



Mentorness Project 2 ICRISAT- District Level Data Analysis

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Batch - MIP-DA-04
On Date - 29th March 2024



Agenda



Problem Statement



Understanding data columns



Data Cleaning and Data Wrangling



Data Dictionary



Dashboard

Problem Statement

- The project will analyze Indian agriculture, looking at data from different districts and years.
- The data includes details about crops, how much land they cover, how much is produced, and the yields.
- The goal is to use Power BI to make interactive pictures that show trends and differences in how farming is done.
- This will help people make smarter choices about farming and where to put resources for the best results.

Data Cleaning - Original Data

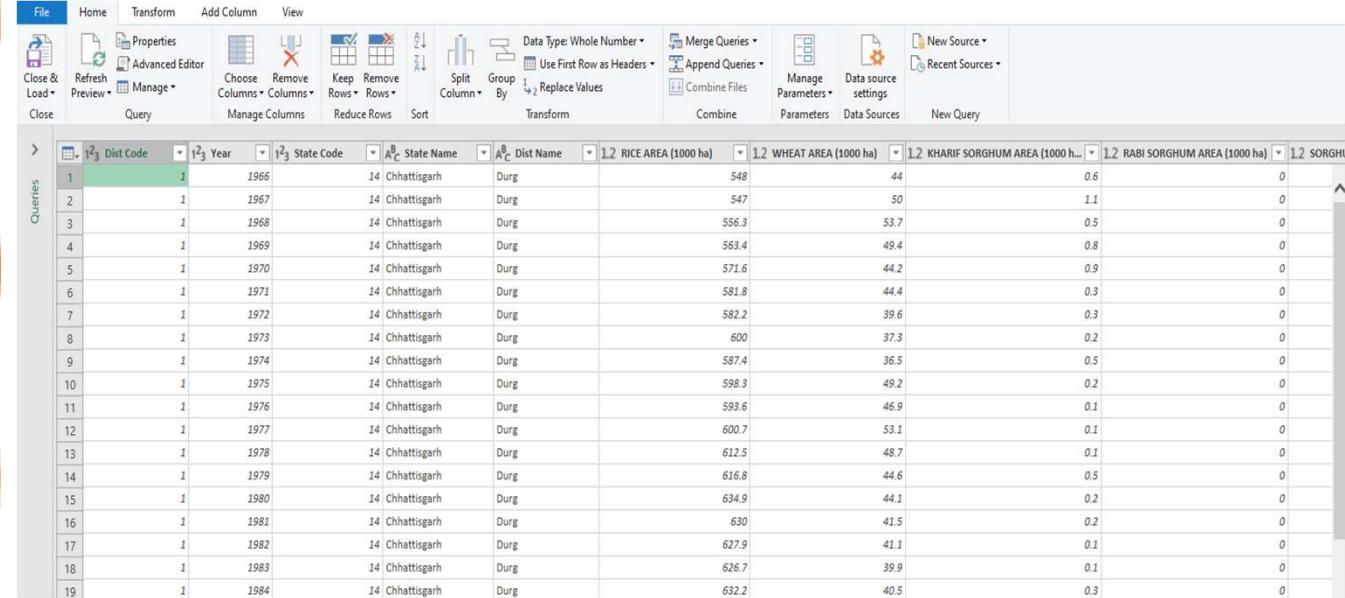
	A	B	C	D	E	F	G	H	I	J	K	L	M	
	Dist Code	Year	State Code	State Name	Dist Name	RICE PRODUCTION (1000 tons)	RICE YIELD (Kg per ha)	WHEAT AREA (1000 ha)	WHEAT PRODUCTION (1000 tons)	WHEAT YIELD (Kg per ha)	KHARIF SORGHUM AREA (1000 ha)	KHARIF SORGHUM PRODUCTION (1000 tons)	KHARIF SORGHUM YIELD (Kg per ha)	R
1	1	1966	14	Chhattisgarh	Durg	185	337.59	44	20	454.55	0.6	0.4	666.67	Af
2	1	1967	14	Chhattisgarh	Durg	409	747.71	50	26	520	1.1	0.9	818.18	
3	1	1968	14	Chhattisgarh	Durg	468	841.27	53.7	30	558.66	0.5	0.4	800	
4	1	1969	14	Chhattisgarh	Durg	400.8	711.4	49.4	26.5	536.44	0.8	0.6	750	
5	1	1970	14	Chhattisgarh	Durg	473.6	828.55	44.2	29	656.11	0.9	0.6	666.67	
6	1	1971	14	Chhattisgarh	Durg	412.9	709.69	44.4	25.8	581.08	0.3	0.2	666.67	
7	1	1972	14	Chhattisgarh	Durg	381	654.41	39.6	20.6	520.2	0.3	0.3	1000	
8	1	1973	14	Chhattisgarh	Durg	471.9	786.5	37.3	18.6	498.66	0.2	0.2	1000	
9	1	1974	14	Chhattisgarh	Durg	219	372.83	36.5	22.4	613.7	0.5	0.4	800	
10	1	1975	14	Chhattisgarh	Durg	454	758.82	49.2	27.8	565.04	0.2	0.2	1000	
11	1	1976	14	Chhattisgarh	Durg	327.1	551.04	46.9	10	213.22	0.1	0.1	1000	
12	1	1977	14	Chhattisgarh	Durg	572.4	952.89	53.1	27.1	510.36	0.1	0.1	1000	
13	1	1978	14	Chhattisgarh	Durg	362.2	591.35	48.7	25.6	525.67	0.1	0.1	1000	
14	1	1979	14	Chhattisgarh	Durg	602.2	585.88	41.2	17.8	500.4	0.5	0.5	1000	

Open Data in Power Query Editor

The screenshot shows the Microsoft Power Query Editor interface with a table of data. The table has the following columns:

Dist Code	Year	State Code	State Name	Dist Name	RICE AREA (1000 ha)	RICE PRODUCTION (1000 tons)	RICE YIELD (Kg per ha)	WHEAT AREA (1000 ha)
1	1966	14	Chhattisgarh	Durg	548	185	337.59	44
1	1967	14	Chhattisgarh	Durg	547	409	747.71	50
1	1968	14	Chhattisgarh	Durg	556.3	468	841.27	53.7
1	1969	14	Chhattisgarh	Durg	563.4	400.8	711.4	49.4
1	1970	14	Chhattisgarh	Durg	571.6	473.6	828.55	44.2
1	1971	14	Chhattisgarh	Durg	581.8	412.9	709.69	44.4
1	1972	14	Chhattisgarh	Durg	582.2	381	654.41	39.6
1	1973	14	Chhattisgarh	Durg	600	471.9	786.5	37.3
1	1974	14	Chhattisgarh	Durg	587.4	219	372.83	36.5
1	1975	14	Chhattisgarh	Durg	598.3	454	758.82	49.2
1	1976	14	Chhattisgarh	Durg	593.6	327.1	551.04	46.9
1	1977	14	Chhattisgarh	Durg	600.7	572.4	952.89	53.1
1	1978	14	Chhattisgarh	Durg	612.5	362.2	591.35	48.7
1	1979	14	Chhattisgarh	Durg	616.8	330.6	535.99	44.6
1	1980	14	Chhattisgarh	Durg	634.9	515.6	812.1	44.1
1	1981	14	Chhattisgarh	Durg	630	506.9	804.6	41.5
1	1982	14	Chhattisgarh	Durg	627.9	513.3	817.49	41.1
1	1983	14	Chhattisgarh	Durg	626.7	711	1134.51	39.9
1	1984	14	Chhattisgarh	Durg	632.2	563.8	891.81	40.5
1	1985	14	Chhattisgarh	Durg	630.8	699.8	1109.38	39.4
1	1986	14	Chhattisgarh	Durg	643	525	816.49	37
1	1987	14	Chhattisgarh	Durg	648	523	807.1	43
1	1988	14	Chhattisgarh	Durg	652.7	549.7	842.19	43.7
1	1989	14	Chhattisgarh	Durg	660.2	457.3	692.67	43.8
1	1990	14	Chhattisgarh	Durg	682.9	806.8	1181.43	36.2
1	1991	14	Chhattisgarh	Durg	680.8	773.6	1136.31	34.8
1	1992	14	Chhattisgarh	Durg	688	777.3	1129.8	56.1

Remove all other columns from the crops and just leaving with the crops_AREA, other details



The screenshot shows the Microsoft Power BI Data Editor interface. At the top, there's a ribbon with tabs like File, Home, Transform, Add Column, and View. Below the ribbon is a toolbar with icons for Close & Load, Refresh Preview, Advanced Editor, Properties, Choose Columns, Remove Columns, Keep Rows, Remove Rows, Sort, Split Column, Group By, Replace Values, Data Type: Whole Number, Use First Row as Headers, Merge Queries, Append Queries, Combine Files, Parameters, Data Sources, and New Source. The main area is titled 'Queries' and contains a table with 19 rows of data. The columns are: Dist Code, Year, State Code, State Name, Dist Name, RICE AREA (1000 ha), WHEAT AREA (1000 ha), KHARIF SORGHUM AREA (1000 ha), RABI SORGHUM AREA (1000 ha), and SORGHUM. The data shows crop area values for Durg district in Chhattisgarh from 1966 to 1984.

	Dist Code	Year	State Code	State Name	Dist Name	RICE AREA (1000 ha)	WHEAT AREA (1000 ha)	KHARIF SORGHUM AREA (1000 ha)	RABI SORGHUM AREA (1000 ha)	SORGHUM
1	1	1966	14	Chhattisgarh	Durg	548	44	0.6	0	0
2	1	1967	14	Chhattisgarh	Durg	547	50	1.1	0	0
3	1	1968	14	Chhattisgarh	Durg	556.3	53.7	0.5	0	0
4	1	1969	14	Chhattisgarh	Durg	563.4	49.4	0.8	0	0
5	1	1970	14	Chhattisgarh	Durg	571.6	44.2	0.9	0	0
6	1	1971	14	Chhattisgarh	Durg	581.8	44.4	0.3	0	0
7	1	1972	14	Chhattisgarh	Durg	582.2	39.6	0.3	0	0
8	1	1973	14	Chhattisgarh	Durg	600	37.3	0.2	0	0
9	1	1974	14	Chhattisgarh	Durg	587.4	36.5	0.5	0	0
10	1	1975	14	Chhattisgarh	Durg	598.3	49.2	0.2	0	0
11	1	1976	14	Chhattisgarh	Durg	593.6	46.9	0.1	0	0
12	1	1977	14	Chhattisgarh	Durg	600.7	53.1	0.1	0	0
13	1	1978	14	Chhattisgarh	Durg	612.5	48.7	0.1	0	0
14	1	1979	14	Chhattisgarh	Durg	616.8	44.6	0.5	0	0
15	1	1980	14	Chhattisgarh	Durg	634.9	44.1	0.2	0	0
16	1	1981	14	Chhattisgarh	Durg	630	41.5	0.2	0	0
17	1	1982	14	Chhattisgarh	Durg	627.9	41.1	0.1	0	0
18	1	1983	14	Chhattisgarh	Durg	626.7	39.9	0.1	0	0
19	1	1984	14	Chhattisgarh	Durg	632.2	40.5	0.3	0	0

Unpivoted other columns

Load and save to new Excel sheet

Screenshot of the Power Query Editor showing the transformation of a table.

The table contains the following data:

	Dist Code	Year	State Code	State Name	Dist Name	Attribute	Value
1	1	1966	14	Chhattisgarh	Durg	RICE AREA (1000 ha)	548
2	1	1966	14	Chhattisgarh	Durg	WHEAT AREA (1000 ha)	44
3	1	1966	14	Chhattisgarh	Durg	KHARIF SORGHUM AREA (1000 ha)	0.6
4	1	1966	14	Chhattisgarh	Durg	RABI SORGHUM AREA (1000 ha)	0
5	1	1966	14	Chhattisgarh	Durg	SORGHUM AREA (1000 ha)	0.6
6	1	1966	14	Chhattisgarh	Durg	PEARL MILLET AREA (1000 ha)	0
7	1	1966	14	Chhattisgarh	Durg	MAIZE AREA (1000 ha)	3
8	1	1966	14	Chhattisgarh	Durg	FINGER MILLET AREA (1000 ha)	0.8
9	1	1966	14	Chhattisgarh	Durg	BARLEY AREA (1000 ha)	0.1
10	1	1966	14	Chhattisgarh	Durg	CHICKPEA AREA (1000 ha)	54
11	1	1966	14	Chhattisgarh	Durg	PIGEONPEA AREA (1000 ha)	37
12	1	1966	14	Chhattisgarh	Durg	MINOR PULSES AREA (1000 ha)	114.96
13	1	1966	14	Chhattisgarh	Durg	GROUNDNUT AREA (1000 ha)	0.2
14	1	1966	14	Chhattisgarh	Durg	SESAMUM AREA (1000 ha)	3
15	1	1966	14	Chhattisgarh	Durg	RAPESEED AND MUSTARD AREA (1000 ha)	1
16	1	1966	14	Chhattisgarh	Durg	SAFFLOWER AREA (1000 ha)	0.07
17	1	1966	14	Chhattisgarh	Durg	CASTOR AREA (1000 ha)	0.7
18	1	1966	14	Chhattisgarh	Durg	LINSEED AREA (1000 ha)	45.7
19	1	1966	14	Chhattisgarh	Durg	SUNFLOWER AREA (1000 ha)	0
20	1	1966	14	Chhattisgarh	Durg	SOYABEAN AREA (1000 ha)	0
21	1	1966	14	Chhattisgarh	Durg	OILSEEDS AREA (1000 ha)	50.7
22	1	1966	14	Chhattisgarh	Durg	SUGARCANE AREA (1000 ha)	0.9
23	1	1966	14	Chhattisgarh	Durg	COTTON AREA (1000 ha)	0
24	1	1966	14	Chhattisgarh	Durg	FRUITS AREA (1000 ha)	5.95

The Query Settings pane shows the following steps:

- PROPERTIES: Name = Table1
- APPLIED STEPS: Unpivoted Other Columns

Same as area, From production remove all other columns from the data except Production

The screenshot shows the Microsoft Power Query Editor interface with the title bar "Agri_India - Power Query Editor". The ribbon menu includes File, Home, Transform, Add Column, and View. The Home tab is selected, displaying various transformation tools like Close & Load, Refresh, Properties, Advanced Editor, and Manage Columns. The main area shows a table with 18 rows of data. The columns are: Dist Code, Year, State Code, State Name, Dist Name, 1.2 RICE PRODUCTION (1000 tons), 1.2 WHEAT PRODUCTION (1000 tons), 1.2 KHARIF SORGHUM PRODUCTION (1000 t...), and 1.2 RABI SORGHUM PRODUCT. All rows show the same value for Dist Code (1), State Code (14), State Name (Chhattisgarh), and Dist Name (Durg). The production values are: 1966 (185), 1967 (409), 1968 (468), 1969 (400.8), 1970 (473.6), 1971 (412.9), 1972 (381), 1973 (471.9), 1974 (219), 1975 (454), 1976 (327.1), 1977 (572.4), 1978 (362.2), 1979 (330.6), 1980 (515.6), 1981 (506.9), 1982 (513.3), and 1983 (711). The "Transform" ribbon tab is active, showing options like Data Type (Whole Number), Sort, Split Column, Group By, and Replace Values. The "Combine" ribbon tab is also visible. On the right side, the "Query Settings" pane shows the query name "Agri_India" and the applied step "Removed Other Columns".

	Dist Code	Year	State Code	State Name	Dist Name	1.2 RICE PRODUCTION (1000 tons)	1.2 WHEAT PRODUCTION (1000 tons)	1.2 KHARIF SORGHUM PRODUCTION (1000 t...)	1.2 RABI SORGHUM PRODUCT
1	1	1966	14	Chhattisgarh	Durg	185	20	0.4	
2	1	1967	14	Chhattisgarh	Durg	409	26	0.9	
3	1	1968	14	Chhattisgarh	Durg	468	30	0.4	
4	1	1969	14	Chhattisgarh	Durg	400.8	26.5	0.6	
5	1	1970	14	Chhattisgarh	Durg	473.6	29	0.6	
6	1	1971	14	Chhattisgarh	Durg	412.9	25.8	0.2	
7	1	1972	14	Chhattisgarh	Durg	381	20.6	0.3	
8	1	1973	14	Chhattisgarh	Durg	471.9	18.6	0.2	
9	1	1974	14	Chhattisgarh	Durg	219	22.4	0.4	
10	1	1975	14	Chhattisgarh	Durg	454	27.8	0.2	
11	1	1976	14	Chhattisgarh	Durg	327.1	10	0.1	
12	1	1977	14	Chhattisgarh	Durg	572.4	27.1	0.1	
13	1	1978	14	Chhattisgarh	Durg	362.2	25.6	0.1	
14	1	1979	14	Chhattisgarh	Durg	330.6	17.8	0.5	
15	1	1980	14	Chhattisgarh	Durg	515.6	33.6	0.2	
16	1	1981	14	Chhattisgarh	Durg	506.9	23.6	0.2	
17	1	1982	14	Chhattisgarh	Durg	513.3	23.9	0.1	
18	1	1983	14	Chhattisgarh	Durg	711	20.6	0.1	

Unpivot the Productions Columns

Load and save to new Excel sheet

The screenshot shows the Microsoft Power Query Editor interface. The ribbon at the top has tabs for File, Home, Transform, Add Column, and View. The Home tab is selected. The Transform ribbon tab is also visible. The main area displays a table with 24 rows of data. The columns are: Dist Code, Year, State Code, State Name, Dist Name, Attribute, and Value. The data represents agricultural production for the year 1966 across various districts in Chhattisgarh. The 'Value' column contains numerical values such as 185, 20, 0.4, etc. The 'Attribute' column lists specific crop types like RICE PRODUCTION, WHEAT PRODUCTION, KHARIF SORGHUM PRODUCTION, etc. The 'Transform' ribbon tab shows several steps applied to the query, including 'Unpivot Other Columns'. The 'Properties' pane on the right shows the query is named 'Agri_India'. The 'Applied Steps' pane shows the 'Unpivot Other Columns' step.

	Dist Code	Year	State Code	State Name	Dist Name	Attribute	Value
1	1	1966	14	Chhattisgarh	Durg	RICE PRODUCTION (1000 tons)	185
2	1	1966	14	Chhattisgarh	Durg	WHEAT PRODUCTION (1000 tons)	20
3	1	1966	14	Chhattisgarh	Durg	KHARIF SORGHUM PRODUCTION (1000 tons)	0.4
4	1	1966	14	Chhattisgarh	Durg	RABI SORGHUM PRODUCTION (1000 tons)	0
5	1	1966	14	Chhattisgarh	Durg	SORGHUM PRODUCTION (1000 tons)	0.4
6	1	1966	14	Chhattisgarh	Durg	PEARL MILLET PRODUCTION (1000 tons)	0
7	1	1966	14	Chhattisgarh	Durg	MAIZE PRODUCTION (1000 tons)	2
8	1	1966	14	Chhattisgarh	Durg	FINGER MILLET PRODUCTION (1000 tons)	0.2
9	1	1966	14	Chhattisgarh	Durg	BARLEY PRODUCTION (1000 tons)	0
10	1	1966	14	Chhattisgarh	Durg	CHICKPEA PRODUCTION (1000 tons)	27
11	1	1966	14	Chhattisgarh	Durg	PIGEONPEA PRODUCTION (1000 tons)	15
12	1	1966	14	Chhattisgarh	Durg	MINOR PULSES PRODUCTION (1000 tons)	-1
13	1	1966	14	Chhattisgarh	Durg	GROUNDNUT PRODUCTION (1000 tons)	0.1
14	1	1966	14	Chhattisgarh	Durg	SESAMUM PRODUCTION (1000 tons)	0.3
15	1	1966	14	Chhattisgarh	Durg	RAPESEED AND MUSTARD PRODUCTION (1000 t...)	0.2
16	1	1966	14	Chhattisgarh	Durg	SAFFLOWER PRODUCTION (1000 tons)	0
17	1	1966	14	Chhattisgarh	Durg	CASTOR PRODUCTION (1000 tons)	0.2
18	1	1966	14	Chhattisgarh	Durg	LINSEED PRODUCTION (1000 tons)	6.8
19	1	1966	14	Chhattisgarh	Durg	SUNFLOWER PRODUCTION (1000 tons)	0
20	1	1966	14	Chhattisgarh	Durg	SOYABEAN PRODUCTION (1000 tons)	0
21	1	1966	14	Chhattisgarh	Durg	OILSEEDS PRODUCTION (1000 tons)	-1
22	1	1966	14	Chhattisgarh	Durg	SUGARCANE PRODUCTION (1000 tons)	1.6
23	1	1966	14	Chhattisgarh	Durg	COTTON PRODUCTION (1000 tons)	0
24	1	1967	14	Chhattisgarh	Durg	RICE PRODUCTION (1000 tons)	409

Removing all other variables except the crop Yield

The screenshot shows the Microsoft Power Query Editor interface with the following details:

- File Bar:** File, Home, Transform, Add Column, View.
- Toolbars:** Close & Load, Refresh, Advanced Editor, Properties, Choose Columns, Remove Columns, Keep Rows, Remove Rows, Sort, Data Type: Whole Number, Use First Row as Headers, Merge Queries, Append Queries, Combine Files, Manage Parameters, Data source settings, New Source, Recent Sources.
- Table:** A data grid with columns: Dist Code, Year, State Code, State Name, Dist Name, RICE YIELD (Kg per ha), WHEAT YIELD (Kg per ha), KHARIF SORGHUM YIELD (Kg per ha), RABI SORGHUM YIELD (Kg per ha). The data spans from row 1 to 27, showing values for Chhattisgarh Durg from 1966 to 1992.
- Query Settings Panel:** Shows the query name "Agri_India (2)" and applied steps: "Removed Other Columns" (highlighted in green) and "Unpivoted Other Columns".

Lastly for the yield unpivoted other columns

Screenshot of the Power Query Editor showing the transformation of a dataset for agricultural yield data.

Query Settings:

- Name: Agri_India (2)
- All Properties

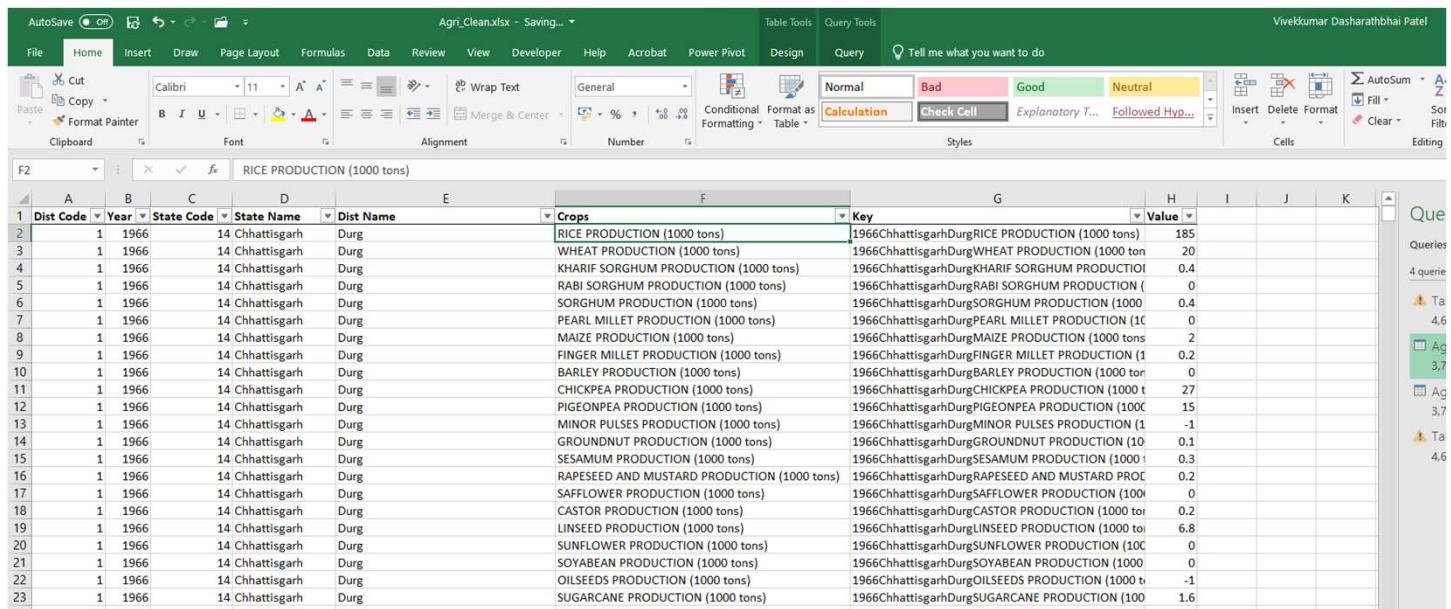
Applied Steps:

- Source
- Changed Type
- Removed Other Columns
- Unpivoted Other Columns** (highlighted in green)

Table Data Preview:

	Dist Code	Year	State Code	State Name	Dist Name	Attribute	Value
1	1	1966	14	Chhattisgarh	Durg	RICE YIELD (Kg per ha)	337.59
2	1	1966	14	Chhattisgarh	Durg	WHEAT YIELD (Kg per ha)	454.55
3	1	1966	14	Chhattisgarh	Durg	KHARIF SORGHUM YIELD (Kg per ha)	666.67
4	1	1966	14	Chhattisgarh	Durg	RABI SORGHUM YIELD (Kg per ha)	0
5	1	1966	14	Chhattisgarh	Durg	SORGHUM YIELD (Kg per ha)	666.67
6	1	1966	14	Chhattisgarh	Durg	PEARL MILLET YIELD (Kg per ha)	0
7	1	1966	14	Chhattisgarh	Durg	MAIZE YIELD (Kg per ha)	666.67
8	1	1966	14	Chhattisgarh	Durg	FINGER MILLET YIELD (Kg per ha)	250
9	1	1966	14	Chhattisgarh	Durg	BARLEY YIELD (Kg per ha)	0
10	1	1966	14	Chhattisgarh	Durg	CHICKPEA YIELD (Kg per ha)	500
11	1	1966	14	Chhattisgarh	Durg	PIGEONPEA YIELD (Kg per ha)	405.41
12	1	1966	14	Chhattisgarh	Durg	MINOR PULSES YIELD (Kg per ha)	-1
13	1	1966	14	Chhattisgarh	Durg	GROUNDNUT YIELD (Kg per ha)	500
14	1	1966	14	Chhattisgarh	Durg	SESAMUM YIELD (Kg per ha)	100
15	1	1966	14	Chhattisgarh	Durg	RAPESEED AND MUSTARD YIELD (Kg per ha)	200
16	1	1966	14	Chhattisgarh	Durg	SAFFLOWER YIELD (Kg per ha)	0
17	1	1966	14	Chhattisgarh	Durg	CASTOR YIELD (Kg per ha)	285.71
18	1	1966	14	Chhattisgarh	Durg	LINSEED YIELD (Kg per ha)	148.8
19	1	1966	14	Chhattisgarh	Durg	SUNFLOWER YIELD (Kg per ha)	0
20	1	1966	14	Chhattisgarh	Durg	SOYABEAN YIELD (Kg per ha)	0
21	1	1966	14	Chhattisgarh	Durg	OILSEEDS YIELD (Kg per ha)	-1
22	1	1966	14	Chhattisgarh	Durg	SUGARCANE YIELD (Kg per ha)	1777.78
23	1	1966	14	Chhattisgarh	Durg	COTTON YIELD (Kg per ha)	0
24	1	1967	14	Chhattisgarh	Durg	RICE YIELD (Kg per ha)	747.71
25	1	1967	14	Chhattisgarh	Durg	WHEAT YIELD (Kg per ha)	520

Creating a key for getting data into one for Production and yield



The screenshot shows a Microsoft Excel spreadsheet titled "Agri_Clean.xlsx". The table has columns labeled A through K. Column A contains "Dist Code", column B contains "Year", column C contains "State Code", column D contains "State Name", column E contains "Dist Name", column F contains "Crops", column G contains "Key", and column H contains "Value". The data in the "Crops" column lists various agricultural products. The "Key" column contains a combination of the year and district name, followed by the crop name. The "Value" column contains numerical values representing production amounts. The formula bar at the top shows the formula: =RICE PRODUCTION (1000 tons)

1	Dist Code	Year	State Code	State Name	Dist Name	F	G	H	I	J	K
2	1	1966	14	Chhattisgarh	Durg	RICE PRODUCTION (1000 tons)	1966ChhattisgarhDurgRICE PRODUCTION (1000 tons)	185			
3	1	1966	14	Chhattisgarh	Durg	WHEAT PRODUCTION (1000 tons)	1966ChhattisgarhDurgWHEAT PRODUCTION (1000 ton	20			
4	1	1966	14	Chhattisgarh	Durg	KHARIF SORGHUM PRODUCTION (1000 tons)	1966ChhattisgarhDurgKHARIF SORGHUM PRODUCTION (0.4			
5	1	1966	14	Chhattisgarh	Durg	RABI SORGHUM PRODUCTION (1000 tons)	1966ChhattisgarhDurgRABI SORGHUM PRODUCTION (0			
6	1	1966	14	Chhattisgarh	Durg	SORGHUM PRODUCTION (1000 tons)	1966ChhattisgarhDurgSORGHUM PRODUCTION (1000	0.4			
7	1	1966	14	Chhattisgarh	Durg	PEARL MILLET PRODUCTION (1000 tons)	1966ChhattisgarhDurgPEARL MILLET PRODUCTION (10	0			
8	1	1966	14	Chhattisgarh	Durg	MAIZE PRODUCTION (1000 tons)	1966ChhattisgarhDurgMAIZE PRODUCTION (1000 tons	2			
9	1	1966	14	Chhattisgarh	Durg	FINGER MILLET PRODUCTION (1000 tons)	1966ChhattisgarhDurgFINGER MILLET PRODUCTION (1	0.2			
10	1	1966	14	Chhattisgarh	Durg	BARLEY PRODUCTION (1000 tons)	1966ChhattisgarhDurgBARLEY PRODUCTION (1000 ton	0			
11	1	1966	14	Chhattisgarh	Durg	CHICKPEA PRODUCTION (1000 tons)	1966ChhattisgarhDurgCHICKPEA PRODUCTION (1000 t	27			
12	1	1966	14	Chhattisgarh	Durg	PIGEONPEA PRODUCTION (1000 tons)	1966ChhattisgarhDurgPIGEONPEA PRODUCTION (1000	15			
13	1	1966	14	Chhattisgarh	Durg	MINOR PULSES PRODUCTION (1000 tons)	1966ChhattisgarhDurgMINOR PULSES PRODUCTION (1	-1			
14	1	1966	14	Chhattisgarh	Durg	GROUNDNUT PRODUCTION (1000 tons)	1966ChhattisgarhDurgGROUNDNUT PRODUCTION (10	0.1			
15	1	1966	14	Chhattisgarh	Durg	SESAMUM PRODUCTION (1000 tons)	1966ChhattisgarhDurgSESAMUM PRODUCTION (1000	0.3			
16	1	1966	14	Chhattisgarh	Durg	RAPSEED AND MUSTARD PRODUCTION (1000 tons)	1966ChhattisgarhDurgRAPSEED AND MUSTARD PRO	0.2			
17	1	1966	14	Chhattisgarh	Durg	SAFFLOWER PRODUCTION (1000 tons)	1966ChhattisgarhDurgSAFFLOWER PRODUCTION (1000	0			
18	1	1966	14	Chhattisgarh	Durg	CASTOR PRODUCTION (1000 tons)	1966ChhattisgarhDurgCASTOR PRODUCTION (1000 ton	0.2			
19	1	1966	14	Chhattisgarh	Durg	LINSEED PRODUCTION (1000 tons)	1966ChhattisgarhDurgLINSEED PRODUCTION (1000 ton	6.8			
20	1	1966	14	Chhattisgarh	Durg	SUNFLOWER PRODUCTION (1000 tons)	1966ChhattisgarhDurgSUNFLOWER PRODUCTION (100	0			
21	1	1966	14	Chhattisgarh	Durg	SOYABEAN PRODUCTION (1000 tons)	1966ChhattisgarhDurgSOYABEAN PRODUCTION (1000	0			
22	1	1966	14	Chhattisgarh	Durg	OILSEEDS PRODUCTION (1000 tons)	1966ChhattisgarhDurgOILSEEDS PRODUCTION (1000 ton	-1			
23	1	1966	14	Chhattisgarh	Durg	SUGARCANE PRODUCTION (1000 tons)	1966ChhattisgarhDurgSUGARCANE PRODUCTION (100	1.6			

With the key fetch data with vlookup

Screenshot of Microsoft Excel showing a table with data from ICRISAT-District Level Data. The table includes columns for State Code, State Name, District Name, Crop Name, Key, Area (1000 ha), Production (1000 tons), and Yield (Kg per ha). The 'Key' column contains concatenated strings of state and district names followed by crop names.

	C	D	E	F	G	H	I	J	K	L	M
1	State Code	State Name	Dist Name	Crop Name	Key	Area (1000 ha)	PRODUCTION (1000 tons)	YIELD (Kg per ha)			
2	14	Chhattisgarh	Durg	RICE YIELD (Kg per ha)	1966ChhattisgarhDurgRICE YIELD (Kg per ha)	548	185	337.59			
3	14	Chhattisgarh	Durg	WHEAT YIELD (Kg per ha)	1966ChhattisgarhDurgWHEAT YIELD (Kg per ha)	44	20	454.55			
4	14	Chhattisgarh	Durg	KHARIF SORGHUM YIELD (Kg per ha)	1966ChhattisgarhDurgKHARIF SORGHUM YIELD (Kg per ha)	0.6	0.4	666.67			
5	14	Chhattisgarh	Durg	RABI SORGHUM YIELD (Kg per ha)	1966ChhattisgarhDurgRABI SORGHUM YIELD (Kg per ha)	0	0	0			
6	14	Chhattisgarh	Durg	SORGHUM YIELD (Kg per ha)	1966ChhattisgarhDurgSORGHUM YIELD (Kg per ha)	0.6	0.4	666.67			
7	14	Chhattisgarh	Durg	PEARL MILLET YIELD (Kg per ha)	1966ChhattisgarhDurgPEARL MILLET YIELD (Kg per ha)	0	0	0			
8	14	Chhattisgarh	Durg	MAIZE YIELD (Kg per ha)	1966ChhattisgarhDurgMAIZE YIELD (Kg per ha)	3	2	666.67			
9	14	Chhattisgarh	Durg	FINGER MILLET YIELD (Kg per ha)	1966ChhattisgarhDurgFINGER MILLET YIELD (Kg per ha)	0.8	0.2	250			
10	14	Chhattisgarh	Durg	BARLEY YIELD (Kg per ha)	1966ChhattisgarhDurgBARLEY YIELD (Kg per ha)	0.1	0	0			
11	14	Chhattisgarh	Durg	CHICKPEA YIELD (Kg per ha)	1966ChhattisgarhDurgCHICKPEA YIELD (Kg per ha)	54	27	500			
12	14	Chhattisgarh	Durg	PIGEONPEA YIELD (Kg per ha)	1966ChhattisgarhDurgPIGEONPEA YIELD (Kg per ha)	37	15	405.41			
13	14	Chhattisgarh	Durg	MINOR PULSES YIELD (Kg per ha)	1966ChhattisgarhDurgMINOR PULSES YIELD (Kg per ha)	114.96	-1	-1			
14	14	Chhattisgarh	Durg	GROUNDNUT YIELD (Kg per ha)	1966ChhattisgarhDurgGROUNDNUT YIELD (Kg per ha)	0.2	0.1	500			
15	14	Chhattisgarh	Durg	SESAMUM YIELD (Kg per ha)	1966ChhattisgarhDurgSESAMUM YIELD (Kg per ha)	3	0.3	100			
16	14	Chhattisgarh	Durg	RAPESEED AND MUSTARD YIELD (Kg per ha)	1966ChhattisgarhDurgRAPESEED AND MUSTARD YIELD (Kg per ha)	1	0.2	200			
17	14	Chhattisgarh	Durg	SAFFLOWER YIELD (Kg per ha)	1966ChhattisgarhDurgSAFFLOWER YIELD (Kg per ha)	0.07	0	0			
18	14	Chhattisgarh	Durg	CASTOR YIELD (Kg per ha)	1966ChhattisgarhDurgCASTOR YIELD (Kg per ha)	0.7	0.2	285.71			
19	14	Chhattisgarh	Durg	LINSEED YIELD (Kg per ha)	1966ChhattisgarhDurgLINSEED YIELD (Kg per ha)	45.7	6.8	148.8			
20	14	Chhattisgarh	Durg	SUNFLOWER YIELD (Kg per ha)	1966ChhattisgarhDurgSUNFLOWER YIELD (Kg per ha)	0	0	0			
21	14	Chhattisgarh	Durg	SOYABEAN YIELD (Kg per ha)	1966ChhattisgarhDurgSOYABEAN YIELD (Kg per ha)	0	0	0			
22	14	Chhattisgarh	Durg	OILSEEDS YIELD (Kg per ha)	1966ChhattisgarhDurgOILSEEDS YIELD (Kg per ha)	50.7	-1	-1			
23	14	Chhattisgarh	Durg	SUGARCANE YIELD (Kg per ha)	1966ChhattisgarhDurgSUGARCANE YIELD (Kg per ha)	0.9	1.6	1777.78			
24	14	Chhattisgarh	Durg	COTTON YIELD (Kg per ha)	1966ChhattisgarhDurgCOTTON YIELD (Kg per ha)	0	0	0			
25	14	Chhattisgarh	Durg	FRUITS YIELD (Kg per ha)	1966ChhattisgarhDurgFRUITS YIELD (Kg per ha)	5.95	#N/A	#N/A			
26	14	Chhattisgarh	Durg	POTATOES YIELD (Kg per ha)	1966ChhattisgarhDurgPOTATOES YIELD (Kg per ha)	0.01	#N/A	#N/A			
27	14	Chhattisgarh	Durg	FODDER YIELD (Kg per ha)	1966ChhattisgarhDurgFODDER YIELD (Kg per ha)	0.47	#N/A	#N/A			
28	14	Chhattisgarh	Durg	ONION YIELD (Kg per ha)	1966ChhattisgarhDurgONION YIELD (Kg per ha)	0.6	#N/A	#N/A			
29	14	Chhattisgarh	Durg	FRUITS AND VEGETABLES YIELD (Kg per ha)	1966ChhattisgarhDurgFRUITS AND VEGETABLES YIELD (Kg per ha)	12.59	#N/A	#N/A			
30	14	Chhattisgarh	Durg	VEGETABLES YIELD (Kg per ha)	1966ChhattisgarhDurgVEGETABLES YIELD (Kg per ha)	6.64	#N/A	#N/A			
31	14	Chhattisgarh	Durg	RICE YIELD (Kg per ha)	1967ChhattisgarhDurgRICE YIELD (Kg per ha)	547	409	747.71			
32	14	Chhattisgarh	Durg	WHEAT YIELD (Kg per ha)	1967ChhattisgarhDurgWHEAT YIELD (Kg per ha)	50	26	520			
33	14	Chhattisgarh	Durg	KHARIF SORGHUM YIELD (Kg per ha)	1967ChhattisgarhDurgKHARIF SORGHUM YIELD (Kg per ha)	1.1	0.9	818.18			
34	14	Chhattisgarh	Durg	RABI SORGHUM YIELD (Kg per ha)	1967ChhattisgarhDurgRABI SORGHUM YIELD (Kg per ha)	0	0	0			
35	14	Chhattisgarh	Durg	SORGHUM YIELD (Kg per ha)	1967ChhattisgarhDurgSORGHUM YIELD (Kg per ha)	1.1	0.9	818.18			

Cleaned Data

	A	B	C	D	E	F	G	H	I
1	Dist Code	Year	State Code	State Name	Dist Name	Crops	Area (1000 ha)	Production (1000 tons)	Yield (Kg per ha)
2	1	1966	14	Chhattisgarh	Durg	BARLEY	0.1	0	0
3	1	1967	14	Chhattisgarh	Durg	BARLEY	0.2	0.1	500
4	1	1968	14	Chhattisgarh	Durg	BARLEY	0.2	0.1	500
5	1	1969	14	Chhattisgarh	Durg	BARLEY	0.2	0.1	500
6	1	1970	14	Chhattisgarh	Durg	BARLEY	0.1	0.1	1000
7	1	1971	14	Chhattisgarh	Durg	BARLEY	0.2	0.1	500
8	1	1972	14	Chhattisgarh	Durg	BARLEY	0.1	0.1	1000
9	1	1973	14	Chhattisgarh	Durg	BARLEY	0.1	0.1	1000
10	1	1974	14	Chhattisgarh	Durg	BARLEY	0.2	0.1	500
11	1	1975	14	Chhattisgarh	Durg	BARLEY	0.2	0.2	1000
12	1	1976	14	Chhattisgarh	Durg	BARLEY	0.1	0.1	1000
13	1	1977	14	Chhattisgarh	Durg	BARLEY	0.1	0.1	1000
14	1	1978	14	Chhattisgarh	Durg	BARLEY	0.1	0.1	1000
15	1	1979	14	Chhattisgarh	Durg	BARLEY	0.2	0	0
16	1	1980	14	Chhattisgarh	Durg	RARIFY	0.2	0.1	500



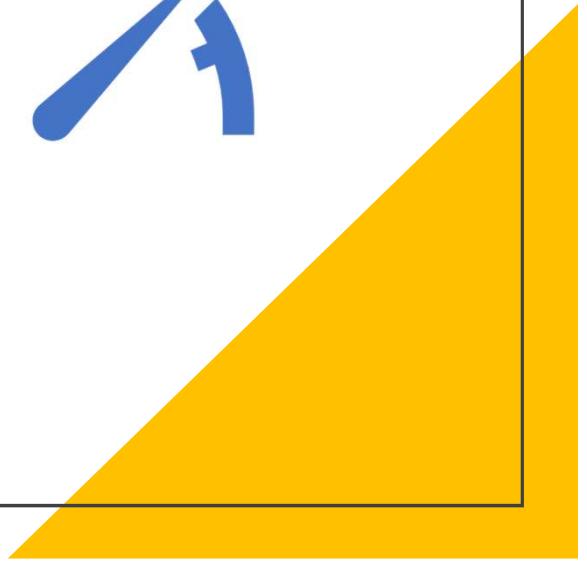
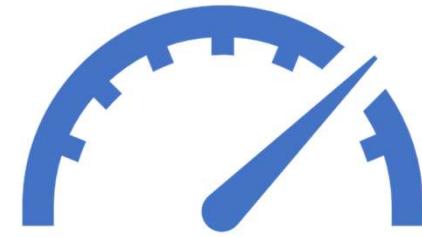
Data dictionary

Variables	Explanation
Dist Code	A unique identifier for each district.
Year	The year for which the data is recorded.
State Code	A code representing the state to which the district belongs.
State Name	The name of the state to which the district belongs.
Dist Name	The name of the district.
Crops	The name of the crop grown in the district.
Area (1000 ha)	The area of land (in thousand hectares) used for cultivating the crop.
Production (1000 tons)	The total production of the crop (in thousand tons).
Yield (Kg per ha)	The yield of the crop (in kilograms per hectare), calculated as the total production divided by the area.

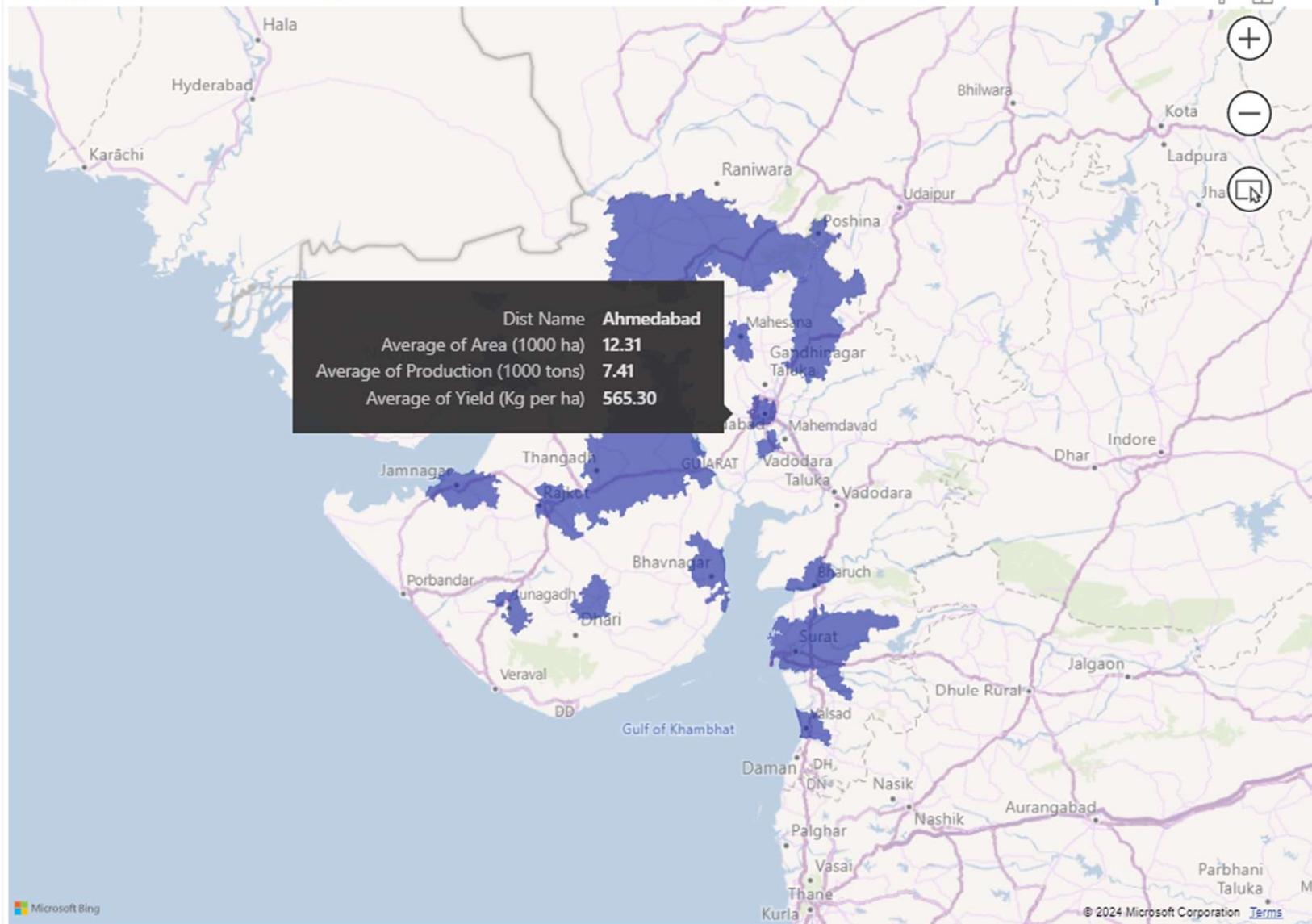
List of Crops

RICE	SUNFLOWER	MINOR PULSES
WHEAT	SOYABEAN	GROUNDNUT
KHARIF SORGHUM	OILSEEDS	SESAMUM
RABI SORGHUM	SUGARCANE	RAPESEED AND MUSTARD
SORGHUM	COTTON	SAFFLOWER
PEARL MILLET	FRUITS	CASTOR
MAIZE	VEGETABLES	LINSEED
FINGER MILLET	FRUITS AND VEGETABLES	PIGEONPEA
BARLEY	POTATOES	FODDER
CHICKPEA	ONION	

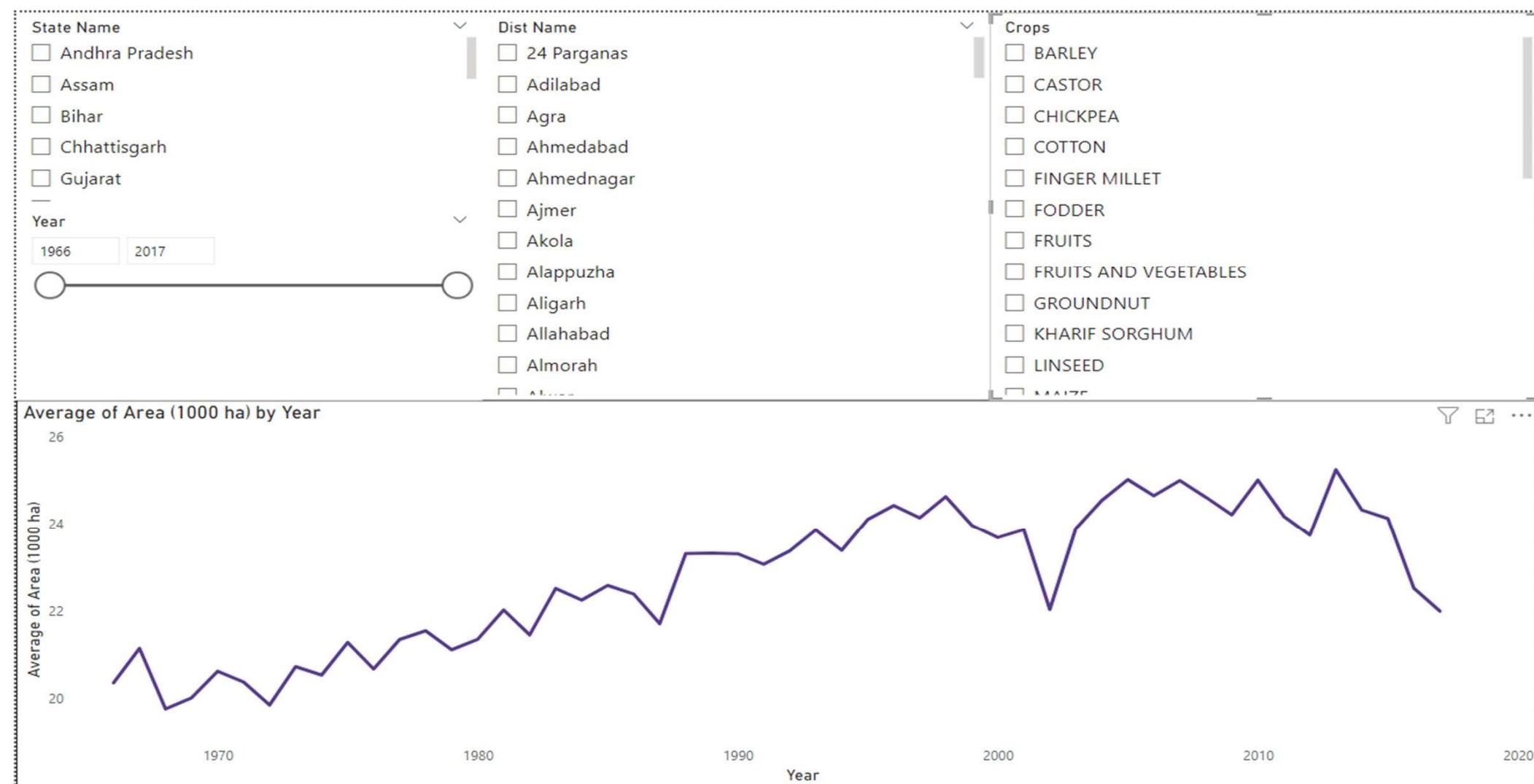
Dashboard PowerBI



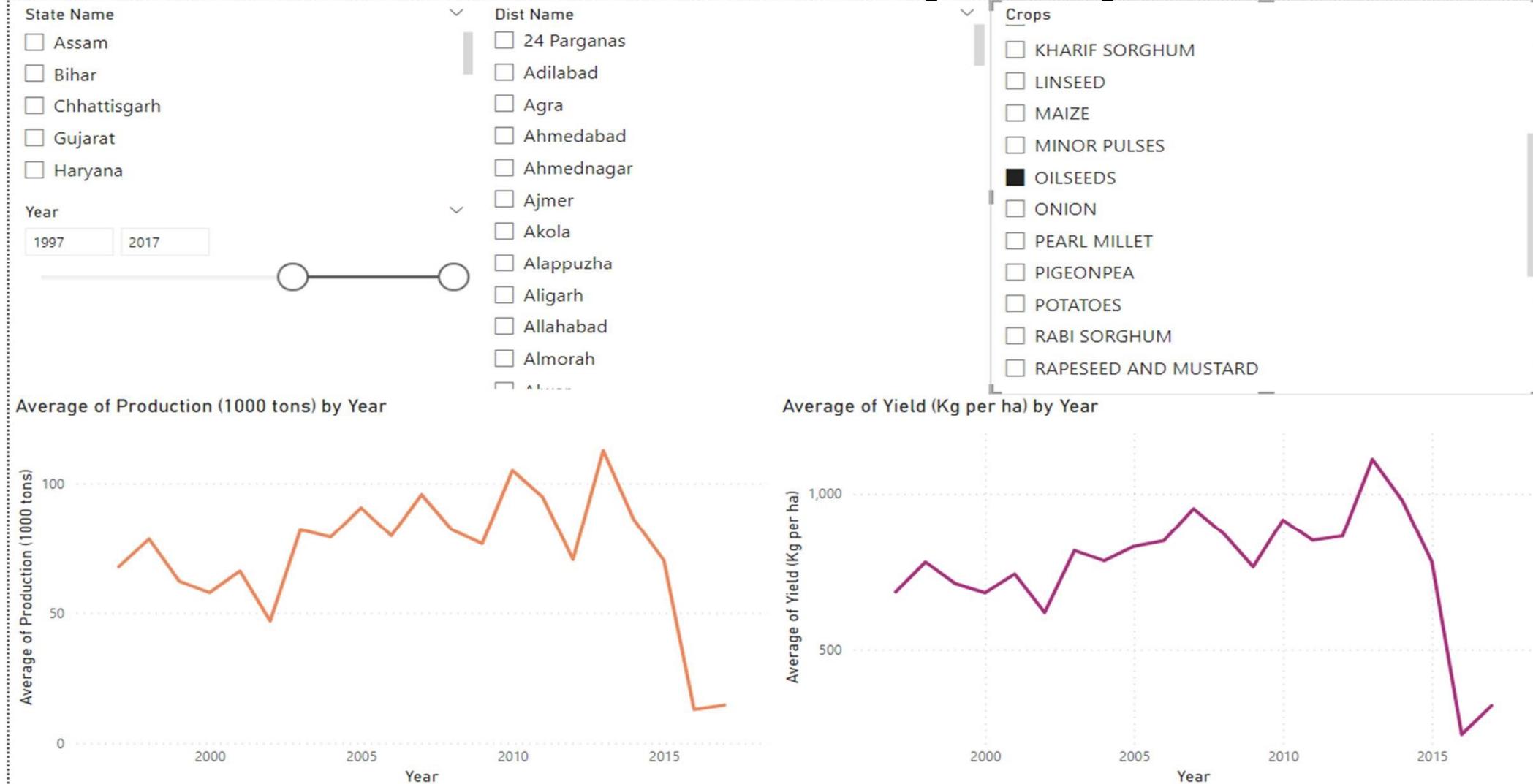
Average of Area (1000 ha), Average of Production (1000 tons) and Average of Yield (Kg per ha) by Dist Name



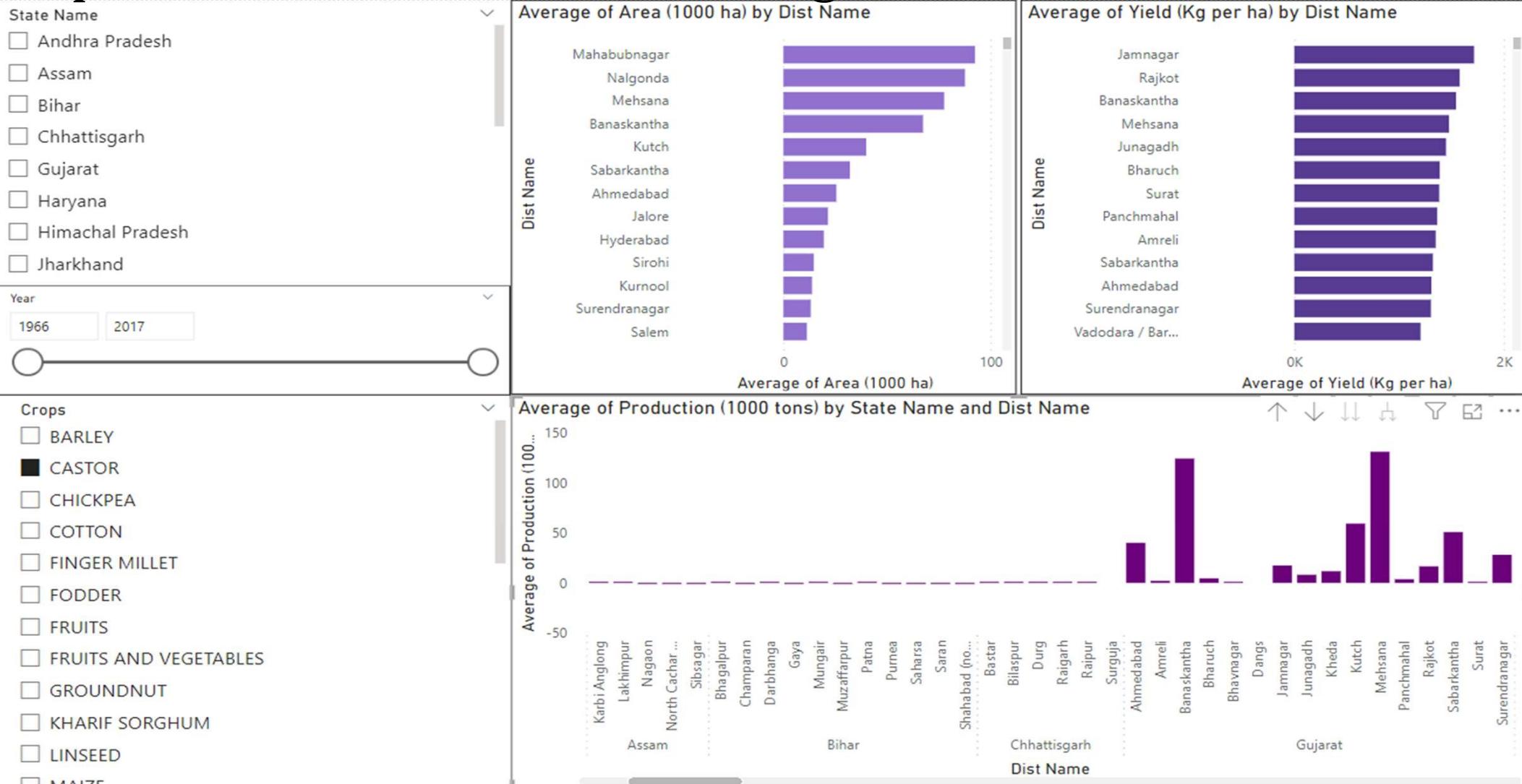
Trend in the agriculture area by states dist and crops



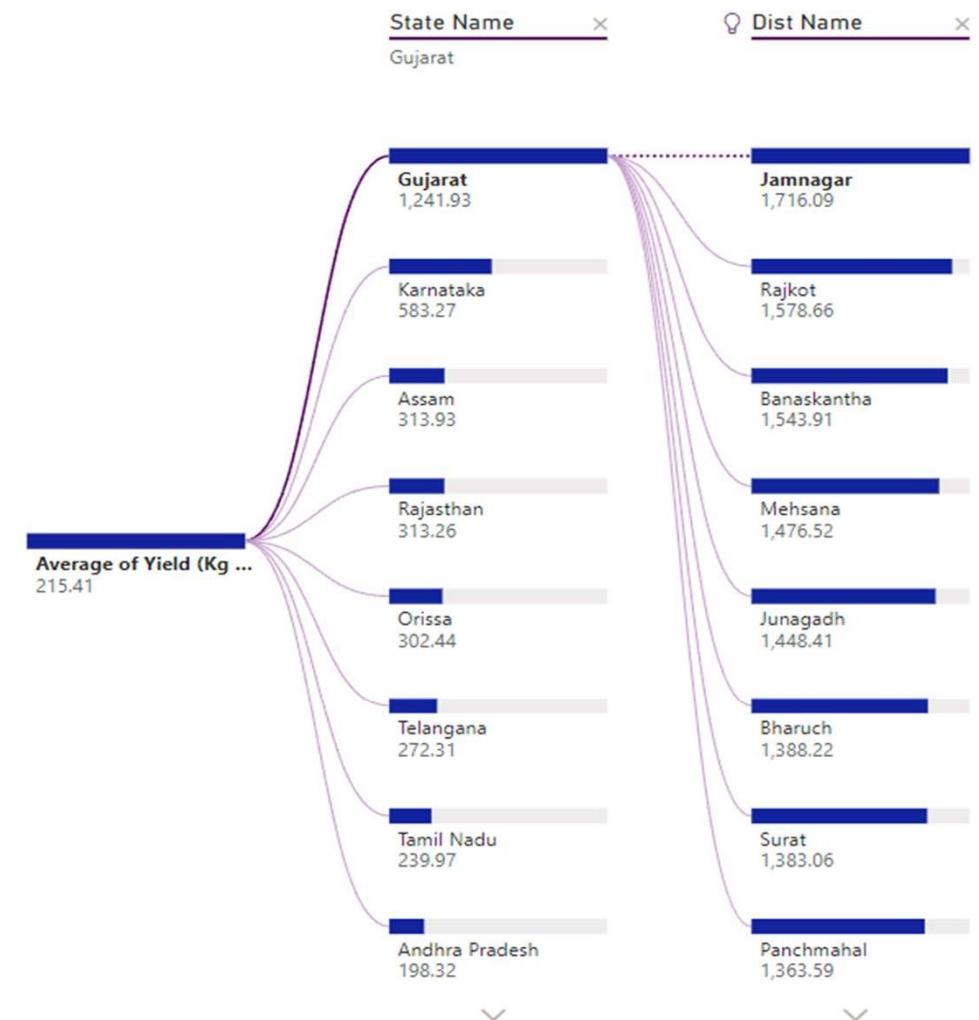
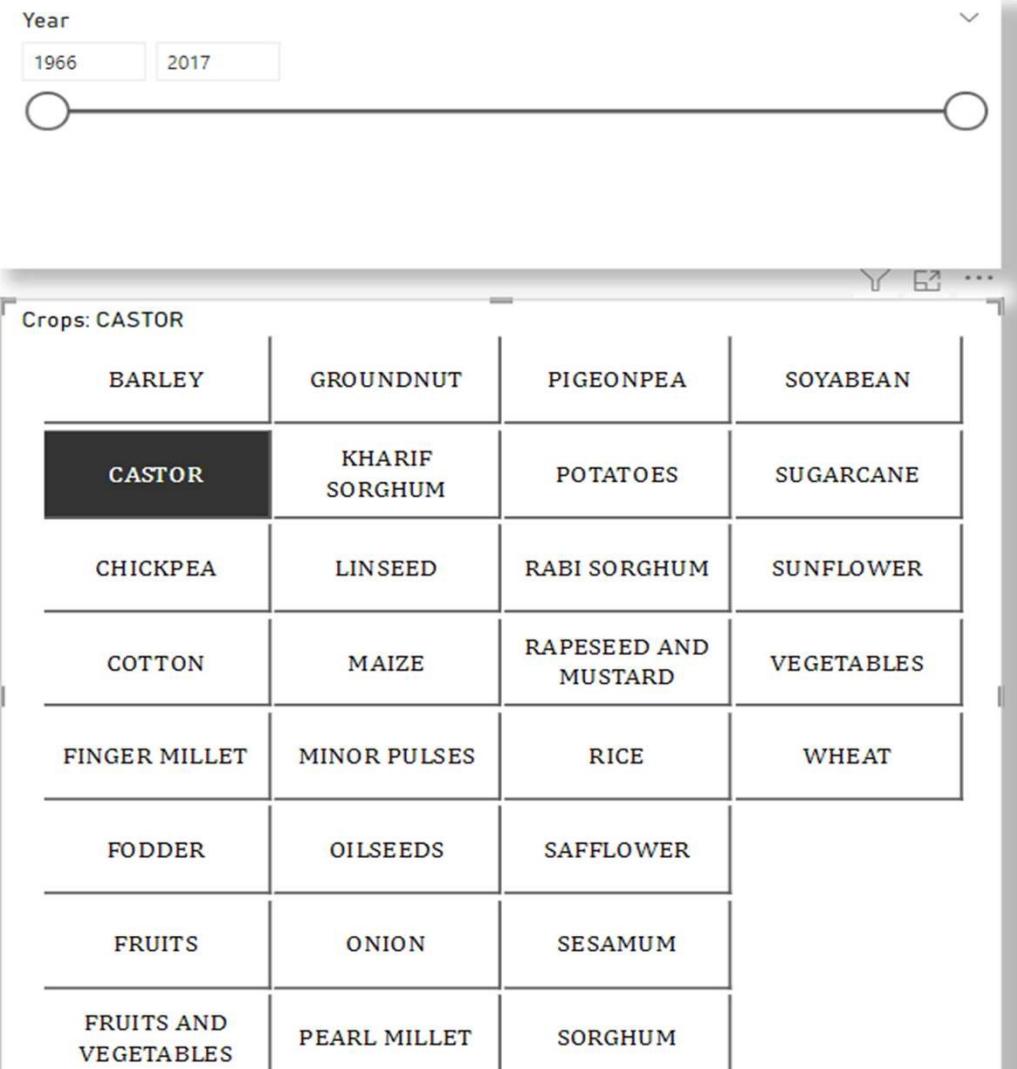
Trend in the Production and Yield as per crops



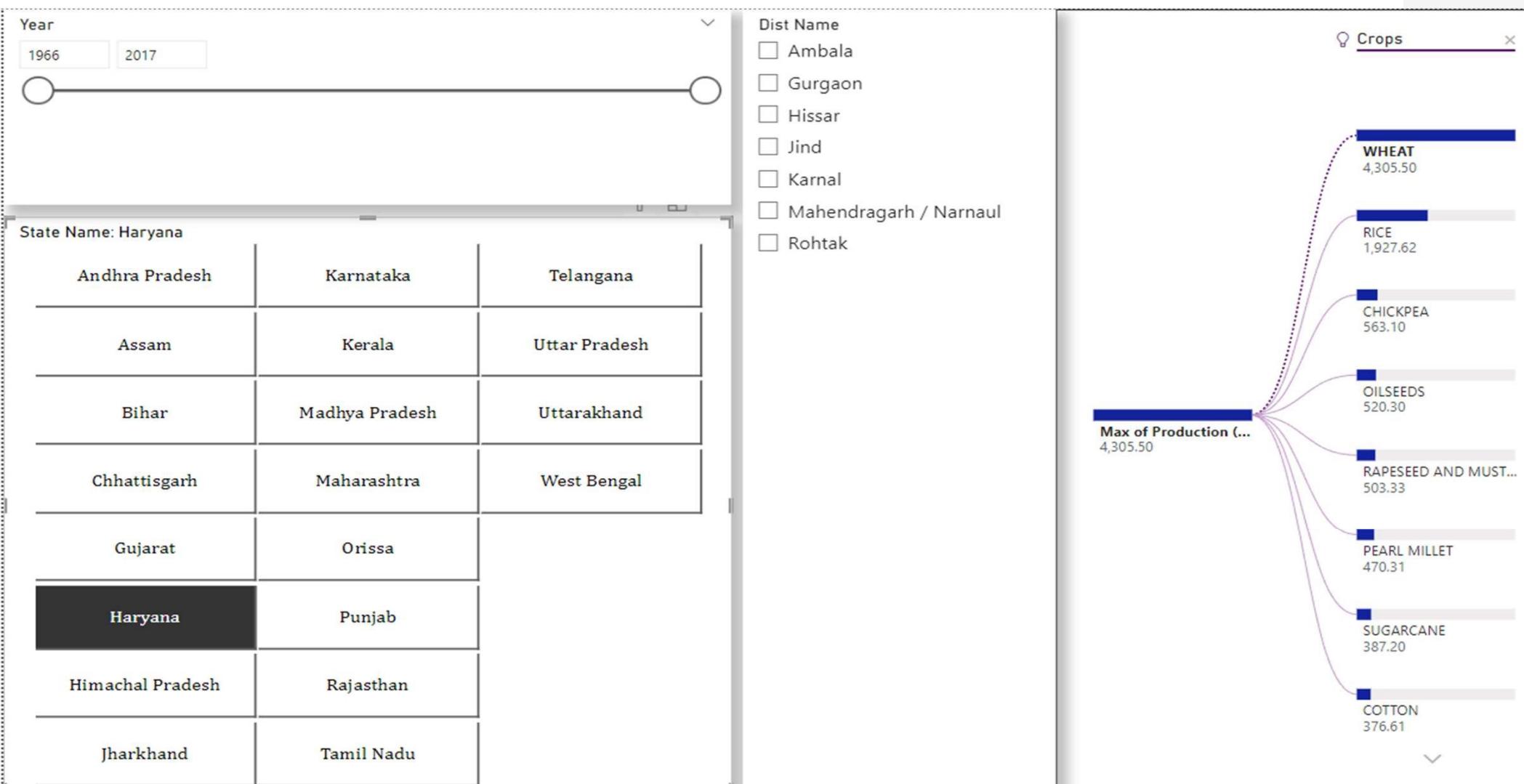
Top Districts and States according to the



Crop selection as per highest yield in the districts



Average Crops Contribution of production in the given state and District



Thank you!

