



Retail Sales Data Case Study

A Research Project by Ankit

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Case Study

- This Case Study Consists of 3 datasets.
- The first dataset consists of Markdowns of each store on Holiday and Not Holiday.
- The second dataset consists of Retail Sales of respective store and departments on Holiday and Not Holiday.
- The third dataset consists of size of store in different types.

Objectives

- Analysis performance of the store sales at the time of markdowns, holidays and non-holidays.
- Publish the insights based on Data Analysis.

Data Analysis

- In Data Analysis of three tables of Retail Data Analytics dataset, the attributes which are affecting business are in features table is consisting Total Markdowns, Holidays for different stores. Sales table is consisting Weekly Sales in different department of each store and Stores table is consisting Store Sizes of different store.

Important Factors to Optimize Business

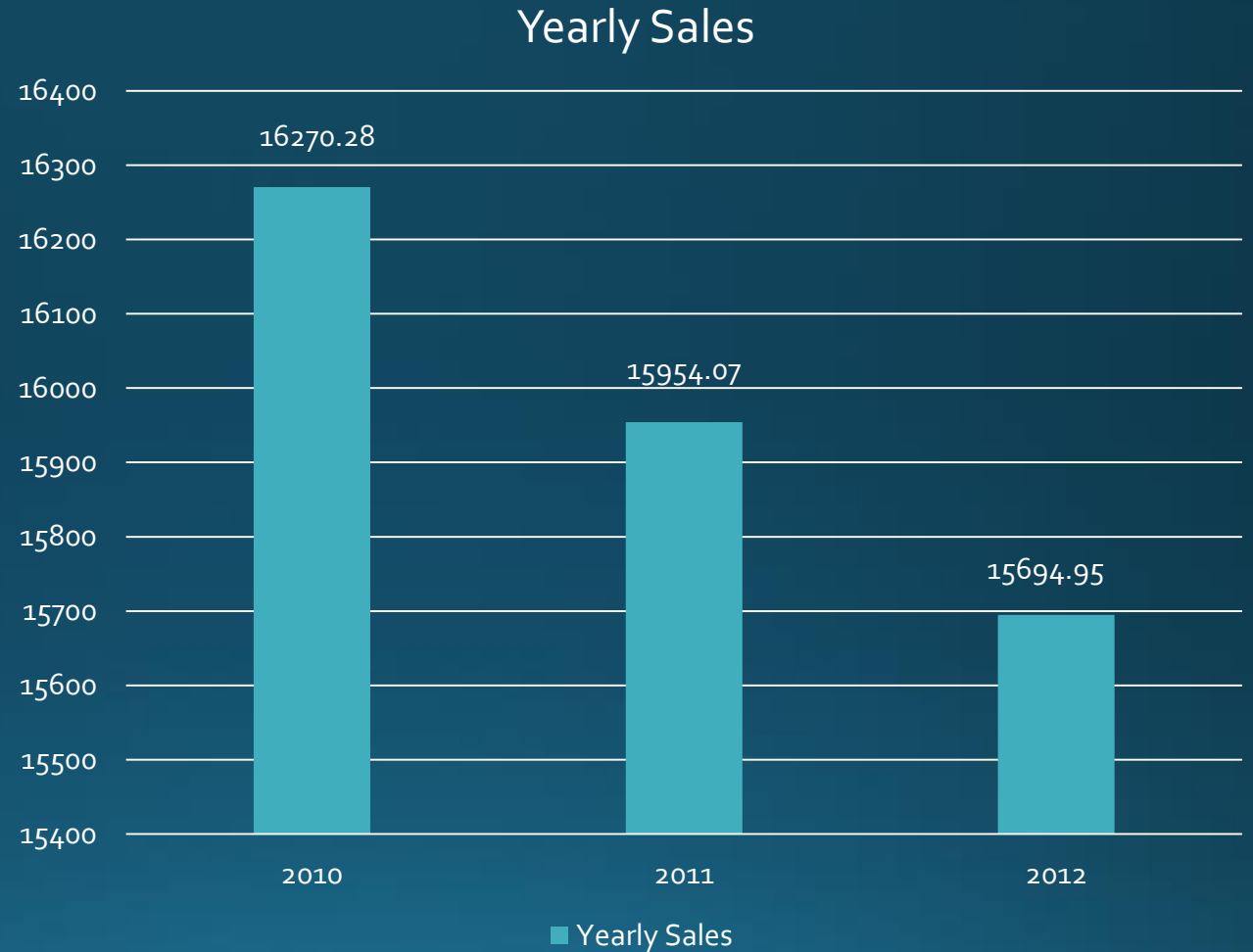
- Total Markdowns
- Holidays
- Sales
- Size of Stores
- CPI
- Fuel Price
- Temperature
- Unemployment

Table Analysis

- Features Table includes number of stores which is 45. Date is given in the dataset on the basis of week. Total no. of distinct dates are 182.
- Sales table includes different total no. of departments for each store.
- Stores table includes types which categorize size of the store.

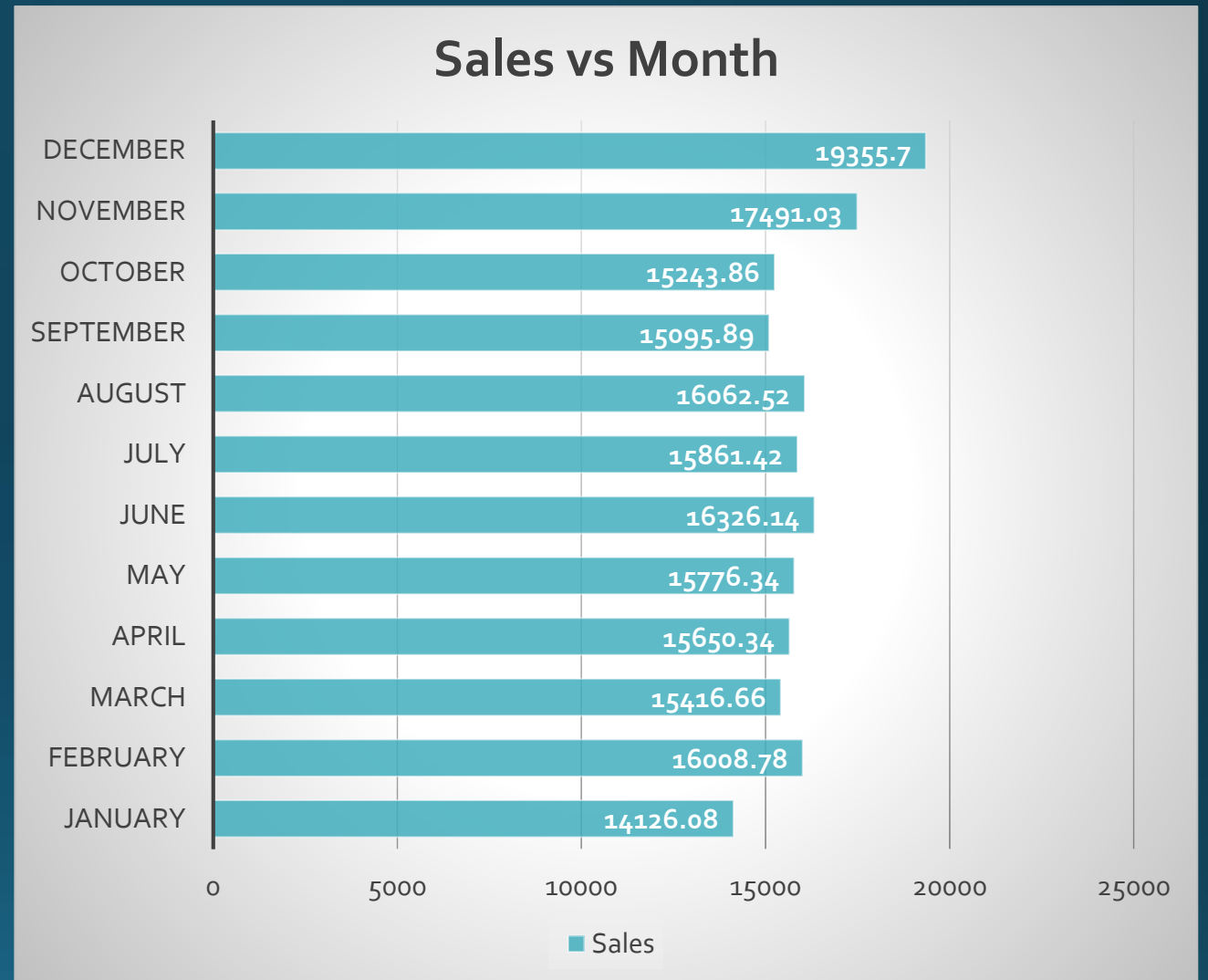
Yearly Sales

- Sales are decreasing with respect to Year from 2010 to 2012.
- In 2010, Sales are 16270.28 and in 2011, Sales are 15954.07 and in 2012, Sales are 15694.95



Monthly Sales

- In December, Sales appear higher than any other month.
- Sales are lowest in the month of January.



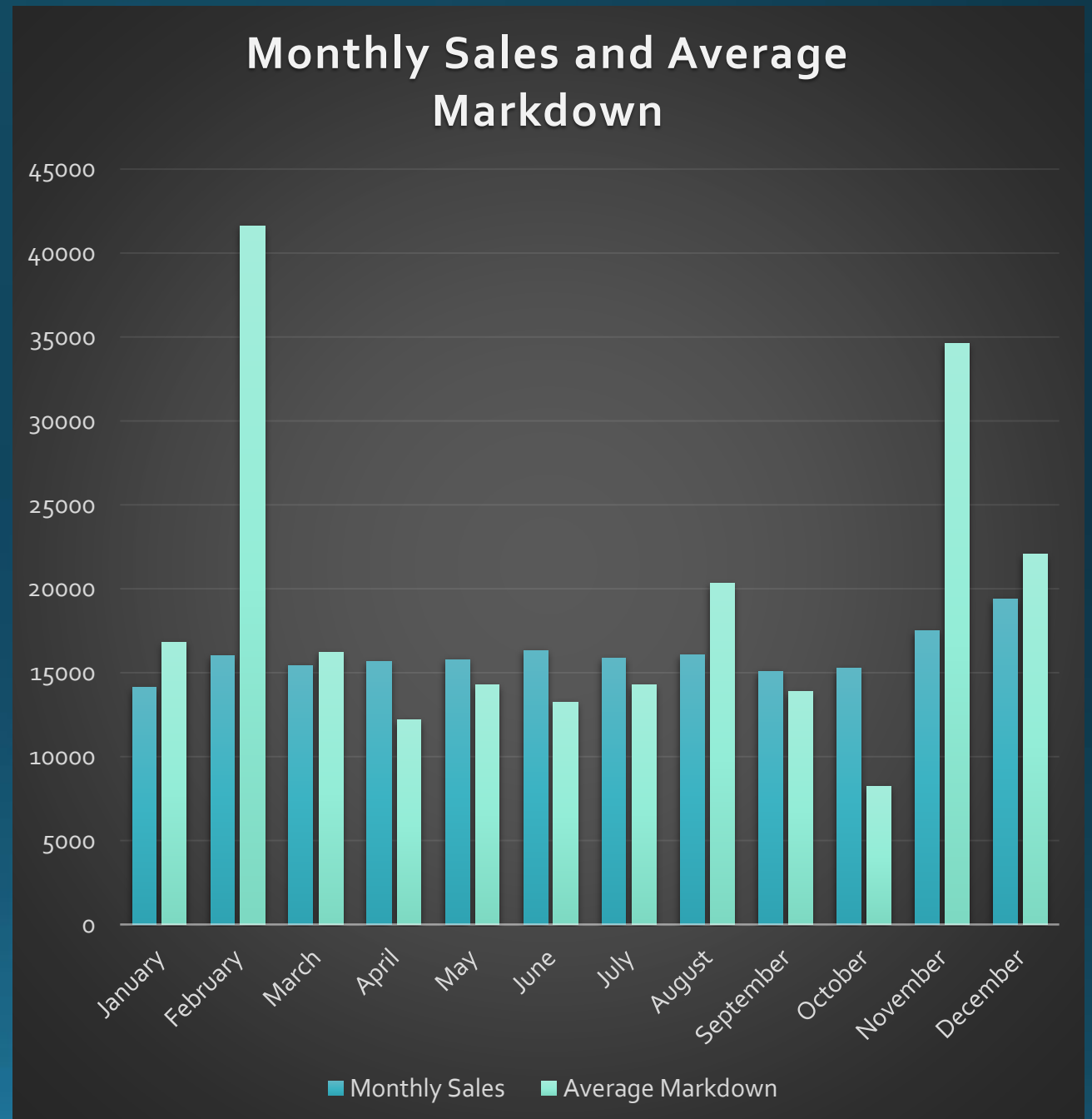
Markdown in Different Year

- Highest Markdown in 2011 which is 25222.05
- Lowest Markdown in 2013 which is 16445.15



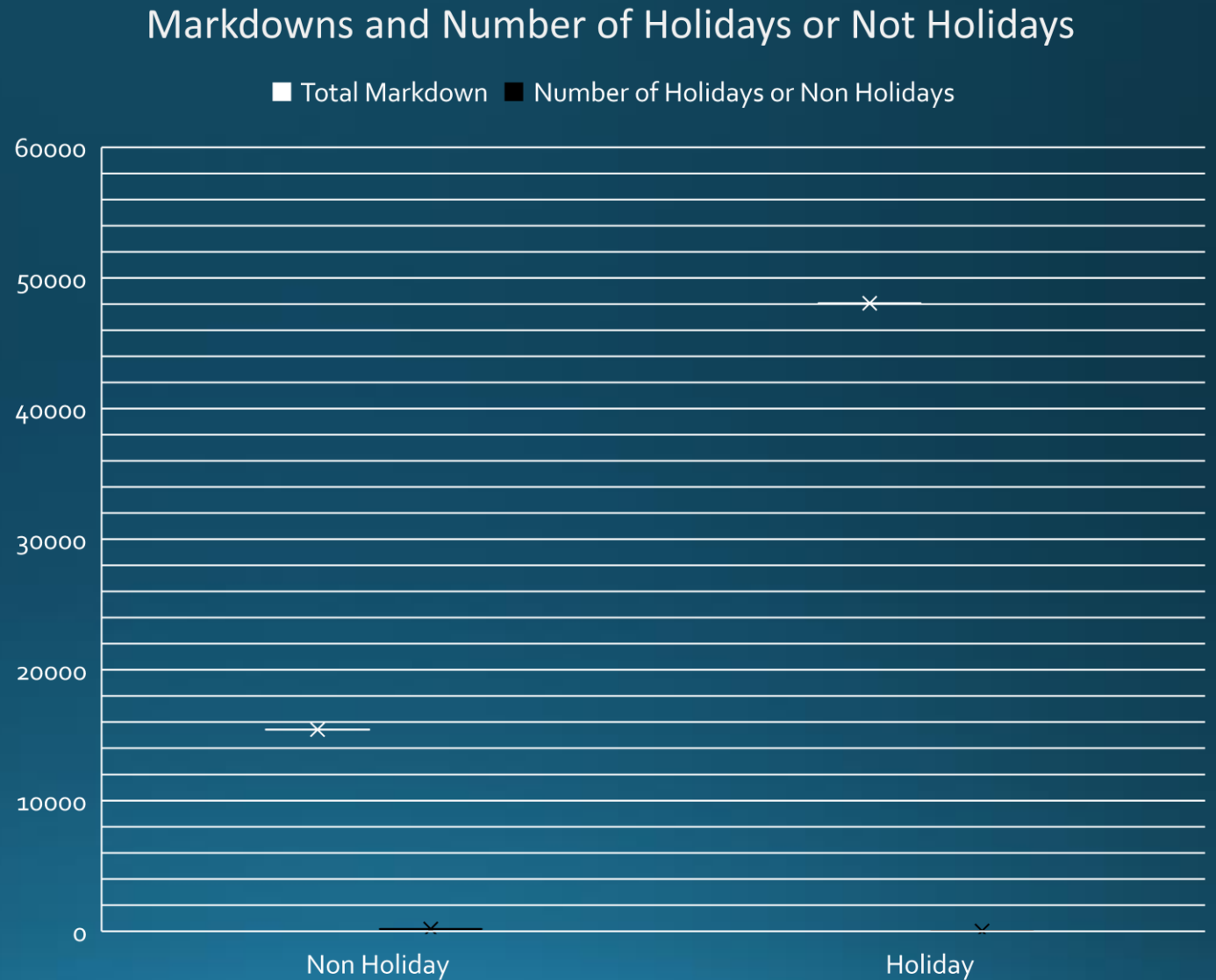
Holidays impact on Monthly sales and Average Markdown

- As Super Bowl holiday comes in February, Thanksgiving holiday comes in November, Christmas holiday comes in December.
- Highest month wise sales in December which is 19355.7, Second highest month wise sales in November which is 17491.03 and Third highest month wise sales in February which is 16008.78
- Highest month wise Average Markdown in February which is 41592.09, Second highest month wise Average Markdown in November which is 34601.95 and Third highest month wise Average Markdown in December which is 22050.89



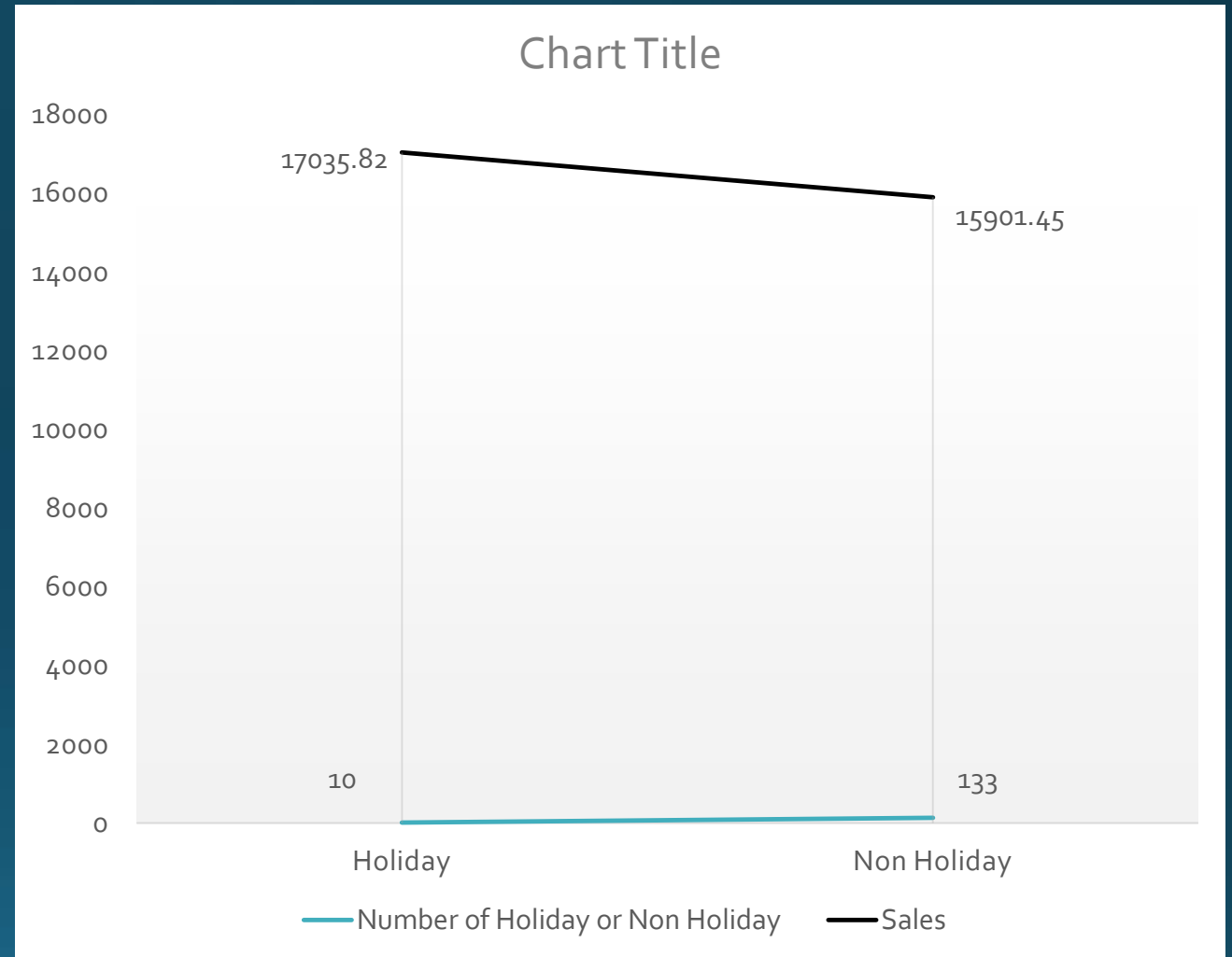
Analysis of Markdown and Number of Holidays and Non Holidays

- Non Holidays are 13 times of Holidays.
- Non Holidays are 169.
- Holidays are 13.
- Average Markdown Holiday wise are 48050.8
- Average Markdown Non Holiday wise are 15423.07



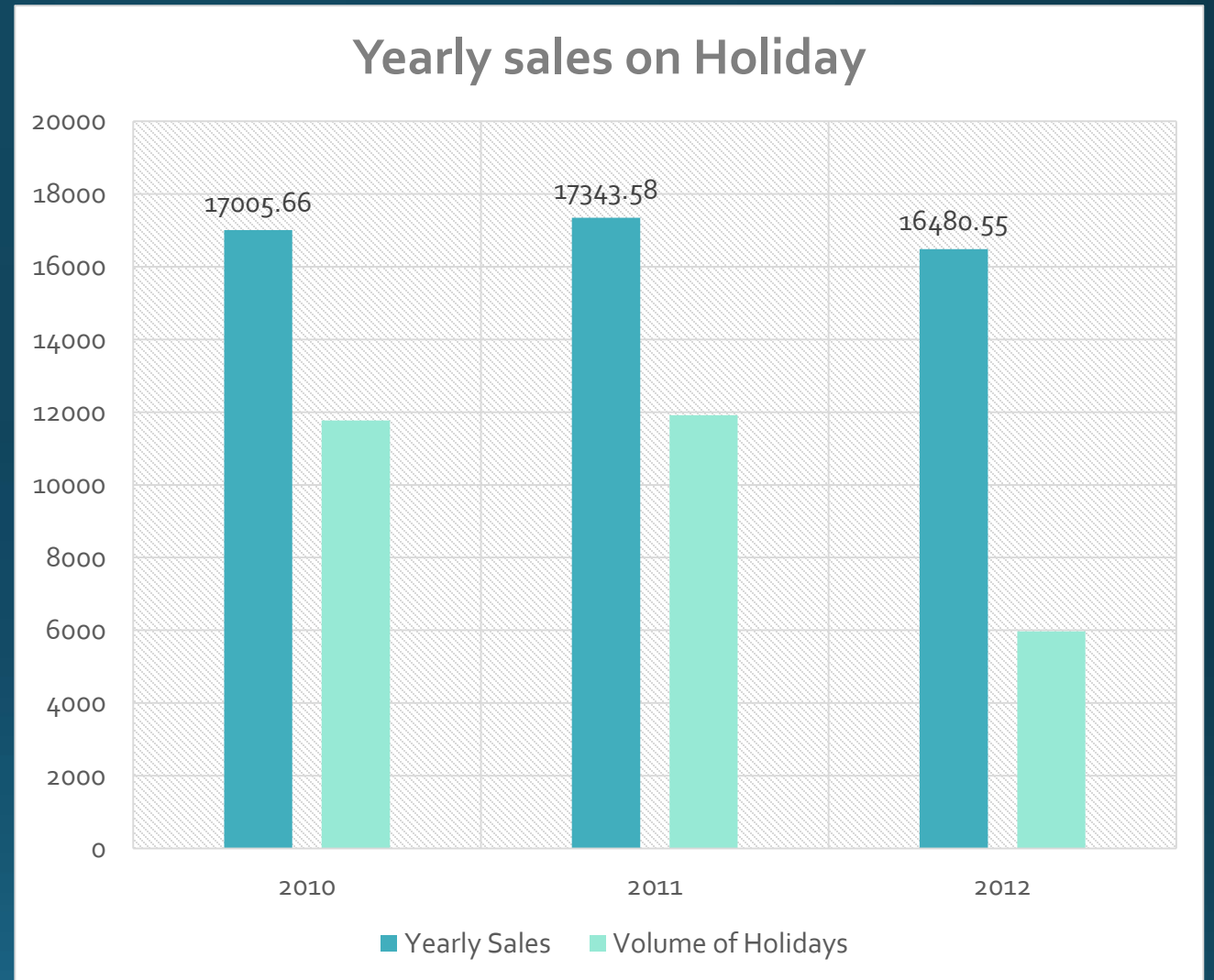
Holiday wise Sales Analysis

- Non Holidays are 13.3 times of Number of Holidays.
- Holidays are 10 and Non Holidays are 133
- Holiday weekly sales are 1,134.37 more than Non Holiday weekly sales
- On Holiday weekly sales are 17035.82
- On Non Holiday weekly sales are 15901.45



Yearly Sales on Holiday

- As this chart is showing up and down trend of yearly sales on Holiday and Number of Holiday is also moving in the same way.
- So , Yearly Sales on Holiday is directly proportional to Number of Holidays in this Holidays case.



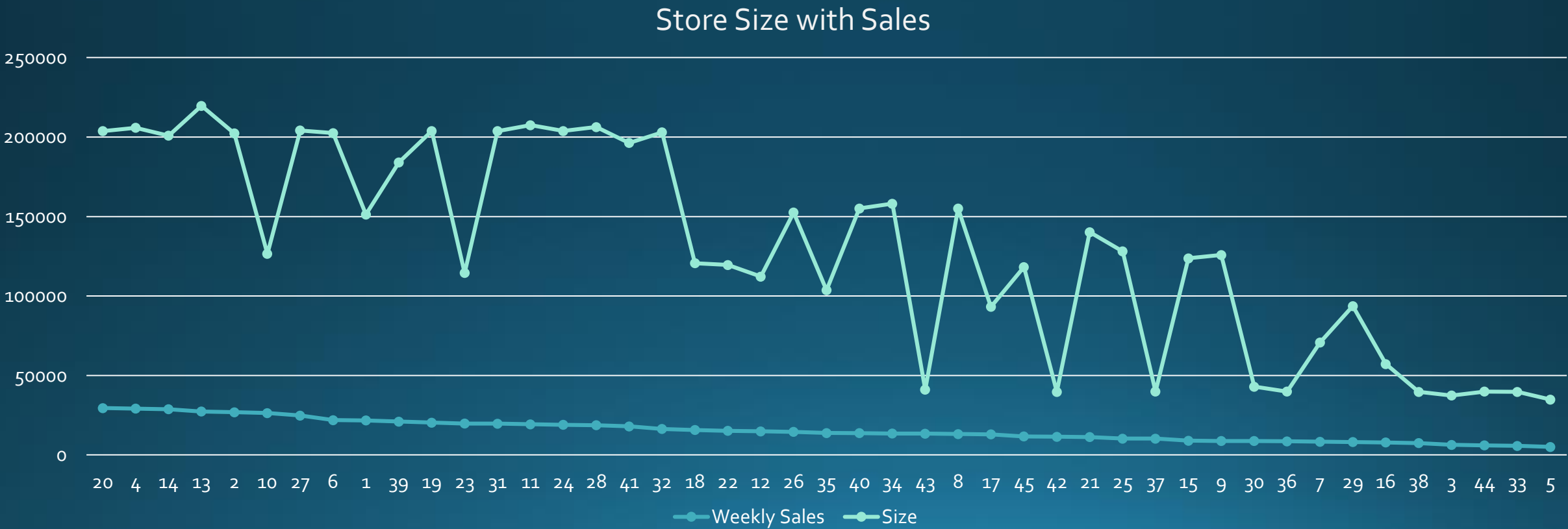
Sales with respect to Store

- Highest Sales is in store 20
- Lowest Sales is in store 5



Proportionality of Sales and Store Size

- As per chart is showing, it is clear that in most of the Sales are directly proportional to Store Size.
- Maximum sales are in store 20 which is 29508.3 with Store Size is 203742
- Minimum sales are in store 5 which is 5053.42 with Minimum Store Size is 34875



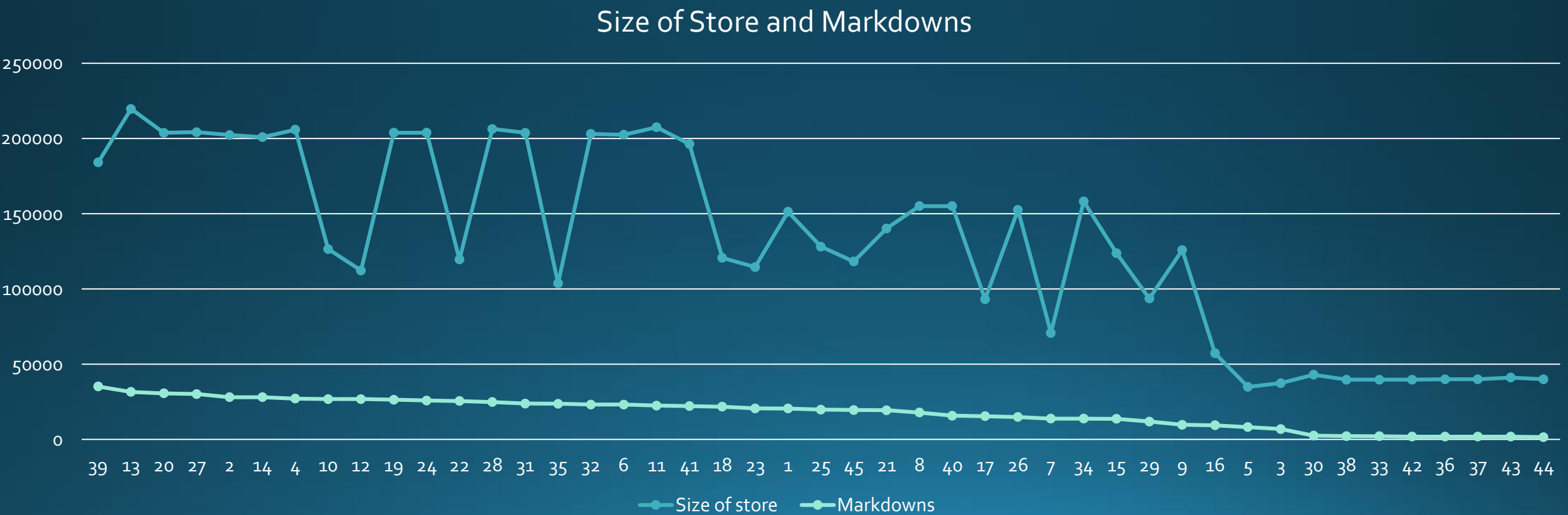
Store wise Markdowns

- Highest total markdowns is in store 39.
- Lowest total markdowns is in store 44.



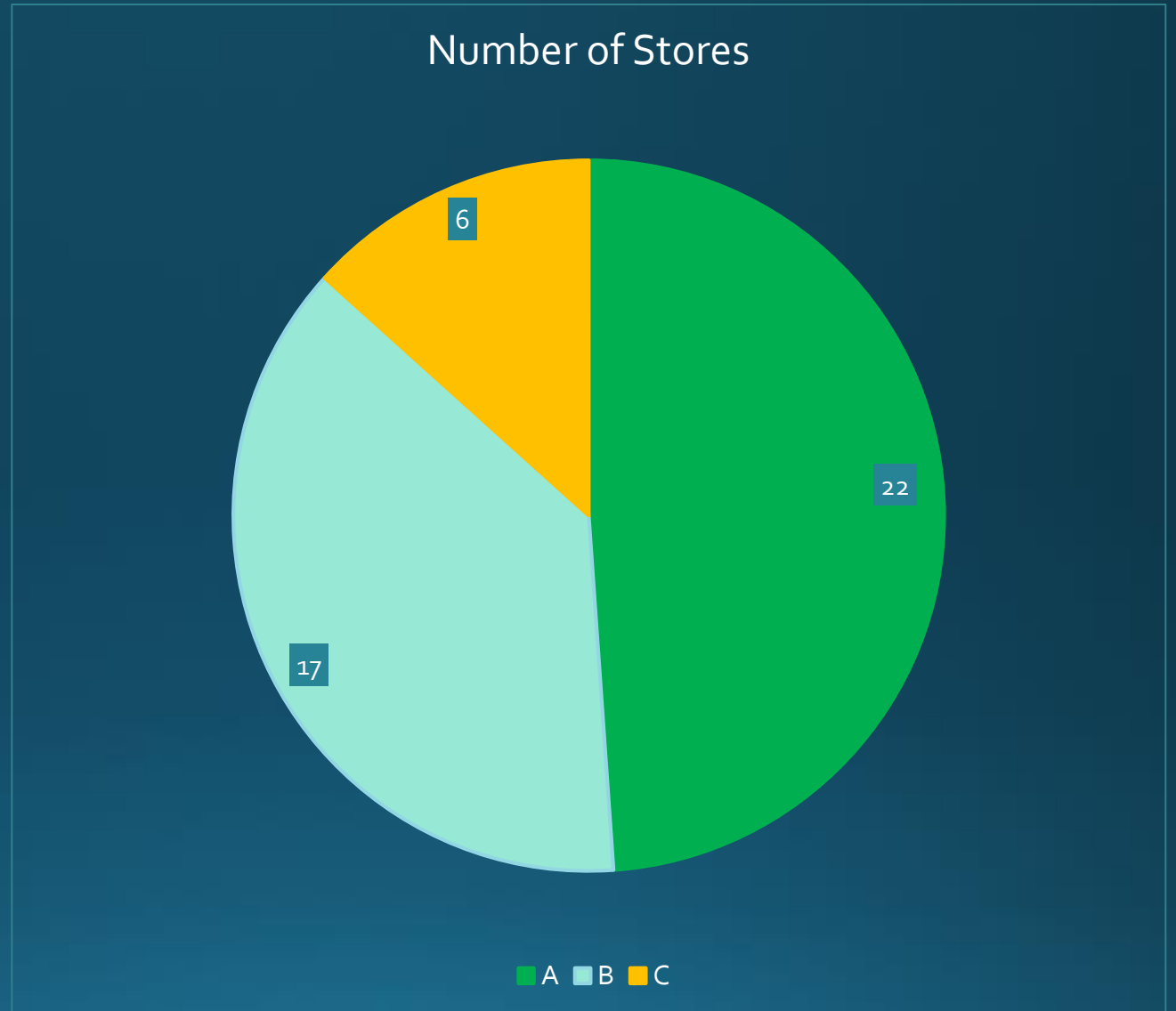
Size of Stores affect Markdowns

- As per chart is showing, it is clear that in most of the Markdown are directly proportional to Store Size.
- Maximum Markdown is in store 39 which is 35152.13 with Store Size is 184109
- Minimum Markdown is in store 44 which is 1480.95 with Store Size is 39910



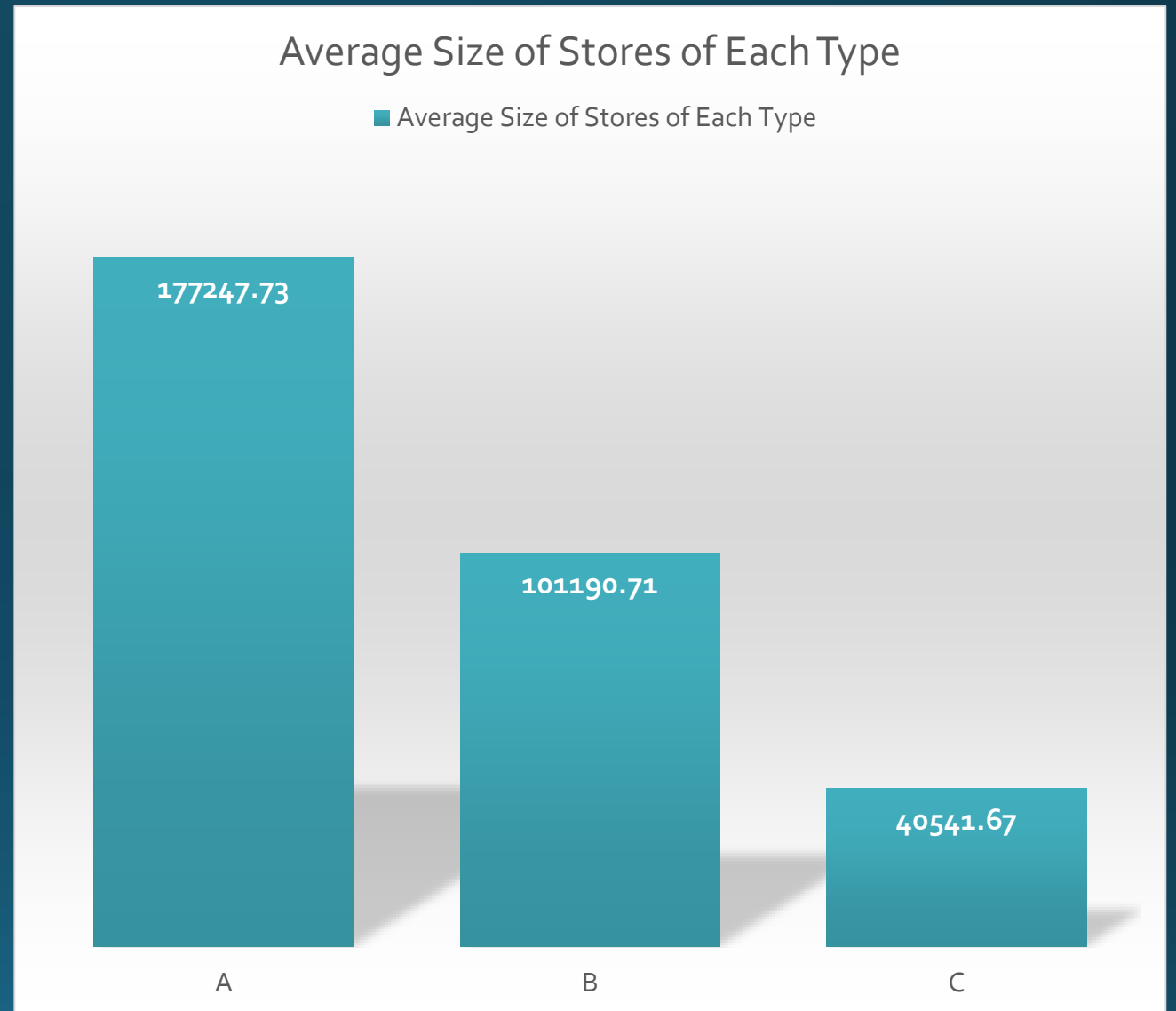
Number of Stores in each Type of Store

- Type A of Stores consist of highest Number of Stores which is 22
- Type C of Stores consist of Lowest Number of Stores which is 6



Size of Stores of each Type

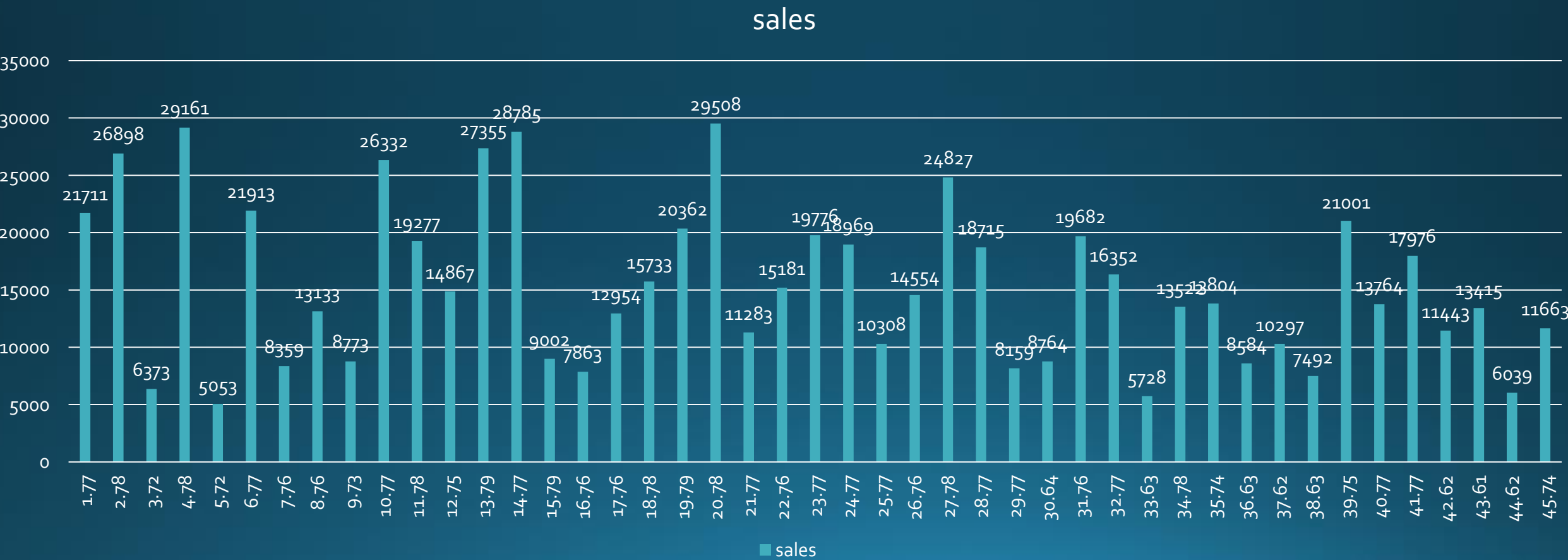
- Type A has largest Average size of stores which is 177247.73
- Type C has lowest Average size of stores which is 40541.67



Sales by Number of Departments

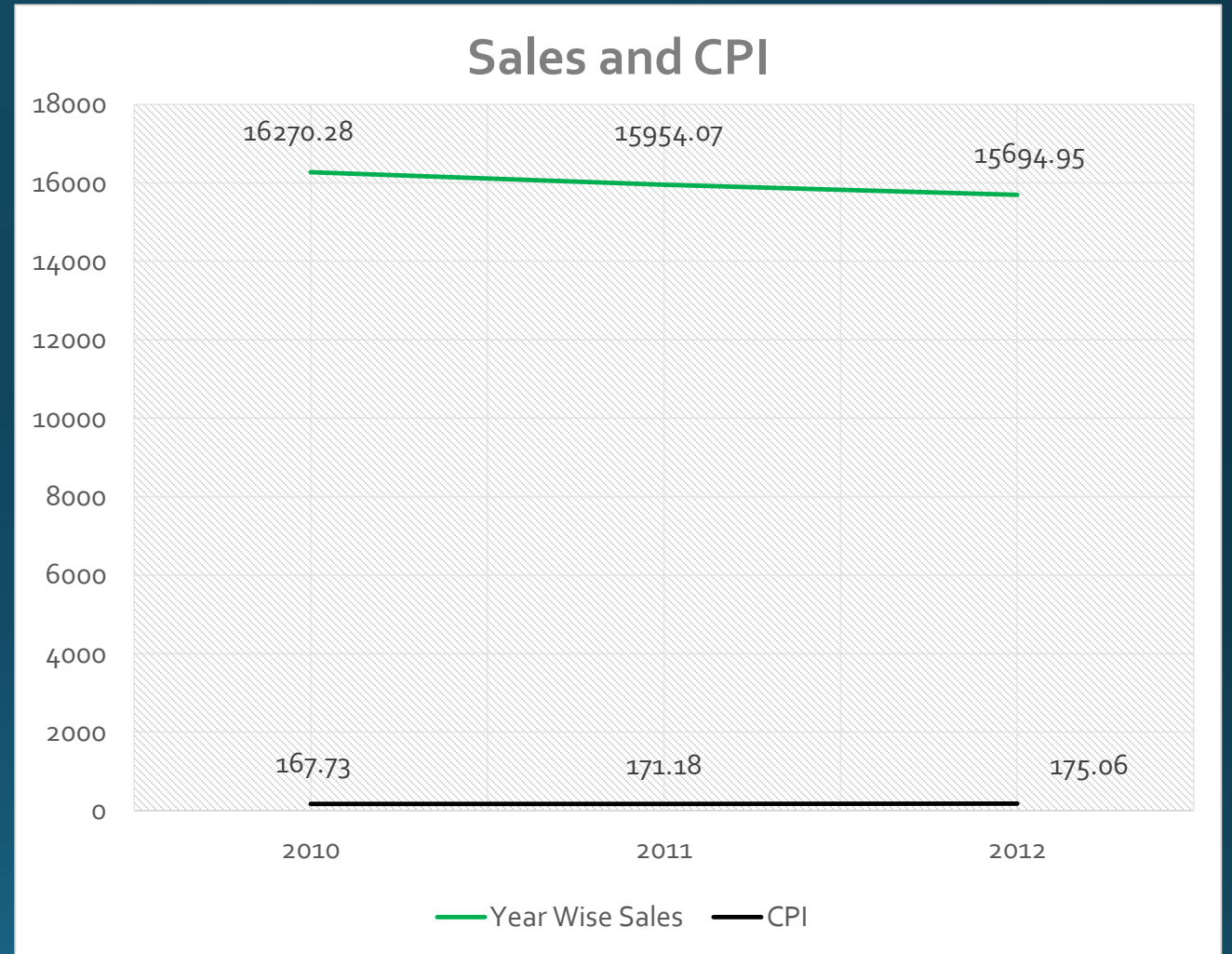
- Total Number of Departments consist by Store more than and equal 76 and sales more than and equal 15000 are 19.
- Total Number of Departments consist by Store are lesser and equal 72 and sales lesser than and equal 7500 are 5.
- In most of the cases, Number of Departments of particular store are affecting Sales.

NOTE:1.77 in below table is “store. Total Number of Departments”



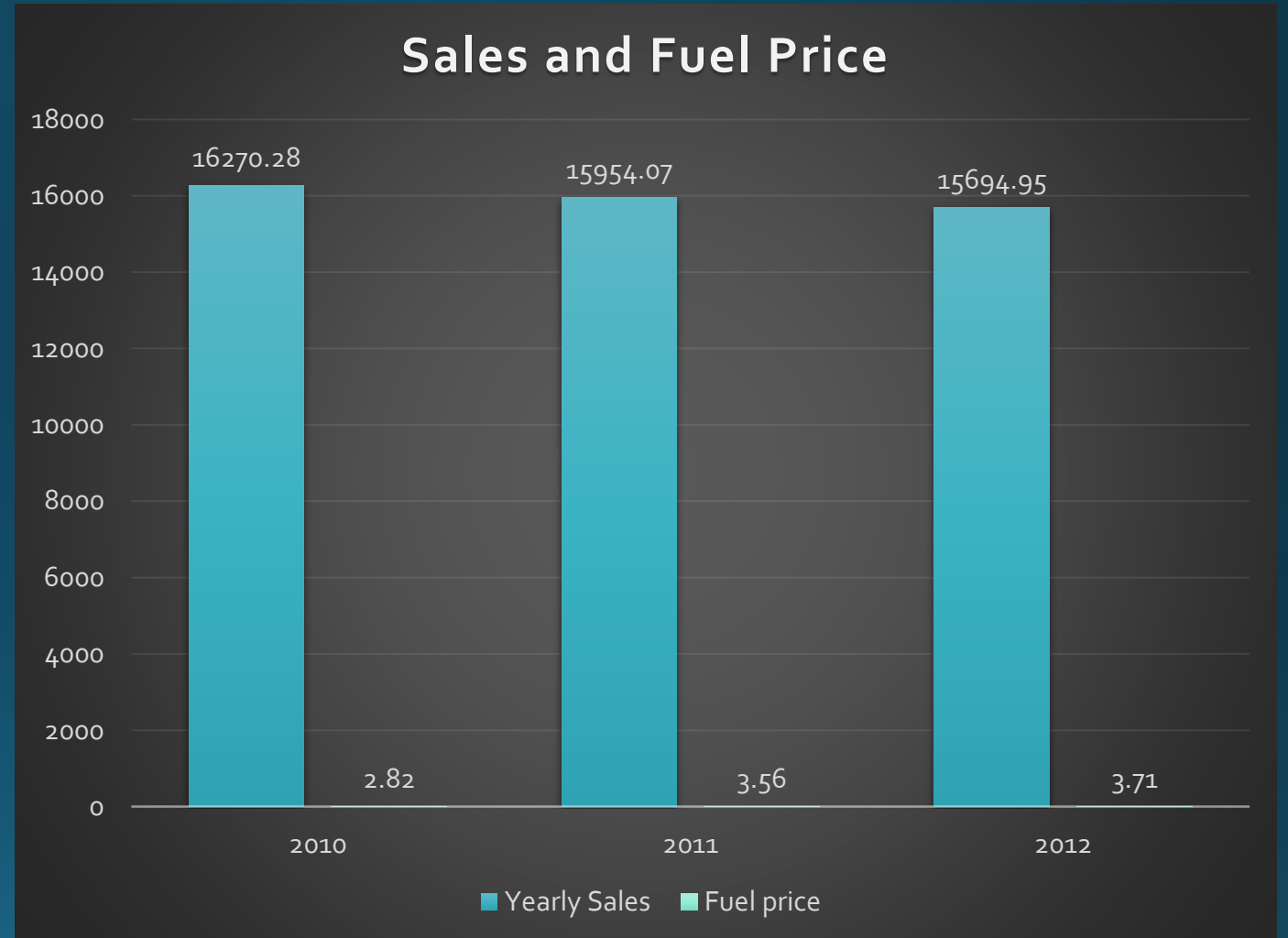
Sales with respect to CPI(Consumer Price Index)

- As per analysis, CPI is increasing and Sales are decreasing on yearly basis.



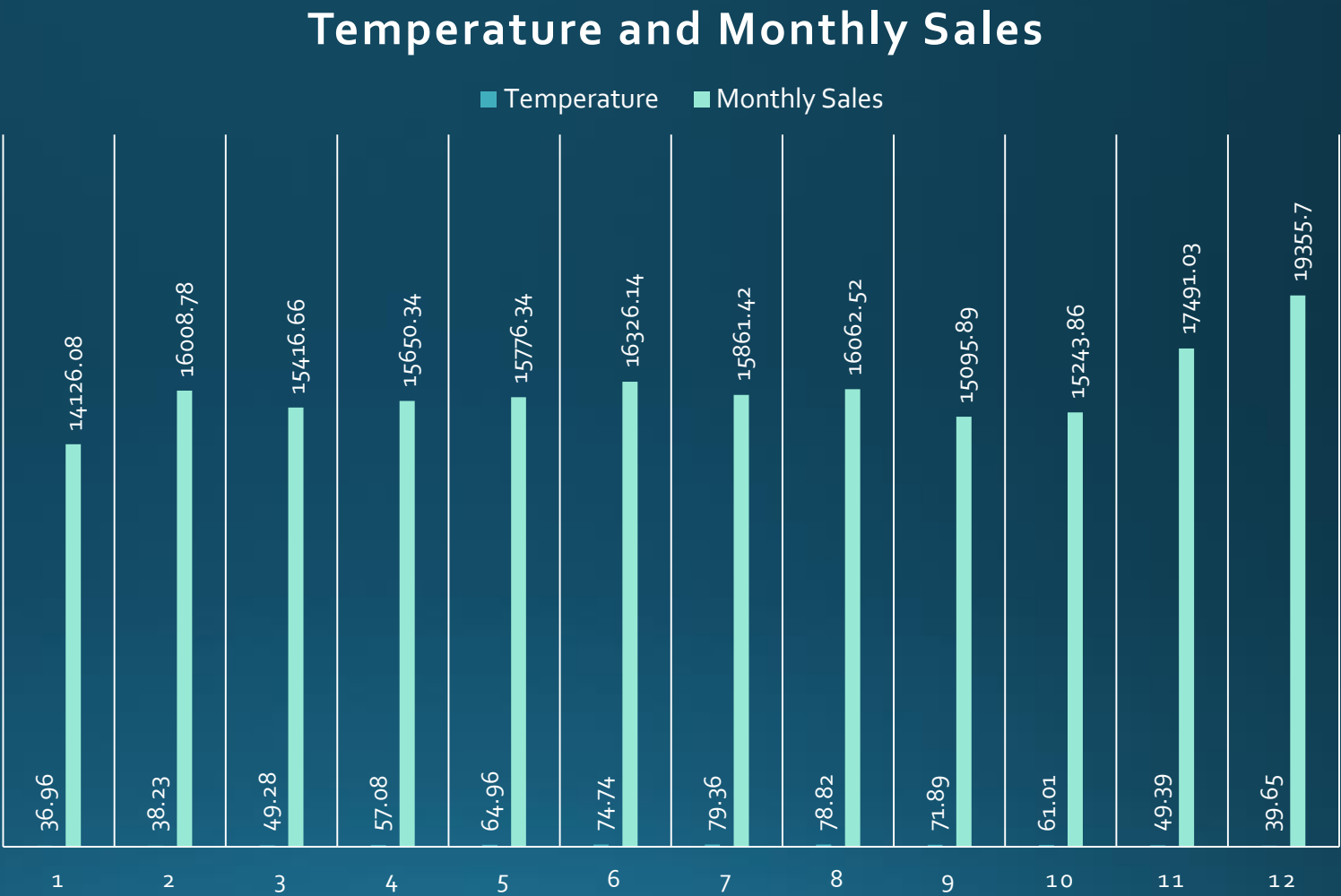
Yearly Sales and Fuel Price Analysis

- As Sales are decreasing on yearly basis fuel prices are increasing.



Temperature and Monthly Sales Analysis

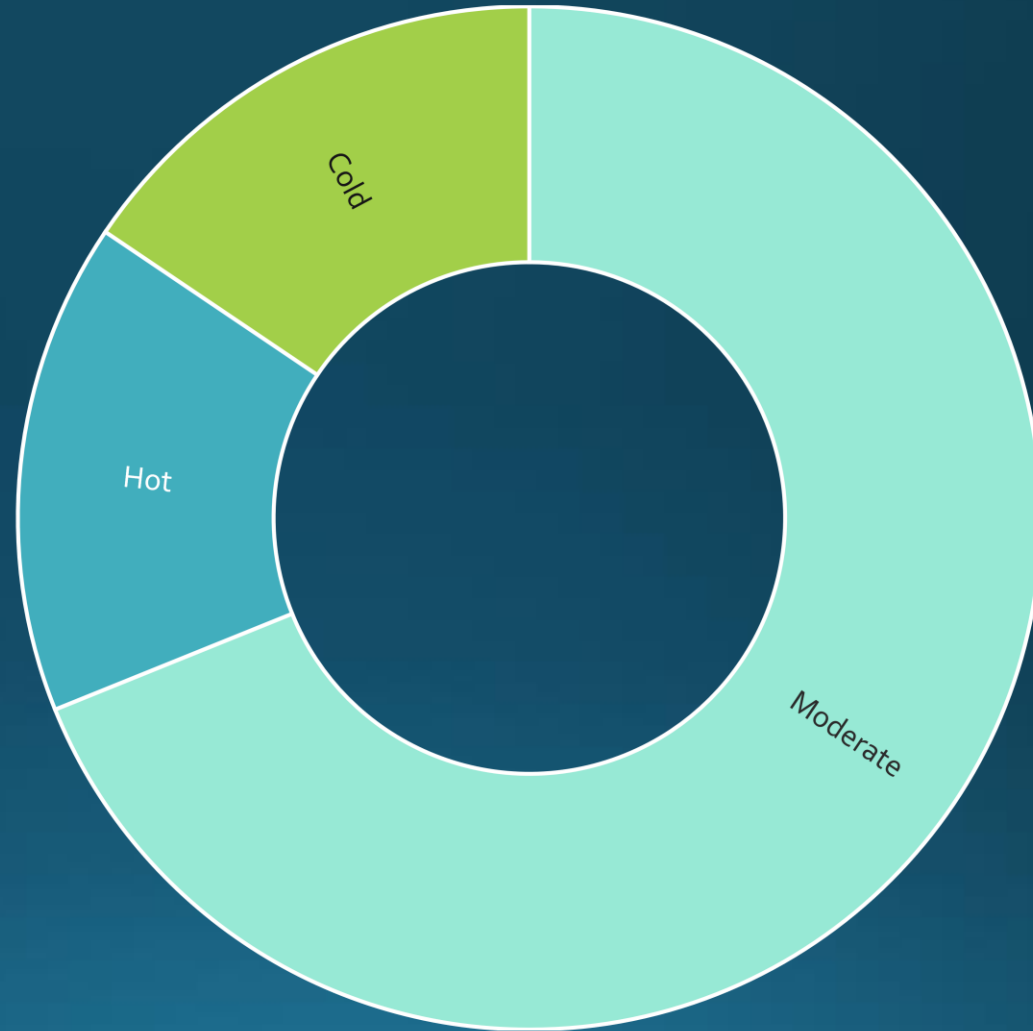
➤ At temperature above 57 degree F, it is giving Average Monthly Sales value as 15716.64 for 7 months.



Volume of number of store in different region

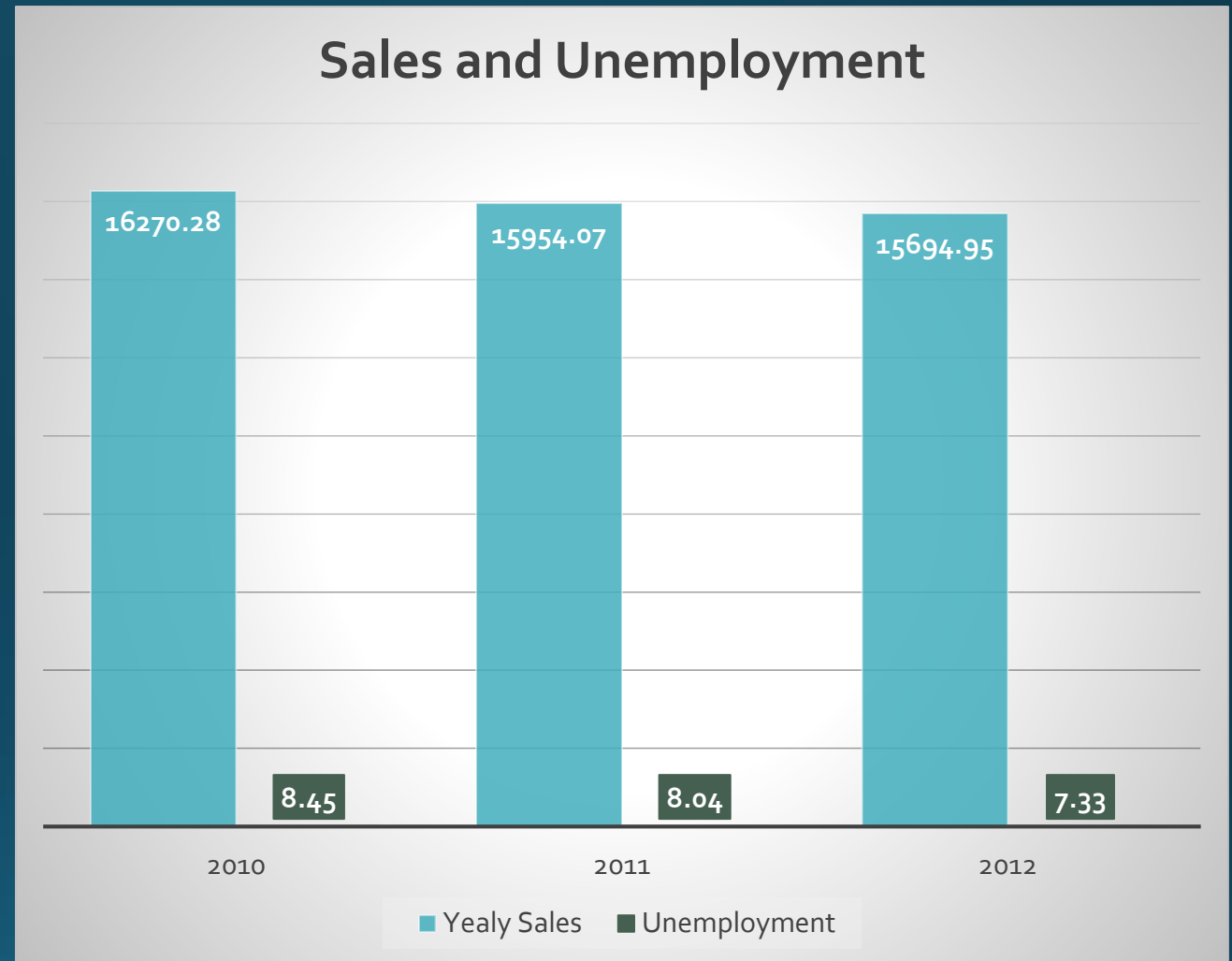
- Hot region consist of 7 Stores.
- Moderate region consist of 31 Stores.
- Cold region consist of 7 Stores.

Volume of number of store in different Regions



Sales and Unemployment Analysis

➤ As Sales are decreasing
Unemployment also decreasing.



Findings

- ❑ As per Company's information, Effectiveness of **Promotional Strategies** can be responsible for decreasing in sales.
- ❑ According to Analysis, **Timing and Magnitude of Markdowns**, optimize Markdown Promotional Events in February, November and December as this months consist of holidays. **Offering Discounts and Promotional Events** one month before a big festival allows customers ample time to plan their purchases and take advantage of the promotions and this will be effective in increasing sales.
- ❑ Volume of sales and markdown are huge on holidays than non holidays.
- ❑ **Larger Store Space** will be profitable in both cases, If considering about **expanding of existing store** in available space or If **relocating to larger store spaces**, especially in areas where there is potential for increased foot traffic, customer demand, high population density and strong consumer purchasing power.
- ❑ As **Consumer Price Index (CPI)** affects sales. The increasing CPI may affect **consumer purchasing power**. Review the product mix and pricing strategies to ensure they align with **consumer preferences**. Conduct a competitive analysis to ensure that your pricing remains **competitive** in the market. Establish a **feedback loop with customers** to understand their evolving needs and preferences, allowing for continuous improvement in products and services
- ❑ The rise in **Fuel Prices**, the company should focus on implementing **cost-effective measures in operations**, such as optimizing transportation routes, adopting fuel-efficient vehicles, Utilizing technologies like GPS and fleet management systems or exploring alternative transportation methods. This will minimize expenses to greater extent.