals incorrectly infer these health strategies are causal and base recommendations and private actions around replicating the observed choices. As these strategies diffuse to the disadvantaged population, their flexible resources can be misdirected away from beneficial health strategies. This generates health inequalities because the same level of flexible resources has higher opportunity costs for the disadvantaged. That is, flawed interpretations of spurious associations may lead the disadvantaged to spend limited resources on losing health strategies rather than winning ones, while the advantaged can engage in all strategies. Finally, the failure by the disadvantaged to exact health gains from ineffectual strategies can generate internalized oppression and reify health stigma towards disadvantaged groups. I describe an example of this process using the spurious association between breastfeeding and allergy in children.

Structural factors**Towards primary and secondary prevention in public health: A review of the theory and evidence for supporting resilient populations** Jessica Acolin* Jessica Acolin

Public health has become more aware of how stress and social determinants impact a mental and physical health outcomes. As a result, important interventions targeting housing insecurity, poverty, and education are being tested and implemented. However, these programs assume that the relationship between stress and health is linear, or that “more stress is bad,” and ignores the potential health benefits of moderate stress as well as the capacity for individuals to be resilient and thrive in the face of adversity. Salutogenesis, the study of the origins of health rather than disease, is a novel approach to public health that asks: how can public health practice support positive adaptation, growth, and resilience in the face of stress rather than treating stress only as a cause of disease? A robust body of empirical and theoretical literature from a diverse set of disciplines, ranging from anthropology to psychology and political science, point the way towards the development of population-level strategies for primary and secondary prevention of stress-related disorders. Stress inoculation, coping strategies, and problem-solving at the individual level hold great potential for application at the population level. Yet, despite important gains in neighboring disciplines, the concept of resilience remains underappreciated in public health, and research addressing its role on a population level is sparse. This paper provides an overview of the literature on stress and resilience, outlines a theory for the application of resilience in public health, and presents a research agenda for studying and testing these hypotheses. Key hypotheses address the curvilinear relationship between stress and population health; the mediating role of social, economic, and political resources in the pathway between stress and health; and whether unhealthy cultural norms predict negative stress responses.

Structural factors**Measuring the Effects of Structural Racism on Perinatal Outcomes Using Index of Concentration at the Extreme in Minnesota Counties** Kari Mentzer* Kari Mentzer Rachel Hardeman

ICE measures the concentration of the population in the most privileged (white/affluent) and least privileged (Black/poor) economic quintiles (Krieger, 2017). ICE measures have never been used to describe unequal privilege in Minnesota (MN), nor to understand adverse perinatal outcomes in our state. Further, ICE measures have not been used to describe inequity for Native American populations of which MN has several. This study aimed to evaluate a model with an ICE measure of race & income compared to a base model without; and describe effects of living in a low privilege vs. a high privilege county on birth outcomes.

An ICE measure was created for each county in MN using 2018 American Community survey data and divided into quintiles Q1-Q5. Vital records data (2014-2018) were used to measure adverse outcomes before birth (poor prenatal care & risk factors) and during birth (low birth weight, preterm, & maternal morbidity) Logistic models calculated the adjusted odds ratio (AOR) of experiencing an adverse outcome in Q1 compared to Q5 while controlling for maternal age, race & ethnicity, and urbanicity at the county level. These models were compared to a base model that did not include ICE measures. Loglikelihood ratios were used to determine performance to a p-value of 0.05.

ICE models for prenatal care, pregnancy risk, low birthweight, and maternal morbidity fit significantly better than the base model. Odds ratios for those living in Q1 vs Q5 showed increased odds for inadequate prenatal care (AOR 1.34 $p<0.0001$); having a pregnancy risk factor (AOR 1.07 $p<0.0001$); experiencing any maternal morbidity (AOR 1.09 $p=0.05$).

Results suggest there are increased perinatal risks associated with unequal distribution of privilege in MN counties. Including Native Americans in this analysis expands analysis to include another historically marginalized population that suffers adverse birth outcomes.

Structural factors

Collective Racial Bias and Health: A Systematic Review Eli Michaels* Eli Michaels Christine Board Mahasin Mujahid Corinne Riddell Rucker Johnson Amani Allen

Background: Structural racism encompasses *institutional* and *cultural* practices that produce and maintain inequities between racial groups, including health inequities. While epidemiologic literature has utilized myriad measures of *institutional* racism, the operationalization of *cultural* racism is nascent. In a novel strategy, data on individual residents' racial biases are aggregated to the area-level to capture "collective racial bias" and linked with health outcomes. As this approach grows in popularity, a systematic review describing the state of the evidence, conceptual and methodological considerations, and directions for future research is warranted.

Objectives: We conducted the first systematic review of studies on "collective racial bias" and health.

Methods: We searched 4 interdisciplinary databases for US-based, peer-reviewed articles that: [1] defined the exposure as individual-level measures of racial prejudice, bias, or attitudes aggregated to the area-level; and [2] examined a health outcome.

Results: Twelve studies met inclusion criteria. Collective racial bias was measured using data from Project Implicit (n=4), the General Social Survey (n=3), Google searches for the "N-word" (n=3), and Twitter (n=2). Outcomes included all-cause (n=4) and cause-specific (n=3) mortality, birth outcomes (n=3), self-reported health (n=3), and healthcare access (n=1). Collective racial bias was associated with poorer health among racially stigmatized groups (n=12), with some studies showing similar results among White populations (n=7). Most studies were cross-sectional (n=9), and few explicitly examined causal mechanisms linking collective racial bias with health.

Conclusion: Collective racial bias is associated with adverse health; however, further conceptual and empirical work is needed to explicate potential institutional, psychosocial, and biologic mechanisms.

Structural factors**Measuring socioeconomic vulnerability at the census tract level for black American women: A confirmatory factor analysis** Shanice Battle* Shanice Battle

Background Compared to most racial/ethnic groups of women, non Hispanic Black American women (BW) are more likely to report severe depressive symptoms and experience dysthymia, a persistent type of depression in which symptoms last at least two years. This evidence suggests depression is arguably more disabling and chronic for BW and that it is unlikely depression etiology is limited to isolated interpersonal events and/or lack of individual skill for this group. **Objectives** I aim to create a measure of exposure to structural discrimination that does not rely on individual perception and appraisal using census tract indicators of socioeconomic vulnerability. **Methods** Using data from the American's Changing Lives study (1986-2012), I conducted a confirmatory factor analysis for non Hispanic Black women participants with sufficiently complete data (n=778 at baseline). In particular, I compared the fit of unidimensional and multi-factor models of census tract level indicators of socioeconomic vulnerability. **Results** Using fit indices and factor interpretability as guides, social vulnerability, disadvantage and affluence emerged as three distinct components of structural vulnerability at the census tract level for black women in terms of strong item loadings (0.82-0.98) and good model fit (CFI 0.93, SRMR 0.05). **Conclusion** These results corroborate previous findings that measures quantifying structural level exposures are complex and the best models will need to account for its various dimensions. In addition, the poor fit of the one factor model and the low inter-factor correlations between the two identified constructs suggest that structural vulnerability might not be best described with one score.

Structural factors**Social determinants of inflammation: Moderated mediation of the link between race-gender, daily discrimination, financial strain, and education.** Omolola Taiwo* Omolola Taiwo

Objective: Disparities in chronic systemic inflammation among black and white women and men are well documented. However, while chronic stress domains such as discrimination and financial strain, as well as socioeconomic factors such as education, have all been linked to inflammation, more research is needed to clarify how these social determinants influence each other and contribute to inflammation. Guided by the Stress Process Model and intersectionality framework, this present study assessed the mediating role of both discrimination and financial strain in the relationship between race-gender groups and inflammation (measured as elevated CRP levels). This research also tested the hypotheses that the potential indirect effects of discrimination and financial strain were contingent on the educational level of black and white men and women.

Method: This secondary analysis focused on an analytic sample (ages 25-74) of black and white men and women (n = 775) from the Midlife in the United States (MIDUS) Biomarkers Project (2004-2009). SPSS Version 24 and PROCESS macro were used to test all mediation and moderated mediation analyses.

Results: Separate mediation analyses revealed that after adjusting for age and when compared to the reference category (white men), both financial strain and daily discrimination mediated the relationship between race-gender and inflammation (CRP levels) among black men, white women, and black men. However, when both mediators were included in the mediation model, discrimination was only significant among black men. Results of the first moderated mediation analysis indicated that the indirect effect among black men on inflammation through discrimination was significantly stronger for black men educated beyond high school. Findings from the second moderated mediation analysis suggested that education also significantly moderated the indirect effect of race-gender on inflammation through financial strain. While this indirect effect was stronger for black men and white women with a high school degree or less; inversely, the effect was stronger for black women with educational levels that exceeded high school.

Conclusion: This study contributes to the literature on inflammation by further illuminating the social determinants and social patterning of inflammation among black and white women and men.

Structural factors**Examining the use of exploitative revenue generation and its impact on health using underutilized public data** Brigitte Davis* Brigitte Davis

Nationwide, the use of police power and governmental regulations were brought to the forefront in the months following the extrajudicial killing of Mike Brown, Jr. in St. Louis County. Specifically, the resulting Department of Justice (DOJ) report revealed that the Ferguson City municipal government explicitly used fees and fines (F&F) collected through police ticketing and court fines to bolster the revenue of the city government. The DOJ report found that this practice was racially targeted and underlaid the initial interaction between Mike Brown, Jr. and the police officer responsible for this death. Since, studies have found that the use of F&F to support governmental revenue is common, with F&F such as parking citations, driving tickets, and assets obtained through civil forfeiture generate hundreds of thousands of dollars for local municipal budgets. Reliance on F&F has been shown to increase as the proportion of Black residents increase, as local governments struggle financially, and to cluster within predominantly Black and Latinx neighborhoods.

The use of police power and surveillance that disproportionately targets individuals of color has been shown to negatively impact the health of communities. Stop and Frisk (SF) is associated with increased anxiety and PTSD symptomology in young men who have been stopped, as well residents in communities with high SF rates—regardless of personally being stopped. In addition to impact hypersurveillance, the exploitative use of citations and court fees extracts critical income from already poor communities.

The Census of Governments is an administrative survey of the revenues and expenditures of local, county, and state governments, with a rich source of data primarily underutilized in population health research. For this presentation, I plan examine neighborhood correlates and geographic variation in F&F and propose potential health impacts on communities of color, particularly through stress and loss of income.