Behind the Screens

VV Trade

Special Projects Manager, Craig Jallal describes the methods used to examine ton mile demand.

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VV Trade is a real-time vessel trade and ton mile analysis tool.

It provides data and analytics to support decisions on investments, trading and vessel operations.

Ton mile demand is calculated at the vessel level and provided at any level of granularity needed (i.e. for individual vessel, owner, global fleet, port, trading route and country level).

In this methodology document, I'll explain how we derive ton mile.

What is Ton Mile Demand?

Vessel Ton Mile Demand = "Laden distance travelled" X "Deadweight (DWT)" X a "factor" (c. 0.95)

How does VV collect Ton Mile Demand data?

We collect ton mile demand from combining real-time vessel movements with a variety of data and algorithms as explained below:

Satellite and terrestrial AIS data informs the current and historical location of the vessel and reported draft (see below for list of items in AIS broadcast):

- Maritime Mobile Service Identity (MMSI) number
- IMO number
- Radio call sign
- Name
- Type of ship
- Dimensions
- Location of positioning system on ship
- Draught
- Destination ETA
- Date stamp
- Captain's Report

Our vessel database informs the cargo carrying capacity of the vessel, survey schedule, laden/ballast draft and dimensions. See the separate document, "The Data", which explains the methodology of the vessel database and valuations.

Our location database identifies load/discharge ports, bunkering areas, dry-dock locations, layup areas etc.

We input data into our **algorithms** to identify "Journeys". We define Journeys as the distance between a vessel picking up cargo and dropping it off.

Complications

Laden/Ballast Status

Identifying if the vessel is laden is complicated by inaccurate/delayed reporting of the draft in the captain's report of the AIS signal. We use the reported draft, combined with data on the laden draft depths for every vessel, as one indicator of the vessel being laden. However, we also use proprietary algorithms to analyse the probabilities of ports being for loading or discharging for different vessel types. The combination of these two metrics allows accurate estimation of the laden statuses of each vessel in the global tanker and bulker fleet.

Stoppages

The algorithm also analyses the speed, time and location of vessels slowing to determine the nature of the stoppages. Stoppages recorded are:

1. Load
2. Discharge
3. Layup
4. Idle / Waiting
5. Drydock
6. Transit
7. Floating Storage
8. Bunker zone
9. Waiting to discharge
10. Waiting to load
11. Ballast water discharge

Journeys

Identifying Journeys is complicated by partial discharges, transhipments, bunkering, waiting, dry-docking and other stoppages shown above. Our algorithms eliminate the effects of these complications so that all journeys are accurately measured.

Vessel Movements

For operational and logistical reasons, vessels rarely sail from a load port to the discharge port at a steady speed. Our analysis of AIS voyage data shows a wide range of decreases in speed, stoppages and other events that detract from simply recording a voyage as from A to B uninterrupted. Indeed, to do so would produce a less accurate average speed for the interrupted voyage. We use an AI engine and logic to determine the underway section of the voyage to produce a weighted harmonic average speed on the voyage. As with ton mile, this is built up from vessel level to sector and global fleet level.

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