Veteran Employment Outcomes (VEO)

Experimental Census Bureau statistics on employment and earnings for Army veterans in the decade after leaving service.

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Veteran Employment Outcomes (VEO)
Today's presentation

- Provide background on VEO project

- Demonstrate VEO Explorer tool

- Walk through some specific use cases for the VEO data

- Brief overview of privacy protection methods

- Discuss ongoing research and future plans

- Q&A

Veteran Employment Outcomes (VEO)
Background and goals of project

VEO is a collaboration between the Census Bureau and the Army Office of Economic and Manpower Analysis (OEMA) to create statistics on labor market outcomes for veterans.

VEO augments traditional survey-based sources of information on veterans to provide additional information about veterans' employment and earnings after discharge.

Anticipated use cases for VEO:

- *Military*: Talent retention and recruitment

- *Soldiers/Veterans*: Post-military career planning

- *Policymakers*: Help design targeted interventions for veterans transitioning into civilian labor market

Veteran Employment Outcomes (VEO)
Comparison to existing data sources

Survey and administrative data approaches have different strengths and uses:

CPS/ACS: Survey responses

- Constructed from a repeated cross-sectional sample of all households, including all living veterans
- Eras of service, but not exact year of discharge
- Little information about characteristics of service (rank, military occupation, years of service)

VEO: Administrative records

- Generated by matching OEMA veteran records to Census Bureau administrative data on jobs from LEHD
- Over 650,000 Army veterans in data, discharged 2000-2015
- OEMA records provide detailed information on service characteristics and exact dates of service.
- LEHD provides detailed longitudinal earnings data for over 96% of employment in the U.S.

Veteran Employment Outcomes (VEO)
What statistics are available? How are the data created?

VEO provides data on Army veterans' post-service employment and earnings by:
- Military occupation (2-digit level (9 occupations) and 3-digit level (56 occupations))
- Civilian industry of employment
- Veterans' characteristics (sex, race, rank, years of military service, etc.)

The data are longitudinal, such that the employment and earnings outcomes are both immediate (1 year after exiting service) and longitudinal (5 and 10 years after).

VEO tabulations use *differential privacy* techniques to ensure that the privacy of individual veterans is protected.

Veteran Employment Outcomes (VEO)
## More specifics on coverage

Coverage:

- Army veterans discharged from service between **2000-2015**
- Army rank E1-E9 at exit (commissioned officers and warrant officers excluded)
- Over **650,000 Army veterans**
- Employment coverage: most private and public sector wage and salary jobs, excludes self-employment earnings

Occupations:

- Military Occupation Specialty (MOS) codes aggregated to the **3-digit** (56 categories) and **2-digit** level (9 categories)

# VEO Explorer is a web-based analysis tool for exploring the data
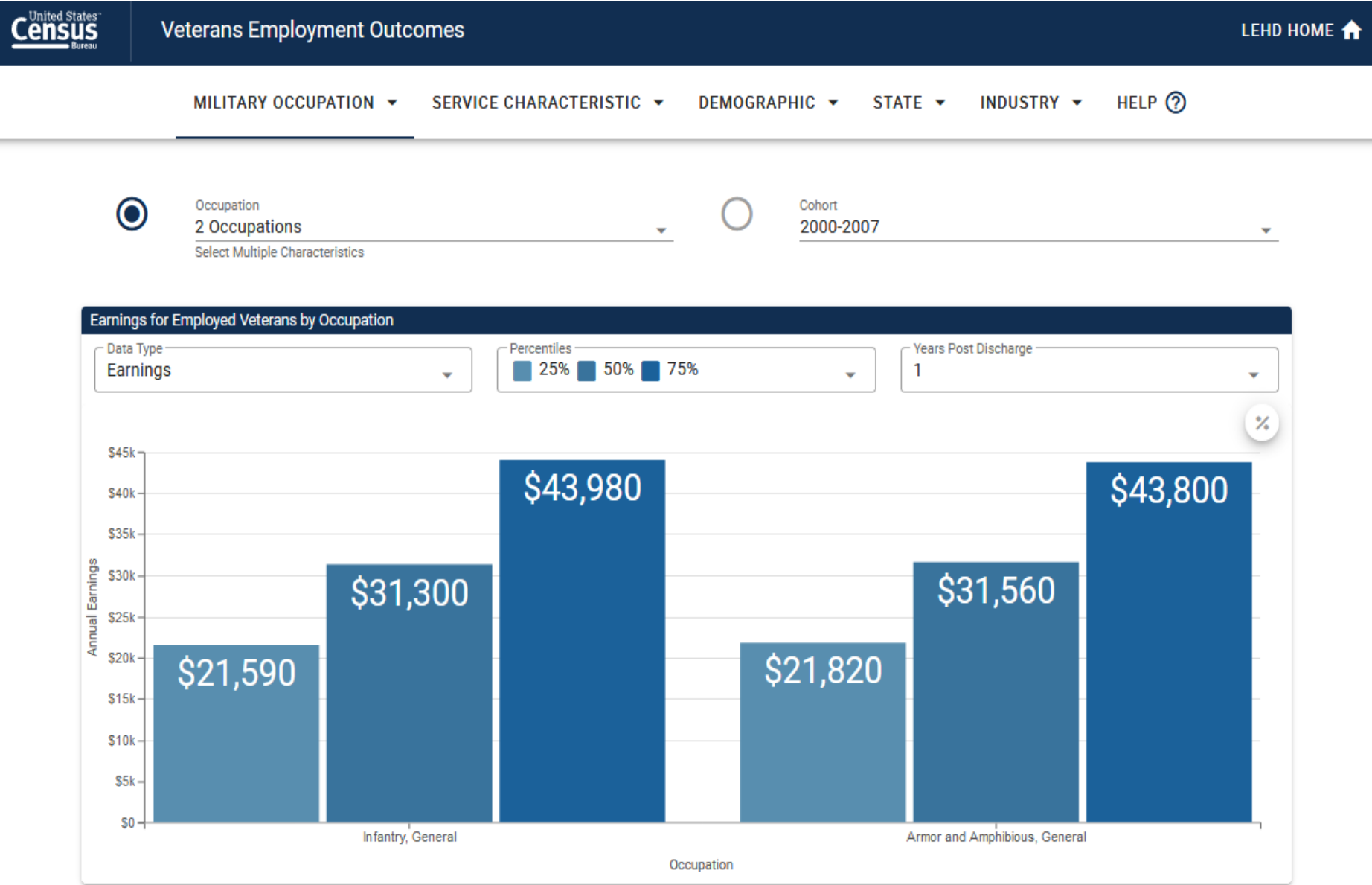
Veteran Employment Outcomes (VEO)
Live demonstration with specific use case examples

Three use cases:

- *Military*: what do military cyber personnel earn if they leave service for civilian jobs?

- *Soldier*: what types of civilian jobs would value my military experience if I left service?

- *Policymaker*: Which vets struggle to find good jobs initially? (Who should we be targeting post-military labor market transition interventions to?)
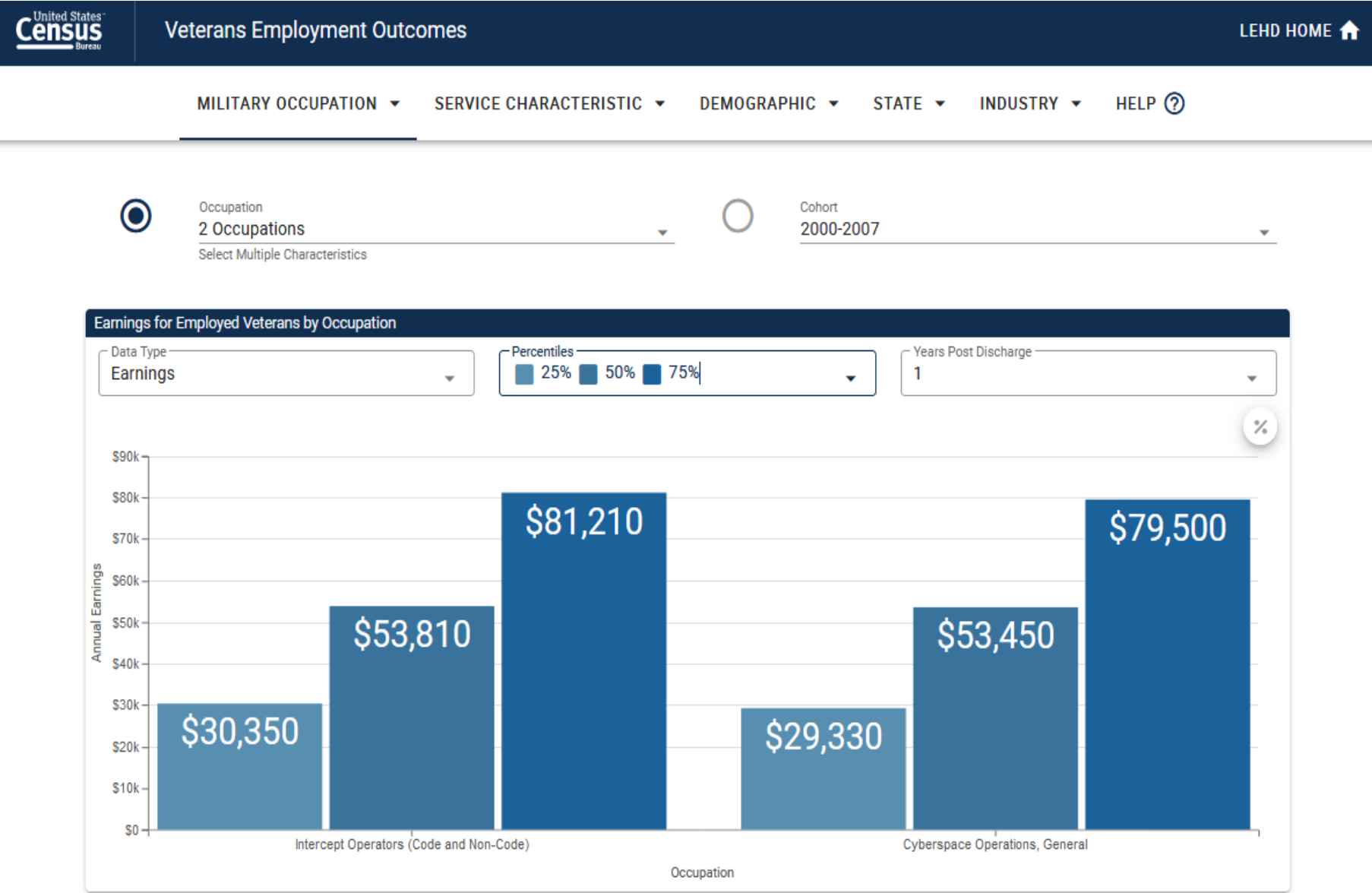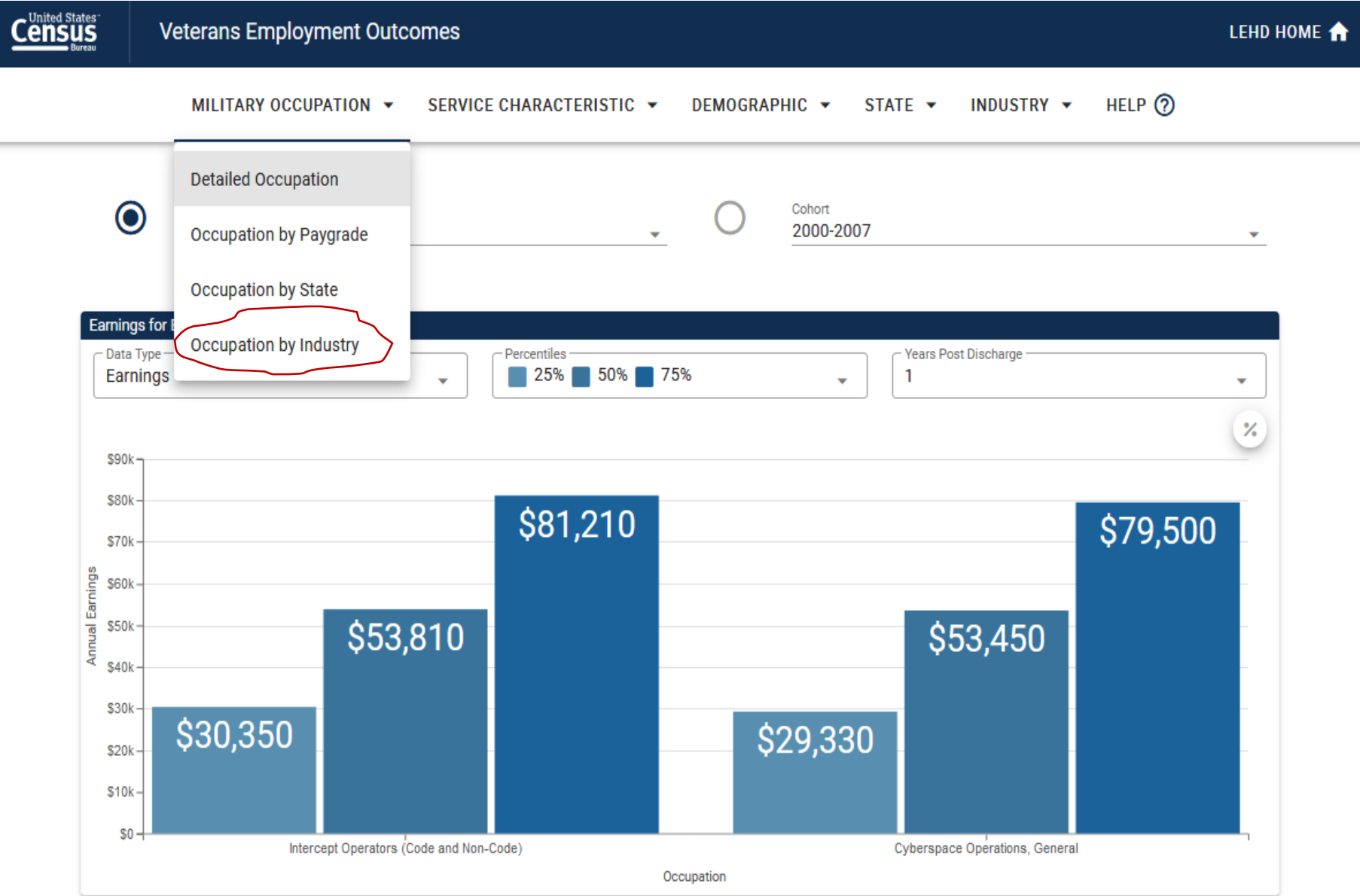
What are private sector salaries for vets who were recently cyber personnel?
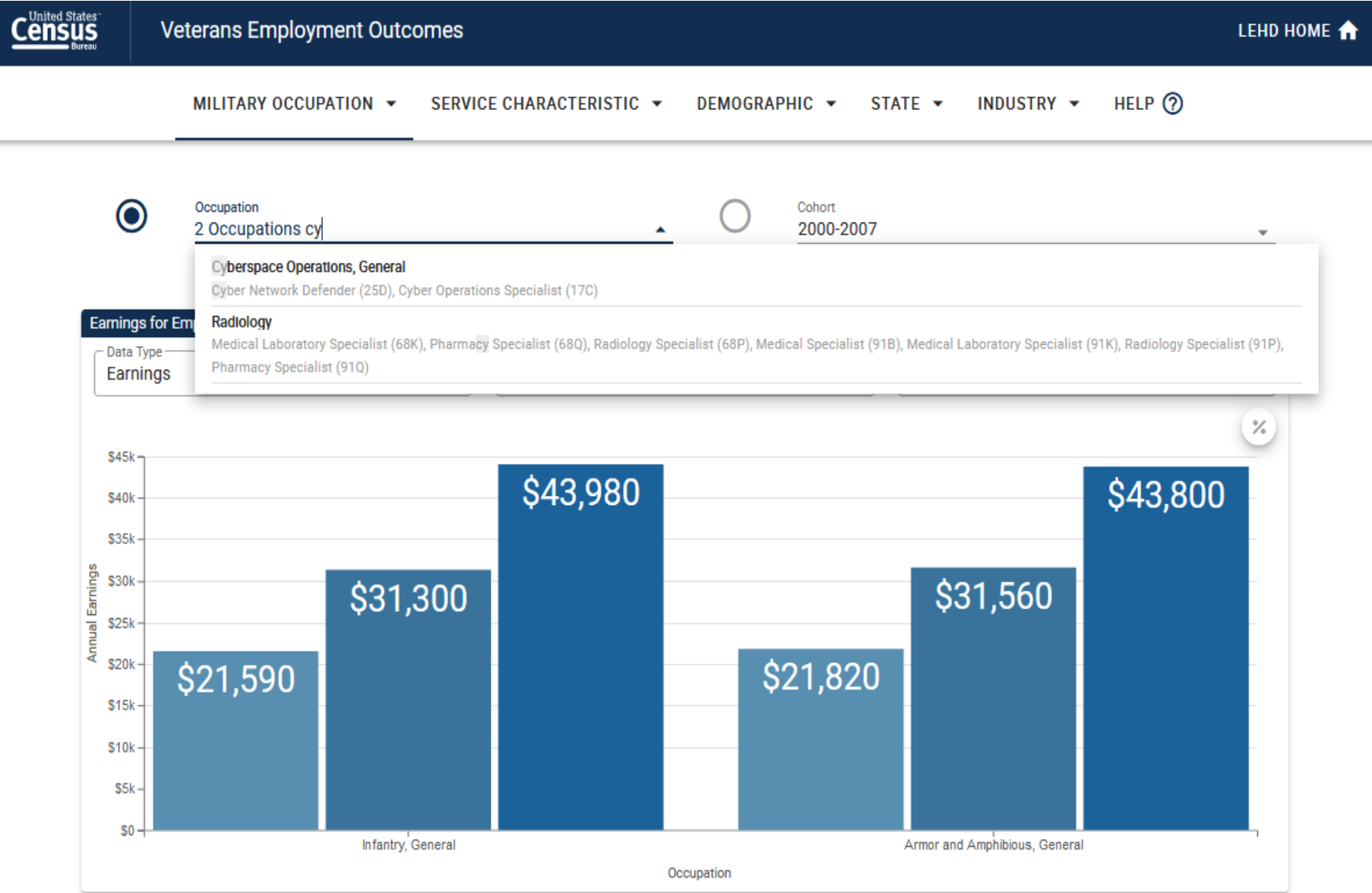
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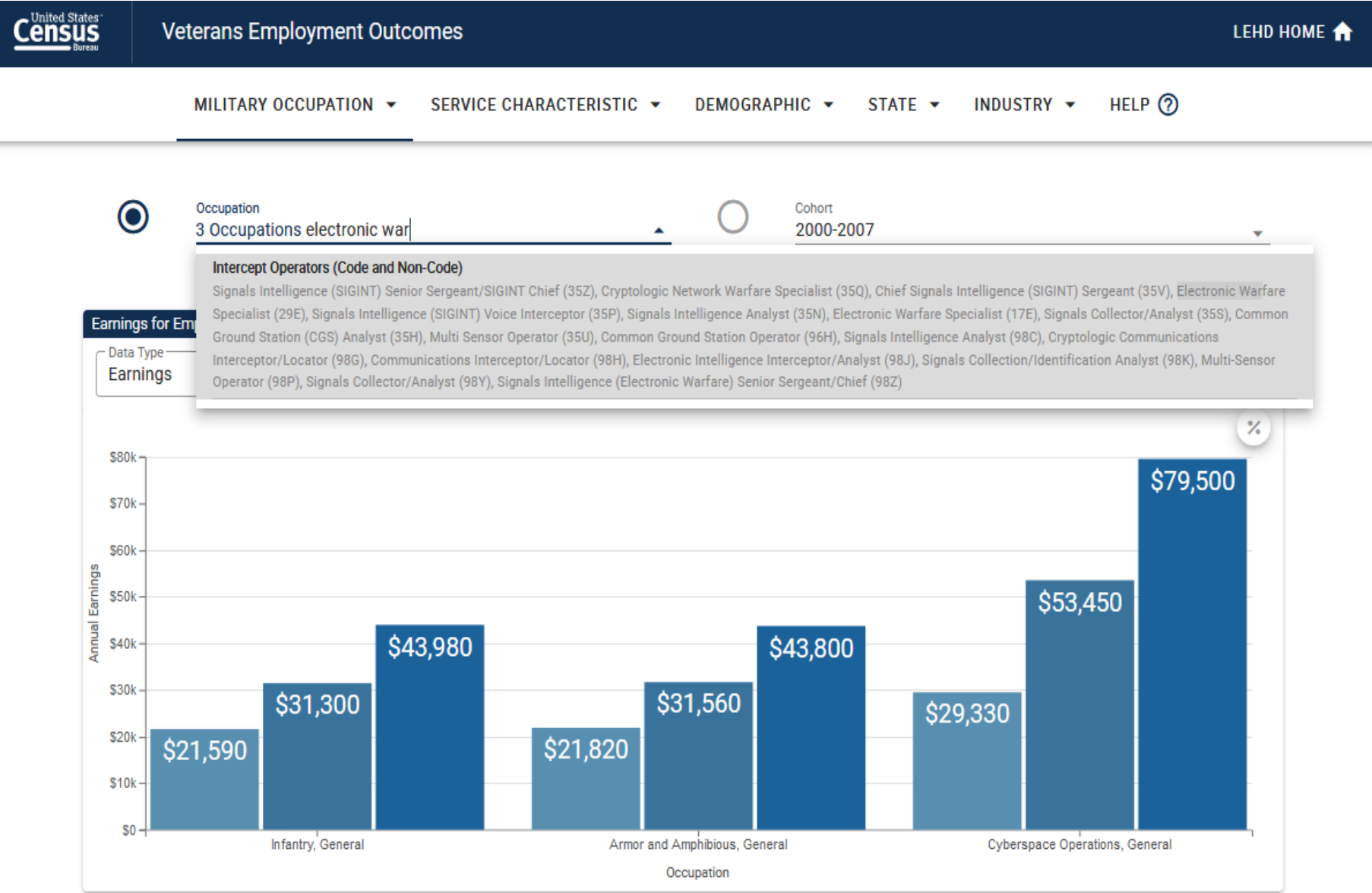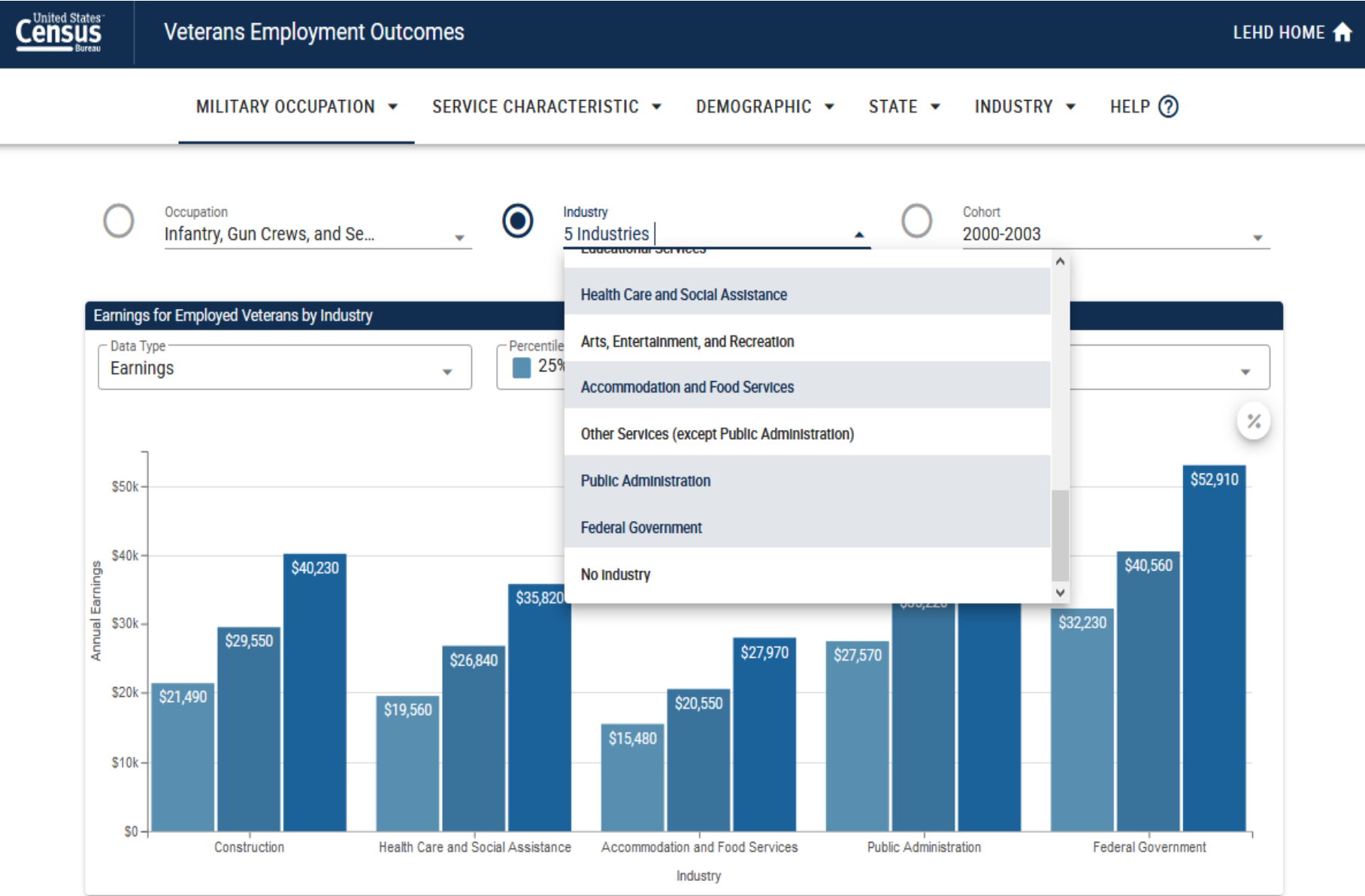
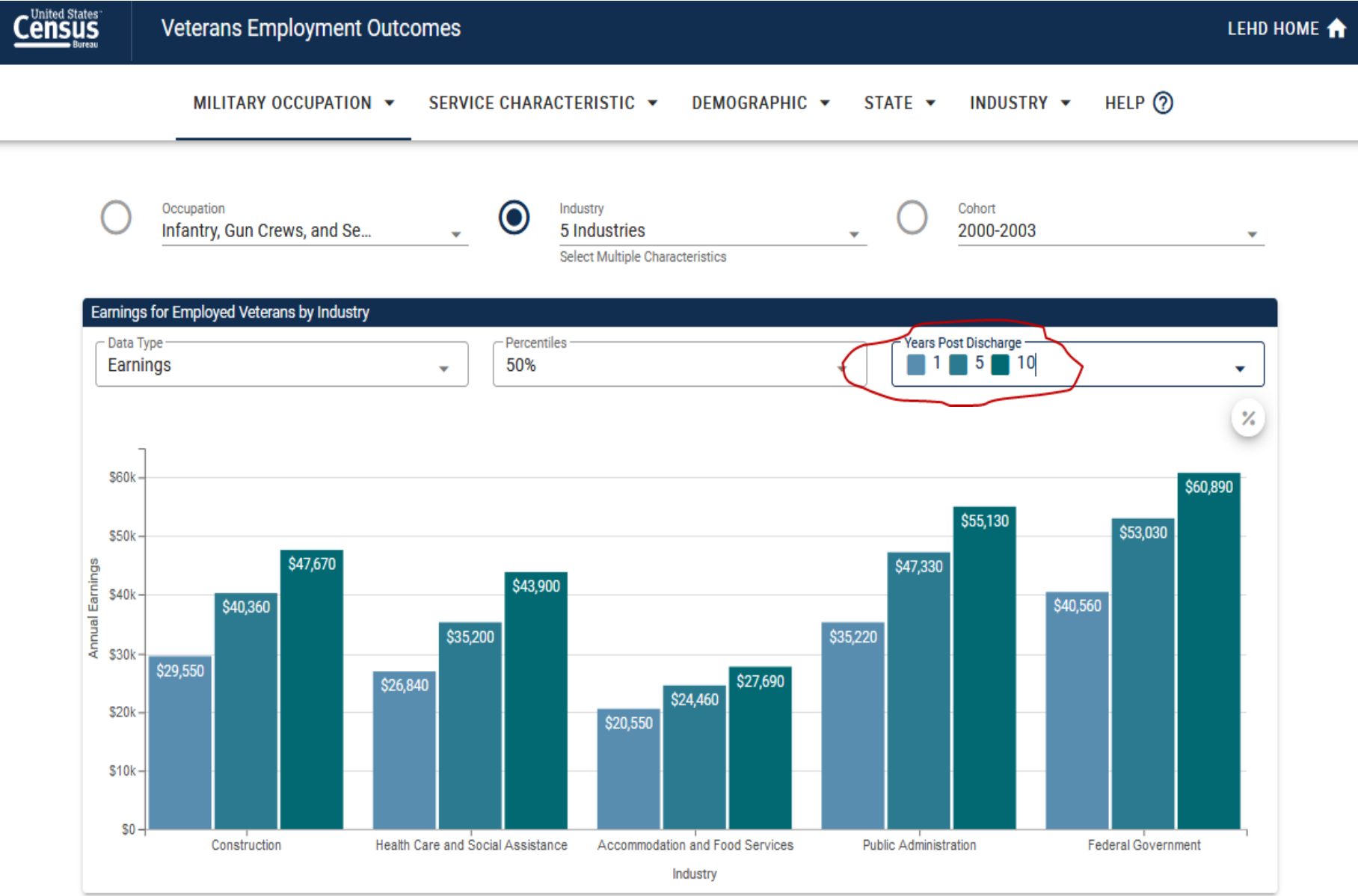# What are private sector salaries for vets who were recently cyber personnel?

What industries should I be looking for jobs if I am former infantry?
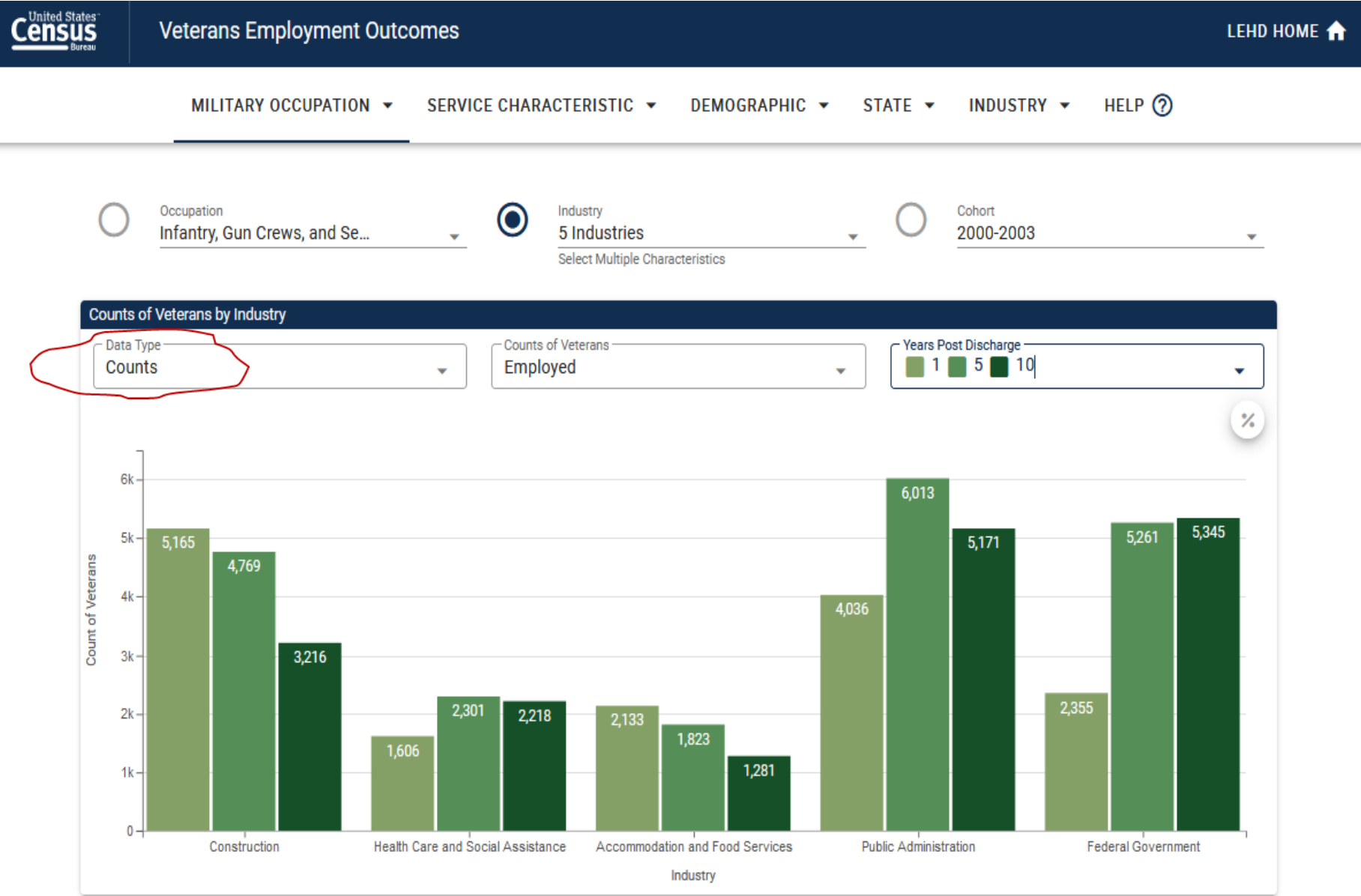
What industries should I be looking for jobs if I am former infantry?

What industries should I be looking for jobs if I am former infantry?

How many people like me (former infantry) do these industries hire?

How does military occupation impact initial civilian labor market outcomes?

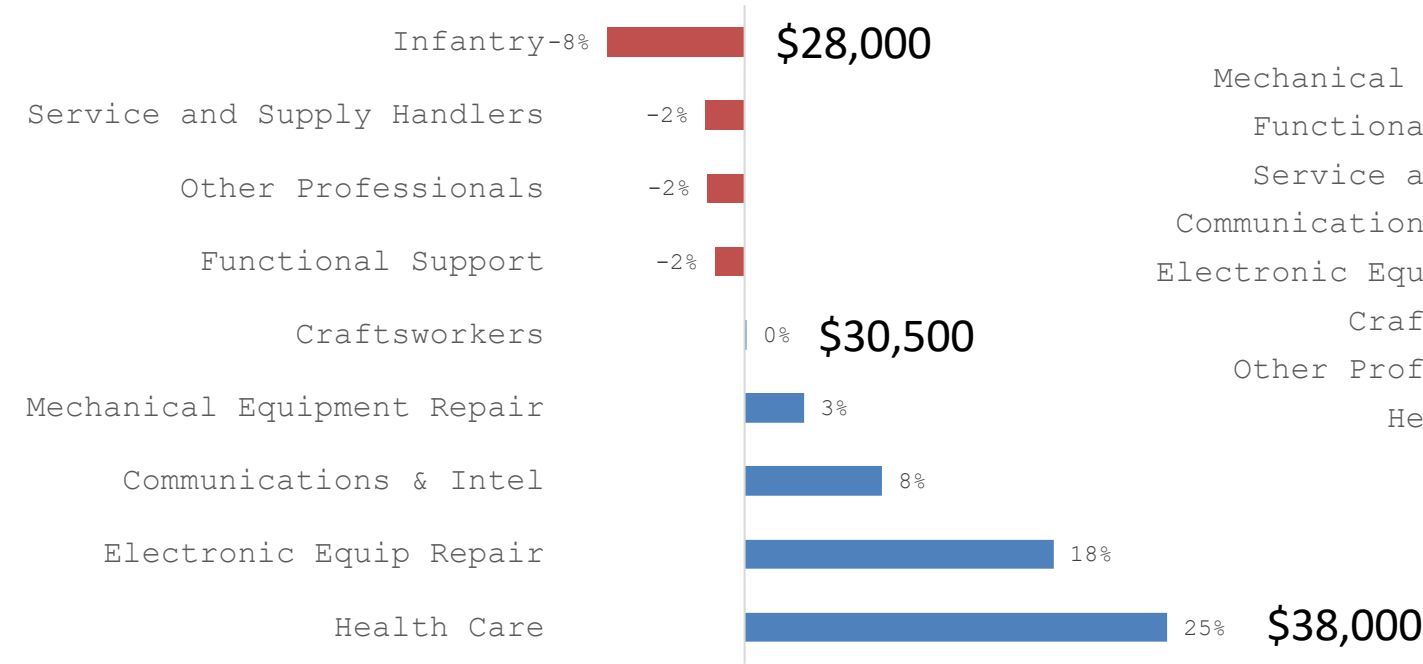## Figure 2a: Difference in 1st year median earnings

Occupation	Difference
Infantry	-8% $28,000
Service and Supply Handlers	-2%
Other Professionals	-2%
Functional Support	-2%
Craftsworkers	0% $30,500
Mechanical Equipment Repair	3%
Communications & Intel	8%
Electronic Equip Repair	18%
Health Care	25% $38,000

Figure 2b: Share of vets by military occupation

| Occupation	Share
Infantry	29%
Mechanical Equipment...	17%
Functional Support	15%
Service and Supply...	12%
Communications & Intel	11%
Electronic Equip Repair	6%
Craftsworkers	5%
Other Professionals	3%
Health Care	2%
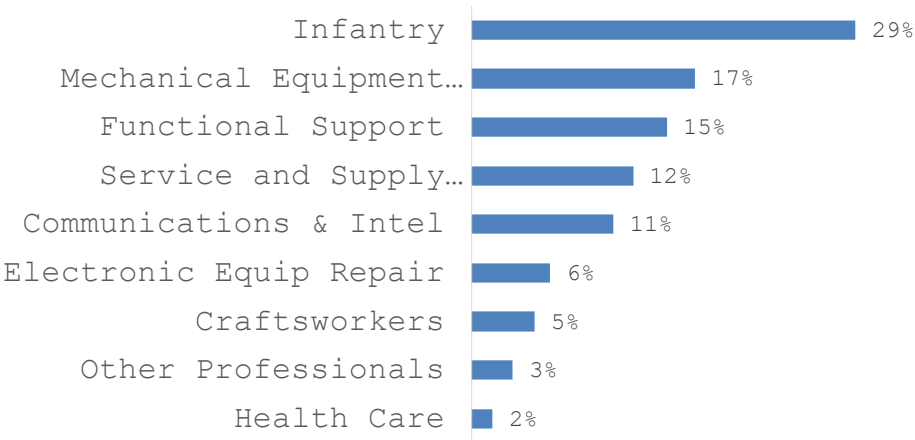
Notes: VEO data, 2000-2003 exit cohort, E1-E5 rank only. Median first year earnings for this cohort is approximately $30,500.

Does my outcome depend on my sex, my race, etc?
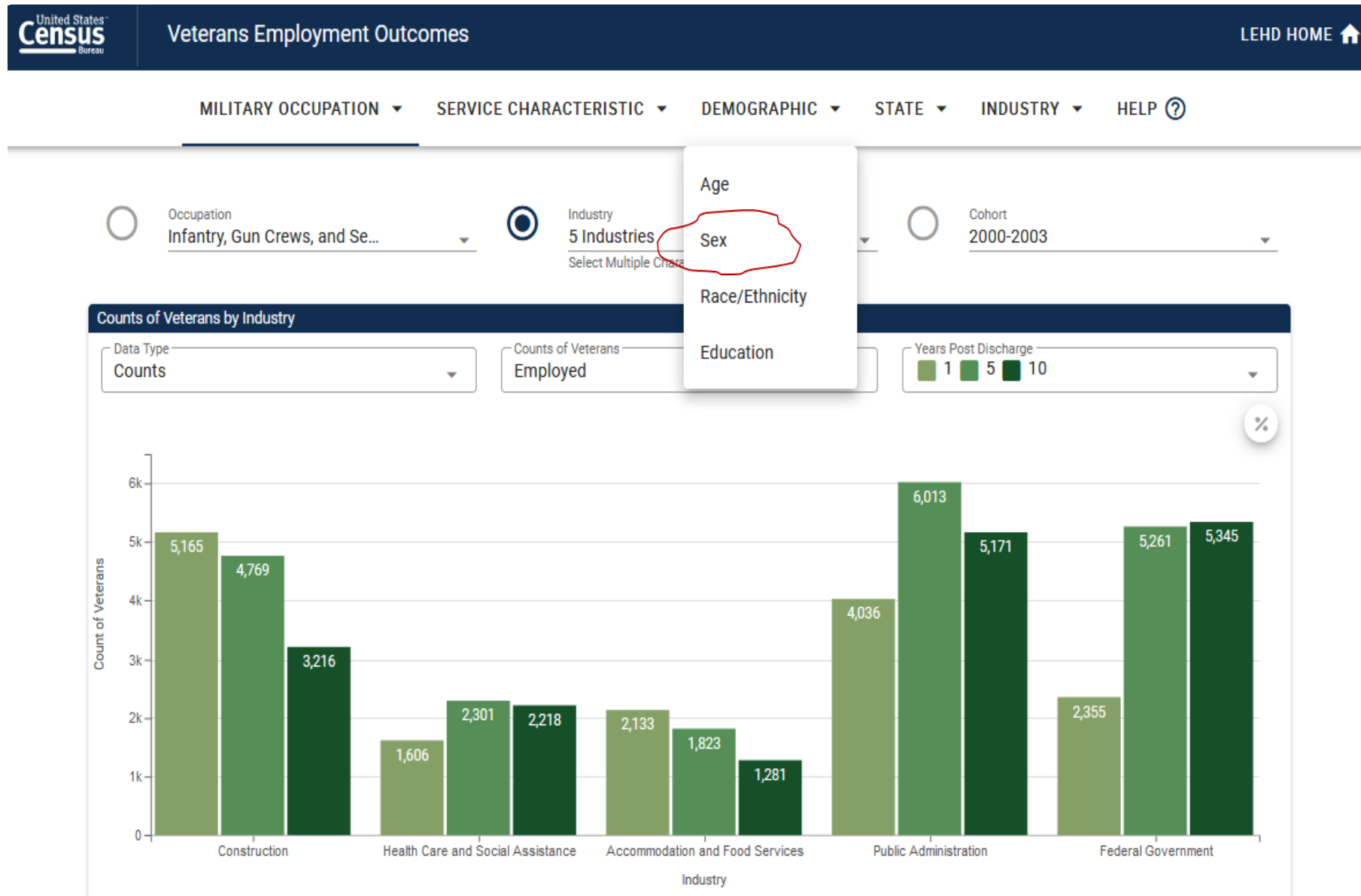
Does my outcome depend on my sex, my race, etc.?
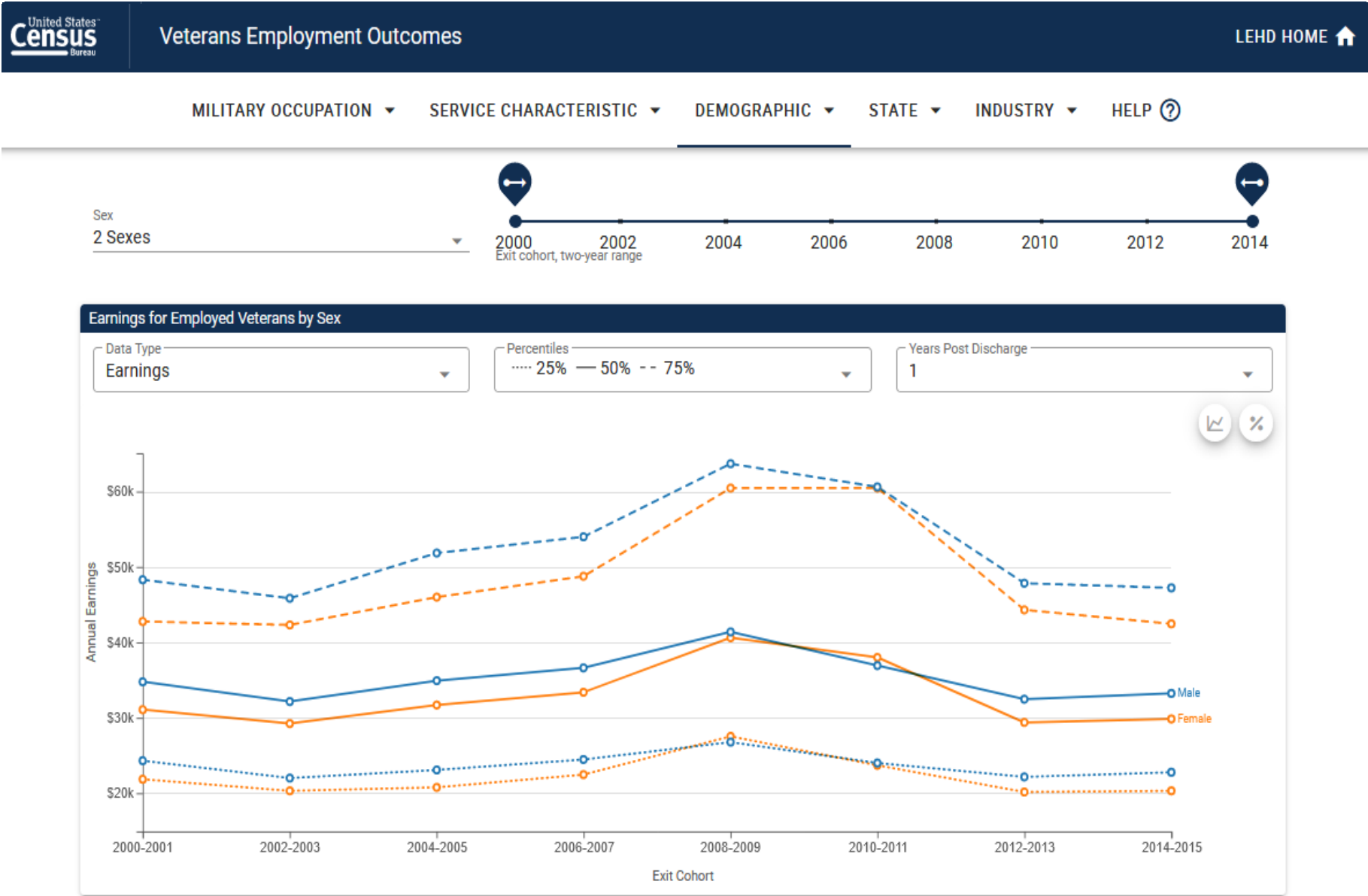
What share of veterans find stable civilian employment first year out?

Figure 1: Share of veterans employed at least three quarters of first year in civilian labor market
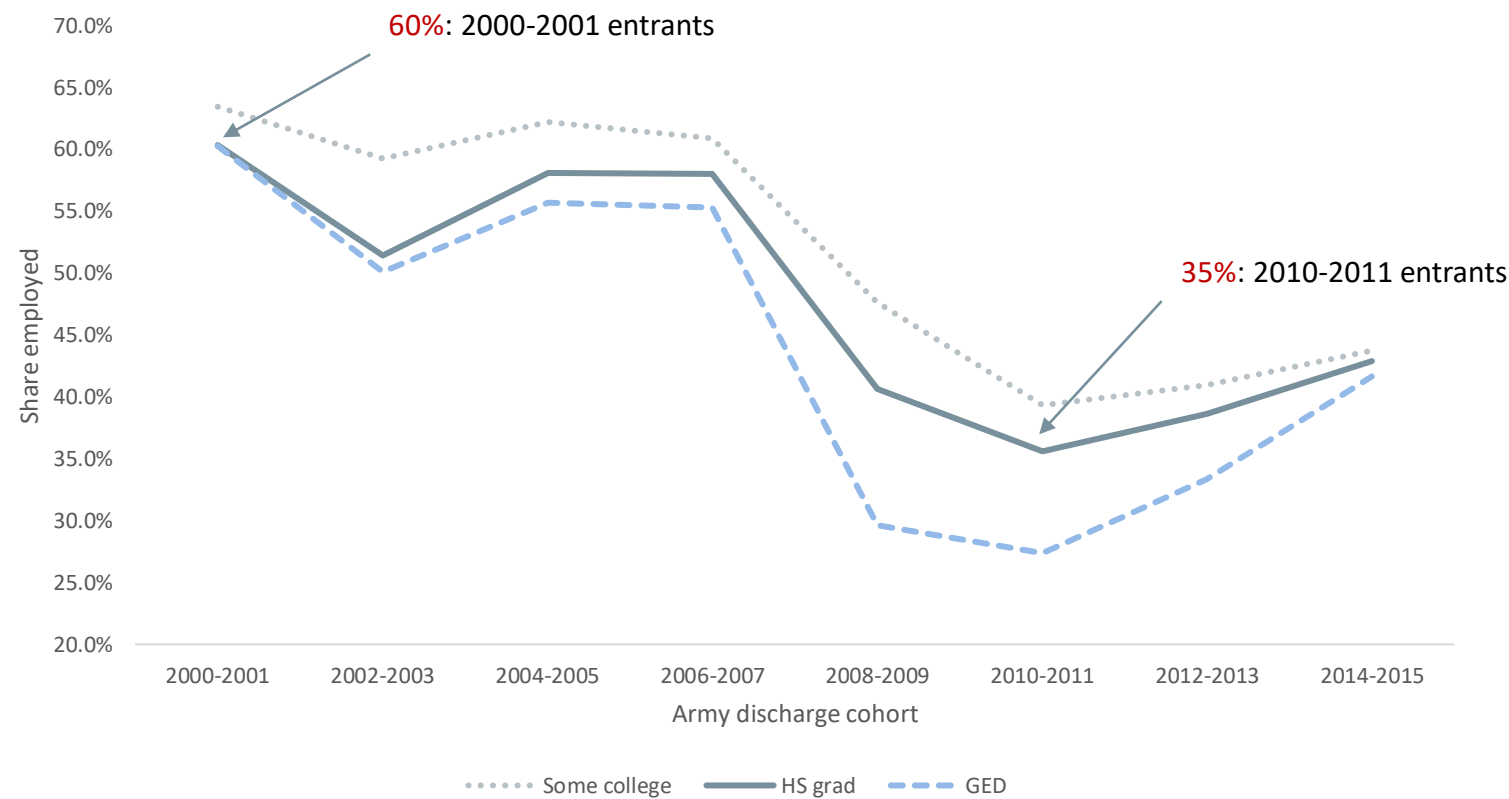
Notes: VEO data, all available cohorts, employed share is share of veterans who worked at least three quarters of the first year after exit from Army and whose earnings were at least those for a full-time minimum wage job.

Veteran Employment Outcomes (VEO)
Protecting veteran privacy

In the microdata:

Veteran record data is de-identified and PII data is destroyed; anonymous identifiers used to link graduates to jobs data.

Public use data disclosure avoidance:

- VEO tabulations are protected using state of the art **differential privacy** disclosure avoidance methods.
- Two key dimensions of privacy protection:
  - How to trade off information (accurate figures, detailed tabulations) vs. privacy of individuals in the database
  - How to balance this trade off across multiple tabulations of the same underlying set of individuals
- Differential privacy addresses both these issues using mathematically provable measures of privacy. VEO allocates a privacy "budget" to trade-off among the different tables.
- Conceptually, makes any one individual in a database used for analysis indifferent between being in the database or not.
- Very similar to Census Post-Secondary Employment Outcomes (PSEO). Methodology for PSEO privacy protection described in Foote, Machanavajjhala, and McKinney (2019): https://doi.org/10.29012/jpc.722

Veteran Employment Outcomes (VEO)
Ongoing research and future plans

Will the data be updated?

- Potentially - MOU with Army could be renewed to provide updated data in the future

Could the data be expanded to cover other service branches?

- Potentially - The VEO team is interested in collaboration with other data partners to expand coverage

Are the underlying data being used for additional research activities?

- Yes - Census Bureau researchers are using the linked data underlying VEO to conduct additional research into the impacts of voluntarily military service.

Are the underlying data available for external research projects?

- Only the publicly released VEO tabulations are available to external researchers at this time.

Veteran Employment Outcomes (VEO)
Q&A Time

We welcome your questions and suggestions.

For any questions or comments not answered here, please email

CES.Local.Employment.Dynamics@census.gov

Briefing Appendix

More details on coverage, data availability, and privacy protection

Veteran Employment Outcomes (VEO)
Full list of tables

Occupation and Industry Tables	Cohort	Available Data
3-digit DoD Occupation	8-year	1, 5, and 10 year earnings percentiles (25th, 50th, 75th).

Counts of veterans with full-year employment (1, 5, and 10 years).

Counts of veterans who are jobless or marginally attached to workforce. |
2-digit DoD Occupation:		
- by civilian industry sector of employment	8-year	
- by pay-grade at exit	4-year	
- by state of employment	8-year	
State of employment	2-year	
Civilian industry sector of employment	2-year	

Veteran Employment Outcomes (VEO)
Full list of tables

Veteran Characteristics Tables	Cohort	Available Data
Sex of veteran	2-year	1, 5, and 10 year earnings percentiles (25th, 50th, 75th).

Counts of veterans with full-year employment (1, 5 and 10 years).

Counts of veterans who are jobless or marginally attached to workforce. |
Education at enlistment	2-year	
Race x Ethnicity	2-year	
Pay Grade at Exit	2-year	
AFQT score at enlistment	2-year	
Age	2-year	
Years of service	2-year	

Veteran Employment Outcomes (VEO)
Comparison to Other Data

	Veteran Employment Outcomes (VEO)	Current Population Survey (CPS)	American Community Survey (ACS)
Veteran population	Army only, Gulf War II era, enlisted veterans exiting in 2000-2015	All service branches	All service branches
Veteran characteristics	Military occupation, rank at exit, sex, age, race/ethnicity, education at enlistment, AFQT score	Last service era, sex, age, race/ethnicity, education	Last service era, sex, age, race/ethnicity, education
Key employment statistics	Employment, earnings, and earnings dispersion by military occupation, rank, and civilian industry	Employment and unemployment rate	Employment, earnings, and occupation