Interactively Exploring Seasonality Patterns in R

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Seasonality
Seasonality

Seasonality analysis can be very useful:

- Cryptocurrency
- Financial backtest
- Google trends
Cryptocurrency

BTC-USD Positive Monthly %

BTC-USD in Nov

Avg % Profit/Loss

Number of Trading Days in Nov
RTSViz package

To run Seasonality Analysis
1. Select Symbol to Analyze, e.g. SPY
2. Click "Run" button

Navigation Tabs
Display Progress

rtsviz package - R Time Series Visualization
Summary Tab

Specify Date Range

* Data Source: yahoo or FRED

Click on the link to scroll to selected
Details Tab

Performance Details:

Historical Monthly Table

<table>
<thead>
<tr>
<th>Month</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sharpe</td>
<td>-0.12</td>
<td>-0.03</td>
<td>0.41</td>
<td>0.43</td>
<td>0.18</td>
<td>-0.3</td>
<td>-0.2</td>
<td>-0.1</td>
<td>-0.18</td>
<td>0.27</td>
<td>0.35</td>
<td>0.37</td>
</tr>
<tr>
<td>% Positive</td>
<td>47.4%</td>
<td>52.6%</td>
<td>68.4%</td>
<td>73.7%</td>
<td>63.2%</td>
<td>50%</td>
<td>55.6%</td>
<td>66.7%</td>
<td>55.6%</td>
<td>56.7%</td>
<td>72.2%</td>
<td>66.7%</td>
</tr>
<tr>
<td>Min</td>
<td>-8.2%</td>
<td>-10.7%</td>
<td>-5.6%</td>
<td>-5.8%</td>
<td>-7.9%</td>
<td>-8.4%</td>
<td>-7.9%</td>
<td>-6.1%</td>
<td>-10.5%</td>
<td>-16.5%</td>
<td>-7.5%</td>
<td>-5.7%</td>
</tr>
<tr>
<td>Max</td>
<td>5.6%</td>
<td>5.6%</td>
<td>9.7%</td>
<td>9.9%</td>
<td>5.8%</td>
<td>4.1%</td>
<td>7.5%</td>
<td>6.5%</td>
<td>9%</td>
<td>10.9%</td>
<td>7.8%</td>
<td>6.7%</td>
</tr>
<tr>
<td>Avg</td>
<td>-0.5%</td>
<td>-0.2%</td>
<td>1.6%</td>
<td>1.8%</td>
<td>0.6%</td>
<td>-1%</td>
<td>0.6%</td>
<td>-0.1%</td>
<td>-0.9%</td>
<td>1.6%</td>
<td>1.5%</td>
<td>1%</td>
</tr>
<tr>
<td>Med</td>
<td>-1%</td>
<td>0.6%</td>
<td>0.8%</td>
<td>1%</td>
<td>1.5%</td>
<td>0%</td>
<td>0.8%</td>
<td>0.5%</td>
<td>0.4%</td>
<td>1.9%</td>
<td>2.4%</td>
<td>1%</td>
</tr>
<tr>
<td>Risk</td>
<td>4.1%</td>
<td>4.4%</td>
<td>4%</td>
<td>4.1%</td>
<td>3.5%</td>
<td>3.8%</td>
<td>3.9%</td>
<td>3.6%</td>
<td>5.3%</td>
<td>5%</td>
<td>4.2%</td>
<td>2.6%</td>
</tr>
</tbody>
</table>

Click "Copy" to copy table to clipboard
Month Tab

To run Month Analysis
1. Select Month to Analyze
2. Click "Run Monthly" button
Jan Daily Historical Performance: ↑

Daily Performance in January

SPY in Jan

Avg % Profit/Loss

Number of Trading Days in Jan
Month Details Tab

Click on the link to scroll to selected

January is highlighted
Try **RTSViz** when you need to quickly Visualize Seasonality Patterns.

Install with the following code:

```r
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 world’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

IEF Positive Monthly %

IEF in Aug

Avg % Profit/Loss

Number of Trading Days in Aug
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

^VIX Positive Monthly %

^VIX in May

Avg % Profit/Loss

Number of Trading Days in May

- ^VIX Avg May 1990 - 2018
- ^VIX May 2018
- Top 25% / Bot 25%