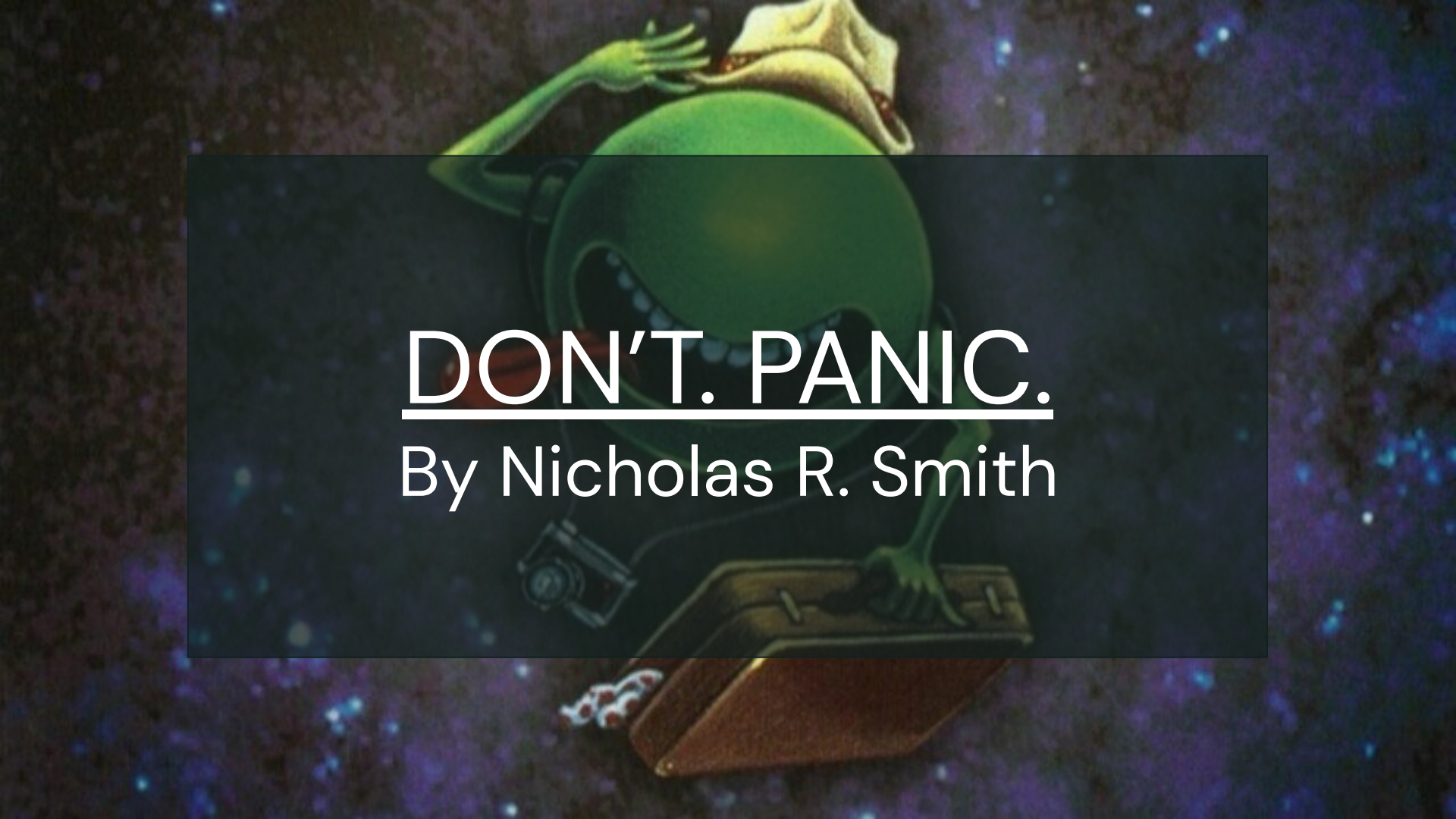


DON’T. PANIC.

By Nicholas R. Smith

Who am I?

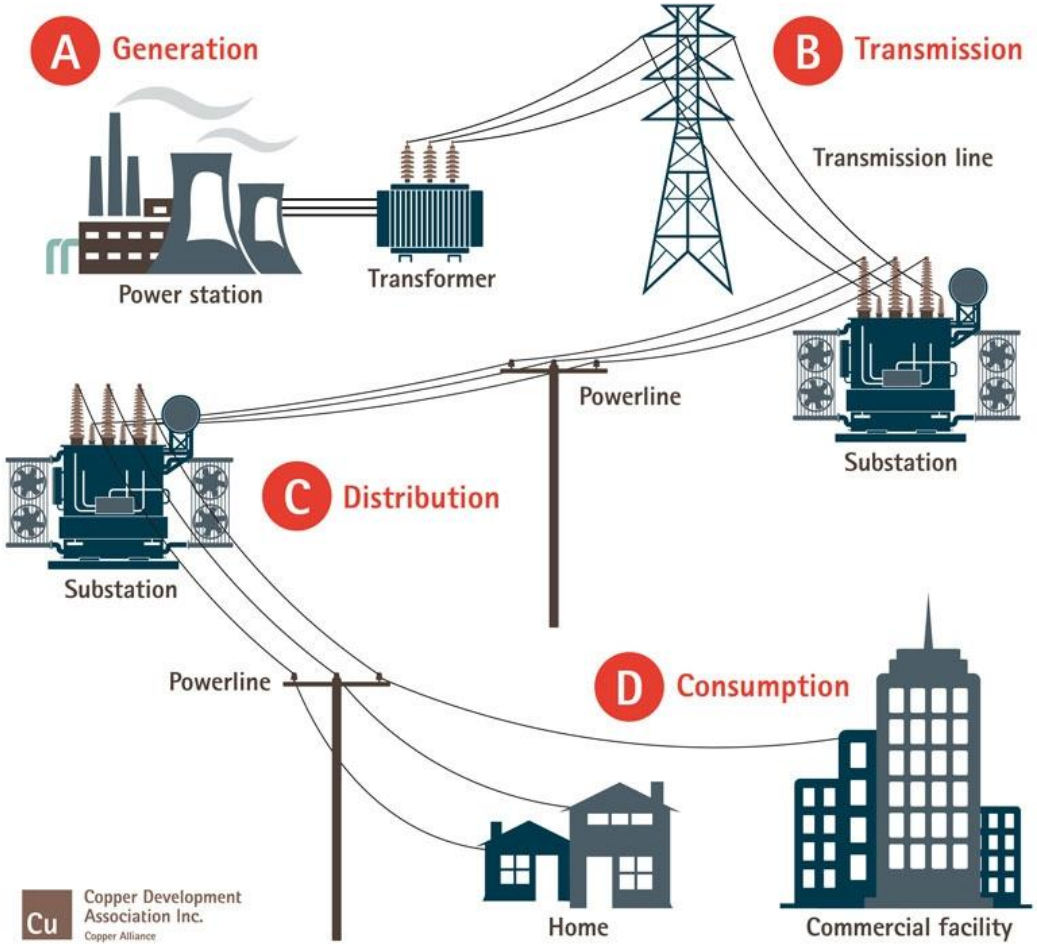
acer

SEL

SCHWEITZER
ENGINEERING
LABORATORIES

Headquarters
Electronic Device Manufacturing
SEL Panels Manufacturing
SEL Branch Office

The Power Grid



0 15
- 15 SECONDS TO CORE MELTDOWN.

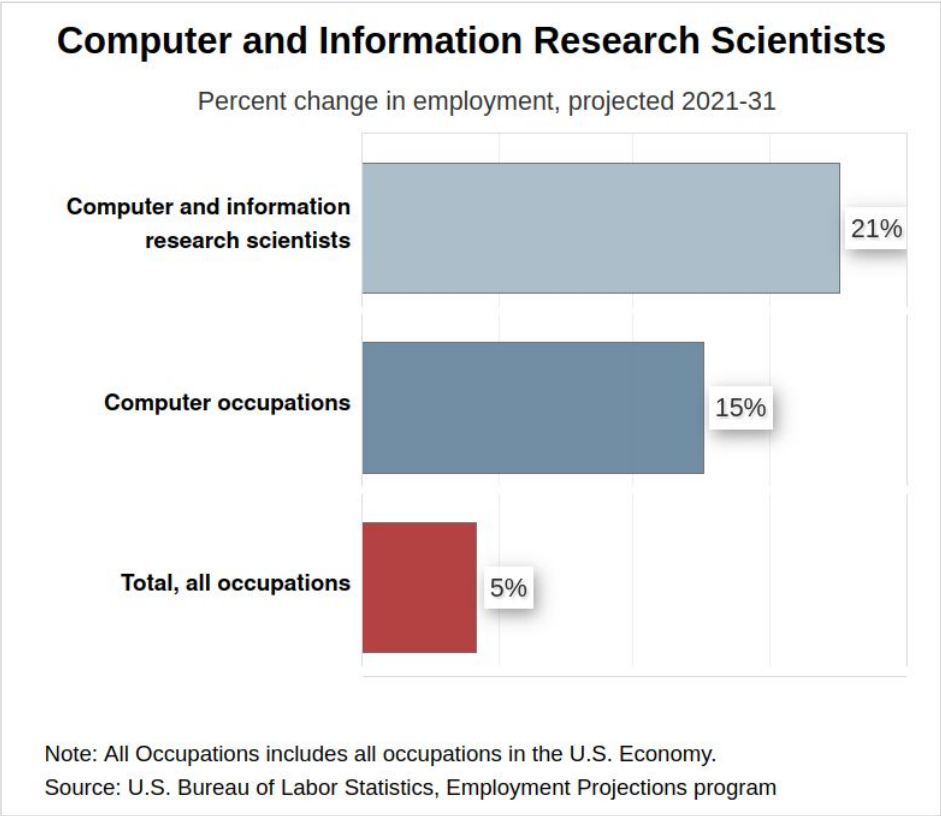
California Wildfires

- Pacific Gas & Electric (PG&E) responsible for sparking “at least 1,500 California fires”[1]
- PG&E equipment “started more than one fire a day in California on average in recent years”[1]
- Responsible for the Dixie Fire, the “second largest fire in California’s history”[2]

1. Gold, R., Blunt, K., & Smith, R. (2019, February 28). PG&E sparked at least 1,500 California fires. now the utility faces collapse. The Wall Street Journal. Retrieved April 29, 2023, from https://www.wsj.com/articles/pg-e-sparked-at-least-1-500-california-fires-now-the-utility-faces-collapse-11547410768

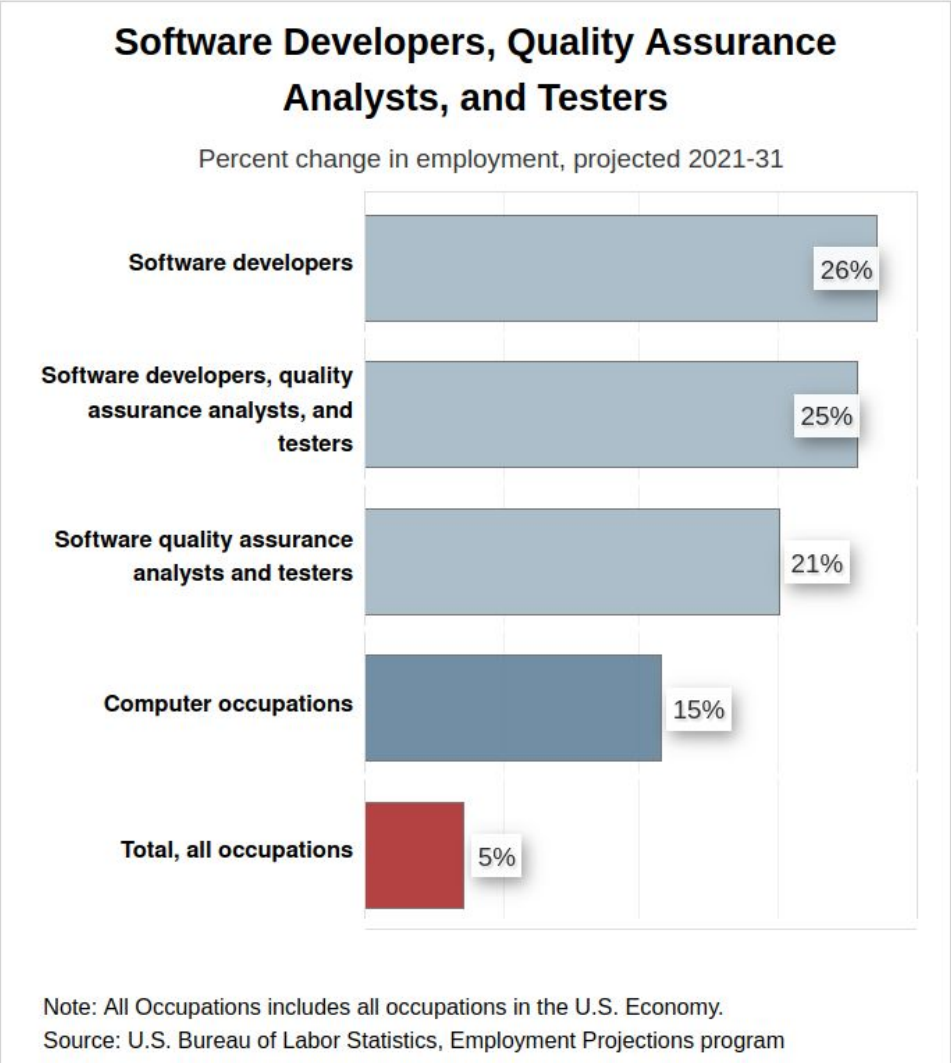
2. Newburger, E. (2022, January 5). California finds PG&E equipment responsible for massive Dixie Fire. CNBC. Retrieved April 29, 2023, from https://www.cnbc.com/2022/01/05/california-finds-pge-equipment-responsible-for-massive-dixie-fire-.html

https://video.selinc.com/detail/videos/solutions/video/17604672182192930 40/falling-conductor-mitigation-demonstration?autoStart=true



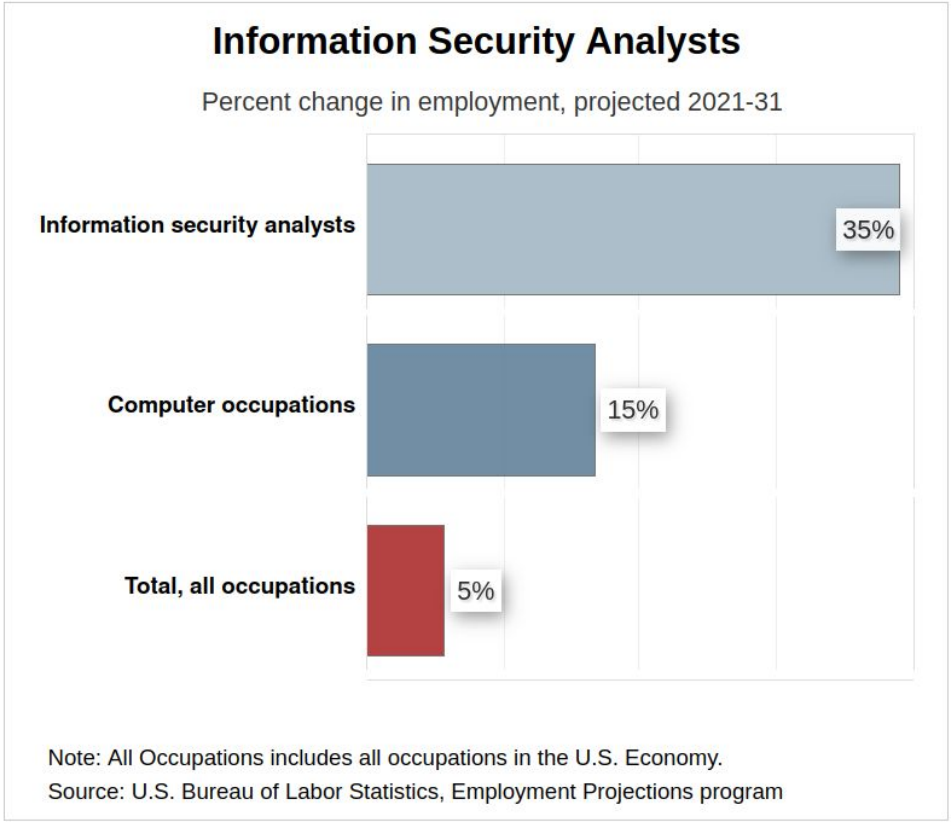
21% increase

Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook, Computer and Information Research Scientists, visited (March 20, 2023) at https://www.bls.gov/ooh/computer-and-information-technology/computer-and-information-research-scientists.htm



26% increase

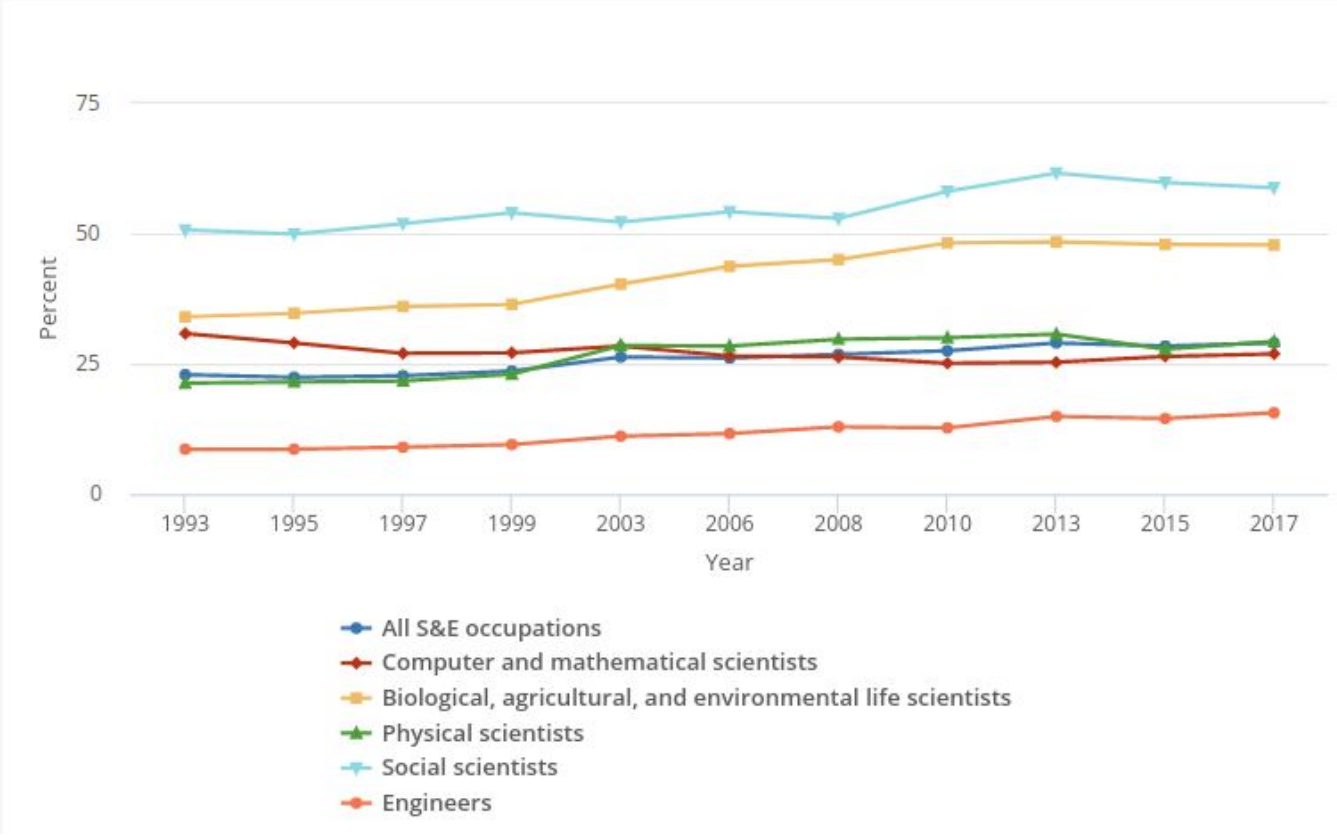
Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook, Software Developers, Quality Assurance Analysts, and Testers, visited (April 22, 2023) at https://www.bls.gov/ooh/computer-and-information-technology/software-developers.htm



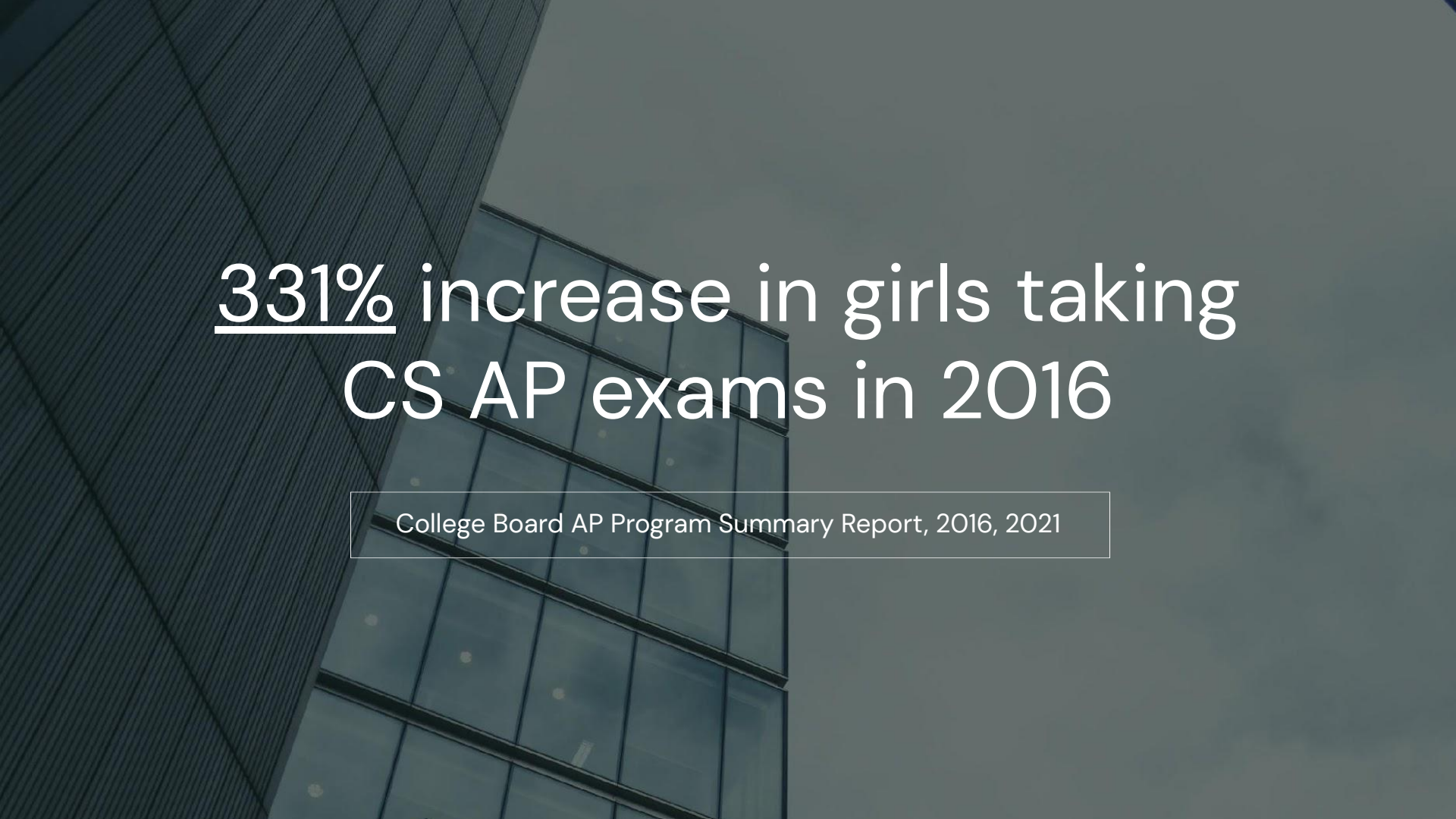
35% increase

Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook, Information Security Analysts, visite ((visited *April 12, 2023*) at https://www.bls.gov/ooh/computer-and-information-technology/information-security-analysts.htm

Women in S&E occupations: 1993–2017

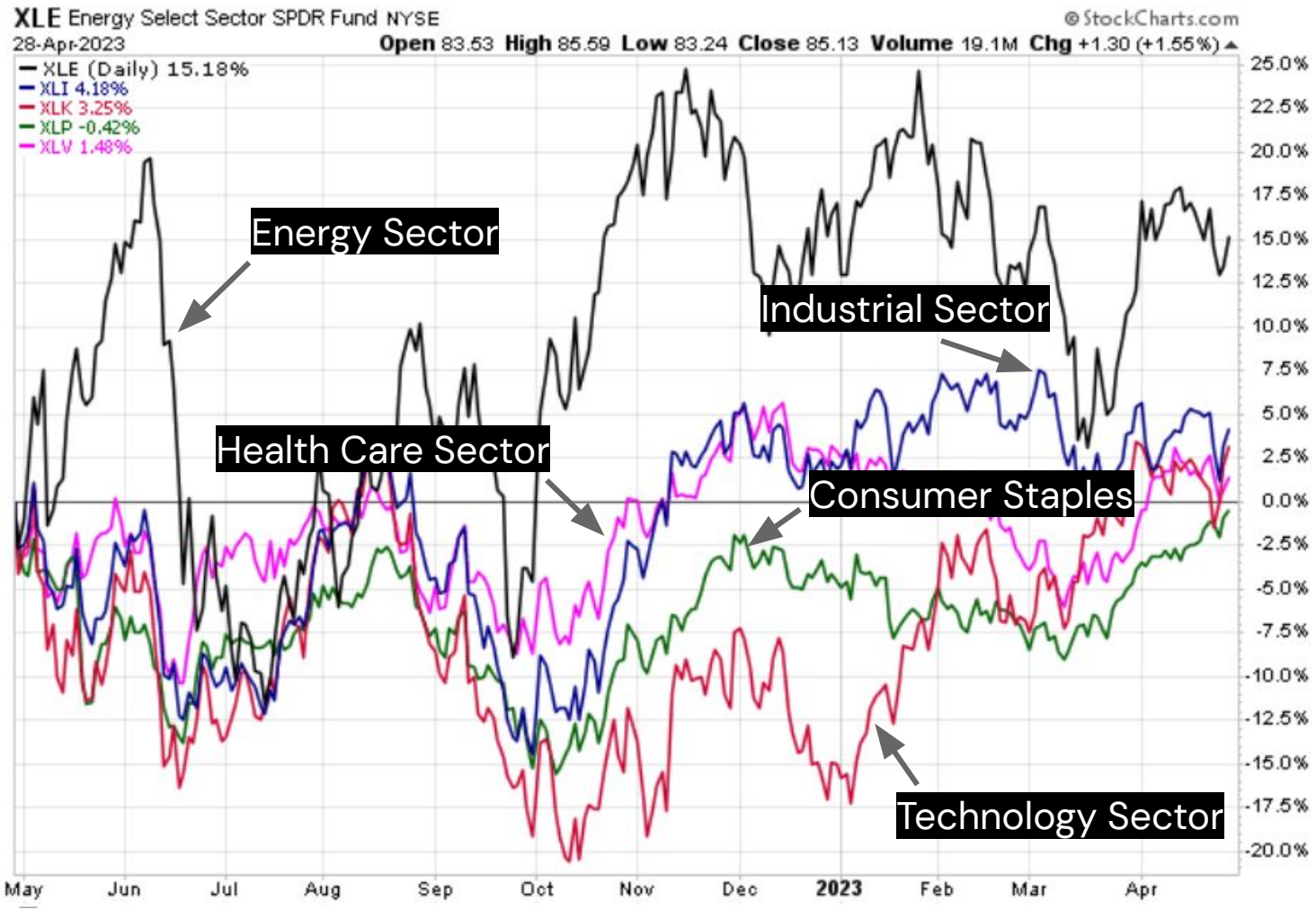


National Science Board, National Science Foundation. 2019. Science and Engineering Indicators 2020: Science and Engineering Labor Force. Science and Engineering Indicators 2020. NSB-2019-8. Alexandria, VA. Available at https://ncses.nsf.gov/pubs/nsb20198/.

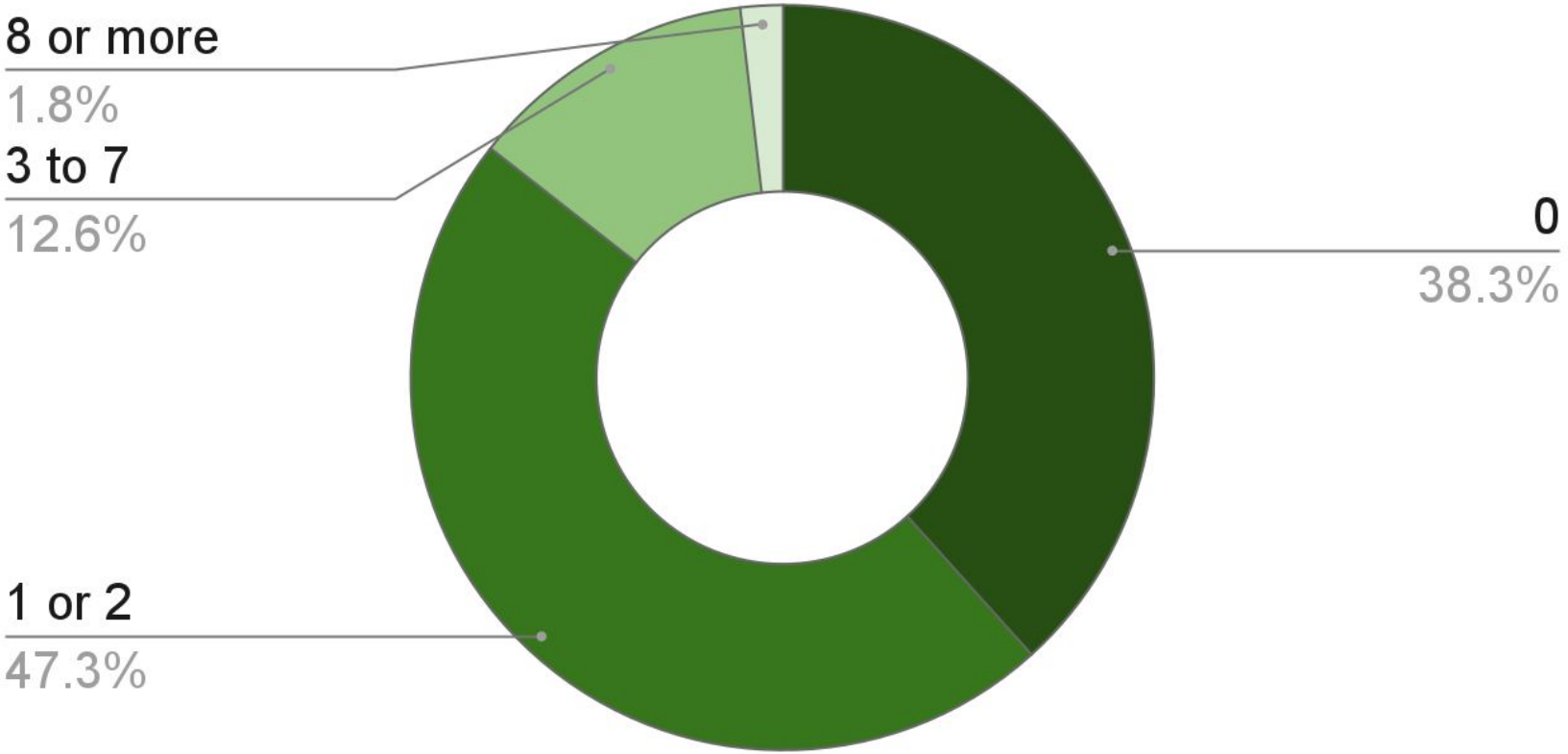


331% increase in girls taking CS AP exams in 2016

College Board AP Program Summary Report, 2016, 2021

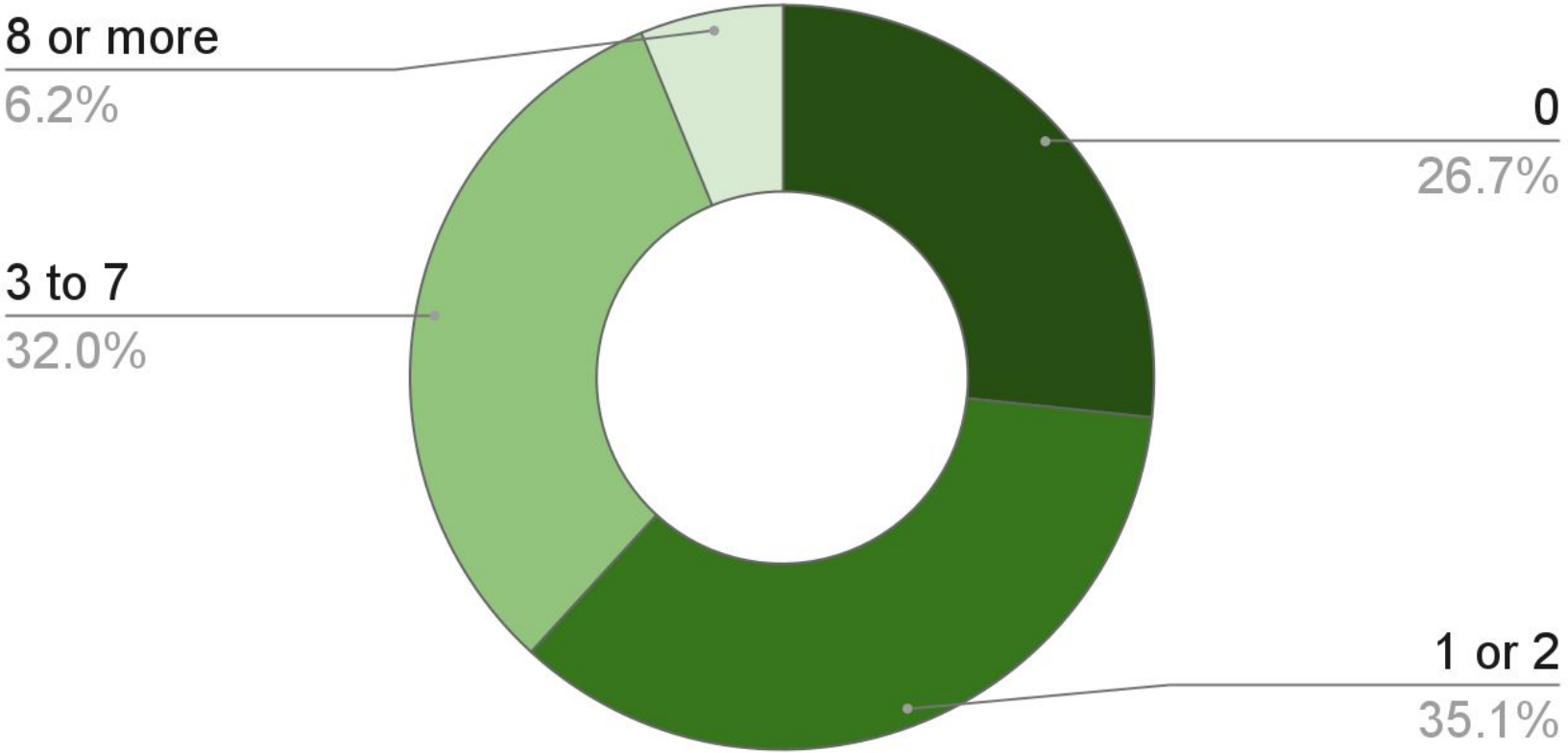

XLE Energy Select Sector SPDR Fund NYSE
© StockCharts.com
28-Apr-2023
Open 83.53 High 85.59 Low 83.24 Close 85.13 Volume 19.1M Chg +1.30 (+1.55%)
XLE (Daily) 15.18%
XLI 4.18%
XLK 3.25%
XLP -0.42%
XLV 1.48%
Energy Sector
Industrial Sector
Health Care Sector
Consumer Staples
Technology Sector
25.0%
22.5%
20.0%
17.5%
15.0%
12.5%
10.0%
7.5%
5.0%
2.5%
0.0%
-2.5%
-5.0%
-7.5%
-10.0%
-12.5%
-15.0%
-17.5%
-20.0%
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
2023
Feb
Mar
Apr

Interviews for Folks That Sent 1-10 Applications



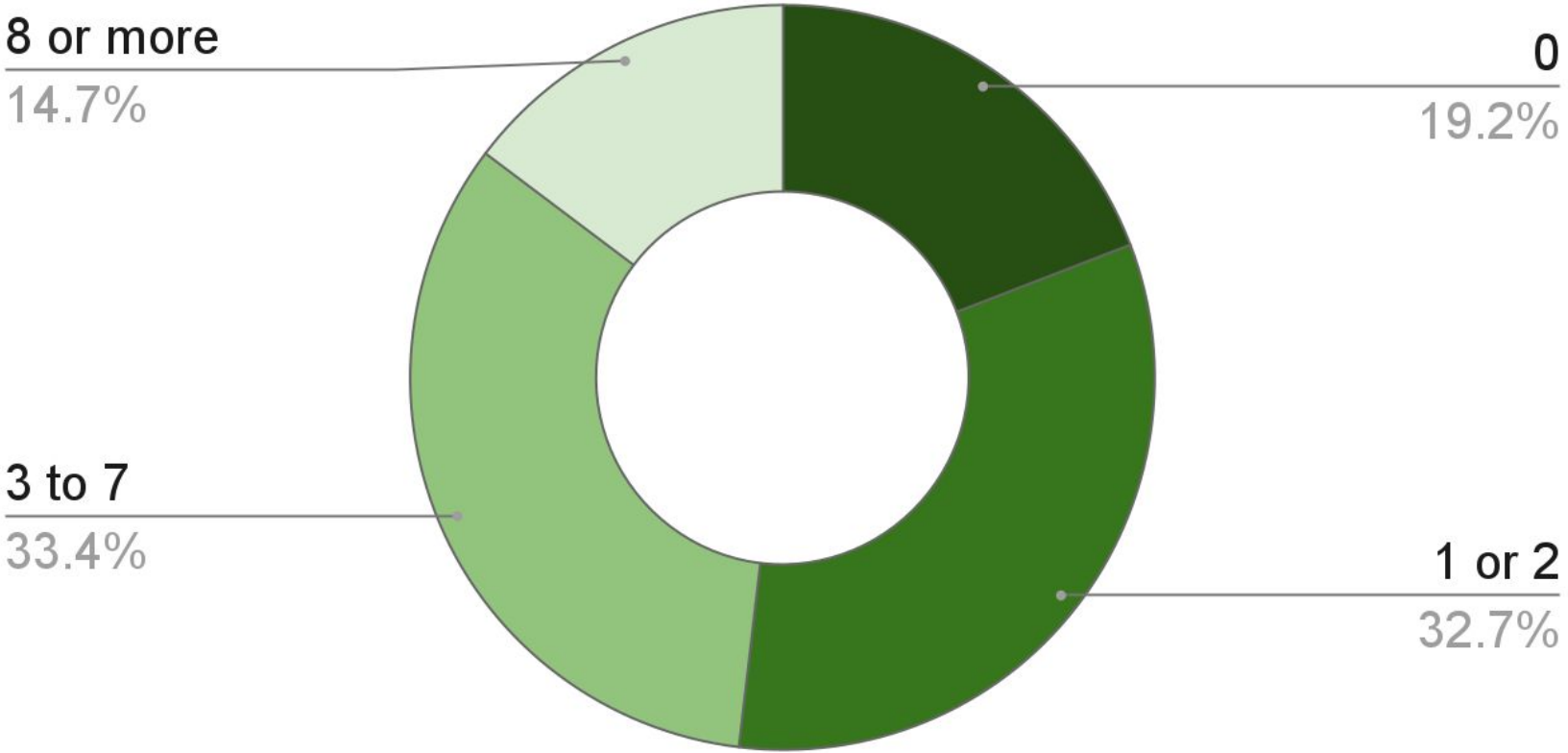
Michael R. Dalton and Jeffrey A. Groen, “How do jobseekers search for jobs? New data on applications, interviews, and job offers,” Beyond the Numbers: Employment & Unemployment, vol. 9, no. 14 (U.S. Bureau of Labor Statistics, November 2020), https://www.bls.gov/opub/btn/volume-9/how-do-jobseekers-search-for-jobs.htm

Interviews for Folks That Sent 11-20 Applications



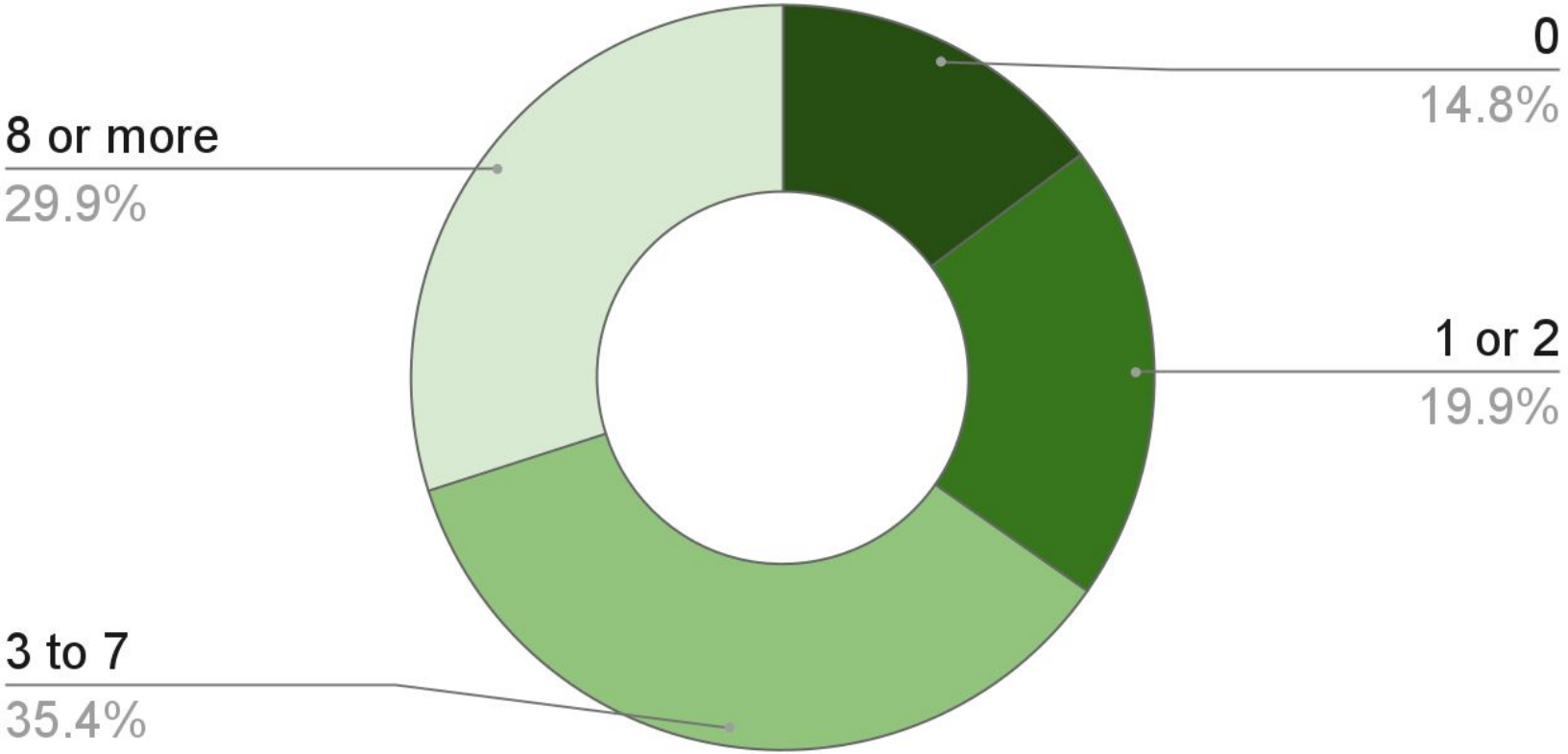
Michael R. Dalton and Jeffrey A. Groen, “How do jobseekers search for jobs? New data on applications, interviews, and job offers,” Beyond the Numbers: Employment & Unemployment, vol. 9, no. 14 (U.S. Bureau of Labor Statistics, November 2020), https://www.bls.gov/opub/btn/volume-9/how-do-jobseekers-search-for-jobs.htm

Interviews for Folks That Sent 21-80 Applications



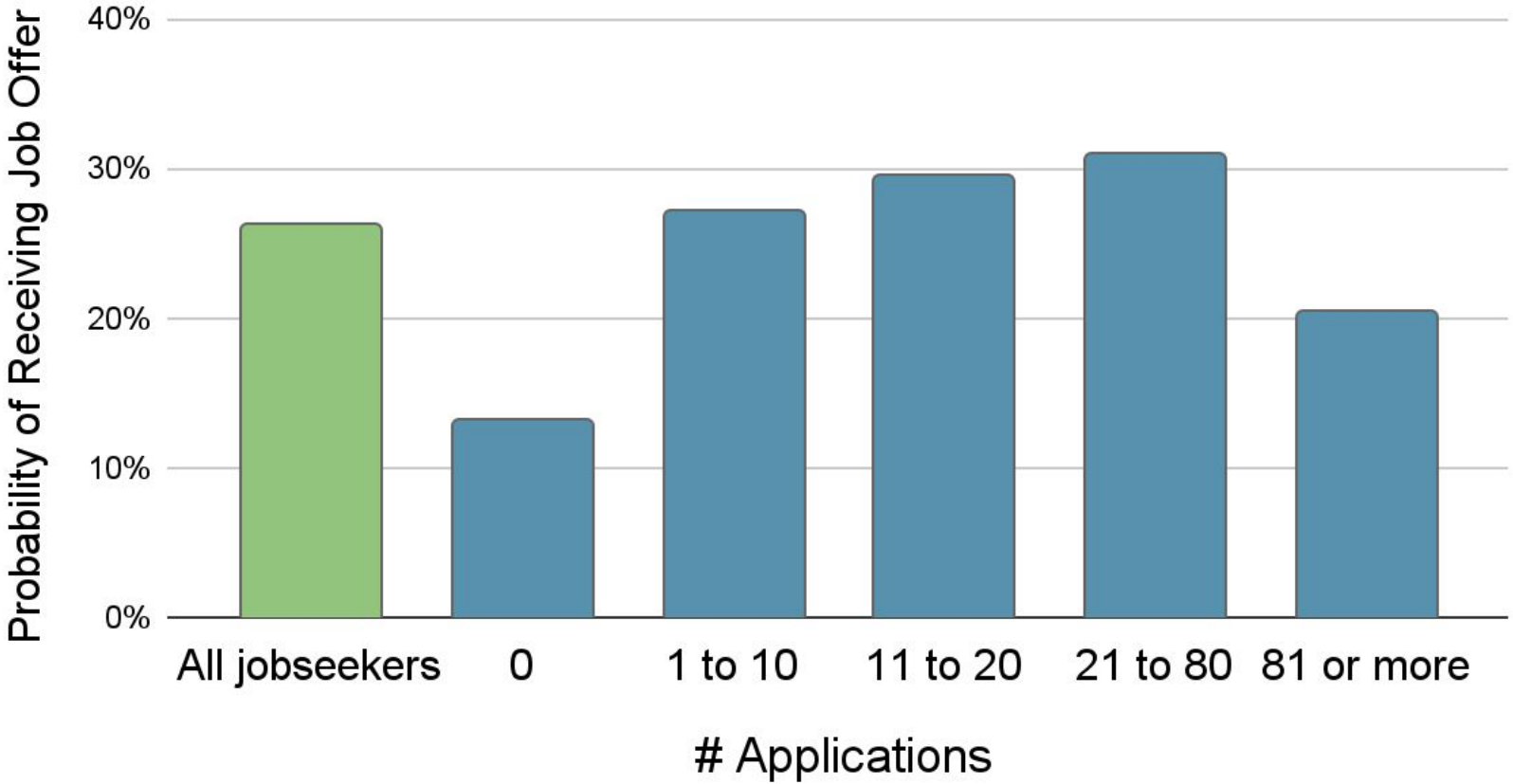
Michael R. Dalton and Jeffrey A. Groen, “How do jobseekers search for jobs? New data on applications, interviews, and job offers,” Beyond the Numbers: Employment & Unemployment, vol. 9, no. 14 (U.S. Bureau of Labor Statistics, November 2020), https://www.bls.gov/opub/btn/volume-9/how-do-jobseekers-search-for-jobs.htm

Interviews for Folks That Sent 81+ Applications



Michael R. Dalton and Jeffrey A. Groen, “How do jobseekers search for jobs? New data on applications, interviews, and job offers,” Beyond the Numbers: Employment & Unemployment, vol. 9, no. 14 (U.S. Bureau of Labor Statistics, November 2020), https://www.bls.gov/opub/btn/volume-9/how-do-jobseekers-search-for-jobs.htm

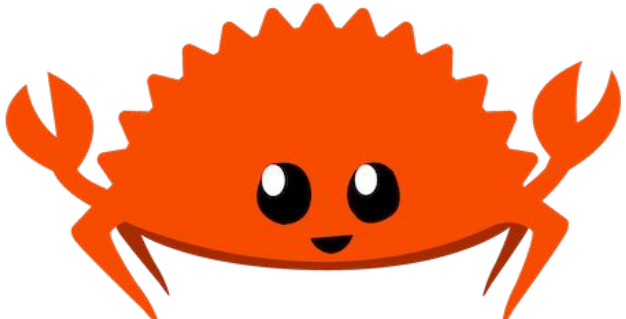
Probability of Receiving Job Offer vs. # Applications

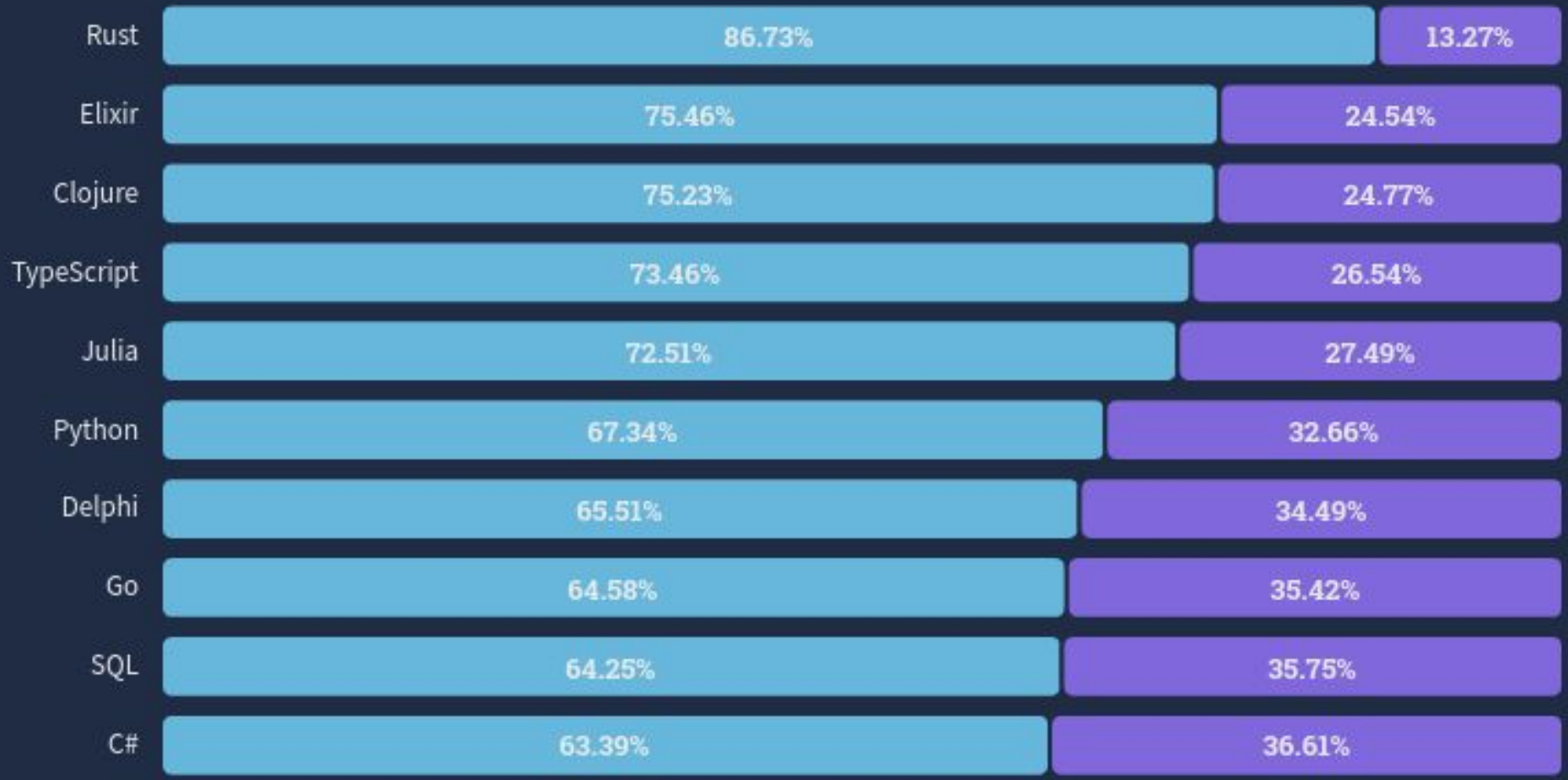


Michael R. Dalton and Jeffrey A. Groen, “How do jobseekers search for jobs? New data on applications, interviews, and job offers,” Beyond the Numbers: Employment & Unemployment, vol. 9, no. 14 (U.S. Bureau of Labor Statistics, November 2020), https://www.bls.gov/opub/btn/volume-9/how-do-jobseekers-search-for-jobs.htm

(Paid) Work I've Done So Far

- 5 months embedded C++
- 5 months Golang
- GTK 3.0 for GUI design
- kubernetes
- Bash scripting CI/CD tools
- Jenkins
- (Learning) Rust





Stackoverflow 2022 Survey:
https://survey.stackoverflow.co/2022/?utm_source=thenewstack&utm_medium=website&utm_content=inline-mention&utm_campaign=platform#section-most-loved-dreaded-and-wanted-programming-scripting-and-markup-languages

```cpp
#include <vector>
#include <stdio.h>

int main(void) {
    std::vector<int> xs = {1, 2, 3};
    int* x = &xs[0];
    xs.push_back(92); // re-allocates xs
    printf("%d\n", *x);
}
```

std::vector<T,Allocator>::push_back

`void push_back( const T& value );`	(1)	(until C++20)
`constexpr void push_back( const T& value );`		(since C++20)
`void push_back( T&& value );`	(2)	(since C++11) (until C++20)
`constexpr void push_back( T&& value );`		(since C++20)

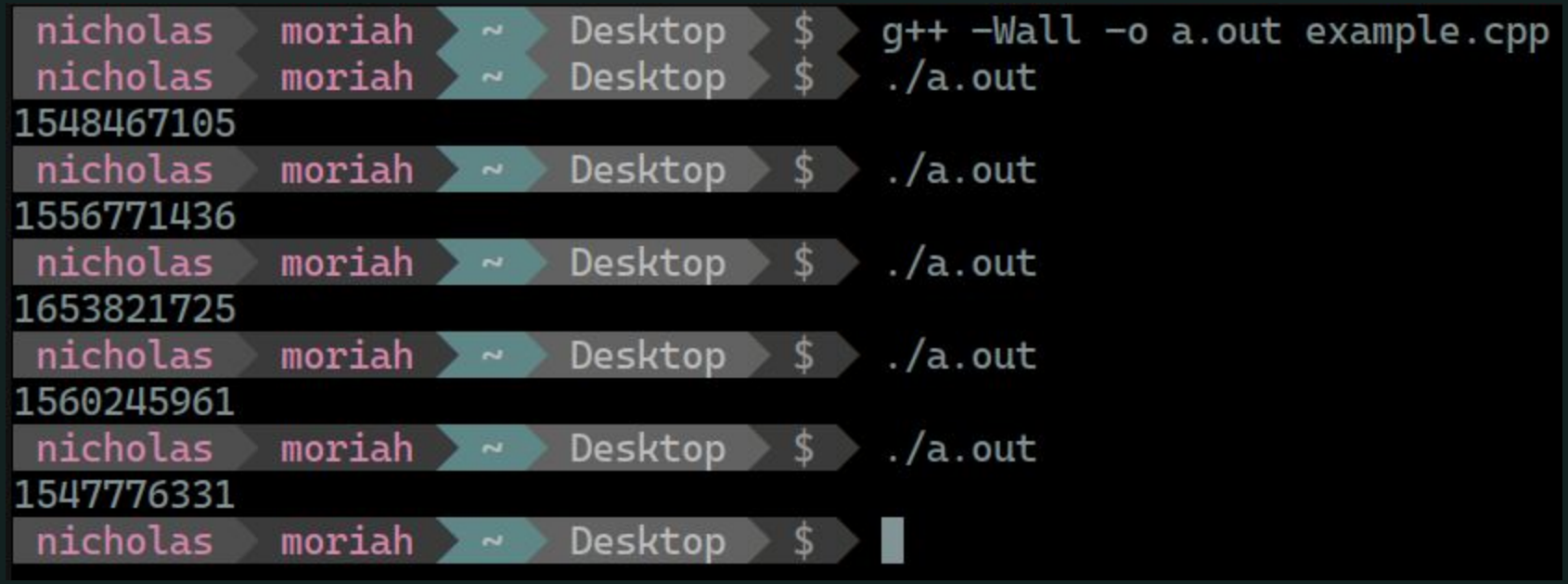
Appends the given element `value` to the end of the container.

1) The new element is initialized as a copy of `value`.

2) `value` is moved into the new element.

If the new `size()` is greater than `capacity()` then all iterators and references (including the `end()` iterator) are invalidated. Otherwise only the `end()` iterator is invalidated.

Source: C++ Reference, “std::vector<T,Allocator>::push_back”. Accessed May 1, 2023. Retrieved from https://en.cppreference.com/w/cpp/container/vector/push_back


nicholas moriah ~ Desktop $ g++ -Wall -o a.out example.cpp
nicholas moriah ~ Desktop $ ./a.out
1548467105
nicholas moriah ~ Desktop $ ./a.out
1556771436
nicholas moriah ~ Desktop $ ./a.out
1653821725
nicholas moriah ~ Desktop $ ./a.out
1560245961
nicholas moriah ~ Desktop $ ./a.out
1547776331
nicholas moriah ~ Desktop $

```
1  fn main() {
2      let mut xs = vec![1, 2, 3];
3      let x: &i32 = &xs[0];
4      xs.push(92);
5      println!("{}", *x);
6  }
7
```

```
nicholas moriah ~ Desktop $ rustc -o a.out example.rs
error[E0502]: cannot borrow `xs` as mutable because it is also borrowed as immutable
 --> example.rs:4:5
  |
3 |     let x: &i32 = &xs[0];
  |                   -- immutable borrow occurs here
4 |     xs.push(92);
  |     ^^^^^^^^^^^ mutable borrow occurs here
5 |     println!("{}", *x);
  |                    -- immutable borrow later used here

note: erroneous constant used
 --> example.rs:5:14
  |
5 |     println!("{}", *x);
  |              ^^^^

error: aborting due to previous error

For more information about this error, try `rustc --explain E0502`.
nicholas moriah ~ Desktop ERROR $
```

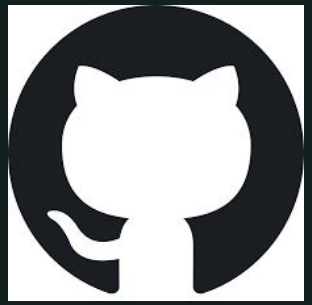
How To Get Good.

git

- Version control system used by almost every company doing software development

personal projects

- GitHub is your friend
- New ideas or building off the ideas of others



passion

- Don’t just do something because it’s a resume builder, do it because you love it!

Thank you!!!

SEL Careers Website:

QR Code for Slides: