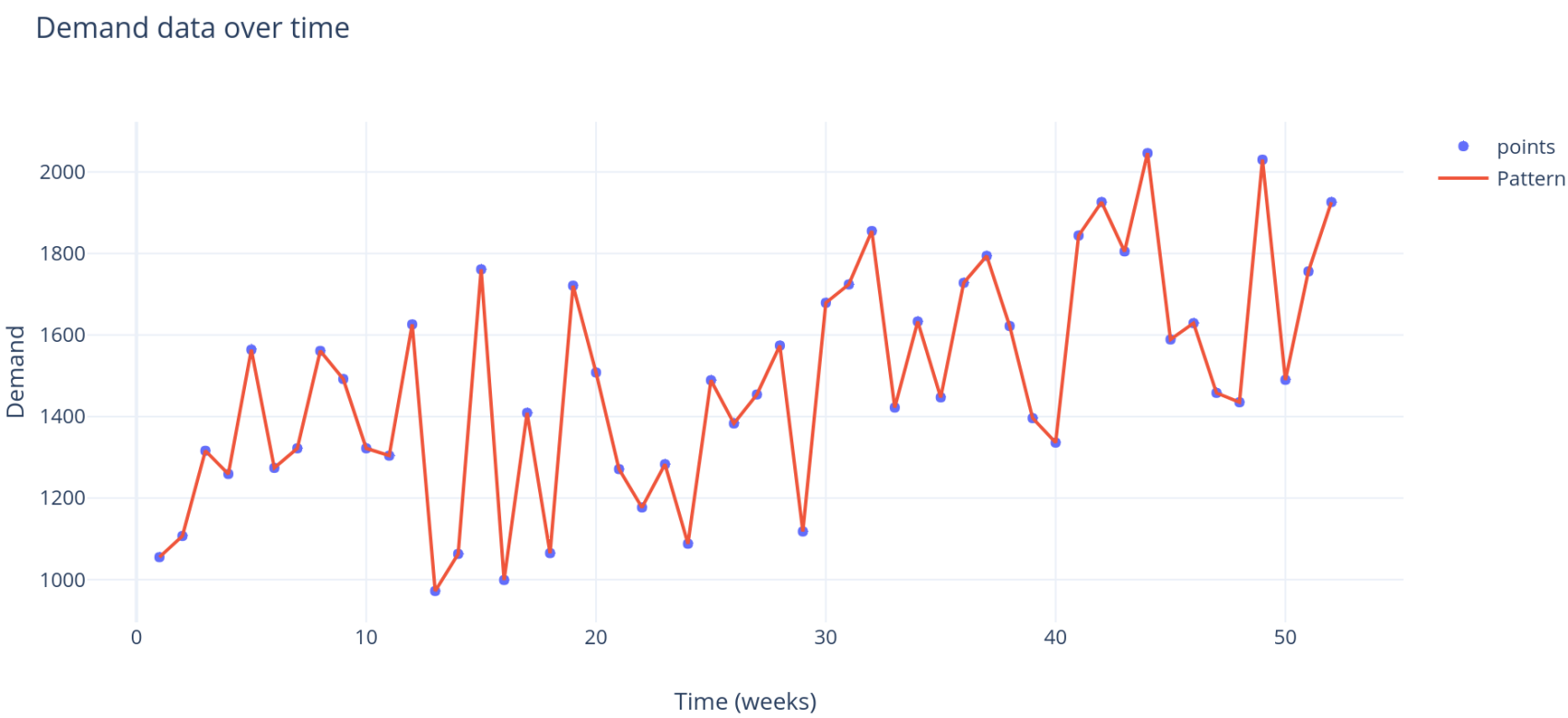


Demand Forecasting.

The given data can be first analyzed by making a scatter plot and observing the trend that the data points are following. A plot of the given data points over time is as follows:

The data does not follow any consistently seasonal, cyclical, or a perfectly horizontal pattern. There is a slight increase in the overall demand over time, the slope of the increase is very small. The data points seem to be scattered relatively irregularly around a slightly angled trend line.



Based on the above observations I concluded that the methods most appropriate to predict demand based on the available data are (a) Weighted moving average method, and (b) Linear regression model.

On trying the linear regression model, I obtained the following formula:

$$y = 10.73x + 1198;$$

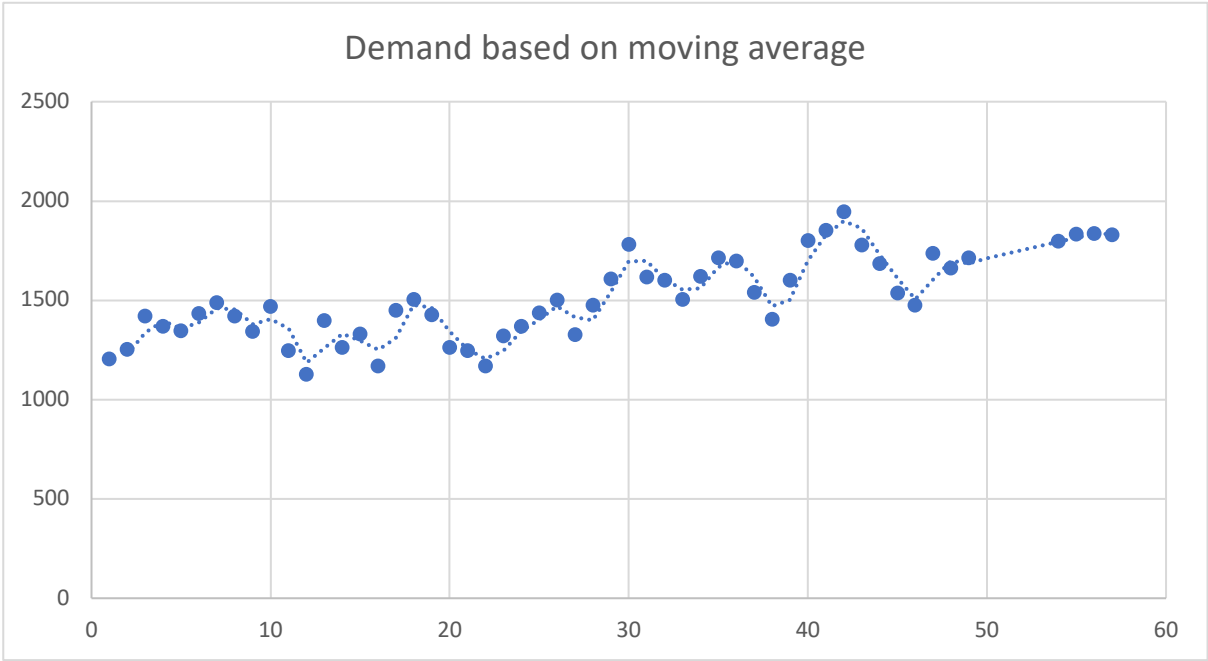
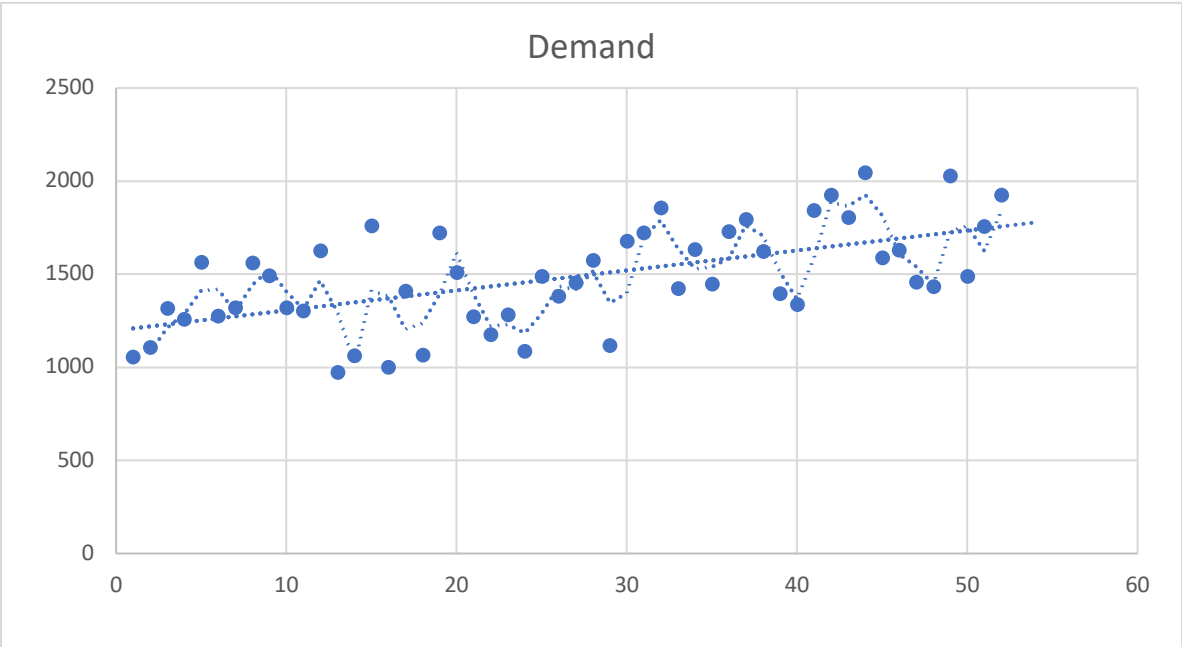
Where 'y' is dependent & 'x' is independent

$$r^2 = 0.3497$$

While the slope is non-zero, data points show significant deviation from the horizontal. The error analysis on both methods showed that the moving averages made better predictions of the existing patterns and are more closely aligned with actual values than the set of values linear regression yields.

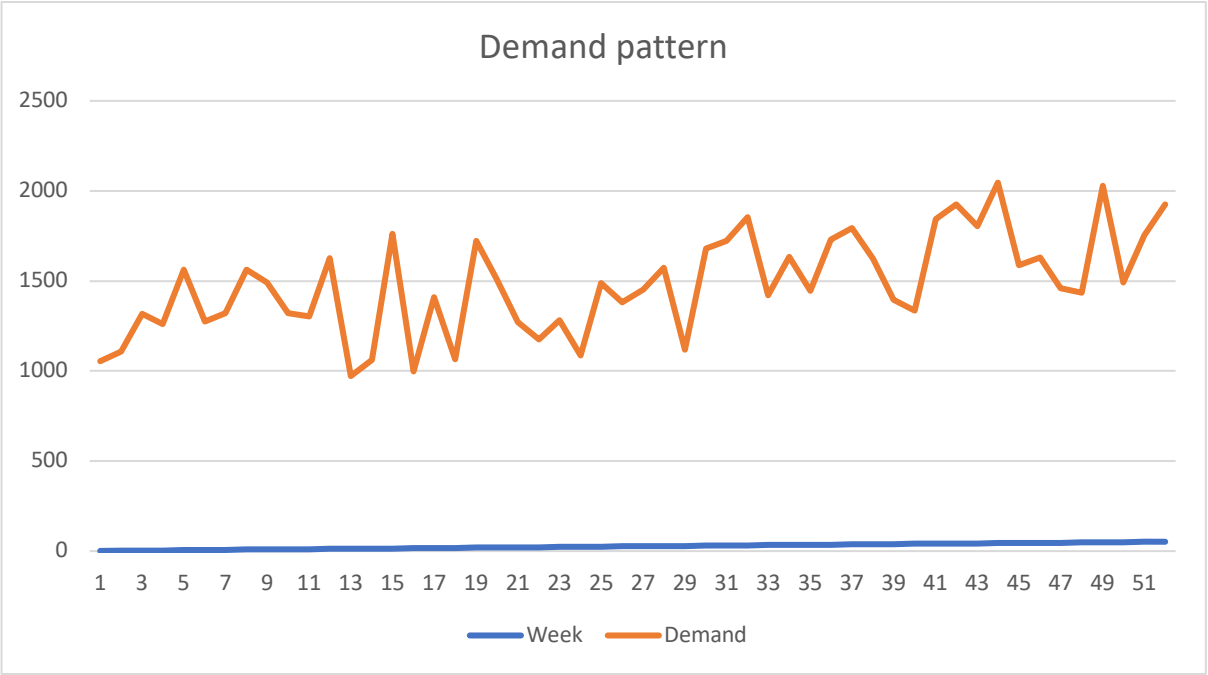
For this reason, I decided to use the moving average method. Weighting the average every 3 weeks by assigning the closest month an arbitrary value of 3, the second closest a value of '2', and the farthest one the value of '1' places more emphasis on the more recent demand data and less on the older data. The calculations pertaining to this method are reported below alongside the submitted Excel file to facilitate the verification of my calculations.

Week	Demand	Wt. moving average
1	1055	---
2	1107	---
3	1316	---
4	1259	1202.833333
5	1564	1252.666667
6	1274	1421
7	1322	1368.166667
8	1561	1346.333333
9	1492	1433.5
10	1322	1486.666667
11	1304	1418.5
12	1626	1341.333333
13	972	1468
14	1063	1245.333333
15	1761	1126.5
16	999	1396.833333
17	1409	1263.666667
18	1065	1331
19	1721	1168.666667
20	1508	1450.333333
21	1271	1505.166667
22	1177	1425
23	1283	1263.5
24	1088	1245.666667
25	1489	1167.833333
26	1383	1321
27	1454	1369.166667
28	1574	1436.166667
29	1118	1502.166667
30	1679	1326
31	1724	1474.5
32	1855	1608
33	1422	1782
34	1633	1616.666667
35	1447	1599.666667
36	1728	1504.833333
37	1794	1618.5
38	1622	1714.166667
39	1396	1697
40	1336	1537.666667
41	1844	1403.666667
42	1926	1600
43	1805	1800.333333
44	2046	1851.833333
45	1589	1945.666667
46	1629	1777.333333
47	1458	1685.166667
48	1435	1536.833333
49	2030	1475
50	1490	1736.333333
51	1756	1660.833333
52	1926	1713



Prediction from 3- week weighted average method.

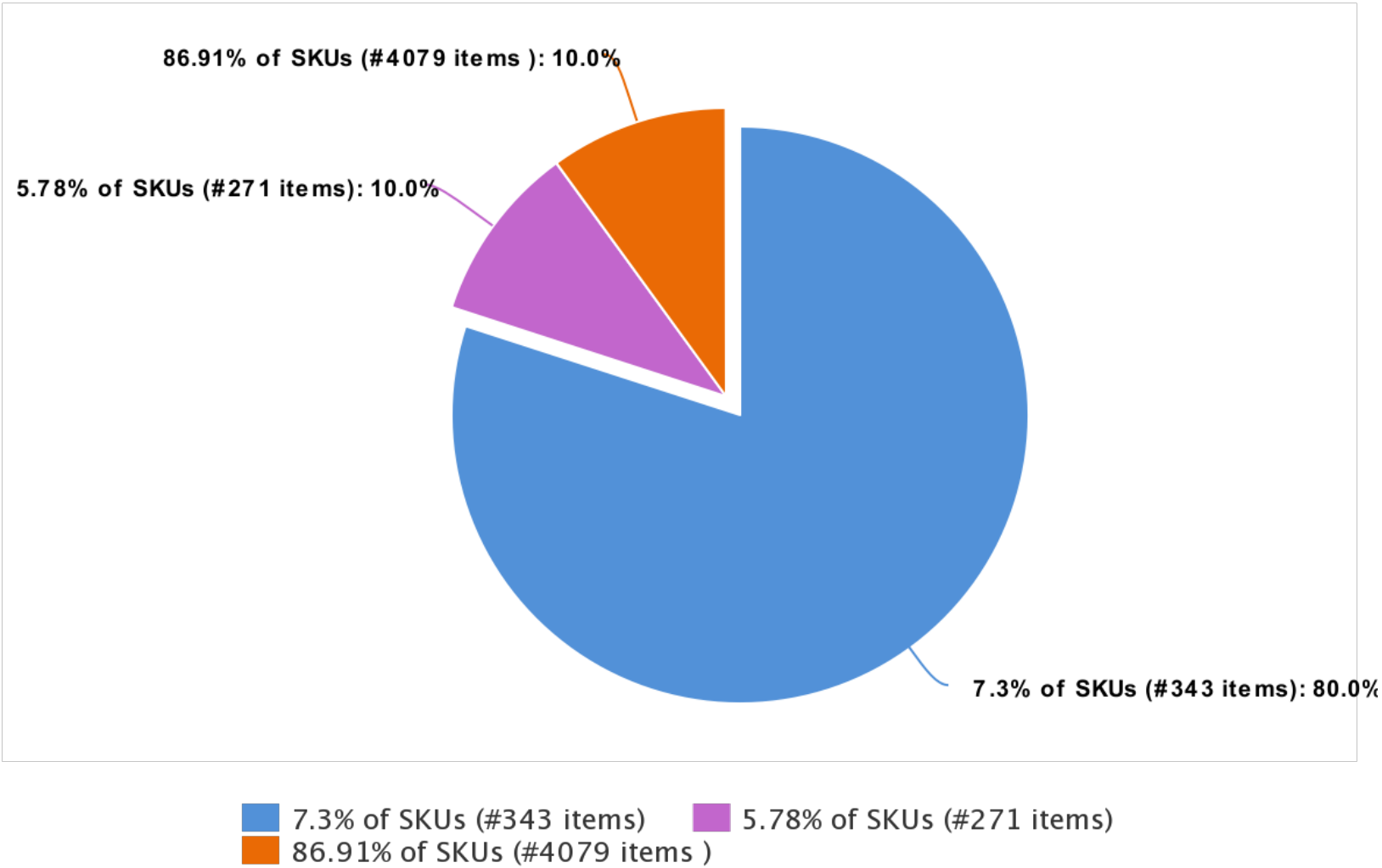
Week 1	1796.667	1796.666667
Week 2	1833	1833
Week 3	1836.389	1836.388889
Week 4	1828.639	1828.638889
Week 5	1831.949	1831.949074
Week 6	1831.586	1831.585648
Week 7	1831.216	1831.215664
Week 8	1831.461	1831.461227
Week 9	1831.4	1831.400109
Week 10	1831.39	1831.389741
Week 11	1831.405	1831.405111
Week 12	1831.399	1831.399154
Week 13	1831.4	1831.399571
Week 14	1831.4	1831.400355
Week 15	1831.4	1831.399894



Week 16	1831.4	1831.399994
Week 17	1831.4	1831.400021
Week 18	1831.4	1831.399991
Week 19	1831.4	1831.400001
Week 20	1831.4	1831.400001
Week 21	1831.4	1831.399999
Week 22	1831.4	1831.4
Week 23	1831.4	1831.4
Week 24	1831.4	1831.4
Week 25	1831.4	1831.4
Week 26	1831.4	1831.4

Inventory Analysis

Total inventory value: \$ 2,647,305.60  
Total number of SKU's: 4,693  
Total number of items: 82,378



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Class	Criteria	# of SKUs	# of items	Total value
A	80% of value	7.3%	343	\$ 2117844.48
B	Next 10% of value	5.78%	271	\$ 264730.56
C	Next 10% of value	86.91%	4079	\$ 264730.56