Open Government in Action: Emerging Practices in Participatory Algorithm Design

July 29, 2024
3 P.M. to 4:30 P.M. ET

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Welcome Remarks

Technical Exchange: Case Studies in Participatory Algorithmic Design

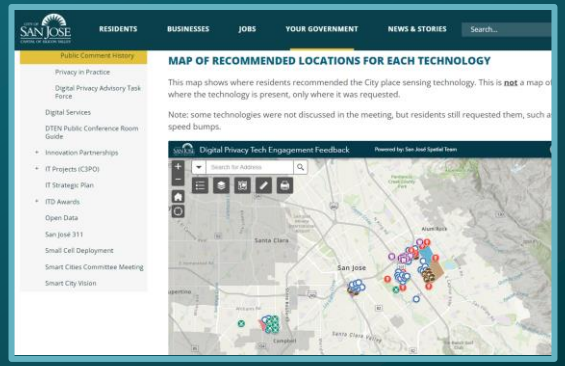
AI-BASED SENSING TECHNOLOGIES

Participatory Algorithmic Design in the City of San José

Chelsea Palacio, Public Information Officer
City of San José Information Technology (IT) Department

CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY

ENGAGEMENT FOR AI-BASED TECH



Automated License Plate Readers

Multilingual Education

Sharing how the technology works and the benefits of implementation in languages spoken in the community.

Gunshot Detection

Collaboration & Accountability

Collaborating on where technology should be implemented.

Accountability of City to publish feedback and data usage reports.

Object Detection

Direction

Public input guides the scope of how technology is developed and used.

MEDIA AND PUBLIC TRUST

BEFORE exploration of participatory algorithmic design

"They're coming by, taking a picture of my car and my license plate and I haven't done anything," Nuñez told San José Spotlight. "They're retaining that information on someone that they have no reason or cause to take information from. So why are they doing it? How long are they keeping that information?"

Unfortunately, "artificial intelligence" isn't a regulated term. Often used as marketing jargon, it can be translated into something akin either to "privacy nightmare" or "disingenuous tech." ShotSpotter, the GDT used in Chicago, also touts use of AI, yet Dana Delger of the Innocence Project found otherwise in the case of her client Silvon Simmons, who

AFTER exploration of participatory algorithmic design

"We're not afraid to go up and down Alum Rock Avenue because our community has been fighting for these protections and slowly but surely, and financially, they've been coming," Garza said.

public to find. San Jose, which has taken a leading role in defining responsible government use of AI systems, appears to be the only city that requires its police department to disclose accuracy data for its gunshot detection system.

GETTING STARTED

Planning

Impact

Language

Accessibility

Meetings

2-weeks advanced notice

Multilingual communications

Accessibility

Language

Transportation / Location

Food / Childcare

Follow-Up

Dedicated webpage on Public Feedback and Comment

Staying Engaged

Promoting government and residents to strengthen San José together.

THANK YOU

Chelsea Palacio

Public Information Officer, City of San José

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CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY

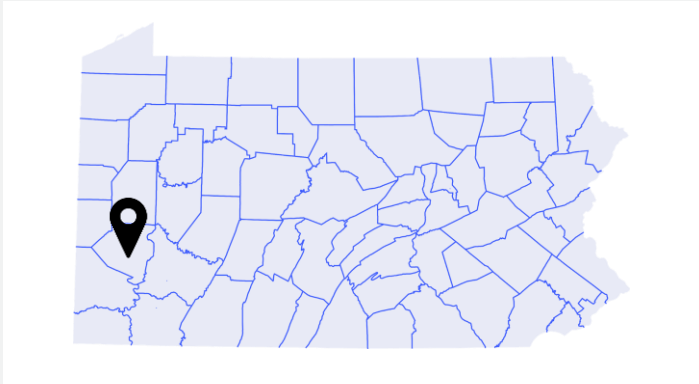
Allegheny County Department of Human Services

Population: 1.2 Million

Responsible for child protection +

~$1.4 billion budget, 1,200 employees

About 40 analysts



Integrated Data Systems

Childhood & Education Services

Early Intervention
HeadStart
Homevisiting
Family Support Centers
Child Welfare
Family Court
Pittsburgh Public Schools + 10 additional School Districts

Basic Needs

Homelessness
Housing Supports
Public Benefits
Public Housing
Employment/Unemployment
Transportation (for medically fragile)
Aging services & supports

Physical & Behavioral Health

Mental Health Services (Medicaid & Uninsured)
Substance Use Services (Medicaid & Uninsured)
Physical Health Services (Medicaid)
UPMC Health Plan (Commercial)
Intellectual Disabilities

Juvenile & Criminal Justice

Juvenile Probation
Delinquency
Pittsburgh Bureau of Police
Criminal Court
Allegheny County Jail
911 Dispatches

Vital Records

Birth Records
Autopsy Records

In over half of the cases where a child died or nearly died as a result of abuse & neglect, there had not been a child welfare referral prior to the critical incident… meaning we had no opportunity to support the family.

hello baby

Why Hello Baby?

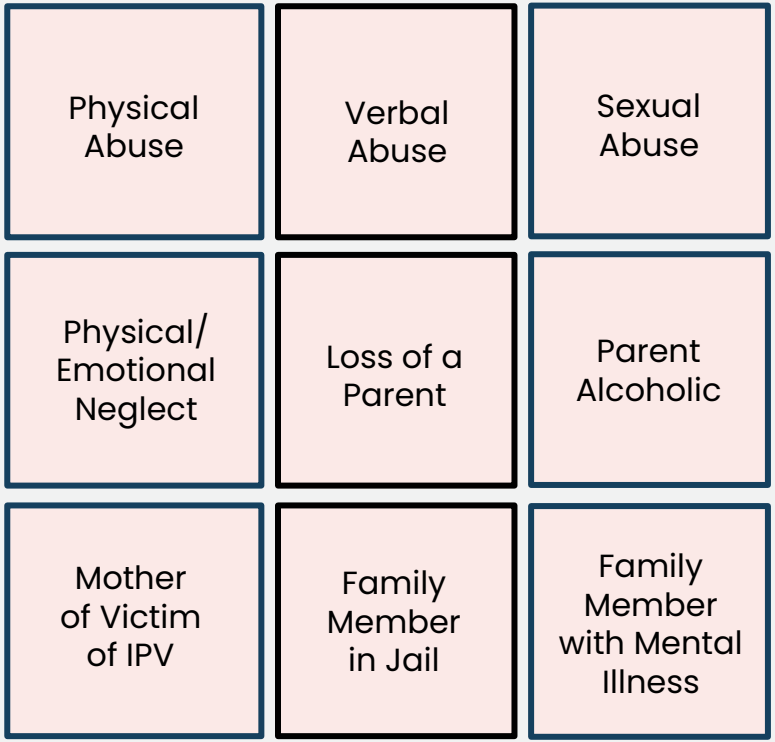
We (internationally, nationally, and locally) have invested in prevention and family strengthening programs for years, but on the whole, we have failed to bend the curve on mitigating adverse childhood experiences, reducing infant mortality, and improving family well-being.

***Bending the Curve*:**

Things to Pay Attention To:

What you give people	Who you give it to	How you evaluate

Adverse Childhood Experiences

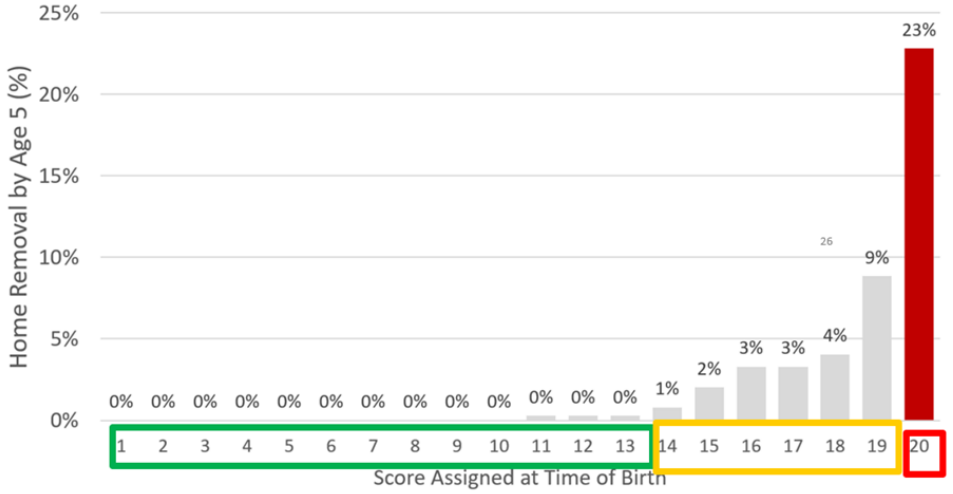


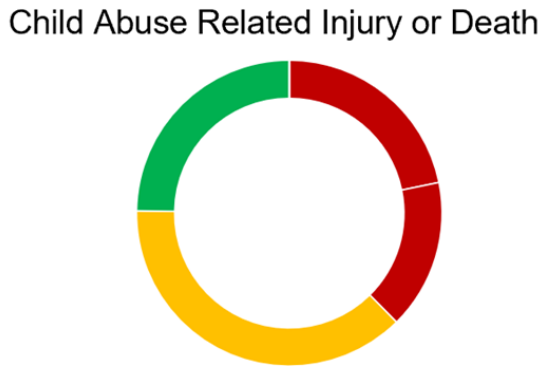
Likelihood of:

- **Child welfare open case**
- **Child welfare placement**
- **Homelessness**
- **Mom having a mental health crisis service**
- **Mom going to jail**
- **Mom death**

Analytics Can Help Tier Supports

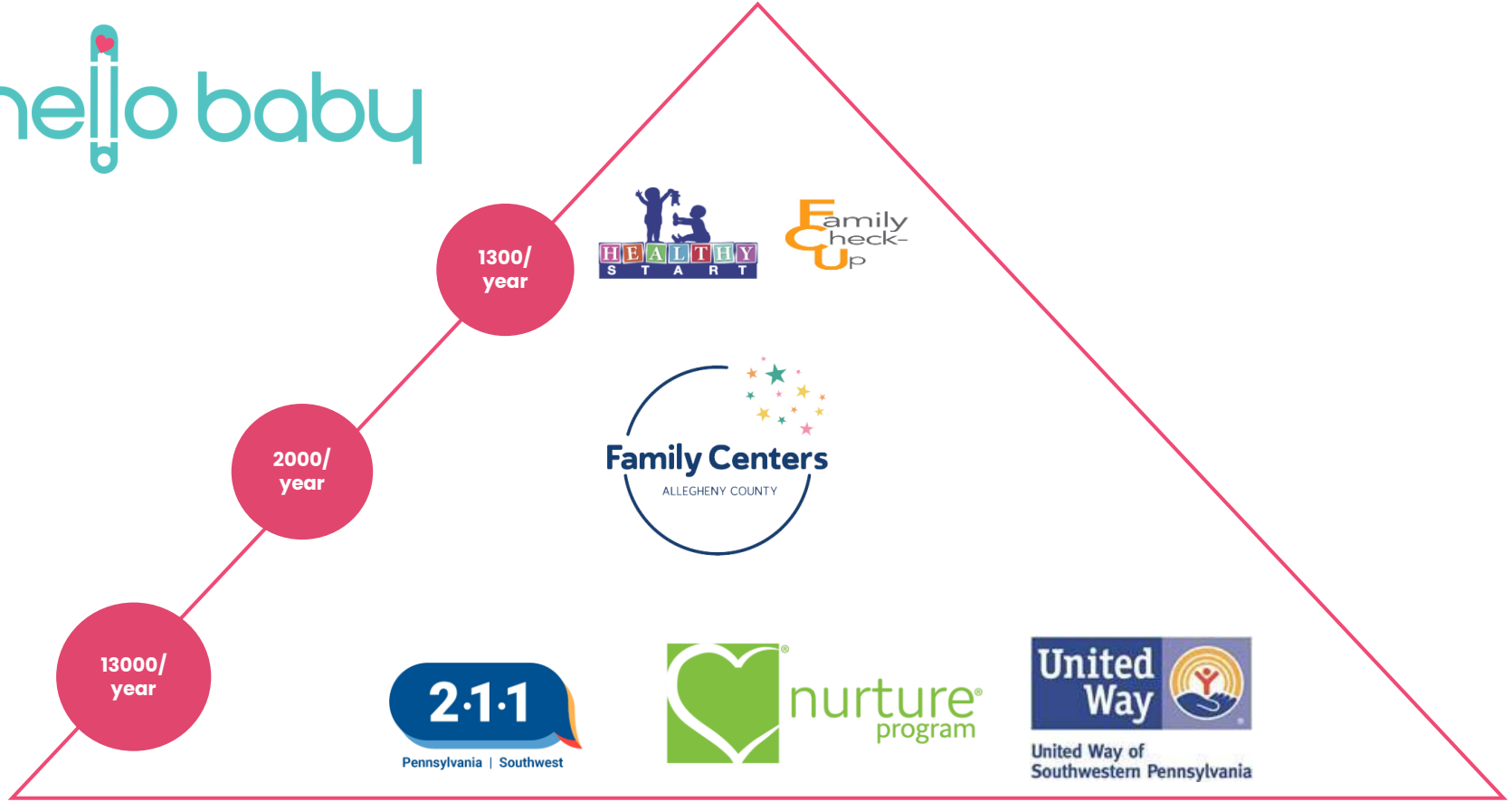
23 times the likelihood of home removal by age 5
10 times more likely to experience post neo-natal infant mortality





Below Average Risk Moderate Risk High Risk

hello baby


1300/ year
2000/ year
13000/ year
HEALTHY START
Family Check-Up
Family Centers
ALLEGHENY COUNTY
2·1·1
Pennsylvania | Southwest
nurture program
United Way
United Way of Southwestern Pennsylvania

Process

- Commitment to Implement
- Do Something that Matters
- Competitive Procurement
- Built in the Public Domain (we own the model etc.)
- Ethical Review
- Model Fairness & Discrimination Review
- Stakeholder Input
- Community Engagement
- Willingness to Modify
- Evaluation
- Commitment to Improve
- Transparency

Social License

- Case Review with parents and stakeholders – do we want to do this?
- Is this Alzheimer's – can we actually help?
- Talk to people impacted – what is important to them?
- Talk to people most critical – what's important to them?
- Have big public meetings
- Report back

INFORMATION TECHNOLOGY SERVICES

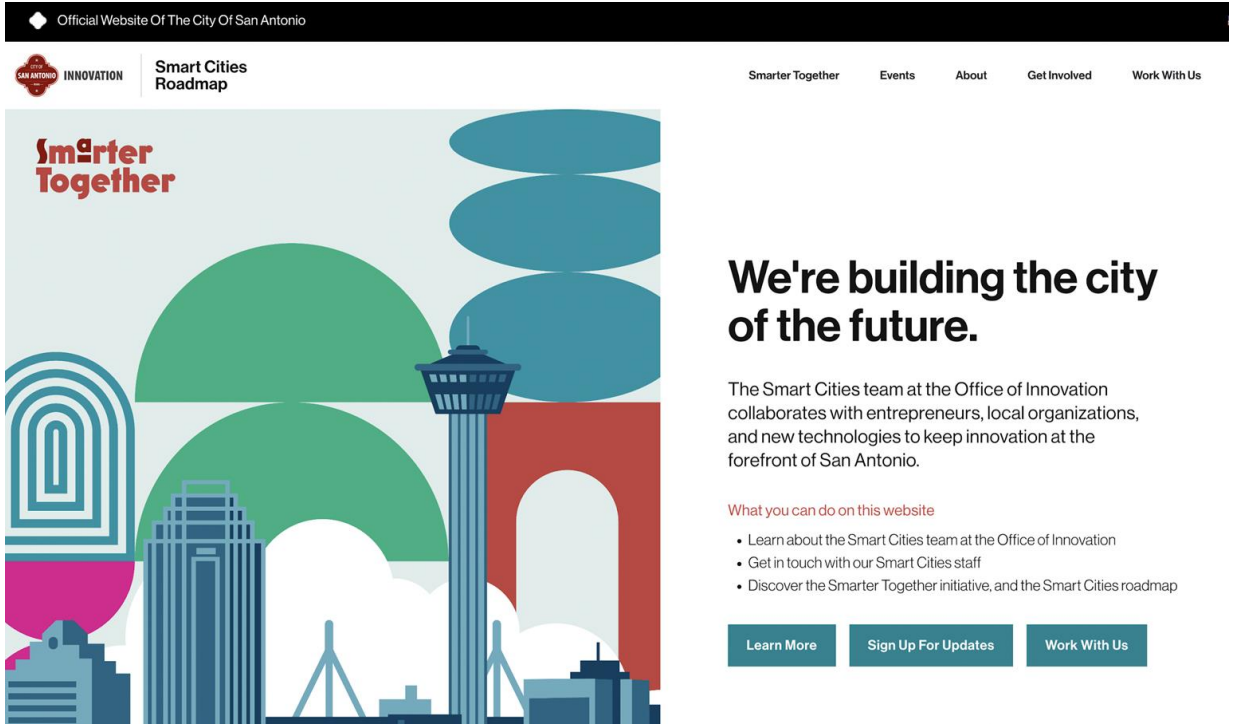
July 26, 2024

Interactive Construction Communications

Emily Royall – Smart Cities Administrator

Smart Cities Roadmap

- **Community driven framework for technology investments**
- **Established the Smarter Together Testbed**
- **Defined 5 Resident Priorities for Smart Cities**
- **Defined 3 key areas of Smart City development for the City of San Antonio**



http://www.smartertogetherSA.com

Business Case

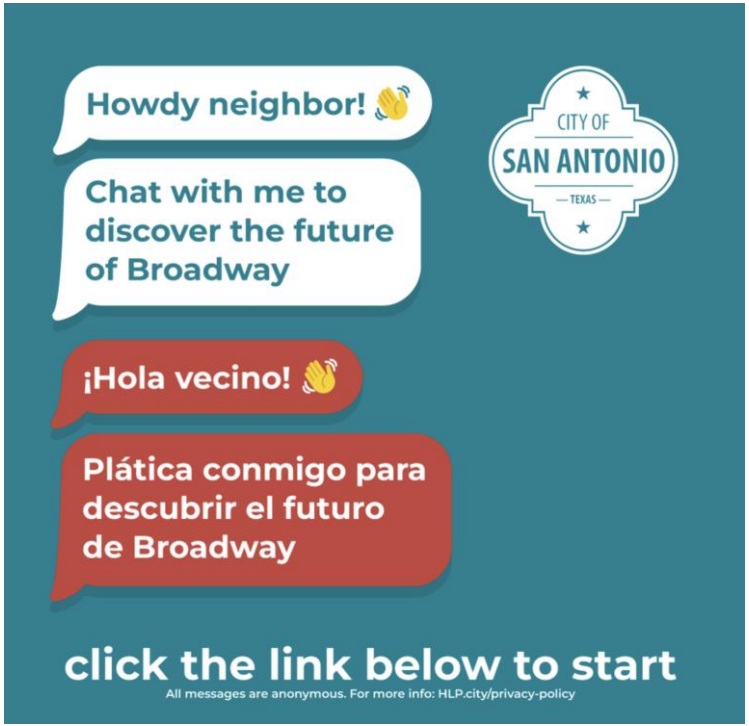
- Small businesses impacted by bond construction projects over multiple months/ years
- Communication and updates provided primarily through analog means
- Lack of real-time, accurate updates due to information flow across stakeholders
- Frustrations among residents

Josh Huskin @JoshHuskin · Jun 21

After dealing with construction for 4-5 years off Broadway the city has closed off half of our parking. Now we're getting parking tickets if you are even close to the sign. Businesses are closing monthly because of this construction, parking tickets don't help that..

6:58 PM · Jun 23, 2024 · **1,824** Views

What is Talkin' Broadway



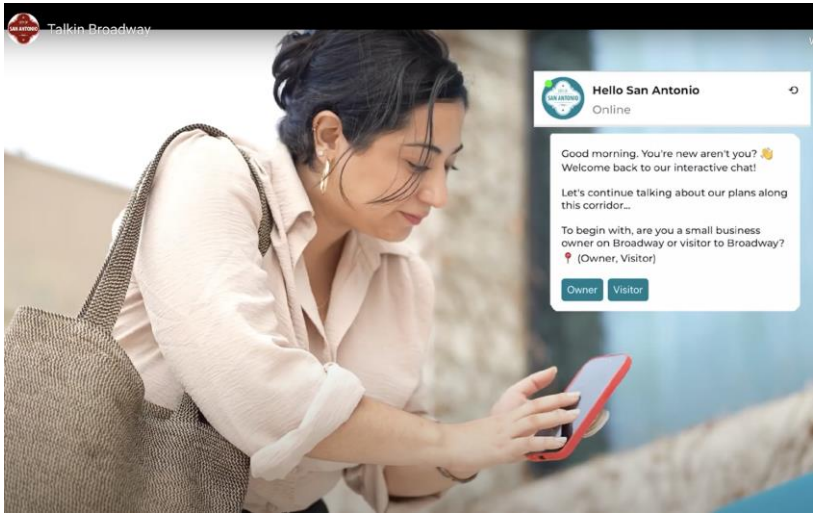
Talkin' Broadway provides information to:

- ***people visiting Broadway***
- ***residents interested in the bond project***
- ***business owners who want construction updates***

- QR codes deployed along Lower Broadway Corridor
- 120 businesses impacted
- COSA-branded signage at 40 locations
- Residents & business owners scan code, receive message
- Can engage with chatbot system, receive customized info & give feedback
- Users can "chat" with the corridor
- Vendor – Hello Lamp Post

Talkin' Broadway Demo

- Link to live demo



Current Traction - All Time

3,449
User Messages

829
Conversations

Challenges with "AI"

- AI system hallucinated without the proper, controlled prompt engineering
- Needed to prevent AI from accessing the live web

NEWS

Chatbot meant to answer public's questions about San Antonio road project stirred panic instead

By **Megan Rodriguez**, *Staff writer*
Updated Jan 18, 2024 3:06 p.m.

A sign with QR codes telling people about a chatbot that responds to questions about construction along Broadway at the corner of McCullough Ave and Broadway on Saturday, Jan. 13, 2024 in San Antonio. There are 40 signs all along lower Broadway
Salgu Wissmath/San Antonio Express-News

Public Prompt Engineering

- Pivoted to public testing model
- Identified nuances about translation
- Identified information we wouldn't have considered including (i.e., EV charging locations)
- Discovered conversation "flow" glitches and UX needs

Key Takeaways

- City governments like SA typically procure AI Systems rather than build them in-house
- Successful implementation requires collaborative vendor that will "open the black box"
- Prompt engineering is laborious and requires dedicated investment by cities
- Public testing is critical to designing a digital service, regardless of the technology that powers it

Stakeholder Participation and Engagement in the Design and Tuning of the 2020 Census Disclosure Avoidance System

Michael B. Hawes
Senior Statistician for Scientific Communication
U.S. Census Bureau

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Any opinions or viewpoints are the presenter's own and do not reflect the opinions or viewpoints of the U.S. Census Bureau

The Triple Tradeoff of Official Statistics

The more statistics you publish, and the greater the granularity and accuracy of those statistics, the greater the disclosure risk.

All statistical techniques to protect confidentiality impose a tradeoff between the **degree of data protection** and the resulting **availability** and **accuracy** of the statistics.

You can maximize on any two dimensions, but only at profound cost to the third.

The 2020 Census improves on the noise injection methods of the 1990-2010 Censuses by employing a mathematical framework known as Differential Privacy (DP) to assess and quantify disclosure risk and confidentiality protection.

Every individual that is reflected in a particular statistic contributes towards that statistic's value.

Every statistic that you publish "leaks" a small amount of private information.

DP as a framework allows you to assess each individual's contribution to the statistic, and to measure (and thus, limit) how much information about them will leak.

Ensuring Fitness-for-Use

All disclosure avoidance methods, and the parameters of their implementation, impact the resulting data's fitness-for-use in different ways.

Agencies must be deliberate in their selection and implementation of disclosure avoidance methods to ensure they meet the needs of their intended data users.

Requires:

- Subject Matter Expertise
- Research and Evaluation
- Stakeholder Communication and Engagement

The TopDown Algorithm

For complete details see: Abowd, J., Ashmead, R., Cumings-Menon, R., Garfinkel, S., Heineck, M., Heiss, C., Johns, R., Kifer, D., Leclerc, P., Machanavajjhala, A., Moran, B., Sexton, W., Spence, M., & Zhuravlev, P. (2022). The 2020 Census Disclosure Avoidance System TopDown Algorithm. *Harvard Data Science Review*. (June) https://doi.org/10.1162/99608f92.529e3cb9

TDA Query Structure

TDA only takes noisy measurements for defined queries (tabulations) at particular geographic levels. Adjusting the queries asked and/or the share of privacy-loss budget (PLB) assigned to those queries determine the resulting amount of noise injected into the DHC statistics derived from those queries.

DHC-P PLB allocations by geographic level and query as reflected in the 2022-03-16 Demonstration Data Product

Global *rho*	3.325
Global *epsilon*	20.01
delta	10^{-10}

	***rho* Allocation by Geographic Level**
US	1.95%
State	27.07%
County	8.42%
Population Estimates Primitive Geography†	12.93%
Tract Subset Group‡	12.93%
Tract Subset‡	23.46%
Optimized Block Group◊	12.93%
Block	0.30%

	Per Query *rho* Allocation by Geographic Level							
Query	US	State	County	Population Estimates Primitive Geography†	Tract Subset Group‡	Tract Subset‡	Optimized Block Group◊	Block
AGE (3 bins) * HHGQ (4 Levels) (12 cells)	0.22%	3.01%	0.94%	1.44%	1.44%	2.61%	1.44%	0.03%
AGE (3 bins) * SEX (6 cells)	0.22%	3.01%	0.94%	1.44%	1.44%	2.61%	1.44%	0.03%
AGE (13 bins) * SEX (26 cells)	0.22%	3.01%	0.94%	1.44%	1.44%	2.61%	1.44%	0.03%
HISPANIC * SEX (4 cells)	0.22%	3.01%	0.94%	1.44%	1.44%	2.61%	1.44%	0.03%
SEX * HHGQ (4 levels) (8 cells)	0.22%	3.01%	0.94%	1.44%	1.44%	2.61%	1.44%	0.03%
HISPANIC * SEX * AGE (13 bins) * HHGQ (8 levels) * CENRACE (26,208 cells)	0.22%	3.01%	0.94%	1.44%	1.44%	2.61%	1.44%	0.03%
HHGQ (8 levels) * AGE (23 bins) * HISPANIC * CENRACE * SEX (46,368 cells)	0.22%	3.01%	0.94%	1.44%	1.44%	2.61%	1.44%	0.03%
RELGQ * AGE (23 bins) * HISPANIC * CENRACE * SEX (243,432 cells)	0.22%	3.01%	0.94%	1.44%	1.44%	2.61%	1.44%	0.03%
RELGQ * SEX * AGE (116 bins) * HISPANIC * CENRACE (1,227,744 cells)	0.22%	3.01%	0.94%	1.44%	1.44%	2.61%	1.44%	0.03%

Reflections: Participatory Algorithms Design – Lessons and Emerging Norms

Panel Questions

Question 1: What norms are emerging around open or participatory algorithmic design? What lessons are we starting to glean?

Question 2: What challenges do we face in this space?

Question 3: What do you see as the next steps in fostering more open or participatory algorithmic design?

Closing Remarks