



Cornell University  
College of Human Ecology

YOUTH AT RISK

THE LIFE COURSE

Cornell University  
College of Human Ecology  
presents

# ECOLOGY<sub>of</sub> OBESITY

linking science and action  conference June 6 & 7, 2005

ECONOMICS

ENVIRONMENT

WORKING SESSION (PART II)  
Implementing an Ecological Perspective  
in Obesity Research and Prevention



## Conference Overview

This conference focuses on obesity from an ecological perspective, examining how social, cultural, economic and built environments influence diet and physical activity throughout life. Conference presenters and participants will have opportunities to interact with one another to build capacity for research and action.

### Conference Co-chairs

- Christine Olson, Division of Nutritional Sciences, Cornell University
- Nancy Wells, Department of Design and Environmental Analysis and The Bronfenbrenner Life Course Center, Cornell University

### Conference Planning Committee Members

- Susan Ashdown, Department of Textiles and Apparel, Cornell University
- Amanda Birnbaum, Departments of Public Health and Pediatrics, Weill Medical College of Cornell University
- Barbara Dennison, Bureau of Health Risk Reduction, New York State Department of Health
- John Cawley, Department of Policy Analysis and Management, Cornell University
- Stephen Cook, Department of Pediatrics and Internal Medicine, University of Rochester School of Medicine and Dentistry
- Stephen Hamilton, Department of Human Development and Family Life Development Center, Cornell University
- Josephine Swanson, Cornell Cooperative Extension, Cornell University

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The Planning Committee (listed above) and staff of Cornell University including the following:

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Franklin D. Becker, Chair, Department of Design and Environmental Analysis, College of Human Ecology and Cutberto Garza, Director, Division of Nutritional Sciences, Cornell University and other department chairs in the College of Human Ecology for supporting faculty involvement in the Conference.

# Agenda

June 6 and 7, 2005 at Cornell University, Ithaca New York

## WORKING SESSION (PART II) Implementing an Ecological Perspective in Obesity Research and Prevention

### June 6: Carrier Ballroom, Statler Hotel

3:30- 5pm *Prior to the start of the Conference, participants have time to set up their posters*

- 5:00 **Welcome and Overview**  
Christine Olson and Nancy Wells, Conference Co-Chairs, Cornell University
- 5:30 **Posters Session A** over appetizers
- 6:30 **Dinner**
- 7:30 **Poster Session B** over dessert
- 8:30 **Conclude** for the day

### June 7: MVR Hall

- 7:30 **Continental Breakfast**  
Lower Atrium, level B, west addition

#### 8:30 **Theme A: Environment, Design and Obesity** Room 280, Amphitheatre

##### **Environment, Design and Obesity: Micro to Macro** (10 minutes)

Nancy Wells, Assistant Professor, Department of Design and Environmental Analysis and The Bronfenbrenner Life Course Center, Cornell University  
Susan Ashdown, Associate Professor, Department of Textiles and Apparel, Cornell University

##### **Mindless Eating: The Hidden Environmental Persuaders that Make Us Lose and Gain Weight** (15 minutes)

Brian Wansink, Professor, Department of Applied Economics and Management, Cornell University

##### **Obesity: Is There a Link to Work and Workstation Design?** (15 minutes)

Alan Hedge, Professor, Department of Design and Environmental Analysis, Cornell University

##### **Obesity and the Local Food Environment** (15 minutes)

Kimberly Morland, Assistant Professor, Department of Community and Preventive Medicine, Mt. Sinai School of Medicine

##### **The Effect of Transportation Mode Choice on Daily Physical Activity Level of Commuters** (15 minutes)

Richard Wener, Professor, Department of Humanities and Social Sciences, Polytechnic University

##### **Reactions and Comments** (10 minutes)

Susan Ashdown

Sheila Danko, J. Thomas Clark Professor of Entrepreneurship and Personal Enterprise Associate Professor, Department of Design and Environmental Analysis  
David Levitsky, Professor, Division of Nutritional Sciences, Cornell University

##### **Discussion with Audience** (10 minutes)

10:00 **Break** for 15 minutes

#### 10:15 **Theme B: Obesity and the Life Course**

Room 280, Amphitheatre

##### **Introduction to the Life Course Perspective** (10 minutes)

Elaine Wethington, Associate Professor, Departments of Human Development and Sociology, and The Bronfenbrenner Life Course Center, Cornell University

##### **Family Ecology and Childhood Obesity** (30 minutes)

Kirsten Davison, Assistant Professor, Department of Health Policy, Management and Behavior, School of Public Health, University at Albany

##### **Metabolic Syndrome: Clustering and Tracking of Components across the Life Course** (15 minutes)

Stephen Cook, Instructor, Department of Pediatrics and Internal Medicine, University of Rochester School of Medicine and Dentistry

##### **Growing Up Poor: Implications for Body Weight in Adulthood** (15 minutes)

Christine Olson, Professor, Division of Nutritional Sciences, Cornell University

##### **Reactions and Comments** (10 minutes)

Gary Evans, Professor, Department of Human Development and Design and Environmental Analysis, Cornell University  
Jeffery Sobal, Associate Professor, Division of Nutritional Sciences, Cornell University

##### **Discussion with Audience** (10 minutes)

11:45 **Lunch**  
Rooms 153, 155, 157 in West addition

12:30 **Dessert**  
Room G73 in West addition

**Funding Opportunities for Research and Action with an Ecological Perspective**

Terry Bazzarre, Senior Program Officer, Robert Wood Johnson Foundation  
Tracy Orleans, Lead Program Officer, Healthy Eating Research Program, Robert Wood Johnson Foundation

**Reactions**

Lisa Staiano-Coico, Rebecca O. and James C. Morgan Dean, College of Human Ecology, Cornell University  
Thomas Pearson, Senior Associate Dean for Clinical Research and Chair and Albert D. Kaiser Professor, Department of Community and Preventive Medicine, University of Rochester School of Medicine and Dentistry

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**1:30 Theme C: Economics and Obesity**

Room 280, Amphitheatre

**Overview of the Economics of Obesity**

(15 minutes)

John Cawley, Assistant Professor, Department of Policy Analysis and Management, Cornell University

**Fast Food Restaurant Advertising on Television and Its Influence on Childhood Obesity**

(25 minutes)

Inas Rashad, Assistant Professor, Department of Economics, Georgia State University

**The Roles of Maternal Employment and School Finances** (25 minutes)

Patricia Anderson, Professor, Department of Economics, Dartmouth College

**Discussion with Audience** (25 minutes)

3:00 **Break** for 15 minutes

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**3:15 Theme D: Youth and Obesity**

Room 280, Amphitheatre

**Framing the Issue: A Positive Approach to Youth and Obesity** (15 minutes)

Richard Kreipe, Professor and Chief, Department of Adolescent Medicine, University of Rochester School of Medicine and Dentistry

**Incorporating the Voices of Young People: A Panel Discussion with New York State Youth**

(30 minutes)

Panelists TBA

**Responses and Opportunities for Interdisciplinary Research** (25 minutes)

Amanda Birnbaum, Assistant Professor, Departments of Public Health and Pediatrics, Weill Medical College of Cornell University

Heather Fiore, Clinical Nutrition Specialist, Golisano Children's Hospital, Strong Children's Diabetes Center

Maura Frank, Director of Ambulatory Pediatrics, Division of General Academic Pediatrics; Medical Director, General Pediatric and Adolescent Practices; and Assistant Professor, Department of Clinical Pediatrics, Weill Medical College of Cornell University

**Discussion with Audience** (20 minutes)

4:45 **Break-out Groups** to discuss next steps for research and action

Rooms: 280, 153, 155, 157

5:30 **Groups Report Back**

Room 280, Amphitheatre

6:30 **Closing**

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## Presenters

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## Presentation Abstracts

### The Roles of Maternal Employment and School Finances

*Patricia M. Anderson and Kristin Butcher, Dartmouth College*

The proportion of children who are overweight in the United States has nearly tripled over the past few decades. Changes in the home and school environment that are driven by economic incentives may have had spillover effects on childhood obesity. This presentation will provide an overview of research on two such changes.

More mothers are spending increasing hours in market work. Our results indicate that a child is more likely to be overweight if his/her mother averages more hours per week over the child's life. These results are robust to controlling for both observable and unobservable differences across individuals and families that may simultaneously influence children's weight and mothers' work patterns. Analyses by subgroups show that despite their children's lower overall incidence of obesity, it is higher socio-economic status mothers whose work intensity is particularly deleterious for their children's overweight status.

Similar economic-driven changes have occurred at schools. Citing financial pressures, schools have given students greater access to "junk" foods and soda pop, using proceeds from these sales to fund school programs. We find that schools under financial pressure are more likely to adopt potentially unhealthful food policies, and that students' Body Mass Index (BMI) is higher where more schools are predicted to allow these policies. We find that a 10 percentage point increase in schools that allow junk food leads to a 1% increase in students' BMI, but for students with an overweight parent we find a 2.2% increase in BMI.

### Overview of the Economics of Obesity

*John Cawley, Cornell University*

This is an overview of the economics of obesity and its relevance for policy. Economics is a useful perspective because it is the study of how people allocate their scarce resources of time and money to maximize their lifetime happiness, and of people's willingness to trade one thing they value (such as future health) for other things they value (such as enjoyment today). I outline the economic perspective on decisions regarding physical activity and nutrition and introduce papers by Anderson and Rashad that offer economic explanations for cross-sectional disparities in obesity and the recent increase in obesity. I also outline economic rationales for policy intervention to address obesity and offer the economic perspective on arguments for policy intervention that arise outside of economics.

### Family Ecology and Childhood Obesity

*Kirsten Davison, University at Albany*

Behavioural risk factors for the development of childhood overweight and obesity, including children's dietary, activity, and sedentary behaviour patterns are learned and supported in the family environment. Parents mould children's behavioural patterns by their own behaviours (i.e. social modelling), and by parenting practices such as the types and quantities of foods presented to children, their use of controlling feeding practices, their support of children's extra-curricula sporting activities, and their monitoring of children's access to television, video and computer games. Consequently, parents and families need to be a key component of childhood obesity prevention programs. In order to develop successful family-based programs it is essential to understand the ecology of parenting. That is, it is necessary to understand the context in which parents operate and why parents adopt, or fail to adopt, certain parenting strategies specific to eating and physical activity. In this presentation, I will discuss the ecology of the family in detail as it relates to childhood obesity. Specifically, I will discuss the impact of the following factors on parenting strategies including: (a) child characteristics (e.g., age, gender, weight status); (b) family demographics (e.g., income, education, ethnicity); (c) organizational characteristics (e.g., school policies and work demands); (d) community characteristics (e.g., crime levels, accessibility to health foods and recreational spaces); (e) policies (e.g., nutrition labels); and (f) media (e.g., advertising to children). I will conclude with recommendations on how parents, with the support of practitioners and policy makers, can learn to navigate this environment and promote and support healthy lifestyles in their children.

### Obesity: Is There a Link to Work and Workstation Design?

*Alan Hedge, Cornell University, Ithaca*

Ergonomics focuses on creating a work layout that places work items in convenient locations requiring minimal movement to speed work performance. The design of the workstation, tools and accessories, such as chairs, provide people with greater levels of comfort and better body support to minimize musculoskeletal injury risks. Modern work often is performed by people who spend long times sitting in well supported static posture using a computer and this work requires minimal physical effort. Ergonomic interventions have created static work environments that place minimal demands on the body. Making work easy to perform removes the need for significant muscular effort and inadvertently may physically weaken the worker and promote obesity. Recently



a number of products, such as ergonomic chairs with backs that track the movement of a person's torso, have appeared that purport to improve dynamic working. Our testing of how these designs affect the amount of movement suggest that although the designs are capable of supporting more dynamic working behaviors, the demands of using a computer system essentially fix the body in space and this precludes any significant body movement. We need to rethink how we pattern work activities throughout the work day such as breaking this into shorter tasks interspersed by micro breaks during which more dynamic activities can be undertaken. Such interventions can reduce worker injury risks and improve work performance. Long held ergonomic assumptions about creating comfortable static workplaces that require minimal effort may no longer apply.

## Obesity and the Local Food Environment

*Kimberly Morland, Mount Sinai School of Medicine*

Our previous research indicates that the selection of specific types of food stores and restaurants varies depending on the socioeconomic status and racial distribution of neighborhoods. For instance, we have shown previously that supermarkets are over four times more prevalent in predominately white compared to predominately black neighborhoods<sup>1</sup>. We have further shown that the location of certain food stores, particularly supermarkets is associated with meeting USDA recommendations for healthy eating<sup>2</sup>. In this analysis, we were interested in investigating if the location of certain types of food stores and restaurants was associated with the prevalence of overweight and obesity. We compared the prevalence of people who were overweight or obese who lived in census tracts with and without supermarkets in four United States communities. Body mass index was determined for 11,231 individuals living in two hundred and five census tracts located in Jackson Mississippi; Forsyth County North Carolina; Washington County, Maryland and selected suburbs of Minneapolis Minnesota. Both residential and business addresses were geocoded to 1990 US defined census tracts. The prevalence of overweight was 9% lower in areas with compared to areas without supermarkets (prevalence ratio (PR)=0.91; 95% confidence interval (CI) =0.87, 0.95). A stronger association was observed for obesity (PR=0.75, 95% CI=0.67, 0.85). This evidence supports the hypothesis that in the US context, local availability of supermarkets may be an important factor contributing to the epidemic of overweight and obesity.

<sup>1</sup>Morland K, Wing S, Diez Roux A, Poole C. Neighborhood characteristics associated with the location of food stores and food service places. *American Journal of Preventive Medicine* 2001;22:23-29.

<sup>2</sup>Morland K, Wing S, Diez Roux A. The contextual effect of the local food environment on residents' diets: the Atherosclerosis Risk in Communities Study. *American Journal of Public Health* 2002;92:1761-1767.

## Growing Up Poor: Implications for Body Weight in Adulthood

*Christine M. Olson, Cornell University*

This study aimed to identify behavioral mechanisms by which low socioeconomic status in early life potentially leads to obesity in adulthood. Thirty rural, poor women with children were interviewed annually for three years. In-depth, personal interviews were conducted using both closed- and open-ended questions focused on food insecurity, eating patterns, and family background. Women's body weights were measured annually and heights were self reported. Sixty percent of women were obese or overweight with body mass indexes (BMI) of 25 or more, 30% were normal weight, and 10% were underweight. Growing up in a poor household was significantly ( $p = 0.03$ ) associated with the likelihood of being overweight or obese in adulthood. Eighty percent of the women who grew up in lower socioeconomic status households were overweight or obese, while only 40% of the women who grew up in higher socioeconomic status households were of these weights. Growing up poor was not associated with contemporary food insecurity. Contemporary food insecurity was not associated with being overweight or obese. Food shortages occurring during childhood appeared to be formative experiences for some women, teaching household food-management skills and motivating them to provide food for their children even at the expense of other necessities. Other long-term dietary repercussions were potentially negative, however, and included food aversions, emotional attachments to food in general or to specific foods, and binge-like patterns of eating. These results may help in understanding the causes of the higher prevalence of obesity in lower income adult women.

## Mindless Eating: The Hidden Environmental Persuaders that Make Us Lose and Gain Weight

*Brian Wansink, Cornell University*

This presentation will provide a description of three critical environmental factors—consumption cues, perceptual cues, and sensory suggestiveness—that unknowingly cause people to gain weight. Two easy solutions to help minimize the problem will also be discussed.



## The Effect of Transportation Mode Choice on Daily Physical Activity Levels of Commuters

*Richard E. Wener, Polytechnic University*

In a cross-sectional comparison train and car commuters (Northern New Jersey to New York City) were asked to wear a pedometer for one week of commuting on their regular route plus completed a standardized self report physical activity index. Train commuters approached CDC recommended daily physical activity levels, walking an average of 30% more steps a day than did car commuters. Train commuters were also significantly more likely to have days when they walked 10 minutes or more while traveling than were car commuters. All of these results are with statistical controls for socioeconomic status. Transportation mode can significantly affect the amount of physical activity commuters get during the course of a typical work day without planned or coordinated exercise programs.

## Environment, Design and Obesity: From Micro to Macro

*Nancy M. Wells and Susan Ashdown, Cornell University*

This introductory presentation considers the role of the physical environment in obesity. We explore the impact of the micro (clothing, food packaging, etc.) to the macro environment (neighborhoods, transportation systems) as presenting barriers to physical activity and healthy eating as well as how the environment can provide affordances—that support healthy habits.

## Poster Abstracts

### Theme A: Environment, Design, and Obesity

#### 1. Three Dimensional Body Scanning, Body Image and Obesity

*Susan P. Ashdown, Suzanne Loker, Adriana Petrova, and Lindsay Lyman-Clarke*

"Thank you so much for the opportunity to be scanned. When I saw myself as others must see me, I realized that it was time to do something! I have lost 10 pounds."

We are interested in exploring several variables using the 3D body scanner as an imaging tool

- body image
- clothing and clothing fit
- motivation for weight maintenance and weight loss
- body scanner as external view of person

The following questions are of interest to us:

How can 3D body scans be used to explore body image? How can they motivate weight maintenance and weight loss?

How can 3D body scans be used to explore body types, the cultural differences in acceptance of body types, and the relationship between body type and obesity?

How are clothing fit, body image and weight maintenance/loss related? How can 3D body scanning be used to explore this relationship and encourage positive weight-related behaviors with clothing selection and analysis?

Can a 3D body scan, as an external view of a person, be helpful in motivating and acknowledging positive change in weight maintenance/loss?

How can clothing, body image, and self esteem be used as modifying variables in addressing obesity and weight maintenance/loss?

Some work has been done on the relationship between body image and weight loss, and use of image with virtual reality techniques for clinical intervention for weight loss (Riva et al, 2001), but there are many possibilities for further research in these areas.

## 2. Environmental Needs Assessment for Obesity Prevention

*Carol M. Devine, Barbour Warren, Mary Maley, Cornell University, Ithaca, and Jeanne Darling, Cornell University, Cornell Cooperative Extension of Delaware County*

Obesity prevention is a priority for breast cancer risk reduction because the relative risk associated with obesity is high, and obesity is a modifiable risk factor that affects many women. The project objective was to increase the capacity of community leaders to take an environmental approach to obesity prevention and breast cancer risk reduction. Empowerment concepts and environmental diagnosis models guided design. The project site was a northeast rural community where 60% of adults were overweight or obese, and buy-in was available from Cooperative Extension, a breast cancer partnership, and community leaders. Researchers and Cooperative Extension worked with a community coalition to conduct a community environmental needs assessment of built and social environments related to obesity. Assessment included: 1) attitudes of coalition members, 2) photographic data on food and physical activity, 3) interviews with community leaders, 4) food access and cost, 5) physical activity in the built environment, and 6) a random sample telephone survey of community attitudes and beliefs. Several opportunities for obesity prevention emerged. There was strong agreement that: obesity was both an individual and a community concern, communities contribute to the way people eat and exercise, healthy foods were hard to find, food portions were too large, and community leaders had a stake in healthy eating and activity. There was divided opinion about social support for healthy eating and activity. Results will be used by community leaders to assess environmental choice points contributing to obesity and to identify and implement workable strategies to make strategic changes.

## 3. Images of a Healthy Worksite—Preventing Obesity in the Workplace

*Isabel D. Fernandez, University of Rochester Medical Center, Carol Devine, Cornell University, Ithaca, and Nancy Chin, University of Rochester Medical Center*

According to the World Health Organization, to stop or eventually reverse the rise in obesity prevalence, broad, population-based approaches are needed. Recognizing this need, NHLBI funded seven 4-year research projects nationwide emphasizing environmental approaches for obesity prevention at worksites. 'Images of a Healthy Worksite' is a partnership among the University of Rochester, Cornell University, and Eastman Kodak Co. to pro-

mote a healthy lifestyle strategy based on participatory research involving the three levels of the epidemiologic triad (host, environment, and agent) in order to stop the shift of the population body mass index curve to the right. The aims of this project are: (1) To gain a broad understanding of the social/cultural role of food and physical activity among workers and to elicit workers' perspectives on innovative interventions that are socially feasible and culturally acceptable; (2) To perform a group-randomized nested pretest-posttest cross-sectional trial addressing portion control, healthy nutrition, and sedentarism. Six pairs of worksites will be randomized to intervention and control conditions. Cross-sectional samples of employees within worksites will be measured at baseline and at the end of the intervention; (3) To perform Process and Outcome Evaluation; (4) To identify the economic benefits of the intervention from the societal and business perspective; and (5) To develop methods for fast-track information dissemination across the scientific and occupational health disciplines. The strategies and tools developed will have a potential impact on 20,000 employees in the Rochester, NY area and 60,000 worldwide. The project is currently in its first year of formative research.

## 4. Associations Between Community Environments & Child Overweight

*Leigh A. Gantner and Edward Frongillo, Cornell University, Ithaca*

Increasing attention has been placed on identifying and defining mechanisms of prevention and treatment of child overweight. Earlier research has shown that community-level variables are strongly associated with patterns of obesity in adults, particularly among rural and inner-city adults and adults from poorer neighborhoods. To study the associations between the community environment and child overweight, data from the Early Childhood Longitudinal Study-Kindergarten Cohort (collected by the National Center for Education Statistics) will be analyzed. ECLS-K data include information on child weight and height in a nationally representative cohort of 22,000 children in a variety of school environments from the time they entered Kindergarten through fifth grade. Data on body mass index from children within the same school/school district will be linked to census data for that location. Preliminary analysis of ECLS-K data show that variation in BMI among students is about half due to inherent variation among schools. The hypothesis guiding the analysis will be that among the community-level factors associated with higher rates of child overweight will be higher levels of poverty, lower perceptions of community safety, and predominantly urban

or rural. Once these associations have been examined, further work can be conducted in representative communities to determine more specifically the reasons for these associations, e.g., community infrastructure and food environment. Understanding the associations between community variables and child overweight, as well as the reasons for those associations, are important steps in planning and designing communities that can best prevent and respond to the epidemic of overweight children.

## 5. Obesity: Is There a Link to Work and Workstation Design?

*Alan Hedge, Cornell University, Ithaca*

Ergonomics focuses on creating a work layout that places work items in convenient locations requiring minimal movement to speed work performance. The design of the workstation, tools and accessories, such as chairs, provide people with greater levels of comfort and better body support to minimize musculoskeletal injury risks. Modern work often is performed by people who spend long times sitting in well supported static posture using a computer and this work requires minimal physical effort. Ergonomic interventions have created static work environments that place minimal demands on the body. Making work easy to perform removes the need for significant muscular effort and inadvertently may physically weaken the worker and promote obesity. Recently a number of products, such as ergonomic chairs with backs that track the movement of a person's torso, have appeared that purport to improve dynamic working. Our testing of how these designs affect the amount of movement suggest that although the designs are capable of supporting more dynamic working behaviors, the demands of using a computer system essentially fix the body in space and this precludes any significant body movement. We need to rethink how we pattern work activities throughout the work day such as breaking this into shorter tasks interspersed by micro breaks during which more dynamic activities can be undertaken. Such interventions can reduce worker injury risks and improve work performance. Long held ergonomic assumptions about creating comfortable static workplaces that require minimal effort may no longer apply.

## 6. An Environmental Approach to Motivating Healthy Worksite Food Choices

*Janet A. Nelson, Cornell University, Ithaca, and Isabel Fernandez, University of Rochester Medical Center*

One hypothesis included for investigation in the "Image of a Healthy Worksite" project, an NHLBI-funded grant implemented through a collaboration among University of Rochester, Cornell University and Eastman Kodak Co., is that a worksite's social and built food environments impact employee capacity to adopt healthful food choices, with an environment promoting and providing easy access to healthy foods positively influencing employee behavior change — potentially leading to the prevention of obesity in the workforce. Kodak vending machine and food service/ cafeteria environments have been identified as intervention targets. Literature citing research in worksite pilot projects has been reviewed to identify best practice strategies. This presentation will review these strategies and the capacity-building process that predicts sustainability of these interventions beyond the project period.

## 7. A Partnership for Community-Specific Environmental Intervention

*Christine M. Olson, Cornell University, Ithaca, Linda Robbins, Cornell University, Cornell Cooperative Extension, and Judy Seoldo, Cornell University, Cornell Cooperative Extension*

This project addresses the potential of environmental interventions developed through a community-based partnership to reduce the prevalence of obesity in childbearing women and their infants. The objectives are to (1) develop environmental interventions through a capacity-building partnership of local health and nutrition professionals from eight counties in rural, Upstate New York and disseminate the resulting tools and strategies through Cornell NutritionWorks, an on-line continuing education program; (2) document the implementation of environmental interventions; and (3) evaluate their impact on weight gain in pregnancy, postpartum weight retention, and infant growth and assess the environmental and behavioral change mechanisms through which the interventions lead to changes in the outcomes. For the impact evaluation we will recruit control and intervention cohorts of pregnant women at high risk of excessive gestational weight gain and postpartum weight retention and follow them through 6 months postpartum; compare the proportion of women with excessive gestational weight gain and

weight retention of 5 pounds or more at 6 months postpartum between the two cohorts; and compare the rate of weight gain in the infants born to women in the two cohorts and in infants whose mothers had excessive and appropriate gestational weight gain. This proposed extension and research project integrates knowledge from nutrition, environmental psychology, epidemiology, and medicine with the knowledge and experience of local nutrition professionals, including extension educators, to plan, implement, and evaluate the impact of environmental interventions aimed at preventing obesity in rural, childbearing women and their infants.

## 8. Family Fare: Colorful Eating for Good Health

*Carol Parker Duncanson, Jennifer O'Neill, and Evalina Irish-Spencer, Cornell University, Cornell Cooperative Extension*

*Family Fare: Colorful Eating for Good Health* is a collaborative training program of Cornell University Cooperative Extension NYC, The Family Development Association of NYS, FDANYS NYC, and the NYC Department of Youth and Community Development. The program was designed for Family Development Trained and Credentialed (FDC) frontline human service workers serving families and individuals in low-income communities. The curriculum developed for Family Fare combined FDC principles with nutrition education, to enable frontline workers to deliver one simple nutrition message: eating more and varied fruits and vegetables can lead to better health. Family Fare participants learn how to implement simple, healthy lifestyle and nutrition behaviors in their own lives and are empowered to take the message to their own families, coworkers, and the families and individuals with whom they work. 62 individuals participated in the 6-week, interactive program, and 84% of participants graduated. 77% of program graduates demonstrated implementation of Family Fare at their worksites through a variety of methods, reaching approximately 458 clients and 557 staff members. Pre/post program participant surveys showed a 55% increase in the numbers of servings of fruits and vegetables consumed, and 41% of participants felt very sure they could eat the recommended servings of fruits and vegetables per day. Family Fare demonstrates that training agency staff on one simple nutrition message can have a positive impact on their own lives, and on the lives of their coworkers and those with whom they work.

## 9. Environmental Approaches to Childhood Obesity Prevention: An Online Course Through Cornell NutritionWorks

*Christina Stark and Wendy Wolfe, Cornell University, Ithaca*

Cornell NutritionWorks, at [www.nutritionworks.cornell.edu](http://www.nutritionworks.cornell.edu), is an interactive, web-based continuing professional education program for nutrition and health practitioners. The program was developed in response to research identifying professional development needs of community nutrition practitioners. As part of Cornell NutritionWorks, a new online course on environmental approaches to preventing childhood obesity is under development. The purpose of the course is to build the capacity of professionals to address childhood obesity at the community level. Based on Green and Kreuter's PRECEDE-PROCEED model, the course will integrate and expand offerings available on Cornell NutritionWorks related to the critical issue of childhood obesity. Course modules will explore the behavioral, environmental and ecological factors contributing to childhood obesity using a flexible, learner-centered, online learning approach. Participants will have opportunities to interact with peers, download resources and tools, and develop their own action plan. The course content and process will be pilot tested by a coalition of community practitioners in fall 2005, and then offered widely to other nutrition education and health professionals for professional education credit. Changes in knowledge, skills, confidence, and intended behavior will be evaluated using both quantitative and qualitative methods. There are currently over 1,700 Cornell NutritionWorks members, representing all 50 states and 43 countries. Previous evaluations indicate that Cornell NutritionWorks is providing nutrition and health professionals with a reliable and convenient source of nutrition information, as well as practical tools and communication channels to assist them in their work. This project is funded by USDA-CSREES and Cornell University.

## 10. Linking Landuse Policy and Social Integration in Later Life

*Linda P. Wagenet, Karl A. Pillemer, and Max J. Pfeffer, Cornell University, Ithaca*

Community well-being demands a healthy physical environment, robust and inclusive social and economic relationships, and diverse opportunities for physical activity and social interaction. Such well-being may be encouraged by different types of land use regulation and planning approaches. While such tools have been widely catalogued and described, there has been little systematic evaluation of their outcomes, especially in creating "active living communities." Over the past several decades, there has been enormous growth in the elderly population, which is

important throughout society. A key issue is the need for social integration of older persons; that is, opportunities for senior citizens to be involved in meaningful roles and social relationships. Land use regulations and planning practices can encourage or stifle urban sprawl, which, in turn, detracts from or promotes the social integration of citizens. Unfortunately, in the past half century, land use policies have encouraged widespread population dispersal indicated by the spread of metropolitan areas. We will describe a proposed program that links land use policies and social integration of the elderly by examining how standard land use regulations constrain or create opportunities for the elderly to become engaged in their communities. The metric we will use for gauging this involvement will be volunteer activities, and we are especially interested in volunteer activity that is targeted at protection of the physical environment. Preliminary work we have done suggests that environmental volunteering may have added value for older persons beyond the types of volunteer activity more conventionally performed in later life.

### 11. Bottomless Bowls: Why Visual Cues of Portion Size May Influence Intake

*Brian Wansink, Cornell University, James Painter, University of Illinois at Urbana-Champaign, and Jill North, University of Illinois at Urbana-Champaign*

Many studies have shown portion size influences intake. Why does it? We propose that portion sizes increase consumption because they suggest larger consumption norms. That is, the amount of food in a bowl may implicitly suggest what might be construed as a "normal" or "appropriate" amount to consume. If some is left, we'll keep eating. To investigate this, we examine participants who are given soup bowls that refill themselves. These individuals consumed 73% more soup, but did not realize they had done so. [Obesity Research (2005),13:1, 93-100]

### 12. Super Bowls: Serving Bowl Size and Food Consumption

*Brian Wansink, Cornell University, and Matthew Cheney, University of Illinois at Urbana-Champaign*

When serving oneself, does the size of serving bowls influence how much food is taken and consumed? Two studies involving 142 people investigated this. First, a controlled study at a Super Bowl party shows that people who served themselves Chex Mix from large bowls consumed 56% more than those serving themselves from medium-sized bowls. A second study showed that

large serving bowls lead people to believe that larger portions are more normal, typical, and acceptable to consume. The size of a serving bowl should increase in proportion to the healthfulness of the food. [JAMA Journal of the American Medical Association, (2005) 293:14, 1727-1728]

### 13. The Ecology of Food Access, Availability, and Food Choice Among Low-Income Households and Grocery Stores: A Conceptual Framework

*Caroline B. Webber and Jamie Dollahite, Cornell University, Ithaca*

Research reports a relationship between obesity and food insecurity in women. Food choice behavior leading to obesity needs to be understood in the context in which decisions are made. Our objective was to examine how low-income households and grocery stores in three upstate New York sites perceived the buying and selling of foods for a healthy diet, especially fruits and vegetables, in the context of the retail food environment. Using qualitative methods based on grounded theory, we interviewed 28 low-income households (< 185% poverty) in rural, village, and inner-city neighborhoods using purposive and theoretical sampling about shopping habits and attitudes toward local food stores. We then interviewed 14 local grocery stores, where participants shopped, about challenges to their business and the retail food industry. Data analysis was guided by Human Ecology Theory and Structuration Theory. Results showed that households developed store and food choice strategies to balance food access with household demand. To do this, they combined household resources, contextual elements (place, natural environment, retail foodscapes), and shopping rules based on the actions of: grocery stores, the food industry, other shoppers, and the culture and values of their own families. Stores used similar strategies (based on resources, contextual elements, and rules) to make food available for customers. We propose a conceptual framework based on these findings that may help explain relationships between the food environment, food choice, and obesity. Partially funded by USDA Hatch Grant NYC-399482 and NIH Training Grant 5-T32-DK-07158-28.



## 14. Neighborhoods, Physical Activity & Diet: A Longitudinal Study

*Nancy M. Wells, Yizhao Yang, and Rolf Pendall, Cornell University, Ithaca*

The problem of obesity has been recognized as a public health epidemic in the United States. The goals of this study are to: a) examine linkages between neighborhood built environment, physical activity, and weight; b) examine the relationships between the local food environment, dietary behavior, and weight; c) identify possible moderators of these relationships such as social, demographic and health characteristics of women, as well as, their knowledge and attitude related to health, nutrition, and physical activity; d) explore mediating mechanism such as food acquisition behavior and perceptions, fear of crime, and sense of community that might explain connections between the environment, physical activity and dietary behaviors, and body weight.

This study focuses on low-income ethnic minority women, a population that is at particularly high risk for poor nutrition, physical inactivity, and obesity. The study takes advantage of a rare "natural experiment," by studying low-income, minority women who are moving from one neighborhood to another. Data will be collected 6 months prior to and both 6 months and 18 months following relocation to new homes. Independent variables include both a) the neighborhood physical characteristics and b) the local food environment. Dependent variables are physical activity dietary behaviors, and body weight.

Due to its longitudinal design, this study will make a substantial contribution to our understanding of causal relationships between the environment, physical activity and diet, and obesity. Information from this study can be used to inform design, policy, and practice to reduce rates of obesity and move our population.

## 15. The Effect of Transportation Mode Choice on Daily Physical Activity Levels of Commuters

*Richard E. Wener, Polytechnic University, and Gary Evans, Cornell University*

In a cross-sectional comparison train and car commuters (Northern New Jersey to New York City) were asked to wear a pedometer for one week of commuting on their regular route plus completed a standardized self report physical activity index. Train commuters approached CDC recommended daily physical activity levels, walking an average of 30% more steps a day than did car commuters. Train commuters were also significantly more likely to have days when they walked 10 minutes or more while

traveling than were car commuters. All of these results are with statistical controls for socioeconomic status. Transportation mode can significantly affect the amount of physical activity commuters get during the course of a typical work day without planned or coordinated exercise programs.

## 16. NYS Action for Healthy Kids SPIN Initiative

*Diane Whitten and Debbie Kelleher, Cornell University, Cornell Cooperative Extension*

Schools & Professionals In Nutrition: Partnering for Healthier, Successful Students

Action for Healthy Kids (AFHK) is a nationwide initiative dedicated to improving the health and educational performance of children through better nutrition and physical activity in schools. AFHK is composed of 51 State Teams that are launching state-level Action Plans focused on improving nutrition and physical activity opportunities in schools.

The New York State Action for Healthy Kids Action Plan includes the SPIN initiative. The SPIN Team includes representatives from Cornell Cooperative Extension, NYS Department of Health, as well as other Statewide agencies. SPIN strives to assist schools with:

- Assessment of current nutrition and physical activity practices and programs by completing the CDC designed School Health Index.
- Development of a school wellness plan with measurable and realistic goals and objectives.
- Review of proven strategies used to improve nutrition and physical activity in schools, and creation of an action plan for positive change.
- Evaluation of new practices and programs in achieving set goals.

SPIN is doing this by training nutrition professionals to work with schools to accomplish the above goals. SPIN has already trained over 400 nutrition professionals across New York State to assist schools, and currently has SPIN representatives working with schools.

This poster display will include the goals of SPIN, a description of our training and marketing efforts, and examples of resources used with schools.

## Theme B: Obesity and the Life Course

### 17. Understanding Food Choice Processes Over the Life Course

*Carole Bisogni, Jeffery Sobal, and Carol Devine, Cornell University, Ithaca*

The Food Choice Process Model provides a broad, multi-faceted framework for viewing food choices as dynamic and evolving over the life course and as constructed by the individual. This model was developed through a series of qualitative studies involving open-ended, in-depth interviews with adults. In the model, life course events and experiences shape several types of influences on food choice including ideals, personal factors, resources, social factors, and contexts. These influences shape the personal food system, the way a person constructs the values, options, tradeoffs, rules, and routines for eating. People have food choice trajectories in that their thoughts, feelings, and actions related to food are persistent and resist change. However, life course transitions and turning points often cause people to develop new personal food systems. To simplify food choice, people construct strategies such as focusing on one value, routinization, elimination, limitation, substitution, addition, and modification. People have different meanings for healthy eating that guide their strategies for food choice. This model and the associated interview guide may be useful to researchers, clinicians, and educators who are addressing food choice in their work related to the ecology of obesity.

### 18. New Mother's Views about Exercise and Weight

*Susan Groth, University of Rochester Medical Center*

**Purpose:** Identify how new mothers view gestational weight gain and what forms of exercise they would engage in during the first year after childbirth.

**Background:** Prevalence of overweight in adult women is approximately 61%, with 34% obese, and 6.3% extremely obese. Weight gain during pregnancy and retention of weight following pregnancy is a potential contributor to long-term weight increase and obesity. The Institute of Medicine published gestational weight gain recommendations in 1990, however, many women gain more than is recommended and have increased weight retention postpartum. An understanding of women's

views of weight gain during pregnancy is necessary for development of methods to encourage gestational weight gain within the recommendations. Women who do not lose weight within the first 6 months postpartum have a larger weight increase than women who do lose during that time period. Physical activity enhances weight loss due to increased expenditure of energy. An understanding of if and how women would exercise during the first year postpartum is important to assist women in controlling or decreasing their weight during this stage of their lives

**Methods:** Descriptive study. A sample of 50 Black and White low-income women who delivered an infant within the past year will be approached in the Pediatric Practice at Golisano Children's Hospital at the time of an office visit with their child, within the first 6 months of age, for an interview.

**Results:** data collection began 5/02/05

### 19. Projects Related to Control of Food Intake

*David A. Levitsky, Cornell University, Ithaca*

Our research has been devoted to demonstrating the powerful effect of environmental factors on human food. We have demonstrated that (a) the most powerful determinants of children's food intake is the amount of food that caregiver's put on the child's plate, (b) adults will eat as much as 50 percent more food depending upon the amount that is placed on their plate, (c) when people with whom subjects are eating, increase the amount they consume, the subjects will also increase the amount they eat, (d) using freshman weight gain as a model, the weight gain is directly related to the number of snacks freshman eat and the frequency they eat at the "all-you-can" eat dining halls, and (e) that we can prevent the weight gain by providing freshman with information about their daily changes in body tissue mass (a system we call TMS) and by teaching them about appropriate portion sizes. Unfortunately, we found that we could not reduce the amount they eat in the dining halls by providing students with caloric information or changing the size of their plates. We are currently testing the effectiveness of the TMS to prevent weight gain in preadolescent, overweight children without affecting their linear growth, thereby reducing their BMI. This summer we will begin testing the effectiveness of losing weight very slowly (using the TMS) to reduce weight and maintain that weight loss for one year.



## 20. DNS Outreach Project for Breastfeeding Promotion, Protection, and Support

*Joan Paddock, Cornell University, Ithaca*

The Office of the Attorney General funded the Division of Nutritional Sciences at Cornell University to conduct an outreach breastfeeding promotion and support project to increase the incidence and duration of breastfeeding among low-income women in New York State. Three major strategies of the project are described below.

Social marketing campaign.

In 1997, Best Start developed "Loving Support," a campaign for the WIC National Breastfeeding Promotion Project. Best Start has been evaluated in two states and has shown positive impacts on breastfeeding rates and on community support for breastfeeding.

Best Start Social Marketing materials that emphasized giving support to women who choose to breastfeed were selected for the campaign in the greater Buffalo area.

Skill building and resources for health care professionals.

The grant helped support the Upstate Breastfeeding Consortium annual conference in Rochester, September, 2003 entitled "A Baby and a Breast: Challenges in Changing Times." The Consortium has over ten years of experience planning conferences for breastfeeding professionals working in hospitals, doctors' offices, outpatient clinics, WIC programs, and health departments.

Support for breastfeeding women through Cornell Cooperative Extension.

Two interventions, In-home Support for Breastfeeding Women and Enhanced Outreach to pregnant or breastfeeding women, were piloted through Cornell Cooperative Extension nutrition programs.

Preliminary results for all three strategies indicate that much success was realized through this effort.

## 21. Marriage and Body Weight

*Jeffery Sobal, Cornell University, Ithaca*

Most people marry, and marriage is associated with eating, exercise, and body weight. Our research has examined dating, marriage, divorce, and widowhood in relationship to body weight in a series of quantitative and qualitative studies. Dating surveys of adolescents revealed that obesity is strongly stigmatized, especially for obese girls. Analysis of NLSY97 and AddHealth data found that heavier boys and girls initiate dating later than those who are thinner. Cross-sectionally, body weight and marital status are related, with NSPHPC data showing that married men are heavier than never married men while no significant relationships of weight by marital status occur for women when other variables are controlled. Longitudinally, analysis of marital trajectories over a ten year period using NHEFS data found that women who enter marriage gain weight and men who become widowed or remain divorced lose weight. Marital quality analysis in NSPHPC data revealed that once people do marry, body weight had few associations with marital happiness or marital problems. Among older adults, analysis of HRS data showed that widows in their 50s were more likely to be obese and divorced men in their 50s were underweight, but there was no marriage-weight relationship in AHEAD data on men or women in their 70s. Qualitative analysis of food choices in newly married couples revealed that negotiations about eating occurred, including considerable food choice convergence as well as some conflicts about marital food choices. These findings have clinical, program, and policy applications.

## Theme C: Economics and Obesity

### 22. Topics in the Economics of Obesity: Labor Market Impacts, Smoking, and Anti-Obesity Drug Use

*John Cawley, Cornell University, Ithaca*

In this poster, I will broadly describe my research agenda in the economics of obesity. I plan to summarize the results of several papers and make available hard copies of these papers. The research falls into three major categories:

#### 1) The Labor Market Impact of Obesity

Two papers will be described: one published in the *Journal of Human Resources* that documents the causal impact of obesity on wages, and one to be published in the *Journal of Policy Analysis and Management* that studies the extent to which obesity is a barrier to the transition from welfare to work.

#### 2) Obesity and adolescent smoking initiation

I will describe a paper published in the *Journal of Health Economics* that documents the impact of weight on the probability that adolescents initiate smoking.

#### 3) The utilization of anti-obesity drugs

I will describe an NBER working paper that documents two things: racial and ethnic disparities in the use of anti-obesity drugs, and how the utilization of anti-obesity drugs responded to the withdrawal of the fen-phen anti-obesity drug cocktail from the market in 1997.

### 23. The Effects of Globalization on Overweight and Obesity in South Korea

*Ji-Yun Hwang and Per Pinstrup-Andersen, Cornell University, Ithaca*

While the effects of globalization on overweight, obesity, and resulting chronic diseases are far-reaching, they are poorly understood. Overweight and obesity have become a major public health problem in South Korea, along with its rapid globalization process which are related to obesity-related diets and behaviors. This study will provide empirical evidence of the impact of three aspects of globalization and how they affect overweight and obesity in Koreans: first, the effects of international food trade on dietary intake as mediated by price and income changes; second, the effects of trade liberalization on physical activity as mediated by occupational structure, public transportation, and income; and third, the modifying effects of global communication on the two other aspects' effects as mediated by individual knowledge change. The results of the study will have important implication: for Koreans, evidence of the impact of globaliza-

tion in various levels of indicators on overweight and obesity would support new policy and program initiatives to alleviate overweight and obesity. Second, for other developing countries which are suffering from nutrition transition, South Korea is a good case for research to benefit them as regards the globalization process since it crosses the spectrum of developing and developed countries within relatively short time period. The nationwide Korea Health and Nutrition Survey, conducted in 1998 and 2001, and time series data, such as those on imports and prices from around 1970 to the present, will be used to address the study objectives.

### 24. Between Problems and Actions: A Role for Dialogue & Deliberation

*David L. Pelletier and Francesca Decker, Cornell University, Ithaca*

Embracing an ecological approach for addressing obesity implies: 1) changes in the design, policies and practices of a wide range of organizations, community settings, businesses and local, state and federal agencies; and 2) changes in social norms, perspectives and lifestyles at the level of individuals, families, social groups, communities and society as a whole, and the many economic, cultural, legal and political forces that factors that shape social norms, lifestyles, design, policies and practices.

Thus, while an ecological approach to obesity seems eminently reasonable, it also implies a vast social change agenda. A political perspective suggests that economic, social and political resistance can be anticipated. The change agenda is likely to proceed in a piecemeal (rather than master plan) fashion according to the opportunities that present themselves or can be created by change agents at various levels. But even here change will be difficult, given competing values, interests and views of the problem and appropriate actions in a given venue. Examples abound: school nutrition policies, daily physical education, the built environment and nutrition labeling at restaurants.

The College of Human Ecology at Cornell is contemplating the creation of a Center for Policy Dialogue and Deliberation that may help organizations, communities and governments come to terms with these difficulties in a constructive way. The Center would approach these issues from a common interest perspective, engage a broad range of stakeholders and build upon the knowledge and experience of these stakeholders and the College.

## 25. Barriers to Healthy Nutrition Practices Between African-American and Latina Women Eating in Harlem

*Erica G. Phillips, Christina Harris and Obesity Intervention Working Group, Cornell University, Weill Medical College*

**Background:** In New York City, obesity is more prevalent among African-American (30%) and Hispanic (26%) women compared to Caucasian (13%) and Asian (7%) women. Consequently, minority women suffer a disproportionate burden of obesity-related diseases. Targeting obesity, as a modifiable risk factor could make an important contribution in reducing the racial health disparity among these groups.

**Objectives:** The objective of this qualitative study is to identify the environmental barriers to healthy nutrition practices among overweight African-American and Hispanic women in a low-income community.

**Methods:** During focus group interviews, 35 participants were asked open-ended questions about obesity and perceived barriers to healthy nutrition. Responses were coded and corroborated by independent investigators using standard techniques, then compared to the participants' body mass index, fat and fruit and vegetable consumption.

**Results:** Although most participants acknowledged the importance of healthy nutrition practices such as decreased fat intake, and decreased portion sizes, many did not follow these general principles. Participants cited internal and external barriers, such as poorer quality and higher food costs in their neighborhoods as compared to "white" neighborhoods, and lack of nutritional education from food stamp service providers on how to budget and food shop for healthy nutrition options.

**Conclusions:** This study provides evidence that higher costs, poor quality food, and lack of nutrition education from service providers in low-income communities are barriers to healthy nutrition practices. Developing interventions to foster prudent healthy nutrition practice among minority low-income communities should be a priority in order to decrease the long-term health effects of obesity.

## 26. Are There Negative Wage Effects of Obesity in China?

*Satoru Shimokawa, Cornell University, Ithaca*

While several studies have found a negative correlation between obesity and wages among women in high income countries (e.g., the United States), there is still a paucity of research on the labor market impact of obesity in low and middle income countries. Public health problems related to overweight and

obesity have been increasingly emerging not only in high income countries but also in middle and low income countries, especially in transition economies such as China. In China, the prevalence of overweight and obesity increased from 14.3 % to 25.2 % among adults aged 24–60 years old during the 1990s. This rapid increase has stimulated interest in better understanding the causes and consequences of being overweight and obese in China.

This paper examines whether obesity causes lower wages in China using the China Health and Nutrition Survey data. Our raw data show that obese respondents tend to earn lower wages compared to their non-obese and non-undernourished peers. To determine the causal effect of obesity on wages, we employ various wage model specifications. We employ the individual fixed effect model with a lagged measure of weight and the IV estimation method to control the potential endogeneity of weight. The results in this paper are also compared to the results for other countries reported elsewhere. Our results demonstrate that there exists a positive wage effect of weight in China, which is opposite from the wage effect of weight in high income countries and similar to that in low income countries.

## 27. Acculturation or Globesity?: The Case of Asian Immigrants in the U.S.

*Hae Kyung Yang, Cornell University, Ithaca*

The World Health Organization recently described "globesity" as a global epidemic of obesity. Nevertheless, the prevalence of obesity is highest in the U.S. compared with the rest of the world. Previous literature has shown that the obesity rate for Asian immigrants have doubled between the first and second generation. However, little is known regarding the factors underlying this increase in obesity. Immigration from developing countries to the U.S. may increase access to health care but by acculturation, it may also introduce unhealthy life style patterns such as fast food diet and little physical activity for the individual. Asian immigrants are more likely to form geographic communities. Based on the economics of obesity and neighborhood effects paradigm, we hypothesize that higher immigrant density in community provides less acculturated neighborhood and leads to a lower prevalence of obesity and overweight compared to the other neighborhood. Limited work has been undertaken in which the adults' place of residence are factored into their weight and their being involved in health promoting activities. We focus on Asian immigrant adults. We use propensity score matching estimators with sensitivity analysis to access the selection bias in neighborhood effect. Using the National Health Interview Survey and 1990 Census of Population and Housing, the analysis will consider both individual and neighborhood levels.

## Theme D: Youth and Obesity

### 28. Promoting Adolescent Health in the Community

*Amanda S. Birnbaum, Cornell University, Weill Medical College, Jackie Davis-Manigualte, Cornell University, Cornell Cooperative Extension, Evalina Irish-Spencer, Cornell University, Cornell Cooperative Extension, Todd Miner, Cornell University, Ithaca, Tracy Nichols, Cornell University, Weill Medical College, Carol Parker-Duncanson, Cornell University, Cornell Cooperative Extension, Caroline Temlock-Teichman, Cornell University, Cornell Cooperative Extension*

This poster describes community-based programming and research related to youth physical activity (PA) and nutrition in New York City. The authors are part of a newly formed collaborative team that consists of faculty from Weill Medical College and Cornell University and program leaders from Cornell Cooperative Extension — New York City, all of whom share interests in the prevention of adolescent/childhood obesity. The team has several projects underway, including an NCI-funded developmental/exploratory research study, [Good Fit Project] that is designed to create intervention and measurement materials for workshops promoting PA in 11–14 year olds, to be delivered in existing after-school programs. Preliminary results from the formative assessment will be presented. In addition, initial findings of a RWJ-funded project investigating select youth sports programs to determine the extent to which positive youth development and nutrition education is incorporated into youth sports programs and coach training, and how coaches, agency staff, parents and youth might benefit from training in this area will be shared. Finally, a program [PAL Fit] developed in collaboration with the Police Athletic League (PAL) to introduce the concepts of nutrition and fitness to youth at various PAL Recreation Centers in NYC in order to decrease the development of overweight and obesity and their resulting chronic diseases, will be described. Future projects related to obesity prevention will be outlined, including family-based research with mother-daughter dyads to understand and intervene on family health practices and outdoor adventure activities as a way to promote PA and healthy eating in sedentary females.

### 29. The Dynamics of Child Obesity: A Multidisciplinary Perspective

*Arvind Chandrasekar and Maki Ueyama, Cornell University, Ithaca*

Child obesity is a problem of epidemic proportions in the US today. The number of children who are overweight or obese has been increasing for the last several decades. Child obesity stems from various socio-economic factors and in turn has a big impact on society. It is imperative that researchers adopt a comprehensive systems approach to address this problem since

it involves the interplay between various disciplines such as economics, public health, nutrition, sociology, genetics, anthropology and human development, to name a few. While there are a number of studies on child obesity in most of the individual fields mentioned above, this is the first integrated examination of the problem with a multidisciplinary perspective. Typically, the causes, effects and the challenges to mitigate child obesity have long time delays. In our study, we propose feedback rich structures to analyze the relationships between various socio-economic factors and child obesity. We then set up the framework to make policy recommendations to mitigate the problem. To achieve this we use a set of behavioral equations and present a formal model representing the variables involved. Aspects of sensitivity analysis and model validation will also be discussed.

### 30. Obesity Comorbidities and Off-spring of Diabetic Mothers

*Stephen Cook, MD, Michael Weitzman, MD, and Thomas Miyoshi, University of Rochester Medical Center*

National rates of Obesity and Type 2 diabetes have been rapidly increasing over the past 2 decades. Infants of mothers of who have gestational diabetes appear to have higher rates of obesity than infants of similar size and gestation whose mothers do not have diabetes. This abstract is in collaboration with the Obstetrics/Gynecology department at Metro Health Center in Cleveland Ohio and Dr. Patrick Catalano as a case-control study of 6–8 year olds to examine effects of maternal weight and diabetes on rates of obesity and cardiovascular risk factors in these children. This data set includes the records of 89 children who have completed a follow up study from their mother's pregnancy. They were initially seen at age 2 years and now have a mean follow age of 7 years. This data was collected primarily to follow the trends of obesity, diabetes and weight gain at the time of pregnancy identification and through the pregnancy to delivery. The children were recalled ! by the Ob/Gyn department at Metro Health to re-assess measures of weight, body fat and blood tests for cardiovascular risk factors of the metabolic syndrome. These children can be matched to their mothers through linked files that include detailed measure of weight, weight gain, body fat, diabetes status and glucose tolerance during pregnancy. We will be examine bivariate relationships and independent associations comparing maternal factors, birth outcome, 2 year data and detailed analyses completed at this final follow-up.

### 31. An Assment of A La Carte Foods Sold in Secondary School Cafeterias

*Heather L. Fiore, University of Rochester Medical Center*

**Purpose:** Competitive foods, or a la carte foods (ALC), are compromising the efforts of the National School Lunch Program to provide students with healthy food choices. This study compared the nutritional content of ALC sold in urban secondary school cafeterias to the Dietary Guidelines for Americans (DG). **Methods:** Nutrition information for each item was obtained and compared to four nutrient levels recommended by DG: <30% calories from fat, <10% calories from saturated fat, <100mg sodium/100 calories, and <10% calories from sugar. ALC were assigned a Dietary Guideline score (DGS) depending on how many guidelines each met and were placed into food categories (entrees, snacks, drinks, etc.). The number of available items from each food category with each DGS was determined. **Results:** Forty percent of available items had DGS 1 (met one guideline), 35% of items had DGS 3, 22% of items had DGS 2, 2% of items had DGS 4, and 1% of items had DGS 0. The large majority of nondairy drinks (2nd largest food category) were assigned DGS 3, whereas most desserts (largest category) had DGS 1. **Conclusions:** Most ALC did not meet recommendations for >2 nutrients (DGS 3 or 4). These data indicate which nutrients ALC provide in excess, offer guidance for school districts regarding healthier choices that are acceptable to students, and provide direction for research concerning the impact of healthier ALC options on students' overall intake.

### 32. Effects of Food Insecurity and Food Stamps on Child Weight Gain

*Edward A. Frongillo, Diana Jyoti, and Sonya Jones, Cornell University, Ithaca*

Household food insecurity and participation in federal food assistance programs have been associated with overweight in US children from cross-sectional studies. We used longitudinal data to investigate how changes in household food insecurity and participation in the Food Stamp Program (FSP) relate to concurrent weight gain in school children. Data were from the Early Childhood Longitudinal Study: Kindergarten Cohort, a prospective sample of about 22,000 nationally representative children entering kindergarten in 1998 and followed through grade 3. Households were food insecure if they reported one or more food problems on the USDA module. Households were FSP participants if they received food stamps in the past 12 months. Weights and heights were directly assessed. Effects on weight gain of changes in food insecurity, FSP participation, and the interaction between these were examined using difference (i.e., fixed-effects) models, controlling for changes in child and household contextual variables. Becoming food insecure, com-

pared with becoming food secure, was associated with a 2.6 kg greater weight gain among boys ( $p<0.019$ ) and a 1.8 kg smaller weight gain among girls ( $p<0.105$ ). Controlling for food insecurity, starting FSP participation (compared with stopping FSP participation) was not associated with differential weight gain in either girls or boys. No significant interaction effect was found. This study provides the strongest empirical evidence to date that food insecurity is associated with greater weight gain among boys and somewhat lower weight gain among girls, and there is no effect of FSP participation on weight gain.

### 33. Fitness Counts

*Betty B. Heitmann, Cornell University, Cornell Cooperative Extension*

Fitness Counts is the Seneca County Cornell Cooperative Extension 4-H Youth Development project funded through a 2005 Healthy Lifestyles Grant from National 4-H Council and Kraft Foods. The goal of this project is to engage youth age 4 and older in fun and exciting educational programs that will help them make smart and healthy food and physical activity choices. The poster will highlight resources obtained, creative educational strategies, and future plans – all revolving around reversing the trend of childhood obesity, especially in Seneca County. Educational strategies featured in the poster will include: classroom presentations, challenge course/fitness trails, cooking classes, and the incorporation of a variety of high and low tech sports and recreational equipment designed to engage youth in team building, healthy lifestyle choices, social skills, self esteem, cooperation and being physical active: moving! Resources obtained and future plans to showcase what children are learning through Fitness Counts will be featured on the poster as well.

The poster will illustrate the progress of the Fitness Counts project to date; showing how youth and youth serving agencies have been involved in all stages of the program, through networking and coordination of efforts. The underlying and powerful positive message the poster and project promotes is: Fitness Counts with Seneca County Cornell Cooperative Extension 4-H Youth Development.



### 34. Not Your Average Fan Club

*Shana L. Karn, and Leslie Kannus, Cornell University, Cornell Cooperative Extension*

In 2004, CCE of Cortland County's Nutrition Education Program introduced Fitness And Nutrition Clubs to youth in after-school programs.

School professionals expressed concerns regarding their students' health habits. One concern is lack of physical activity. A vicious cycle was identified: Youth who aren't athletically gifted tend to avoid sports and activities at which they feel awkward. This lack of activity often contributes to overweight among these youth, which can then lead to further withdrawal from participating in activities.

Another identified concern is the youths' inability to choose and prepare healthy foods. It's felt that this is related to poor nutrition role modeling and education at home.

FAN Clubs directly address these concerns in the following ways.

- activities that are not viewed as sports or exercise, but simply as fun (e.g., parachute games, juggling, hip-hop dancing, yoga, tai-bo);
- hands-on nutrition/food-prep activities using CCE's Cooking Up Fun curriculum;
- communication with parents, providing that crucial link between home and school.

Increased prevalence of childhood overweight provides strong impetus for schools to request FAN Clubs. To date, six Clubs have been conducted, reaching forty-seven children. In each after-school program where FAN Clubs have been run, there are waiting lists for the next Club.

FAN Clubs are developing a reputation! The lowest-income school in Cortland — Randall Elementary — recently learned about FAN Clubs through word-of-mouth. They are so impressed that they're devoting 12 hours of classroom time to have FAN Clubs for their entire sixth grade.

### 35. Academic & Community Collaboration for Prevention and Treatment of Childhood Obesity at the University Of Rochester and the AAP

*Jonathan Klein, MD, Steve Cook, MD, and Michael Weitzman, University of Rochester Medical Center*

The Department of Pediatrics at the University of Rochester Medical Center and the American Academy of Pediatrics Center for Child Health Research (CCHR) have several initiatives to address childhood obesity. The CCHR has conducted a series of secondary analyses exploring the relationship between obesity and other health factors, including the interrelationship be-

tween smoking and obesity. Additionally, a Robert Wood Johnson Foundation (RWJF) funded project developed and synthesized information about barriers and facilitators to implementation of nutrition and exercise prevention interventions in primary care practice. The goal of this project was to inform planning for initiatives addressing obesity and children at RWJF, the American Academy of Pediatrics, and the National Initiative for Children's Health Care Quality (NICHQ). Several "next steps" proposals are under review, to continue to improve clinical interventions for overweight prevention and treatment in child health practice. In addition, the Department of Pediatrics at the University of Rochester convened the Haggerty Initiative. This working group of senior faculty and collaborators from across the University seeks to coordinate intervention and research services around childhood obesity on a community and regional level. The purpose of this abstract describes some of the preliminary work identifying key stakeholders among practicing providers, academicians, local health departments, insurers, and community based agencies and organizations. Greater Rochester / Monroe County area initiatives to coordinate services and to collaborate in research on intervention and policy change approaches that influence nutrition and activity in lives of children and families to combat the obesity epidemic will be described.

### 36. Action Clothing: Using Clothing to Inspire Physical Activity for Children

*Lindsay M. Lyman-Clarke and Nancy Wells, Cornell University, Ithaca*

In this study we investigate a method to encourage physical activity in children. Both a child's psychological and physical environment can promote or suppress physical activity, but few studies have been done concerning the relationship between a child's most immediate environment, their clothing, and physical activity.

This research is part of an ongoing project to explore the relationship children have with their clothes. We investigate whether inspiration and motivation for activity can be drawn from clothing that gives a child feedback about their movement. For this study a cape was developed with small working pin-wheels at the wrists of 19 preschool children between the ages of 3 and 5 participated in the study. Preschoolers were observed during multiple outdoor playtimes to determine whether the study garment would be associated with more physical exercise at playtime, as measured by a pedometer. Results indicate that children who showed low or moderate activity at playtime as judged during the pretest increased their activity with the cape, while those who were highly active in the pretest showed no change while wearing the cape.

### 37. Childhood Overweight and Obesity in Urban China

*Banoo J. Parpia, Cornell University, Ithaca*

Abstract of Proposal submitted to NICHD (March 1, 2005)

The overall objective of the four-year proposed study is to investigate both the behavioral and environmental influences on prepubertal childhood overweight and obesity in urban China. The proposed investigation is an international collaborative project between Cornell University (Drs B Parpia and C. Henderson), Weill Medical College of Cornell University (Dr A Birnbaum) and the Chinese Center for Disease Control and Prevention (Dr W Zhao). The specific aims are to 1) identify overweight and obesity in this population, 2) assess proximate behavioral correlates of body size including physical activity, food intake behavior, and TV viewing habits, 3) assess contextual environmental factors including family, school and community environments, and 4) comprehensively identify the primary multi-level correlates of body size and adiposity in this population. The study design is based on a 2-level hierarchical model that integrates school and community contextual effects with child and family behavioral effects on body size and overweight/obesity in prepubertal Chinese schoolchildren aged 7 y and 10 y. China presents a rare opportunity to study the contextual factors associated with overweight and obesity in a population of children with large variability in body size, without ubiquitous parental overweight or obesity, together with substantial variability in sociocultural, socioeconomic, and other environmental exposures. By taking advantage of the unique transitional situation in China, the proposed study will make significant substantive contributions and inform childhood overweight and obesity prevention programs in the U.S. as well as in China and other nations.

### 38. Growing Wellness: Kids Growing Food—At School

*Nancy Schaff, Cornell University, Ithaca*

The New York Agriculture in the Classroom Kids Growing Food program has started and supported 275 school gardens since 1998. Experience gained through this program suggests that schools should consider school gardens as an integral component of wellness plans. Teachers report a wide array of benefits to students and schools supported by research on garden-based learning. One of many benefits reported is positive change in attitudes toward good nutrition, including an increased willingness to eat fresh fruits and vegetables grown by the students. Gardens provide an environment for physical outdoor activity and an opportunity for children to do fun and useful work. Teachers and food service directors can team up during New York Harvest for New York Kids Week – and throughout the year – in creative ways to connect garden-based learning with the

cafeteria. Kids Growing Food teachers are passionate about their “garden classrooms” because they make learning and standards across the curriculum literally come alive. A Kids Growing Food teacher in Syracuse reported that the students “enjoyed the fresh carrots, fresh broccoli, fresh green beans – if it was a ‘fresh’ they enjoyed it.” Delivering food to the cafeteria provided great excitement for the students: “yellow squash was served with lunch from our harvest, and there were a few times a delicious salad was served with our school lunches compliments of our garden’s harvest.” Kids Growing Food gardens grow healthy and happy kids.

### 39. Linking Nutrition Education to Youth Development

*Patricia F. Thonney and Carole A. Bisogni, Cornell University, Ithaca*

Recent advances in youth development offer new ways of thinking about how nutrition interventions are designed and delivered to youth audiences. This is particularly relevant as the issue of childhood obesity commands attention of nutrition and health professionals. Cooking Up Fun (CUF) is designed to help 9- to 14-year-olds acquire independent food skills that will support healthful eating and positive youth development. Adult facilitators work with small groups of youth, create individual or 2-person work stations, engage youth in planning the cooking sessions, and promote conversation about food and the cooking process. In a pilot project 29 adults worked with 190 youth in 23 cooking clubs in seven counties in New York. A majority of clubs reached youth from low-income families. Data collected from both facilitators and participants show that benefits youth experienced from CUF promote independent food skills and positive youth development. Facilitators described the following mutually shaping processes through which youth experienced benefits: (1) Practicing food skills supported mastery, confidence and feelings of success among youth; (2) Preparing food in a small group setting fostered social skills and relationships; (3) Experiencing food enjoyment resulted from making choices in food preparation, handling food, preparing familiar food products, and trying new foods. Food skill mastery and youth development principles warrant further study as potential strategies for improving nutrition education for youth. The conceptual model that emerged from Cooking Up Fun can inform the development and evaluation of youth nutrition education programs.



#### 40. Effect of School Meals Initiative on Child Obesity

*Maki Ueyama, Cornell University, Ithaca*

Child obesity is one of the most serious public health concerns in the American society today. In the midst of the heightened trend of child obesity, the USDA's first School Nutrition Dietary Assessment Study found that National School Lunch Program (NSLP) meals were higher in fat, saturated fat and sodium, and lower in carbohydrates than the levels recommended by the Dietary Guidelines for Americans. As a response, School Meals Initiative for Healthy Children (SMI) was launched in 1995. It revised nutrition standards in school meals, restructured menu planning requirements and introduced a nutrition education program.

Using data from National Health and Nutrition Examination Survey III and IV, this study proposes to examine the effect of SMI on child obesity and to determine whether the effect differs by the severity of residential state's competitive foods policy. This research extends the literature in several ways. First, this is the first study to examine the effect of SMI on child obesity. All previous studies use data prior to SMI implementation. Second, this is the first study to examine whether the effect of SMI on child obesity differs by the severity of residential state's competitive foods policy. Although a few studies examined the direct effect of availability and advertisement of lower quality meal substitutes on child obesity, none have examined competitive foods policy in relation to SMI and child obesity. Third, this study controls for selection bias using difference-in-differences method. Most previous studies fail to control for selection into NSLP.

#### 41. Cornell Farm to School Program: For Healthy Kids, Healthy Farms, and Healthy Communities

*Jennifer L. Wilkins and Meredith Graham, Cornell University, Ithaca*

Farm to School projects, where school food service and college dining directors are choosing to offer locally raised food to students are catching on across New York State. Food service directors, parents, school administrators, and extension educators are increasingly interested in farm to school connections as an approach to addressing childhood obesity because these programs focus primarily on fruits, vegetables and other plant foods. The link between local agriculture and schools addresses critical food system issues — increasing child and adolescent obesity and declining competitiveness for small and mid-size family farms. Farm to school programs have been shown to increase consumption of fresh fruits and vegetables. In a survey of NYS K-12 food service directors 28% reported purchasing fruits and vegetables directly from a farmer.

Federally mandated school wellness policies provide an opportunity for developing connections between schools and the local agriculture and food system — improving the quality of schools meals and agriculture literacy for students, markets for family farmers, and economic vitality for communities. There are many elements that can be incorporated into farm to school programs. Some federal, state, local and institutional policies support farm to school connections and yet many barriers also exist. Stakeholders are actively engaged in developing creative strategies for overcoming challenges to sustainable farm to school links. Two recently funded projects will investigate effectiveness of farm to school strategies for achieving health outcomes.

#### 42. Connectedness and Adolescent Obesity

*Stephen F. Hamilton and Mary Agnes Hamilton, Cornell University, Ithaca*

The National Longitudinal Survey of Adolescent Health (Add Health) established a strong association between health and connectedness among adolescents: controlling for background variables, those who can talk with their parents and with adults at school have more favorable health indicators. We can infer that youth with more adults to support them make better health choices, but the causality of the link and its mechanism remain to be determined.

With Cornell colleagues, partners in the NYC schools and New Visions for Public Schools, we submitted a two-year proposal to NIH to investigate this association. The community-based

participatory research (CBPR) proposal has two main components. One is the administration of a survey based on Add Health to students in four small high schools that emphasize building close personal relations between students and adults. This will allow us to see whether the same association appears in a severely disadvantaged population and whether small schools enhance connectedness and thereby health. School-based research teams will reflect on results and recommend action steps to support mentoring relationships. The second component is an ethnographic examination of students, "mentoring relationships with adults in the school and community, with the goal of illuminating how such relationships form and how they operate. School-based research teams will be co-generators of the ethnographic research data.

The study will provide the basis for a more definitive study. Because the students, especially the girls, are at high risk of obesity, that will be one of the health risks of greatest interest.

tions and volunteer program advisors guide program priorities with programs drawing extensively on CU resources. Extension professionals are skilled educational facilitators with academic preparation in areas such as nutrition, health, child, youth and family development, family economics and more. CCE local programs may include applied research components in concert with CU faculty and community members have opportunities to contribute to research endeavors.

### **43. Obesity Prevention Community Outreach: Leveraging the Cornell Cooperative Extension System**

*Josephine A. Swanson, Cornell University, Ithaca*

Integrated research and outreach obesity prevention projects can leverage the strength of the statewide Cornell Cooperative Extension (CCE) educational system. CCE can be a full program partner from the onset of a project; during implementation, as pilot sites; as a replication and/or evaluation partner; and as a knowledge disseminator. CCE engages in program partnerships with individuals, communities, organizations, government agencies and businesses around issues of mutual concern. Cornell (CU) faculty and CCE professionals plan, deliver and evaluate programs at the local, regional and state levels. Programs incorporate contemporary, research-based knowledge and skill development. The CCE system can connect learners to research resources of the academy, at Cornell and beyond. CCE can be a vehicle for information dissemination via technology including video and satellite conferencing, internet, hard copy, and media releases. More intensive educational interventions are conducted through sequential workshops and training programs, 4-H youth development groups, after school programs, conferences and other events. Lay adult and youth audiences, professionals and government and agency personnel are among the program participants. CCE local offices have strong community ties and fiscal support. Locally elected volunteers govern the county loca-

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