Economics of Cybersecurity
Geneva Cybersecurity Law & Policy Conference

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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?
Inaction is not uncommon

Seat belt use was slow

- 1950s patented
- 1960s standard in cars
- 1970s (United States)
  - Study showed 60% safer in accident
  - 80% did not use
- 1980s seat belt legislation

Air bag adoption was similar

- Low demand and supply
- Adoption was mandated

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

A password manager only increases security if it is secure
How to choose a password manager?

<table>
<thead>
<tr>
<th>Product</th>
<th>Dashlane - 1 year plan</th>
<th>Special Offer</th>
<th>LastPass</th>
<th>Password Boss</th>
<th>Zoho Keeper</th>
<th>LogMeOnce</th>
<th>RoboForm</th>
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Ranking usage features, but not underlying security

What are safeguards if there is a problem?

9. Limitation of Liability

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Compare this with car safety today

<table>
<thead>
<tr>
<th>Make &amp; Model</th>
<th>Safety Equipment</th>
<th>Overall rating</th>
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<tbody>
<tr>
<td>Alfa Romeo Giulietta</td>
<td>Standard</td>
<td>72%</td>
</tr>
<tr>
<td>BMW 6 Series GT</td>
<td>Standard</td>
<td>85%</td>
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<tr>
<td>Dacia Duster</td>
<td>Standard</td>
<td>81%</td>
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Cybersecurity Market Failures

**Negative externalities**

- Consequence of economic activity impacting a third-party; e.g. pollution
- Organisations do not bear all the costs of a data breach
- Leads to lower spending to prevent breaches, since the cost is spread around

**Asymmetric information**

- One party to an economic transaction knows more than the other; e.g. used car quality
- Hard for customers to assess level of cybersecurity
- Less willing to compete on cybersecurity spending, since it cannot be proven to customers

This helps explain why organisations do not always upgrade their systems; train their employees; properly evaluate connected vendors; minimize data storage or encrypt what is stored
Market failures require external solutions

Technology designed around human behaviour
- Automatic security updates on operating systems
- Password complexity prompts
- Default password managers

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

Non-regulatory solutions
- Security testing and ratings
  - Consumer Reports or Which?
  - Starting for cyberinsurance
- Certification
  - As with UL for electricity
  - Set standards for cybersecurity

New issues arising

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

Reaction
- 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
What’s next?

Who is responsible for deciding whether such a vehicle would be allowed on the streets?

Bibliography


