# Final Project Report

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2023-12-11

Importing the Dataset
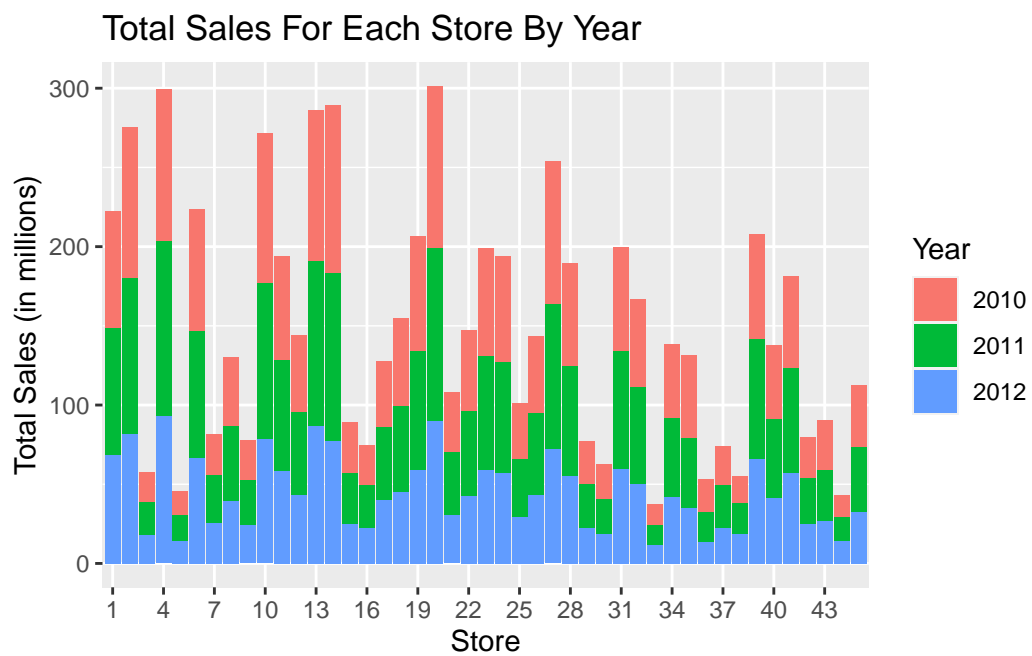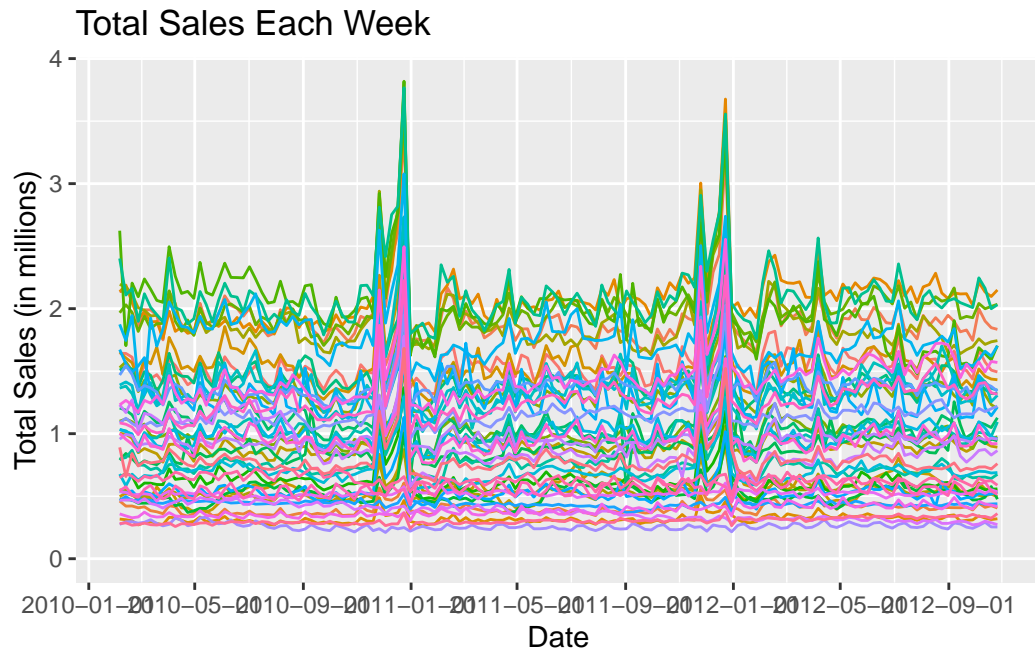
Store	Date	Weekly_Sales	Holiday_Flag	Temperature	Fuel_Price	CPI	Unemployment	Year	Month	Day	Week	Plot_Date
1	2010-02-05	1643690.9	0	42.31	2.572	211.0964	8.106	2010	2	5	6	2013-02-05
2	2010-02-05	2136989.5	0	40.19	2.572	210.7526	8.324	2010	2	5	6	2013-02-05
3	2010-02-05	461622.2	0	45.71	2.572	214.4249	7.368	2010	2	5	6	2013-02-05
4	2010-02-05	2135143.9	0	43.76	2.598	126.4421	8.623	2010	2	5	6	2013-02-05
5	2010-02-05	317173.1	0	39.70	2.572	211.6540	6.566	2010	2	5	6	2013-02-05
6	2010-02-05	1652635.1	0	40.43	2.572	212.6224	7.259	2010	2	5	6	2013-02-05

Total Sales Data

Total Sales Each Week
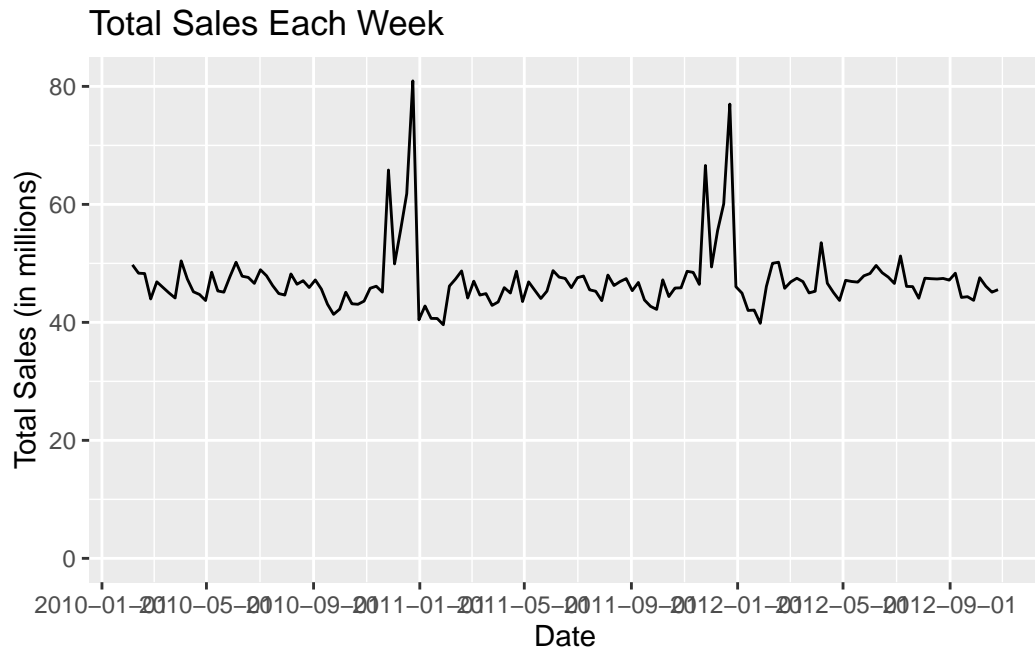
Store	Total_Store_Sales
20	301397792
4	299543953
14	288999911
13	286517704
2	275382441
10	271617714
27	253855917
6	223756131
1	222402809
39	207445542
19	206634862
31	199613906
23	198750618
24	194016021
11	193962787
28	189263681
41	181341935
32	166819246
18	155114734
22	147075649

| Store	Total_Store_Sales
12	144287230
26	143416394
34	138249763
40	137870310
35	131520672
8	129951181
17	127782139
45	112395341
21	108117879
25	101061179
43	90565435
15	89133684
7	81598275
42	79565752
9	77789219
29	77141554
16	74252425
37	74202740
30	62716885
3	57586735
38	55159626
36	53412215
5	45475689
44	43293088
33	37160222

Total Sales Each Week

Total Sales For Each Store By Year

Total Weekly Sales Per Year Across All Stores
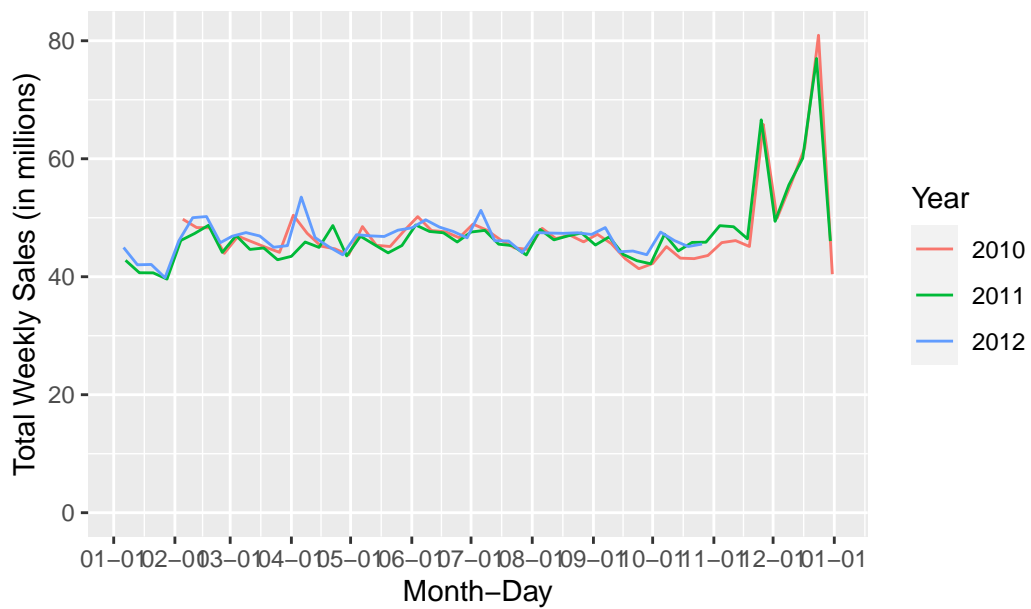
Total Sales by Season
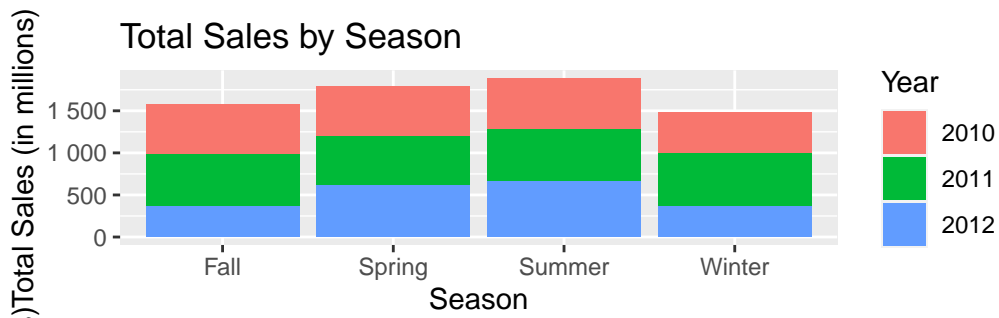
Average Sales by Season
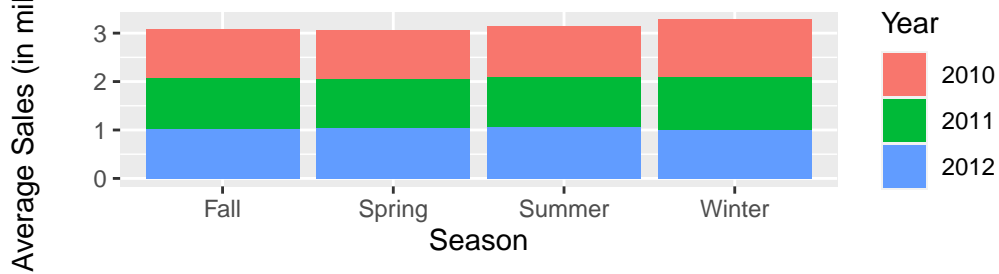
Holidays

Adding additional holidays

Looking at holiday impact

Total Sales Each Week

Total Weekly Sales Per Year Across All Stores With Holidays
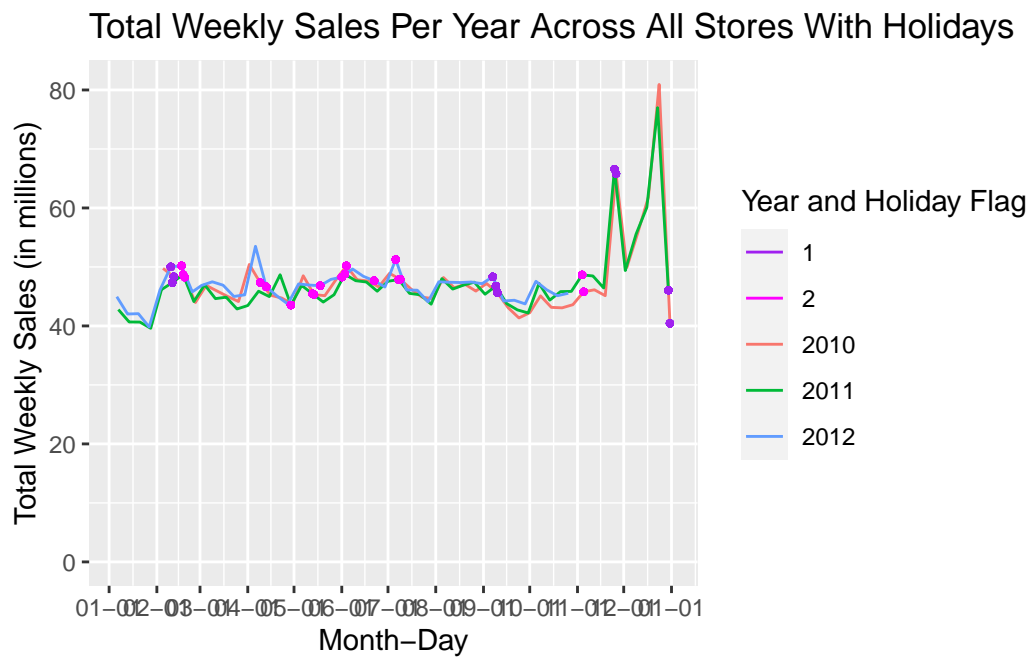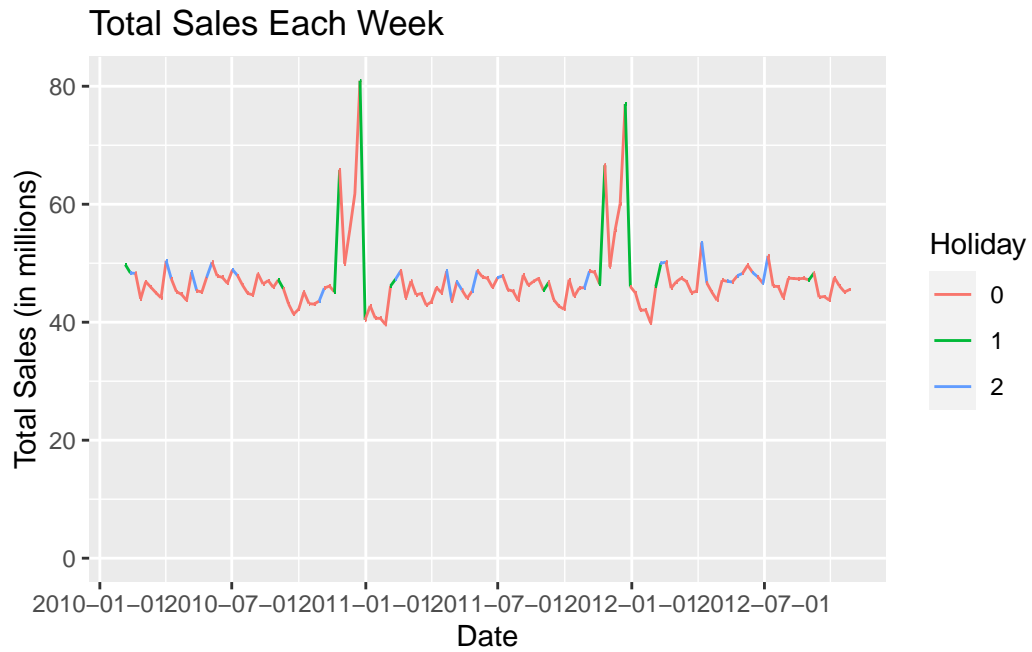
Looking at other factors

Store	Date	Weekly_Sales	Holiday_Flag	Year	Month	Day	Week	Plot_Date	Category	Value
1	2010-02-05	1643691	0	2010	2	5	6	2013-02-05	Unemployment	8.1060
1	2010-02-05	1643691	0	2010	2	5	6	2013-02-05	CPI	211.0964
1	2010-02-05	1643691	0	2010	2	5	6	2013-02-05	Fuel_Price	2.5720
1	2010-02-05	1643691	0	2010	2	5	6	2013-02-05	Temperature	42.3100
2	2010-02-05	2136989	0	2010	2	5	6	2013-02-05	Unemployment	8.3240
2	2010-02-05	2136989	0	2010	2	5	6	2013-02-05	CPI	210.7526

Warning: `aes_string()` was deprecated in ggplot2 3.0.0.
i Please use tidy evaluation idioms with `aes()`.
i See also `vignette("ggplot2-in-packages")` for more information.
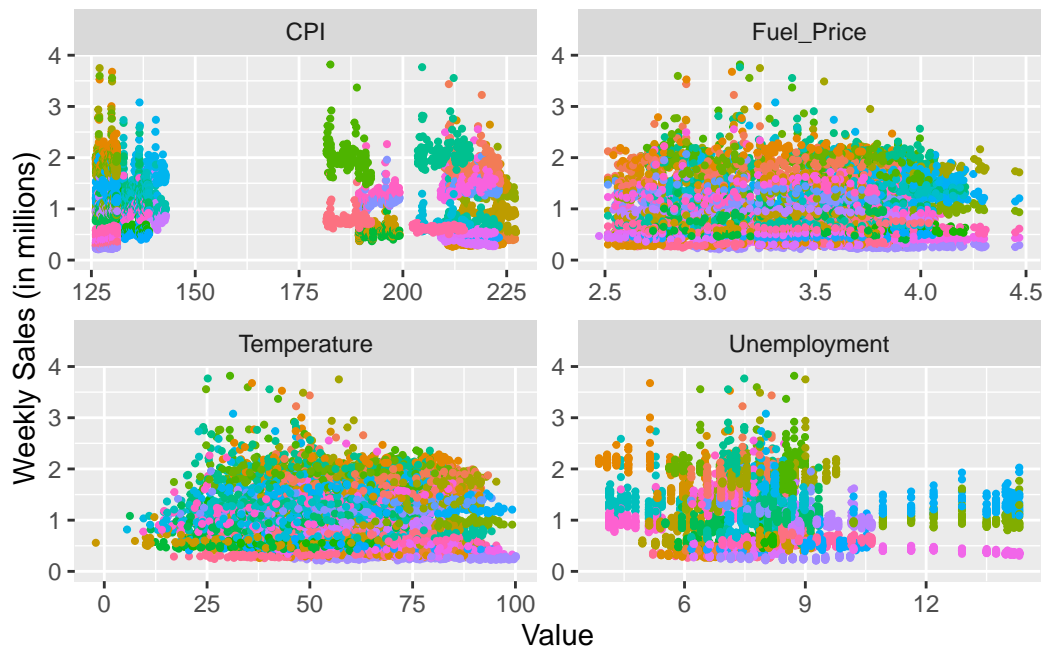
[1] "Temperature: -0.0638100131794695"

[1] "CPI: -0.0726341620401763"

[1] "Unemployment: -0.106176089657954"

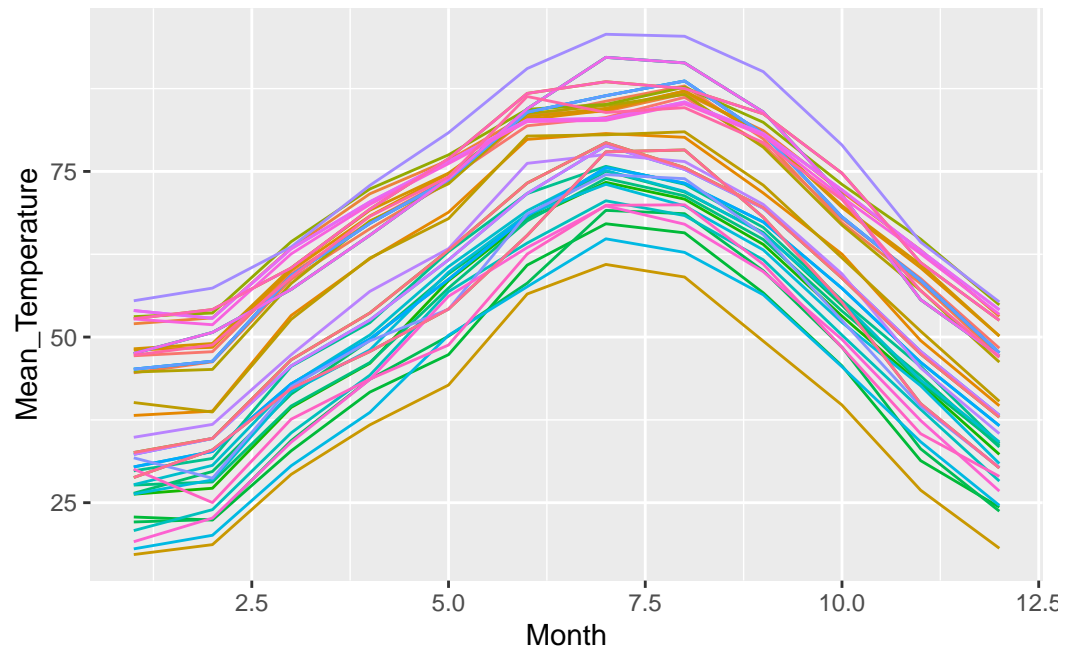[1] "Fuel: 0.00946378631447514"

Store	Unemployment	Temperature	Fuel_Price	CPI
1	-0.10	-0.22	0.12	0.23
2	0.07	-0.30	-0.20	-0.06
3	-0.23	-0.38	0.14	0.32
4	-0.34	-0.23	0.21	0.35
5	-0.21	-0.18	0.17	0.31
6	0.04	-0.08	-0.10	-0.01
7	-0.17	0.02	0.11	0.29
8	-0.05	-0.31	0.03	0.12
9	-0.19	-0.21	0.21	0.29
10	0.13	-0.43	-0.19	-0.12
11	-0.02	-0.28	-0.04	0.07
12	-0.01	-0.38	0.02	0.08
13	-0.17	-0.14	0.08	0.16
14	0.21	-0.20	-0.35	-0.42
15	0.08	-0.05	-0.19	-0.17
16	-0.07	0.18	0.00	0.12
17	-0.26	0.08	0.31	0.35
18	0.14	-0.14	-0.28	-0.19
19	0.10	-0.08	-0.19	-0.16
20	-0.10	-0.26	-0.01	0.06
21	0.22	-0.18	-0.14	-0.16
22	0.04	-0.08	-0.07	-0.04
23	-0.08	0.06	0.02	0.08
24	-0.01	0.11	-0.11	-0.01
25	0.00	-0.03	-0.08	-0.01
26	-0.07	0.21	0.02	0.13
27	-0.01	0.12	-0.23	-0.21
28	0.14	-0.38	-0.14	-0.10
29	0.08	-0.13	-0.09	-0.07
30	0.20	-0.33	-0.43	-0.30
31	-0.06	-0.26	0.11	0.13
32	-0.10	-0.11	0.12	0.20

Store	Unemployment	Temperature	Fuel_Price	CPI
33	0.10	0.02	-0.06	-0.05
34	0.02	-0.28	0.01	0.12
35	0.48	0.04	-0.50	-0.42
36	0.83	-0.09	-0.73	-0.92
37	-0.22	-0.30	0.21	0.24
38	-0.79	0.03	0.70	0.81
39	-0.38	0.06	0.27	0.43
40	-0.11	0.09	0.03	0.11
41	-0.35	0.11	0.31	0.39
42	-0.36	-0.15	0.32	0.36
43	-0.20	0.10	-0.34	-0.29
44	-0.78	0.27	0.61	0.74
45	0.00	-0.20	-0.05	-0.02
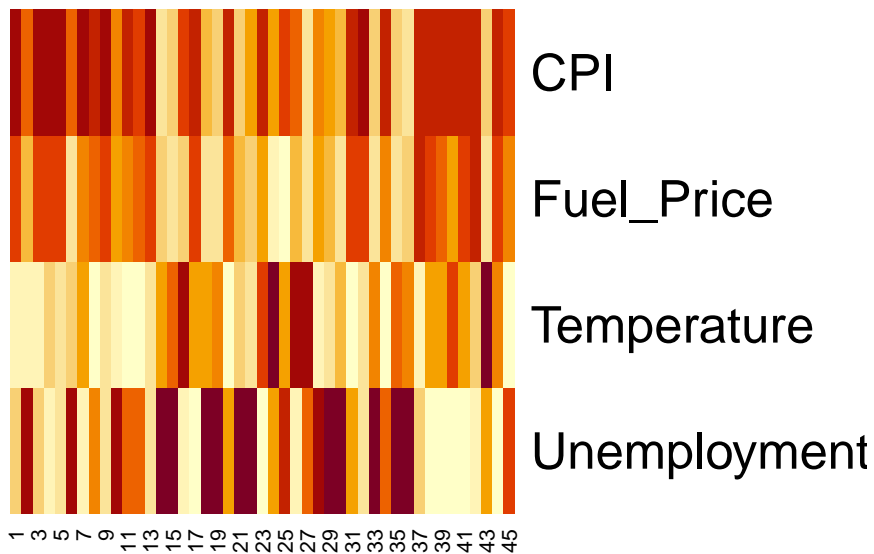
Store	January	February	March	April	May	June	July	August	September	October	November	December
1	47.18	47.79	59.55	67.39	73.89	81.89	83.14	86.19	79.01	67.88	58.84	48.32
2	44.61	46.26	58.70	66.34	73.36	83.11	85.60	87.90	79.92	67.24	58.07	47.15
3	52.01	52.90	63.44	71.62	76.69	83.53	84.09	86.73	81.16	71.88	63.13	53.13
4	38.17	38.82	53.25	61.82	68.84	79.84	80.72	80.15	71.74	62.52	49.47	39.63
5	48.04	48.45	60.04	68.27	74.64	82.84	84.23	87.16	80.71	69.55	60.45	50.16
6	48.23	49.03	60.42	69.15	74.74	83.23	84.53	87.12	80.61	69.84	60.92	50.16
7	17.17	18.67	29.27	36.74	42.76	56.50	60.96	59.06	49.39	39.74	26.89	18.12
8	40.12	38.69	52.67	61.92	67.88	80.34	80.53	80.98	72.92	61.95	50.89	40.31
9	44.72	45.12	58.08	67.52	73.14	83.73	84.96	86.62	78.65	66.90	57.03	46.22

Store	January	February	March	April	May	June	July	August	September	October	November	December
10	52.77	54.15	60.42	69.29	76.92	86.78	88.54	87.51	83.70	74.73	61.24	52.52
11	53.08	53.63	64.39	72.35	77.50	84.38	85.12	87.72	82.41	73.04	64.78	54.86
12	47.52	50.70	57.19	65.37	73.91	84.45	92.22	91.38	83.97	71.39	55.64	47.18
13	28.80	32.97	42.23	47.82	54.23	65.35	77.96	78.24	68.08	55.25	39.95	30.24
14	32.57	34.70	46.56	53.63	63.12	73.24	79.34	75.57	69.53	58.91	47.45	37.90
15	26.28	27.18	39.38	46.04	58.51	67.77	73.35	70.82	63.98	53.16	42.86	32.29
16	22.84	22.38	32.82	41.69	47.35	60.86	67.10	65.73	56.67	45.65	31.35	24.33
17	22.09	22.46	34.36	43.63	50.14	58.13	69.12	68.62	60.00	48.48	33.13	23.72
18	26.42	29.71	41.39	49.51	59.55	67.97	75.05	71.89	65.77	54.81	43.14	33.67
19	27.66	28.13	39.59	46.15	57.40	67.54	73.94	71.31	64.73	53.93	44.13	33.40
20	29.81	31.68	45.57	52.18	62.90	71.65	75.77	73.06	66.55	55.55	45.57	33.95
21	45.16	46.35	59.27	67.15	73.74	83.94	86.43	88.65	80.63	68.14	58.56	47.63
22	30.40	32.73	42.94	49.71	58.72	68.31	75.59	73.22	67.37	57.36	46.19	36.62
23	20.79	23.95	35.54	44.24	56.86	64.19	70.57	68.34	61.66	50.30	39.09	28.26
24	27.72	30.63	42.88	50.31	60.63	69.07	75.13	71.99	65.62	55.30	43.52	34.17
25	26.30	28.43	41.76	48.05	59.80	68.52	73.06	69.80	63.16	52.21	42.65	30.91
26	18.03	20.08	30.57	38.62	50.27	57.60	64.83	62.78	56.38	45.52	34.19	24.60
27	32.29	34.69	45.65	52.57	61.65	71.68	78.88	75.31	69.44	59.13	47.84	38.21
28	47.52	50.70	57.19	65.37	73.91	84.45	92.22	91.38	83.97	71.39	55.64	47.18
29	30.40	32.73	42.94	49.71	58.72	68.31	75.59	73.22	67.37	57.36	46.19	36.62
30	45.16	46.35	59.27	67.15	73.74	83.94	86.43	88.65	80.63	68.14	58.56	47.63
31	45.16	46.35	59.27	67.15	73.74	83.94	86.43	88.65	80.63	68.14	58.56	47.63
32	31.77	28.69	42.52	49.42	54.20	68.60	74.52	73.90	65.47	52.51	39.57	30.32
33	55.48	57.39	63.60	72.89	80.85	90.53	95.70	95.40	90.06	78.98	64.33	55.30
34	34.87	36.82	47.32	56.89	63.34	76.22	77.55	76.49	70.02	59.55	45.34	35.42
35	32.29	34.69	45.65	52.57	61.65	71.68	78.88	75.31	69.44	59.13	47.84	38.21
36	54.00	52.84	63.32	70.41	76.52	82.77	82.99	85.48	80.72	72.22	63.04	54.12
37	54.00	52.84	63.32	70.41	76.52	82.77	82.99	85.48	80.72	72.22	63.04	54.12
38	47.52	50.70	57.19	65.37	73.91	84.45	92.22	91.38	83.97	71.39	55.64	47.18
39	52.73	51.86	62.55	70.03	76.18	82.52	82.71	85.19	80.43	71.14	62.58	53.43
40	19.11	22.68	34.12	43.60	56.16	63.51	69.80	67.03	59.87	49.64	37.40	26.75
41	30.07	25.02	37.60	43.65	48.80	62.53	69.89	69.96	61.00	48.43	35.41	28.97
42	52.77	54.15	60.42	69.29	76.92	86.78	88.54	87.51	83.70	74.73	61.24	52.52
43	47.26	48.80	59.01	68.22	74.17	86.31	83.90	84.62	79.36	70.76	57.00	46.93
44	28.80	32.97	42.23	47.82	54.23	65.35	77.96	78.24	68.08	55.25	39.95	30.24
45	32.57	34.70	46.56	53.63	63.12	73.24	79.34	75.57	69.53	58.91	47.45	37.90

Conclusion