

# Ethics for Powerful Algorithms

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Aspire Health  
Wrangle, SF  
July 2016





1. Algorithms are de facto gatekeepers to opportunity.
2. Good statistics are necessary but not sufficient for good ethics.
3. You should conduct an ethics review ...and tell someone.

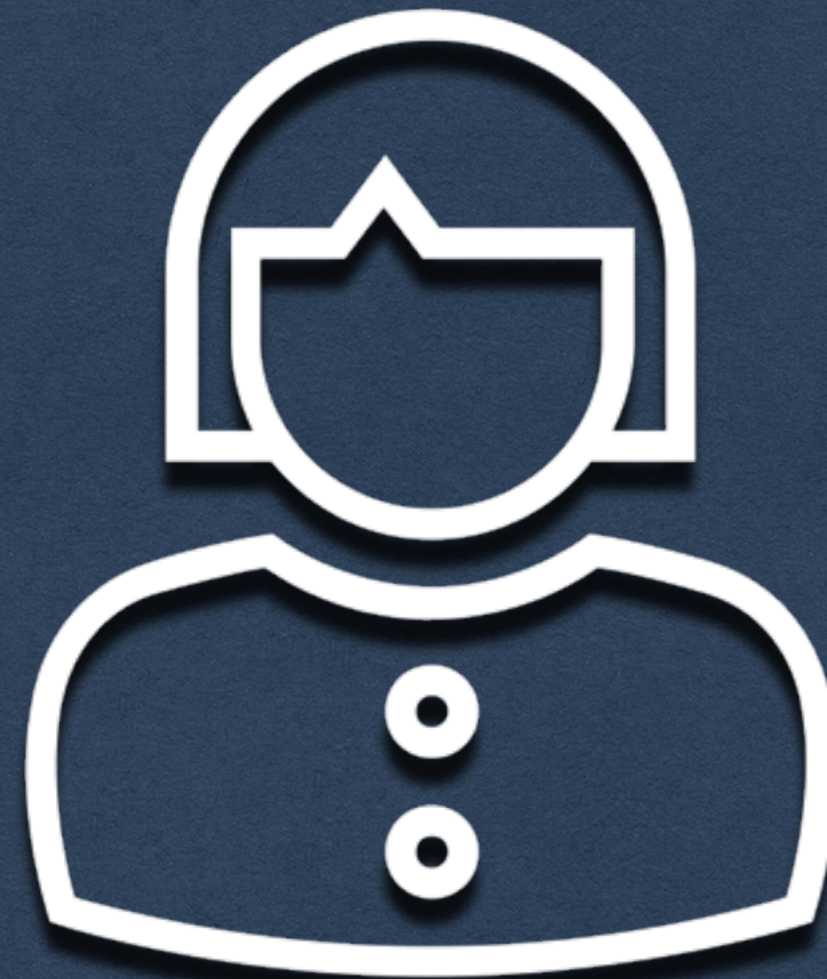


Hi! I'd like a



Great!  
Let me check your

**Credit score**



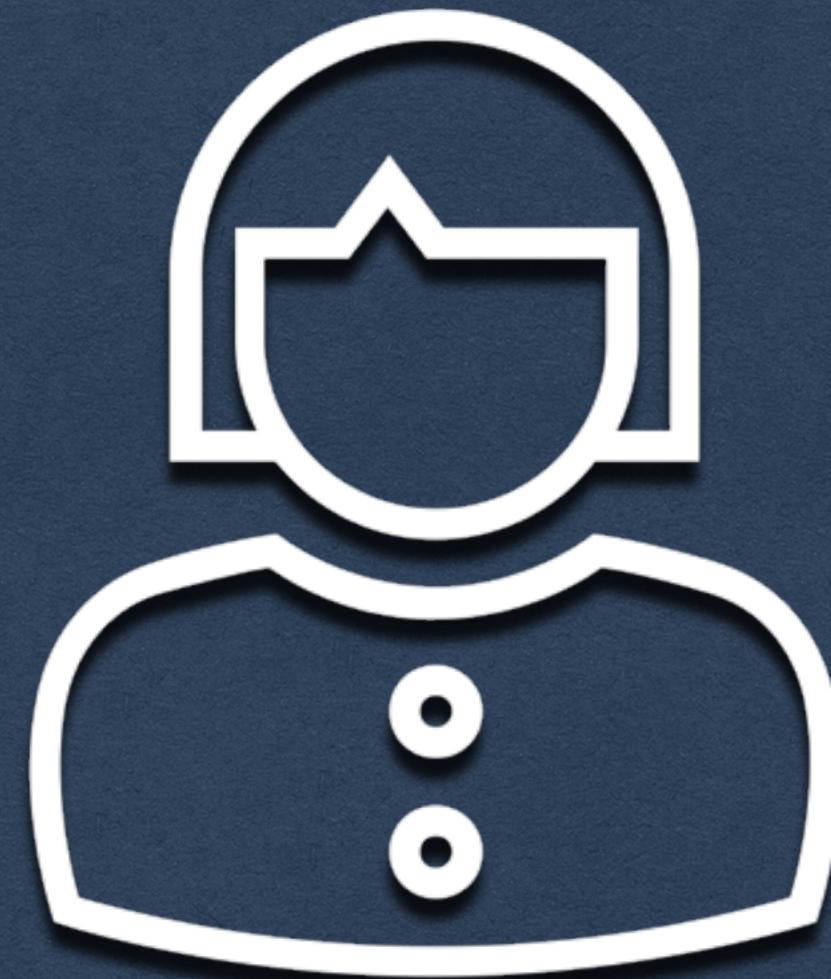


Hi! I'd like an



Sure!  
Let me check your

**SAT/ACT**



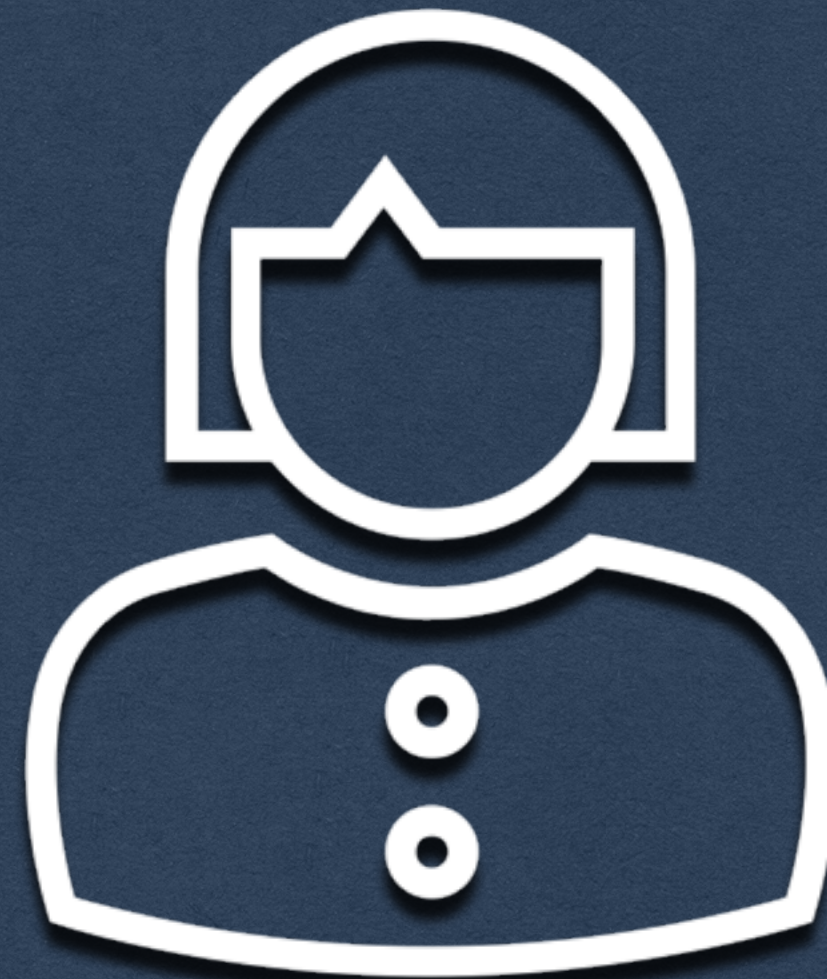


Hi! I'd like to start a



Of course!  
Let me check your

**Criminal  
history**



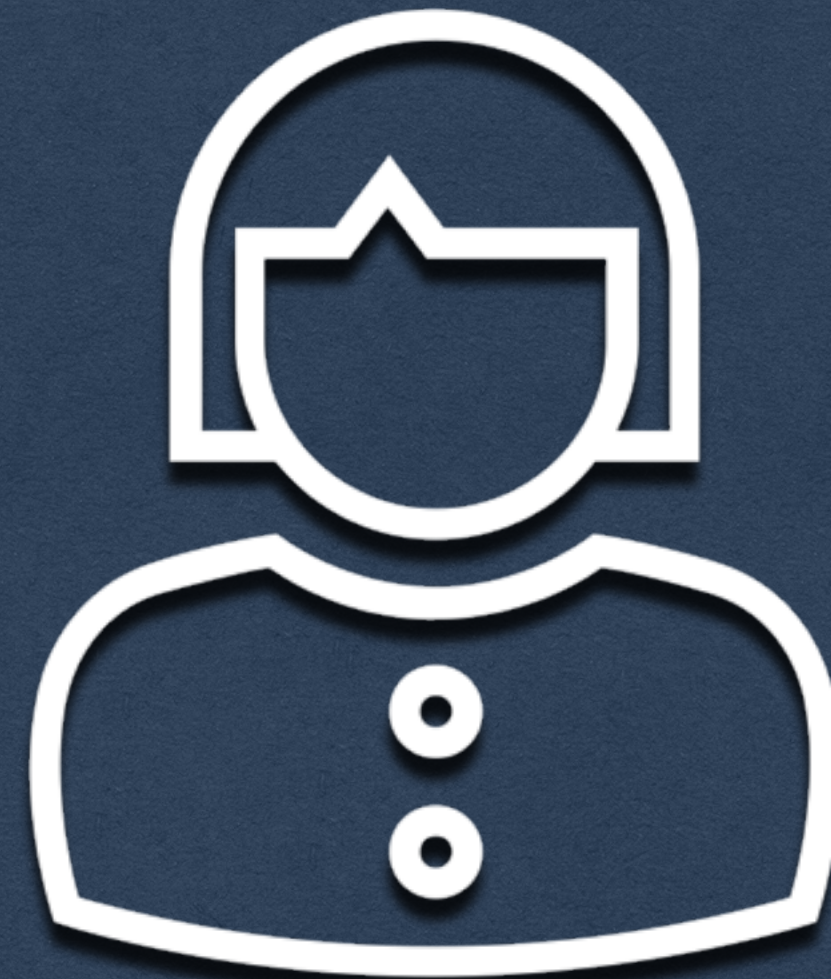


Hi! I need access to

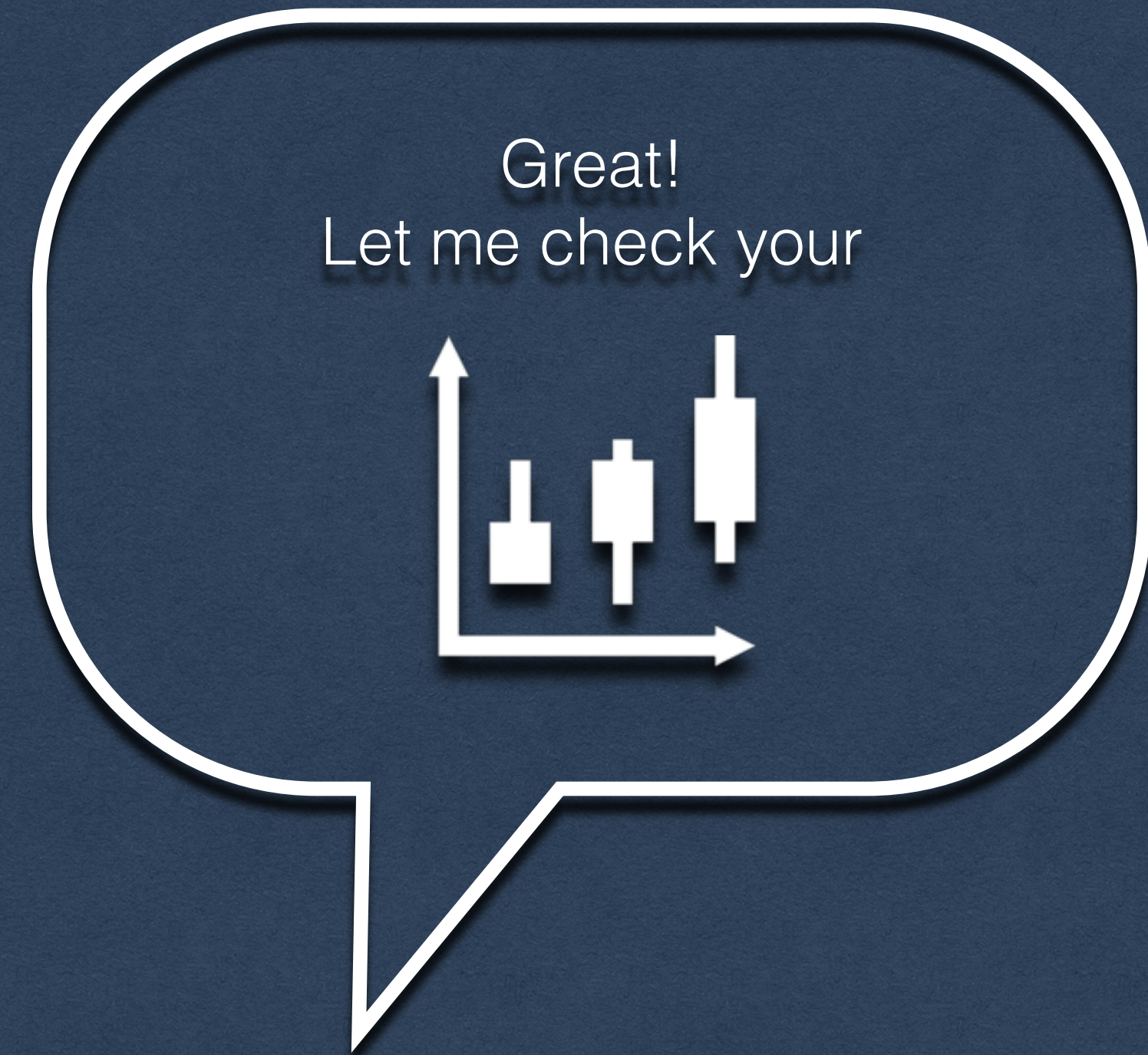
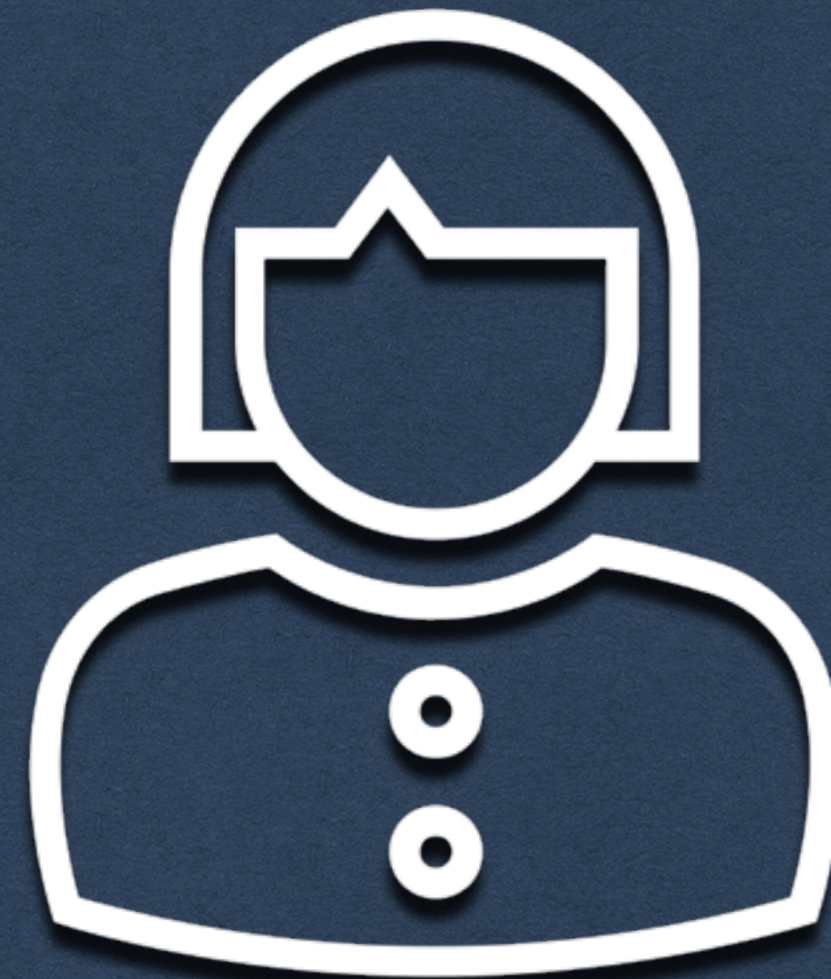


Of course!  
Let me check your

**Rates**





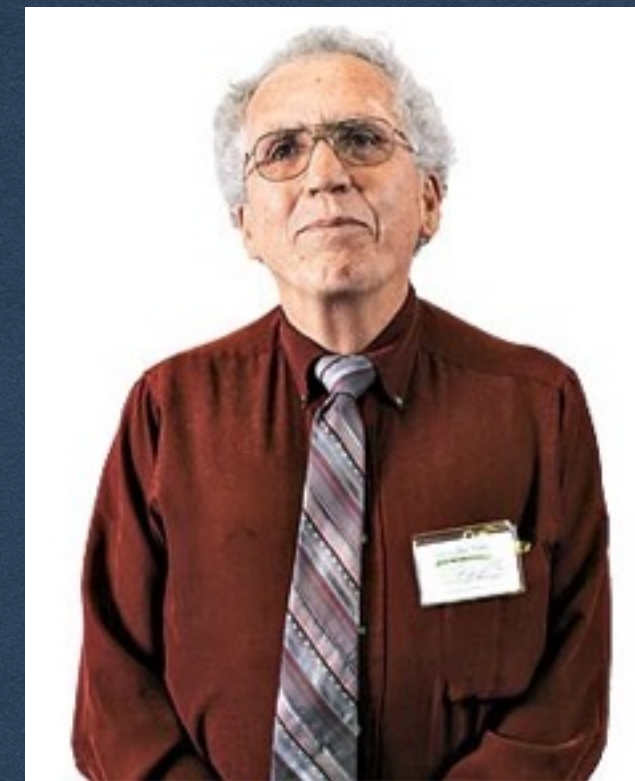
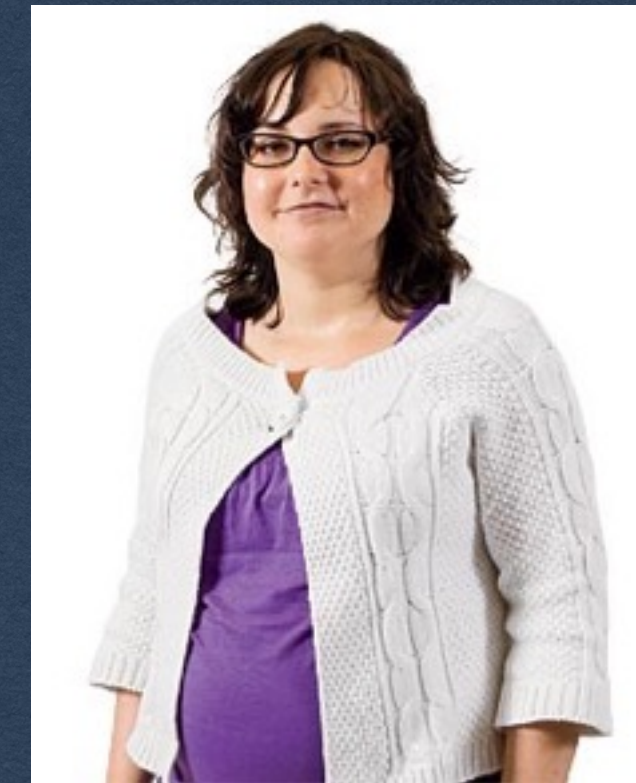






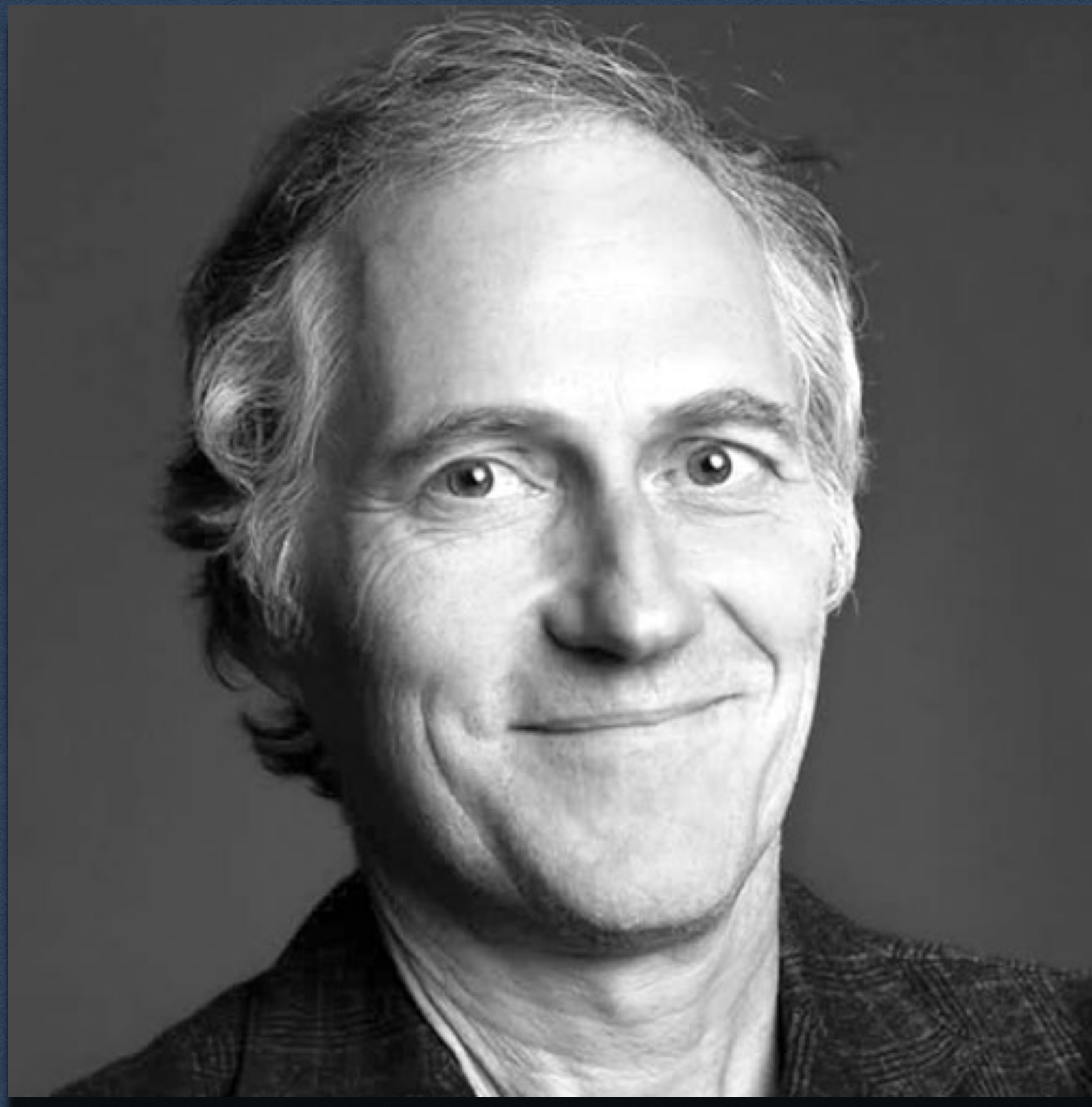
**Algorithms are de facto  
gatekeepers to opportunity.**







You know the way that **advertising** turned out to be the native business model for the Internet?

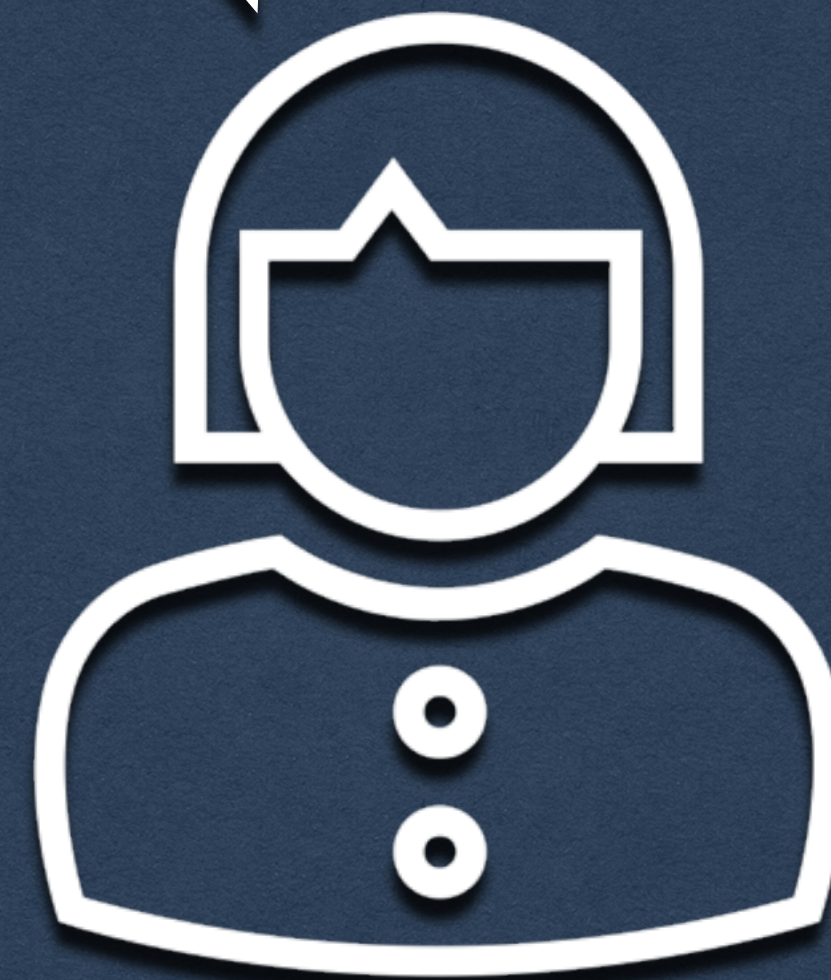


I think that **insurance** is going to be the native business model for the Internet of Things.

- Tim O'Reilly



Hi! I'd like to  
not be in  
**prison**  
anymore



Sure thing!  
Let me check your  
**COMPAS  
score**





# COMPAS

- Proprietary algorithm
- Predicts recidivism
- 137 questions
- Not used in conviction or sentencing (usually)
- Often used to inform parole





# Machine Bias

There's software used across the country to predict future criminals. And it's biased against blacks.

*by Julia Angwin, Jeff Larson, Surya Mattu and Lauren Kirchner, ProPublica*

May 23, 2016



### Two Shoplifting Arrests



JAMES RIVELLI

LOW RISK **3**

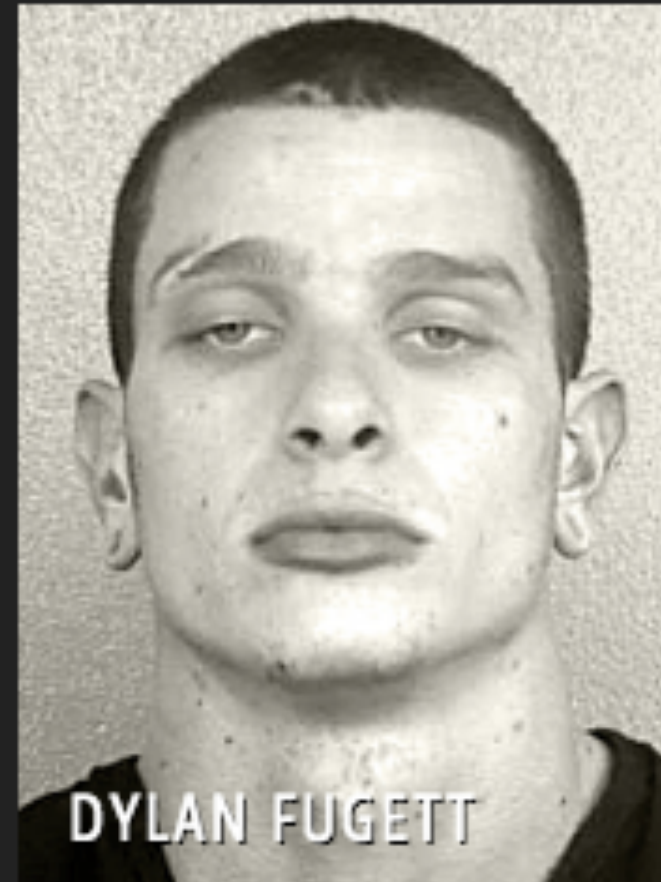


ROBERT CANNON

MEDIUM RISK **6**

*After Rivelli stole from a CVS and was caught with heroin in his car, he was rated a low risk. He later shoplifted \$1,000 worth of tools from a Home Depot.*

### Two Drug Possession Arrests



DYLAN FUGETT

LOW RISK **3**

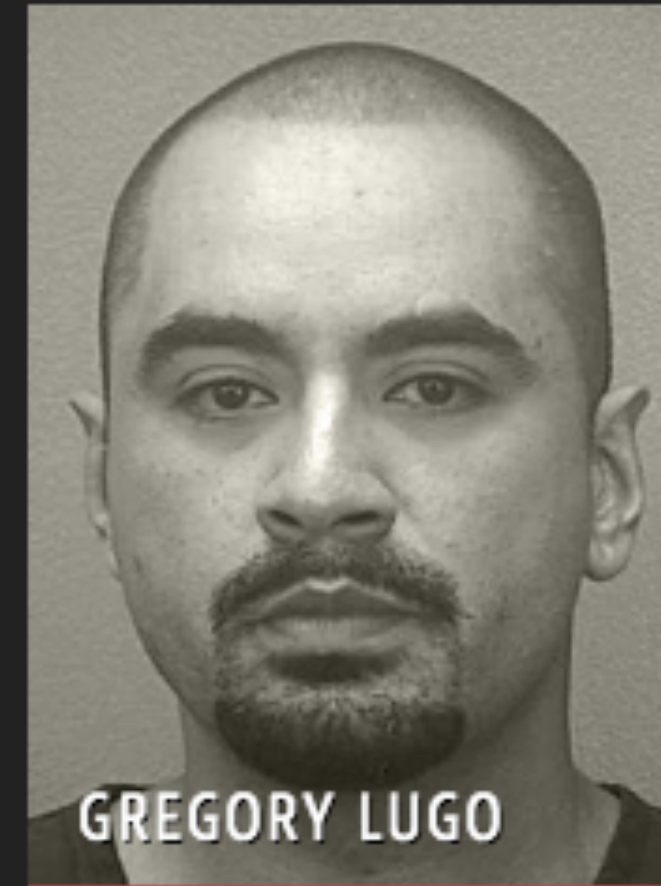


BERNARD PARKER

HIGH RISK **10**

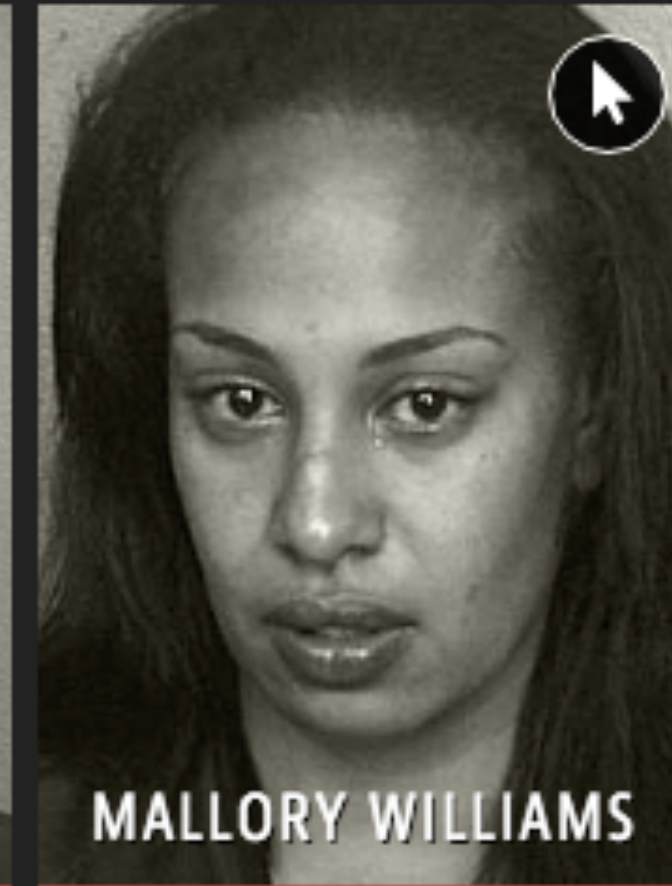
*Fugett was rated low risk after being arrested with cocaine and marijuana. He was arrested three times on drug charges after that.*

### Two DUI Arrests



GREGORY LUGO

LOW RISK **1**



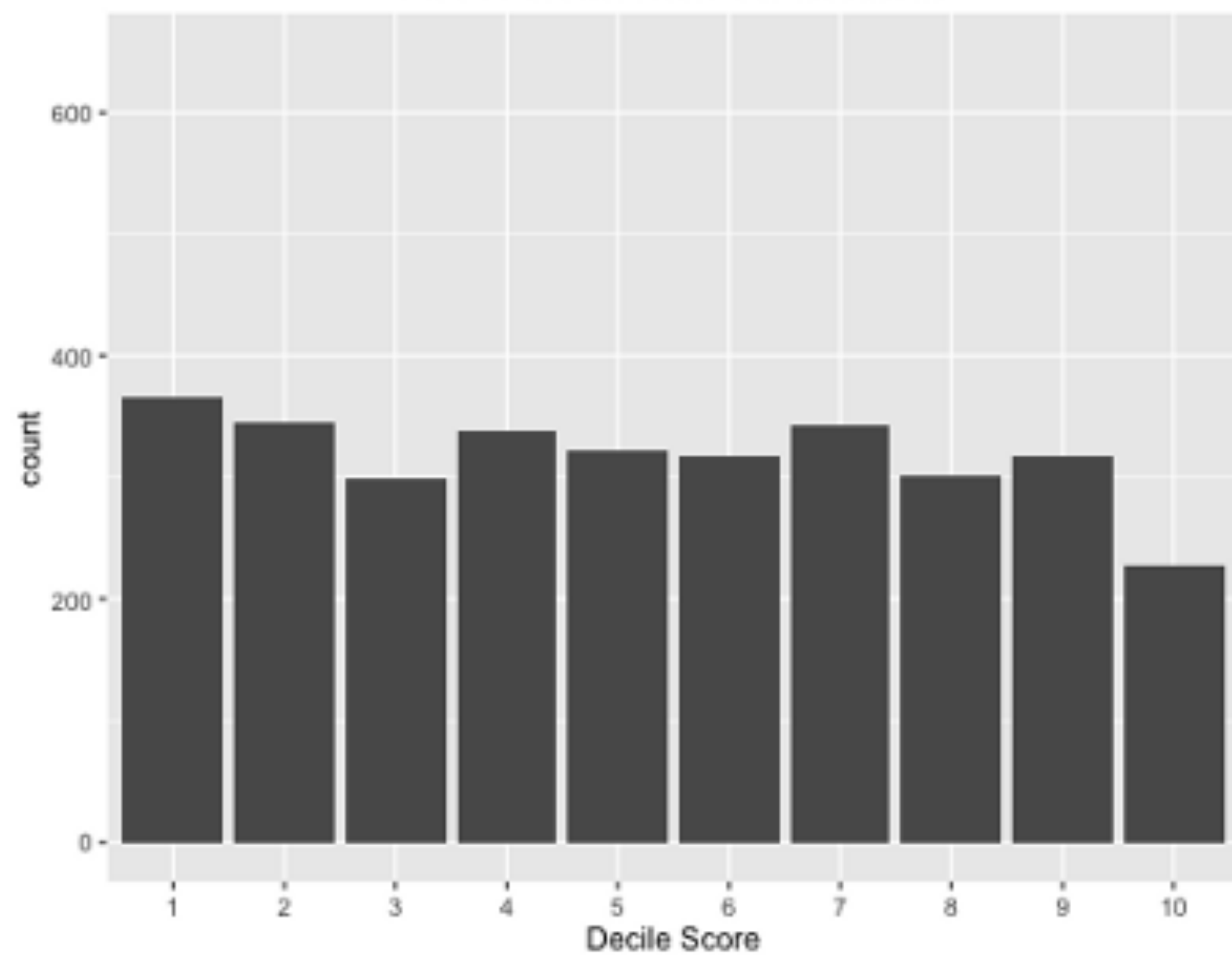
MALLORY WILLIAMS

MEDIUM RISK **6**

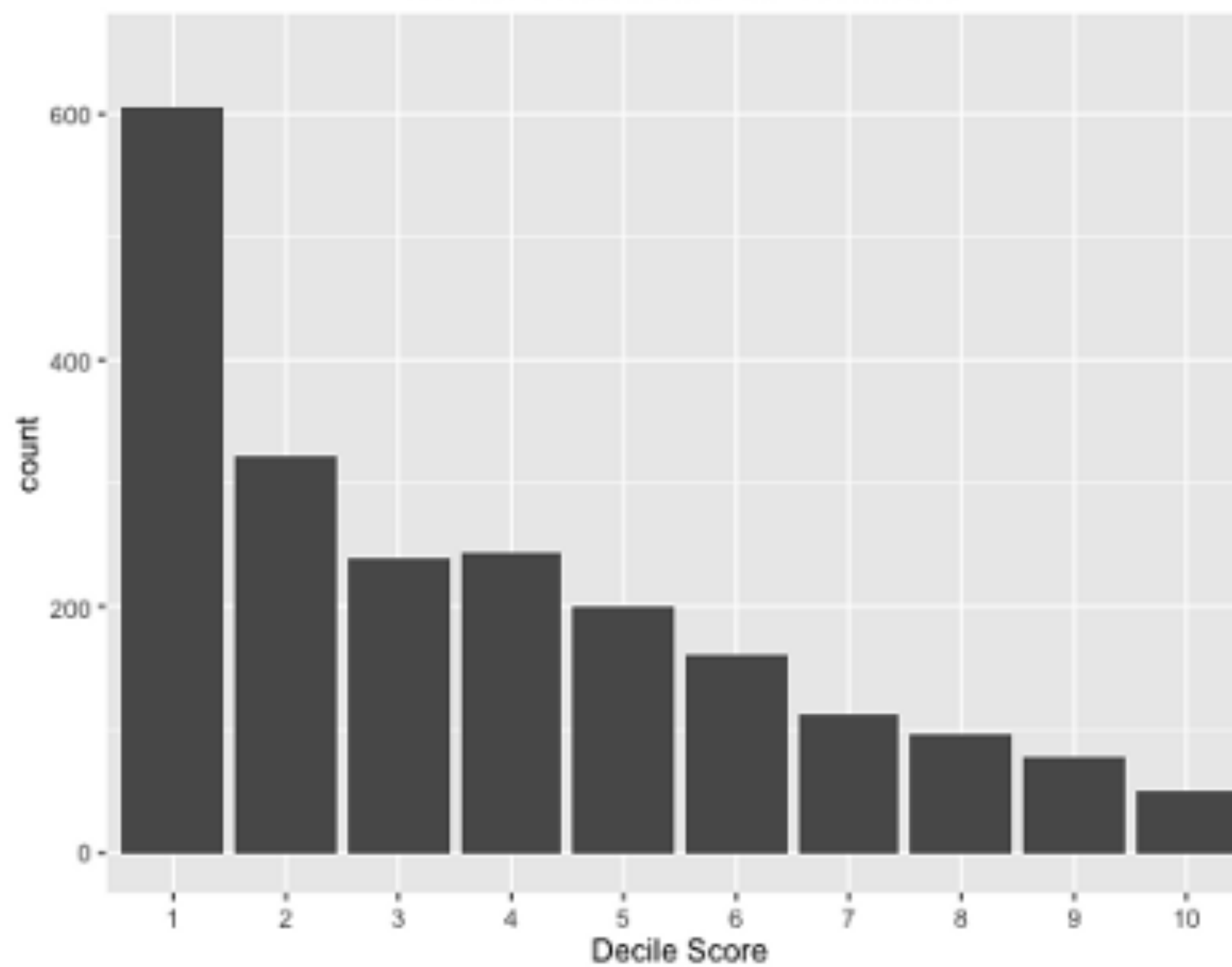
*Lugo crashed his Lincoln Navigator into a Toyota Camry while drunk. He was rated as a low risk of reoffending despite the fact that it was at least his fourth DUI.*



Black Defendant's Decile Scores

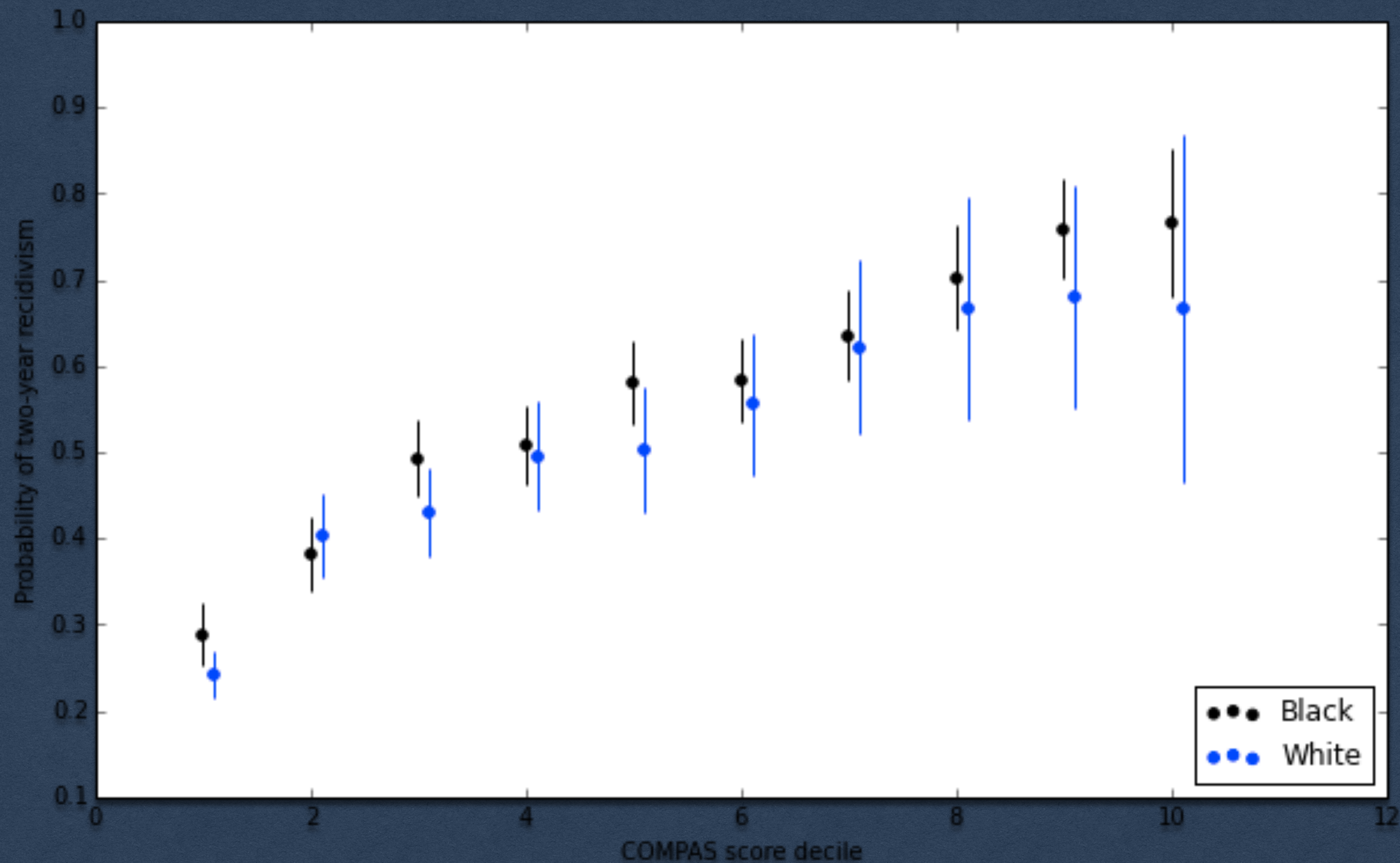


White Defendant's Decile Scores





# COMPAS isn't (statistically) biased...





...but could still be deeply unfair.

1. Biased ground truth



...but could still be deeply unfair.

1. Biased ground truth

*A hungry person has a right to steal.*

2. Resources to cheat

*When people get in trouble with the law it's because they have no chance to get a decent job.*

*When people do minor offenses or use drugs they don't hurt anyone except themselves.*

*If someone insults my friends, family or group they are asking for trouble.*

*The law doesn't help average people.*



...but could still be deeply unfair.

1. Biased ground truth

*If you lived with both parents and they later separated, how old were you at the time?*

2. Resources to cheat

3. Circumstances outside personal control

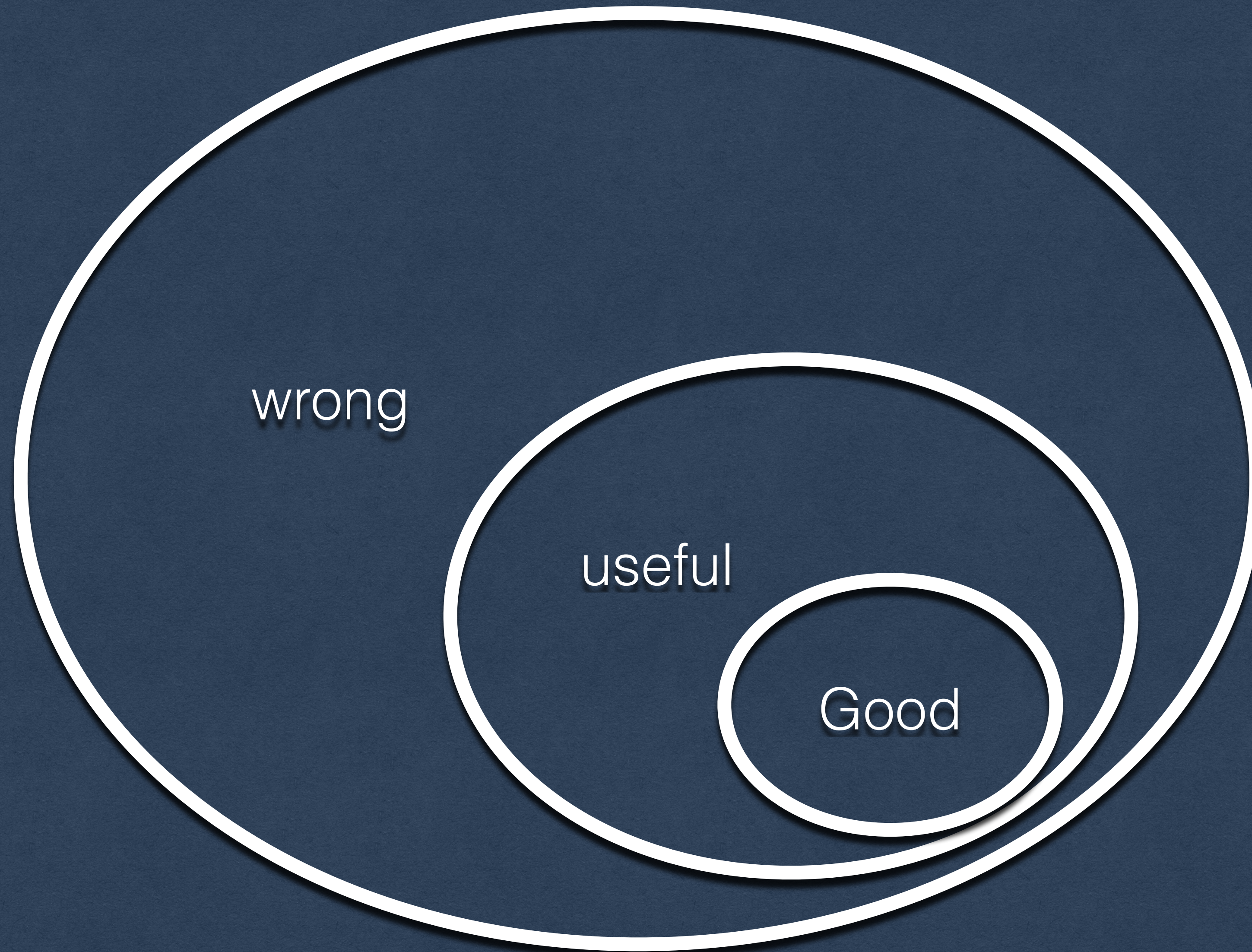
*Was your father (or father figure who principally raised you) ever arrested, that you know of?*

*How many of your friends/acquaintances are taking illegal drugs regularly?*

*In your neighborhood, have some of your friends or family been crime victims?*

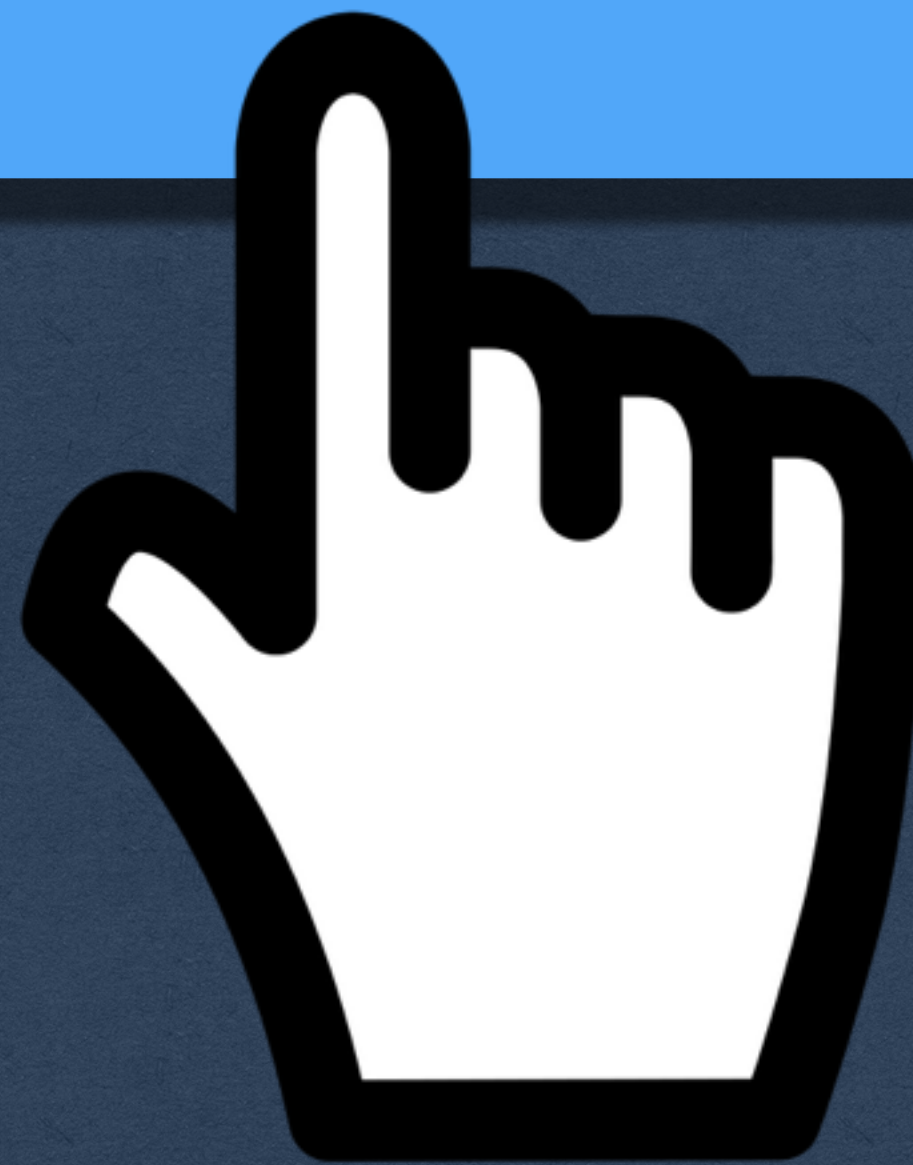


# Models





**Conduct an ethics review**



**No thanks, I'd rather  
be an amoral jerk.**





1. Find a friend.
2. Ask 4 questions.
3. Share something you learned.

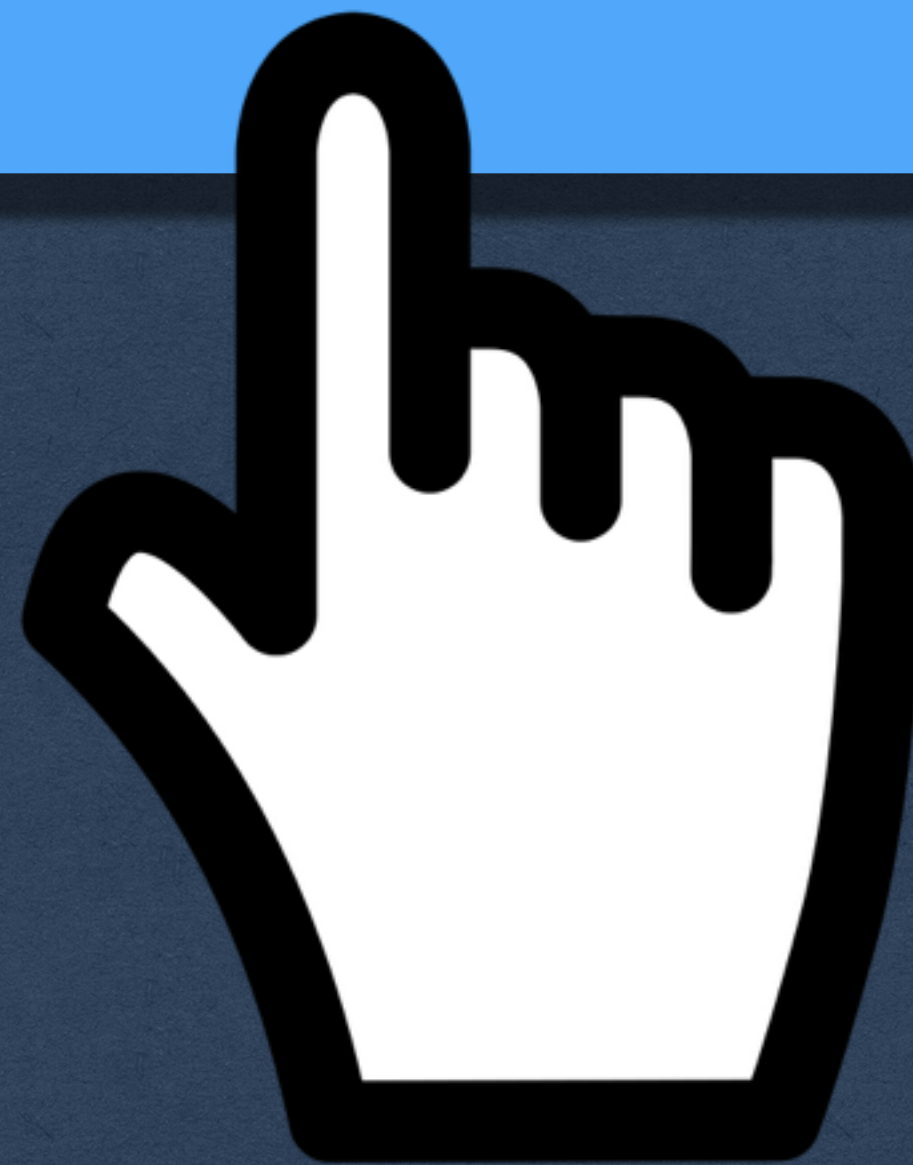




1. Are the statistics solid?
2. Who wins? Who loses?
3. Are those changes in power structures healthy?
4. How can we mitigate harms?



**Share on twitter, etc.**



**No thanks, I don't care  
about building community.**



**I did an ethics review for my new  
workout classification algorithm  
#ethicalalgorithms**







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**Foreground detection can rule out accidental  
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**Great insights from @clarecorthell during our  
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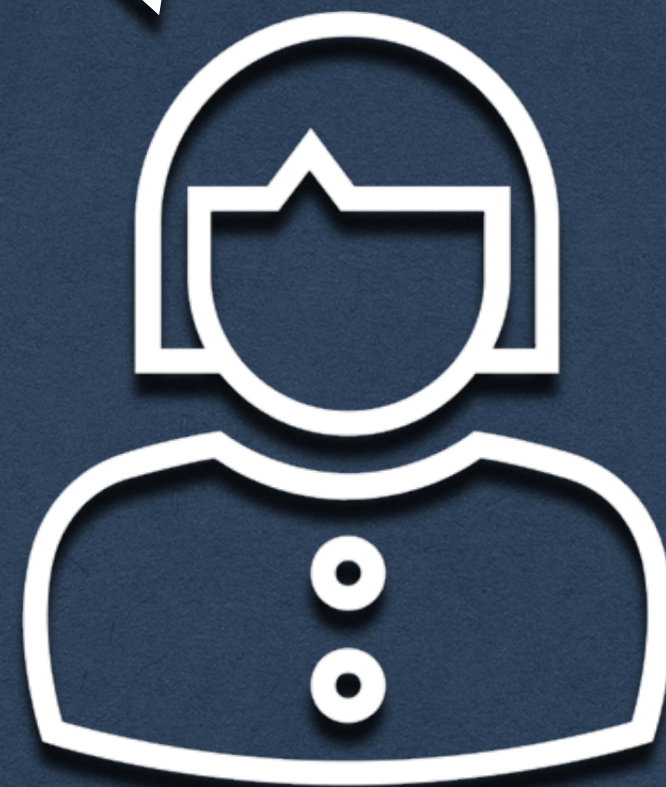
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**Just finished an ethics review for my latest  
data project. Feeling really good about it.  
#ethicalalgorithms**

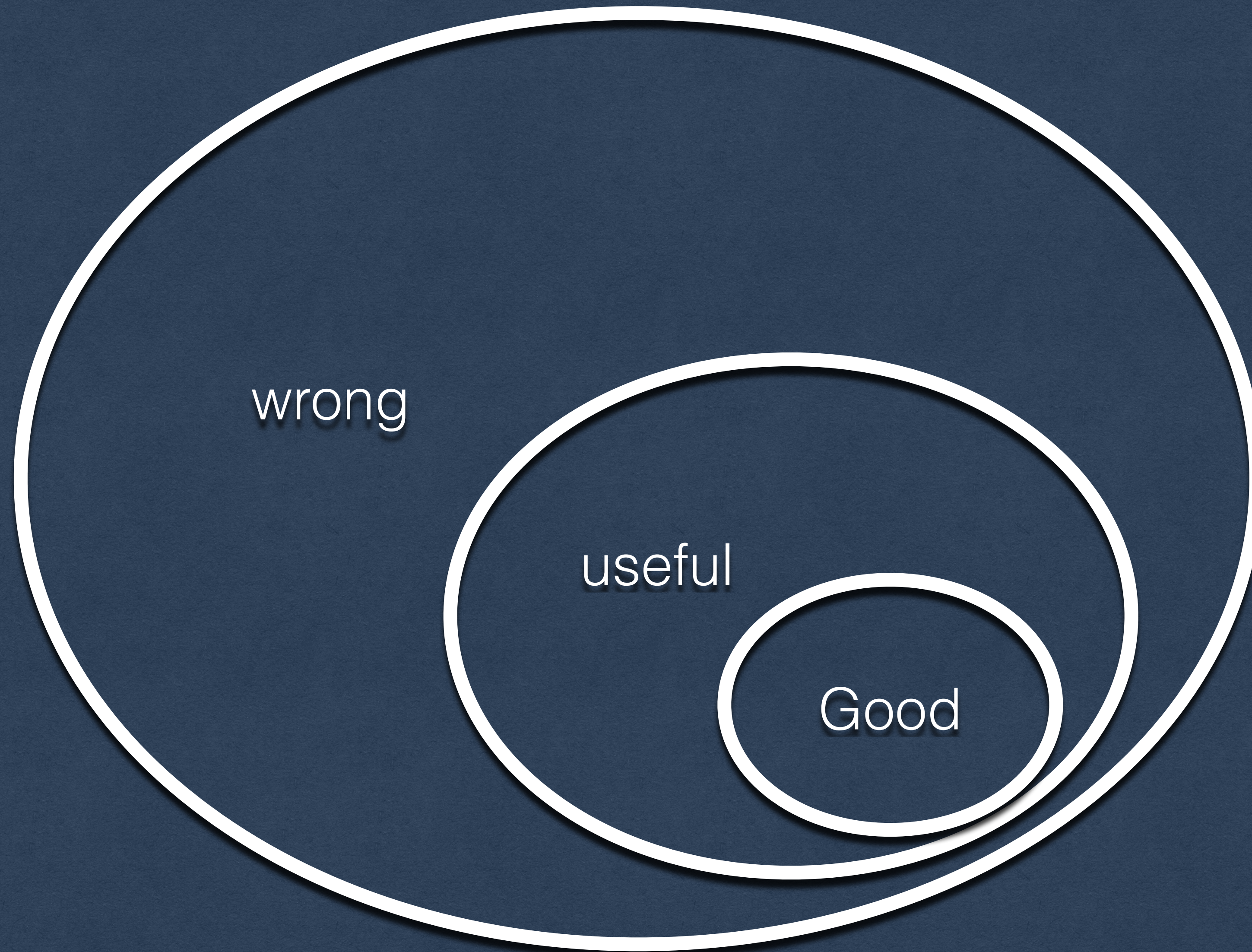


# Algorithms are de facto gatekeepers to opportunity.





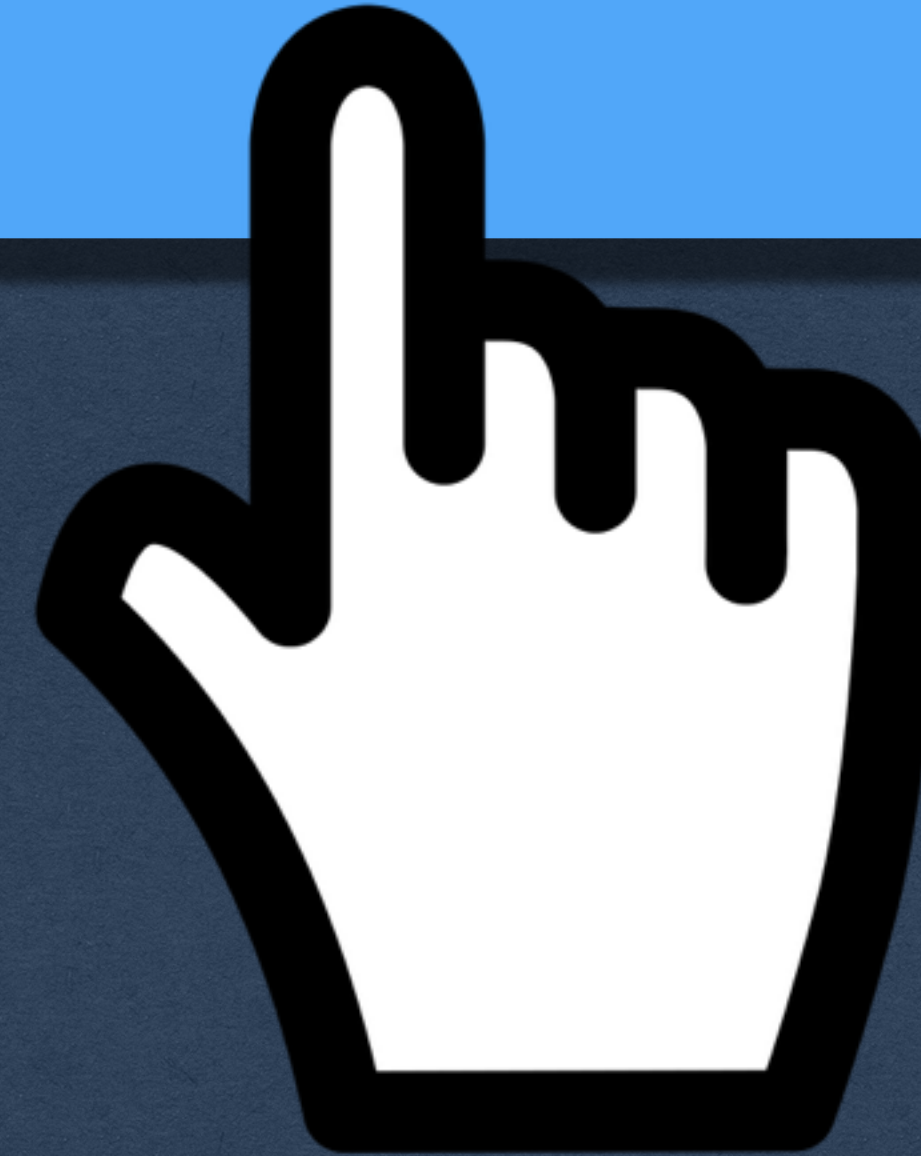
# Models





# Conduct an ethics review

1. Are the statistics valid?
2. Who gains? Who loses?
3. Are changes in power structures healthy?
4. Can we mitigate harms?



And share on twitter, etc.  
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