Big data, faster indicators and commercial collaborations

Nov 2020

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Creation story

“Although better use of [data] has the potential to transform the provision of economic statistics, ONS will need to build up its capability to handle such data.

This will take some time and will require not only recruitment of a cadre of data scientists but also active learning and experimentation.

That can be facilitated through collaboration with relevant partners – in academia, the private and public sectors, and internationally.”

*Independent Review Economic Statistics*  
Professor Sir Charles Bean, 2016, p.11
The longer a decision-maker has to wait for the statistics, the less useful they are likely to be

Professor Sir Charles Bean (2016)
Review of UK economic statistics
Deployment and products: faster economic indicators

- Barclays – high frequency low latency consumer spending to monitor Covid impact
- Used to model International Passenger Survey: GDP, prices, travel and tourism official stats
- Collaborations with UN, Turing, DIT, FCDO…
Early Indicators

Fig 1. UK GDP Growth Rate

<table>
<thead>
<tr>
<th>January</th>
<th>February</th>
<th>March</th>
<th>April</th>
<th>May</th>
<th>June</th>
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</thead>
<tbody>
<tr>
<td>quarter 1</td>
<td>quarter 2</td>
<td>quarter 1 preliminary estimate</td>
<td>quarter 1 2nd estimate</td>
<td>quarter 1 quarterly national accounts</td>
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Early Intervention

5 years
Length of time from 2008 for the UK economy to return to pre-recession size

-6%
Change in UK GDP between first quarter of 2008 and second quarter of 2009

£12b
Estimated value for earlier identification of 2008 downturn
VAT diffusion indices (monthly & quarterly)
Heatmap visualisation helps spot common signals

Road traffic data

- Highways England sensor data
- Average speeds
- All-England and English ports
- By vehicle length
- Available 2 months before GDP
Shipping Automated Information System (AIS) data

- Marine and Coastguard Agency, ORBCOMM, Global Platform
- Ship tracking data
- Port traffic frequency
- Time in port
- Real time

Exploration and research: JamCams

Using publicly available streamed traffic camera images to monitor busyness during lockdown

- Regular publication in ONS coronavirus faster indicators
- European Statistical System collaboration
- Collaboration with Newcastle University

Aerial photography and satellite imagery – natural capital

vNDVI (48.3%)  GLI (63.7%)  VARI (48.1%)

HSV (16.2%)  Lab(a*) (2.5%)  Lab(a*b*) (3.3%)

Aerial photography and satellite imagery – natural capital

- Assessing quality of Global Surface Water Explorer for trend data
  - SDG indicator 6.6.1 ‘Change in extent of water-related ecosystems over time’

https://datasciencecampus.ons.gov.uk/using-satellite-imagery-to-report-changes-to-water-bodies-for-sdg-6-6-1/
Commercial collaborations – what we have learnt

• Win by multiple means
  – One-size-fits-all does not work – be prepared to be flexible on commercial arrangements, data access, timescales, partnerships and much more

• Coordinate your activity
  – Multiple contact points are confusing
  – Get your material ready – especially data sharing / access legal gateways…

• Collaborate collaborate collaborate
  – Understand your partners requirements / user needs / decision-making process

• Minimise your access to sensitive data
  – Take your analysis to the data … Simplify the data access challenge wherever possible
Case study 1 – Barclays payments data

- Weekly data feed to support UK decision-making
  - Outputs shared with govt decision-makers

- Supported & enabled ONS publications that cannot be collected during the pandemic, eg International Passenger Survey

https://datasciencecampus.ons.gov.uk/payments-data-for-public-good/
Case study 2 – O2 / Telefonica mobile data

- Weekly data feed to support UK decision-making
  - Outputs shared with govt decision-makers

- Valuable additional data and insight for economic and Covid-19 pandemic understanding

https://www.o2.co.uk/business/why-o2/customer-stories/o2-motion-and-ons
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