

World

Interactive display choice

[Fidelity](#) provides interactive data displays designed to assist users in making stock choices. The display I chose for [Nvidia](#) can be viewed [here](#). Viewing the chart does not require logging into the Fidelity website, but the webpage displays some data behind a  icon requiring one to login. See **Figure 1** (below) to view Fidelity's interactive data display.



Figure 1. Fidelity's chart requires users to either have familiarity or figure out how to decode the data. The site provides no key to aid users. Understanding that red equals loss and green equals gain is expected. Letters at the top show opening, high, low, and closing prices as well as volume moved without defining what anything means. The [candlestick chart](#) could be mistaken for a simple line graph by some users. The bar graph at the display's bottom has no initial indication it represents stock volumes. Read below to learn about this chart.

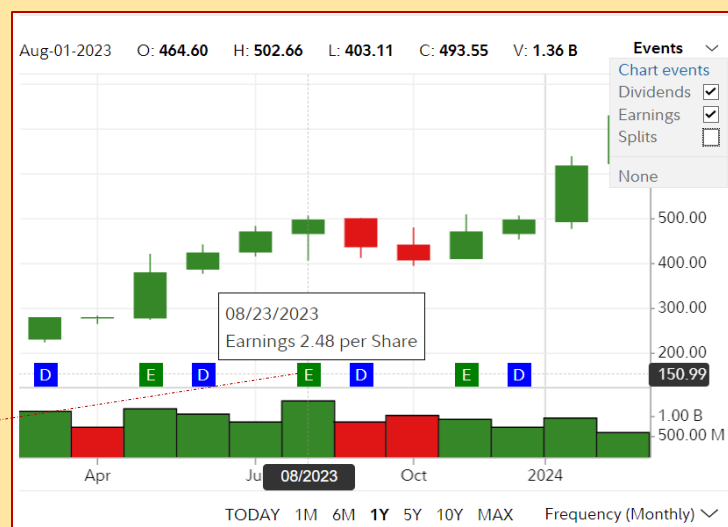
User-controlled variables

Display type

The candlestick chart depicting stock price movement and the bar graph at the chart's bottom showing total volumes bought and sold are static. Users have the option to display additional information at the top of the chart (**Figure 2** below). The event menu allows users to display when dividend payments occurred, earnings per share, and any stock splits that happened. When any or all these options are selected, users can hover their mouse above the event tag to view earnings per share for a given reporting period, dividends paid per share, and/or specific stock split ratios.

Figure 2. The drop-down menu on the chart's top right lets users choose to view earning, dividend, and split reports. Users must hover above a data point to view more details, such as earnings per share or dividends paid per share. To view information on the last stock split, users would need to check the box for that event and select a data range of 10Y. Read about time and data ranges on the next page.

Hovering your mouse over the letter block displays data for that block. Select which letter blocks are displayed with the drop-down menu to the top left.



Time

Users have several options to control the charts depiction of time. **Figure 3** shows a menu at the bottom of the chart allowing users to view a data range by day, month, or various year increments. It also depicts options for controlling the frequency of the data displayed, with today (showing the last trading day), weekly, monthly, quarterly, and yearly options for the data range selected, and below that, it allows one to select a view spanning minutes to hours which shifts the data range to 'today.' Additionally, users can hover their mouse arrow above the chart, and use the mouse wheel to adjust the data range by rolling in and out. Using the mouse wheel allows users to view data ranges not selectable via the shortcuts at the bottom of the chart.



Figure 3. At the chart's bottom, users may select a data range. There is also an option to open a menu that allows users to control the frequency of the data they are viewing.

- 5 Minutes
- 10 Minutes
- 15 Minutes
- 30 Minutes
- 1 Hour
- 4 Hours
- Daily
- Frequencies below will change timeframe
- Weekly
- Monthly
- Quarterly
- Yearly

Selecting data ranges and frequency changes the display in the chart.

User control impact on clarity

Arrangement

The arrangement of data remains the same, though its depiction on screen varies based on the data range and frequency selected. Greater ranges at a higher frequency require more data to be crammed into a smaller space. The dimensions of the chart do not change based on the amount of data depicted.

Emphasis

Shifting data range and frequency shift emphasis between price and volume trends over a larger time period (when viewing a larger data range) to viewing price and volume shifts daily, hourly, or even by the minute (when the data range is narrowed).

Clarity

Clarity shifts between overall trends and daily price fluctuations with the user's selections. Gaining clarity over trends requires a loss in clarity for daily price changes. Fortunately, users can easily shift between the two data types by changing data range and frequency.

Limitations and drawbacks of the display

The display's primary limitation and drawback is that it requires users to either already be familiar with how it works or to spend an amount of time experimenting with its settings to figure out what it is trying to say. A hyperlink placed within the whitespace in the bottom left corner of the display, connecting users with a tutorial and/or a key, would be helpful for new users and might even result in new customer acquisitions for Fidelity.

Data

Introduction

India based stock broker [Groww](#) offers data displays similar to [Fidelity](#) (compare **Figure 4** below with [Figure 1](#) from the previous section). Figure 4 shows a 1-year history of Nvidia stock depicted as a line graph. Note that there is no 6-month timescale to choose from at the bottom of the chart, so the scale of Figure 4's display is different from that of Figure 1.



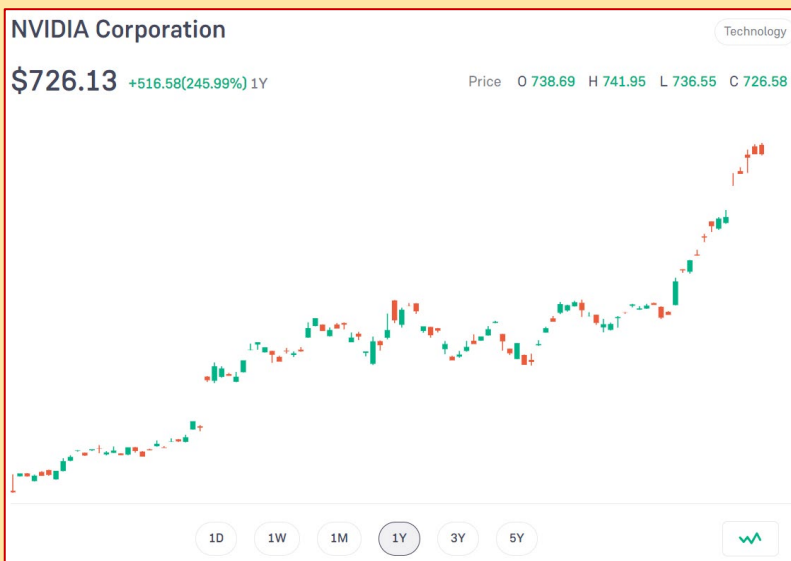
Figure 4. Groww, a brokerage based in India, shows a simpler display than Fidelity's chart shown in Figure 1 (previous section). Users can choose to view a [candlestick](#) display like the one offered by Fidelity. The icon in the bottom left of the chart shows a small image of a candlestick chart. Clicking on this image toggles the display of the chart. You can compare the chart to the left with the Fidelity chart from the previous article. Then, look at Figure 5, which depicts the candlestick chart that Groww makes available to its users.

Toggle display between line chart and candlestick chart.

Toggling the icon in the bottom right corner of the chart allows users to select between a simple line graph and a more informative candlestick display. **Figure 5** (below) shows a display that is closer to the one presented by Fidelity in Figure 1. When users elect to view the candlestick chart, they are also presented with opening, high, low, and closing prices in the upper right corner of the chart. Note that the icon in the bottom corner now shows a line graph, informing users that they will return to that data display if they click the icon again.

Figure 5. The candlestick chart shown to the right is similar to the candlestick chart presented by Fidelity in Figure 1. See the next page to read more about the data displays presented by Groww.

When users elect to view the candlestick chart, additional information about the stocks is presented graphically in the chart and textually in the top right of the chart.



Arrangement

The chart presented by Groww has an arrangement comparable to other stock focused [websites](#). Graphics are in the center. Time selection is displayed horizontally at the bottom across the Y axis. Price information (quantity) is displayed vertically on the X axis. Textual data runs across the top, and data related to the candlestick graphic only appears when that version of the chart is selected.

Emphasis

The value of the stocks, and how that value rises and falls within selected time frames, is the focus of this data display. The candlestick chart places more emphasis on rises and falls due to the additional element of color—red means a stock fell in price and green means it rose. The line graph places emphasis on an overall upward (or downward) movement over time, using only the direction of the line to indicate rises and falls.

Clarity

Both the line and candlestick charts succeed at clarity if the users have some familiarity with these kinds of charts. As with the Fidelity site described in the previous section, Groww's digital data display would benefit from either a key or a hyperlink to instructions to assist new users in understanding the information they are viewing.

Conciseness

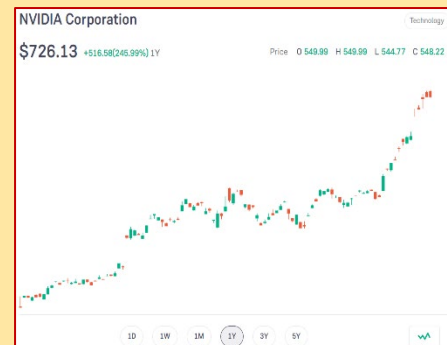
Groww initially presents users with a line graph showing overall movements of a stock. Users who wish to view more information may select a candlestick chart. The website sacrifices showing information on stock volumes, and in doing so achieves better conciseness than the Fidelity website.

Ethos

The charts presented by [Groww](#) follow conventional patterns for financial charts, and charts in general. The arrangement of the sites data (see Arrangement above) builds user trust in the site. Additionally, Groww's choice to include the candlestick chart traditionally used to view stock information adds to their credibility as real financial brokers. However, the simplicity of their data display, even though it may achieve slightly better clarity and conciseness, causes them to lose some credibility if readers compare their data display to the more complex display offered by [Fidelity](#). See **Figure 6** (below) to compare the two displays.



Figure 6. Groww (right) vs Fidelity (left). Both show a year of Nvidia stock moves using a candlestick chart. Fidelity data is shown by the week via the Frequency selection. Groww offers no option to select frequency. Which display instills more trust?



Lipton

I chose to complete the exercise on page 183. Since Lipton does not provide an actual report to pull numbers from, I followed his direction to “make up the data.”

I chose to answer the following three questions:

- Which job titles make how much (overall and by gender)?
- How does geographic location affect salary scale (overall and by gender)?
- How many respondents got a promotion (overall and by gender)?

I chose to call my “respondents” Florida residents so that I could compare them to the national average. I did NOT execute a research project on salary data across the twelve major industries comparing residents of the state of Florida against national averages, so again, the numbers are completely made up. I chose 12 categories of industry from an article on [Indeed](#). **The data shown below was fabricated, and the images should only be referenced for ideas on visual data design—the numbers are meaningless.** I did choose to show female salaries as slightly less than male in all areas to represent the [actual inequalities](#) that exist across gender salaries.

Data

Table A (below) is the table I started with in Excel. It was created as a starting point and to organize the data as I fabricated it.

	Number of jobs (x10k) (x200k)		Florida Median Salary (x1000 dollars)		National Median Salary (x1000 dollars)		Number of promotions x1000	
	Florida	National	Male	Female	Male	Female	Male	Female
Adertising & Marketing	6	47	70	60	67	59	8	8
Aerospace	8	80	120	95	119	98	22	3
Agricuture	3	32	50	48	48	46	6	1
Computers & Technology	7	123	110	106	125	121	18	20
Construction	6	64	60	42	55	41	3	1
Education	5	77	49	47	52	48	4	9
Energy	3	35	66	59	65	59	2	2
Entertainment	6	22	55	48	51	50	1	3
Finance	7	86	84	80	81	76	19	18
Health Care	11	56	90	88	96	92	7	9
Hospitality	8	42	52	47	52	50	14	7
Manufacturing	5	56	45	43	41	38	2	5

Table A. The table above was created in excel. It has no additional formatting and was only used to organize data as it was created. Gender inequality in salaries was added to reflect documented real-world bias across genders.

Table

See [Table B](#) (next page) to view the updated table. I added an extra row at the top so that I could better format the titles for the Florida and national median salaries. I added grey background to the horizontal titles. I added heavier lines to break the table into three data groups, one focusing on the number of jobs, one focusing on median salary, and one focusing on promotions. I initially added grey background to the vertical titles but decided to use alternating white and yellow lines across the tables y axis to improve readability.

Job Potential by Gender	Number of jobs (x 200k)		Median Salaries (x \$1000)				Number of promotions x 1000	
			Florida		National			
	Florida	National	Male	Female	Male	Female	Male	Female
Advertising & Marketing	6	47	70	60	67	59	8	8
Aerospace	8	80	120	95	119	98	22	3
Agriculture	3	32	50	48	48	46	6	1
Computers & Tech	7	123	110	106	125	121	18	20
Construction	6	64	60	42	55	41	3	1
Education	5	77	49	47	52	48	4	9
Energy	3	35	66	59	65	59	2	2
Entertainment	6	22	55	48	51	50	1	3
Finance	7	86	84	80	81	76	19	18
Health Care	11	56	90	88	96	92	7	9
Hospitality	8	42	52	47	52	50	14	7
Manufacturing	5	56	45	43	41	38	2	5

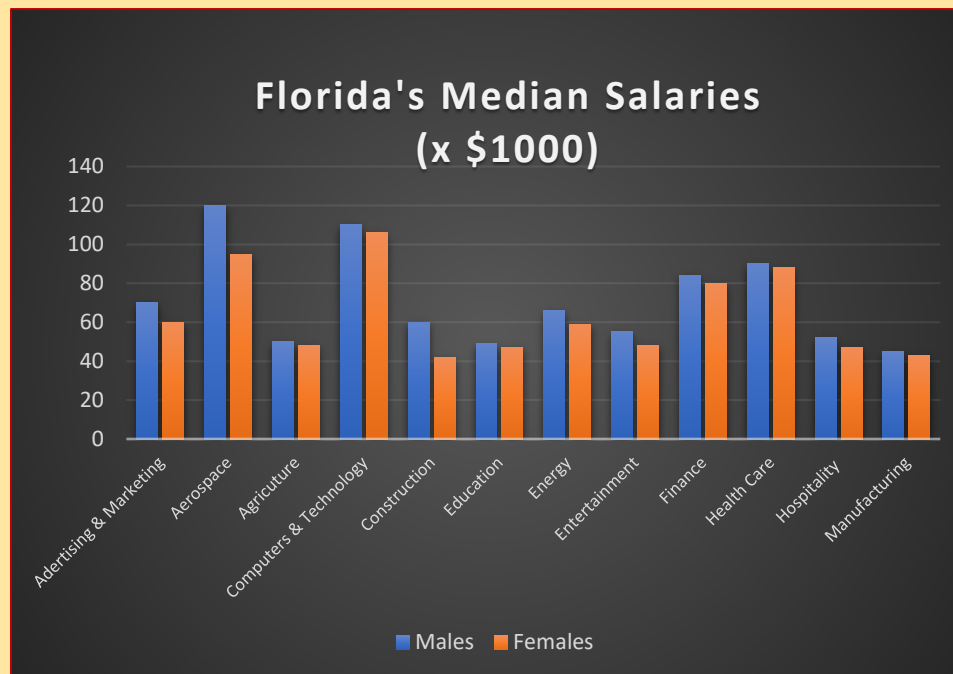
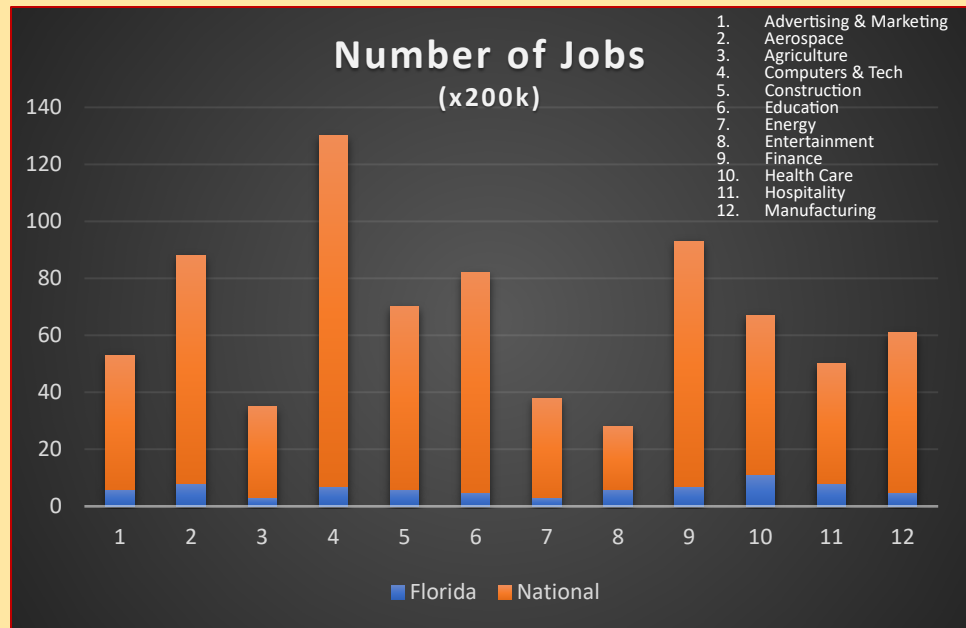
Table B. After moving the table into MS Word, I adjusted the spacing to balance out the white space around the numbers. My goal was to add emphasis to each individual number and add space above and below it to make it easier to read.

Charts

An example of how I might present the data is shown in [Chart A](#) (next page). I would use separate bar charts to present each of the three data sets, and I would reference users to the table for additional information. I preferred the stacked bar chart for the job data because of the smaller size of the Florida data in relation to the national data—it seemed unnecessary to devote an entire bar to the Florida data. [Chart B](#) (next page) shows an alternate method of presentation, using adjacent bars instead of stacked bars. For Chart B, I used the data set depicting median salaries in Florida. I could add the national salaries to Chart B, but I think it would be better to show the data in an additional chart formatted the same as Chart B to achieve better clarity. I would use either of the two formats depicted in Charts A and B to display the number of promotions. I think Table B (above) does the best job of presenting the data, but the charts are easier to read.

Chart A. I elected to add a key to the corner rather than placing the text over bars because I felt that made the chart look too cluttered.

This chart was created in Microsoft Excel. Text was added after its export to Microsoft Word.



This chart was also created in Microsoft Excel. No changes were made other than the text size of the industry titles after importing the chart into Microsoft Word.

Chart B. The bottom of the chart was expanded to show all the full title of the industries.

Conclusion

The main conclusion I drew from the Lipton assignment was that I need to master a better method of creating and editing charts. Excel saves a lot of work formatting the information, but it is also very limited. I look forward to learning more about HTML and finding out if that offers more options for designing charts. I suspect by the time I learn HTML that AI will be designing charts and diagrams for us according to prompts. Of course, we'll still have to articulate what we want through those prompts.

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