Data Storytelling
Individual Assignment
Ronja Larsson
2023-05-24

Background

Imagine that there is a copy of our earth, called Counter Earth, out there far away in the galaxy, where everything is the same as our earth, but the ruling species is pig instead of human. The main meat products pigs on Counter Earth consume are crocodile, condor, elephant, komodo dragon, panda and…. human!

I am working as an analyst to gain an overview of how the meat trade look like for the 13 largest countries by population on Counter Earth, which are the following: Zimbabwe, Japan, France, Sweden, Bulgaria, Ecuador, Canada, Georgia, Germany, China, Egypt, Vietnam, and Iceland.

I received 13 files containing the data for all the transactions of the meat trades on each day of the year of 1989. I was given the task to find out the following:

- which countries have exported and imported the lowest and highest volumes of meat throughout the year 1989
- on which day were there the least meat shipped corresponding to the least value of goods exported in the year 1989
- which countries have exceeded their import budget for the year 1989
- which countries have fallen below their Expected Revenue for the year 1989

I am presenting my final findings to the International Meat Trade Organization of the Counter Earth, which is an organization that regulates sustainable meat trades on Counter Earth.

Data Storytelling

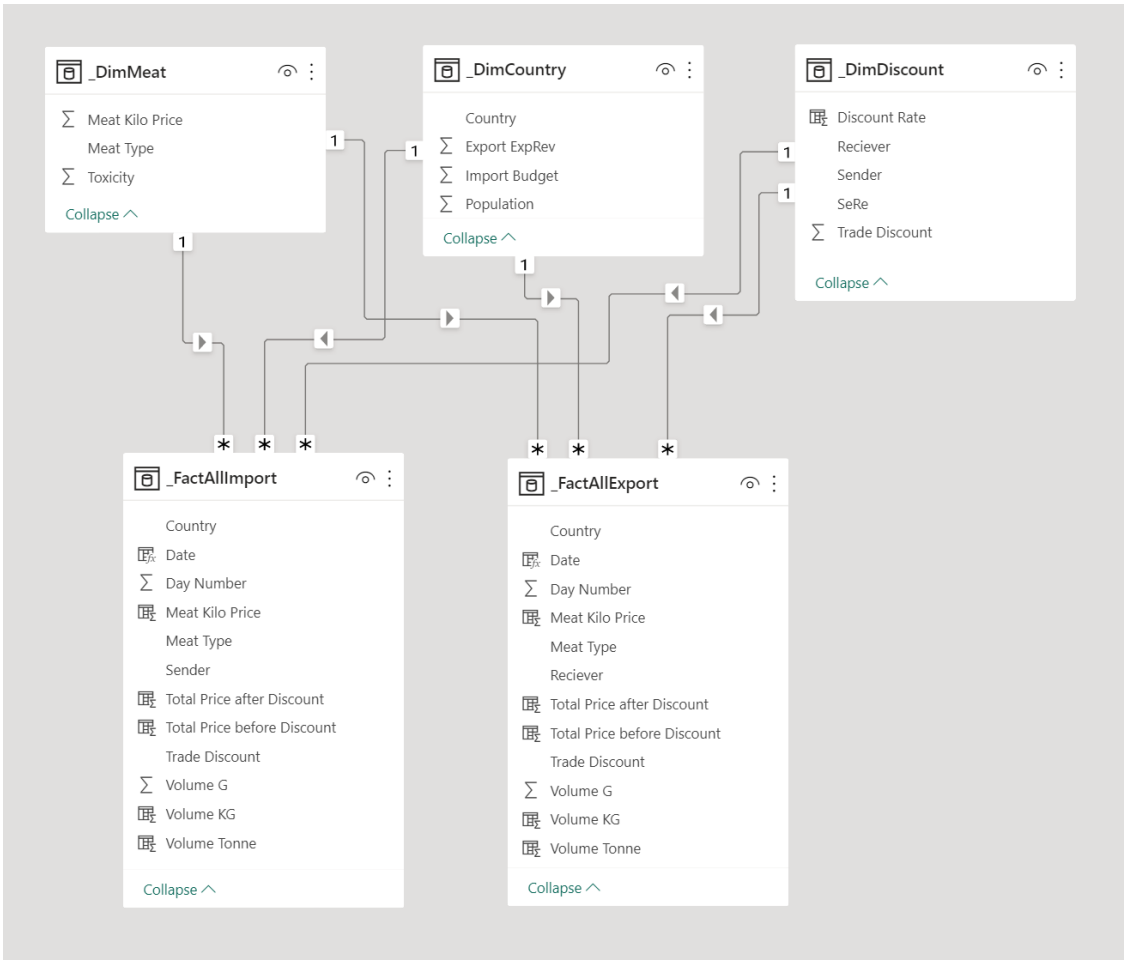
I want to find out what countries are the largest importing and exporting countries for meat trade. I also want to find out if there is seasonality when it comes to meat trade and if there is a pattern on what kind of meat that is popular.

Technical Analysis

The data I was given consisted 13 files with all the transactions of meat trades for each country. There are a lot of redundancy, errors and inconsistency in the raw data, so I had to restructure and clean the original data set. From the raw data, I created three dimension tables and two fact tables:

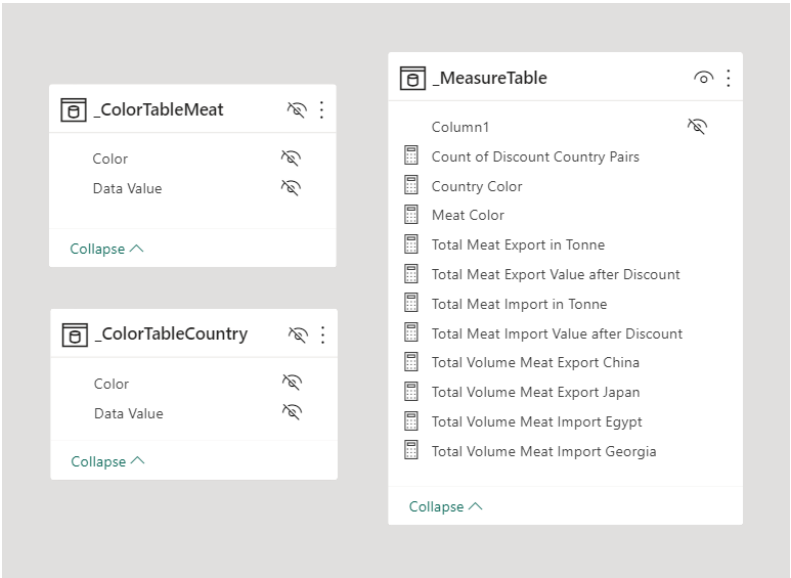
- _DimMeat containing basic information about the meat types
- _DimCountry containing basic information about the country
- _DimDiscount containing information about discount rates between exporting and importing countries
- _FactAllImport containing transactions from importing country
- _FactAllExport containing transactions from exporting country

The relationships between these five tables have been established as shown below:



Besides above dimension tables and fact tables, I also created the following tables:

- _MeasureTable containing measures created in DAX code for the report
- _ColorTableMeat containing the color code of each meat type for the customization of the visualisations
- _ColorTableCountry containing the color code of each country for the customization of the visualisations



In the original raw data, I identified a few issues in both fact tables, assuming the data in the dimension tables all are correct. I have taken steps to resolve these issues:

1. In both fact tables, the unit of the volume was missing. After confirming with my data source at the International Meat Trade Organization of the Counter Earth, the unit for the original volume was in gram. But the price for each meat type is in kilo price. So I had to add a column with volumes in kilogram, to be able to later calculate the monetary values of each transaction. I also created a column to have the volumes for each transaction in tonne, which is used for visualization.

2. I discovered, if I used the given discount rates from the raw data, the values of all transaction became too high, compared with the budget each country have for the import and export of the meats. After confirming with my data source at the International Meat Trade Organization of the Counter Earth, it was confirmed that the discount rate should be reverted. For example, the discount rate from Bulgaria to China should be 1 – 0.681981976014245, which means that the discount is approximately 68% off, not 32%. This issue is solved by using DAX formular to used 1 – Trade Discount in the table fact tables.

Sender	Reciever	Trade Discount	SeRe	Discount Rate
Bulgaria	China	*0.681981976014245*	Bulgaria|China	*0.318018023985755*

3. All the transactions in the original data are from the year of 1989, but instead of stating the date, we had the day number of the year. I created a column to add dates for each transaction, for later use of drill down in the visualization.

Report Structure

The report contains eight sheets. The first five sheets contains visualizations of information about the countries in relation to the trades. The sixth sheet contains visualizations of the trades daily throughout the year, with the key information on the time of the year where the most and the least volume and value trades happened. The last two sheets contains visualizations about the meat types and how volumes of different meat types are traded throughout the year.

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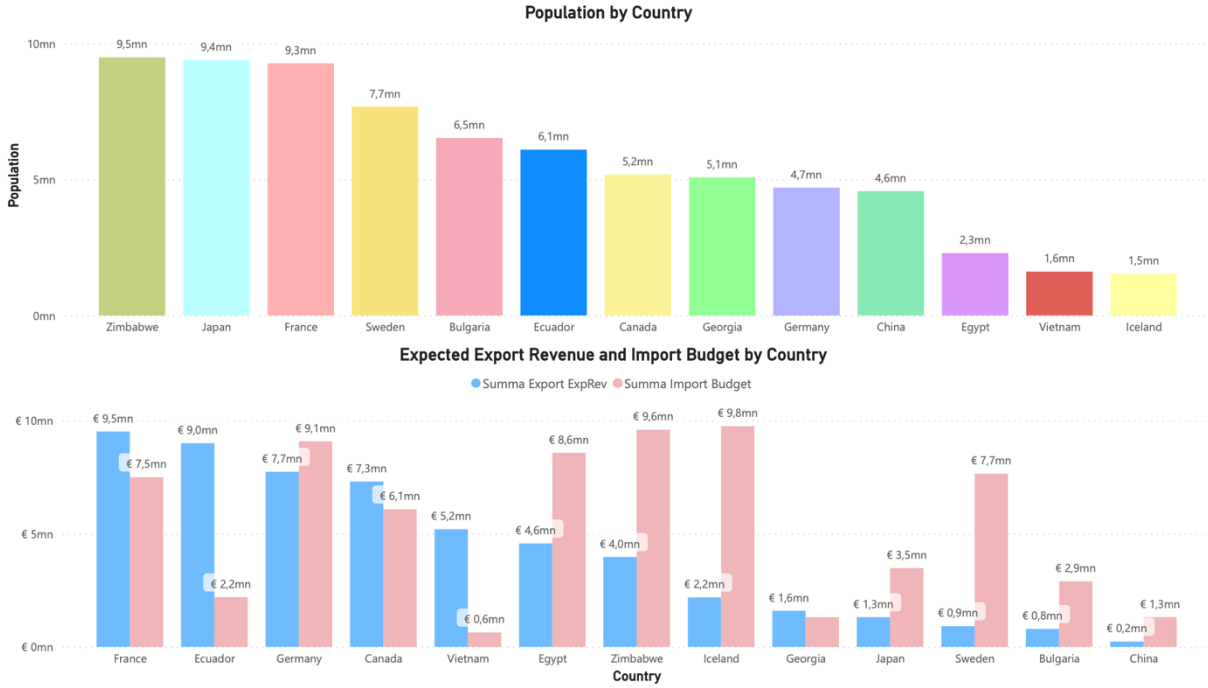
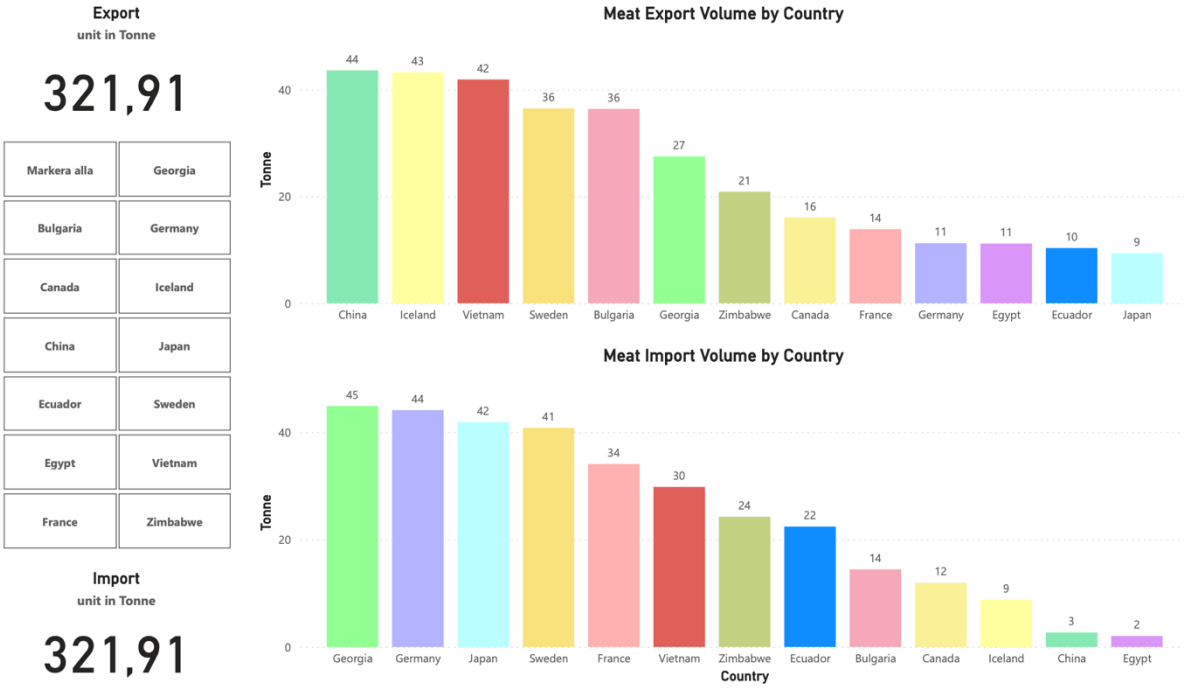
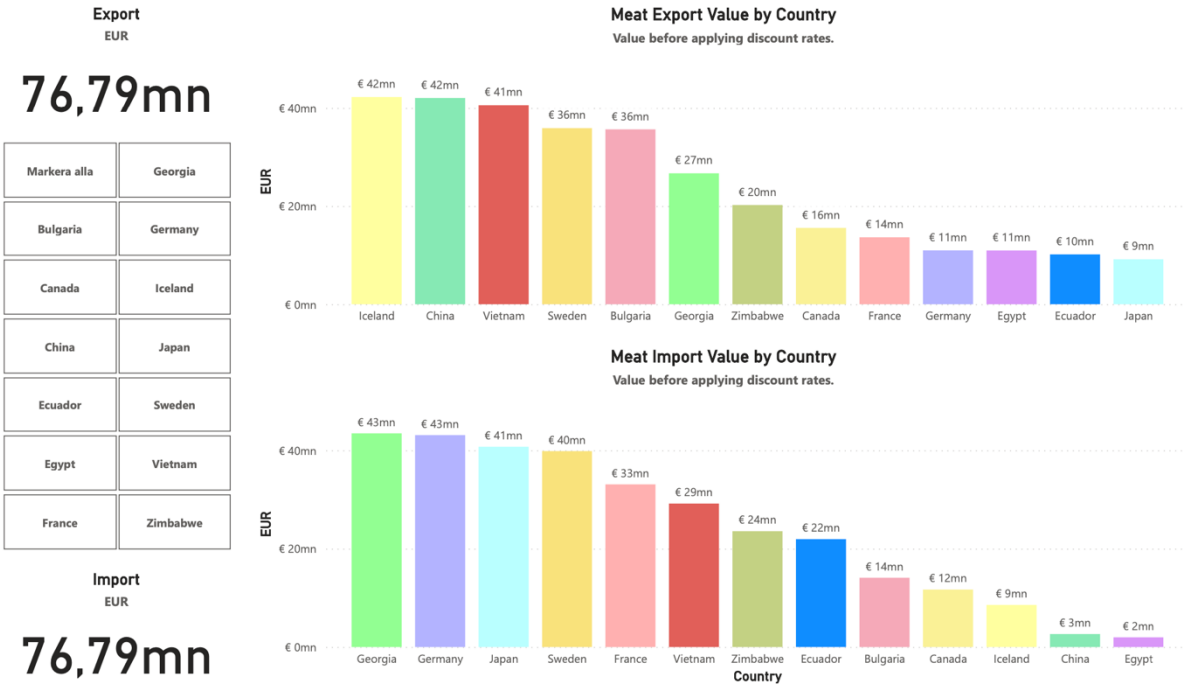
Visualizations



The chart I chose to visualize population by country and expected revenue and import budget by country is clustered column chart. It is a clear way show the data for each of the country this way. On the second chart you can see that we can clearly see and compare the import budget and expected revenue for each country and get an idea of how the planned import and export status are for each country.



The second and third pages of the report show the import and export of meat by country, one is based on volume in tonne and the other is based on value in EUR. Here I chose to use column chart. The color theme is the same as the first page where each country has its own custom color. This color theme will be consistent throughout the report for the visualizations where country is the key data to focus on.



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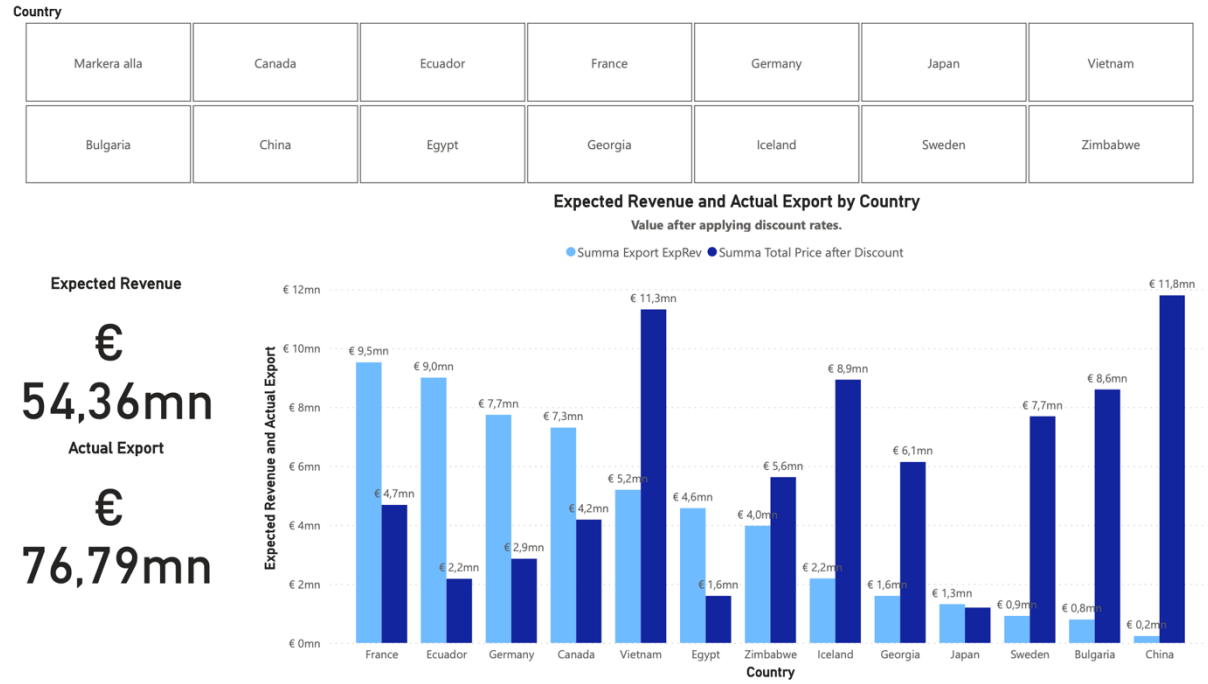
In these two pages I explore the difference between the budgets and the actual trades from both import and export side. Here we can see clearly that some countries are well within budget and some are way, which can be interesting to get more data to find out what the possible reasons might be.



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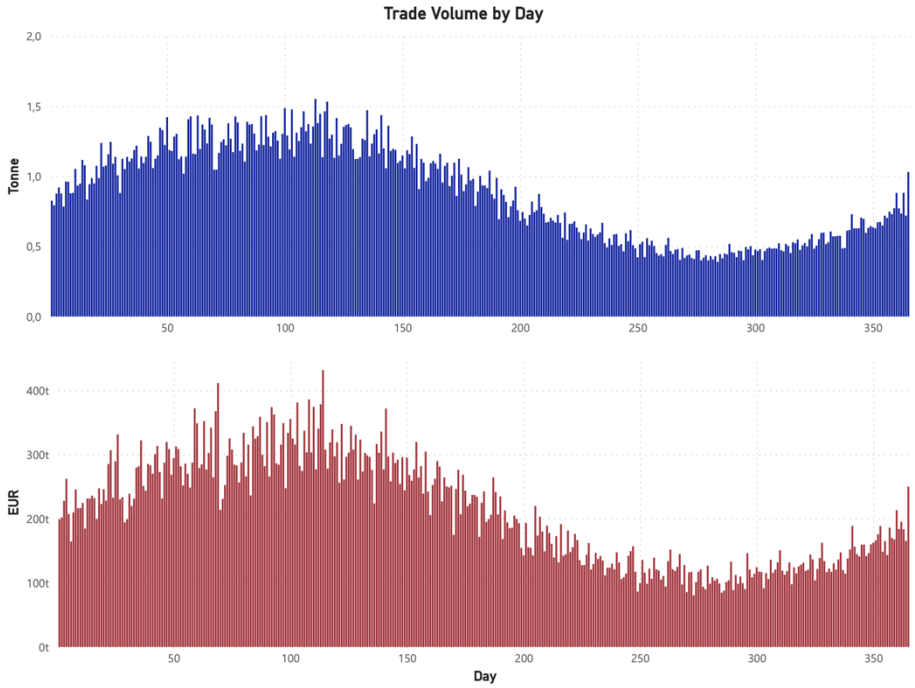

Top 3 volume days

Day Number	Total Meat Export in Tonne
113	1,55
118	1,53
100	1,49
Totalt	**4,57**

Bottom 3 volume days

Day Number	Total Meat Export in Tonne
284	0,39
280	0,40
277	0,40
Totalt	**1,19**

Top 3 value days

Day Number	Summa Total Price after Discount
114	€ 431 455,60
69	€ 411 480,16
108	€ 385 920,51
Totalt	**€ 1 228 856,27**

Bottom 3 value days

Day Number	Summa Total Price after Discount
273	€ 80 442,35
285	€ 84 691,08
270	€ 85 468,54
Totalt	**€ 250 601,97**

On this page I chose to use bar chart to represent the volume and value of the trade of each day throughout the year. On the side I use tables to show the top three and bottom three days of the trades. In the interactive report, by clicking on a day in the tables, the visualizations on the left hand side will indicate which day it is of the year, which gives a stronger understanding of the matter.

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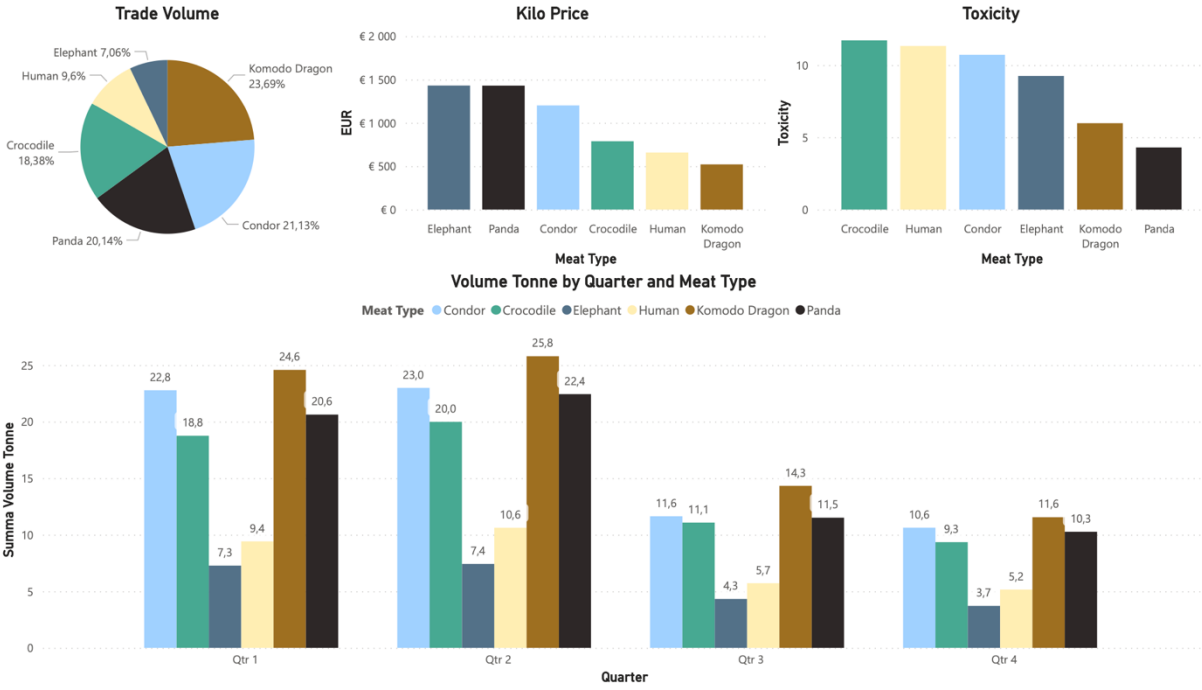
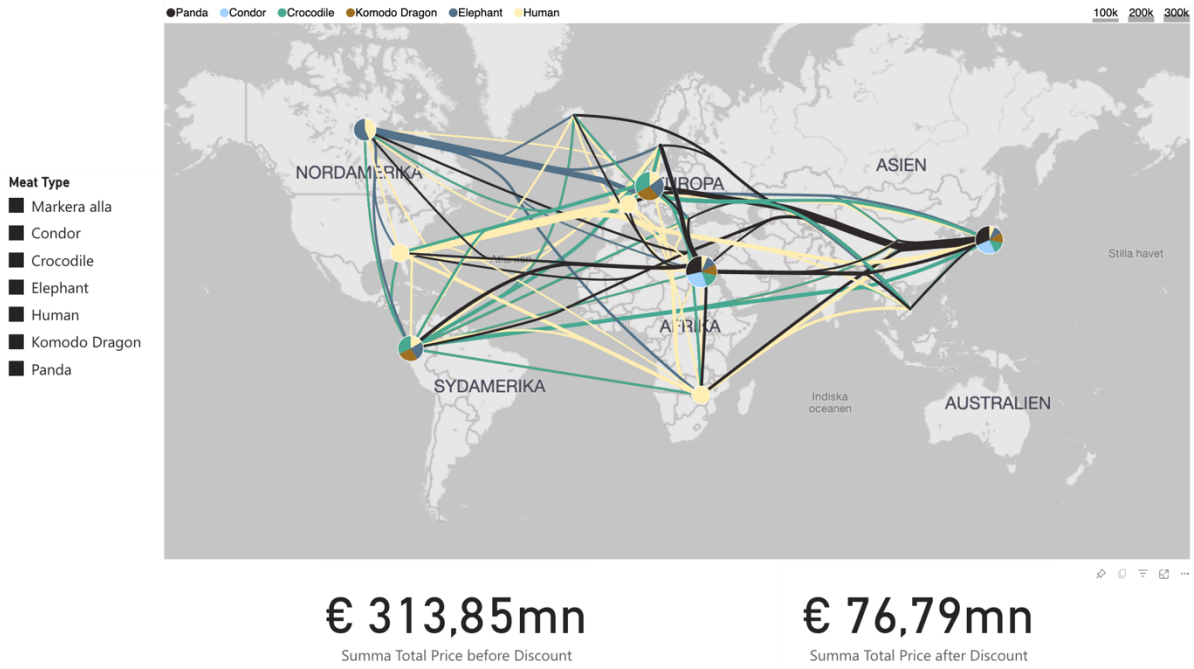


The last two pages of the report are about the meat types. Above page gives a general idea of the meats, how much in volume they are traded in relation to one another in the pie chart, the kilo price and toxicity of each meat type in bar chart. The visual in the bottom contains a drill down function in the interactive report where the user can click on and go further down to see how much volume different meat types are traded in a specific date. The color theme is also customized, like the theme color for the countries. Below is a flow chart showing how different meat are traded between countries. The use can filter to see a specific meat type by choosing it on the left hand side.



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Conclusion and Recommendation

The purpose of this report is to find out the following:

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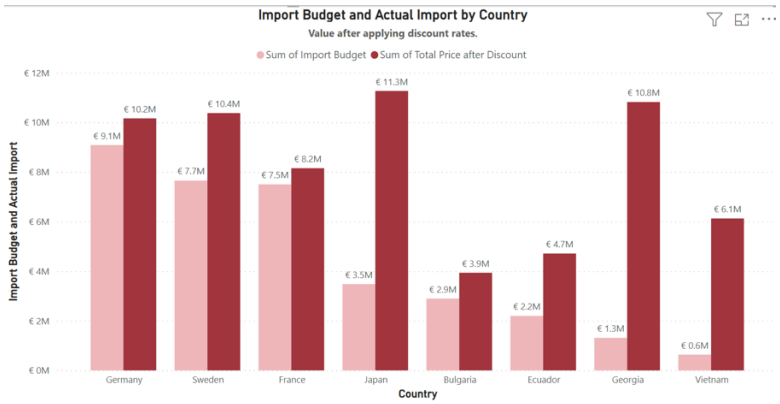
On the export export side, China has the highest volume of meat exported and Japan has the lowest volume of meat exported.

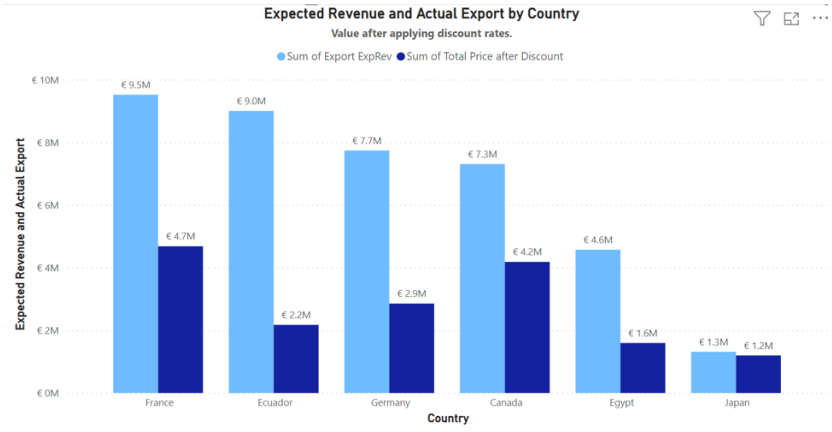
On the import side, Georgia has imported the most volume of meat and Egypt has imported the least volume of meat.

On day 284 of the year, we had the least meat shipped in volume, but on day 273, we had the least value of goods exported.

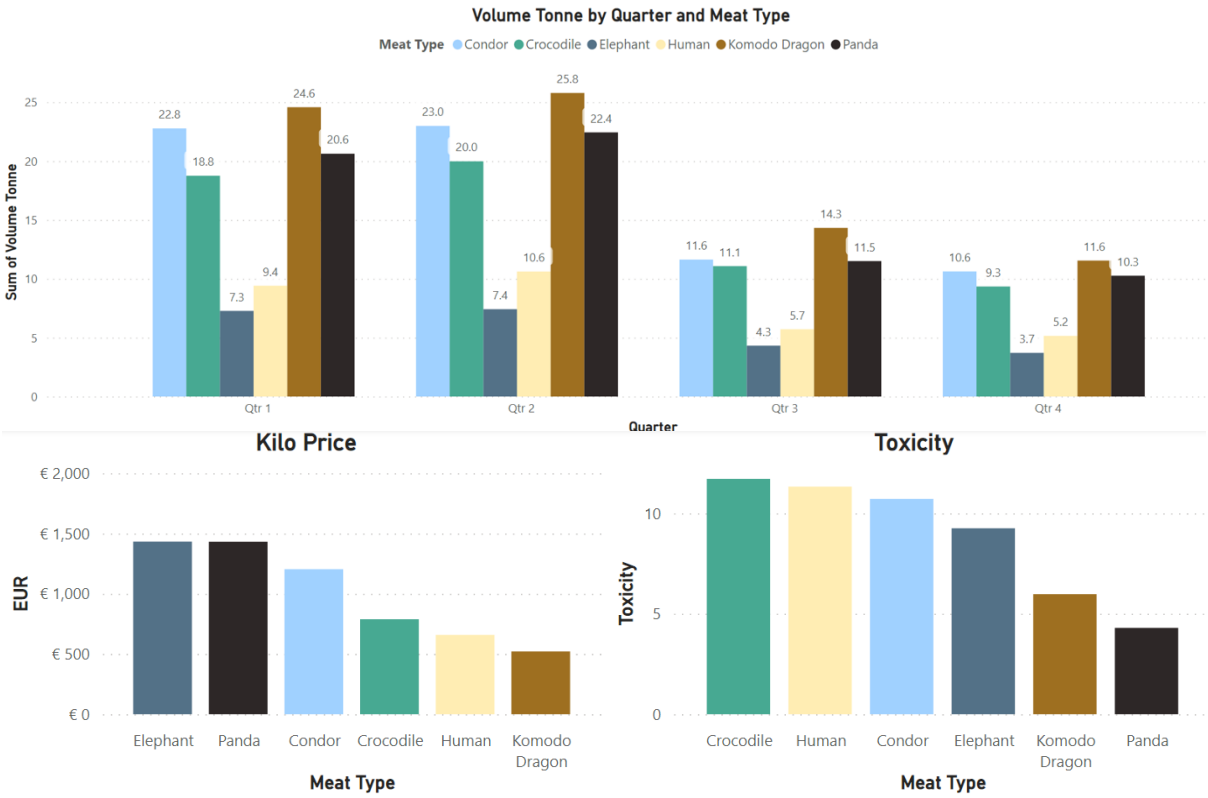
The countries that have exceed their import budgets are: Germany, Sweden, France, Bulgaria, Ecuador, Georgia and Vietnam.



The countries that have fallen below the expected revenue from export are: France, Ecuador, Germany, Canada, Egypt and Japan.



As the data is showing, some countries are really bad with their budgets for importing and exporting meat. In the exploration of data, we can also see that there is less volume of meat being traded in the third and forth quarters. However, the pattern shows that the volumes of each meat type are consistent throughout the year. Komodo Dragon meat is the most popular meat type which maybe have something to do with the relatively low toxicity and kilo price.



I recommend the International Meat Trade Organization of the Counter Earth to further get into how individual countries are importing and exporting different meat type and what the reasons for not keeping the budgets might be for each country. Furthermore, if Komodo Dragon meat is this popular, some steps might be taken to preserve the amount of the specie so that they are not overly hunted for food.

Comments

I have approached the assignment with a lot of freedom in how I interpretate the data. There were many different approaches one could take, I have chosen to assume that the data in the dimension tables are all correct and the adjustments needed to be made in the transactions. I have made up a narrative that makes sense to how I chose to interpretate the data.

I have fulfilled and answered all the requirements and questions for G grade. For the VG part, I have fulfilled and answer all questions, other than the requirement for Python code. This was due to that I have a Mac notebook and I am using Parallels Desktop to be able to use Power BI. I took all the steps to import all the original files with Python code, but somehow Power BI program in Parallels Desktop could not find the pathway to my files, saved in my notebook. After consulting with the teacher, he agreed that he would not hold Python code as a reason not to give me a higher grade. I made a good attempt to use Python code.