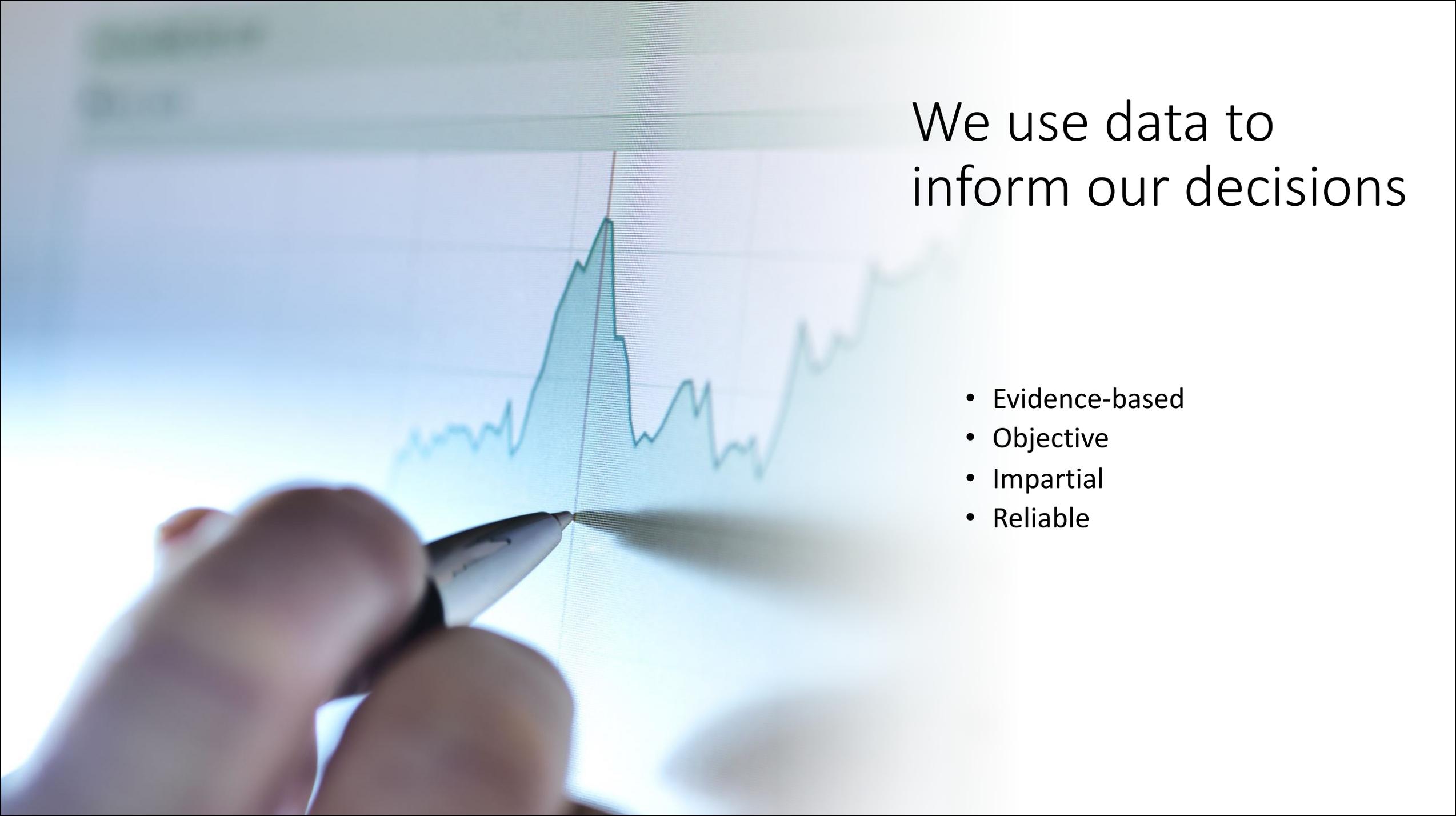


# Data Ethics: Choices and Values

---

Diana Acosta-Navas

McCoy Family Center for Ethics in Society - HAI

A hand holding a pen is pointing at a line graph on a screen. The graph shows a blue line with a peak, and a vertical red line is drawn at the peak. The background is a blurred screen with a grid.

We use data to  
inform our decisions

- Evidence-based
- Objective
- Impartial
- Reliable

QUALITY

5.0

DIFFICULTY

1.0



**CS101**



**AWESOME**

May 21st, 2015

Attendance: **Not Mandatory** Grade: **A** Textbook: **Yes** Online Class: **Yes**

This class was awesome. A beginner like me that has never done anything further than facebook on a computer, Professor Nick was very clear and easy to listen to. I very much enjoyed the lectures and how easy it was to learn from such a great teacher. Thank you for all that you do



# What can we learn from a data set?

- Patterns
- Correlations
- Distributions
- ...



- Choices
- Values
- Assumptions
- Biases



What can we learn  
from a data set?

How to interrogate a data set to  
find ethically relevant features?



## VALUES IN DESIGN



PROBLEM  
FORMULATION



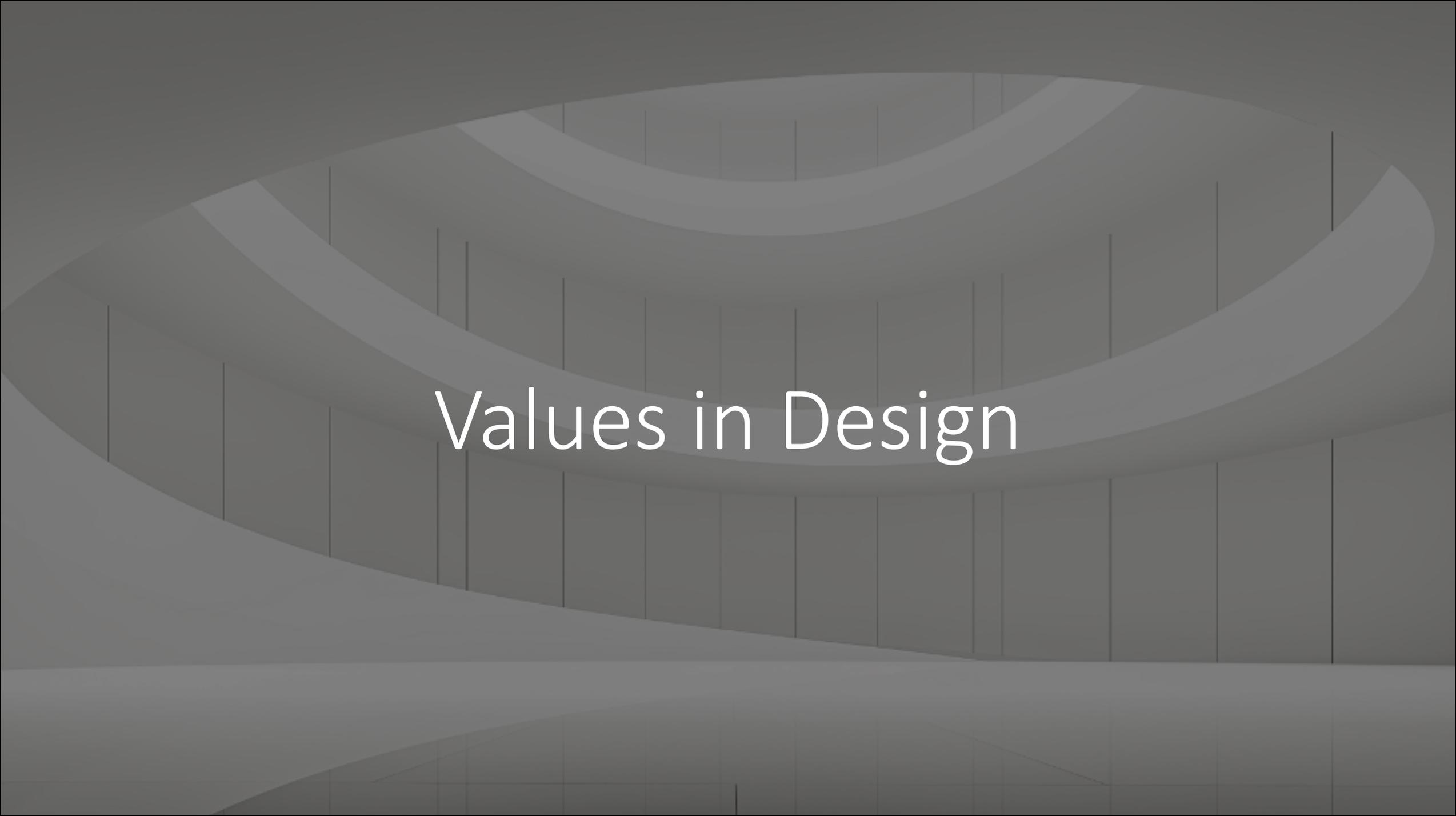
LANGUAGE



BIAS AND  
REPRESENTATION



FAIRNESS



# Values in Design

# Values in Design

- Design decisions encode values:
  - Problem formulation
  - Data choice
- They are expressive of what we care about
- They reveal our assumptions about the world and the people who will be interacting with our design and benefiting from it

# Values in Design

- **Explicit values:** Values that designers intend their products to embody
- **Collateral values:** values that crop up as side effects of design decisions and the way users interact with them

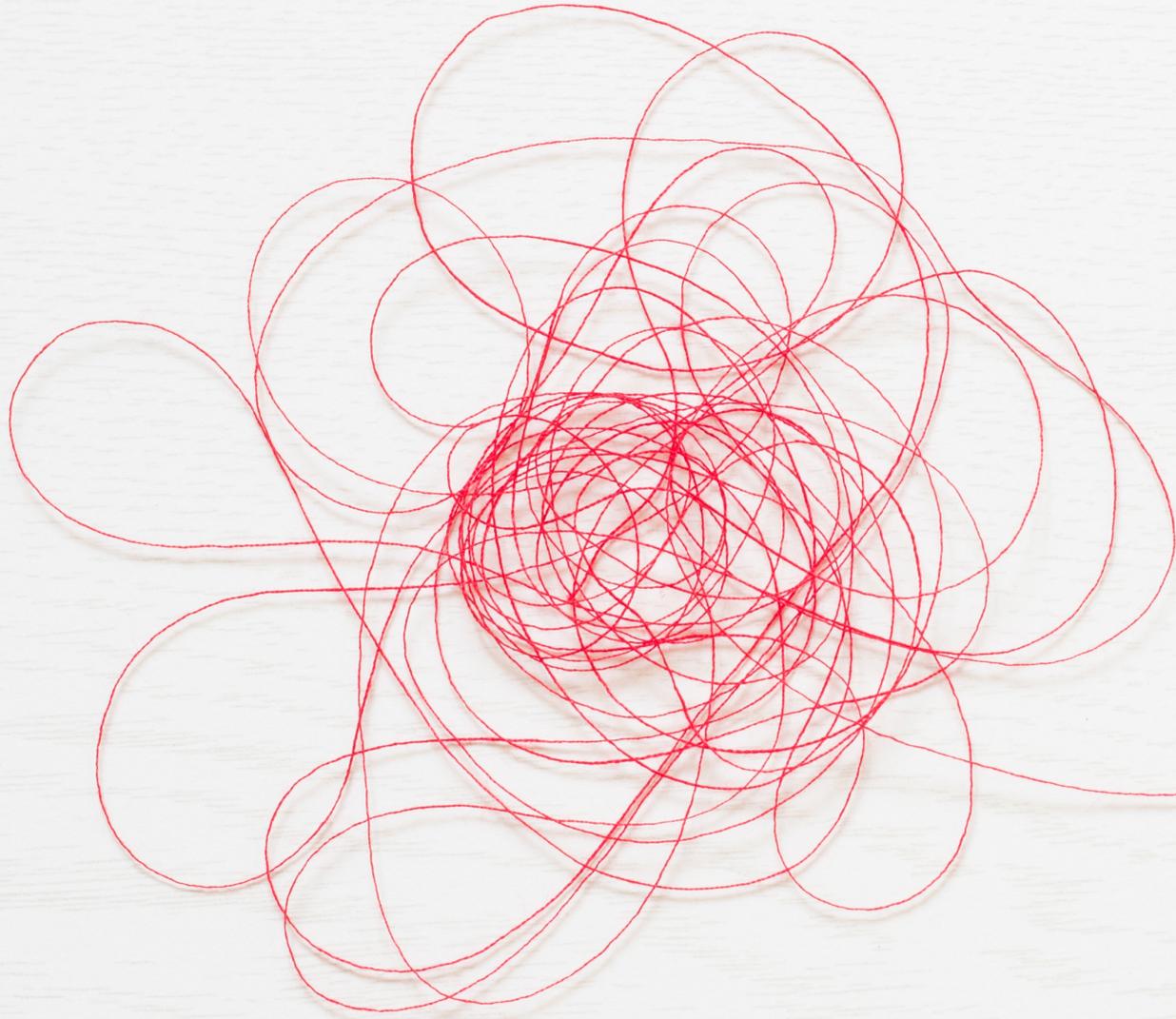
# Explicit Values

## Contact-tracing

Health  
Safety  
Efficiency  
Public interest

# Collateral Values

- Security?
  - Where is information stored?
  - Encryption?
- Privacy?
  - Who has access to information?
  - Geolocation or blue-tooth?
  - What information is accessible to health authorities/ the public?
- Autonomy?
  - Informed consent?



Problem  
Formulation

---

# Problem Formulation Statements



- Formulating a problem means treating the desired solution as good or worthy of being done.
- Why should we care about solving this problem?
- Who can agree that this is a problem worth solving?
- Who would benefit from its solution?

# Problem Formulation

“Homeless people are sleeping here  
and we want them to stop”



# Problem Formulation

“Some people in our community don’t have a place to sleep and we think they should”

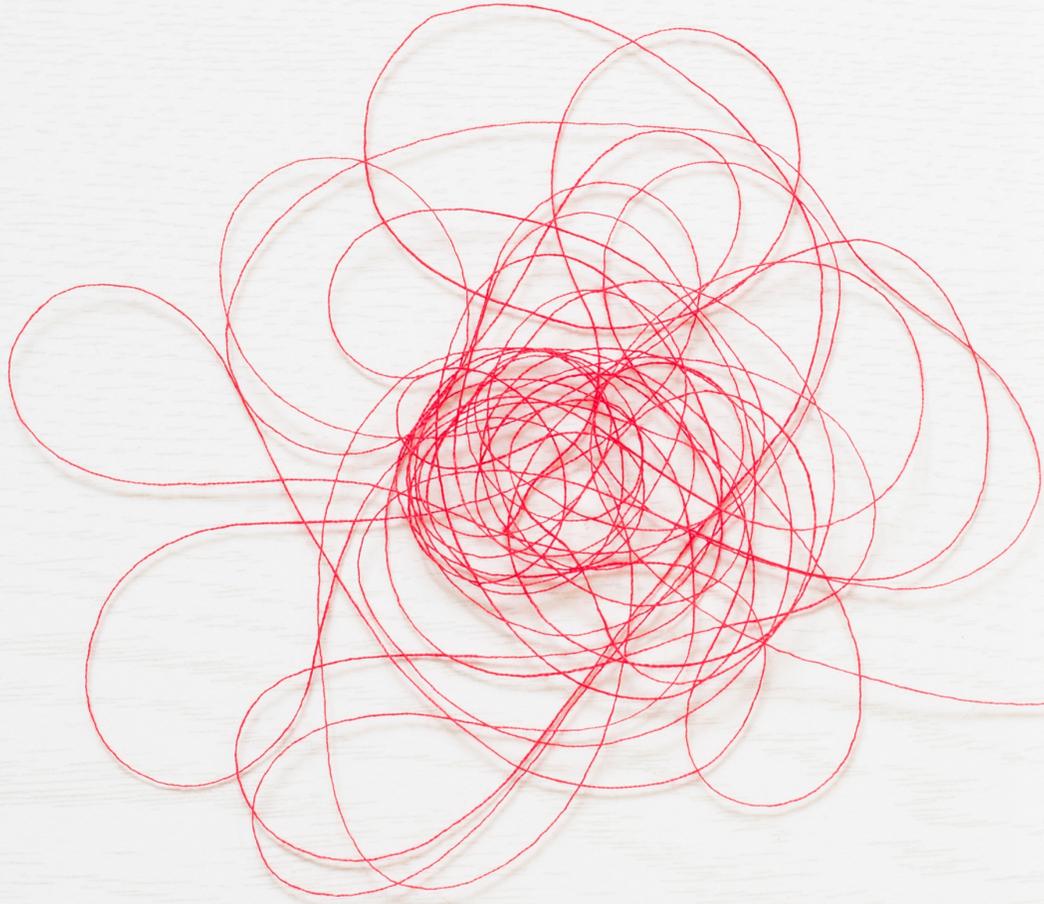


# Problem Formulation



Who is included in each problem formulation?  
Who can agree it's a problem?

# Problem Formulation Statements



- What is the problem to be solved?

Is Professor X a good teacher?

- Do students think she is a good teacher?
- Do most students think she is a good teacher?

# Choice of Data

## CS 106A Mid-Quarter Evaluation

 [kcreel@stanford.edu](#) (not shared) [Switch account](#) 

\* Required

### Instructor Feedback

These first few questions come from Nick Parlante and Juliette Woodrow. Your anonymous feedback will be reviewed by them, so please be specific and give suggestions for improvement.

What has Nick been doing so far that has worked well for you? What should he continue doing? \*

Your answer \_\_\_\_\_

- What kind of data should inform our decisions?
- Where will it come from?
- Is it a reflection of what we want to measure?



Language

---

QUALITY

5.0

DIFFICULTY

1.0



**CS101**



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# Descriptive vs. Normative Language

## **Descriptive language**

- Statements of fact
- What people did
- What happened



- “Lectures are 90-minutes long”
- “Assignments take more than two hours to finish”
- “Sections are mandatory”

QUALITY

5.0

AWESOME

May 21st, 2015

Attendance:  
Not  
Mandatory

Textbook  
Required

atory Grade: A

Class: Yes

DIFFICULTY

1.0

me. A beginner like me. I did not know anything further than facebook  
Professor Nick was very clear and easy to understand. I very much enjoyed the  
lectures and how easy it was to learn from such a great teacher. Thank you for all that you do

👍 2    👎 1



# Descriptive vs. Normative Language

## **Normative language:**

- Evaluative statements
- Express the speaker's opinions/reactions
- How things should be



- “right”
- “wrong”
- “good”
- “bad”
- “should”
- “should not”

QUALITY

5.0

DIFFICULTY

1.0



CS101



May 21st, 2015

Attendance:  Grade: A Textbook: Yes Online Class: Yes

AWESOME

This class was like me that anything further than facebook  
on a computer very clear very much enjoyed the  
lectures and learn from su Thank you for all that you do

GREAT  
TEACHER



2



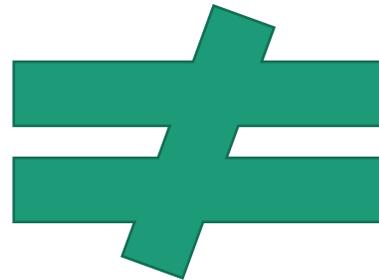
1



# Descriptive vs. Normative Language

## Normative language:

- Evaluative statements
- Express the speaker's opinions/reactions
- How things should be



## Descriptive language

- Statements of fact
- What people did
- What happened

QUALITY

5.0

DIFFICULTY

1.0



CS101



May 21st, 2015

Attendance: [redacted] Grade: A Textbook: Yes Online Class: Yes

CLEAR

This class was very clear and easy to learn from. I like me that I don't need anything further than facebook on a computer. I very much enjoyed the lectures and I learned from them. Thank you for all that you do.

EASY TO LISTEN TO



2



1



# Thick Normative Terms

## **Descriptive AND normative:**

- Thick normative terms express morally or aesthetically “loaded” descriptions



- Cowardly
- Cautious
- Polite
- Rude
- Chill
- Kind
- Caring
- Smart
- **Professional**

# Descriptive or Normative?



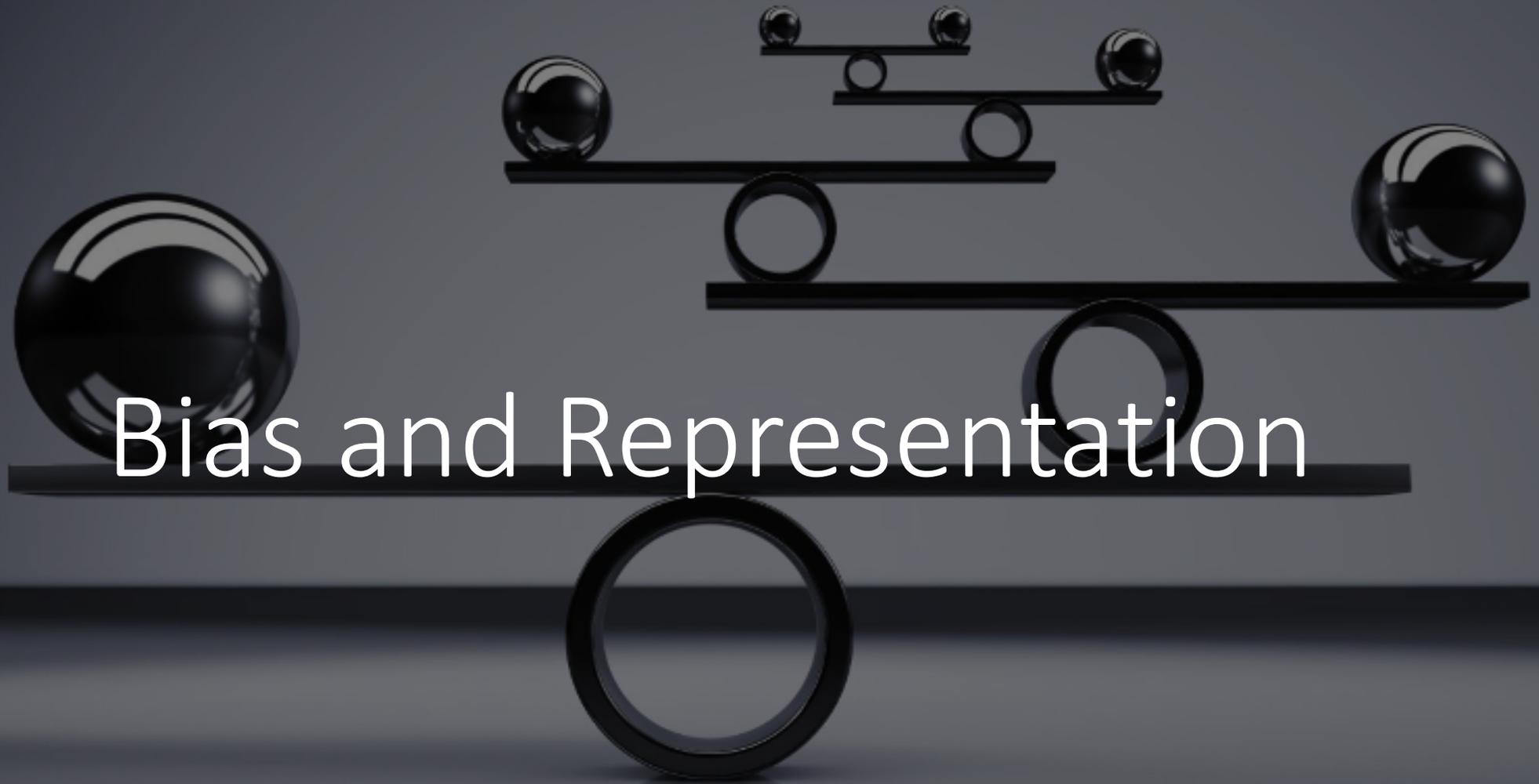
Does the program you are writing contain descriptive claims?



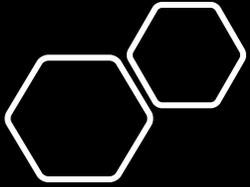
Do it contain normative claims or values?



How about thick normative terms?



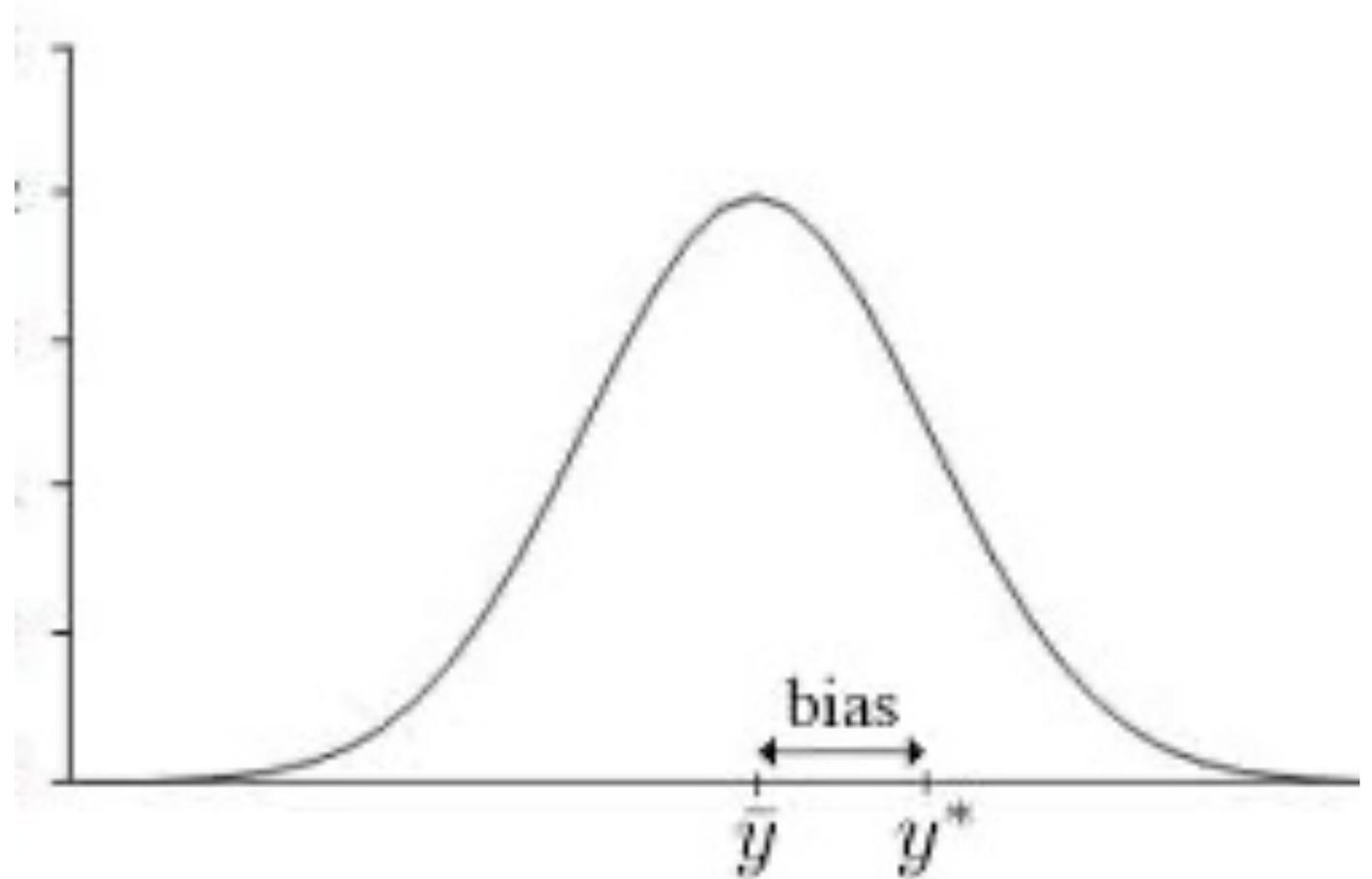
# Bias and Representation



# What is Bias?

Statistical bias is the difference between measured results and “true” value.

- This is the “neutral” or statistical meaning of the word bias. You will see it often in discussions of patterns in data.





# Discriminatory Bias in Data

Biased measurement or classification

+

Use of that bias that compounds existing injustice

=

*Discriminatory or Unfair Bias*



# Discrimination

- *Direct discrimination*: discrimination resulting from a negative attitude toward the social group (e.g. animus or indifference)
- *Indirect discrimination*: discrimination that does not result from such an attitude, but from rules and procedures constructed in a way that favors one group over another



# Discrimination

”The rules and norms of society **consistently** produce **disproportionately** disadvantageous outcomes for the members of a certain group [and] the outcomes are **unjust** to the members of the disadvantaged group”  
(SEP)



# Discrimination

A decision procedure unjustly discriminates against social group  $x$  if and only if:

- There is a social group  $y$  such that the procedure treats the members of  $x$  less favorably than the members of  $y$ ;
- Part of the explanation for the difference in treatment is their membership in  $x$  and  $y$ , respectively; and
- The difference in treatment is not morally justified on independent grounds.

The background features a light gray field with several dark gray circles of varying sizes scattered across it. The circles are solid and have no outlines. The text is centered in the lower half of the image.

Representation  
in Survey Data



# Representational Harms

A person is harmed when her identity is diminished in public representations of her social groups.



# Representational Harms

- Who is represented in this data?
- Who can see themselves in it?

A close-up photograph of five scoops of ice cream in various colors: yellow, orange, pink, red, and green. The scoops are arranged in a slightly overlapping row on a white surface. The text "Allocation of goods" is overlaid in the center of the image.

Allocation of goods

# Distributional or Allocative Harm





# Allocative Harms

A person is harmed when opportunities resources, benefits, and protections that would otherwise be allocated to her are **unfairly** withheld.



# Allocative Harms

- On the basis of what characteristics are social goods distributed?
- Morally relevant or morally arbitrary?



Fairness



Distribution of goods should be based on morally relevant characteristics, not on morally arbitrary ones.



# Formal Equality of Opportunity

“Positions and posts that confer superior advantages should be open to all applicants. Applications are assessed on their merits, and the applicant deemed most qualified according to appropriate criteria is offered the position.” (Stanford Encyclopedia of Philosophy)



# Formal Equality of Opportunity:

Everyone has same opportunity to develop skills needed for the job, apply for the job, and get promoted.



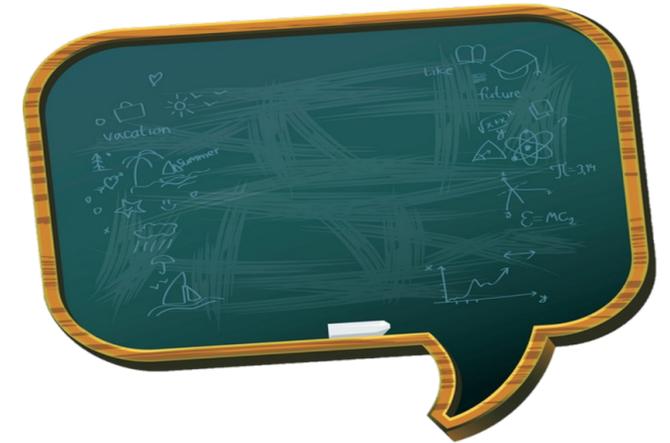
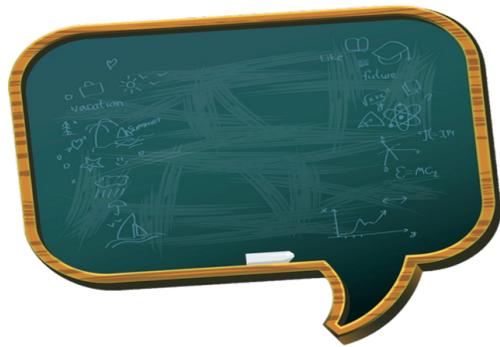
# Substantive Equality of Opportunity

Takes into account systemic inequalities to ensure everyone in a community has access to the same opportunities and outcomes. Acknowledging that inequalities exist and works to eliminate them.



# Substantive Equality of Opportunity

Because there are pervasive disadvantages, we should adjust our rules and procedures to eliminate (or mitigate) their effects on people's ability to access social goods.



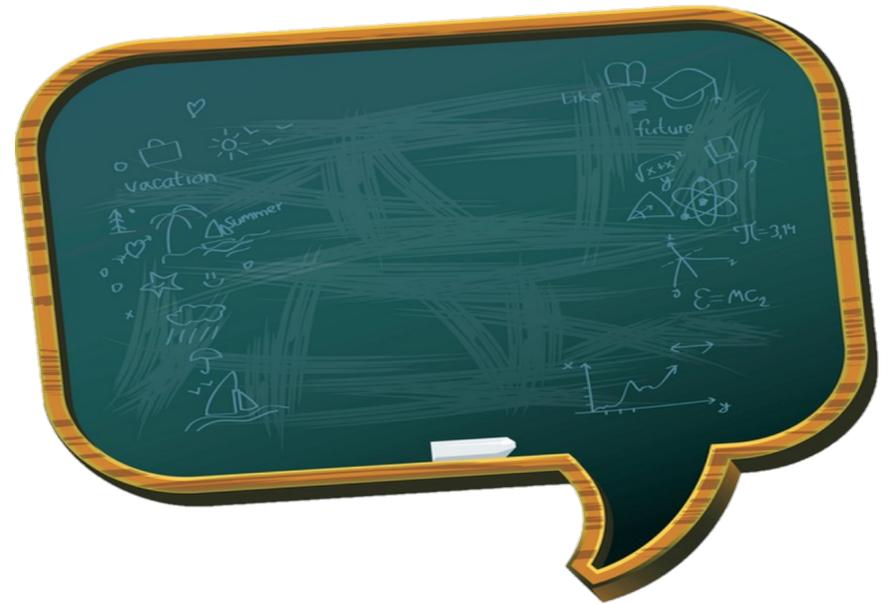
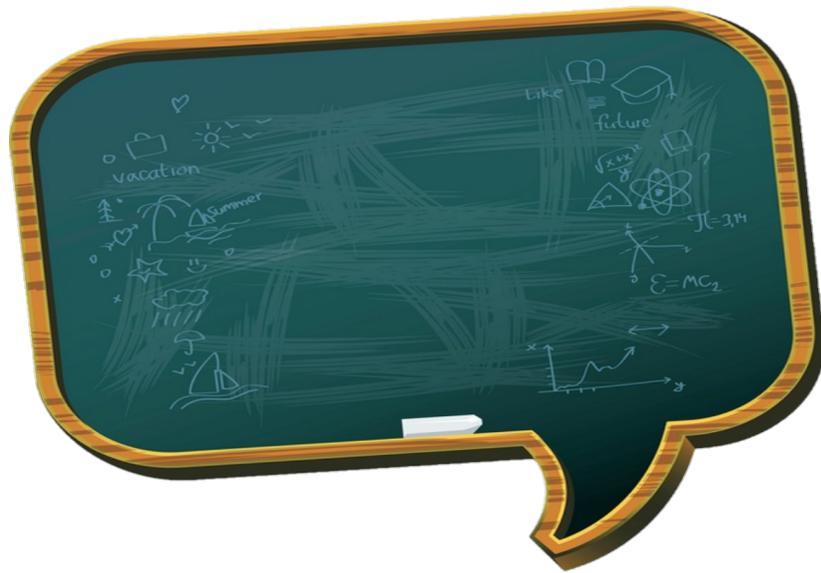
# Parity

Because we are equal, we should adjust rules and procedures to ensure that outcomes reflect that.



# Parity

Everyone is equally likely to be a good teacher, so we should expect to end up with number of good teachers (and high rankings) proportionate to population.



# Two Sets of Questions to Ask

## Values in Data Set

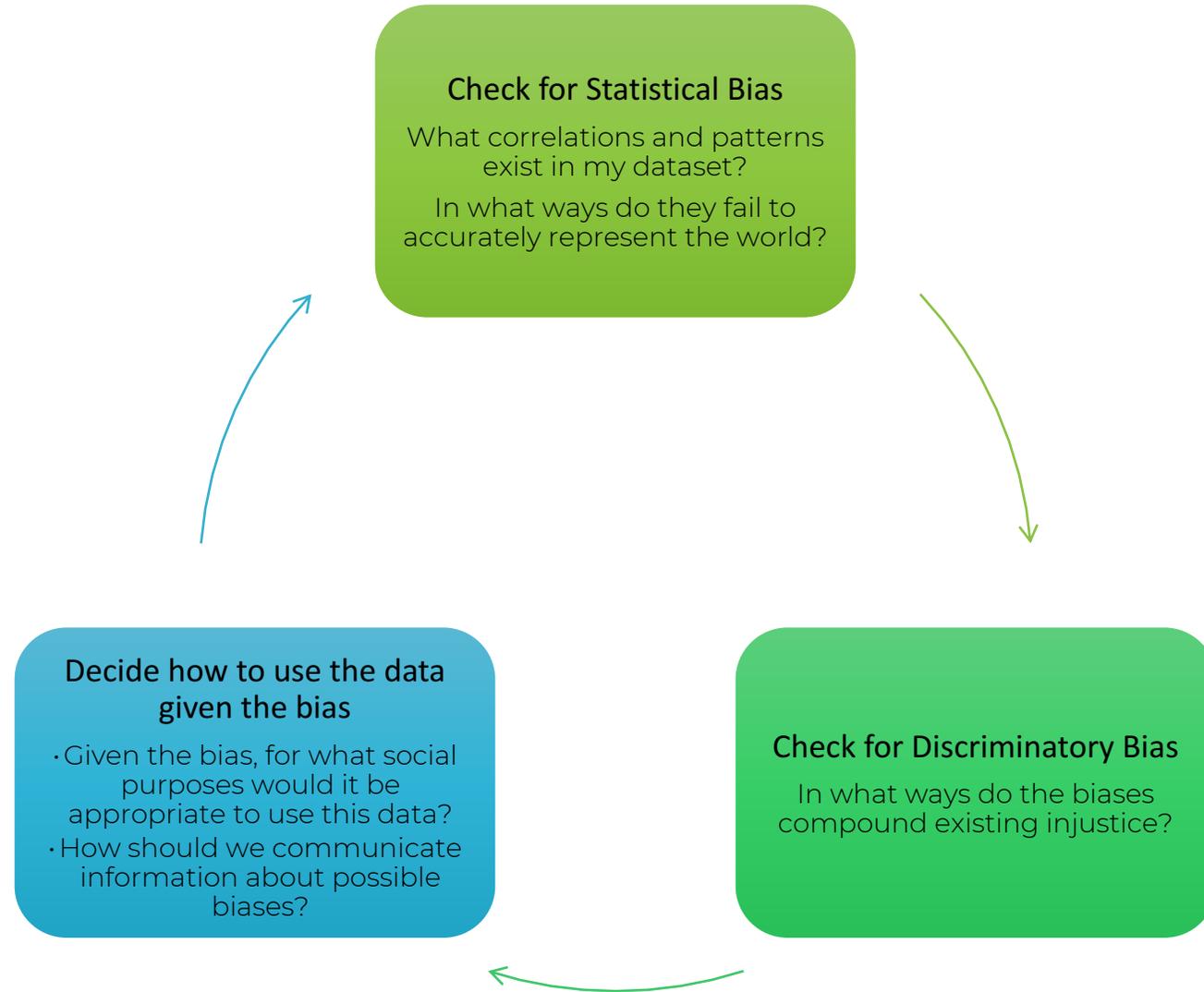
- What conception of fairness is encoded in the data set, if any?
- Does it lead to discrimination?

## Values in data-based decisions

- Given existing biases in the data set, would it be fair to rely on them for our decisions?
- Would decisions based on the data set lead to discrimination?



# I have data about people! Now What?



Thank you!

