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Research update: insights from TB cohort audit data from North West England

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Overview

- Inequality, poverty, and TB
- PHE and North West response
- Two related PHE/UoL studies using ETS/Cohort data:
 1. Should we continue screening contacts of EPTB?
 2. Can patient's ECM level predict their contacts' risk of developing TB disease?



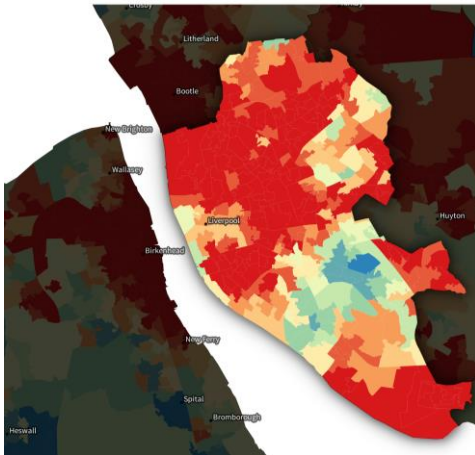
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Inequality In England

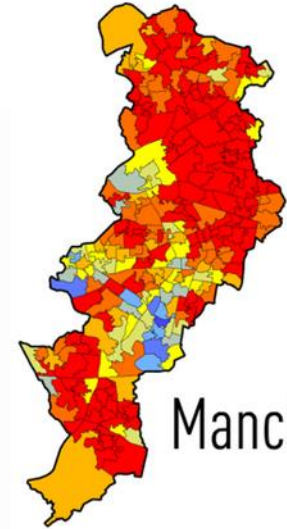
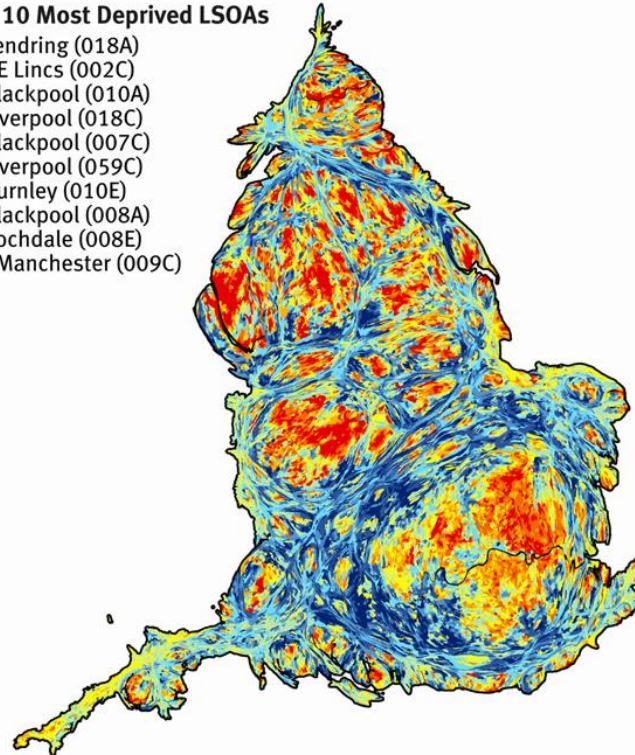
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Red areas - most deprived
Blue areas - least deprived

Top 10 Most Deprived LSOAs

1. Tendring (018A)
2. NE Lincs (002C)
3. Blackpool (010A)
4. Liverpool (018C)
5. Blackpool (007C)
6. Liverpool (059C)
7. Burnley (010E)
8. Blackpool (008A)
9. Rochdale (008E)
10. Manchester (009C)



Manchester

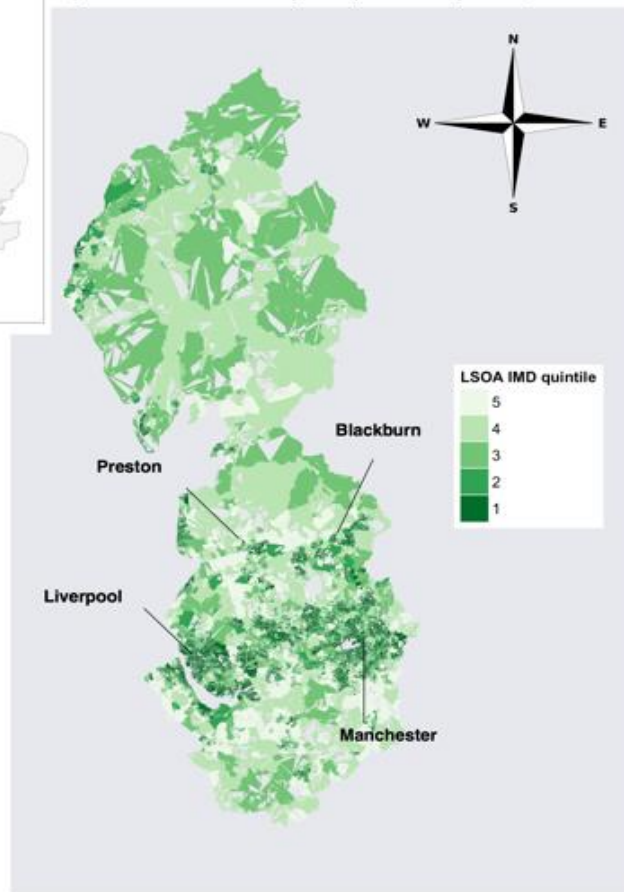
The northwest is a hotspot of inequity,
poverty, and unemployment



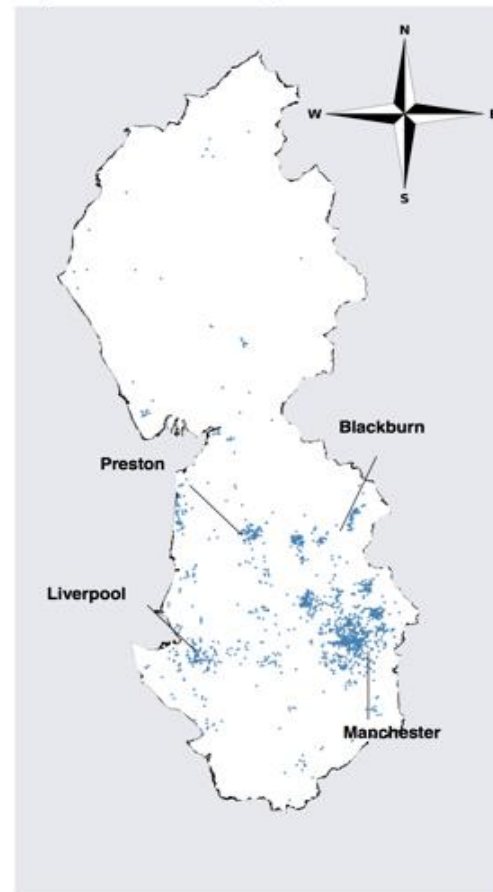
TB remains a social disease



A) LSOA index of multiple deprivation quintile, 2011



B) Location of TB cases, 2011-2014



Manchester has 3-times the national TB incidence

UK TB Response



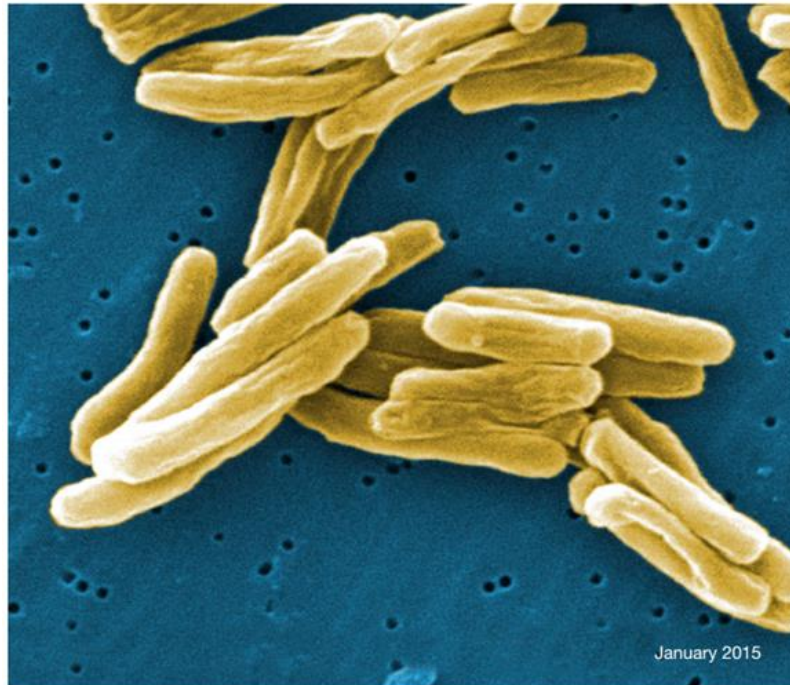
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Protecting and improving
the nation's health

Collaborative Tuberculosis Strategy for England

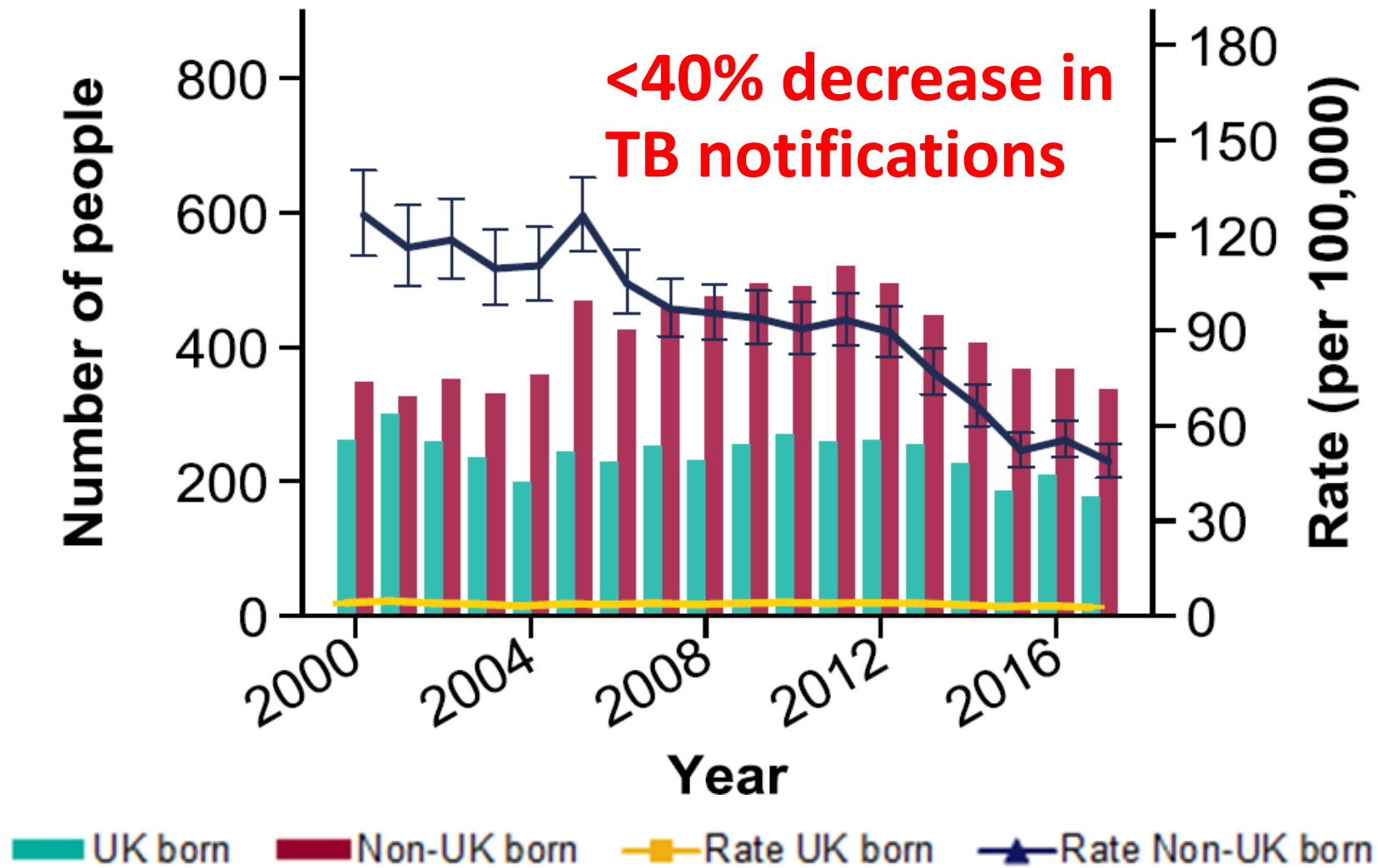
2015 to 2020



January 2015

UK TB Response

North West





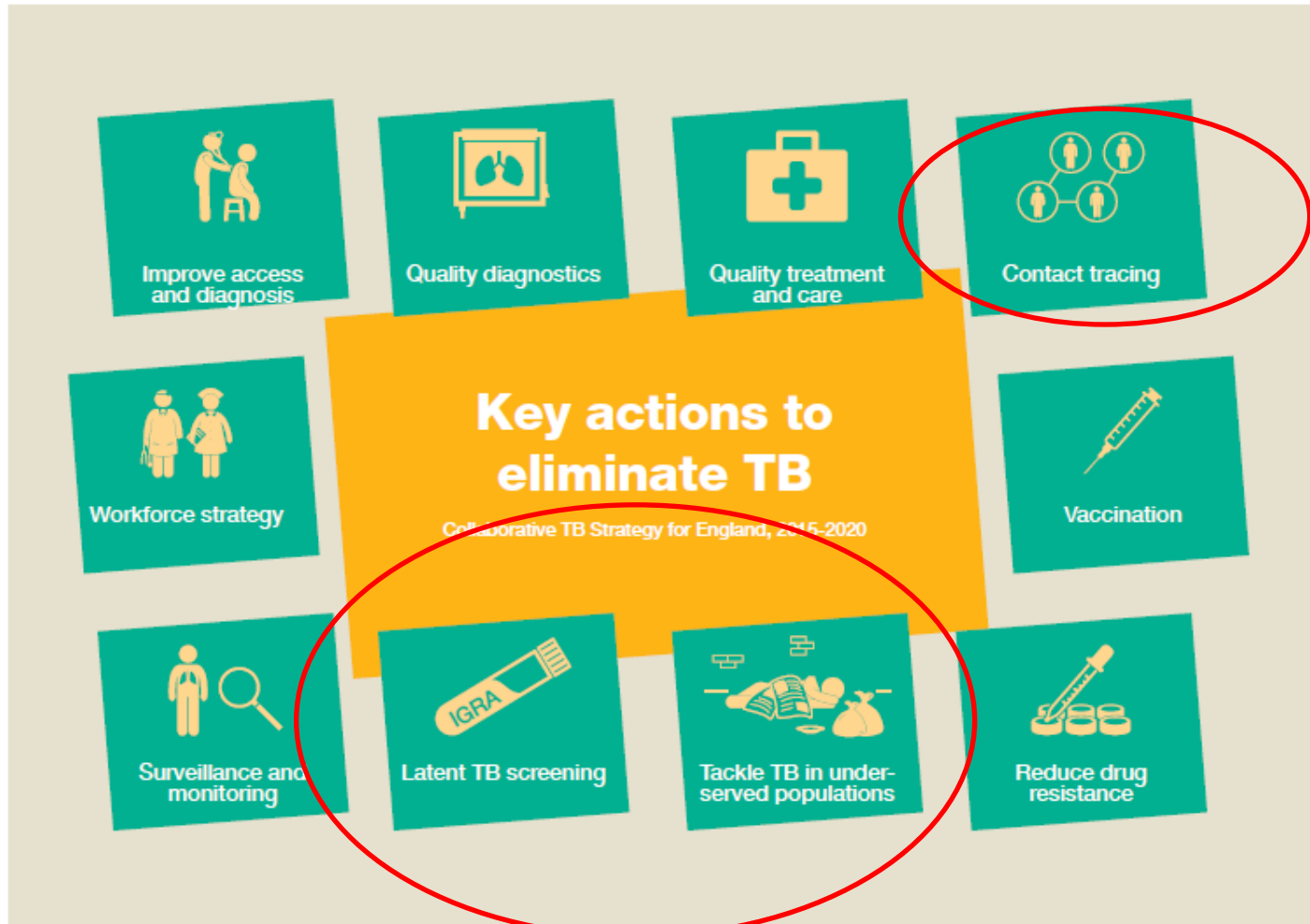
UK TB Response

Healthmatters Reducing the burden of tuberculosis

5. Collaborative action

Further work is needed to ensure that we continue to see an ongoing decline in TB cases in England. This involves taking forward the 10 areas of action from the collaborative TB Strategy for England. Examples of actions for stakeholders include:

- **Local authorities** are encouraged to use the PHE TB Fingertips tool to assess their local TB burden
- **TB clinical teams** are encouraged to improve local TB control
- **Clinical Commissioning Groups (CCGs)** can commission and support highly-targeted case finding and prevention activities, which focus on high-risk groups





PHE/UoL North West TB Contacts Study

Study 1: Should we continue screening contacts of patients with EPTB?¹

Study 2: Can patients' Enhanced Case Management (ECM) level predict their contacts' risk of developing TB disease?²

1) Wingfield et al, Thorax 2017

2) Wingfield et al, IJTLDD 2018



PHE/UoL North West TB Contacts Study

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Study 1: Background – NICE 2016

Offer screening to the close contacts of any person with pulmonary or laryngeal TB. [2006, amended 2016]

- No recommendation to screen contacts of people with extra-pulmonary TB (EPTB)
- Lack of cost-effectiveness cited despite some relevant evidence of substantial active TB rates in EPTB contacts not considered^{1,2}
- Decision challenged by some TB control teams

1. Saunders et al, IJTL, 2014

2. Mandal et al, QJM, 2012



Study 1: Aims

1. Measure active TB rates in contacts of adults with TB in North West England
2. Compare these rates by site of TB disease, country of origin, and years in UK
3. Compare these rates to:
 - a) UK new-entrant screening program eligibility thresholds
 - Incidence $>40/100,000$ people per year
 - Prioritize incidence $>150/100,000$ people per year
 - b) UK new-entrant screening program active TB rates
 - $147/100,000$ people per year¹

1. Aldridge et al, Lancet, 2016

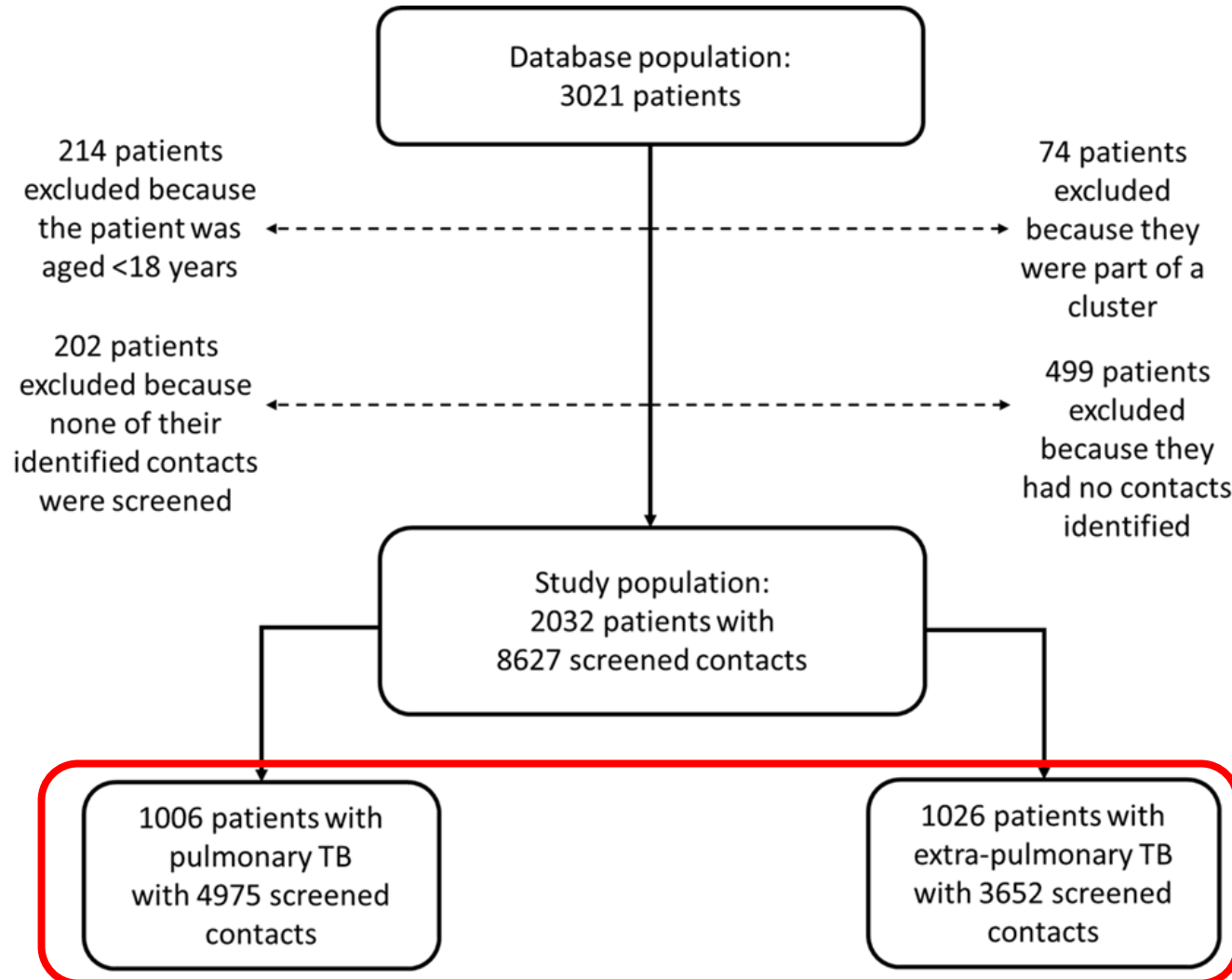


Study 1: Methods

- Data collected from Public Health England's Enhanced TB Surveillance (ETS) system and TB cohort review
- **Eligibility:** adult residents of North West England with microbiologically/clinically confirmed TB with ≥ 1 contact but not part of a cluster (≥ 25 contacts)
- **Analysis:** Regression model and trend comparing rates of active TB disease in contacts by:
 - a. Site of TB disease
 - b. Country of origin and years in UK
- Study period 2012 – 2016 (pre-NICE 2016 guidance)



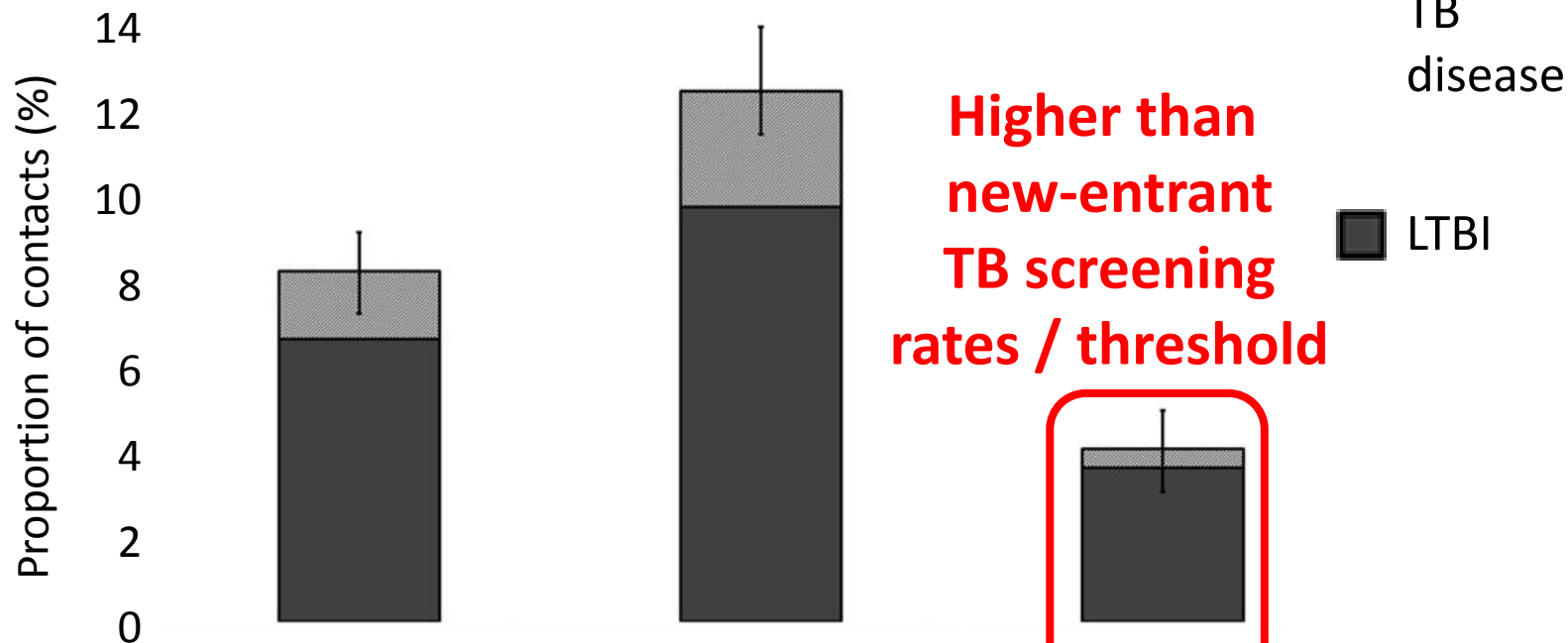
Study 1: Methods





Study 1: Results

$p < 0.001$

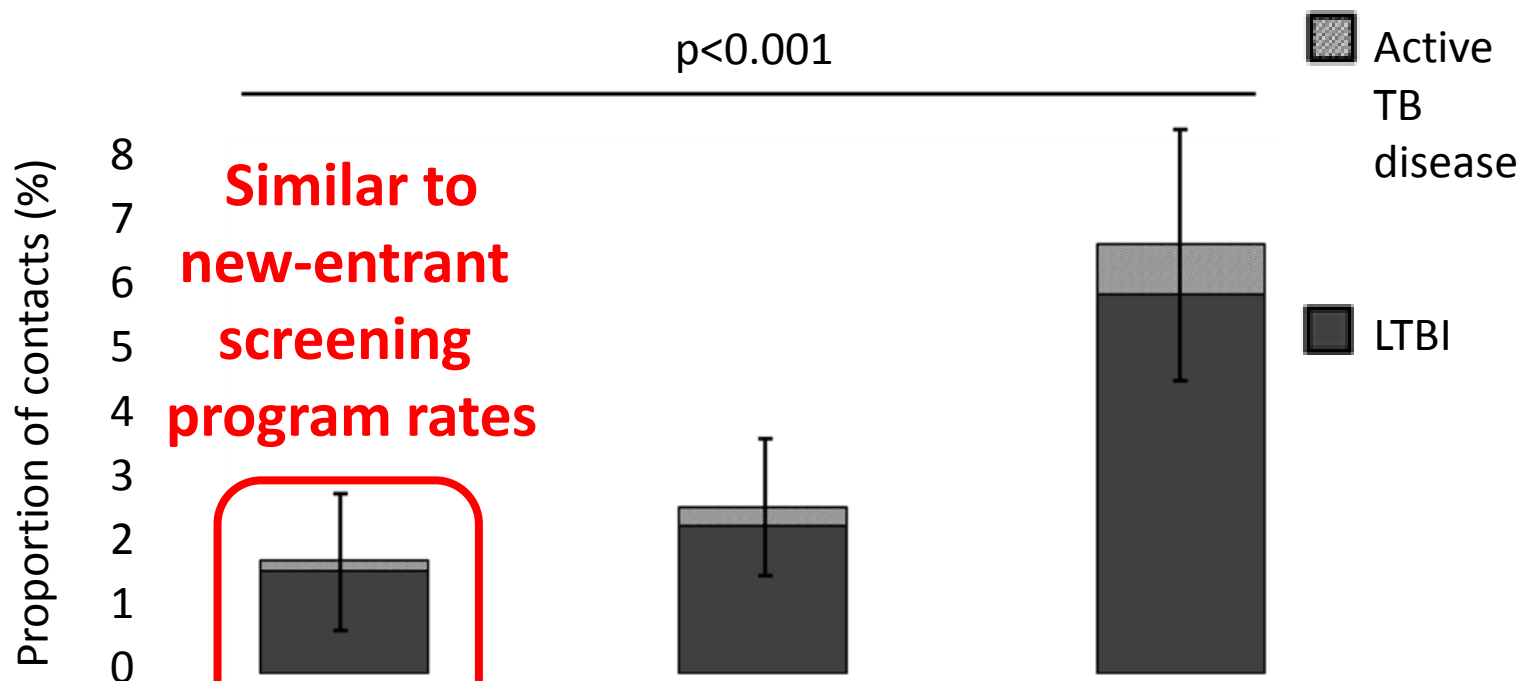


	All TB (n=2032)	Pulmonary TB (n=1006)	EPTB (n=1026)
Active TB disease rate per 100,000 screened	1600	2700	440



Study 1: EPTB Results

$p < 0.001$



	UK-born (n=189)	Non-UK born long-term migrant to UK (n=363)	Non-UK born recent migrant to UK (n=363)
Active TB disease rate per 100,000 screened	160	290	780



Study 1: Conclusions

- Rates of active TB disease were high in EPTB contacts and were:
 - Higher than thresholds for new/pre-entrant screening
 - Similar to yield in new-entrant screening programmes
- Influenced BHIVA TB/HIV guidance
- Reconsideration of NICE guidance



Study 1: Ongoing debate

- Cavany et al, Thorax 2018: screening of EPTB contacts in London unlikely to be cost-effective
- Wingfield et al, Thorax 2018: eliminating TB in England will never be cost-effective
 - as incidence of TB declines, cost per tracing will increase
 - increase in the proportion of TB cases who have complex social and clinical risk factors requiring ECM
 - cost-effectiveness wrongly assumes homogeneity
 - will require innovative solutions



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Study 2: Background





Study 2: Aims

- Assess the association of patients' ECM level with their contacts risk of:
 - LTBI
 - Active TB disease



Study 2: Methods

Same population as Study 1 (sensitivity analysis excluding those eligible for pre/new entrant screening programmes)

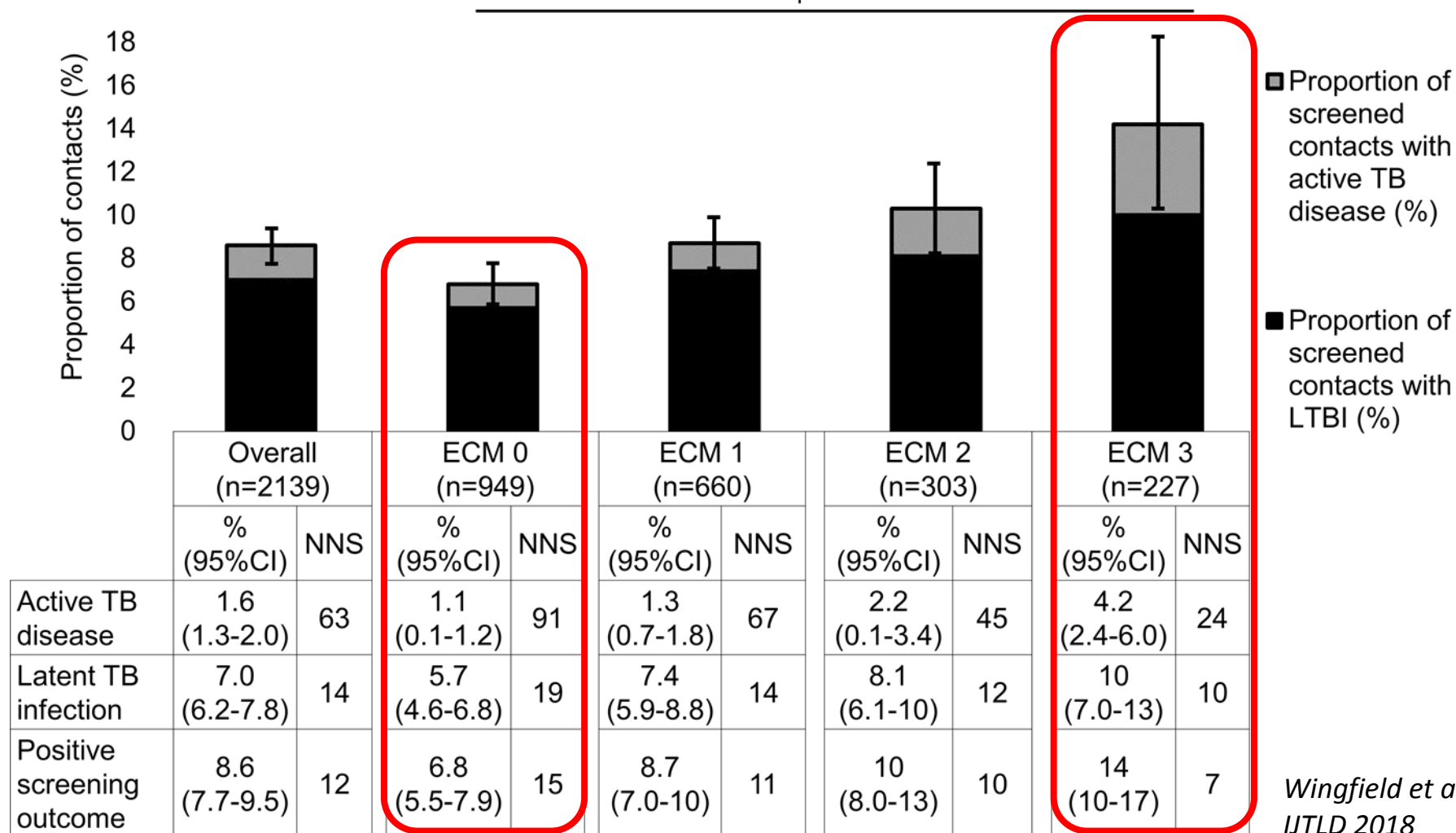
ECM Factors

- **Language barrier**
- **DOT**
- **Homelessness** or housing issues due to finance
- **Migrants** with difficulty accessing funding / benefits
- Drug **resistance** / more than one drug resistance
- Complex contact tracing: children / **vulnerable groups** / extensive
- **Children who DNA and social service** involvement is require
- Difficult to reach – **consistent DNA at clinics** / home for reviews



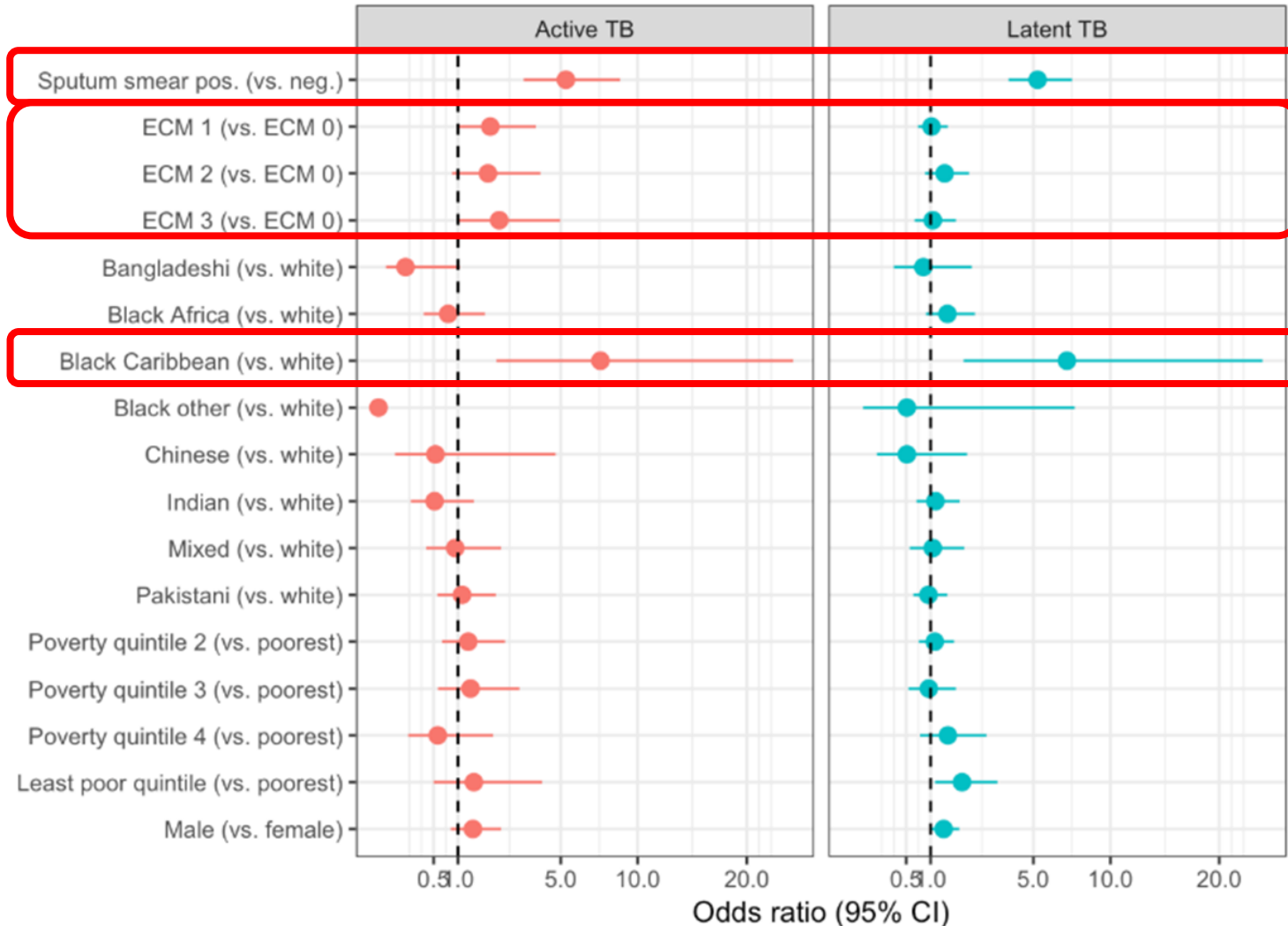
Study 2: Results

$p < 0.001$





Study 2: Results





Study 2: Conclusions

- TB-affected households share social risk factors
- Patients' ECM level predicts their contacts risk of active TB disease (vulnerable households)
- Contacts of Afro-Caribbean patients appear more likely to have active TB disease
- TB multi-disciplinary teams could use ECM to inform resource prioritisation for tracing high-risk contacts



Further work

- Use routinely collected PHE/Cohort data to:
 - Improve accuracy of ECM evaluation and tailored response
 - Characterise risk factors for diagnostic delay
 - Identify risk factors for TB diagnosis post-mortem (nationally)
- National TB Patient Costs Survey
 - Identify socioeconomic burden of “free” TB care in England
 - Potential catastrophic costs indicator
 - Socioeconomic support packages



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Any
questions?

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