Interactively Exploring Seasonality Patterns in R

Michael Kapler

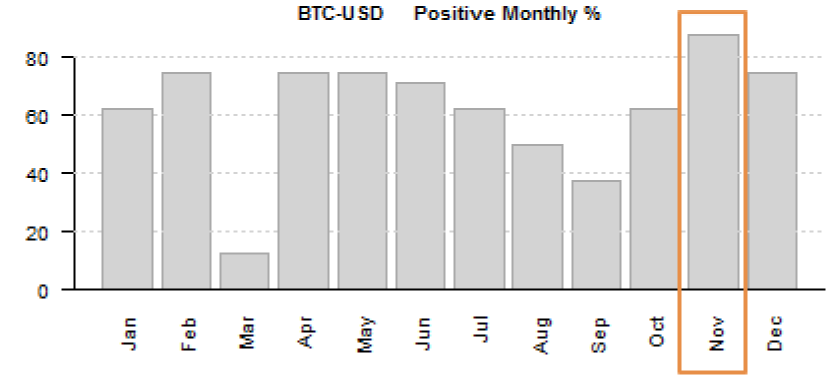
Seasonality

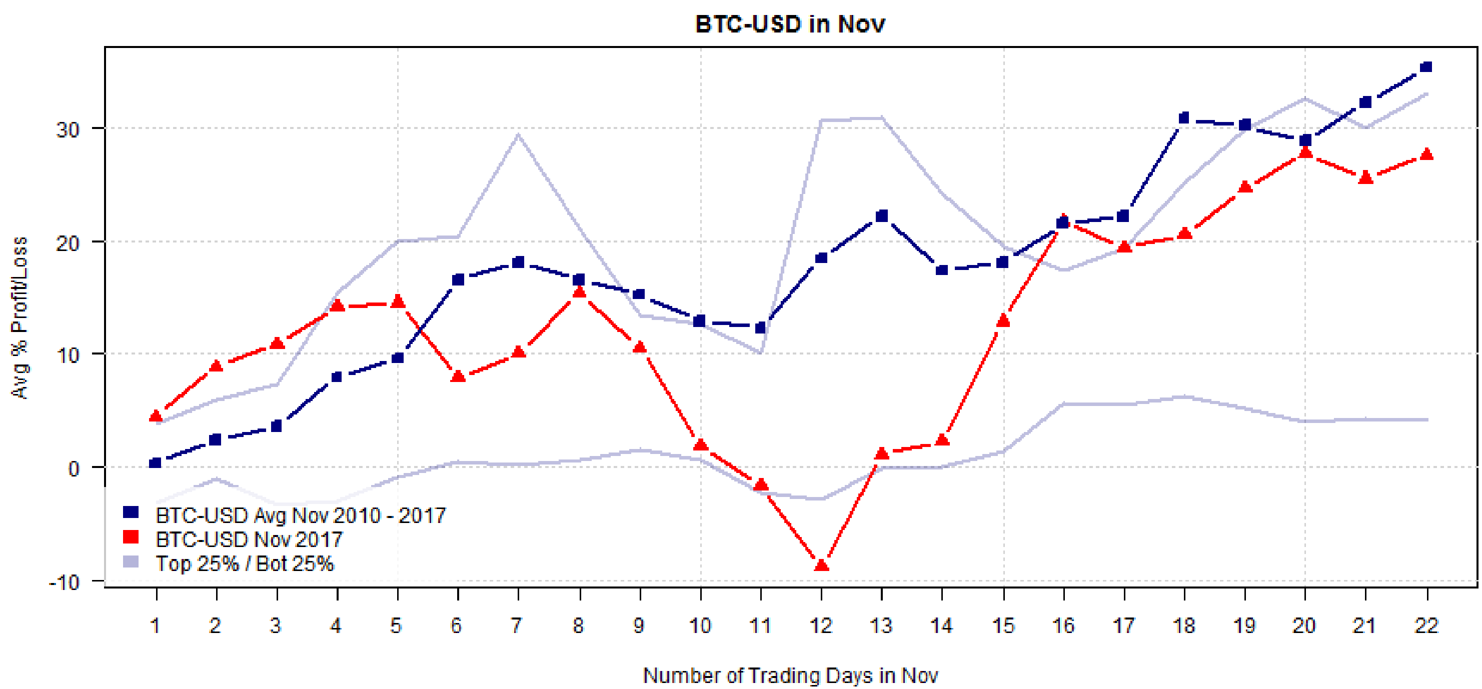
Seasonality

Seasonality analysis can be very useful:

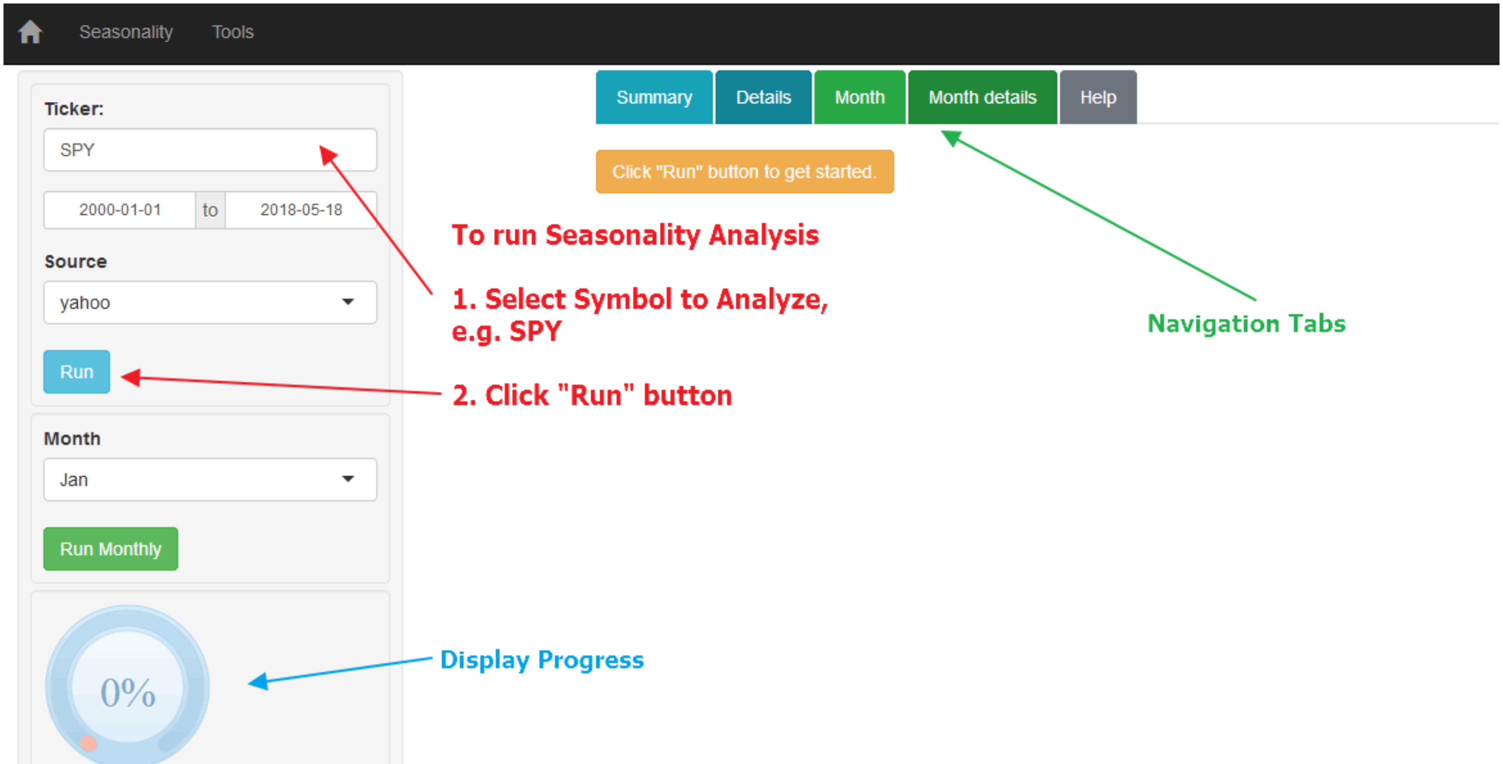
- Cryptocurrency
- Financial backtest
- Google trends

Cryptocurrency



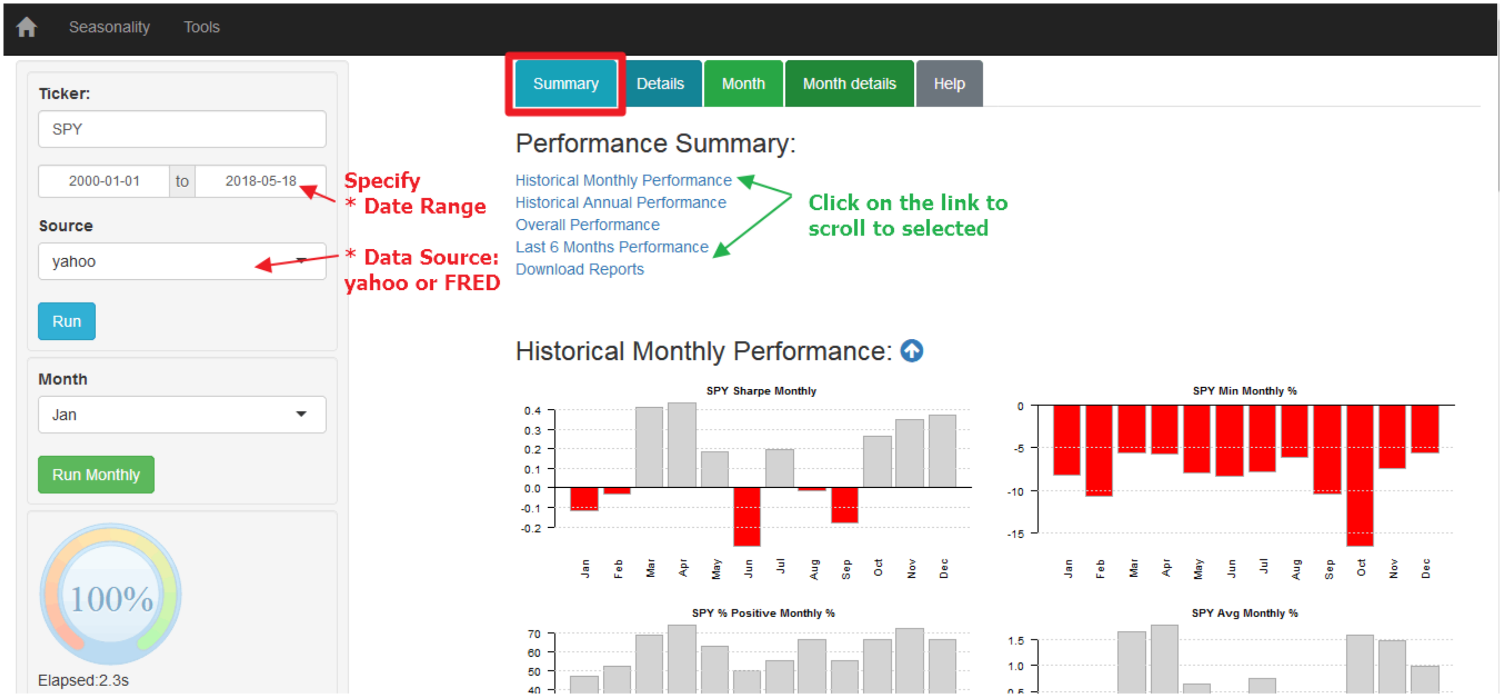


RTSViz package



rtsviz package - R Time Series Visualization

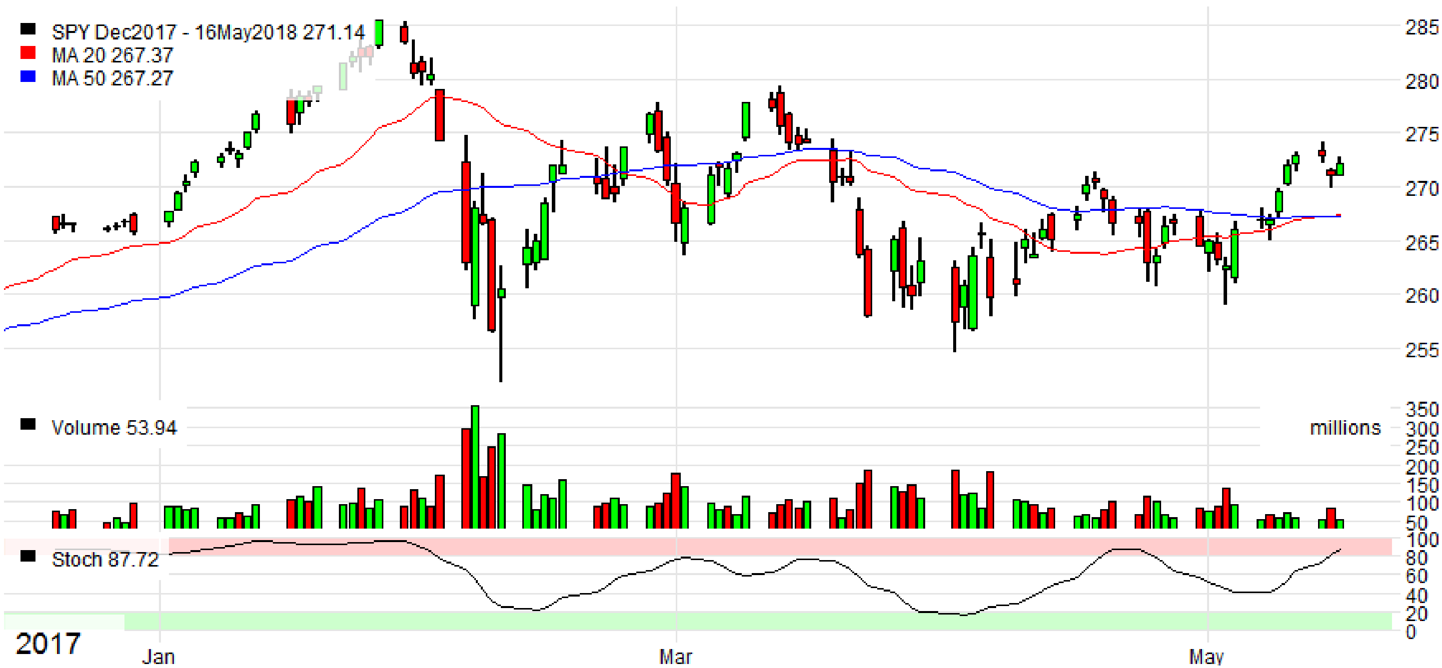
Summary Tab



Seasonality
Tools
Ticker:
SPY
2000-01-01
to
2018-05-18
Source
yahoo
Run
Month
Jan
Run Monthly
100%
Elapsed:2.3s
Specify
* Date Range
* Data Source:
yahoo or FRED
Summary
Details
Month
Month details
Help
Performance Summary:
Historical Monthly Performance
Historical Annual Performance
Overall Performance
Last 6 Months Performance
Download Reports
Click on the link to
scroll to selected
Historical Monthly Performance:
SPY Sharpe Monthly
SPY Min Monthly %
SPY % Positive Monthly %
SPY Avg Monthly %
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

Reports

Last 6 Months Performance: Click on the "Up" arrow to scroll up

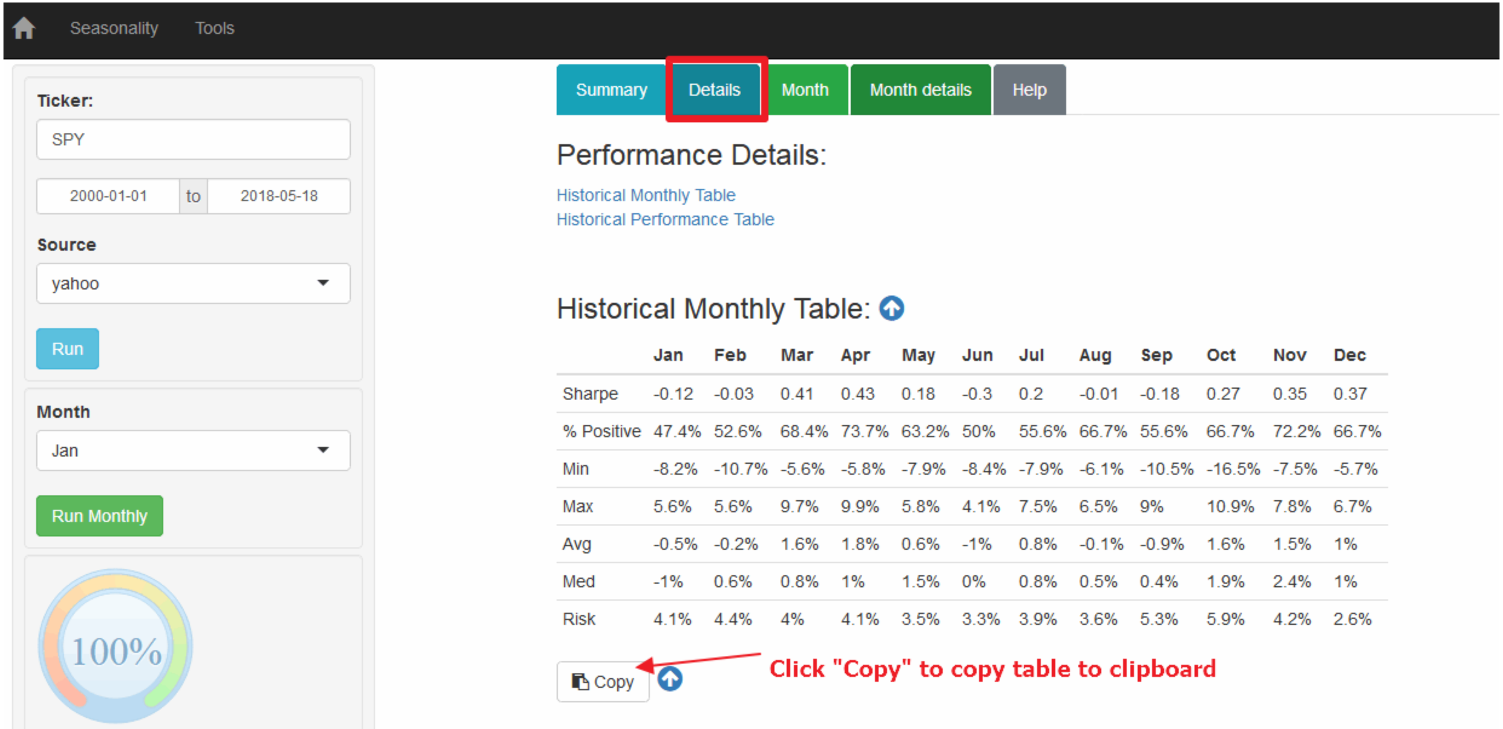


Download Reports:

Rmd PDF CSV

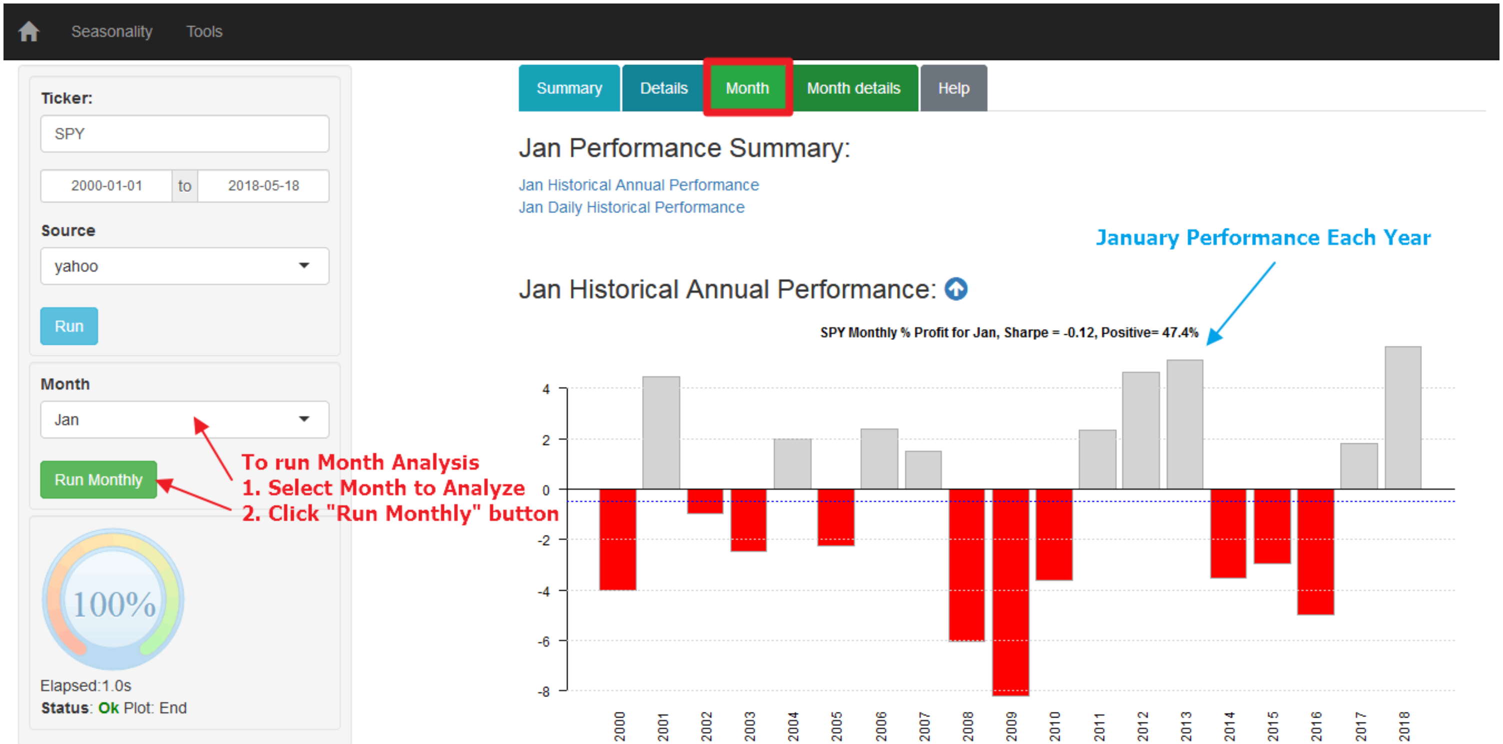
Download Reports as
* RMarkdown
* PDF
* CSV

Details Tab



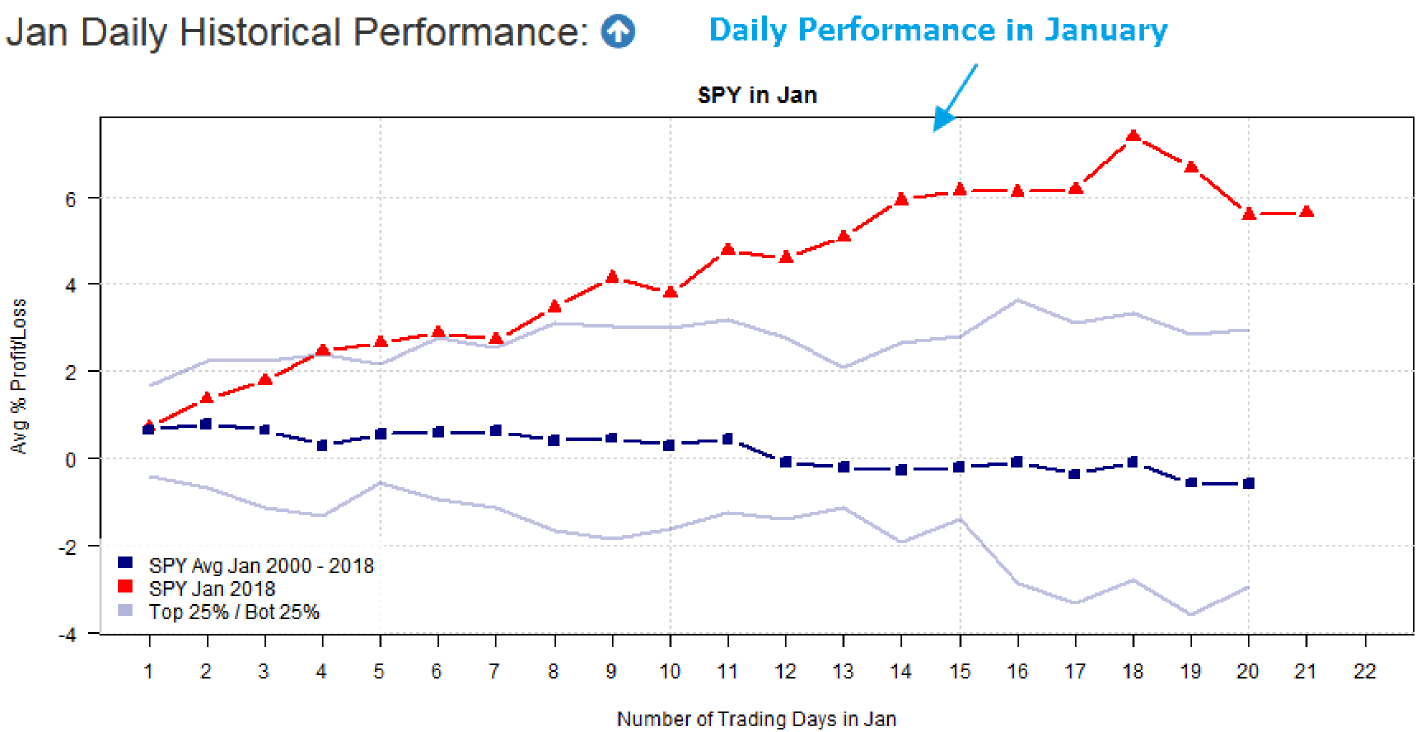
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Sharpe	-0.12	-0.03	0.41	0.43	0.18	-0.3	0.2	-0.01	-0.18	0.27	0.35	0.37
% Positive	47.4%	52.6%	68.4%	73.7%	63.2%	50%	55.6%	66.7%	55.6%	66.7%	72.2%	66.7%
Min	-8.2%	-10.7%	-5.6%	-5.8%	-7.9%	-8.4%	-7.9%	-6.1%	-10.5%	-16.5%	-7.5%	-5.7%
Max	5.6%	5.6%	9.7%	9.9%	5.8%	4.1%	7.5%	6.5%	9%	10.9%	7.8%	6.7%
Avg	-0.5%	-0.2%	1.6%	1.8%	0.6%	-1%	0.8%	-0.1%	-0.9%	1.6%	1.5%	1%
Med	-1%	0.6%	0.8%	1%	1.5%	0%	0.8%	0.5%	0.4%	1.9%	2.4%	1%
Risk	4.1%	4.4%	4%	4.1%	3.5%	3.3%	3.9%	3.6%	5.3%	5.9%	4.2%	2.6%

Month Tab

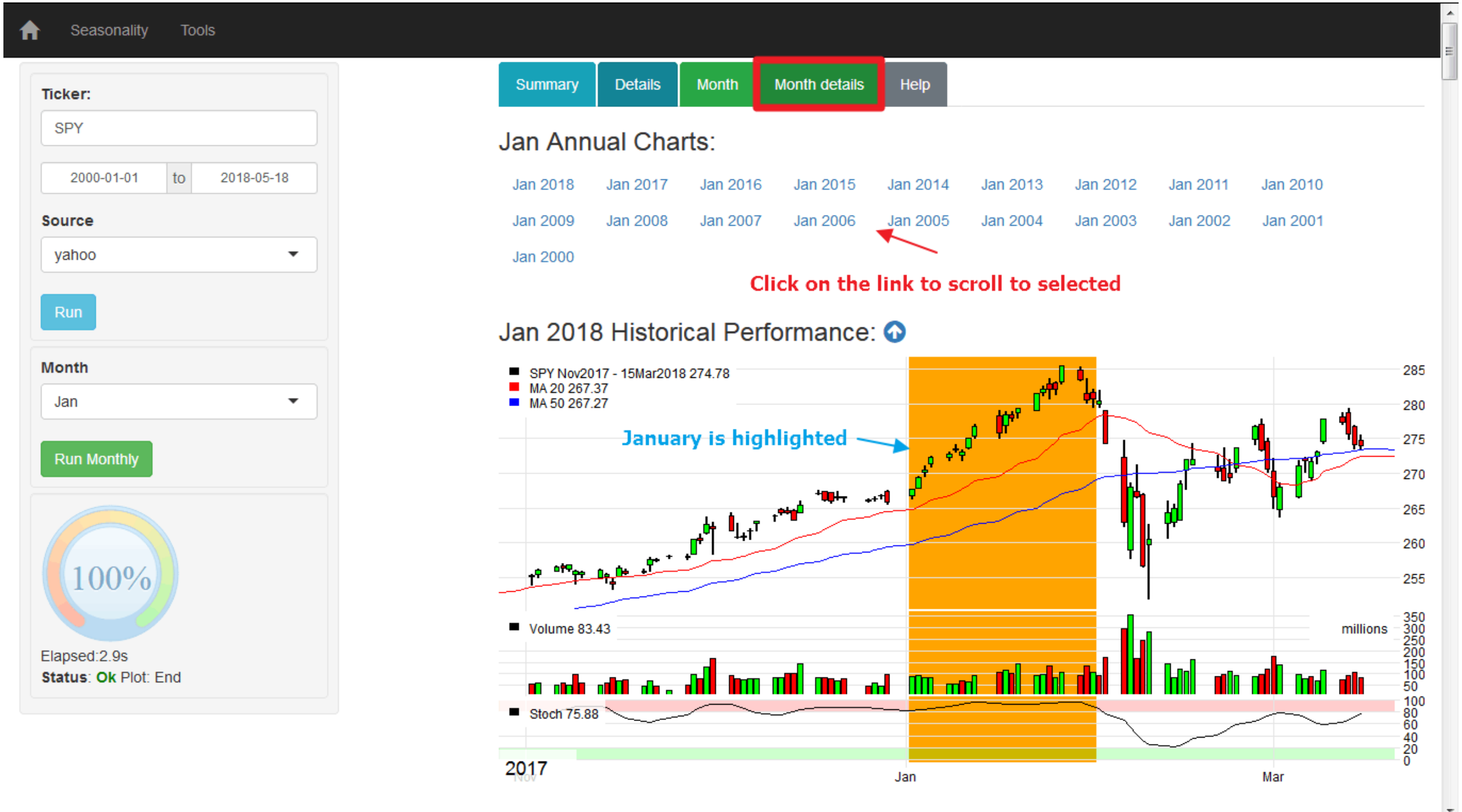


Seasonality
Tools
Ticker:
SPY
2000-01-01
to
2018-05-18
Source
yahoo
Run
Month
Jan
Run Monthly
100%
Elapsed:1.0s
Status: Ok Plot: End
To run Month Analysis
1. Select Month to Analyze
2. Click "Run Monthly" button
Summary
Details
Month
Month details
Help
Jan Performance Summary:
Jan Historical Annual Performance
Jan Daily Historical Performance
January Performance Each Year
Jan Historical Annual Performance:
SPY Monthly % Profit for Jan, Sharpe = -0.12, Positive= 47.4%

Month Tab - Daily Plot



Month Details Tab



Try RTSViz when you need to quickly Visualize Seasonality Patterns.

Install with the following code:

```
remotes::install_bitbucket('rtsvizteam/rtsviz')
```

Thank you

I will be glad to answer your questions during the break

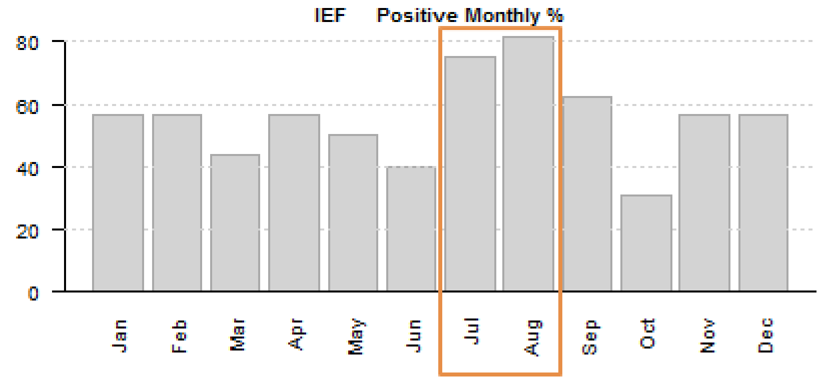
Appendices

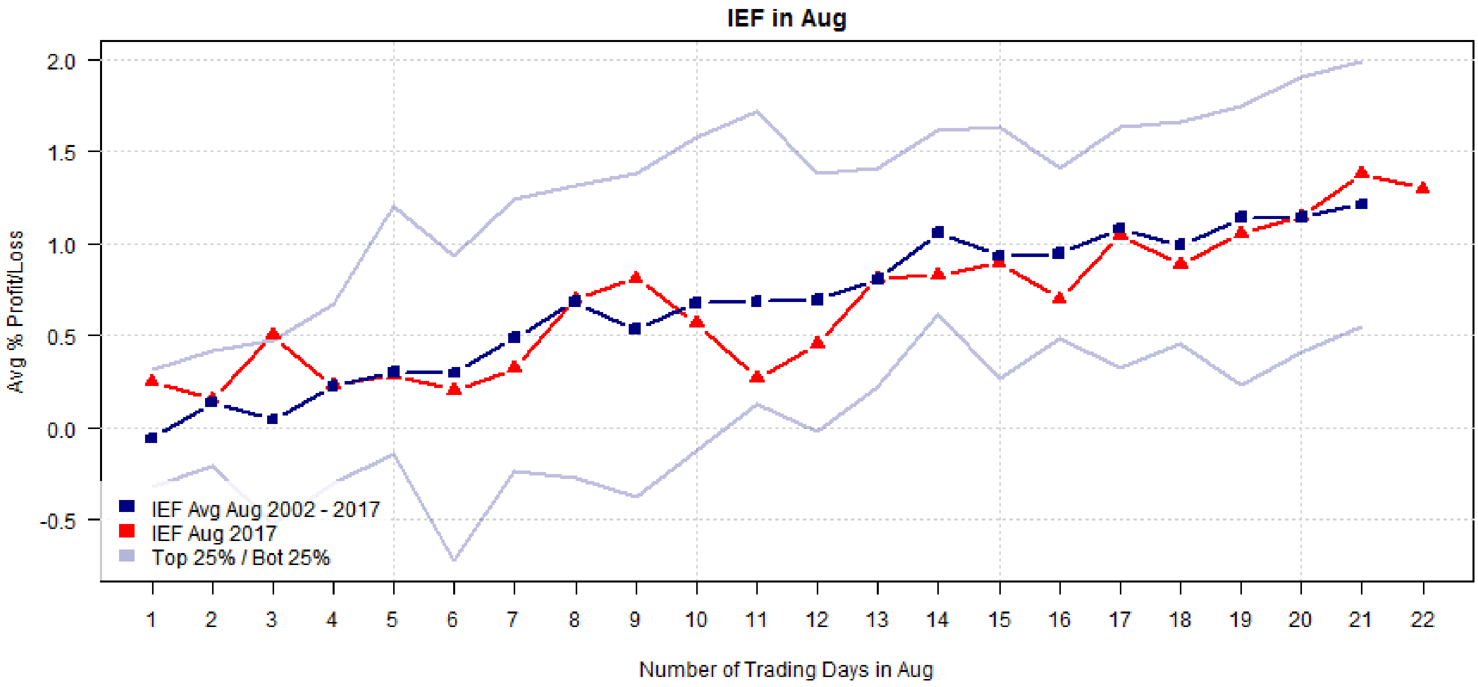
Additional examples of seasonality analysis:

- Seasonality Patterns in Fixed Income[1]
- Seasonality Patterns in Google Trend Search Queries[2]
- Seasonality Patterns in Adaptive Allocation strategy back-test[3]
- Seasonality Patterns in VIX

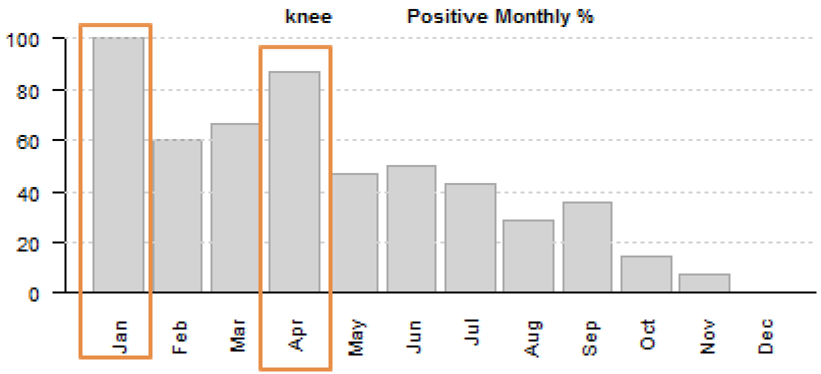
[1] Morgan Stanley unveils a detailed strategy that has worked perfectly for 3 decades for trading one of the worldâ™s largest markets around US holidays
[2]Using google trends to assess for seasonal variation in knee injuries
[3]Market Timing - Adaptive Allocation

Fixed Income



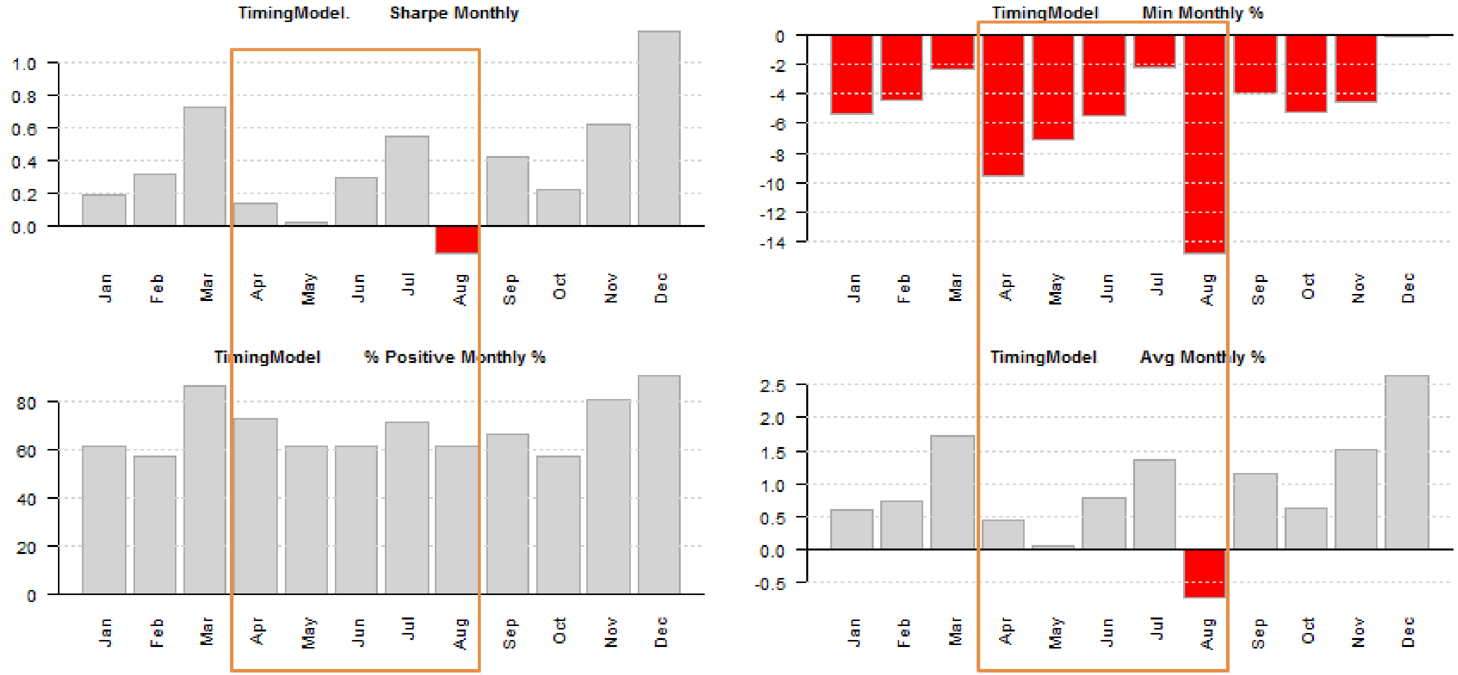


Google Trend Search Queries



Using google trends to assess for seasonal variation in knee injuries.

Adaptive Allocation strategy back-test



Avoid **spring and summer** to reduce **drawdowns**.

Implied Volatility