

# ML and Society

Mar 15, 2022

# 2<sup>nd</sup> discussion summary due right after break

note @38 3 views

## Autolab accepting Second Progress summary

Autolab is now accepting the second progress summary for all groups that is due **Mon (March 28)** at 5pm (note that this is *right after the spring break is done*). Note that each group will meet with me in class on **Tue, March 29** in the following order:

1. Human Acceptance
2. Teaching tools
3. Algorithmic Auditing
4. Multiple notions of fairness

Your groups have been set up on Autolab. However, please double-check the following:

- Make sure you can see your group. To do so, follow these steps
  - Go to CSE 440/441/540 > Second Progress Summary (under Project)
  - Go to Options > Group options
  - Check to make sure your and your partners' emails are in there.
- **DO NOT**
  - Click on invite another student to the group or the leave group buttons
- Please submit a dummy PDF well in advance of the deadline and check with **ALL** your group-mates to make sure they see your submitted PDF in their account.
  - I will grade the last PDF submitted by any of the group members.
  - I recommend that you designate one person in your group as the official submitter but whatever works for your group is fine with me.

project submit

Grading a bit delayed...

# Office hour today online

note 039    

stop following 0 views

## Move today's office hour online

Sorry but I'll have to move my 2pm office hours online. Here is the zoom link:

<https://buffalo.zoom.us/j/94681323097?pwd=YkprL000REU1Z3hGamJkTWIhO0dZz09>

Apologies for any inconvenience this might cause.

office\_hours

good note 

Updated Just now by AMI Rucke

# A blanket acknowledgement/thanks

Thanks to Kenny Joseph for allowing me to use his slides

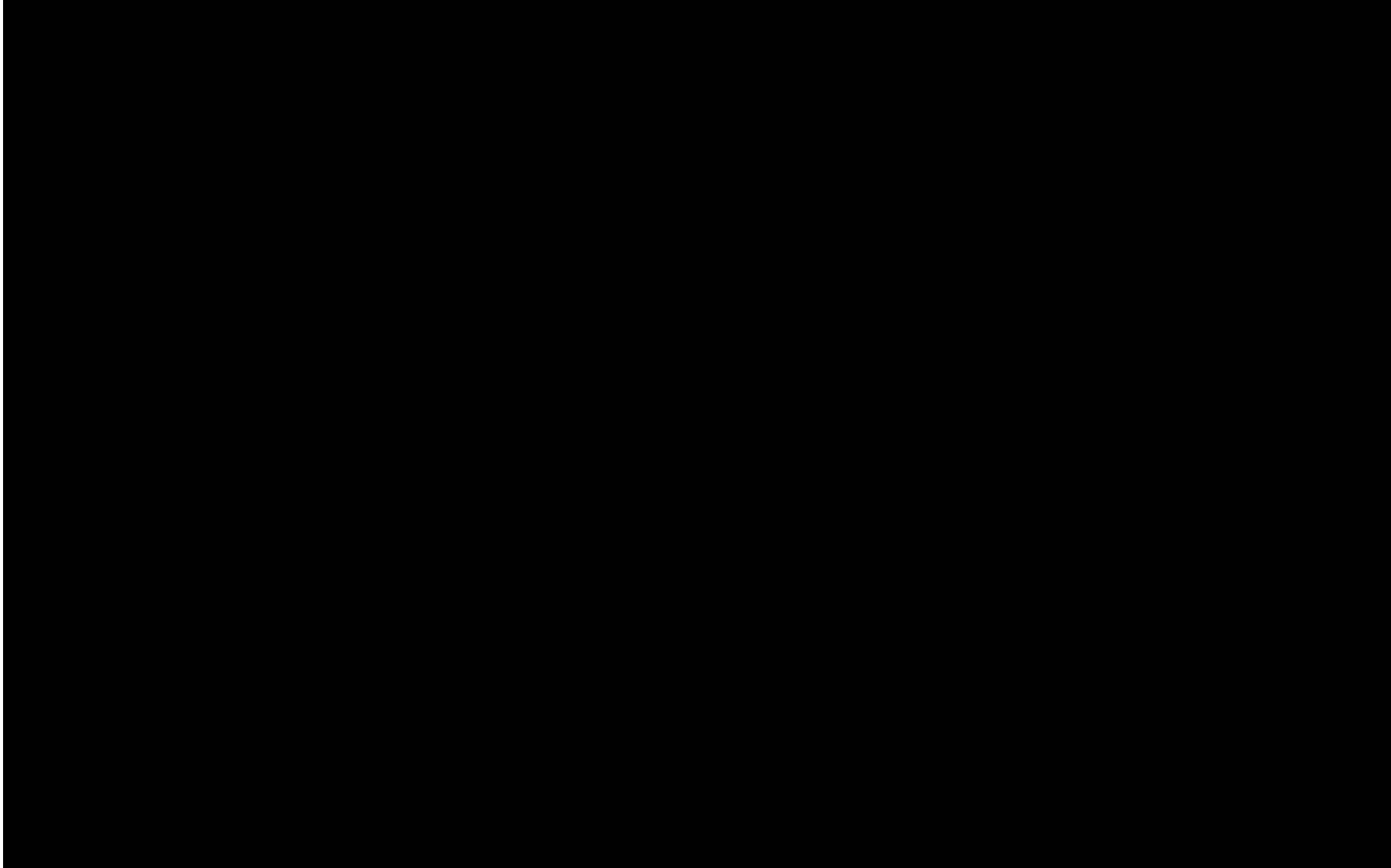
# Impossible Project!

DALIA ANTONIA CARABALLO MULLER

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What is Impossible Project?



Few more introductions

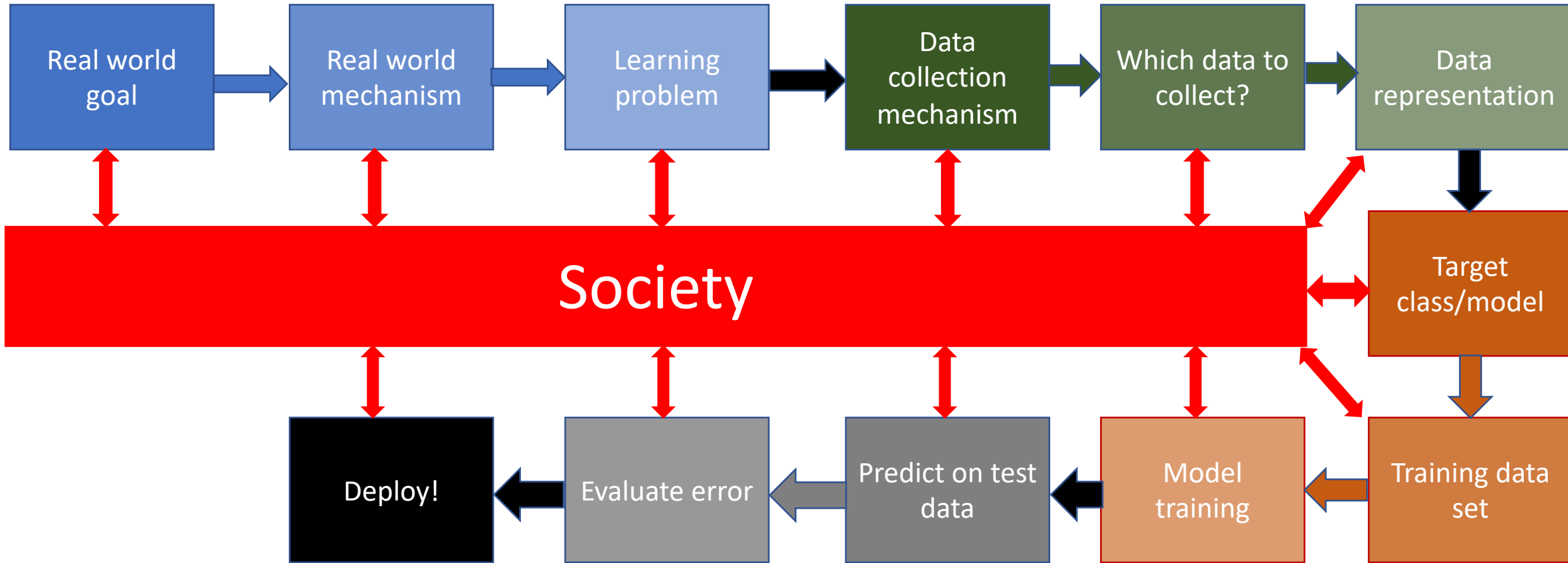
Dr. Kimberly Boulden

Mikaela Hastings

Maungo (Botsalano) Makgabo



# Why Impossible Project in this course?





# C O D E D B I A S

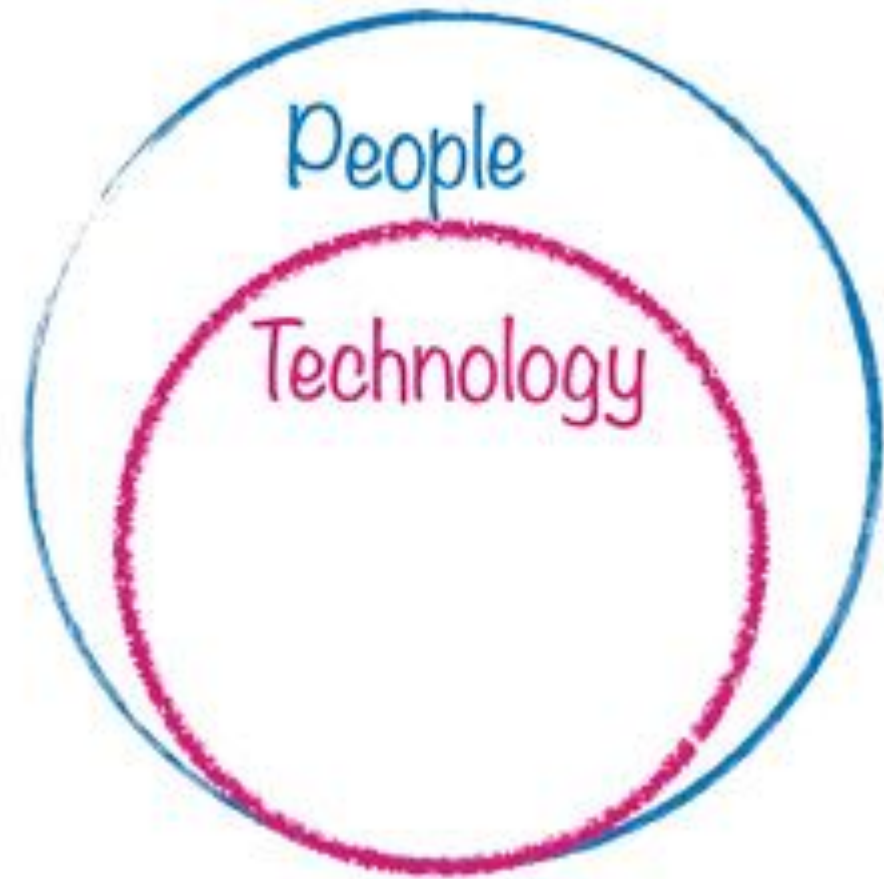
 **Play**   

2020 TV-MA 1h 25m HD

This documentary investigates the bias in algorithms after M.I.T. Media Lab researcher Joy Buolamwini uncovered flaws in facial recognition technology.

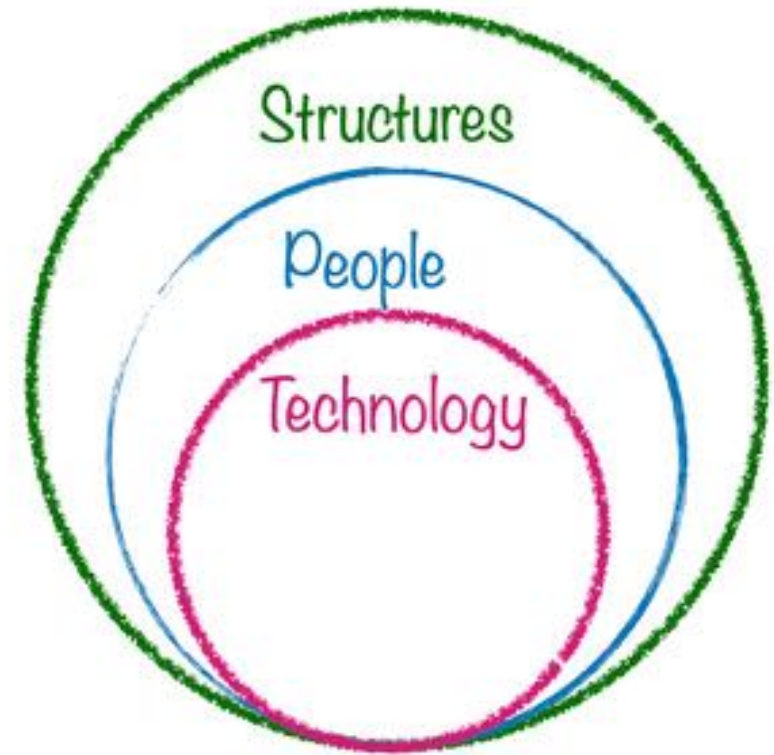


Are we automating racism?

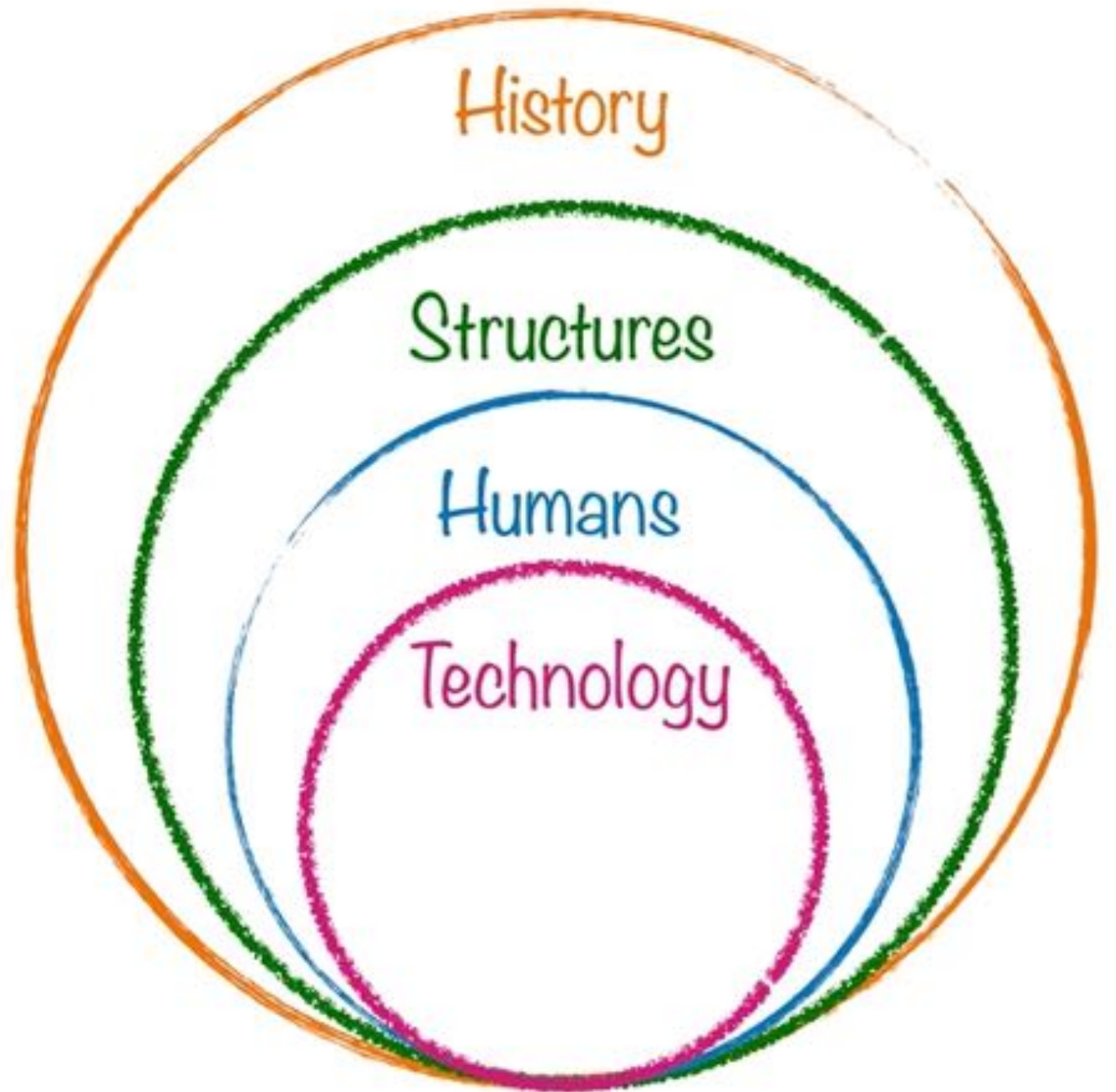




# Housing segregation



Historical context..



# What is race?

## Biologically speaking, race isn't actually anything

"If you ask what percentage of your genes is reflected in your external appearance, the basis by which we talk about race, the answer seems to be in the range of .01 percent," said Dr. Harold P. Freeman, the chief executive, president and director of surgery at North General Hospital in Manhattan, who has studied the issue of biology and race. "This is a very, very minimal reflection of your genetic makeup."

Ultimately, there is so much ambiguity between the races, and so much variation within them, that two people of European descent may be **more genetically similar to an Asian person than they are to each other** (Figure 2).

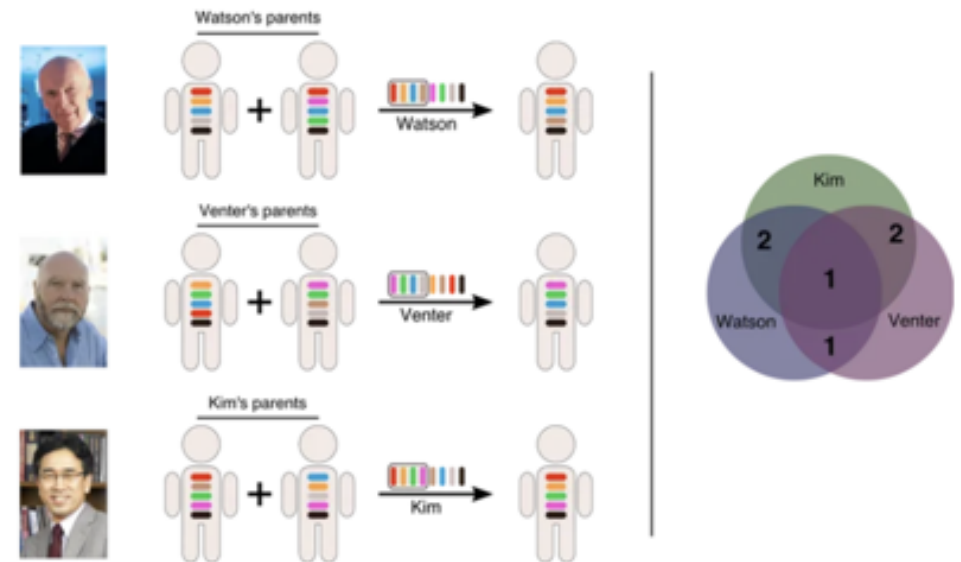


Figure 2: Case study of genetic variation between three scientists. Left: Schematization of the genetic variation between Drs. James Watson, Craig Venter, and Kim Seong-jin. Colored bars represent genes; different colors represent different alleles, i.e. versions of genes. Some alleles are shared by all three of the men (represented by the dark brown allele that is shared by every person in this image). Besides the universal dark brown allele, Watson and Venter share one other allele (bright blue). However, both share two alleles with Kim (Watson shares red and orange with Kim, Venter shares green and magenta), in addition to the universal allele. Right: There is more similarity between the Kim and Watson and Kim and Venter, than there is between Watson and Venter.

<https://www.nytimes.com/2000/08/22/science/do-races-differ-not-really-genes-show.html>

<https://sitn.hms.harvard.edu/flash/2017/science-genetics-reshaping-race-debate-21st-century/>

So, what is it, then? Where did race come from?

SCENE **•ON** RADIO

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**seeing**

**white**



# On Shreya's Question...

The screenshot shows the PBS website interface. At the top, there is a navigation bar with the PBS logo, a 'Sign In' button, and links for Home, Shows, Video, TV Schedules, Shop, Donate, LIVE TV, and WNET PBS. The main content area features a video player with a large red banner that reads 'WHY DID EUROPEANS ENSLAVE AFRICANS?'. Below the banner is a video player showing a scene with several African men carrying a long pole on their shoulders. The video player includes a play button, a progress bar showing 0:00 / 7:42, and various control icons. To the right of the video player is a sidebar with the following text: 'ORIGIN OF EVERYTHING', 'Why Did Europeans Enslave Africans?', 'Season 1 Episode 38 | 7m 42s | CC', '+ My List', 'Why were most slaves in America from West Africa? Slavery has existed throughout history in various forms across the globe, but who became enslaved was almost always based on military conquest. So why did Europeans travel thousands of miles to enslave people from a particular geographic region? Watch the episode to find out.', 'Aired: 03/23/18 | Rating: NR', and 'From: PBS Digital Studios >'. Below the video player, there is a 'Continuous Play' toggle set to 'On', a 'Share' button with social media icons, and a link for 'Problems Playing Video? Report a Problem | Closed Captioning'.



# What is racism?

Something is *racist* if it **creates a lasting, structural advantage or disadvantage in power along racial lines**

Ray, V. (2019). A theory of racialized organizations. *American Sociological Review*

Kendi, I. X. (2019). *How to be an antiracist*. One world

# Why anti-Black racism?

## Statistically, it is the biggest form of power inequality in the U.S.

Black students who earned bachelor's degrees also accumulated more debt than whites. They borrowed \$21,149 on average, nearly twice as much as whites, by the time they left school. (This includes students who didn't borrow at all.) But it got worse after that: By the end of the 12-year period that Dr. Scott-Clayton examined, blacks owed \$64,142 — three times as much as whites. That's because black degree-holders had both higher levels of graduate school borrowing and lower rates of repayment.

Even with a college degree, black Americans can't count on getting a paycheck of the same size.

But the gap isn't a function of differences in education levels. Even among those who attain advanced degrees, blacks were paid 82.4 cents for every dollar earned by their white peers. Hispanics do better, at 90.1 cents on the dollar.

And the gender pay gap expands the racial gap into a chasm: Black women, on average, earn 64 cents for every dollar a white man earns, according to [another report from the institute](#).

<https://www.nytimes.com/2020/06/09/your-money/race-income-equality.html>

# Passphrase for today: **Alexandra Chouldechova**



## **Alexandra Chouldechova**

Estella Loomis McCandless Assistant Professor of Statistics and Public Policy

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[Phone](#): 412-268-4414

[CV Google Scholar](#)

## **Brief Academic Bio**

Dr. Alexandra Chouldechova is the Estella Loomis McCandless Assistant Professor of Statistics and Public Policy at Carnegie Mellon University's Heinz College of Information Systems and Public Policy. Her research investigates questions of algorithmic fairness and accountability in data-driven decision-making systems, with a domain focus on criminal justice and human services. Her work has been supported through funding from organizations including the Hillman Foundation, the MacArthur Foundation, and the [NSF Program on Fairness in Artificial Intelligence in Collaboration with Amazon](#). She is a member of the executive committee for the ACM Conference on Fairness, Accountability and Transparency ([FAccT](#)), and previously served as a Program Committee co-Chair for the conference.

Dr. Chouldechova is a 2020 Research Fellow with the [Partnership on AI](#), where she is working on understanding factors that drive racial bias in algorithmic risk assessment tools being developed for use in pre-trial, parole and sentencing contexts. She is also a member of the [Pittsburgh Task Force on Public Algorithms](#).

Dr. Chouldechova received her PhD in Statistics from Stanford University and an H.B.Sc. in Mathematical Statistics from the University of Toronto.

## **Research**

My research investigates problems related to fairness in predictive modeling. Much of my work concerns the study of risk assessment tools in domains such as criminal justice, child welfare, health care, and financial services.

My research in this area has also studied questions falling into the following areas:

# A case study

# What is child welfare?

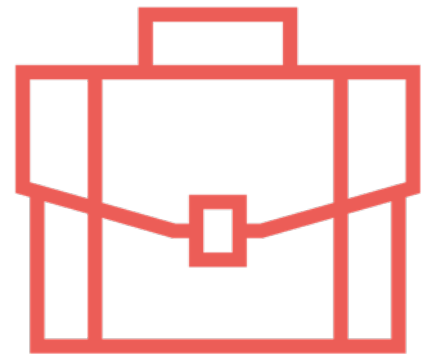
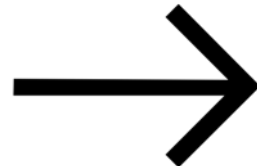
The child welfare system is a group of services designed to promote the well-being of children by ensuring safety, achieving permanency, and strengthening families.



Youth are reported to CPS



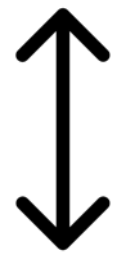
The call is **screen in** (or not)



If screened in, the call is investigated. The investigation can result in **substantiation** (or not)



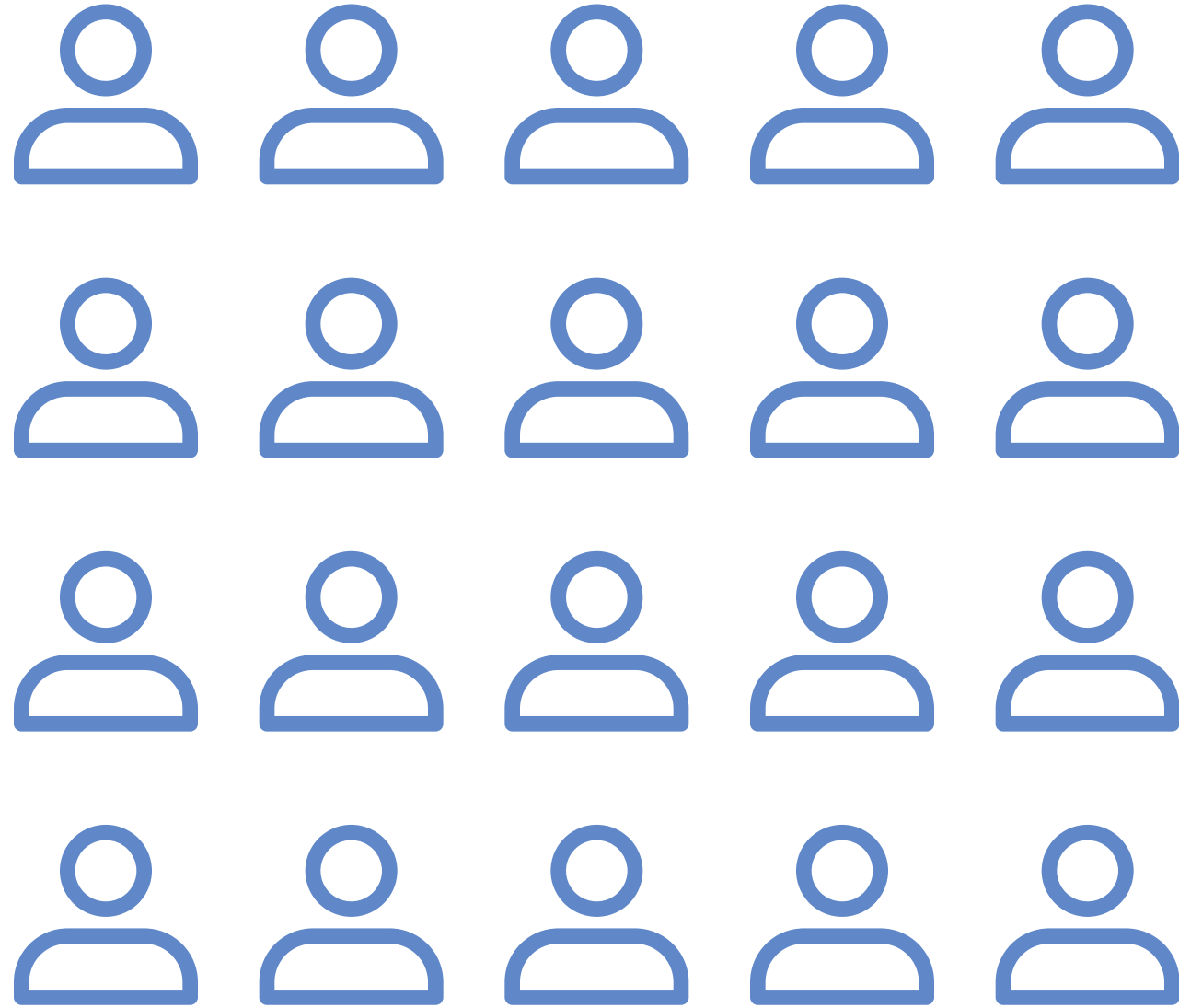
If substantiated, the youth is **taken into care**



The youth's case is then periodically reinvestigated

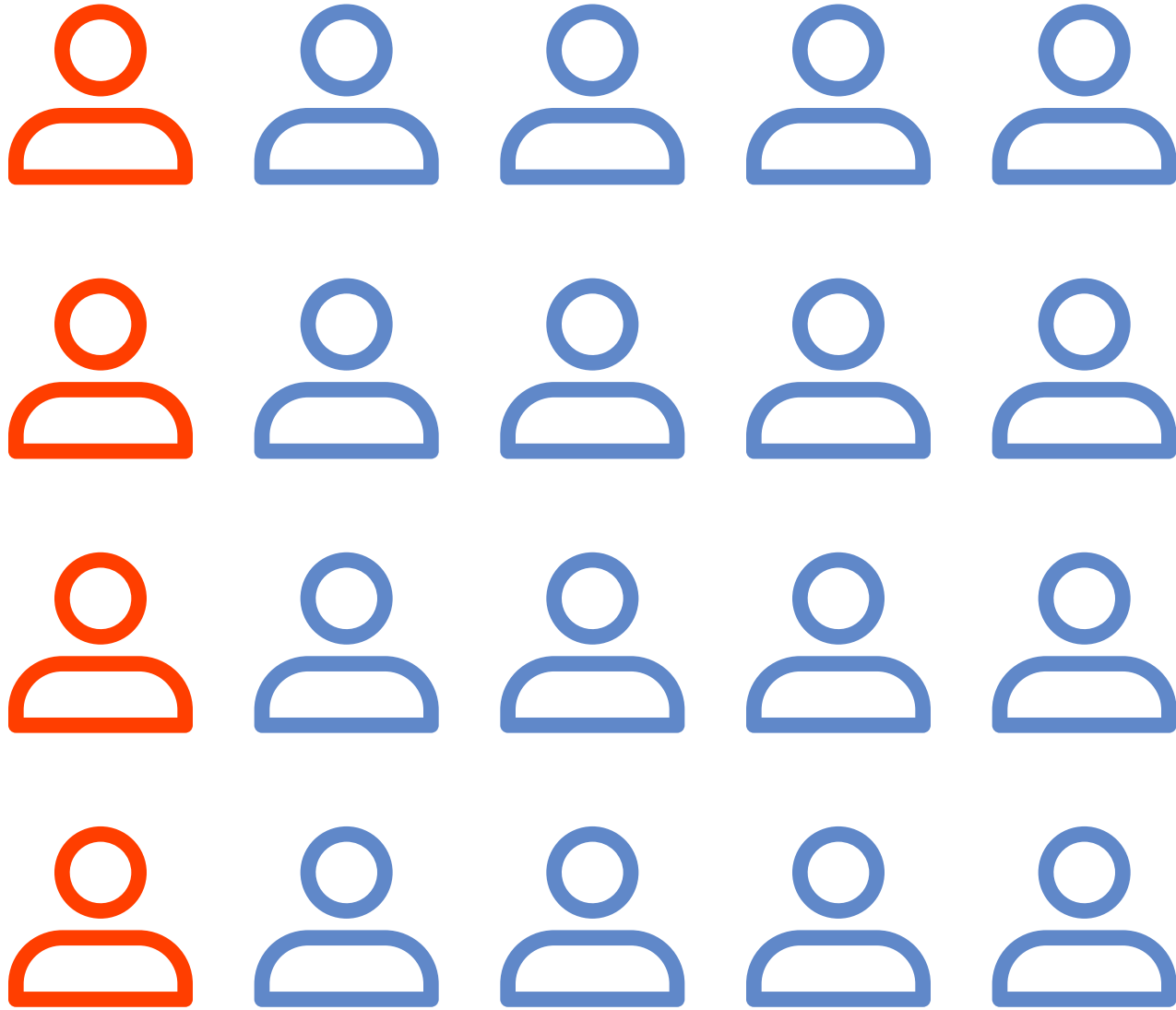
# State care of another kind



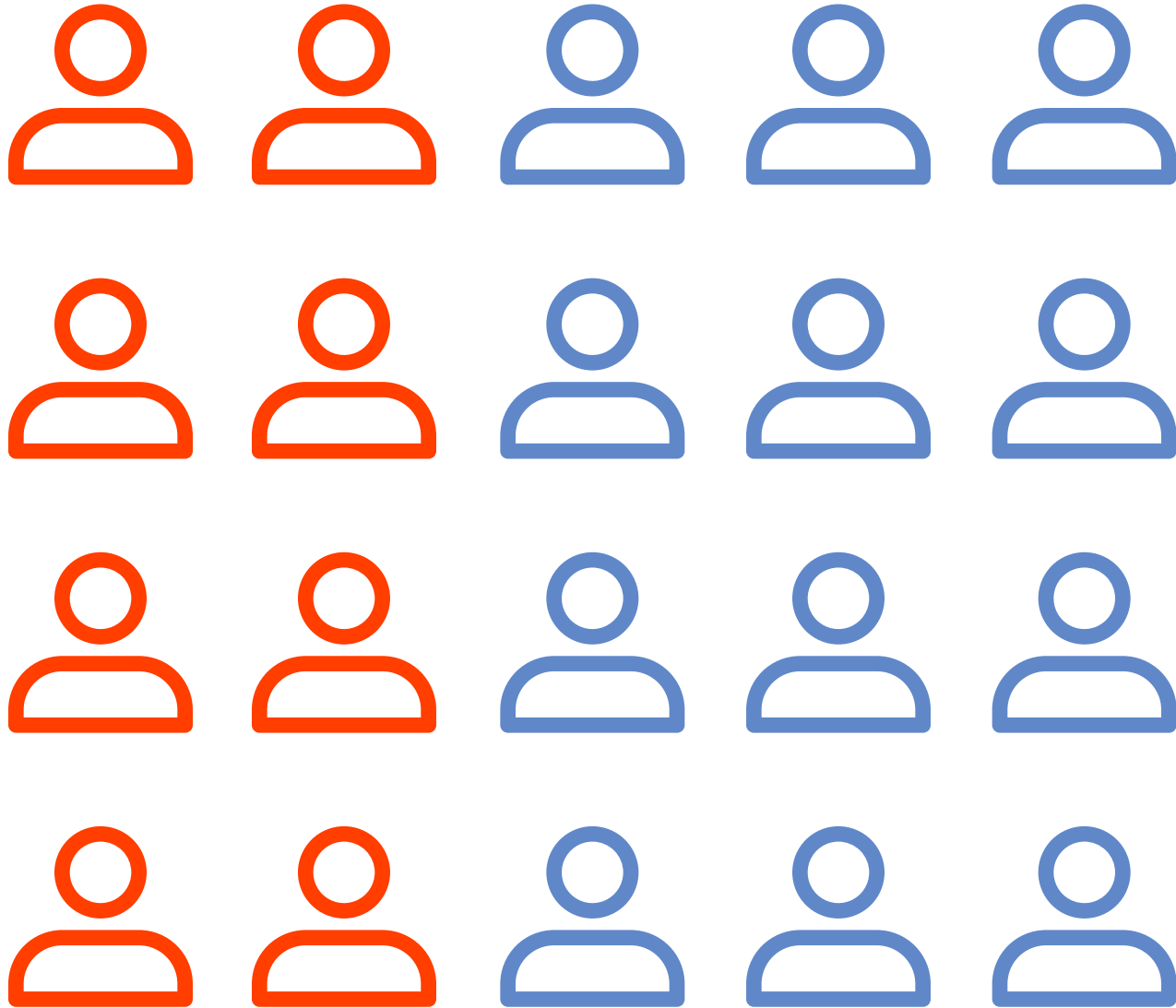


Every year,  
20,000 youth age  
out of foster care





20% will have  
been homeless  
at least once  
(5.7% gen. pop.)



66.2% will not go  
to college.  
(41% gen. pop.)

## Racial disparities in Illinois' child welfare system

Black children are removed from their homes at rates that far exceed their proportion of the population.

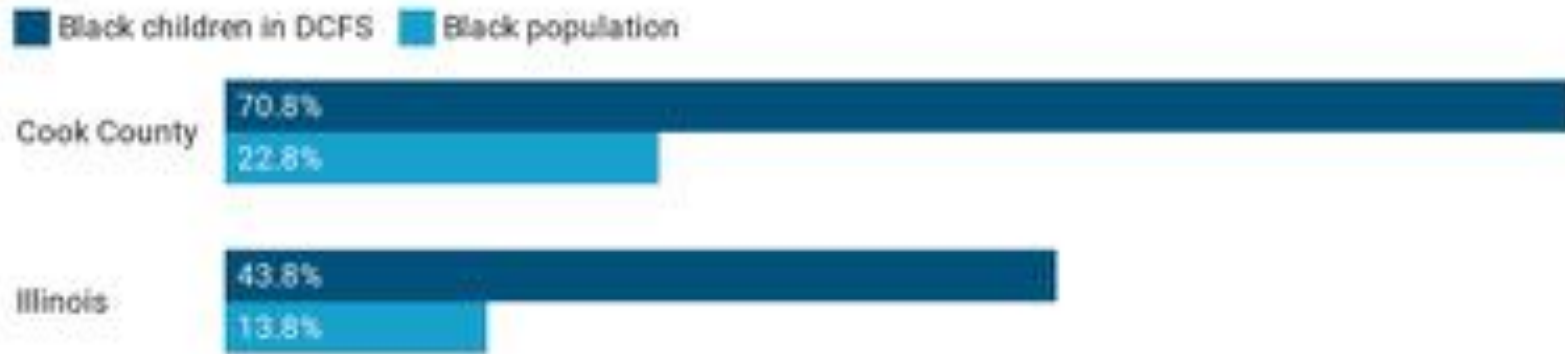
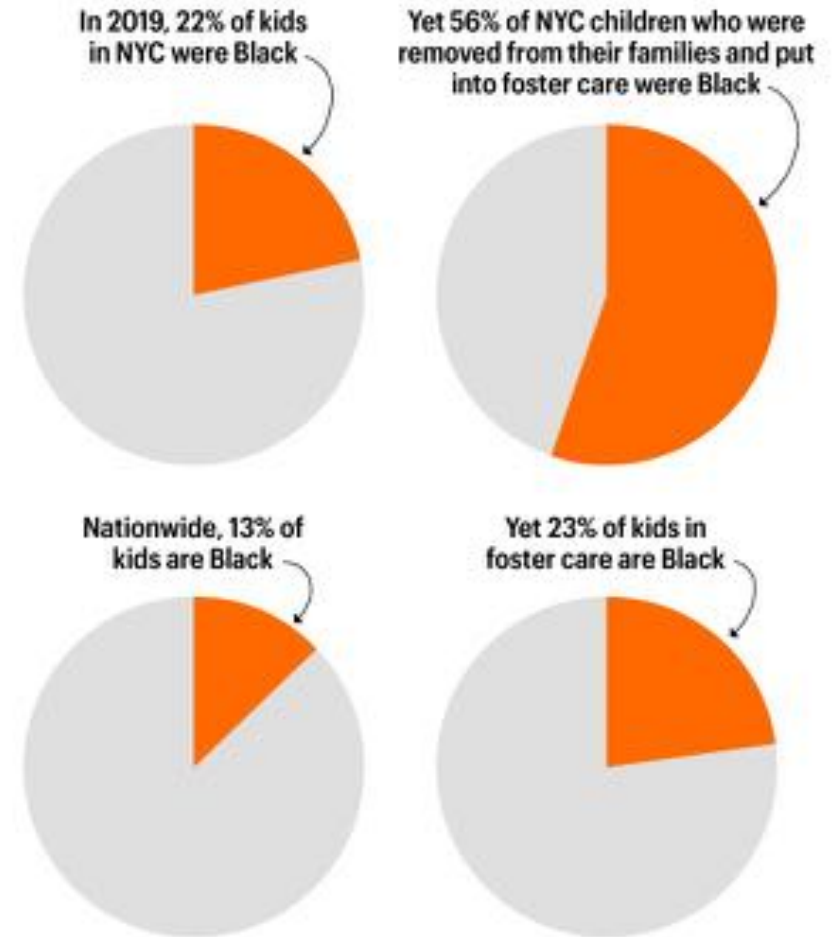


Chart: John Seasty, Injustice Watch • Source: Illinois DCFS data as of May 31, 2020; American Community Survey 2018 • Created with Datawrapper

## Sucked Into the System



Sources: Citizens' Committee for Children, New York City Administration for Children's Services, Federal Interagency Forum on Child and Family Statistics, US Department of Health and Human Services

# Summary thus far

- No one wants to be in the child welfare system
  - Experts agree that the goal should be to get people back with their families
  - People involved suffer
  - Life outcomes for people who stay in it are terrible
- Black people are over-represented in the child welfare system

# Why are Black youth over-represented?

## Two possible reasons

1. **Need/Risk** (Black parents have less money to support children)
2. **Discrimination/Bias** (Black families are over-policed within Child Welfare)

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Disentangling substantiation: The influence of race, income, and risk on the substantiation decision in child welfare

“when also controlling for caseworker perceptions of risk, race emerges as the stronger explanatory factor.”

Full length article

Factors associated with racial differences in child welfare investigative decision-making in Ontario, Canada

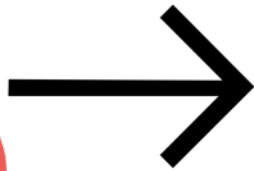
child welfare agencies, with children of certain racial minority backgrounds more likely to be referred for suspected maltreatment, to be substantiated as victims, to be placed into out-of-home care, and to remain in care for longer periods of time than White children (Fluke, Harden, Jenkins, & Ruehrdanz, 2010; Putnam-Hornstein, Needell, King, & Johnson-Motoyama, 2013; Sinha, Trocmé, Fallon, & MacLaurin, 2013; Trocmé, Knoke, & Blackstock, 2004; Wulczyn, Gibbons, Snowden, & Lery, 2013).

# What might we do?

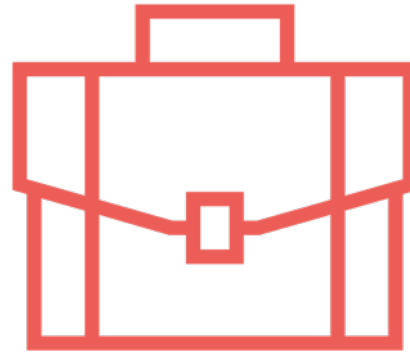
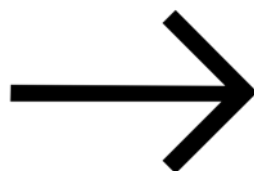
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# What might we do?

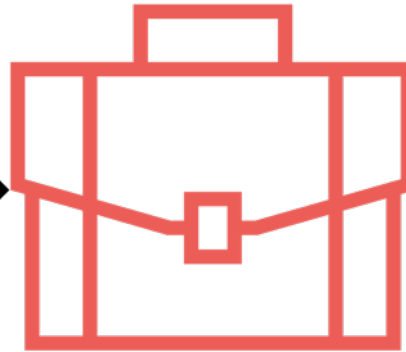
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The youth's case is then periodically reinvestigated

# What data would you use?

- Proxy:

- Use outcomes from **substantiation phase**, not **screening phase**
- Idea: Probably more accurate, less biased

# Paper by Chouldechova et al.

Proceedings of Machine Learning Research 81:1-15, 2018

Conference on Fairness, Accountability, and Transparency

## A case study of algorithm-assisted decision making in child maltreatment hotline screening decisions

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**Editors:** Sorelle A. Friedler and Christo Wilson

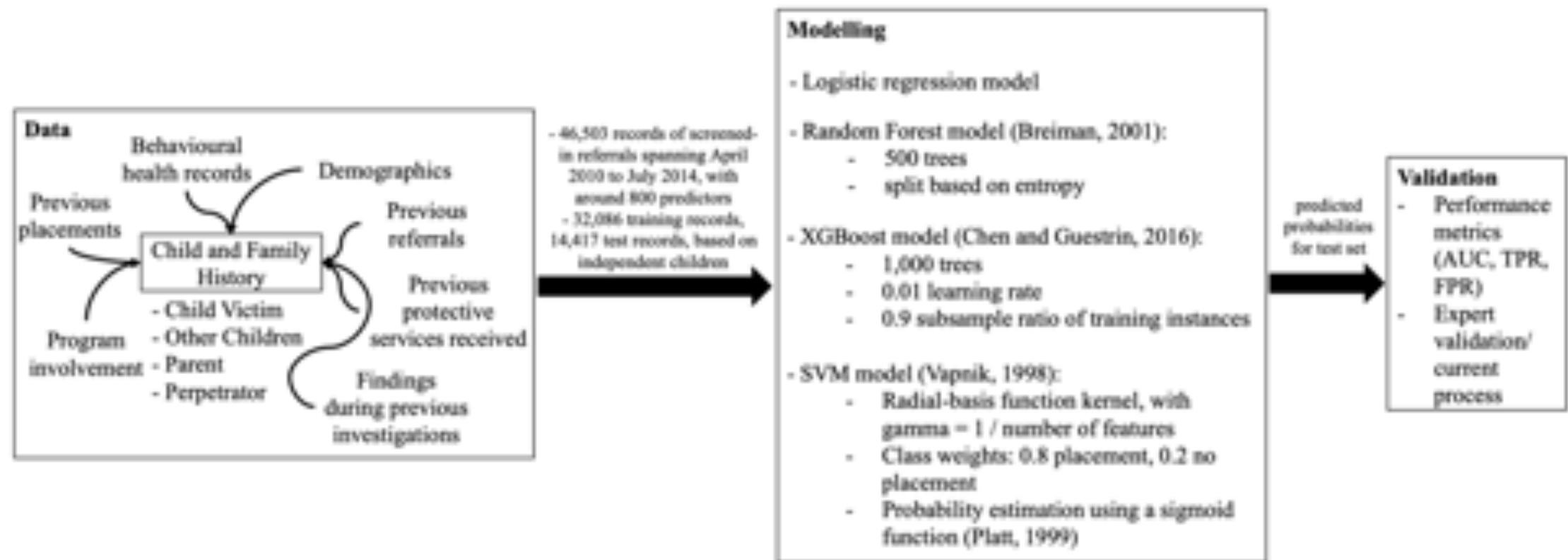


Figure 1: An overview of the modeling process.

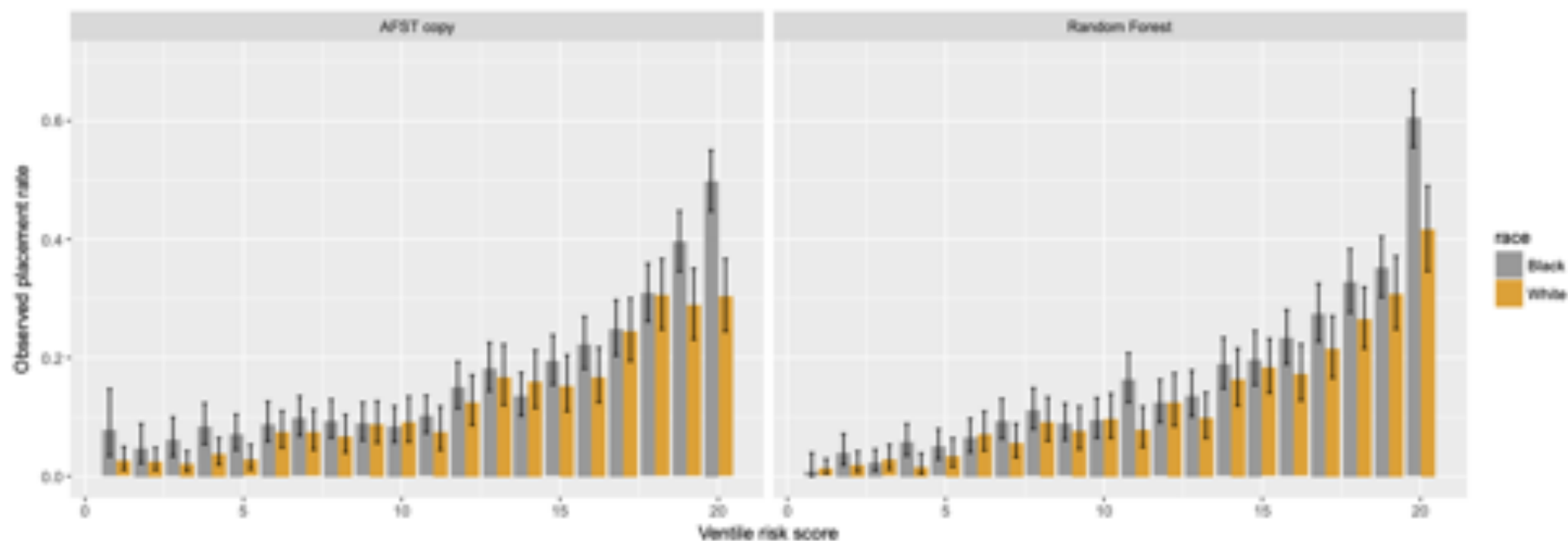


Figure 4: Observed placement rates by AFST model (left) and Random forest model (right) risk score ventile broken down by victim's race. Error bars correspond to 95% confidence intervals.

**Why** (were there racial disparities in the algorithm's risk scores)?

A: Because the **algorithm** developers chose a proxy variable that had racial bias.



**Why** was the underlying proxy variable racially biased?

A: Because the **people** who made the decisions that informed the proxy variable did so in a racially biased way



# Two really good reasons not to stop here.

1. Not all (many?) case workers hold explicit racial biases
2. Individuals can **perform actions that increase racial inequality without “being racist”**  
(so can technology...)





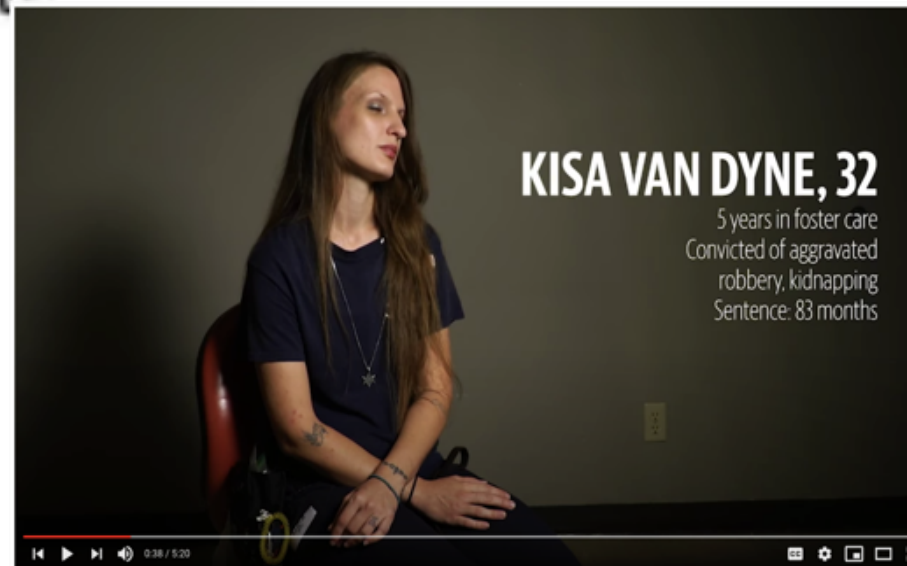
Ida Bae Wells

@nhannahjones

Replying to @nhannahjones and @davidwblight1

So, for people like myself, white guilt is useless, and denying that white people can struggle financially or have to work hard is useless and inaccurate. The entire point of the work we do is to point out the way the systems work whether individuals are racist or not

10:43 AM · Nov 1, 2021 · Twitter for iPhone

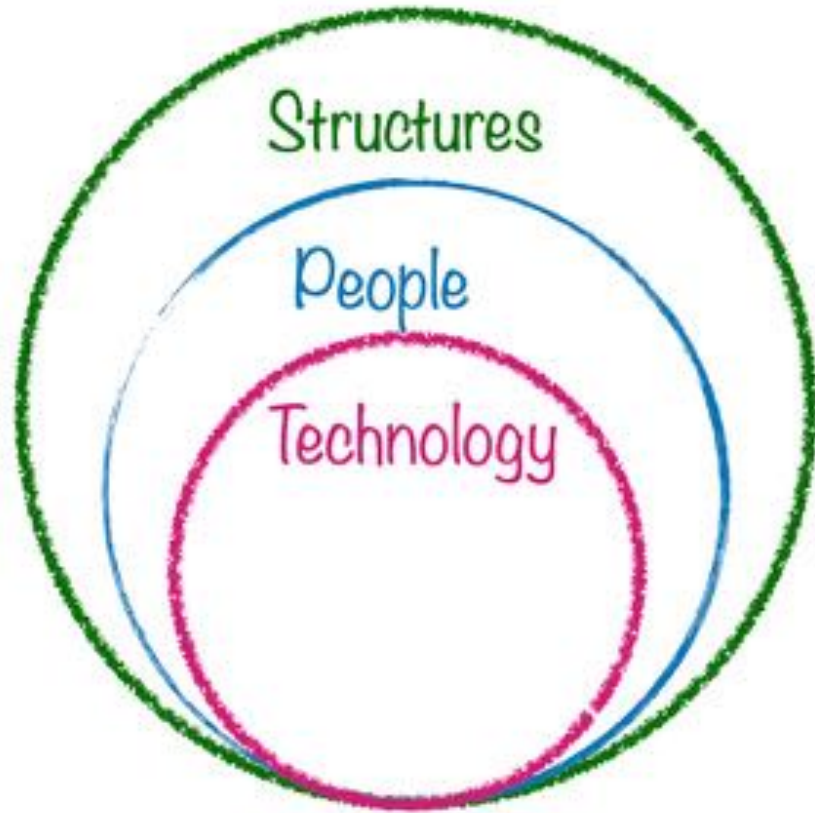


<https://twitter.com/nhannahjones/status/1455184081793306627>

**Why** did the people make racially biased decisions?

**A: Because case workers are bad, racist people**

A: Because racial biases and discrimination are built into our **society** at a structural level



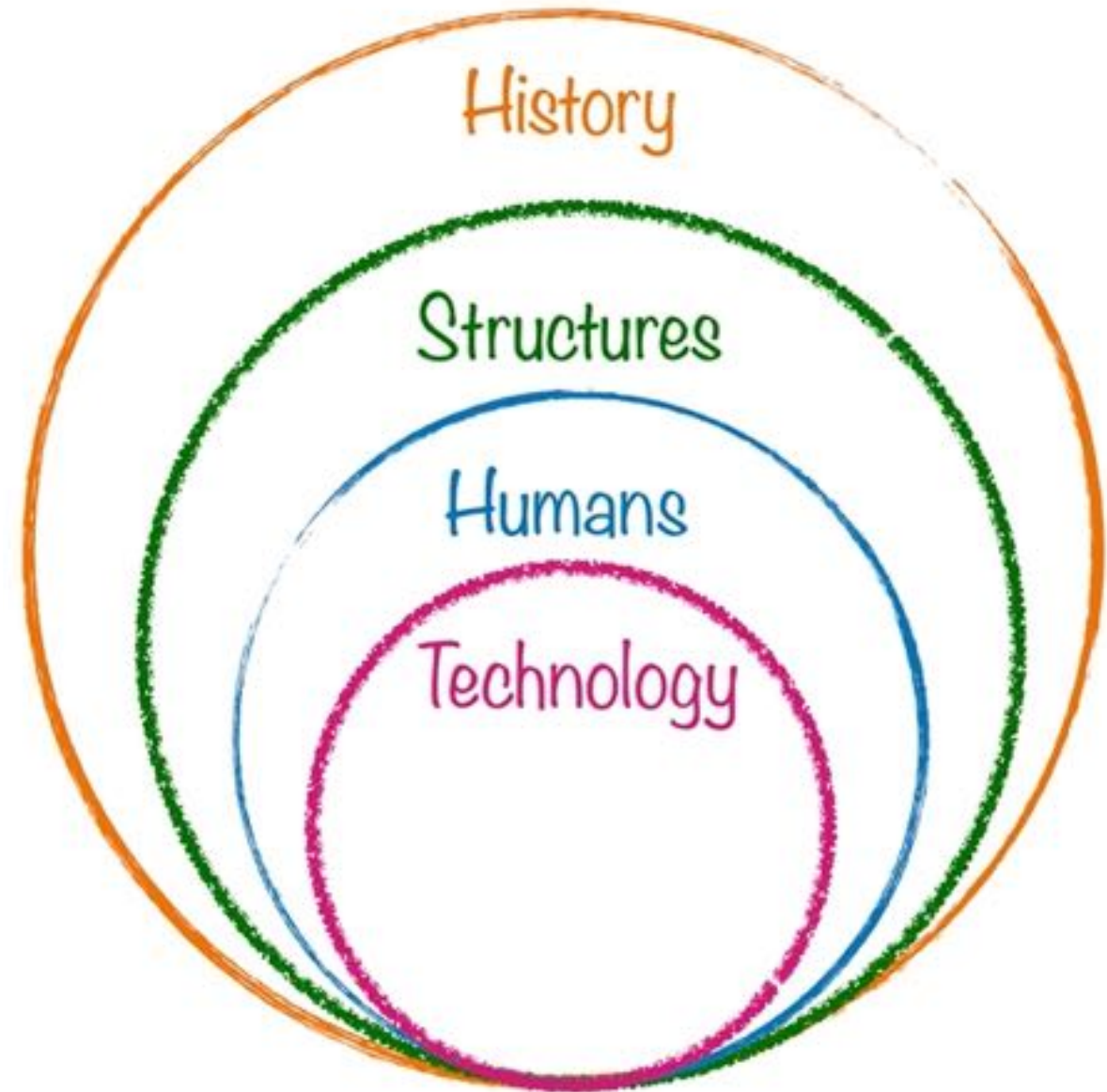
# Becoming Wards of the State: Race, Crime, and Childhood in the Struggle for Foster Care Integration, 1920s to 1960s

Michaela Christy Simmons 

But at the same moment that minorities were included in positions of power in the courts, African American children disproportionately entered the system as delinquents rather than as dependent or neglected ([Trost 2005](#); [Ward 2012](#)).

"Wiltwyck School did not accept the boy . . . [Brace Farms] cannot accept Lonnie<sup>1</sup> for placement . . . Berkshire Ind[ustrial] Farm rejected Lonnie. . . . Should Children's Village reject the application on Lonnie, the only alternative left, regrettably as it may seem, is to send this boy to the N.Y. State Training School at Warwick [for delinquents]." ~1944 court action for a 13-year-old neglected African American boy ([Polier Manuscripts 1944a](#))

<https://journals.sagepub.com/doi/full/10.1177/0003122420911062>



**Why** are racial bias and discrimination built into our society at a structural level?

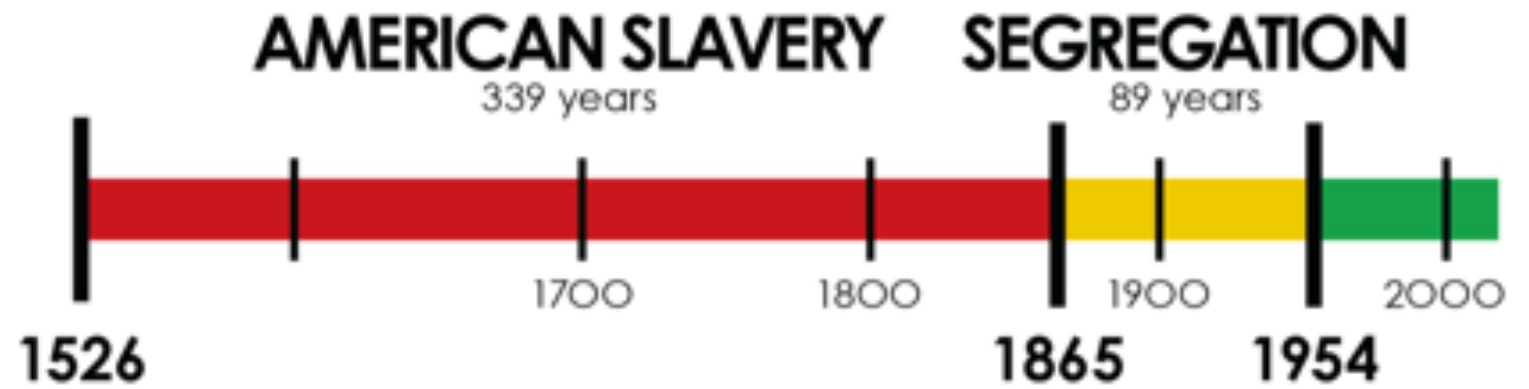
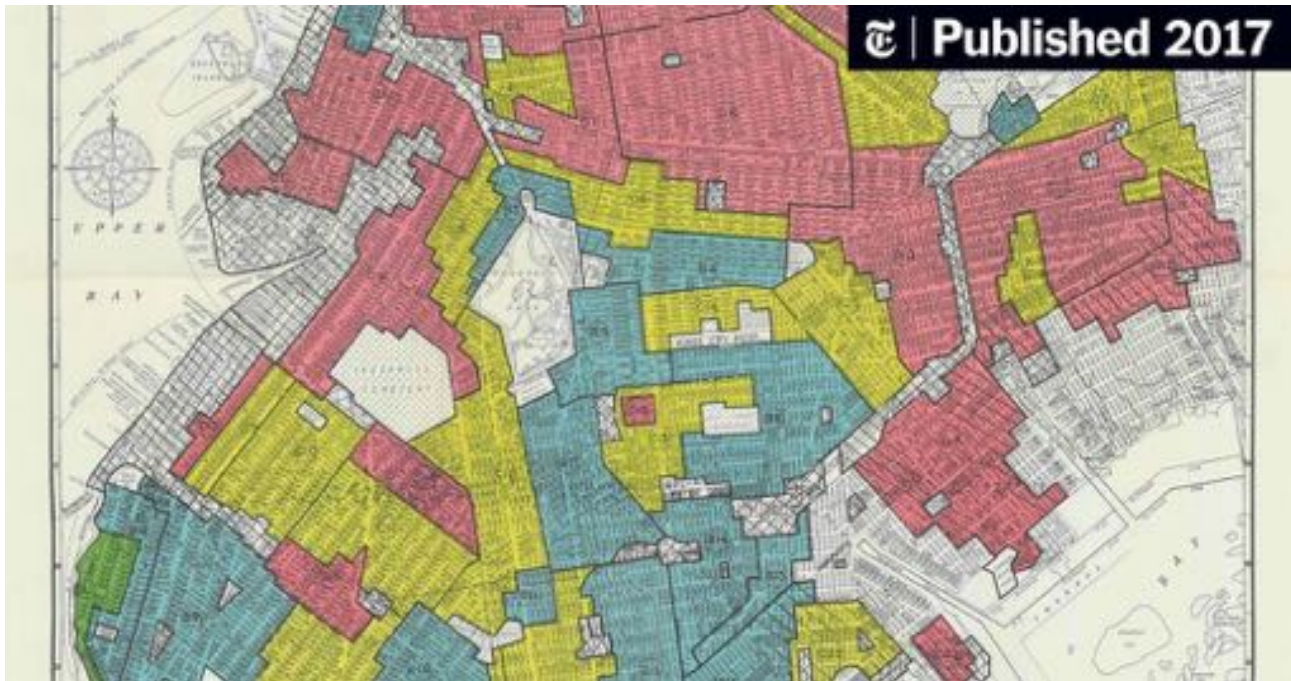
A: Because American society has **historically** favored White Americans, relative to Black Americans, and structural racism is reproduced over time

# Why are Black youth over-represented?

Two possible reasons

- 1. Need/Risk** (Black parents have less money to support children)
- 2. Discrimination/Bias** (Black families are over-policed within Child Welfare)





OK.

This seems bad.

**What can we do about it?**




The Impossible Project:  
Making Computing Antiracist



# The case study



# WHY worksheet due tomorrow 5pm

note @36    stop following 8 views



## WHY worksheets now out!

Okie dokie, following up from @35, the WHY worksheets are also out:

<http://www-student.cse.buffalo.edu/~atn/mi-and-soc/spr22/ig/why.html>

**Please note the non-standard submission procedure. Make sure you follow the procedure EXACTLY!**



 good note 

Updated 1 day ago by Ann Ruelle