Exploring the Impact of a Cybersecurity Buddy for Improving Attack Vulnerability

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ABSTRACT

Social engineering attacks exploit human vulnerabilities, making them a significant threat to organizations. These attacks can circumvent technical security measures, making them difficult to prevent. Our project addresses this in two phases. Phase 1 is to assess the cyber awareness of the campus community. Phase 2 is to work with different campus units to provide peer support which we call the "cybersecurity buddy".

PHASE 1

1. **Conduct a baseline assessment of survey respondents' cybersecurity awareness, motivation & knowledge which we call the Security Score.**
2. **Identify individuals with a high level of knowledge and expertise in cybersecurity to act as cybersecurity buddies.**
3. **Identify departments where we can test our cybersecurity buddy program.**

SECURITY SCORE COMPUTATION

- **Calculation of the Security Score has been divided into two parts.**

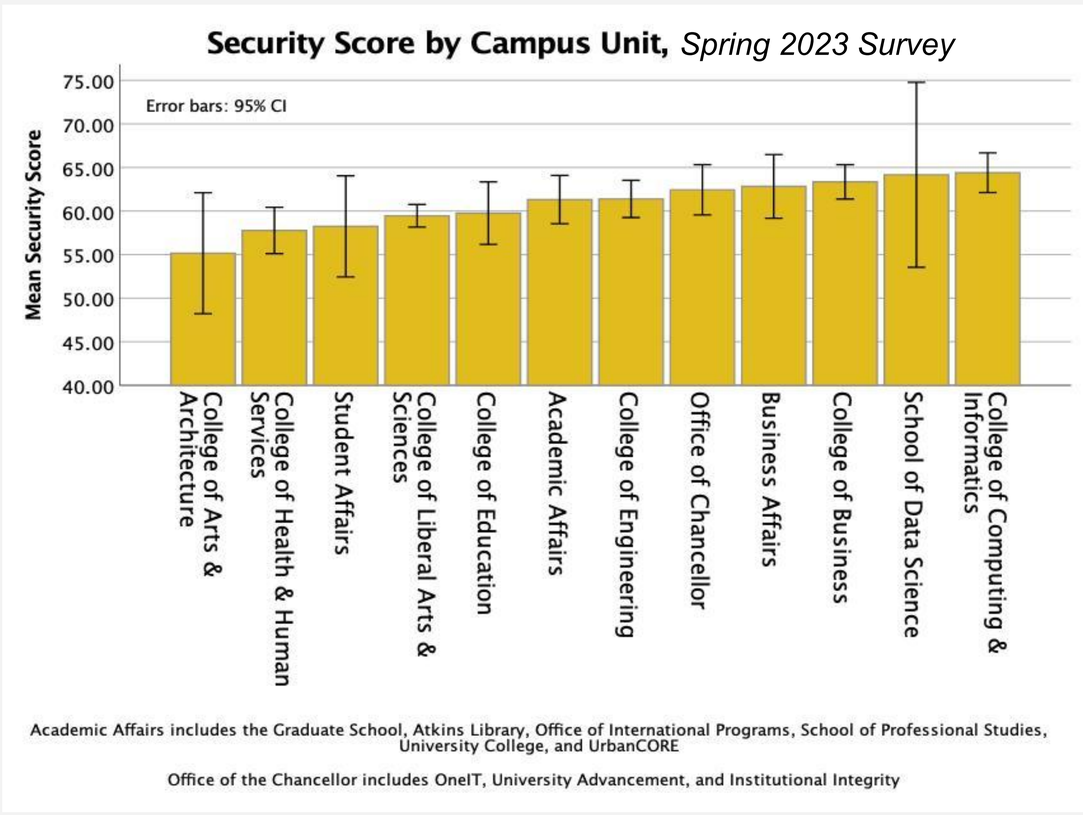
1. **SA-13 calculation**
   - **Consists of 13 MCQ questions to indicate the degree to which you agree and disagree**
   - **Engagement subscale (SA-6): Mean of items 1, 3, 4**
   - **Attentiveness subscale (SA-6): Mean of items 2, 5, 6**
   - **Resistance subscale: Mean of items 7-10**
   - **Concernedness subscale: Mean of items 11-13**
   - **Overall scale: Reverse the Resistance items (recode responses as 6-r), then take the mean of all 13 items.**
2. **Awareness Matrix calculation**
   - **Consists 13 questions which question one's level of awareness.**

The value of each option ranges from 1 to 5. The sum of the values is taken to compute the security score.

PHASE 2 / FUTURE WORK

1. **Pair employees with cybersecurity buddies based on their baseline assessment results.**
2. **Conduct regular evaluations to monitor the effectiveness of the program.**
3. **Analyze the outcomes of the program, including increased awareness and understanding of cybersecurity risks and best practices, improved security posture, and a reduction in the likelihood of successful social engineering attacks and other breaches.**

DATA ANALYSIS OF N=323 SURVEY RESPONSES, FEB. 7-MAR. 7, 2023



We can see there is a direct significance between the

1. **Security score and the amount of money being handled in a year.**
2. **Security score and Age**
3. **Security score and have earned a degree in the field of CS, CE, IS or IT, highest level of education**

We can also see that there is no significant association between

1. **Security score and Gender**
2. **Security score and experience handling sensitive data**
3. **Security score and received any formal cybersecurity training**

FIGURE 1: A one-way ANOVA found a significant difference exists among the campus units according to the mean Security Score: F=3.210; p<.001. The College of Computing & Informatics was the highest-scoring unit, followed by the School of Data Science and College of Business. The College of Arts & Architecture was the lowest-scoring unit. Larger error bars indicate few participants.

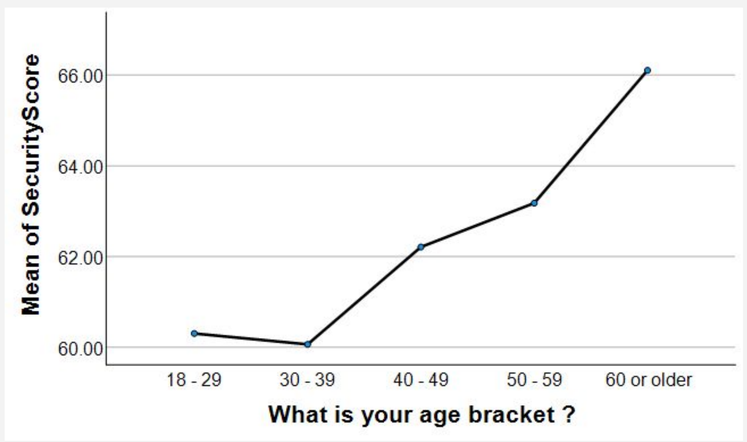


FIGURE 2: A one-way ANOVA found a significant difference exists among Age according to the mean Security Score: F=4.478; p=.002. As the age range increases, the score also increases. 60+ has the highest security score in our dataset.

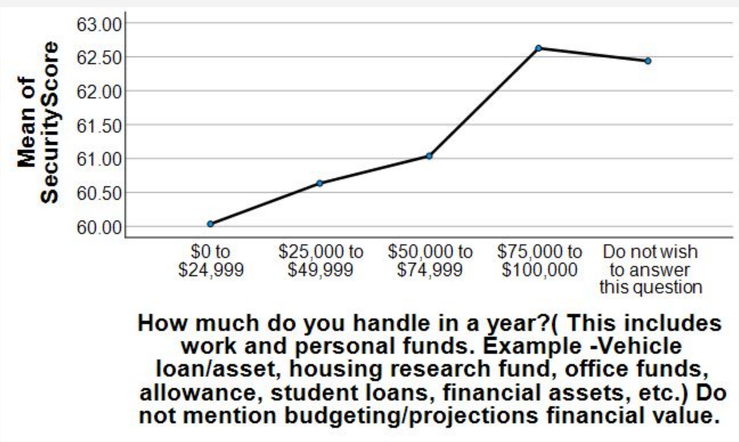


FIGURE 3: A one-way ANOVA found a significant difference exists among money handled in a year according to the mean Security Score: F=2.111; p=.079. As the amount of money being handled in a year increases, we note an increase in the mean score. $75k to $100k has the highest mean score, while $0 to $24,999 has the lowest.

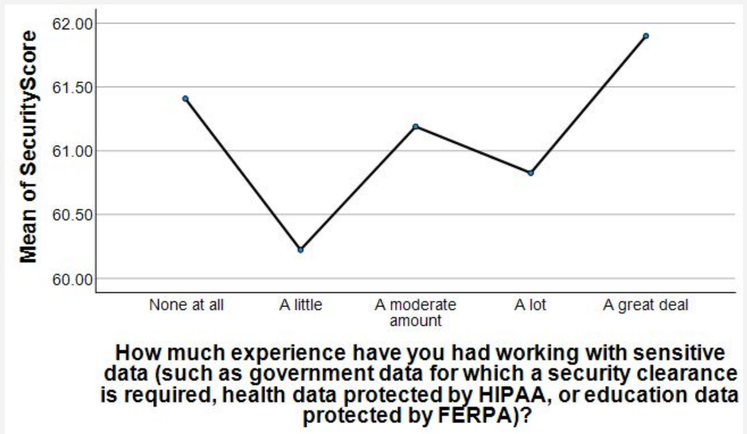


FIGURE 4: A one-way ANOVA did not find a significant difference exists among experience handling sensitive data to the mean Security Score: F=0.539; p=.707. In this dataset, there is no impact of experience handling sensitive data on the score.

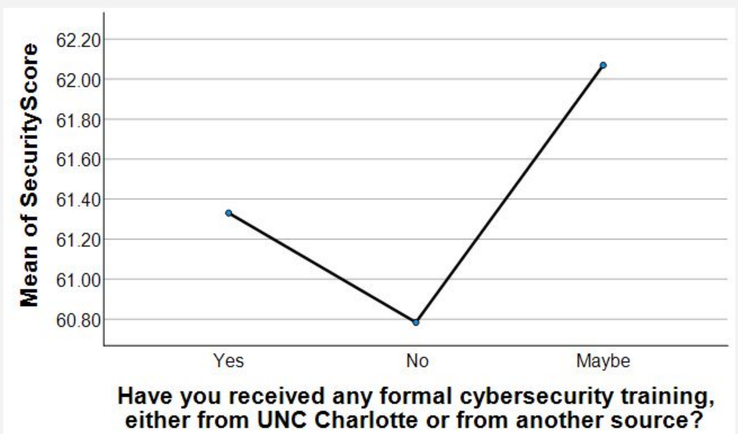


FIGURE 5: A one-way ANOVA did not find a significant difference exists among receiving a formal cybersecurity training according to the mean Security Score: F=0.540; p=.583. There is no impact of receiving formal cybersecurity training on the score.

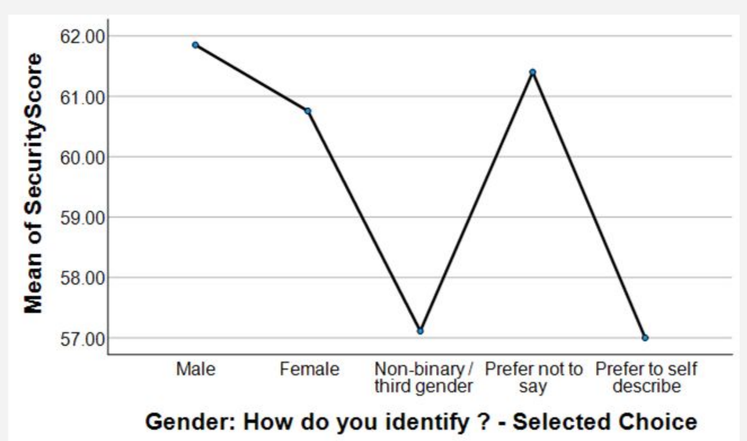


FIGURE 6: A one-way ANOVA did not find a significant difference exists among Gender according to the mean Security Score: F=1.339; p=.255. In other words, in our dataset, no association exists between Gender and the mean score.

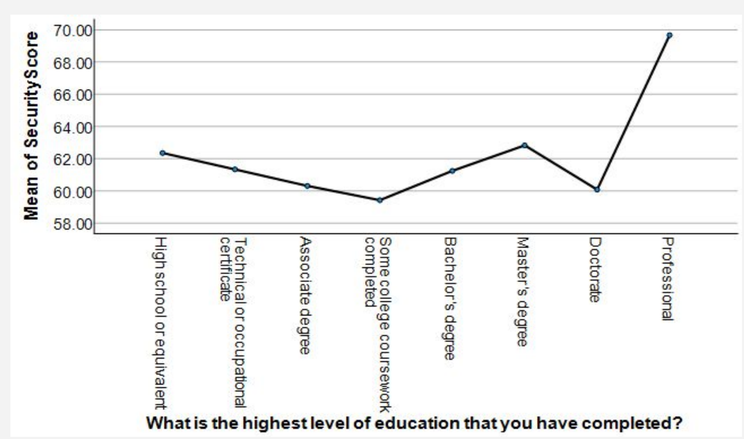


FIGURE 7: A one-way ANOVA found a significant difference exists among the Highest level of education according to the mean Security Score: F=2.298; p=.027. In our dataset, those reporting a professional degree have the highest mean score, while those reporting some college coursework completed have the lowest mean score.