BI-E05-Visualization Metabase

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Part I

Q1) Please, answer following question - what is "automatic explorations" in the terms of Metabase?

A1) Automatic Explorations is a Metabase feature that automatically looks at your data and shows useful information.

It creates simple summaries, trends, and details without you writing any query.

Q2) Please, answer following question - what means “asking a new question" in the terms of
Metabase? How can you utilize this functionality of this tool?

A2) In Metabase, asking a new question means creating a new query to explore your data.

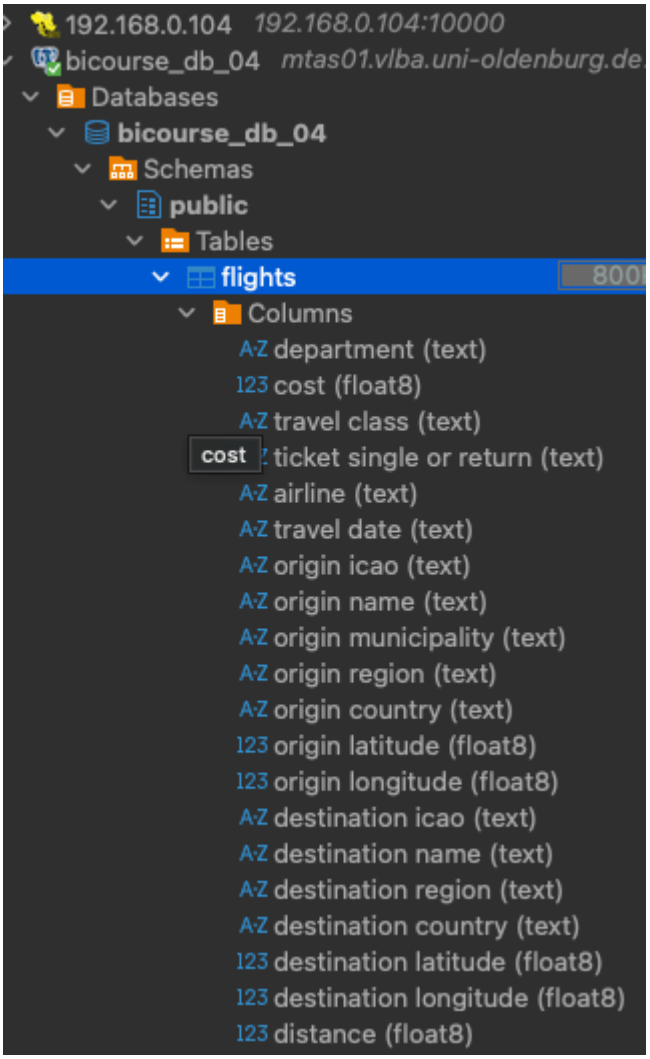
A “question” is basically a report, chart, table, or SQL query you build.

Q3) Please, answer following question – what types of the visualizations this tool provides?

A3) Metabase provides tables, time series charts, comparison charts, maps, funnels, scatter plots, and metric cards, allowing you to visualize data in many different ways.

Part II

Task 1: Import “flights” dataset into the database

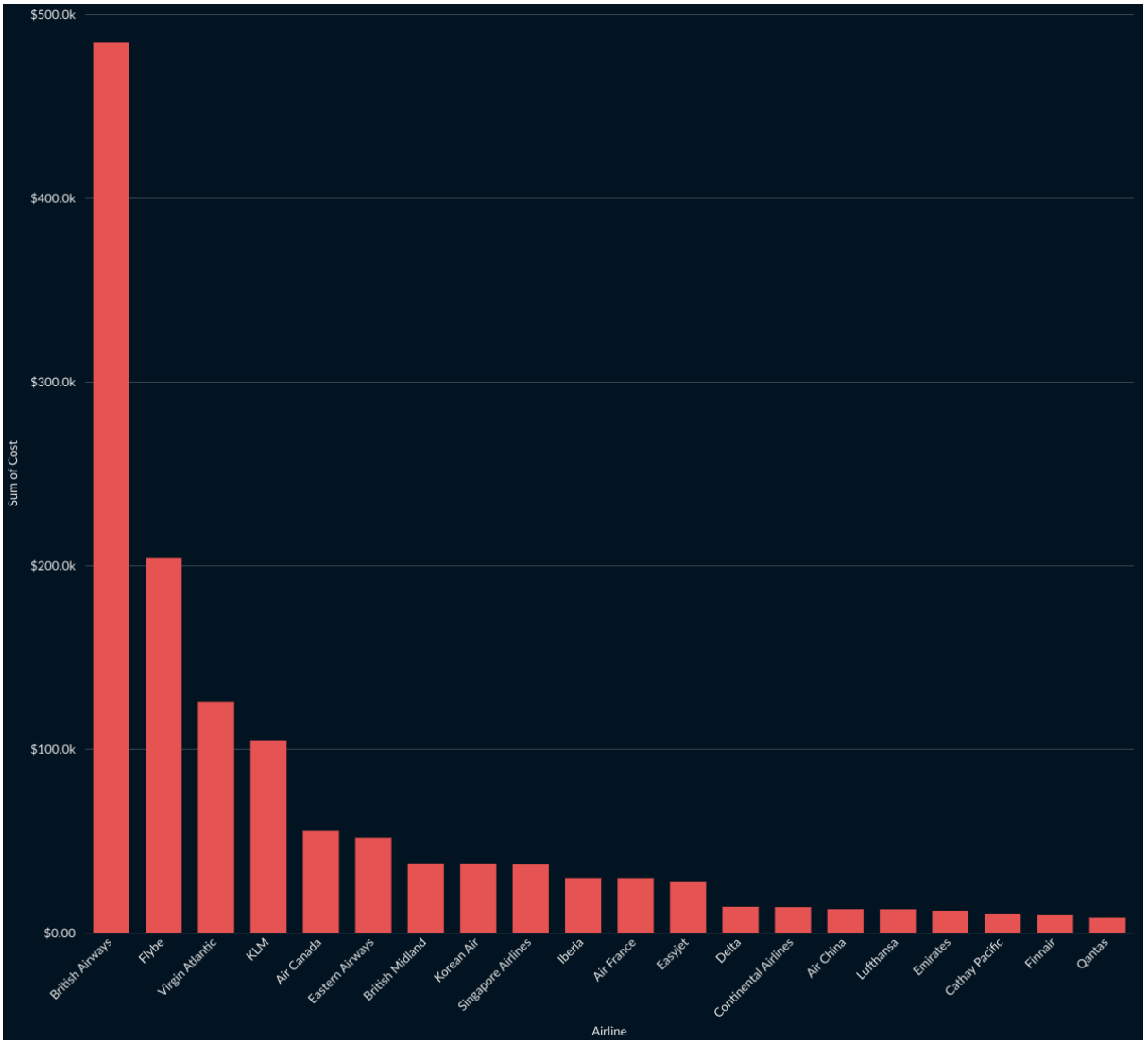


Task 2: What kind of data / fields the dataset contains? List them (name + data type)

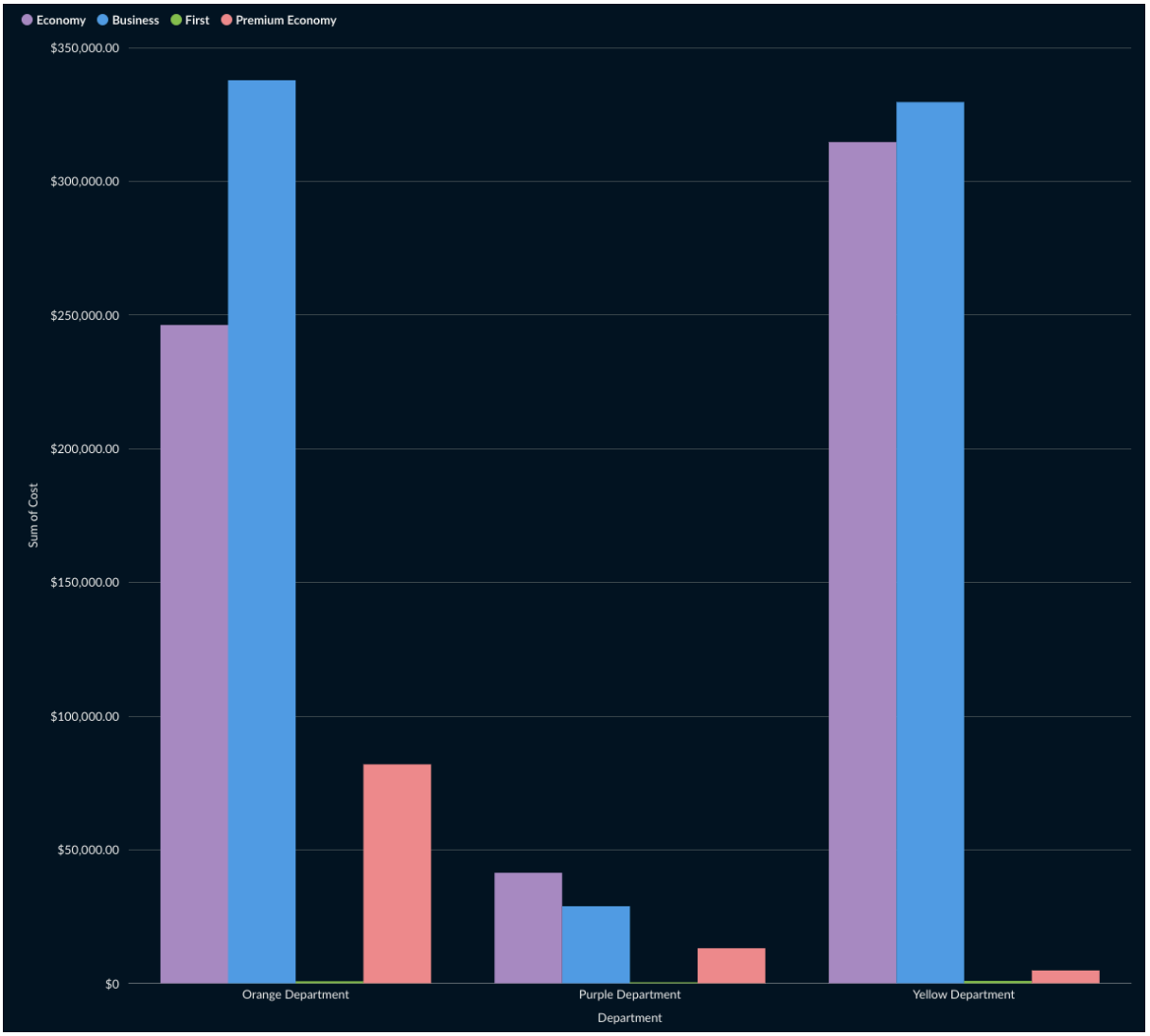
Field name	Data type
department	text
cost	float8
travel class	text
ticket single or return	text
airline	text
travel date	text
origin icao	text
origin name	text
origin municipality	text

Field name	Data type
origin region	text
origin country	text
origin latitude	float8
origin longitude	float8
destination icao	text
destination name	text
destination region	text
destination country	text
destination latitude	float8
destination longitude	float8
distance	float8

Task 3: Reproduce this plot by using “red” color for the bar chart and limiting airlines to 20c



Task 4: Reproduce the given plot. Which insights you can spot?

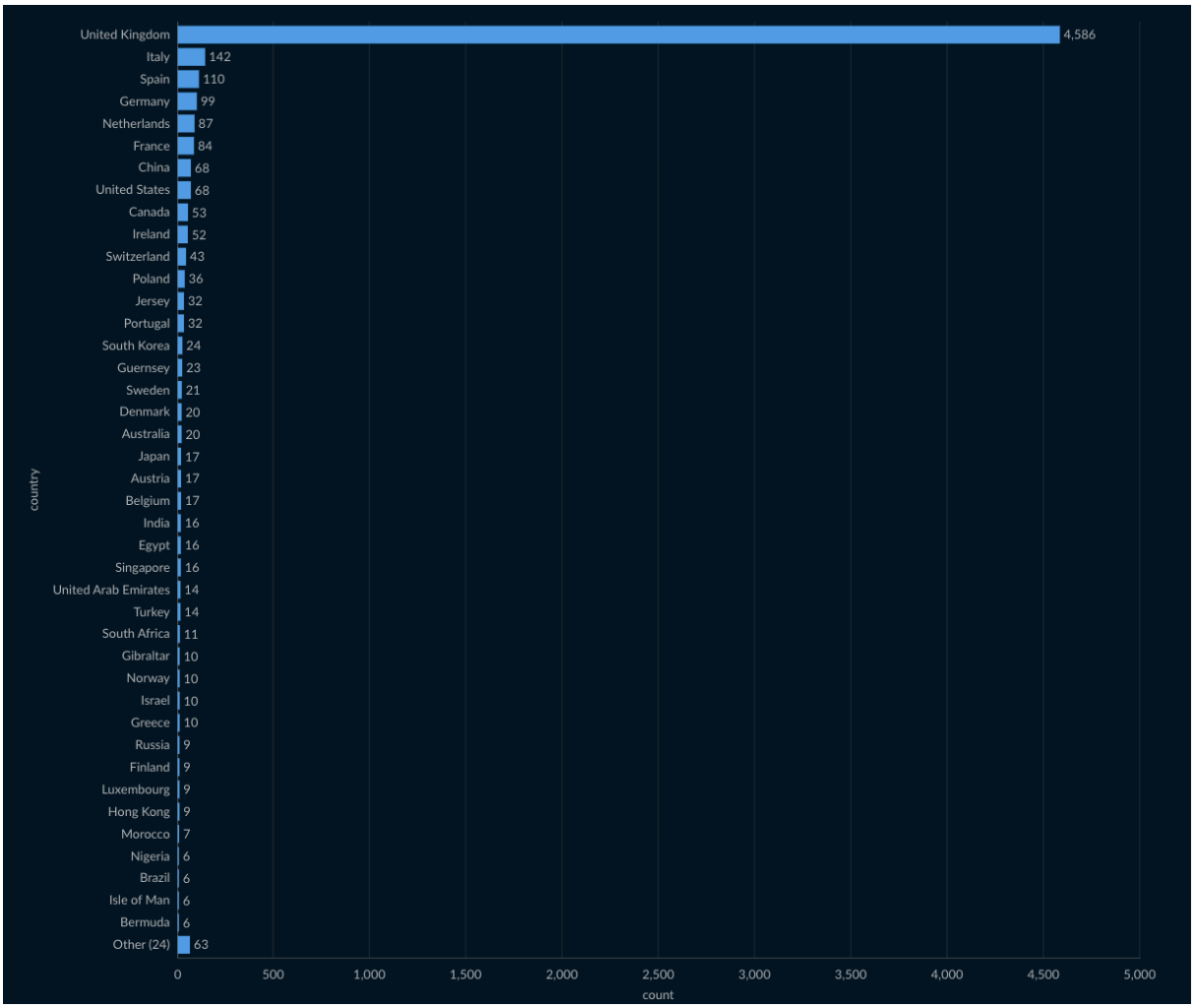


1. Business class has the highest cost in both the Orange and Yellow Departments.
2. Economy class is the second-largest expense in these departments.
3. First class costs are very low in both cases.
4. The Purple Department has much lower overall flight expenses.
5. Premium Economy is almost nonexistent, with very little or no spending.

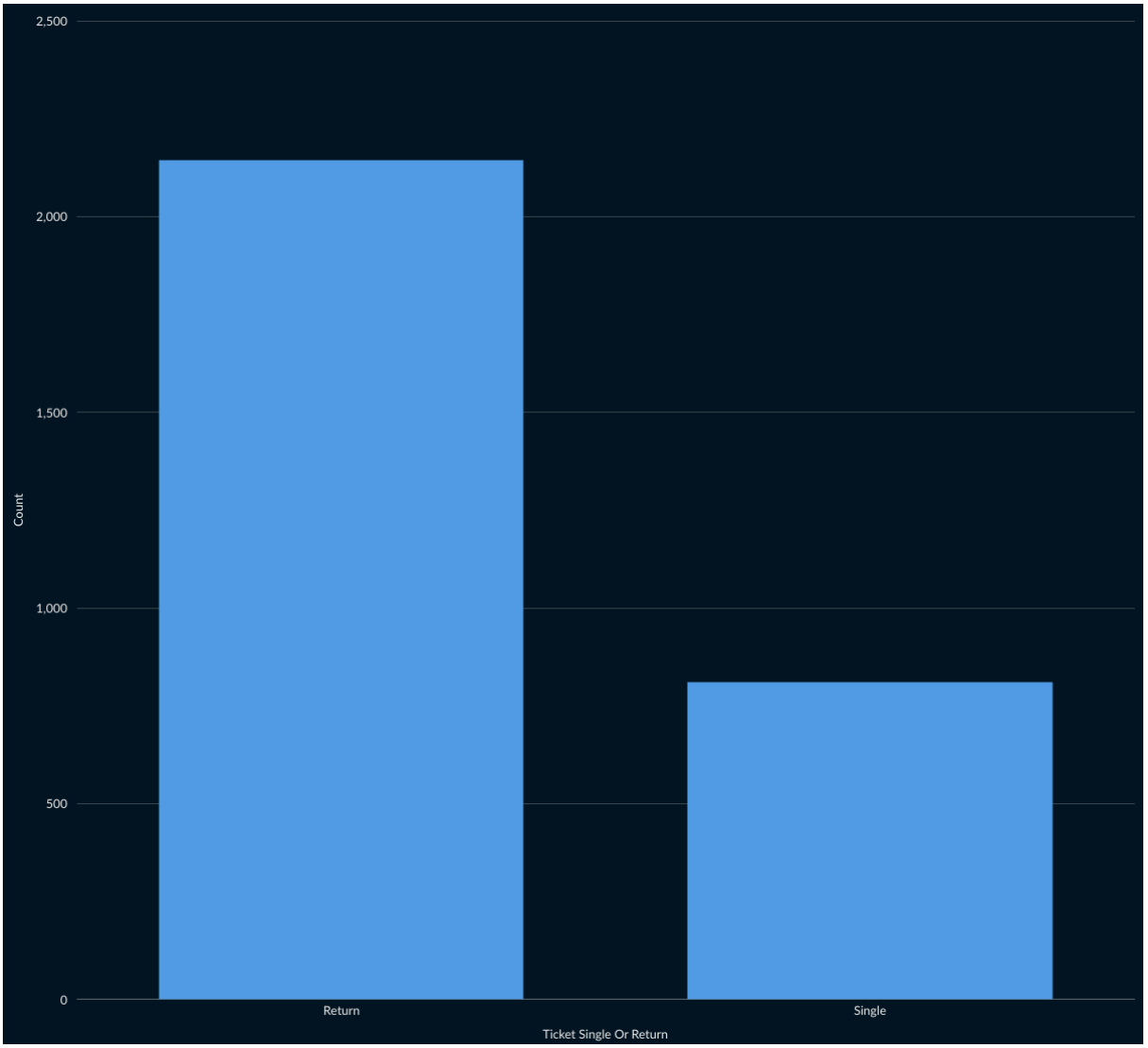
Task 5: How many countries are represented in the dataset? Visualize the number and countries

```
SELECT country, COUNT(*) AS count
FROM (
    SELECT "origin country" AS country FROM public.flights
```

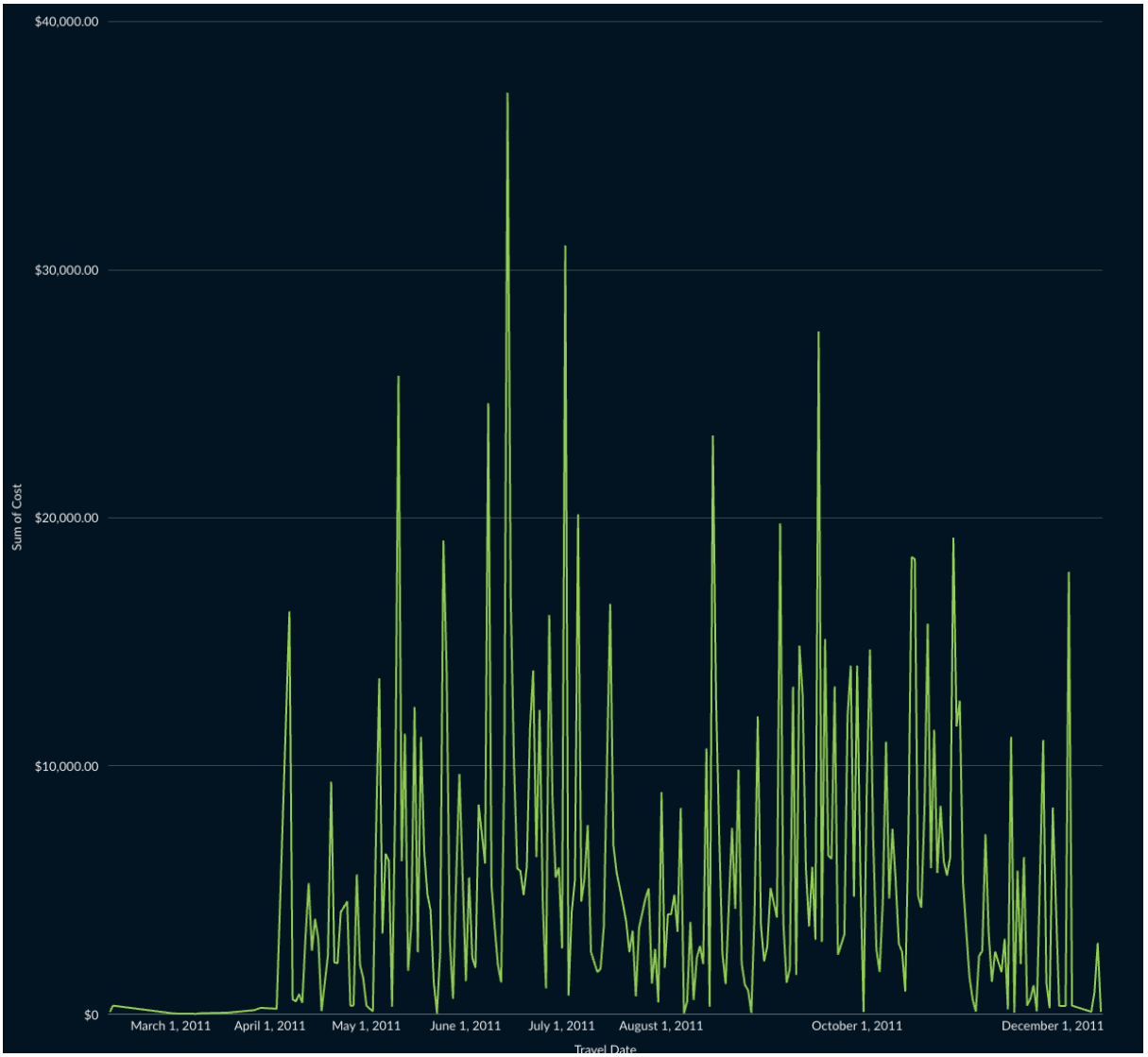
```
    UNION ALL
    SELECT "destination country" AS country FROM public.flights
) AS all_countries
GROUP BY country
ORDER BY count DESC;
```



Task 6: Compare and visualized the amount of sold tickets (single / return).



Task 7: Show, how the given costs are distributed over the time.

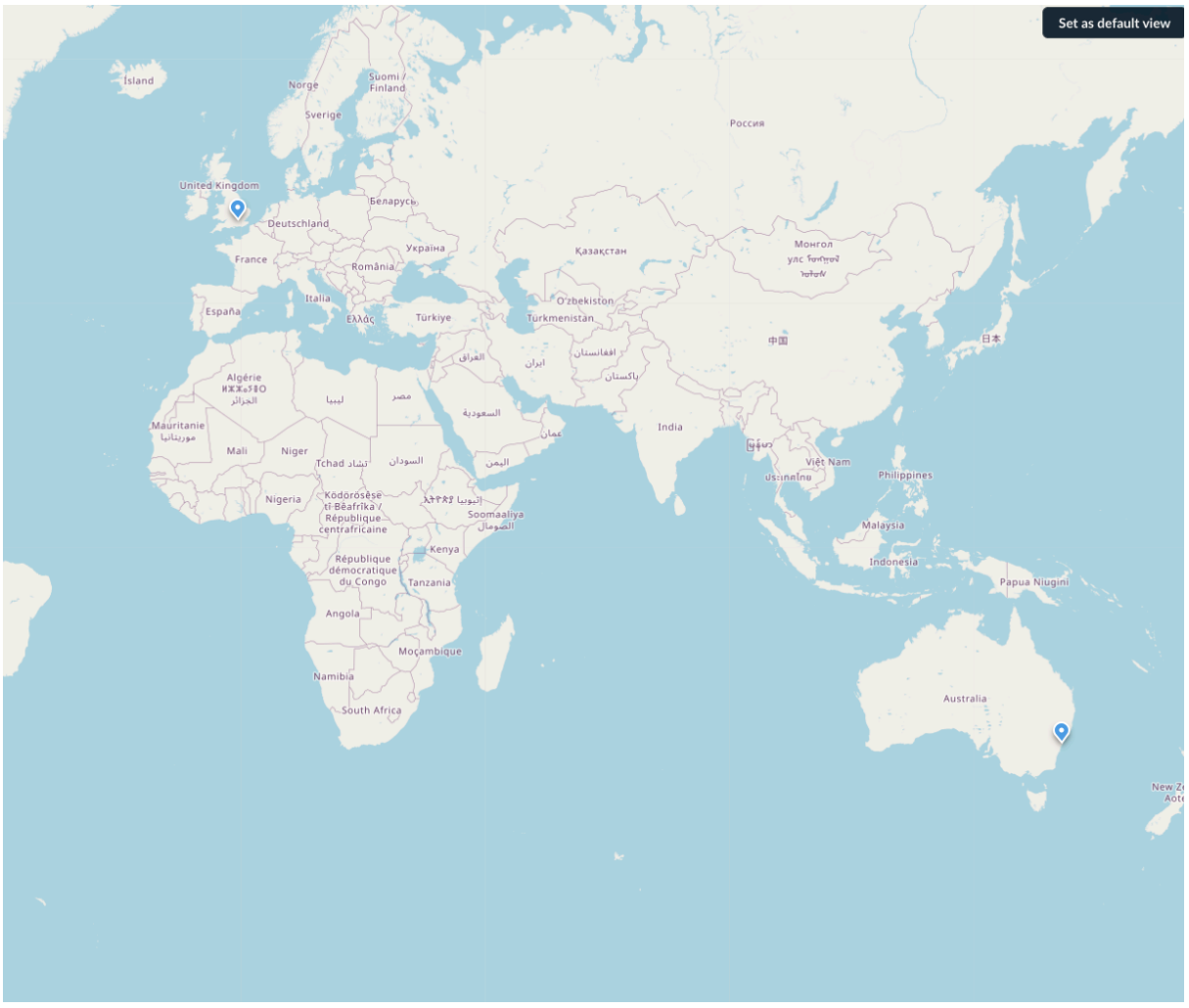


Task 8: Create a geo-map with the original latitude / longitude.

Task 9: Show on the geo-map the farthest destination from “London Heathrow Airport”. Display
both locations on the map.

```
WITH farthest AS (
    SELECT
        "destination name" AS name,
        "destination latitude" AS latitude,
        "destination longitude" AS longitude,
        distance
    FROM public.flights
    WHERE "origin icao" = 'EGLL'
      AND "destination latitude" IS NOT NULL
      AND "destination longitude" IS NOT NULL
    ORDER BY distance DESC
    LIMIT 1
),
heathrow AS (
    SELECT
        'London Heathrow Airport' AS name,
        "origin latitude" AS latitude,
        "origin longitude" AS longitude,
```

```
      0 AS distance
    FROM public.flights
    WHERE "origin icao" = 'EGLL'
      AND "origin latitude" IS NOT NULL
      AND "origin longitude" IS NOT NULL
    LIMIT 1
)
SELECT * FROM farthest
UNION ALL
SELECT * FROM heathrow;
```



Task 10: Create a new dashboard that contains following information
- Total amount of flights available
– Single / Return tickets ration from June and July

– Location of the busiest airport
– Costs for each department

```
SELECT
    "ticket single or return" AS ticket_type,
    COUNT(*) AS total_tickets
FROM public.flights
WHERE
    CAST("travel date" AS date) BETWEEN '2011-06-01' AND '2011-07-31'
GROUP BY "ticket single or return";
```

```
WITH all_airports AS (
    SELECT "origin icao" AS icao, "origin name" AS name,
           "origin latitude" AS lat, "origin longitude" AS lon
    FROM public.flights

    UNION ALL

    SELECT "destination icao", "destination name",
           "destination latitude", "destination longitude"
    FROM public.flights
),
ranked AS (
    SELECT
        icao,
        name,
        lat,
        lon,
        COUNT(*) AS flight_count
    FROM all_airports
    WHERE lat IS NOT NULL AND lon IS NOT NULL
    GROUP BY icao, name, lat, lon
    ORDER BY flight_count DESC
    LIMIT 1
)
SELECT *
FROM ranked;
```

```
SELECT
    department,
    SUM(cost) AS total_cost
FROM public.flights
GROUP BY department
ORDER BY total_cost DESC;
```