

Data Appendix / Methodology
Corporate Governance: On the Front Lines of America's Cyber War
SEC Commissioner Robert J. Jackson, Jr.

In this appendix we briefly explain the data and methodology behind the analysis described in Commissioner Jackson's speech *Corporate Governance: On the Front Lines of America's Cyber War*, delivered on March 15, 2018. In Part 1, we describe the data sources used to identify cybersecurity breaches of publicly-traded companies. In Part 2, we describe our analysis and results. Part 3 concludes.

We consider this analysis preliminary; and we especially welcome inquiries and further analysis on this important policy issue. Should you have any questions, please do not hesitate to contact Commissioner Jackson at jacksonro@sec.gov or 202-551-5070.

Part 1: Sample

The Identity Theft Resource Center (ITRC) tracks various types of security breaches and compiles them into summary reports. From the ITRC website description:

The ITRC Breach Report is a compilation of data breaches confirmed by various media sources and/or notification lists from state governmental agencies. This list is updated daily, and published each Tuesday. Breaches on this list typically have exposed information that could potentially lead to identity theft, including Social Security numbers, financial account information, medical information, and even email addresses and passwords. ITRC follows U.S. Federal guidelines about what combination of personal information comprise a unique individual, and the exposure of which will constitute a data breach.

What is a breach? The ITRC defines a data breach as an incident in which an individual name plus a Social Security number, Driver's License number, medical record or financial record (credit/debit cards included) is potentially put at risk because of exposure. This exposure can occur either electronically or in paper format. The ITRC will also capture breaches that do not, by the nature of the incident, trigger data breach notification laws. Generally, these breaches consist of the exposure of user names, emails and passwords without involving sensitive personal identifying information. These breach incidents will be included by name but without the total number of compromised records included in the cumulative total.¹

¹ Source: <https://www.idtheftcenter.org/Data-Breaches/data-breaches>.

We reviewed the ITRC's 2017 Breach List, which contains 1,579 breaches involving over 170 million exposed records (this count excludes breaches with unknown amounts of exposed records). We identified publicly-traded companies on this list and then excluded the following observations: foreign firms, breaches limited to ATM debit card skimming, and breaches that exposed fewer than 1,000 records. We included breaches involving unknown numbers of records.

The ITRC breach reports include a date that reflects the date of a breach notification. This could reflect the date of a letter from the company to a state Attorney General's office, the date of a media report covering the breach, the date of a company press release, etc.² We searched the SEC's Edgar system for 8-K filings by the companies during the 12 month period following the ITRC date.³ We dropped an observation if the company did not make regular SEC filings around the time of the breach notification.⁴

This process resulted in a list of 81 breaches in 2017. The list of breaches is provided in Table 1 at the end of this Data Appendix. Companies may be on the breach list multiple times, which could either reflect separate incidents or subsequent update announcements relating to earlier breaches.

Part 2: Analysis

We searched the SEC's Edgar system for 8-K filings following the data breaches for each of the 81 companies listed in Table 1. We reviewed the 8-K filings for any disclosures or updates regarding the breaches. After reviewing the filings, we were only able to locate two companies

² Our informal review of these dates indicated that they were not necessarily the dates upon which investors first learned of the breaches.

³ Source: <https://www.sec.gov/edgar/searchedgar/companysearch.html>.

⁴ These generally reflected firms that had been acquired or gone private and were no longer filing 10-Ks, 10-Qs, and 8-Ks at that time.

with 8-K filings related to the breaches. The first company was Equifax, which discovered a breach on July 29, 2017 and filed an 8-K disclosing this breach to the public on September 7, 2017. The second company was Sonic Corp., which discovered a breach on September 18, 2017 and was the subject of media coverage regarding the breach beginning around September 27, 2017. Sonic Corp. filed an 8-K announcing fiscal 2017 results on October 16, 2017. This 8-K filing contained a paragraph with a brief update on the data breach.

We were unable to locate any 8-K filings disclosing the 2017 breaches for 79 out of 81 publicly-traded companies. The only 8-K filing that provided an initial disclosure of the breach to investors was filed by Equifax, and it was filed 40 days after the breach discovery.

Part 3: Conclusions

We identified 81 publicly-traded companies on the ITRC's 2017 Breach List and we searched for company 8-K filings related to the breaches. Out of these companies, only two filed an 8-K disclosing or discussing the breach within 12 months of the ITRC publication date. This represents a filing rate of approximately 2.5% relative to the sample of firms that experienced cybersecurity incidents in 2017.

Table 1: Dataset

N	Ticker	Company Name¹	Records¹	Date¹	8-K Filing²
1	HUM	Humana Inc.	3,674	1/20/2017	No Filing
2	SIRI	Sirius XM	Unknown	1/24/2017	No Filing
3	UGI	UGI Utilities	1,825	1/26/2017	No Filing
4	RUN	Sunrun	4,000	1/27/2017	No Filing
5	AXS	Axis Insurance	Unknown	1/30/2017	No Filing
6	C	Citibank	Unknown	2/2/2017	No Filing
7	WBA	Walgreens Co.	4,500	2/3/2017	No Filing
8	KLDX	Klondex Gold & Silver	Unknown	2/6/2017	No Filing
9	BA	Boeing Co.	36,000	2/8/2017	No Filing
10	NSP	Insperity Inc.	Unknown	2/17/2017	No Filing
11	CTL	Centurylink Inc.	8,161	2/20/2017	No Filing
12	BAC	Bank of America	Unknown	2/21/2017	No Filing
13	STI	SunTrust Bank	Unknown	2/21/2017	No Filing
14	AMP	Ameriprise Financial	Unknown	2/27/2017	No Filing
15	DE	John Deere Financial	Unknown	2/27/2017	No Filing
16	VIAB	Viacom, Inc.	Unknown	2/28/2017	No Filing
17	LOW	Lowe's	Unknown	3/3/2017	No Filing
18	TYL	Tyler Technologies	7,788	3/13/2017	No Filing
19	AFL	AFLAC	Unknown	3/16/2017	No Filing
20	GME	Gamestop	1,338,102	4/7/2017	No Filing
21	RAD	Rite Aid	18,680	4/11/2017	No Filing
22	HUM	Humana Inc.	3,831	4/18/2017	No Filing
23	NOC	Northrop Grumman	Unknown	4/18/2017	No Filing
24	HUM	Humana Inc.	Unknown	4/21/2017	No Filing
25	DCI	Donaldson Company Inc.	Unknown	4/24/2017	No Filing
26	CMG	Chipotle Mexican Grill	Unknown	4/27/2017	No Filing
27	GCI	Gannett Company	18,100	4/28/2017	No Filing
28	COF	Capital One	Unknown	5/1/2017	No Filing

29	CFG	Citizens Financial Group	Unknown	5/5/2017	No Filing
30	BBBY	Bed Bath & Beyond	Unknown	5/15/2017	No Filing
31	T	AT&T	14,878	5/19/2017	No Filing
32	SHLD	Sears Holdings	35,155	6/1/2017	No Filing
33	UBSH	Union Bank & Trust	Unknown	6/15/2017	No Filing
34	BKE	Buckle Inc.	1,993	6/19/2017	No Filing
35	AET	Aetna	5,002	6/21/2017	No Filing
36	USM	US Cellular	1,852	6/22/2017	No Filing
37	CHH	Choice Hotels	Unknown	7/1/2017	No Filing
38	LNC	Lincoln Financial Group	Unknown	7/1/2017	No Filing
39	MTB	M&T Bank	Unknown	7/1/2017	No Filing
40	OSG	Overseas Shipholding Group	Unknown	7/1/2017	No Filing
41	UBSH	Union Bank & Trust	Unknown	7/1/2017	No Filing
42	ZG	Zillow	1,912	7/1/2017	No Filing
43	COST	Costco	1,945	7/7/2017	No Filing
44	STWD	Starwood Property Trust	Unknown	7/7/2017	No Filing
45	WWE	World Wrestling Entertainment	Unknown	7/7/2017	No Filing
46	BBY	Best Buy	Unknown	7/11/2017	No Filing
47	AMP	Ameriprise Financial	Unknown	7/13/2017	No Filing
48	VZ	Verizon	Unknown	7/13/2017	No Filing
49	MET	Metropolitan Life	4,220	7/19/2017	No Filing
50	ANTM	Anthem Inc.	18,580	7/24/2017	No Filing
51	WFC	Wells Fargo	50,000	7/24/2017	No Filing
52	DK	Delek US Holdings	27,123	7/26/2017	No Filing
53	COF	Capital One	Unknown	7/31/2017	No Filing
54	H	Hyatt	24,599	8/7/2017	No Filing
55	CFG	Citizens Financial Group	Unknown	8/8/2017	No Filing
56	SXI	Standex International	Unknown	8/8/2017	No Filing
57	STT	State Street	Unknown	8/8/2017	No Filing
58	FGP	Ferrellgas	Unknown	8/9/2017	No Filing
59	LPLA	LPL Financial	Unknown	8/14/2017	No Filing

60	CLGX	Corelogic Inc.	2,189	8/27/2017	No Filing
61	AET	Aetna	11,887	8/29/2017	No Filing
62	CVS	CVS Caremark	4,000	8/30/2017	No Filing
63	TWX	Time Warner Inc.	Unknown	9/5/2017	No Filing
64	EFX	Equifax Inc.	145,500,000	9/7/2017	9/7/2017 8-K Link
65	TMUS	T-Mobile	Unknown	9/14/2017	No Filing
66	COF	Capital One	2,921	9/19/2017	No Filing
67	COF	Capital One	1,267	9/21/2017	No Filing
68	SONC	Sonic Corp.	5,000,000	9/28/2017	10/16/2017 8-K Link
69	BGG	Briggs & Stratton	33,000	9/29/2017	No Filing
70	LPLA	LPL Financial	Unknown	10/3/2017	No Filing
71	ADM	Archer Daniels Midland	4,277	10/10/2017	No Filing
72	PODD	Insulet Corporation	1,469	10/17/2017	No Filing
73	AET	Aetna	1,506	10/23/2017	No Filing
74	KMB	Kimberly Clark	Unknown	10/30/2017	No Filing
75	MET	Metropolitan Life	Unknown	11/9/2017	No Filing
76	ABM	ABM Industries	Unknown	11/14/2017	No Filing
77	OPY	Oppenheimer	Unknown	11/14/2017	No Filing
78	BCC	Boise Cascade	Unknown	11/16/2017	No Filing
79	HUM	Humana Inc.	5,764	11/21/2017	No Filing
80	LNC	Lincoln Financial Group	Unknown	11/29/2017	No Filing
81	UHAL	U-Haul	Unknown	12/11/2017	No Filing

¹ Source: Identity Theft Resource Center, <https://www.idtheftcenter.org/>.

² Source: <https://www.sec.gov/edgar/searchedgar/companysearch.html>.