



BUSINESS INTELLIGENCE & DATA WAREHOUSE

GROUP ASSIGNMENT #3

DASHBOARD DESIGN - TABLEAU

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INTRODUCTION

In the first project assignment, our group designs a data warehouse (data mart) based on a dataset of German Farm Subsidies disbursed by EU towards farmers across the Union. We analyze the data provided with a data quality check and design a data warehouse where we conclude that the best model follows a Snowflake schema.

The second assignment is focused on Data Integration using Pentaho. It consists of designing a one-time historic load of the German Farm Subsidies data using an ETL (Extraction, Transformation and Loading) tool.

This third assignment is focused on generating value from the data warehouse after transformations. It consists of designing a dashboard and/or a story using Tableau.

To begin, I connect Tableau via MySQL to Workbench farm_subsidies schema noticing that I need to do the following transformation from Pentaho:

- Remove negative and zero values on Amount Euros
- Substitute unrecognizable special German characters to English (after double check with a German friend)

1. AUDIENCE

To start creating Dashboards we have to determine an audience and who can benefit concerning the data we have. Choosing more specifically, I believe that German Government Authorities, especially Federal Ministry of Food and Agriculture will be interested to know how the funds are disbursed, to be more precise, if it is done equally and aligned with German future needs.

I came up with the next positions:

- Federal Minister
- State Secretary
- Scientific Advisory Board

From BLE website:

“The German government intends to orient agricultural production more closely than before to the economic, social and environmental principles of sustainability. Important issues in this context are, among other things, organic and sustainable farming, global food security, biodiversity and animal welfare.”

Also, when defining the audience, I tried to answer the following questions:

- What decisions do they make?
- In what context will they be reviewing the dashboard?
- How sophisticated are they with using data?
- How familiar are they with the key performance metrics?
- Do they understand where the data comes from?

2. Objective

Dashboards can serve many purposes. The Federal Office of Agriculture and Food (BLE) collects data and information related to agriculture and food, and which are processed for the Federal Ministry of Food and Agriculture (BMEL), for providing information, for statistical purposes, and also for political decision making.

The objective for this Dashboard is to provide a common interface for German Authorities interacting with the analysis of recipients' information and payments through UE to German farmers. More importantly, to analyze if funds are distributed equally in terms of size, location, and value.

What other values will the dashboard bring?

- Plan budget ahead on German Farms needs
- Recommend Farms to European Union that fulfill requirements not just based on their land size for example.
- Map recipients and payments per state for equally distribution.
- Give EU recommendations of the type of schemes to subsidy based on country needs and to balance the production of crops

3. Metrics

In terms of content I define as **key metrics**:

- Number of Recipients (filter per year)
- Number of Payments (filter per year)
- Total Subsidy (filter per year)
- Avg Subsidy Payment per Recipient (filter per year)

Other Metrics:

- Top 15 Recipients
 - Create a filter for non-null values for name with top 15 for amount euros attribute.
 - Recipient information as tooltip: recipient name, number of payments, zipcode, state, address, town
- Total Subsidies per year
 - Filter per year
 - Tooltip information of year, total subsidy, number of payments and average payment.
- Subsidies per State and Scheme in a dual
 - Tooltip for state and scheme
 - Created a filter for year and filter to State to exclude nulls.
- Comparison between Total Subsidies vs Number of Payments
 - Create different groups for subsidies amounts
 - Tooltip with number of payments, subsidies amount.

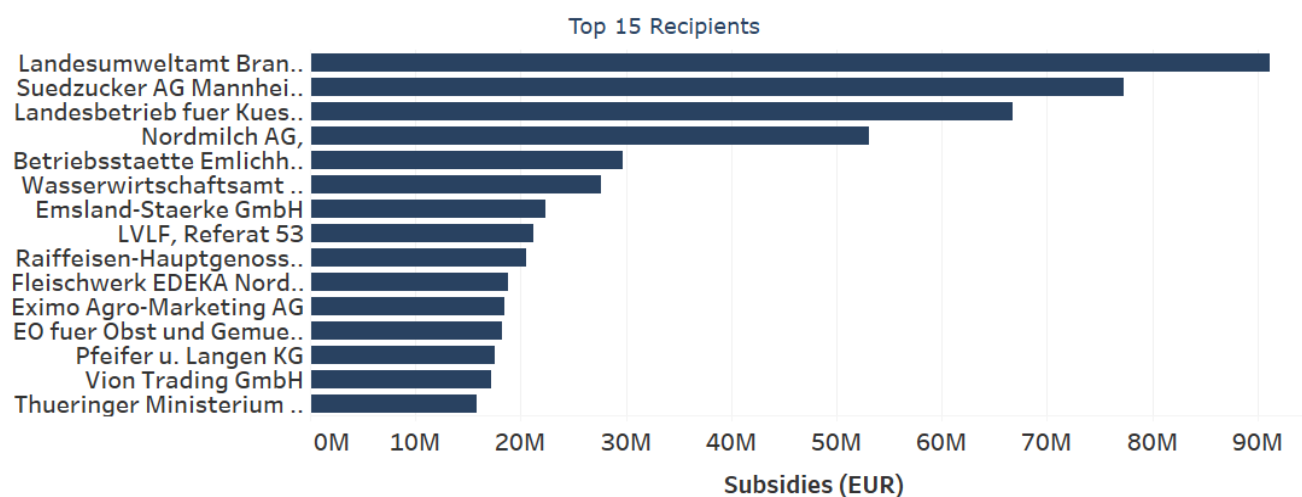
I added the Year as a common filter to few worksheets as you can find in the Dashboard.

4. Levels of Data

The level of data for this dashboard is broad in the sense that displays information in a high-level presenting the most critical top-level numbers. It is also historical from 2002 to 2012 year providing trends.

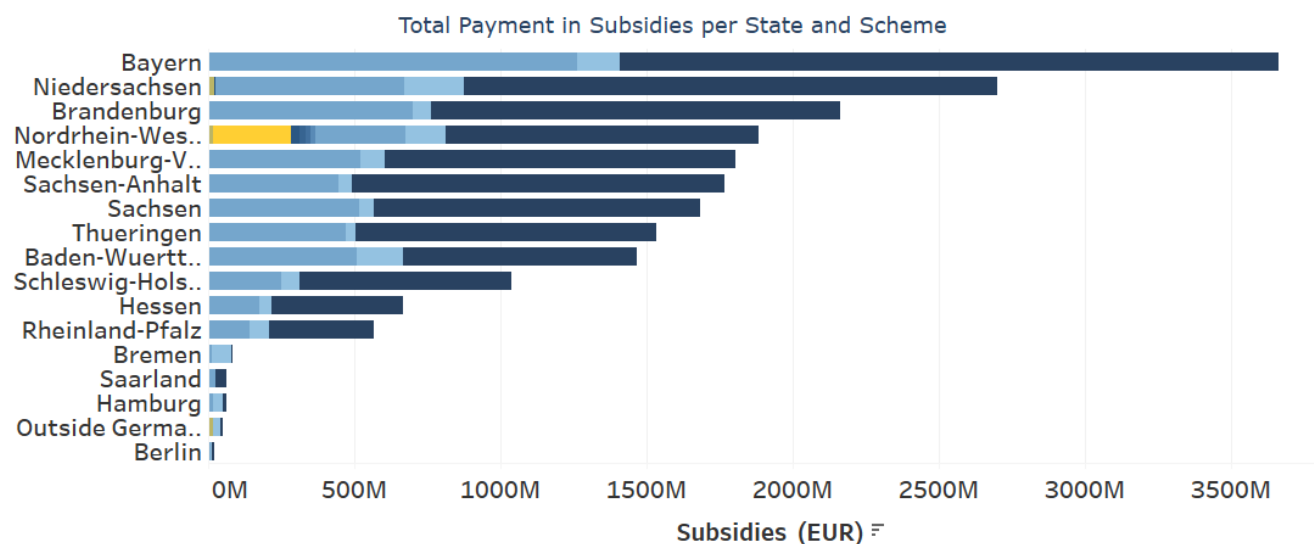
Germany Farm Subsidies Dashboard

Top 15 Recipients



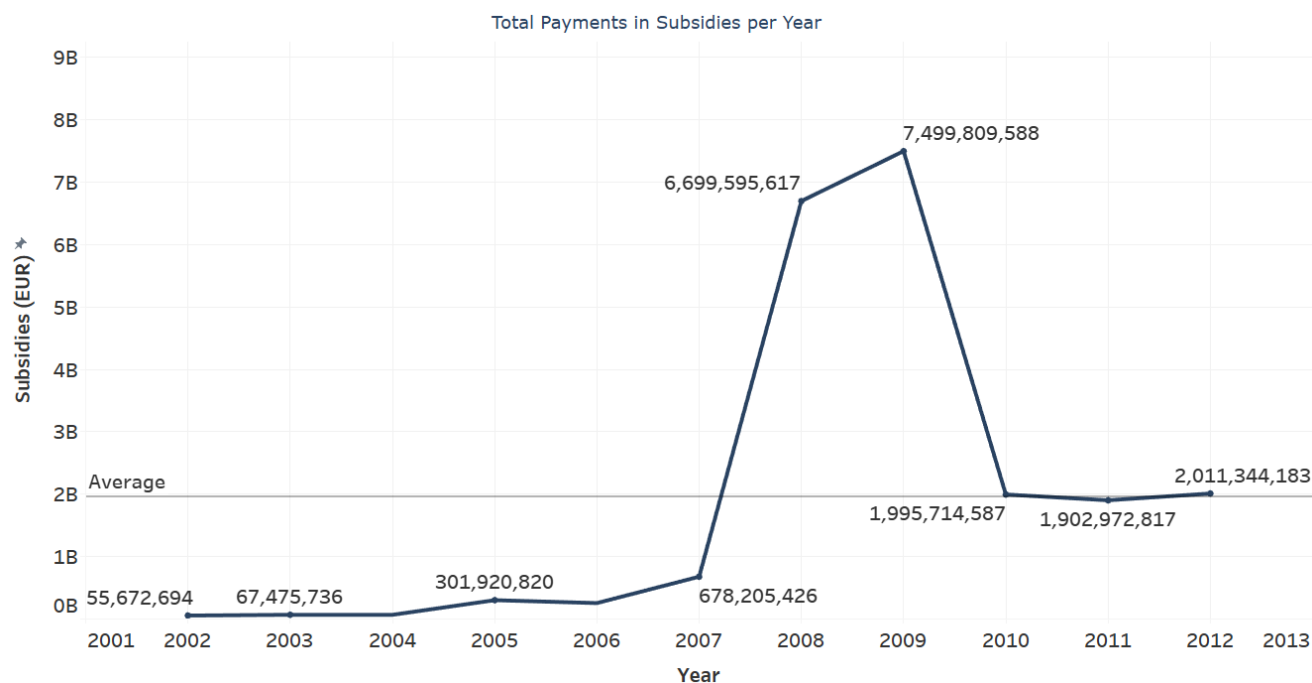
This graph as horizontal bar shows a quick view of the top 15 recipients by Total Payment in Subsidy (Eur). I choose horizontal because recipients names are long, and this provides a better view. I also include a common filter for year and a tooltip with more information about recipient such as state, town, zipcode, longitude, latitude, and number of payments received.

Total Payment in Subsidies per State and Scheme



This graph also uses a horizontal bar to be consistent with previous Top 15 Recipients. Dataset provides different locations' attributes from address, town, zipcode, etc. but I use State because it is the attribute with less unknown values and more relevant information.

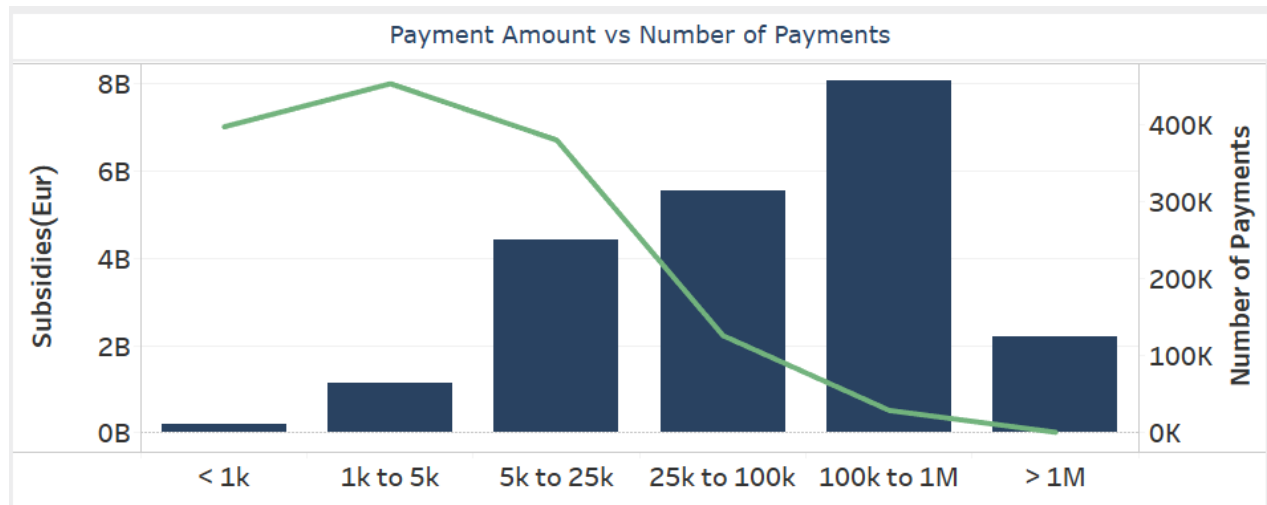
Total Payments in Subsidies per year



This line graph shows Total Payments in subsidies per year. Since values are very different, I include the average and a label for total payment. Finally, I add a tooltip for year, total payment,

number of payments and average per payment where we can see that recently we have less payments with bigger amounts.

Payment Amount vs Number of Payments



In this double combination graph, I try to compare the subsidies with the number of payments.

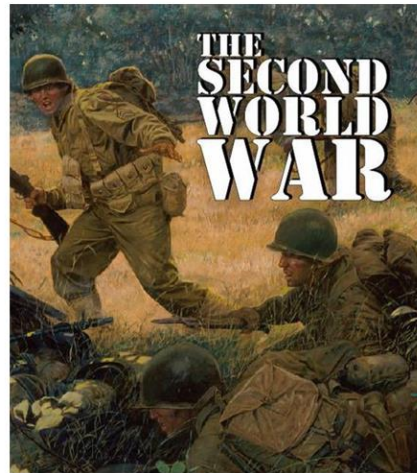
Story German Farm Subsidies

The data story along with the described Audience were created to convey the need of more information and data quality from EU or Farmers directly and better distribution of the subsidies based on Germany plan to develop certain states and rural areas. I started the Story by giving context on how Farm Subsidies started in EU and then drill down to current Germany situation and possible problem with subsidies distribution and finishing with the 3 main questions.

Slide 1 – How it started

How Farm Subsidies Started

During the Second World War Europe had suffered the biggest food shortages. In the postwar recovering period each state aimed to maximize the production of food. Thus, in 1962 EU launched the Common Agricultural Policy (CAP) which prioritizes an improvement of agricultural productivity, so that both consumers and EU farmers can make a reasonable living.

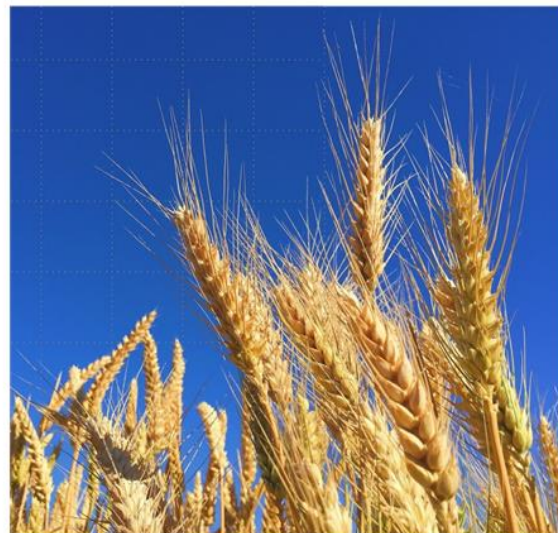


Slide 2 – Farm Subsidies today

Farm Subsidies Today

Nowadays, there are about 11 million farms in Europe on what CAP disburses €55 billion a year. These numbers show that CAP needs to control thoroughly a money distribution which can lead to farmers' equal income support and market measures.

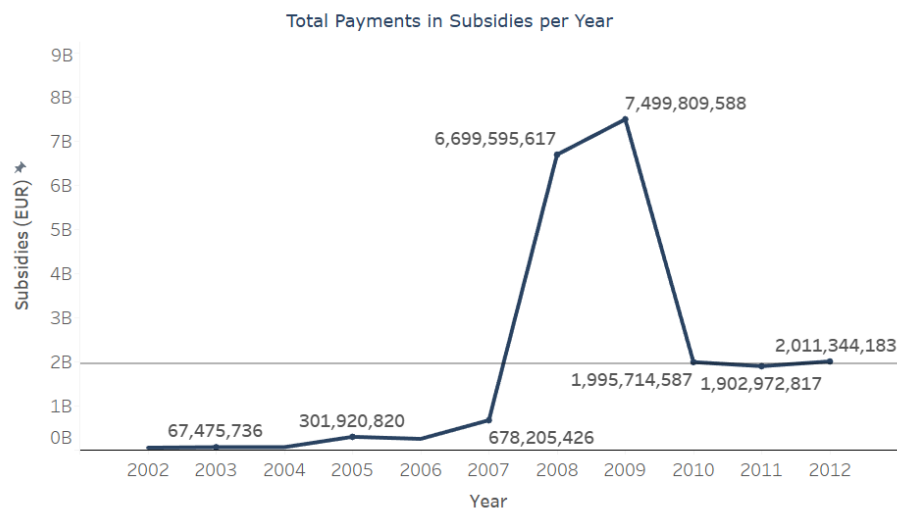
What about Germany Subsidies?



Slide 3 – German Farm Subsidies

Germany Farm Subsidies from 2002 to 2012

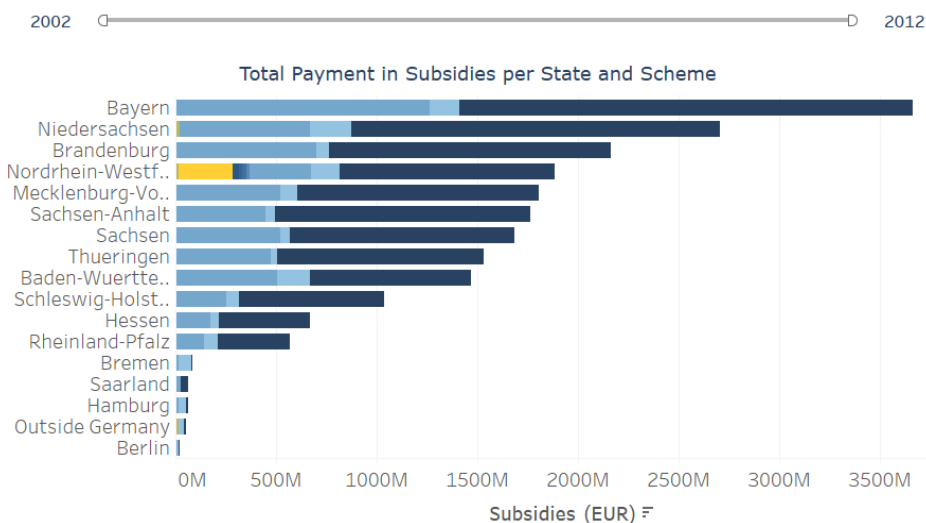
Today, there are about 600 thousand farms in Germany on what CSP disbursed 21bn to Germany. Subsidies distributed been inconsistent as can be seen in the Graph. And in the tooltip, we see that Avg subsidy per Farm recipient been increasing with less payments per year.



Slide 4 – German Farm Subsidies per state

Germany Farm Subsidies per state and scheme

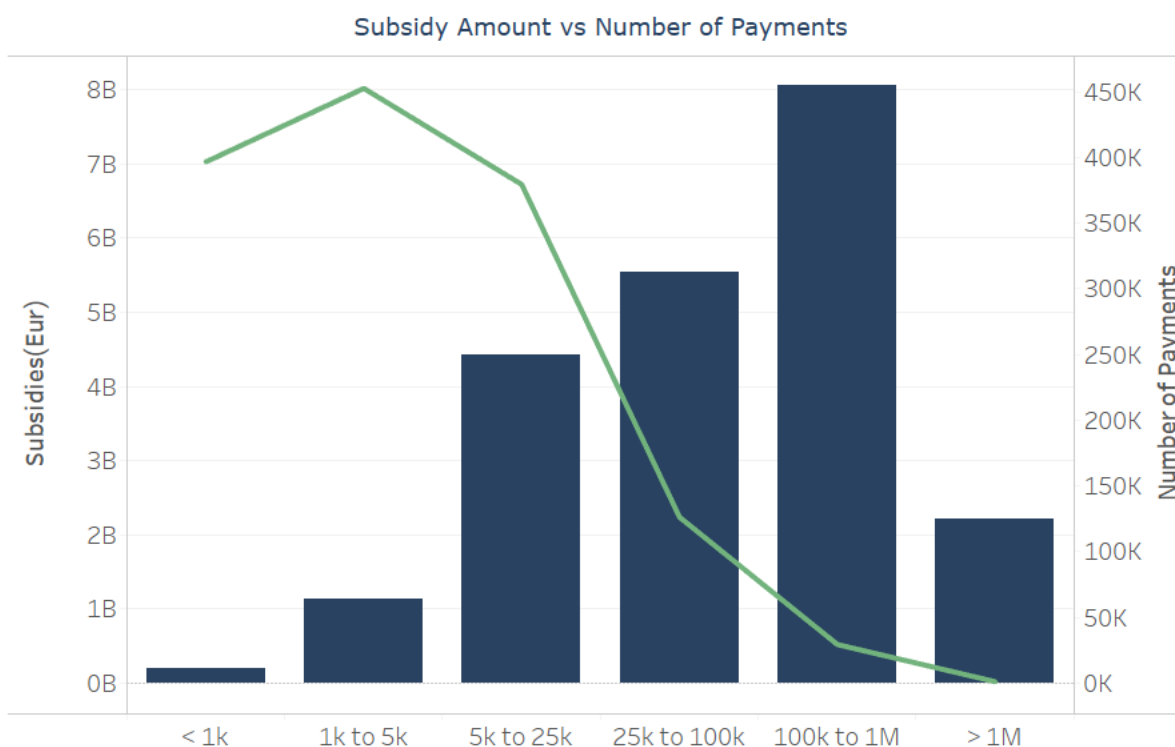
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Slide 5 – Subsidies vs Number of Payments

Subsidies vs Number of Payments

We can see that subsidies may not be equally distributed when we compare subsidies amounts vs number of payments.



Slide 6 – Questions

What now?

1. Can we collect more information from EU or Farmers directly?
2. Are the subsidies distributed equally?
3. Are the funds aligned with how Germany plans to develop different states and rural areas?



Sources:

<https://www.wikihow.com/Get-a-Farm-Subsidy>

https://en.m.wikipedia.org/wiki/Common_Agricultural_Policy

<https://www.bmel.de>