Delivering Better Transport with Data
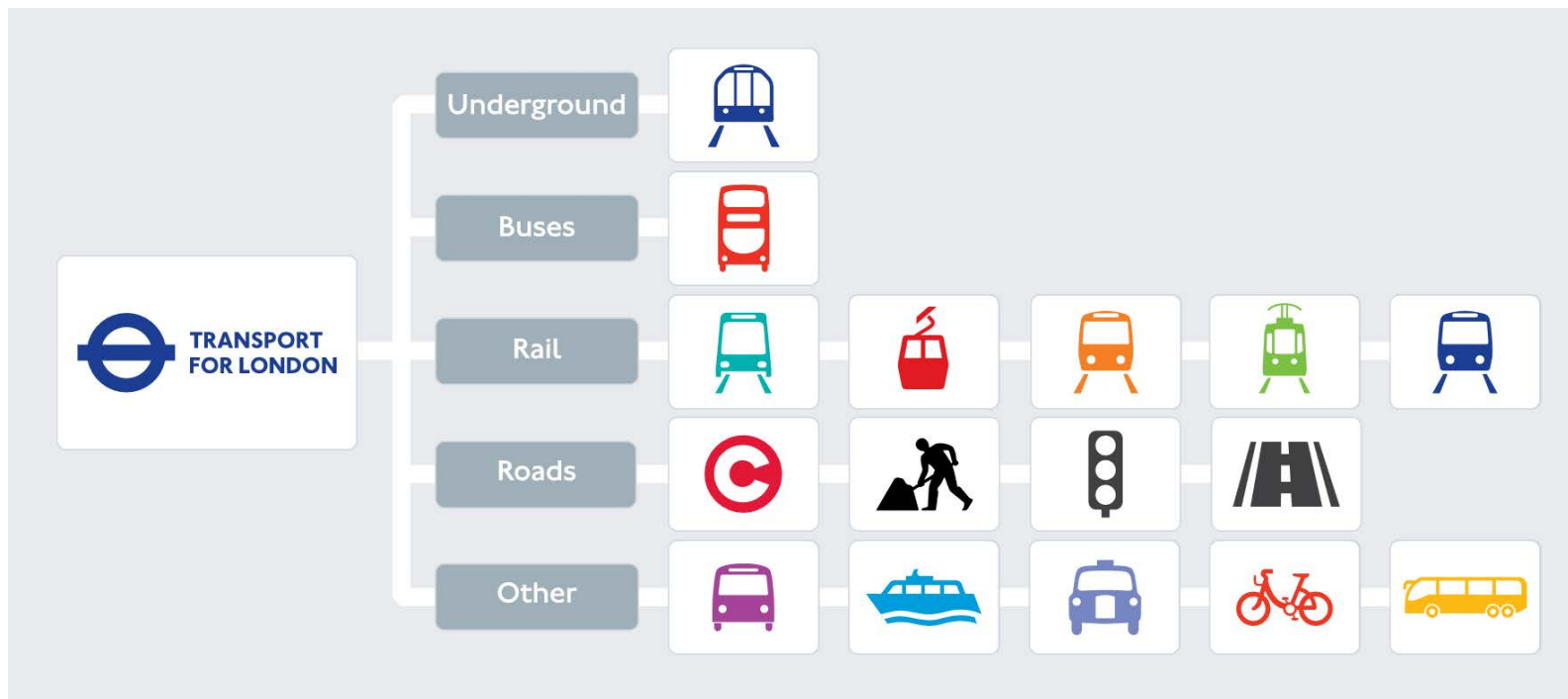
Lauren Sager Weinstein

Chief Data Officer, Technology & Data

Transport for London
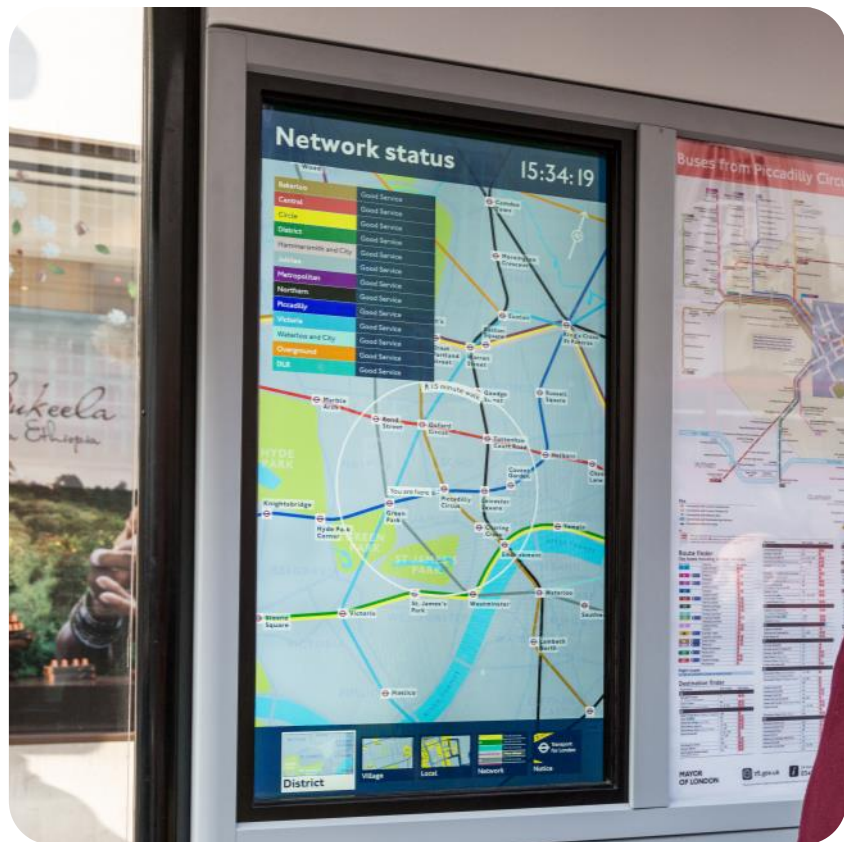
EVERY JOURNEY MATTERS

TRANSPORT FOR LONDON

Our responsibilities

Our Purpose

- To deliver for the Mayor

- Keep London working and growing and make life better

- Every Journey Matters

Our priorities:

Customer

To put customers and users at the core of all of our decision making

Reliability & Safety

To drive improvement in reliability and safety across our network

Capacity & Growth

To accelerate the growth and increase the capacity of our network

Our people

To invest in our people and lead them to be the best they can be every day

Finance

To cost less and generate more income

Technology & Data

To exploit technology to produce better and faster results

We are data rich

19 million smartcard ticketing transactions a day from **12 million active cards**

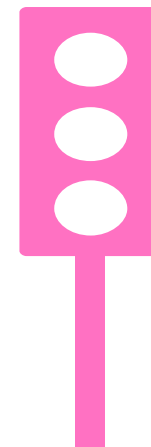**12 million** ANPR registration plates from the **1600 cameras** across our road network

4.5 million ibus geo-located events

650,000 tfl.gov.uk website visits

15,000 SCOOT detectors creating **5.2bn** records

500,000 rows of train diagnostic data on the Central Line alone

250,000 daily train location and event data from NETMIS

DATA ITSELF IS NOT ENOUGH

We must make it useful

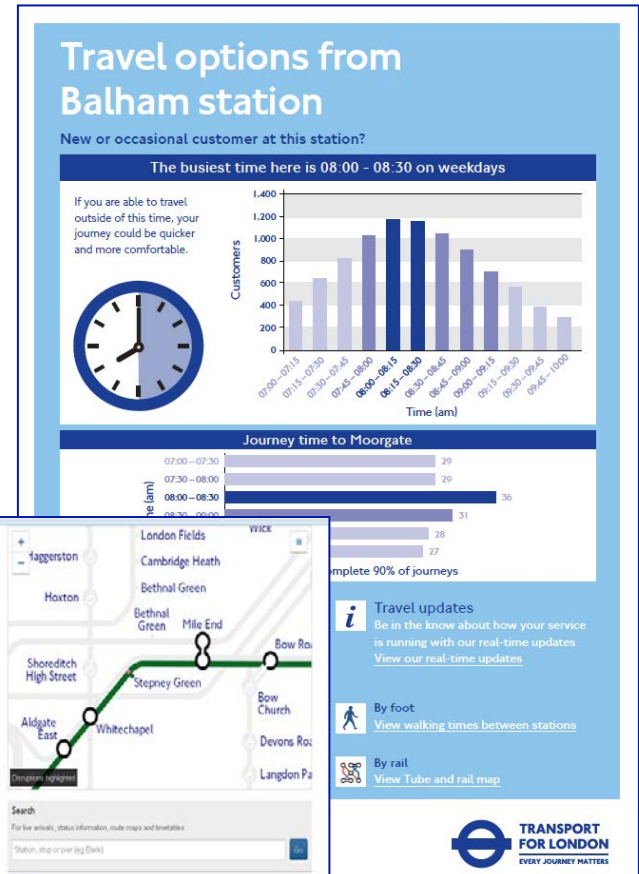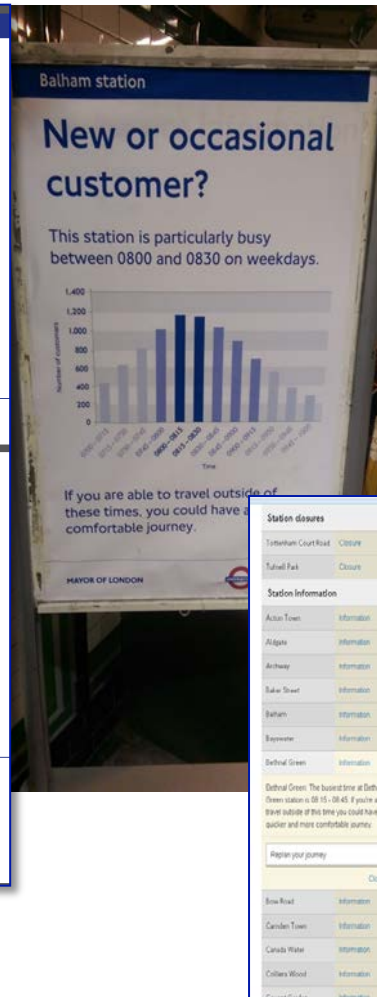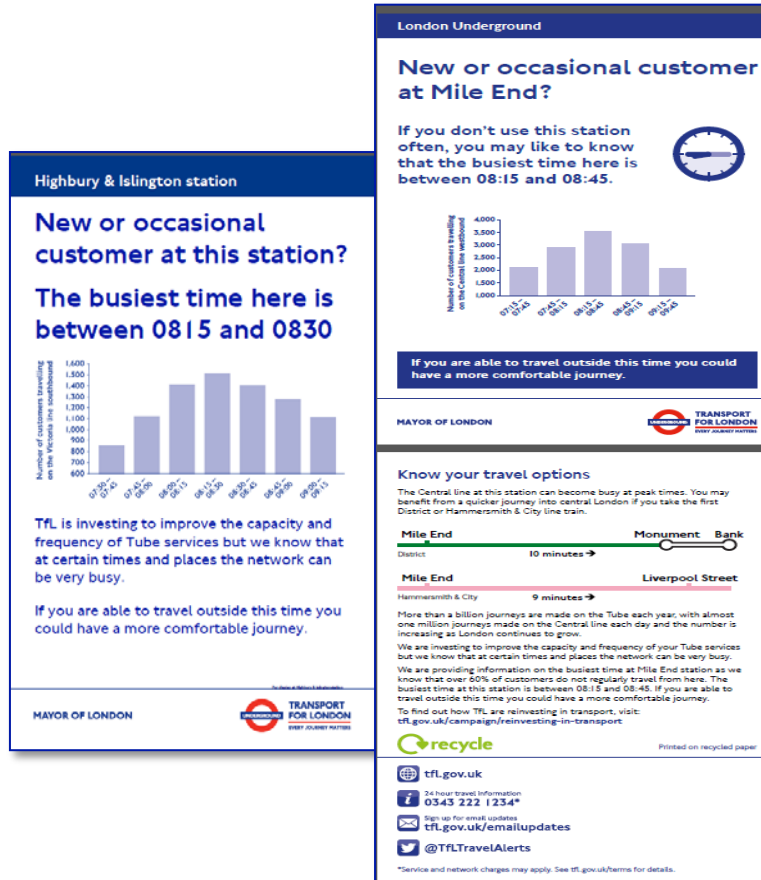- Transforming data into intelligence to drive improvement

- Putting our customers at the heart of what we do

- Improving our operations & safety

- Supporting new capacity & growth

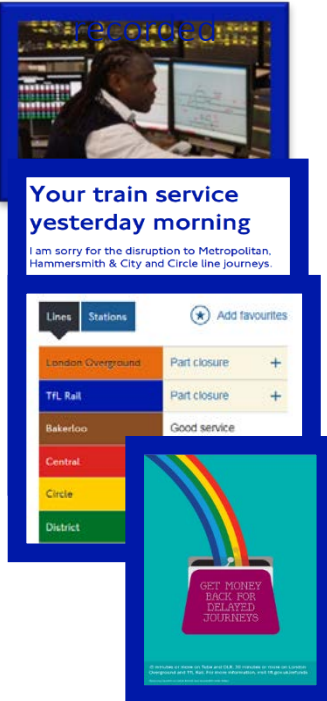And protecting the privacy of our customers is fundamental

Advising customers on travel options

Putting things right when they go wrong

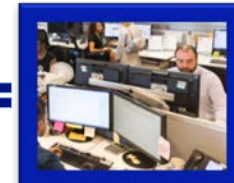**Major disruption**

Our Action

Customer Benefit

TfL Benefit

Operational Research team undertake analysis and pattern matching to identify customers

We automatically refund our customers – no need to apply

Fewer calls to Contact Centre

Understanding Customer patterns

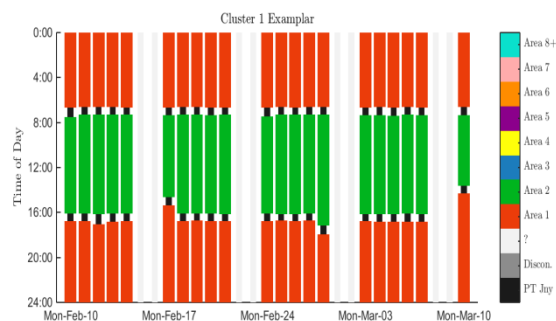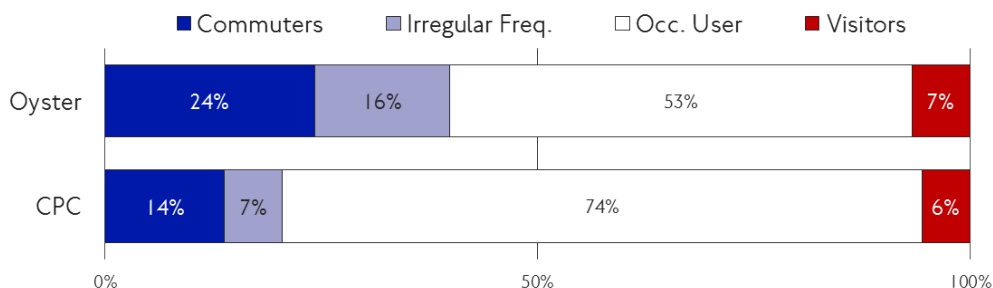| Commuters	Irregular Frequent Users	Occasional Users	Visitors
• Travel often (~4 days/wk) • Regular Schedule • First journey in AM peak • Clear working days • Most journeys to and from same locations	• Travel often (~4 days/wk) • Irregular schedule with variable first journey time • Some working days • Visit more locations than commuters	• Travel occasionally (~ 1 day/wk) • Start travelling later in the day • No working days • Visit various locations from journey to journey	• Travel for limited period (~2.5 days) • Start travelling late morning • No working days • Visit multiple visitor locations

■ Commuters ■ Irregular Freq. □ Occ. User ■ Visitors

	Commuters	Irregular Freq.	Occ. User	Visitors
Oyster	24%	16%	53%	7%
CPC	14%	7%	74%	6%

0%   50%   100%

- Helps to understand response to our messages
- Guides placement of signs at stations
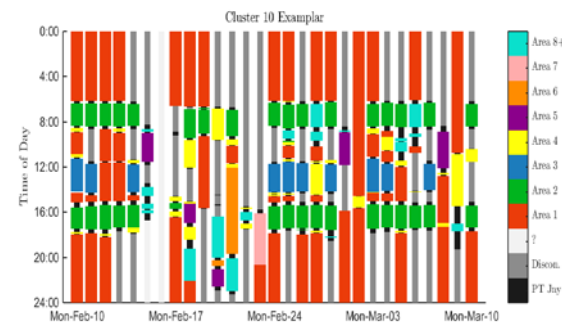
Exploring new opportunities through pilots

By transforming depersonalised WiFi connection data into movements could this help us

- Provide better information to **customers** for journey planning and avoiding congestion?
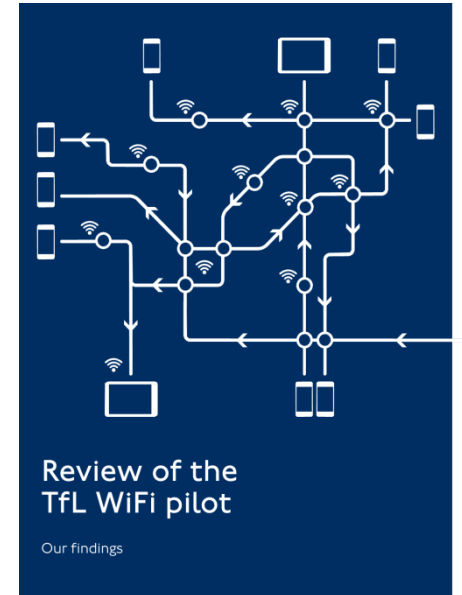
- **Operate and manage** our stations better?

- **Plan** timetables, upgrades etc. more efficiently?

- By measuring footfall, could we generate additional **income to reinvest** in our services?

Transparency was key

Discussions with stakeholders on how analysis could be undertaken on a permanent basis.

Full report: http://content.tfl.gov.uk/review-tfl-wifi-pilot.pdf

Review of the TfL WiFi pilot
Our findings
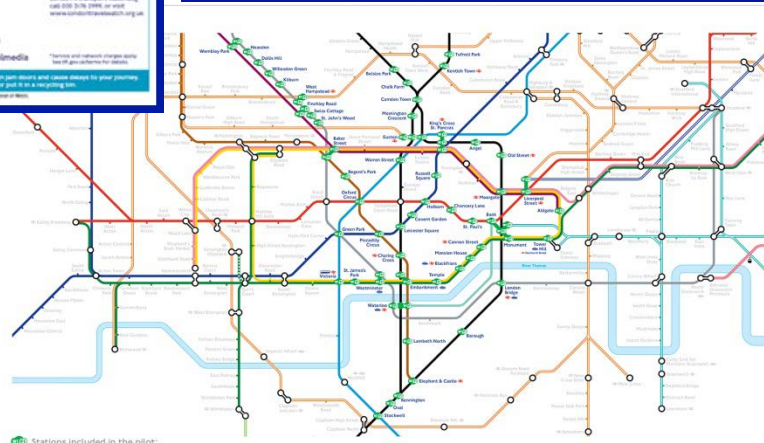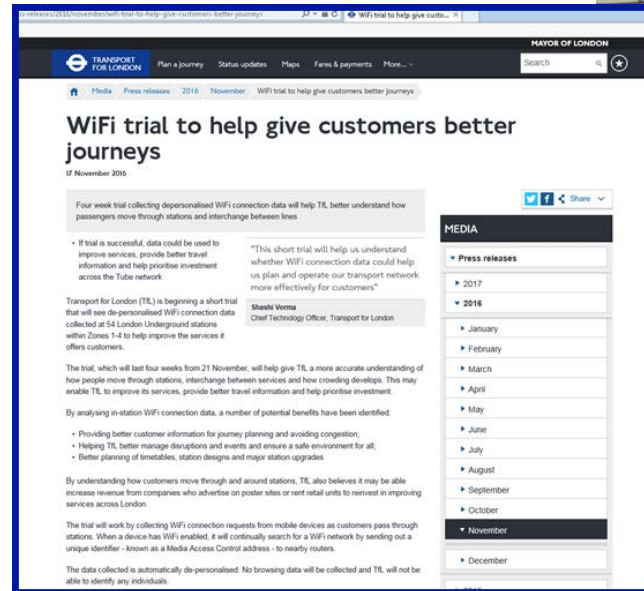
MAYOR OF LONDON   TRANSPORT FOR LONDON

WiFi data collection

Explaining our project

Data was depersonalised and analysed

More than

509 million

probing requests were collected at

54

stations from

5.6 million

devices
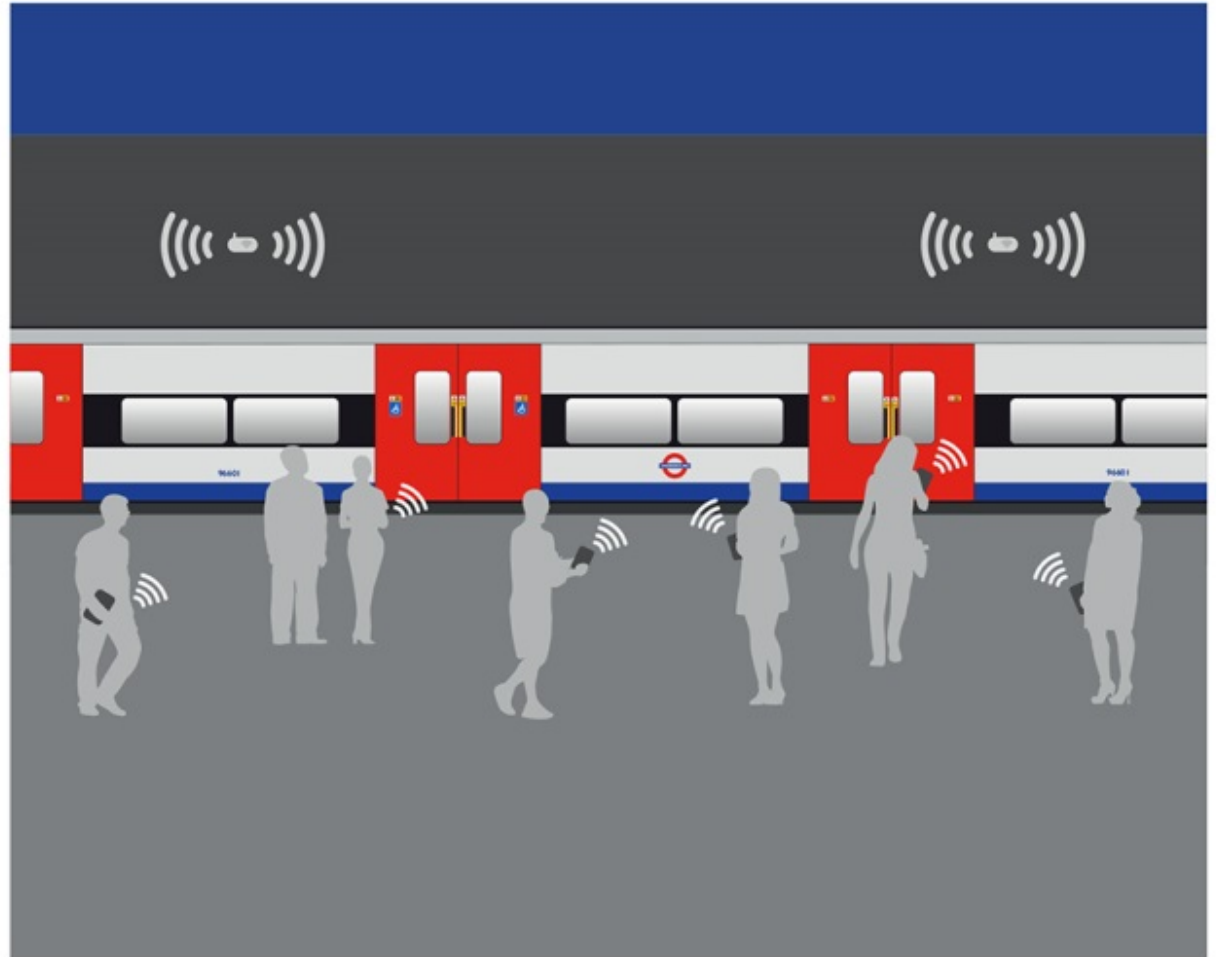
To identify busy stations and trains

WiFi (%)
Oyster (%)

🕐 7:50-7:55		100+ passengers
🕐 7:55-8:00		300+ passengers
🕐 8:00-8:05		500+ passengers
🕐 8:05-8:10		900+ passengers
🕐 8:10-8:15		700+ passengers
🕐 8:15-8:20		900+ passengers
🕐 8:20-8:25		Over 1,100 passengers
🕐 8:25-8:30		900+ passengers
🕐 8:30-8:35		700+ passengers
🕐 8:35-8:40		500+ passengers
🕐 8:40-8:45		700+ passengers
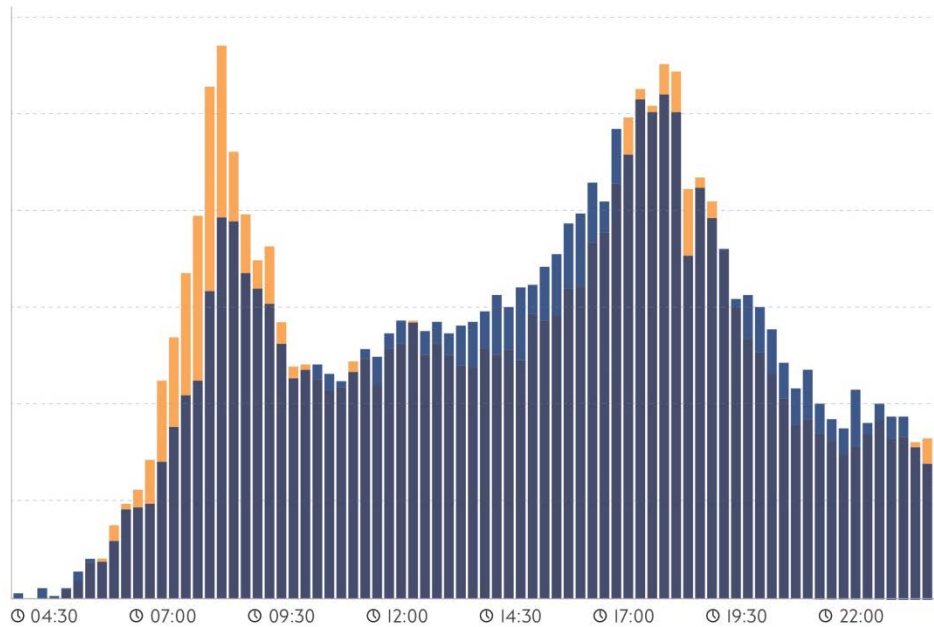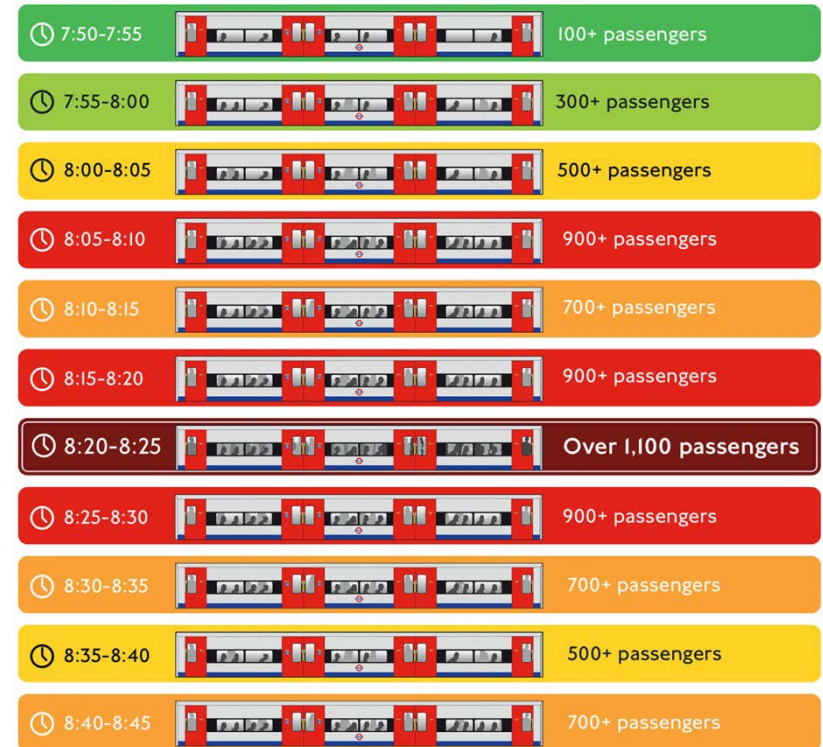
Not crowded ·········· Extremely busy

EVERY JOURNEY MATTERS

To highlight customer movements

68%
of customers use the shortest route at Euston station

EVERY JOURNEY MATTERS
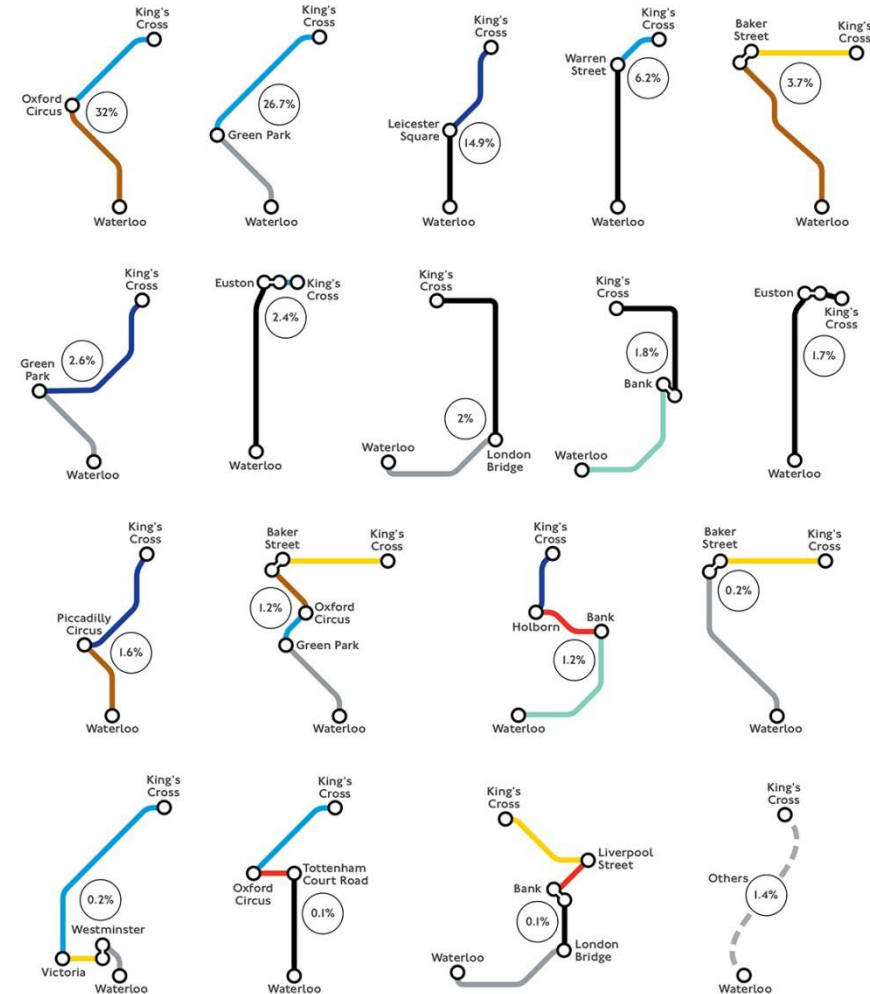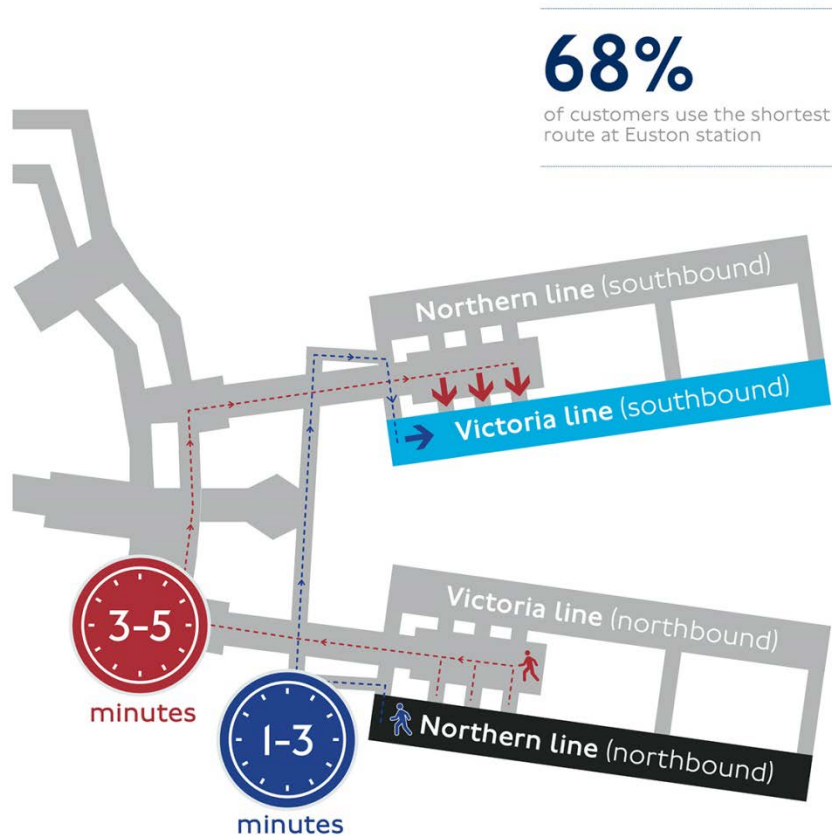
And measure responses to disruption

08:00–09:00 **Waterloo & City line** suspended, which led to customers making a number of different travel choices to get to Bank station

Bank
Leicester Square
Charing Cross
Victoria
Waterloo
London Bridge

■ Higher demand
■ Unchanged
- - Suspended Waterloo & City line

Waterloo — Embankment — Monument/Bank
Waterloo — Westminster
Waterloo — London Bridge — Bank

Additional trains full of people using the route

Crowding levels
Low — Medium — High
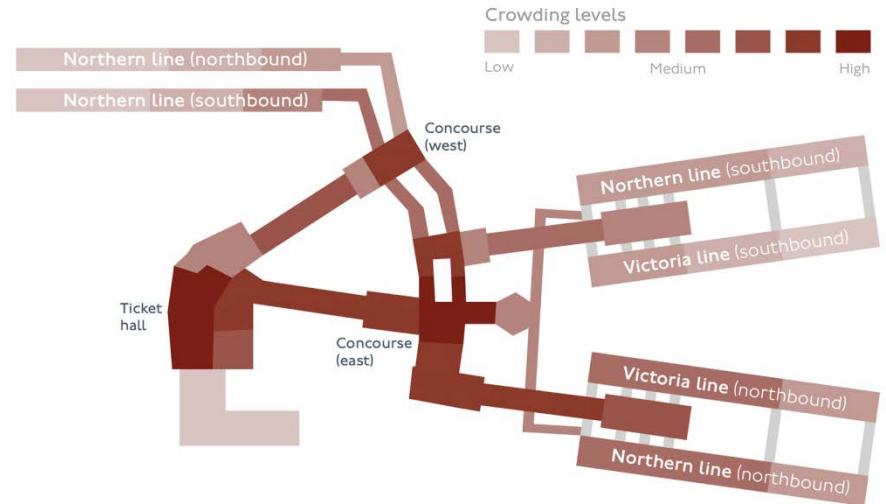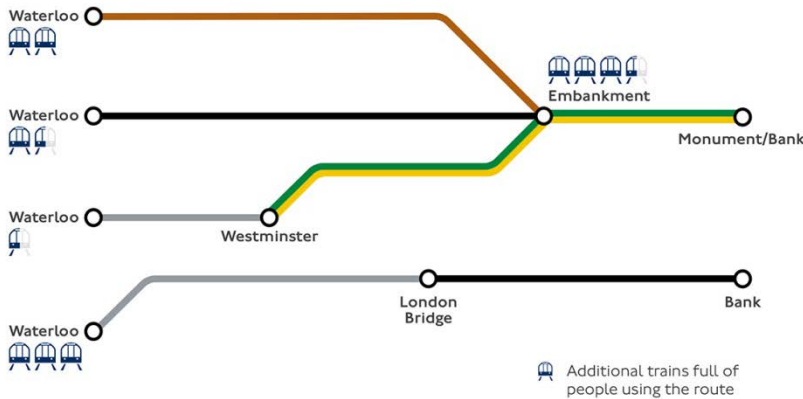
Northern line (northbound)
Northern line (southbound)
Concourse (west)
Northern line (southbound)
Victoria line (southbound)
Ticket hall
Concourse (east)
Victoria line (northbound)
Northern line (northbound)

Walk times increased from **three minutes** at **18:00** to **more than 10 minutes** at **18:30** because of congestion

18:00   18:15   18:30

EVERY JOURNEY MATTERS

Building London's Smart Plan

- The Mayor's Office is building a Smart London Plan to be launched in June 2018

- Headed by Theo Blackwell, Chief Digital Officer

- A listening exercise has started (smart@London.gov.uk)

- Aims:
  - City-wide collaboration & innovation
  - A new deal for city data
  - World-class connectivity
  - Digital capability & skills
  - Openness & responsible tech

- https://medium.com/@SmartLondon/a-smarter-london-together-listening-exercise-for-a-new-smart-london-plan-51be7d9ca203

Data Partnerships

- Our open data policy enables better access to information

- Over 650 apps powered by our data

- 14,400 open data users

- Over 200 elements included in the Unified API

- This has been delivered at very little cost

- Regularly used by 42% of Londoners

- Helps London's economy by up to £130m per year

Delivering for the future: Mayor's Transport Strategy

Healthy streets and Healthy People

A good public transport experience

Planning for new homes and jobs

Our data work must help deliver this

My Big Data Principles

- Programme of work targeted to TfL priorities and draft Mayor's Transport Strategy

- Focus on the right questions and the problems you face. Interesting is not enough and don't start with the data.

> *As a [my job title]*
>
> > *I need [big data insights]*
> >
> > > *So that I can [make a decision my job expects me to]*

Thank you   Lauren Sager Weinstein   ChiefDataOfficer@tfl.gov.uk