From: Sent:

26 January 2023 17:20

To:

Fuller, Gary

Cc:

Subject:

FW: ULEZ report

Hi Gary,

Here's the latest draft

ULEX 1 Year Report V5 GARY.docx

Speak tomorrow,

Thanks,



From:

Sent: 25 January 2023 17:38

To: Fuller, Gary

@imperid.ac.uk>

Cc:

@tfl.gov.uk>

Subject: ULEZ report

Hi Gary,

I think we promised you an updated version of the ULEZ report today but we've not had time to action all the comments yet so hopefully will be with you tomorrow instead.

(Also don't forget to send me a cost so I can get the PO done asap!)

@london.gov.uk>

Ta,

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london.gov.uk

@london.cov.uk

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From: Fuller, Gary @imperial.ac.uk> 23 January 2023 12:34 Sent: To: Cc Subject: Inner London ULEZ year 1 report Afternoon We had a really good meeting on the report last week covering methods, results and also the interpretation. The methods are as before and this is great. I saw some of your comments on the version of the report that was shared. I agree that the report would be much better if it had conclusions. Rather than take this as the bullets from the summary it would be good to synthesise the evidence from the different strands of the report. The different data sources align well to give a more complete view of the ULEZ effectiveness. In the comments on the report you raised a question about a media article on the first report. I was disappointed that the journo didn't check with me or TfL GLA to see if this was an over-interpretation. However, it does point to a likely perspective on this report. It would be good to ensure that this is covered explicitly rather than being left to the journalist to attempt to interpret themselves. I think the main message for inner London is the NO2 improvements and then step change in traffic composition before the ULEX start date and a sustained benefit since, with no disbenefit on the boundary or in outer London. There seems to be good evidence that the ULEX also led to improvements in the outer London fleet too and since ULEZ the rate of improvement in NO2 concentrations in outer London have matched those in inner London. I understand from that later drafts of the report have removed data on fleet and composition data from outer London. I think these are very much needed to fully describe the ULEX impacts and hence my email. The NO2 concentration results from the boundary roads are interesting. They seem to show a faster rate of decline compared with the inner and out London roads. I think there's more to think about on this point. are going to look at this more carefully before we meet again on Friday this week. Bye for now, Gary Dr Gary Fuller @imperial.a

Twitter: @drgaryfuller

Imperial profile page: https://www.imperial.ac.uk/people/q.fuller

UKRI Clean Air Champion: https://www.ukcleanair.org/about-us/clean-air-champions/

Guardian profile page: https://www.theguardian.com/profile/gary-fuller

Fuller, Gary @imperial.ac.uk> From: 21 June 2022 15:40 Sent: To: Subject: RE: ULEZ 6 month report data analysis review OK. I'll send a link in a moment. Gary @london.gov.uk> From: Sent: 21 June 2022 15:21 @tfl.gov.uk>; | To: Fuller, Gary @imperial.ac.uk>; @tfl.gov.uk> Subject: FW: ULEZ 6 month report data analysis review Actually just thought someone best do the meeting invite as if I do it and don't attend you may well all just be left waiting in the lobby... Thanks, From: Sent: 21 June 2022 15:19 To: Fuller, Gary @imperial.ac.uk>; @tfl.gov.uk>; @tfl.gov.uk> @london.cov.uk> Cc: Subject: RE: ULEZ 6 month report data analysis review Hi Gary, Thanks very much for joining us earlier and giving us your very helpful thoughts on this! The notes are great and I think they match with mine. The time period we're looking to is up until the end of May 2022. I'll send over a meeting invite for the 4th July though I won't be able to attend and we will email you any queries in the mean time. Kind Regards,

From: Fuller, Gary @imperial.ac.uk>
Sent: 21 June 2022 12:50

To: @london.qov.uk>;
@tfl.gov.uk>
Cc: @london.qov.uk>
Subject: RE: ULEZ 6 month report data analysis review

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Hi everyone,

I enjoyed talking earlier.

I think the big decision of the day was to set out a priori what our analysis approach would be. This is a discipline from my epidemiological colleagues and it ensures that the analysis doesn't become bias or skewed towards positive or negative findings as we go along and avoids subjective decisions down the line. My notes for the air pollution measurement analysis are:

Analysis will only be on measurements from EU reference equipment run to AURN/ LAQN QA/QC.

General trends for inner, outer London will be done as before. This question relates to changes in concentrations and exposure for Londoners and is a separate question to determining the impact of the ULEZ.

For the impact of the LEZ:

Main analysis:

Time period: 2010 to latest available (we didn't discuss ratified and unratified but data is ratified up to end of 2021 at the moment. In my view it is fine to include unratified data as long as this is clear in figures, tables, text and discussion).

Sites that operated before 2021, with at least one year of data. Sites that that either opened or closed in 2021 are excluded since these site changes may induce changes in the critical 2021 year. Roadside and kerbside sites included to create a traffic increment metric.

Sites around Heathrow excluded from the traffic and background sets – the largest decreases in NO2 during lockdowns were found around both Gatwick and Heathrow and activity has not returned to normal. We wish to avoid a Heathrow effect causing bias in the analysis.

Results will be produced for inside and outside the ULEZ zones. The boundary roads will not be included in analysis as inside or outside and will be a specific "area" in their own right.

Back ground sites to include all those in outer London to create an increment, excluding those near Heathrow.

Counterfactual – this was discussed but we didn't reach formal decision. I think we decided to use the roadside increment in outer London as our counterfactual but also to seek other counterfactuals from cities outside London that have not implemented ULEZ/ CAZ or similar. We accept that no city is like London in terms of buses, vehicle age, petrol / diesel mix etc but outer London is more similar to other cities than central London is. Outside London, measurements are sparse so it may not be possible to find a city where a traffic increment can be calculated. In this new analysis, the counterfactuals will be more important than they were for the central London ULEZ since they will be not just an indicator of the natural fleet turnover bit also as an indicator for changes due to COVID.

Sensitivity analysis (each done singularly):

To include those sites that opened or closed in 2021.

To only have sites with at least three year's data capture.

To include the near-Heathrow sites

To exclude kerbside and do analysis on roadside rather than traffic increment only.

Although not strictly a sensitivity on the main analysis, a separate analysis may be required for the sites near Heathrow only to aid interpretation.

Does this match everyone else's notes? I'll leave it to you to produce and send round a final set of a priori decisions.

I will be travelling next week to Ireland for a PhD viva and for meetings. It is unlikely that we can meet virtually but I will be collecting my emails when I can. We planned a meeting for 9am 4th July. Would someone send a link please. delayed me starting the paperwork on costing but you suggested that I cost for a max of four days input, although we expect total time to be less.

Thanks and bye for now,

Gary



Imperial profile page: https://www.imperial.ac.uk/people/q.fuller

UKRI Clean Air Champion: https://www.ukcleanair.org/about-us/clean-air-champions/

Guardian profile page: https://www.theguardian.com/profile/gary-fuller

-----Original Appointment-----@london.gov.uk> From: Sent: 14 June 2022 09:25 To:

; Fuller, Gary;

Cc:

Subject: FW: ULEZ 6 month report data analysis review

When: 21 June 2022 09:15-10:15 (UTC+00:00) Dublin, Edinburgh, Lisbon, London.

Where: Microsoft Teams Meeting

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Morning,

Are you able to join us this morning?

Thanks,

----Original Appointment----

From: Sent: 14 June 2022 09:25

@imperial.ac.uk; To:

; Fuller, Gary Cc:

Subject: ULEZ 6 month report data analysis review

When: 21 June 2022 09:15-10:15 (UTC+00:00) Dublin, Edinburgh, Lisbon, London.

Where: Microsoft Teams Meeting

Microsoft Teams meeting

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 From:
 @london.gov.uk>

 Sent:
 15 July 2022 17:17

 To:
 Fuller, Gary

 Cc:
 ;

 Subject:
 RE: ULEZ analysis

Hi Gary,

That's great, thanks for the feedback. I'll add your point below to the methodology as it is a good explanation.

Many thanks,



From: Fuller, Gary < @imperial.ac.uk>
Sent: 15 July 2022 17:14

To: @london.gov.uk>
Cc: @london.gov.uk>; @london.gov.uk>
Subject: RE: ULEZ analysis

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Hi,

Glad that my comments were useful.

Thanks for sharing these the 0.375 figures. I'm happy to go with your use of 0.5 with these. I agree that the smoothing is better. The difference between the percentage change is not large.

I suppose we could frame it that we used 0.5 in the central London LEZ and it only the need to reflect the COVID changes in central London that required us to diverge from this.

Bye for now,

Gary



@drgaryfuller

Imperial profile page: https://www.imperial.ac.uk/people/q.fuller

UKRI Clean Air Champion: https://www.ukcleanair.org/about-us/clean-air-champions/

Guardian profile page: https://www.theguardian.com/profile/gary-fuller

From: @london.gov.uk>

Sent: 15 July 2022 12:23

To: Fuller, Gary @imperial.ac.uk>

Cc: @london.gov.uk>;

Subject: RE: ULEZ analysis

Hi Garry

Thanks very much for your comments/edits, al very helpful!

One question re the use of 0.5 span for the boundary roads rather than 0.375 like the rest, I've attached the graphs for the 0.375 span – we thought not smoothed enough, especially hangar lane one. Using 0.375 span would have given a 21% impact for both groups rather than 24% for group 1 and 17% for group as with 0.5 used in the report.

We'd be keen to get your thoughts on using the attached instead though I appreciate you have other things on!

Thanks,



From: Fuller, Gary @imperial.ac.uk>

Sent: 15 July 2022 08:07

To: @london.gov.uk>
Cc: @london.gov.uk>

Subject: RE: ULEZ analysis

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I didn't get time to review the whole report but I looked at the air pollution sections. The analysis is sound. I made some comments on the text, some suggested track changes and highlighted some errors. I hope these are all helpful.

Let me know if you have any questions.

I'll try to dip into my emails when I can. I'm tied up in meetings in London on Monday and Tuesday.

Bye for now,

Gary



@drgaryfuller

Imperial profile page: https://www.imperial.ac.uk/people/q.fuller

UKRI Clean Air Champion: https://www.ukcleanair.org/about-us/clean-air-champions/

Guardian profile page: https://www.theguardian.com/profile/gary-fuller

From: @london.gov.uk>

Sent: 14 July 2022 13:20

To: Fuller, Gary < @imperial.ac.uk>

Cc: @london.gov.uk>

Subject: FW: ULEZ analysis

Importance: High

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Sorry that should have said 12pm tomorrow! (Friday)

Thanks,

From: Sent: 14 July 2022 13:17

To: @imperial.ac.uk

Cc: @london.gov.uk>; @tfl.gov.uk>;

Subject: FW: ULEZ analysis

Hi Gary,

I should have mentioned in the previous email that we have a very tight turnaround on this with it being published on Tuesday now so any comments by 12pm would be most gratefully received! I've attached the most recent version of the report.

Many thanks,

From:

Sent: 13 July 2022 09:33

To: Fuller, Gary

Cc: @london.gov.uk>;

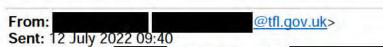
@tfl.gov.uk>	@london.qov.uk>;
@tfl.gov.uk>	

Subject: RE: ULEZ analysis

Hi Gary,

See attached for the draft report as it is – still a bit of work to do and it is missing emissions, but we'd be grateful for your feedback.

Thanks,



To: Fuller, Gary

@imperial.ac.uk>;

@london.gov.uk>;

@london.gov.uk>;

@london.gov.uk>;

Subject: RE: ULEZ analysis

Hi Gary

I think the report is going to be circulated today for first review – I am having problems with the emissions calculations though so progress on this bit has been frustrating and I will have to make a decision as to what to included later today.

We settled for 0.375 constant – which gave a good balance of representing the pandemic curve and recent patterns but also reduced the 2012 dip somewhat.

Overall – means we will says 20% reduction in inner London roadside (we had 24% previously). Also checking back up the curve shows that we still get very similar results to the first round of analysis (not exactly but v close).

We can confirm constants for pm2.5 and for boundary roads – as were looking at these.

Unfortunately I am currently stuck on a train and cant access the files to send through to you – but hoping that would be able to do this.

Really thanks for your help with this – I think much of the "cool" stuff I showed you might never make to reports but will try eventually!!

Thanks

From: Fuller, Gary @imperial.ac.uk>

Sent: 12 July 2022 07:25

To: @london.gov.uk>; @london.gov.uk>; @london.gov.uk;

@london.gov.uk>; @tfl.gov.uk>

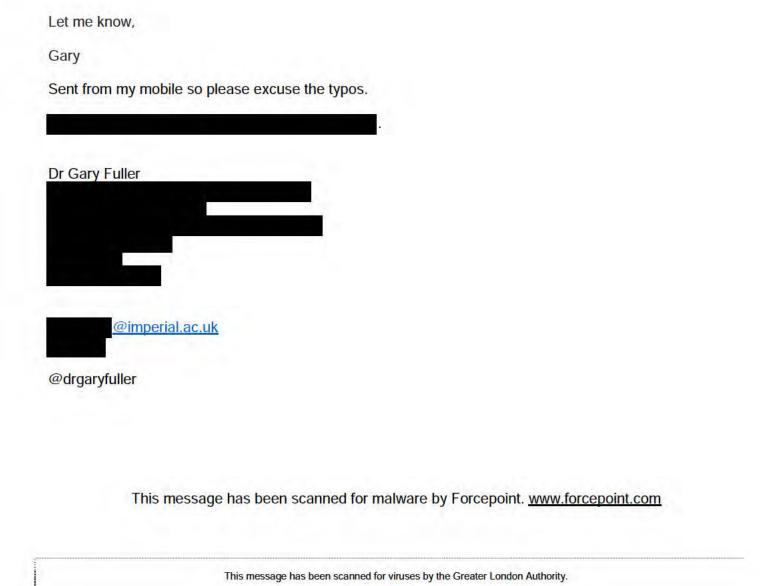
Subject: ULEZ analysis

Morning all,

I hope the presentation to the higher ups went well at the end of last week. It was shaping up nicely when and I talked.

Is there any feedback that we need to think about?

Was there any further improvement from changing the Constantine the Loess smoothing?



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From: Fuller, Gary @imperial.ac.uk>

Sent: 17 January 2023 12:31

To:

Cc: Subject:

RE: ULEZ analysis review

Great - I'll send round a link for Friday.

Ta

Gary

From: @london.gov.uk>

Sent: 17 January 2023 11:35

To: Fuller, Gary @imperial.ac.uk>
Cc: @dfl.gov.uk>

Subject: FW: ULEZ analysis review

Hi

Please see the link for the latest draft.

ULEX 1 Year Report V4 Clean for Gary.docx

Note we've kept the concentrations methodology the same as the 6 month report for consistency.

Thanks,



From: Sent: 17 January 2023 11:23

To: @imperial.ac.t >

Subject: RE: ULEZ analysis review

Hi Gary,

Thanks for getting back to us.

I'll send you a clean copy of the report as is shortly.

Do you know what the comment was from the journo?

11-2 works for me too on Friday.

Many thanks,

From: @tfl.gov.uk>

Sent: 17 January 2023 10:10

To: 'Fuller, Gary' @imperial.ac.uk>;

Subject: RE: ULEZ analysis review

Hi

I can currently do something between 11 and 2pm on Friday.

Thanks

From: Fuller, Gary < @imperial.ac.uk>

Sent: 17 January 2023 08:42

To: <u>@london.gov.uk</u>>;

Subject: Re: ULEZ analysis review

PS. How are you fixed for meeting on Friday this week or Monday next week?

Sent from my phone so please excuse the typos.

Dr Gary Fuller

Email: @imperial.ac.uk (

Twitter: @drgaryfuller

Imperial profile page: https://www.imperial.ac.uk/people/g.fuller

UKRI Clean Air Champion: https://www.ukcleanair.org/about-us/clean-air-champions/

Guardian profile page: https://www.theguardian.com/profile/gary-fuller

From: Fuller, Gary

Sent: Tuesday, January 17, 2023 8:19:40 AM

To: @london.gov.uk>; < tfl.gov.uk>

Subject: RE: ULEZ analysis review

Morning both,

I'm really pushed for time too, mostly due to work for . Would you be able to send it over today. I'm in the office and may get the chance to print any sections that need a detailed read. We should also meet up for you to talk me through the analysis and we can discuss any problems.

It would be interesting to revisit the sensitivity analysis around the LOAS smoothing window. An interesting point was raised by a journo at the Standard following the last report. I was disappointed that he didn't contact you or me to see if his observation and what he implied was supported by the analysis.

and colleagues here have looking at the ULEZ separately for another project. I think they've talked to you or colleagues. I'll check in with them to see how this analysis is going. My last conversation with them was a passing chat in a corridor just before Christmas.

I'll try to sort a quote with IPROJ today. This will cover both the review of the current report and the last one, even though the dates will be a bit vague in the quote to avoid getting mixed up with a retrospective quote.

Thanks,

Gary

From: @london.gov,uk>

Sent: 16 January 2023 10:21

To: @tfl.qov.uk>; Fuller, Gary @imperial.ac.uk>

Subject: RE: ULEZ analysis review

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Hi Gary,

Thanks for getting back in touch about this. As mentioned we're very tight on time now though, could you let me know today if you'll have time to review it this week (next week at the latest would be in time for the 2nd review by deputy Mayors)?

And let me know the updated cost as per below and I'll arrange the PO.

Many thanks,

From: < <u>@tfl.qov.uk</u>>

Sent: 13 January 2023 16:35

To: Fuller, Gary < @imperial.ac.uk>

Cc: @london.qov.uk>

Subject: RE: ULEZ analysis review

Hi Gary

Happy New Year to you too!

We are almost finished the 1 year report – and of course time has massively caught up with us.

I have some further info to add on emissions and then it will be ready for you to take a look through as well.

Its going to deputy majors end of next week – so if its okay we will send it to you early next week for you to take a look through.

On costs – rather presumptuous of me but I don't think there will be even 5 days available – so if you could assume 3 – so 8 in total?

will handle to po etc.

Let me know if this sounds okay.

Thanks

From: Fuller, Gary @imperial.ac.uk>

Sent: 09 January 2023 23:19

To: @tfl.gov.uk>

Subject: ULEZ analysis review

Hi

Happy New Year.

Sorry for my tardiness with sorting a costing for the review of the expanded ULEZ analysis. Following guidance from you and we've prepared a quote to cover 10 days of my time for the review of the first report and the review of a second one. Is this coming up soon?

I'm not allowed to give costs but let's just say that the total cost looks to be around £10,035 +VAT.

I hope that this is OK. If so I'll get IPROJ to send over a quote and firm price agreement.

Bye for now,

Gary



Twitter: @drgaryfuller

Imperial profile page: https://www.imperial.ac.uk/people/g.fuller

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@london.gov.uk> From: 14 June 2022 09:24 Sent: To: Fuller, Gary Cc: RE: ULEZ expansion 6 month report data analysis check Subject: Morning, That also works for me. I'll send an invite and a teams link. Thanks, @tfl.gov.uk> From: Sent: 13 June 2022 09:41 To: Fuller, Gary @imperial.ac.uk>; @london.gov.uk> @london.gov.uk>} @tfl.gov.uk> Subject: RE: ULEZ expansion 6 month report data analysis check 21st from 9.15 would work for me – assuming on teams due to rail strikes. From: Fuller, Gary @imperial.ac.uk> Sent: 10 June 2022 17:33 To: @london.gov.uk> Cc: @tfl.gov.uk>; @london.gov.uk>; @ff.gov.uK> Subject: RE: ULEZ expansion 6 month report data analysis check Hi - 23rd and 24th are blocked off for interviews. Morning of 21st would be best. Would 9 am work? Gary From: @london.gov.uk> Sent: 10 June 2022 15:55 To: Fuller, Gary @imperial.ac.uk> @tfl.gov.uk>; @loncon.gov.uk> Cc: @tfl.gov.uk> Subject: RE: ULEZ expansion 6 month report data analysis check Hi Gary, Thanks for getting back to me and that's great that you'd be happy to help. Yes please send over the costs. I think that's a good idea to discuss this a bit earlier on, we are going to be looking at everything next week so we might have more of an idea the following week, would the morning of either the 23rd/24th work? Or the morning of the 21st avoiding 10.30-11.30. Also happy to credit you as proposed below like last time. Thanks, From: Fuller, Gary @imperial.ac.uk>

@london.gov.uk>

Sent: 10 June 2022 14:50

To:

Cc: @london.gov.uk>

Subject: RE: ULEZ expansion 6 month report data analysis check

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I'd be delighted to review the air pollution analysis aspects of the report again. We used a carefully considered form of words in the last report, "We are grateful to Dr Gary Fuller, King's College London who kindly provided peer review support and comments on this methodology" and I'd be happy for something similar.

To avoid the possibility that I'll find a problem when you're nearly at publication day, why don't we meet earlier and you can talk me through the approach and early results? For instance are you using a de-weathering techniques and how do you propose to account for traffic changes due to covid lockdowns and recovery?

The funding for my post has changed over the last year. Would you be happy to pay for a day or two of my time for this? If so I can get the Imperial Projects people to tell you the cost.

Bye for now,

Gary



@drgaryfuller

Imperial profile page: https://www.imperial.ac.uk/people/q.fuller

UKRI Clean Air Champion: https://www.ukcleanair.org/about-us/clean-air-champions/

Guardian profile page: https://www.theguardian.com/profile/gary-fuller

From: @london.gov.uk>

Sent: 09 June 2022 14:39

To: Fuller, Gary @imperial.ac.uk>

Cc: @london.gov.uk>

Subject: ULEZ expansion 6 month report data analysis check

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Hi Gary,

Many thanks,

My preferred pronouns are
Please note my working days are

I'm in the air quality team at the GLA and we're currently working on the ULEZ expansion 6 month report and carrying out the AQ analysis for the impacts of the scheme. I believe for the central ULEZ you did a review for us of the analysis for the report, would it be possible to provide a review for us again? It would be the W/C 11th July with a publication date of 25th July. We can pay for the time taken to review of course.

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