analysis_base_first_date

May 17, 2021

1 Analysis of stock prices in different time periods

NOTE: `base date point` means that base value will be set to the first date in dataset.

Example: if we want to get daily prices within a week then `base date point` means that the base value will be set **only** for data point with first date

[1]:
```
import sys

sys.path.append('..')

from analysis_base_first_date import Column
from common import plot, YahooRange

from loguru import logger
import numpy as np
import pandas as pd
from seaborn import lineplot, barplot, scatterplot, boxplot
from matplotlib import pyplot


FILENAME = "sp500/sp500.csv"
LIMIT = None

logger.remove()
logger.add(sys.stdout, level="INFO")

pass
```

1.1 Monthly stock price fluctuations within a year

[2]:
```
from analysis_base_first_date import get_best_month

df = get_best_month(FILENAME, YahooRange.YEARS_20, limit=LIMIT)
df
```

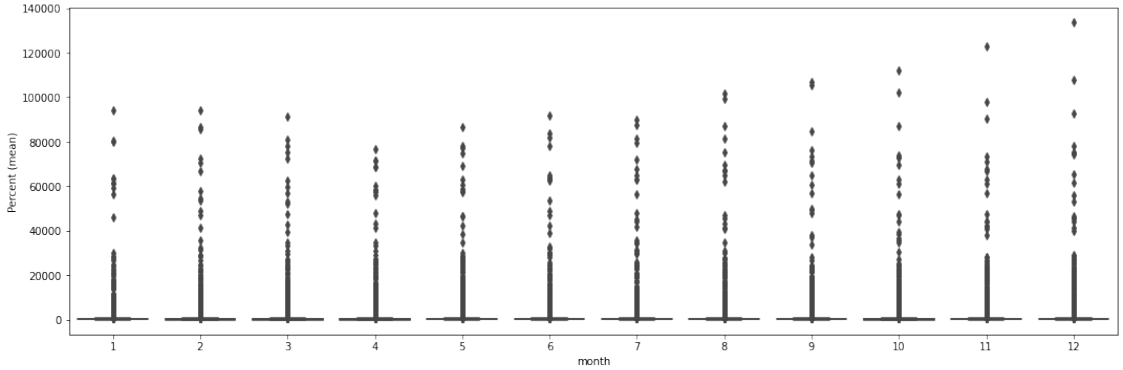
[2]:

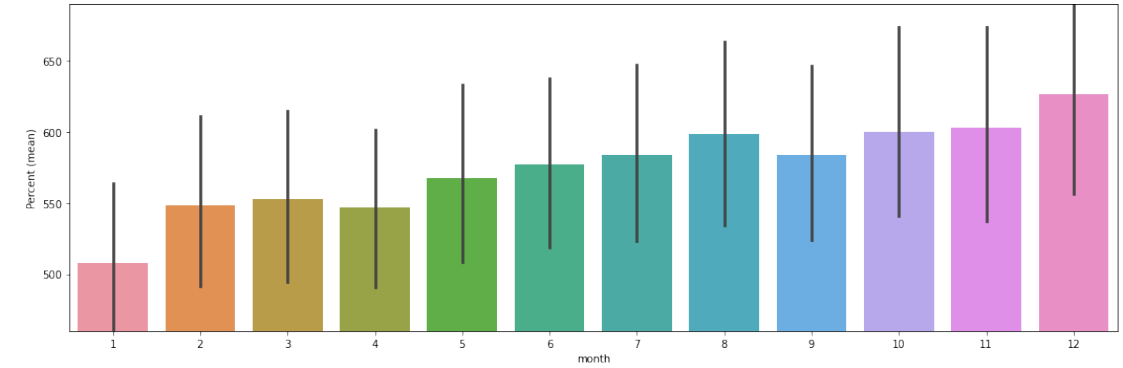
	year	month	Symbol	Percent (mean)
0	2001	1	SWKS	100.0

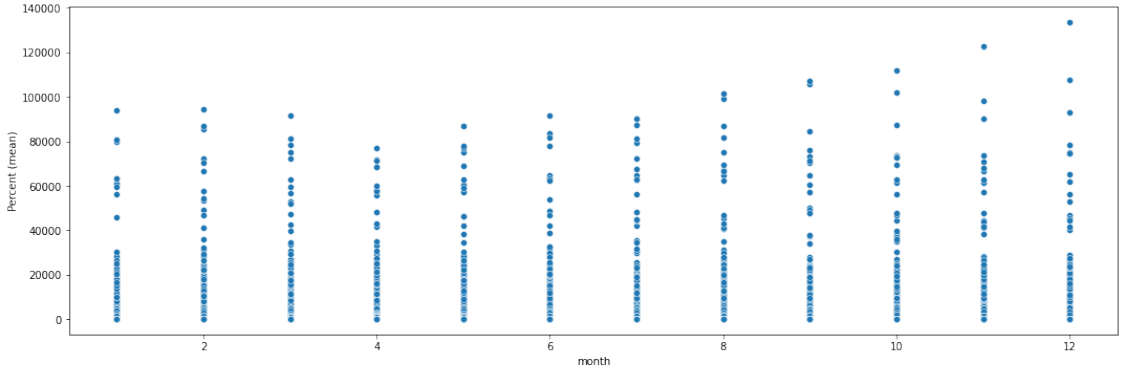
```
1        2001      2   SWKS       81.063123
2        2001      3   SWKS       39.202658
3        2001      4   SWKS       40.863787
4        2001      5   SWKS       65.887046
…        …    …    …              …
108176   2020      8   CTVA       96.739498
108177   2020      9   CTVA       96.067227
108178   2020     10   CTVA       97.075627
108179   2020     11   CTVA      111.865542
108180   2020     12   CTVA      130.084036

[108181 rows x 4 columns]
```

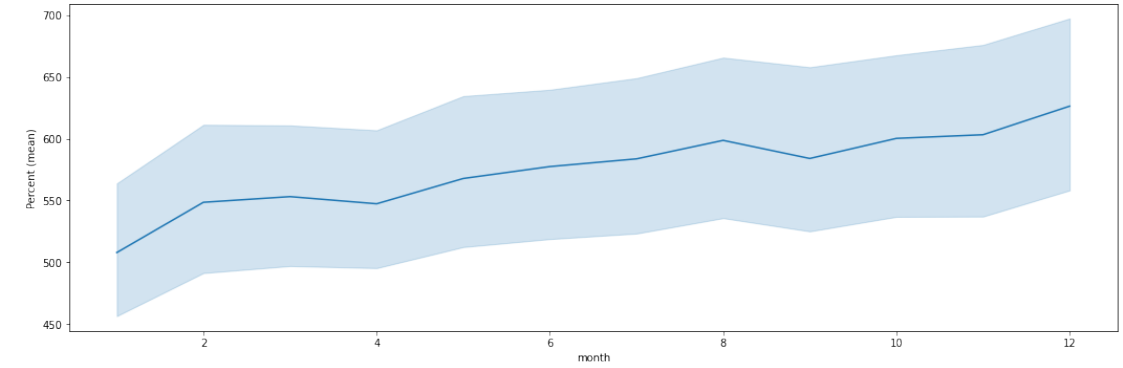
[3]:
```
plot(x=Column.MONTH, y=Column.PERCENT, data=df)
```

```
       Percent (mean)
month
1          507.755035
2           548.49062
3           553.07701
4          547.281632
5          567.780294
```


Percent (mean)
month


Percent (mean)
month


Percent (mean)
month


Percent (mean)
month

1.2 Weekly stock price fluctuations within a year

[4]:
```
from analysis_base_first_date import get_best_week

df = get_best_week(FILENAME, YahooRange.YEARS_20, limit=LIMIT)

df
```

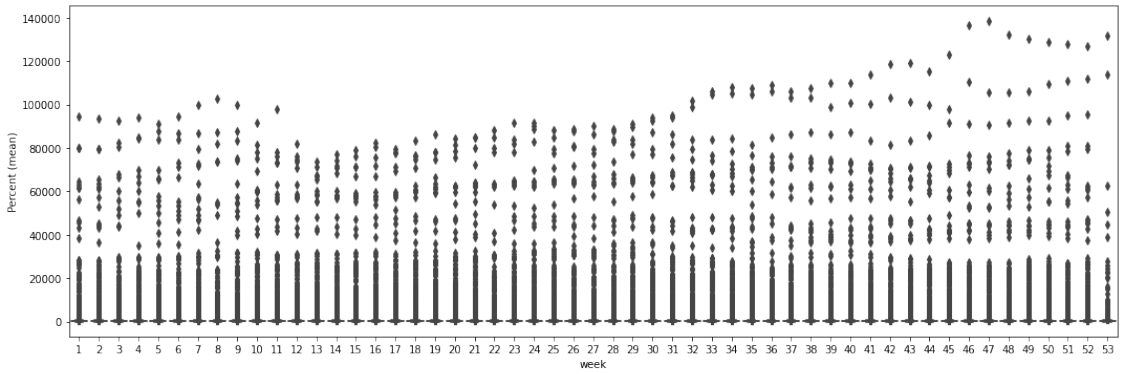
[4]:

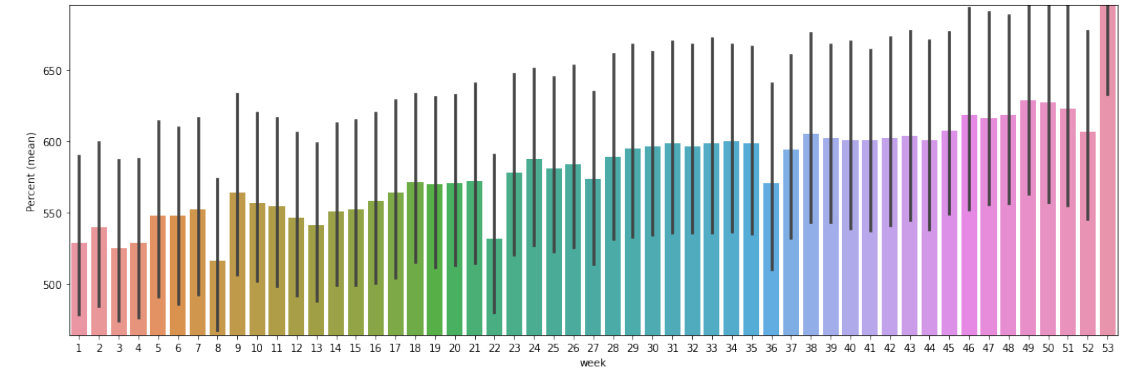
	year	week	Symbol	Percent (mean)
0	2001	1	TXT	100.0
1	2001	2	TXT	101.851852
2	2001	3	TXT	102.910053
3	2001	4	TXT	101.587302
4	2001	5	TXT	102.222221
…	…	…	…	…
469467	2020	49	KSU	1883.358049
469468	2020	50	KSU	1911.70368
469469	2020	51	KSU	1952.691424
469470	2020	52	KSU	1923.851786
469471	2020	53	KSU	1994.074014

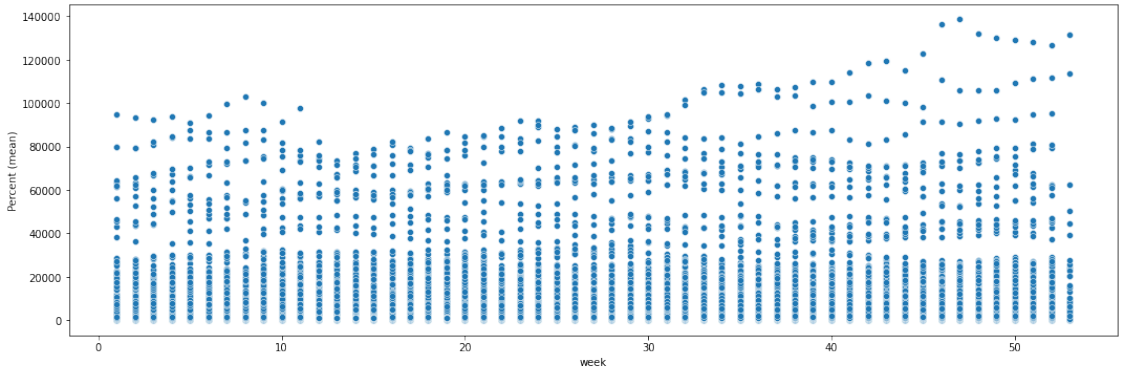
[469472 rows x 4 columns]

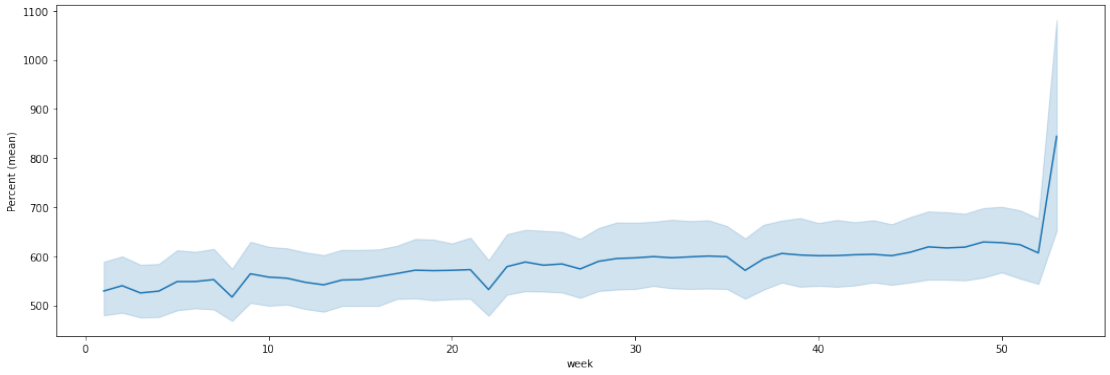
[5]:
```
plot(x=Column.WEEK, y=Column.PERCENT, data=df)
```

week	Percent (mean)
1	528.976614
2	539.76455
3	525.041477
4	528.702092
5	548.1239


Percent (mean)
week


Percent (mean)
week


Percent (mean)
week


Percent (mean)
week

1.3 Daily stock price fluctuations within a month

[6]:
```
from analysis_base_first_date import get_best_month_day

df = get_best_month_day(FILENAME, YahooRange.YEARS_20, limit=LIMIT)

df
```

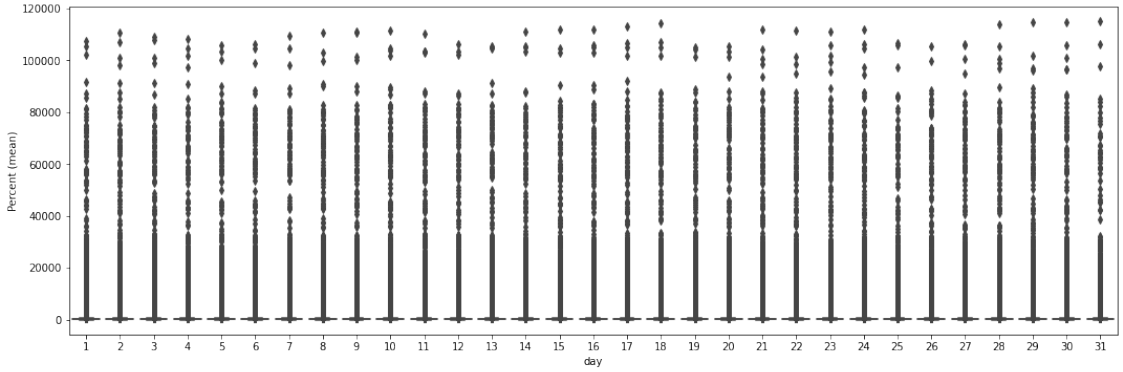
[6]:

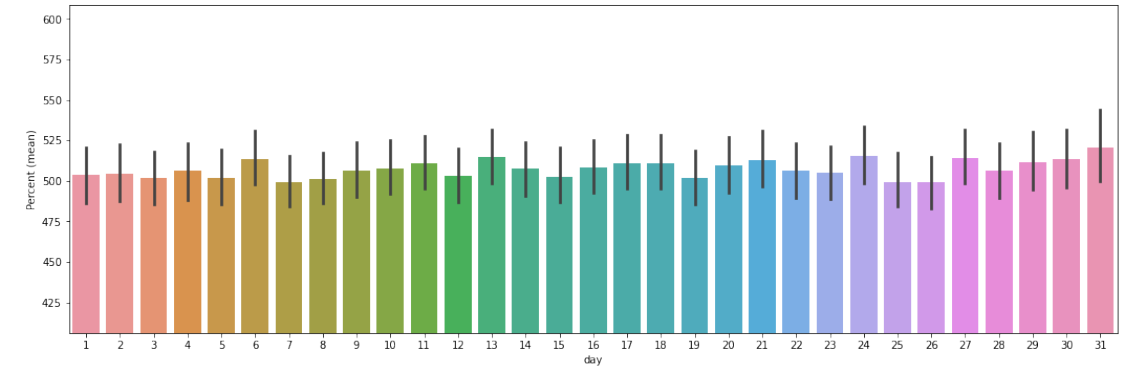
	year	month	day	Symbol	Percent (mean)
0	2001	7	25	ZBH	100.0
1	2001	7	26	ZBH	97.9661
2	2001	7	27	ZBH	95.593223
3	2001	7	30	ZBH	96.271185
4	2001	7	31	ZBH	96.474573
…	…	…	…	…	…
2264184	2020	12	24	TSCO	27674.353745
2264185	2020	12	28	TSCO	27845.64568
2264186	2020	12	29	TSCO	27102.116843
2264187	2020	12	30	TSCO	26994.824219
2264188	2020	12	31	TSCO	26959.059053

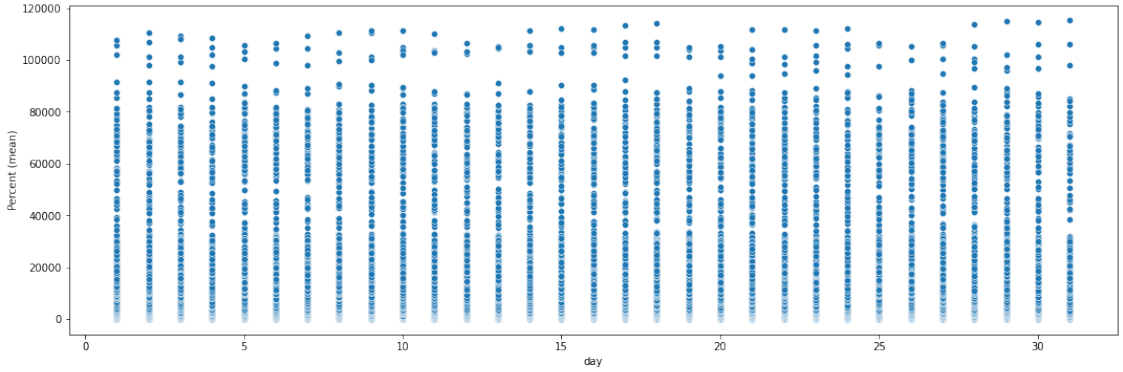
[2264189 rows x 5 columns]

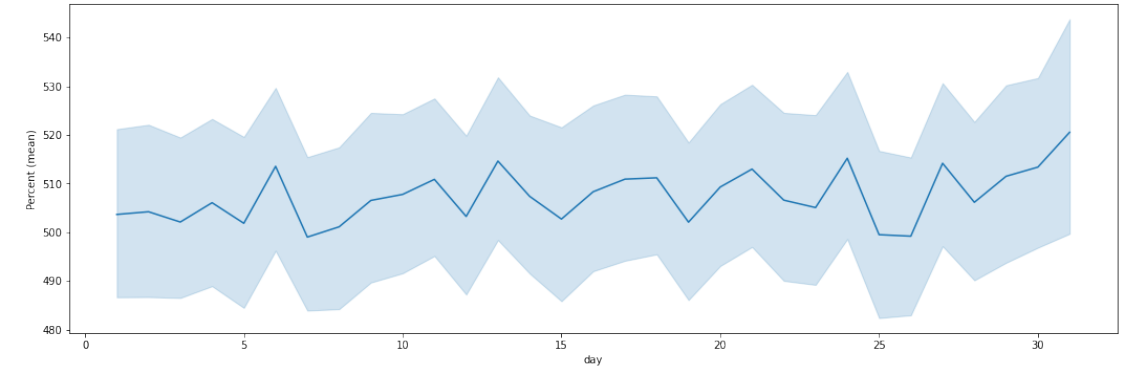
[7]:
```
plot(x=Column.DAY, y=Column.PERCENT, data=df)
```

day	Percent (mean)
1	503.675396
2	504.227772
3	502.113545
4	506.085608
5	501.854768


Percent (mean)
day


Percent (mean)
day


Percent (mean)
day


Percent (mean)
day

1.4 Daily stock price fluctuations within a week

[8]:
```
from analysis_base_first_date import get_best_weekday


df = get_best_weekday(FILENAME, YahooRange.YEARS_20, limit=LIMIT)

df
```

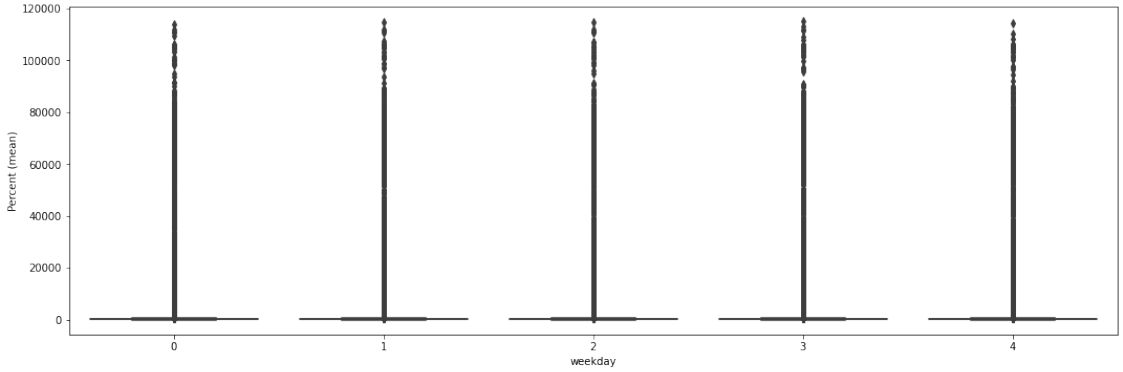
[8]:

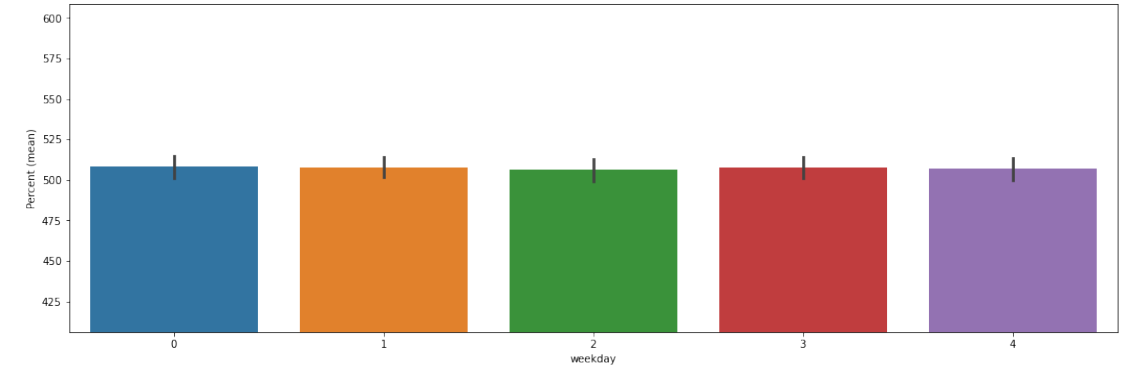
	year	week	weekday	Percent (mean)
0	2001	30	2	100.0
1	2001	30	3	97.9661
2	2001	30	4	95.593223
3	2001	31	0	96.271185
4	2001	31	1	96.474573
…	…	…	…	…
2264184	2020	52	3	27674.353745
2264185	2020	53	0	27845.64568
2264186	2020	53	1	27102.116843
2264187	2020	53	2	26994.824219
2264188	2020	53	3	26959.059053

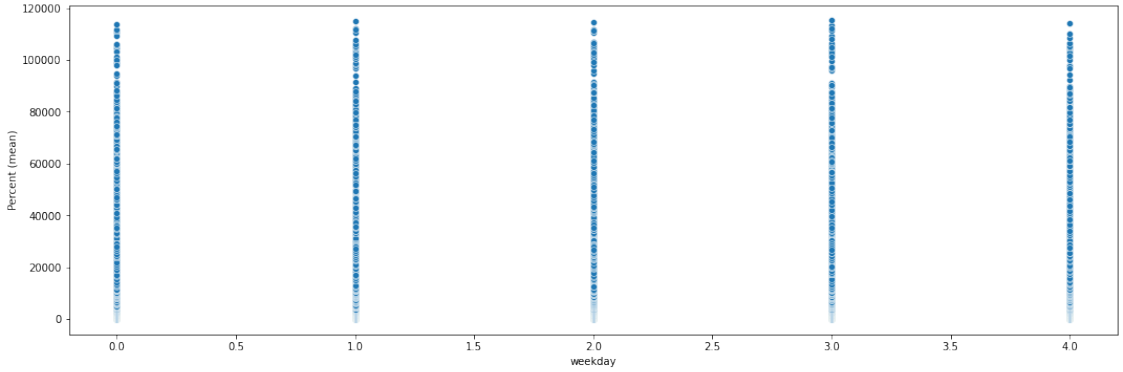
[2264189 rows x 4 columns]

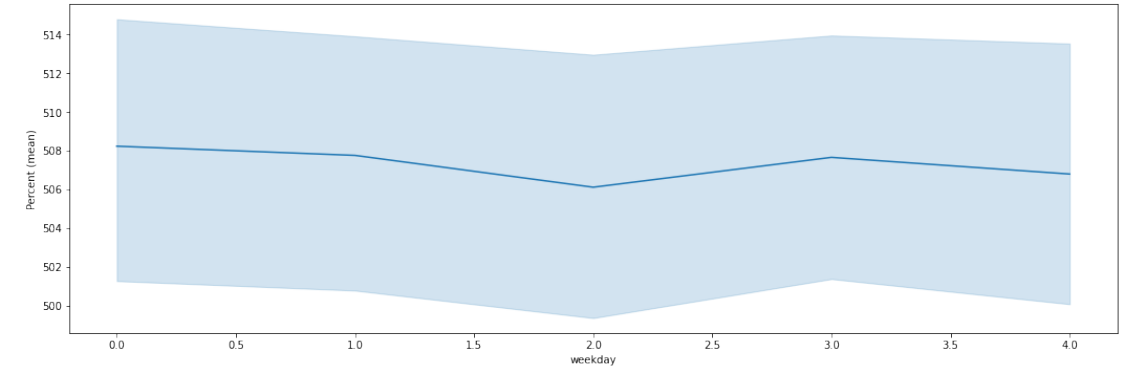
[9]:
```
plot(x=Column.WEEKDAY, y=Column.PERCENT, data=df)
```

weekday	Percent (mean)
0	508.245284
1	507.769809
2	506.127979
3	507.668426
4	506.807758


Percent (mean)
weekday


Percent (mean)
weekday


Percent (mean)
weekday


Percent (mean)
weekday

1.5 Hourly stock price fluctuations within a day

[10]:
```
from analysis_base_first_date import get_best_hour

df = get_best_hour(FILENAME, YahooRange.YEARS_2, limit=LIMIT)

df
```

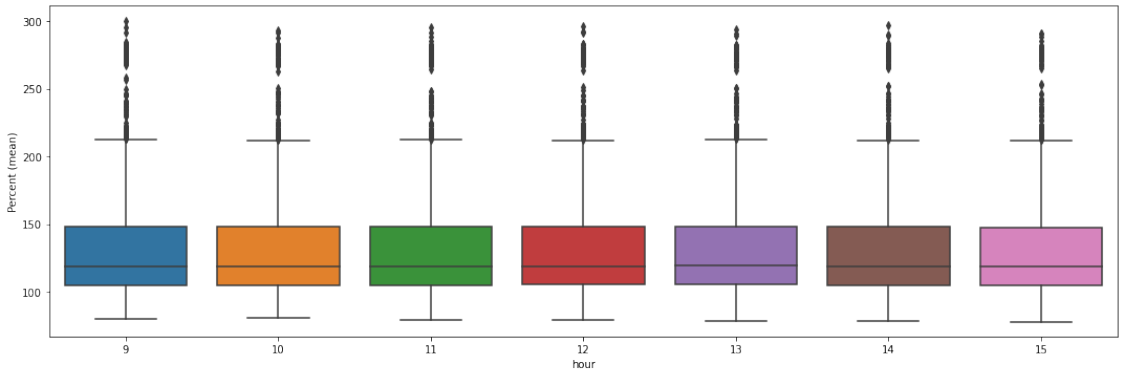
[10]:

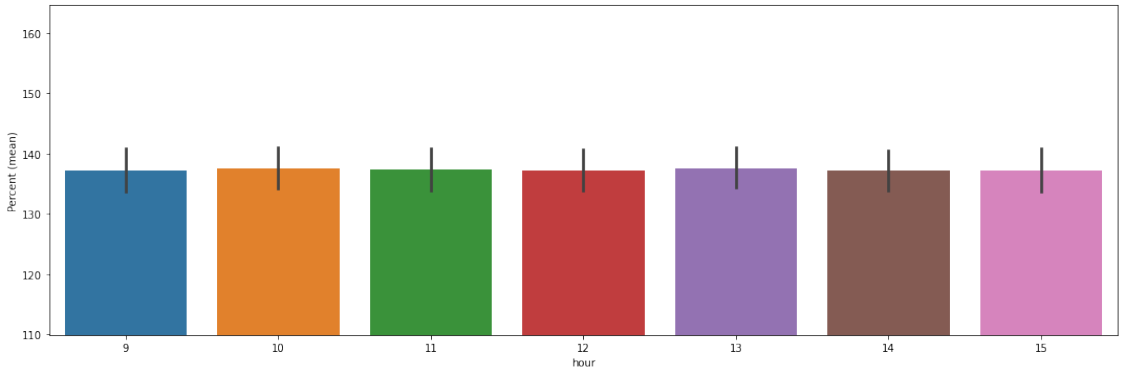
	year	week	day	hour	Symbol	Percent (mean)
0	2020	14	3	9	OTIS	100.0
1	2020	14	3	10	OTIS	99.065634
2	2020	14	3	11	OTIS	104.238834
3	2020	14	3	12	OTIS	106.494983
4	2020	14	3	13	OTIS	111.109845
…	…	…	…	…	…	…
5416	2020	53	31	11	CTVA	145.62924
5417	2020	53	31	12	CTVA	146.194416
5418	2020	53	31	13	CTVA	146.156743
5419	2020	53	31	14	CTVA	146.495854
5420	2020	53	31	15	CTVA	146.382808

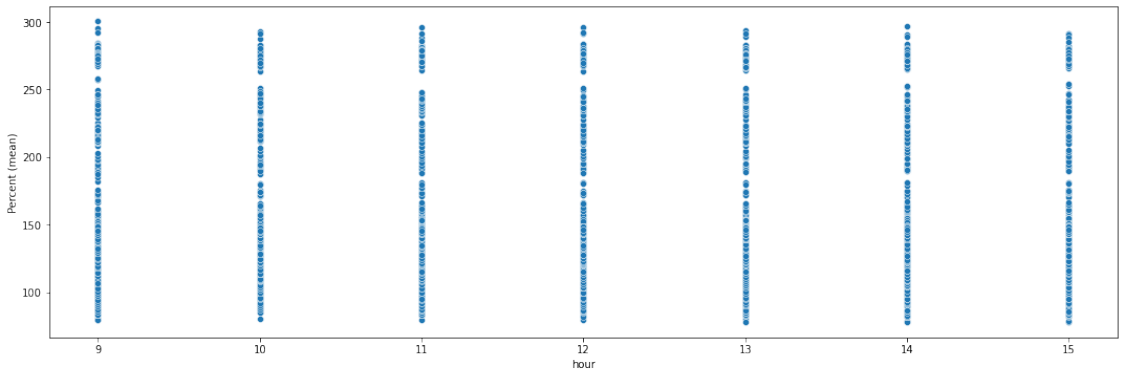
[5421 rows x 6 columns]

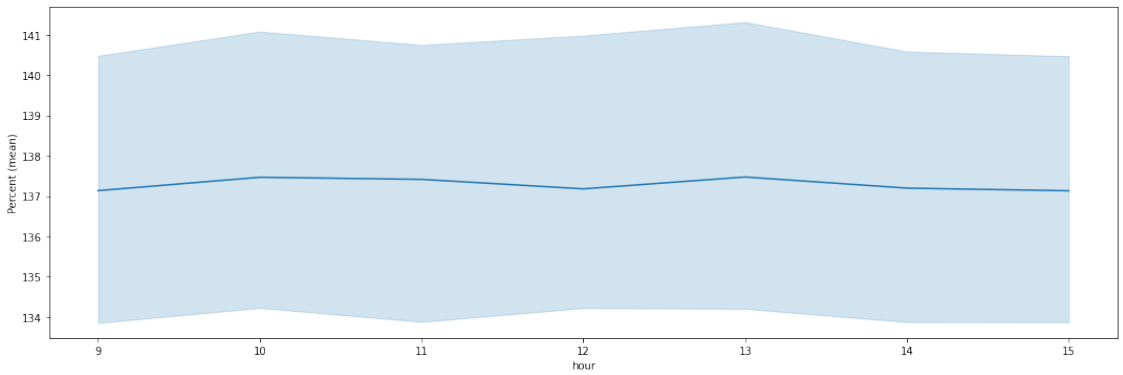
[11]:
```
plot(x=Column.HOUR, y=Column.PERCENT, data=df)
```

hour	Percent (mean)
9	137.134953
10	137.466385
11	137.414052
12	137.179864
13	137.473023


Percent (mean)
hour


Percent (mean)
hour


Percent (mean)
hour


Percent (mean)
hour

1.6 Hourly and quarterly stock price fluctuations within an day

[12]:
```
from analysis_base_first_date import get_best_time

df = get_best_time(FILENAME, YahooRange.DAYS_58, limit=LIMIT)

df
```

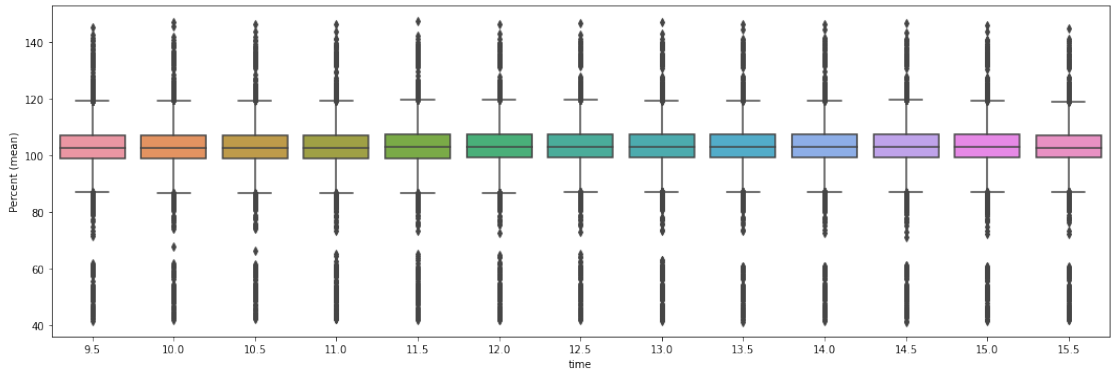
[12]:

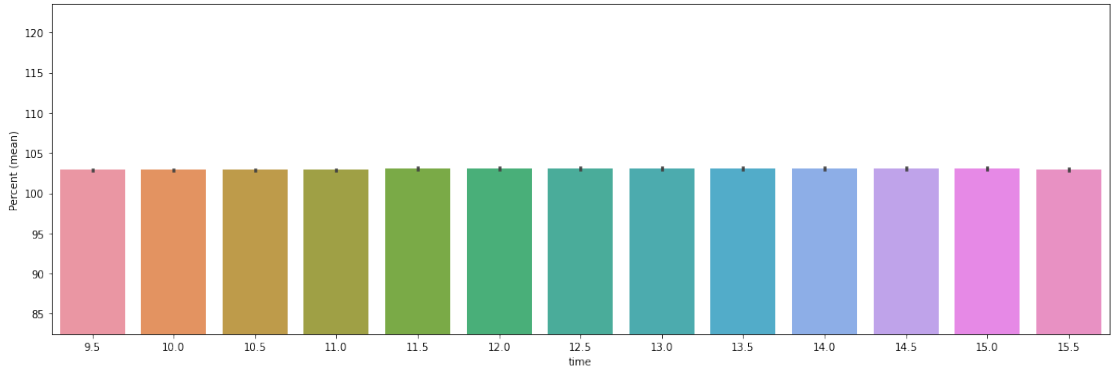
	year	week	day	hour	minute	time	Symbol	Percent (mean)
0	2021	11	18	9	30	9.5	TXT	100.0
1	2021	11	18	10	0	10.0	TXT	100.866425
2	2021	11	18	10	30	10.5	TXT	102.518044
3	2021	11	18	11	0	11.0	TXT	102.400718
4	2021	11	18	11	30	11.5	TXT	102.238263
…	…	…	…	…	…	…	…	…
236800	2021	19	12	13	30	13.5	UDR	100.044475
236801	2021	19	12	14	0	14.0	UDR	99.866575
236802	2021	19	12	14	30	14.5	UDR	99.466307
236803	2021	19	12	15	0	15.0	UDR	100.155659
236804	2021	19	12	15	30	15.5	UDR	99.577491

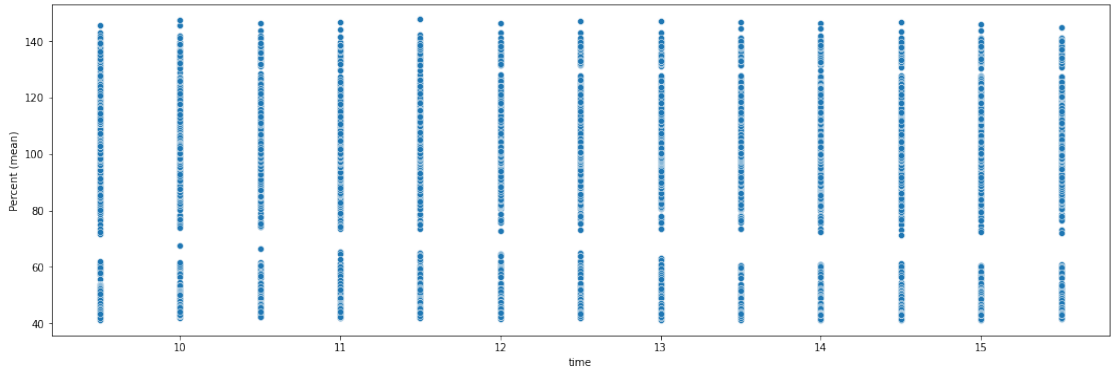
[236805 rows x 8 columns]

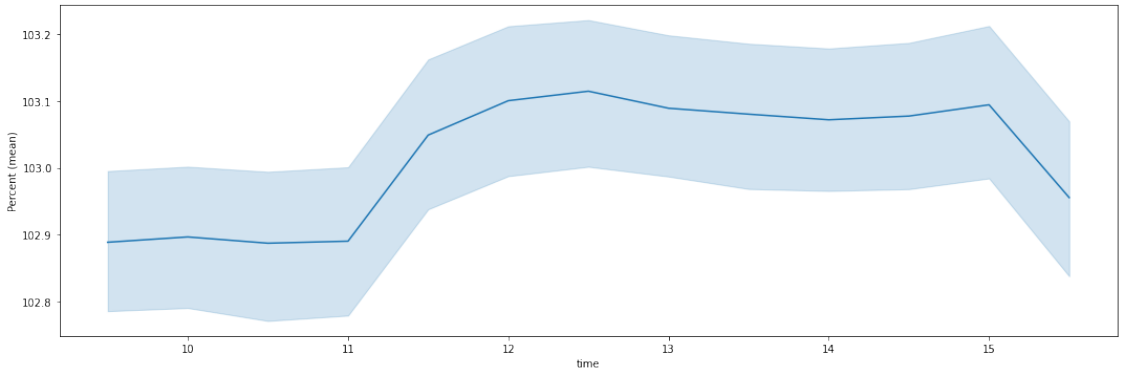
[13]:
```
plot(x=Column.TIME, y=Column.PERCENT, data=df)
```

time	Percent (mean)
9.5	102.888896
10.0	102.896852
10.5	102.887475
11.0	102.890513
11.5	103.04898


Percent (mean)
time
9.5
10.0
10.5
11.0
11.5
12.0
12.5
13.0
13.5
14.0
14.5
15.0
15.5


Percent (mean)
time
9.5
10.0
10.5
11.0
11.5
12.0
12.5
13.0
13.5
14.0
14.5
15.0
15.5


Percent (mean)
time
10
11
12
13
14
15


Percent (mean)
time
10
11
12
13
14
15

1.7 Quarterly stock price fluctuations within an hour

[14]:
```
from analysis_base_first_date import get_best_quarter

df = get_best_quarter(FILENAME, YahooRange.DAYS_58, limit=LIMIT)

df
```

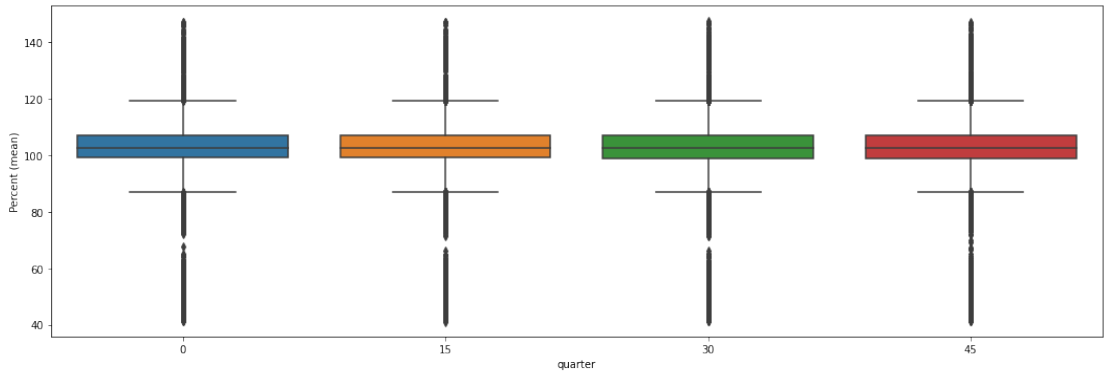
[14]:

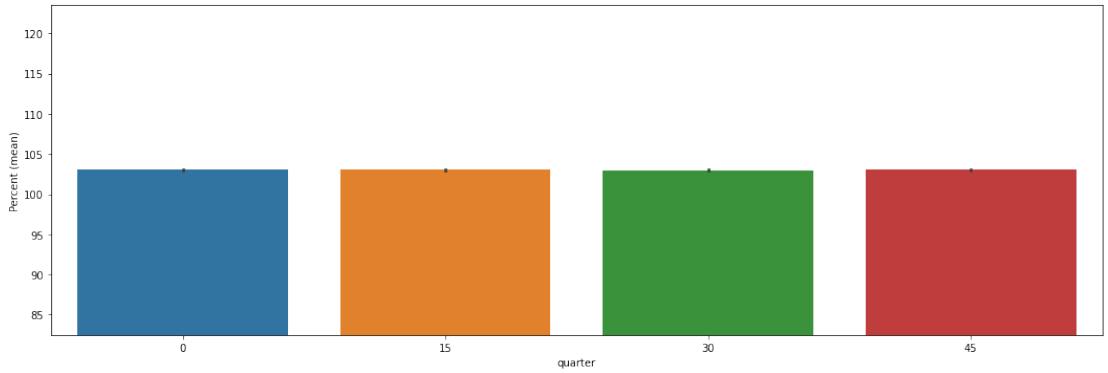
	year	week	day	hour	minute	quarter	Symbol	Percent (mean)
0	2021	11	18	9	30	30	AME	100.0
1	2021	11	18	9	45	45	AME	100.621704
2	2021	11	18	10	0	0	AME	100.605238
3	2021	11	18	10	15	15	AME	100.666994
4	2021	11	18	10	30	30	AME	100.502306
…	…	…	…	…	…	…	…	…
471945	2021	19	12	14	45	45	LVS	84.241272
471946	2021	19	12	15	0	0	LVS	83.990891
471947	2021	19	12	15	15	15	LVS	83.778449
471948	2021	19	12	15	30	30	LVS	83.566007
471949	2021	19	12	15	45	45	LVS	83.482546

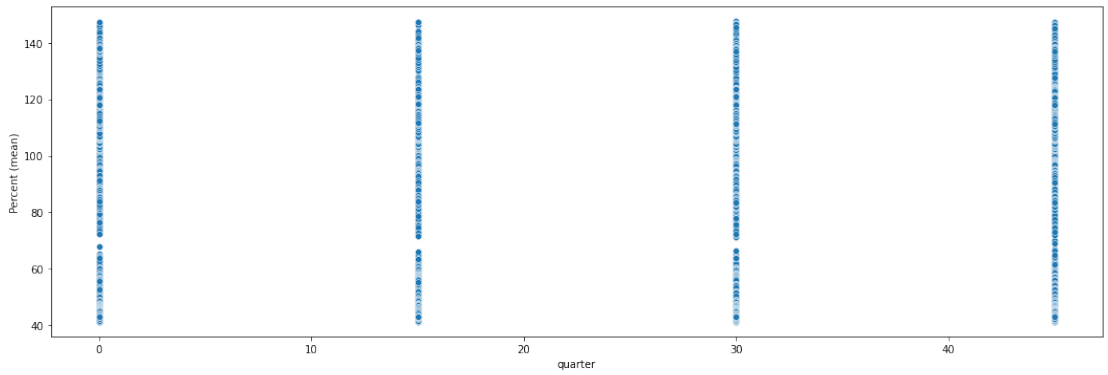
[471950 rows x 8 columns]

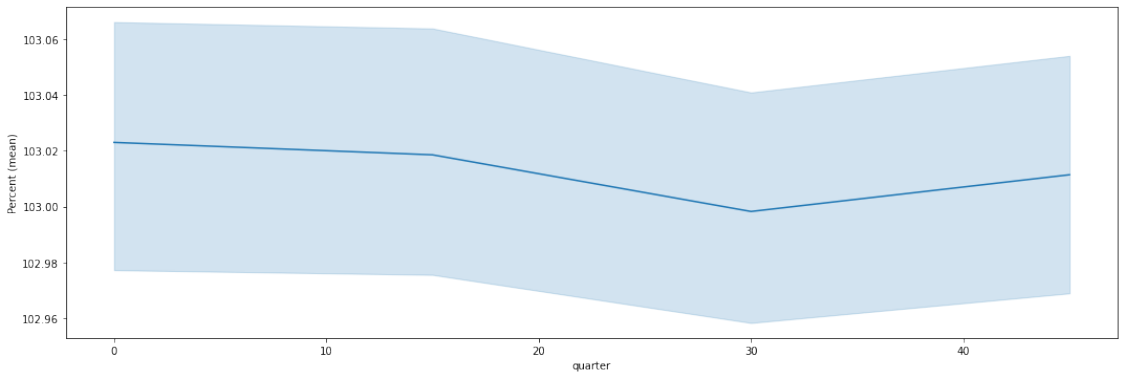
[15]:
```
plot(x=Column.QUARTER, y=Column.PERCENT, data=df)
```

quarter	Percent (mean)
0	103.022994
15	103.018539
30	102.998241
45	103.011395


Percent (mean)
quarter
0
15
30
45


Percent (mean)
quarter
0
15
30
45


Percent (mean)
quarter
0
10
20
30
40


Percent (mean)
quarter
0
10
20
30
40

[ ]: