

LANTERNS Project



Illuminating Street Lighting Strategies

Phil Edwards

Senior Lecturer

Department of Population Health

Improving health worldwide

www.lshtm.ac.uk

LONDON
SCHOOL of
HYGIENE
& TROPICAL
MEDICINE





Sustainability
Economy
Austerity

MailOnline

Home News U.S. Sport TV&Showbiz Femail Health Science Money RightMinds

News Home Arts Headlines Pictures Most read News Board

Click on your line to see how the Tube upgrade plan affects you

Bakerloo

Central

Circle

District

H'smith & City

Jubilee

Metropolitan

Northern

Piccadilly

Victoria

Waterloo & City

Street lights on major roads to be turned off at midnight to save money despite safety fears

By DAILY MAIL REPORTER

UPDATED: 14:20, 14 October 2008

Share Tweet +1 Share

0 View comments

Street lights on major roads could be turned off between midnight and 5am in an attempt to cut carbon emissions and save money.

Officials at the Highway Agency are researching the safest areas to implement the black-out which will be launched next year as part of an energy efficiency strategy.

Local authorities including West Sussex, Gloucestershire, Hampshire, Essex and Powys are also bringing in similar initiatives.

However motoring groups are alarmed that the move may cause an increase in road accidents.

Edmund King, the president of the AA, told The Daily Telegraph: 'Turning off street lights to save money or reduce CO2 may backfire in terms of increased accidents.'



18 January 2012 Last updated at 01:53



Light pollution: Is there a solution?

[COMMENTS \(438\)](#)

By Denise Winterman

BBC News Magazine



Few people in the UK now have a clear view of the night sky because of light pollution. The fight is on to reclaim the stars, but what are the possible solutions?

Look at the sky at night and what do you see? Not much most probably. Even in the countryside the stars are becoming harder to spot, with the sky glow caused by light pollution now visible for up to 50 miles (80km).

Only one 10th of the country now enjoys a truly dark sky, says the Campaign to Protect Rural England (CPRE), which carries out an annual **star count**. In the 1950s most of us would have been able to see the **Milky Way**.

Because light at night has brought indisputable benefits, its use has expanded to the point where it is "inescapable", said a **Royal**

In today's
Magazine

Who owns the
Maasai 'brand'?

10 consequences of
the late spring

The world's highest
traffic jam

Bank holidays
around the world

24 January 2012 Last updated at 21:51



Praise for Surrey's new white street lights

Environmental campaigners have praised a project to install 88,000 new white street lights in Surrey.

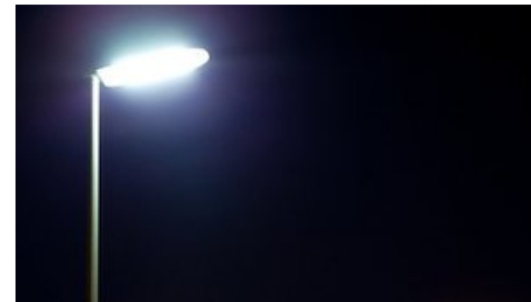
The Campaign to Protect Rural England said the new computer controlled lights would reduce light pollution.

Andy Smith said: "This is just the beginning but we look forward to a time when the night skies above Surrey are genuinely dark."

Surrey County Council said the project would save about £12m over the next 25 years.

The new white street lights direct the light downwards, unlike the orange lamps, and will reduce carbon emissions by 60,000 tonnes over 25 years, the council said.

"Our campaign against 'night blight' goes hand in hand with our work on landscape protection, de-cluttering the countryside," Mr Smith said.



The white street lights reduce light pollution by directing the light downwards

More on This Story

Related Stories

[Switch-off for stargazers in Somerset](#) 19 JANUARY 2012, UK

[Bright light, big pity](#) 18 JANUARY 2012, MAGAZINE

[On the trail of the Northern Lights](#) 25 DECEMBER 2011, MAGAZINE

Does street lighting
adaptation impact on
crime & road traffic
injury? We don't know.



Evidence?

Beyer FR, Ker K.

Street lighting for preventing road traffic injuries.

Cochrane Database of Systematic Reviews 2009, Issue 1.

Art. No.: CD004728. DOI:

10.1002/14651858.CD004728.pub2.

Welsh BC, Farrington DP.

Effects of improved street lighting on crime. *Campbell*

Systematic Reviews 2008:13 DOI: 10.4073/csr.2008.13

LONDON
SCHOOL of
HYGIENE
& TROPICAL
MEDICINE



Randomised controlled trials provide the highest level of evidence, but aren't always possible.



Adaptation of street
lighting across the
country is a 'Natural
Experiment'.

You are doing this!

LONDON
SCHOOL of
HYGIENE
& TROPICAL
MEDICINE



A single 'natural experiment' in one local authority setting may lack statistical power.



We need many local
authority settings, e.g.:
Rural & Urban,
Deprived & Affluent,
Residential & Business.

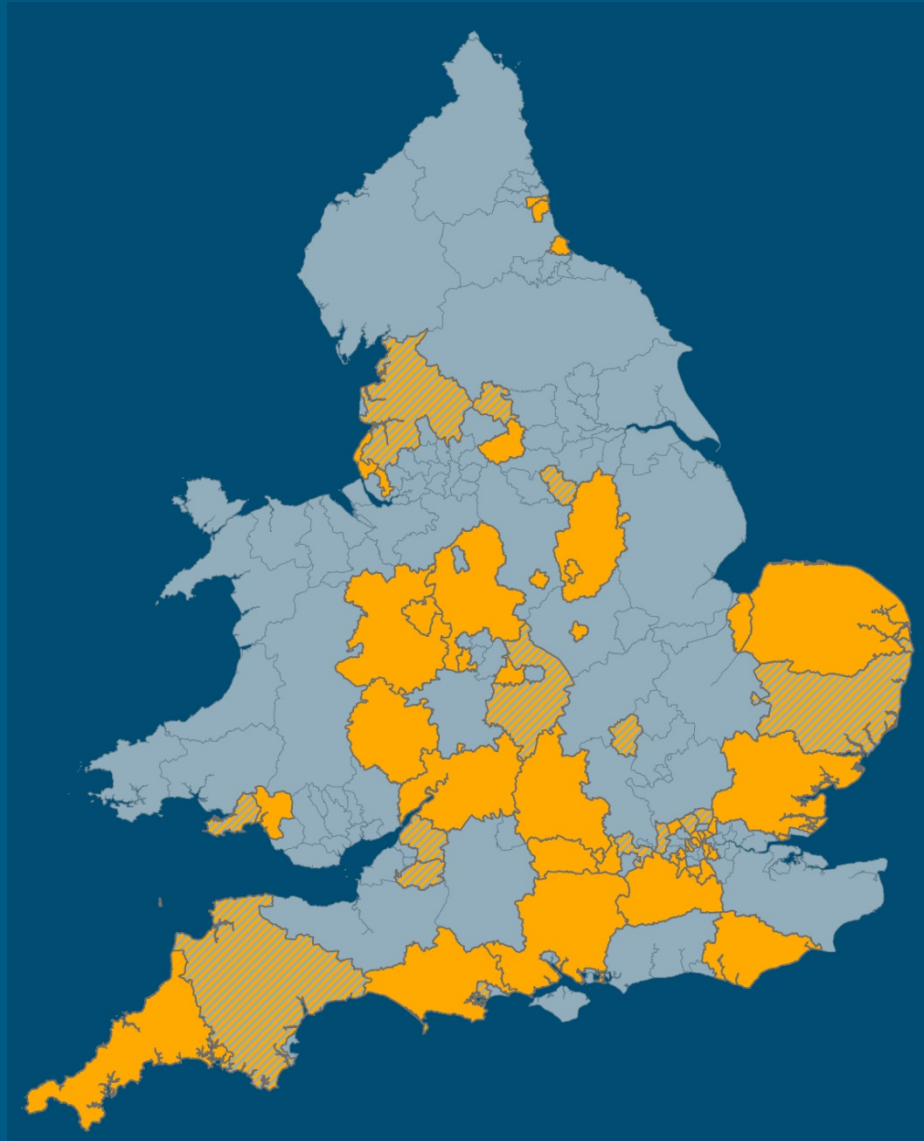


LANTERNS Project Aims

- To collate information on street lighting adaptation schemes nationally
- Statistically examine whether reduced lighting has any effects on traffic crashes or crime
- Explore local public opinion on street lighting provision, and potential for reducing levels
- Investigate whether street lighting adaptation schemes offer value for money

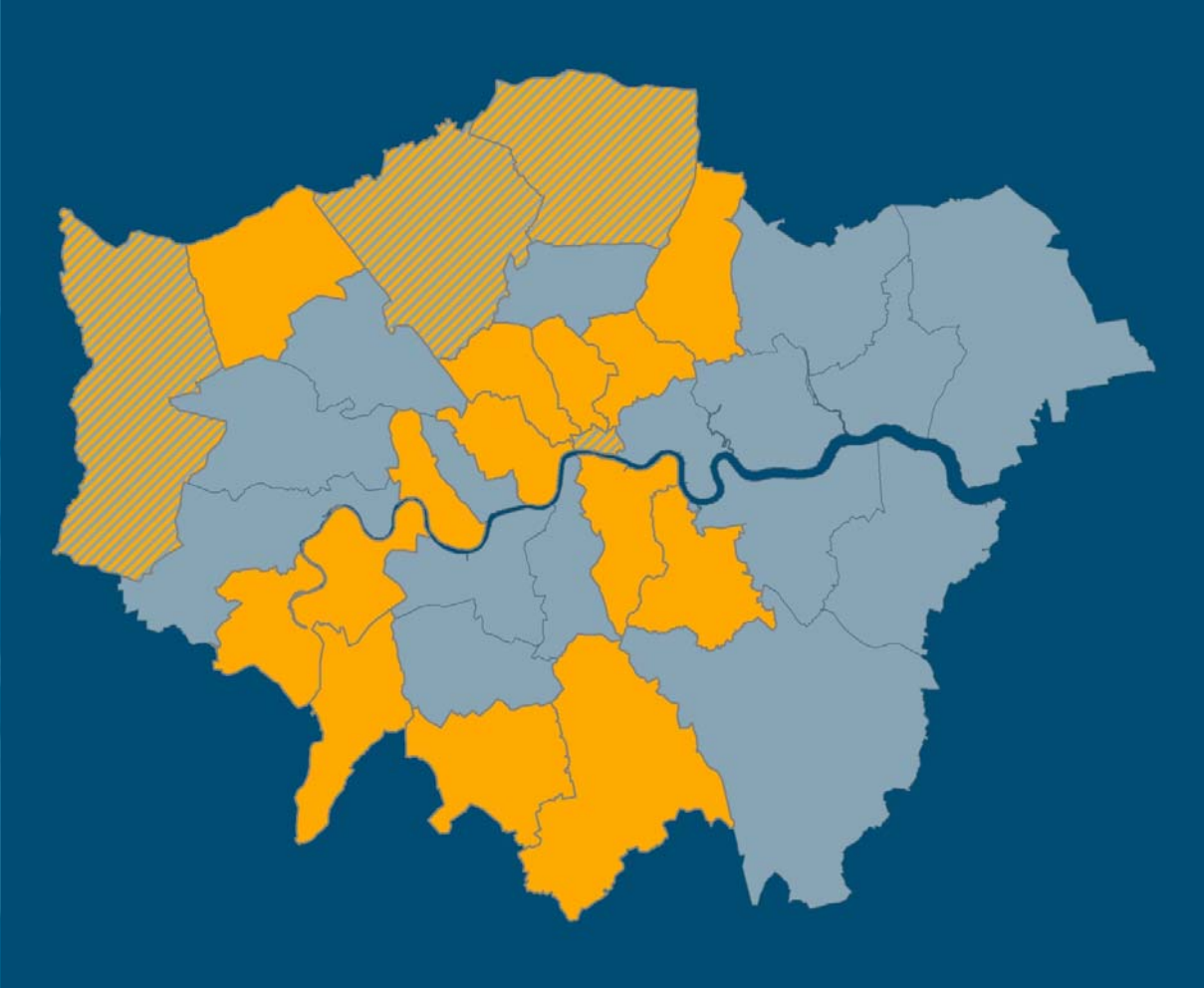


Data received so far..



LONDON
SCHOOL of
HYGIENE
& TROPICAL
MEDICINE

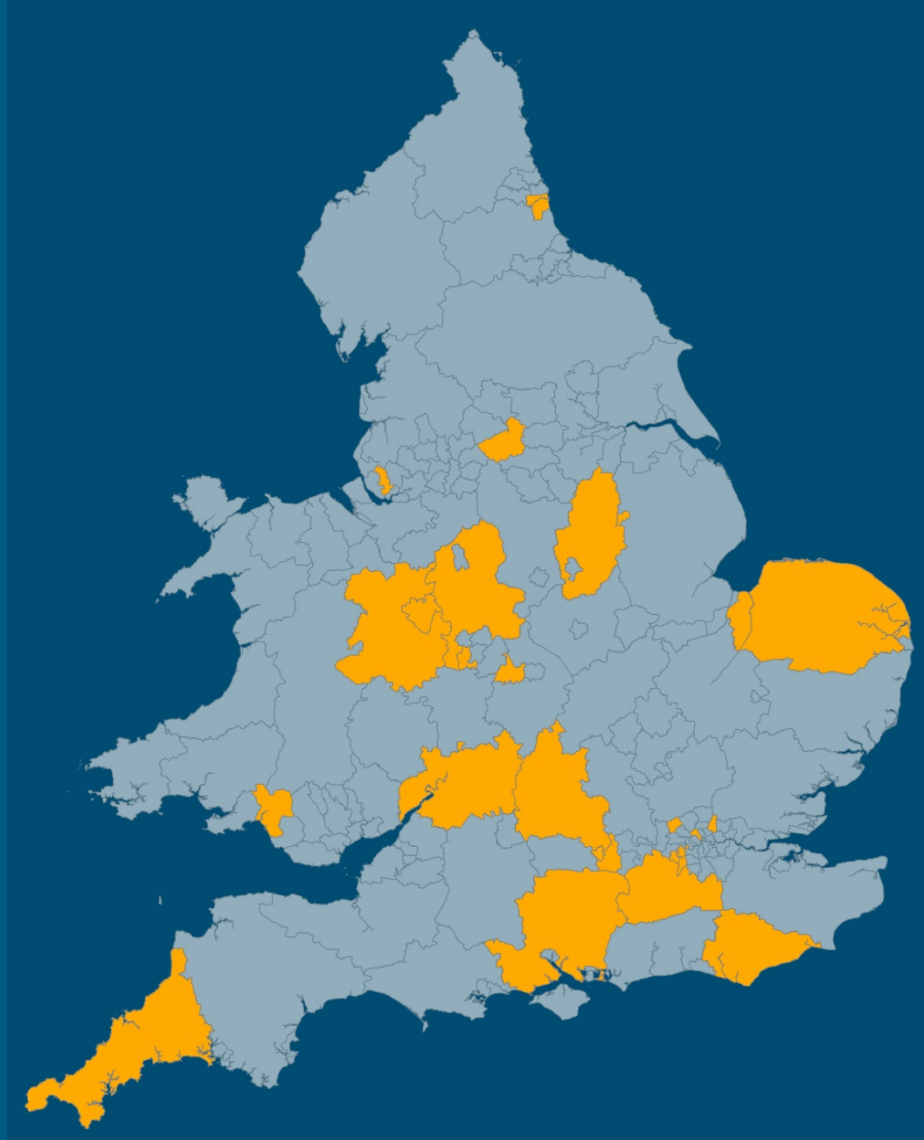




LONDON
SCHOOL of
HYGIENE
& TROPICAL
MEDICINE



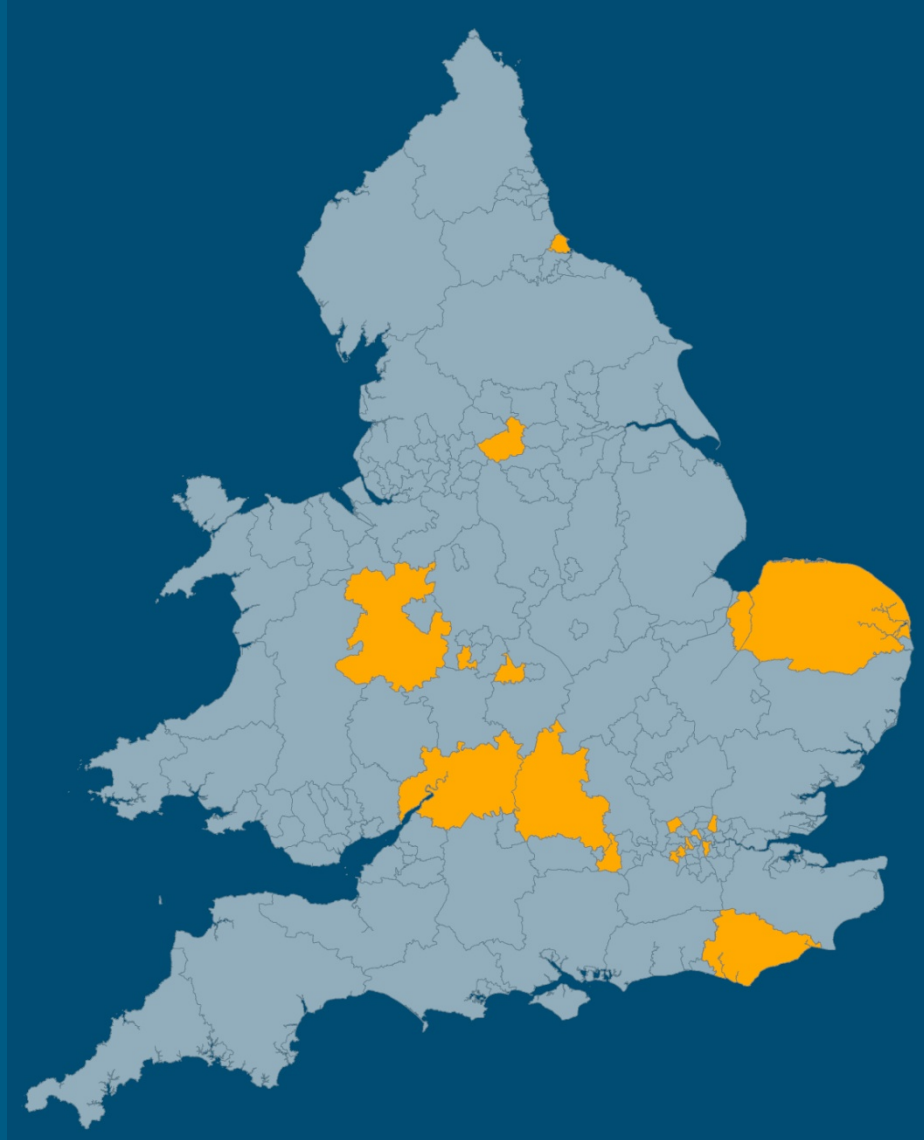
Dimming (24/42; 57%)



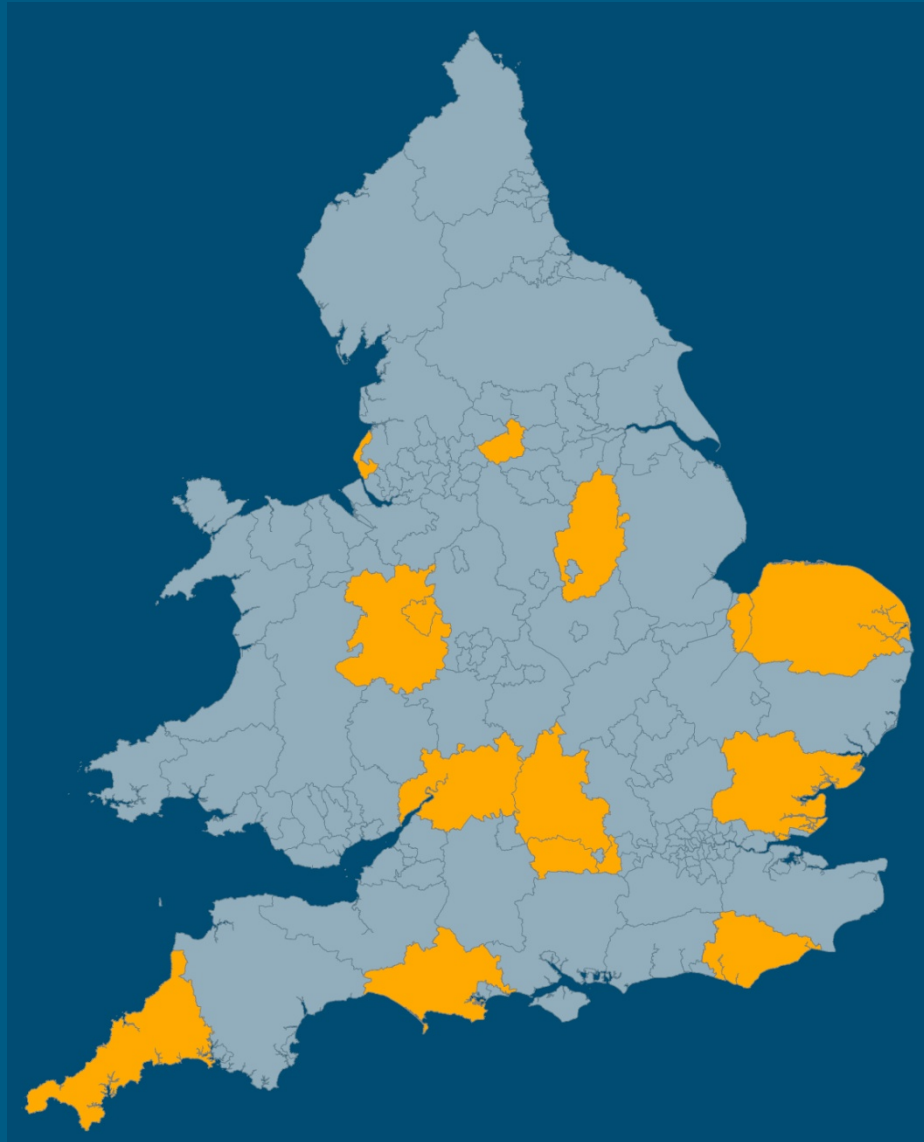
LONDON
SCHOOL of
HYGIENE
& TROPICAL
MEDICINE



Trimming (16/42; 38%)



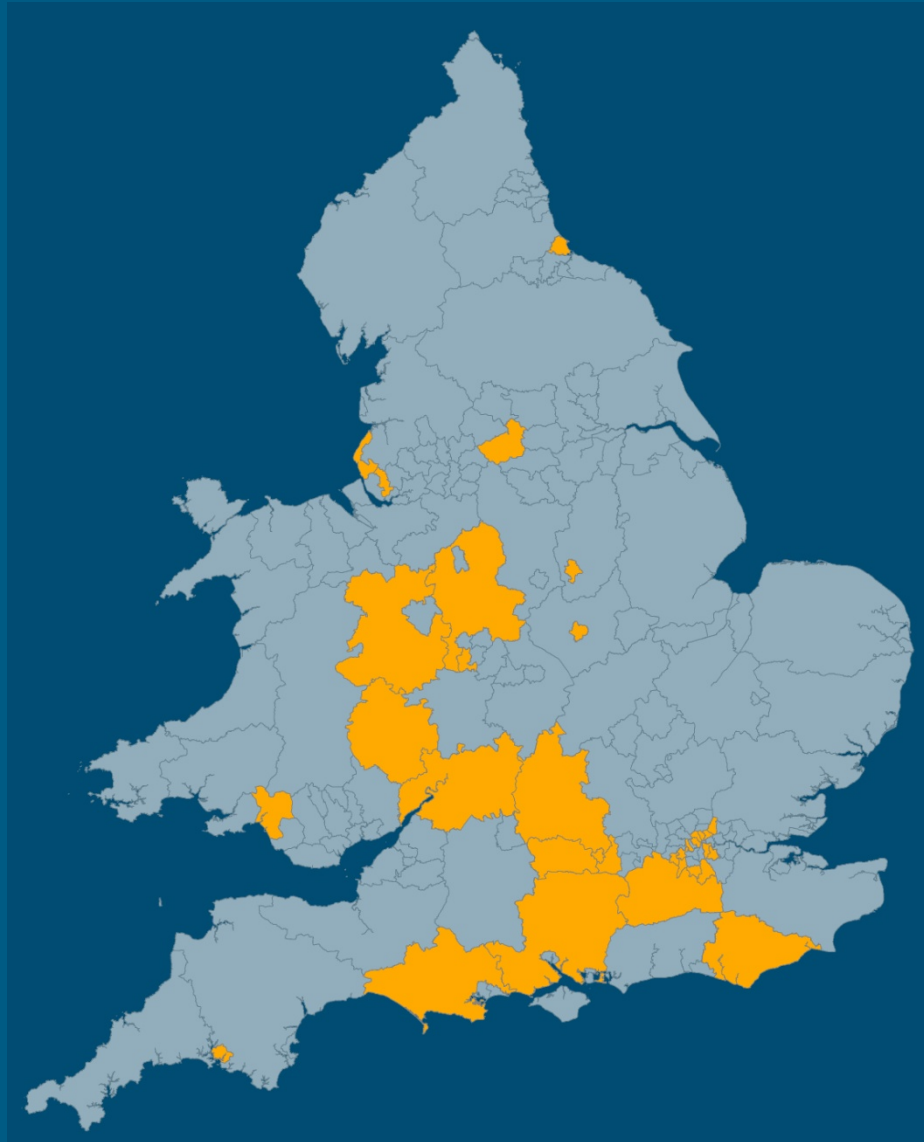
Part-night (14/42; 33%)



LONDON
SCHOOL of
HYGIENE
& TROPICAL
MEDICINE



White light (33/42; 79%)



LONDON
SCHOOL of
HYGIENE
& TROPICAL
MEDICINE



Example dataset required

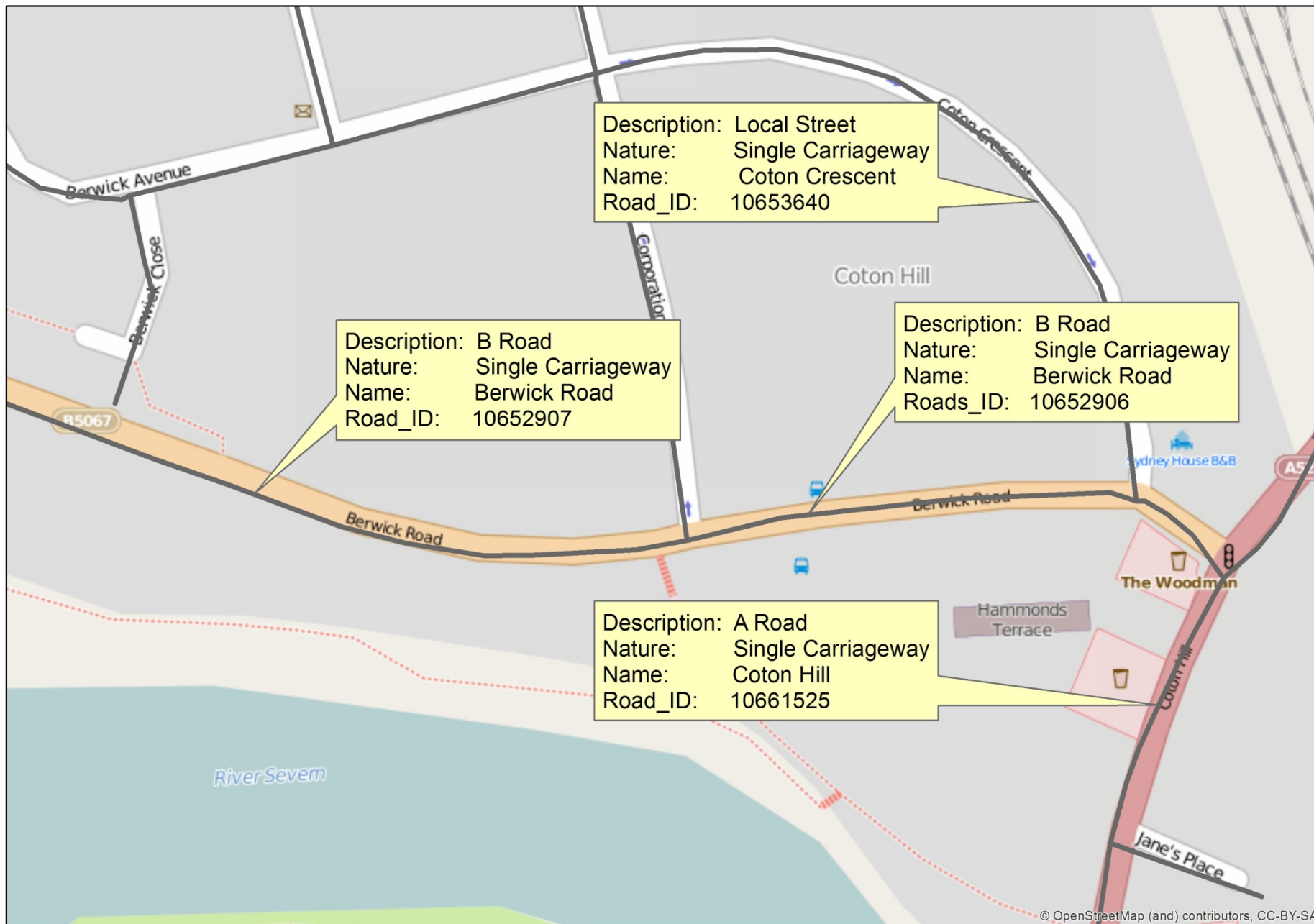
Column ID	Easting	Northing	Change	Regime	Date change applied
58	466015	174494	White Light	LED	03/02/2012
78	465885	173200	White Light	LED	26/03/2013
83	466006	174470	White Light	LED	03/02/2012
84	465977	174470	White Light	LED	03/02/2012
85	465958	174450	White Light	LED	03/02/2012
86	465973	174438	White Light	LED	03/02/2012
87	466001	174448	White Light	LED	03/02/2012
88	466034	174445	White Light	LED	03/02/2012
89	465937	174420	White Light	LED	03/02/2012
90	465927	174422	White Light	LED	03/02/2012
91	465922	174389	White Light	LED	03/02/2012
99	465544	174593	White Light	LED	30/01/2011
100	465584	174600	White Light	LED	30/01/2011
101	465512	174571	White Light	LED	30/01/2011
10207	464465	171217	Part-night lighting	00:00 to 05:30	24/02/2012
10208	464432	171206	Part-night lighting	00:00 to 05:30	24/02/2012
10209	464394	171191	Part-night lighting	00:00 to 05:30	24/02/2012
10210	464352	171170	Part-night lighting	00:00 to 05:30	24/02/2012
10211	464311	171145	Part-night lighting	00:00 to 05:30	24/02/2012
10212	464274	171119	Part-night lighting	00:00 to 05:30	24/02/2012
10213	464234	171085	Part-night lighting	00:00 to 05:30	24/02/2012
10214	464198	171049	Part-night lighting	00:00 to 05:30	24/02/2012
10207	464465	171217	Part-night lighting	00:00 to 05:30	24/02/2012
10208	464432	171206	Part-night lighting	00:00 to 05:30	24/02/2012





© OpenStreetMap (and) contributors, CC-BY-SA



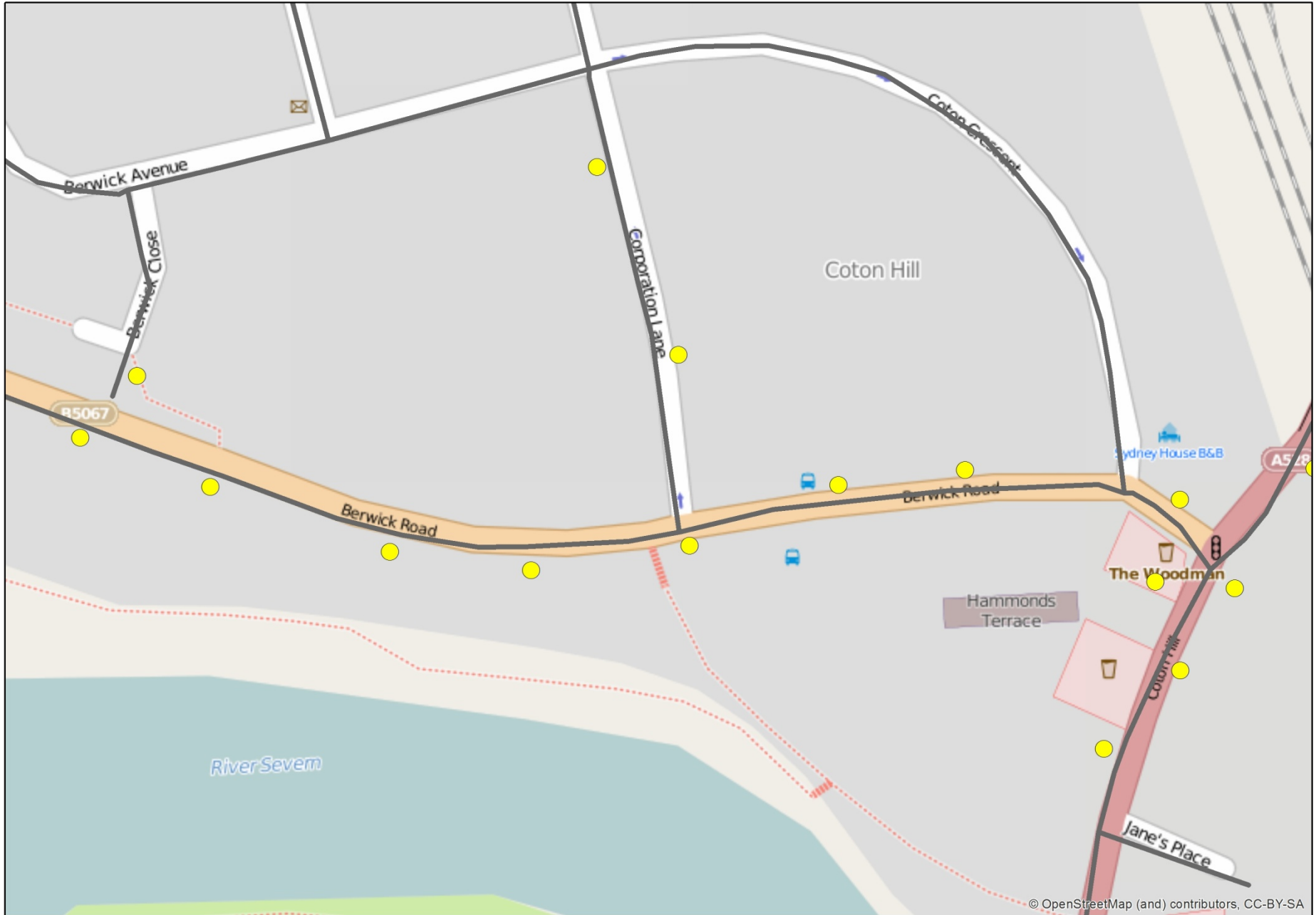


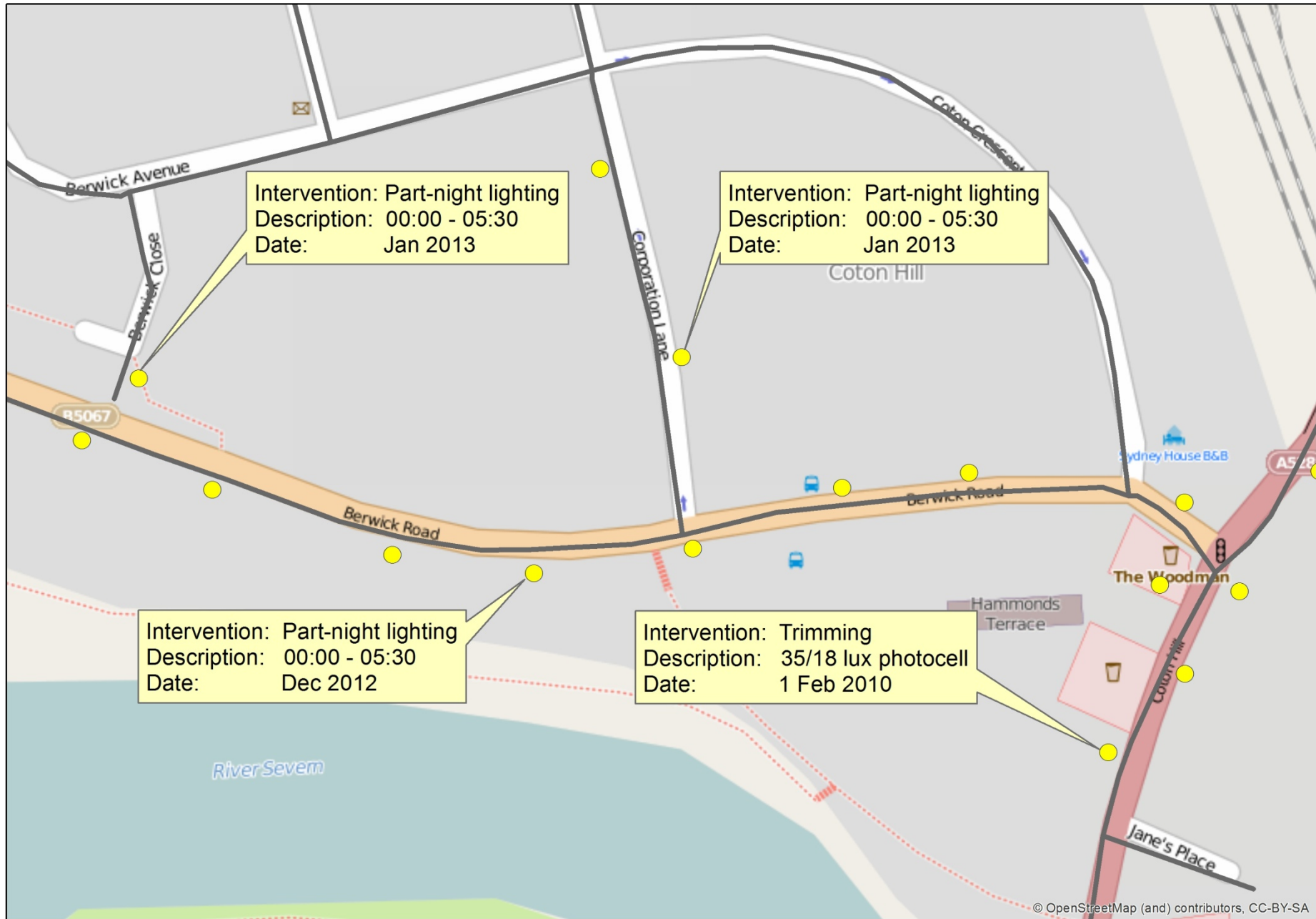
Description: Local Street
Nature: Single Carriageway
Name: Coton Crescent
Road_ID: 10653640

Description: B Road
Nature: Single Carriageway
Name: Berwick Road
Road_ID: 10652907

Description: B Road
Nature: Single Carriageway
Name: Berwick Road
Roads_ID: 10652906

Description: A Road
Nature: Single Carriageway
Name: Coton Hill
Road_ID: 10661525



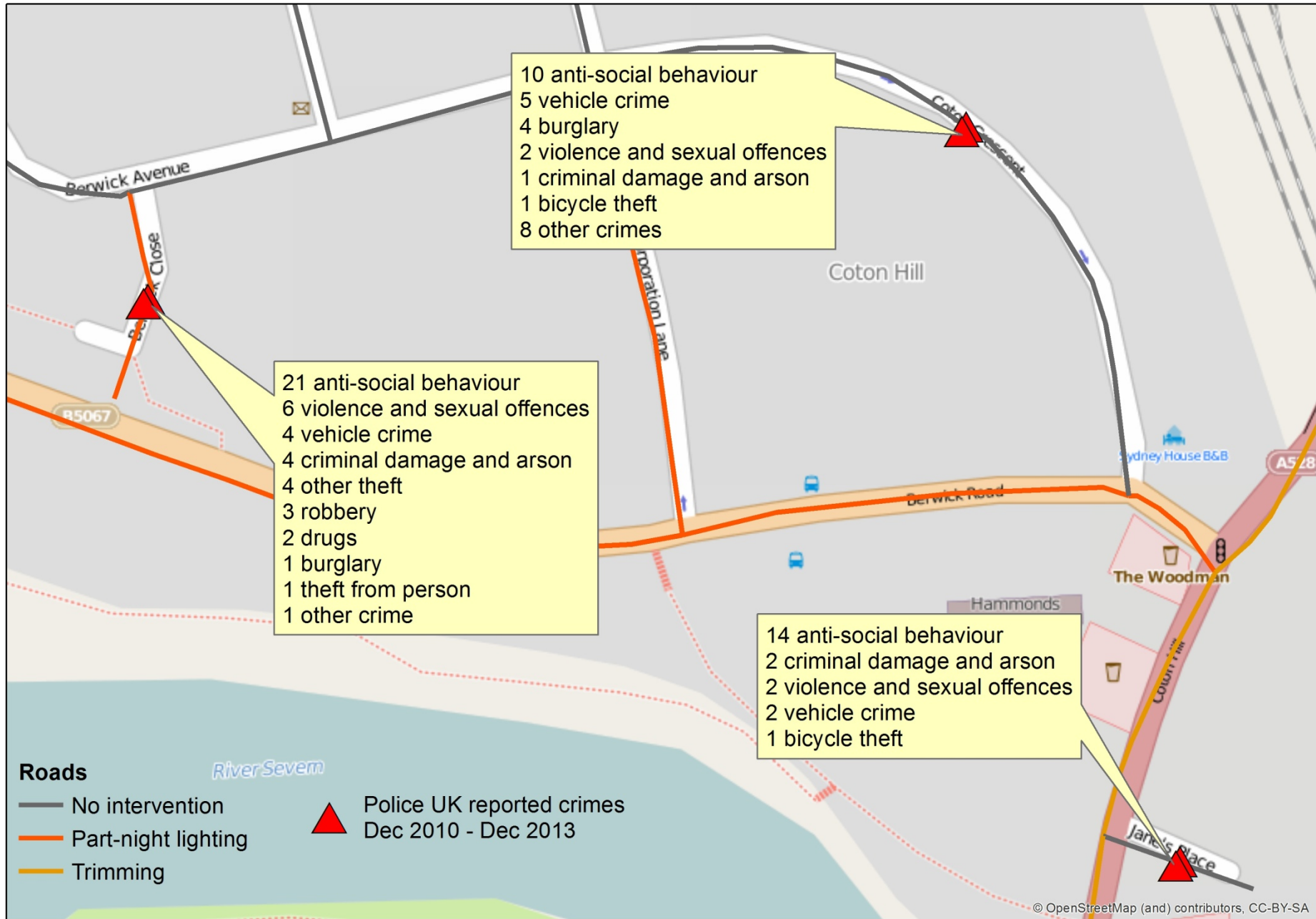


© OpenStreetMap (and) contributors, CC-BY-SA

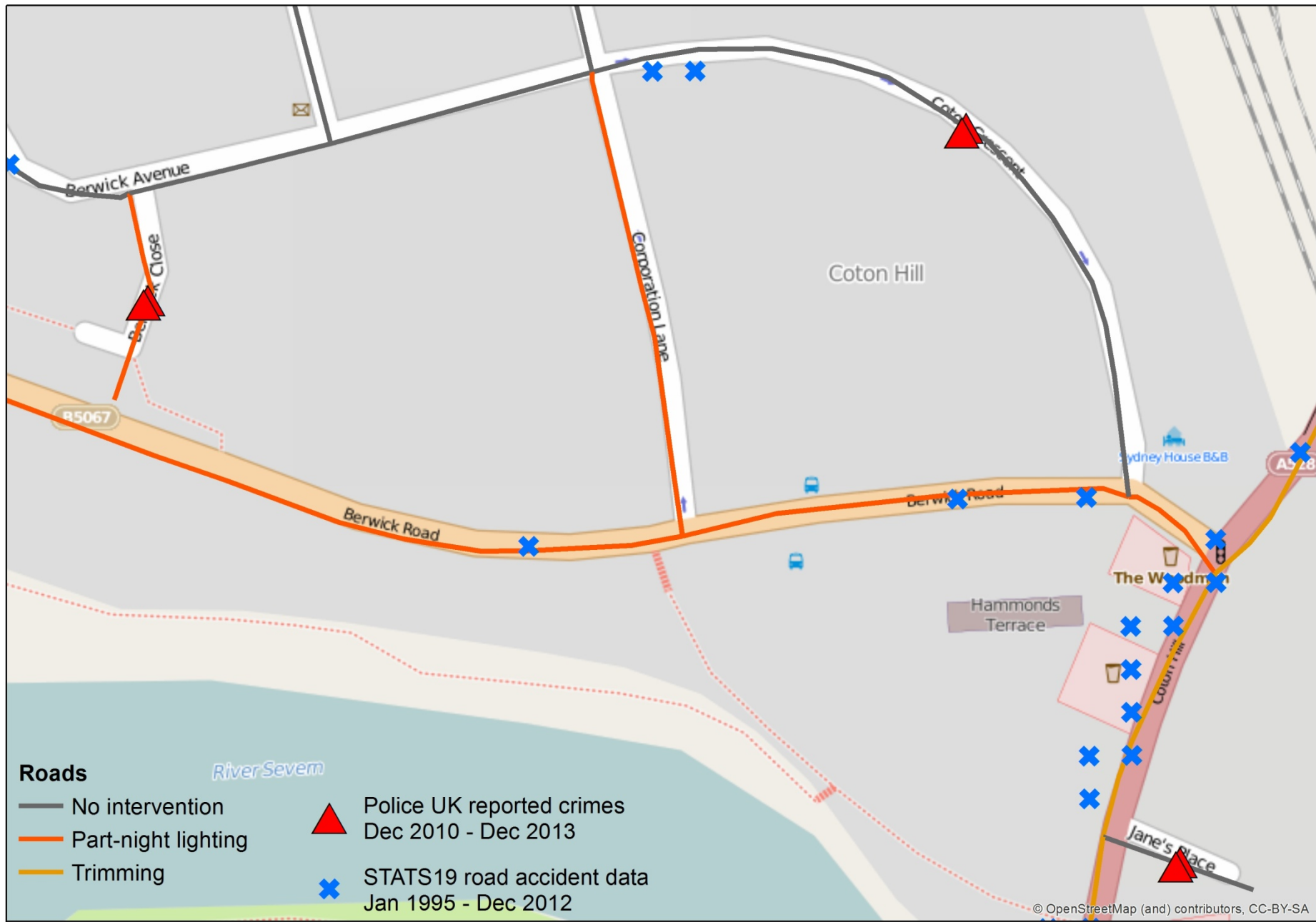


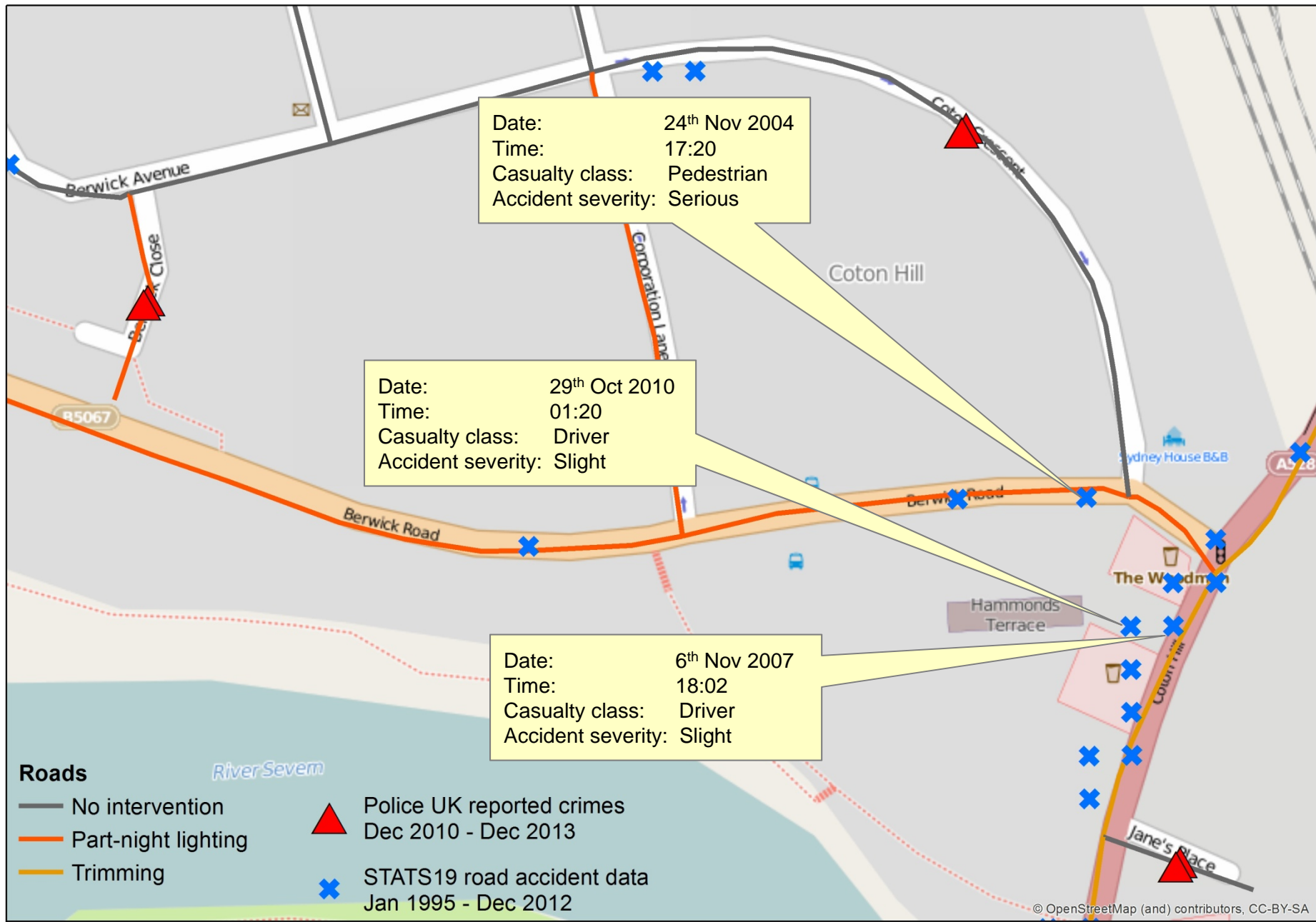




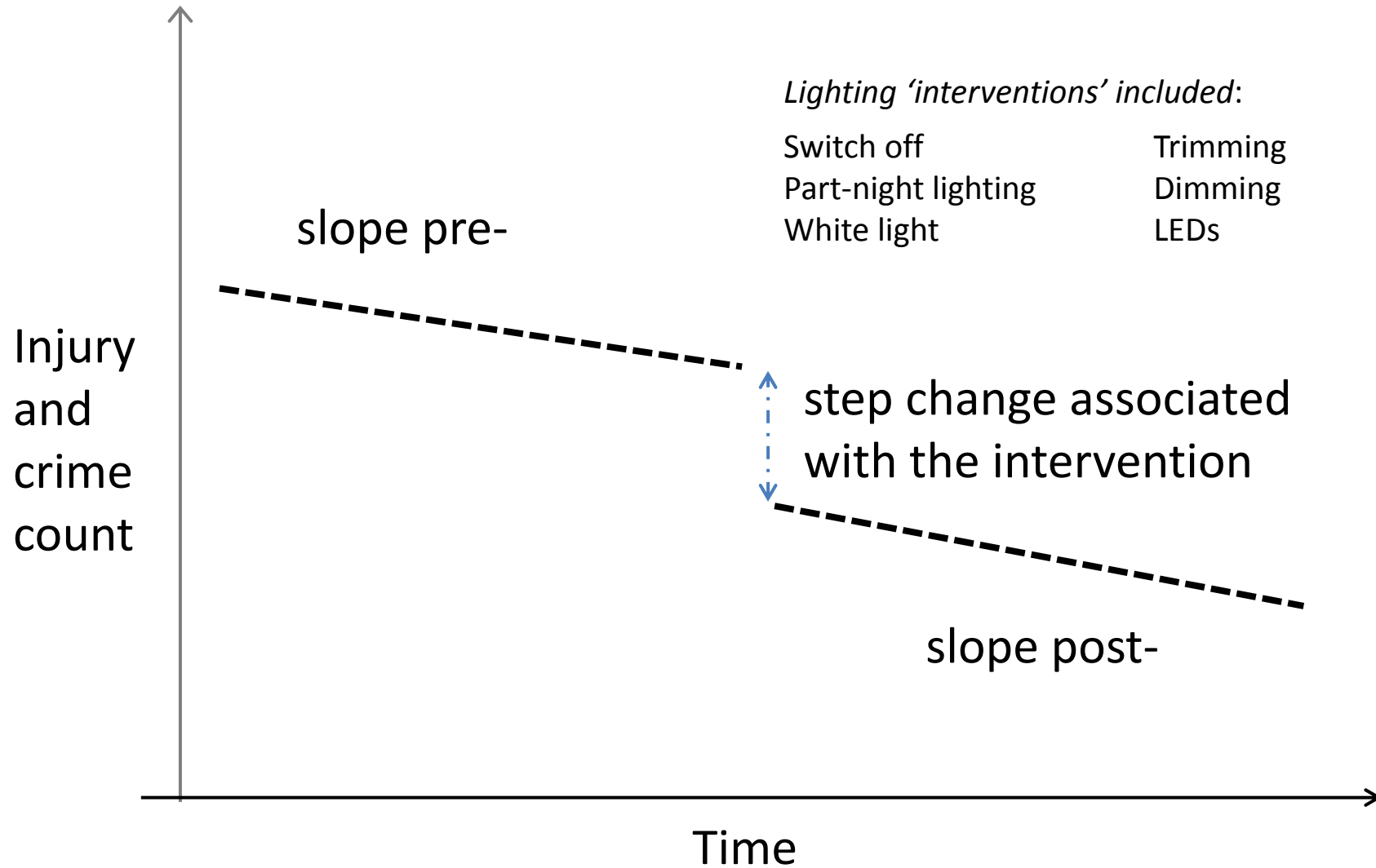


© OpenStreetMap (and) contributors, CC-BY-SA





Controlled interrupted time series model



$$Y_{s,t} \sim \text{Poisson}(\mu_{s,t})$$
$$\log(\mu_{s,t}) = \alpha_s + S(t, z_s) + \boldsymbol{\beta} \cdot \mathbf{x}_{s,t}$$

$y_{s,t}$ = number of casualties & crimes
in road segment 's' in year 't'

α_s = road segment effect

z_s = road segment characteristics

$S(t, z_s)$ = function of year to allow for
nationwide trends, dependent on
road segment characteristics

$\mathbf{x}_{s,t}$ = vector of indicator (0,1) variables
identifying road segments affected

$\boldsymbol{\beta}$ = vector of coefficients of effect of lighting
change on casualties and crimes

David Moore

Asset Manager, Reading
Borough Council

- *“Data gathering was a reasonable investment considering the potential benefits of the study. I would encourage other authorities to consider participating.”*

LONDON
SCHOOL of
HYGIENE
& TROPICAL
MEDICINE



David White

Street Lighting Asset
Manager, Royal Borough
of Kingston

- *“This is exactly the type of research that Local Authorities and the Street Lighting industry need to inform their policies and strategies. “*

LONDON
SCHOOL of
HYGIENE
& TROPICAL
MEDICINE



Michala Medcalf
Senior Technical
Administration Officer,
Derby City Council

- *“The street lighting industry is undergoing rapid changes and the LANTERNS project is providing a perfect forum to measure those changes.... the data we collected was relatively easy via Mayrise”*

LONDON
SCHOOL of
HYGIENE
& TROPICAL
MEDICINE



Dave Franks

Westminster City Council
& LoLEG Chair

- *“The LANTERNS Project is an opportunity to better understand the impact that recent decisions regarding illumination of our public realm have had on our society.”*

LONDON
SCHOOL of
HYGIENE
& TROPICAL
MEDICINE



Eddie Henry
Operations Manager,
London Borough of
Southwark

- *“The level of data being captured within the project will enable a far more in-depth understanding of what is being done across the country”*

LONDON
SCHOOL of
HYGIENE
& TROPICAL
MEDICINE



Does:

Switch off
Part night
Dimming
Trimming
White light

..or combinations
of these?

Cause any changes in:

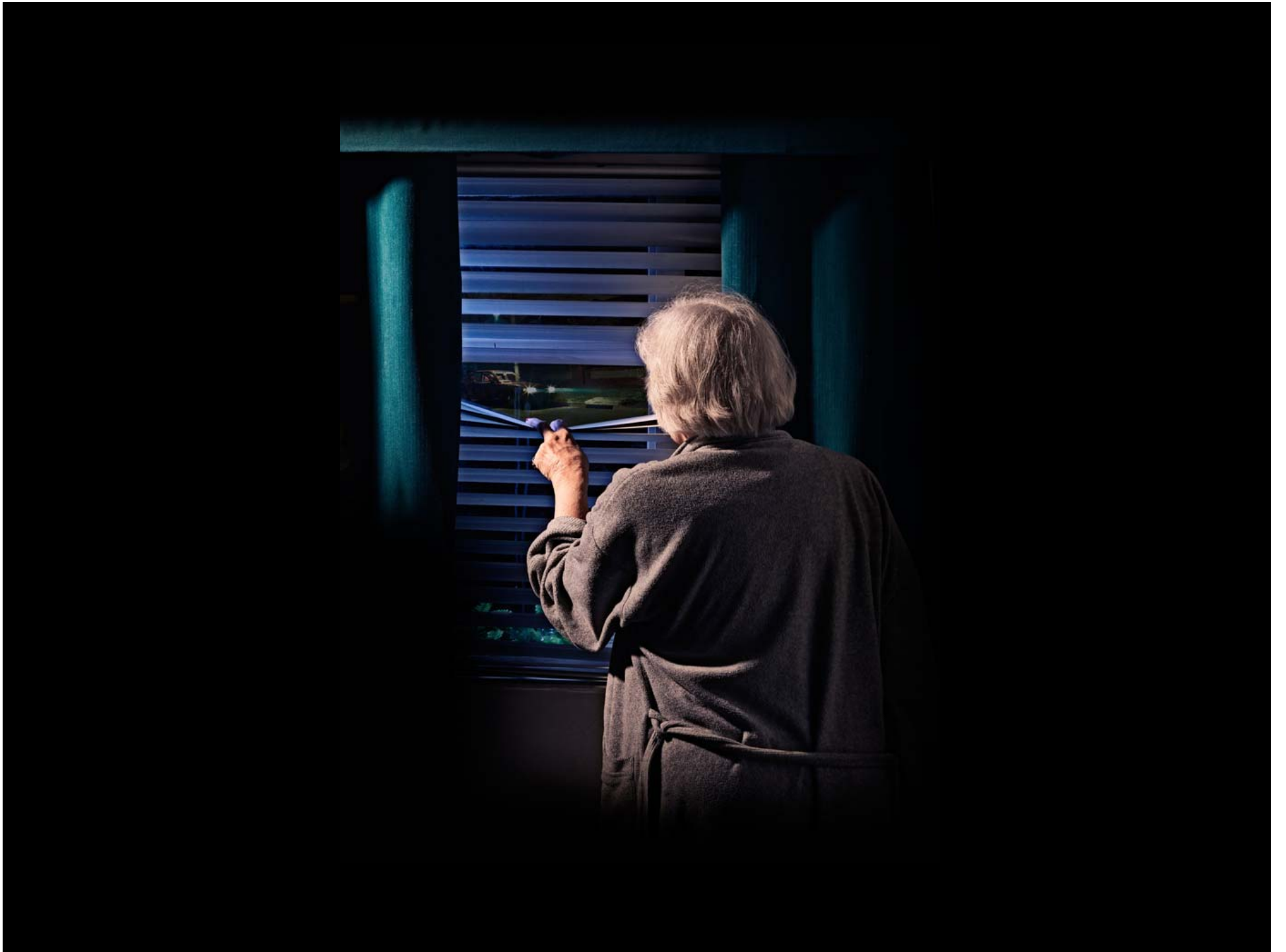
ROAD CASUALTIES

- Car occupant
- Pedestrian
- Motorcyclist
- Cyclists

CRIME

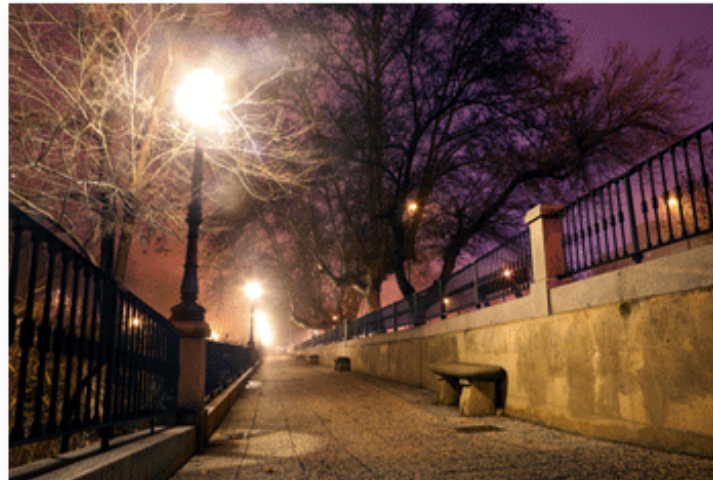
- Burglary
- Criminal Damage & Arson
- Vehicle Crime
- Violence & Sexual Offences
- Robbery





Laura Sharman 30 January 2014

Councils warned turning off street lighting is increasing fear of crime



In areas where street lights have been switched off or dimmed, 56% of women and 39% of men now feel less safe, according to a new survey.

A survey, conducted by the Neighbourhood & Home Watch Network (England & Wales) (NHWN) and Suzy







Survey of residents

Your Neighbourhood at Night



The University of London is conducting a national survey of neighbourhoods at night. We would like to know about your experiences of your street and neighbourhood, and some questions are about your street after dark.

Your street has been included to represent a range of different types of houses and streets.

Please can one adult from your household complete this short questionnaire. If there are 2 or more adults in your household, we would like the person who usually pays the bills to complete it.

Please answer the questions on pages 2, 3 and 4, and add any other comments you would like to make on the last page.

Please return it to us in the prepaid envelope, or give your answers online via our website:

<http://lanterns.lsh.uct.ac.uk/survey/>

By 'neighbourhood' we mean the streets within 10 minutes' walk of your home. For each question please tick one box.

1. Thinking about your neighbourhood in general, would you say that people can rely on each other for help?

Always Usually Rarely Never

2. Do you trust your local council to do its best for your neighbourhood?

Always Usually Rarely Never

3. Thinking about the spring and autumn periods, how often do you usually walk alone in your neighbourhood after dark?

At least once a week At least once a fortnight At least once a month Less than once a month Never

4. Thinking about the spring and autumn periods, how safe do you feel walking alone in your neighbourhood after dark?

Very safe Fairly safe A bit unsafe Very unsafe

5. Thinking about the spring and autumn periods, how safe do you feel driving home after dark?

Very safe Fairly safe A bit unsafe Very unsafe I don't drive

6. How worried are you about having your car stolen or broken into after dark in your neighbourhood?

Very worried Fairly worried Not very worried Not at all worried I don't have a car

Please continue with Question 7a

Please indicate how much you agree with the following statements:

7a. "There is enough street lighting to see clearly at night in my street"

Strongly agree Somewhat agree Slightly disagree Strongly disagree

7b. "Street lights outside my home keep me awake at night"

Strongly agree Somewhat agree Slightly disagree Strongly disagree

7c. "On a clear night, I can see the stars if I stand outside in my street"

Strongly agree Somewhat agree Slightly disagree Strongly disagree

7d. "It's important to me to be able to see the stars at night"

Strongly agree Somewhat agree Slightly disagree Strongly disagree

Thinking about your house or flat, have you or the owner done any of the following within the last two years?

8a. Installed any lights at the front or garden, to improve visibility or security? Yes No

8b. Installed any lights at the back or garden, to improve visibility or security? Yes No Not applicable

8c. Installed a burglar alarm? Yes No

8d. Made other improvements to the visibility of your front entrance? Yes No

Please add any further details you wish to include here:

Finally, about your experiences of being outside at night:

9. Has the number or brightness of street lights in your neighbourhood been reduced within the last few years?

Yes, in my street Yes, in streets nearby No Don't know

10. Do you carry a torch with you when you go out at night?

Always Usually Rarely Never

To help with our research, please give your age, sex and household size:

Your age: 16 to 24 25 to 44 45 to 64 65 or over

Sex: Male Female

Number of adults in household (including yourself):

Please add any other comments about your street or neighbourhood after dark:

Thank you for helping with our survey

We expect to have the results available at the end of 2014. You will be able to read about them on the website <http://lanterns.lshhtm.ac.uk>

Results due in 2014

PLEASE CONTACT US:

LANTERNS@LSHTM.ac.uk

Tel: 020 7958 8130

<http://LANTERNS.LSHTM.ac.uk/>

NHS
**National Institute for
Health Research**

The views and opinions expressed in this article are those of the authors and do not necessarily reflect those of the NIHR PHR Programme or the Department of Health.

 **UCL**

LONDON
SCHOOL of
HYGIENE
& TROPICAL
MEDICINE

