

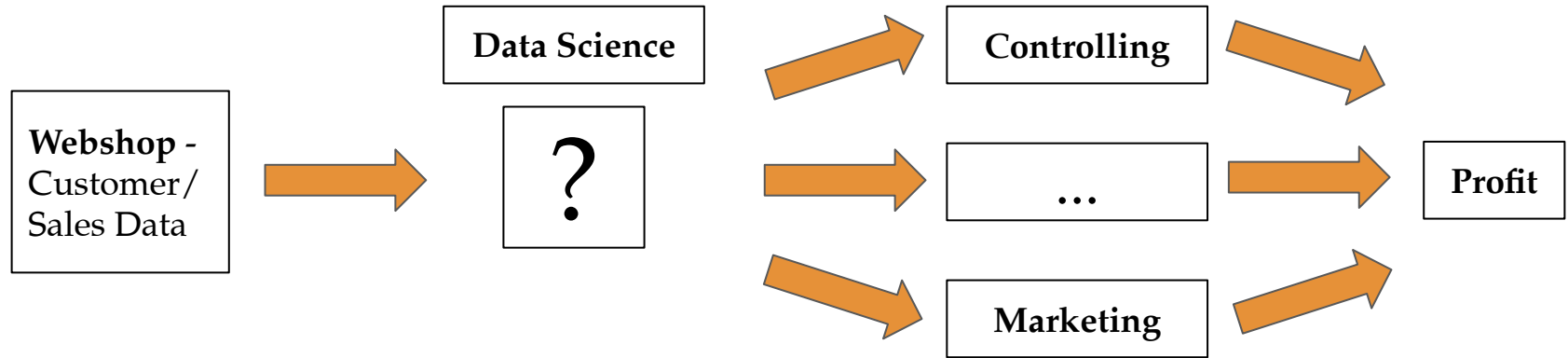
# Every Customer Counts ?

How to maximize the use of your customer and sales data

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6. Sales Prediction

# Problem Statement



# Business Value

- Give the means for Business Strategies
- Know your Customer better
  - Value of each
  - Bind them to you
- Predict future sales and customer behaviour

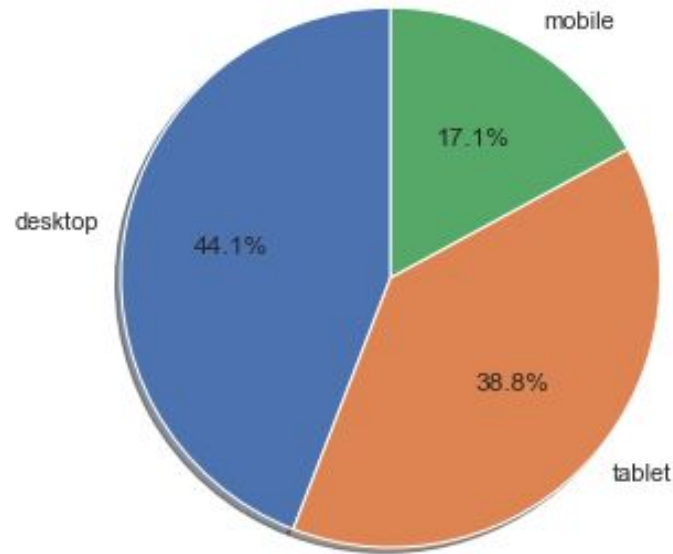
# Data Exploration



# Data Exploration



# Data Exploration







# Customers





# Sample Customers

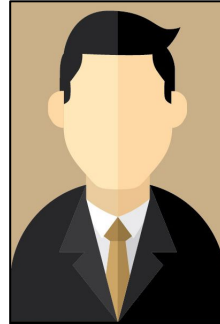
A



87

1

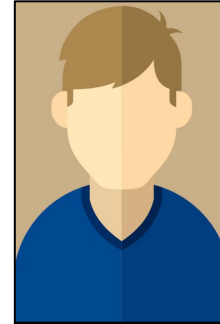
B



713

9

C



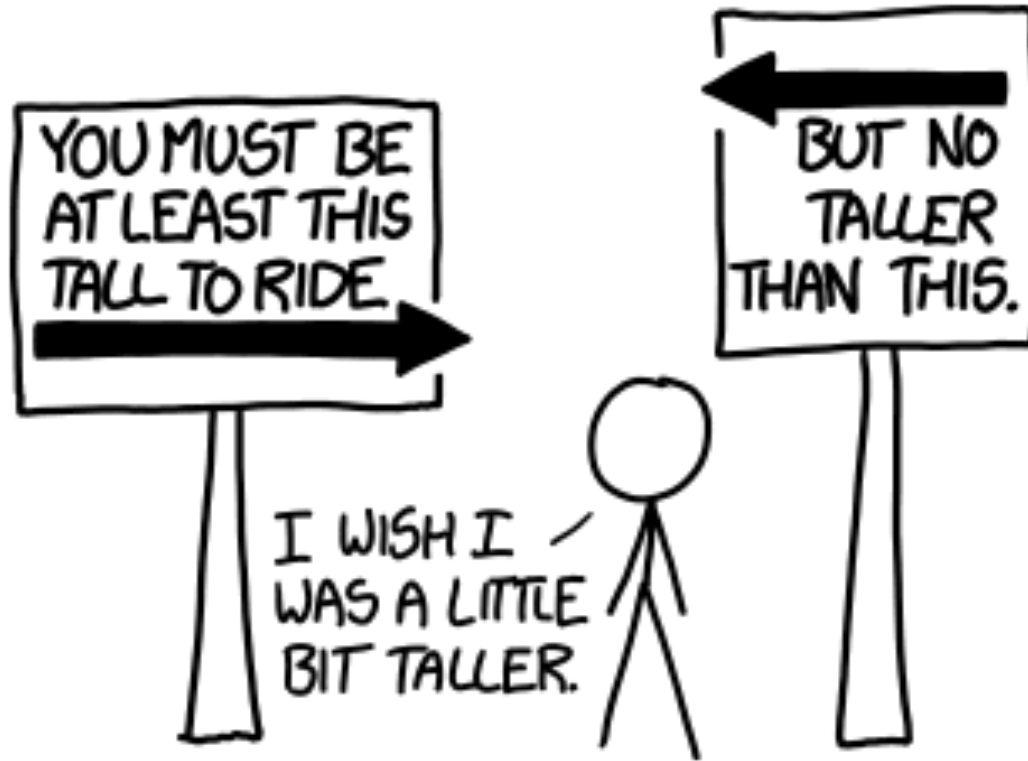
5589

52

Revenue:

Purchases:

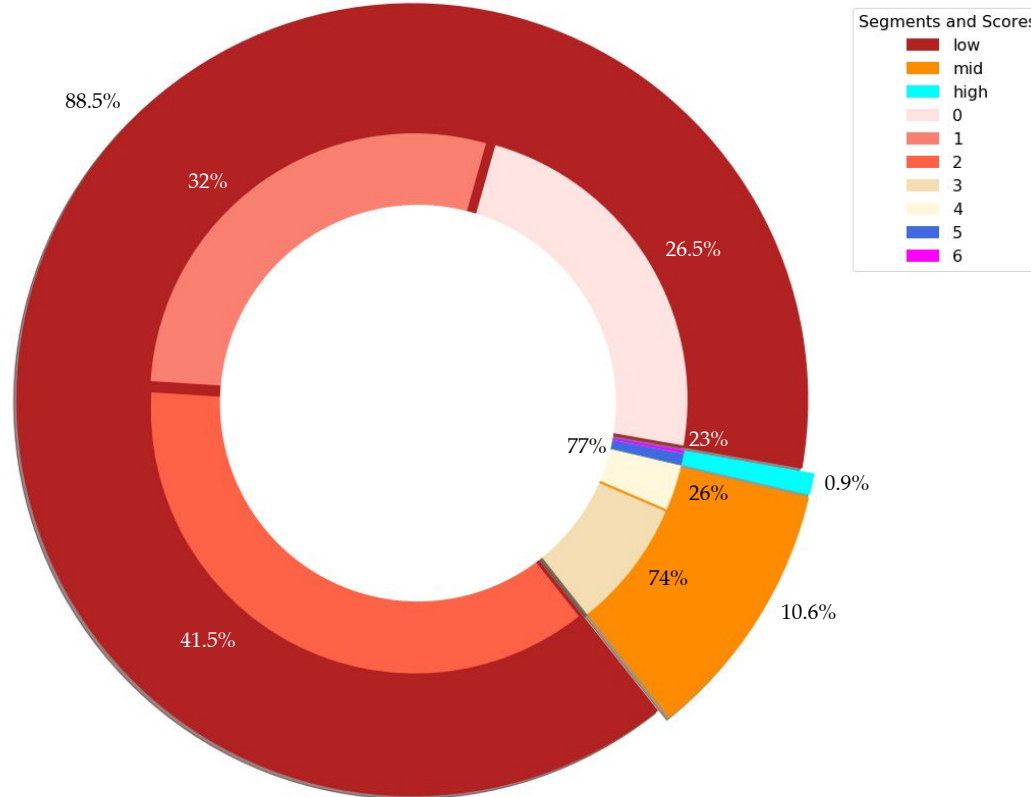
# Customer Segmentation






# Customer Segmentation

- Clustering with K-Means
- RFM Method
  - Recency, Frequency, Monetary Value
- Calculate Score

# Customer Segmentation



# Sample Customers

	A	B	C
			
Revenue:	87	713	5589
Purchases:	1	9	52
Score/Value:	2/low	4/mid	6/high

Calculating

# Customer Lifetime Value



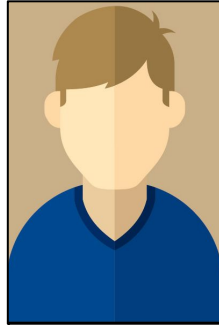


# Customer Lifetime Value

- Lifetimes package
- Combination of RFM and statistical Prediction Models
- Predict CLV
- Predict Number of Purchases in the next year



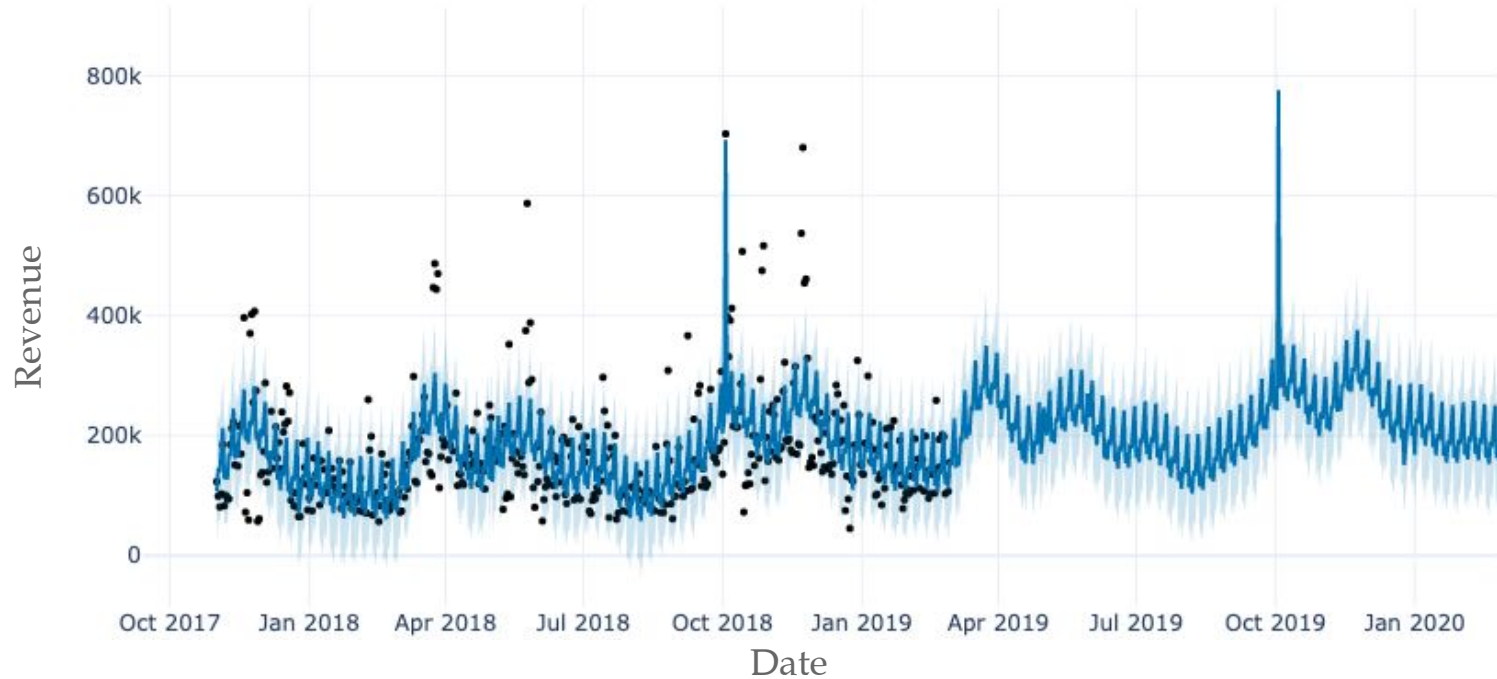
# Sample Customers

	A	B	C
			
Revenue:	87	713	5589
Purchases:	1	9	52
Score/Value:	2/low	4/mid	6/high
CLV:	18	345	2591
Pred. Purchases: (1 year)	0.2	4.5	24

# Sales Prediction

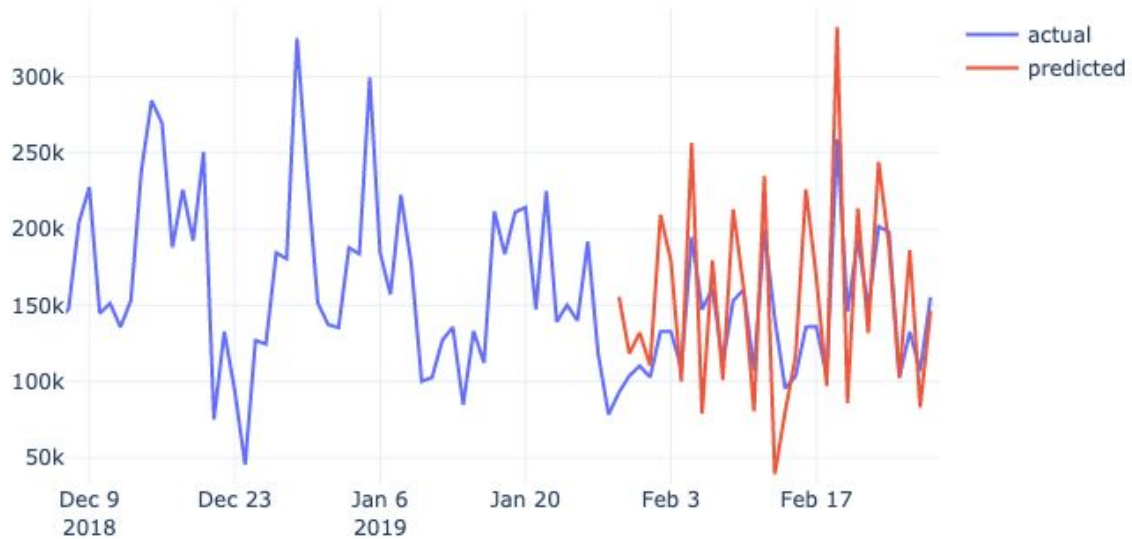


# Prophet



# Keras

Sales Prediction



# Conclusion

- Built working models:
  - Customer Segments
  - Lifetime Value
  - Sales Prediction
  - Churn Prediction ( no coherent results )
- Extensive EDA

# Future Work

- Get additional Data
  - to fix inconsistencies
  - to be able to run new models
- Improve Neural Network and predict future
- Build a proper Churn model
- Predict next purchase day for customers
- A-B Testing



# Questions ?

Simon Lau  
01/20/2020



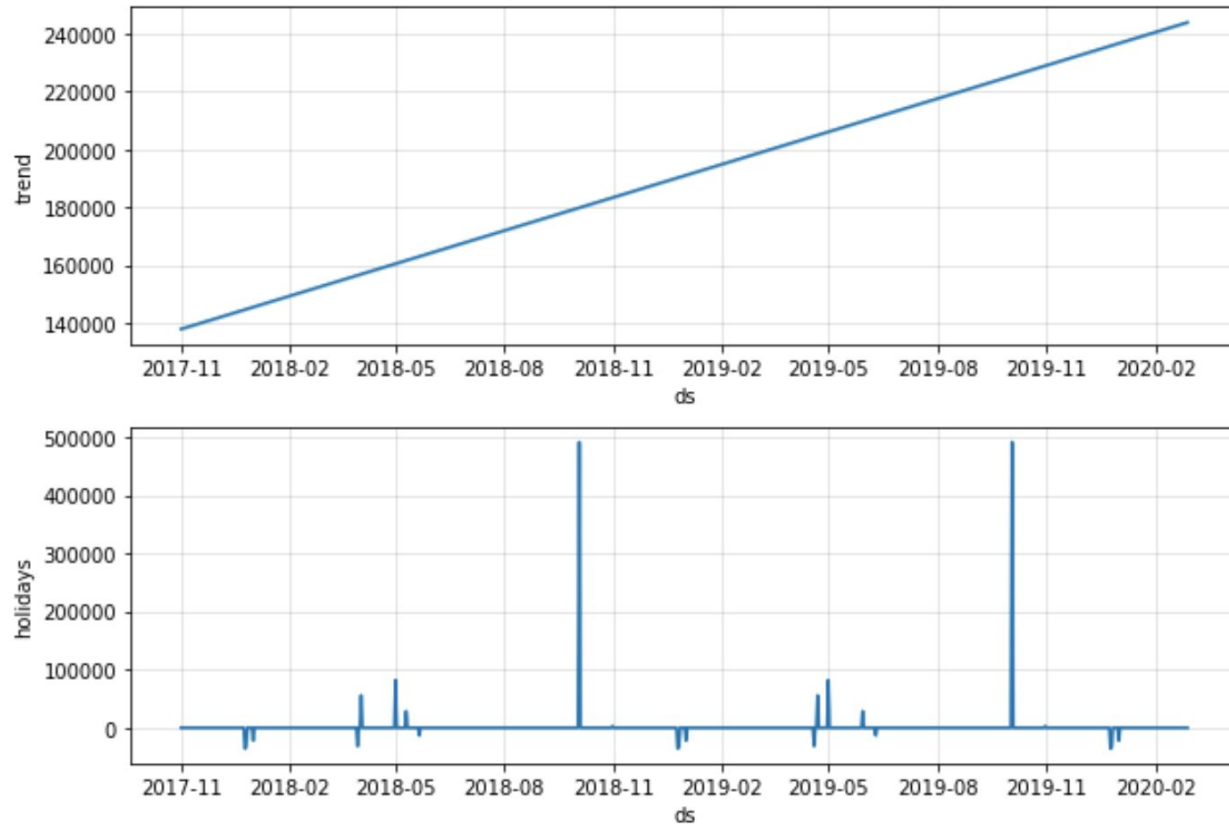


# Thank you !

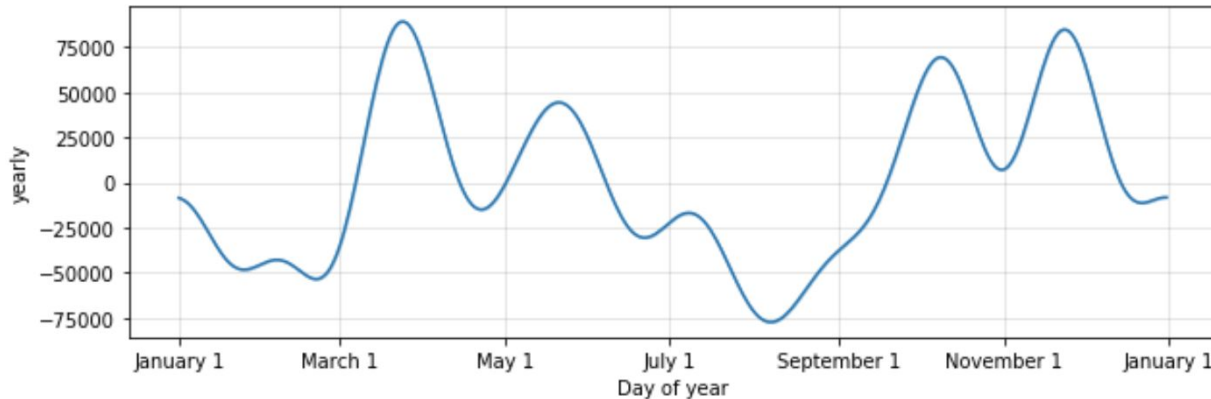
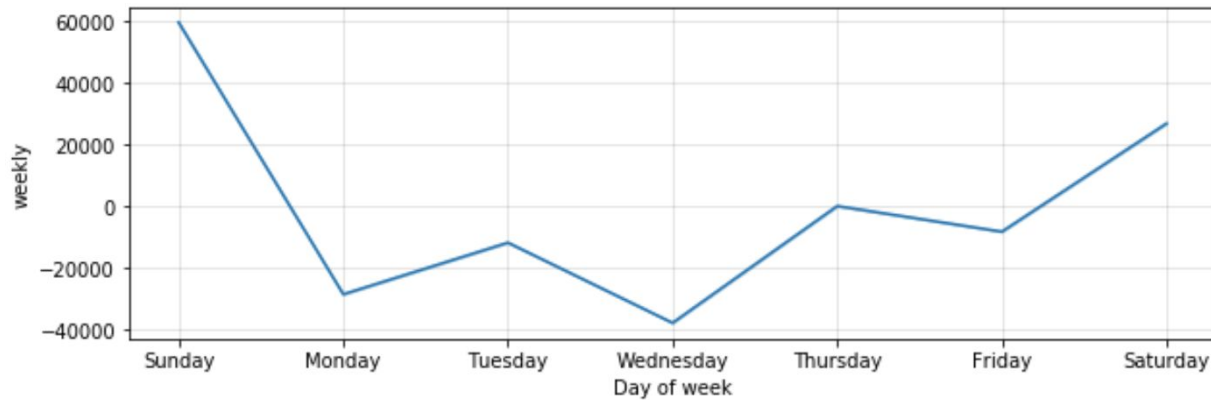
# Appendix

- Prophet Graphs
- Additional Keras Plots ( different sizes )
- Customer Segmentation
  - Extra Donut Plot
  - Average Values for Segments

# Prophet Appendix

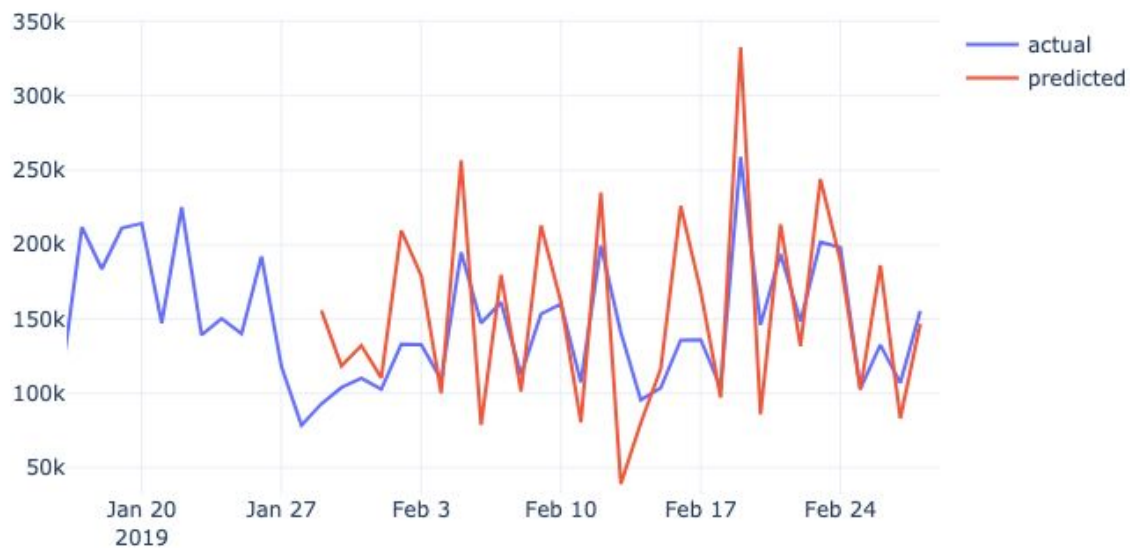


# Prophet Appendix

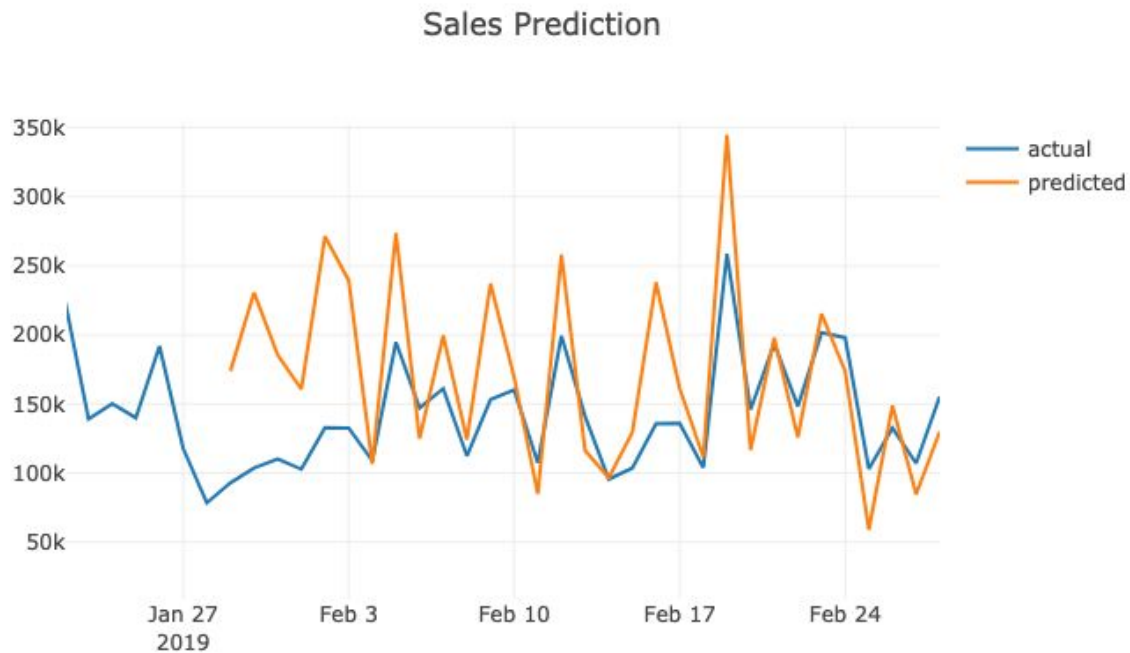


# Keras Appendix

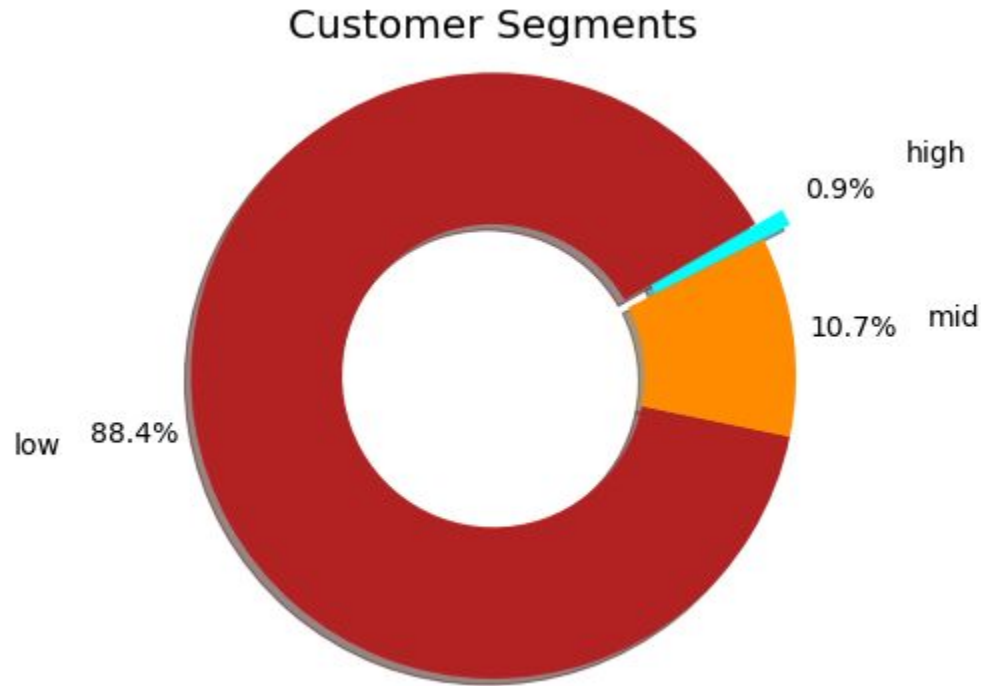
Sales Prediction



# Keras Appendix



# Customer Segmentation Appendix





# Customer Segmentation Appendix

## Values by Customer Segment

	revenue			avg_shop_cart	avg_cart_itemcount	total_purchases		recency	frequency	pred_purch	clv
	count	mean	sum	mean	mean	mean	sum	mean	mean	mean	mean
value_segment											
high	5482	1130.678862	6.198382e+06	171.530084	6.022522	8.382342	45952	68.388362	8.382342	2.816609	331.257357
mid	66003	345.106455	2.277806e+07	187.413593	5.941222	2.503341	165228	106.504280	2.503341	0.548503	50.184327
low	551132	95.339794	5.254481e+07	85.092175	3.316983	1.131970	623865	242.922799	1.131970	0.112013	10.186436