

GIS in the Born in Bradford cohort: green space and health research

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28 May 2020



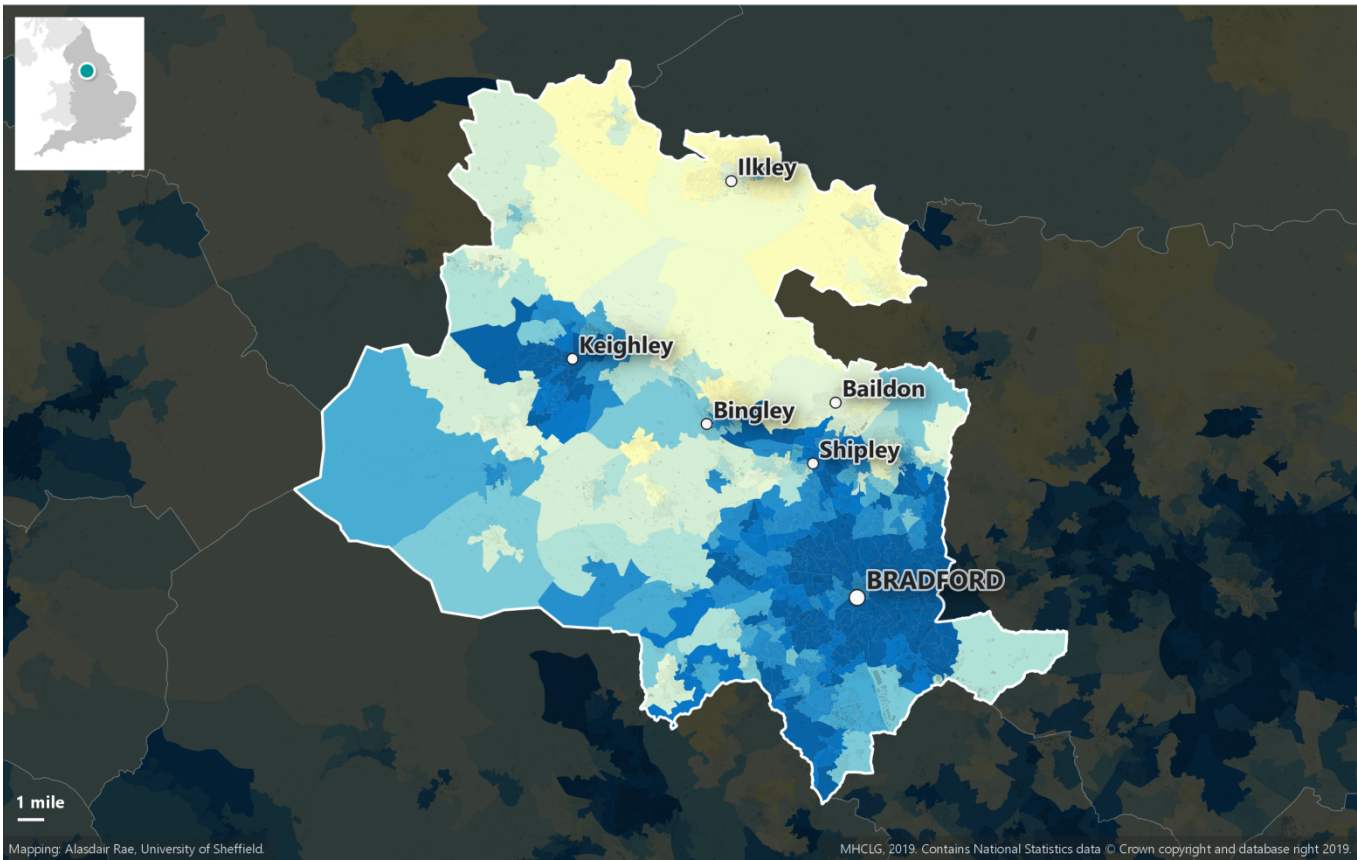
Image by Dan Bailey



We are family
BORN IN BRADFORD

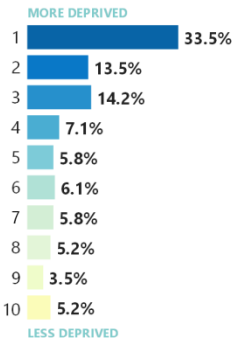
English Indices of Deprivation 2019

BRADFORD



Local deprivation profile

% of LSOAs in each national deprivation decile



What this map shows

This is a map of Indices of Deprivation 2019 data for **Bradford**. The colours on the map indicate the deprivation decile of each Lower Layer Super Output Area (LSOA) for England as a whole, and the coloured bars above indicate the proportion of LSOAs in each national deprivation decile. The most deprived areas (decile 1) are shown in blue. It is important to keep in mind that the Indices of Deprivation relate to small areas and do not tell us how deprived, or wealthy, individual people are. LSOAs have an average population of just under 1,700 (as of 2017).



Compared with benchmark: Better Similar Worse Not compared

Quintiles: Best Worst Not applicable

Recent trends: Could not be calculated No significant change Increasing / Getting worse Increasing / Getting better Decreasing / Getting worse Decreasing / Getting better Increasing Decreasing

Indicator	Period	Bradford		Region England		England		Range
		Recent Trend	Count	Value	Value	Value	Worst/ Lowest	
Life expectancy at birth (Male)	2016 - 18	–	-	77.8	78.7	79.6	74.5	
Life expectancy at birth (Female)	2016 - 18	–	-	81.6	82.4	83.2	79.5	
Under 75 mortality rate from all causes	2016 - 18	–	4,911	406	363	330	544	
Under 75 mortality rate from all cardiovascular diseases	2016 - 18	–	1,238	105.0	82.0	71.7	124.6	
Under 75 mortality rate from cancer	2016 - 18	–	1,719	145.6	141.2	132.3	190.3	
Suicide rate	2016 - 18	–	115	8.8	10.7	9.6	20.7	
Killed and seriously injured (KSI) casualties on England's roads	2016 - 18	–	551	34.3	49.1	42.6*	109.8	
Emergency Hospital Admissions for intentional Self-Harm	2018/19	–	1,450	266.2	205.8	193.4	497.7	
Hip fractures in people aged 65 and over	2018/19	–	430	539	544	558	852	
Cancer diagnosed at early stage (experimental statistics)	2017	➡	943	51.8%	50.6%	52.2%	36.8%	
Estimated diabetes diagnosis rate	2018	–	-	85.1%	81.9%	78.0%	54.3%	
Estimated dementia diagnosis rate (aged 65 and over)	2019	–	4,315	81.1%	71.6%	68.7%	41.4%	
Admission episodes for alcohol-specific conditions - Under 18s	2016/17 - 18/19	–	160	37.7	32.2	31.6	112.7	
Admission episodes for alcohol-related conditions (Narrow)	2018/19	–	3,862	805	729	664	1,127	
Smoking Prevalence in adults (18+ - current smokers (APS)	2018	–	73,002	18.5%	16.7%	14.4%	26.1%	
Percentage of physically active adults	2018/19	–	-	62.4%	66.2%	67.2%	46.7%	
Percentage of adults (aged 18+) classified as overweight or obese	2018/19	–	-	65.6%	65.4%	62.3%	75.9%	
Under 18s conception rate / 1,000	2018	⬇	197	18.4	19.6	16.7	39.4	
Smoking status at time of delivery	2018/19	➡	1,039	14.6%	14.4%*	10.6%	25.7%	
Breastfeeding initiation	2016/17	⬆	5,481	71.5%	69.3%	74.5%	37.9%	
Infant mortality rate	2016 - 18	–	131	5.7	4.0	3.9	8.2	
Year 6: Prevalence of obesity (including severe obesity)	2018/19	⬆	1,767	24.4%	21.0%	20.2%	29.6%	
Deprivation score (IMD 2015)	2015	–	-	33.2	-	21.8	42.0	
Smoking Prevalence in adults in routine and manual occupations (18-64) - current smokers (APS)	2018	–	-	29.4%	27.4%	25.4%	46.5%	
Inequality in life expectancy at birth (Male)	2016 - 18	–	-	9.1	10.4	9.5	15.2	
Inequality in life expectancy at birth	2016 - 18	–	-	8.0	8.5	7.5	13.8	

District is given child mortality 'red flag'

Watchdog's report says public bodies need to do more to improve services


Jo Winrow City Hall Reporter

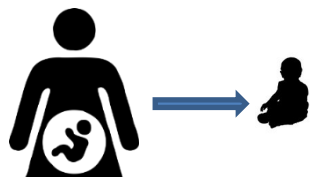
Infant mortality is still a huge problem in Bradford, according to a new watchdog report. The report is a de-railing and tougher test into how well public services are performing. The new style of assessment, unveiled for the first time today, brings together details from six public watchdogs and flags up areas of exceptional performance or of significant concern.

organisation checks for authorities providing services in the area, is available to the public today through the Oneplace website at direct.gov.uk/oneplace. Stephen Gregg, Oneplace spokesman for Bradford, said: "Bradford's public services are working well to tackle some of the big challenges facing the city. "Although the recession has affected retail developments, investment is helping to improve the attractiveness of the city centre. Bradford is becoming safer, with most types of crime falling. Services for older people are excellent and partners work effectively to help Bradford's diverse communities to get on well together. "But there remain some big problems, particularly in less well-off parts of the city where many people are in poor health and some private

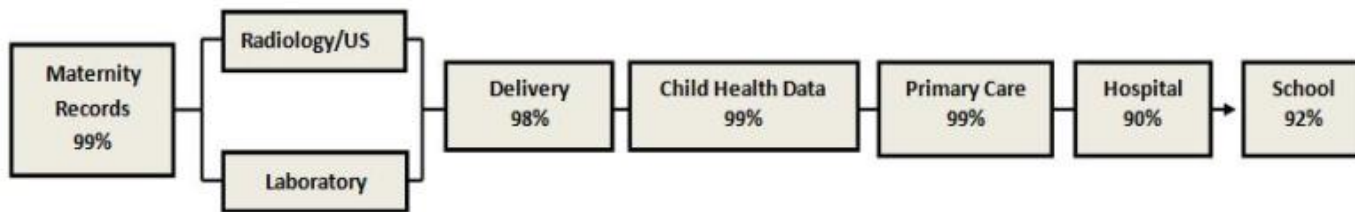
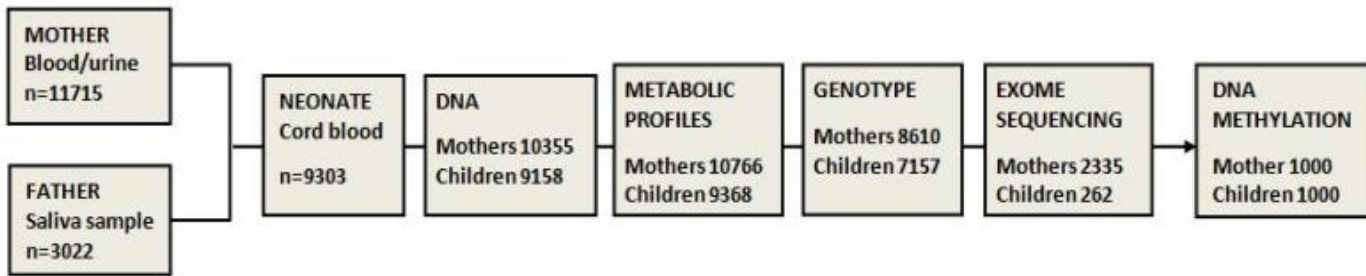
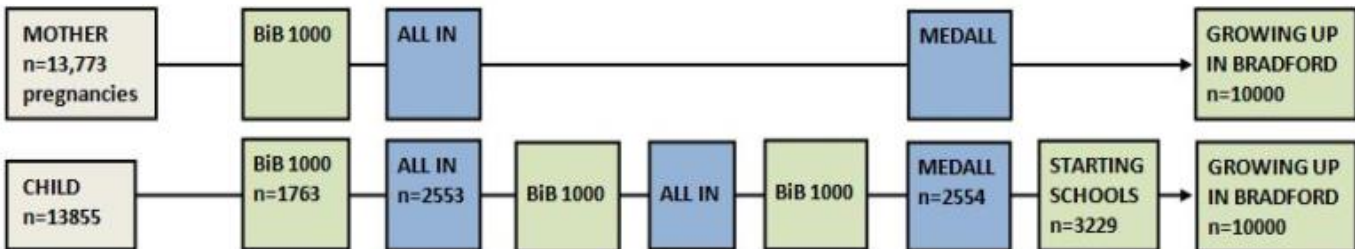
ASSESSMENT: Progress on opportunity to do well." The information aims to provide an independent overview of



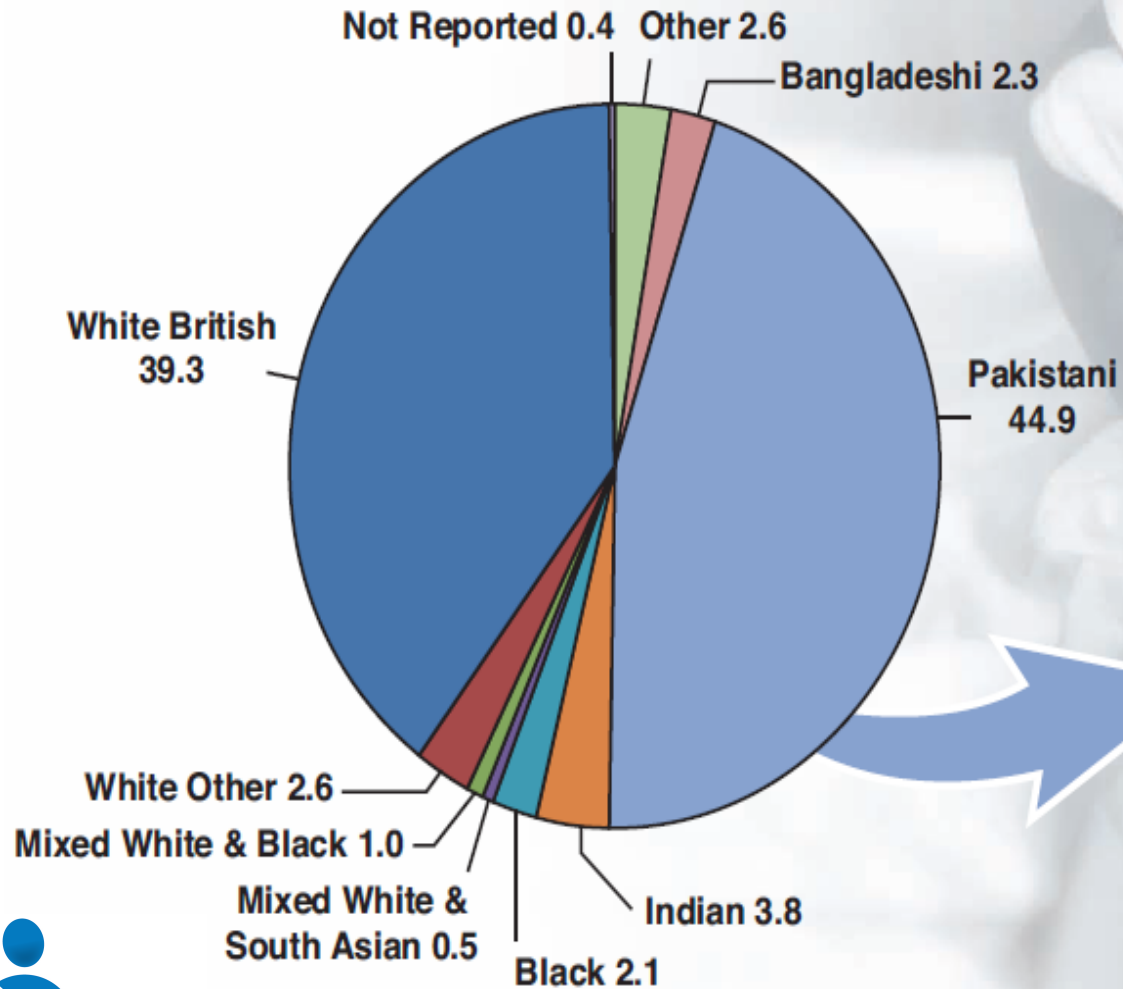
- 
- Describe health and ill-health and their causes
 - Develop, design and evaluate interventions to promote health
 - Provide a model for integrating research into practice
 - Build and strengthen local research capacity in Bradford.



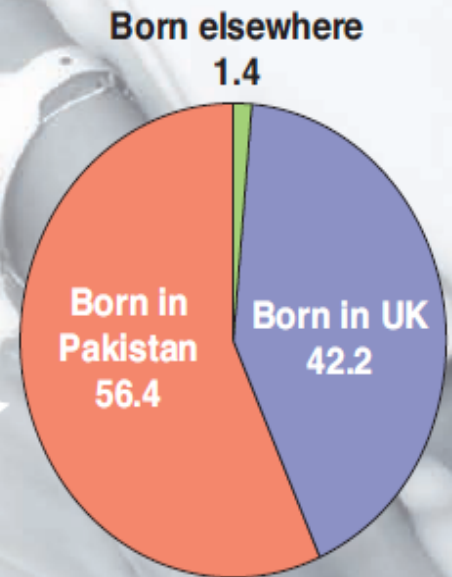
Recruitment 2007-2011
26-28 week OGTT



Proportion (%) of different ethnic groups in the BiB study



Country of origin of Pakistani mothers (%)



Mapping the urban environment

Geographic Information System (GIS)

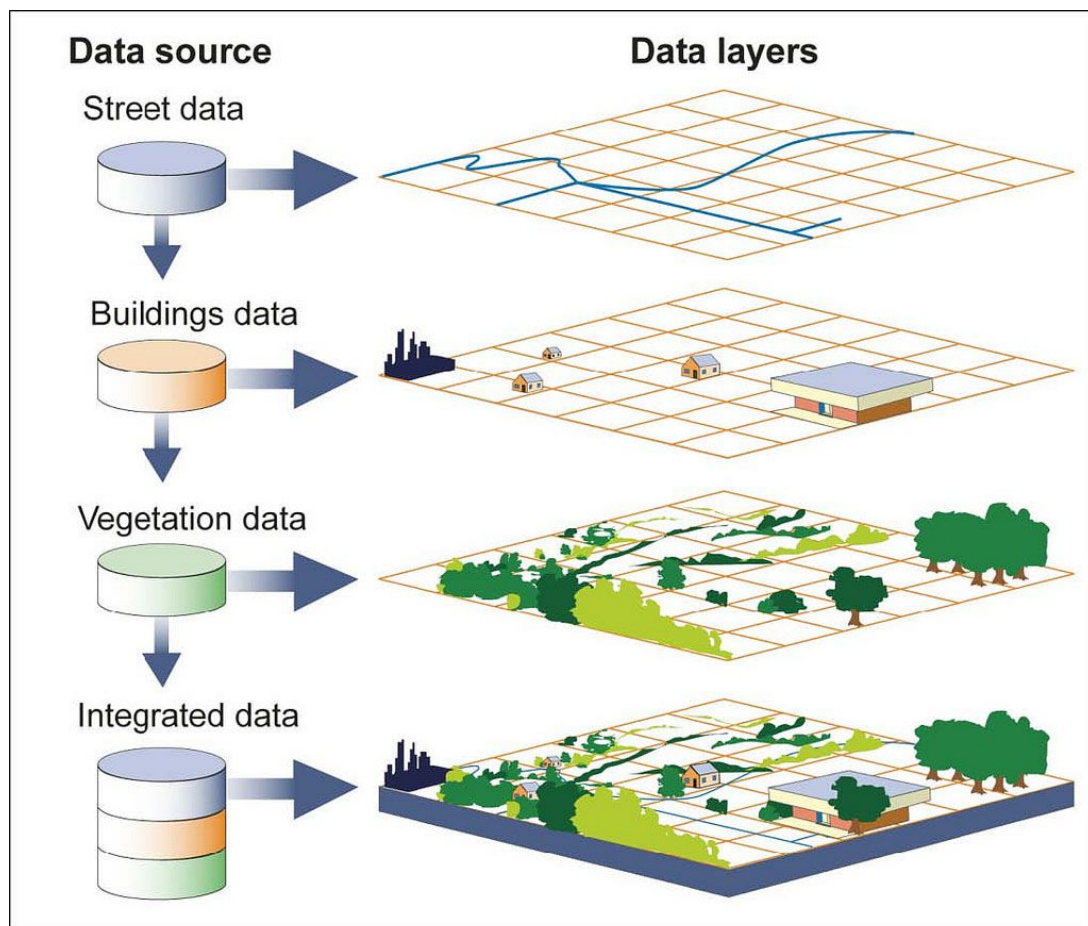
Geocoding:
Bradford Royal Infirmary



X = 53.80731522941357
Y = -1.796748088362097

Layers:

- Natural spaces
- Built environment
- Social context
- Traffic
- Noise
- Unhealthy food
- Meteorology

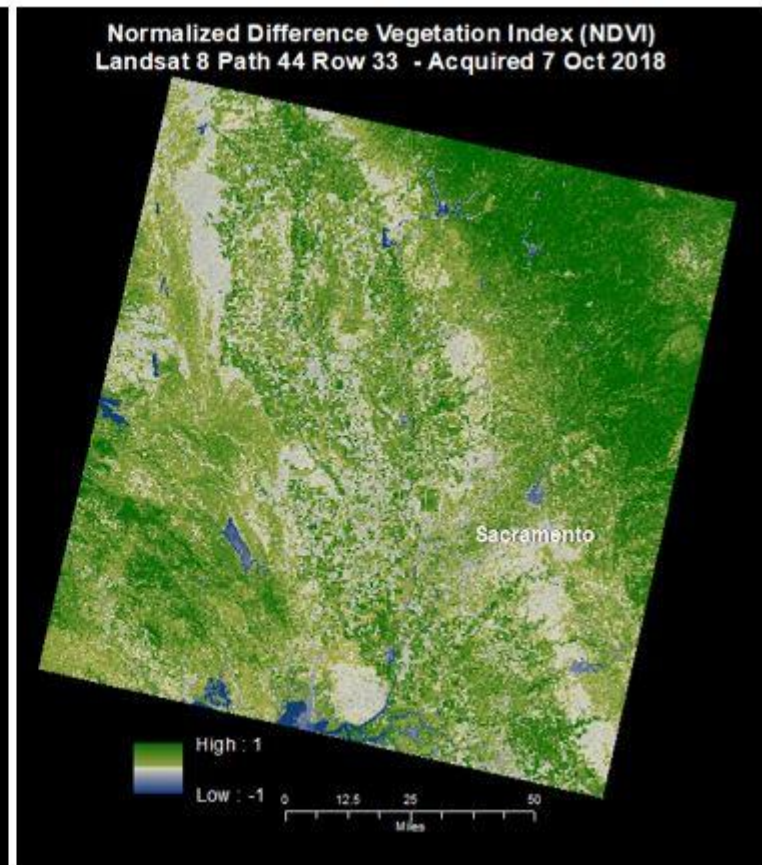
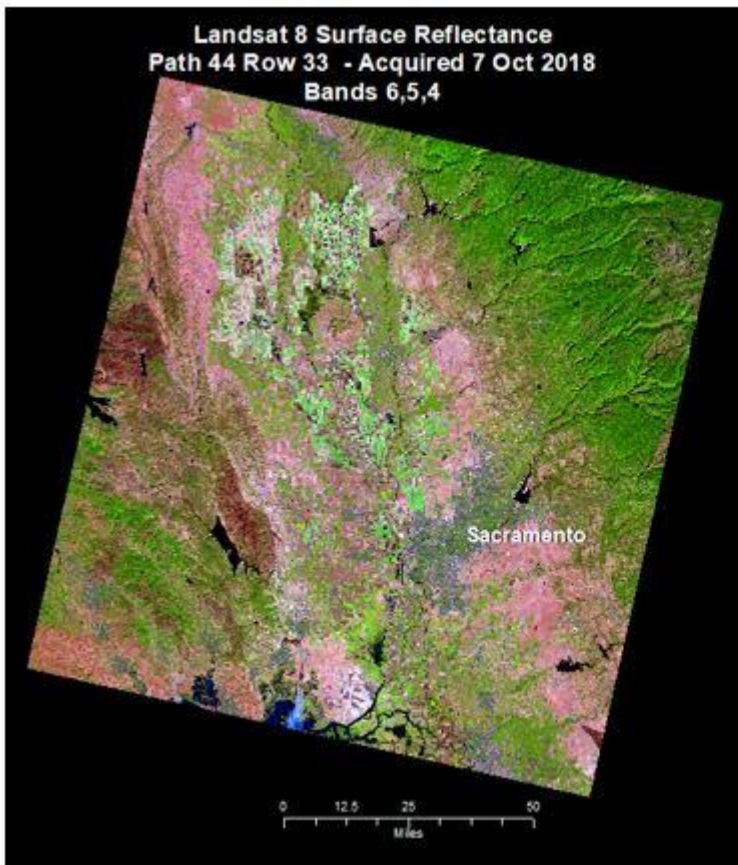


Source: GAO.

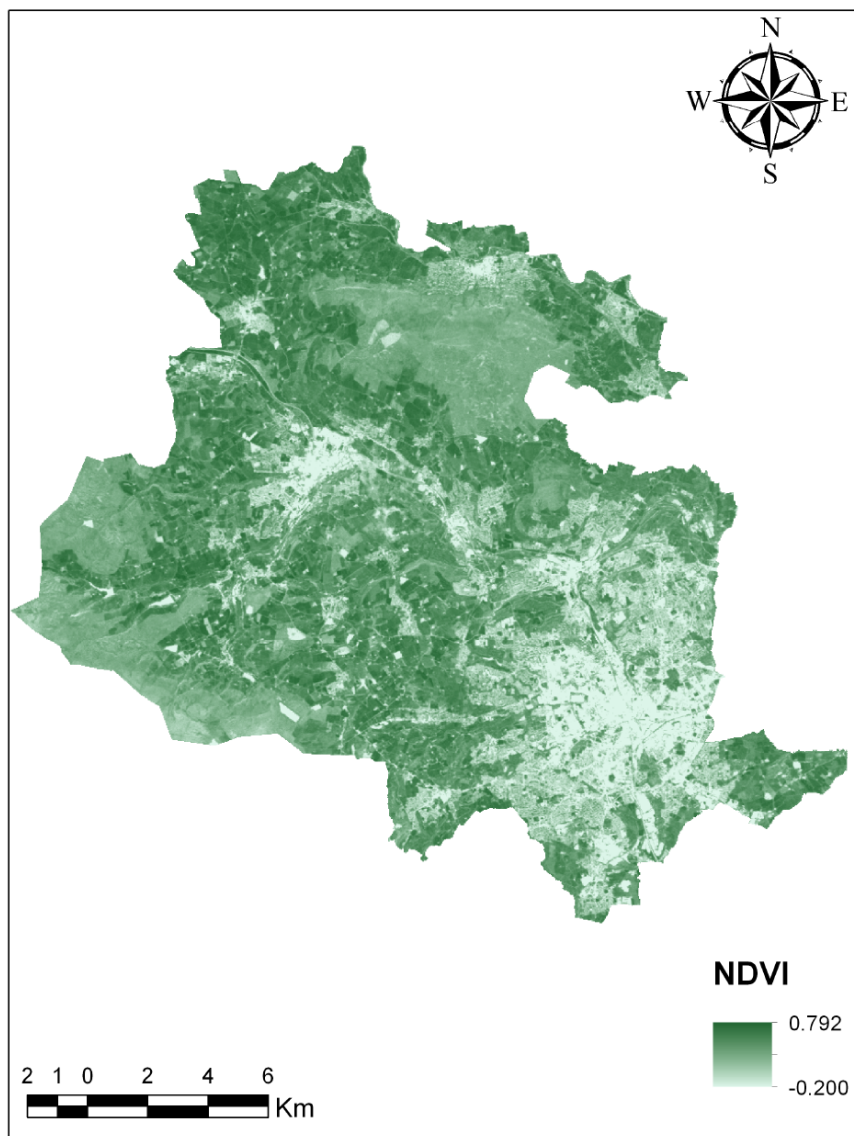


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Generating green space maps: from satellite images to NDVI



<https://www.usgs.gov/media/images/landsat-surface-reflectance-and-normalized-difference-vegetation-index>

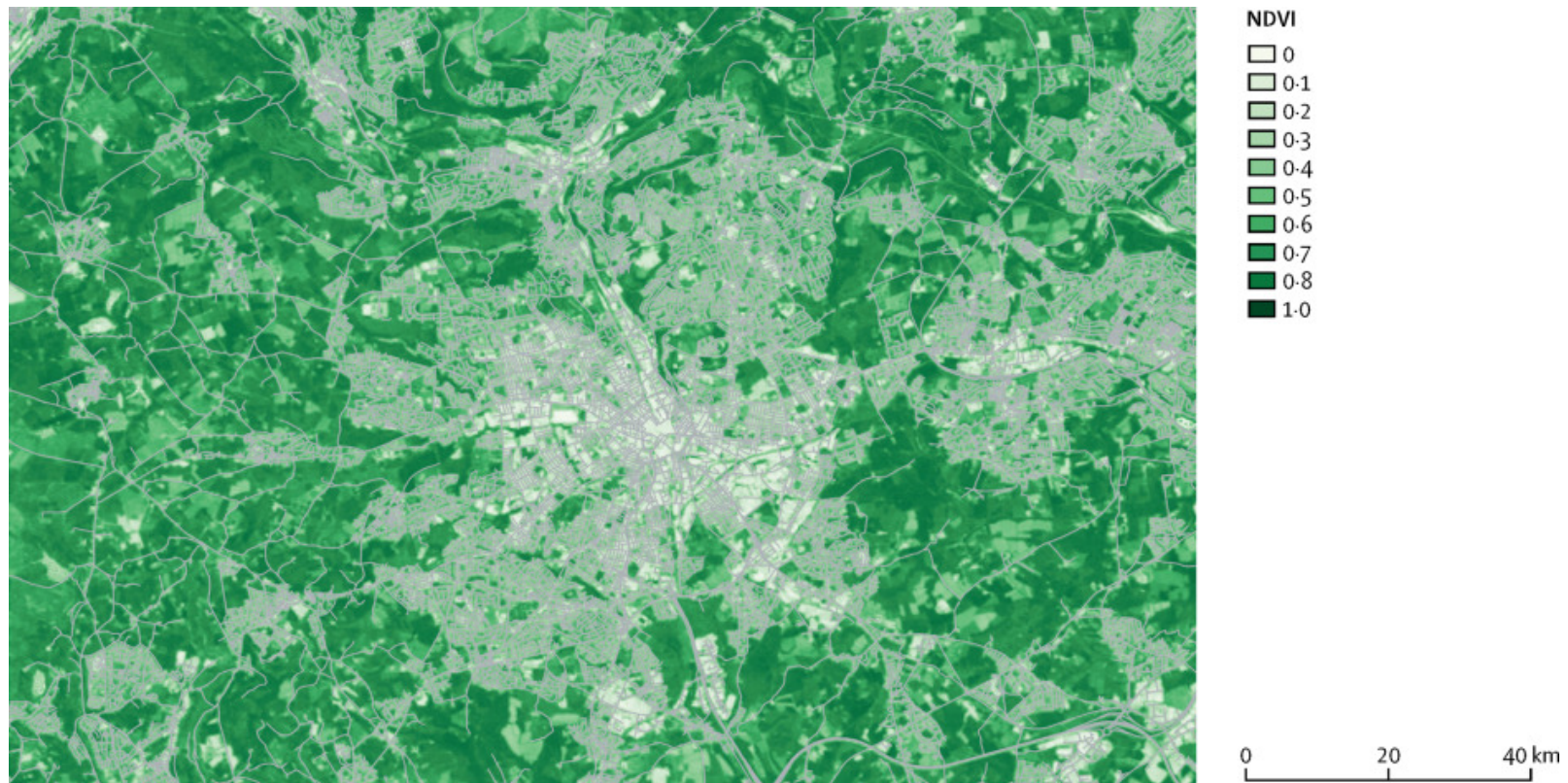


Normalized Difference Vegetation Index (NDVI)

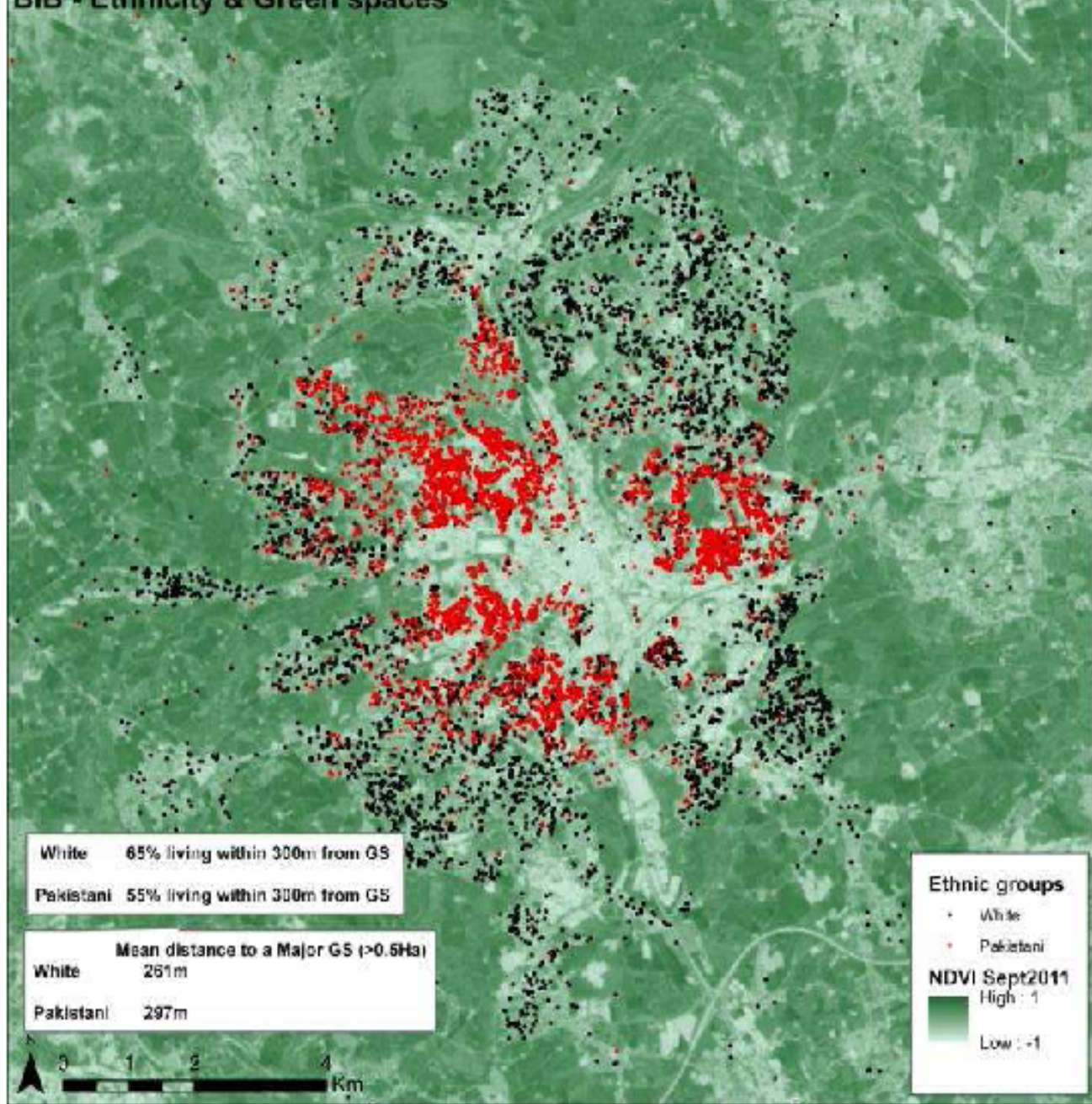
Landsat 4-5 Thematic Mapper™, 30x30 resolution from NASA's Earth Observing System Data and Information System (EOSDIS)

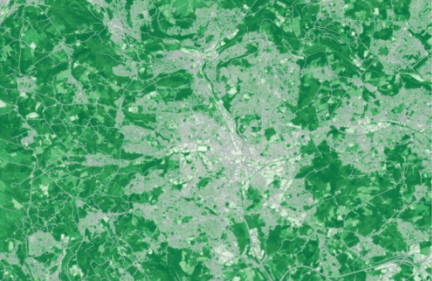


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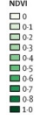


McEachan, Rosemary RC, et al. *The Lancet Planetary Health* 2.6 (2018): e244-e254.



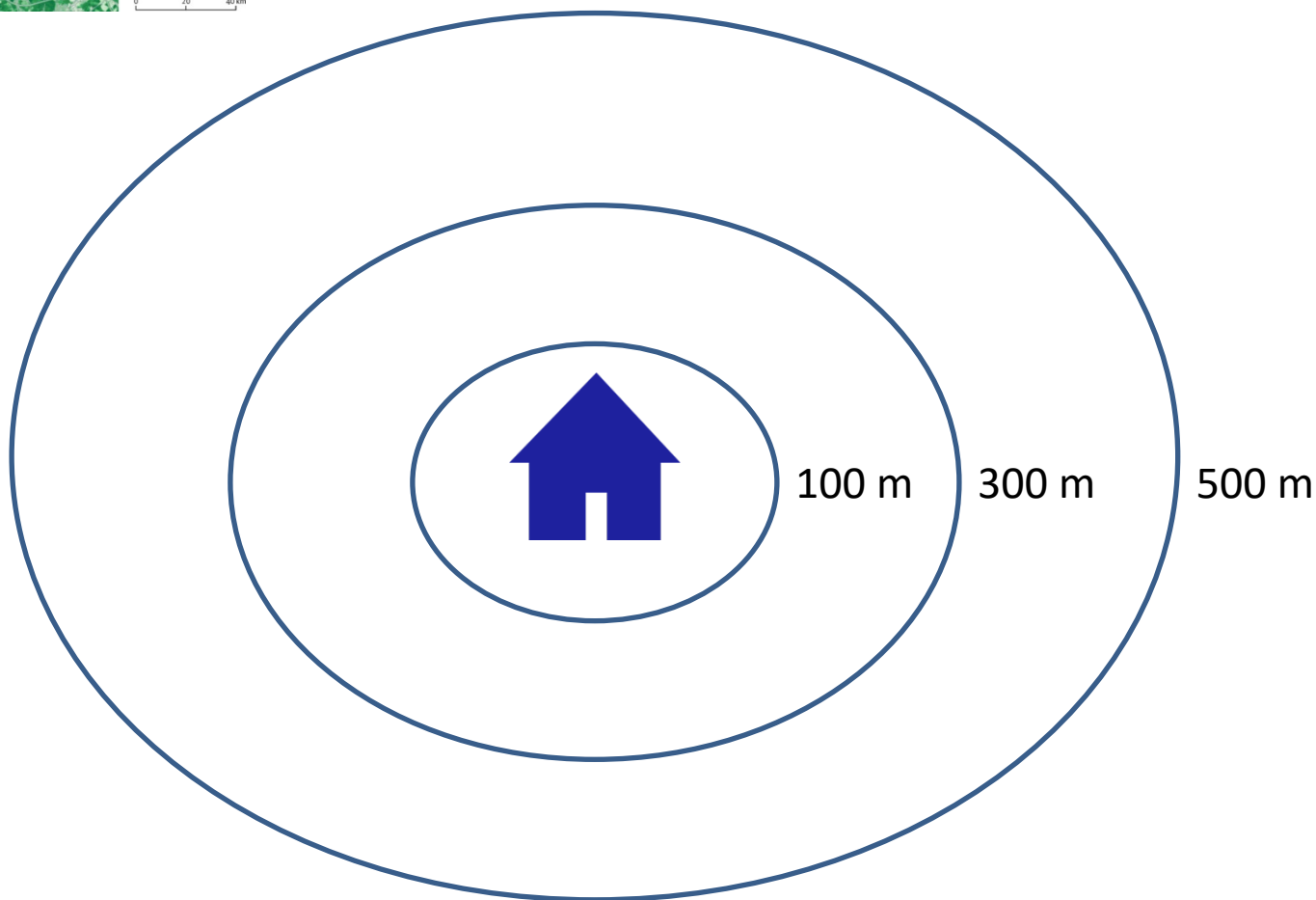


NDVI



0 20 40 km

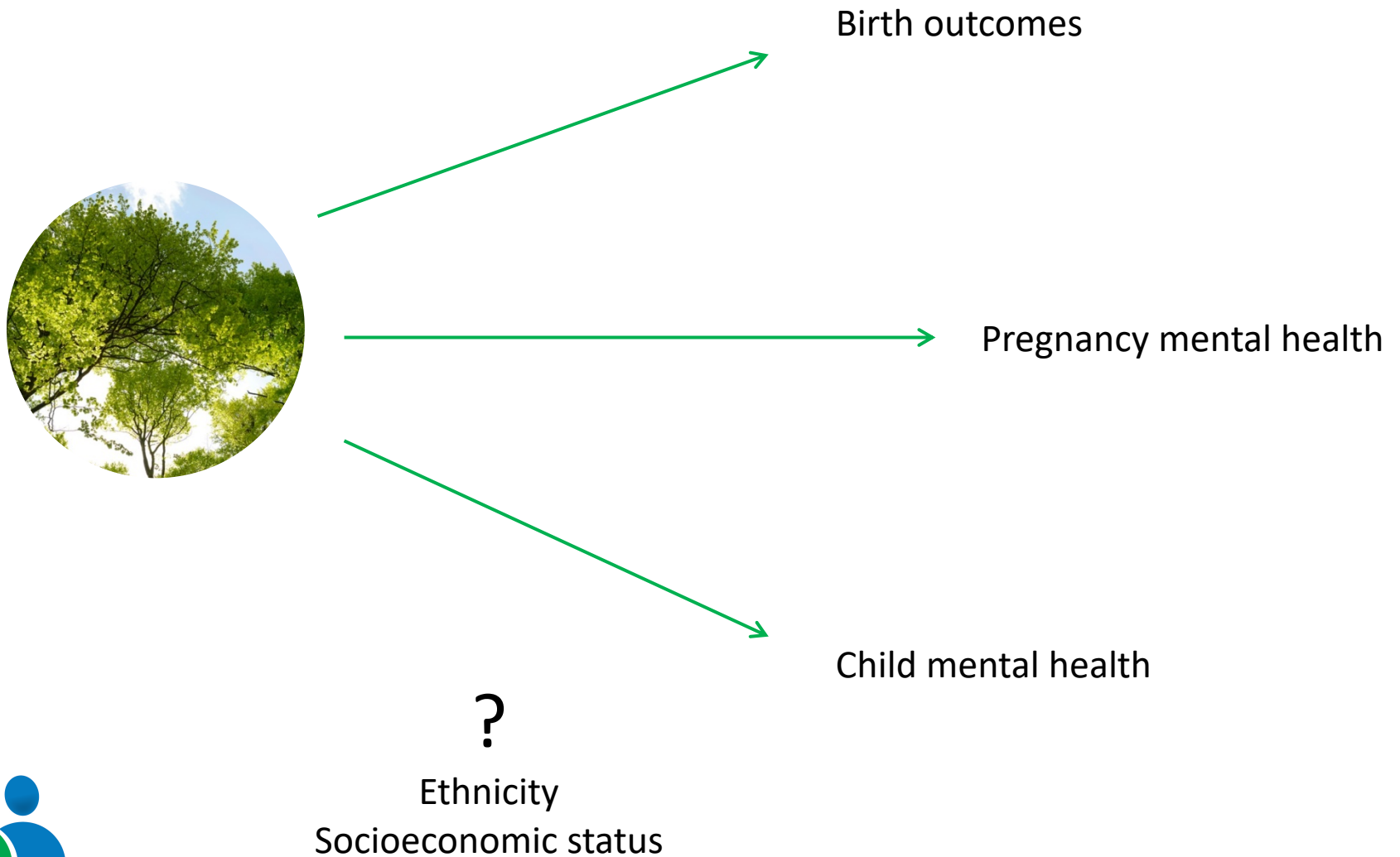
Surrounding greenness



Distance to major green space



Green space research in BiB



Inequality, green spaces, and pregnant women



NDVI
Proximity



Birth weight



Ethnicity
SES : individual (education)
neighborhood (IMD)



NDVI



Birth weight

White British women

Green space and child's mental wellbeing



NDVI
Proximity



Child SDQ @ 4-5 years old



Ethnicity
SES : individual (education)
neighborhood (IMD)

Conduct problems

- e.g. often has temper tantrums or hot tempers

Hyper-activity

- e.g. easily distracted, concentration wanders

Emotional symptoms

- e.g. many worries, often seems worried

Peer problems

- e.g. rather solitary, tends to play alone

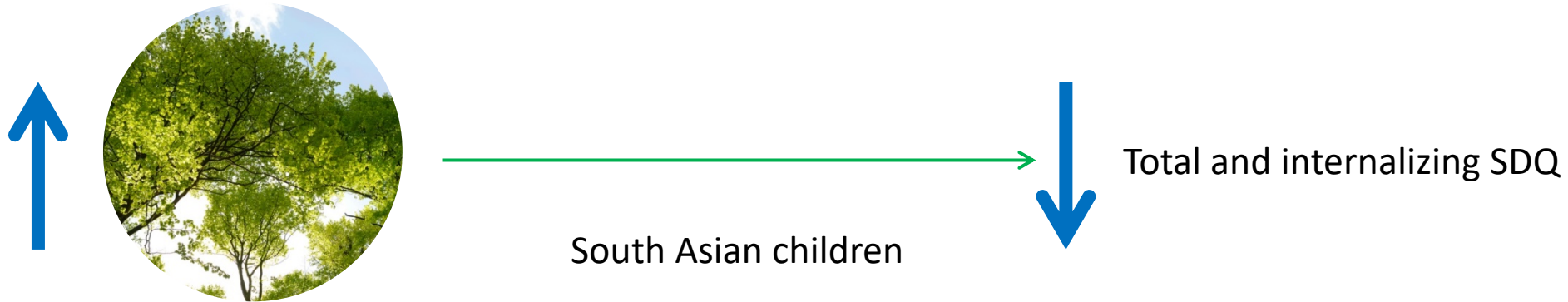
Prosocial behaviour

- e.g. kind to younger children

Total SDQ = all 4 dimensions except prosocial behavior
Internalizing SDQ = emotional and peer problems
Externalizing SDQ = hyperactivity and conduct problems

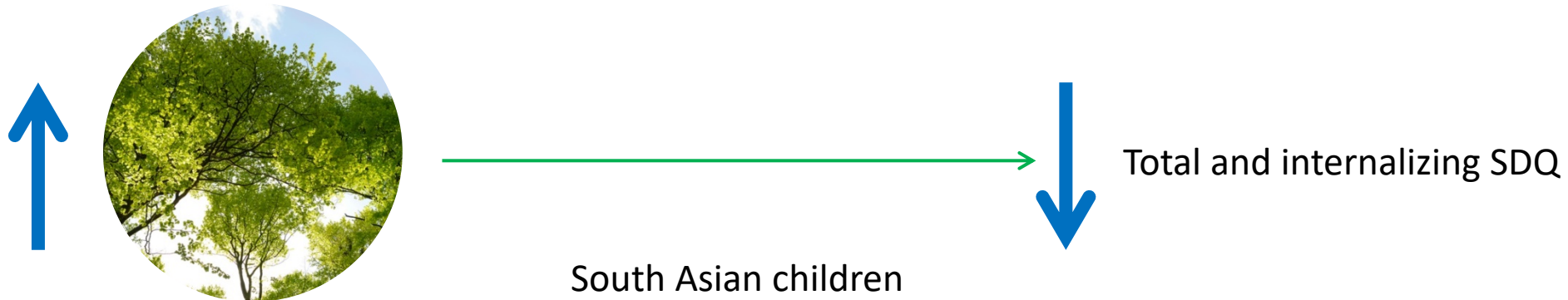
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Green space and child's mental wellbeing



Sub-group:

- Time spent outside (minutes/week)
- Parent satisfaction with green space



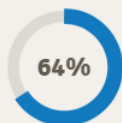
About Bradford

Bradford is the 6th largest city in the UK, with a multi-ethnic population of more than 500,000 people. However Bradford suffers from high levels of deprivation as well as having some of the highest rates of childhood illness in the UK.

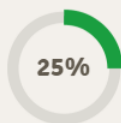
About BiB

Born in Bradford is helping to unravel the reasons for this ill health and bring new scientific discovery to the world.

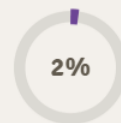
It is also providing a catalyst for communities to work with the NHS and local authority to improve child health and wellbeing.



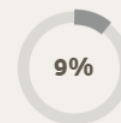
White British



South Asian (Pakistani, Indian, Bangladeshi, Afghan, Kashmiri)

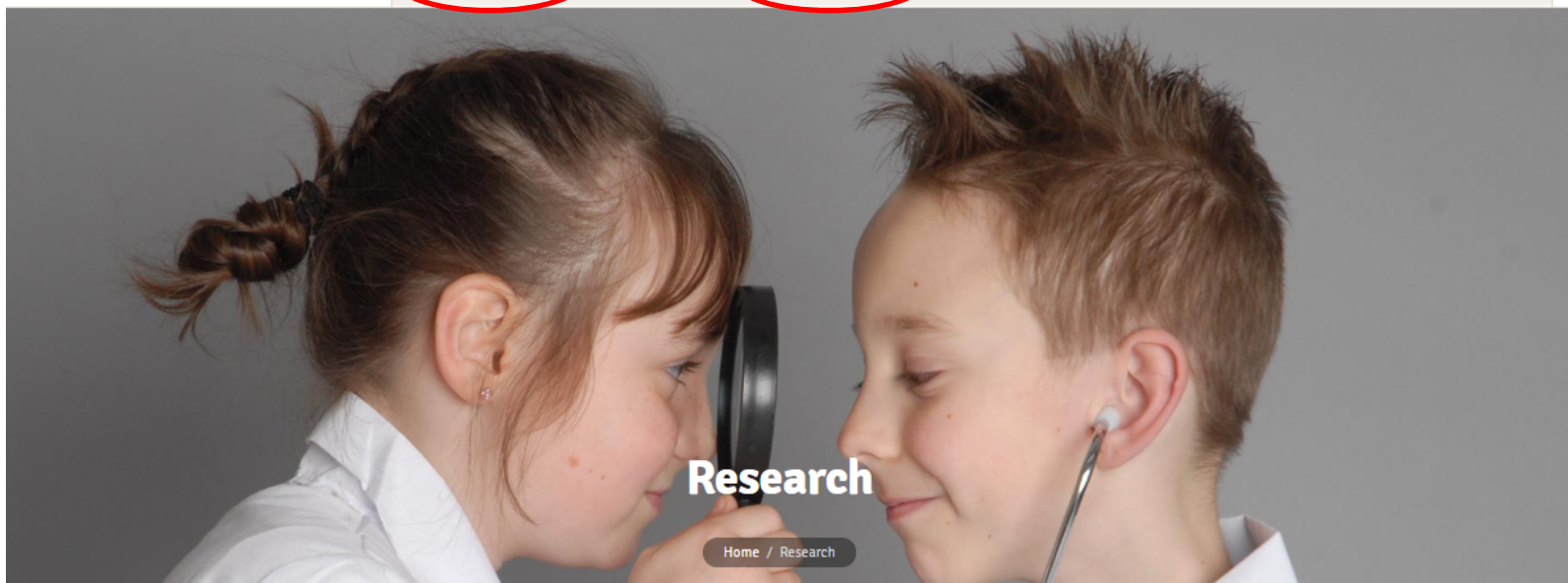


Non-UK European



Other

What BiB parents say



Welcome to the research section of the Born in Bradford website

Born in Bradford has collected data from 13,500 families over the past 10 years. In this section are details of our publications and study documents including questionnaires used in the BiB baseline as well as sub-studies. We have also added a data dictionary to make this easier for you to see the types of data that we have collected.

We hope you find this useful.



Born in Bradford is helping to unravel the reasons for the high level of childhood illness in the UK and bring new scientific discovery to the world.





Documents & Data

[Home](#) / [Research](#) / [Documents & Data](#)

[Data Dictionary](#)[Participant Information](#)[Questionnaires](#)

Overview

[BiB Data Digest](#)

An overview of each dataset containing counts of records relative to child lifecourse.

[BiB Data Summary \(slide deck\)](#)

BiB data summary slide deck. Basic descriptions and counts for all data sources. Best for on-screen viewing, particularly small screens.

[BiB Data Summary \(printable\)](#)

Printable BiB data summary. Similar to slide deck: basic descriptions and counts for all data sources, but formatted for printing.

Baseline questionnaire

[Baseline questionnaire data dictionary](#)

Questionnaire completed by mothers at baseline recruitment. Also a shorter version completed by fathers at baseline recruitment.

Child Growth

[Child growth \(all sources\) data dictionary](#)

Child growth data from all sources, including primary research and routine data linkage.

[Child growth \(BiB 1000\) data dictionary](#)

Child growth data from all BiB 1000 follow-ups.

[School nurse measured blood pressure and growth](#)

Observations of blood pressure, height and weight taken in school by school nurses.

[Child growth \(HCR\) data dictionary](#)

Child growth data from various healthcare record sources.

Cohort information

[Cohort administrative information](#)

Information about the cohort and the participants from various research and administrative sources.

[Subcohort indicators: who has what data](#)

Indicators of which data types are present for each person and each pregnancy.

[Biobank material indicators](#)

Indicators of which biobank sample types are held for each person and each pregnancy.

[Bioinformatics linkage information data dictionary](#)

Indicators for linking cohort data records to data held in bioinformatics data files.

Pregnancy & neonatal

[Pregnancy Eclipse data dictionary](#)

Pregnancy data obtained from the Eclipse electronic maternity record.

[Neonatal Eclipse data dictionary](#)

Neonatal data obtained from the Eclipse electronic maternity record.

[Maternity records data dictionary](#)

Data from a manual abstraction of blood pressures, maternity hospital admissions and other information from the written maternity notes.

[Pregnancy ultrasound data dictionary](#)

Observations from ultrasound scans taken during pregnancy.

[Fetal renal ultrasound data dictionary](#)

Ultrasound scan observations from the Fetal Renal Ultrasound study.

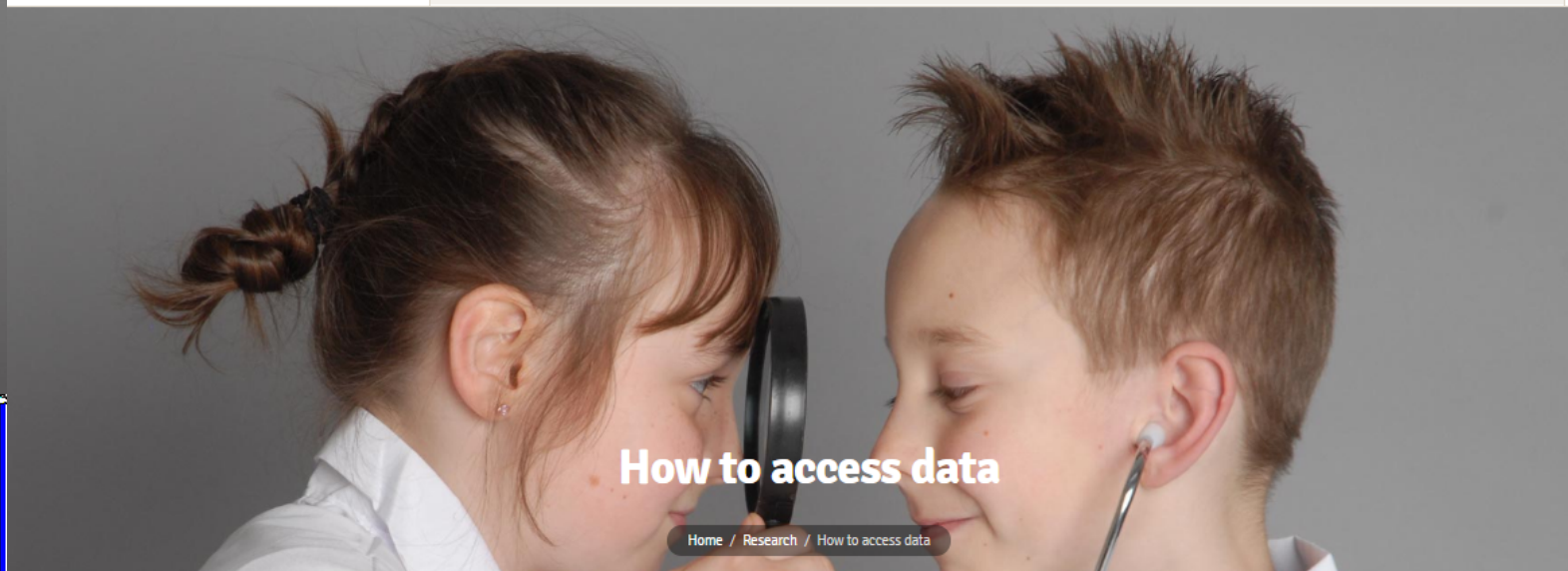
[Pregnancy blood biomarkers data dictionary](#)

Blood biomarkers obtained from blood sample taken at recruitment during pregnancy.

[Baby bloods biomarkers](#)

Blood biomarkers obtained from blood sample taken from umbilical cord.





How to access data

[Home](#) / [Research](#) / [How to access data](#)

How to access data or collaborate

Update May 2020: We have currently put a pause on all new data requests for the next 3 months. This will be reviewed by 1st August 2020.

We get lots of requests to use BiB data and to run nested studies within BiB and we make every effort to support these requests. If you are interested in developing a research proposal working with the Born in Bradford (BiB) project or would like to access BiB data to use in a piece of work you wish to undertake then you will need to complete a proforma outlining your proposal

Before you contact us, please make sure you have read our [Guidance for Collaborators](#). Our BiB executive review proposals on a monthly basis and we will endeavor to respond to your request as soon as possible. You can find out about the different datasets which are available [here](#). If you are unsure if we have the data that you need please contact a member of the BiB team (borninbradford@bthft.nhs.uk).

Once you have formulated your request please complete the 'Expression of Interest' form available [here](#) and send to borninbradford@bthft.nhs.uk

If your request is approved we will ask you to sign a [collaboration agreement](#) and if your request involves biological samples we will ask you to complete a [material transfer agreement](#).

You may be aware that, amongst our many fantastic collaborators, BiB is strategically linked to the ALSPAC birth cohort (<http://www.bristol.ac.uk/alspac/>) which is following the lives of 14,500 families in the Bristol area. We strongly encourage you to look at whether this cohort may provide additional useful data or resources for your research project. Further information about how to apply to use ALSPAC data can be found here: <https://proposals.epi.bristol.ac.uk/>



Questions / comments?

Born in Bradford is only possible because of the enthusiasm and commitment of the children and parents in BiB. We are grateful to all the participants, practitioners and researchers who have made Born in Bradford happen.

Born in Bradford is supported by a Wellcome Trust infrastructure grant (WT101597MA), a joint grant from the UK Medical Research Council (MRC) and Economic and Social Science Research Council (ESRC) (MR/N024397/1), and the National Institute for Health Research ARC Yorkshire and Humber (NIHR200166). The views expressed are those of the author(s) and not necessarily those of the National Institute for Health Research or the Department of Health and Social Care or Wellcome Trust.