

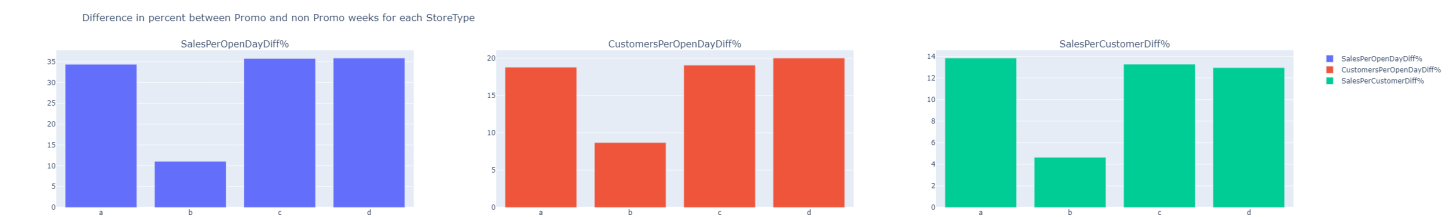
Summary

1 General task from the client

- Determine the key factors that influence sales and revenue
- Create strategies for the management to improve the business
- Build a standardized forecasting model which can predict the sales figures for the next eight weeks for each store.
- Generate a report with information on the overall performance of the 1115 stores as well as individual performance reports for each store.

2 Key factors and interesting insights:

Impact of Promotions



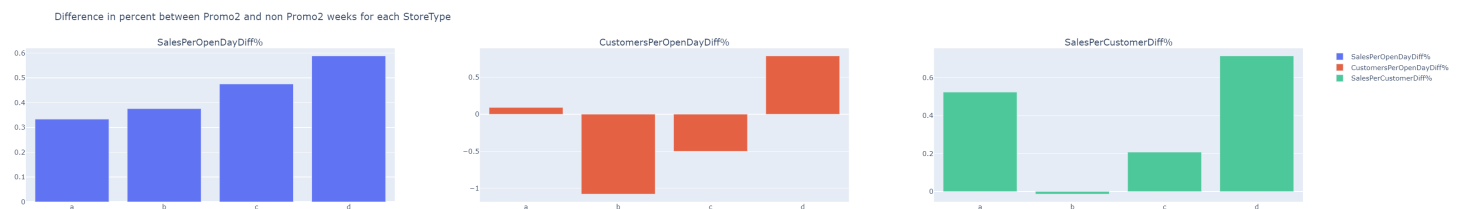
Result: The sales, customers and sales per customer are higher in weeks with promotions.

- Sales per day is ~ 35% higher
- Customers per day is ~ 19% higher
- Sales per customer is ~ 13% higher
- Storetype b is quite different. It just has 1/3 of the promotion impact.

Result: Also in a week with state holidays the promotions have a positive effect.

- The sales per day is 38% higher
- The customers per day is 20% higher
- The sales per customer is 16% higher

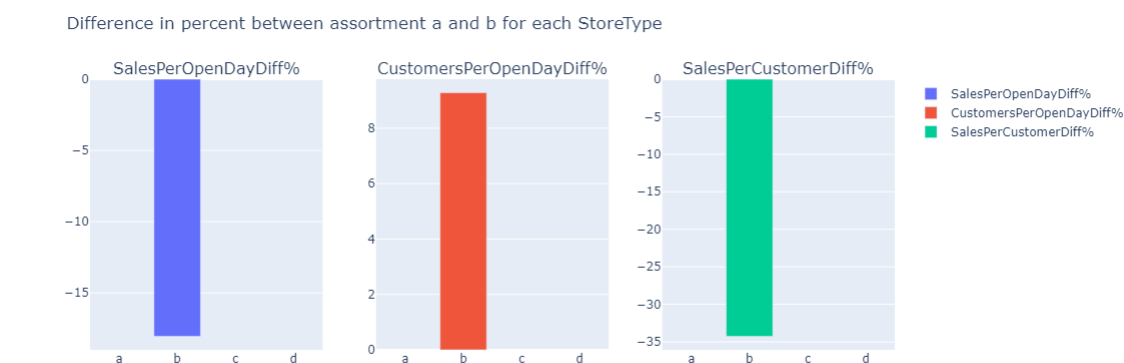
Impact of Promo2



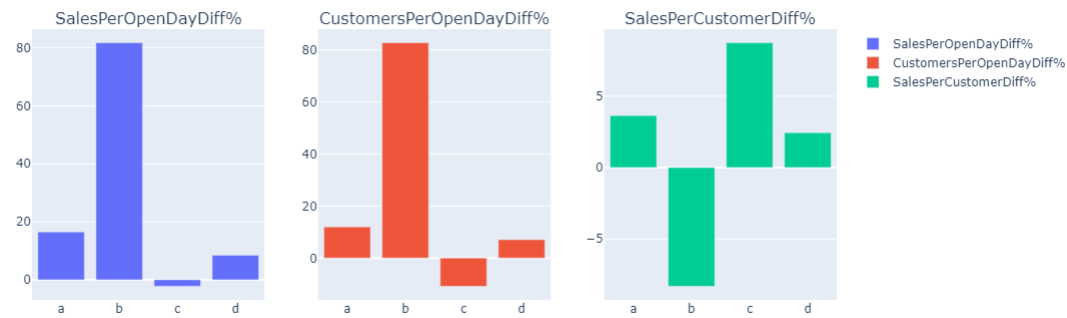
Result: For Promo2 members, months with Promo2 has no significant impact

- Sales per day is ~ 0.4% higher
- Customers per day is the nearly the same as without Promo2
- Sales per customer is ~ 0.4% higher

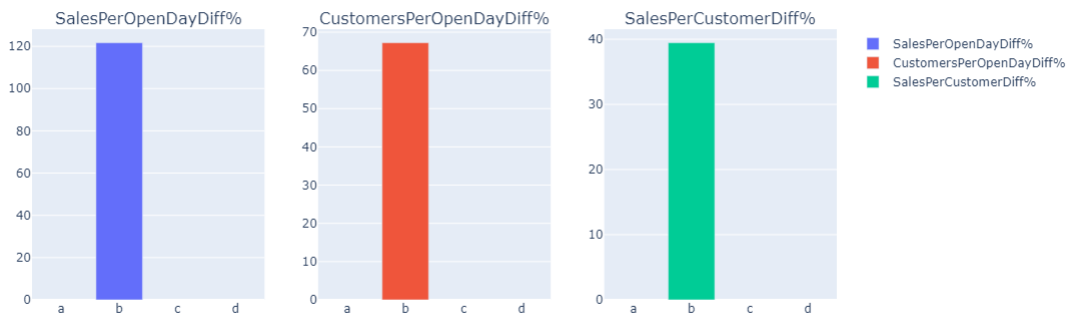
Performance of different assortments



Difference in percent between assortment a and c for each StoreType



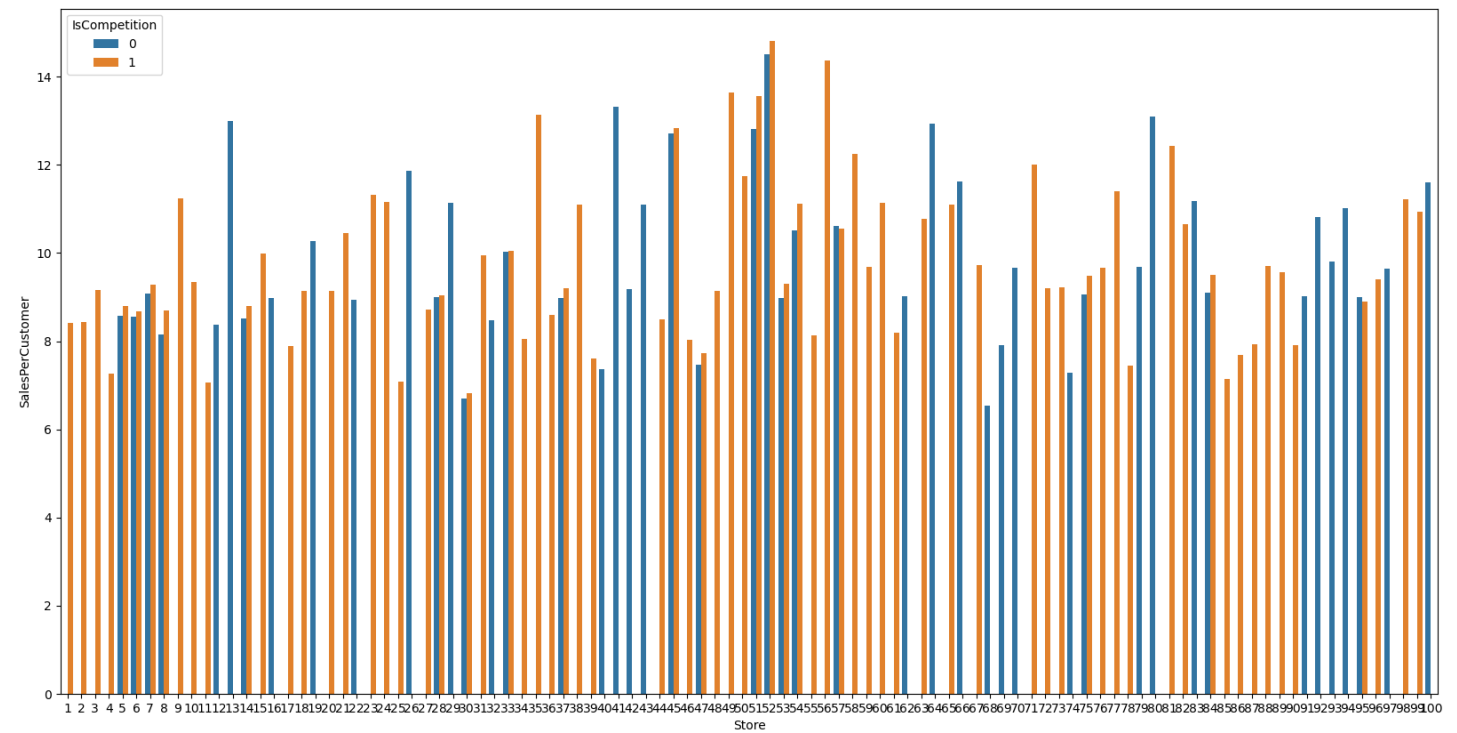
Difference in percent between assortment b and c for each StoreType



Result

- Only Storetype b has the assortment category extra(b)
- The sales per day in Storetype b for assortment extra(b) is 18% less then for assortment basic(a). They have 9.3% more customers but 34% less sales per customer.
- The sales per day for assortment erweitert(c) is in average 26%(16%,81%,-2%,8%) higher then for assortment basic(a).
- The sale per days for assortment erweitert(c) is 121% higher then for assortment extra(b).er.

Impact if competitor opens a store



Result:

- The sales is in average 5,5% less after the competeter has opened.

Saturday

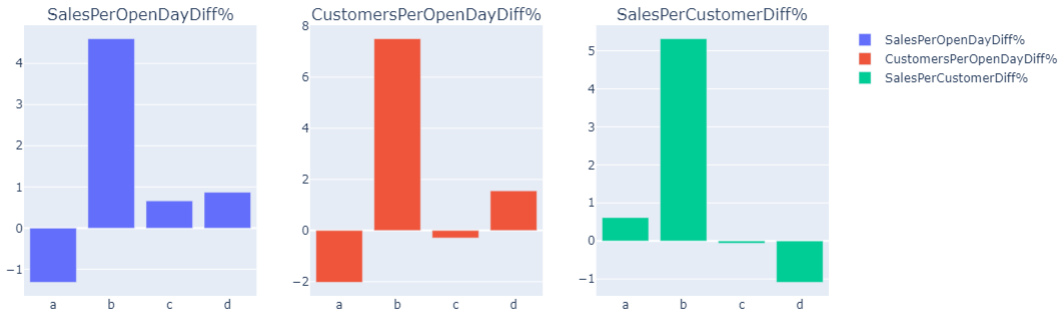
	Customers	Sales	SalesPerCustomer
DayOfWeek			
1	748.00	7310.00	9.62
2	680.00	6463.00	9.31
3	651.00	6133.00	9.24
4	646.00	6020.00	9.11
5	682.00	6434.00	9.19
6	571.00	5410.00	9.13

Result:

- The amount of customers on a Saturday is ~22% lower then within the week.
- The sales on a Saturday is ~ -20% lower then within the week.
- The sales per customer on a Saturday is ~ 2% lower then within the week.

Impact of school holidays

Difference in percent between SchoolHoliday and non SchoolHoliday weeks for each StoreType



Result:

- For Storetype a the sales on Schooldays are 1.3% lower.
- For Storetype b the sales on Schooldays are 4.6% higher.
- For Storetype c and d the sales on Schooldays are nearly the same higher with 0.7% and 0.9%.

3 Improvement suggestions and ideas

- Stop Promo2 or change strategy
- For storetype b try to open more stores with assortment erweitert(c)
- For storetype a, d try to open more stores with assortment erweitert(c)
- Try to stand out from the competitor and do special promotions on saturday for products relevant for the weekend.
- On day with school holidays make special offers to this target group within storetype b.
- Optimization of spend resources

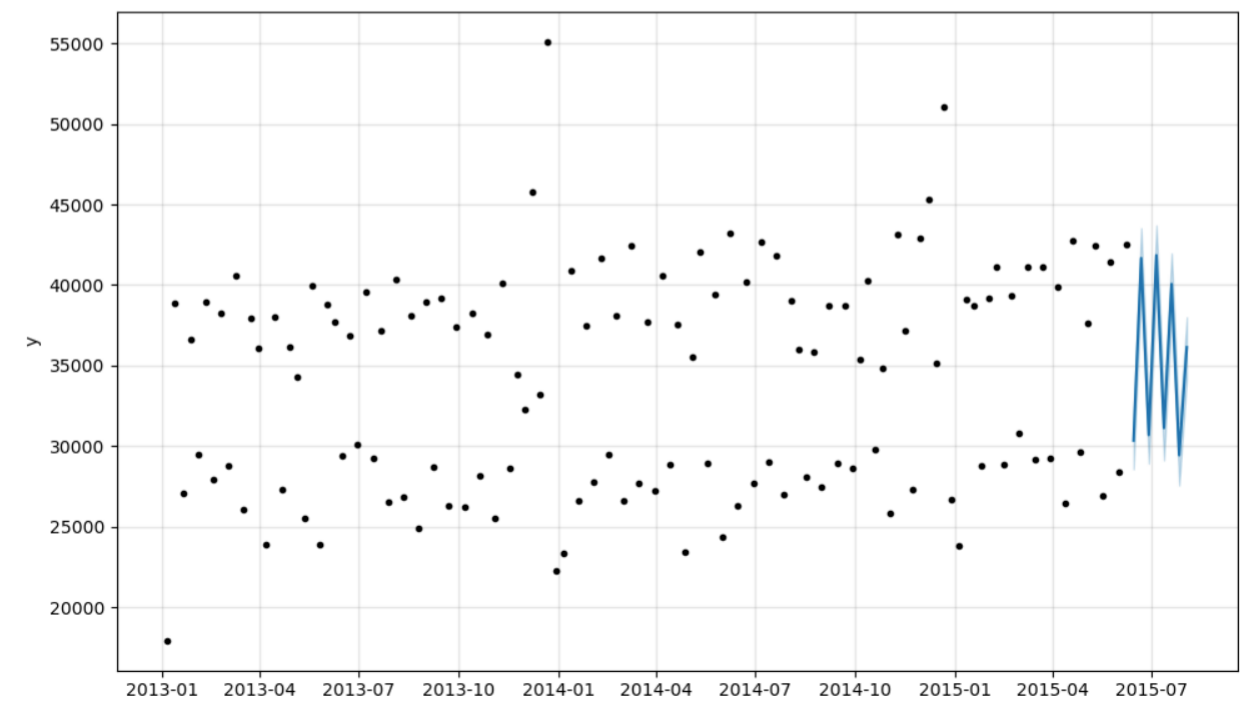
4 Sales Forecast

For the prediction of the sales for the next 8 weeks the library Prophet is sugested. (With a MAE: 2481 and R2: 0.68 by calculating metrics for each store)

Prophet: Forecast for store 836 with yhat as the forcasted value:

Model Train: MAE: 1133.8449415173889 R2: 0.9530844084523857
Model Test: MAE: 1531.1734479919842 R2: 0.8922165820415624

	yhat	yhat_lower	yhat_upper	y
ds				
2015-06-14	30343.934576	28576.422669	32302.572755	30366
2015-06-21	41668.150834	39612.120692	43524.419498	41807
2015-06-28	30687.725624	28926.103267	32541.927733	28618
2015-07-05	41845.499272	39875.424439	43696.790375	45770
2015-07-12	31124.505141	29131.514587	33068.172645	32638
2015-07-19	40064.597750	38113.261873	41958.135167	41183
2015-07-26	29435.660199	27568.930315	31433.710098	31599
2015-08-02	36136.990267	34186.728611	37996.473799	37436



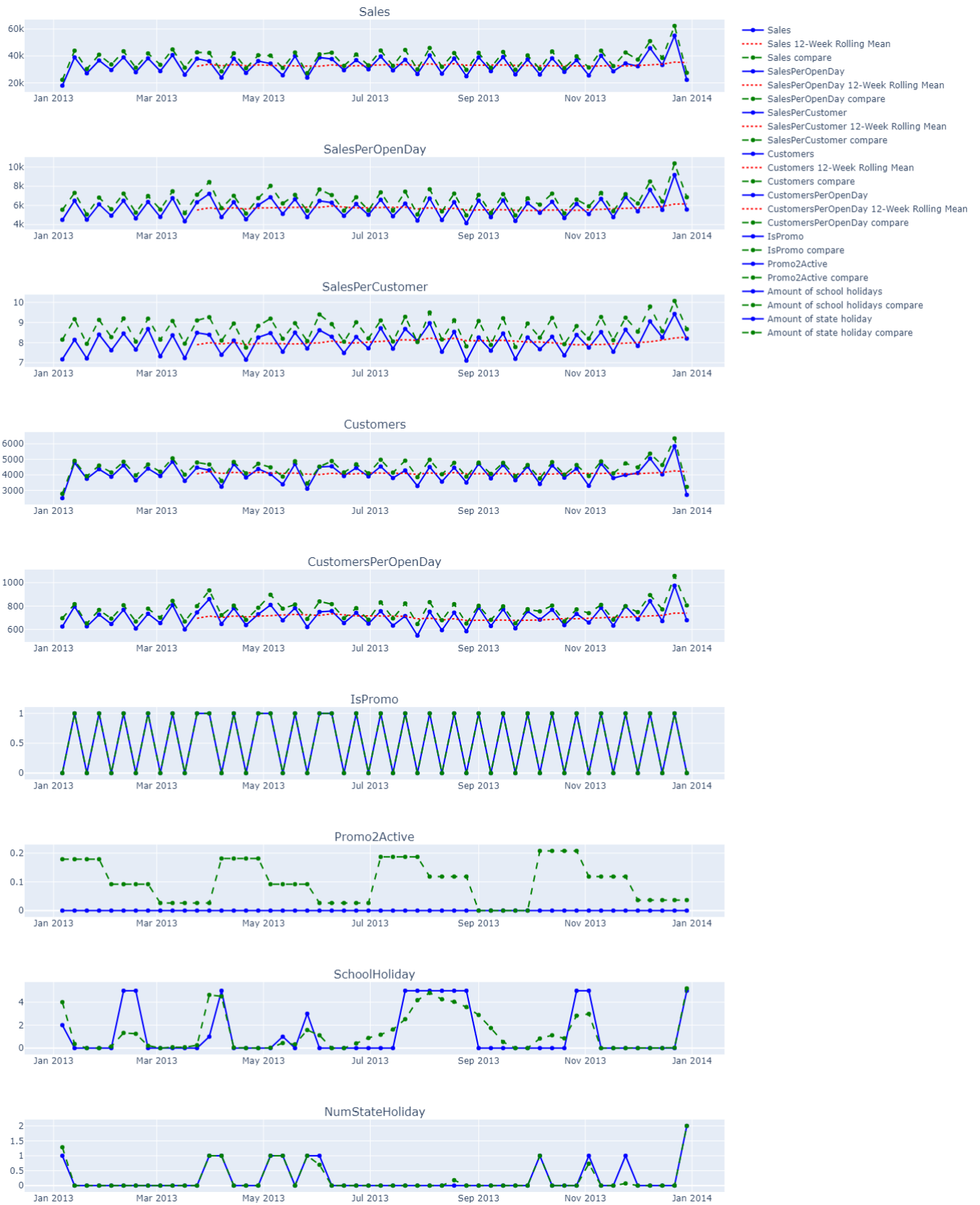
5 Reports

Store Report

Period: 2013-01-01 to 2013-12-31
Store ID: 836
Store Type: a
Assortment: a
Competition Distance: 2720
Competition Open Since: 2012-09-01
Promo2: None

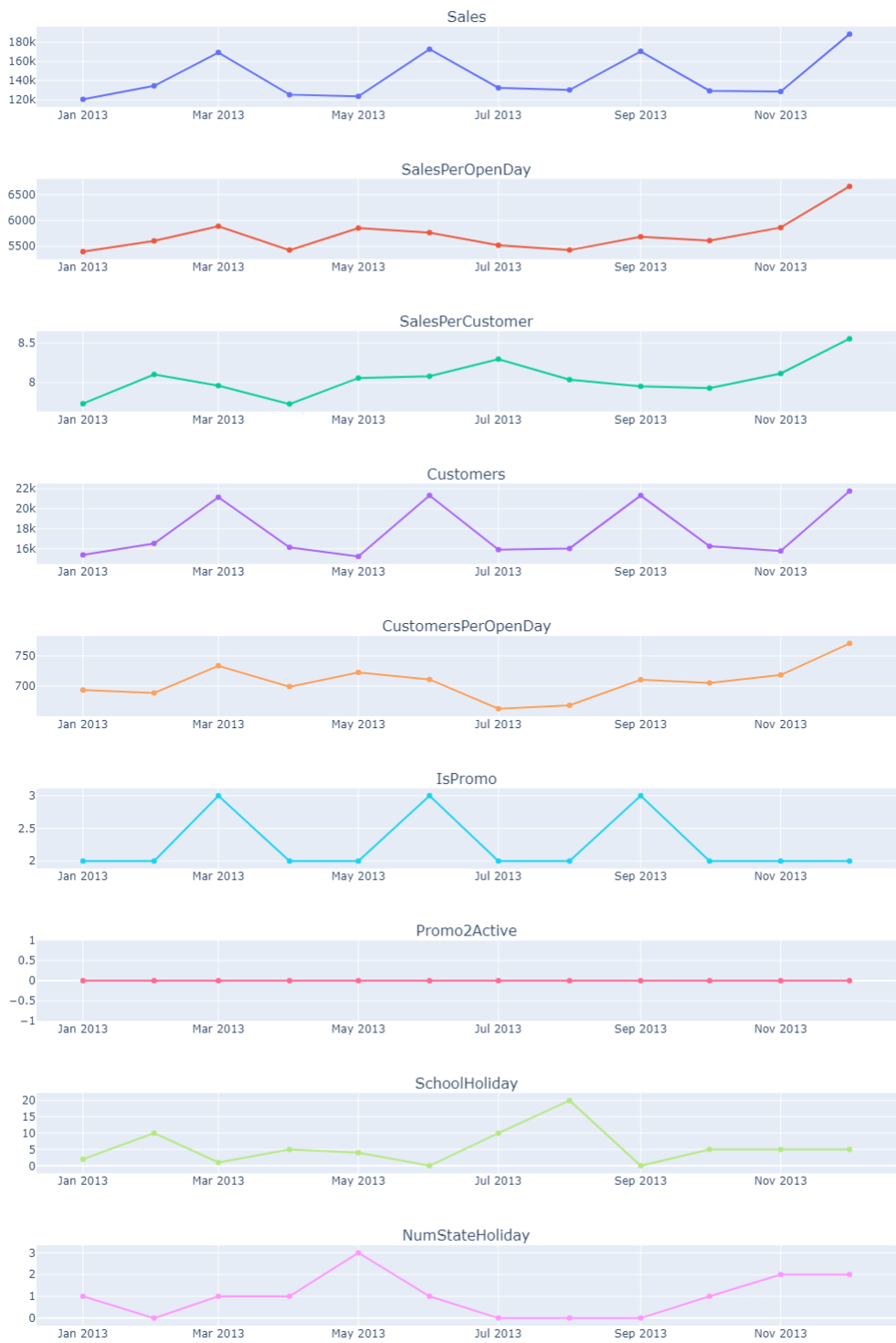
Weekly

Store 836 Weekly Overview



Monthly

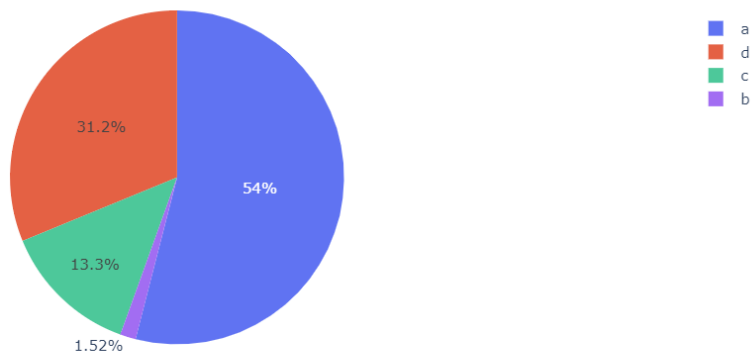
Store 836 Monthly Overview



Overall Report

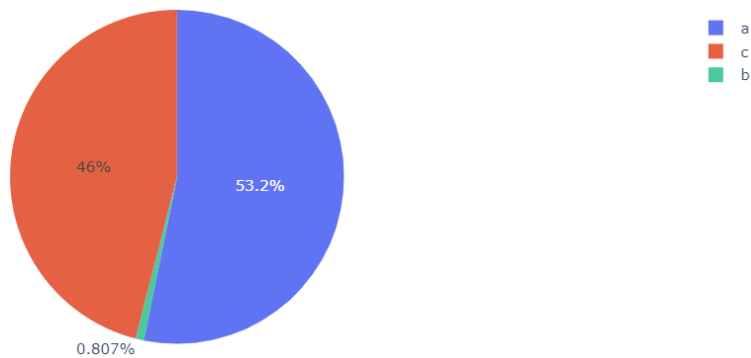
Period: 2013-01-01 to 2013-12-31
Number of Stores: 1115
Number of Stores in each Store Type: StoreType
a 602
b 17
c 148
d 348
Name: Store, dtype: int64

Number of Stores in each Store Type



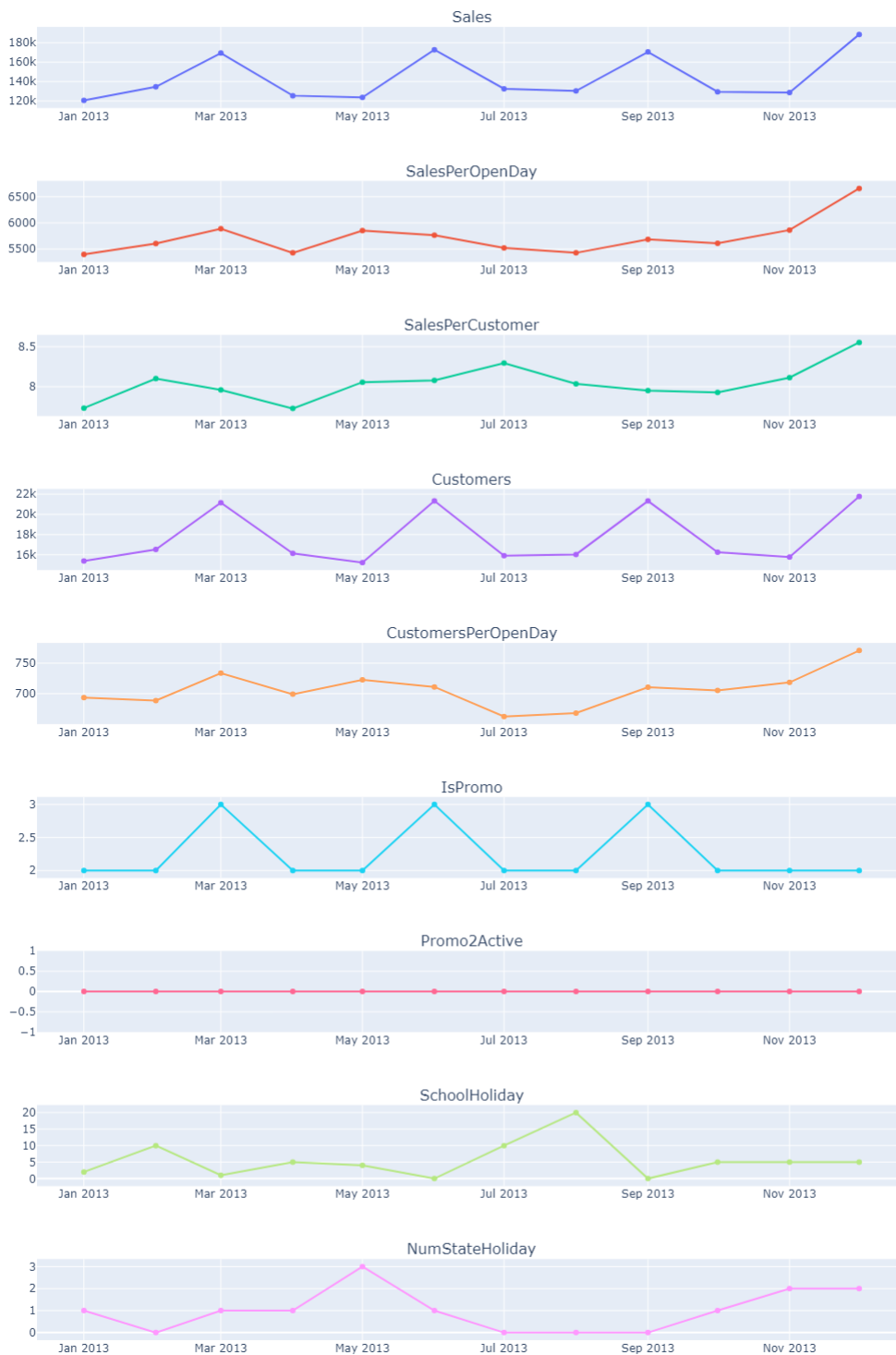
Number of Stores in each Assortment: Assortment
a 593
b 9
c 513
Name: Store, dtype: int64

Number of Stores in each Assortment



Number of Stores with Promo2: 571
Number of Stores without Promo2: 544
Number of Stores with Competition: 653
Number of Stores without Competition: 545

Store 836 Monthly Overview



In []: