

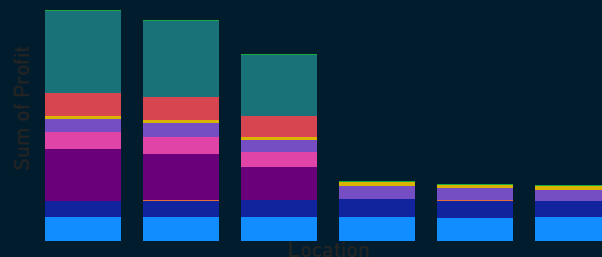
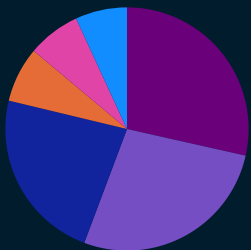
Power BI Analysis of Car Sales Data

Hello Dear Reader, I hope you are doing great.

Welcome to the project of - Power BI Analysis of Car Sales Data from 2014 to 2023 of an Imaginary Company. The company in question is like a distribution network. The company sells cars from its six locations. Company sells cars for all the available categories and subcategories. Cars ranging from ultra-budget small cars like Nano to full fledged SUV like Safari. We have tried to take the data and analyze this data across multiple factors like year wise, location based, category and subcategory based analysis. Below are the tables of Locations, Categories and Subcategory tables that we have subsequently analyzed.

There are two prices that are in the data. ESP - The Entry Standard Price i.e., the price at which the company has acquired the car. Another one is MPP - The Maximum Possible Price i.e., the price at which the company sells the car to the customer. Profit then naturally, is the difference between these two. There are two dates involved in the analysis of the project. Purchase Date is the date at which the vehicle purchase is registered and Delivery Date is the date at which the vehicle has been given to customer. Delivery time is the difference between these two, calculated in days.

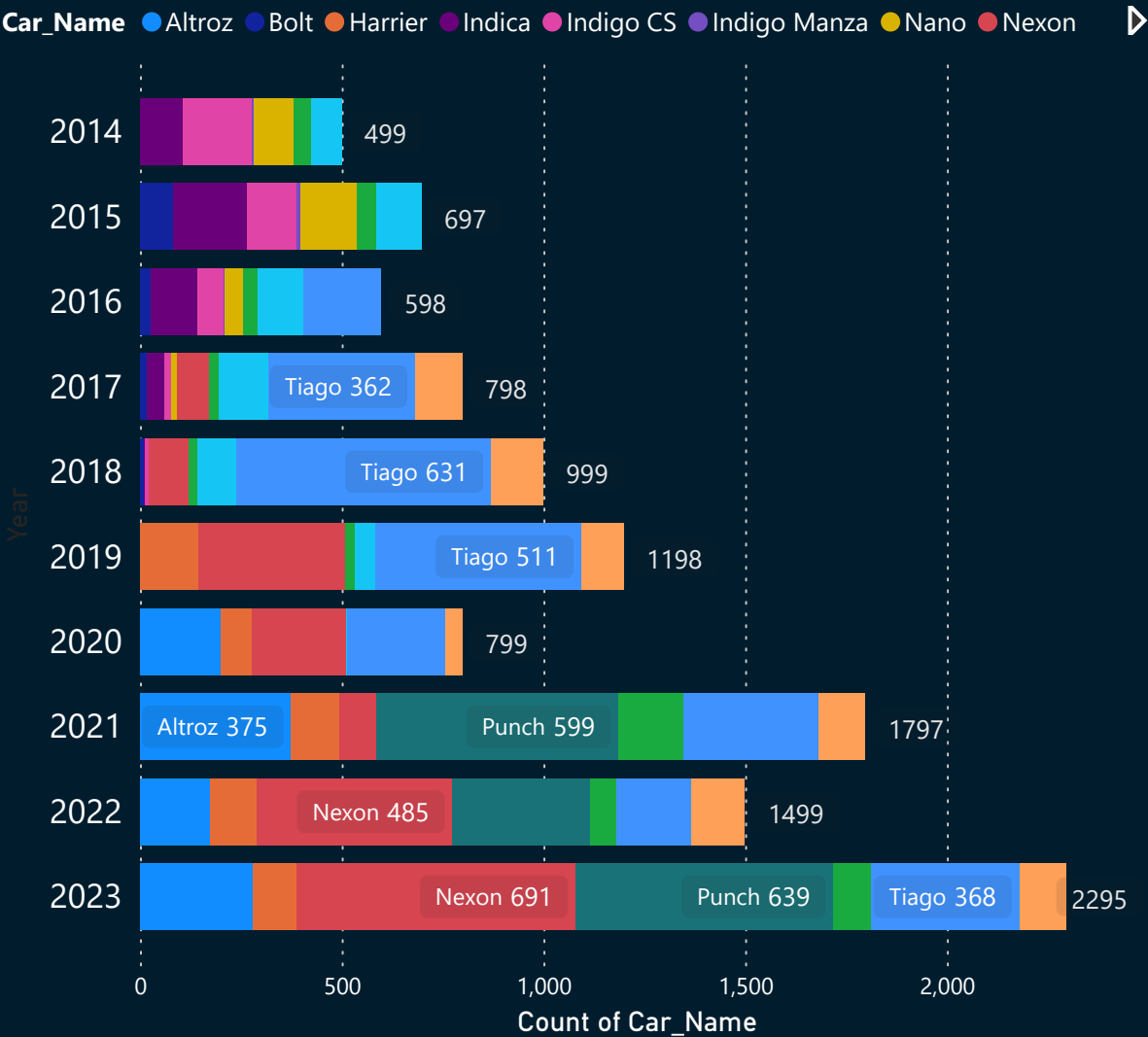
In the project, vehicles are categorized into three categories - SUVs, Hatchbacks and Sedans. These categories are further classified into different subcategories. In our analysis we have tried to explore the relationship between sales of vehicles across these categories and subcategories.



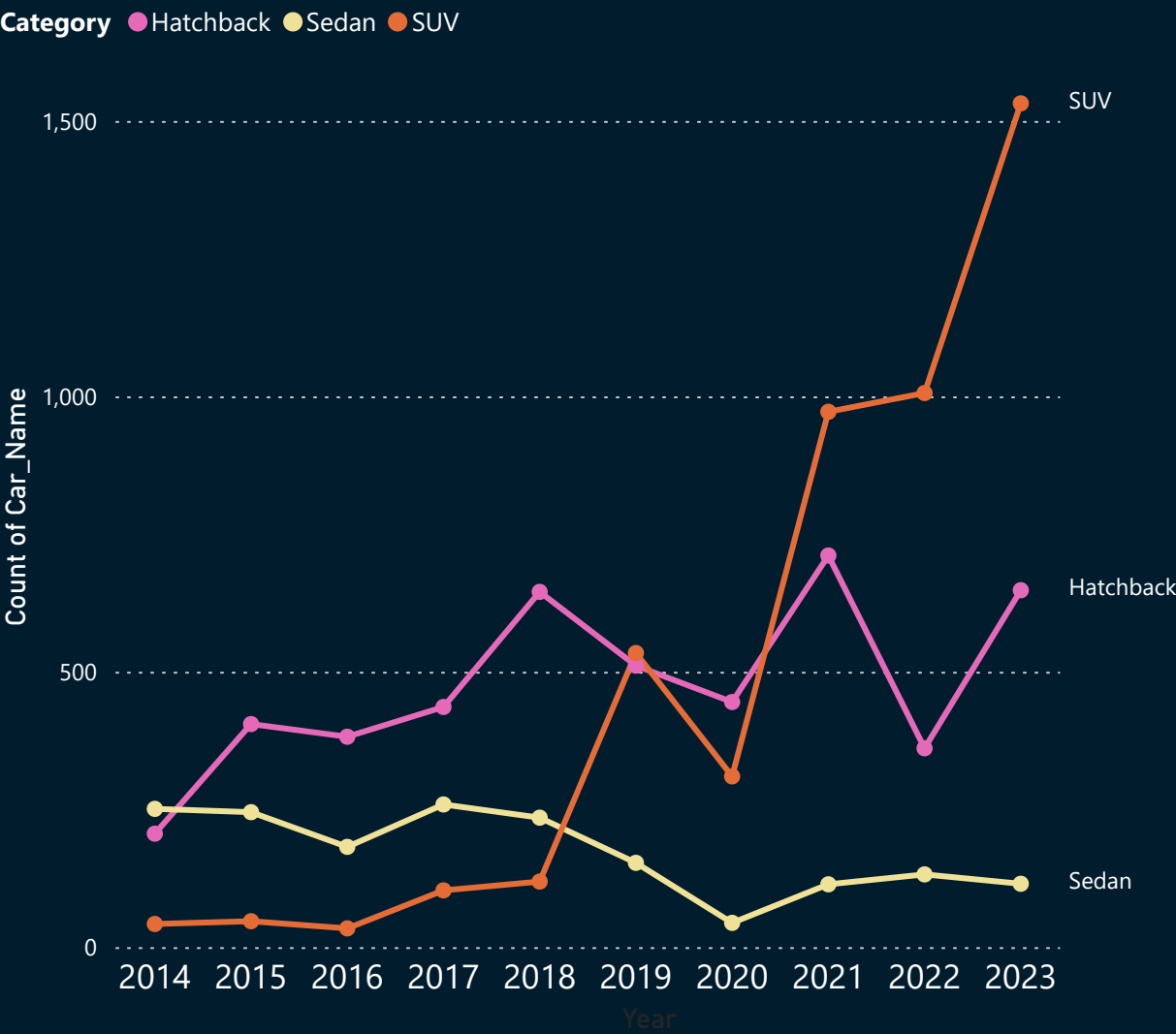
Year Wise Sales by Car Name

The plot below describes the amount of cars sold by each car. We can observe that Nexon and Punch are the most sold cars among all. Whereas Tiago is the car that is most consistently sold from 2016 to 2023. In the following Pages, we go year by year how each individual vehicle performed in terms of sales

Count of Car_Name by Year and Car_Name



Count of Car_Name by Year and Category



Year 2014

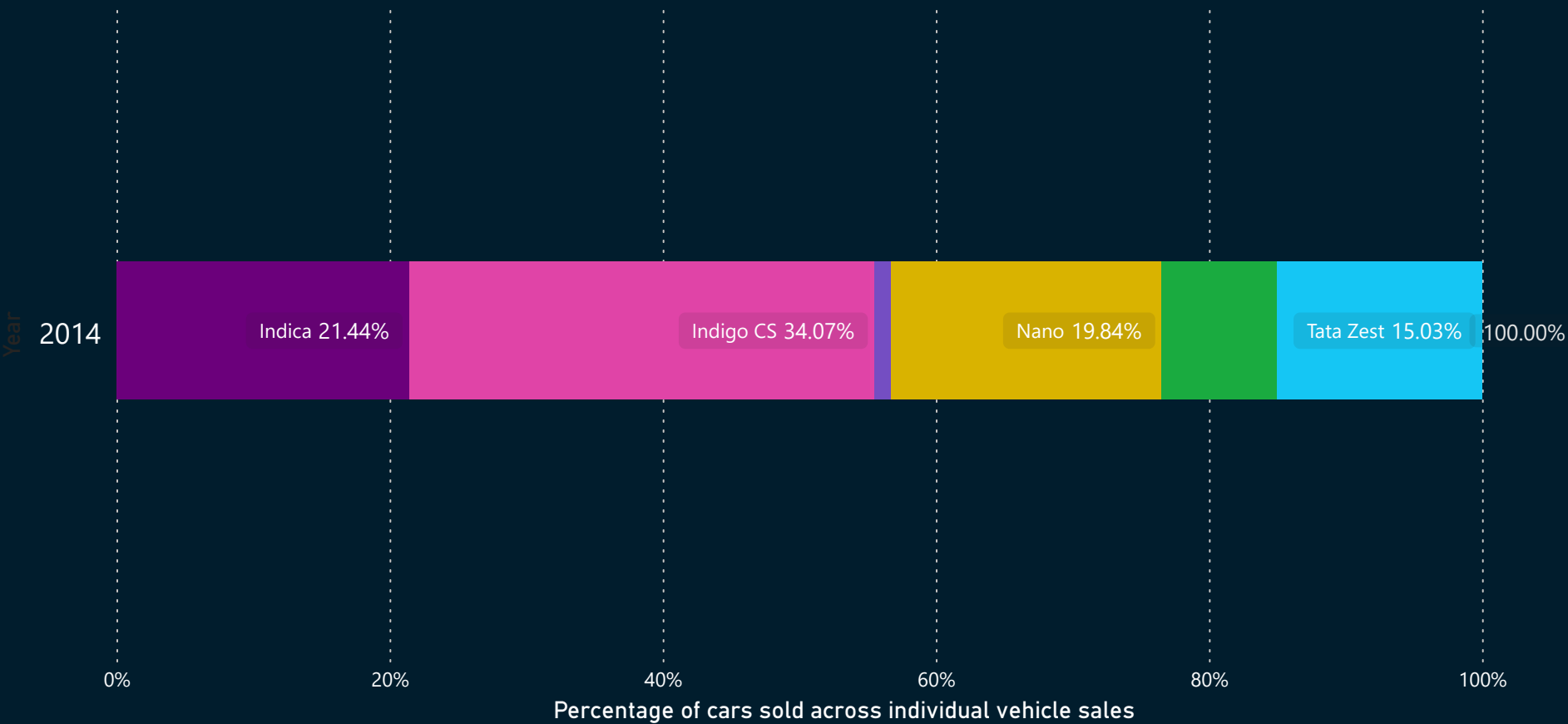
2014 was a good year for sales of sedan and hatchbacks, Indigo CS a compact sedan being the highest sold vehicle amounting to approximately 35% of overall sales combined, followed closely by Tata Zest, another compact sedan. Among hatchbacks, Indica, a proper hatchback and Nano - an ultra-budget hatchback amounted to nearly 42% of overall sales. Safari, the only vehicle in the SUV category only amounted to 8% of sales. This is most probably because it is the only vehicle in SUV category and is priced comparatively higher against other vehicles in different categories.

Year

2014

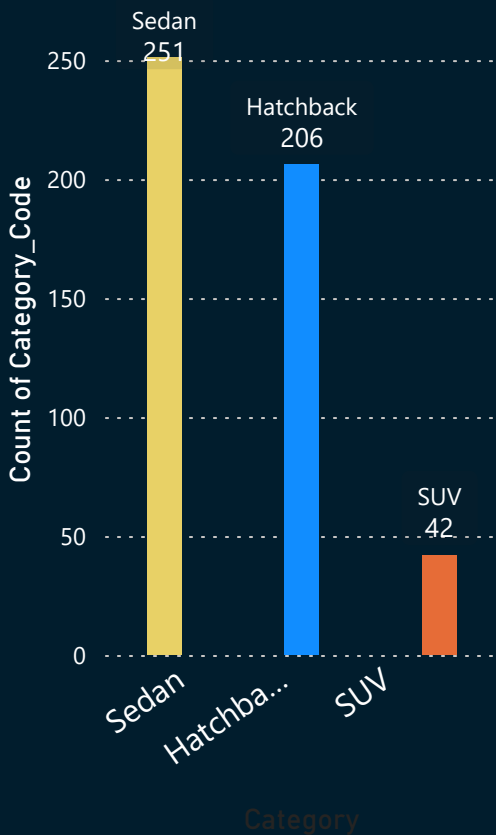
Percentage of cars sold across individual vehicle sales by Year and Car_Name

Car_Name Indica Indigo CS Indigo Manza Nano Safari Tata Zest



Count of Category_Code by Category and Category

Cate... Sedan Hatchb... SUV



Year 2015

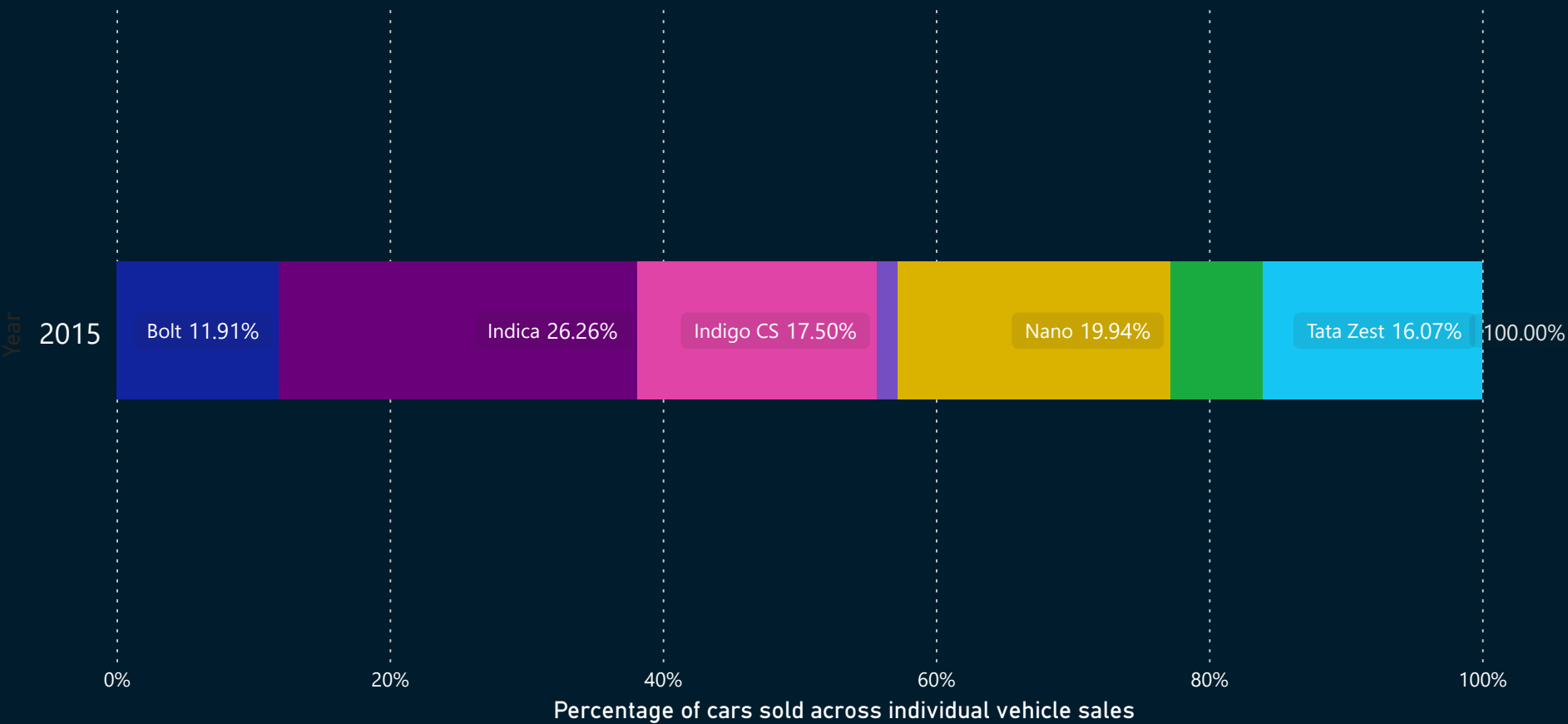
Trend for 2015 is somewhat similar to 2014 as in the hatchbacks are still at the top, where Bolt, Indica and Nano, the three hatchbacks consisting of approximately 11, 26 and 19 percent of overall cars sold. Indigo CS and Tata Zest are the leaders in sedan category occupying 17 and 16 percent of overall sales. SUVs have performed lower than last, but it is also not unexpected since the ESP for Safari, the only SUV available is at 14.7 lakh, whereas the ESP of the most expensive vehicle among the rest i.e. ESP of Tata Zest is only 8.80 lakh.

Year

2015

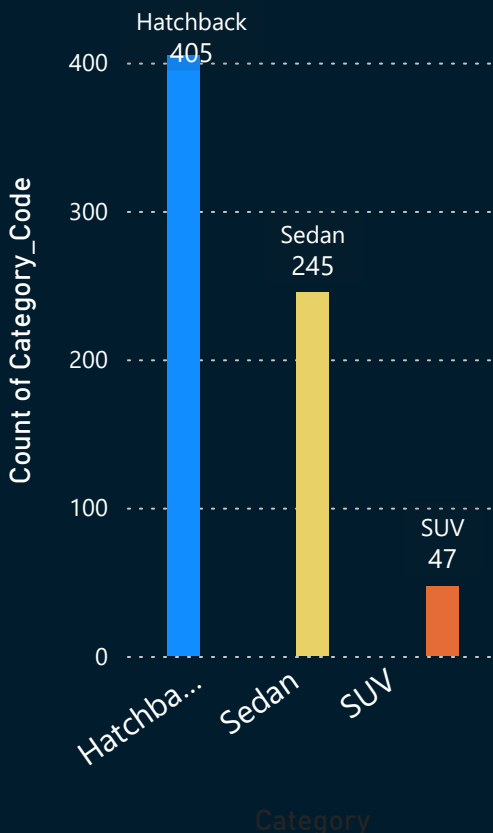
Percentage of cars sold across individual vehicle sales by Year and Car_Name

Car_Name Bolt Indica Indigo CS Indigo Manza Nano Safari Tata Zest



Count of Category_Code by Category and Category

Cate... Hatchb... Sedan SUV



Year 2016

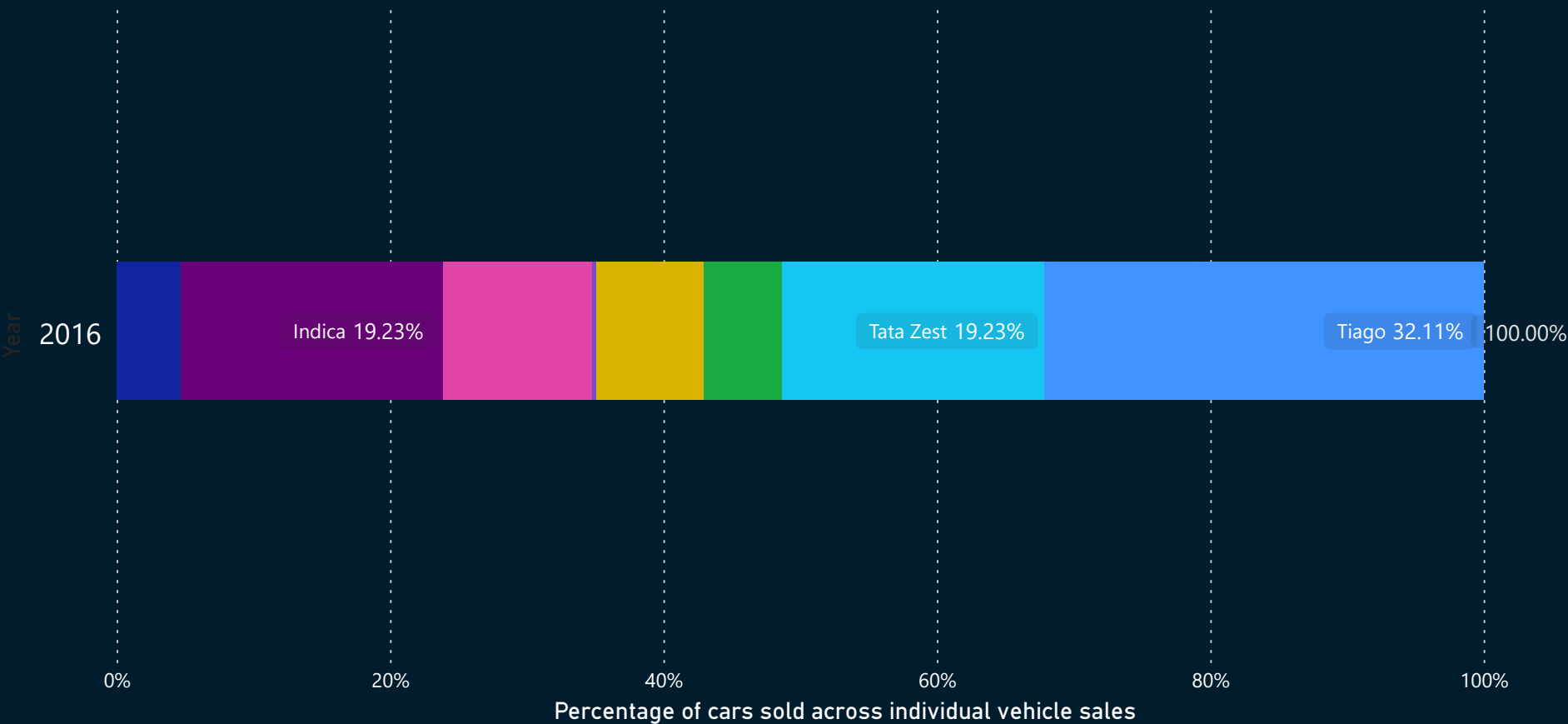
2016 is the year in which the company started selling Tiago, a compact hatchback which became extremely popular occupying approximately 33 percent of overall sales. Tiago was followed by Indica in terms of sales. Not only that, there are significant sales for Nano and Bolt, making it a very good year in for sales of hatchbacks. Sedans occupy a considerable sales in form of Indigo CS and Tata Zest. SUV sales have plummeted even further and the gap between ESP of Safari, the only SUV, and ESP of Tata Zest, the most expensive among rest have increased further from 5.27 to 5.83 lakh.

Year

2016

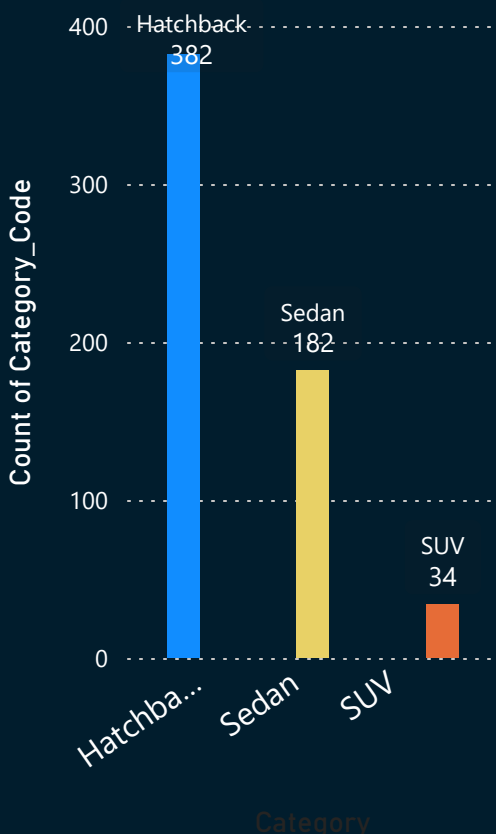
Percentage of cars sold across individual vehicle sales by Year and Car_Name

Car_Name Bolt Indica Indigo CS Indigo Manza Nano Safari Tata Zest Tiago



Count of Category_Code by Category and Category

Cate... Hatchb... Sedan SUV



Year 2017

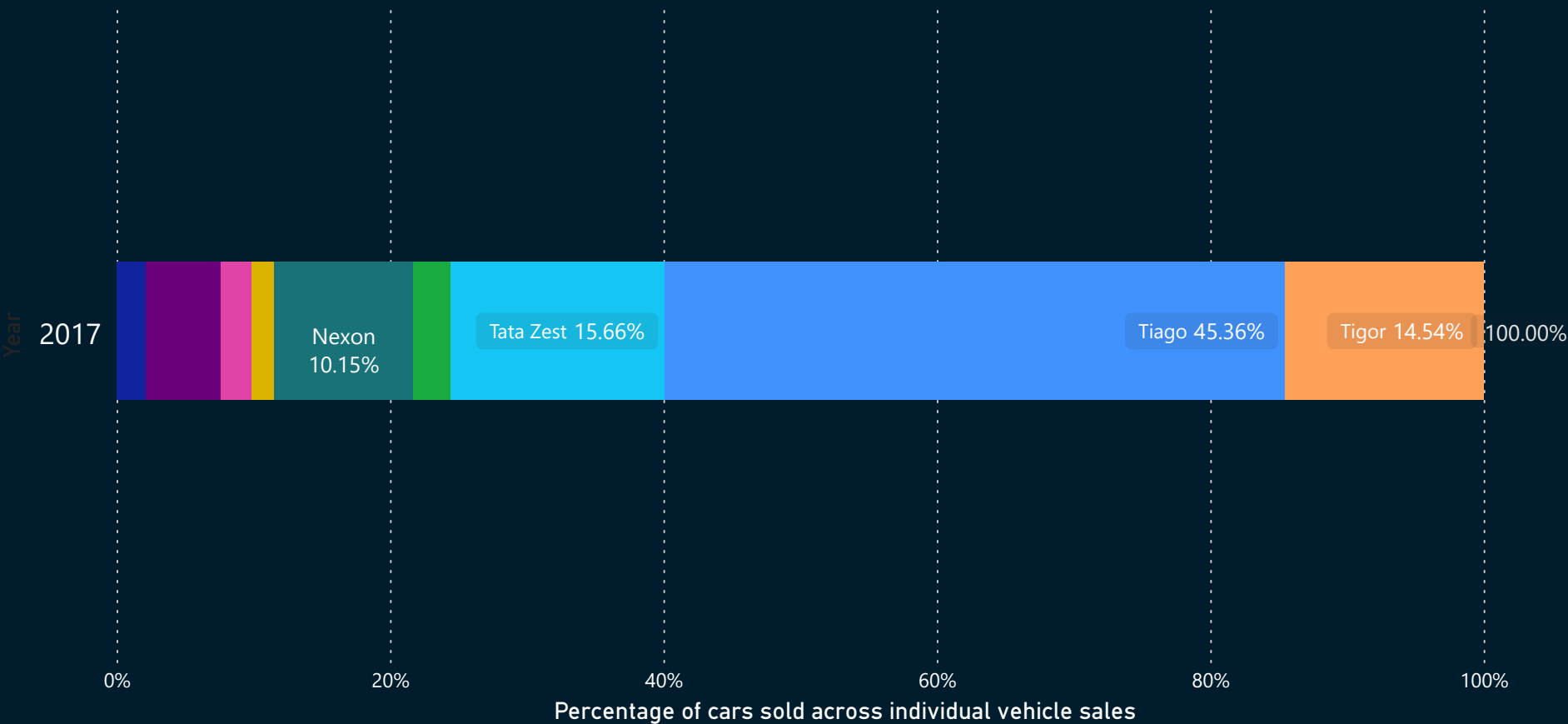
For 2017, Tiago is undisputed winner occupying 45 percent of overall sales, whereas the Tigor and Tata Zest, the two compact sedans have recorded almost 15 percent of sales each. One important thing to note here is that the a Subcompact SUV - Nexon has started selling, occupying 10.15 percent. This subcompact SUV has ESP of 8.91, which is less than ESP of Tigor, making buying an SUV cheaper than buying most expensive Sedan for the first time.

Year

2017 ✓

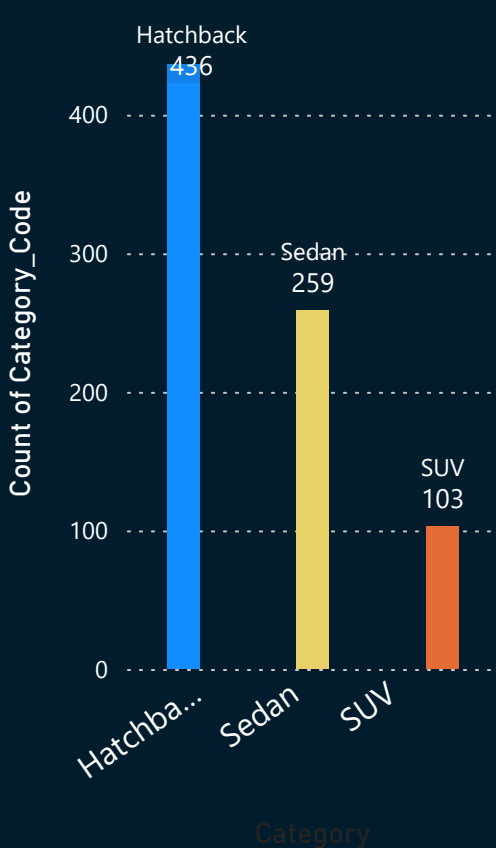
Percentage of cars sold across individual vehicle sales by Year and Car_Name

Car_Name Bolt Indica Indigo CS Nano Nexon Safari Tata Zest Tiago Tigor



Count of Category_Code by Category and Category

Cate... Hatchb... Sedan SUV



Year 2018

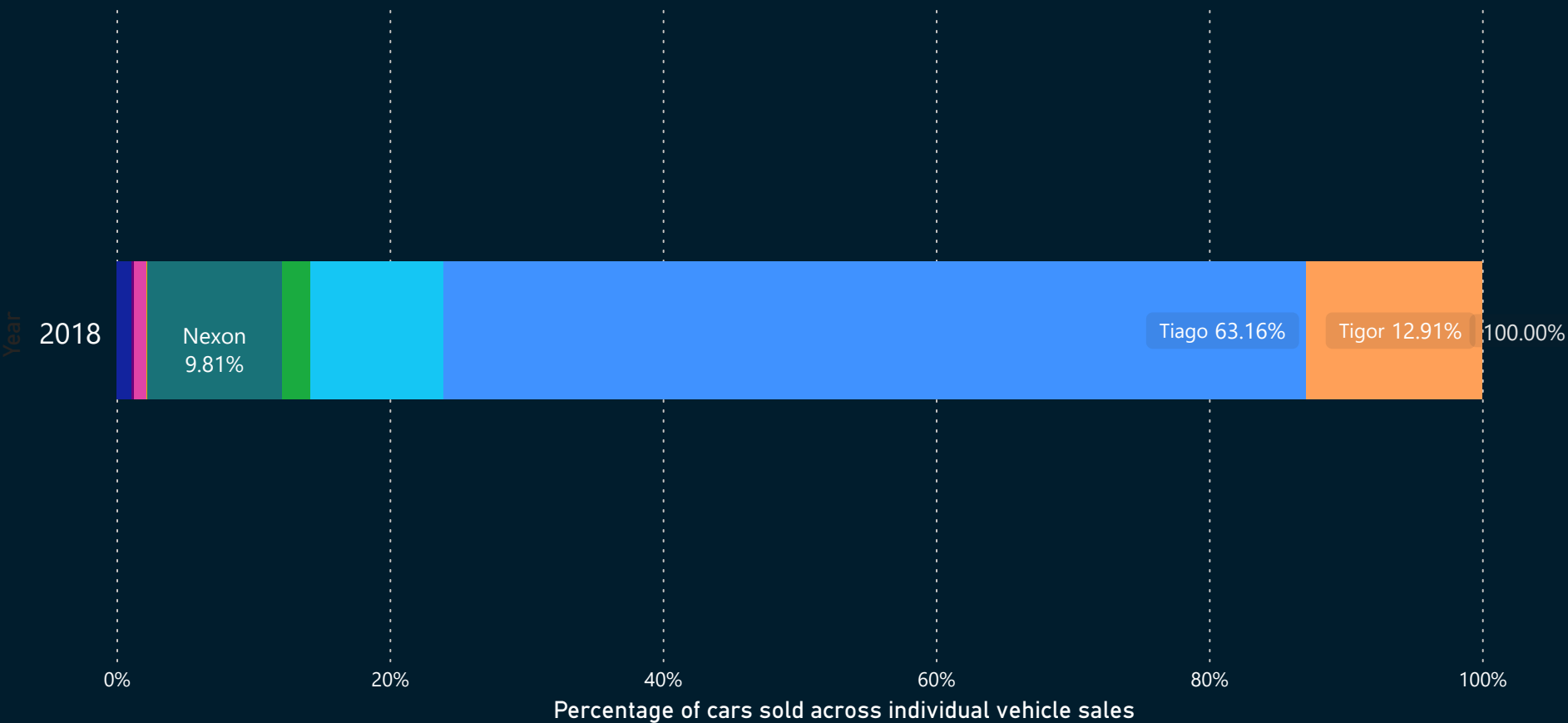
Tiago increased its lead, now consisting of almost 64 percent of overall sales. Nexon is now priced lower than both Tata Zest and Tigor, making buying an SUV a more lucrative option, however there are still only two SUVs competing against solid offering of multiple hatchbacks and sedans. However, this seems to be last year in which hatchbacks are sold most against SUVs.

Year

2018

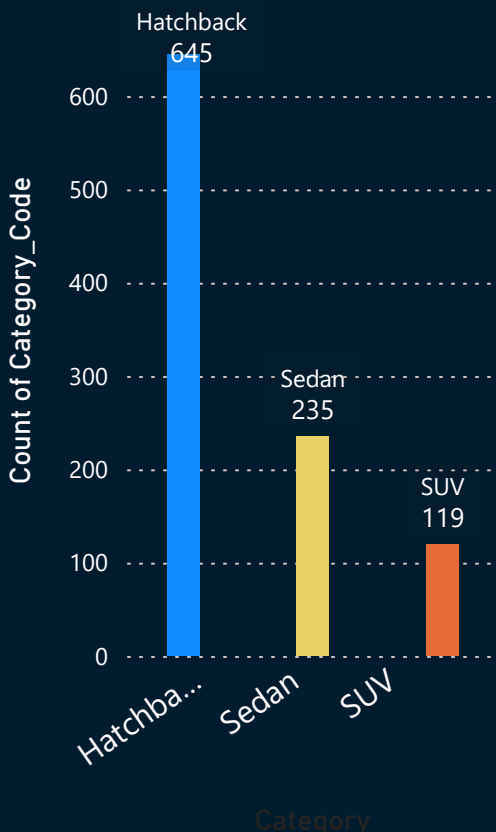
Percentage of cars sold across individual vehicle sales by Year and Car_Name

Car_Name Bolt Indica Indigo CS Nano Nexon Safari Tata Zest Tiago Tigor



Count of Category_Code by Category and Category

Cate... Hatchb... Sedan SUV



Year 2019

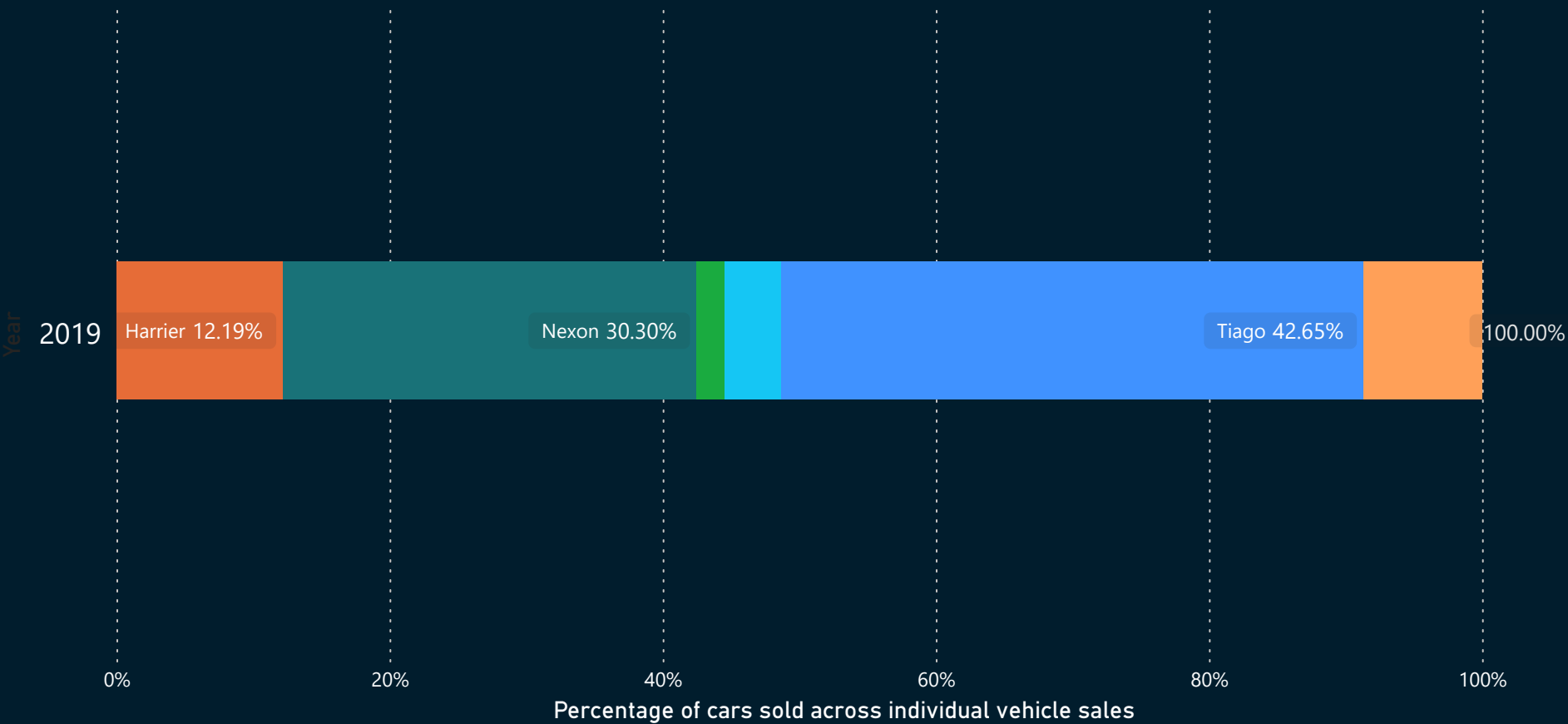
Tiago is still the most sold car in this year, but this is the first year in which SUVs have take over hatchbacks in terms of sales, the reason being Harrier, another SUV that is priced between Nexon and Safari. This, combined with the fact that Nexon is now at 30 percent of overall sales means that now only three vehicles consist of almost 85 percent of overall sales. Sedan sales have now plummeted to the extent that Tigor is the only sedan at mere 8 percent in terms of sales.

Year

2019

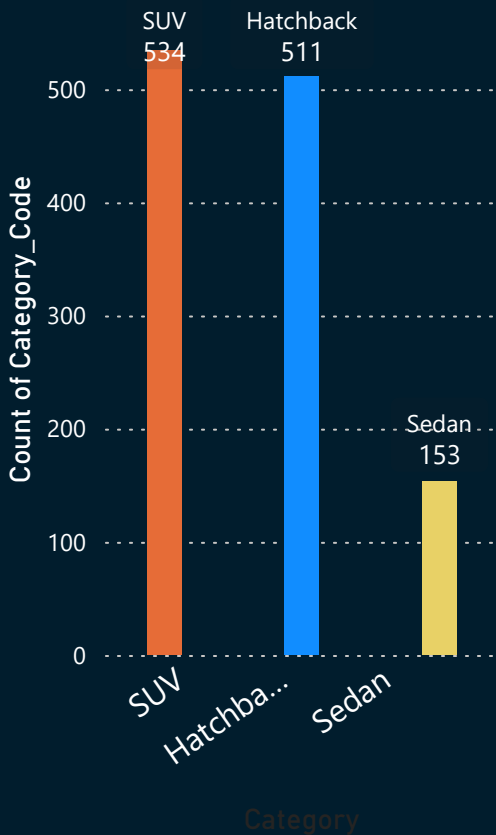
Percentage of cars sold across individual vehicle sales by Year and Car_Name

Car_Name Harrier Nexon Safari Tata Zest Tiago Tigor



Count of Category_Code by Category and Category

Cate... SUV Hatchb... Sedan



Year 2020

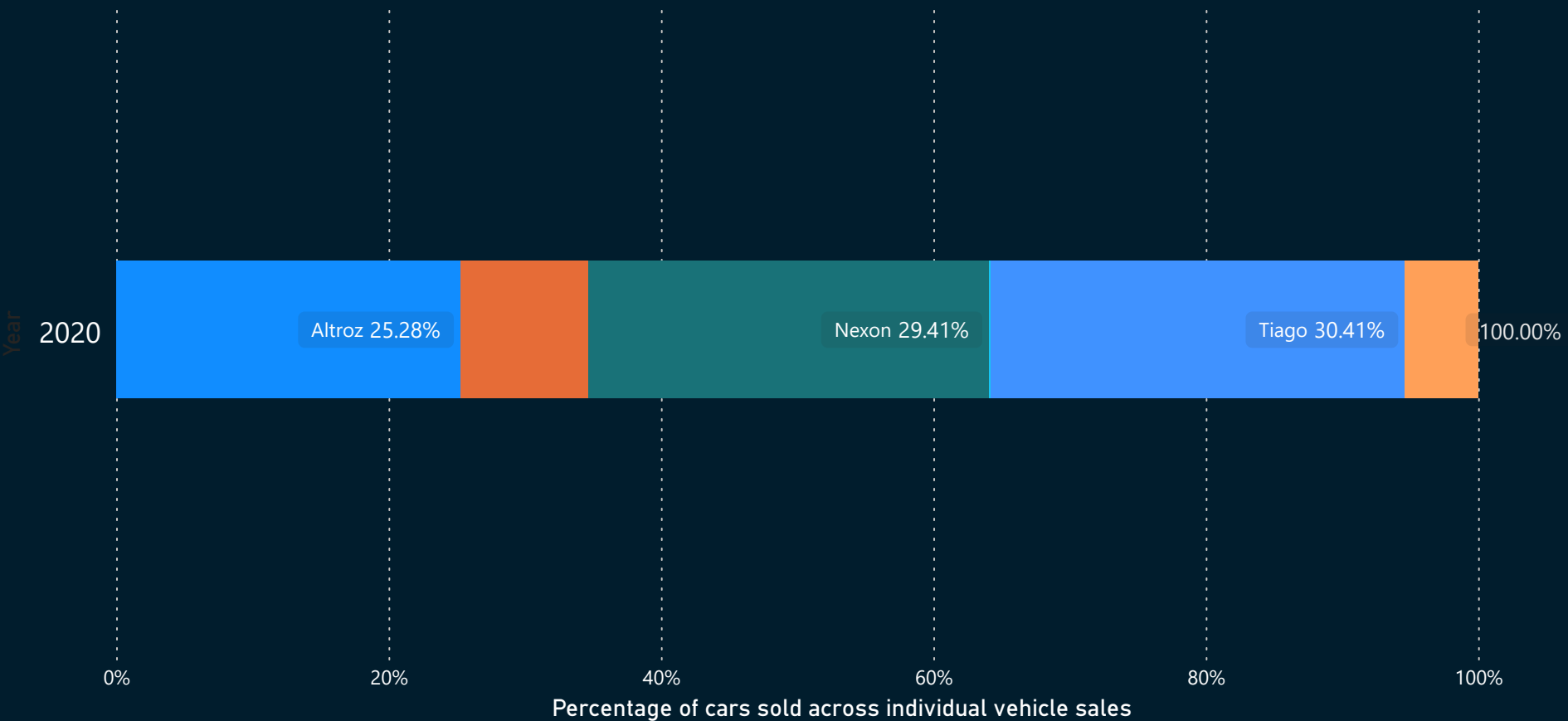
Hatchbacks have bounced back now with the start of sales of Altroz a first in class premier hatchback. This combined with Tiago, still the most selling vehicle means that the trend has shifted again towards hatchbacks. Two SUVs and Two Hatchbacks now consist of almost 94 percent, leaving only 6 percent for only sold sedan - Tigor.

Year

2020

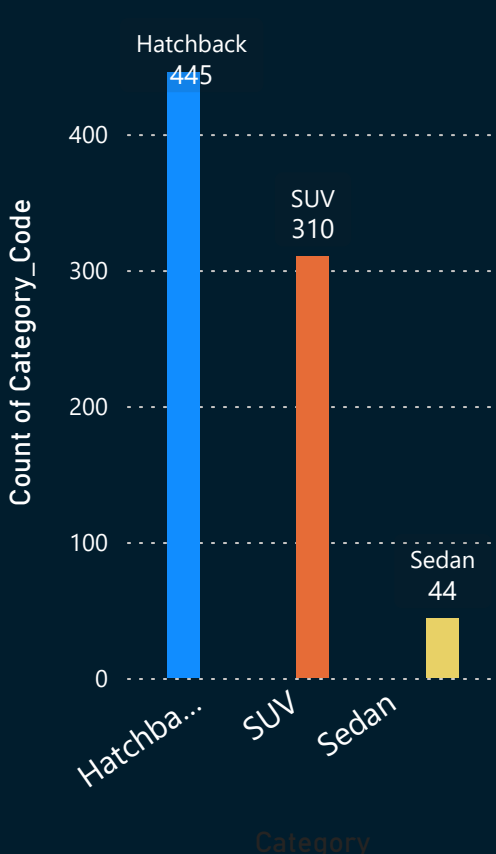
Percentage of cars sold across individual vehicle sales by Year and Car_Name

Car_Name Altroz Harrier Nexon Tata Zest Tiago Tigor



Count of Category_Code by Category and Category

Cate... Hatchb... SUV Sedan



Year 2021

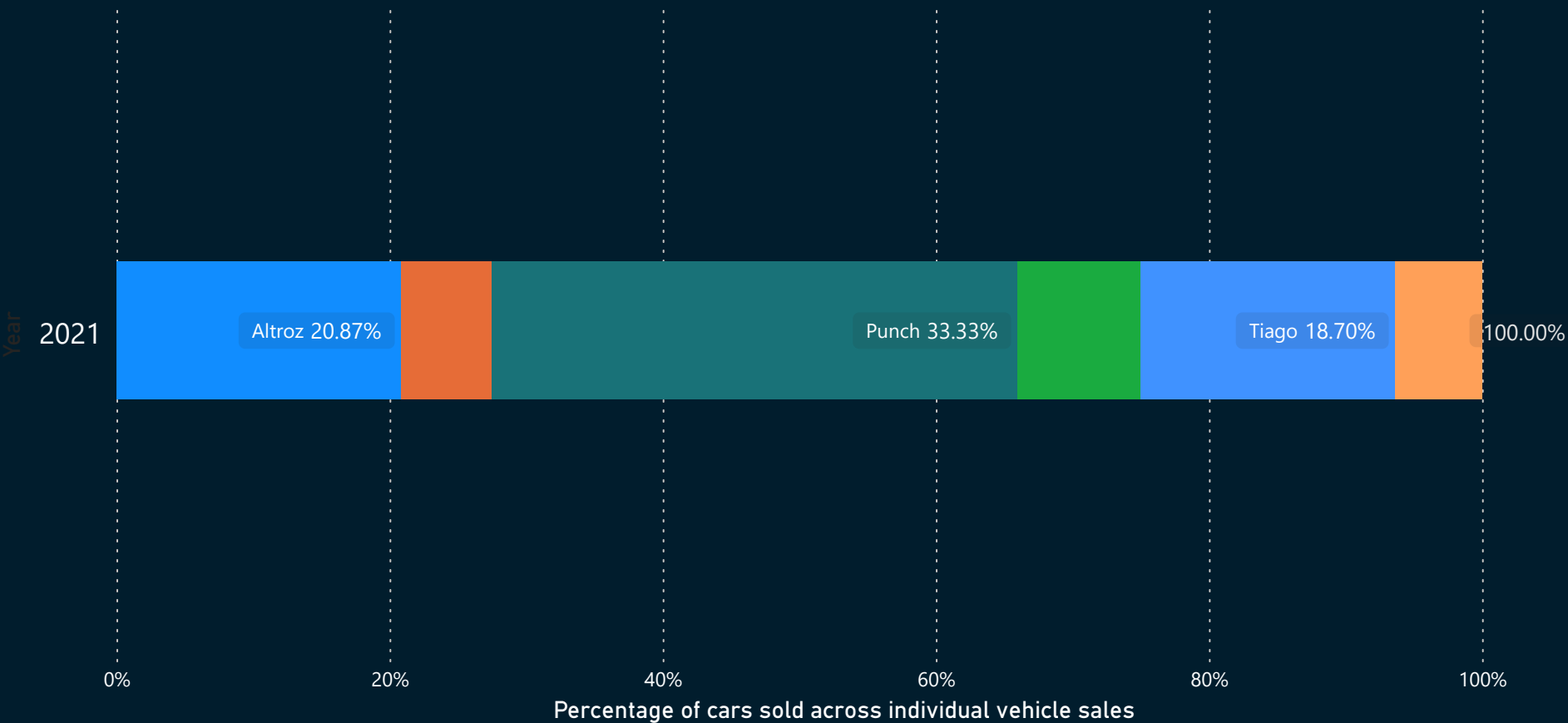
With the launch of a new Micro-SUV Punch, which is priced exactly above Altroz but is still significantly lower than Nexon, the sales of Nexon somehow appeared to have shifted towards Punch. Overall, SUVs are the most selling vehicles now, but the sales of Nexon has reduced to mere 5.8 percent. Sedan sales are still at a very low, only selling sedan is Tigor at 6 percent.

Year

2021

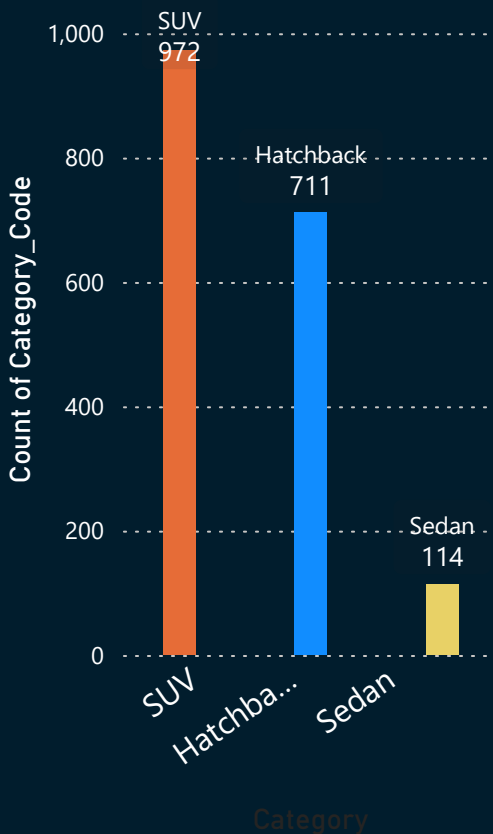
Percentage of cars sold across individual vehicle sales by Year and Car_Name

Car_Name Altroz Harrier Nexon Punch Safari Tiago Tigor



Count of Category_Code by Category and Category

Cate... SUV Hatchb... Sedan



Year 2022

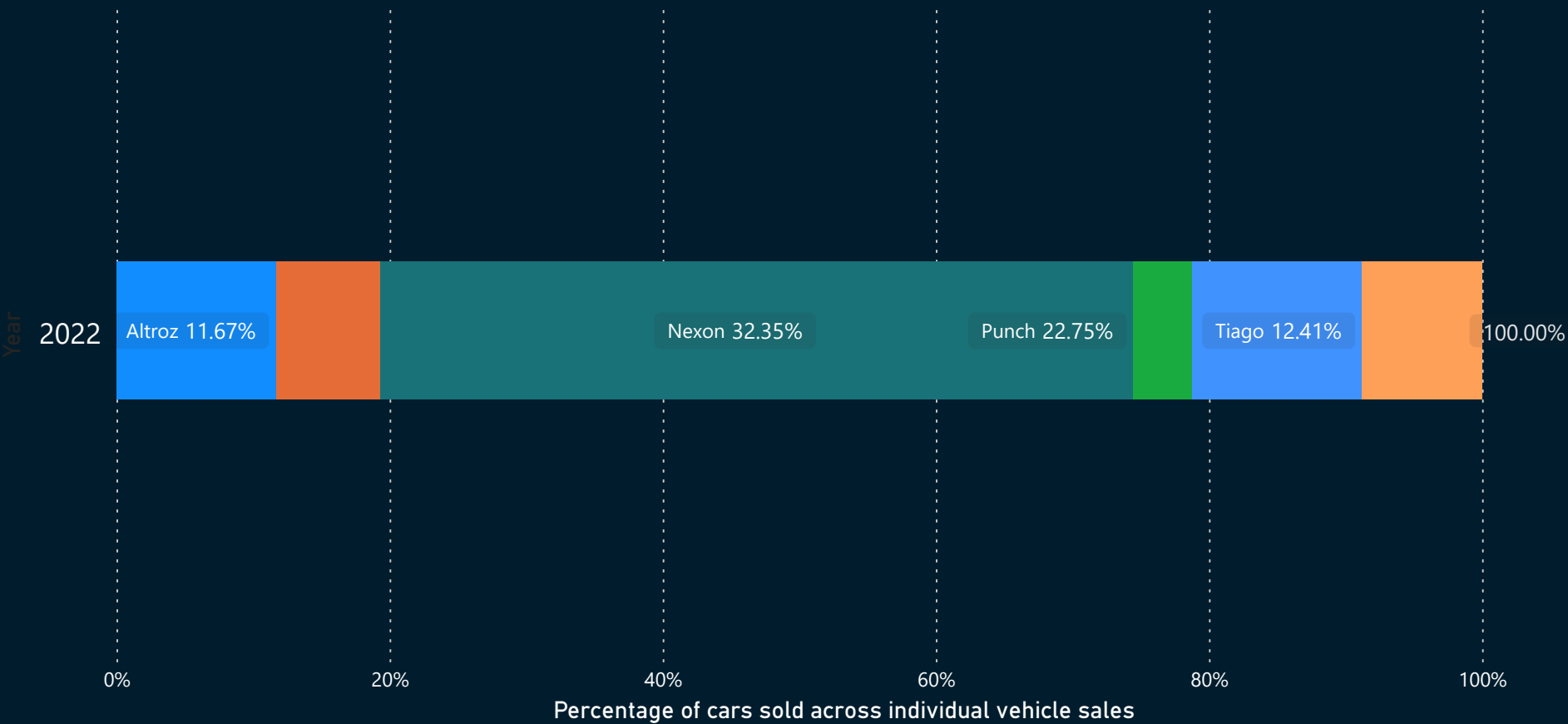
Nexon sales seem to have skyrocketed, Nexon is now at all time high of 33 percent. This combined with 23 percent of Punch means every second vehicle sold is either an Micro-SUV or a Sub-Compact SUV. The SUV fever has made sure that SUV sales are more than the combined sales of hatchbacks and sedans. Sedan sales however, seems to have bounced back at 8 percent.

Year

2022

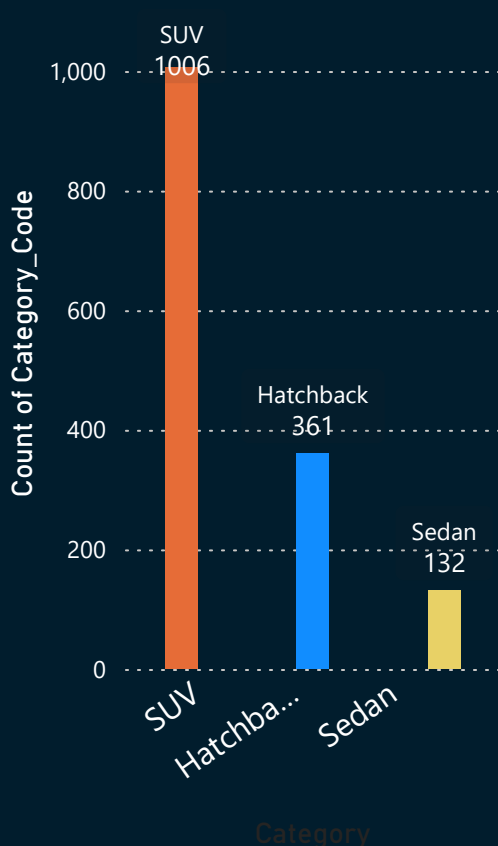
Percentage of cars sold across individual vehicle sales by Year and Car_Name

Car_Name Altroz Harrier Nexon Punch Safari Tiago Tigor



Count of Category_Code by Category and Category

Cate... SUV Hatchb... Sedan



Year 2023

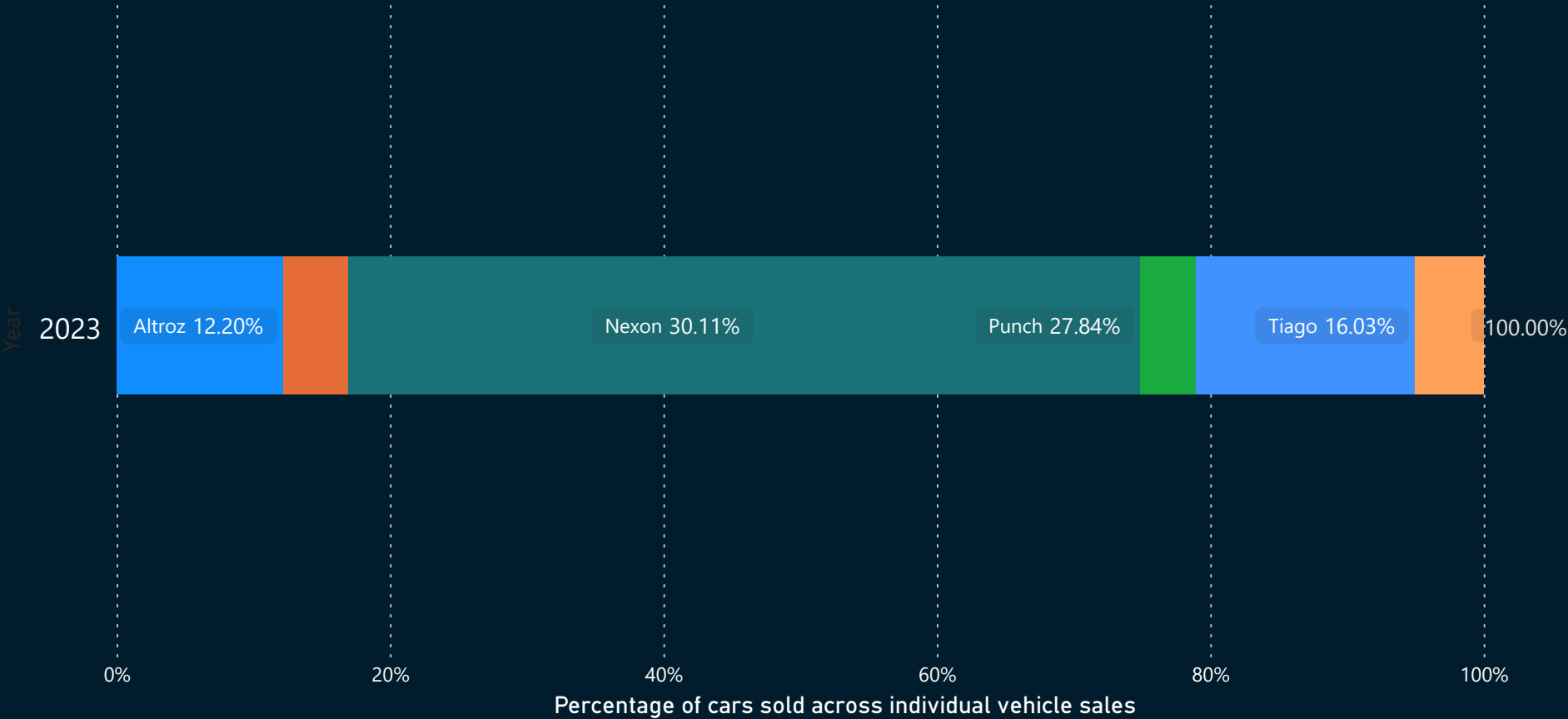
Nexon, Punch, Harrier and Safari combined have almost 75 percent of sales. That means 3 out of 4 vehicles sold are SUVs. Hatchback sales have increased compared to the last year, but sedan sales are at all time low at just 5 percent. This is not unexpected as two hatchbacks - Altroz and Tiago; as well as two SUVs - Nexon and Punch are priced lower than only sedan being offered - Tigor. Buyers who prefer more fuel efficiency are buying hatchbacks and buyers who prefer a more terrain versatility are buying SUVs.

Year

2023

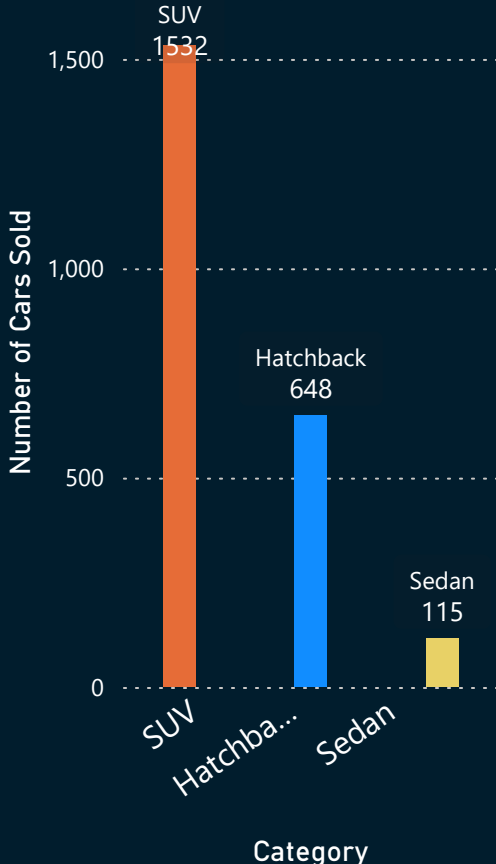
Percentage of cars sold across individual vehicle sales by Year and Car_Name

Car_Name Altroz Harrier Nexon Punch Safari Tiago Tigor



Cars Sold Across Category

Cate... SUV Hatchb... Sedan

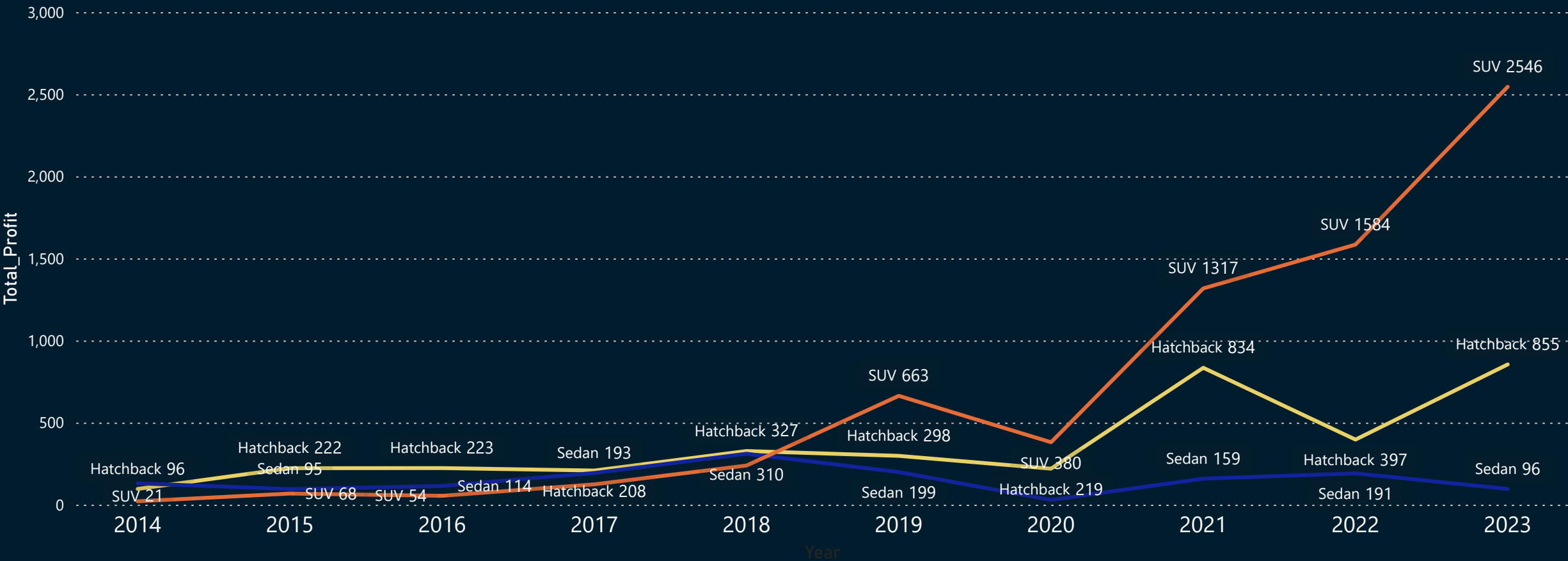


Category Wise Analysis of Profit

We can see that the sales of SUVs really kicked off once the sale of Nexon started, then when Punch arrived in the game, it sealed the deal for Sedans. Sedans which are priced higher than the SUVs cannot compete with SUVs since they lack the manoeuvrability and the overall space provision of the SUVs. Hatchbacks on the other hand have successfully held ground not matter of the year and situation which is not surprising considering Tiago is one of the highest selling vehicles. Also, since SUVs on average are priced higher, they naturally carry more margins resulting in higher net profit.

Total_Profit by Year and Category

Category ● Hatchback ● Sedan ● SUV

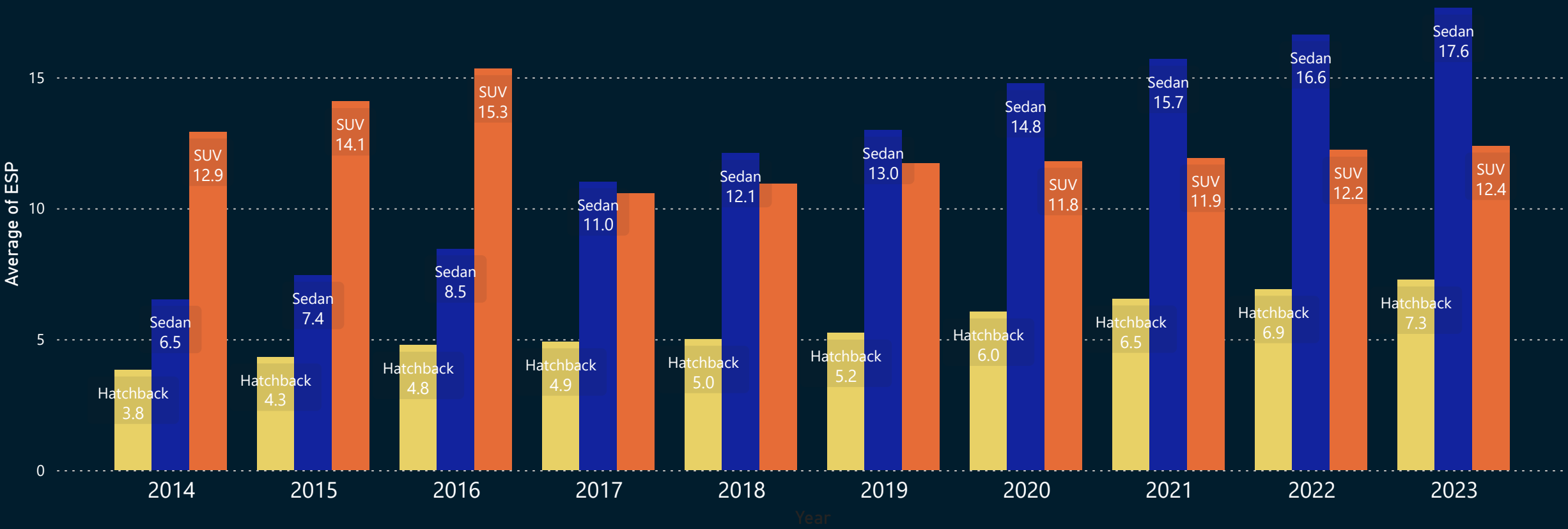


Average Price Analysis by ESP

Below graph shows how average ESP of the SUVs became less than Sedans around 2019, which was one of the main factors in the reduction of sales of Sedans. Since Sedans overall offer less space and comfort than SUVs, the buyers preferred to purchase an SUV which was offered almost at same or even lesser price. However, it has to be noted that this shift in pattern only appeared because of lower segment of SUVs like Nexon and Punch. Nexon which was priced significantly lower than Sedans took sales from their, while Punch also took sales from the potential buyers of Altoz, a premier hatchback, since both are competitively priced.

Average of ESP by Year and Category

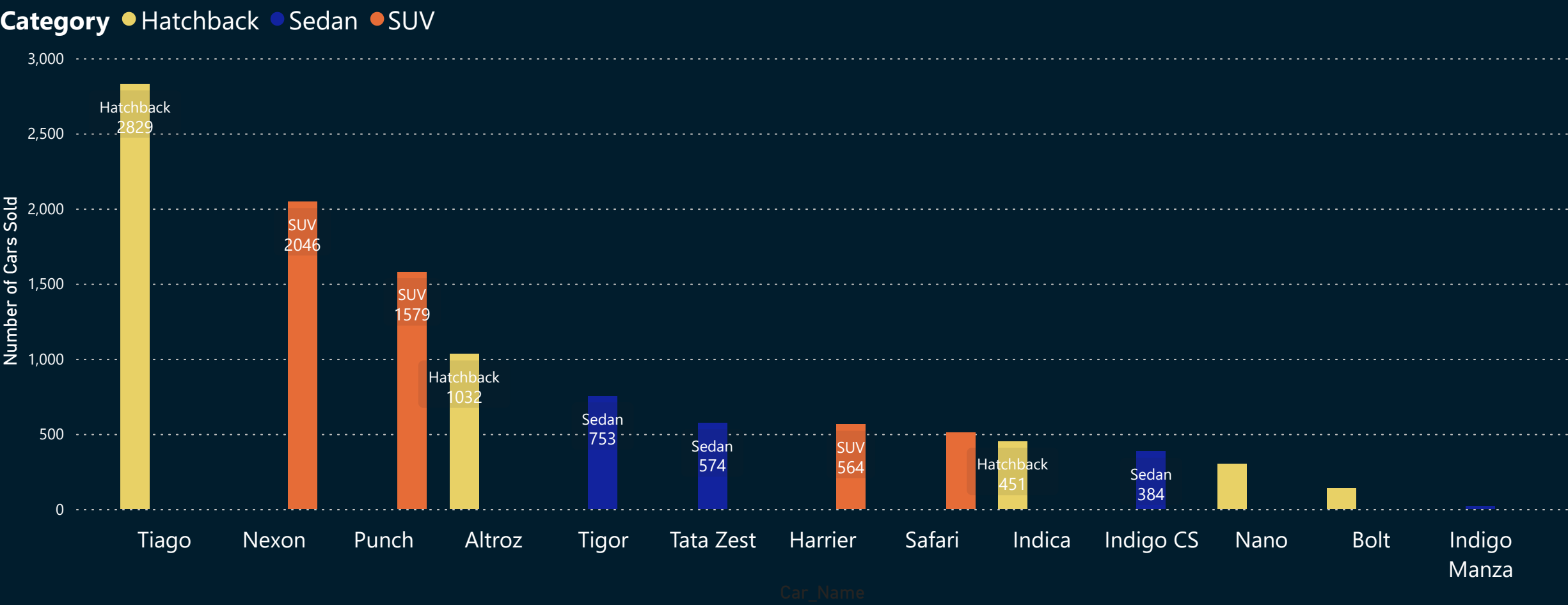
Category ● Hatchback ● Sedan ● SUV



Category and Vehicle Analysis

Below graph shows that Tiago a compact hatchback is the MVP among car sales, sold for around 8 years and more than sales of any other vehicle of any category, this shows that there are still significant number of buyers that still prefer having as hatchback as their everyday car. This is not very surprising considering only hatchbacks offer road manoeuvrability ideal for narrow Indian roads. The second important point to observe is that the Nexon and Punch combination has put all the other vehicles at a significant disadvantage. Other vehicles simply are either not as price friendly as these two or aren't SUVs that offer better performance.

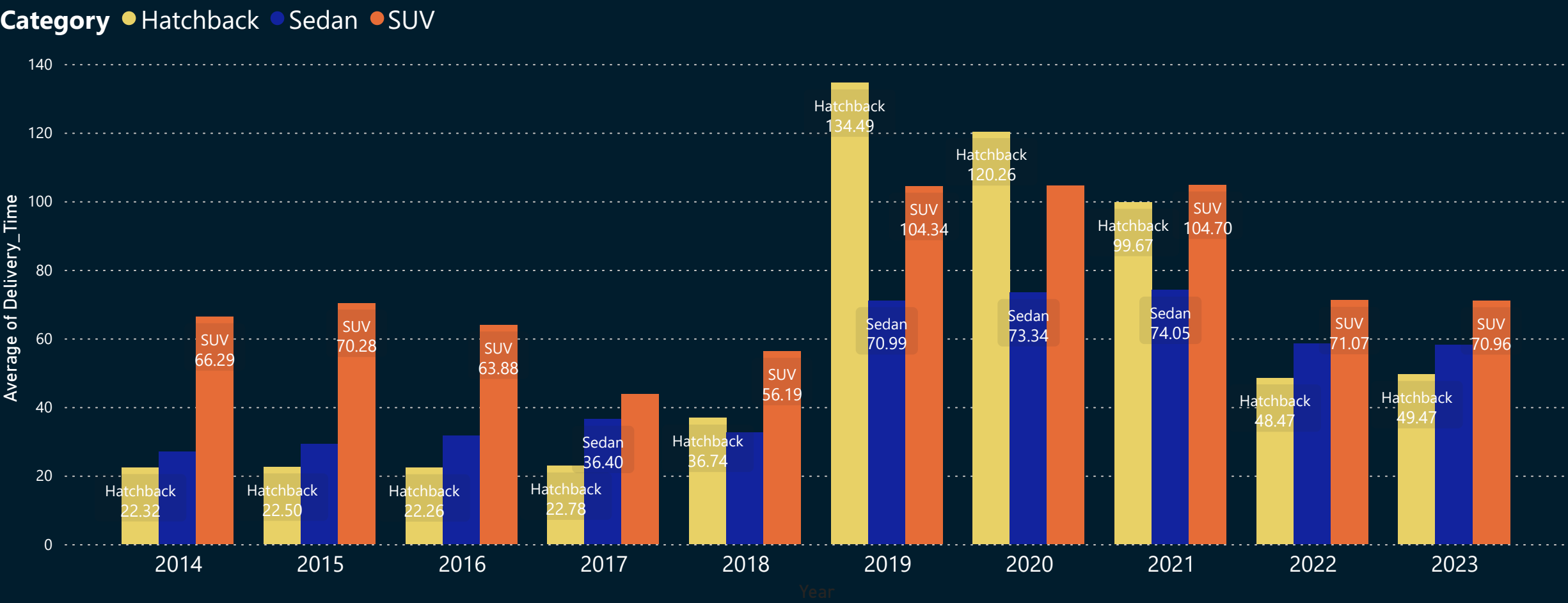
Number of Cars Sold by Car_Name and Category



Delivery Times Across Categories and years

Category wise distribution of delivery times indicate that untill the 2019, the delivery times of all the vehicles remained almost similar, but the launch and subsequent popularity of Nexon which meant its demand drove the delivery times to an all time high. The high delivery times stayed all the way till 2021, mostly due to the Covid-19 Pandemic. The category wise distribution also indicate that there isn't that much scope of finding an established relation between categories and its wait times. Wait times seem to go up and down based on the factors unrelated to category of the vehicle.

Average of Delivery_Time by Year and Category

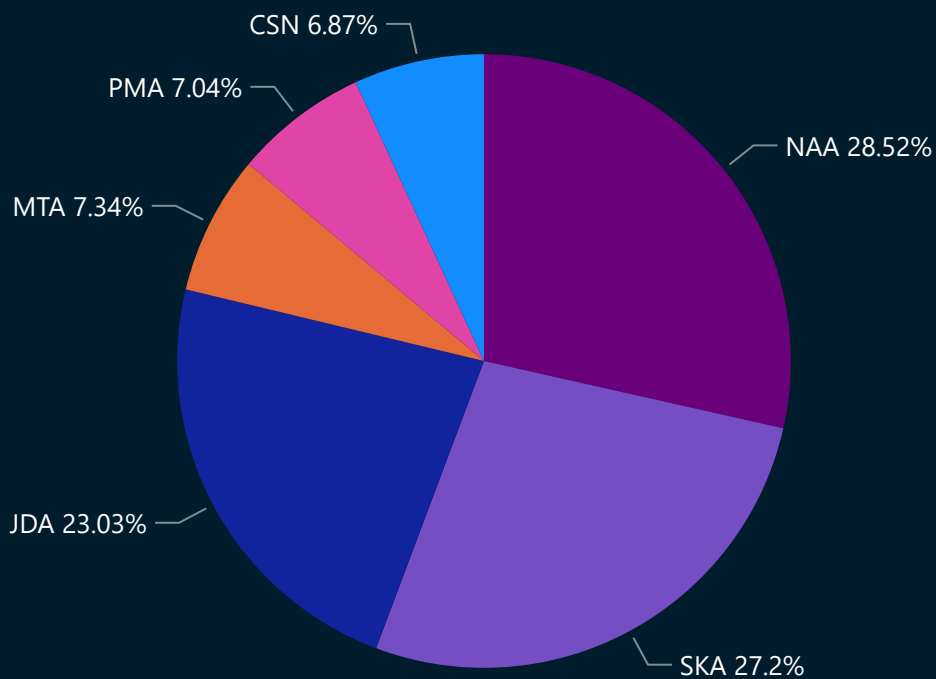


Location wise analysis of Profit and Count of cars sold

Two of the pie charts below indicate how different locations performed based on the Profit and amount of cars were sold at those locations. We can observe that three of the locations - NAA, SKA and JDA amount for more than 65 % of overall profit and sales. This isn't surprising considering these are the only locations from where the company sells SUVs, other locations can only sell hatchbacks and sedans. In the next page, we go through the amount of cars, category and subcategory wise analysis of different locations.

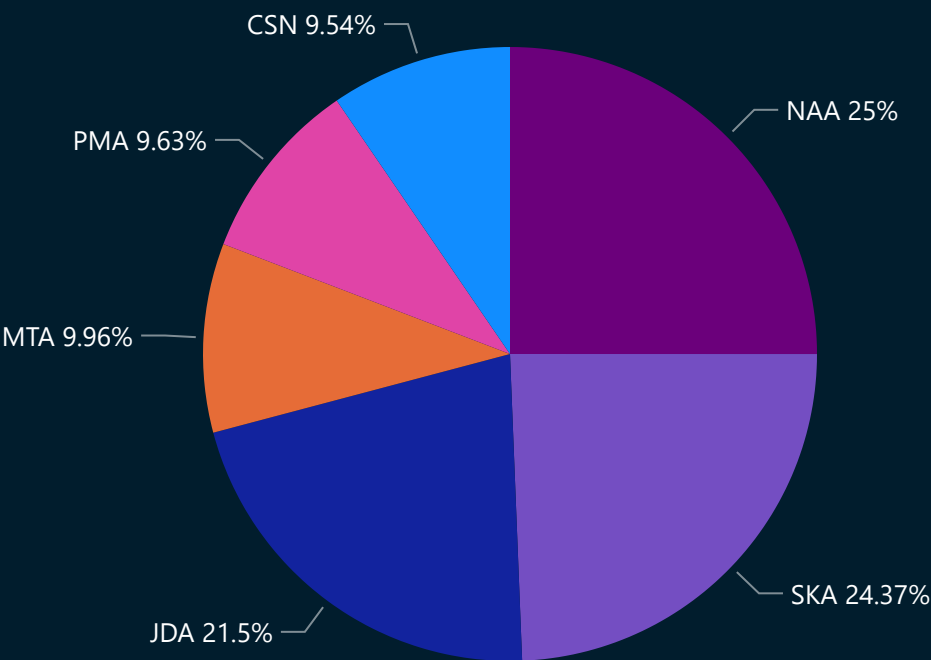
Profit_Percentage by Location

Location NAA SKA JDA MTA PMA CSN



Count of Cars Sold by Location

Location NAA SKA JDA MTA PMA CSN

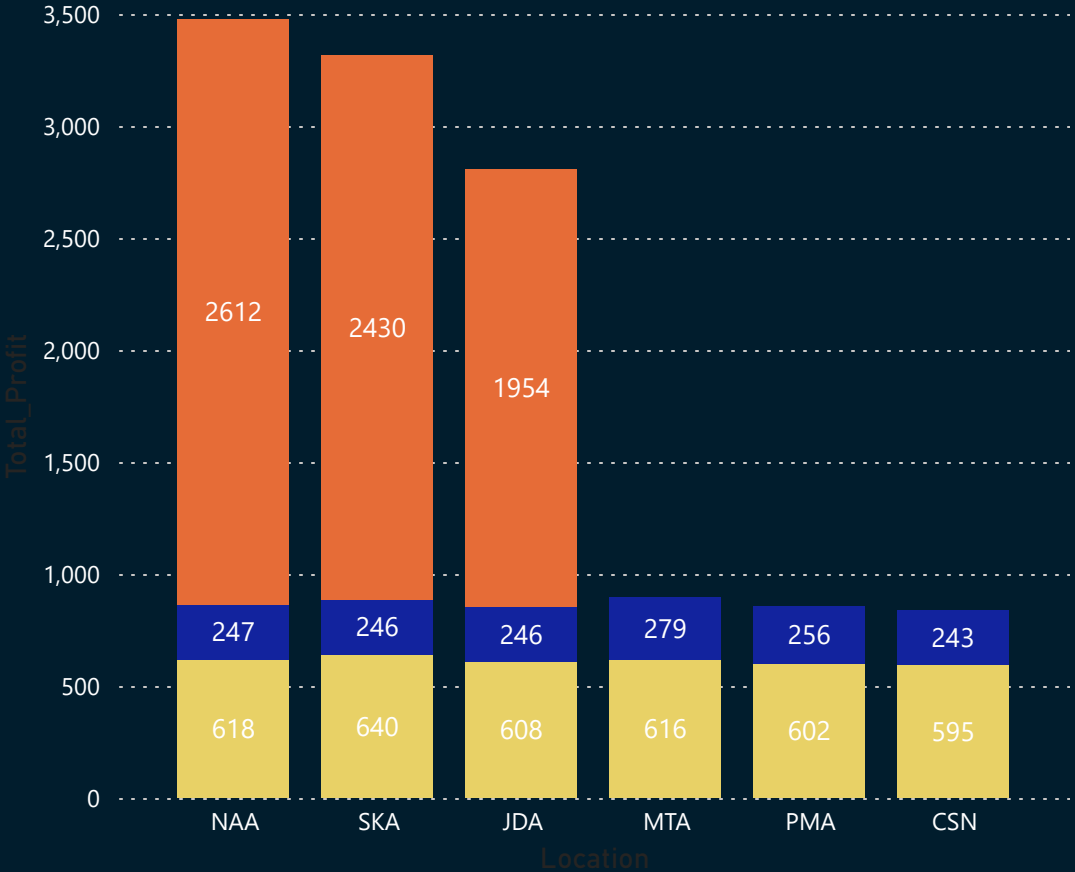


Location wise analysis of Profit and Count of cars sold Across Categories

IT is clearly visible that most of the profit that the three top locations are earning are almost because of the large amount of SUVs they are selling. The distribution of sales of sedan and hatchbacks have been almost uniform across all the locations. If the company does not start selling the SUVs across other locations as well, it stands to loose significant profit over the coming years.

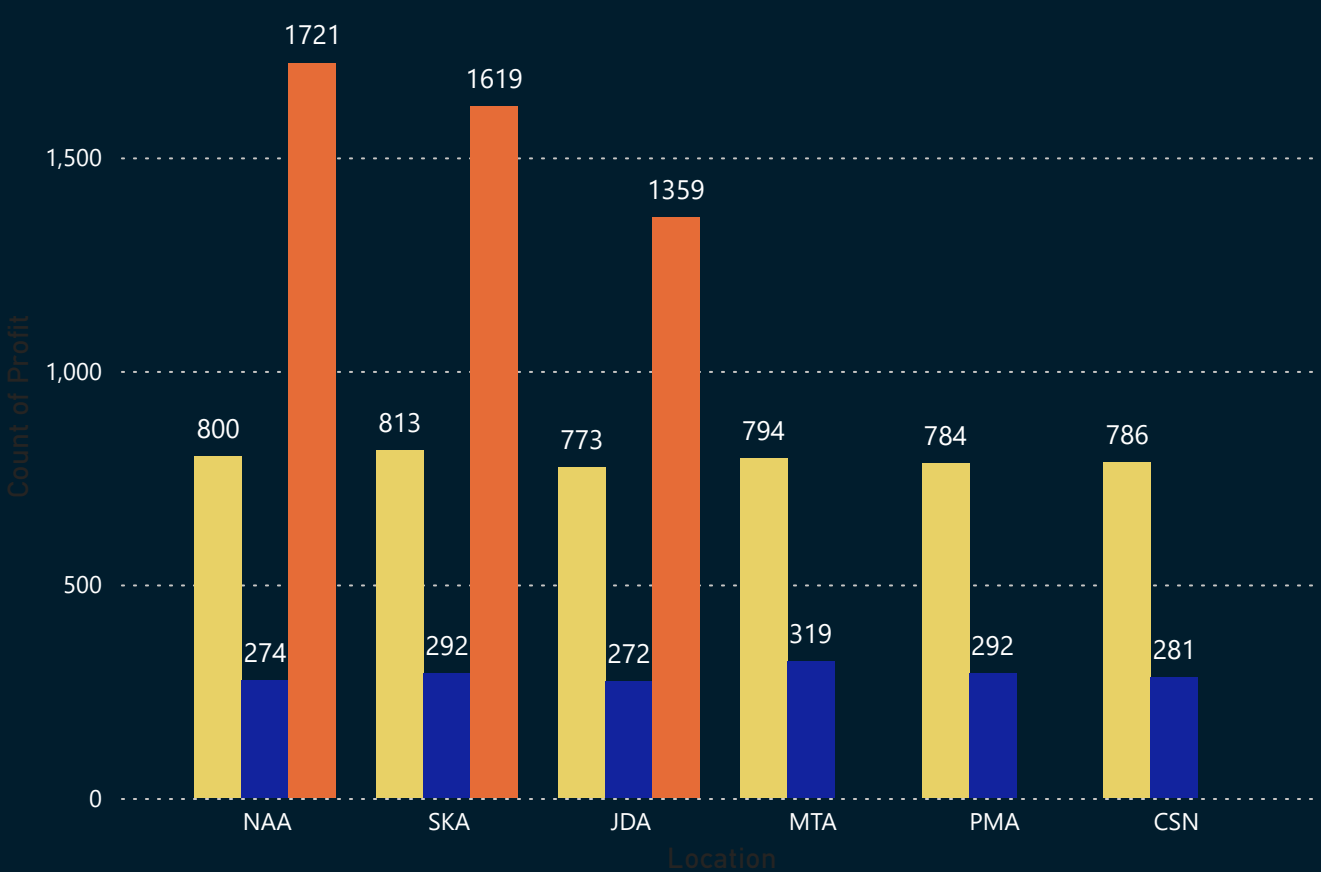
Total_Profit by Location and Category

Category Hatchback Sedan SUV



Count of Profit by Location and Category

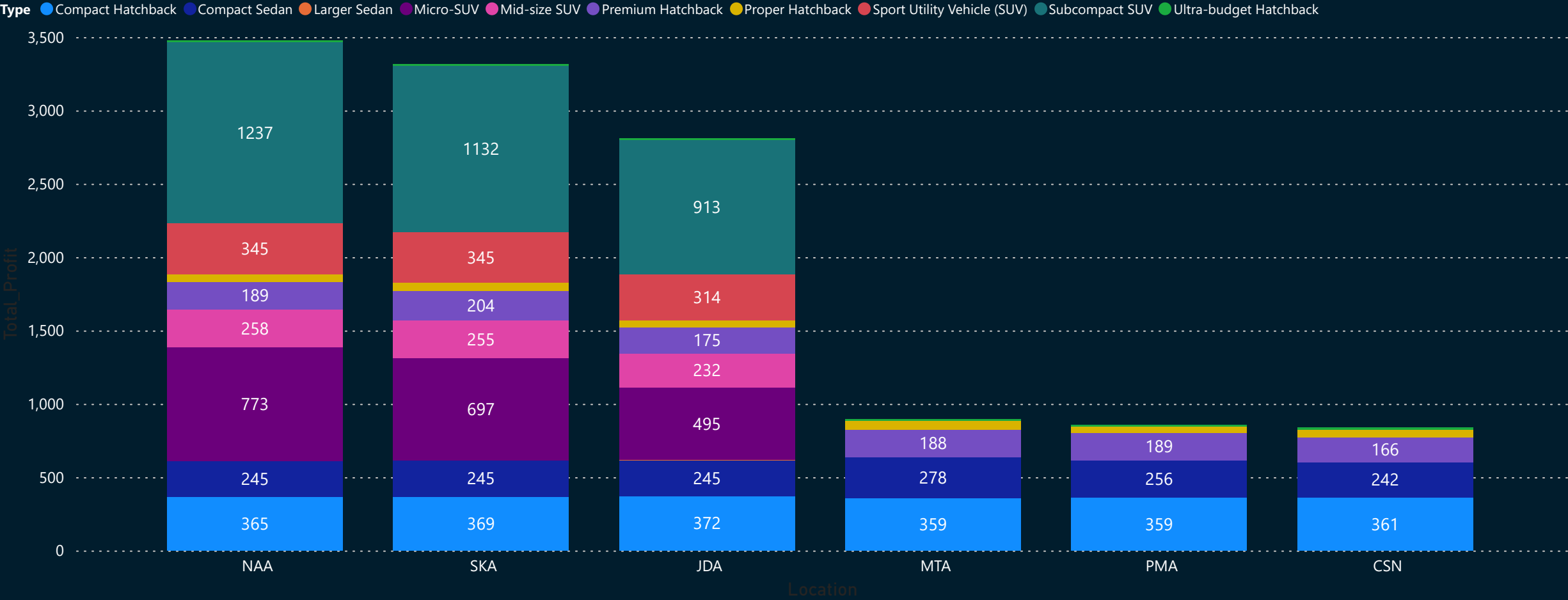
Category Hatchback Sedan SUV



Location wise analysis of Profit and Count of cars sold Across Subcategories

Sales of Micro-SUV because of Punch and Sales of Sub-Compact SUV i.e. Nexon have been at rapid increase across all location, which is clearly apparant from the chart below. The Subcategory of Compact Hatchback i.e. Tiago also appears to be a steady sales generator. Overall, the trend here is almost similar to categories, however other subcategories in the SUV category doesn't seem to be performing as good as Nexon and Punch. Which is not very surprising considering other vehicles in this category are priced comparatively higher than Sub-compact and Micro-SUV segments

Total_Profit by Location and Type



Location wise analysis of Profit Distributed Across Year

Below Ribbon Chart show how the three locations that were allowed to sell SUVs overtook other locations in terms of profit. It can be seen that majority impact started appearing only after release of Nexon and then after Punch was released, it became almost an instant hit, making sure that top three locations capture almost 65 percent of the market. Profit seems to have reduced across all the locations in 2020, but it may be because of Covid 19 Pandemic and resultant delivery time increases.

