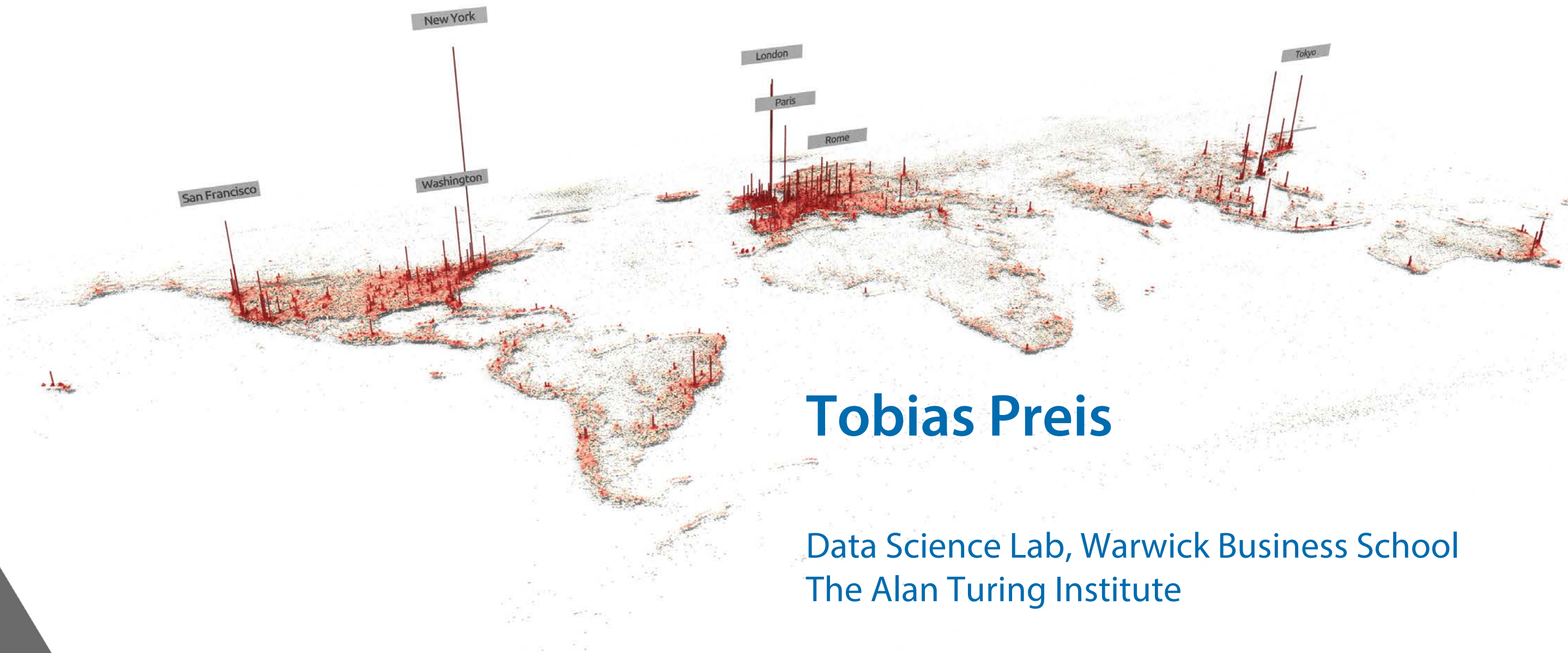


# Faster economic indicators with data from aircraft and online photos

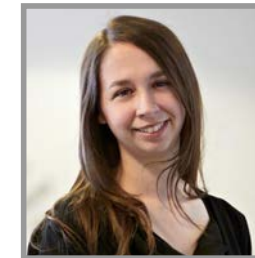


**Tobias Preis**

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<http://preis.uk>

# Data Science Lab



WARWICK BUSINESS SCHOOL

## Key Objectives

1

Reducing cost and delay of existing measurements of behaviour

2

Measuring new quantities of behaviour

3

Predicting future behaviour



Featured by:

**BBC**

**1**

Economic insights from aircraft

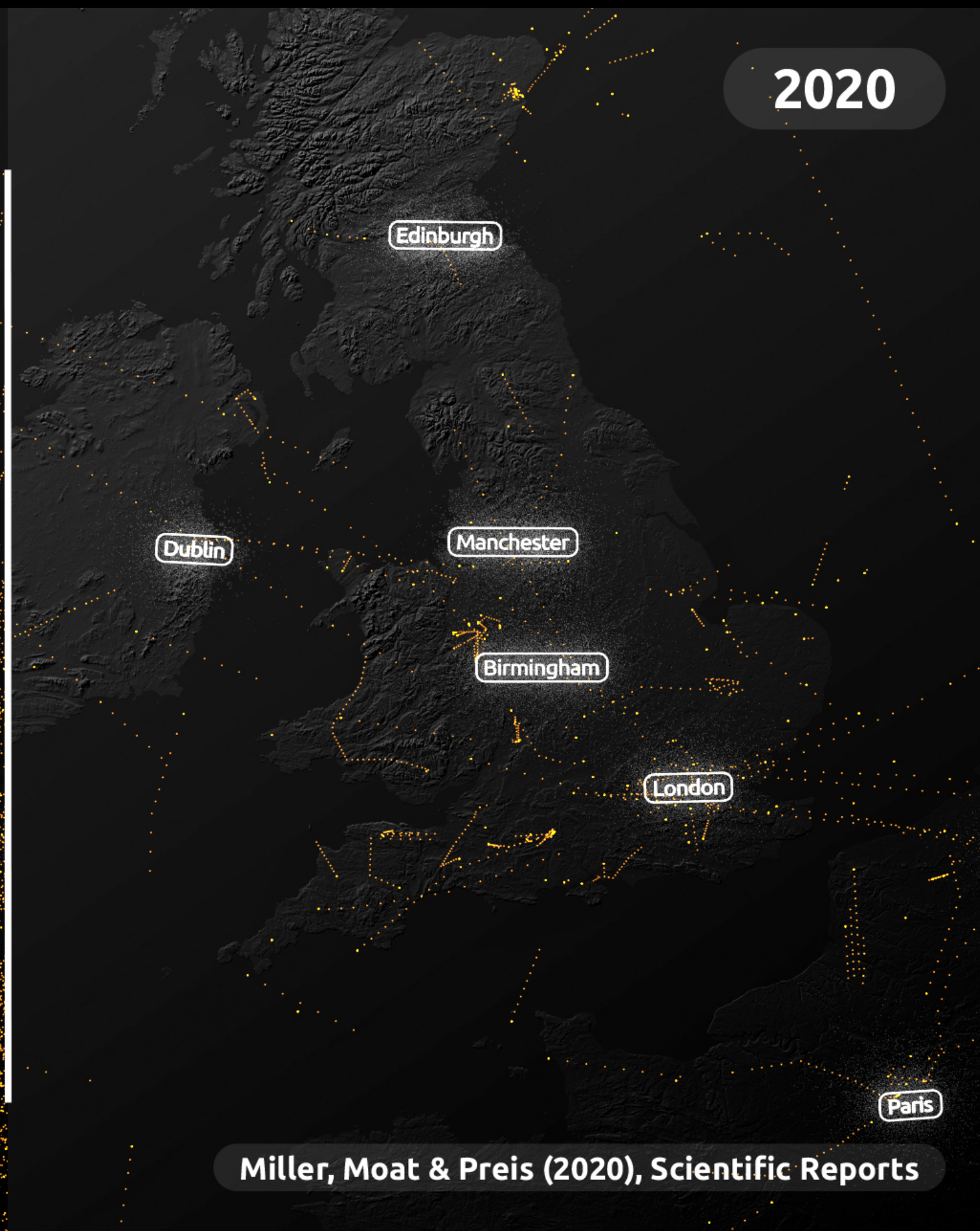


2019



Air traffic on  
15<sup>th</sup> April  
10am – 11am

2020

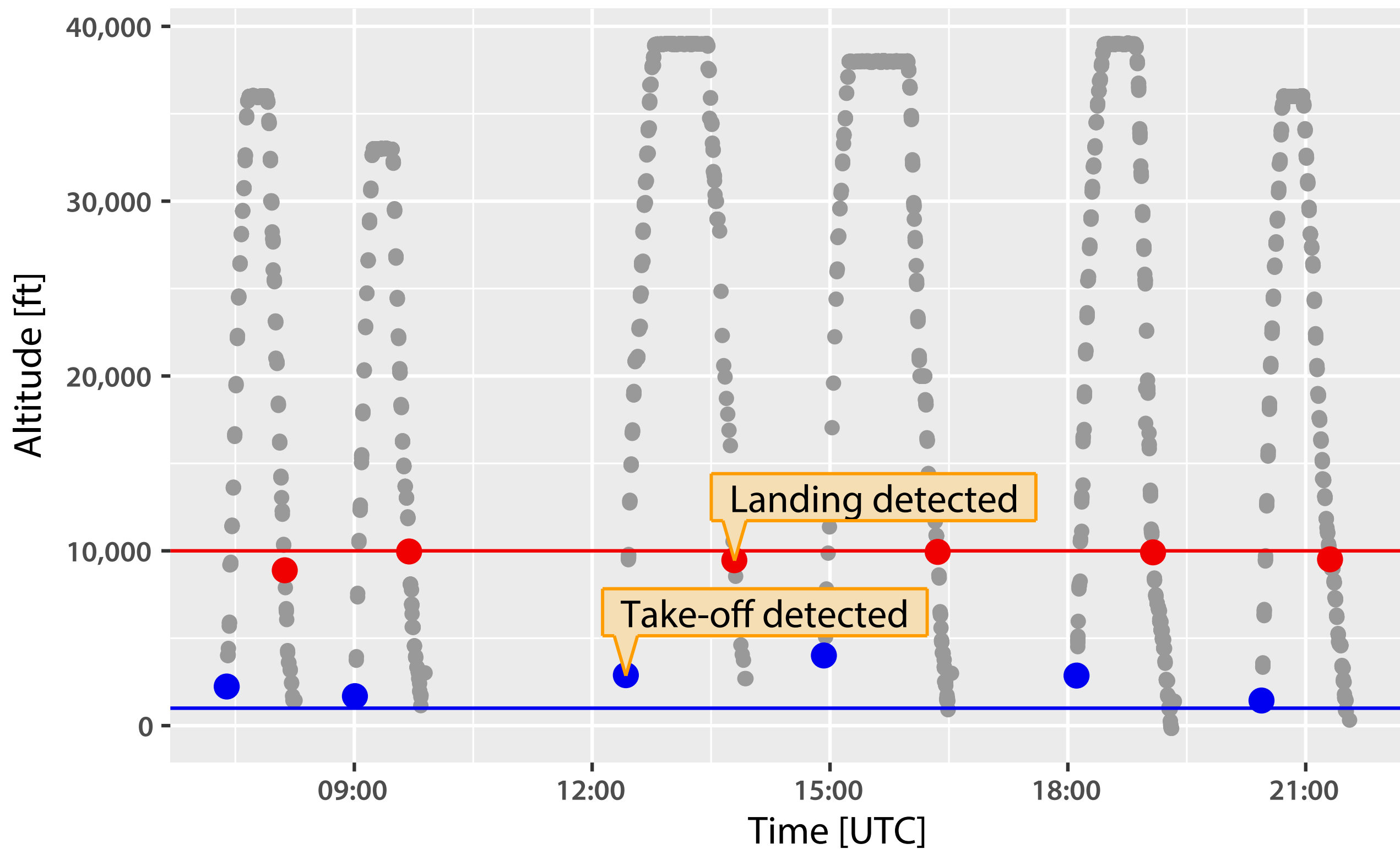


Miller, Moat & Preis (2020), Scientific Reports



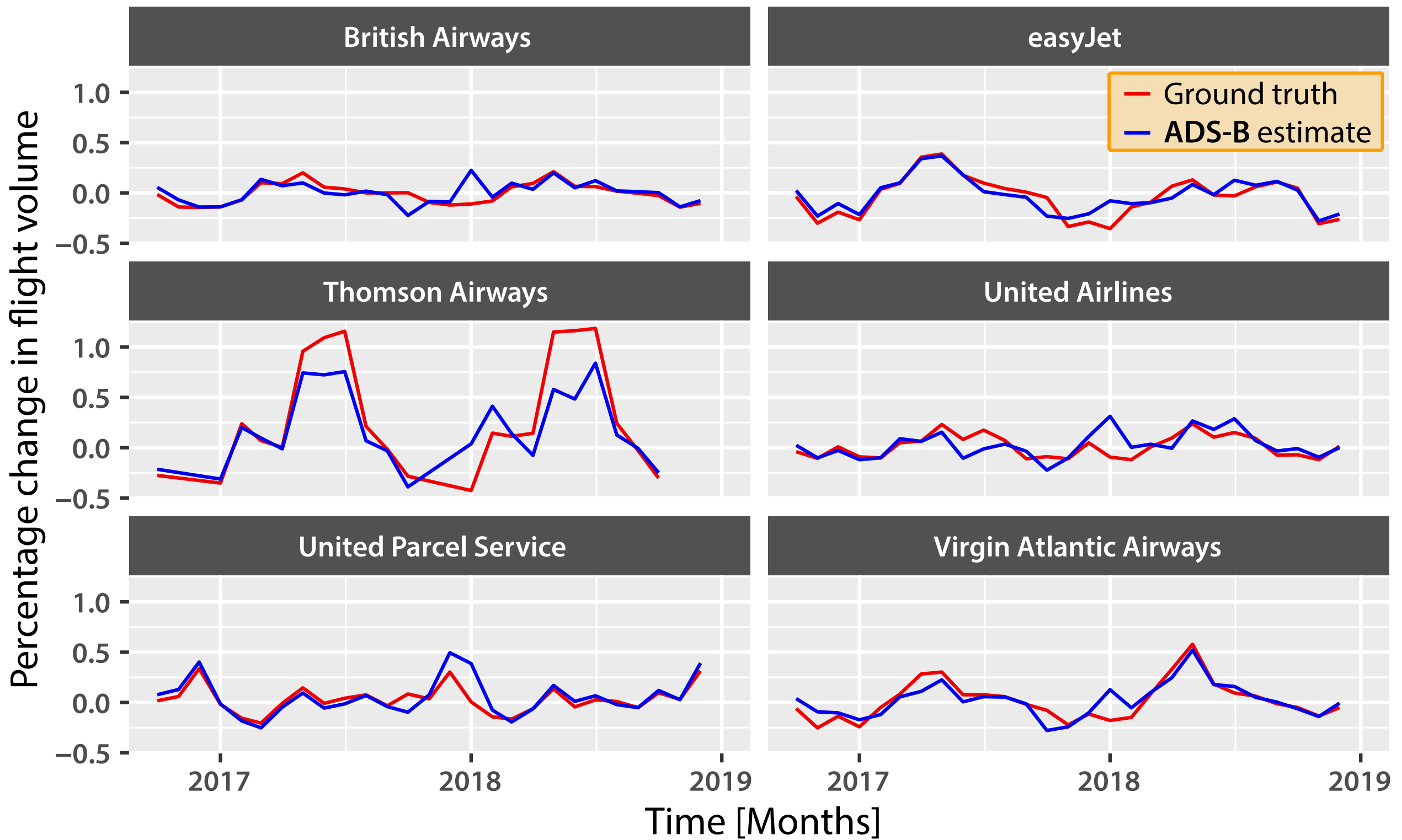
# Counting flights

Miller, Moat & Preis (2020)

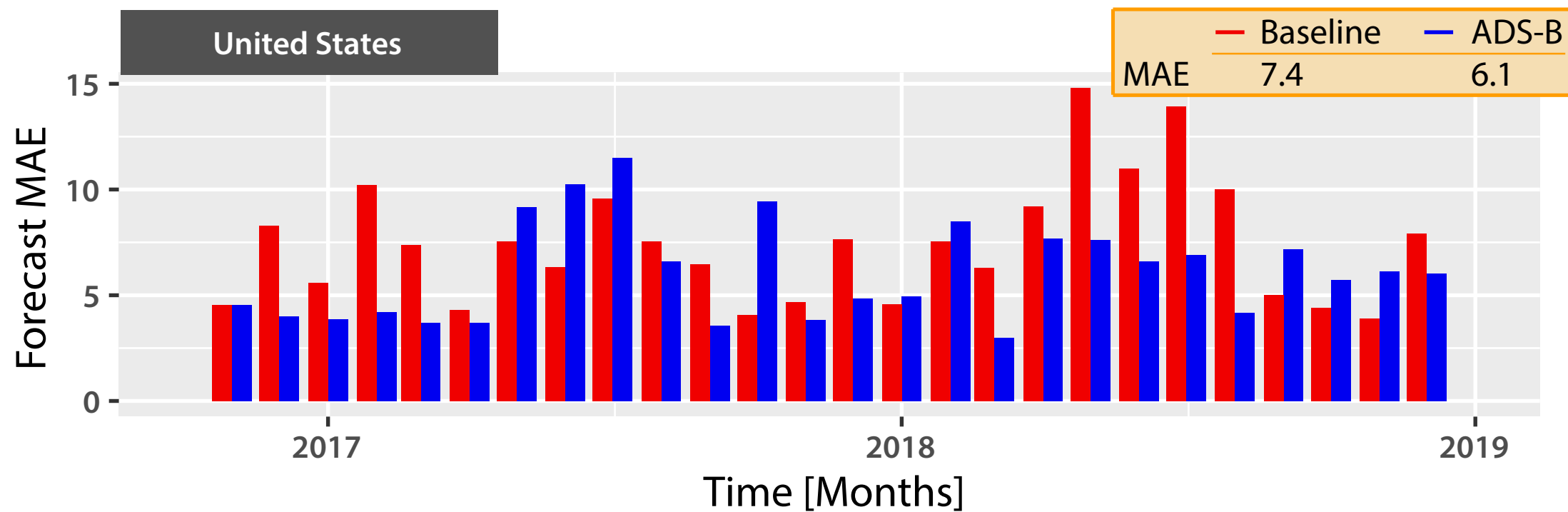
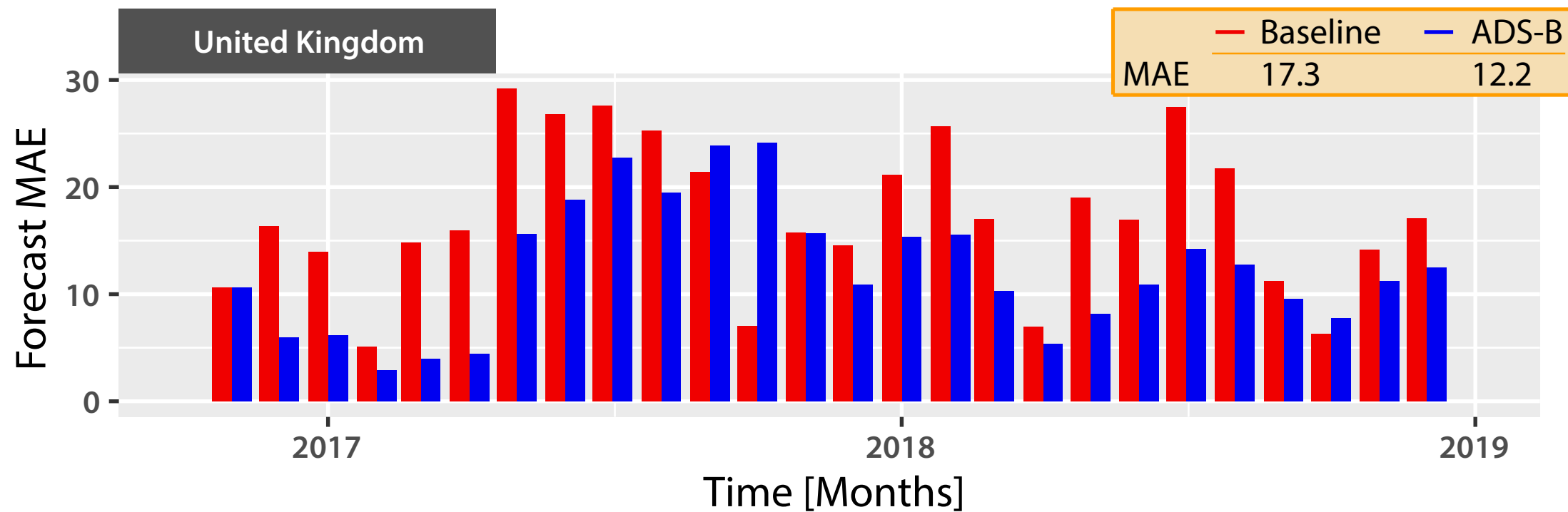




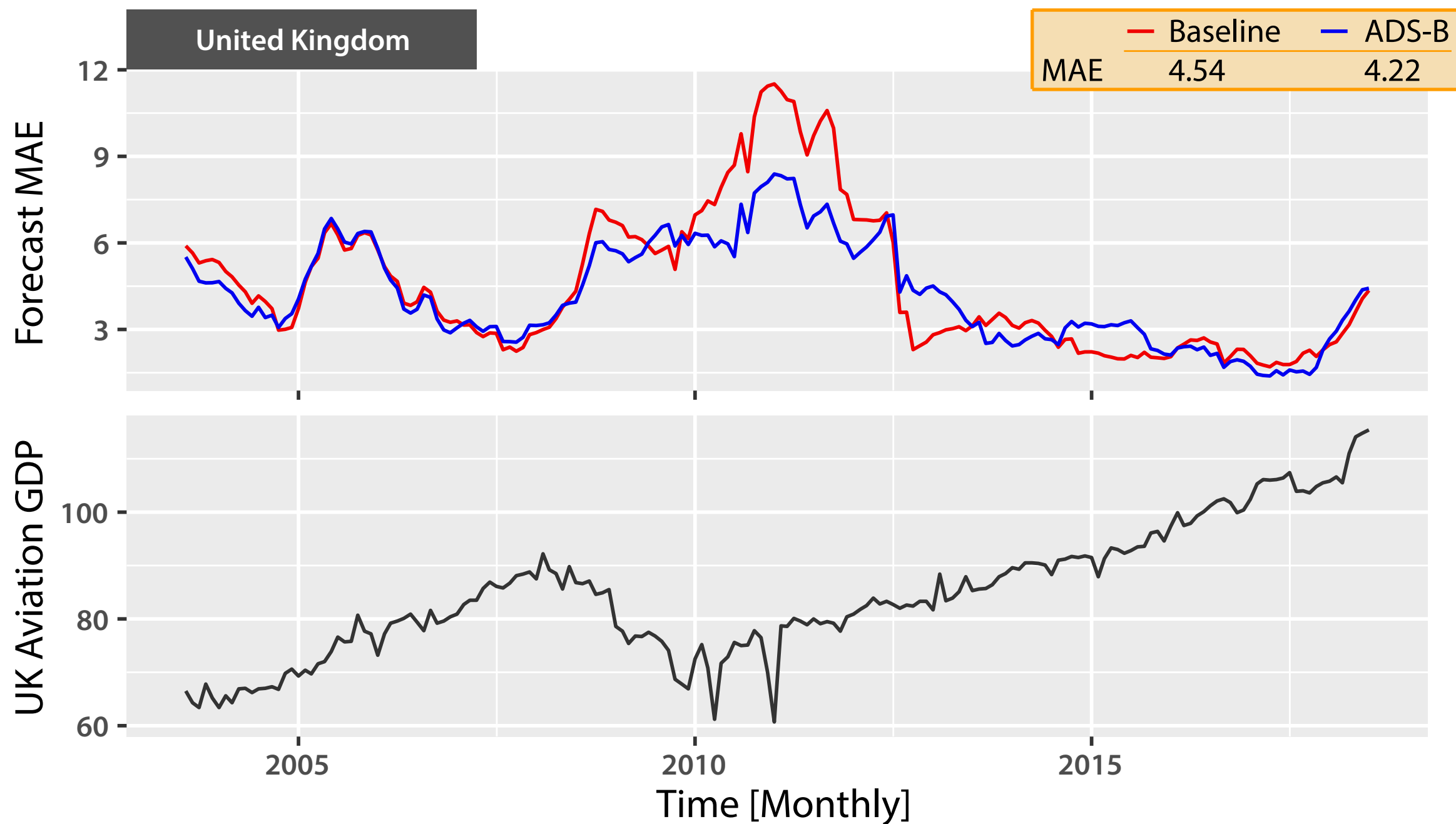
# Real-time flight volume sensing



# Real-time flight volume sensing



# Estimating economic activity





2020

Miller, Moat & Preis (2020)

March

April

UK air traffic

-57%

-98%

UK aviation GDP

-49%

-83%

2020

Miller, Moat & Preis (2020)

March

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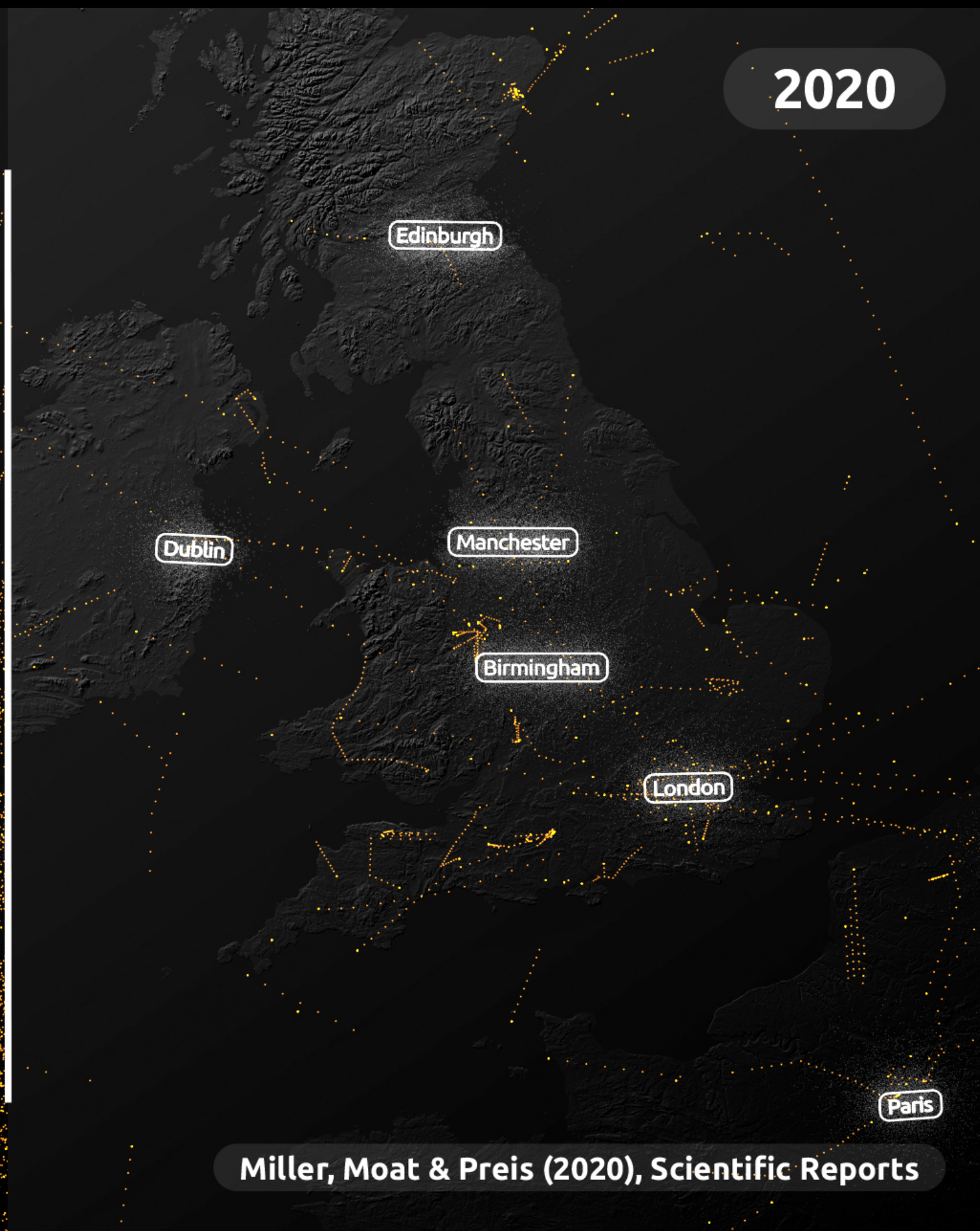


2019



Air traffic on  
15<sup>th</sup> April  
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2020



Miller, Moat & Preis (2020), Scientific Reports



Beijing

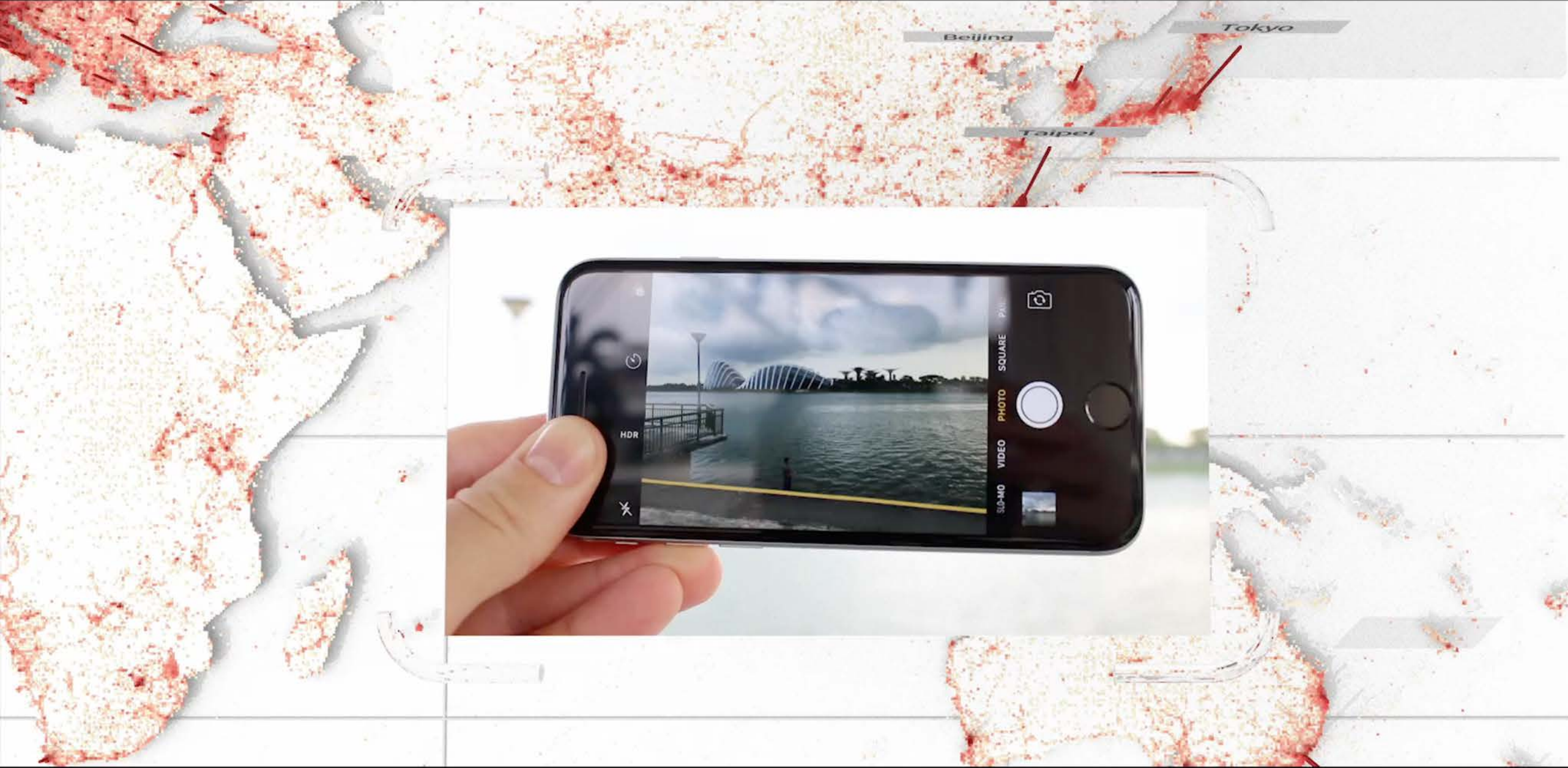
Taipei



2

Tracking global travel patterns

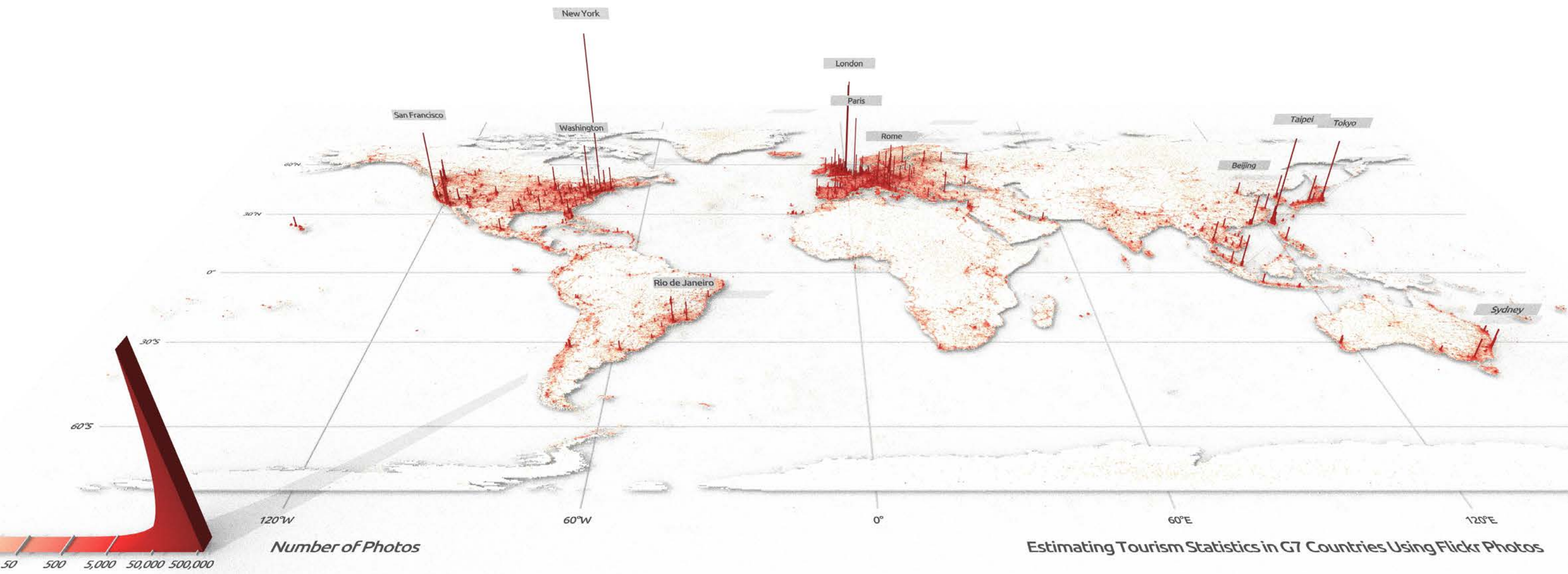




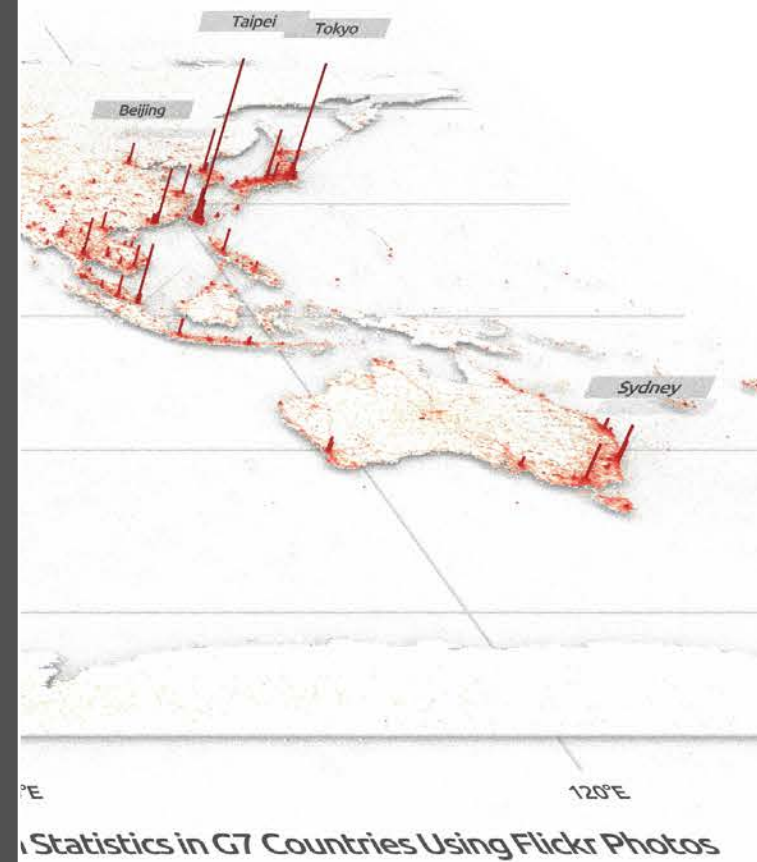
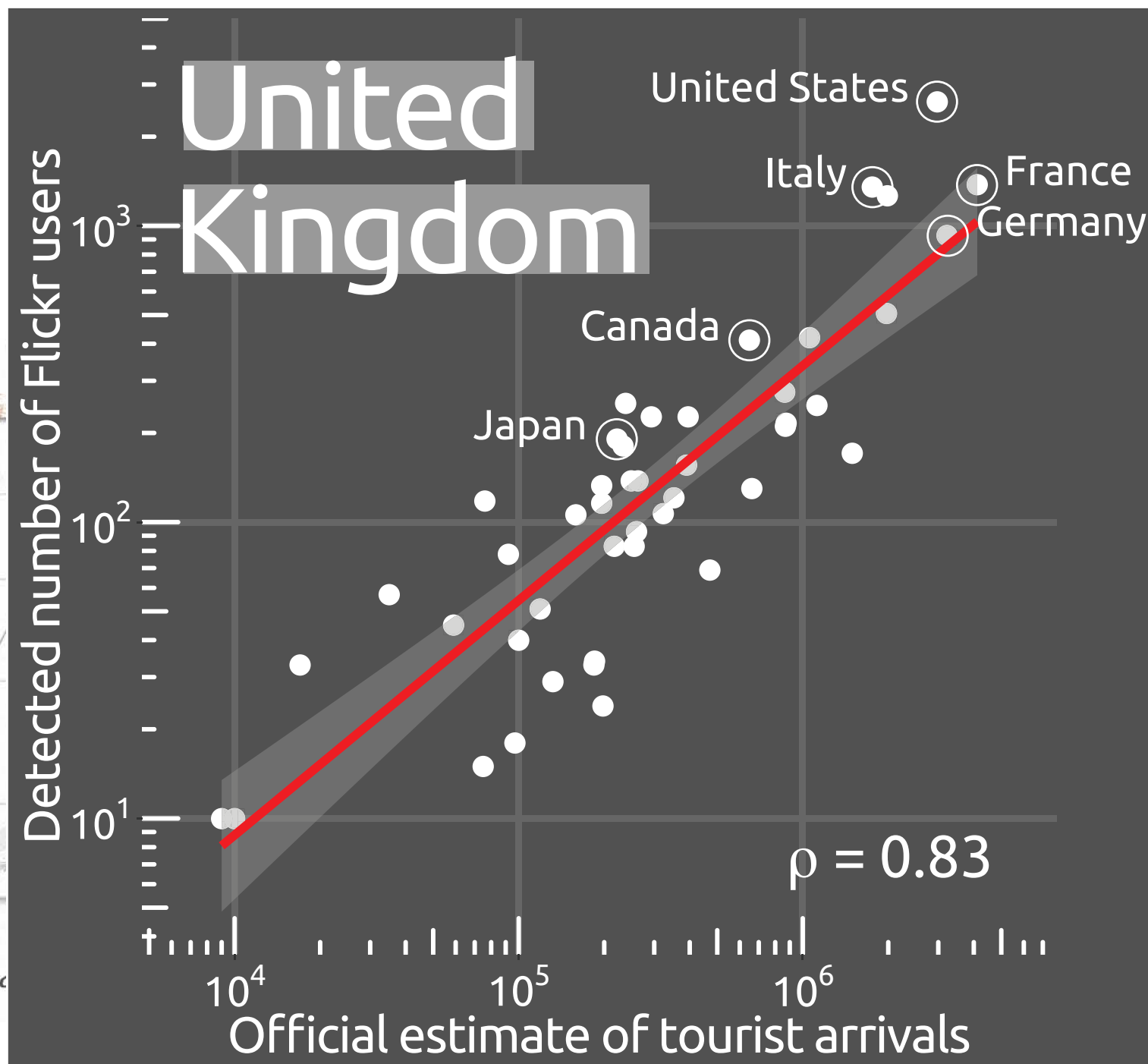
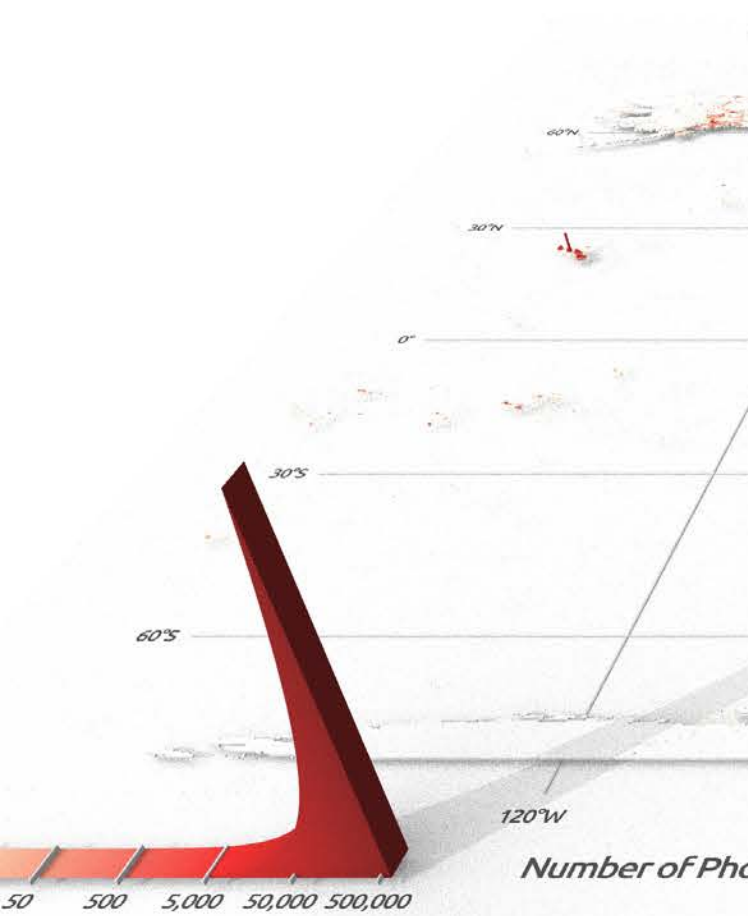
Beijing

Tokyo

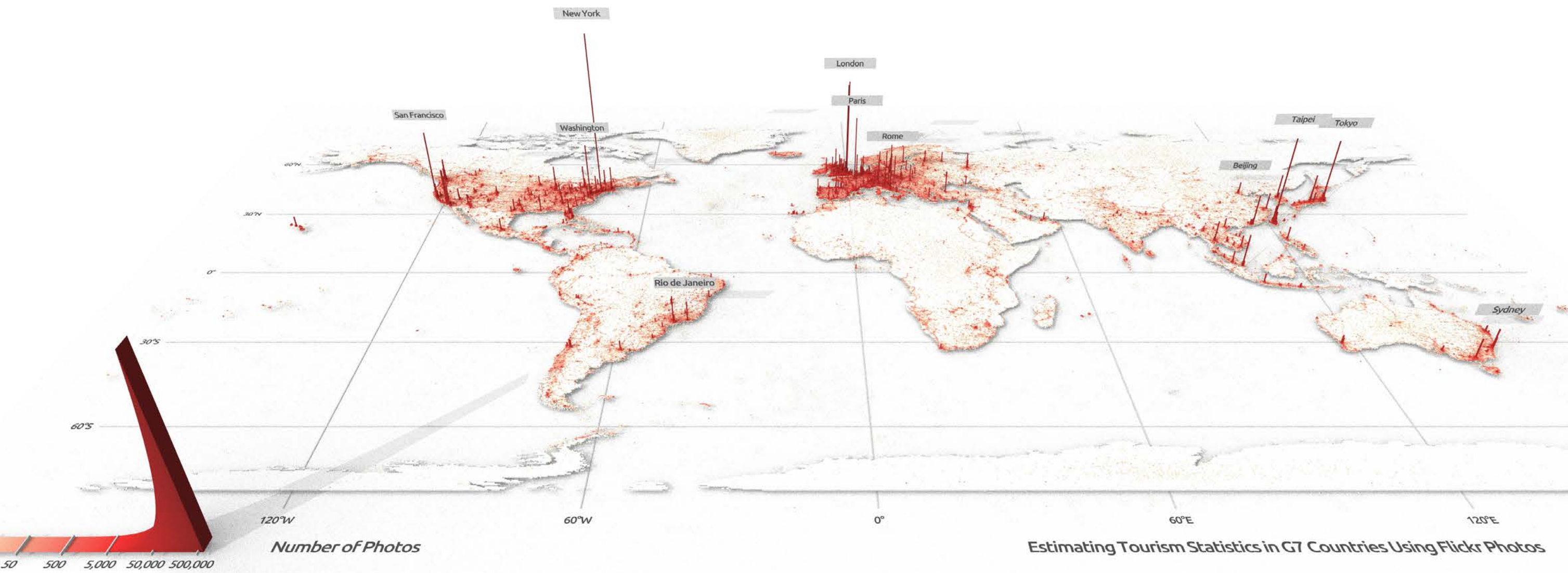
Taipei







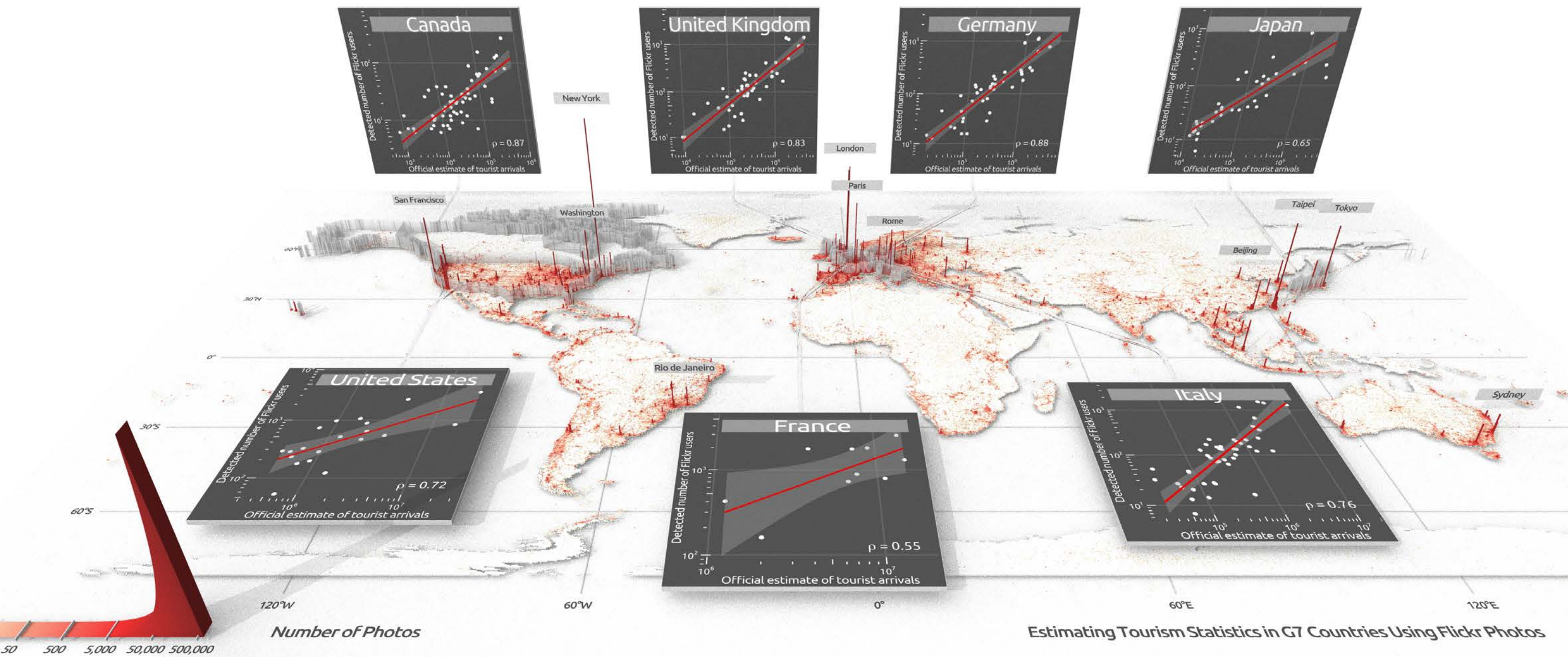
Preis, Botta & Moat (2020)



Preis, Botta & Moat (2020)

<https://journals.sagepub.com/doi/pdf/10.1177/0308518X19872772>





Preis, Botta & Moat (2020)

<https://journals.sagepub.com/doi/pdf/10.1177/0308518X19872772>





Google

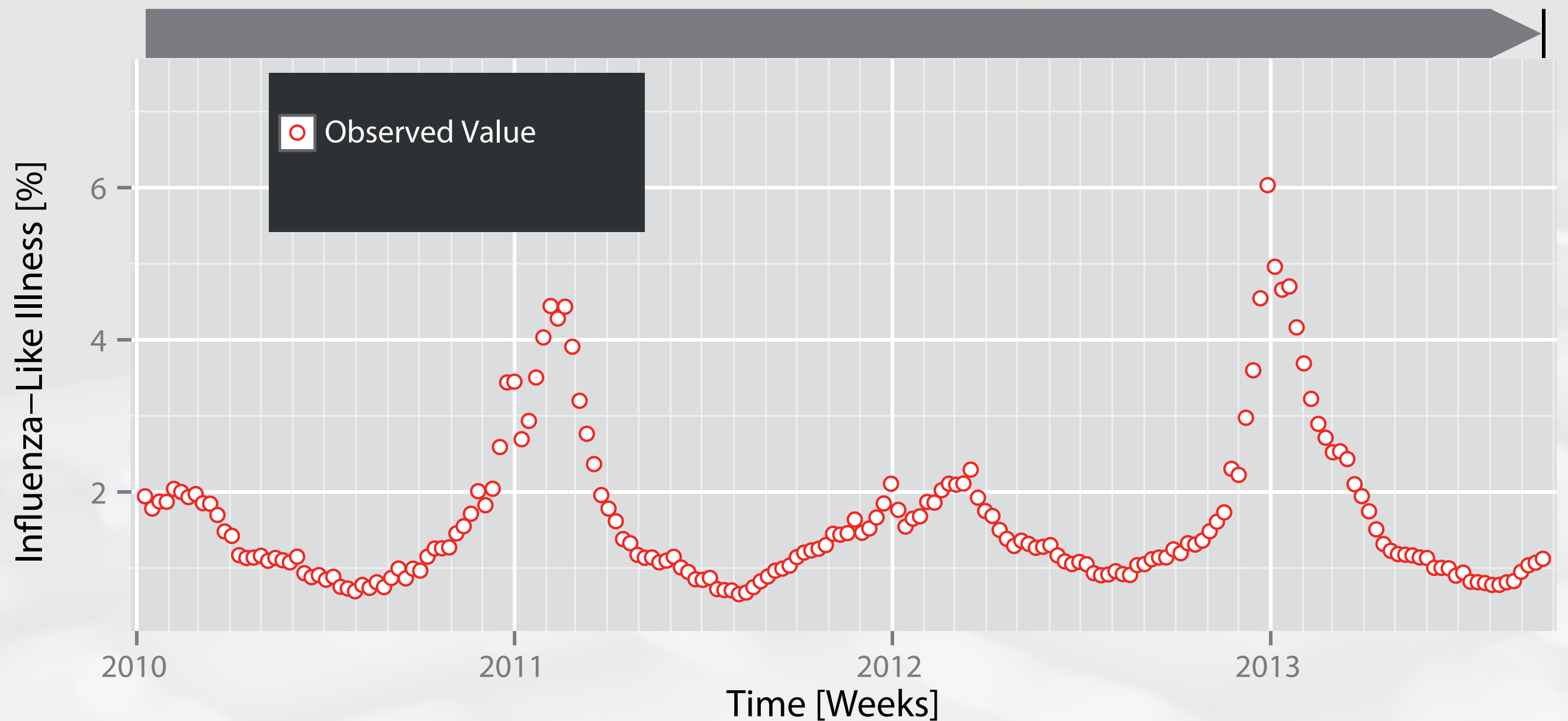
**3**

Google searches and the flu

# Tracking the flu

Preis & Moat (2014)

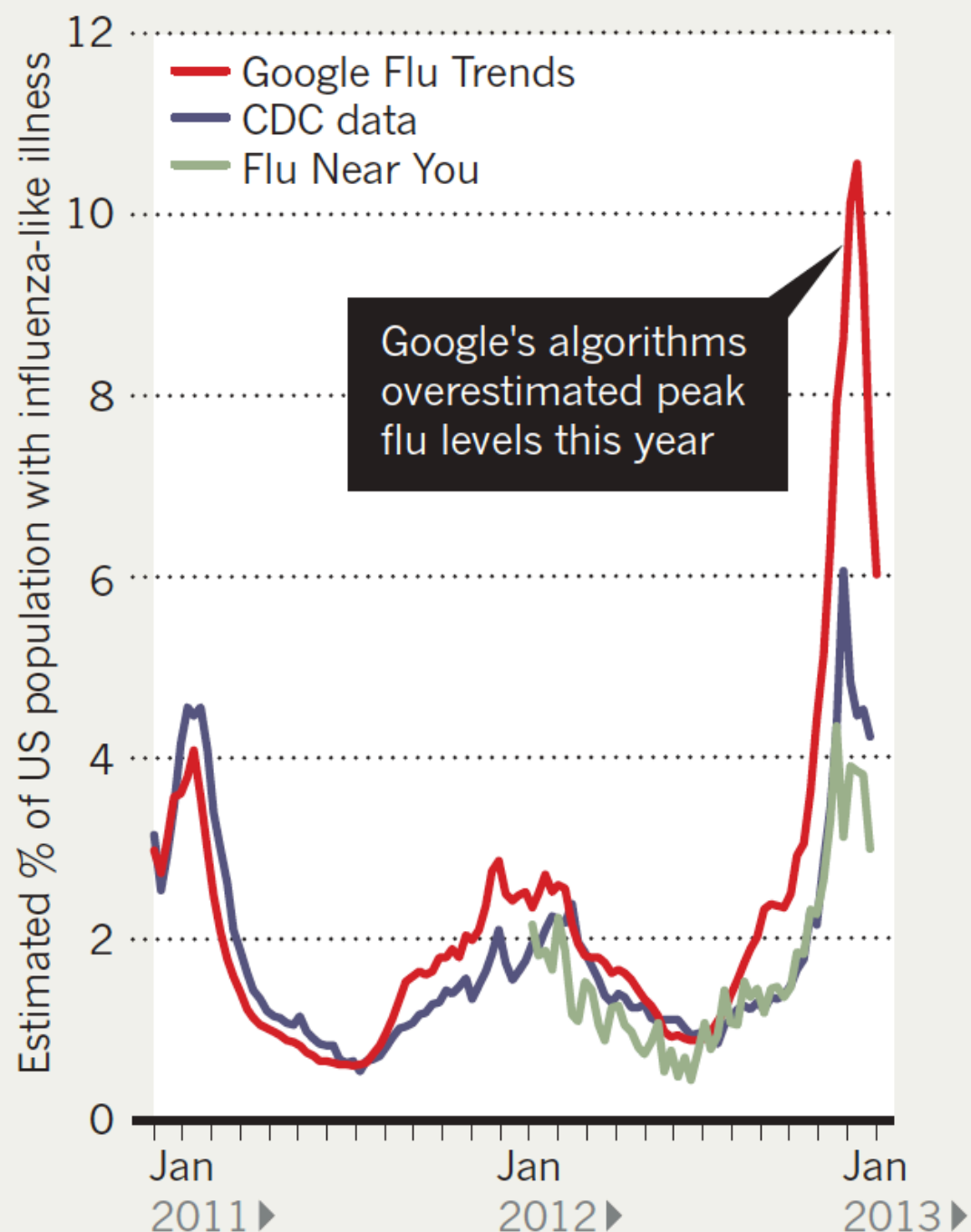
## Number of influenza cases in the US





## FEVER PEAKS

A comparison of three different methods of measuring the proportion of the US population with an influenza-like illness.



## EPIDEMIOLOGY

# When Google got flu wrong

*US outbreak foxes a leading web-based method for tracking seasonal flu.*

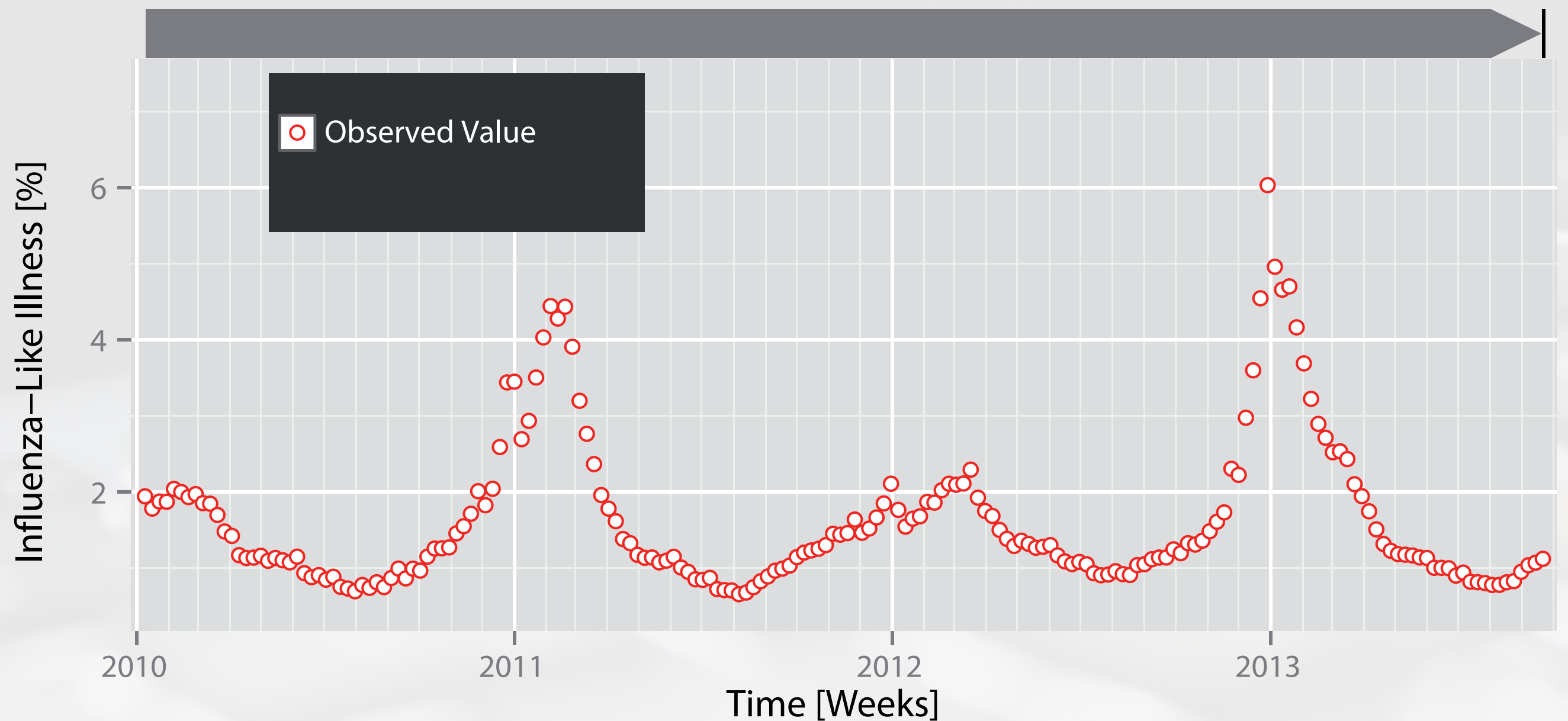
Butler, *Nature* **494**, 155 (2013)



# Tracking the flu

Preis & Moat (2014)

## Number of influenza cases in the US

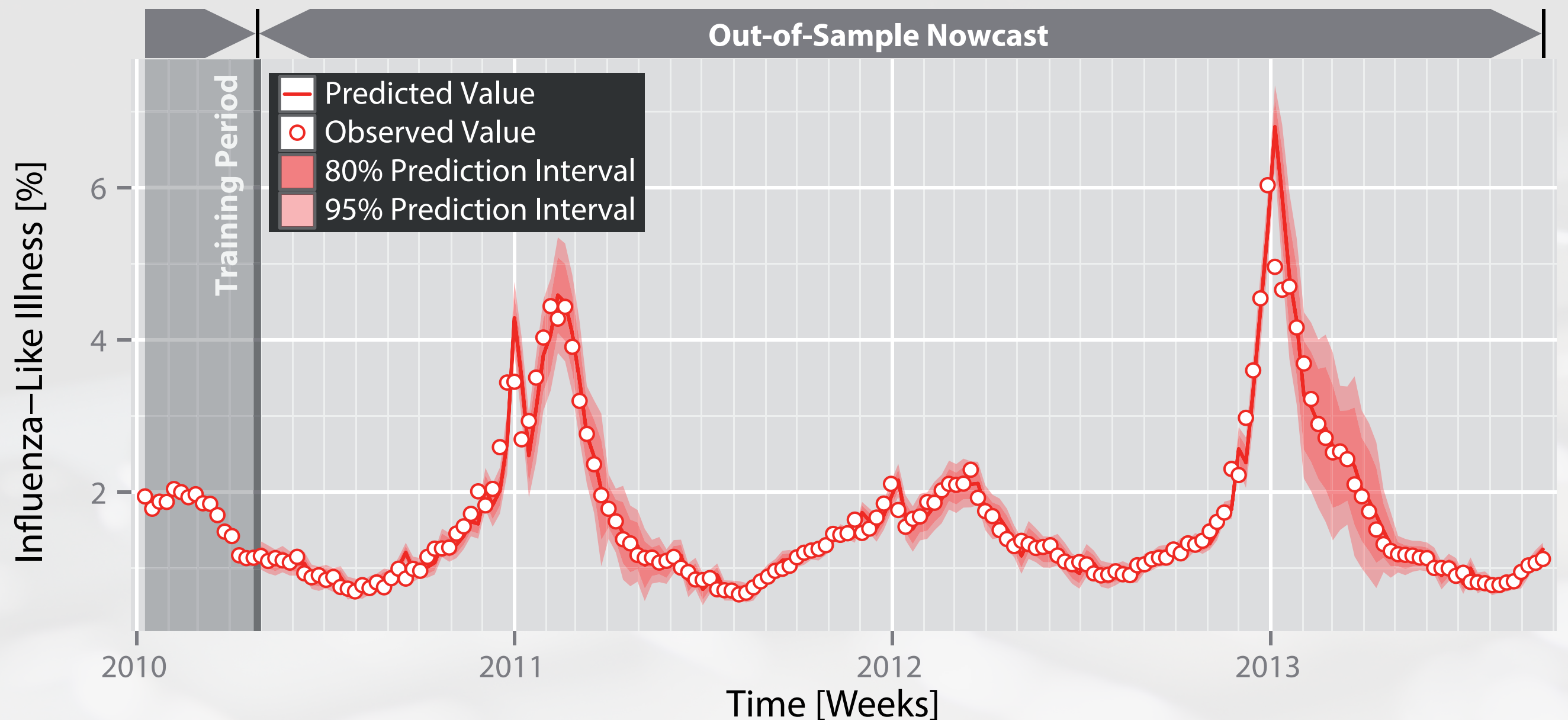




# Tracking the flu

Preis & Moat (2014)

## Estimating the current number of influenza cases

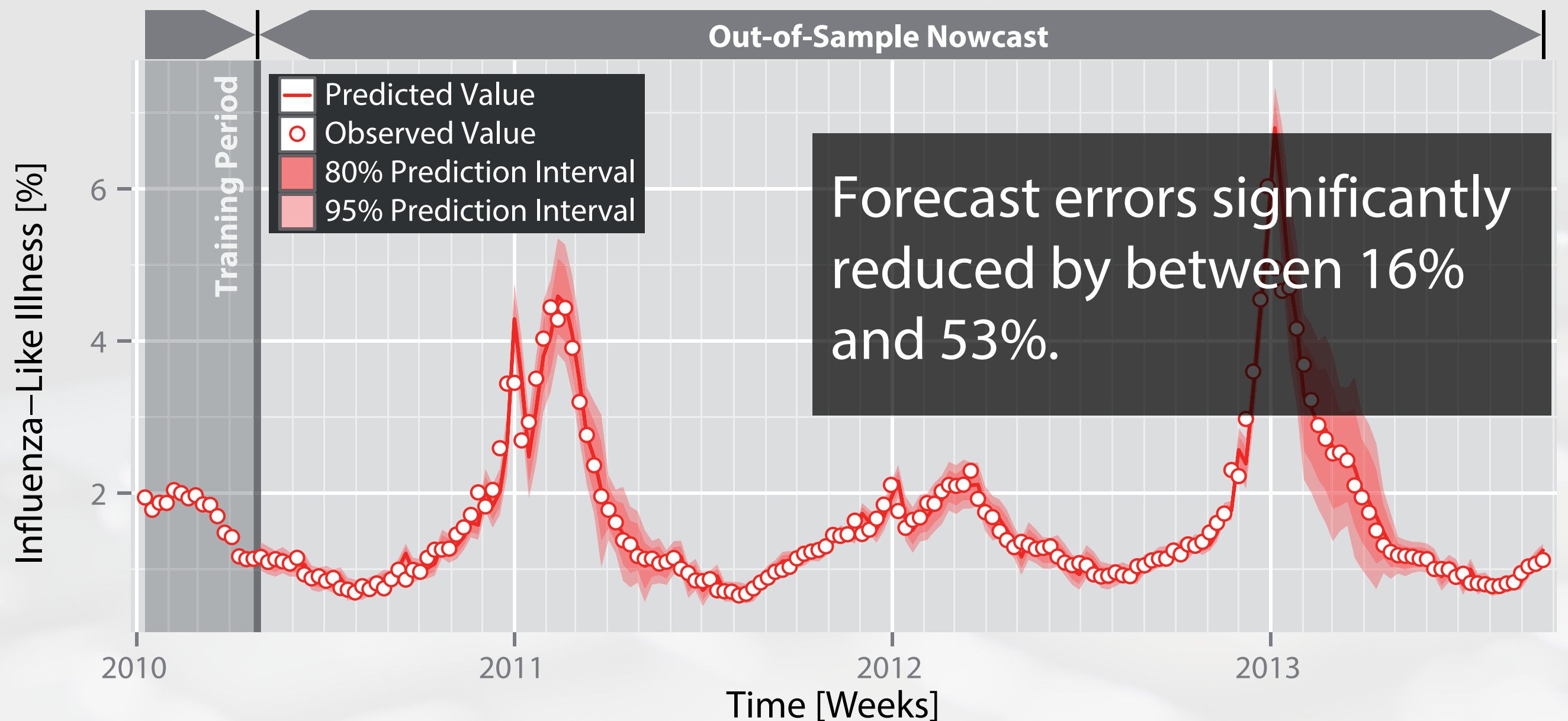




# Tracking the flu

Preis & Moat (2014)

## Estimating the current number of influenza cases



<http://rsos.royalsocietypublishing.org/content/royopensci/1/2/140095.full.pdf>





Digital traces may help us  
measure and even predict  
human behaviour



EPSRC

Engineering and Physical Sciences  
Research Council



I A R P A