

UNIVERSITY OF  
BIRMINGHAM



# HEALTH AND ECONOMIC IMPACT ASSESSMENT

DR SUZANNE  
BARTINGTON

WM-AIR  
CLEAN AIR SCIENCE FOR  
THE WEST MIDLANDS

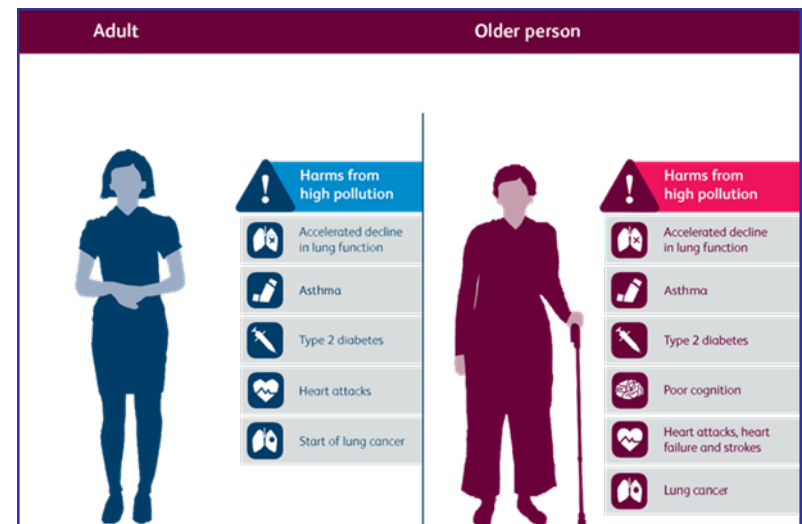
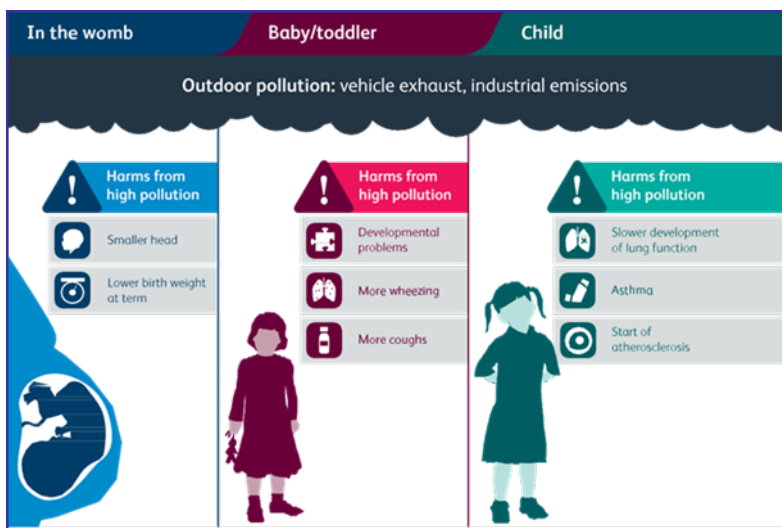


# STRAND 4: PUBLIC HEALTH AND ECONOMIC IMPACT ASSESSMENT

**Aim:** Application of research capabilities to enable assessment of air quality predictions/policy measures on health and economic outcomes,

## Context

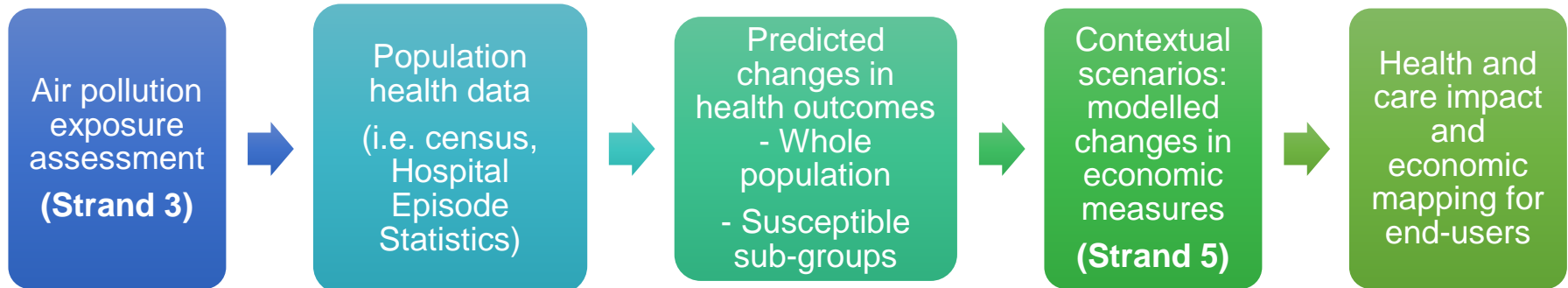
- Air pollution affects approximately 2.4 million people in the West Midlands
- Annual health cost (Birmingham) £190 - £470 million per year
- Vulnerable groups: young children, pregnant women, the elderly, those with chronic health conditions, those in areas of high deprivation



1: *Every Breath We Take: The lifelong impact of air pollution*, RCP 23 Feb 2016

# AIR QUALITY LIFECOURSE ASSESSMENT TOOL

- Assessment of impact of **AQ policy scenarios** upon:
  - Birth outcomes: low birth weight
  - Physical health: respiratory, cardiovascular, metabolic disease
  - Mental health: cognitive decline, dementia
  - Health inequalities: premature mortality, healthy life expectancy
- Development of an **economic decision model** to predict:
  - Service demand: hospital admissions/A&E Attendances
  - Economic evaluation: morbidity burden, Quality Adjusted Life-Years



# POPULATION LEVEL HEALTH DATA SOURCES

- **Hospital Episode Statistics (HES)**

- Database of hospital admissions, A&E attendances and outpatient appointments at NHS hospitals (England)
- Information – clinical (diagnosis, operation), administrative (admission/discharge data), geographical (postcode)
- Patient confidentiality maintained (small number suppression)

- **Health Outcome Measures**

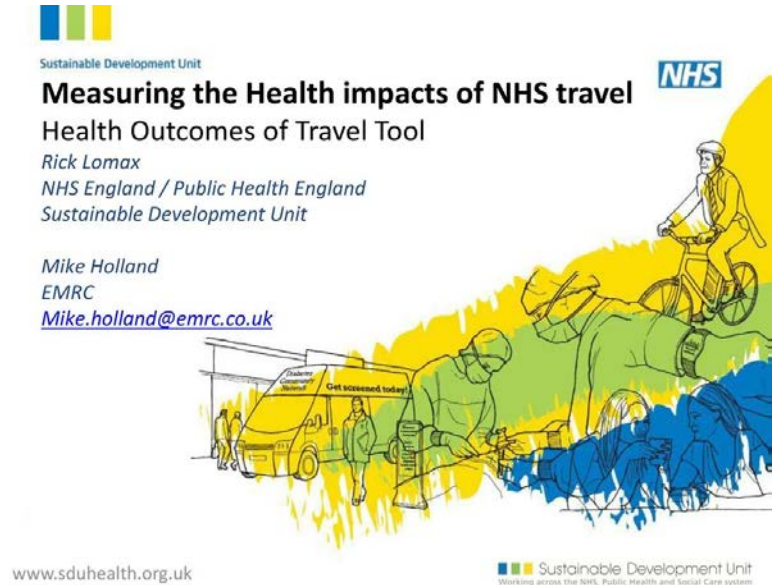
- Calculated for every Lower Super Output Area (LSOA) in England (average population 1500 residents)
- Population denominator obtained from ONS census data
- Calculation of admission/incidence rates for specific disease conditions (e.g. Ischaemic Heart Disease, COPD, asthma)

# ECONOMIC DECISION MODELLING TOOL

- **Establish lifetime impacts on population health:**
  - Apply AQ Lifecourse assessment tool at baseline
- **Link population health status to data:**
  - Health and social care resource use and costs
  - Mortality
  - Quality of life (QoL weights to disease states)
- **Assessment of impact on AQ policy scenarios**
  - Changes in health and social care utilisation and costs
  - Changes in life years and Quality-Adjusted Life Years (QALYs)
- **Model outputs**
  - Population and sub-groups
  - Regional and local estimates

# BIRMINGHAM AND SOLIHULL STP - AIR QUALITY DEEP DIVE

- Travel data analyses using the Health Outcomes of Travel Tool (NHS SDU)
- Key findings
  - 340 million miles travelled by NHS staff, patients and visitors.
  - Half of all overall mileage was staff commuting.
  - Ambulance and business travel only a small proportion of total mileage



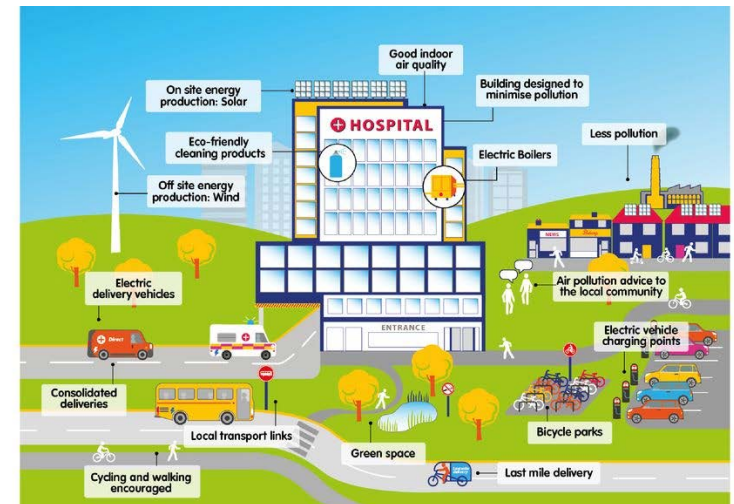
# CLEAN AIR HOSPITAL FRAMEWORK – EVALUATION

- **Assessment tool:**

- Understand components of a clean air hospital
- Self assess progress against seven domain measures
- Develop a clean air action plan to improve air quality
- Assign organisational ownership to implement the action plan
- Track and report progress towards becoming a clean air hospital

- **Case study** (Queen Elizabeth Hospital)

- Implementation
- Evaluation
- Feedback



# PROFESSIONAL COMMUNITY AND POLICY IMPACT

- **University Hospitals Birmingham NHS Foundation Trust**
  - Academic support for Sustainable Development Management Plan
- **Association of Directors of Public Health West Midlands**
  - Expert input to regional Air Quality Policy Position Statement to support national ADPH Policy Position on Outdoor Air Quality
  - Policy statement to be launched at West Midlands Public Health Excellence Conference Air Quality Workshop (28 November 2019)
- **National Institute for Health and Clinical Excellence**
  - Stakeholder consultation for Public Health and Social Care Guidelines
  - Quality Standard [QS181] Outdoor air quality and health – Feb 2019
  - Guideline [GID-NG10022] Indoor air quality at home - Dec 2019

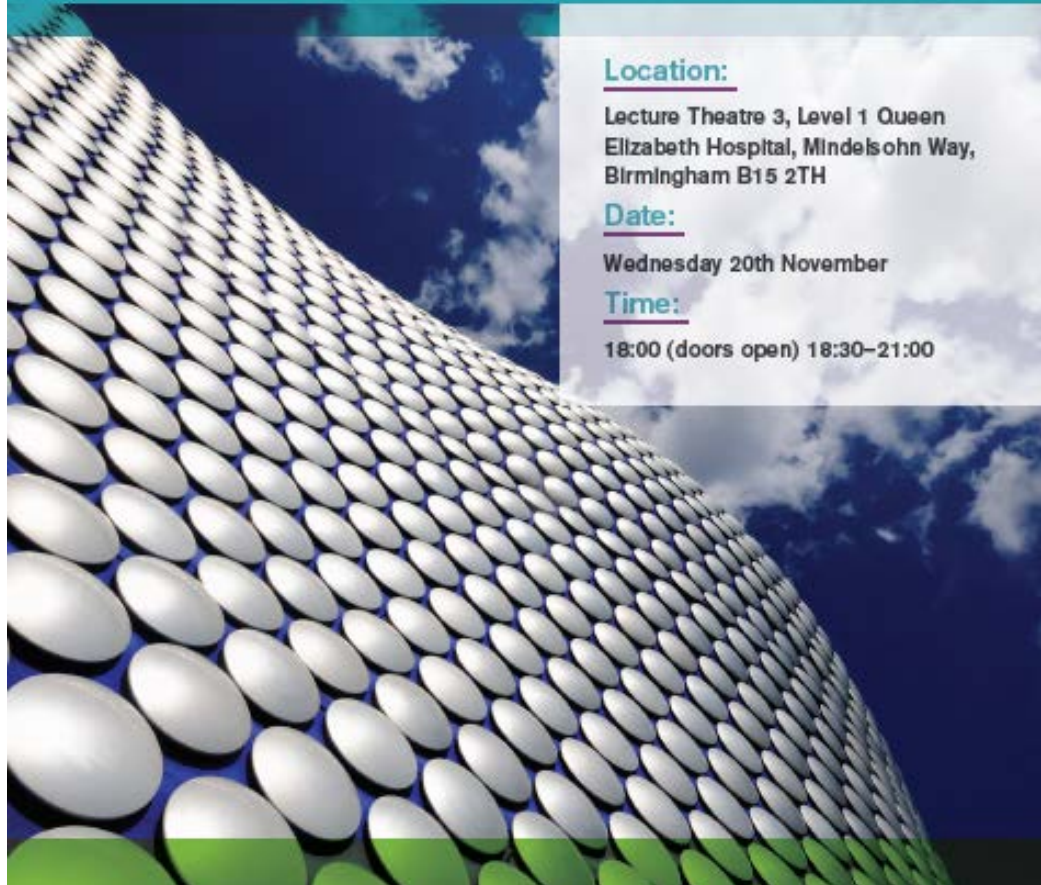


# HEALTH IMPACT ASSESSMENT – CASE STUDIES



# Clean Air for All

*Working together to improve the air we breathe for better health*



Location:

Lecture Theatre 3, Level 1 Queen Elizabeth Hospital, Mindelsohn Way, Birmingham B15 2TH

Date:

Wednesday 20th November

Time:

18:00 (doors open) 18:30–21:00

To book a place please visit:

<https://www.birminghamhealthpartners.co.uk/event/clean-air-for-all/>

# ACKNOWLEDGEMENTS

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- Dr Christopher Chiswell



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- Dr James Hall

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- Andy Cope

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