Protecting Information Assets

- Unit# 5 -

Creating a Security Aware Organization

Agenda

- In the News 001, 701
- Awareness and Training Controls
- Creating a Security Aware Organization
  - Awareness and Training InfoSec Controls
  - The Threat landscape
  - Employee risk
  - Training course content (examples)
- Test Taking Tip
- Quiz

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  - Training course content (examples)
- Test Taking Tip
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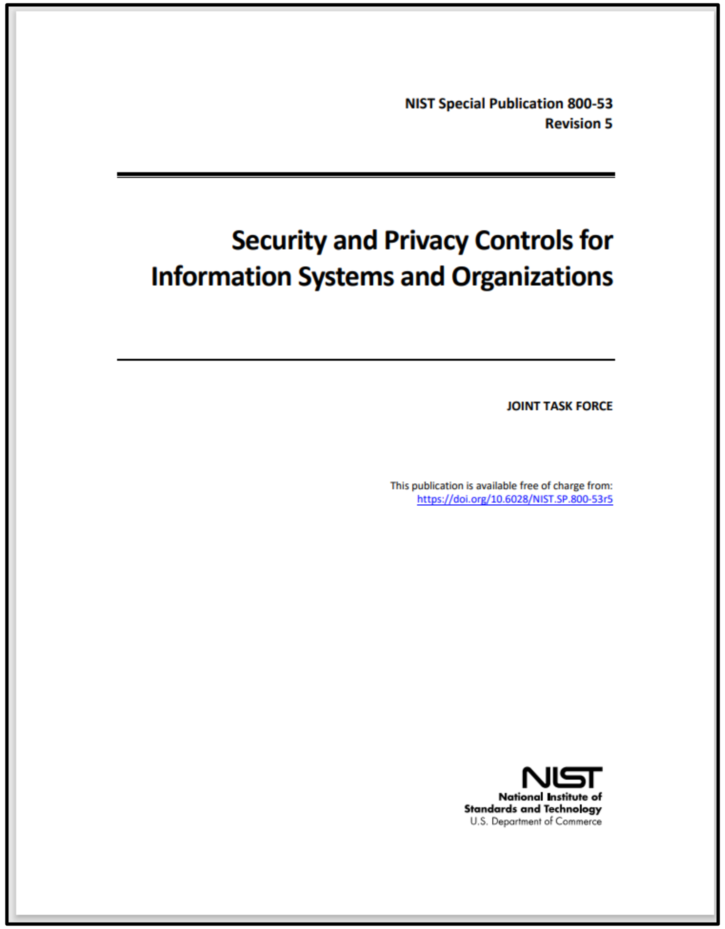

NIST Special Publication 800-53
Revision 5

Security and Privacy Controls for Information Systems and Organizations

JOINT TASK FORCE

This publication is available free of charge from:
https://doi.org/10.6028/NIST.SP.800-53r5

NIST
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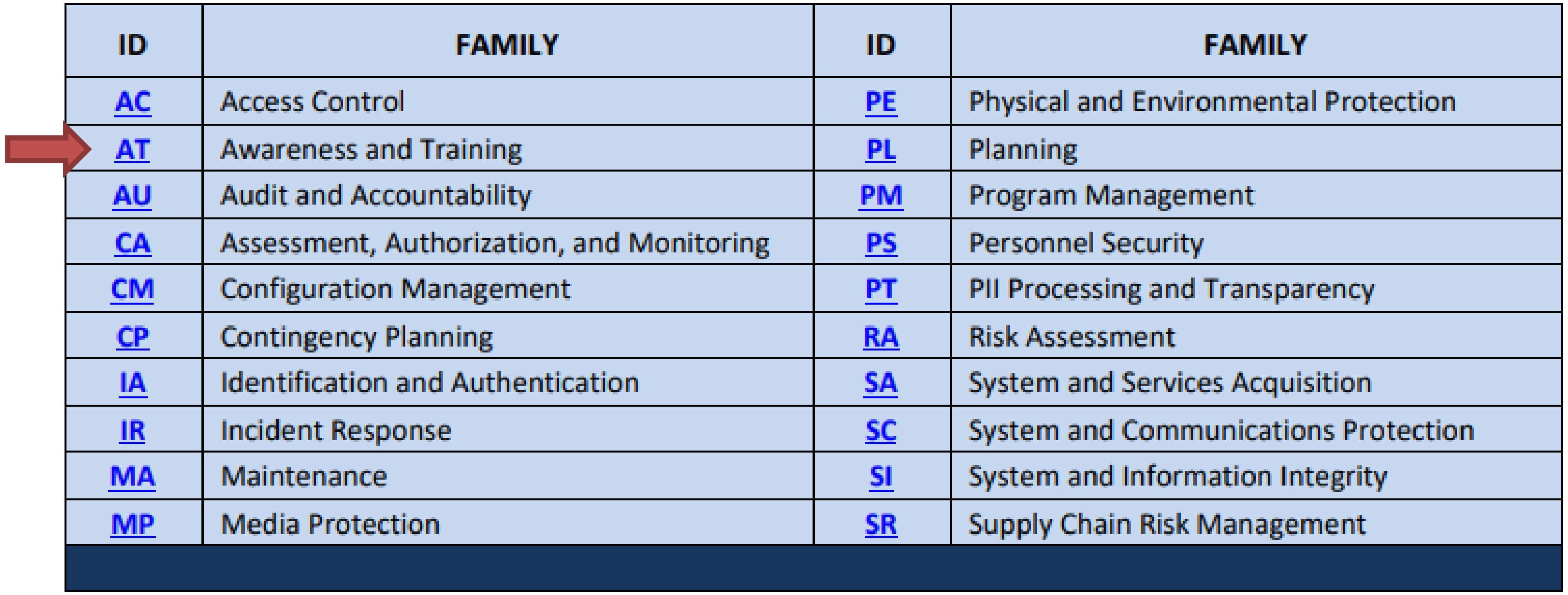
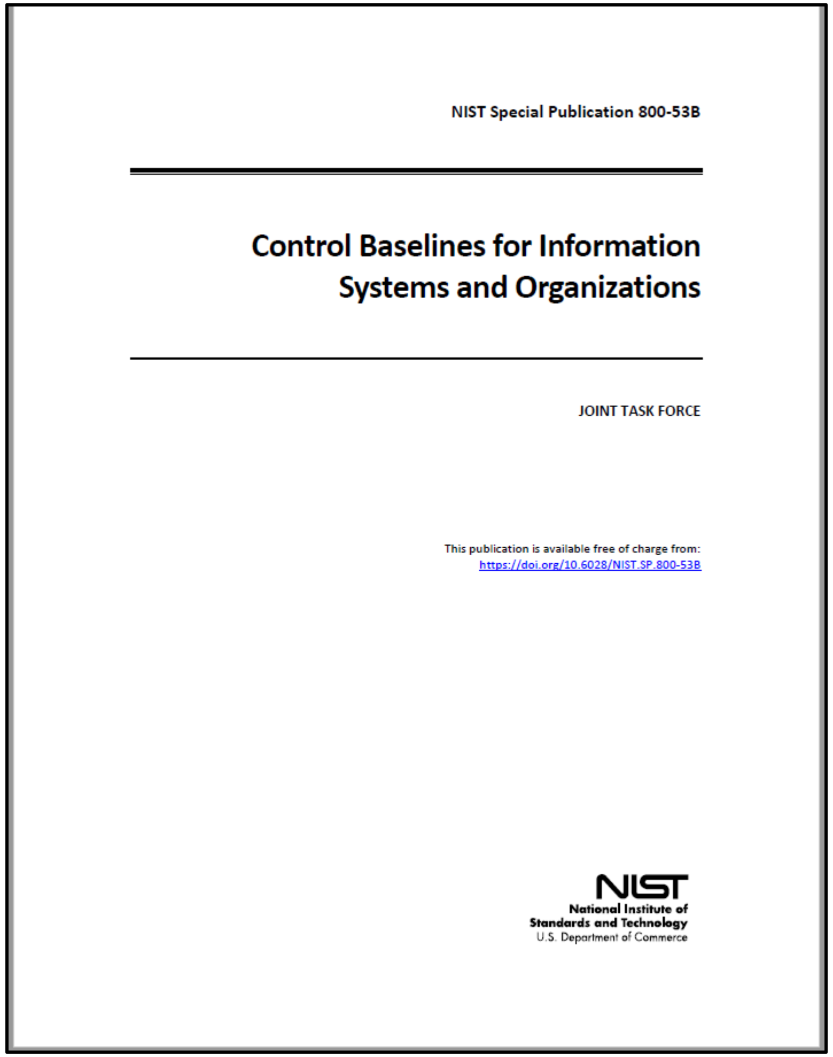
U.S. Department of Commerce

TABLE 1: SECURITY AND PRIVACY CONTROL FAMILIES



ID	FAMILY	ID	FAMILY
AC	Access Control	PE	Physical and Environmental Protection
AT	Awareness and Training	PL	Planning
AU	Audit and Accountability	PM	Program Management
CA	Assessment, Authorization, and Monitoring	PS	Personnel Security
CM	Configuration Management	PT	PII Processing and Transparency
CP	Contingency Planning	RA	Risk Assessment
IA	Identification and Authentication	SA	System and Services Acquisition
IR	Incident Response	SC	System and Communications Protection
MA	Maintenance	SI	System and Information Integrity
MP	Media Protection	SR	Supply Chain Risk Management

Note: NIST SP 800-53x InfoSec control documents can be found on the NIST website:
SP 800-53, 800-53A, and 800-53B



NIST Special Publication 800-53B

Control Baselines for Information Systems and Organizations

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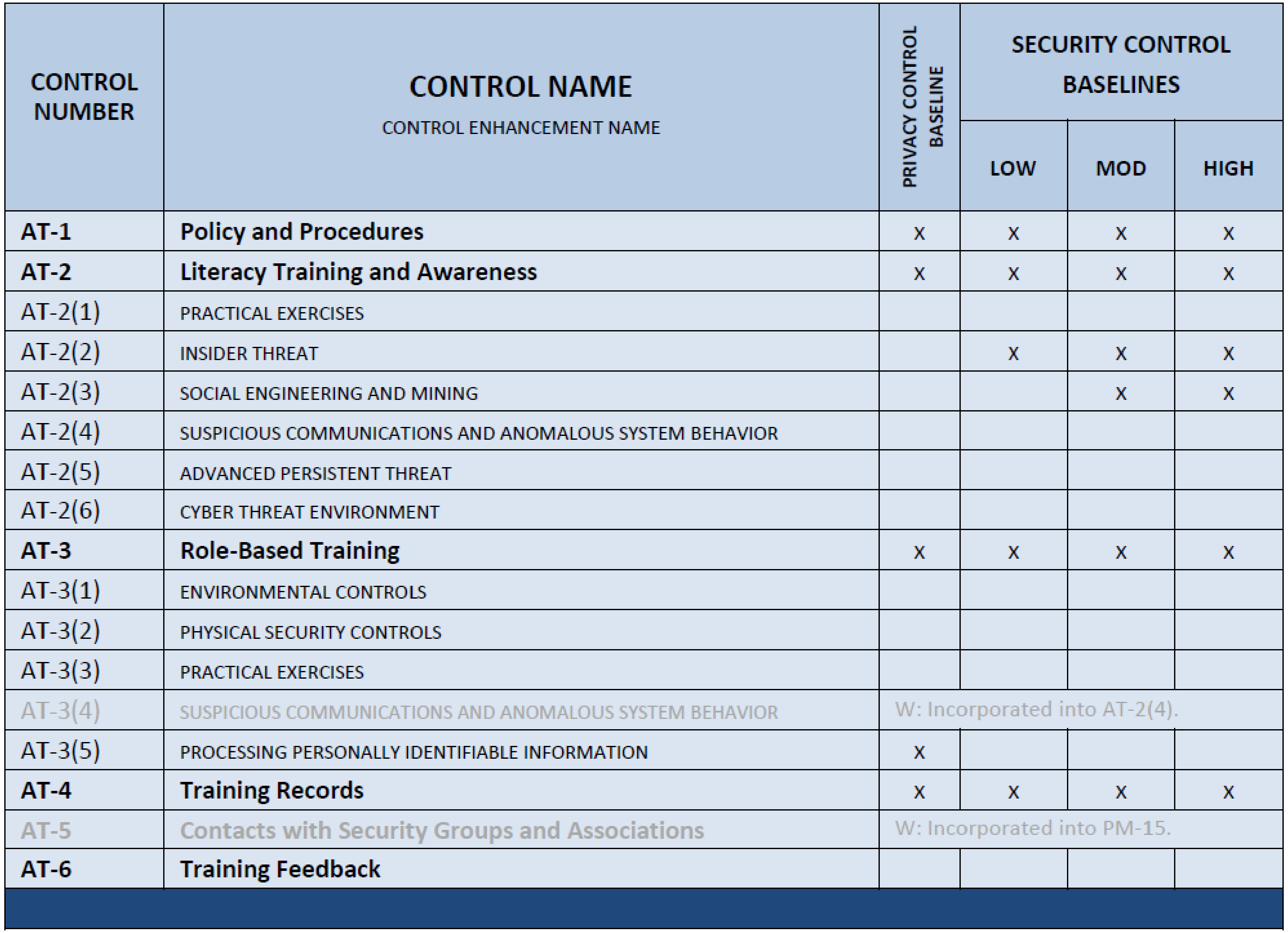
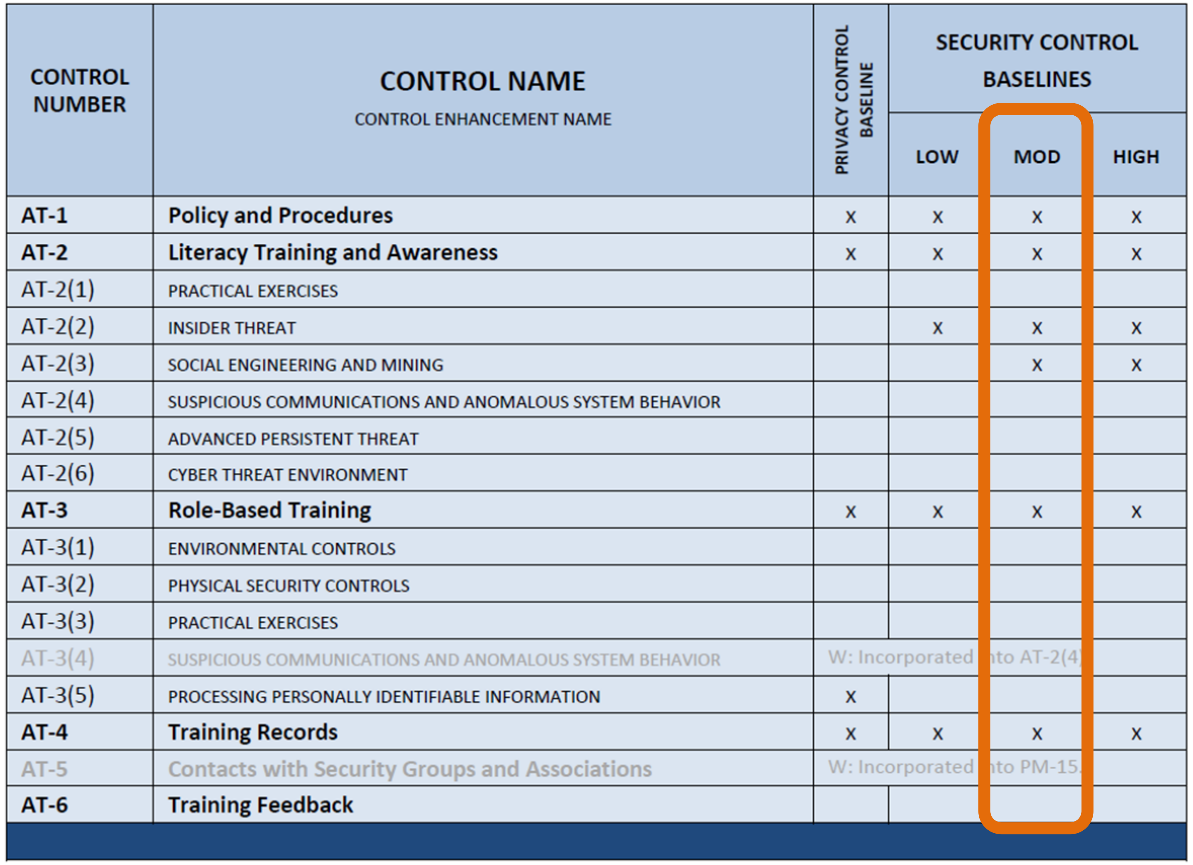
TABLE 3-2: AWARENESS AND TRAINING FAMILY



CONTROL NUMBER	CONTROL NAME CONTROL ENHANCEMENT NAME	PRIVACY CONTROL BASELINE	SECURITY CONTROL BASELINES		
			LOW	MOD	HIGH
AT-1	**Policy and Procedures**	x	x	x	x
AT-2	**Literacy Training and Awareness**	x	x	x	x
AT-2(1)	PRACTICAL EXERCISES				
AT-2(2)	INSIDER THREAT		x	x	x
AT-2(3)	SOCIAL ENGINEERING AND MINING			x	x
AT-2(4)	SUSPICIOUS COMMUNICATIONS AND ANOMALOUS SYSTEM BEHAVIOR				
AT-2(5)	ADVANCED PERSISTENT THREAT				
AT-2(6)	CYBER THREAT ENVIRONMENT				
AT-3	**Role-Based Training**	x	x	x	x
AT-3(1)	ENVIRONMENTAL CONTROLS				
AT-3(2)	PHYSICAL SECURITY CONTROLS				
AT-3(3)	PRACTICAL EXERCISES				
AT-3(4)	SUSPICIOUS COMMUNICATIONS AND ANOMALOUS SYSTEM BEHAVIOR	W: Incorporated into AT-2(4).			
AT-3(5)	PROCESSING PERSONALLY IDENTIFIABLE INFORMATION	x			
AT-4	**Training Records**	x	x	x	x
AT-5	**Contacts with Security Groups and Associations**	W: Incorporated into PM-15.			
AT-6	**Training Feedback**				

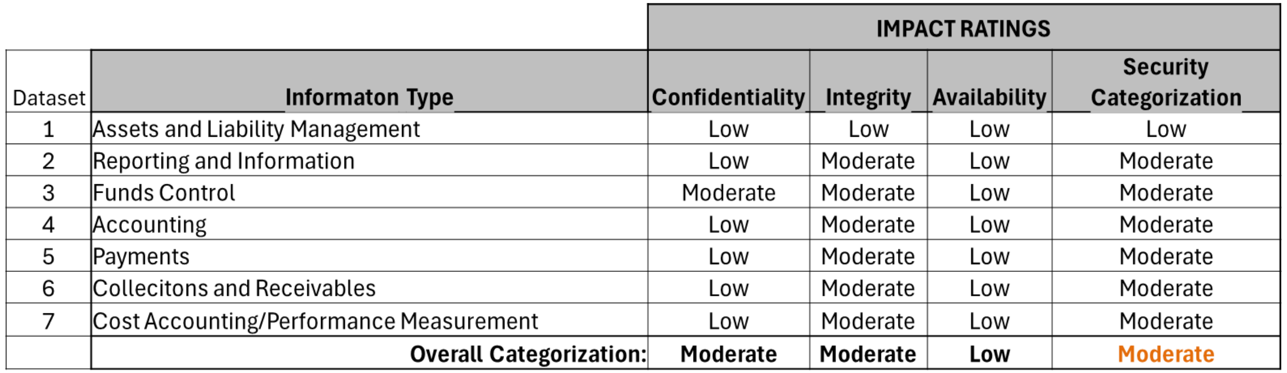
https://nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.800-53B.pdf

TABLE 3-2: AWARENESS AND TRAINING FAMILY



CONTROL NUMBER	CONTROL NAME CONTROL ENHANCEMENT NAME	PRIVACY CONTROL BASELINE	SECURITY CONTROL BASELINES		
			LOW	MOD	HIGH
AT-1	**Policy and Procedures**	x	x	x	x
AT-2	**Literacy Training and Awareness**	x	x	x	x
AT-2(1)	PRACTICAL EXERCISES				
AT-2(2)	INSIDER THREAT		x	x	x
AT-2(3)	SOCIAL ENGINEERING AND MINING			x	x
AT-2(4)	SUSPICIOUS COMMUNICATIONS AND ANOMALOUS SYSTEM BEHAVIOR				
AT-2(5)	ADVANCED PERSISTENT THREAT				
AT-2(6)	CYBER THREAT ENVIRONMENT				
AT-3	**Role-Based Training**	x	x	x	x
AT-3(1)	ENVIRONMENTAL CONTROLS				
AT-3(2)	PHYSICAL SECURITY CONTROLS				
AT-3(3)	PRACTICAL EXERCISES				
AT-3(4)	SUSPICIOUS COMMUNICATIONS AND ANOMALOUS SYSTEM BEHAVIOR	W: Incorporated into AT-2(4)			
AT-3(5)	PROCESSING PERSONALLY IDENTIFIABLE INFORMATION	x			
AT-4	**Training Records**	x	x	x	x
AT-5	Contacts with Security Groups and Associations	W: Incorporated into PM-15.			
AT-6	**Training Feedback**				

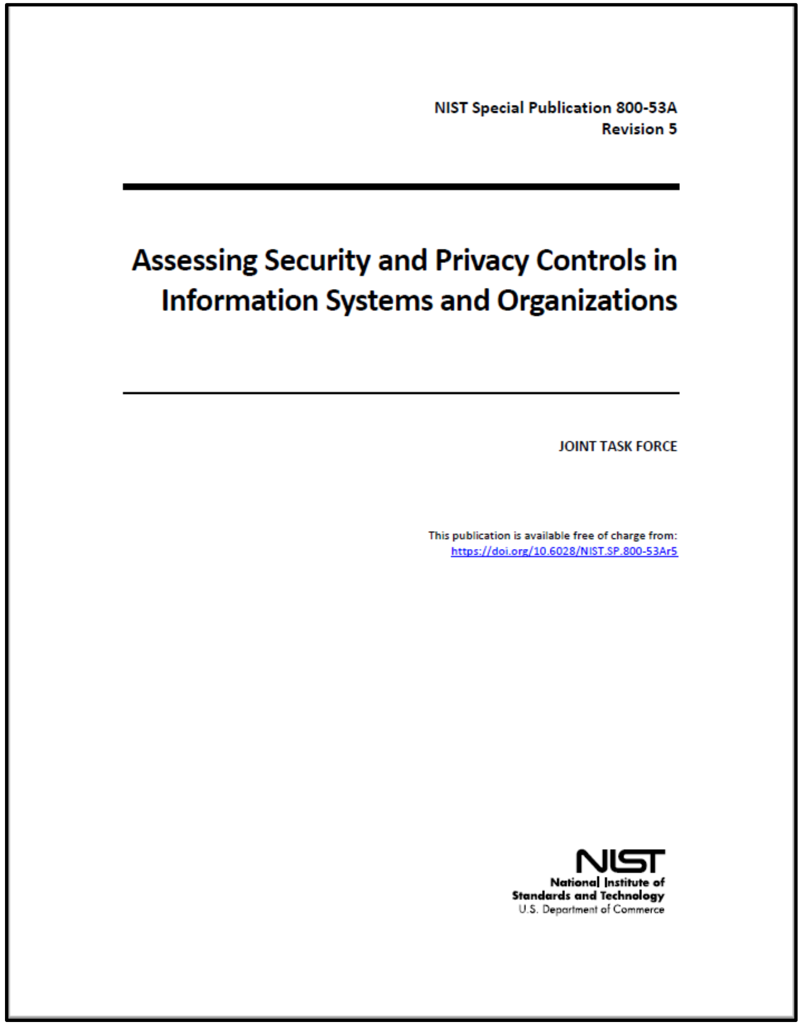
Remember the security categorization of the Financial Information Management System?



		IMPACT RATINGS			
Dataset	**Informaton Type**	**Confidentiality**	**Integrity**	**Availability**	**Security Categorization**
1	Assets and Liability Management	Low	Low	Low	Low
2	Reporting and Information	Low	Moderate	Low	Moderate
3	Funds Control	Moderate	Moderate	Low	Moderate
4	Accounting	Low	Moderate	Low	Moderate
5	Payments	Low	Moderate	Low	Moderate
6	Collecitons and Receivables	Low	Moderate	Low	Moderate
7	Cost Accounting/Performance Measurement	Low	Moderate	Low	Moderate
	Overall Categorization:	**Moderate**	**Moderate**	**Low**	**Moderate**

The overall security categorization: Moderate

How would you audit these risk controls?



NIST Special Publication 800-53A
Revision 5

Assessing Security and Privacy Controls in Information Systems and Organizations

JOINT TASK FORCE

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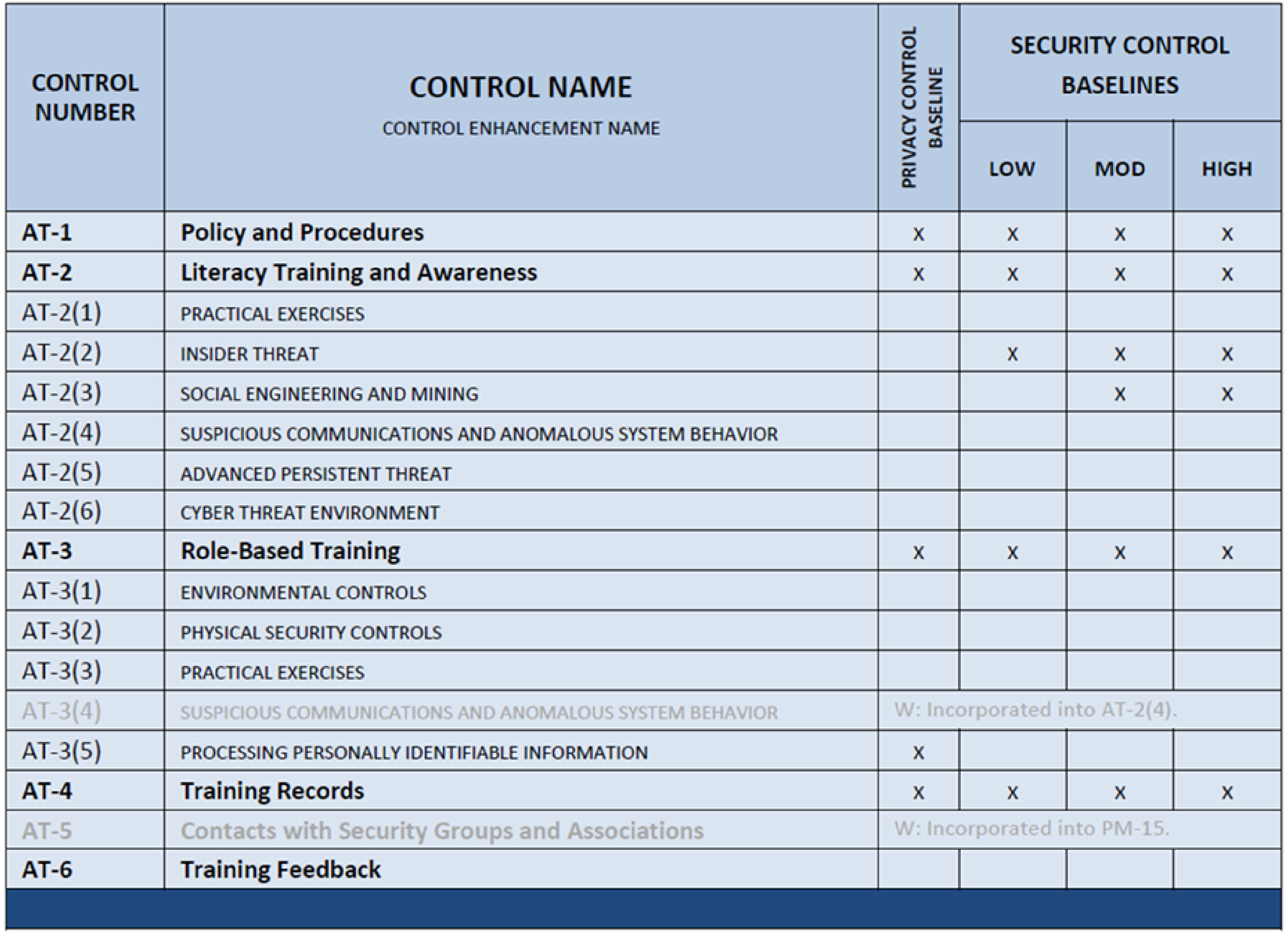
National Institute of Standards and Technology
U.S. Department of Commerce

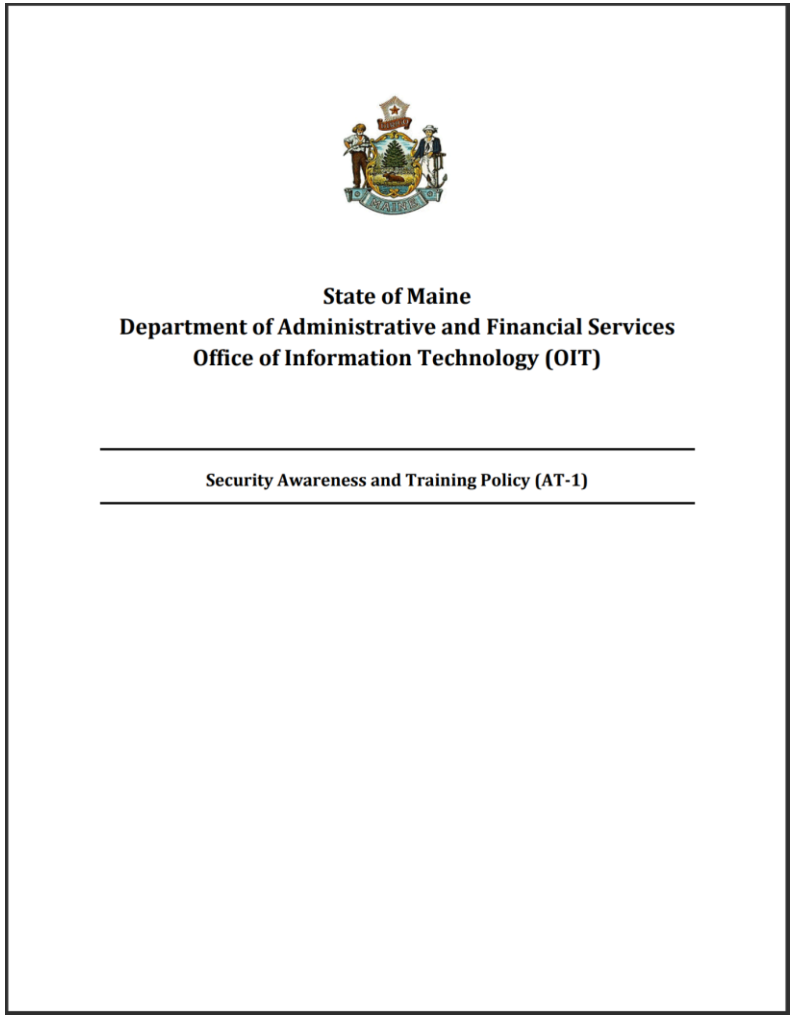
TABLE 3-2: AWARENESS AND TRAINING FAMILY



CONTROL NUMBER	CONTROL NAME CONTROL ENHANCEMENT NAME	PRIVACY CONTROL BASELINE	SECURITY CONTROL BASELINES		
			LOW	MOD	HIGH
AT-1	**Policy and Procedures**	x	x	x	x
AT-2	**Literacy Training and Awareness**	x	x	x	x
AT-2(1)	PRACTICAL EXERCISES				
AT-2(2)	INSIDER THREAT		x	x	x
AT-2(3)	SOCIAL ENGINEERING AND MINING			x	x
AT-2(4)	SUSPICIOUS COMMUNICATIONS AND ANOMALOUS SYSTEM BEHAVIOR				
AT-2(5)	ADVANCED PERSISTENT THREAT				
AT-2(6)	CYBER THREAT ENVIRONMENT				
AT-3	**Role-Based Training**	x	x	x	x
AT-3(1)	ENVIRONMENTAL CONTROLS				
AT-3(2)	PHYSICAL SECURITY CONTROLS				
AT-3(3)	PRACTICAL EXERCISES				
AT-3(4)	SUSPICIOUS COMMUNICATIONS AND ANOMALOUS SYSTEM BEHAVIOR	W: Incorporated into AT-2(4).			
AT-3(5)	PROCESSING PERSONALLY IDENTIFIABLE INFORMATION	x			
AT-4	**Training Records**	x	x	x	x
AT-5	Contacts with Security Groups and Associations	W: Incorporated into PM-15.			
AT-6	**Training Feedback**				

Exercise:

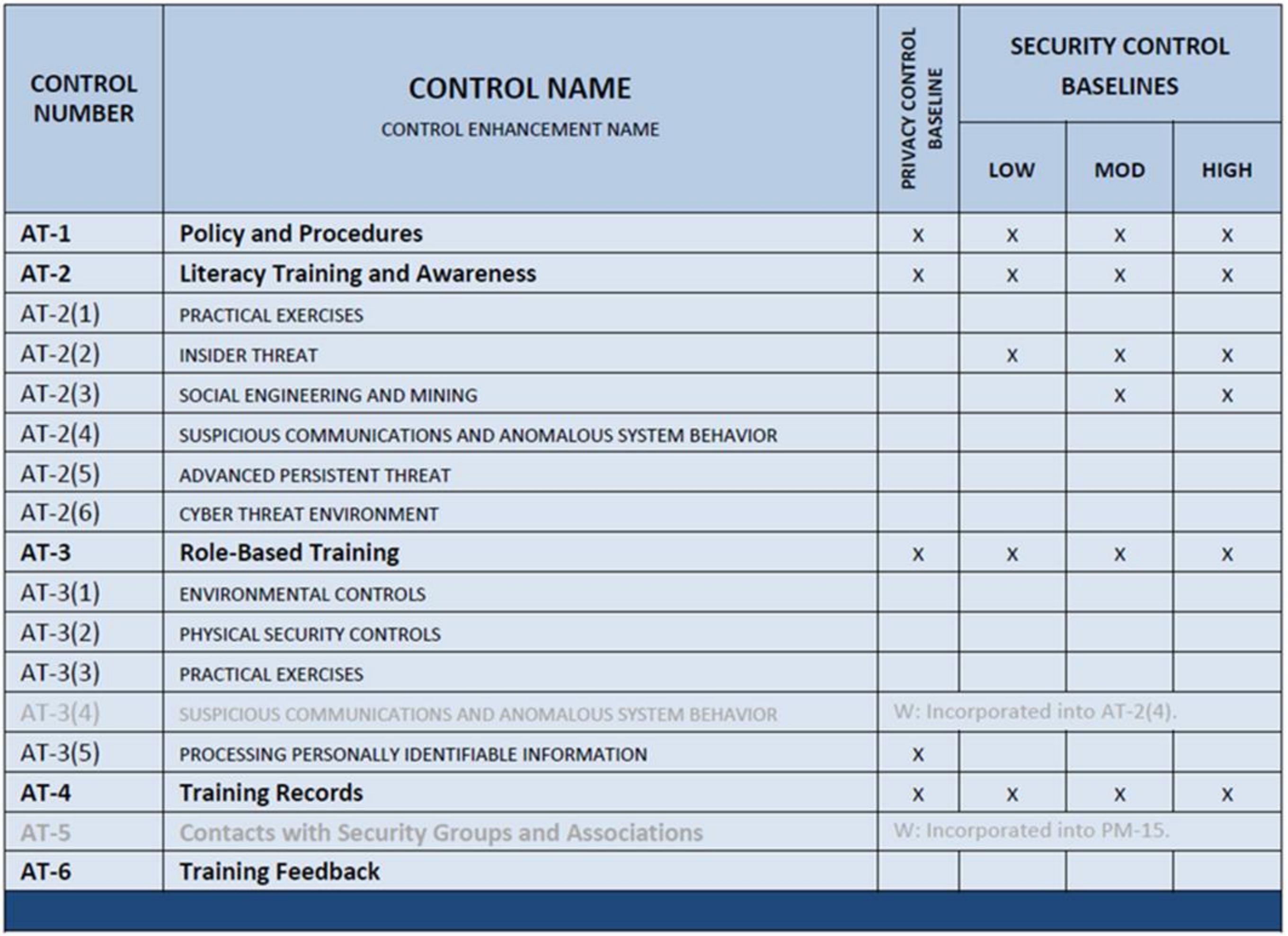
- ***Find an audit control checklist for AT-1…***



State of Maine
Department of Administrative and Financial Services
Office of Information Technology (OIT)

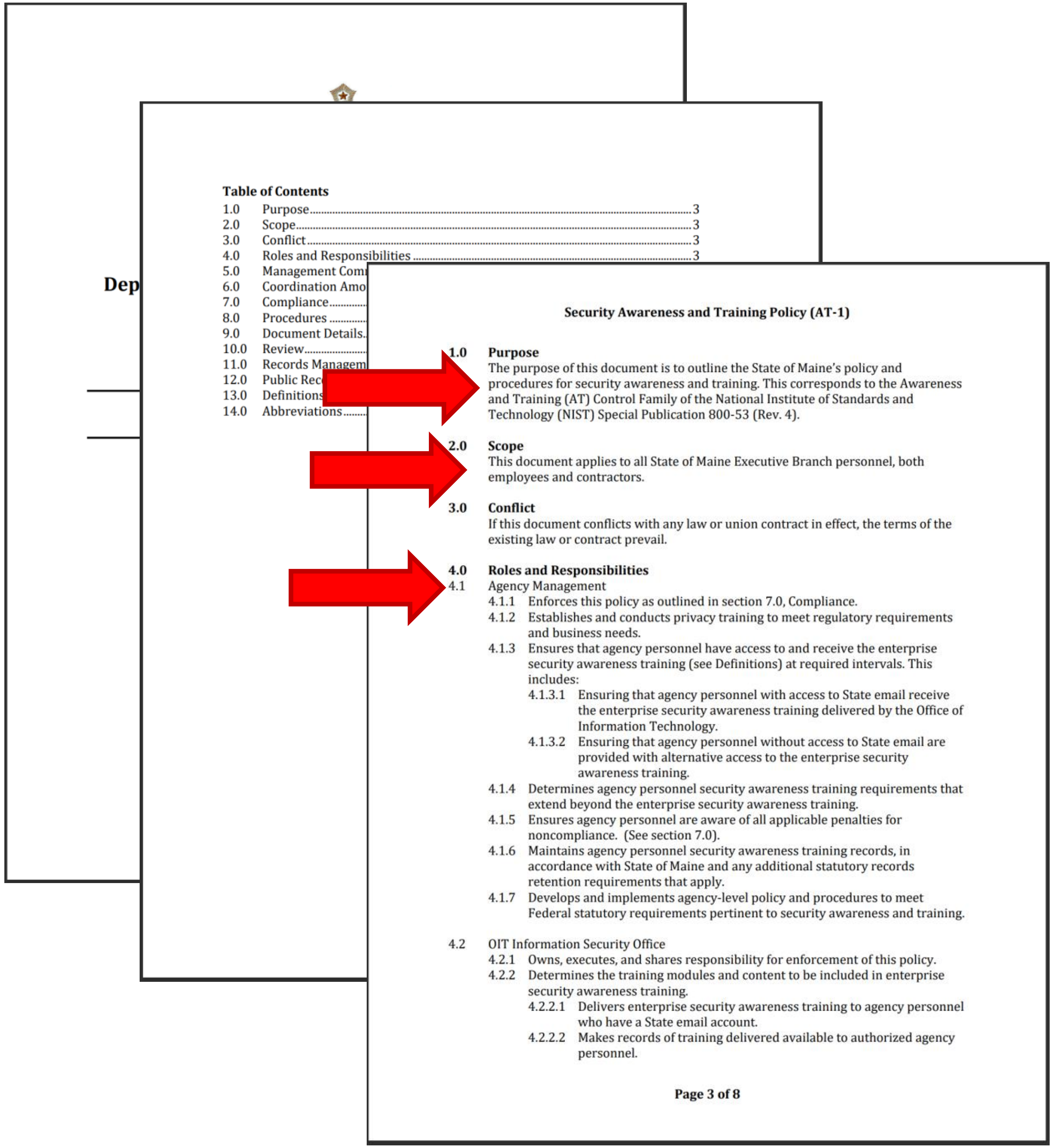
Security Awareness and Training Policy (AT-1)

TABLE 3-2: AWARENESS AND TRAINING FAMILY



CONTROL NUMBER	CONTROL NAME CONTROL ENHANCEMENT NAME	PRIVACY CONTROL BASELINE	SECURITY CONTROL BASELINES		
			LOW	MOD	HIGH
AT-1	**Policy and Procedures**	x	x	x	x
AT-2	**Literacy Training and Awareness**	x	x	x	x
AT-2(1)	PRACTICAL EXERCISES				
AT-2(2)	INSIDER THREAT		x	x	x
AT-2(3)	SOCIAL ENGINEERING AND MINING			x	x
AT-2(4)	SUSPICIOUS COMMUNICATIONS AND ANOMALOUS SYSTEM BEHAVIOR				
AT-2(5)	ADVANCED PERSISTENT THREAT				
AT-2(6)	CYBER THREAT ENVIRONMENT				
AT-3	**Role-Based Training**	x	x	x	x
AT-3(1)	ENVIRONMENTAL CONTROLS				
AT-3(2)	PHYSICAL SECURITY CONTROLS				
AT-3(3)	PRACTICAL EXERCISES				
AT-3(4)	SUSPICIOUS COMMUNICATIONS AND ANOMALOUS SYSTEM BEHAVIOR	W: Incorporated into AT-2(4).			
AT-3(5)	PROCESSING PERSONALLY IDENTIFIABLE INFORMATION	x			
AT-4	**Training Records**	x	x	x	x
AT-5	Contacts with Security Groups and Associations	W: Incorporated into PM-15.			
AT-6	**Training Feedback**				

AT-01	POLICY AND PROCEDURES
	ASSESSMENT OBJECTIVE: *Determine if:*
AT-01_ODP[01]	*personnel or roles to whom the awareness and training policy is to be disseminated is/are defined;*
AT-01_ODP[02]	*personnel or roles to whom the awareness and training procedures are to be disseminated is/are defined;*
AT-01_ODP[03]	*one or more of the following PARAMETER VALUES is/are selected: {organization-level; mission/business process-level; system-level};*
AT-01_ODP[04]	*an official to manage the awareness and training policy and procedures is defined;*
AT-01_ODP[05]	*the frequency at which the current awareness and training policy is reviewed and updated is defined;*
AT-01_ODP[06]	*events that would require the current awareness and training policy to be reviewed and updated are defined;*
AT-01_ODP[07]	*the frequency at which the current awareness and training procedures are reviewed and updated is defined;*
AT-01_ODP[08]	*events that would require procedures to be reviewed and updated are defined;*
AT-01a.[01]	an awareness and training policy is developed and documented;
AT-01a.[02]	the awareness and training policy is disseminated to ***<AT-01_ODP[01] personnel or roles>***;
AT-01a.[03]	awareness and training procedures to facilitate the implementation of the awareness and training policy and associated access controls are developed and documented;
AT-01a.[04]	the awareness and training procedures are disseminated to ***<AT-01_ODP[02] personnel or roles>***.
AT-01a.01(a)[01]	the ***<AT-01_ODP[03] SELECTED PARAMETER VALUE(S)>*** awareness and training policy addresses purpose;
AT-01a.01(a)[02]	the ***<AT-01_ODP[03] SELECTED PARAMETER VALUE(S)>*** awareness and training policy addresses scope;
AT-01a.01(a)[03]	the ***<AT-01_ODP[03] SELECTED PARAMETER VALUE(S)>*** awareness and training policy addresses roles;
AT-01a.01(a)[04]	the ***<AT-01_ODP[03] SELECTED PARAMETER VALUE(S)>*** awareness and training policy addresses responsibilities;
AT-01a.01(a)[05]	the ***<AT-01_ODP[03] SELECTED PARAMETER VALUE(S)>*** awareness and training policy addresses management commitment;
AT-01a.01(a)[06]	the ***<AT-01_ODP[03] SELECTED PARAMETER VALUE(S)>*** awareness and training policy addresses coordination among organizational entities;
AT-01a.01(a)[07]	the ***<AT-01_ODP[03] SELECTED PARAMETER VALUE(S)>*** awareness and training policy addresses compliance; and



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Security Awareness and Training Policy (AT-1)

1.0 Purpose

The purpose of this document is to outline the State of Maine's policy and procedures for security awareness and training. This corresponds to the Awareness and Training (AT) Control Family of the National Institute of Standards and Technology (NIST) Special Publication 800-53 (Rev. 4).

2.0 Scope

This document applies to all State of Maine Executive Branch personnel, both employees and contractors.

3.0 Conflict

If this document conflicts with any law or union contract in effect, the terms of the existing law or contract prevail.

4.0 Roles and Responsibilities

4.1 Agency Management

4.1.1 Enforces this policy as outlined in section 7.0, Compliance.

4.1.2 Establishes and conducts privacy training to meet regulatory requirements and business needs.

4.1.3 Ensures that agency personnel have access to and receive the enterprise security awareness training (see Definitions) at required intervals. This includes:

4.1.3.1 Ensuring that agency personnel with access to State email receive the enterprise security awareness training delivered by the Office of Information Technology.

4.1.3.2 Ensuring that agency personnel without access to State email are provided with alternative access to the enterprise security awareness training.

4.1.4 Determines agency personnel security awareness training requirements that extend beyond the enterprise security awareness training.

4.1.5 Ensures agency personnel are aware of all applicable penalties for noncompliance. (See section 7.0).

4.1.6 Maintains agency personnel security awareness training records, in accordance with State of Maine and any additional statutory records retention requirements that apply.

4.1.7 Develops and implements agency-level policy and procedures to meet Federal statutory requirements pertinent to security awareness and training.

4.2 OIT Information Security Office

4.2.1 Owns, executes, and shares responsibility for enforcement of this policy.

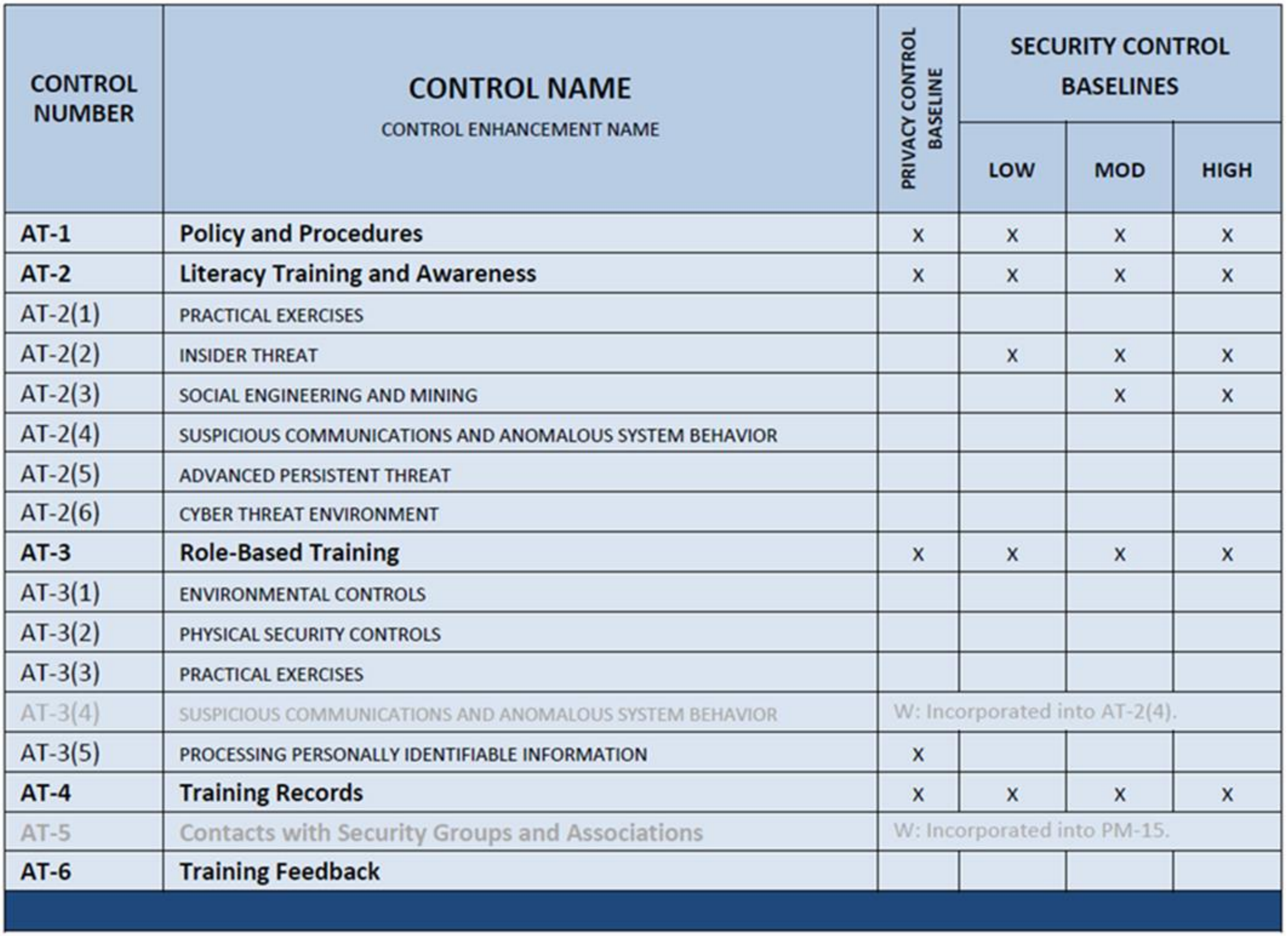
4.2.2 Determines the training modules and content to be included in enterprise security awareness training.

4.2.2.1 Delivers enterprise security awareness training to agency personnel who have a State email account.

4.2.2.2 Makes records of training delivered available to authorized agency personnel.

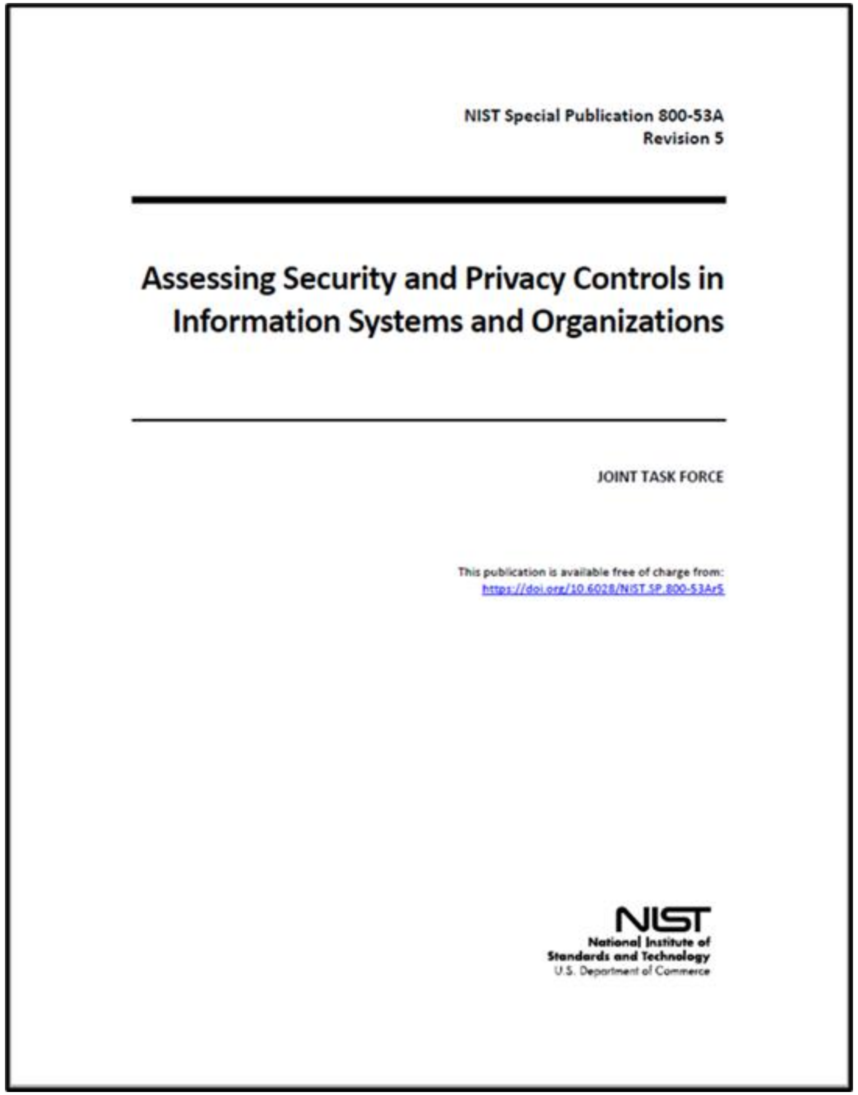
Page 3 of 8

TABLE 3-2: AWARENESS AND TRAINING FAMILY



CONTROL NUMBER	CONTROL NAME CONTROL ENHANCEMENT NAME	PRIVACY CONTROL BASELINE	SECURITY CONTROL BASELINES		
			LOW	MOD	HIGH
AT-1	**Policy and Procedures**	x	x	x	x
AT-2	**Literacy Training and Awareness**	x	x	x	x
AT-2(1)	PRACTICAL EXERCISES				
AT-2(2)	INSIDER THREAT		x	x	x
AT-2(3)	SOCIAL ENGINEERING AND MINING			x	x
AT-2(4)	SUSPICIOUS COMMUNICATIONS AND ANOMALOUS SYSTEM BEHAVIOR				
AT-2(5)	ADVANCED PERSISTENT THREAT				
AT-2(6)	CYBER THREAT ENVIRONMENT				
AT-3	**Role-Based Training**	x	x	x	x
AT-3(1)	ENVIRONMENTAL CONTROLS				
AT-3(2)	PHYSICAL SECURITY CONTROLS				
AT-3(3)	PRACTICAL EXERCISES				
AT-3(4)	SUSPICIOUS COMMUNICATIONS AND ANOMALOUS SYSTEM BEHAVIOR	W: Incorporated into AT-2(4).			
AT-3(5)	PROCESSING PERSONALLY IDENTIFIABLE INFORMATION	x			
AT-4	**Training Records**	x	x	x	x
AT-5	Contacts with Security Groups and Associations	W: Incorporated into PM-15.			
AT-6	**Training Feedback**				

How would you assess the training?



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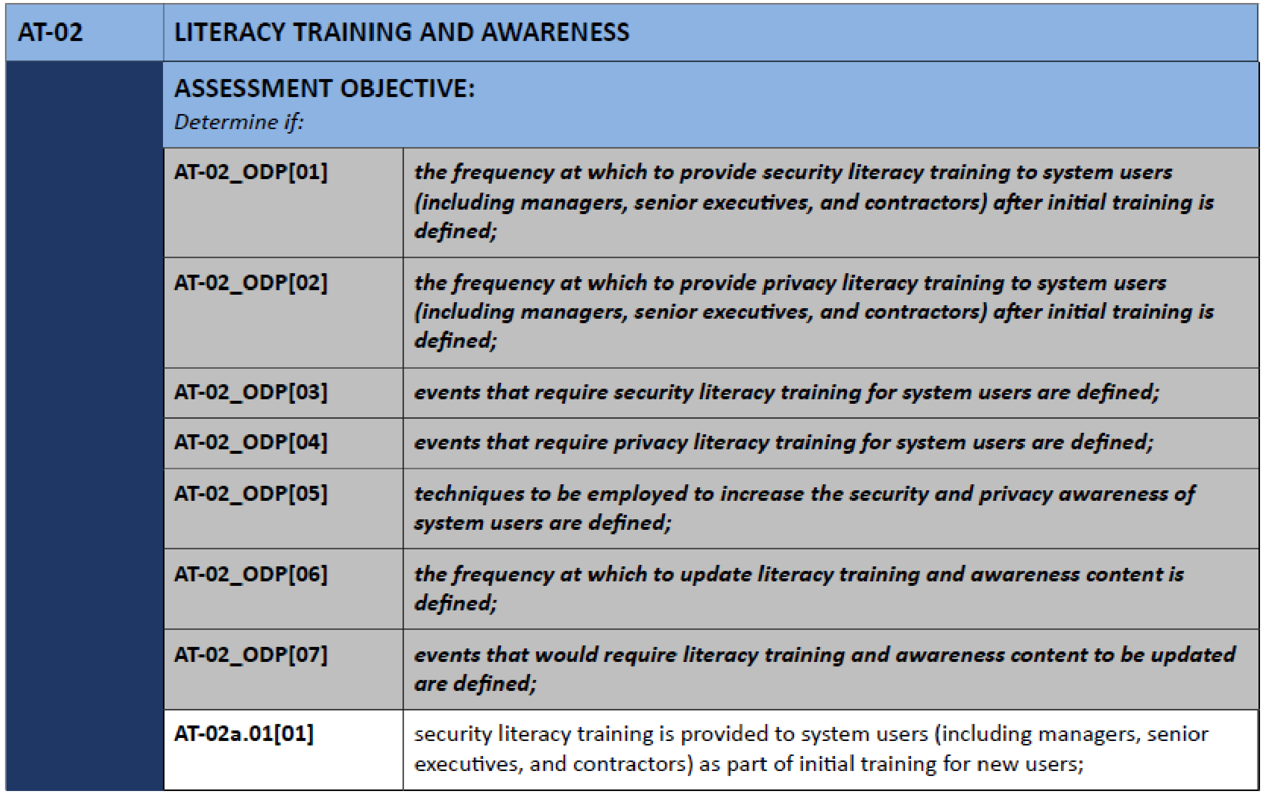
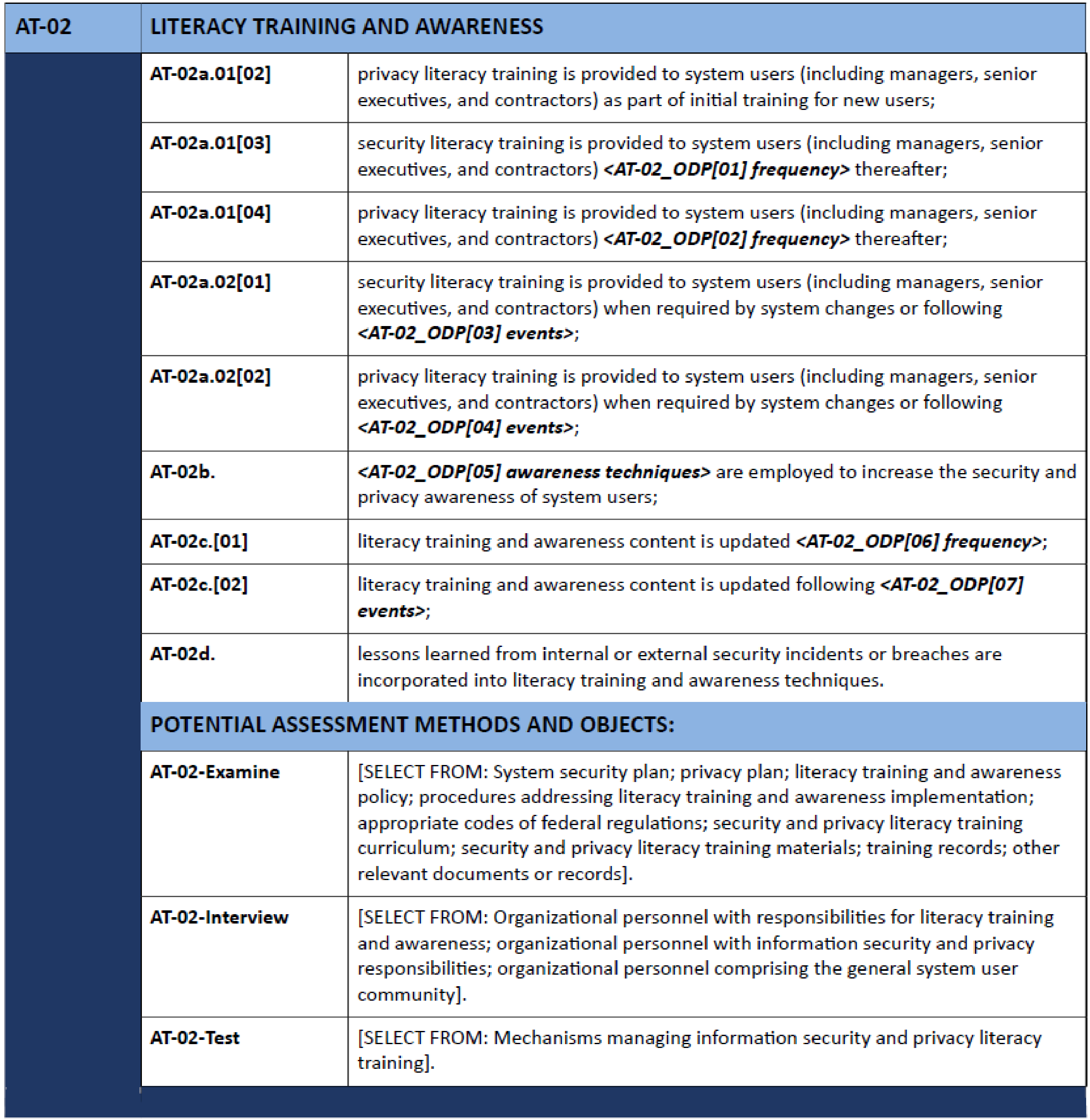


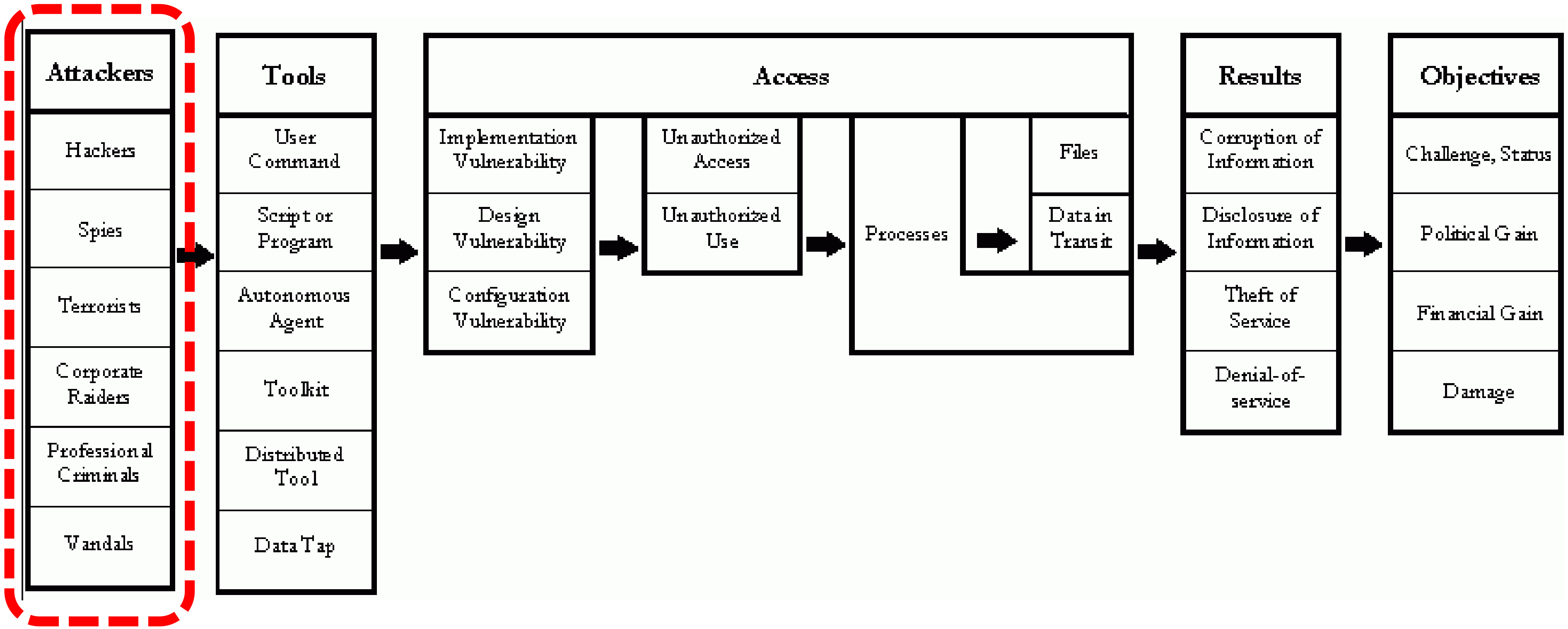
AT-02	LITERACY TRAINING AND AWARENESS	
	ASSESSMENT OBJECTIVE: *Determine if:*	
	AT-02_ODP[01]	***the frequency at which to provide security literacy training to system users (including managers, senior executives, and contractors) after initial training is defined;***
	AT-02_ODP[02]	***the frequency at which to provide privacy literacy training to system users (including managers, senior executives, and contractors) after initial training is defined;***
	AT-02_ODP[03]	***events that require security literacy training for system users are defined;***
	AT-02_ODP[04]	***events that require privacy literacy training for system users are defined;***
	AT-02_ODP[05]	***techniques to be employed to increase the security and privacy awareness of system users are defined;***
	AT-02_ODP[06]	***the frequency at which to update literacy training and awareness content is defined;***
	AT-02_ODP[07]	***events that would require literacy training and awareness content to be updated are defined;***
	AT-02a.01[01]	security literacy training is provided to system users (including managers, senior executives, and contractors) as part of initial training for new users;



AT-02	LITERACY TRAINING AND AWARENESS	
	AT-02a.01[02]	privacy literacy training is provided to system users (including managers, senior executives, and contractors) as part of initial training for new users;
	AT-02a.01[03]	security literacy training is provided to system users (including managers, senior executives, and contractors) ***<AT-02_ODP[01] frequency>*** thereafter;
	AT-02a.01[04]	privacy literacy training is provided to system users (including managers, senior executives, and contractors) ***<AT-02_ODP[02] frequency>*** thereafter;
	AT-02a.02[01]	security literacy training is provided to system users (including managers, senior executives, and contractors) when required by system changes or following ***<AT-02_ODP[03] events>***;
	AT-02a.02[02]	privacy literacy training is provided to system users (including managers, senior executives, and contractors) when required by system changes or following ***<AT-02_ODP[04] events>***;
	AT-02b.	***<AT-02_ODP[05] awareness techniques>*** are employed to increase the security and privacy awareness of system users;
	AT-02c.[01]	literacy training and awareness content is updated ***<AT-02_ODP[06] frequency>***;
	AT-02c.[02]	literacy training and awareness content is updated following ***<AT-02_ODP[07] events>***;
	AT-02d.	lessons learned from internal or external security incidents or breaches are incorporated into literacy training and awareness techniques.
	POTENTIAL ASSESSMENT METHODS AND OBJECTS:	
	AT-02-Examine	[SELECT FROM: System security plan; privacy plan; literacy training and awareness policy; procedures addressing literacy training and awareness implementation; appropriate codes of federal regulations; security and privacy literacy training curriculum; security and privacy literacy training materials; training records; other relevant documents or records].
	AT-02-Interview	[SELECT FROM: Organizational personnel with responsibilities for literacy training and awareness; organizational personnel with information security and privacy responsibilities; organizational personnel comprising the general system user community].
	AT-02-Test	[SELECT FROM: Mechanisms managing information security and privacy literacy training].

What is in this picture ?

What is missing from this diagram?



Attackers
- Hackers
- Spies
- Terrorists
- Corporate Raiders
- Professional Criminals
- Vandals

Tools
- User Command
- Script or Program
- Autonomous Agent
- Toolkit
- Distributed Tool
- Data Tap

Access
- Implementation Vulnerability
- Design Vulnerability
- Configuration Vulnerability
- Unauthorized Access
- Unauthorized Use
- Processes
- Files
- Data in Transit

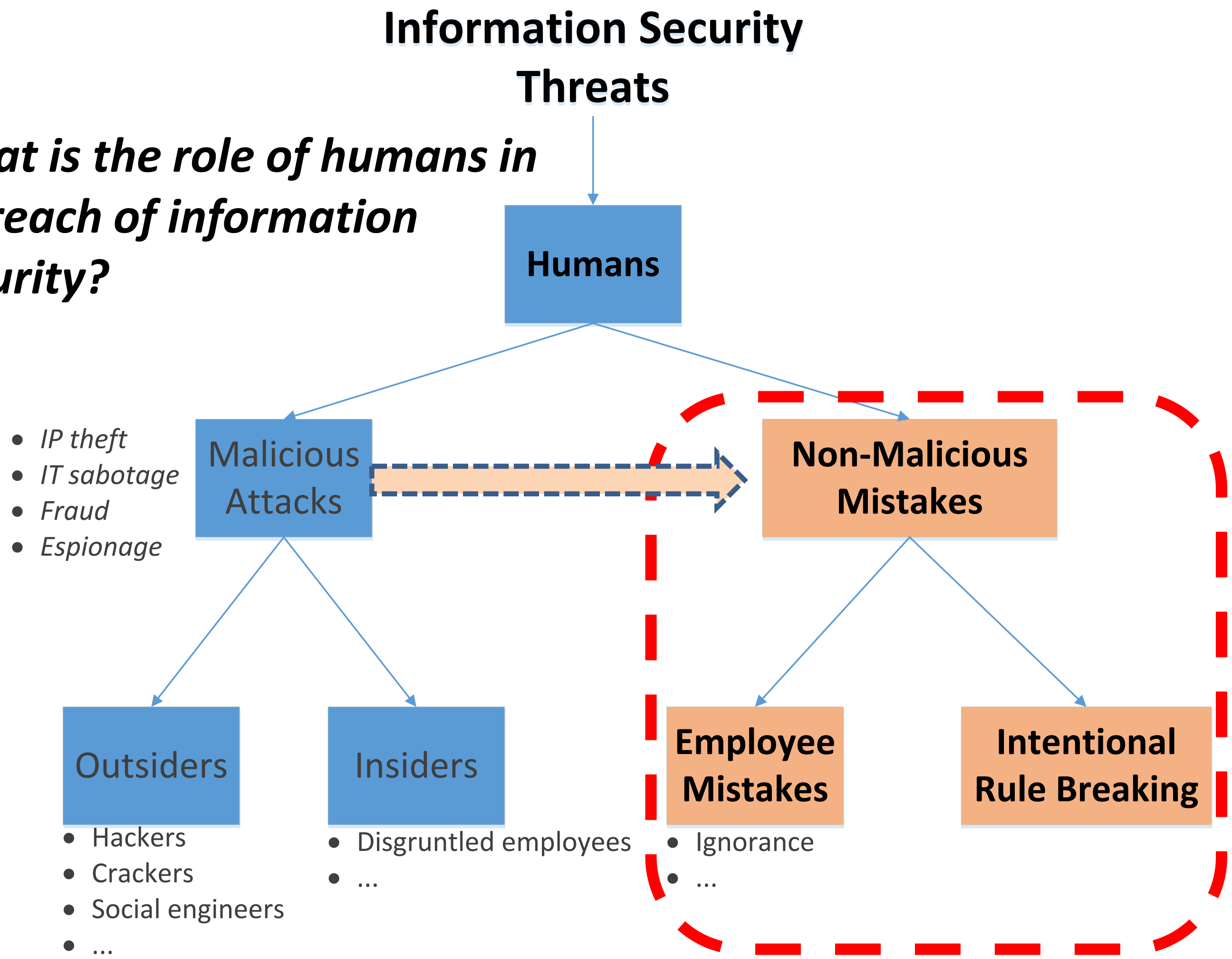
Results
- Corruption of Information
- Disclosure of Information
- Theft of Service
- Denial-of-service

Objectives
- Challenge, Status
- Political Gain
- Financial Gain
- Damage

Howard's process-based taxonomy, from Hansman, S. and Hunt, R., 2004, "A taxonomy of network and computer attacks", Computers & Security, page 3, Elsevier Ltd. Cited from Howard, JD, 1997, "An analysis of security incidents on the internet 1989-1995. PhD thesis, Carnegie Mellon University.

The threat landscape….

What is the role of humans in a breach of information security?



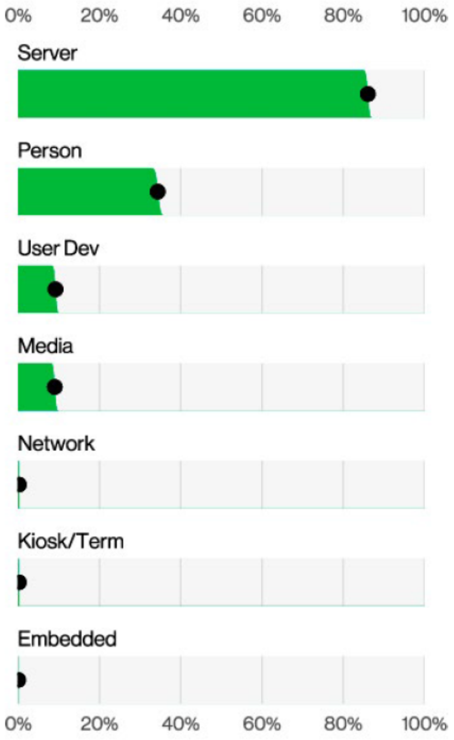


Figure 21. Assets in breaches (n=8,910)

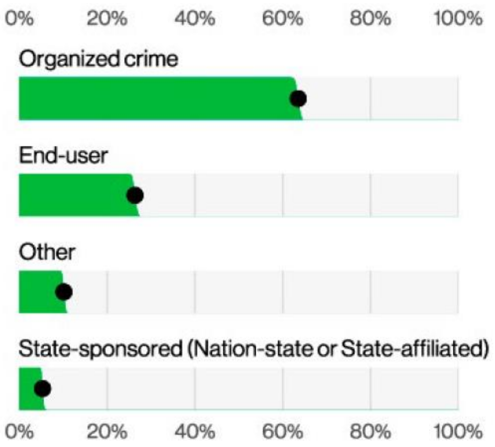
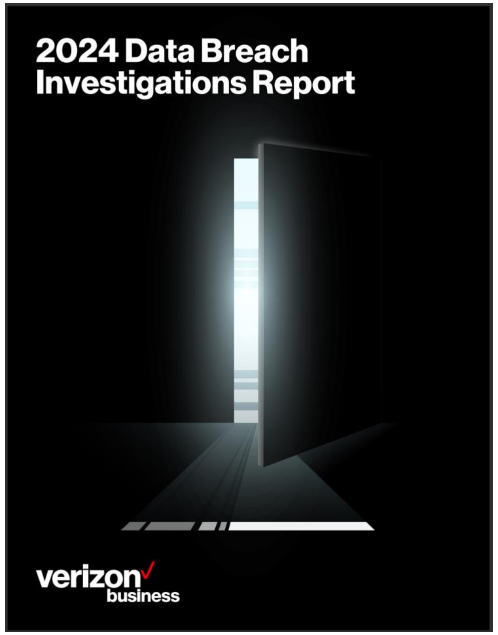
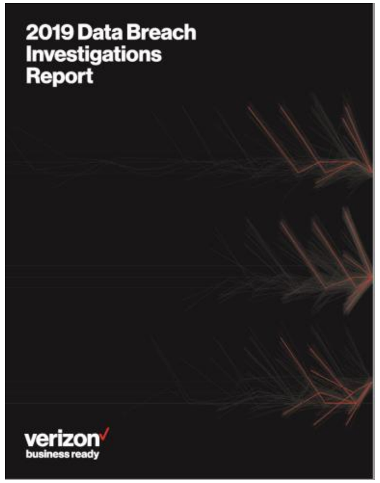


Figure 13. Threat actor varieties in breaches (n=7,921)



https://www.verizon.com/business/resources/reports/dbir

What roles do employees play in these attack chains



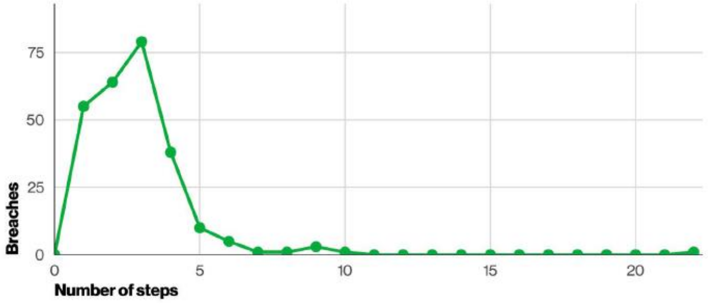


Figure 30. Number of steps per breach in non-Error breaches (n=258)

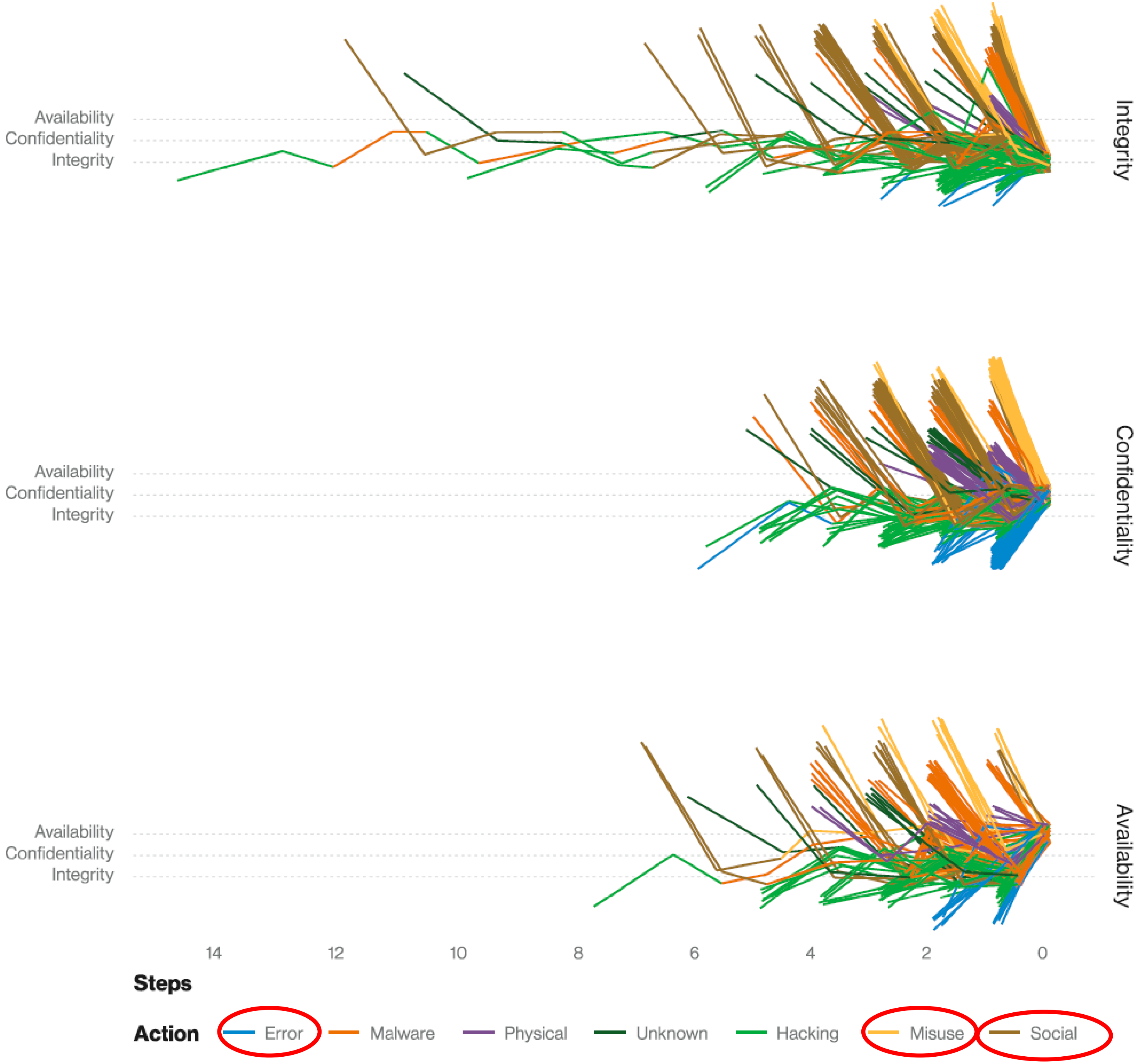
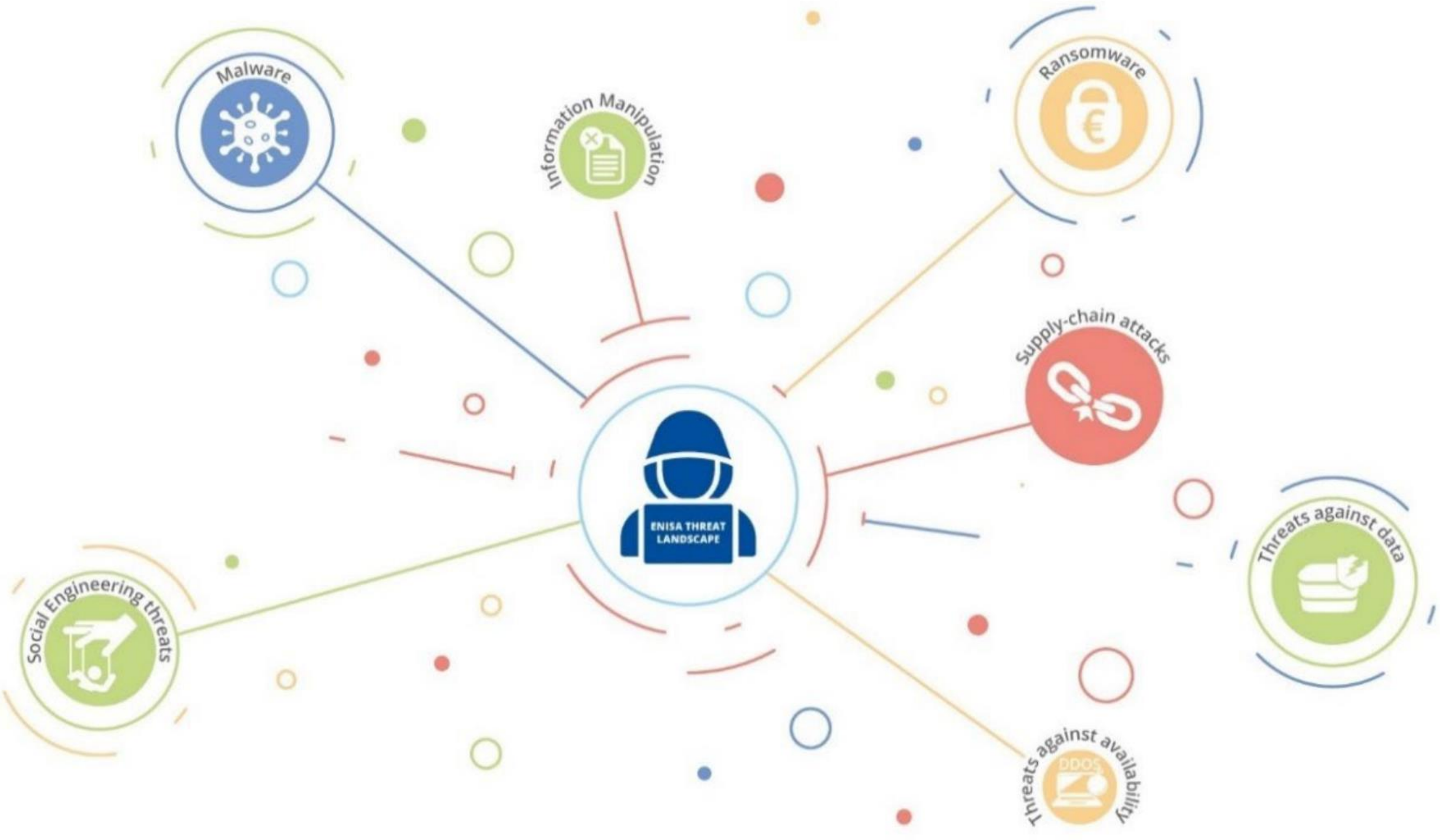


Figure 30. Attack chain by final attribute compromised[12] (n=941)

Figure 1: ENISA Threat Landscape 2024 - Prime threats



enisa 20 years!

EUROPEAN UNION AGENCY FOR CYBERSECURITY

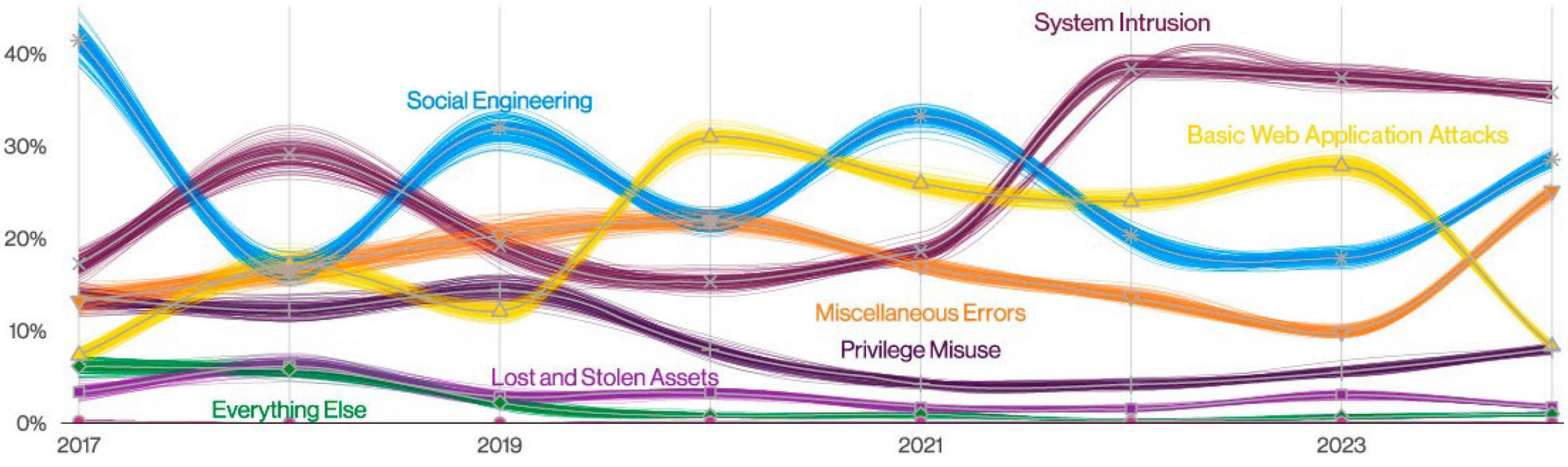
ENISA THREAT LANDSCAPE 2024

July 2023 to June 2024

SEPTEMBER 2024

In which of these threats are humans the vulnerability?

Patterns over time in breaches



2024 Data Breach Investigations Report

verizon business

System Intrusion Complex attacks that leverage malware and/or hacking to achieve their objectives including deploying Ransomware.

Basic Web Application Attacks These attacks are against a Web application, and after initial compromise, they do not have a large number of additional Actions. It is the "get in, get the data and get out" pattern.

Social Engineering A psychological compromise of a person that alters their behavior into taking an action or breaching confidentiality.

Miscellaneous Errors Incidents where unintentional actions directly compromised a security attribute of an information asset. This does not include lost devices, which are grouped with theft instead.

Privilege Misuse Incidents predominantly driven by unapproved or malicious use of legitimate privileges.

Employee risk areas…

Employee Risk

Firewall and email filters to weed out phishing emails and malicious websites are important, but they’re not enough

- Organizations must also ensure their security posture is good by:
  - Setting policies, educating staff, and enforcing good security hygiene
  - Taking advantage of the security options that are available
  - Training and testing employees
  - Implementing automated checks to ensure their security posture

Employee Risk

Malware delivery methods

“Malware is largely distributed via email and often comes in the form of Microsoft Office documents. This makes sense when you consider that most of these documents now have the ability to run code on the client system, which is extremely useful if you’re an attacker.”

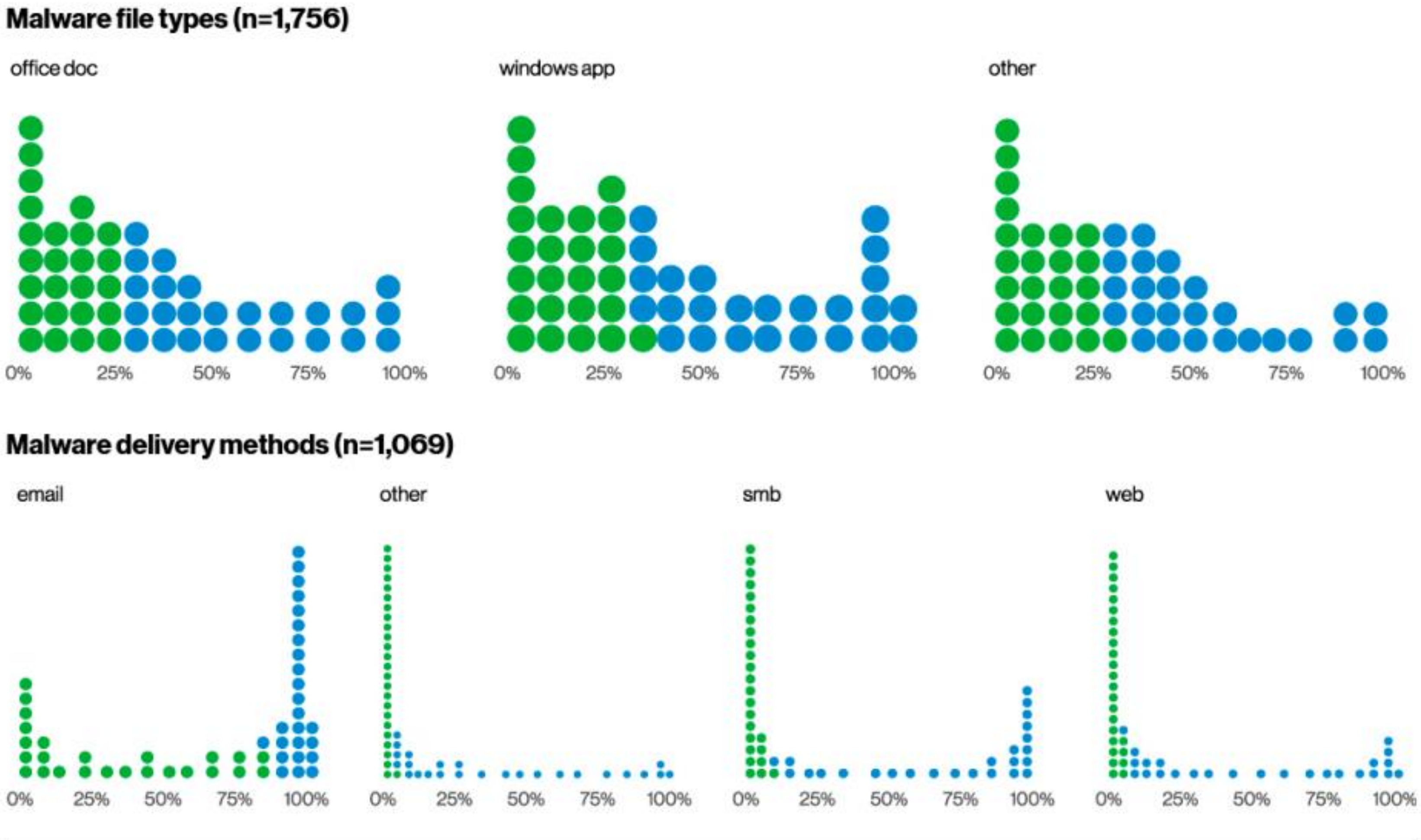
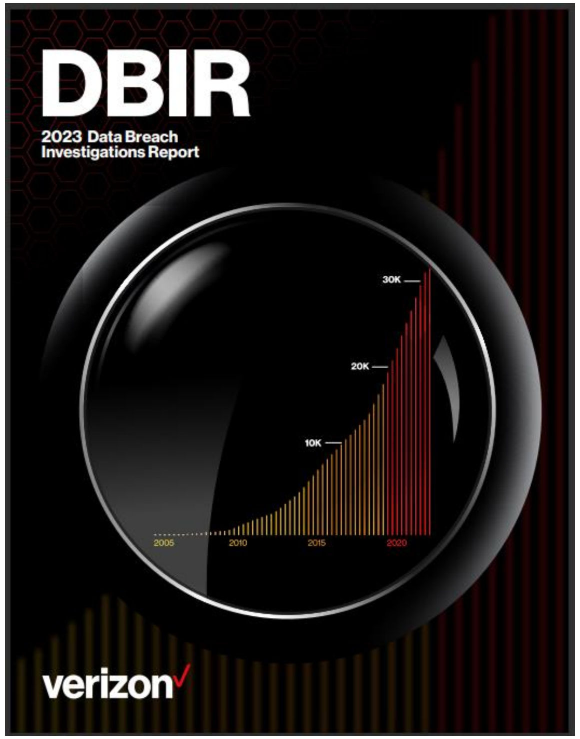


Figure 30. Malware delivery method proportion per organization



SMB (Server Message Block) is a widely used protocol for file and printer sharing in Windows and Unix environments. It is often targeted by attackers seeking to exploit vulnerabilities.

Why is teaching security awareness essential ?

- We have a culture of trust that can be taken advantage of with dubious intent
- Most people feel security is not part of their job
- People underestimate the value of information
- Security technologies give people a false sense of protection from attack

Non-malicious insider threat

1. A current or former employee, contractor, or business partner
2. Has or had authorized access to an organization’s network, system, or data
3. Through action or inaction without malicious intent…

   Causes harm or substantially increases the probability of future serious harm to…

   confidentiality, integrity, or availability *of the organization’s information or information systems*

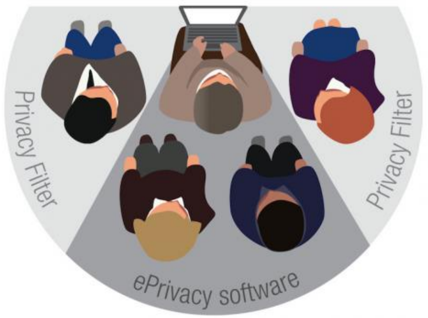
Major characteristic is ‘*failure in human performance*’

Carnegie Mellon Univeristy’s Software Engineering Institute’s
(SEI) Computer Emergency Response Team (CRT) CERT
Definition (2013)

The Unintentional Insider threat

from an add for…

3M™ ePrivacy Filter Software
+ 3M™ Privacy Filter



"You spelled 'confidential' wrong."

How would you characterize insiders' information security mistakes

- **Ignorant**
  - An unintentional accident
- **Negligent**
  - Willingly ignores policy to make things easier
- **Well meaning**
  - Prioritizes completing work and "getting 'er done" takes over following policy

Willis-Ford, C.D. (2015) "Education & Awareness: Manage the Insider Threat", SRA International Inc., FISSA (Federal Information Systems Security Awareness) Working Group

http://csrc.nist.gov/organizations/fissea/2015-conference/presentations/march-24/fissea-2015-willis-ford.pdf

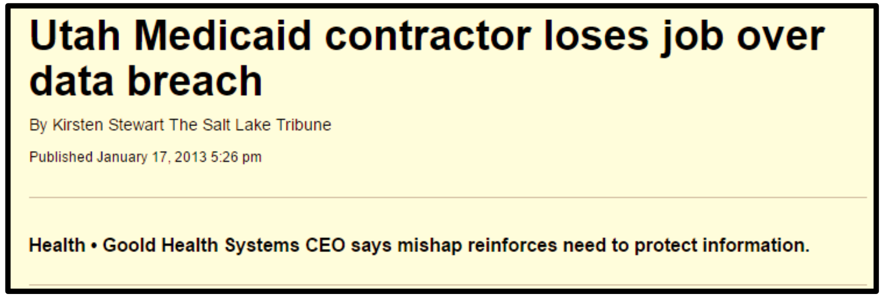
What are examples of insiders’ accidents ?

- **Accidental Disclosure**
  - Posting sensitive data on public website
  - Sending sensitive data to wrong email address
- **Malicious Code**
  - Clicking on suspicious link in email
  - Using ‘found’ USB drive
- **Physical data release**
  - Losing paper records
- **Portable equipment**
  - Losing laptop, tablet
  - Losing portable storage device (USB drive, CD)

Willis-Ford, C.D. (2015) “Education & Awareness: Manage the Insider Threat”, SRA International Inc., FISSA (Federal Information Systems Security Awareness) Working Group

http://csrc.nist.gov/organizations/fissea/2015-conference/presentations/march-24/fissea-2015-willis-ford.pdf

Example of an accident made by a well meaning employee…



Utah Medicaid contractor loses job over data breach

By Kirsten Stewart The Salt Lake Tribune

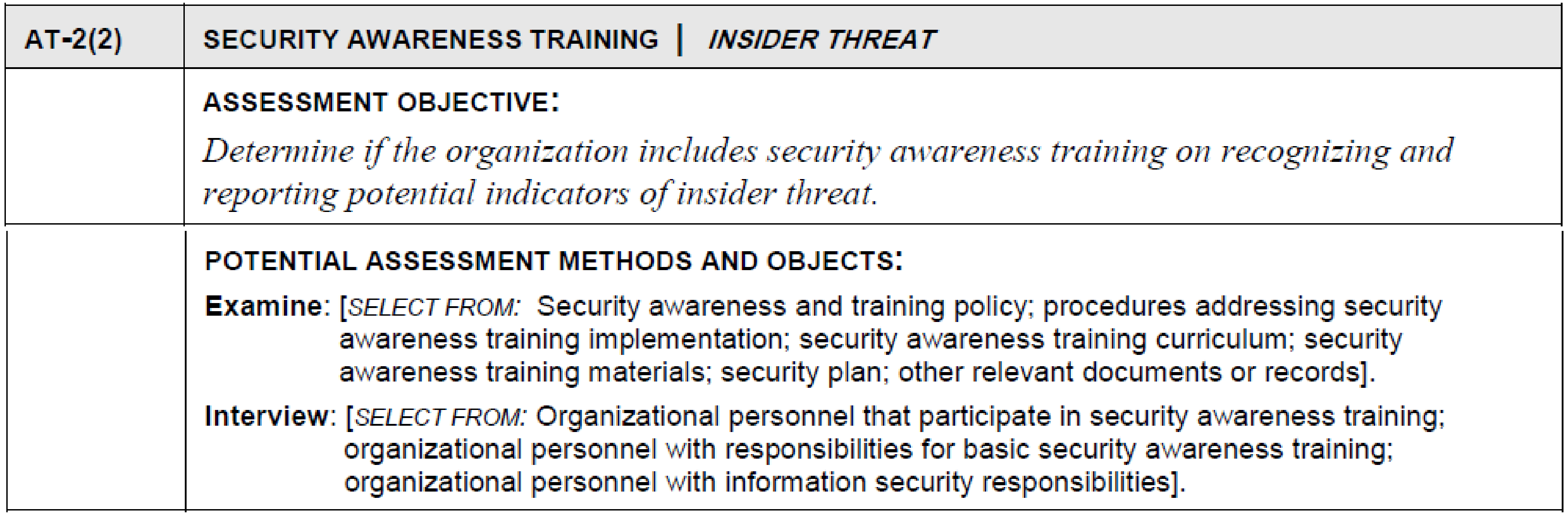
Published January 17, 2013 5:26 pm

Health • Goold Health Systems CEO says mishap reinforces need to protect information.

"Terrific employee":

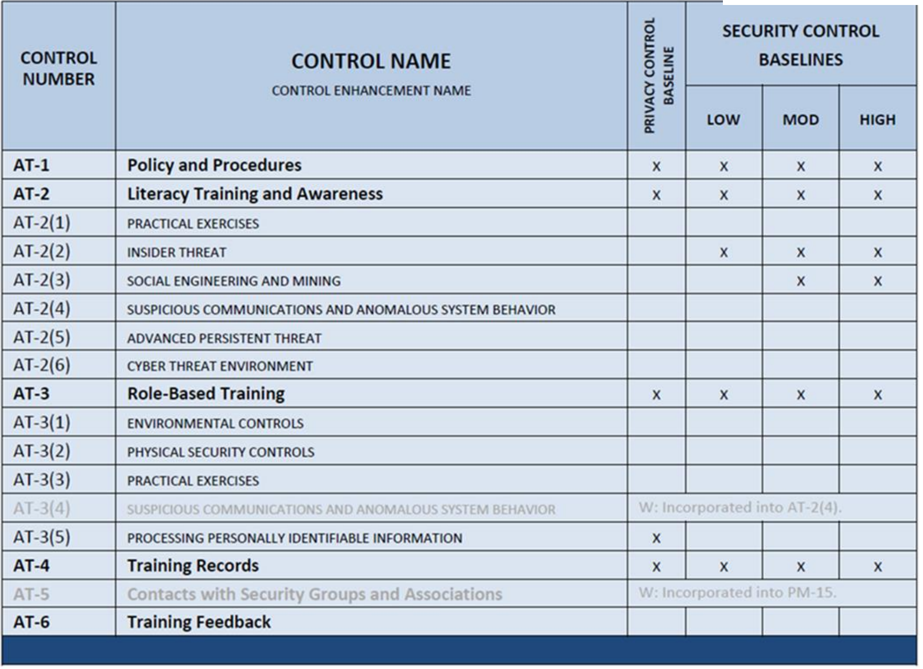
- Account Manager handling health data for Utah
- Employee had trouble uploading a file requested by State Health Dept.
- Copied 6,000 medical records to USB drive
- Lost the USB drive, and reported the issue
- CEO admits the employee probably didn't even know she was breaking policy
  - this makes it accidental i.e. "well meaning…"

Auditing a Security Awareness Training control enhancement



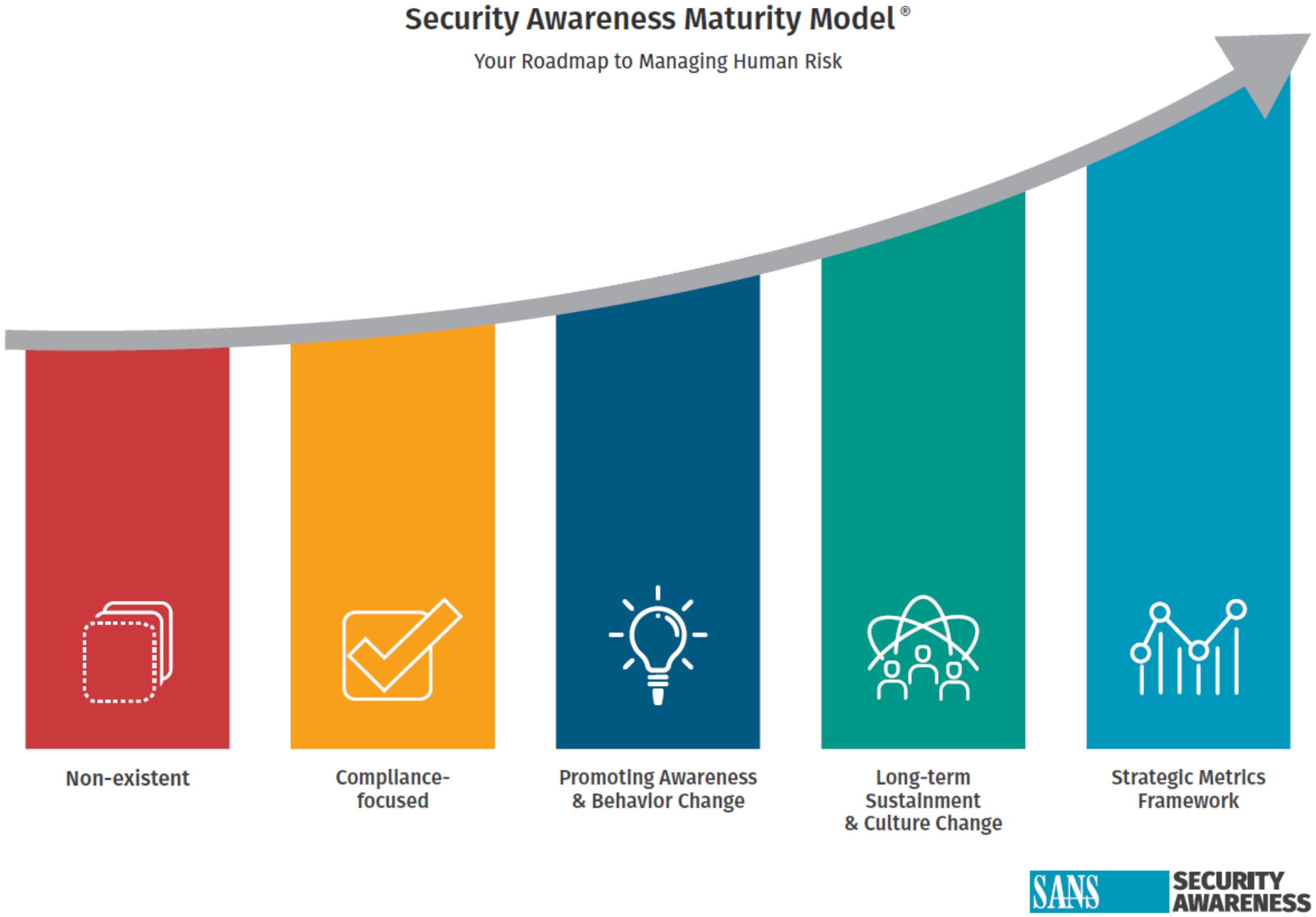
AT-2(2)	SECURITY AWARENESS TRAINING | *INSIDER THREAT*
	ASSESSMENT OBJECTIVE: *Determine if the organization includes security awareness training on recognizing and reporting potential indicators of insider threat.*
	POTENTIAL ASSESSMENT METHODS AND OBJECTS: **Examine**: [*SELECT FROM:* Security awareness and training policy; procedures addressing security awareness training implementation; security awareness training curriculum; security awareness training materials; security plan; other relevant documents or records]. **Interview**: [*SELECT FROM:* Organizational personnel that participate in security awareness training; organizational personnel with responsibilities for basic security awareness training; organizational personnel with information security responsibilities].

TABLE 3-2: AWARENESS AND TRAINING FAMILY



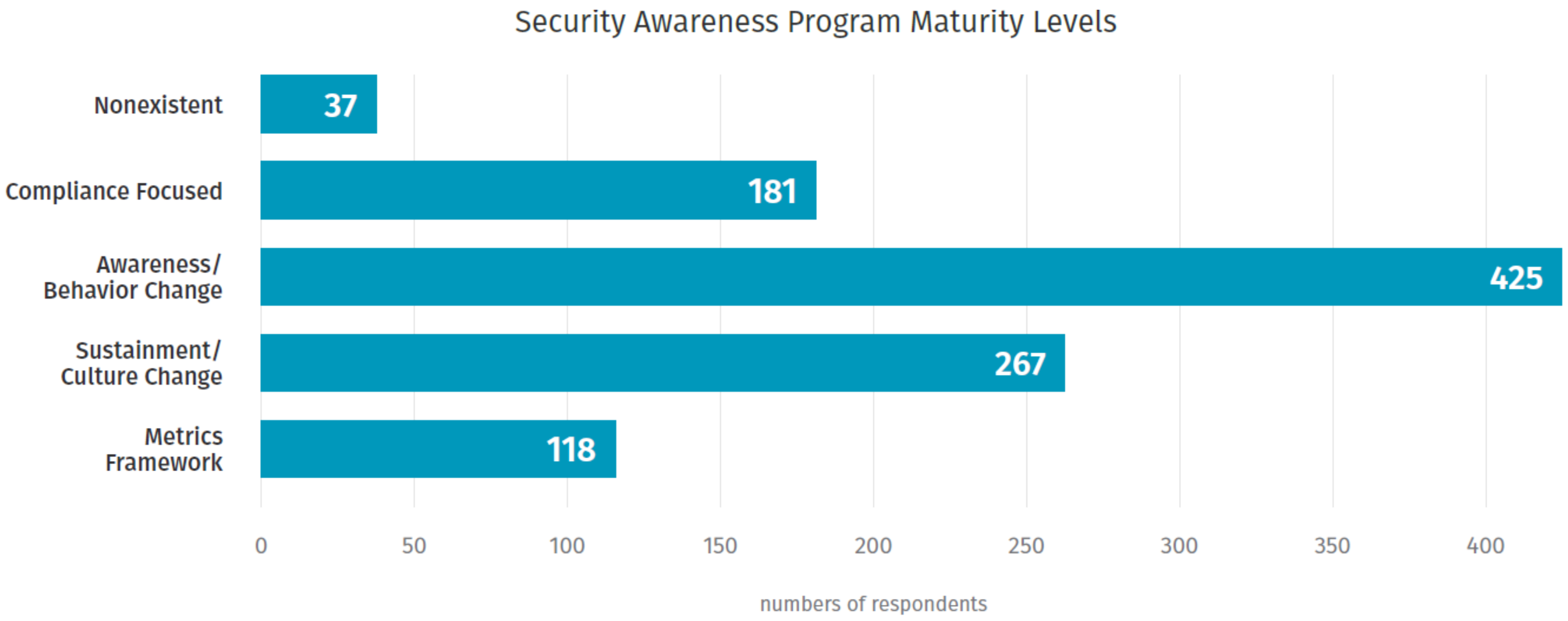
CONTROL NUMBER	CONTROL NAME CONTROL ENHANCEMENT NAME	PRIVACY CONTROL BASELINE	SECURITY CONTROL BASELINES		
			LOW	MOD	HIGH
AT-1	**Policy and Procedures**	x	x	x	x
AT-2	**Literacy Training and Awareness**	x	x	x	x
AT-2(1)	PRACTICAL EXERCISES				
AT-2(2)	INSIDER THREAT		x	x	x
AT-2(3)	SOCIAL ENGINEERING AND MINING			x	x
AT-2(4)	SUSPICIOUS COMMUNICATIONS AND ANOMALOUS SYSTEM BEHAVIOR				
AT-2(5)	ADVANCED PERSISTENT THREAT				
AT-2(6)	CYBER THREAT ENVIRONMENT				
AT-3	**Role-Based Training**	x	x	x	x
AT-3(1)	ENVIRONMENTAL CONTROLS				
AT-3(2)	PHYSICAL SECURITY CONTROLS				
AT-3(3)	PRACTICAL EXERCISES				
AT-3(4)	SUSPICIOUS COMMUNICATIONS AND ANOMALOUS SYSTEM BEHAVIOR	W: Incorporated into AT-2(4).			
AT-3(5)	PROCESSING PERSONALLY IDENTIFIABLE INFORMATION	x			
AT-4	**Training Records**	x	x	x	x
AT-5	Contacts with Security Groups and Associations	W: Incorporated into PM-15.			
AT-6	**Training Feedback**				

What phases of security awareness do organizations go through as their programs mature?

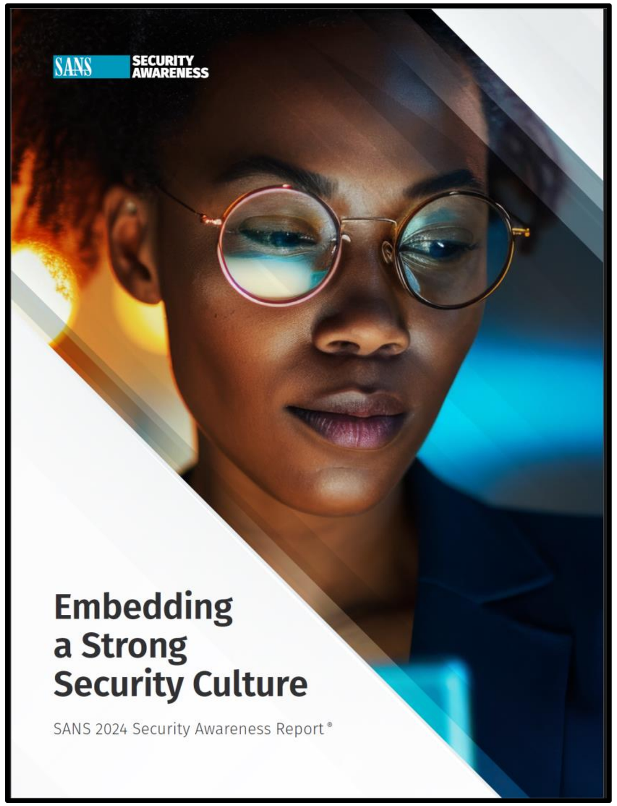

Security Awareness Maturity Model®
Your Roadmap to Managing Human Risk
Non-existent
Compliance-focused
Promoting Awareness & Behavior Change
Long-term Sustainment & Culture Change
Strategic Metrics Framework
SANS SECURITY AWARENESS

SANS SECURITY AWARENESS
Embedding a Strong Security Culture
SANS 2024 Security Awareness Report®

https://www.sans.org/mlp/ssa-2024-security-awareness-report/



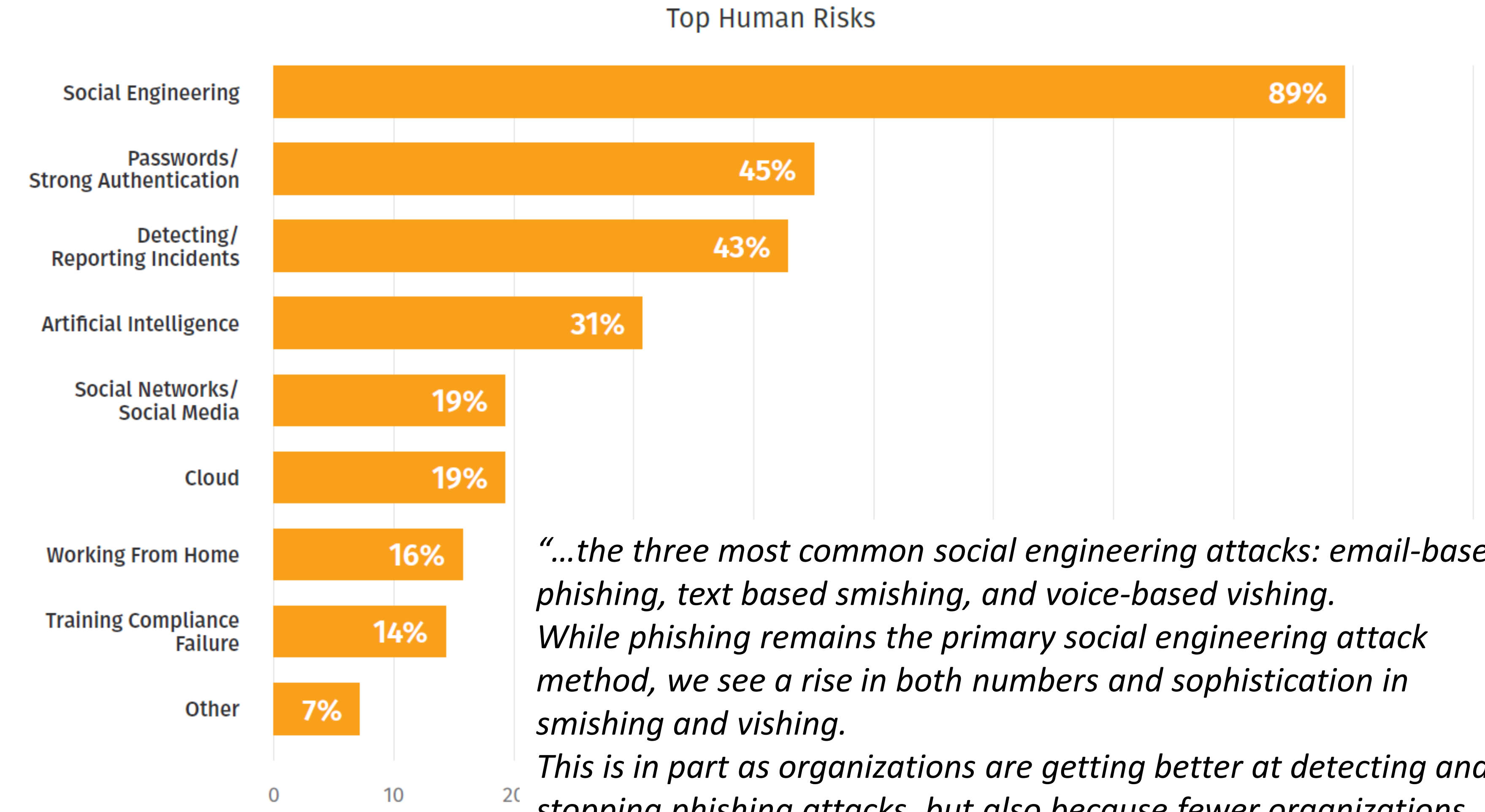
Security Awareness Program Maturity Levels



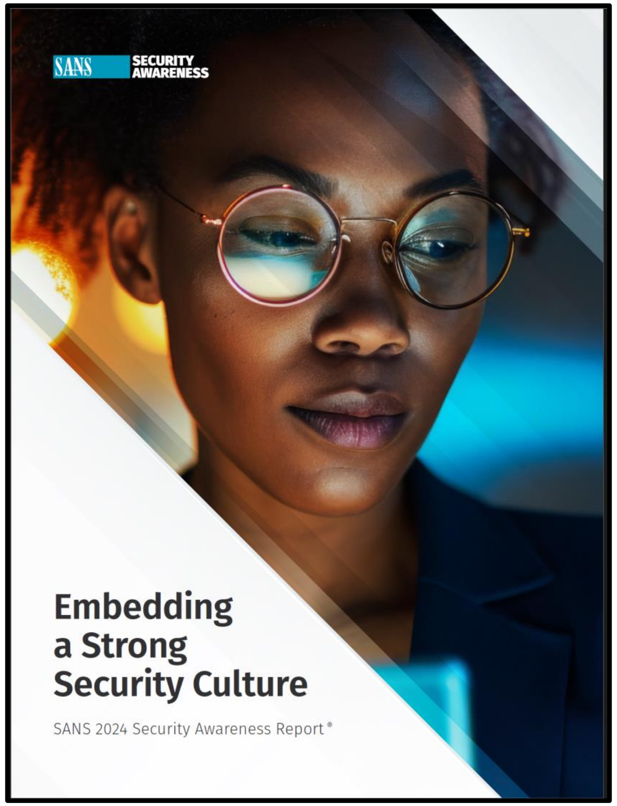
Embedding a Strong Security Culture

SANS 2024 Security Awareness Report®

Top Human Risks: What are the top three concerns or human risks you are focusing on for 2024?



"…the three most common social engineering attacks: email-based phishing, text based smishing, and voice-based vishing. While phishing remains the primary social engineering attack method, we see a rise in both numbers and sophistication in smishing and vishing. This is in part as organizations are getting better at detecting and stopping phishing attacks, but also because fewer organizations have control over and visibility into employees' mobile devices." Page 9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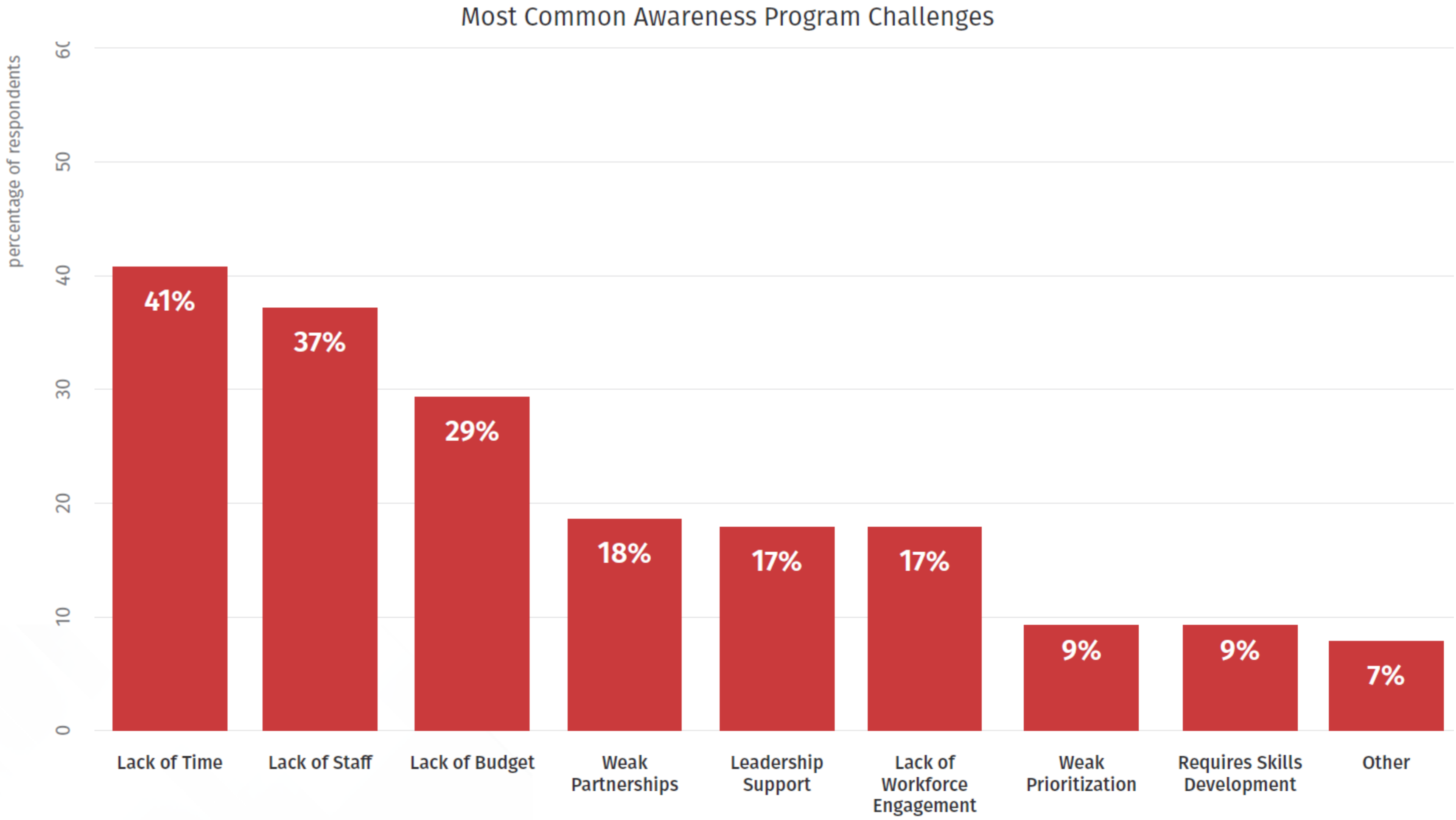
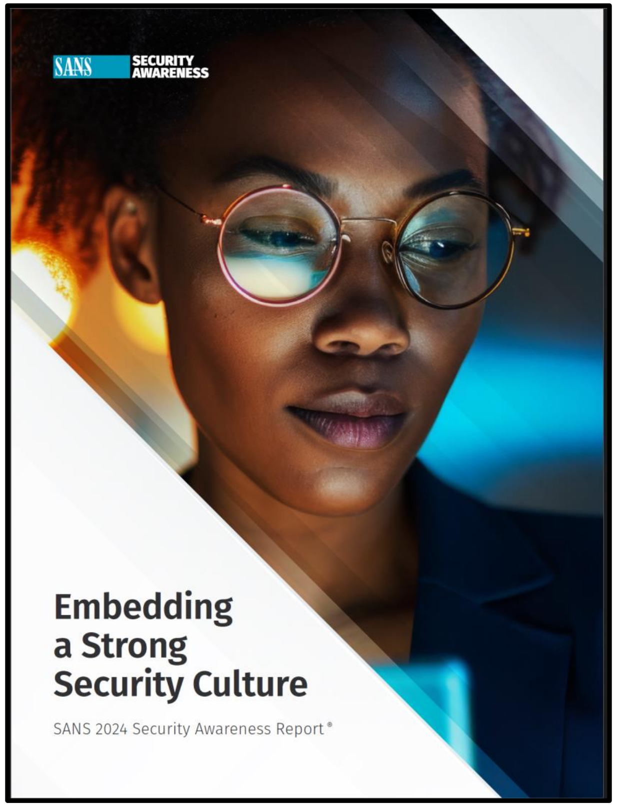
SANS 2024 Security Awareness Report®

Program Challenges: What do you feel are the two biggest challenges limiting your ability to succeed?

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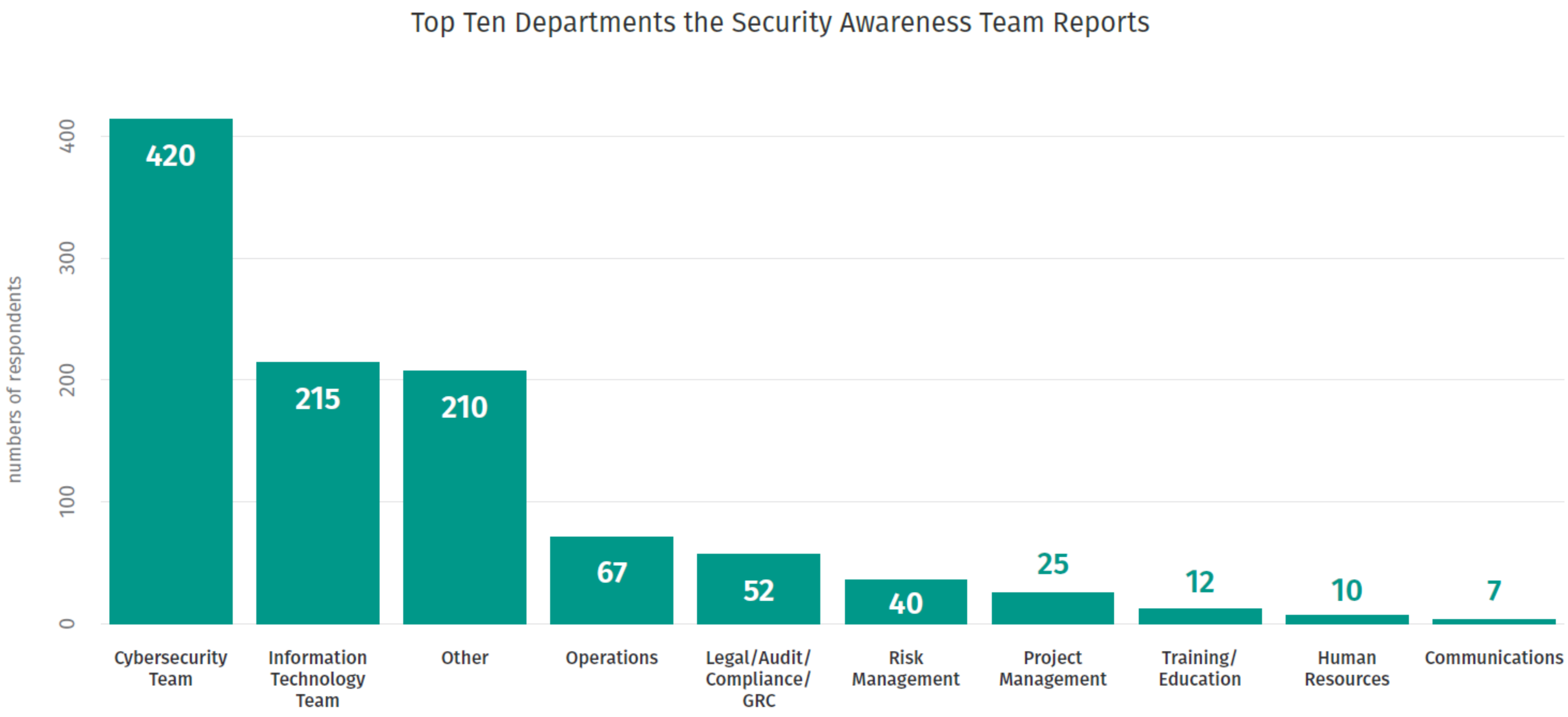
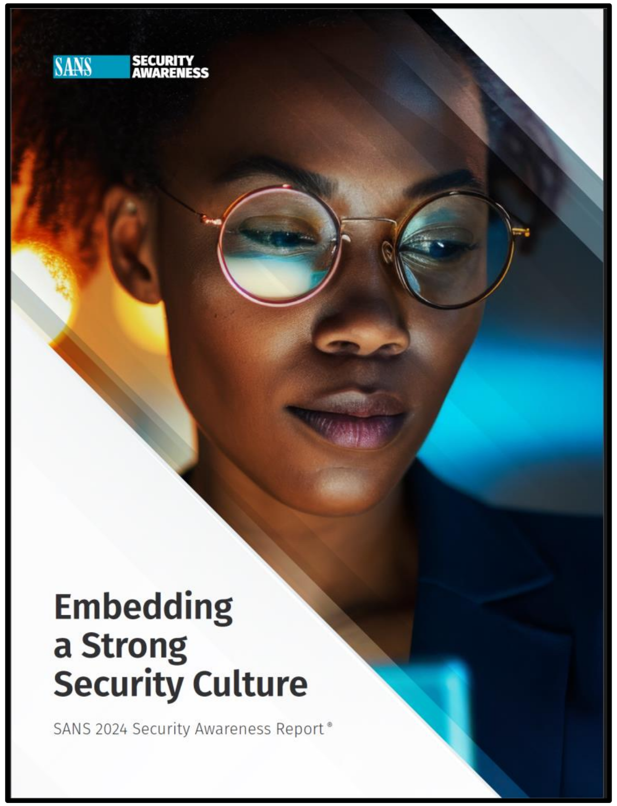
Reporting: What department best describes where you report to?





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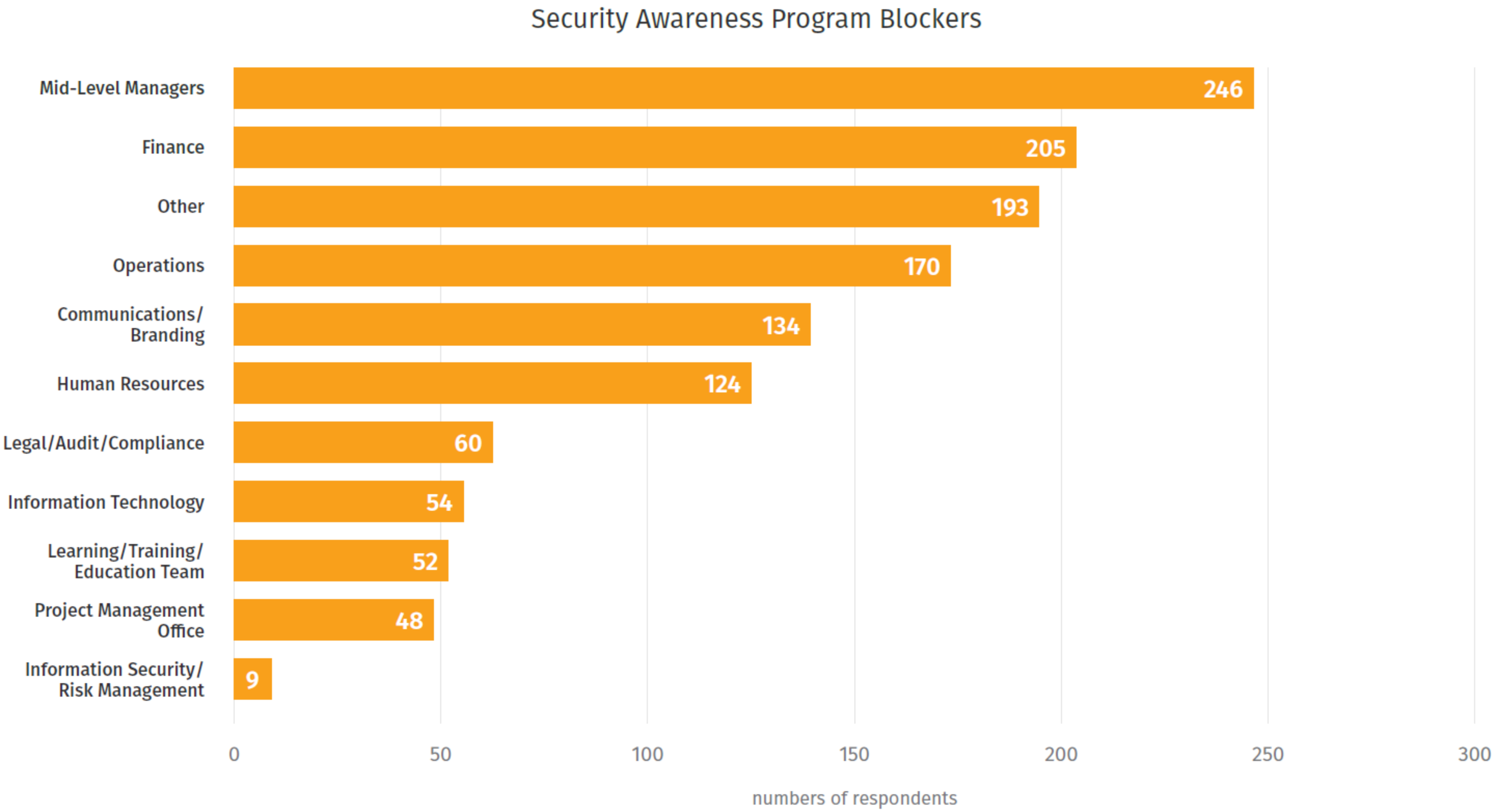
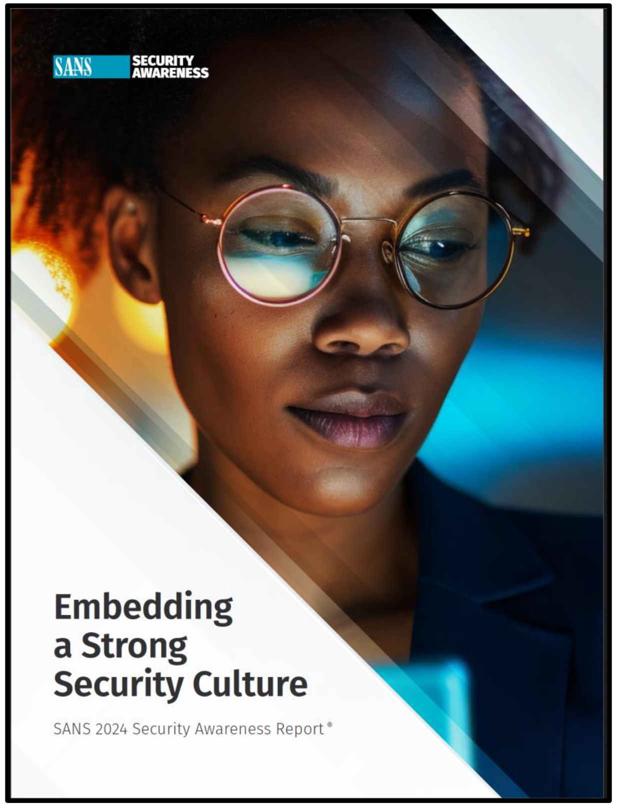

Security Awareness Program Blockers
Mid-Level Managers
246
Finance
205
Other
193
Operations
170
Communications/ Branding
134
Human Resources
124
Legal/Audit/Compliance
60
Information Technology
54
Learning/Training/ Education Team
52
Project Management Office
48
Information Security/ Risk Management
9
0
50
100
150
200
250
300
numbers of respondents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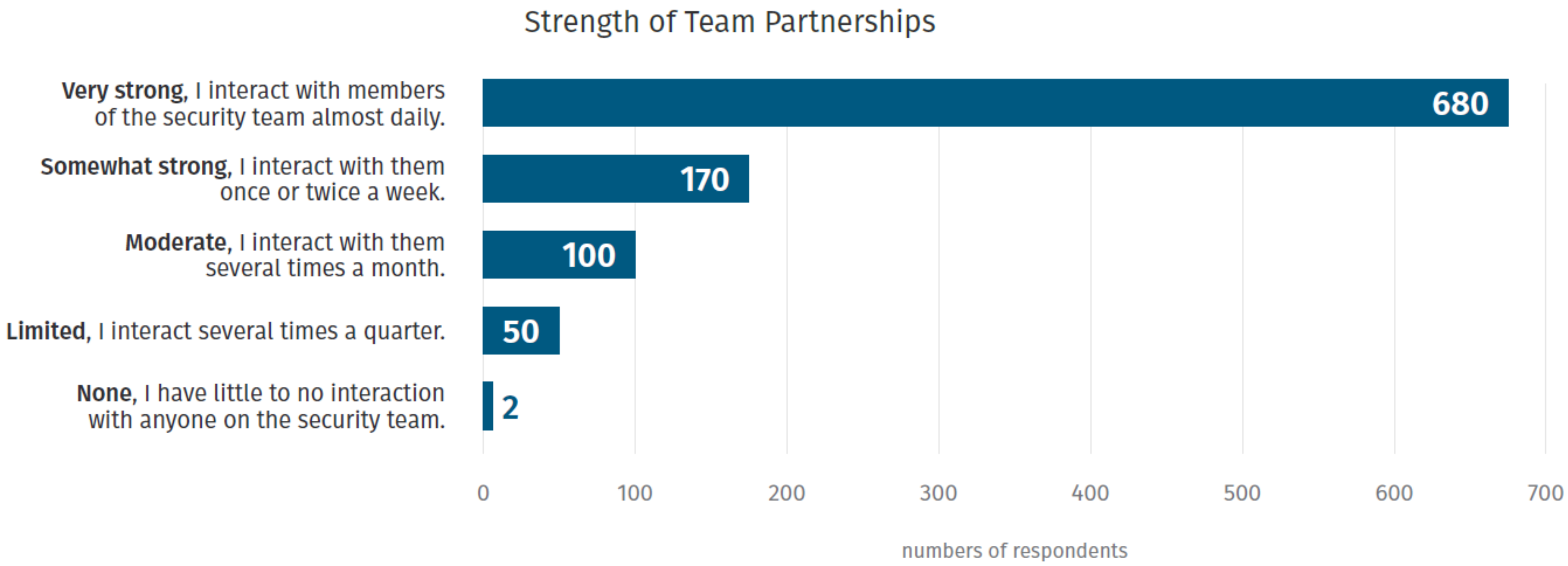
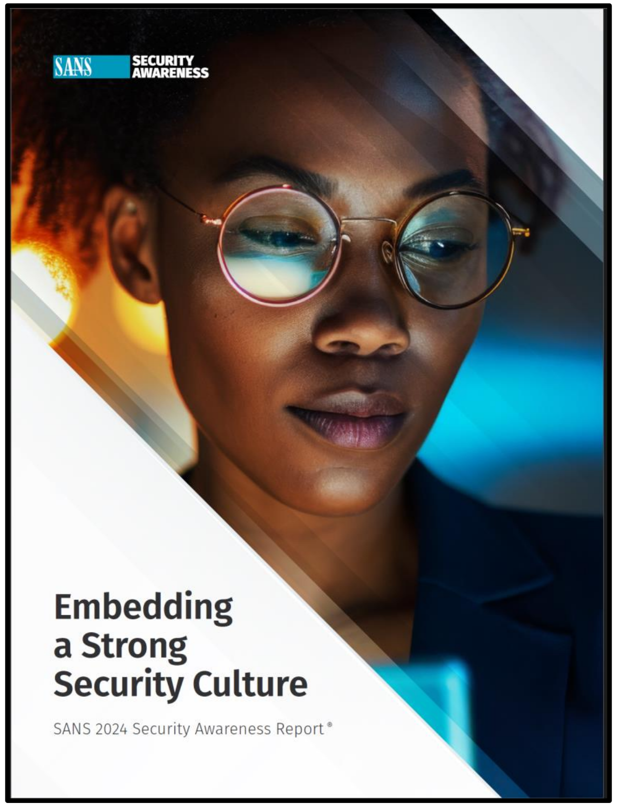
Security Team: How strong is your relationship with the information security team? Do you actively partner with them on understanding threats, identifying human risks, helping with outbound communications, or interacting with the workforce?




SANS SECURITY AWARENESS
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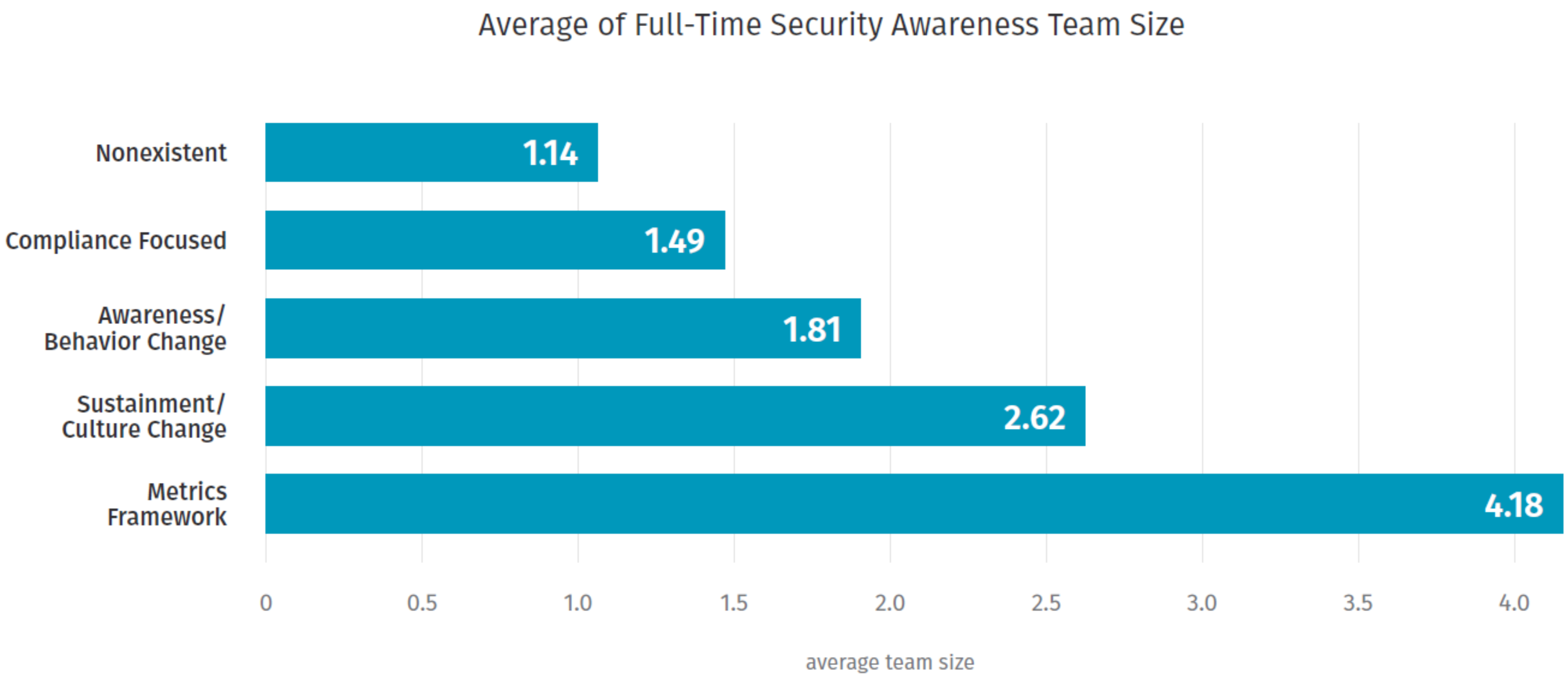
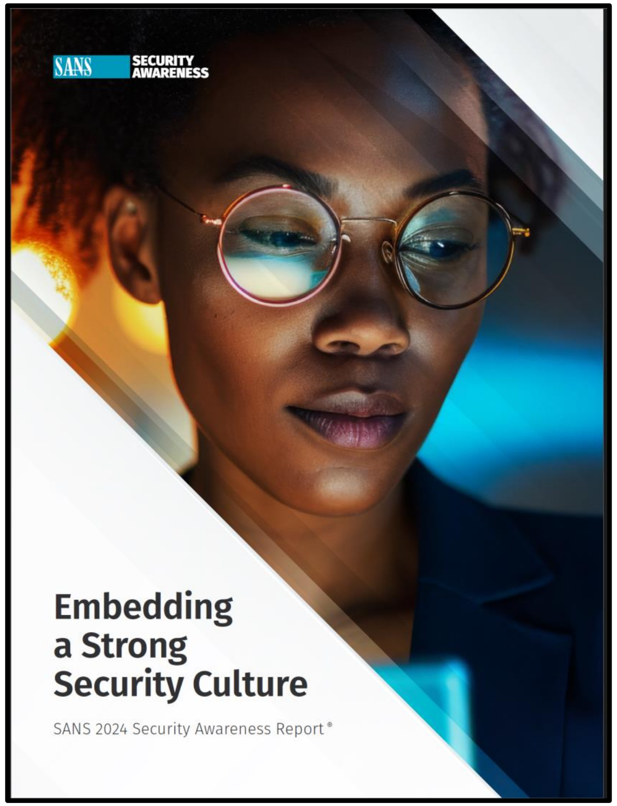

Average of Full-Time Security Awareness Team Size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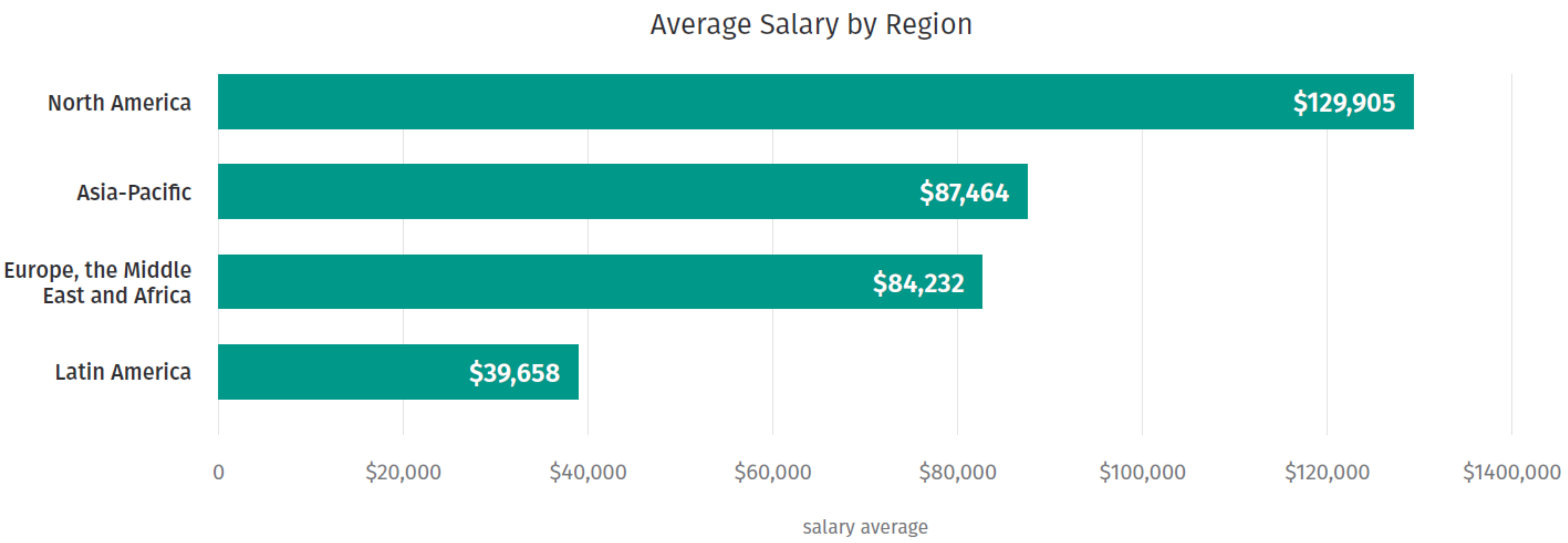
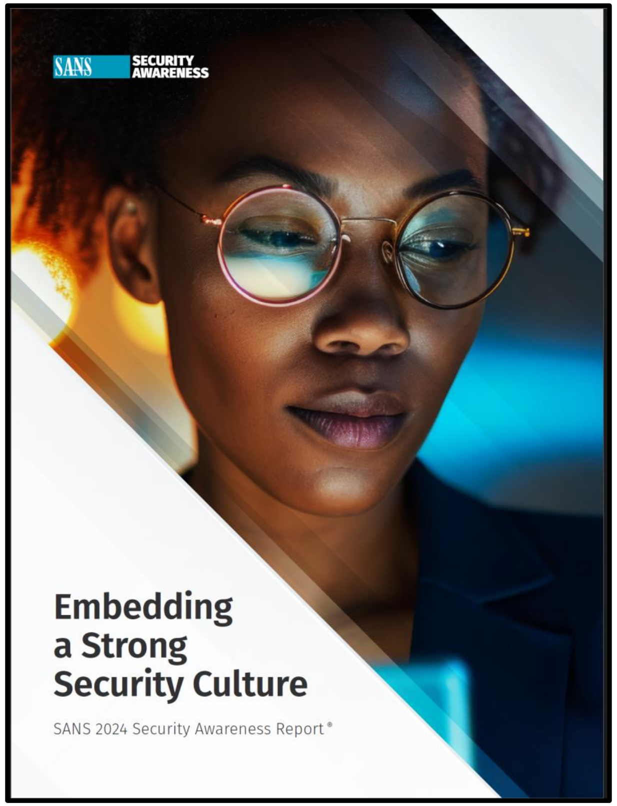
Average Salaries for Security Awareness Practitioners





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Embedding a Strong Security Culture

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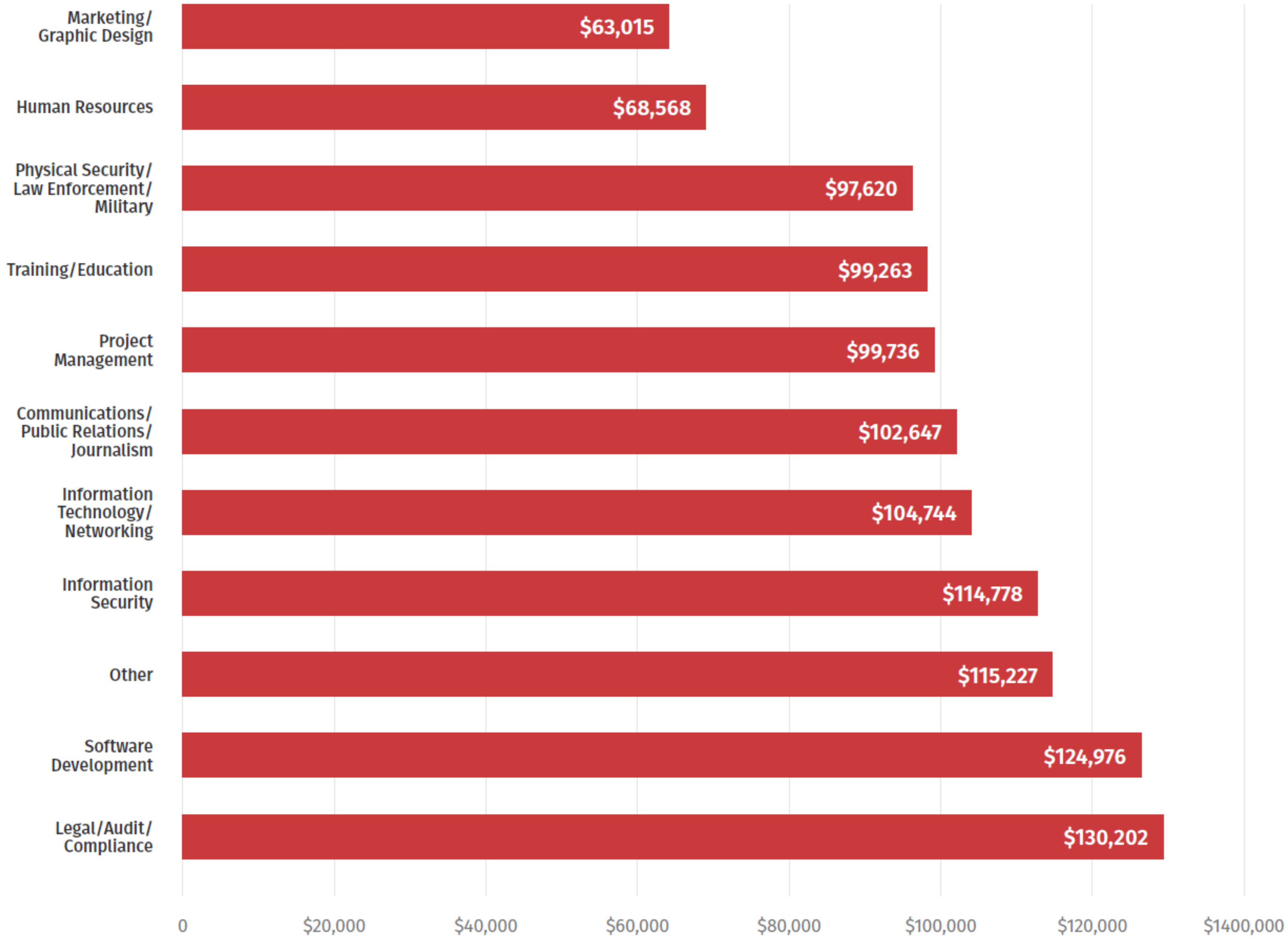
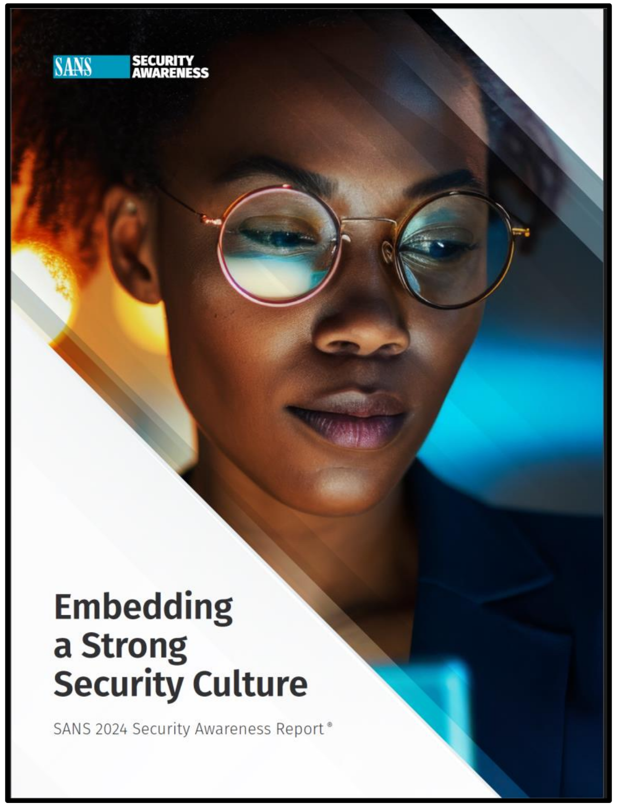
Average Salary by Professional Background

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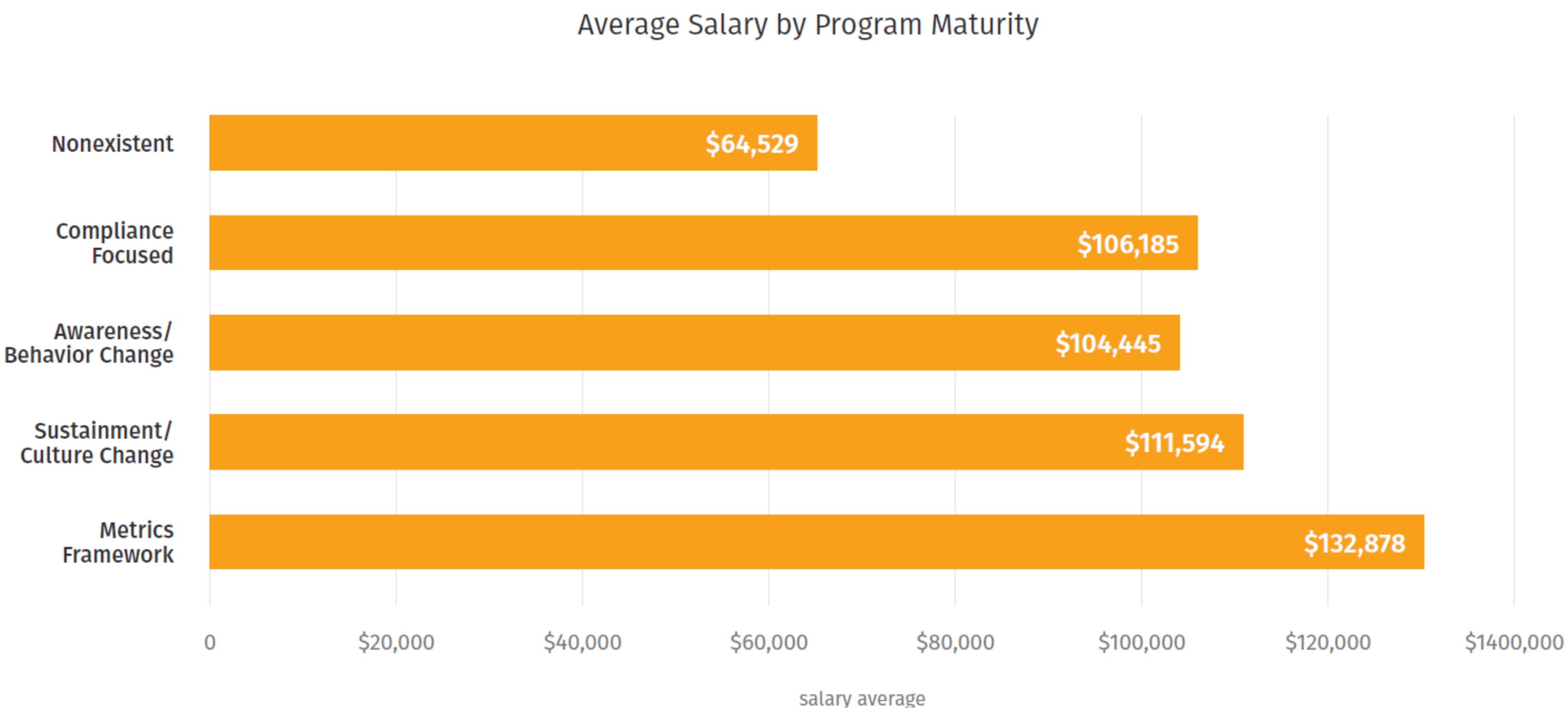
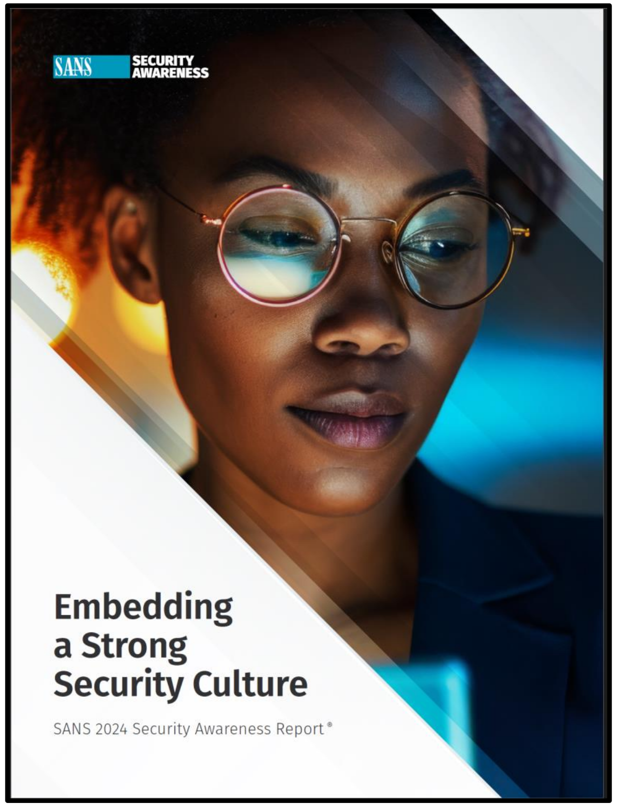
Average Salaries for Security Awareness Practitioners

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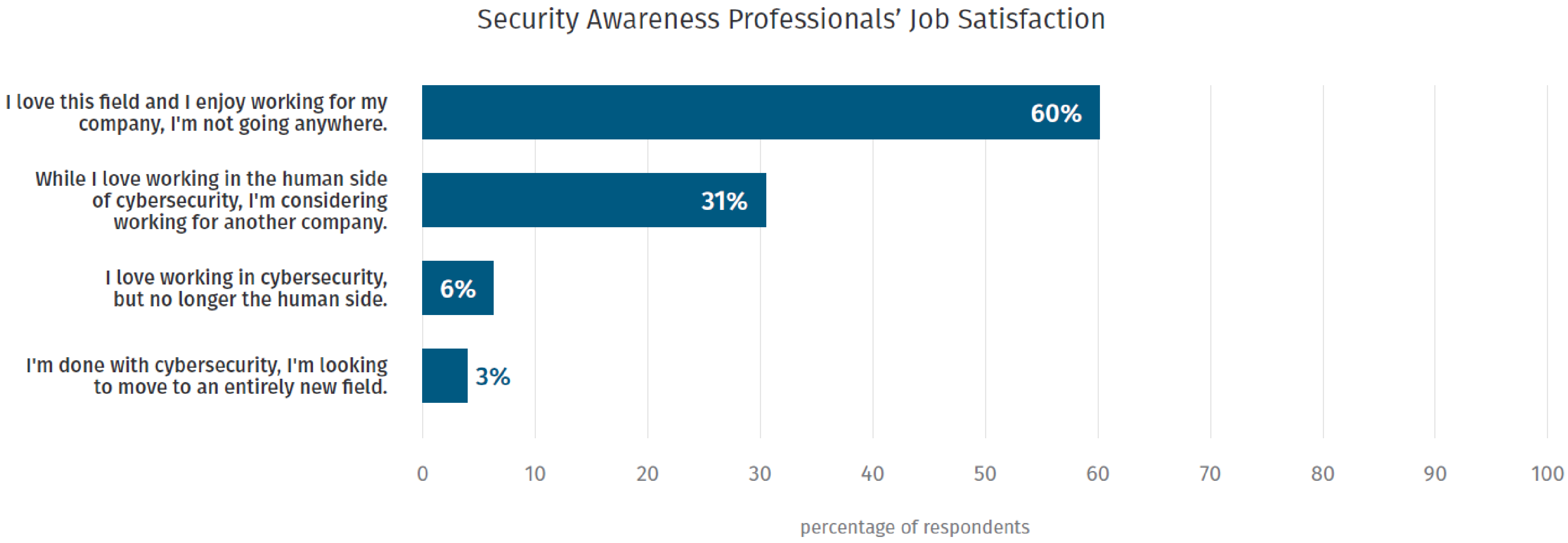
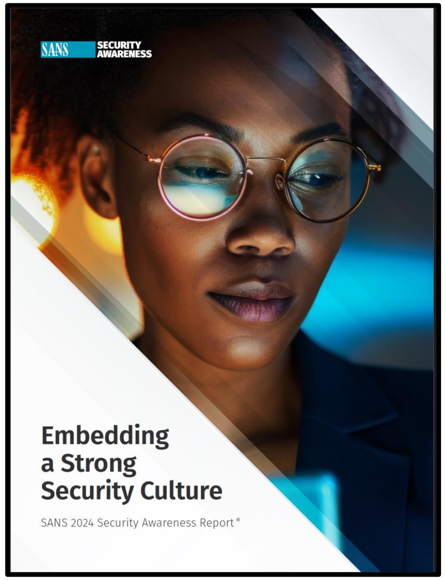
How Are You Feeling?





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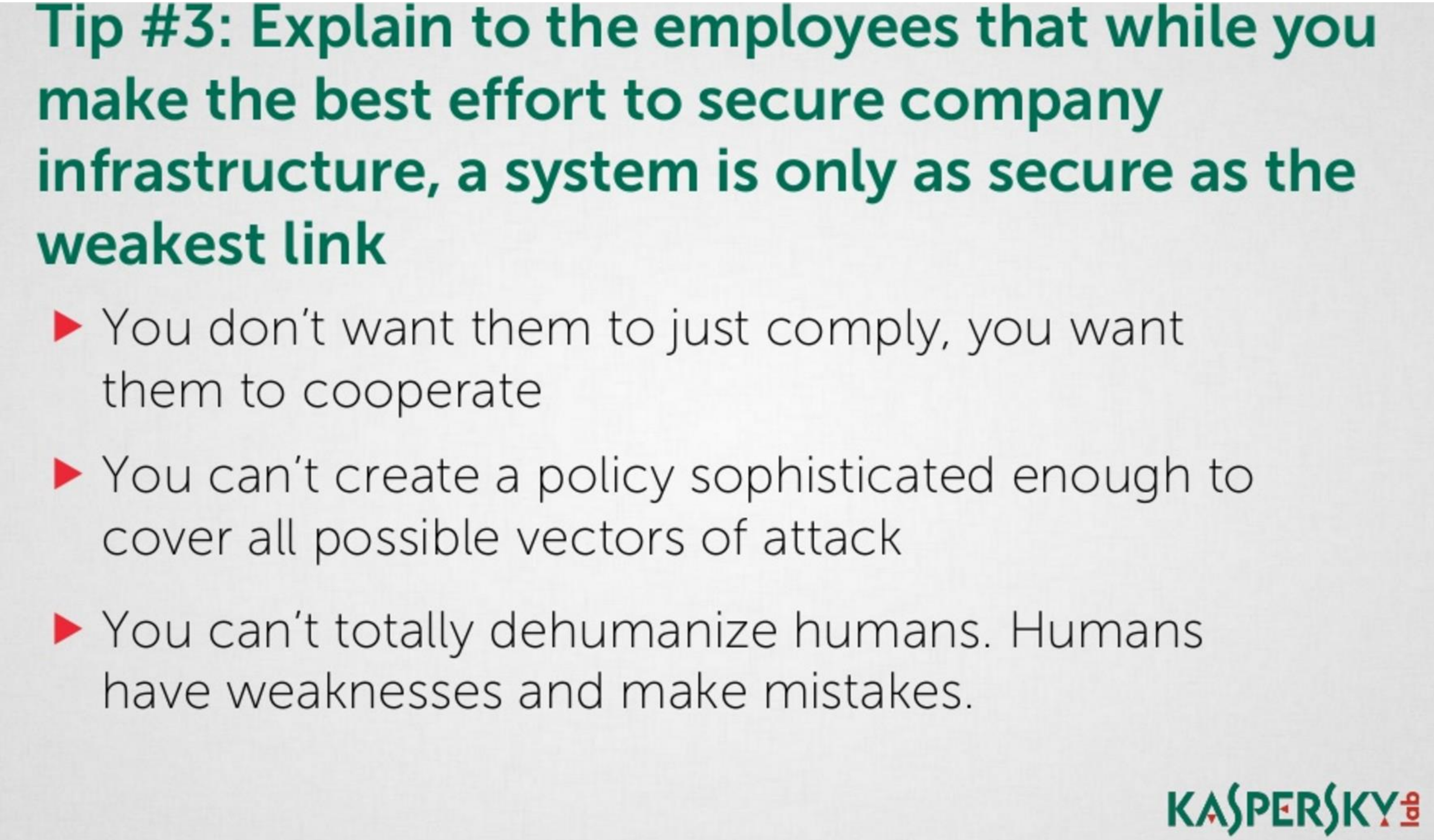
What should be in an information security training course ?

- Create a course outline of topics

- Prioritize the topics for teaching the course

Training courses examples…



Tip #3: Explain to the employees that while you make the best effort to secure company infrastructure, a system is only as secure as the weakest link

- You don’t want them to just comply, you want them to cooperate
- You can’t create a policy sophisticated enough to cover all possible vectors of attack
- You can’t totally dehumanize humans. Humans have weaknesses and make mistakes.

KASPERSKY lab

Training course content example

A. Physical security
B. Desktop security
C. Wireless Networks and Security
D. Password security
E. Phishing
F. Hoaxes
G. Malware
    1. Viruses
    2. Worms
    3. Trojans
    4. Spyware and Adware
H. File sharing and copyright

Brodie, C. (2009), “The Importance of Security Awareness Training”, SANS Institute InfoSec Reading Room, SANS Institute

Training course content example

A. **Password safety and security**
B. Email safety and security
C. Desktop security
D. FERPA Issues (i.e. student information security)
E. Acceptable Use Policy

Fowler, B.T. (2008), “Making Security Awareness Efforts Work for You”, SANS Institute InfoSec Reading Room, SANS Institute

Training course content example…

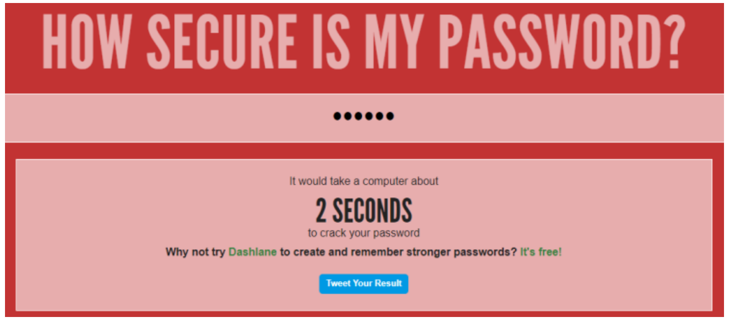
Password safety and security

- 80% of hacking related data breaches involve compromised and weak credentials (login and password)
- 29% of all breaches involve the use of stolen credentials

  2019 Verizon Data Breach Investigations Report

- Security policies need to cover both computer and voice mail passwords

- Every employee should be instructed in how to devise a difficult-to-guess password



HOW SECURE IS MY PASSWORD?

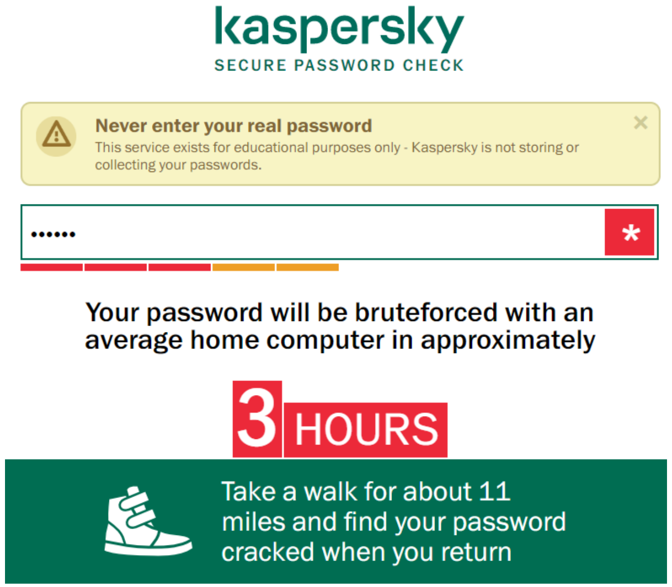
••••••

It would take a computer about

2 SECONDS

to crack your password

Why not try Dashlane to create and remember stronger passwords? It's free!



kaspersky

SECURE PASSWORD CHECK

Never enter your real password

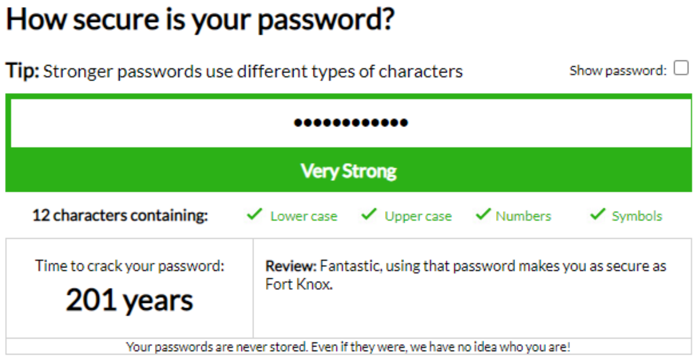
This service exists for educational purposes only - Kaspersky is not storing or collecting your passwords.

••••••

Your password will be bruteforced with an average home computer in approximately

3 HOURS

Take a walk for about 11 miles and find your password cracked when you return



How secure is your password?

Tip: Stronger passwords use different types of characters

Show password: □

••••••••••••

Very Strong

12 characters containing: ✓ Lower case ✓ Upper case ✓ Numbers ✓ Symbols

Time to crack your password:

201 years

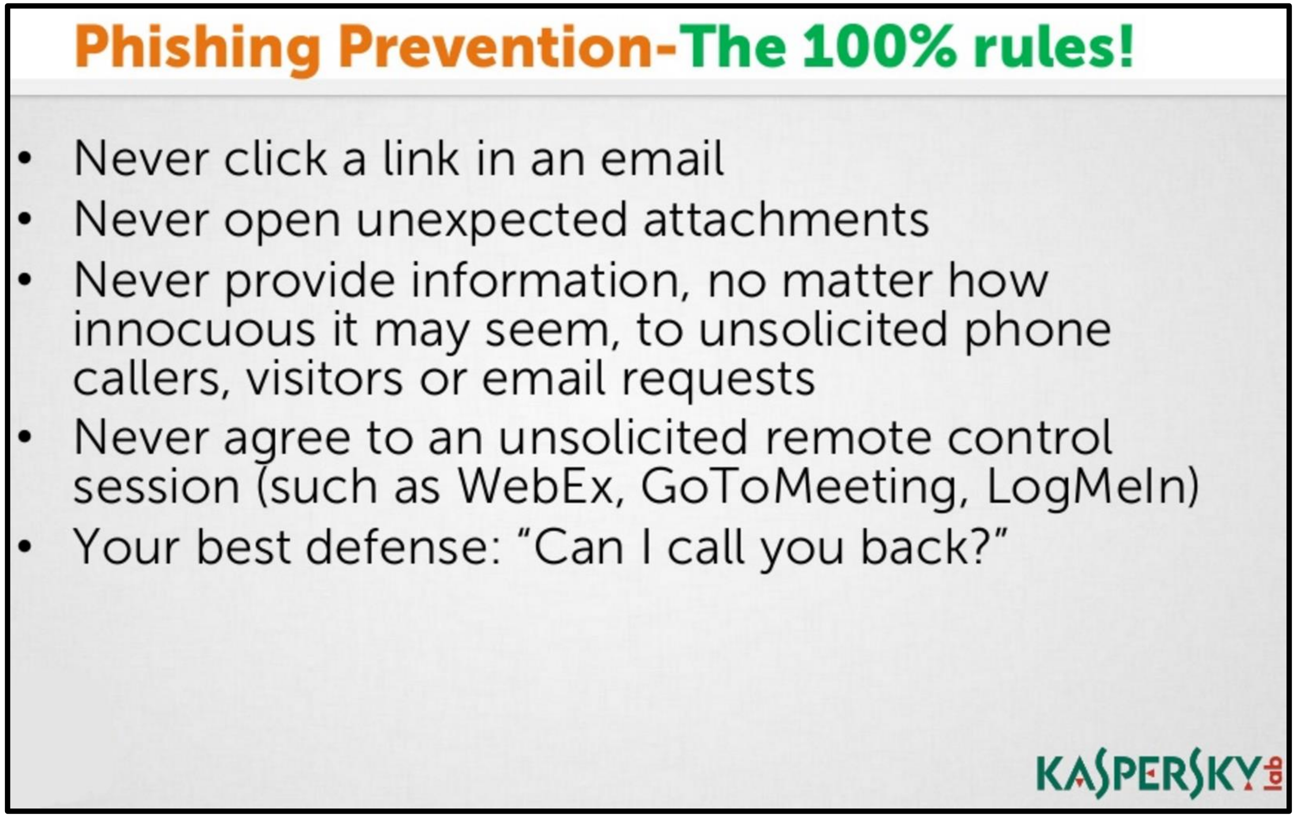
Review: Fantastic, using that password makes you as secure as Fort Knox.

Your passwords are never stored. Even if they were, we have no idea who you are!

Training course content

Email and Voicemail

- Email usage policy, including the safeguards to prevent malicious code attacks including viruses, worms, and Trojan Horses
- Best security practices of voice mail usage



Phishing Prevention-The 100% rules!

- Never click a link in an email
- Never open unexpected attachments
- Never provide information, no matter how innocuous it may seem, to unsolicited phone callers, visitors or email requests
- Never agree to an unsolicited remote control session (such as WebEx, GoToMeeting, LogMeIn)
- Your best defense: "Can I call you back?"

KASPERSKY lab

Training course content

Every employee should know their responsibility to comply with the policies and the consequences for non-compliance

Handling sensitive information

- How to determine the classification of information and the proper safeguards for protecting sensitive information
- The procedure for disclosing sensitive information or materials
- Proper disposal of sensitive documents and computer media that contain, or have at any time in the past contained, confidential materials
- …

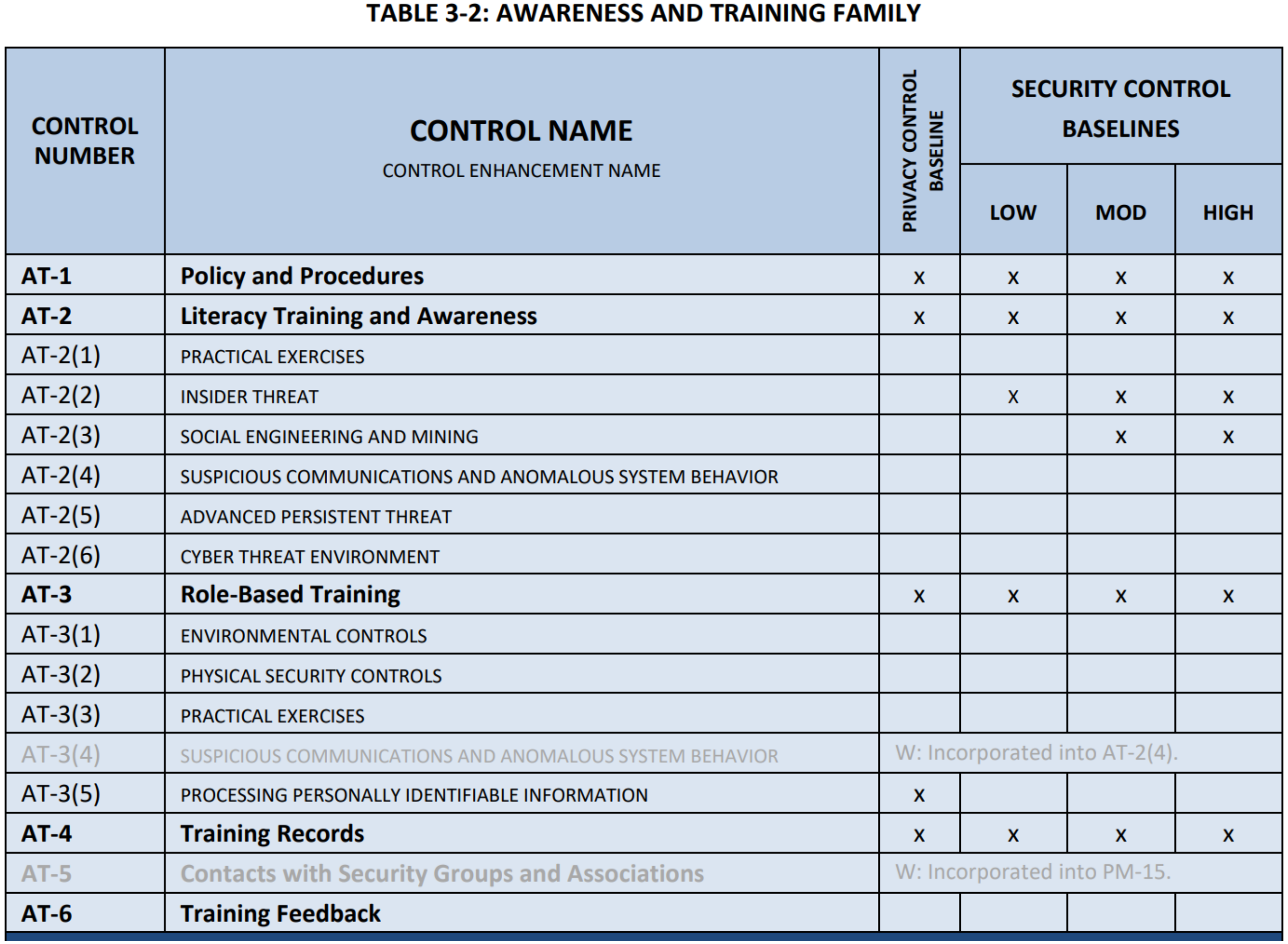
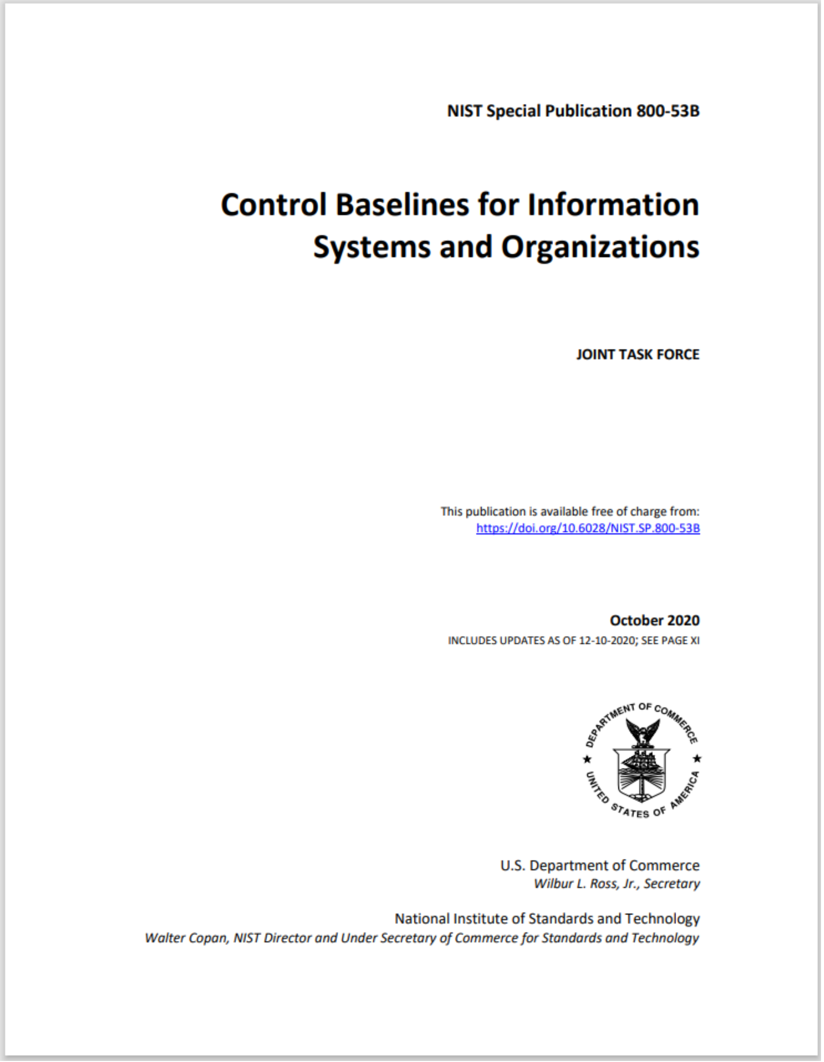


TABLE 3-2: AWARENESS AND TRAINING FAMILY

CONTROL NUMBER	CONTROL NAME CONTROL ENHANCEMENT NAME	PRIVACY CONTROL BASELINE	SECURITY CONTROL BASELINES		
			LOW	MOD	HIGH
AT-1	**Policy and Procedures**	x	x	x	x
AT-2	**Literacy Training and Awareness**	x	x	x	x
AT-2(1)	PRACTICAL EXERCISES				
AT-2(2)	INSIDER THREAT		x	x	x
AT-2(3)	SOCIAL ENGINEERING AND MINING			x	x
AT-2(4)	SUSPICIOUS COMMUNICATIONS AND ANOMALOUS SYSTEM BEHAVIOR				
AT-2(5)	ADVANCED PERSISTENT THREAT				
AT-2(6)	CYBER THREAT ENVIRONMENT				
AT-3	**Role-Based Training**	x	x	x	x
AT-3(1)	ENVIRONMENTAL CONTROLS				
AT-3(2)	PHYSICAL SECURITY CONTROLS				
AT-3(3)	PRACTICAL EXERCISES				
AT-3(4)	SUSPICIOUS COMMUNICATIONS AND ANOMALOUS SYSTEM BEHAVIOR	W: Incorporated into AT-2(4).			
AT-3(5)	PROCESSING PERSONALLY IDENTIFIABLE INFORMATION	x			
AT-4	**Training Records**	x	x	x	x
AT-5	Contacts with Security Groups and Associations	W: Incorporated into PM-15.			
AT-6	**Training Feedback**				



NIST Special Publication 800-53B

Control Baselines for Information Systems and Organizations

JOINT TASK FORCE

This publication is available free of charge from:
https://doi.org/10.6028/NIST.SP.800-53B

October 2020
INCLUDES UPDATES AS OF 12-10-2020; SEE PAGE XI

U.S. Department of Commerce
Wilbur L. Ross, Jr., Secretary

National Institute of Standards and Technology
Walter Copan, NIST Director and Under Secretary of Commerce for Standards and Technology

Social Engineering

- Humans are a key driver of 82% of breaches (Verizon 2022 DBIR, page 8), and social engineering is responsible for a large percentage of these breaches
- Malware and stolen credentials are used as a second step after a social attack gets the threat actor in the door
- This is why having a strong security awareness program is important

These attacks split between Phishing and convincing Pretexting attacks (73% of breaches, DBIR 2024)

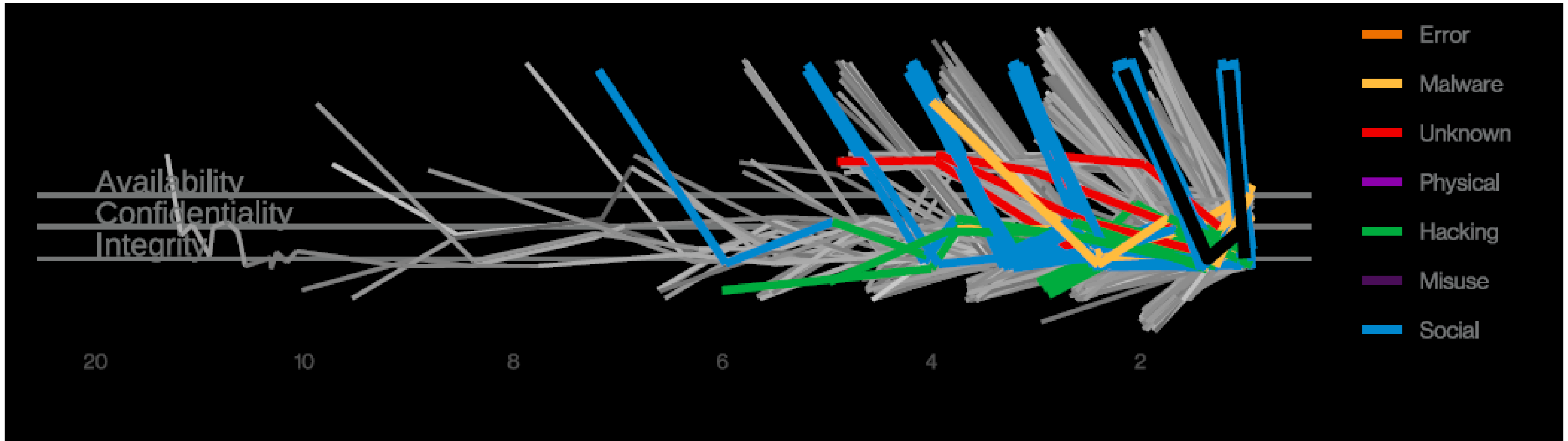
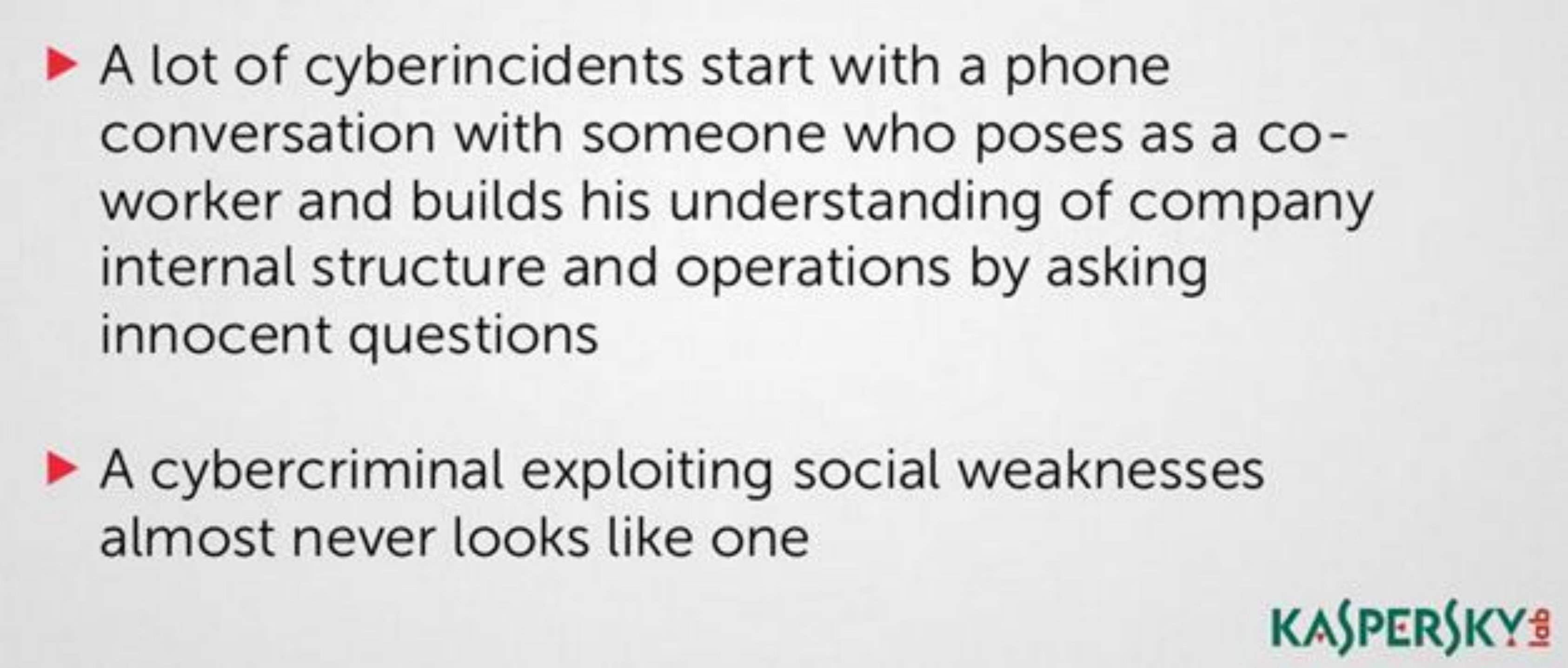


Figure 47. Social Engineering incident paths (n=75)

What is social engineering?

Social engineering attacks have the same common element: deception (with the goal of getting an employee to do something the social engineer desires…)



- A lot of cyberincidents start with a phone conversation with someone who poses as a co-worker and builds his understanding of company internal structure and operations by asking innocent questions

- A cybercriminal exploiting social weaknesses almost never looks like one

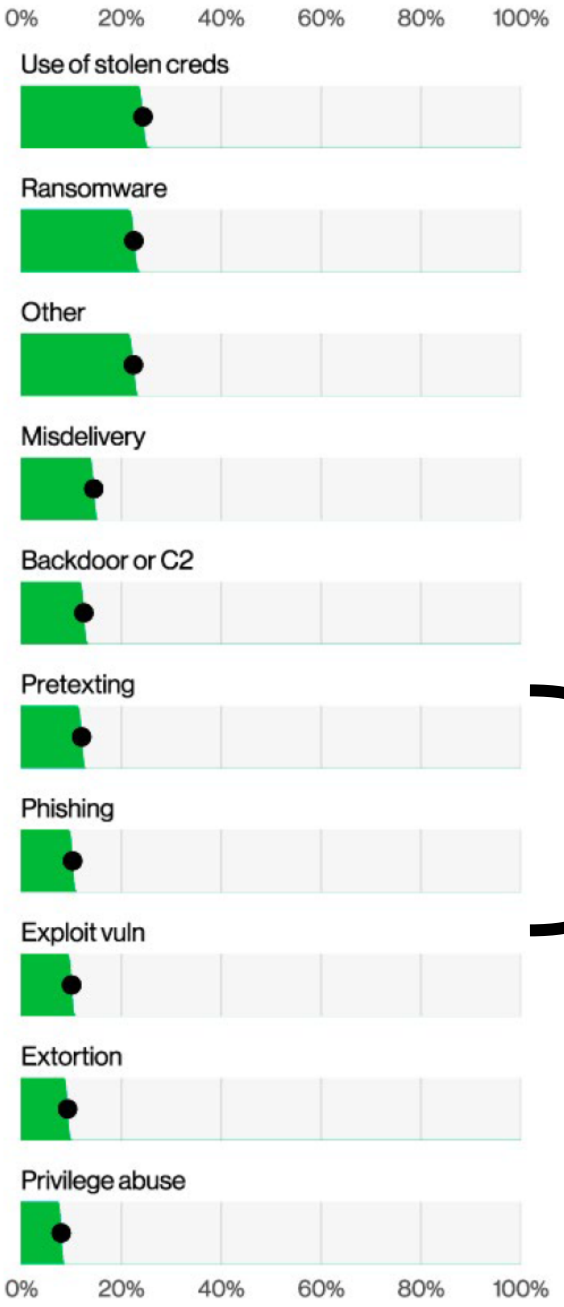
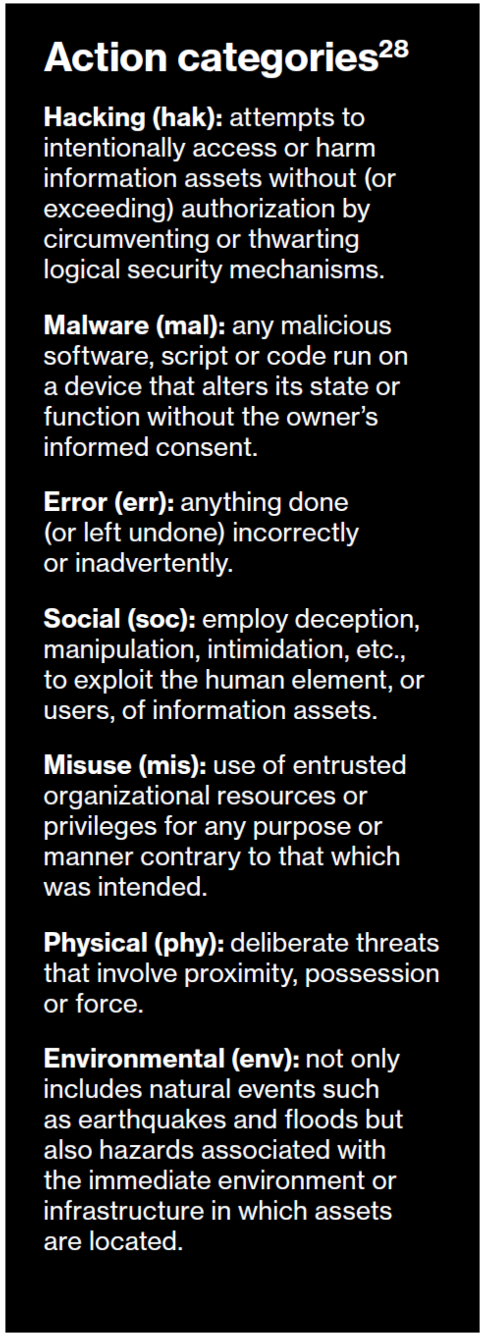


Figure 15. Top Action varieties in breaches (n=9,982)



Action categories[28]

Hacking (hak): attempts to intentionally access or harm information assets without (or exceeding) authorization by circumventing or thwarting logical security mechanisms.

Malware (mal): any malicious software, script or code run on a device that alters its state or function without the owner's informed consent.

Error (err): anything done (or left undone) incorrectly or inadvertently.

Social (soc): employ deception, manipulation, intimidation, etc., to exploit the human element, or users, of information assets.

Misuse (mis): use of entrusted organizational resources or privileges for any purpose or manner contrary to that which was intended.

Physical (phy): deliberate threats that involve proximity, possession or force.

Environmental (env): not only includes natural events such as earthquakes and floods but also hazards associated with the immediate environment or infrastructure in which assets are located.

2024 Data Breach Investigations Report

verizon business

Social Engineering

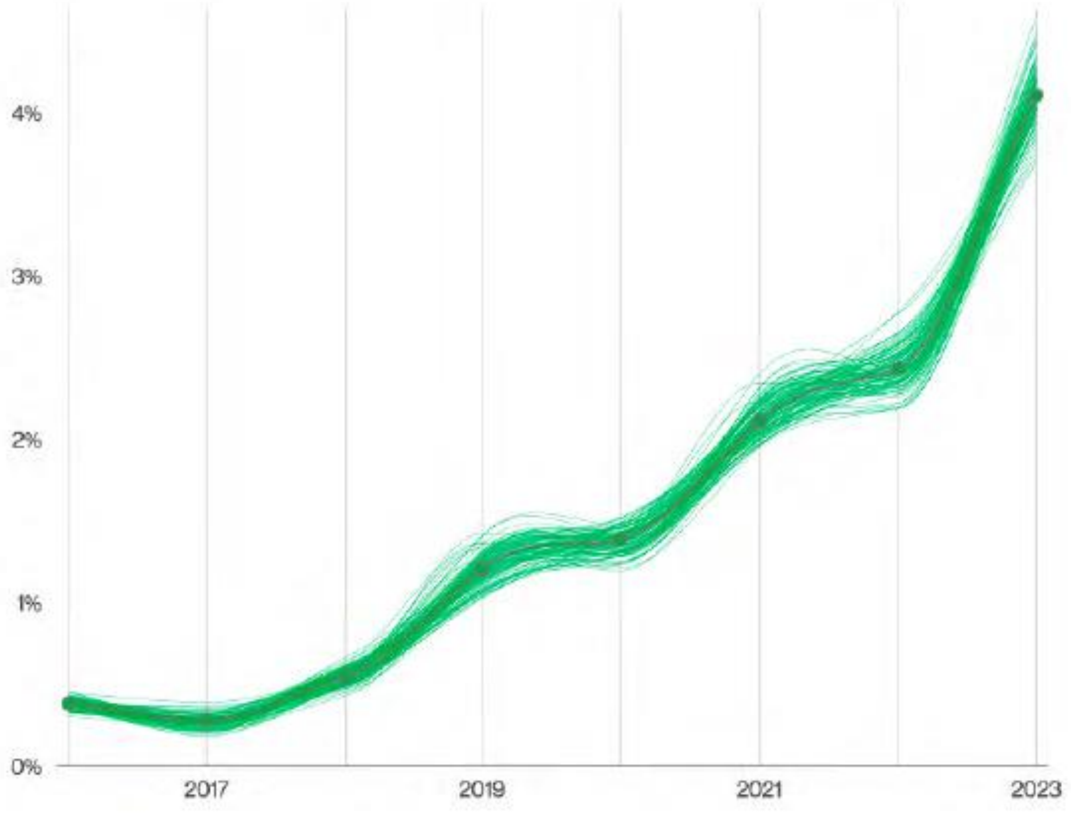
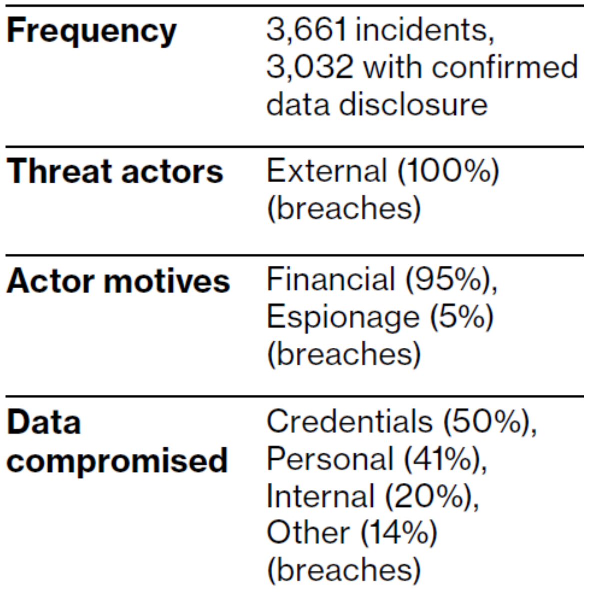
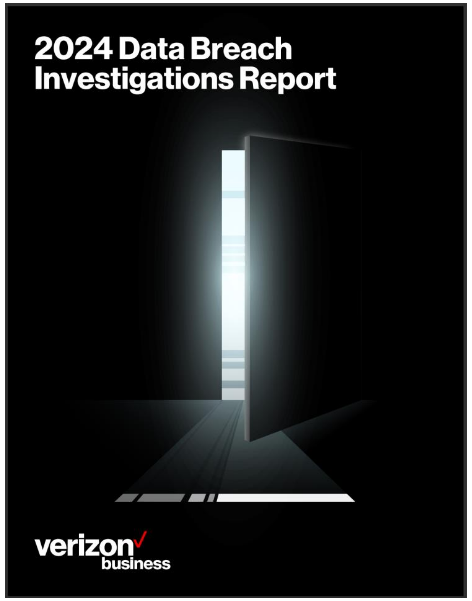


Figure 36. Pretexting incidents over time



Frequency	3,661 incidents, 3,032 with confirmed data disclosure
Threat actors	External (100%) (breaches)
Actor motives	Financial (95%), Espionage (5%) (breaches)
Data compromised	Credentials (50%), Personal (41%), Internal (20%), Other (14%) (breaches)



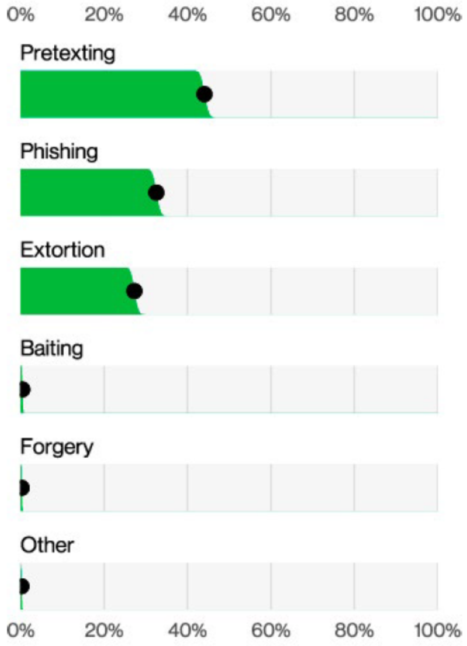
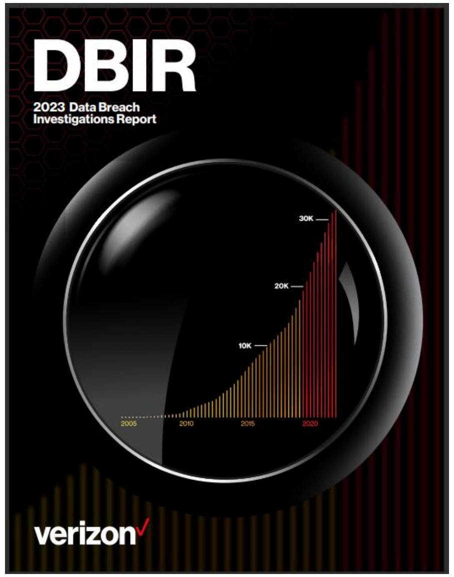
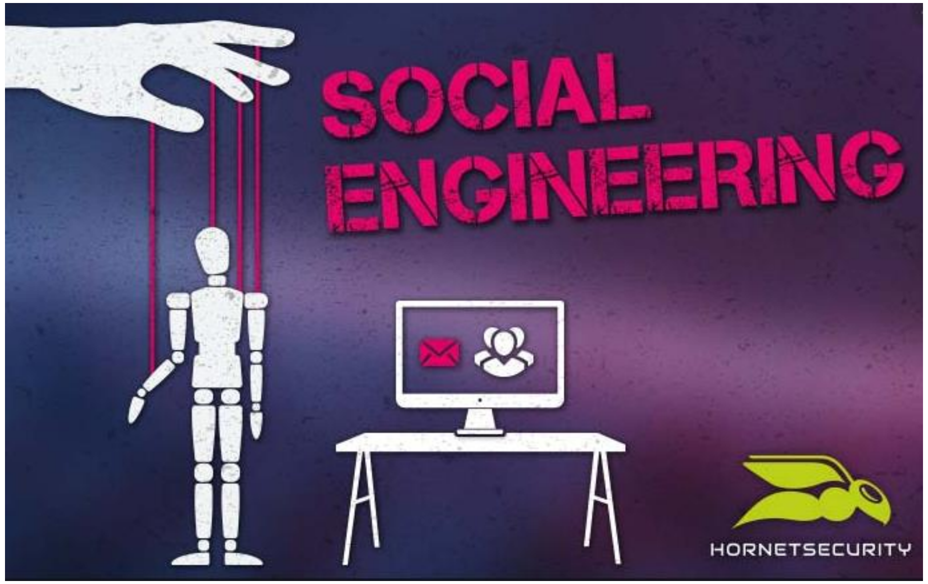


Figure 34. Top Action varieties in Social Engineering incidents (n=3,647)



Creating a Security Aware Organization

An ongoing information security awareness program is vital - because of the need and importance of defending against social engineering and other information security threats



Common Social Engineering Strategies

3 BASIC TYPES OF TACTICS
IN-PERSON
PHONE
DIGITAL

- **Posing** as
  - ❑ a fellow employee
  - ❑ a new employee requesting help
  - ❑ someone in authority
  - ❑ a vendor or systems manufacturer calling to offer a system patch or update
  - ❑ an employee of a vendor, partner company, or law enforcement

- **Offering**…
  - ➢ help if a problem occurs, then making the problem occur, thereby manipulating the victim to call them for help
  - ➢ free software or patch for victim to install

Warning Signs of a Social Engineering Attack

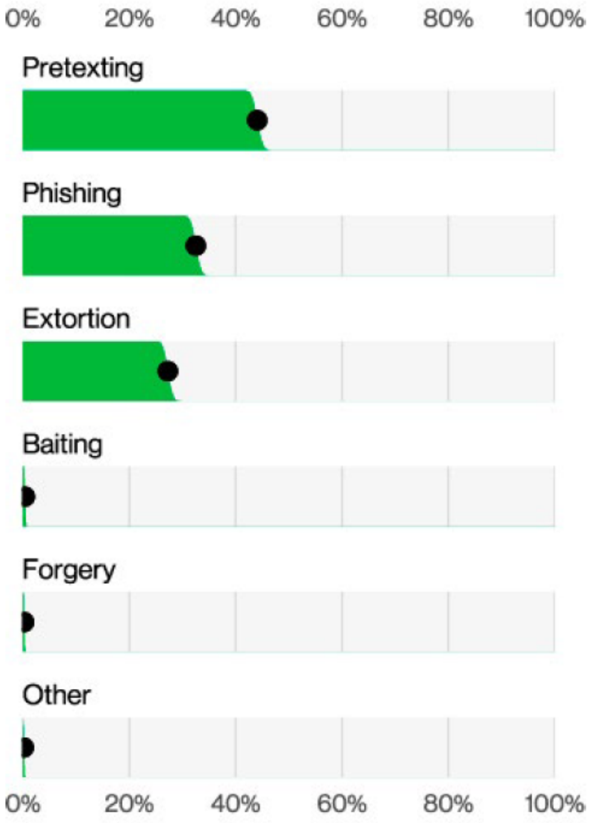
- Refusal to give call back number
- Out-of-ordinary request
- Claim of authority
- Stresses urgency
- Threatens negative consequences of non-compliance
- Shows discomfort when questioned
- Name dropping
- Compliments or flattery
- Flirting

Social Engineering
The clever **manipulation** of the natural human tendency to trust!

Social Engineering

"Regardless of the exact method that attackers use to reach organizations, the core tactic is the same: They seek to exploit our human nature and our willingness to trust and be helpful for their own gain.

While these attacks all share that commonality, one rather significant difference is the scale and pervasiveness of these tactics." Page 37



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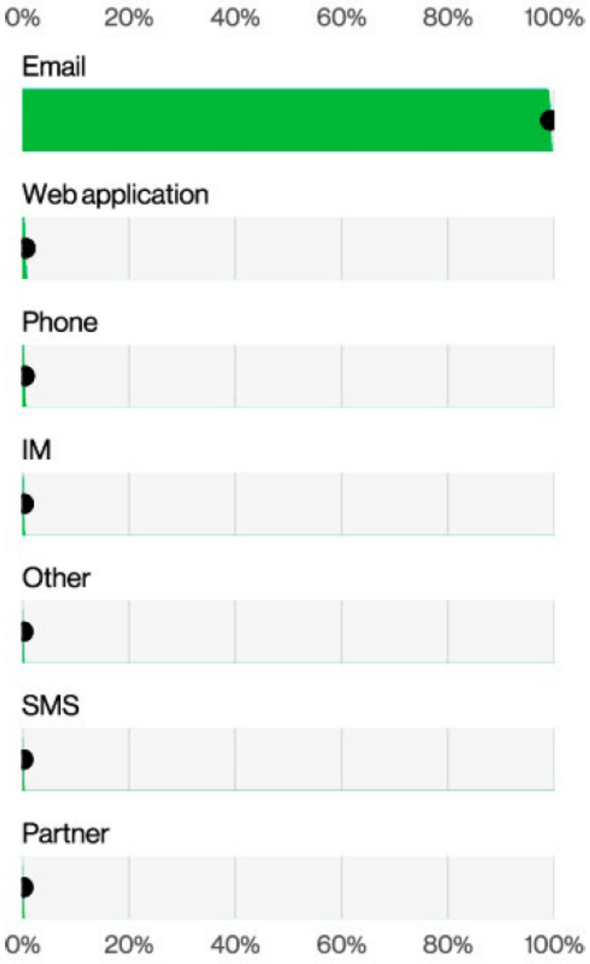


Figure 35. Top Action vectors in Social Engineering breaches (n=2,961)

Phishing

"The first lesson to learn is that Phishing attacks happen fast.
The median time to click on a malicious link after the email is opened is 21 seconds, and then it takes only another 28 seconds to enter the data (Figure 39).
That leads to a frightening finding: The median time for users to fall for phishing emails is less than 60 seconds." Page 40

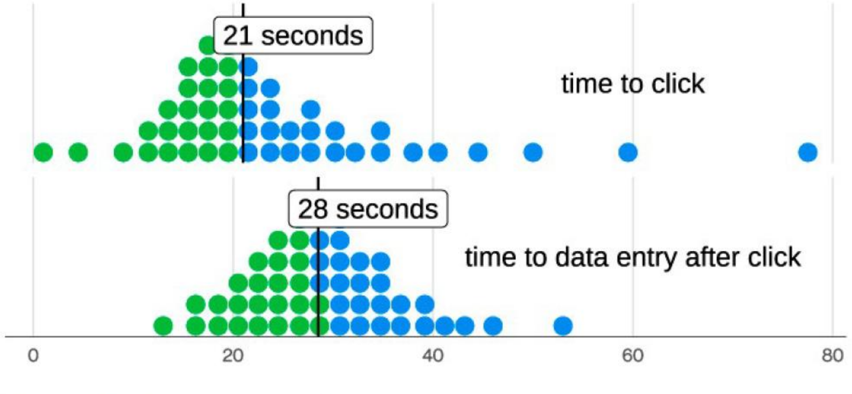
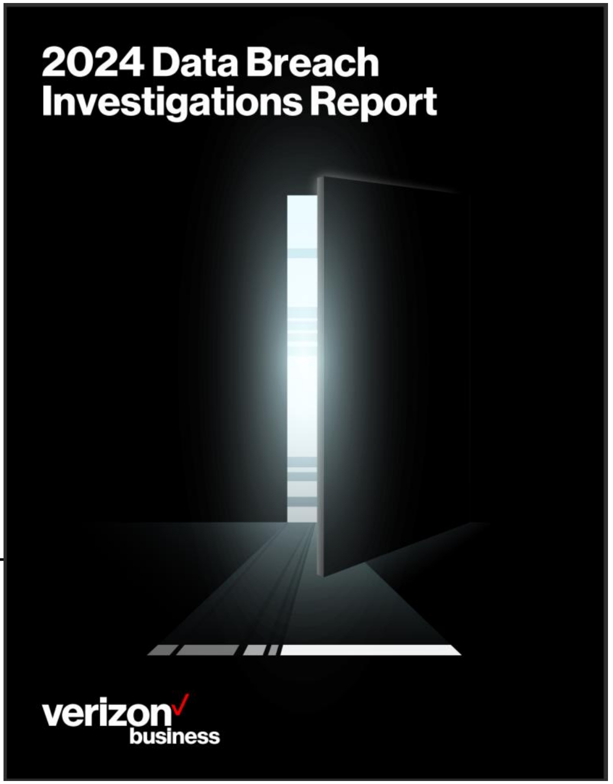


Figure 39. Time between email clicked and data entered



"Some good news is that, as an industry, we seem to be getting better with regard to phishing test reporting.
More than 20% of users identified and reported phishing per engagement, including 11% of the users who did click the email." Page 40

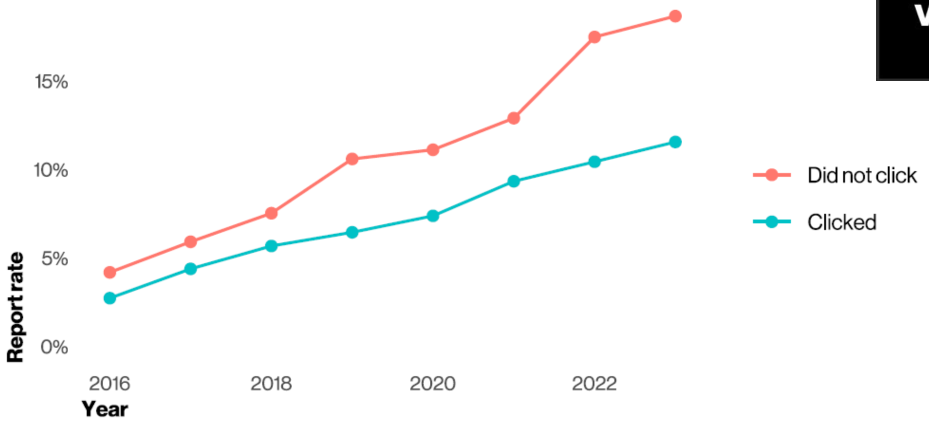


Figure 40. Phishing email report rate by click status

What is “just in time training?”

“Just in time training…”

Data from network incident reporting tools, such as security and information event management (SIEM) systems and data loss prevention(DLP) software… helps understand prevalence of data handling issues

User behavior analytics (UBA) and user entity behavioral analytics (UEBA) provides a way to parse through information collected by SIEM and DLP

UEBA can help provide “just in time training” as a mistake is made

- *UEBA might identify Jane Doe saving a company document to an unapproved internet site (e.g. Dropbox, Box or Google Drive) and deliver a system-generated pop-up that reminds her of the company’s policy on storing company documents in an authorized ecosystem….*

Pendergast, T. (2016) “How to Audit the Human Element and Assess Your Organization’s Security Risk”, ISACA Journal, Volume 5 pp. 20-24

“Just in time training…”

- *If Jane does it again, the system then might provide a quick video on the reasons why it is best to avoid an unapproved cloud storage system.*

- *Months later, if Jane makes the same mistake again, she might be automatically enrolled in a 15-minute course on approved cloud storage and the appropriate way to store company documents. This is a perfect example of delivering the right training to the right person at the right time.”*

Pendergast, T. (2016) “How to Audit the Human Element and Assess Your Organization’s Security Risk”, ISACA Journal, Volume 5 pp. 20-24

Agenda

- ✓ In the News
- ✓ Awareness and Training Controls
- ✓ Creating a Security Aware Organization
  - ✓ Awareness and Training InfoSec Controls
  - ✓ The Threat landscape
  - ✓ Employee risk
  - ✓ Training course content (examples)
- Test Taking Tip
- Quiz

Test Taking Tip

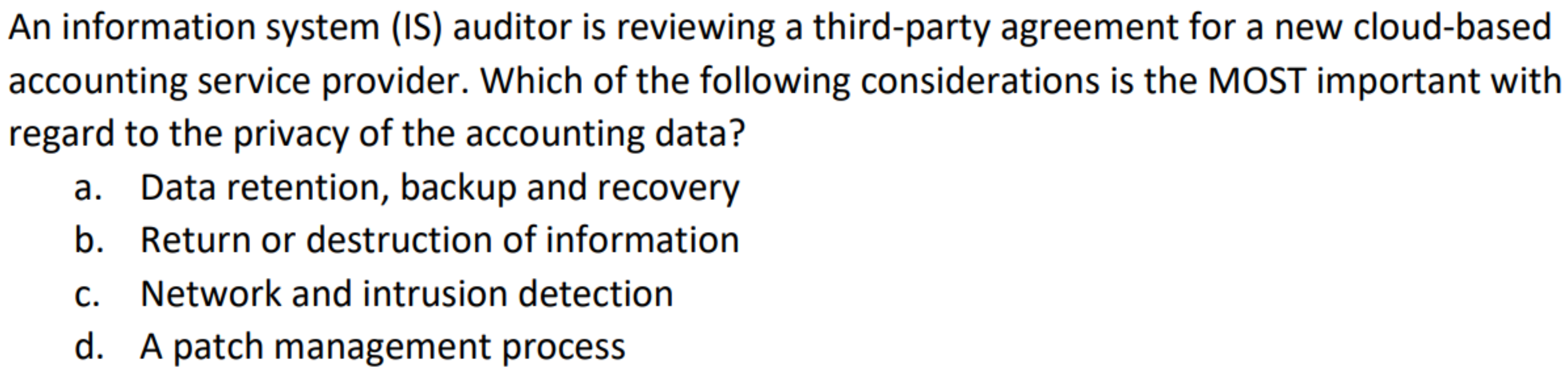
- If you don't know the answer … guess and then move on -

Your score will be higher if you guess and move on even if your guess is wrong

Here's why:

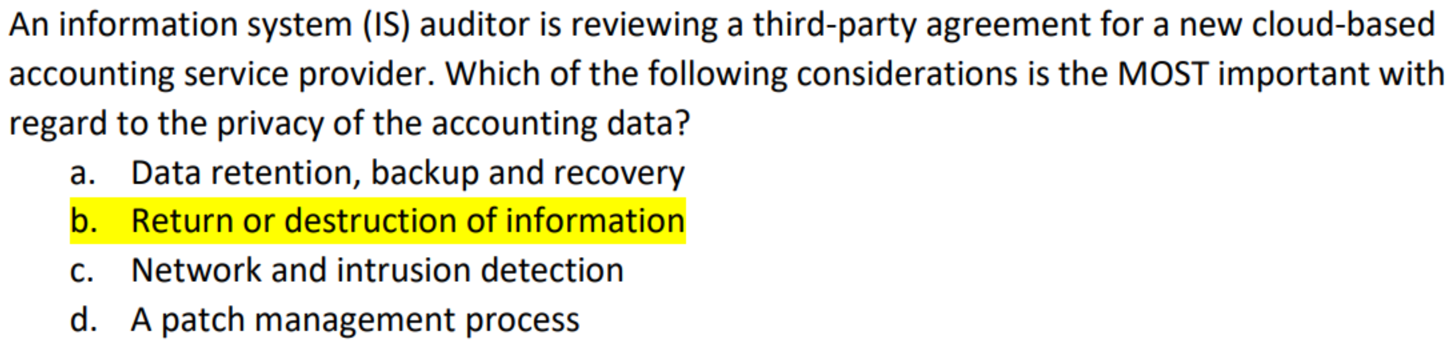
- Most certification tests do not penalize for wrong answers. That is, they only count the number of correct answers in computing the score
- In a 4 option multiple choice test, guessing at questions to which you do not know the answer is likely to get you an additional right answer ¼ of the time
- Guessing, and then moving on, gives you time to answer the questions that you do know, raising your score

Quiz and Solutions



An information system (IS) auditor is reviewing a third-party agreement for a new cloud-based accounting service provider. Which of the following considerations is the MOST important with regard to the privacy of the accounting data?

a. Data retention, backup and recovery
b. Return or destruction of information
c. Network and intrusion detection
d. A patch management process



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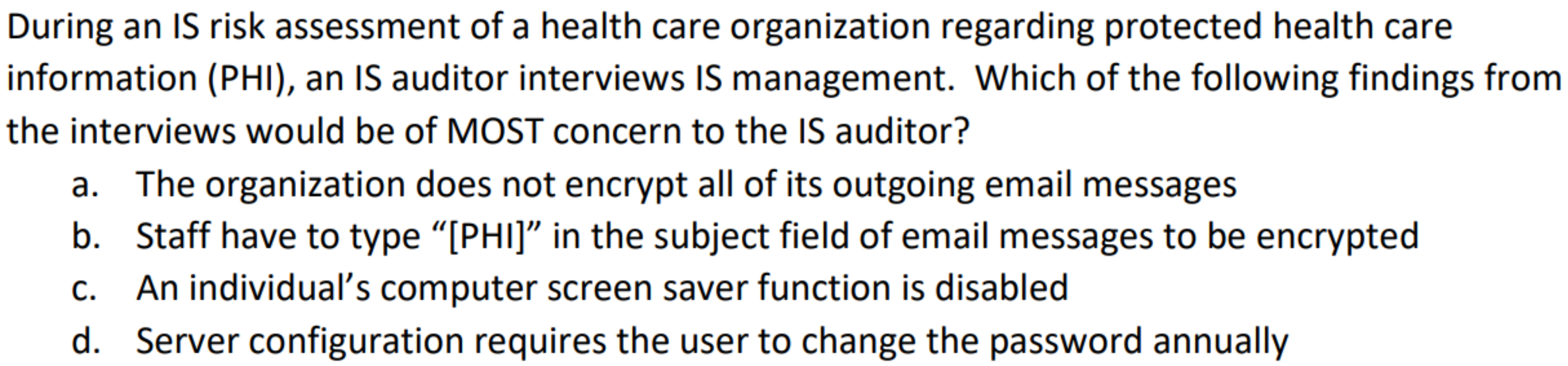
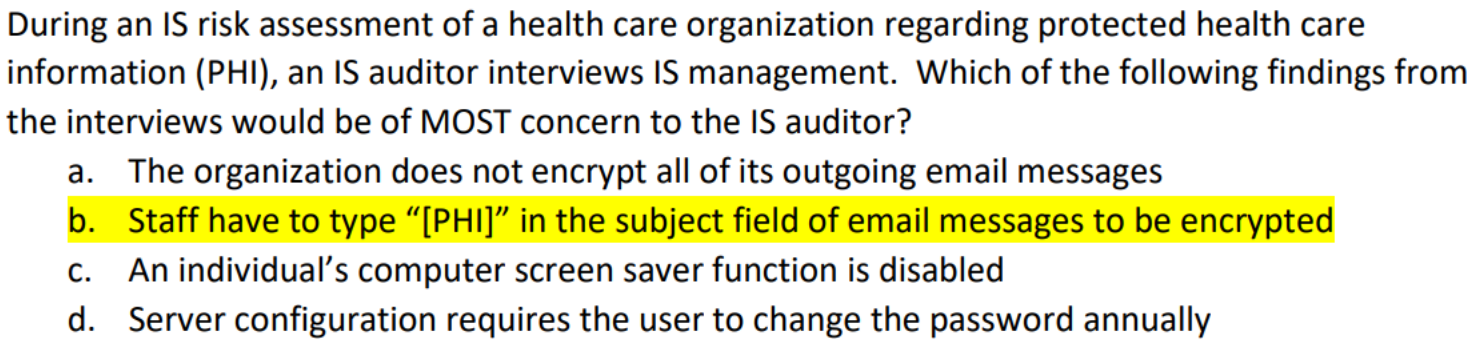


During an IS risk assessment of a health care organization regarding protected health care information (PHI), an IS auditor interviews IS management. Which of the following findings from the interviews would be of MOST concern to the IS auditor?

a. The organization does not encrypt all of its outgoing email messages
b. Staff have to type “[PHI]” in the subject field of email messages to be encrypted
c. An individual’s computer screen saver function is disabled
d. Server configuration requires the user to change the password annually



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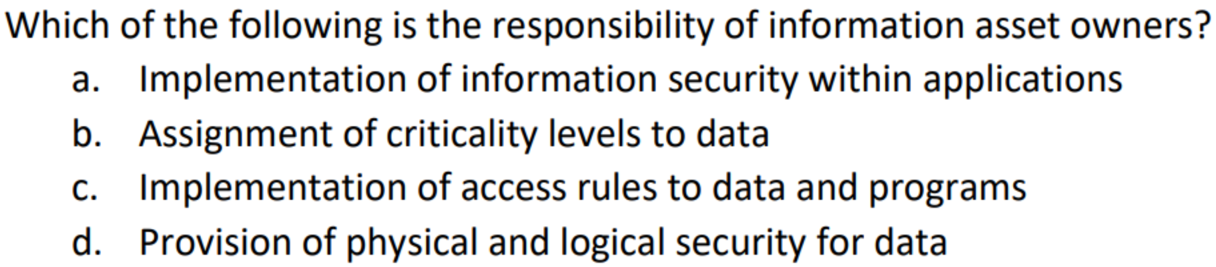
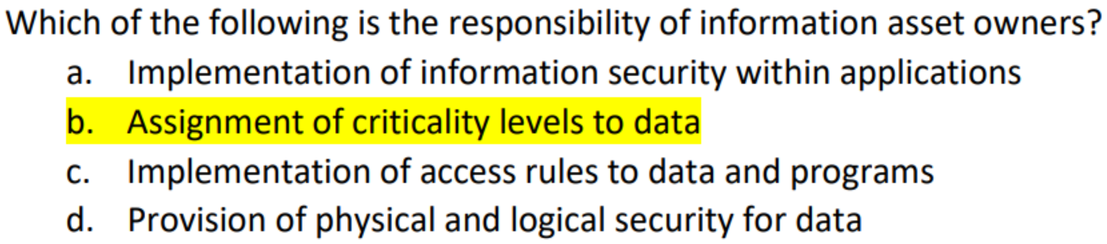


Which of the following is the responsibility of information asset owners?

a. Implementation of information security within applications
b. Assignment of criticality levels to data
c. Implementation of access rules to data and programs
d. Provision of physical and logical security for data



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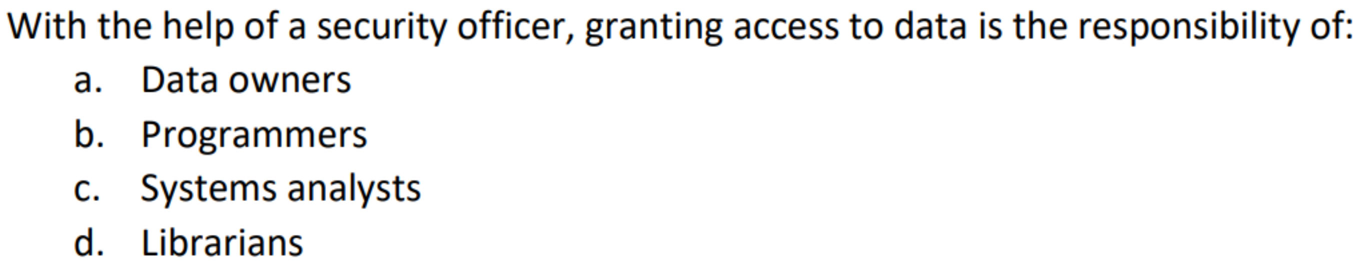
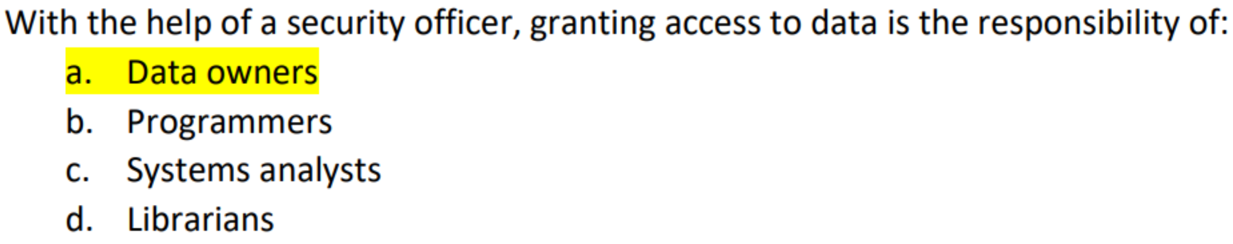


With the help of a security officer, granting access to data is the responsibility of:

a. Data owners
b. Programmers
c. Systems analysts
d. Librarians



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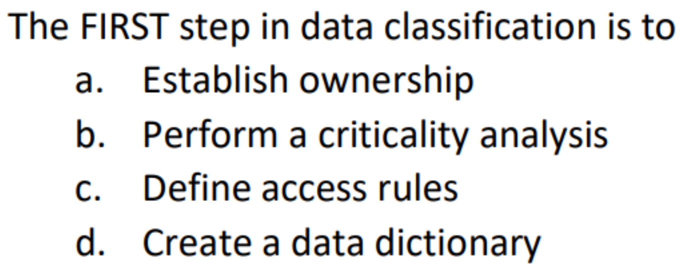
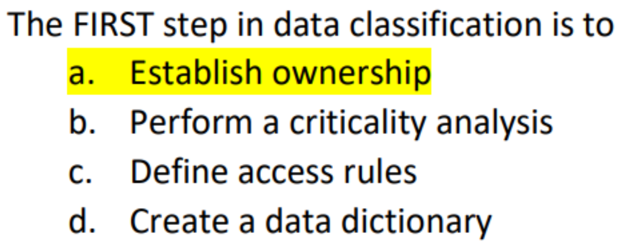


The FIRST step in data classification is to

a. Establish ownership
b. Perform a criticality analysis
c. Define access rules
d. Create a data dictionary



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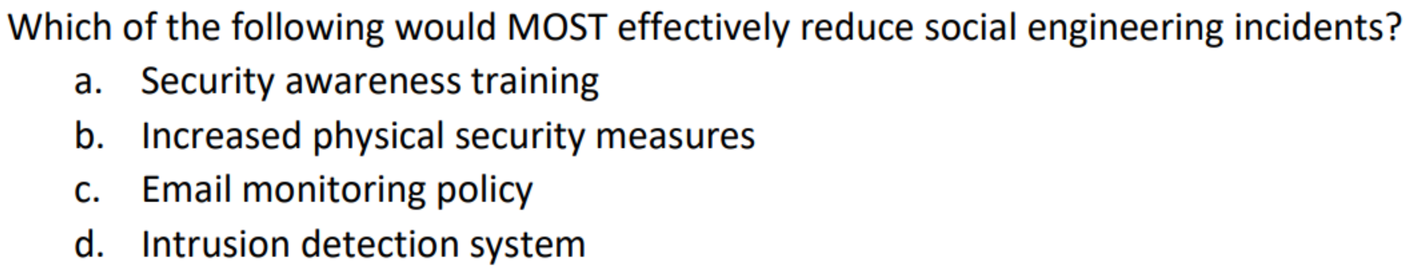
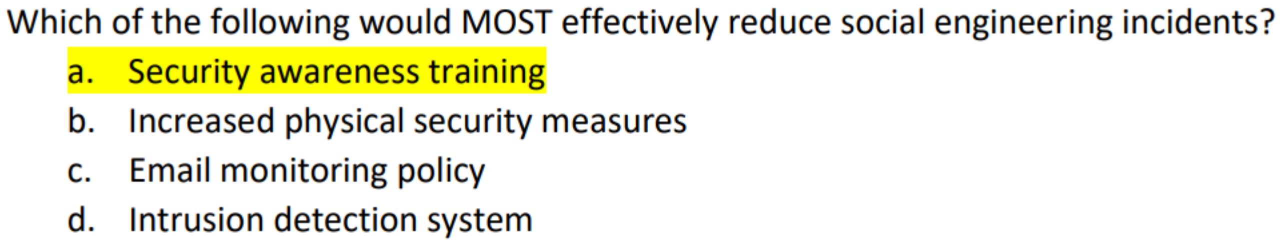


Which of the following would MOST effectively reduce social engineering incidents?

a. Security awareness training
b. Increased physical security measures
c. Email monitoring policy
d. Intrusion detection system



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a. Review the security training program
b. Ask the security administrator
c. Interview a sample of employees
d. Review the security reminders to employees

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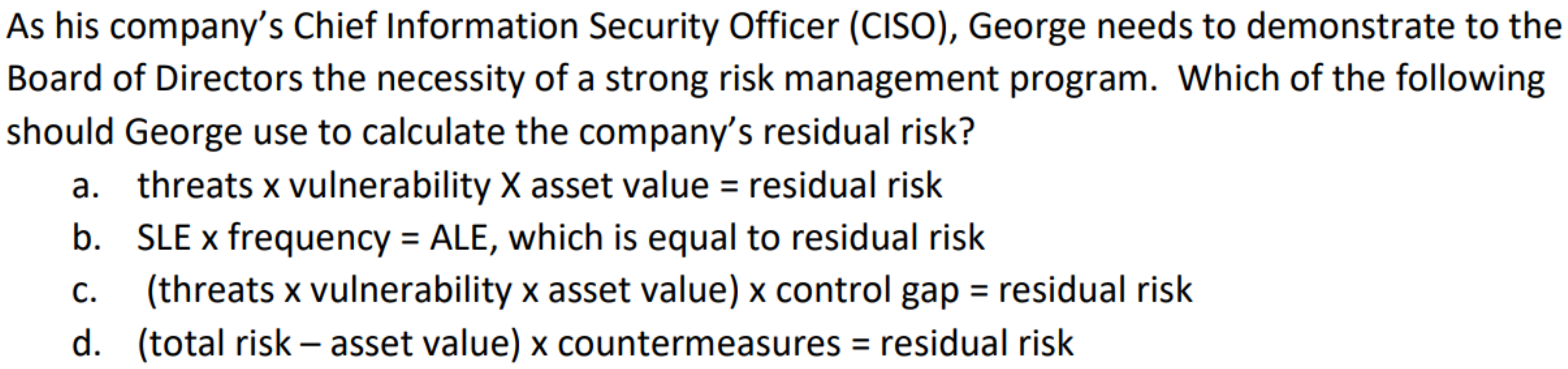
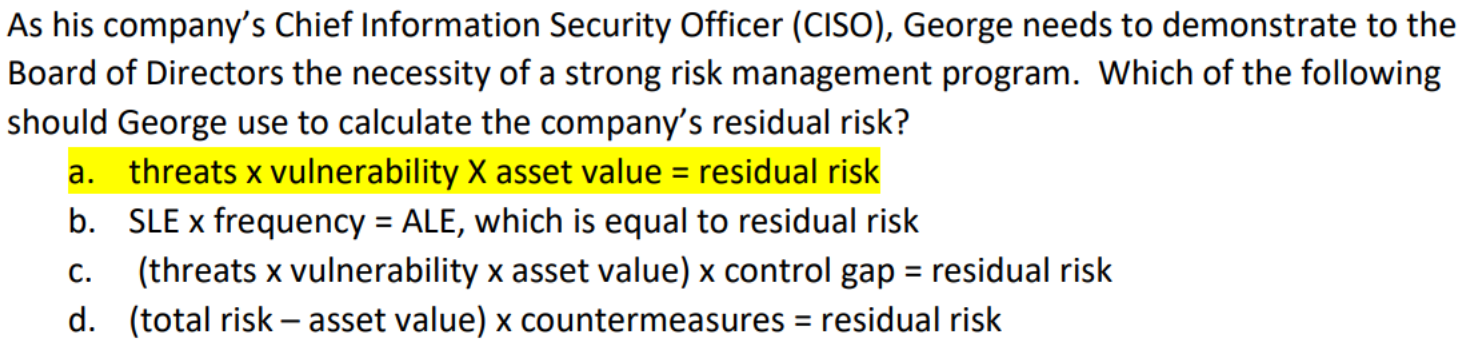


As his company’s Chief Information Security Officer (CISO), George needs to demonstrate to the Board of Directors the necessity of a strong risk management program. Which of the following should George use to calculate the company’s residual risk?

a. threats x vulnerability X asset value = residual risk
b. SLE x frequency = ALE, which is equal to residual risk
c. (threats x vulnerability x asset value) x control gap = residual risk
d. (total risk – asset value) x countermeasures = residual risk



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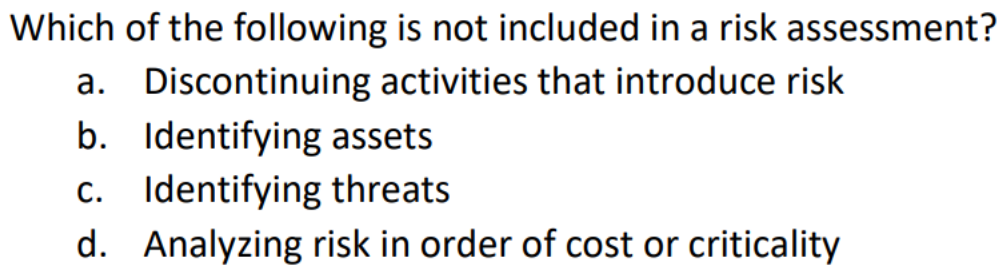
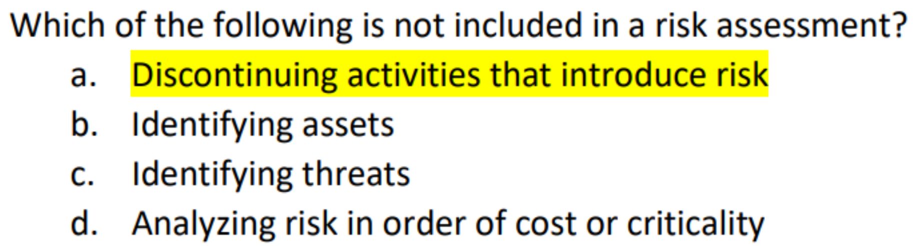


Which of the following is not included in a risk assessment?

a. Discontinuing activities that introduce risk
b. Identifying assets
c. Identifying threats
d. Analyzing risk in order of cost or criticality



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Protecting Information Assets

- Unit# 5 -

Creating a Security Aware Organization