



Department  
for Transport



# **New data sources for greater supply chain visibility: a focus on container flow**

**United Kingdom  
3 April 2023**

OFFICIAL

# Maritime global supply chain issues

12% of global trade passes through Suez and 30% of all containership traffic<sup>1</sup>.

Ever Given ran aground in Suez Canal in March 2021.

Blocked the Suez for 6 days causing backlog of over 400 vessels (80 containerships, >1m TEU\*).

\*TEU = Twenty Foot Equivalent

1) <https://www.weforum.org/agenda/2021/03/the-suez-canal-in-numbers/>



# Maritime supply chain and the UK



95% of all goods come to the UK by sea.



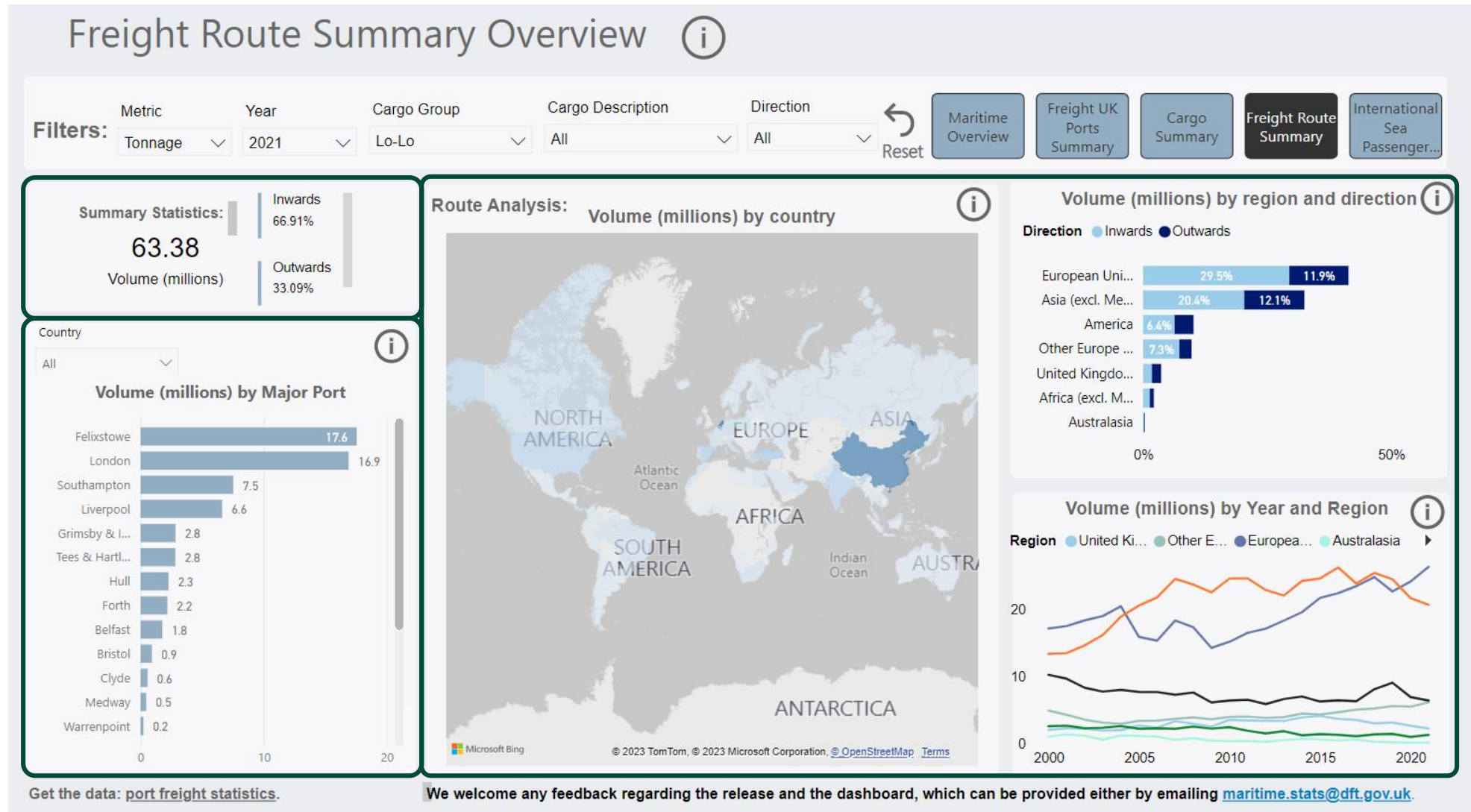
14.5% (63m tonnes) arrives by containership.



10.4m TEU in 2021 at UK ports



# What data do we currently have?



# Problem

- **Understanding movements in a more timely way**

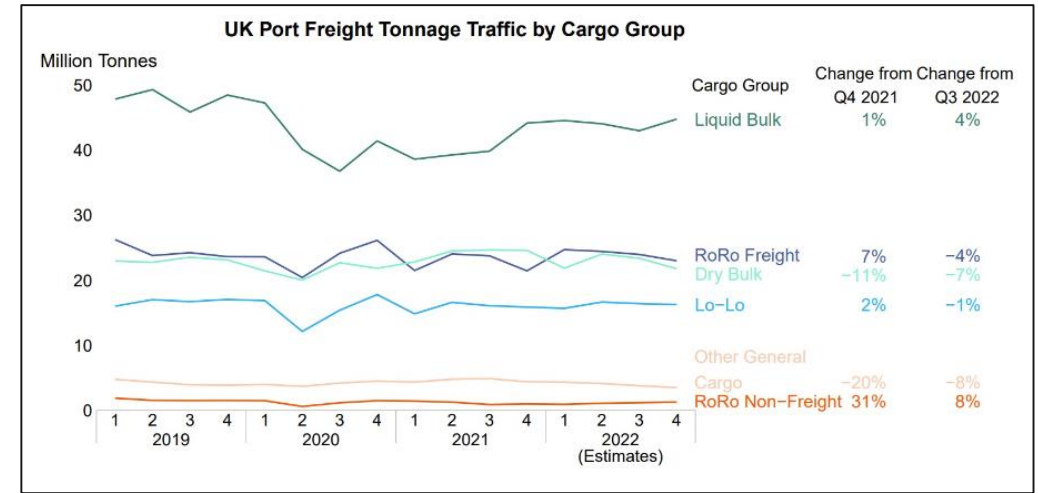
- Quarterly statistics is currently the most granular data we have.

- **What's in the container?**

- Cargo categorisation is complicated, takes a lot of validation and is very high level so we cannot tell the exact goods.

- **Port connectivity**

- We do not know where the goods go after the port and how they get to their final destination.



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**Port Freight Statistics** (last update December 2019)

**Categorisation Flowchart**

For more details, please check the complete [notes and definitions](#).

**What does the cargo look like?**  
**How is the cargo carried on the ship?**

↓

**Load on-Load off Container**  
What is the size of the container?  
*The cargo inside is not of interest here, but its weight. Do not include the weight of the container.*

**Liquid Bulk**

**Dry Bulk**  
(can be scooped)

**Roll-On Roll-Off**  
(vehicle or other container rolled onto ship)  
Only include the tonnage of the cargo, not the weight of the vehicle/carrying unit

**Other**  
(none of the above)

99 - less than 20 foot containers  
 31 - 20 foot containers  
 32 - 40 foot containers  
 33 - Freight containers between 20 and 40 foot in length  
 34 - Freight containers over 40 foot in length

11 - Liquefied gas, e.g. butane, propane and LNG  
 12 - Crude oil. If weight is unavailable, 1 barrel of oil = 0.14 tonnes  
 13 - Oil products (i.e. derivatives of petroleum), including diesel, gasoil, aviation fuel, reformat, gas condensate and benzene heat cut.  
 19 - Other liquid bulk, **not related to petrochemicals** e.g. molasses, juices, ethanol, liquid fertilizer

21 - Ores and scrap, e.g. iron ores, metal scraps, rutilite sand.  
 22 - Coal, coke, coke breeze and coke foundry **but not coal by-products (e.g. gypsum, fly ash and slag).**  
 23 - Bulk agricultural products, e.g. grain, soya or tapioca. Only grains **but not fertilizer or processed, grains (rape or soya meal/pellets) or animal feeds.**  
 29 - Other dry bulk, e.g. coal by-products, ash, fertiliser products, cement, aggregates, wood pellets or wood chip **but not wood pulp.**

51 - Road goods vehicles with or without accompanying trailers, **not import/export motor vehicles**  
 52 - Passenger cars, motorcycles with or without any accompanying trailers/caravans, **not import/export motor vehicles**  
 53 - Passenger buses, which are not for trade.  
 54 - Import/export motor vehicles  
 59 - Other mobile self-propelled units, e.g. a mobile crane that is being moved but not traded.

61 - Unaccompanied road goods trailers and semi-trailers.  
 62 - Unaccompanied caravans and other road, agricultural or industrial vehicles  
 63 - Rail wagons, shipborne port-to-port trailers and shipborne barges, e.g. containers/cargo loaded onto MAFI's or lash barges. One MAFI loaded with cargo is recorded as one unit and the weight is entered.  
 69 - Other mobile non self-propelled units, e.g. large industrial vehicles carrying goods which are pulled on to the vessel.

56 - Live animals on the hoof  
 91 - Forestry products, **including timber, paper and pulp (when shipped as break bulk).**  
 92 - Iron and steel products, e.g. steel coils, uncoated metal pipes and strip but not manufactured products  
 99 - Other general cargo (none of the previous categories or less than 20 foot containers). This includes any goods that are transported in bags, barrels, on pallettes, etc.

**Common miscoding errors!**

- Check the content of the liquid bulk, not everything is "other liquid bulk".
- Bulk agricultural products (23) only include grains and not processed or fertilised.
- Wood pulp is a forestry product (91), not a bulk agricultural products or other dry bulk.
- Similarly, wood pellets and chip are considered other dry bulk (29).
- Check if the iron and steel is a product (92) or metal ore and/or scrap (21).
- Any vehicle being shipped for trade is 54.

# What is the new data?

- **Shipping Instructions for UK imports and exports transported by sea, taken from Bills of Lading**
- **Datasets:**
  - Events: with information on events such as port arrival and departure.
  - Transactions: with information on senders and receivers, goods, containers, ships and ports.
- **Coverage:**
  - Does not cover all sea-based UK imports / exports, but approximately 70%.
- **What does the data look like and what can we use it for?**

# Tracking containers - example

Carrier	Container No.	Container Type	Event Type	City Name	Country	Vessel Name	Event Date
CMA CGM	TCNU5126281	40 ft	Empty Picked Up	Karachi	Pakistan	SYMI I	2020-12-08 11:05:00
"	"	"	Gated In	Muhammad Bin Qasim / Karachi	Pakistan	SYMI I	2020-12-09 12:07:00
"	"	"	Vessel Load	Muhammad Bin Qasim / Karachi	Pakistan	MSC LISBON	2020-12-15 16:55:00
"	"	"	VESSEL DEPARTURE	Muhammad Bin Qasim / Karachi	Pakistan	MSC LISBON	2020-12-16 04:55:00
"	"	"	VESSEL ARRIVAL	Mundra	India	MSC LISBON	2020-12-22 01:19:00
"	"	"	Unloaded from Vessel	Mundra	India	MSC LISBON	2020-12-22 13:19:00
"	"	"	Vessel Load	Mundra	India	MSC AMALFI	2020-12-24 21:32:00
"	"	"	VESSEL DEPARTURE	Mundra	India	MSC AMALFI	2020-12-25 09:32:00
"	"	"	VESSEL ARRIVAL	Southampton	United Kingdom	MSC AMALFI	2021-01-14 21:25:00
"	"	"	Unloaded from Vessel	Southampton	United Kingdom	MSC AMALFI	2021-01-15 09:25:00
"	"	"	Loaded Truck	Southampton	United Kingdom	MSC AMALFI	2021-01-25 03:40:00
"	"	"	Gated Out	Southampton	United Kingdom	MSC AMALFI	2021-01-25 03:41:00
"	"	"	Delivered	Southampton	United Kingdom	MSC AMALFI	2021-01-25 04:41:00

What's in the container?

Carrier	Shipper	Consignee	Port of Loading	Country	Port of Delivery	Country	Cargo Description	Weight (kg)	Container Count
CMA CGM	Shipper Company Name	Consignee Company Name	Muhammad Bin Qasim / Karachi	Pakistan	Southampton	United Kingdom	Printed bedlinen of man-made fibres	11,847	1

# Practical uses

- **UK port strikes in October 2022:**

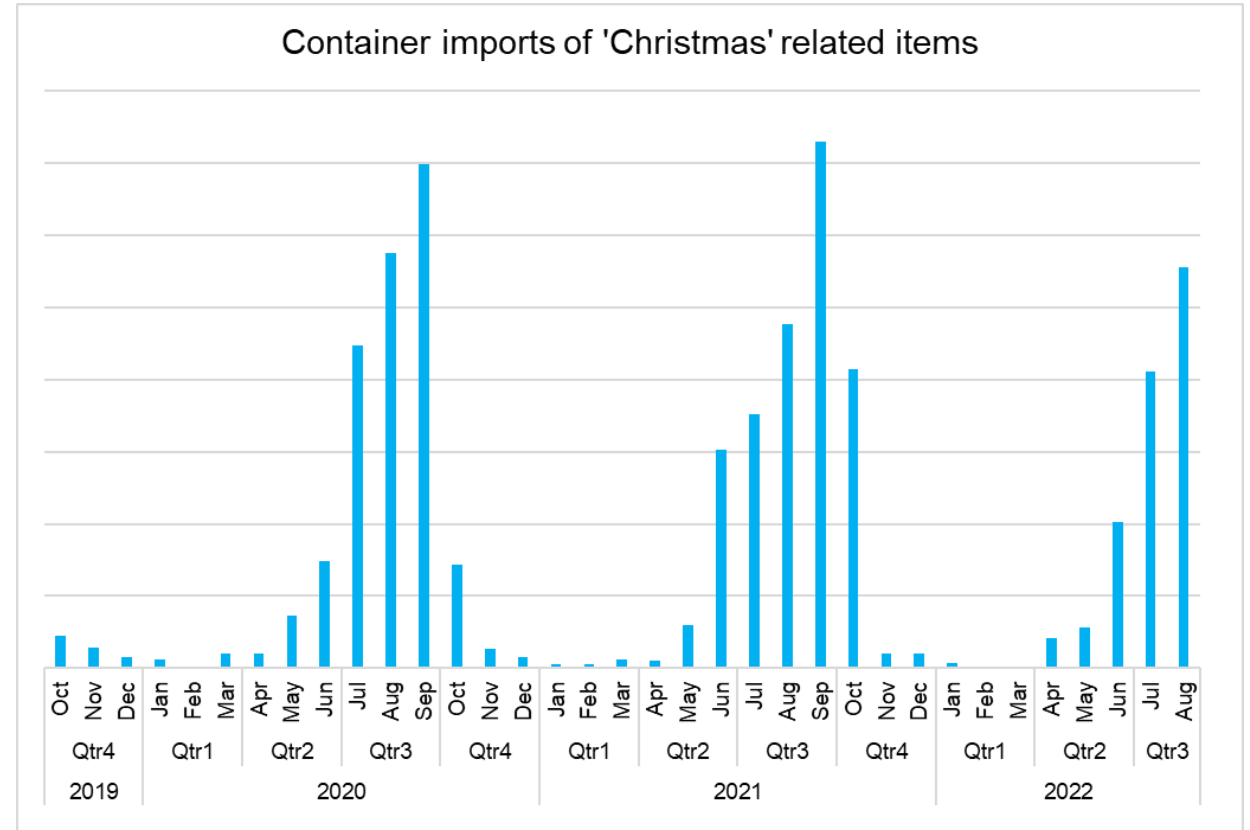
- Will we have all the goods in the UK for Christmas?

- **Another Suez type incident:**

- What goods will be delayed?
- Can those goods go an alternative route?

- **Port to door movement:**

- How are goods moved inland?
- What % of goods on lorries vs trains?





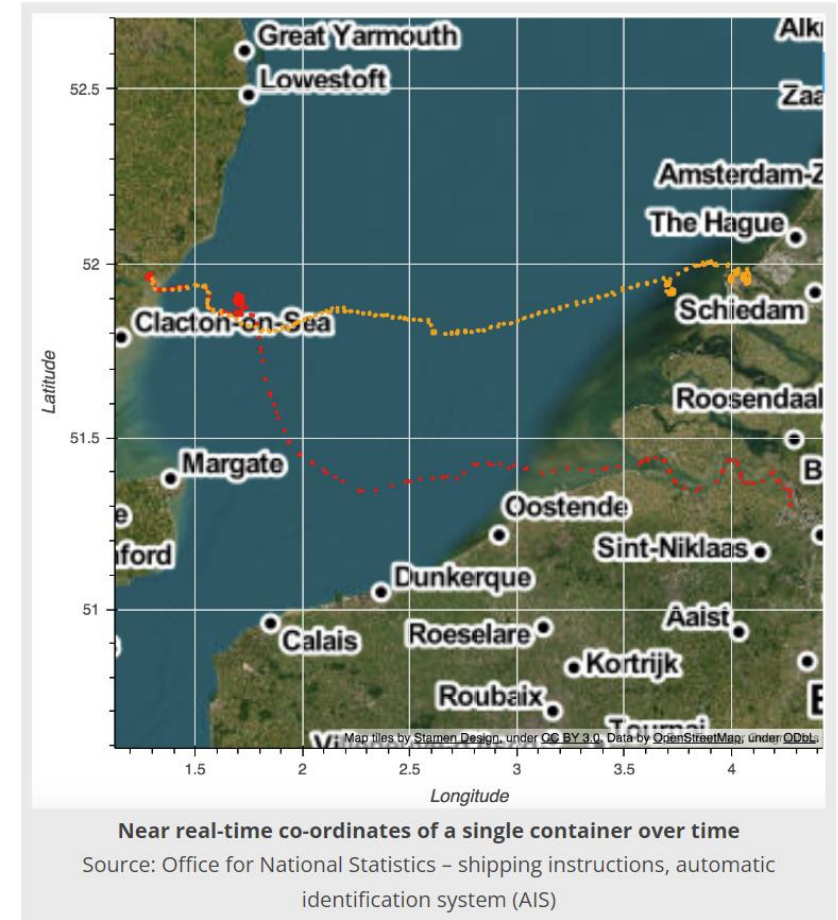
# More advanced analysis

- **AIS routes with Office for National Statistics**

- In this example they track shipments of specific goods from Antwerp to Felixstowe (red line) and from Felixstowe to Rotterdam (orange line).
- Allows us to accurately track container movements to better understand our supply chain.

- **Global Supply Chain Logistics Dashboard with Department for Business and Trade**

- Matching the shipping instructions dataset with HMRC (His Majesty's Revenue and Customs) data.
- This will inform the monetary cost of maritime supply chain routes.



<https://datasciencecampus.ons.gov.uk/using-new-shipping-data-to-improve-government-understanding-of-trade-flows/>

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