Evaluation report

Withernsea Bike Library and Cycle Buddy Pilot
East Riding of Yorkshire Council
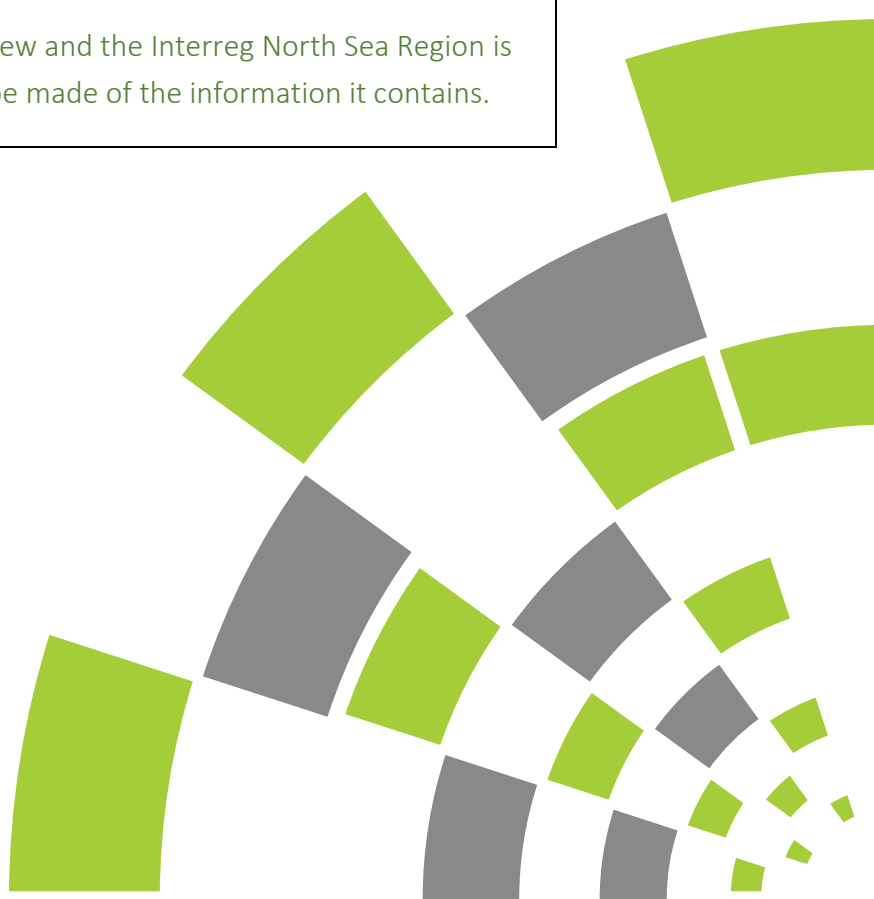
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Author: Angela Merrills and Annabel Allen
Project coordinated by Province of Overijssel

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Short description

The BITS bike library pilot in Withernsea will test the ways that data can be collected and used to bring about behaviour change and improvements in the cycling experience as well as to inform policy making and investment decisions. The intentions of the pilot are to improve the health and wellbeing of local residents through cycling; provide residents with the ability to access cycling for free for the purposes of work, education, caring responsibilities, volunteering or for leisure; use data to provide support to cyclists so that they feel safer, supported and more connected; encourage a shift from motorised forms of transport to cycling in order to reduce emissions locally; and generate high quality data to help improve the cycling infrastructure and create more cycle opportunities for people in Withernsea.

Type of ITS

See.Sense trackers and lights

Timeline

The new Bicycle library was launched with 50 bikes in Withernsea in July 2021, giving residents the opportunity to borrow a brand-new bicycle for free. The scheme had embedded within it a cycle buddy, whose role was to offer support with maintenance and advice on safe cycling, and to help to improve health and wellbeing in the participants. The bicycles were all fitted with state-of-the-art trackers, which gathered rider statistics and data on road condition, accidents blackspots and cycle use, as well as lights, which provided access to personal app featuring rider insights (e.g., calories expended, distance travelled). The trackers and lights fitted to the bicycles were supplied by See.Sense. The data collected also included popular routes, speed, dwell times, plus data on swerving, braking and collisions as well as in-app user reports. Prior to the commencement of the BITS extension period, our bike library delivery partner, SHoRes, secured funding for a further 20 bikes, which were also fitted with trackers and lights. The extension period ran from April to December 2022.
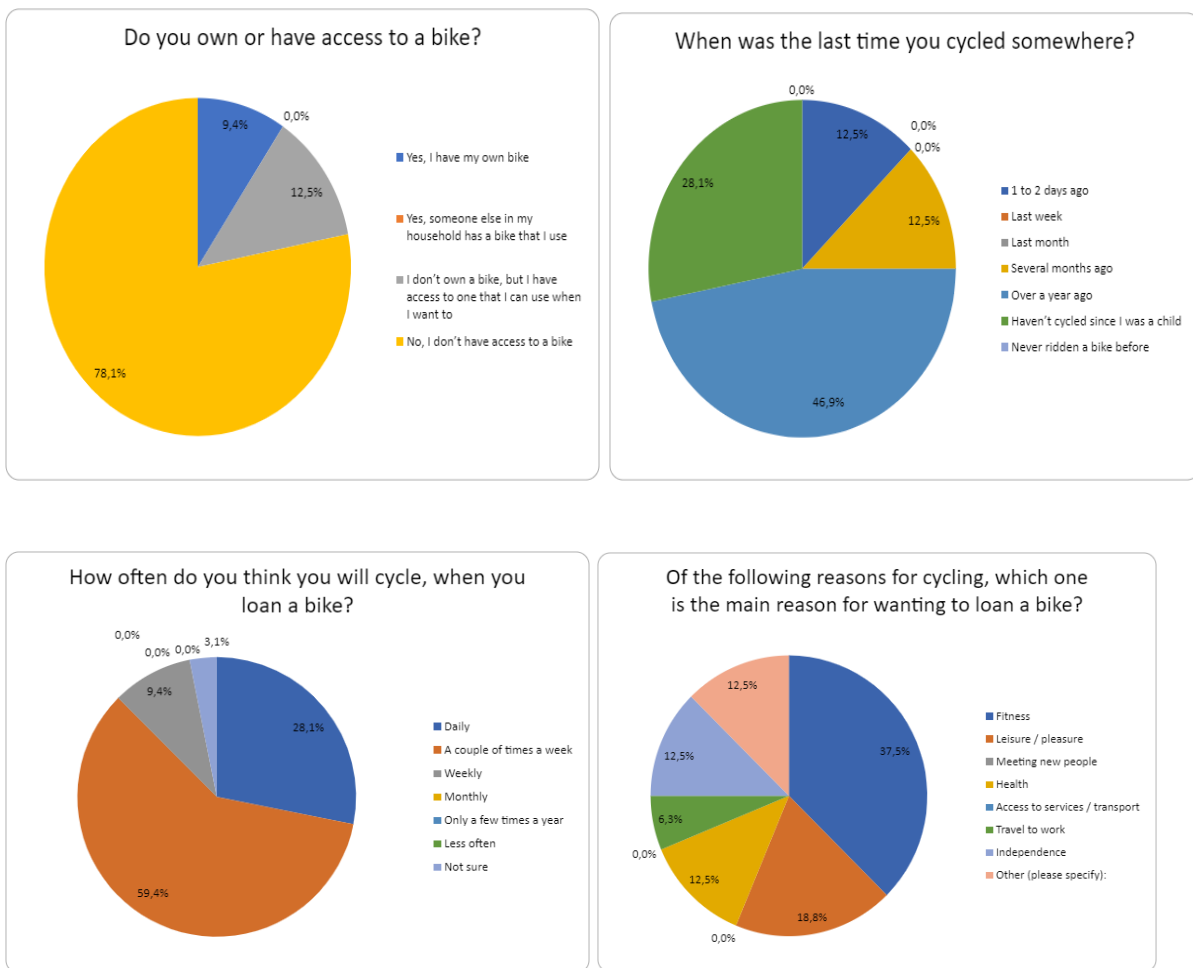
Hypothesis

ERYC is aiming for the following results from this pilot and the other implementations: a 10% increase in the number of km cycled; 9% reduction in emissions; 10 new datasets generated for use by the council and for inclusion in the BITS Cycle DataHub; 20% of participants reporting better health and wellbeing; and two new intelligent transport systems tested in this pilot. (NB: We ran a separate counting pilot that utilised a third form of ITS – traffic counters).

Data

- Each bicycle in the bike library was fitted with a tracker to gather cycle data (see above) and monitor its location for security purposes. The data was accessed by ERYC and the cycle buddy to

help understand how and where the bikes were being used and improve the cycling experience of the participants. The app has a pin-drop system which enables a user to identify a location where an infrastructure improvement might be needed (e.g. pothole requiring attention, dangerous intersection).

- In addition to this, ERYC has carried out a social value assessment. A survey has been administered among the target population of the people that started renting a bike. 32 of the 50 people filled out a questionnaire. The findings of this assessment will be published in a separate final report. Below are the results of baseline survey that underpinned the social value forecast for this pilot:

Do you own or have access to a bike?

9,4% 0,0% 12,5% 78,1%

- Yes, I have my own bike
- Yes, someone else in my household has a bike that I use
- I don't own a bike, but I have access to one that I can use when I want to
- No, I don't have access to a bike

When was the last time you cycled somewhere?

0,0% 12,5% 0,0% 0,0% 12,5% 28,1% 46,9%

- 1 to 2 days ago
- Last week
- Last month
- Several months ago
- Over a year ago
- Haven't cycled since I was a child
- Never ridden a bike before

How often do you think you will cycle, when you loan a bike?

0,0% 0,0% 0,0% 3,1% 9,4% 28,1% 59,4%

- Daily
- A couple of times a week
- Weekly
- Monthly
- Only a few times a year
- Less often
- Not sure

Of the following reasons for cycling, which one is the main reason for wanting to loan a bike?

12,5% 12,5% 6,3% 0,0% 12,5% 0,0% 18,8% 37,5%

- Fitness
- Leisure / pleasure
- Meeting new people
- Health
- Access to services / transport
- Travel to work
- Independence
- Other (please specify):

- From this survey, we were able to forecast the anticipated social value for this pilot using the Social Value Engine (a software tool co-developed by ERYC and economic consultancy Rose Regeneration). The forecast projected that for every £1.00 spent on this project, it would generate £3.39 in social value. This calculation, done in July 2021, was based on a proportion of the 50 bicycles plus the 20 purchased for the extension period.
- Case studies and direct feedback from the participants will be included in the social value final report. Below are two quotes from our participants to highlight some of the social value realised:
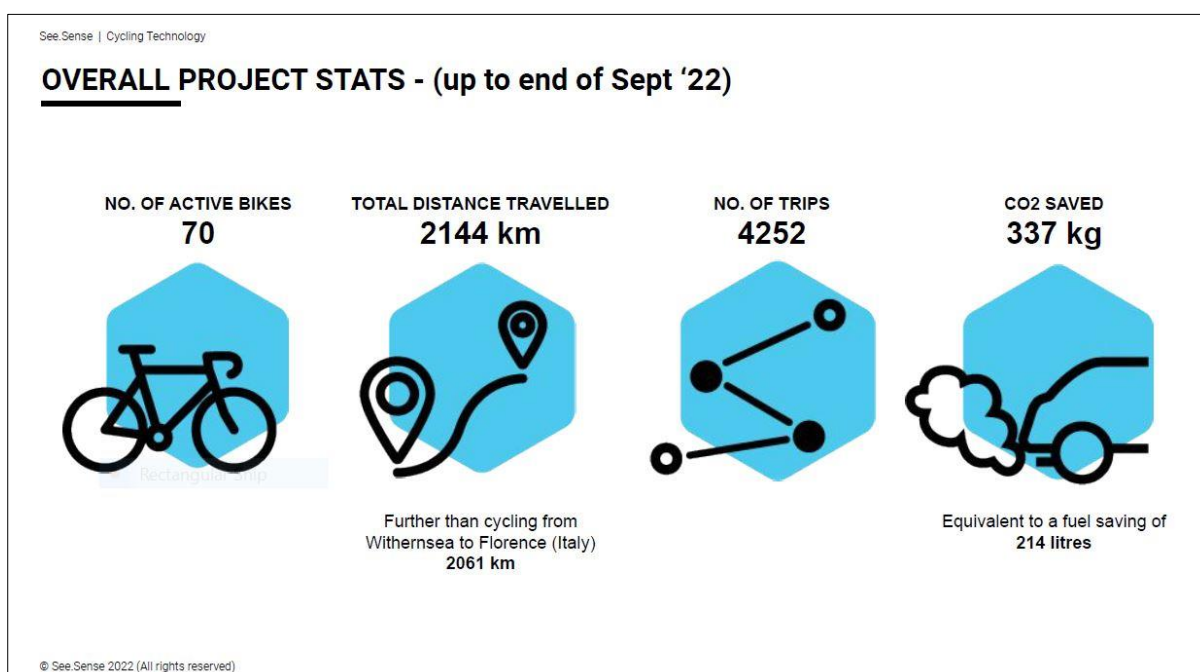
"'I can't believe where I am now. When I first signed up for a bike I wouldn't have dared meet up with groups of people. I didn't really go out that much and only took my dog for a walk. I started out going for short bicycle rides and really had to force myself to leave the house. I still can't get over how much my life has changed; I have made friends with everyone at the South Holderness Resource Centre and am helping other people like me. When I was invited to the presentation day in November (BITS evaluation final workshop event) I had to pinch myself afterwards, I actually talked in front of room full of people I didn't know, to tell them about myself. I have really loved having the bike and its changed my life for the better." – Participant 1

"I wanted to get fitter and explore the area and hoped I would meet new people by being involved in the workshops. I have found some lovely off road cycle routes and feel fitter. I've loved learning bike mechanics and how to index my gears. The bonus is finding employment at the end of it." – Participant 2

Report of pilot

Overview of results analysis by See.Sense

- The data from the trackers was used by ERYC and the cycle buddy to interact with each of the bike library users with the aim of encouraging them to cycle more (e.g. nudge, incentivisation) and to improve their individual experience, whether this was route planning to find safer journeys to work or organising social group rides to improve emotional wellbeing. An overview of the data collected from this ITS is provided below:

See.Sense | Cycling Technology

OVERALL PROJECT STATS - (up to end of Sept '22)

NO. OF ACTIVE BIKES	TOTAL DISTANCE TRAVELLED	NO. OF TRIPS	CO2 SAVED
70	2144 km	4252	337 kg

Further than cycling from Withernsea to Florence (Italy) 2061 km

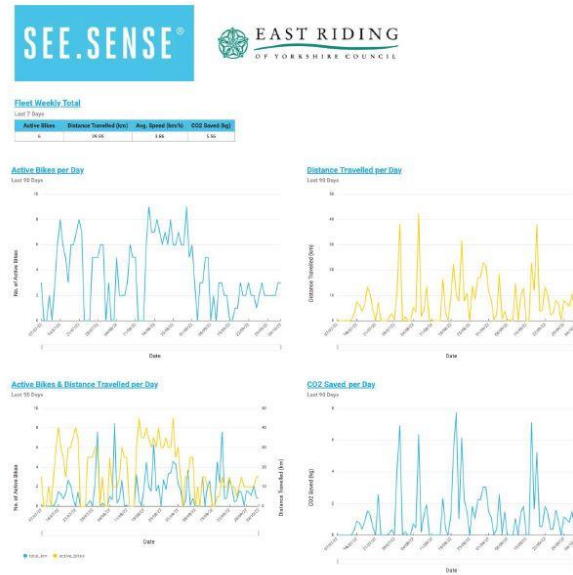Equivalent to a fuel saving of 214 litres

DATA & DASHBOARDS

QuickSight
Recently, ERYC were provided with our new Insights Dashboard to be able to manage the bikes more efficiently and effectively.

Examples of some of the widgets available are shown on the right.

East Riding (BITS) Insights Dashboard

ROUTE POPULARITY

1. Queen St
One of the main streets through Withernsea is very popular among cyclists, particularly between Hull Road and Station Road.
Busy shopping area (Aldi etc), with some cycle parking facilities.

2. Central Promenade
Pedestrian/cyclist path along the promenade

3. Other
Region 3 is very popular on Seaside Road and in Valley Gardens.
Seaside Road is a good route to the beach as well as being the location of many cafes and SHoRes.

SPEED

Higher Speeds

1. North Promenade
Less traffic and wider road allows cyclist to travel at higher speeds.

2. Queens Street (Princes Ave -> Chestnut Ave)
A residential area of Queens Street, with shops ending just before Princes Avenue.

Lower Speeds

3. Queens Street (Hull Road -> Station Road)
Busy shopping area with heavy traffic and pedestrians causing cyclists to cycle more slowly.

4. Seaside Road and Valley Gardens
Busy area with cafes near the promenade where cyclists may stop or slow down due to pedestrian-cyclist conflict.

Low

High
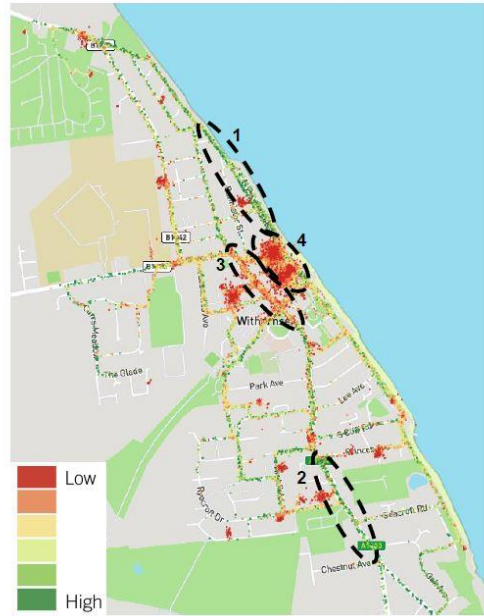
BRAKING

1. Seathorne
Heavy braking experienced by cyclists where a path ends onto Seathorne possibly causing pedestrian-cyclist conflict.
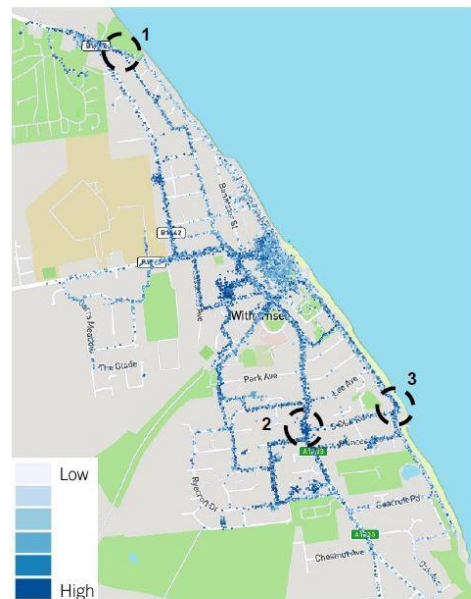
2. Junction between Queen St and Southcliff Road
Heavy braking around this junction may be due to zebra crossing just a few yards after exiting South Cliff Road onto Queen Street.

3. Southcliff Road
Heavy braking where Southcliff Road meets the pedestrian promenade. Could be more evidence of pedestrian-cyclist conflict.

Low

High

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SWERVING

1. North Road
Heavy swerving evident at entrance to Withernsea Sands on North Road .

2. Lascelles Avenue & Hull Road
Swerving potentially caused by pedestrians crossing the road and not being aware of cyclists.

3. Piggy Lane
Swerving is experienced at the end of Piggy Lane where cyclists leave the road to use alleyways between houses. Pedestrian-cyclist conflict may occur.

Low

High

ROAD SURFACE

Roughest Roads

1. Arthur Street
Rough surfaces and potholes as shown in image 1.

2. Pier Road
Rough surfaces close to the curb where cyclists are most likely to be.

3. Central Promenade
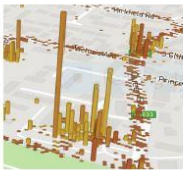Cracked pavement and cobbled pavements may explain this rough surface data.

Smooth

Rough

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- The data collected. by the trackers is very valuable information for (local) cycling policies. They point to priorities for creating or improving cycling paths (popular routes), to potential unsafe situations for cyclists (info on speed, braking, road surface) and to the need for storing facilities at certain locations (dwell time). We note however that it concerns in this case a particular selection of cyclists (users bike library). To inform cycling policies on how to make improvements for the overall population the trackers should be installed on the bikes of a representative sample of cyclists. However, it could also be interesting to focus on particular subgroups, as for example this particular group making use of the bike library, but also for instance groups as school children or the elderly in a community.

Experiences of project managers and lessons learned

- Because this was a first of its kind project in the East Riding, nobody on the ERYC project team had any direct experience of delivering such a pilot. However, we were able to form a team of officers whose combined skills, knowledge and experience enabled us to learn as we went and carry out our plans to a reasonable degree of success.
- We learned lessons from the procurement of the bikes. This was the first time that we had procured ITS for such a project so there was a steep learning curve when preparing the specification for the competitive tender. We were able to draw on support from other BITS partners (e.g., Province of Antwerp) and our internal procurement, ICT and data protection teams to complete the procurement correctly. We were also able to share our experiences of using the See.Sense ITS with another BITS partner, Baron Mobility.
- We did not anticipate the loss of data due to poor mobile phone reception in the local area. The trackers use Vodafone for the transmission of data. While we had understood that the coverage provided by Vodafone was sufficient, we learned through the experience of the cyclists that this

was not the case. This meant that journeys were made that were not recorded due to data being lost. This did cause some frustration amongst the participants as well as in the project team.

- 90% of the participants had not cycled in a long time so they needed a lot of support and encouragement to keep cycling throughout the pilot. Having a dedicated cycle buddy was therefore essential for the success of this scheme. There were numerous staffing changes at SHoRes, which meant that we did not have a consistent cycle buddy during the project. Fortunately, our lead delivery officer is an experienced cyclist and qualified cycle instructor, coach and ride leader and she was able to provide support and training to the different buddies and directly to the participants.

- We discovered that the participants needed a lot of support to use the trackers effectively. For example, cyclists had to be reminded to charge the trackers constantly during the pilot. The trackers provided data on charging levels so we were able to target those participants whose trackers needed to be charged.

- Because the trackers needed regular charging, we discovered that it would have been better to use See.Sense's Dynamo wheel charging system on the bikes to keep the trackers continuously charged. The cost of a wheel is around £70, which we could not afford within the agreed budget. Should similar schemes be run in the future, we would recommend using the Dynamo wheel charging system over the peripheral trackers.

- This pilot has enabled ERYC to raise its profile in Withernsea and the surrounding area and help realise some positive outcomes for the participants, some of whom are continuing to cycle. At the start of the project, SHoRes were already a highly-regarded charity in the town. They proved to be an excellent delivery partner given their standing in the community.

Conclusions

This was the first time that ERYC had used cycle ITS for the purpose of gathering data to improve the cycle experience for individuals and to identify where improvements in road and cycle infrastructure might be needed. There was a steep learning curve, which was not helped by the outbreak of Covid-19 and associated restrictions on movement and interaction. These obstacles caused a delay in the launch of the bike library and affected people's ability to cycle in the first months of its operation. In total, the bike library pilot ran for 17 months (July 2021 to December 2022). If we have had more time, we would have been able to gather more data and build up a more comprehensive picture of cycling in the town. Despite this, however, we succeeded in meeting our targets linked to increasing the number of km cycled, replacing motor transport, generating new datasets for use by council colleagues and the CycleDataHub and improving the health and wellbeing. This project has not (yet) resulted in a significant CO_2 reduction, but this pilot was more oriented to an initial behavioral change towards healthier living, which in the long run also might have a positive impact with respect to CO_2 reduction.

SHoRes have applied for funding to continue the operation of the bike library, albeit without the ITS due to costs. If the funding is confirmed, the bikes will be made available to residents for free but also for hire to visitors in the local area, which will provide another income stream for the charity. So, in summary, the project is leaving a legacy as our partners in Withernsea will continue to promote sustainable forms of transport and cycling as a means of improving health and wellbeing after the project has ended.