and labour market. Time trends of SII and RII were tested during the period of economic stagnation 1992–2013.

Results Overall, age-standardised self-rated good health was high among children (70%) and low among the older old (30%). In all age groups, prevalence of good health declined slightly from its peak in 1995 but increased after 2007. In 1992 among children, working-age adults and younger old, health inequality based on SII for net household income was small (approximately 10% lower prevalence of good health in those with lowest compared to highest income). Among working-age adults, time trends of health inequalities between 1992 and 2013 were curvilinear. The SII narrowed and then widened after 2002 (quadratic trends in men and women $p < 0.05$), resulting in the magnitude of health inequality returning to its level at the beginning of economic stagnation in 1992 but not exceeding it. Time trends in relative inequality (RII) were qualitatively similar to those in absolute inequality (SII). Health inequality narrowed and then widened, and the RIIs in 2013 was no larger than those in 1992.

Conclusion The long-term low-growth Japanese economy appears compatible with maintaining and improving population health and holding health inequalities at current levels. This evidence is of great significance for sustainable development and the health of current and future generations.

Friday 11 September

Transport

OP87 EXPLORING GENDERED ACTIVE TRAVEL BY POOLING AND SYNTHESISING QUALITATIVE STUDIES

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10.1136/jech-2020-SSMabstracts.86

Background Encouraging incidental physical activity is an important strategy to improve population health. Recent research has drawn on social practice theory to describe the recursive and relational character of active living, which could help to understand conditions for change. A growing evidence base suggests that gender should be considered amongst these conditions as an independent influence on travel behaviour, and qualitative studies have been particularly valuable to understand differential experiences. Our aim was to upscale insights from individual contexts, by synthesising data from primary qualitative research studies, to explore gendered patterns within active travel practices.

Methods We pooled 280 transcripts from five research projects conducted in the UK, including a range of populations, travel modes and settings. All data included gender descriptors, but most studies did not set out to study gender specifically. Text analytics software, Leximancer, was used in the first phase of the analysis to produce inter-topic distance maps to illustrate inter-related 'concepts'. These maps guided a second researcher-led interpretive analysis of text excerpts to infer meaning from the computer-generated outputs, whilst maintaining sight of the explanatory strength of qualitative data and its social theoretical framing or original context.

Results Our interpretative findings indicate gender differentiated experiences and travel narratives. Firstly, focusing particularly on respondents' commutes (travelling to and from work), and guided by social practice theory, we identified 'inter-related' and 'relating' practices across the pooled datasets. Women largely spoke about how their journeys associated with their commute were 'bundled together' as a series of multifunctional trips that included the school run or shopping, whereas men described relatively linear journeys from A to B but highlighted 'relating' practices to their journeys, such as showering after cycling to work. Secondly, we identified a gendered difference in the way men and women spoke about travel practices across contexts, particularly with reference to safety or danger. Women spoke more about themselves as actors in travel, how they are identified and their internal feelings of safety ('I feel unsafe'), and men's talk was more outwardly framed, and in terms of danger spoke about external conditions ('it is a dangerous road').

Conclusion Our research highlights gender differential experiences and accounts of travel experience. These findings can inform future research and policy decisions that aim to promote healthier travel practices, by emphasising the need to consider how gender (and other social positions) might shape practices and accounts of those practices.

OP89 A NATURAL EXPERIMENTAL STUDY OF NEW WALKING AND CYCLING INFRASTRUCTURE ACROSS THE UNITED KINGDOM: QUANTITATIVE ANALYSIS OF USE AND PHYSICAL ACTIVITY

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10.1136/jech-2020-SSMabstracts.87

Background Physical inactivity is a growing problem, increasing risks of non-communicable disease. Changing the built environment, including the provision of walking and cycling infrastructure, can influence population levels of physical activity, but high quality evaluations of these interventions are scarce. We demonstrate how different types of data can be used to investigate how context is associated with change in use of new walking and cycling infrastructure, and the association between use of infrastructure and overall physical activity.

Methods We combined insights from multiple 'routine' and academic data sources. We conducted repeat cross-sectional pre-post analysis of pragmatic monitoring data from 84 new walking and cycling routes in the United Kingdom (the 'Connect2' programme), using four-day manual counts (pre $n=189,250$; post $n=319,531$), route intercept surveys (next-to-pass) (pre $n=15,641$; post $n=20,253$), and automatic count data which generated total estimated annual users, alongside longitudinal data from the iConnect cohort which involved postal questionnaires with local residents near three of the Connect2 schemes at baseline, 1-yr ($n=1853$) and 2-yr follow-up ($n=1524$). Multivariable binary logistic regression analysis was conducted using R to analyse:

1. Contextual features associated with increases of at least 50%, and doubling, of pedestrians, cyclists and particular user sub-groups. Models were adjusted for each independent contextual variable and time from infrastructure completion to post-monitoring.

2. Association between use of new walking and cycling infrastructure and meeting physical activity guidelines.

Models were adjusted for demographic variables. Cohort data were additionally adjusted for baseline physical activity and scheme.

Results The new routes were associated with increased use (median increase in cyclists=52%, pedestrians=38% ($p<0.001$)). Large relative increases in users were found where baseline levels were low (e.g. double cycling OR=0.47, 95% CI=0.26, 0.74 for each 10,000 baseline cyclists). Use of the new routes was associated with meeting physical activity guidelines in both the cross-sectional pre-post and longitudinal evaluations (compared to non-users, 1-yr follow-up users OR=2.09, 95%CI=1.38–3.25; 2-yr follow-up users OR=2.04, 95%CI=1.40, 3.03)).

Conclusion Creating new walking and cycling infrastructure may help to increase levels of population physical activity and places with existing low levels of walking and cycling could see the largest relative increases. ‘Routine’ and academic research evaluations involve trade-offs between scale, representativeness of sample and ability to capture within-participant change. Combining findings across data sources can help to understand the impacts of complex interventions on health.

OP90

AN EVALUATION OF THE IMPACT OF THE 20MPH SPEED LIMITS IN THE CITY OF EDINBURGH ON ROAD TRAFFIC CASUALTY AND COLLISION RATES

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10.1136/jech-2020-SSMabstracts.88

Background The City of Edinburgh implemented 20mph speed limits on most of the streets (an increase from 50% to 80%) in the city between April 2016 and March 2018. This paper is part of the research undertaken by the ‘Is Twenty Plenty for Health?’ project team which examines the impact of the 20mph speed limit policy in the City of Edinburgh. This paper assesses, specifically, the impact of the speed limits on the average vehicular speed and volume in the City, and the road traffic collision and casualty rates. Police recorded data (road traffic collisions and casualties), and the City of Edinburgh’s street survey data are used in this study.

Methods In this paper we calculate vehicular speed and volume summaries, and the average annual rate for collisions and casualties for selected subgroups. In addition, we calculate the percentage difference in annual rates before and after the 20mph speed limits (un-adjusted and adjusted for secular trend) for various street categories. The observed reduction in collisions (overall) is compared with that predicted from Elvik’s power model.

Finally, we construct a regression model with key explanatory variables treatment (implementation zone vs control zone), time (adhering to the stepped wedge nature of the implementation), and an interaction term constructed from the two latter variables. The dependent variable is the number of collisions (and separately, casualties) and the model coefficient

of the interaction term is the ‘difference in differences’ estimator.

Results Our results show that there was a statistically significant reduction of in average speed in the City (1.34mph) since the speed limit implementation and that there was no significant change in vehicular volume. We identified a reduction in road traffic collisions post speed limit implementation and a reduction in road traffic casualties in key vulnerable groups such as children (a provisional, un-adjusted 39% reduction in casualty rate).

Conclusion In this paper, we reveal the changes in vehicular speed and volume post 20mph speed limits and also present changes in road traffic collisions and casualties. In addition we apply statistical methods to evaluate the impact of the speed limits in a natural experiment context. This study is important not only to public health and city planning officials, but to academics involved in natural experiment evaluations.

Friday 11 September

Pregnancy II

OP91

DID ENGLAND’S TEENAGE PREGNANCY STRATEGY REDUCE PREGNANCY RATES IN ENGLAND? EVALUATING A POLICY USING TWO NATURAL EXPERIMENTAL METHODS

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10.1136/jech-2020-SSMabstracts.89

Background The Teenage Pregnancy Strategy was published in July 1999 with the aim halving under-18 pregnancy rates in ten years. The strategy came to an end in 2010 with the UK’s change of government. Overall costs of implementation are estimated around £280m. From 1999–2014 rates of pregnancy to women aged under 18 fell by more than 50%. Hailed as a unique, nation-wide, comprehensive, evidence-based intervention, the strategy has been promoted as a reproducible model for other countries with high teenage pregnancy rates. In evaluating policy impact, observational studies alone may not be able to account for background trends and other events. We aimed to evaluate the impact of England’s Teenage Pregnancy Strategy on pregnancy and birth rates using natural experimental methods.

Methods Women aged under-20 and living in England during the intervention period were the target population. UK pregnancy rates were taken from Office of National Statistics and Information Services Division Scotland reports for years 1992–2016. We compared under-18 pregnancy rates in England with Scotland and Wales as controls using interrupted time series methods. Observed level and trend changes in controls at 1999 were used to predict a ‘No Strategy’ England. We compared under-18 birth rates and under-20 pregnancy rates of England with European and English-speaking high-income countries using synthetic control methods. Estimates of births were taken from the Human Fertility Database, estimates of population from the Human Mortality Database and abortions from the European Health Information Gateway, supplemented from national statistics bodies, for years 1990–2013.