Global Food Production Trends and Analysis: A Comprehensive Study from 1961 to 2023 Using Power BI

Introduction:

ABC Company undertook a comprehensive study of global food production trends from 1961 to 2023, leveraging Power BI for insightful visualizations. The analysis encompassed key agricultural commodities, revealing that total rice production amounted to 269 billion tonnes, while wheat production reached 282 billion tonnes. The study highlighted that tea production stood at 2 billion tonnes, with Africa emerging as the leading producer of green coffee. Additionally, the research underscored a steady rise in wheat, maize, and rice production over the years, with wheat showing the most significant increase.

The project also explored the production volumes of apples, avocados, bananas, and oranges by different regions, identifying Europe and Asia as significant contributors. Maize production demonstrated consistent growth, particularly from the late 1980s onward. The study further indicated that grapes had the highest total production among fruits at 43 billion tonnes, followed by apples, bananas, and oranges. This comprehensive analysis equips ABC Company with valuable insights to better understand global food production trends, aiding strategic decision-making in the agricultural sector.

Project Flow:

To accomplish this, we have to complete all the activities listed below,

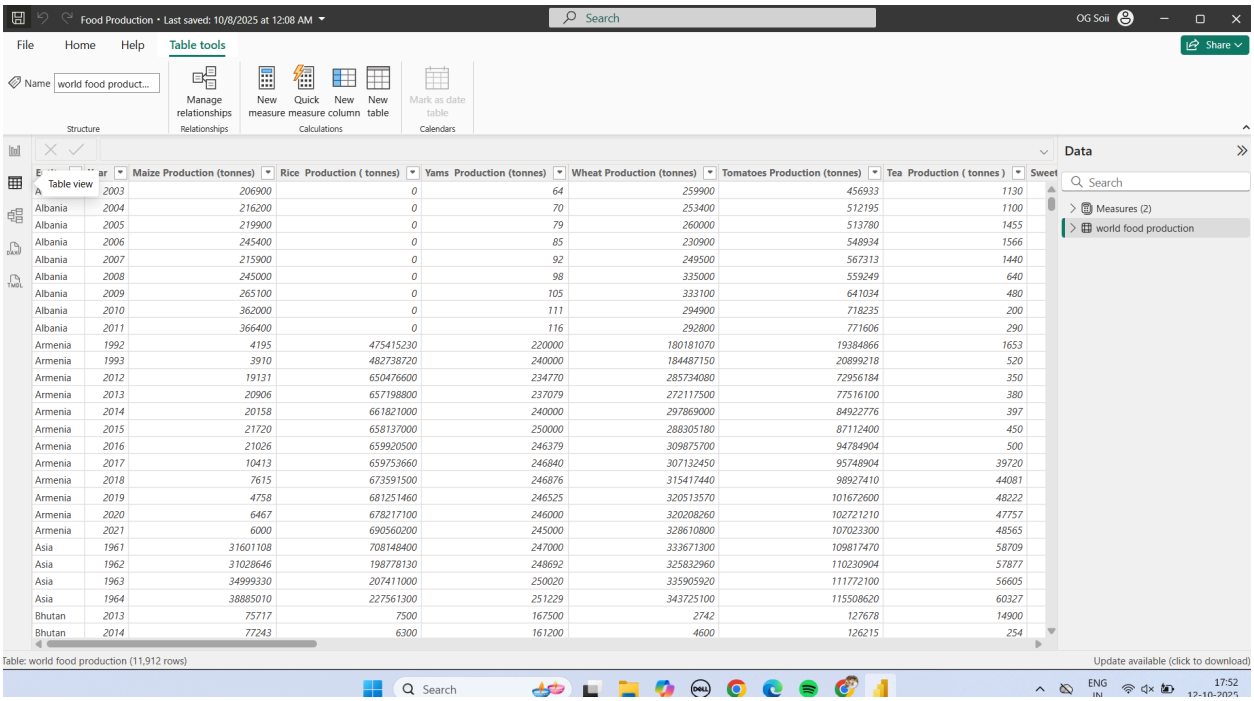
- Data Collection
    - Collect the dataset,
    - Connect Data with Power BI
- Data Preparation
- Prepare the Data for Visualization
- Data Visualizations
    - Visualizations
- Dashboard

    - Responsive and Design of Dashboard
- Report
- Report Creation
- Performance Testing
    - Utilization of Data Filters
    - No. of Calculation fields
    - No. of Visualizations/Graphs
- Project Demonstration & Documentation
    - Record explanation Video for project end to end solution
    - Project Documentation-Step by step project development procedure

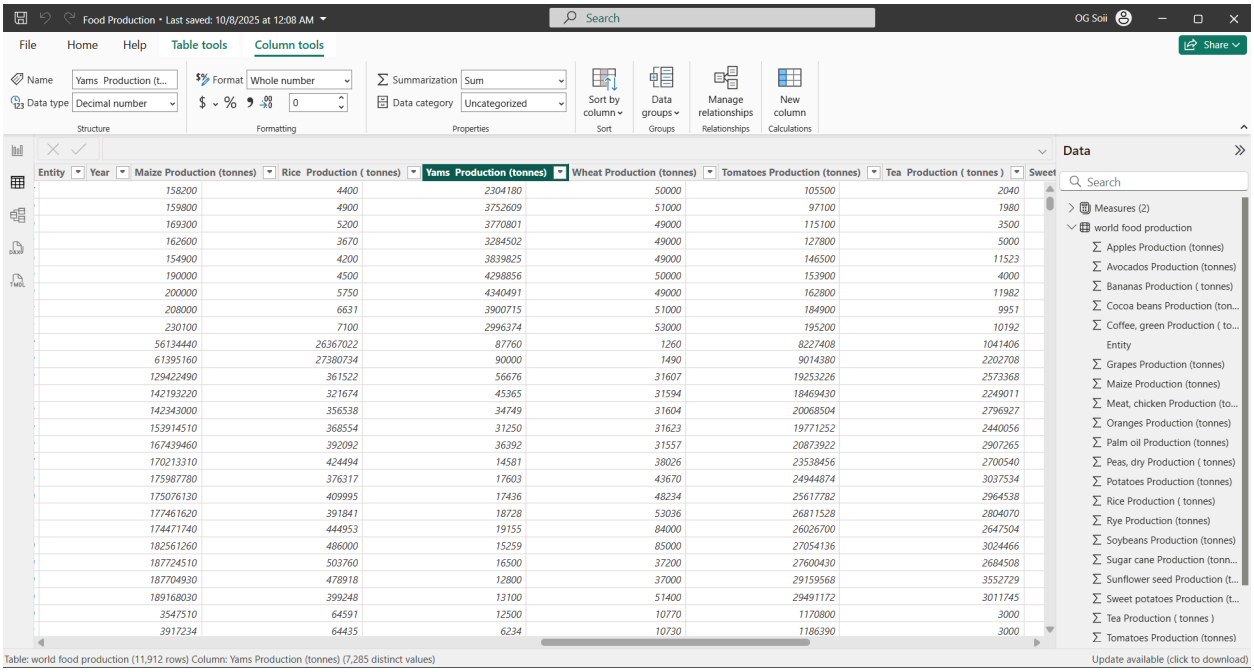
Dataset :

Column Description of the Dataset:

- Entity: Represents the country or region where the food production data is recorded.
- Code: A unique identifier or code for each entity (country or region).
- Year: The specific year for which the data is recorded, ranging from 1961 to 2023.
- Apples_Production (tonnes): The total annual production of apples measured in tonnes.
- Avocados_Production (tonnes): The total annual production of avocados measured in tonnes.
- Bananas_Production (tonnes): The total annual production of bananas measured in tonnes.
- Coffee_green_Production (tonnes): The total annual production of green coffee measured in tonnes.
- Grapes_Production (tonnes): The total annual production of grapes measured in tonnes.
- Maize_Production (tonnes): The total annual production of maize measured in tonnes.
- Oranges_Production (tonnes): The total annual production of oranges measured in tonnes.
- Rice_Production (tonnes): The total annual production of rice measured in tonnes.
- Tea_Production (tonnes): The total annual production of tea measured in tonnes.
- Wheat_Production (tonnes): The total annual production of wheat measured in tonnes.



Entity	Year	Maize Production (tonnes)	Rice Production (tonnes)	Yams Production (tonnes)	Wheat Production (tonnes)	Tomatoes Production (tonnes)	Tea Production (tonnes)	Sweet
Albania	2003	206900	0	64	259900	456933	1130	
Albania	2004	216200	0	70	253400	512195	1100	
Albania	2005	219900	0	79	260000	513780	1455	
Albania	2006	245400	0	85	230900	548934	1566	
Albania	2007	215900	0	92	249500	567313	1440	
Albania	2008	245000	0	98	335000	559249	640	
Albania	2009	265100	0	105	333100	641034	480	
Albania	2010	362000	0	111	294900	718235	200	
Albania	2011	366400	0	116	292800	771606	290	
Armenia	1992	4195	475415230	220000	180181070	19384866	1653	
Armenia	1993	3910	482738720	240000	184487150	20899218	520	
Armenia	2012	19131	650476600	234770	285734080	72956184	350	
Armenia	2013	20906	657198800	237079	272117500	77516100	380	
Armenia	2014	20158	661821000	240000	297869000	84922776	397	
Armenia	2015	21720	658137000	250000	288305180	87112400	450	
Armenia	2016	21026	659920500	246379	309875700	94784904	500	
Armenia	2017	10413	659753660	246840	307132450	95748904	39720	
Armenia	2018	7615	673591500	246876	315417440	98927410	44081	
Armenia	2019	4758	681251460	246525	320513570	101672600	48222	
Armenia	2020	6467	678217100	246000	320208260	102721210	47757	
Armenia	2021	6000	690560200	245000	328610800	107023300	48565	
Asia	1961	31601108	708148400	247000	333671300	109817470	58709	
Asia	1962	31028646	198778130	248692	325832960	110230904	57877	
Asia	1963	34999330	207411000	250020	335905920	111772100	56605	
Asia	1964	38885010	227561300	251229	343725100	115508620	60327	
Bhutan	2013	75717	7500	167500	2742	127678	14900	
Bhutan	2014	77243	6300	161200	4600	126215	254	



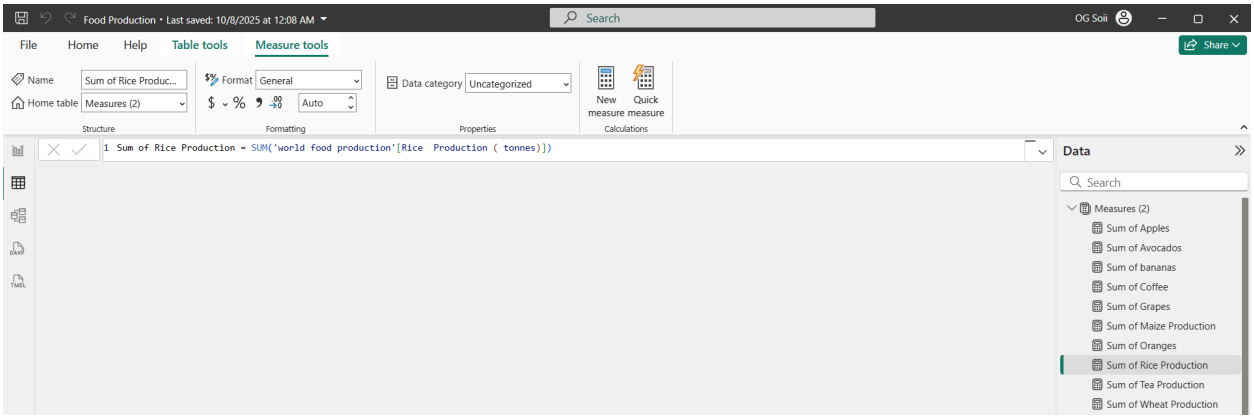
Entity	Year	Maize Production (tonnes)	Rice Production (tonnes)	Yams Production (tonnes)	Wheat Production (tonnes)	Tomatoes Production (tonnes)	Tea Production (tonnes)	Sweet
		158200	4400	2304180	50000	105500	2040	
		159800	4900	3752609	51000	97100	1980	
		169300	5200	3770801	49000	115100	3500	
		162600	3670	3284502	49000	127800	5000	
		154900	4200	3839825	49000	146500	11523	
		190000	4500	4298856	50000	153900	4000	
		200000	5750	4340491	49000	162800	11982	
		208000	6631	3900715	51000	184900	9951	
		230100	7100	2996374	53000	195200	10192	
		56134440	26367022	87760	1260	8227408	1041406	
		61395160	27380734	90000	1490	9014380	2202708	
		129422490	361522	56676	31607	19253226	2573368	
		142193220	321674	45365	31594	18469430	2249011	
		142343000	356538	34749	31604	20068504	2796927	
		153914510	368554	31250	31623	19771252	2440056	
		167439460	392092	36392	31557	20873922	2907265	
		170213310	424494	14581	38026	23538456	2700540	
		175987780	376317	17603	43670	24944874	3037534	
		175076130	409995	17436	48234	25617782	2964538	
		177461620	391841	18728	53036	26811528	2804070	
		174471740	444953	19155	84000	26026700	2647504	
		182561260	486000	15259	85000	27054136	3024466	
		187724510	503760	16500	37200	27600430	2684508	
		187704930	478918	12800	37000	29159568	3552729	
		189168030	399248	13100	51400	29491172	3011745	
		3547510	64591	12500	10770	1170800	3000	
		3917234	64435	6234	10730	1186390	3000	

Calculated Measures:

Scenario 1: Sum of Rice Production (tonnes)

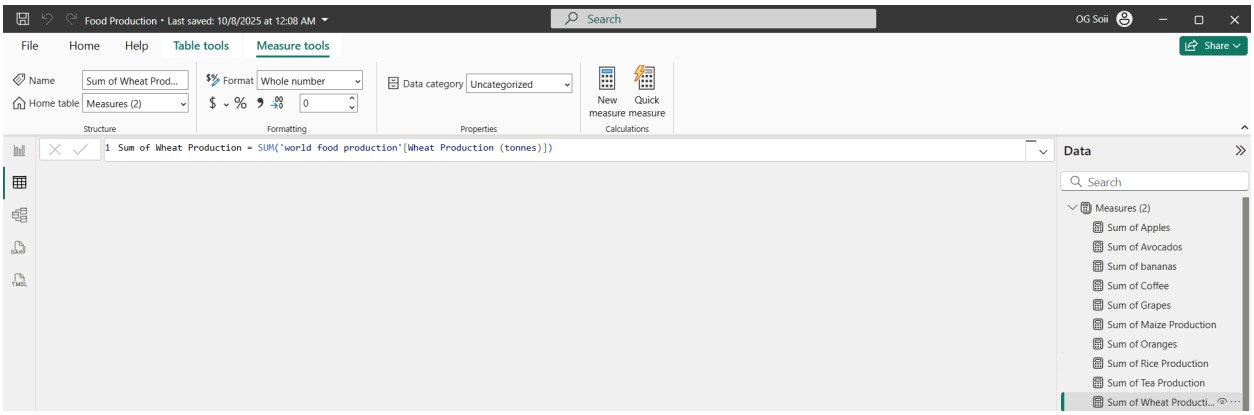
This section prominently displays the total global rice production, amounting to 269

billion tonnes over the period from 1961 to 2023. It highlights the significant volume of rice produced, emphasizing its importance as a staple food crop worldwide.



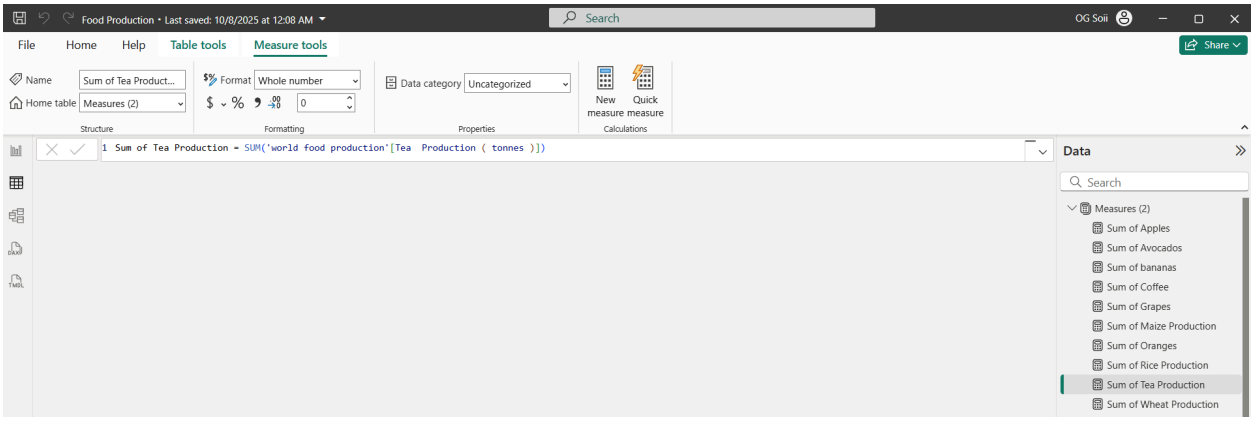
Scenario 2:Sum of Wheat Production (tonnes)

Highlighting the global wheat production, this section shows a total of 282 billion tonnes produced between 1961 and 2023. This underscores wheat's crucial role in global food security and its widespread cultivation.



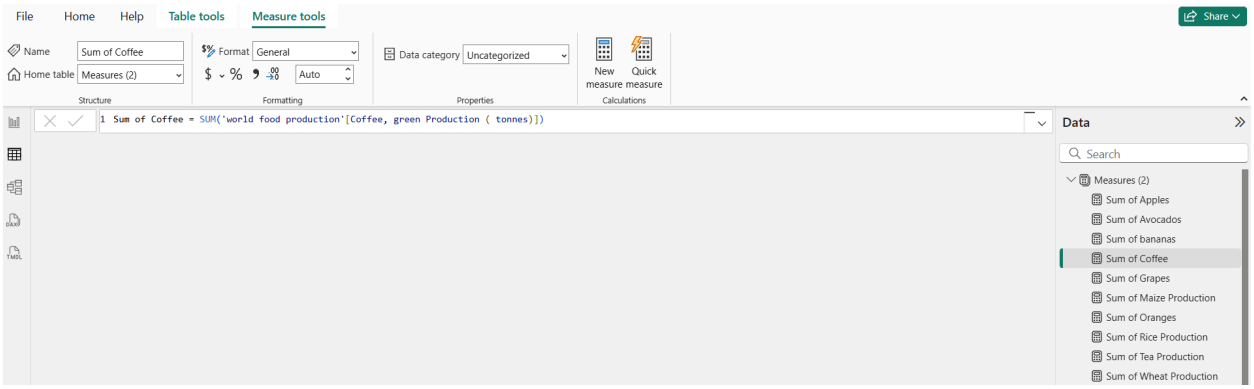
Scenario 3: Sum of Tea Production (tonnes)

This section shows a gauge chart illustrating the total tea production, amounting to 2 billion tonnes. The visual emphasizes the scale of tea production compared to other major crops.



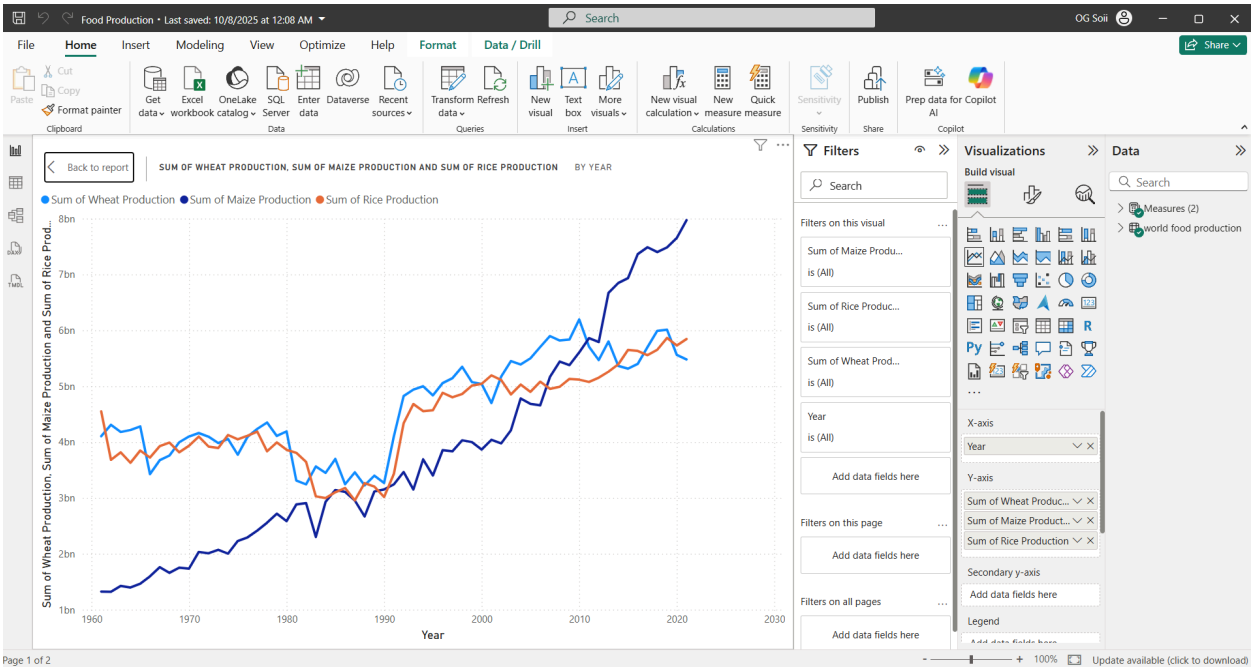
Scenario 4:Sum of Coffee, Green Production (tonnes) by Entity

A bar chart depicting the distribution of green coffee production among various entities. Africa, Asia, and America are leading producers, reflecting regional contributions to global coffee supply.



Scenario 5: Sum of Wheat, Maize, and Rice Production (tonnes) by Year

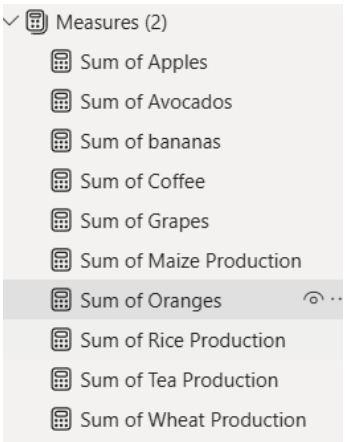
An area chart showing the annual production trends of wheat, maize, and rice from 1961 to 2023. It highlights the growth trajectories and fluctuations of these essential crops over the years.



Scenario 6: Sum of Apples, Avocados, Bananas, and Oranges Production (tonnes) by Entity

This stacked bar chart illustrates the production volumes of apples, avocados, bananas, and oranges by different entities. It highlights the diverse contributions to global fruit production.

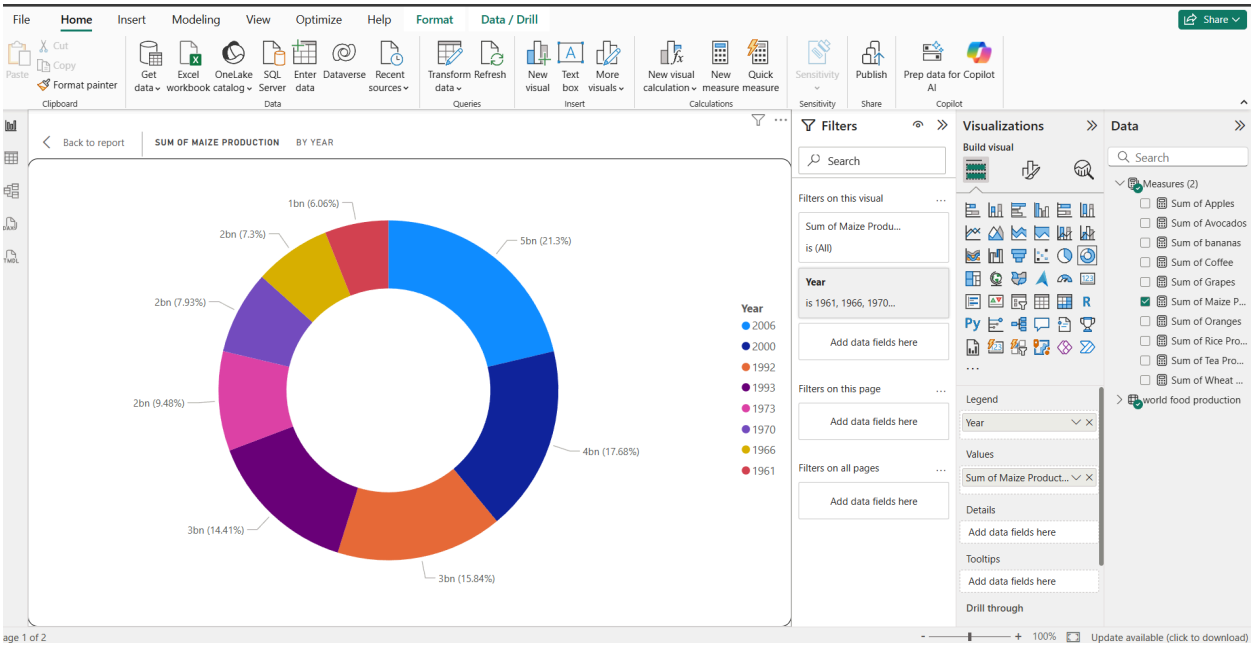
```
Sum of Apples = SUM('world food production'[Apples Production (tonnes)])
Sum of Avocados = SUM('world food production'[Avocados Production (tonnes)])
Sum of bananas = SUM('world food production'[Bananas  Production ( tonnes)])
Sum of Oranges = SUM('world food production'[Oranges  Production (tonnes)])
```



Scenario 7:Sum of Maize Production (tonnes) by Year

A donut chart depicting the yearly maize production distribution across different years. It shows how maize production has evolved, with specific years highlighted for their significant contributions.

```
Sum of Maize Production = SUM('world food production'[Maize Production (tonnes)])
```



Scenario 8: Sum of Grapes, Apples, Bananas, and Oranges Production (tonnes)

This bar chart compares the total production volumes of grapes (43 billion tonnes), apples (39 billion tonnes), bananas (32 billion tonnes), and oranges (26 billion tonnes). It provides a comparative view of the global production scales of these popular fruits.

```
Sum of Grapes = SUM('world food production'[Grapes  Production (tonnes)])
Sum of Apples = SUM('world food production'[Apples Production (tonnes)])
Sum of bananas = SUM('world food production'[Bananas  Production ( tonnes)])
Sum of Oranges = SUM('world food production'[Oranges  Production (tonnes)])
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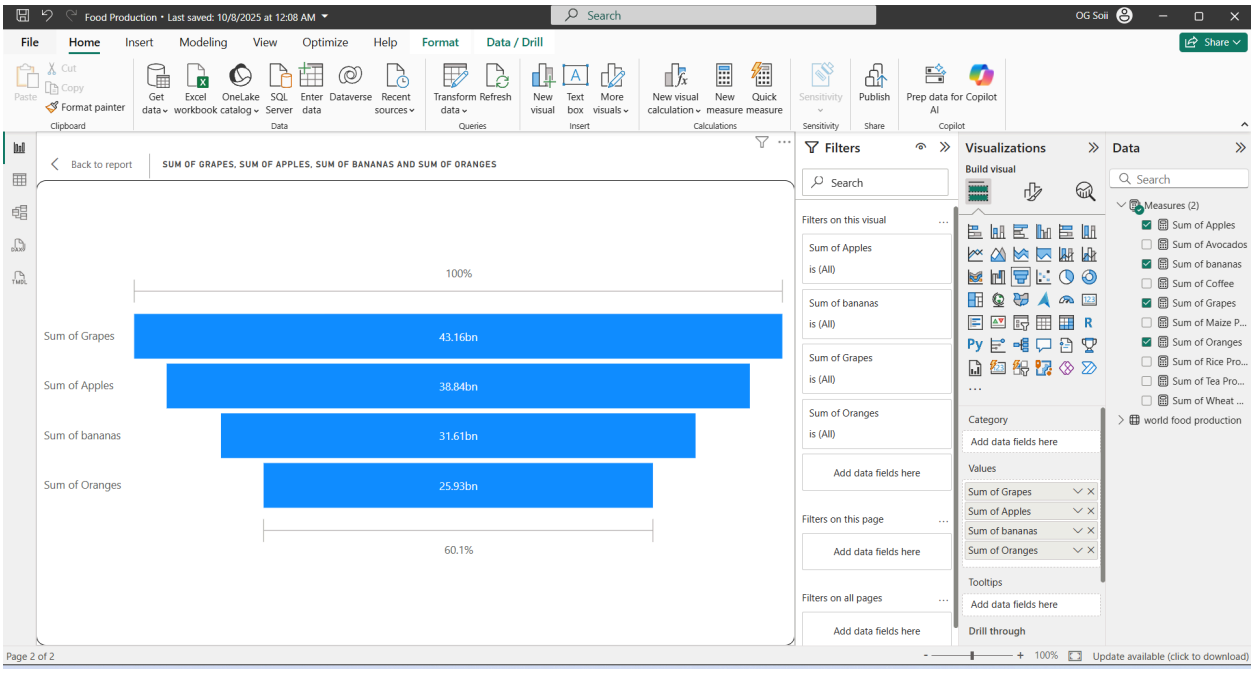


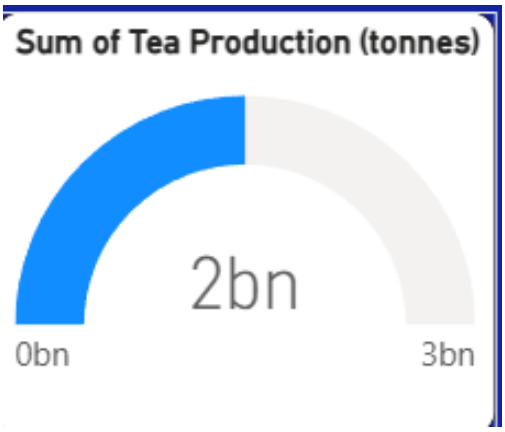
Data Visualization

Data visualization is the process of creating graphical representations of data to help people understand and explore the information. The goal of data visualization is to make complex data sets more accessible, intuitive, and easier to interpret. By using visual elements such as charts, graphs, and maps, data visualizations can help people quickly identify patterns, trends, and outliers in the data.

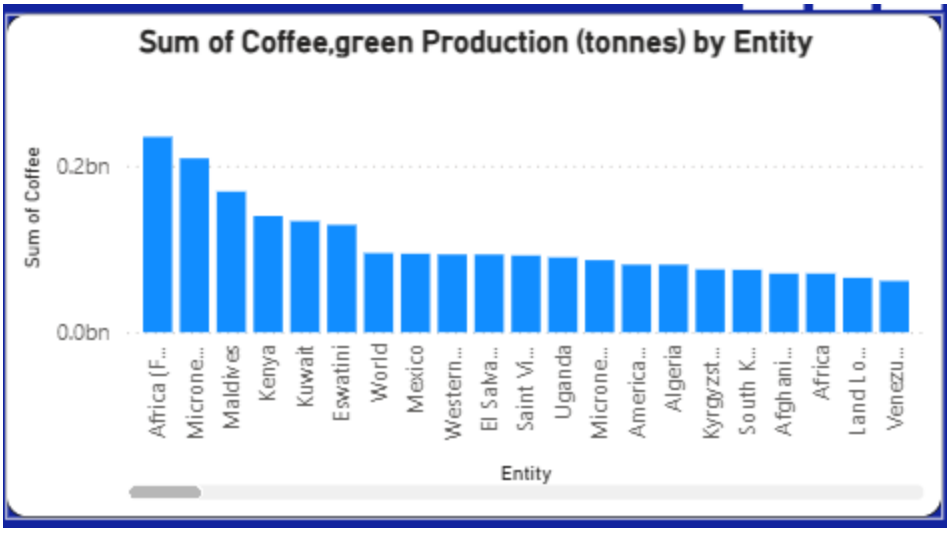
Sum of Rice Production (tonnes)

Sum of Wheat Production (tonnes)

Sum of Tea Production (tonnes)

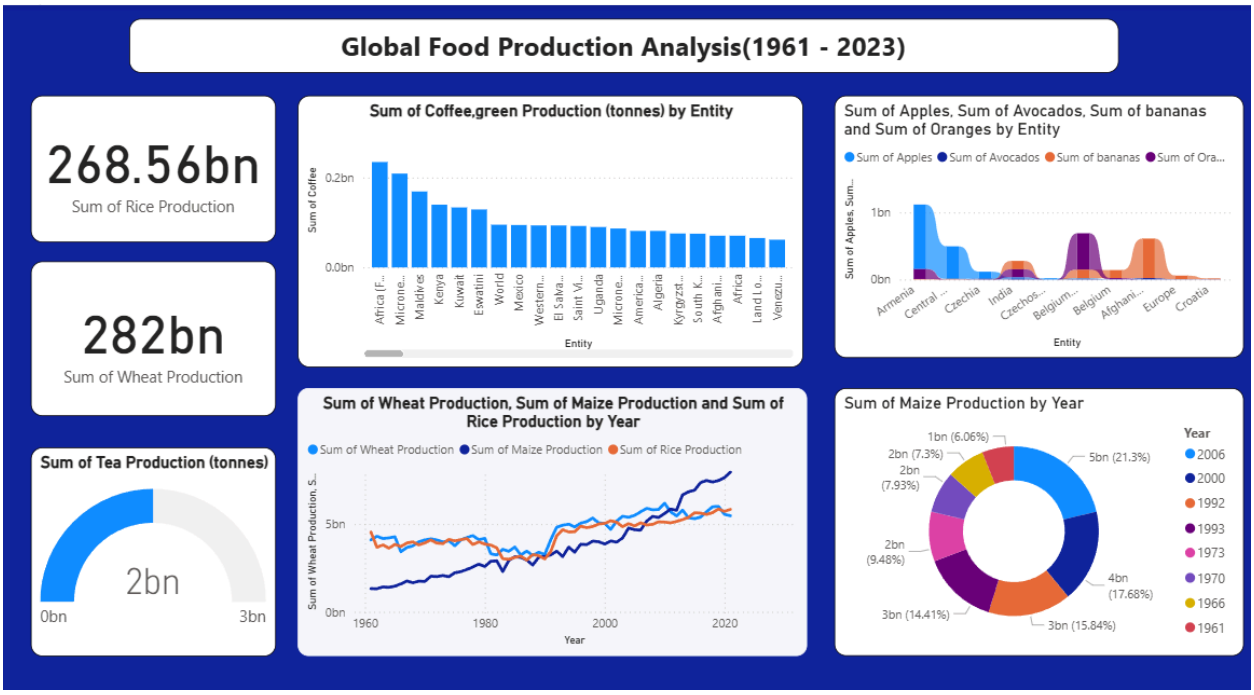


Sum of Coffee, Green Production (tonnes) by Entity



Dashboard

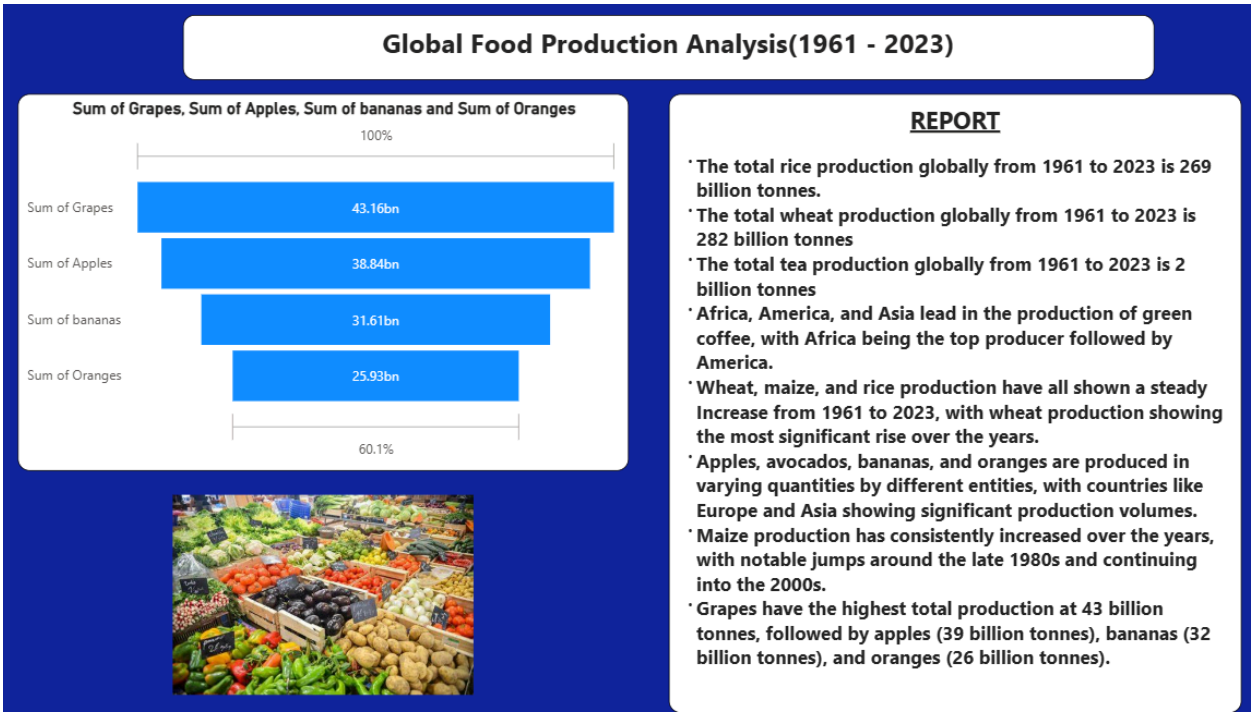
A dashboard is a graphical user interface (GUI) that displays information and data in an organized, easy-to-read format. Dashboards are often used to provide real-time monitoring and analysis of data and are typically designed for a specific purpose or use case. Dashboards can be used in a variety of settings, such as business, finance, manufacturing, healthcare, and many other industries. They can be used to track key performance indicators (KPIs), monitor performance metrics, and display data in the form of charts, graphs, and tables.



Report

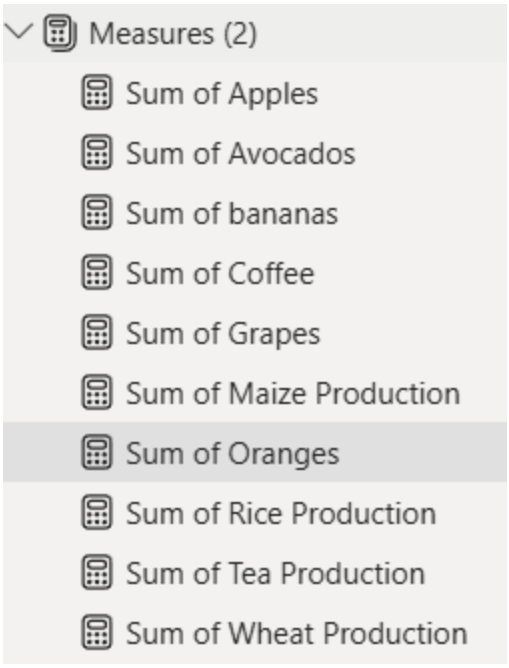
A report is a comprehensive document that provides a detailed and structured account of data analysis, findings, and insights. It is typically used for in-depth analysis, documentation, and communication of results. Reports are suitable for a diverse audience, including decision-makers, analysts, and stakeholders who need a comprehensive understanding of the data.

Designing a report in Power BI involves connecting to data sources, creating visualizations like charts and graphs, customizing their appearance and interactivity, organizing them logically on the canvas, formatting elements for consistency and clarity, and optionally creating dashboards for a summarized view. Throughout the process, it's essential to consider the audience's needs and ensure the report effectively communicates insights from the data. Finally, iterate based on feedback to continually improve the report's design and usefulness.



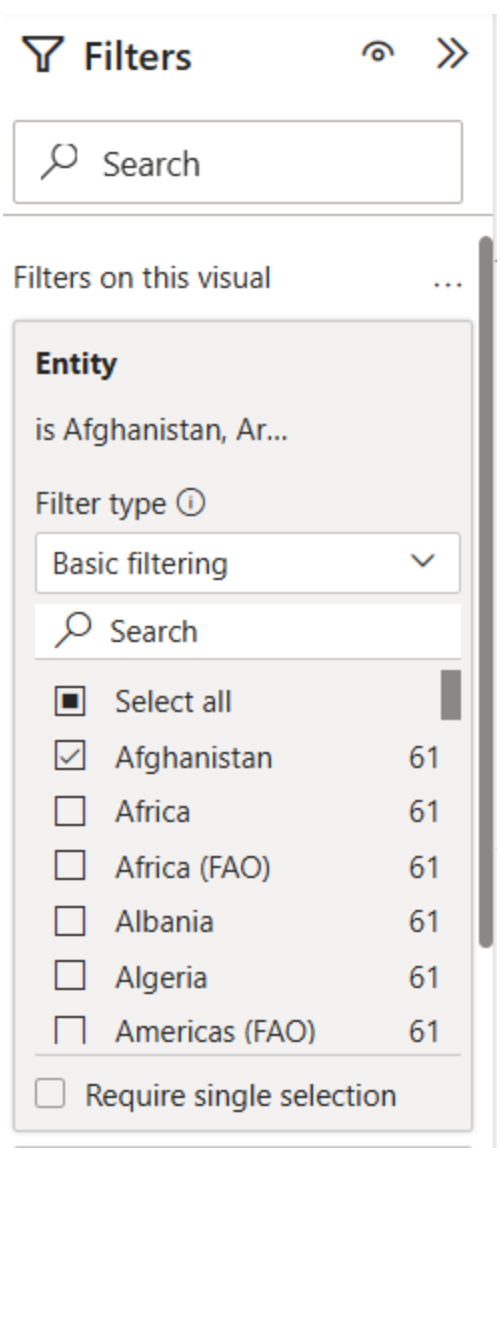
Amount of Data Loaded

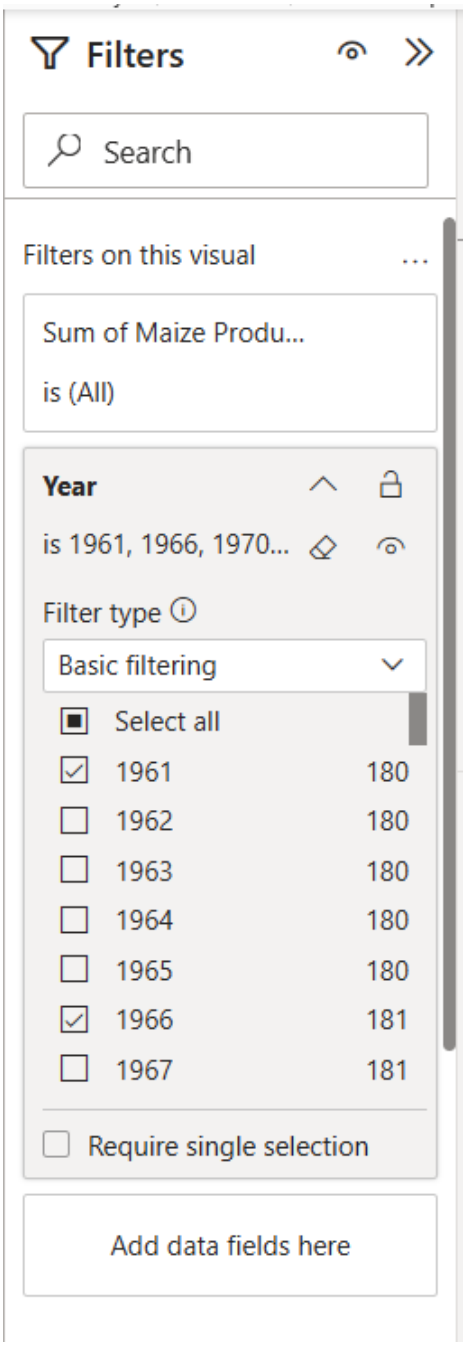
"Amount of Data Loaded" refers to the quantity or volume of data that has been imported, retrieved, or loaded into a system, software application, database, or any other data storage or processing environment. It's a measure of how much data has been successfully processed and made available for analysis, manipulation, or use within the system.

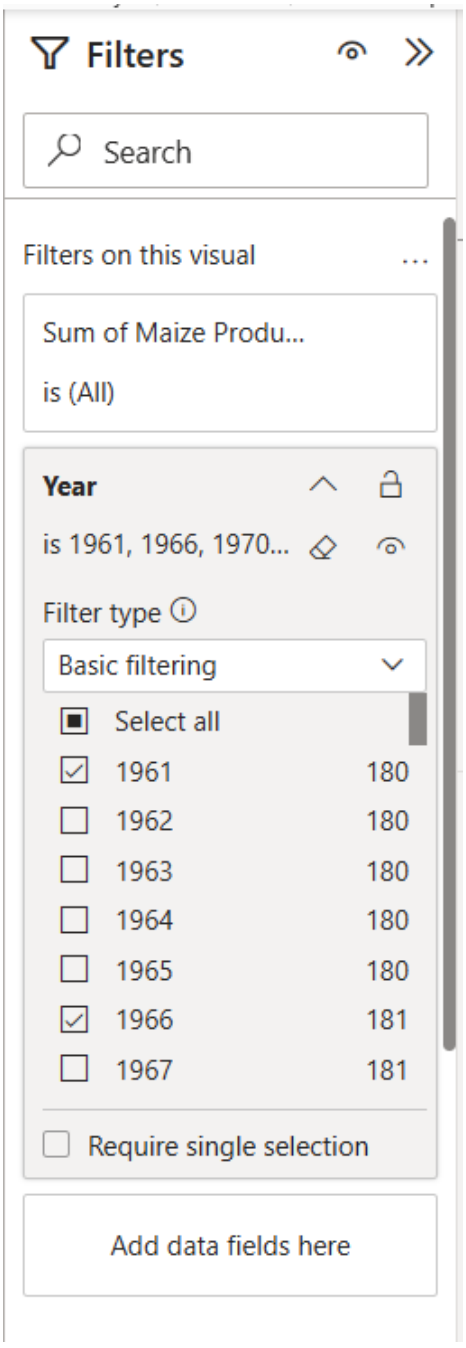


Utilization of Filters

"Utilization of Filters" refers to the application or use of filters within a system, software application, or data processing pipeline to selectively extract, manipulate, or analyze data based on specified criteria or conditions.


Filters
Search
Filters on this visual
Entity
is Afghanistan, Ar...
Filter type
Basic filtering
Search
Select all
Afghanistan 61
Africa 61
Africa (FAO) 61
Albania 61
Algeria 61
Americas (FAO) 61
Require single selection


Filters
Search
Filters on this visual
Sum of Maize Produ...
is (All)
Year
is 1961, 1966, 1970...
Filter type
Basic filtering
Select all
1961 180
1962 180
1963 180
1964 180
1965 180
1966 181
1967 181
Require single selection
Add data fields here


Filters
Search
Filters on this visual
Sum of Maize Produ...
is (All)
Year
is 1961, 1966, 1970...
Filter type
Basic filtering
Select all
1961 180
1962 180
1963 180
1964 180
1965 180
1966 181
1967 181
Require single selection
Add data fields here