

# What do we mean by visuals?

Visuals: the collection of images, words, and graphic elements offered in the context of inquiry, communication, or persuasion.

Negative definition: the components of written texts with communicative functions that are not characterized by continuous prose text.

Functional definition: Elements of the presentation of data used as a mode of evidence or a domain for exploration

**TABLE 1  
INCOME AND POPULATION BY CLASS, BRAZIL, 2006**

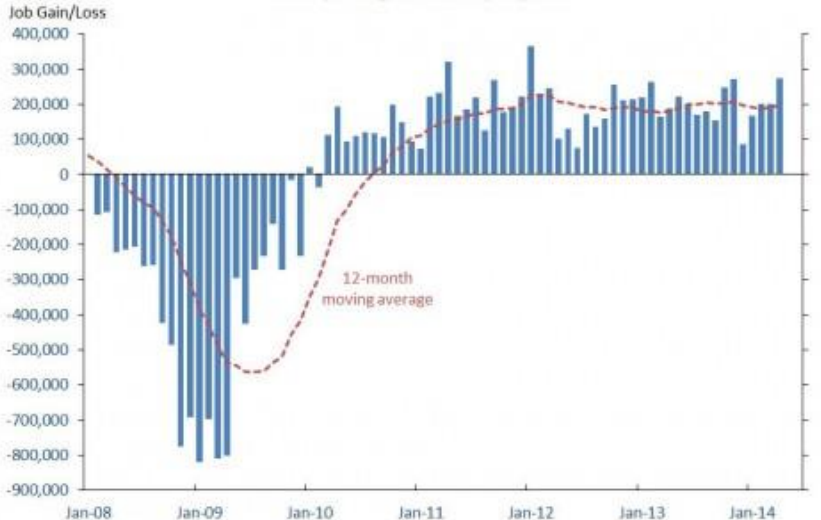
Class	Household income <i>per capita</i>			Population			
	Band	Average	Percentage of total income	Total	18 to 24		
					Total	Finished secondary school	
						Total	In the class
Lower	Less than R\$ 506	R\$ 219	33.3%	74.6%	75.2%	58.8%	34.2%
Middle	from R\$ 506 to R\$ 1,500	R\$ 822	33.3%	19.9%	20.3%	33.5%	72.1%
Upper	More than R\$ 1,500	R\$ 2,959	33.3%	5.5%	4.4%	7.7%	76.4%
<b>Total</b>		R\$ 490	100.0%	100.0%	100.0%	100.0%	43.8%

Source: *PNAD*, 2006 (IBGE Foundation, 2007).

Gurreiro Osorio, R. (2008). Class, Race, and Access to Higher Education in Brazil.

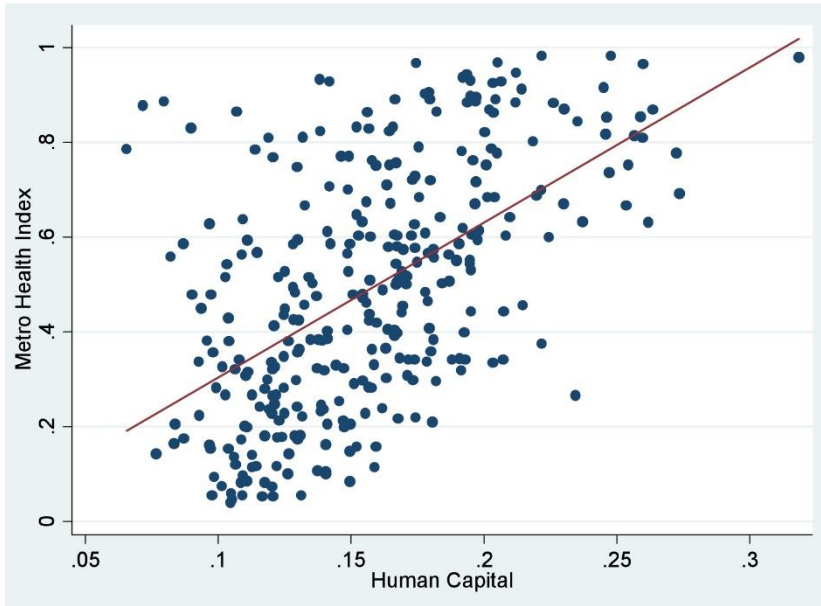
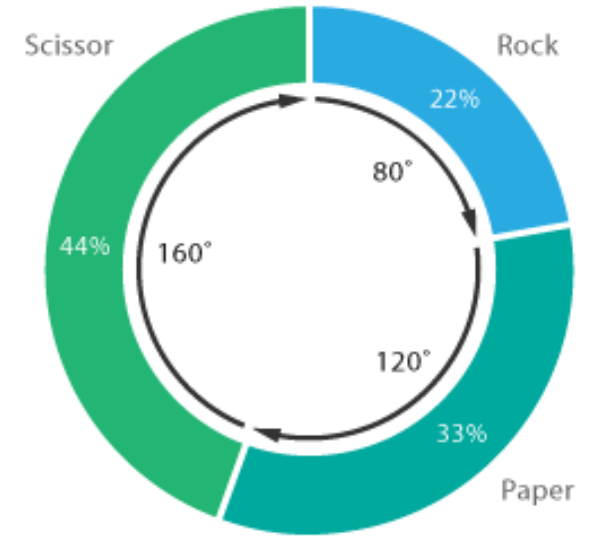
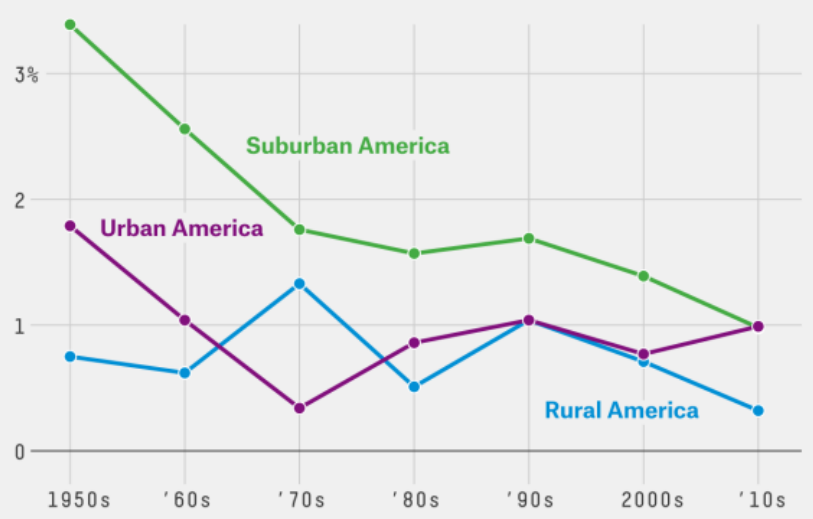
### Private Sector Payroll Employment

Monthly Change, Seasonally Adjusted

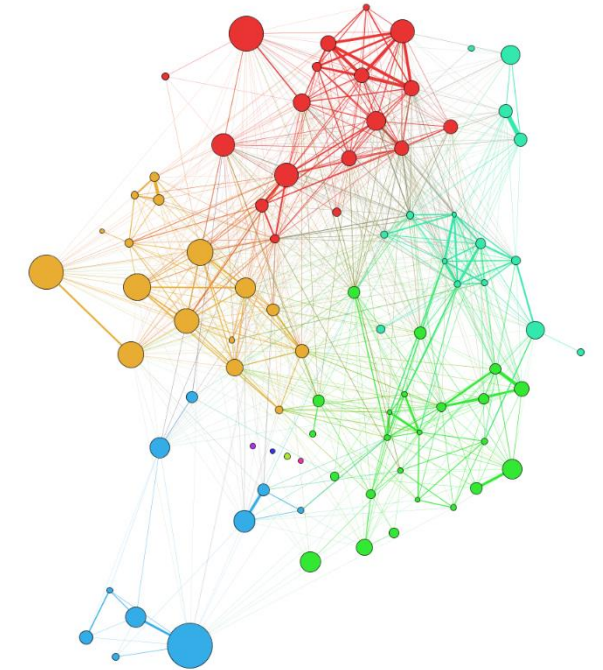


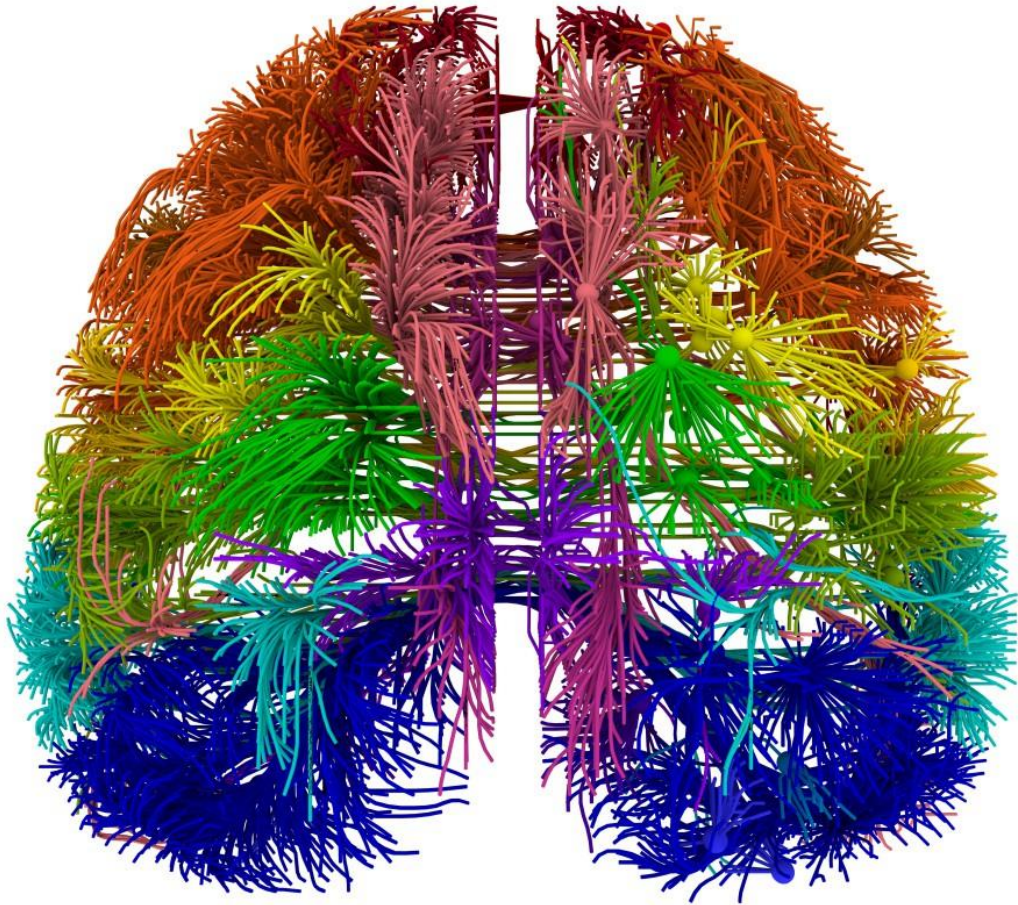
### Urban Growth Ticks Up As The Suburbs Slow Down

Annualized population growth by decade, 1950-2014

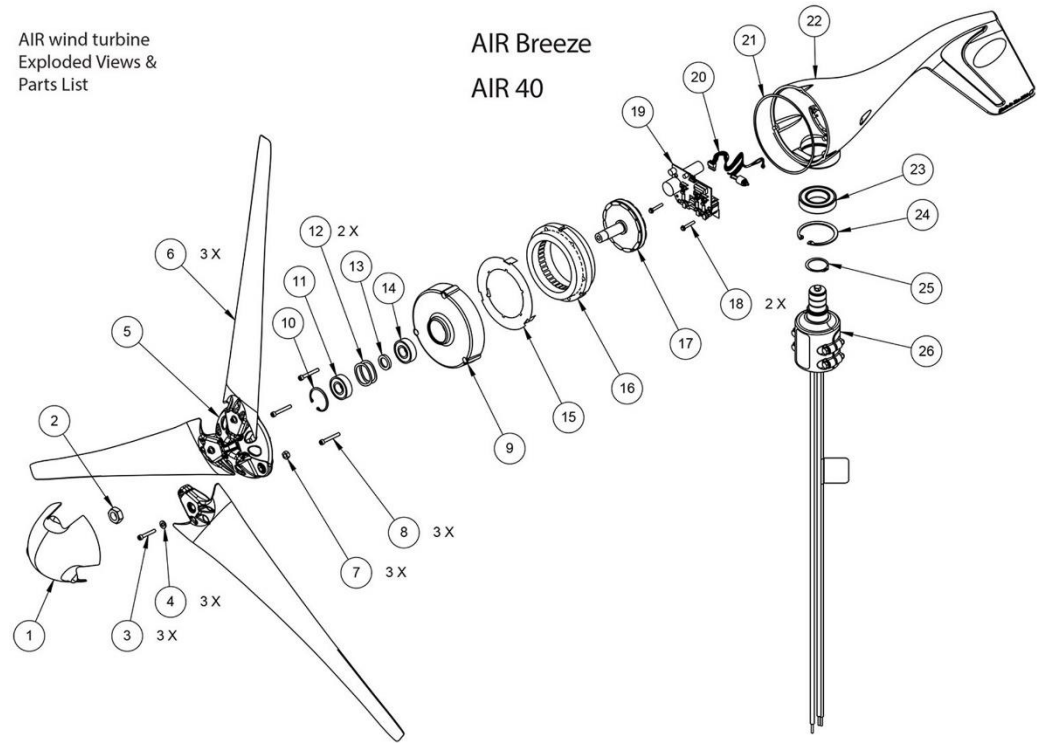


#GOOG +16.10% 698.66	#FB +4.52% 94.94	[SMI20] +0.99% 9519.69	[CAC40] +0.95% 5176
[STOXX50] +0.93% 3707.3	[IBEX35] +0.91% 11589.69	#IBM +0.88% 172.47	#AAPL +0.87% 129.59
#CAT -0.72% 83.13	AUD/NZD -0.73% 1.12225	GBP/NZD -0.81% 2.37063	#JNJ -0.99% 100.09
#BA -1.09% 146.82	#CVX -1.43% 93.12	#INTC -1.47% 29.45	GOLD -1.68% 1114.814





Engelking, C. (2014). First wiring diagram of mouse brain created. *Discover Magazine Blog*.



Air Breeze Inc. (2016). Air Breeze and Air 40 wind turbine replacement spare parts. *Air Breeze, Air 40, and Air 30 Manual*.



Bagg, M. (2016). Light Conversation. National Geographic Photo of the Day May 18, 2016.

# Creating and captioning visuals: the principles

Determine the function or functions your visualization will serve

Determine the medium used to address the audience and its constraints on scale, color, layout, and typography

Identify the tools you can use for design (which may be the same)

Reduce or eliminate inessential information

# Creating and captioning charts, graphs, and complex visuals-more principles

Determine the character of your dataset (categorical or quantitative, discrete or continuous)

Identify the central insight of your visualization (which will become the title or heading)

Determine the medium used to address the audience and its constraints on scale, color, layout and typography

Select a visualization tool suited to your central insight (description, composition, trend, correlation, distribution)

# Creating and captioning charts, graphs, and complex visuals-the practices

**Calculate:** gather as complete a data set as is available and perform any manipulations or calculations from the raw data set that you intend to use.

**Clean:** determine and follow conventions of data presentation (confirm standard units of measure, significant digits, conventions for titles captions and labels)

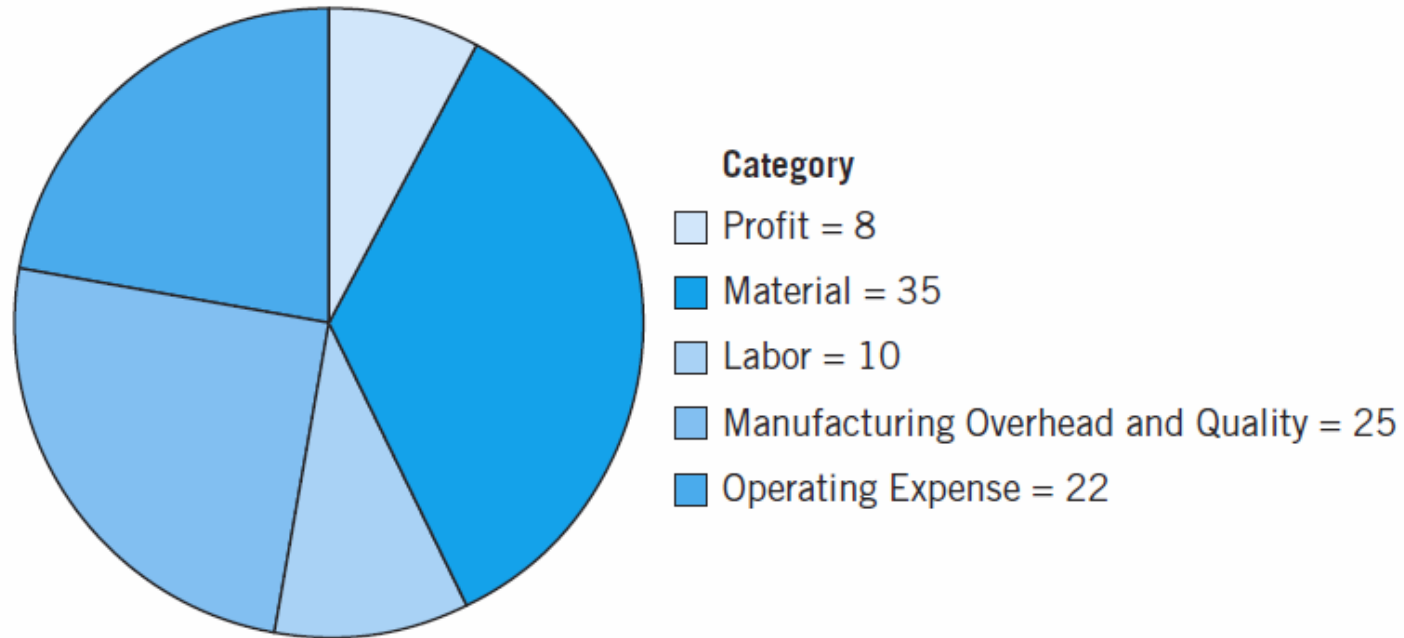
**Compose:** Enter the data into your visualization tool, select typography and color palette (restraint rules)

**Correct:** Confirm that your visual displays your central insight, correcting for medium and mode of presentation



# What insight does this chart reveal?

Distribution of Total Revenue by Percentage

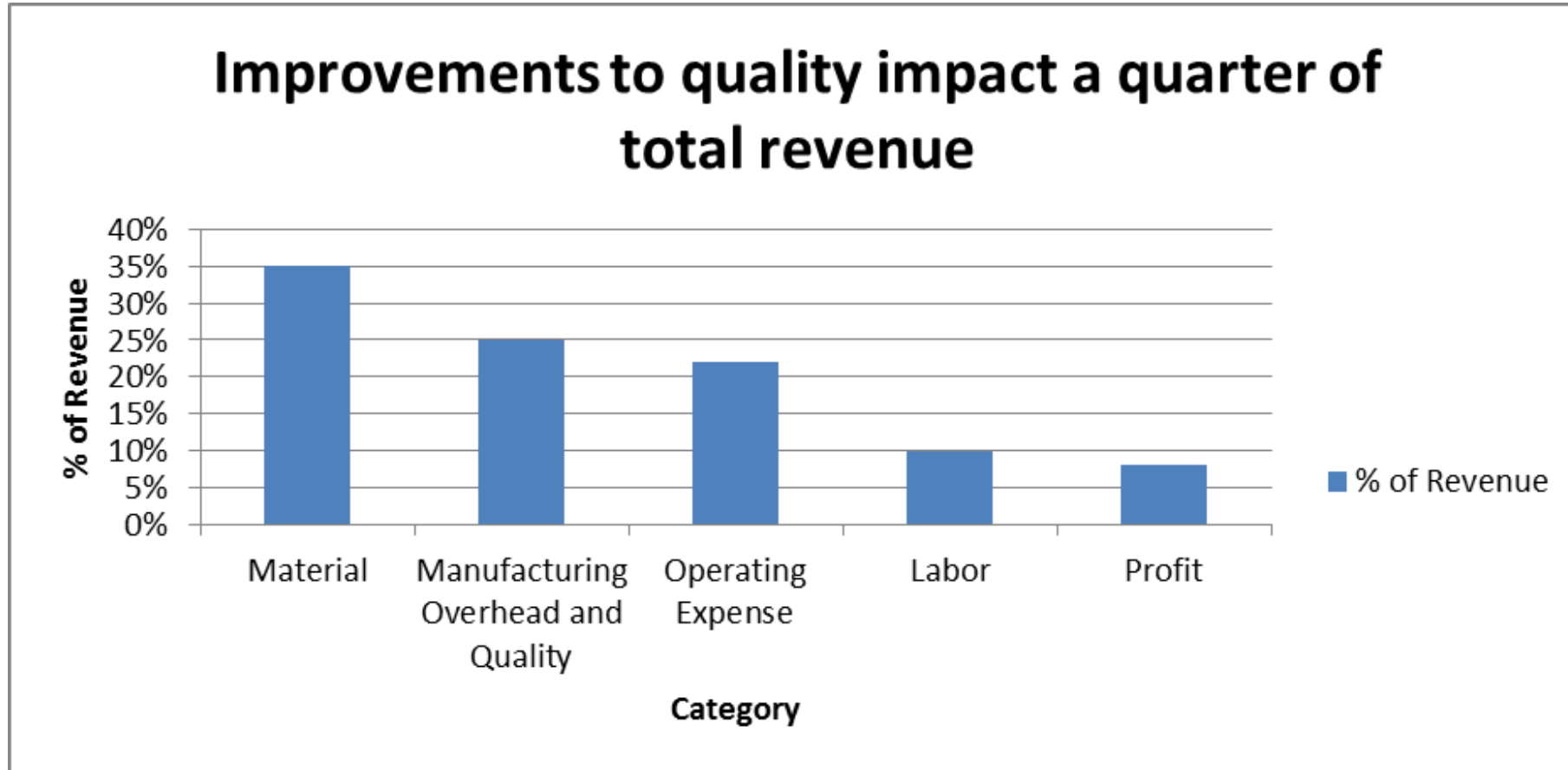


■ **FIGURE 1.16** The distribution of total revenue by percentage in a typical manufacturing organization.

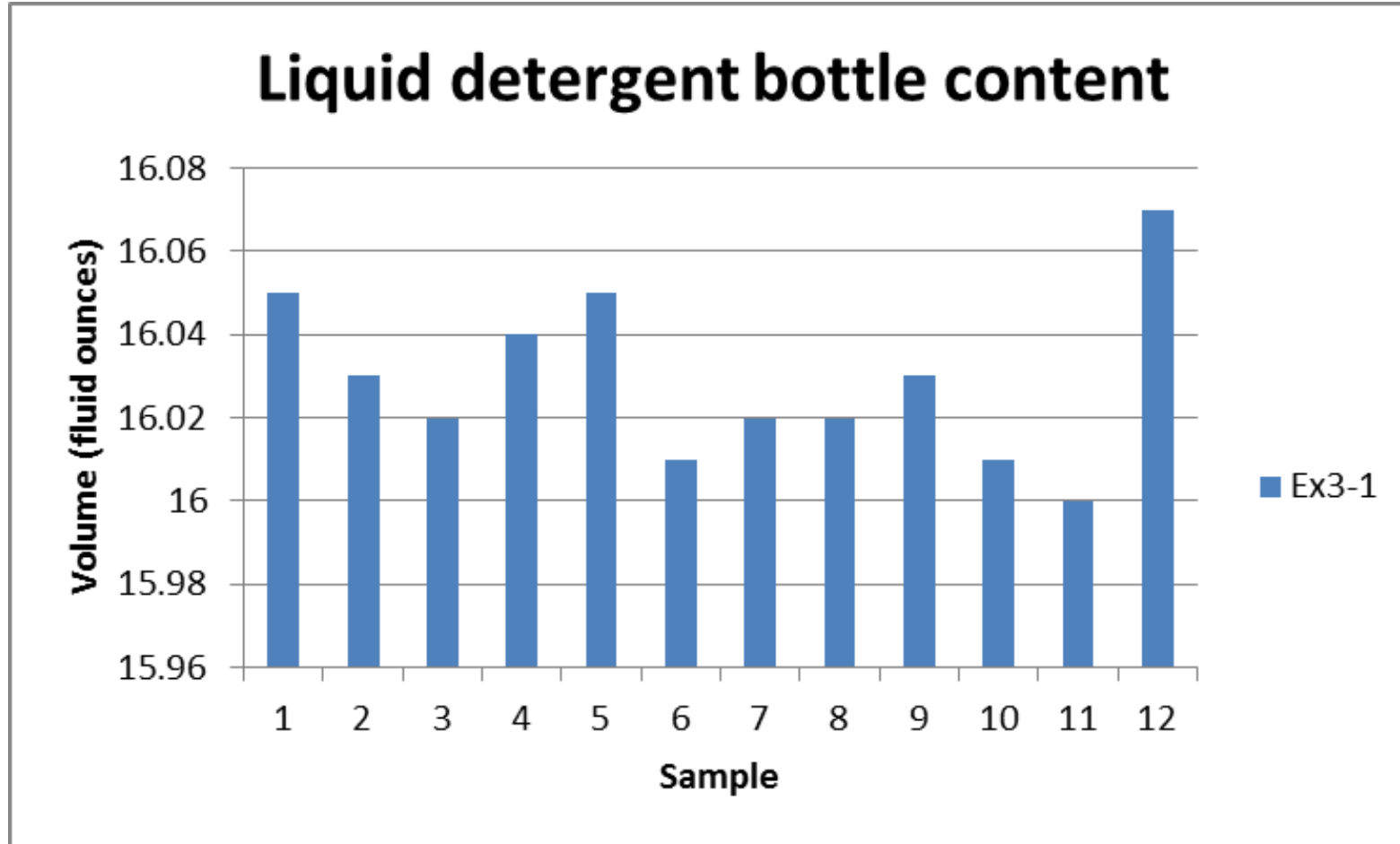
# Visualizing Data: Insights are Apparent

- We don't always need to show ALL the data, just because we have it
- **Relative size** of categorical data should be clear
- Most **appropriate chart type** is used
  - Line: Data over time. Good for showing variability.
  - Column/bar: Metric comparison across categories
  - X-Y Scatter: Show relationship (or lack of relationship) between 2 variables
- Pie chart: % of total. Column/Bar chart is usually better choice

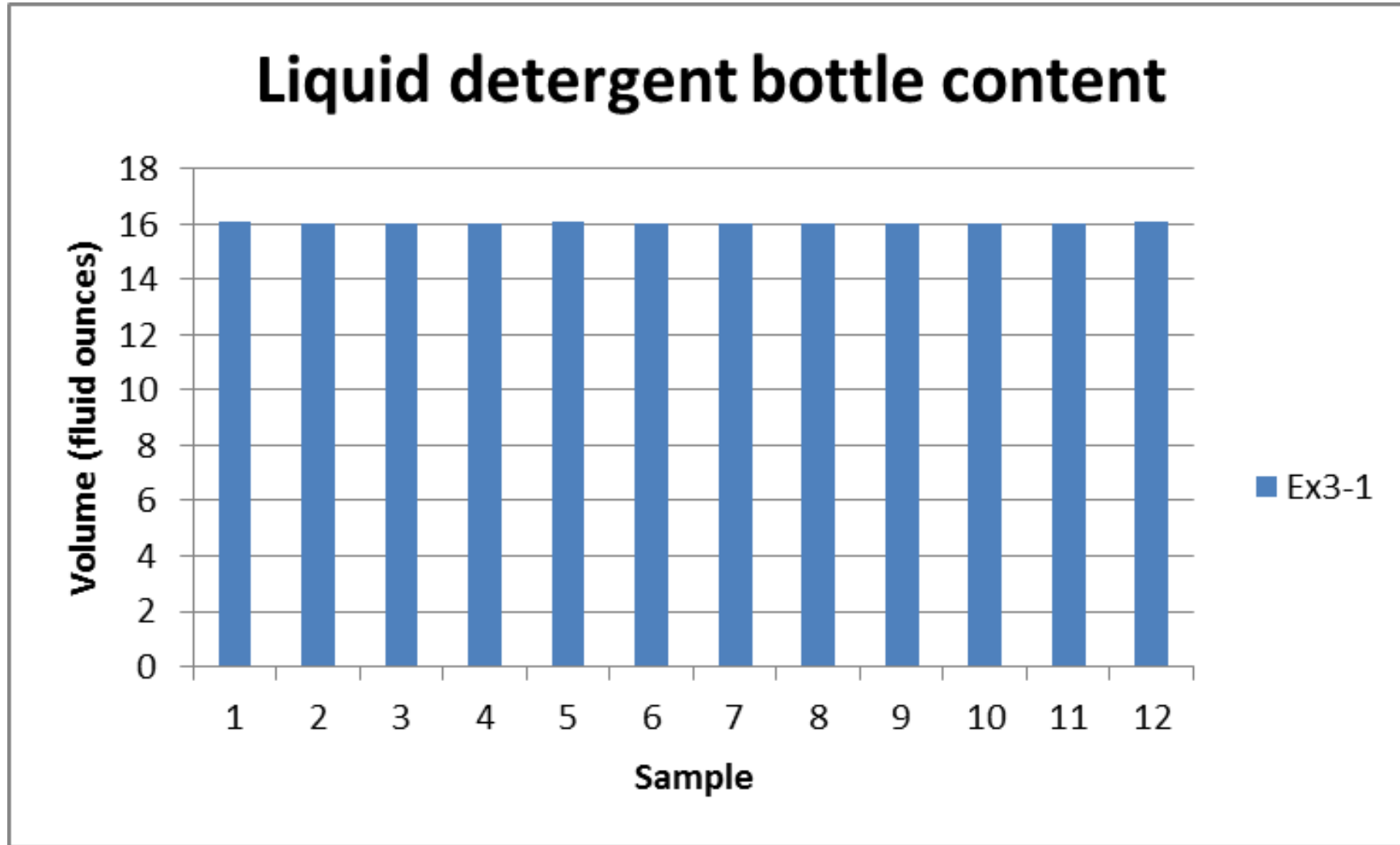
Sometimes you can put the insight in the title...



What insights does Chart 1 reveal?  
How much bigger is sample 12 than 11?\*



## Chart 2: honest but unclear



# Chart 3: Line graph is useful for showing variability

