



**RiskBased
SECURITY**

Not Just Security, the Right
Security.



Better Data Matters

Data Breach QuickView Report

First Quarter 2019 -
Data Breach Trends

Risk Based Security, Inc.

Issued on April 30, 2019
Data as of March 31, 2019

2019 starts off fueled by credential leaks and compromised email accounts

- **1,903** breaches were reported through March 31, exposing approximately **1.9 billion** records.
- Compared to Q1 2018, the number of reported breaches was **up 56.4%** and the number of exposed records was **up 28.9%** from 1.4 billion.
- Of the breached organizations that could be definitively classified, the Business sector accounted for 71.1% of reported breaches, followed by Medical (13.6%), Government (7.8%), and Education (6.8%).
- Already in 2019, there have been three breaches exposing **100 million** or more records. Despite this, only one new breach was added to the top twenty largest breaches of all time.
- The Business sector accounted for 85.6% of the records exposed followed by Unclassified at 12.6% and Medical at 1.5%. The Governmental and Education sectors combined accounted for 5.8 million records exposed in Q1, or less than 0.03% of the total records exposed.
- **Web** continued its reign in the top spot for the breach type exposing the most records, accounting for **67.6% of compromised records**, while **Hacking** remained firmly as the top breach type for number of incidents, accounting for **84.8% of reported breaches**.
- **14.7%** of breached organizations were unwilling or unable to disclose the number of records exposed.

Table of Contents

INTRODUCTION.....	3
FIRST THREE MONTHS OF 2019 COMPARED TO Q1 OF THE PREVIOUS FOUR YEARS	4
FIRST THREE MONTHS OF 2019 BREACHES BY INDUSTRY, BY MONTH	4
FIRST THREE MONTHS OF 2019 BREACHES BY TYPE AND RECORD EXPOSED	5
FIRST THREE MONTHS OF 2019 BREACHES BY THREAT VECTOR	6
FIRST THREE MONTHS OF 2019 DISTRIBUTION OF BREACHES BY DISCOVERY METHOD.....	6
FIRST THREE MONTHS OF 2019 TIME INTERVAL BETWEEN DISCOVERY AND REPORTING	7
FIRST THREE MONTHS OF 2019 TEN LARGEST BREACHES BY RECORDS EXPOSED.....	7
FIRST THREE MONTHS OF 2019 ANALYSIS BY DATA FAMILY.....	8
FIRST THREE MONTHS OF 2019 IMPACT ON DATA CONFIDENTIALITY	8
FIRST THREE MONTHS OF 2019 ANALYSIS OF RECORDS COMPROMISED PER BREACH	9
FIRST THREE MONTHS OF 2019 RECORDS EXPOSED FOR TOP 5 BREACH TYPES	9
FIRST THREE MONTHS OF 2019 TOP BUSINESS GROUPS FOR TOP 3 ECONOMIC SECTORS	10
FIRST THREE MONTHS OF 2019 ANALYSIS OF BREACHES BY LOCATION.....	11
FIRST THREE MONTHS OF 2019 YEAR BREACHES BY COUNTRY.....	11
FIRST THREE MONTHS OF 2019 EXPOSED RECORDS BY COUNTRY.....	12
FIRST THREE MONTHS OF 2019 DISTRIBUTION OF BREACH LOCATION BY STATE.....	12
FIRST THREE MONTHS OF 2019 ANALYSIS OF US STATE RANKINGS, EXPOSED RECORDS	13
FIRST THREE MONTHS OF 2019 BREACHES EXPOSING THIRD PARTY DATA.....	13
FIRST THREE MONTHS OF 2019 BREACH SEVERITY SCORES	14
FIRST THREE MONTHS OF 2019 TOP 5 BREACHES BY SEVERITY SCORE	14
TOP 20 LARGEST BREACHES ALL TIME (BY RECORDS EXPOSED).....	15
METHODOLOGY & TERMS	17

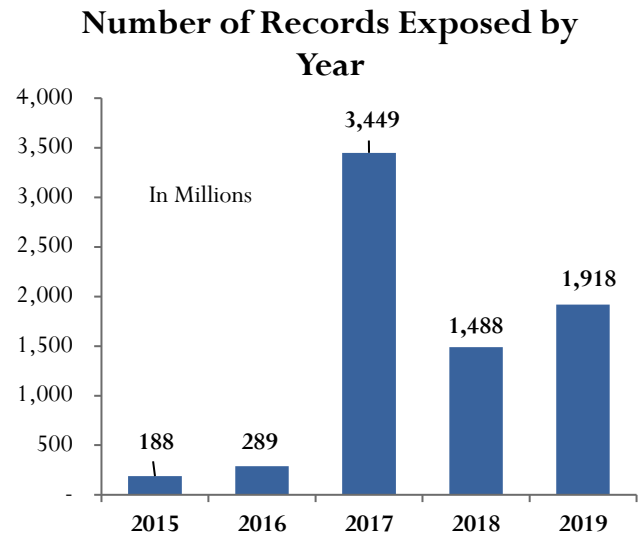
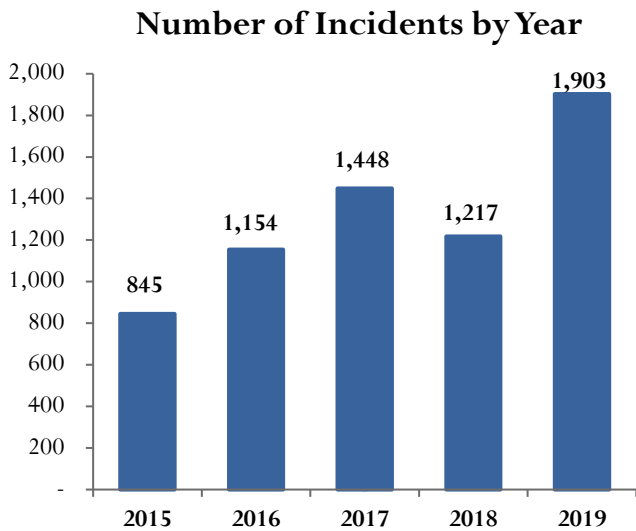
Introduction

Everywhere you look today you see the concept of “*risk-based security*” being touted as the next big thing. At Risk Based Security we have been advocates of that concept for nearly a decade. We have always believed that the goal should be to know your vendors and assets, understand the threats and vulnerabilities that may impact those vendors and assets, and calculate a risk score in order to prioritize mitigation actions. This is not accomplished by a single exercise once a year. It requires a continuous assessment of your organization’s risk posture as well as assessment of key vendors, suppliers, and business associates. Calculating a risk score to guide your mitigation program, while using incomplete and infrequently updated information, merely gives you a false sense of security and well-being when perhaps your true risks go unidentified. The difference is the data.

Ask yourself the questions, “What is my source of data breach information?” and “What is my source of software vulnerability information?” And then ask your service and tool providers the same questions. You’ll be surprised at the lack of transparency, meaning they typically rely on sources of data that are incomplete with late reporting. After you read this report, we doubt you will find that an acceptable response.

#BetterDataMatters

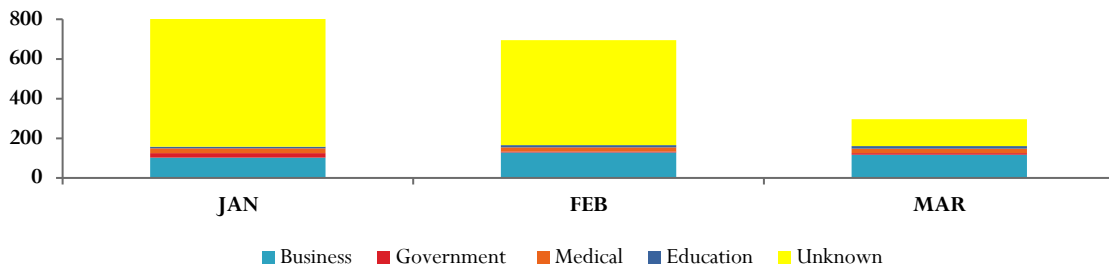
First Three Months of 2019 Compared to Q1 of the Previous Four Years



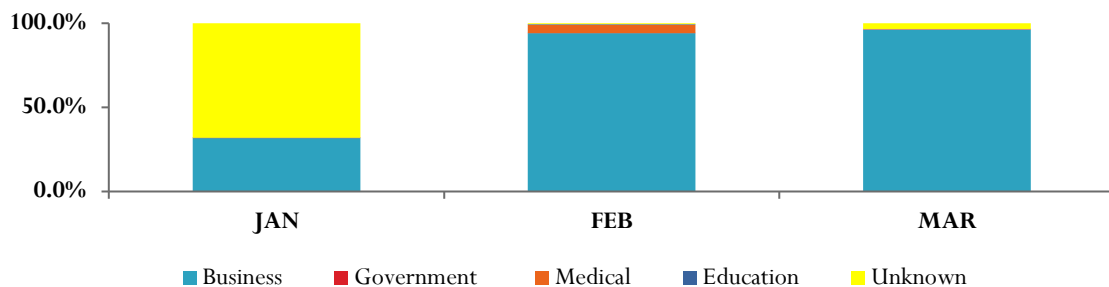
For three years in a row more than one billion records have been exposed in the first quarter of the year, whereas between 2009 and 2016, the number of records exposed in the first quarter generally fell in the 100,000,000 – 200,000,000 range, with only 2016 and 2014 exceeding 200 million. Why the shift? Two causes stand out: leaky databases and malicious actors going public with sizable data sets for sale.

First Three Months of 2019 Breaches by Industry, by Month

Distribution of Incidents by Industry, by Month

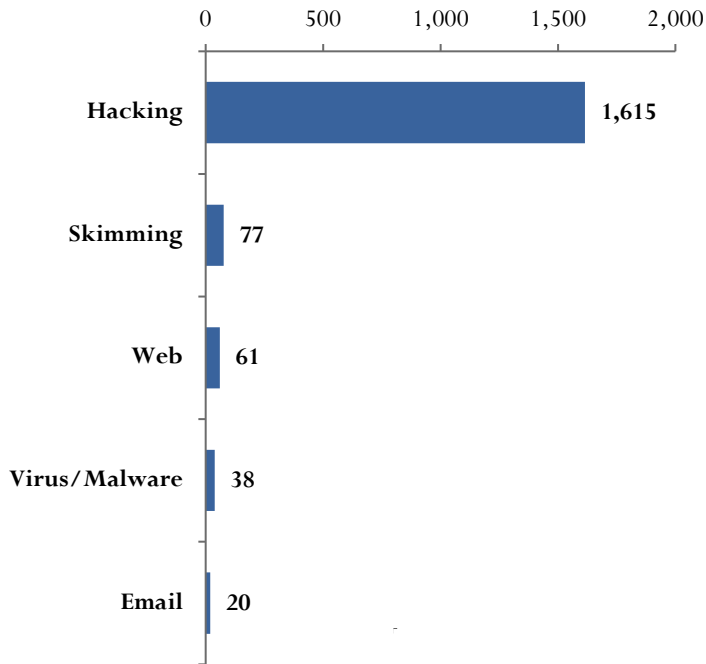


Distribution of Exposed Records by Industry, by Month



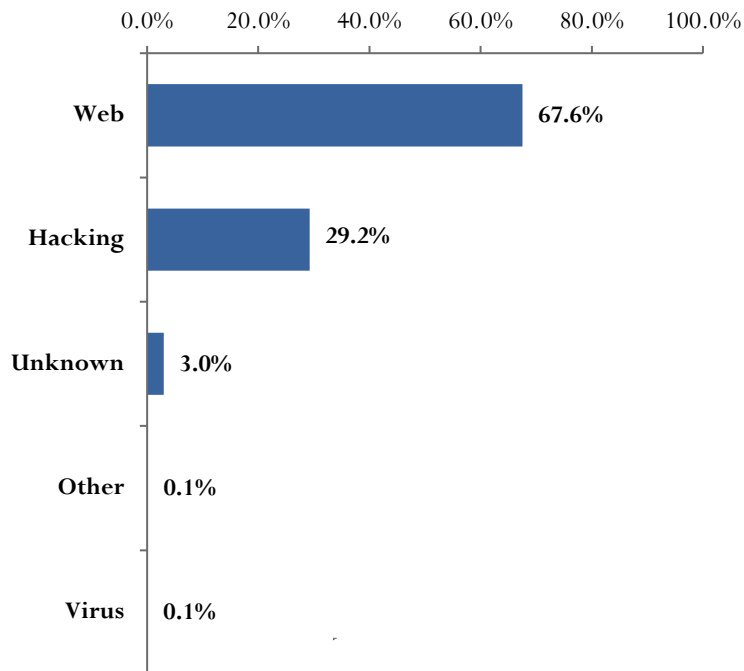
First Three Months of 2019 Breaches by Type and Record Exposed

Top 5 Breach Types



Regular readers of the QuickView Report will recognize a consistent theme here, with unauthorized access into services or systems (“hacking”) taking the top spot for breach type.

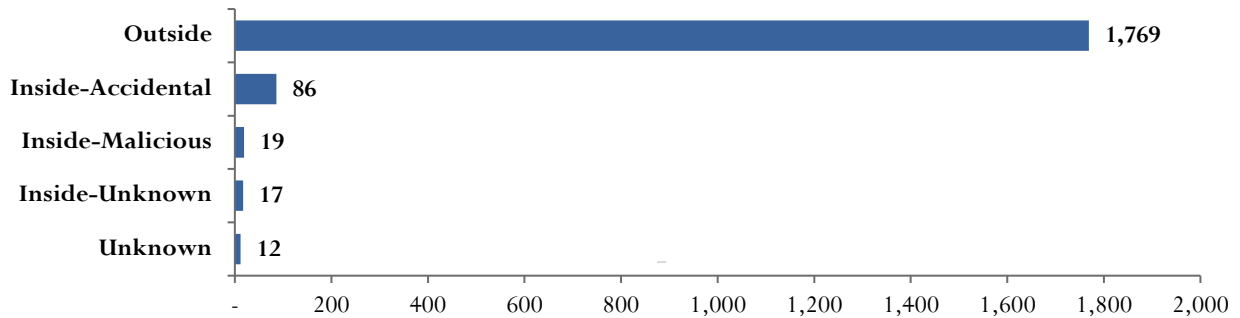
Records Exposed by Breach Type



Another consistent theme, exposure of sensitive data on the Internet (“web”) remains the number one contributor to the total number of records exposed, which is unfortunate as preventing this is largely within the organization’s control.

First Three Months of 2019 Breaches by Threat Vector

Number of Incidents
by Threat Vector



Going hand-in-glove with Hacking as the top breach type, incidents originating outside of the compromised organization are, by far, the largest threat vector. A particularly popular attack method evident in recent quarters is targeting user email accounts. Malicious actors typically phish employees or use leaked credentials to access email services. Although pilfering sensitive data is not always the attackers' objective, such access can trigger lengthy investigations and give rise to a string of regulatory obligations.

Threat Vector	Records Exposed
Inside-Accidental	1,262,020,967
Outside	620,107,852
Inside-Unknown	36,453,278
Unknown	112,920
Inside-Malicious	71,071
Total	1,918,766,088

First Three Months of 2019 Distribution of Breaches by Discovery Method

	Internal Discovery - Incidents	Internal Discovery - Records	External Discovery - Incidents	External Discovery - Records	Undisclosed Discovery - Incidents	Undisclosed Discovery - Records
Q1 2019	87	4,194,268	1,580	1,823,324,010	236	91,245,675

This outcome closely mirrors prior quarters with the majority of breaches discovered via external sources such as notification by law enforcement, fraud monitoring, actor disclosure, security researchers or notification from customers themselves.

First Three Months of 2019 Time Interval Between Discovery and Reporting

	Q1 2019	Q1 2018	Q1 2017	Q1 2016	Q1 2015
Average Number of Days Between Breach Discovery and Reporting	54.0	37.9	42.7	68.9	82.6
Average For The Year	2019	2018	2017	2016	2015
	TBD	49.6	48.6	60.9	70.1

In the [2018 Year End QuickView Report](#) we posed this question: could there be a correlation between discovery method and the average number of days it takes to disclose the breach? It seemed likely the organizations that were able to discover their breaches would also be better prepared to respond, resulting in a shorter number of days between discovery and reporting. Analysis of Q1 2019 does **not** support this assumption. In fact, organizations that learned of the breach from external sources disclosed the incident much more quickly than organizations that learned of the breach through internal sources.

For Q1 2019, the average number of days between discovery and disclosure was 43 days when the breach came to light via external sources. However, it was a stunning 74 days for organizations that learned of the breach via internal sources. The median number of days between discovery and disclosure was equally surprising, with a median of 8 days for external discovery compared to a median of 46 days for internal discovery.

Is this a random outcome? Tune in to the QuickView Report throughout the year as we continue to track the data.

First Three Months of 2019 Ten Largest Breaches by Records Exposed¹

Breach Type	Records Exposed	Percentage of Total Exposed	Data Type ²	Severity Score
Web	982,864,972	51.2%	ADD/DOB/EMA/FIN/MISC/NAA/NUM/PWD	10
Web	202,730,434	10.6%	ADD/DOB/EMA/MISC/NAA/NUM	9.39
Hack	161,549,210	8.4%	EMA/MISC/NAA/PWD/USR	9.81
Hack	60,800,000	3.2%	EMA/MISC/PWD	9.39
Hack	57,000,000	3.0%	ADD/EMA/MISC/PWD/USR	9.36
Hack	41,028,098	2.1%	DOB/EMA/MISC/NAA/PWD/USR	9.52
Hack	40,000,000	2.1%	EMA/MISC/NAA	9.20
Web	33,000,000	1.7%	ADD/EMA/MISC/NUM/USR	8.77
Hack	28,510,450	1.5%	EMA/NAA/PWD	9.06
Web	24,300,000	1.3%	ADD/DOB/FIN/MISC/NAA/SSN	9.16

¹ See page 13 for additional detail on these incidents.

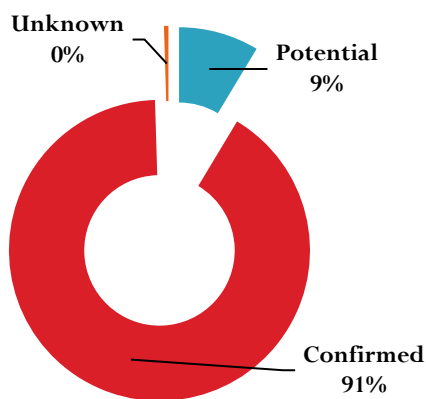
² See page 17 for a description of abbreviations.

First Three Months of 2019 Analysis by Data Family

	Percentage of Total Breaches	Percentage of Total Exposed Records	Percentage of Total Breaches	Percentage of Total Exposed Records
Data Family	2018	2018	2019	2019
Electronic	92.03%	99.98%	98.12%	100.00%
Physical	5.34%	<1%	1.57%	N/A
Unknown	0.49%	<1%	<1%	N/A

First Three Months of 2019 Impact on Data Confidentiality

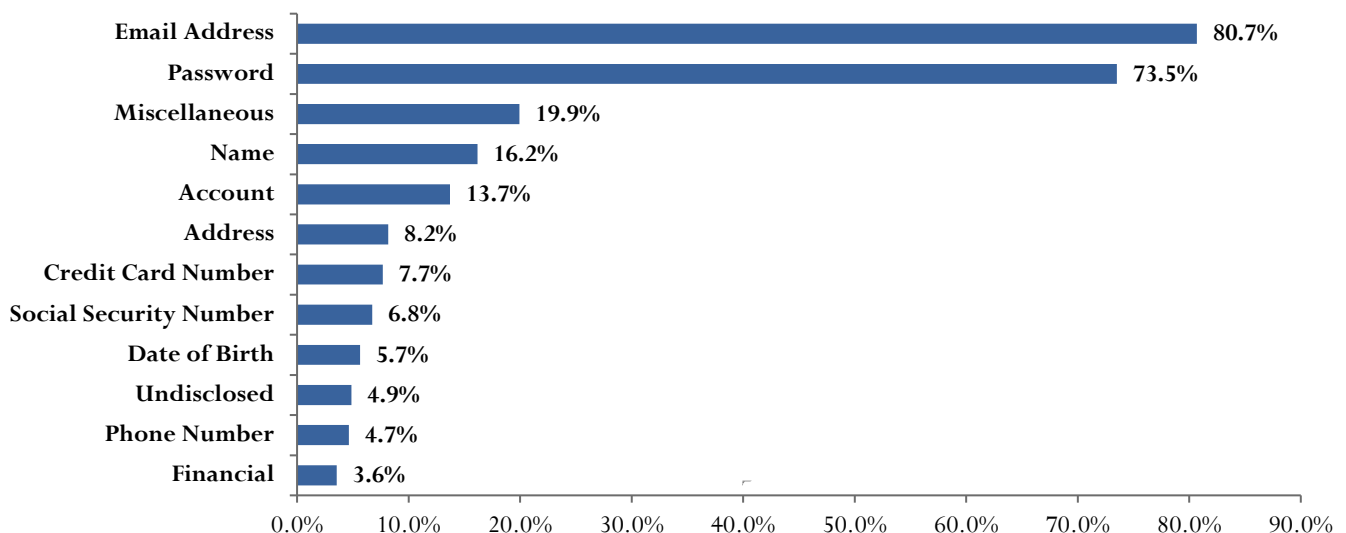
Confidentiality Impact



Q1 of 2018 saw the number of incidents with confirmed data exposure drop to 68%. Throughout 2018 and now into Q1 of 2019, confidentiality impact has returned to a more typical distribution.

First Three Months of 2019 Breach Analysis by Data Type

Incidents by Data Type Exposed



Percentage of Breaches Exposing Top Four Data Types – 2019 vs. Prior Years			
Data Type	2019	2018	2017
Email Address	80.7%	44.7%	39.4%
Password	73.5%	40.7%	34.5%
Miscellaneous	19.9%	16.5%	13.4%
Name	16.2%	35%	40.7%

First Three Months of 2019 Analysis of Records Compromised Per Breach

Exposed Records	Number of Breaches	Percent of Total
Unknown/Undisclosed	280	14.7%
1 to 100	799	42.0%
101 to 1,000	596	31.3%
1,001 to 10,000	113	5.9%
10,001 to 100,000	47	2.5%
100,001 to 500,000	13	0.7%
500,001 to 999,999	5	0.3%
1 M to 10 M	30	1.6%
> 10 M	20	1.1%

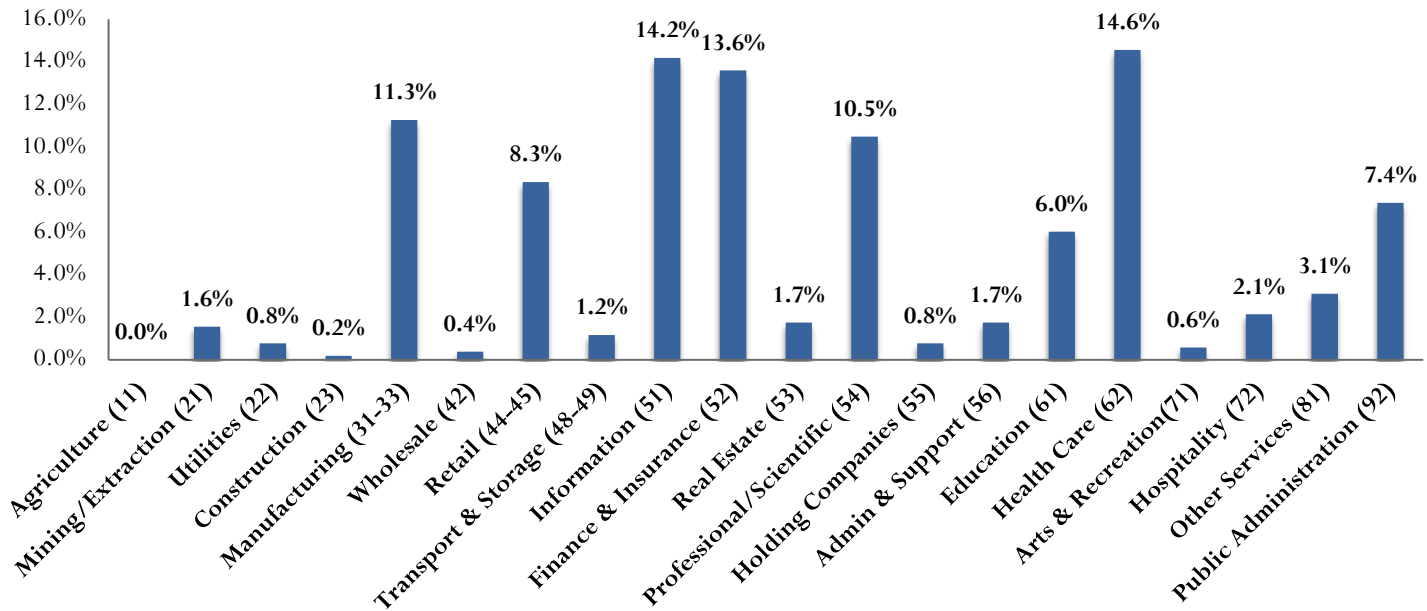
Despite 50 breaches exposing one million or more records, 79% of breaches expose between 1 and 10,000 records.

First Three Months of 2019 Records Exposed For Top 5 Breach Types

Breach Category	Number of Breaches	Number of Records Exposed	Average Records per Breach	Percent of Total Records Exposed
Hacking	1,615	560,596,868	347,118	29.2%
Skimming	77	611	7	<1%
Web	61	1,295,803,481	21,242,680	67.6%
Malware/Virus	38	2,253,989	59,315	<1%
Email	20	68,019	3,400	<1%

First Three Months of 2019 Analysis of Incidents by NAICS Economic Sector

Distribution of Incidents by Economic Sector



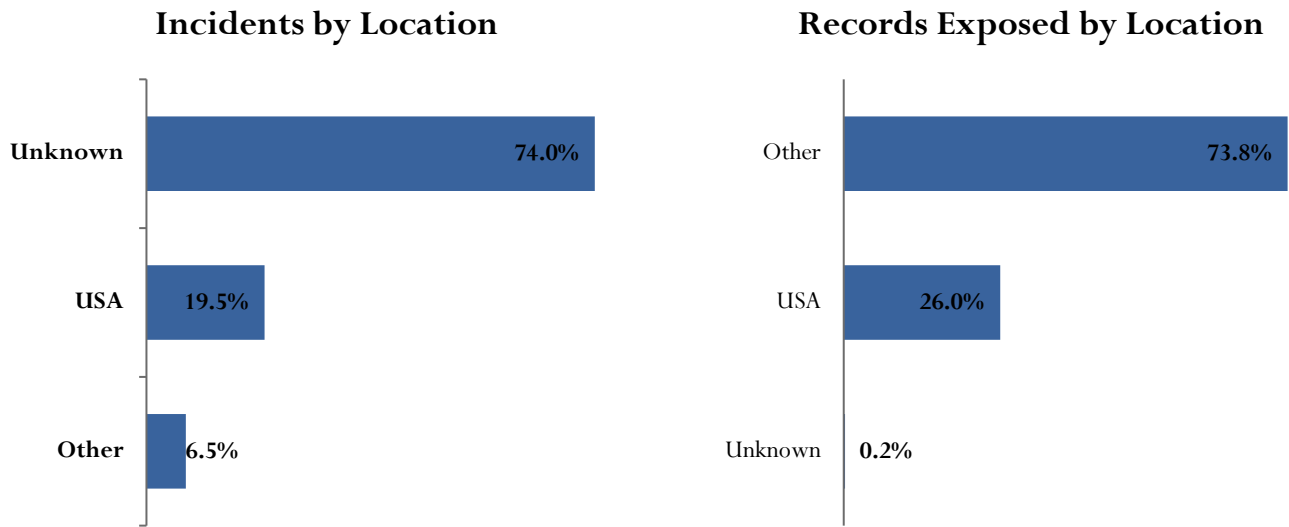
*Where known. Organizations that could not be definitively classified have been removed from results

First Three Months of 2019 Top Business Groups For Top 3 Economic Sectors

Economic Sector	Business Group	Percentage of Breaches Within Economic Sector
Health Care (62)	Practitioner Offices	37%
	Hospitals	28%
	Medical Facilities	26%
Information (51)	Software / Websites	84%
	Telecommunications	11%
	Mass Media	5%
Finance & Insurance (52)*	Financial	70%
	Insurance	30%

*Note the Finance & Insurance sector is made of two Business Groups. As such, the entire sector is represented.

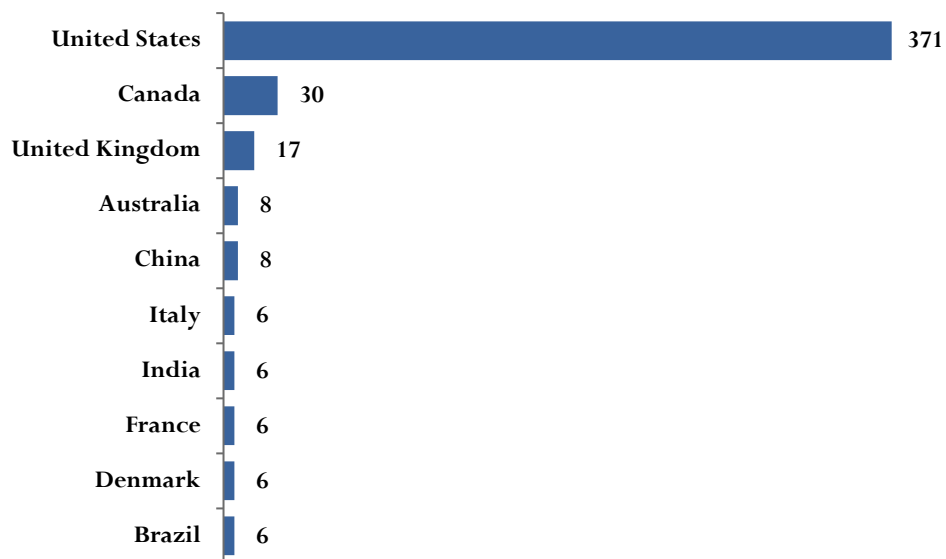
First Three Months of 2019 Analysis of Breaches by Location



A significant number of smaller credential leaks were detected in Q1. This accounts for the high percentage of breaches where the origin of the event could not be definitively identified coupled with a low percentage of records attributed to an unknown location.

First Three Months of 2019 Year Breaches by Country

Incidents By Country - Top 10

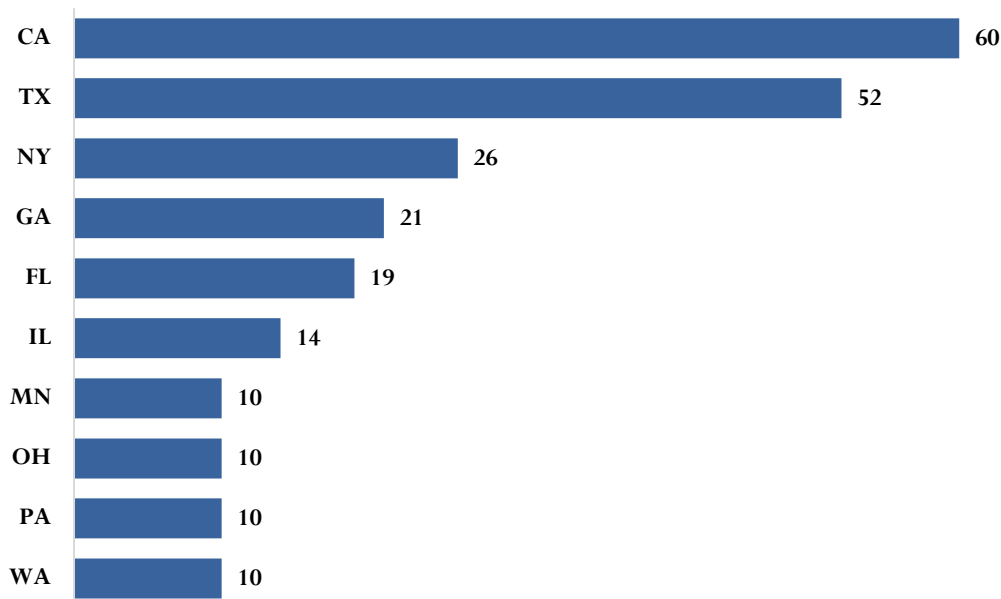


First Three Months of 2019 Exposed Records by Country

Ranking	Number of Breaches	Country	Total Exposed Records	Average Records per Breach	Median Records Exposed	Percentage of Exposed Records
1	1	Estonia	982,864,972	N/A	N/A	51.22%
2	371	United States	498,772,695	1,344,401	9,000	25.99%
3	8	China	245,466,459	30,683,307	2,182,862	12.79%
4	3	Germany	42,451,432	14,150,477	21,270,716	2.21%
5	2	Sweden	27,460,000	13,730,000	13,730,000	1.43%
6	2	Spain	27,000,000	13,500,000	13,500,000	1.41%
7	6	India	24,957,200	4,159,533	6,791,200	1.30%
8	30	Canada	19,008,013	633,600	50	0.99%
9	1	Indonesia	13,000,000	N/A	N/A	0.68%
10	3	Japan	8,460,000	2,820,000	3,100,000	0.44%
Total	427		1,899,440,771	4,424,920		98%

First Three Months of 2019 Distribution of Breach Location By State

Incidents by US State -
Top 10

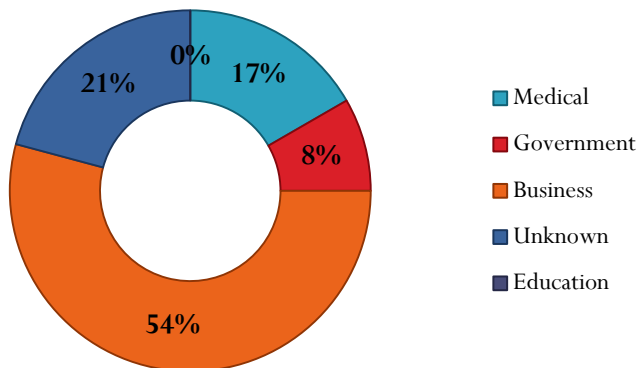


First Three Months of 2019 Analysis of US State Rankings, Exposed Records

Exposed Records Ranking	US State	Total Exposed Records	Number of Breaches	Exposed Records/Breach	Percentage of Records Exposed in USA
1	NY	235,460,373	26	9,056,168	47.21%
2	CA	212,740,111	60	3,545,669	42.65%
3	WA	19,151,276	10	1,915,128	3.84%
4	TX	9,340,004	52	179,615	1.87%
5	OR	8,027,643	6	1,337,941	1.61%
6	KS	4,083,473	6	680,579	0.82%
7	FL	2,207,906	19	116,206	0.44%
8	GA	375,811	21	17,896	0.08%
9	CT	352,237	5	70,447	0.07%
10	SC	91,242	4	22,811	0.02%

First Three Months of 2019 Breaches Exposing Third Party Data

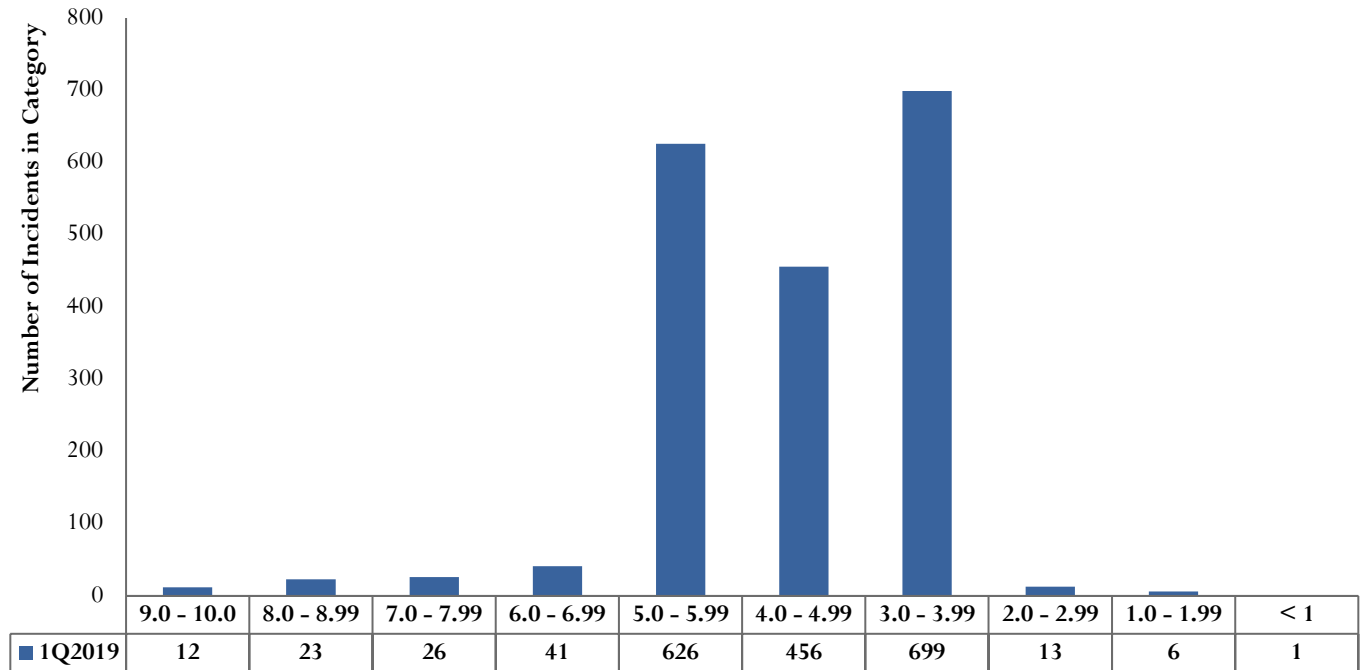
Third Party Breaches by Steward Organization Business Type



Vendors, suppliers, and key service providers can hold or process terabytes of sensitive data on behalf of their customers. When such service providers expose data, it can trigger a cascading effect whereby one event impacts the data of multiple organizations. There were 49 such incidents reported in the first quarter of 2019, ranging from events such as the breach at Toyota Tokyo Sales Holdings, which exposed customer records at subsidiary operations as well as affiliated dealerships, to a Point of Sale (POS) solutions provider that exposed payment card details of the customers of at least 15 different companies.

First Three Months of 2019 Breach Severity Scores

Breach Severity Scores by Quarter



First Three Months of 2019 Top 5 Breaches By Severity Score

Score	Reported	Organization (Third Party)	Top 10 Summary
10	March	Verifications.io	(Web) 982,864,972 names, email & IP addresses, dates of birth, contact information, personal mortgage amounts, and FTP server credentials exposed on the Internet due to a misconfigured database
9.81	February	Dubsmash, Inc.	(Hacking) 161,549,210 users' names, IDs, email addresses, usernames, SHA256-hashed passwords, languages, and countries stolen by hackers
9.51	February	ShareThis Inc.	(Hacking) 41,028,098 users' names, usernames, email addresses, DES-hashed passwords, genders, and dates of birth stolen by hackers
9.50	March	Earl Enterprises	(Malware) 2,150,000 customer names, and credit or debit card numbers with expiration dates stolen by hackers employing malware
9.38	January	Undisclosed	(Web) 202,730,434 job applicants' personal details exposed on the Internet due to a misconfigured database

Top 20 Largest Breaches All Time (By Records Exposed)

Reported Date	Summary	Records Exposed	Organization	Industry-Sector	Breach Location
All Time Highest 12/14/2016	Recent revelations around the 2013 intrusion into Yahoo's systems moves this event back into the top spot	3 Billion	Yahoo	Business - Technology	United States
Number 2 5/13/2017	User phone numbers, names and addresses inappropriately made accessible in an uncensored public directory	2 Billion	DU Caller Group (DU Caller)	Business - Technology	China
Number 3 3/3/2017	Names, addresses, IP addresses, and email addresses, as well as an undisclosed number of financial documents, chat logs, and backups, exposed by faulty <code>rsync</code> backup.	1.3 Billion	River City Media, LLC	Business - Technology	United States
Number 4 1/25/2017	A database holding email addresses and passwords stolen by hackers and offered for sale on the dark web.	1.2 Billion	NetEase, Inc. dba 163.com	Business - Technology	China
Number 5 1/3/2018	Village-level enterprise operators sell access to the Aadhaar database	1.1 Billion	Unknown	Unknown	India
Number 6 1/3/2017	Email addresses, passwords, and SMTP credentials exposed on the Internet due to a misconfigured database	711 Million	Unknown	Unknown	Netherlands
Number 7 9/22/2016	Hack exposes user names, email addresses, phone numbers, dates of birth, hashed passwords and security questions and associated answers.	500 Million	Yahoo	Business - Technology	United States
Number 8 9/11/2018	Misconfigured database exposes up to 445 million customer details including names, email addresses and IP addresses	445 Million	Veeam Software	Business - Technology	Switzerland
Number 9 10/18/2016	Hackers compromise member email addresses, usernames, and encrypted passwords, IP addresses and statuses.	412 Million	FriendFinder Networks, Inc	Business - Technology	United States
Number 10 12/5/2017	Misconfigured MongoDB exposes over 400 million names, phone numbers, email addresses and other customer information	404 Million	Ai.type	Business - Technology	Israel

Reported Date	Summary	Records Exposed	Organization	Industry-Sector	Breach Location
Number 11 11/30/2018	Hackers compromise loyalty program database, exposing names, addresses, reservation details, passport numbers	383 Million	Starwood (Marriott)	Business – Hotels	United States
Number 12 5/27/2016	Hack exposes user accounts containing SHA1 encrypted passwords, email addresses	360 Million	MySpace	Business - Technology	United States
Number 13 6/27/2018	Misconfigured marketing database exposes 230 million personal details as well as 110 million business contact records	340 Million	Exactis	Business – Professional Services	United States
Number 14 5/3/2018	Usernames and clear text passwords accidentally captured in an unprotected internal log	336 Million	Twitter	Business - Technology	United States
Number 15 1/1/2017	Email addresses and phone numbers were exposed in an unsecure MongoDB installation, which was later downloaded and dumped on the Internet	267 Million	EmailCar	Business - Technology	China
Number 16 8/28/2018	Customer contact details as well as bank account numbers stolen by hackers	240 Million	Huazhu Hotel Group	Business - Hotel	China
Number 17 10/11/2018	Customer names, contact details, dates of birth and other personal information exposed by misconfigured database	236 Million	FitMetrix, Inc	Business - Technology	United States
Number 18 8/22/2014	Hack of websites exposes names, registration numbers, usernames and passwords.	220 Million	Organization's Name has not been reported	Unknown	South Korea
Number 19 12/3/2016	Hackers offer for sale a database containing a variety of personal and financial details.	203 Million	Organization's Name has not been reported	Unknown	Unknown
Number 20 1/10/2019	Job applicants personal details are exposed to the Internet due to a misconfigured database	202 Million	Organization's Name has not been reported	Unknown	China

Methodology & Terms

Risk Based Security's research methods include automated processes coupled with traditional human research and analysis. Our proprietary applications crawl the Internet 24x7 to capture and aggregate potential data breaches for our researchers to analyze. In addition, the research team manually verifies news feeds, blogs, and other sources looking for new data breaches as well as new information on previously disclosed incidents. The database also includes information obtained through Freedom of Information Act (FOIA) requests, seeking breach notification documentation from various state and federal agencies in the United States. The research team extends our heartfelt thanks to the individuals and agencies that assist with fulfilling our requests for information.

Data Standards and the use of "Unknown"

In order for any data point to be associated with a breach entry, Risk Based Security requires a high degree of confidence in the accuracy of the information reported as well as the ability to reference a public source for the information. In short, the research team does not guess at the facts. For this reason the term "Unknown" is used when the item cannot be verified in accordance with our data validation requirements. This can occur when the breached organization cannot be identified but leaked data is confirmed to be valid or when the breached organization is unwilling or unable to provide sufficient clarity to the data point.

Breach Types are defined as follows:

Name	Description
Disposal Computer	Discovery of computers not disposed of properly
Disposal Document	Discovery of documents not disposed of properly
Disposal Drive	Discovery of disk drives not disposed of properly
Disposal Mobile	Discovery of mobile devices not disposed of properly
Disposal Tape	Discovery of backup tapes not disposed of properly
Email	Email communication exposed to unintended third party
Fax	Fax communication exposed to unintended third party
Fraud SE	Fraud or scam (usually insider-related), social engineering
Hack	Computer-based intrusion
Lost Computer	Lost computer (unspecified type in media reports)
Lost Document	Discovery of documents not disposed of properly, not stolen
Lost Drive	Lost data drive (unspecified if IDE, SCSI, thumb drive, etc.)
Lost Laptop	Lost laptop (generally specified as a laptop in media reports)
Lost Media	Media (e.g. disks) reported to have been lost by a third party
Lost Mobile	Lost mobile phone or device such as tablets, etc.
Lost Tape	Lost backup tapes
Missing Document	Missing document, unknown or disputed whether lost or stolen
Missing Drive	Missing drive, unknown or disputed whether lost or stolen
Missing Laptop	Missing laptop, unknown or disputed whether lost or stolen
Missing Media	Missing media, unknown or disputed whether lost or stolen
Other	Miscellaneous breach type arising primarily from data mishandling
Phishing	Masquerading as a trusted entity in an electronic communication to obtain data
Seizure	Forcible taking of property by a government law enforcement official
Skimming	Using electronic devices (such as a skimmer) to swipe victims' credit/debit card numbers
Snail Mail	Personal information in "snail mail" exposed to unintended third party
Snooping	Exceeding intended privileges and accessing data for unauthorized purposes
Stolen Computer	Stolen desktop (or unspecified computer type in media reports)
Stolen Document	Documents either reported or known to have been stolen by a third party
Stolen Drive	Stolen data drive, unspecified if IDE, SCSI, thumb drive, etc.
Stolen Laptop	Stolen Laptop (generally specified as a laptop in media reports)

Name	Description
Stolen Media	Media generally reported or known to have been stolen by a third party
Stolen Mobile	Stolen mobile phone or device such as tablets, etc.
Stolen Tape	Stolen backup tapes
Unknown	Unknown or unreported breach type
Virus (Malware)	Exposure to personal information via virus or Trojan (possibly classified as hack)
Web	Web-based intrusion, data exposed to the public via search engines, public pages

Data Type Definitions

Abbreviation	Description
CCN	Credit Card Numbers
SSN	Social Security Numbers (or Non-US Equivalent)
NAA	Names
EMA	Email Addresses
MISC	Miscellaneous
MED	Medical
ACC	Account Information
DOB	Date of Birth
FIN	Financial Information
UNK	Unknown / Undisclosed
PWD	Passwords
ADD	Addresses
USR	User Name
NUM	Phone Number
IP	Intellectual Property

NO WARRANTY.

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About Risk Based Security

Risk Based Security (RBS) provides detailed information and analysis on Data Breaches, Vendor Risk Scores and Vulnerability Intelligence. Our products, [Cyber Risk Analytics \(CRA\)](#) and [VulnDB](#), provide organizations with access to the most comprehensive threat intelligence knowledge bases available, including advanced search capabilities, access to raw data via API, and email alerting to assist organizations in taking the right actions in a timely manner. In addition, our [YourCISO](#) offering provides organizations with on-demand access to high quality security and information risk management resources in one, easy to use web portal.

[Cyber Risk Analytics \(CRA\)](#) provides actionable security ratings and threat intelligence on a wide variety of organizations. This enables organizations to reduce exposure to the threats most likely to impact them and their vendor base. In addition, our PreBreach vendor risk rating, the result of a deep-view into the metrics driving cyber exposures, are used to better understand the digital hygiene of an organization and the likelihood of a future data breach. The integration of PreBreach ratings into security processes, vendor management programs, cyber insurance processes and risk management tools allows organizations to avoid costly risk assessments, while enabling businesses to understand its risk posture, act quickly and appropriately to proactively protect its most critical information assets.

For more information, please visit:

<https://www.riskbasedsecurity.com/>

Or call 855-RBS-RISK.