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Air Quality and Public Health Impacts

PROGRAMME TEAM

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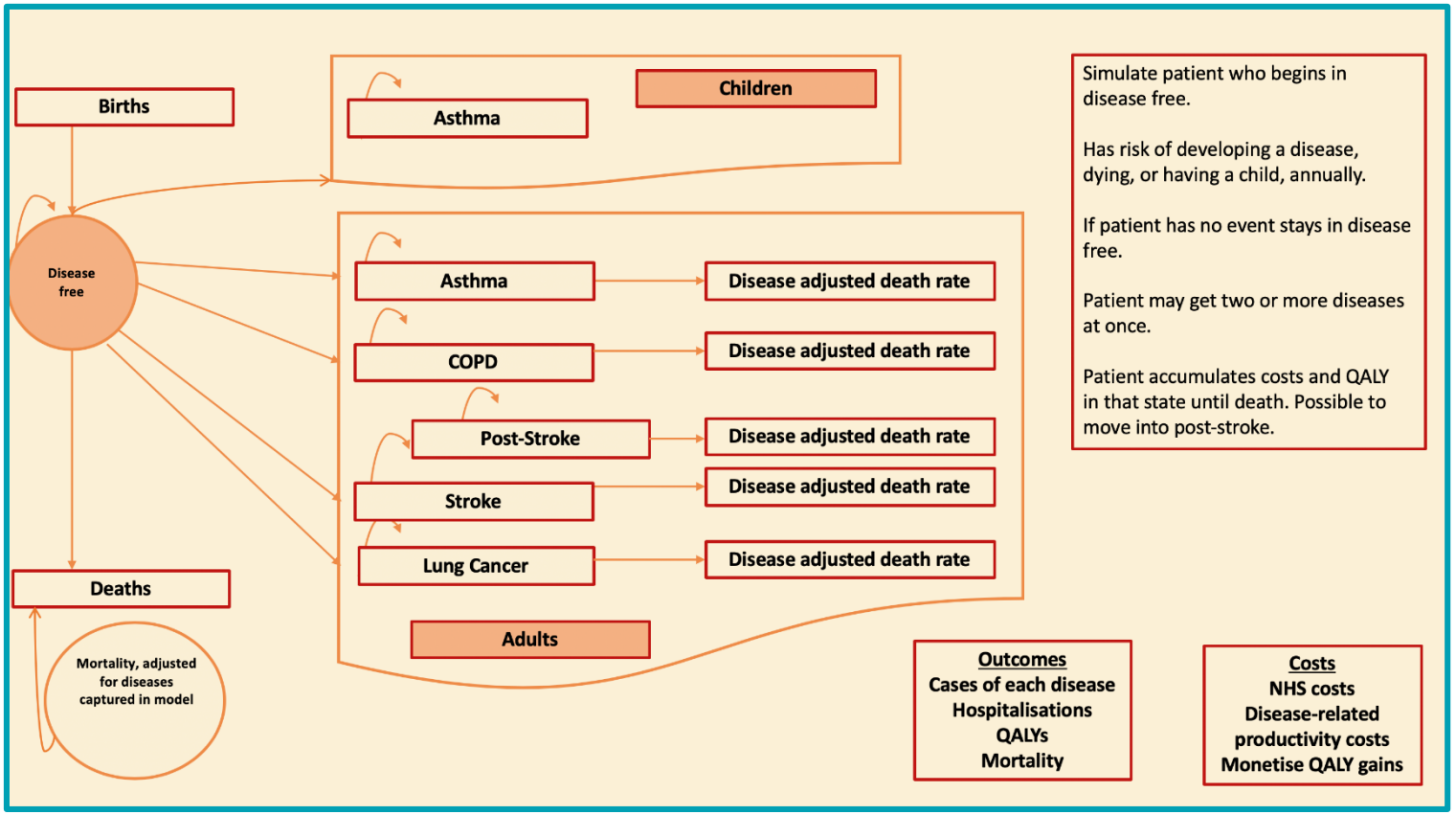
CLEAN AIR SCIENCE FOR
THE WEST MIDLANDS

Health Impacts – Strand Overview

- Toolkit – health and economic AQ impact assessment
  - Small area public health outcome mapping

- Health impact case studies
  - Healthcare sites and vulnerable groups
  - Transport modes and modal shift
  - Planning and development
  - Responsive studies e.g. School Streets , Low Traffic Neighbourhoods, cycleway schemes

Air Quality Lifecourse Assessment Toolkit – Overview



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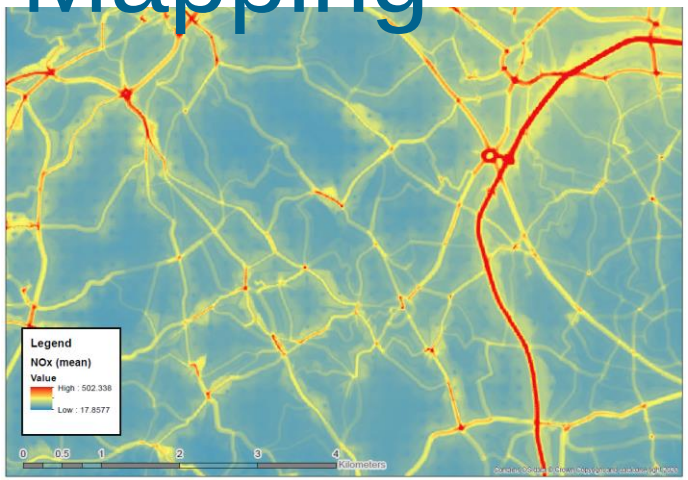
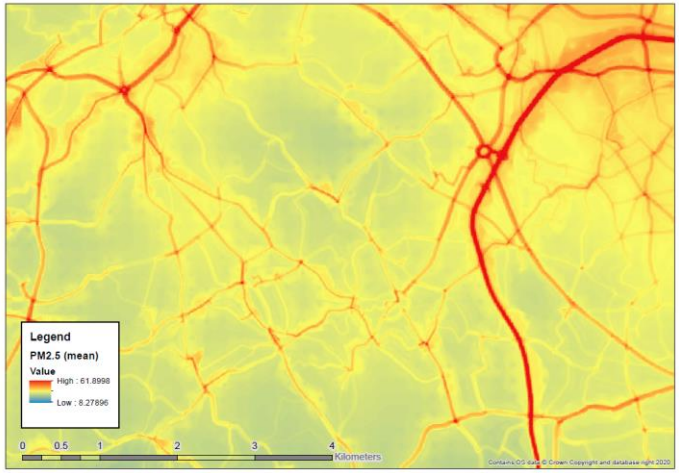
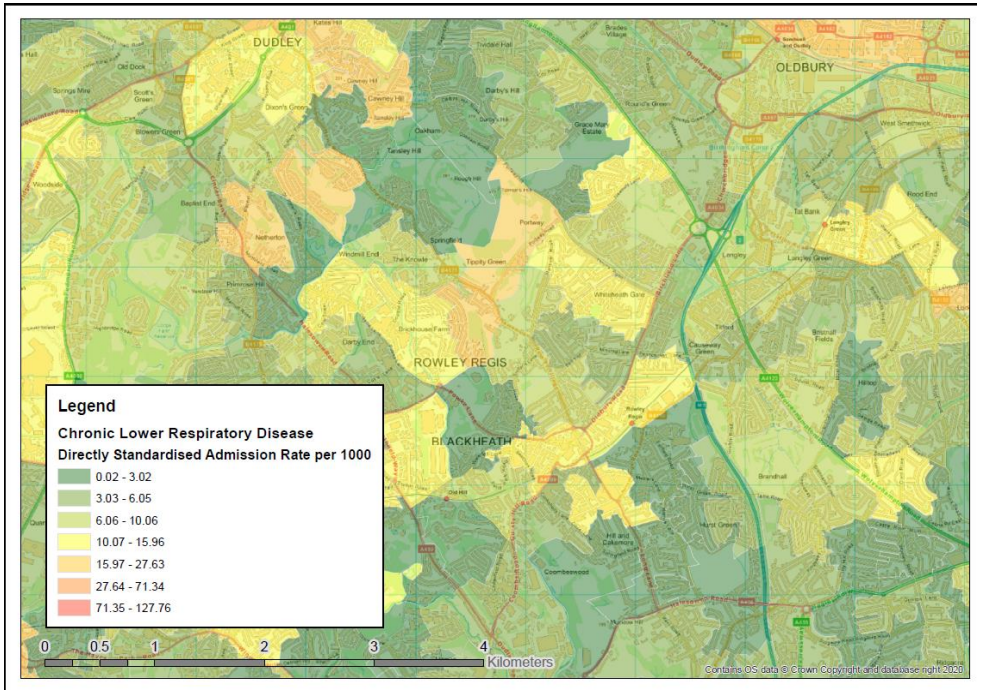
Air Quality Lifecourse Assessment Toolkit – Data Sources

Model Parameter	Usage	Source / method
Population demographics	To tailor cohort to produce ward specific estimates	ONS
Baseline disease incidences	To simulate baseline incidences in business as usual scenario	Literature derived / HES data derived
National / Regional AP associated RR	To simulate incidences in AP reduction scenarios	Literature derived / HES data derived
Disease healthcare usage	To estimate HC use associated with a typical disease case	Literature derived
Utility scores	Estimate QALYs (quality adjusted life years) associated with each disease	Literature derived

Air Quality Lifecourse Assessment Toolkit – Small Area Disease Mapping





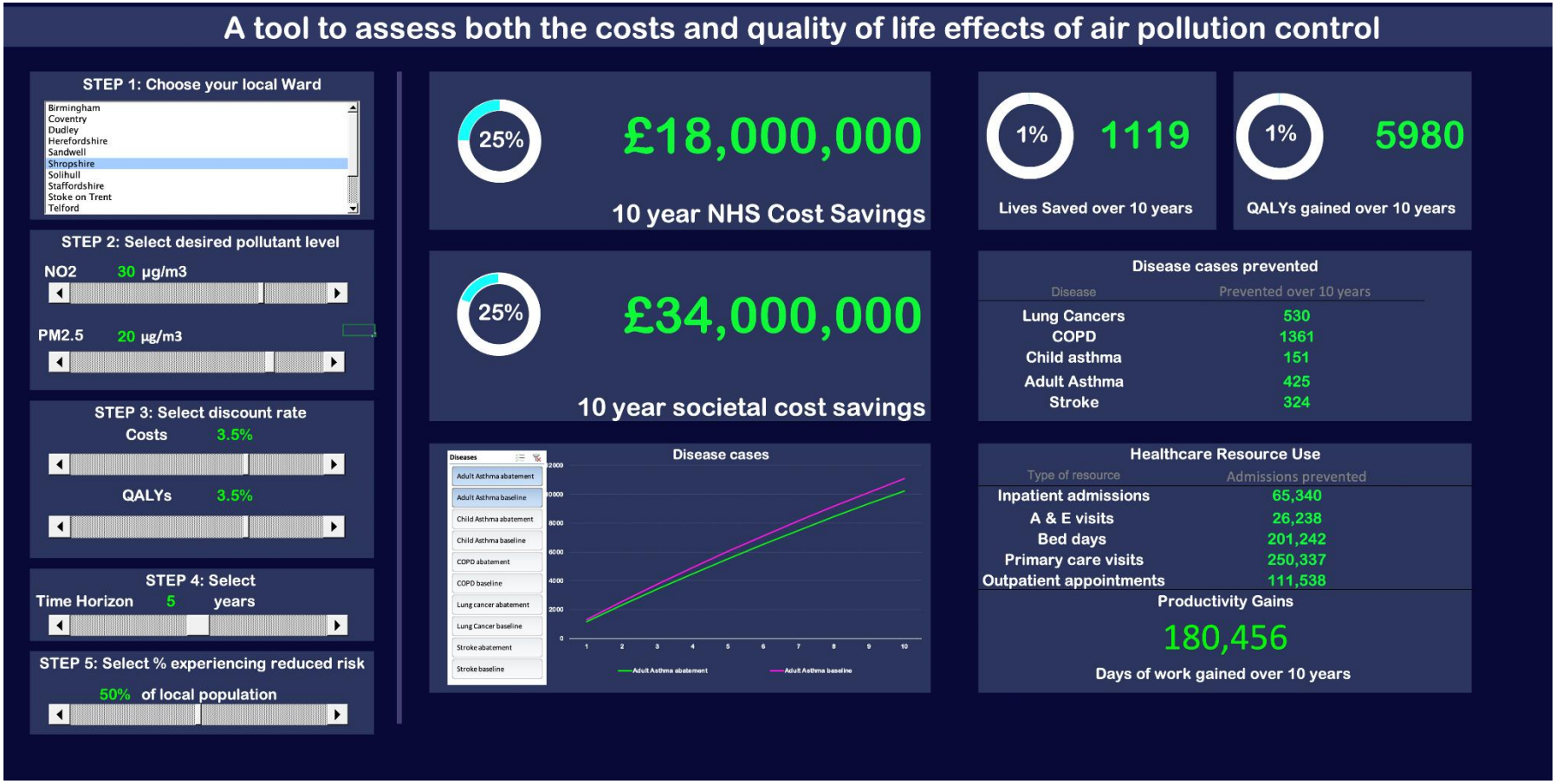


Hospital admissions for respiratory conditions in **Sandwell Metropolitan Borough Council** area

Air Quality Lifecourse Assessment Tool – Development

- Critically appraise Public Health England model, as well as other relevant economic modelling in Air Pollution.
- Consult local decision makers and partners regarding their needs
- Consult with senior economic decision modeler regarding model structure
- Understand data availability and analyze trade-offs between methodological rigor and meeting needs of partners

Air Quality Lifecourse Assessment Tool – Interface



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Air Quality Lifecourse Assessment Tool – Application

- To estimate health impacts of air pollution in local areas (e.g. wards) and population groups
- To predict health benefits of interventions (e.g. Clean Air Zone) at a small area level
- To inform area-level public health indicators and progress (e.g. Public Health Outcomes Framework)
- To assess economic costs and benefits arising from intervention measures
- To track public health progress of air quality actions

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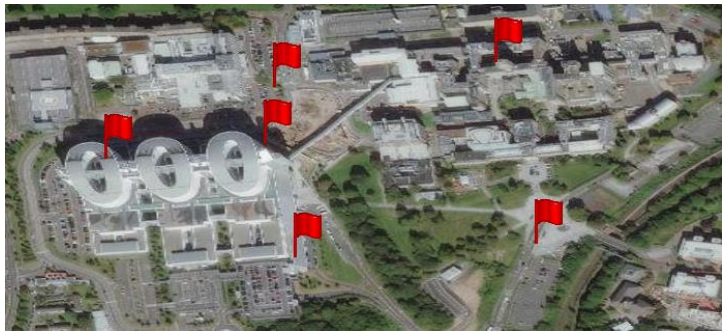
Case Study: UHB NHS Foundation Trust Air Quality Assessment

Queen Elizabeth Hospital



Heartlands Hospital

- Working with partners at UHB and NHS SDU to understand air pollution at acute Trust sites.
- Triplicate NO_2 diffusion tubes deployed at multiple locations around Queen Elizabeth and Heartlands hospitals.
- Aim to identify potential NO_2 hotspots, allowing improved evidence-based local decision making
- Link to NHS Net Zero plan: https://www.england.nhs.uk/greenernhs/a-net-zero-nhs/

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Case Study: Clean Air Hospital Framework Evaluation

- Strategy to improve air quality in and around hospitals
- Qualitative evaluation - interviews undertaken among UHB NHS Foundation Trust staff
  - Activities which impact upon air quality
  - Changes which could mitigate emissions
  - Feasibility of air quality actions
  - Predicted impacts (co and dis-benefits)

- Planned Outputs
  - Executive level report on key strategic changes to reduce existing operational impacts upon air quality
  - Evaluate the process of tool implementation to understand strengths and limitations

https://www.globalactionplan.org.uk/clean-air-hospital-framework/

Ongoing partnership work

- **West Midlands Combined Authority** - Regional Health Impact of COVID-19 programme and regional recovery network
- **Health Education England** - Public health practitioner training and skills development
  - *Inclusive Growth & "The Doughnut Model" for Economic Recovery* (Health Education England) - 10th November 2020

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