The University Of Sheffield.

Does the presence of lighting encourage cycling after-dark?

Dr Jim Uttley

Lighting Research Group, University of Sheffield

International Conference on Environmental Psychology,

University of Plymouth, 4-6 Sep 2019

Importance of light for cycling

Transportation (2011) 38:153–168
DOI 10.1007/s11116-010-9284-y

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-1 (“Much less likely to cycle”) to +1 (“Much more likely to cycle”)

I can make the trip in daylight hours

Mean rating = +0.50

Ranked in top 10 biggest motivators

The route is not well lit after dark

Mean rating = -0.59

Ranked in top 10 biggest deterrents

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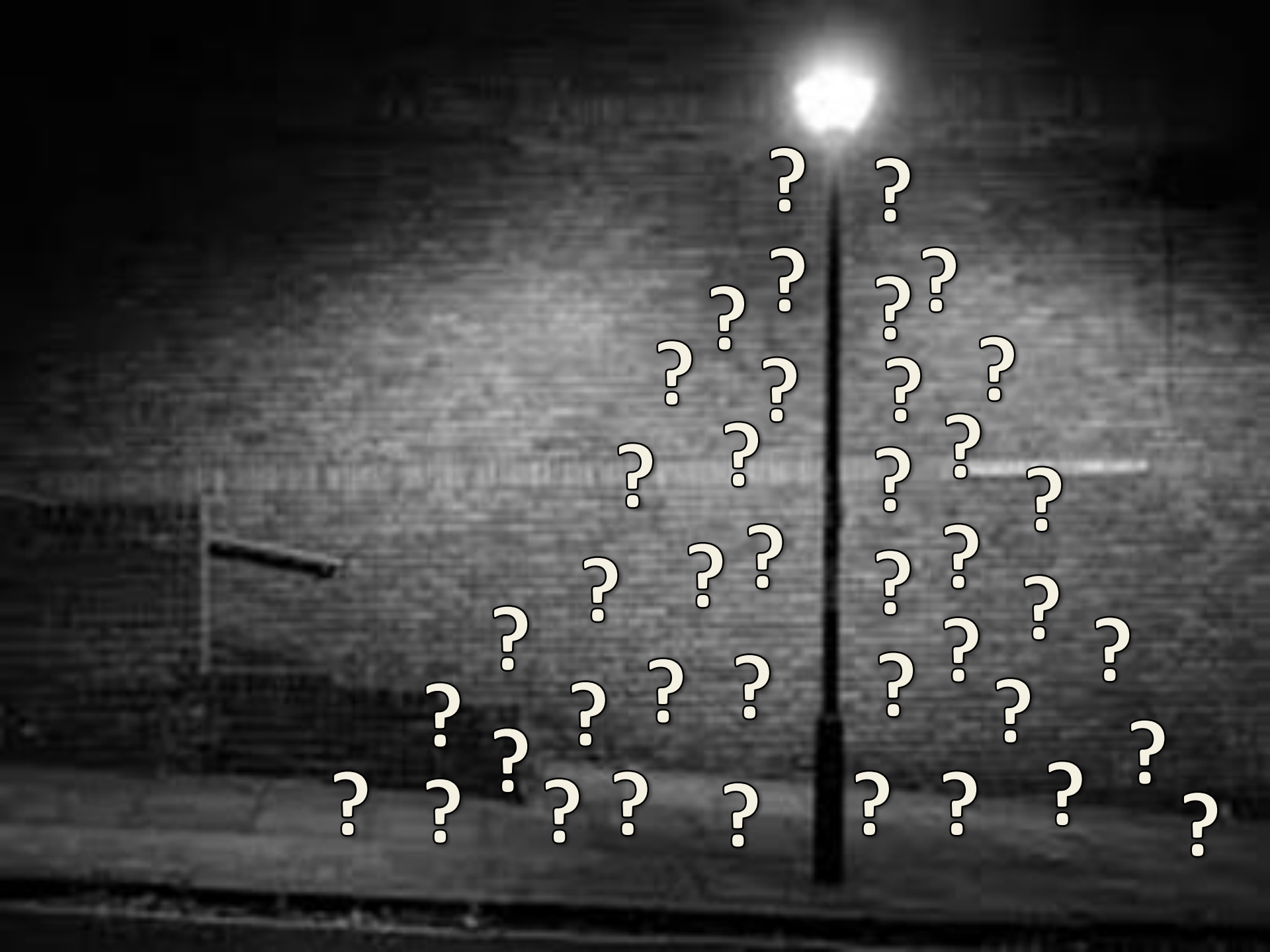
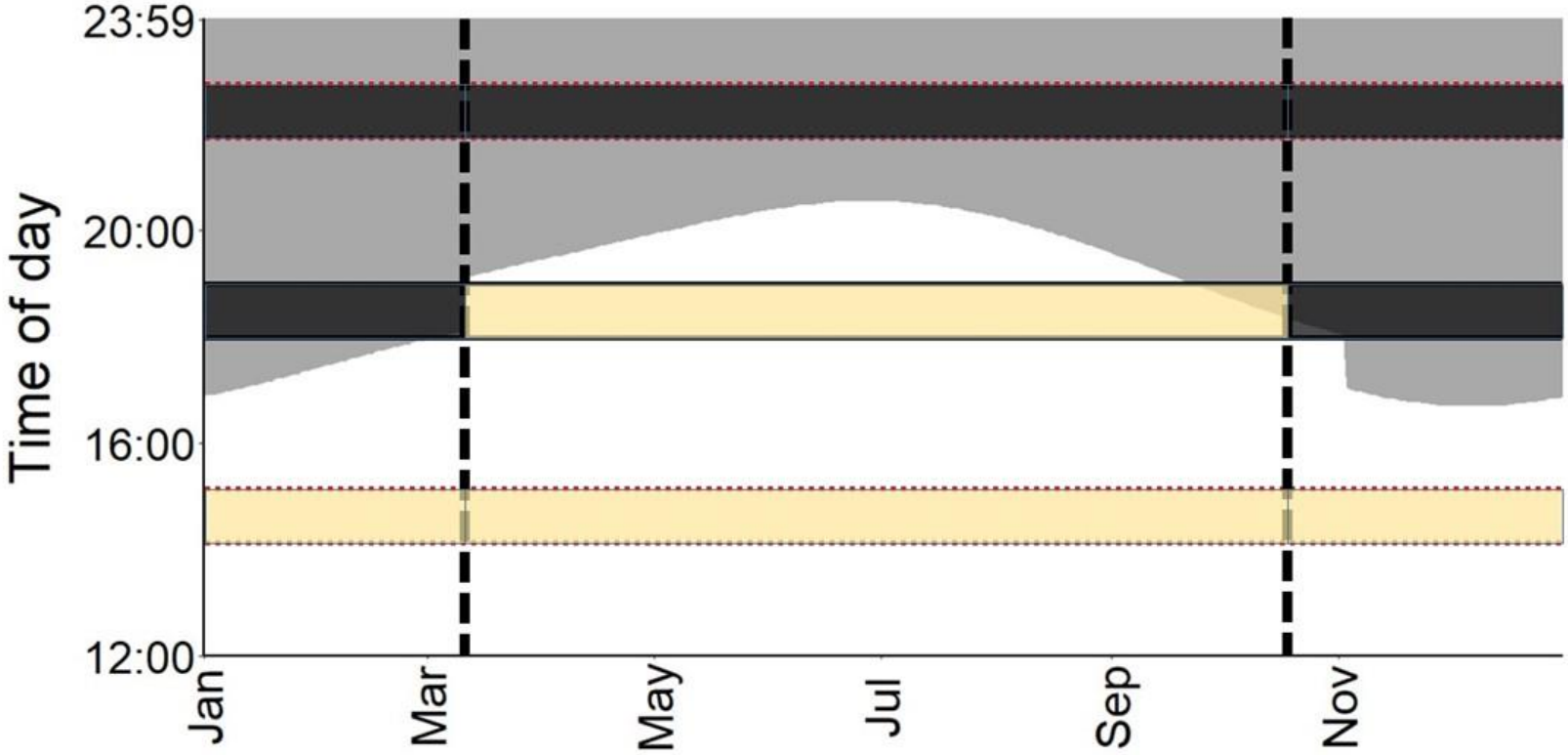
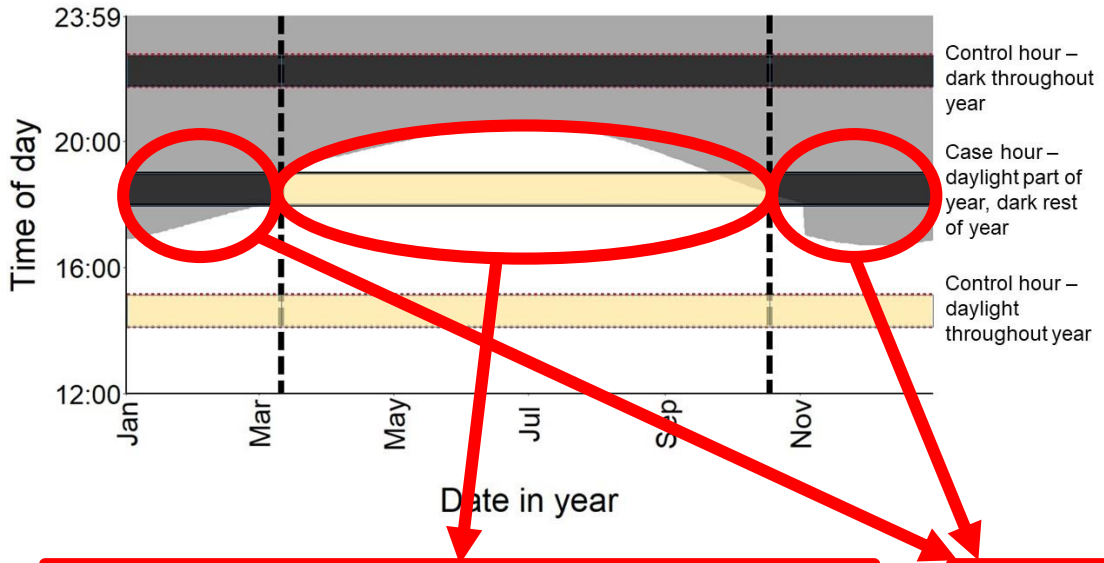


Odds ratio to quantify effect of darkness



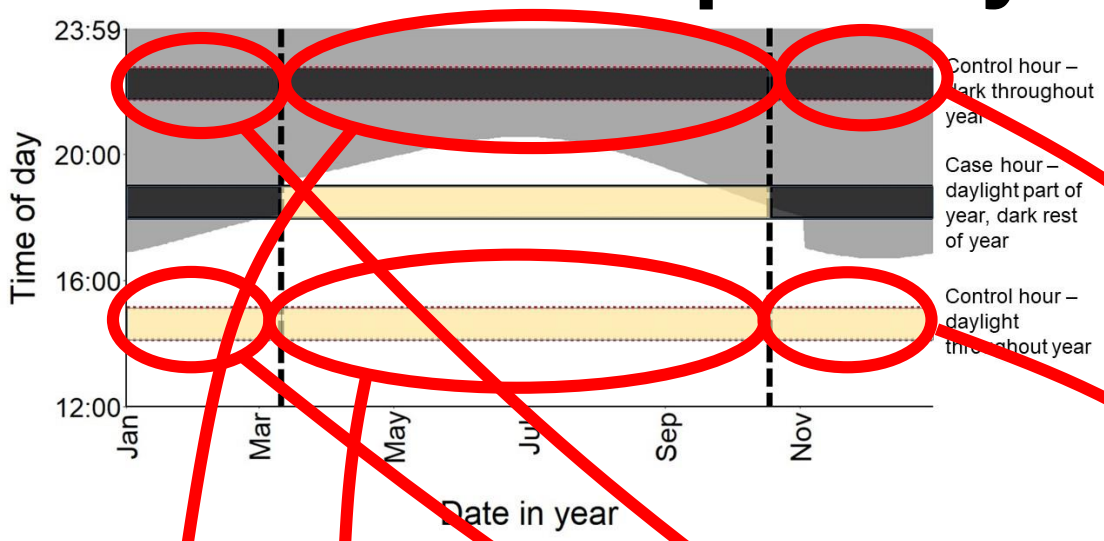
Odds ratio to quantify effect of darkness



Case hour in daylight ÷ Case hour in darkness

Control hour when case hour in daylight ÷ Control hour when case hour in darkness

Odds ratio to quantify effect of darkness



Case hour in daylight ÷ Case hour in darkness

Control hour when case hour in daylight

÷

Control hour when case hour in darkness

= Odds ratio (effect of darkness on cyclist numbers)

Odds ratio to quantify effect of darkness

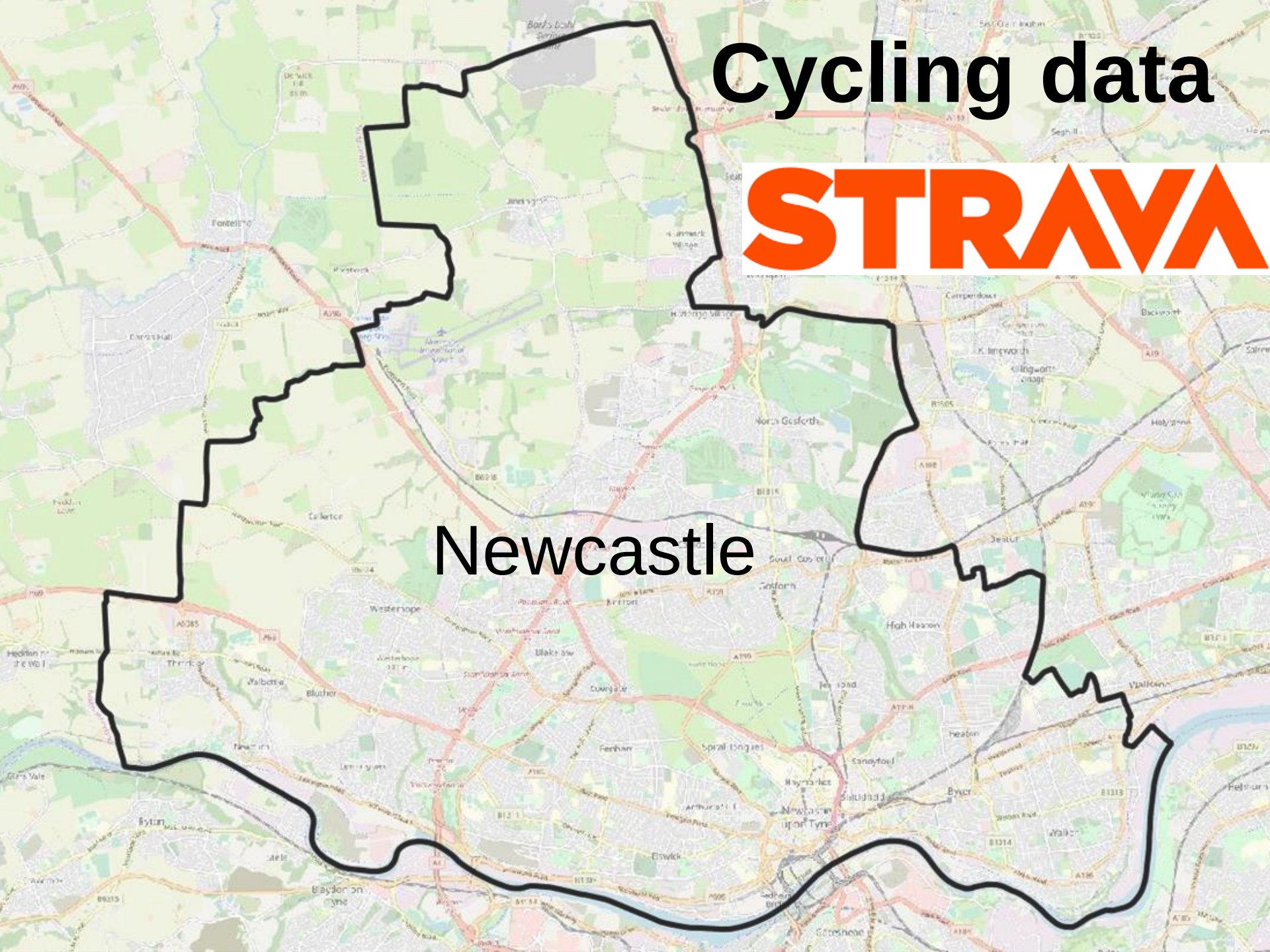
Odds ratio > 1

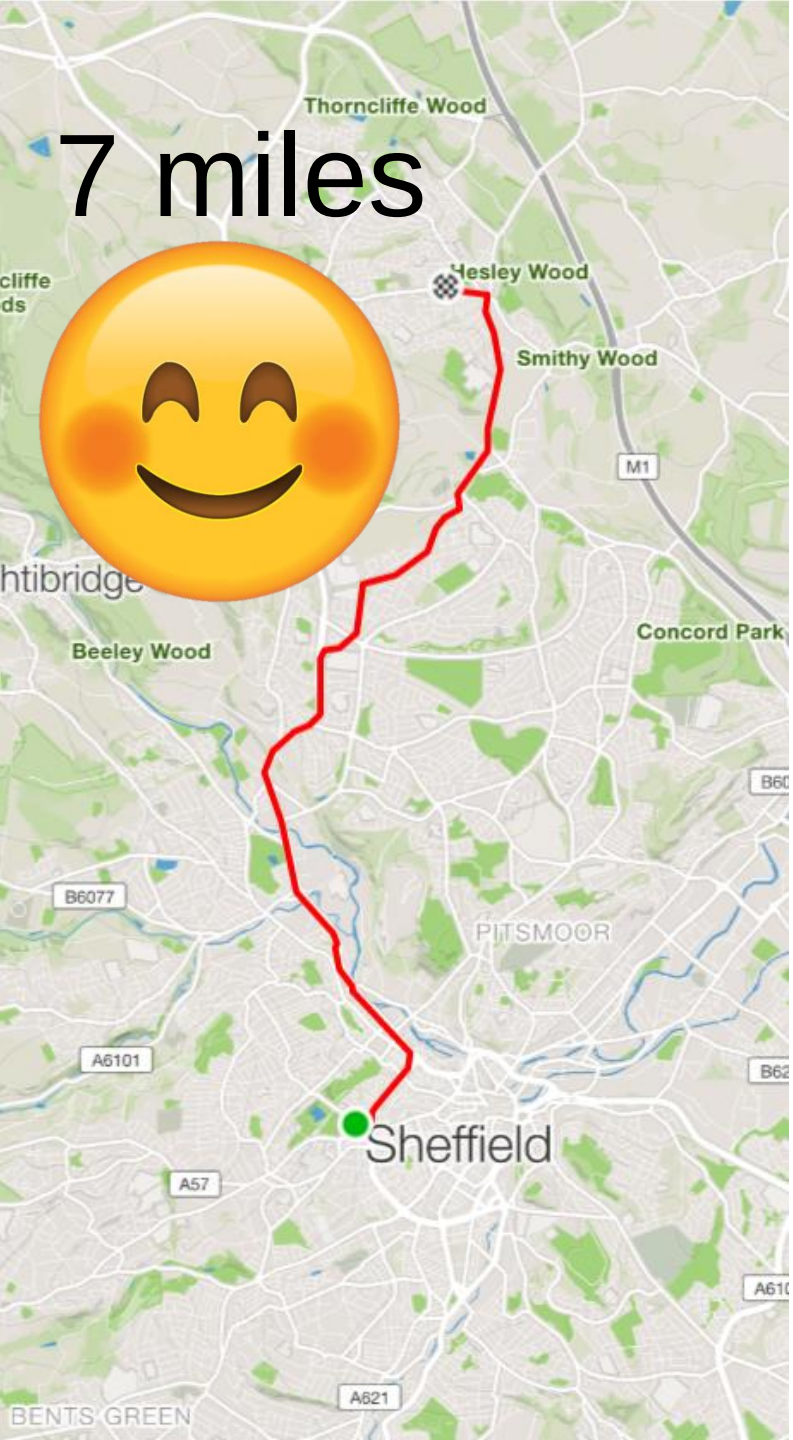
Significantly fewer cyclists due to darkness

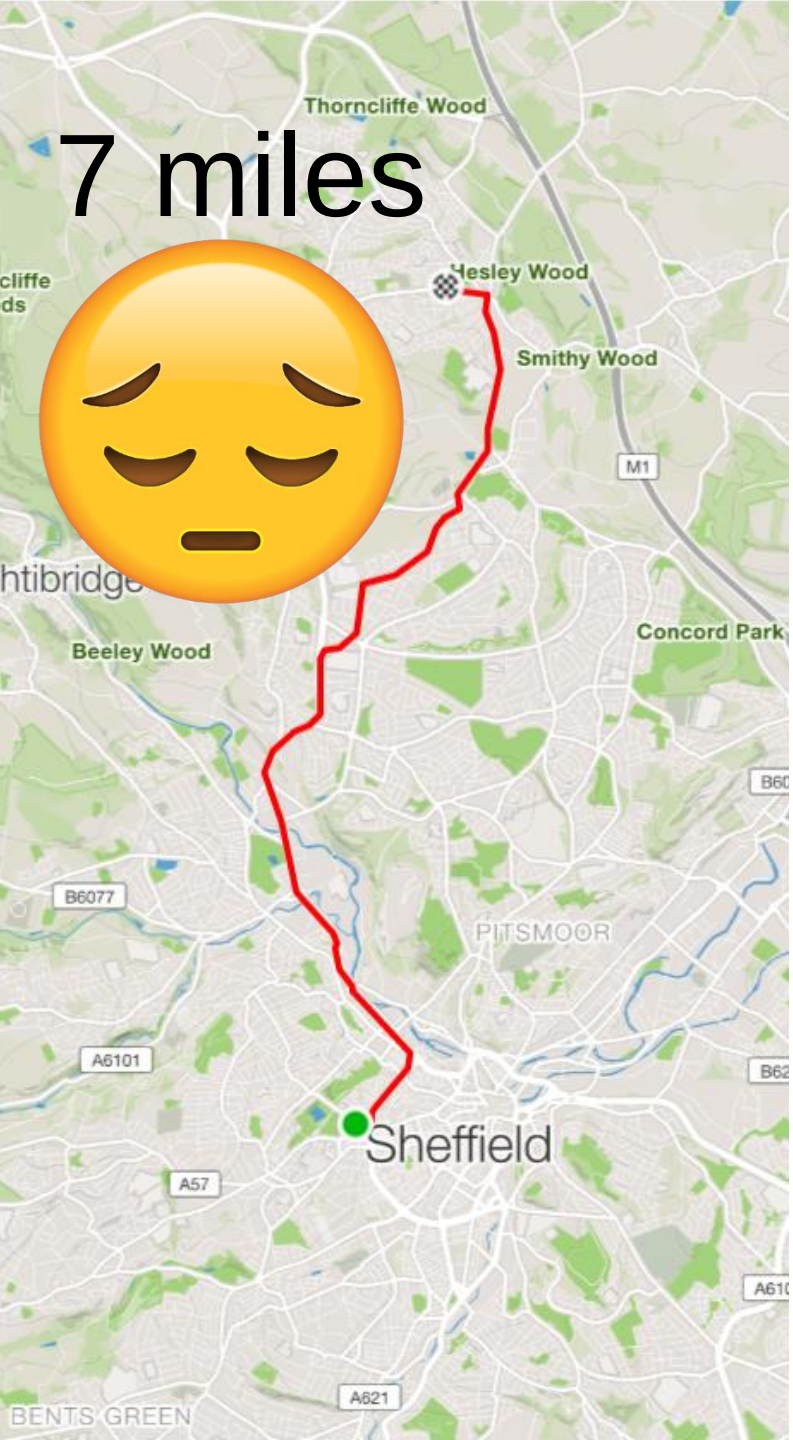
= Odds ratio (effect of darkness on cyclist numbers)


BIG DATA

Cycling data




7 miles
Thorncliffe Wood
Hesley Wood
Smithy Wood
M1
Concord Park
Beeley Wood
B6077
PITSMOOR
A6101
Sheffield
A57
A621
BENTS GREEN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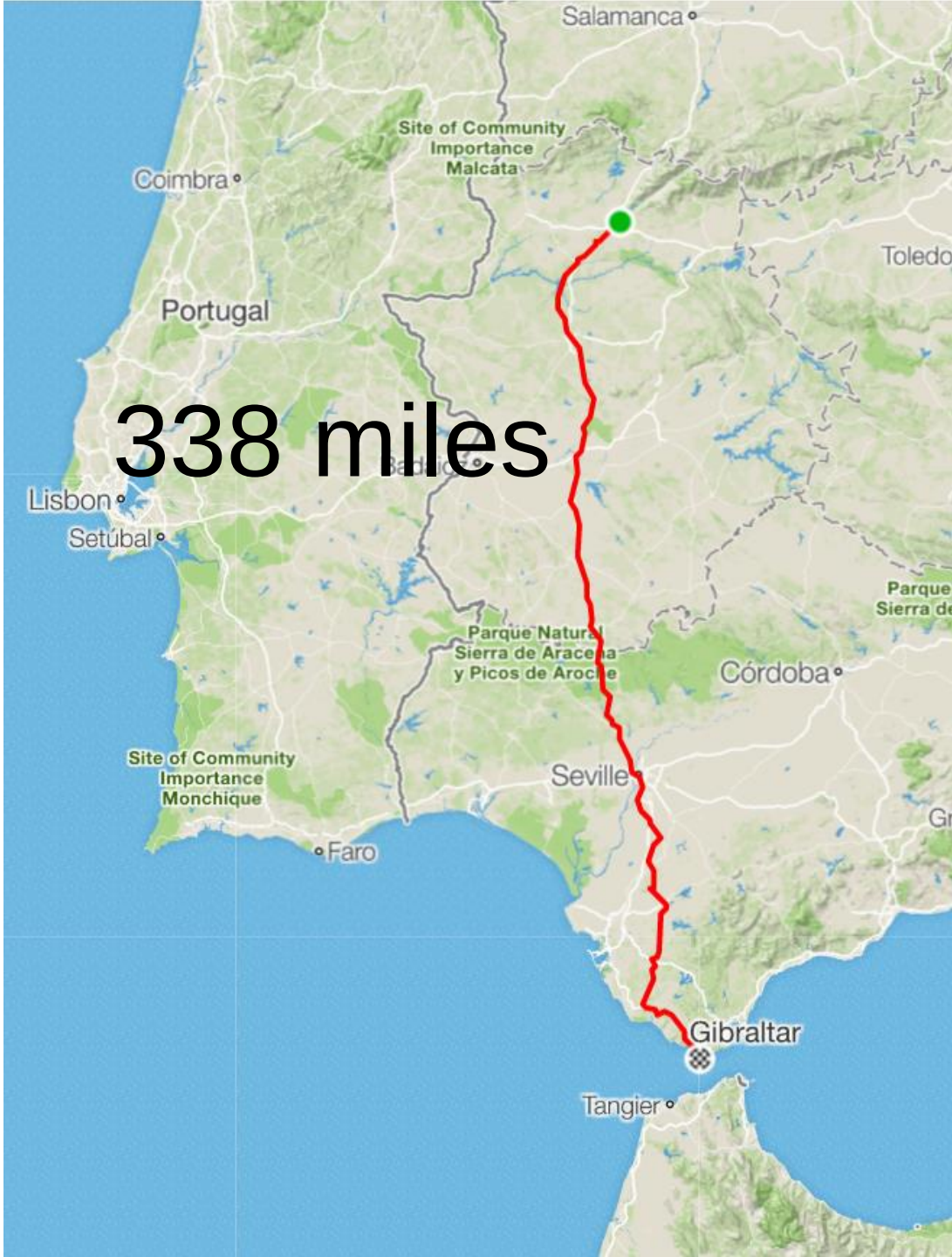
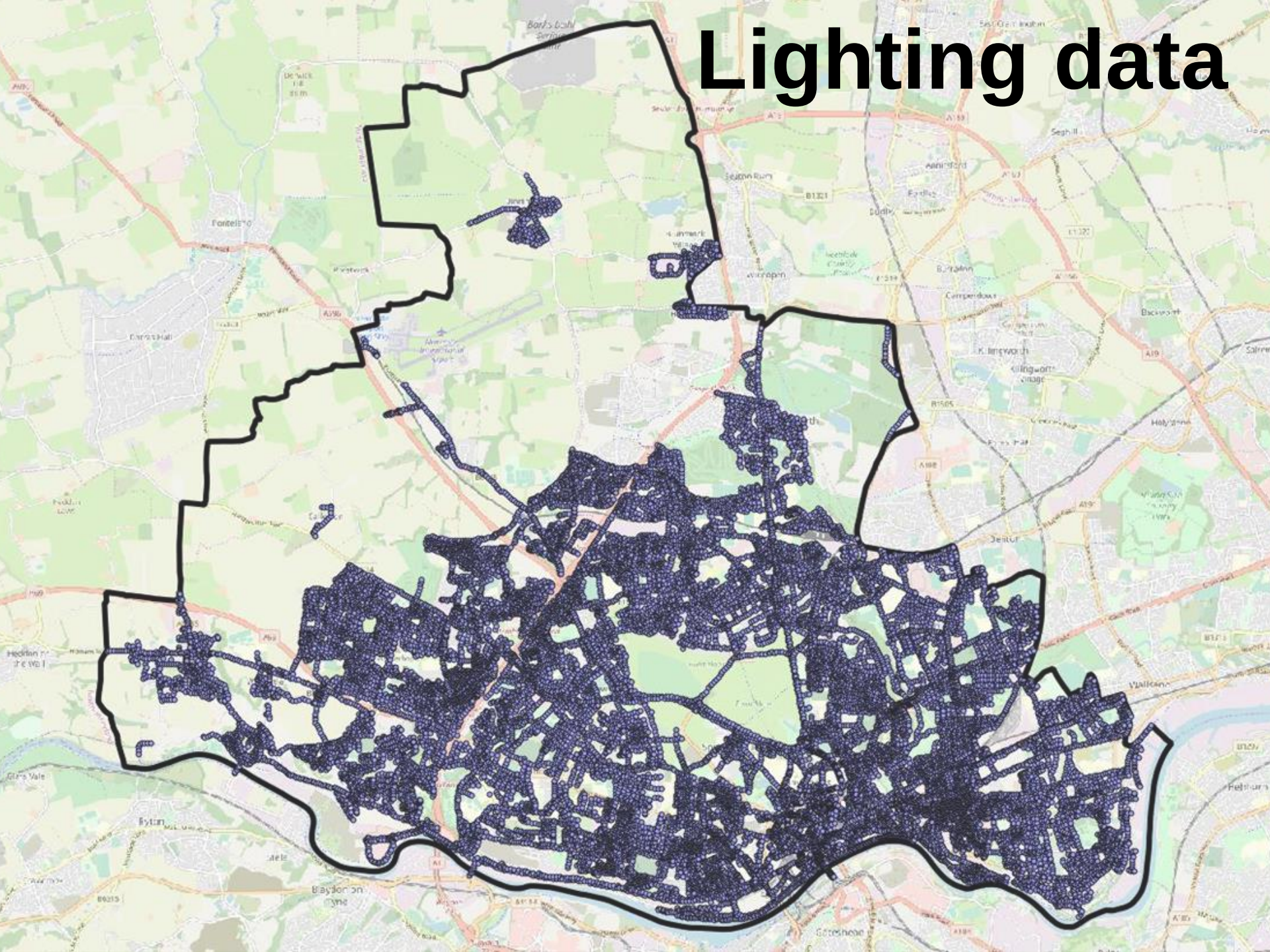
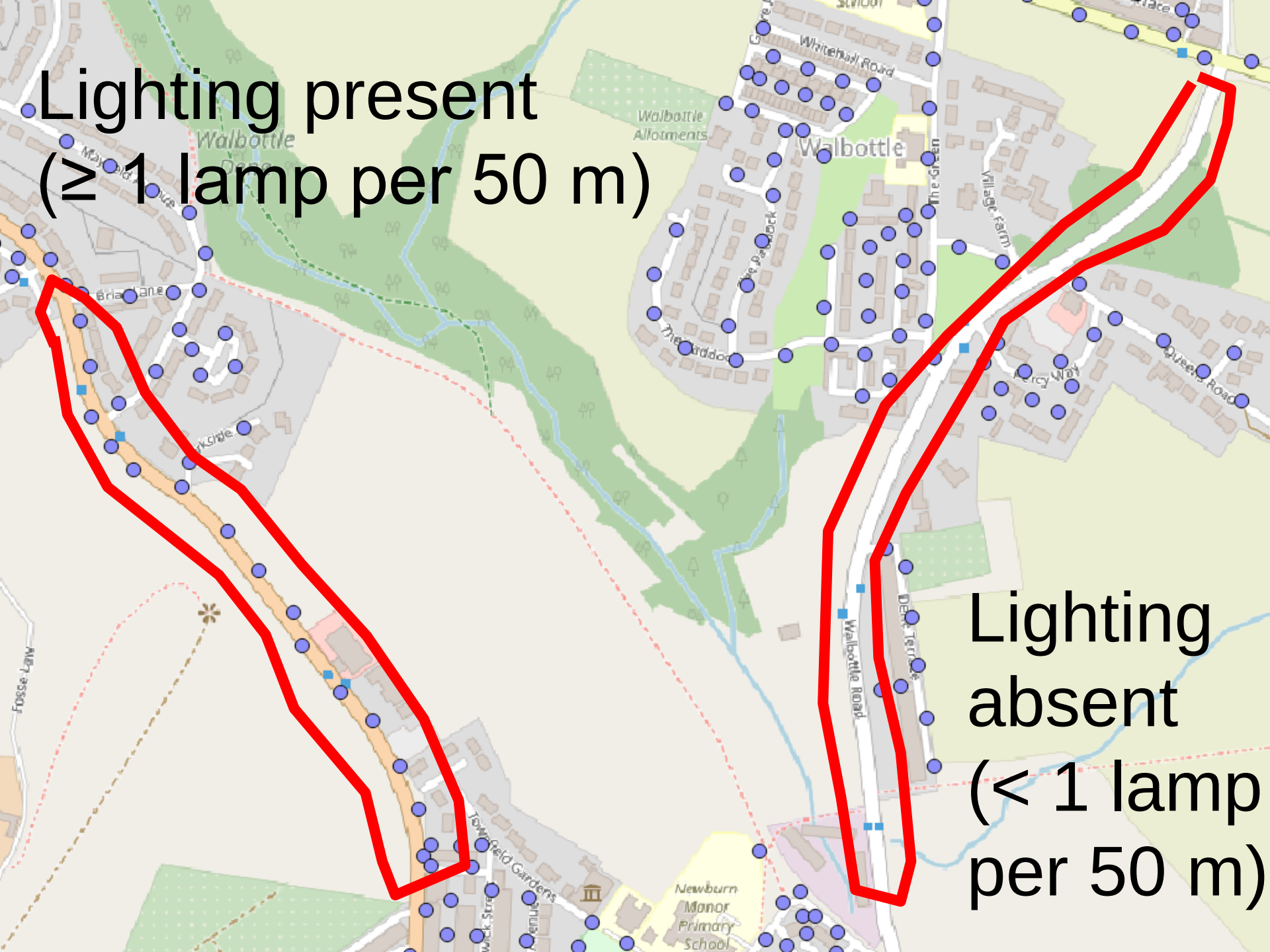
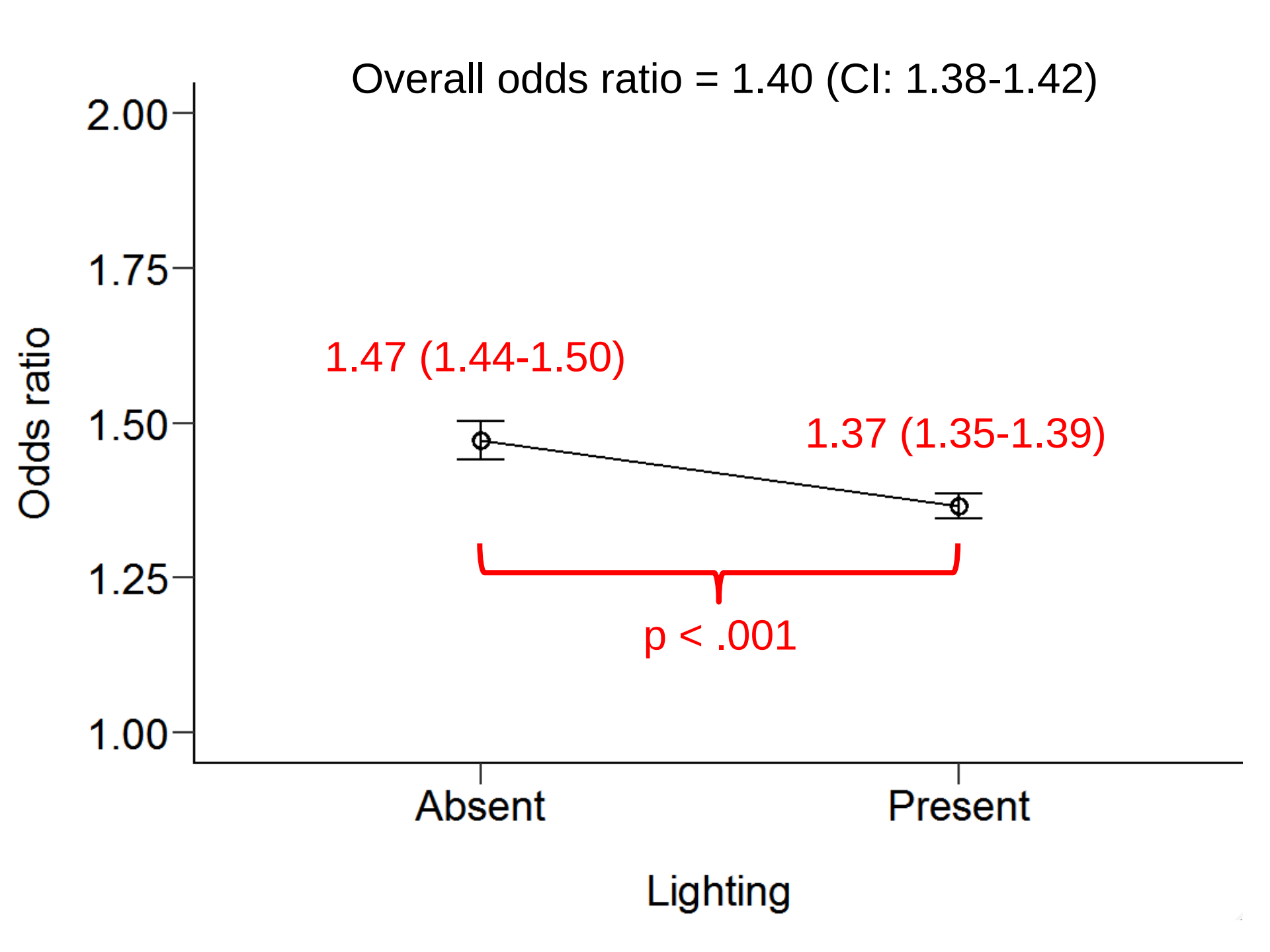

338 miles
Salamanca
Site of Community Importance Malcata
Coimbra
Toledo
Portugal
Lisbon
Setúbal
Parque Natural Sierra de Aracena y Picos de Aroche
Córdoba
Site of Community Importance Monchique
Seville
Faro
Gibraltar
Tangier

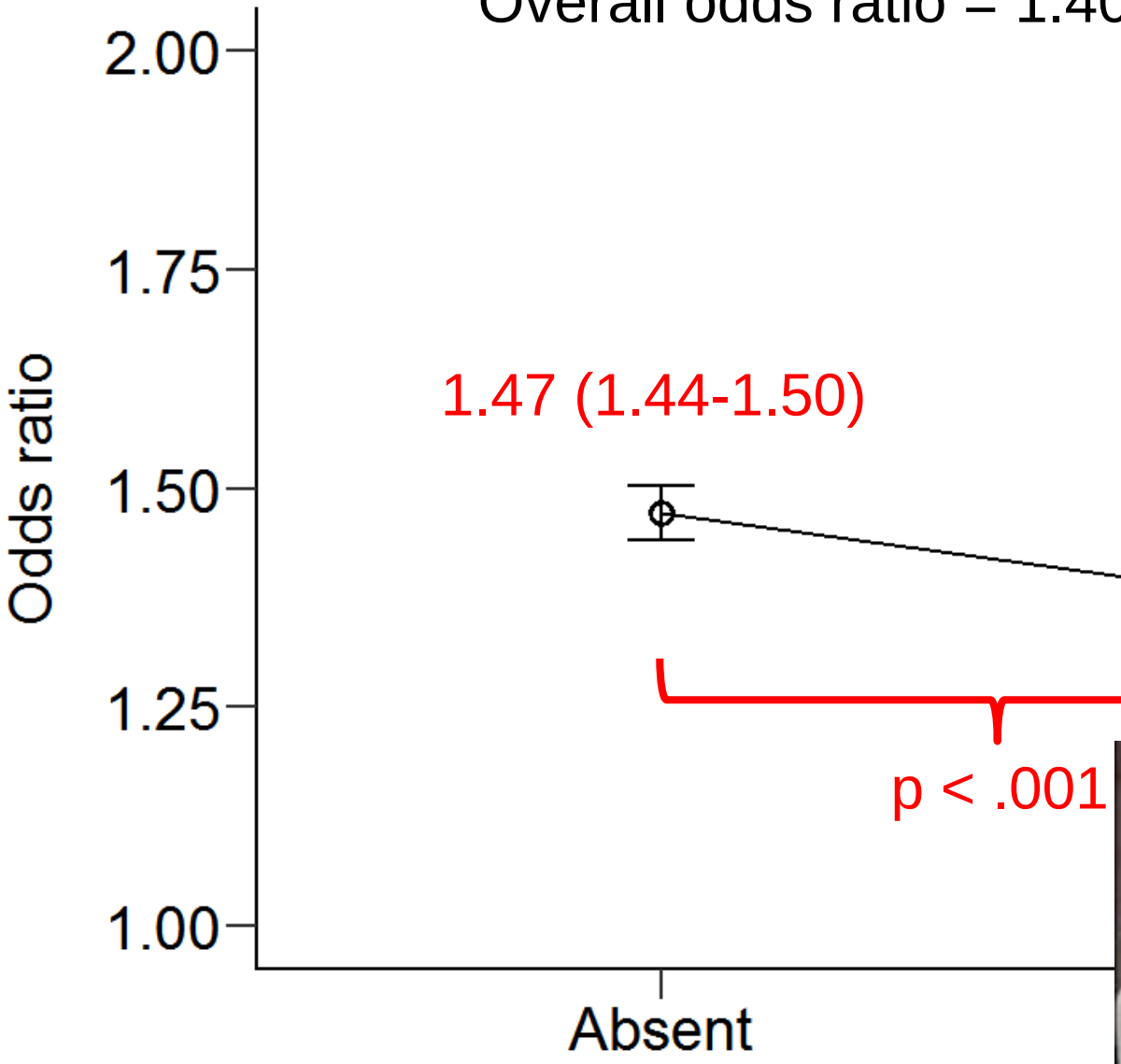
Lighting data




Lighting present
(≥ 1 lamp per 50 m)
Lighting absent
(< 1 lamp per 50 m)
Walbottle
Walbottle Allotments
Whitehall Road
The Green
Village Farm
Queens Road
Walbottle Road
Dene Terrace
Briardene
Fosse Law
Townfield Gardens
Newburn Manor Primary School


Overall odds ratio = 1.40 (CI: 1.38-1.42)
2.00
1.75
1.50
1.25
1.00
Odds ratio
1.47 (1.44-1.50)
1.37 (1.35-1.39)
p < .001
Absent
Present
Lighting

Overall odds ratio = 1.40 (CI: 1.38-1.42)



Cycling data

STRAVA

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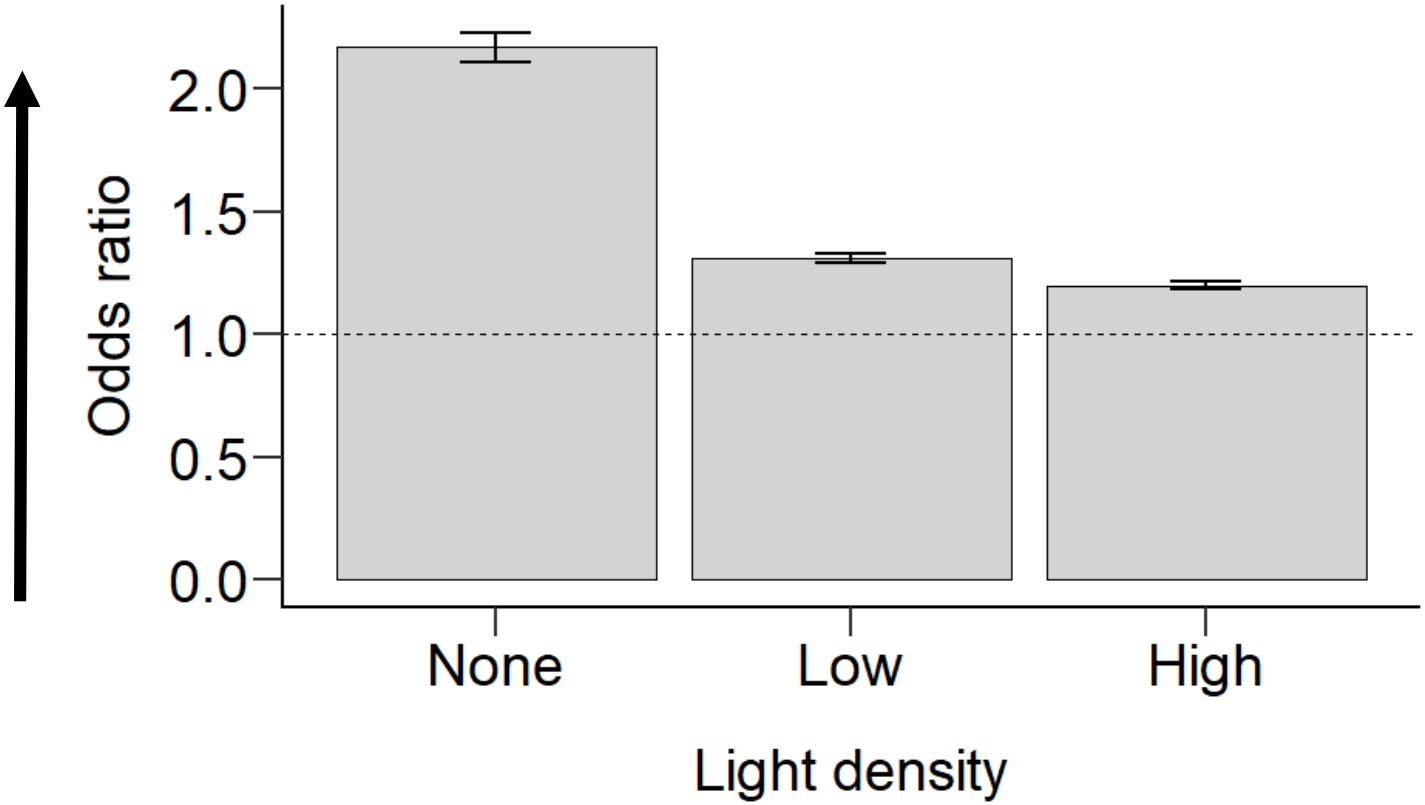
Data from Birmingham using cycle counters

Street light density category	Number of cycle counters	Median street light density (lights per 100 m)
None	8	0
Low	20	2.0
High	20	3.5

Larger odds ratio = greater reduction after-dark



Thanks for listening

j.uttley@sheffield.ac.uk @AJ_Uttley

https://www.jimuttley.co.uk/

http://www.lightingresearch.group.shef.ac.uk/

Any questions?