Institute of Education

Fast Food and Childhood Obesity: Evidence from the UK

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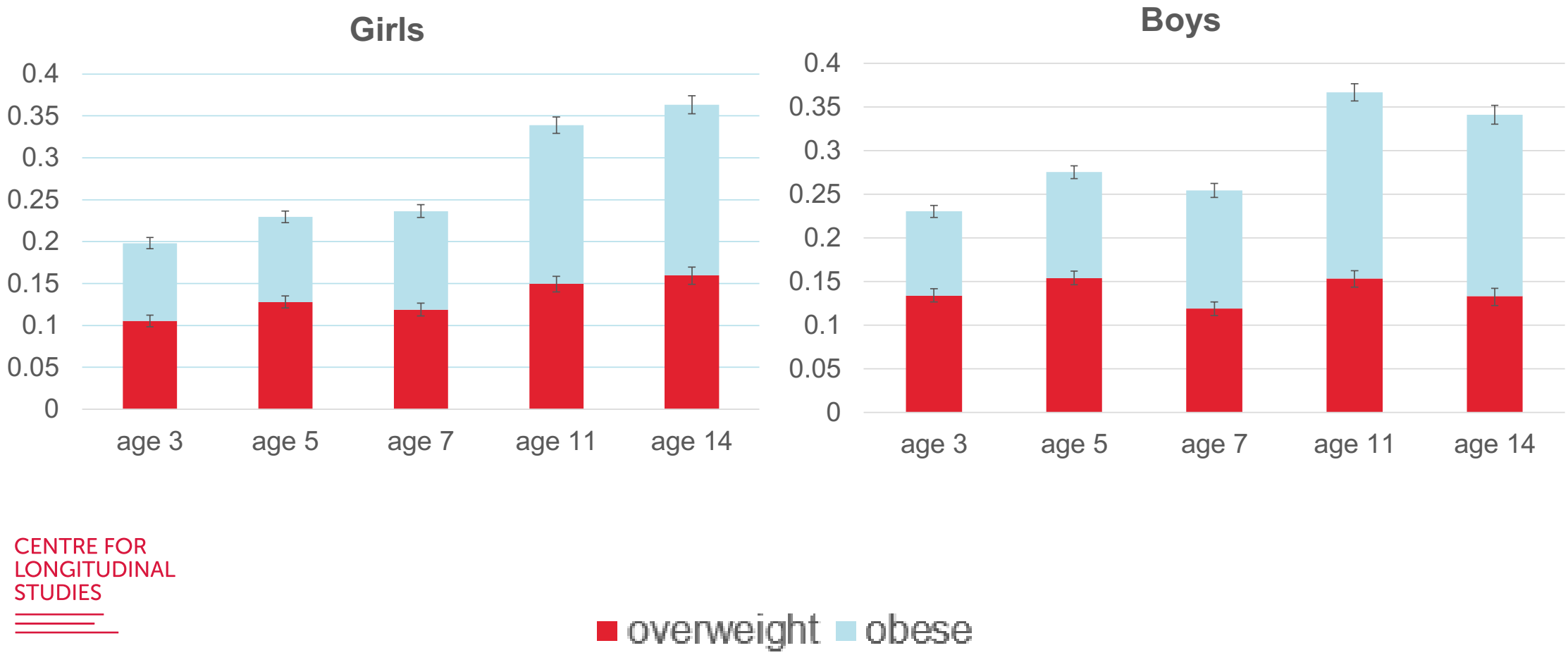
CENTRE FOR LONGITUDINAL STUDIES

Excess weight in childhood and adolescence, by gender



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Fast foods

- Fast food outlets – incl. chip shops, burger bars and pizza places – account for more than a quarter (26%) of all eateries in England
- 34% increase in fast food outlets from 2010 to 2018 in the UK
- England's poorest areas have 5 times more fast food outlets than the most affluent

Research Question: does proximity to fast food restaurants affect childhood obesity rates?

Challenge - associations between the two may reflect socioeconomic deprivation rather than the presence of fast food outlets

Most papers based on cross-sectional data, or v local/small scale studies - must be interpreted cautiously …

Takeaway clampdowns 'may combat obesity epidemic'

By Helen Briggs
BBC News

14 March 2014

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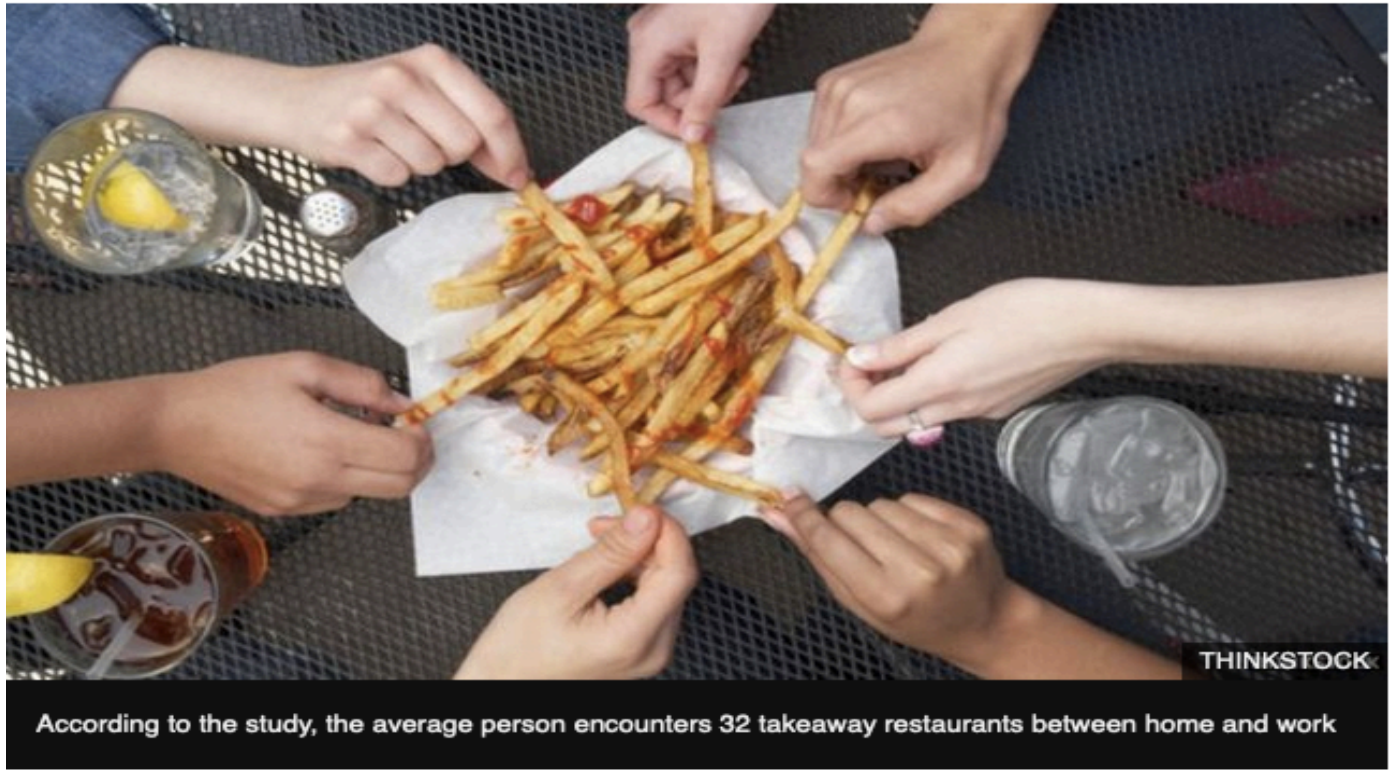

According to the study, the average person encounters 32 takeaway restaurants between home and work

Restricting the number of fast-food outlets around offices and homes could help combat the obesity epidemic, UK researchers say.

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Research Question: does proximity to fast food restaurants affect childhood obesity rates?

- **Longitudinal, nationally representative** data combined with **highly granular geographic data** provide unique opportunity to provide causal evidence for effective policy

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Data

1. Very detailed geo data on availability of fast food outlets across Great Britain:

- **OS 'Points of Interest'** - 4 million+ commercial and public (non-residential) organisations - over 600 categories including fast food, supermarkets, green food stores etc. (2005 -)

- **OS 'MasterMap'** - including road networks, building polygons, aerial photography and building heights (enabling 3D analysis) datasets (1997 -)

2. Millennium Cohort Study - BMI measures over time throughout childhood/adolescence, plus rich data on children's backgrounds from birth

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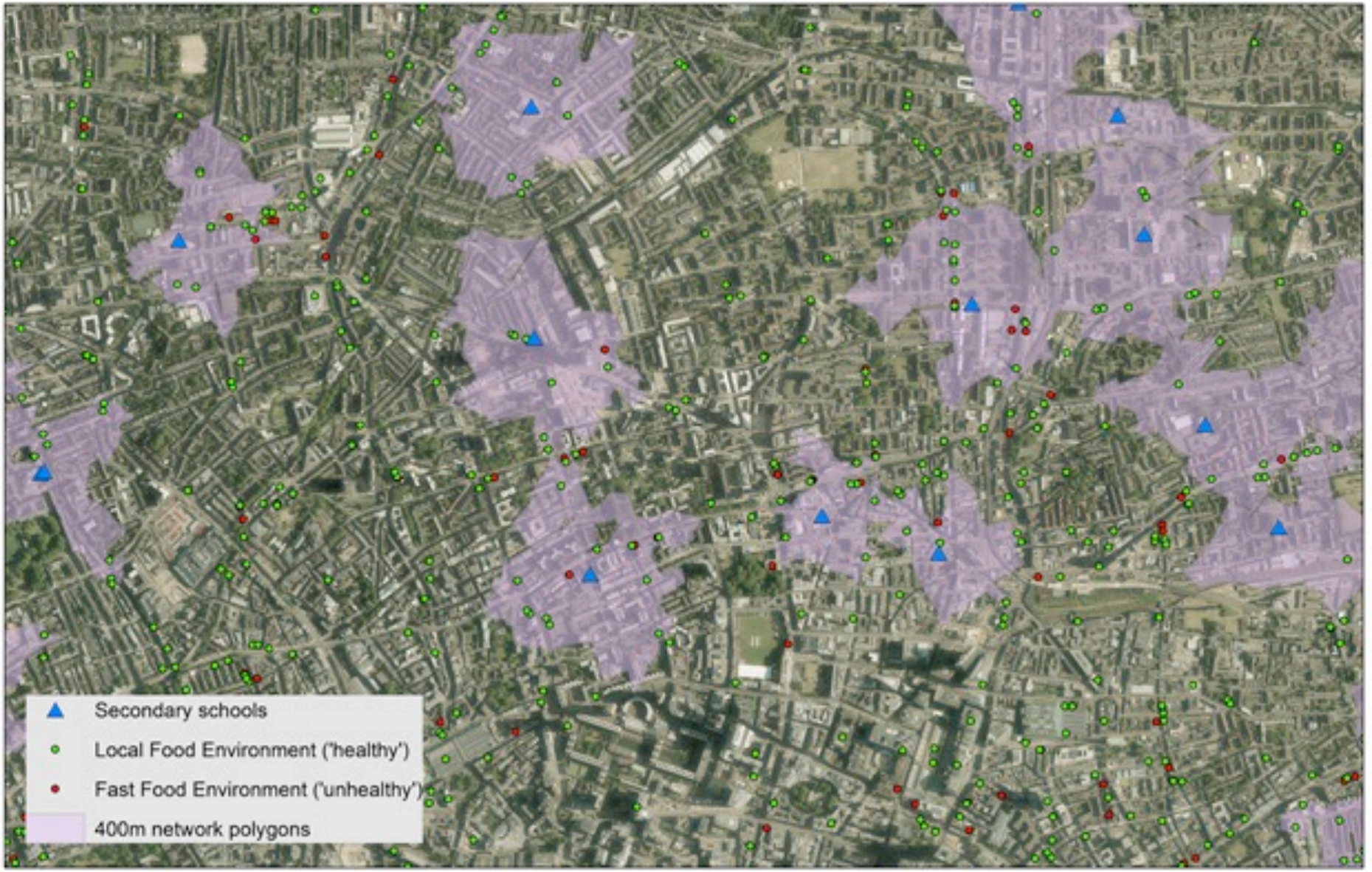
→ For each individual, we calculate the number of fast food outlets using 400m/800m/1600m road network buffers around each cohort member's home and school @ ages 7, 11, 14

Geo Data

The local food environment around secondary schools in central London



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Methodology

- Fixed effect methods in longitudinal data are better than OLS to estimate causal relationships because control for unobservable time-invariant confounders.
- Control for time-varying characteristics (e.g. physical activity, skip breakfast, etc.)
- Fast Food: McDonalds, KFC, Burger King, Wimpy, Subway, Pizza Hut, and Dominos' Pizza, Fish and Chips shops, Kebab shops, and Chicken shops.

Model 1: $Y_{it} = \alpha_i + \beta F_{it}^{\mathrm{k}} + \rho X_{it} + \varepsilon_{it}$

Model 2: $Y_{it} = \alpha_i + \gamma_1 F_{it}^{400} + \gamma_2 F_{it}^{400-800} + \gamma_3 F_{it}^{800-1600} + \rho X_{it} + \varepsilon_{it}$

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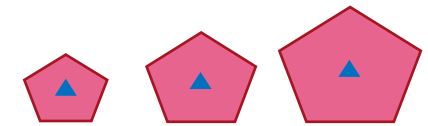
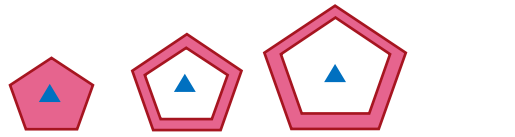




Preliminary Results

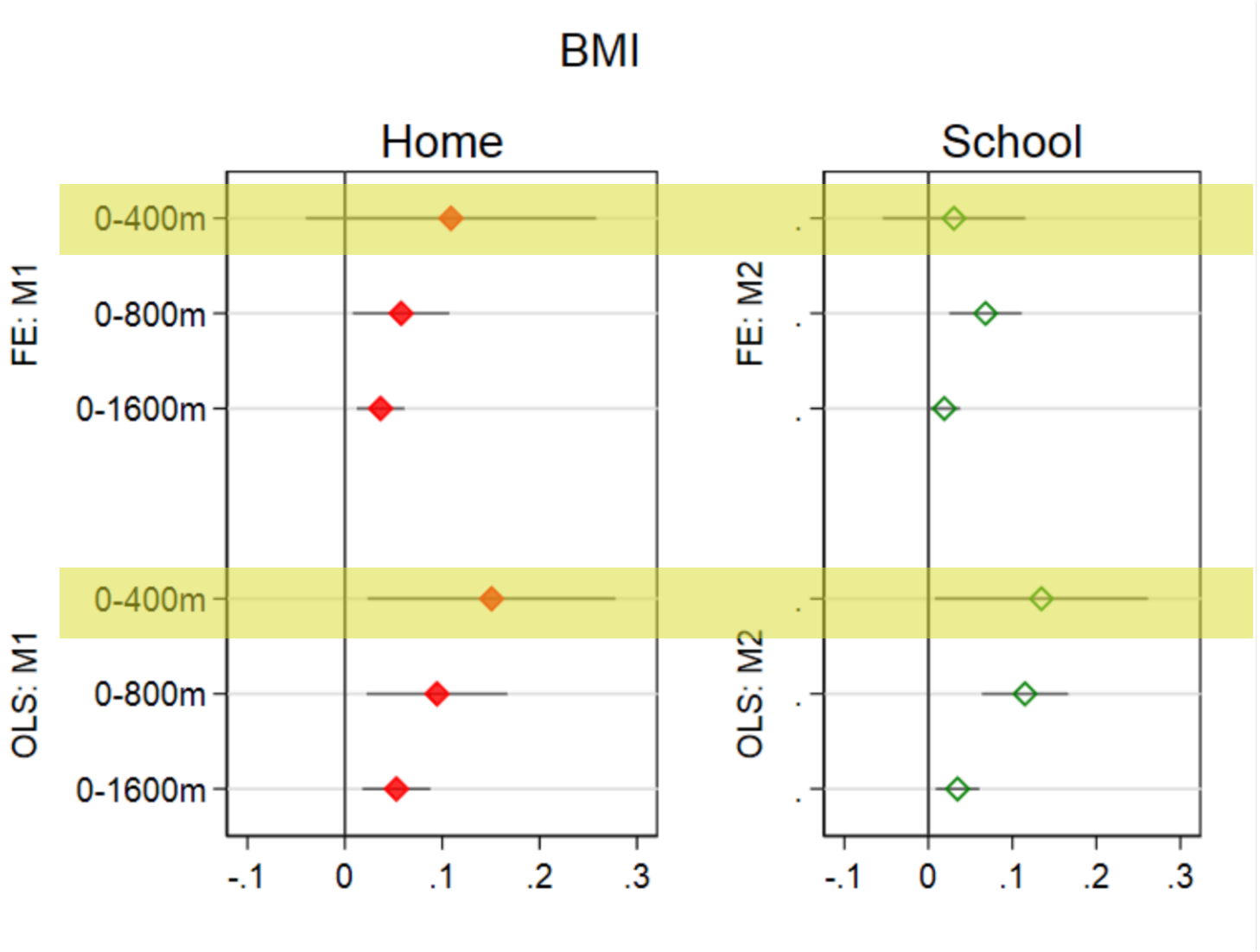
- A significantly positive association between the number of fast-food restaurants located near children's households (and children's schools) and Body Mass Index (BMI) and Body Fat

- Estimates are higher among those children whose parents have relatively low levels of education, exacerbating inequalities

- At ages 11-14, estimates are higher around cohort members' schools, consistent with transition to secondary school

Effect of Fast Food Restaurants on BMI

- FE and OLS
- Controlling for unobservable time-invariant confounders
- OLS overestimate effects



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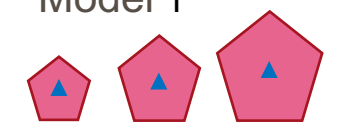
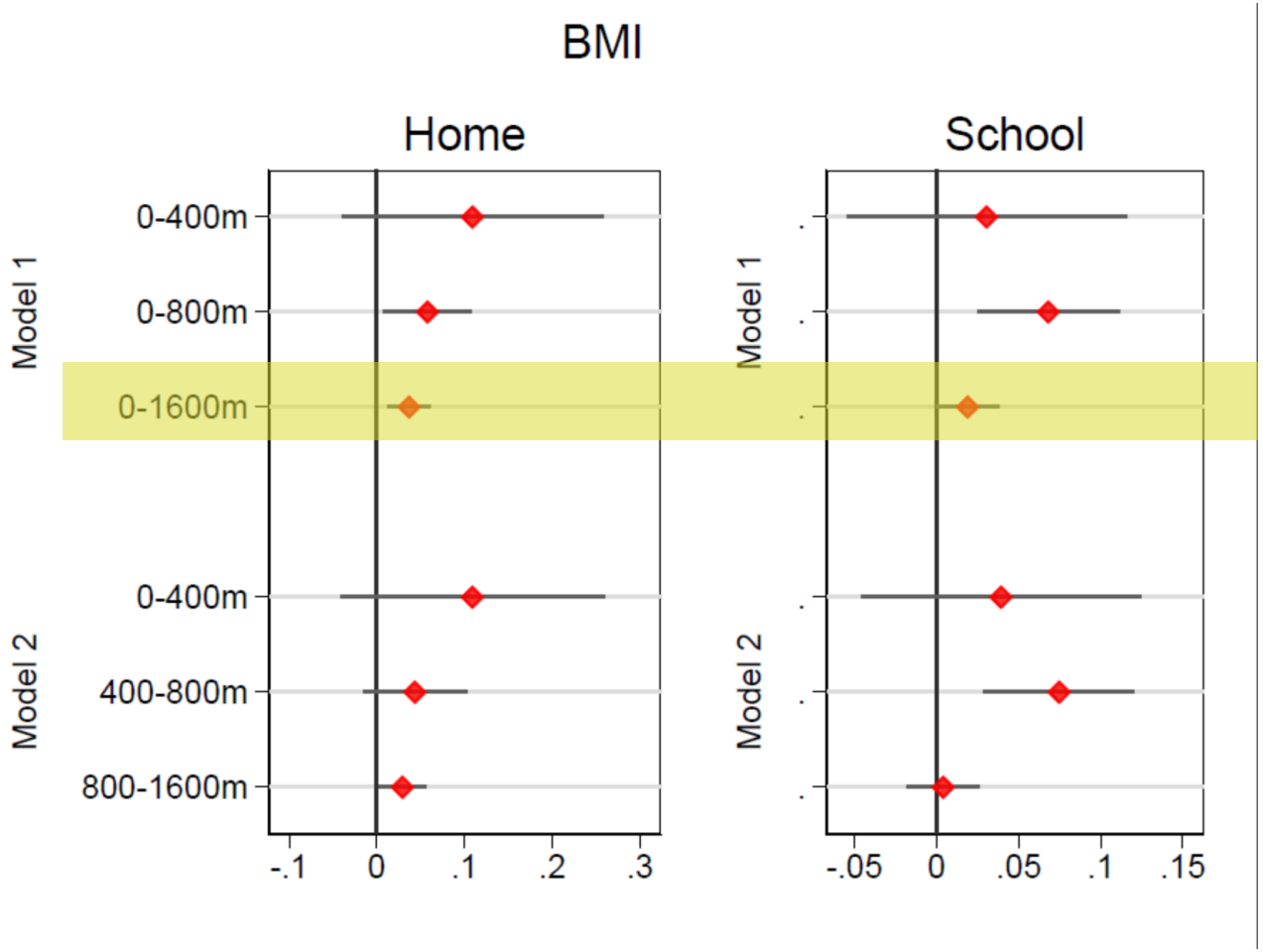
Model 1



Effect of Fast Food Restaurants on BMI



- An additional fast food outlet within 1600m of home increases cohort members' BMI by 0.04 points, a 0.19% increase over the sample mean of 19
- Positive and significant effect between 400-800m distance of cohort member school

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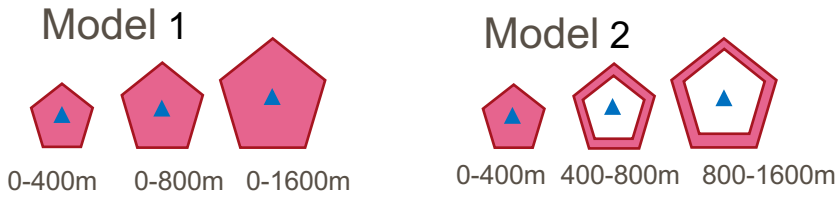
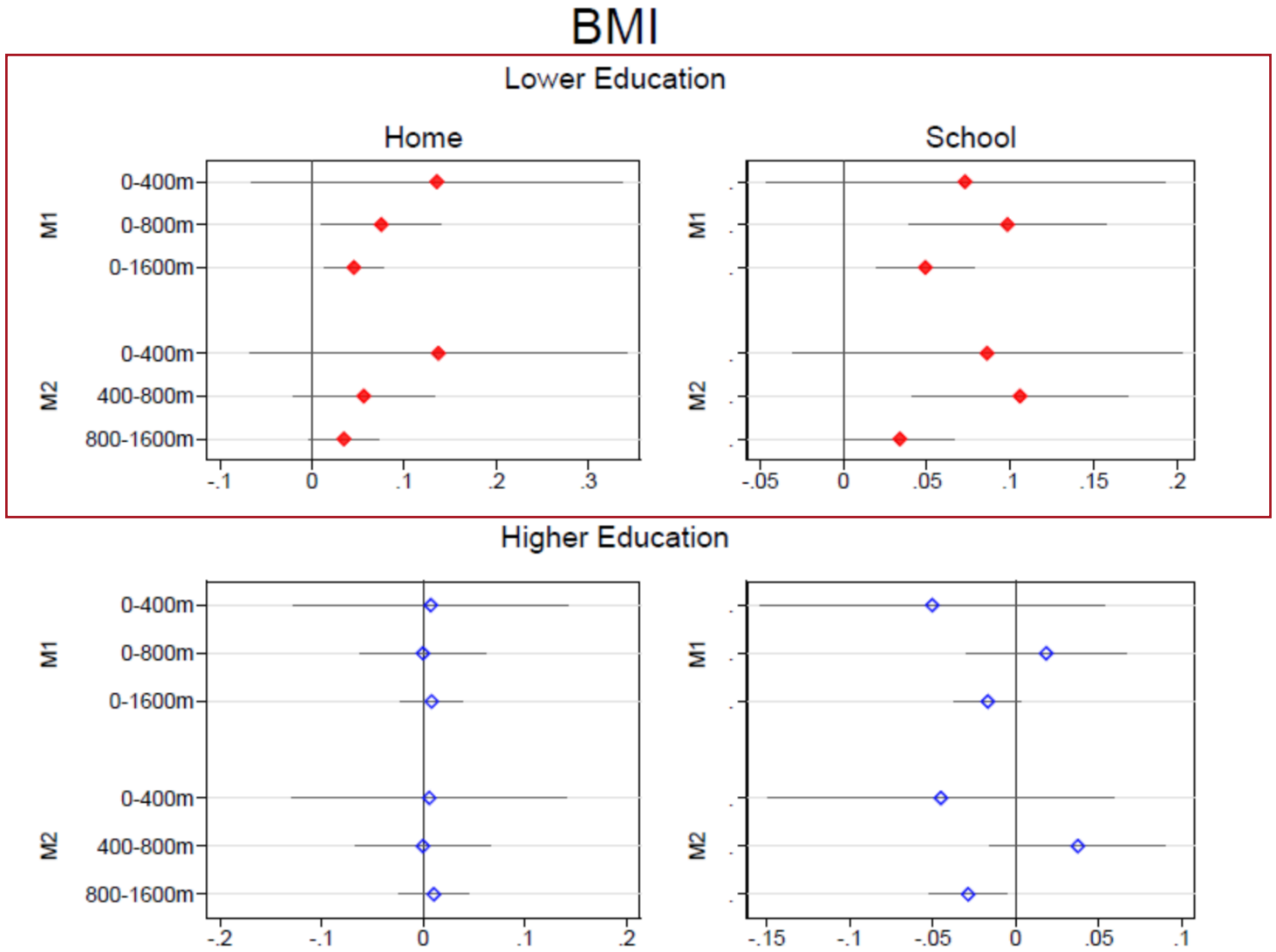
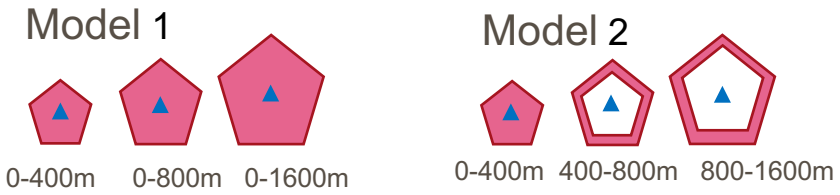


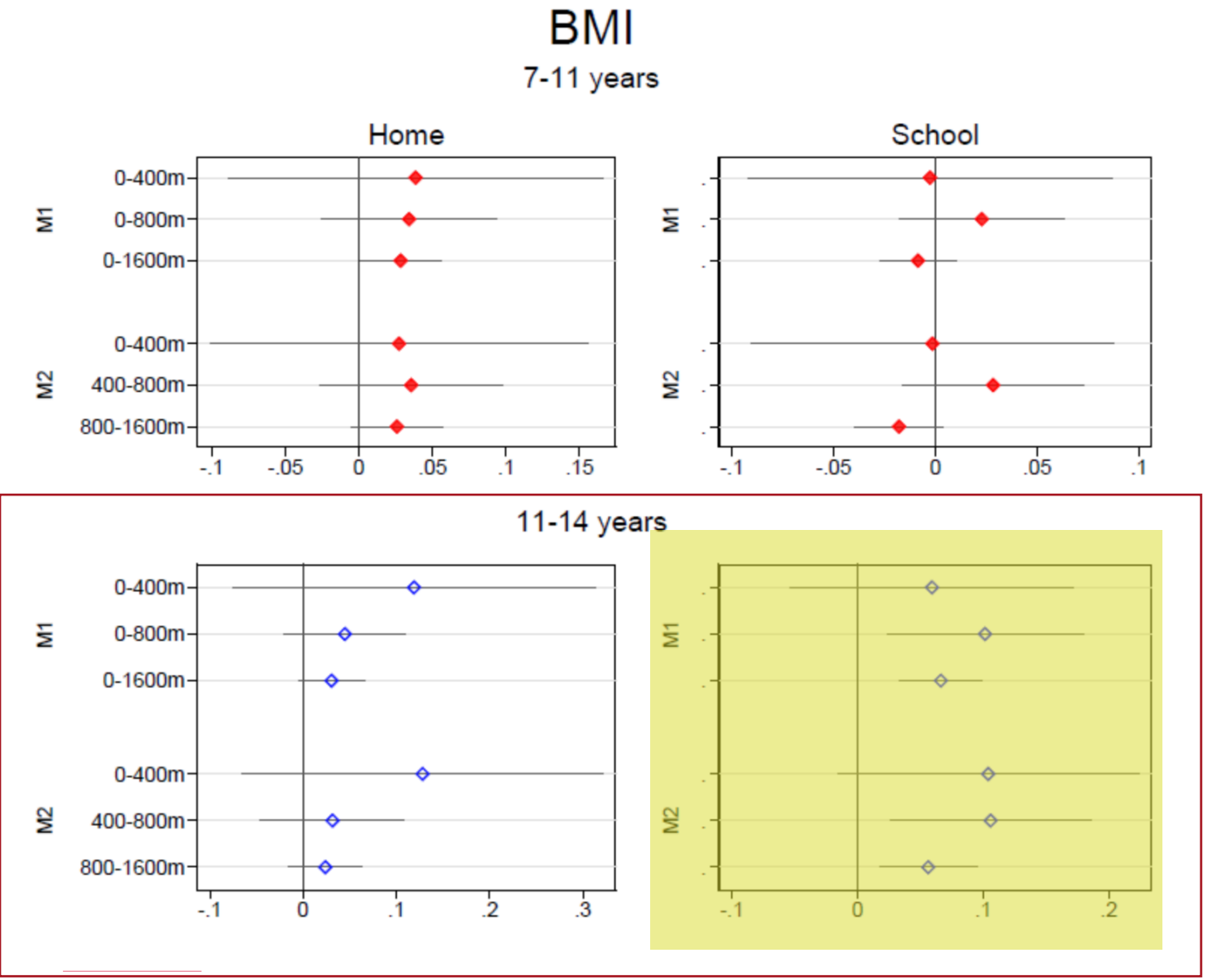
Differences by Maternal Education



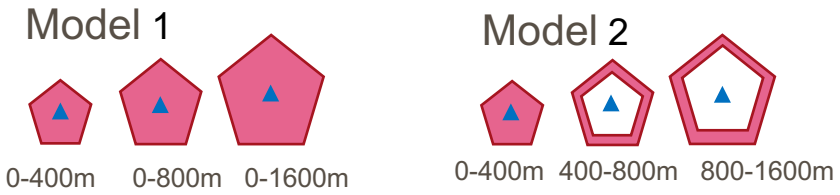
- Estimates are higher and statistically significant for those from less educated backgrounds (NVQ 0-3, versus NVQ 4-5)



Differences by Age



- Higher effects among cohort members in the 11-14 age period – consistent with move to secondary school, increased autonomy



Conclusion

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- Increase in the number of fast-food restaurants located near children's households (and children's schools) is associated with increases in Body Mass Index (BMI) and Body Fat.
- Buffers between 400m and 1600m matters
- Small effects, consistent with existing causal evidence (mainly in the US)
- Exposure to fast-food restaurants throughout adolescence could exacerbate socioeconomic inequalities in health outcomes
- Transition to secondary school is a relevant period