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Insurance risk modeling & the cyber risk industry

Scott Stransky

October 24, 2026



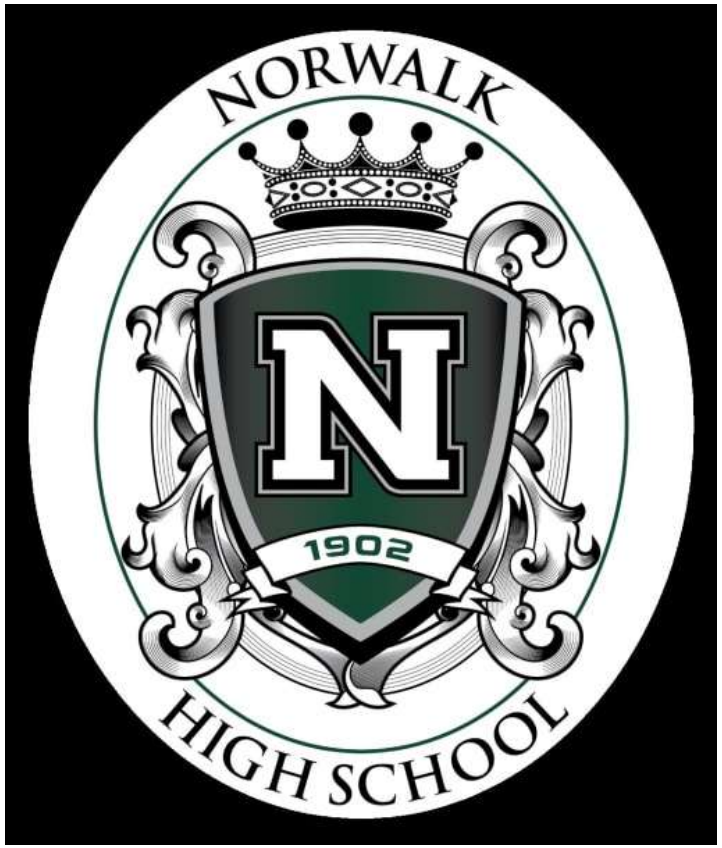
Agenda

- My background and journey
- Introduction to modeling
- Cyber insurance and cyber specific datasets and studies
- Q&A

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My background and journey

High school



- Norwalk High School (CT) class of 2001
- Part of the band, marching band, pit orchestra
- Volunteered in several places

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College & Grad school



- Bachelor’s degree in Math with Computer Science (2005)
- Minors in Music and Earth Science
- Master’s degree in Atmospheric Science (2007)

- Participant in the MIT Wind Ensemble (even now!)

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Career path



- 2007-2021
- Found the job “by accident”
- Started on the natural catastrophe team – building hurricane, tornado, and other weather-related models
- Moved into cyber at the end of 2013



- 2021-present
- Formed the “Cyber Risk Intelligence Center” (details on next slide)

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Cyber Modeling and Data Strategy

Delivered Through the Marsh Cyber Risk Intelligence Center

The Marsh Cyber Risk Intelligence Center (formerly Cyber Risk Analytics Center) is a **foundational cross-business investment** in our cyber analytics capabilities across Guy Carpenter, Marsh, and Oliver Wyman, founded in 2021.

The Cyber Risk Intelligence Center is focused on these key activities:

- Development of a view of risk via research, development, and maintenance of proprietary models – the Marsh Cyber Attritional Loss Model (CALM™)
- Evaluating and licensing external models and data to complement our proprietary view of risk
- Cross-Marsh data sharing and governance



Cyber Risk Intelligence Center



Building internal models and the Marsh view of cyber risk using our proprietary data



Partnering with the best external data and modeling vendors to complement our internal models



Thought leadership: research publication, academic partnerships, and beyond

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My hobby

- Travel!
  - All 50 states at age 16
  - Been to 13 of the 38 state tripoints
  - Crossed 96 of the 107 state borders
  - 414 of the 433 national park sites in the US
  - 52 countries
  - 218 of the 1273 UNESCO world heritage sites
  - 1521 flights on 73 different airlines

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Introduction to modeling

Essentially, all models are wrong, but **some are useful**.

-George Box, Statistician

History of Insurance Risk Modeling

To learn more about the history of modeling, check out this New York Times article: https://www.nytimes.com/2007/08/26/magazine/26neworleans-t.html

Pre 1980's

- Insurance before modeling

1987

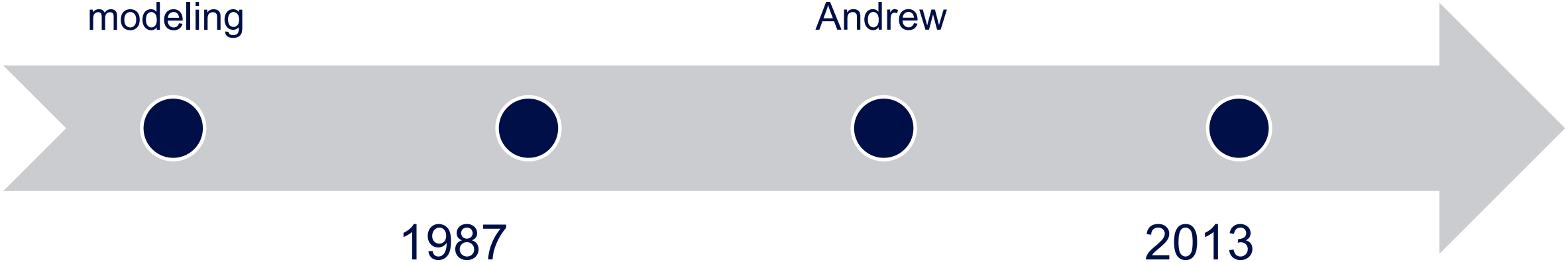
- Cat modeling begins

1992

- Hurricane Andrew

2013

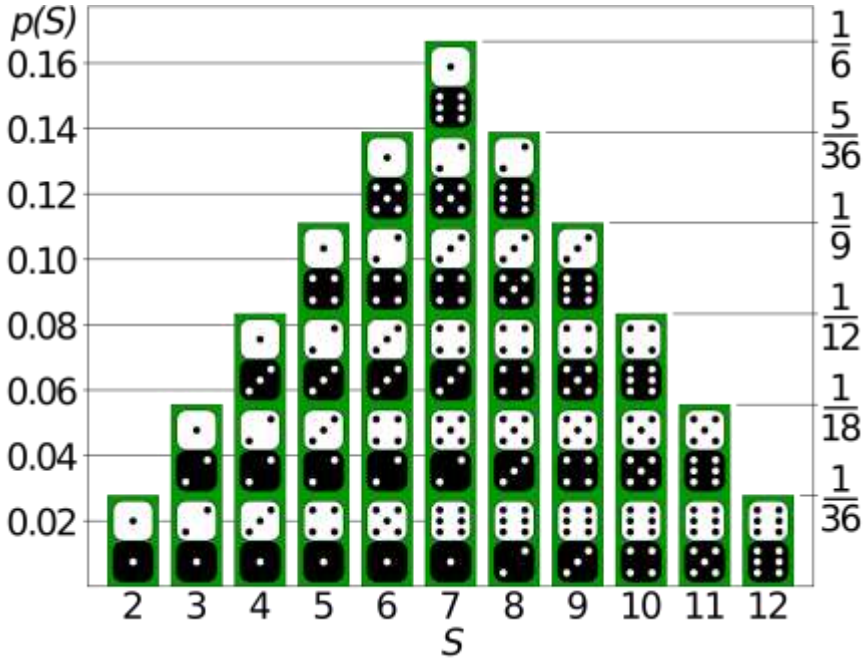
- Cyber modeling



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Monte Carlo Simulation



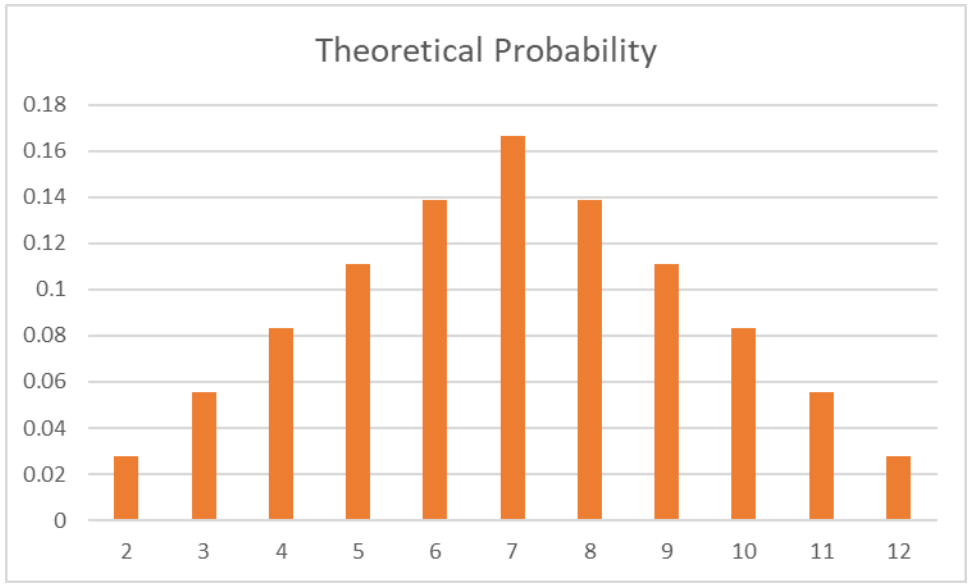


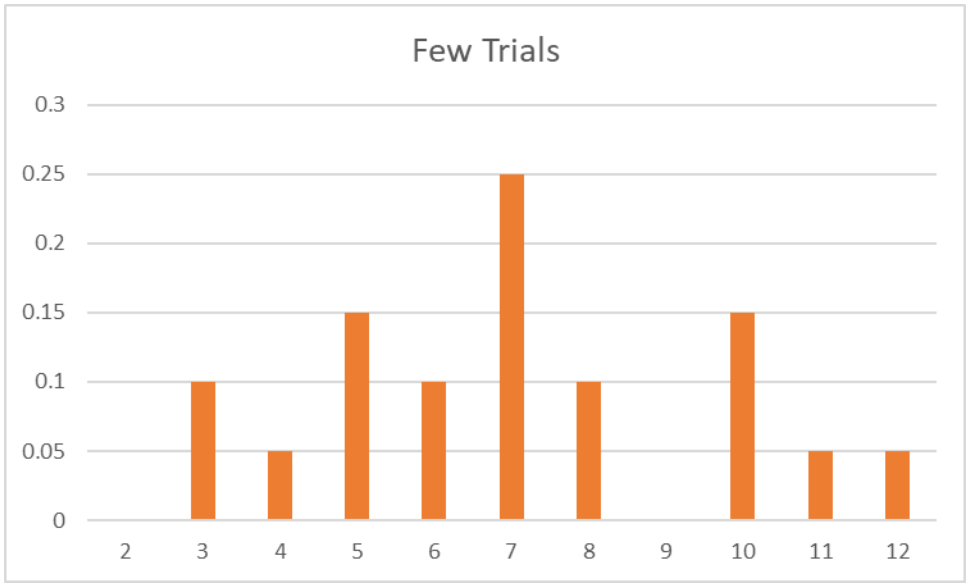
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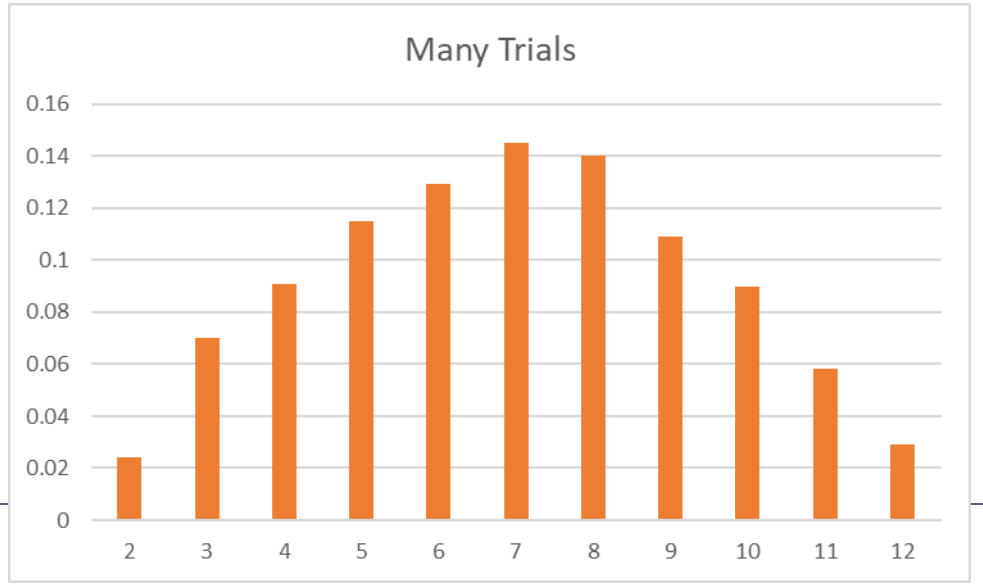
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How many simulations do we need?

For cyber modeling we use 100K (100,000) years/simulations, but we have to check "convergence"







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Event Frequency

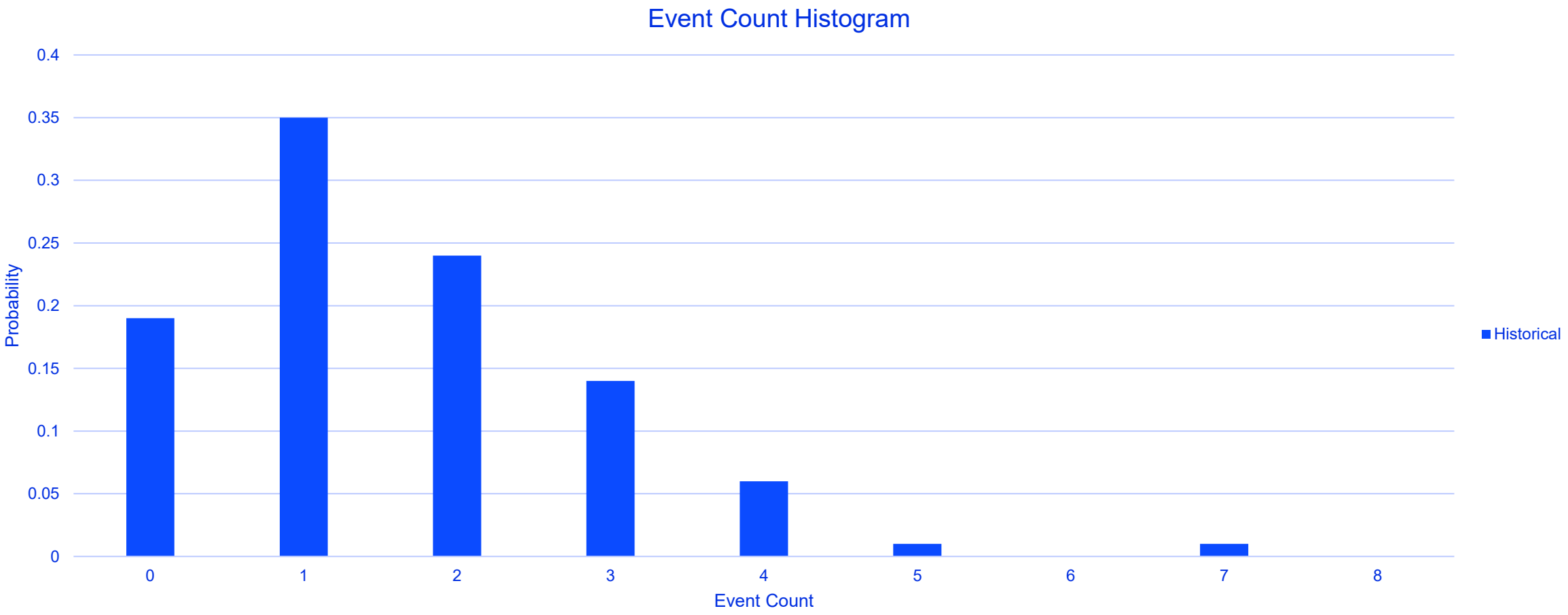
- Imagine a world where there is 100 years of data on event counts:

Year	Event count
1922	3
1923	0
1924	4
1925	0
…	
2021	1

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Event Frequency

Always visualize your data!

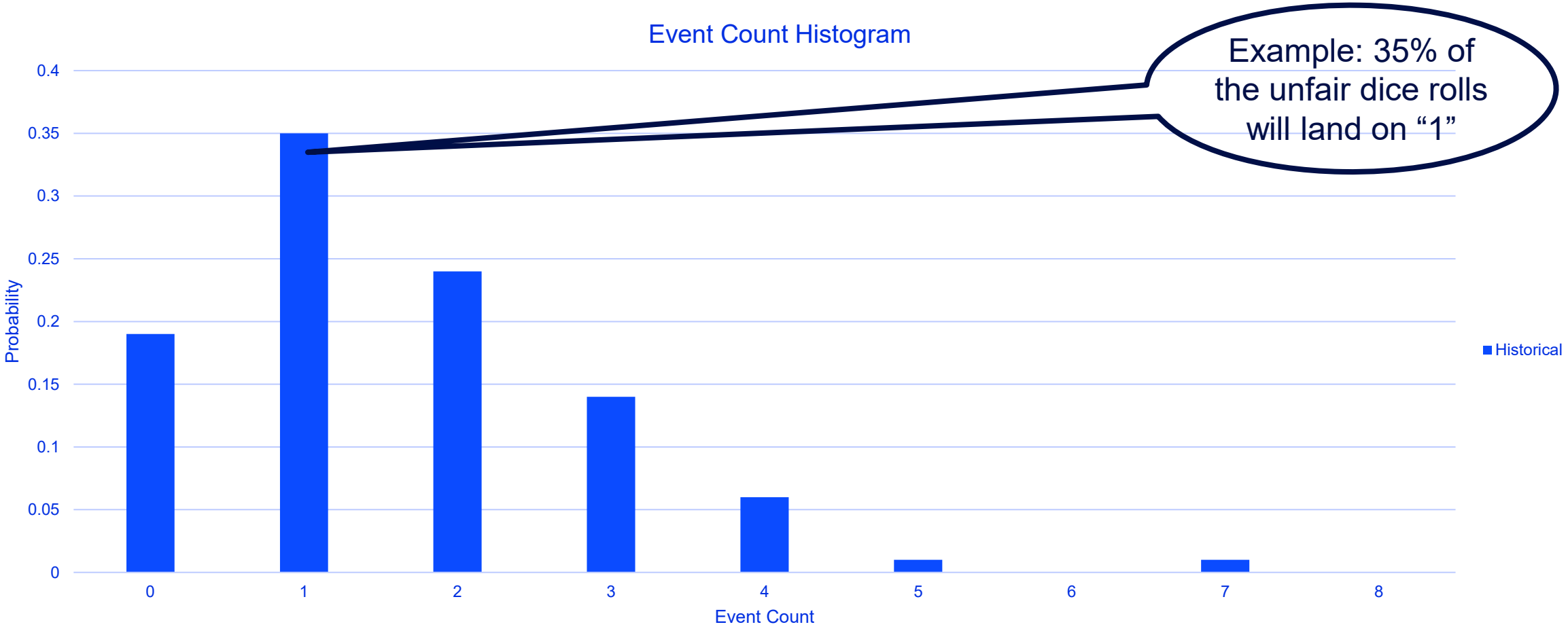


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Event Frequency

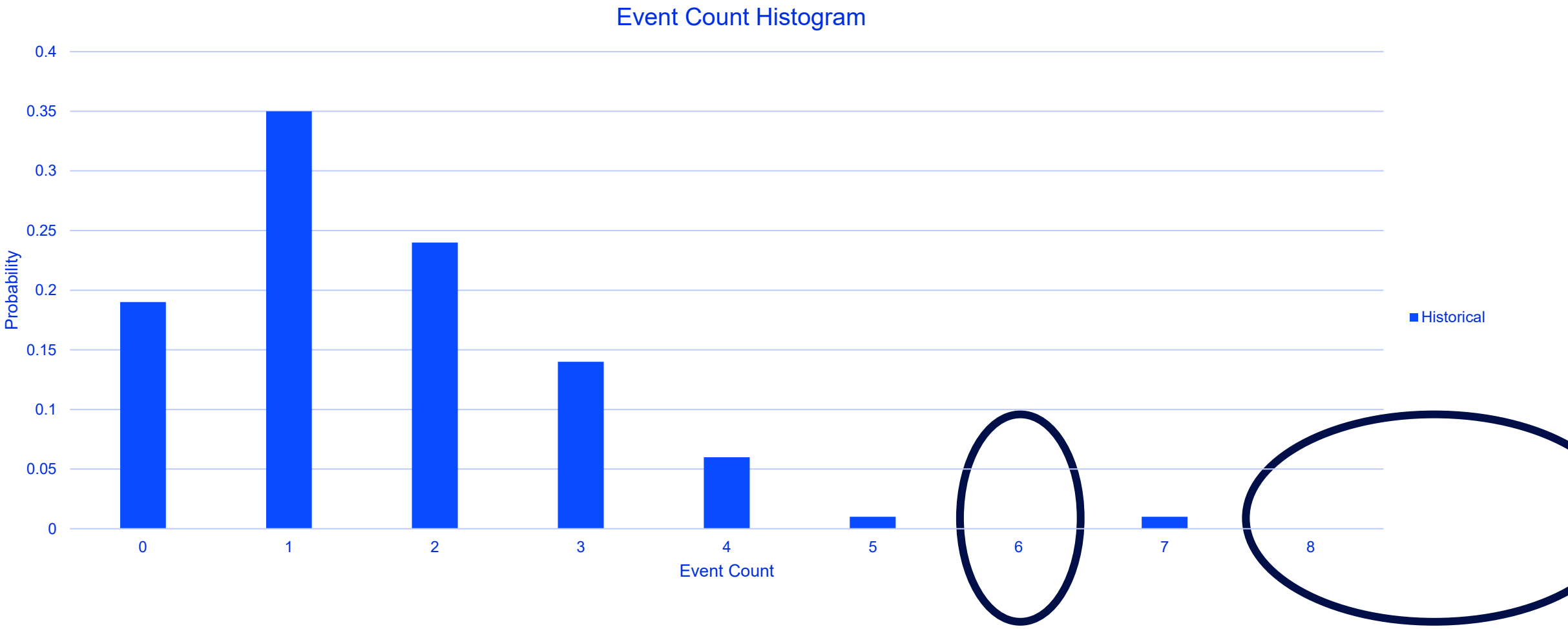
To do a basic empirical Monte Carlo simulation on this, envision unfair dice with 7 sides that are weighted to land using the distribution shown below from 0 to 7 (except 6)



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Event Frequency

Empirical distributions have several concerns

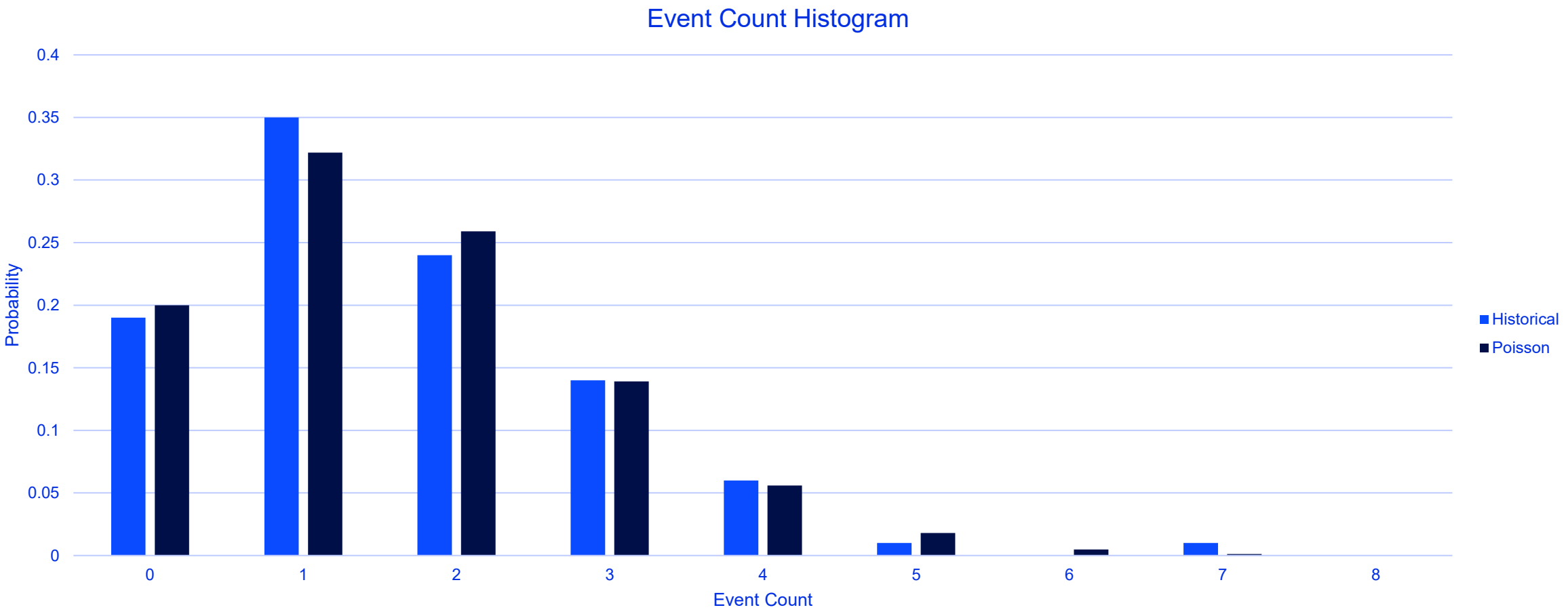


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Event Frequency

Using a “parametric distribution” eliminates this issue – now our Monte Carlo dice have “infinitely” many sides, but most of the time, it’ll land on 0 through 6



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Cyber insurance and cyber specific datasets and studies

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Cyber insurance



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Our Data Is From Proprietary, Licensed, and Public Sources

Proprietary

- Marsh placement data
- Guy Carpenter exposure data
- Cyber Self Assessment (CSA) answers
- Marsh loss data
- Guy Carpenter loss data

Licensed

- Zywave (Advisen) – historical incident data
- Risk Based Security – historical incident data
- Bitsight – outside in scans
- Security Scorecard – outside in scans
- CyberCube – catastrophe modeling
- Kynd – single points of failure
- Searchlight – dark web threat intelligence

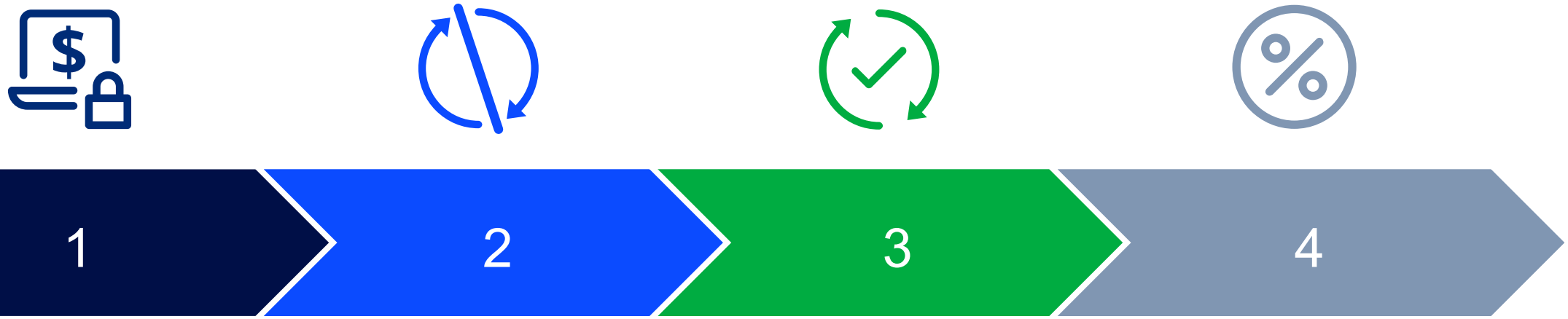
Public

- GDPR and other fines
- Publicly reported breaches
- News articles
- Published reports (Ponemon, Verizon, etc)

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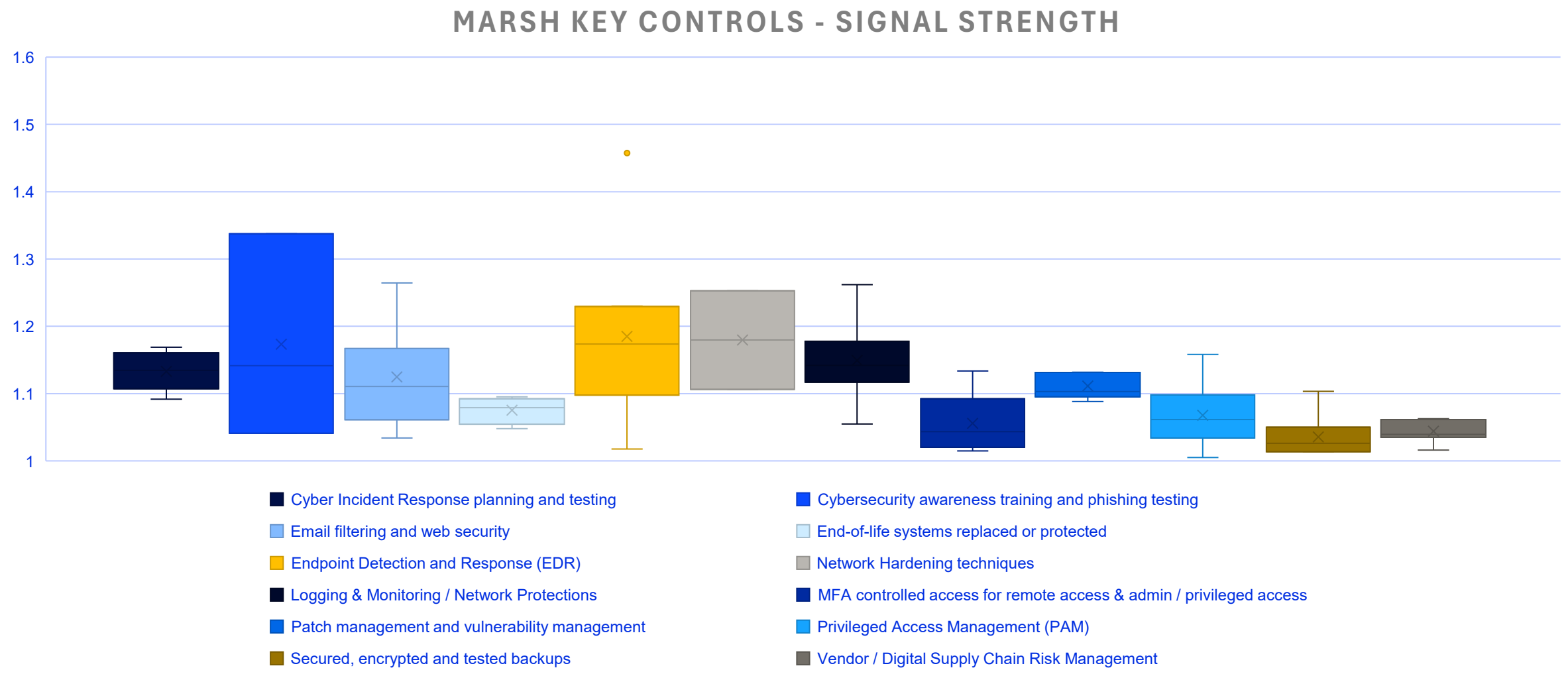
Cyber Self Assessment ->Loss Correlation Study Overview

Study is Focused on Event Frequency – forms one of the most unique aspects of the Marsh Cyber Attritional Loss Model (CALM™)



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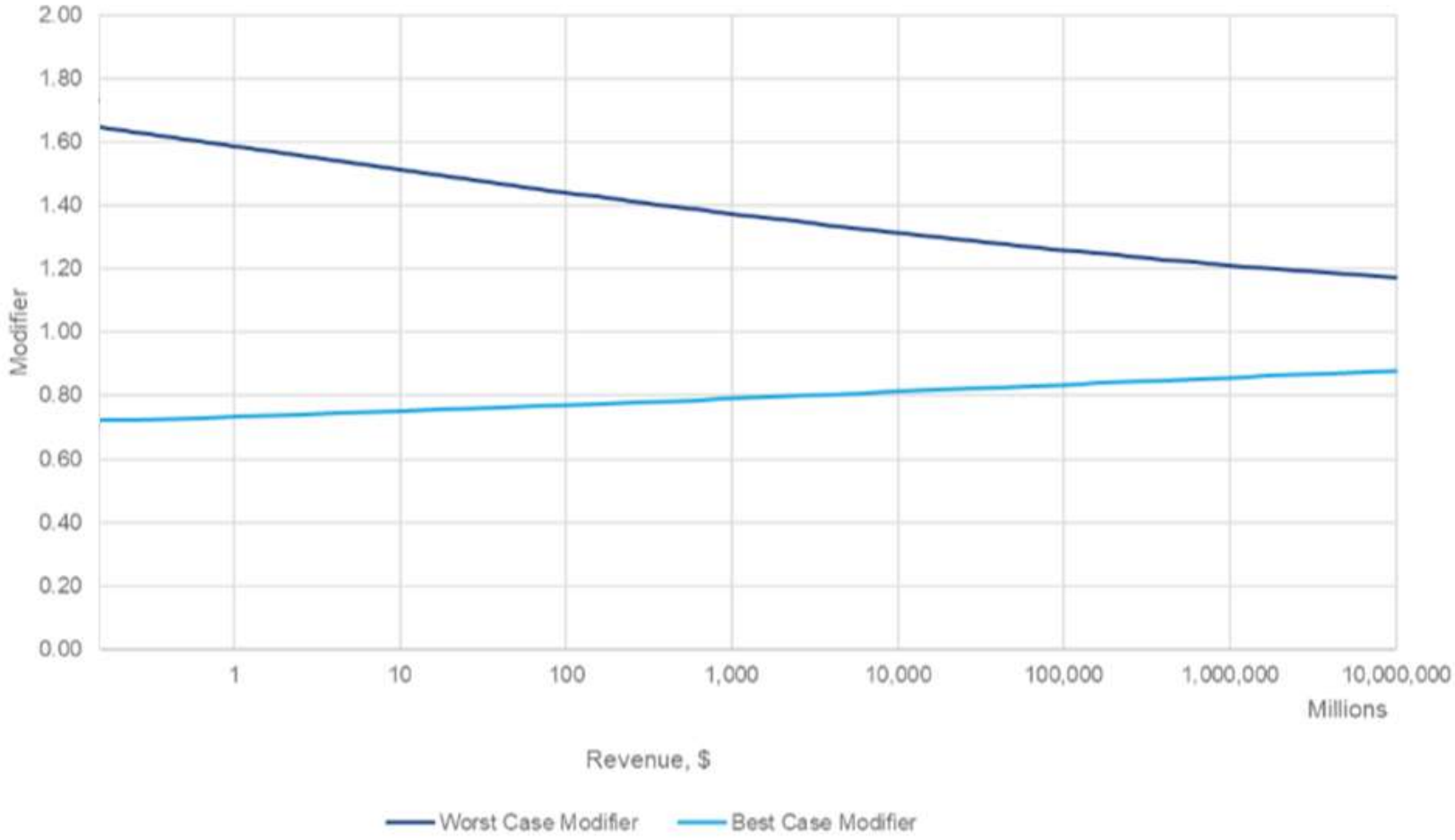
Overall Results



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Cyber Controls Loss Impact

Increase/decrease in cyber incident frequency for the very best and worst cyber controls for various revenue companies



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Recommendations

- AI, it’s here and growing
- Everyone says you rarely use the math you learn in school – that’s NOT true!
- Academics and standardized tests are great and important, but colleges are looking for a well-rounded person
- There are jobs you may never have heard of that could be perfect for you
- Build your network – via friends, family, teachers, mentors, etc.
- Three phases when you start a job – doing assigned tasks, thinking to yourself what the next task might be, and starting to suggest tasks

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Q&A