

# BREAK THE CYCLE

# 13

**BREAK THE CYCLE OF ENVIRONMENTAL HEALTH DISPARITIES**

**Reducing Children's Environmental Health Disparities and Promoting Health Equity for all Children**

**APRIL 23-24, 2018**

**Emory University  
Health Research Sciences Building  
Rollins Auditorium, 1st Floor  
1760 Haygood Drive, Atlanta, GA 30322**

[www.breakthecycleprogram.org](http://www.breakthecycleprogram.org)

**A PROJECT OF**

**SOUTHEAST PEDIATRIC ENVIRONMENTAL HEALTH SPECIALTY UNIT (PEHSU) and  
BREAK THE CYCLE OF HEALTH DISPARITIES INC (BCHD)**

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**GEORGIA GOVERNOR'S COUNCIL ON DEVELOPMENTAL DISABILITIES**



# BREAK THE CYCLE 13

## BREAK THE CYCLE OF ENVIRONMENTAL HEALTH DISPARITIES

Reducing Children's Environmental Health Disparities and Promoting Health Equity for all Children

*Envisioning Community Based Solutions to Environmental Health Disparities*

### **Monday April 23, 2018**

**8:30 AM Registration, Poster Setup, & Light Breakfast**

**9:00 AM Opening of Program**

Robert J. Geller, MD, Director, Southeast PEHSU, Professor of Pediatrics, Emory University, Atlanta GA

**9:10 AM Message from the ATSDR**

Leann Bing, ATSDR Region IV Representative, CDC, Atlanta GA

**9:20 AM Message from the US EPA, Region 4**

Beverly H. Banister, Director of Air Pesticides and Toxics Management Division, US EPA Region 4, Atlanta GA

**9:40 AM Introduction to Break the Cycle**

Leslie Rubin, MD, Director, Break the Cycle Program, Associate Professor, Morehouse School of Medicine, Co-Director Southeast PEHSU, Atlanta GA

**10:00 AM Risk of Preeclampsia in Teen and Inexperienced Mothers**

Student: Alexandrah Gichingiri

Mentor: Candace Tannis MD

Icahn School of Medicine at Mount Sinai, Graduate Program in Public Health, New York NY

**10:20 AM Breaking the Cycle: Examining the Protective Effects of Early Parenting on the Association between Maternal Childhood Adversity and Infant Neurodevelopment**

Student: April Brown, MPH

Mentor: Patricia Brennan, PhD

Emory University, Laney School of Graduate Studies, Atlanta GA

**10:40 AM Health Break**

**11:00 AM Children's Health and Safety Risks Posed by Irrigation Water in Northern Utah**

Student: Kristen Koci

Mentor: Courtney Flint, PhD

Utah State University, Department of Sociology, Logan UT

- 11:20 AM**      **KEYNOTE: Proctor Creek – A Primer**  
Na’Taki Osborne Jelks, PhD, MPH  
Visiting Assistant Professor in Public Health, Director of Evaluation and Assessment  
Agnes Scott College, Methods Graduate Program, Atlanta GA
- 12:00 PM**      **Lunch**  
\$12 Optional lunch if reserved at registration  
We encourage you to stay and network with presenters and attendees
- 1:20 PM**      **Can a Changing Food Environment Tip the Scale? Mixed-Methods Study of Food Habitus and Obesity in a Neighborhood Undergoing Gentrification.**  
Student: Brennan Rhodes-Bratton, MPH  
Mentor: Julie Herbstman, PhD  
Columbia University, Columbia Center for Children’s Environmental Health and  
Department of Sociomedical Sciences, New York NY
- 1:40 PM**      **Evaluation of a single fish-consumption screening question to identify pregnant women with elevated mercury levels**  
Student: Ivorie Stanley  
Mentor: Susan Buchanan, MD, MPH  
University of Illinois at Chicago School of Public Health, Division of Environmental and  
Occupational Health Sciences, Chicago IL
- 2:00 PM**      **Confronting Invisible Threats: Recognizing Airborne Hazards in the Home**  
Student: Prathyusha Chenji  
Mentor: John Marshall, JD  
Georgia State University, School of Law, Atlanta GA
- 2:20 PM**      **Health Break**
- 2:40 PM**      **The effects of neighborhood and community characteristics on school connectedness and academic success among U.S. youth and adolescents.**  
Student: Breyanna M. Mikel, CHES  
Mentor: Ashley Lima, PhD, MPH  
Georgia State University, School of Public Health, Department of Epidemiology, Atlanta  
GA
- 3:00 PM**      **Social Media as a Tool for Breaking the Cycle of Children’s Environmental Health Disparities**  
Student: Faith Bygrave & Talia Bernhard  
Mentor: Nsedu Witherspoon, MPH  
Emory University, Nell Hodgson Woodruff School of Nursing, Atlanta GA
- 3:20 PM**      **Environmental Justice for Vulnerable Children in the Aftermath of a Hurricane**  
Student: Manmit Singh and Dylan Avery  
Mentor: Valerie Mac, PhD, RN  
Emory University, Nell Hodgson Woodruff School of Nursing, Atlanta GA

**3:45 PM      Review and Conclusion**

Leslie Rubin, MD

**4:00 PM      Poster Session and Awards**

Light Refreshments Provided

## **POSTERS**

### **Dialogic Reading with Adolescent Mothers and Their Children**

Student: Diana Abarca

Mentor: Jacqueline Towson, PhD, CCC-SLP

University of Central Florida, College of Health and Public Affairs, Department of Communication Sciences and Disorders, Orlando FL

### **Nutritional Healthcare Disparities in Rural South Carolina**

Student: Ka'Dedra Creech

Mentor: Michelle Nichols, PhD, RN

Medical University of South Carolina, College of Nursing, Charleston SC

### **Healthy Family Healthy Child: An assessment of sleep habits related to obesity prevention in low-income African American preschoolers**

Student: Kristina Caffey

Mentor: Sharon Fruh, PhD, RN

The University of South Alabama, College of Nursing, Mobile AL

### **School-based Sexual Health Education and Sexual Experiences in a Sample of Tennessee College Students**

Student: Oluyemi Rotimi, MBBS

Mentor: Mildred Maisonet, PhD

East Tennessee State University, Department of Biostatistics and Epidemiology, Johnson City TN

### **Barriers and Promotors to Initiating and Sustaining Breastfeeding among African American Women**

Students: Danielle Dimacali, BS, Claribel Marmol, BA, MPH, Jalisa Fortune

Mentors: Jeannie Rodriguez, BSN, MSN, PhD, Helen Baker, BSN, MSN, PhD

Emory University, Nell Hodgson Woodruff School of Nursing, Atlanta GA

### **Urban Life Activity Center**

Student: Sunity Chowdhury

Mentor: Elizabeth Armstrong-Mensah, PhD, MIA

Georgia State University, School of Public Health, Atlanta GA

### **The Effects of Health Education, Gardening, and Physical Activity on Developing Children in Macon County**

Student Name: Micah Thomas, BS, OTS

Mentor Name: Jannett Lewis-Clark, OTR/L

Tuskegee University, Occupational Therapy Program, Tuskegee AL

### **Collier Heights Environmental Health Outdoor Classroom**

Derwin Douglas, Anthony Hairston, Rajah Jordan, William Mitchell, Montaus Paden, Monteria Paden, Cadence Williams

Mentors: Gwen Smith and Darryl A. Howard BS

Collier Height Assoc. for Revitalization, Resilience, and Sustainability and Morehouse School of Medicine

### **Autism Disparities: Assessing Quality of Care and Structural Barriers to Diagnosis and Services**

Jennifer Singh, Leslie Rubin

Georgia Tech, School of History and Sociology

Morehouse School of Medicine, Department of Pediatrics

### **It Takes a Village: Investing in Community Outreach and Research Translation to Address Environmental Health Disparities**

Hagurenesh Woldeyohannes, MPH, Ayanna Robinson, MPH, PhD, Abby Mutic MSN, CNM, Melanie Pearson PhD, Nathan Mutic, MS, Linda McCauley RN, PhD

Emory University Nell Hodgson Woodruff School of Nursing

Emory University Rollins School of Public Health

### **Pediatric Asthma as an Inside Job: Community Education to Reduce Household Triggers**

Christine M Higgins, BS, CCRN, Kathleen Rachel Singhio MPH, RN, Jeannie Rodriguez PhD, RN, Abby Mutic MSN, CNM

Emory University Nell Hodgson Woodruff School of Nursing

**6:00 PM      CONFERENCE DAY 1 CONCLUDES**

**Tuesday, April 24, 2018**

**Envisioning Community Based Solutions to Environmental Health Disparities:  
Educational Site Visit to Proctor Creek**

**8:00 AM Registration at Emory University Health Science Research Building**

**8:30 AM Bus to Departs to Lindsay Street Park**

**9:00 AM Proctor Creek Experiential Learning Site Visit**

**10:15 AM Health Break**

**10:30 AM Bus Departs to C.A. Scott Recreation Center**

**11:45 AM Feedback from Groups and Conclusion**

**12:30 PM Adjourn – Bus to Emory or Airport**



### **Theme of Break the Cycle 13**

#### *Envisioning Community Based Solutions to Environmental Health Disparities*

People who live in poverty are more likely to live in areas where there is more pollution and other adverse environmental factors that aggravate poor health and drain the communities of energy to make a difference and so the situation gets worse and the population becomes more entrenched and trapped in that negative cycle of health disparities.

Communities have agency to promote health equity. Community-based solutions are necessary and critical, but require supportive public and private policies at all levels and programs to facilitate community action. The collaboration and engagement of new and diverse (multi-sector) partners is essential to promoting health equity. Health equity is crucial for the well-being and vibrancy of communities.

The inspiration for this theme came from a situation in Atlanta where Proctor Creek, a waterway which had once been the playground and even food source for local neighborhoods, Sadly, over time, the neighborhoods became poor and multiple social, economic, and political factors resulted in environmental degradation and pollution of the Creek with increased bacterial counts, poisoned fish, and debris which are affronts to all senses and adversely affect human health and community sustainability.

The good news is that with a community effort, political will and economic investment, this situation is finally being turned around and nature and life are returning to the area. Our focus will be on how the pollution happens in the poor communities, what it takes to make a positive change, and the benefits and unintended consequences that result.

EPA Proctor Creek Watershed/Atlanta (Georgia)

<https://www.epa.gov/urbanwaterspartners/proctor-creek-watershedatlanta-georgia>

EPA Proctor Creek Boone Boulevard Health Impact Assessment (HIA) Final Report

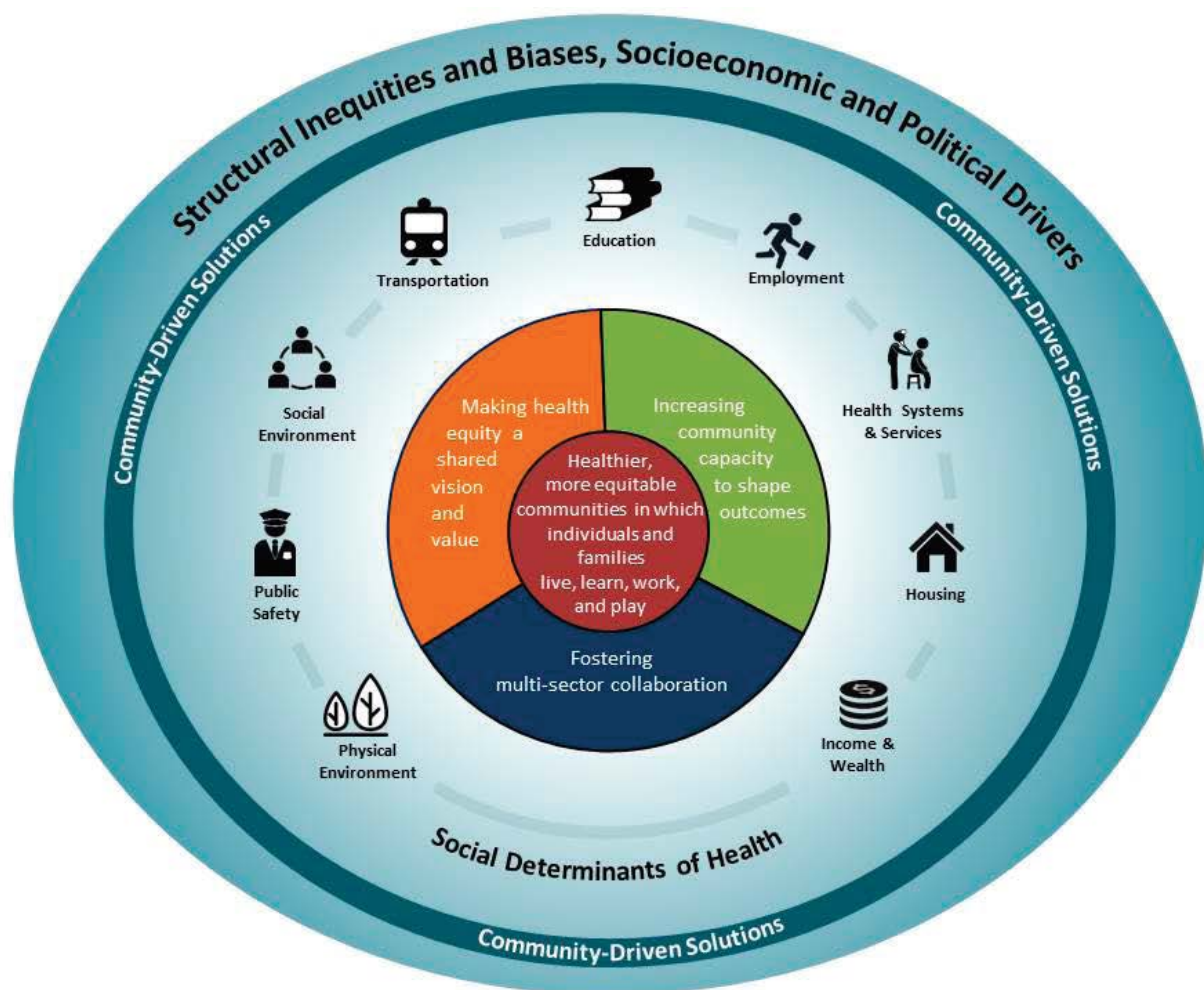
<https://www.epa.gov/healthresearch/proctor-creek-boone-boulevard-health-impact-assessment-hia-final-report>

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Reducing Children's Environmental Health Disparities and Promoting Health Equity for all Children

The Robert Wood Johnson Foundation, as part of its Culture of Health initiative, asked the National Academies of Sciences, Engineering, and Medicine to assist in delineating causes of and solutions to health inequities in the United States. A consensus committee was assembled, and members examined the evidence on solutions to promote health equity. At the end of the project, the committee released a report entitled *Communities in Action: Pathways to Health Equity*, which is also available to the public.



National Academies of Sciences, Engineering, and Medicine. 2017. *Communities in action: Pathways to health equity*. Washington, DC: The National Academies Press. doi: 10.17226/24624 .



# **Break the Cycle 13 Cohort**

## **Student and Mentor Participants**

**Georgia State University**  
**School of Public Health**  
**Department of Epidemiology**

**Student**

**Breyanna M. Mikel, CHES**

**Breyanna M. Mikel** received her Bachelor of Science in Integrative Studies and minor in Health Promotions from Kennesaw State University. After completing her undergraduate degree, she went on to work with elementary students in Southwest and Southeast Atlanta schools as a curriculum intervention specialist and witnessed how her students' academic performances were impacted and influenced by the environment that they lived in. Understanding the relationship between socioeconomic factors (e.g., neighborhood-level poverty and education) and health, Breyanna became interested in how disparities in the former might lead to disparities in the latter. To better understand this relationship, Breyanna became a certified health education specialist, while pursuing her Master of Public Health in Epidemiology. Upon graduation in 2018, she hopes to continue addressing health disparities and providing a voice for vulnerable, underrepresented populations through research and programming. She hopes to use her experiences and passion in a Ph.D. program in the future.

**Faculty Mentor**

**Ashley C. Lima, PhD, MPH**

**Dr. Ashley C. Lima** is a behavioral researcher trained in qualitative methods and communication sciences. Her domestic and global research experiences have centered on examining the social contexts and structural exposures that increase HIV/STI risk among black/African American women. She earned a BS in biology from Spelman College and completed her MPH and PhD in health promotion and behavior at the University of Georgia. She teaches Health Disparities and Social and Behavioral Foundations of Public Health at Georgia State University, where she is an adjunct faculty member.

# “Cause I Ain’t Got a Pencil:” Neighborhood and community characteristics influencing school connectedness

Breyanna M. Mikel, CHES, *student*; Dr. Ashley Lima, *mentor*  
Georgia State University, School of Public Health, Department of Epidemiology

## Background:

In a society that has shifted and prided itself on standardized tests and academic success, there appears to be a widening education gap among youth and adolescents who live in neighborhoods deemed as quality and safe and those who live in communities that are lacking basic amenities and are perceived to be unsafe. This education gap is associated with other disparities, such as the lack of professional and employment opportunities and development, the school to prison pipeline, and the increase in chronic diseases, such as heart disease, diabetes, and obesity. Because of the impact that the built environment has on populations – specifically, vulnerable populations like minority youth – there is need to explore the built environment on adolescent and youth development – particularly, the neighborhood amenities affecting the school connectedness and academic performance among school-aged children.

## Methods:

Using SAS 9.4, a chi-square tests and multiple regression will be used to analyze the data from the 2011/2012 National Survey of Children’s Health (NSCH). The NSCH is a cross-sectional sampling design that collects detailed information from households with at least one child on all components that makeup health and well-being, in addition to community amenities and school activities, and medical coverage using random digit dialing and telephone surveys. The overall NSCH sample consisted of 95,677 children ranging from the ages of 0 to 17 (M=8.85, SD=5.23).

## Results:

Strong associations were found between detracting community elements and school connectedness - specifically, among Hispanic and African-American youth. Hispanic youth aged 6-17 years were 3 times likely to have low levels of school connectedness compared to their White counterparts. African-American youth aged 6-17 years were twice as likely to have low levels of school connectedness compared to their White counterparts.

## Conclusions:

Communities and neighborhoods with detecting elements, such as the presence of abandoned homes and limited access to parks and safe common areas, are believed to have lower school connectedness and performance. Further unsafe neighborhoods and communities, can lead to risk factors that result in increased disparities in the achievement gap as well as overall health among minorities youth and adolescents.

## Utah State University Department of Sociology

### Student

#### Kristen Koci

**Kristen Koci** received her undergraduate degree from Sam Houston State University in Huntsville, Texas with a major in Sociology and minor in English. She joined the Environment and Community Sociology PhD Program at Utah State University in 2017, with Dr. Courtney Flint as her major adviser. Kristen's primary interests include rural access to healthcare, health risk perceptions, and wellbeing. She is currently involved in 2 research projects. The first is a project aimed at exploring perceptions of health risk related to reclaimed water use in Northern Utah; this project is funded by the USDA and Kristen became involved with this project as a result of her research assistantship with Dr. Flint. The second is a project focused on exploring perspectives on children's health and safety risks posed by irrigation water in Northern Utah (the project conducted for Break the Cycle).

### Faculty Mentor

#### Courtney Flint, PhD

**Dr. Courtney Flint** is a Professor of Natural Resource Sociology at Utah State University. Dr. Flint's expertise is on community and regional response to environmental disturbance and risk as well as the integration of social science and environmental science to address natural resource-related vulnerabilities. Her research has focused on numerous natural resource contexts including water management, forestry, agriculture, subsistence tribal resources, and mountain landscapes. She employs qualitative, quantitative, and participatory research methods. Dr. Flint has collaborated with an interdisciplinary array of scientists as well as community and regional stakeholders in North America, Europe, and recently South Africa. Dr. Flint serves on the Executive Committee of the US EPA Board of Scientific Counselors (BOSC) and as Chair of the Sustainable and Healthy Communities Subcommittee of the BOSC. Dr. Flint has been author of 60 peer-reviewed journal articles and book chapters. Additionally, she has led and collaborated on research funded by federal agencies including the National Science Foundation (NSF), the US Department of Agriculture (USDA), the US Fish and Wildlife Service (USFWS), and the Environmental Protection Agency (EPA).

# Perspectives on Children's Health and Safety Risks Posed by Irrigation Water in Northern Utah

Kristen Koci, *student*; Dr. Courtney Flint, *mentor*  
Utah State University, Department of Sociology

## Background:

In Northern Utah communities, irrigation water poses a potential risk to children's health and safety. While some irrigation water is piped directly to households for residential irrigation use, this water also flows openly in irrigation canals/ditches and through towns in the gutter system to be used for residential landscaping or agriculture. Children may be exposed to irrigation waters through gardening, play, ingestion, or other unintentional contact. These waters are not treated to the same standards as drinking water, if treated at all, and the quality is not widely known.

## Methods:

In-depth interviews were conducted with key stakeholders in Logan, Utah and the surrounding areas to assess perspectives on children's health and safety risks posed by irrigation water. Key stakeholders include university informants (researchers and extension agents) and civic informants (individuals affiliated with city government, state government, irrigation systems, and community organizations). Interviews broadly addressed participants' involvement with the irrigation system, perspective on health and safety risks for children, awareness of concern voiced in the region, and suggestions on any actions that should be taken to address health and safety risks now and in the future.

## Results:

University informants identified some potential contaminants in irrigation water that could pose a threat to children's health. Potential contaminants include agro-chemicals, pathogens, animal materials, human contaminants from recreation, and chemicals introduced during canal maintenance. University informants also perceive there to be a significant potential risk to children's health due to irrigation water exposure, however, civic informants do not. Both university and civic informants perceive there is a risk to children's safety due to access to open irrigation waters. University informants suggested that children of socially disadvantaged situations are more at risk for health and safety issues related to irrigation water exposure. Both university and civic informants discussed strategies to break the cycle of children's environmental health disparities related to irrigation water exposure, including piping or fencing off canals, raising awareness of risks, and increasing concern for the quality of irrigation water.

## Conclusions:

There are some perceived risks to children's health and safety, especially from a scientific vantage point. Since there could be an issue with children's health and safety due to irrigation water exposure, future research is needed to address these issues. Further, it's important to understand the differences in perceived risks (scientific versus civic) in order to establish a means of communication between the public and public leaders in an effective way.

**Emory University**  
**Emory College of Arts & Sciences**  
**Nell Hodgson Woodruff School of Nursing**

**Student**

**Talia Bernhard (Emory College of Arts & Sciences)**

Talia Bernhard is a senior from Los Angeles, California, studying in Emory's College of Arts & Sciences. Upon graduating in May 2018, she will have a Bachelor of Arts in Human Health and a minor in Anthropology. Her experience includes a summer spent at the University of Southern California Keck School of Medicine's Health, Emotion, & Addiction Laboratory (HEAL) and a different summer interning for a study in UCLA's Center for Occupational & Environmental Health. Since September 2017, Talia has served as the Outreach & Social Media Intern for Emory's Center for Children's Environmental Health. By managing the Center's social media channels, among other tasks, she supports the Community Outreach and Translation Core (COTC). Talia plans to gain work experience in public health before applying to graduate programs.

**Student**

**Faith Bygrave (Emory College of Arts & Sciences; Nell Hodgson Woodruff School of Nursing)**

Faith Bygrave is currently a junior studying Anthropology and Human Health in Emory's College of Arts Science from East Orange, New Jersey. She will be transitioning to Emory's Neil Hodgson Woodruff School of Nursing next year and plans on graduating in May 2020. Since October 2017, Faith has served as the Social Media Intern for the Southeastern Pediatric Environmental Speciality Unit (SEPEHSU) that works with units nationwide to improve children's health and educate health providers as well as the general public on environmental hazards, their effects, and practical ways to protect our children's health. Faith plans on becoming a nurse and apply the lessons she has learned from her time with the SEPEHSU to the health field.

**Faculty Mentor**

**Nsedu Obot Witherspoon, MPH**

Nsedu serves at the Executive Director for the Children's Environmental Health Network (CEHN), where her responsibilities include successfully organizing, leading, and managing policy, education/training, and science-related programs. For the past 18 years, she has served as a key spokesperson for children's vulnerabilities and the need for their protection, conducting presentations and lectures across the country. She is a leader in the field of children's environmental health, serving as a member of the NIH Council of Councils, on the Science Advisory Board for the Centers for Disease Control and Prevention, and the External Science Board for the Environmental Influences on Child Health Outcomes (ECHO) NIH Research work. She is also a Co-Leader for Advancing the Science/Health initiative of the National Collaborative on a Cancer-Free Economy. Ms.

Witherspoon is also a Board member for the Pesticide Action Network of North America and serves on the Maryland Children's Environmental Health Advisory Council.

Ms. Witherspoon has held past appointments on the Children's Health Protection Advisory Committee for the Environmental Protection Agency, and the Board for the American Public Health Association. She is a past member of the National Association of Environmental Health Sciences Council and the Institute of Medicine's Environmental Health Sciences Roundtable. Ms. Witherspoon has a variety of publications and has the distinct honor of having one of CEHN's leadership awards, the Nsedu Obot Witherspoon (NOW) Youth Leadership Award, named in her honor. She is also the recent recipient of the William R. Reilly Award in Environmental Leadership, from the Center for Environmental Policy at American University and the Snowy Egret Health Award from the Eastern Queens Alliance. Ms. Witherspoon has a B.S. in Biology Pre Med from Siena College and an M.P.H. in Maternal and Child Health from The George Washington University, School of Public Health and Health Services. She is a proud mom to 4 children!

# Social Media as a Tool for Breaking the Cycle of Children’s Environmental Health Disparities

Talia Bernhard & Faith Bygrave, *students*; Nsedu Witherspoon, *mentor*  
Emory College of Arts & Sciences; Nell Hodgson Woodruff School of Nursing  
Children’s Environmental Health Network (CEHN)

## Background:

Successfully communicating scientific evidence and resources is often the missing link between research and individual behavior changes that improve health and well-being. Given how pervasive social media is in today’s world, scientists should not underestimate the power of using it as a tool to spread awareness about the issues at hand. There is not a very in-depth understanding in the literature about how people can use social media in their work as it pertains to children’s environmental health and reaching vulnerable populations. Thus, gaining improved and more extensive qualitative data from a wide variety of individuals and organizations about their experiences doing so will help others, such as the Children’s Environmental Health Network, in the future to approach social media use more effectively.

## Methods:

Our main project question was “How can we use social media as a tool for environmental justice to break the cycle of disparities in children's environmental health?”. Through a Google Forms survey, sent to various groups and individuals that do research, non-profit, advocacy, and grassroots work, among other efforts, we aimed to fill in the current body of research on strategies that apply to children’s environmental health messaging.

## Results:

Of the 25 survey respondents, who come from a relatively diverse geographic range (from California to Illinois, New York to Georgia, etc.), 22 use print sources, 21 use Facebook, 19 use a blog or website, and 15 use Twitter to reach their audiences. Some respondents never utilize social media and some post several times per day. The majority report *not* targeting any particular ethnic group (14/25), socioeconomic group (18/25), or education level (16/25). 60 percent also report *not* utilizing any particular strategy on social media. 72 percent struggle with limited staff capacity and 40 percent find limited financial resources to be a challenge in social media outreach. In terms of how social media benefits respondents’ work, 84 percent answered ‘Yes, social media helps my group accomplish our goals.’ This is done, according to the respondents, by spreading awareness, engaging people, contributing to advocacy work, and tightening their message and broadening their reach. To reach vulnerable or high-risk populations, 88 percent of respondents report offering non-social media based resources. Those include print materials, meetings and workshops, and training, which allow broader access to education and support.

## Conclusions:

A majority of respondents reported *not* trying to reach a particular ethnic group, socioeconomic group, or education level on social media. This has implications for vulnerable and minority individuals, and communities who may not have as much access to resources or awareness of the problems and solutions within their environments. Therefore, some improvements need to be made within the organizations’ use of social media such as altering their target population to direct efforts toward children and vulnerable, disadvantaged groups. By dedicating more staff and funding to social media and in-person outreach, developing a strategic plan that includes culturally sensitive, plain-language content, and using analytics and participatory feedback to evaluate successes and weak points, communities can better position themselves to break the cycle of children’s environmental health disparities.

## **Emory University**

### **Department of Psychology**

#### **Student**

**April Brown, M.A., M.P.H.**

**April Brown** recently earned a Master's degree in Clinical Psychology from Emory University, where she is currently enrolled as a doctoral student. After graduating from Spelman College with a B.A. in Psychology, April attended Rollins School of Public Health where she earned an M.P.H. in Behavioral Science and Health Education (C'2016). In 2012, she began working as a Guest Researcher and Research Analyst at the Centers for Disease Control and Prevention in the Division of Congenital and Developmental Disorders. April has studied the cycle of violence, life stress, and examined the effects of childhood adversity on parenting practices, child problem behavior, and criminal offending.

#### **Faculty Mentor**

**Patricia Brennan, Ph.D.**

Patricia A. Brennan, Ph.D. is a Professor of Psychology at Emory University and a member of the Clinical Psychology Program. She received her BS in Psychology from UMASS Amherst, and her M.A. and Ph.D. in Psychology from the University of Southern California. Dr. Brennan has been the PI or Co-I on several large scale, NIH funded longitudinal studies that have examined stress as well as perinatal and familial risk factors in association with children's cognitive development, emotional reactivity, sleep function, psychopathology and physical health outcomes. She has a passion for multidisciplinary scientific efforts, mentoring, and teaching.



# Early Parenting and the Association between Maternal Childhood Adversity and Infant Neurodevelopment

April Brown, *student*; Dr. Patricia Brennan, *mentor*  
Emory University, Department of Psychology

## Background:

Adverse childhood experiences (ACEs) have been cited as significant environmental risk factors for a host of negative health outcomes. Minority populations and those who reside in socio-economically depressed areas are disproportionately exposed to ACEs, and recent studies have provided evidence that ACEs may have intergenerational effects on child development. There is evidence that maternal ACEs decrease maternal responsiveness, sensitivity, and positive affect, which in turn, impede infant neurodevelopment. Recently, associations between maternal ACEs and child brain anatomy have been observed, but very few studies have examined maternal ACEs and infant neurodevelopment as a function of early parenting behaviors. This study aims to examine the effects of maternal childhood abuse and maltreatment on infant neurodevelopment and assess whether early parenting behaviors moderate these associations.

## Method:

This study leveraged subject recruitment and perinatal data from an ongoing longitudinal study of maternal stress within African Americans. Maternal ACEs were assessed using the Childhood Trauma Questionnaire, and mother-infant parenting behaviors were assessed by coding videotaped observations at 3-month follow-up. Infant neurodevelopment was assessed using the cognitive and motor subscales of the Bayley Scales of Infant and Toddler Development at 3-, 6-, and 12-month follow-up.

## Results:

Preliminary results indicate that maternal ACEs are not significantly associated with infant cognitive and motor development at 3-month follow-up. Additionally, there were no significant interaction effects between maternal ACEs and parenting behaviors on 3-month cognitive or motor development ( $ps > 0.05$ ).

## Conclusions:

Preliminary findings suggest no main effects of maternal adversity on infant neurodevelopment at 3-month follow-up and revealed no significant interaction effects between maternal adversity and early parenting behaviors. It is still possible that these factors predict the *rate* of neurodevelopment over the first year of life, which will be examined using growth curve analyses. Findings from this study could be used to explore parenting behaviors as a key point of intervention that may weaken the intergenerational effects of ACEs on child neurodevelopmental outcomes, thereby breaking the cycle of risk.

# Icahn School of Medicine at Mount Sinai

## The Department of Environmental Medicine and Public Health

### Student

#### Alexandrah Gichingiri

**Alexandrah Gichingiri** is a second year MPH student at the Icahn School of Medicine at Mount Sinai. She is a Public Health Intern under Dr. Elizabeth J. Garland, involved in research that is examining data from a Maternal Outreach Program to help better understand health trends and the program's impact on the health of mothers and babies. Gichingiri received her bachelor's degree in Public Health at Syracuse University in 2016. As a native of Kenyan who was raised in Texas, Gichingiri understands health disparities on a personal level and how they disproportionately affect the lives of others. She hopes to use her public health education and passion to help ensure communities around the world receive culturally competent health care and education.

### Faculty Mentor

#### Candace Tannis, MD, MPH

**Dr. Tannis** obtained her medical school degree from New York University of Medicine. She trained in pediatrics for two years at the University of Rochester. Dr. Tannis obtained her MPH from Harvard University School of Public Health, where her thesis was focused on factors that contributed to successful weight management among high risk children at an urban pediatric obesity management clinic. She is currently practicing at Mount Sinai and specializes in Environmental Medicine and Public Health.

# Risk of Preeclampsia in Teen and Inexperienced Mothers

Alexandrah Gichingiri, *student*; Dr. Candace Tannis, *mentor*

Icahn School of Medicine at Mount Sinai, Department of Environmental Medicine and Public Health

## Background:

Preeclampsia is a disease observed during pregnancy that causes high blood pressure, protein in the urine, kidney damage, and even death when left untreated. Preeclampsia affects 5 to 8 percent of mothers in the United States, with the only known cure of delivering the baby before it can lead to more fatal complications for both the mother and the baby. The age of the mother during the first pregnancy is often considered a risk factor, with women older than 30 years of age and younger than 20 years of age at a greater risk for preeclampsia. This life change into parenthood is one filled with stress and high risk for teen and inexperienced mothers. Evidence has found that adolescent pregnancy is associated with long-term poverty, low educational attainment, increased risk of health problems for their children, unemployment, and the repeated cycle of bearing a child as a teenager.

## Methods:

A retrospective chart review was conducted of 261 women in the Little Sisters of the Assumption Family Health Service Maternal Outreach Program between the years of 2015 to 2016. A chi-square test was used to compare the percentage of preeclampsia in teen and inexperienced mothers to mothers who are experienced and at least 20 years of age. Logistic regression was then used to find significant potential risk factors to help identify mother at risk for preeclampsia.

## Results:

25% of teen and inexperienced mothers were found to be preeclamptic compared to 32% of mothers who were experienced and at least 20 years of age. Risk factors for preeclampsia found to be statistically significant were: no antepartum care (OR 2.3 95% CI 1.1-5.0), insufficient income (OR 2.0 95% CI 1.0-3.8), education less than a 9th grade level (OR 2.6 95% CI 1.1-6.0).

## Conclusions:

Analysis of the sociodemographic characteristics of the clients served indicated that the Little Sisters of the Assumption Family Health Services does serve a high-risk population in East Harlem. The percentage of preeclampsia was found to be lower in teen and inexperienced mothers compared to experienced mothers who were at least 20 years of age. Insufficient income and education less than a 9th grade level were significantly associated with preeclampsia.

# Georgia State University

## College of Law

### Student

#### Prathyusha Chenji

**Prathyusha Chenji** is a second-year law student at Emory University School of Law. She received her undergraduate degree from Northwestern University in Evanston, IL with a major in Asian Languages and Civilizations, and a concentration in Pre-Medical studies and Molecular Biology. She has always been passionate about children's health and has attempted to incorporate this interest into every aspect of her academic journey. While at Northwestern, she worked closely with children of gifted capacities as a Research, and later Teaching Assistant at the Center for Talent Development. She also worked on studies relating to the neurodevelopment of infants and toddlers as a Research Assistant at the Project on Child Development. In 2017, she worked as a student intern at the HeLP Legal Services clinic at Georgia State University College of Law, a medical-legal partnership helping low-income children and their families. Upon graduating from law school in 2019, she hopes to implement her work and research experience into practice working with children and families.

### Faculty Mentor

#### Professor John Travis Marshall

**John** is an assistant professor at the Georgia State University College of Law, where he teaches Environmental Law, Land Use Law, and Property Law and serves as associate director of the Center for the Comparative Study of Metropolitan Growth. He is particularly interested in how improved local laws and heightened capacity of local government lawyers and leaders can improve resilience to disasters and economic shocks. John is co-author of MARKET DEMAND-BASED PLANNING AND PERMITTING (with Arthur C. Nelson, Julian Juergensmeyer, and James Nicholas) (forthcoming 2017 ABA Press) and co-editor and an author of HOW CITIES WILL SAVE THE WORLD (Routledge 2016), which examines stories of urban crises and disasters and the steps that cities have taken -- or might take -- to address these challenges.

# Invisible Threats: Recognizing & Confronting Airborne Hazards in the Home

Prathyusha Chenji, *student*; Emory University School of Law  
Professor John Travis Marshall, *mentor*; Georgia State University, College of Law

## Background:

Federal housing standards dictate certain vague, fundamental rights for tenants. Yet these legal baseline standards have not been broadly effective at securing health and safe living conditions. Young parents are often unaware that environmental health hazards such as mold, lead, dust mites, rodents, etc. serve as triggers for asthma in children. The scope of this project is to develop a comprehensive DIY-checklist of risk factors which may be easily identified within the home by a lay person, both adult and child. The primary goals of this project are: 1) isolate recognizable risk factors for asthma in the home or symptoms in the child and consolidate them into an accessible, home assessment; 2) develop separate educational legal worksheet for parents aimed at training them to seek resources and relief which may better their living environment. In addition to helping parents recognize hazards within the home, these worksheets would facilitate a “know your rights” education for parents, offering guidance on available legal resources to negotiate with landlords for better housing conditions. Overall, this project attempts to empower families by developing an education plan that may be implemented within school or medical systems to make housing rights more accessible, address asthmatic triggers within the home, and thereby improve children’s health.

## Methods:

The methods for this project involved researching home conditions and risk factors which may trigger asthmatic episodes in children. For this, it was important to identify what areas of the home are more prone to airborne hazards, and how they would likely manifest. Additionally, my research involved identifying common medical symptoms in children which may be triggered by these particular airborne hazards. All of this information was incorporated into a standard, interactive assessment for parents. Research for the legal remedies worksheet involved working through local ordinances and housing codes, and speaking with lawyers on the types of legal relief and housing rights available to potential clients. This information was consolidated into a brief information sheet for parents.

## Conclusions:

This project has produced two worksheets, a DIY home-assessment and a legal worksheet that can educate a parent on relief which may be available for their consideration. The DIY Home-Assessment is divided into areas of the house, and asks a series of questions to help parents pinpoint what risk factors may be present within the home. Affirmative answers to the questions lead parents to questions about symptoms their child may be experiencing. Additional information is provided via notes on the nature of the risk factors, adverse health outcomes, and next steps. The Legal Worksheet is an information sheet that educates parents on next steps if they intend to better their housing environments. The content of both worksheets may be presented on paper or online.

**University of Illinois at Chicago**  
**School of Public Health**  
**Division of Environmental and Occupational Health Sciences**

**Student**  
**Ivorie Stanley**

**Ivorie Stanley** received her undergraduate degree from North Carolina State University with a major in Communications, Disorders concentration. Passionate about serving underserved communities and eliminating health disparities, she then sought training at Morehouse School of Medicine where she earned a Master of Public Health, focusing on Health Administration and Policy, and then a Doctor of Medicine. She is currently a resident in Occupational and Environmental Medicine at the University of Illinois at Chicago, where she combines her passion for patient care and public health. Ivorie looks forward to embarking on a career in academics, where she can advocate for health through patient care, research, teaching, and policy.

**Faculty Mentor**  
**Susan Buchanan, MD, MPH**

**Dr. Susan Buchanan** is Director of the Great Lakes Center for Children’s Environmental Health at the University of Illinois at Chicago. This is the EPA/ATSDR-funded Pediatric Environmental Health Specialty Unit for federal Region 5. Dr. Buchanan is board certified in Family Medicine and Occupational and Environmental Medicine. She teaches occupational and environmental health topics in UIC’s Occupational Medicine Residency Program, Family Medicine Department, and School of Public Health. Her research interests include environmental exposures among pregnant women and young children.

# Evaluating Fish-Consumption in Pregnancy: An Opportunity for Neurodevelopmental Health Promotion

Dr. Ivorie Stanley, *student*; Dr. Susan Buchanan, *mentor*

University of Illinois at Chicago School of Public Health, Division of Environmental and Occupational Health Sciences

## Background:

Due to maternal consumption of fish high in mercury (i.e. methylmercury), babies who are exposed to elevated mercury levels in utero are at higher risk of preterm delivery and adverse neurodevelopmental outcomes. On the other hand, the omega-3 fatty acids found in fish (DHA, EPA) confer significant neurodevelopmental benefits and may improve gestational health. Considering both factors, maternal fish consumption practices can have significant implications for children's health and development. This is particularly true for socially and economically disadvantaged children who are at greater risk for adverse environmental exposures. Currently, pregnant women are not screened for fish consumption to assure adequate intake of omega-3 fatty acids and minimal mercury intake.

## Methods:

The aim of this research was to evaluate a single fish-consumption screening question to identify pregnant women with elevated mercury levels. I conducted a cross sectional study at a state hospital in Chicago, IL that serves a large proportion of minority and low socioeconomic status patients. The question "In general, do you eat more than two fish meals per week?" was asked of consenting pregnant women and a single test for total blood mercury level was collected with routine labs. Estimated date of delivery, date of birth, zip code, and ethnicity were collected; resources and education was also provided.

Descriptive & analytical statistics were used to characterize the study population and to evaluate the fish consumption practices and mercury level of participants by demographic factors like age, ethnicity, and income. To evaluate the utility of the screening question, I calculated sensitivity, specificity, positive predictive value, and negative predictive value. Results were also compared to those collected at a nearby clinic and to national levels published by NHANES.

## Results:

In my limited study (n=42), participants were mainly Black (48%) and Latina (43%), and 71.4% had a median household income (estimated from zip code) below 200% of the federal poverty level and qualified for Illinois WIC. Most (90%) were not eating fish twice weekly as recommended and were unaware of the health benefits. No participant had an elevated mercury level and this population had a very low geometric mean mercury level of 0.28 µg/L [0.07, 1.99].

At a nearby clinic (n=195), participants were 100% Asian and 85% had a household income below 200% of the federal poverty level. A smaller majority (61%) of these pregnant women were not eating fish greater than twice weekly. However, 13% had elevated mercury levels (> 5.8 µg/L) and the geometric mean mercury level was 2.2 µg/L [0.155, 15.05].

Blood mercury level was significantly associated with factors like fish consumption and income level for both groups, however the screening question was not found to have utility for these study populations (individually nor combined).

## Conclusions:

In the face of numerous social and environmental threats to health, it is important to look for opportunities to promote health and build resiliency. By evaluating fish consumption practices, particularly for vulnerable pregnant women, there is an opportunity for neurodevelopmental health promotion. The very low rates of fish

consumption among low income Black and Latina pregnant women in this study may signal suboptimal omega-3 fatty acid (DHA/ EPA) intake. The elevated mercury levels found in 13% of pregnant women from this low income Chinese population is concerning for additional neurologic and gestational risks. Ultimately, results from this study may be used to target outreach to populations with increased risks based on health determinants, like race/ ethnicity and socio-economic status. Appropriate dietary choices can help limit further toxic insult and build developmental resilience, to ultimately help break the cycle of children's environmental health disparities.



## Emory University

### Nell Hodgson Woodruff School of Nursing

#### Students

**Dylan Avery** received his undergraduate degree at University of California Berkeley in public health with a focus in environmental health science and biostatistics. His experience includes working as a research assistant at the Center for Environmental Research and Children's Health in Berkeley California where he worked on studies related to environmental exposures that affect maternal and child health. He then worked at the Barcelona Institute for Global Health exploring exposure assessment methods focusing on water quality and maternal and child health outcomes. Dylan is now at the Emory School of Nursing pursuing his Masters degree in Nursing with a focus on Family Practice. He is also working as a research assistant with the School of Nursing performing GIS analysis on various environmental research projects.

**Manmit Singh** received her undergraduate degree from the University of California, Los Angeles with a major in Psychobiology. She is now pursuing her Masters degree in Nursing at Emory University. Her interests include equal access, community health, and preventative healthcare. She plans to use her research experience to continue advocating for vulnerable communities in a clinical setting. She intends to serve as a primary healthcare provider in a low resource community where her services can contribute to the greater fight of combatting the health disparities faced by such populations.

#### Faculty Mentor

**Dr. Valerie Mac RN, PhD**

**Dr. Valerie Mac** is an Assistant Professor at the Nell Hodgson Woodruff School of Nursing. She has expertise in community health nursing and specializes in heat illness biomonitors of vulnerable occupational populations, including agricultural workers and firefighters. Her research is centered around characterizing heat illness through physiologic biomonitors and community-based research to identify meaningful and sustainable interventions for vulnerable worker populations. Currently she practices as a registered nurse at the Clarkston Community Health Center serving vulnerable patient populations.

# Environmental Justice for Vulnerable Children in Hurricane Aftermath

Dylan Avery and Manmit Singh, *student*; Dr. Valerie Mac, PhD RN, *mentor*  
Nell Hodgson Woodruff School of Nursing at Emory University

## Background:

In the wake of the most recent hurricane season, damage from flooding and hurricane force winds highlighted the disparities in vulnerability and resiliency factors related to hurricane preparedness that exist across various Florida communities. Low-income populations in coastal Florida, are highly vulnerable to hurricanes. Vulnerable to the effects of hurricanes are children residing in older housing with poor infrastructure, whose parents may not have the resources to preemptively evacuate, or fortify their vulnerable housing structures for the oncoming storm. In the aftermath of a hurricane, housing can be damaged and saturated, which can create unhealthy environments for children (i.e. mold, polluted water, and physical hazards).

## Methods:

A literature review was conducted to identify environmental and sociodemographic risk factors that predispose certain populations of children to being more vulnerable to the effects of hurricanes than others. GIS mapping was utilized to examine these risk factors in Florida counties and the locations of recent hurricanes. Data from the US Census Tiger database, including demographic data, housing characteristics, number of children in households, and socioeconomic status (SES) of residents was utilized through the social vulnerability index to describe the level of vulnerability these children face in addition to risk factors of vulnerability identified in the literature and geographic location.

## Results:

The mapping of factors of vulnerability identified by the SVI in conjunction with the hurricane wind and flood data highlight inconsistencies within the current emergency hurricane mitigation plan. Certain Florida counties have higher percentages of children and are disproportionately more vulnerable based on social vulnerability factors than the current plan seems to account for.

## Conclusions:

The most hurricane-vulnerable communities of children being identified will inform future relief efforts. Research will provide valuable data to spur efforts focusing on these communities to reduce the number of children placed at-risk by hurricane aftermaths.

## Columbia University, Mailman School of Public Health Department of Sociomedical Sciences and the Columbia Center of Children's Environmental Health

### Student

**Brennan Rhodes-Bratton, MPH**

**Brennan Rhodes-Bratton**—a recipient of the Ruth L. Kirschstein National Research Service Award—is conducting dissertation research to identify and address the role that food practices and dispositions play in the risk of obesity among residents living in a neighborhood undergoing gentrification. During her traineeship in the Initiative for Maximizing Student Diversity, she worked as a research assistant in the development of a conceptual framework for the emerging issue of energy insecurity and also led a community-based participatory research project unveiling the lived experience of New York City Housing Authority residents with a PhotoVoice project entitled “Going Beyond the Mold.” Her professional and educational career to-date comprises nearly a decade of experience in public health including research in environmental health, built-environment, nutrition and wellness education, community-based participatory research, health policy analysis, housing insecurity, extensive training in the application of social theory to public health problems, and applied experiences in PhotoVoice and intervention design, implementation, and evaluation. Rhodes-Bratton’s long-term career goal is to become a public health mixed methods researcher with expertise in theoretically-driven research and interventions, doing research grounded in sociological concepts and theories about the social and economic determinants of health and illness.

### Faculty Mentor

**Julie Herbstman, PhD**

**Dr. Julie Herbstman**, is an Associate Professor in the Department of Environmental Health Sciences. Trained as an epidemiologist, Dr. Herbstman’s research focuses on the impact of prenatal exposures to environmental pollutants, including [polybrominated diphenyl ethers \(PBDEs\)](#) and [polycyclic aromatic hydrocarbons \(PAH\)](#) on child growth and development. She has also been involved in research exploring the long-term environmental health impact of exposure to pollutants from the collapse of the [World Trade Center on 9/11](#). She collaborates on the Columbia Center for Children’s Environmental Health’s work involving the integration of epigenetic biomarkers to explore the mechanistic pathway between prenatal exposures and disease risk.

# Can a Changing Food Environment Tip the Scale? Study of Maternal Food Habitus and Child Obesity in Neighborhoods Undergoing Gentrification.

Brennan Rhodes-Bratton, *student*; Dr. Julie B. Herbstman, *mentor*  
Columbia University, Department of Sociomedical Sciences and Columbia Center of Children's  
Environmental Health

## **BACKGROUND:**

Since the late 1990s, the neighborhood of Central Harlem in New York City has been undergoing a dramatic transformation, as characterized by gentrification, a mixture of divestment and redevelopment. These changes influence the food environment (i.e. grocery outlets, restaurants, street vendors, and farmers markets) and, with it, residents' food-related practices and health. Given the high rates of nutrition-related conditions such as obesity, diabetes, and cardiovascular disease in Harlem, any transformation in its food environment raises the need for investigation. Gentrification refers to the transformation of a community previously characterized by poverty and divestment through the influx of investment and new residents with high SES. Inequality and health disparities arise as a result of gentrification when long-term residents are displaced or trapped in a revalorized neighborhood unable to benefit from the new investments. The disappearance of old and emergence of new food establishments, such as grocery stores and restaurants catering to the tastes of high SES residents, may increase the proximity to and density of healthy food options for the community as a whole. This, however, may undermine the affordability and consumption of healthy food by residents of low SES, thus increasing their risk for obesity.

## **PURPOSE:**

The overarching question of my dissertation is: How does the changing food environment in Harlem, a neighborhood undergoing gentrification, affect residents' risk for obesity mediated by food-related dispositions and practices?

## **METHODOLOGY:**

Given the critical role of mothers in shaping the food practices of their young children and the opportunity to examine how these practices change as children develop in a context of gentrification, I analyzed two datasets to assess this relationship. First, I analyzed the National Establishment Time Series data for food establishments in New York City from 1990-2010 by gentrification category and healthfulness of the food outlets. Secondly, a composite score of dining food habitus was developed using longitudinal data about home dining practices from the Columbia Center for Children's Environmental Health (CCCEH)'s prospective birth cohort study of 725 African American and Latino pregnant women and their children of low SES, whose health and weight was monitored from the child's birth through adolescence. Additionally, group based trajectory analyses were conducted on the maternal home dining food habitus composite variable. Lastly, linear regression was used to assess the relationship between the newly created trajectory groups and BMI Z scores of CCCEH participants at age 5.

## **RESULTS:**

The food landscape in New York City has changed from 1990-2010. While there is an overall increase in food establishments throughout the city, gentrifying neighborhoods had the greatest increase during this time. In addition, gentrifying neighborhoods experienced both an increase in healthy and unhealthy food outlets. Higher-income neighborhoods have the lowest proportion of unhealthy food outlets compared to healthy food outlets.

The group based trajectory analyses of maternal home dining food habitus resulted in four significant trajectories for CCCEH participants. Only one of these trajectories was held constant throughout the study

suggesting that food habitus can be dynamic construct. The regression analysis suggests variation between these four trajectories and predicted BMI Z score of children at age 5.

**CONCLUSIONS:**

These preliminary findings suggest that understanding both the neighborhood level changes and household practices are helpful to understand the relationship between gentrification and obesity. Future directions include in-depth interviews with CCCEH participants from each of the four maternal home dining food habitus trajectory groups, an ethnography of a gentrifying neighborhood, and a more robust analysis of the BMI z scores of children at ages 7, 9, and 11 years old.