



# Finance Visualization

Jacob Kulik, David Pogrebitskiy

Northeastern University, Houry College of Computer Sciences

Balance Sheets are a financial statement that reports a company's assets, liabilities, and shareholder equity

Assets	This Year	Last Year
<b>Current assets</b>		
Cash and cash equivalents	\$ 10,000	\$ 10,000
Accounts receivable	35,000	30,000
Inventory	25,000	20,000
<b>Total current assets</b>	<b>70,000</b>	<b>60,000</b>
<b>Fixed assets</b>		
Plants and machinery	\$ 20,000	\$ 20,000
Less depreciation	-12,000	-10,000
Land	8,000	8,000
Intangible assets	2,000	1,500
<b>Total assets</b>	<b>88,000</b>	<b>79,500</b>
<b>Liabilities and Shareholders' Equity</b>		
<b>Liabilities</b>		
Accounts payable	\$ 20,000	\$ 15,000
Taxes payable	5,000	4,500
Long-term bonds issued	15,000	10,000
<b>Total liabilities</b>	<b>40,000</b>	<b>29,500</b>
<b>Shareholder's equity</b>		
Common stock	\$ 40,000	\$ 40,000
Retained earnings	8,000	10,000
<b>Total shareholder's equity</b>	<b>48,000</b>	<b>50,000</b>
<b>Liabilities and shareholders' equity</b>	<b>\$ 88,000</b>	<b>\$ 79,500</b>

wrds

The Global Standard for Business Research



## Domain User

Students in an introductory Accounting or Finance class

## Domain Problem

It's difficult to analyze a company's financial metrics over time, and even more difficult to compare across firms



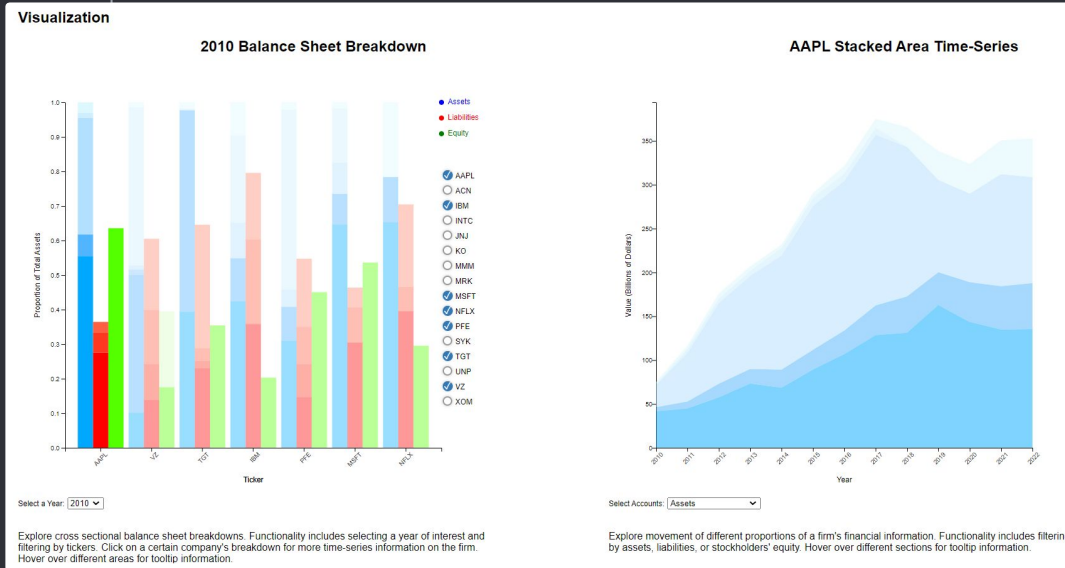
# Task Abstraction

High-level -> Consume -> Discover

Mid-level -> Search -> Explore

Low-level -> Query -> Compare

# Visual Encodings



Stacked Bar Chart:

- Line mark
  - Color, size, X and Y position channels

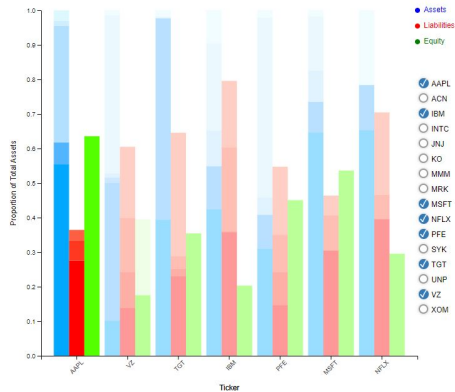
Stacked Area Chart:

- Area mark
  - Color, area, X and Y position channels

# Interactions

## Visualization

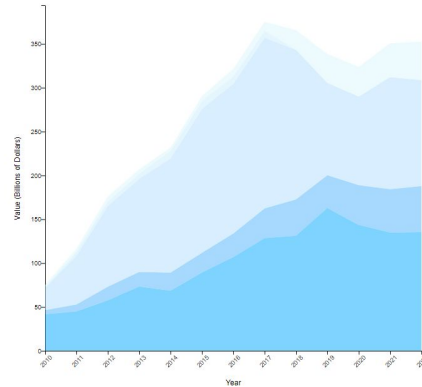
### 2010 Balance Sheet Breakdown



Select a Year:

Explore cross sectional balance sheet breakdowns. Functionality includes selecting a year of interest and filtering by tickers. Click on a certain company's breakdown for more time-series information on the firm. Hover over different areas for tooltip information.

### AAPL Stacked Area Time-Series



Select Accounts:

Explore movement of different proportions of a firm's financial information. Functionality includes filtering by assets, liabilities, or stockholders' equity. Hover over different sections for tooltip information.

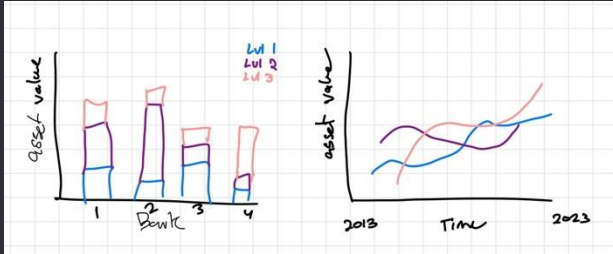
## Stacked Bar Chart:

- Change over time interaction
  - Updates on a year filter selection

## Stacked Area Chart:

- Selection interaction
  - Updates on a bar chart selection

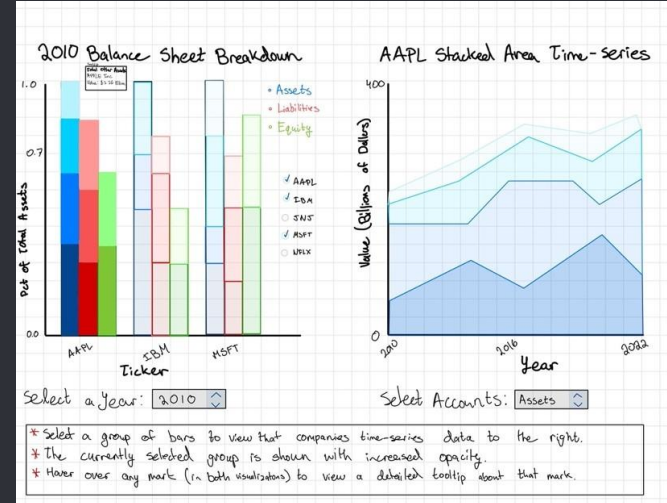
# Design Process



## First Design

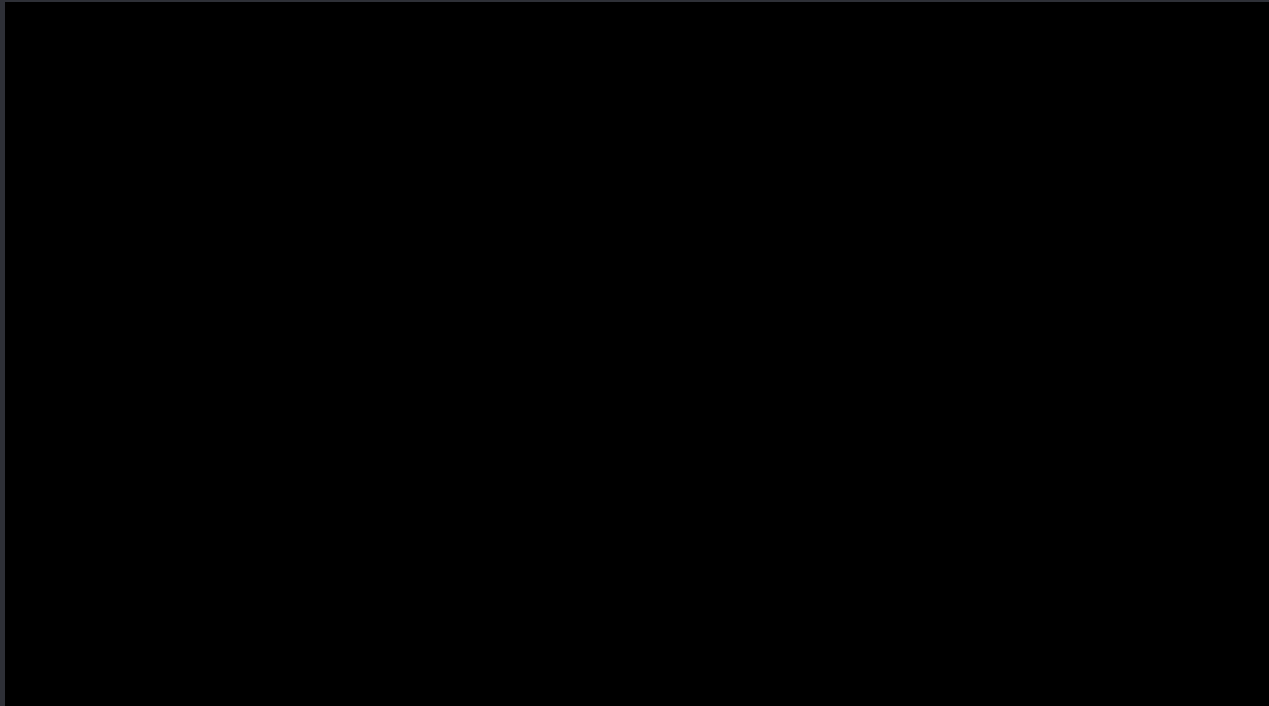
Changes Implemented:

- Switch from line graph to stacked area chart
- Addition of filters and tooltip functionality



## Final Design

# Demo



[Video](#)





Thank you!

Any Questions?