

INFO 350



Algorithms, Artificial Agents

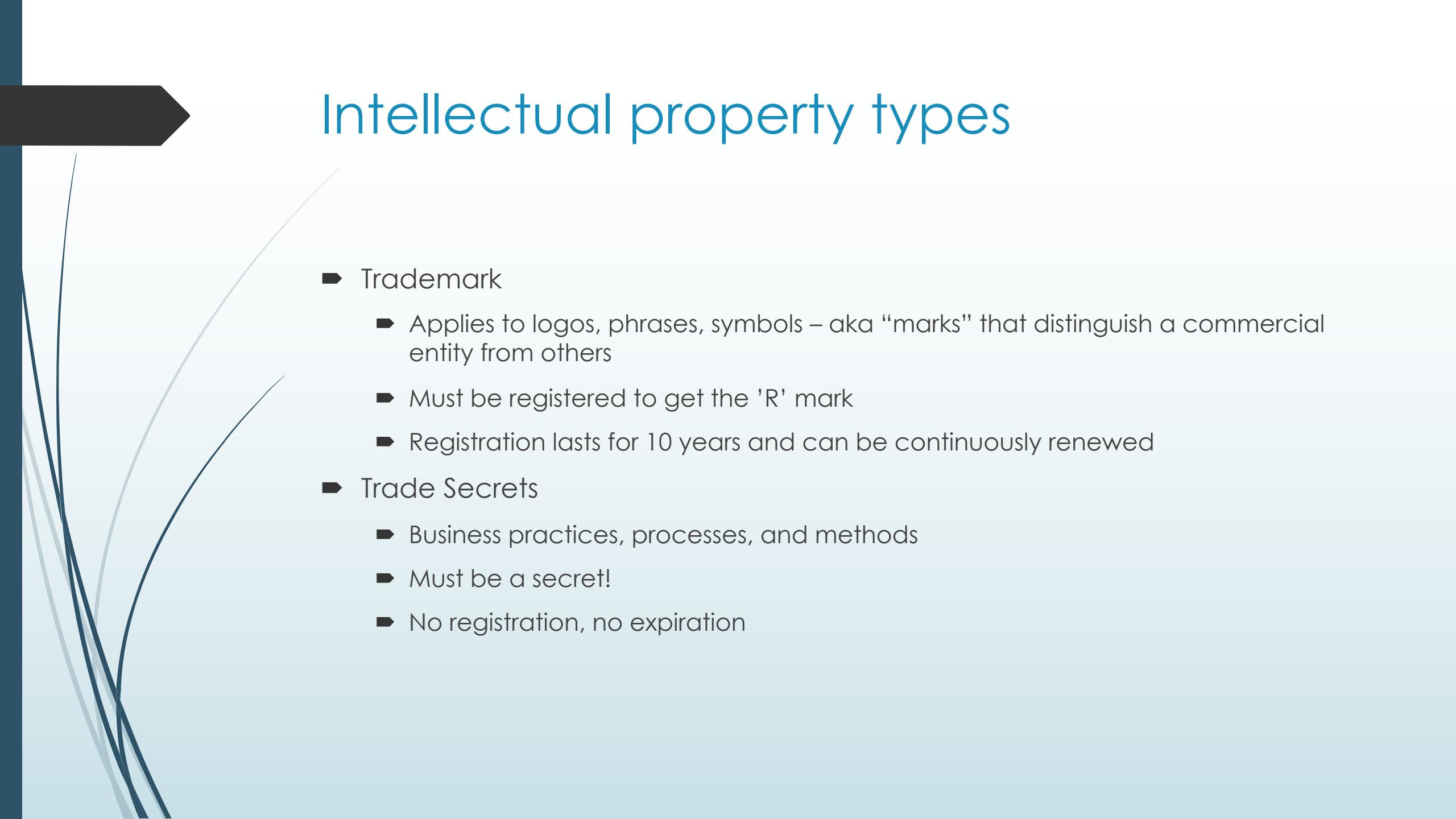


Review of Intellectual property In Law



Intellectual property types

- ▶ Copyright
 - ▶ Applies to *manifestations* of creative works (e.g. stories, music, movies, artworks, dances, etc.)
 - ▶ Does not require registration – but a copyright owner must defend their copyright
 - ▶ Does not apply to *ideas* (like theories or concepts) and also does not apply to *instructions* (like recipes)
 - ▶ Time limited – life of the author plus 70 years (longer in some cases). Then works become “public domain”
 - ▶ Public domain – also applies to works too old to be covered under copyright law
- ▶ Patents
 - ▶ For inventions – “useful for work” – e.g. machines, gadgets, software
 - ▶ Requires registration with the federal government
 - ▶ Time limited – only valid for a period of years (14-20 years depending on type)



Intellectual property types

- ▶ Trademark
 - ▶ Applies to logos, phrases, symbols – aka “marks” that distinguish a commercial entity from others
 - ▶ Must be registered to get the 'R' mark
 - ▶ Registration lasts for 10 years and can be continuously renewed
- ▶ Trade Secrets
 - ▶ Business practices, processes, and methods
 - ▶ Must be a secret!
 - ▶ No registration, no expiration



Copyright Fair use

- ▶ Copyrighted works can be used without licensing if used for:
 - ▶ **criticism, comment, news reporting, teaching, scholarship, or research**
 - ▶ No guarantees! Must be interpreted by a judge if contested
 - ▶ Based on the nature of the material and how it is used
- ▶ The body of case law that informs about what is/is not fair use is called: “the fair use doctrine”



Algorithmic Fairness and Autonomous Agency



INFO Policy, Law, and Ethics...



In the news

Misinformation



- ▶ <https://www.cnn.com/videos/tech/2019/05/25/facebook-monika-bickert-pelosi-video-cooper-intv-sot-ac360-vpx.cnn>
- ▶ <https://www.cnn.com/videos/business/2019/05/24/nancy-pelosi-doctored-video-social-media.cnn-business/video/playlists/business-media/>

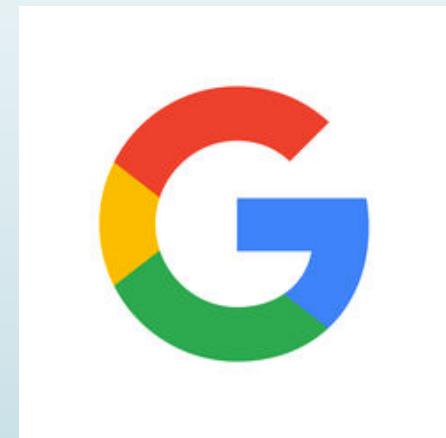
Algorithms and Profiles

- Within the world of information systems, the main way we experience algorithms is through advertising.



The “Advertising Model”

- ▶ Nominally free services are supported by advertising
 - ▶ Facebook, Google, mobile apps
 - ▶ This isn't a new practice, but...
- ▶ This most desirable advertising is *targeted* advertising
 - ▶ Emerged from direct mail strategies in the 1970s
 - ▶ Secondary information markets – merge and aggregate information from multiple sources
 - ▶ “Digital dossiers”, “digital persons”
 - ▶ Sedentary information markets
 - ▶ Companies sell access to a captive audience



What Profiling Looks Like

[REDACTED] likes Poached Jobs.

Poached Jobs
Sponsored

Like Page

The nation's largest job board for the restaurant & hospitality industry



Need Cooks?
We fill hard to fill positions
POACHEDJOBS.COM

Learn More

15

4 Comments 1 Share

Sponsored

Create Ad



Customers came back to purchase as a GIFT
myheroclip.com
Free shipping for a limited time! 100,000+ sold!
Get it as a gift ASAP =>> <https://myheroc...>



Never Re-Roof Again.
SeattlesBestRoof.com
Interlock® Metal Roofing Systems are Solar Ready, Environmentally Friendly and come with a...



Algorithmic Decision Making

- ▶ Decision support systems
- ▶ The tools of targeted advertising are now the tools of automated decision making
- ▶ Profiling people for jobs, housing, dating
- ▶ Based on the data that can be found and used
- ▶ Risk mitigation for decision makers – looking for the negative

The Scoreboards Where You Can't See Your Score

By NATASHA SINGER DEC. 27, 2014





► Some examples of consumer scores:

- ▶ “churn scores,” aim to predict which customers are likely to forsake their mobile phone carrier or cable TV provider for another company
- ▶ “job security scores,” risk of unemployment into calculations of his or her ability to pay back a loan;
- ▶ “charitable donor scores,” households likeliest to make large donations;
- ▶ “frailty scores,” which are typically used to predict the risk of medical complications and death in elderly patients who have surgery.
- ▶ Is this okay?
- ▶ Scoring happens... “whether or not you want to participate, and these scores will be used by others to make major decisions about your life, such as whether to hire, insure, or even date you.”

Modern algorithms don't only analyze clicks and posts, emerging technologies claim to be able to analyze physical traits and behaviors

Examples you may be familiar with:

- Facial recognition
- Voice analysis
- Fingerprint scanners

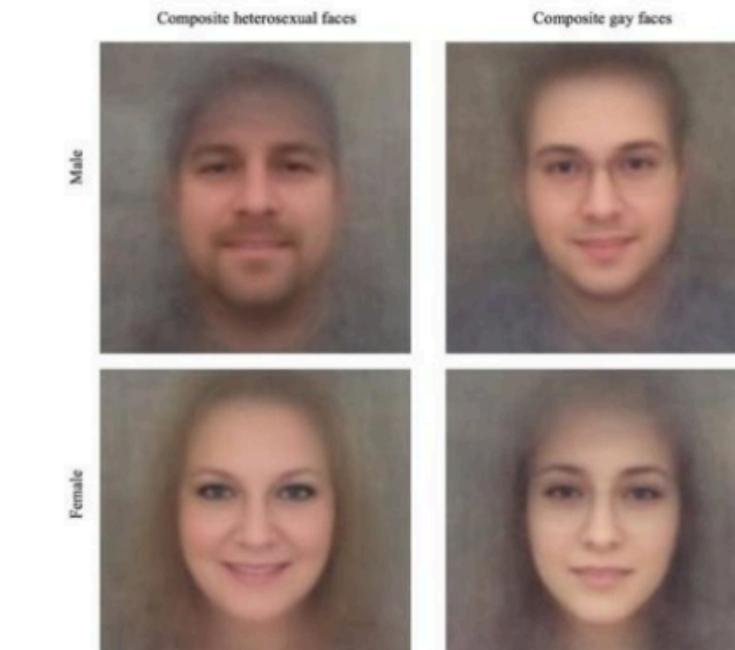
But how about:

- Sexual identity
- Illness (Alexa patent)
- Criminality

Technology

Row over AI that 'identifies gay faces'

11 September 2017



The study created composite faces judged most and least likely to belong to homosexuals



The Scored Society

Citron & Pasquale

- ▶ Automated predictions increasing part of people's lives.
 - ▶ Political campaigns,
 - ▶ Health insurance
 - ▶ Jobs
 - ▶ Loans
 - ▶ Crime and punishment
- ▶ Why are decision makers drawn to algorithmic scoring?
 - ▶ Fast, easy, the power of information!
 - ▶ Landlords evaluate tenants, tenants evaluate landlords...
 - ▶ Humans out of the loop: worries about error, bias, and...liability



The Scored Society

Citron & Pasquale

- ▶ Authors ask: should we trust algorithmic scores?
 - ▶ Are there biases we should be concerned about?
 - ▶ Are there categories that are just plain unfair?
- ▶ Should your purchasing history inform your employment chances?
- ▶ Should your Facebook friends influence whether you get a loan?



Better decisions or just different?

- ▶ “Advocates applaud the removal of human beings and their flaws from the assessment process. Automated systems are claimed to rate all individuals in the same way, thus averting discrimination. But this account is misleading.”
- ▶ “Because human beings program predictive algorithms, their biases and values are embedded into the software’s instructions, known as the source code and predictive algorithms.”
- ▶ “Scoring systems mine datasets containing inaccurate and biased information provided by people.”



The Scored Society

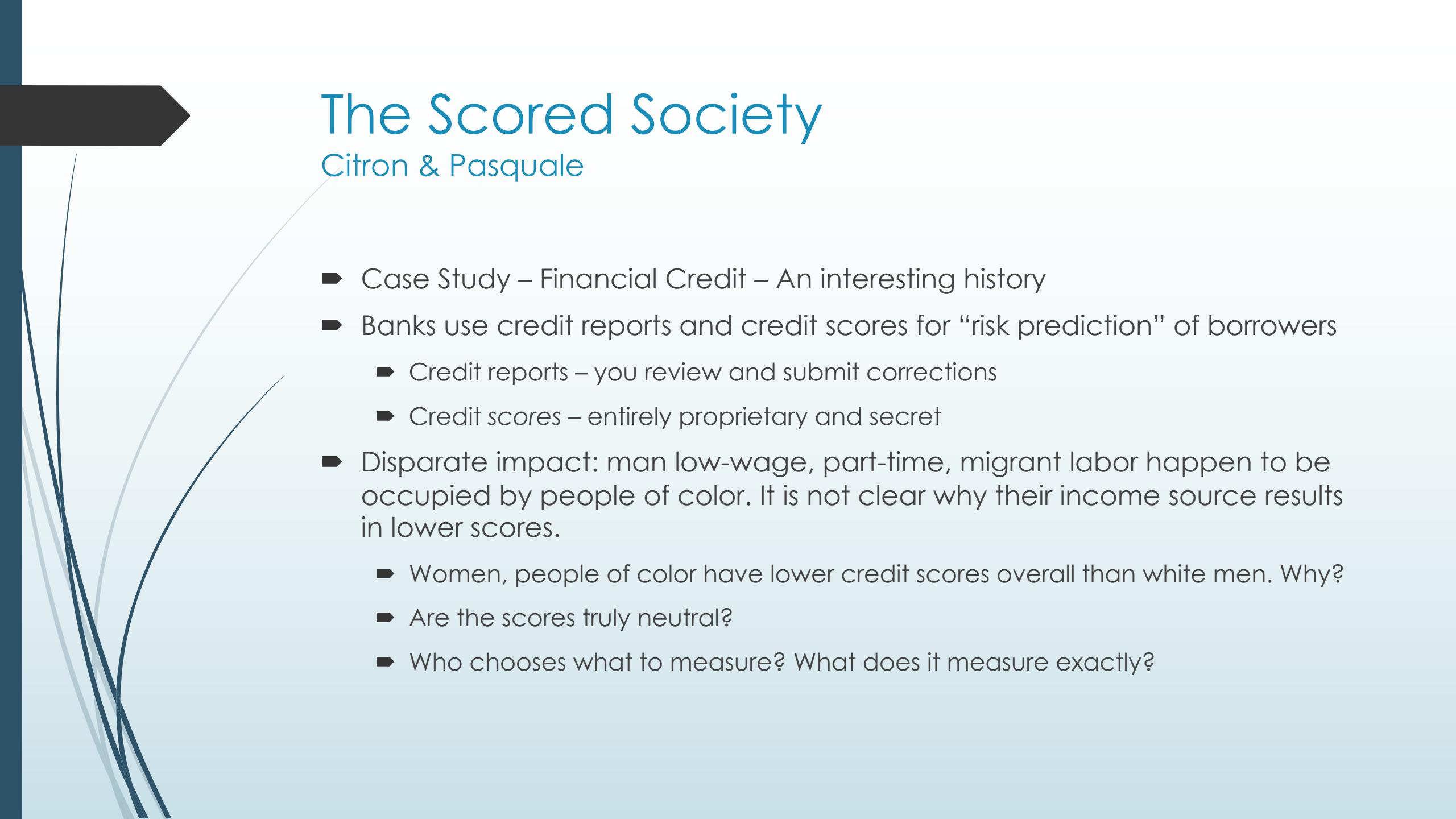
Citron & Pasquale

- ▶ What is “agency?”
 - ▶ What counts as a “maker” of a decision?
 - ▶ An “agent” is capable of making a moral decision, is worthy of moral consideration
 - ▶ Agency is the ability to act, and to act morally
- ▶ Degrees of Algorithmic Agency
 - ▶ Humans in the loop
 - ▶ Humans on the loop
 - ▶ Humans out of the loop



In-Lecture Reflection, May 28th

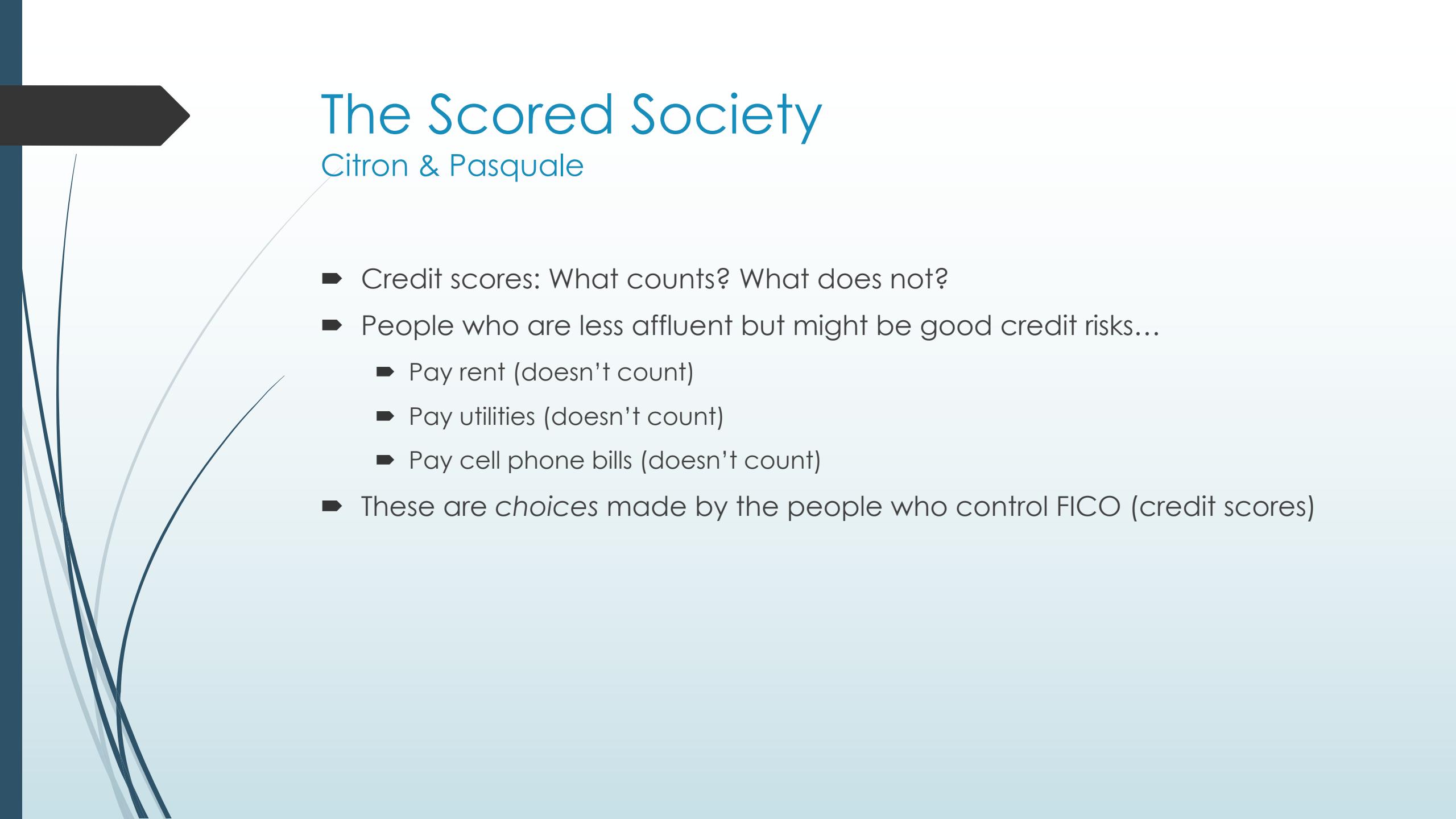
- ▶ What is artificial intelligence? Offer a definition of what artificial intelligence is and what it can or will do.



The Scored Society

Citron & Pasquale

- ▶ Case Study – Financial Credit – An interesting history
- ▶ Banks use credit reports and credit scores for “risk prediction” of borrowers
 - ▶ Credit reports – you review and submit corrections
 - ▶ Credit scores – entirely proprietary and secret
- ▶ Disparate impact: men low-wage, part-time, migrant labor happen to be occupied by people of color. It is not clear why their income source results in lower scores.
 - ▶ Women, people of color have lower credit scores overall than white men. Why?
 - ▶ Are the scores truly neutral?
 - ▶ Who chooses what to measure? What does it measure exactly?



The Scored Society

Citron & Pasquale

- ▶ Credit scores: What counts? What does not?
- ▶ People who are less affluent but might be good credit risks...
 - ▶ Pay rent (doesn't count)
 - ▶ Pay utilities (doesn't count)
 - ▶ Pay cell phone bills (doesn't count)
- ▶ These are choices made by the people who control FICO (credit scores)

Redlining

Modern-day redlining: How banks block people of color from homeownership



In this Nov. 11, 2017, photo, provided by Reveal, Rachelle Faroul, right, and her partner, Hanako Franz, sit outside their new home in Philadelphia. "I had a fair amount of savings and still had so much trouble just left and right," said Faroul, who was rejected twice by lenders when she tried to buy a brick row house close to Malcolm X Park in Philadelphia. (Sarah Blesener / Reveal via AP)

Chicago Tribune

IN PARTNERSHIP WITH

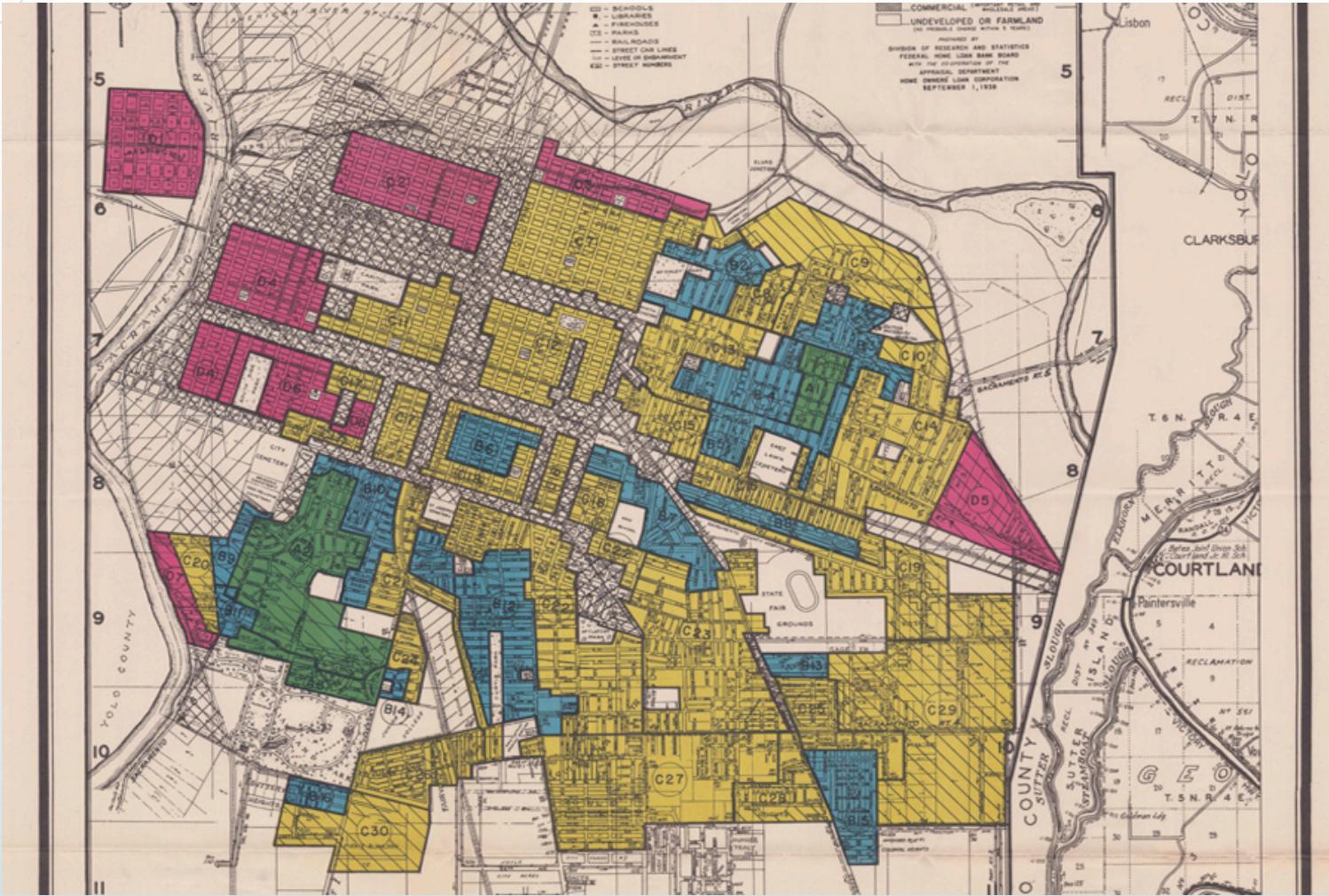
BESTREVIEWS

We tested the top
Tax Software.

See which
Tax Software
we rated
Best of the Best.



Redlining



Digital Redlining

- Report: "Digital redlining" of low-income neighborhoods in Cleveland



Network Effects

- ▶ Companies using data stores to make decisions about essential life opportunities
- ▶ Mortgages, apartments, etc.
- ▶ Including the low-hanging fruit: social media data





Information Marginalization

- ▶ These could unfairly advantage the already advantaged
 - ▶ How do we know?
 - ▶ Credit scores – women and African Americans v. white men
- ▶ Over-representation in harmful data sets – prison voice prints
- ▶ Social media data includes information about “who you know”
 - ▶ Family members, friends, neighbors can work against you
- ▶ Profiling taking place out of view of the profiled
 - ▶ Typically no recourse for the profiled
- ▶ Reputation harms perpetuate existing advantage/disadvantage
 - ▶ Civil rights laws harder to enforce against algorithms and proprietary software