

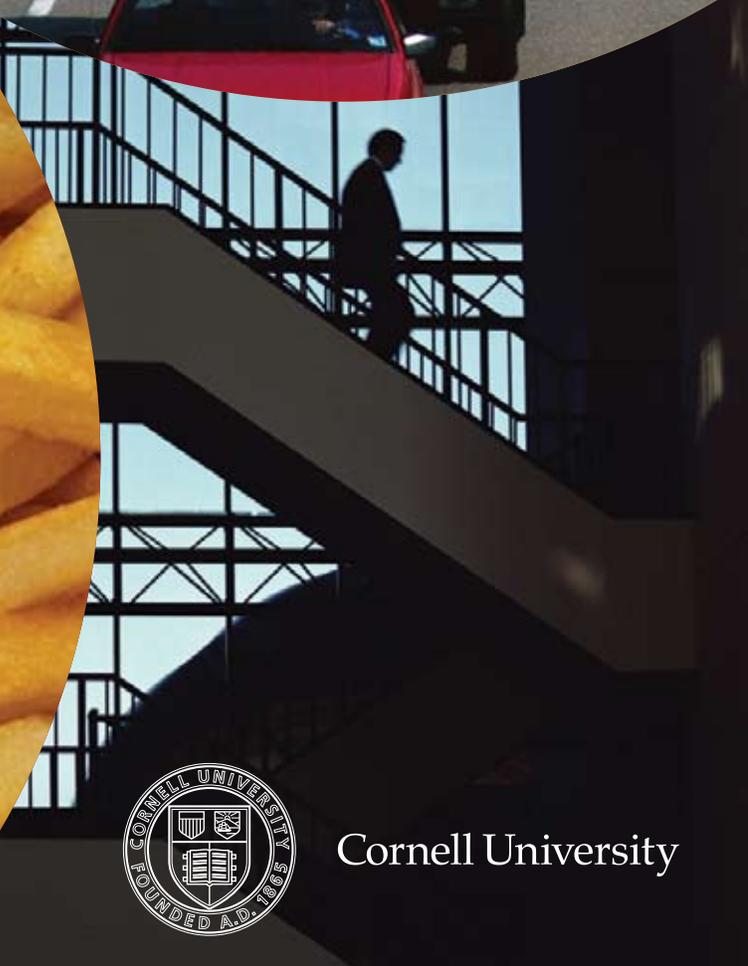
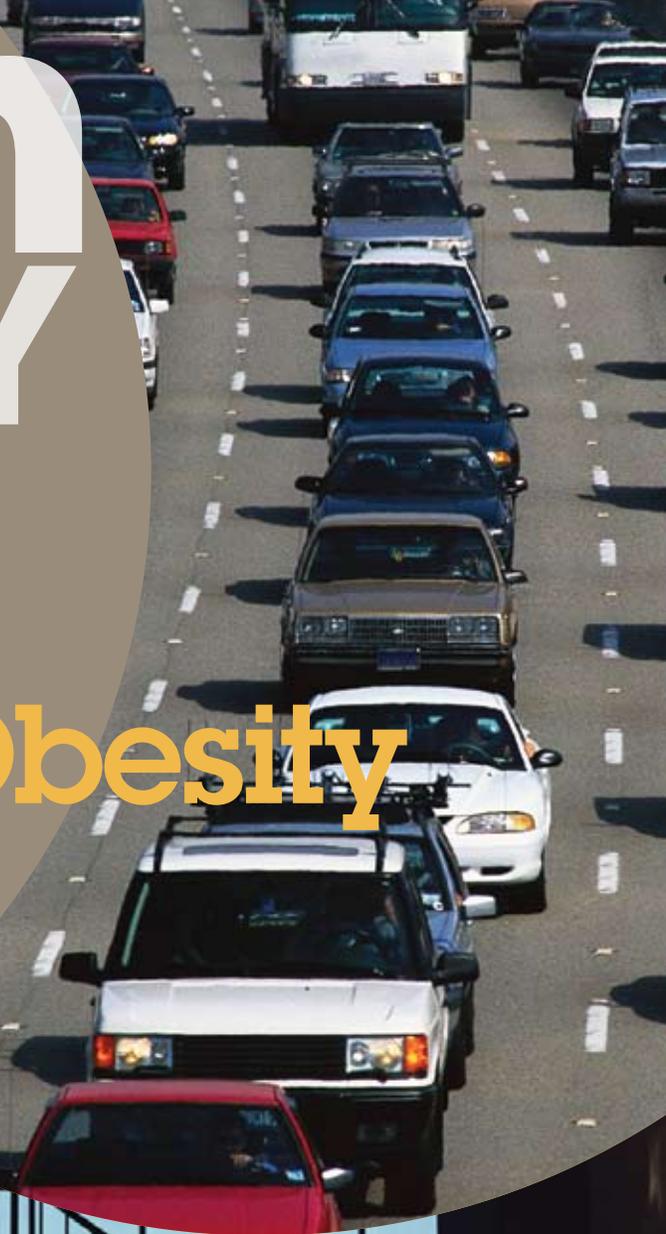
# Human ECOLOGY

Reports from the

## Ecology of Obesity

Conference at Cornell University  
June 6 & 7, 2005

College of Human Ecology, Cornell University • December 2005 • Volume 33, Number 3



Cornell University



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December 2005

The New York State College of  
Human Ecology at Cornell University  
Lisa Staiano-Coico, Ph.D.  
Rebecca Q. and James C. Morgan Dean

Cornell's College of Human Ecology publishes this magazine to illustrate how its programs address complex societal issues to improve the human condition. This mission of human improvement is accomplished through faculty initiatives in research, outreach, and teaching—with an emphasis on an ecological perspective, collaborative projects, and multidisciplinary curricula within and across five academic units: the Department of Design and Environmental Analysis; the Department of Human Development; the Department of Policy Analysis and Management; the Department of Textiles and Apparel; and the Division of Nutritional Sciences, a unit shared with the College of Agriculture and Life Sciences. The college includes the Family Life Development Center, Bronfenbrenner Life Course Center, and the Cornell Institute for Policy Research.

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PHOTO: DISC

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DIGITAL STOCK

**Ecology of Obesity**

On June 6 and 7, 2005, the College of Human Ecology hosted a conference entitled “Ecology of Obesity: Science and Action.” The conference brought together health professionals, researchers, and extension educators from all across New York State and addressed the epidemic of obesity from a broad range of perspectives. Among the topics discussed were the impact of obesity on our economy, the ways the built environment can hinder or encourage physical activity, and socioeconomic and racial disparities associated with obesity. Organization of the conference was led by two faculty members in the college: Christine Olson, of the Division of Nutritional Sciences, and Nancy Wells, of the Department of Design and Environmental Analysis.

We have chosen to dedicate this issue of *Human Ecology* to this conference and to the issue of obesity in general. This growing health concern affects us all. In a super-sized society where healthy choices are often few and far between, we must all work together to actively promote healthier lifestyles and to offer positive food-choice examples for our children. We are proud to be one of the many catalysts for collaborative research and outreach, and I am truly delighted to be able to share the outcomes of this conference with you in the pages that follow.

Our college’s multidisciplinary approach to research and our faculty’s ability to cross over into fields outside their own departments provide us with a unique opportunity to help fight the growing instances of obesity—and all of its negative health effects—among New York State residents of all ages. This conference and the conversations it sparked are just the first steps in a long-term strategic plan to make obesity a problem of the past, and to promote healthy living and eating habits in all our communities.



*Lisa Staiano-Coico*

LISA STAIANO-COICO, PH.D.  
Rebecca Q. and James C. Morgan Dean

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**The Economics of Obesity: Costs, Causes, and Controls**

Burgeoning health care costs and lost work time make obesity expensive for society. Can policies help curb people’s appetites for cheap, calorie-dense foods and encourage more physical activity?

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By looking at the course of individuals’ and groups’ lives over time, researchers can see early warning signs of obesity and determine opportune times for intervention.

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**Youthful Obesity Is Epidemic**

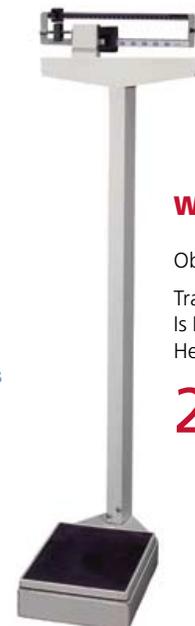
Declines in physical activity and unhealthy eating habits are making more and more children overweight. To reduce the problem, strategies that involve families, schools, and the whole community are needed.

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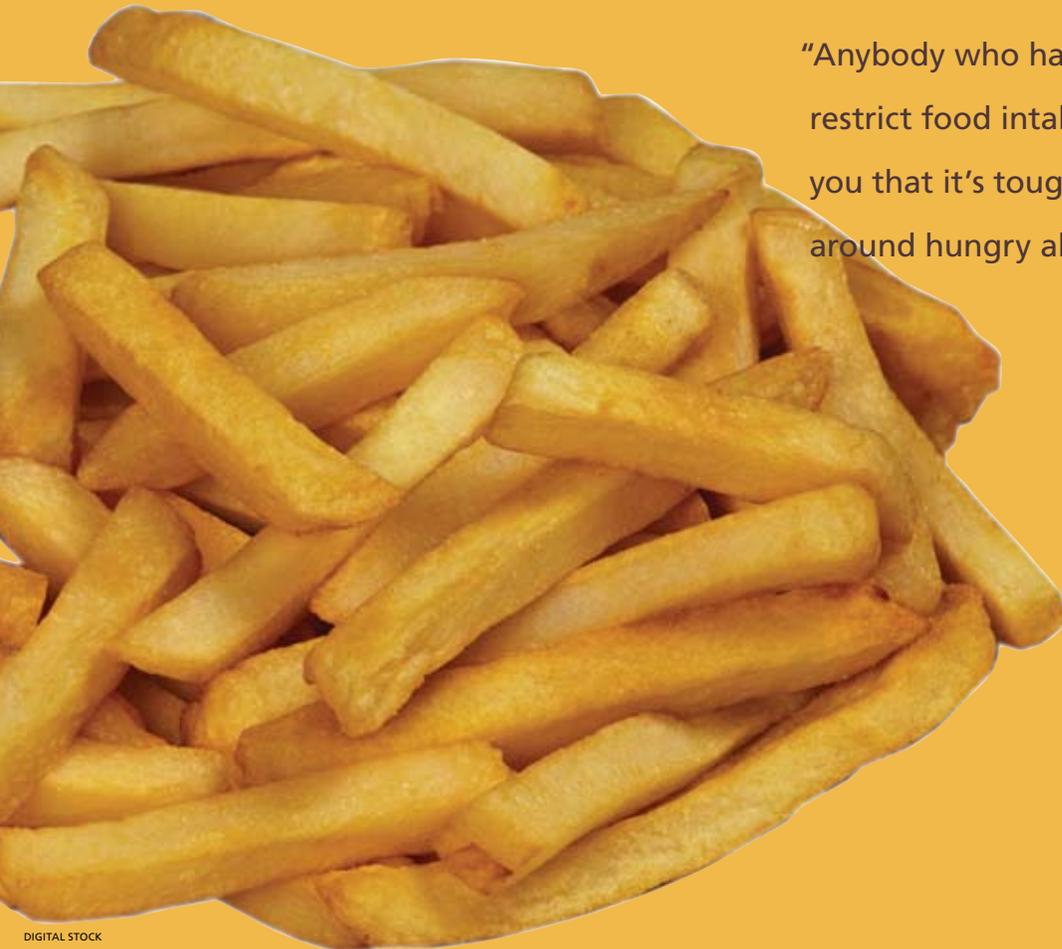
"If we do nothing to turn this around by 2008,  
about 75 percent of the population will be  
overweight or obese."

"There are people who go from the bed  
to the car to the elevator to their desk  
to the elevator to their car to the easy chair  
to the bed—with no physical activity at all."

//

# The Ecology of OBESITY

**"Type II diabetes follows obesity  
like night follows day."**



"Anybody who has tried to  
restrict food intake will tell  
you that it's tough going  
around hungry all the time."

" Kids are getting obese  
for the same reasons  
adults are getting  
obese; they share the  
same genes and the  
same environment."

# Our Biology Conspires with Modern Environment to Make Us Fat



METTA WINTER

When you walk down the street in the United States today, the people you see who are of normal weight will be in the minority.” With this stark fact, James O. Hill, professor of pediatrics and medicine and director of the Center for Human Nutrition at the University of Colorado Health Sciences Center, began his presentation of how it has come to be that almost seven out of every 10 Americans are overweight or obese. Hill gave the keynote talk, “Strategies to Address the Obesity Epidemic,” at the Ecology of Obesity conference held at Cornell June 6 and 7, 2005.

The obesity epidemic is the result of a modern-day mismatch between our biology and our environment, which Hill says has created a perfect storm. On the one hand, biology works against our efforts to maintain a healthy weight, stemming from a time when, as hunter-gathers, humans needed to get enough food in a food-scarce environment. Doing so took constant physical effort.

“So our biology says: eat whenever food is available and rest whenever you can,” Hill stated.

On the other hand, today’s environment is radically different. Modern people no longer need to be constantly on the move foraging and hunting for food. Today Americans sit still while waiting at a drive-through window for a meal based on the cheapest ingredients industrialized agriculture has to offer: fat and sugar.

“We have engineered physical activity right out of our lives by the way we’ve built our communities,” Hill said pointing to the universality of the automobile and suburbs designed to promote the movement of people in their cars rather than on their feet.

Hill called for an examination of the environment as a necessary first step in addressing the obesity epidemic. The built environment, with its prevalence of drive-up windows rather than sidewalks, is the most obvious. Hill also cited the commercial environment, which profits from selling large portions of high fat/high carbohydrate foods and devices such as high-definition TV, video games, and other modes of entertainment that promote inactivity.

He pointed out that progress and productivity often are inextricably linked to sitting at computer workstations. Company policies that lock stairwells in buildings deprive people of exercise. And many businesses do not require insurance companies to pay physicians for obesity prevention or treatment.

“Taking all of this together, it’s clear that the environment produces obesity,” Hill said. “Everywhere we export this environment around the world, it produces obesity there, too.”

## FACT

### Did You Know?

At present the average American gains one to two pounds a year.

What’s to be done? At present the average American gains one to two pounds a year. To get back to the 1980 obesity rate of 15 percent, Hill believes the focus must be on a 40- to 50-year, widespread public health strategy targeting both adults and children that promotes small behavior changes to prevent weight gain.

“The focus must be on prevention because prevention is the most efficient way to address obesity,” Hill said. The combination of a modest decrease in caloric intake coupled with a modest increase in physical activity could result in the overall obesity rates going down with each successive generation, instead of going up as they are today.

To put this concept to work, Hill has become a collaborator with the grassroots non-profit organization America On the Move. This nationwide initiative, which is partnered with the YMCA, among other organizations, promotes an effective weight-control strategy of simultaneously eating 100 fewer calories a day while walking 2,000 more steps (the equivalent of one mile). He said it is essential to involve the private sector in changing the environment in ways that support these behaviors, such as rewarding fast-food restaurants for offering healthier menu items.

Individuals residing in communities participating in America On the Move are generating creative ideas to encourage physical activity. A car dealer is giving away a pass to the zoo with each car sold. A hotel is offering pedometers to guests with a map of area restaurants within walking distance. Big chain stores are posting the number of steps taken while walking down the aisles.

“Obesity is a very tough issue, but we can do it—we can turn it around,” Hill concluded. ●●●

For more information go to:  
[americaonthemove.org](http://americaonthemove.org).

# The Built Environment Can Encourage or Obstruct Healthful Behavior

METTA WINTER

One of the keys to stemming the obesity epidemic is to create environments that make healthy choices easy choices, said James F. Sallis, professor of psychology at San Diego State University and director of the Robert Wood Johnson Foundation's Active Living Research Program. Sallis gave a presentation at Cornell's June 2005 Ecology of Obesity conference titled "Obesity and the Built Environment."

"Ninety-eight percent of new housing developments are suburban," said Sallis, an international authority on physical activity interventions and behavioral research who administers a \$12.5 million research program to study how the built environment—communities, parks, and buildings—can help people lead more active lives. "If you build all housing so that it's impossible to walk to the

grocery store, then you've taken that choice away," he said.

"We have been harassing people to make changes in a very hostile health-related environment, and we've not been very successful," Sallis said, explaining why focusing on nutrition alone is not the solution to the obesity epidemic.

Instead, he favors an ecological approach that examines the multitude of influences the environment exerts on an individual's behavior, including the psychological, biological, social, cultural, and physical environments. Sallis said that it is hardly surprising that more than 60 percent of American adults don't meet the federal government's recommendations for physical activity.

"We all know that physical activity is important, yet precious little is being done to promote it," he said. "We need to create environments that make healthful choices easy, then motivate and educate people on how to take advantage of them." To this end, the Robert Wood Johnson Foundation has spent more than \$75 million in the past five years to promote active living projects; that is more than the federal government's expenditure on this approach.

According to Sallis, active living goes beyond exercise for the sake of health and recreation to integrating physical activity into daily routines, including transportation and work-related activities. Labor-saving devices and the automobile have eliminated most activities that were previously built into daily life.

"We need to bring some of this back by thinking about activity-friendly environments," Sallis said.

## FACT

### Did You Know?

Walking to and from school, once considered exercise, has largely been abandoned; current estimates are that only 5 to 14 percent of children walk to school.



“ We need to create environments that make healthful choices easy, then motivate and educate people on how to take advantage of them.”

JAMES SALLIS, PROFESSOR,  
DEPARTMENT OF PSYCHOLOGY,  
SAN DIEGO STATE UNIVERSITY

A modest, but growing, body of literature affords some guidance on how to do this. Sallis cited studies showing that

- aesthetically pleasing environments are associated with more physical activity.
- there is a strong association between spending time outdoors and being active among preschool children.
- there is a direct association between lack of access to outdoor recreational facilities and overweight status among adults.
- the closer people live to a bikeway the more likely they are to use it.
- forty-three percent of individuals who live within 10 minutes of a safe place to walk met the federal guidelines of 30 minutes of physical activity daily, compared to 27 percent who did not have safe places to walk nearby.
- trees, water features, birds, and varied landscapes are the qualities that people say make parks most appealing to walk in.

One of Sallis’s own studies examined the variables that influence middle school children’s decisions to be physically active or not, before and after school and after lunch.

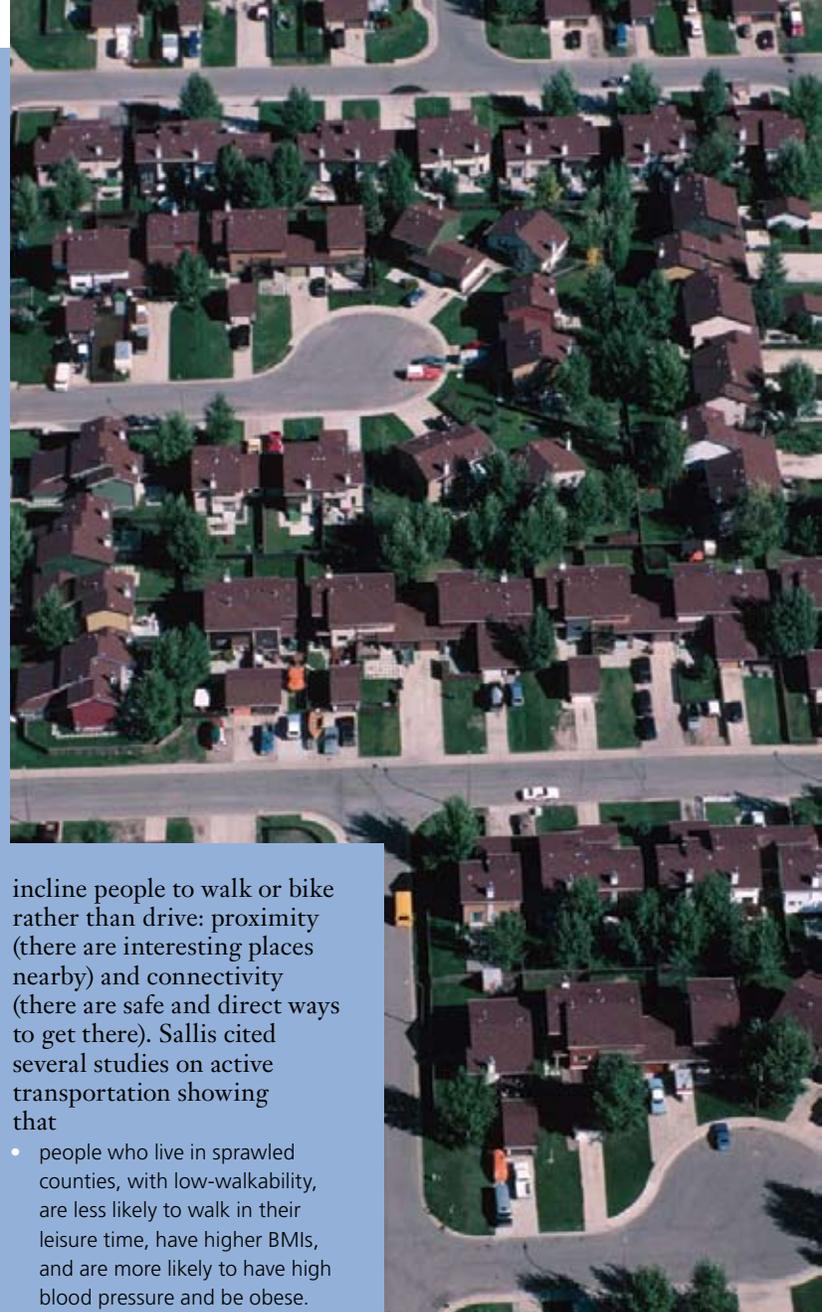
“By assessing various components of the physical social environments, we explained 40 to 60 percent of the variance in physical activity in schools,” Sallis said. “We interpreted this as giving evidence that making practical changes—having places where kids can play, improving them and setting them up for activities, and providing equipment and supervision—can make a big difference.”

Walking to and from school, once not considered exercise, has largely been abandoned; current estimates are that only 5 to 14 percent of children walk to school. Yet studies demonstrate that the more children walk to school the lower their body mass index (BMI) and the less weight they gain over time.

Safety seems to be one reason why so few children walk to class. Sallis cited one study showing that children whose route to school passes safety improvements—including sidewalks, cross walks, and slower traffic speeds—were more likely to walk than children whose route didn’t.

Another pilot study showed that 16 percent of children walked to school but that percentage differed markedly by neighborhood. Twenty-five percent of children from what are called “high-walkability” neighborhoods walked to school versus 11 percent in “low-walkability” neighborhoods. In fact, walkability is a stronger factor than gender and the same as ethnicity when it comes to determinants of adolescent physical activity.

The concept of walkability stems from studies of active transportation. In 1977 about 10 percent of trips in the United States were made on foot; today that has dropped to 5 percent. Two factors



incline people to walk or bike rather than drive: proximity (there are interesting places nearby) and connectivity (there are safe and direct ways to get there). Sallis cited several studies on active transportation showing that

- people who live in sprawled counties, with low-walkability, are less likely to walk in their leisure time, have higher BMIs, and are more likely to have high blood pressure and be obese.
- individuals in high-walkability neighborhoods meet the federal activity guidelines two days a week more than those in low-walkability neighborhoods.
- within the same city, 60 percent of the people in low-walkability neighborhoods are overweight versus 35 percent in high-walkability ones.

Sallis concluded by saying that, while still in its infancy, the ecological approach to obesity is already beginning to generate the kind of research-based knowledge needed to inform policy makers of environmental changes that can affect entire communities for the better, forever. ●●●

FOTORESEARCH

For more information see  
[www.activelivingresearch.org](http://www.activelivingresearch.org)

Changes in the home, workplace, school, community— even in clothing and dishware—could increase our level of physical activity and help us make better food choices.

# Modifying Our Environment Could Slow or Reverse Obesity Trend

BY ROGER SEGELKEN

Is it possible for us to make behavioral changes and live more healthful lives even though we have grown up in a supersize-me environment? Experts are cautiously optimistic that the trend toward overweight and obesity can be slowed—and perhaps even halted and reversed.

This issue was addressed at the College of Human Ecology's Ecology of Obesity conference held June 6 and 7, 2005. In the conference session titled "Environment and Obesity," Nancy Wells, conference co-chair and an assistant professor in Human Ecology's Department of Design and Environmental Analysis and the Bronfenbrenner Life Course Center, explained how the "food environment" contributes to overeating and obesity. "While evolution has equipped us to store fat on our bodies for times of adversity, we now live in a world of abundance and of large portions. The Hershey bar has gone from 2 ounces to 7 ounces. Several studies have shown that large plates, large portions, and large packages influence people to eat more," she said.

But the food environment can be reconfigured to support healthy habits, Wells added, showing a picture of a vending machine in a Cornell campus building filled with fresh, appealing apples and other healthful snacks instead of candy bars.

Ironically, the College of Human Ecology, in which Wells studies health issues, inadvertently may have contributed to today's obesity problem. "The College of Home Economics, as it was previously known, helped engineer physical activity out of daily lives," Wells said, pointing to the step-saving "Cornell kitchen triangle" that put housekeeping equipment within easier reach. "This labor-saving research was directed toward hard-working farm wives," Wells said, "and this technology reduced the energy expenditure to wash clothes, dry clothes, and clean floors. The reduction of homemaking labor is paralleled in the workplace. We spend a great deal of time at the computer, and we send e-mails rather than walking to a colleague's office. The challenge," she said, "is to use technology to redesign physical activity back into our lives."

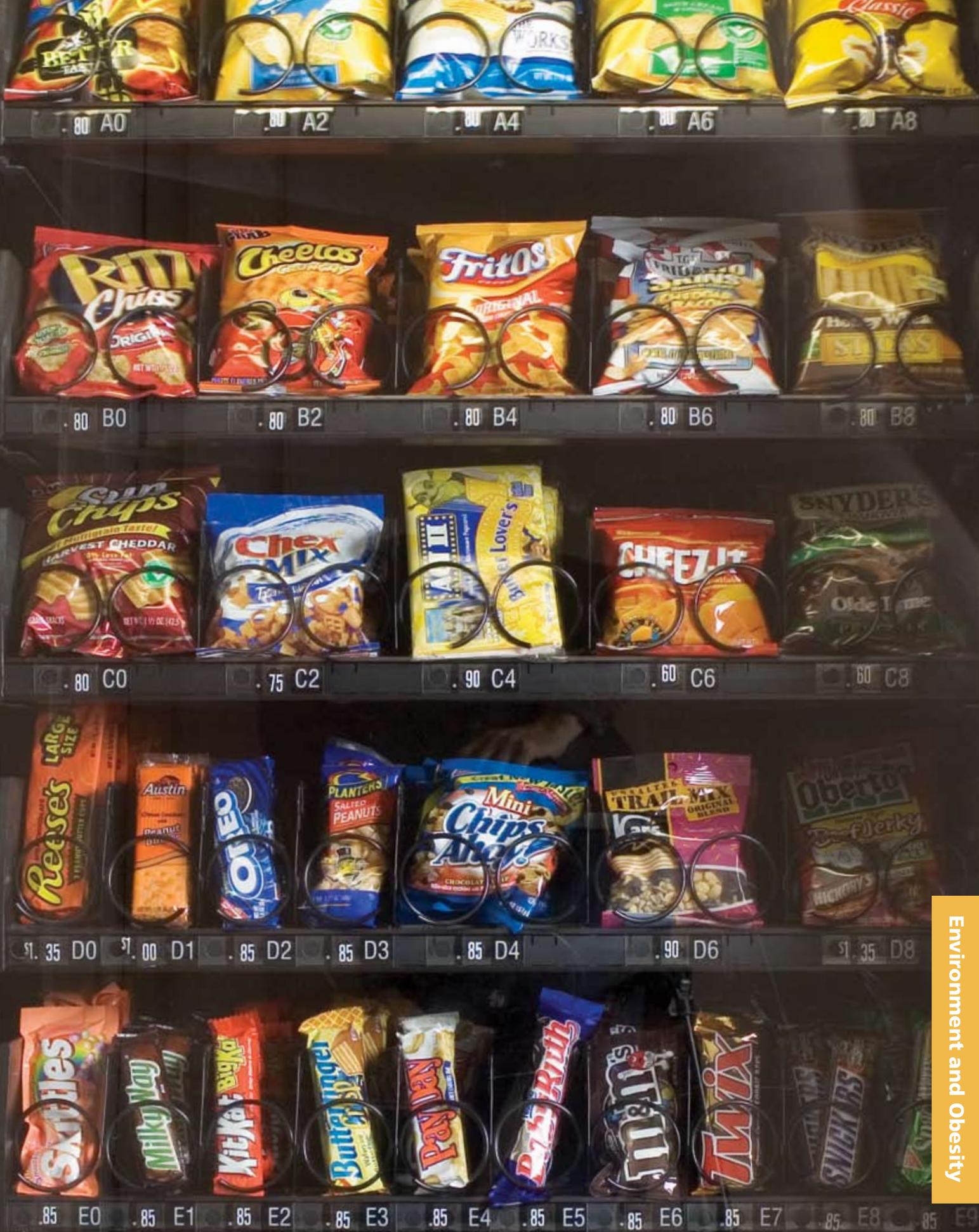
Susan Ashdown, an associate professor in Human Ecology's Department of Textiles and Apparel, scans volunteers' bodies with a computer-based imaging system to learn more about sizing and fit of clothing. Ashdown said that the way we see ourselves in this new image-capture technology can be motivating. "An image of oneself can be a powerful incentive for weight loss or maintenance. Now we are asking ourselves, how can body scanning help us understand the complexities of self image and weight loss and gain?" >>>

## FACT

### Did You Know?

There's a vending machine in a Cornell campus building filled with fresh, appealing apples instead of candy bars.





Environment and Obesity



**Wansink looks for what he calls consumption cues: “the implicit consumption norms that promote mindless eating. Once we are given a plate or a package size, and once we see what people around us are doing, we spend less time saying ‘How much should I eat?’ We just eat.”**

Our most proximate environment, the apparel surrounding our bodies, can either encourage exercise or discourage it, Ashdown added. Having to wear business attire to work is a convenient excuse for not riding a bicycle or climbing the stairs. On the other hand, she said, developments in sportswear materials and design “make it easier for elite athletes to explore and expand the boundaries of human capability in physical activity, and these designs are also available for the weekend warrior.”

Clothing can be designed to provide feedback about movement and even motivate activity, Ashdown pointed out, as she displayed children’s sneakers that light up with each step. Lindsay Lyman-Clarke, a Textiles and Apparel graduate student, created an even more whimsical garment: superhero capes with wrist-mounted pinwheels that spin when the children run. For multitasking adults, Ashdown said, “There’s a solar-powered jacket that encourages people to engage in outdoor activities while charging their technological devices.”

Ashdown and Wells also discussed ways that enlightened building design can play a greater role in helping people become more active. Noting that elevators are usually much more attractive than stairways, they discussed studies that show how adding artwork and music to stairwells encourages usage. And while people in high-rise buildings probably won’t walk to the top, they noted that “skip-stop” elevators, which stop at every other floor, require people to climb at least one flight of stairs.

Kimberly Morland, an assistant professor of community and preventive medicine at Mt. Sinai School of Medicine, discussed the factors that influence a person’s food choices: cost of food, household income, education, cultural differences, and the types of food stores available in a neighborhood. She pointed out that there is a great disparity in the kinds of food stores—supermarkets, groceries, full-service restaurants, fast-food outlets, and convenience stores—available in different neighborhoods.

Healthful, wholesome foods are more likely to be available in supermarkets, rather than at convenience stores and fast-food restaurants, Morland noted. Her research found significantly higher rates of obesity in neighborhoods that lack supermarkets. “Proximity to convenience stores increases the risk of obesity,” she said. Morland’s research, which studied four U.S. neighborhoods, ranging from suburban to inner-city, found that having a supermarket in a neighborhood decreases the number of overweight individuals by 6 percent,

whereas having only a convenience store nearby increases the risk of obesity by almost 50 percent.

“Our findings suggest that the local food environment deserves greater attention as a potentially important causal or contributing factor in the development of obesity,” Morland concluded.

Brian Wansink, who recently joined Cornell’s College of Agriculture and Life Sciences’ faculty in the Department of Applied Economics and Management, had conducted some telling experiments in human perception at the University of Illinois, Urbana-Champaign. Wansink looks for what he calls consumption cues: “the implicit consumption norms that promote mindless eating. Once we are given a plate or a package size, and once we see what people around us are doing, we spend less time saying ‘How much should I eat?’ We just eat.”

To prepare for one perception experiment, Wansink gave graduate students an hour-long seminar on research that shows that big bowls produce big appetites. Six weeks later, he invited the students to a “Superbowl Party,” and his football-fan guests must have missed the cue. Their host set out gallon-size bowls of snacks for some students and the same volume of calorie-laden food—but in twice as many half-gallon bowls—for others. At the end of the party, Wansink asked each guest to estimate how much food they had consumed. “Even these intelligent, informed people ate 55 percent more from the large bowls,” he reported. “And none of the people believed they ate more because of the bowls.”

Some people eat more even if they hate the food, Wansink said. Once, he and his assistants stood in the lobby of a movie theater and offered moviegoers free popcorn in two sizes: large and extra large buckets. Some of the popcorn was freshly popped, but the rest was 14 days old. People with extra large buckets of fresh popcorn ate 45 percent more; but even the people with the stale popcorn ate 34 percent more from the biggest buckets.

Another Wansink experiment was based on an optical illusion: People think a tall, thin glass holds more than a short, wide glass of exactly the same volume. He said that teenagers attending a weight-loss camp were easily fooled, serving themselves 80 percent more beverage in the short glasses. He tried the same experiment with professional bartenders. When told to pour (without measuring) exactly 1.5 ounces of alcohol, the bartenders poured 29 percent more into short tumblers, compared to tall highball glasses.

Instead of being discouraged with human nature, Wansink said the experiments suggest to him intervention opportunities. “Use smaller bowls, but allow people to go back for seconds if they want to. Replace wide glasses with taller ones. Repackage foods into smaller packages. Use smaller serving spoons.”

Alan Hedge, Human Ecology professor of design and environmental analysis, who specializes in workplace ergonomics, is willing to accept some blame for the obesity epidemic. “For the past 20 years, I and my colleagues have been doing more than practically anybody else to contribute to obesity by creating workplaces that decrease physical activity,” he said. The ergonomically correct office has “created a nightmare situation for energy expenditure,” Hedge said, “and has helped the United States become a nation of workaholics. That wouldn’t be bad if working actually involved physical activity,” he added. “But the vast majority of employees are achieving the work they have to do by punching a button or moving a mouse.”

The goal of workplace ergonomics, Hedge observed, “has been to make people as comfortable and as productive as possible. One little keystroke can execute a lot of activities. But once you are in front of the computer and engrossed in what you are doing, two things happen: you completely lose track of time and you don’t move.”

So Hedge’s laboratory now tests new devices to get office workers moving. Some might help, but others he’s not so sure about. The foot supports that move up and down, for example, allow a little exercise and may provide an additional benefit: “It does reduce swelling in the lower legs,” Hedge said. “Most people have significant pooling of blood in the lower legs at the end of the day. There are six million new cases of deep vein thrombosis every year.”

“Dynamic” chairs also were tested in the Hedge lab, and he quickly found a flaw in the concept. “The act of using a keyboard and a mouse locks you in space. It doesn’t matter if the chair is dynamic. The work is static, so you’re still stuck in place,” he said. Movable workstations that allow users to stand up at work are now mandatory in Australia, “but Australians don’t use them,” Hedge said. “In our tests, people only stand for 20 to 30 minutes a day.”

Computers could be programmed with timers, reminding workers to get up and move about, Hedge suggested. He sees a future for wearable, wireless computers that let people roam while working. “We ergonomists have been focusing on labor-saving devices,” Hedge admitted. “We should concentrate on activity-stimulating devices instead.”

Richard Wener, a professor of humanities and social sciences at Polytechnic University, who studied walking patterns among commuters, said that the way people get to work also affects their activity levels. “In Beijing, people commute by bicycle, but that’s just not possible for the majority of people here who have to commute long distances in bad weather and bad routes,” Wener said.

In a study conducted in collaboration with Professor Gary Evans of Human Ecology’s Department of Design and Environmental Analysis, they recruited commuters who travel, either by car or by train, from the same part of suburban New Jersey to Manhattan, then asked them to wear pedometers and record their daily mileage by foot. Compared to car commuters, rail commuters took 30 percent more steps each day—to and from the trains

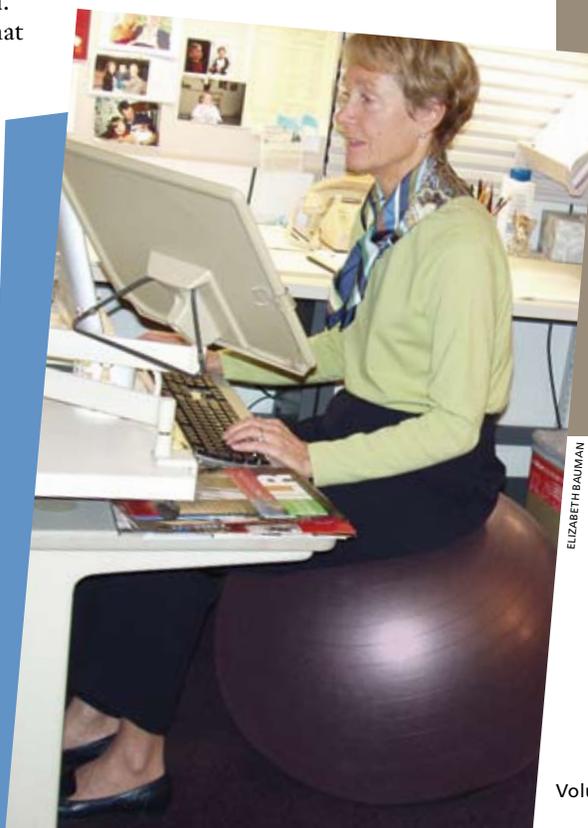
on the New Jersey part of their commutes, and to and from New York’s Pennsylvania Station to their workplaces. Other environmental considerations aside, “Policies that encourage car commuting reduce the amount of physical activity,” Wener said.

If the experts who succeeded so well in making the workplace too comfortable—the ergonomists—can change, there is hope for others, according to Sheila Danko, an associate professor of design and environmental analysis in Human Ecology. “It will take a mindset shift,” she said. “We need to recognize that work is not the priority. Health is the priority. And health comes from a healthy work-life balance.”

David Levitsky, Cornell professor of nutritional sciences, who looks at the intake side of the equation, also thinks positive change is possible. “These are small changes. If you consider that just 3 to 9 additional calories a day accounts for an increase in mass and produces obesity, that makes a reduction of 10 calories a day relevant,” he said. But cutting calories will take willpower to overcome temptation in a time of increasing abundance, Levitsky acknowledged. Recent increases in food production in the United States are making an additional 30 to 50 calories a day available to every American man, woman, and child. ●●●



It doesn’t matter if the chair is dynamic. The work is static, so you’re still stuck in place,” Hedge said.



ELIZABETH BAUMAN

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Burgeoning health care costs and lost work time make obesity expensive for society. Can policies help curb people's appetites for cheap, calorie-dense foods and encourage more physical activity?

# The Economics of Obesity: Costs, Causes, and Controls

BY CLARE ULRICH

The box-office hit *Super Size Me* vividly brought the dangers of fast food and inactivity to the mass media. Most people these days know that diets high in trans fats, sugar, and salt combined with lack of exercise are stepping stones to obesity. Yet 400,000 people die each year in the United States of poor diet and inactivity, an increase of 33 percent since 1990. If the trend persists, obesity will soon replace smoking as the number one cause of preventable death in this country.

Why aren't we getting it?

"Simply telling people to behave differently may not be very effective; you need to alter the trade-offs people face to create incentives for

them to do what you want them to do," John Cawley, associate professor in Human Ecology's Department of Policy Analysis and Management, told listeners during a presentation titled "Economics of Obesity" given at Cornell's Ecology of Obesity conference held June 6 and 7, 2005.

By "trade-offs" Cawley means the kinds of things people gain and give up when they make decisions. "If resources were limitless," he explains, "if we had endless amounts of money and all the time in the world, we could eat anything and everything we wanted and still maintain our ideal weight. But we're constrained by our money; we can't afford everything. We're constrained by time; there are only 24 hours in a day. And we're also constrained by biology; the foods that give us short-term pleasure—like high-sugar, high-fat foods—unfortunately have this long-run impact of raising our weight. When resources are scarce, people have to make trade-offs."

Studying the trade-offs people make sheds light on how economic forces contribute to weight gain. A look at economics is also useful for determining to what extent obesity is a personal issue and to what extent it involves society, Cawley adds. An economic framework can provide justification for whether something should be done about an obesity-related problem—whether the government should be involved, for instance—and what could actually be done to intervene to affect the kinds of decisions people make.

There's no shortage of data quantifying how obesity is very much a public problem, Cawley pointed out. The Surgeon General recently reported that 27 percent of Americans are obese and 61 percent are overweight. About 13 percent of children and adolescents are also seriously overweight, 70 percent of whom are likely to become overweight adults. > > >

## FACT

### Did You Know?

400,000 people die each year in the United States of poor diet and inactivity, an increase of 33 percent since 1990.



Foods that are energy dense—oil, margarine, and sugars—are very cheap per calorie to buy. Healthy foods such as fresh fruits and vegetables and lean meats increase a food budget by 5,000 percent per calorie. These are enormous differences in costs.



Sedentary recreation has become more attractive. Far greater options in television programming and the advent of videos and DVDs have encouraged people to stay at home and watch TV or movies.



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While premature death is one consequence of obesity, the condition is more frequently linked to disease than mortality and requires long-term health management. Complications such as diabetes, arthritis, heart disease, stroke, certain cancers, and depression increase health-care costs for obese people by 36 percent and medication costs by 77 percent. Total health-care costs for obesity-related problems were tabulated at \$75 billion in 2003. Since approximately one-half of these costs are financed by Medicare and Medicaid, U.S. taxpayers' pocketbooks are directly pinched, Cawley noted. Higher insurance premiums add another wallop. In addition, as a result of compromised health, obese people suffer indirect costs such as lost work time and wages, lower productivity, and early retirement to the national tune of about \$50 billion a year. Their employers lose, too.

Fueling the increase in obesity is the average cost of food, which has fallen 15 percent between 1978 and 2000. Supply and demand dictates that when goods get cheaper, people tend to buy more of them. This appears to have happened with food.

But all foods are not priced equally. Cawley cited a study conducted by Adam Drewnowski, professor of epidemiology at the University of Washington, who recorded the cost of food per calorie and the density of calories in various food items. Drewnowski found that foods that are energy dense—oil, margarine, and sugars—are very cheap per calorie to buy and that buying healthy foods such as fresh fruits and vegetables and lean meats increased a food budget by 5,000 percent per calorie. These are enormous differences in costs, which often force consumers—especially people of marginal socioeconomic status—to choose between money and health, Cawley said.

Likewise, sedentary recreation has become more attractive over this same time period. Inas Rashad, an assistant professor of economics at Georgia State University, who also spoke in the presentation, noted that while 2 percent of households in the United States owned television sets in 1950, 98 percent own them now. Far greater options in television programming and the advent of videos and DVDs have also encouraged people to stay at home and watch TV or movies.

While societal changes such as lower food prices and more TV programs may be contributing to the rise of obesity in the United States, policy interventions that alter the relative costs and benefits of certain foods or activities hold promise for offsetting the trend. But, Cawley said, policy interventions are only justified in cases of market failure, or situations in which goods and services do not serve the public interest. By this definition, obesity does not constitute a market failure—nor do lower food prices or increased TV options. Information, or lack of it, may point to a market failure if it confounds the consumer's decision-making, and government could play an important role in correcting it.

For example, before the Nutrition Labeling and Education Act of 1990, consumers had no way of finding out the nutritional content of most foods. Now the government requires that most packaged foods display nutrition labels, and some policymakers are recommending similar labeling for restaurants. The Federal Trade Commission has also filed 80 cases in the past 10 years against the weight-loss industry for making "false, misleading, and exaggerated claims" that put people at risk.

Another possible justification for enacting policy is to protect consumers who may not be able to act in their own self-interest, such as children. "An abundance of precedents exists for treating children differently than adults on the basis of their inability to make responsible decisions," Cawley said. "Cigarette and alcohol sales to minors are banned. Those under age 16 may not drive, while those under age 18 may not vote."

Should similar restrictions be placed on children's decisions to eat unhealthy foods or watch TV at the expense of exercising? Cawley warned that while the overt intention of such policies is protection, too much government control could infringe on civil rights or cloak less-than-altruistic motives.

"Throughout American history, there have been calls to regulate what is ostensibly private behavior, even without any evidence of market failure," he explained. "Moreover, some of the proposals to encourage obese people to restrict their diets, exercise more, or achieve healthy weight may partly be influenced by puritanical disgust for sloth and gluttony."

Patricia Anderson, a professor of economics at Dartmouth College, has been studying changes that have occurred in the home and school environments since the 1970s that may have contributed to the tripling of child obesity rates.

Anderson found evidence that children of mothers who work full-time are more likely to be overweight, especially those in the upper quartile of income. Between 1975 and 1994, the average hours worked per week for top-income women increased from about 20 to 27 hours as the obesity rate for children of these women increased from 2 to nearly 10 percent. Changes in mothers' behavior with regard to nutrition (such as more reliance on calorie-dense convenience foods) and physical activity (such as being unable to supervise vigorous outside play) are possible mechanisms contributing to children's obesity. However, Anderson explained, since her data explain only a third of the increase in child obesity, other factors clearly exist.

In addition to the home, the other place children spend the bulk of their time is school. Anderson found that almost half of all high school students have no physical education classes, and almost all of them have access to vending machines and are served brand-name fast foods in school. To make matters worse, Anderson pointed out, over the last decade, cash-strapped schools have accepted contracts with soda and vending-machine companies in order to increase their budgets, in some cases by as much as \$11.1 million over 10 years. In exchange for payment, 73 percent of high schools agree to sell one brand of soda, while 46 percent allow vendors to advertise at the school or at school activities. Additionally, 64 percent of high schools receive a percentage of sales, with 39 percent collecting an additional payment for reaching sales targets. While Anderson's research revealed that students in schools where junk foods are available have nearly a 1 percent higher average body mass index (BMI), that effect more than doubles in children with an overweight parent. She recommended further research.

"It's an economic reality of the marketplace that most kids are going to live in a family without a stay-at-home parent," Anderson said. "Given that this is true, and given that it appears that there's some effect on children's health through obesity, what can we do about that?"

Policies that encourage a parent to stay at home are unlikely, she pointed out, implying that school-based interventions may be more effective. Anderson said that we need a better understanding of how school finance policies affect school physical education and food and beverage decisions, and how these choices affect children's health. Legislators are listening and have begun to restrict deals between junk-food and soft-drink vendors and schools.

"Many of the same fast-food companies that advertise on TV are also giving a lot of money to public schools," Rashad added. Her research explored the causal relationship between children's

exposure to television advertising by fast-food restaurants and obesity. It is based on the premise that consumers derive more utility (happiness) from consuming a well-advertised product.

Measuring the number of hours of television fast-food restaurant advertising messages children saw per week, Rashad found that exposure to fast-food advertising has a positive and significant effect on children's and adolescents' overweight status, except for female adolescents. She calculated that a complete ban on advertising would have the impact of reducing the percentage of overweight teenage boys by 20 to 31 percent, 12 to 29 percent for male children (ages 3–11), 4 to 15 percent for female children, and 1 to 5 percent for teenage girls.

Rashad recommended disallowing food advertising as a tax-deductible business expense. Since the corporate income tax rate is 35 percent, she calculated that elimination of tax deductibility would increase the price of advertising by about 54 percent and reduce fast-food restaurant messages seen on TV by about 48 percent for children and 25 percent for adolescents. The policy could potentially reduce the number of overweight children by 4 to 5 percent and overweight adolescents by 3 to 6 percent. Rashad is convinced that "there is more rationale for government intervention with regard to children and adolescents than there is for adults."

Because economic and social environments change much more quickly than human biology, they have driven many of the recent changes in obesity patterns. But their inherent instability offers hope.

"Industry produces and sells the goods or services that yield the highest profit," Cawley explained. "But this is not a bad thing for society, as industry's desire to earn profit leads it to sell exactly the items that satisfy consumers' desires. The fact that American industry sells a lot of high-fat foods and not very many abdominal exercise machines is not evidence that industry is evil and is attempting to fatten American people, but is a reflection of consumer sentiment that high-fat foods are tasty and exercising can be a chore." On the other hand, Cawley recalled diet soda and Olestra as examples where the food industry has sought ways to increase profit by decreasing the impact of their products on body weight, and the pharmaceutical industry is currently developing drugs to help alleviate obesity, a market that is expected to grow to \$1.3 billion by the year 2010. The profit incentive built into the U.S. economy can work in tandem with Americans to help them get leaner—if consumers are clear about what they want and make their demands known.



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By looking at the course of individuals' and groups' lives over time, researchers can see early warning signs of obesity and determine opportune times for intervention.

# Researchers View Obesity from a Life Course Perspective

BY ROGER SEGELKEN

The extra pounds and inches that make a body overweight do not appear overnight. The same can be said of the causes and risk factors for an obese population. Researchers agree that it has taken a lifetime of experiences—perhaps several lifetimes across multiple generations—to build the momentum (and mass) that now dooms millions of Americans to a dismal future of ill health.

In a presentation titled “Obesity and the Life Course” during Cornell’s Ecology of Obesity conference held June 6 and 7, 2005, experts viewed obesity from the life course perspective, which, they said, can reveal both early warning signs and opportune moments for constructive intervention.

The life course perspective brings together psychology, sociology, and human development to examine individuals’ and groups’ periods of stability and periodic changes in beliefs and behaviors over their life spans and over time, according to Elaine Wethington, an associate professor of human development and sociology, and a faculty member of the Bronfenbrenner Life Course Center in the College of Human Ecology. When those beliefs and behaviors involve human health, Wethington adds, the life course perspective helps scientists understand how the environment shapes activity levels, how dietary behaviors change over time, and how people adapt throughout their lifetimes to changing circumstances.

“That’s why studies with children are so important. Childhood is when food preferences are formed, and those preferences will have an impact on health and behavior across the life course,” Wethington said.

Adherents of the life course perspective think in terms of trajectories, pathways, transitions, and turning points, according to Wethington. They try to learn how culture, external events, and what they call contextual influences affect people’s lives, as well as how linked lives—usually within families and workplaces or between partners—have an impact on how people change and adapt.

“Look at how significant others have an impact on health and behavior,” Wethington said, “how parents have impact on how their children eat. Or how your work network has an impact on whether you go out to eat and what you eat. Marital partners have an impact on health and weight and how much you eat and when you eat it.” >>>

## FACT

### Did You Know?

Parents pass on the genes related to regulation of body weight and they create the environment in which young children live and grow.



PHOTO: DISC



Obesity and the Life Course

*Olson said that interviews with participants in the poverty-obesity study revealed some lasting effects of growing up poor.*

One woman told us, 'I panic when there is no food in the house. When it is there, I am calm.'

The timing of external events—the announcement of a scientific discovery with health implications, for example, or a major change in healthcare protocols—can be important if that event coincides with a critical period in an individual's life. "You can only adapt in ways that you know at that time, or with the types of strategies that are available to you at your particular age and level of experience," Wethington noted.

She said the concept of trajectories "has the promise of insights into how eating behaviors develop over time and why change can be so difficult. Studies of when trajectories appear to change suggest when it is easier to help someone; that is, when he or she is in a period of transition."

Kirsten Davison, assistant professor of health policy, management, and behavior at the University at Albany's School of Public Health, said she tries to combine knowledge of the "ecology of families" with the life course perspective. To reverse the trend to obesity, Davison said she would provide families "with the skills and support to promote healthy lifestyles among all family members. This is the key place we need to start in the prevention of obesity, and we need to start early. Eating behaviors, physical activity patterns, and TV viewing habits develop early in life, in the context of the family, before children enter school."

Early habits show continuity across time, according to Davison, "and they are more difficult to change as time elapses and habits become ingrained. Parents pass on the genes related to regulation of body weight and they create the environment in which young children live and grow; parents really load the gun and then they pull the trigger."

Davison's prescription for a healthy family environment calls for more healthful foods and less junk foods, more physical activity involving the entire family, and less television watching. "Parents themselves need to develop healthy eating behaviors because there is a trickle-down effect," she said. "Making a variety of healthful foods available and accessible in the home will increase the likelihood children will consume and learn to prefer these foods."

A mother with young children, Davison recommends continuing to offer healthful foods even though the child rejects it at first. "Among infants, preference for vegetables can take up to eight exposures before a baby will actually accept these vegetables. Physical activity can be encouraged by facilitating children's participation in organized events and incorporating physical activities in family time," she said. "Instead of watching a movie together, go for a bike ride or go roller blading."

Appalled by a recent finding—that 40 percent of American preschoolers have personal television sets in their bedrooms—Davison said parents should limit their own TV viewing, remove television sets from children's rooms, and place clear limits on how much television children can watch.

Stephen Cook, a specialist in pediatrics and internal medicine at the University of Rochester, takes a biological perspective on the changes that occur throughout lifetimes. Two changes in particular worry him: the development in individuals of the so-called metabolic syndrome and the tendency for components of the metabolic syndrome to show up in younger and younger populations, including adolescents.

The World Health Organization (WHO) defines metabolic syndrome as a clustering of risk factors around insulin resistance and obesity—including abdominal obesity, glucose intolerance or insulin resistance, elevated blood pressure, and lipid abnormalities.

"Metabolic syndrome has emerged as being as strong a contributor to heart disease as cigarette smoking," Cook said. "It is important to recognize the syndrome and treat it with lifestyle changes," he said, adding that approximately 25 percent of American adults are affected by metabolic syndrome.

Even more worrisome to pediatrics specialists such as Cook is the early onset of metabolic syndrome in children. "The rate of increase in children with Type 2 (adult) diabetes is devastating," he said. "In adults, the risk factors [for metabolic syndrome] can take decades to accumulate. In adolescents, we're seeing some risk factors in just years or months. Children are definitely laying down cholesterol and laying it down in greater degrees than adults."

Psychological and environmental stresses also can be predictors of metabolic syndrome in children, Cook noted. "Children who score higher on scales for hostility and psychological stress have higher BMIs [body mass indexes] and higher rates of insulin resistance." Survivors of childhood cancers are particularly susceptible to metabolic syndrome, Cook said, and smoking or exposure to tobacco smoke also is a risk factor.

Treating metabolic syndrome in adults requires multiple medications and help to make behavior changes, Cook observed. So prevention—as early as childhood—"is hugely important. If parents have a clustering of metabolic syndrome factors, their children are much more likely to have inherited or acquired those factors, too," he said.

One kind of psychological stress is the experience of "growing up poor," according to Christine Olson, the Cornell professor of nutritional sciences who helped conduct a multistate study of the links between obesity and poverty.

The study, which was conducted in part in two upstate counties in New York, found that mothers who were poor as children were twice as likely to be overweight or obese than women who had grown up in families who were not poor. One preliminary conclusion of the study is that socioeconomic status-related differences in parenting practices lead to behavioral patterns in childhood, and throughout life, that

increase risk of obesity. Binge-like eating patterns, for example, were more common in mothers who had grown up poor.

Olson said that interviews with participants in the poverty-obesity study revealed some lasting effects of growing up poor. "One woman told us, 'I panic when there is no food in the house. When it is there, I am calm.' She said she remembered the deprivation when her father's factory went on strike, and now she obsesses about shortages of food, particularly when she perceives an economic threat. People told us they were happy when the cupboard was full. They had developed an emotional attachment to food."

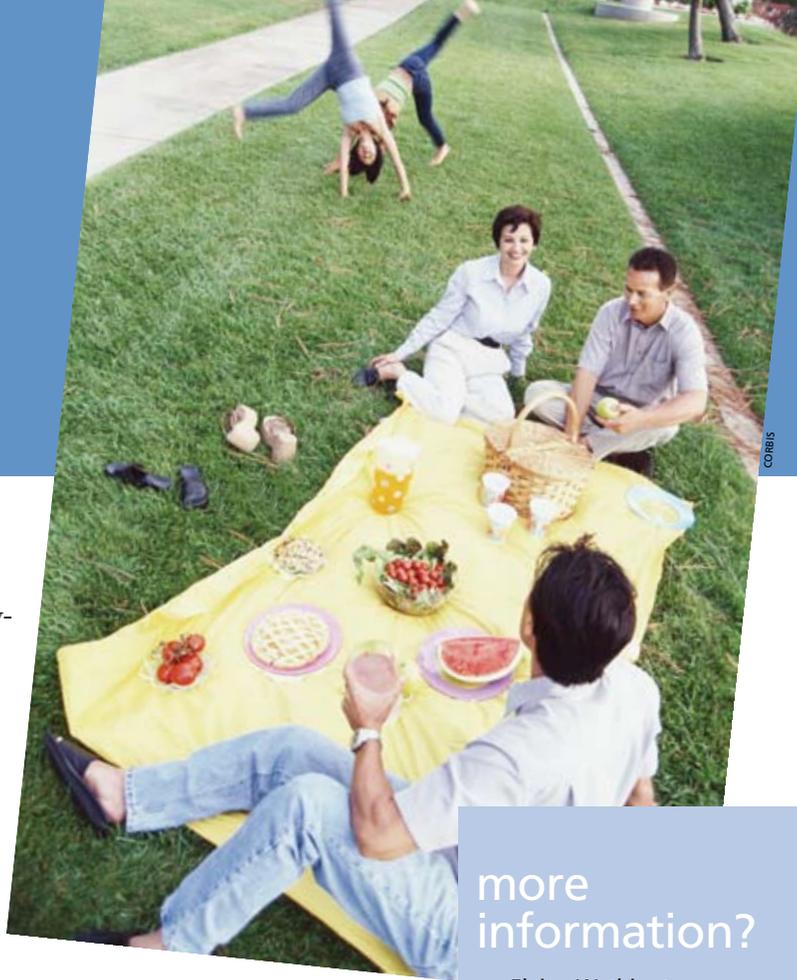
The nutritional scientist said some people who had experienced food insecurities and deprivation in childhood compensate as adults by "stocking" more food than they need. "One woman said she always has a garden and the freezer is never empty. She bargain shops in big lots. She told us, 'I will never be hungry again. I've been through it and it's not fun.'"

The study found adults had developed eating habits "in response to negative affective states in their youth," Olson said. "We heard one woman say, 'When my sister and I were growing up, there were times when we went to bed with nothing. And it wasn't my mother's fault. She worked hard.' When food became available, she would eat until she 'had a big stomachache. Then we would sleep.' She had an awareness that now, today as an adult, when things get tough, she is doing the same things because she remembered the pleasure and relief she got from overeating. Eating would calm her down, almost like a sedative."

Of particular interest to the nutritional scientists conducting the poverty-obesity study is how a second generation of poverty affects today's children. She said one father told of coaching his children through weeks of lean times and encouraging them to anticipate the last week of the month when their family would have enough money to buy food. "That excitement and pleasure, when food does become available, can lead to overeating," Olson said.

Growing up in the context of poverty and food deprivation may well be predisposing today's children to develop obesity in adulthood. "During adult life, food insecurity and other life stresses may trigger a reversion to emotional eating patterns and overeating learned in childhood," Olson noted.

From the life course perspective, Wethington would say the children of poverty are following a behavioral trajectory that was created in childhood. "A trajectory is a stable pattern, in this case a pattern characterized by a lifestyle relating to health or progress toward chronic disease. A trajectory has momentum; it has stability. And while there can be multiple trajectories in an individual person's life, trajectories tend to be consistent and to reinforce one another. But trajectories can change, "



Corbis

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Wethington said. "There can be transitions and turning points. Events that occur in the environment can change trajectories."

Public health interventions to break the obesity cycle could well start with families, according to Davison. "There are a number of ways parents can influence children's obesity-related behaviors," she said, "including knowledge and beliefs of the parents, modeling, and shaping."

Gary Evans, Human Ecology professor of design and environmental analysis, who was a responder to the presentations, quoted B. F. Skinner as saying, after a career devoted to shaping behavior: "It is much easier to change the environment than to change behavior." Public health professionals, including faculty in the College of Human Ecology, are initiating environmental approaches to obesity prevention. Several of these are described in this issue of *Human Ecology*. ●●●

Declines in physical activity and unhealthy eating habits are making more and more children overweight. To reduce the problem, strategies that involve families, schools, and the whole community are needed.

# Youthful Obesity Is Epidemic

BY TAMAR MORAD



Working to reduce obesity in America “is going to be a long haul,” according to Richard Kreipe, M.D., professor of pediatrics and chief of the division of adolescent medicine at Golisano Children’s Hospital at Strong Memorial Hospital in Rochester, N.Y. Kreipe is also the director of the Leadership, Education, and Adolescent Health Program and the director of the Child and Adolescent Eating Disorders Program at the University of Rochester Medical Center.

Kreipe gave a presentation titled “Youth and Obesity” at Cornell’s Ecology of Obesity conference held June 6 and 7, 2005. He noted that the top two public health issues of major concern to the nation are declining physical activity and increasing overweight or obesity, as outlined by *Healthy People 2010*, the national public health framework designed to identify the most significant health threats to Americans and to establish national goals to reduce those threats. Physical activity and overweight/obesity are also the World Health Organization’s number one and two health indicators.

There has been an “epidemic increase,” Kreipe said, in overweight children, according to the National Longitudinal Survey of Youth, conducted over a 12-year period from 1986 to 1998. The study found that all racial groups experienced increasing rates of obesity. The study examined physical activity in 2,400 girls (half of them African American, half Caucasian), and found a decline in physical activity in 100 percent of African American girls and 56 percent of Caucasian girls. By the age of 16 and 17, there was no habitual leisure physical activity in 56 percent of African American girls and 31 percent of Caucasian girls. This is “very concerning to us all,” Kreipe said.

Kreipe pointed to several developmental issues that relate to adolescent obesity. First, while the onset of puberty has always been considered age 11 in most girls, now the average age for the onset of breast development in girls has dropped to age 8 or 9, which Kreipe attributes primarily to increased nutrition, although there may be other environmental causes as well. >>>

# FACT

## Did You Know?

Young people list many reasons behind increasing obesity: primarily insufficient exercise, eating the wrong foods, lack of structure in terms of meal times, and eating out.

## more information?

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Second, obesity may change how adolescents grapple with autonomy: issues of self-control, readiness to change, and their relationships with parents and other authority figures. That is, being larger may give some adolescents a physical advantage over their peers and may make them more likely to challenge adults.

According to Kreipe, obesity also may interfere with the process of understanding identity—namely, self-esteem and self-concept—another key developmental issue in adolescence. To the degree that an adolescent's perception of herself or himself is determined by physical appearance, size, or weight, her or his drive to either gain or lose weight could be affected. Part of the process of developmental progress also includes family history. Kreipe said that if adolescents know they have a family history of obesity, then they might feel as though they're fighting an uphill battle to lose weight or to stay thin.

Cognitive processes also can play an important role, Kreipe said. Adolescents may have a difficult time considering the long-term consequences of issues when faced with the immediate gratification of eating some high-calorie, good-tasting snack, especially when they are in a social situation or when they are feeling depressed. Finally, nutrition concepts are difficult to understand for adults and may be even more so for adolescents.

The obesity epidemic should be addressed in a comprehensive, community-based way, Kreipe pointed out. He cited an article by Karen Pittman, executive director of the Forum for Youth Investment, entitled "What's Health Got to Do with It?" in the Forum's May/June 2005 newsletter. That article notes that civic engagement, physical health, vocational readiness and success, educational attainment, and social and emotional health are all important issues that must be addressed to reduce delinquency and violence, sexual activity, substance abuse, unemployment, isolation, depression, dropping out of school, and illiteracy among America's youth. Kreipe said he proposes adding overweight and obesity to the list of issues to be addressed to fend off this litany of social ills.

In her article, Pittman writes that "quick-fix" programs that target high-risk youth aren't enough. Kreipe pointed out that high-risk youth are not the target. Rather, he said, "we want to raise the water level for all youth," so that they all benefit from positive developmental opportunities. Communities must move away from "problem reduction," he said, and toward prevention of obesity by providing services, support systems, and many opportunities for youth.

Kreipe highlighted a recent monograph published by the Institute of Medicine in New York called *Preventing Childhood Obesity: Health in the Balance*. According to the monograph, "Prevention of obesity in children and youth is, ultimately, about community—extending beyond individuals and families and often beyond geographic boundaries to encompass groups of people who share values and institutions. . . . In

recent years, many public health professionals and community leaders have recognized the need for community involvement in preventing disease and promoting healthful lifestyles. Consequently, they have attempted to capitalize on the naturally occurring strengths, capacities, and social structures of local communities to institute health-promoting change."

Community programs, he said, should collaboratively develop and promote programs that encourage healthful eating behaviors and regular physical activity, particularly for high-risk populations. They should promote efforts to eliminate health disparities that should include obesity prevention as one of their primary areas. And community evaluation tools should incorporate measures of the availability of opportunities for physical activity and healthful eating.

A panel of seven New York teens from Ithaca and Dryden shared their views on the matter, providing possible explanations for the epidemic, concerns about how it should be fought, and potential remedies. They listed many reasons behind increasing obesity: primarily insufficient exercise, eating the wrong foods, lack of structure in terms of meal times, and eating out. One panelist complained that schools serve unhealthy food, and that after school, students snack on junk food at home and watch television rather than playing outside. Another noted that many kids skip breakfast at home and often pick up a far less healthy breakfast at school. Kreipe added that the average American kid doesn't eat breakfast. One female member of the panel noted that young people model what their parents do, and if parents are obese, or habitually on diets, children will imitate their parents' eating behaviors.

The panelists themselves were, overall, involved in school sports or were otherwise physically active, and voiced satisfaction with their own weights and body image. But they said that many of their friends and acquaintances were less active and in some cases obese.

One male student said he works on his family's dairy farm every day, which keeps him physically fit. Another, a female student who is home schooled, said her family is in good shape, which she attributes to a family culture of activity. They are members of the YMCA and she and some family members frequently ice skate in the winter.

The panelists offered varied suggestions for reducing caloric intake and becoming more physically active. Among the recommendations:

- A weekly or otherwise regular community physical activity, which would both help kids burn calories and decrease the time they are at home or otherwise near food to snack.
- Greater parental involvement in kids' schedules. This panelist remarked that most parents aren't home when their kids get home from school and don't require their kids to do chores, which are time-consuming, often calorie-burning, and keep mouths away from food.
- Community-wide or school-wide sports, which enable kids who are not selected for athletic teams to compete.
- Maintaining regular gym classes several times a week.
- Eating a water-based soup or a salad before a meal to decrease the amount of high-calorie food consumed during a meal.

One female panelist voiced concern that pushing adolescents too hard to reduce their food intake could result in a jump in the number of cases of anorexia nervosa among girls.

The panelists pointed out gender differences related to weight loss and self-concept. Females are more self-conscious than males about their weight and more concerned about keeping thin, they said. Males often feel at a disadvantage if they are overweight, but not quite as much as females do. In many cases, overweight can be an advantage for men—for instance, if they play football.

Kreipe ended his talk with a test run of "Dance, Dance Revolution," a game in which players match their foot movements with signals on a screen. To get teens to be more physically active, Kreipe noted, "We have to make it fun." ●●●



# Obesity Shows Socioeconomic and Racial/Ethnic Disparities

METTA WINTER

In a national study, Penny Gordon-Larsen has found that individuals who live in economically advantaged neighborhoods, where the education level is high and the population predominantly non-Hispanic white, have greater access to both publicly funded and privately owned facilities and resources that promote physical activity.

“We really expected to find public facilities—schools, public swimming pools, tennis courts, parks, youth centers, and YMCAs and YWCAs—to be more equitably distributed. Instead, we found that they, too [like member-only athletic clubs and instructional classes] were more likely to be situated in more advantaged communities,” said Gordon-Larsen, an assistant professor in the Department of Nutrition at the University of North Carolina, Chapel Hill. At Cornell’s June 2005 Ecology of Obesity conference, Gordon-Larsen gave a presentation on “Socioeconomic and Racial/Ethnic Disparities in Obesity.”

The consequence of such an environmental disparity is significant for weight control. In a related study, Gordon-Larsen found that having a single facility decreases the likelihood of individuals in the community being overweight and increases the likelihood that they will meet the federally recommended activity guidelines of engaging in five or more bouts of moderate to vigorous physical activity per week. Results of a study examining another modifiable environmental factor—physical education (PE) in schools—showed a similar result when the data were adjusted for age, sex, and urbanicity. Those children who had PE at least one day a week are 44 percent more likely to be highly active than those who have no PE at all. Those children who have PE five days a week are more than twice as likely to be highly physically active. And those who use recreation centers are 75 percent more likely to be highly active.

“These results underscore the importance of such programs and that we should be more aggressive in calling for PE in schools and the establishment of community recreation centers,” Gordon-Larsen said.

She presented findings from a number of other studies that help to further identify populations at high risk for obesity, one being individuals living in rural communities. “There is a general idea that if you live in a rural environment, you would be more physically active, but that isn’t necessarily true,” Gordon-Larsen said.

Of the gender and racial/ethnic groups included in the study (non-Hispanic white, non-Hispanic black, Hispanic, and non-Hispanic Asian), non-Hispanic black women are by far at greatest risk, according to Gordon-Larsen.

Second-generation immigrants, regardless of home country, make up another high-risk group. Among people immigrating to the United States from Mexico, Asia, Puerto Rico, and Cuba, the prevalence of overweight individuals is higher among the generation born in the United States.



**We should be more aggressive in calling for physical education in schools and the establishment of community recreation centers.”**

PENNY GORDON-LARSEN,  
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CHAPEL HILL

Individuals with lower economic status are also at higher risk to be overweight. “Research on the relationship between overweight status and income shows an inverse relationship: the higher the income level, the less likely the individual is to be overweight. However, we found that this is only true for Hispanic and non-Hispanic white females. Among black females, there is no protection against obesity at higher income levels. Both higher-income and lower-income black females are at high risk for obesity,” Gordon-Larsen said.

The findings of an analysis of data from the National Longitudinal Study of Adolescent Health, in which samples were added to enhance the representation of minorities, showed that by the time young people reached the age of 26, non-Hispanic black females were at particularly high risk for developing a Body Mass Index (BMI) greater than 40, an indication of extreme obesity.

In their teen years, Hispanic and non-Hispanic black young women had the lowest physical activity level of the racial/ethnic/gender groups and, as they aged, their activity level decreased dramatically. Yet, over these years, the amount of time engaged in sedentary behaviors, as measured by time spent in front of video, TV, and movie screens, remained the same.

What are needed now, Gordon-Larsen said, are

- studies addressing inequality in health behaviors and outcomes by race/ethnicity and socioeconomic status.
- recognition that prevention and early health promotion are key.
- life course studies leading to understanding critical periods and optimal times for intervention.
- longitudinal studies looking at changes in health behaviors and outcomes over time.
- ecological approaches at all levels of influence on health behaviors.
- transdisciplinary approaches to address etiology, treatment, and prevention of obesity.

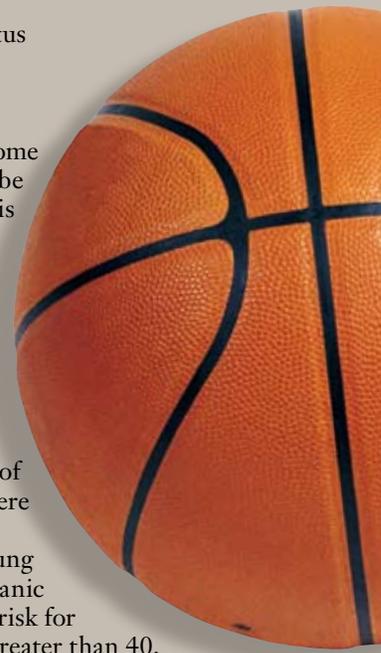


IMAGE CLUB  
GRAPHIC

# Cornell NutritionWorks Web Site Nourishes Community Practitioners

CLARE ULRICH

One hundred years ago, Martha Van Rensselaer drove throughout upstate New York to bring information about nutrition and hygiene to rural farm wives. Today, Christina Stark, extension associate in the Division of Nutritional Sciences, uses a 21st century means of delivering extension education; she is using the Internet to connect nutrition professionals throughout the nation and the world with current research in their field, which ultimately benefits the people they serve. Stark is the program leader for Cornell NutritionWorks, an interactive web site that offers professional development to

nutrition and health practitioners, including Cornell Cooperative Extension nutritionists serving residents throughout New York State.

The web site ([www.nutritionworks.cornell.edu](http://www.nutritionworks.cornell.edu)) uses distance technology to provide a variety of continuing education opportunities for the target audience. Cornell NutritionWorks members can interact with Cornell faculty through an Ask the Nutrition Expert feature, access cutting-edge nutrition information, download resources and tools that enhance practice, participate in discussion forums with peers, and take online self-assessments for continuing professional education units. In addition, the web site offers the latest nutrition research from the Division of Nutritional Sciences, recommends links, and has a complete reference center.

“NutritionWorks was developed to meet the needs of community practitioners who feel professionally isolated, who want to keep up to date with the latest research-based nutrition information, who want to interact with researchers and peers, and who don’t have the time or funds to travel for continuing education,” Stark explains.

Membership in Cornell NutritionWorks became free in 2004, and new members can register easily online. To date, there are more than 2,400 members, who come from all 50 states and 46 countries.

At the moment, over 20 topics designed to provide continuing education credit are available. The presenters are predominately faculty members within the Division of Nutritional Sciences; Stark has also featured experts from institutions outside of Cornell. For example, some of the newest offerings will include audio-visual cyber-presentations of invited speakers who participated in Cornell’s Ecology of Obesity conference in June 2005. These include James Hill from the University of Colorado on obesity and energy balance, James Sallis from San Diego State University on obesity and the built environment, and Penny Gordon-Larsen from the University of North Carolina on socioeconomic and racial/ethnic disparities in obesity. Plans are underway to make additional resources and materials resulting from the Ecology of Obesity conference available on Cornell NutritionWorks.

If a member chooses to take an offering for continuing professional education credit, the charge is \$15 per credit, which can be paid online. A certificate of completion is instantly available, and each member’s progress is tracked with a personalized transcript. Cornell NutritionWorks is a Commission on Dietetic Registration Accredited Provider. The offerings for credit cover a spectrum of subjects—such as childhood obesity, low-carbohydrate diets, regulation of genetically engineered foods, trans fatty acids, and infant formulas.



COURTESY OF THE DIVISION OF RARE AND MANUSCRIPT COLLECTIONS, CORNELL UNIVERSITY LIBRARY (COLLECTION #23-2-749, ITEM #PK-610-1)

then

This Extension car was used beginning in 1913 to take information about nutrition and health to rural farm wives in New York State.

Several of the web site's features were designed specifically to connect professionals with one another or with researchers. The Ask the Nutrition Expert service allows members to interact directly with Cornell nutrition experts through e-mail and receive individual replies, which are then posted online. A new topic is offered every few months, and previous topics are available in the archive. General, as well as topic-specific, discussion forums offer opportunities to network with peers.

A new Cornell NutritionWorks course under development will focus on preventing childhood obesity using an ecological approach. Stark received a Faculty Innovation in Teaching grant from Cornell to develop this course and is collaborating with Cornell Information Technologies and eCornell, which offers the university's professional and executive development curriculum online. The course will provide a practical and research-based curriculum on childhood obesity prevention, which will be offered over a set four-week period. In contrast with current NutritionWorks offerings, which members can complete at any time and in one session, participants will take this new course together over a four-week period. Assignments will have deadlines, but these can be completed within a flexible time frame. By the end of the four weeks, participants will have developed their own action plan describing a collaborative, ecological approach (as opposed to an individual, behavioral approach) to addressing childhood obesity prevention in their communities. The course is being pilot tested with several groups of community practitioners.

"This course will be the first of its kind for Cornell NutritionWorks," Stark says. "Unlike our other offerings, we'll have a facilitator interacting online with participants and reviewing their assignments." Stark is the facilitator for the pilot test. This is also the first time an eCornell course is being integrated into an online professional development program in the College of Human Ecology.

In addition to Stark, other members of the Cornell NutritionWorks faculty team developing the new course include Division of Nutritional Sciences' Associate Professor Carol Devine, Associate Professor Jamie Dollahite, Professor Christine Olson, and Research Associate Wendy Wolfe.

The pilot group is using online evaluation tools to provide quantitative and qualitative feedback on content and usability. Stark is also arranging a videoconference so that participants and the faculty team can meet virtually to evaluate their experiences with the course. An Extension Distance Learning Innovation Project grant, which Stark received from the College of Human Ecology, is helping to fund the evaluation.

"I'm looking forward to creating a sense of camaraderie among professionals who come to the site regularly and interact with each other," Stark says.

Cornell NutritionWorks will lead to more informed practitioners, who can work collaboratively with policy makers and other stakeholders to address critical nutrition issues such as childhood obesity, according to Stark. With its focus on capacity-building of professionals, Cornell NutritionWorks lays the groundwork for positive change. ●●●

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CHRISTINA STARK,  
EXTENSION ASSOCIATE,  
DIVISION OF NUTRITIONAL SCIENCES,  
CORNELL UNIVERSITY

now

[www.nutritionworks.cornell.edu](http://www.nutritionworks.cornell.edu)

Cornell University

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# Cornell NutritionWorks

About Us What's New

Continuing Education. Online. Anytime.

## Welcome

Welcome to Cornell NutritionWorks, the website for nutrition professionals. Sponsored by the Division of Nutritional Sciences at Cornell University, Cornell NutritionWorks uses distance technology to provide an affordable, convenient way for you to meet your professional development needs. As a Cornell NutritionWorks member you can:

- Stay up to date on timely nutrition topics
- Interact directly with Cornell experts
- Communicate with other practitioners
- Earn continuing education credit, instantly online

Becoming a member is easy. Simply fill out the short registration form. There is no charge for membership. To find out more, check out the [Benefits of Membership](#), [Types of Offerings](#) and [About Us](#). To find out our latest offerings, check out [What's New](#).

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CNW Top

# What's new. . .

## Obesity Issues in New York State

"Many people in the United States and abroad are coming together to address the issue of childhood obesity, yet some of those we need to talk to the most are not sitting in the room." With this opener, New York State Assemblyman Felix Ortiz, chair of the Task Force on Food, Farm, and Nutrition Policy, called on the participation of corporate America in dealing with this critical challenge to the public's health, in the presentation "Obesity Issues in New York State" at the Ecology of Obesity conference held at Cornell June 6 and 7, 2005.

"Our children and grandchildren will be employed by them," Ortiz continued. "I do not believe it is in the interest of corporate America, or of the government, that only the not-for-profits are looking out for our children."

Ortiz, Democrat from the 51st district, has authored and pressed for the passage of numerous bills to mobilize the power of the Assembly to make New York a leader in, as Ortiz puts it, "doing the right thing."

Two bills currently pending, A05664 and A05665, would impact corporate America. The former amends the public health law to require chain restaurants to provide the calorie, saturated and trans fat, carbohydrate, and sodium contents of foods they serve. The latter, euphemistically referred to as the "fat tax," would add an additional 1/4 of 1 percent sales tax on sweets and snack foods as well as on the sale and rental of video and computer games, video game equipment, and video and DVD movies. The revenues—estimated to exceed \$50 million annually—would be used solely to help fund childhood obesity prevention programs throughout the state.

Nutrition Facts	Serving Size	Calories	Calories from Fat	Total Fat (g)	% Daily Value	Saturated Fat (g)	% Daily Value	Trans Fat (g)	Cholesterol (mg)	% Daily Value	Sodium (mg)	% Daily Value	Carbohydrates (g)
Hamburger	3.7 oz (105g)	260	80	9	14	3.5	17	0.5	30	9	530	22	33
Cheeseburger	4.2 oz (119g)	310	110	12	19	6	28	1	40	14	740	31	35
Double Cheeseburger	6.1 oz (173g)	460	210	23	35	11	55	1.5	80	27	1140	47	37

[www.mcdonalds.com/app\\_controller.nutrition.index1.html](http://www.mcdonalds.com/app_controller.nutrition.index1.html)

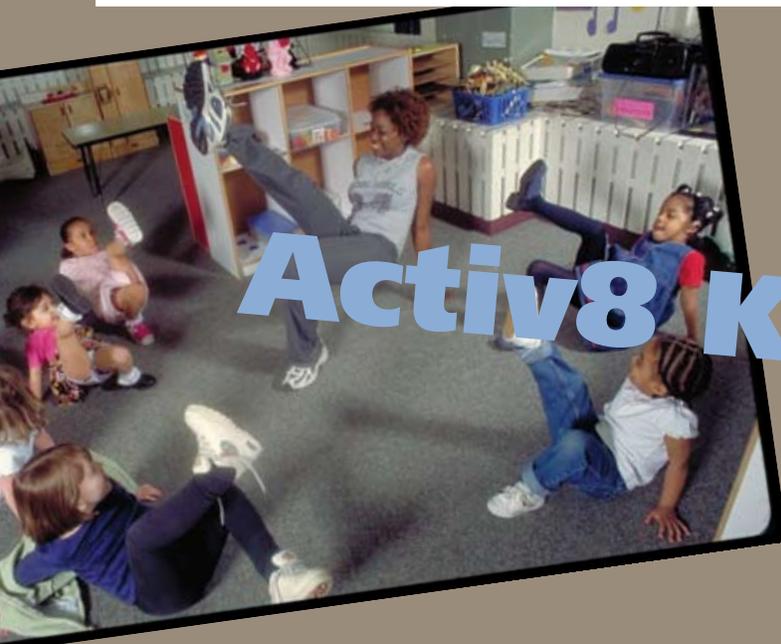
On another front, the New York State Department of Health's "Activ8 Kids!" program aims to have all New York children, by the age of eight, each day consuming at least five servings of fruits and vegetables, getting an hour or more of physical activity, and sitting in front of a TV or computer fewer than two hours.

"Many people recognize that obesity is an individual problem, but by focusing on the effects on young children, we are gradually seeing that it is a public health problem," explained Barbara Dennison, director of the Bureau of Health Risk Reduction at the health department.

"Activ8 Kids!" is the child-focused part of the department's overall strategic plan. Its goals are to

- increase the awareness of overweight and obesity as a major public health threat.
- increase early recognition of overweight and/or excessive weight gain.
- improve individuals' ability to manage their weight and obesity-related diseases.
- increase initiation, exclusivity, and duration of breastfeeding during infancy.
- improve lifelong healthy eating.
- increase lifelong physical activity.
- decrease exposure to television and other recreational screen time.
- increase policy and environmental supports for physical activity and healthy eating, including breastfeeding.
- increase and maintain effective public health responses to the obesity epidemic in New York State.
- expand surveillance and program evaluation to prevent overweight and obesity.

● METTA WINTER



[www.health.state.ny.us/prevention/obesity/activ8kids/index.htm](http://www.health.state.ny.us/prevention/obesity/activ8kids/index.htm)

## Transdisciplinary Research Is Needed for Positive Health Outcomes

In the session on “Opportunities for Transdisciplinary Research and Action” during the Ecology of Obesity conference held at Cornell June 6 and 7, 2005, Amanda Birnbaum, an assistant professor in the Department of Public Health at Weill Cornell Medical College, cited improvements in maternal mortality in the developed world as an example of how positive health outcomes can be gained through environmental change. The incidence of life-threatening complications from pregnancy is the same throughout the world, she said, yet the reason that women in developed countries don’t die in the large numbers that women in the developing world do is that they have access to emergency obstetrical care.

“It makes no sense to tell a woman who is having an obstetrical emergency to go and get care if none is available,” Birnbaum said. “In the same vein, before telling people that they should work hard to make changes in their diet and physical activities, we should first change the environment to ensure their success.”

Carol Devine, an associate professor in Cornell’s Division of Nutritional Sciences, spoke of the shift in role that researchers must accept if they are to conduct meaningful community-based research aimed at obesity prevention.

“To create community engagement, researchers can no longer function as the experts in all things,” said Devine, who is conducting two community-based research projects in New York State, one in rural Delaware County and the other in a worksite in the city of Rochester. “It’s a waste of your time if community members don’t take the project on as their own.”

What outside researchers can provide are study design; assessment tools; and assistance in data collection, interpretation, and design of locally chosen interventions, according to Devine. “One thing we’ve found is that when the built environment to promote physical activity is already in place, social class, cultural mores, and workplace policies greatly influence whether people take advantage of it or not,” Devine noted.

Jonathan Klein, an associate professor of pediatrics and community and preventive medicine at the University of Rochester, said that health care providers are key in creating community-based solutions to obesity. In the primary-care setting, clinicians interact with parents of young children eight times on average in the first two years of the child’s life. Even for adolescents, 75 to 80 percent of them visit a health care provider each year.

“This is a very powerful opportunity to identify a child’s trajectory toward obesity,” Klein pointed out. Not only is the opportunity there, but a reliable measurement tool—the body mass index (BMI)—is available, yet used by few but the earliest adopters.

Therefore, Klein recommended two critical research questions: What are the barriers to the wide-scale substitution of BMI for the conventionally accepted—and much less accurately predictive—height and weight chart? And how can these barriers be overcome?

“Studies of primary-care services show that obesity goes largely unidentified and untreated,” Klein said. “Plotting the BMI percentile can create a fundamental change in the effectiveness of the health care system in addressing the rise of obesity.”

● METTA WINTER

“ . . . before telling people that they should work hard to make changes in their diet and physical activities, we should first change the environment to ensure their success.”



PHOTODISC

AMANDA BIRNBAUM  
ASSISTANT PROFESSOR  
DEPARTMENT OF PUBLIC HEALTH  
WEILL CORNELL MEDICAL COLLEGE

**Urie Bronfenbrenner**, a co-founder of the national Head Start program and widely regarded as one of the world's leading scholars in developmental psychology, child-rearing, and human ecology—the interdisciplinary domain he created—died at his home in Ithaca, N.Y., Sept. 25. He was 88.

Bronfenbrenner was the Jacob Gould Schurman Professor Emeritus of Human Development and of Psychology at Cornell University.

Francille Firebaugh, professor and dean emerita of the College of Human Ecology, commented, "Urie's introductory class, the *Development of Human Behavior*, was legendary, and his ability to make complex ideas readily accessible and stimulating was evident in his teaching and his writing."

In tribute to Professor Bronfenbrenner, we present his thoughts on teaching.

## Thoughts on Teaching

In my 40 years on the Cornell faculty, I have given at least as much priority to teaching as I have to research and public service. I have done so, because I believe that is what should happen at a great university. And when I was an undergraduate at Cornell in the mid-1930s, that is what did happen.

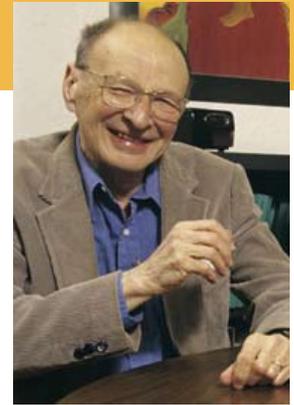
There was a tradition in that the most distinguished professors taught introductory courses. It still happens today, but not as often.

As a teacher, I have seen as my main goal enabling students to experience the adventure, and hard-won harvest, of disciplined, creative thought that goes beyond any one discipline. To be sure, transmitting knowledge is also important, but today's knowledge is sure to be surpassed by tomorrow's. Thus, the greatest gift one can give to the young is to enable them to deal critically and creatively with the new answers, and the new questions, that the future brings.

Alas, that is a far more difficult task than conveying what is already known, for it requires the student to be an active participant in the process. This means that the classroom experience must, at one and the same time, be both structured and free—a kind of disciplined spontaneity on the part of both teacher and students. That's something a teacher can't play by ear. It requires a lesson plan that is far more detailed than a prepared lecture. It's like writing a play in which only your own lines appear in the script, all the other actors are free to improvise, and your part must have alternative versions that anticipate the possible roles the others may play, so that you can choose the best response to make the plot move toward resolution.

Writing such a play for each day's class takes hours, but when it succeeds—as it sometimes does—the reward is the greatest a teacher can experience—the awakening and empowerment of another's mind and spirit.

**URIE BRONFENBRENNER**



**Human  
ECOLOGY**

**NOTE:**

Two issues will  
be published for  
the upcoming  
*Human Ecology*  
Vol. 34, 2006.

His full obituary may be read at  
<http://www.news.cornell.edu/stories/Sept05/Bronfenbrenner.ssl.html>