

GLUTTONY AND SLOTH: New evidence on how calories and lack of strenuous activity are driving the worldwide rise in obesity

Changes in the nature of work and people's time use outside the labour market have led to a big reduction in the strenuousness of daily life. So although there has been a decline in the total calories consumed over the past 30 years, there has been a dramatic rise in worldwide obesity.

That is the central finding of research by Professor **Rachel Griffith**, which she will present in her presidential address to the European Economic Association's annual congress in Mannheim on 26 August. In a study conducted with Rodrigo Lluberas and Melanie Luhrmann, she shows that both calories and insufficient exercise are important in explaining the rise in obesity.

But the researchers also find that there is a strong correlation between work and calories – individuals that are in work substitute more market-produced food for home-produced food. This suggests that to evaluate policy interventions aiming to reverse the rise in obesity by changing people's food purchasing behaviour, it may be important to take this correlation with work into account.

The study also shows that both men and women are more likely to work in less strenuous occupations, activities that account for a large share of people's time. And there are other big changes in people's time use: for example, both men and women spend more time watching TV. Sport and exercise account for a small amount of time use.

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Obesity is a major public policy issue. According to the World Health Organisation, worldwide obesity has more than doubled since 1980, with most of the world's population living in countries where excess weight kills more people than underweight. Estimates by McKinsey Global Institute suggest that almost one third of the global population is overweight and that obesity accounts for about 5% of deaths in the world.

The media, policy-makers and the economics and medical research literatures have emphasised an increase in food consumption as the main factor. This is primarily based on the evidence that: food prices have fallen; real food expenditure has increased; and expenditure on some food categories has increased – in particular on soft drinks and confectionery, fast food and food out at restaurants and ready prepared meals at home. All these facts are true. In addition, food availability data suggest an increase in calories available.

But official government household surveys show a different picture. The new research brings together household level expenditure data for England with nutritional information over 30 years (1980-2013) to provide a more complete picture of how diets have changed.

The researchers show that total calories have declined. One of the important reasons that calories have declined while real expenditure has increased is that households have shifted from home production towards market-produced food and towards more

expensive calories. Real food expenditure increased up to 2007 but fell back sharply after that, while total calories fell steadily throughout the period.

This decline in calories presents a puzzle: what explains the rise in obesity and weight gain? The study reconciles these facts by documenting changes in time use and changes in the strenuousness of activities.

Weight gain arises from a caloric imbalance (more energy consumed than energy expended). Physical activity has declined by more than calories. Changes in the nature of market work and house work (travel, leisure and other activities) have led to reductions in the strenuousness of daily life.

There are differences across males and females. Females increase the amount of time at market work, and reduce time in house work. House work is on average more strenuous than market work. Males reduce time in market work.

In addition, both males and females are more likely to work in less strenuous occupations; the study details these changes. Work is important because it accounts for a large share of people's time. There are other big changes in time use, for example, both males and females spend more time watching TV, which is a sedentary activity. Sport and exercise account for a small amount of time use.

These facts are important not just because they make it possible to run a horse race between calories and exercise to see which explains the rise in obesity – both are important. But the research also shows that there is a strong correlation between work and calories – individuals that work substitute more towards market-produced food.

This correlation suggests that to evaluate policy interventions that aim to reverse the rise in obesity by changing people's food purchasing behaviour, it may be important to take this correlation with work into account.

This research shows evidence that decisions over work and food demand are related, for example, through the technology of home production. The full price (the shadow price) of home-prepared food depends on work status, because of the valuation that households place on the time it takes to prepare food. If they are related, then it is important to reflect this when modelling food demand and evaluating policy interventions.

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Gluttony and Sloth? Calories, labour market activity and the rise of obesity
Rachel Griffith, Rodrigo Lluberas and Melanie Lührmann

Contact:
rgriffith@ifs.org.uk; melanie.luhrmann@rhul.ac.uk