

Evaluating the impact of austerity on mental health of disadvantaged communities: Research Showcase 2024

Connor Gascoigne, Marta Blangiardo, (Imperial), Annie Jeffrey, James Kirkbride, Gianluca Baio (UCL), Sara Geneletti

Department of Statistics
LSE



THE LONDON SCHOOL
OF ECONOMICS AND
POLITICAL SCIENCE ■

1 Overview

2 EPITOME

3 Universal Credit

4 Hostile Environment Policy

5 Going forwards

Evaluating Policy Implementations TO Predict MEntal health [EPITOME] : a Bayesian hierarchical framework for quasi-experimental designs in longitudinal settings. Started 1st of June 2022

- 1 Wellcome Trust Collaborative Awards in Science with Gianluca Baio (Statistics) and James Kirbride (Psychiatry/Epidemiology) at UCL and Marta Blangiardo (Epidemiology and Biostats) at IC
- 2 Substantive aims are to evaluate the impact of Conservative/Coalition government policies and subsequent interaction with the COVID pandemic on mental health in minority communities
- 3 Methodological advancements in the area of interrupted time series designs, synthetic controls
- 4 The EPITOME project research I will be talking about is almost entirely the work of the two brilliant post-docs who have been on the project longest **Connor Gascoigne** (Imperial) and **Annie Jeffrey** (UCL) so all credit goes to them and any mistakes are mine!

1 Overview

2 **EPITOME**

3 Universal Credit

4 Hostile Environment Policy

5 Going forwards

Background and Aims

- 1 Social inequities are strongly associated with mental ill-health and ethnic minorities are disproportionately affected by them. This has consequences on income, employment and housing security amongst others (Marmot Review).
- 2 Since the Conservative government came to power in 2010, they have implemented a number of policies that have resulted in an increase in the burden of mental health overall but disproportionately in minority communities.
 - 1 The introduction of austerity policies : reduction in public spending
 - 2 Universal Credit (UC) to replace existing welfare payments
 - 3 The Hostile Environment Policy (HEP) : the Windrush Scandal
- 3 The COVID-19 pandemic substantially aggravated mental health problems and the stripped infra-structure was unable to cope
- 4 The broad aim of this project is to quantify the extent to which the Conservative policies increased the prevalence of mental ill-health on disadvantaged/minority communities and to predict the long-term consequences in the aftermath of COVID.

- 1 Project is in it's 3rd year
- 2 4 post-docs, one per collaborator, covering 4 strands of the project
- 3 LSE is the third and Xuewen Yu started earlier this year
- 4 Collaboration outside of academia :
 - 1 Charities such as Rethink :Mental Illness, Joint Council for the Welfare of Immigrants
 - 2 McPin foundation which sets up focus groups specifically to discuss mental health issues

Part 1 : A Bayesian Spatio-temporal interrupted time series framework for evaluating policy change on mental well-being : an application to England's welfare reform. *Connor Gascoigne*

Part 2 : The effect of UK immigration policy reform on mental health in people from minoritised ethnic backgrounds. *Annie Jeffrey*

Part 3 : Using Bayesian structural time series to assess the effect of immigration policy with a possible extension to controls on a different scale. *Xuewen Yu*

Part 4 : Predicting post-COVID health burden. Post-doc to start in July at UCL.

1 Overview

2 EPITOME

3 Universal Credit

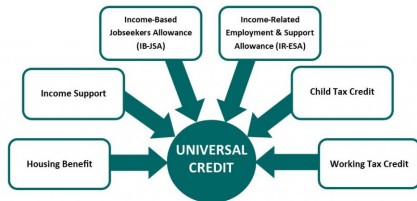
4 Hostile Environment Policy

5 Going forwards

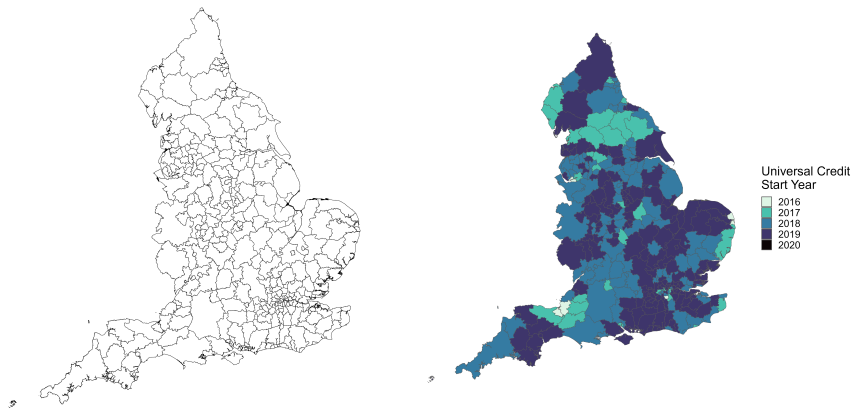
- In the world : 1 in every 8 (~ 970 million) people live with mental disorder (UN, 2023)
- In England : 1 in 4 adults and 1 in 10 children experience mental illness (NHS England, 2023)
- Social inequalities (low income, unemployment, poorer education) are strongly associated with overall mental-ill health in England [Marmot, 2020]
- This leads to inequitable exposure for certain demographic groups
 - Those from a Black, Asian and Minority Ethnic population suffer unreasonably from mental ill-health outcomes such as those listed above [Singh et al., 2019, Rose et al., 2020, Byrne et al., 2020]

United Kingdoms Welfare Reform

- Universal Credit (UC)
 - Welfare reform in the UK over the 2010s
 - Six legacy benefits with one universal benefit
 - Monthly payments (similar to salary)
- Controversy
 - Reduced/no and delayed payments
- Previous studies
 - Wickham et al. [2020] - National level results that does not account for variations in space



Universal Credit Roll Out



- 1 Develop a flexible spatio-temporal modelling framework to assess implementation of government policy on mental health
- 2 Evaluate the effect of geographical location and socioeconomic factors on government policies impact on mental health

Variables

Data

- Survey responses from United Kingdom Household Longitudinal Survey (UKHLS)
- Study period 2009 – 2021

Outcome

- UKHLS responses to GHQ-12
- Transformed to binary outcome 0 for no psychological distress, 1 for psychological distress

Exposure

- No individual level exposure to UC
- UKHLS response to employment (14 responses)
- Unemployed (Exposed) and all others (Control) except life-time sick

Confounders

- Age, Education, Ethnicity, Marital status and sex
- even with ITS design we want to adjust for observed confounders

Deprivation and Diversity

Inter- and intra- LTLA roll out

- As UC is applied to a whole area, and not everyone becomes eligible at the same time,
- We need to reach a threshold of enough people within the LTLA to be receiving UC for an individuals mental well-being to be affected
- This is called a 'contextual awareness to UC'
- The threshold we decided was that when 25% of people in a given LTLA are on UC, then the population of unemployed individuals are 'contextually aware and the intervention starts'

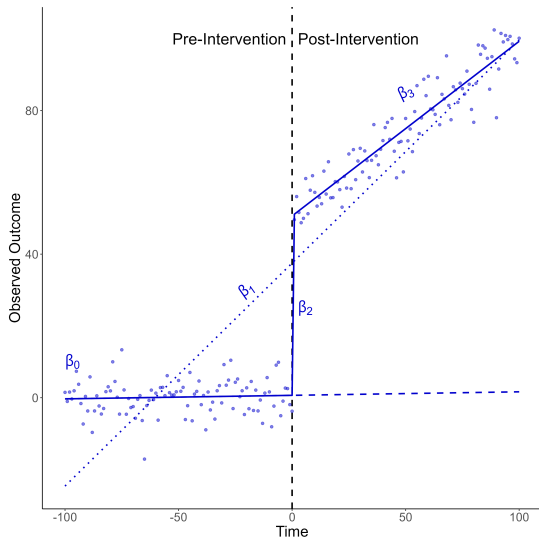
Interrupted Time Series (ITS) Model

- Type of data? Longitudinal data before and after an intervention
- Aim? Understand if an outcome of interest has changed after an intervention
- Examples? Evaluating policy changes on smoking bans [Gasparrini et al., 2009] and alcohol trading laws [Humphreys et al., 2013]

A basic ITS

- Outcome of interest, y
- Linear time trend over the entire study period, T
- A binary variable to indicate the start of the intervention, I
- Linear time trend after the intervention, T^+

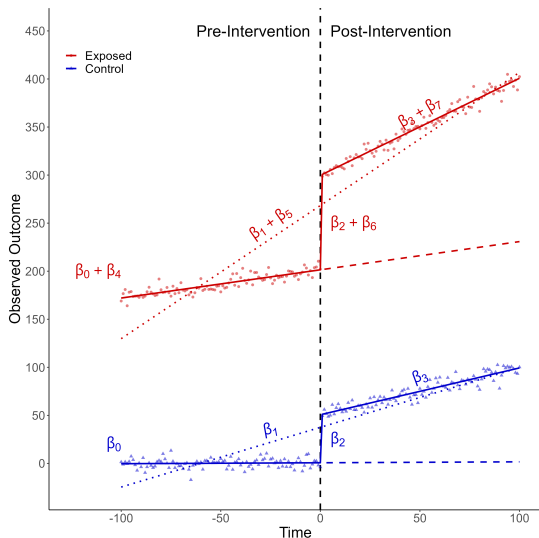
$$y = \beta_0 + T\beta_1 + I\beta_2 + T^+\beta_3$$



An ITS With Controls

- Including interactions between ITS terms and exposure group
- Let E be a binary variable indication exposure group

$$\begin{aligned}y = & \beta_0 + T\beta_1 + I\beta_2 \\ & + T^+ \beta_3 \\ & + E\beta_4 + T \times E\beta_5 \\ & + I \times E\beta_6 \\ & + T^+ \times E\beta_7\end{aligned}$$



Spatio-Temporal Interrupted Time Series Model

Individual ($i = 1, \dots, I_l$), LTLA ($l = 1, \dots, 309$), time (in month) $t = -50, \dots, 127$

$$y_{itl} \sim \text{Bernoulli} p_{i,t,l}$$

$$\text{logit} p_{itl} = \mu_{itl}$$

$$= \beta_0 + \mathbf{T}_l \beta_1 + \mathbf{I}_{l,t} \beta_2 + \mathbf{T}_l^+ \beta_3$$

$$+ \mathbf{E}_{i,t} \beta_4 + (\mathbf{T}_l \times \mathbf{E}_{i,t}) \beta_5$$

$$+ \mathbf{I}_{l,t} \times \mathbf{E}_{i,t} \beta_6 + \mathbf{T}_l^+ \times \mathbf{E}_{i,t} \beta_7$$

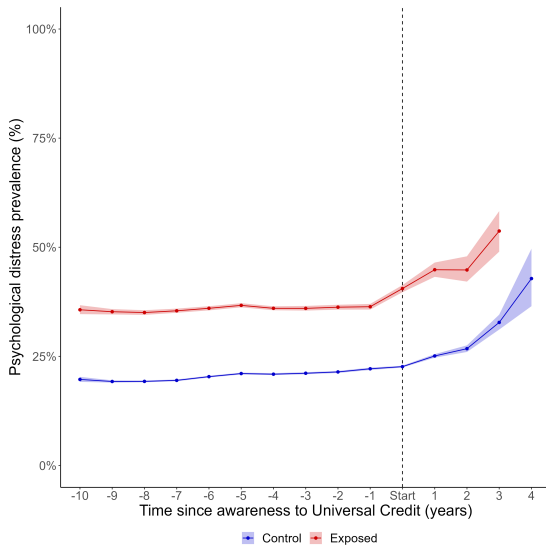
$$+ \sum_{m=8}^{14} \mathbf{X}_{i,t,l} \beta_m + \gamma_t + \delta_l$$

where $p_{i,t,l}$ is the probability of psychological distress

$$\beta_0 \sim \text{Uniform}(-\infty, \infty); \beta_1, \dots, \beta_{14} \sim \text{N}(0, 100)$$

$$\gamma_t \sim \text{RW}(1, \sigma_\gamma^{-2}); \delta_l \sim \text{BYM}(2, \sigma_\delta^{-2}, \phi)$$

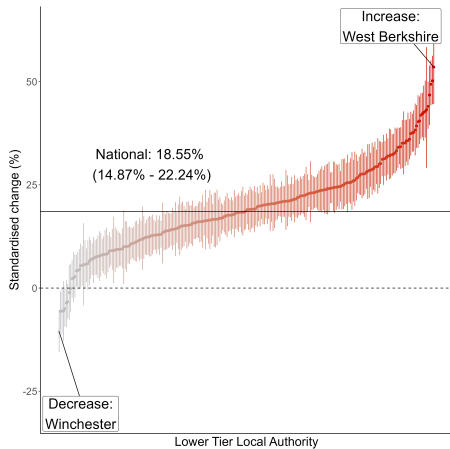
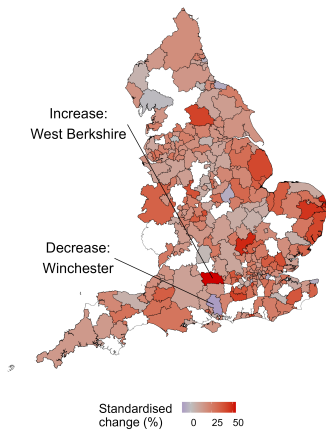
National Temporal Trend



ITS Odds Ratios

2* Parameter	Odds Ratio		
	Lower	Median	Upper
Baseline β_4	1.6505	1.7026	1.7539
Time β_5	0.9978	0.9982	0.9986
Intervention β_6	1.3508	1.4639	1.5905
Time ⁺ β_7	0.9996	0.9998	9.9996×10^{-1}

% Change by LTLA profile



Summary of results

- 1 We developed a flexible Bayesian hierarchical model to assess the impact of government policy on mental health
- 2 Difference in baseline : 1.65 (1.70, 1.75) increase in risk for exposed
- 3 Immediate impact : 1.35 (1.46, 1.59) increase in risk for exposed
- 4 Definition of intervention is important for evaluating the immediate and long-term impacts of intervention
- 5 Results of Bayesian framework reveal additional insights on spatial and confounder relations, e.g area level profiles

- 1 Overview
- 2 EPITOME
- 3 Universal Credit
- 4 Hostile Environment Policy**
- 5 Going forwards

- To understand the impact of the Hostile Environment Policy on
- those directly affected and
- those indirectly affected in minority communities

Theresa May

- Theresa May was Home Secretary (2010-2016) and then PM (2016-2019)
- "... The aim is to create, here in Britain, a hostile environment.."
- " ... We can deport first and hear appeals later..."

Immigration Act 2014

- Required migration status checks to be carried out before
 - opening bank account,
 - renting,
 - employment,
 - health treatment,
 - school,
 - drivers license

Windrush Generation

- Post WW2, Jamaican citizens were invited to settle here as the UK were in need of skilled workers
- They travelled on the Empire Windrush



Impact of HEP

- Many of the Windrush generation arrived as children on their parents' passports, and the Home Office destroyed thousands of landing cards and other records
- So many lacked the documentation to prove their right to remain in the UK
- Following HEP many were deported or threatened with deportation, denied basic services like shelter and healthcare

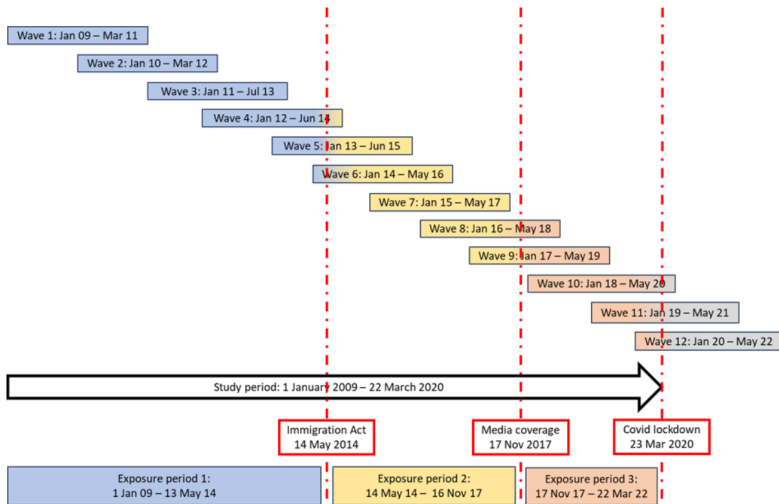


Impact of Media coverage : Windrush Scandal

- The impact of HEP on people in the Windrush generation started in 2014
- It wasn't until 2017 that the media coverage started
- This impacted the British born descendants of the Windrush generation.

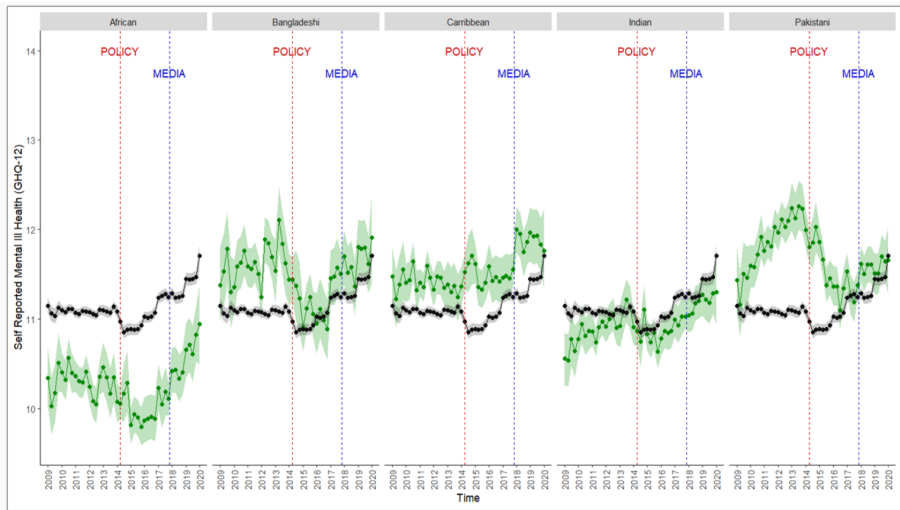
- Same spatio-temporal model : Interrupted time series with treated and control groups
- Interventions are different
 - the HEP policy and
 - the subsequent media coverage
- slightly "easier" because everyone has same intervention dates
- Same dataset : UK Household Longitudinal Survey
- Age 16+
- Outcome : Mental ill health as measured by the GHQ-12 score, this time continuous
- "treated" : Black African, Black Caribbean, Indian, Pakistani, Bangladeshi
- "controls" : White

Time frame and interventions



Results

Green : treated, Black : control



Caribbean

- After implementation of Immigration Act 2014 we see an effect only on people not born in the UK (1.25 increase in mental distress)
- After the Windrush media coverage in 2017 the effect is on people born in the UK (2.00 increase in mental distress)

Limitations

- For UC needed to devise a measure of treatment/control
- Extensive sensitivity analysis showed that the contextual awareness threshold does not affect results significantly
- Use of binarised outcome for UC could have lead to information loss, there is now a continuous version
- For the HEP some groups had very small sample sizes which impeded some more confounder level analyses

- 1 Overview
- 2 EPITOME
- 3 Universal Credit
- 4 Hostile Environment Policy
- 5 Going forwards**

Current and future work

- Xuewen Yu at LSE is working on methods that use Bayesian structural time series to understand the impact of the HEP on minority community mental health.
- Similar results to Annie but different methods. Plan to extend into controls possibly on a different scale
- Last post-doc to start at UCL in July working on impact of COVID

Thanks

Thanks for listening
Any questions?

Michael Marmot. Health equity in England : the Marmot Review 10 years on. *Bmj*, 368, 2020.

Ankur Singh, Lyrian Daniel, Emma Baker, and Rebecca Bentley. Housing disadvantage and poor mental health : a systematic review. *American journal of preventive medicine*, 57(2) :262–272, 2019.

Nikolas Rose, Nick Manning, Richard Bentall, Kamaldeep Bhui, Rochelle Burgess, Sarah Carr, Flora Cornish, Delan Devakumar, Jennifer B Dowd, Stefan Ecks, et al. The social underpinnings of mental distress in the time of COVID-19—time for urgent action. *Wellcome open research*, 5, 2020.

Bridget Byrne, Claire Alexander, Omar Khan, James Nazroo, and William Shankley. *Ethnicity, Race and Inequality in the UK : State of the Nation*. Policy Press, 2020.

Sophie Wickham, Lee Bentley, Tanith Rose, Margaret Whitehead, David Taylor-Robinson, and Ben Barr. Effects on mental health of a UK welfare reform, Universal Credit : a longitudinal controlled study. *The Lancet Public Health*, 5(3) :e157–e164, 2020.

Antonio Gasparrini, Giuseppe Gorini, and Alessandro Barchielli. On the relationship between smoking bans and incidence of acute myocardial infarction. *European journal of epidemiology*, 24 :597–602, 2009.

David K Humphreys, Manuel P Eisner, and Douglas J Wiebe. Evaluating the

impact of flexible alcohol trading hours on violence : an interrupted time series analysis. *PloS one*, 8(2) :e55581, 2013.