

National Impact of Shifting Cybersecurity Risk Exposure on Healthcare Resilience

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Enhancing the Resilience of Healthcare and Public Health Critical Infrastructure: A Workshop
December 10, 2024

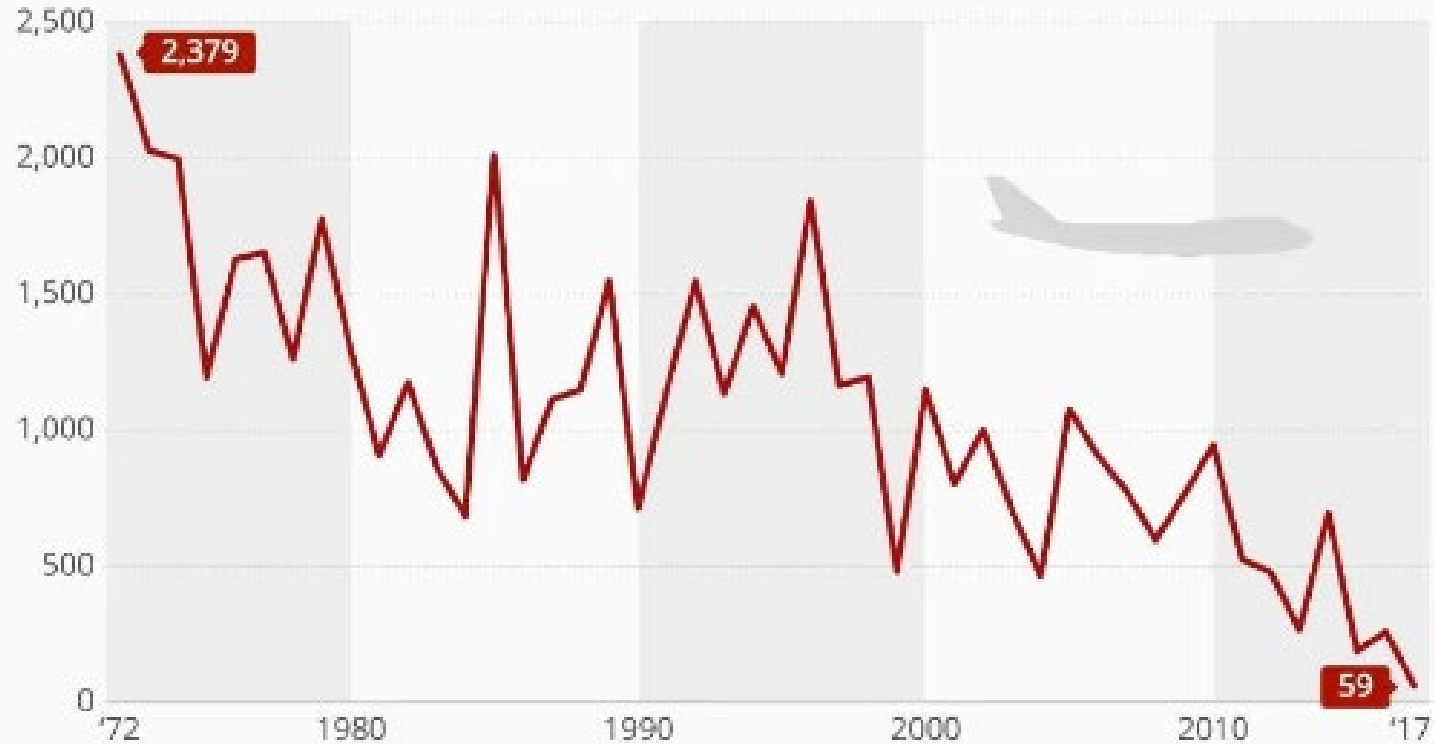
Air Travel Safety



Air Travel Safety

2017 Was The Safest Year In The History Of Air Travel

Airliner accident fatalities by year from 1972 to 2017*



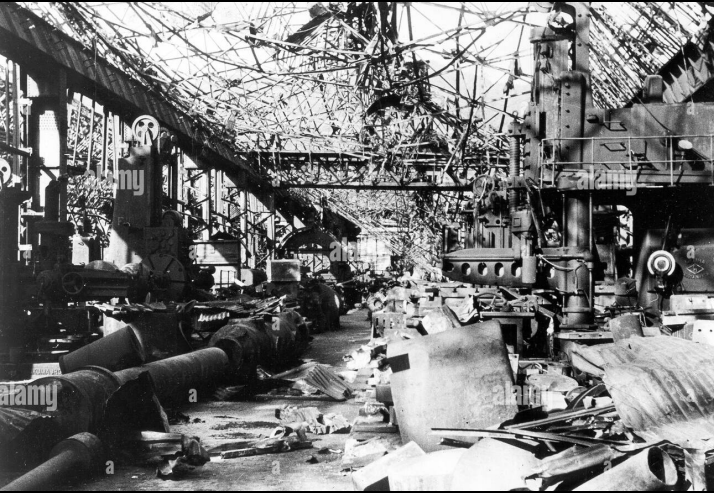
@StatistaCharts

* Accidents excluding suicide, sabotage, hijackings etc.

Source: Aviation Safety Network

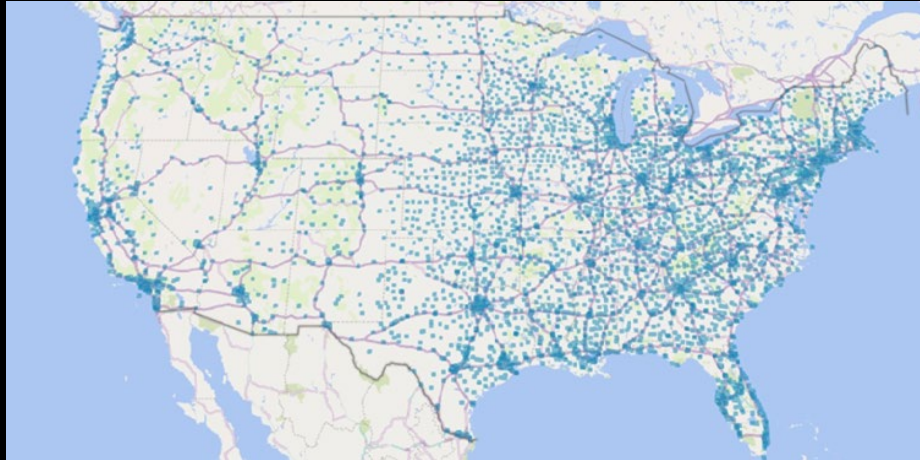
Measurement and Lessons Learned

Transformation by Measurement



“[The System of Profound Knowledge] provides a map of theory by which to understand the organizations that we work in.” - W. Edwards Deming

If you can't measure, you can't manage.



Asset inventory
Non-trivial
Dynamic
2/3 are Hospital systems

Rating System 'FICO-like' Cybersecurity score

Rating Overview

Rating Overview Panel shows how well this company is managing each risk vector. Click on a risk vector to see more details about the risk.

Compromised Systems=27%

Botnet Infections
Spam Propagation
Malware Servers
Unsolicited Communications
Potentially Exploited

User Behavior=2.5%

File Sharing 2.5%
Exposed Credentials **

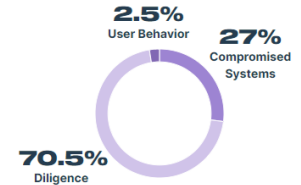
Public Disclosures

Security Incidents/Breaches
Other Disclosures *

Diligence=70.5%

SPF Domains 1%
DKIM Records 1%
TLS/SSL Certificates 10%
TLS/SSL Configurations 15%
Open Ports 10%
Web Application Headers 5%
Patching Cadence 20%
Insecure Systems 2.5%
Server Software 2%
Desktop Software 3%
Mobile Software 1%
DNSSEC *
Mobile Application Security *
Web Application Security *
Domain Squatting **

What Makes A Security Rating?



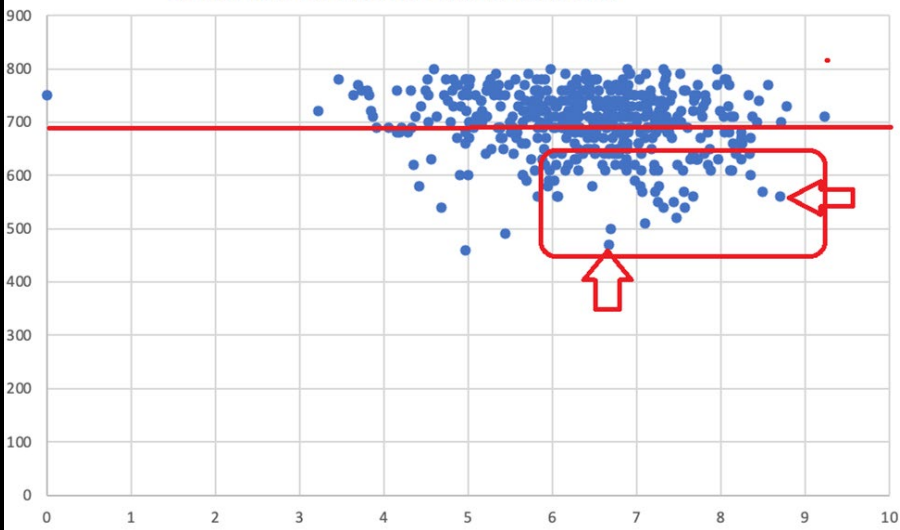
Weight of each risk category on the rating. Public disclosures may impact the Bitsight rating, but risk vectors in this category do not have a fixed weight.

[Learn more about how ratings are calculated.](#)

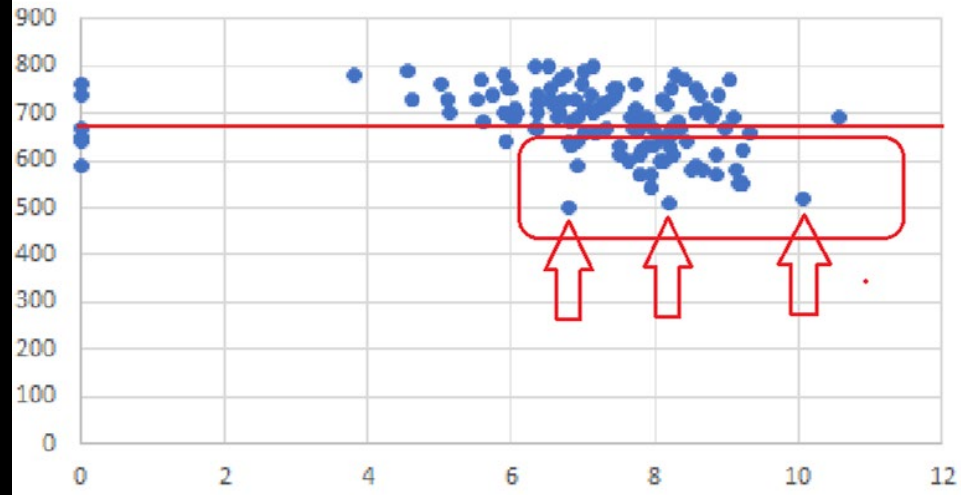
[Learn more about every risk vector.](#)

Measuring Cybersecurity for all USA Hospitals

INTRASTATE HOSPITAL SYSTEMS



INTERSTATE HOSPITAL SYSTEMS



Size of Hospital system (1000's)

Cybersecurity score: 200-900

Security Rating

	IHS	VHA	INTERSTATE	INTRA-STATE
MEAN	719.78	753.78	682.72	699.34
95% CI	+/- 7.25	+/- 2.96	+/- 12.00	+/- 5.62
MEDIAN	730	760	690	710
RANGE	650-760 (110)	690-780 (90)	500-800 (300)	460-800 (340)
SKEW	-1.23	-2.27	-0.52	-0.89
TARGETS	12	25	50	29



Proposed: NTSB - like entity for Healthcare Cybersecurity Lessons Learned

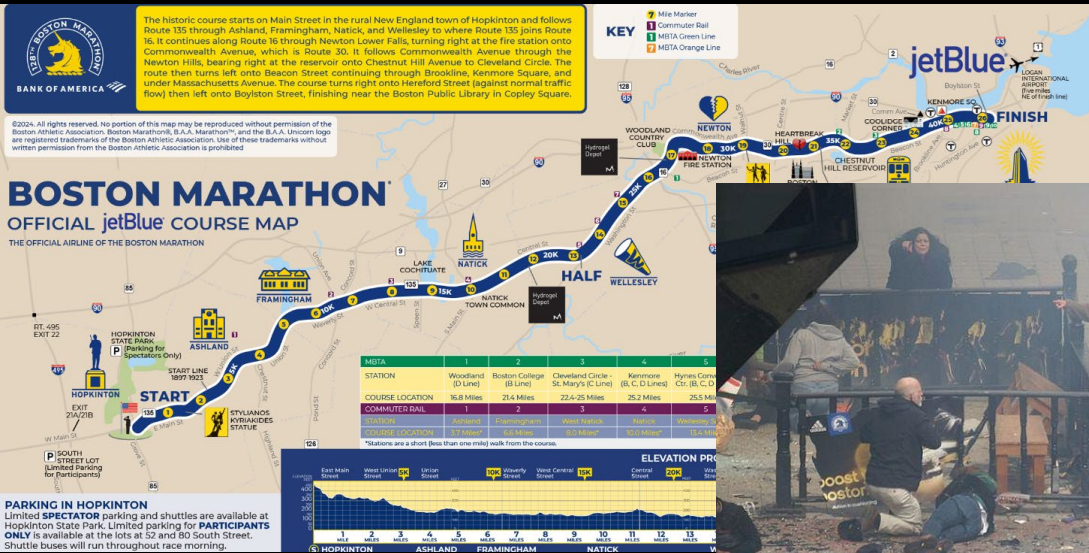


“There is no quick fix until we understand the underlying problem”

W. Edwards Deming

Backup Slides

Deadliest Day in Boston Marathon History?



The historic course starts on Route 1 in the rural New England town of Hopkinton and follows Route 135 through Ashland, Framingham, Natick, and Wellesley to where Route 135 joins Route 1. It continues along Route 1 through Newton Lower Falls, turning right at the fire station onto Commonwealth Avenue, which is Route 30. It follows Commonwealth Avenue through the Newton Hills, bearing right at the reservoir onto Chestnut Hill Avenue to Cleveland Circle. The route then turns left at Beacon Street, continuing through Brookline, Kenmore Square, and under Massachusetts Avenue. The course turns right onto Hereford Street (against normal traffic flow) then left onto Boylston Street, finishing near the Boston Public Library in Copley Square.

BOSTON MARATHON
OFFICIAL jetBlue COURSE MAP



Regional Medical
Outcomes
due to Boston Marathon
ER delays
exceeded effects of the
marathon bombing itself



SPECIAL ARTICLE



Delays in Emergency Care and Mortality during Major U.S. Marathons

Authors: Anupam B. Jena, M.D., Ph.D., N. Clay Mann, Ph.D., Leia N. Wedlund, and Andrew Olenski, B.S. [Author Info & Affiliations](#)

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Abstract

BACKGROUND

Large marathons frequently involve widespread road closures and infrastructure disruptions, which may create delays in emergency care for nonparticipants with acute medical conditions who live in proximity to marathon routes.

METHODS

We analyzed Medicare data on hospitalizations for acute myocardial infarction or cardiac arrest among Medicare beneficiaries (≥ 65 years of age) in 11 U.S. cities that were hosting major marathons during the period from 2002 through 2012 and compared 30-day mortality among the beneficiaries who were hospitalized on the date of a marathon, those who were



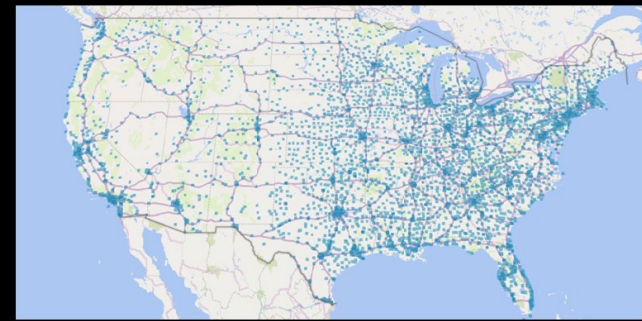
Point of Care



Hospital System



National Healthcare

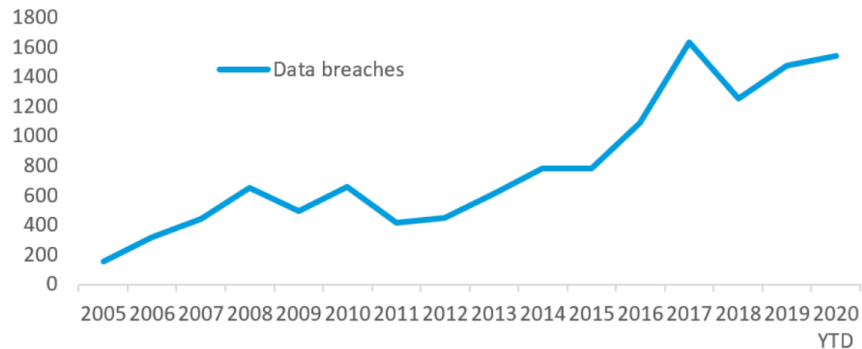


Company Valuation and Insurance Rates Effected by Cybersecurity Risk Exposure



Threats rising

Explosion in cyber attack incidents.

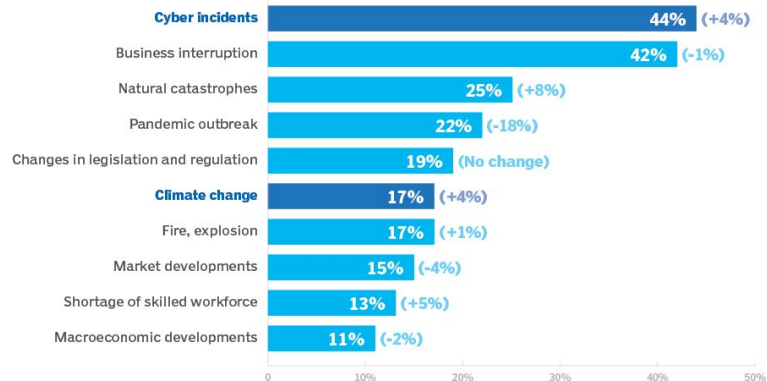


Source: Identity Theft Resource Center.

INTERNATIONAL MONETARY FUND

The most important business risks in 2022

Cyber incidents and climate change are increasingly deemed as critical enterprise risks.
(Year-over-year percentages in parentheses.)



Healthcare Cybersecurity Challenges

Telehealth



Cybersecurity incidents not reported
(water, power outages are reported)



Remote health monitoring



Legal Liability and Public Relations

