

Individual routing behaviour and collective traffic congestion

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NESTA

DataBeers London - 13.10.2016



Now ▾

Start Kennington Park Road, SE11

End Work
1 Plough Pl, City of London



53
min

218 cal >



~23
min

77 cal >



19
min

£7-10 >

Suggested



£2.40 30
min >

📶 in 1, 3, 6 min from Oval



£1.50 34
min >

📶 in 8, 17, 20 min from Kennington Park Post...



£1.50 31
min >

📶 in 8, 17, 20 min from Kennington Park Post...

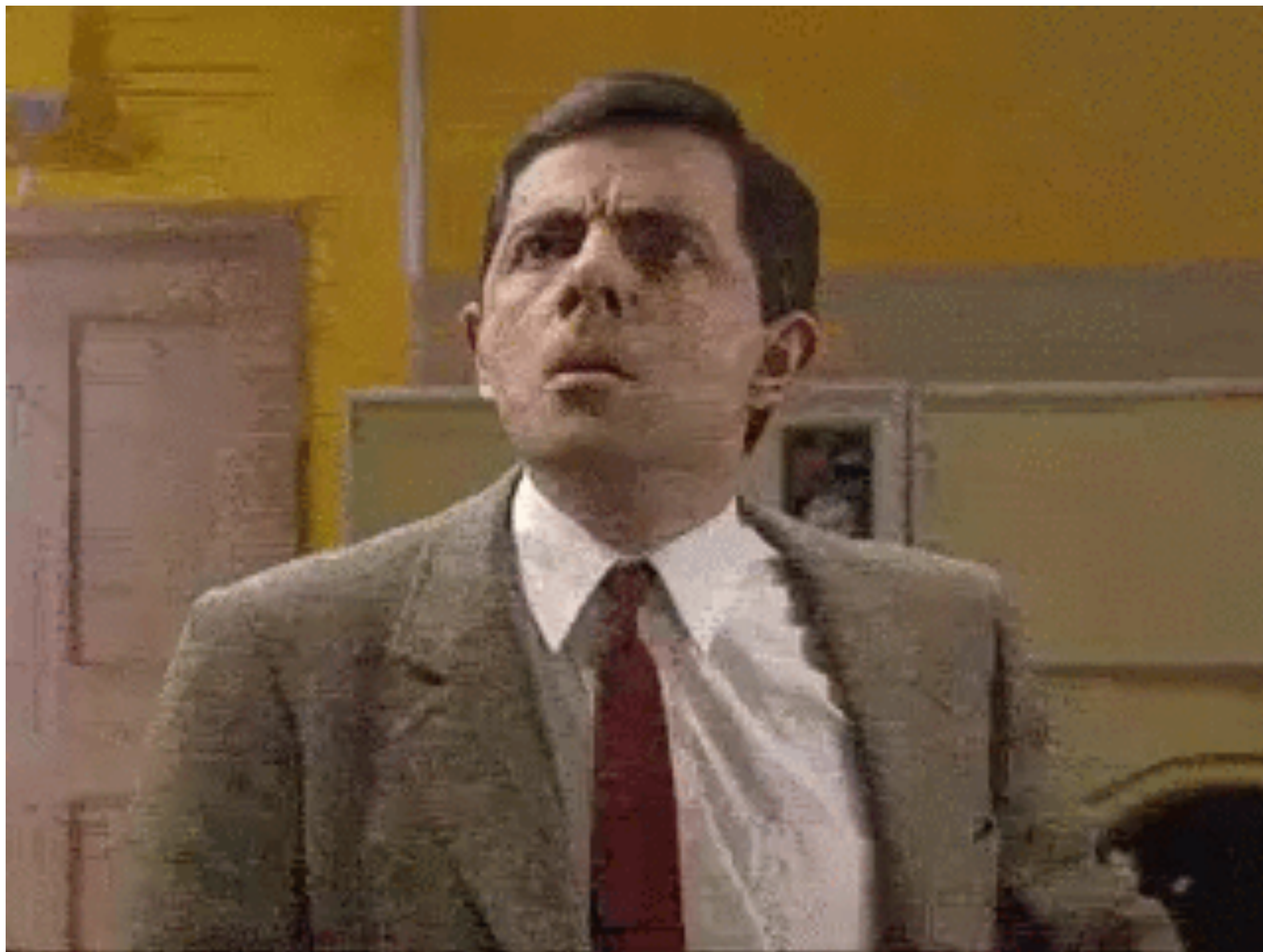


£2.40 32
min >

📶 in 3 min from Kennington



£3.90 31
min >



Northern line voted least favourite London Underground line: 10 reasons why

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Northern named London Underground's worst tube line

Black line on the map named commuter's least favourite by far while Jubilee named Londoner's favourite

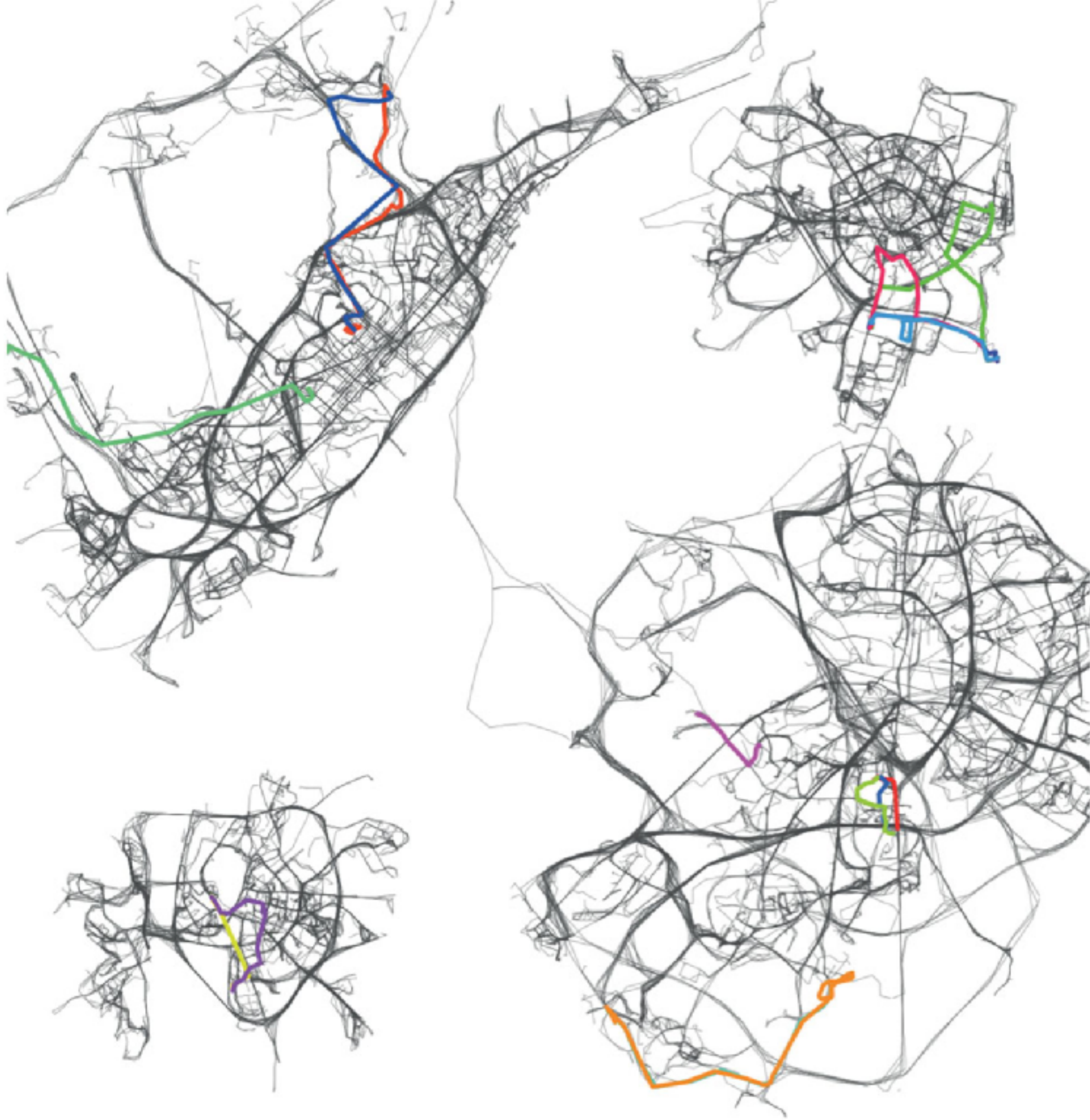
How do you choose **your** route?

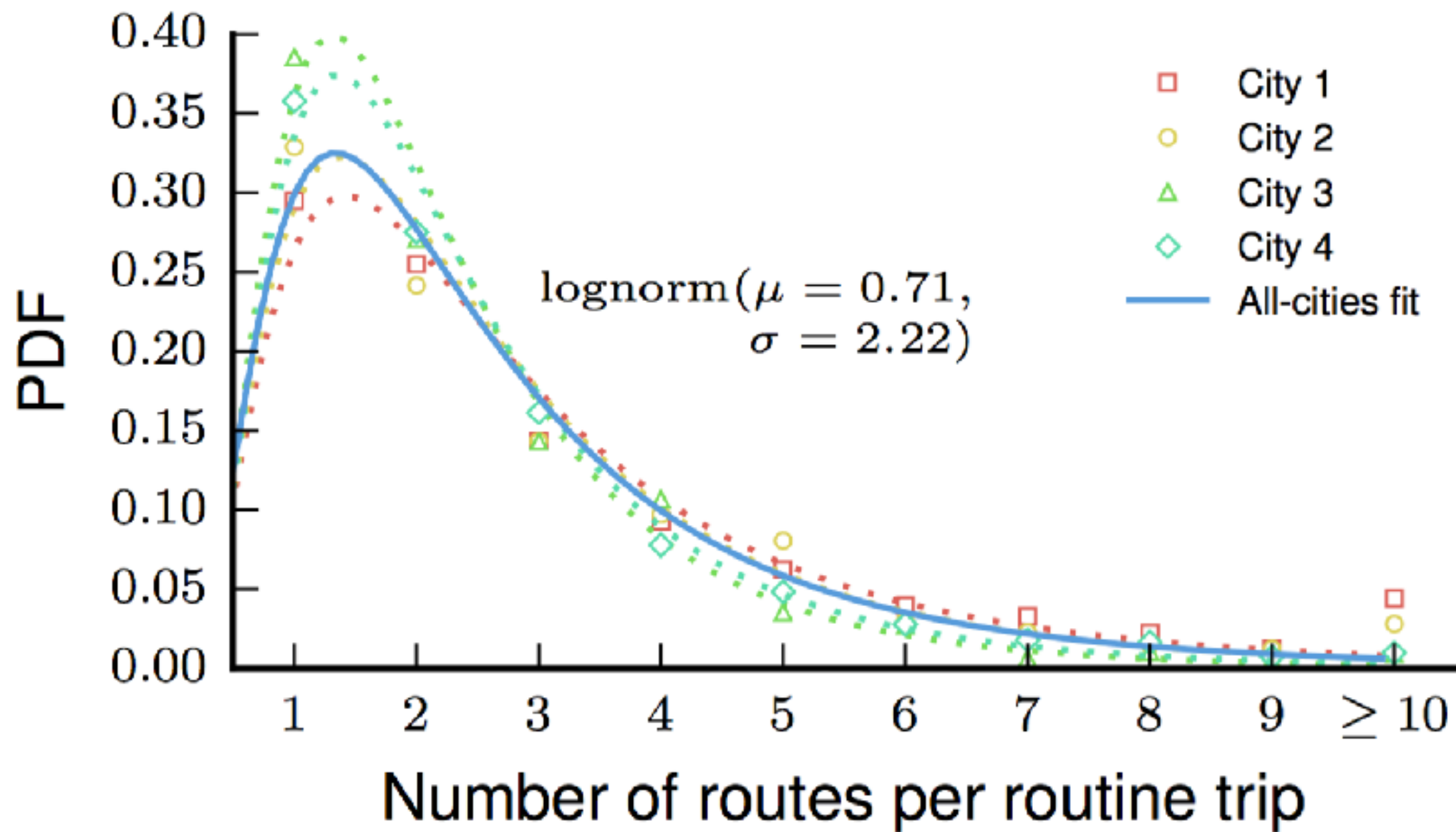
Wardrop's first principle (1962)

The journey times on all the routes actually used are equal, and less than those which would be experienced by a single vehicle on any unused route.

tl;dr

People take the route that minimises travel time, subject to other people's choices (traffic).





1. Drivers typically use only a few routes.



2. They have a favourite choice.



3. Their favourite route is very often (53%) not optimal.



- People prefer routes that go south. 🌞😎

[T. T. Brunyé et al., 2009]

- People prefer “initially straight” routes. 🛣️

[J. N. Bailenson et al., 1999]

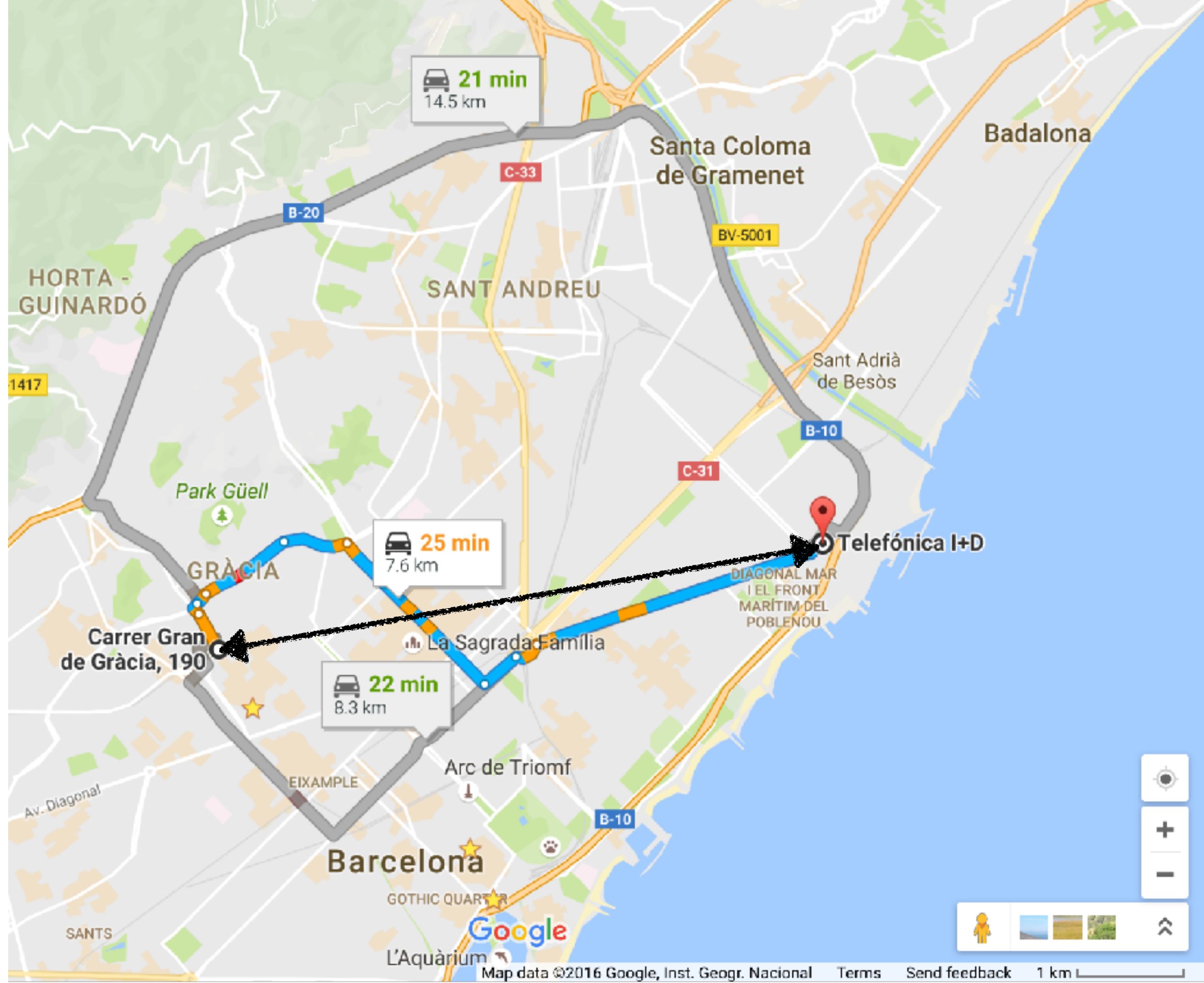
- Landmarks influence route choice. 🏛️🗽

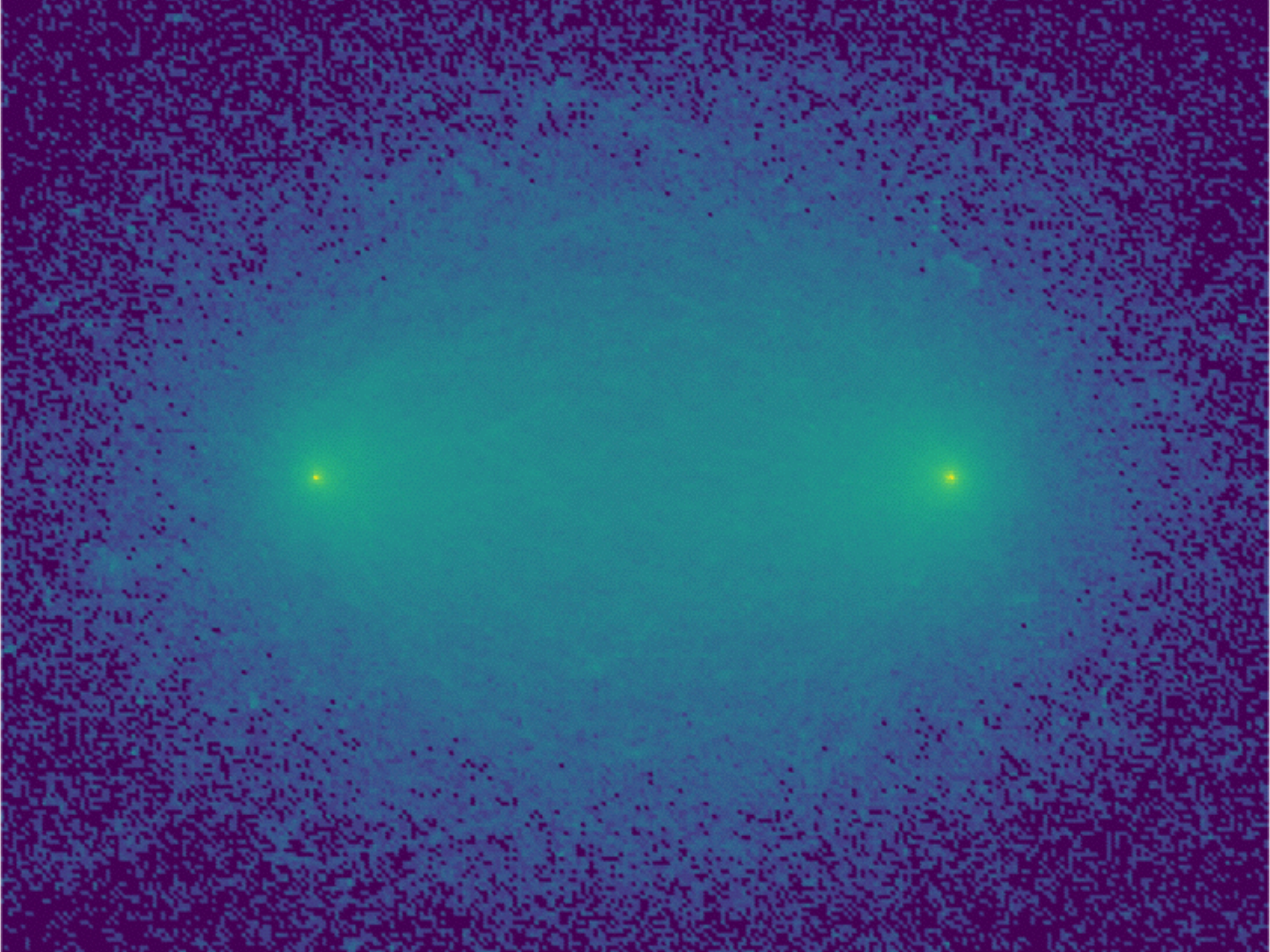
[E.J. Manley et al., 2015]

- etc, etc, ...

- Route choices are personal.



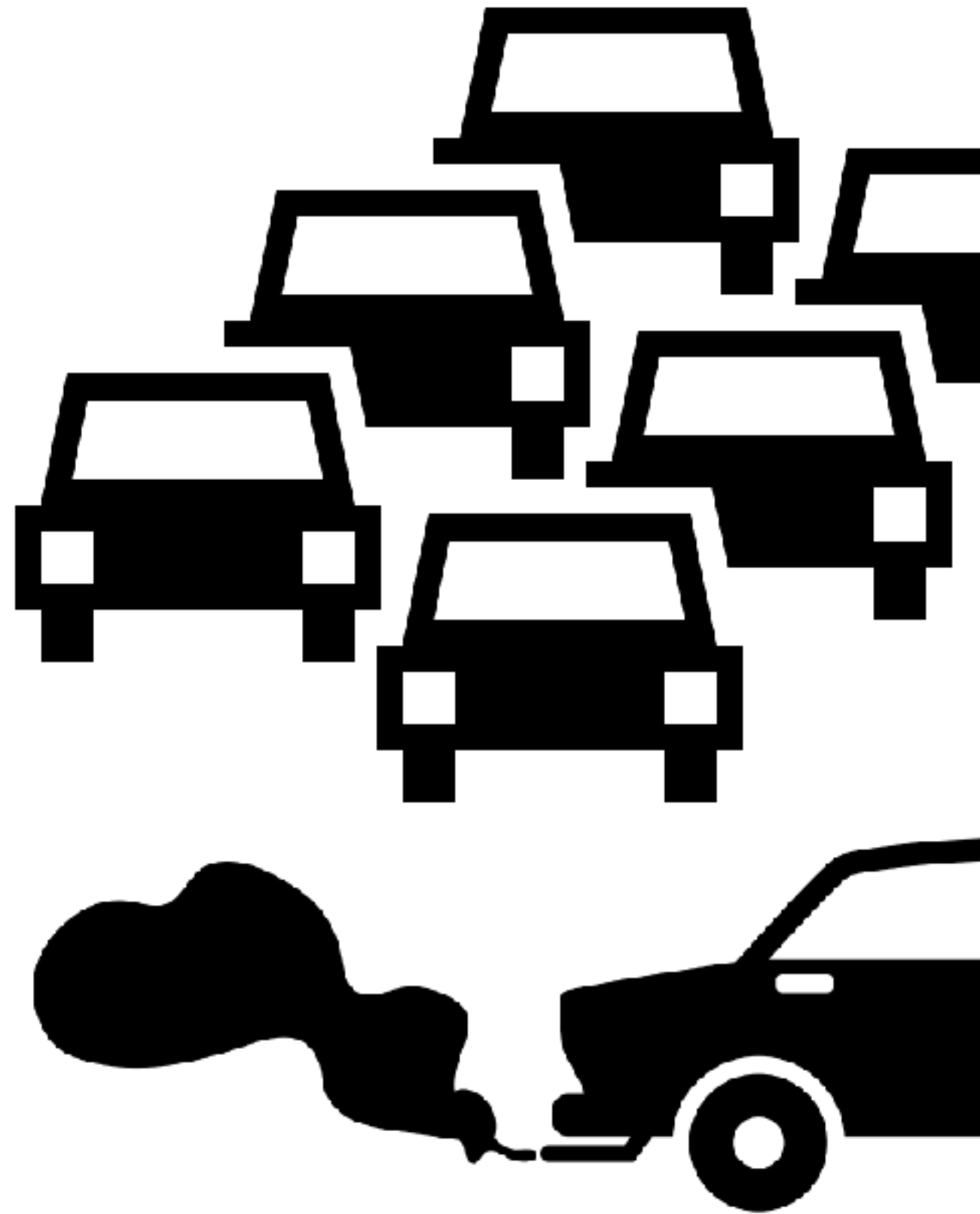




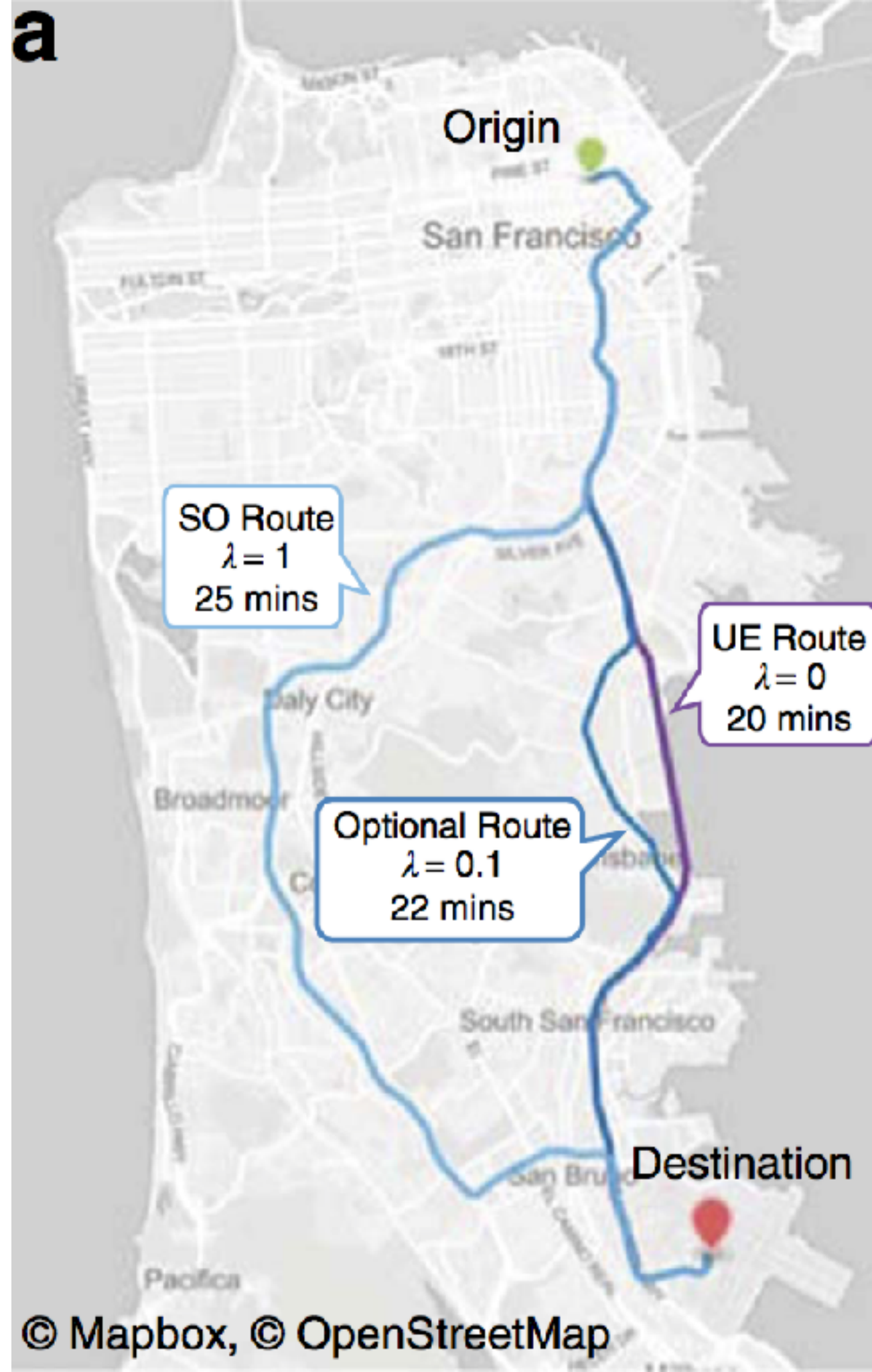
The price of congestion

The estimated price for 2014 in the US is:

- US\$160 billion;
- 42 extra hours of travel time per commuter;
- \$960 worth of extra fuel per commuter.



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- + personalised and altruistic routing
- congestion
- time spent in traffic
- pollution

- Understanding individual routing behaviour
Antonio Lima, Rade Stanojevic, Dina Papagiannaki,
Pablo Rodriguez, Marta C. González
J. R. Soc. Interface 2016 13 20160021.
- Understanding congested travel in urban areas.
Serdar Çolak, Antonio Lima & Marta C. González
Nature Communications **7**:10793 (2016)