The power of data: harnessing routine data to inform equitable climate change policy and action.

Samantha Turner
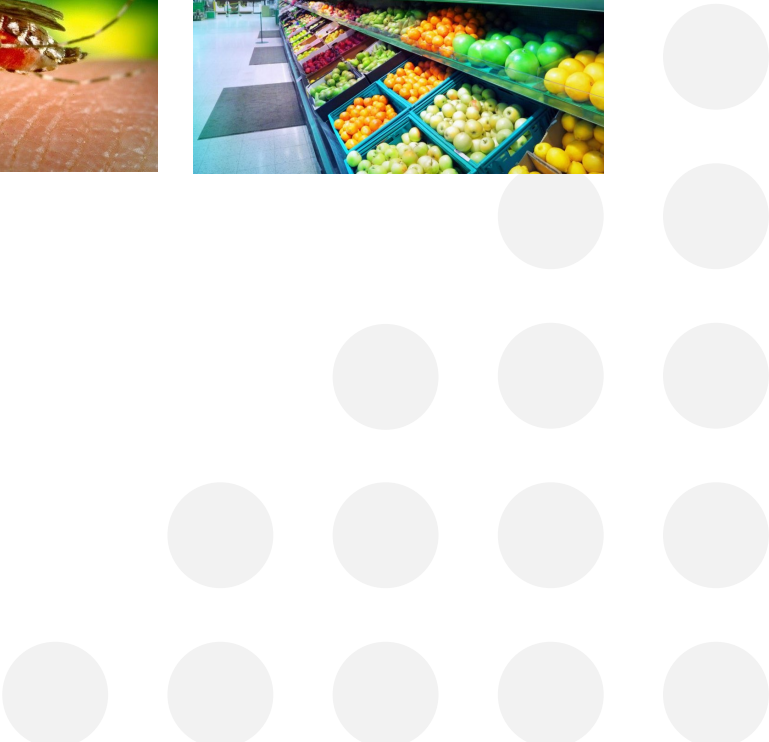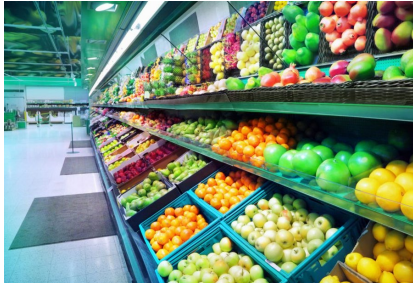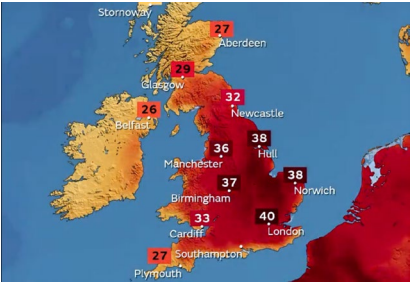Senior Research Officer for Climate Theme ADR Wales
Swansea University

Climate Change and Health

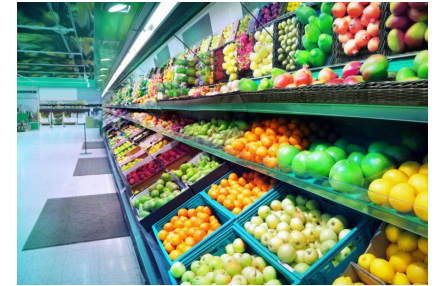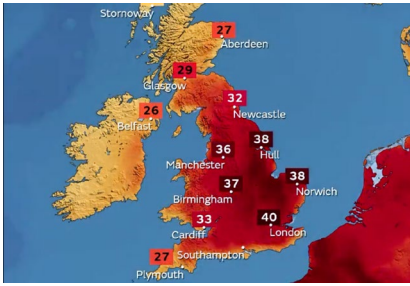Climate change is **no longer a future problem.**

WHO has declared climate change as the **single biggest health threat facing humanity.**

Climate Change and Health

Climate change is **no longer a future problem.**

WHO has declared climate change as the **single biggest health threat facing humanity.**

Health impacts **will not be the same for everyone**:
- Differential exposure
- Biological and social vulnerability
- Adaptive capacity

Vulnerable populations will bear the greatest health burdens.
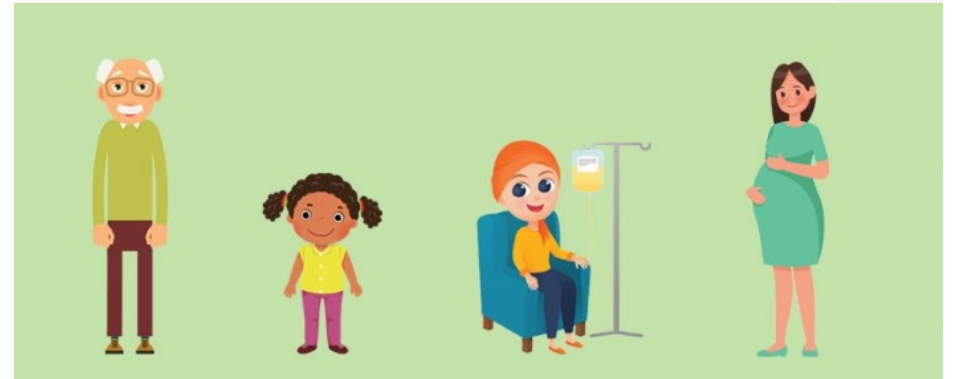
What is routine data and how can it help?

| GP Records | Hospital Records | Education | Social Services | Meteorological Records |
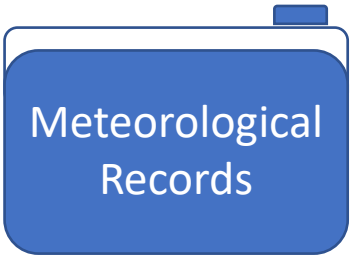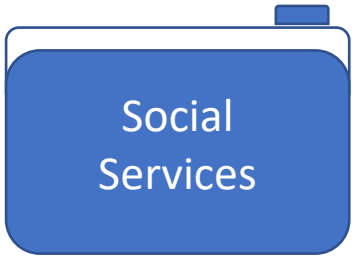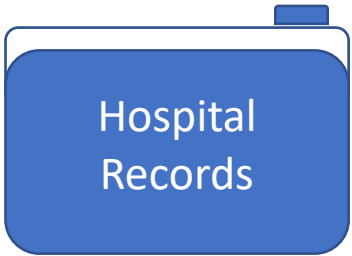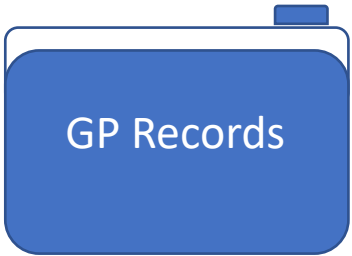
Rich source of information, but often data sit in **department/ organisation silos.**

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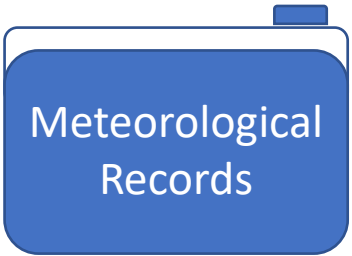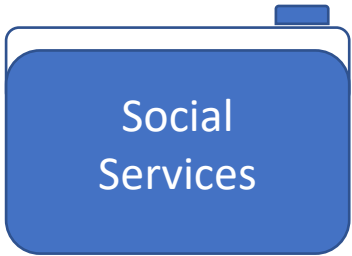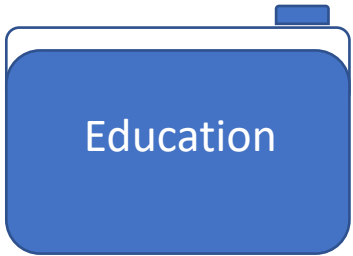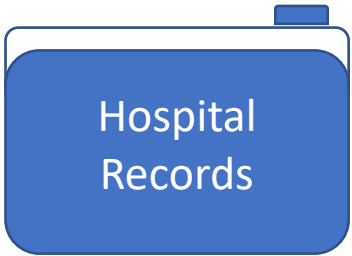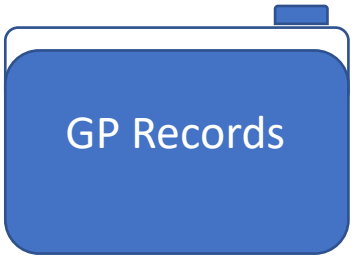
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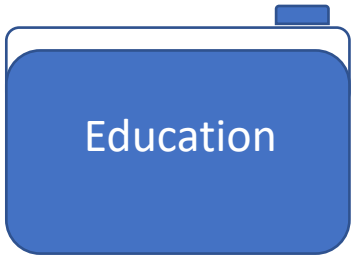
SAIL DATABANK

Secure **data repositories** enable de-identified data to be **linked and analysed** to support research, whilst **protecting individual privacy.**

YDG CYMRU | ADR WALES | UKRI | Economic and Social Research Council

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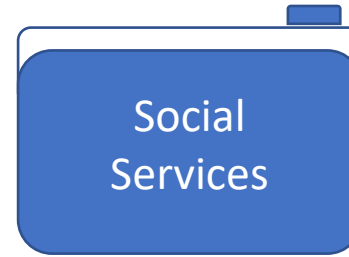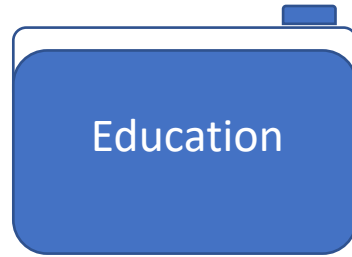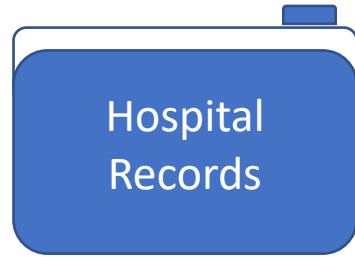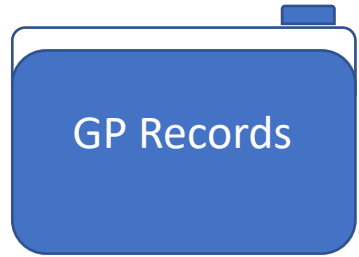
Secure **data repositories** enable de-identified data to be **linked and analysed** to support research, whilst **protecting individual privacy**

Benefits of secure, linked data repositories:

1. **Population-level data,** & can provide a **holistic view** of the **complex interaction** between climate change and health.

2. Identify and **monitor disparities**, to ensure a **just transition.**

3. Early detection of health impacts, that can be incorporated into **future forecast models**, to help build more resilient policies and systems in the future.

ADR Wales

Administrative Data Research Wales (https://adrwales.org/)
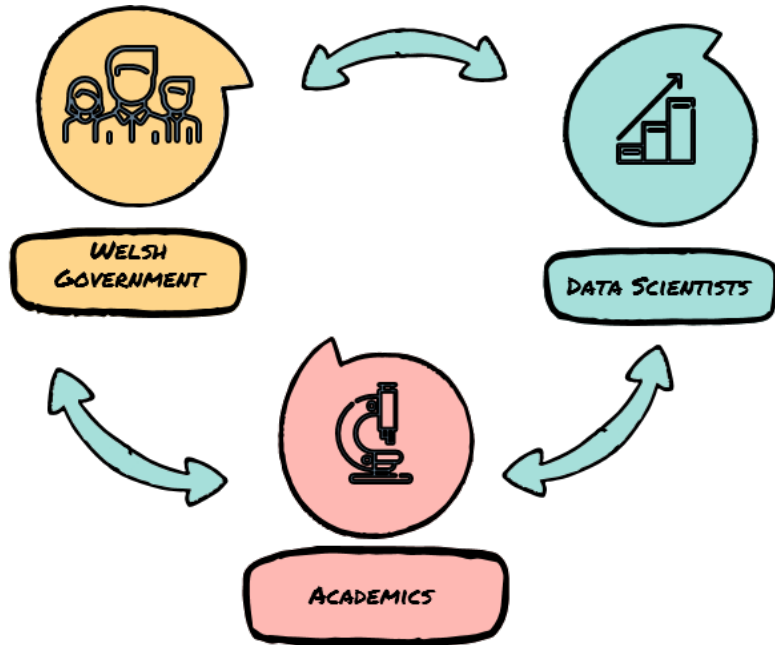
Aim: harness the potential of routinely collected administrative data to produce evidence that will inform future policy decisions in Wales.

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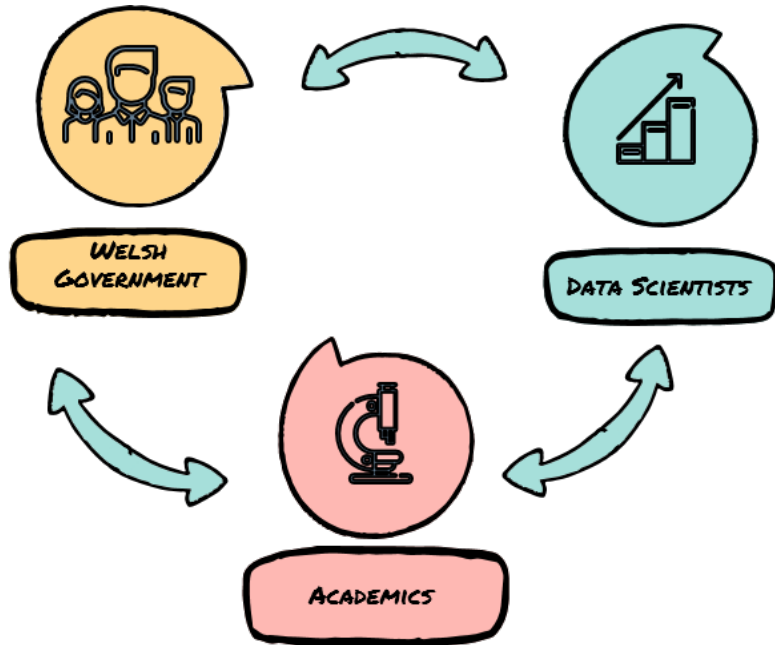
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10 core research themes that align with WGs Policy and Areas of Research Interest.

Climate change theme:
- Health and well-being impacts of extreme weather
- Active travel

SAIL Databank

https://saildatabank.com/data/

Secure, anonymised databank, data on population Wales (**5 ½ million people**).

Health, educational, social, environment data.

Data linkable at individual, household, area level.

Data de-identified via 'split-file' approach.

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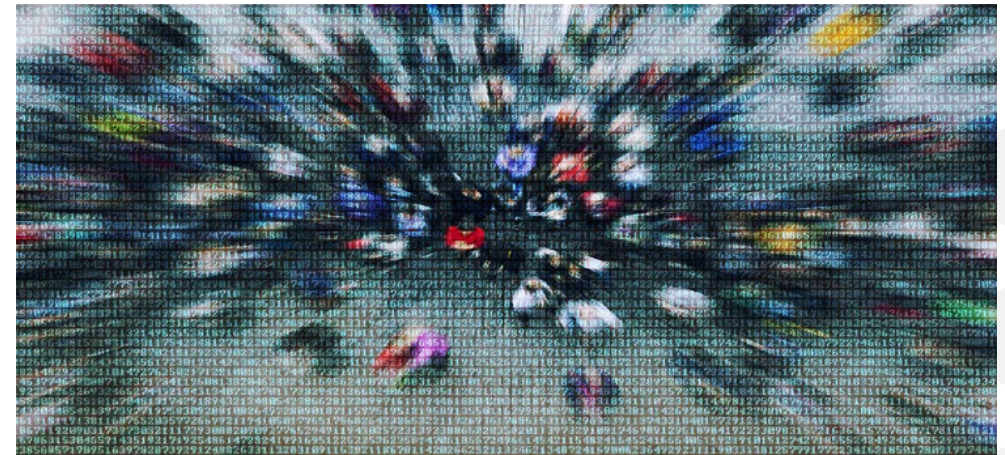
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Linking fields:
Individual: Anonymised Linking Field (ALF)
Household: Residential ALF (RALF)
Schools: Encrypted establishment code
Workplace: Workplace ALF (WALF, in-development)
Area: LSOA (Lower Layer Super Output Area)

MAGENTA

Maternal & Child Health in a Warming World
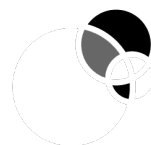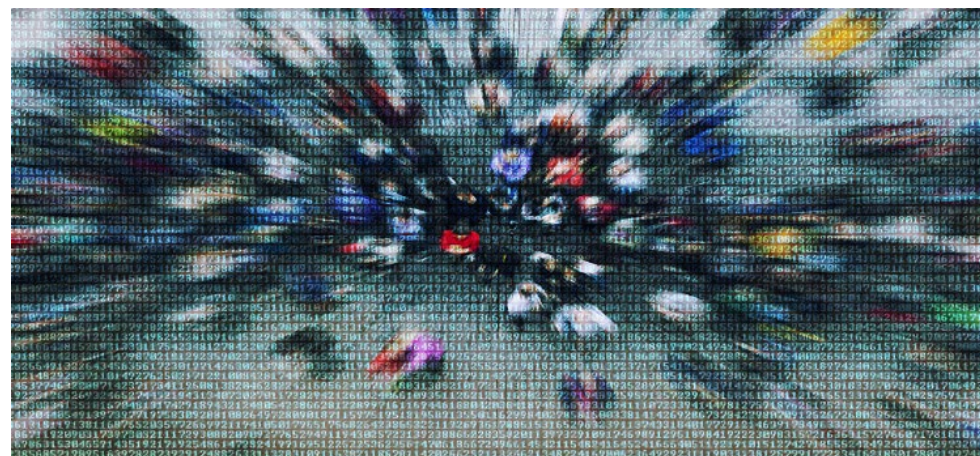
Maternal **a**nd Pre**g**nancy H**e**alth a**n**d Eleva**t**ed He**a**t

How exposure to elevated or prolonged heat during pregnancy impacts pregnancy outcomes for people living in selected communities in Wales and London.

Led by Swansea University, partnered with the Kids' Environment & Health Cohort at University College London (UCL).

£2.2m funding received from the Wellcome Trust.

January 2024 – December 2026

MAGENTA: Research Questions

1. What are the health impacts of exposure to increased or prolonged heat during pregnancy on mother and baby health in Wales and London?

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3. How does heat stress biologically affect mothers, placentas, and babies e.g. inflammation?

4. How do the findings we obtain from routine data and mother and baby bio samples inform our understanding of mother and baby health in future climate change scenarios?

MAGENTA: Approach

Wales and London

Swansea

WP1: Environmental data

WP2: Electronic health data

WP3: Participatory research

>10 years of temp and health data from >300,000 births in Wales and over 1.1 million in London. Biological samples from >200 pregnant women

WP4: Forecasting future trends

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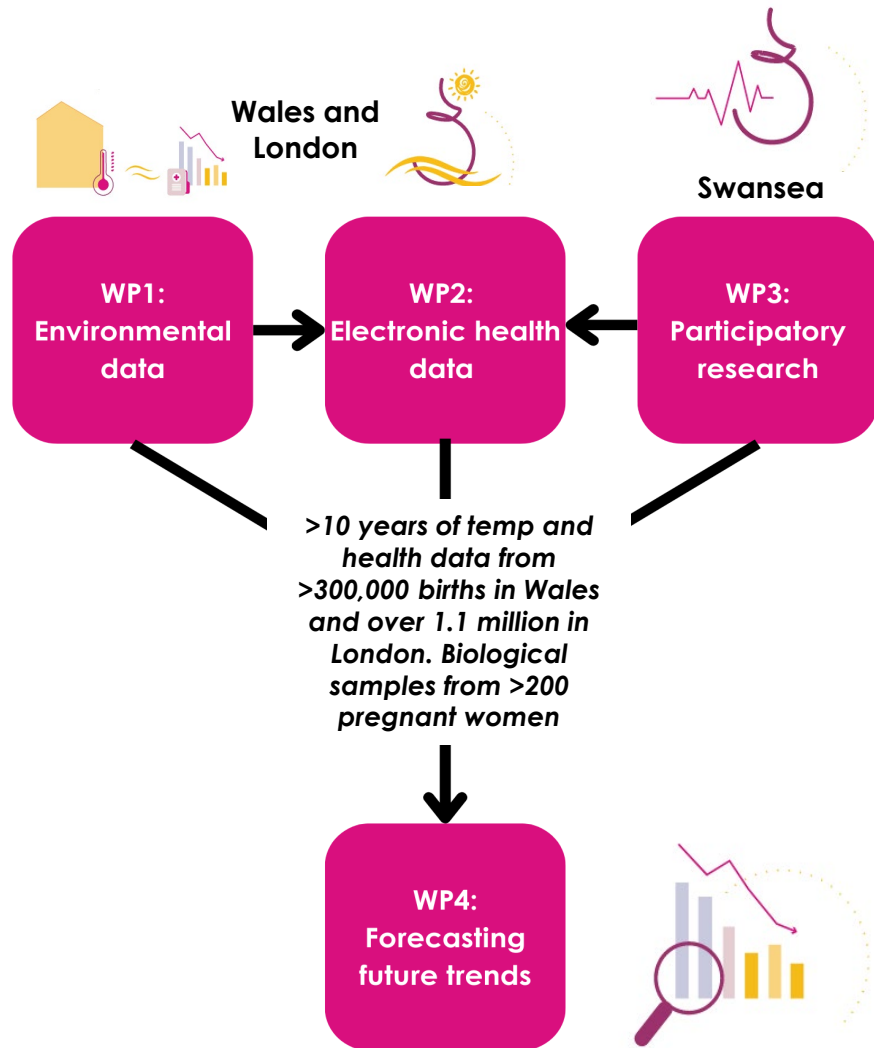
Trans-disciplinary team: Geographers, epidemiologists, statisticians, clinicians, immunologists, media experts and members of the public.

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Public Involvement
1. Steering Committee
2. Stakeholder group
3. PPIE group (monthly meetings)
4. Community engagement events

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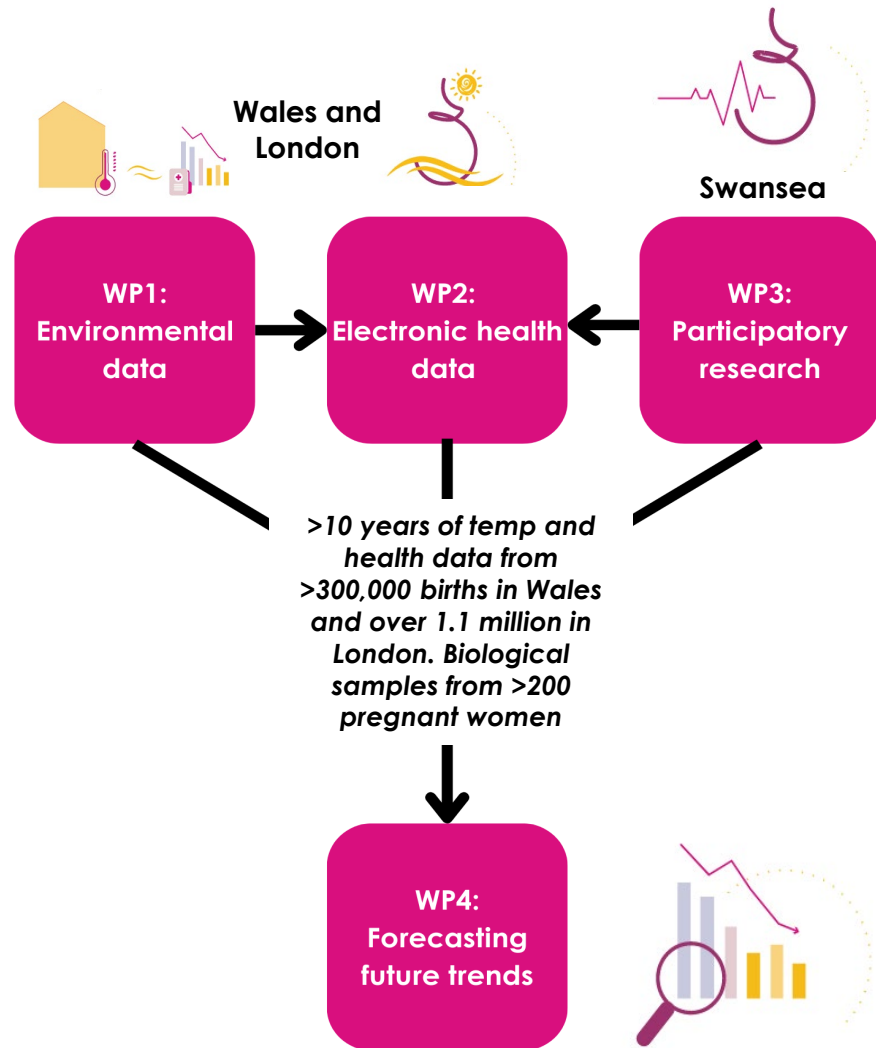
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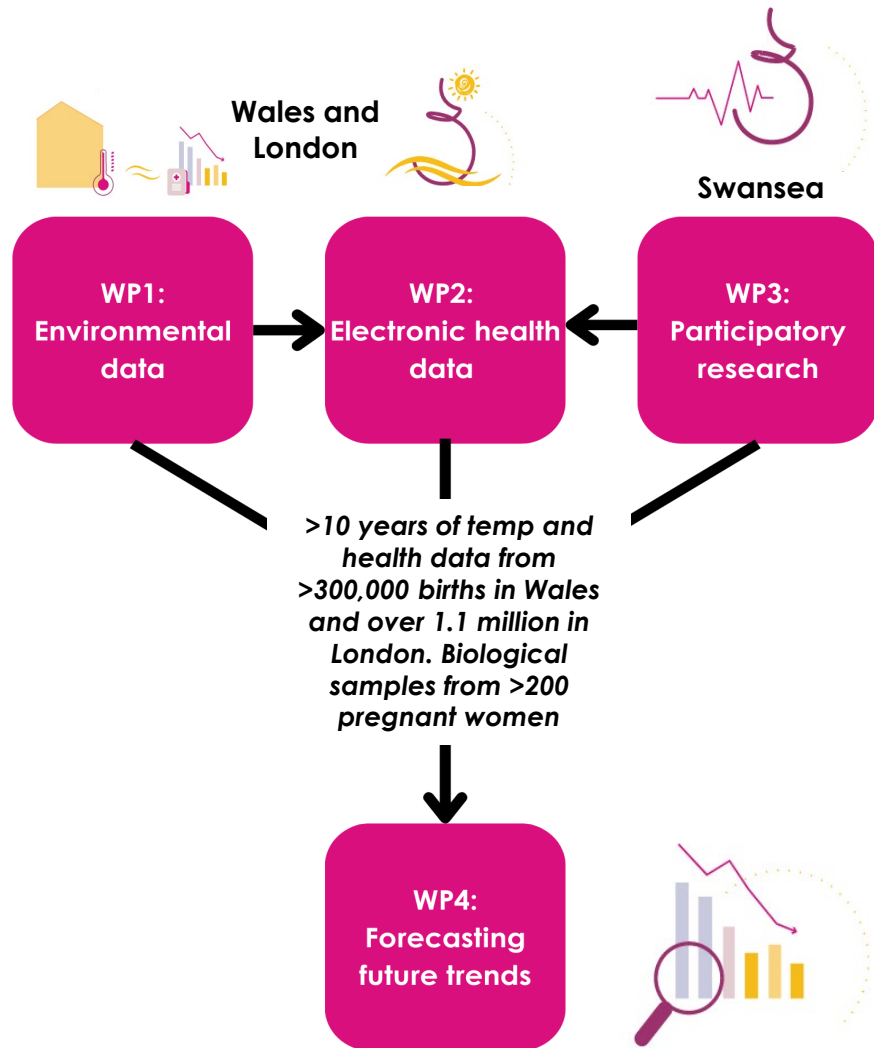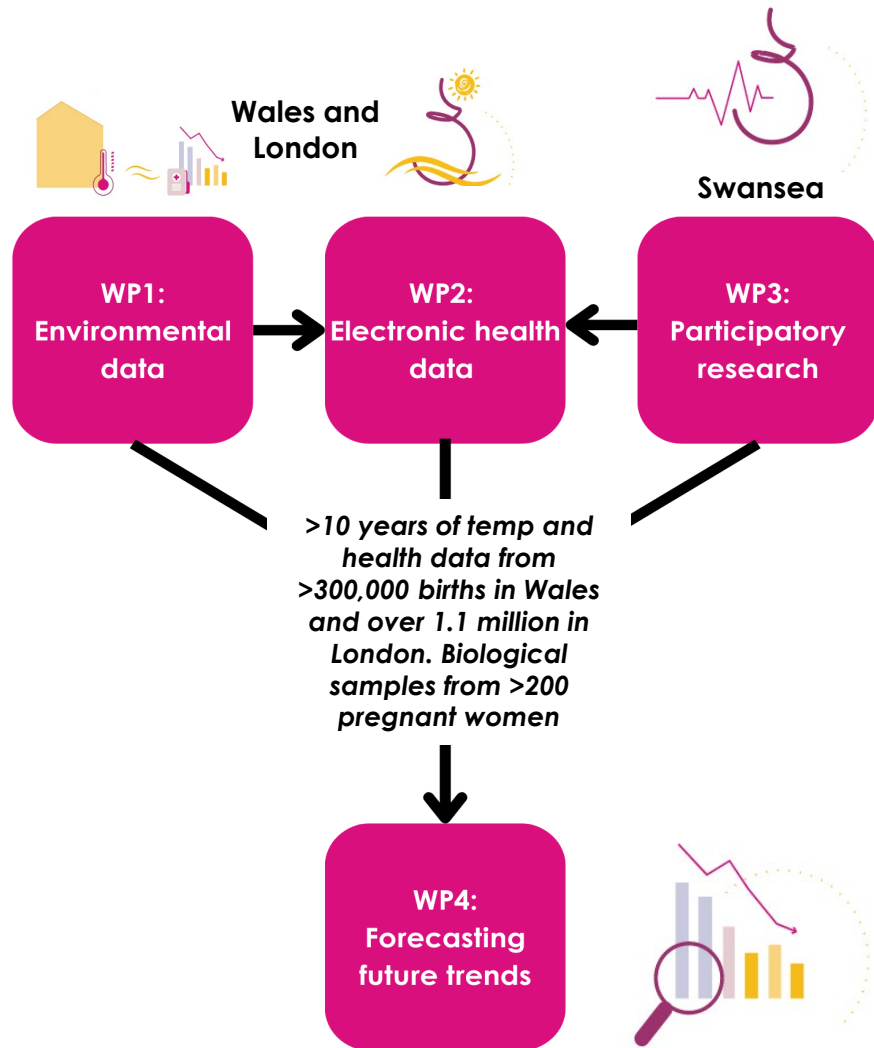
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Impact
1. To reveal the **impact of heat on pregnancy outcomes**.
2. To identify **vulnerable groups** who may be less resilient.
3. To produce **actionable recommendations** for public, policy makers and practice.

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Maternal & Child Health in a Warming World

Active Travel: Distance to school

Lack of comparable data on distance children live from **attended** and **nearest** to inform planning, policy and active travel interventions.

- Increased opportunities for **active travel**

- **Equitable access** to education

- Improved **air quality**

- Increased **social cohesion**

All important for **low-carbon, sustainable communities** and improved physical and mental **health**

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2 de-identified cohorts created in SAIL:

1. all children in a state school in Wales (2020) linked to distance data

   Explore distance children live from **attended** and **nearest** school in Wales (by socio-demographic breakdowns, school type, school language etc.)

2. all children who self-reported travel to school behavior in the School Health Research Network (2020) linked to distance data

   Explore **distance thresholds for active-to-passive** travel (by age, gender, deprivation, ethnicity, school type etc.)

Distance to school: Methods

Distance estimated using geo-spatial techniques outside of SAIL.

Shortest network distances generated for all schools within 50km of every UPRN in Wales, 2020 (650 million records).
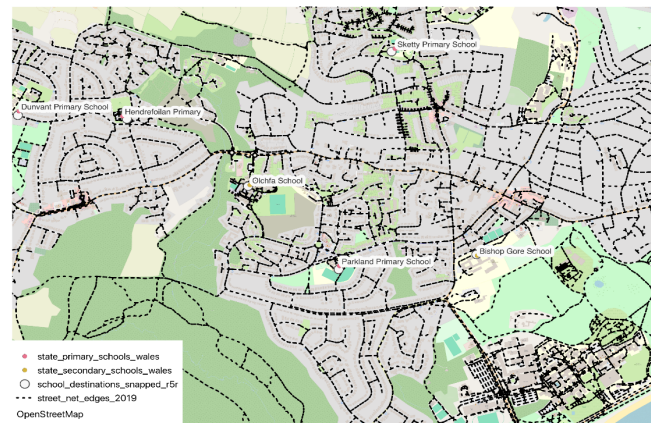
SAIL's split-file approach used to anonymise schools and UPRNs, upload to SAIL, and link to de-identified pupil data in Education dataset (EDUW) in SAIL.
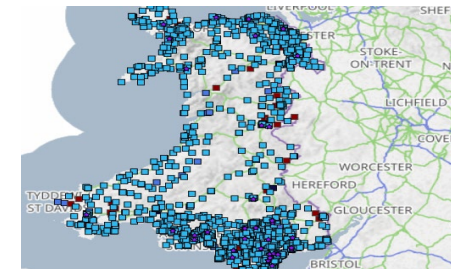
Unique Property Reference Number
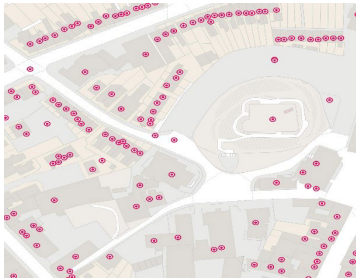
Unique Property Reference Number from OS AddressBase Premium

Calculate shortest network distance to all schools within 50km
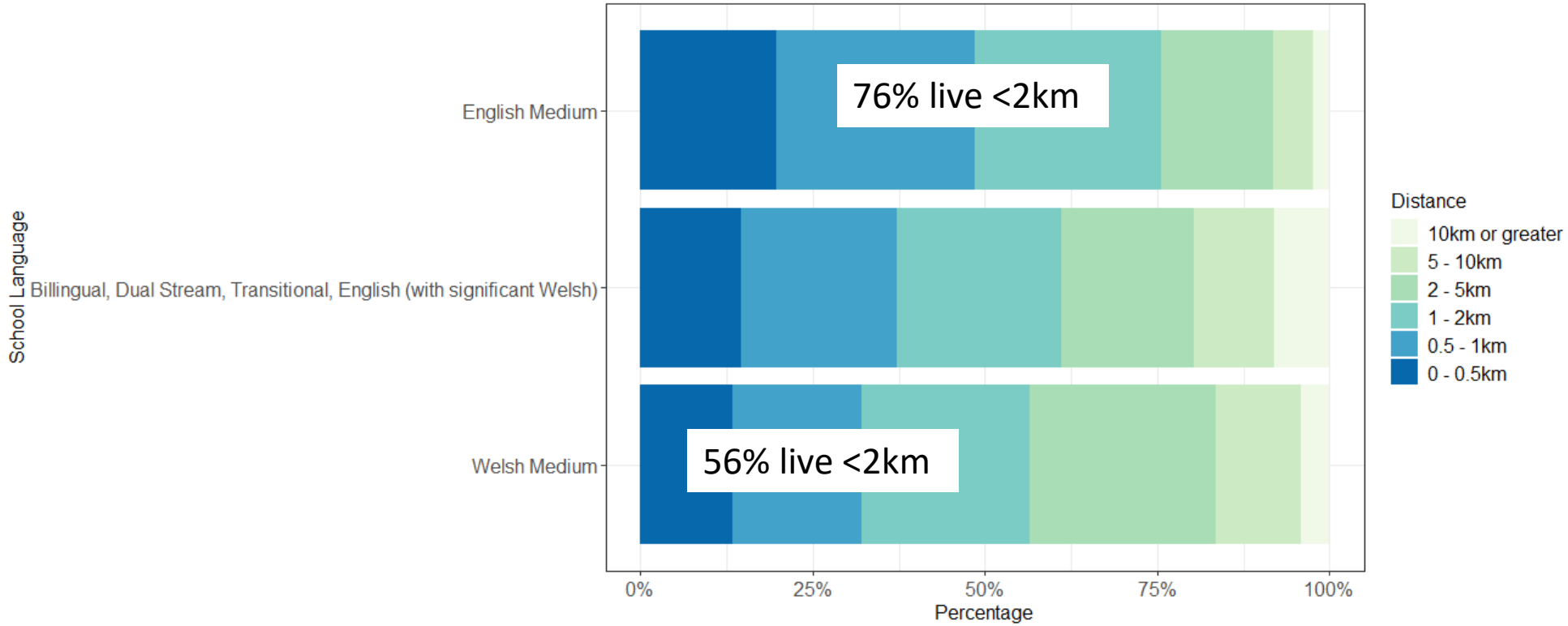

Unique School Number

School locations compiled from OS AddressBase, mylocalschool, Address list of schools and the Pupil Level Annual School Census (PLASC).

Preliminary results:
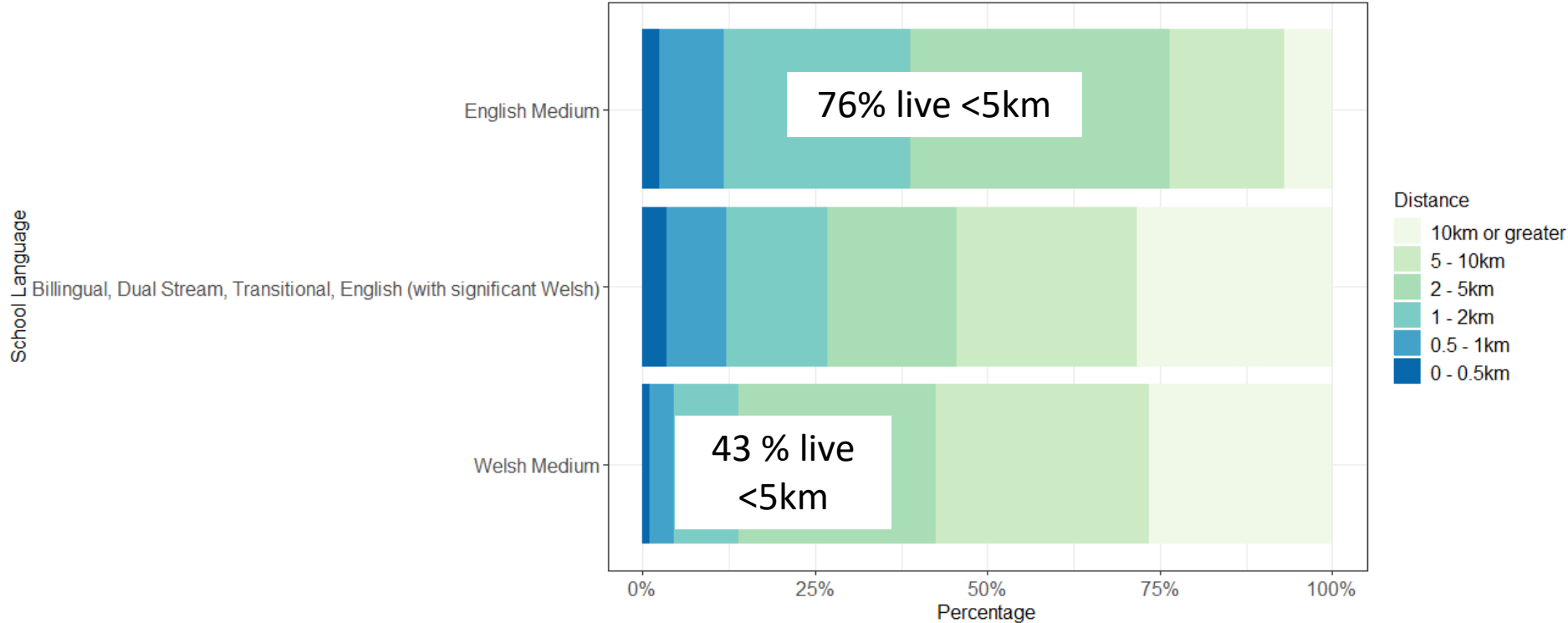## Primary age children, by School Language

Distance to school for all primary-aged children in Wales by school language, 2020

76% live <2km

56% live <2km

Preliminary results
Secondary age children, by School Language

Distance to school for all secondary-aged children in Wales by school language, 2020

76% live <5km

43 % live <5km

Distance
- 10km or greater
- 5 - 10km
- 2 - 5km
- 1 - 2km
- 0.5 - 1km
- 0 - 0.5km

Preliminary results
Secondary age children, by School Language

Distance to school for all secondary-aged children in Wales
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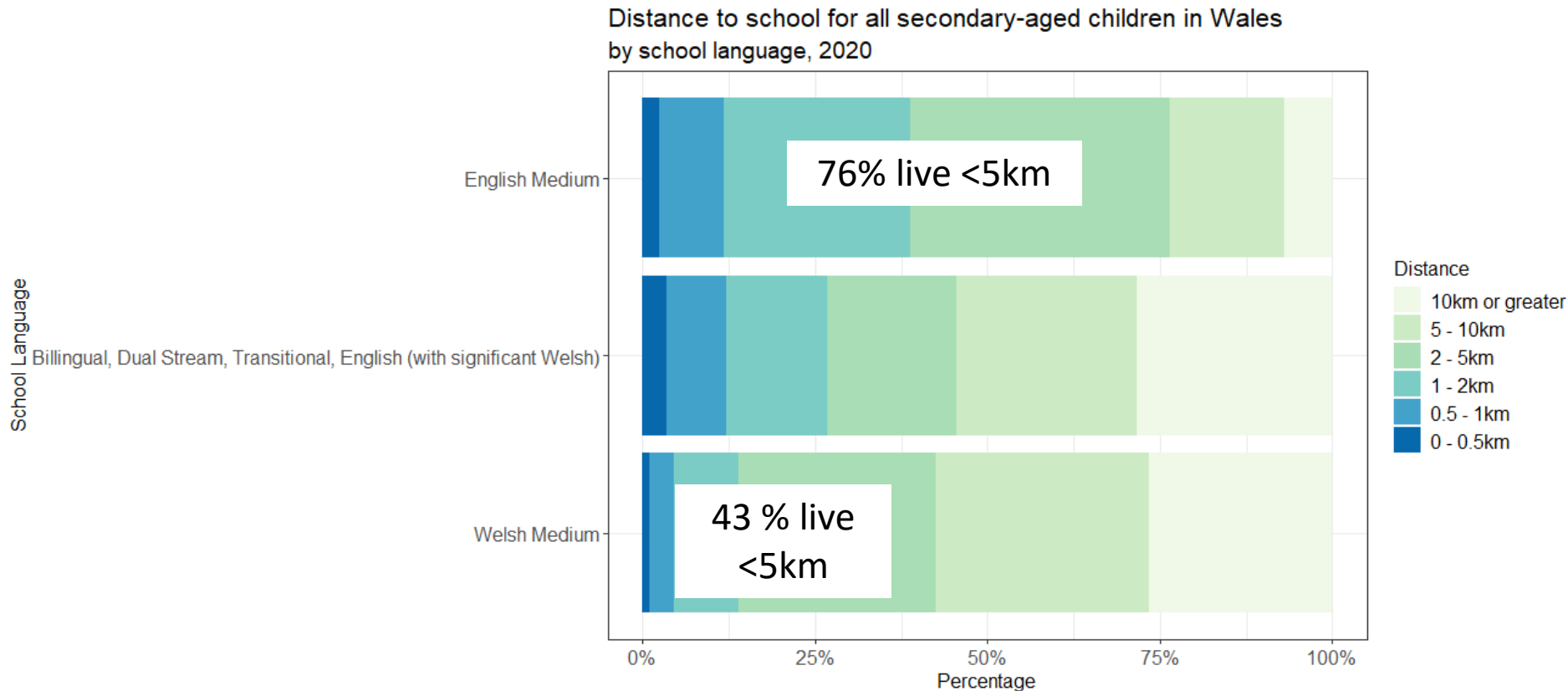
Future Plans

- To provide access to summarised school-level findings publicly
- Replicate with more recent data
- Refine models by linking to other environment data (e.g. safe-routes, terrain, built environment)
- Link cohorts to health outcomes

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43 % live <5km

Distance
- 10km or greater
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School Language

English Medium

Billingual, Dual Stream, Transitional, English (with significant Welsh)

Welsh Medium

Percentage

ENVHE

Collaboration of experts generating unique insights from **routine data** on the **complex interactions** between the **world we live in and our individual health** and well-being.
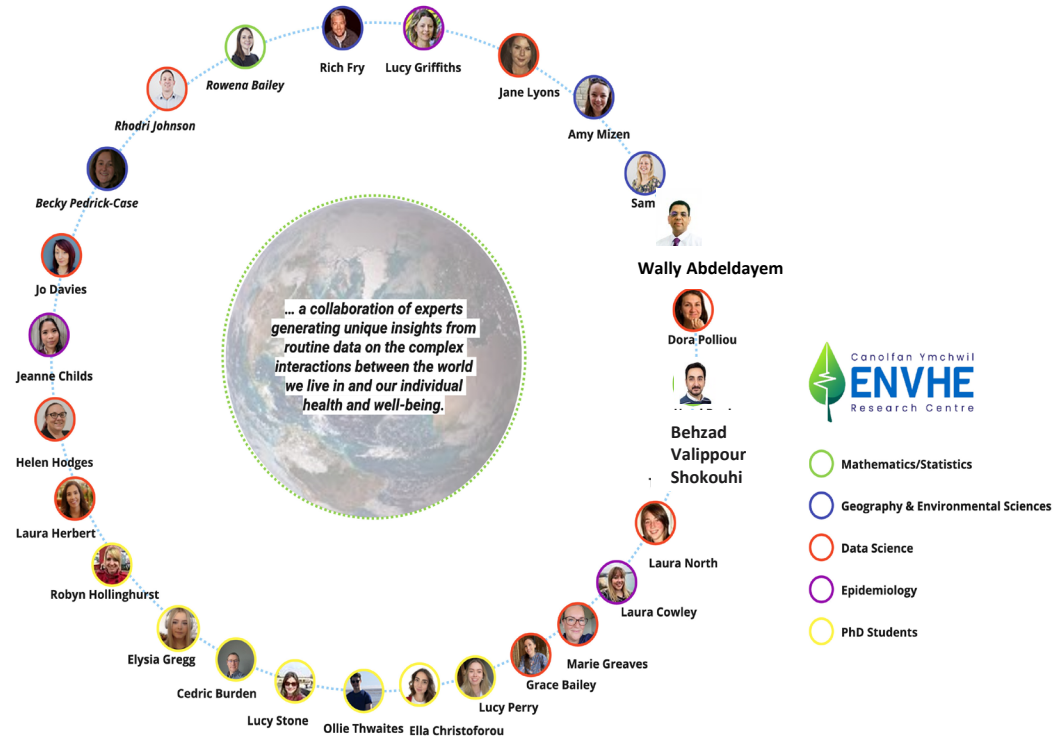
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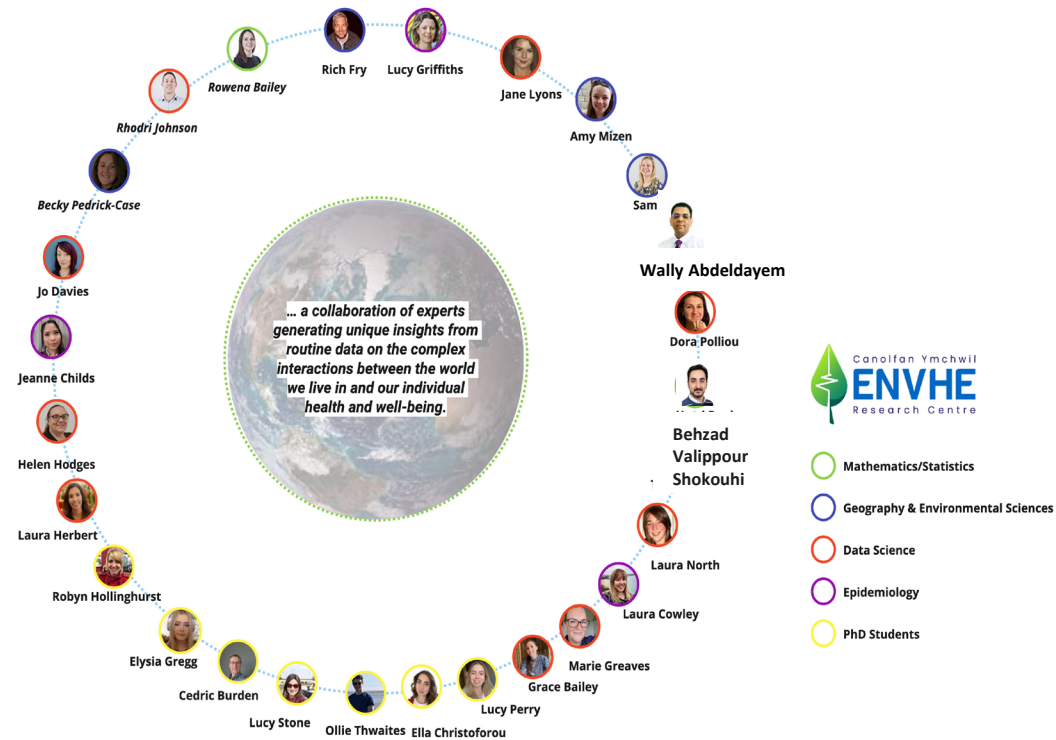
Climate Change PhD Projects 2024-26:

Cedric Burden:
Air pollution and asthma inequalities

Ella Christoforou:
Air pollution and its impacts on mental health in adolescents

Lucy Perry:
Impact of air pollution on preterm birth outcomes in Wales

Elysia Gregg:
Environmental neurotoxins and the development of CVD and dementia

Final Thoughts….

Climate crisis presents an opportunity to **accelerate societal change for the better.**

Policies and interventions aimed at building resilience to CC.

⟷ Improve **health and reduce inequalities.**

Final Thoughts....

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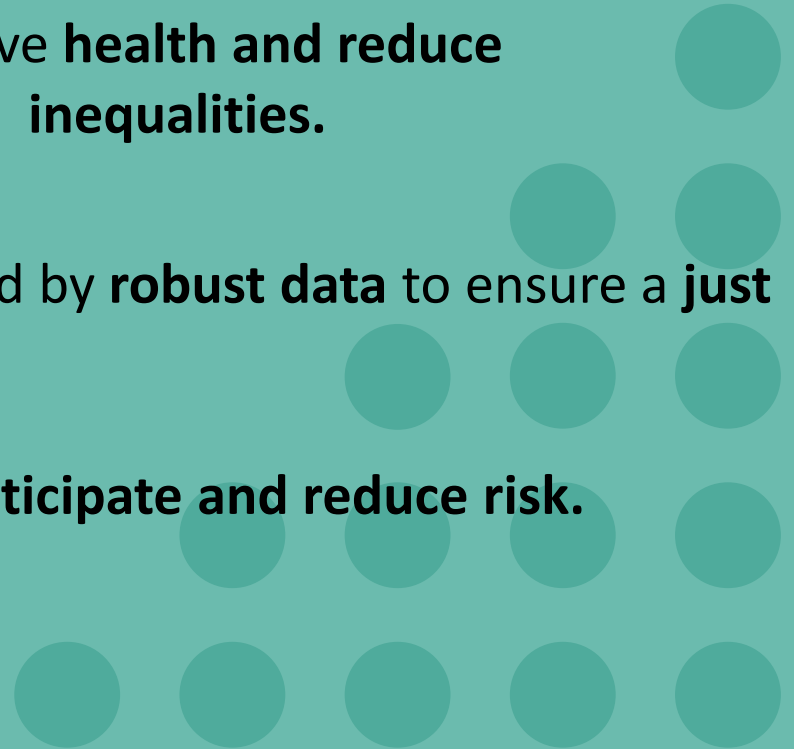**Policies and interventions** aimed at **building resilience to CC.**

Improve **health and reduce inequalities.**

It is crucial decisions are informed by **robust data** to ensure a **just transition.**

Data will give us the **power to anticipate and reduce risk.**

Email: s.turner@swansea.ac.uk

MAGENTA E-mail: magenta-project@swansea.ac.uk

Follow MAGENTA on @twitter, @linkedin, @facebook, and @instagram.

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