

TEAM CLOUD 9

Promoting Cycling in London: Data-informed Recommendations

Our Analysis

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Infrastructure

- > Bike Parking
- > Road signage & cycling Safety
- > Cycle Superhighway & Quietway
- > Cycle Hire Scheme



Demographics

- > Gender disparity in Cycling
- > Gender time distribution during a weekday



Weather

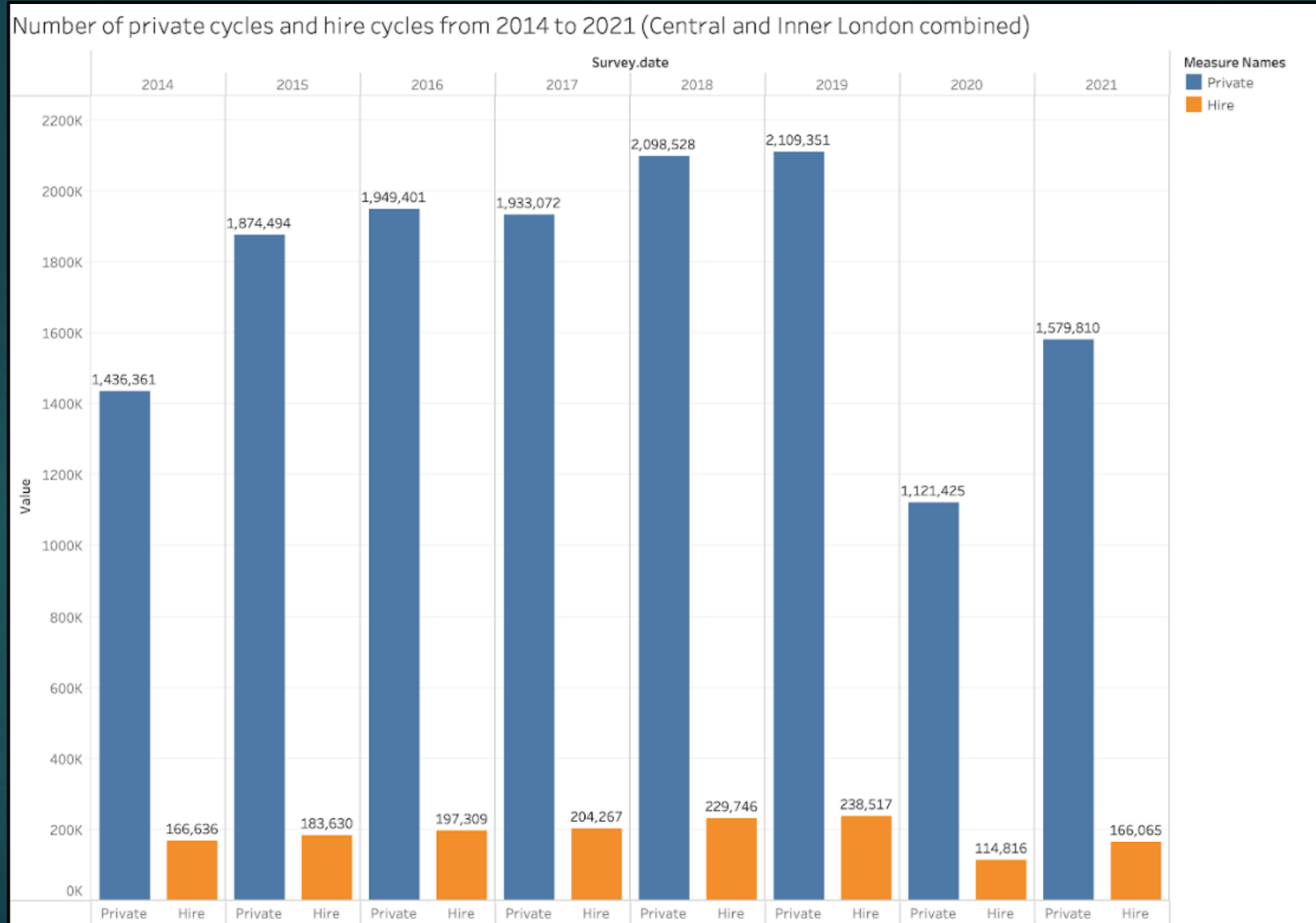
- > Dry
- > Wet

Images taken from Cycling Infrastructure Database's Asset Information Guide

Infrastructure Analysis

Bridging the Gaps in London's Bike Culture

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Privately-owned
Bikes vs
Santander Bike
counts across
London

Infrastructure Analysis

Bicycle Parking

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Recommendations	How to Measure Success
Enhance the capacity of bicycle parking facilities strategically across the city to accommodate growing demand.	Track usage of bicycle parking facilities and gather feedback from cyclists.



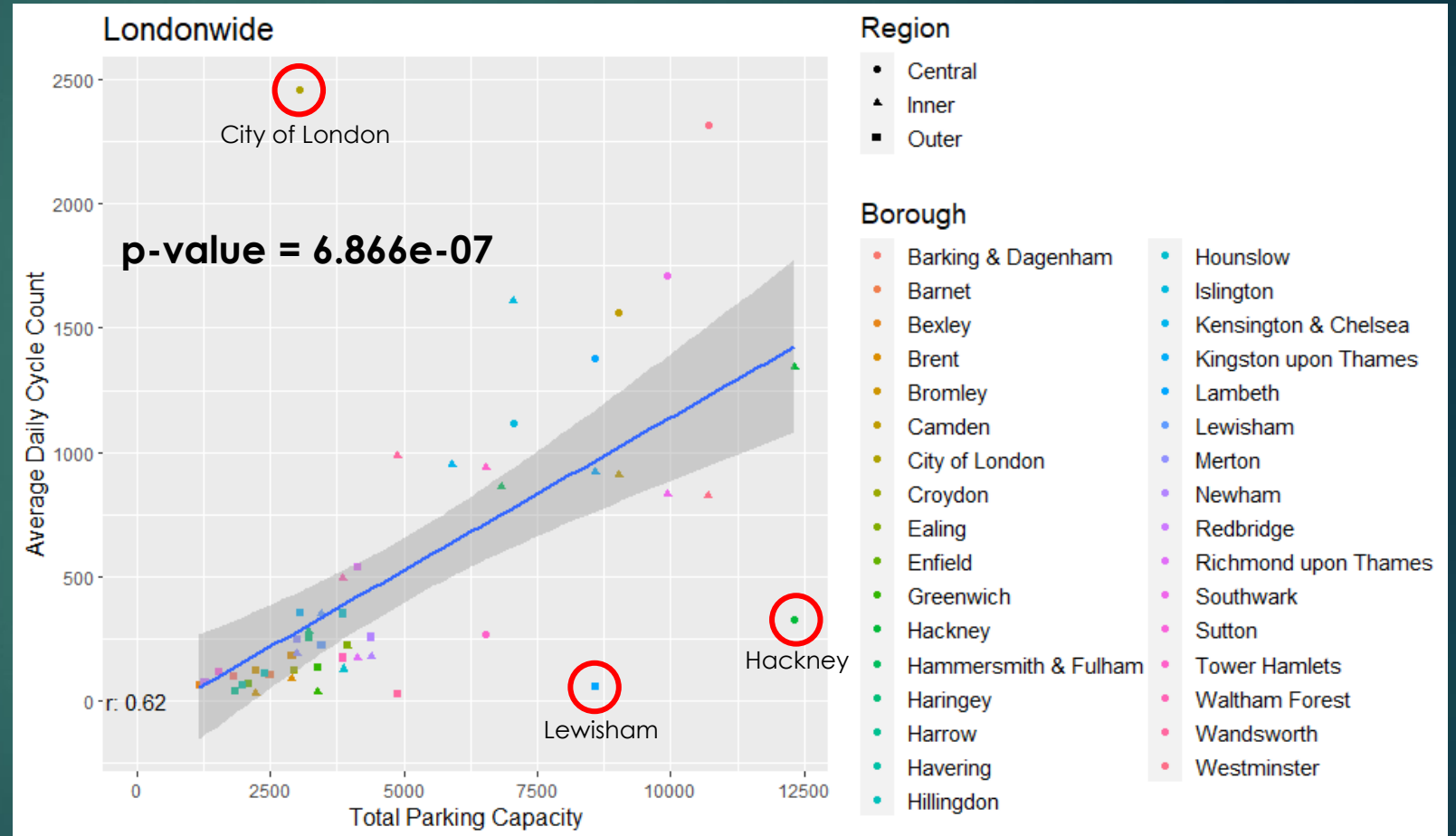
- A 2019 review of scientific literature conducted by University of Leeds concluded that a lack of bicycle parking discourages cycling. ^[1]
- In a 2016 TfL survey, 52% of respondents said it would encourage them to cycle more if their employer or place of education offered more cycle parking facilities. ^[2]

Infrastructure Analysis

Bicycle Parking Impact: A Correlation Analysis

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- When the relationship between bicycle parking capacity and average daily cycle counts examined, there is a statistically significant correlation with a very low p-value.
- There is a high concentration of bicycle users but very limited capacity in City of London Borough.
- Hackney and Lewisham, despite having ample parking, have low cycle counts.



Bicycle Parking Capacity vs Daily Cycles by Borough
Correlation Co-efficient, $r = 0.62$, $p\text{-value} = 6.866e-07$

Infrastructure Analysis

Exploring the impact of Cycle Exception signposts

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Recommendations	How to Measure Success
Continue to invest in safety features of the cycling infrastructure, e.g. Turning exception signposts, Except cycle signposts.	Track total cycle counts' trend & number of 'cycle except' arrangement to facilitate cycling safety and gather feedback from cyclists.



- The research project conducted by the Behavioural Insights Team on behalf of the Department for Transport, 'A moment of Change: Increasing Cycling Uptake' identified infrastructure as one of five major barriers (objectives) to be met in order for cycling rates to significantly increase.^[3]
- In other words, people must feel safe cycling.
- Good infrastructure elements such as Cycling safety and clear signages for cyclists are basic requirements for people to consider cycling as a feasible mode of transport.

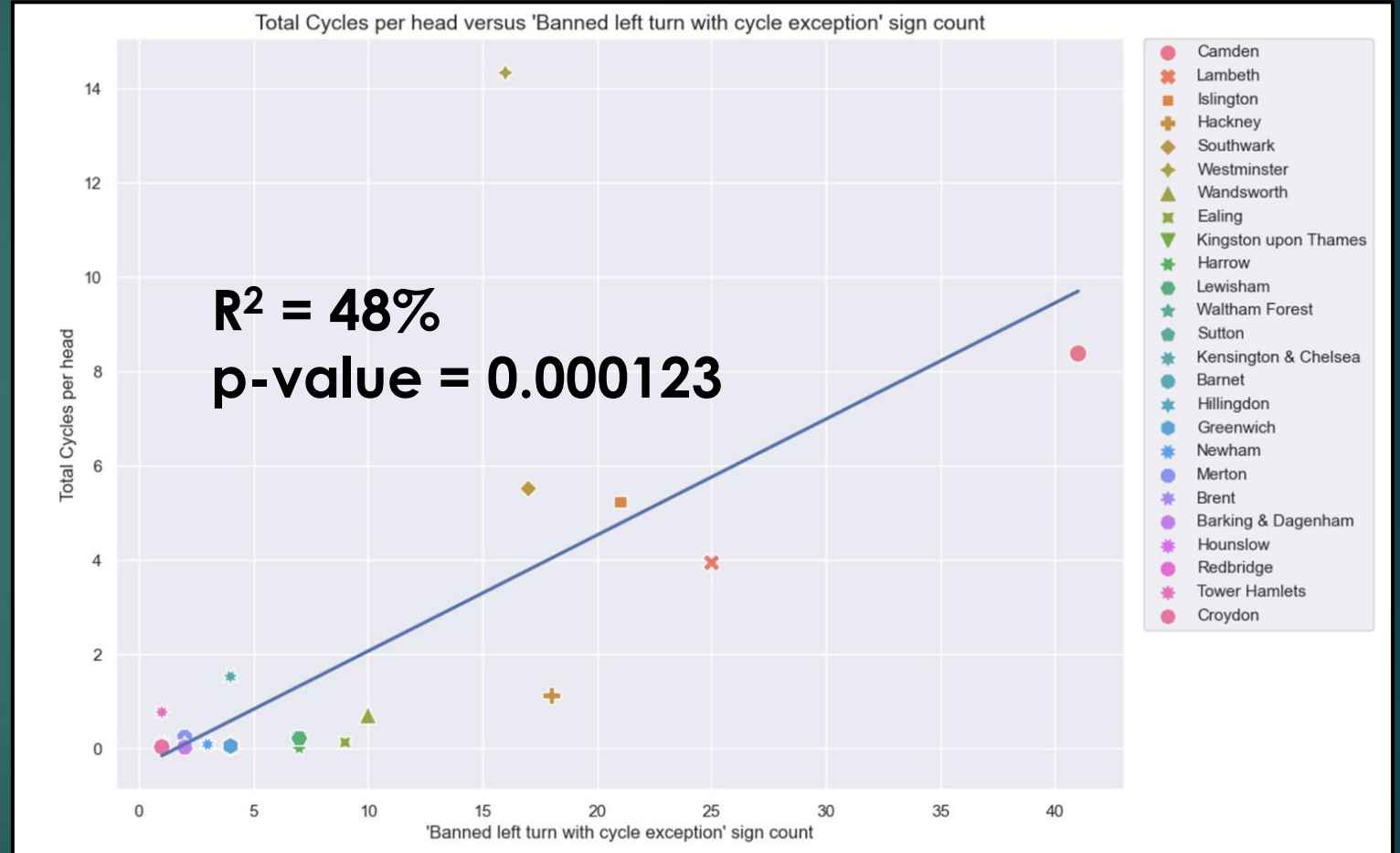
Infrastructure Analysis

Exploring the impact of 'Banned Left Turn with Cycle Exception' signage

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“Banned Left Turn with Cycle Exception” means vehicles are restricted from turning left at road junctions, but cycles are exempt.



Total Cyclists per head vs
'Banned Left Turn with Cycle Exception' sign count

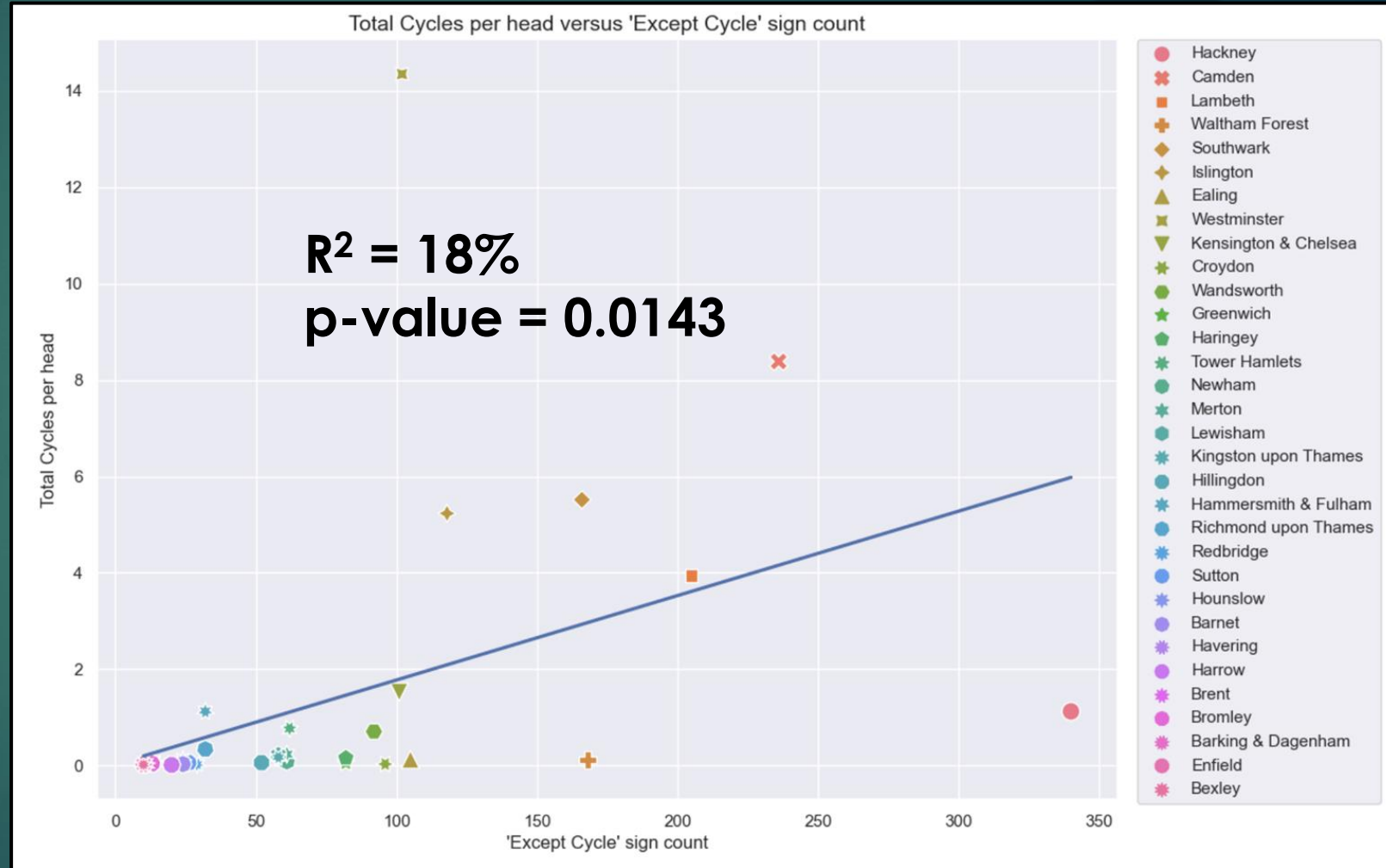
Infrastructure Analysis

Exploring the impact of 'Except Cycles' signage

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“Except Cycle” signs permit cycle movements that general traffic cannot make. The exception plate will always accompany another sign with a restriction. For example, the “No Entry” sign shown above has “Except cycles” beneath.



Total Cyclists per head vs Except Cycle signage count

Infrastructure Analysis

Exploring the impact of Cycle Superhighways and Quietways

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Recommendations	How to Measure Success
Keep monitoring utilisation and assess effectiveness of Cycle Superhighway & Quietway per location in helping increase cycling before further introducing them to other London boroughs	Track cycle counts' trend along each Superhighway and gather feedback from cyclists.



According to TfL's Attitudes to cycling survey 2016 ^[2]

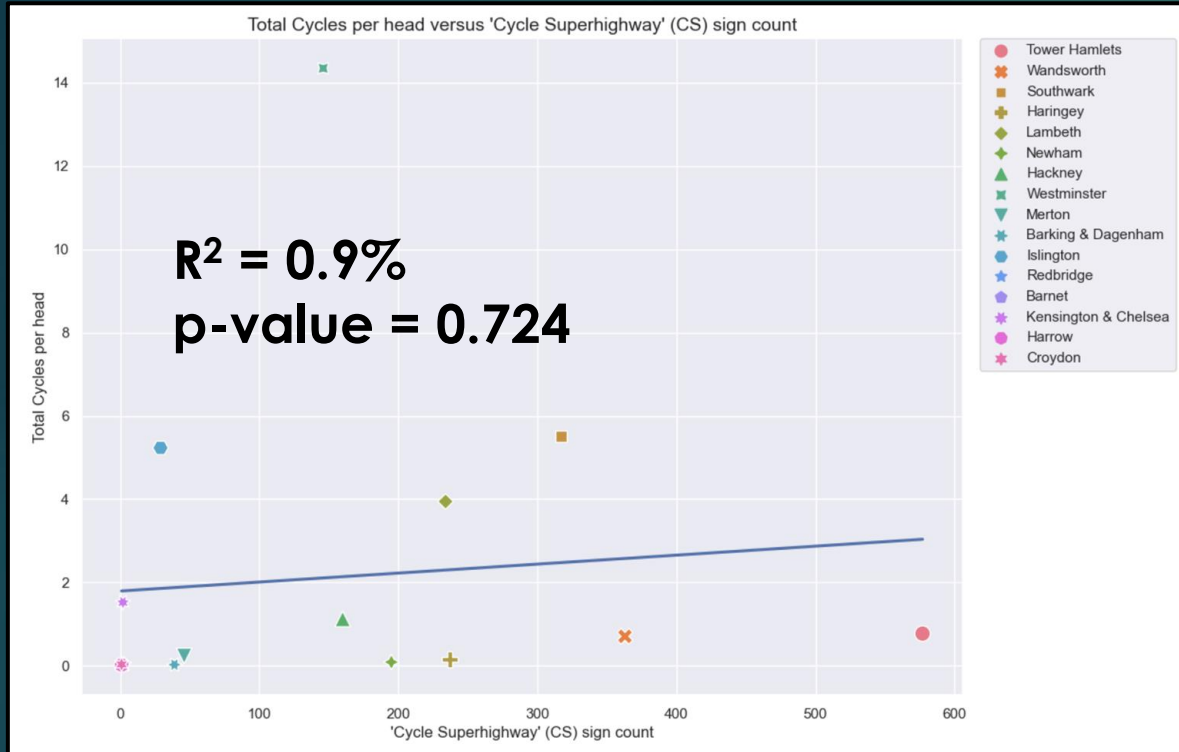
- Most Londoners who have used Cycle Superhighways feel they have been encouraged to cycle more
 - Quietways appear to have a positive impact on users' cycling propensity
- Hypothesise that there is correlation between availability of dedicated cycling paths and more cycling.

Infrastructure Analysis

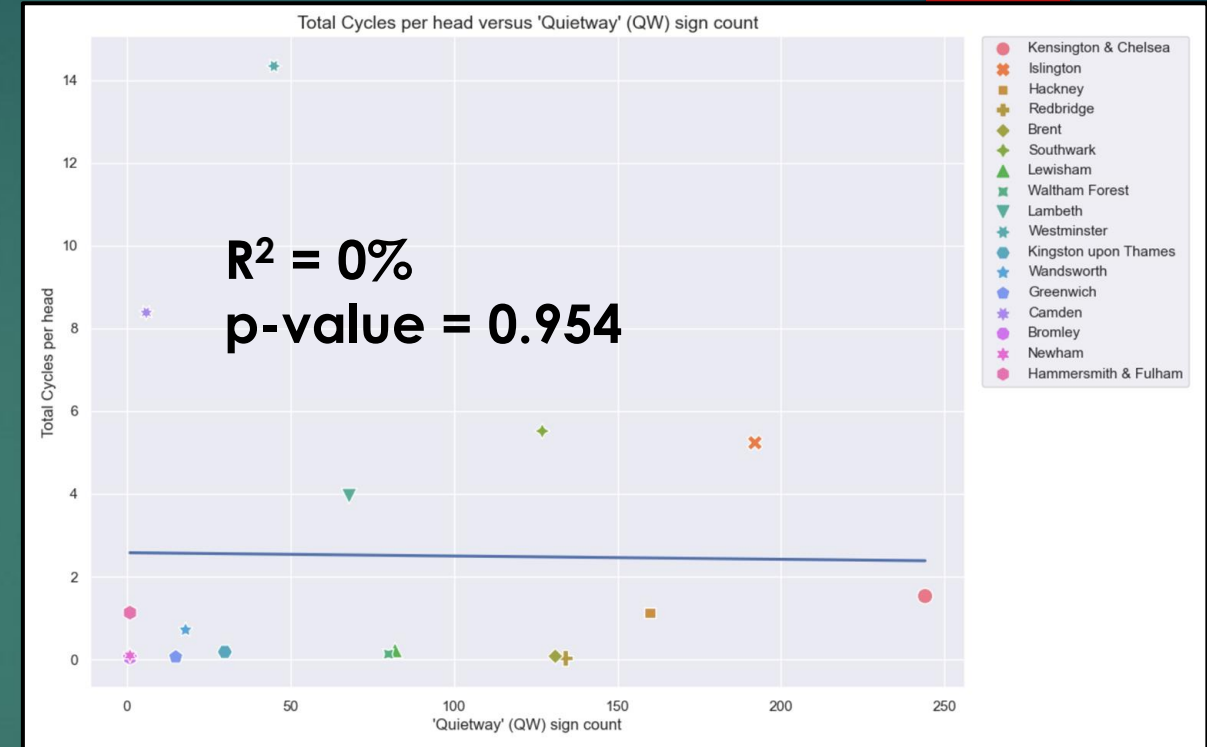
Exploring Cycle Superhighways and Quietways



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Total Cyclists per head vs
Cycle Superhighways sign count



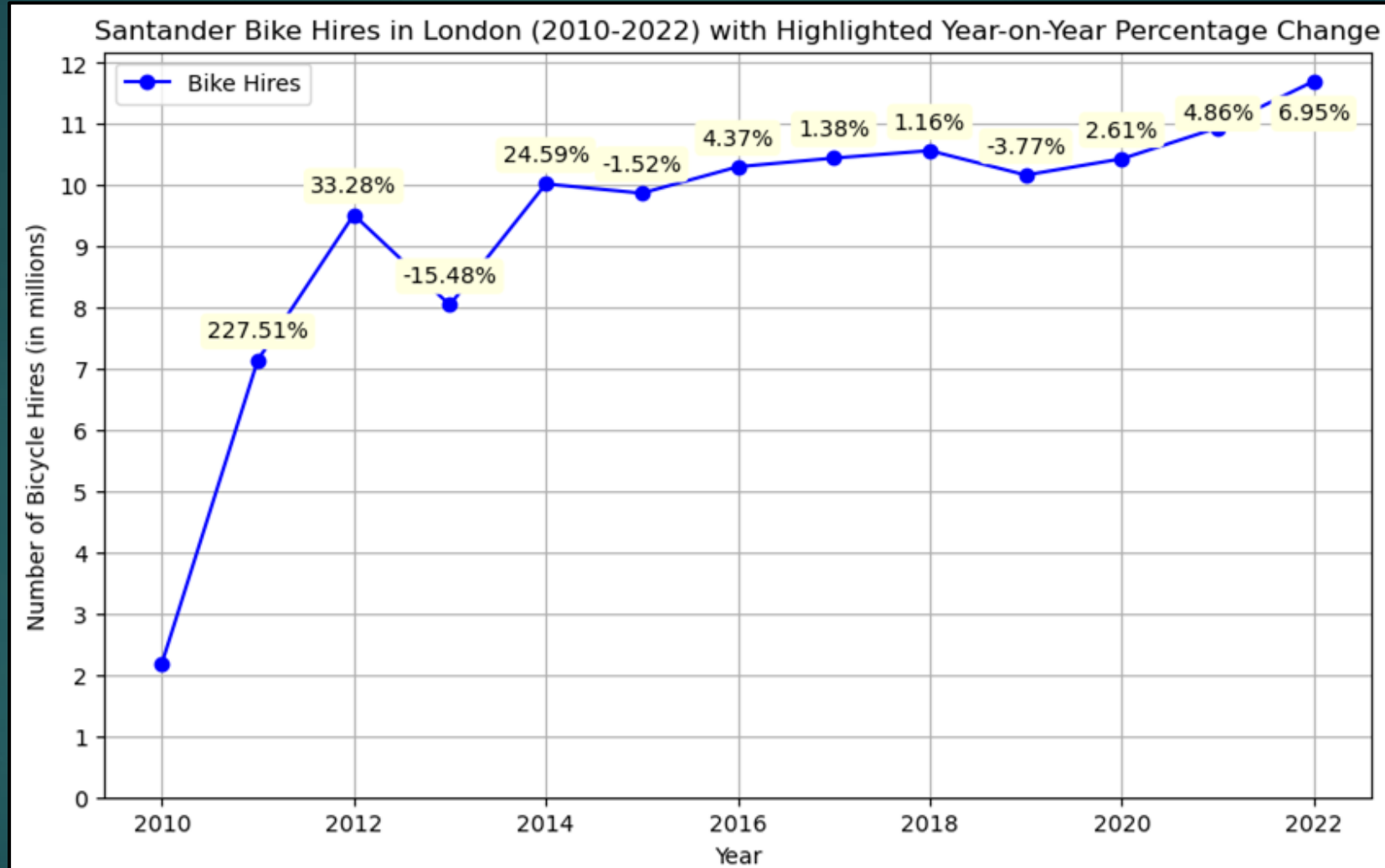
Total Cyclists per head vs
Cycle Quietways sign count

- No correlation found
- Presence in only around half of London boroughs
- An evidence of infrastructure alone not necessarily leading to increased cycling
- Relatively new to Londoners compared to Except Cycle signposts as one of the reasons (new hypothesis to investigate and test)

Infrastructure Analysis

Santander Cycling Uptake

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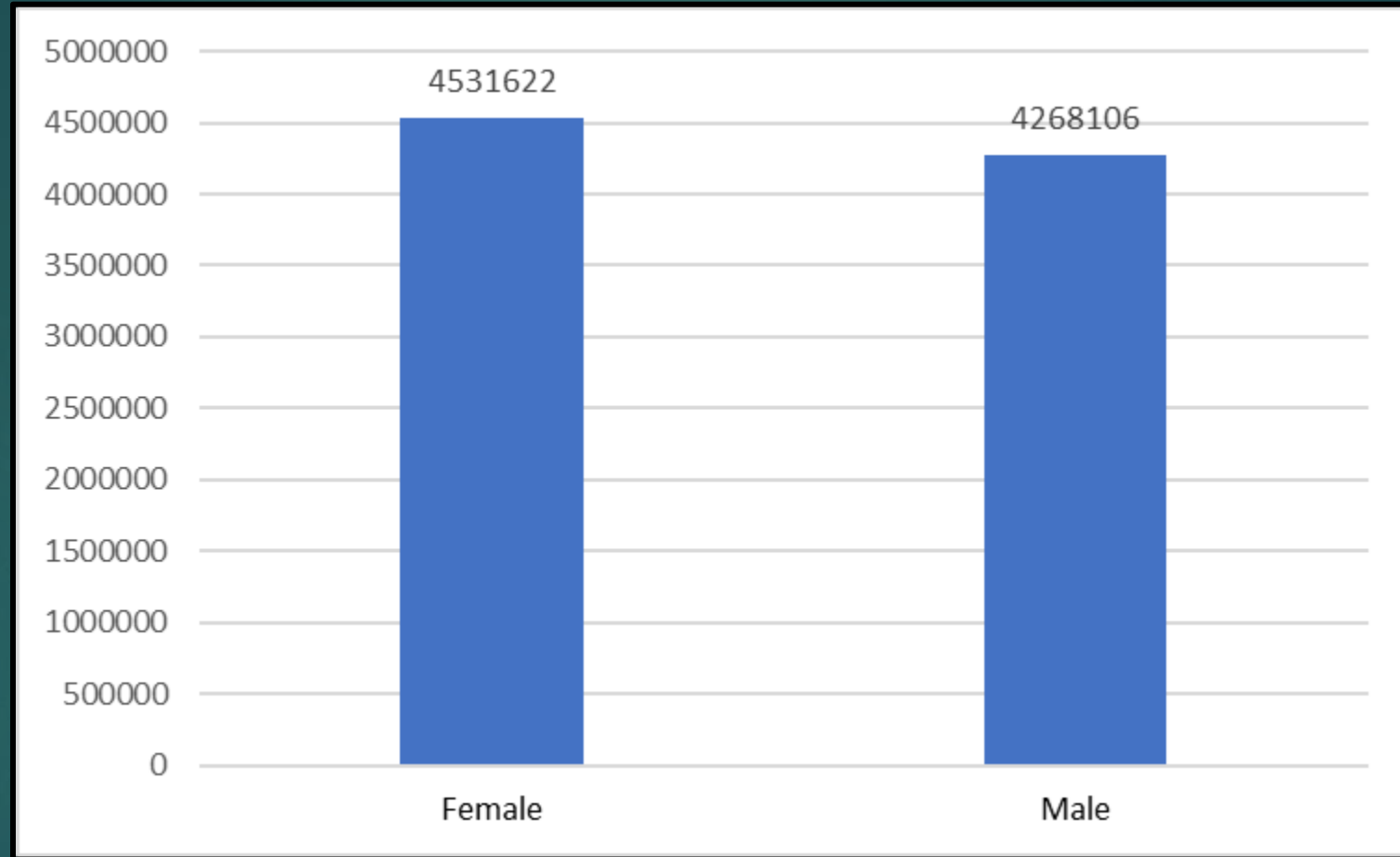


Growth trajectory of Santander Cycling Uptake

Demographic Analysis

Gender Disparity in Cycling

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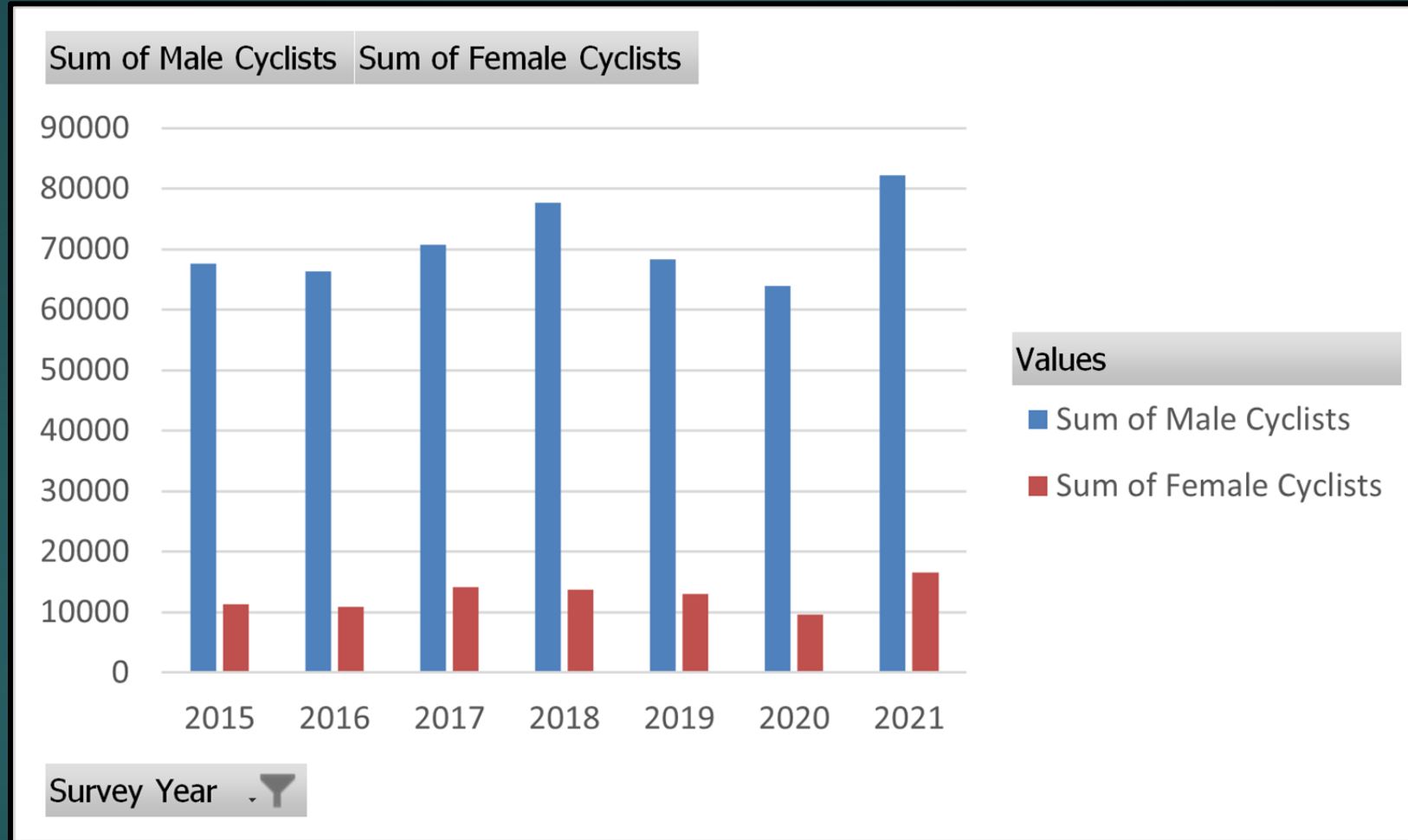


Female vs Male Population Count in London - 2021^[4]

Demographic Analysis

Gender Disparity in Cycling

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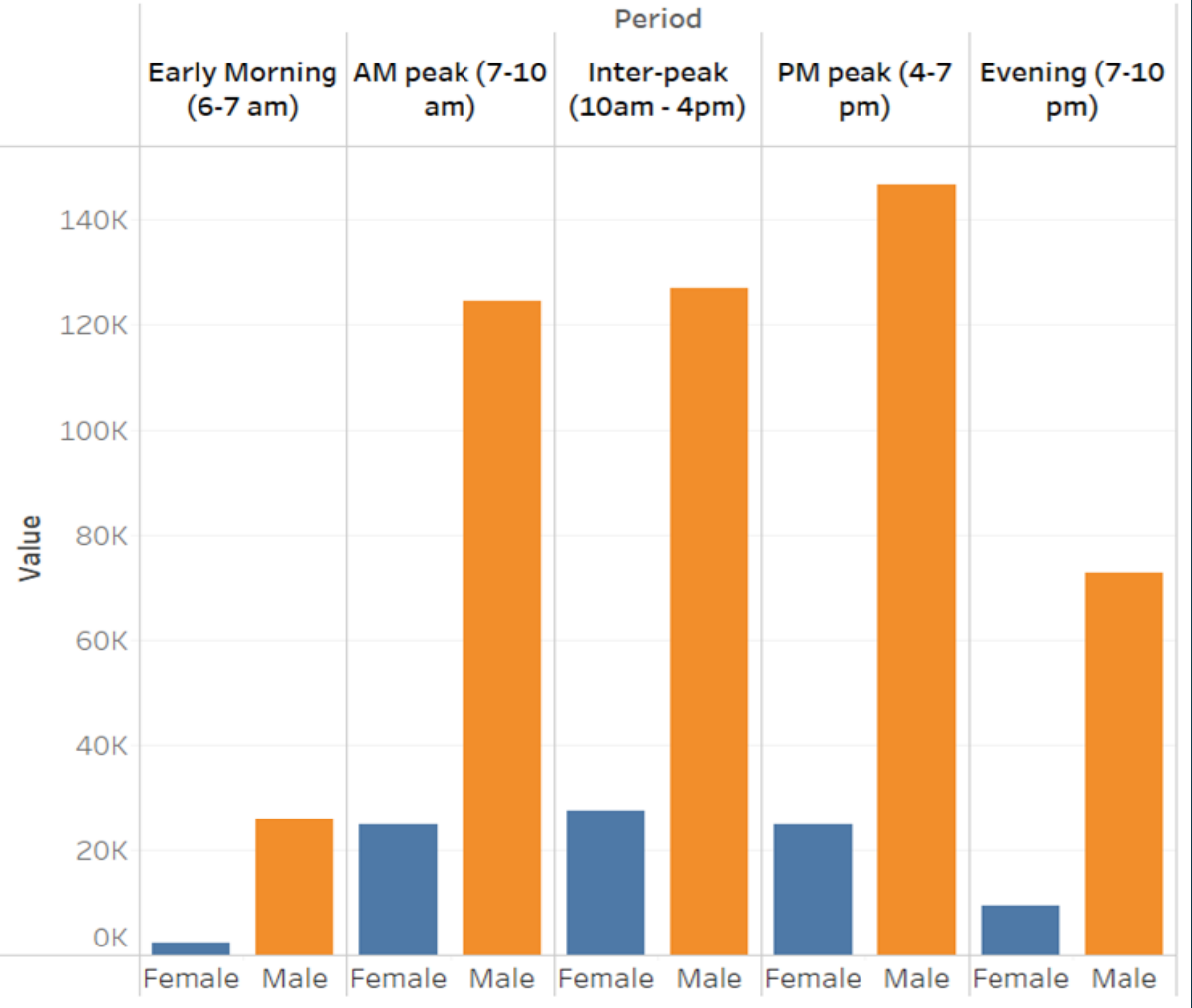
Number of Female vs Male cyclists in London

Demographic Analysis

Gender Distribution Across Time Periods

<u>TIME PERIOD</u>	<u>WOMEN LIKELIHOOD TO CYCLE VS MEN</u>
Early Morning	-2.59%
AM Peak	+2.69%
Inter Peak	+5.35%
PM Peak	-1.54%
Evening	-3.91%

Total Cyclist Distribution over Time Periods



Feel safest

73%

believe that late at night
is the least safe time to travel



Women are more likely to have stopped
travelling at certain times of the day
due to safety concerns

women **48%**,
other **23%**

Late morning
9:30am to 12:00pm

Morning peak times
6:30am to 9:30am

Early afternoon
12:00pm to 4:30pm

Early morning
5:00am to 6:30am

Evening peak times
4:30pm to 7:00pm

Early at night
7:00pm to 10:00pm

Late at night
10:00pm onwards

Least safe

'Bus stops tend to be quite safe but at night,
alone, it's a different ball game'

Young woman in focus group

'TfL workers don't tend to be at my local stops off peak / night
time, typically when they're needed the most.'

Young woman in focus group

'I don't really know how to define safety other than whether I
feel comfortable or not, or if I'm thinking 'oh god, I wish this
person would go away'...I tend to never be in places where
there is nobody.'

Older woman in focus group

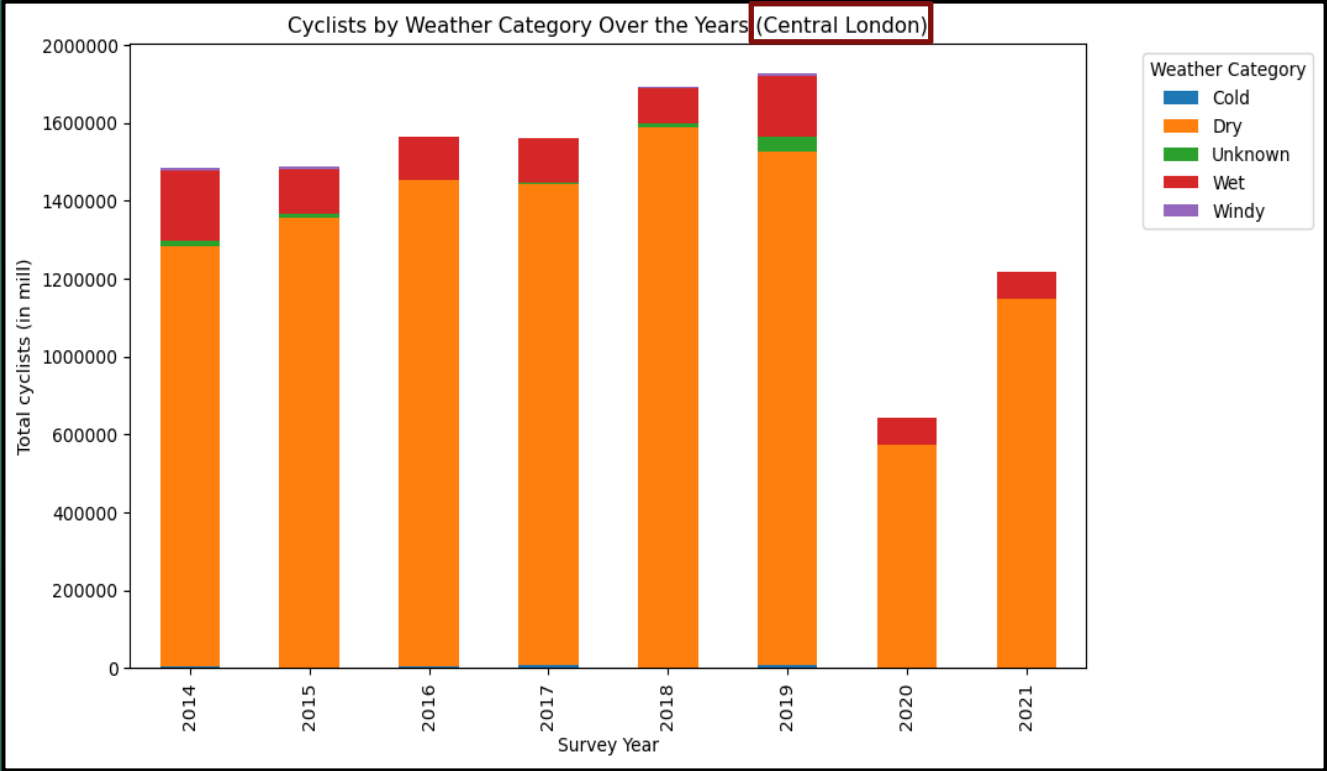
- ▶ TfL 2021 Report :
"Cycling Potential in
London's Diverse
Communities"
- ▶ Found Road Safety and
Personal Safety greatest
barriers to cycling uptake
- ▶ **Personal Safety - greatest
barrier to women, Asian
and mixed ethnicity
people.** [6]

Recommendations	How to Measure Success
Implement safety alarms or alert systems connected to rented bike to enhance personal security.	Measured by tracking incident reduction and assessing overall increase in safety perceptions among female cyclists.
Increase the presence of TfL staff at docking stations to ensure a swift response to queries, maintenance issues, and enhance overall safety.	A noticeable decrease in query response time from TfL and improved customer satisfaction among female cyclist.
Introduce safety lockers at docking stations to provide a secure space for personal belongings.	Availability and utilisation of lockers, feedback on their convenience, and decrease in reported property-related concerns.

Weather Analysis

Unlocking Cycling Patterns: Weather Insights

Recommendations	How to Measure Success
Promote weather-resilient cycling infrastructure and implement incentive programs to reward cyclists for choosing sustainable transportation, even in adverse weather ^[7] .	Monitor usage of covered bike parking spaces and track cyclist participation in incentive programs.



Further Exploration: Revolutionising Urban Cycling by Converting Disused Tube Stations into Dedicated Cycle Routes ^[6]

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- ▶ 40 stations disused and available for repurposing
- ▶ Enhanced connectivity
- ▶ Improved safety
- ▶ Weather resilience for cyclists in London



Further Exploration: Revolutionising Urban Cycling by Converting Disused Tube Stations into Dedicated Cycle Routes

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- ▶ Feasibility and Viability
- ▶ Historical Records
- ▶ Cost-Benefit Analysis
- ▶ Public acceptance
- ▶ Demographic data
- ▶ Integration with existing infrastructure



Thank you for your attention.

Any questions?

TEAM CLOUD 9

Appendix Slides

Cycling Infrastructure Recommendations (1/2)

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Research / Data insights	Recommendations	How to Measure Success
Lack of bike parking discourages cycling / Statistically significant correlation between bicycle parking capacity and average daily cycle counts with a p-value close to zero	Enhance the capacity of bicycle parking facilities strategically across the city to accommodate growing demand. Collaborate with public transport authorities to integrate bike parking facilities seamlessly with transit hubs.	Monitor the frequency and capacity usage or enhanced bike parking facilities, and regularly collect feedback from cyclists regarding the satisfaction with the new bike parking spaces. A successful outcome would involve an increase in the number of bikes parked daily and a positive sentiment reflected from users.
People must feel safe cycling / Cycle exception signage counts' statistically significant correlation with Total cycles per head	Continue to invest in safety features of the cycling infrastructure, e.g. Turning exception signposts, Except cycle signposts.	Track total cycle counts' trend & number of 'cycle except' arrangement to facilitate cycling safety and gather feedback from cyclists.
Only 16% of Londoners in Sept 2016 have used Cycle Superhighways / Presence of Superhighways does not correlate with more cycling	Keep monitoring utilisation and assess effectiveness of Cycle Superhighway & Quietway per location in helping increase cycling before further introducing them to other London boroughs.	Track cycle counts' trend along each Superhighway and gather feedback from cyclists.

Cycling Infrastructure Recommendations (2/2)

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Research / Data insights	Recommendations	How to Measure Success
Growth trend in Santander Bike hire	<p>Launch targeted Santander Bike campaigns to rekindle interest and promote their benefits. Foster partnerships and engagement with local communities to understand preferences and barrier.</p> <p>Introduce incentive programs such as discounts or loyalty rewards for frequent Santander bike users.</p>	<p>Measure the frequency of Santander bike rides over time. Evaluate community engagement levels through event participation and survey responses. Track the uptake of incentive programs. Success will be reflected by increased ride frequency, positive sentiment from the community, and increased participation in incentive programs.</p>

Demographic Recommendations

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Weather Recommendations

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1. Heinen, E., & Buehler, R. (2019). Bicycle parking: a systematic review of scientific literature on parking behaviour, parking preferences, and their influence on cycling and travel behaviour. *Transport Reviews*, 39(2), 198-220
<https://eprints.whiterose.ac.uk/143013/1/Bicycle%20parking%20paper%20revision3%20final.pdf>
1. Attitudes towards cycling. (2016). Transport for London. <https://content.tfl.gov.uk/attitudes-to-cycling-2016.pdf>
2. A Moment of Change: Increasing Cycling Uptake By Department of Transport (2020):
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005208/moment-of-change-increasing-cycling-uptake.pdf
3. Sex - Census 2021. (2021). Office for National Statistics.
<https://www.ons.gov.uk/datasets/TS008/editions/2021/versions/4/filter-outputs/9beb3fac-22bb-46ce-81b3-01e50a8e969e#get-data>
4. Personal Security on London's Transport Network. (2022). London TravelWatch
<https://www.londontravelwatch.org.uk/wp-content/uploads/2022/01/Personal-security-on-Londons-Transport-network.pdf>
1. Cycling potential in London's diverse communities. (2021). Transport for London.
<https://content.tfl.gov.uk/cycling-potential-in-londons-diverse-communities-2021.pdf>
1. Analysis of Cycling Potential 2016 (2016), <https://content.tfl.gov.uk/analysis-of-cycling-potential-2016.pdf>
2. Bike paths in abandoned tube tunnels: is the London Underline serious:
<https://www.theguardian.com/cities/2015/feb/05/bike-paths-abandoned-tube-tunnels-london-underline>