

INTRODUCTION TO ETHICAL PRACTICE IN STATISTICS AND DATA SCIENCE

Ethics in Statistics and Data Science: “With great power comes great responsibility”

- *Michiko I. Wolcott (Msight Analytics)*

Statistical ethics takes the stage: Exploring ethical thinking through role play

- *Jennifer Van Mullekom (Virginia Tech)*
- *Jennifer Ortman (US Census Bureau)*
- *Nilupa Gunaratna (Purdue University)*
- *Anthony Mangino (University of Kentucky)*
- *Mario Davidson (Vanderbilt University Medical Center)*

Moderator: *Matthew Rotelli (Nat and Matt Consulting)*

Images generated by Microsoft Copilot, Anthropic Claude, and Google Gemini

Get your copy of the
ASA Ethical Guidelines
to follow along 



Joint Statistical Meetings
Introductory Overview Lecture
August 2, 2026

DISCLAIMER

The views and opinions expressed in this presentation are those of the individual presenters and do not necessarily reflect the official policies, positions, or views of their affiliated organizations or employers.

SESSION OUTLINE

- **Overview Part 1:** Introduction
- **Role Play 1** (Government): “Before the Storm: Disclosure versus Vulnerable Population Safety at the Office of Emergency”
- **Overview Part 2:** The Nature of Ethics
- **Role Play 2** (Academia/Research): “What We Owe the Community”
- **Overview Part 3:** Considerations for Ethical Practice
- **Role Play 3** (Industry): “Vibe Targets: Speed, Reach, and Uneven Opportunity”
- **Overview Part 4:** Putting Ethics into Practice

- **Floor Discussion**

Get your copy of the
ASA Ethical Guidelines
to follow along 



ETHICS, ETHICS EVERYWHERE

EXAMPLES OF WELL-KNOWN CASES IN ETHICS

- Cambridge Analytica Facebook data
- Amazon's hiring algorithm
- Planning a mass shooting with ChatGPT
- Target predictive marketing model



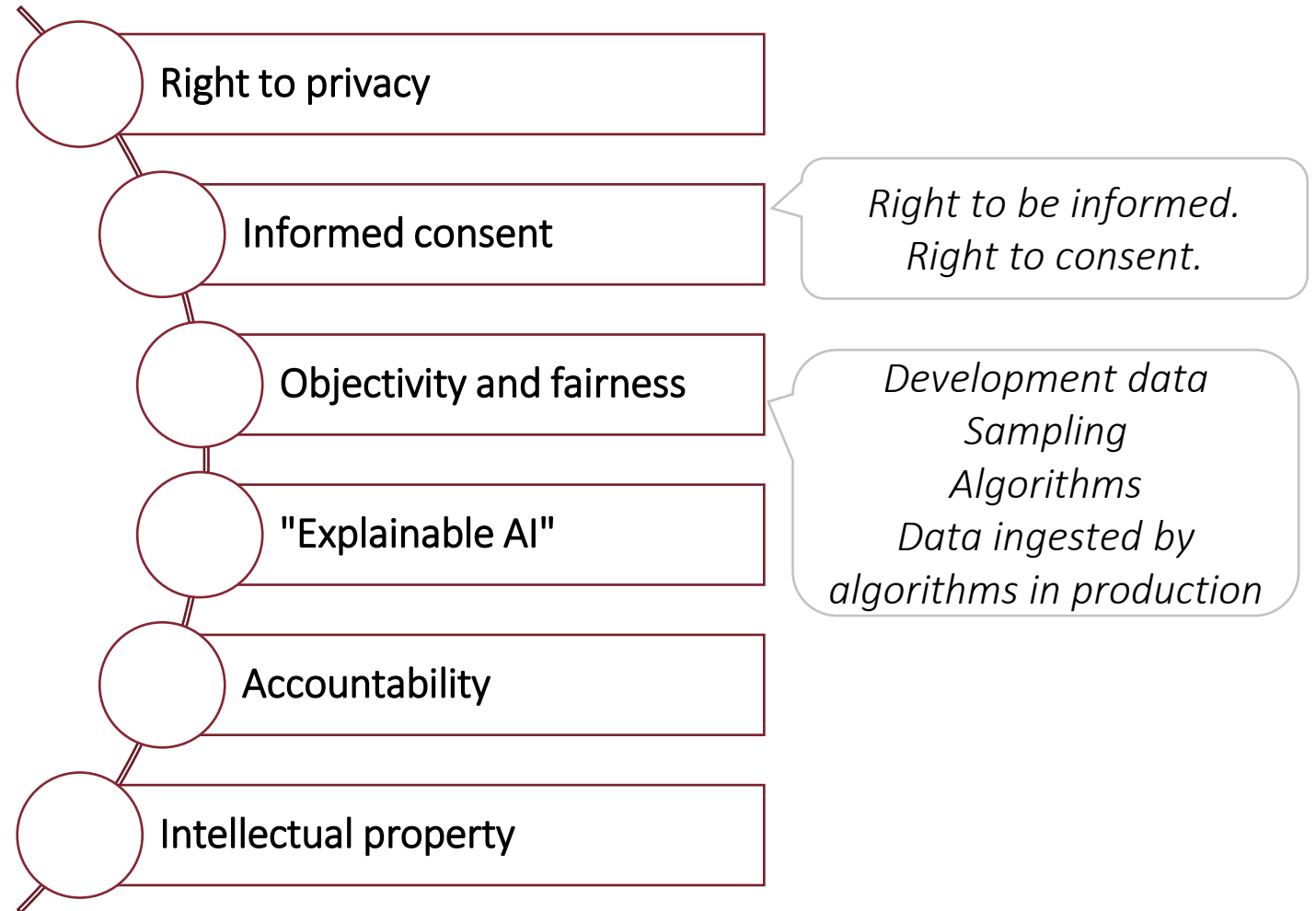
ETHICS IN DATA AND ANALYTICS

SOME HOT TOPICS

Responsible AI: The practice of designing, developing, and deploying artificial intelligence systems in ways that are ethical, transparent, fair, and aligned with human values and societal well-being.

Responsible data: The ethical and secure handling of data to ensure privacy, fairness, transparency, and accountability throughout its lifecycle.

**According to Microsoft Copilot*



IMPLEMENTATIONS OF ETHICAL STANDARDS

CURRENT LANDSCAPE

- Regulations: Data, algorithms
- Research ethics review
- Industry standards and frameworks
- Certifications
- Professional guidelines and codes of ethics
- Organizational policies and practices
- Working groups, conferences, etc.

- *Respect for stakeholders: data subjects, clients, colleagues/collaborators, users, and the general public*
- *Professional competency*
- *Respect for the profession*
- *Obligation to assume responsibility as a professional*
- *Avoidance of harm*
- *Honesty/transparency*
- *Fairness*
- *Privacy/confidentiality*

ASA ETHICAL GUIDELINES FOR STATISTICAL PRACTICE

- A. Professional Integrity and Accountability
 - B. Integrity of Data and Methods
 - C. Responsibilities to Stakeholders
 - D. Responsibilities to Research Subjects, Data Subjects, or Those Directly Affected by Statistical Practices
 - E. Responsibilities to Members of Multidisciplinary Teams
 - F. Responsibilities to Fellow Statistical Practitioners and the Profession
 - G. Responsibilities of Leaders, Supervisors, and Mentors in Statistical Practice
 - H. Responsibilities Regarding Potential Misconduct
- Appendix: Responsibilities of Organizations/Institutions

Get your copy of the
ASA Ethical Guidelines
to follow along 





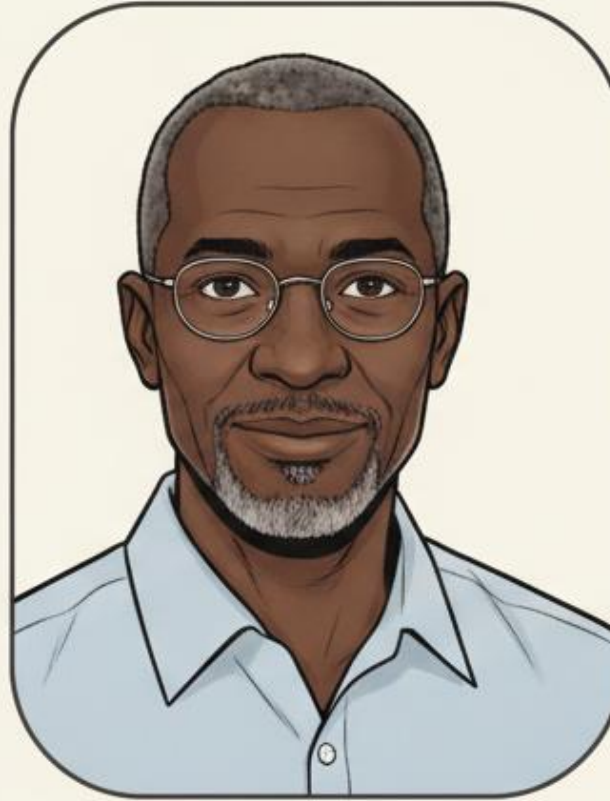
Before the Storm: Disclosure versus Vulnerable Population Safety at the Office of Emergency Management and Preparedness

- D4: Protection of Privacy and Confidentiality
- D7: Data Disclosure Minimization and Re-identification Risk
- D6: Impact on Marginalized Groups
- E4: Avoids Compromising Validity for Expediency
- A3: Exploitation of Vulnerable Populations

BEFORE THE STORM — A Government Ethics Role Play



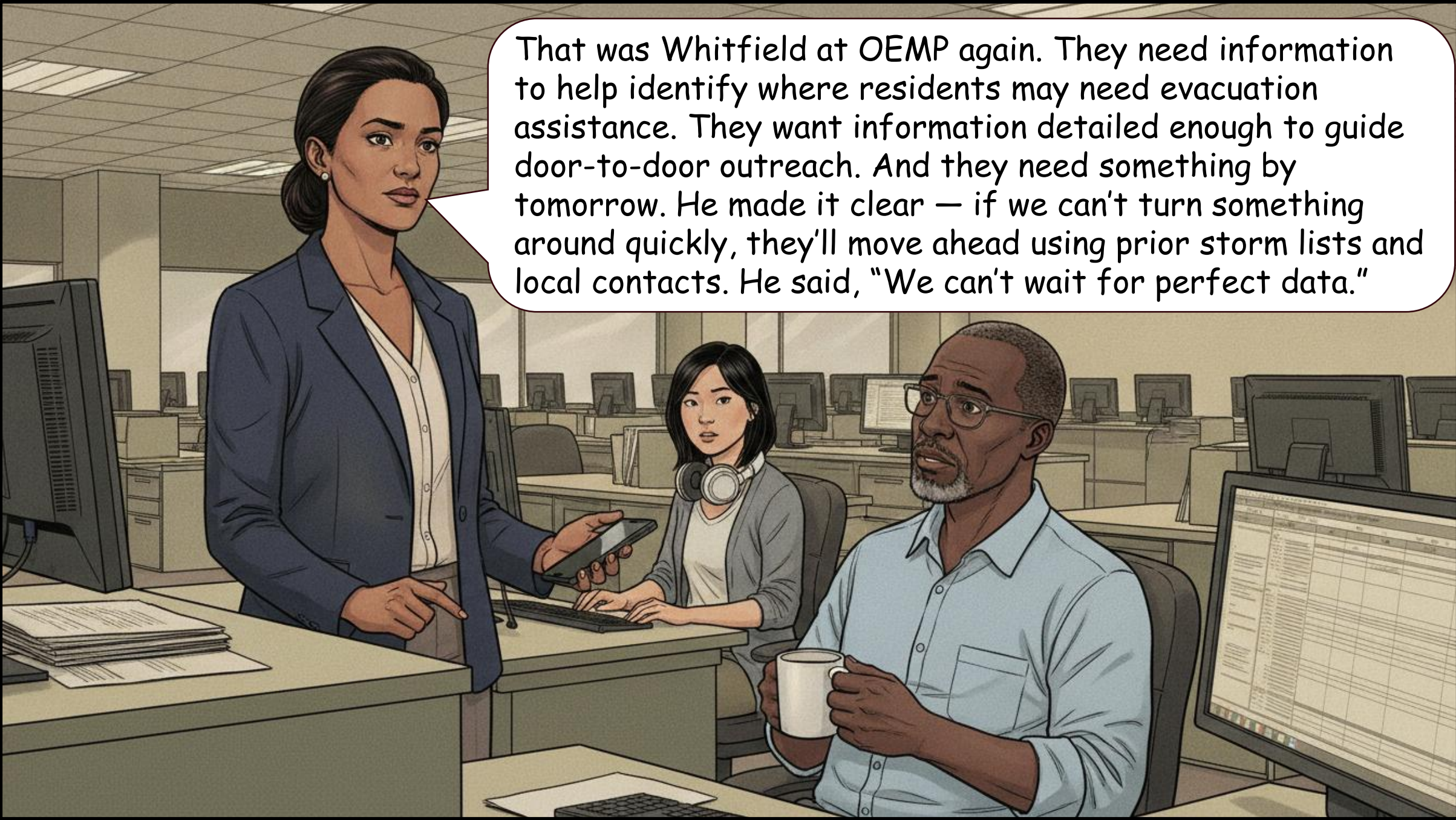
AMINA SANTOS
Branch Chief



DARRELL OKAFOR
Senior Statistician



SOFIA CHEN
Junior Analyst



That was Whitfield at OEMP again. They need information to help identify where residents may need evacuation assistance. They want information detailed enough to guide door-to-door outreach. And they need something by tomorrow. He made it clear — if we can't turn something around quickly, they'll move ahead using prior storm lists and local contacts. He said, "We can't wait for perfect data."



We've done this a dozen times. Pull our data on population characteristics — flag the neighborhoods with high concentrations of people who are elderly, have limited mobility, or do not have vehicles, package it up. Three hours, maybe less.



Neighborhood-level is probably okay. But the follow-up email asked about address-level characteristics. That's a different conversation.



It's a hurricane, Sofia. People are going to die if the outreach teams don't know where to go.

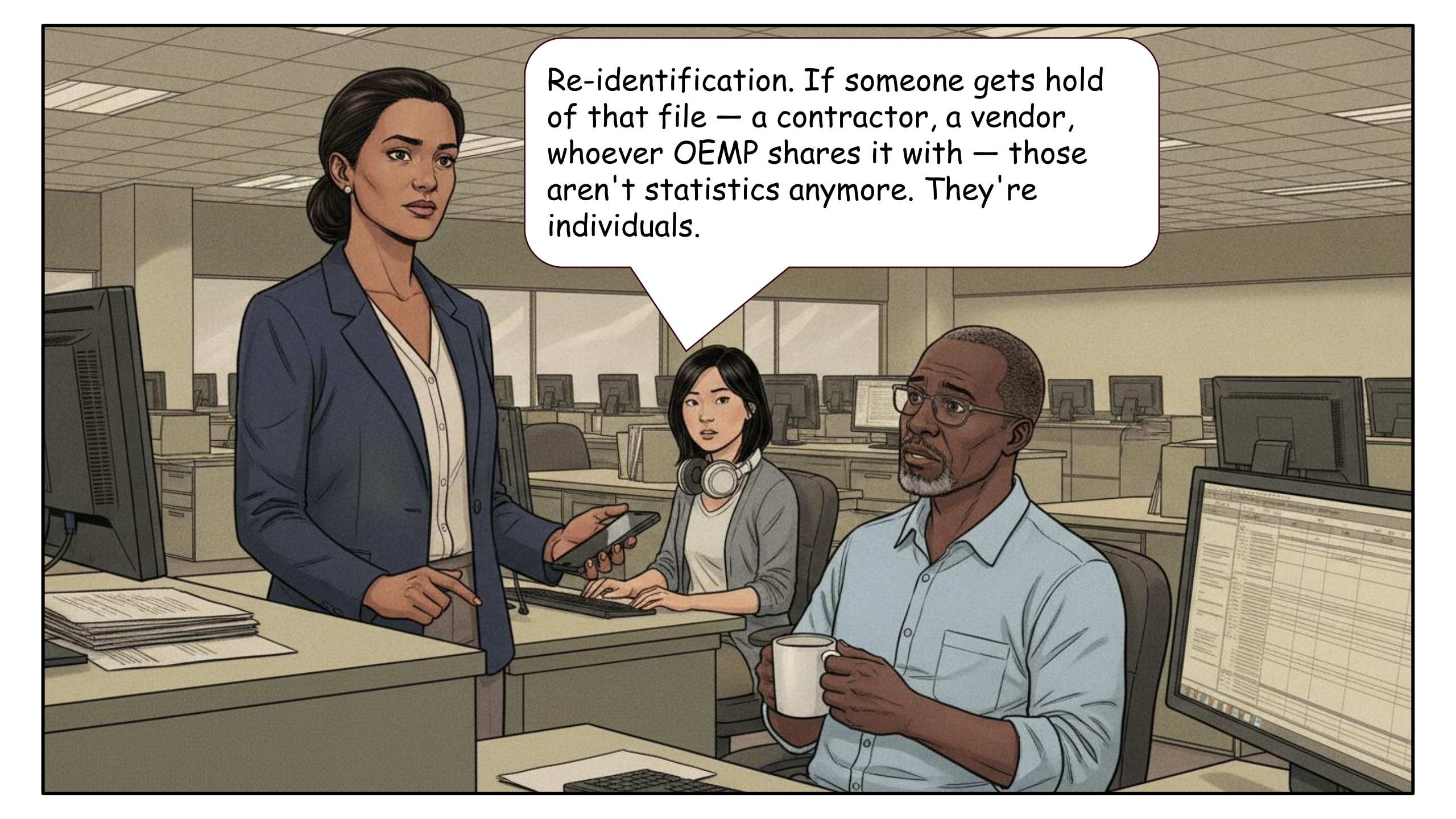


I know. If we provide information at that level of detail, we could end up revealing information about specific people and households. That's exactly why we have a review process.



What's the actual exposure
you're worried about?





Re-identification. If someone gets hold of that file — a contractor, a vendor, whoever OEMP shares it with — those aren't statistics anymore. They're individuals.



The disclosure framework was built for published research. This is operational. There's a difference.

Technically the protocols
apply regardless of use case.





Technically?! Are you really going to tell them we can't help because of a process requirement?"

AUDIENCE POLL QUESTION 1

ASA Ethical Guidelines D4: *The ethical statistical practitioner protects the privacy and confidentiality of data and knows and adheres to applicable rules and guidelines — regardless of how the data will be used.*



Submit your response here 

Q: What is the most important ethical obligation at this moment?

- A. Protecting the privacy and confidentiality of individuals.
- B. Helping emergency responders reach vulnerable residents.
- C. Following established agency procedures.
- D. Maintaining public trust in government statistics.

AUDIENCE POLL QUESTION 2

ASA Ethical Guidelines D4: *The ethical statistical practitioner protects the privacy and confidentiality of data and knows and adheres to applicable rules and guidelines — regardless of how the data will be used.*

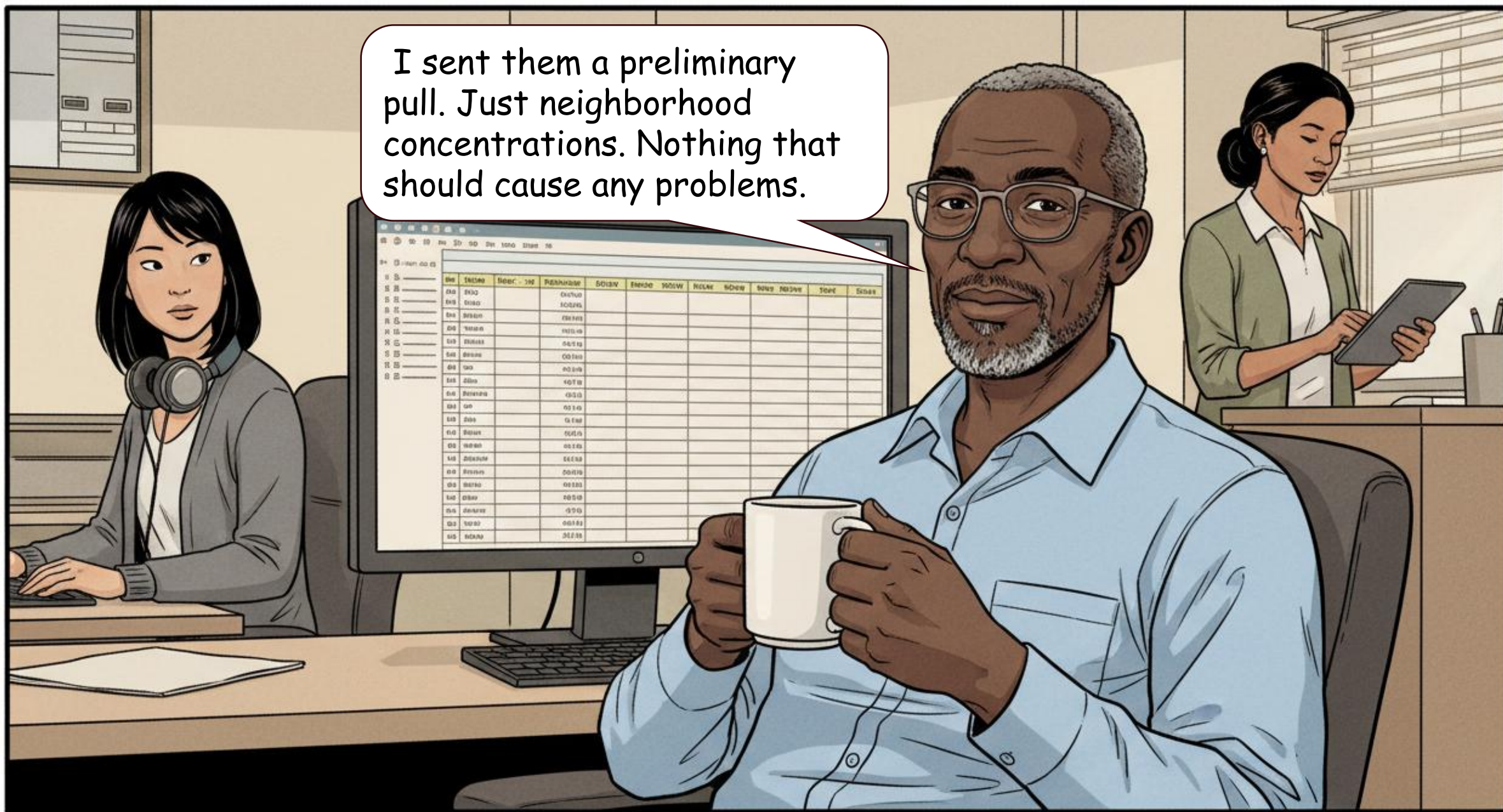


Submit your response here 

Q: How should Amina respond to the emergency management request?

- A. Provide the requested information immediately because lives may be at stake.
- B. Decline the request until all reviews are complete.
- C. Work to provide information that supports response efforts while still protecting confidentiality.
- D. Escalate the decision to agency leadership before taking action.

I sent them a preliminary pull. Just neighborhood concentrations. Nothing that should cause any problems.



Did it go through disclosure review?





No. It was preliminary. I flagged it as not for distribution.

Then we don't actually know whether it complies with our disclosure standards.





Sofia, what is your assessment of the risk?



The file may contain enough detail that someone could infer information about individual households.



I didn't check for that.



Sofia — can you tell from the file header whether any cells fall below the review threshold?



I'd need to pull it up. Five minutes, maybe.





Do it. Darrell, I need you to pull up exactly what you sent and when. And I need to call Whitfield before he acts on anything else.





Before you do that — think about the optics. You pull the data, Whitfield goes to the Secretary's office — or worse, they just revert to outdated lists and start knocking on the wrong doors. We get overridden anyway, but now it's on record that we were the obstacle.



Or it's on record that we caught a potential disclosure problem and handled it correctly.

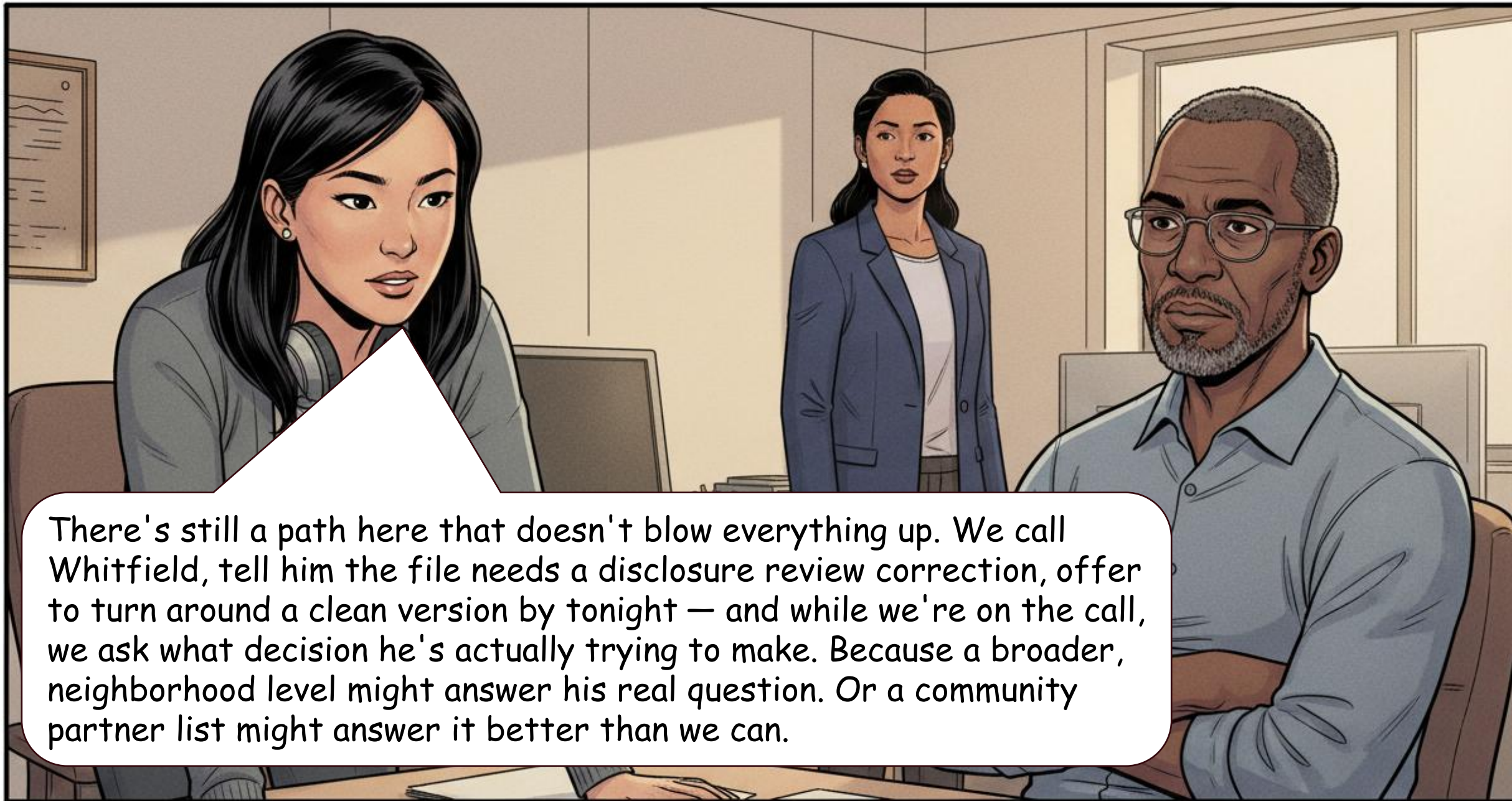
In the middle of a disaster response?!?





Amina, I've got two cells in the file under the cell minimum. If someone cross-references this with a commercial address list, you could identify households.





There's still a path here that doesn't blow everything up. We call Whitfield, tell him the file needs a disclosure review correction, offer to turn around a clean version by tonight — and while we're on the call, we ask what decision he's actually trying to make. Because a broader, neighborhood level might answer his real question. Or a community partner list might answer it better than we can.





That's why Amina makes the call.



AUDIENCE POLL QUESTION 3

ASA Ethical Guidelines E4: *Avoids compromising validity for expediency. Regardless of pressure on or within the team, does not use inappropriate statistical practices.*

ASA Ethical Guidelines H2: *Avoids condoning or appearing to condone statistical, scientific, or professional misconduct. Encourages other practitioners to avoid misconduct or the appearance of misconduct.*



Submit your response here 

Q: How serious is Darrell's decision to send the file before review?

- A. Very serious because established safeguards were bypassed.
- B. Moderately serious because the intent was to help people.
- C. Not serious if the information ultimately helps emergency responders.
- D. Impossible to judge without knowing more about the file.

AUDIENCE POLL QUESTION 4

ASA Ethical Guidelines D4: *The ethical statistical practitioner protects the privacy and confidentiality of data and knows and adheres to applicable rules and guidelines — regardless of how the data will be used.*



Submit your response here 

Q: What should Amina do first?

- A. Contact the emergency management agency and explain the concern.
- B. Review the file to understand the actual risk.
- C. Consult agency legal or disclosure experts.
- D. Focus on supporting the emergency response and address the issue later.

THE NATURE OF ETHICAL DILEMMAS

ETHICS IS NOT EASY



Ethical vs. Legal



Conflicting values



Ambiguity

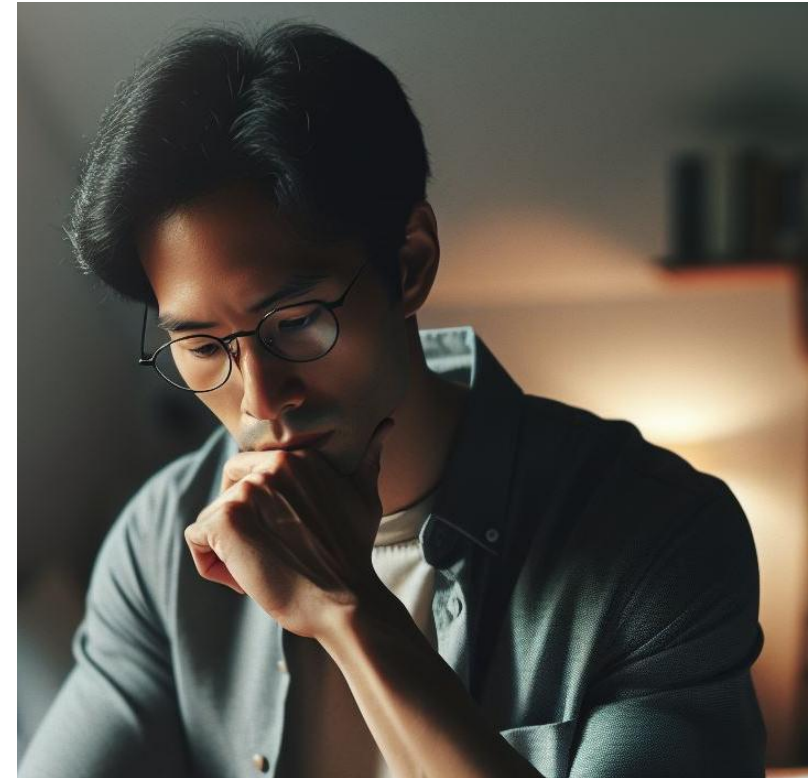


Careful and critical thinking

ETHICAL ISSUES FOR STATISTICIANS AND DATA SCIENTISTS

IT'S ABOUT WHAT YOU DO, NOT WHAT HAPPENS TO YOU

- "Can" vs. "should"
 - Knowing when to do something
 - when NOT to do something.
- Different aspects: Objective, data, algorithms, use.
- Fairness vs. bias
 - Global/social bias vs. personal bias
 - Theory vs. reality
 - Open biases vs. hidden biases
 - Bias in: (1) data, (2) algorithms, (3) users
- Intentionality and justification
 - Do you know what you are doing?
 - How can you demonstrate it?
- Building trust
 - How do we demonstrate our commitment to ethical principles?





What We Owe the Community

Section B: Integrity of data and methods

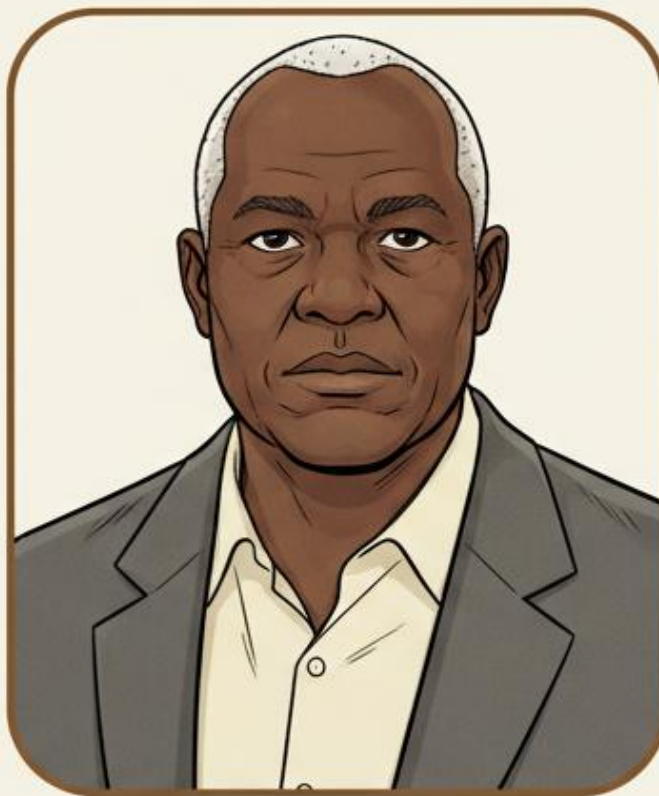
Section C: Responsibilities to Stakeholders

Section D: Responsibilities to Research Subjects, Data Subjects, or Those Directly Affected by Statistical Practices

WHAT WE OWE THE COMMUNITY



DR. ELENA VARGAS
Senior Researcher



MARCUS HILL
Community Leader



LILA CHEN
Funding Agency Rep

Scene 1 – The Results

Thank you both for coming. I'll get straight to it—the results are conclusive. The contaminant levels are strongly associated with the health outcomes we've been tracking.



Scene 1 – The Results

"Associated"? How strong?



Scene 1 – The Results

Statistically and clinically significant. The effect sizes are not small, they're consistent across subgroups, and all symptoms have higher prevalence rates than in our comparison community.



Marcus, the symptoms your residents have been experiencing are highly likely to be due to these contaminants.



A comic-style illustration of three people in a meeting. On the left, an older Black man with grey hair, wearing a grey suit jacket over a light blue shirt, sits with his hands clasped. In the center, a woman with dark hair and glasses, wearing a green blazer over a white top, also has her hands clasped. On the right, a younger woman with short dark hair, wearing a blue blazer over a white top, is looking towards the others. They are seated around a large wooden conference table covered with stacks of papers and several pens. Large windows in the background show a city skyline at dusk. A speech bubble from the woman on the right contains the text: "So... replication wouldn't chance the direction of the findings? There's no chance of random error having anything to do with these results?"

So... replication wouldn't chance the direction of the findings? There's no chance of random error having anything to do with these results?



Unlikely. We've run sensitivity analyses. Different models. Everything holds. All our results are consistent.

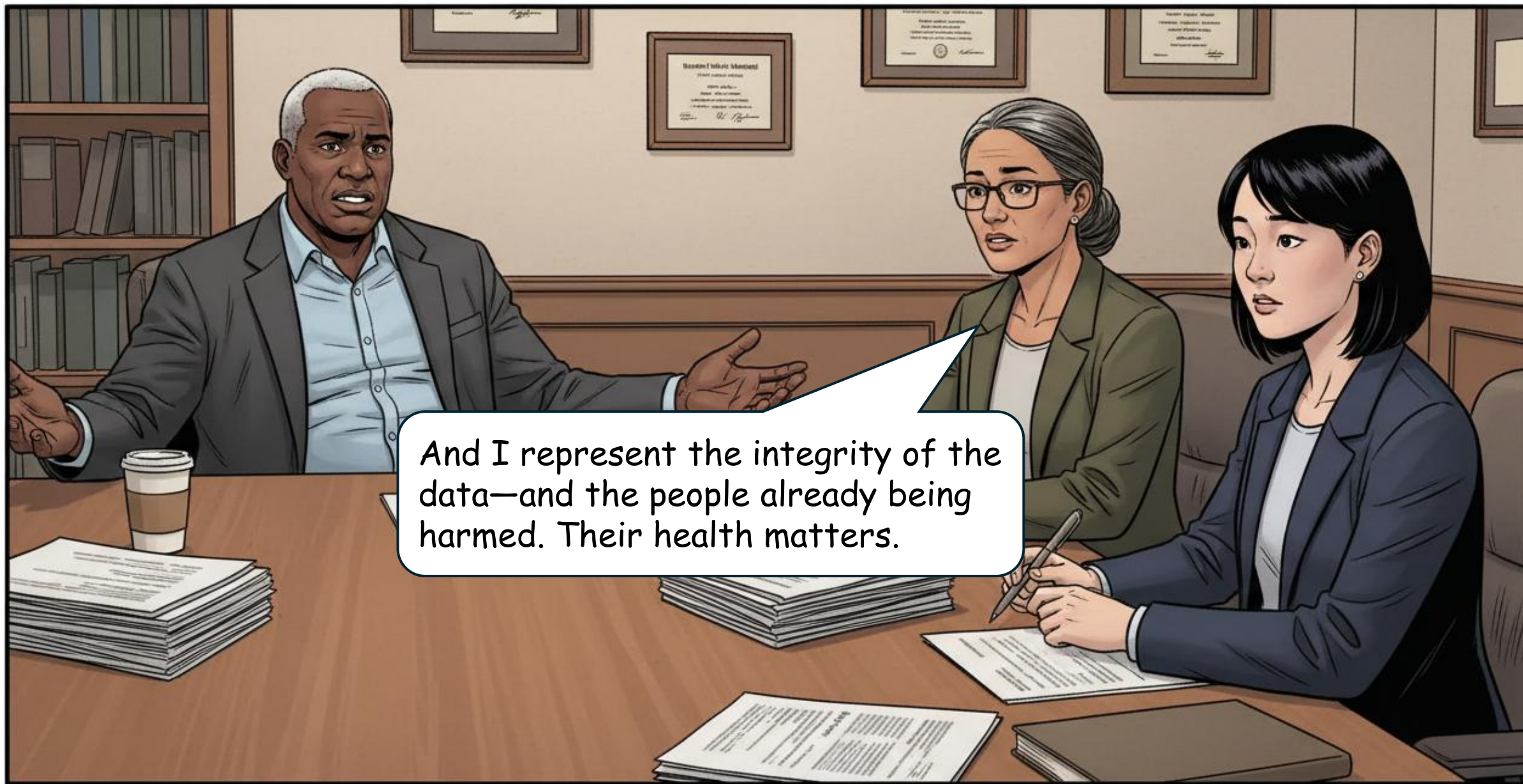


Then we have a problem.

We have an obligation.

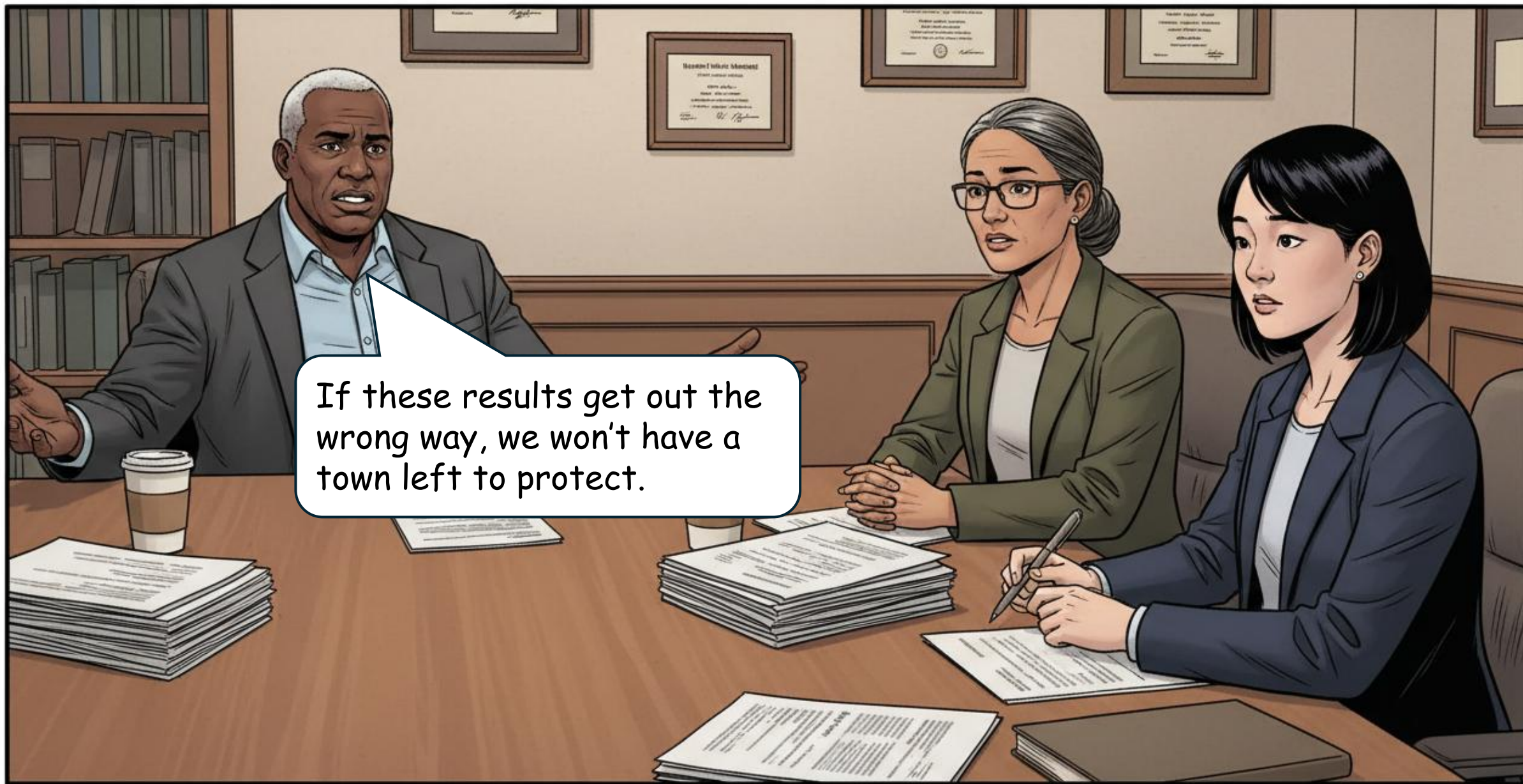


Obligation to who? Because I represent families who will lose everything if this gets out the wrong way.



And I represent the integrity of the data—and the people already being harmed. Their health matters.









Dissemination doesn't
have to mean national
headlines tomorrow.



No—but it does mean we
can't bury these results.

AUDIENCE POLL QUESTION 5

ASA Ethical Guidelines D6: *Considers the impact of statistical practice on society, groups, and individuals. Recognizes that statistical practice could adversely affect groups or the public perception of groups, including marginalized groups. Considers approaches to minimize negative impacts in applications or in framing results in reporting.*



Submit your response here 

Q: Which of the following is the *greatest* concern in this scenario?

- A. Protecting the residents from adverse health effects.
- B. Protecting the community from adverse economic impact.
- C. Ensuring results are shared in accordance with scientific practice and dissemination requirements.
- D. Accurately determining the uncertainty of findings from the study.

AUDIENCE POLL QUESTION 6

ASA Ethical Guidelines C7: Understands and conforms to confidentiality requirements for data collection, release, and dissemination and any restrictions on its use established by the data provider (to the extent legally required). Protects the use and disclosure of data accordingly. Safeguards privileged information of the employer, client, or funder.



Submit your response here 

Q: What should Elena do next?

- A. Begin planning to publicly release the findings immediately.
- B. Meet with community leaders to develop a responsible communication plan.
- C. Delay action until additional studies are completed.
- D. Consult the funding agency before making any decisions.



There may be a middle ground.
Controlled release of information, briefings
before publication, community meetings,
providing guidance on our next steps.



With who in the room?



Community representatives. Health officials. Perhaps even the general public, your residents.



If we're going to do this, we need very careful messaging.



Not spin.

Context. The full scope of the situation. There's a difference.



That aligns with minimizing harm without withholding truth. This sounds like a reasonable approach, and an effective one.





If we do this... I need assurance the community isn't blindsided. I need to protect my residents.

You have my word. We brief everyone first. Together, with one cohesive message.



And we document the process.
Transparency in our method, our
results, and all our communications.





Then that's what we need to do. But we need to do it right.

We release the findings—with context, resources, and support.





Agreed.

They deserve to know.

Yes. They do.



So... where do we begin?

AUDIENCE POLL QUESTION 7



Submit your response here 

ASA Ethical Guidelines:

Section B, Integrity of Data and Methods

Section C, Responsibilities to Stakeholders

Section D, Responsibilities to Research Subjects, Data Subjects, or Those Directly Affected by Statistical Practices

Q: What is the most immediate responsibility statisticians face after research findings are released?

- A. Ensuring transparency of methodology, disclosure of adjustments and assumption violations, and clear articulation of exploratory vs confirmatory results (**Section B**).
- B. Ensuring results are shared with the appropriate stakeholders—researchers, the local community, and the scientific community—as soon as possible so action can be taken (**Section C**).
- C. Ensuring study findings are both reproducible and replicable; advocate for replication of analytic results (**Section B**).
- D. Ensuring confidentiality and privacy of data collected from participants as well as analytic results (**Section D**).

AUDIENCE POLL QUESTION 8

ASA Ethical Guidelines B4: *Meets obligations to share the data used in the statistical practices as allowable. Respects expectations of data contributors....*

ASA Ethical Guidelines C7: *Understands and conforms to confidentiality requirements for data collection, release, and dissemination and any restrictions on its use...*

ASA Ethical Guidelines D6: *Considers the impact of statistical practice on society, groups, and individuals.... Considers approaches to minimize negative impacts....*



Submit your response here 

Q: Which unintended consequences concern you most?

- A. People begin to move out of the community, destroying the local economy and having an impact on multiple sectors and industries.
- B. The public loses trust in scientists and public health agencies, reducing confidence in research findings and willingness to participate in future studies.
- C. Attention and resources are diverted away from other health threats.
- D. The community is stigmatized as an unhealthy place to live, hurting opportunities for funding and growth.
- E. Government inquiries occur, causing agency shutdowns, loss of jobs, disciplinary hearings, and arrests.

ETHICAL ISSUES FOR STATISTICIANS AND DATA SCIENTISTS

THERE IS A LOT TO CONSIDER IN EACH OF THE FOUR ASPECTS

Objective of the solution

- Should we develop it?
- Targeting vs. fairness
- Experimentation vs. manipulation
- Details of the intended uses
- Potential unintended uses
- Scope of its impact

Data: In development and in production

- Anonymization and encryption are necessary but not sufficient to protect privacy
- Use of data only for defined purposes
- Data minimization
- Inherent biases in modern data sources
- Intellectual property in data

ETHICAL ISSUES FOR STATISTICIANS AND DATA SCIENTISTS

THERE IS A LOT TO CONSIDER IN EACH OF THE FOUR ASPECTS

Algorithms

- The selection of the technique: Performance vs. transparency
- Model architecture: variables/features, segmentation, treatments, etc.
- Reducing the cost of misinformation
- Incorporating fairness and eliminating biases

Use of the solution

- Unintended consequences of intended uses
 - Risks and costs of misinformation
 - Consequences of naive uses
- Uses beyond those originally intended
 - Naivety? Manipulation? Malice?
- Perpetuating or worsening bias
- Intellectual properties and ownership



Vibe Targets: Speed, Reach, and Uneven Opportunity

D6: Impact of statistical practice on society, groups, and individuals

E4: Avoiding compromises in the name of expediency

C4: Informing stakeholders of potential limitations and impacts

VIBE TARGETS: Speed, Reach, and Uneven Opportunity



LENA PETROVA
Data Scientist



KENJI TANAKA
Marketing Manager



CAMILA NAVARRO
Compliance Manager

The latest test run looks great. The model works—it finds the consumers most likely to engage with our offers. I used a large language model to speed up feature engineering on engagement patterns and neighborhood proxy variables. The model is reproducible, so anyone can rerun it.

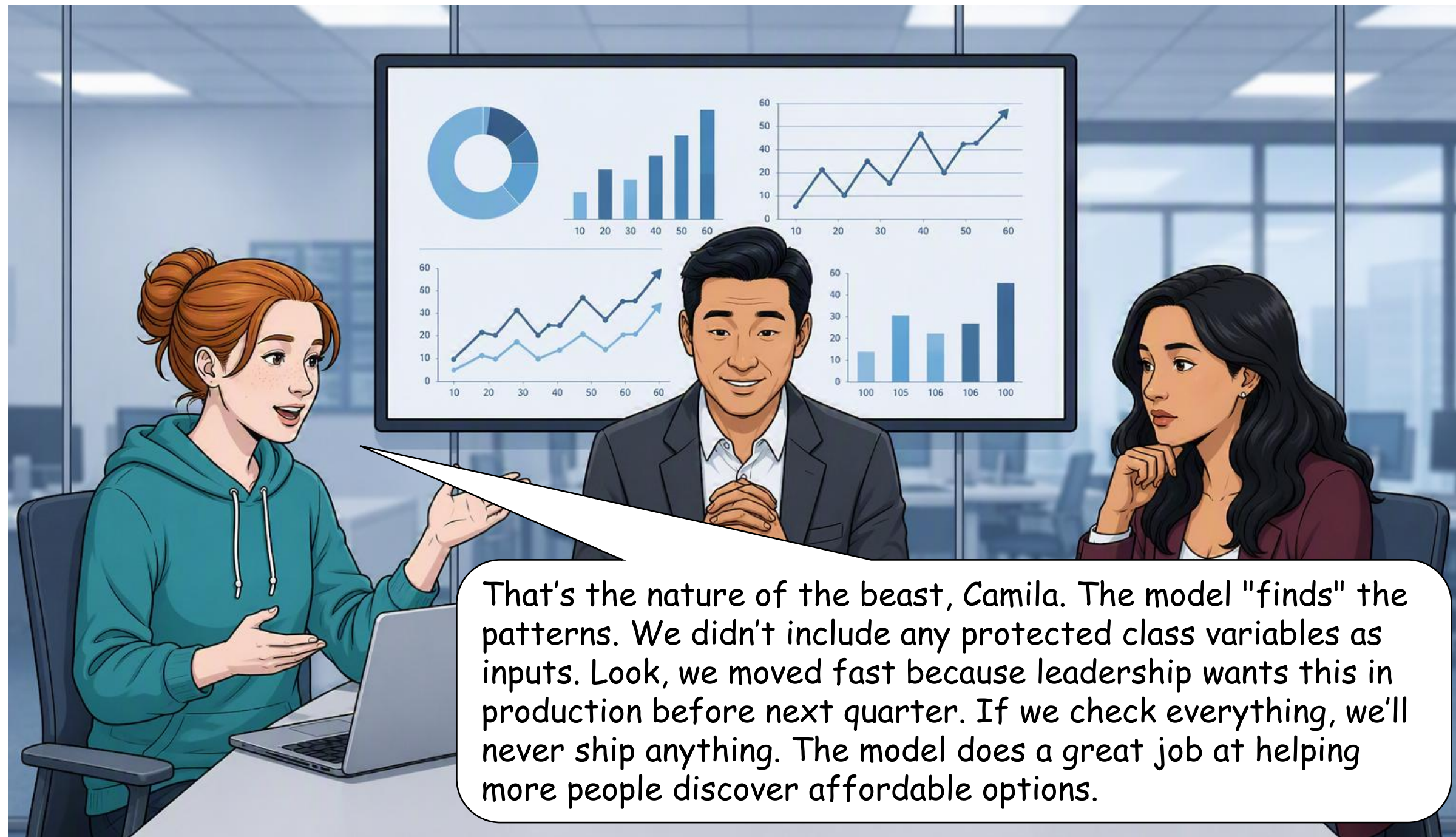


This is exactly what we need. We're getting crushed on customer acquisition costs. With this, we can target folks who are actually likely to engage with our first-time buyer tools and offers. It's marketing, not underwriting—no one's being denied credit. Just smarter outreach.





Legally, yes. It does clear the industry standards for nondiscrimination and privacy. But Lena, how transparent are the assumptions in the feature engineering and selection steps? And have we really looked at how using these proxy variables affects different neighborhoods or income groups? Do we really know why certain consumers are being targeted for these offers and others are not?



Exactly. We're the good guys here—helping people into homes. Slowing down means competitors reach those families first. We're just choosing where to spend our limited marketing budget. It's efficiency, not exclusion. And individual families benefit when we're efficient.



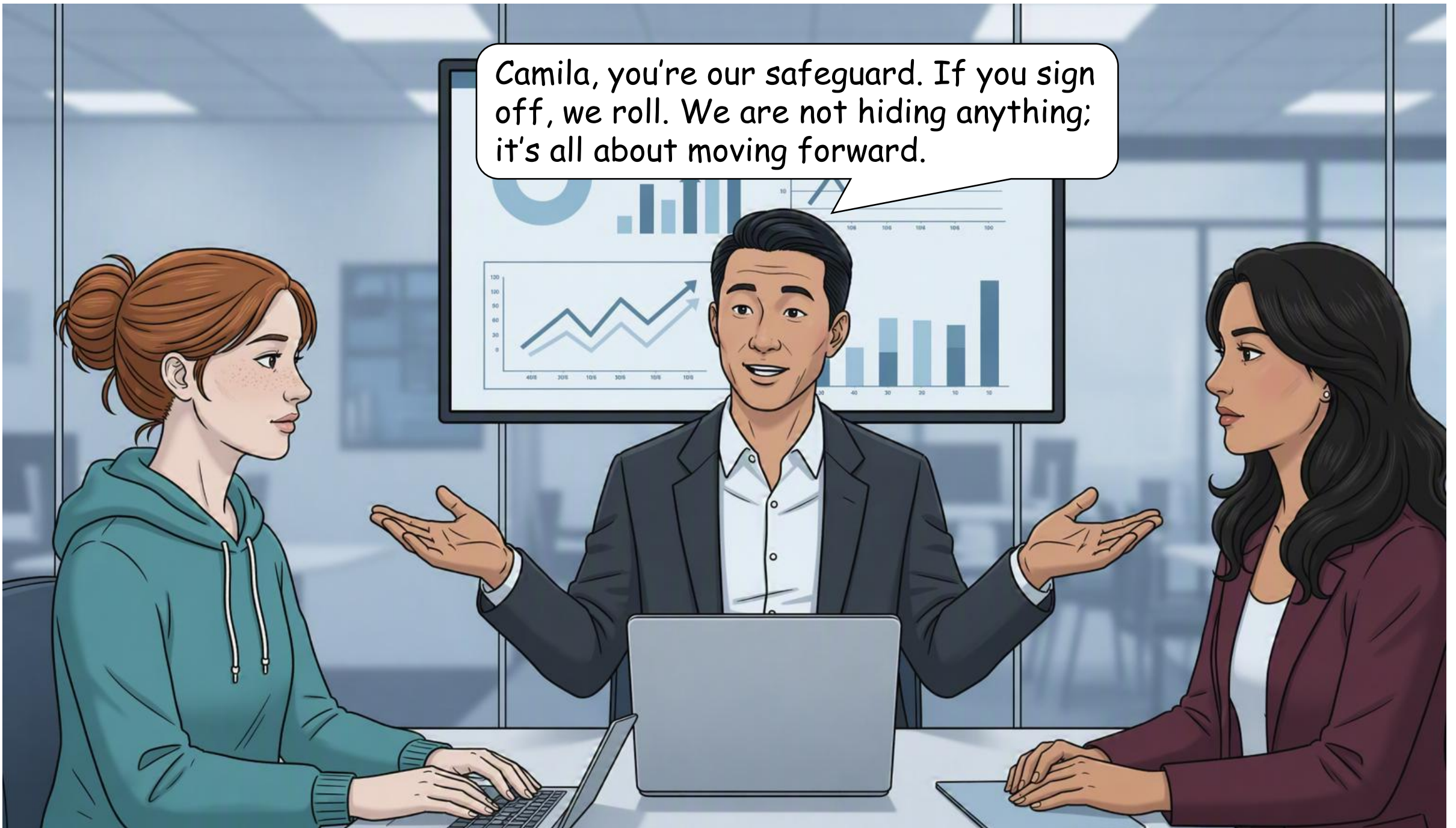
But it's not just individuals. If certain communities consistently see less outreach because these neighborhood-proxy variables drive that way, we're unevenly shaping who even knows these opportunities exist. That impacts net approval. Even if it's legal, are we comfortable with that?



We're putting the offers in front of the people most likely to say "yes." It's not designed to exclude anyone. Marketing targets are non-negotiable, and we're all evaluated on delivery speed.



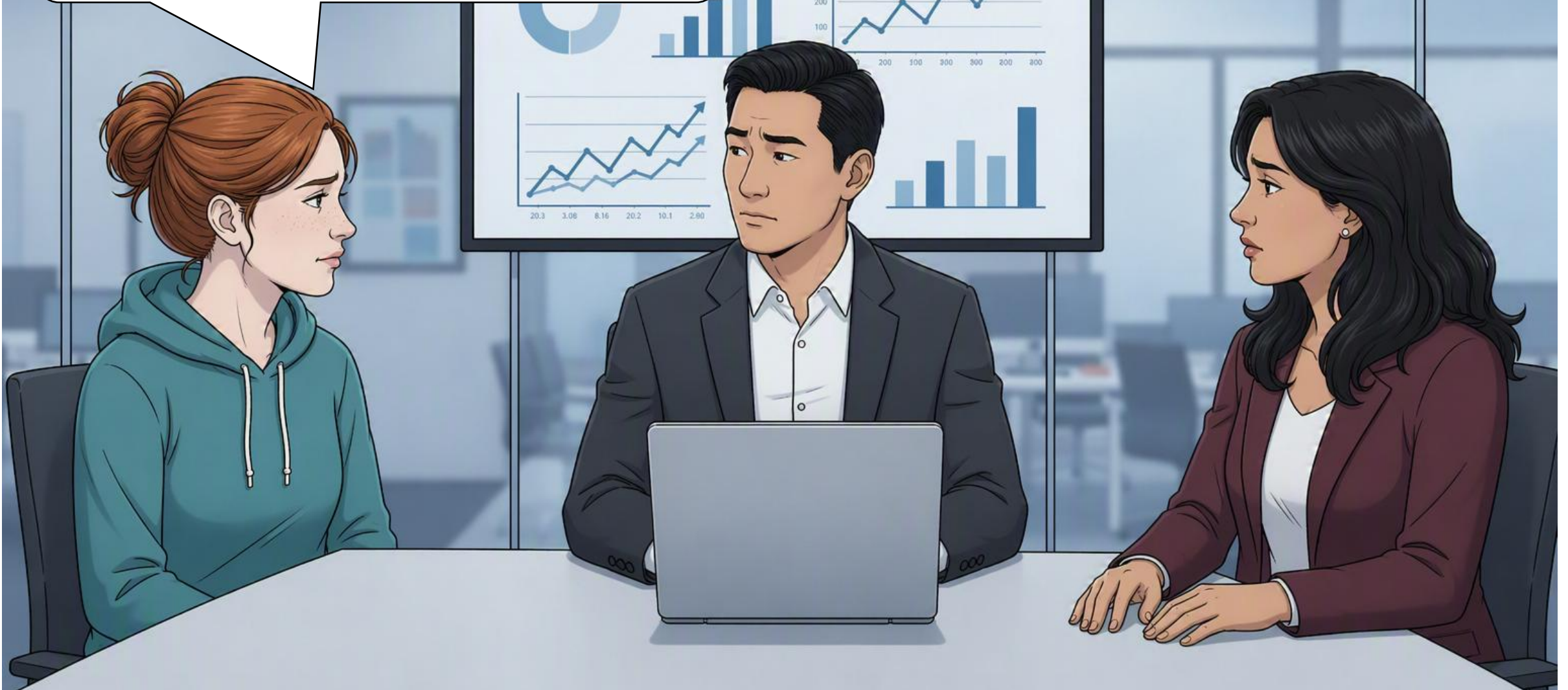
Camila, you're our safeguard. If you sign off, we roll. We are not hiding anything; it's all about moving forward.



I can technically sign off on compliance. But I'm not sure we've fully addressed the limitations on long-term equity. Consumers are stakeholders too.



Can we go live with what we have? Doing full audits now for interpretability would push us back weeks.



AUDIENCE POLL QUESTION 9

ASA Ethical Guidelines D6: *The ethical statistical practitioner considers the impact of statistical practice on society, groups, and individuals. Recognizes that statistical practice could adversely affect groups or the public perception of groups, including marginalized groups. Considers approaches to minimize negative impacts in applications or in framing results in reporting.*



Submit your response here 

Q: How strongly does the current model development process address the impact of statistical practice on society, groups, and individuals, including minimizing negative effects on groups?

- A. Not at all.
- B. Minimally.
- C. Adequately.
- D. Thoroughly.
- E. Depends on implementation.

AUDIENCE POLL QUESTION 10

ASA Ethical Guidelines E4: *The ethical statistical practitioner avoids compromising validity for expediency. Regardless of pressure on or within the team, does not use inappropriate statistical practices.*



Submit your response here 

Q: Is the team compromising in the name of expediency?

- A. Strongly agree.
- B. Agree.
- C. Neutral.
- D. Disagree.
- E. It depends.



Bottom line: this gives us an edge in a tough market. Families win when they hear about programs tailored to them.



But which families? It's great that you built it quickly, but these informal assumptions worry me about future audits or challenges.

The vibe-coding approach using LLM gets the job done, but yeah... explaining the "why" behind some weights later could be awkward. I can add a paragraph to the documentation. I'll call it "Unintended Concentration" and say it's a byproduct of signals for prospect engagement. Still, the model performance is there.



Acknowledging a fire isn't the same as putting it out, Lena. We need to think about how to better inform key stakeholders about what this model can and cannot tell us.



AUDIENCE POLL QUESTION 11

ASA Ethical Guidelines C4: *The ethical statistical practitioner informs stakeholders of the potential limitations on use and re-use of statistical practices in different contexts and offers guidance and alternatives, where appropriate, about scope, cost, and precision considerations that affect the utility of the statistical practice.*



Submit your response here 

Q: Does the team have an obligation to inform the company leadership of the risks and limitations of the model?

- A. Yes, before launching the model into production.
- B. Yes, as soon as possible after launching the model into production.
- C. No.

AUDIENCE POLL QUESTION 12

ASA Ethical Guidelines C4: *The ethical statistical practitioner informs stakeholders of the potential limitations on use and re-use of statistical practices in different contexts and offers guidance and alternatives, where appropriate, about scope, cost, and precision considerations that affect the utility of the statistical practice.*



Submit your response here 

Q: Which of the following best describes the company's obligation to inform the consumers of the risks and limitations of the model?

- A. Informing the customers receiving the offer.
- B. Updating the terms of use for all customers.
- C. Sending an explicit message to all customers with reasons for the targeted offers.
- D. Some other obligation.
- E. The company is not obligated to inform the consumers of the risks and limitations of the model.

HOW DO I PUT ALL THIS INTO PRACTICE?

INITIAL FRAMING QUESTIONS



Is it consistent with laws, regulations, and standards?



What are the risks?



Whom does it compromise?



To whom does the information belong?



Whom does it put at risk?



What are the possible consequences?



Is it moral? For whom?



Whom does it benefit?



Does it work as intended for all stakeholders?

Legal/regulatory • Moral • Financial • Reputational • Physical • Psychological • Direct/indirect • Etc.

How do you know? How have you demonstrated it?

HOW DO I PUT ALL THIS INTO PRACTICE?

TAKE THE TIME AND EFFORT TO DO THE RIGHT THING BY RESPECTING PRINCIPLES AND GUIDELINES



Do no harm.



Be fair.



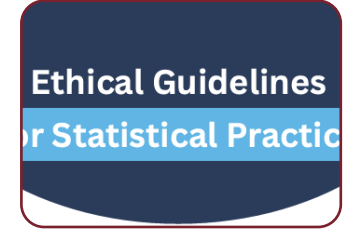
Be honest and
transparent.



Take
responsibility.



Respect and
protect others.



Use the ASA
Ethical
Guidelines!

- Be intentional in everything you do.
- Identify and disclose any conflict of interest.
- Be aware of all shortcomings.
- Recognize conflict in values is an integral part of ethical decision making. Being ethical is hard.
- Document all decisions and justifications.
- Monitor and correct methodologies, practices, and products: biases, misinformation.
- Take responsibility for own actions and decisions.



FLOOR DISCUSSION

Get your copy of the
ASA Ethical Guidelines



Session sponsored by **ASA Committee on Professional Ethics**

CoPE website: <https://community.amstat.org/ethics/home>

- The slides from this presentation and supporting materials are available under **Resources > Supporting Material**
- Additional resources on ethical statistical practice available

The **DEPICT paper referenced in the session:** <https://rdcu.be/fyyMO>

Van Mullekom, J., Davidson, M. DEPICT: A Framework for Ethical Reasoning in Statistics and Data Science with Case-Study Applications. *J Stat Theory Pract* **19**, 30 (2025). <https://doi.org/10.1007/s42519-025-00442-6>

Questions about the presentation/session?

Contact Michiko I. Wolcott, Organizer at michiko.wolcott@msightanalytics.com

REFERENCES

(Examples; not exhaustive)

EXAMPLES OF REGULATIONS AND STANDARDS

Jurisdiction	Name	URL
European Union	General Data Protection Regulation (GDPR)	https://gdpr.eu/tag/gdpr/
European Union	EU Artificial Intelligence Act	https://artificialintelligenceact.eu/
United Kingdom	UK GDPR and Data Protection Act	https://ico.org.uk/for-organisations/data-protection-and-the-eu/data-protection-and-the-eu-in-detail/the-uk-gdpr/
California, USA	California Consumer Privacy Act (CCPA)	https://oag.ca.gov/privacy/ccpa
Mexico	Federal Law on the Protection of Personal Data Held by Private Parties (LFPDPPP)	https://www.gob.mx/indesol/documentos/ley-federal-de-proteccion-de-datos-personales-en-posesion-de-los-particulares
Canada	Personal Information Protection and Electronic Documents Act (PIPEDA)	https://www.priv.gc.ca/en/privacy-topics/privacy-laws-in-canada/the-personal-information-protection-and-electronic-documents-act-pipeda/
Brazil	General Data Protection Law (LGPD)	https://www.gov.br/esporte/pt-br/acesso-a-informacao/lgpd
Argentina	Personal Data Protection Law	https://servicios.infoleg.gob.ar/infolegInternet/anexos/60000-64999/64790/norma.htm
India	Digital Personal Data Protection Act (DPDP Act)	https://egazette.gov.in/WriteReadData/2023/248045.pdf

EXAMPLES OF FRAMEWORKS AND STANDARDS

Name	Entity	URL
International Compilation of Human Research Standards	Office of Human Research Protections, U.S. Health and Human Services (HHS)	https://www.hhs.gov/ohrp/international/compilation-human-research-standards/index.html
Belmont Report: Ethical Principles and Guidelines for the Protection of Human Subjects of Research	Office of Human Research Protections, U.S. Department of Health and Human Services (HHS)	https://www.hhs.gov/ohrp/regulations-and-policy/belmont-report/index.html https://www.hhs.gov/sites/default/files/informe-belmont-spanish.pdf
Privacy by Design	Information and Privacy Commissioner of Ontario	https://en.wikipedia.org/wiki/Privacy_by_design
Ethics Guidelines for Trustworthy AI	European Commission	https://digital-strategy.ec.europa.eu/en/library/ethics-guidelines-trustworthy-ai
AI Risk Management Framework	National Institute of Standards and Technology (NIST)	https://www.nist.gov/itl/ai-risk-management-framework
ISO/IEC 42001	International Standards Organization (ISO)	https://www.iso.org/standard/81230.html
IEEE 7000	IEEE Standards Association	https://standards.ieee.org/ieee/7000/6781/
Artificial Intelligence Governance Professional (AIGP) Certification	International Association of Privacy Professionals (IAPP)	https://iapp.org/certify/aigp/

EXAMPLES OF PROFESSIONAL GUIDELINES AND CODES OF ETHICS

Organization	Name	URL
American Statistical Association (ASA)	Ethical Guidelines for Statistical Practice	https://www.amstat.org/your-career/ethical-guidelines-for-statistical-practice
American Statistical Association (ASA)	Statement on Ethical AI Principles for Statistical Practitioners	https://www.amstat.org/docs/default-source/amstat-documents/asa-statement-on-ethical-ai-principles-for-statistical-practitioners.pdf
Association for Computing Machinery (ACM)	Code of Ethics	https://www.acm.org/code-of-ethics
Institute of Management Consultants USA (IMC USA)	Code of Ethics	https://imcusa.org/about/ethics/code-of-ethics/

EXAMPLES OF ETHICAL CASES

- “Facebook-Cambridge Analytica Data Scandal”: https://en.wikipedia.org/wiki/Facebook%E2%80%93Cambridge_Analytica_data_scandal
- “Lawsuit blames ChatGPT maker OpenAI for helping plan a school shooting”: <https://apnews.com/article/openai-chatgpt-lawsuit-mass-shooting-florida-1a8071ee49ad0220348d3eb55f60e648>
- “Judge denies Apple’s attempt to dismiss a class-action lawsuit over AirTag stalking”: <https://apnews.com/article/apple-airtags-stalking-lawsuits-e59166988920c4ba1e82956ea85c1677>
- “Insight - Amazon scraps secret AI recruiting tool that showed bias against women”: <https://www.reuters.com/article/world/insight-amazon-scraps-secret-ai-recruiting-tool-that-showed-bias-against-women-idUSKCN1MK0AG/>
- “NYC’s AI Chatbot Tells Businesses to Break the Law”: <https://themarkup.org/news/2024/03/29/nycs-ai-chatbot-tells-businesses-to-break-the-law>
- “How Companies Learn Your Secrets”: <https://www.nytimes.com/2012/02/19/magazine/shopping-habits.html?pagewanted=1&r=1&hp#>
- “Artificial Intelligence Bot Becomes Racist And Homophobic After Learning From Humans”: <https://oecd.ai/en/incidents/16537>
- “New York lawyers sanctioned for using fake ChatGPT cases in legal brief”: <https://storage.courtlistener.com/recap/gov.uscourts.nysd.575368/gov.uscourts.nysd.575368.31.0.pdf>
- “Racial Bias Found in a Major Health Care Risk Algorithm”: <https://www.scientificamerican.com/article/racial-bias-found-in-a-major-health-care-risk-algorithm/>

LARGE LANGUAGE MODELS USED

The following large language models were used to generate images and/or draft role play scripts:

- Anthropic. (2026). Claude (Sonnet 4.6 and Sonnet 5) [Large language models]. <https://www.anthropic.com/claude>
- Google. (2026). Gemini (April 2026 version) [Large language model]. [google.com](https://www.google.com)
- Google DeepMind. (2026). Gemini 3.6 Flash [Large language model]. <https://ai.google.dev/gemini-api/docs/changelog>
- Microsoft. (2026). M365 Copilot (GPT-5 chat model) [Large language model]. <https://copilot.microsoft.com>
- OpenAI. (2026). ChatGPT [Large language model]. <https://chatgpt.com>
- xAI. (2026). Grok (4.3) [Large language model]. <https://grok.x.ai>

PRESENTER BIOGRAPHIES

MARIO DAVIDSON

Dr. Mario Davidson is an associate professor in biostatistics at Vanderbilt University School of Medicine in Nashville, TN. As the lead biostatistician for medical students and educators at Vanderbilt, he directs the third-year research course known as PLAN. Additionally, he has facilitated numerous case-based learning courses for medical students. Dr. Davidson developed the department's statistical collaboration course and is the director of the Academy for Excellence in Education.

NILUPA GUNARATNA

Dr. Nilupa Gunaratna is an Associate Professor of Public Health, with a courtesy appointment in Nutrition Science, at Purdue University. Her research, teaching, and professional engagement focus on food systems, food security, and nutrition for at-risk populations, particularly in low- and middle-income countries. Her research specifically aims to develop and evaluate interventions that equitably and sustainably improve food security and nutrition, while promoting rigorous and ethical quantitative methods. Her current work investigates the needs of consumers and actors across the food system in Ethiopia, Kenya, Lao PDR, Tanzania, and the USA. Dr. Gunaratna holds MS degrees in Agronomy and Statistics and a PhD in Statistics. She has been a member of ASA's Committee on Professional Ethics since 2021.

TONY MANGINO

Tony Mangino is a Research Assistant Professor in the Department of Biostatistics at the University of Kentucky, and is a team scientist in the Biostatistics Consulting and Interdisciplinary Research Collaboration (Biostat CIRCL), collaborating with other clinical, translational, and public health scientists. His own research focuses on the generation, use, and evaluation of synthetic data—including AI prompts and outputs—and the ethics of doing so, with a specific focus on transparency and reproducibility.

JENNIFER ORTMAN

Jennifer Ortman is a demographer at the U.S. Census Bureau, where she leads efforts to create a demographic frame (a compilation of information about people and households from censuses, surveys, and administrative data sources). She also serves as a member of the Federal Committee on Statistical Methodology and ASA's Committee on Professional Ethics.

Ortman, who joined the Census Bureau in 2009 as a demographer, has helped develop many statistical programs. Among them: the American Community Survey and Population Projections. She has co-authored reports about such topics as the nation's older population and baby boom cohort and has presented her research findings at various venues including C-SPAN's America by the Numbers.

Ortman has received the Department of Commerce's Silver Medal and Bronze Medal awards in recognition of her outstanding work. She has a doctorate in sociology, with a concentration in population studies, from the University of Illinois at Urbana-Champaign.

MATTHEW ROTELLI

Dr. Rotelli has 30 years of pharmaceutical development experience. He is the founder and Principal Consultant at Nat and Matt Consulting LLC. His work focuses on the intersection of data, analytics, artificial intelligence, and ethics to improve development, regulatory, and health care decisions.

Dr. Rotelli retired from his position as Vice President of Bioethics Eli Lilly and Company in January 2025. Earlier in his career, Dr. Rotelli led talented teams of statisticians and pharmacometricians to bring medicines to patients in oncology, immunology, pain, cardiovascular, endocrine, and neuroscience indications. Throughout his career, he has gained experience in all phases of clinical development, including commercialization, pharmacovigilance, and real-world evidence generation as well as establishing a group of data scientists to assist teams with advanced modeling and analytic applications. For the last 8 years of his career, Dr. Rotelli underwent training and development to take on leadership responsibilities for Lilly's Global Bioethics Program.

Dr. Rotelli earned his B.A. in Mathematics from Cornell University and his M.S. and Ph.D. degrees in Statistics from Virginia Tech. He is a member of Public Responsibility in Medicine and Research and of the American Statistical Association (ASA), where he is chair of the Committee on Professional Ethics. He holds an adjunct faculty appointment at the Indiana University School of Medicine and serves on an IRB there.

JENNIFER VAN MULLEKOM

Dr. Jennifer Van Mullekom joined Virginia Tech in 2016 after a 20-year industry career and now serves as Associate Director of the Academy of Data Science, Graduate Director of the MS in Data Science program, and a Professor of Practice in Statistics. Previously, a Senior Consulting Statistician and Certified Six Sigma Master Black Belt at DuPont, she led the Tyvek® Medical Packaging Transition Project to a DuPont Engineering Excellence Award and continues to collaborate with DuPont today. She holds leadership roles in the ASA and ASQ, is an inventor on two U.S. patents, and has also worked at Lubrizol and Capital One. She received the ASA's Section on Statistical Consulting Mentoring Award in 2024 and was elected an ASA Fellow in 2025. She earned her PhD and MS in Statistics from Virginia Tech and dual bachelor's degrees in Mathematics and Mathematics Education from Concord University.

MICHIKO I. WOLCOTT

Michiko is the Principal Consultant at Msight Analytics. With over 25 years of experience, she advises business and technical leaders on advancing the effectiveness of data practices. She is a member of ASA Committee on Professional Ethics and is an active volunteer with Statistics Without Borders.

Working primarily with C-suites, she has impacted organizations of all sizes globally in financial services, communications, retail, healthcare, life sciences, transportation and logistics, agriculture cooperatives, not-for-profit organizations, and government agencies, to name a few sectors.

Michiko is a Certified Management Consultant (CMC®) and a Certified ISO9001 Quality Management Systems Auditor, with multiple product management certifications from Pragmatic Marketing. She holds a Master of Science degree in Statistics from Florida State University, among other degrees from Florida State University and the Peabody Conservatory of the Johns Hopkins University.