



[Link To Website](#)

Teaching Cybersecurity Best Practices



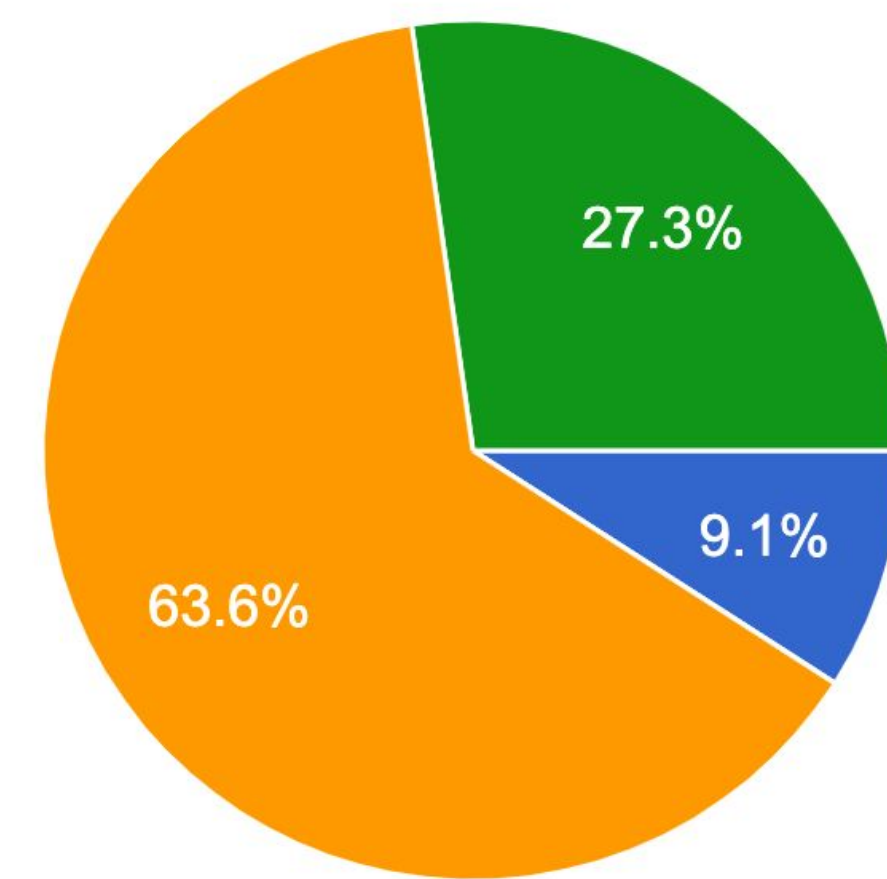
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Abstract

- Our goal is to improve poor cybersecurity behavior via a multi-lesson educational website
 - A website can be distributed nearly instantaneously to anyone with a phone or personal computer
- Cyber security lessons include:
 - History
 - Passwords
 - Malware
 - Careers
- Each lesson contains a quiz in order to review/reinforce existing content
- Of 11 people surveyed:
 - 45.5% (5) were already using an antivirus
 - 81.8% (9) feel better informed about history of cybersecurity
 - 9.1% (1) are now planning to use a password manager

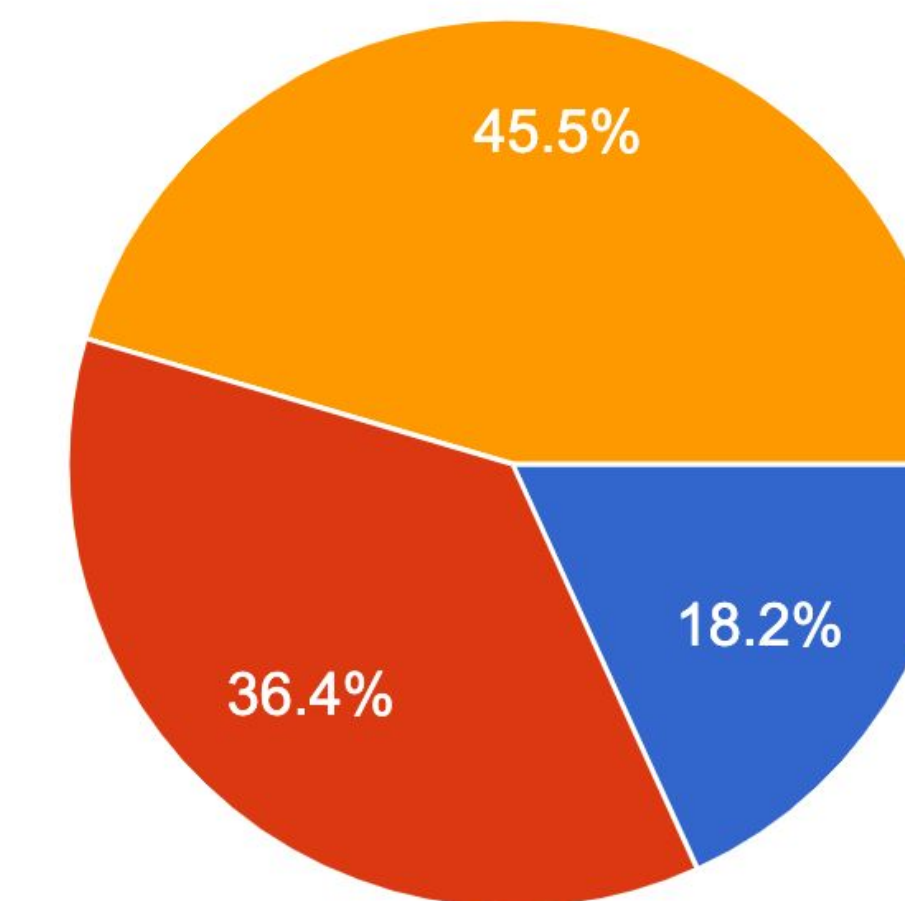
Results

Are you planning to use a password manager?
11 responses



- Yes, A Free One
- Yes, Any
- No
- I Already Have One

Are you planning on installing an antivirus?
11 Responses



- Yes
- No
- I Already Have One

Survey Results

These results are from a survey given to individuals after viewing the website.



Screenshot from page "Malware"

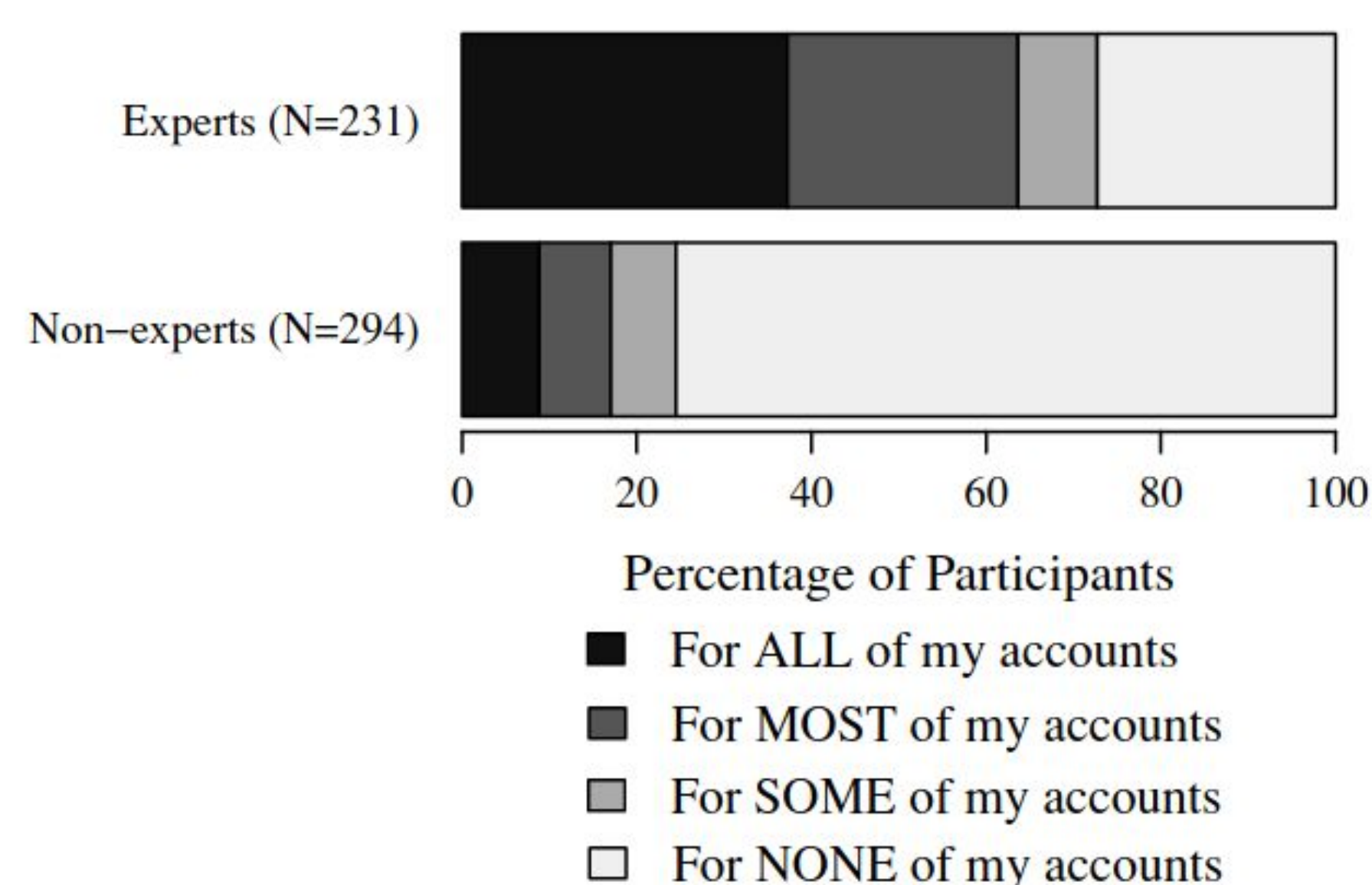
A video embedded in the website to provide additional information if desired by the reader.

Conclusions

- We were more effective at convincing people to install an antivirus than using a password manager
- Not very effective at either
 - Changed behavior in well below half of our surveyed users
- In line with current findings that presenting information about password security is ineffective at changing behavior (Renaud and Zimmermann 2019)
 - Renaud's experiment convinced 4% of people, we convinced 9.1% of people
- In future, could add more interactivity to website (beyond quizzes), which could include educational video games and testing out a password manager

Behaviorial Gap

I use a password manager



- Over 70% of cybersecurity experts use a password manager, but less than 1/4 of the broader population does (Ion et al. 2015).



Screenshot from page "History"

Our website contains a history section that briefly explains the history of cyber security.

VIDEO QUIZ

WHAT DO COMPANIES IMPLEMENT TO PROTECT SENSITIVE INFORMATION?

- Do not allow employees to try and hack into their network and databases.
- Push everything to cloud storage.
- Firewalls and data encryption programs
- Updates software and hardware every two weeks.

DO YOU NEED A BACHELOR'S TO BECOME A CYBERSECURITY PROFESSIONAL.

- True
- False

Quiz from page "Careers"

Questions are about company protocol for combating security threats and academic credentials needed for employment as a cybersecurity professional

Methods

- We used simple front-end web technologies (HTML/CSS/Javascript):
 - [HTML5Up](#) static site template (which itself uses HTML, CSS, Javascript)
 - [Web Storage API](#) (localStorage) to store most recent score for Careers page
 - Basic DOM manipulation and dynamic creation of HTML elements for Passwords quiz
 - CSS pseudo-classes to modify the colors used when highlighting text
- We used GitHub Pages to host the website

CHOOSING A PASSWORD MANAGER	BITWARDEN	LASTPASS	DASHLANE	CHROME'S BUILT-IN
Free unlimited passwords	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	50	<input checked="" type="checkbox"/>
Free Device Syncing	<input checked="" type="checkbox"/>	Only browser or phone, not both	1 Device	<input checked="" type="checkbox"/>
Cross-Browser Compatibility	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Only Chrome
Open Source	<input checked="" type="checkbox"/>	Proprietary	Proprietary	Proprietary

Table from page "Passwords"

This compares and contrasts the free feature sets of leading password managers. Bitwarden has the most features at this price range.

References

Stoltz R. Cyber security job outlook - is it a good career in 2021. Neit.edu. 2020 Nov 19. <https://www.neit.edu/blog/cyber-security-job-outlook>.

Ion I, Reeder R, Consolvo S. 2015. "...No one Can Hack My Mind": Comparing Expert and Non-Expert Security Practices. p. 327–346. <https://www.usenix.org/conference/soups2015/proceedings/presentation/ion>.

Love JJ. A Brief History of Malware-Its Evolution and Impact. Lastline. 2019 Sep 19 [accessed 2021 Apr 29]. <https://www.lastline.com/blog/history-of-malware-its-evolution-and-impact/>.

Renaud K, Zimmermann V. 2019. Encouraging password manager use. Network Security. 2019(6):20. doi:10.1016/S1353-4858(19)30075-3.

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