

# From Physics to Astronomy: adopting a complex systems approach to improving health

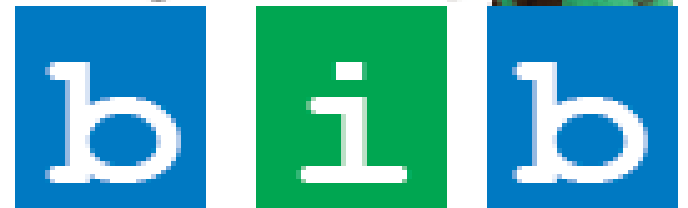


**John Wright**  
**Bradford Institute for Health Research**



**BORNINBRADFORD**

*For a Healthy Future*



**BORNINBRADFORD**

*For a Healthy Future*



**BORNINBRADFORD**

*For a Healthy Future*



Born in Bradford is a ground breaking project,  
designed to improve the health of children - both  
now and in the future.

We will track the lives of around 10,000 babies  
born in the city, from pregnancy, through  
childhood, until they become adults.

Born in Bradford will form one of the world's  
biggest studies into why our children fall ill.

For more information please contact:

**BORNINBRADFORD**

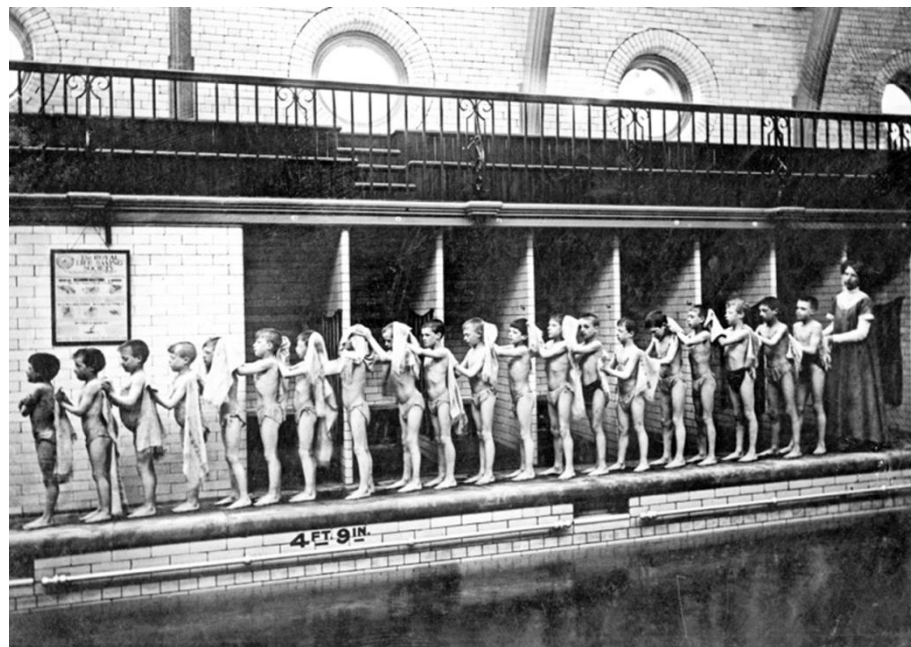
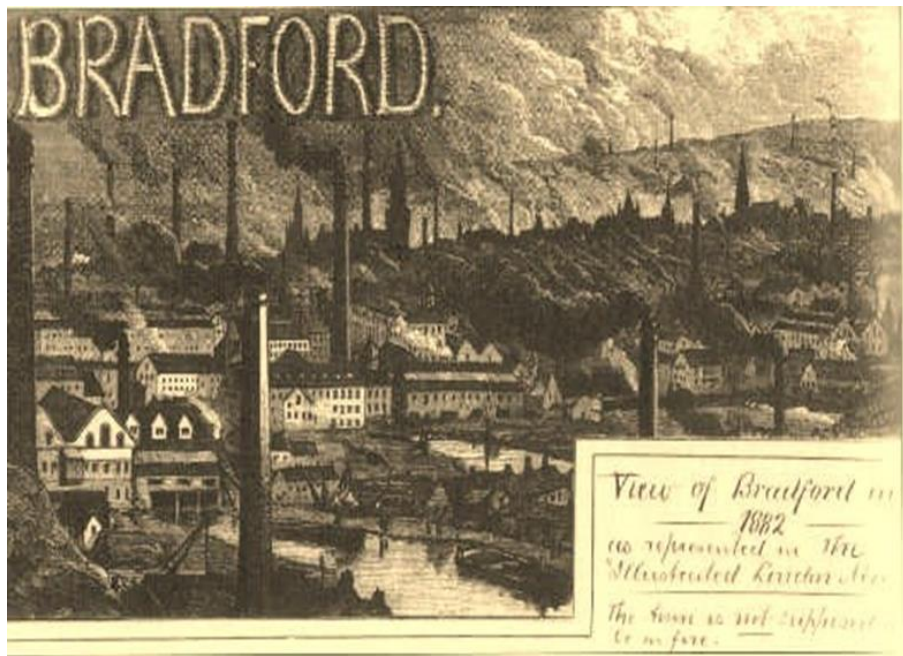
Project office, Bradford Royal Infirmary, Duckworth Lane, Bradford BD9 6BJ

tel: 01274 364474 email: [bbi@bradfordhospitals.nhs.uk](mailto:bbi@bradfordhospitals.nhs.uk)

Registered Charity No: 1061753

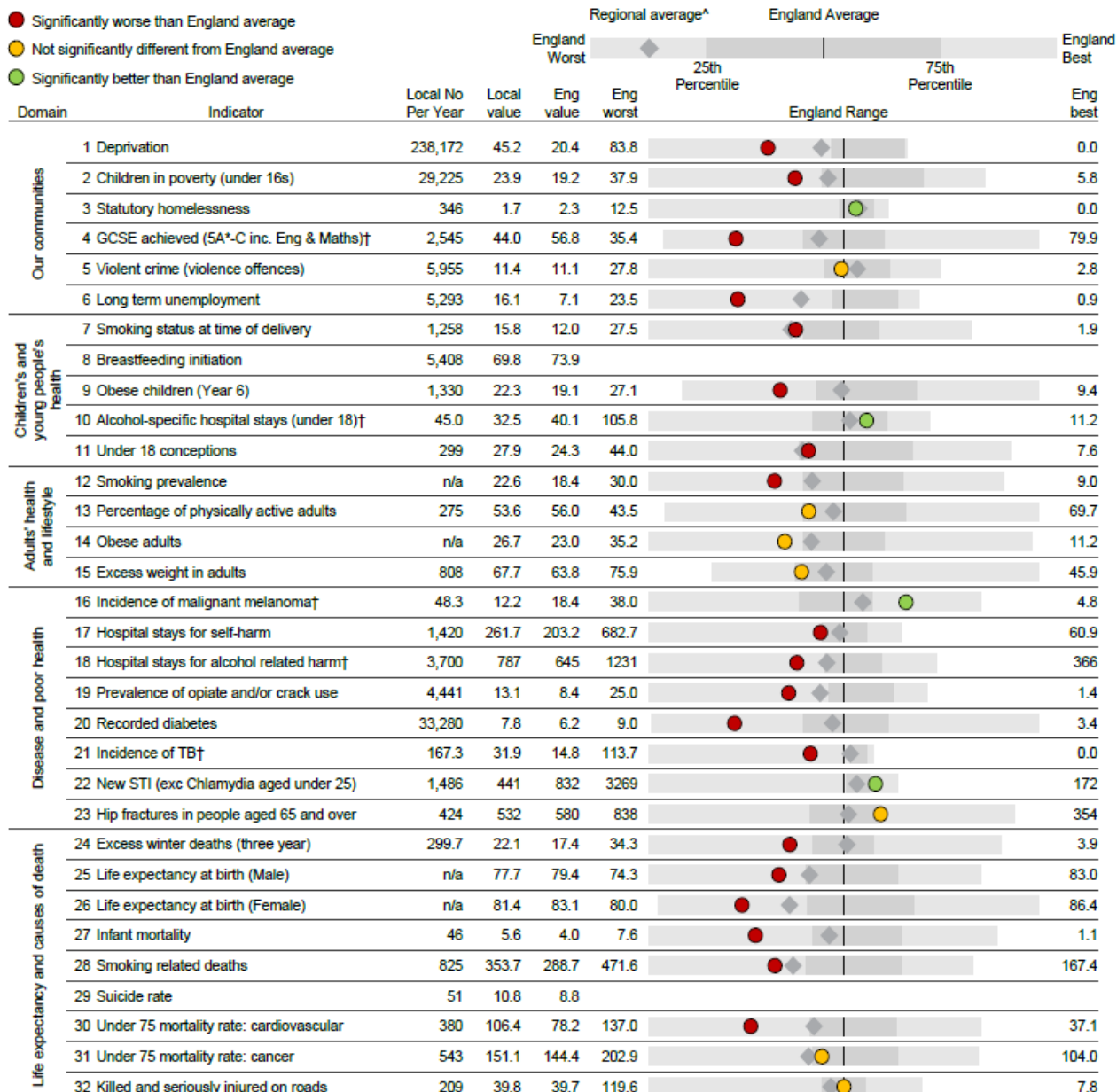
Please visit our website:





# Health summary for Bradford

The chart below shows how the health of people in this area compares with the rest of England. This area's result for each indicator is shown as a circle. The average rate for England is shown by the black line, which is always at the centre of the chart. The range of results for all local areas in England is shown as a grey bar. A red circle means that this area is significantly worse than England for that indicator; however, a green circle may still indicate an important public health problem.



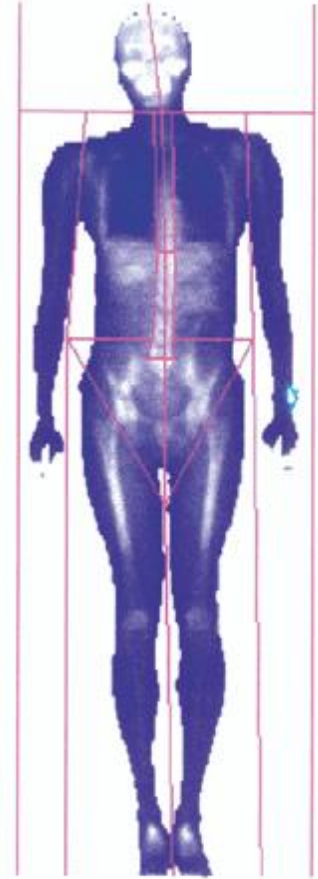
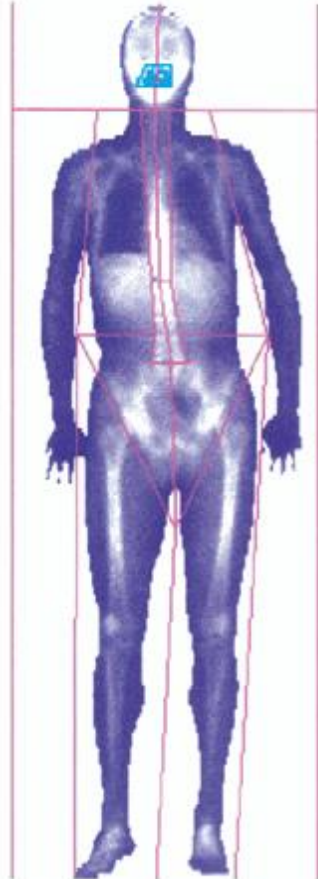


- Describe health and ill-health and their causes
- Design and evaluate interventions to promote health
- Provide a model for integrating research into practice
- Build and strengthen local research capacity

## BMI

22.3

22.3



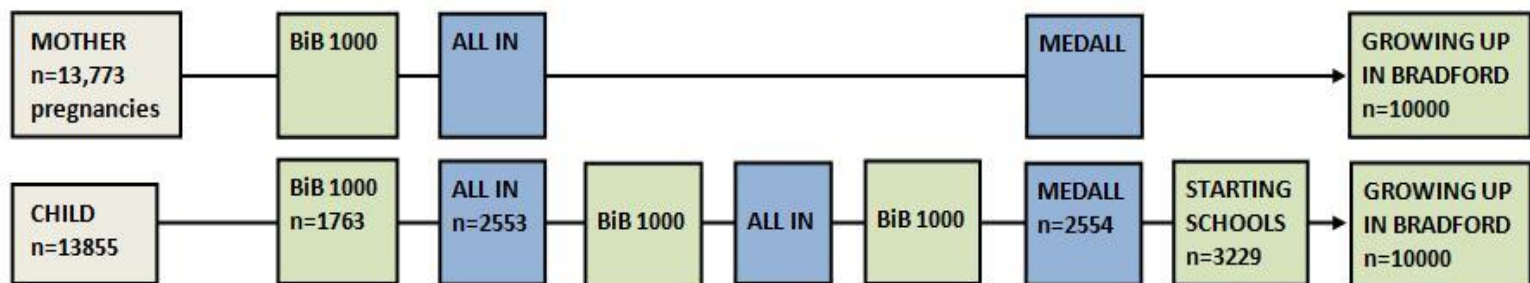
## Body fat

9.1%

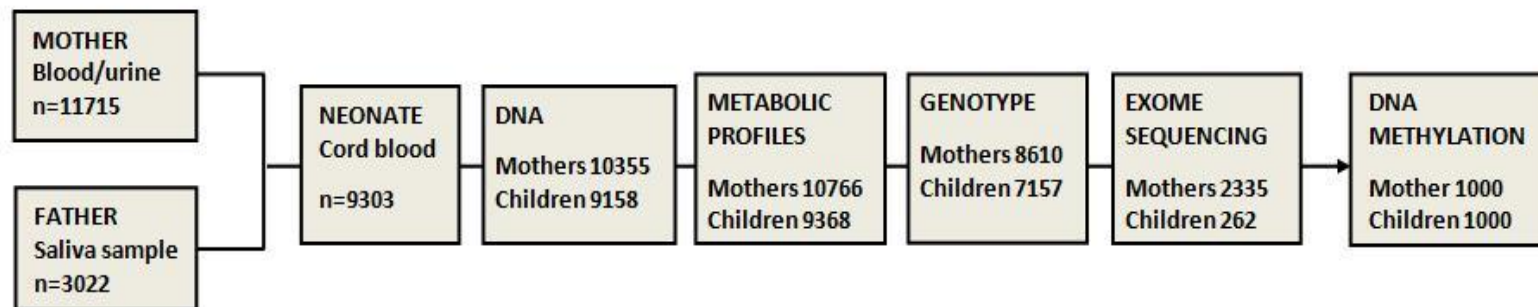
21.2%



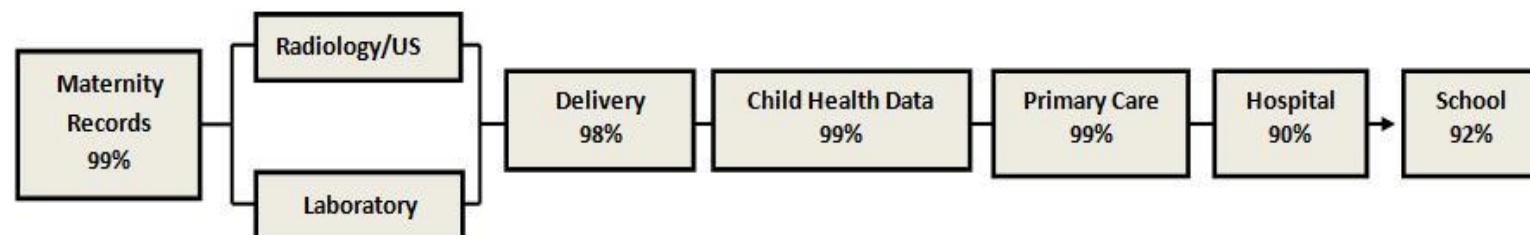
## RESEARCH DATA



## BIOBANK



## ROUTINE DATA











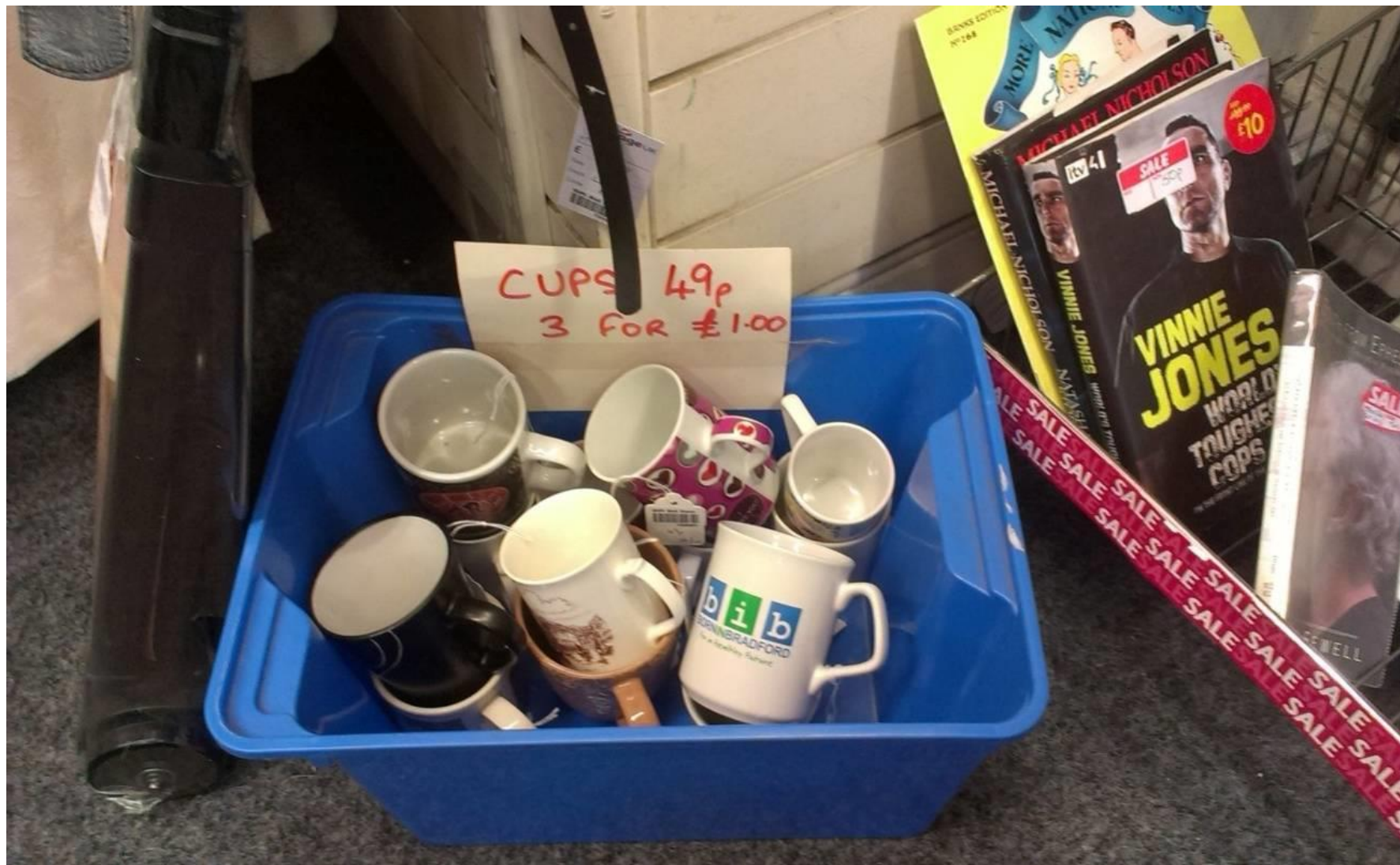




We are family  
BORN IN BRADFORD



We are family  
BORN IN BRADFORD



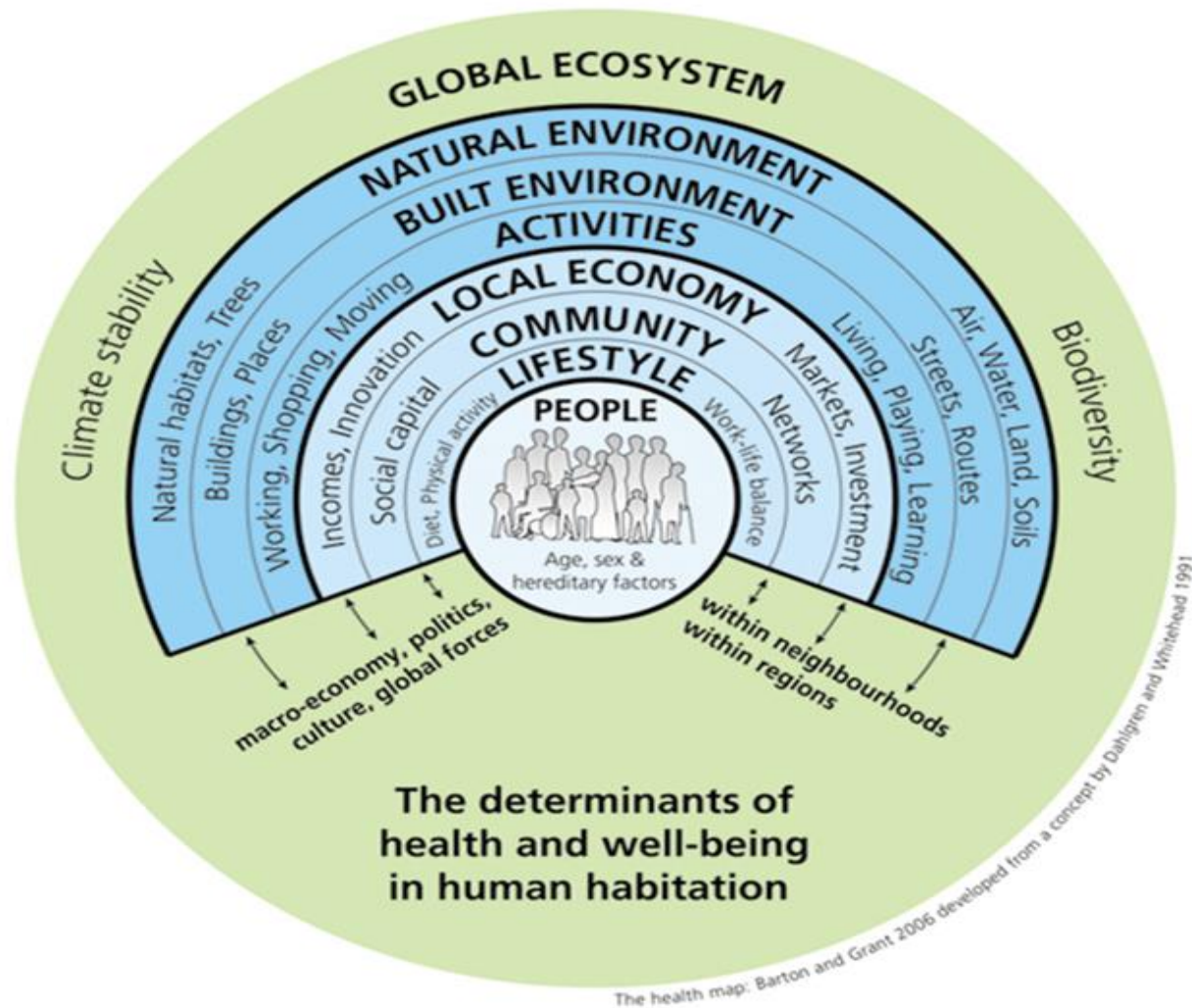
# Novel cohorts



# Connected Bradford data tapestry





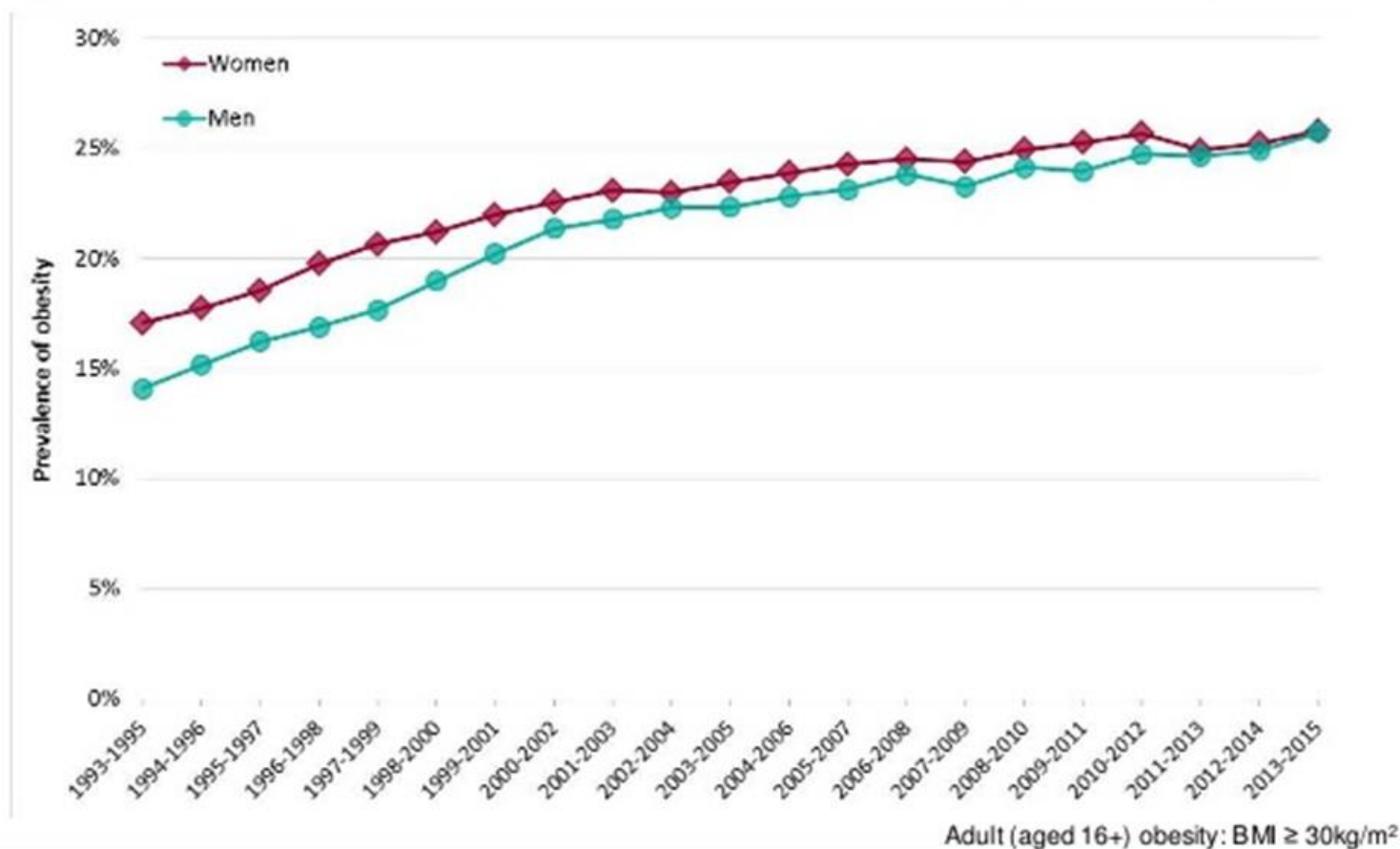




Public Health  
England

## Trend in obesity prevalence among adults

Health Survey for England 1993 to 2015 (three-year average)



A man in profile, wearing a dark shirt, is blowing a plume of white smoke from a cigarette into the face of a woman. The woman, with long dark hair and wearing a white tank top, is looking towards the smoke. The background is a solid bright yellow.

**Blow in her face and she'll follow you anywhere.**

Hit her with tangy Tipalet Cherry. Or rich, grape-y Tipalet Burgundy. Or luscious Tipalet Blueberry. It's Wild! Tipalet. It's new. Different. Delicious in taste and in aroma. A puff in her direction and she'll follow you, anywhere. Oh yes... you get smoking satisfaction without inhaling smoke.



New from Muriel.

About 5 for 25¢.

Smokers of America,  
do yourself a flavor.  
Make your next  
cigarette a

**Tipalet®**

THE RANGE ROVER EVOQUE  
ADAPTED TO THE CITY

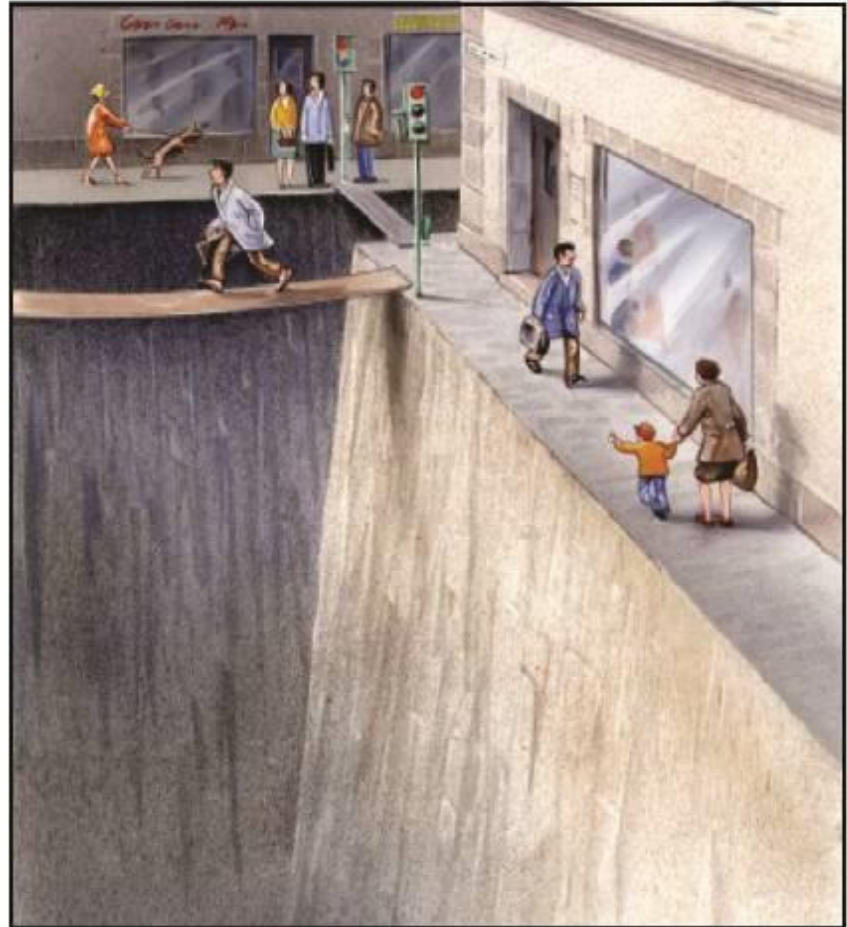


Figure 5: How we might view roads had we more time to evolve with them.

***The wrong way to see a road***

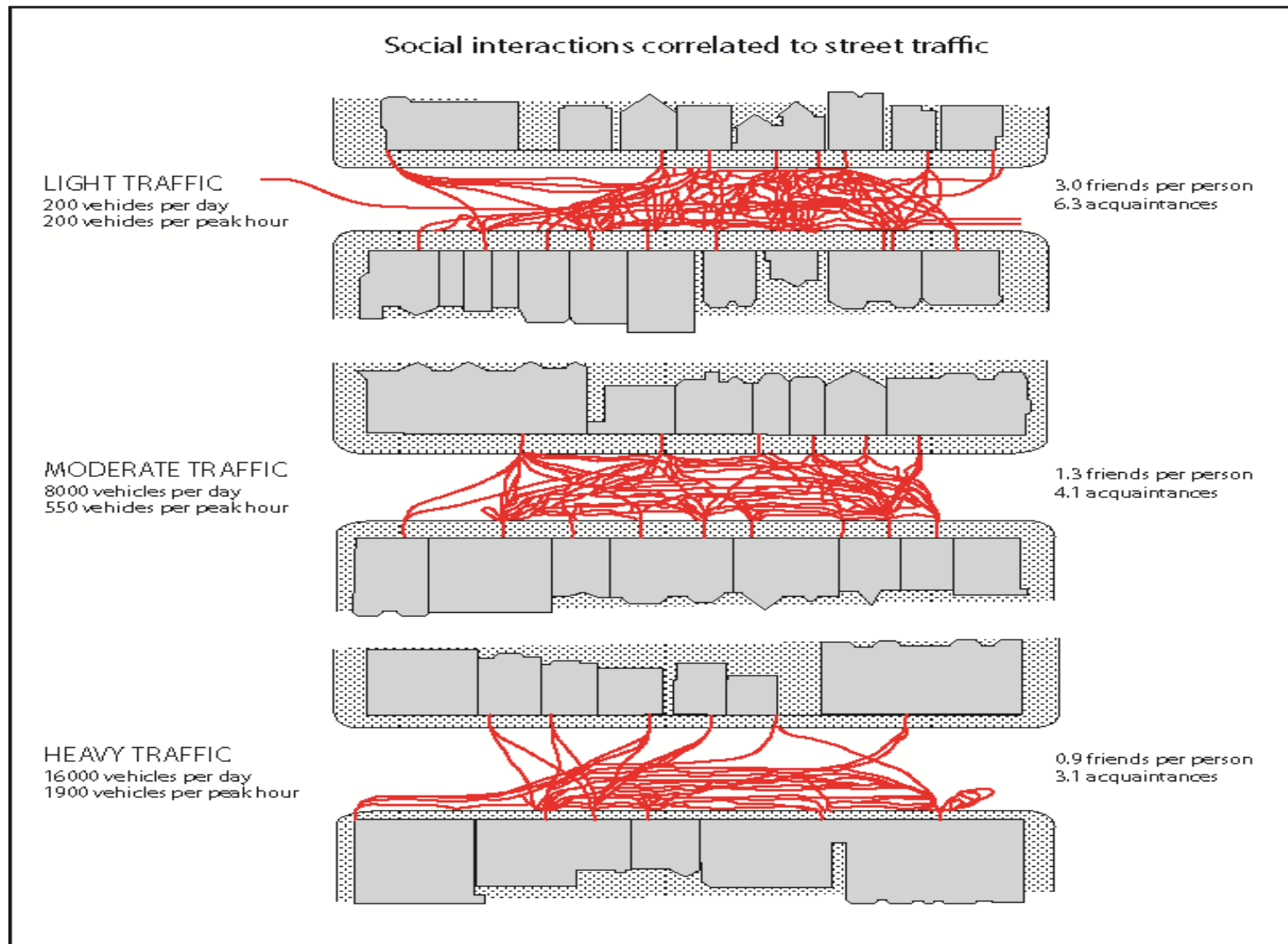


***How to view the relative risk correctly***



Note: We have learnt to be afraid of heights because those people who were not afraid of heights got to become parents a little less often than those who were afraid. Being hit by a car is a little like falling horizontally. Not something we have evolved to fear.

Figure 6: Donald Appleyard's measurements of social interaction in different streets.



Source: <http://www.carfreeinbigd.com/2012/01/point.html>, in turn from Appleyard, D. (1981), *Liveable Streets*, Berkley: University of California Press.

For a better start in life  
start **COLA** earlier!



### How soon is too soon?

Not soon enough. Laboratory tests over the last few years have proven that babies who start drinking soda during that early formative period have a much higher chance of gaining acceptance and "fitting in" during those awkward pre-teen and teen years. So, do yourself a favor. Do your child a favor. Start them on a strict regimen of sodas and other sugary carbonated beverages right now, for a lifetime of guaranteed happiness.

The Soda Pop Board of America  
1515 W. Hart Ave. - Chicago, ILL.

- Promotes Active Lifestyle!
- Boosts Personality!
- Gives body essential sugars!



Watch "Soldier"  
For exciting ads  
7-Up TV ads

Copyright 1988 by 7



Avoid  
imitations  
served from  
fountains or  
cup-machines.  
Seven-Up  
is sold in  
bottles only.

### Why we have the youngest customers in the business

This young man is 11 months old—and he isn't our youngest customer by any means.

For 7-Up is so pure, so wholesome, you can even give it to babies and feel good about it. Look at the back of a 7-Up bottle. Notice that all our ingredients are listed. (That isn't required of soft drinks, you know—but we're proud to do it and we think you're pleased that we do.)

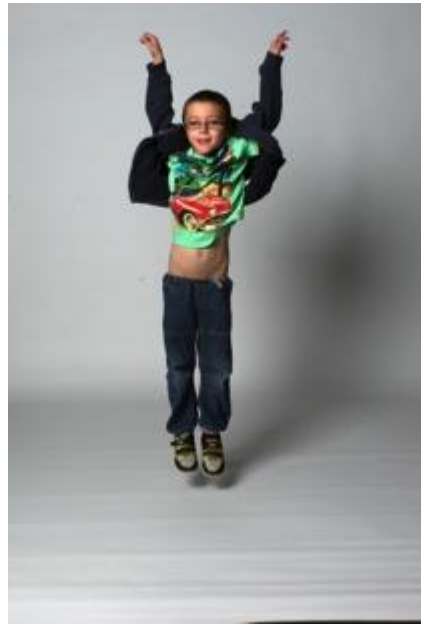
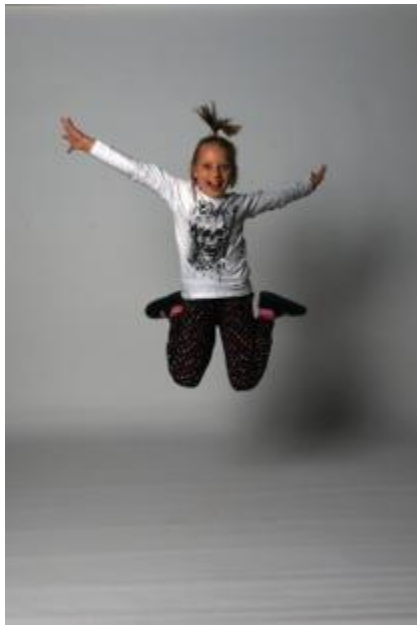
By the way, Mom, when it comes to toddlers—if they like to be coaxed to drink their milk, try this: Add 7-Up to the milk in equal parts, pouring the 7-Up gently into the milk. It's a wholesome combination—and it works! Make 7-Up your family drink. You like it... it likes you!

*Nothing does it like Seven-Up!*





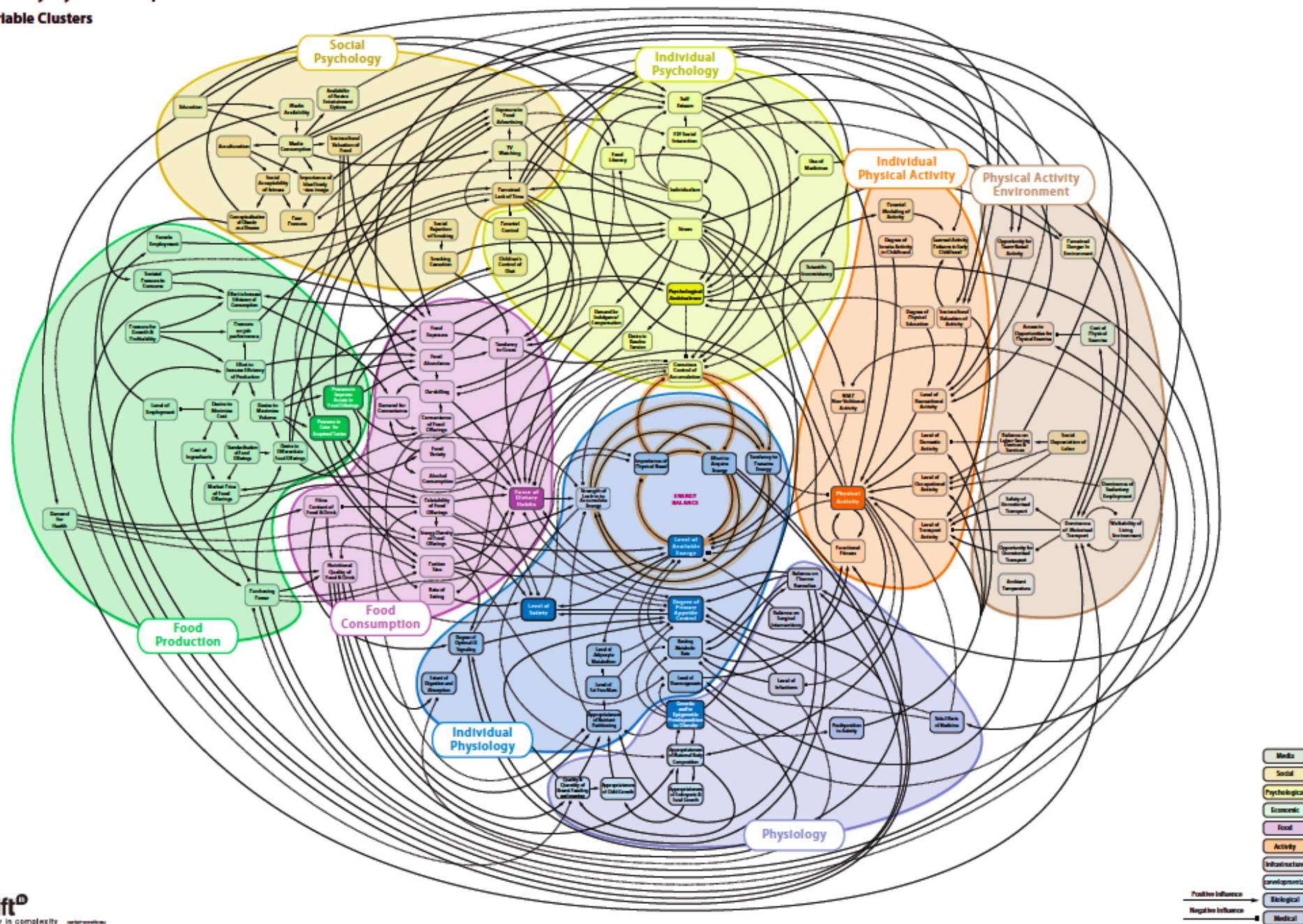






# Obesity System Map

## Variable Clusters



# How Amsterdam is reducing child obesity

By **Dominic Hurst**  
BBC News

🕒 02 April 2018 | **Health**



Why kids in Amsterdam are getting slimmer

**Childhood obesity rates are rising in many parts of the world - but in Amsterdam they are**

**The Upside** Obesity

## Leeds becomes first UK city to lower its childhood obesity rate

City's Henry programme gives children choices while helping parents maintain boundaries



▲ The Henry programme uses 'authoritative parenting', giving children choices while keeping parents in charge.  
Photograph: Alamy Stock Photo

**Sarah Boseley** Health editor



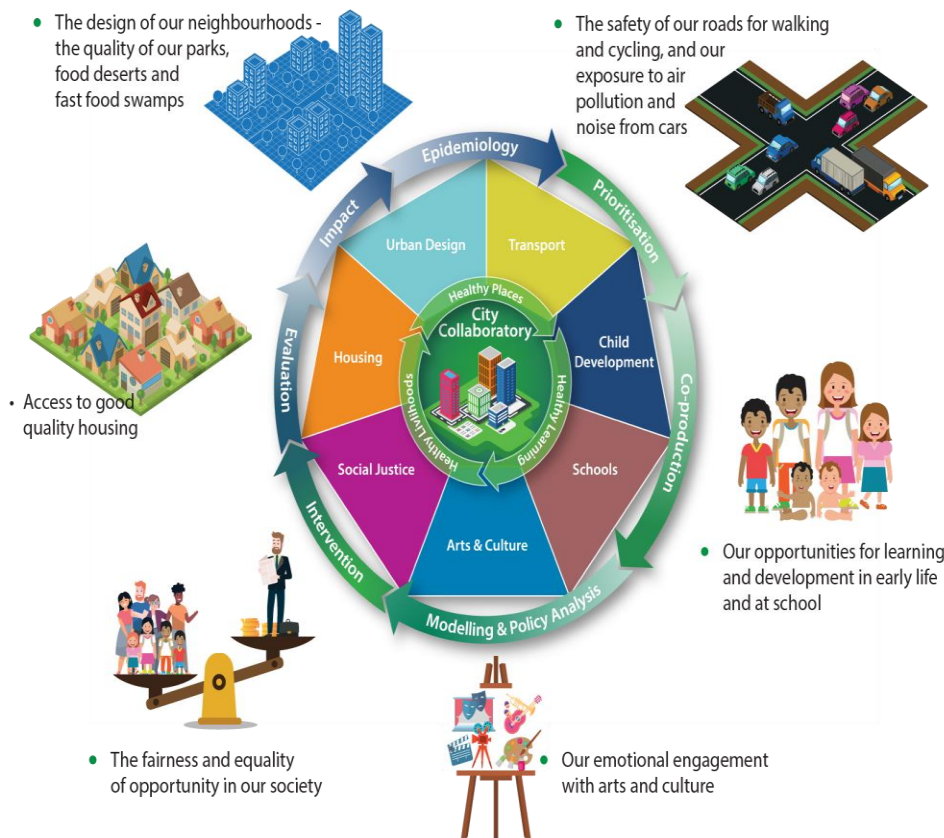
### Healthy lifestyle, children and young people

In Tower Hamlets, nearly 1 in 7 children in reception (4- to 5-year-olds) and over 1 in 4 of children in year 6 (10- to 11-year-olds) are obese. Tower Hamlets has the fifth highest proportion of obese 10- to 11-year-olds in London and the sixth highest in the country. However, levels of obesity in 4- to 5-year-olds have been decreasing over the last 5 years and, following a steep rise, the levels of obesity in 10- to 11-year-olds has plateaued over the last 3 years.

# ActEarly: A City Collaboratory approach to promote good health and wellbeing

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.

Our health is shaped by:



Our City Collaboratories in Bradford and Tower Hamlets will provide a place where the public, scientists, policy leaders and practitioners work with each other to develop and test whole-system solutions to prevent ill-health.

For the Healthy Places work programme, we'll work with local communities to explore how we can design our neighbourhoods to improve health.

For the Healthy Learning theme, we'll be working with preschools and schools to embed health in education.

And for the Healthy Livelihoods theme, we'll be developing novel approaches to improve life chances.

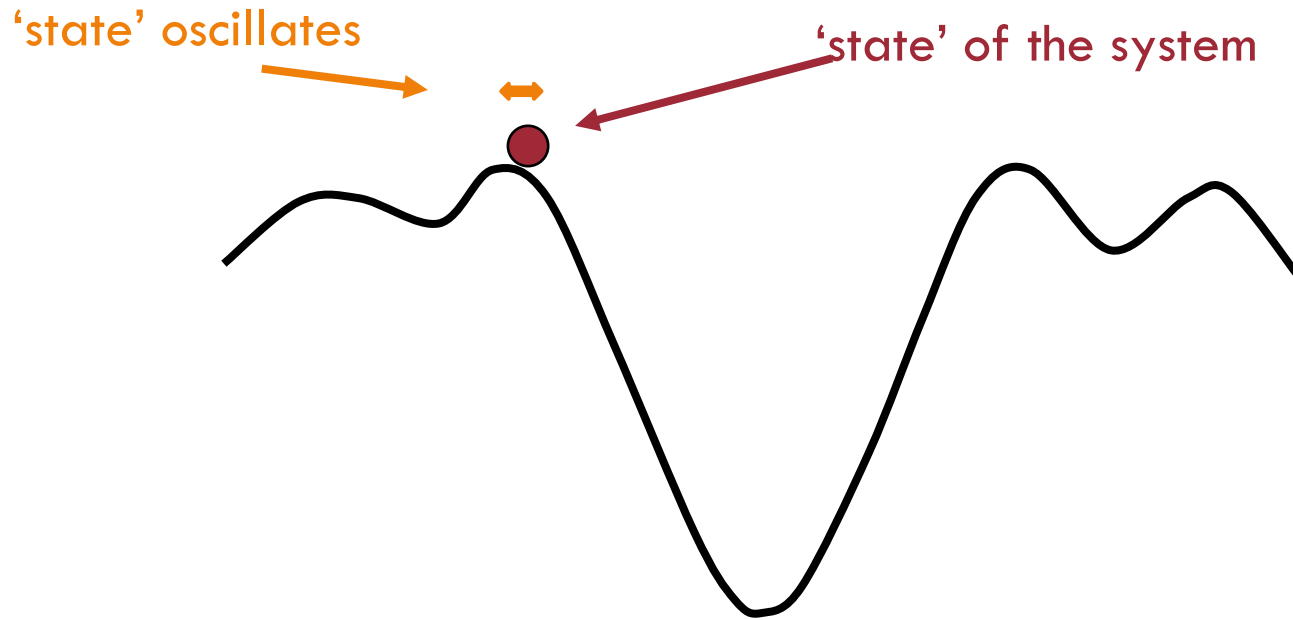
Scientists from Yorkshire and London will use our rich data to

- Understand health needs and target upstream 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. What we do in ActEarly will shape their lives, their health and the fairness of the cities in which they live.

# Tipping points



Complex systems can exhibit rapid change when a threshold point is reached. A system can be pushed towards (and past) a tipping point – especially with feedback

# Whole system approach

## Healthy Places

Healthy Streets  
Clean Air Strategy  
School Super zones  
Park Redesign  
Traffic calming  
Gamification  
Housing advice  
Incredible edibles  
Fast-food outlets



## Healthy Learning

Active travel  
Free school meals  
Healthy vending machines  
Sing Up  
Glasses for Classes  
Immersive technology  
ABRACADABRA  
#50thingstodobeforeyou're5  
Enhanced learning locations



## Healthy Livelihoods



Early education & care • Welfare advice • Universal basic income • Participatory budgeting



Pollution  
Traffic  
Green space

Inactive travel  
Sedentary days

Fast food outlets  
Unhealthy school meals

# SCHOOL SUPER ZONE



Physical  
activity

Attainment

Mental  
Health

Obesity



