

Publication and analysis of real-time indicators in the United Kingdom

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Context

- Quest for faster and more accurate economic indicators
- Faster Indicators of UK Economic Activity project (2019)
- Aims: identify close-to-real-time big data and administrative datasets, enable early identification of significant economic changes, and provide insight into economic activity with timeliness and granularity not possible with official economic statistics
- COVID-19 pandemic in 2020 resulted in a need for more timely data
- Now have three main products:
 - Suite of real-time indicators
 - Fortnightly Business Impact of Coronavirus Survey (BICS)
 - Opinions and Lifestyle survey (OPN)

Example: Real-time and COVID-19

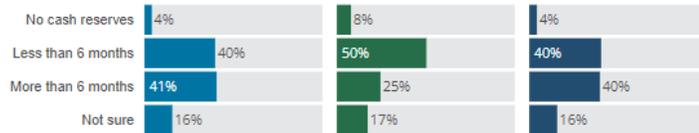
Figure 2: The proportion of the workforce of all UK businesses (excluding those permanently ceased trading) on furlough has decreased to 11%, down from 13% in the previous wave

Headline indicators from the Business Insights and Conditions Survey (BICS), 19 April to 11 May 2021

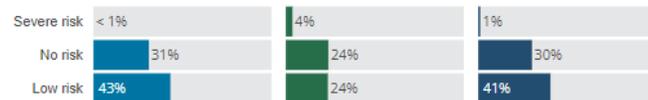
Proportion of businesses by trading status



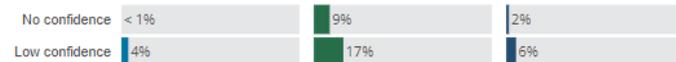
Cash reserves



Risk of insolvency



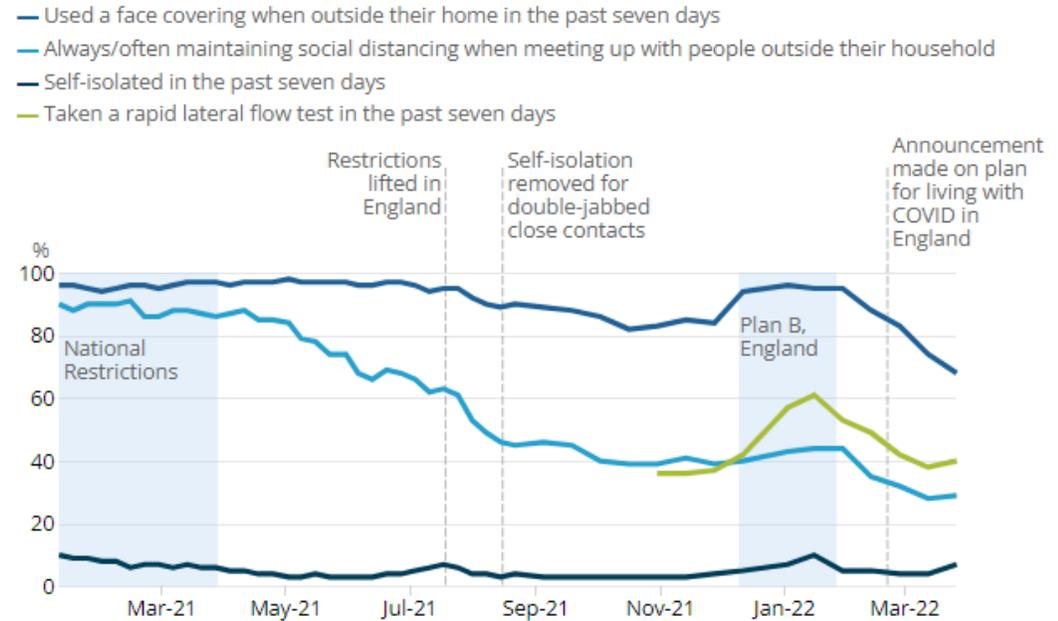
Survival confidence



Source: Office for National Statistics - Business Insights and Conditions Survey (BICS)

Figure 1: Impact of restriction easing on behaviours

Percentage of adults practising preventative measures to slow the spread of coronavirus (COVID-19), Great Britain, January 2021 to March 2022



Source: Office for National Statistics - Opinions and Lifestyle Survey (COVID-19 module)

[Economic activity and social change in the UK, real-time indicators - Office for National Statistics \(ons.gov.uk\)](https://ons.gov.uk/economic-activity-and-social-change-in-the-uk-real-time-indicators)

[Coronavirus and the social impacts on Great Britain - Office for National Statistics \(ons.gov.uk\)](https://ons.gov.uk/coronavirus-and-the-social-impacts-on-great-britain)

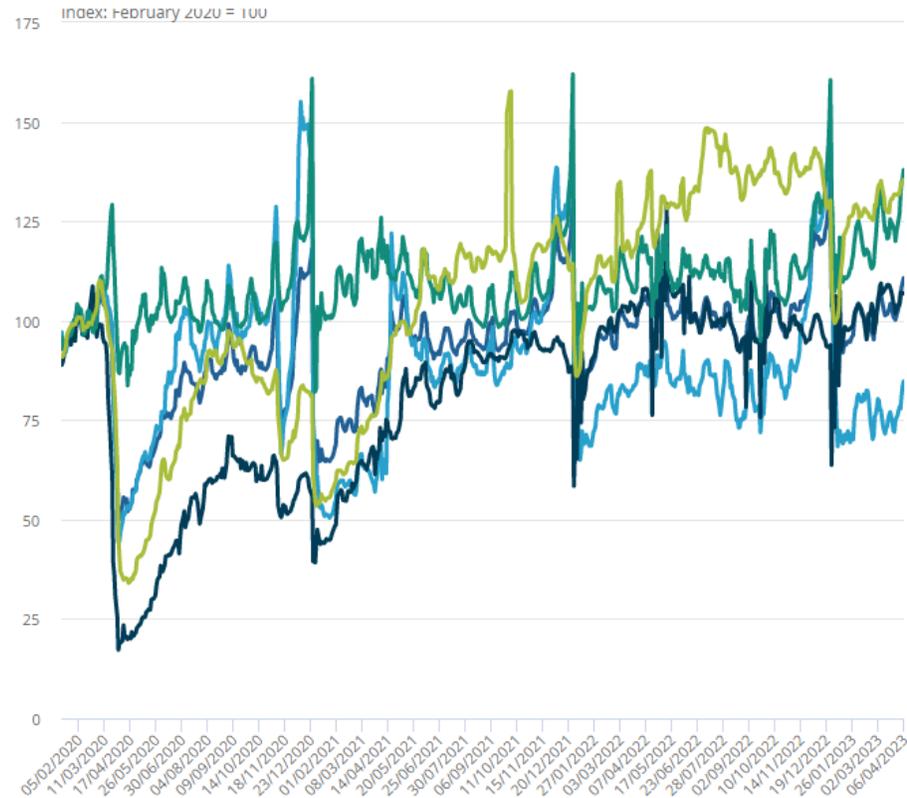
Meeting user needs and working in partnership

- Real-time information helps policy makers assess the current state of the economy
- Acquiring real-time data involves working in partnership with data suppliers
- Challenge: Difficulties in establishing partnerships due to legal, regulatory constraints, data privacy, and security concerns
- Benefits of working across public and private companies
- Public sector organisations have access to data not available to private sector firms, and private sector firms may have access to proprietary data that can provide unique insights
- Working together and sharing data can develop a more complete picture of the economy

Example: CHAPS data from the Bank of England

Figure 1: In the week to 6 April 2023, the aggregate CHAPS-based indicator of credit and debit card purchases increased by 7 points from the previous week and increased by 5 points compared with the same week in 2022

A backward-looking seven-day rolling average, 13 January 2020 to 6 April 2023, non-seasonally adjusted, nominal prices



- Access to BoE daily clearing house data
- Track daily payments made by credit and debit card payment processors to around 100 major UK retail corporates
- Gives an incredibly timely picture of spending habits within the UK
- Breaks down aggregate spending into interesting and related categories
- Can now compare this with the official monthly Retail sales

<https://www.ons.gov.uk/economy/economicoutputandproductivity/output/bulletins/economicactivityandsocialchangeintheukrealtimeindicators/14april2023>

Weekly publication

- Release every Thursday
- Content varies based on indicator availability and frequency
- Have flexibility in publication
- 19 indicators
- 14 datasets
- **Grouped by 4 themes**
- “Data only” for some indicators

Economic activity and social change in the UK, real-time indicators: 14 April 2023

Early experimental data and analysis on economic activity and social change in the UK. These real-time indicators are created using rapid response surveys, novel data sources and experimental methods.

This is the latest release. [View previous releases](#)

Contact:
[Tom Williams](#)

Release date:
14 April 2023

Next release:
20 April 2023

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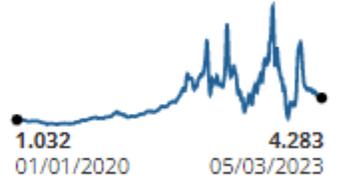
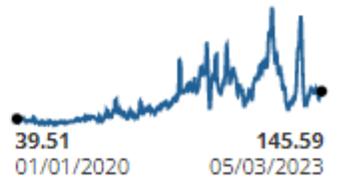
Consumer behaviour

- Selected indicators
- CHAPS spending on credit and debit cards (Bank of England)
- Revolut card spending (Revolut)
- Demand for fuel per transaction (VISA/BEIS)
- Retail footfall (Springboard)
- Weekly transactional data for Pret A Manger (Pret A Manger)
- Restaurant seated diners (OpenTable)

Indicator	Latest data compared with previous period	Latest data compared with equivalent period the previous year	Latest data compared with pre-coronavirus (COVID-19) baseline	Timeline
Aggregate UK spending on debit and credit cards (estimated from CHAPS payments) Source Units	9pp ▲	3pp ▲	5pp ▲	<p>94 13/01/2020 105 02/03/2023</p>
Debit card transactions ages 18-34 Source Units	18pp ▲	36pp ▲	75pp ▲	<p>105 01/01/2020 175 05/03/2023</p>
Debit card transactions ages 35-54 Source Units	8pp ▲	23pp ▲	26pp ▲	<p>126 01/01/2020 126 05/03/2023</p>
Debit card transactions ages 55+ Source Units	1pp ▲	27pp ▲	9pp ▲	<p>104 01/01/2020 109 05/03/2023</p>
Estimated automotive fuel demand per transaction Source Units	-5pp ▼	-17pp ▼	Not available	<p>97 04/07/2021 89 26/02/2023</p>

Energy and housing

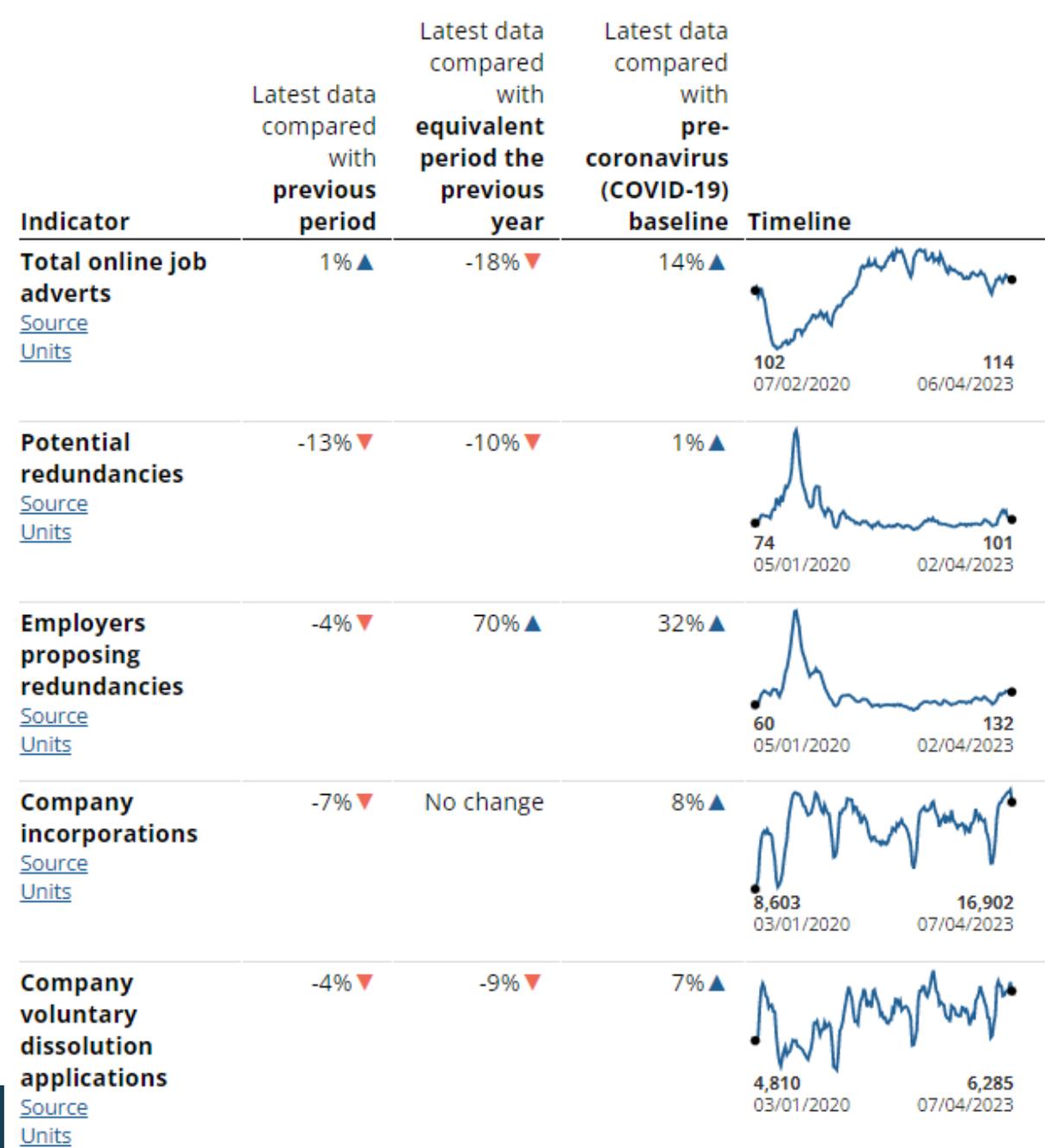
- Selected indicators
- Energy Performance Certificate lodgements (MHCLG)
- System Average Price of gas (National Grid)
- System Price of electricity (Elexon)

Indicator	Latest data compared with previous period	Latest data compared with equivalent period the previous year	Latest data compared with pre-coronavirus (COVID-19) baseline	Timeline
Average automotive fuel price Source Units	-1pp ▼	-15pp ▼	Not available	 <p>118 04/07/2021</p> <p>106 26/02/2023</p>
System Average Price of gas Source Units	-1% ▼	-63% ▼	419% ▲	 <p>1.032 01/01/2020</p> <p>4.283 05/03/2023</p>
System Price of electricity Source Units	15% ▲	-48% ▼	348% ▲	 <p>39.51 01/01/2020</p> <p>145.59 05/03/2023</p>

Source: Office for National Statistics

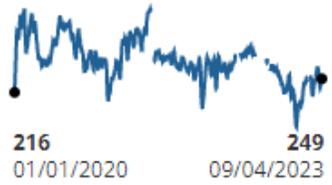
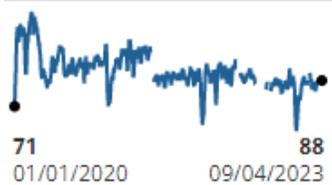
Business and workforce

- Selected indicators
- Online job adverts (Adzuna)
- Redundancies (Insolvency Services)
- Company incorporations, voluntary dissolutions, and compulsory dissolutions (Companies House)
- Data on sales and jobs in small businesses (Xero)
- VAT new businesses and business turnover (HMRC)



Transport

- Selected indicators
- UK flights (EUROCONTROL)
- Traffic camera activity (Regional LG bodies)
- Shipping visits (exactEarth)
- Flights passenger number (Civil Aviation Authority)
- Road traffic in Great Britain (Department for Transport)

Indicator	Latest data compared with previous period	Latest data compared with equivalent period the previous year	Latest data compared with pre-coronavirus (COVID-19) baseline	Timeline
Total ships visits Source Units	9% ▲	-6% ▼	Not available	 <p>216 01/01/2020</p> <p>249 09/04/2023</p>
Cargo and tanker ship visits Source Units	No change	-4% ▼	Not available	 <p>71 01/01/2020</p> <p>88 09/04/2023</p>

Source: Office for National Statistics

Our weekly publication

- The production team faces tight deadlines and receives data on Mondays and Tuesdays, which is then processed and formatted for publication on Thursdays at 9:30 am.
- The production team has 11 full-time equivalent staff members, including a development team of four people who are instrumental in creating and improving automated data processing systems (R and Python, Power BI, time series analysis)
- Quality assurance is comprehensive including passing written sections to data suppliers/stakeholders for quality assurance
- Key: automation of tasks and reproducible statistical pipelines

Our statistical production

- Python / R: data transformation; partial quality assurance automation; data outputs; .html outputs; tkinter applications; gptables accessible datasets;
- Git: version control; documentation
- Power BI: Reports and dashboards; data checking; charts; summary statistics; tables
- Power Query: data modelling; sharepoint work flow; automation
- Automation approach
 - Incremental Developments (GitLab massive help here)
 - Exploring new ideas
 - Communication between production analysts and developers

Power BI Dashboard

Power BI Real-time Indicators

Home

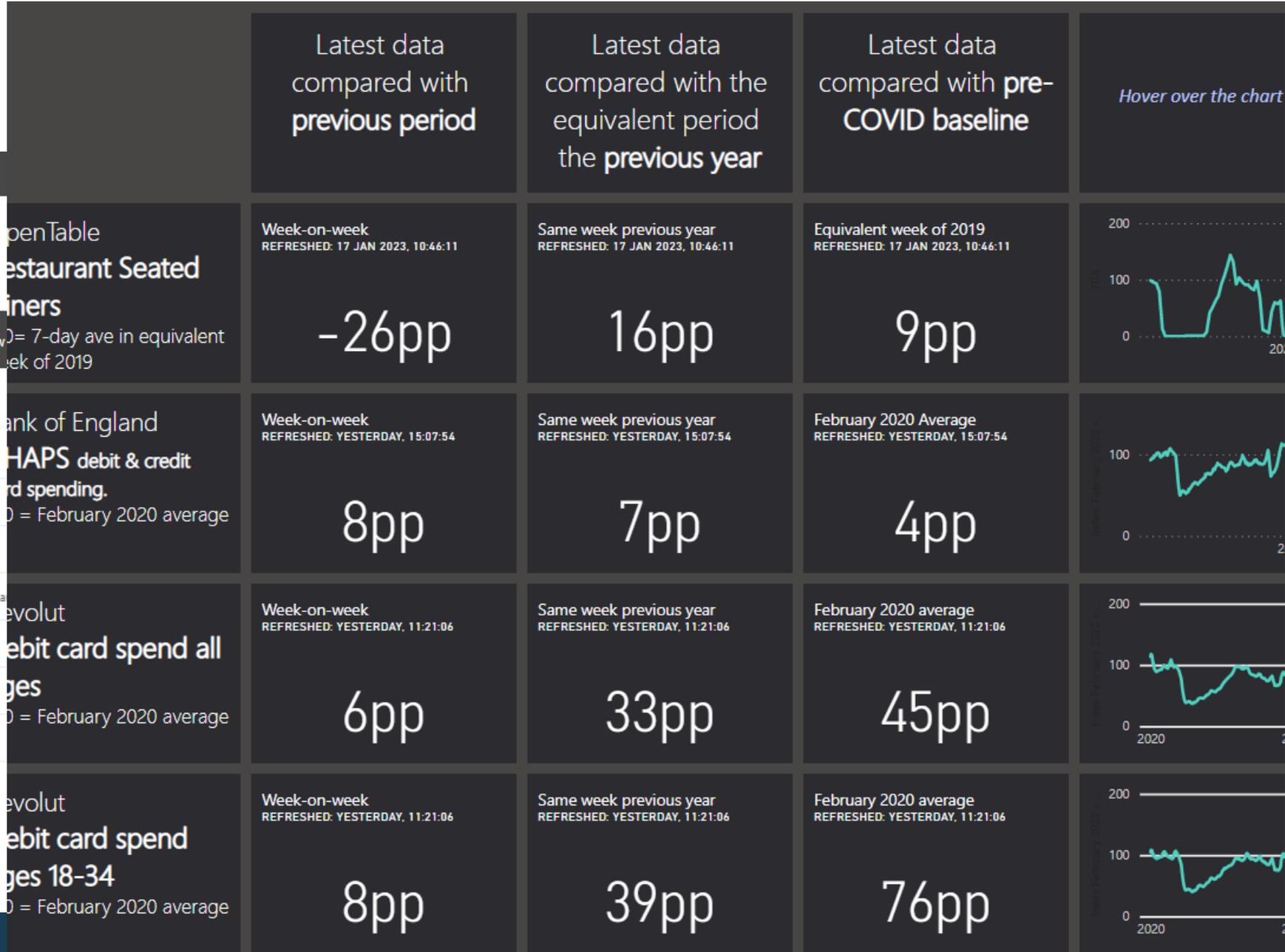
Real-time Indicators
Place for work on new structured bulletin

+ New Upload

We updated the look of workspaces Take a tour, and we'll show you how

All Content Datasets + dataflows

Name	Type
Adzuna	Report
Adzuna	Dataset
Business Insights & Workforce	Dashboard
CAA Flights	Report
CAA Flights	Dataset
CHAPS	Report



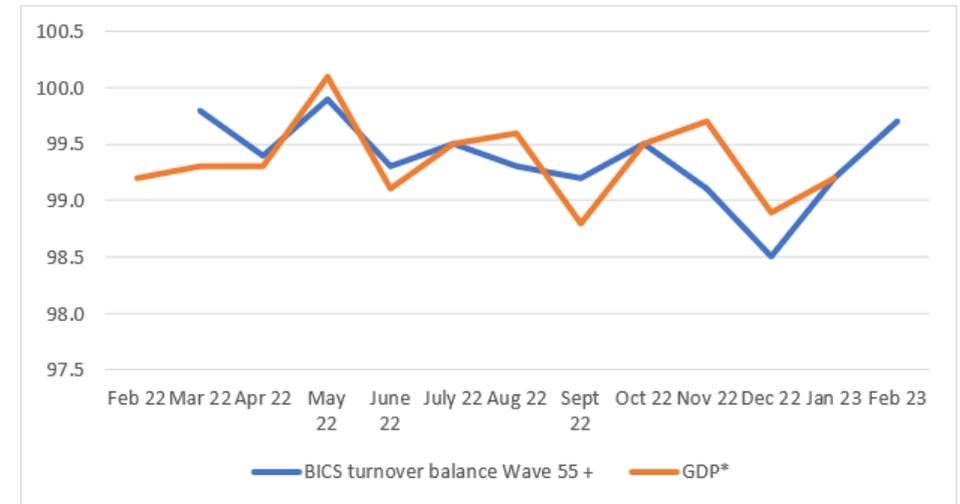
National Accounts and real-time indicators

- UK publishes monthly and quarterly GDP
- Access now to a large range of real-time data with different frequencies (e.g. weekly, fortnightly, and also detailed management information used internally)
- Policy approach: Need to consider the relationship of real-time data alongside official indicators
- Issues to consider
 - Publication strategy for different frequencies and outputs
 - Signal v noise (high frequency data)
 - ...

National Accounts and real-time indicators

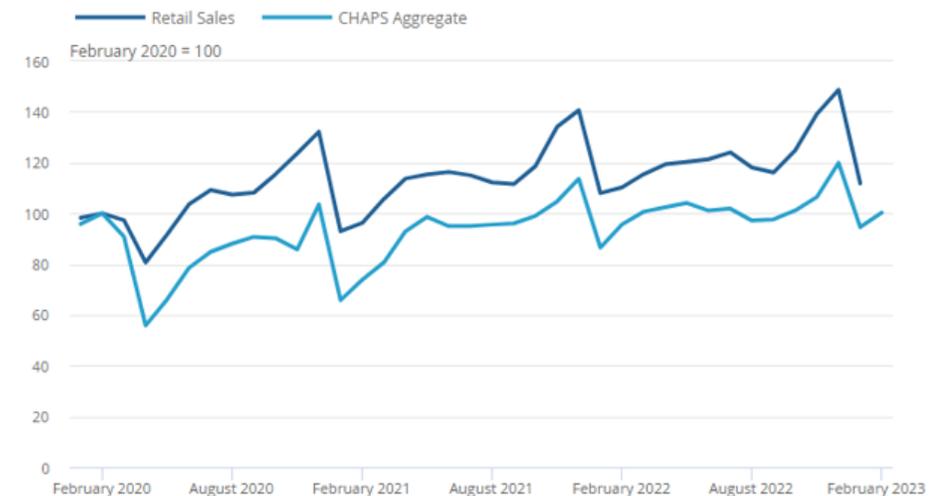
- Some examples
 - For restaurant sector in mGDP compare with the Opentable restaurant reservation dataset
 - For air transport, and for elements of retail spending we will look at the spending categories within the various consumer spending indicators, e.g. CHAPS (BoE data) and Revolut spending.
- Can construct turnover balance indicators from fortnightly source (Business survey) and compare to a modified mGDP; and compare Retail sales to card data.

Business Insights and Conditions Survey (BICS) standardised turnover balance estimate and monthly GDP* estimates follow similar trends, February 2022 until February 2023 |



Retail sales data follow a similar trend to the CHAPS index of aggregate credit and debit card spending

Indices: February 2020 = 100, non-seasonally adjusted, nominal prices and retail sales values, January 2020 to February 2023



The future

- Ambition for the UK is to have *real-time* real-time indicators; e.g. publish indicators when they are ready onto a dynamic and interactive data portal for users
- Currently exploring: seasonal adjustment for high-frequency data; now-casting techniques in partnership with our Data Science Campus and academics
- Researching new indicators: anonymised and aggregated utility bills; granular geographical data; renting affordability; cargo manifests; composite indicator, ...
- Real-time indicators are here to stay!