

In [19]:

```
from quantopian.pipeline import Pipeline
from quantopian.research import run_pipeline
from quantopian.pipeline.factors import BollingerBands, RSI
from quantopian.pipeline.data.builtin import USEquityPricing
from quantopian.pipeline.filters import QTradableStocksUS
from quantopian.pipeline.classifiers.morningstar import Sector
from alphalens.utils import get_clean_factor_and_forward_returns
from alphalens.tears import create_full_tear_sheet
from alphalens.tears import create_returns_tear_sheet
from alphalens.tears import create_information_tear_sheet
```

In [8]:

```
def make_pipeline():
    base_universe = QTradableStocksUS()
    rsi = RSI(inputs=[USEquityPricing.close],
               window_length=14,
               mask=base_universe)
    bb = BollingerBands(inputs=[USEquityPricing.close],
                         window_length=14,
                         mask=base_universe,
                         k=2)

    factor_to_analyze = rsi+bb.upper-bb.lower
    sector = Sector()

    return Pipeline(
        columns={'factor_to_analyze': factor_to_analyze, 'sector': sector},
        screen=QTradableStocksUS() & factor_to_analyze.notnull() & sector.notnull())
)

factor_data = run_pipeline(make_pipeline(), '2015-1-1', '2016-1-1')
pricing_data = get_pricing(factor_data.index.levels[1], '2015-1-1', '2016-6-1',
                           fields='open_price')
```

**Pipeline Execution Time:** 19.72 Seconds

In [16]:

```
longest_look_forward_period = 63 # week = 5, month = 21, quarter = 63, year = 25
2
range_step = 5

merged_data = get_clean_factor_and_forward_returns(
    factor=factor_data['factor_to_analyze'],
    prices=pricing_data,
    periods=range(1, longest_look_forward_period, range_step)
)

create_full_tear_sheet(merged_data)
```

Dropped 1.2% entries from factor data: 1.2% in forward returns computation and 0.0% in binning phase (set max\_loss=0 to see potentially suppressed Exceptions).

max\_loss is 35.0%, not exceeded: OK!

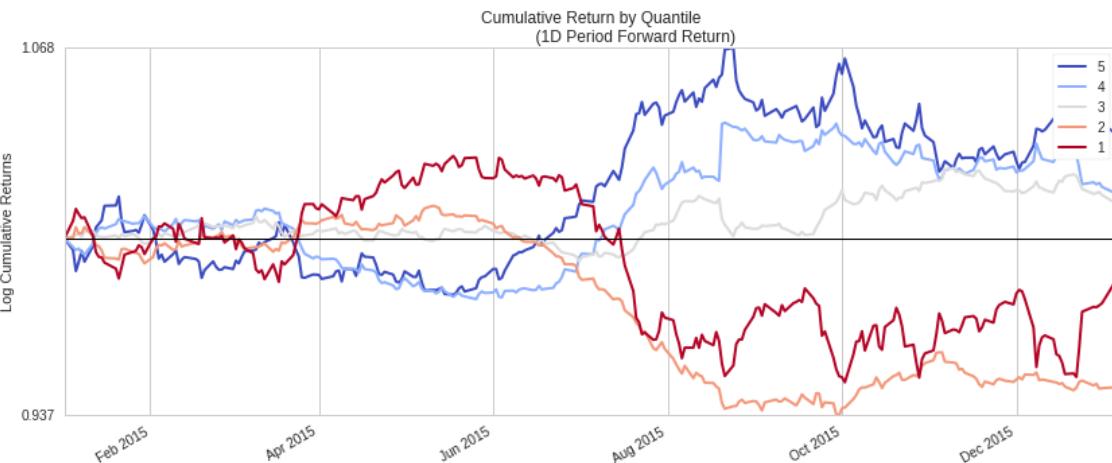
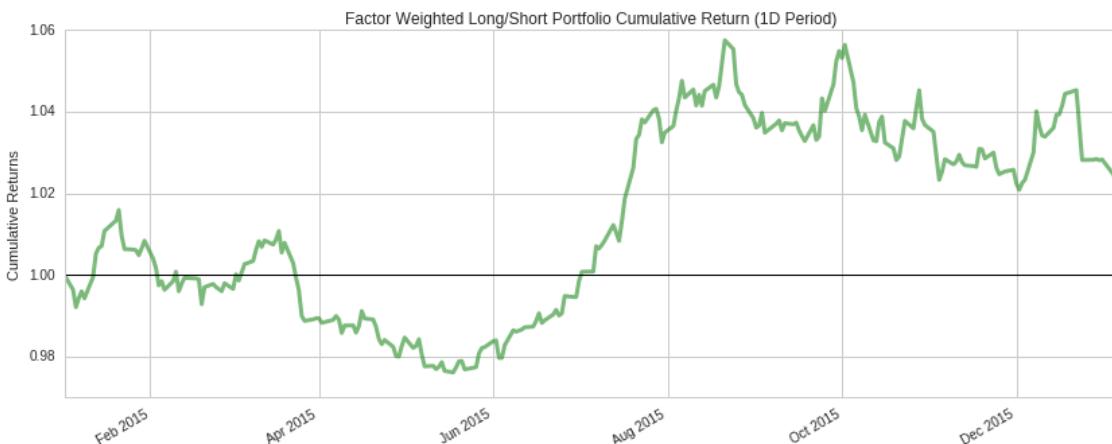
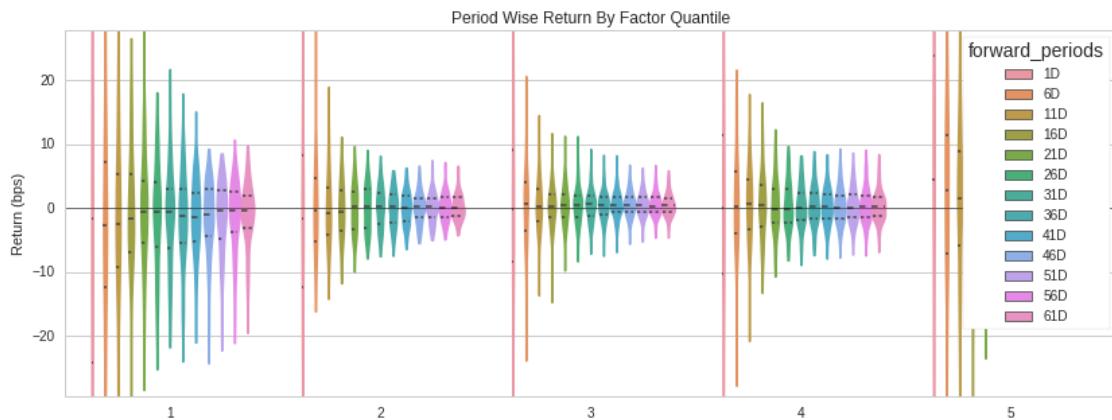
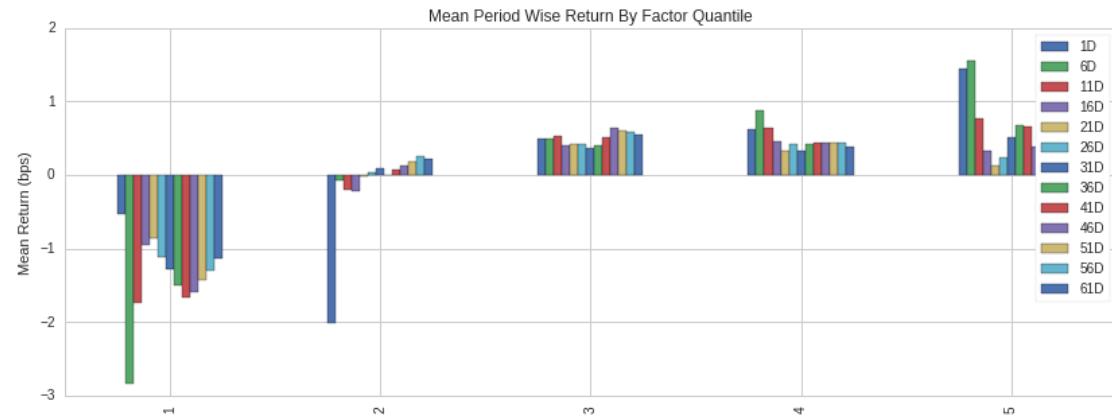
#### Quantiles Statistics

	min	max	mean	std	count	count %
factor_quantile						
1	0.523861	61.376002	32.918540	8.705112	108917	20.018196
2	24.168581	70.568271	45.315583	7.329289	108773	19.991729
3	29.956318	77.859739	53.517135	7.627969	108762	19.989708
4	35.701547	86.838455	62.358119	8.075100	108773	19.991729
5	44.833972	409.268523	79.538751	16.024546	108865	20.008638

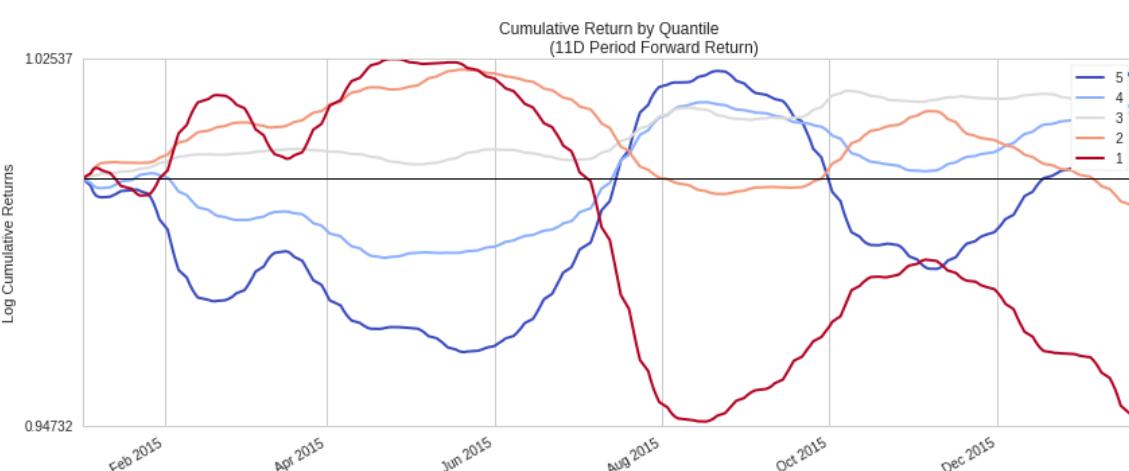
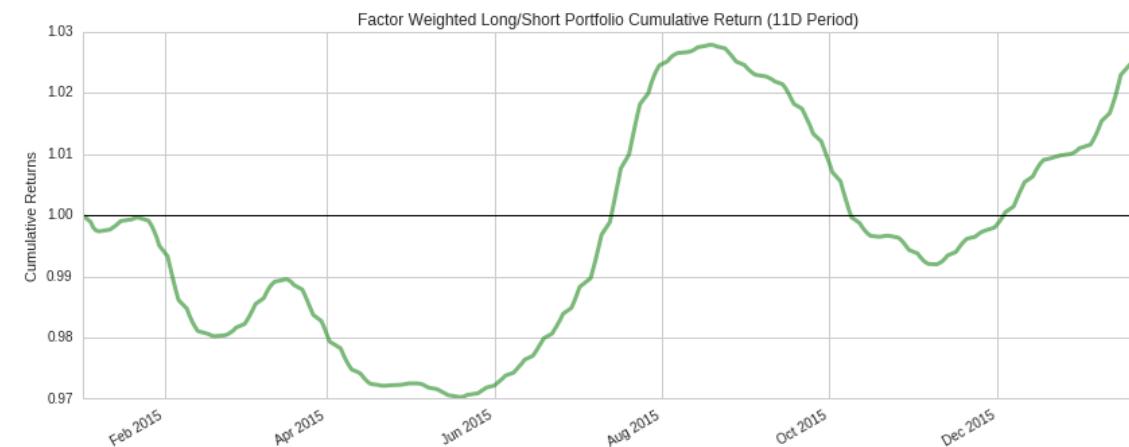
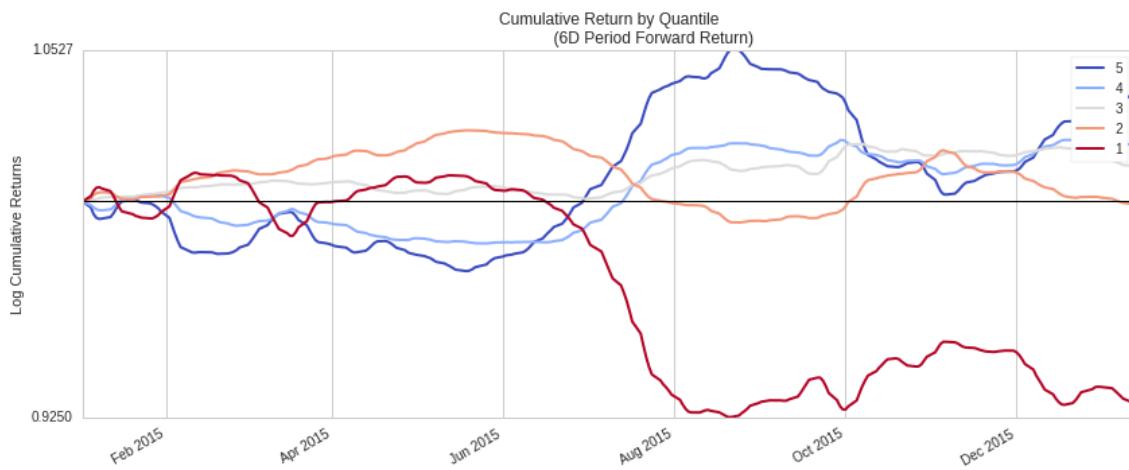
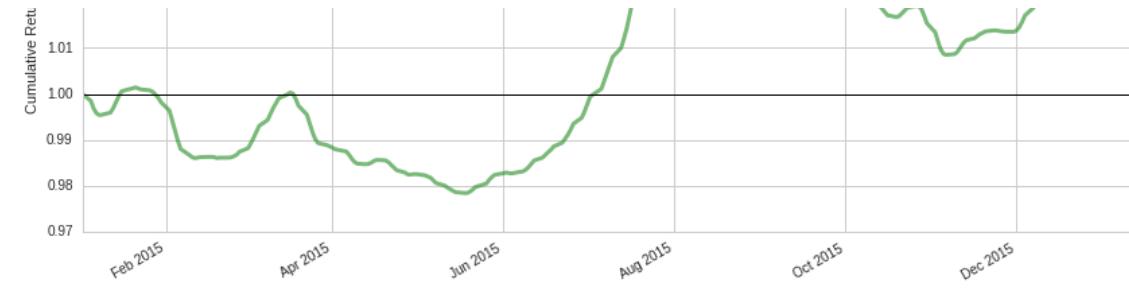
#### Returns Analysis

	1D	6D	11D	16D	21D	26D	31D	36D	41D	46D	51D
Ann. alpha	0.017	0.018	0.002	-0.015	-0.022	-0.021	-0.015	-0.007	0.000	-0.001	-0.005
beta	-0.088	-0.169	-0.155	-0.172	-0.194	-0.211	-0.196	-0.176	-0.139	-0.127	-0.131
Mean Period Wise Return Top Quantile (bps)	1.444	1.558	0.774	0.320	0.122	0.241	0.510	0.679	0.650	0.386	0.181
Mean Period Wise Return Bottom Quantile (bps)	-0.534	-2.847	-1.735	-0.945	-0.864	-1.120	-1.288	-1.505	-1.671	-1.590	-1.422
Mean Period Wise Spread (bps)	1.978	4.418	2.521	1.278	1.005	1.377	1.820	2.219	2.356	2.014	1.646

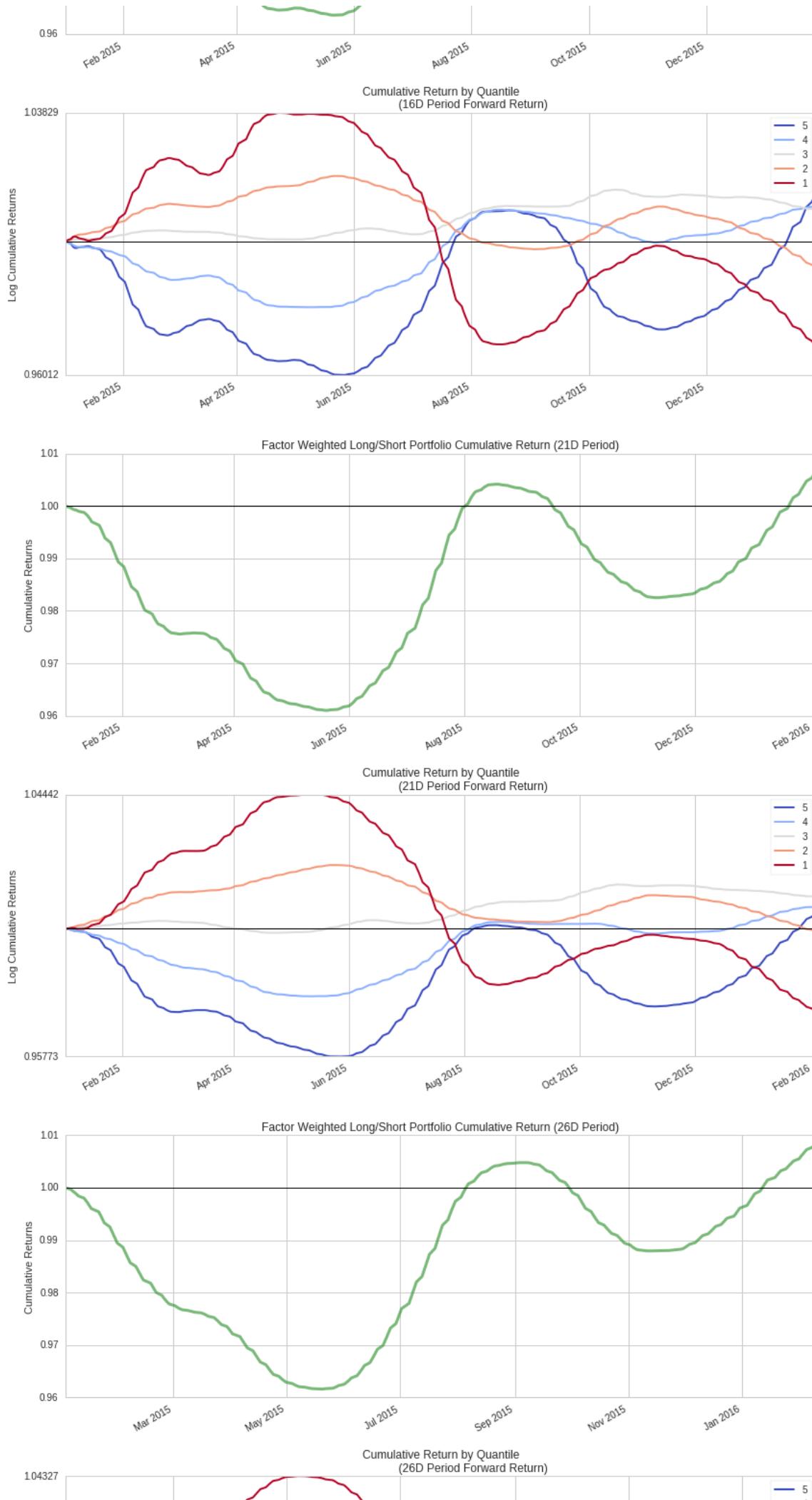
<matplotlib.figure.Figure at 0x7f41cfb2c080>



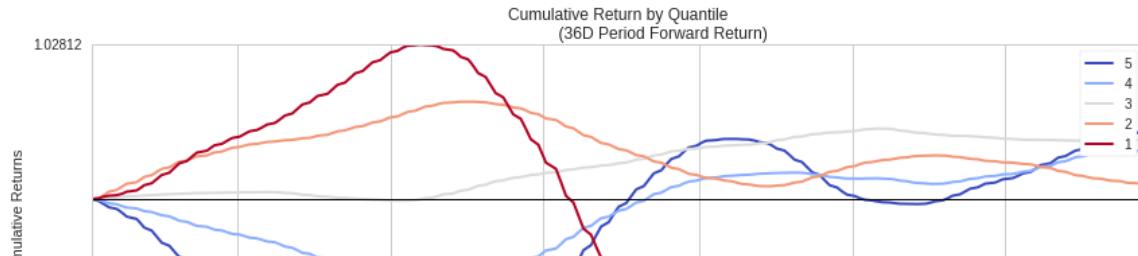
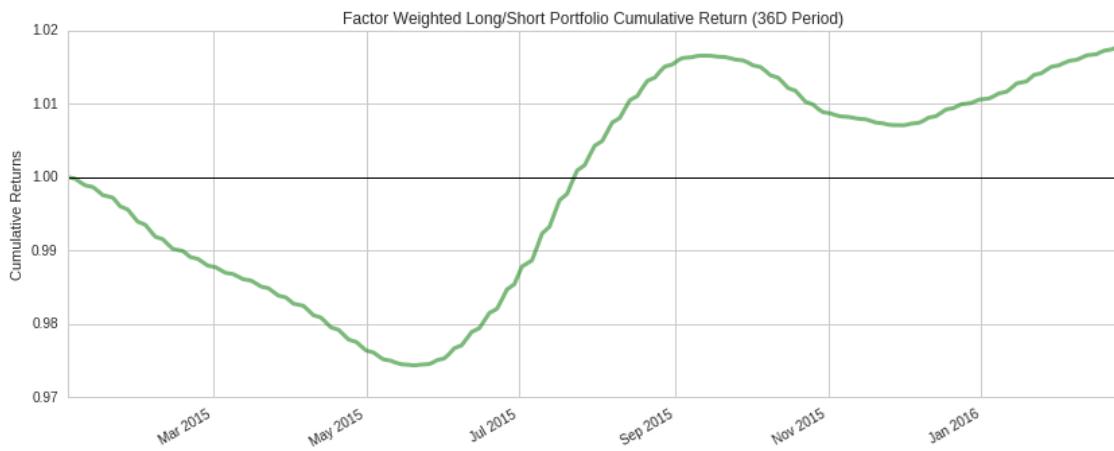
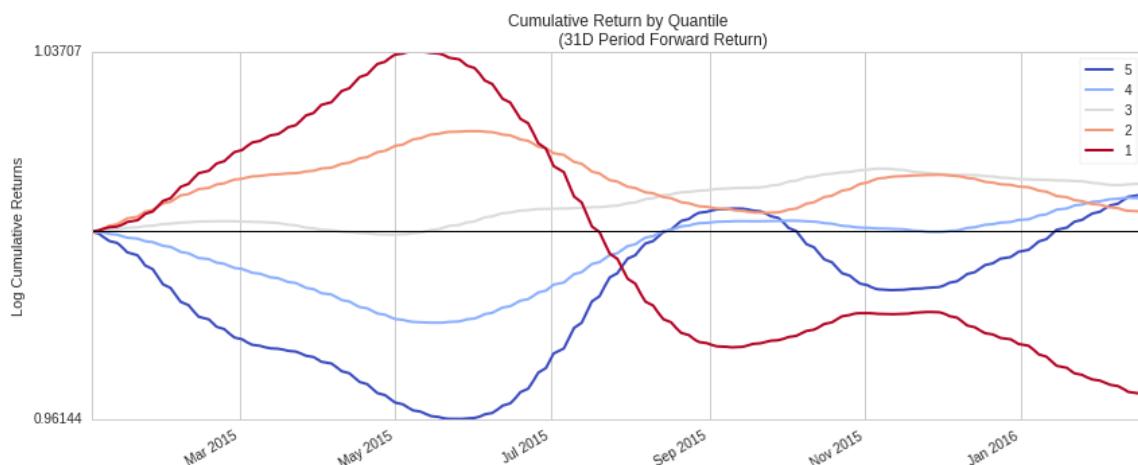
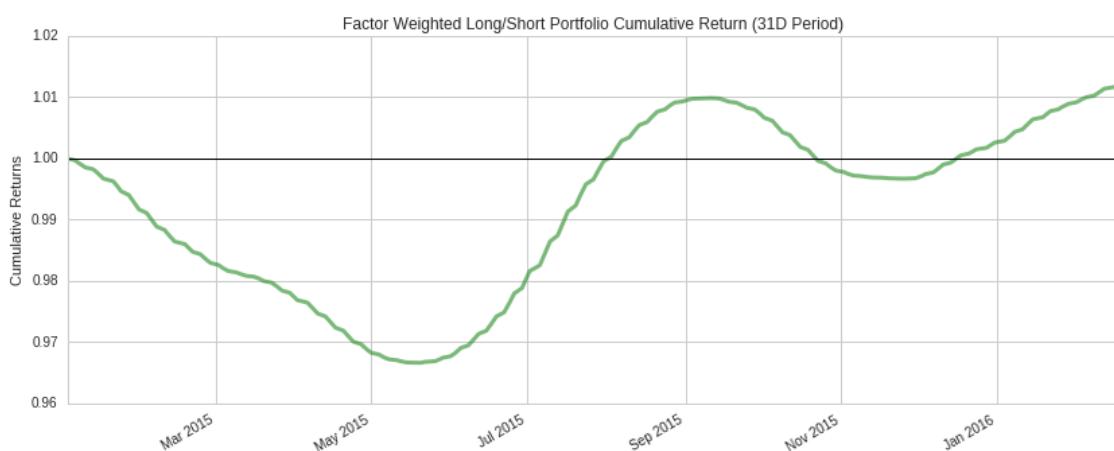
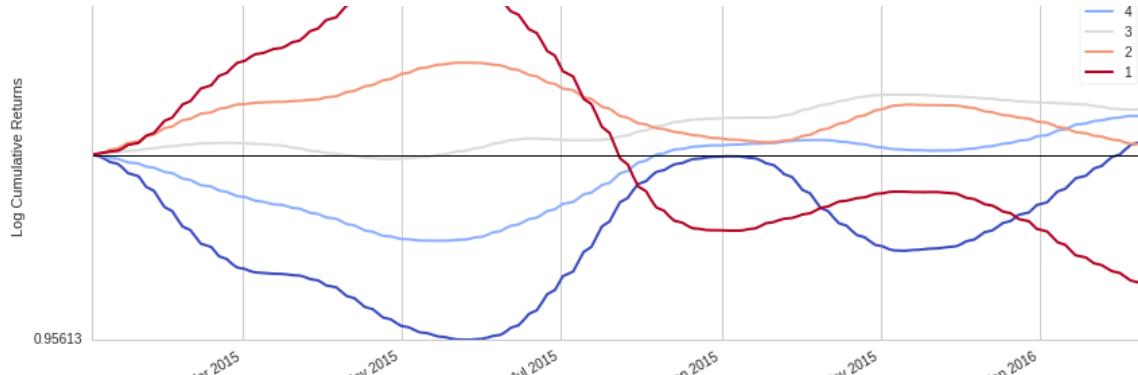
## RSI\_BollingerBands\_Analysis

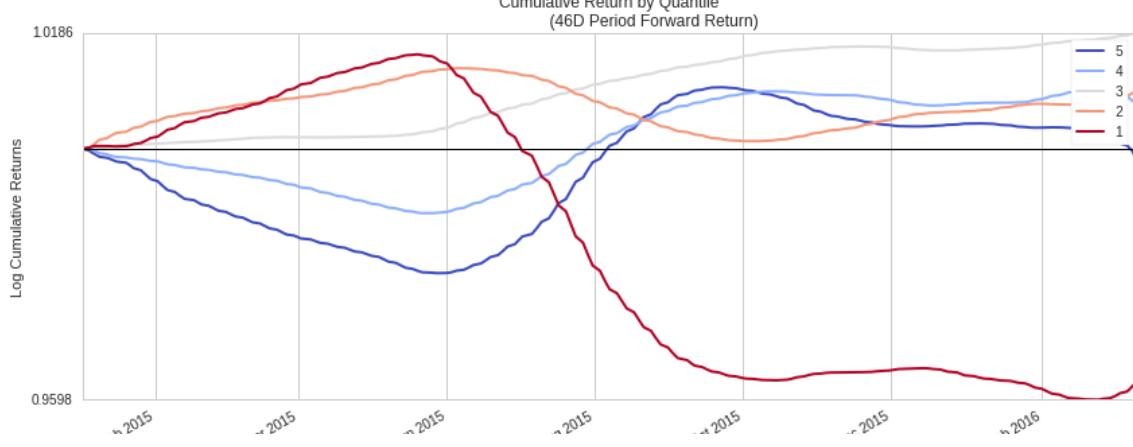
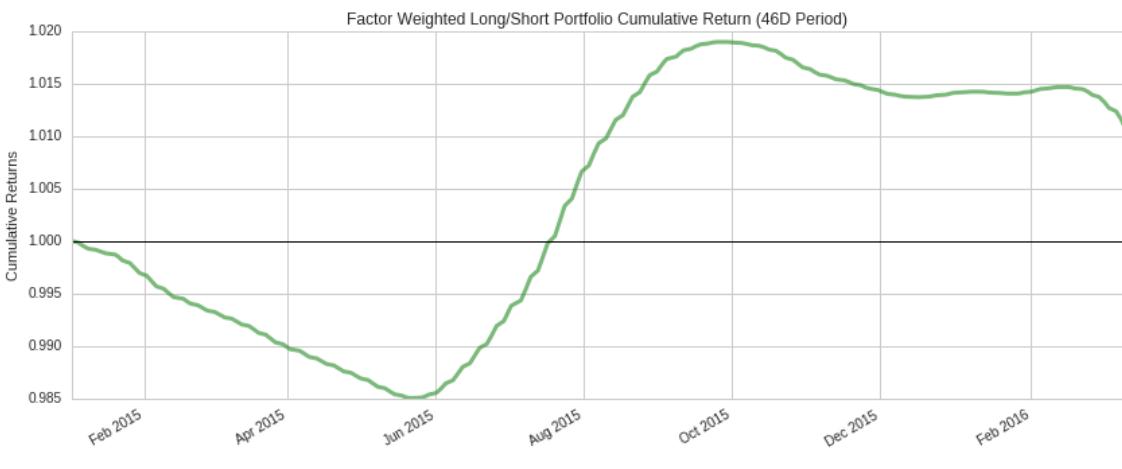
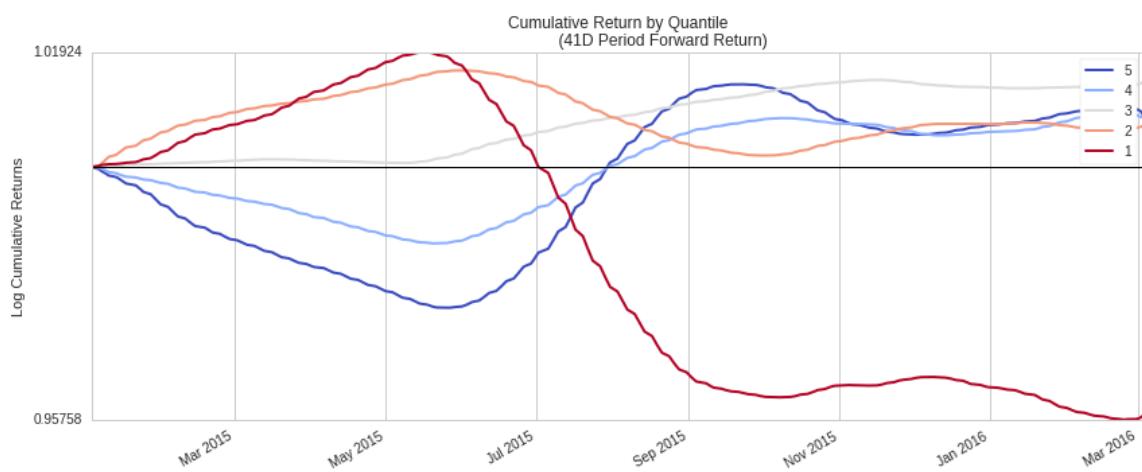
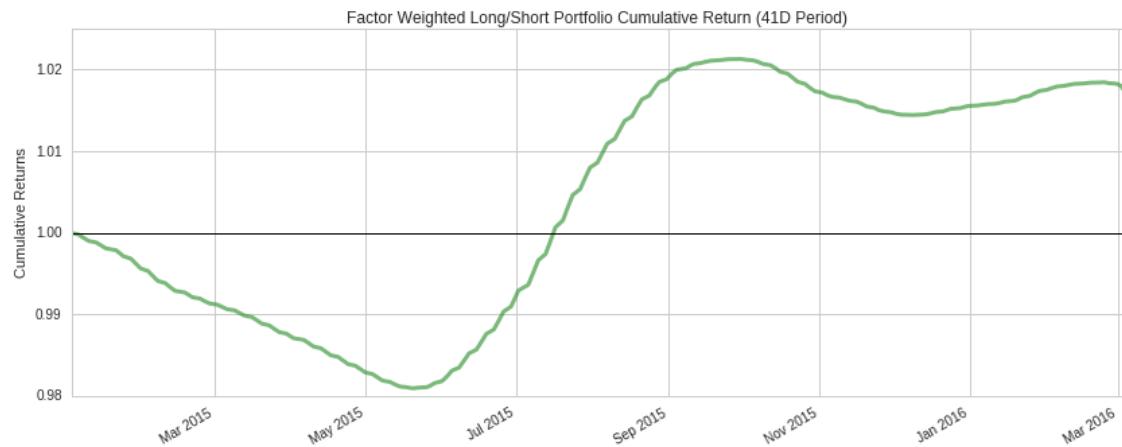
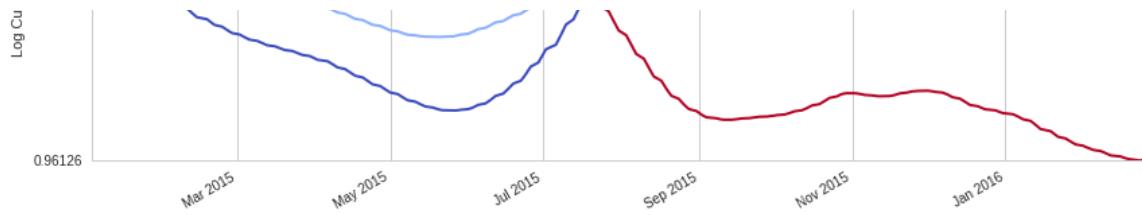


## RSI\_BollingerBands\_Analysis

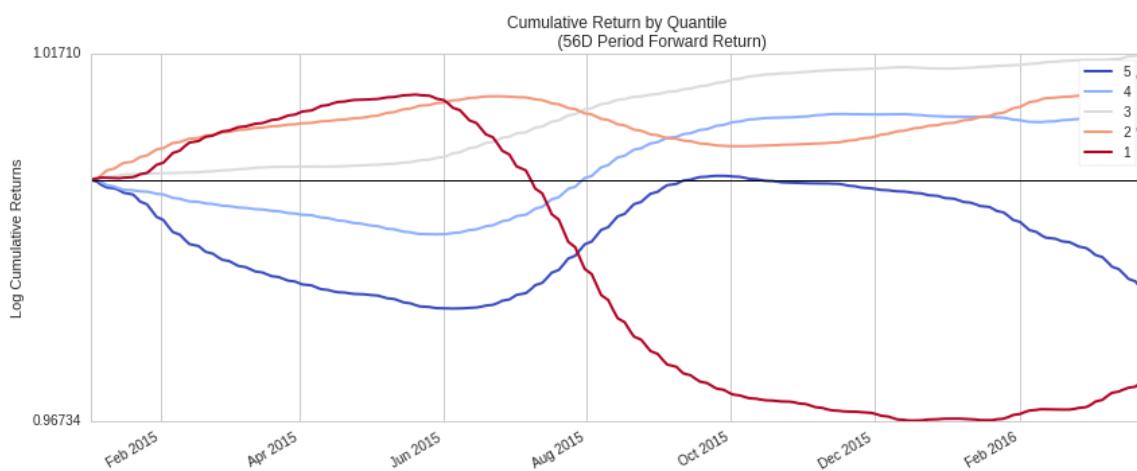
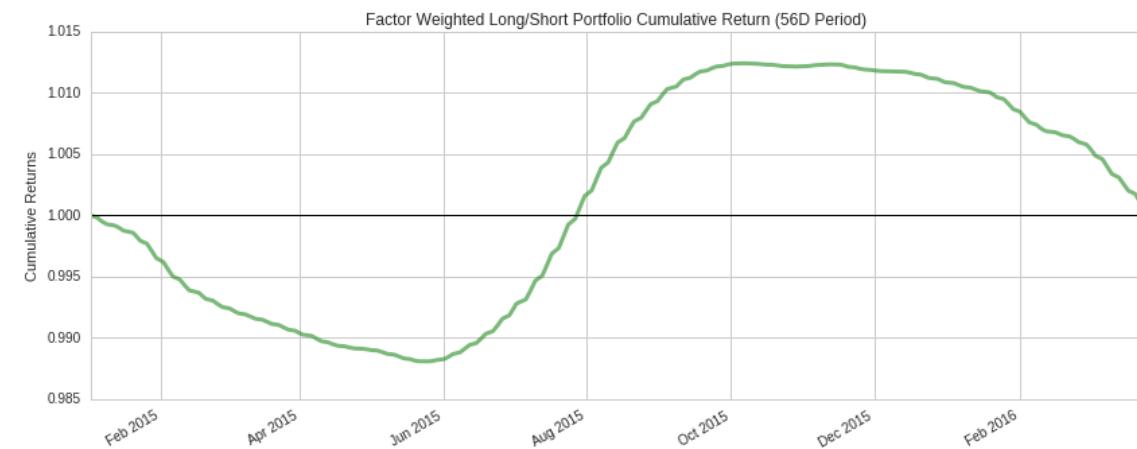
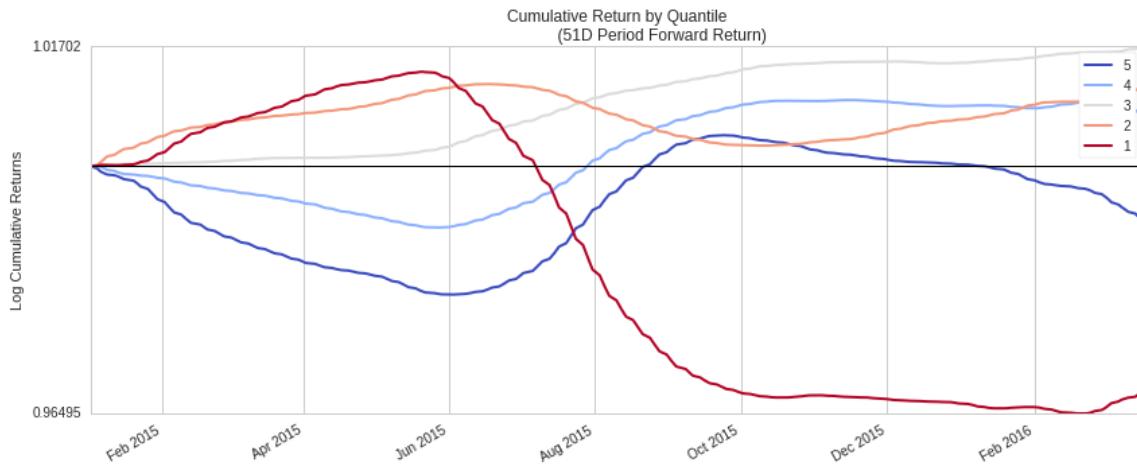
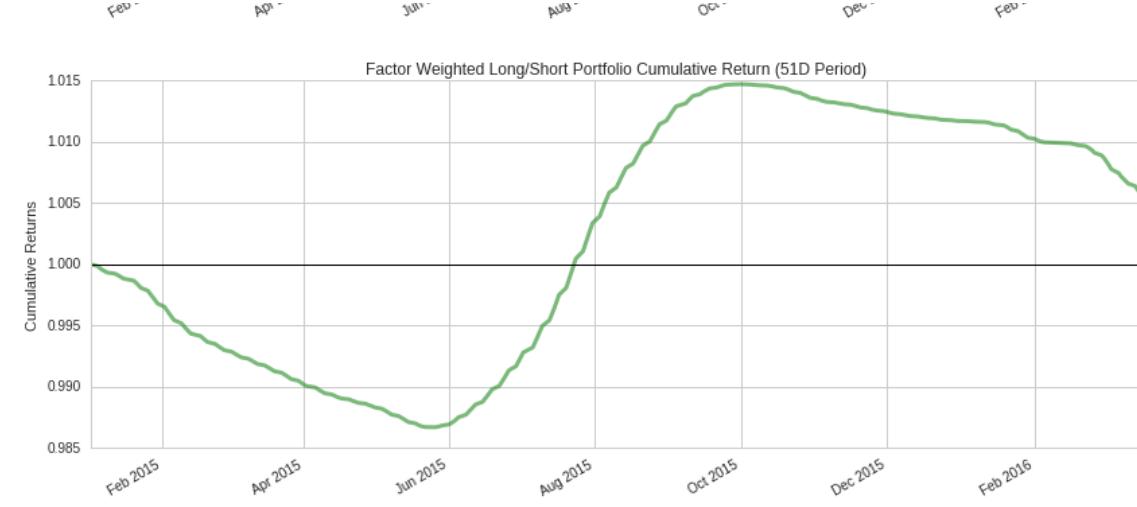


## RSI\_BollingerBands\_Analysis

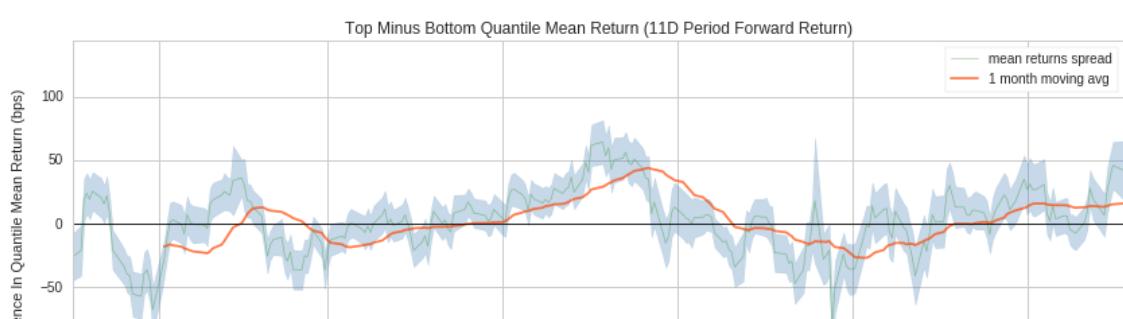
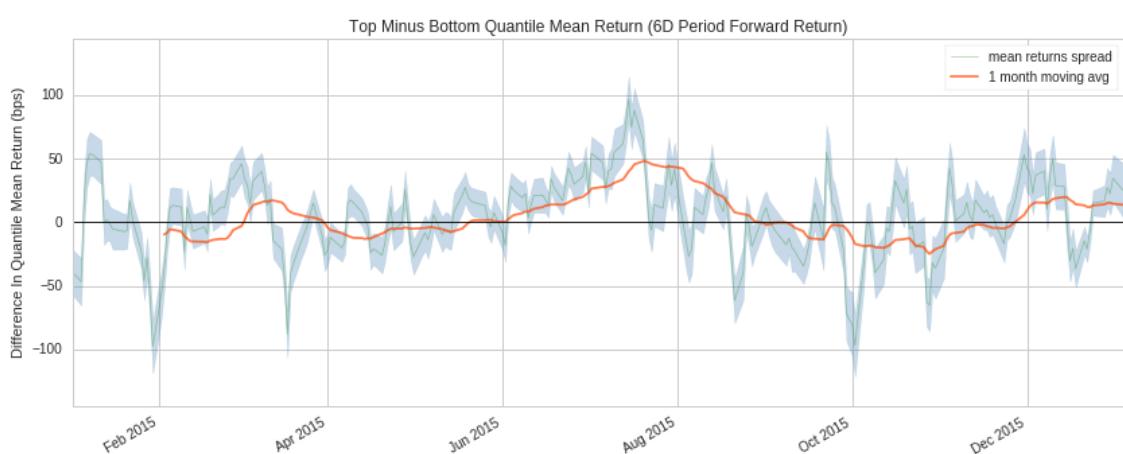
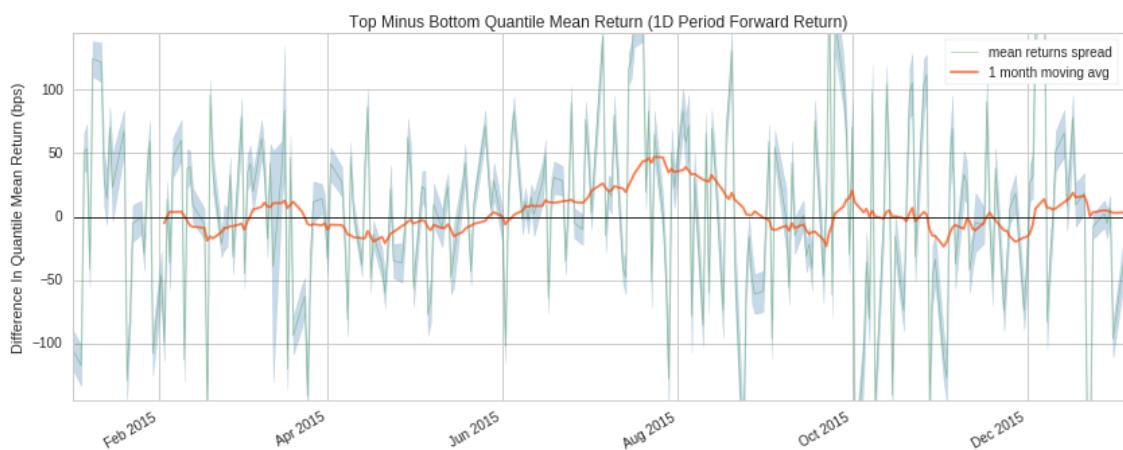
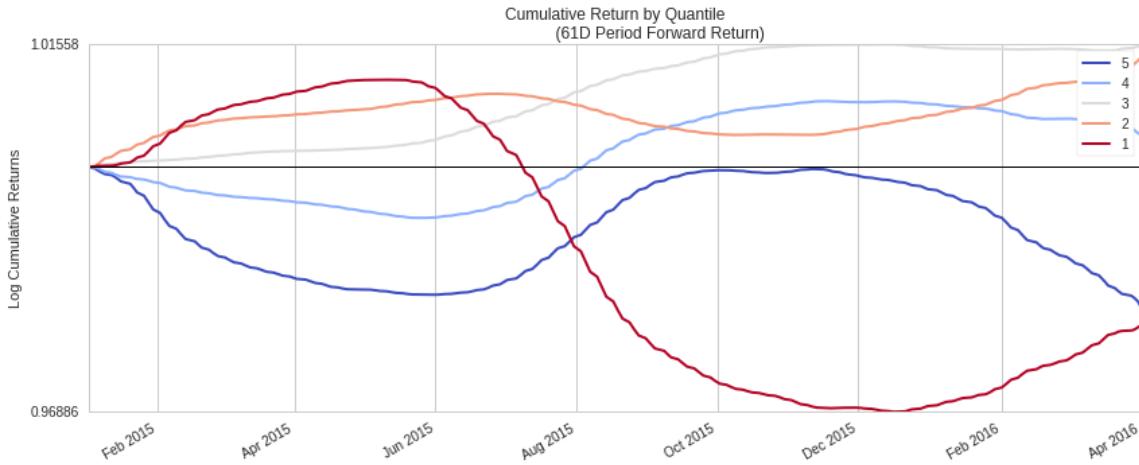
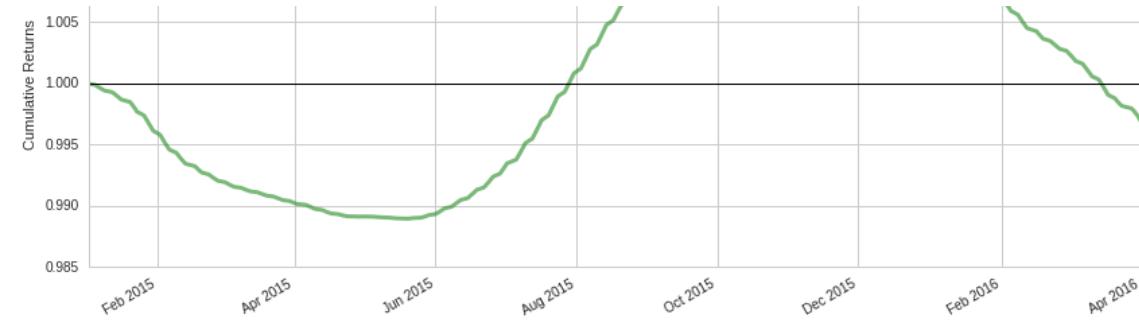




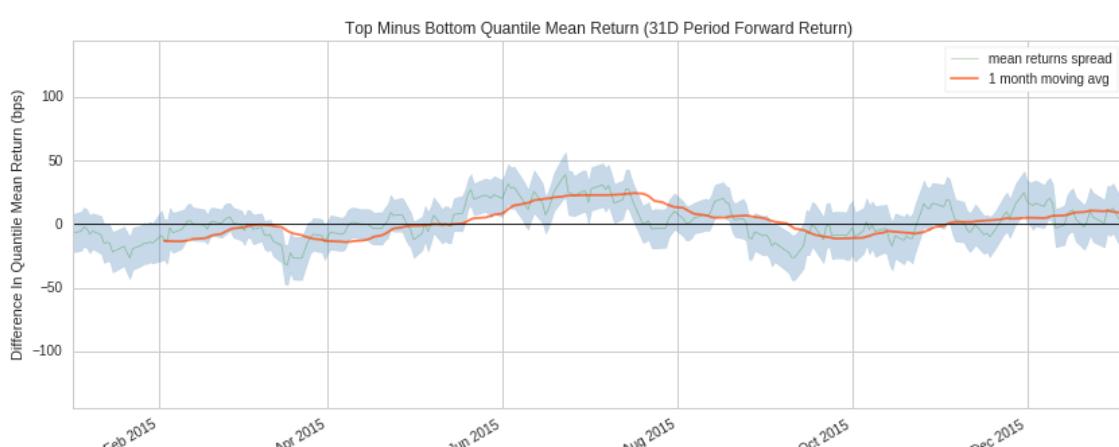
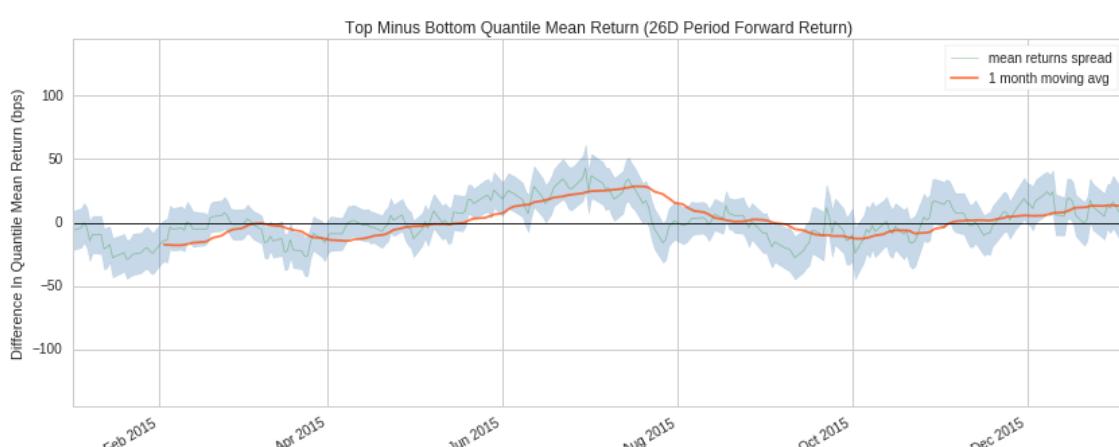
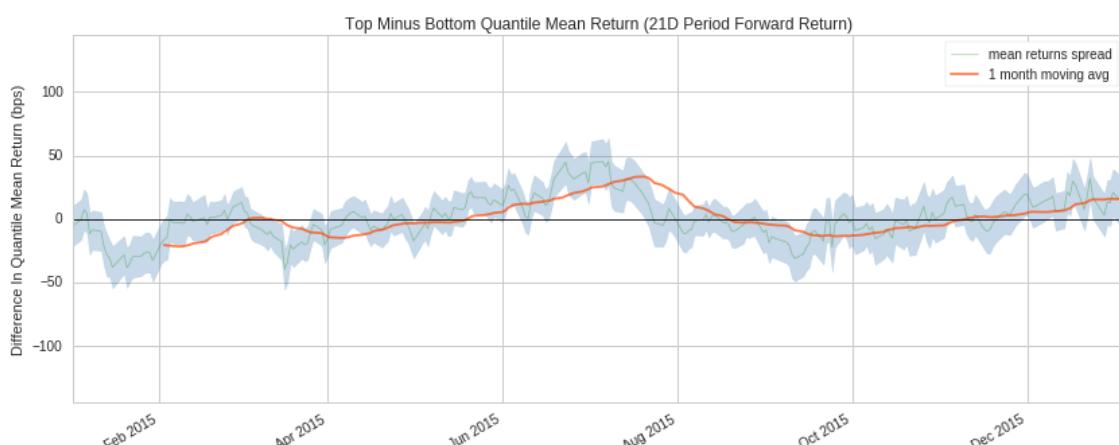
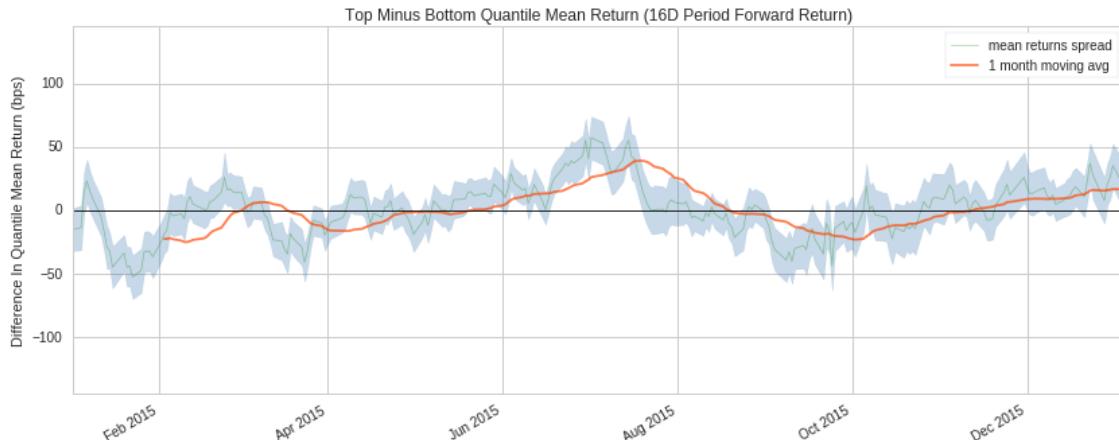
## RSI\_BollingerBands\_Analysis



## RSI\_BollingerBands\_Analysis

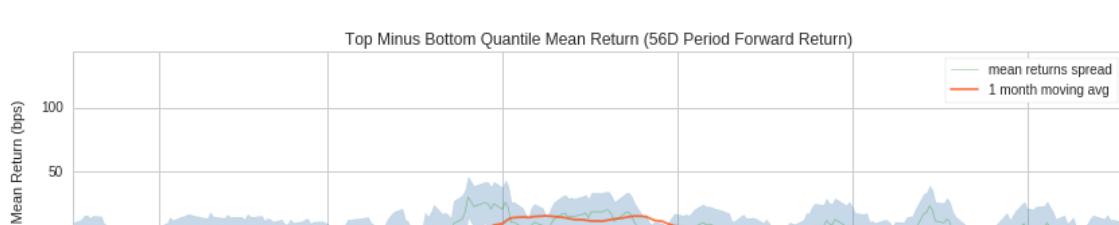
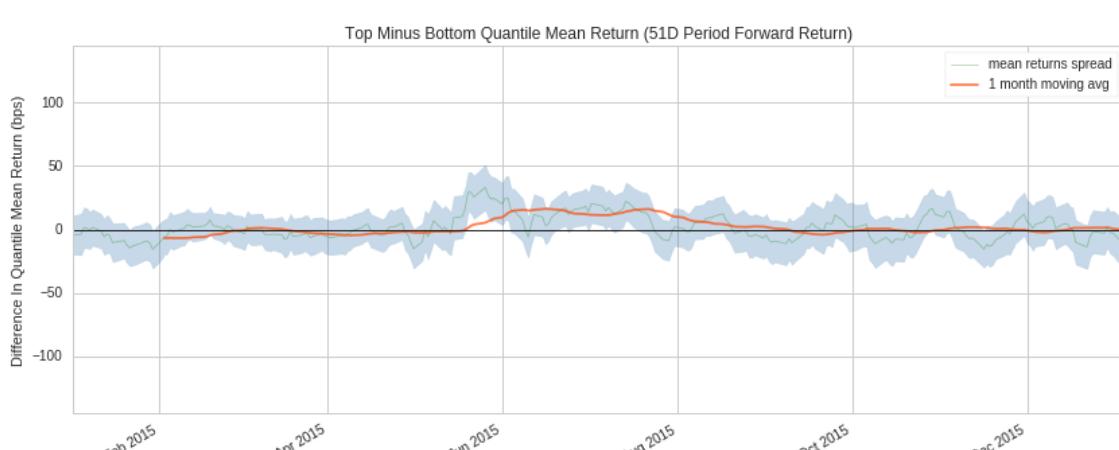
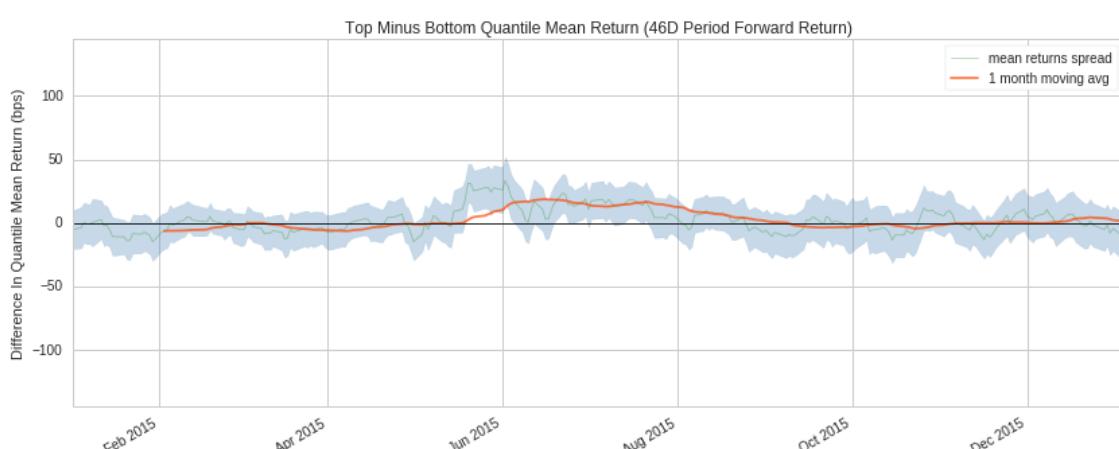
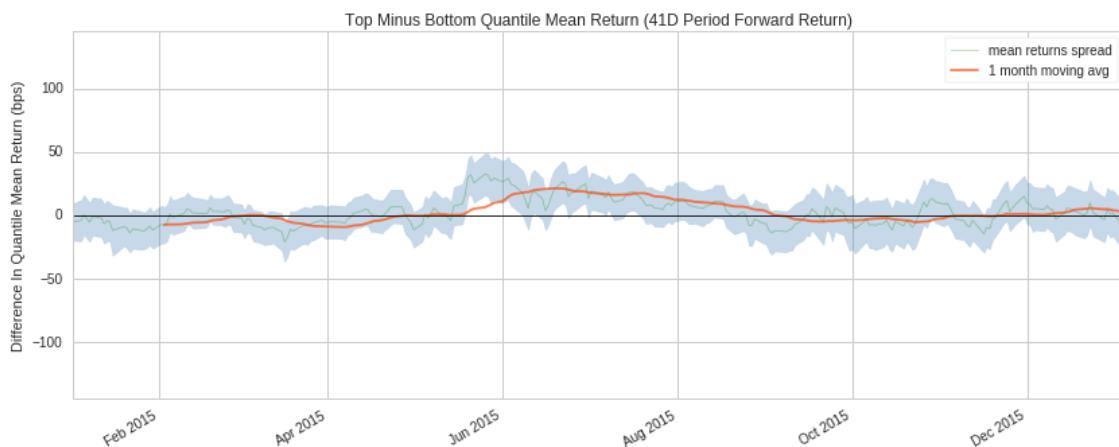
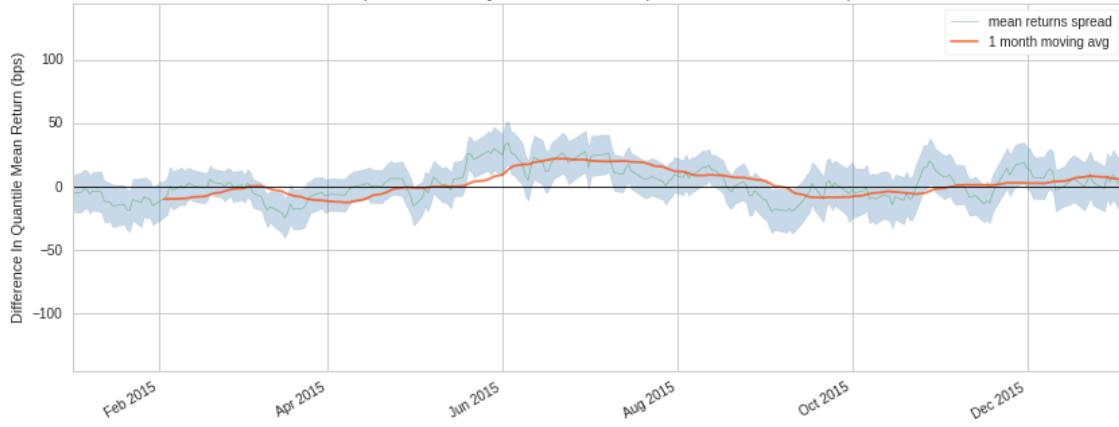


## RSI\_BollingerBands\_Analysis

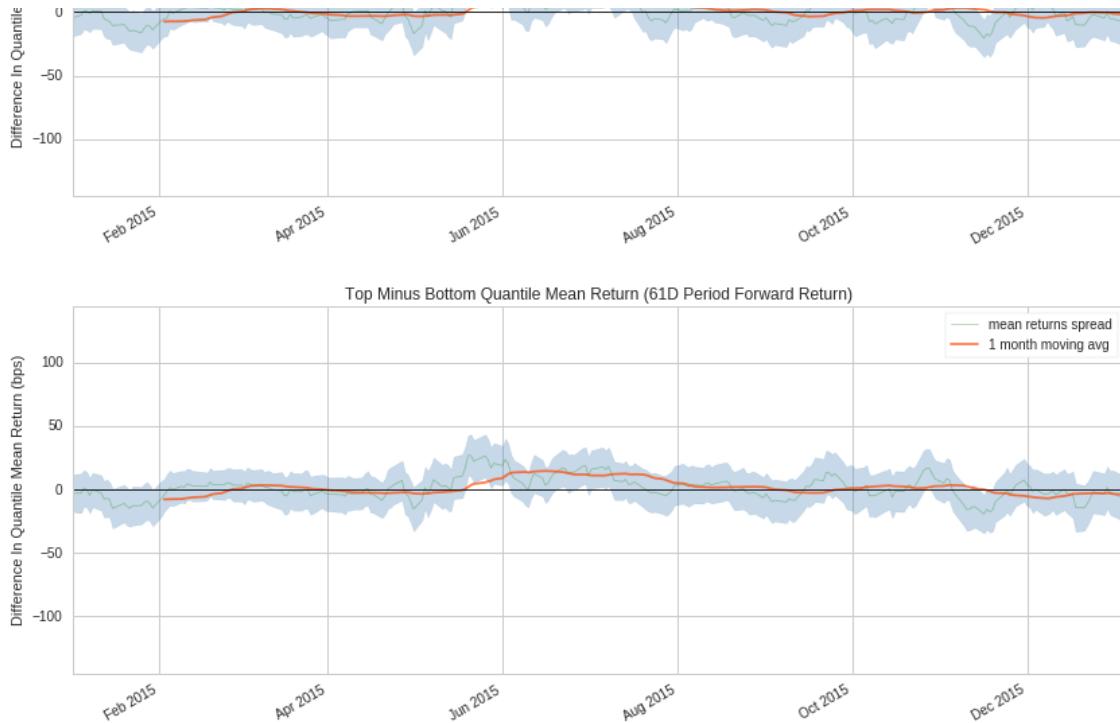


Top Minus Bottom Quantile Mean Return (36D Period Forward Return)

## RSI\_BollingerBands\_Analysis



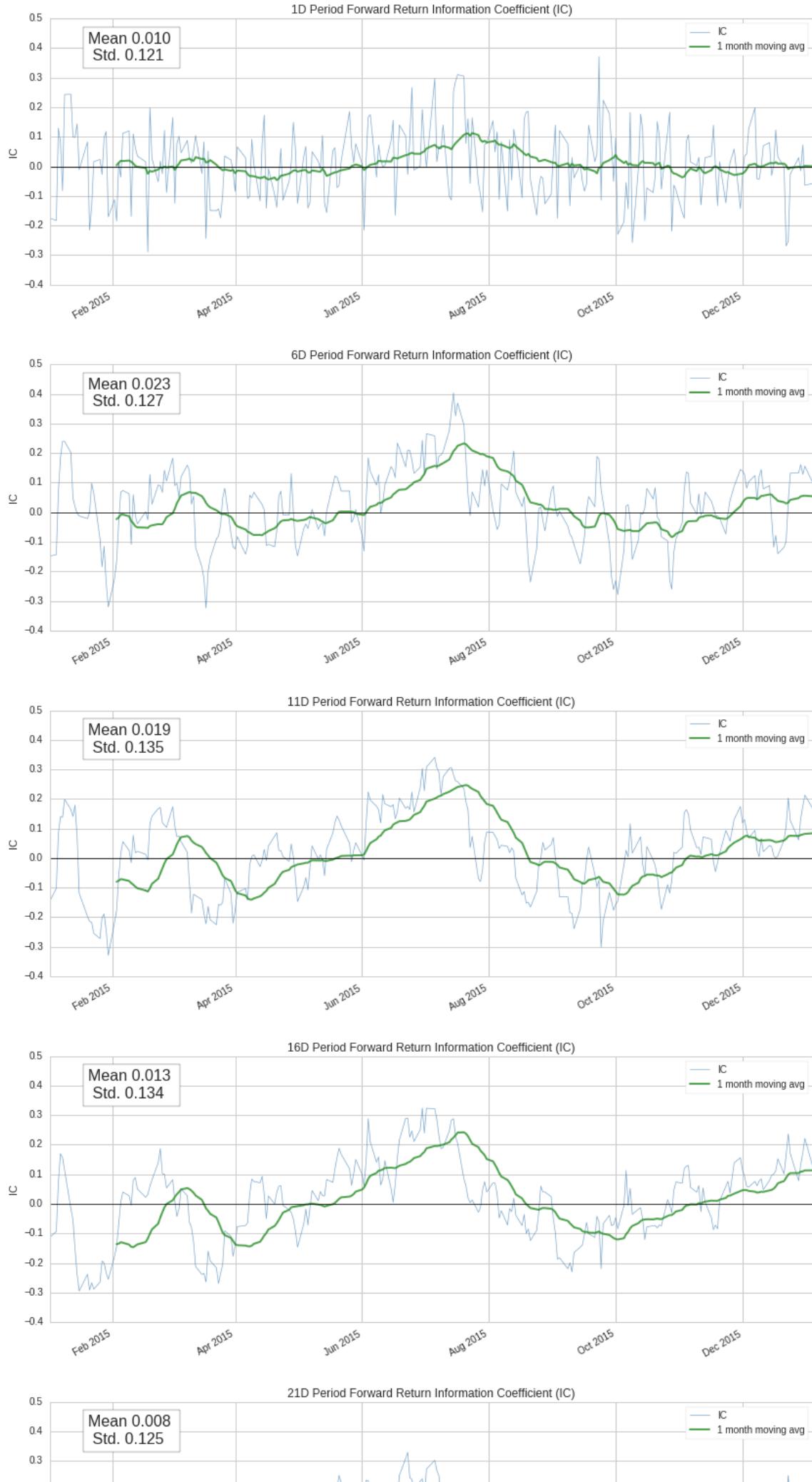
## RSI\_BollingerBands\_Analysis



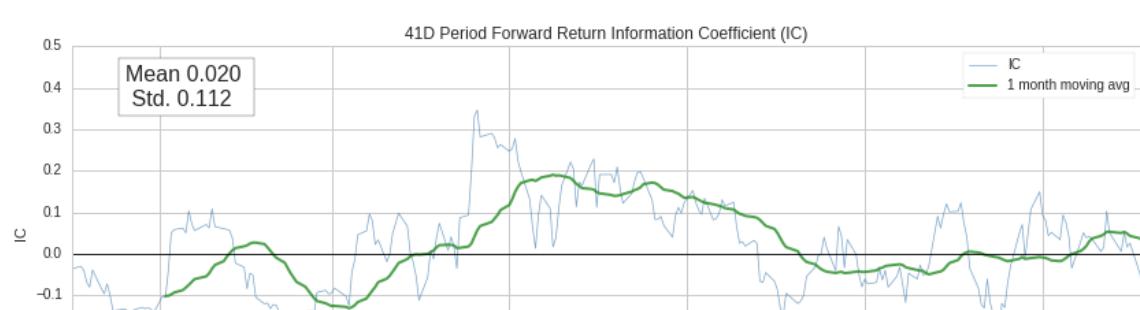
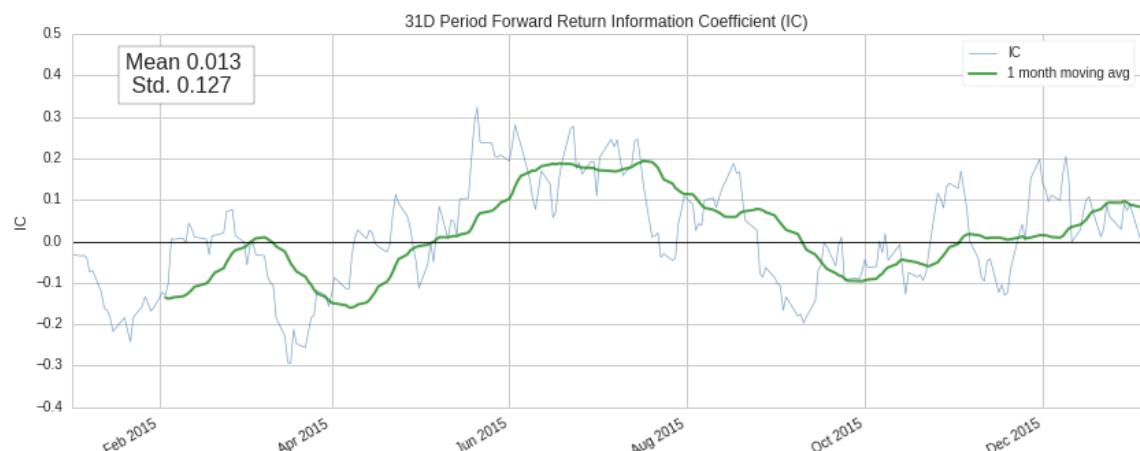
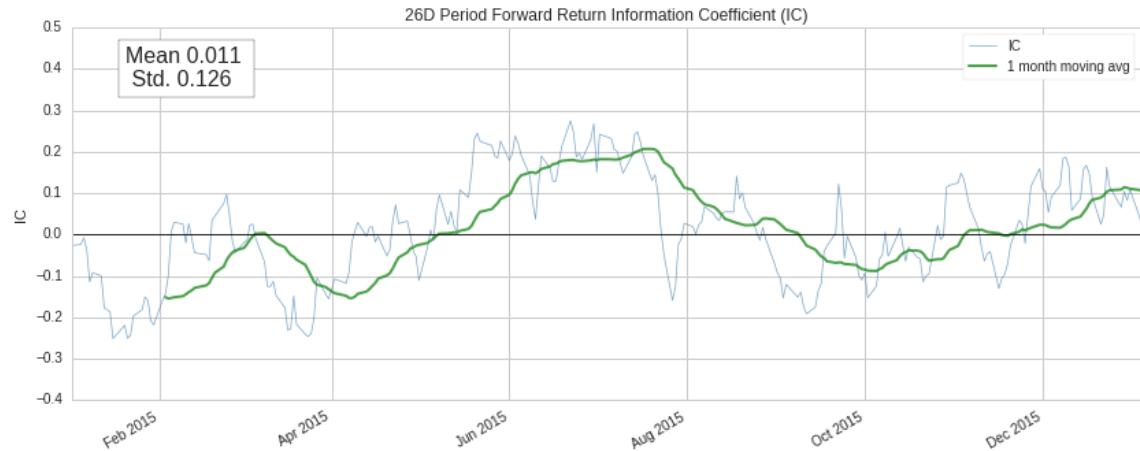
## Information Analysis

	<b>1D</b>	<b>6D</b>	<b>11D</b>	<b>16D</b>	<b>21D</b>	<b>26D</b>	<b>31D</b>	<b>36D</b>	<b>41D</b>	<b>46D</b>	<b>51D</b>
<b>IC Mean</b>	0.010	0.023	0.019	0.013	0.008	0.011	0.013	0.017	0.020	0.019	0.018
<b>IC Std.</b>	0.121	0.127	0.135	0.134	0.125	0.126	0.127	0.122	0.112	0.108	0.111
<b>Risk-Adjusted IC</b>	0.080	0.178	0.140	0.095	0.066	0.087	0.105	0.141	0.177	0.175	0.162
<b>t-stat(IC)</b>	1.268	2.830	2.233	1.506	1.043	1.387	1.674	2.241	2.819	2.786	2.577
<b>p-value(IC)</b>	0.206	0.005	0.026	0.133	0.298	0.167	0.095	0.026	0.005	0.006	0.011
<b>IC Skew</b>	0.046	-0.070	-0.087	-0.089	0.074	-0.007	0.047	0.095	0.338	0.511	0.453
<b>IC Kurtosis</b>	-0.189	0.150	-0.431	-0.230	-0.167	-0.715	-0.547	-0.541	-0.300	-0.124	-0.327

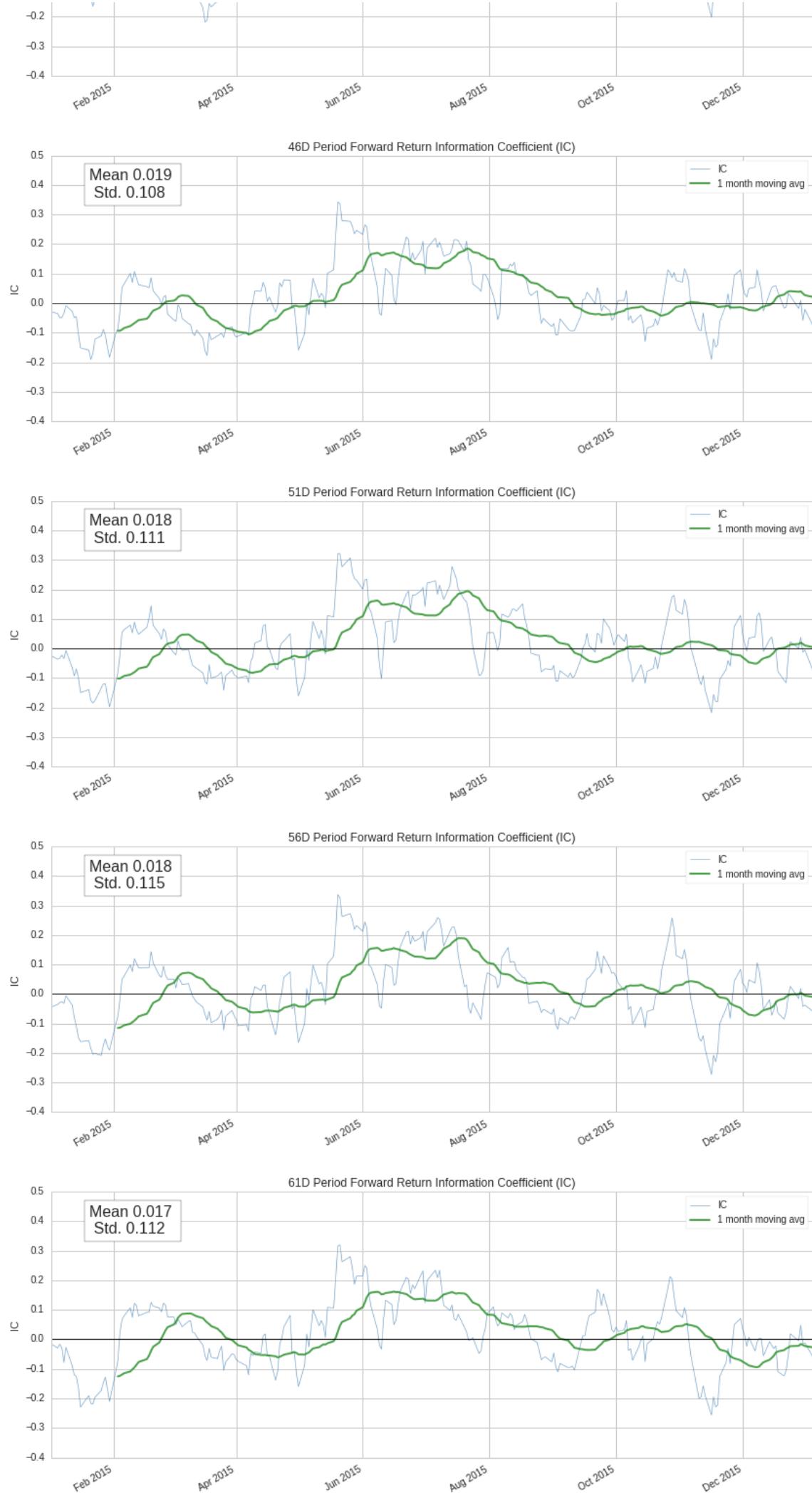


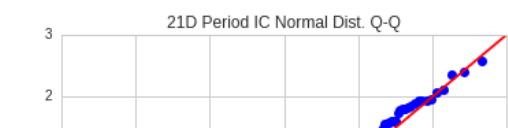
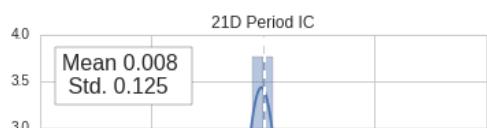
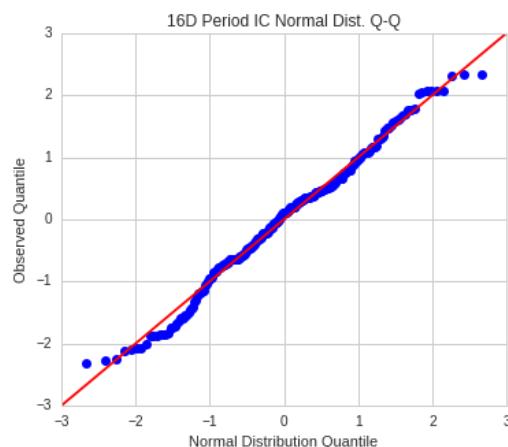
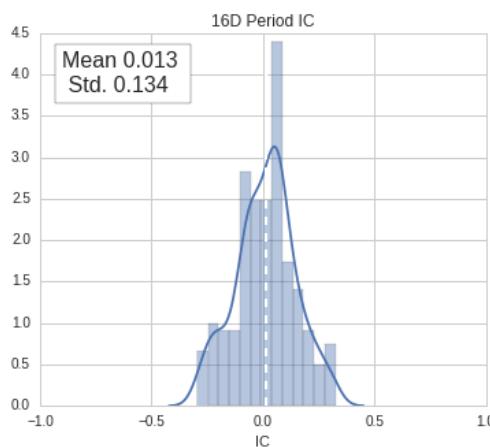
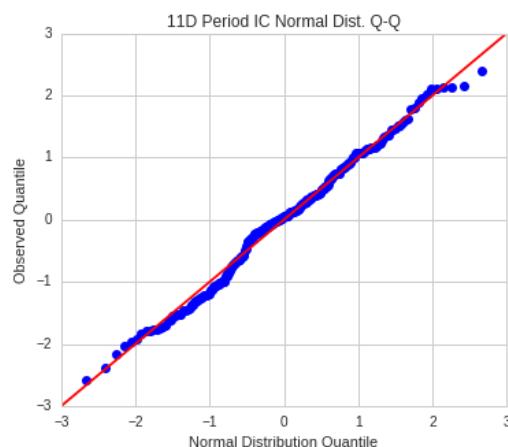
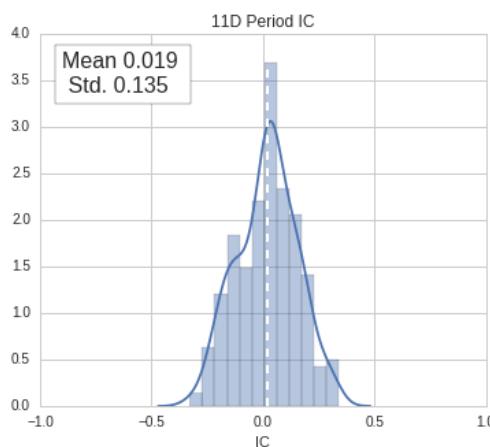
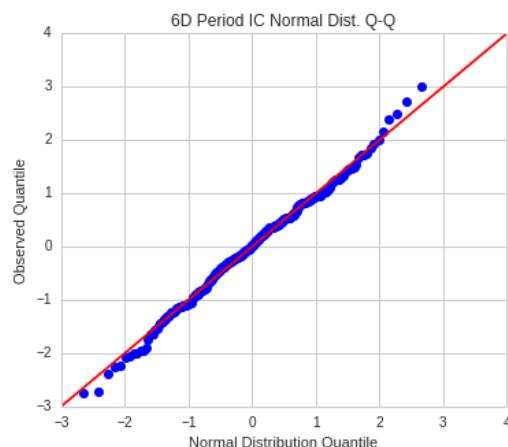
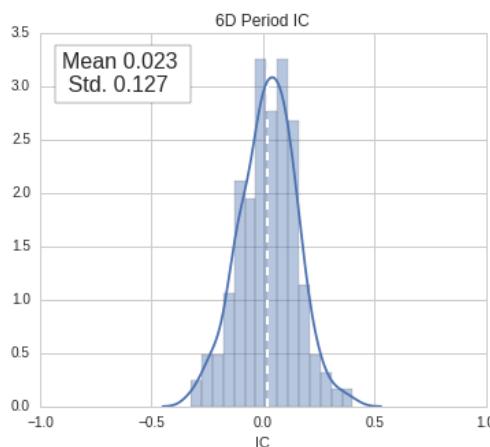
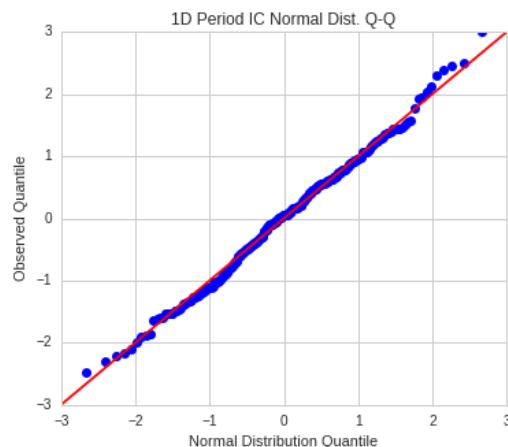
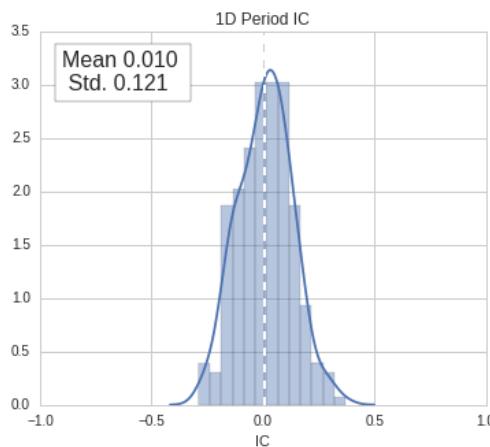


## RSI\_BollingerBands\_Analysis

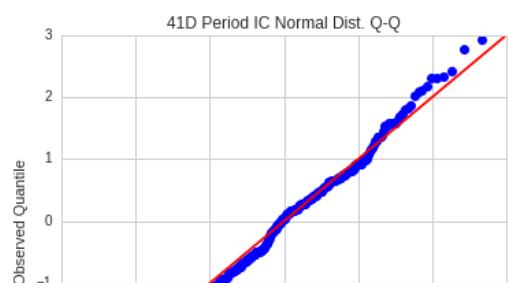
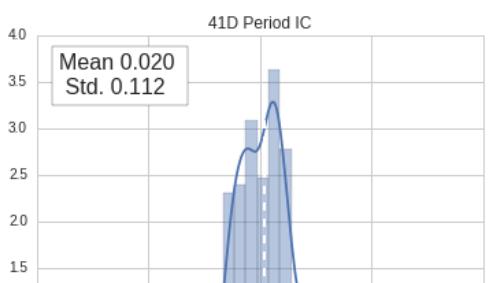
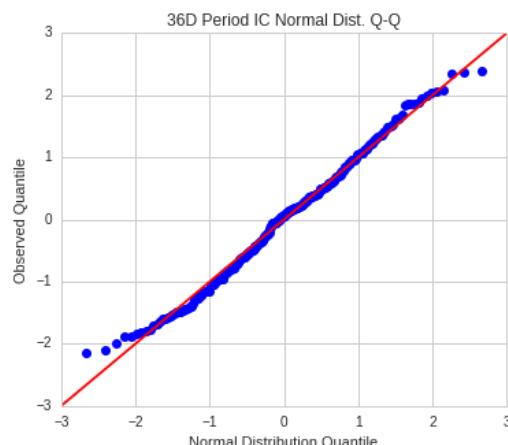
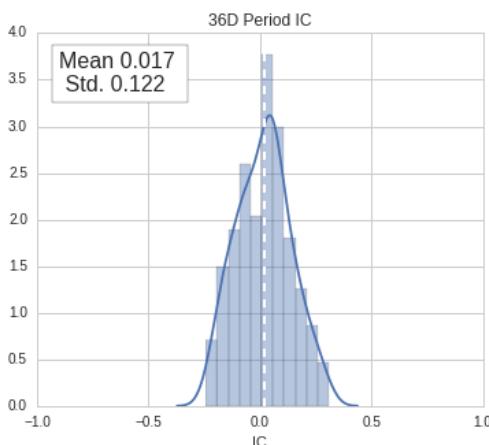
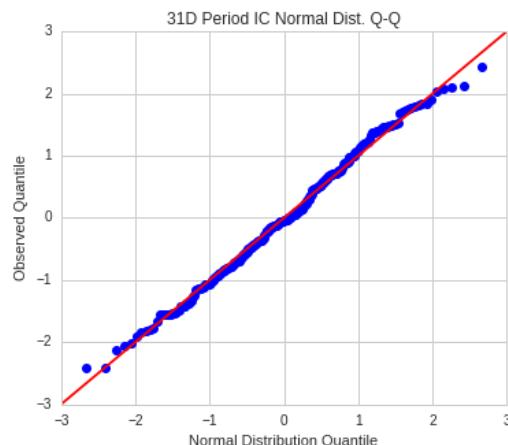
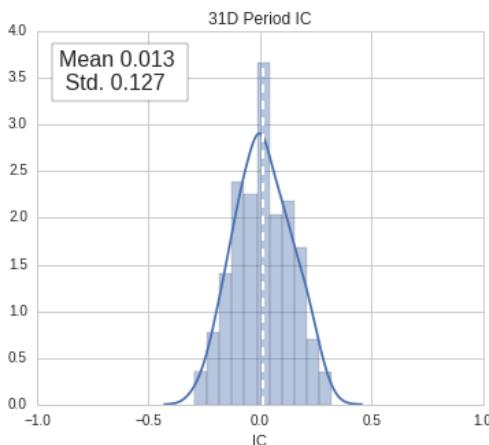
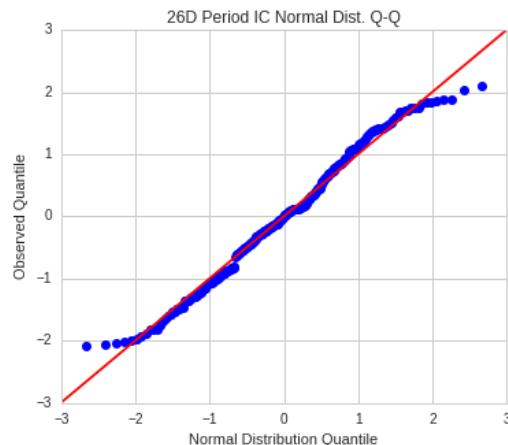
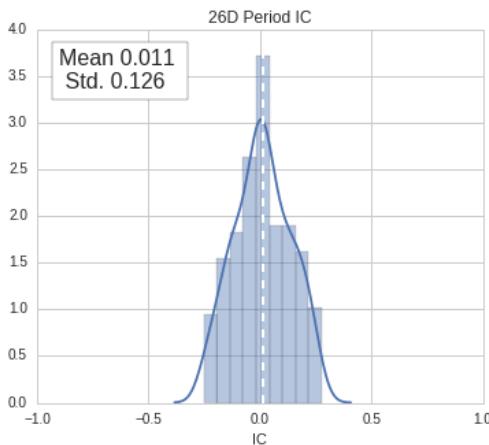
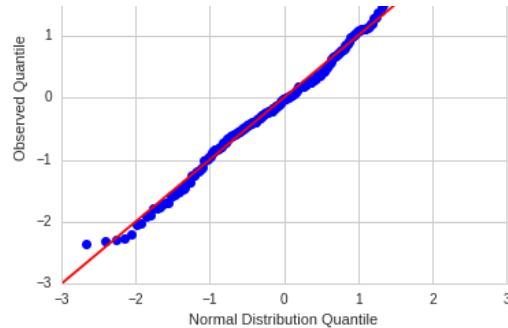
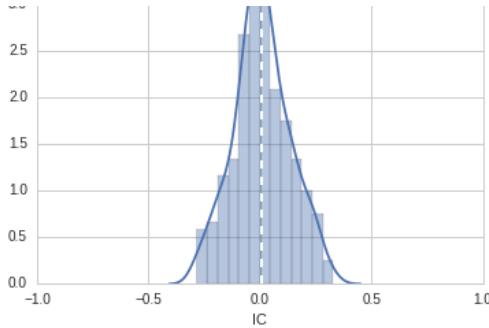


## RSI\_BollingerBands\_Analysis

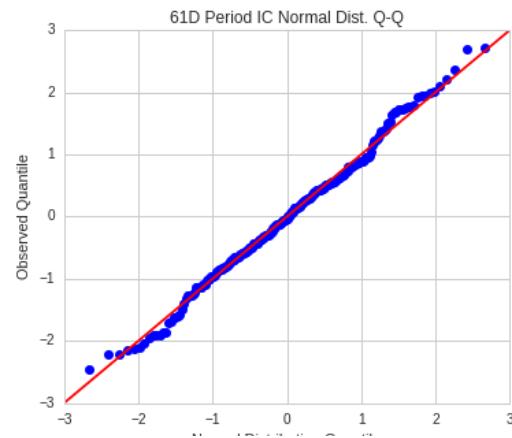
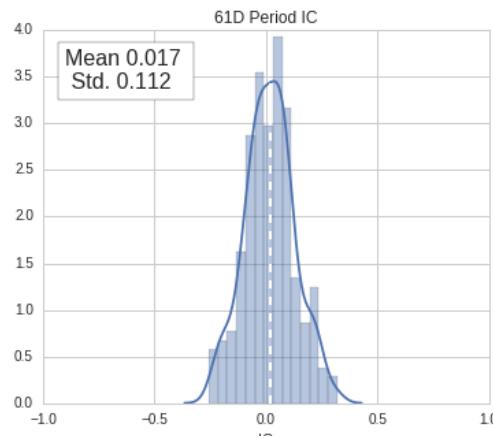
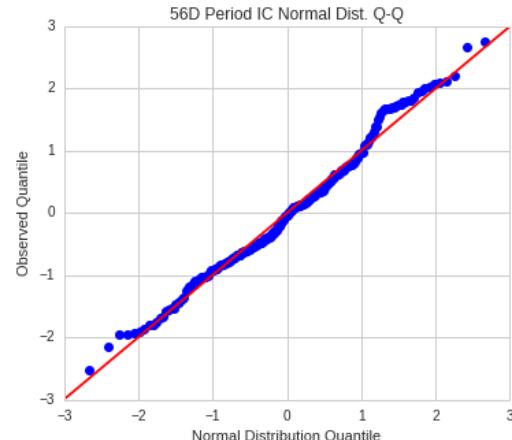
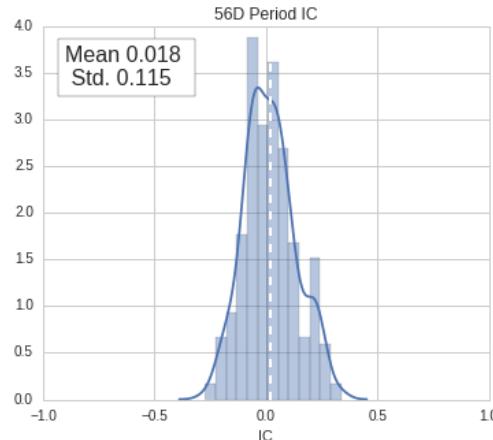
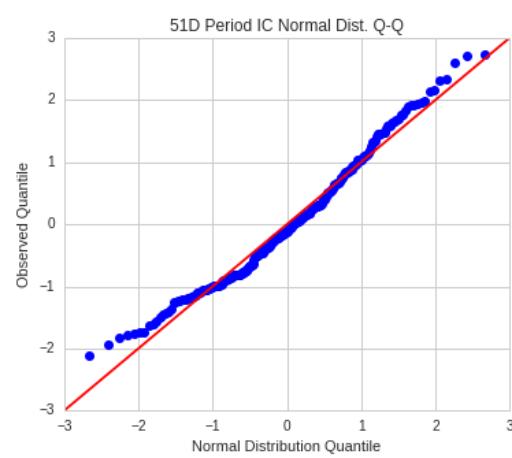
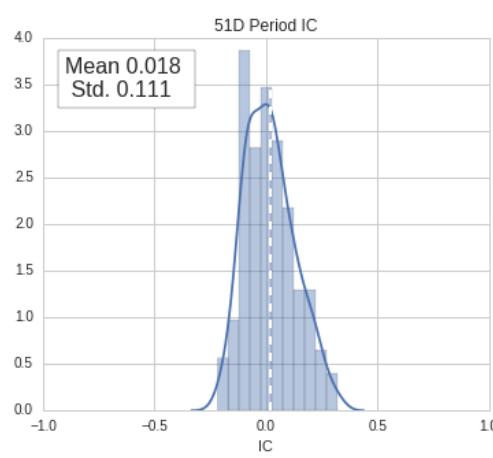
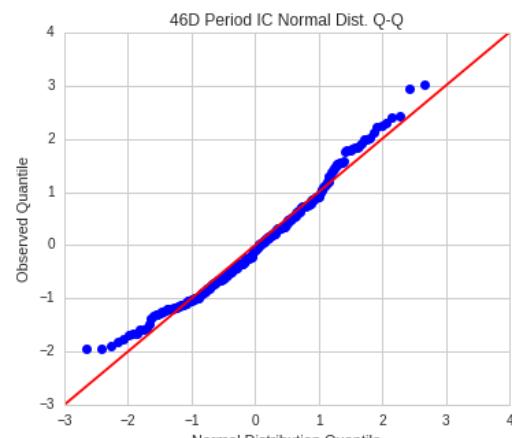
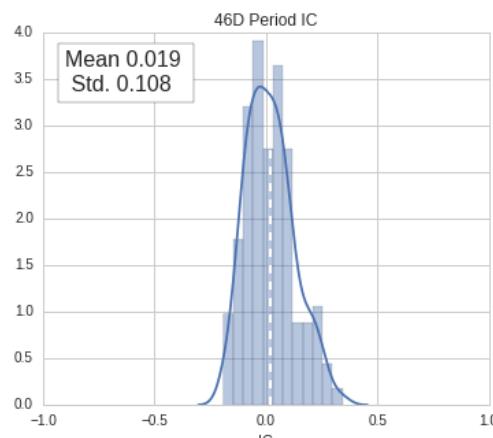
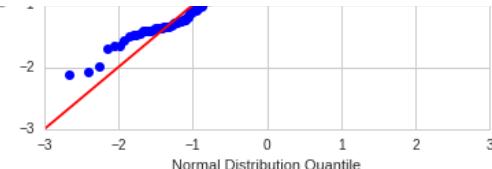
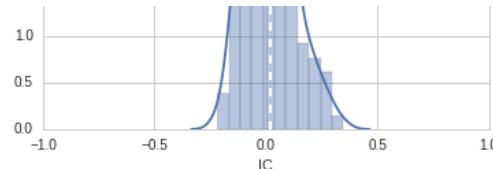




## RSI\_BollingerBands\_Analysis



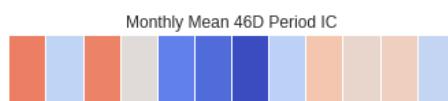
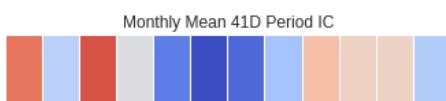
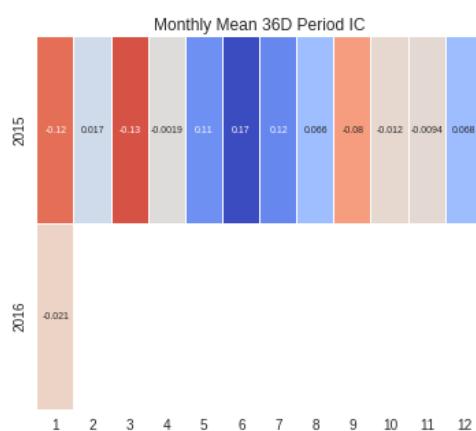
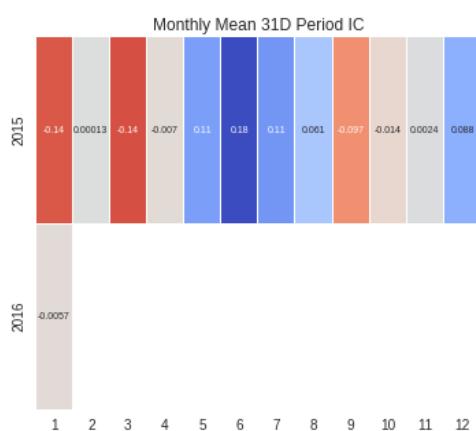
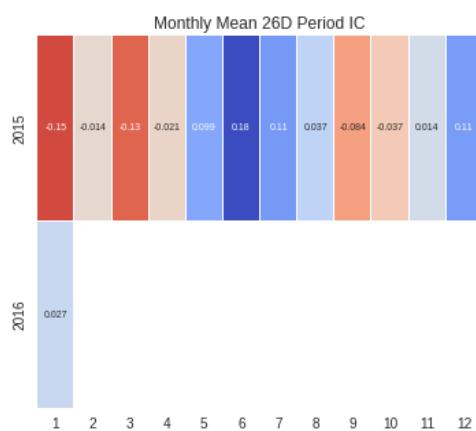
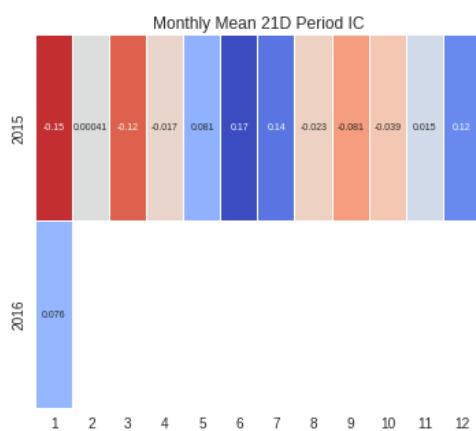
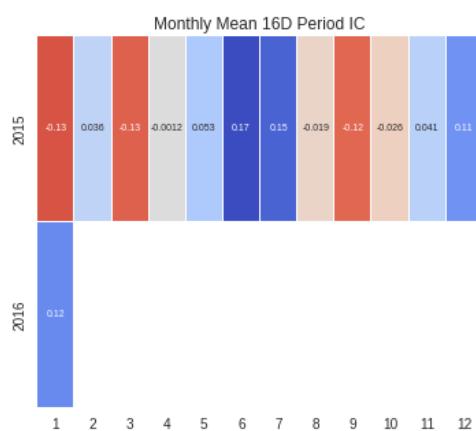
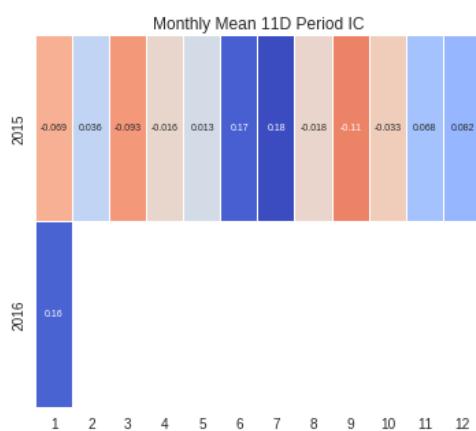
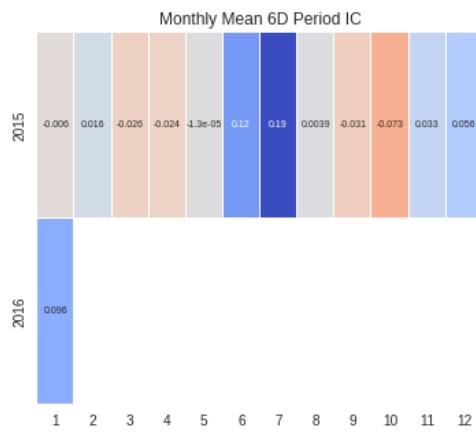
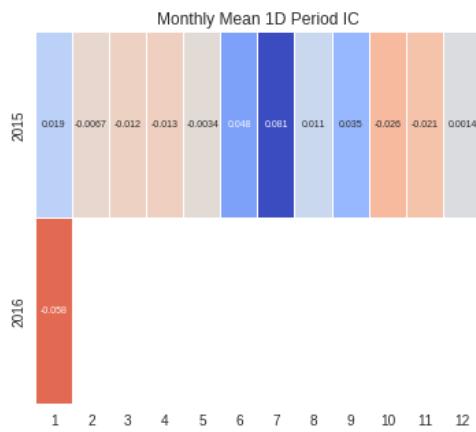
## RSI\_BollingerBands\_Analysis



## RSI\_BollingerBands\_Analysis

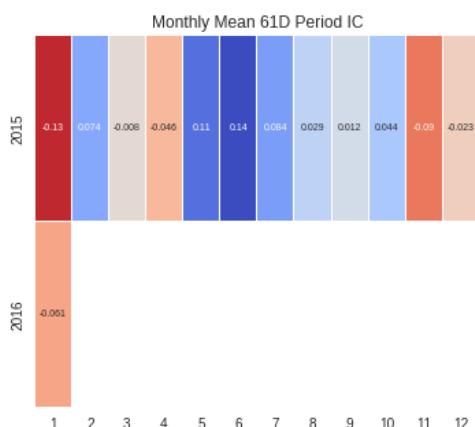
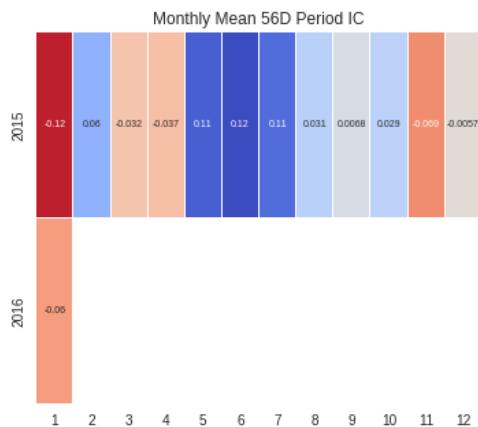
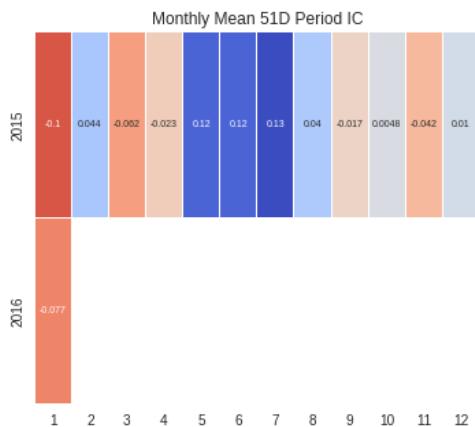
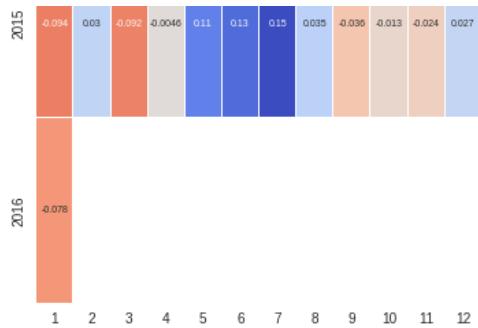
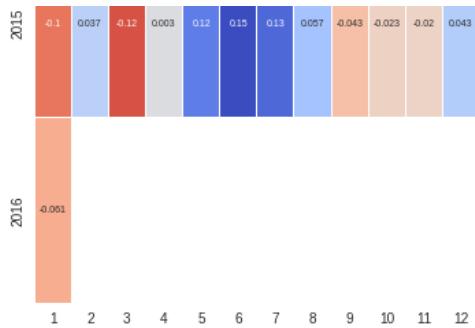
Normal Distribution Quantile

IC



10/04/2020

## RSI\_BollingerBands\_Analysis



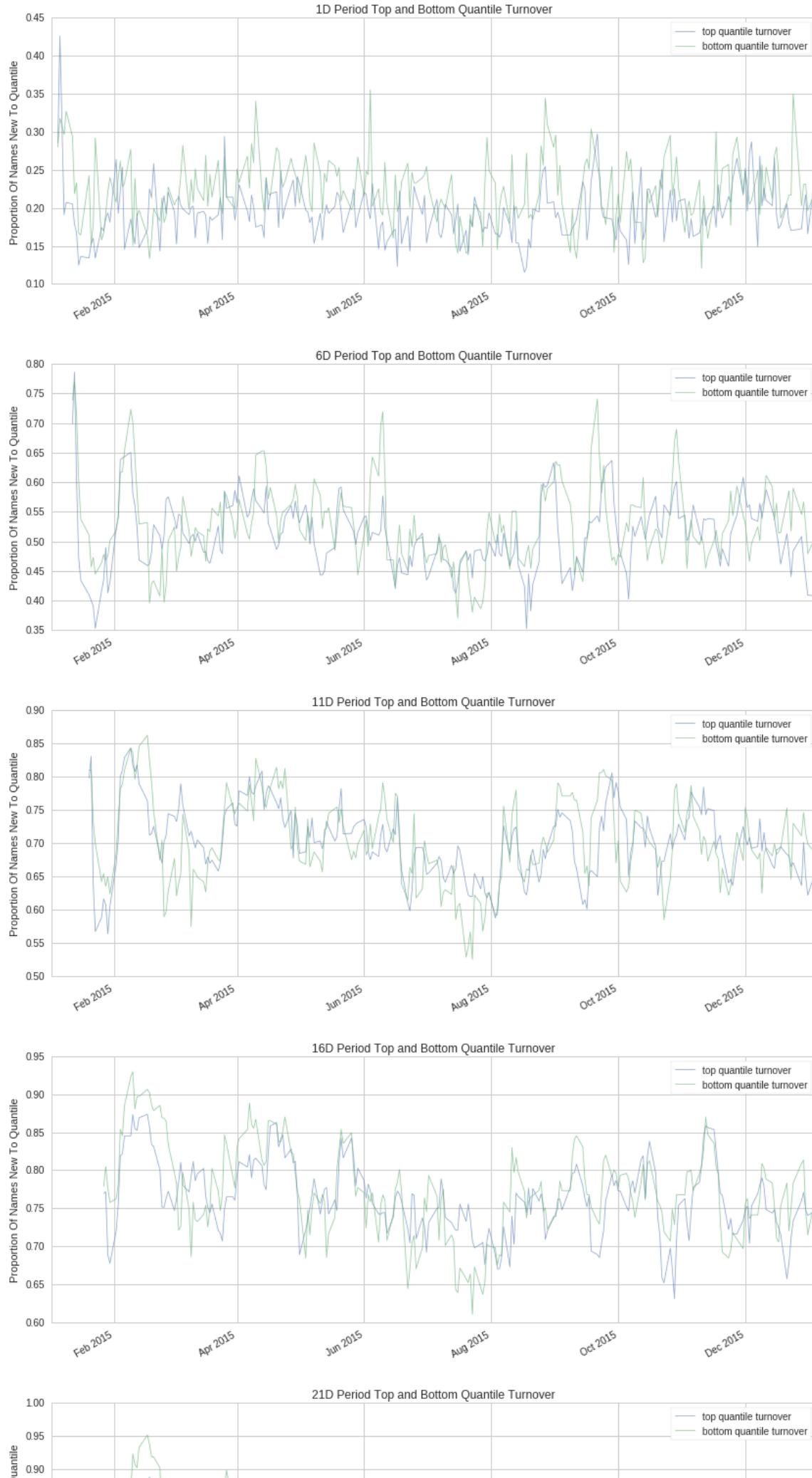
## Turnover Analysis

	11D	16D	1D	21D	26D	31D	36D	41D	46D	51D	56D	61D
<b>Quantile 1 Mean Turnover</b>	0.702	0.772	0.224	0.781	0.784	0.778	0.764	0.757	0.762	0.773	0.773	0.770
<b>Quantile 2 Mean Turnover</b>	0.781	0.796	0.458	0.797	0.800	0.801	0.802	0.799	0.799	0.802	0.801	0.801
<b>Quantile 3 Mean Turnover</b>	0.793	0.798	0.497	0.799	0.798	0.796	0.798	0.799	0.802	0.800	0.801	0.797
<b>Quantile 4 Mean Turnover</b>	0.784	0.797	0.432	0.797	0.801	0.800	0.796	0.795	0.797	0.802	0.802	0.801
<b>Quantile 5 Mean Turnover</b>	0.703	0.762	0.194	0.762	0.759	0.756	0.756	0.754	0.756	0.755	0.748	0.746

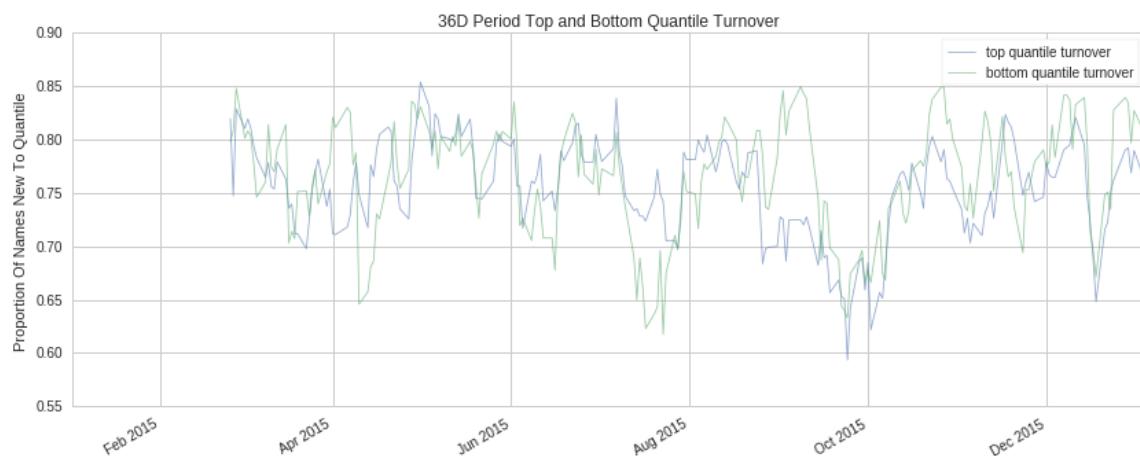
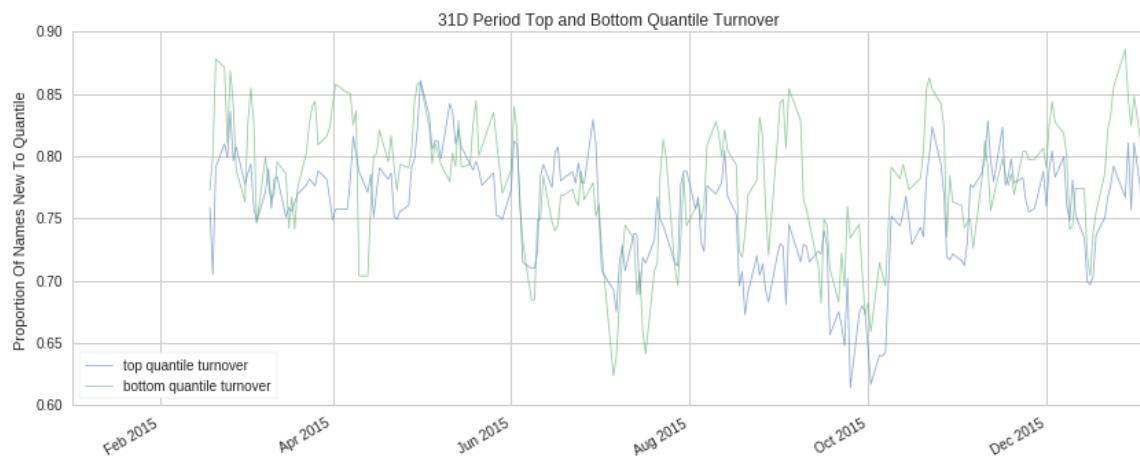
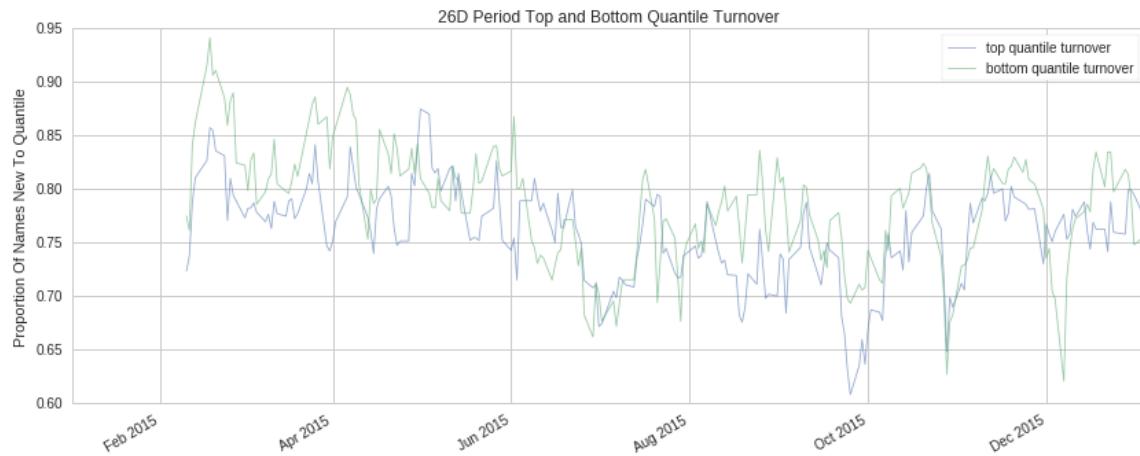
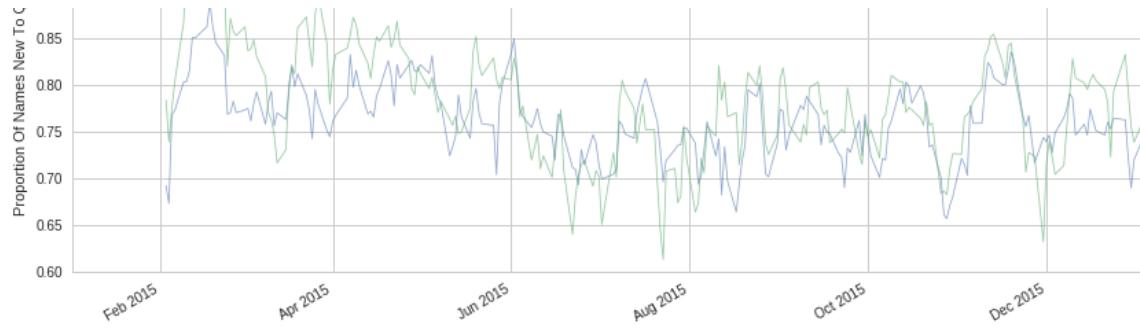


	1D	6D	11D	16D	21D	26D	31D	36D	41D	46D	51D
<b>Mean Factor</b>											
Rank	0.91	0.538	0.213	0.074	0.065	0.064	0.069	0.089	0.107	0.107	0.096
<b>Autocorrelation</b>											





## RSI\_BollingerBands\_Analysis

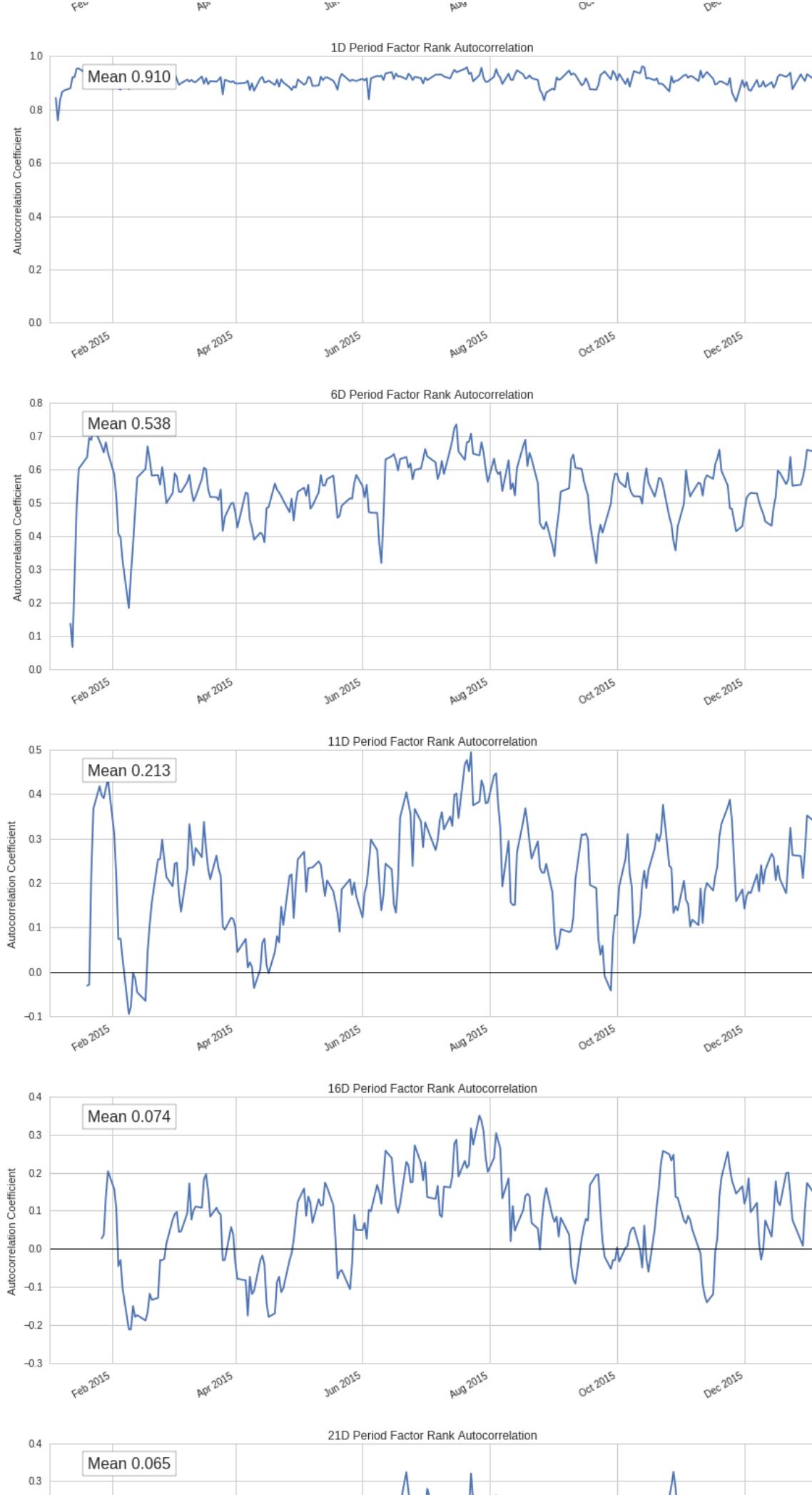


10/04/2020

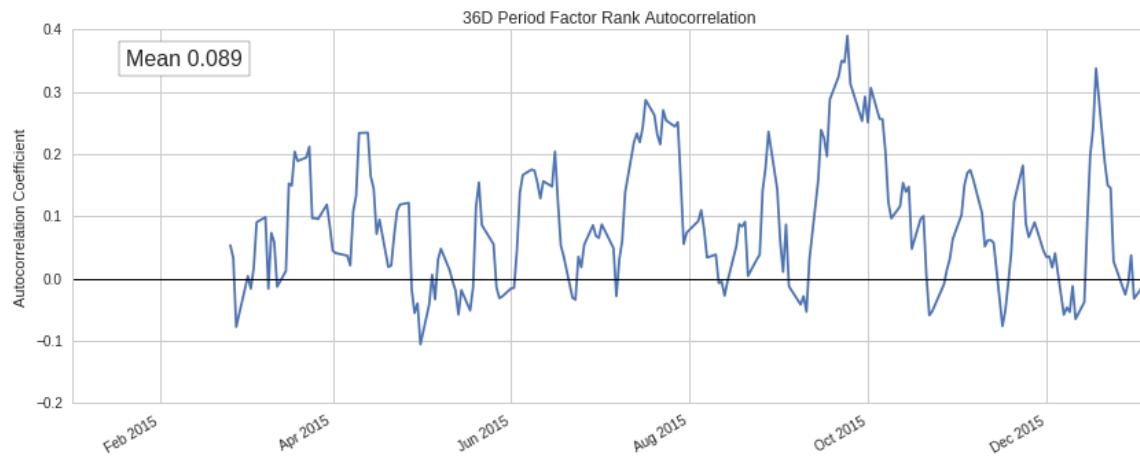
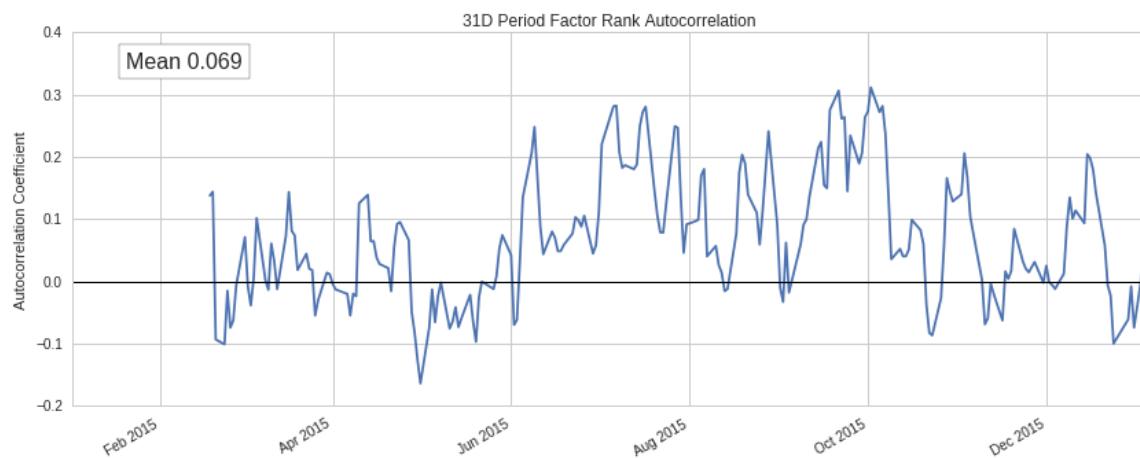
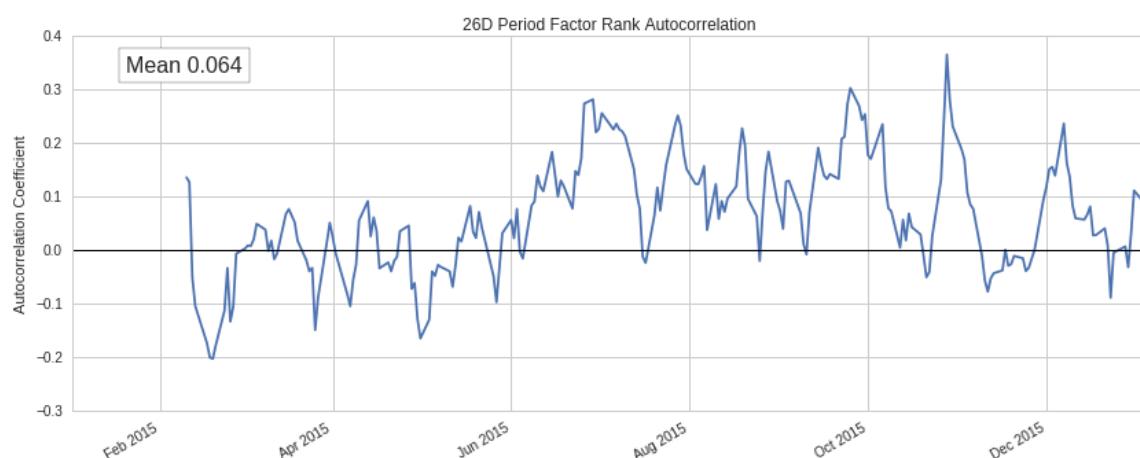
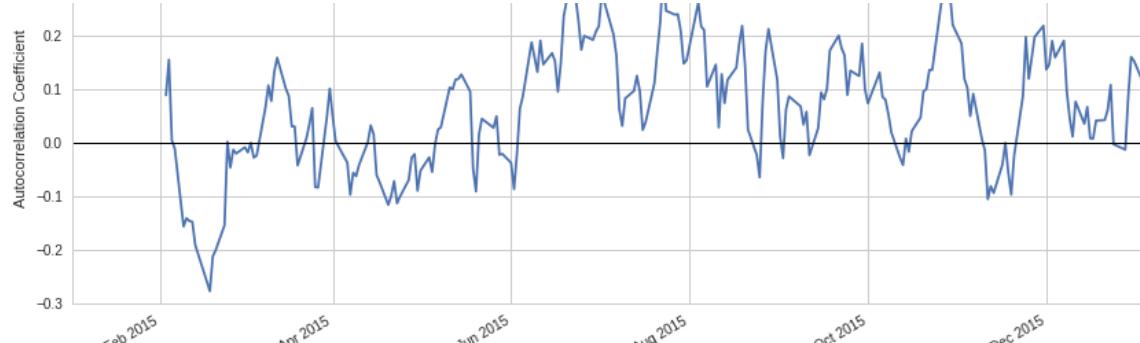
## RSI\_BollingerBands\_Analysis



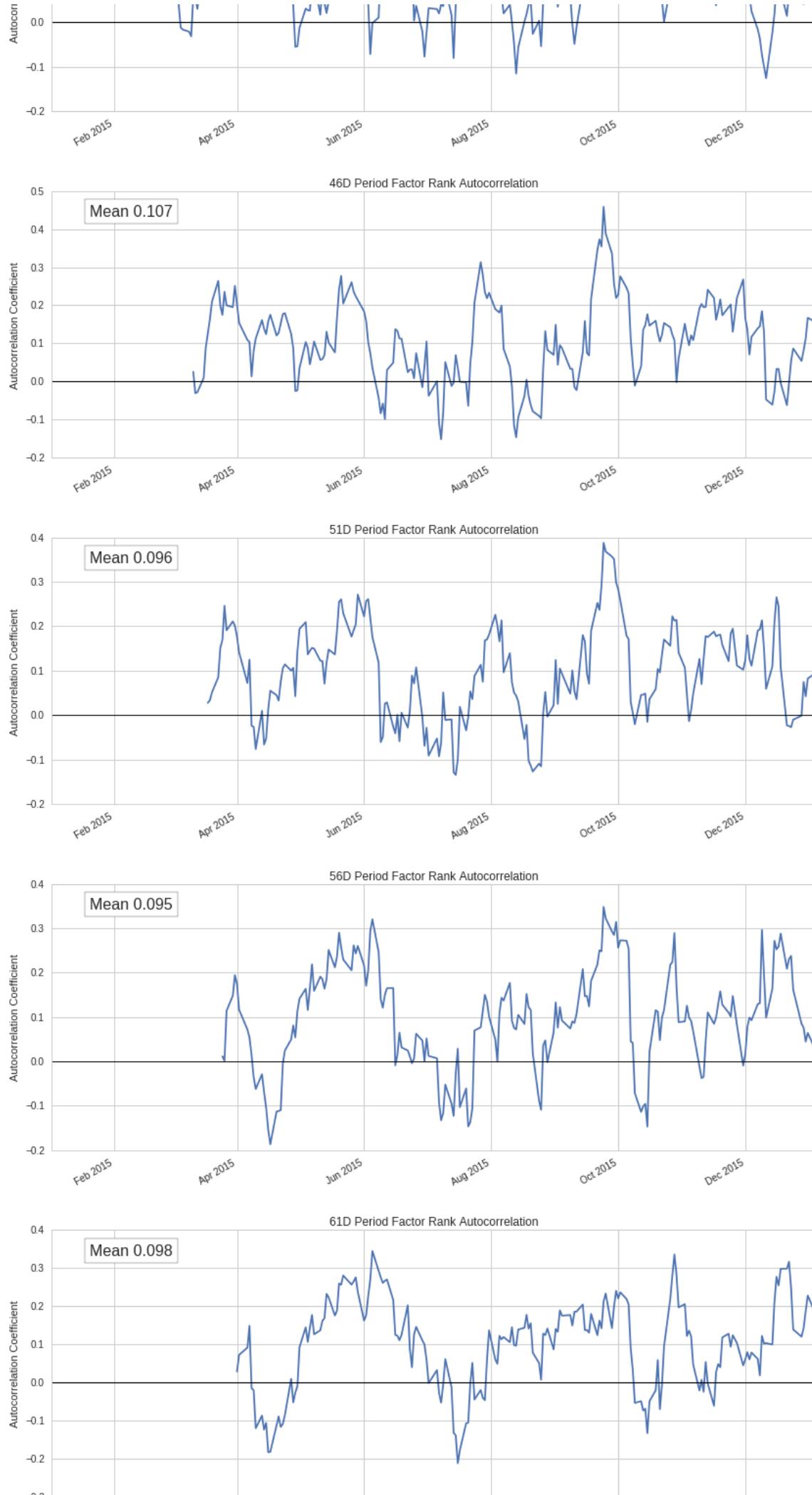
## RSI\_BollingerBands\_Analysis



## RSI\_BollingerBands\_Analysis



## RSI\_BollingerBands\_Analysis





In [ ]:

In [ ]: