

Born in Bradford

Research that changes a city



WELCOME

Brilliant Bradford



Editorial Team:

Tiffany Yang
with Richard Chew

2





Above: Rosie McEachan and John Wright

This is for you - all the mums, dads and children who are Born in Bradford. You are brilliant.

You have changed the city and inspired the world. Your answers to our questionnaires (I know - too long!) have helped us to understand your health and what causes ill-health such as asthma and depression. Your medical data has helped to improve the NHS services we provide - increasing the detection of diabetes and childhood disability. Your blood samples are helping to develop new methods to detect disease. Your DNA is allowing scientists to develop new treatments.

Born in Bradford began in 2007 with little funding but huge support from doctors, nurses, teachers and, most importantly, families like yours. In the last ten years it has grown to become one of the biggest and most exciting studies in the world. Over 30,000 Bradfordians are part of this incredible research - every single mum, dad and child helping to push the frontiers of medical science. Together we have shown how communities across our great city can join hands to become a living network of citizen scientists, helping to create a healthier and happier future for our children.

In this magazine we have tried to capture some of the magic of Born in Bradford

and how you have helped to discover the causes of ill-health and also develop new approaches to improve health. You have helped us to understand the harm of diesel fumes and enabled us to lobby to fit pollution filters on our buses to get cleaner air. You have helped us to show the benefit of green space - parks and gardens - and so design better and greener environments. You have helped to show how diabetes starts very early in life, and contributed to improved detection in younger people. You have helped make the case for millions of pounds of new funding for Bradford's Better Start to improve services and support for new lives; Active Bradford to improve physical activity; and Bradford's Opportunity Area to improve the prospects of children at school.

Over the next five years we hope to build on the fantastic support we have received from all our Born in Bradford families. We will be opening up recruitment for new mothers and fathers to join the study. Our goal is for 100,000 mums, dads and children to become the largest health research project in the world - building a City of Research where we can create a better place for future generations. I hope you will join us.

You are Born in Bradford and you are brilliant.

Reducing air pollution will improve the health of our children

On average, we take about 16 breaths per minute. That's 960 breaths an hour, 23,000 breaths a day - and more than 8 million breaths a year! It is hardly surprising then, that the quality of the air we breathe can have a significant impact on our health. Thankfully, since the Victorian era, we have taken huge strides in cleaning up our air – although traces of Bradford's smoke-filled past are still there for all of us to see on many buildings today. Yet we must remember that modern day air pollution now comes in many forms – not all of which can be seen by the human eye.

The growing number of vehicles on our roads, for example, has led to an increase in pollutants such as nitrogen oxides and and particulate matter, tiny particles that we all breathe in.

Even at low levels, these can cause problems to our health. High concentrations in urban areas, and around schools, are a particular worry. Air pollution is linked to conditions such as asthma, heart disease, cancer and stroke. It contributes to as many as **64,000 deaths in the UK every year.** We also know that it can harm unborn babies and affect brain development.

More needs to be done to safeguard public health. Reducing pollution requires everyone to act - from how we make choices about how we travel, and heat our homes; to Government taking legal action to lower the emissions that cause poor air quality.

DID YOU KNOW?

As a result of our research on the link between air pollution and ill-health, Bradford Council has cleaned up the buses that pollute our air the most.

What we have found with your help

- **Breathing polluted air during pregnancy increases the risk of babies being born with low birth weights and smaller heads - factors which can lead to later ill-health.**
- **Here in Bradford, 55% of us are exposed to air pollution higher than European safety guidelines. This translates to 17 deaths every year which could have been prevented if we weren't exposed to such levels.**
- **As many as 687 childhood asthma cases in Bradford every year may be due to air pollution (that's 38% of all childhood asthma patients).**

4





KEY FINDING 1

Air quality and asthma are linked. At 4 years of age, more than 1 in 4 of our BiB children were suffering from wheeze, and around 1 in 7 had been diagnosed with asthma by a doctor

These statistics were the highest in a medical study that covered the whole of Europe. They show us how important it is to identify the prime causes for childhood wheezing disorders.

Things you can do to protect children from air pollution:

- Cycle or walk along less busy and polluted roads - find quiet back roads if you can, or walk on the side of the pavement furthest from the road.
- Using pram covers to reduce your child's exposure to harmful particulates, particularly in built-up areas.
- Take advantage of car sharing or use public transport to reduce the number of vehicles on the roads.
- Use an extractor fan when cooking with gas or open a window to increase ventilation.
- Cut out smoking and using candles indoors – they both give off potentially harmful particles.
- Reduce your use of scented products such as cleaners and air fresheners, which contain a mixture of chemicals that may be harmful to your health.
- Limit the use of wood burners, many of which are more polluting than an average diesel car.
- Invest in houseplants, many of which can play an important role in filtering the air in your home.

What we have found with your help

- Around 2-in-5 of our BiB children diagnosed with asthma had a wheeze too. And the more severe the wheeze, the greater the risk of being diagnosed with asthma.
- The risk of asthma and wheeze are higher in children if parents smoked or had asthma, had allergies, or had the itchy skin condition eczema.
- There is an increased risk of diagnosis of asthma or wheezing disorders for babies born with low birth weight.
- Babies born small use health services more, including the need for more prescriptions and GP and hospital visits.

6



Bring nature indoors!

Reducing air pollution will improve the health of our children

Did you know that indoor plants can help purify the air? Gases and particulate matter released from everyday objects like cleaning supplies, paints, sofas, carpets, gas cookers, and cigarettes all contribute to indoor air pollution.

As we spend much of our time indoors, we could be exposing ourselves to high levels

of these gases and particulates which can negatively affect health. By bringing plants into our homes, their natural air-filtering qualities can help purify the air and reduce the levels of pollutants. They have also been found to have psychological benefits such as reducing stress. Try placing a few plants in the kitchen, living room, and bedroom to bring some green space into your home!



Pothos



Money Tree



Peace Lily



Parlour Palm



Boston Fern



**Elephant Ear
Philodendron**



Ficus

Illustrations by Raquel Veila

Thank you to Bradford College for their support and student participation



JOIN US: MOVE. PLAY.

78% of children and young people in Bradford need to be more physically active. BiB's new project, JU:MP, is working with Active Bradford with funding from Sport England and the Big Lottery to discover new ways to encourage people to be more active.

JU:MP's mission is to bring together families, communities and organisations in an area of Bradford north of the city to create a healthier, happier and more active place to grow up in. We will work locally to provide opportunities for children to try different ways to be active and make it as easy as possible for them to do it.

Our website joinusmoveplay.org helps explore different ways to be active.

**We encourage everyone to
Join Us: Move. Play!**



Check out our
Facebook group to
find activities that
families can get
involved in!



Arts and culture in Bradford!

Bradford has an exciting new project called 'The Leap'.

Most Bradfordians have not attended an arts or culture event in the last year.

Evidence shows that arts and culture can improve health and well-being. BiB is leading a programme of work looking at what works to encourage a greater participation in arts and culture.

Inspired by our BiB artists-in-residence, Ian Beesley and Ian McMillan, who capture the energy of our children leaping into the future in their poems and photographs, 'The Leap' will benefit the whole district with activities for everyone to participate in and enjoy over the next four years. Its core work will focus on some of the most disadvantaged areas of Bradford where opportunities to engage with arts and culture are few and current levels of participation are low.

The project will begin in early 2020 and, as well as transforming the cultural landscape of Bradford, 'The Leap' will be a great opportunity to understand the health and wellbeing benefits of cultural activity.



9



The Leap

It's the space between your feet and the ground.

It's the air between your hopes and your fears.

It's the gap between the dream and the real.

It's the light between the wish and the idea.

It's the leap into the future, the leap into the dark.

It's a moment, it's a second, it's an idea, it's a spark.

It's a time when gravity's left behind.

It's a crack in the everyday world.

It's a photograph you'll remember forever.

It's a flag of possibilities that you've left unfurled.

It's the leap into the future, the leap into the dark.

It's a moment, it's a second, it's an idea, it's a spark.

Ian McMillan

High quality green space improves both physical and mental health

The green space around us - such as parks, playgrounds, and greenery in our communities - and the way we make the most of them, is important for our physical and mental health.

Thanks to you, BiB investigated how the world in which we live in influences whether we are poorly or well. We have found that air quality and exposure to green space play an important role in our - and our children's - health.

Living near, and spending time in, green space has been linked to well-being, both physical and mental. Thanks to you, we have found that this may improve pregnancy outcomes as well as the health of our children as they grow up.

10



What we have found with your help

- Greater availability of green space such as parks, play areas and gardens is associated with healthier birthweight amongst babies, reduced risk of depression amongst pregnant mothers, and improved mental wellbeing amongst young children.
- The beneficial effects of green space are stronger for more deprived groups.
- Families living in deprived parts of Bradford have less access to quality green space, and are less satisfied with their local green space.
- Fears about safety and antisocial behaviour are key barriers to using local green space.

DID YOU KNOW?

BiB listens to the community! As part of one of our projects, we asked people living in an area of Bradford what changes they would like made to their local green space to make it more friendly and accessible. These changes are now being carried forward. We plan on seeing whether these changes lead to more people using their local parks!

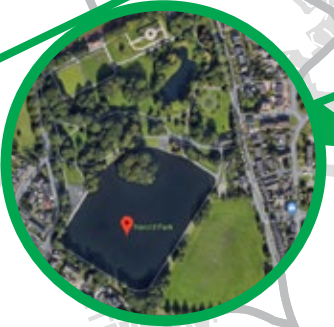
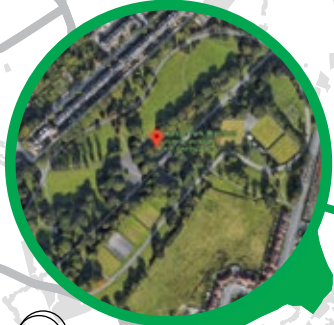
How we can all get more green

- Make the most of nature by surrounding yourself with green plants – try growing herbs to add some green to your home as well as a bit of pep to your meals.
- Enjoy the many walking trails across our city – most have bus routes and parking.
- Take part in activities that explore and engage with the outdoors such as Outward Bound, orienteering, and walking groups.
- Take action! Talk to your local council representative about how the council can improve your local green spaces.
- Get to know all our local parks and green spaces with a map of Bradford.



Map of parks in Bradford

Check the map to see if you live near a park or a smaller pocket of green space!



12

Roberts Park

Lister Park

Ladyhill Park

West Park

Brackenhill Park

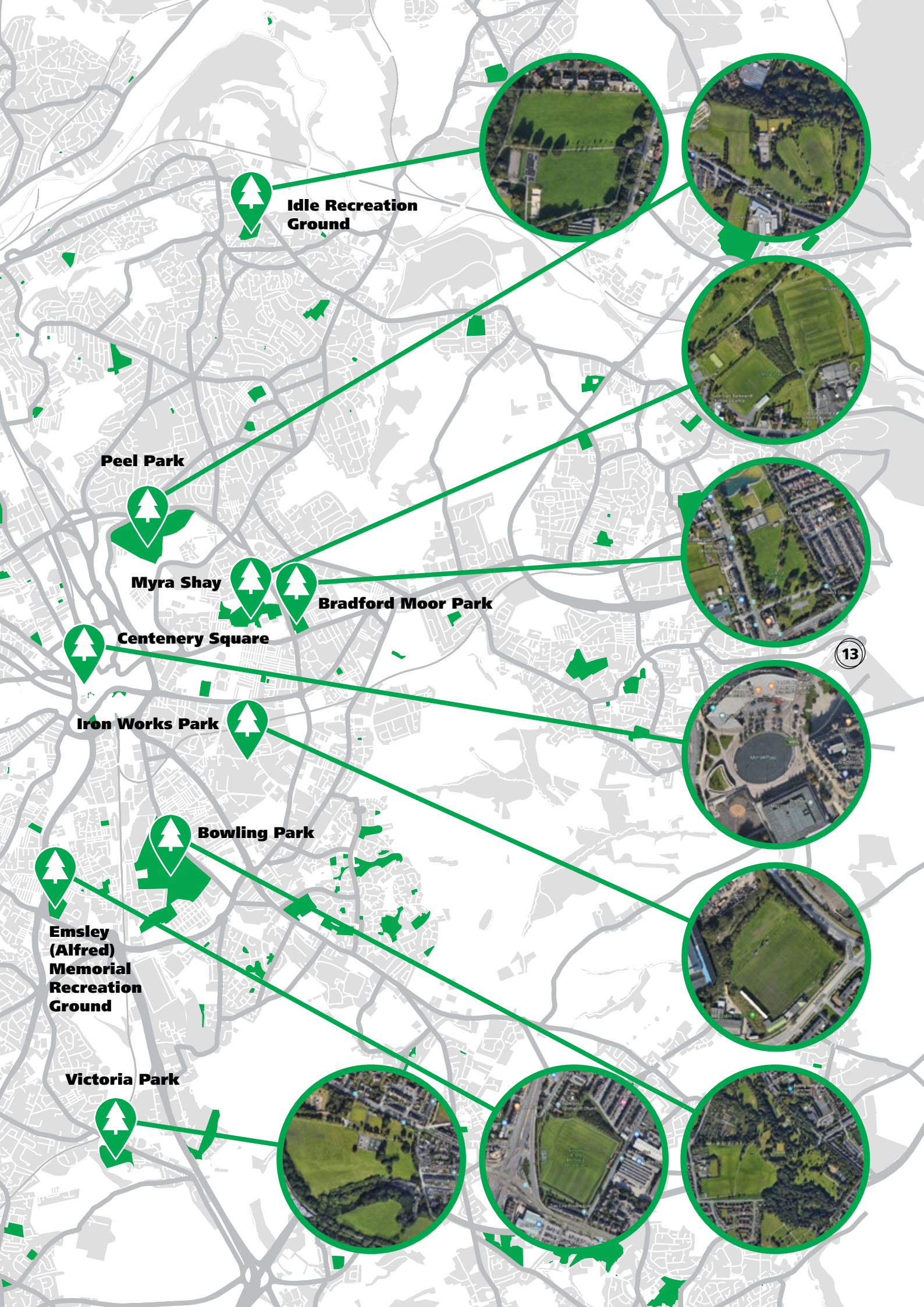
Horton Park

Russell Hall Park

Horton Bank

Wibsey Park

Harold Park



Idle Recreation Ground



Peel Park



Myra Shay



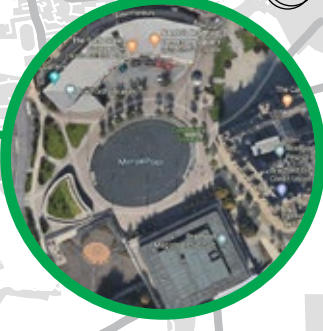
Bradford Moor Park



Centenary Square



13



Iron Works Park



Bowling Park



Emsley (Alfred) Memorial Recreation Ground



Victoria Park



How do BiB parents feel about being part of the BiB family?

We asked parents:

- Why did you decide to join the BiB cohort?
- What do you like about being part of the BiB cohort family?
- What difference has being part of BiB cohort family made to you and your family?



Salma Nawaz Mother of 3

1. I decided to join the BiB family cohort when I was attending my glucose tolerance test at BRI when I was expecting with my first child in 2009. I noticed that most children in Bradford have asthma and eczema. I had a fear that what if my child has similar problems. Therefore, I became part of the BiB family cohort in order to discover the causes of such diseases.
2. I like the fact that, being part of the BiB cohort family, we are able to improve the lives of children and families around the world.
3. Being part of the BiB family cohort has helped us to live a healthy lifestyle. I mainly cook at home using fresh ingredients in order to promote healthy eating.

We avoid take-outs to prevent the consumption of acrylamide. We eat out at a restaurant twice a month, choosing healthy options. As a family, we refrain from junk food and sugary foods.

We live an active lifestyle. My children are in after school sports club where they enjoy playing football, gymnastics and other sports. We take our children outdoors on the weekends for walks in the parks and take advantage of the greenspaces. As excessive TV and electronic usage has a negative impact on children's mental health, we therefore promote the use of technology in moderation. I had postnatal depression therefore I go for walks every morning in order to control my depression and elevate my mood.

14



Eisha Khan Mother of 3

1. I wanted to do something for the betterment of my community. BiB is working with children, women's wellbeing and that is something in which I really want to contribute. When I moved to Bradford from London I felt this city is deprived in many ways. But, the way BiB is contributing is making a difference in a real sense.
2. It's amazing being part of the BiB cohort as I am able to

meet different people from the community. It's always so much to know and learn. I feel such research and work bring differences to the community on ground levels.

3. It helps me to know about my community and surroundings in a better way. Build my confidence and knowledge. It has given me insight into a lot of things and I am able to conduct a lot of things in better ways in my family.



Samina Begum Mother of 3

1. I joined as I wanted to be able to have a say as a parent and volunteer in how the area I lived in can be improved in regards to children and their life chances.
2. Meeting other parents and being involved in the different types of research going on and being asked for our views to help shape services.
3. It's made me reflect on my own experience of parenting and how I can bond more as a family, doing things together. Whether it be going to the park and looking at the habitat there and exploring it. Giving her confidence to talk and be inquisitive... Which motivates her and me on how we are bonding.



Dawn Davidson Mother of 1

1. It sounded like a really interesting study looking at health, development and the welfare of local children
2. It is great being at the heart of the research, knowing how BiB are moving forward and how the study has progressed. It is really important for the health of our children now and in future.
3. It makes us more aware of healthy living, how the environment impacts health and how our area supports children's health and exercise. Our children are also more aware of their own health and lifestyles.



Suhaib Ahmed Father of 3

1. I decided to join Born in Bradford because my children were born in Bradford and I wanted to learn more about how children in Bradford are developing and progressing and how they are affected by genetic illnesses, nutrition, allergies and disabilities.
2. What I like about the Born in Bradford cohort family is that there is research and studies being done to help get to the bottom of these illnesses and issues and because we have parents taking part in the research this will help diagnose illnesses much quicker and find solutions to them.
3. The difference of being part of the Born in Bradford cohort family, has made to me and my family is that I have been able to discuss and provide information to them so that they can use it in their research to help unravel why children are having illnesses and diagnose why children have disabilities. I believe the research they are doing with the NHS and local authorities will help to improve child health and well being.

'It is great being at the heart of the research... It is really important for the health of our children now and in the future'

Dawn Davidson

Improving mental health in parents could reduce the risk of poor mental health in children

We know that parental mental health is important because it affects the way our children behave, how they express themselves, and how they get on with others.

By identifying and treating common mental disorders like anxiety and depression in parents, we can improve the health of our children in a number of ways.

With your help, BiB have explored a range of mental health conditions and how these may shape the behaviour of children.

16



Photo by Ian Beesley

What we have found with your help

- Children were at increased risk of behavioural problems and poor mental health at age 3 if their mothers experience poor mental health.
- Up to 40% of pregnant women experience low mood, but very few cases are reported in our health records – as many as half of the most common mental health disorders are potentially missed by GPs; this means that women may not be getting the support they need.
- Mums living in our most deprived communities were more likely to have a potential diagnosis missed by health professionals.
- Pakistani women are at greater risk of mental ill health but were half as likely to have a diagnosis recorded with their GP than White British women. They were also less likely to receive treatment or other support.

There may be a time in everyone's life when they feel sad or depressed. At such times they might feel that they cannot cope. When people feel like this it is important that they can talk to someone and seek help.

If you should feel like this, or if you are concerned for someone else, here are some contacts which might be useful.



Local help

First Response 01274 221181

First Response is a service that supports people experiencing a mental health crisis in Bradford, Airedale and Wharfedale.

You can contact them direct 24 hours a day, 7 days a week. You don't need an appointment and you don't need a referral. You do not have to have used any mental health services before.

Your GP

They will be able to provide help and advice. Your GP can also provide access to appropriate specialist services and local organisations.

Your midwife

They will be able to provide help and advice during your pregnancy.

Your Health Visitor

They will be able to provide help and advice after your baby is born.

Mental Health in Bradford: Wellbeing Guide

This website helps you find out more about mental health, different problems that people experience and where to access help and support. The service directory lists over two hundred services, mostly within the Bradford and Airedale district, which may be able to help.

www.mentalhealthinbradford.co.uk

National help

The Samaritans

The Samaritans provide a confidential service for people in despair and who feel suicidal. Call free on **116 123**

www.samaritans.org.uk

SANE

Provides information and support to anyone affected by mental illness.

0300 304 7000 (between 6pm–11pm daily)

www.sane.org.uk

Supportline

Confidential telephone helpline offering emotional support to any individual on any issue. **01708 765 200**

www.supportline.org.uk

National Domestic Violence Helpline

Provides an information service and access to 24-hour emergency refuge accommodation. **0808 2000 247**

Cruse Bereavement Care

Offers help, including a free counselling service, for bereaved people whatever their age, nationality or beliefs.

0808 808 1677

www.cruse.org.uk

Mind

Mental health charity providing information, support, local groups and an online chatroom.

0300 123 3393

www.mind.co.uk



Financial and food insecurity are harmful to physical and mental health – health and welfare services need to be provided in areas of high deprivation

Inequality is an important determinant of health

Poverty and inequality have more than just financial consequences – they can create barriers to opportunities such as employment and education that can negatively impact a person's health.

In BiB, we looked at how the impact of inequality differs between ethnic groups and how it affects areas such as mental health and food security.

Social disadvantage, such as poverty, is a significant risk factor for poor mental health.

- Mothers who said they were struggling financially had twice the risk for mental ill-health.

Subjective feelings of financial security are a better representation of the social position of Pakistani women than education or socioeconomic status.

- For Pakistani mothers, self-reported financial security had the strongest relationship with

health outcomes. In White British mothers, traditional measures of socioeconomic status were more consistently associated with health outcomes.

- This adds to evidence that traditional measures such as income or education level and may not fully capture the relationship between social disadvantage and a person's health among some groups.



What we have found with your help

- **Financial stress was a key contributor to increased smoking rates during the 2008-2010 recession. Pregnant women were more likely to smoke then, than those who were pregnant before the recession, despite the long-term UK trend of declining rates of smoking in pregnancy.**
- **The use of food banks has risen sharply since the start of the 2008 recession. We found 14% of women reported food insecurity when their baby was 1 year old. For women receiving income support, this figure rises to 33%. More White British women reported being food insecure than Pakistani women.**
- **The use of food banks was closely associated with reported shortcomings in welfare support mechanisms, including delayed payments.**
- **Mothers facing food insecurity, where they are unlikely to have access to nutritious and affordable food, are more likely to have overweight. Their diets were of poorer quality, with fewer vegetables and more sugary drinks.**
- **They are also more likely to have poor mental health. Food insecurity may be preceded by distress and may also be a cause of such distress.**

Our Young Ambassadors

Our Young Ambassadors are the next generation of BiB researchers! Made up of some of our oldest BiB children, our Young Ambassadors are critical in helping us understand their experience of being part of BiB and what it is like to be born and brought up in Bradford. They help us by sharing their ideas about the research done within BiB, and have the opportunity to speak to other children and adults.

As part of our first meeting with them, we asked:

- 1 What makes a happy, healthy child?
- 2 What do you like about your community?
- 3 What do you think needs to change in Bradford to keep the community healthy?
- 4 What research do you think we should do?
- 5 If you had all the money in the world, what would you spend it on to help children be happy and healthy?

This type of involvement is helping us understand what our Young Ambassadors think is important for growing up healthy, and this is invaluable to us. We thank them for their continued participation and look forward to hearing more from them!

The answers from our Young Ambassadors

20

What makes a happy, healthy child?

Having water, food - 5 a day, friends, clothes, clean bed, bath and showers, Christmas dinner and just enough games

Being grateful and giving to charity

Not using technology for more than 2 hours, not using mobile as much as before

Activities to entertain

Playing outside with my friends

When I go on holiday

Being treated with a lot of respect

Reading

Treating others with respect and not forcing them to do something

Going to new places

Going to museums

Spending time with my family

Spending time with my mum's gardening club

When I go hoola hooping

Monkey bars and gymnastics

Learning new subjects

Dancing to music

What do you like about your community?

I like fun things to do in the community

I like the fact that people show other people respect

My parents

My community is awesome

My community has cultural diversity



What do you think needs to change in Bradford to keep the community healthy?

- No motor bikes
- No drugs
- No smoking or vapouring
- Bikes or uni-cycle
- Everyone to get the flu jab
- Converting to metal straws, paper or bamboo

- Influencing and promoting people to walk more
- Turn street lamps off at 6:00pm or whenever it gets dark
- Less screentime
- Increase the price of video games
- Talk more about feelings

- Don't be afraid to tell people how you feel
- Tell people you trust
- Reduce self harm
- Reduce bullying
- More things to help the environment in the area at least

What research do you think we should do?

- How to limit screentime
- Stop them playing inside
- Talk more about your emotions
- Stop them from playing on gadgets for too long

If you had all the money in the world, what would you spend it on to help children be happy and healthy?

- Getting rid of pollution and plastic in the sea!
- Anti-bullying
- Talk about your emotions
- Reduce screentime
- Get rid of self-harming
- Destroy stuff which can cause harm
- Destroy anger and stop self-harm

What you eat can influence the types and amount of chemicals and toxicants you're exposed to

Food, like everything around us, is made of chemicals. Some chemicals that are found in foods, or formed when we cook foods, have harmful effects for our health.

What you can do:

- Eat fewer foods like chips and crisps that are fried or cooked at high temperatures.
- Continue to eat fish, especially oily fish like mackerel, salmon, herring, and anchovies – these are a great source of protein and good-for-you fats. But, stick to the recommended fish intake of 2-3 times per week to limit exposure to toxic chemicals and heavy metals.

22

What we have found

- Acrylamide is a chemical which can be formed when starchy foods are cooked or fried at very high temperatures (for example, crisps and chips). We found that acrylamide can cross the placenta, and exposure during pregnancy can lead to a lower birth weight and smaller head circumference.
- Fish, especially oily fish, is recommended for the health benefits that it provides. However, eating fish more than the recommended number of times per week can lead to an increase in consuming chemicals and heavy metals, which we've detected in blood samples of children and mothers.



DID YOU KNOW?

- Evidence from BiB has led to recommendations in international guidelines for lowering exposure to acrylamide.
- In everyday life, humans are in contact with many environmental contaminants from many different sources (such as food, air, cosmetics and water). BiB has been working with 5 other European cohorts as part of the HELIX (Human Early-Life Exposome) project to measure environmental hazards in the early years of life. Our findings show that chemical pollutants are detected in

blood and urine samples of almost all our BiB mothers and children. These hazards include pesticides, mercury, lead, and chemicals used in plastics and cosmetics.

We also found that mothers and children are exposed to several hazards from our city living. These include air pollution caused by road traffic, traffic noise, and insufficient contact with natural environments such as parks. Future research will help us understand how these hazards affect our health.



Diet, exercise and weight

What we eat, how much we eat, and how often we move around in our daily lives – three things that can play a role in whether or not we put on weight.

Carrying extra weight increases our risk of diseases, such as diabetes. And, too much body fat in childhood is a real concern because we know that children with too much body weight are more likely to become adults with too much body weight. BiB has explored whether a healthy weight range for South Asian mothers and children should be the same for those of White British backgrounds, or whether a different measurement would be better.

Understanding how our eating habits are formed early in life, and what foods we keep in our homes, may help us better understand the link between what we eat and our health and body weight

- We found that White British homes were more likely to have chocolate, cakes, and sweets, while Pakistani homes were more likely to fruit and sugar-sweetened drinks.

Any exercise, even light physical activity, is beneficial for reducing children's body fat.

- Increasing physical activity and reducing inactivity, such as playing computer games or watching television, benefits children's health and could potentially improve learning skills.
- We found a link between frequent light-intensity physical activity and skinfold thickness – a measure of body fat.
- Benefits were greater with higher intensity physical activity. Replacing 20 minutes of inactivity with exercise saw a larger decrease in skinfolds.

What have we found?

South Asians may need a different approach for measuring a healthy body size.

- We know that people of South Asian origin naturally have more fat tissue than those who are White British.
- This means that having the same warning level for deciding whether someone has overweight or obesity (a condition where a person has accumulated so much body fat that it may have a negative impact on their health) would be inaccurate for South Asian people.
- By using a more accurate weight range for South Asian people, the number who were considered to have obesity increased from 19% to 31%.
- Compared to White British babies, Pakistani babies were smaller and lighter at birth but had similar amounts of fat. This suggests that Pakistani babies are relatively fatter. This ethnic difference in fatness does not seem to rise with increasing birth weight.
- Pakistani children could be considered 'fast' growers compared to White British children, as all our children had similar weights by 2 years. Yet Pakistani children were taller. Between 4-5 years of age, Pakistani children were still taller and had lower BMI than White British children.
- Using a more accurate weight range for South Asian people could lead to better assessment and monitoring of health risks, such as diabetes in pregnant women, low birth weight, and obesity.

Vitamin D – the sunshine vitamin!

The sun's rays include ultraviolet A (UVA) and ultraviolet B (UVB) light, which we can't see. UVB light is what our skin needs to make vitamin D but too much can cause sunburn and some forms of skin cancer.

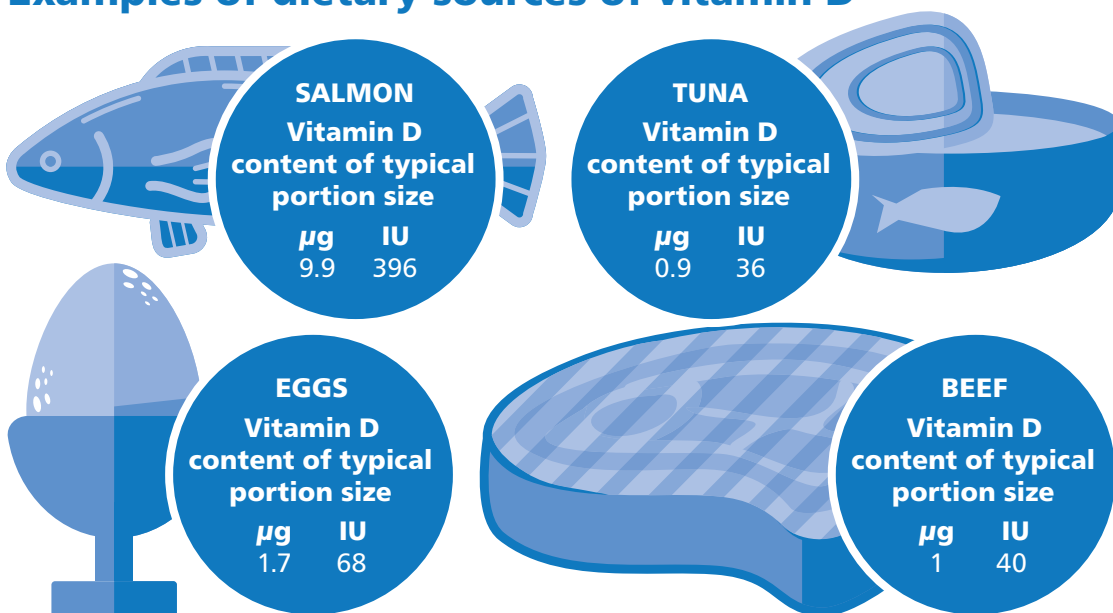
Vitamin D is essential for helping our bodies maintain healthy bones and teeth by working with the minerals calcium and phosphorus. These two minerals combine to create the structure that forms our bones and teeth. Deficiency in vitamin D can lead to rickets, where weakened muscles and bones can lead to permanent deformities. We are not able to make this vitamin ourselves and need to get it from other sources. It is sometimes called the 'sunshine vitamin' because it can be made in our skin when we are outside in daylight. The amount your skin can make depends on how strong the sun is (which is greatest in the middle of the day), how much skin is exposed, how pigmented your skin is, and how long your skin is exposed for. At the height of

You're most effective at making vitamin D when your shadow is shorter than you.

British summer, this might mean 10-15 minutes of time in the sun without sunscreen several times a week. But, because of how far north we are, we can't make vitamin D through our skin between March and September. It is recommended that for the general UK population aged 11 years old and above, a daily intake of 10 µg (400 IU) would be enough. For the winter months when we can't make any vitamin D, it can be obtained through supplements or through the diet. The best sources are fatty fish like salmon, herring, mackerel, sardines, and tuna. Vitamin D is also found in smaller amounts in eggs, meats like beef – particularly offal like liver – and mushrooms that have been exposed to the sun's rays*. Some foods are also fortified with vitamin D such as cereals and milk.

*While we can't make vitamin D behind glass as UVB rays don't penetrate, mushrooms can make vitamin D from the UVA rays that can penetrate glass! Scientists have found that placing your normal shop-bought mushrooms on a windowsill can boost the amount of vitamin D in them. Just place your mushrooms on a windowsill for an hour or two between 10am and 3pm – facing the gill tissue (the brown undersides) to the light will help maximize the increase.

Examples of dietary sources of vitamin D



Do you know how much sugar is in your drinks and snacks?

While we all like a sweet drink or snack, these can easily add up to too much sugar throughout the day.

What are 'free sugars'?

These are sugars that are added to foods by manufacturers, as well as sugars naturally present in honey, syrups, and fruit juices. Sugars used by food manufacturers can come in many forms. They can include sugar from sugar beet or cane sugar, as well as honey, syrups, and fruit and vegetable juices and purees.

26

While fruit and vegetable purees and juices seem like they would be a healthier source of sugar, they add only sweetness but no nutrients such as fibre. These naturally-occurring fruit and vegetable juice sugars are included in the recommended daily total and it is advised that only one serving of fruit juice count towards your 5-a-day.

How to tell if there are added sugars in your food and drinks?

Anything ending in -ose (fructose, maltose, glucose, sucrose, etc.) is a form of sugar. Sugar can also be listed as barley malt syrup, dehydrated cane juice, potato syrup solids, and maltodextrin. Foods or drinks saying 'no added sugar' may still contain sugars added as concentrated fruit juice, purees, or evaporates.

Why do we care about sugar?

The two biggest concerns with sugar are tooth decay (dental caries) and unhealthy weight gain. It is easy to overeat sweet things and eating more than we need contributes to weight gain. Sugar also feeds the bacteria in our mouth which creates

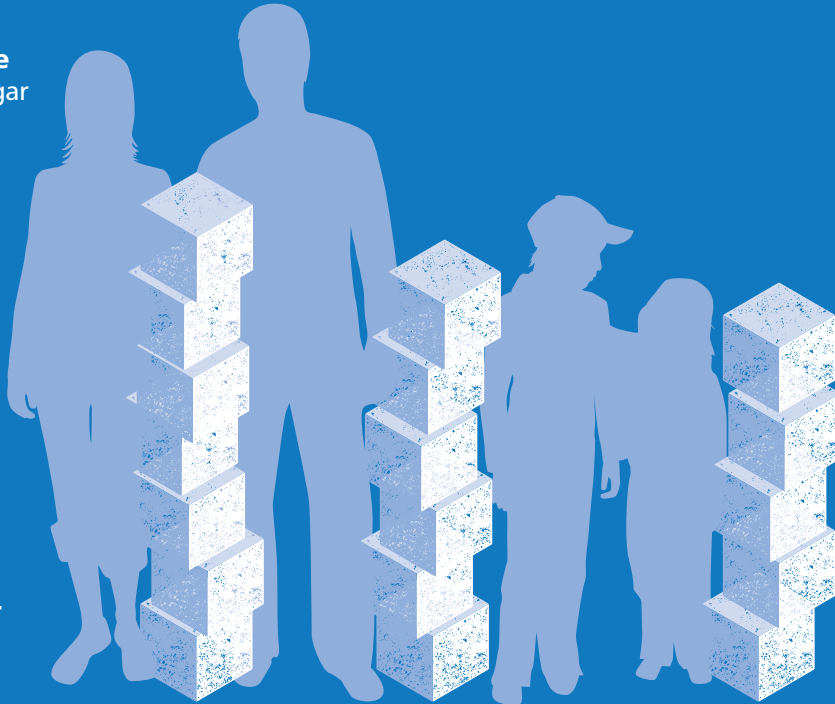
acids, dissolving the surface of our teeth and creating damage and decay.

So...what can I do to reduce my sugar intake?

Learn to read labels. By knowing when sugars are added to your foods and drinks, whether as an 'identifiable' sugar like honey or syrup or a 'natural' sugar like concentrated fruit juices, you will be able to make an informed choice. Products made from fruit, rather than fruit itself, should be viewed as treats and not as everyday foods. While many fruit juices like orange and apple don't have any added sugars, eating the fruit is better as you get the additional benefit of added fibre which helps keep your gut healthy.



It's recommended that **adults have no more than 30 grams** (7 sugar cubes or teaspoons) of 'free sugars' a day, while **children between 7 and 10 years old should have no more than 24 grams** (6 sugar cubes or teaspoons), and **children 4 to 6 should have no more than 19 grams** (5 sugar cubes or teaspoons) a day. **Sugar should be avoided altogether for children under 4 years of age.**



Sugar found in popular snacks



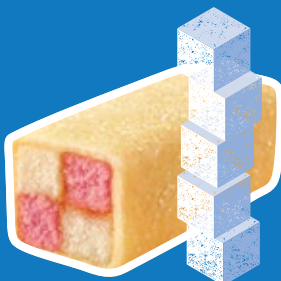
Energy drink
1 can: 500 mL
13.8 teaspoons



Carrot & walnut cake
1 slice
11.3 teaspoons



Mocha coffee
1 medium mocha
7.8 teaspoons



Mini Battenberg
1 serving
5.1 teaspoons



Breakfast bar
1 bar
4.5 teaspoons



Hot chocolate
1 sachet: 28 g
4.3 teaspoons

The first 1,000 days of life (and even pre-conception) can have the greatest impact on childhood obesity

What is BMI?

Your Body Mass Index (BMI) is a number calculated by taking your weight and dividing it by your height squared (kilograms/metres²). This number allows health professionals to determine whether you are in the underweight, normal weight, overweight, or obese weight category.

Why is BMI used?

BMI is used as a measurement for fat mass. Health professionals are concerned when individuals carry too much fat on their bodies as too much fat isn't good for health. Carrying extra fat has been linked to diabetes, cardiovascular disease, and cancer. By using BMI as a measure for fat mass, this easy-to-calculate number gives an indicator of your metabolic health.

What about children?

BMI isn't accurate for children who are still growing, so health professionals calculate something called a BMI 'z-score', which takes into account a child's sex and age. The z-score is a representation of a child's body weight compared to a child of average weight for that age and sex.

A value above 0 means that they are larger than average for their age and sex

While a value below 0 means that they are smaller than average for their age and sex

These z-scores can be translated into percentiles. A child at the 85th percentile for their age and sex would mean that the child's BMI is greater than the BMI of 85% of children of the same age and sex.

What we have found with your help

- Up to 40% of childhood obesity can be explained by maternal overweight and obesity, showing the importance of maintaining a healthy weight before conceiving a baby.
- In addition to maternal BMI, smoking, and parenting styles also impact on children's risk of obesity at age 3.
- We found White British mums in Bradford were more likely to smoke during pregnancy, breastfeed their babies for less time, and wean them earlier compared to mums of South Asian origin; these may all have implications for a child's later weight.
- South Asian mums were less physically active and had higher rates of gestational diabetes (the sort of diabetes that develops in pregnancy). High levels of glucose (a type of sugar) in the blood is associated with increased risk of diabetes, including gestational diabetes. This then raises the risk for a child being born with high birth weight or fat.



Behaviours such as smoking, breastfeeding, and even how we act as parents can impact on the health and development of our children. BiB has looked at a range of factors that can influence health from early life, including lifestyle differences between ethnic groups. Ethnic differences in parenting styles, breastfeeding, and habits may contribute to differences observed in child health and well-being.

What we have found with your help

Overweight and obesity is more common in children of South Asian origin compared to White British children. Short breastfeeding timescales, sleep duration, and early intakes of sugary food and drinks may be contributing factors.

- **We found that longer sleep length was linked to less body fat. More body fat was also linked to shorter sleep.**

The amount of time children spend watching TV or on a phone or computer has been linked with poor health outcomes including obesity, lower fitness levels, and poor development of the way children think,

learn, understand and remember. Current recommendations do not endorse any screen time for children under the age of 2 years - and suggest a limit of 1 hour/day in children aged 2-5 years old.

- **We found that the amount of TV watched by children is shaped by household attitudes and use.**

Children of South Asian origin have a lower rate of Sudden Infant Death Syndrome (SIDS) - the unexplained death, usually during sleep, of a seemingly healthy baby less than a year old - compared to White British children. This may be due to differences in lifestyle and infant care behaviours.

- **We found that risk of SIDs may be reduced if parents reduced smoking, alcohol consumption, and sofa-sharing.**

One of the five pillars of Islam is to fast during Ramadan; pregnant women are not expected to fast but many still choose to.

- **We found that fasting during Ramadan does not increase risk of premature births or low birth weight babies.**

By linking data from health and education services together, we can quickly and accurately identify children in need of additional support

What we have found with your help

There are links between child health status, health care use, and education outcomes.

- For example, we found children who were born premature had worse educational outcomes, particularly if the premature birth resulted in the child starting school a year earlier than they would have if born full term.
- Early diagnosis of autism was associated with better health and education outcomes and children from more deprived areas may be under-diagnosed.
- We found routine Early Years Foundation Stage assessments were associated with subsequent

diagnosis of autism, so may be an important early indicator of autism.

- Children's fine motor skills were associated with educational outcomes, including mathematics. For example, we found evidence that initiatives to improve fine motor skills have positive impacts on children's handwriting accuracy and speed.
- Early literacy outcomes are associated with a child's ability to see clearly. Children who need glasses, and wear them, improve the clarity of their vision which is then associated with improved literacy in early childhood.

30

DID YOU KNOW?

- We are piloting the use of routine educational data as a first stage in screening for autism in primary schools as a way of improving the pathway to autism assessment.
- BiB and our research partners in Yorkshire and Humber have been working with the National Child and Maternal Health Intelligence Network

and the Department for Health. We have developed a tool to help predict how birth and early-childhood factors can have an impact on a child's learning, development, behaviour and health. This tool, which will soon be released for national use, will inform how local councils and health providers design and improve services for young people.

Some of the organisations that we contact to link information from your patient record or to help us contact you in the future



Connecting knowledge and care across Bradford

31

It's easier to see the 'bigger picture' when you've got all the pieces of the puzzle. As part of Connected Bradford, we want to piece together the health, social, and community care puzzle pieces to understand how treatments and care occur across the different settings; this allows near to real-time information on how and who is accessing care pathways, which services are used, and the requirements for care in a population.

All this translates to helping improve services for your needs by having a clearer understanding of care pathways, treatments and health outcomes. We can use these insights to inform new interventions and policies as well as reduce avoidable GP appointments and emergency admissions, whilst improving timely diagnoses.

Working together with 88 GP practices, NHS Trusts (Bradford Teaching Hospitals, Airedale Hospitals, Bradford District Care Trust) and both Bradford and North Yorkshire Local Authorities, we are connecting anonymised data from 700,000 patients across the Bradford and Airedale regions in a regional research database that spans over ten years.

All the data is anonymised – meaning personal, identifying, data such as names and addresses are removed or replaced by the data-providing organisations. Currently, we are focusing on testing the power of linking together anonymised data on childhood and ageing research. Connecting data sources together has allowed us to develop and test initiatives in the young and elderly, improving identification of care needs and improving care pathways for those who need it.



32

Genetic disorders can lead to increased risk of infant death – knowing your potential risk can help inform your decisions

Genetics is a branch of science that explores how our children inherit medical conditions, as well as the way they look, from their parents.

Our genes therefore play a large role in our health and function, but they are not the authors of our lives. Understanding how our genes affect us, and how we can use this knowledge to benefit our health, is something BiB is taking an active role in.

A particular interest for us here in Bradford is the role that consanguineous marriages involving blood relatives play in the genetics of children born from these relationships.

These marriages are common in many parts of the world and the health risks and benefits have international relevance due to migration. In BiB, we have explored this as well as other questions of how our genes influence our health.

DID YOU KNOW?

There was concern that there were higher levels of childhood disability due to congenital anomalies (such as heart or genetic defects at birth) in Bradford than in other areas of the country, but this was hard to establish without a register of these problems.

BiB worked with doctors to set up this register in Bradford and, by working with the directors of public health for the region, expanded this across the whole of Yorkshire.

Rare genetic occurrences can help us understand what our genes do.

- A particular interest is in looking at genes that are 'knocked out' (knock-out genes) and no longer function as they normally do. We want to find out how common knock-out genes are and what implications they have for health.

What we have found with your help

Consanguineous marriages have their own risks and potential benefits.

- Those in consanguineous relationships were less well-off economically and less educated, but were not disadvantaged in terms of other indicators such as marital warmth, financial stability, and were less likely to end in separation or divorce.

The risk for congenital anomalies, also known as birth defects, doubles among children born to parents in consanguineous relationships.

- The risk for congenital anomalies was greater for babies of Pakistani parents compared to White British parents. This risk doubled among babies whose parents were related.

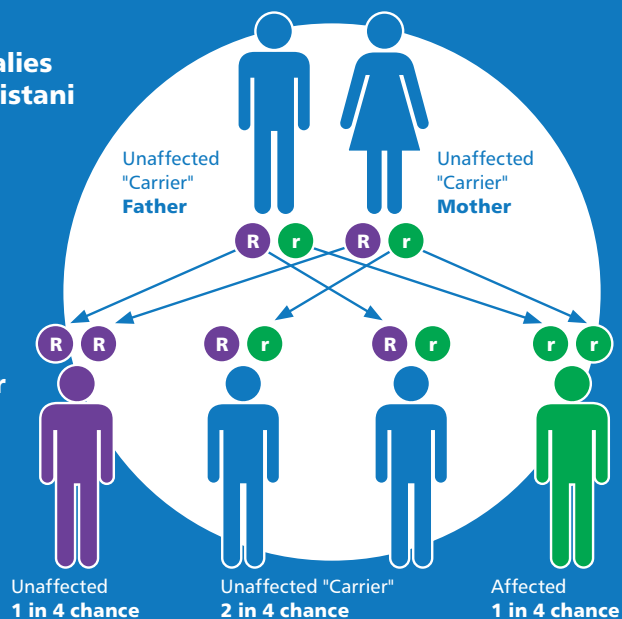
This is related to certain genetic recessive disorders that become more commonplace when a smaller genetic 'pool' of individuals who are more likely to be carriers of a disease-causing gene have children.

- Consanguinity – when both parents are descended from

a common ancestor – is the only significant factor increasing risks of these birth defects in children of Pakistani couples.

- The risk of a baby having a recessive disorder doubled for consanguineous couples, to 6% of births.
- In White British mothers, risk of having a child with a birth defect increased when mums were 34 years of age or older.

Below: how a recessive genetic disorder occurs



In the media!

We want everyone to know about the incredible work that is being done every day at BiB – the amazing research that you contribute to deserves to be heard. Here are some of our media partners:

You may have heard us on our regular annual program on:



We regularly talk about our work on:



34

Our work has been featured in:



and been written about in:



The environments around deprived areas are less healthy and have fewer health resources such as GP surgeries

In BiB, we looked at how the impact of the structural and neighbourhood environment differs between ethnic groups and how it affects things like access to social services, resources, and mental health.

What we have found with your help

- GP consultation rates were lower among women living in more deprived neighbourhoods; we also found Pakistani women were less like to consult GPs than White British women.
- There are fewer GPs per 1,000 patients in more deprived areas of Bradford.
- Poorer areas in Bradford have less access to high quality green space, are more polluted, and have a greater density of fast food outlets.
- 95% of families live within 500m of a fast food outlet.
- Social capital, a sense of being connected to family, neighbours and community, can exert a positive impact on health and well-being. This can protect some groups from some of the effects of deprivation.

35



Photo by Ian Beesley

Takeaway density in Bradford

What you eat is shaped by what foods are available.

Areas with more takeaways and food to eat on-the-go make it easy to eat too much cheap, unhealthy food and drinks.

Research has shown that the poorest areas of England have more fast food outlets, disproportionately affecting places like Bradford.

What is a takeaway?

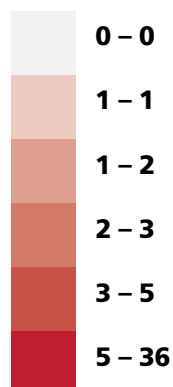
Takeaways food shops were defined as food outlets where hot food can be ordered and paid for at the till, with no waiter service, and limited or no options to sit-in and eat.

Increasing numbers of takeaways in Bradford.

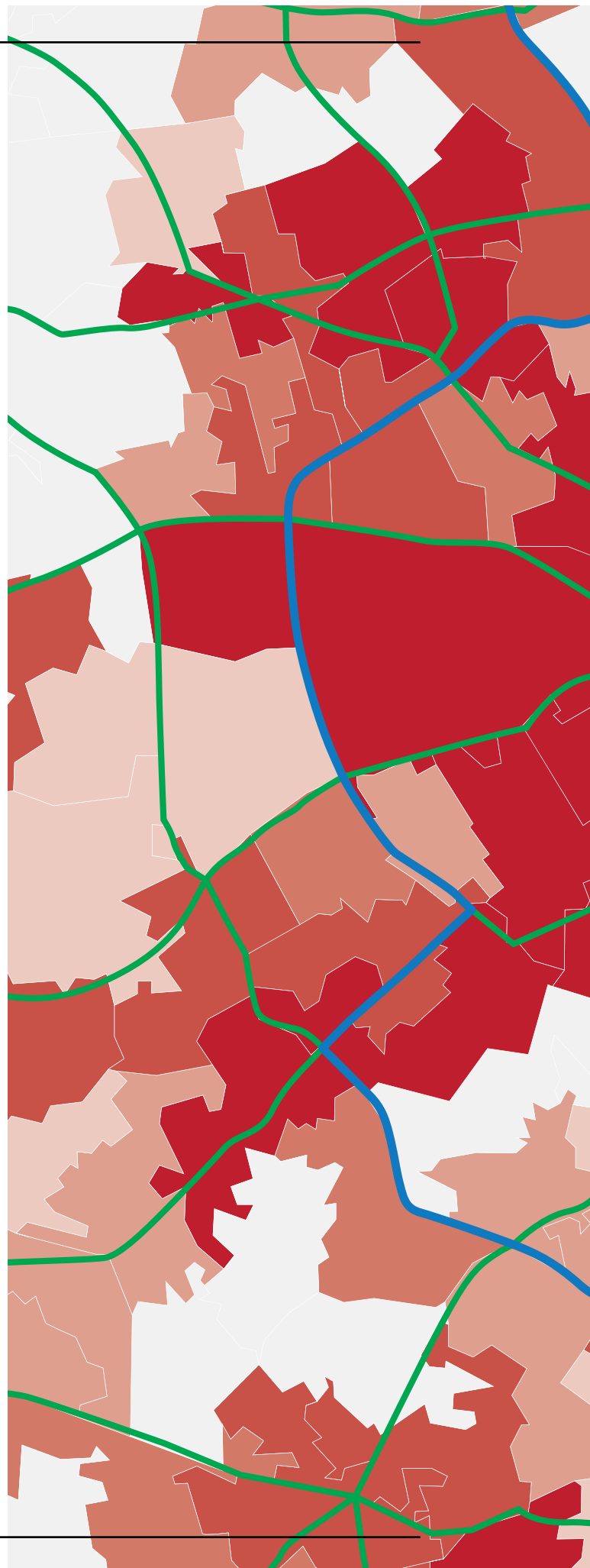
The number of takeaways in Bradford is significantly higher than the average for England. The number of takeaways increased by over 20% between 2014 and 2017 with one takeaway for every 714 residents.

KEY

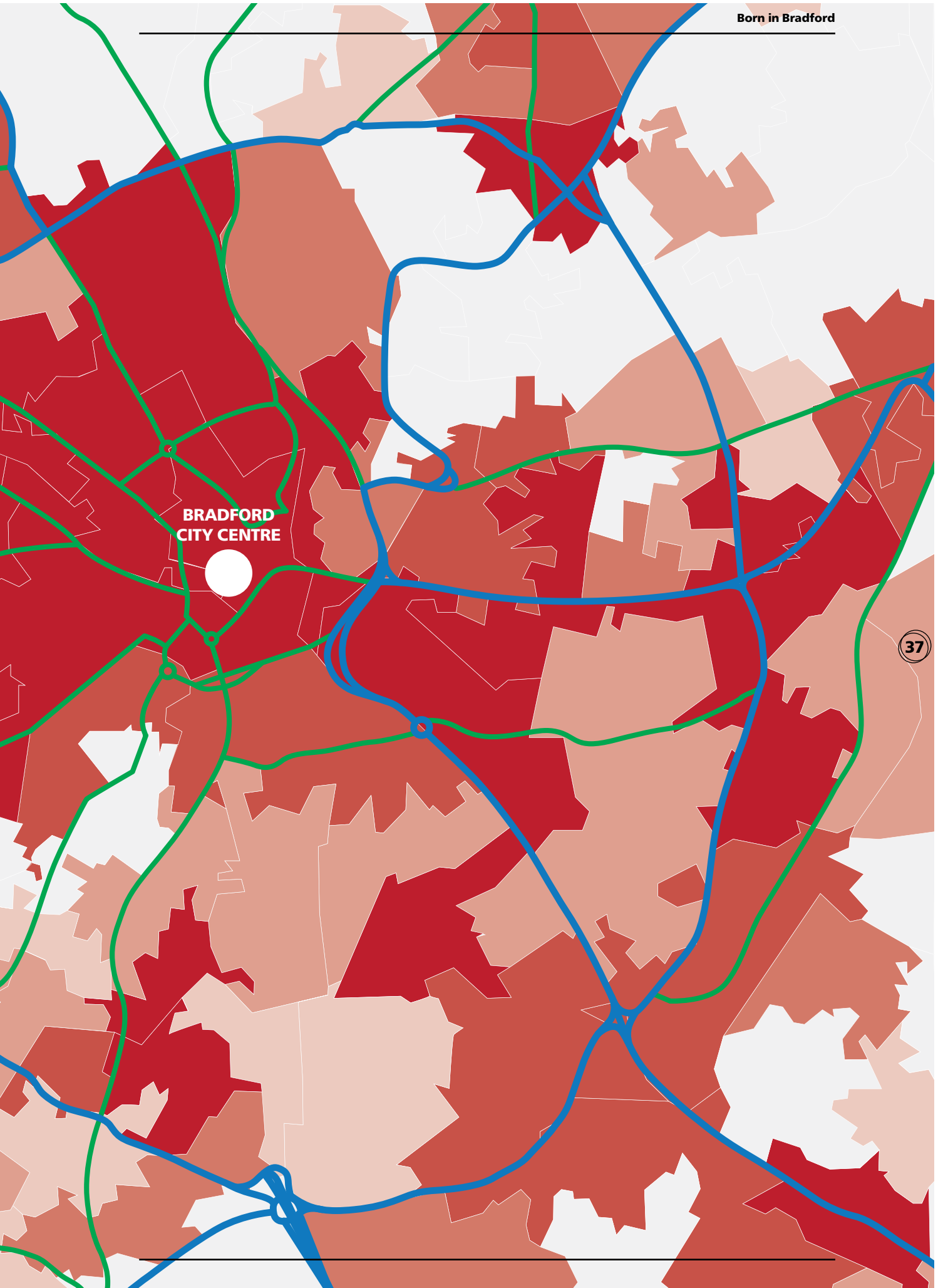
Number of takeaways



Source: UKCRC Centre for Diet and Activity Research (CEDAR), The Guardian



BRADFORD
CITY CENTRE



The BiB biobank

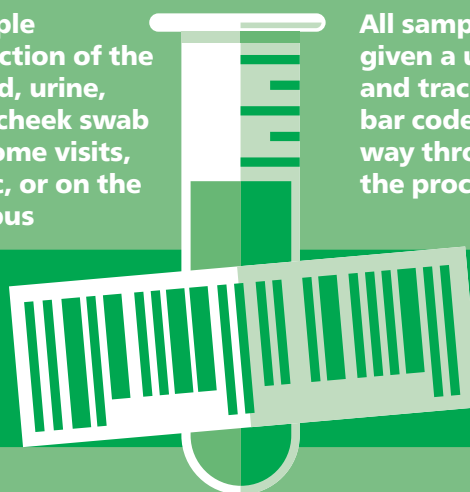
The BiB biobank, where we store human samples for use in research, is as old as as the research study itself, starting in Spring 2007. The biobank initially started with one industrial type freezer but due to the incredible uptake of the study, it quickly expanded to 7 freezers. At one point, the biobank contained over 150,000 biological samples including blood, urine and DNA collected from nearly 30,000 children and their parents.

The biobank is an integral part of the BiB study and has a wealth of precious resource that could hold the key in our understanding of disease processes and potential treatments. Diseases such as coronary heart disease, obesity, diabetes, asthma and allergies are on the rise and linking these diseases with the genetic make-up of participants could improve our understanding and management of these conditions in the future.

A journey of what happens to the blood, urine, and saliva you've given us:

Sample collection of the blood, urine, and cheek swab at home visits, clinic, or on the BiB bus

All samples are given a unique ID and tracked with bar codes all the way through the process



When needed by researchers, the samples are thawed and processed for tests such as heavy metals, chemicals, and DNA sequencing

The rest of the samples are frozen and stored at -80°C. in order to keep them stable



Your samples then journey on and become part of research projects!



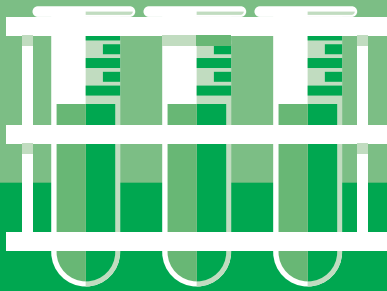
The biological material from the BiB biobank has already been used in a number of UK and European collaborative studies leading to many scientific publications.

For example, DNA information was used in the European MeDALL (Mechanisms of the Development of Allergy) study enhancing our understanding of the molecular and genetic basis for allergic conditions. Similarly, BiB biochemical data

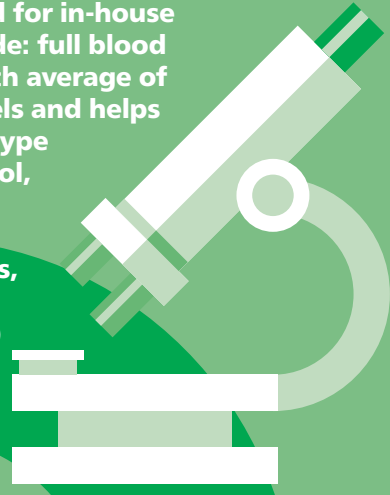
has been used in several studies to broaden our understanding of the role of vitamin D, iodine, lipids, leptin and insulin in pregnancy, diabetes and heart disease.

As our BiB children are growing up, more and more of the existing biological samples and measurements could be used to further unpick the complex role of genetics and biomarkers in the develop of diseases.

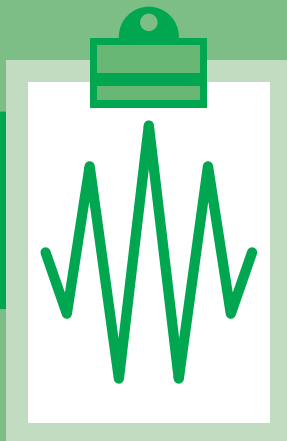
Travel back to the lab



Samples are prepared for in-house lab tests. These include: full blood count, HbA1c (3-month average of your blood sugar levels and helps inform us of risk for type 2 diabetes), cholesterol, urea and electrolytes (to assess kidney function), amino acids, free fatty acids, and glucose (blood sugar)



If there are any abnormal values, participants are notified



The remaining samples are separated into blood components including plasma, serum, and buffy coat, and red blood cells



Our work with you in BiB has catapulted us into changing the city of Bradford

We started out trying to describe and understand the health our city's children.

Now, we've expanded that ambition to wanting to design initiatives to try and improve the health, happiness, and well-being of the children and families in our city and beyond.

Through our initial work with you, our amazing BiB families, we've attracted over £20 million in research funding into the city and built an international network of leading scientists who are working together to support a healthier city.

40

We've been able to work with key health, education and voluntary sector partners in the city to attract investment for our families and city including projects such as:

- **Better Start Bradford – to improve outcomes for pregnant women and children under 4.**
- **Bradford Opportunity Area – to develop the Centre for Applied Education Research which will study the links between education and health.**
- **Active Bradford Sport England Local Delivery pilot – to find innovative ways to promote physical activity amongst young people.**
- **Obesity Trailblazer – to develop obesity intervention programmes in Islamic religious settings.**
- **Creative People and Places – to engage Bradfordians to celebrate and shape their rich and diverse culture.**
- **ActEarly city collaboration between Bradford and London – to co-produce, develop, and evaluate large-scale initiatives to prevent disease and reduce inequalities.**



Primary School Years

BiB researchers have been visiting children in Years 3, 4 and 5 in Bradford Primary Schools to conduct assessments of learning ability, working memory capacity, and well-being. The assessments will indicate which children are struggling in class and will pick up where their difficulties lie, for example in their fine motor control, or their working memory, and be able to identify children who need additional support.

Using Islamic religious settings to prevent childhood obesity among South Asian children in the UK

South Asian children are more likely to have overweight or obesity; the majority of these children also spend many hours at the mosque or madrasa each week. By working with religious settings and leaders, we are developing obesity prevention measures to be delivered in these settings.

Join Us: Move, Play (JU:MP)

We know that the amount of activity we do can have impacts on both our physical and mental health – and that habits start young. We are working with the community to develop fun ways of engaging and increasing physical activity among young people aged 5-14 years old.

Glasses in Classes

8% of BiB children had reduced vision and 4% had very poor vision when tested in their first year of school. The vast majority of these problems could be treated by wearing glasses. BiB are undertaking a new study 'Glasses in Classes' to find out if schools can support children wearing their glasses. All 4 and 5 year old children will receive vision screening in reception, their parents and schools will be notified to know to encourage the children to wear their glasses, and a second pair of glasses will be kept at school.

Digital BiB

We live in a world that is increasingly becoming more digitalised – we learn, socialise, travel and shop using digital platforms that help connect individuals and groups directly. Digital BiB will explore how smartphone apps can be used to more efficiently collect information for health research studies and share it back.

Why are we doing this study?

Motor-control has been linked to educational outcomes.

Why are we doing this study?

Working with community leaders means a greater insight into what prevention ideas may work for the community.

Why are we doing this study?

Working with the community to come up with ideas for increasing physical activity means they are more likely to be ones that are achievable and enjoyable.

41

Why are we doing this study?

Being able to see clearly can impact on learning.

Why are we doing this study?

We want to give our participants an opportunity to gain more knowledge about their health through accessing their health records and make it easier for our participants to provide answers to our survey questions.

New birth cohort study for all pregnant women in Bradford!

Are you pregnant, or know someone in Bradford who is? Then you need to know about BiB4All – the newest birth cohort study in the Born in Bradford family. Once again, every woman expecting a baby in Bradford is able to join the BiB family. But this time it's a bit different – there's no questionnaire or samples to give, just permission for BiB to link together information that already exists about you and your baby over time.

42

BiB have worked closely with midwives in Bradford to develop the study. When you have your booking visit with your midwife you'll get some information about the project and have the opportunity to talk it through. Your midwife will then ask whether



you'd like to join the study. And that's it. BiB will be busy in the background joining together a whole range of information to give researchers the opportunity to answer questions like:

- **Are there relationships between things that happen in pregnancy and children's future health?**
- **How many children in Bradford have asthma? Are children in some areas more likely to get asthma than children in other areas?**
- **How many mums in Bradford experience postnatal depression? What could be done to help prevent depression or provide support for families?**
- **Do particular projects that aim to improve outcomes for children make a difference?**

We're so excited to welcome even more people into the BiB family and with this new study, everyone having a baby in Bradford will get the chance. If you're interested and want to hear more about it, we'd love to hear from you!



Giving children and families the best start in life

As a true a 'cradle to grave' service, it's vital that the NHS understands how it can support people at every stage of their lives, including what impacts on the growth and development of children.

In BiB, we're applying what we have learned in the form of projects or programmes to benefit the lives and health of children living in Bradford. We have developed a series of projects targeted around healthy eating, increasing physical activity and managing a healthy body weight and have already discovered that:

- **Standing desks in schools reduce the amount of sedentary sitting time**
- **and do not impair, and may benefit, children's hand-eye coordination.**
- **An outdoor physical activity intervention in the playground could benefit pre-school children at risk for low levels of physical activity.**
- **The HAPPY (Happy Active Parenting Programme for early Years) intervention, developed for Bradford's multi-ethnic population, has been positively received by mums and shows promise at reducing the risk of obesity in children of overweight and obese mums.**

43

An integrated approach to early years development

BiB is working closely with Better Start Bradford, an exciting programme working with families in the areas of Bowling and Barkerend, Bradford Moor and Little Holton.

Better Start Bradford is made up of more than 20 projects focused on improving diet and nutrition, language and communication, social and emotional well-being, and outdoor space that supports, informs, and engages families expecting babies or with children under four, and professionals and organisations working with them.

The projects are designed to give children the best possible start in life by helping to improve their health, their social and emotional development and their ability to communicate with the world around them.

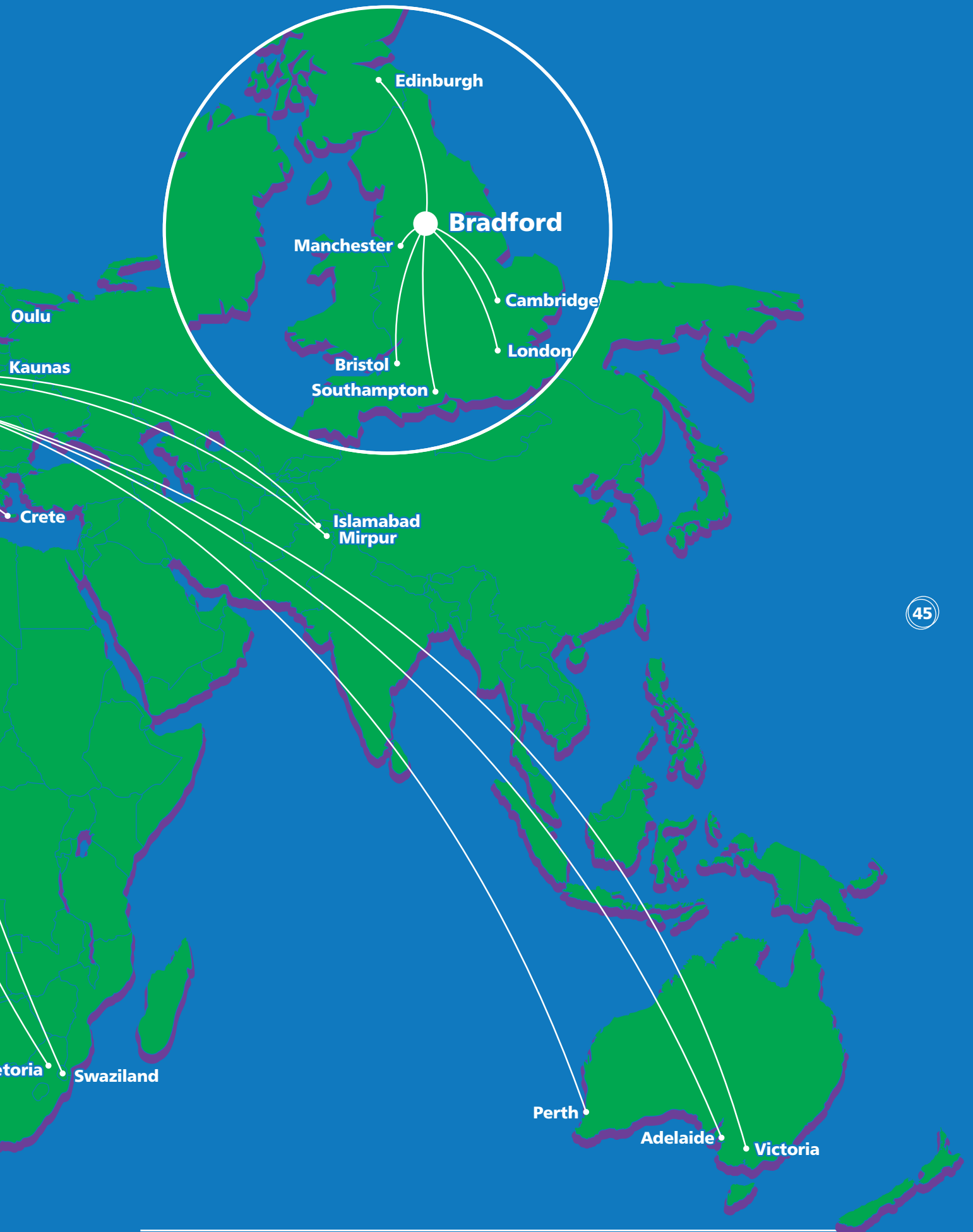
Born in Bradford's Better Start (BiBBS) cohort is running alongside Better Start Bradford in order to show the impact that the programme is having on children and their families.

This will help us to plan healthier and happier lives for families who live in Bradford and across England.

Bringing the world to Bradford

Researchers from around the world have worked with us to help improve the health of our city!







ActEarly **A City Collaboratory approach to promote good health and well-being**

Health is about much more than avoiding disease – it’s about feeling well in mind and body, feeling safe, being part of a community and being able to fulfil your true potential.

46

Our health is shaped by:

- **The design of our neighbourhoods and the quality of our parks**
- **The safety of our roads for walking and cycling, and our exposure to air pollution and noise from cars**
- **Our opportunities for learning and development in early life and at school**
- **Our emotional engagement with arts and culture**
- **The fairness and equality of opportunity in our society**
- **Access to good quality housing**

Our City Collaboratories in Bradford and Tower Hamlets will provide spaces where the public, scientists, policy leaders and practitioners work with each other to develop and test whole-system solutions to prevent ill-health. We’ll work with local communities to explore how we can design our neighbourhoods to improve health, with preschools and schools to embed

health in education, and we’ll develop novel approaches to improve life chances.

Scientists from Yorkshire and London will use our rich data to:

- **Understand health needs and target wider causes of ill-health**
- **Work with communities to develop sustainable solutions**
- **Develop a ‘SimCity’ to test the costs and benefits of new policies**
- **Create and design interventions with our communities**
- **Measure the impact of these interventions across the whole city system**

At the start of the 22nd century, our children will be in their seventies and eighties. We hope that what we are planning to do in ActEarly will shape their lives, their health, and the cities in which they live.



Manage your health with BiB's new app!

Sign up to Airmid and be part of
BiB's online community

Features of Airmid:

- View your health record
- Record daily health data, including from wearable devices
 - Set up medication reminders
 - Find nearby healthcare facilities
- View data about pollution exposure in Bradford





We would like you to stay closely involved in Born in Bradford. It is your study so please let us know what you would like us to research and tell us your ideas for how we can help you and your family become happier and healthier.

Follow us on social media:

f Born in Bradford @BiBResearch

www.borninbradford.nhs.uk

Call us: 01274 364474

Email us: borninbradford@bthft.nhs.uk



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