

From One Report, Many

Using Parameterized Reporting to Generate
Dozens, Hundreds, or Thousands of Reports
at the Same Time

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About Me



Why Parameterized Reporting?

Making multiple reports is tedious

Making multiple reports is error-prone

Making multiple reports is often not feasible

Parameterized Reporting Changes Everything





Census data determines the allocation of federal and other funds to vital social programs, guides redistricting, and informs research. Therefore, an accurate census that captures historically undercounted populations² is crucial for our democracy. Since 2016, a collaborative of philanthropic funders has worked to align and pool funding to build and strengthen the infrastructure needed to support a fair and accurate count.

The Democracy Funders Collaborative's Census Subgroup, which is the steering committee for the census funder collaborative, engaged ORS Impact as a partner to develop state-level reports that provide an overview of philanthropic efforts to promote the 2020 Census within and across the 50 states, as well as the District of Columbia and Puerto Rico. This report provides a summary of census efforts for the State of Minnesota based on review of secondary data, and interviews with key actors involved (n=4).

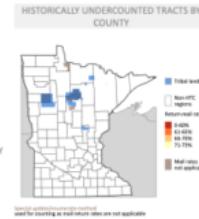
²We have opted to use the term "historically undercounted populations" in our narrative, but the term is interchangeable with "hard-to-count," which we use when our informants opted to do so.

State Overview

OVERVIEW GOING INTO 2020 CENSUS

5,527,358

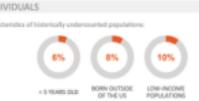
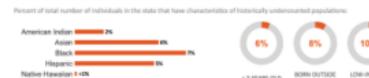
TOTAL POPULATION
151,840
TOTAL POPULATION LIVING IN HISTORICALLY UNDERCOUNTED CENSUS TRACTS



Population

Past analyses of Census data have consistently shown differences in self-response rates based on household or individual characteristics, indicating that certain populations are at higher risk of being undercounted. The following graphs show the distribution of selected populations within the state that have historically been more likely to be undercounted. Data for all maps and graphs provided by CUNY Graduate Center via the Census 2020 Hard to Count/Response Rate map at www.CensusHardToCountMaps2020.us.

INDIVIDUALS



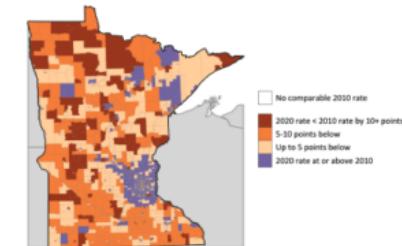
Percent of total number of individuals in the state that have characteristics of historically undercounted populations:
• <5 years old
• Born outside US
• Low-income populations
 $n = 5,527,358$

State Overview

OVERVIEW OF CENSUS SELF-RESPONSE RATES

YEAR	SELF RESPONSE	CHANGE
2020	75.1%	+1.0
2010	74.1%	

CENSUS TRACTS WHERE 2020 CENSUS RETURN RATE WAS LOWER THAN 2010



2020 Census Outreach

STRUCTURE OF CENSUS OUTREACH

Minnesota's 2020 Census efforts were grounded in a large, cross-sector collaboration, co-led by philanthropy, state government, and nonprofit organizations, which focused on reaching historically undercounted communities. Efforts benefited from foundational organizing that began several years before the response period, considerable investments by philanthropy and the state, and complementary statewide activities on the part of the state demographer's office. Important milestones in the development of efforts in the state and a description of key structures and actors follow.

An early start on building a collaborative structure for the 2020 Census founded in authentic engagement of historically undercounted community leaders set up Minnesota for success. In 2015, spurred by the Minnesota Council on Foundations (MCF) began designing what became the Minnesota Census Mobilization Partnership (MCMP) as a complement to anticipated public sector efforts. MCF engaged the Minneapolis Foundation, the St. Paul & Minnesota Foundation, and the Blandin Foundation in early design conversations. MCF hired Grassroots Solutions, a Minnesota-based consulting firm, to form a Co-Creation Table (CCT) to develop a vision, strategy, and plan for mobilizing historically undercounted communities around the 2020 Census. The Grassroots Solutions senior strategist who led this foundational effort—herself a trusted messenger within communities of color—recruited community leaders from civic engagement groups and racial equity organizations across the state to join the CCT. Framing the census as a community power-building opportunity helped overcome any initial reluctance to join the CCT due to distrust of the federal government. Initial meetings of the CCT raised members' awareness of the history of undercounting Minnesota's Black communities, indigenous communities, and communities of color; how that related to underinvestment in those same communities; and federal laws ensuring the strict confidentiality of census data within the US Census Bureau. CCT members were paid for their time attending CCT meetings and for time to meet with members of their respective communities to inform the CCT's vision, strategy, and plan.

The collaborative structure allowed for both independent and coordinated leadership among a diversity of invested community stakeholders. In 2018, the CCT completed the organizing and mobilizing strategy and decided on the structure and timeline for what became Our Minnesota Census Campaign, which later became part of the state's We Count! census campaign. MCMP was organized into five coordinating hubs:

- Our Minnesota Census Campaign Hub, focused on relational organizing with historically undercounted communities (driven by former CCT members)
- Complete Count Committees Hub, focused on supporting the more than 200 local government, nonprofits, and affinity group complete count committees across the state
- Greater Minnesota/Rural Hub, focused on leveraging the networks of community foundations in MCF membership to support census engagement in Greater Minnesota and rural communities



Or Imagine Having to Make One Report for Each NHS Trust in England

```
# A tibble: 274 × 2
  org_code admissions
  <fct>      <dbl>
1 RF4          5060
2 R1H          6943
3 AD913         0
4 RYX          0
5 RQM          3597
6 RJ6          2202
7 Y02696        0
8 NX122         0
9 RVR          3360
10 RJ1          3181
11 Y03082        0
12 RQX          1684
13 RY9          0
14 RYJ          3270
15 RJZ          4477
16 RAX          1839
```

Parameterized Reporting is the Solution

How Parameterized Reporting Works

Make a Report

- - -

- - -

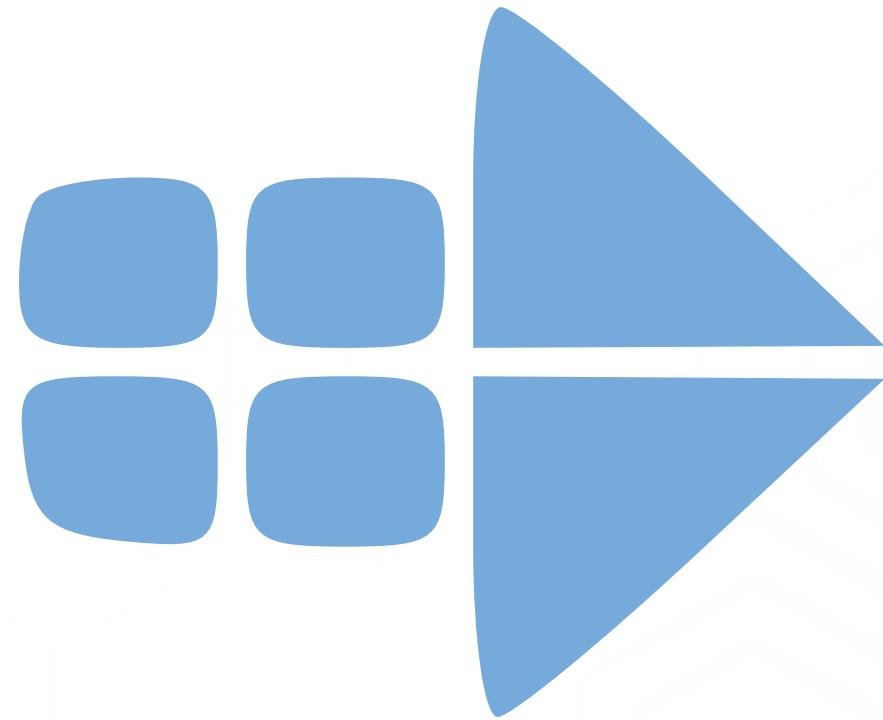
\` `` \{ x \}

\` `` \`

report.qmd

```
1 ---  
2 title: "Total Admissions Over Time"  
3 format:  
4   html:  
5     embed-resources: true  
6     css: styles.css  
7 execute:  
8   echo: false  
9   warning: false  
10  message: false  
11 editor_options:  
12   chunk_output_type: console  
13 ---  
14  
15 ```{r}  
16 library(tidyverse)  
17 library(NHSRdatasets)  
18 library(scales)  
19 ```  
20  
21  
22 This chart shows total admissions over time in all NHS trusts.  
23
```

Manually Render One Report



Render

Make a Report for One Location

``` {r}

```
filter(location == "RF4")
```

```

report.qmd

```
1 ---  
2 title: "Total Admissions Over Time"  
3 format:  
4   html:  
5     embed-resources: true  
6     css: styles.css  
7 execute:  
8   echo: false  
9   warning: false  
10  message: false  
11 editor_options:  
12   chunk_output_type: console  
13 ---  
14  
15 ```{r}  
16 library(tidyverse)  
17 library(NHSRdatasets)  
18 library(scales)  
19 ```  
20  
21 This chart shows total admissions over time at RF4.  
22  
23 ```{r}
```

Add a Parameter to Our Report

```
--  
params:  
  location: "RF4"  
--  
  
` `` ` {  
filter(location == params$location)  
` `` `
```

report.qmd

```
1 ---  
2 title: "Total Admissions Over Time"  
3 format:  
4   html:  
5     embed-resources: true  
6     css: styles.css  
7 execute:  
8   echo: false  
9   warning: false  
10  message: false  
11 editor_options:  
12   chunk_output_type: console  
13 params:  
14   location: "RF4"  
15 ---  
16  
17 `r`  
18 library(tidyverse)  
19 library(NHSRdatasets)  
20 library(scales)  
21 `r`  
22  
23
```

Manually Render the Report (Again)

Manually Render Multiple Reports

```
---  
params:  
  location: "RF4"  
---
```

```
```{r}  
filter(data == params$location)
```
```

report.qmd

```
---  
params:  
  location: "R1H"  
---
```

```
```{r}  
filter(data == params$location)
```
```

report.qmd

Semi-Manually Render Report with R Script File

```
library(quarto)  
quarto_render()
```

render.R

```
---  
params:  
  location: "RF4"  
---  
  
```{r}  
filter(data == params$location)
```
```

report.qmd

Report #1

Officia proident ullamco esse labore esse. Tempor qui laboris proident in adipisicing dolor nulla enim sint occaecat ullamco. Ut proident ipsum voluptate est tempor adipisicing velit tempor adipisicing est. Ea consectetur enim duis. Labore cillum elit exercitation minim ea laborum consequat nisi ad nisi velit laborum voluptate ad quis.

report.html

```
1 library(quarto)
2
3 quarto_render(
4   input = "report.qmd",
5   output_file = "RF4.html",
6   execute_params = list(location = "RF4")
7 )
```

Automatically Render Multiple Reports with R Script File

```
library(quarto)  
reports  
reports %>%  
  walk(quarto_render)
```

render.R

```
---
```

```
params:  
  location: "RF4"  
---
```

```
```{r}  
filter(data == params$location)
```
```

report.qmd

Report #1

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report.html

Report #2

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report.html

Report #3

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report.html

```
1 # Load packages
2 library(tidyverse)
3 library(NHSRdatasets)
4 library(quarto)
5
6 # Create a vector of all locations
7 locations <- ae_attendances %>%
8   distinct(org_code) %>%
9   mutate(org_code = as.character(org_code)) %>%
10  pull(org_code)
11
12 # Create a tibble with information on the:
13 # input R Markdown document
14 # output HTML file
15 # parameters needed to knit the document
16 reports <- tibble(
17   input = "report.qmd",
18   output_file = str_glue("{locations}.html"),
19   execute_params = map(locations, ~list(location = .))
20 )
21
22 # Use the tibble to generate all of our reports
23 pwalk(reports, quarto_render)
```

Summary

1. Create report
2. Add parameter to report
3. Create render.R script file
4. Create vector of all locations
5. Create tibble with information about all reports
6. Use reports tibble to render all reports

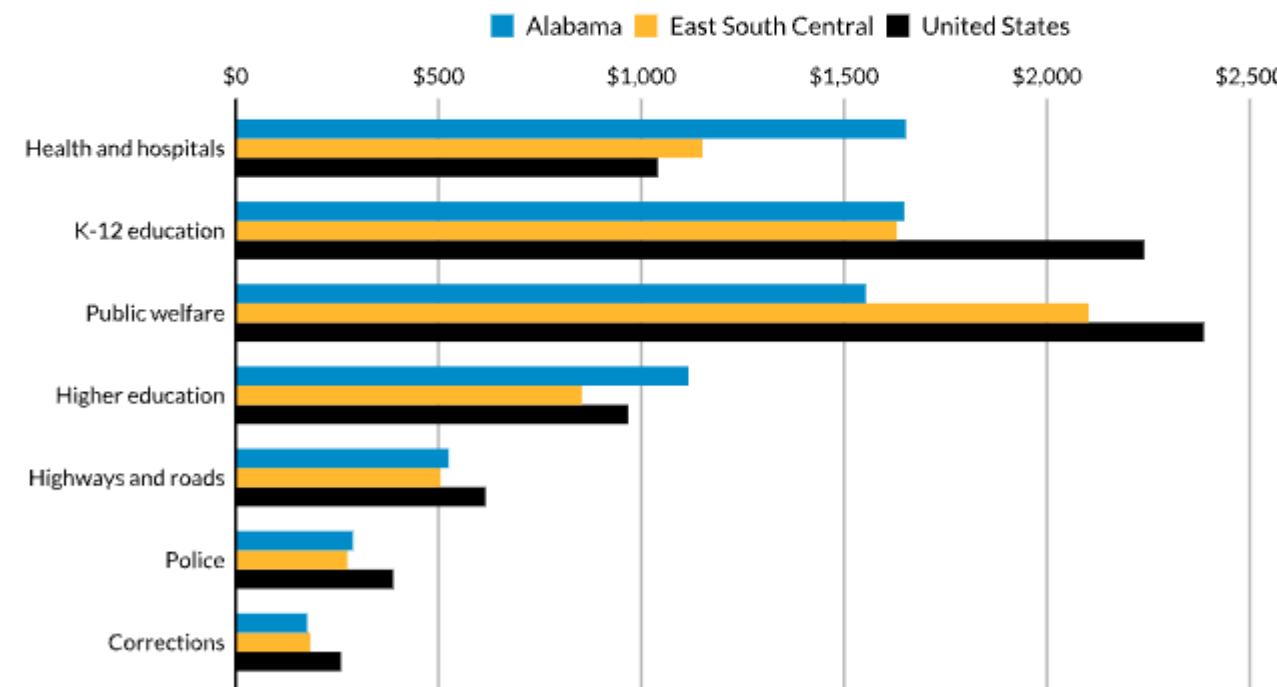
Learn More

Chapter from R Without Statistics →

Alabama's largest spending areas per capita were [health and hospitals](#) (\$1,652) and [elementary and secondary education](#) (\$1,648). The Census Bureau includes most Medicaid spending in [public welfare](#) but also allocates some of it to [public hospitals](#). Per capita spending is useful for state comparisons but is an [incomplete metric](#) because it doesn't provide any information about a state's demographics, policy decisions, administrative procedures, or residents' choices.

Alabama's State and Local Per Capita Expenditures, Fiscal Year 2020

Compared with national and regional averages



Source: US Census, Fiscal Year 2020.

Note: Medicaid spending is allocated to both public welfare and health and hospitals, with the majority of dollars allocated to the former. Census's definition of the East South Central region includes Alabama, Kentucky, Mississippi, and Tennessee.

Don't Do It By Hand, Use Parameterized Reporting

- Less tedious
- Less error-prone
- Makes it possible to generate reports that would not otherwise be feasible

Questions?

Ask in the chat or by email: david@rfortherestofus.com