Economics of Cybersecurity

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Economics of cybersecurity

93% of attacks are preventable

- Known vulnerabilities
- Social engineering (e.g. phishing for a password)

Non-preventable ones could still be mitigated

- Keep less data
- Encrypt what is kept
- But costs are high and growing
- Estimates of \$500 billion per year for breaches
- Loss of customers, jobs, privacy

Question: Why is more not done to prevent or mitigate, given the costs of an attack?



Password security as an example of economic challenges

Password issues

- Simple passwords
- Commonly reused across services (personal and work)
- Easy entry point for hackers

Solutions exist including password managers

- Create, store, and use complex passwords
- In one survey, only 12% use password managers
- Most remember them or write them down

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A password manager only increases security if it is secure

Product	🕑 dashlane	Sticky Password	LastPass ••••	PASSWORD BOSS	ZOHO	keeper	S Logne Coo	RoboForm
Lowest Price	Dashlane - 1 year plan	Special Offer	LastPass	Password Boss	Zoho	Keeper Security	LogMeOnce	RoboForm
	SEE IT	SEE IT	SEE IT	SEE IT	SEE IT	SEE IT	SEE IT	SEE IT
Editors' Rating	EC CHOICE						E ADITORS	
Import From Browsers	~	~	\checkmark	\checkmark	_	\checkmark	~	\checkmark
Two-Factor Authentication	~	\checkmark	~	\checkmark	~	~	~	~
Fill Web Forms	~	~	~	~	_	~	~	\checkmark
Multiple Form- Filling Identities	~	~	~	~	_	~	~	~
Actionable Password Strength Report	~	-	~	~	~	~	~	~
Browser Menu Of Logins	~	~	~	~	~	~	~	~
Application Passwords	-	~	~		-	~	_	~
Secure Sharing	~	_	~	\checkmark	~	~	~	~
Digital Legacy	~		~	~	~	~	\checkmark	~

How to choose a password manager?

Ranking usage features, but not underlying security

What are safeguards if there is a problem?

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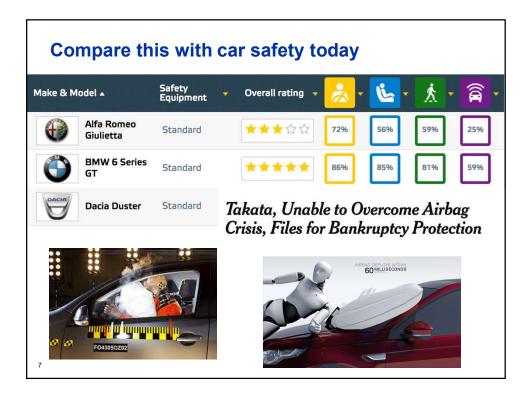
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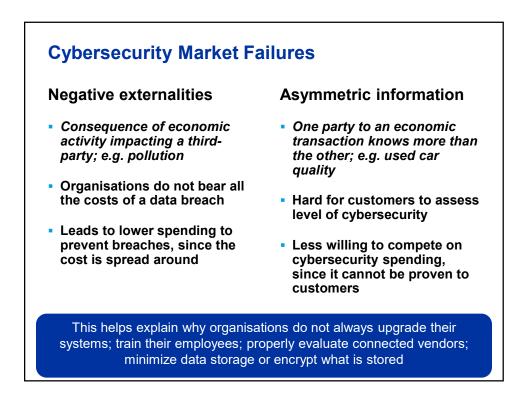
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Market failures require external solutions

Technology designed around human behaviour

- Automatic security updates on operating systems
- Password complexity prompts
- Default password managers

Non-regulatory solutions

Security testing and ratings

- Consumer Reports or Which?
- Starting for cyberinsurance

Certification

- As with UL for electricity
- Set standards for cybersecurity

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Regulations to address market failures

Externality

- Internalise costs of breaches
- Increased liability on breach (mandatory disclosure, consumer protection, etc.)

Asymmetric information

- Mandates on features which consumers cannot verify or assess
- For instance, require encryption of stored data; limits on how long kept

New issues arising

Jeep Chrysler

- Introduced Internet-enabled entertainment system
- Researchers could take over brakes and transmission wirelessly

Reaction

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- Jeep recalled with security update through USB
- But, Jeep claimed it was not a defect, like a bad airbag, but rather an act of vandalism
- Regulatory liability for such attacks still not established





Bibliography

The Economics of Building Trust Online: Preventing Data Breaches. Internet Society Global Internet Report 2016, https://www.internetsociety.org/globalinternetreport/2016

Cyber Incident and Breach Response, Online Trust Alliance, https://otalliance.org/resources/cyber-incident-breach-response

Cybersecurity Policy Initiatives, Geneva Internet Platform, https://dig.watch/issues/cybersecurity

Hackers Remotely Kill a Jeep on the Highway – With Me in It, https://www.wired.com/2015/07/hackers-remotely-kill-jeep-highway/

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