Gathering Service Member Information from U.S. Census Data

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Objectives

Objectives

- Background
- Data
- Methodology / Limitations / Sources of Error
- Military Demographics Survey
- Other Interesting Questions
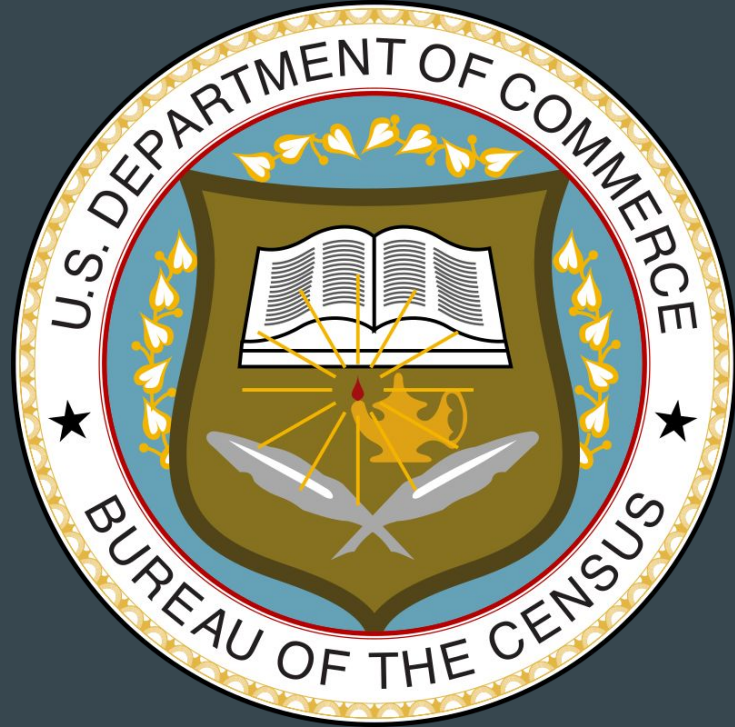- Future Work
- Questions

Data

U.S. Current Population Survey

- Monthly survey conducted by the U.S. Census Bureau
  - In-person and over the phone
- Results are published as CSV files
  - Each file is > 100 MB
- Information contained for respondents includes race, age, gender, military service, current job, etc.

Methodology / Limitations

Methodology

1. Gather general demographic information from 2020 Military Demographics Report PDF document
2. Download CSV files to shared folder on class HPC drive
3. Open a tunnel to Jupyter Lab through MobaXterm
4. Read the CSV files into Pandas DataFrames
5. Use filtering, value counts, and other DataFrame methods to sort the data
6. Pull out demographics data from the CPS results and compare to Military Demographics Report
7. Use the DataFrames to answer other interesting questions about active duty service members and veterans

Limitations / Sources of Error

- Missing data from the CPS responses
- Small sample sizes relative to how large the military is
  - 300-400 active duty responses per month may not be representative of entire military population
- Computing power
- Working simultaneously on Hamming/Jupyter Lab
  - When establishing a tunnel to Jupyter thru MobaXterm, each user would need to use a different port
- Military members may ignore Census requests due to their strenuous schedules
- COVID-19 is the bane of statistics

Military Demographics Survey

Military Demographics Report

- Annual report done by the Department of Defense
- Published at militaryonesource.mil
- Details various demographics on, amongst others, the active duty service member
- The following slides compare the results from the 2021-2023 CPS responses to the 2020 Military Demographics Survey

Census Results vs Military Demographics

Percentage of U.S. Population:

Census	% of U.S. Population	Military Demographics
0.27%	Active Duty	0.40%

Census	Gender	Military Demographics
87.28%	Male	82.8%
12.72%	Female	17.2%

Census Results vs Military Demographics

Census	Race	Military Demographics
79.78%	White	68.9%
11.48%	Black	17.2%
0.93%	Indigenous	1.1%
3.6%	Asian	4.8%
1.47%	Pacific Islander	1.2%
2.74%	Other	3.9%

It appears the military tends to over-exaggerate their race statistics.

Census Results vs Military Demographics

Census	Age	Military Demographics
23.11%	<=25	45%
18.85%	26-30	21.4%
19.82%	31-35	14.8%
17.93%	36-40	10.8%
20.28%	>=41	7.9%

It appears the military tends to over-exaggerate the youthfulness of their members.

Census Results vs Military Demographics

Income ($)	Census
<5000	1.03%
5,000-7,499	0.31%
7,500-9,999	0.38%
10,000-12,499	0.74%
12,500-14,999	0.41%

Income ($)	Census
15,000-19,999	0.93%
20,000-24,999	1.47%
25,000-29,999	2.79%
30,000-34,999	3.58%
35,000-39,999	4.32%

Income ($)	Census
40,000-49,999	8.01%
50,000-59,999	9.89%
60,000-74,999	14.12%
75,000-99,999	16.89%
>100,000	35.11%

It appears the military members are financially set up.

Census Results vs. Military Demographics: Education Level

	Census Data:	2021:	2022:	2023:	Average '21-'23:
Less Than High School(HS) Diploma:	0.1%	.447%	.70%	.42%	.52%
HS Diploma with Some College:	66.9%	48.16%	48.16%	47.36%	48.02%
Associate's Degree:	8.7%	13.11%	12.62%	14.40%	13.38%
Bachelor's Degree:	14.3%	21.91%	23.55%	22.06%	22.5%
Advanced:	8.2%	15.99%	14.97%	15.76%	15.58%

Census Results vs. Military Demographics: Education Level cont.

- Do the graphical hotspots match reality?
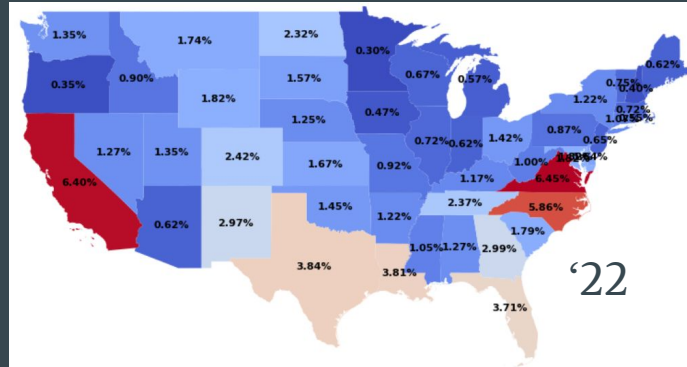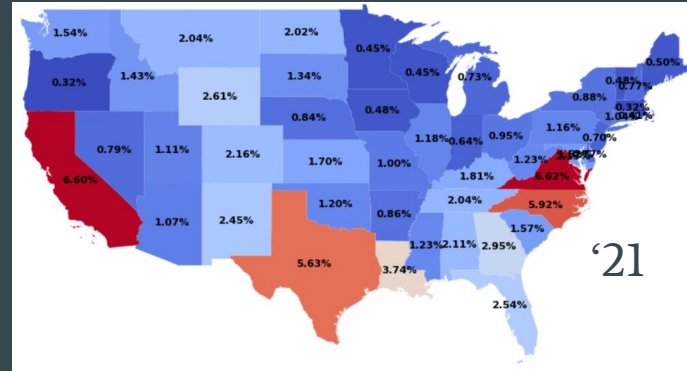- Heat Color: Blue: High School Diploma to Red: Advanced Degree
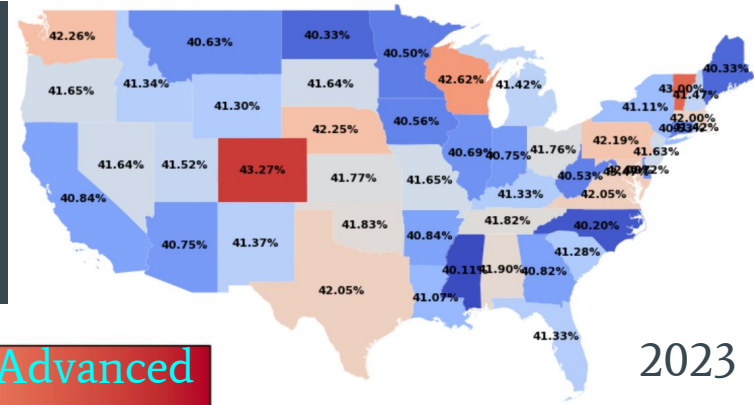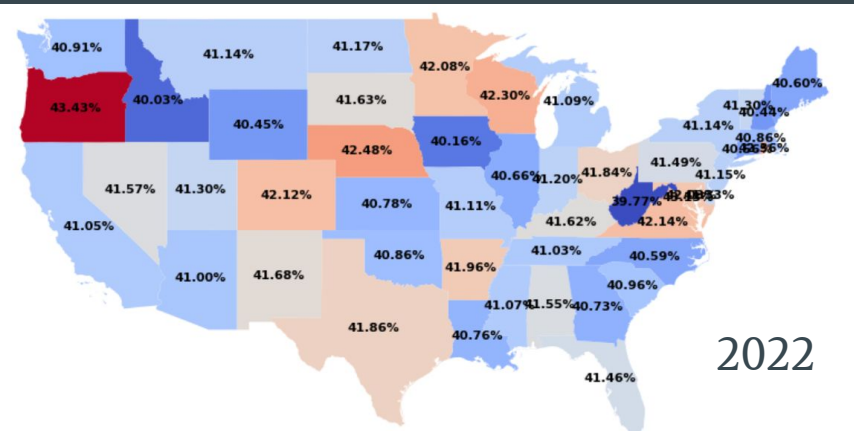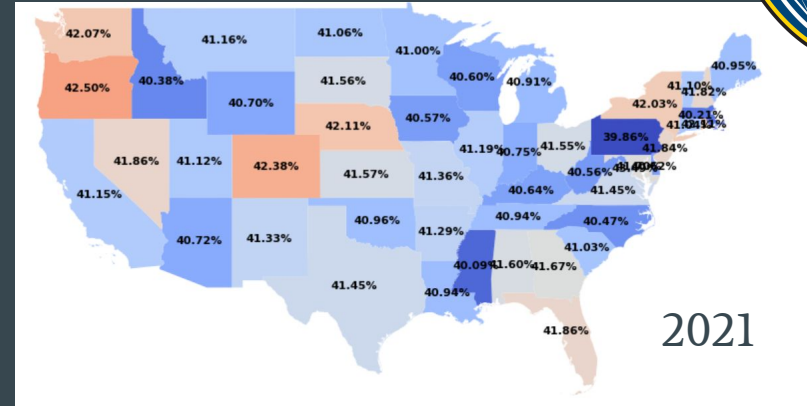
Other Interesting Questions

Active Duty Locations

- Percentage of active duty respondents from each state
- Smaller percentages in blue, larger in red
- Representation everywhere
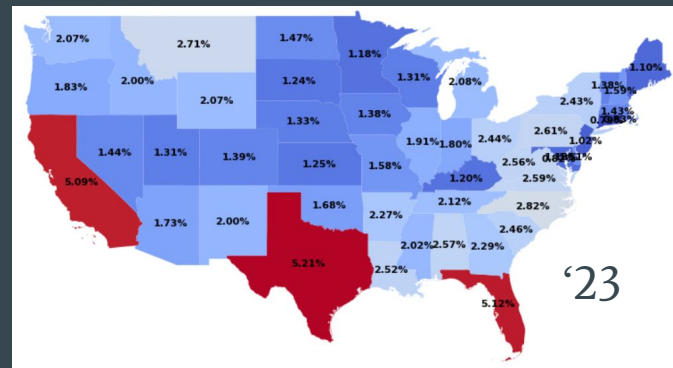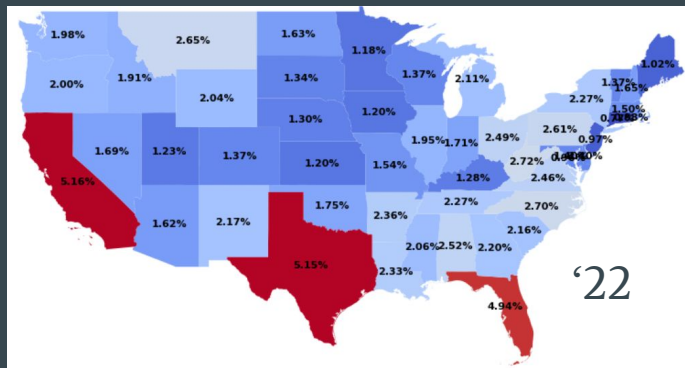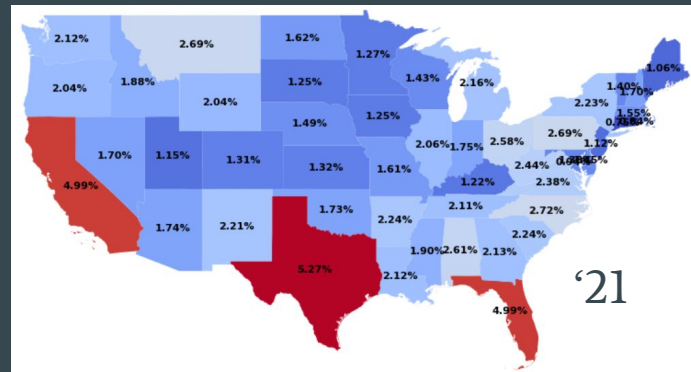- Expected high concentrations
  - FL, CA, VA, NC, GA, LA

Veteran Locations

- Percentage of veteran respondents from each state
- What did we expect?
- More dispersed, concentrations not as high
- More dispersed, highs not as high

Percentage of veteran respondents from state

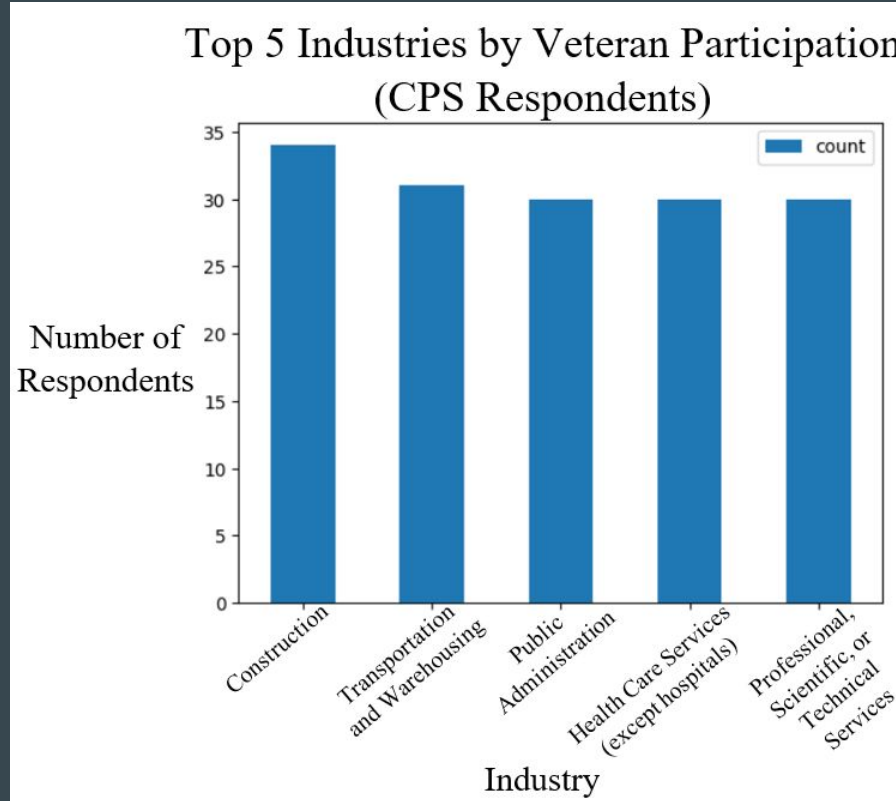# What Industries do Veterans Work In (according to the CPS)?

Top 5 Industries by Veteran Participation (CPS Respondents)

Future Work

Future Work

- In this study, we treated the CPS data as one time period
  - More detailed comparisons between the annual Military Demographics Survey and the compilation of the associated year's CPS responses could give greater insight into year-to-year trends
- Answer other questions a personnel officer might have
  - How much are veterans making?
  - How many children do active duty service members have?
- Find data on people in the Reserves and learn more about them

Questions

Thank You!