

Area deprivation and changes in the digital food environment during the COVID-19 pandemic: a longitudinal analysis of three online food delivery platforms

Alexandra Kalbus¹, Steven Cummins¹, Andrea Ballatore², Laura Cornelsen¹

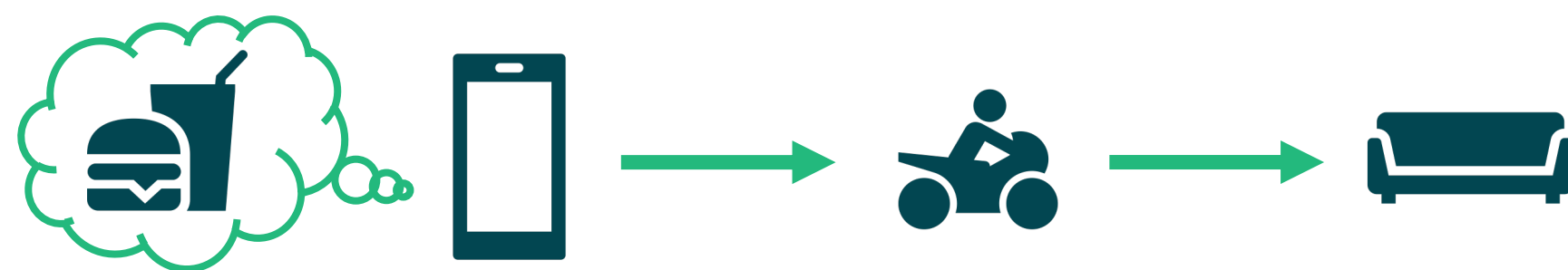
¹ Population Health Innovation Lab, Department of Public Health, Environments and Society, London School of Hygiene & Tropical Medicine

² Department of Digital Humanities, King's College London

Introduction

- Food prepared away from home tends to be unhealthier than foods prepared at home¹
- Social inequalities exist in the exposure to physical food environments (e.g. supermarkets, restaurants)² and overweight and obesity³

- Are there differences in spatial coverage across the three market-leading platforms?
- Are there social inequalities in the access to online food delivery services?

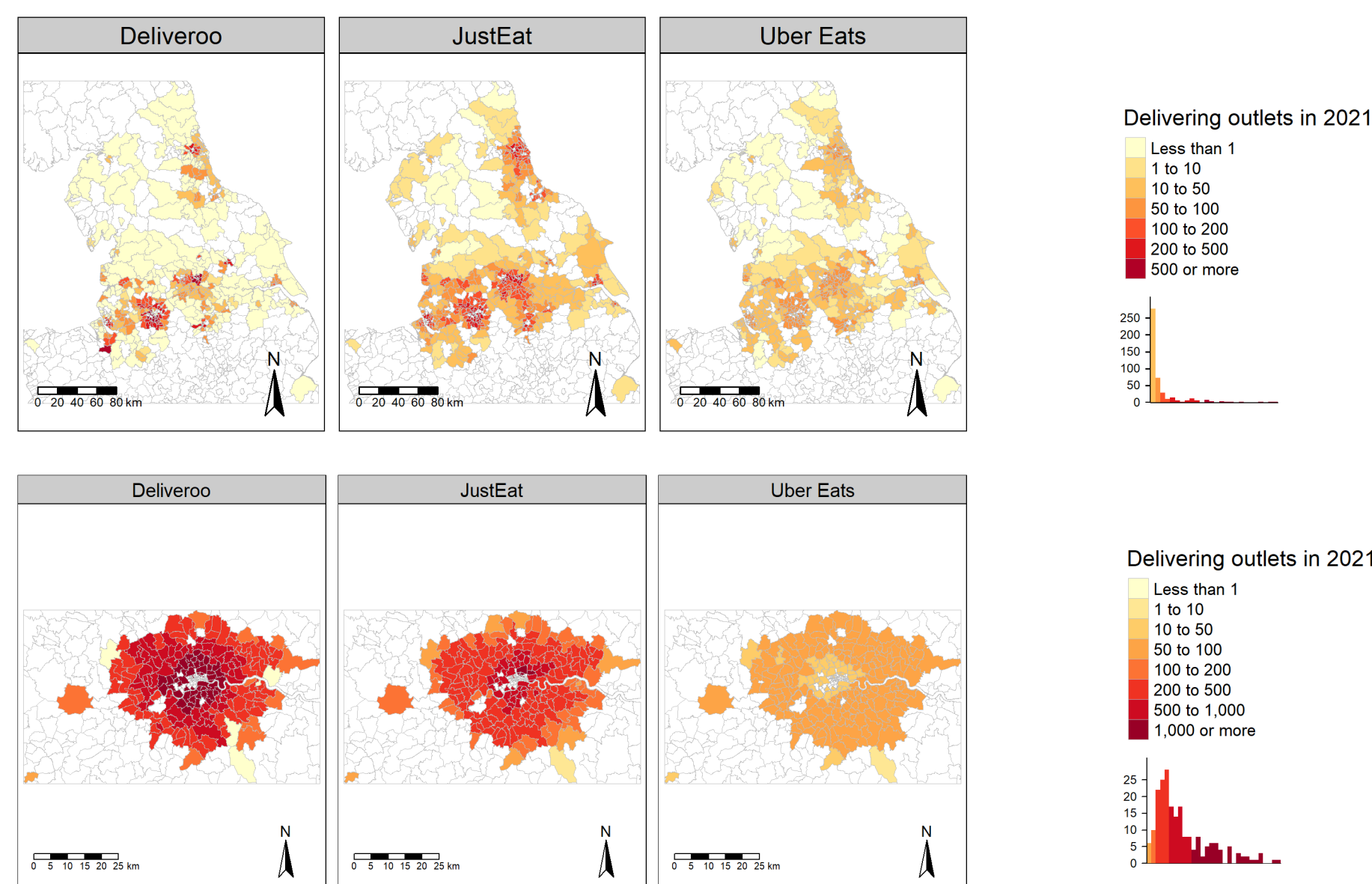


Methods

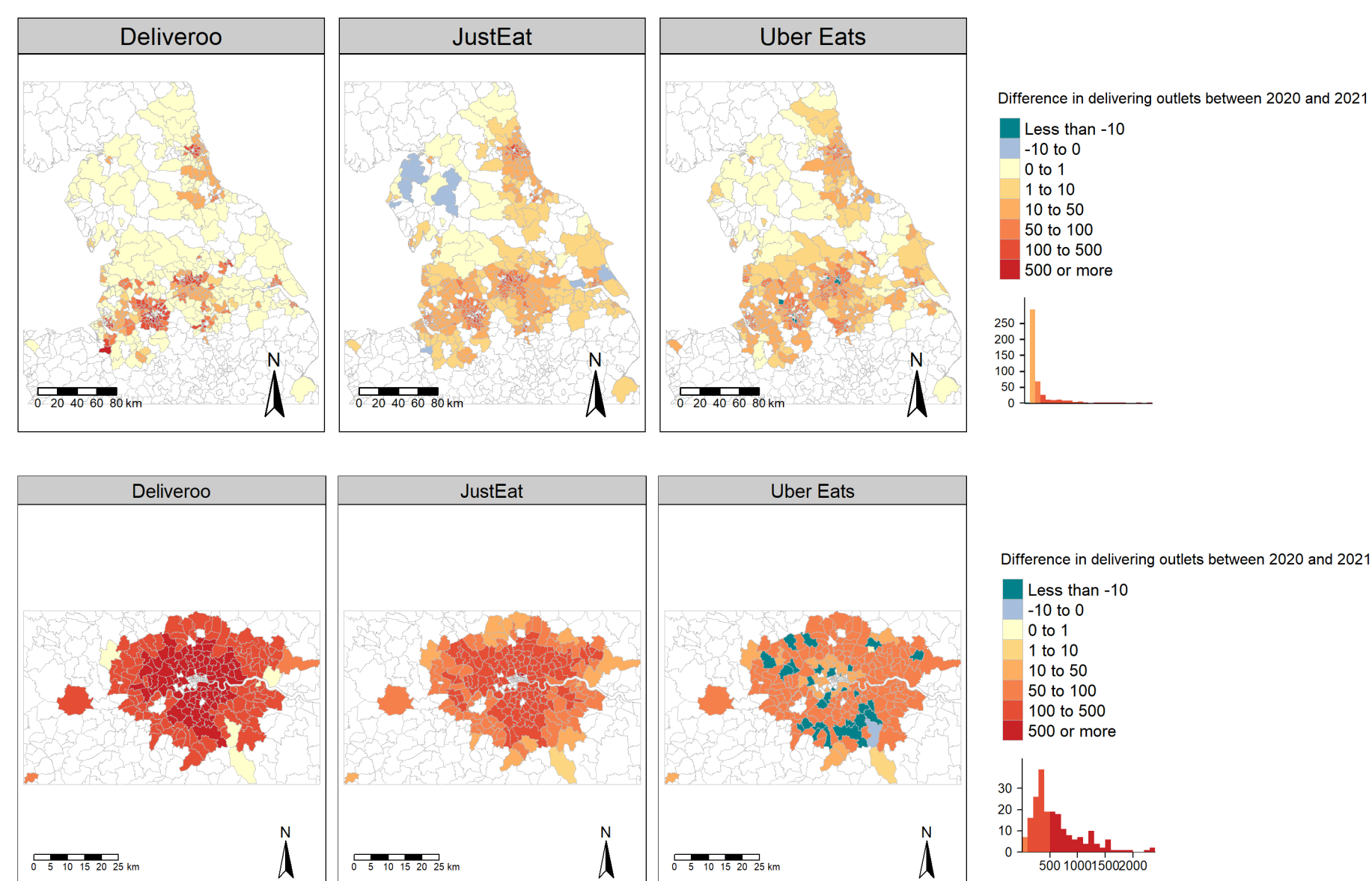
- Setting: 661 postcode districts in London and the North of England
- Data: food outlet data were web-scraped from Deliveroo, JustEat, and Uber Eats in April 2020 and May 2021
- Choropleth maps visualise spatial distribution of online food delivery services
- Multi-level negative binomial regression models combined, deduplicated count of delivering outlets in 2020 and 2021 in relation to quintiles of area deprivation, adjusted for region, urban status, population density, and age, ethnicity and gender distribution of resident population

Results – spatial distribution of services

- All services have higher presence in urban centres
- JustEat has the highest, Uber Eats the lowest geographical coverage

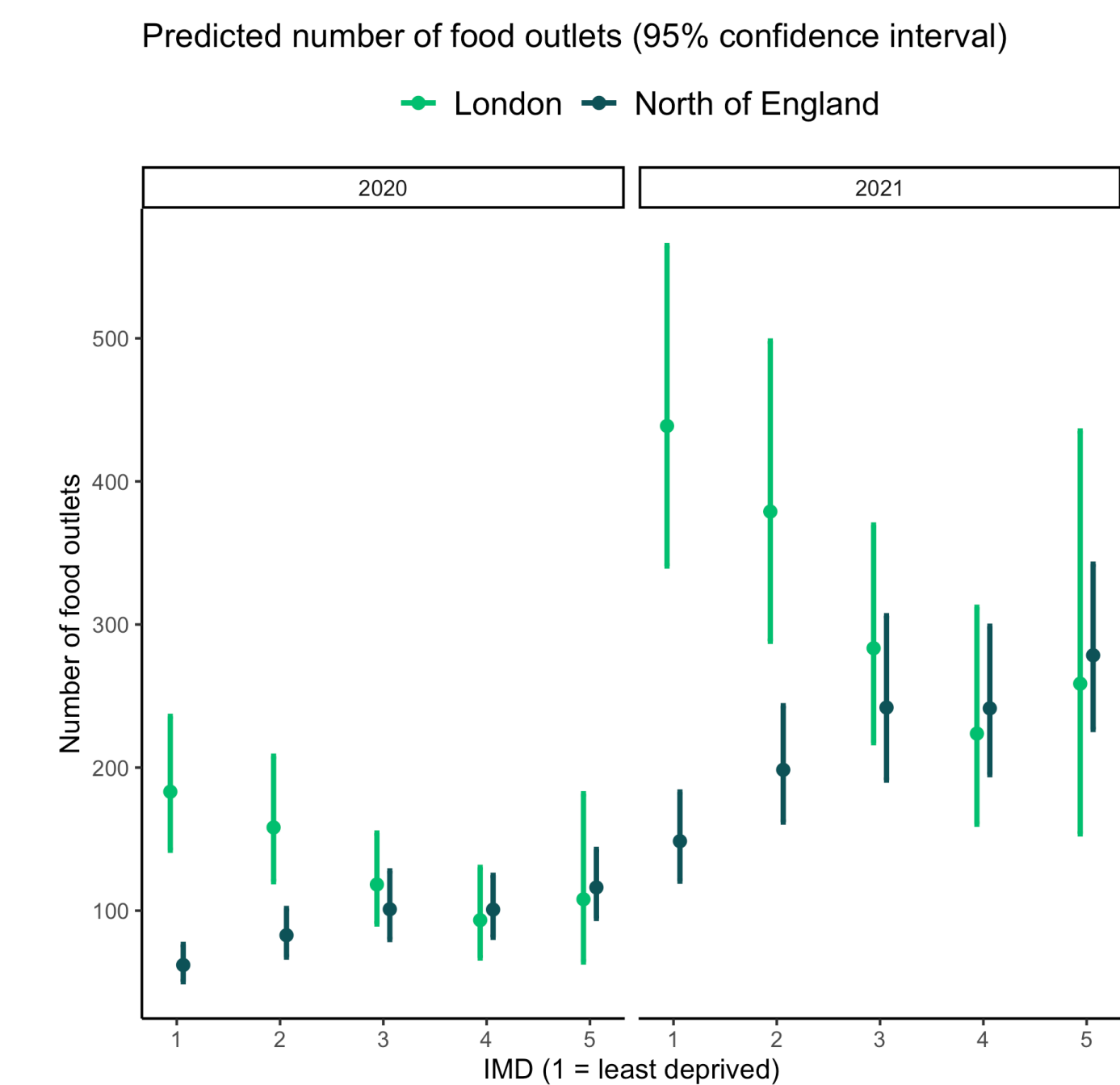


- All three services expanded between 2020 and 2021, mostly in urban centres



Results – area deprivation and food delivery services

- Adjusted for area characteristics, deprivation was associated with number of outlets delivering through online services
- Region-dependent effects: in the North of England, higher deprivation was linked to higher number of delivering outlets. In London, higher deprivation was associated with lower outlet count



Conclusions

- The market-leading online food delivery services differ in spatial distribution and growth during pandemic; combined, area deprivation is associated with online services
- Relevance of regional context → no one-size-fits-all approach to policies on the digital food environment

1. Bezerra, I. N., Curioni, C., & Sichieri, R. (2012). Association between eating out of home and body weight. *Nutrition Reviews*, 70(2), 65–79. <https://doi.org/10.1111/j.1753-4887.2011.00459.x>

2. Fraser, L. K., Edwards, K. L., Tomnitz, M., Clarke, G. P., & Hill, A. J. (2012). Food outlet availability, deprivation and obesity in a multi-ethnic sample of pregnant women in Bradford, UK. *Social Science and Medicine*, 75(6), 1048–1056. <https://doi.org/10.1016/j.socscimed.2012.04.041>

3. Keaver, L., Pérez-Ferrer, C., Jaccard, A., & Webber, L. (2019). Future trends in social inequalities in obesity in England, Wales and Scotland. *Journal of Public Health*, 1–7. <https://doi.org/10.1093/pubmed/fdz022>