

New_Highs_New_Lows

September 29, 2021

1 Market Breadth: 52-Week Highs/Lows

1.1 New Highs New Lows

<https://www.investopedia.com/university/marketbreadth/marketbreadth2.asp>

https://www.marketinout.com/technical_analysis.php?t=New_Highs-New_Lows&id=70

https://stockcharts.com/school/doku.php?id=chart_school:market_indicators:high_low_index

```
[1]: import numpy as np
import pandas as pd
import matplotlib.pyplot as plt

import warnings
warnings.filterwarnings("ignore")

# fix_yahoo_finance is used to fetch data
import fix_yahoo_finance as yf
yf.pdr_override()
```

```
[2]: # input
symbol = 'SPY'
start = '2012-01-01'
end = '2019-01-01'

# Read data
df = yf.download(symbol,start,end)

# View Columns
df.head()
```

[*****100%*****] 1 of 1 downloaded

```
[2]:
```

	Open	High	Low	Close	Adj Close	\
Date						
2012-01-03	127.760002	128.380005	127.430000	127.500000	110.244629	
2012-01-04	127.199997	127.809998	126.709999	127.699997	110.417557	
2012-01-05	127.010002	128.229996	126.430000	128.039993	110.711548	

2012-01-06	128.199997	128.220001	127.290001	127.709999	110.426208
2012-01-09	128.000000	128.179993	127.410004	128.020004	110.694260

	Volume
Date	
2012-01-03	193697900
2012-01-04	127186500
2012-01-05	173895000
2012-01-06	148050000
2012-01-09	99530200

```
[3]: df.tail()
```

	Open	High	Low	Close	Adj Close \
Date					
2018-12-24	239.039993	240.839996	234.270004	234.339996	233.312317
2018-12-26	235.970001	246.179993	233.759995	246.179993	245.100388
2018-12-27	242.570007	248.289993	238.960007	248.070007	246.982117
2018-12-28	249.580002	251.399994	246.449997	247.750000	246.663513
2018-12-31	249.559998	250.190002	247.470001	249.919998	248.823990

	Volume
Date	
2018-12-24	147311600
2018-12-26	218485400
2018-12-27	186267300
2018-12-28	153100200
2018-12-31	144299400

```
[4]: new_high = df['Adj Close'].rolling(52).max() # 52-week lows
new_low = df['Adj Close'].rolling(52).min() # 52-week highs
```

```
[5]: print("Yesterday's Value:", df['Adj Close'][-2]) # Yesterday's Value
print("Current Value:", df['Adj Close'][-1]) # Current's Value
```

Yesterday's Value: 246.663513
Current Value: 248.82399

```
[6]: new_high = new_high.dropna()
new_low = new_low.dropna()
#Record_High_Percent = (new_high / (new_high + new_low)) * 100
#nhnl = new_high - new_low
```

```
[7]: # 1. Cumulative New High/Low Line
# Today's Value = Yesterday's Value + (Today's New Highs - Today's New Lows)
df['CNHL'] = df['Adj Close'][1] + (new_high - new_low)
```

```
[8]: # 2. New-High Minus New-Low Oscillator
# Oscillator = Today's New Highs - Today's New Lows
df['Oscillator'] = new_high - new_low
```

```
[9]: # 3. New High/Low Ratio
# Ratio = Today's New Highs / Today's New Lows
df['Ratio'] = new_high / new_low
```

```
[10]: # 4. Percentage of New-High to New High + New Low
# % New Highs = Today's New Highs / (Today's New Highs + Today's New Lows)
# % New Lows = Today's New Lows / (Today's New Highs + Today's New Lows)
df['NH'] = new_high / (new_high + new_low)
df['NL'] = new_low / (new_high + new_low)
```

```
[11]: # 5. Percentage of New Highs to Total Market
# % New Highs = Today's New Highs / Total # of Listed Stocks in Given Market
# % New Lows = Today's New Lows / Total # of Listed Stocks in Given Market
df['NHTM'] = new_high / 5 # Number of stocks
df['NLTM'] = new_low / 5 # Number of stocks
```

```
[12]: df = df.dropna()
df.head(10)
```

```
[12]:
```

	Open	High	Low	Close	Adj Close	\
Date						
2012-03-16	140.360001	140.479996	140.000000	140.300003	121.843971	
2012-03-19	140.210007	141.279999	140.110001	140.850006	122.321655	
2012-03-20	140.050003	140.610001	139.639999	140.440002	121.965569	
2012-03-21	140.520004	140.649994	139.919998	140.210007	121.765793	
2012-03-22	139.179993	139.550003	138.740005	139.199997	120.888680	
2012-03-23	139.320007	139.809998	138.550003	139.649994	121.279488	
2012-03-26	140.649994	141.610001	140.600006	141.610001	122.981621	
2012-03-27	141.740005	141.830002	141.080002	141.169998	122.599518	
2012-03-28	141.100006	141.320007	139.639999	140.470001	121.991638	
2012-03-29	139.639999	140.490005	139.089996	140.229996	121.783188	

	Volume	CNHL	Oscillator	Ratio	NH	NL	\
Date							
2012-03-16	152893500	122.016899	11.599342	1.105215	0.524989	0.524989	
2012-03-19	125291100	122.321655	11.904098	1.107810	0.525574	0.525574	
2012-03-20	121729700	122.313004	11.895447	1.107723	0.525554	0.525554	
2012-03-21	122388400	122.313004	11.895447	1.107723	0.525554	0.525554	
2012-03-22	135216700	122.044952	11.627395	1.105041	0.524950	0.524950	
2012-03-23	120521000	121.335937	10.918380	1.098008	0.523357	0.523357	
2012-03-26	120164000	121.995903	11.578346	1.103932	0.524699	0.524699	
2012-03-27	119868500	121.995903	11.578346	1.103932	0.524699	0.524699	
2012-03-28	148562100	121.995903	11.578346	1.103932	0.524699	0.524699	

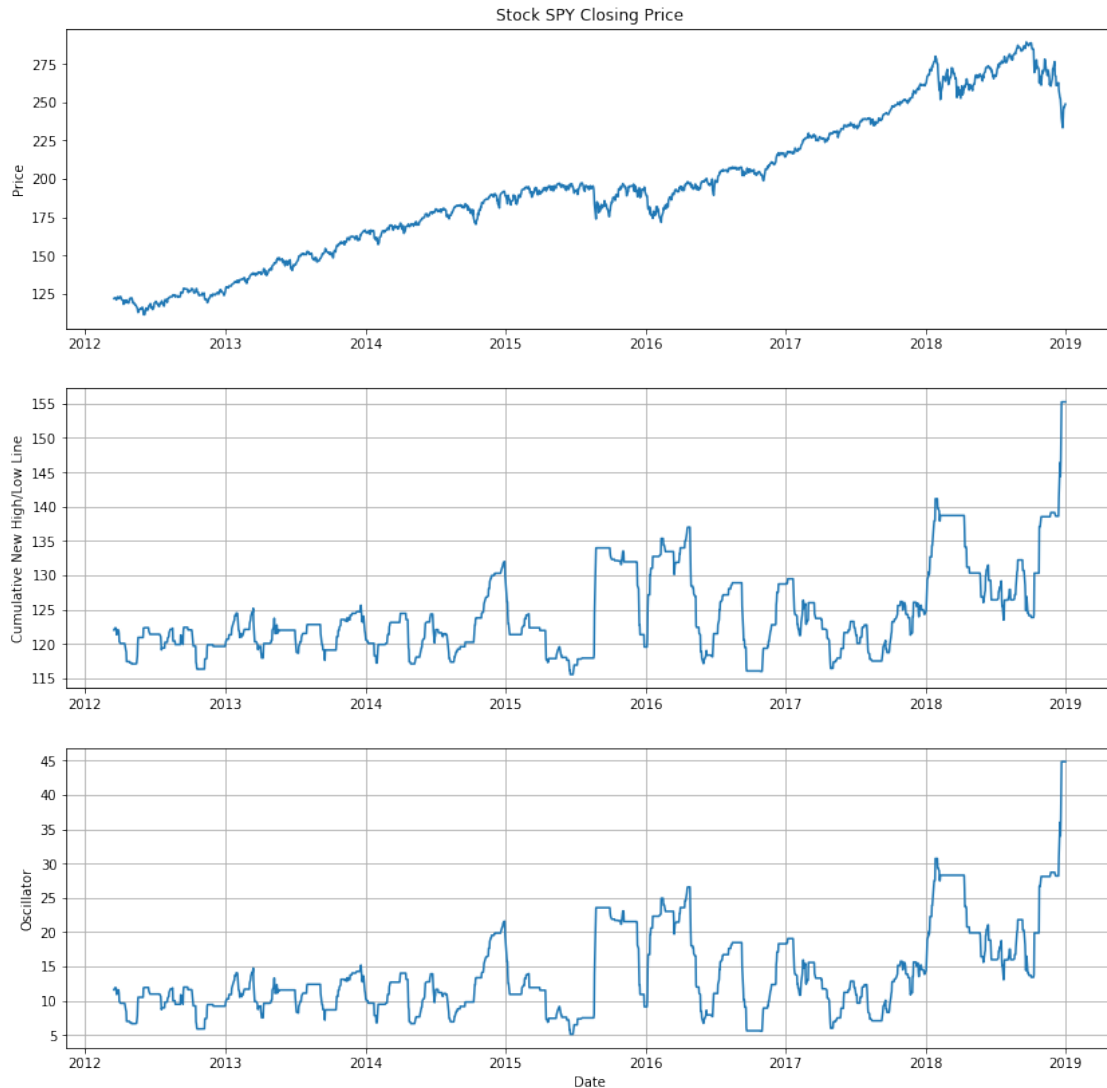
2012-03-29	164963700	121.563546	11.145989	1.099664	0.523733	0.523733
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	NHTM	NLTM
Date		
2012-03-16	24.368794	22.048926
2012-03-19	24.464331	22.083511
2012-03-20	24.464331	22.085242
2012-03-21	24.464331	22.085242
2012-03-22	24.464331	22.138852
2012-03-23	24.464331	22.280655
2012-03-26	24.596324	22.280655
2012-03-27	24.596324	22.280655
2012-03-28	24.596324	22.280655
2012-03-29	24.596324	22.367126

```
[13]: fig = plt.figure(figsize=(14,14))
ax1 = plt.subplot(3, 1, 1)
ax1.plot(df['Adj Close'])
ax1.set_title('Stock ' + symbol + ' Closing Price')
ax1.set_ylabel('Price')

ax2 = plt.subplot(3, 1, 2)
ax2.plot(df['CNHL'], label='Cumulative New High/Low Line')
#ax2.axhline(y=0, color='red')
ax2.set_ylabel('Cumulative New High/Low Line')
ax2.grid()

ax3 = plt.subplot(3, 1, 3)
ax3.plot(df['Oscillator'], label='Oscillator')
#ax3.axhline(y=50, color='red')
ax3.set_ylabel('Oscillator')
ax3.set_xlabel('Date')
ax3.grid()
```



1.2 Candlestick with New Highs/New Lows

```
[14]: from matplotlib import dates as mdates
import datetime as dt

df['VolumePositive'] = df['Open'] < df['Adj Close']
df = df.dropna()
df = df.reset_index()
df['Date'] = mdates.date2num(df['Date'].astype(dt.date))
df.head()
```

```
[14]:      Date      Open      High      Low      Close  Adj Close  \
0  734578.0  140.360001  140.479996  140.000000  140.300003  121.843971
```

1	734581.0	140.210007	141.279999	140.110001	140.850006	122.321655
2	734582.0	140.050003	140.610001	139.639999	140.440002	121.965569
3	734583.0	140.520004	140.649994	139.919998	140.210007	121.765793
4	734584.0	139.179993	139.550003	138.740005	139.199997	120.888680

	Volume	CNHL	Oscillator	Ratio	NH	NL	NHTM \
0	152893500	122.016899	11.599342	1.105215	0.524989	0.524989	24.368794
1	125291100	122.321655	11.904098	1.107810	0.525574	0.525574	24.464331
2	121729700	122.313004	11.895447	1.107723	0.525554	0.525554	24.464331
3	122388400	122.313004	11.895447	1.107723	0.525554	0.525554	24.464331
4	135216700	122.044952	11.627395	1.105041	0.524950	0.524950	24.464331

	NLTM	VolumePositive
0	22.048926	False
1	22.083511	False
2	22.085242	False
3	22.085242	False
4	22.138852	False

```
[15]: from mpl_finance import candlestick_ohlc

fig = plt.figure(figsize=(16,8))
ax1 = plt.subplot(3, 1, 1)
candlestick_ohlc(ax1,df.values, width=0.5, colorup='g', colordown='r', alpha=1.
    ↪0)
ax1.xaxis_date()
ax1.xaxis.set_major_formatter(mdates.DateFormatter('%d-%m-%Y'))
ax1v = ax1.twinx()
colors = df.VolumePositive.map({True: 'g', False: 'r'})
ax1v.bar(df.Date, df['Volume'], color=colors, alpha=0.4)
ax1v.axes.yaxis.set_ticklabels([])
ax1v.set_ylim(0, 3*df.Volume.max())
ax1.set_title('Stock ' + symbol + ' Closing Price')
ax1.set_ylabel('Price')

ax2 = plt.subplot(3, 1, 2)
ax2.plot(df['CNHL'], label='Cumulative New High/Low Line')
#ax2.axhline(y=0, color='red')
ax2.grid()
ax2.set_ylabel('Cumulative New High/Low Line')

ax3 = plt.subplot(3, 1, 3)
ax3.plot(df['Oscillator'], label='Oscillator')
#ax3.axhline(y=50, color='red')
ax3.grid()
ax3.set_ylabel('Oscillator')
ax3.set_xlabel('Date')
```

[15]: Text(0.5,0,'Date')

