Measuring Income Statement Sharpe Ratios using R
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The American football Passing Efficiency Ratio provides an analytical measurement of the success of the quarterback

\[ PssrRtg_{NCAA} = \frac{(8.4 \times Yds) + (330 \times TDs) + (100 \times Compl) - (200 \times Intcps)}{Atmps} \]

- While Aaron Rogers was a quarterback in college, playing for the University of California at Berkeley ("Cal"), he played two seasons
  - 5,469 total passing yards
  - 424 completions
  - 665 attempts
  - only 13 interceptions
  - a hefty 43 touchdown passes

- This yielded, according to our formula above, to a Cal record career passer rating of 150.2 and high QB NFL draft pick
What is one of the most important Financial Ratios?

▶ ”Sure returns are important”

▶ ”But what about volatility?”

▶ ”Consistency is the key in sports…”

▶ ”… and finance”
The Sharpe Ratio (SR) is a well-known analytical metric to compare securities. It rewards good financial returns and penalizes erratic behavior of those returns.

\[ r_S = \frac{E\{R_P\} - \mu_f}{\sigma_P} \]
Income statement figures for thousands of stock tickers can be read via R program using `quantmod` package.
The Income Statement Sharpe Ratio (ISSR) can be computed like Sharpe Ratio of log returns of price history.
The 4 ISSRs can be sorted and we can 'cherry pick' best candidates.

**Figure:** 33 candidates & ISSRs
1=Income Growth, Net; 2=Total Rev Growth; 3=Gross Profit Growth; 4=Diluted Norm Earn per Share Growth
The 4 IS RVs can be used as predictors of Up/Down price behavior for Long/Short positions with 61% accuracy using the *party* decision tree package in R.

![Decision Tree Diagram](image_url)
Financial Analytics with R: Building a Laptop Laboratory for Data Science

- From Cambridge University Press in Fall 2016
- For professionals and students seeking financial analytics training in data science.
- Business, investor, and consumer-level problems are attacked with tools from statistics, computer science and finance.
- Thousand of lines of operational R code are included to help the reader build their “Laptop Laboratory”