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# Census 2020: The Good, the Bad, the Ugly

ARDA

April 16, 2021



@TexasDemography

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TEXAS   
DEMOGRAPHIC CENTER



## What is the Census?

- Every ten years, the country conducts a census to count every person in the United States.
- April 1, 2020 is the official Census date.
- Census counts used to reapportion the U.S. House of Representatives, determining how many seats each state gets.
- Census counts also used to determine the number of electoral college votes a state gets.
- Census counts used by state and local officials to redraw congressional, legislative, and local boundaries to account for population shifts.
- Businesses rely on Census data for market research, locations, and economic development.
- Census derived data are used to allocate over \$1.5 trillion in federal funds to support healthcare, education, transportation, or other service programs.\*
- Census data form the foundation for nearly all demographic and socio-economic statistics, including population estimates & projections, for the next 10 years.



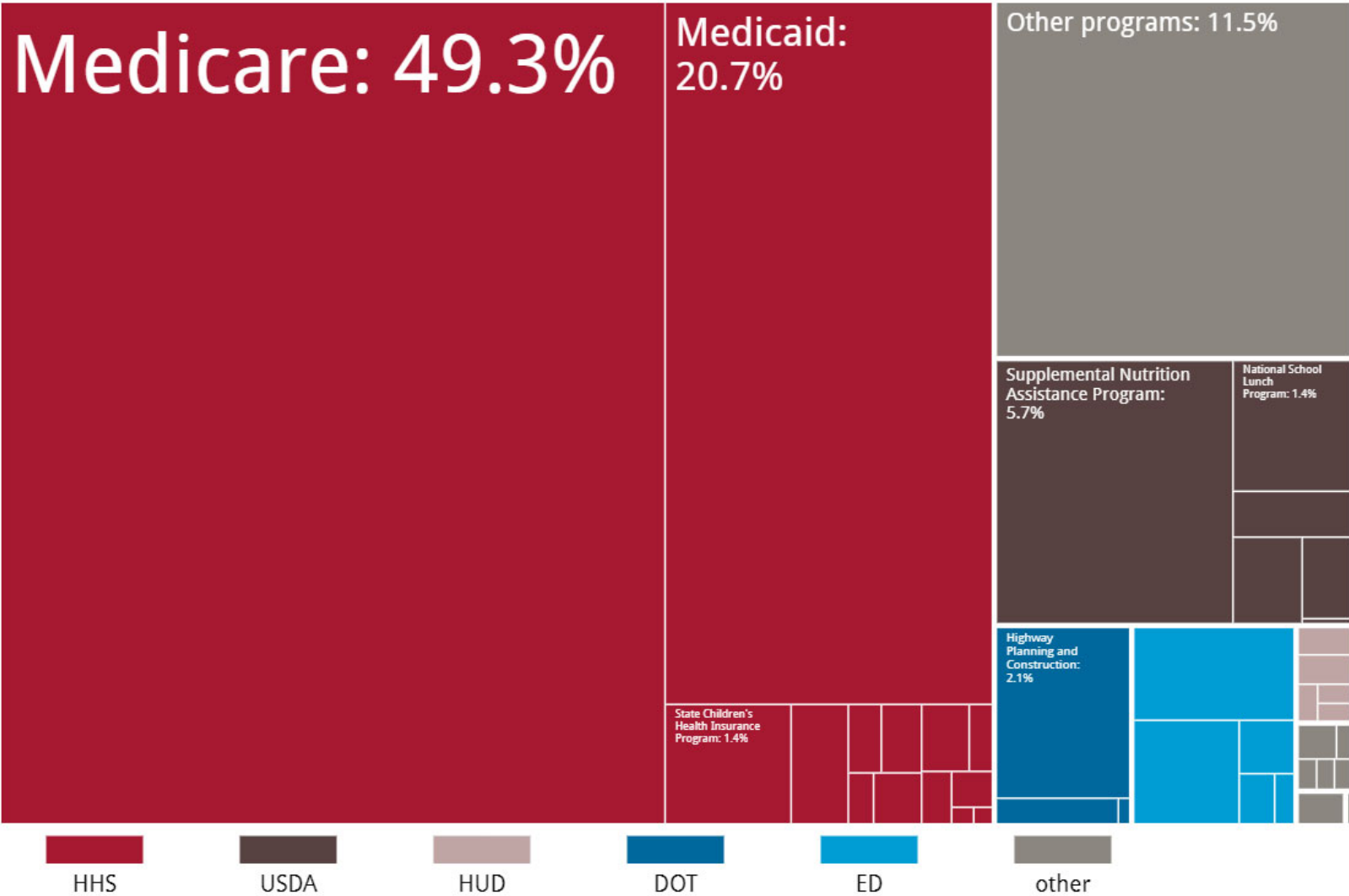
# Census Derived Funding in Texas

In FY 2017, Texas received **\$101 billion** in federal funding for programs that use Census derived data.

\$50 billion for Medicare

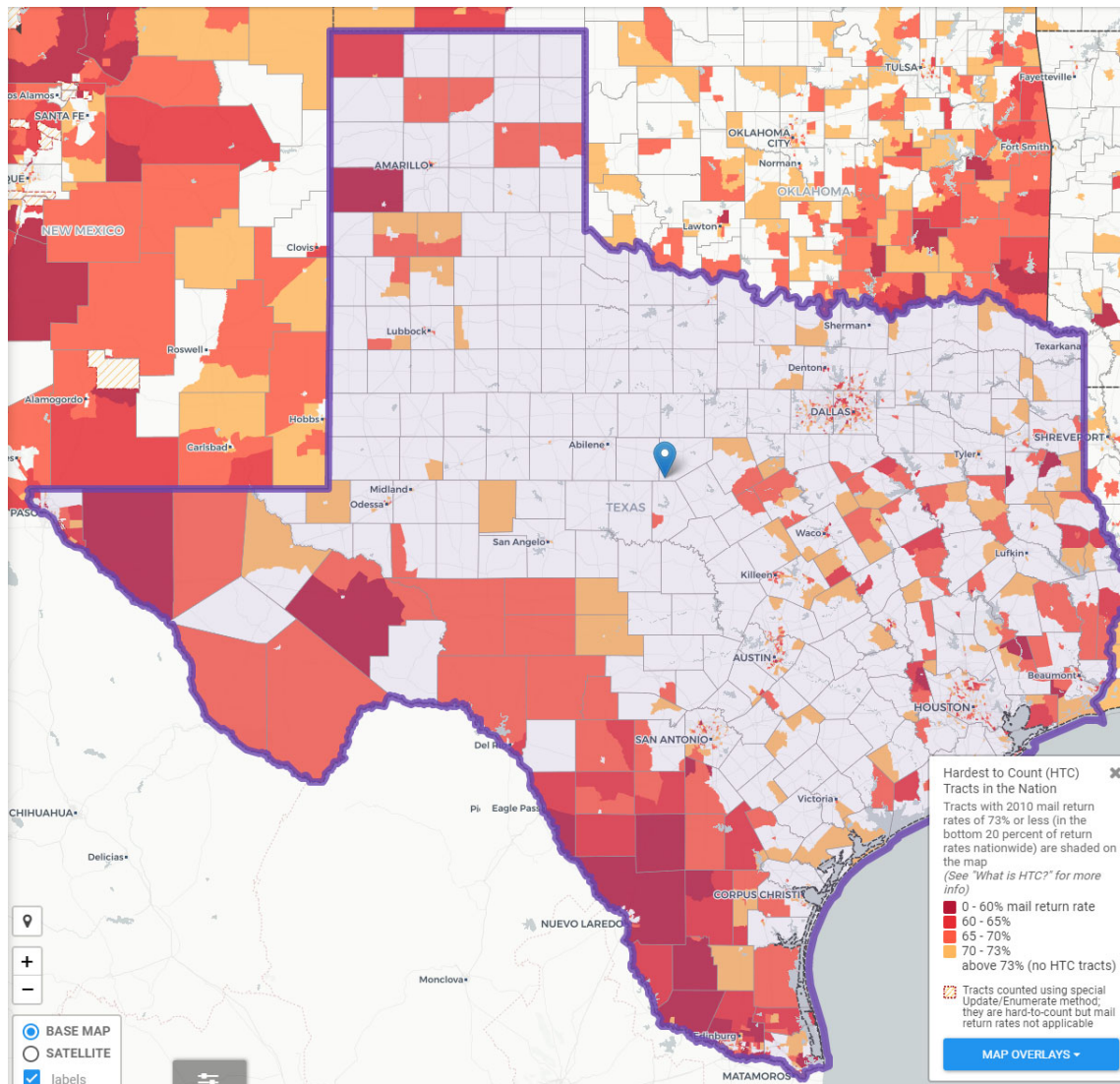
\$21 billion for Medicaid

\$30 billion for other programs.





## Texas Hard to Count Populations



**An estimated 7 million, or nearly 25% of Texans live in HTC areas.**

- People of color
- Children under 5 years
- Populations in/near poverty
- Single-parent households
- Immigrants & those with limited English proficiency
- Complex households: renters, multi-family, mixed status, multi-generation, larger households



# U.S. Response Rates to the 2020 Census

## Mapping Response Rates for a Fair and Accurate 2020 Census

U.S. response rates:

63.2%

Self-response pre-NRFU\*

+3.8%

Self-Response during NRFU

67.0%

Self-response as of 10/17 Share of all units resolved via NRFU

+32.9%

On Sept. 29, America met its final 2010 self-response rate of 66.5%.

99.9%

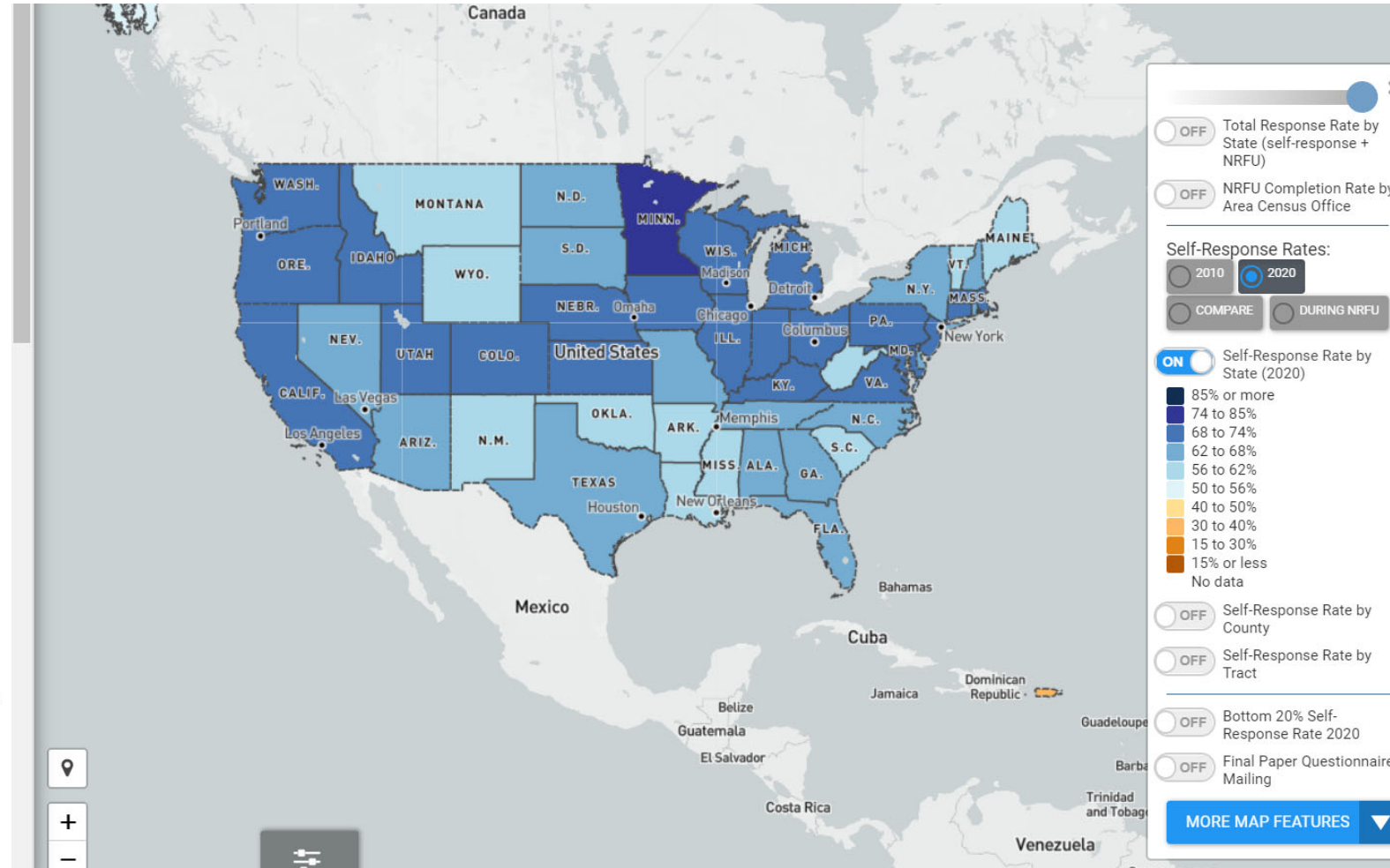
TOTAL SHARE OF HOUSING UNITS ENUMERATED nationwide as of 10/17

The Census Bureau says it's on track to count at least 99% of U.S. households. But **that may not mean the count is complete or accurate.**

Here's why; rushing to finish the count could mean:

- **more reliance on counting by "proxy"** (relying on someone else for a household's data);
- **counting more households & filling in missing answers with administrative records** (which can systematically omit groups already likely to be missed, such as kids or young adult men of color);
- **designating units as vacant without confirming whether people lived there on April 1** (Census Day).

\* NRFU = **nonresponse followup**, the Census Bureau's door-knocking operation to enumerate households in-person or via other records, for households that did not fill out the census form on their own.



$$\begin{aligned} \text{Total Response Rate} &= \\ &\text{Self-Response Rate} \\ &+ \\ &\text{NRFU Enumerated Rate} \end{aligned}$$





## U.S. Response Rates to the 2020 Census

- 99.98% of all housing units and addresses nationwide were enumerated.
- 2020 Self-Response Rate of 67.0% surpassed 2010 Self-Response Rate of 66.5%.
- 32.9% housing units enumerated through Non-Response Follow-Up (NRFU).
- 24.1% of NRFU workload enumerated through proxy (landlord, neighbor, etc.).
- 5.6% of address nationwide (13.9% of NRFU workload) resolved using administrative records



# 2020 Census Total Response in Texas

Total Response Rate  
=  
Self-Response Rate  
+  
NRFU Enumerated Rate

Texas Response Rate:  
99.9% = 62.8% + 37.1%

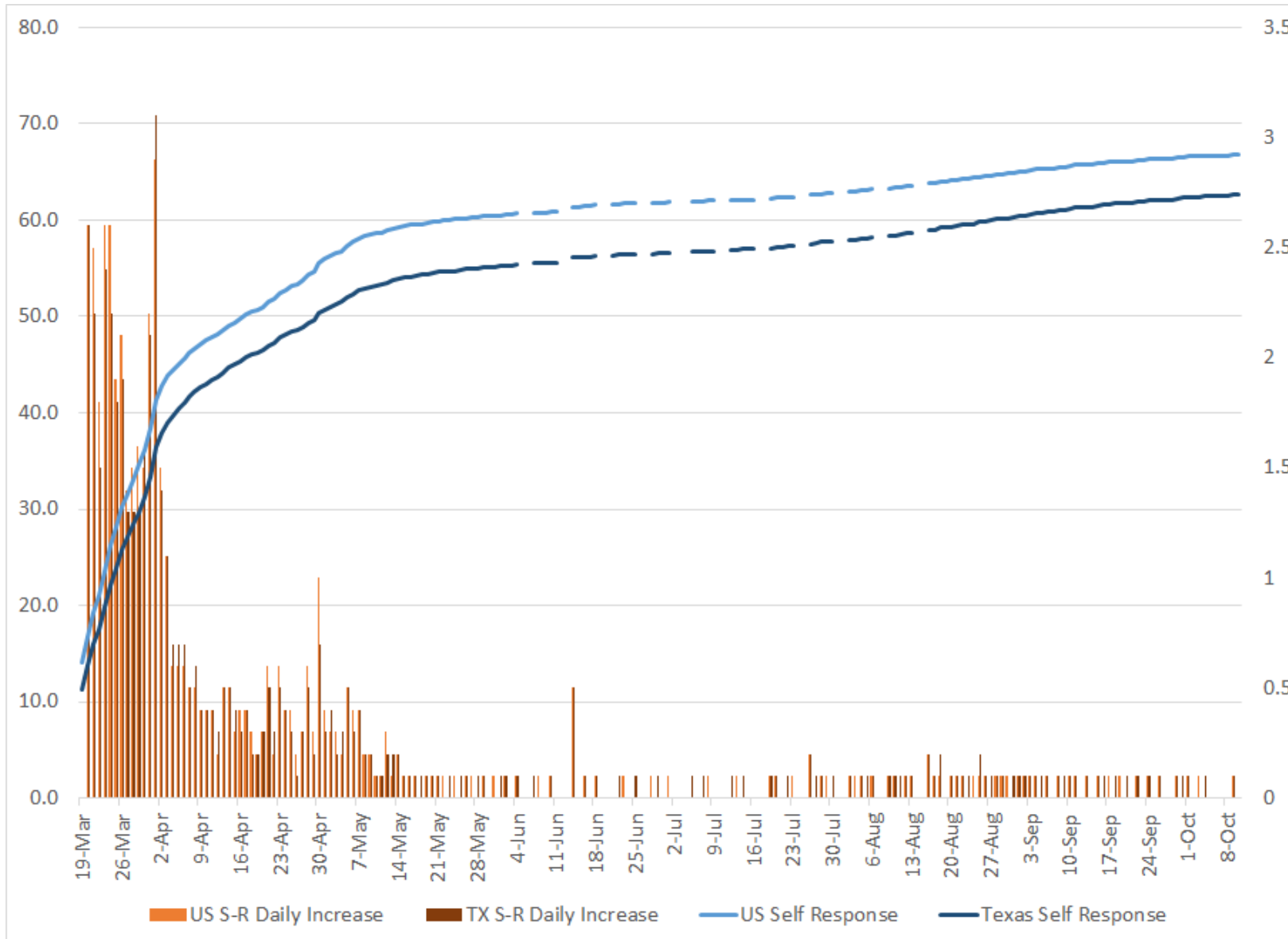
## 2020 Census Housing Unit Enumeration Progress by State

Sort by: Nonresponse Followup

	Report Date: 10/17/2020 As of 10/16/2020, percentage of housing units:		
State	Enumerated	Enumerated in Nonresponse Followup (NRFU)	Self-Responded
U.S. Total	99.9	32.9	67.0
Puerto Rico	99.9	64.2	35.7
Alaska	99.9	45.2	54.7
West Virginia	99.9	43.7	56.2
Maine	99.9	41.7	58.2
New Mexico	99.9	41.2	58.7
Mississippi	99.9	39.5	60.4
Montana	99.9	39.5	60.4
Vermont	99.9	39.4	60.5
Arkansas	99.9	39.3	60.6
Oklahoma	99.9	38.9	61.0
South Carolina	99.9	38.9	61.0
Wyoming	99.9	38.8	61.1
Louisiana	99.0	38.6	60.4
Georgia	99.9	37.1	62.8
Texas	99.9	37.1	62.8



## TDC Analysis of Daily Self-Response Rates (SRR) as of 10/12/20



Total increase in SRR pre-NRFU (July 1st to August 8th) = 1.6

Total increase in SRR post-NRFU (August 9th to present) = 4.4

In last two weeks, Total Response Rates in Texas have come to a standstill.

Zero change in SRR in 7 of the last 10 days.





## **Not all rates are created equal.**

Self response rates, total response rates, enumeration rate, NRFU completion rates

What we do know:

- Texas self-response rate lags 2010 rate: 62.0% vs. 64.4%
- Self-response rates vary across the state.
- Enumeration does not mean count.
- Self-response yields the most accurate census data.



## 2020 Census Response Across Texas

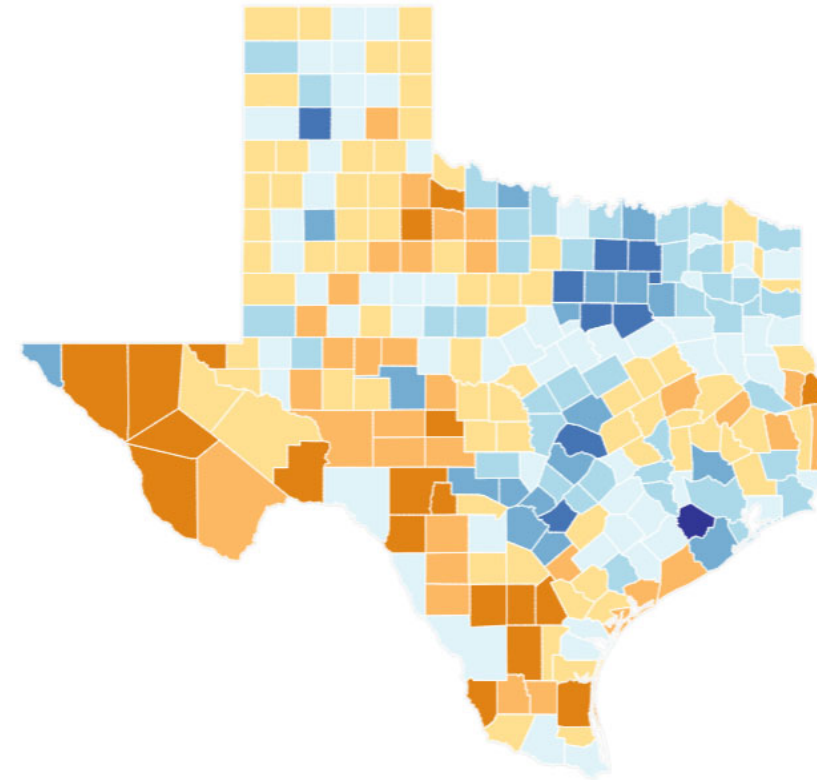
Self-Response Rates among Texas Counties ranged from 75.8% in Fort Bend County to 18.6% in Edwards County.

29/254 (11%) Counties met or surpassed their 2010 SRR.

283/1221 (23%) Places/Cities met or surpassed their 2010 SRR.

Texas  
Self-Response  
**62.8%**

Anderson  
Self-Response  
**53.6%**





## TDC Analysis of Census Tracts with Self-Response Rates in Bottom 20% as of 9/28/20

- Texas has **1347 census tracts** with self-response rates **below 50%** (bottom 20% of self-response rates across all Texas census tracts)
- These lower responding CTs are distributed across the state, in 231 of 254 counties. However, there are more census tracts in the lower NRFU completion ACOs, specifically **Laredo, Fort Bend, Lubbock, and El Paso**.
- **47.9%** of these CTs have **majority (>50%) Hispanic** populations and **55.9%** have a **greater share of Hispanics** than their state share (>40%).
- **5%** of these CTs have **majority (>50%) African American** populations and **35.3%** have a **greater share of Blacks** than their state share (>12%).
- **77.1%** of these CTs greater shares than the Texas share of **Hispanic and/or Black** populations.



## Census Bureau Data Quality Measures

- Census Coverage Measures: provide undercount by demographic groups, geography, and method
- Post-Enumeration Survey: interview a small sample of HHs who to check accuracy of data collected on 2020 census forms (November 2021-February 2022)
- Demographic Analysis: produce population estimates using vital statistics, estimates of international migration and administrative records (December 2020)
- For more info: <https://www.census.gov/newsroom/press-releases/2020/2020-census-metrics-data-quality-measures.html>
- <https://www.census.gov/programs-surveys/decennial-census/about/coverage-measurement.html> (2010 Census)



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## Areas of Concern

- Communities of color
- Under-represented groups in administrative records
- Areas with low internet access
- Off-campus college students
- Public perception of the Census Bureau and its data

# The Privacy Challenge

**Every time you release any statistic calculated from a confidential data source you “leak” a small amount of private information.**

**If you release too many statistics, too accurately, you will eventually reveal the entire underlying confidential data source.**





# The Census Bureau's Privacy Protections Over Time

**Throughout its history, the Census Bureau has been at the forefront of the design and implementation of statistical methods to safeguard respondent data.**

**Over the decades, as we have increased the number and detail of the data products we release, so too have we improved the statistical techniques we use to protect those data.**



# Privacy and Data Usability

**Every disclosure avoidance method reduces the accuracy and usability of the data.**

**Traditional methods for protecting privacy (suppression, coarsening, and perturbation) can have significant impacts on the usability of the resulting data products, but data users are often not aware of the magnitude of those effects.**

# The Growing Privacy Threat

## **More Data and Faster Computers!**

In today's digital age, there has been a proliferation of databases that could potentially be used to attempt to undermine the privacy protections of our statistical data products.

Similarly, today's computers are able to perform complex, large-scale calculations with increasing ease.

These parallel trends represent new threats to our ability to safeguard respondents' data.

# Reconstruction

The recreation of individual-level data from tabular or aggregate data.

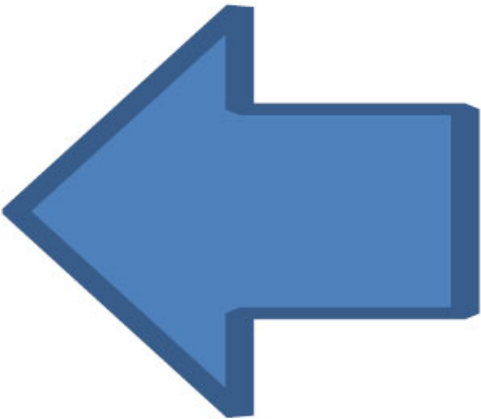
If you release enough tables or statistics, eventually there will be a unique solution for what the underlying individual-level data were.

Computer algorithms can do this very easily.

	4					2	
			7				4
1		7	8			5	
			9			3	8
5							
			6		8		
3						4	5
	8	5				1	9
		9		7	1		

# Reconstruction: An Example

Age	Sex	Race	Relationship
66	Female	Black	Married
84	Male	Black	Married
30	Male	White	Married
36	Female	Black	Married
8	Female	Black	Single
18	Male	White	Single
24	Female	White	Single

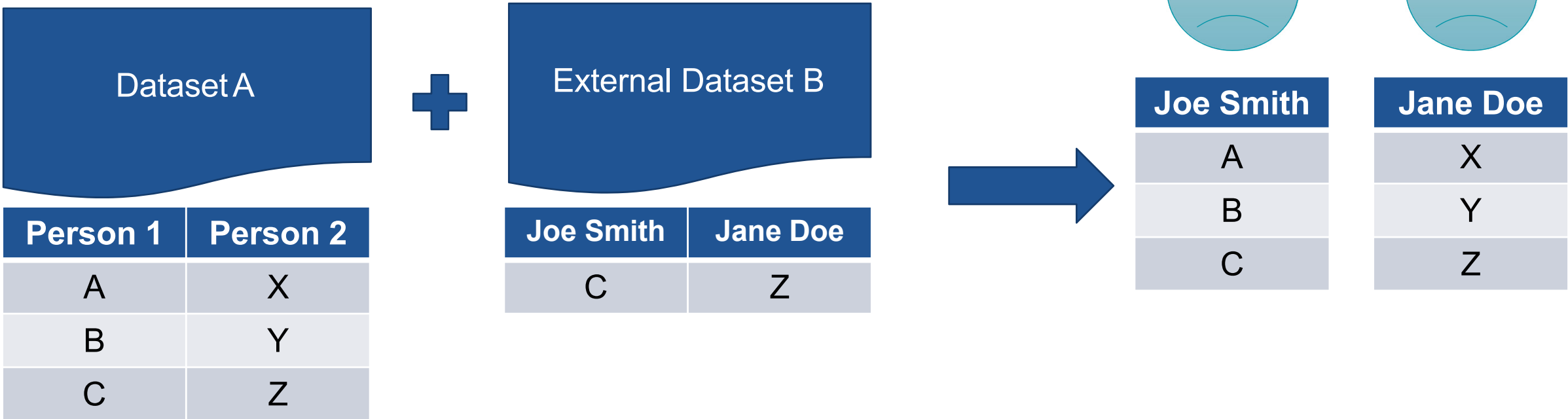


	Count	Median	Mean
Total	7	30	38
# Female	4	30	33.5
# male	3	30	44
# black	4	51	48.5
# white	3	24	24
Married	4	51	54
Black F	3	36	36.7

This table can be expressed by 164 equations.  
Solving those equations takes 0.2 seconds on  
a 2013 MacBook Pro.

# Re-identification

Linking public data to external data sources to re-identify specific individuals within the data.





# Differential Privacy

**aka “Formal Privacy”**

- quantifies the precise amount of privacy risk...**
  - for all calculations/tables/data products produced...**
    - no matter what external data is available...**
      - now, or at any point in the future!**

# Assessing Privacy Risk

## Traditional Disclosure Avoidance Considers Absolute Privacy Risk

Can an individual be re-identified in the data, and can some sensitive attribute about them be inferred?

Evaluates risk given a particular, defined mode of attack, asking: What is the likelihood, at this precise moment in time, of re-identification and inferential disclosure by a particular type of attacker with a defined set of available external information?

## Formal Privacy is about Relative Privacy Risk

Does not directly measure re-identification risk (which requires specification of an attacker model).

Instead, it defines the maximum privacy “leakage” of each release of information compared to some counterfactual benchmark (e.g., compared to a world in which a respondent does not participate, or provides incorrect information).

# Precise amounts of noise

**Differential privacy allows us to inject a precisely calibrated amount of noise into the data to control the privacy risk of any calculation or statistic.**

# Privacy vs. Accuracy

Differential Privacy also allows policymakers to precisely calibrate where on the privacy/accuracy spectrum the resulting data will be.



Data	Quality		Bnae	Kegouqe
Dada	Qualitg		Vrkk	Jzcfkdy
Data	Qaality		Dncb	PrhvBl
Dzte	Qvality		Dncb	Prtnavy
Dfha	Quapyti		Tgta	Ppijacy
Tgta	Qucjity		Dfha	Pnjvico
Dncb	Qhulitn		Dzhe	Njivaci
Ntue	Quevdto		Dzte	Privacy
Vrkk	Zuhnvry		Dada	Privacg
Bnaq	Denorbe		Data	Privacy



## Redistricting Dates

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- Apportionment File sent to POTUS on ~~12/31/2020~~ now by April 30, 2021
- Redistricting Data File (Public Law 94-171 File) received by the Governor no later than ~~April 1, 2021~~ - now by September 30, 2021
- PL 94-171 released to states in groups of 8 states per week, with one week prior notice
- PL 94-171 File to include:
  - Race, Hispanic origin, 18 and older, occupancy status, and group quarters by type.
- Data available at [WWW.CENSUS.GOV/RDO](http://WWW.CENSUS.GOV/RDO)



## DECENNIAL CENSUS OF POPULATION AND HOUSING

[Why a Census?](#)

[History of the Census](#)

[Census in the  
Constitution](#)

[Decennial and the  
American Community  
Survey \(ACS\)](#)

[Coverage Measurement](#)

[Local Update of Census  
Addresses Operation  
\(LUCA\)](#)

[New Construction  
Program](#)

[Participant Statistical  
Areas Program \(PSAP\)](#)

**Redistricting**

[Voting Rights](#)

[Related Sites](#)



# Redistricting Data Program

REDISTRICTING & VOTING RIGHTS DATA OFFICE (RDO@CENSUS.GOV OR 301-763-4039)

May 05, 2017 | CRVRDO

## Redistricting Data Program Congressional Districts

Guidance and access to information about congressional districts and congressional district products.

May 08, 2017 | CRVRDO

## Redistricting Data Program State Legislative Districts

Guidance and access to information about state legislative districts and state legislative district products.

May 08, 2017 | CRVRDO

## Decennial Census P.L. 94-171 Redistricting Data Summary Files

Guidance and documentation to assist in accessing P.L. 94-171 Redistricting Data

December 31, 2019 | Redistricting & Voting Rights Data Office (Rdo@census.gov Or 301-763-4039)

## Redistricting Data Program Management

Guidance about and for participation in the Redistricting Data Program for the current and past Decennial Censuses.

## Related Information

[Redistricting Data Datasets](#)

[Redistricting Data Mapping Files](#)





## Census Bureau Announces Quality Assessments for 2020 Census

DECEMBER 07, 2020  
RELEASE NUMBER CB20-CN.131

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### Census Bureau Continues Practice of Evaluating Decennial Count

**DEC. 7, 2020** — The U.S. Census Bureau announced updated plans for releasing information about quality along with the first results from the census, including releasing an unprecedented number of data quality indicators.

Each decade, the Census Bureau conducts extensive evaluations of the census and releases a variety of data quality metrics. Given the unique challenges that the COVID-19 pandemic posed to the 2020 Census, the Census Bureau plans to release additional data quality metrics.

In addition to upcoming quality metrics planned for release, the Census Bureau will engage in other evaluations of the 2020 Census in the coming months and years, including:

- Working with outside experts to evaluate data quality.
- Conducting extensive evaluations and assessments of 2020 Census operations.
- Comparing the 2020 Census results to other population totals.

All of these efforts support the evaluation of the quality of a census — analyzing the process, reviewing data carefully and comparing the results to other population totals.



# 2020 Census Detailed Operational Plan for: 24. Count Question Resolution Operation (CQR)

MARCH 31, 2020

VERSION: 1.0

PREPARED BY: DECENNIAL CENSUS MANAGEMENT DIVISION

## Operation Purpose

The purpose of the 2020 Census CQR is to provide a mechanism for governmental units (GUs) to request a review of their official 2020 Census results. The 2020 Census CQR is the final operation by which updates to the 2020 Census data can be made. Tribal chairpersons and the highest elected officials (or their representative) from state and local governments in the United States and Puerto Rico can submit a CQR case to request review of the official 2020 Census counts of population and housing, and to correct boundary, geocoding, and certain coverage issues.



[Download Count Question Resolution Operation \(CQR\) \[PDF - 1.6 MB\]](#)

<https://www.census.gov/programs-surveys/decennial-census/2020-census/planning-management/planning-docs/CQR-detailed-op-plan.html>

Information on 2010 CQR process:

<https://www.census.gov/programs-surveys/decennial-census/decade/2010/program-management/cqr.html>



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