

```
In [6]: import numpy as np
import pandas as pd
import matplotlib.pyplot as plt # for visualizing.
%matplotlib inline
import seaborn as sns
```

```
In [80]: df = pd.read_csv(r'C:\Users\SAMAD\Downloads\Datasets\fast\fast_food.csv', encoding:
```

```
In [81]: df.shape
```

```
Out[81]: (33, 7)
```

```
In [147... df.head
```

Out[147]: <bound method NDFrame.head of

Fast-Food Chains \

0	Arbyâs
1	Baskin-Robbins
2	Bojangles
3	Burger King
4	Carlâs Jr.
5	Checkers/Rallyâs
6	Chick-fil-A
7	Chipotle
8	Churchâs Chicken
9	Culverâs
10	Dairy Queen
11	Del Taco
12	Domino's
13	Dunkin'
14	El Pollo Loco
15	Firehouse Subs
16	Five Guys
17	Freddyâs Frozen Custard & Steakburgers
18	Hardeeâs
19	In-N-Out Burger
20	Jack in the Box
21	Jersey Mikeâs
22	Jimmy Johnâs
23	KFC
24	Krispy Kreme
25	Little Caesars
26	Marcoâs Pizza
27	McAlisterâs Deli
28	McDonaldâs
29	Moeâs Southwest Grill
30	Panda Express
31	Panera Bread
32	Papa Johns

U.S. Systemwide Sales (Millions - U.S Dollars) \

0	4462
1	686
2	1485
3	10033
4	1560
5	931
6	16700
7	7547
8	776
9	2489
10	4494
11	931
12	8641
13	10416
14	973
15	1044
16	2093
17	759
18	2100
19	1175
20	4077
21	2203
22	2301
23	5100
24	996
25	4185
26	899
27	869

28	45960
29	661
30	4452
31	5650
32	3486

	Average Sales per Unit (Thousands - U.S Dollars)	Franchised Stores \
0	1309	2293
1	296	2317
2	1924	496
3	1470	7054
4	1400	1011
5	1145	568
6	6100	2650
7	2641	0
8	870	731
9	3099	831
10	1036	4337
11	1551	306
12	1317	6185
13	1127	9244
14	2000	292
15	909	1101
16	3172	911
17	1842	391
18	1117	1536
19	3200	0
20	1843	2055
21	1145	2087
22	866	2616
23	1408	3906
24	4000	51
25	1000	3601
26	934	957
27	1866	472
28	3420	12775
29	1073	658
30	2173	147
31	2700	1130
32	1147	2564

	Company Stores	2021 Total Units	Total Change in Units from 2020
0	1116	3409	40
1	0	2317	102
2	277	773	15
3	51	7105	24
4	47	1058	-21
5	266	834	-13
6	82	2732	155
7	2966	2966	198
8	161	892	-13
9	6	837	55
10	2	4339	-22
11	294	600	4
12	375	6560	205
13	0	9244	161
14	189	481	1
15	39	1140	9
16	479	1390	8
17	29	420	32
18	198	1734	-32
19	370	370	5
20	163	2218	-23
21	13	2100	246

22	41	2657	48
23	47	3953	10
24	307	358	6
25	580	4181	-28
26	45	1002	48
27	33	505	24
28	663	13438	244
29	1	659	-22
30	2187	2334	150
31	950	2080	-25
32	600	3164	30

>

In [148...

df.info

Out[148]: <bound method DataFrame.info of

0	Arbyâs
1	Baskin-Robbins
2	Bojangles
3	Burger King
4	Carlâs Jr.
5	Checkers/Rallyâs
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25	580	4181	-28
26	45	1002	48
27	33	505	24
28	663	13438	244
29	1	659	-22
30	2187	2334	150
31	950	2080	-25
32	600	3164	30

In [149... `pd.isnull(df).sum()`

Out[149]:

Fast-Food Chains	0
U.S. Systemwide Sales (Millions - U.S Dollars)	0
Average Sales per Unit (Thousands - U.S Dollars)	0
Franchised Stores	0
Company Stores	0
2021 Total Units	0
Total Change in Units from 2020	0
dtype: int64	

In [150... `df.dropna(inplace=True)`

In [151... `pd.isnull(df).sum()`

Out[151]:

Fast-Food Chains	0
U.S. Systemwide Sales (Millions - U.S Dollars)	0
Average Sales per Unit (Thousands - U.S Dollars)	0
Franchised Stores	0
Company Stores	0
2021 Total Units	0
Total Change in Units from 2020	0
dtype: int64	

In [152... `df.columns`

Out[152]:

```
Index(['Fast-Food Chains', 'U.S. Systemwide Sales (Millions - U.S Dollars)',
      'Average Sales per Unit (Thousands - U.S Dollars)', 'Franchised Stores',
      'Company Stores', '2021 Total Units',
      'Total Change in Units from 2020'],
      dtype='object')
```

In [153... `df.dtypes`

Out[153]:

Fast-Food Chains	object
U.S. Systemwide Sales (Millions - U.S Dollars)	int64
Average Sales per Unit (Thousands - U.S Dollars)	int64
Franchised Stores	int64
Company Stores	int64
2021 Total Units	int64
Total Change in Units from 2020	int64
dtype: object	

In [154... `df.describe()`

Out[154]:

	U.S. Systemwide Sales (Millions - U.S Dollars)	Average Sales per Unit (Thousands - U.S Dollars)	Franchised Stores	Company Stores	2021 Total Units	Total Change in Units from 2020
count	33.000000	33.000000	33.000000	33.000000	33.000000	33.000000
mean	4852.545455	1851.515152	2281.000000	381.121212	2662.121212	49.121212
std	8213.257812	1166.920496	2861.750819	638.708402	2849.948440	83.305071
min	661.000000	296.000000	0.000000	0.000000	358.000000	-32.000000
25%	973.000000	1117.000000	496.000000	39.000000	834.000000	-13.000000
50%	2203.000000	1408.000000	1101.000000	163.000000	2080.000000	15.000000
75%	4494.000000	2173.000000	2616.000000	375.000000	3164.000000	55.000000
max	45960.000000	6100.000000	12775.000000	2966.000000	13438.000000	246.000000

In [155...
df[['Franchised Stores', 'Company Stores', 'Total Change in Units from 2020']].des

Out[155]:

	Franchised Stores	Company Stores	Total Change in Units from 2020
count	33.000000	33.000000	33.000000
mean	2281.000000	381.121212	49.121212
std	2861.750819	638.708402	83.305071
min	0.000000	0.000000	-32.000000
25%	496.000000	39.000000	-13.000000
50%	1101.000000	163.000000	15.000000
75%	2616.000000	375.000000	55.000000
max	12775.000000	2966.000000	246.000000

In [156...
df.columns

Out[156]:

```
Index(['Fast-Food Chains', 'U.S. Systemwide Sales (Millions - U.S Dollars)',  
      'Average Sales per Unit (Thousands - U.S Dollars)', 'Franchised Stores',  
      'Company Stores', '2021 Total Units',  
      'Total Change in Units from 2020'],  
      dtype='object')
```

In [157...

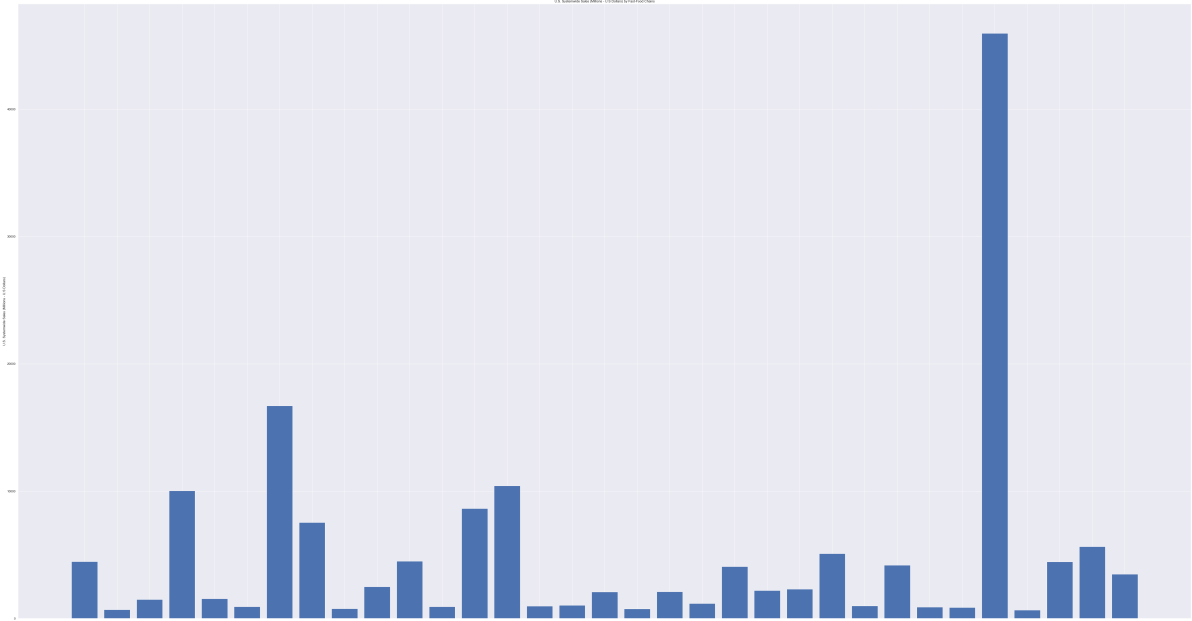
```
#Sorting the data by Food chain name in alphapetic order.  
df.sort_values('Fast-Food Chains', ascending=True)
```


Out[157]:

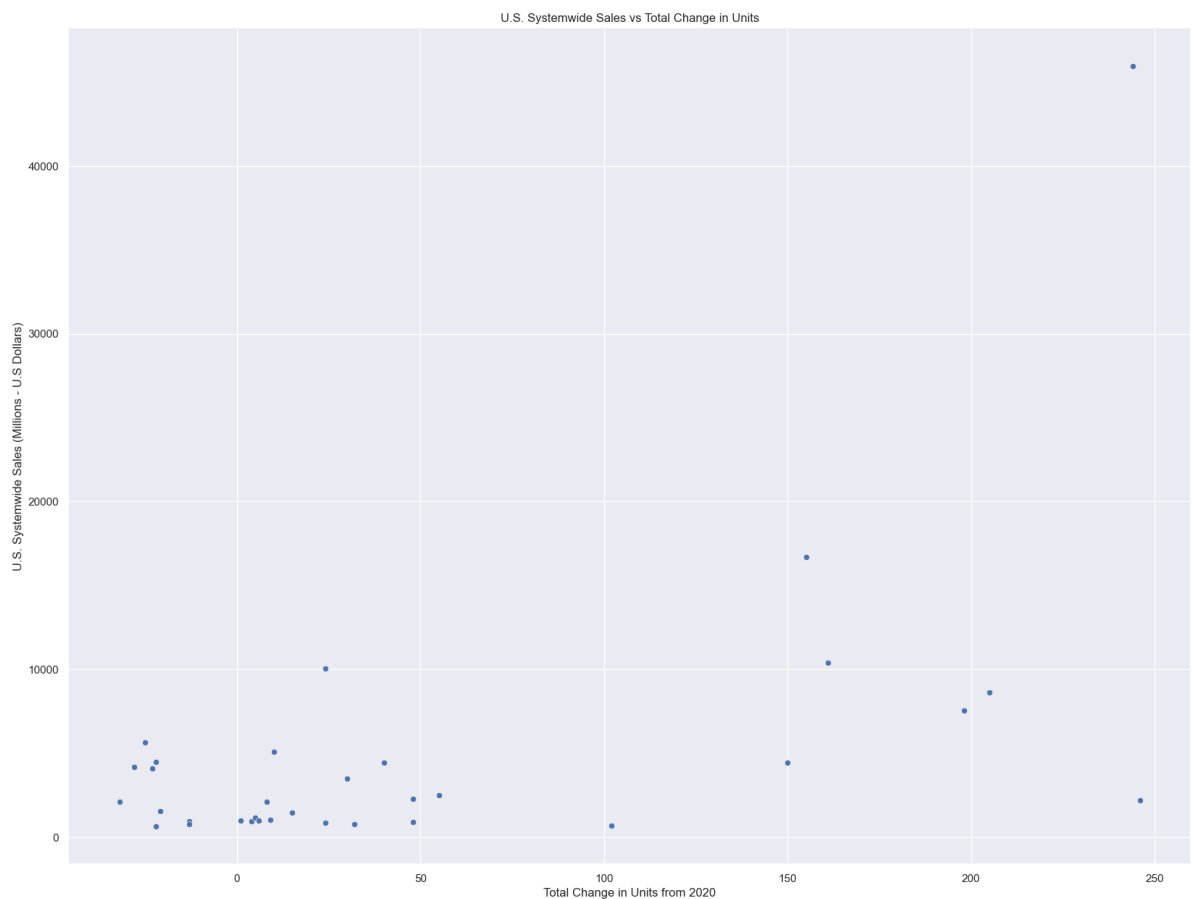
	Fast-Food Chains	U.S. Systemwide Sales (Millions - U.S Dollars)	Average Sales per Unit (Thousands - U.S Dollars)	Franchised Stores	Company Stores	2021 Total Units	Total Change in Units from 2020
0	Arbyâs	4462	1309	2293	1116	3409	40
1	Baskin-Robbins	686	296	2317	0	2317	102
2	Bojangles	1485	1924	496	277	773	15
3	Burger King	10033	1470	7054	51	7105	24
4	Carlâs Jr.	1560	1400	1011	47	1058	-21
5	Checkers/Rallyâs	931	1145	568	266	834	-13
6	Chick-fil-A	16700	6100	2650	82	2732	155
7	Chipotle	7547	2641	0	2966	2966	198
8	Churchâs Chicken	776	870	731	161	892	-13
9	Culverâs	2489	3099	831	6	837	55
10	Dairy Queen	4494	1036	4337	2	4339	-22
11	Del Taco	931	1551	306	294	600	4
12	Domino's	8641	1317	6185	375	6560	205
13	Dunkin'	10416	1127	9244	0	9244	161
14	El Pollo Loco	973	2000	292	189	481	1
15	Firehouse Subs	1044	909	1101	39	1140	9
16	Five Guys	2093	3172	911	479	1390	8
17	Freddyâs Frozen Custard & Steakburgers	759	1842	391	29	420	32
18	Hardeeâs	2100	1117	1536	198	1734	-32
19	In-N-Out Burger	1175	3200	0	370	370	5
20	Jack in the Box	4077	1843	2055	163	2218	-23
21	Jersey Mikeâs	2203	1145	2087	13	2100	246
22	Jimmy Johnâs	2301	866	2616	41	2657	48
23	KFC	5100	1408	3906	47	3953	10
24	Krispy Kreme	996	4000	51	307	358	6
25	Little Caesars	4185	1000	3601	580	4181	-28
26	Marcoâs Pizza	899	934	957	45	1002	48
27	McAlisterâs Deli	869	1866	472	33	505	24
28	McDonaldâs	45960	3420	12775	663	13438	244
29	Moeâs Southwest Grill	661	1073	658	1	659	-22
30	Panda Express	4452	2173	147	2187	2334	150
31	Panera Bread	5650	2700	1130	950	2080	-25

	Fast-Food Chains	U.S. Systemwide Sales (Millions - U.S Dollars)	Average Sales per Unit (Thousands - U.S Dollars)	Franchised Stores	Company Stores	2021 Total Units	Total Change in Units from 2020
32	Papa Johns	3486	1147	2564	600	3164	30

```
In [161... #Comparing sales and there systemwide sales.
plt.figure(figsize=(76, 40))
plt.bar(df['Fast-Food Chains'], df['U.S. Systemwide Sales (Millions - U.S Dollars)'])
plt.xlabel('Fast-Food Chains')
plt.title('U.S. Systemwide Sales (Millions - U.S Dollars) by Fast-Food Chains')
plt.ylabel('U.S. Systemwide Sales (Millions - U.S Dollars)')
plt.show()
```



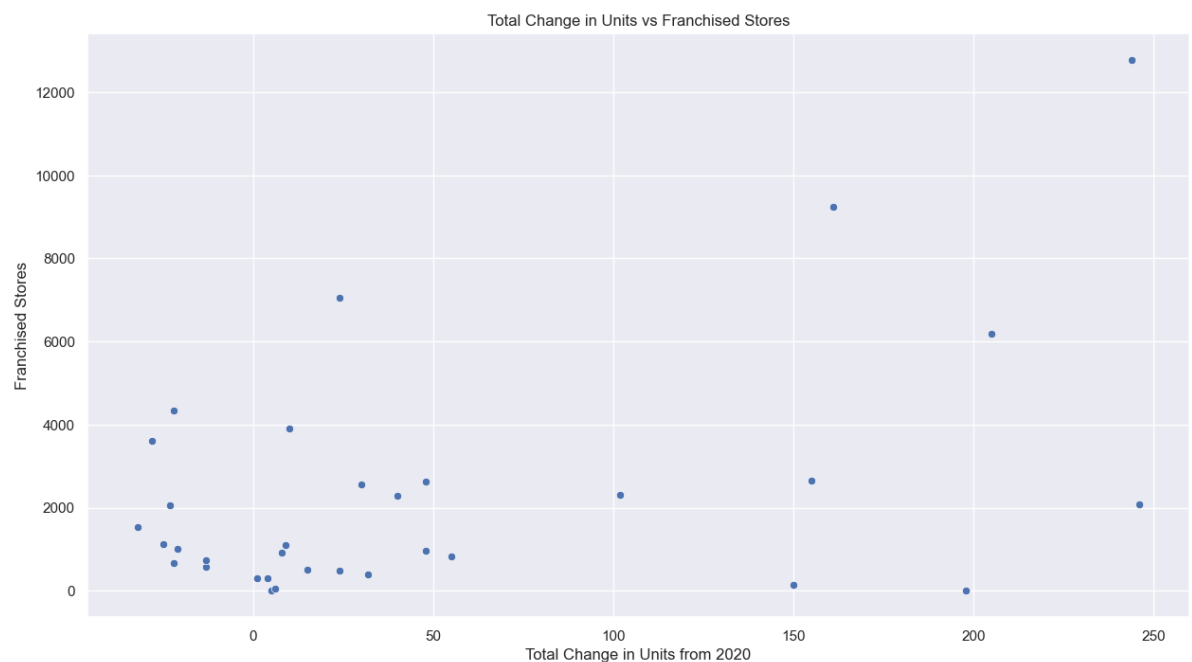
```
In [119... #U.S. Systemwide Sales vs Total Change in Units
sns.scatterplot(x='Total Change in Units from 2020', y='U.S. Systemwide Sales (Millions - U.S Dollars)')
sns.set(rc={'figure.figsize':(20,10)})
plt.xlabel('Total Change in Units from 2020')
plt.ylabel('U.S. Systemwide Sales (Millions - U.S Dollars)')
plt.title('U.S. Systemwide Sales vs Total Change in Units')
plt.show()
```



In [112...

```
#Total Change in Units vs Franchised Stores
sns.scatterplot(x='Total Change in Units from 2020', y='Franchised Stores', data=d)
sns.set(rc={'figure.figsize':(6,8)})
plt.xlabel('Total Change in Units from 2020')
plt.ylabel('Franchised Stores')
plt.title('Total Change in Units vs Franchised Stores')

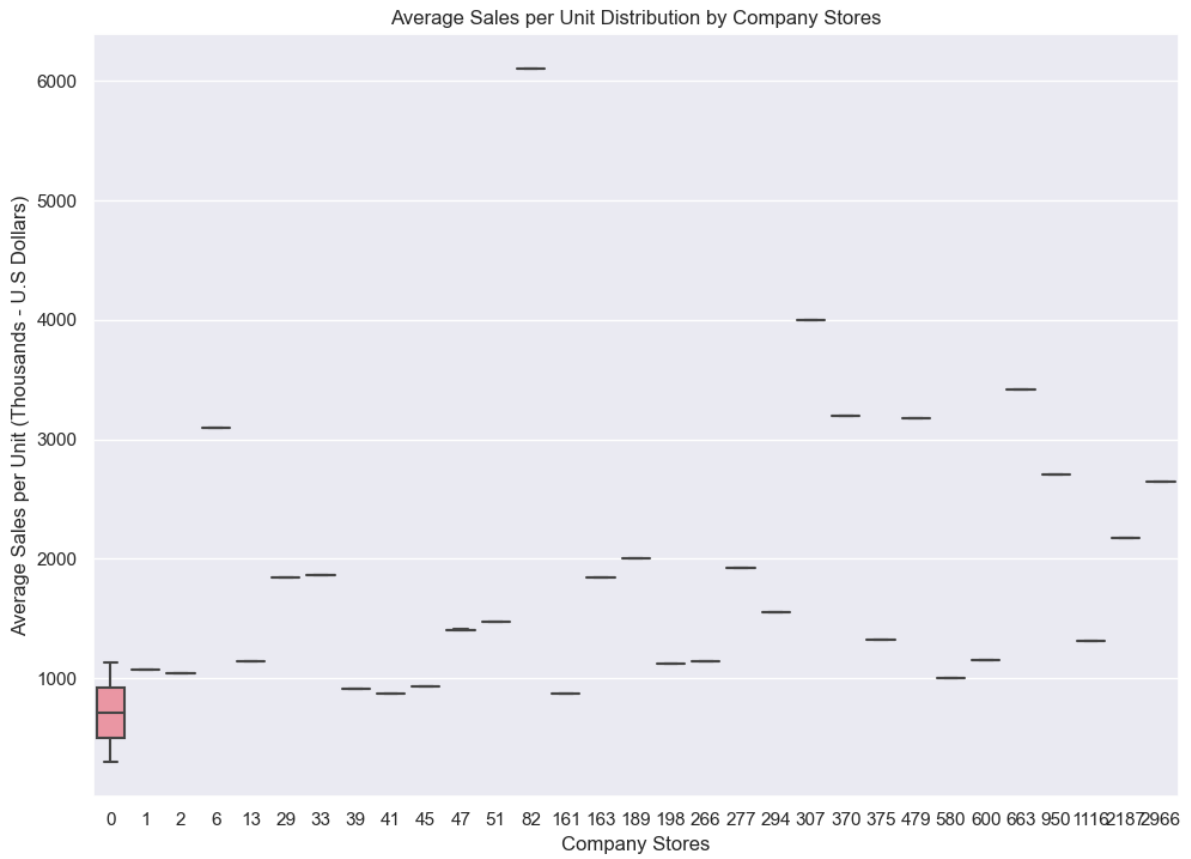
plt.show()
```



In [106...

```
#Average Sales per Unit Distribution by Company Stores
sns.boxplot(x='Company Stores', y='Average Sales per Unit (Thousands - U.S Dollars)')
sns.set(rc={'figure.figsize':(68,10)})
plt.xlabel('Company Stores')
plt.ylabel('Average Sales per Unit (Thousands - U.S Dollars)')
```

```
plt.title('Average Sales per Unit Distribution by Company Stores')  
  
plt.show()
```



In []: