

Codebasics Resume Challenge #7

Analyse Growth and Present Insights to the Telangana Government

CREATED BY

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Telangana Growth Analysis

CREATED BY

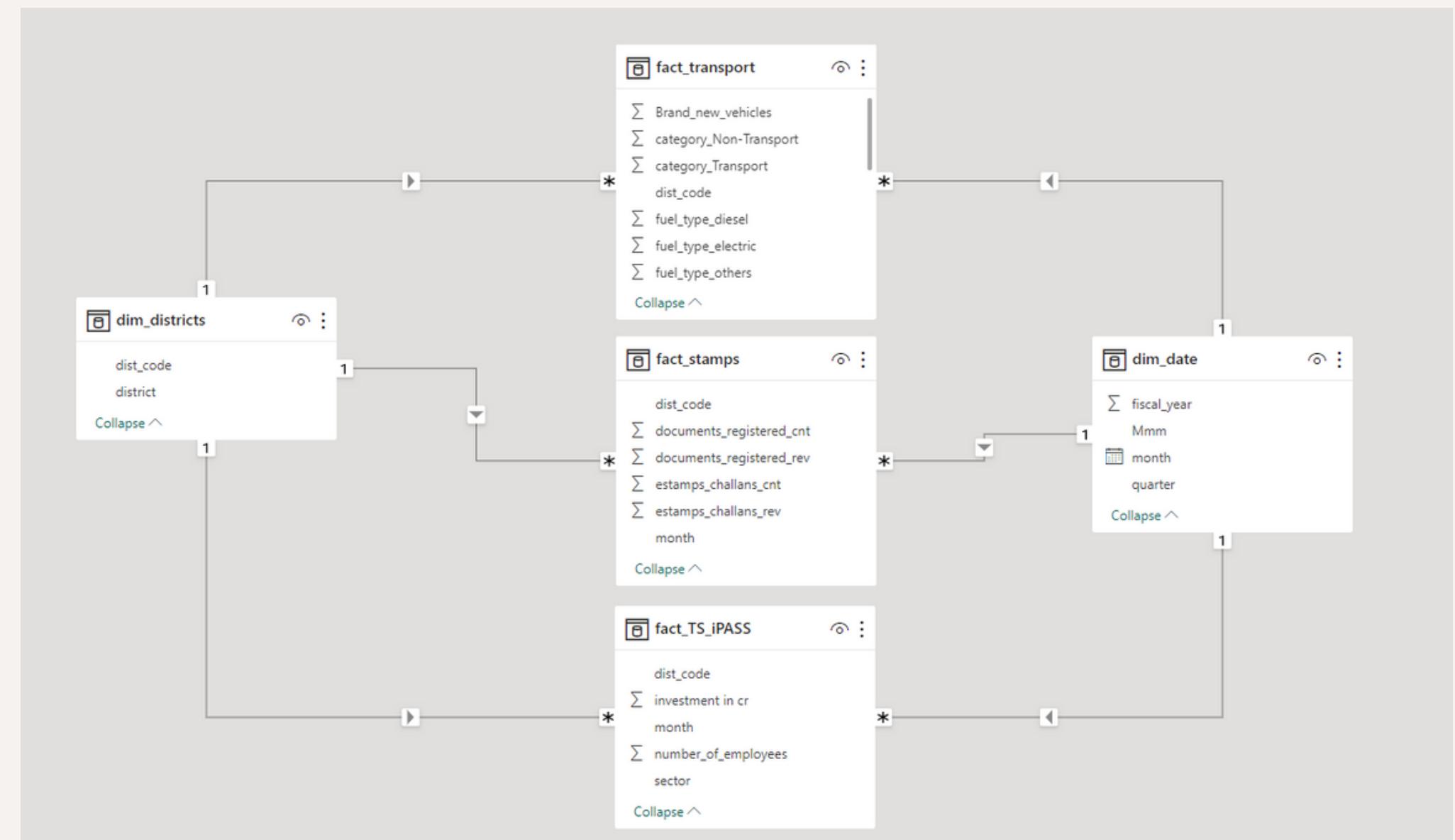
Satvik Srivastava

Objectives

- Explore Stamp Registration, Transportation and Ts-Ipass Datasets. Understand their attributes, categories and time period.
- Analyze trends and patterns within each department.
- Identify growth opportunities and areas needing attention.
- Find correlation among these departments and report the overall growth of the state through insights and relevant visuals such as shape maps.



Dataset



Requests

Stamp Registration

1. How does the revenue generated from document registration vary across districts in Telangana? List down the top 5 districts that showed the highest document registration revenue growth between FY 2019 and 2022.
2. How does the revenue generated from document registration compare to the revenue generated from e-stamp challans across districts? List down the top 5 districts where e-stamps revenue contributes significantly more to the revenue than the documents in FY 2022?
3. Is there any alteration of e-Stamp challan count and document registration count pattern since the implementation of e-Stamp challan? If so, what suggestions would you propose to the government?
4. Categorize districts into three segments based on their stamp registration revenue generation during the fiscal year 2021 to 2022.

Ts-Ipass (Telangana State Industrial Project Approval and Self Certification System)

8. List down the top 5 sectors that have witnessed the most significant investments in FY 2022.
9. List down the top 3 districts that have attracted the most significant sector investments during FY 2019 to 2022? What factors could have led to the substantial investments in these particular districts?
10. Is there any relationship between district investments, vehicles sales and stamps revenue within the same district between FY 2021 and 2022?
11. Are there any particular sectors that have shown substantial investment in multiple districts between FY 2021 and 2022?
12. Can we identify any seasonal patterns or cyclical in the investment trends for specific sectors? Do certain sectors experience higher investments during particular months?

Transportation

5. Investigate whether there is any correlation between vehicle sales and specific months or seasons in different districts. Are there any months or seasons that consistently show higher or lower sales rate, and if yes, what could be the driving factors? (Consider Fuel-Type category only)
6. How does the distribution of vehicles vary by vehicle class (MotorCycle, MotorCar, AutoRickshaw, Agriculture) across different districts? Are there any districts with a predominant preference for a specific vehicle class? Consider FY 2022 for analysis.
7. List down the top 3 and bottom 3 districts that have shown the highest and lowest vehicle sales growth during FY 2022 compared to FY 2021? (Consider and compare categories: Petrol, Diesel and Electric)

Secondary Research: (Need additional research and get additional data)

Note: These are just examples, you can add more questions

1. What are the top 5 districts to buy commercial properties in Telangana? Justify your answer.
2. What significant policies or initiatives were put into effect to enhance economic growth, investments, and employment in Telangana by the current government? Can we quantify the impact of these policies using available data?
3. Provide top 5 Insights & 5 recommendations to Telangana government for sustained growth in the next 5 years based on your analysis.

Tools Used



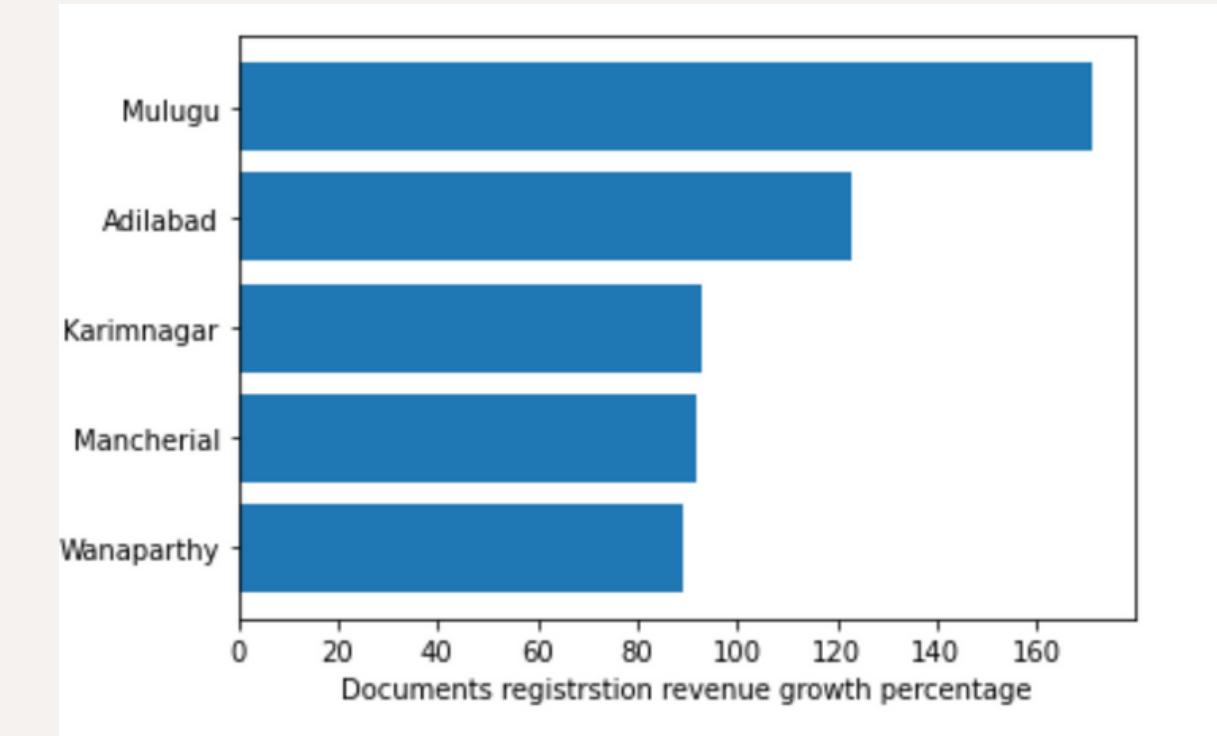
Power BI



Stamp Registration

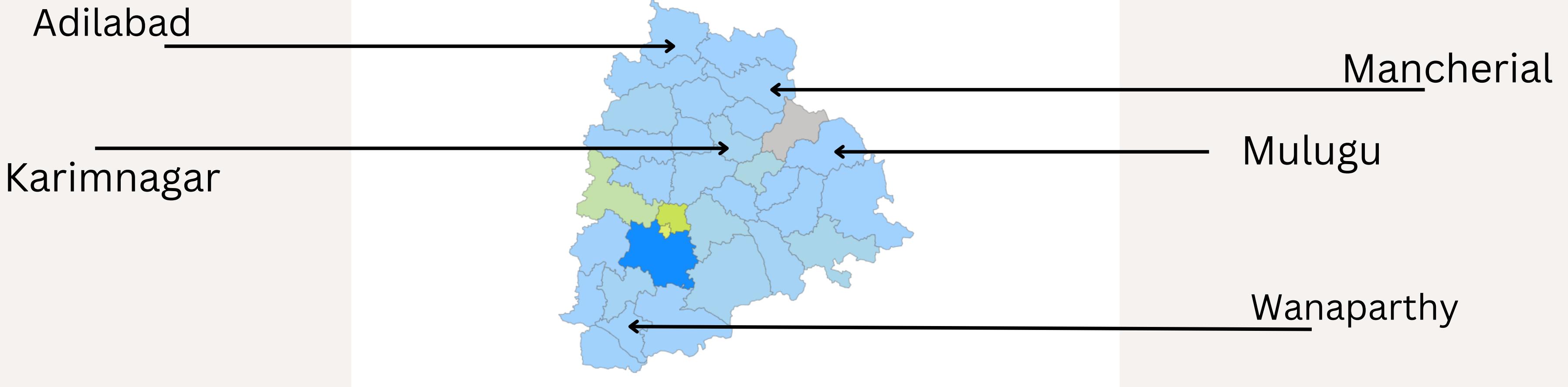
1. How does the revenue generated from document registration vary across districts in Telangana? List down the top 5 districts that showed the highest document registration revenue growth between FY 2019 and 2022.

dist_code	district	revenue_growth_percentage
21_6	Mulugu	170.9376
19_1	Adilabad	122.8413
20_1	Karimnagar	92.7455
19_3	Mancherial	91.7491
14_4	Wanaparthy	89.0532

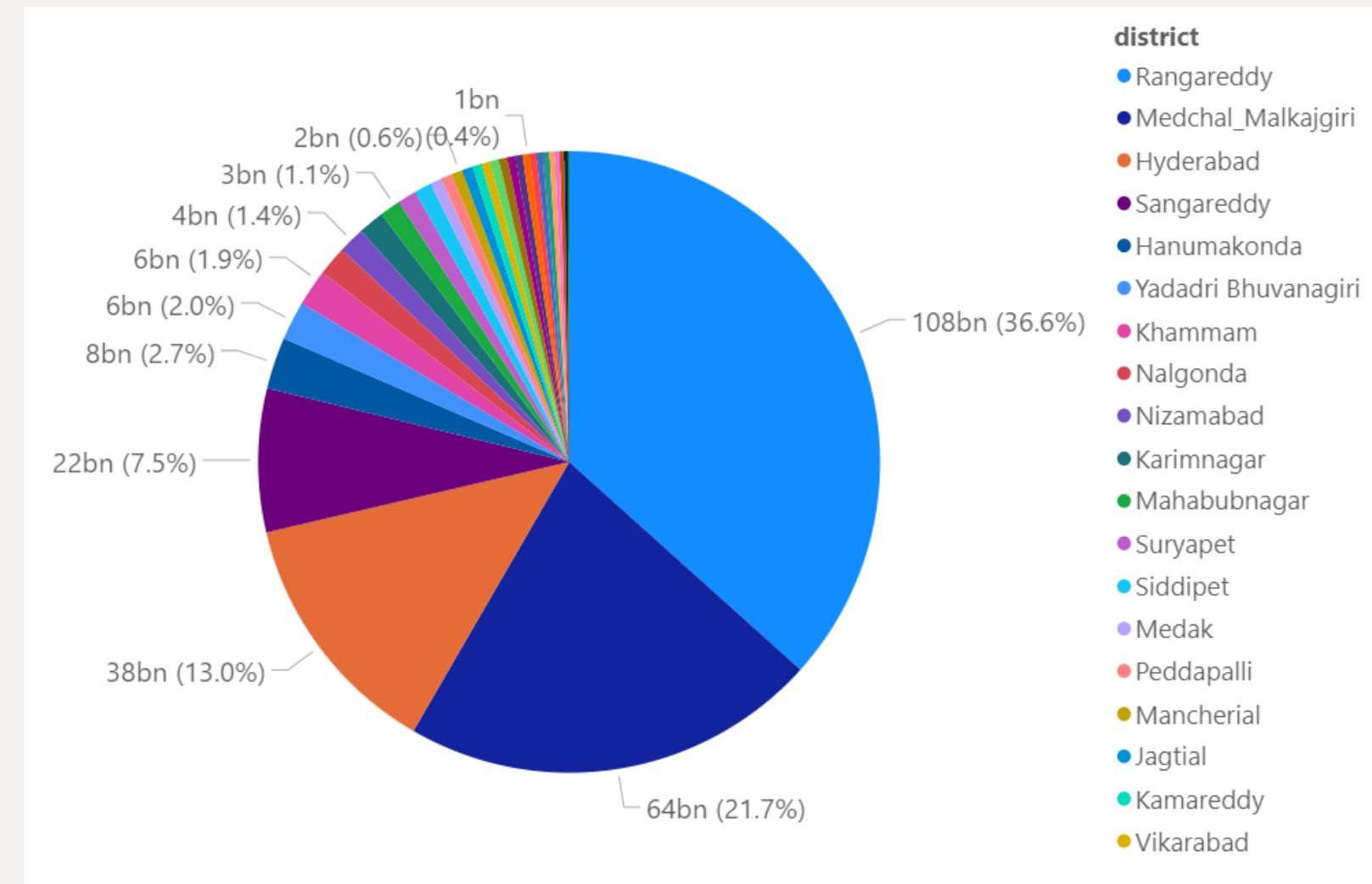


dist_code	district	revenue_growth_percentage
21_6	Mulugu	170.9376
19_1	Adilabad	122.8413
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19_3	Mancherial	91.7491
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Documents registered revenue from 2019 to 2023 accross districs



Variation of revenue generated from documents registration accross districts from 01/04/19 to 01/03/23:-

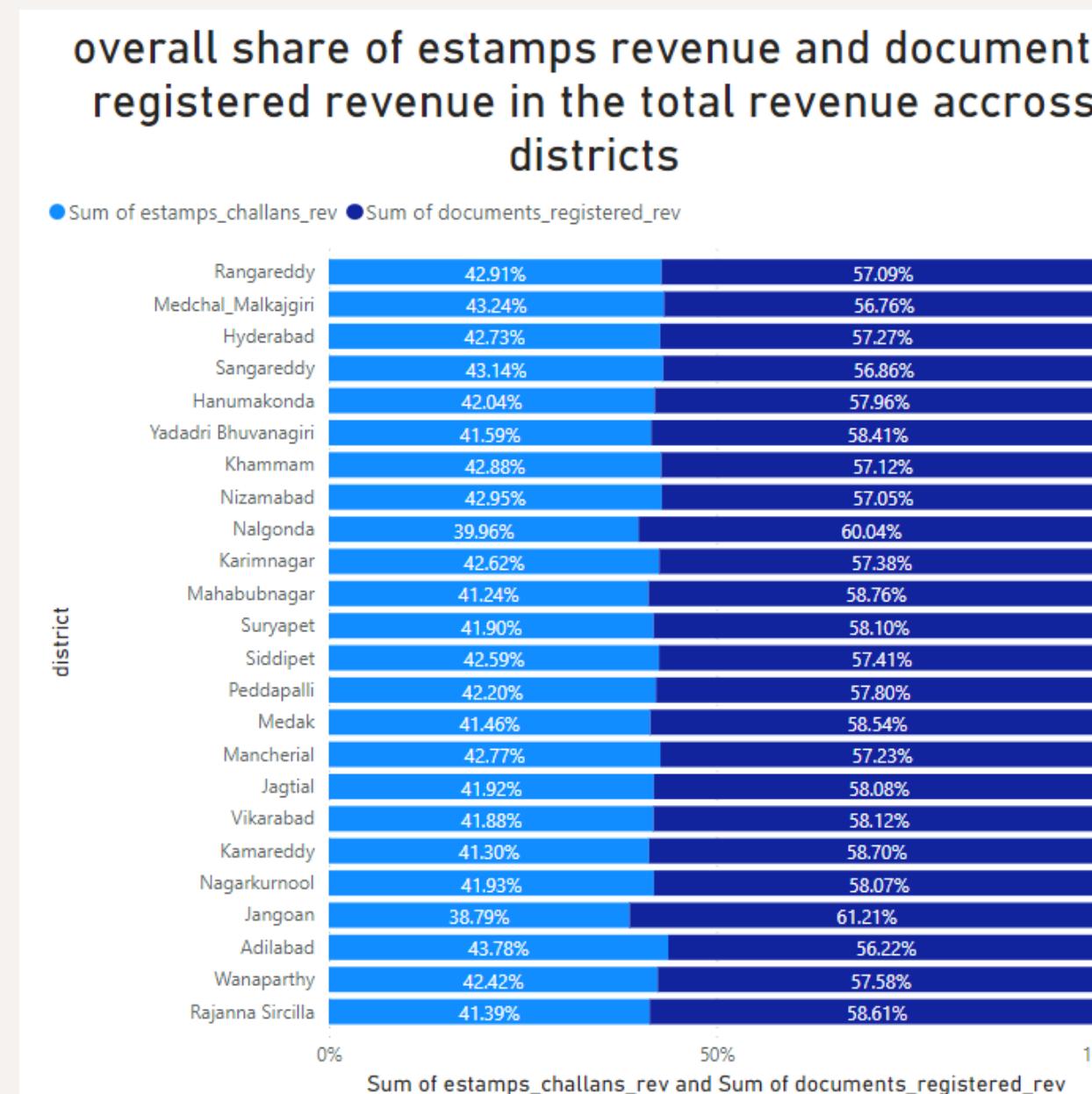


Rangareddy, Medchal Malkajgiri and Hyderabad account for 71% of the total generated revenue.

Rangareddy alone accounts for 36.6% of the total generated revenue.

Rangareddy, Medchal Malkajgiri, Hyderabad, Sangareddy and Hanumakonda are the top 5 districts in terms of documents registered revenue generation.

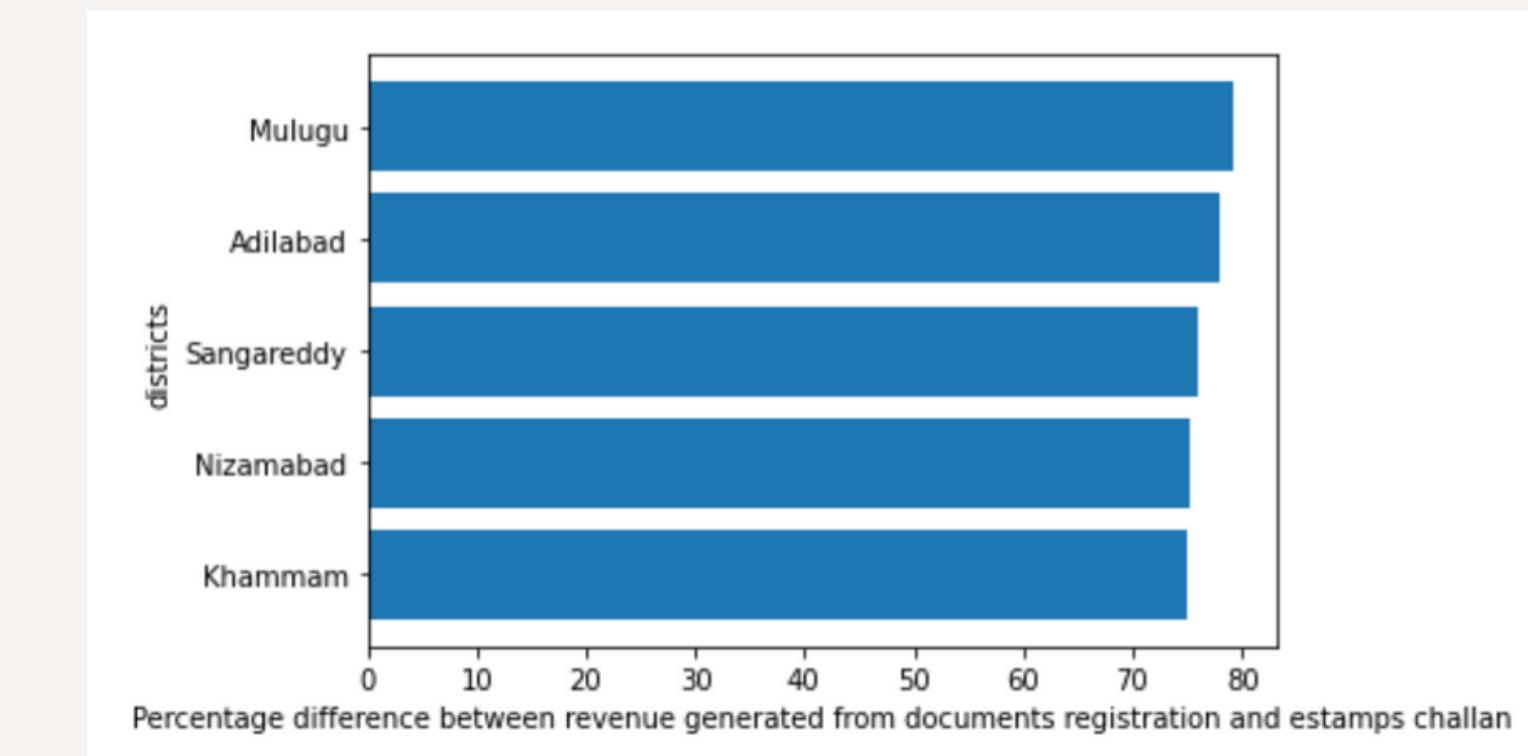
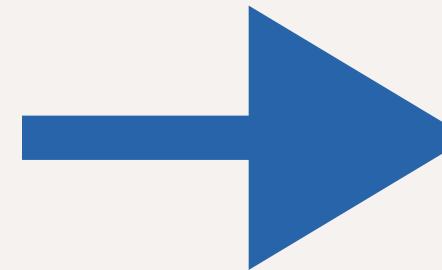
2. How does the revenue generated from documents registration compare to the revenue generated from e stamp challans across districts? List down the top 5 districts where the e-stamps revenue contributes significantly more to the revenue than the documents in FY 2022.



Revenue generated from documents registration is slightly more than the revenue generated from estamp accross all the districts.

Top 5 districts where the e-stamp challans contribute significantly more as compared to documents registration, to the revenue in FY 2022

dist_code	district	revenue_ratio_percent
21_6	Mulugu	79.2863
19_1	Adilabad	77.8876
17_2	Sangareddy	75.8620
18_1	Nizamabad	75.2939
22_1	Khammam	75.0647



3. Is there any alteration of e-Stamp challan count and document registration count pattern since the implementation of e-Stamp challan? If so, what suggestions would you propose to the government?

Average peaks before implementation of estamp



Average peaks after implementation of estamp

Monthly documents registration count has fell significantly since the implementation of estamp challans.

Occasional peaks of documents registration count has also taken a dip since the implementation of estamp challans.

4. Categorize districts into three segments based on their stamp registration revenue generation during the fiscal year 2021 to 2022

Statistics about the stamp registration revenue generated by different districts during FY 2021 to 2022 -->

	estamps_challans_rev
count	3.200000e+01
mean	2.677041e+09
std	6.590934e+09
min	5.829472e+07
25%	2.884277e+08
50%	4.439858e+08
75%	1.179227e+09
max	3.233294e+10

Python code-->

```
cutoff_low=2.884277e+08
cutoff_high=1.179227e+09

result_df['rev_category']=result_df['estamps_challans_rev'].apply(
    lambda x: 'Low' if x < cutoff_low
    else ('High' if x >= cutoff_high
    else 'Medium'))
```

dist_code	district	rev_category
15_1	Rangareddy	High
15_2	Medchal_Malkajgiri	High
16_1	Hyderabad	High
17_2	Sangareddy	High
21_1	Hanumakonda	High
22_1	Khammam	High
23_1	Nalgonda	High
23_3	Yadadri Bhuvanagiri	High

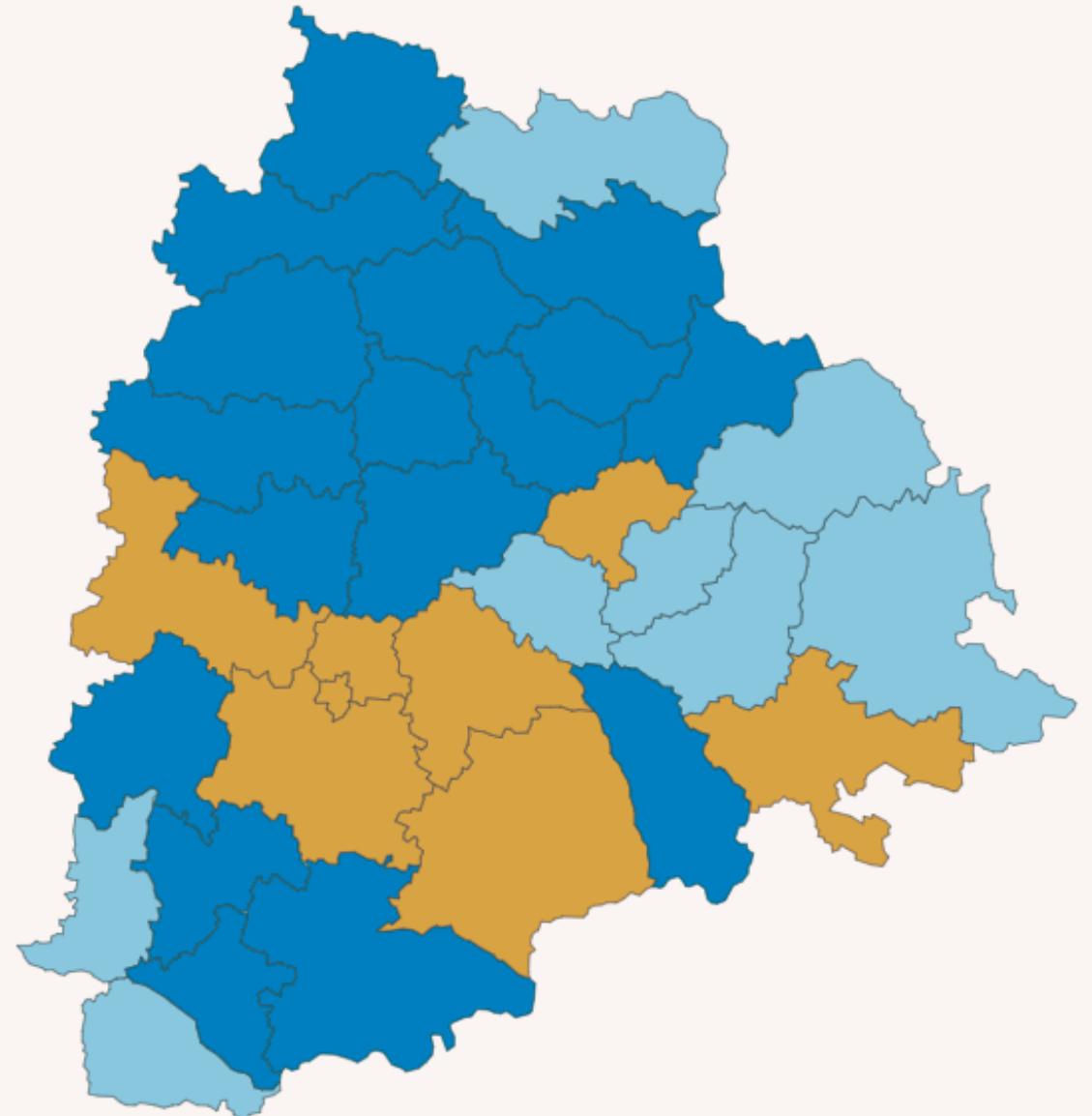
Districts with ***high revenue***

dist_code	district	rev_category
14_1	Mahabubnagar	Medium
14_3	Nagarkurnool	Medium
14_4	Wanaparthy	Medium
15_3	Vikarabad	Medium
17_1	Medak	Medium
17_3	Siddipet	Medium
18_1	Nizamabad	Medium
18_2	Kamareddy	Medium
19_1	Adilabad	Medium
19_2	Nirmal	Medium
19_3	Mancherial	Medium
20_1	Karimnagar	Medium
20_2	Jagtial	Medium
20_3	Rajanna Sircilla	Medium
20_4	Peddapalli	Medium
23_2	Suryapet	Medium

Districts with ***medium revenue***

dist_code	district	rev_category
14_2	Jogulamba Gadwal	Low
14_5	Narayanpet	Low
19_4	Kumurambheem Asifabad	Low
21_2	Warangal	Low
21_3	Jangoan	Low
21_5	Mahabubabad	Low
21_6	Mulugu	Low
22_2	Bhadradri Kothagudem	Low

Districts with ***low revenue***



Districts with high revenue



Districts with medium revenue

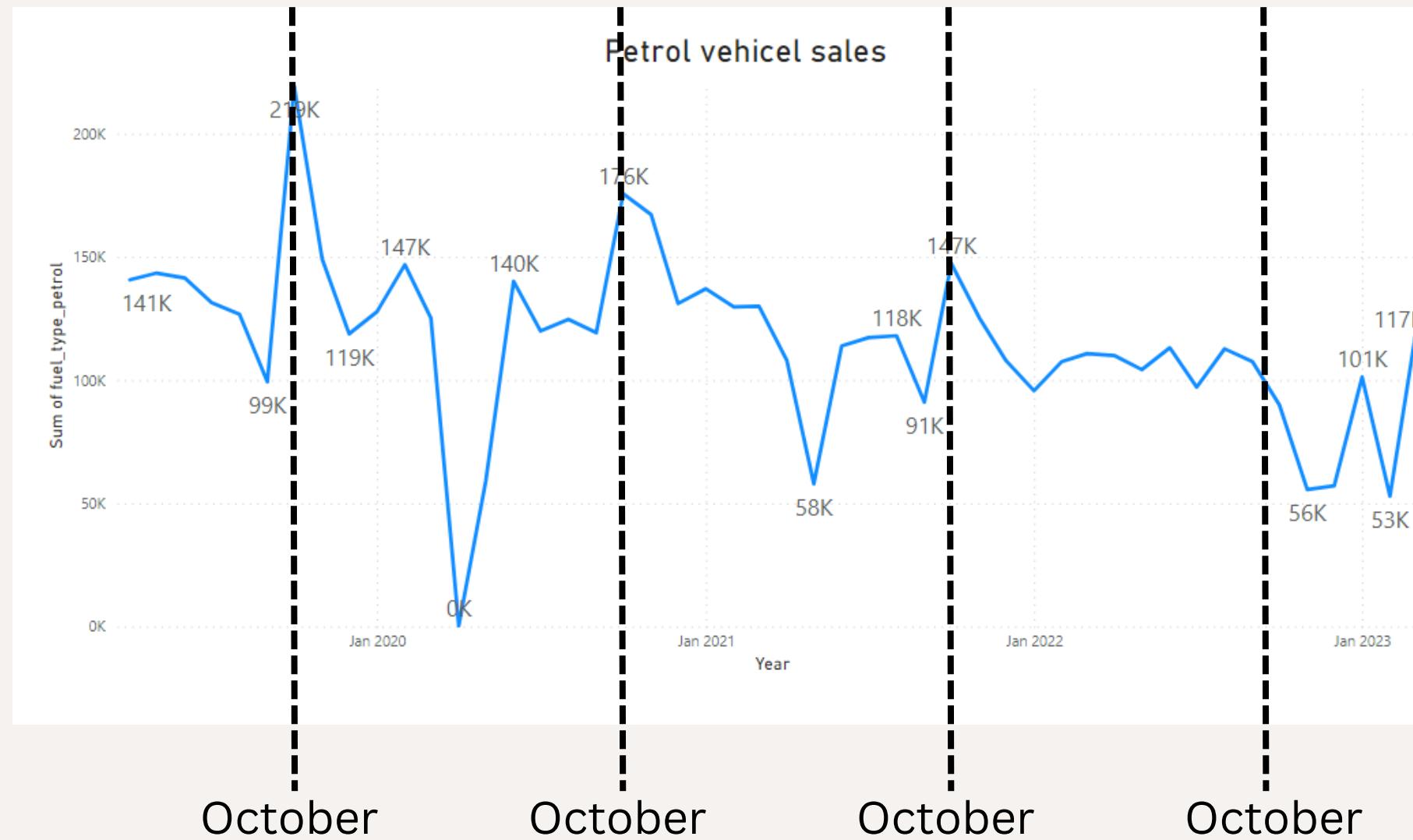


Districts with low revenue

Transportation

5. Investigate whether there is any correlation between vehicle sales and specific months or seasons in different districts. Are there any months or seasons that consistently show higher or lower sales rate, and if yes, what could be the driving factors? (Consider Fuel-Type category only)

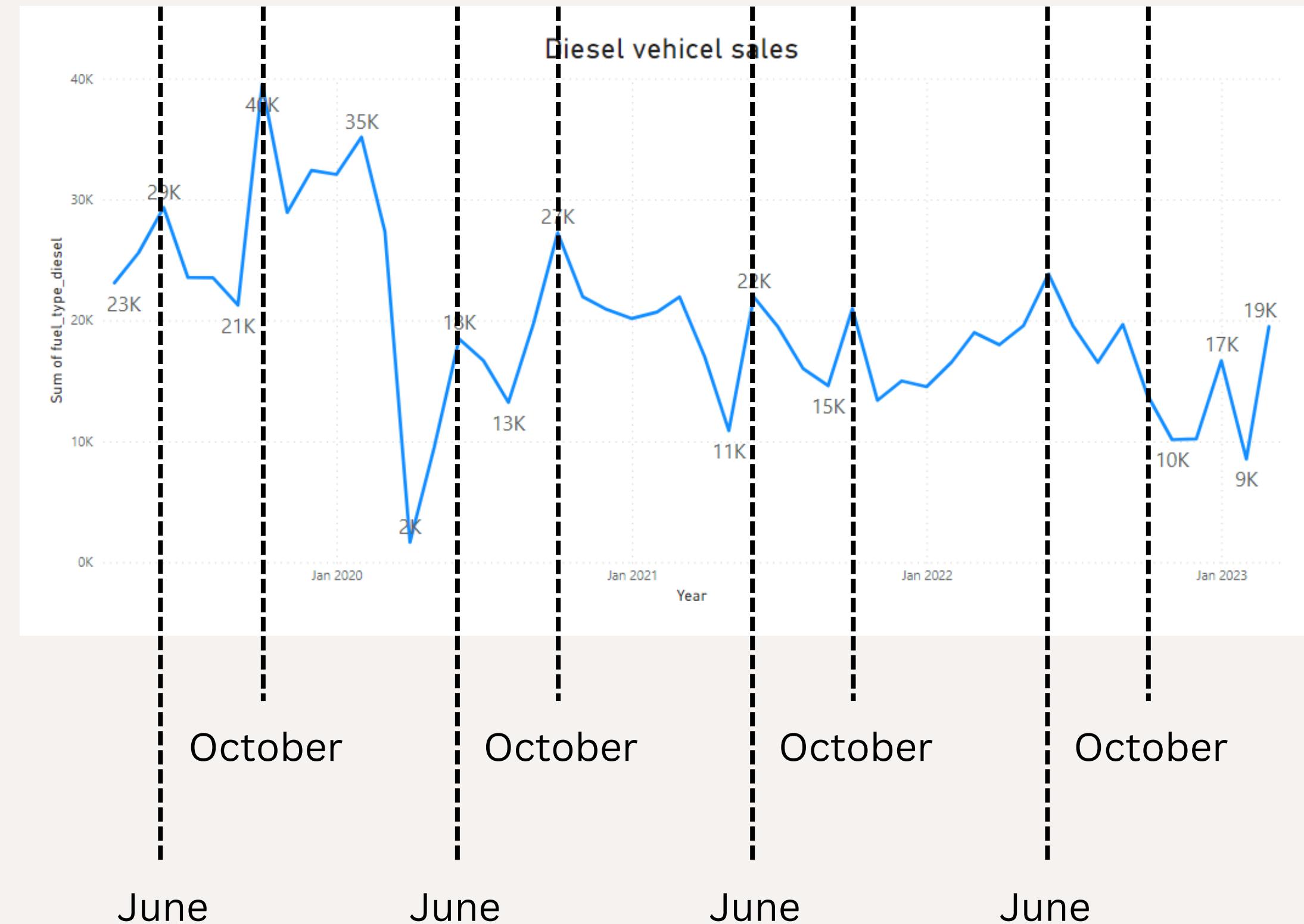
April 2020 saw the sales dropping to an all time low due to nationwide lockdown.



Petrol vehicle sales peak during October. This can be attributed to the festive season which comprise Navratri, dusshera and Bathukamma.

No such peak is observed during the October of 2022. This can be attributed to heavy rain and flood conditions during that time.

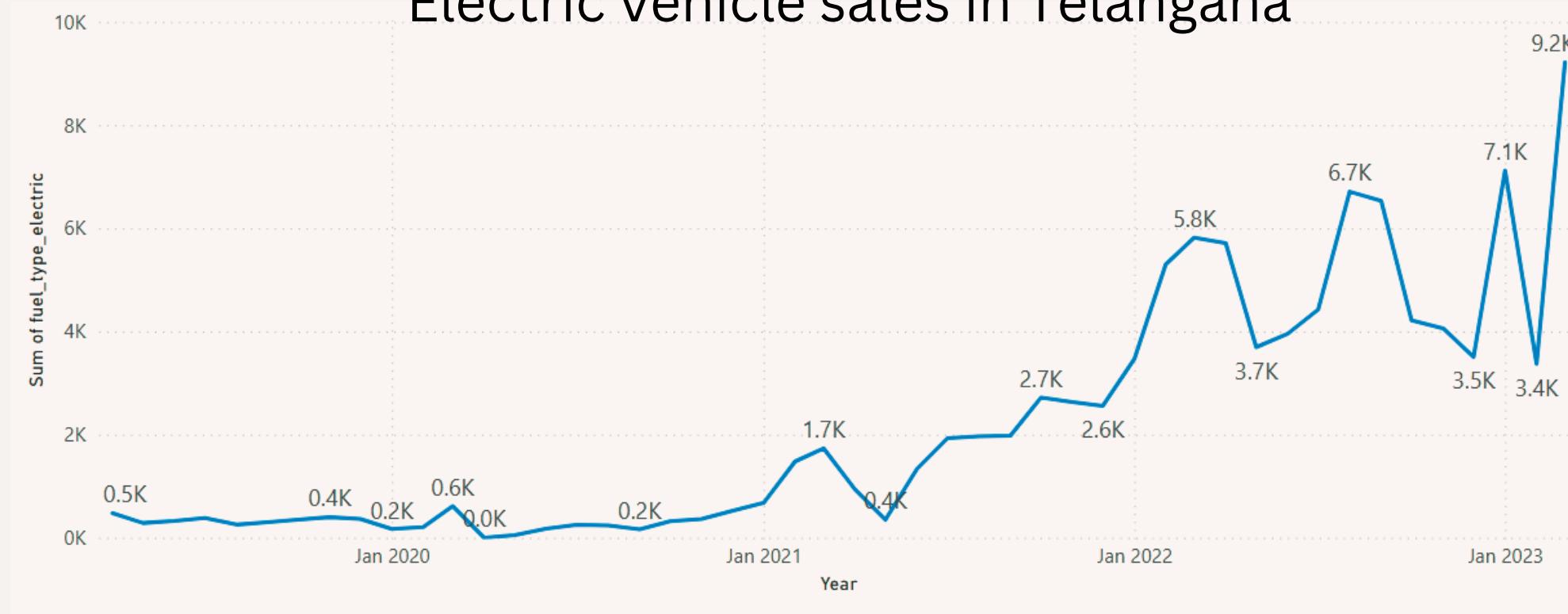
Sales were at an all time low during April 2020 due to nationwide lockdown.



Diesel vehicle sales peak during the months of October and June. Peaks during October can be attributed to the festive season

No such peak is observed during the October of 2022 due to heavy rain and flood conditions during that time.

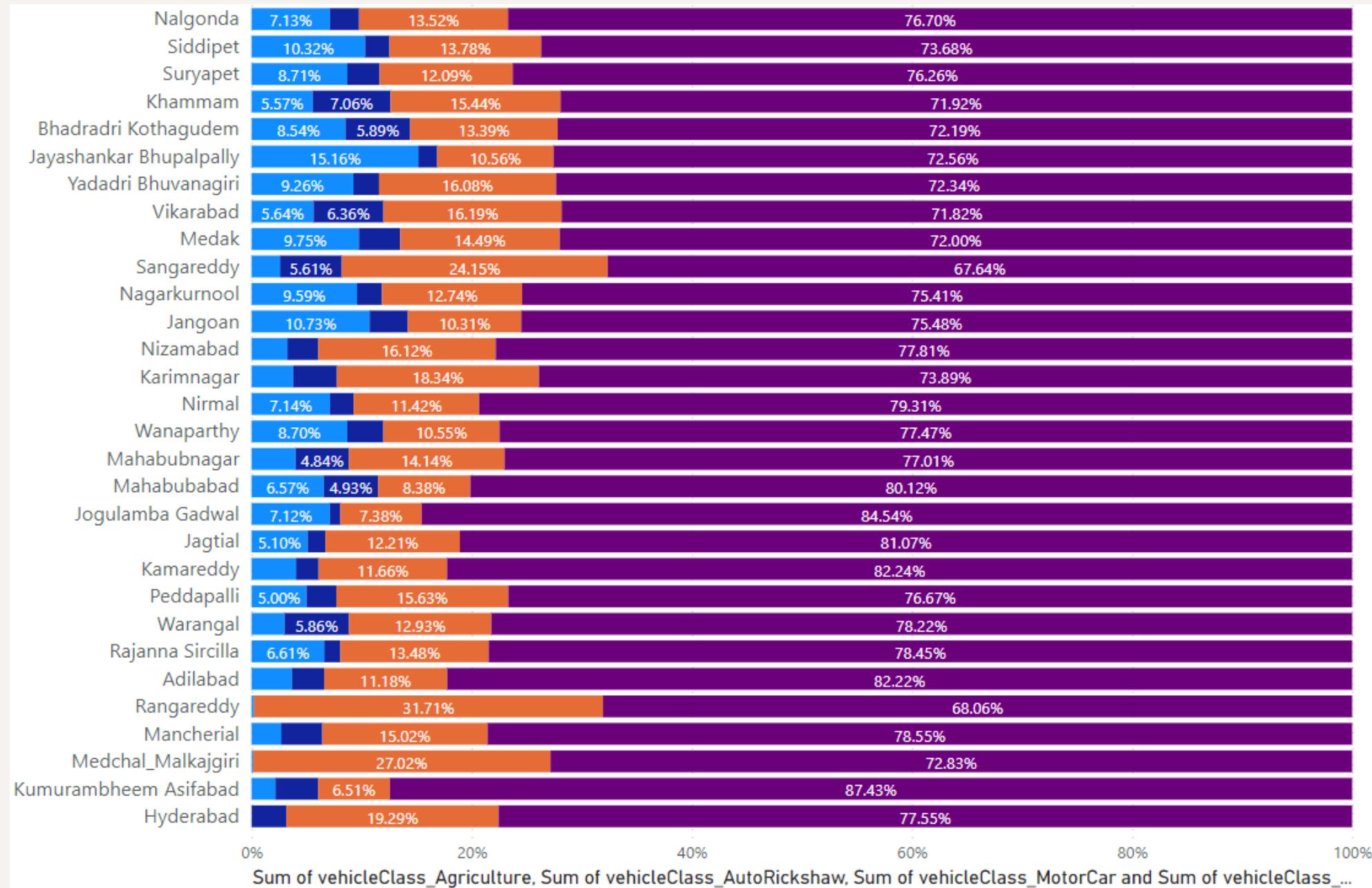
Electric vehicle sales in Telangana



Electric vehicle sales in Telangana have been on a continuous rise in last 2 years.

6. How does the distribution of vehicles vary by vehicle class (MotorCycle, MotorCar, AutoRickshaw, Agriculture) across different districts? Are there any districts with a predominant preference for a specific vehicle class? Consider FY 2022 for analysis.

In all the districts ,
motor cycle
accounts for more
than 70% of the total
vehicle sales. The
only exception being
Rangareddy and
Sangareddy.

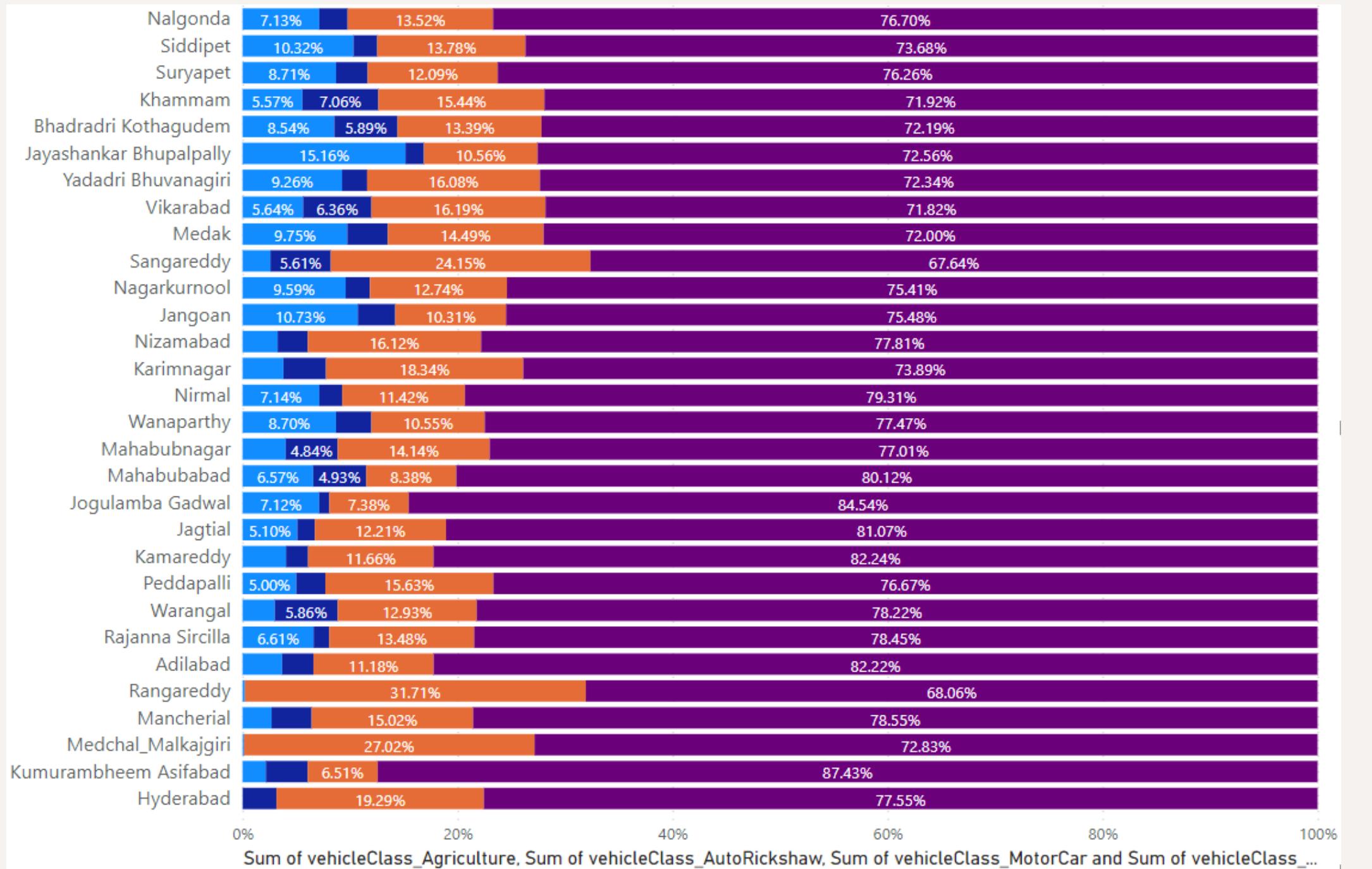


Motor Cycle

Motor Car

Auto Rickshaw

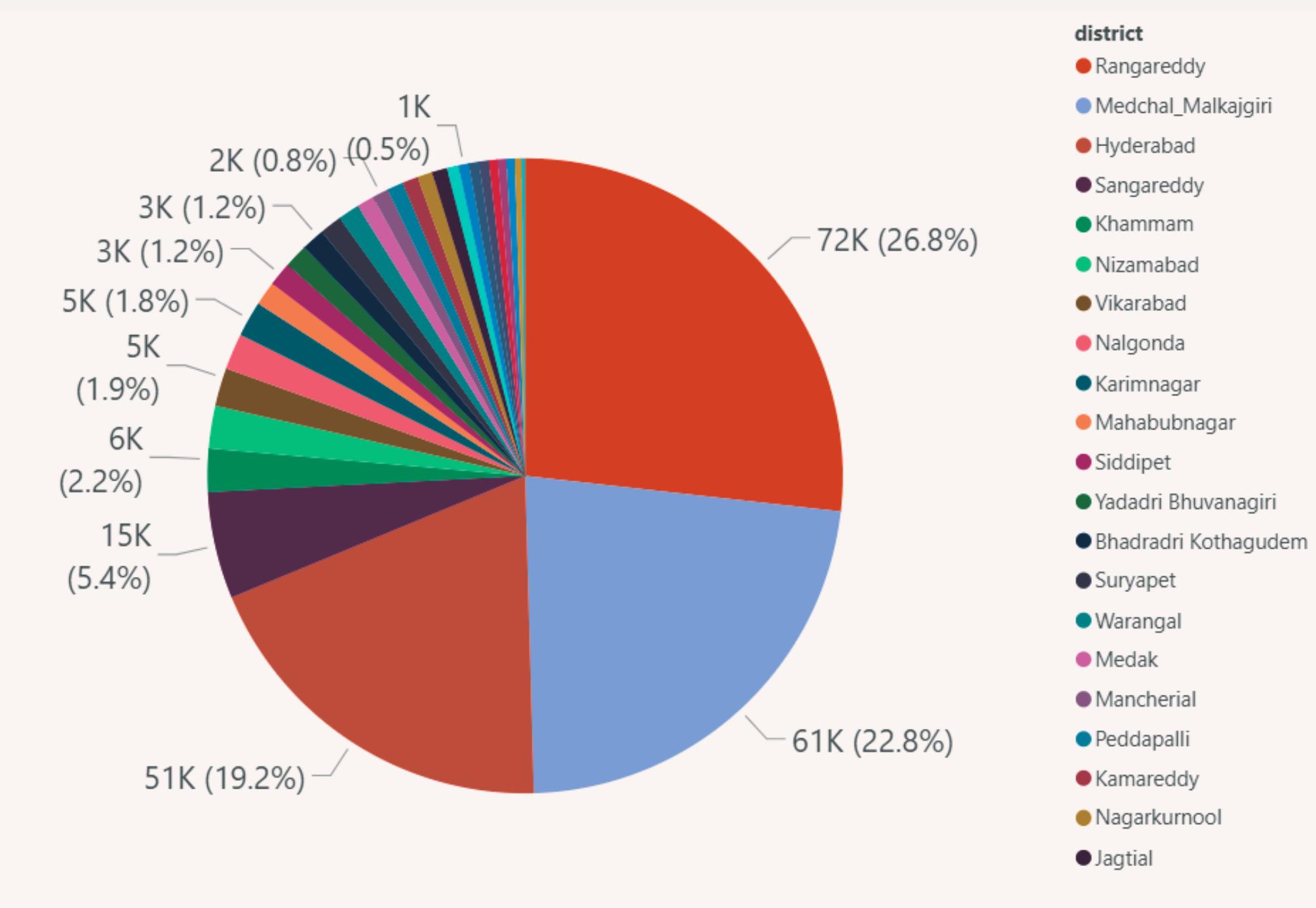
Agricultural



Insights :-

- Motorcycle is predominantly preferred accross all the districts
- Rangareddy, Sangareddy and Medchal Malkajgiri are the only districts where more than 20% of the population buy a motor car.
- Siddipet, Jayashankar Bhupalpally and Jangoan, are the districts where more than 10 % of the population buy agricultural vehicles.
- Khammam, Bhadradri Kothagudem, Vikarabad, Sangareddy and Warangal are the only districts where more than 5% of the population account for auto rickshaw sales.

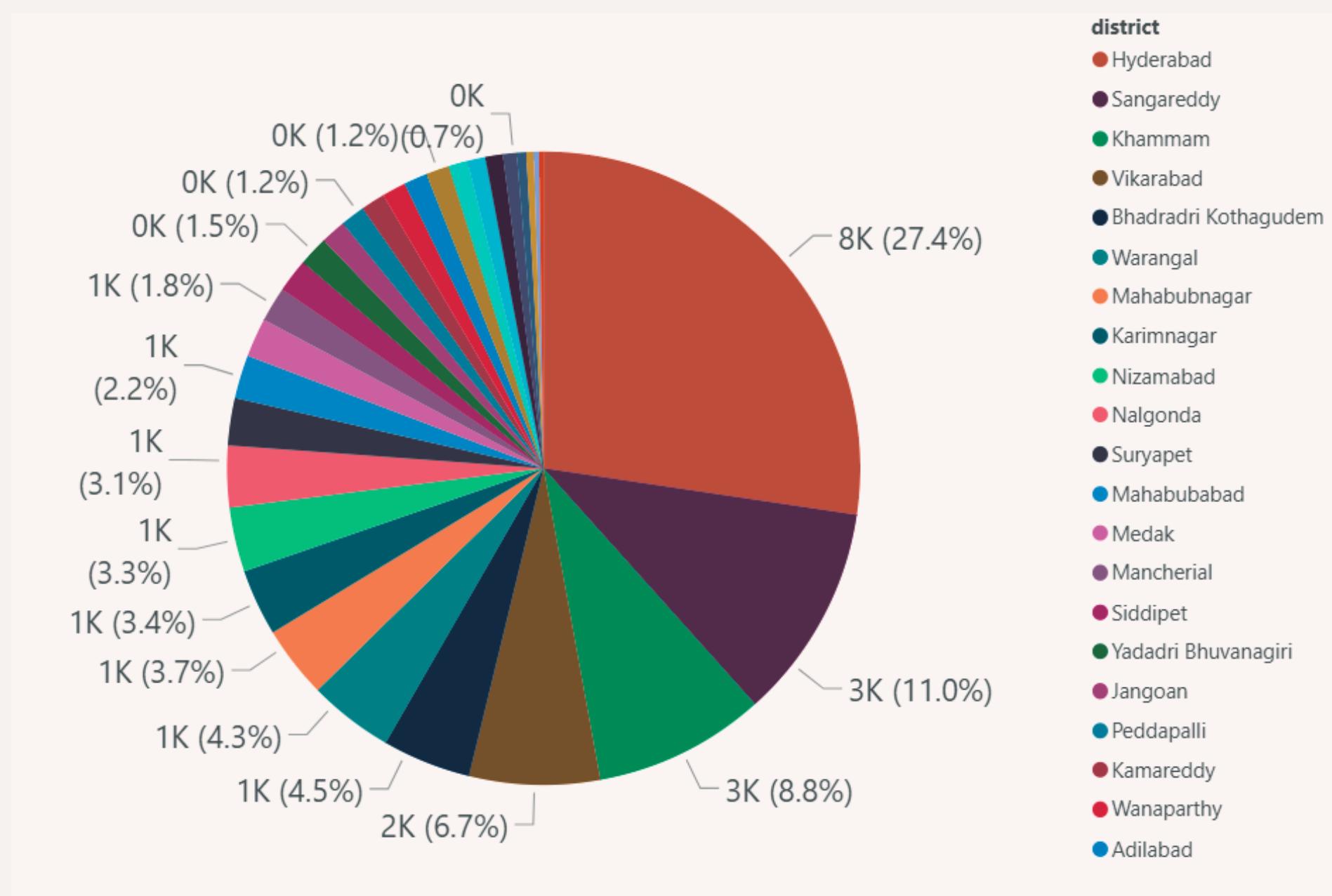
Motor car sales in FY 2022



Insights :-

- Rangareddy, Medchal Malkajgiri and Hyderabad account for 68.8% of motor car sales during FY 2022

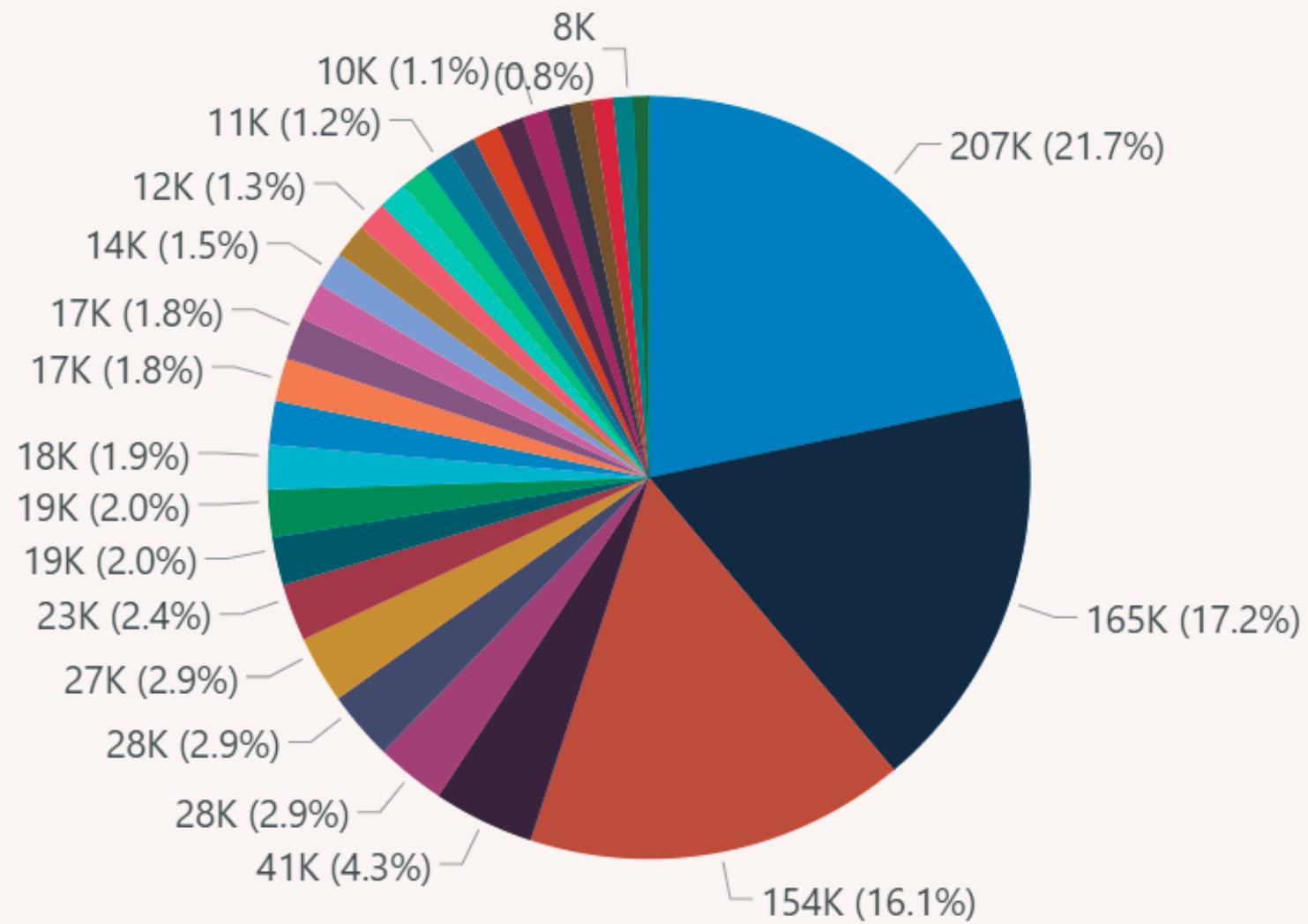
Auto rickshaw sales in FY 2022



Insights :-

- Hyderabad, Sangareddy and Khammam account for 46.2% of total auto rickshaw sales during FY 2022

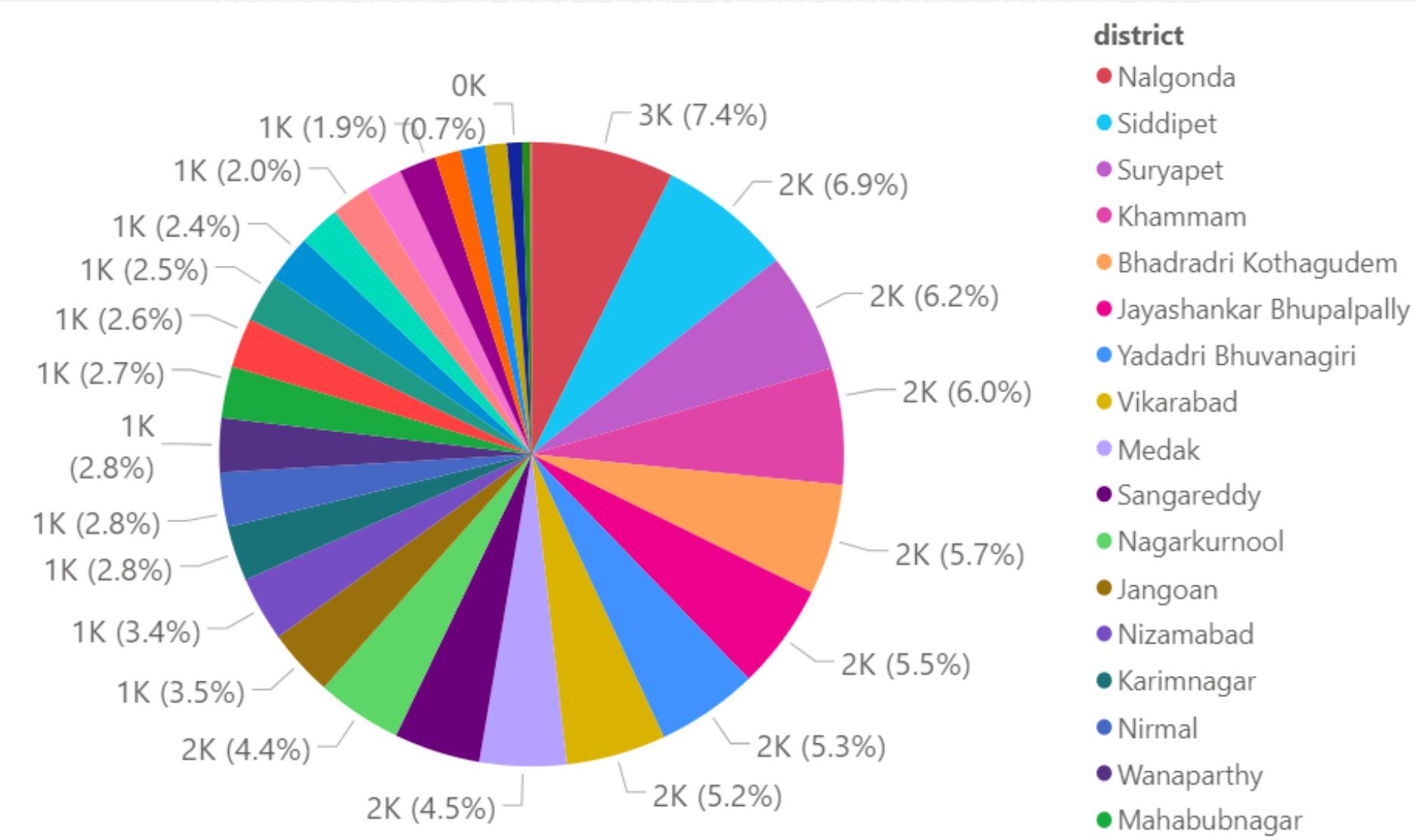
Motor cycle sales in FY 2022



Insights :-

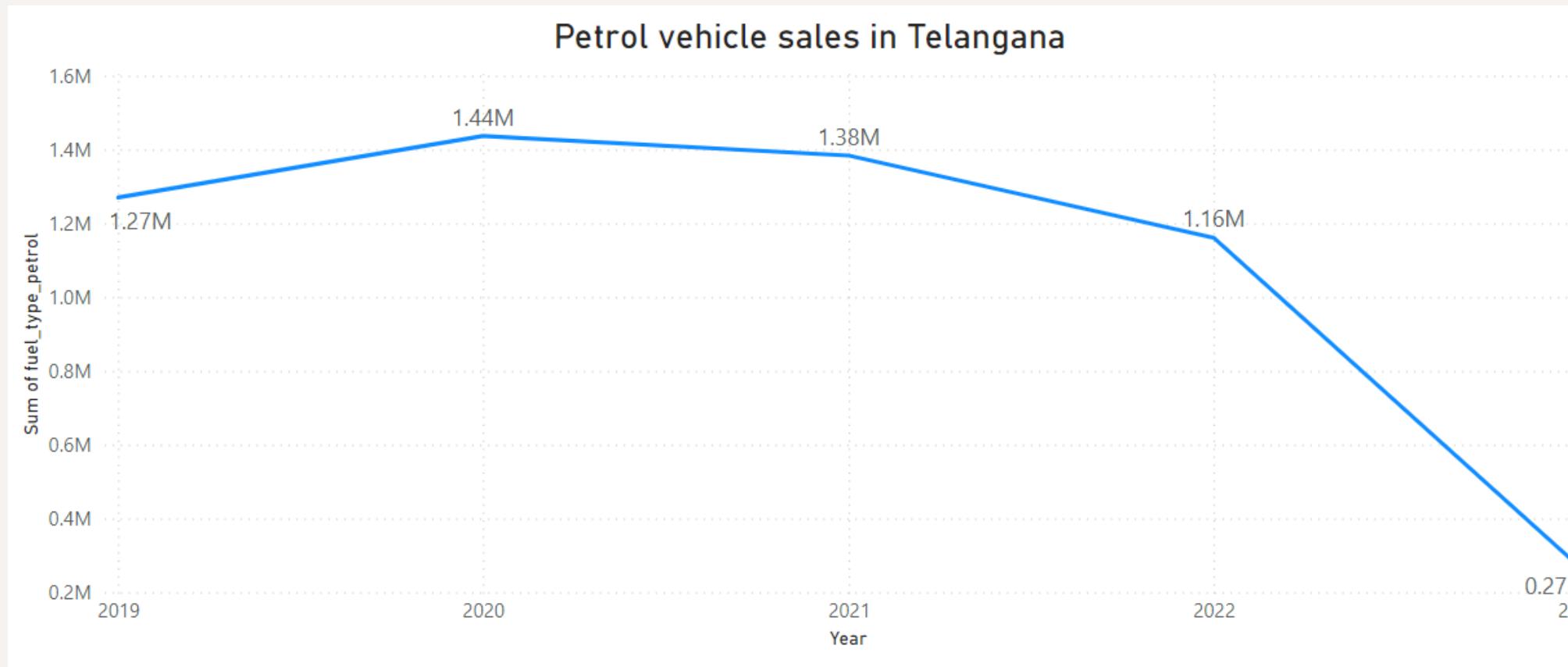
- Hyderabad, Medchal Malkajgiri and Rangareddy account for 55% of the total Motor Cycle sales during FY 2022

Agriculture vehicle sales in Telangana in FY 2022

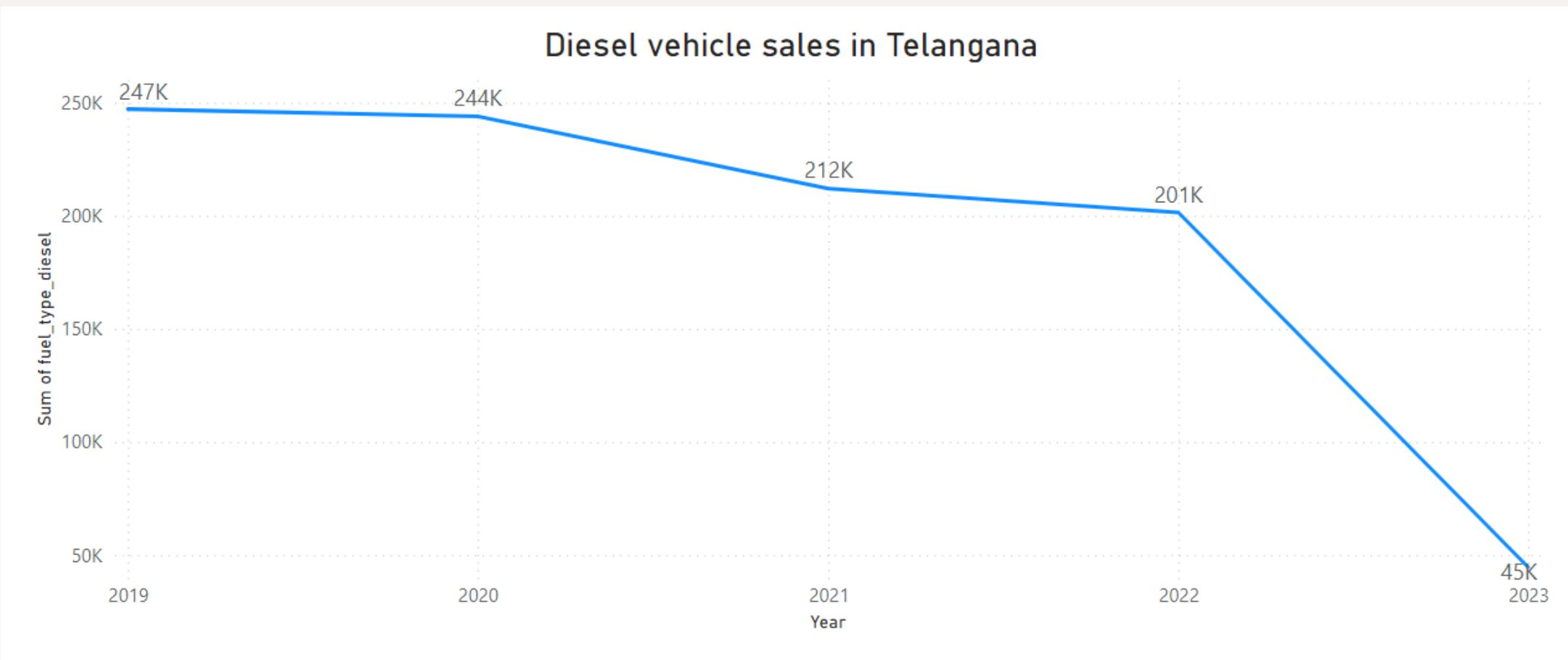


Nalgonda, Siddipet, Suryapet, Khammam, Bhadrabdi Kothagudem, Jayashankar Bhupalpally, Yadadri Bhuavanagiri , Vikarabad and Medak account for 52% of the total agriculture vehicle sales in Telangana in FY 2022. Sales accross these districts is quite evenly distributed.

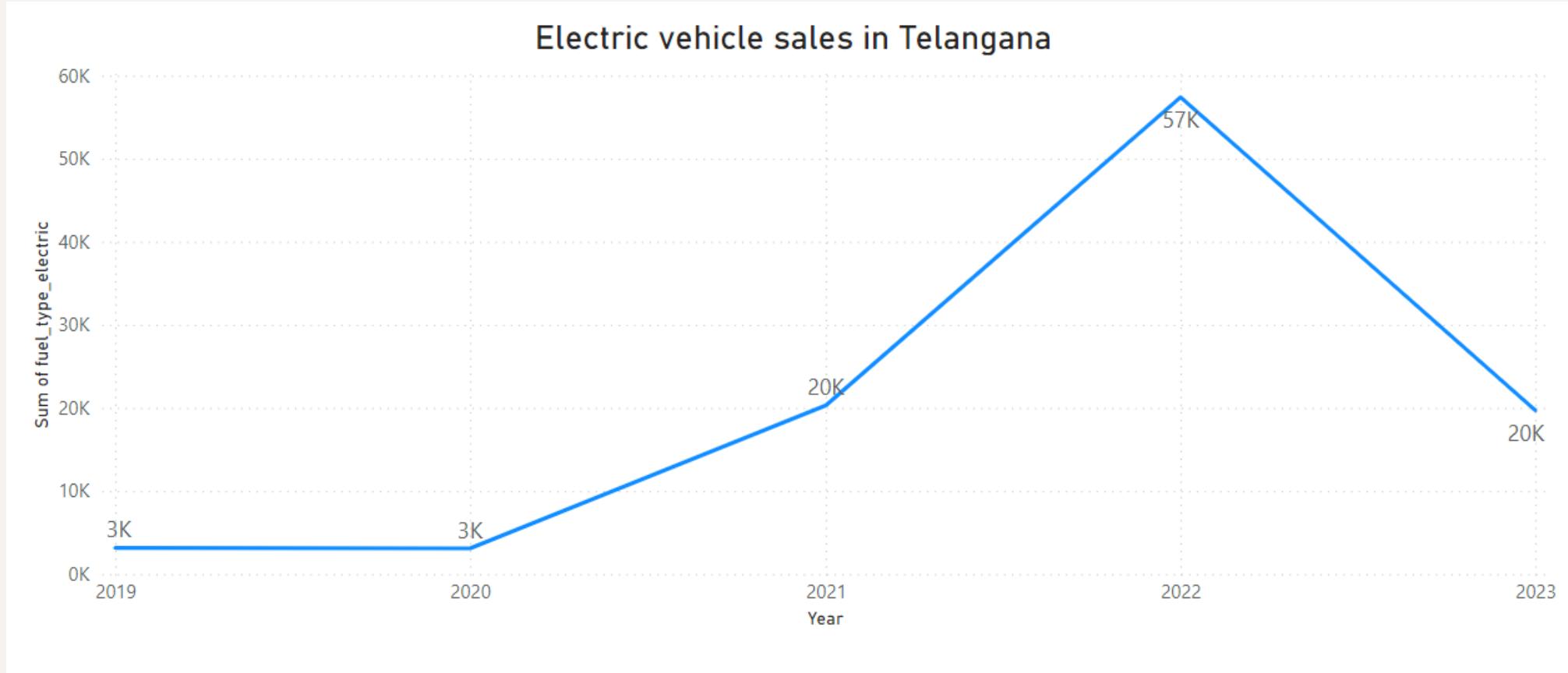
7. List down the top 3 and bottom 3 districts that have shown the highest and lowest vehicle sales growth during FY 2022 compared to FY 2021? (Consider and compare categories: Petrol, Diesel and Electric)



Petrol vehicle sales have fell in 2022 as compared to 2021



Diesel vehicle sales in Telangana have fell in 2022 as compared to 2021



Electric vehicle sales have increased significantly in 2022 as compared to 2021

Petrol vehicle sales growth rate

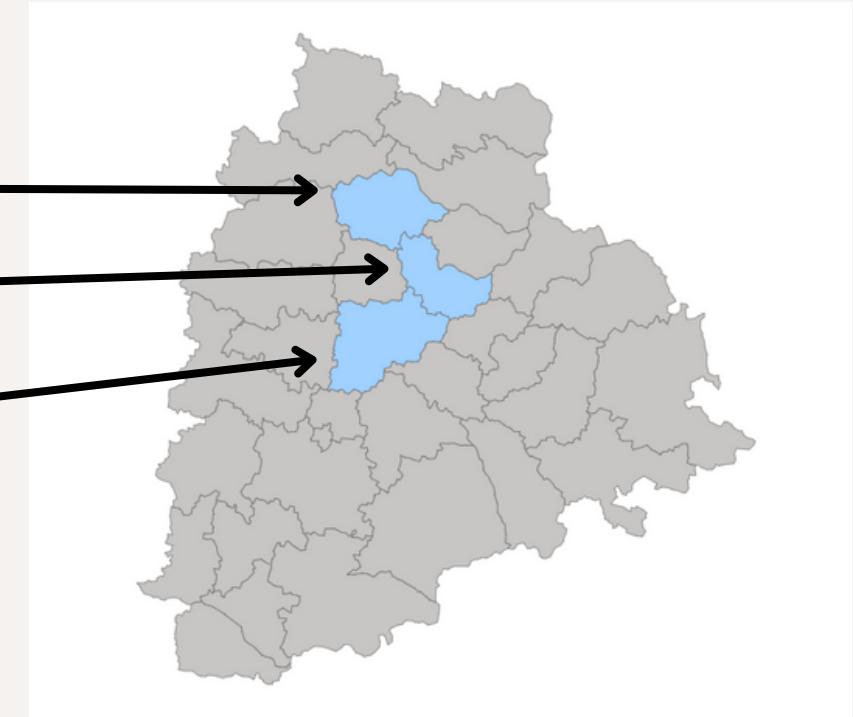
Districts with highest sales growth rate

dist_code	district	petrol_type_growth_percent
20_1	Karimnagar	-2.2292
17_3	Siddipet	-2.2807
20_2	Jagtial	-2.3012

Jagtial

Karimnagar

Siddipet



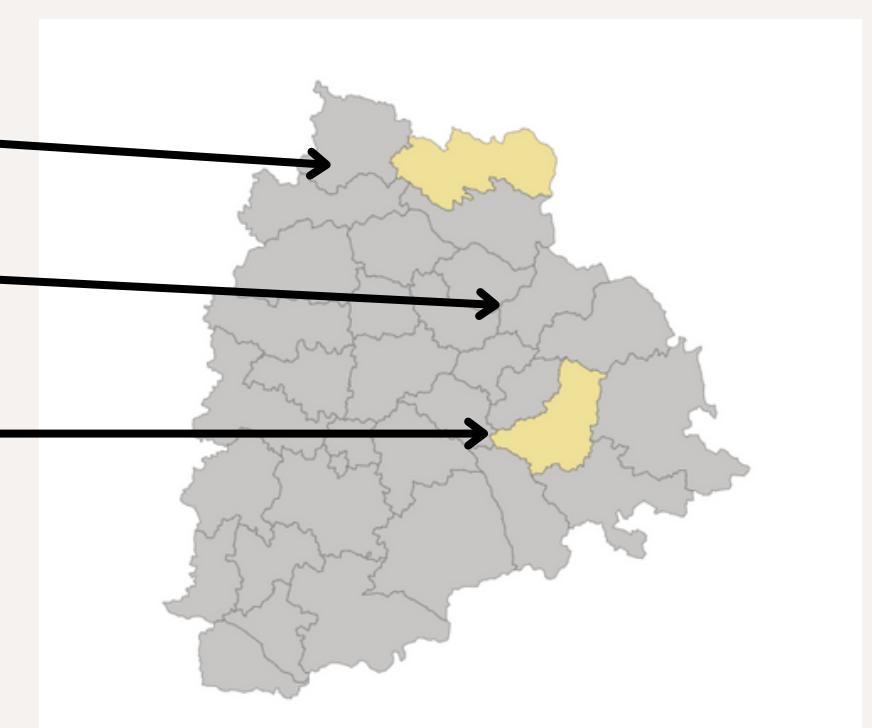
Districts with lowest sales growth rate

dist_code	district	petrol_type_growth_percent
21_7	Jayashankar Bhupalpally	-3.6389
21_5	Mahabubabad	-3.3769
19_4	Kumurambheem Asifabad	-3.3595

Kumurumbheem Asifabad

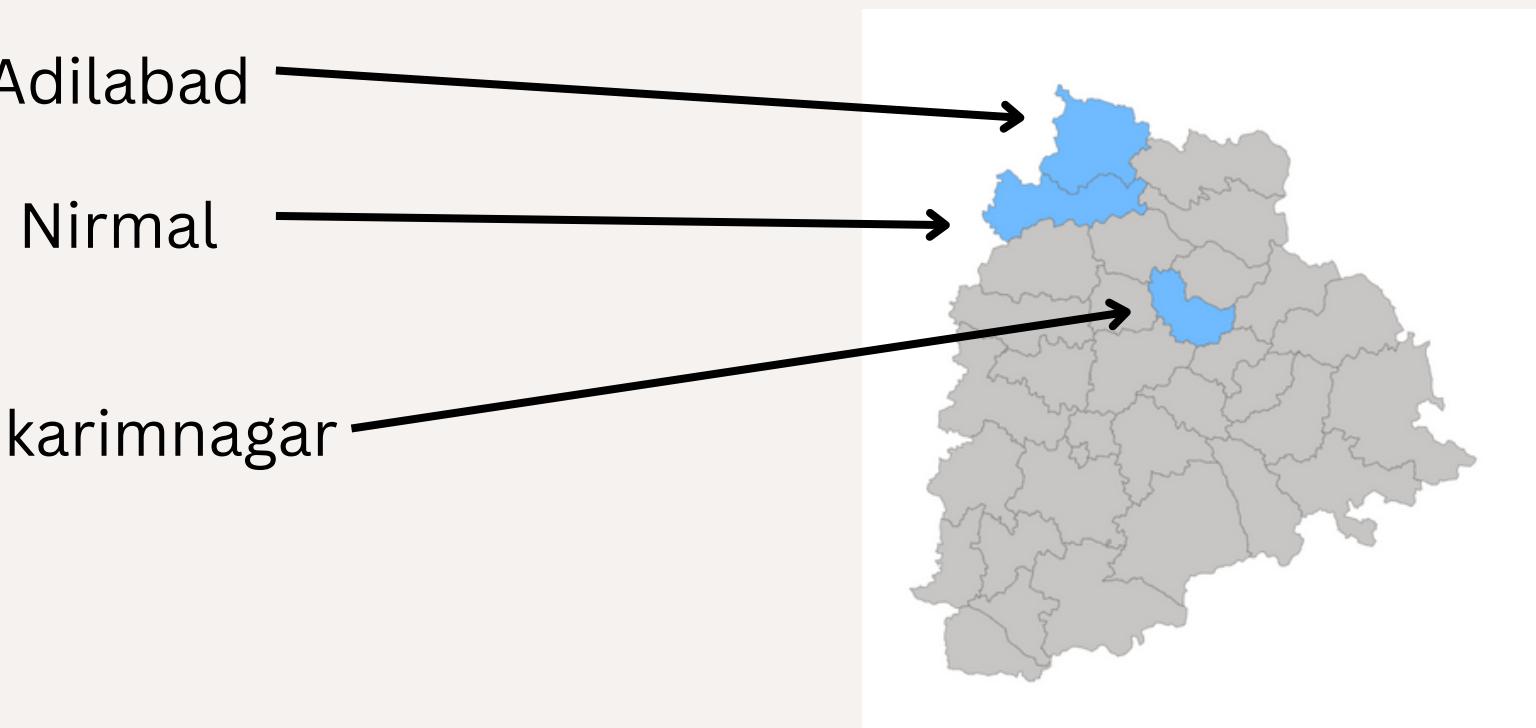
Jayashankar Bhupalpally

Mahbubabad

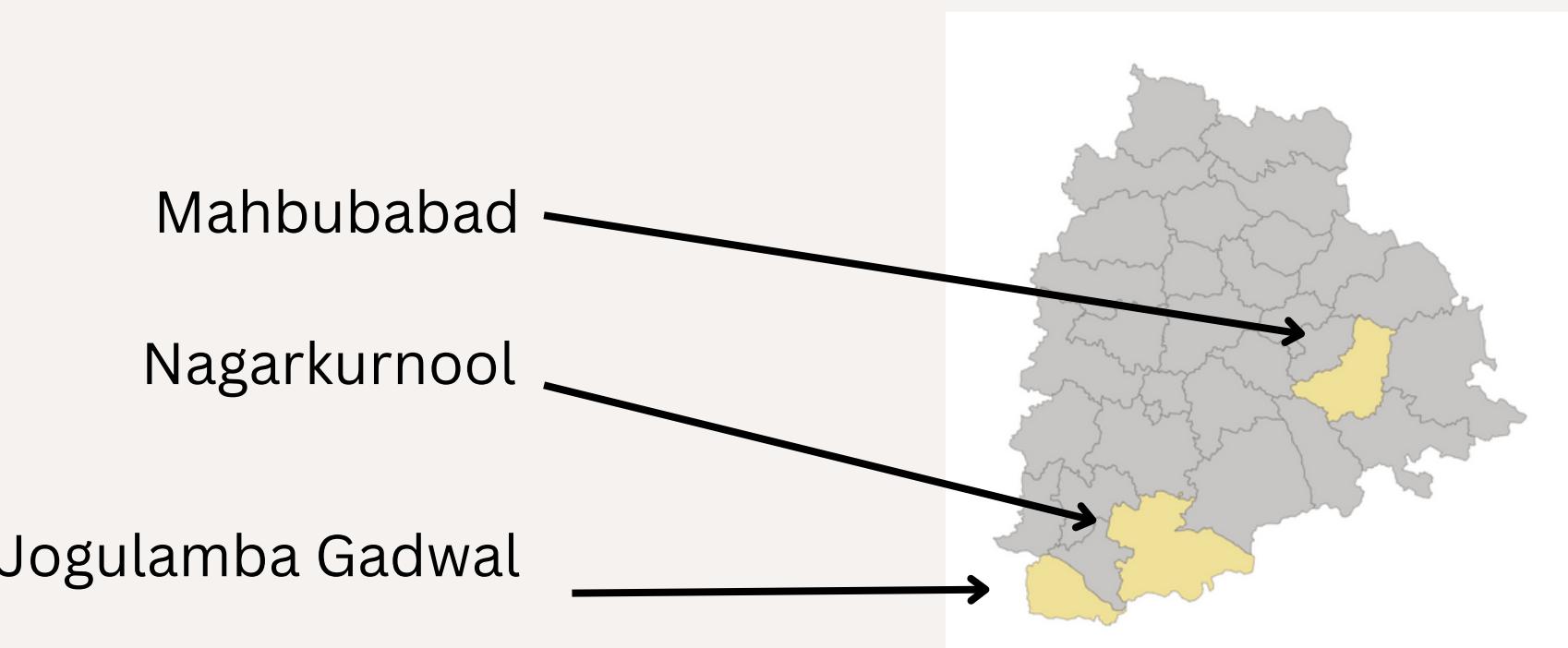


Deisel vehicle sales growth rate

dist_code	district	diesel_type_growth_percent
19_1	Adilabad	-1.6506
20_1	Karimnagar	-1.8363
19_2	Nirmal	-1.9345



dist_code	district	diesel_type_growth_percent
14_2	Jogulamba Gadwal	-3.2223
21_5	Mahabubabad	-3.1980
14_3	Nagarkurnool	-3.1421



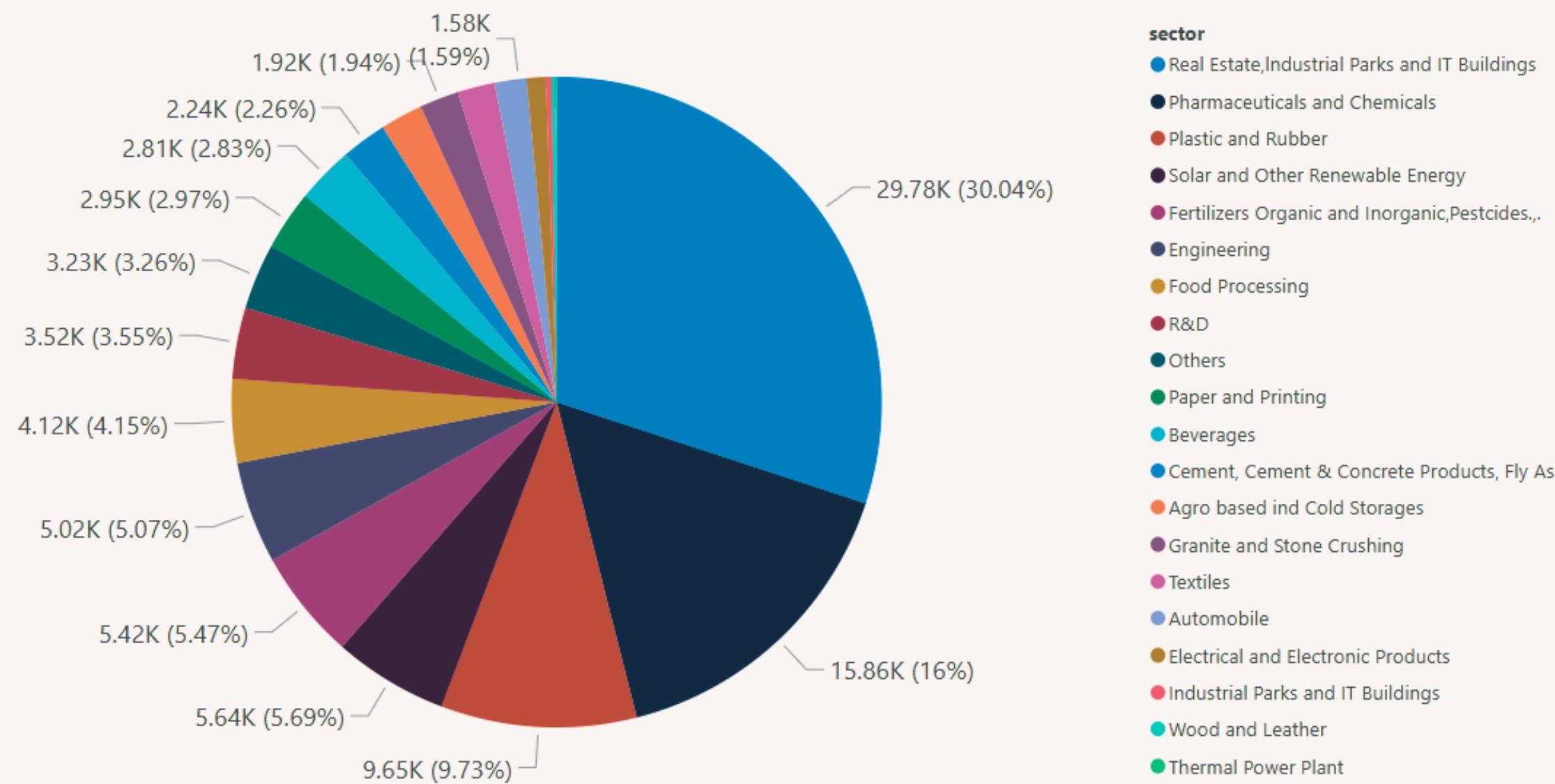
Ts-iPASS

8. List down the top 5 sectors that have witnessed the most significant investments in FY 2022.

sector	total_investment
Real Estate,Industrial Parks and IT Buildings	29778.174099999997
Pharmaceuticals and Chemicals	15858.05609999999
Plastic and Rubber	9649.78459999995
Solar and Other Renewable Energy	5639.703200000001
Fertilizers Organic and Inorganic,Pesticides,Inse...	5418.397699999998

Investment in cr in FY 2022

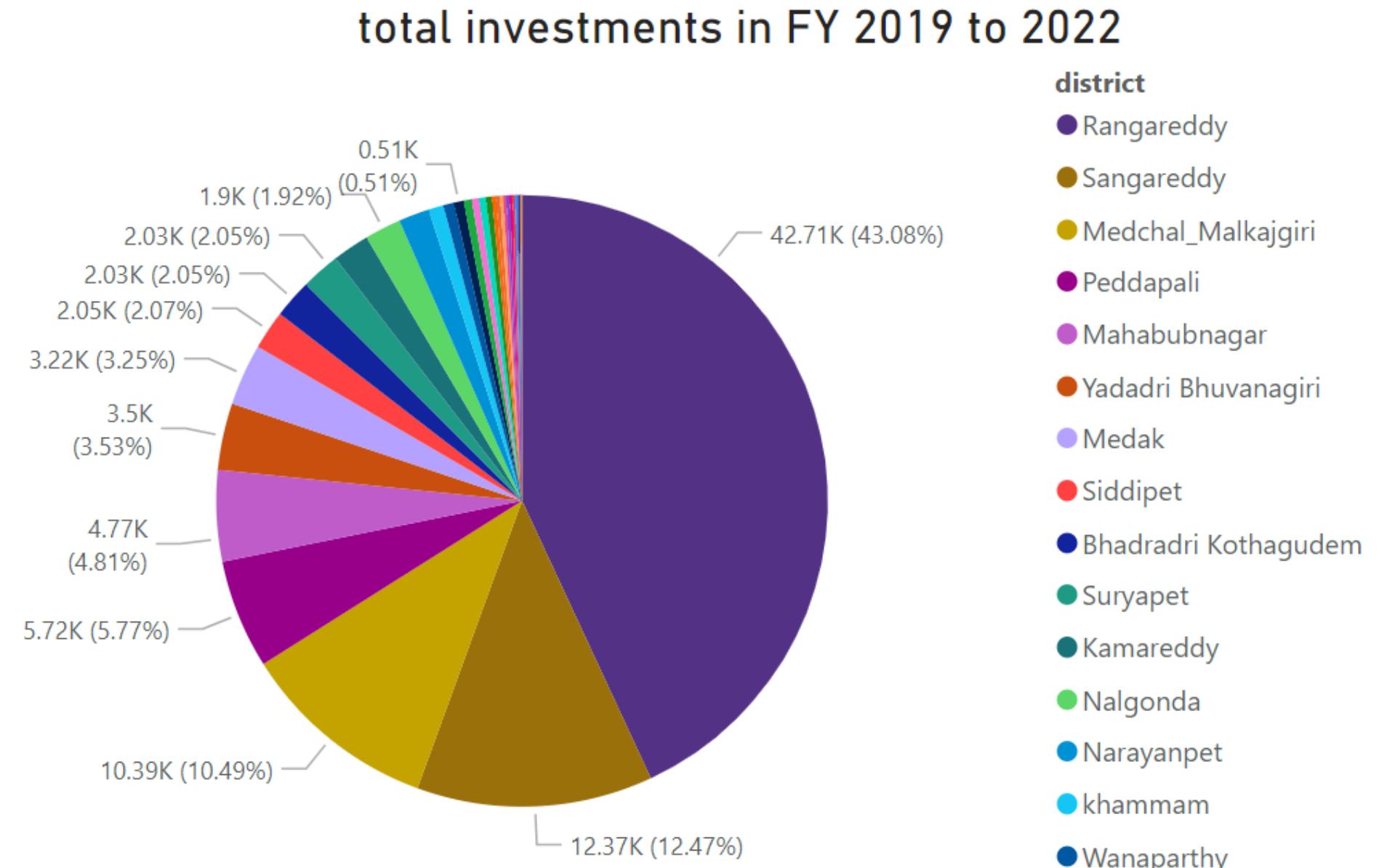
⋮ ⋯



Three sectors :Real estate, Industrial Parks and IT buildings; Pharmaceuticals and Chemicals; Plastic and rubber, account for 56% of the total investment in Telangana in FY 2022

9. List down the top 3 districts that have attracted the most significant sector investments during FY 2019 to 2022? What factors could have led to the substantial investments in these particular districts?

dist_code	district	total_investment
15_1	Rangareddy	42706.3320000004
17_2	Sangareddy	12366.75559999997
15_2	Medchal_Malkajgiri	10394.56099999996



Rangareddy, Sangareddy and Medchal Malkajgiri account for 66% of the total investment in Telangana between FY 2019 to 2022.

Rangareddy alone accounts for 43% of the total investments in Telangana between FY 2019 to 2022.

10. Is there any relationship between district investments, vehicles sales and stamps revenue within the same district between FY 2021 and 2022

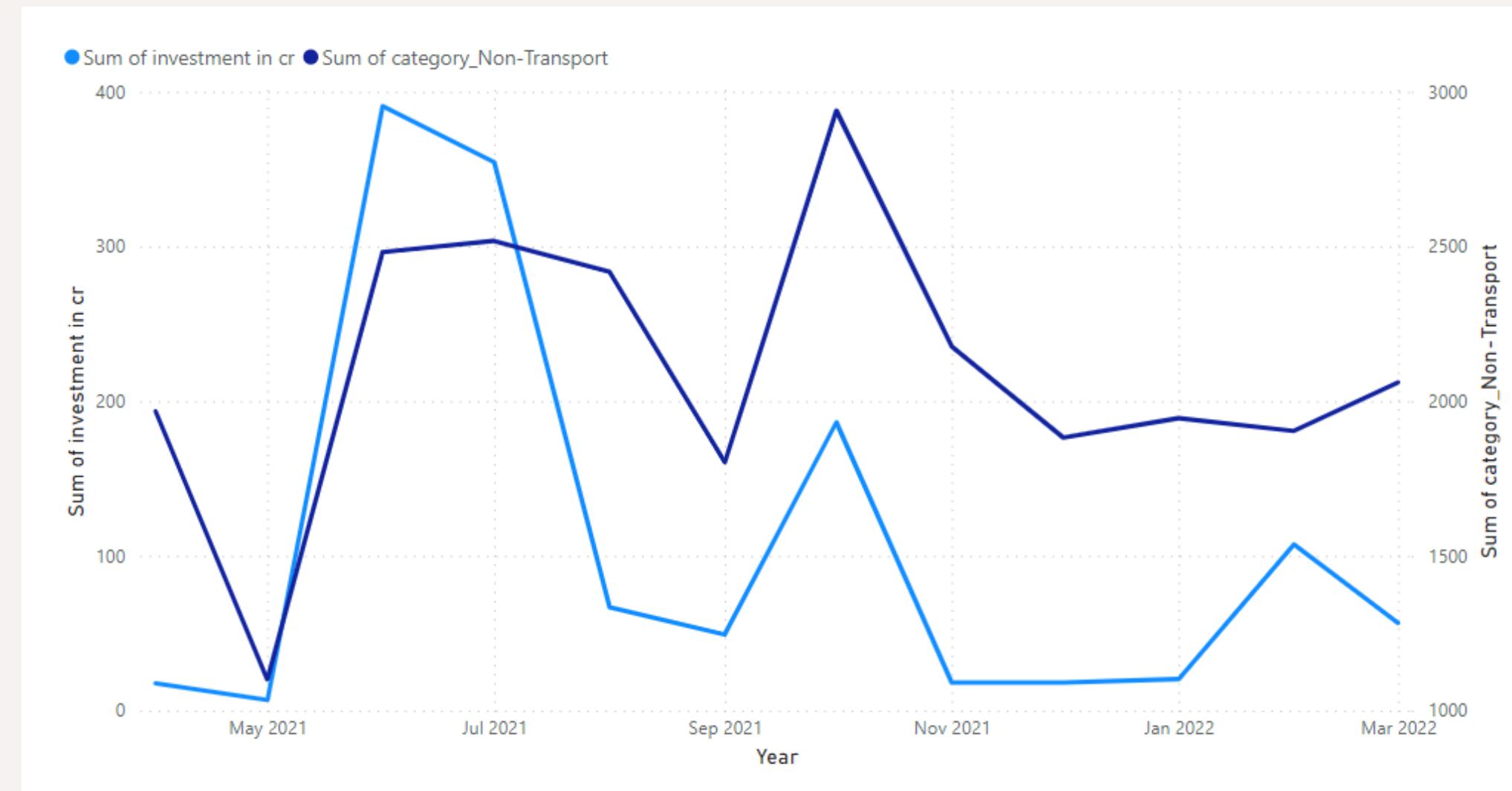
Firstly , we would be looking at districts with relationship between vehicle sales and investment received .

Then we would move on to the districts with relationship between stamp revenue and investment received.

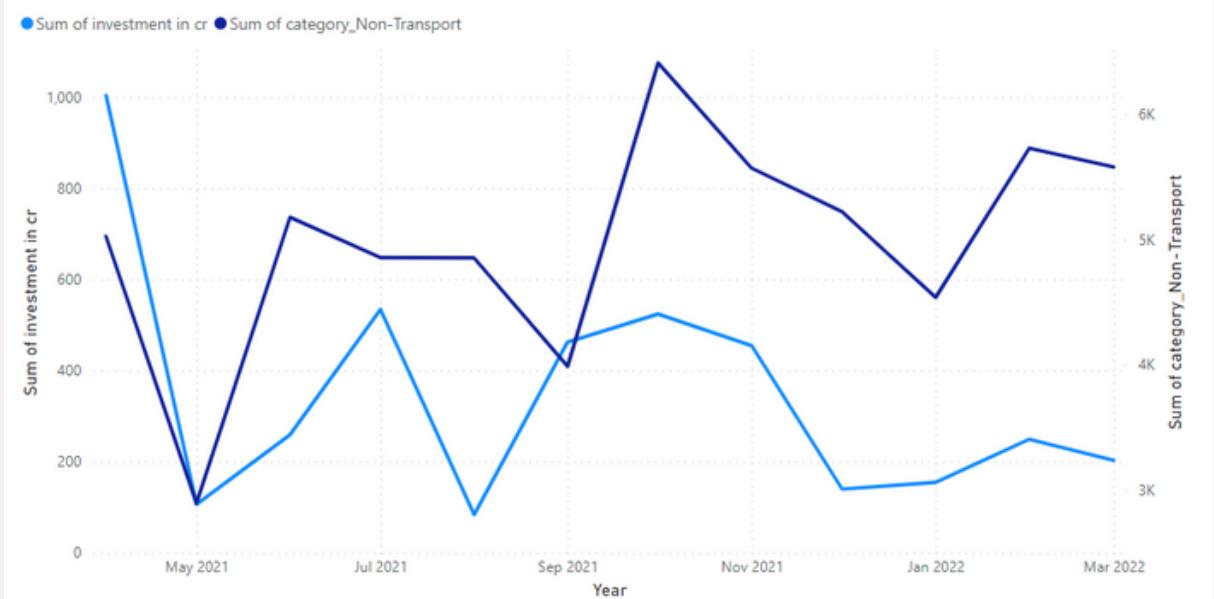
Vehicle Sales



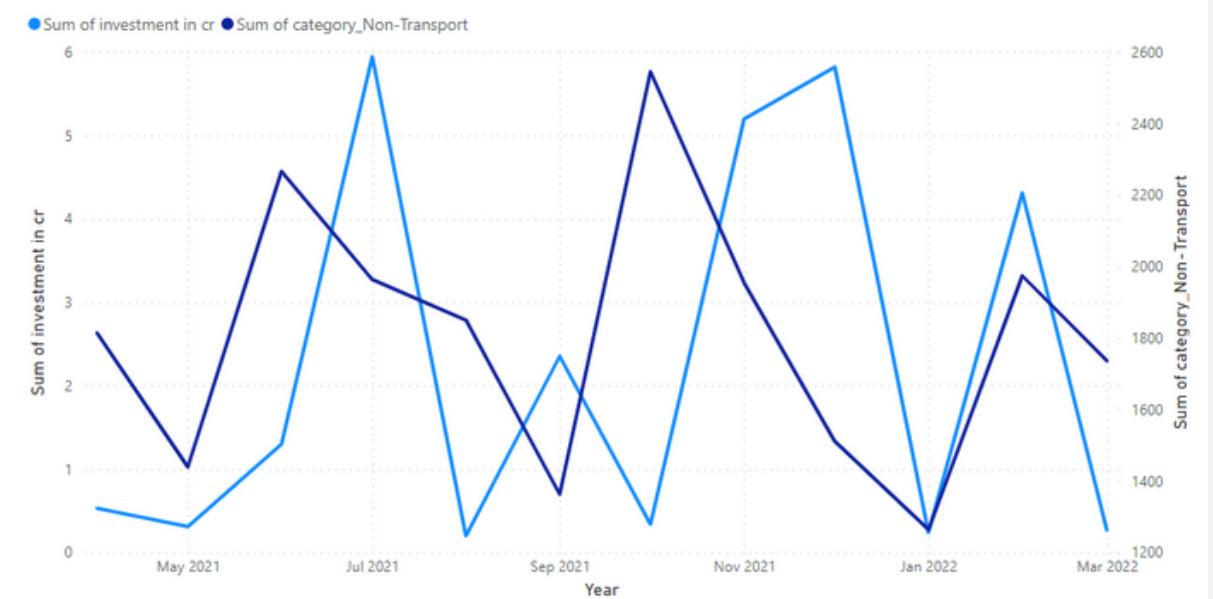
Investment



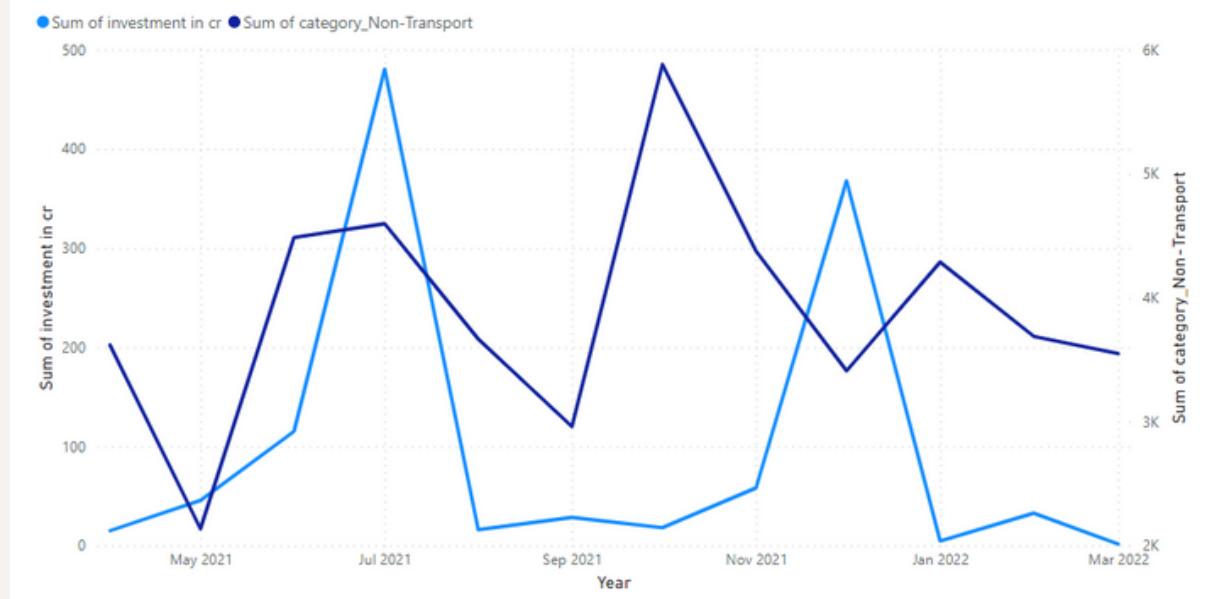
Yadadri Bhuvanagiri



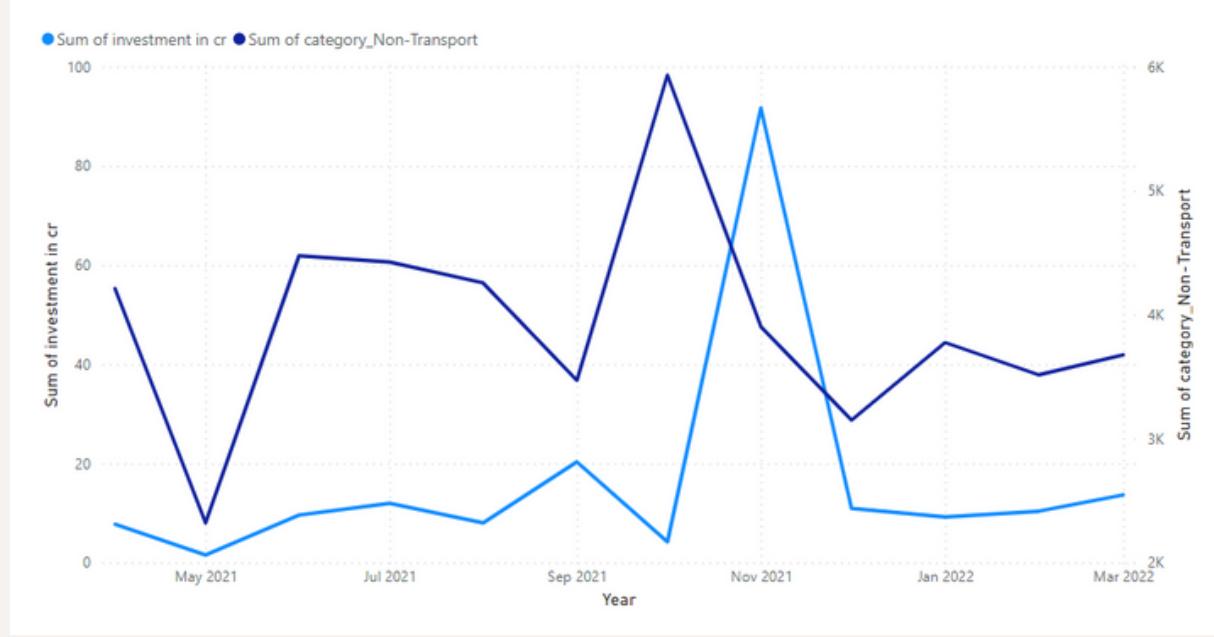
Sangareddy



Nirmal



Nalgonda



Khammam



Mancherial

Other districts with similar trends :-

Suryapet

Nizamabad

Medak

Karimnagar

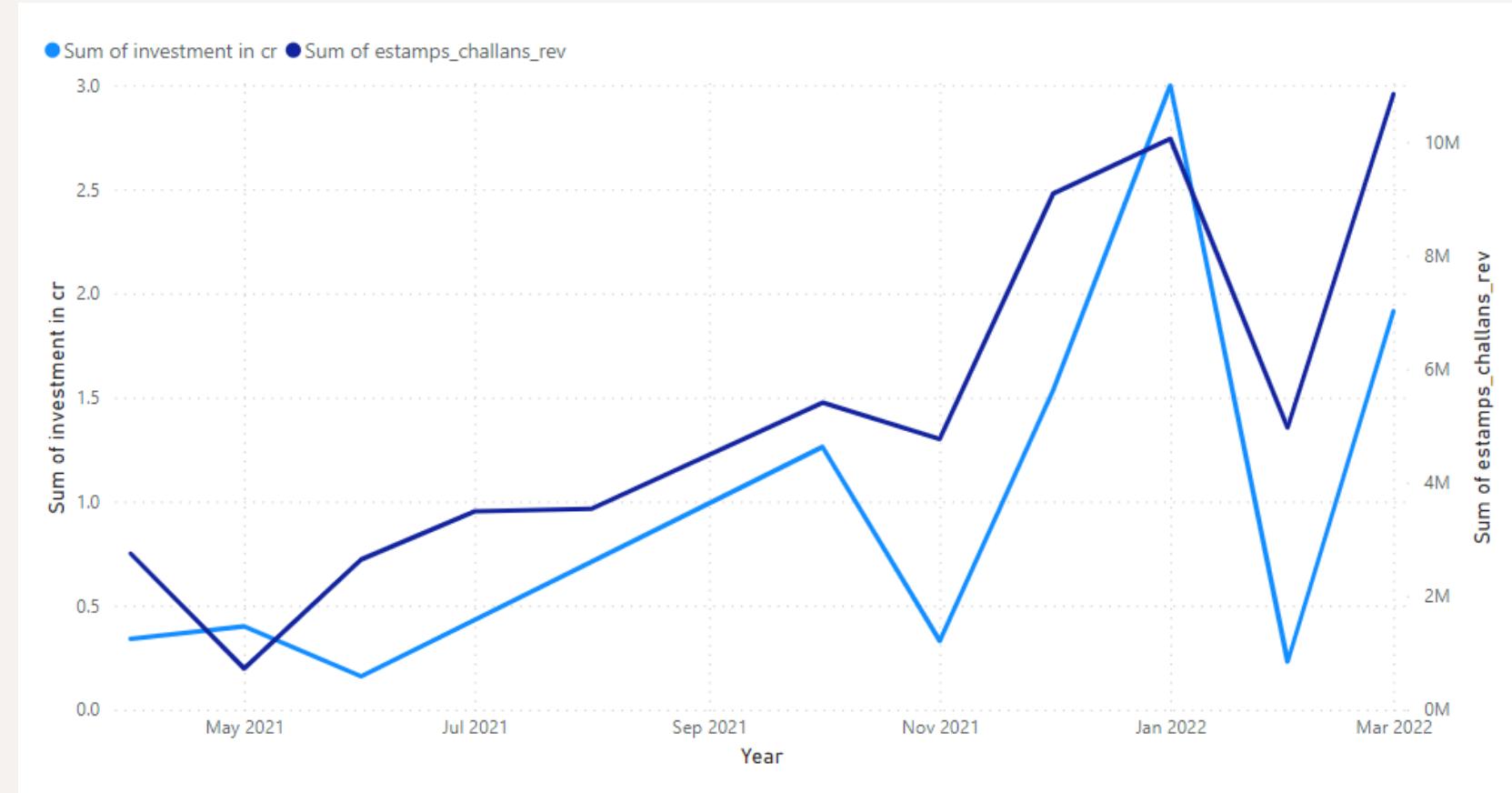
Jangoan

Hyderabad

estamp challan revenue



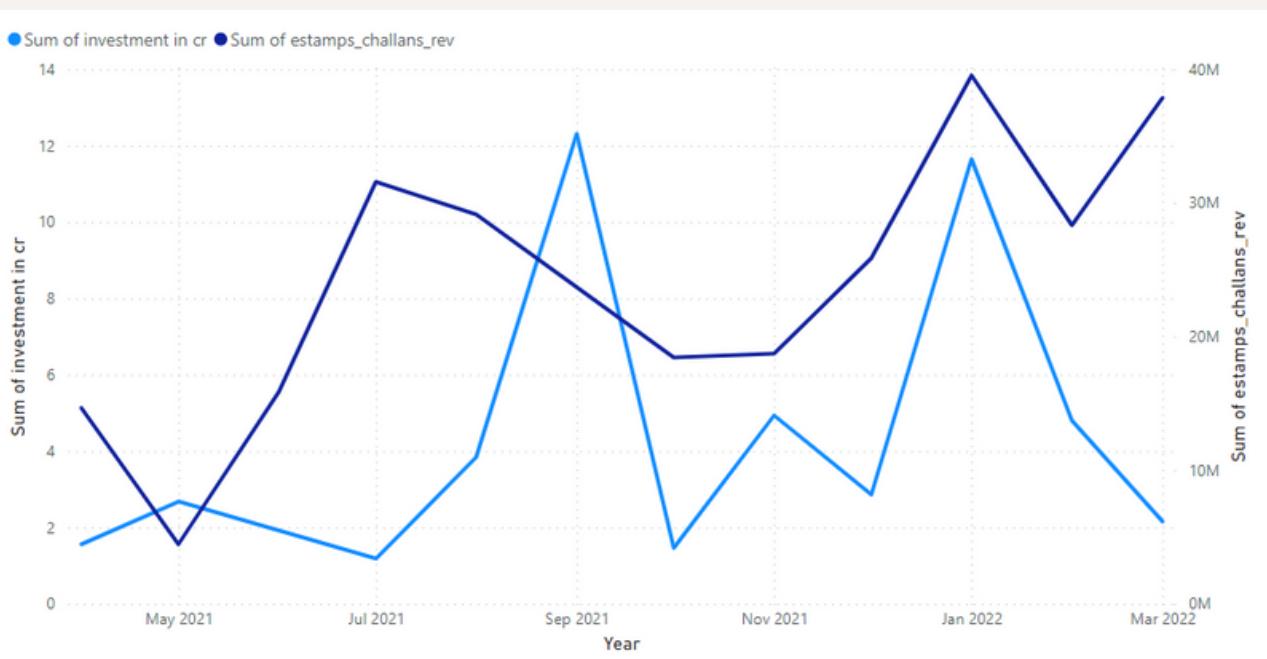
Investment



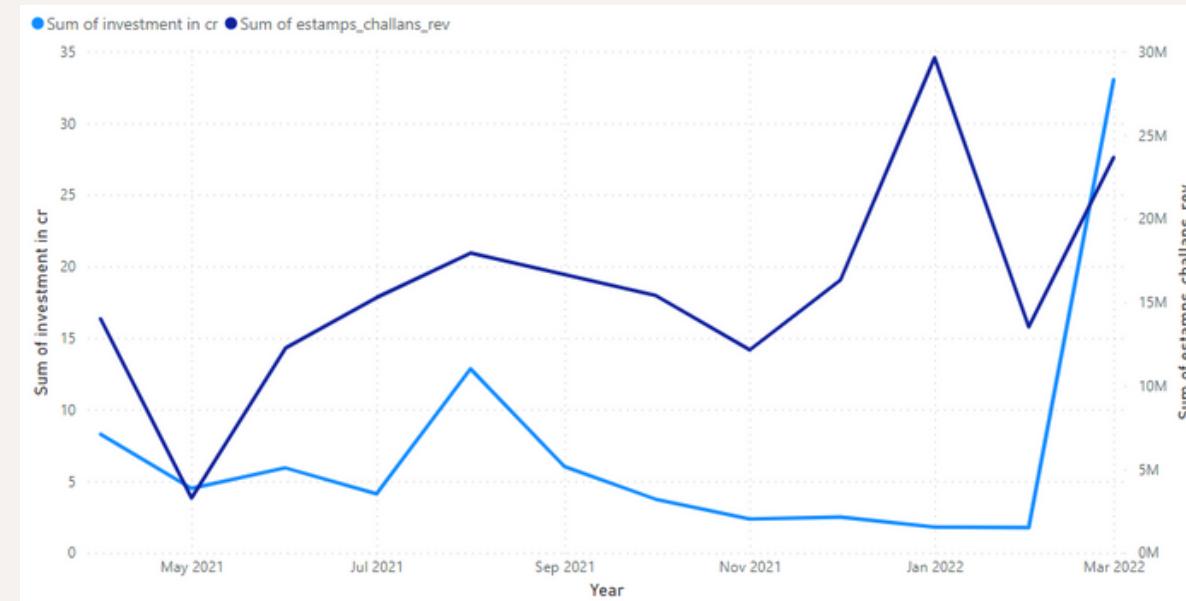
Kumurambheem Asifabad



Medak



Mahbubabad



Warangal

Other districts with similar trends :-

Mahbubnagar

Peddapalli

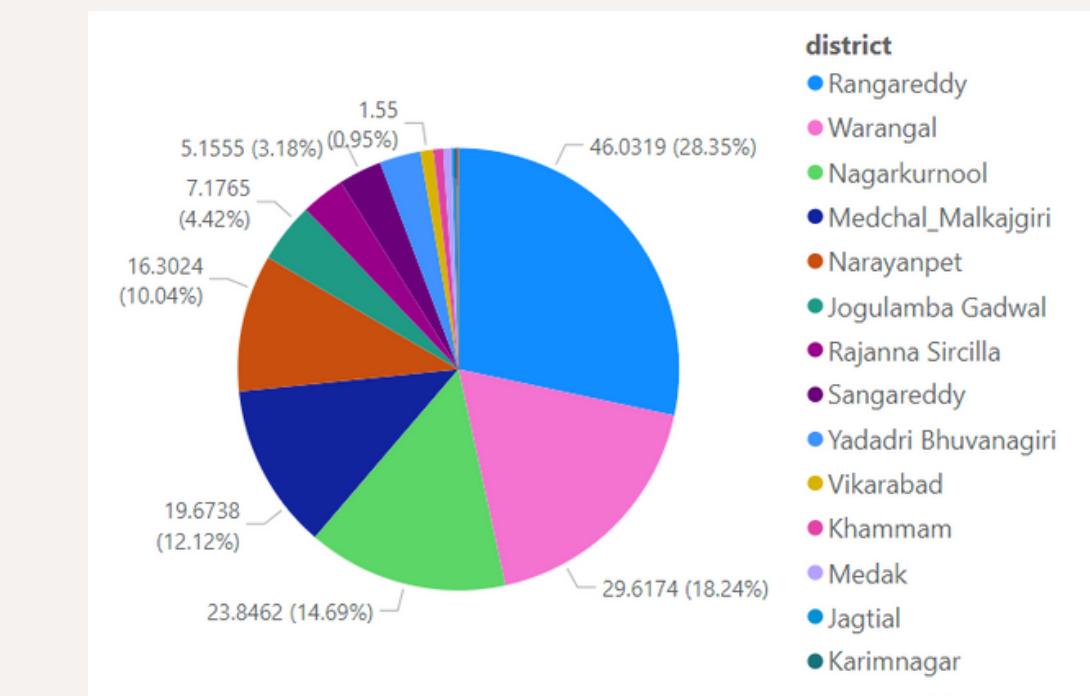
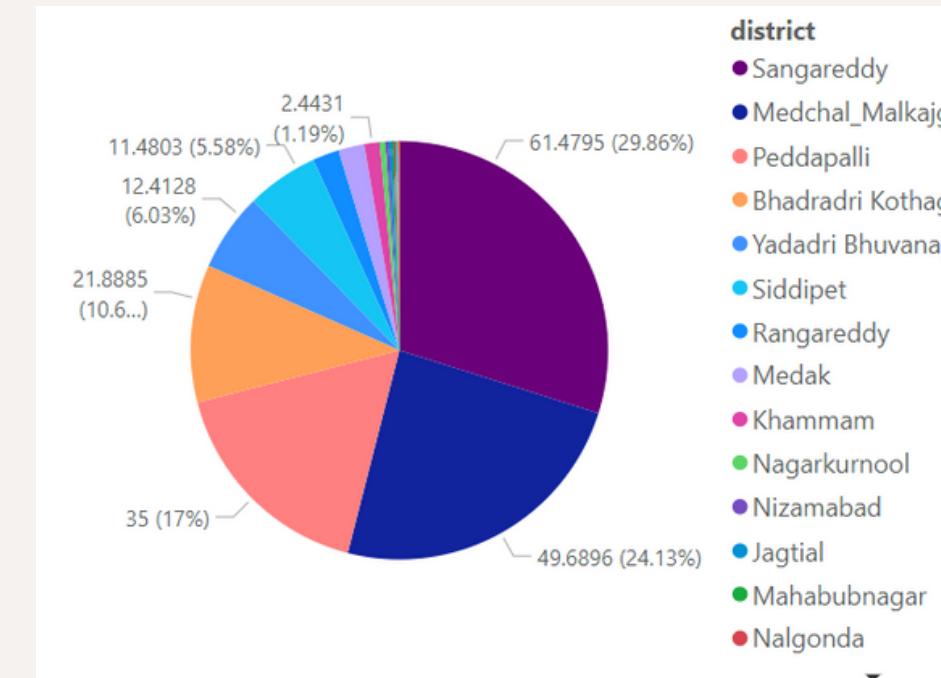
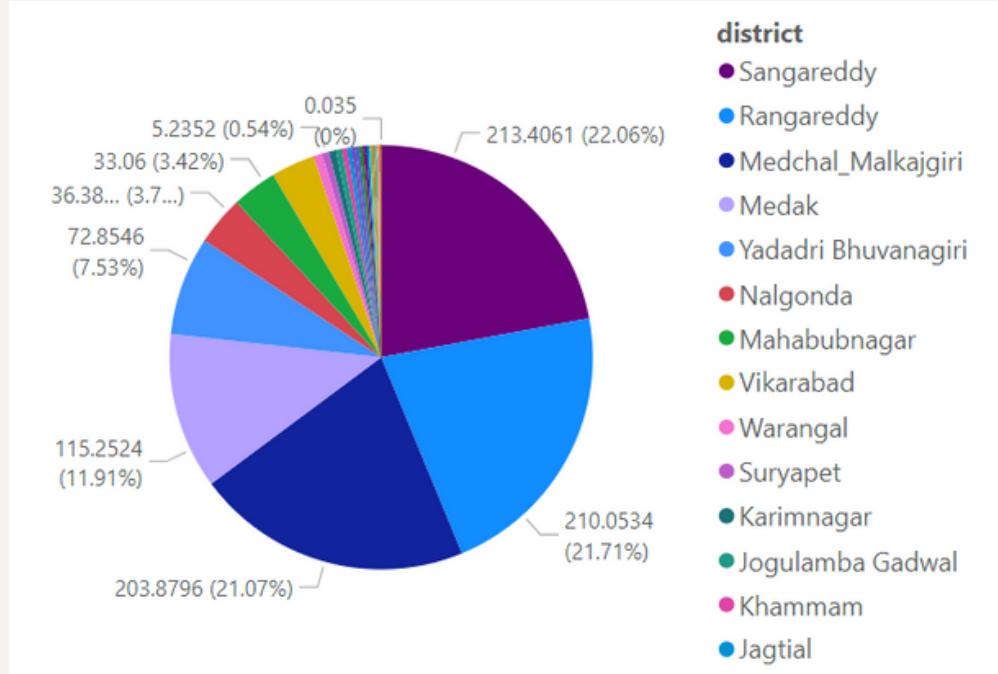
Kamareddy

Mulugu

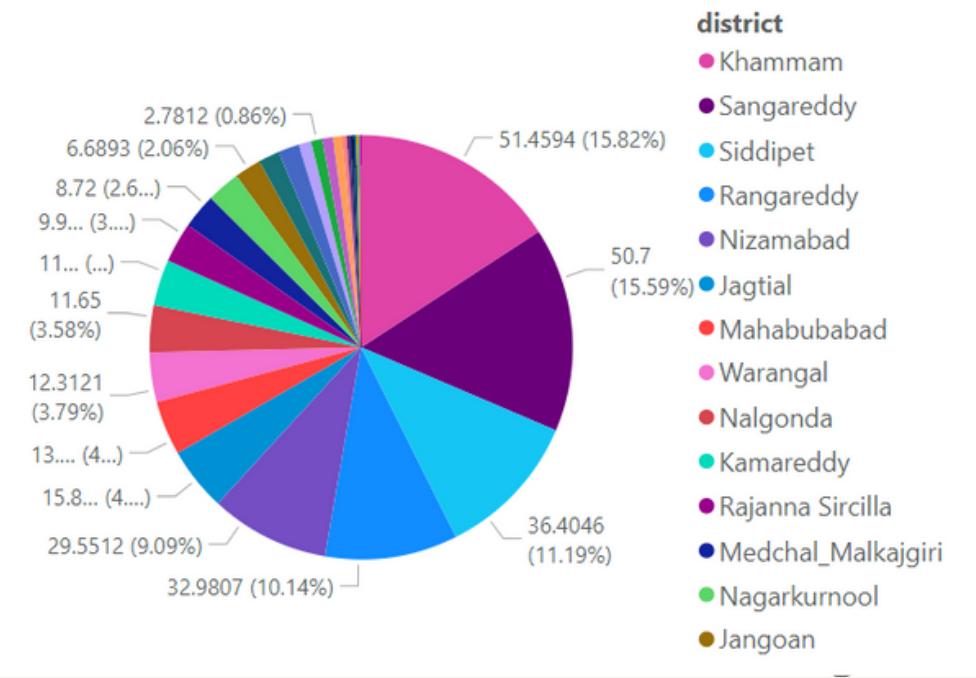
Sangareddy

Warangal

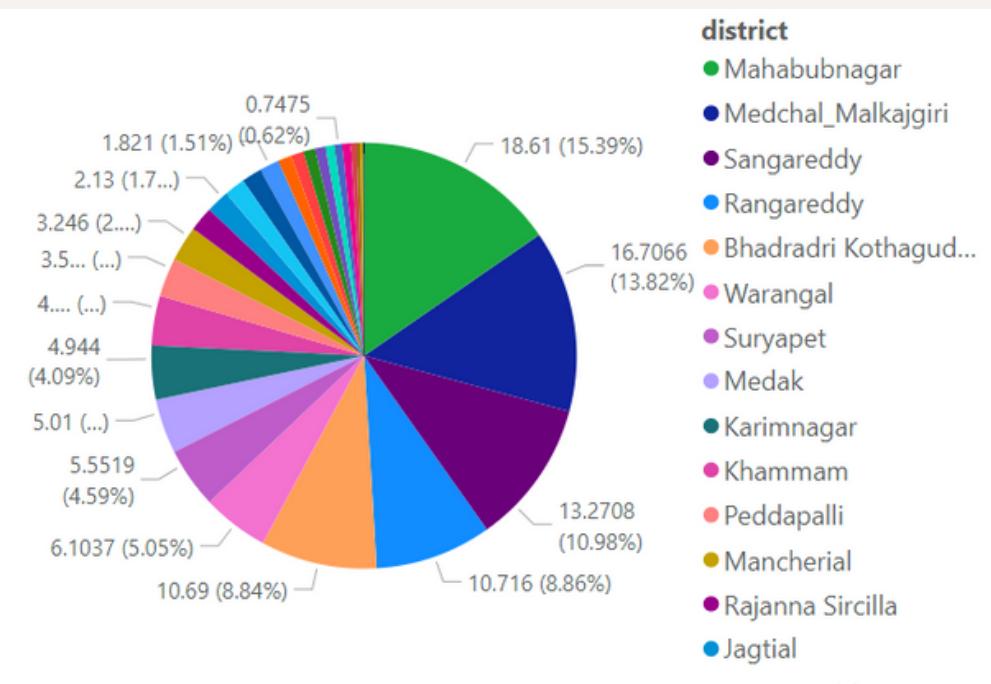
11. Are there any particular sectors that have shown substantial investment in multiple districts between FY 2021 and 2022?



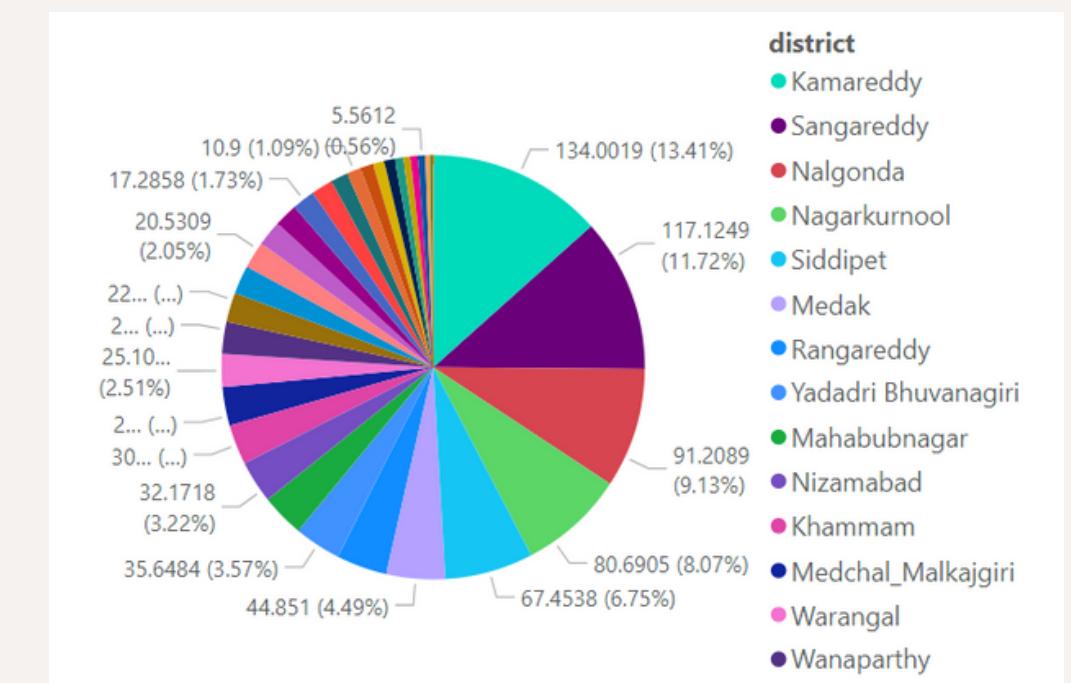
Textiles



Agro based incl Cold Storage



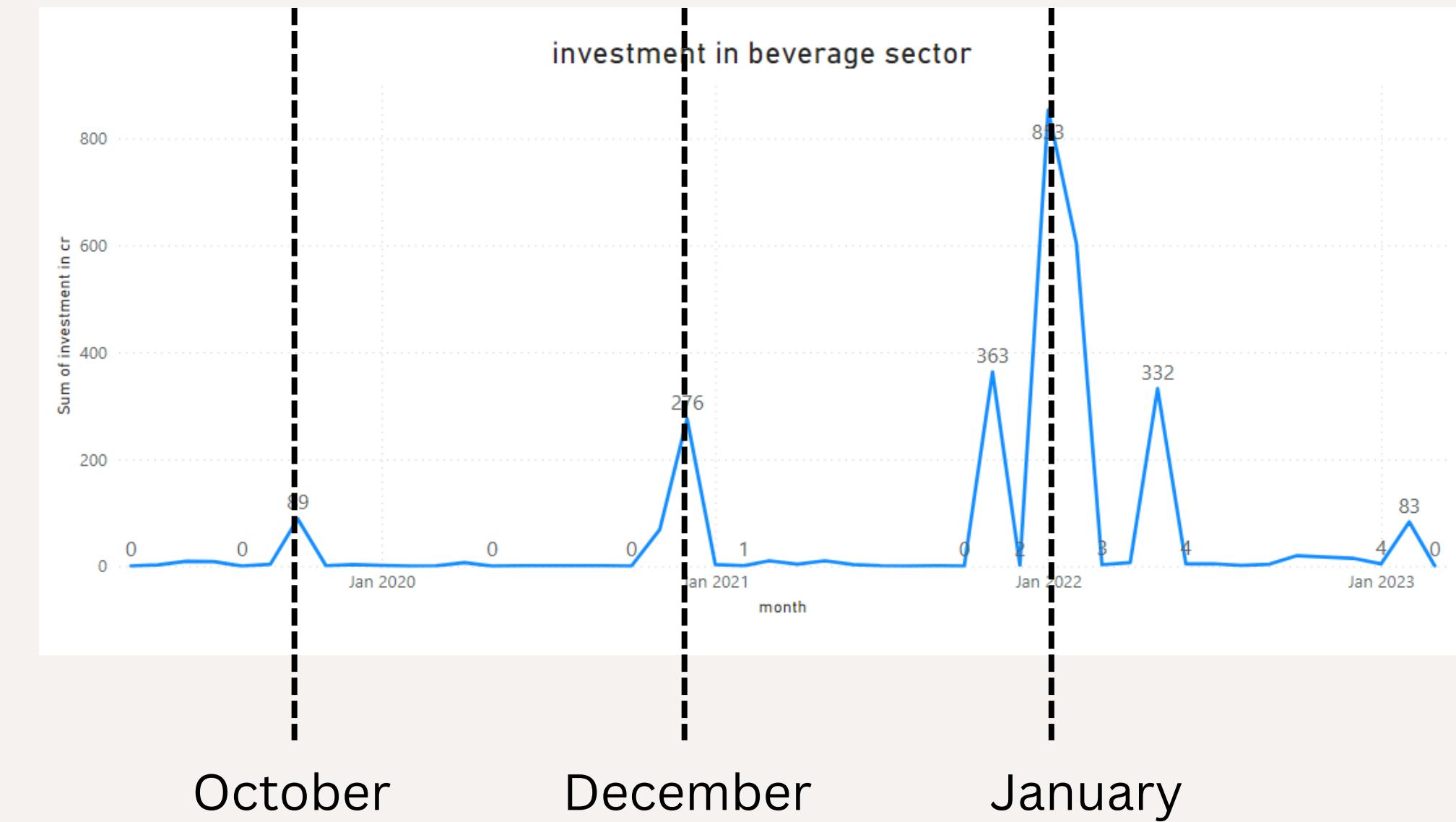
Cement, Cement & concrete products, Fly ash bricks

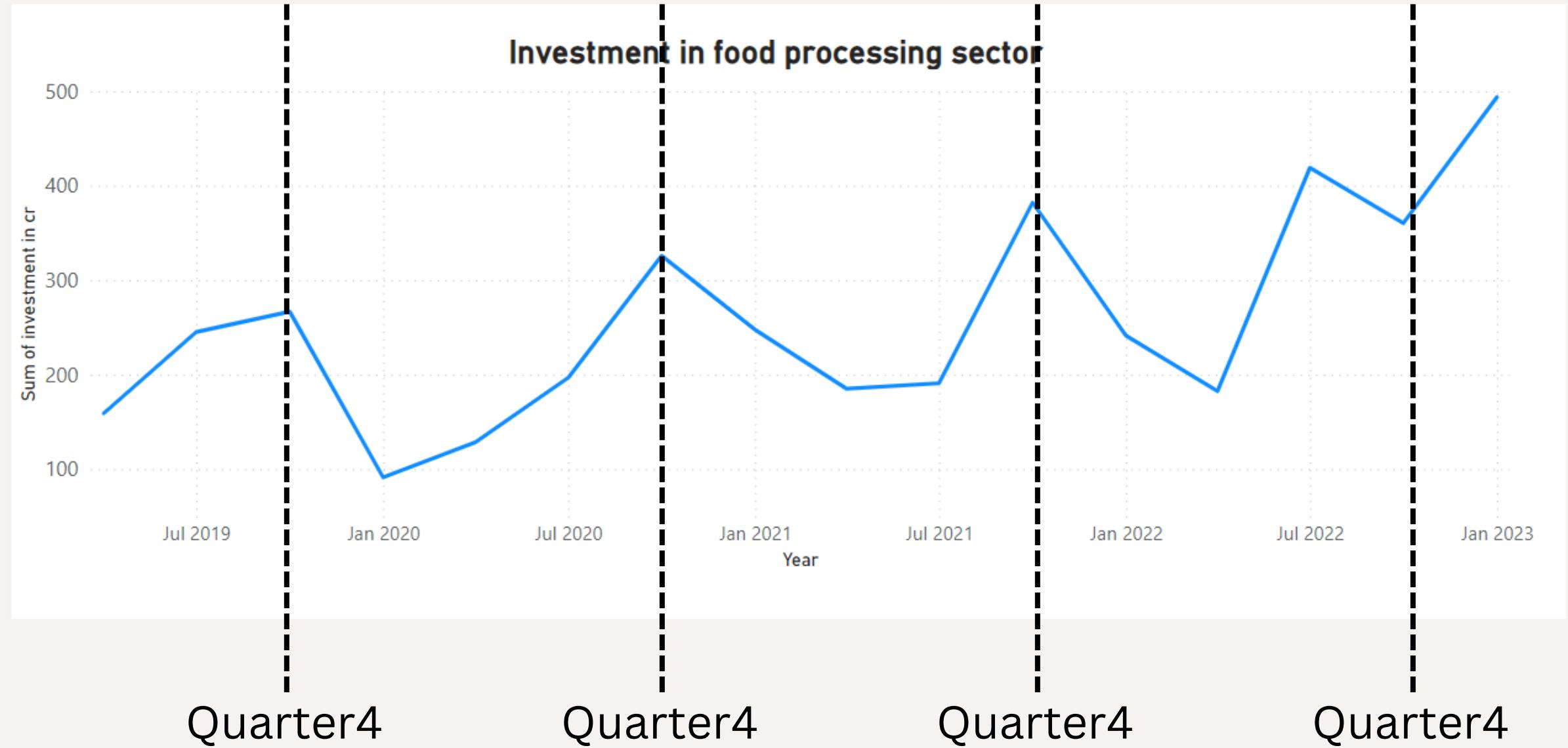


Food processing

12. Can we identify any seasonal patterns or cyclicality in the investment trends for specific sectors? Do certain sectors experience higher investments during particular months?

Beverage industry witnesses rise in investments during and around winter season



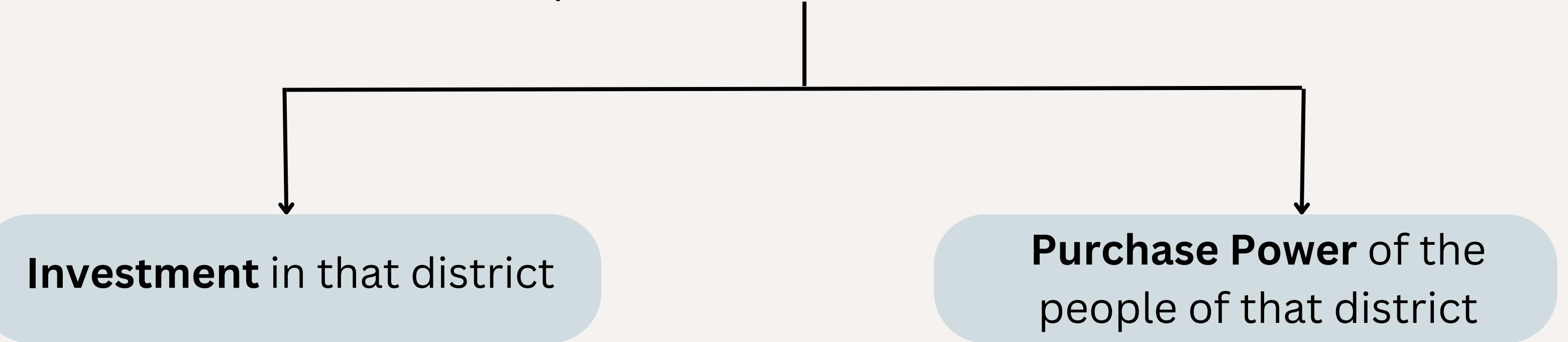


There is a rise in investments in food processing sector during the 4th quarter, i.e. during the months of October, November, December.

Secondary Research

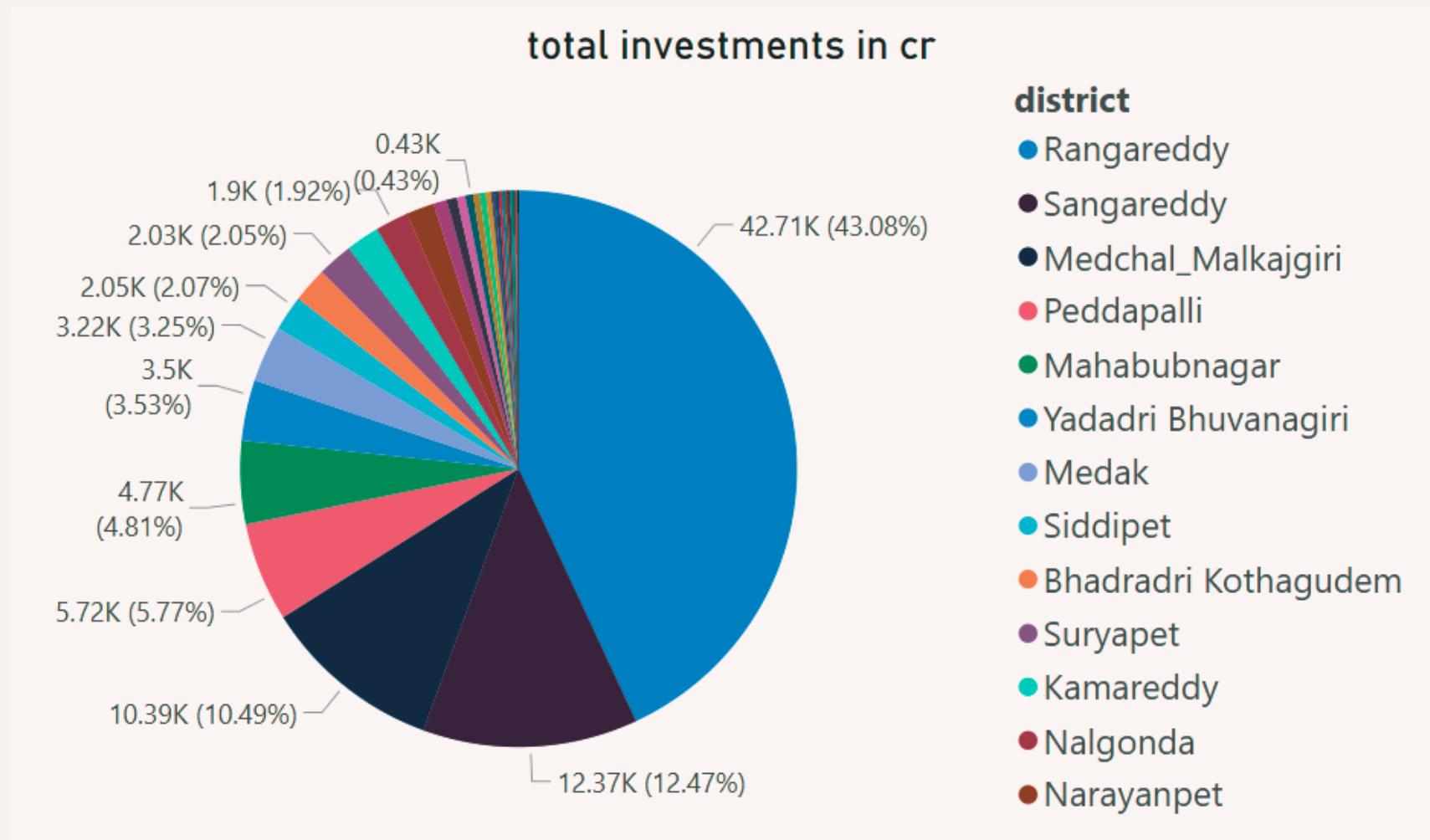
1. What are the top 5 districts to buy commercial properties in Telangana? Justify your answer.

2 important factors to consider



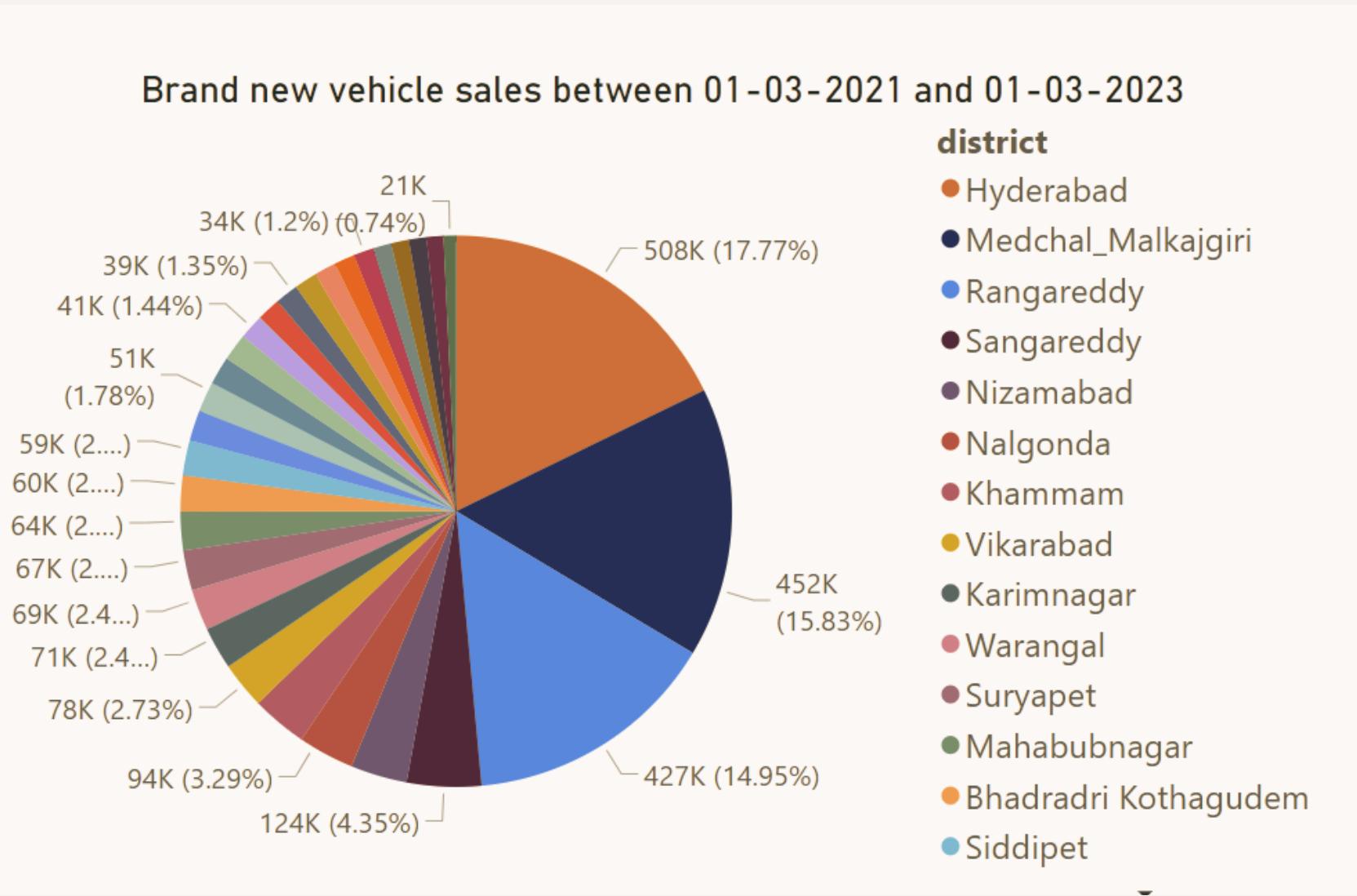
Investment in that district

Purchase Power of the
people of that district



Rangareddy and Sangareddy account for 55.5% of the total investment in Telangana

Rangareddy, Sangareddy, Medchal Malkajgiri, Peddapalli and Mahabubnagar are the top 5 districts in terms of investments



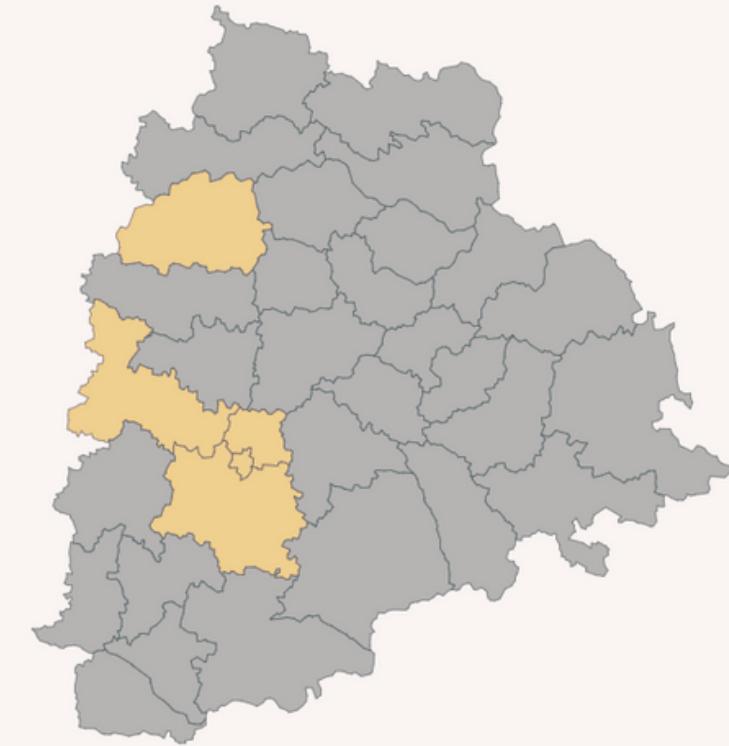
Hyderabad, Medchal Malkajgiri and Rangareddy account for 48.5% of the total brand new vehicle sales between 01-03-2021 and 01-03-2023

People of Hyderabad, Medchal malkajgiri and Rangareddy have the highest purchase power.

Sangareddy and Nizamabad complete the top 5.

Top 5 districts to invest in commercial properties :-

1. Hyderabad
2. Medchal Malkajgiri
3. Rangareddy
4. Sangareddy
5. Nizamabad

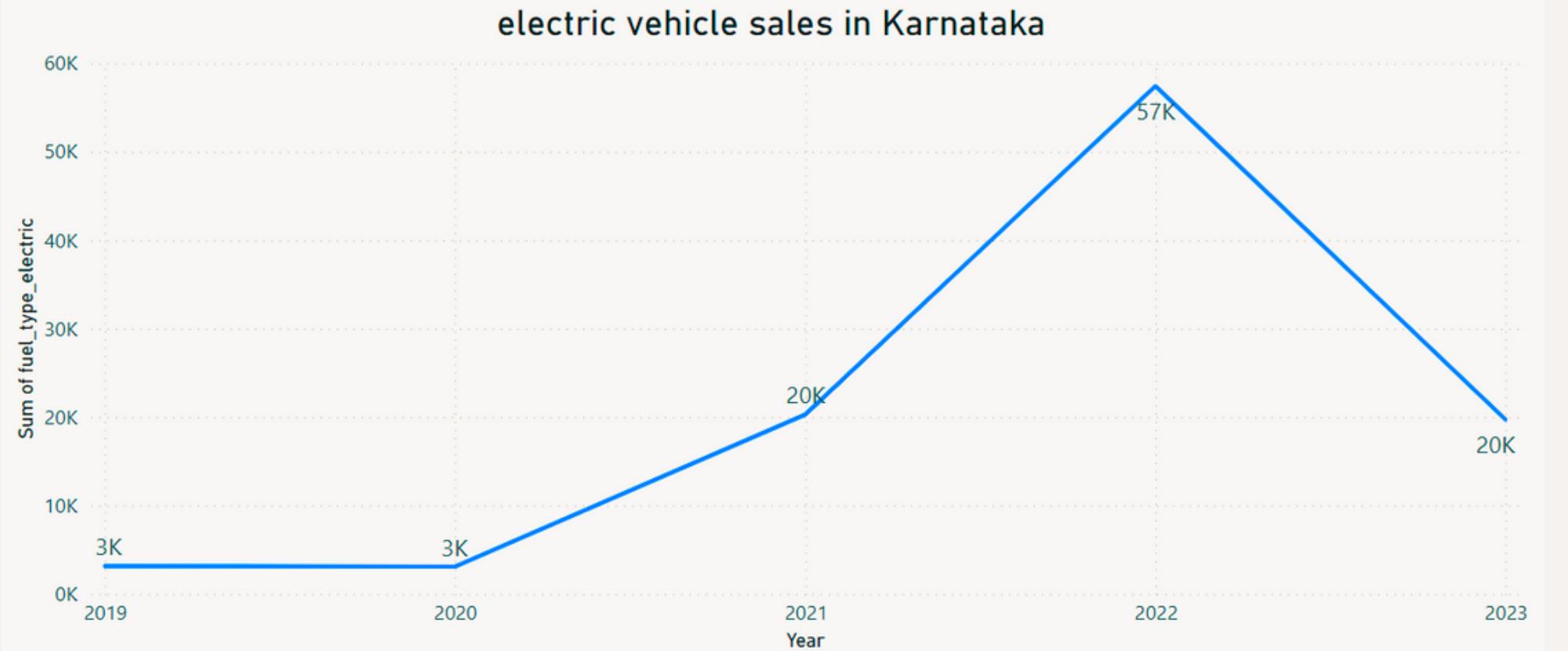


2. What significant policies or initiatives were put into effect to enhance economic growth, investments, and employment in Telangana by the current government? Can we quantify the impact of these policies using available data?

1. Telangana Electric Vehicle and Energy Storage Policy (2020-2030)

- To make the State an attractive investment destination for this sector
- To promote R&D and manufacturing in Electric Vehicle & Energy Storage Systems' sector
- To ensure faster adoption of Electric Vehicles & Energy Storage Systems in the State

Impact

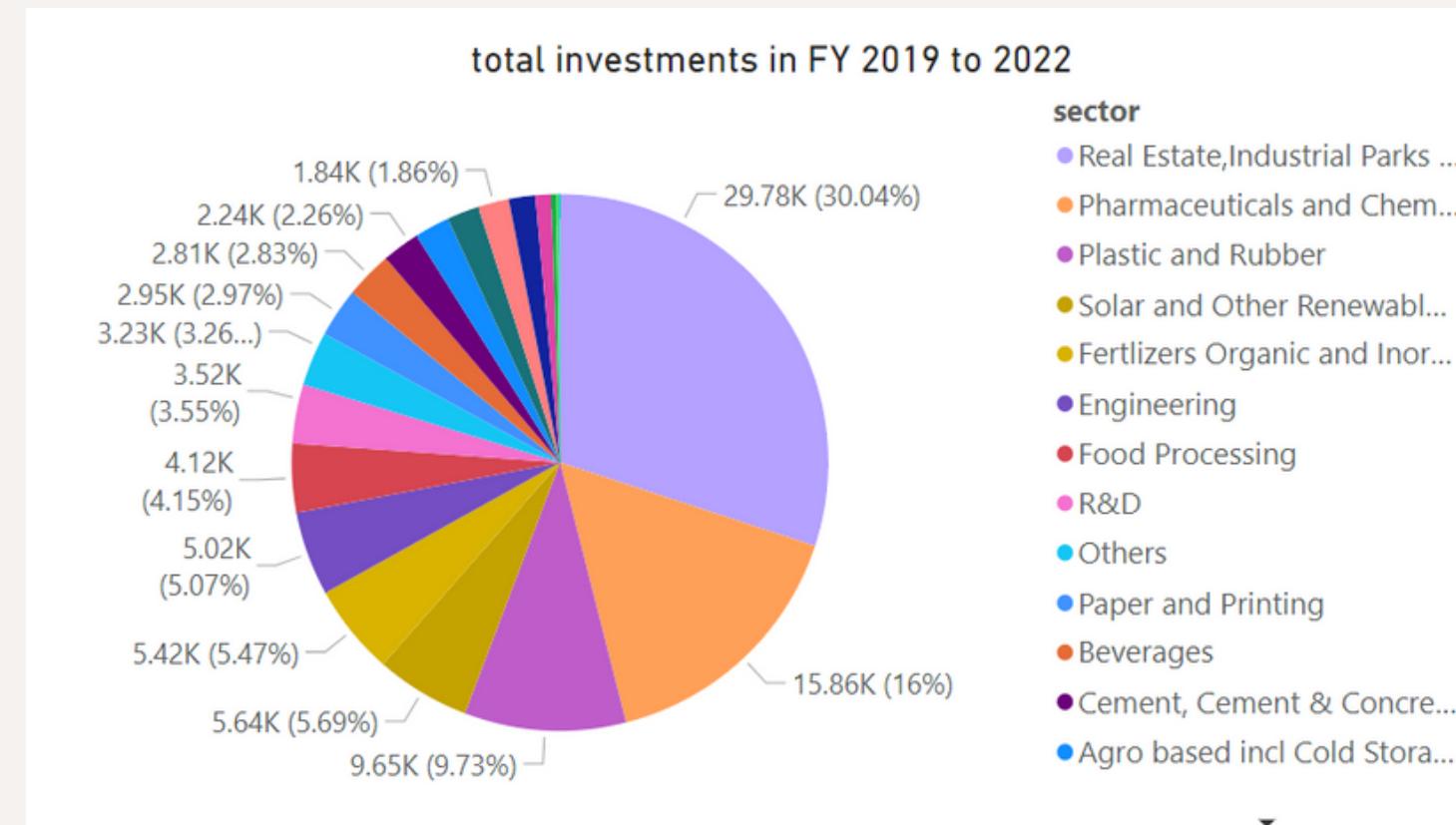


Sales growth percent of electric vehicles between 2020 to 2022 is **1800%**

Moreover, Mahindra, BYD and MEIL are several companies that are investing heavily in this sector in Telangana

2. Life Science Policy

The Telangana State Government has conducted detailed studies and consulted experts to identify the competitive advantages the State can have, given its geographical location, available resources and skill-base, raw material availability, existing manufacturing practices, and expertise... opening up new opportunities.

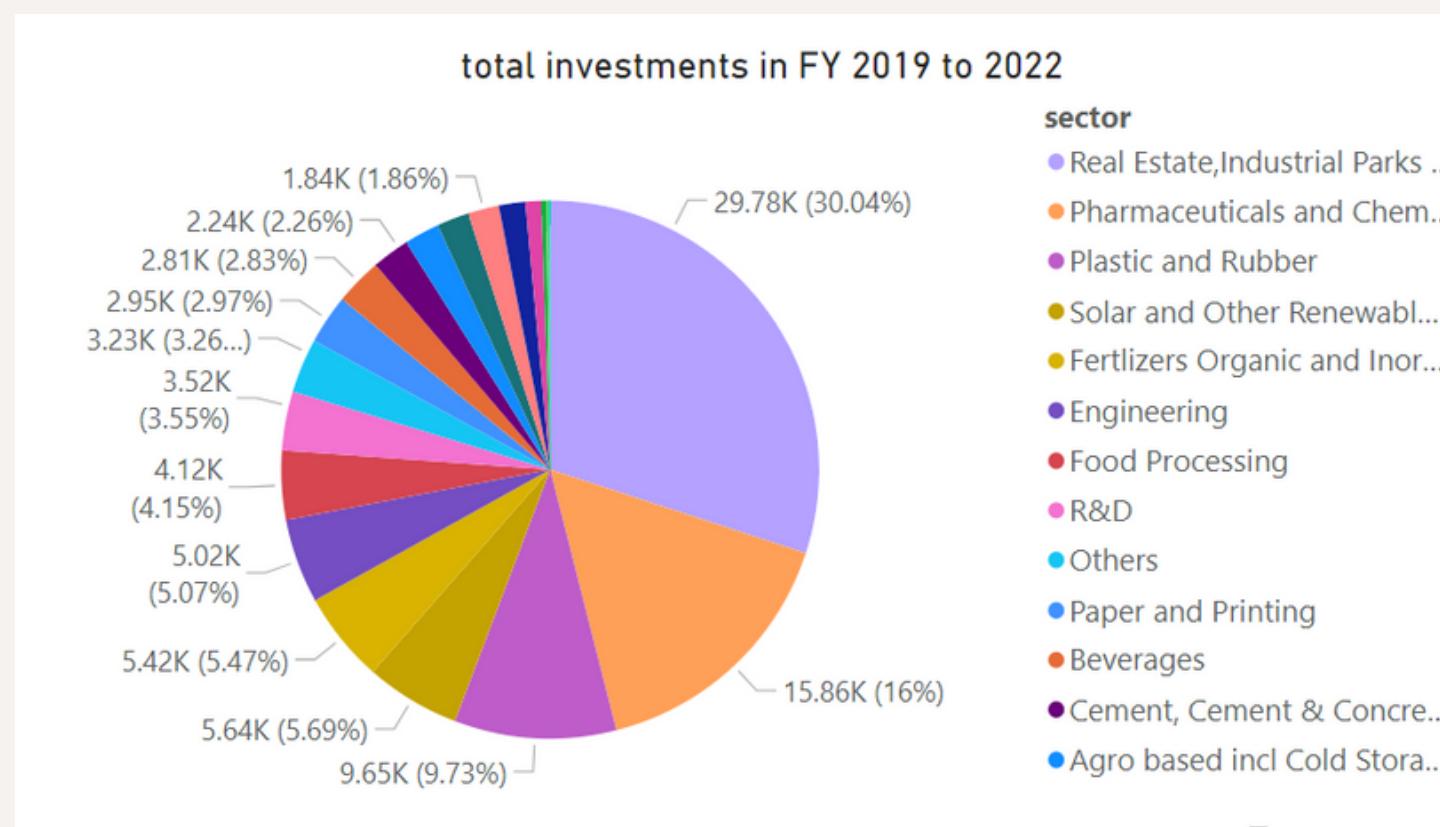


15000+ crore of total investment in Pharmaceuticals. The sector accounts for 16% of the total investments in Telangana

The sector has received second highest investment between FY 2019 and 2022.

3. Solar Power Policy

- To promote solar park.
- To promote public as well as private investment in solar power generation.
- To promote all technologies of harnessing solar energy



Solar power sector has received the fourth highest investment between FY 2019 and 2022

Thank You