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Census Delays and Introduction to Differential Privacy

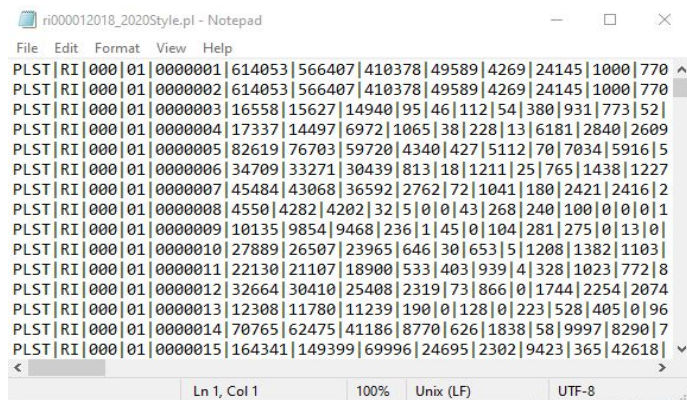
May 4, 2021

Introduction to Census Data Delays

- Census Act – 13 U.S.C. § 141
 - (a) April 1 “decennial census date”
 - (b) Apportionment data w/n 9 months
 - (c) Population tabulation by state “as expeditiously as possible” but w/n 12 months
 - Known as “P.L. 94-171 data” – 1975 amendment

Introduction to Census Data Delays

- 2021 Census Bureau announcement
 - February 12: “COVID-19-related delays and prioritizing the delivery of the apportionment results delayed the Census Bureau’s original plan to deliver the redistricting data to the states by March 31, 2021.”
 - COVID-19 pushes “Nonresponse Followup” effort from May 2020 to approx. August
 - Gulf Coast hurricanes, west coast fires, civil unrest
 - P.L. 94-171 data by September 30, 2021
 - Legacy data by August 16, 2021



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Differential Privacy and Impact on Census

- Confidentiality requirement 13 U.S.C. § 9(a)(2)
 - Census Bureau may not “make any publication whereby the data furnished by any particular establishment or individual under this title can be identified.”
- Necessitates disclosure avoidance strategies
- Census Bureau deems previous use of “data swapping” inadequate
 - Data swapping held the population count and voting age population invariant (constant) at the block group level
- New method: differential privacy
 - Differential privacy introduces (allegedly) appropriate noise into the block level data, while maintaining overall state populations invariant

What is differential privacy?

- First introduced in computer science literature in 2006. Has since been used in aggregate data analysis by Google, Apple, Uber, and others.
- Defined in formal mathematical language.
- Simply, differential privacy ensure that the only things that can be learned about an individual from a dataset are essentially the same as what could have been learned if the analysis had been performed without that individual's data.
 - That is, that the presence or absence of any one individual in a dataset does not significantly affect the responses that the data system provides.
- To achieve this, differential privacy injects a carefully tuned amount of “noise” to the statistics outputted.

What does differential privacy protect against?

- Differential privacy aims to protect against “privacy attacks”
- A common privacy attack is taking de-identified data (such as anonymized health records) and comparing it to publicly available datasets (such as voter registration records) to deduce who the individuals in the de-identified dataset are.
- Example: in 1990s, Massachusetts published de-identified data of state employees’ hospital records. A researcher compared the data in this set to voter registration data and identified the health records of Massachusetts Governor William Weld.

How to calibrate “noise”

- Injecting noise means that the computation gives an approximate answer to individual pieces of data.
- Determining how much “noise” to inject is determined by setting the privacy-loss budget, also known as the privacy-loss parameter or epsilon value (ϵ).
- Like tuning a knob for balancing privacy and accuracy
 - Setting ϵ to zero means perfect privacy but useless data
 - Setting ϵ to infinity means perfectly accurate data but no privacy
- Determining where to set ϵ is a policy decision that depends on the intended use of the data and the importance of privacy.

The Census Bureau's Use of Differential Privacy

- Census Bureau says it introduced its intention to use differential privacy in 2018.
- The Bureau has indicated that its internal studies indicate that Census data is vulnerable to re-identification attacks through record linkage.
- The Bureau first released four sets of “demonstration data” applying differential privacy to 2010 Census data.
 - These demonstration datasets applied ϵ value of 4.
- These demonstration datasets resulted in serious accuracy concerns, now at issue in Alabama litigation.

The Census Bureau's Use of Differential Privacy

- The Census Bureau says it deliberately set a low ϵ value to its first demonstration datasets to identify issues and fine-tune approach later
- Published new demonstration dataset on April 28, 2021 that applies substantially higher ϵ value of 10.3
- Census Bureau says that this demonstration dataset is much more accurate

The Census Bureau's Use of Differential Privacy

- According to Census Bureau, the most recent dataset shows the following from differential privacy:
 - Total populations for counties have average error of +/- 5 persons
 - At the block level, differentially private data have an average population error of +/- 3 persons
 - No meaningful bias in the statistics for racial and ethnic minorities even in very small population geographies like Federal American Indian Reservations
- Final ϵ value will be determined in June, 2021
- Census Bureau has invited feedback based on most recent dataset for fitness of use (including redistricting and VRA), privacy, and improvements
- Deadline for feedback is May 28, 2021

Census Delay Litigation

- *Ohio v. Raimondo* (S.D. Ohio Feb. 25, 2021)
 - Based on Census Bureau's announcement of delay
 - Causes of action:
 - Violation of the Census Act, 13 U.S.C. § 141(c) (P.L. 94-171)
 - Failure to meet statutory deadline
 - Violation of the Administrative Procedure Act, 5 U.S.C. § 706
 - Not in accordance with law
 - Failure to meet statutory deadline
 - Arbitrary and capricious:
 - Failure to accommodate states with early deadlines
 - Failure to account for states' reliance interests on the March 31 deadline
 - Remedies:
 - Declaratory judgment, preliminary injunction, writ of mandamus

Census Delay Litigation

- *Ohio* – Order Denying Preliminary Injunction/Dismissing Case (Mar. 24, 2021)
 - Held, Ohio lacks standing
 - No redressability
 - Not possible to order the Census Bureau to meet Mar. 31 deadline
 - Congressional apportionment must come first
 - No injury-in-fact
 - Statutory violation, in and of itself, is insufficient
 - Census Act provides no cause of action
 - Ohio law does not require federal redistricting data
 - No allegation that federal redistricting data will result in better districts, or better comply with federal law
 - Alleged need to avoid debates about the quality of data, and/or potential distrust, are speculative injuries
 - Injury is traced to Ohio's rigid timeline, not any act of the Census Bureau

Census Delay Litigation

- *Alabama v. U.S. Dept. of Commerce* (M.D. Alabama Mar. 10, 2021)
 - Based on census delay *and* use of differential privacy
 - Plaintiffs: State of Alabama, two individual voters, one candidate for Congress
 - Causes of action:
 - Violation of the Census Act, 13 U.S.C. § 141(c) (P.L. 94-171)
 - Differential privacy results in failure to produce accurate “tabulations of population” required under law
 - Violation of the Right to Vote under the Equal Protection Clause of the 5th Amendment
 - Differential privacy will result in false redistricting data, creating substantial risk the individual plaintiffs’ votes will be diluted in violation of the one-person, one-vote principle
 - Violation of the Administrative Procedure Act, 5 U.S.C. § 706
 - Not in accordance with law
 - Differential privacy results in failure to produce accurate tabulations under 13 U.S.C. § 141(c)
 - Contrary to constitutional right
 - Differential privacy produces substantial risk of vote dilution in violation of one-person, one-vote

Census Delay Litigation

- *Alabama v. U.S. Dept. of Commerce* (M.D. Alabama Mar. 10, 2021)
 - Causes of action (con't):
 - Violation of the Administrative Procedure Act, 5 U.S.C. § 706
 - Arbitrary and capricious
 - Failure to consider the effect of differential privacy on states that rely on accurate data
 - Failure to offer states the option for accurate redistricting data in lieu of differential privacy data
 - Offering an explanation that runs counter to the evidence before the Census Bureau
 - Violation of the Census Act, 13 U.S.C. § 141(c) (P.L. 94-171)
 - Failure to meet statutory deadline
 - Violation of the Administrative Procedure Act, 5 U.S.C. § 706
 - Not in accordance with law
 - Failure to meet statutory deadline

Census Delay Litigation

- *Alabama v. U.S. Dept. of Commerce* (M.D. Alabama Mar. 10, 2021)
 - Causes of action (con't):
 - Violation of the Administrative Procedure Act, 5 U.S.C. § 706
 - Arbitrary and capricious
 - Failure to roll out data and prioritize states with early deadlines
 - Failure to account for states' reliance interests on the March 31 deadline
 - Remedies:
 - Declaratory judgment, preliminary/permanent injunction, vacatur of delay decision, writ of mandamus
 - 3-judge panel appointed
 - Oral argument May 3, 2021

Census Delay Litigation

- *Alabama v. U.S. Dept. of Commerce* (M.D. Alabama Mar. 10, 2021)
 - Commerce Department response to Motion for Preliminary/Permanent Injunction
 - Plaintiffs lack standing
 - Differential privacy issues
 - Plaintiffs have not suffered any injuries-in-fact
 - Plaintiffs will not suffer an informational injury because the Census Bureau will properly deliver “tabulations of population” under 13 U.S.C. § 141(c)
 - Plaintiffs will not suffer a sovereign injury that impedes its interest in drawing fair districts
 - The differential privacy data will be perfectly fit/useful
 - Alabama law doesn’t mandate use of federal redistricting data
 - Potential loss of federal funding is too speculative
 - Too early to tell whether differential privacy data will dilute minority groups’ votes (plus such claims must be brought by voters residing in the affected districts)
 - A mere violation of federal law is insufficiently particularized injury

Census Delay Litigation

- *Alabama v. U.S. Dept. of Commerce* (M.D. Alabama Mar. 10, 2021)
 - Commerce Department response to Motion for Preliminary/Permanent Injunction
 - Plaintiffs lack standing
 - Differential privacy issues (con't)
 - Plaintiffs' alleged injuries are not traceable to the Census Bureau's conduct
 - Alabama's conundrum is due to its own state law inflexibility (citing *Ohio*)
 - Alabama cannot show that differential privacy data is less accurate than alternative disclosure avoidance methodologies
 - Plaintiffs' injuries are not redressable
 - Census Bureau still must protect privacy; 2010 data swapping is adequate and would make the data more inaccurate
 - Abandoning differential privacy would require the Bureau to start over, creating a delay of "several months"

Census Delay Litigation

- *Alabama v. U.S. Dept. of Commerce* (M.D. Alabama Mar. 10, 2021)
 - Commerce Department response to Motion for Preliminary/Permanent Injunction
 - Plaintiffs lack standing (con't)
 - Census delay issues
 - Plaintiffs have not suffered any injuries-in-fact
 - Alabama is not required to use the federal census data
 - Alabama's Board of Registrars is able to get a head start in reassigning voters to correct precincts
 - Plaintiff candidate will not be uniquely harmed by shorted campaign time
 - Plaintiffs' alleged injuries are not traceable to the Census Bureau
 - Any injuries result from the state's independent actions
 - Front-loading Alabama could result in rushed, inaccurate data
 - Plaintiffs' alleged injuries are not redressable.
 - Not possible to speed up the delivery date

Census Delay Litigation

- *Alabama v. U.S. Dept. of Commerce* (M.D. Alabama Mar. 10, 2021)
 - Commerce Department response to Motion for Preliminary/Permanent Injunction
 - Plaintiffs cannot prevail on the merits
 - Differential privacy issues
 - Use of differential privacy data complies with the Census Act, 13 U.S.C. § 141(c)
 - Alabama (as a state) doesn't qualify as an "aggrieved person" under a federal law, P.L. 105-119, § 209, and thus cannot bring a lawsuit to private enforce violations of the Census Act
 - Differential privacy won't necessarily create vote dilution, and state not even required to use the data
 - The Census Bureau did not violate the APA by use of differential privacy data
 - The differential privacy announcement is not a "final agency action"
 - Plaintiffs criticize broad policy, not specific "agency actions"
 - The action is not "final"
 - Only non-final demonstrations have been produced
 - No final decision has been made on how to tune the data noise

Census Delay Litigation

- *Alabama v. U.S. Dept. of Commerce* (M.D. Alabama Mar. 10, 2021)
 - Commerce Department response to Motion for Preliminary/Permanent Injunction
 - Plaintiffs cannot prevail on the merits
 - Differential privacy issues
 - The Census Bureau did not violate the APA by use of differential privacy data (con't)
 - The differential privacy decision does not violate any law
 - The decision is not arbitrary or capricious, and meets a highly deferential standard
 - The decision was based on reasoned conclusions that the 2010 methodology was inadequate

Census Delay Litigation

- *Alabama v. U.S. Dept. of Commerce* (M.D. Alabama Mar. 10, 2021)
 - Commerce Department response to Motion for Preliminary/Permanent Injunction
 - Plaintiffs cannot prevail on the merits
 - Census delay issues
 - Alabama (as a state) doesn't qualify as an "aggrieved person" under a federal law, P.L. 105-119, § 209, and thus cannot bring a lawsuit to private enforce violations of the Census Act
 - The Census Bureau did not violate the APA by delaying the redistricting data
 - The Feb. 12 announcement is not a "final agency action"
 - The action is not "final"
 - No legal consequences because Alabama is not required to use the data
 - The delay decision is not arbitrary or capricious because it was supported by a reasoned decision: COVID-19 made it impossible to meet the statutory deadline

Census Delay Litigation

- *Alabama v. U.S. Dept. of Commerce* (M.D. Alabama Mar. 10, 2021)
 - Commerce Department response to Motion for Preliminary/Permanent Injunction
 - Plaintiffs cannot demonstrate irreparable harm
 - Alabama has not alleged any harm, much less irreparable harm
 - Harm cannot be irreparable if Alabama waited nearly 2 years
 - Balance of hardships
 - Differential privacy is in the public interest
 - Creating a new disclosure avoidance method would delay the census data by months
 - Ordering an accelerated deadline for Alabama would disrupt other states

Census Delay Litigation

- *Alabama v. U.S. Dept. of Commerce* (M.D. Alabama Mar. 10, 2021)
 - Amicus Curiae participation
 - Supporting plaintiffs
 - Professor Jane Bambauer, U of A law professor (applying differential privacy across the board, without context or assessment of particular privacy risks, is an irrational policy)
 - Professor Margo Anderson, Univ. of Wisc. history professor (critiquing lack of sufficient state consultation)
 - 16 States: Utah, Alaska, Arkansas, Florida, Kentucky, Louisiana, Maine, Mississippi, Montana, Nebraska, New Mexico, Ohio, Oklahoma, South Carolina, Texas, and West Virginia (relies on Utah Legislature study comparing 2010 differential privacy demonstration data and 2010 final redistricting data; demonstrates differential privacy data is inaccurate and thus impacts federal funding, rural communities, and minorities)
 - State Government Leadership Foundation and legislators from Louisiana, Minnesota, Mississippi, Nevada, Oklahoma, and Vermont (differential privacy will threaten redistricting plans and create litigation)
 - Pennsylvania Republican legislative leaders
 - Supporting the Census Bureau
 - Coalition of 20 privacy experts (differential privacy is the only sound method to prevent reconstruction attacks)
 - National Redistricting Foundation (rushing process would be harmful; no position on differential privacy)

Thank you Questions?

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