Exposing the Bait: A Qualitative Look at the Impact of Autonomous Peer Communication to Enhance Organizational Phishing Detection

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Mayo Clinic is a nonprofit organization committed to providing expert, whole-person care to everyone who needs healing.

The Mayo Clinic mission is to inspire hope and contribute to health and well-being by providing the best care to every patient through integrated clinical practice, education and research.

Mayo Clinic Locations

Mayo Clinic's campus in Arizona

Mayo Clinic's campus in Florida

Mayo Clinic's campus in Minnesota

Mayo Clinic Health System

2017

Total Personnel: 63,134

Staff physicians and scientists: 4,729

Administrative and allied health staff (clinics and hospitals): 58,405

Patient care (*rounded*)

Total clinic patients: 1,300,000

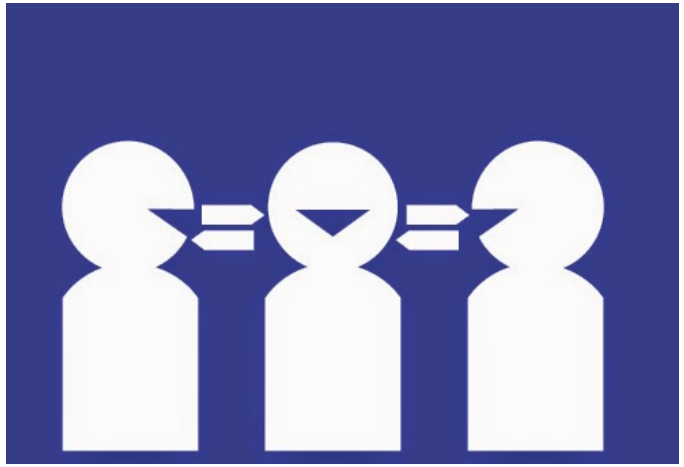
Hospital admissions: 128,500

Hospital days of patient care: 632,700

https://www.mayoclinic.org/about-mayo-clinic

Why are we here?

3rd Party Access

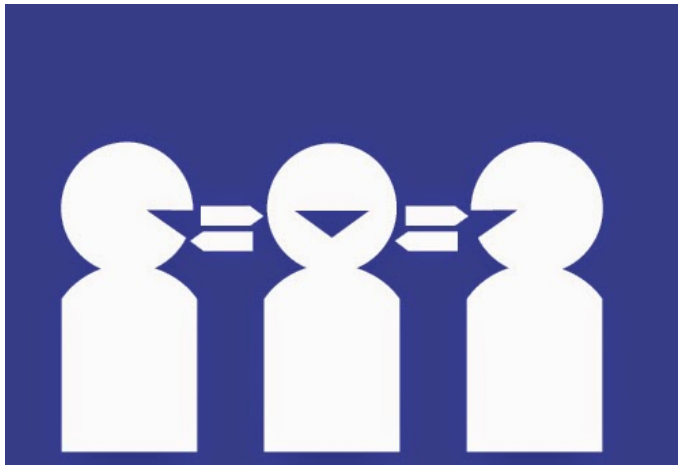


+Mobile Devices

Lack of Awareness

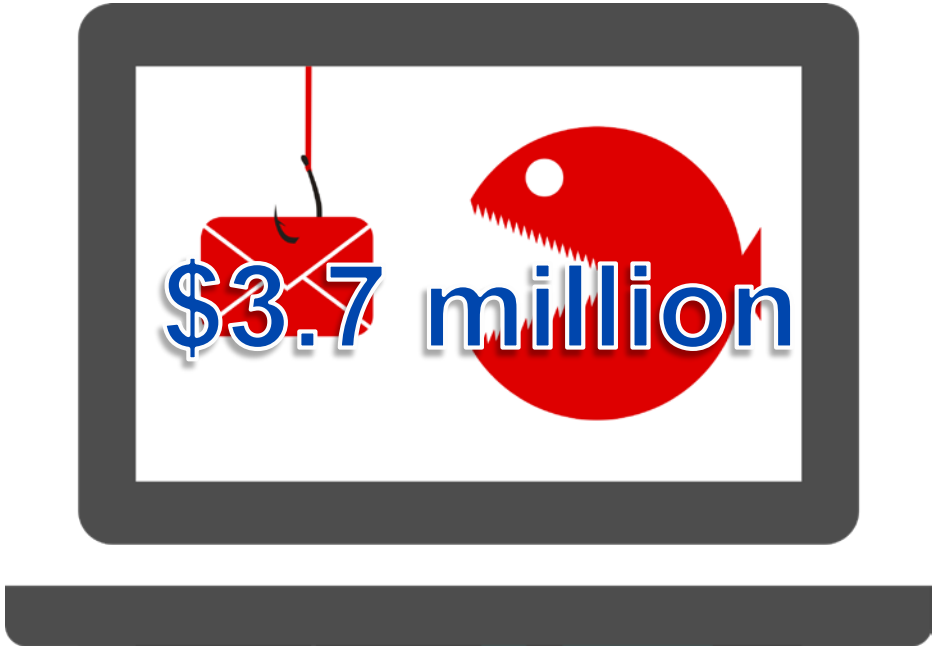
Top 3 Vulnerabilities to Organizations

-Deloitte, TMT Global Security Study, 2013

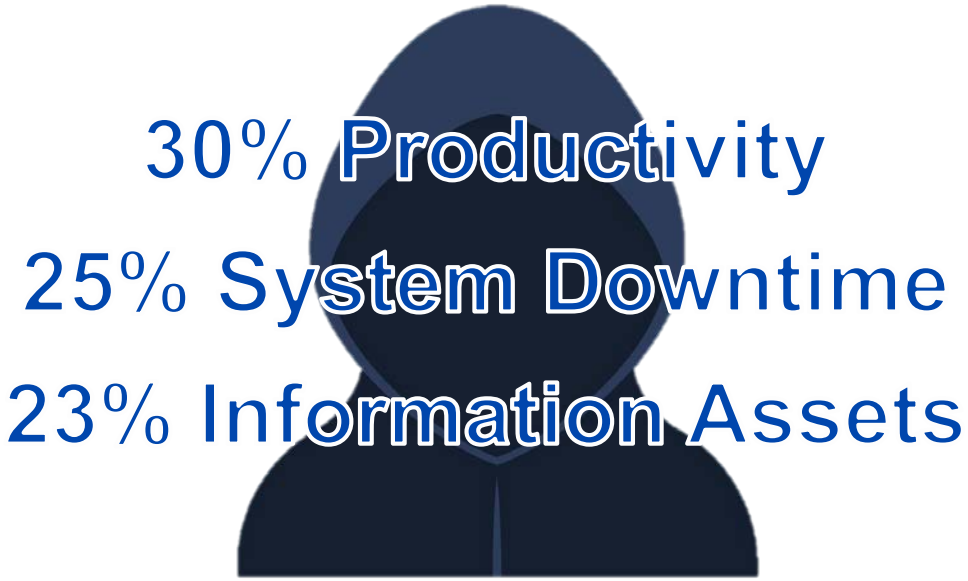


Human Component

Average Cost of a Phishing Attack to a 10k Employee Company



Largest Areas of Loss



-Ponemon Institute, “The 2017 State of Endpoint Security Risk Report,” 2018.

Technology + Human Solution

Education & Visual Recognition:
Phishing Simulation

Communication & Influence:
InfoSec Ambassador

By raising awareness, leading by example, distributing timely information to co-workers and reminding everyone of their role in keeping Mayo Clinic safe, InfoSec Ambassadors are champions of safe behaviors.

Mayo Clinic InfoSec Ambassadors

- 289 active ambassadors to date, enterprise-wide
  - 2015: 144
  - 2016: 281
  - 2017: 289
- 64% female; 36% male
- One year commitment
- 2-3 hours per month
- Low membership turnover rate

Newsletter

THE SCAN

Security Alerts

Lead by Example

InfoSec Ambassador Program Delivery

Security Ambassador Survey: 3 Year Program Feedback

- 125 held ambassadorship role since start of program
- 35 randomly selected
- Surveyed via RedCap

Example of Questions asked:

- *Why did you choose to become an InfoSec Ambassador?*
- *How do you measure your own success as an InfoSec Ambassador?*
- *What motivates you to continue fulfilling the InfoSec Ambassador role?*

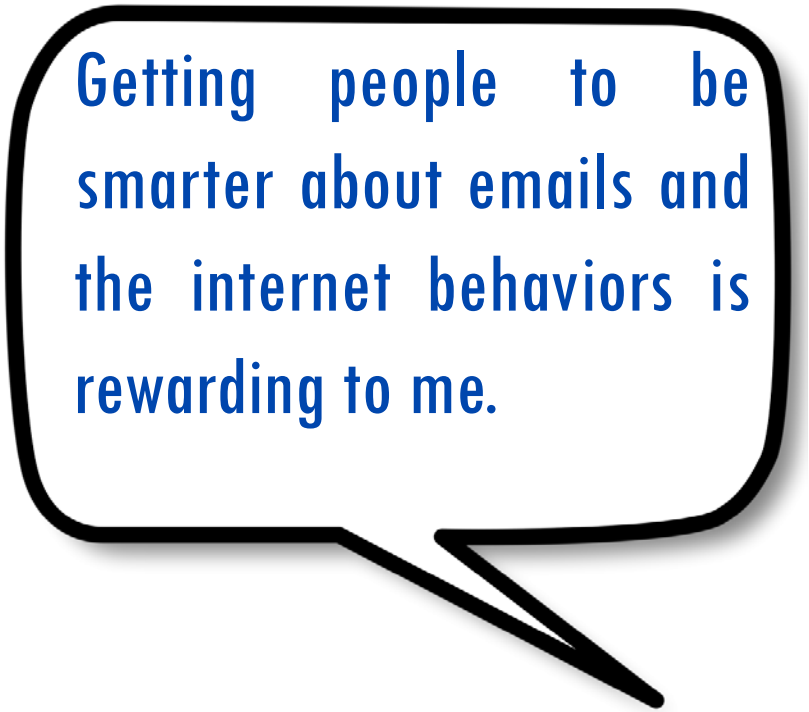
Quantifiable Findings

0% Hesitation to join program

75% Shared information ASAP

67% Perceived positive impact to organization

What ambassadors had to say:



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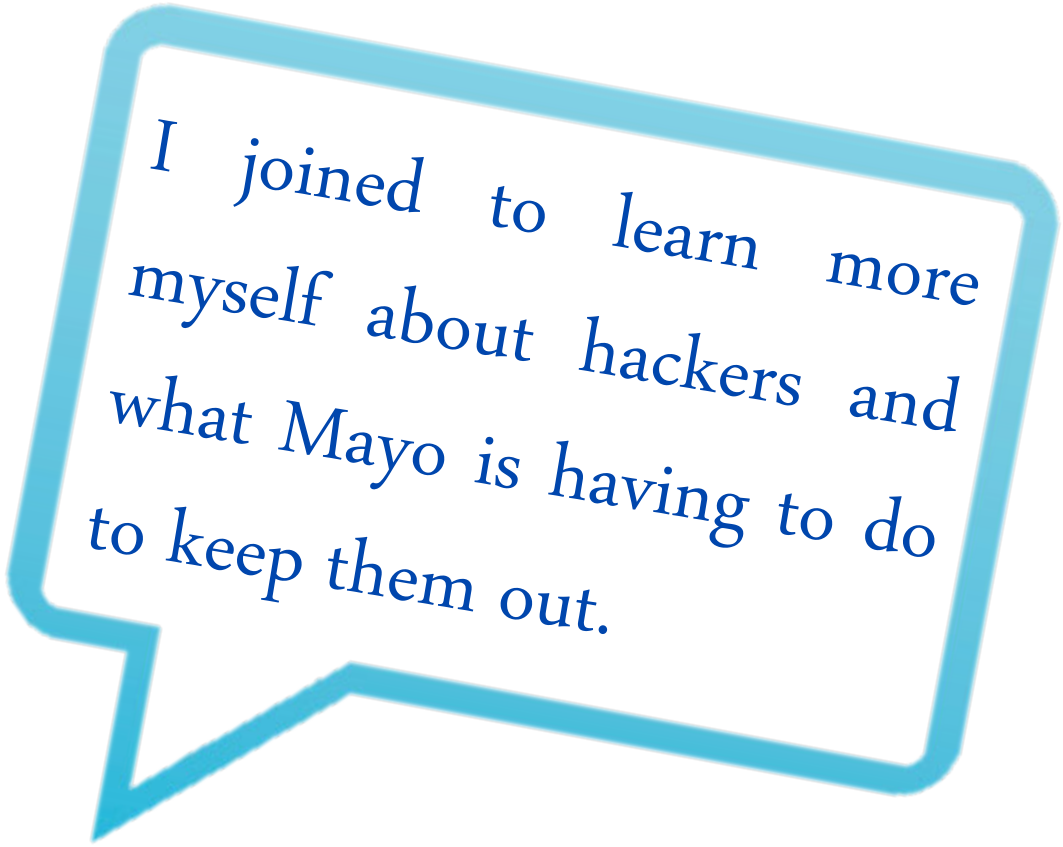


What ambassadors had to say:

I'm always looking for opportunities to share.

I had already been informally teaching info security to our department to help prevent them and Mayo from becoming victims. This provided a more formalized way to continue educating people and keeping them up to date.

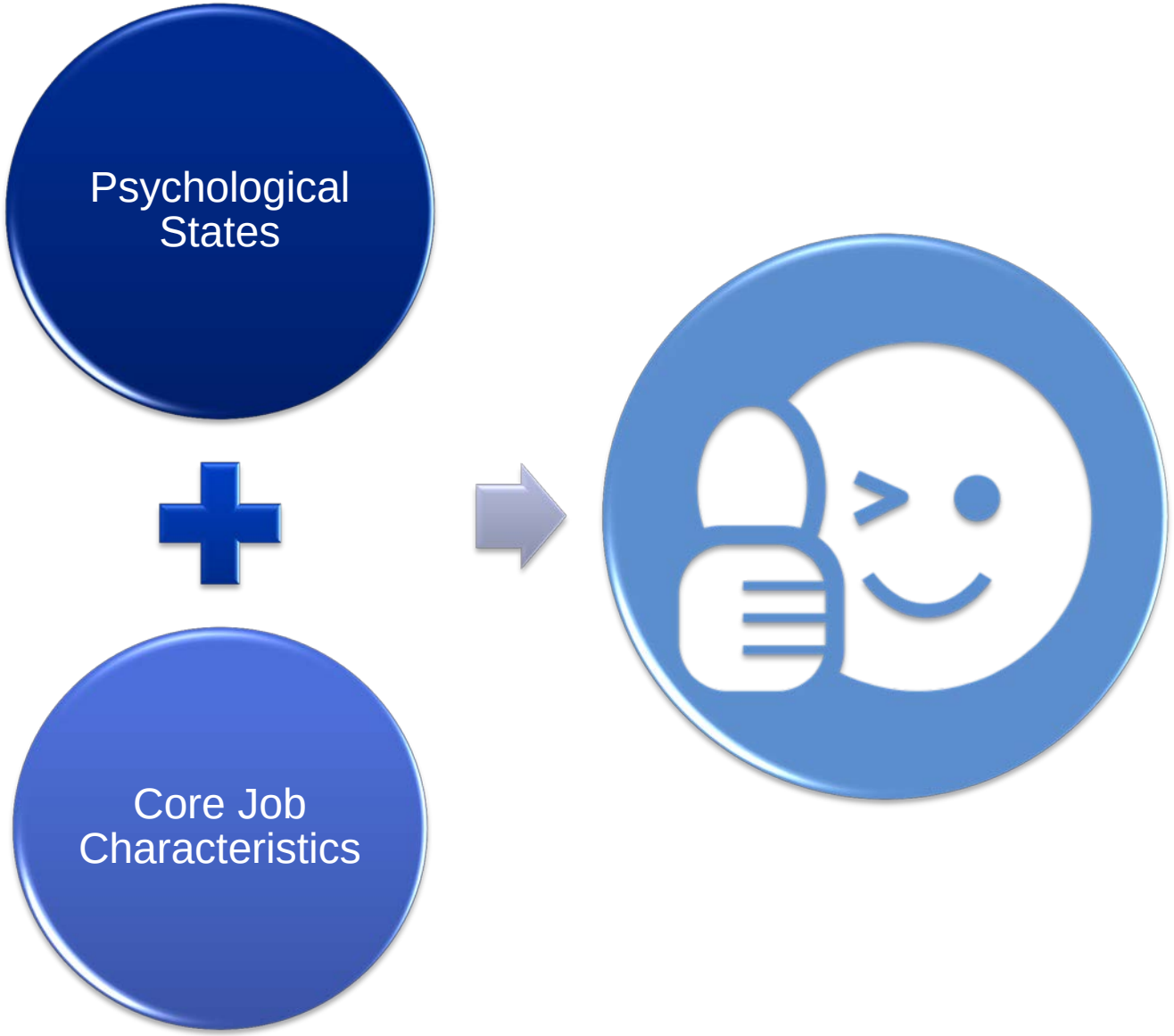
SURVEY CONCLUSION:

Ambassadors found their participation to be satisfying

What makes a job satisfying?

Job Characteristic Model

Richard Hackman & Greg Oldham, 1980


Psychological States
Core Job Characteristics

How do I achieve this?

3 Critical Psychological States

Meaningfulness of Work Performed	My contributions to the larger picture are valuable.
Personal Responsibility	I am accountable for the work being performed.
Knowledge of Results	I understand my level of work performance.

5 Core Job Characteristics

Meaningfulness of Work	Personal Responsibility	Knowledge of Results
• Task Variety • Task Identity • Task Impact	• Autonomy	• Performance Feedback

Satisfaction Outcomes

- High Internal Work Motivation
- High Satisfaction of Growth
- Job Satisfaction
- High Work Effectiveness
- Low Turnover… and Many More!

The Theory In Action
Did Behavior Adaption Occur?

Simulated Phishing Campaigns

2015: 6 Campaigns

63,831 Total Average Emails Sent

32.9% Reported Phish

2016: 8 Campaigns

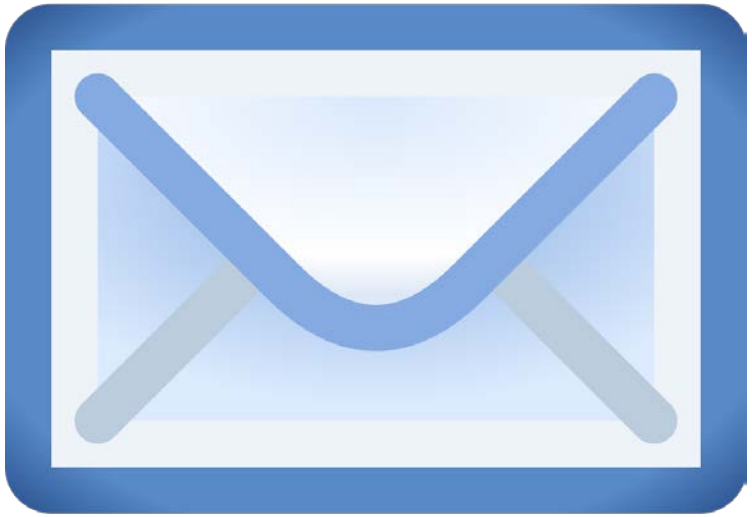
66,010 Total Average Emails Sent

44.4% Reported Phish

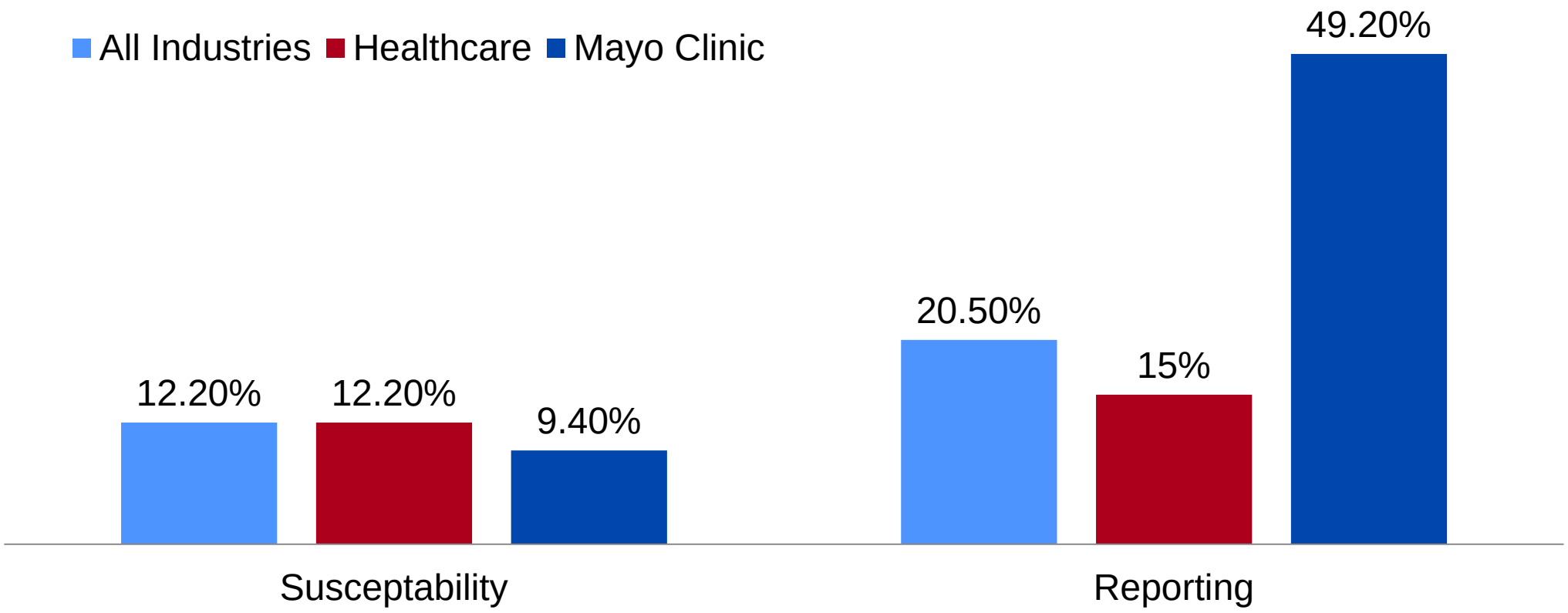
2017: 5 Campaigns

66,882 Total Average Emails Sent

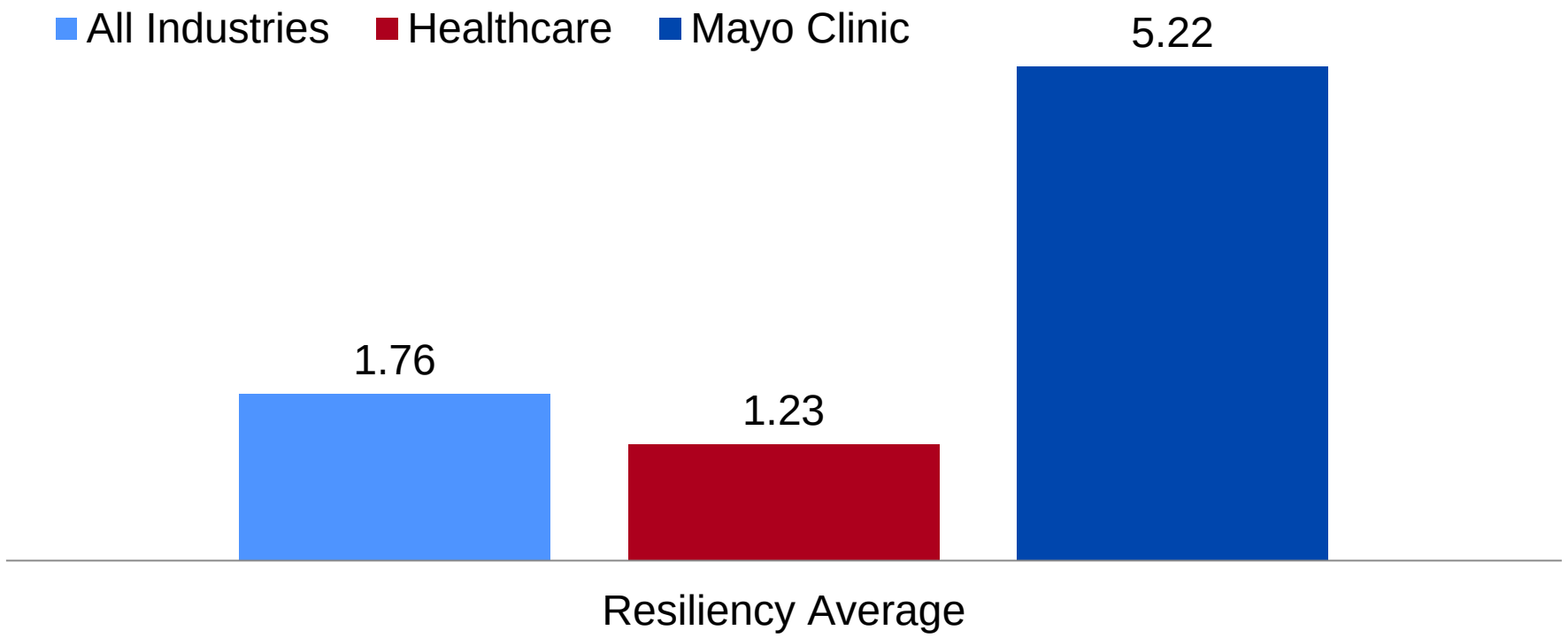
52.1% Reported Phish



2017 Comparative Analysis Averages



2017 Comparative Analysis: Resiliency



Resiliency: Ratio between users who report the phish vs those who fell susceptible to it

Behavior Change Achieved

Motivation

Satisfaction

Conversion

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