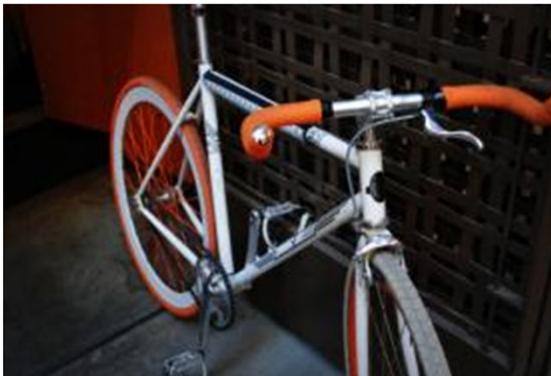


## EXEMPLOS DE INFRAESTRUTURA: outras medidas

### Cultura

- Países como Escandinávia, Alemanha e Holanda tem registado aumento considerável da taxa de utilização da bicicleta nos últimos anos. Número de ciclistas, viagens de bicicleta cresce ao mesmo tempo que passa a ser mais prático e seguro andar de bicicleta
- Andar de bicicleta muda de um grupo restrito (“ciclistas destemidos”) para passar a ser um movimento/hábito praticado e usado por grande parte da população, de todas as idades e estratos sociais.
- Quando há muitas bicicletas e muitas crianças e idosos entre elas, passa a ser mais seguro para todos deslocar-se de bicicleta. Bicicletas de corrida e licras do *Tour de France* darão lugar a bicicletas citadinas e confortáveis e os seus utilizadores vestirão apenas roupas casuais. Andar de bicicleta passa de um desporto radical de sobrevivência a uma maneira prática de deslocação – para todos.





## 06. Exemplo de um projecto de investigação

# 1. Research project



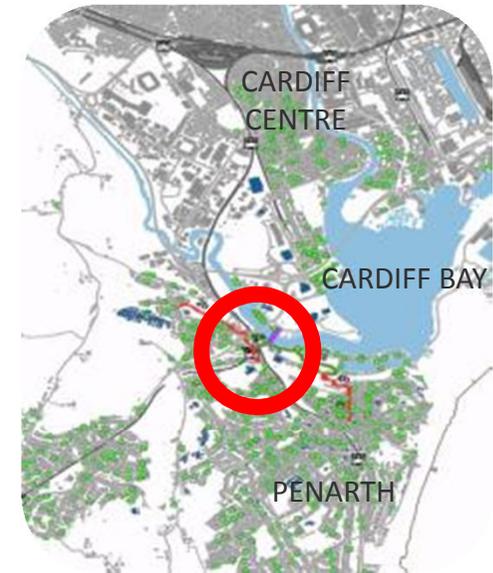
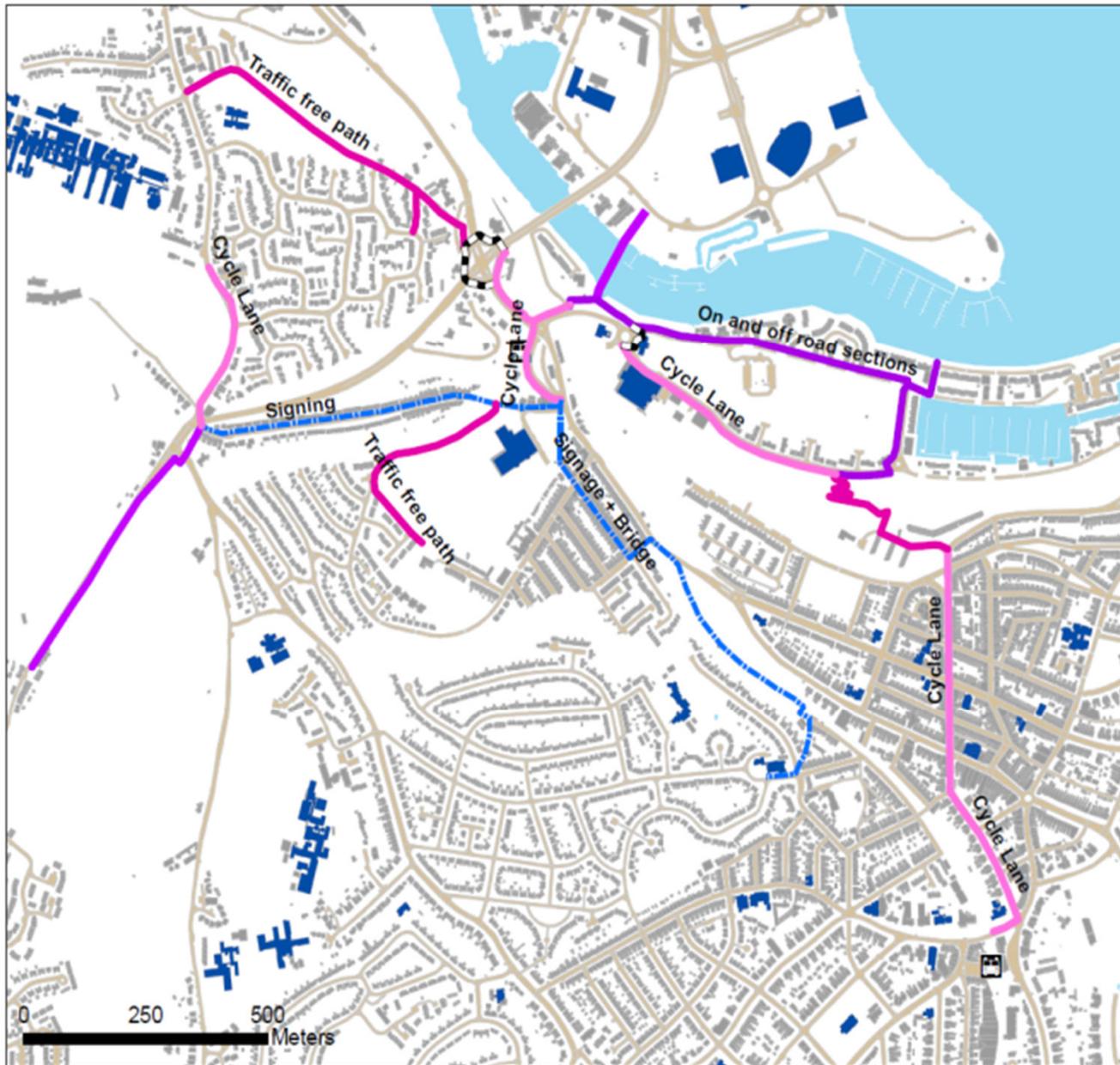
## Sustrans Connect 2 project

- UK-wide project that is transforming local travel in 79 communities by creating new crossings and bridges to overcome barriers such as busy roads, rivers and railways, giving people easier and healthier access to their schools, shops, parks and
- Unique opportunity to measure change in travel behaviour: pre and after intervention context

## Connect 2 Cardiff

An area in Cardiff, UK, where a bridge and new routes for pedestrians and cyclists are being implemented was selected as case study.





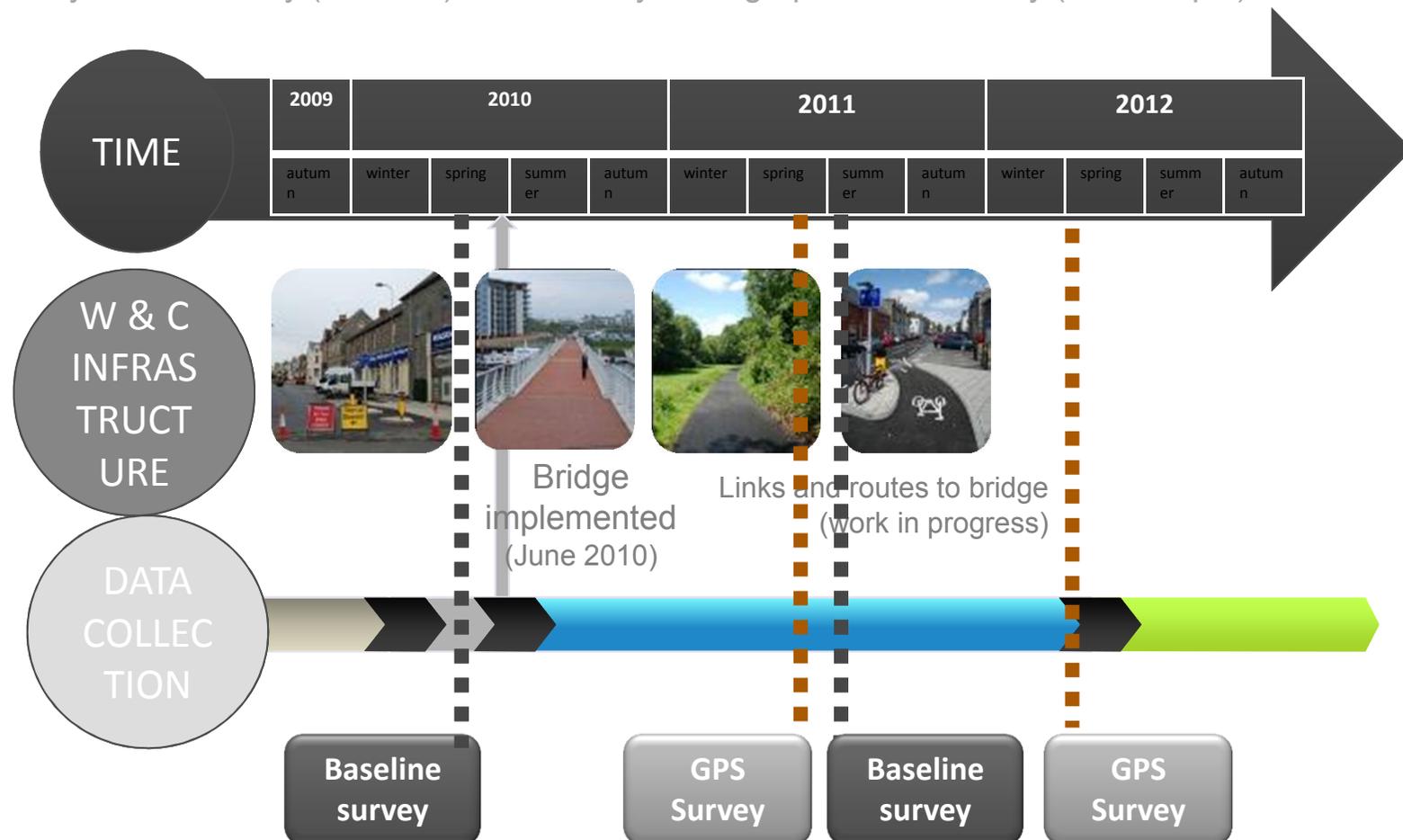
**Legend**

- iC\_Bridge
  - Facilities
  -  Train Station
  - Roads
  - Inlandwater
  - buildings\_2
- IC\_Elements**
- INFRS\_TYPE**
-  Crossing
  - Cycle Lane
  - Cycle Lane + Crossing
  - On and off road sections
  - Shared Use path along bus lane
  - - - Signage + Bridge
  - - - Signage
  - Traffic free path
  - Traffic free path + Signage

## 2. methodology

### ➤ A Longitudinal panel study:

- Residents in Cardiff Bay Area and Penarth
- Baseline survey (2-3 waves)
- 7 days travel survey (2 waves): GPS survey + Actigraph + Travel Diary (sub sample)



# The baseline survey

SECTION  
A

## About your local area

1. Firstly, we'd like to ask you about the **neighbourhood where you live**. By neighbourhood we mean the area that you could walk to in 10–15 minutes from your home. How much do you agree with the following statements about your neighbourhood? (Tick one box per row.)

	STRONGLY AGREE	SOMEWHAT AGREE	NEITHER AGREE NOR DISAGREE	SOMEWHAT DISAGREE	STRONGLY DISAGREE
a. Walking is unsafe because of the traffic.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Cycling is unsafe because of the traffic.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. There are no convenient routes for walking and cycling.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. There are not enough safe places to cross roads.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. The area is unsafe because of the level of crime or anti-social behaviour.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. The area is generally free from litter or graffiti.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. There are places to walk or cycle to (e.g., shops, restaurants, leisure facilities).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. There are open spaces (e.g., parks, sports fields or beaches).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. There are pavements suitable for walking.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. There are special lanes, routes or paths for cycling.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. There are many road junctions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l. There are many different routes for walking and cycling so I don't have to go the same way every time.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m. The area is pleasant for walking or cycling.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. Now we would like to ask you about **travelling between Penarth and Cardiff Bay**. To what extent do you agree with the following statements? (Tick one box per row.)

	STRONGLY AGREE	SOMEWHAT AGREE	NEITHER AGREE NOR DISAGREE	SOMEWHAT DISAGREE	STRONGLY DISAGREE
a. Walking is unsafe because of the traffic.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Cycling is unsafe because of the traffic.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. The level of crime or anti-social behaviour means walking or cycling is unsafe.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. There are pavements suitable for walking.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. There are special lanes, routes or paths for cycling.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. The routes for walking and cycling are generally well lit at night.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. The routes are pleasant for walking or cycling.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2

local area, walking and cycling to travel from place to place, journeys in the last 7 days, about recreation and leisure activities, about work or place of study, about household

We'd now like to ask about

## your journeys in the last seven days

Please include all the journeys you made however long or short, using any method of transport, not just walking and cycling. **Four points to note**

- ① A return journey counts as one journey. For example, if you travelled to work and back five (5) times, this counts as five (5) journeys.
- ② Where a return journey involves a number of purposes, please give the main purpose.
- ③ Include all methods of travel you used as part of a journey (e.g., walking to a bus stop and then catching the bus).
- ④ If you spent time waiting for public transport please include this within the public transport journey time.

Here is an example:

← FIVE (5) RETURN JOURNEYS TO WORK →

10 minutes (each way) x 5 (return journeys) = 100 minutes (1 hour 40 minutes)

0.5 miles (each way) x 5 (return journeys) = 5 miles

20 minutes (each way) x 5 (return journeys) = 200 minutes (3 hours 20 minutes)

25 miles (each way) x 5 (return journeys) = 250 miles

PLEASE COMPLETE THESE QUESTIONS EVEN IF YOU DON'T TRAVEL AROUND VERY MUCH IN GENERAL OR YOU DO NOT DO VERY MUCH WALKING OR CYCLING.

8. Think about your **journeys to and from work** (e.g., travel to and from your place of work, accompanying your spouse to and from their work).

a. How often did you make such a journey over the last seven (7) days?  TIMES  IF ZERO TIMES, TICK HERE AND GO TO QUESTION 9

b. How much time in total over the last seven (7) days did you spend travelling to and from work by:

	HOURS		MINUTES
Walking	<input type="text"/>	<input type="text"/>	<input type="text"/>
Cycle	<input type="text"/>	<input type="text"/>	<input type="text"/>
Bus	<input type="text"/>	<input type="text"/>	<input type="text"/>
Train	<input type="text"/>	<input type="text"/>	<input type="text"/>
Car, as a driver	<input type="text"/>	<input type="text"/>	<input type="text"/>
Car, as a passenger	<input type="text"/>	<input type="text"/>	<input type="text"/>
② Other (please specify): .....	<input type="text"/>	<input type="text"/>	<input type="text"/>

c. How far did you travel in total over the last seven (7) days to and from work by:

	MILES
Walking	<input type="text"/>
Cycle	<input type="text"/>
Bus	<input type="text"/>
Train	<input type="text"/>
Car, as a driver	<input type="text"/>
Car, as a passenger	<input type="text"/>
② Other (please specify): .....	<input type="text"/>

Continued

# The GPS & Actigraph devices



## Qstarz 66-CH series BT-Q1000XT Bluetooth® A-GPS eXtreme Travel Recorder™

- Measures travel, route, distance and time.
- vibration sensor to automatically start/ stop logging
  - Ultra lower power consumption up to 42hrs operation
  - Stand-Alone travel recorder to log up to 400,000 records
  - Datum WGS84
  - Built-in rechargeable Li-ion battery, Up to 42 hrs after fully charged



## GT3X Activity Monitor GT3X Tri-Axis Actigraphy Monitor

Measures physical activity including activity counts, energy expenditure, steps taken and activity intensity levels.

### INSTRUCTIONS

HOW TO USE THE ACTIVITY MONITORS

There are two pieces of equipment that we are asking you to wear:

EQUIPMENT

**a. BLACK DEVICE** (GPS device) that tracks travel and is able to calculate travel distance and duration.

**b. RED DEVICE** (Actigraph) that measures physical activity and energy expended

**HOW TO CHARGE THE DEVICES?**

1. Recharge the GPS device EVERY EVENING once you are home for the night so that is fully charged for the following day. You recharge the device like a mobile phone. If the battery symbol on the front of the monitor turns red this means the battery power is low.
1. Attach the cable charger to the USB port on the right hand side of the device, as shown in the picture 1.
2. Plug the other end of the charger into the electric socket. Don't forget switching the socket on! (picture 2)
3. When the charger is plugged in, the battery symbol on the front of the black monitor will turn green to demonstrate that is charging. Once the battery is fully charged the battery symbol will turn off. (picture 3)

The red monitor does not need to be recharged.

**HOW TO SWITCH THE DEVICES ON?**

1. Black device - switch button from OFF to LOG (picture 4)
2. Red device it is always ON. The battery lasts for approx-

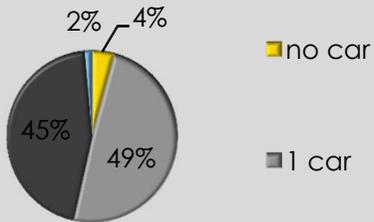
**HOW DO I KNOW IF THE DEVICES ARE WORKING?**

1. If the black device is working, the orange light should be ON and flashing (picture 5)
2. Red device is always ON.

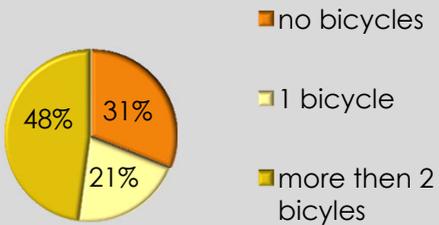


# 3. participants

number of cars on the household

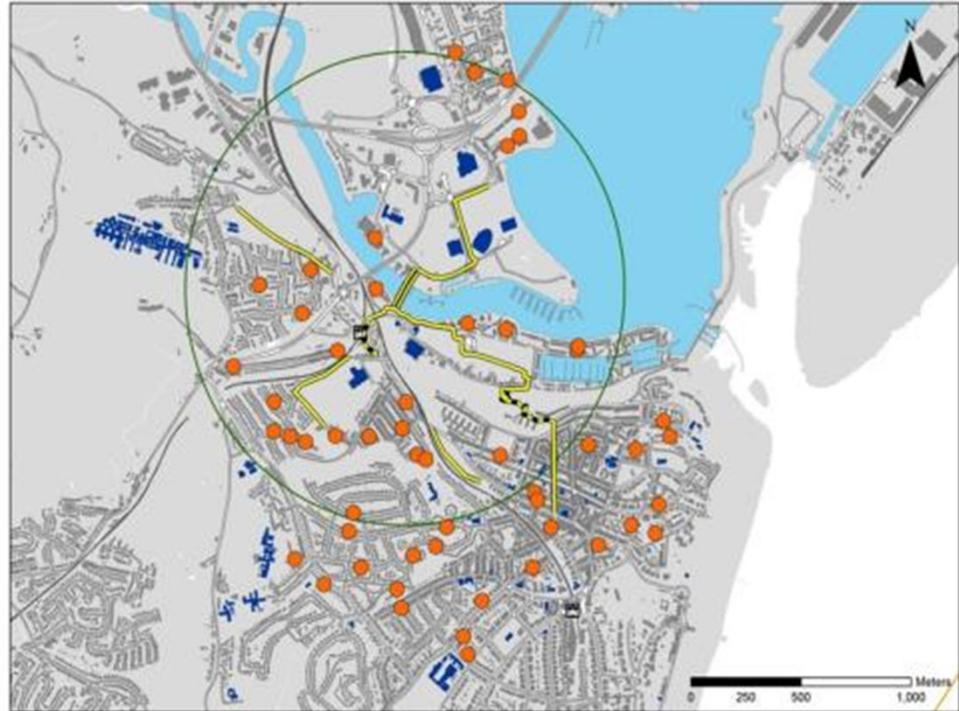
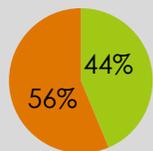


number of bicycles in the household



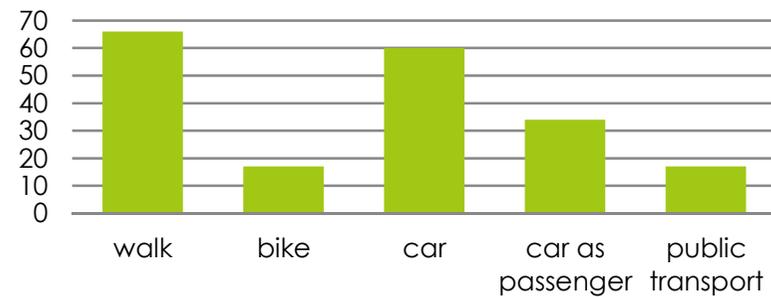
gender

%male %female



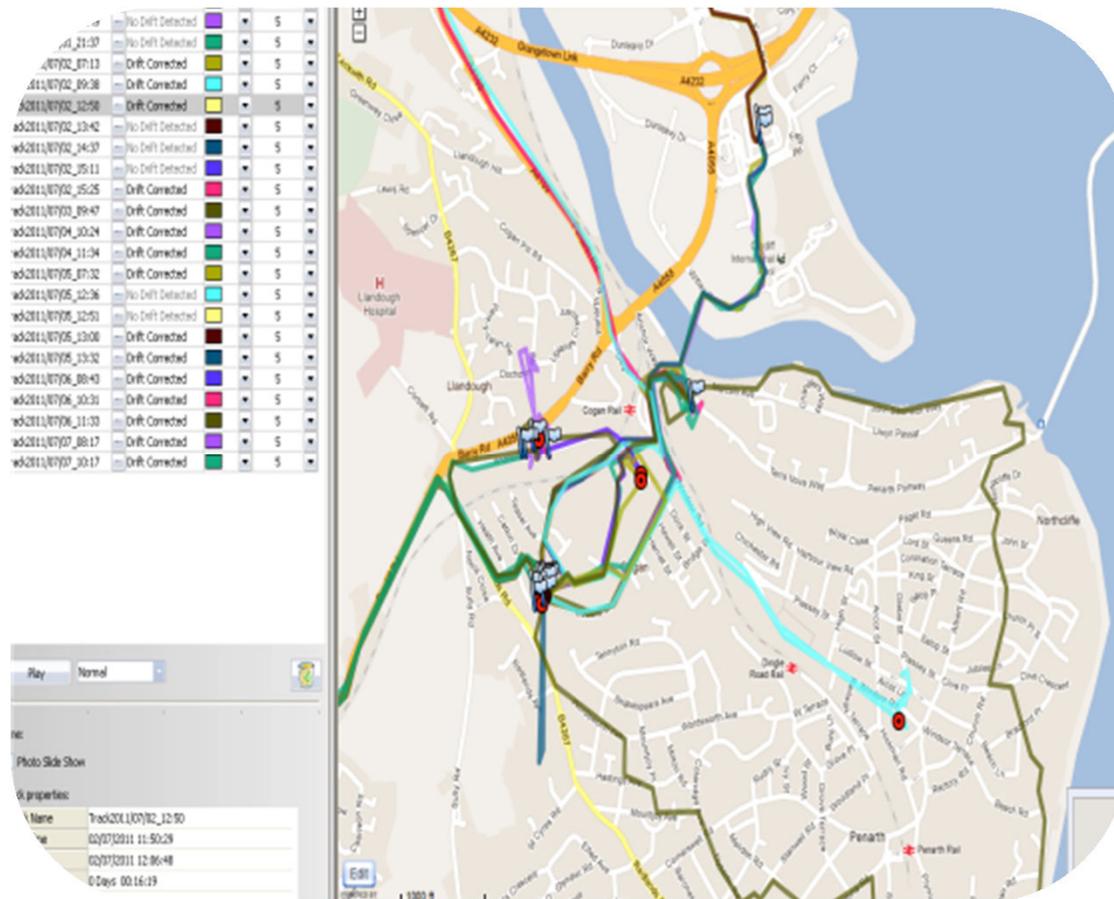
Umeå

Travel mode

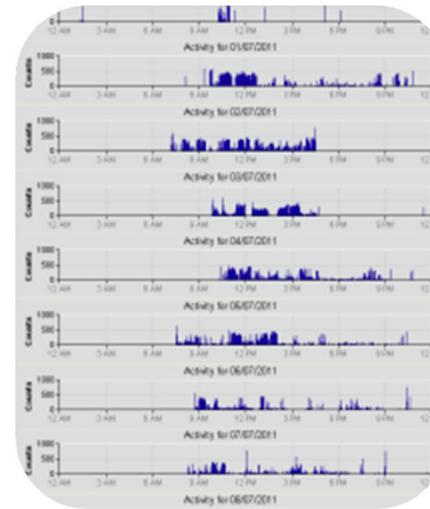


# 4. Preliminary results

➤ Total Of **451** days of travel data



Example of Data recorded by the GPS: route, distance, time, altitude, speed,

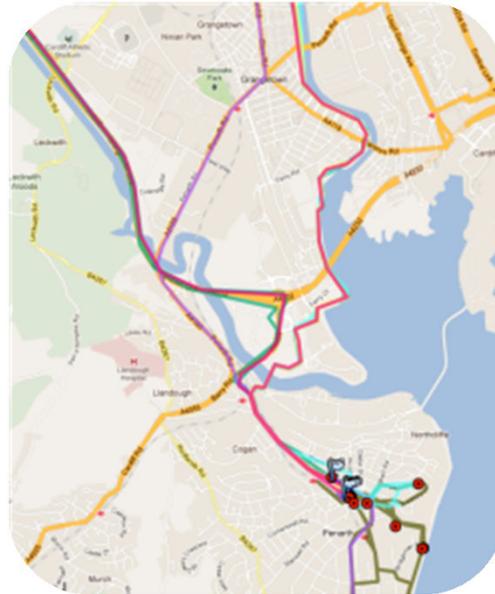


Example of data recorded by actigraph: amount of physical activity



Example of data recorded in the travel diary

Using new infrastructure : for **COMMUTING**



Bridge 5x  
Mode: cycling  
Purpose: commuting



Bridge 2x  
Mode: walking  
purpose: commuting

Using new infrastructure : for **LEISURE**

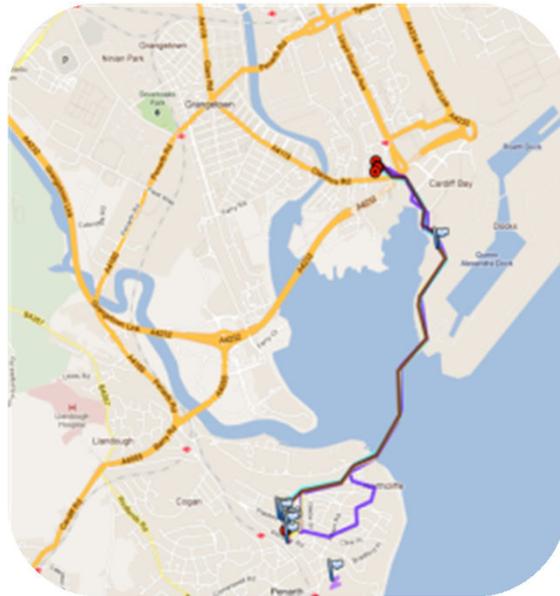


Bridge 2 x  
Mode: cycling  
Purpose: leisure



Bridge 3x mode:  
walking  
purpose: running  
/ leisure

**Cycling to work but using alternative routes**



Commutes to work by bicycle  
Uses route through the Barrage, a traffic free path



Cycles to work.  
Could use new bridge but prefers a more direct route through a busy road (because it is quicker)

**Living close to intervention but not using it**





## 07. Reflexões & Conclusões

- ▶ Andar a pé e de bicicleta são das **formas mais saudáveis de deslocação**.
  - Modos suaves contribuem para níveis de actividade física diária, ajudando a combater a obesidade, as doenças cardiovasculares, entre outras.Há um consenso quanto à **contribuição dos modos activos** para a redução da poluição atmosférica, emissões de carbono, congestionamento automóvel, ruído, acidentes viários e outros impactos negativos da utilização do automóvel
- ▶ Existem várias formas de promover uma maior utilização da bicicleta, ao mesmo tempo que a tornando mais segura:
  - Melhorando o infra estrutura (cruzamentos, ciclovias, estacionamento para bicicletas, ect)
  - Promovendo centro das cidades sem carros e medidas de acalmia de tráfego em ruas residenciais;
  - Integração da bicicleta com o transporte público
  - Programas de educação, sensibilização e marketing
  - Zonas urbanas compactas, de uso misto,
  - Desenho de espaço público com qualidade e numa escala humana
- ▶ **Países e cidades com níveis elevados de ciclistas** e bons registos ao nível da segurança viária tendem a ter uma boa infra estrutura para peões e ciclistas implementada, assim como um conjunto vasto de medidas e programas.
- ▶ Apenas **uma estratégia não é suficiente**. Comunidades devem implementar um conjunto integrado de medidas. Uma estratégia integrada terá um muito maior impacto do que medidas individuais não coordenadas. O impacto de uma medida particular é melhorado com as sinergias criadas por medidas complementares do mesmo programa.
- ▶ É **fundamental explicar e informar** a sociedade em geral da importância de andar a pé e de bicicleta, para lazer ou como forma de transporte quotidiano.  
É fundamental gerar apoio e interesse por parte dos decisores políticos, autarquias e órgãos de decisão.
- ▶ Um dos objectivos da melhoria das condições para W&C é a redução do risco de acidente. Proteger as crianças e os idosos devia ser um motivo por si só.
- ▶ **Modos suaves como forma de mobilidade saudável, sustentável, geradora de opções de mobilidade, independência e divertimento – para todos.**





**OBRIGADO PELA ATENÇÃO!**

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