

RSA® Conference 2019

San Francisco | March 4–8 | Moscone Center



BETTER.

SESSION ID: SEM-M01

Folk Theories of Security & Privacy

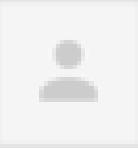
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#RSAC

*****SPAM***** Security Alert

Inbox x



Michigan State University thais.santos@univasf.ec

Feb 22



to ▼

Helpdesk Support Center, Due to congestion in all MSU Net users accounts you need to update your account with our released F-Secure Internet Security 2016. New version of a better resource spam and virus. If you have not upgraded your account, kindly fill in the columns below.

Failure to comply with Cyber-security regulation your MSU NetID account will be temporarily blocked or suspended from our network and you may not be able to receive or send e-mail due to non-compliance.

Full Name*

MSU NetID*

Password*

Confirm Password*

Thank you for your co-operation

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Updates

Available



Agenda.
2 Days Ago

[UPDATE](#)

ENHANCED

- Faster and more stable undo/redo

[more](#)



Monument Valley
2 Days Ago

[Update All](#)

[UPDATE](#)



Monument Valley 2
2 Days Ago

[UPDATE](#)



Nest
Jan 23, 2019

[UPDATE](#)



Notability
Jan 22, 2019

[UPDATE](#)



Microsoft OneDrive
Jan 16, 2019

[UPDATE](#)



Pulse Secure
Jan 23, 2019

[UPDATE](#)

Pulse Secure for iOS app is the Unified Client for enabling Secure Access to your Enterprise reso [more](#)



YouTube Music
Jan 17, 2019

[UPDATE](#)

We update our app all the time in order to make your YouTube Music experience better. We polished [more](#)

Updated Recently



Gmail - Email by Google
Jan 21, 2019

[OPEN](#)



Google Drive
Jan 20, 2019

[OPEN](#)

This release brings enhancements that help you get more out of your inbox: [more](#)



NETGEAR Orbi
Jan 20, 2019

[OPEN](#)

We are always working hard to improve our apps and truly appreciate your feedback! This release inc [more](#)



1Password -

[OPEN](#)



The New York Times
Jan 20, 2019

[OPEN](#)

• Minor bug fixes.
• We're always working on improving the app, a [more](#)

AT&T 15:15 1 90%

Updates

Available

[Update All](#)

Signal - Private
Messenger
2 Days Ago

[UPDATE](#)

The New York Times
2 Days Ago

[UPDATE](#)

Audible audiobooks
& originals
3 Days Ago

[UPDATE](#)

Change your Password — Changing your Password periodically helps ensure the security of your account information.

*** Required field**

Change Password

Enter your current Password, then choose and confirm your new Password.

Your new Password:

- Must be 8-32 characters long
- Must include at least two of the following elements:
 - At least one letter (upper or lowercase)
 - At least one number
 - At least one special character from the following: # \$ % ' ^ , () * + . : | = ? @ /] [- ` { } \ ! ; - ~
- Must be different than your previous five Passwords
- Must not match your User ID
- Must not include more than 2 identical characters (for example: 111 or aaa)
- Must not include more than 2 consecutive characters (for example: 123 or abc)
- Must not use the name of the financial institution (for example: JPM, MORGAN, CHASE)
- Must not be a commonly used password (for example: password1)

Current Password *

New Password *

Confirm new Password *

Change Password



Search for a location or
allow Dark Sky to access
your current location.

[Change Settings](#)



Forecast



Map



Notifications



Report

Not authorized

No authorization to access camera.
Please go to iOS Settings > Privacy >
Camera

OK



Exposure compensation

Nan



1

- Can't remove the user from all security decisions!
- A system's security depends on the choices made by its users.
- So, how do regular users make security decisions?
- And how can we help them make better choices?

<https://www.flickr.com/photos/stevendepolo/4226949238>



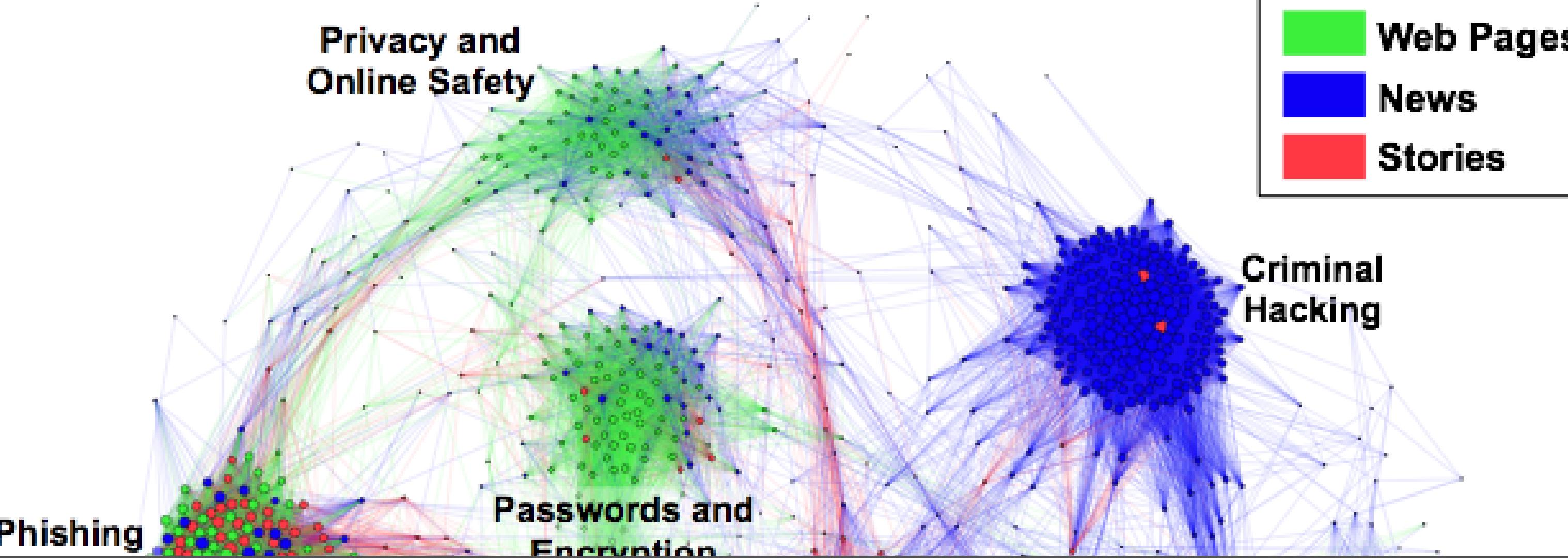
Folk Theories are...

- Informal, causal, explanatory "ways of understanding"
- Develop out of everyday experiences with technologies
 - informal learning based on experience
- Help people envision what might happen, based on what they already know
- Incomplete, and not necessarily technically accurate
- Useful "rules of thumb" that guide decision-making!



PRIVACY
PLEASE

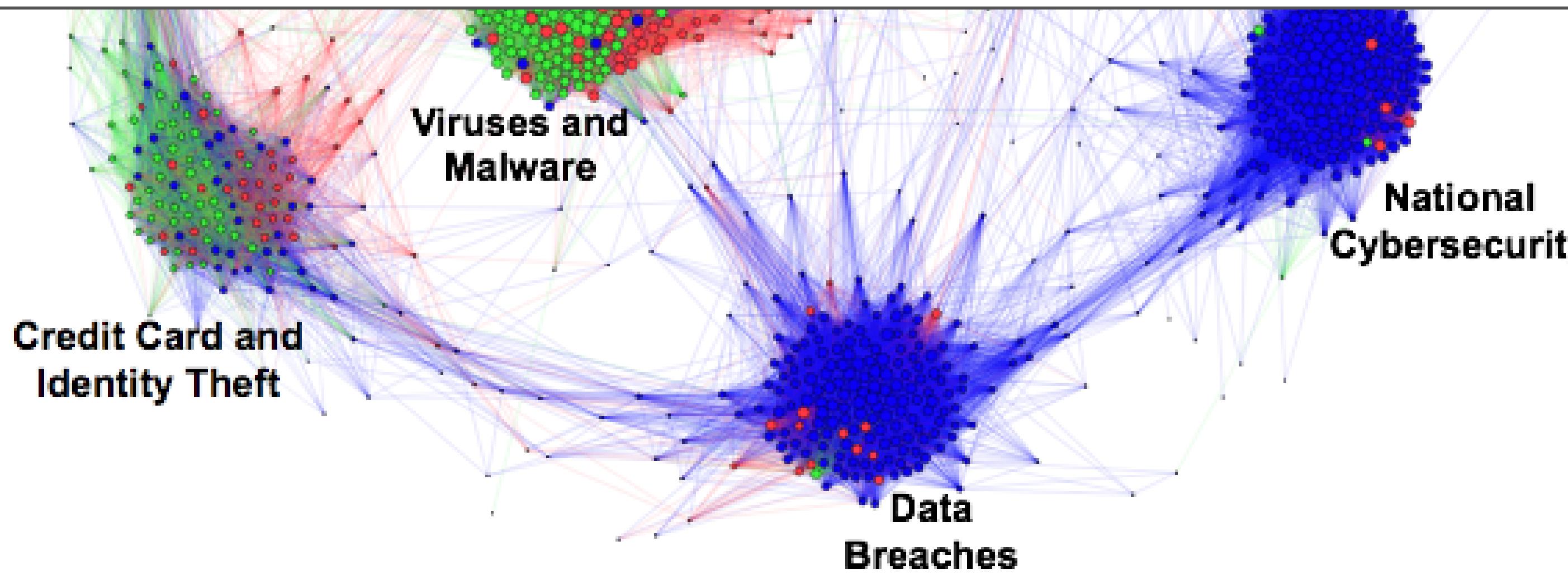
**Folk theories of experts, versus
"regular" users**



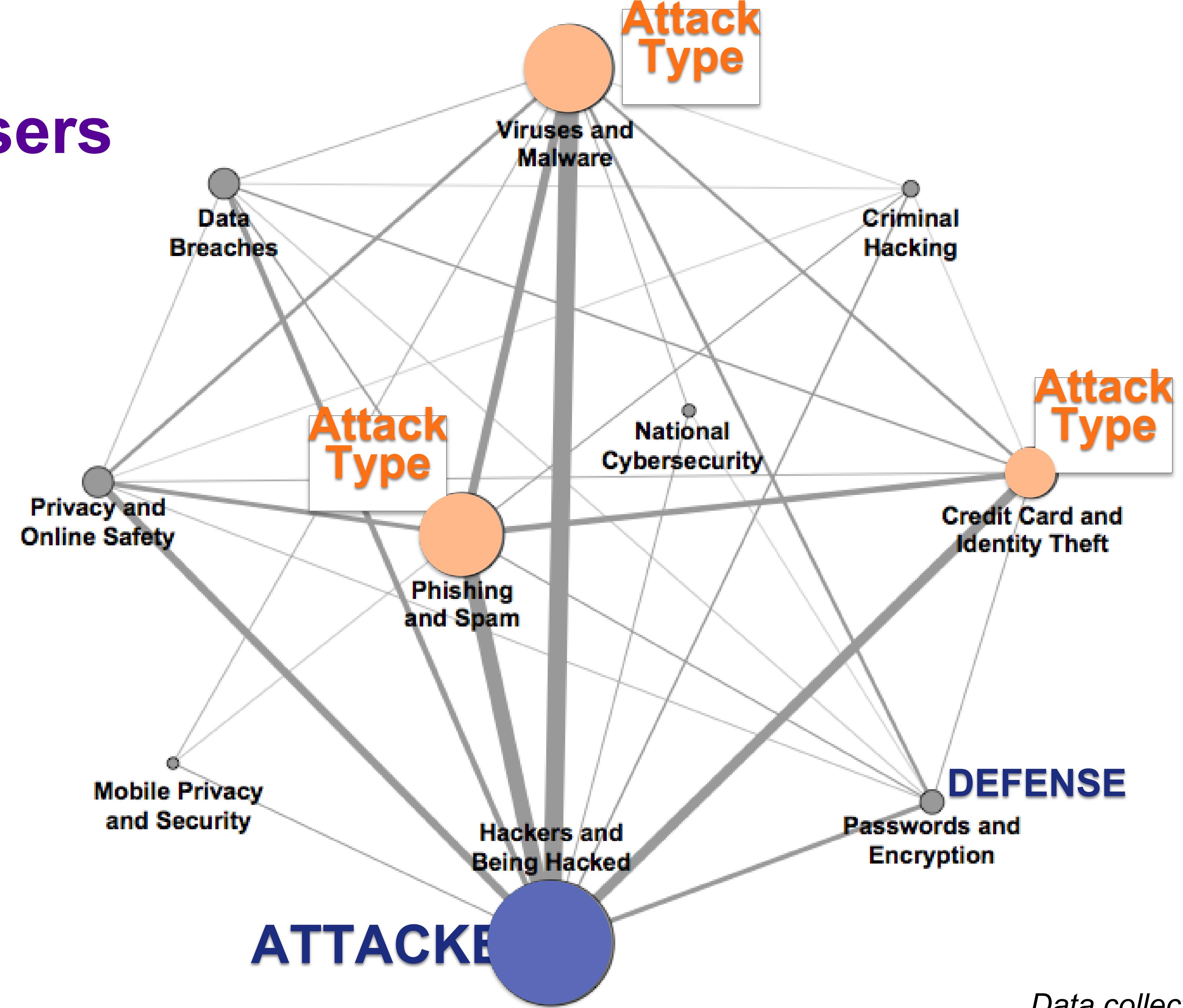
STORIES people tell each other about security (301)

WEB PAGES with advice from experts (509)

NEWS ARTICLES about cybersecurity (1072)

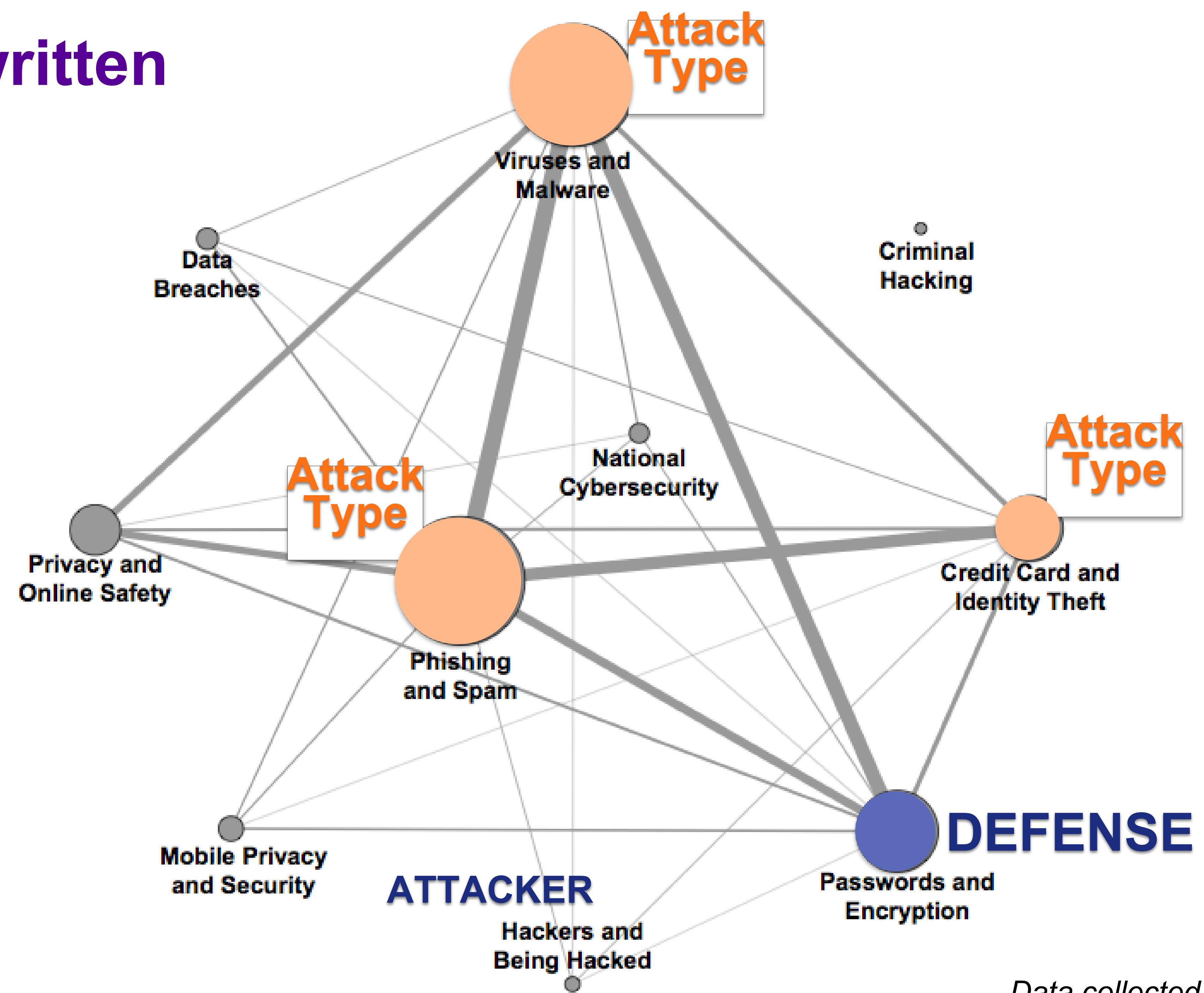


Stories from "Regular" Users



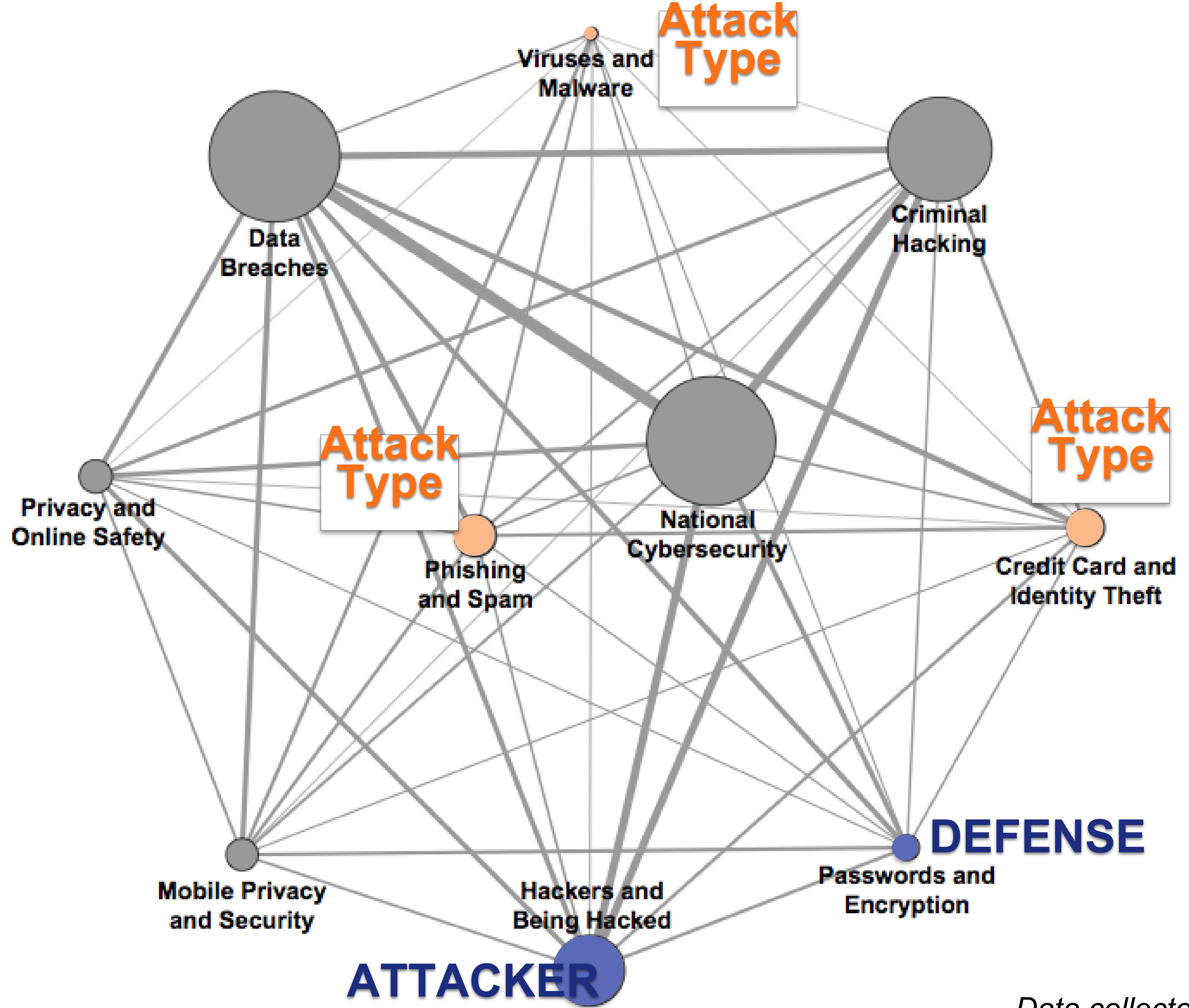
Data collected in 2012

Web Pages written by Experts



Data collected in 2012

News Articles



Comparing Information Sources

- Stories from "regular" users explain **agency**: connecting *who* attacks with the *type* of attack
- Experts explain **method**: connecting the *types* of attack with *preventative* measures
- News articles explain **consequences**, but for society not for individuals

**When are folk theories
important?**



Folk theories are important when...

- Learning from experience
- Choosing to take protective action
- Consenting to data collection

Learning from experience:

- Software updates are becoming more automated, but...
 - people often don't have the settings they intend
 - people don't consistently choose the settings they want
- Automating the install of software updates provides few opportunities to learn
- This makes it harder for people to learn how to connect cause and effect

Choosing to take protective action:

- Belief that one could be a target of hackers associated with taking protective action
 - But, belief that hackers target other people (not me) was NOT associated with protective action
- Belief that viruses cause visible problems associated with using antivirus
 - But, belief that you can "catch" a virus simply by browsing the internet was NOT associated with protective action

Consenting to data collection:

- Privacy self-management relies on user consent
- Consent depends on awareness -- folk theories!
- Awareness is about what's visible, and therefore “know-able” to users:
 - visible in terms of what a person can imagine being directly collected
 - and also in terms of what the interface shows to them

What does this mean?

- Hiding security and privacy from users means they can't learn from experience
- Identify decision points where it is important to include users, such as:
 - Authentication
 - Software Updates
 - Consent
- Design feedback that augments what users already believe

“Technical experts will evaluate folk theory from this perspective [correctness] -- not by asking whether it **fulfills the needs of the folk**. But it is the latter criterion [...] on which sound public policy must be based.”

- Willett Kempton, 1986

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Thank you!

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