

# Visualizations

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Importing preprocessing functions

Importing Logo for the graphs

Reading and creating necessary datasets

Preprocessing sales data

adding features to the data

```
aggregated_revnuue_dataframe<-general_revenue_dataframe(final_sales_data)
```

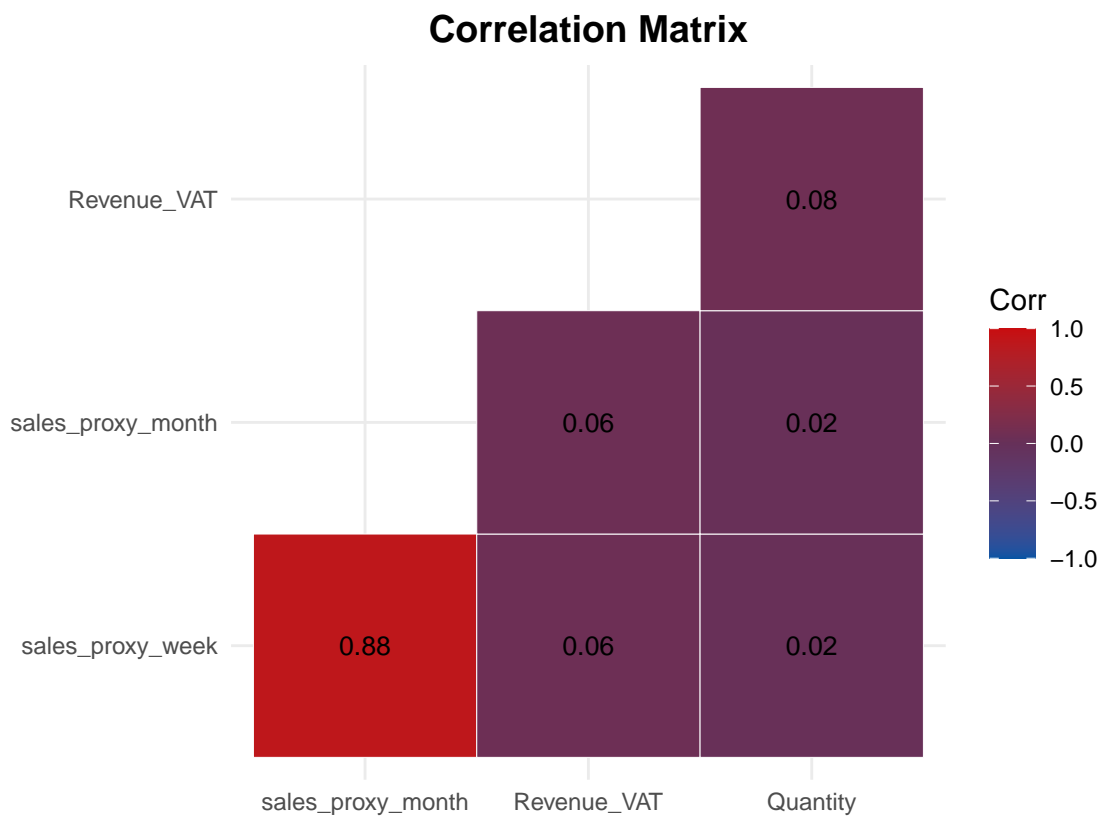
## Feuture engenereeing

Factor	Df	SumSq	MeanSq	Fvalue	Pr	Significance
product_type	199	3.68e+15	1.85e+13	4077.547	0.000	***
Brand	284	1.99e+15	7.01e+12	1247.852	0.000	***
manufacture_country	23	8.51e+14	3.70e+13	5829.943	0.000	***
Branch	24	3.15e+13	1.31e+12	191.159	0.000	***
City	11	7.68e+12	6.98e+11	101.404	0.000	***
IsHoliday	1	2.14e+11	2.14e+11	31.096	0.000	***
day_of_week	1	5.06e+11	5.06e+11	73.422	0.000	***
week_of_year	1	4.74e+08	4.74e+08	0.069	0.793	
is_weekend	1	1.21e+07	1.21e+07	0.002	0.967	
quarter	1	1.13e+10	1.13e+10	1.646	0.199	
year	1	1.38e+10	1.38e+10	1.999	0.157	
month	1	1.43e+10	1.43e+10	2.076	0.150	
day	1	4.23e+11	4.23e+11	61.388	0.000	***

## Helper functions

## EDA

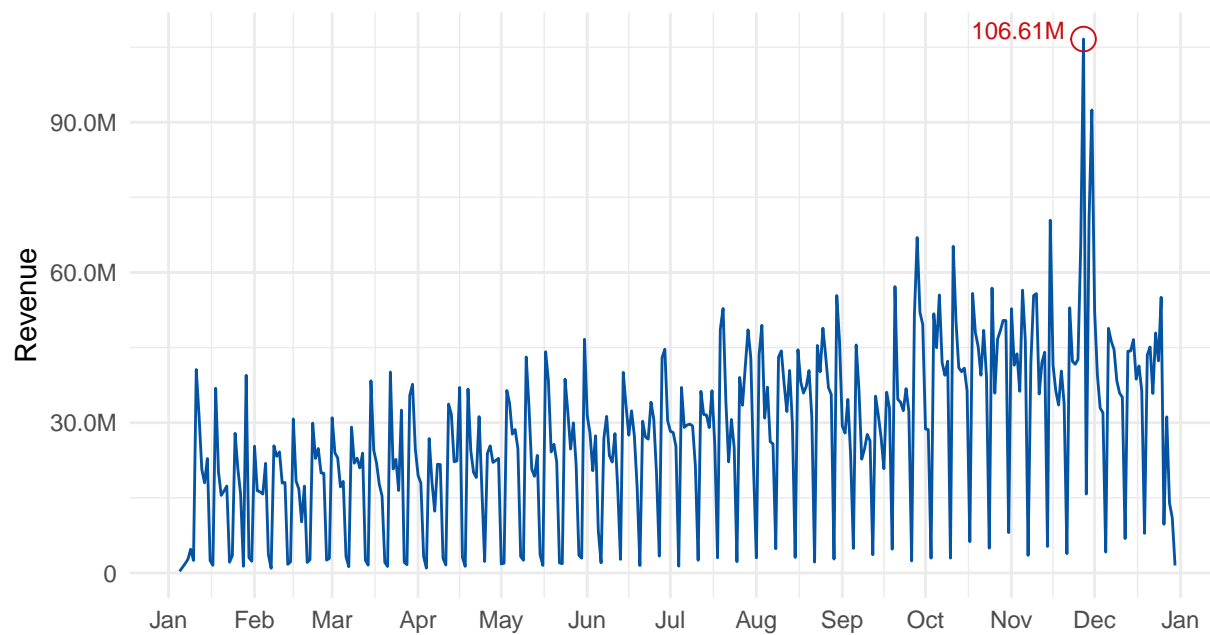
```
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```

## Daily Sales in 2021

On November 27 revenue was \$106.61M

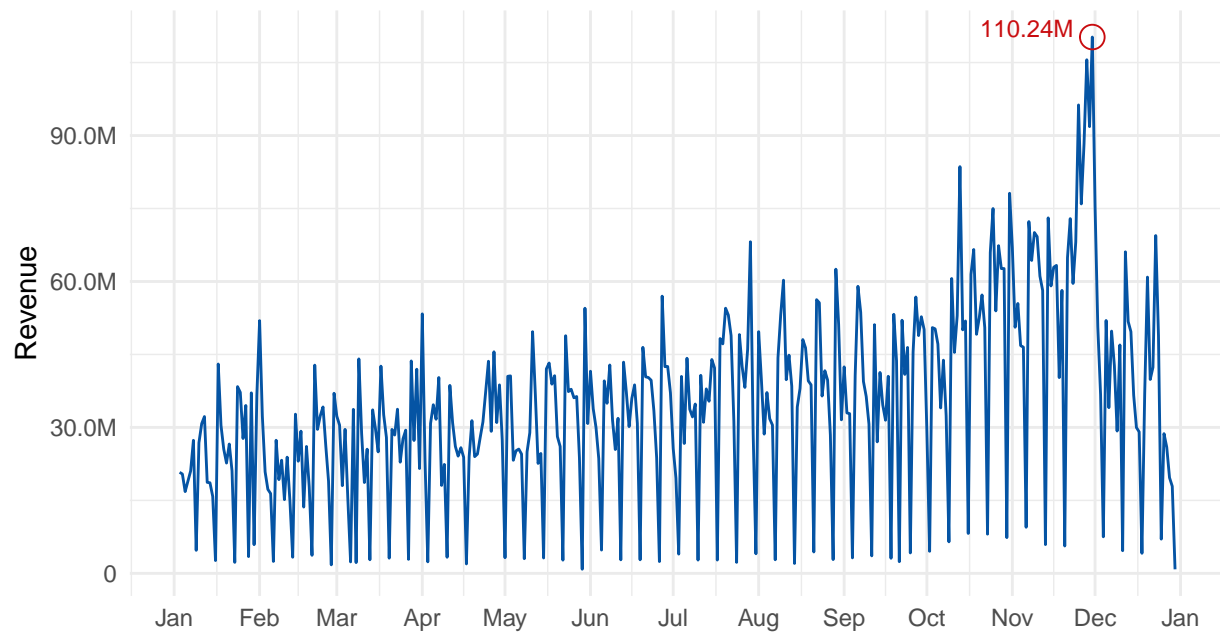


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## Daily Sales in 2022

On November 30 revenue was \$110.24M

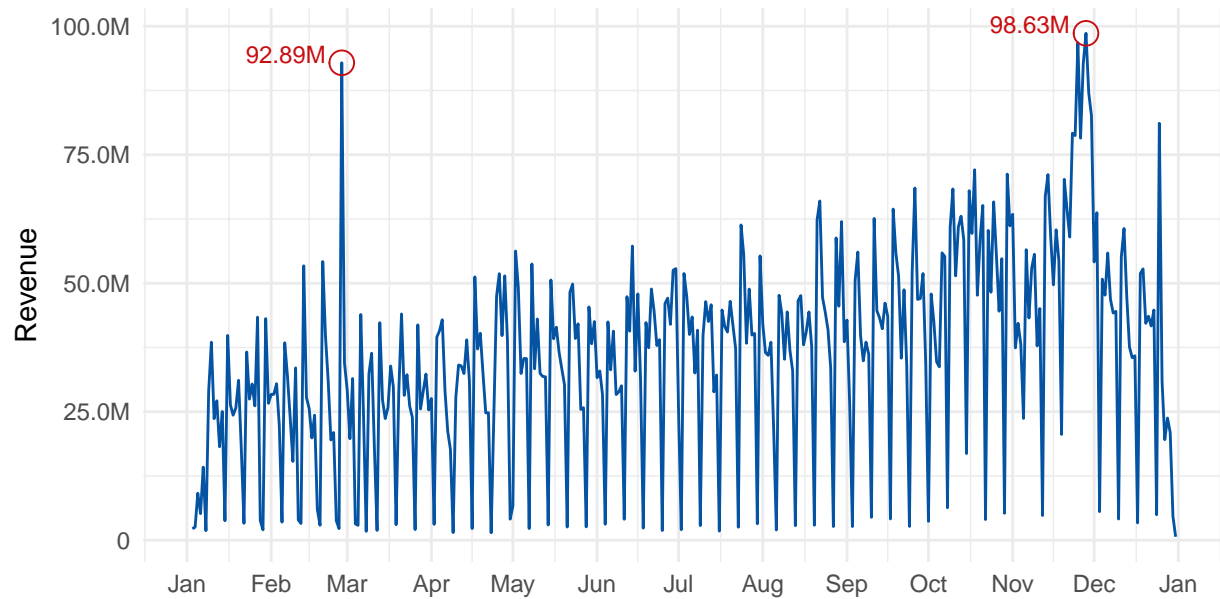


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## Daily Sales in 2023

On February 27 revenue was \$92.89M

On November 28 revenue was \$98.63M

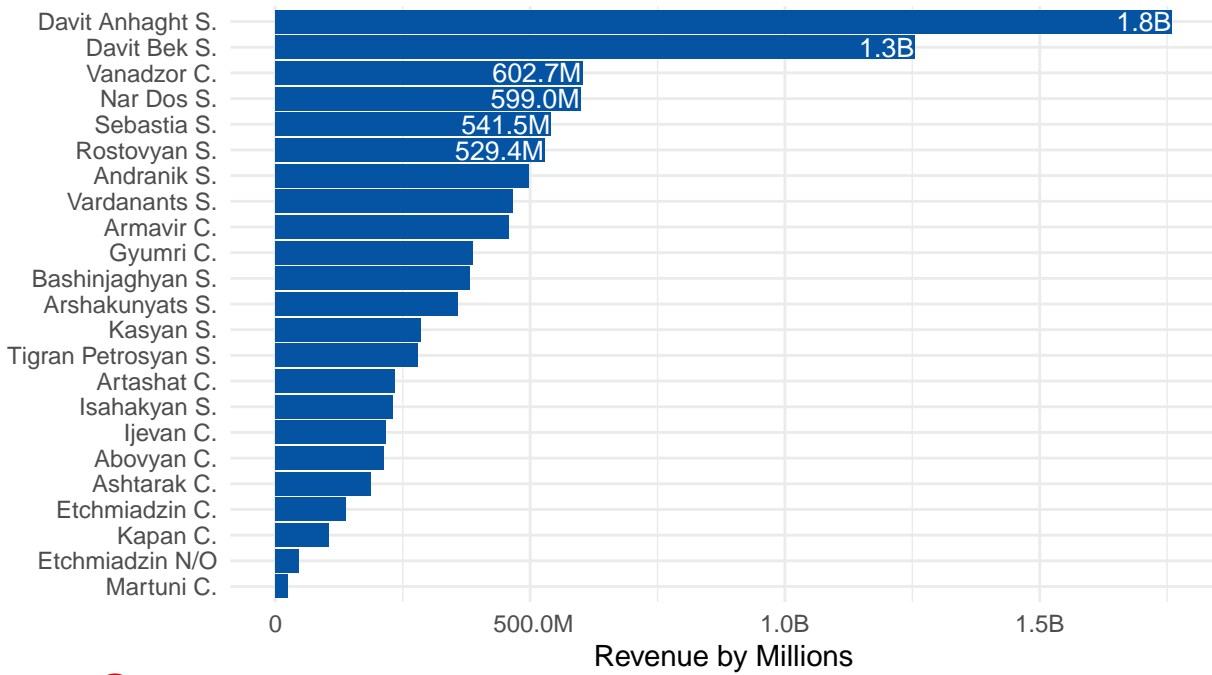


## Overall sales by shop

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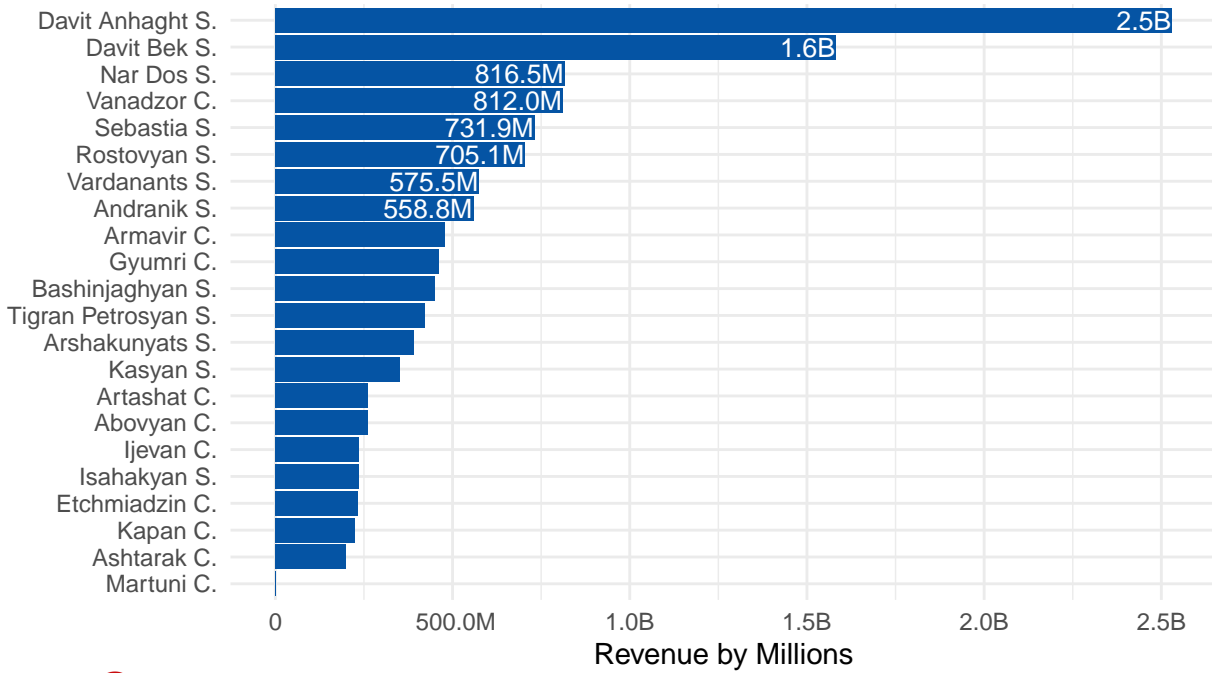
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## Sales by Shop 2021



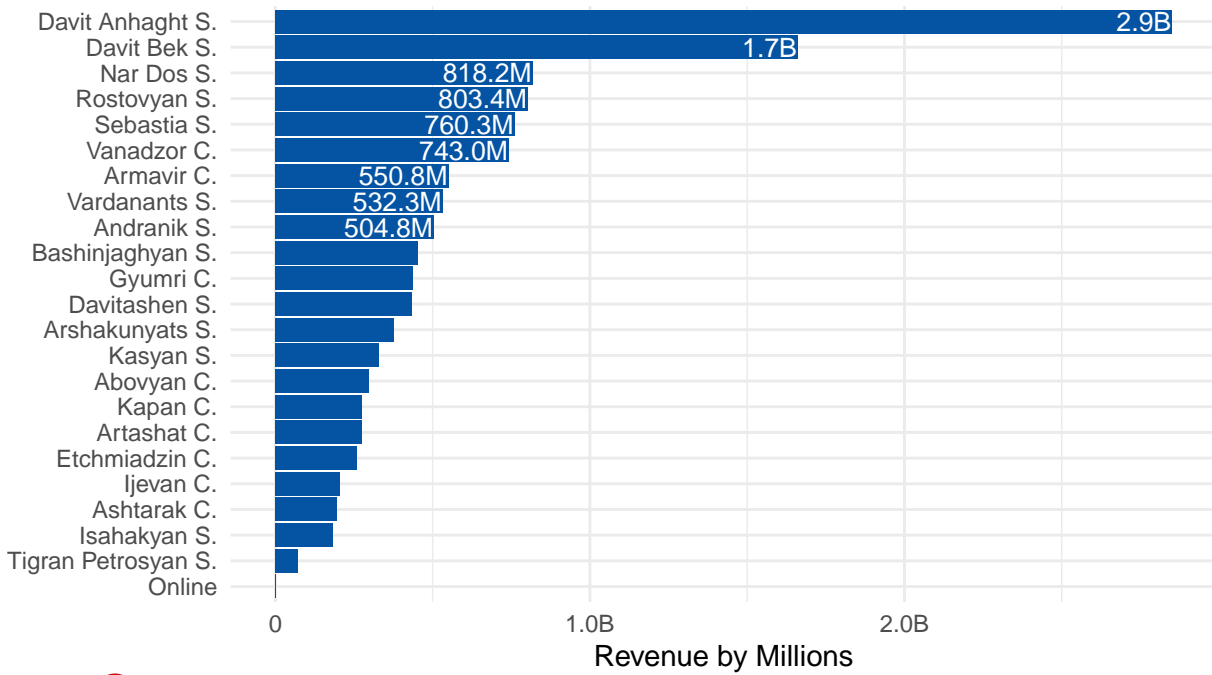
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## Sales by Shop 2022



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## Sales by Shop 2023



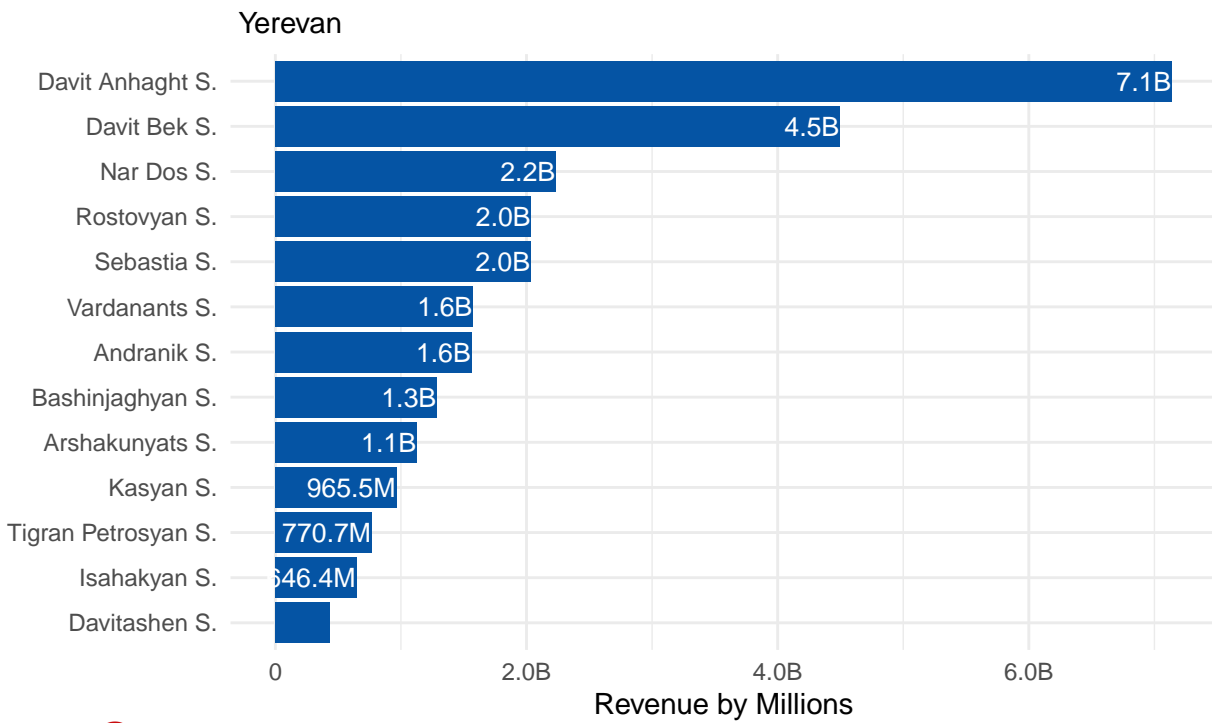
## Sales by shop in Yerevan

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## Sales by Shop

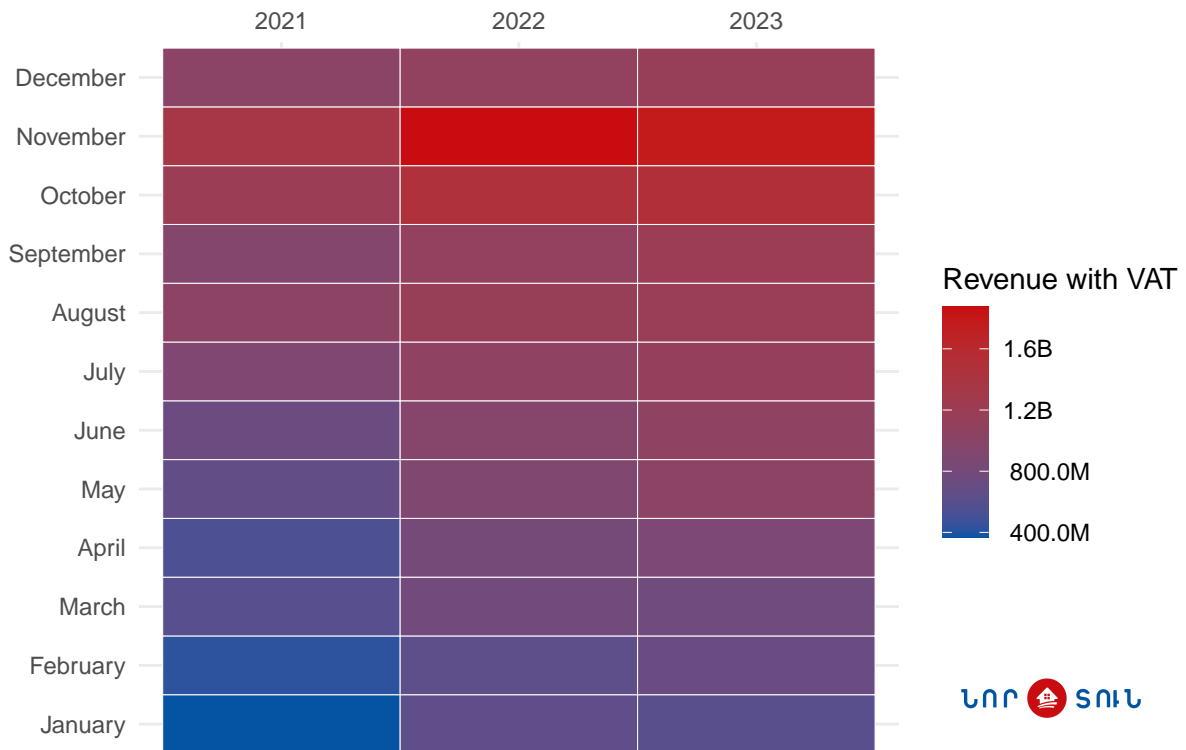


Heatmap of sales years and months

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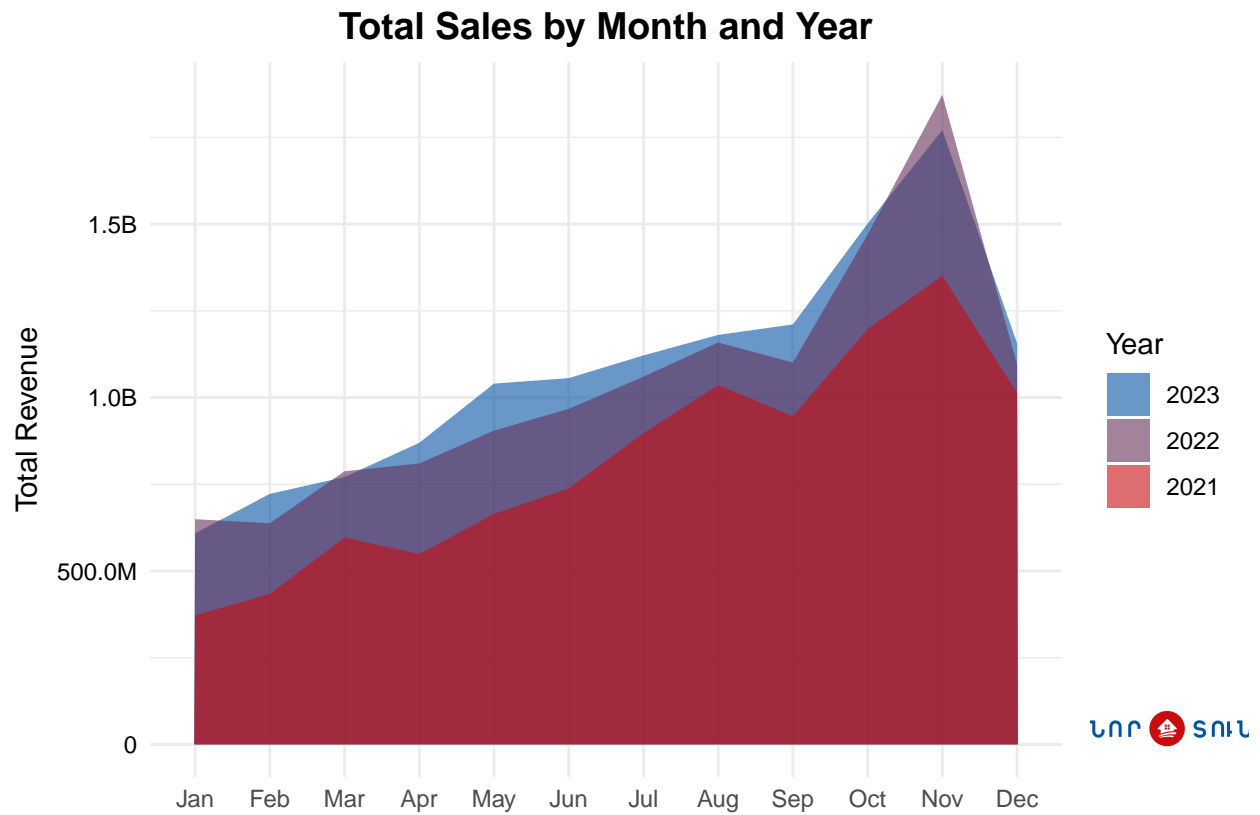
## Monthly Revenue by Year



Area Chart

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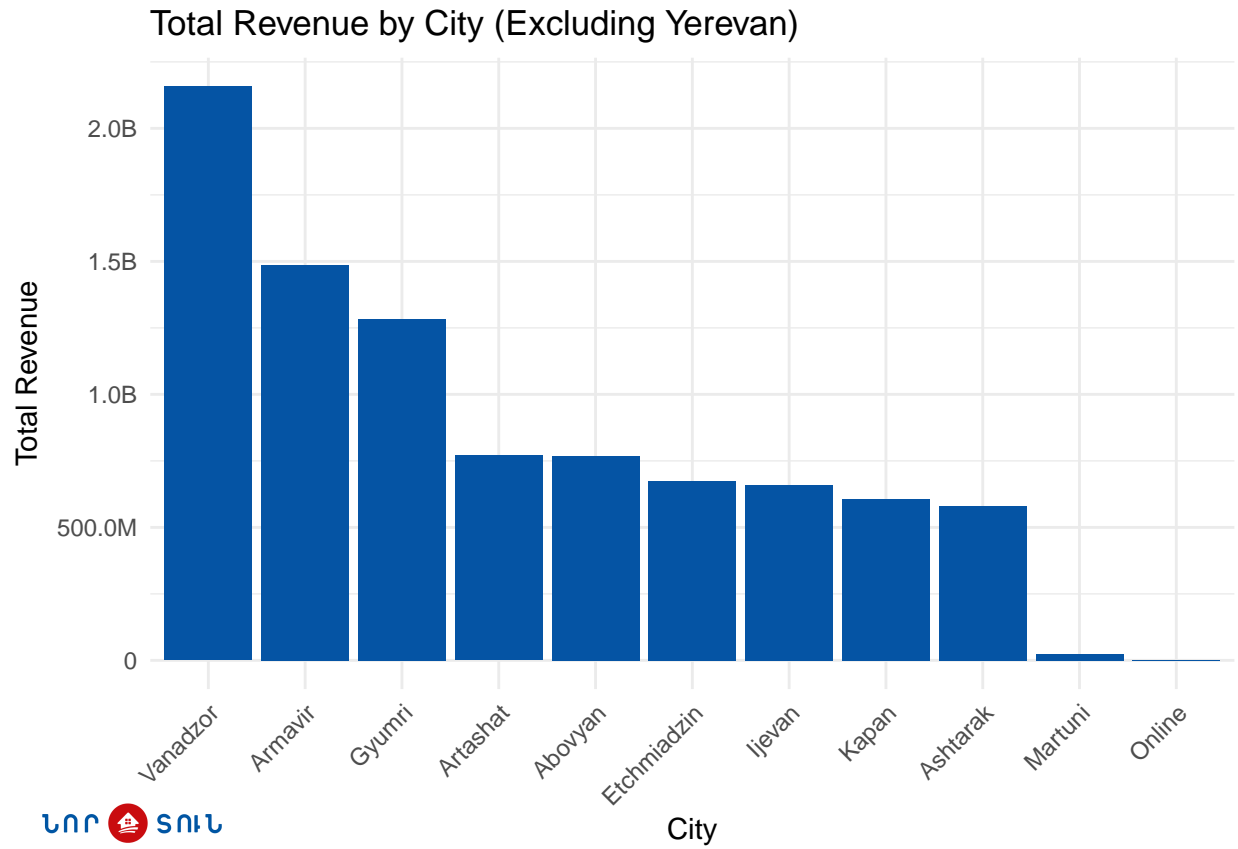
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# Revenue by city Without Yerevan

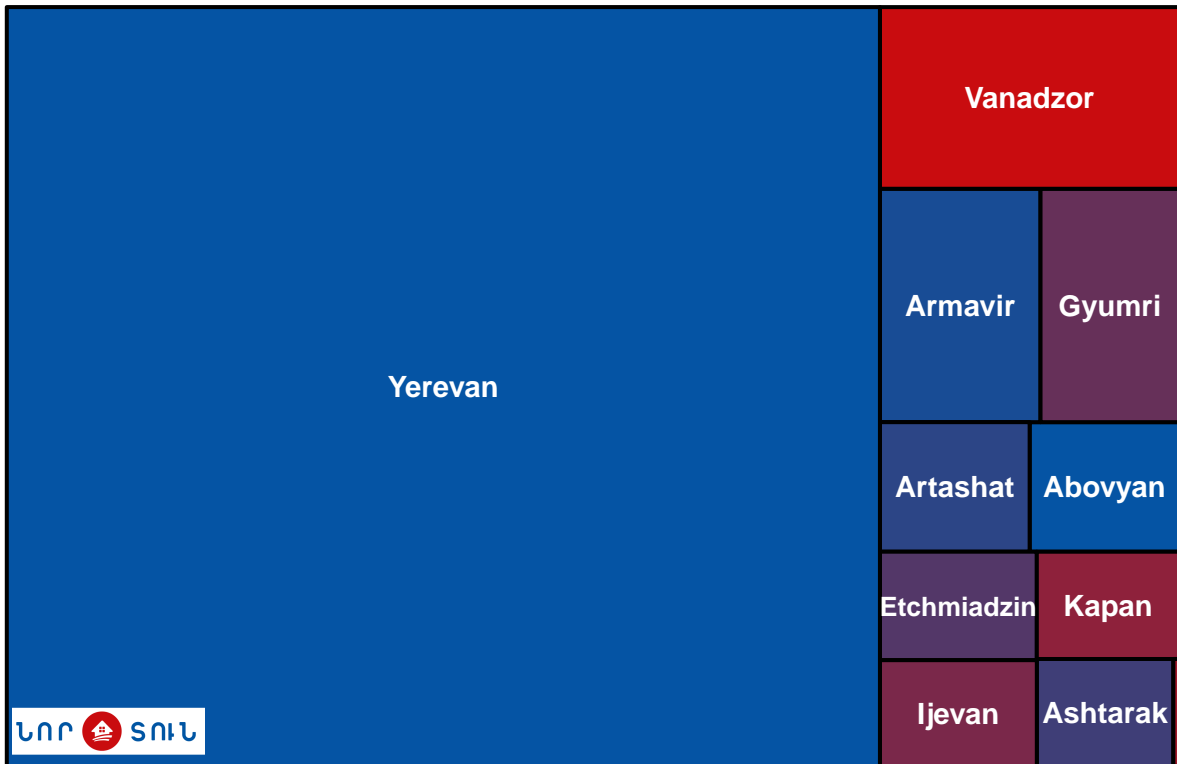
## pdf

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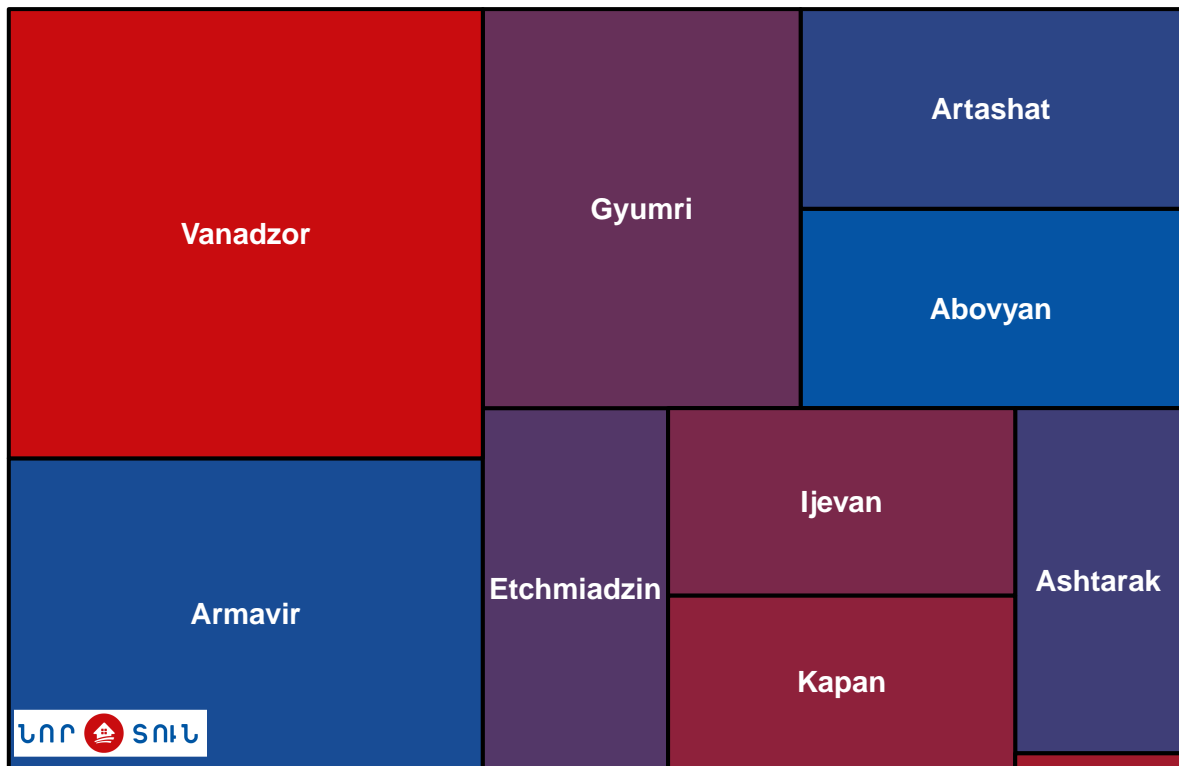


#comparing yerevan with other cities ## treemap

## Revenue by City

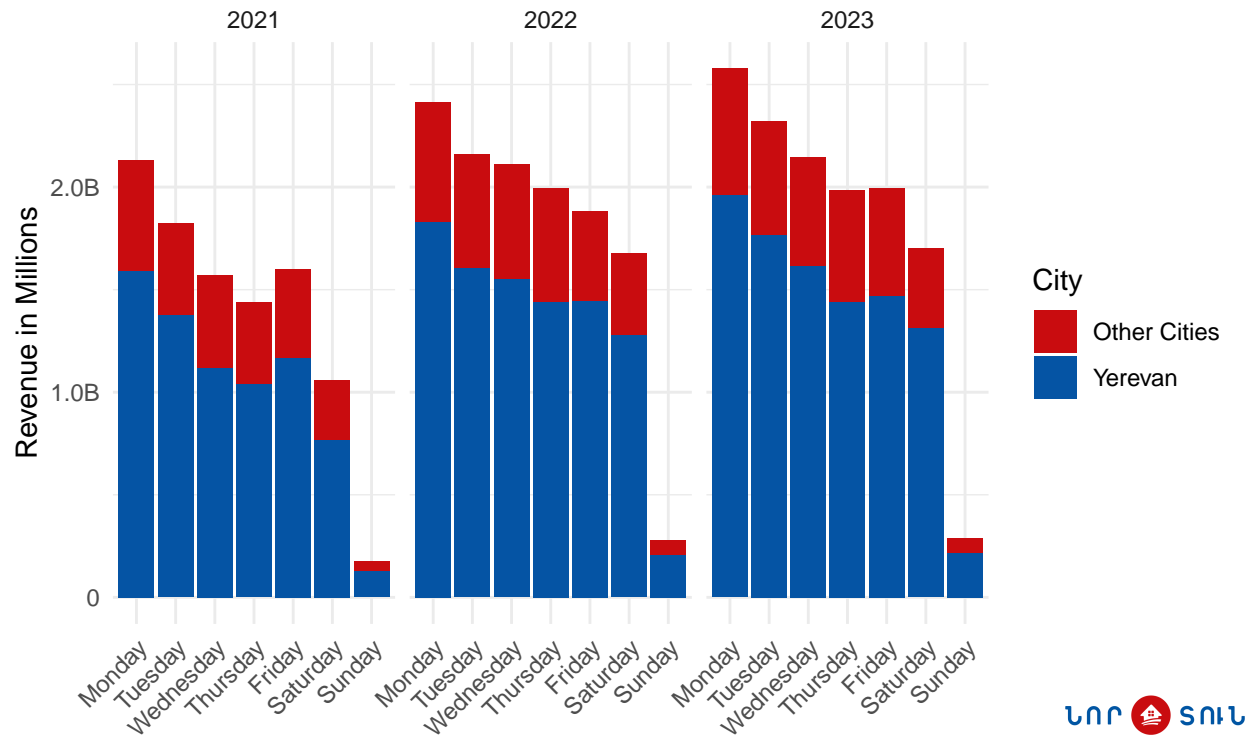


## Revenue by City Without Yerevan



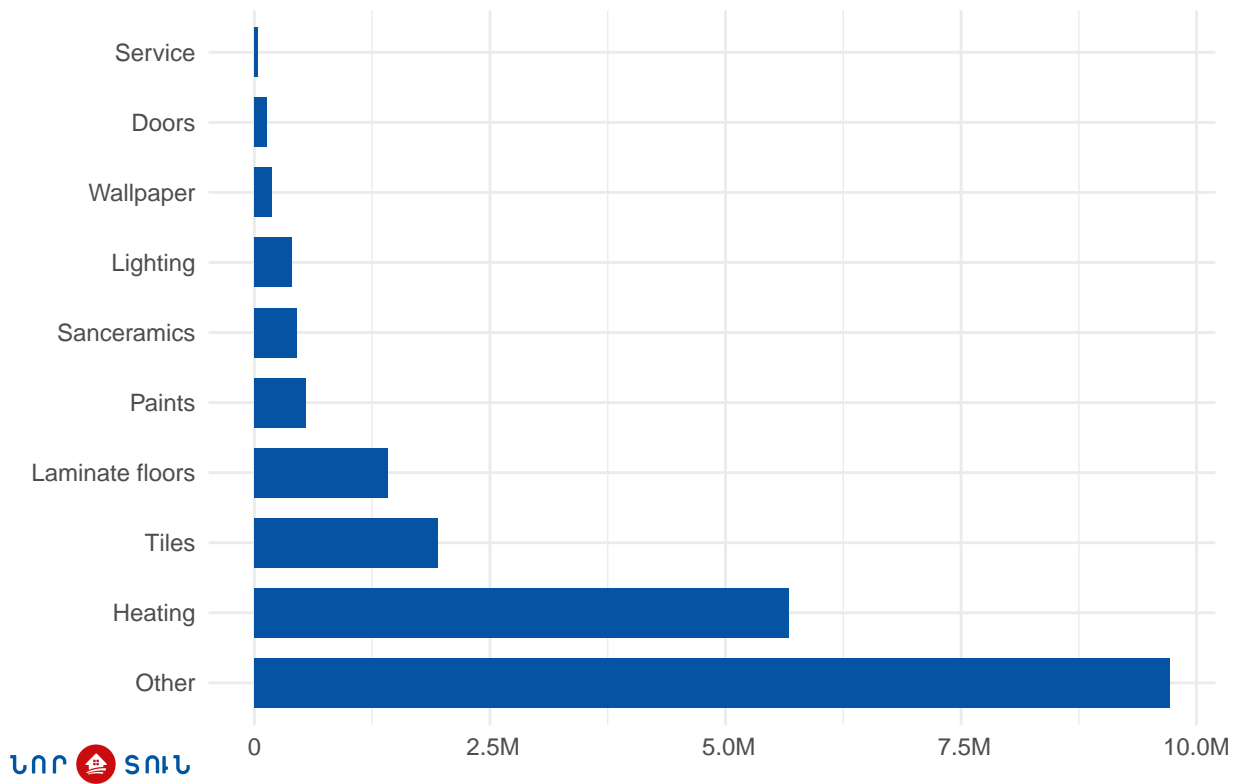
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## Average Sales by Weekday Across Cities



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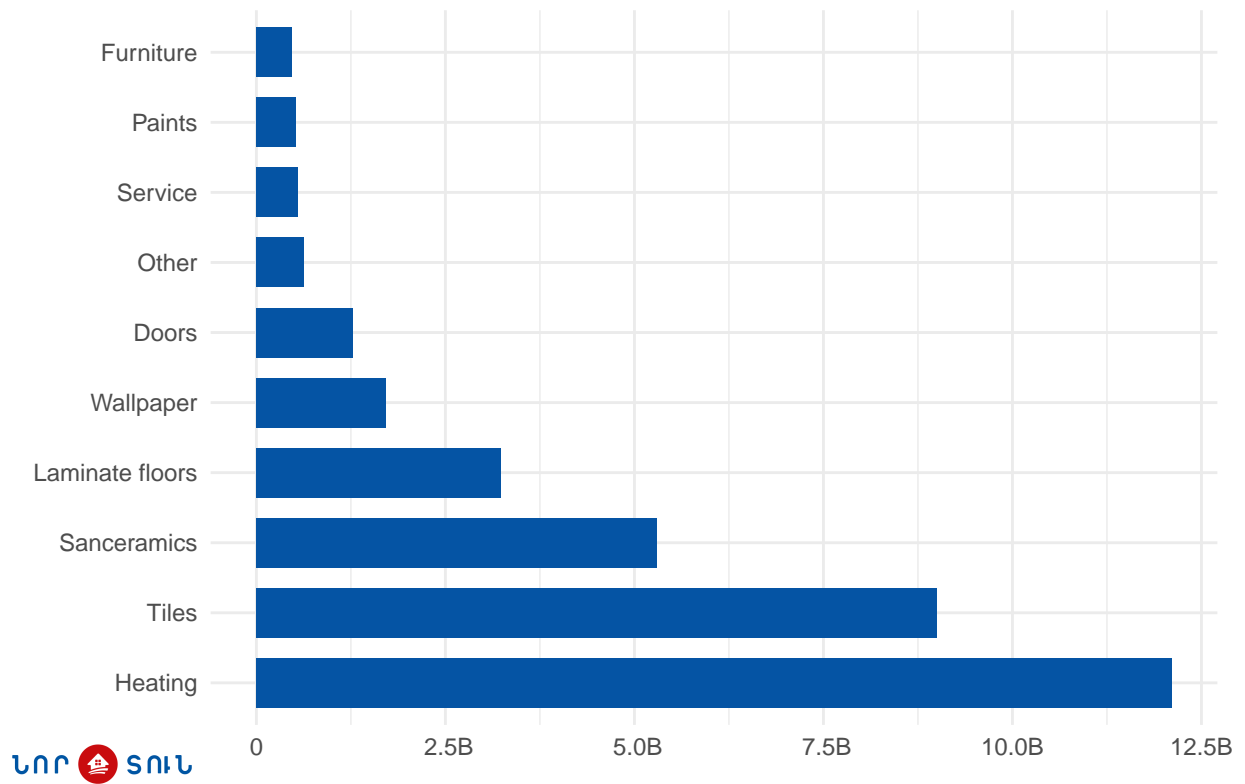
## Total Number of Product Purchases by Category



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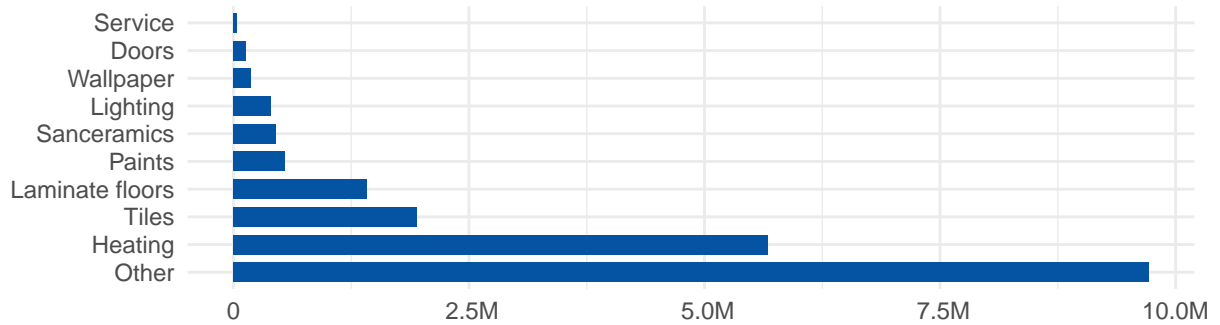


## Revenue by Category

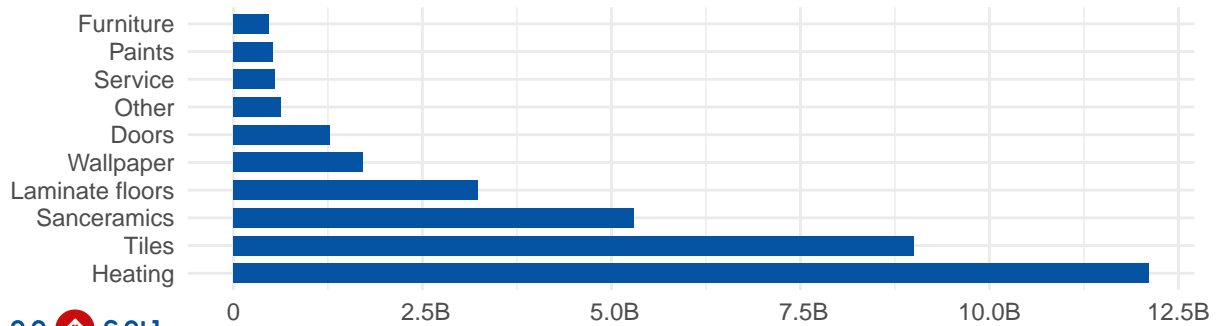


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## Total Number of Product Purchases by Category

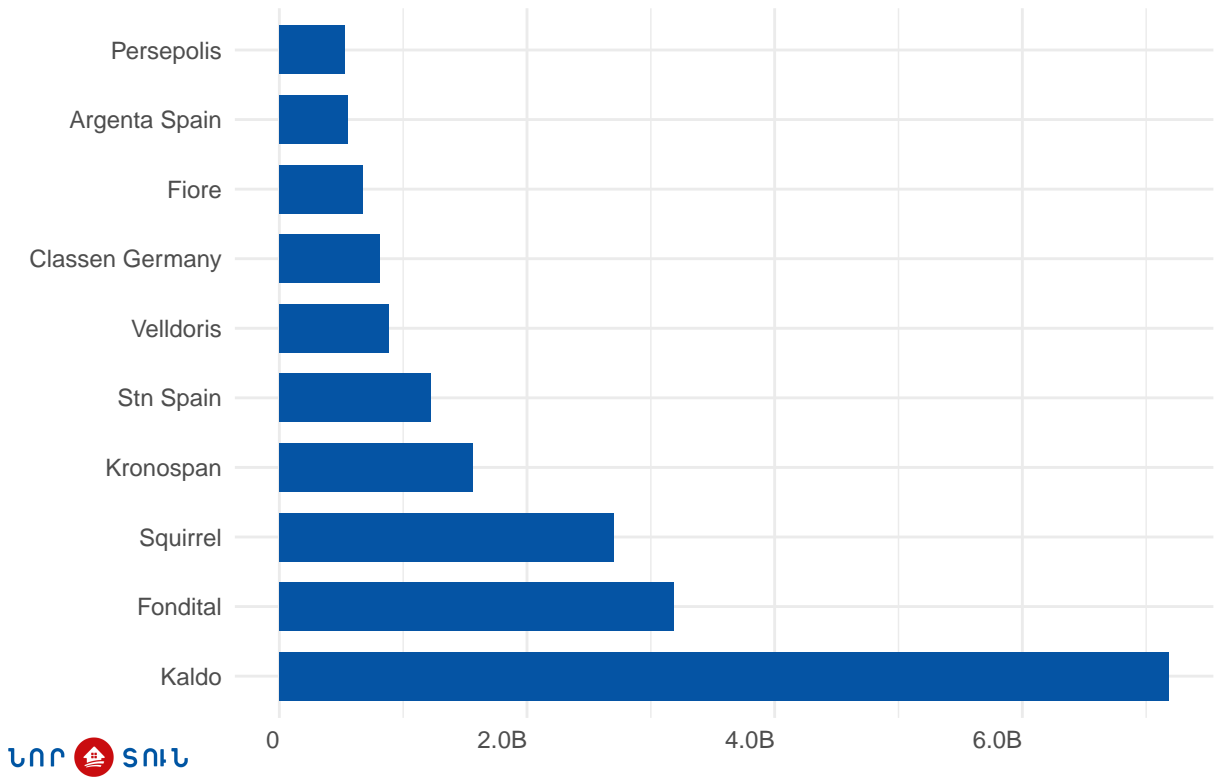


## Revenue by Category

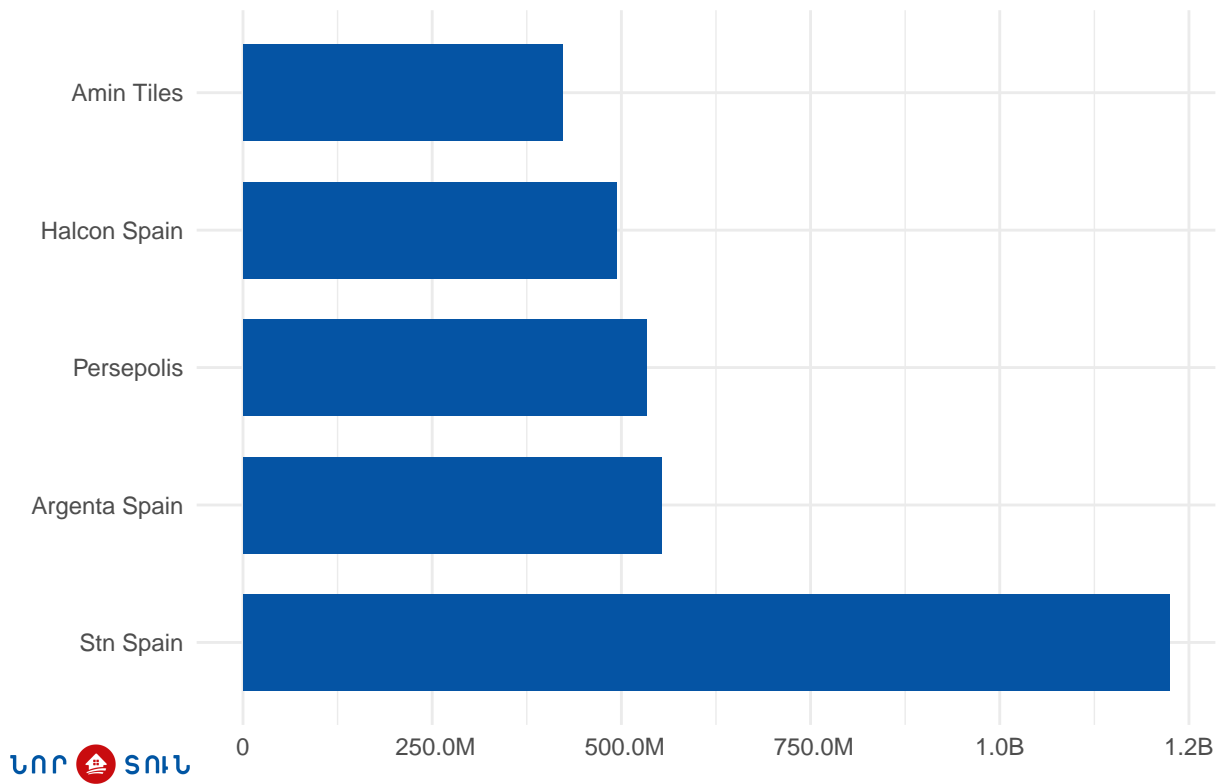


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## Top 10 Brands by Revenue



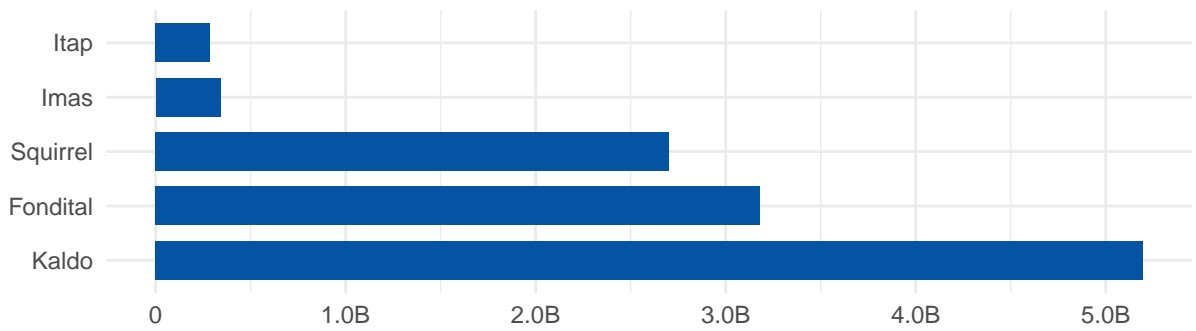
## Top 5 Brands in Tiles by Revenue



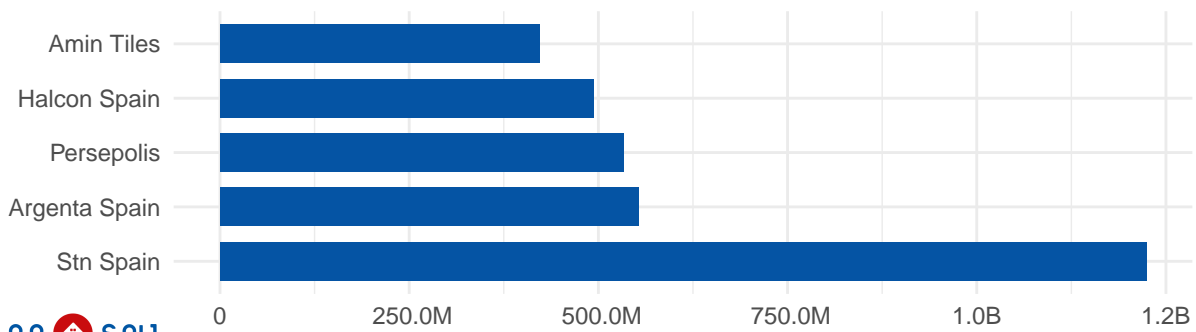
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### Top 5 Brands in Heating by Revenue

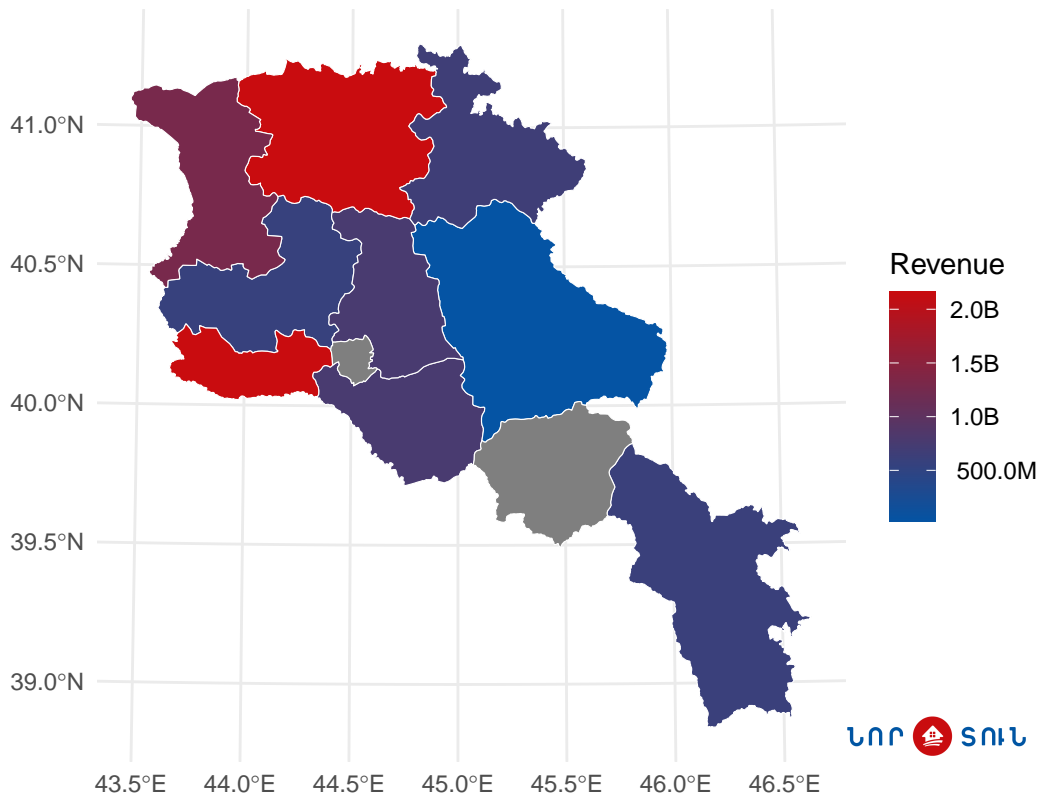


### Top 5 Brands in Tiles by Revenue

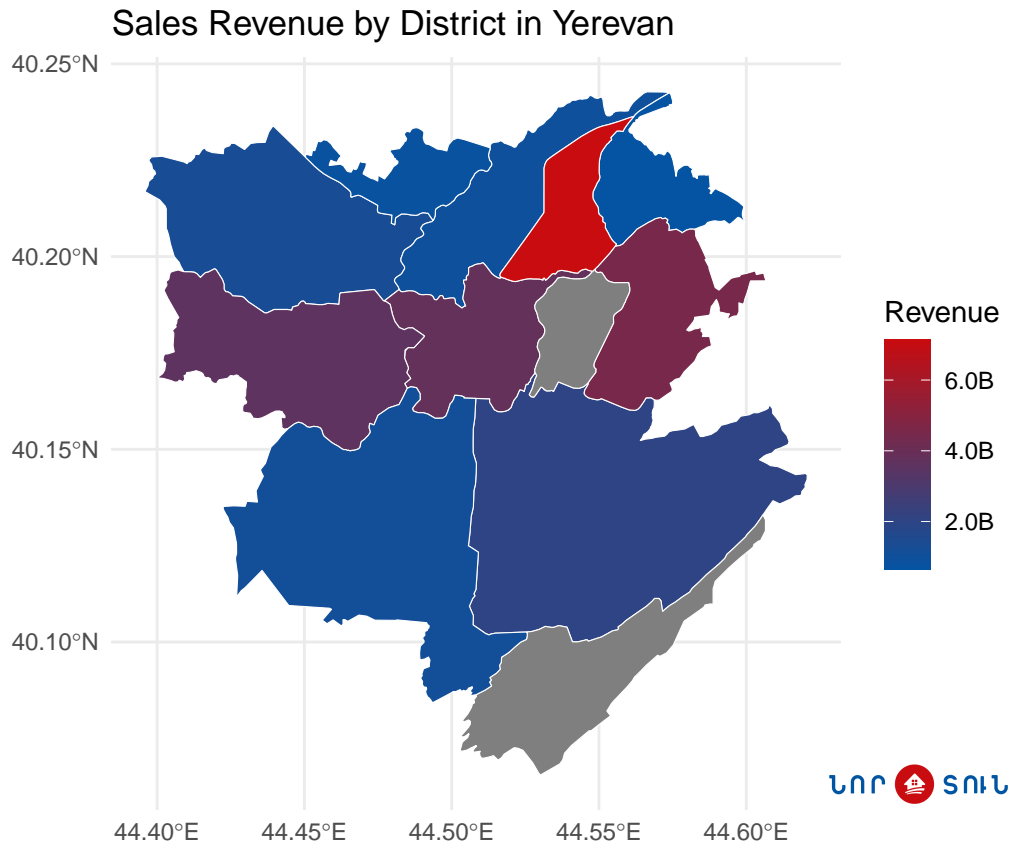


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## Sales Revenue by Region in Armenia



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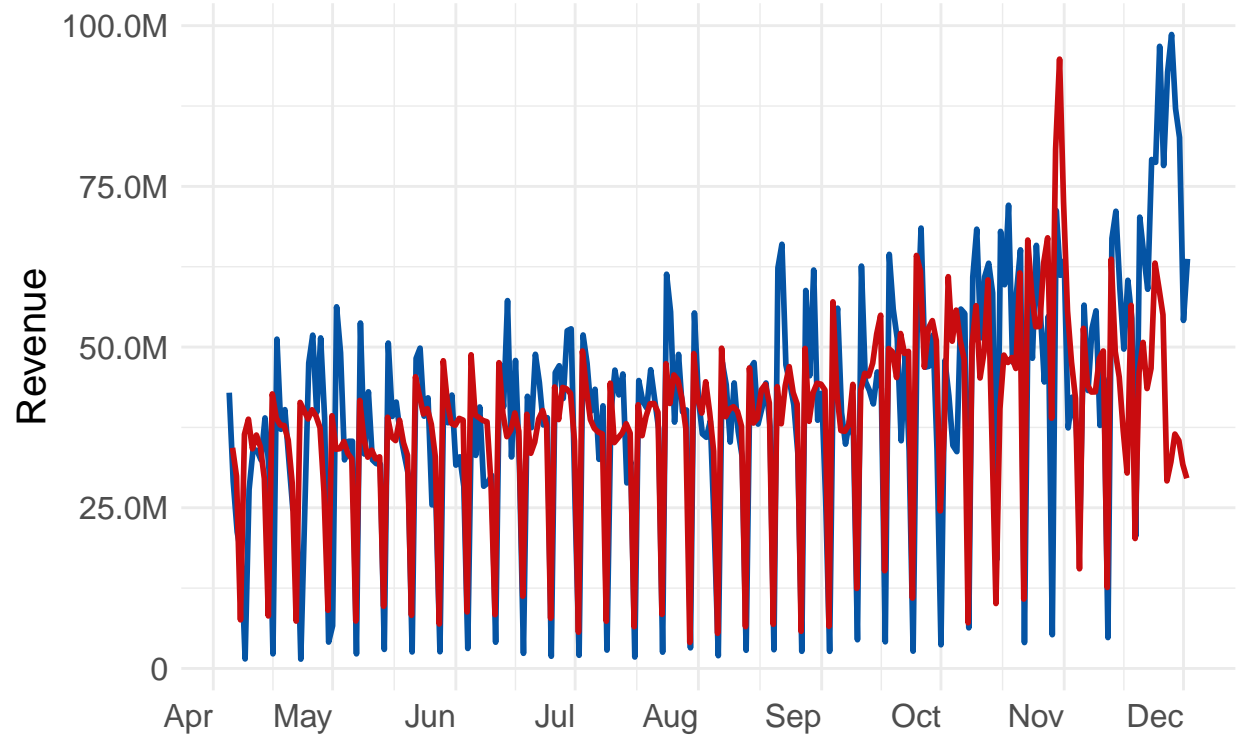


## PREDICTIONS

```
## Warning: Using 'size' aesthetic for lines was deprecated in ggplot2 3.4.0.
## i Please use 'linewidth' instead.
## This warning is displayed once every 8 hours.
## Call 'lifecycle::last_lifecycle_warnings()' to see where this warning was
## generated.
```

```
## pdf
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```

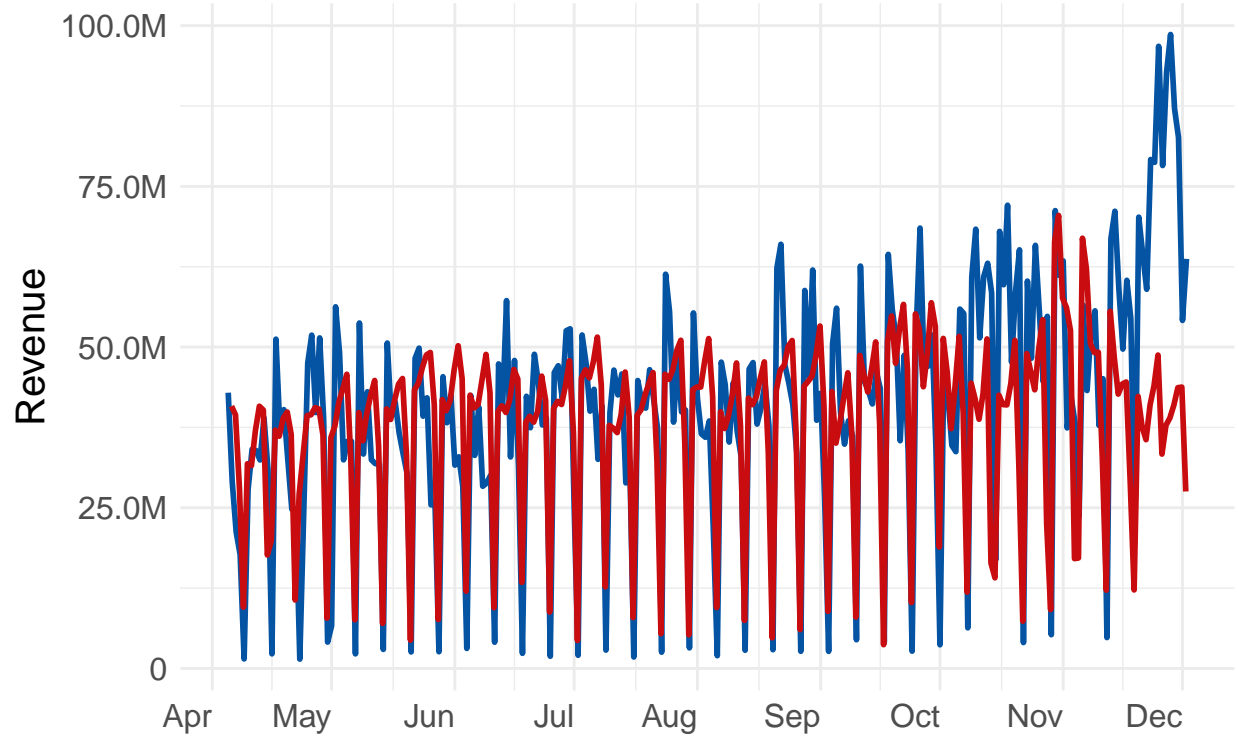
## One Layer LSTM Forecast



```
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```



## Two Layer LSTM Forecast

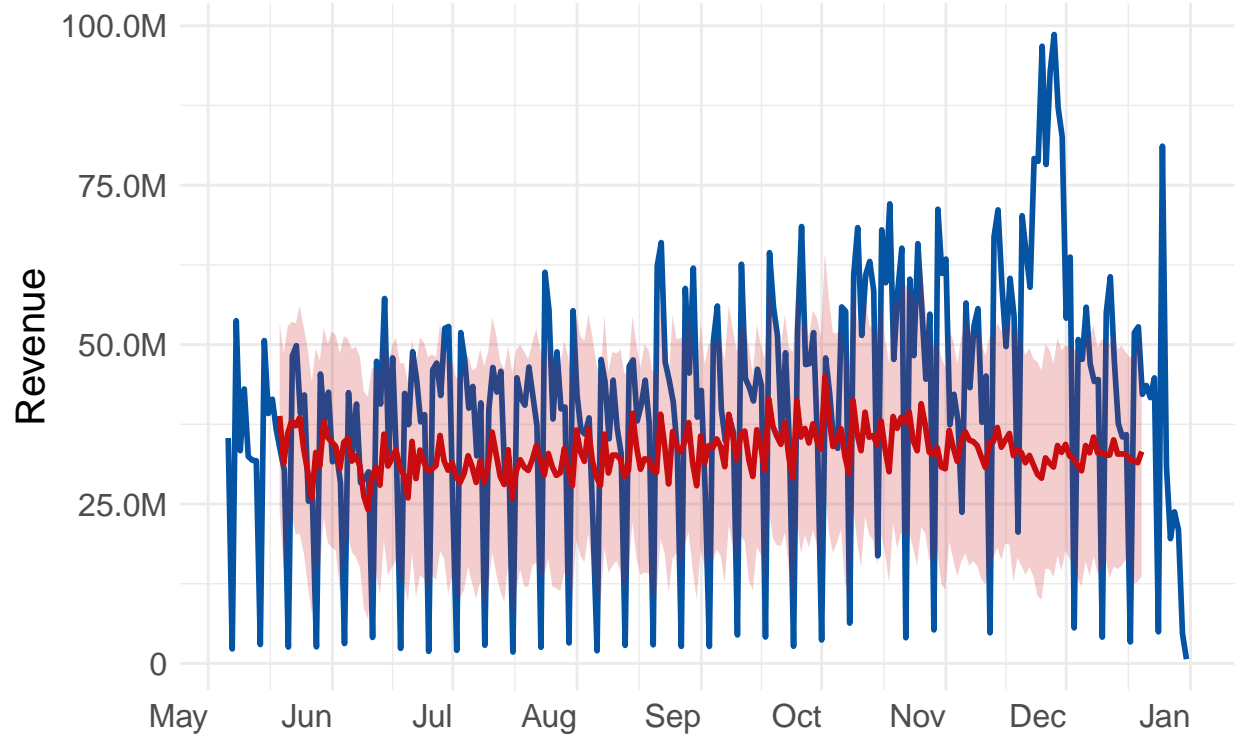


```
## pdf
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```

```
## Warning in geom_line(data = ZER_SHOT_LLAMA, aes(x = date, y = pred), color =
## end_color, : Ignoring unknown parameters: 'label'
```

```
## pdf
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```

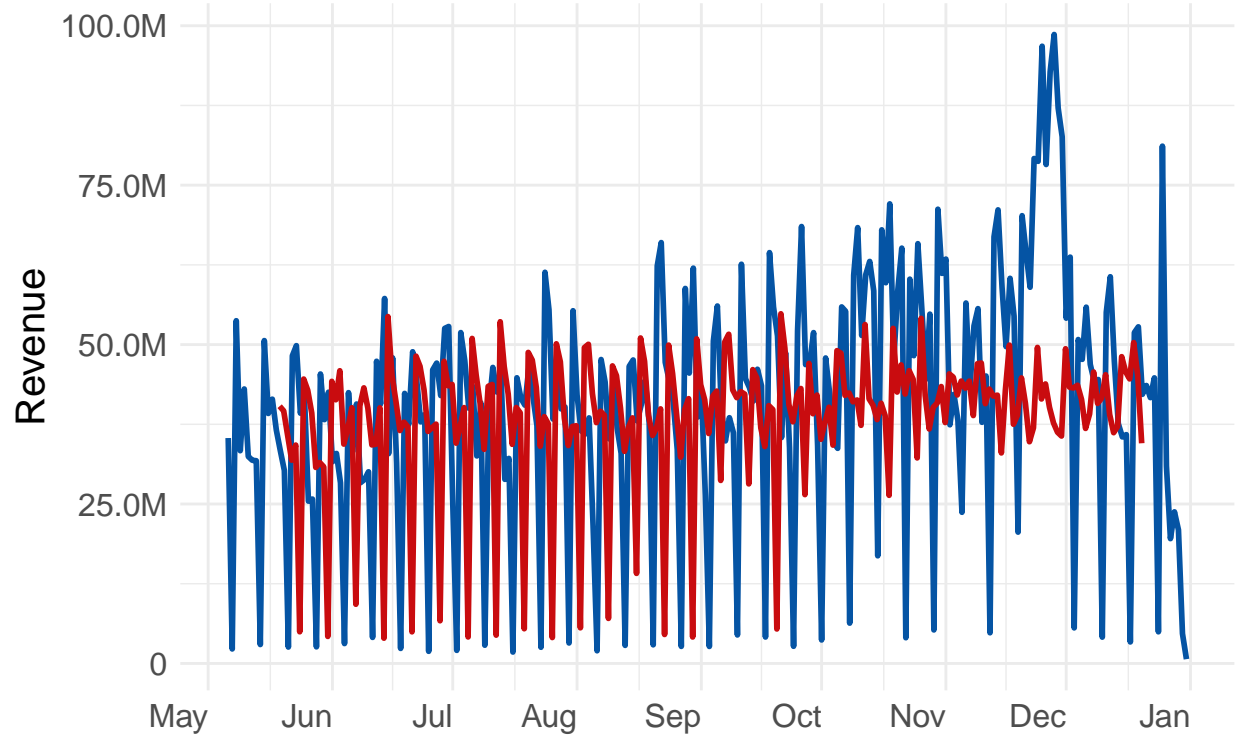
## Zero-Shot, Lag-Llama Forecast



```
## Warning in geom_line(data = FINE_TUNED_LLAMA, aes(x = date, y = pred), color =  
## end_color, : Ignoring unknown parameters: 'label'
```

```
## pdf  
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```

## Fine-Tuned, Lag-Llama Forecast

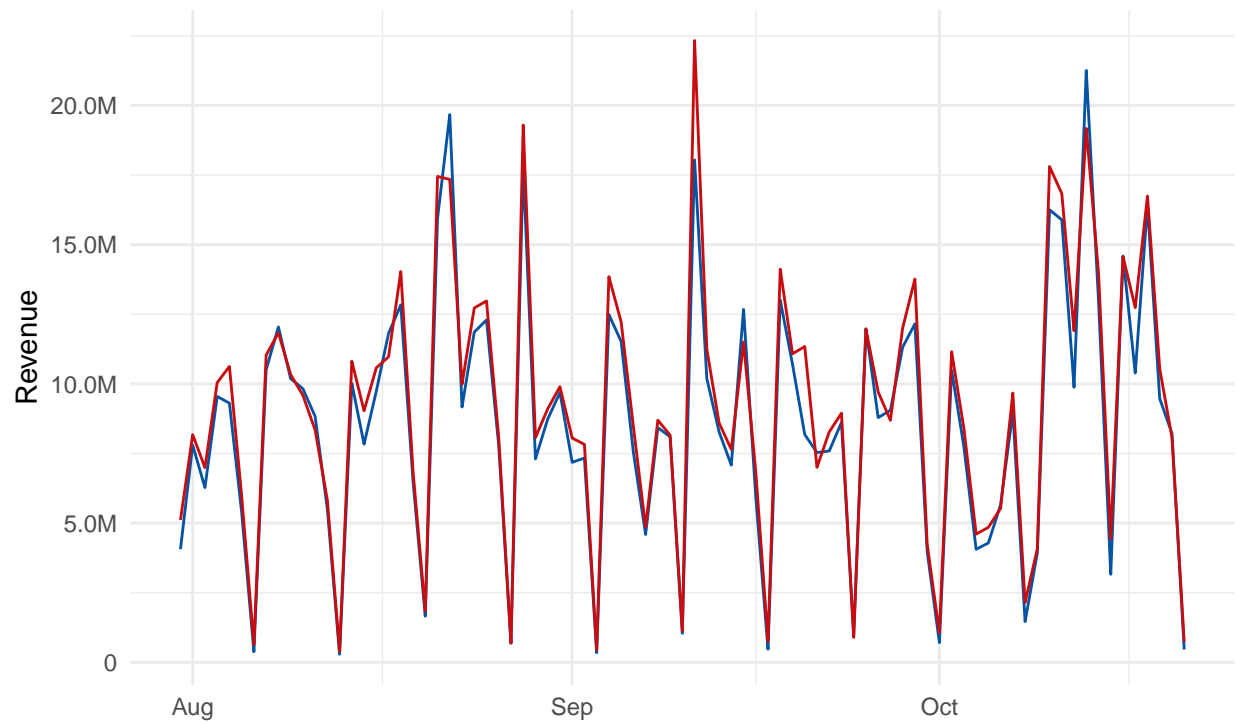


```
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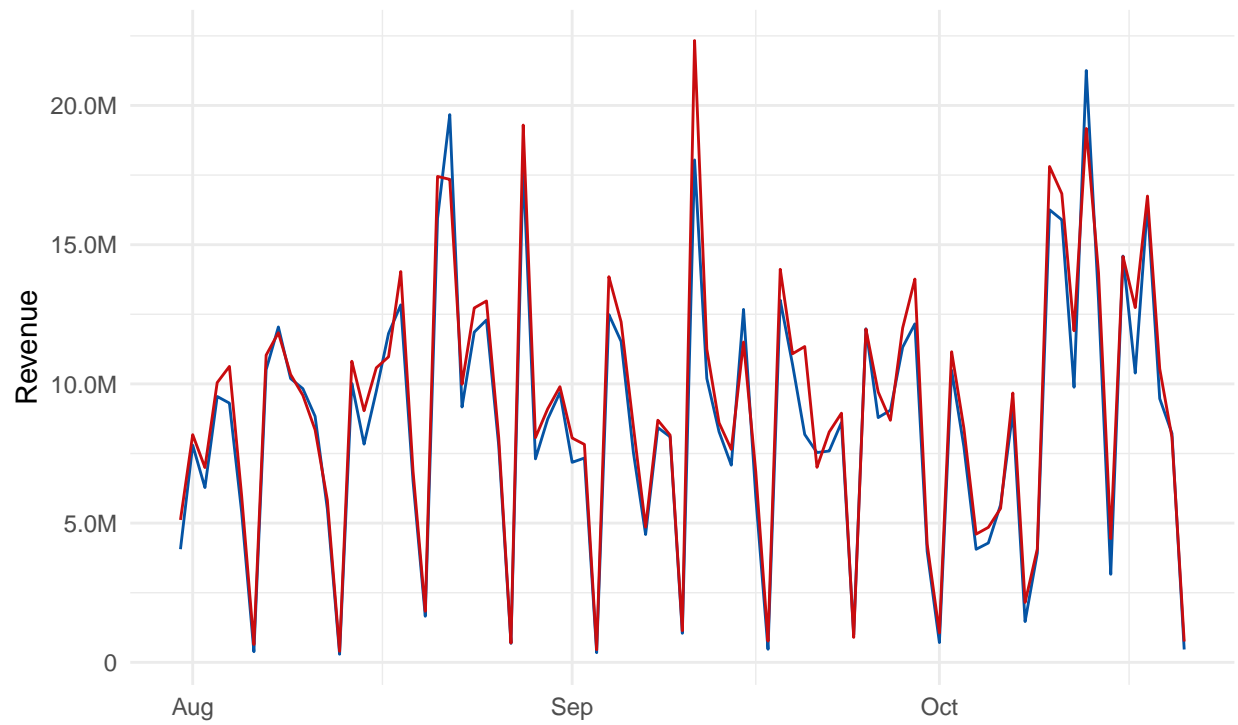
## Random Forest Regressor Forecast

Davit Anhaght S.



## Random Forest Regressor Forecast

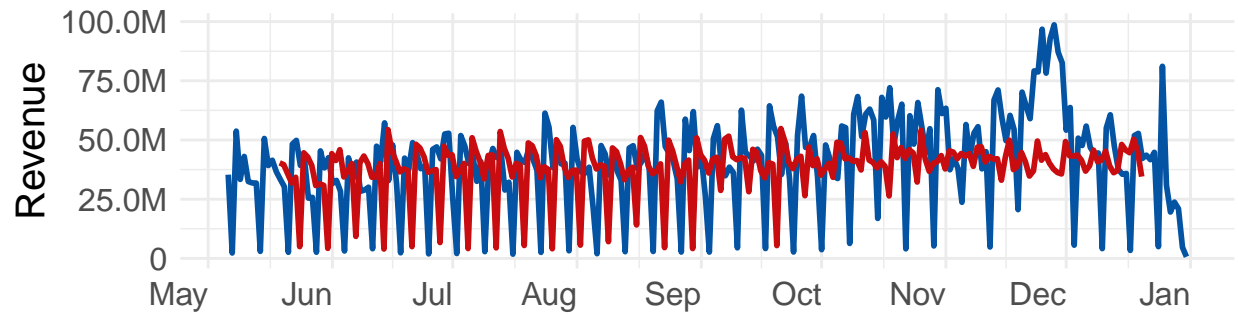
Davit Anhaght S.



```
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```

```
ggarrange(fine_tune_lag_llam_prediction, fine_tune_lag_llam_prediction, nrow = 2)
```

Fine-Tuned, Lag-Llama Forecast



Fine-Tuned, Lag-Llama Forecast

