

Visualization Pain Related Factors from EHR Flowsheet Data

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Background

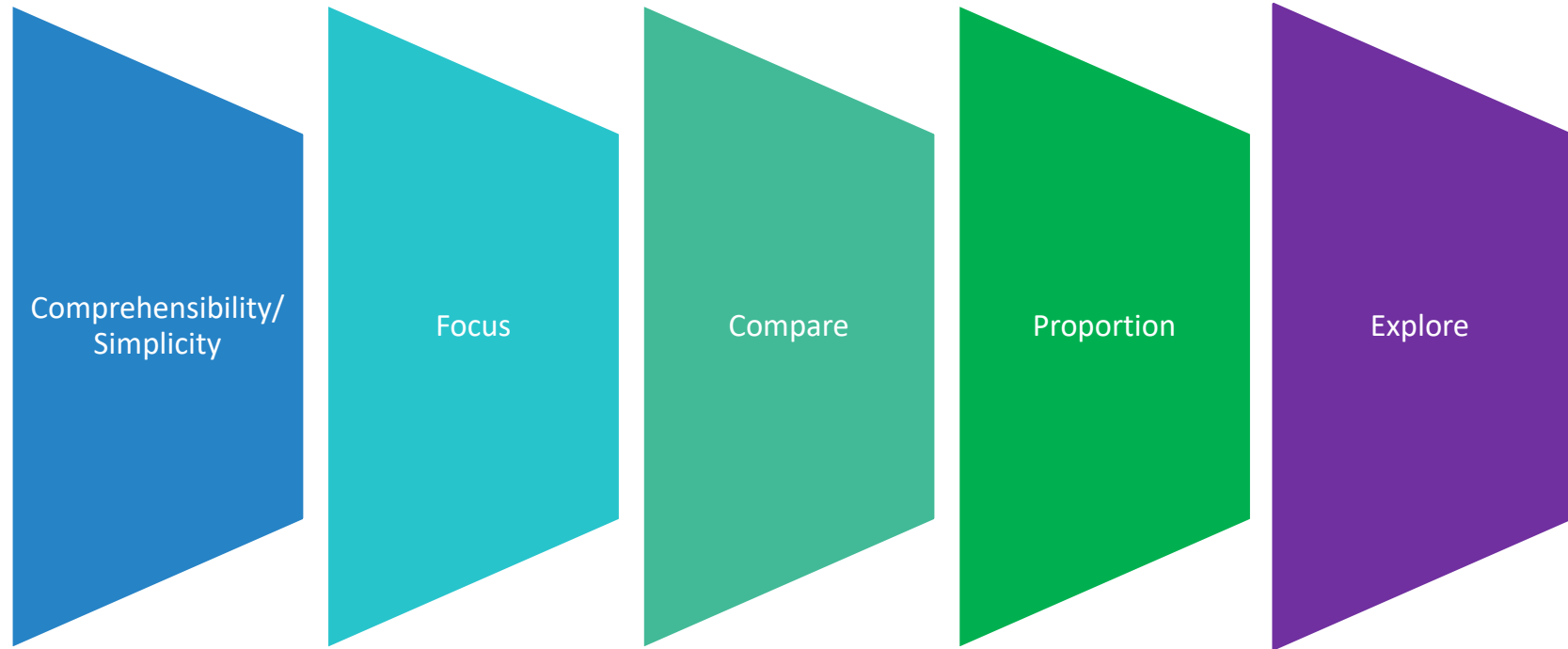
Fake data set

- Generated by 2 organizations, de-identified, duplicated to achieve 10,000 patients, massaged to calculate data elements i.e. age

Patients discharged with an opioid prescription are more likely to misuse (abuse?) opioids than those who do not have a prescription.

- NOT SAYING – patients shouldn't need or have opioids, rather the access to a prescription puts patients (or caregivers) at higher risk of opioid misuse.
- 

Principles of Visualization



Principles of Visualization

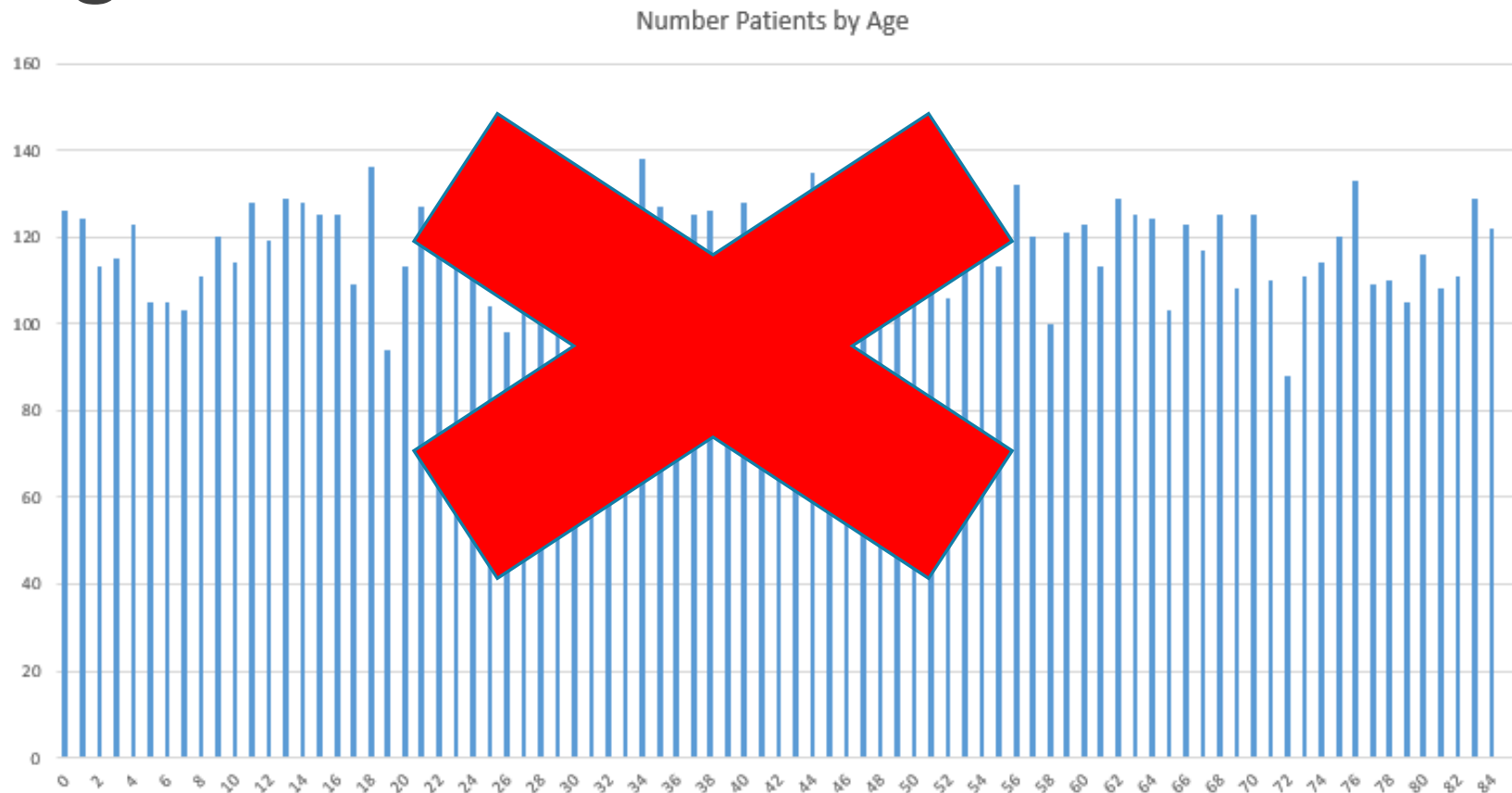
Comprehensibility – Ability to understand the point of the data

Simplicity - good data visualization captures the essence of data - without oversimplifying.

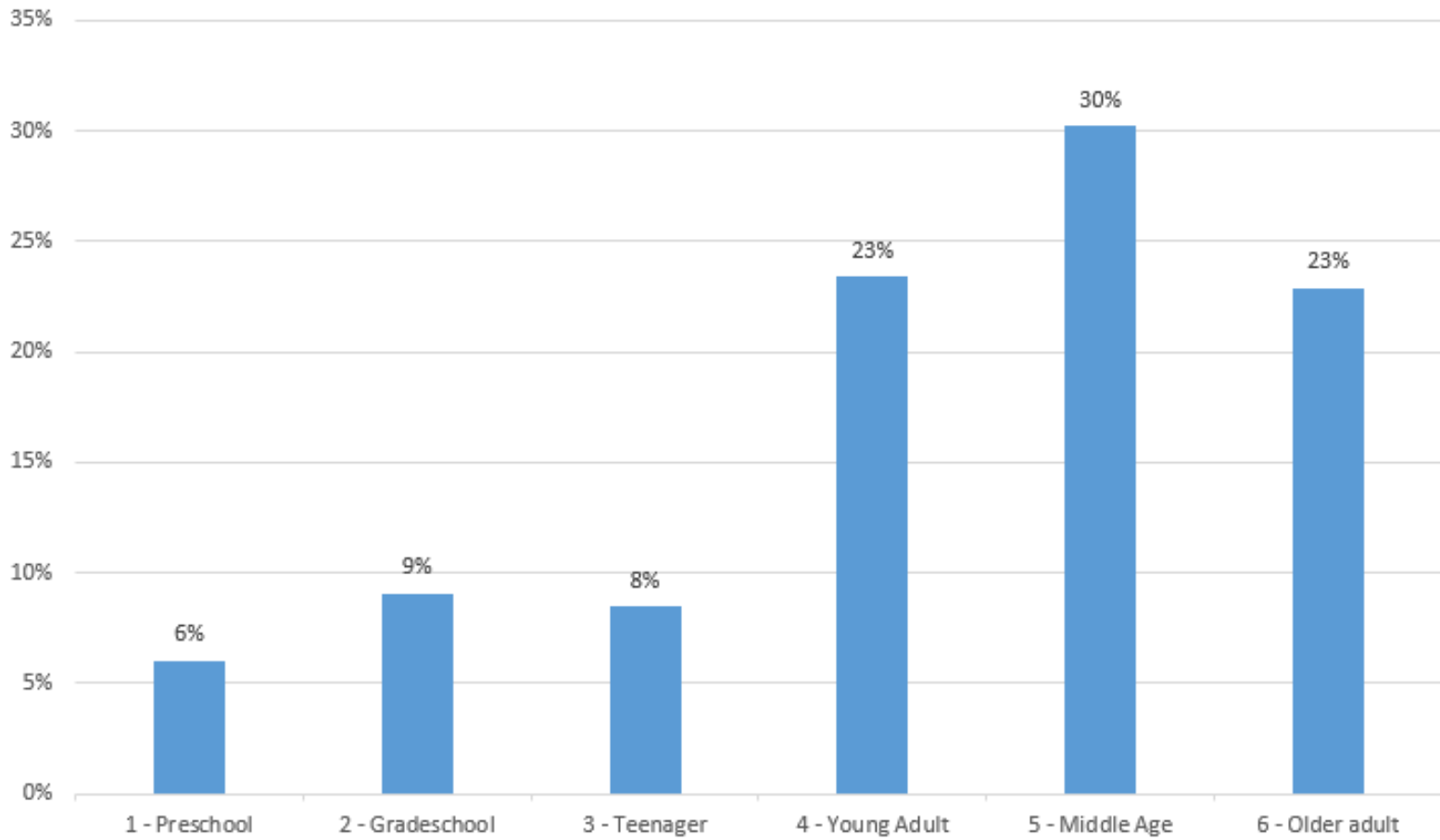
Comprehensibility/
Simplicity

Who?
What?
Why?

What is the number of patients by age?



Percent of Patients by Age Group



Principles of Visualization

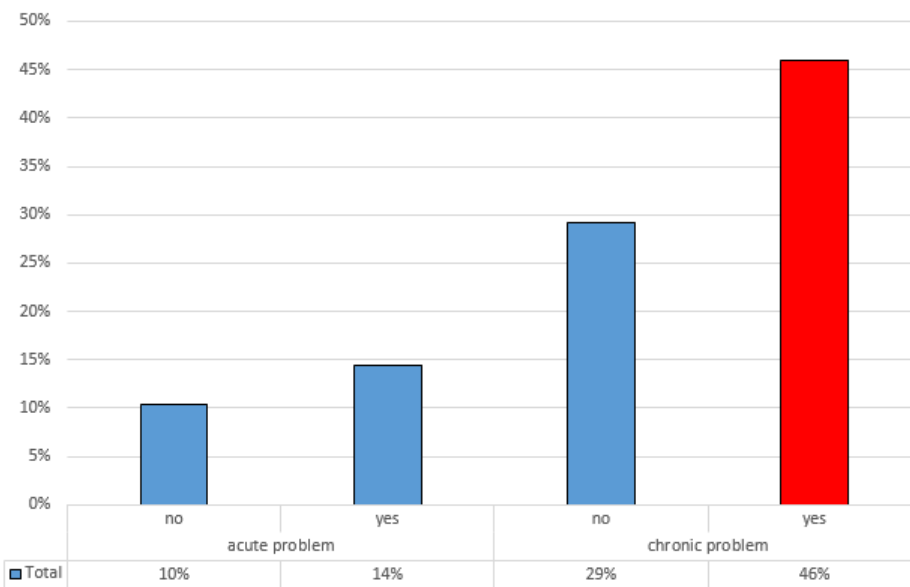
Draws attention to
most important

Focus

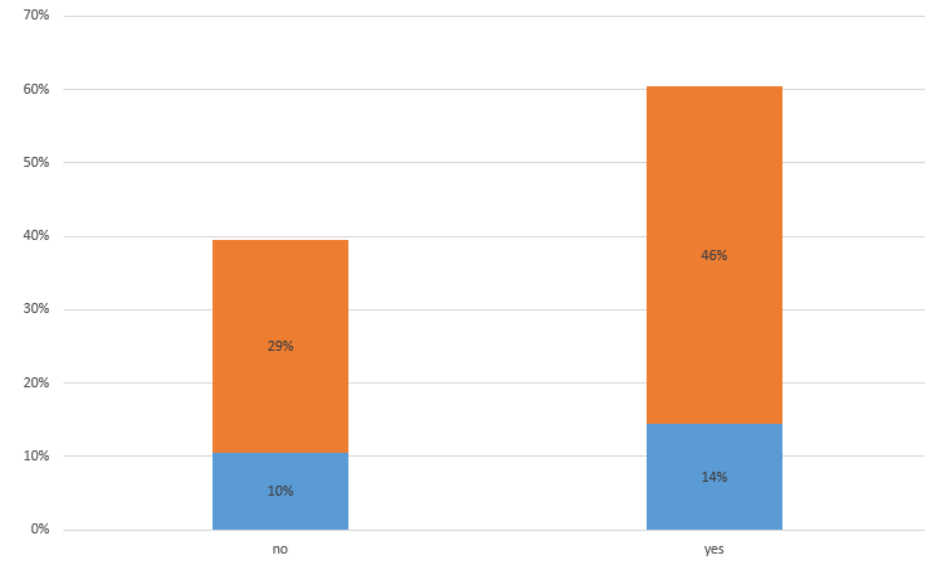


Which patients (acute vs chronic) have a DC prescription for opioids?

Percent Patients by Admit Type with DC Opioid Prescription



Percent Patients by Admit Type with Opioid Prescription at DC



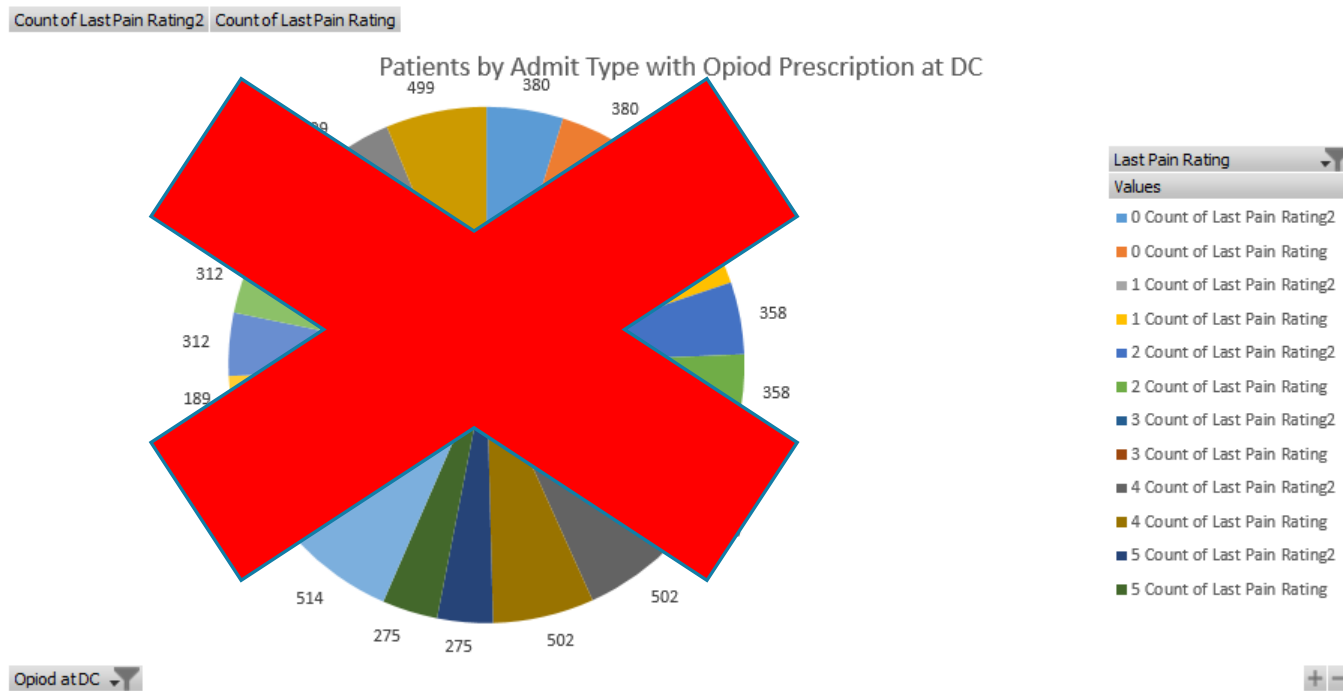
Principles of Visualization

Side by side view

Compare



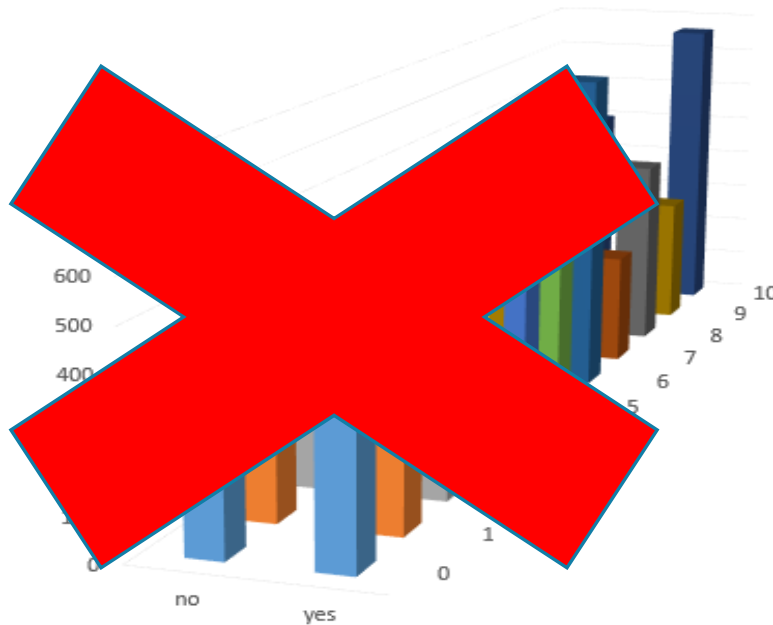
Is there a relationship between last pain rating and DC prescription for opioids?



Is there a relationship between last pain rating and DC prescription for opioids?

Count of LastPain Rating

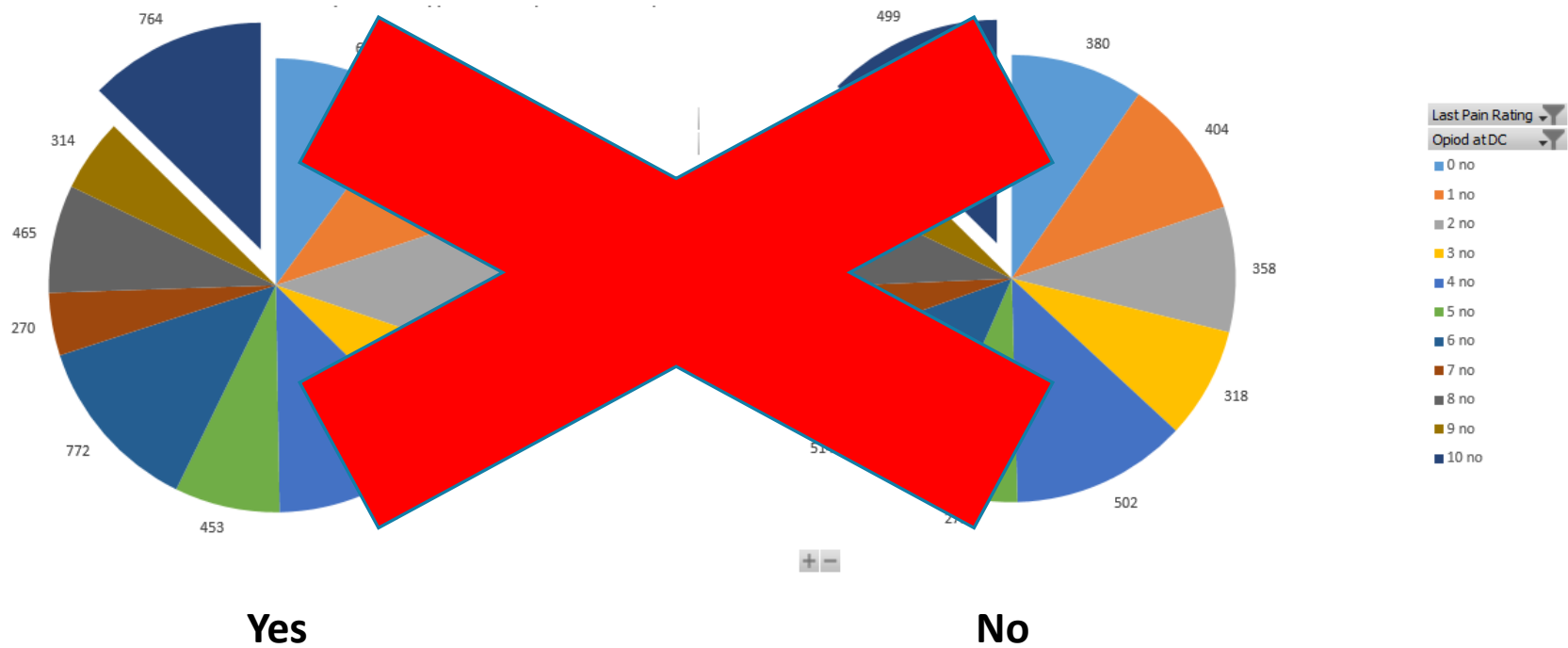
Percent Patients by Admit Type with Opiod Prescription at DC



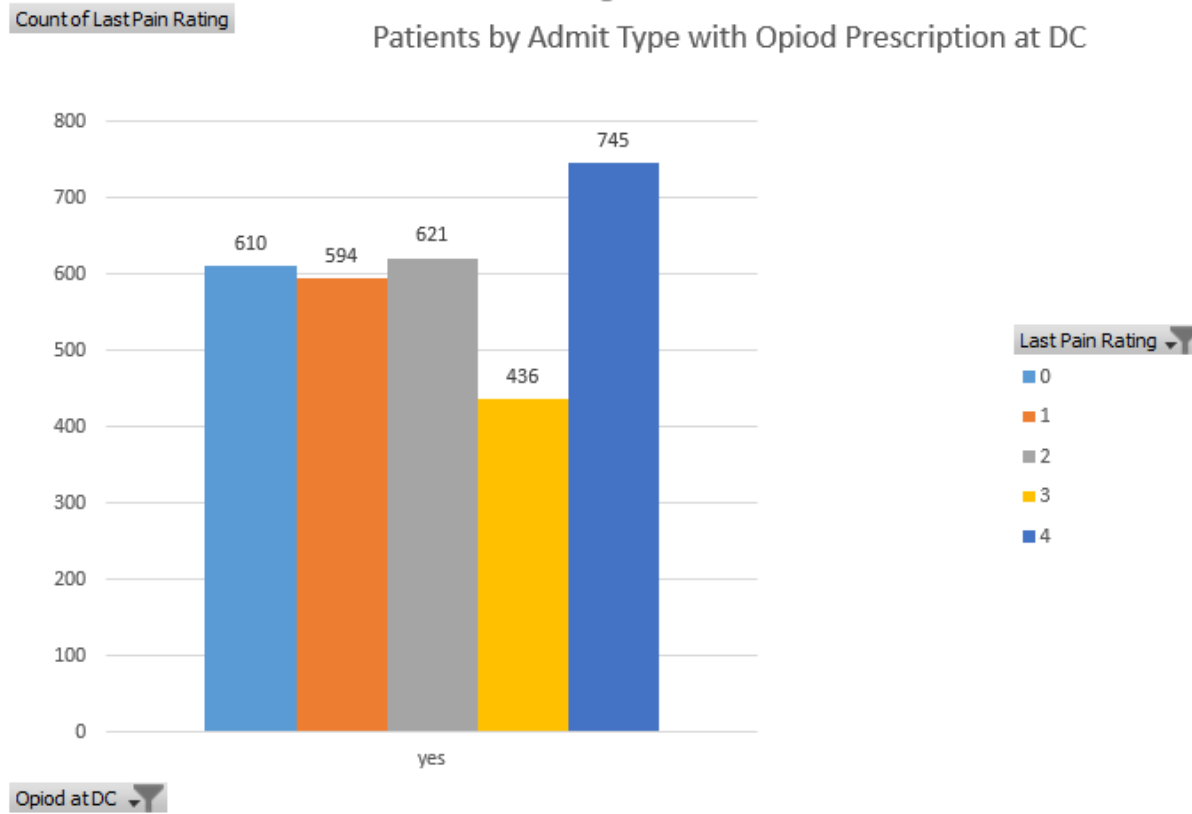
Opiod at DC



Yes - DC Opioid Prescription by Last Pain Rating



Yes - DC Opioid Prescription by Last Pain Rating



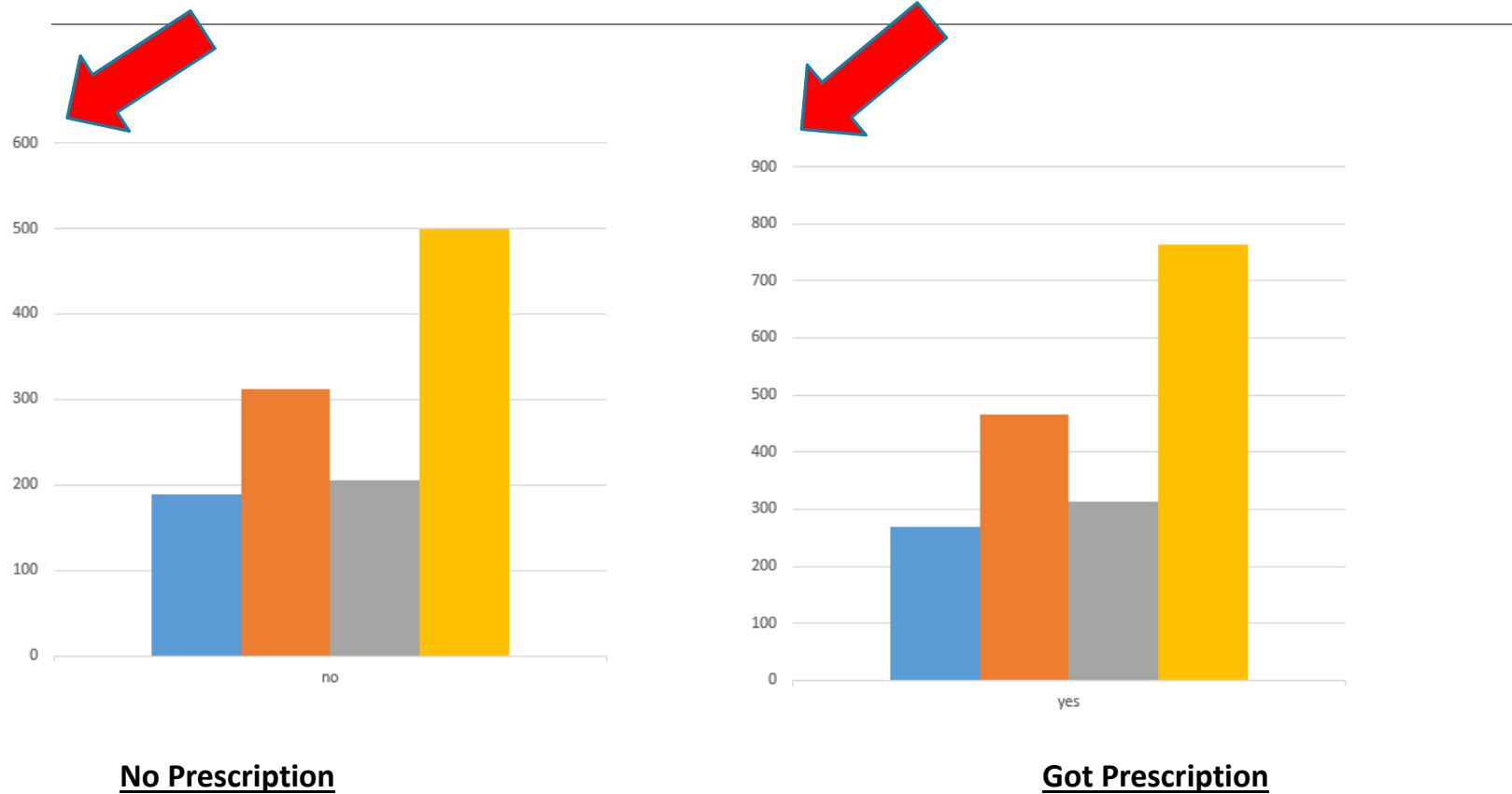
Principles of Visualization

Same
scale

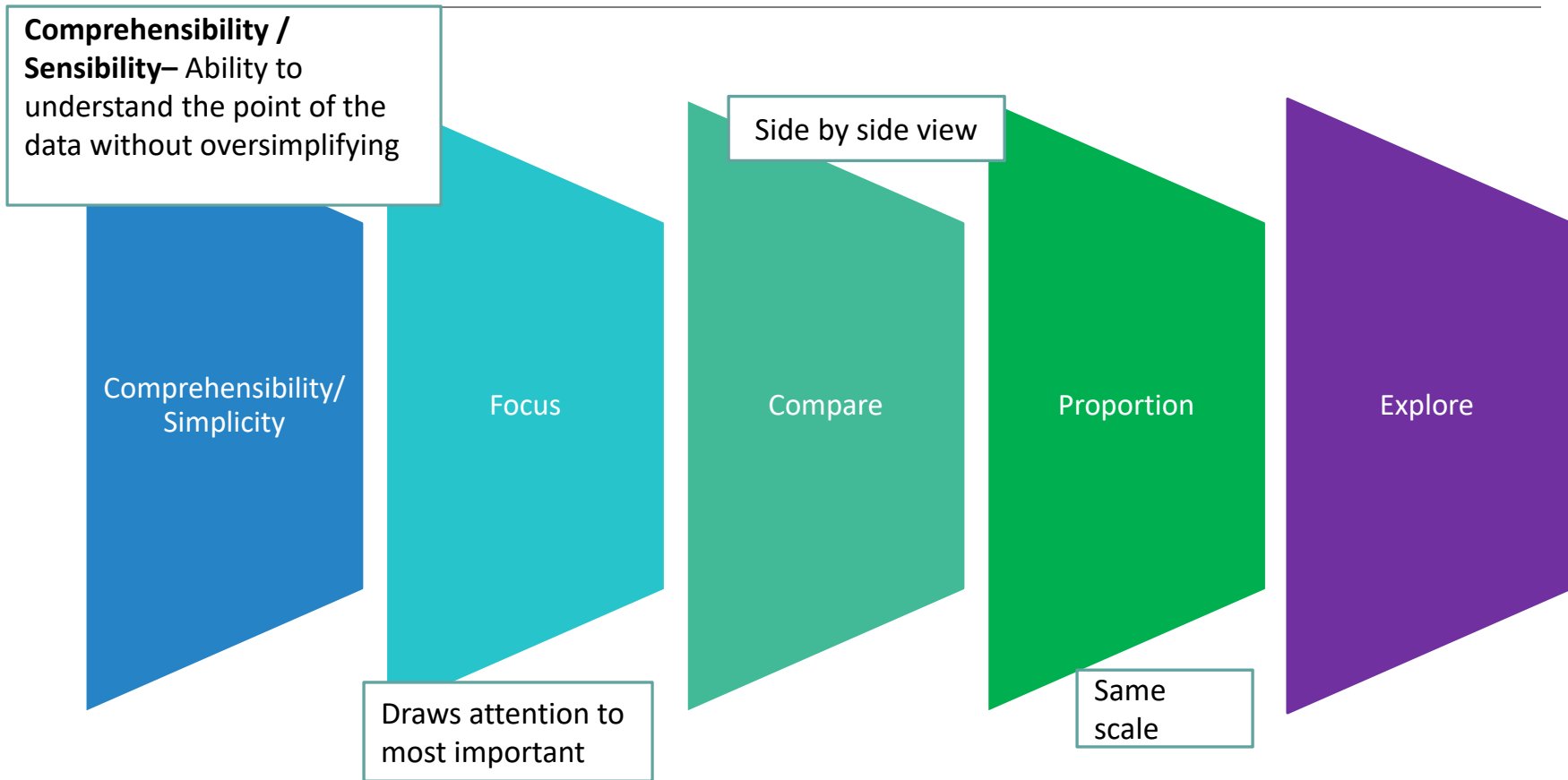
Proportion

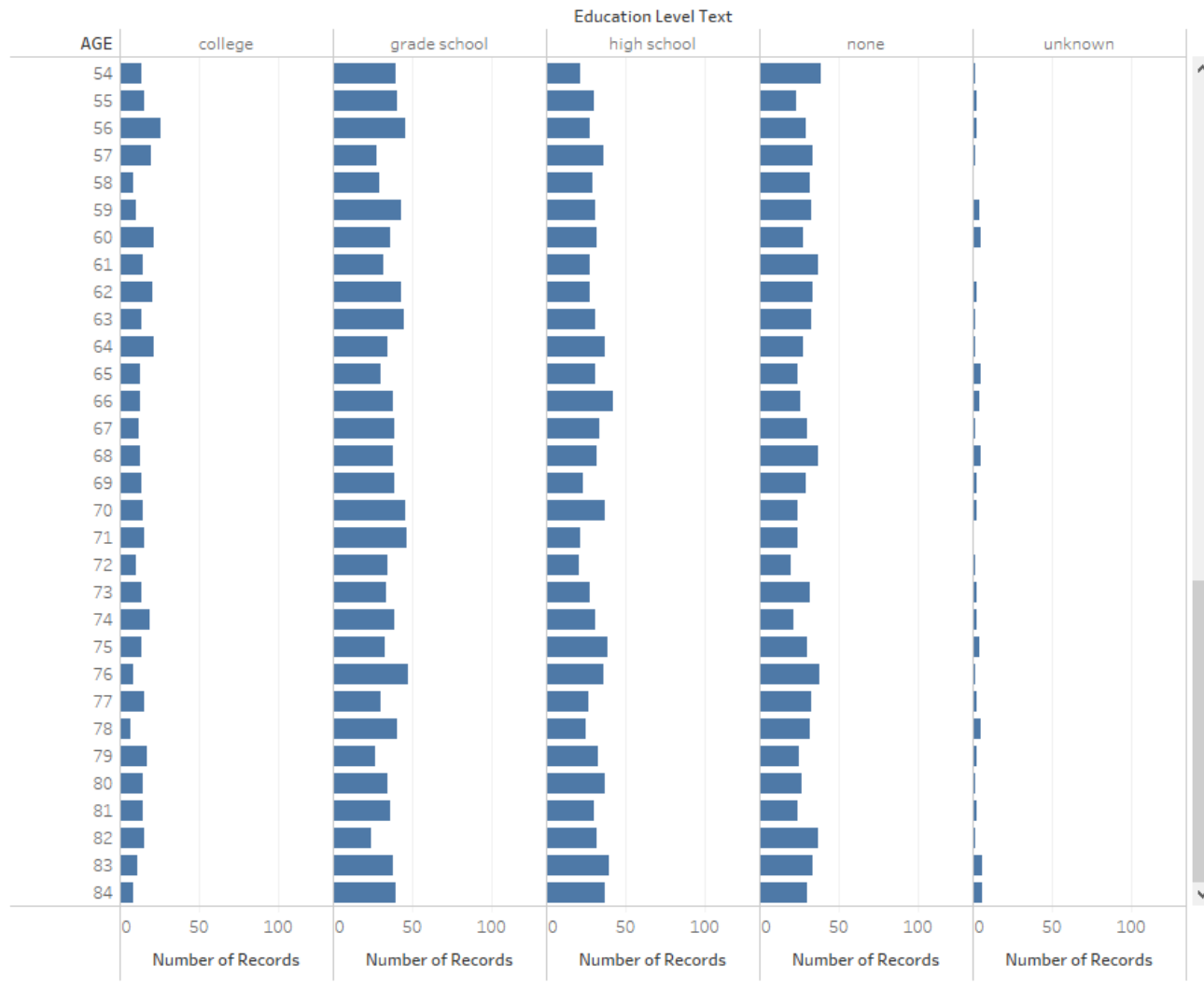


10)with or without Opioid Prescription at DC



Exercise



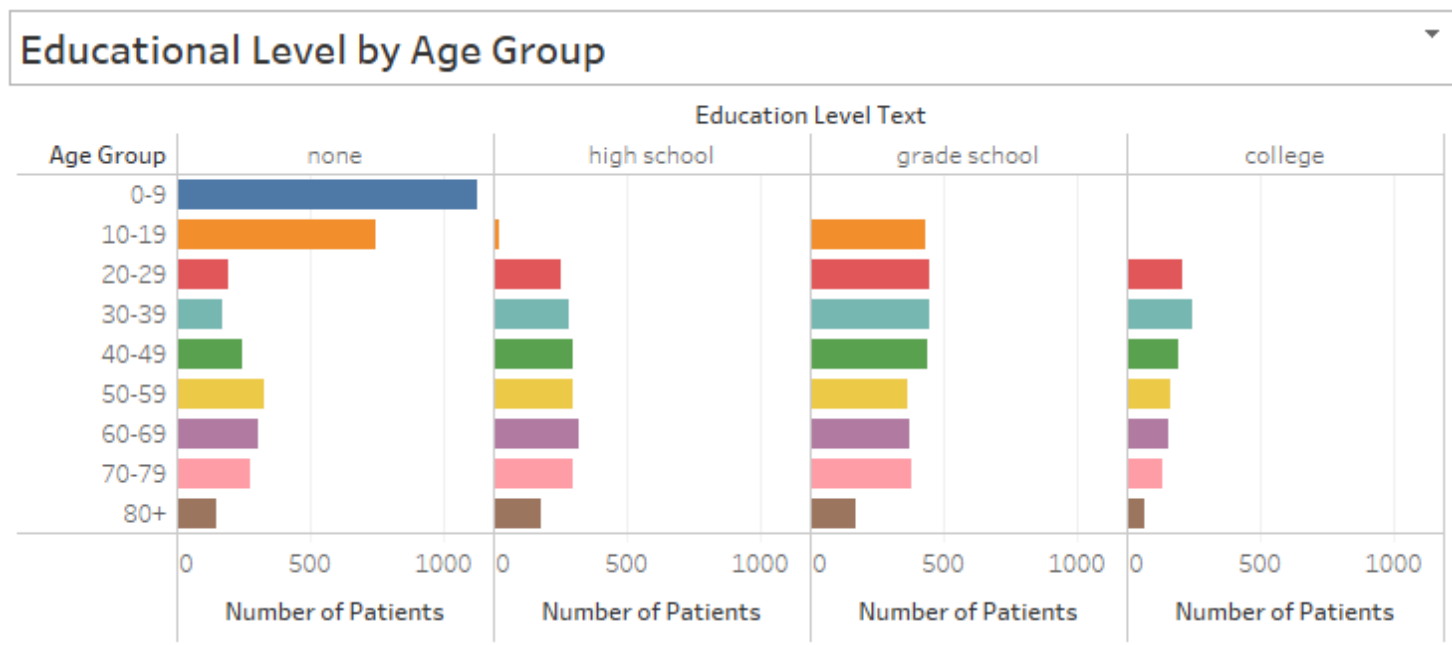


Which principles would you apply to evaluate the number of patients by age & education?

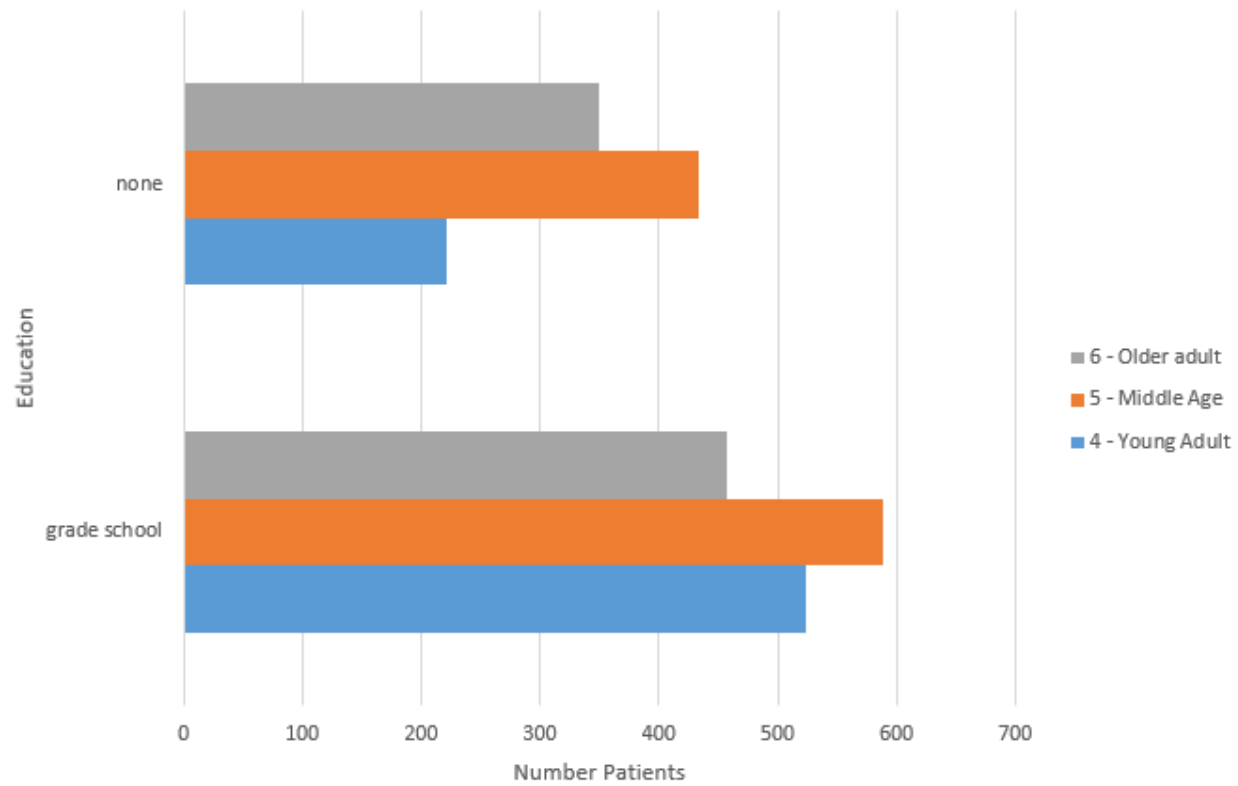


Which slide is more actionable and why – this one or the next?

A



Patients by Age and Education with Opioid Prescription at DC

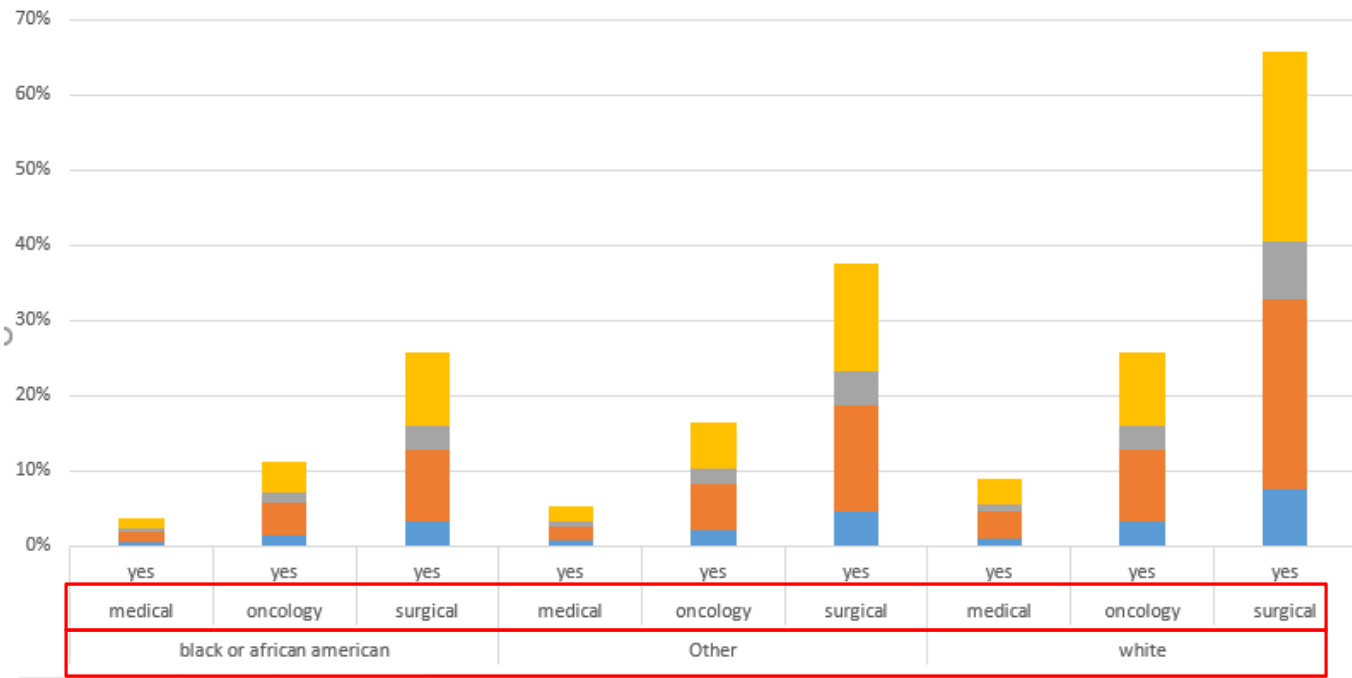


Which provides a better understanding of multiple variables?

DC Opiod - % Patients x Race x Service x Reason



Count of Admit Reason Count of Opiod at DC



Values

Admit Reason

- Count of Opiod at DC - chronic problem
- Count of Opiod at DC - acute problem
- Count of Admit Reason - chronic problem
- Count of Admit Reason - acute problem

Race Collapsed Service Opiod at DC



Summary

Described principles for visualization.

Reviewed examples of principles applied to a fake data set of 10K patients.

Applied principles to examples of visualizations

Data set can be downloaded at:

- <http://www.nursingbigdata.org/node/85>
- (bottom right)

Resources

Data visualization: basic principles.

<http://paldhous.github.io/ucb/2016/dataviz/week2.html>.

Stephen Few on Data Visualization: 8 Core Principles.

<https://www.tableau.com/blog/stephen-few-data-visualization>

Data Visualization Principles: Lessons from Tufte.

<https://moz.com/blog/data-visualization-principles-lessons-from-tufte>

Data Visualization and the 9 Fundamental Design Principles.

<https://www.idashboards.com/blog/2017/07/26/data-visualization-and-the-9-fundamental-design-principles/>