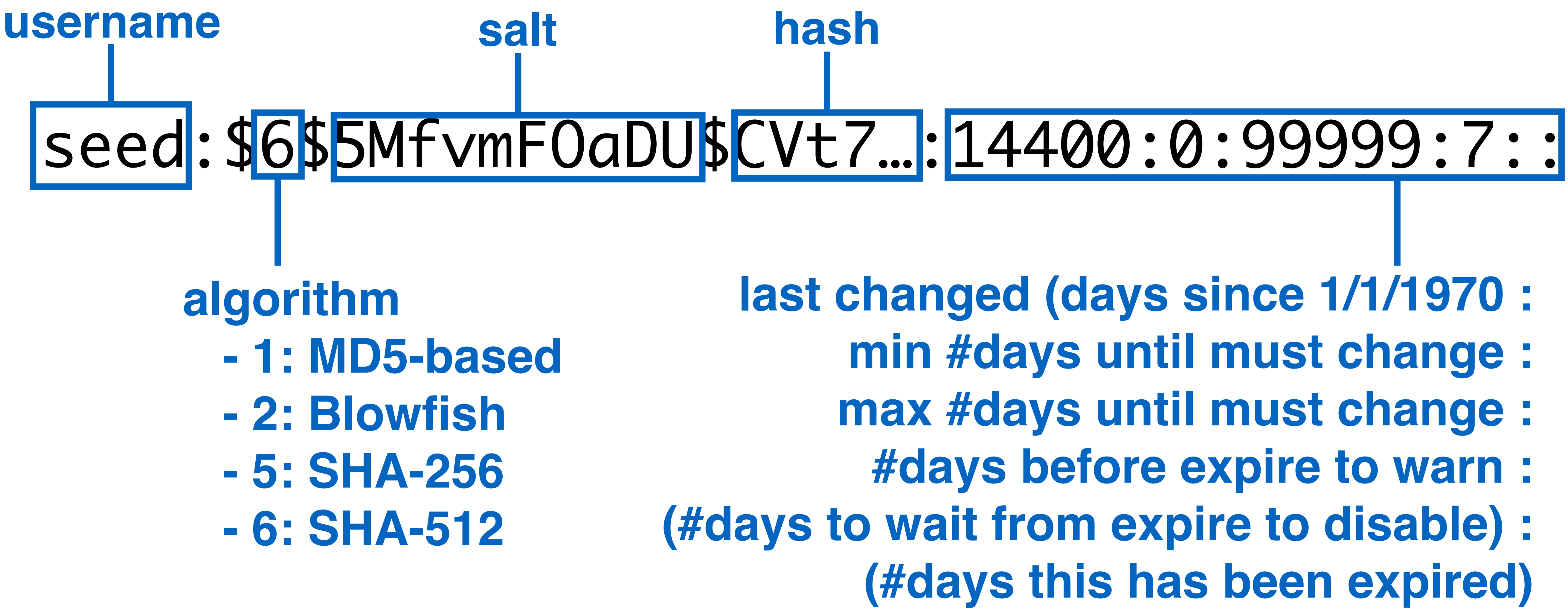
Passwords in the wild

Slides from

- Dave Levin 414-spring2016

Storing passwords in Linux

Stored in `/etc/shadow`



```
seed:$6$5MfvmFOaDU$CVt7…:14400:0:99999:7::
```

username

salt

hash

algorithm
- 1: MD5-based
- 2: Blowfish
- 5: SHA-256
- 6: SHA-512

last changed (days since 1/1/1970 :
min #days until must change :
max #days until must change :
#days before expire to warn :
(#days to wait from expire to disable) :
(#days this has been expired)

Passwords and Computer Security

- In 2012, **76% of network intrusions exploited weak or stolen credentials** (username/password)
  - Source: Verizon data breach investigations report

- First step after any successful intrusion: install **sniffer** or **keylogger** to steal more passwords

- Second step: run cracking tools on password files
  - Cracking needed because passwords are not (or at least *should not be*) stored in the clear

Gary McKinnon

- 2001 and 2002: hacked into 97 US military and NASA computers searching for evidence of free energy suppression and UFO coverups
  - “… shut down the entire US Army’s Military District of Washington network of over 2000 computers for 24 hrs”
  - “… rendered [US Naval Weapons Station Earle]’s entire network of over 300 computers inoperable at a critical time immediately following 11 September 2001”

- Method: Perl script randomly looking for **blank and default passwords** to administrator accounts

Old password surveys

- Klein (1990) and Spafford (1992)
  - 2.7% guessed in 15 minutes, 21% in a week
  - Much more computing power is available now

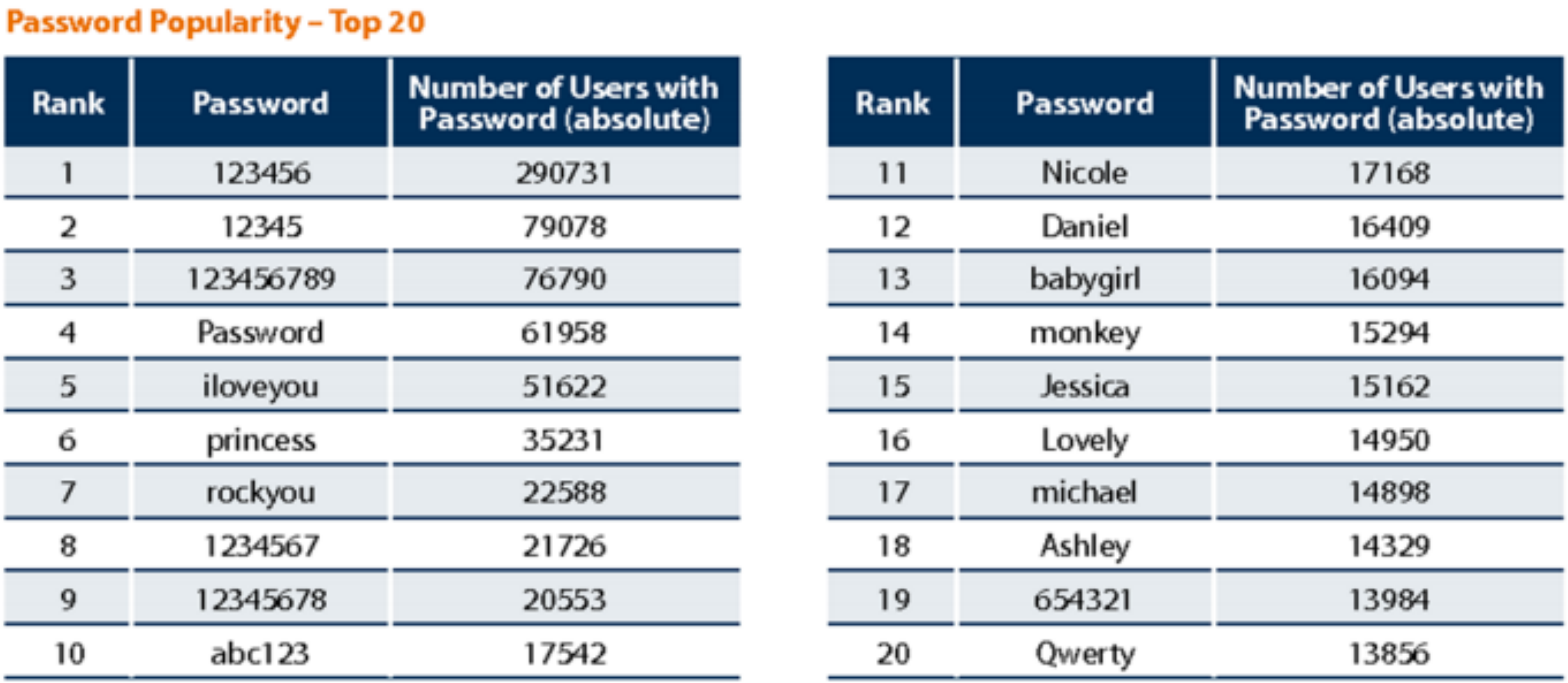
- Univ. of Michigan: 5% of passwords were “goblue”

- Zviran and Haga (1999)
  - Password usage at DoD facility in California
  - 80% of passwords were 4-7 characters in length; 80% used alphabetic characters only; 80% of the users had never changed their password

RockYou Hack (2009)

- Social gaming company
- Database with 32 million user passwords from partner social networks
- Passwords stored in the clear
- December 2009: entire database hacked using a SQL injection attack and posted on the Internet

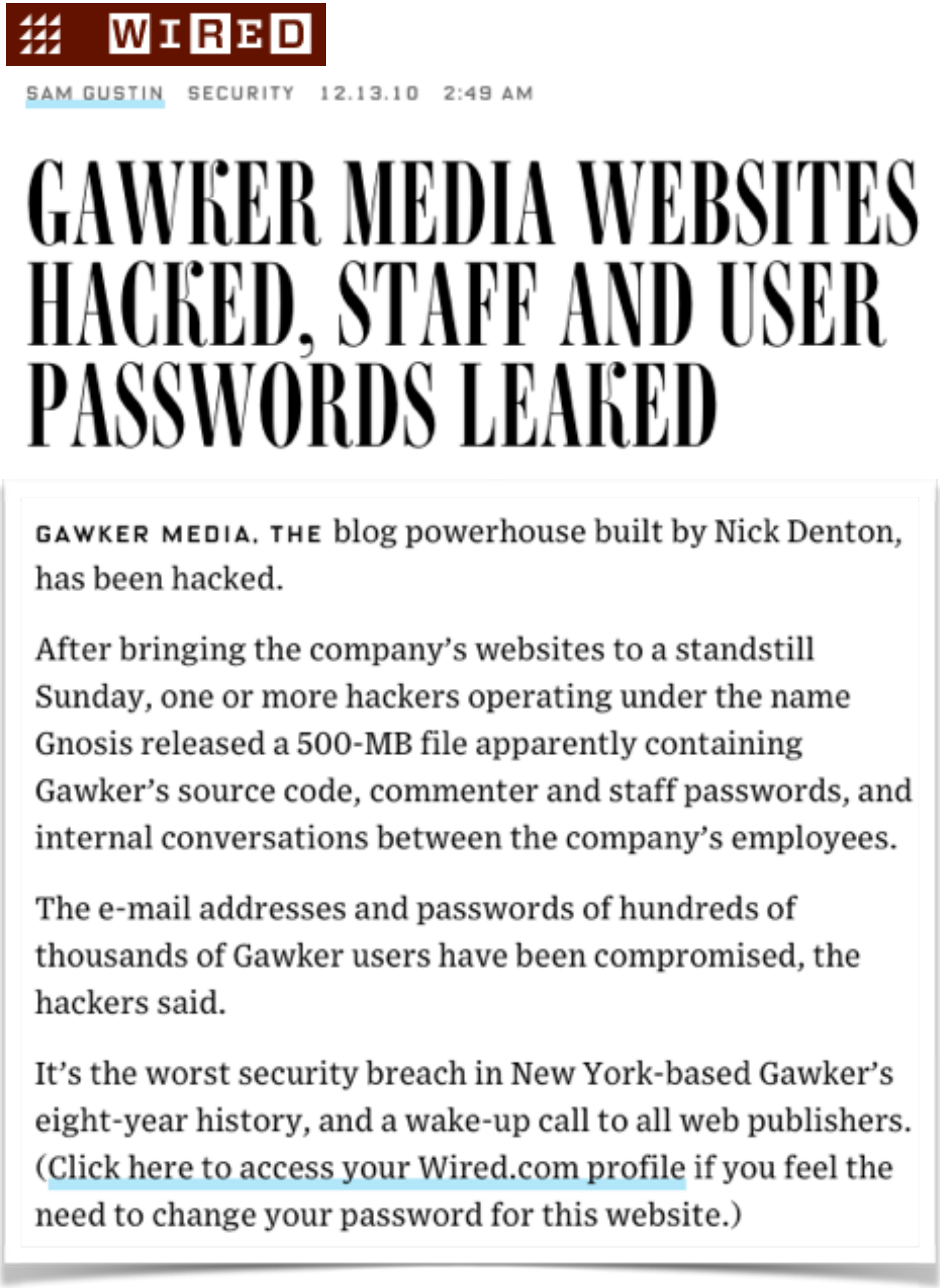
Passwords in RockYou database



Password Popularity – Top 20

Rank	Password	Number of Users with Password (absolute)
1	123456	290731
2	12345	79078
3	123456789	76790
4	Password	61958
5	iloveyou	51622
6	princess	35231
7	rockyou	22588
8	1234567	21726
9	12345678	20553
10	abc123	17542
11	Nicole	17168
12	Daniel	16409
13	babygirl	16094
14	monkey	15294
15	Jessica	15162
16	Lovely	14950
17	michael	14898
18	Ashley	14329
19	654321	13984
20	Qwerty	13856

2010 - Gawker
Stored passwords encrypted
188,279 decrypted & released



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SAM GUSTIN SECURITY 12.13.10 2:49 AM

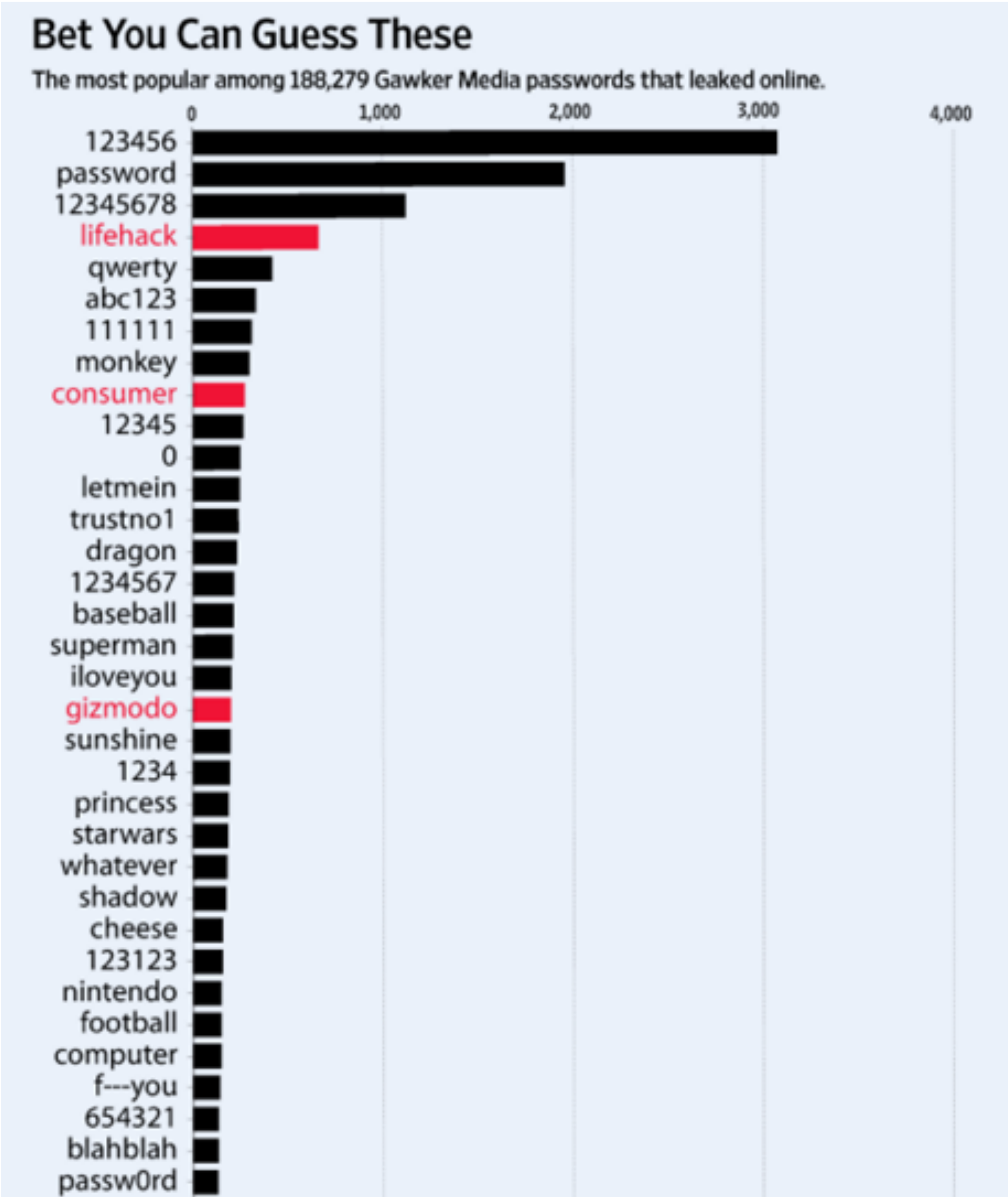
GAWKER MEDIA WEBSITES HACKED, STAFF AND USER PASSWORDS LEAKED

GAWKER MEDIA, THE blog powerhouse built by Nick Denton, has been hacked.

After bringing the company's websites to a standstill Sunday, one or more hackers operating under the name Gnosis released a 500-MB file apparently containing Gawker's source code, commenter and staff passwords, and internal conversations between the company's employees.

The e-mail addresses and passwords of hundreds of thousands of Gawker users have been compromised, the hackers said.

It's the worst security breach in New York-based Gawker's eight-year history, and a wake-up call to all web publishers. (Click here to access your Wired.com profile if you feel the need to change your password for this website.)



Bet You Can Guess These

The most popular among 188,279 Gawker Media passwords that leaked online.

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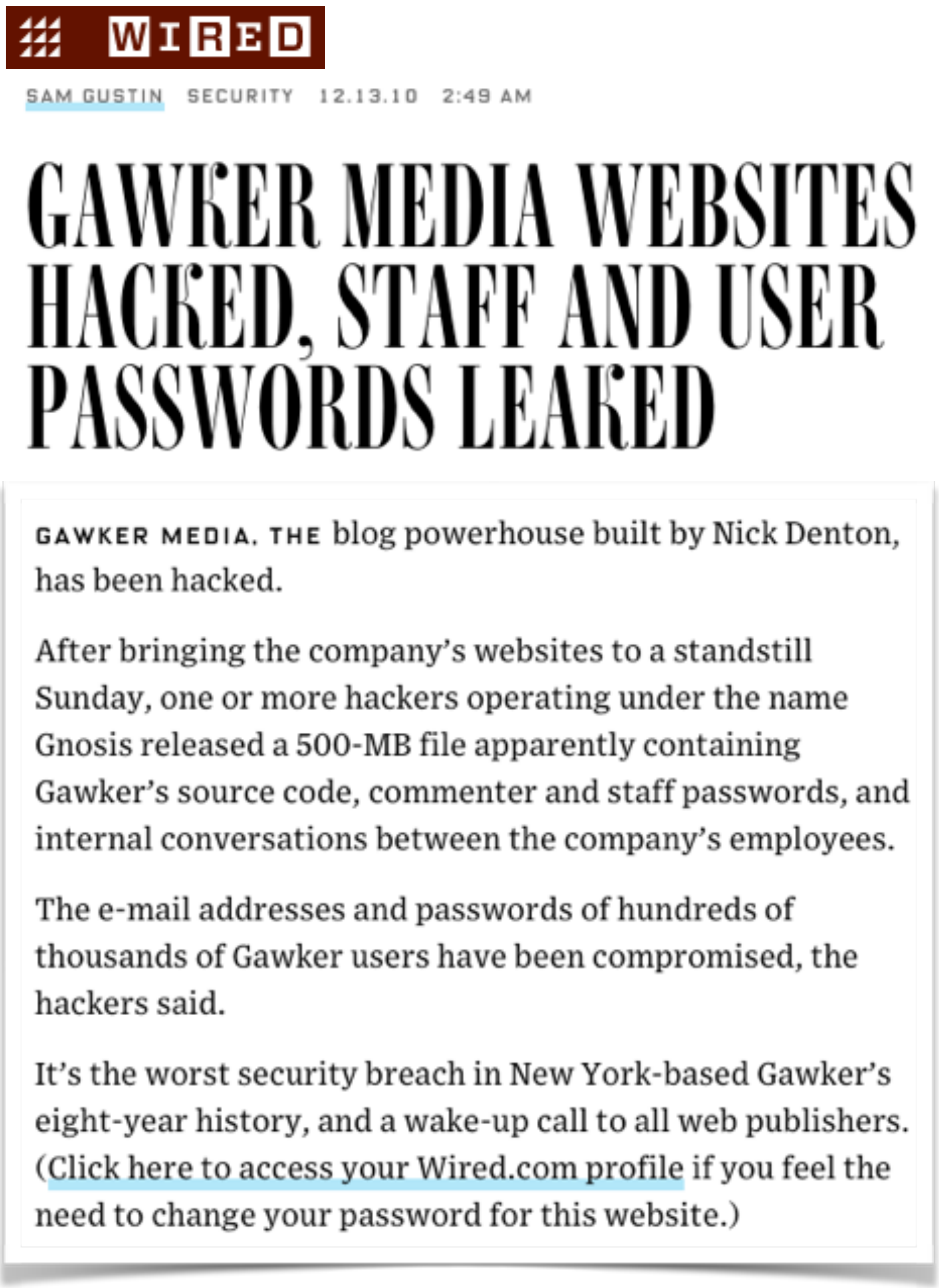

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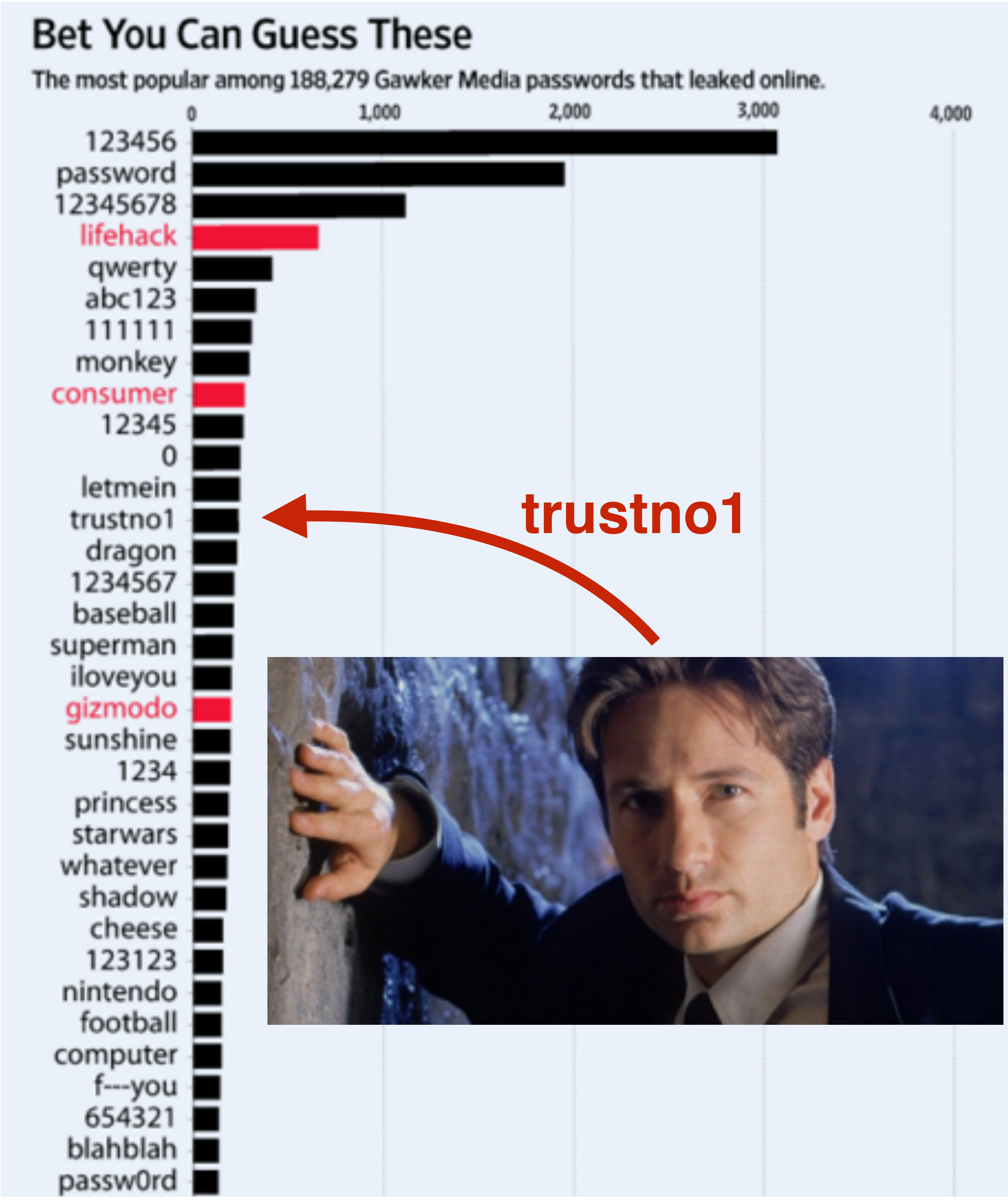

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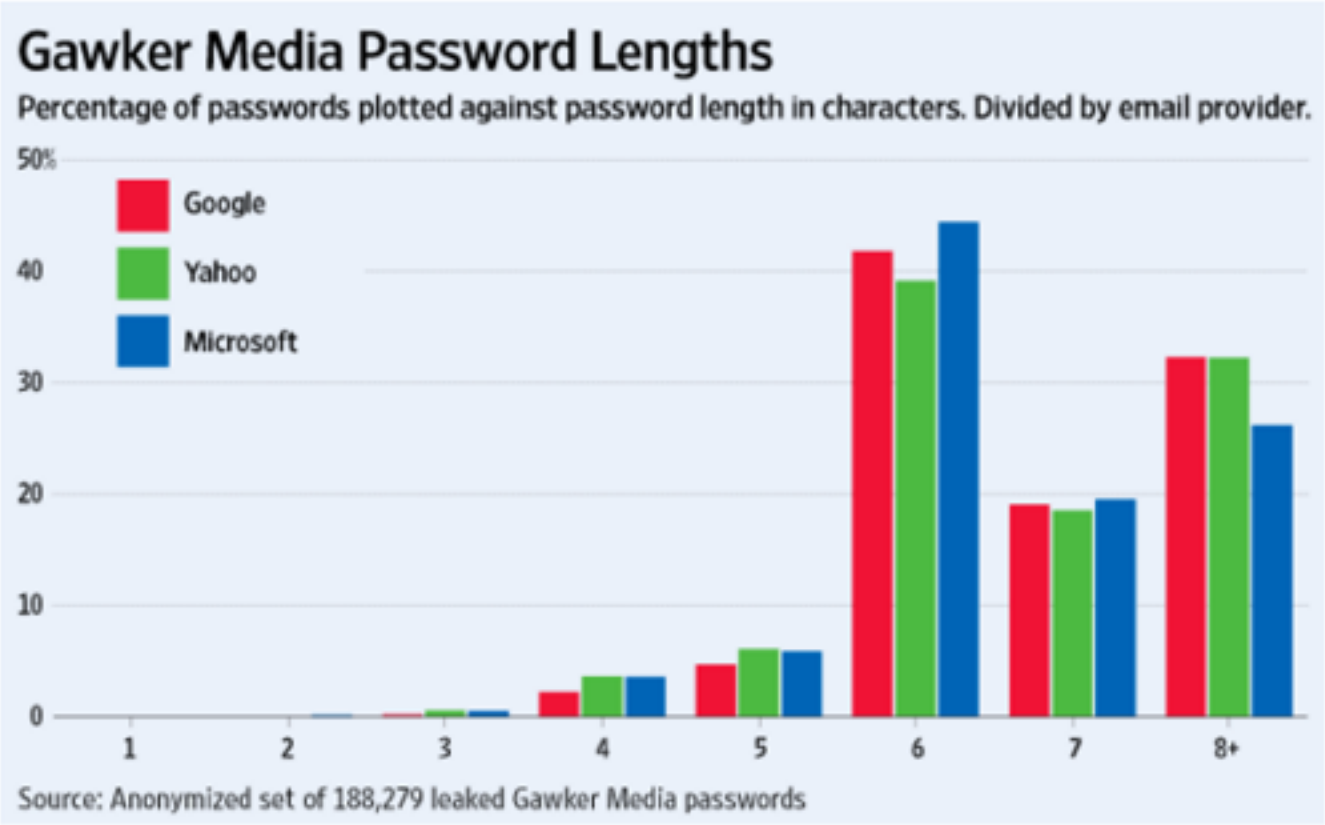
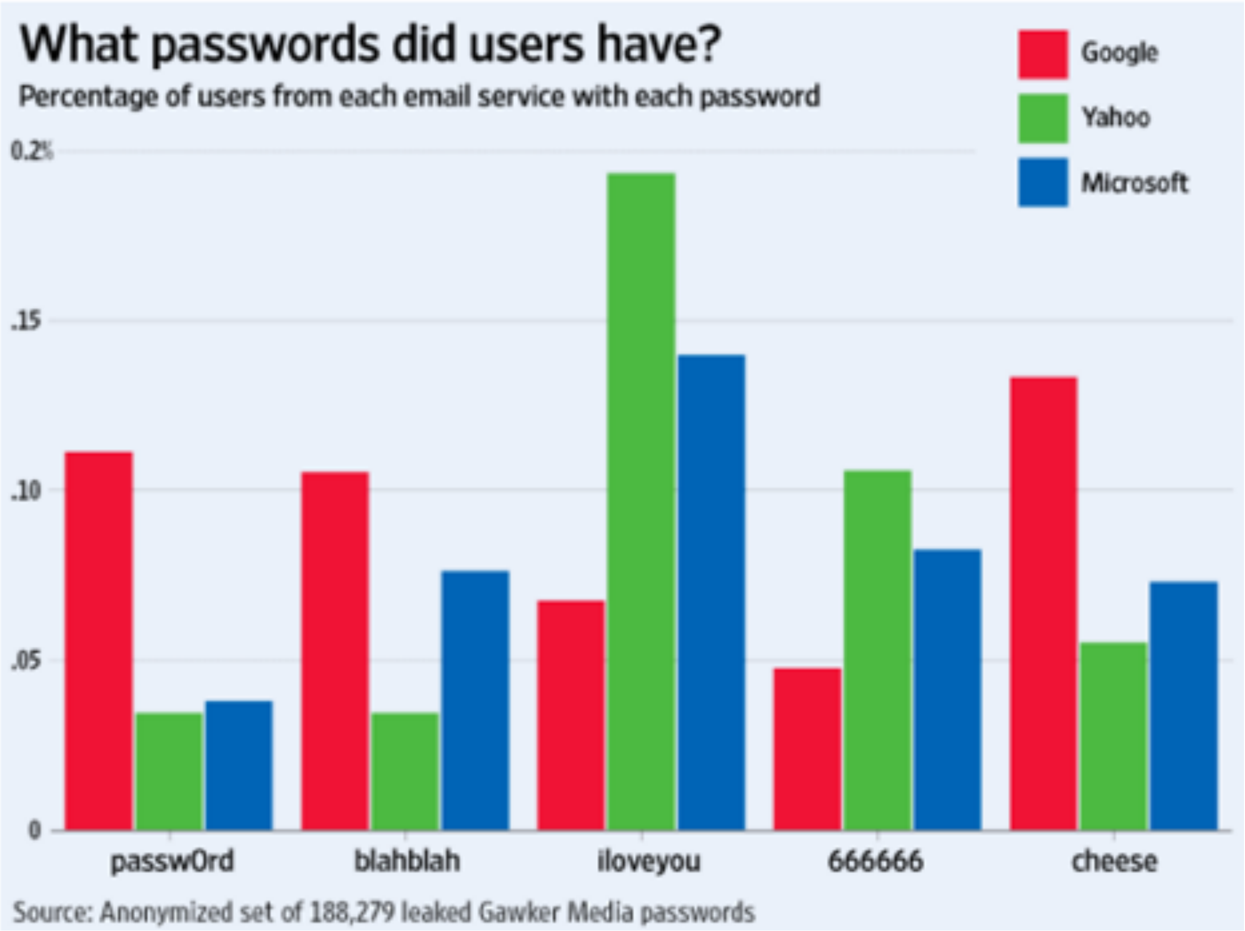
Gawker Passwords (2010)



Source: Anonymized set of 188,279 leaked Gawker Media passwords



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