Computer Security – Past, Present, and Future
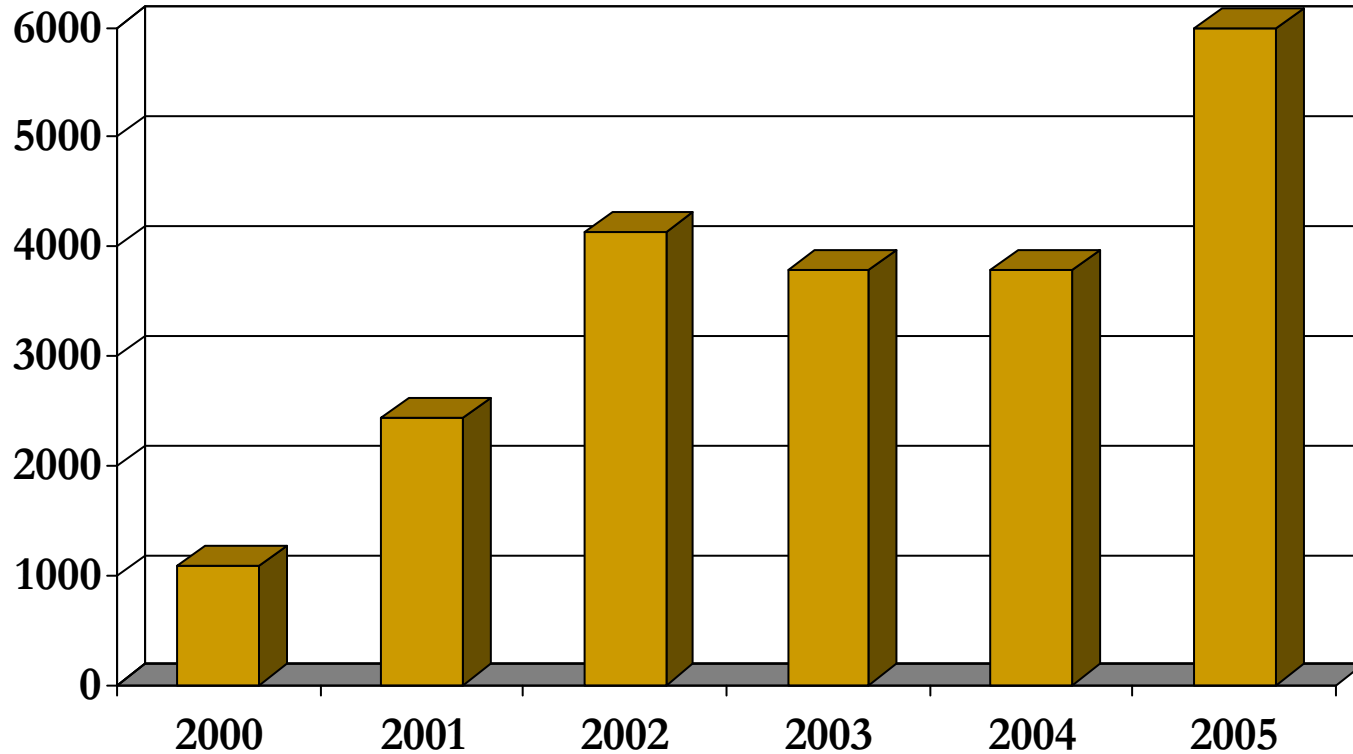
Dan Boneh

Malware: endless room for creativity

- 1985 – 1998:   viruses,   spam

- 1999:   Denial of Service   (DoS and DDoS)

- 2001:   Fast Internet worms: CodeRed
- 2003:   Super fast worms: Slammer
- 2004:   Cell phone worms: Cabir, Skulls, CommWarrior

- 2004:   Phishing

- 2005:   bot-nets,   keyloggers

- 2006:   Transaction Generators,   P2P bot-nets
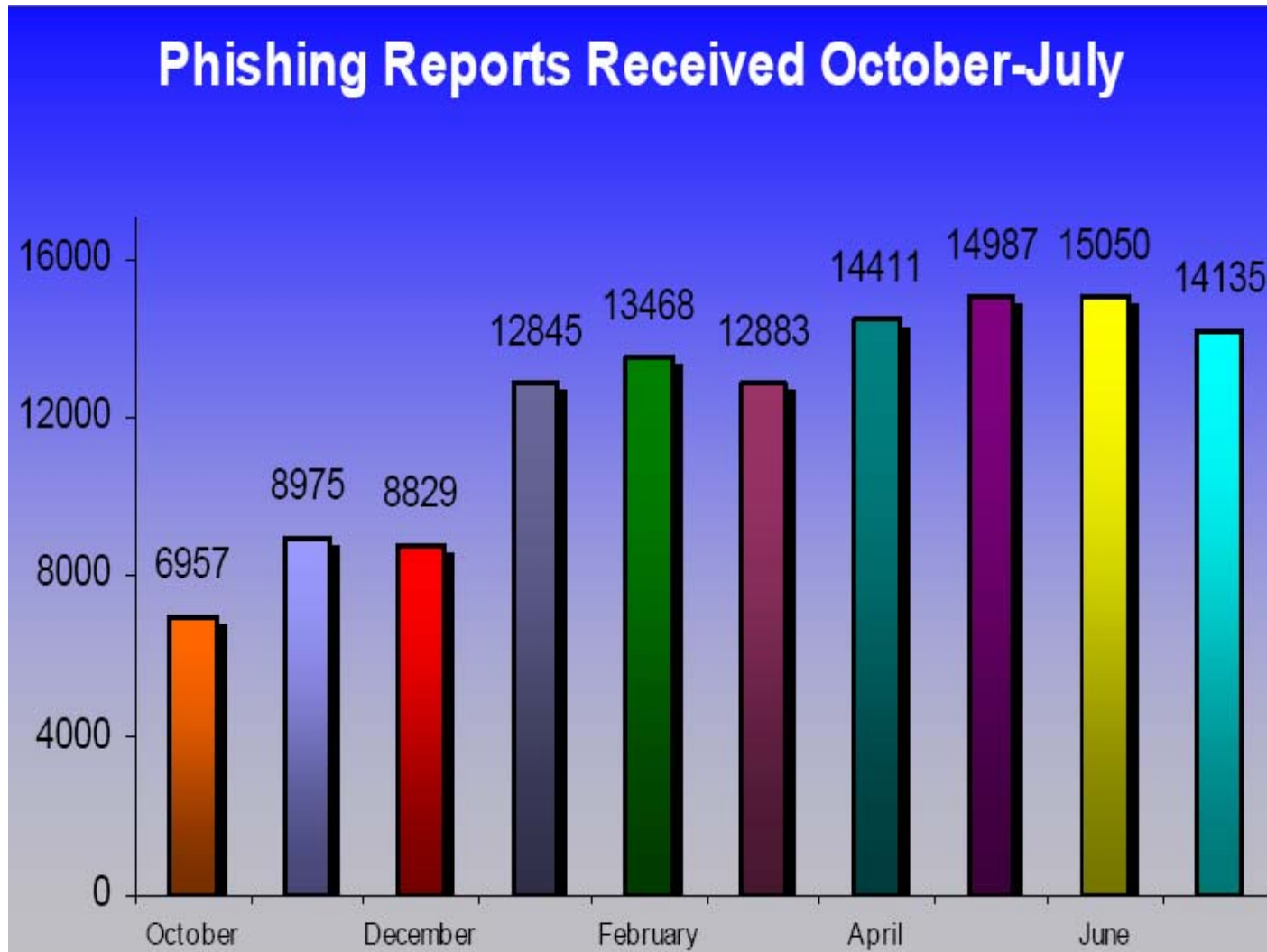
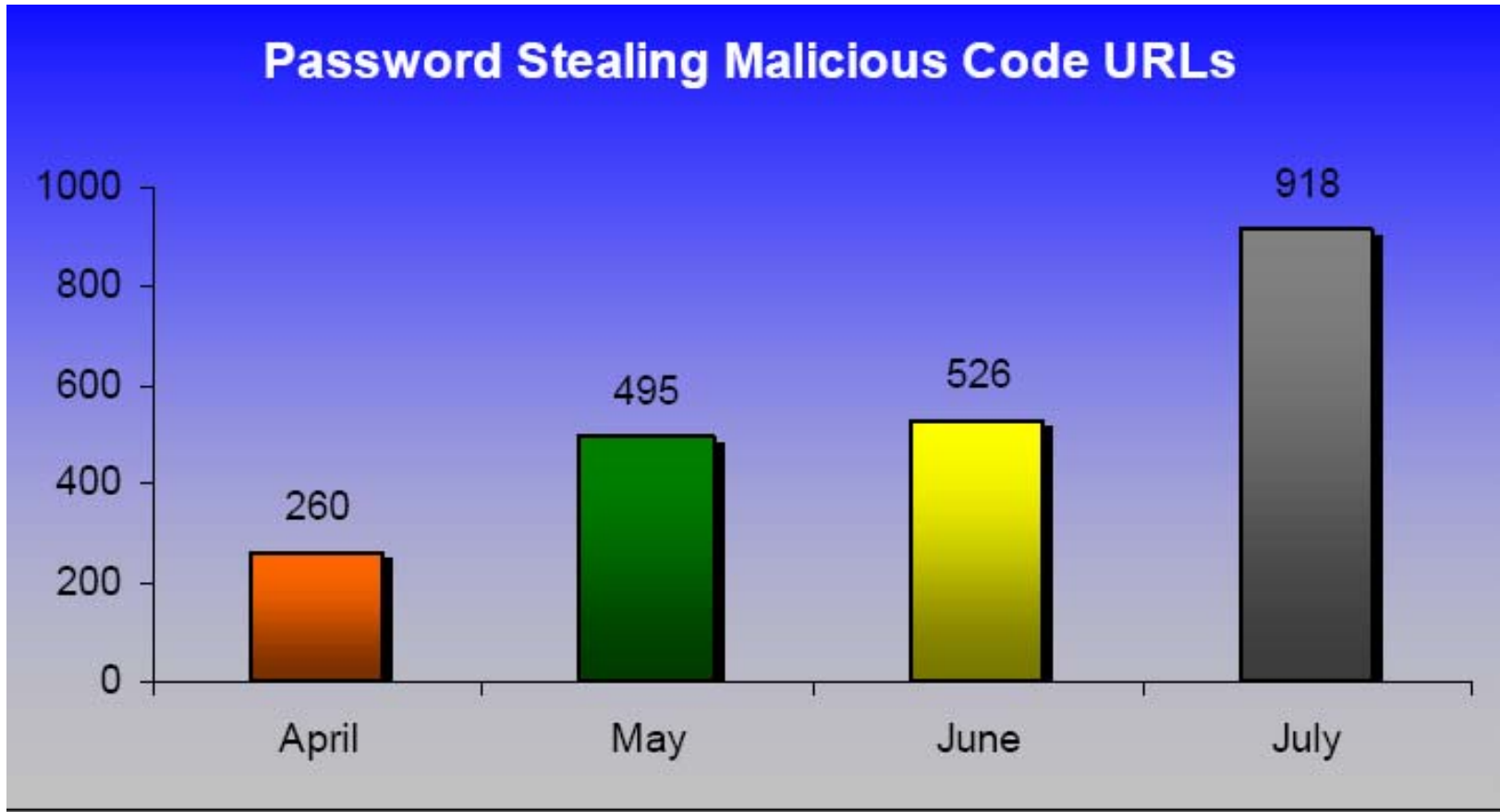- 2007-2017:   ???

The state of software

Software Vulnerabilities: CERT Statistics

Increase in Phishing incidents, 2005-6

URLs hosting infectious code

Password Stealing Malicious Code URLs

Month	Value
April	260
May	495
June	526
July	918

APWG Stats for 2005-6

The next 10 years

- **<u>Shifting battle ground</u>:**

  - ❏ Mobile devices: cell phones, PDAs

  - ❏ Home entertainment systems

  - ❏ Cars   (e.g. Lexus Virus)

  - ❏ US election equipment

Research Advances

- Tools to help end-users secure their machines:

  - Better security HCI

  - Tools to protect online user credentials

- Accurate software bug finding tools

- Network quarantine/isolation methods

- Crypto/Security tools to protect user privacy.