



DON'T. PANIC.

By Nicholas R. Smith

A group of approximately 12 students are posing for a photo in front of a large, white wall. On the left side of the wall is a large, blue question mark. The wall is covered in various graffiti and signatures. The students are standing and sitting on the wall. A semi-transparent dark box with the text "Who am I?" is overlaid in the center of the image. The background shows a large tree and a yellow building.

Who am I?

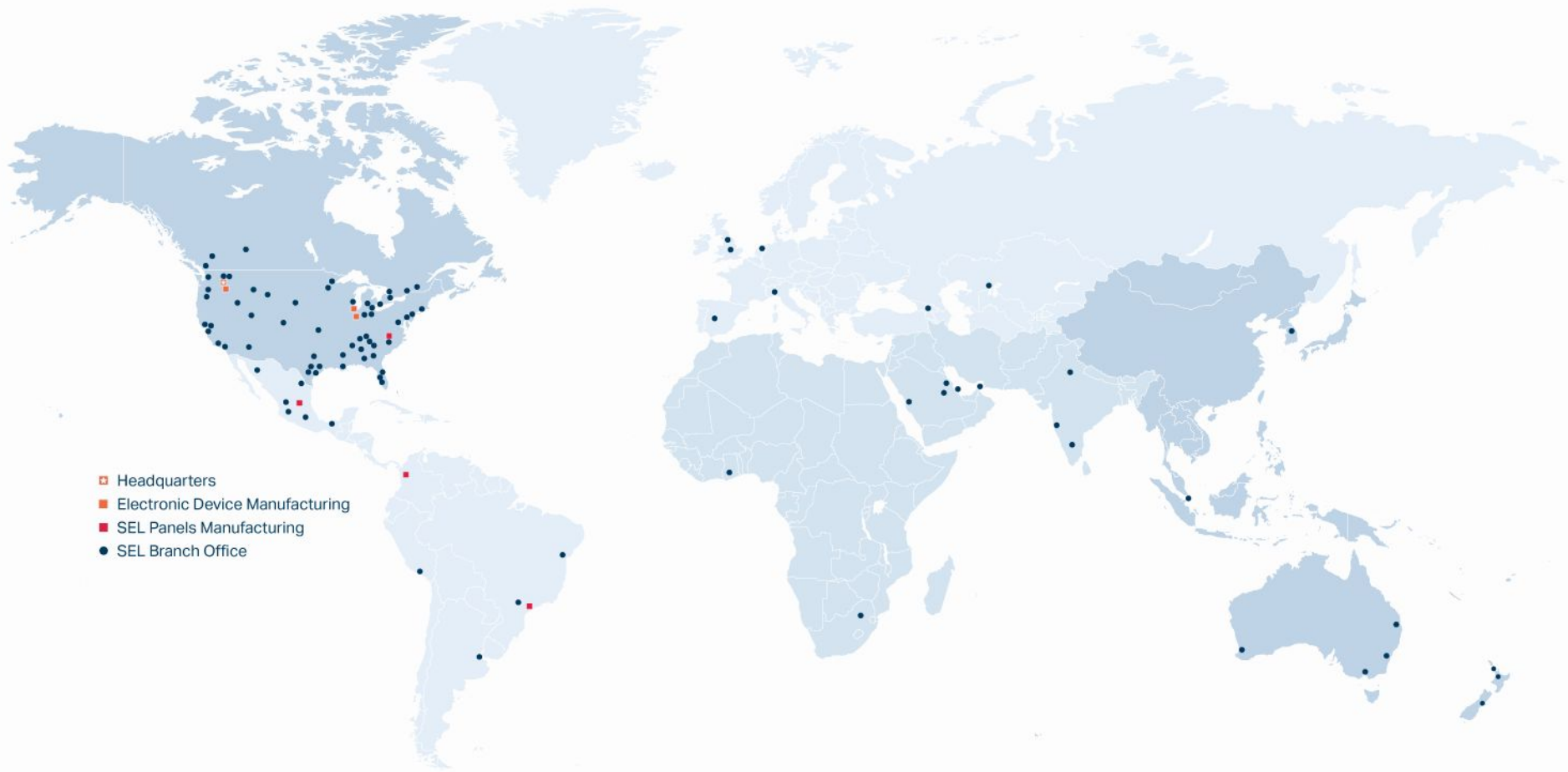
16



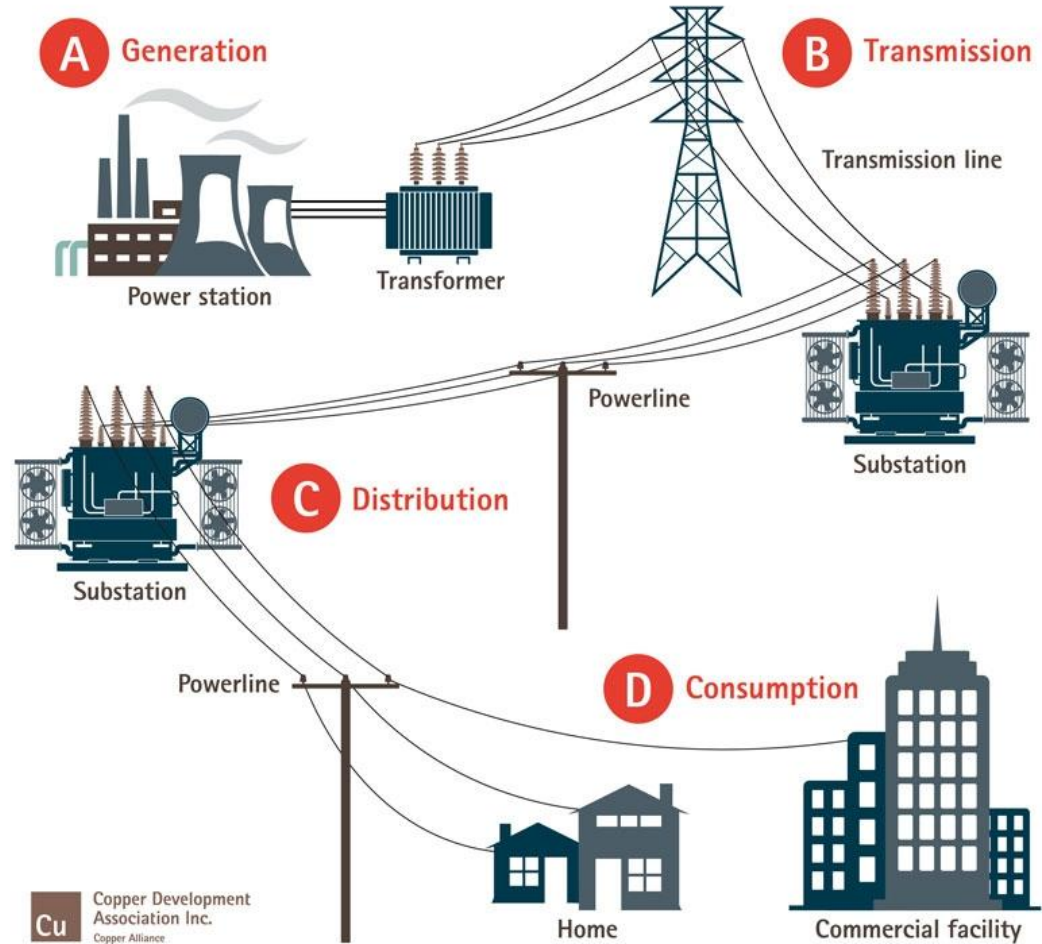


**SCHWEITZER
ENGINEERING
LABORATORIES**





The Power Grid







A stylized, low-poly illustration of a control room. In the center, a digital display shows '0:15' in red. The background is filled with various control panels, buttons, and gauges. Some gauges have a sailboat icon. The color palette is dominated by blues, purples, and greys, with accents of orange, yellow, and green.

0:15

- 15 SECONDS TO CORE
MELTDOWN.

California Forest Fires

- 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



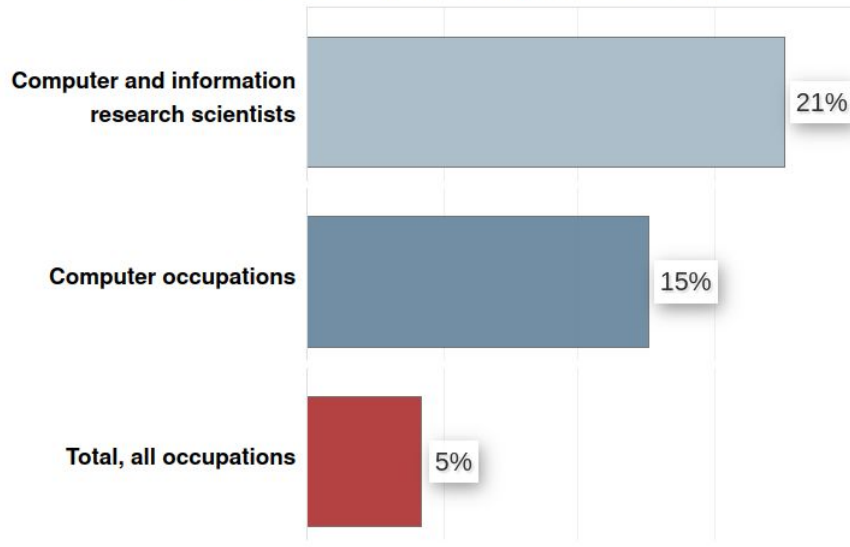
1. Gold, R., Blunt, K., & Smith, R. (2019, February 28). PG&E sparked at least 1,500 California fires. now the utility faces collapse. The Wall Street Journal. Retrieved April 29, 2023, from <https://www.wsj.com/articles/pg-e-sparked-at-least-1-500-california-fires-now-the-utility-faces-collapse-11547410768>

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/1760467218219293040/falling-conductor-mitigation-demonstration?autoStart=true>

Computer and Information Research Scientists

Percent change in employment, projected 2021-31



Note: All Occupations includes all occupations in the U.S. Economy.

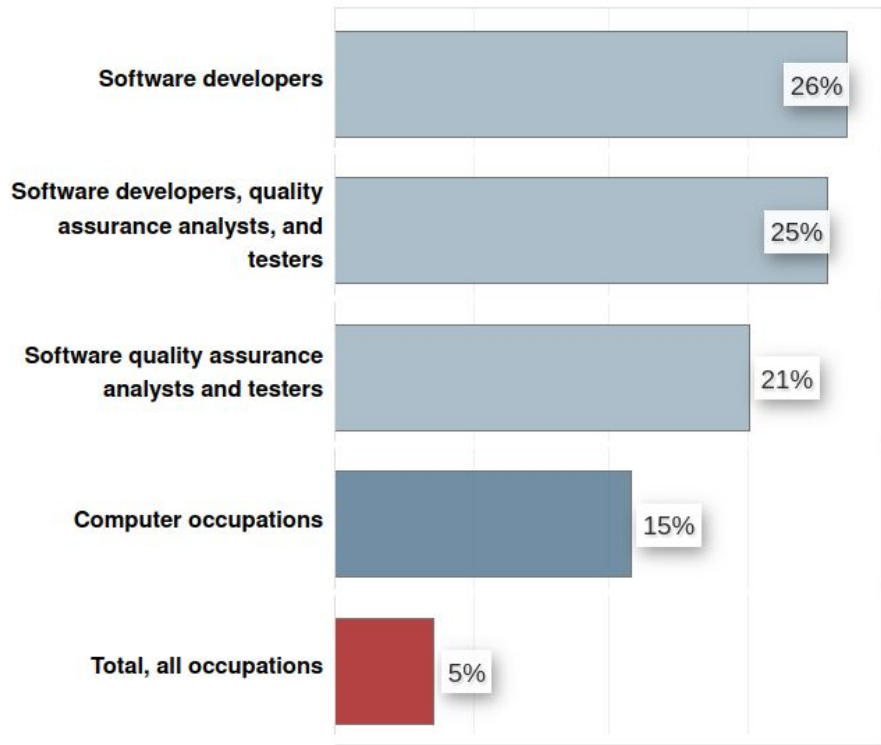
Source: U.S. Bureau of Labor Statistics, Employment Projections program

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>

Software Developers, Quality Assurance Analysts, and Testers

Percent change in employment, projected 2021-31



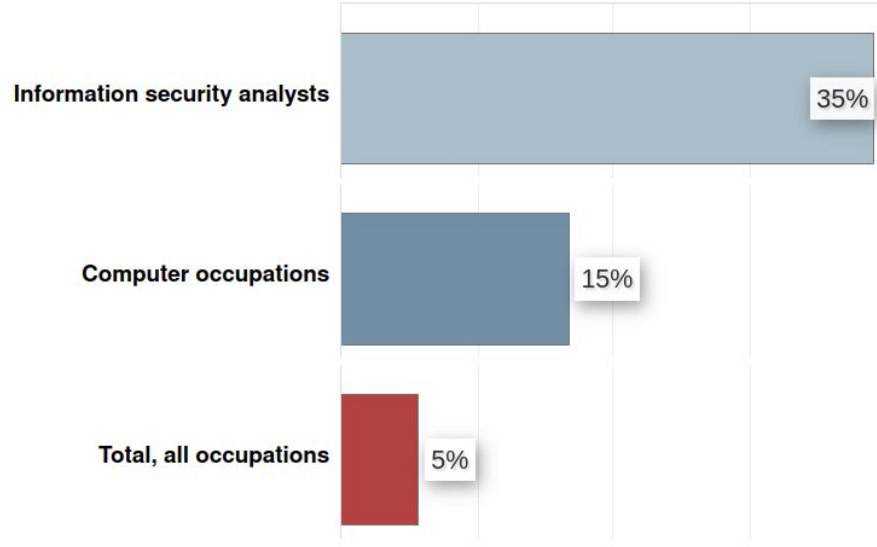
26% increase

Note: All Occupations includes all occupations in the U.S. Economy.
Source: U.S. Bureau of Labor Statistics, Employment Projections program

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>

Information Security Analysts

Percent change in employment, projected 2021-31

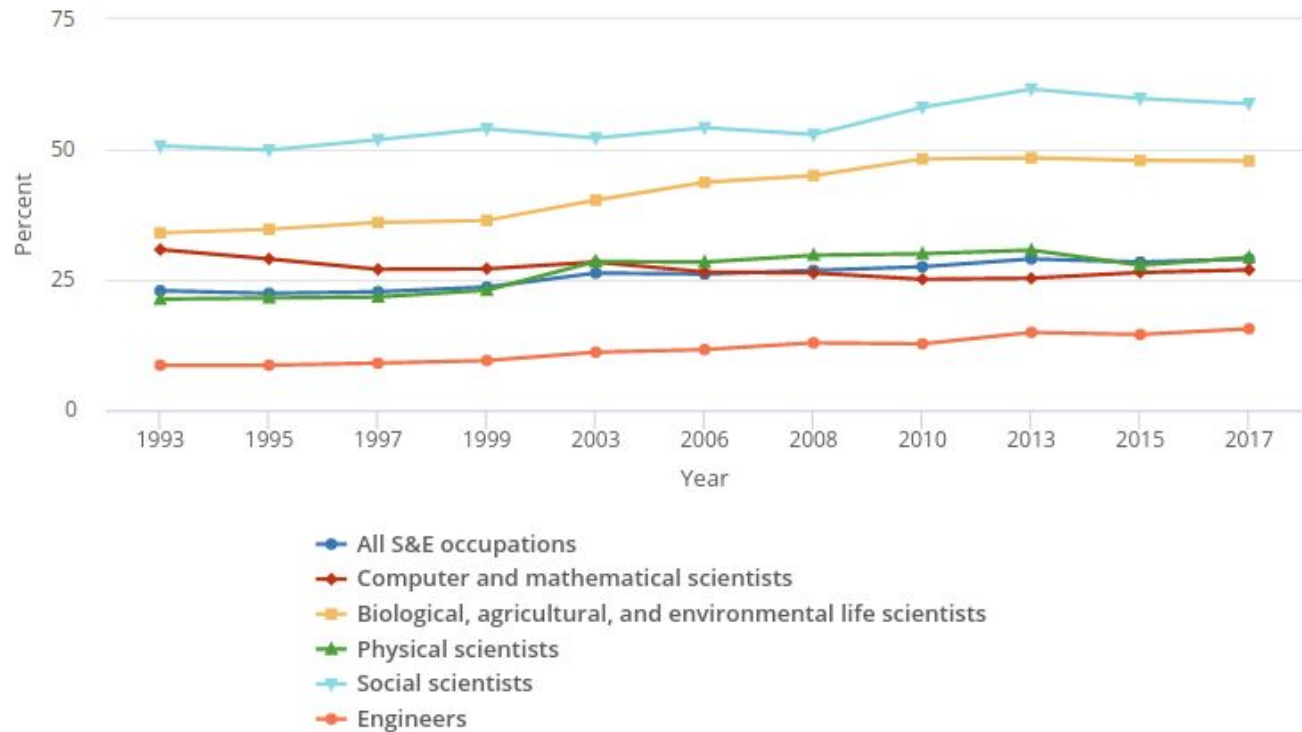


Note: All Occupations includes all occupations in the U.S. Economy.

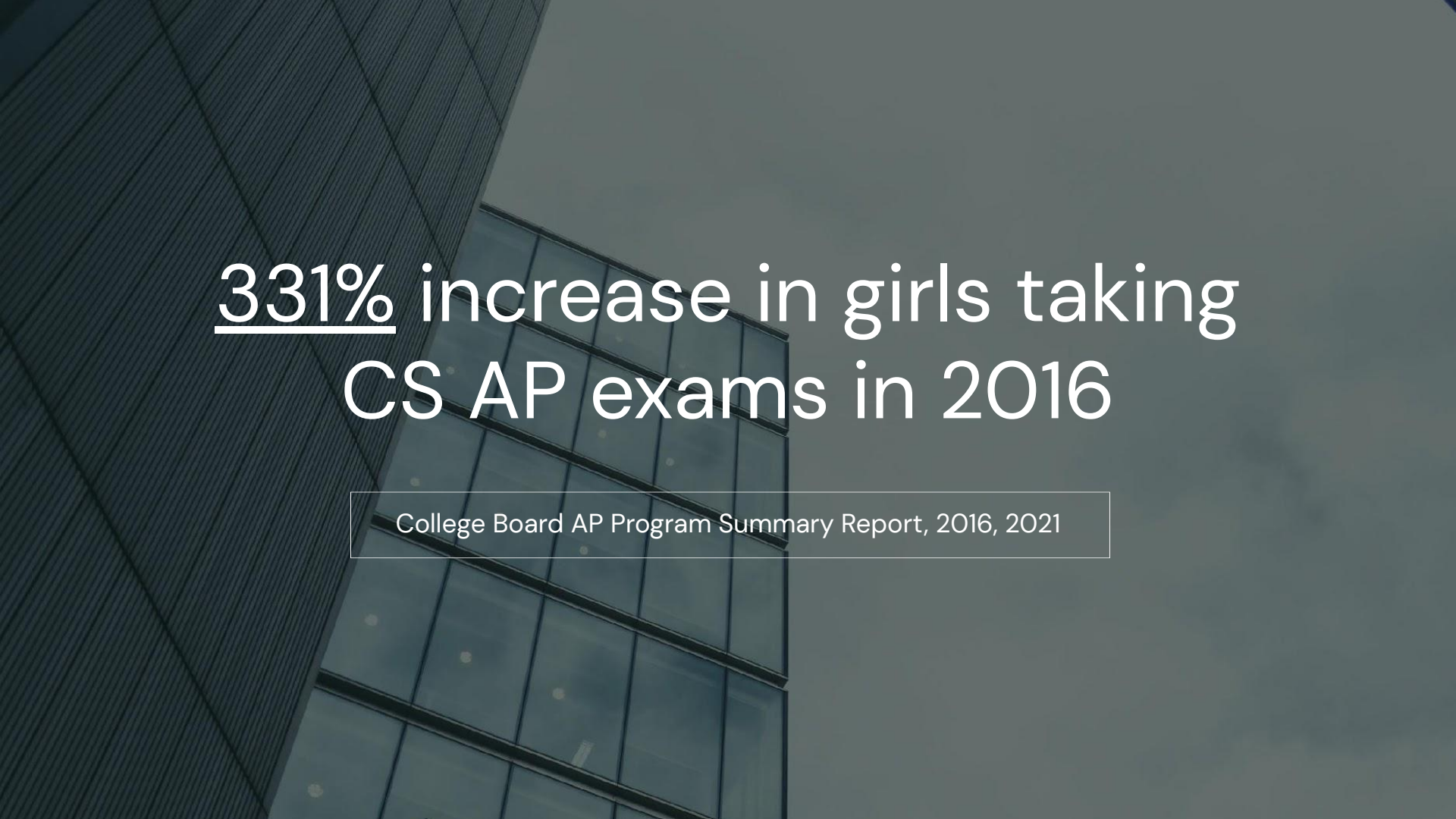
Source: U.S. Bureau of Labor Statistics, Employment Projections program

35% increase

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://nces.nsf.gov/pubs/nsb20198/>.

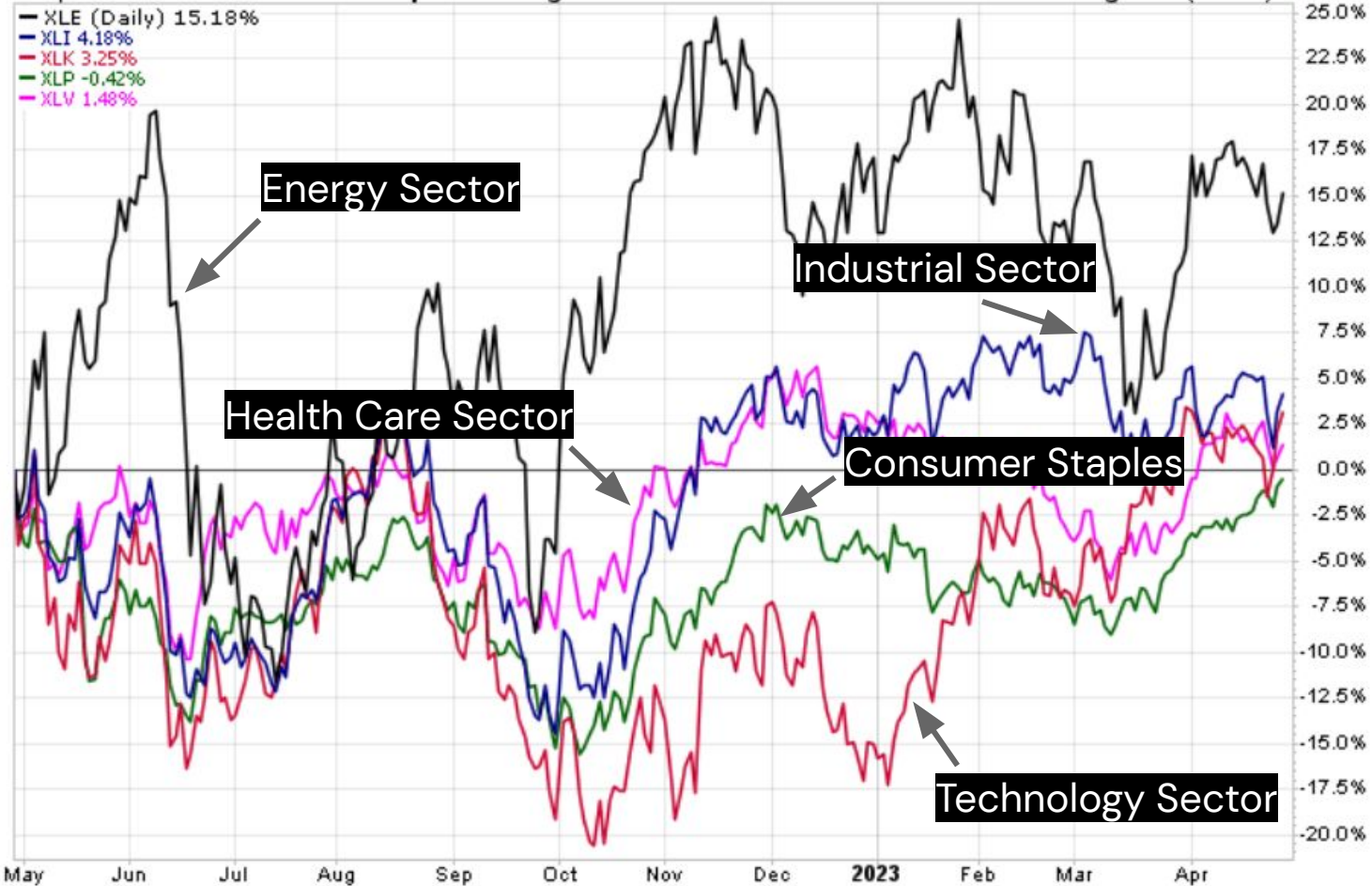


331% increase in girls taking CS AP exams in 2016

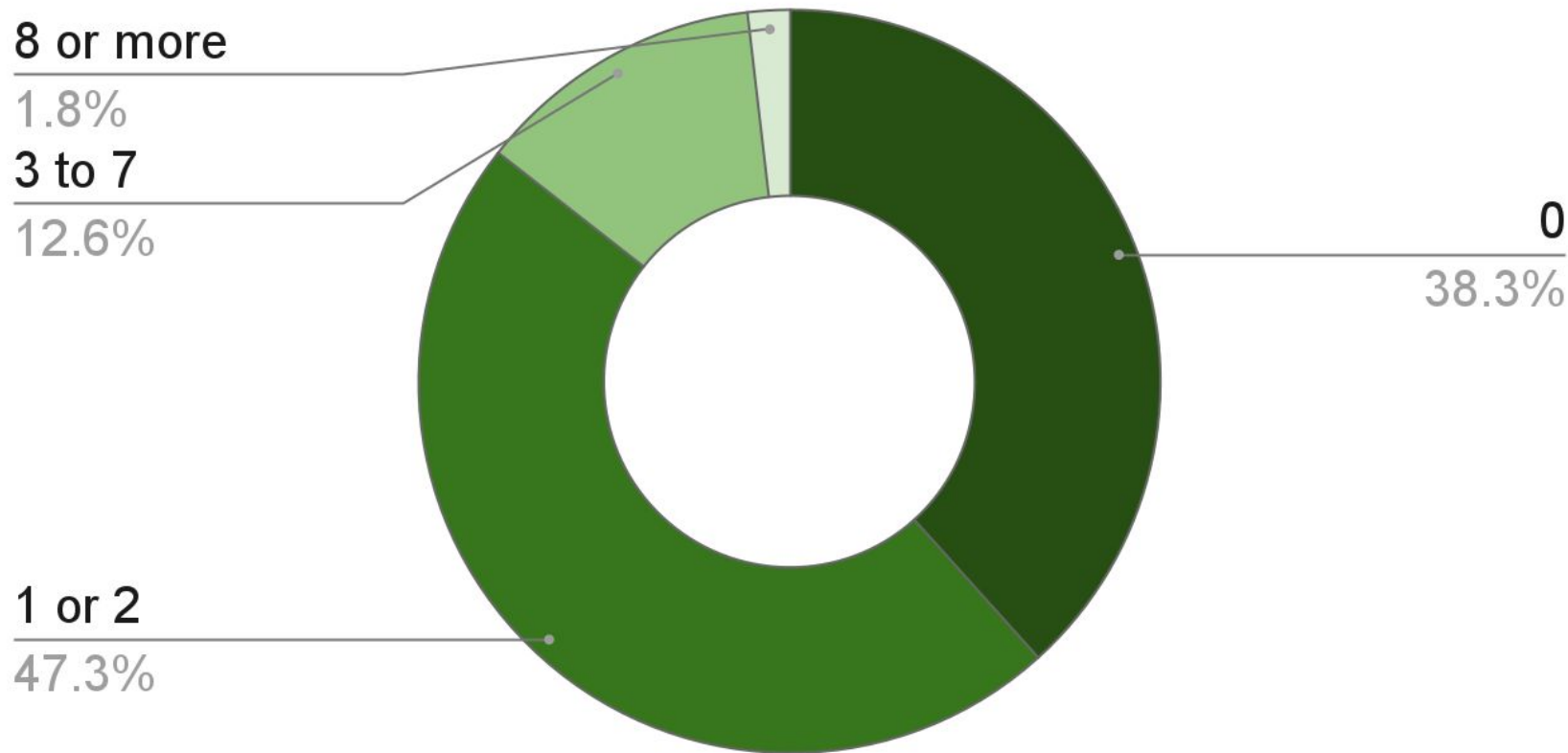
College Board AP Program Summary Report, 2016, 2021

28-Apr-2023

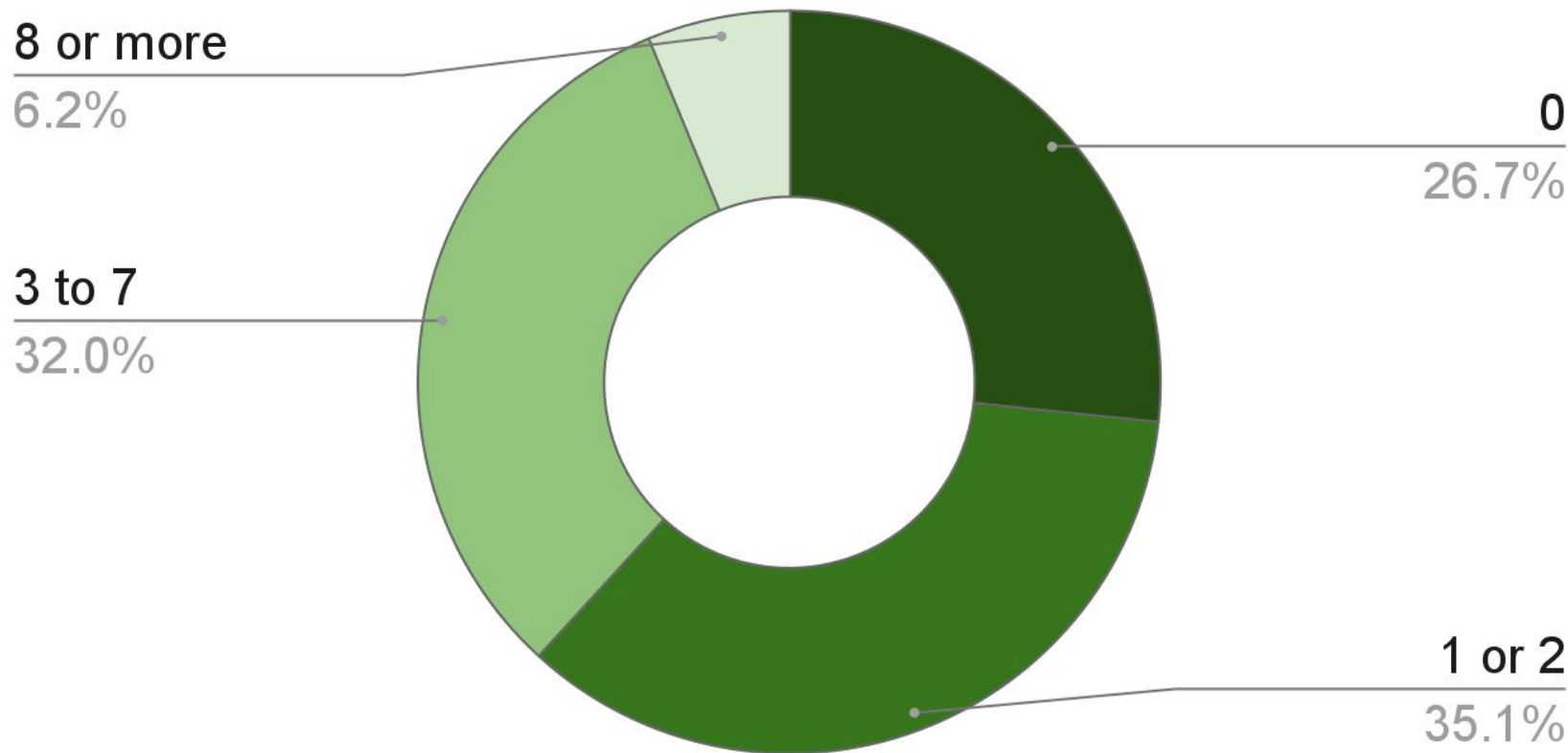
Open 83.53 High 85.59 Low 83.24 Close 85.13 Volume 19.1M Chg +1.30 (+1.55%) ▲



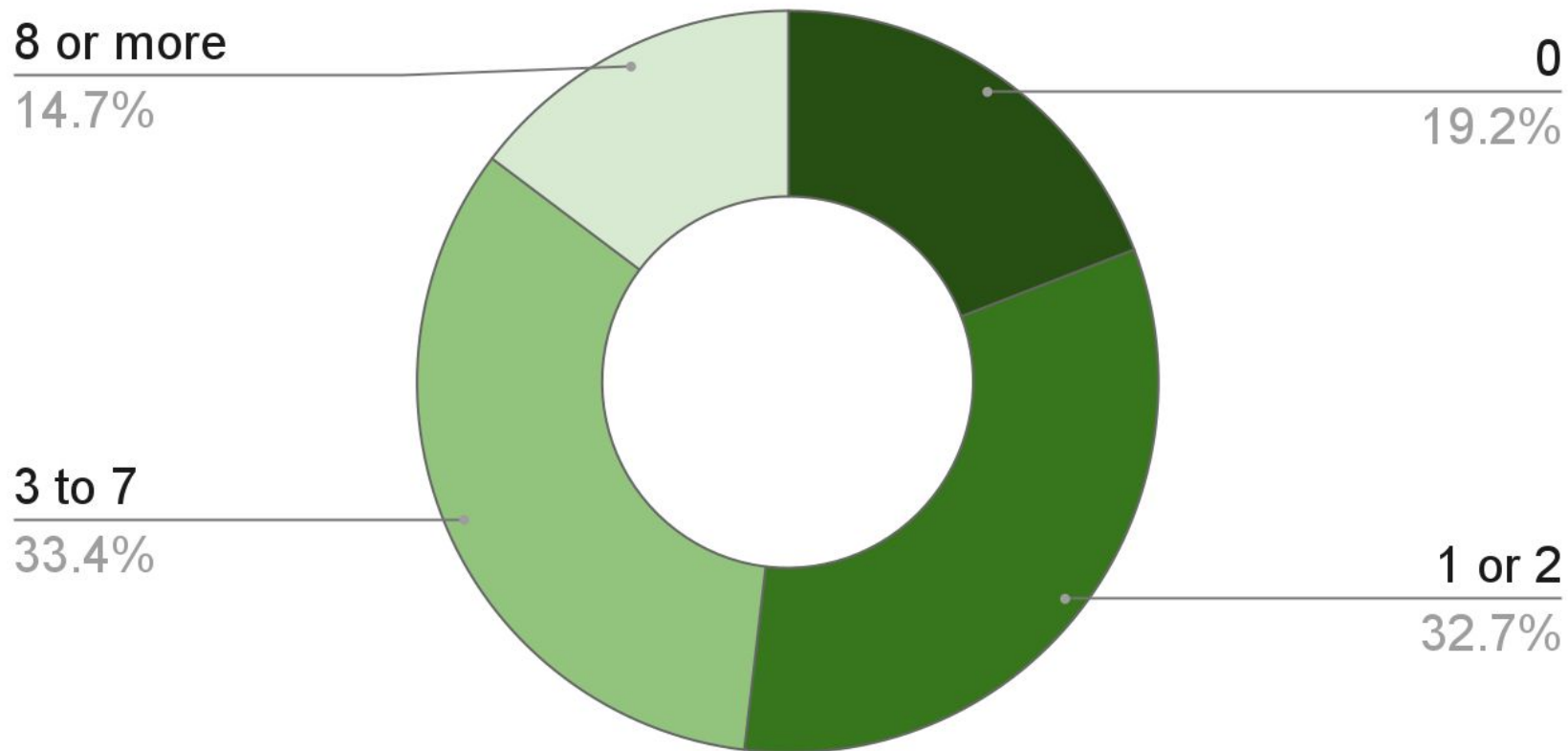
Interviews for Folks That Sent 1-10 Applications



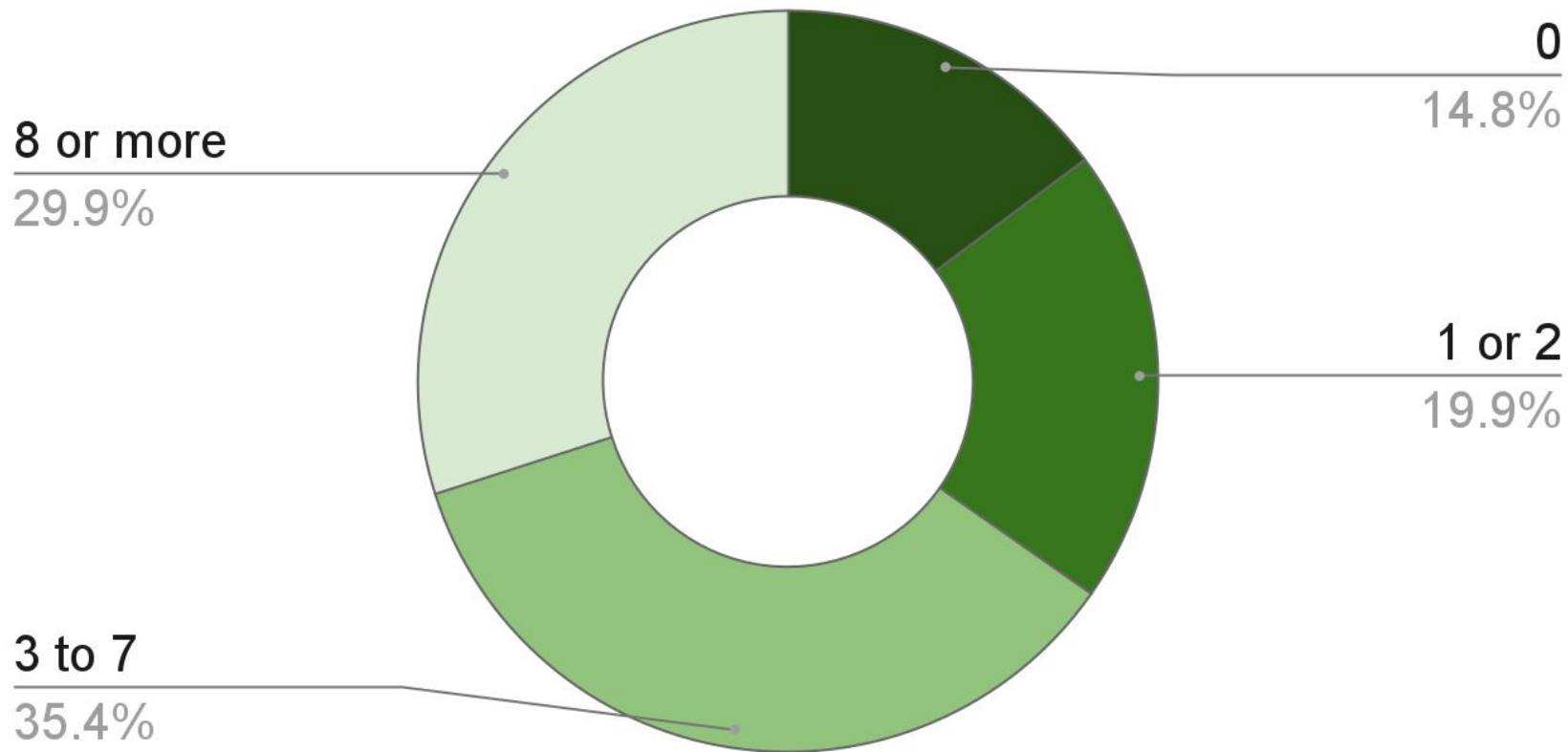
Interviews for Folks That Sent 11-20 Applications



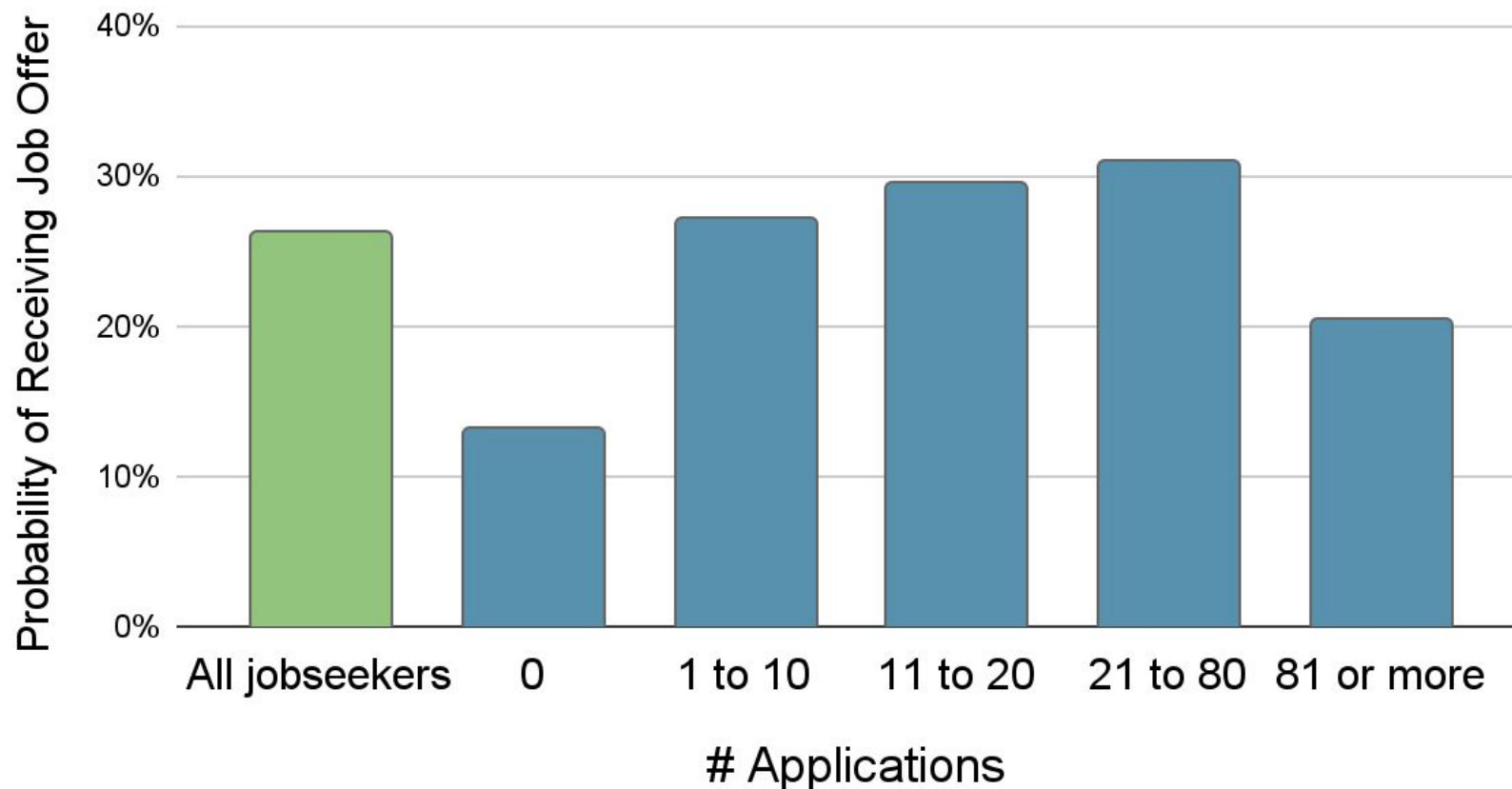
Interviews for Folks That Sent 21-80 Applications



Interviews for Folks That Sent 81+ Applications

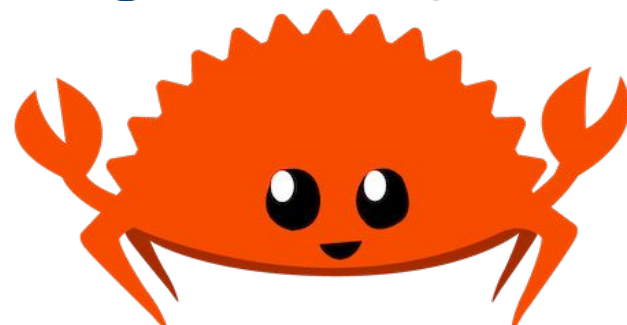
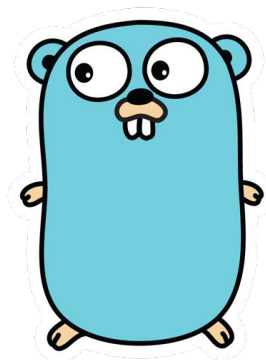


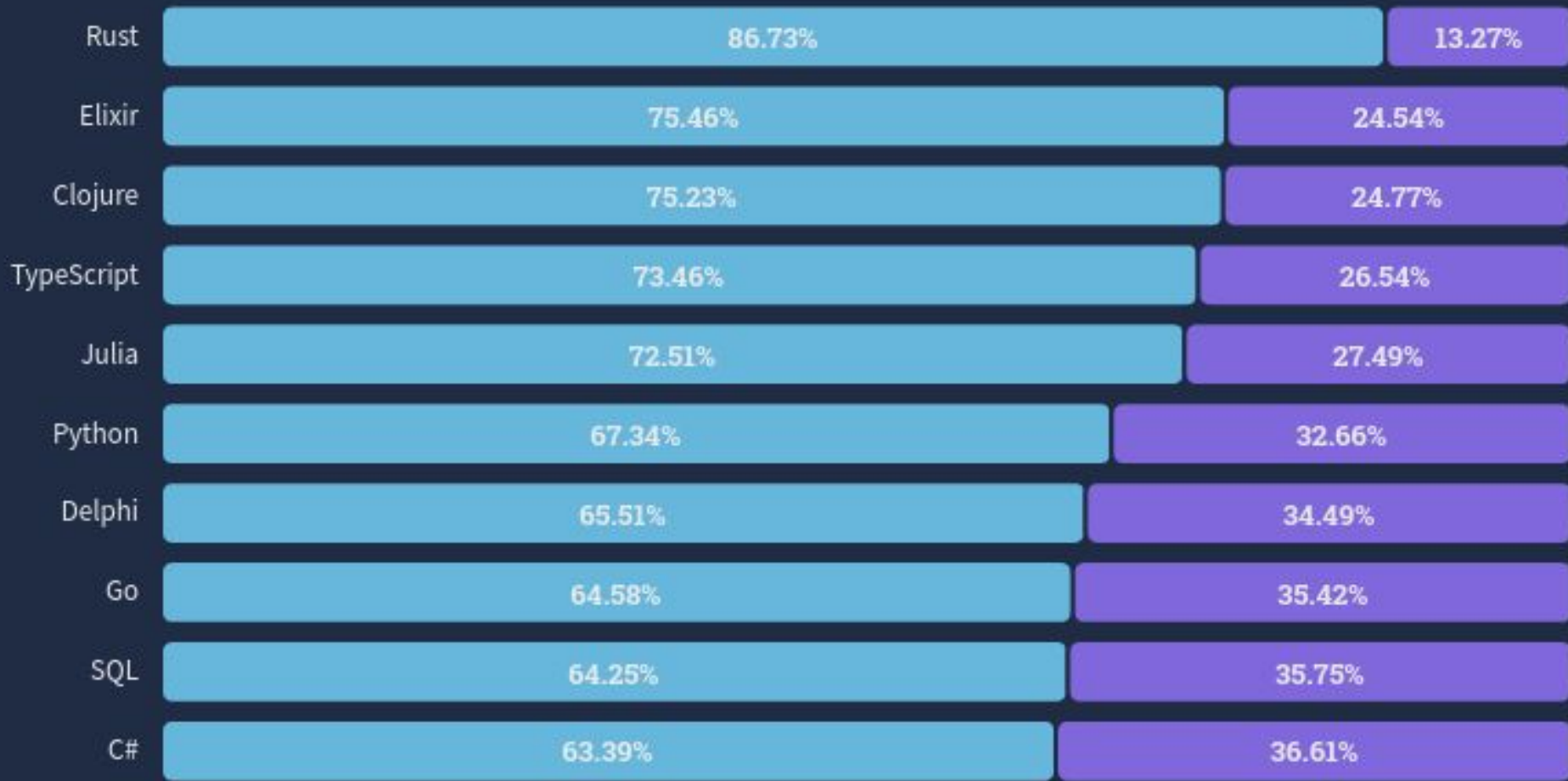
Probability of Receiving Job Offer vs. # Applications



(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

```
1  #include <vector>
2  #include <stdio.h>
3
4  int main(void) {
5      std::vector<int> xs = {1, 2, 3};
6      int* x = &xs[0];
7      xs.push_back(92); // re-allocates xs
8      printf("%d\n", *x);
9  }
```

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

<code>void push_back(const T& value);</code>	(1)	(until C++20)
<code>constexpr void push_back(const T& value);</code>		(since C++20)
<code>void push_back(T&& value);</code>		(since C++11)
<code>constexpr void push_back(T&& value);</code>	(2)	(until C++20)
		(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.


```
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:

