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DARLING CONSULTING GROUP

CCBN™ California Community Banking Network

The New Fraud Landscape—Fighting the Emerging Threats of Tomorrow

CCBN Annual Conference

November 4, 2026

Mark Haberland | Managing Director | MHaberland@darlingconsulting.com

Sam Chen | Quantitative Consultant | SChen@darlingconsulting.com

How Much Fraud Do You Want to Catch?



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How Much Fraud Do You Want to Catch?

Open for business

0%



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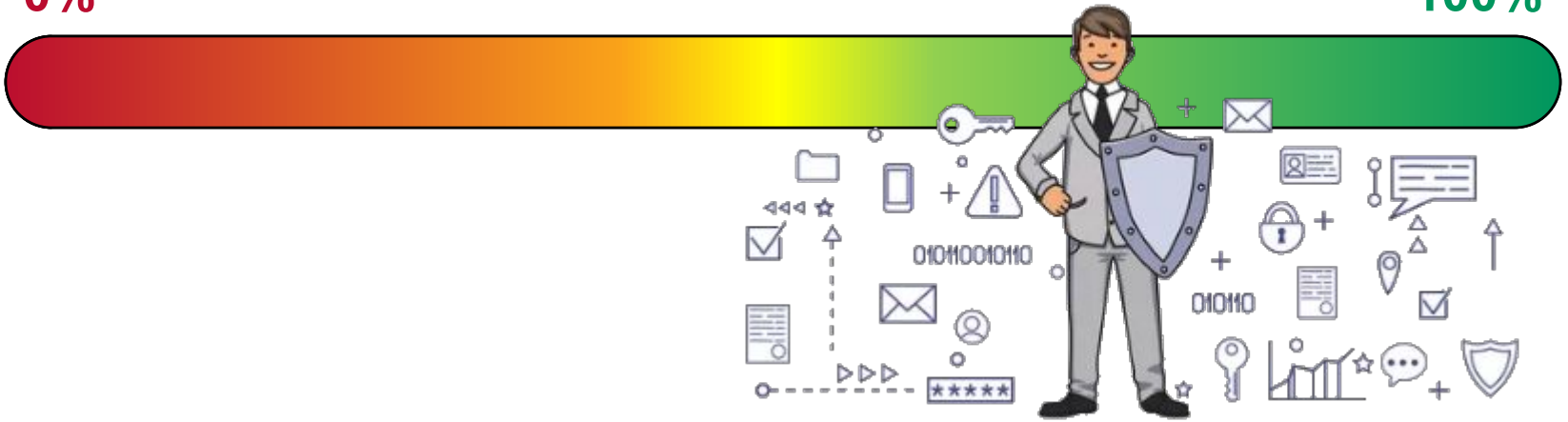
How Much Fraud Do You Want to Catch?

Open for business

0%

Not on my watch

100%



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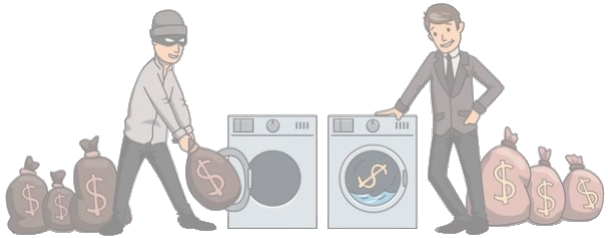
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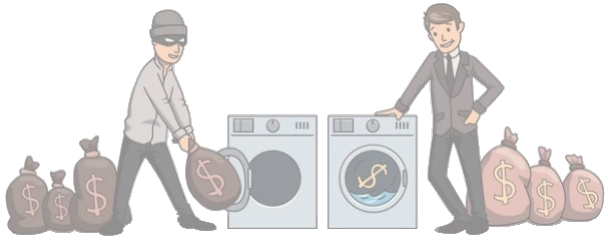
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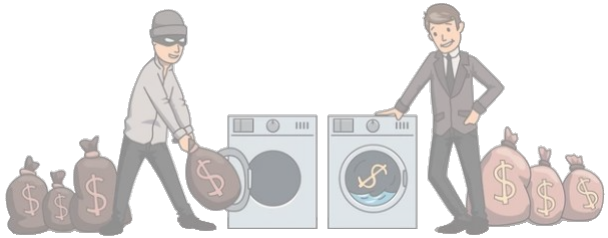
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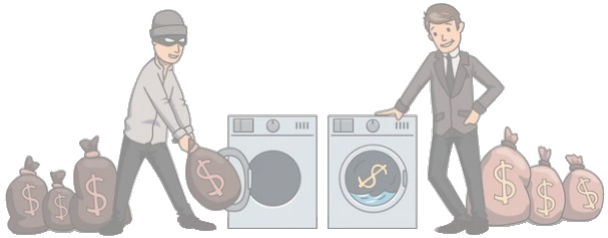
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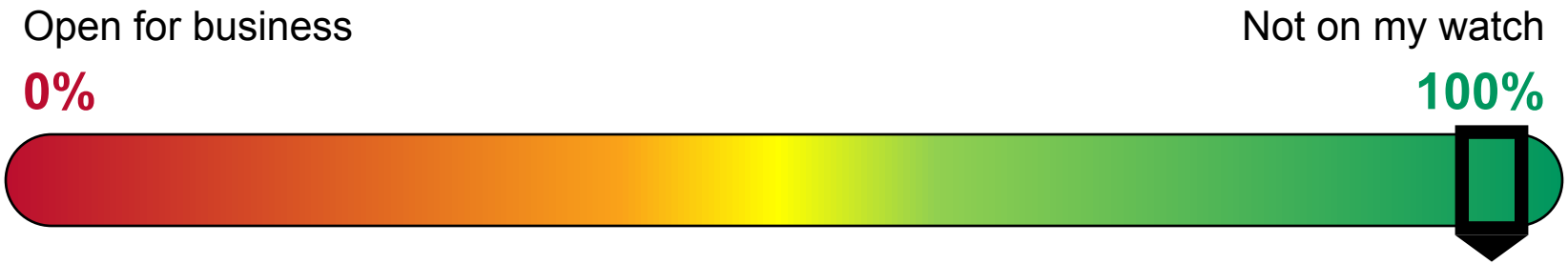
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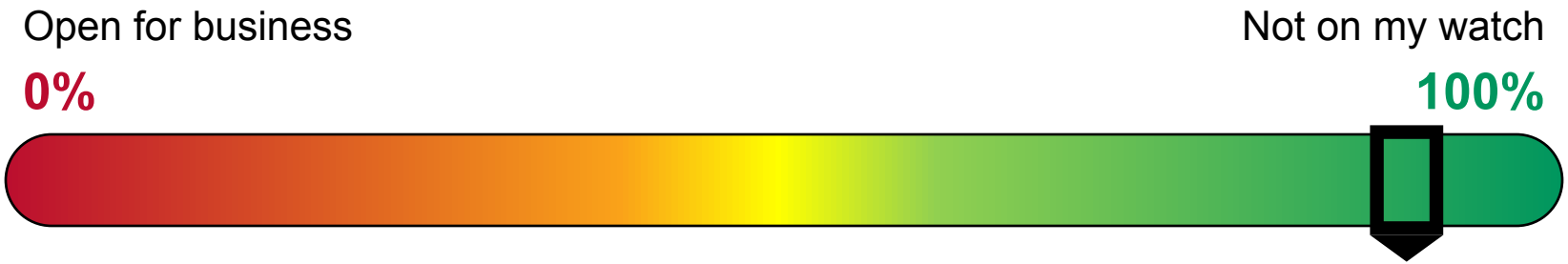
90%
Customer Fatigue

1,500
Investigator Capacity

6,000 → **50**
Alerts → Confirmed Cases

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How Much Fraud Do You Want to Catch?



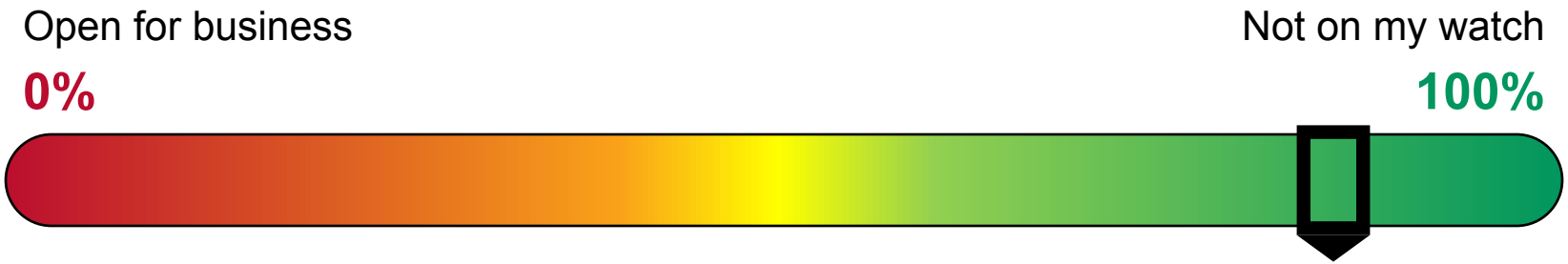
65%
Customer Fatigue

1,500
Investigator Capacity

3,700 → **49**
Alerts → Confirmed Cases

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How Much Fraud Do You Want to Catch?



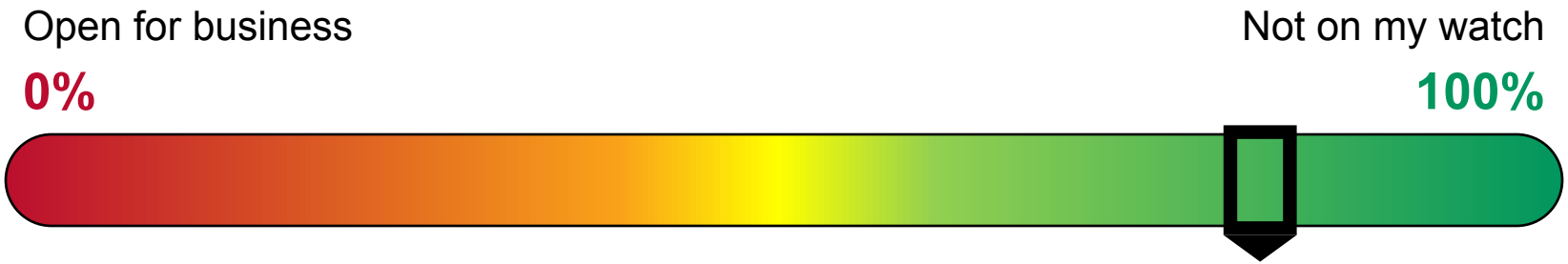
40%
Customer Fatigue

1,500
Investigator Capacity

2,400 → **48**
Alerts → Confirmed Cases

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How Much Fraud Do You Want to Catch?



20%
Customer Fatigue

1,500
Investigator Capacity

1,900 → **47**
Alerts → Confirmed Cases

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How Much Fraud Do You Want to Catch?

Open for business

0%

Not on my watch

100%



10%
Customer Fatigue

1,500
Investigator Capacity

1,500
Alerts

→

41
Confirmed Cases

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How Much Fraud Do You Want to Catch?

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0%

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100%



20%
Customer Fatigue

1,500
Investigator Capacity

1,900
Alerts

→

47
Confirmed Cases

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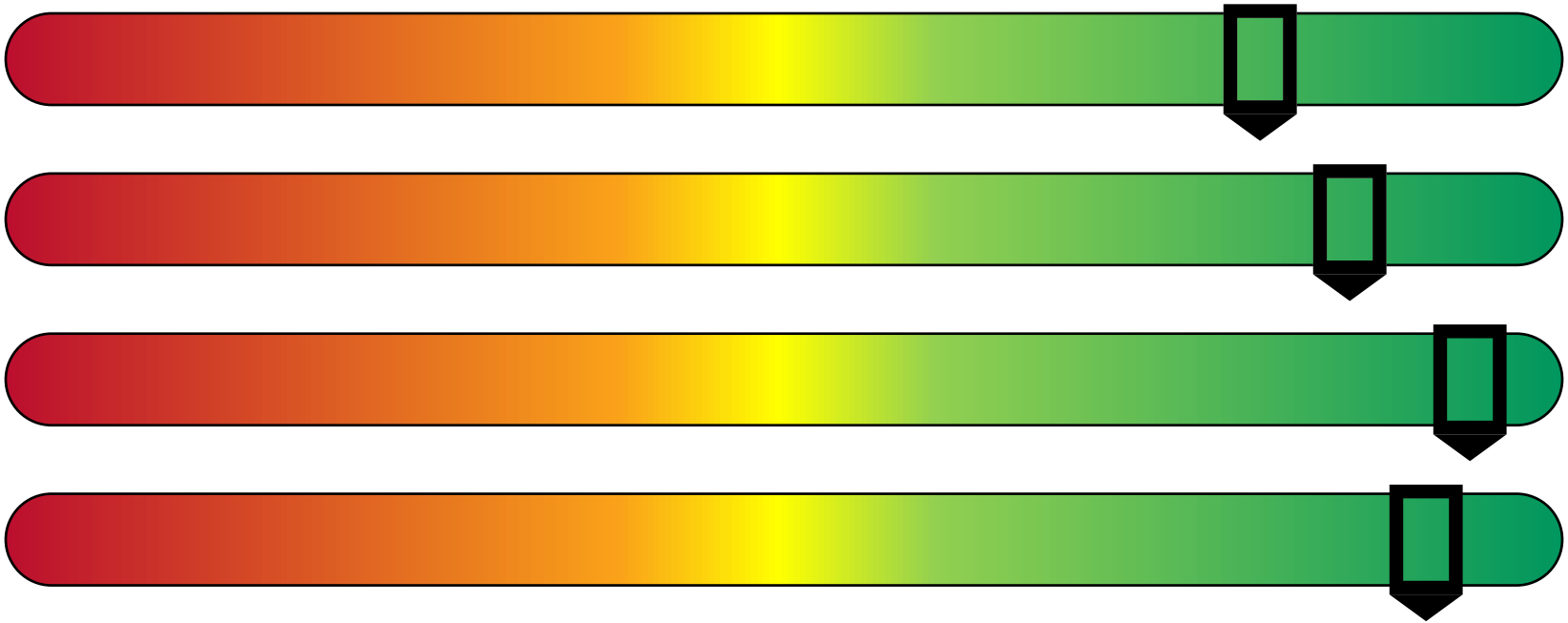
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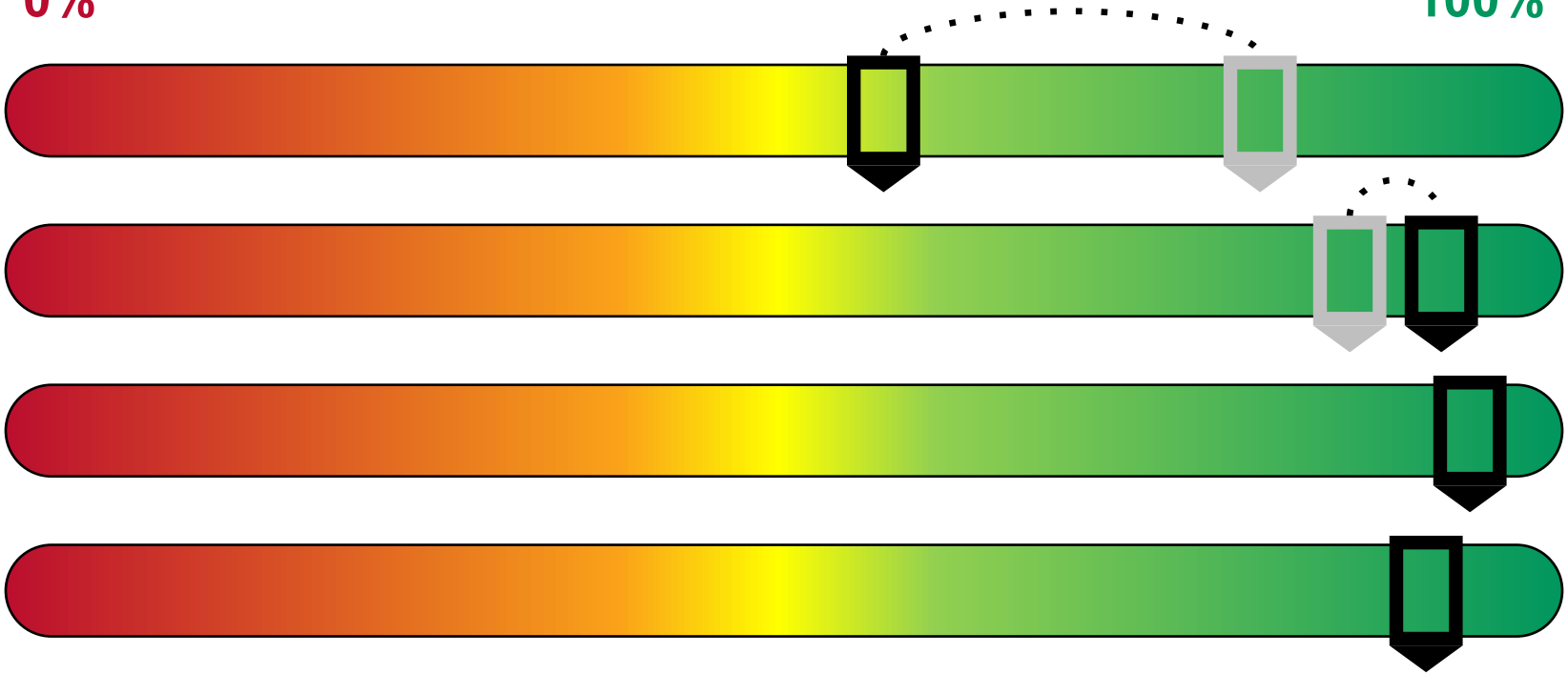
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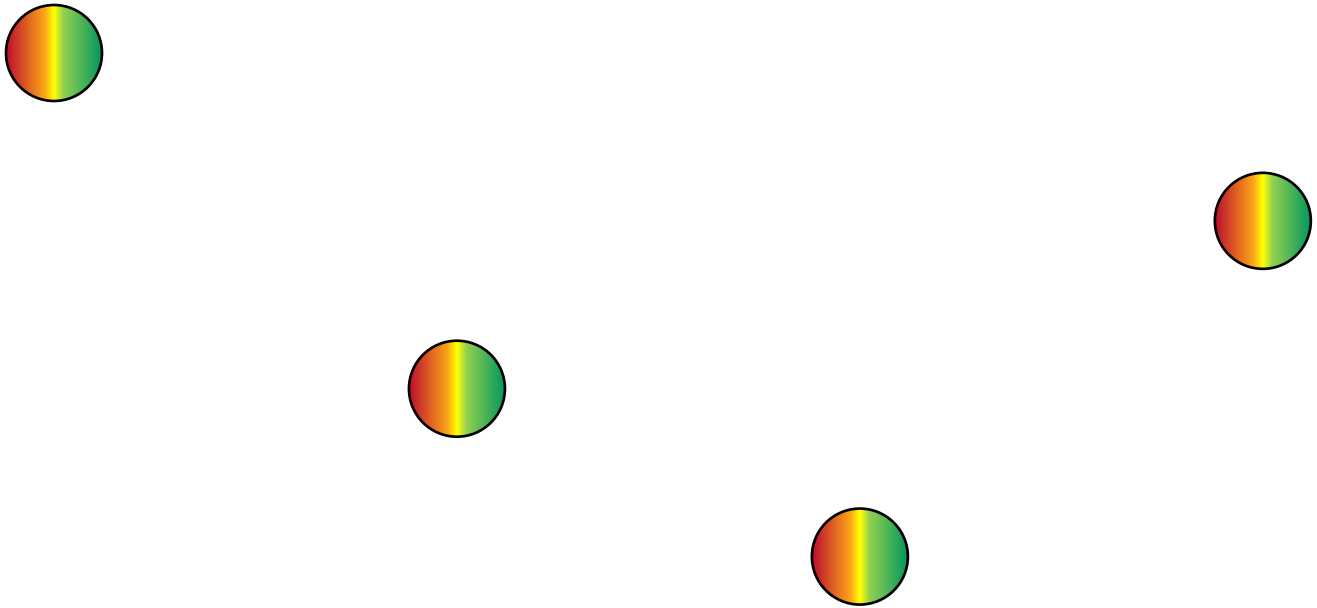
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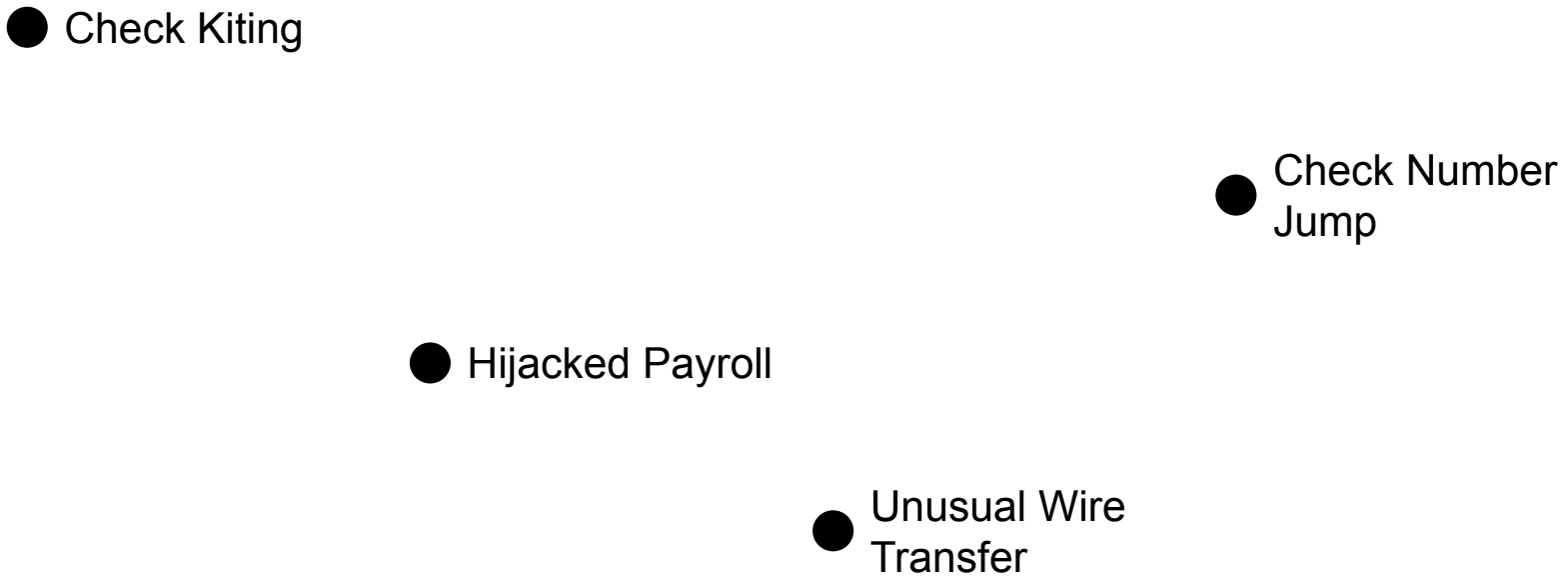
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How Much Fraud Do You Want to Catch?

- Excessive Tax Returns
- SBA Loan Fraud
- Stolen Stimulus
- Unemployment Fraud

- Risky Online Banking
- Account Takeover
- Check Kiting
- Excessive Credit
- Reactivated Account
- Unusual Loan Activity

- Excessive ATM Usage
- High Velocity Card Usage
- Common Point of Purchase
- Suspicious POS Behavior
- Card Flipping
- Fallback POS

- Duplicate Check
- Check Number Jump
- Fraudulent Cluster
- Counterfeit Checks
- Forged Signature

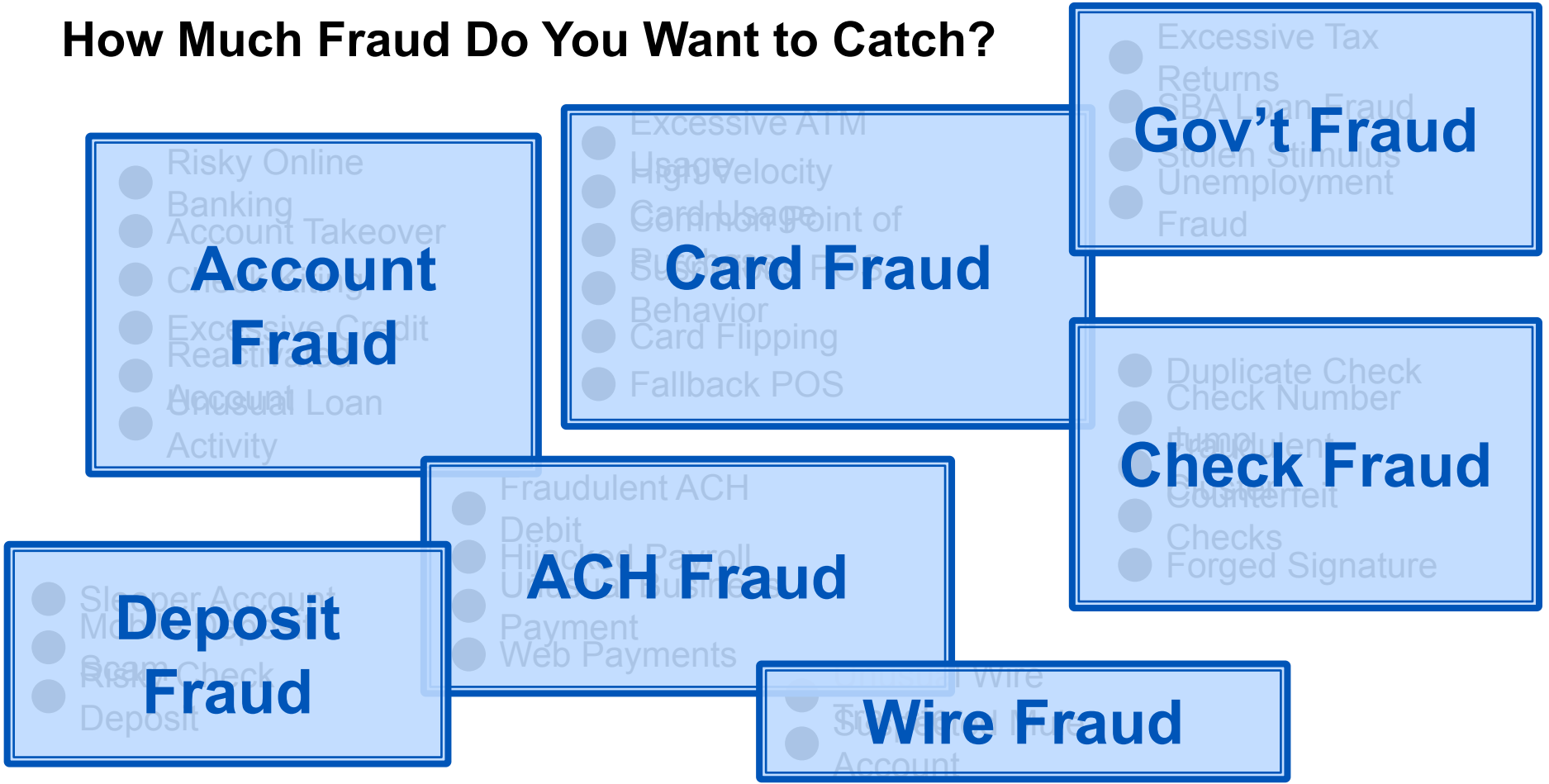
- Fraudulent ACH Debit
- Hijacked Payroll
- Unusual Business Payment
- Web Payments

- Sleeper Account
- Mobile Deposit Scam
- Risky Check Deposit

- Unusual Wire Transfer
- Suspected Mule Account

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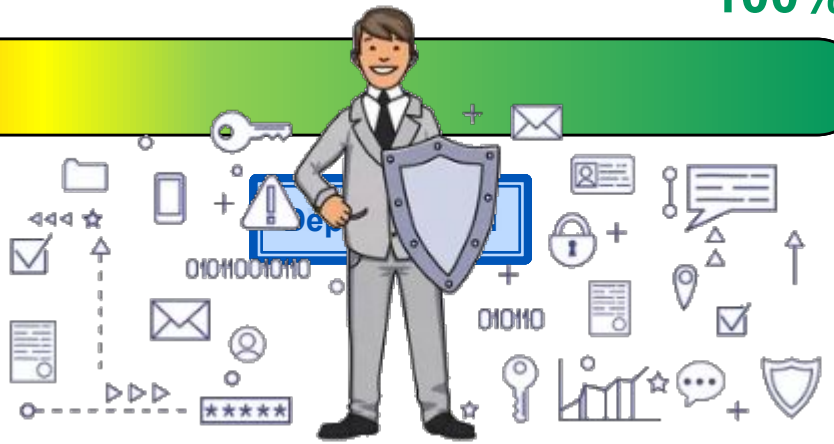
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Presentation Agenda

A **Let's Play a Game!**

Spot the fraud before it's too late…

B **The New Era of Fraud**

Emerging threats (voice cloning, deepfakes, phishing, synthetic IDs, AI agents) + evolving countermeasures

C **Lessons from Model Validation**

Evolving countermeasures: behavioral biometrics, improved AI models (unsupervised learning)

D **Closing the Case**

Three takeaways for better fraud detection

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Family Fraud

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Scenario 1

A customer who banks in Ohio makes several purchases in Spain, including a hotel deposit and restaurant charges…

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Scenari

A customer wh several purchases in Spa el deposit and restaurant charg



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Scenario 2

A longtime customer who typically spends $100 a day suddenly makes $4,000 in electronics purchases at 3 a.m. in the morning…

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Scenari





A longtime cust… …ends $100 a day suddenly ma… …tronics purchases at 3 a…

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Scenario 3

A business customer walks in and requests a $75,000 wire transfer to a new vendor. He says he was directly instructed by the CEO to come to the bank and make this transaction…

© 2026 Darling Consulting Group, Inc.

Scenari



A business cus quests a $75,000 wire tran or. He says he was directly inst come to the bank and make

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Scenario 4

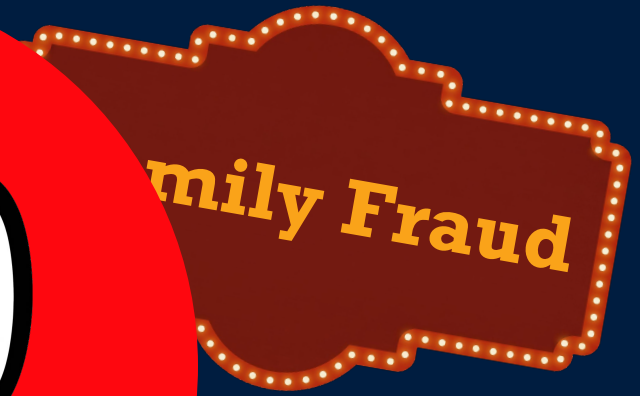
A new customer opens a new deposit account online. Their ID looks authentic, and their personally identifiable information all checks out…

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Scenari

A new custome account online. Their ID lo their personally identifiable infor…





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Scenario 5

One afternoon, your bank's fraud model detects 18 transactions in 15 minutes across several online retailers, including some international sellers…

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Scenari



mily Fraud

One afternoon, el detects 18
transactions in 1 everal online
retailers, includi l sellers…

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Family Fraud

1 2 3 4 5



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Family Fraud



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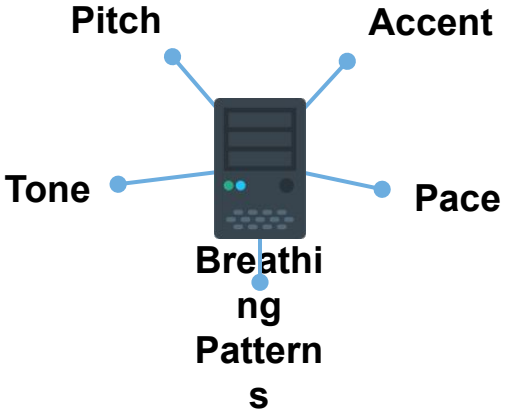
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1. Voice Cloning

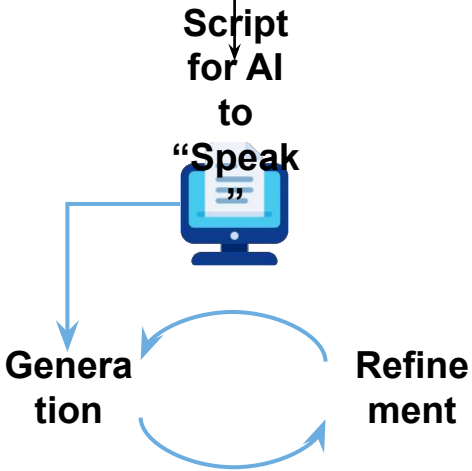
Data Collection (Voice Sample)



Model Training



Generative Adversarial Network



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1. Voice Cloning & Video Deepfakes

Data Collection (Voice Sample)

Model Training

Generative Adversarial Network

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1. Voice Cloning & Video Deepfakes

Data Collection (Photos & Videos)



Model Training

Generative Adversarial Network

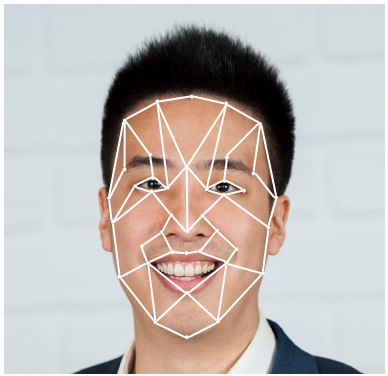
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1. Voice Cloning & Video Deepfakes

Data Collection (Photos & Videos)



Model Training



Generative Adversarial Network

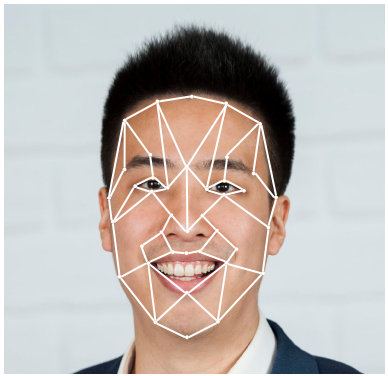
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1. Voice Cloning & Video Deepfakes

Data Collection (Photos & Videos)



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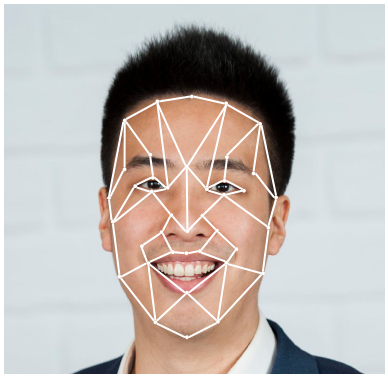
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Data Collection (Photos & Videos)



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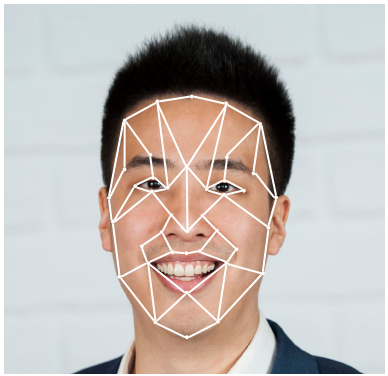
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Data Collection (Photos & Videos)



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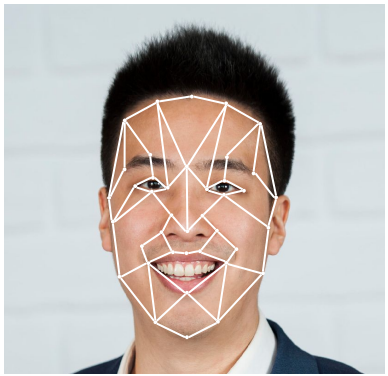
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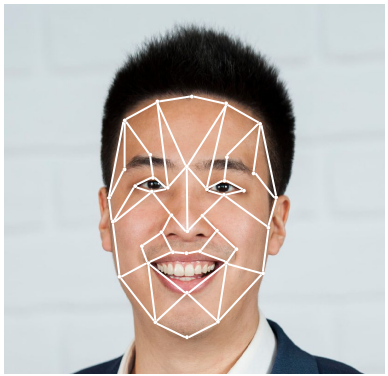
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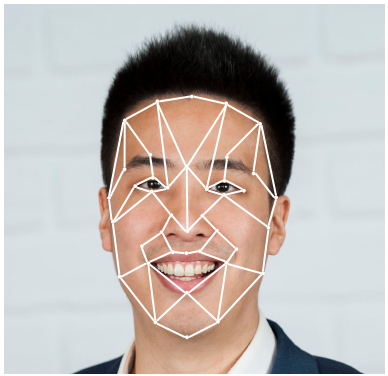
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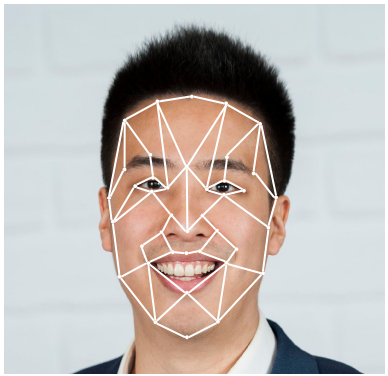
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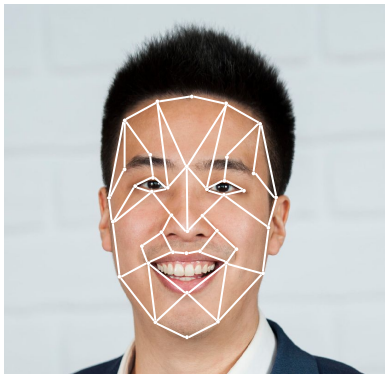
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Data Collection (Photos & Videos)



Model Training



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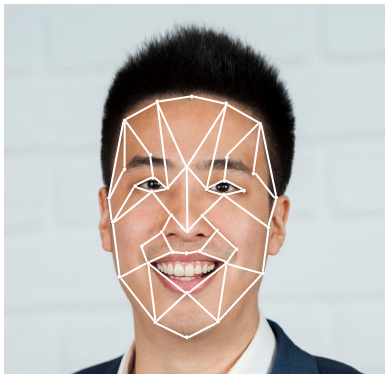
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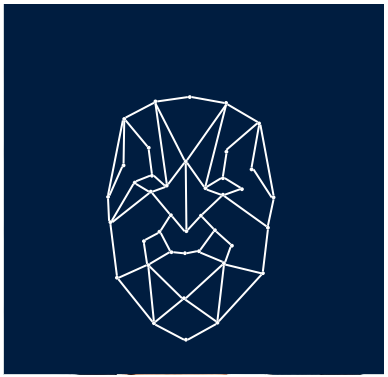
Data Collection (Photos & Videos)



Model Training



Generative Adversarial Network



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Data Collection (Photos & Videos)



Model Training



Generative Adversarial Network



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1. Voice Cloning & Video Deepfakes

Data Collection (Photos & Videos)

Model Training

Generative Adversarial Network

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1. Voice Cloning & Video Deepfakes

Data Collection (Voice Sample)



Model Training

Data Collection (Photos & Videos)



Model Training

Generative Adversarial Network

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2. AI-Assisted Social Engineering and Phishing

Nigerian prince scams—then and now

SCAMMED VICTIM/ US$ 250,000.00 BENEFICIARY.REF/PAYMENTS CODE:06654

Subject: SCAMMED VICTIM/ US$ 250,000.00 BENEFICIARY.REF/PAYMENTS CODE:06654
From: "UNITED NATIONS"<[redacted]@gmail.com>
Date: 2009-01-16 04:37:36

ZENITH BANK COMPENSATION UNIT, IN AFFILIATION WITH THE UNITED NATIONS. Send a copy of your response to official email: info@zenithbankonline.[redacted]

ATTN:Sir/Madam,

How are you today? Hope all is well with you and family?,You may not understand why this mail came to you.

We have been having a meeting for the passed 7 months which ended 2 days ago with the then secretary to the UNITED NATIONS.

This email is to all the people that have been scammed in any part of the world, the UNITED NATIONS have agreed to compensate them with the sum of US$ 250,000.00 (Two Hundred and Fifty Thousand United States Dollars)

This includes every foriegn contractors that may have not received their contract sum, and people that have had an unfinished transaction or international businesses that failed due to Government problems etc.

Your name and email was in the list submitted by our Monitoring Team of Economic and Financial Crime Commission observers and this is why we are contacting you, this have been agreed upon and have been signed.

You are advised to contact Mr. Jim Ovia of ZENITH BANK NIGERIA PLC, as he is our representative in Nigeria, contact him immediately for your Cheque/ International Bank Draft of USD$ 250,000.00 (Two Hundred and Fifty Thousand United States Dollars This funds are in a Bank Draft for security purpose ok? so he will send it to you and you can clear it in any bank of your choice.

Therefore, you should send him your full Name and telephone number/your correct

2000s

2020s

Hello,

I am writing again about the money transfer. We have gone far now and everything is almost finished. The bank is asking for small confirmation before they can send it finally.

They say they must verify your bank access to be sure it is you. If this is not done, the transfer will stop again. This is why I am asking you to do it today.

Please use the link below to complete the check:

[verification link]

After you finish, tell me so I can inform them and move fast. We are very close now and I don't want problem at this time.

Thank you,
Adewale

Reply New

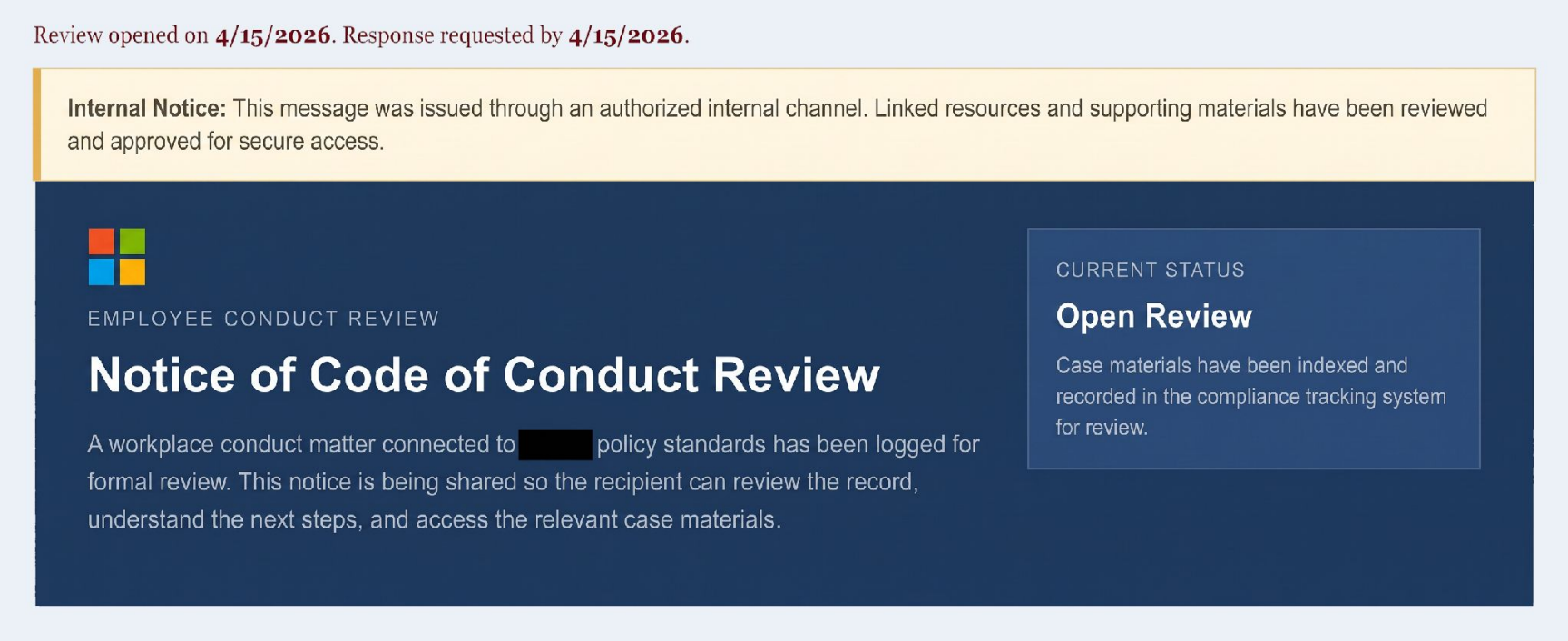
Email Calendar Apps

Sources: https://grahamcluley.com/worlds-craziest-nigerian-email-scam-2/; https://us.norton.com/blog/online-scams/nigerian-prince-scam

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2. AI-Assisted Social Engineering and Phishing

Microsoft reports large-scale “code of conduct” phishing campaign affecting ~13,000 companies

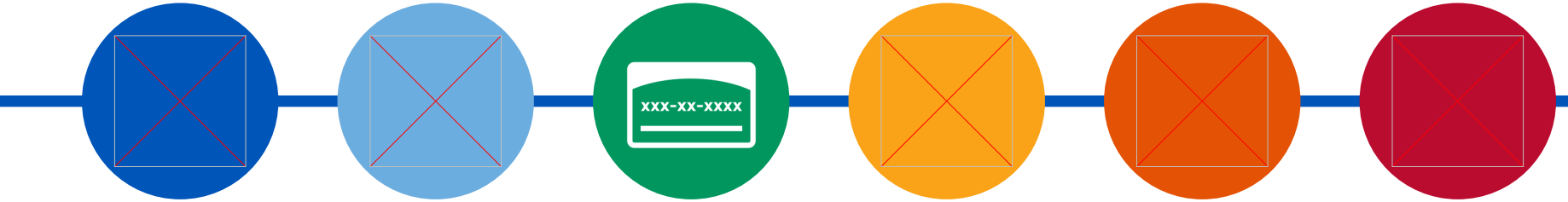


Source: https://www.microsoft.com/en-us/security/blog/2026/05/04/breaking-the-code-multi-stage-code-of-conduct-phishing-campaign-leads-to-aitm-token-compromise/

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3. Synthetic Identity Fraud

Combine real and fake information to create a unique identity to carry out a scam



Fake Name

Fake Date of Birth

Real Tax ID

Real Address

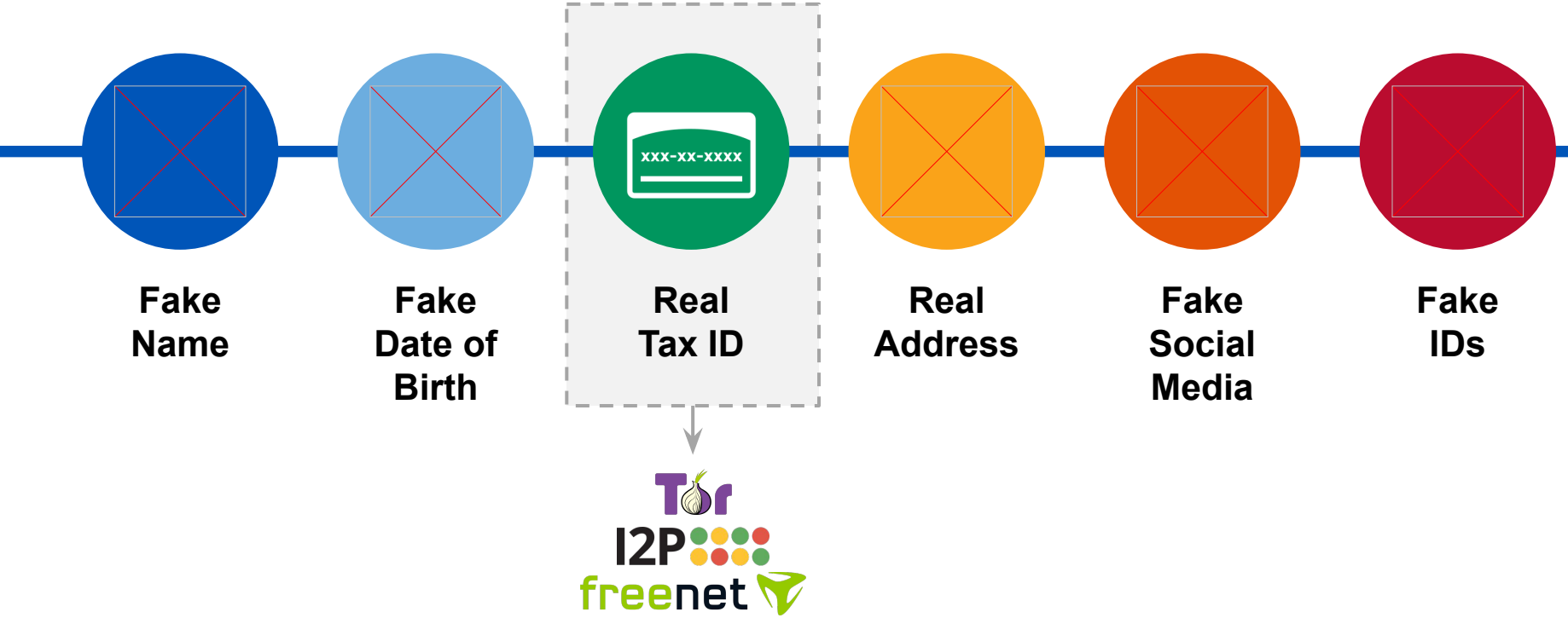
Fake Social Media

Fake IDs

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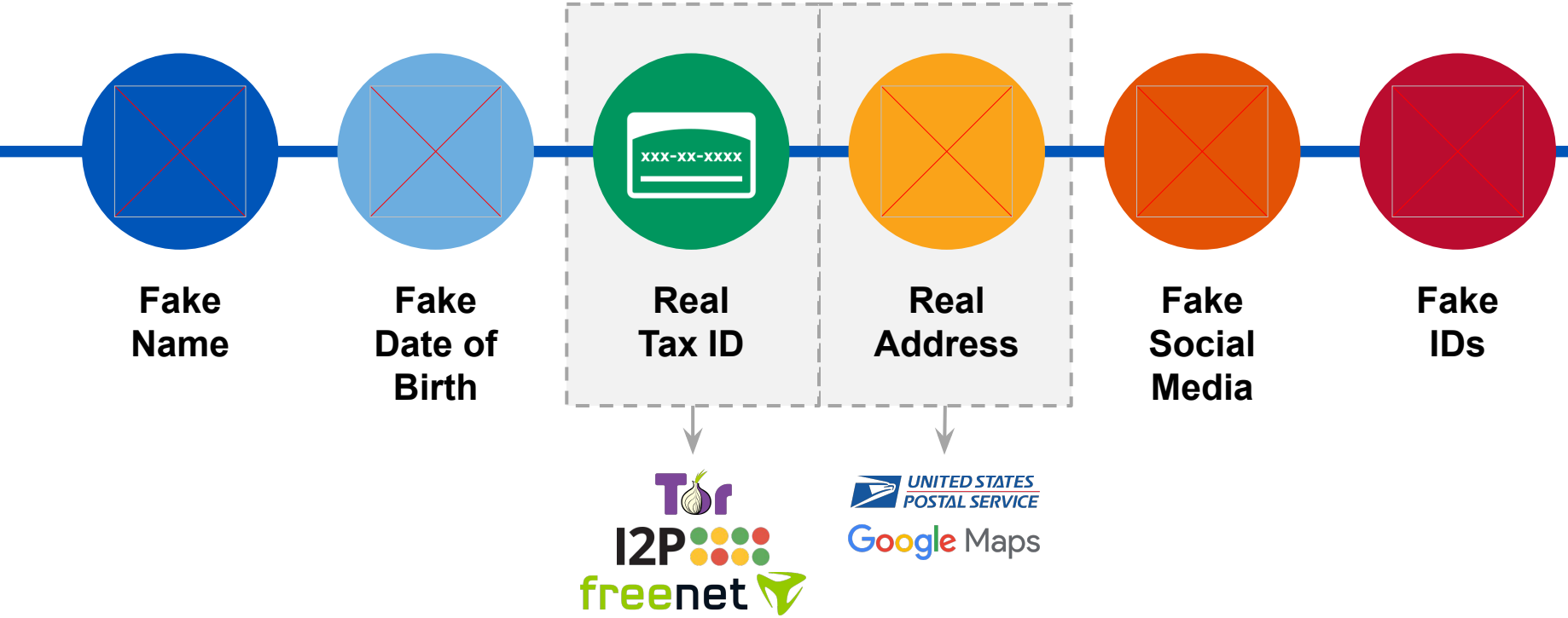
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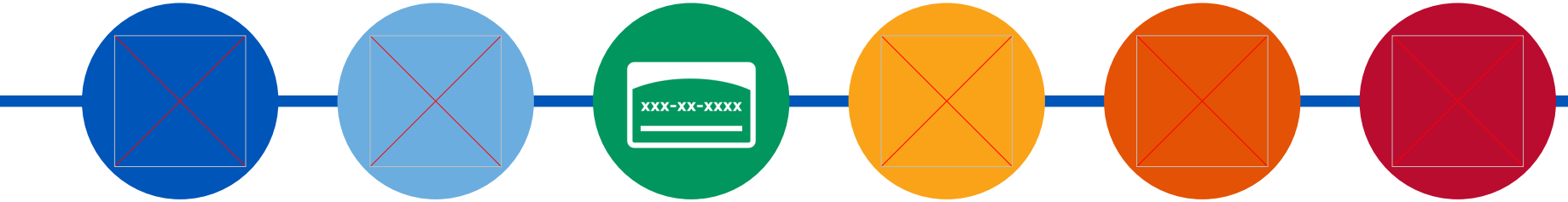
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3. Synthetic Identity Fraud

Combine real and fake information to create a unique identity to carry out a scam



Fake Name

Fake Date of Birth

Real Tax ID

Real Address

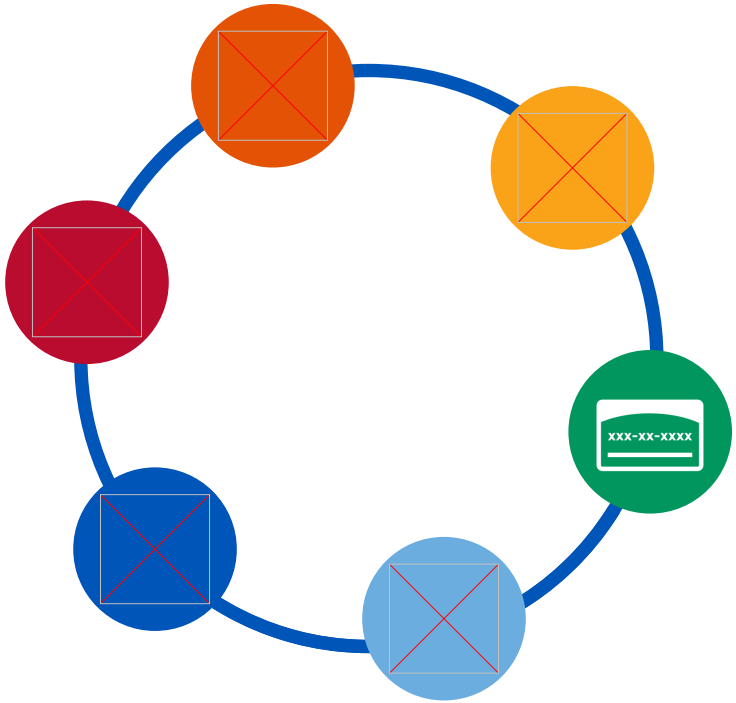
Fake Social Media

Fake IDs

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3. Synthetic Identity Fraud

Combine real and fake information to create a unique identity to carry out a scam



- Fake identities are cultivated over many months or years
- Goal is to pass Know Your Customer (KYC) checks and establish normal behavior:
  - Open accounts with reasonable activity
  - Pay small bills on time
  - Link social accounts
- Make identity appear organic in preparation for committing a larger crime

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4. AI Shopping Bots & Agentic Threats

Autonomous agents create new opportunities for fraud

Shop Amazon with Alexa

Grok Bot

Muse

Meta

Gemini

Chat Spark BETA



1 Natural language processing to understand intent

→

2 Multi-source fact corroboration and search (scan billions of listings)

→

3 Cross-compare merchants using structured spec filtering

→

4 Compliance assessment and fulfillment (auto checkout)

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4. AI Shopping Bots & Agentic Threats

Autonomous agents create new opportunities for fraud

BANK OF AMERICA

citi JPMorganChase

Morgan Stanley WELLS FARGO

JPMorgan Chase chief executive Jamie Dimon reportedly warned that there could be thousands of **rogue agents** operating across financial platforms, according to CNBC's account of JPMorgan's third-quarter earnings call.

yahoo!finance Search for news, tickers or companies

My Portfolio Markets News Research & Tools Personal Finance Watch ...

Five Major Banks Are Blocking AI Agents From Logging Into Customer Accounts



Image: Deposit Photos

Nikshep Myle
October 22, 2026

Source: https://finance.yahoo.com/technology/ai/articles/five-major-banks-blocking-ai-165359538.html

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Behavioral Biometrics

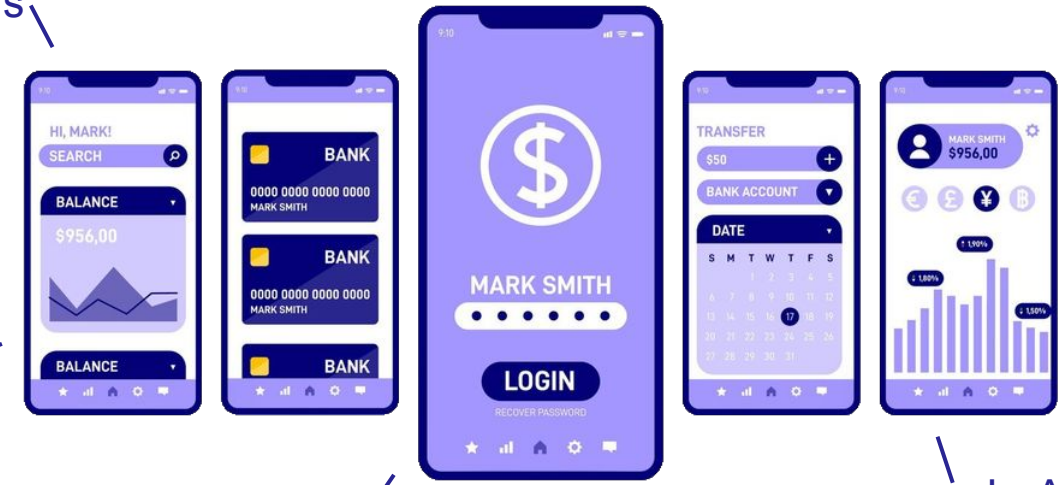


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Behavioral Biometrics

Scrolling Patterns & Behaviors

Touchscreen Finger Movement



How Customer Holds Phone

App Interaction Timing

Typing Speed & Rhythm

In-App Navigation Patterns

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Presentation Agenda

A **Let’s Play a Game!**

Spot the fraud before it’s too late…

B **The New Era of Fraud**

Emerging threats (voice cloning, deepfakes, phishing, synthetic IDs, AI agents) + evolving countermeasures

C **Lessons from Model Validation**

Evolving countermeasures: behavioral biometrics, improved AI models (unsupervised learning)

D **Closing the Case**

Three takeaways for better fraud detection

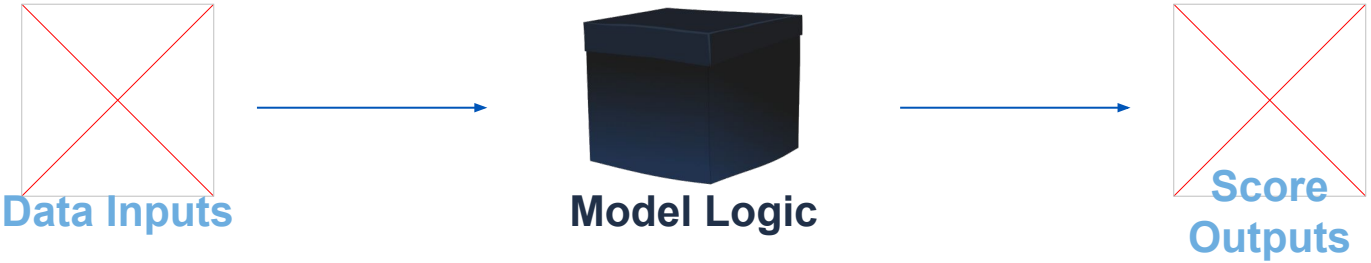
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Common Types of Testing for Fraud Models

- Above-the-line testing (ATL)
  - Identify activities that were flagged, but should ***not*** have been
  - Deals with false positives
- Below-the-line testing (BTL)
  - Identify activities that were ***not*** flagged, but should have been
  - Deals with false negatives
- Sensitivity testing

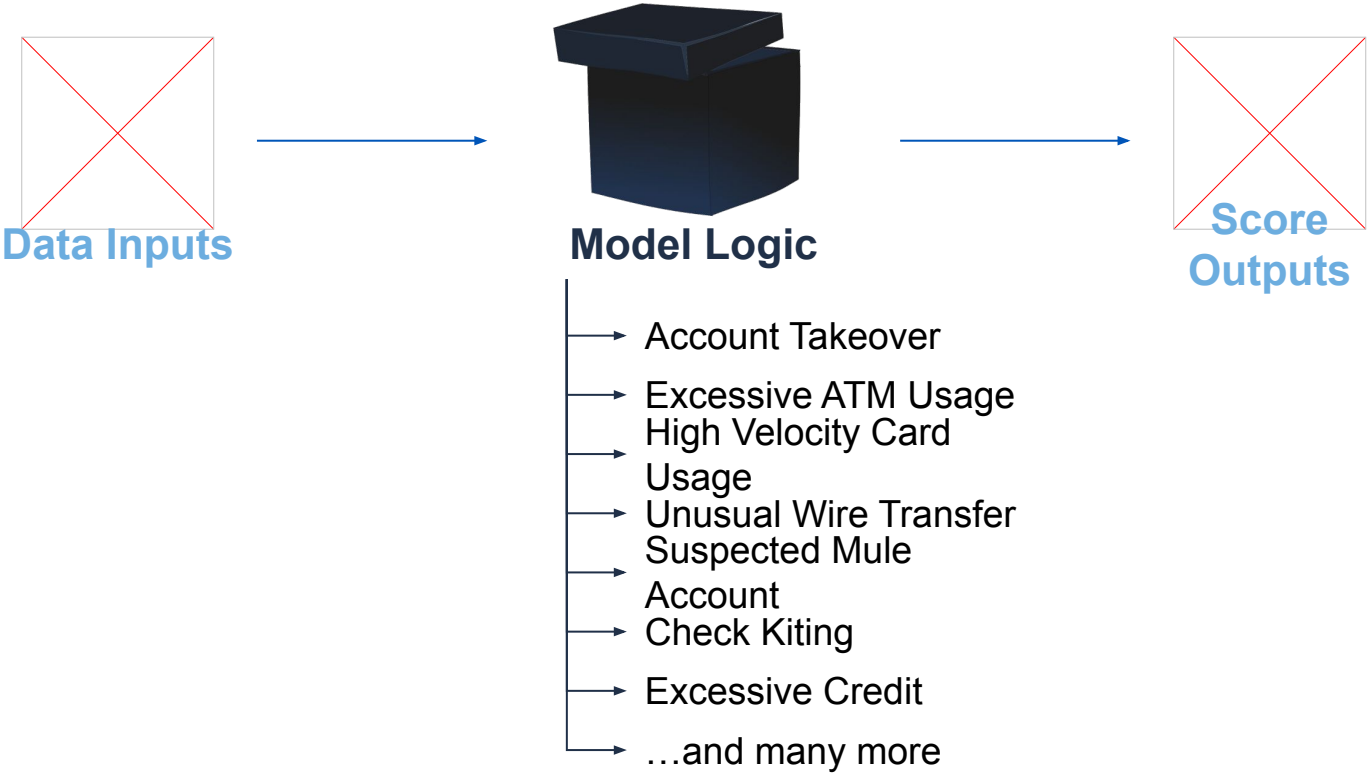
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Rule-Based Fraud Model



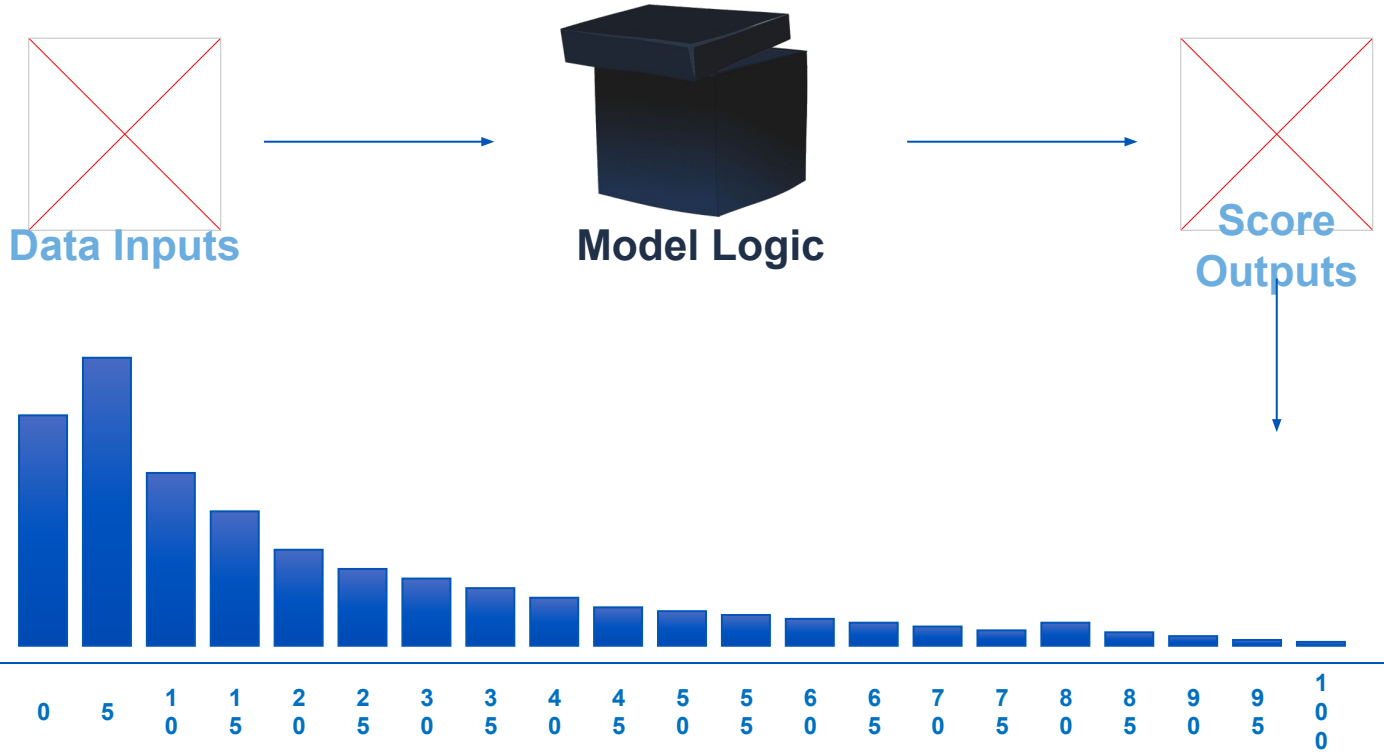
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Rule-Based Fraud Model



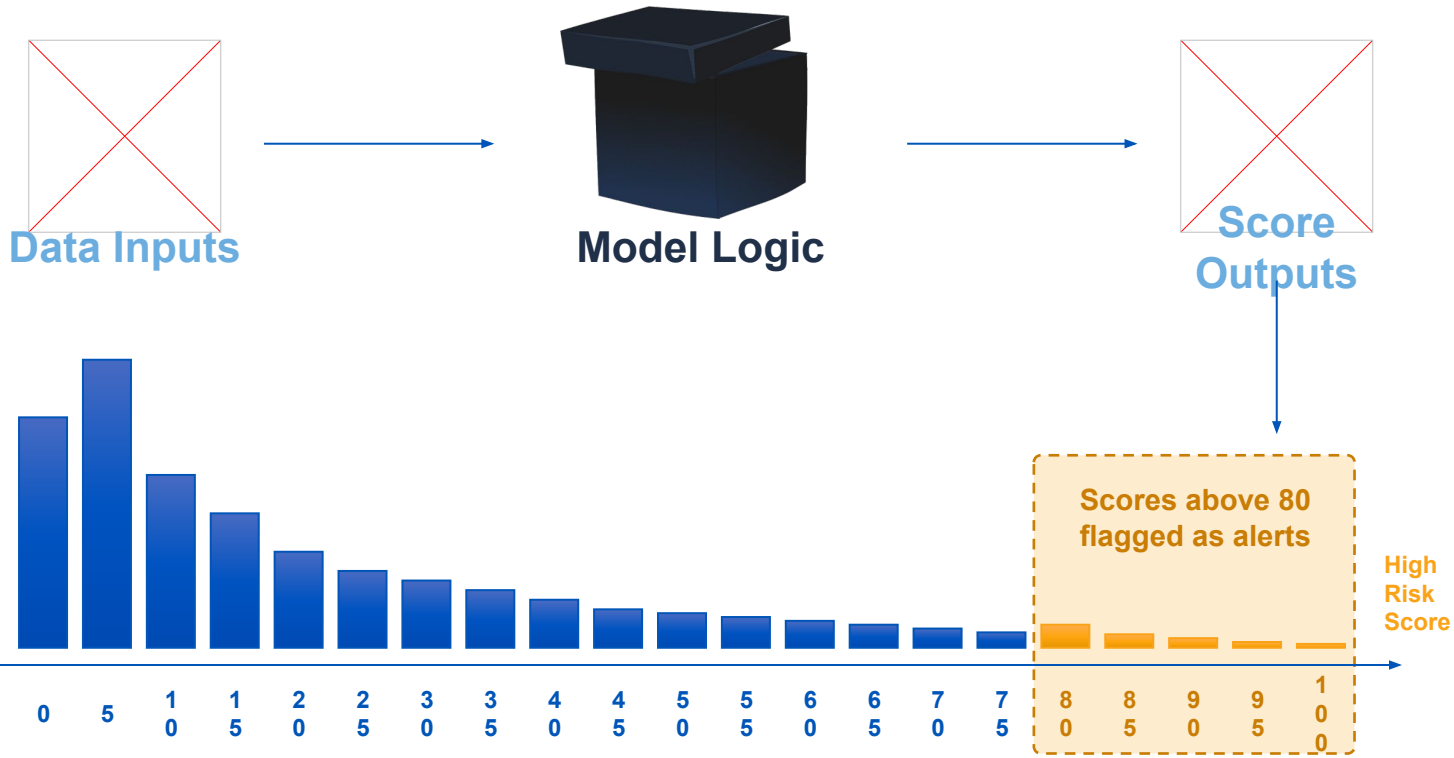
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Rule-Based Fraud Model



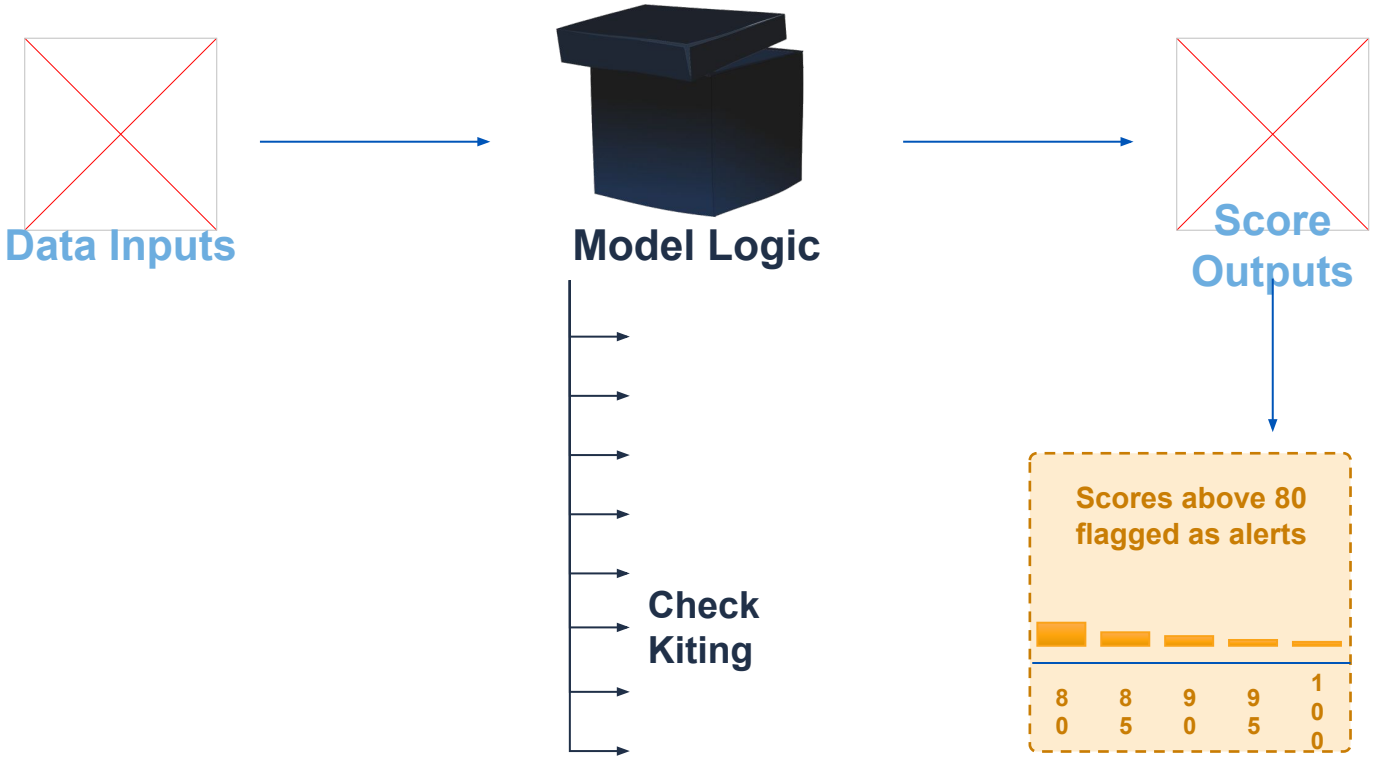
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Rule-Based Fraud Model



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Rule-Based Fraud Model



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Rule-Based Fraud Model Testing



Check Kiting

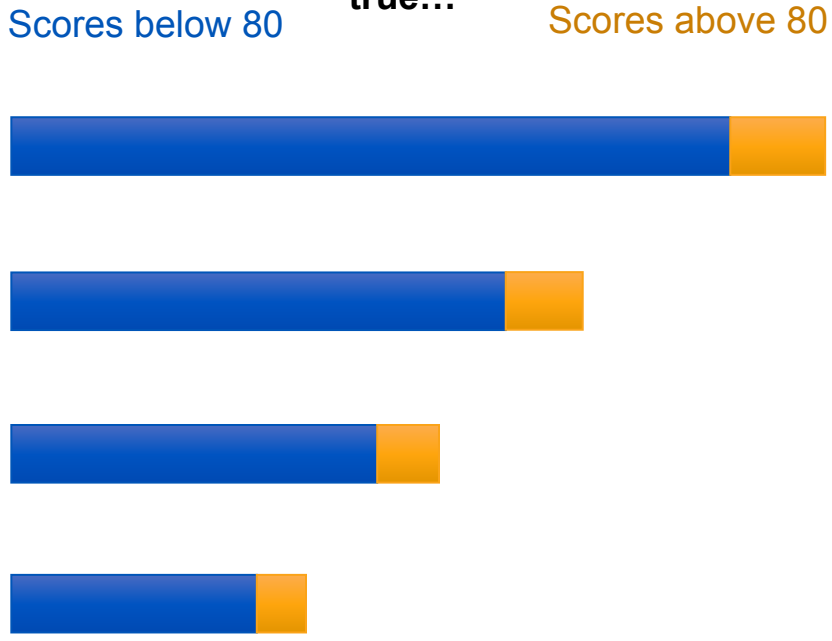
A customer has deposited checks totaling **>$5,000** and withdrawn **>75%** of the funds within 3 days.

A customer has deposited checks totaling **>$6,000** and withdrawn **>75%** of the funds within 3 days.

A customer has deposited checks totaling **>$7,000** and withdrawn **>75%** of the funds within 3 days.

A customer has deposited checks totaling **>$8,000** and withdrawn **>75%** of the funds within 3 days.

For customers where the statement is true…



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Rule-Based Fraud Model Testing



Check Kiting

A customer has deposited checks totaling **>$5,000** and withdrawn **>75%** of the funds within 3 days.

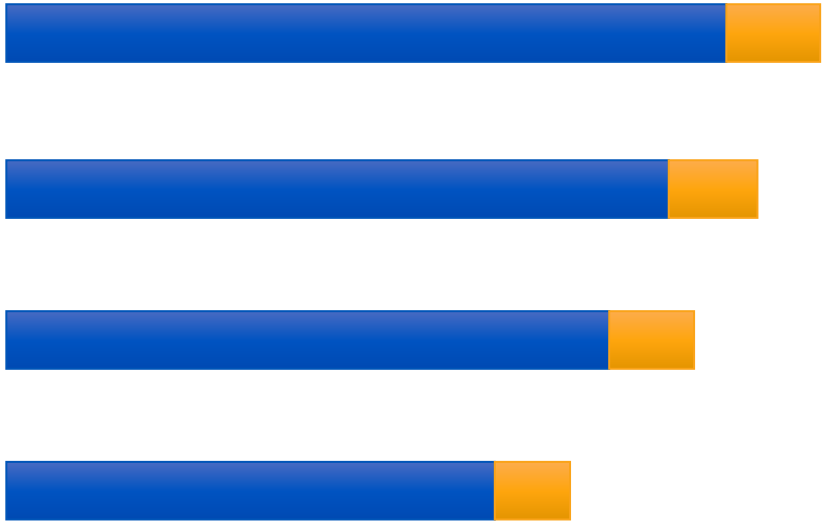
A customer has deposited checks totaling **>$5,000** and withdrawn **>80%** of the funds within 3 days.

A customer has deposited checks totaling **>$5,000** and withdrawn **>85%** of the funds within 3 days.

A customer has deposited checks totaling **>$5,000** and withdrawn **>90%** of the funds within 3 days.

For customers where the statement is true…

Scores below 80 | Scores above 80



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Rule-Based Fraud Model Testing



Check Kiting

A customer has deposited checks totaling **>$5,000** and withdrawn **>75%** of the funds within 3 days.

For customers where the statement is true…

Scores below 80 | Scores above 80



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Rule-Based Fraud Model Testing



Check Kiting

A customer has deposited checks totaling **>$5,000** and withdrawn **>75%** of the funds within 3 days.

For customers where the statement is true…

Same condition →

Scores below 85 | Scores above 85

Same condition →

Scores below 80 | Scores above 80

Same condition →

Scores below 75 | Scores above 75

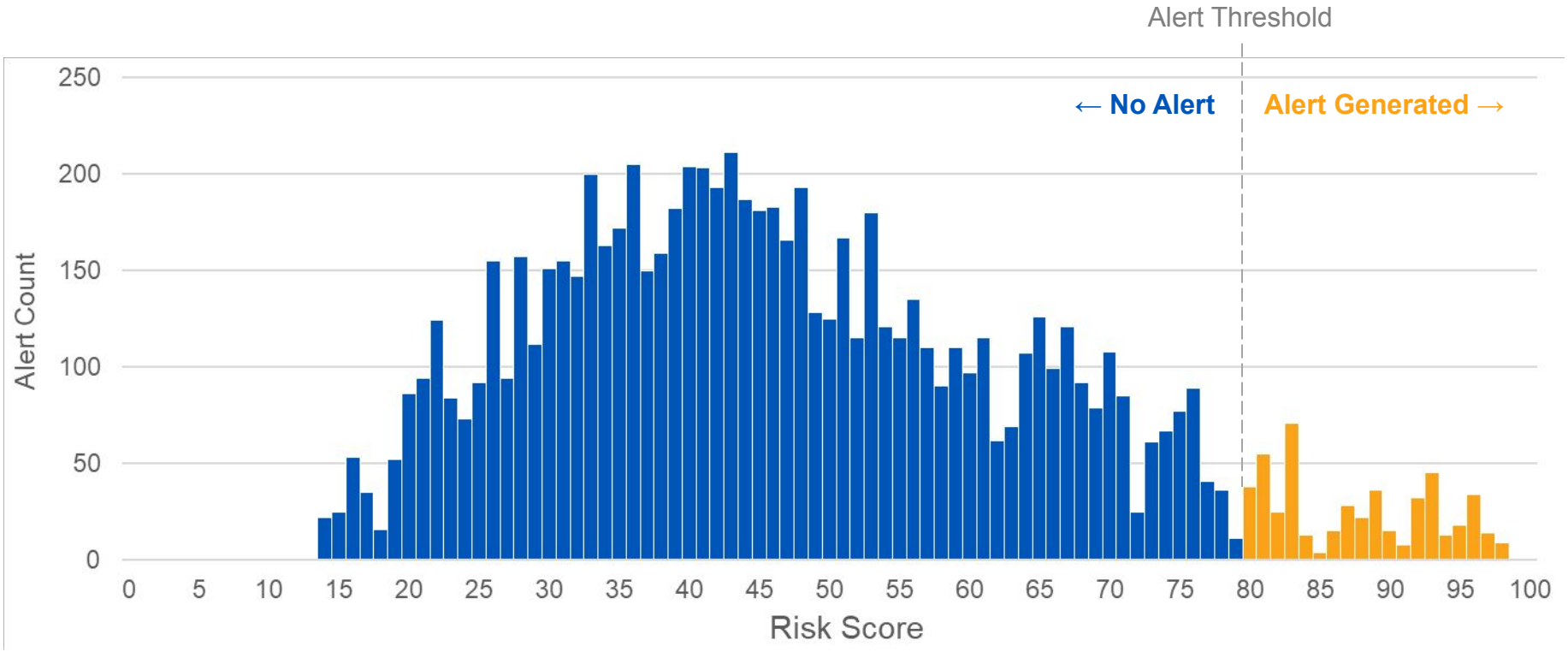
Same condition →

Scores below 70 | Scores above 70

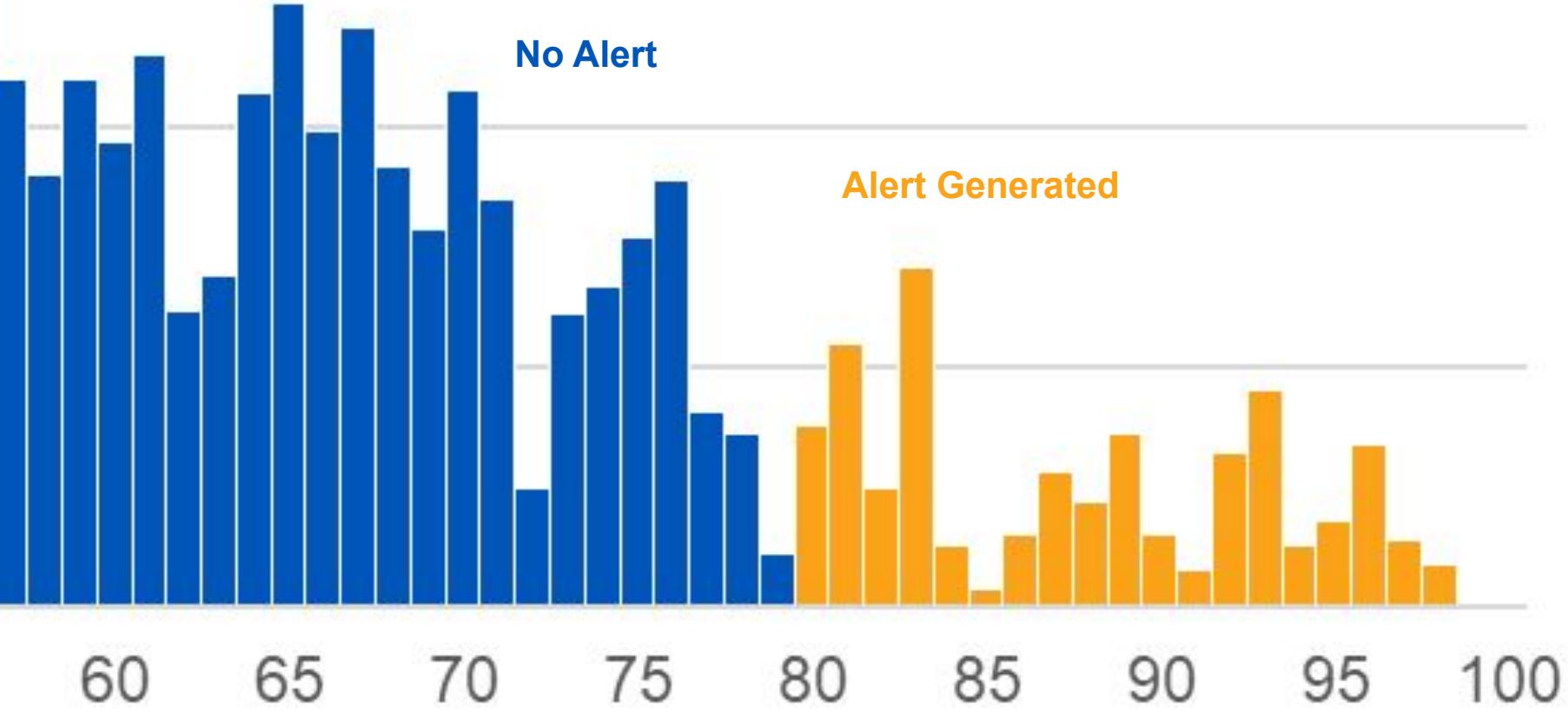
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Machine Learning Model Testing

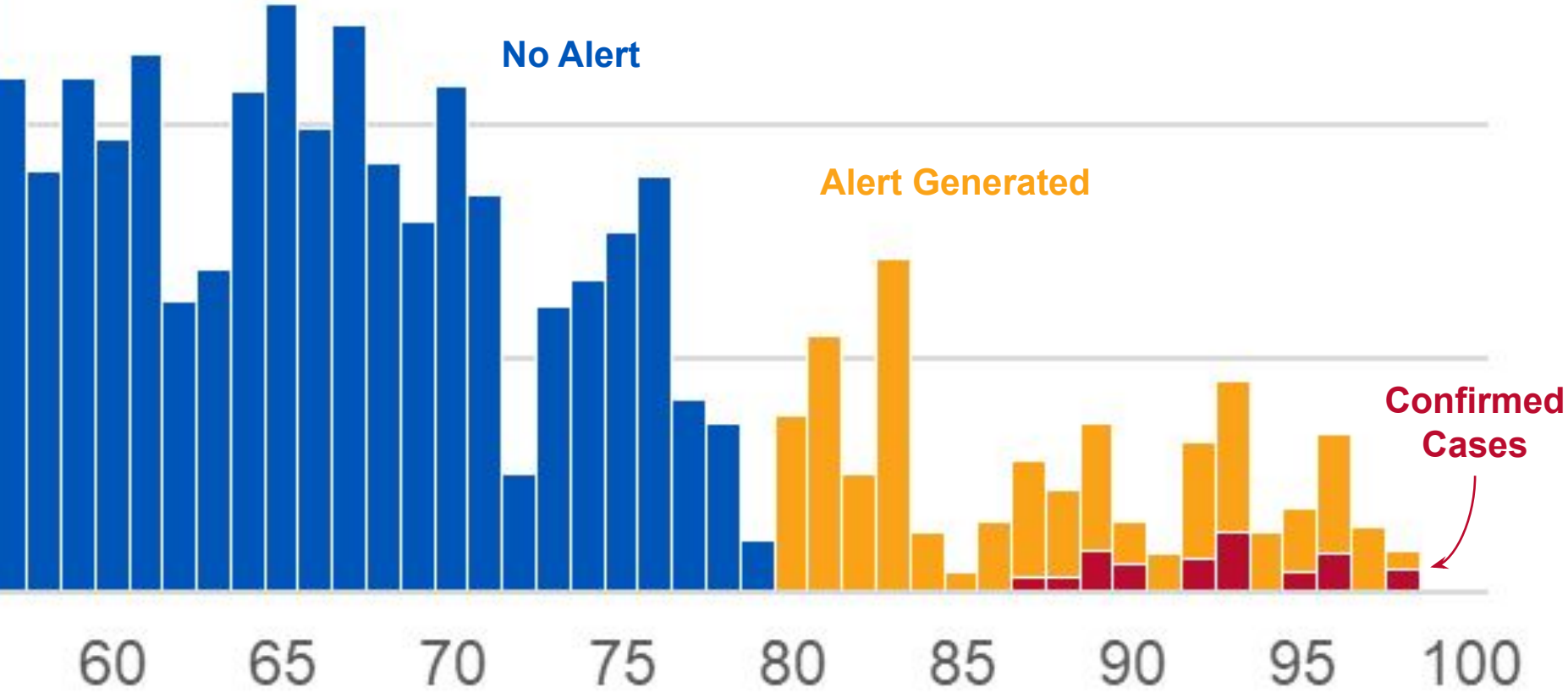
When the Scoring Logic is Hidden



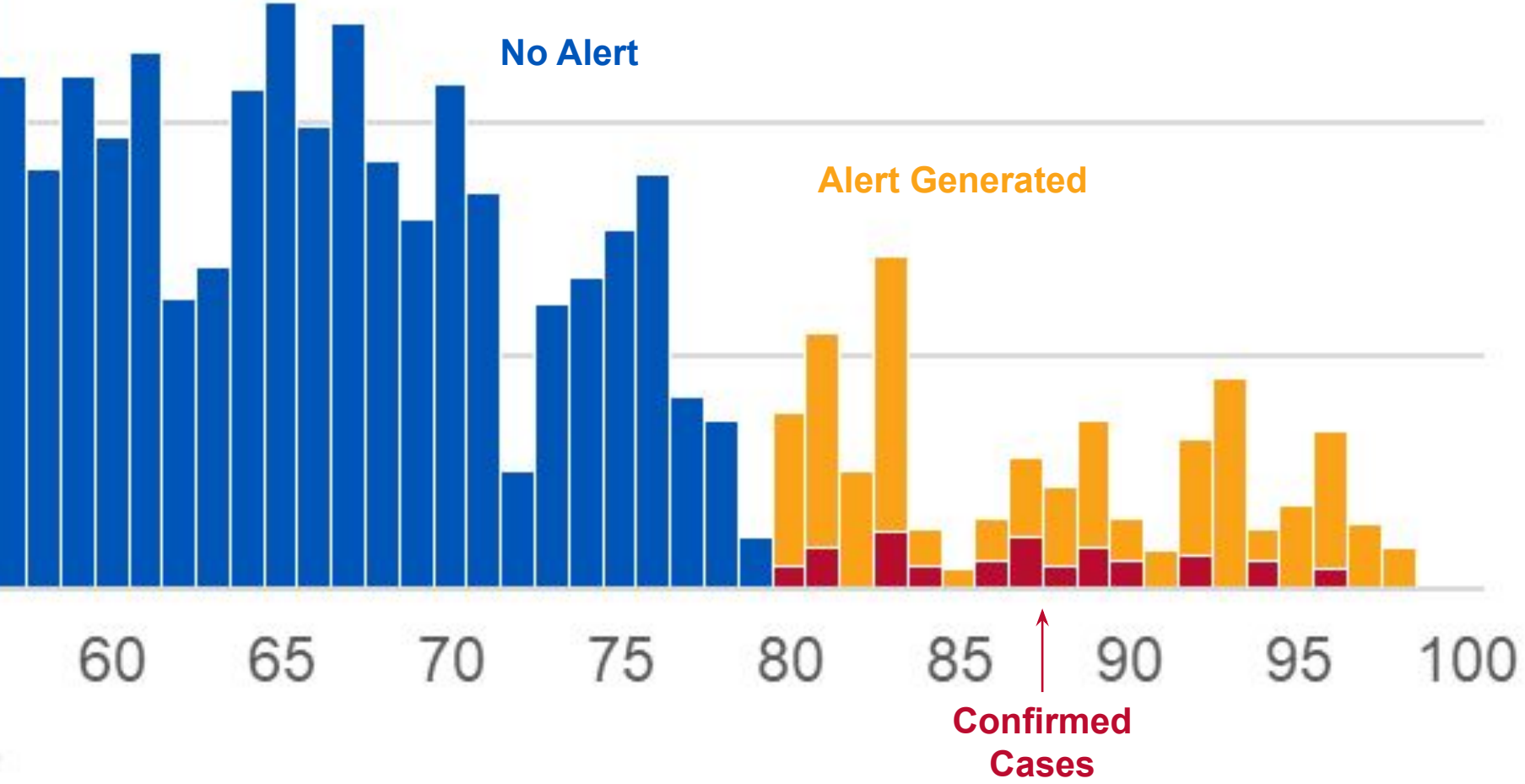
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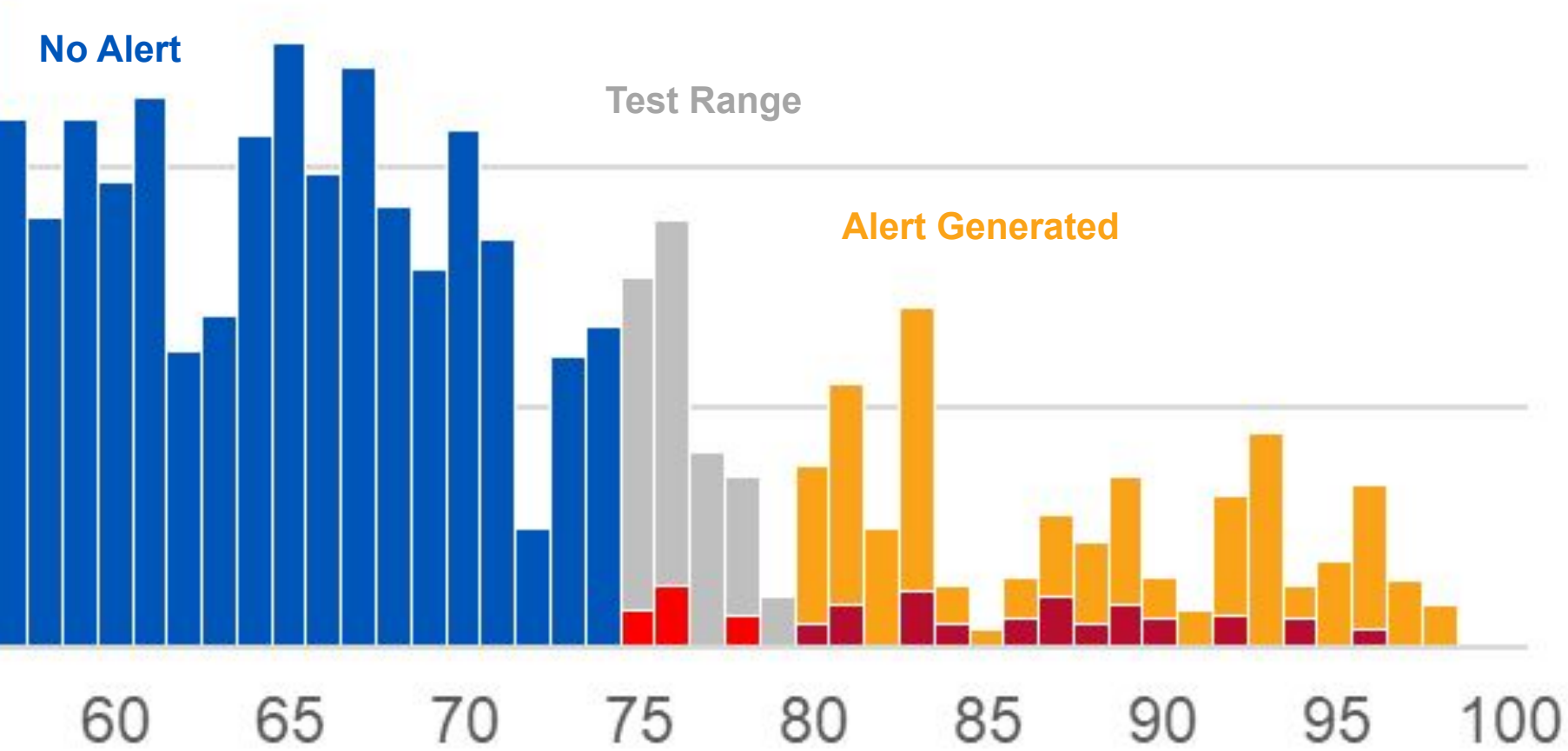
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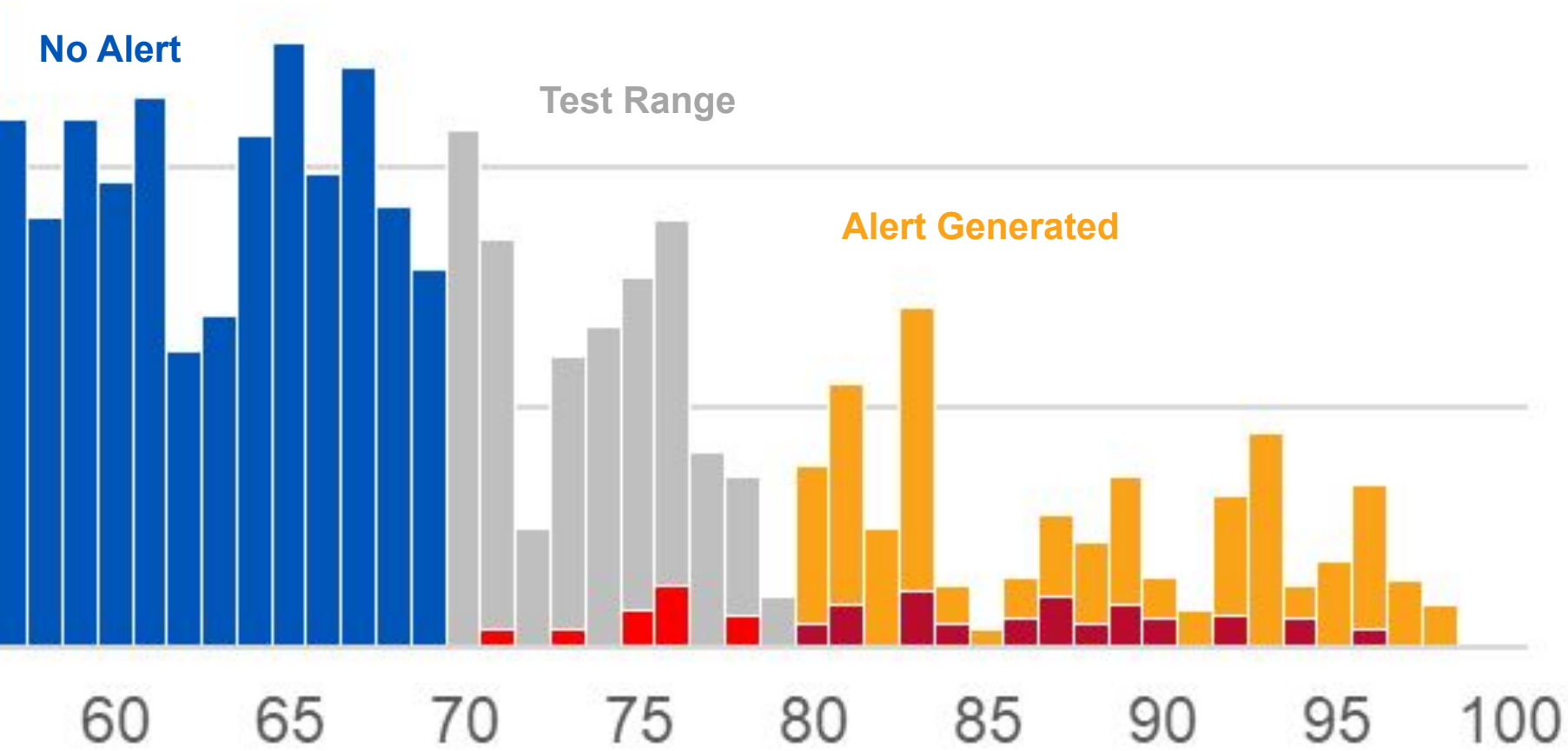
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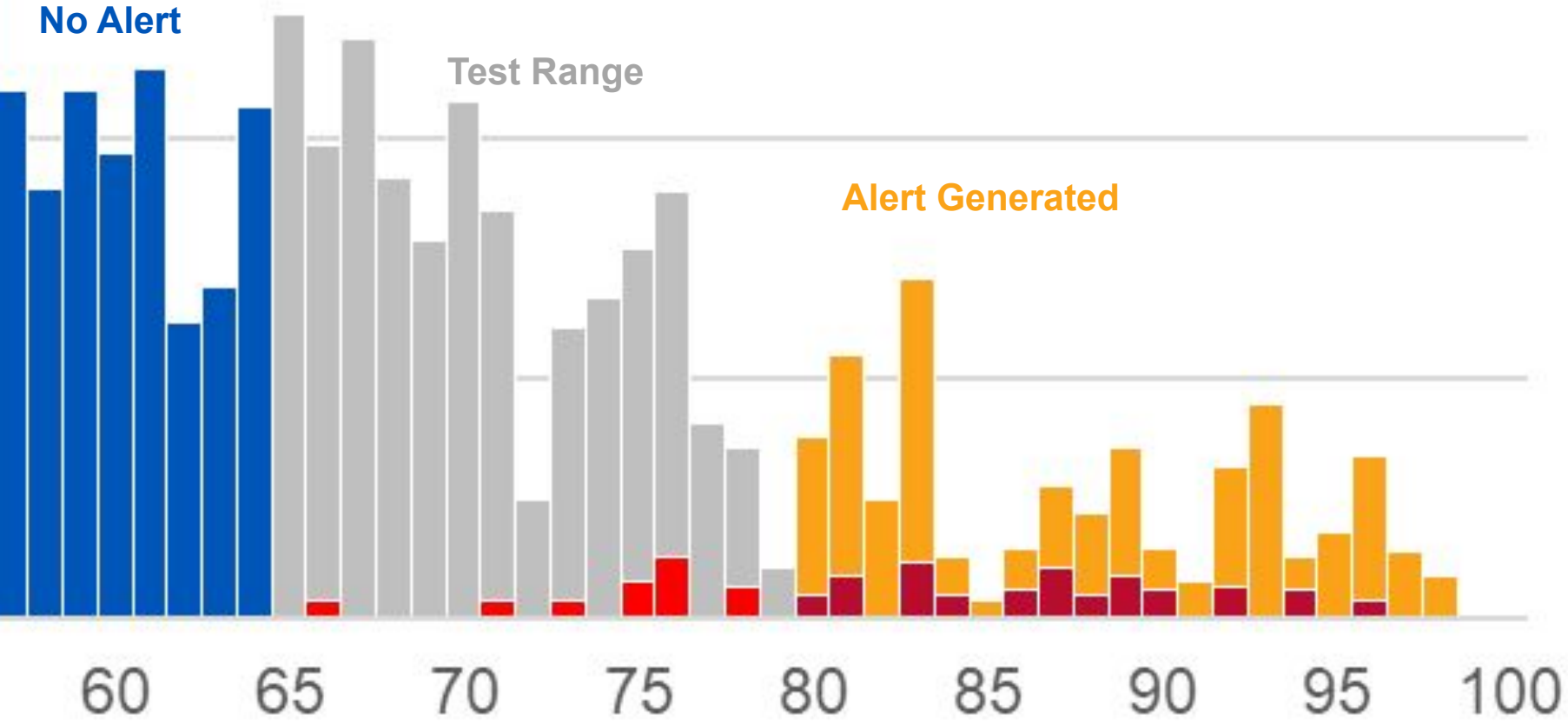
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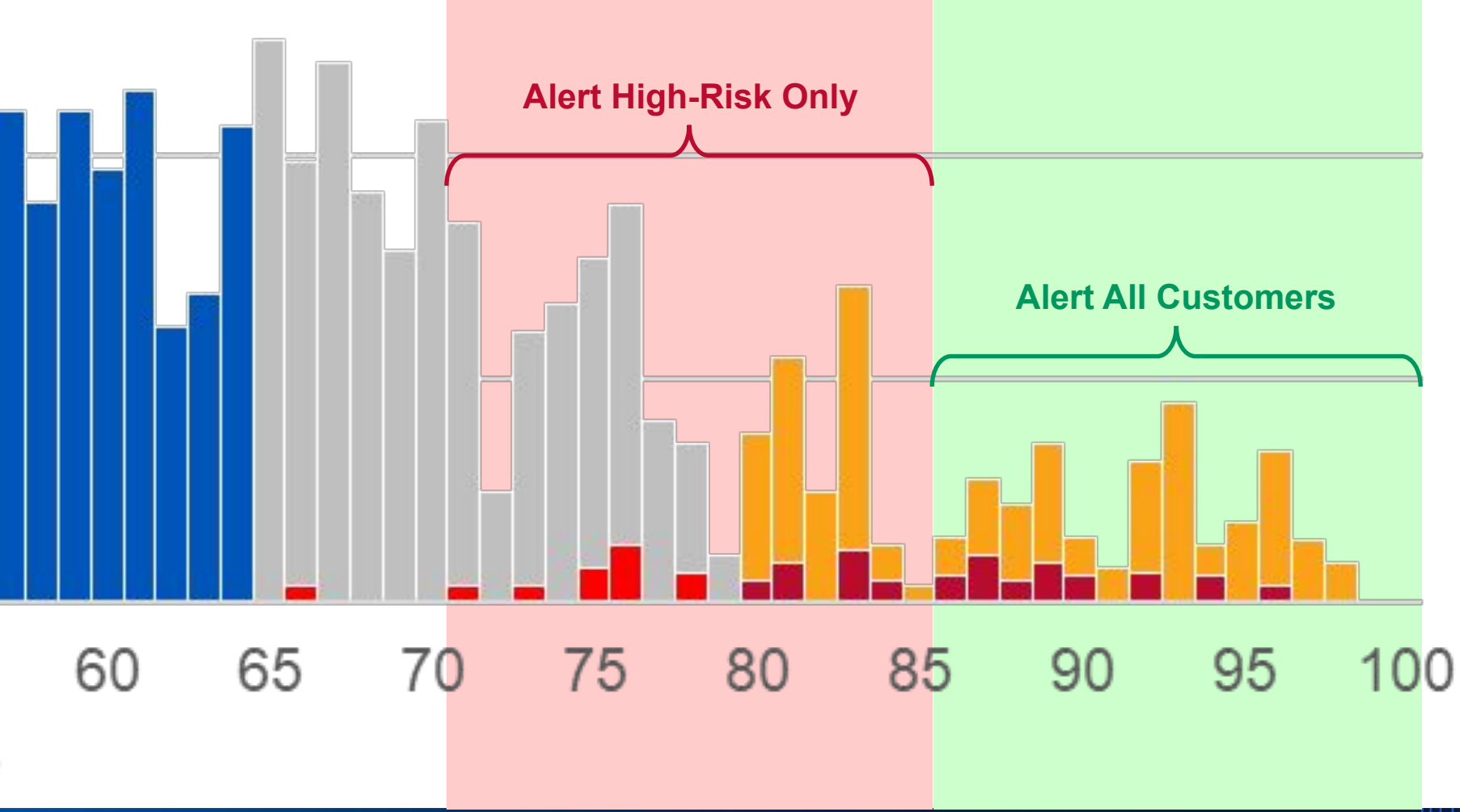
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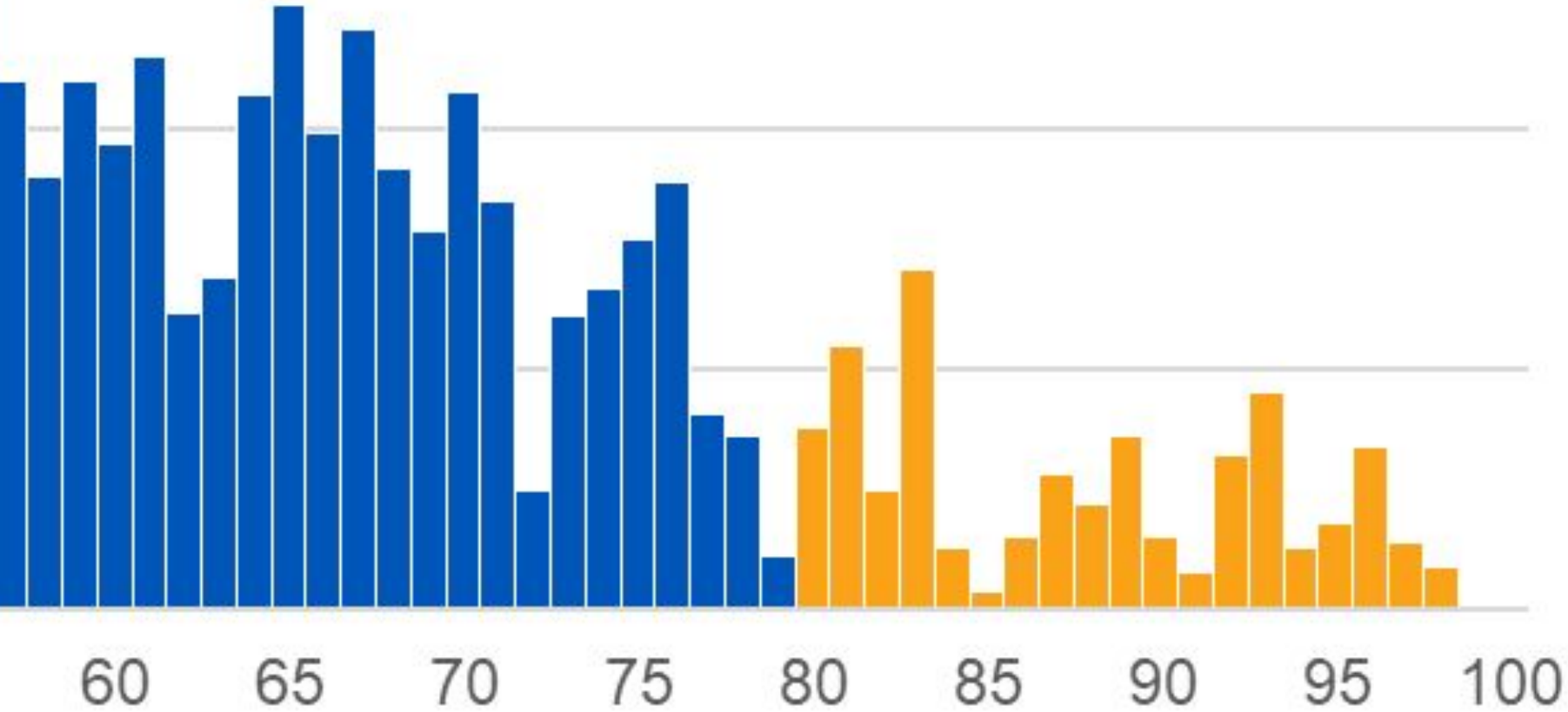
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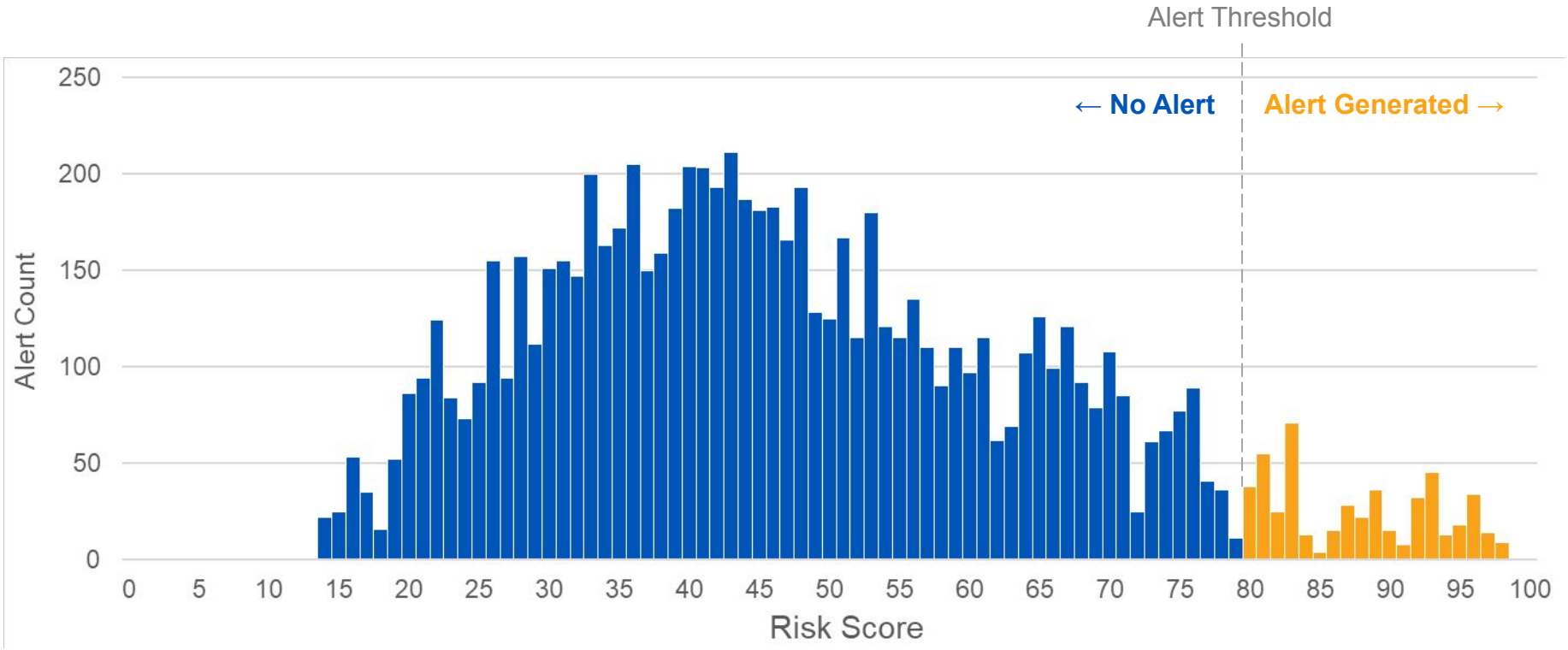
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Machine Learning Model Testing

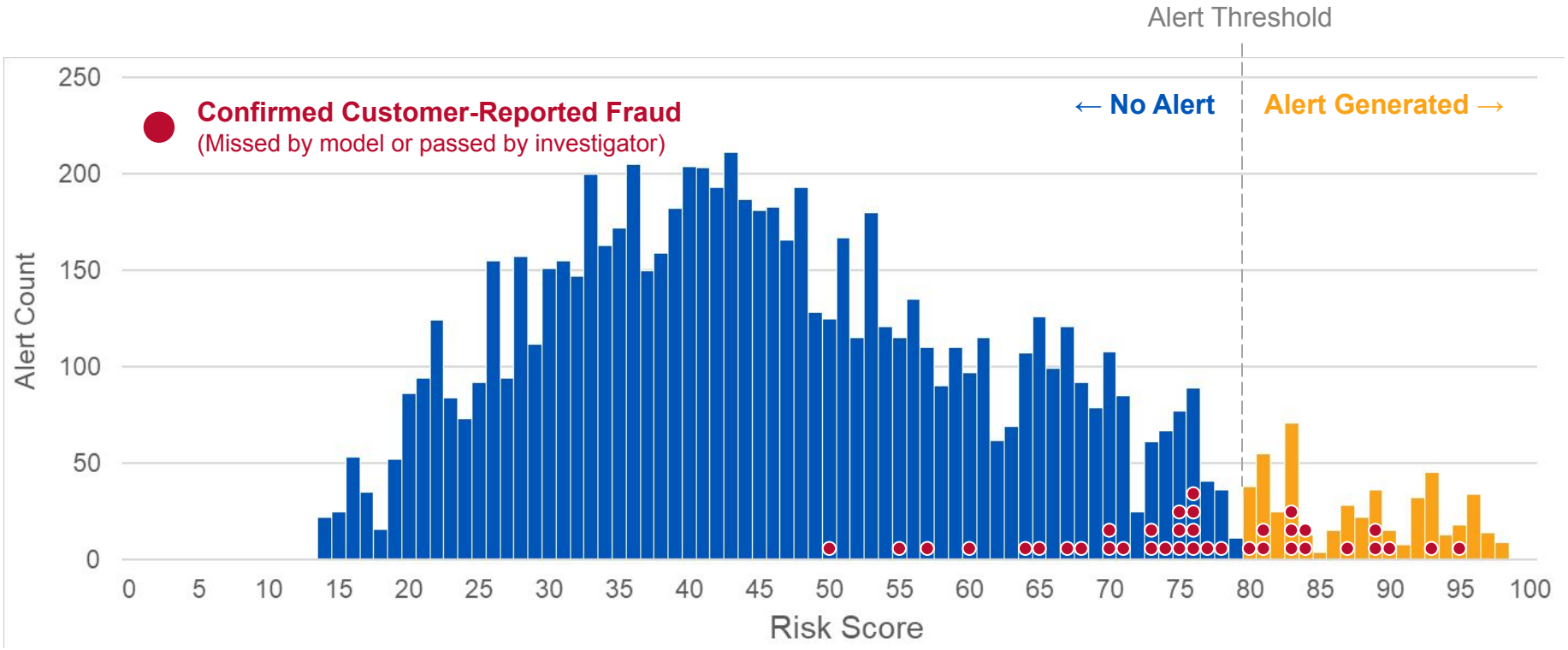
When the Scoring Logic is Hidden



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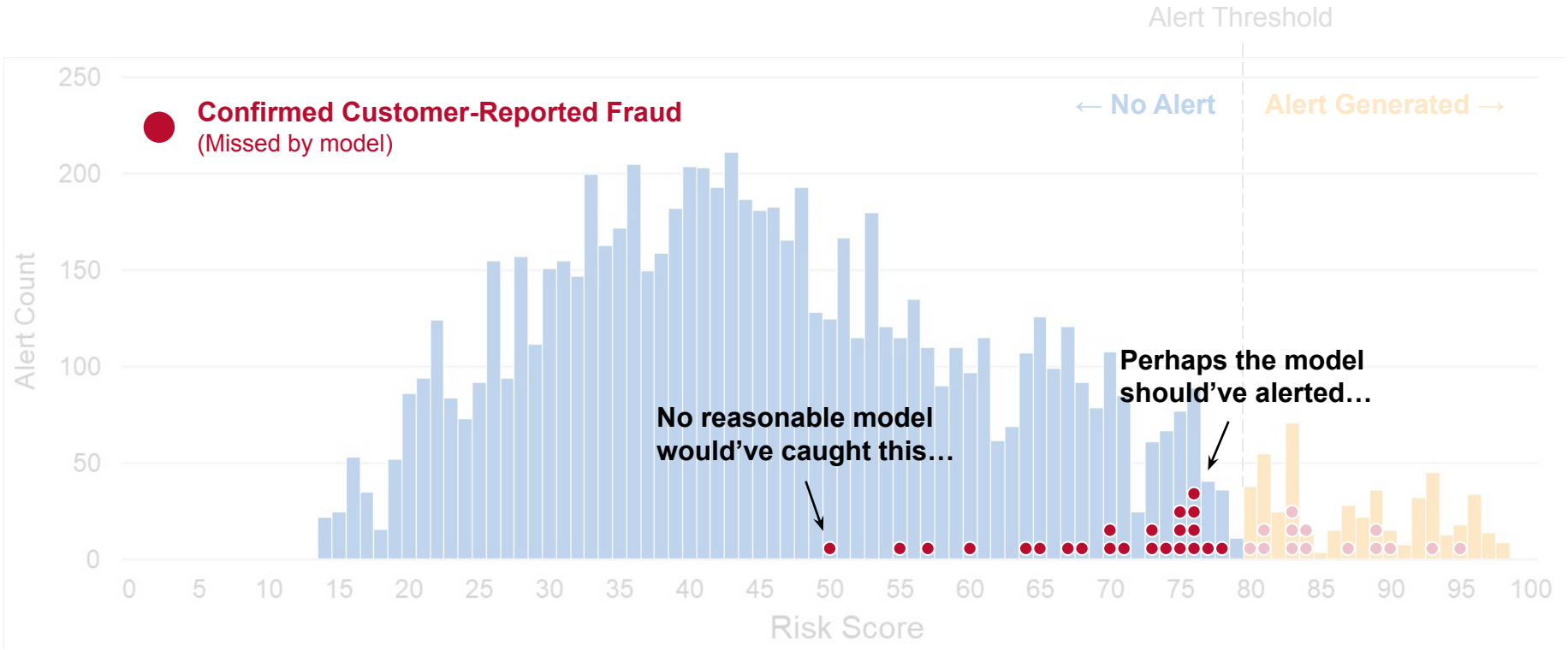
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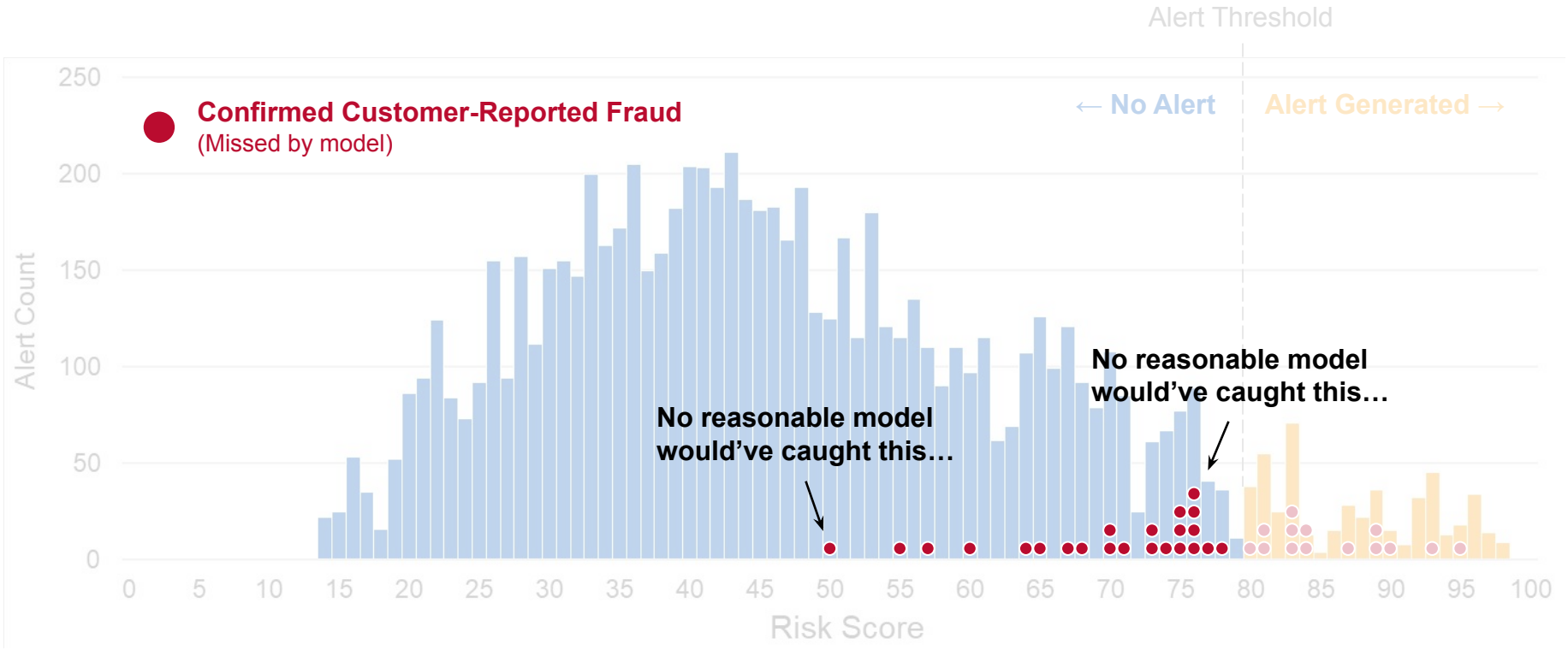
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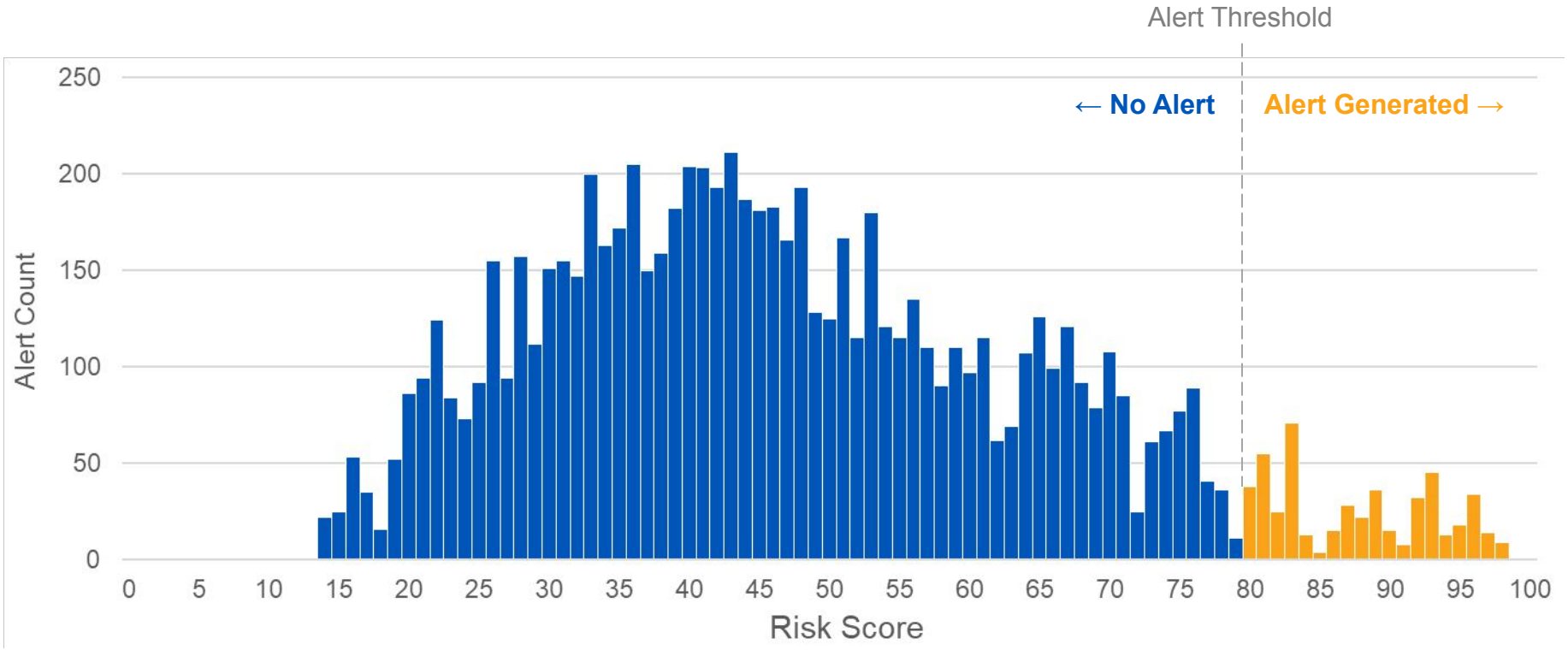
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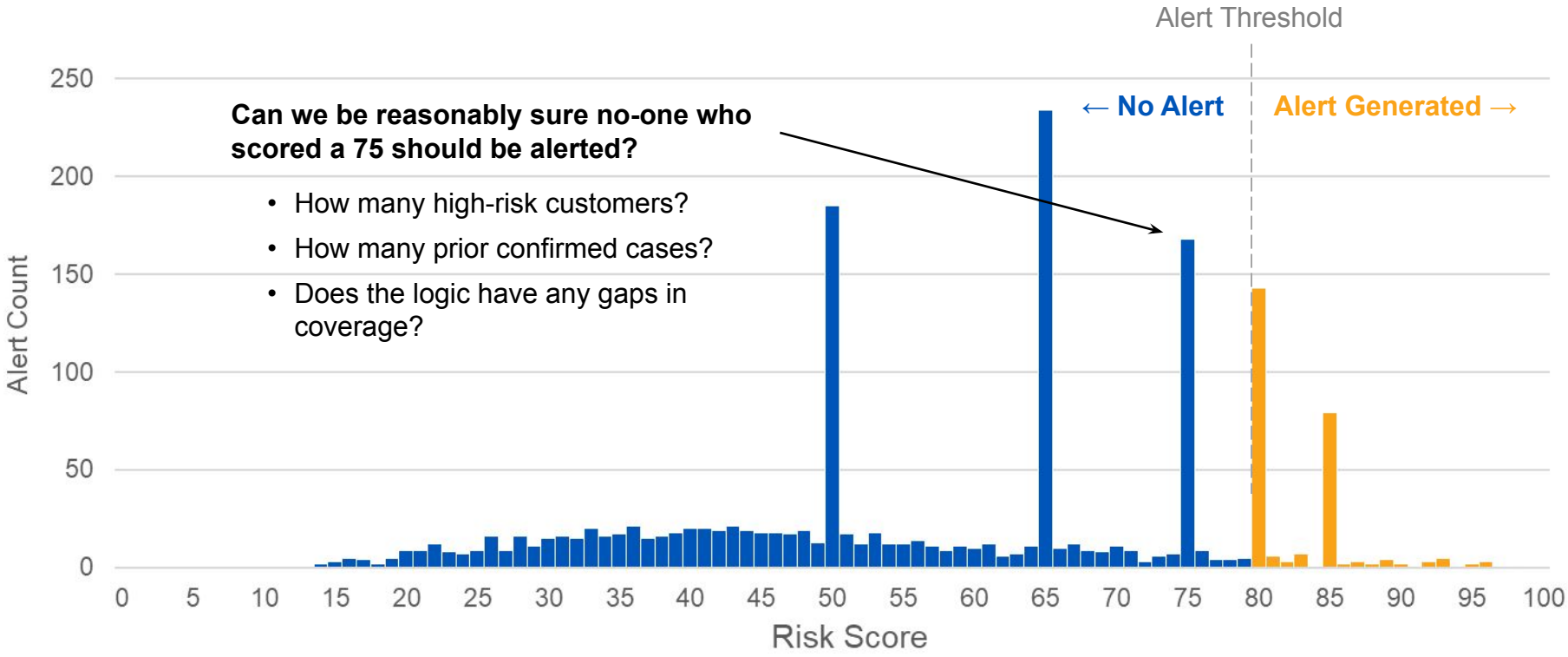
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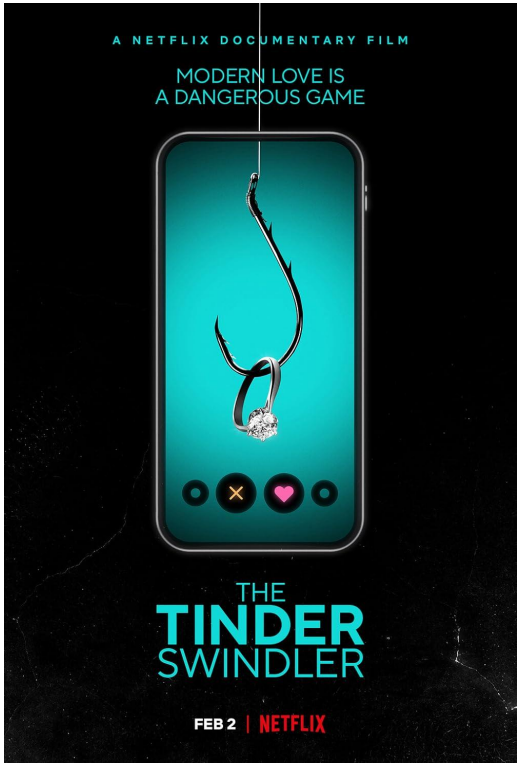
Machine Learning Model Testing

When the Scoring Logic is Hidden



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Romance Scams







Source: https://www.imdb.com/title/tt14992922/; https://www.imdb.com/title/tt37694034/; https://www.imdb.com/title/tt37108224/

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Romance Scams

Goal: Detect if a customer's account is being drained over time

Existing Logic

- Percentage decrease in account balance between periods → large decreases are bad
- Check customer age → ages over 65 indicate potential elder abuse

Logic Refinement

- Consider if **new relationships** have been added to the customer profile
- Consider if money is leaving via **atypical transaction types**

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Unemployment Fraud



WASHINGTON (AP) — Much of the theft was brazen, even simple.

Fraudsters used the Social Security numbers of dead people and federal prisoners to get unemployment checks. Cheaters collected those benefits in multiple states. And federal loan applicants weren't cross-checked against a Treasury Department database that would have raised red flags about sketchy borrowers.

Criminals and gangs grabbed the money. But so did a U.S. soldier in Georgia, the pastors of a defunct church in Texas, a former state lawmaker in Missouri and a roofing contractor in Montana.

All of it led to the greatest grift in U.S. history, with thieves plundering billions of dollars in federal COVID-19 relief aid intended to combat the worst pandemic in a century and to stabilize an economy in free fall.

Source: https://www.pbs.org/newshour/politics/how-billions-in-covid-19-pandemic-relief-aid-was-stolen-or-wasted

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Unemployment Fraud

Goal: Detect unusual patterns in unemployment insurance (UI) deposits

Existing Logic

- None (use existing transaction volume/frequency logic)

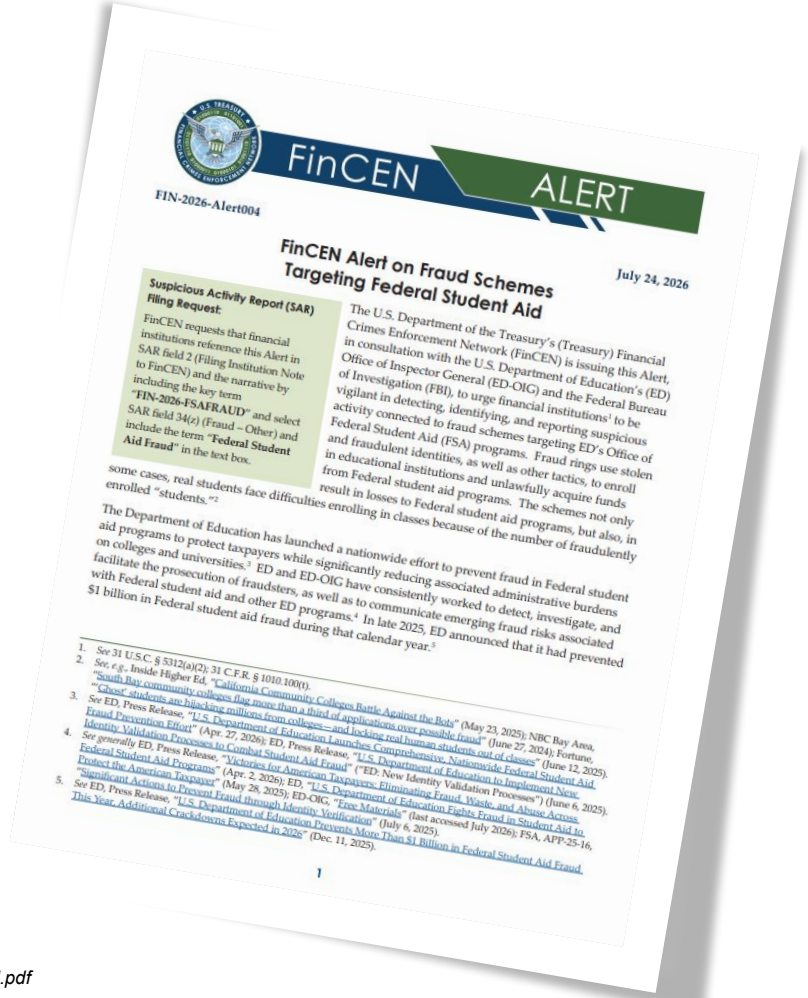
Logic Refinement

- Detect **UI payments** from multiple states or out-of-state
- Check if **UI payee** does not match account holder's name
- Monitor new accounts that receive **government payouts**

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Student Aid Fraud

1. Customer profile inconsistent with student
2. Incoming aid → outgoing digital assets
3. Unrelated students using same account
4. Student aid refunds to unrelated customer
5. New account funded by student aid
6. Business account receiving student aid
7. Incoming P2P/wire from student aid account
8. Aid accounts accessed out-of-state or int'l
9. Many aid accounts created online quickly



FinCEN ALERT

FIN-2026-Alert004

FinCEN Alert on Fraud Schemes Targeting Federal Student Aid

July 24, 2026

Suspicious Activity Report (SAR) Filing Request:

FinCEN requests that financial institutions reference this Alert in SAR field 2 (Filing Institution Note to FinCEN) and the narrative by including the key term "**FIN-2026-FSAFRAUD**" and select SAR field 34(z) (Fraud – Other) and include the term "**Federal Student Aid Fraud**" in the text box.

The U.S. Department of the Treasury's (Treasury) Financial Crimes Enforcement Network (FinCEN) is issuing this Alert, in consultation with the U.S. Department of Education's (ED) Office of Inspector General (ED-OIG) and the Federal Bureau of Investigation (FBI), to urge financial institutions[1] to be vigilant in detecting, identifying, and reporting suspicious activity connected to fraud schemes targeting ED's Office of Federal Student Aid (FSA) programs. Fraud rings use stolen and fraudulent identities, as well as other tactics, to enroll in educational institutions and unlawfully acquire funds from Federal student aid programs. The schemes not only result in losses to Federal student aid programs, but also, in some cases, real students face difficulties enrolling in classes because of the number of fraudulently enrolled "students."[2]

The Department of Education has launched a nationwide effort to prevent fraud in Federal student aid programs to protect taxpayers while significantly reducing associated administrative burdens on colleges and universities.[3] ED and ED-OIG have consistently worked to detect, investigate, and facilitate the prosecution of fraudsters, as well as to communicate emerging fraud risks associated with Federal student aid and other ED programs.[4] In late 2025, ED announced that it had prevented $1 billion in Federal student aid fraud during that calendar year.[5]

1. See 31 U.S.C. § 5312(a)(2); 31 C.F.R. § 1010.100(t).
2. See, e.g., Inside Higher Ed, "California Community Colleges Battle Against the Bots" (May 23, 2025); NBC Bay Area, "South Bay community colleges flag more than a third of applications over possible fraud" (June 27, 2024); Fortune, "'Ghost' students are hijacking millions from colleges—and locking real human students out of classes" (June 12, 2025).
3. See ED, Press Release, "U.S. Department of Education Launches Comprehensive, Nationwide Federal Student Aid Fraud Prevention Effort" (Apr. 27, 2026); ED, Press Release, "U.S. Department of Education to Implement New Identity Validation Processes to Combat Student Aid Fraud" ("ED: New Identity Validation Processes") (June 6, 2025).
4. See generally ED, Press Release, "Victories for American Taxpayers: Eliminating Fraud, Waste, and Abuse Across Federal Student Aid Programs" (Apr. 2, 2026); ED, "U.S. Department of Education Fights Fraud in Student Aid to Protect the American Taxpayer" (May 28, 2025); ED-OIG, "Free Materials" (last accessed July 2026); FSA, APP-25-16, "Significant Actions to Prevent Fraud through Identity Verification" (July 6, 2025).
5. See ED, Press Release, "U.S. Department of Education Prevents More Than $1 Billion in Federal Student Aid Fraud This Year, Additional Crackdowns Expected in 2026" (Dec. 11, 2025).

1

Source: https://www.fincen.gov/system/files/2026-07/FinCEN-Alert-Fraud-Schemes-Targeting-Federal-Student-Aid.pdf

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Student Aid Fraud

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PRESS RELEASE

Justice Department Unveils Indictments in Nationwide ‘Ghost Student’ Fraud Scam Linked to Kenyan Network

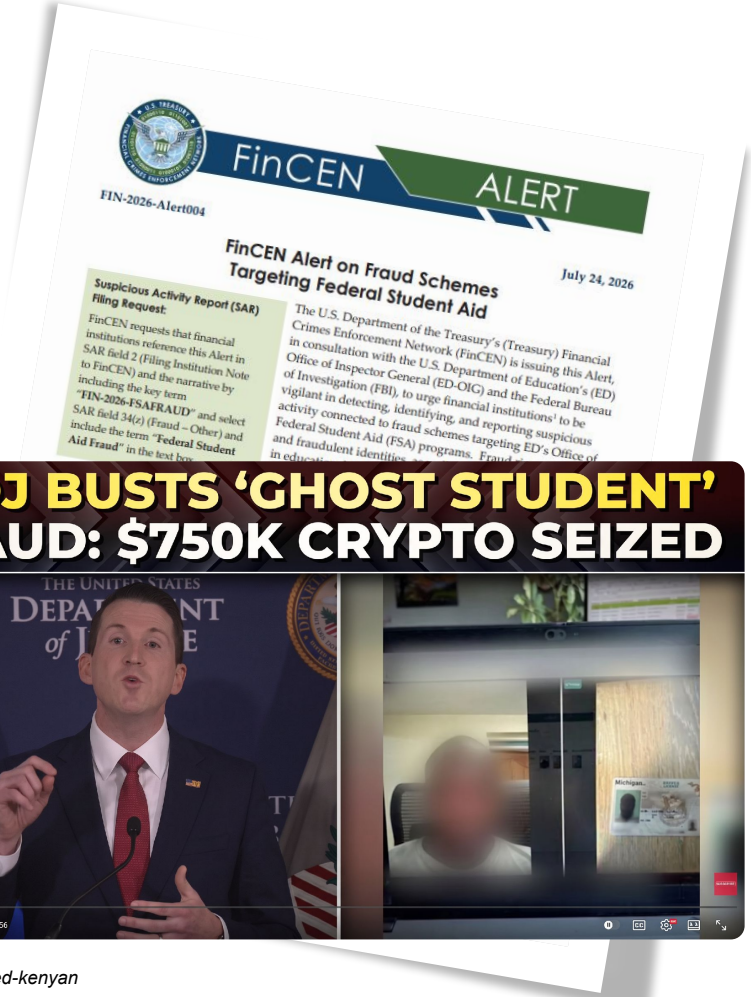
Thursday, October 29, 2026

Share

For Immediate Release

Office of Public Affairs

The Justice Department’s National Fraud Enforcement Division (Fraud Division), along with the U.S. Attorney’s Offices for the Eastern District of Virginia, Nebraska, and New Jersey announced indictments resulting from **Operation Ghostbusters**. Operation Ghostbusters is a nationwide investigation into a large-scale student-loan fraud scheme in which criminal actors created fraudulent Federal Student Aid (FAFSA) accounts using stolen U.S. citizen identities to enroll “ghost students” in educational institutions. After loan and grant disbursements, the refunds were diverted to bank accounts controlled by foreign actors and facilitated by U.S.-based money mules, including Kenyan nationals.



Source: https://www.justice.gov/opa/pr/justice-department-unveils-indictments-nationwide-ghost-student-fraud-scam-linked-kenyan

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Student Aid Fraud

Goal: Detect fraudulent student aid proceeds

Existing Logic

- None (use existing flow of funds logic for P2P/wire transactions and virtual currency detection)

Logic Refinement

- Detect **student aid** deposits with 3+ P2P payments within 7 days
- Detect **student aid** deposits 50%+ sent int'l within 7 days
- Update keyword search lists with student aid-related terms

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Presentation Agenda

A **Let’s Play a Game!**

Spot the fraud before it’s too late…

B **The New Era of Fraud**

Emerging threats (voice cloning, deepfakes, phishing, synthetic IDs, AI agents) + evolving countermeasures

C **Lessons from Model Validation**

Evolving countermeasures: behavioral biometrics, improved AI models (unsupervised learning)

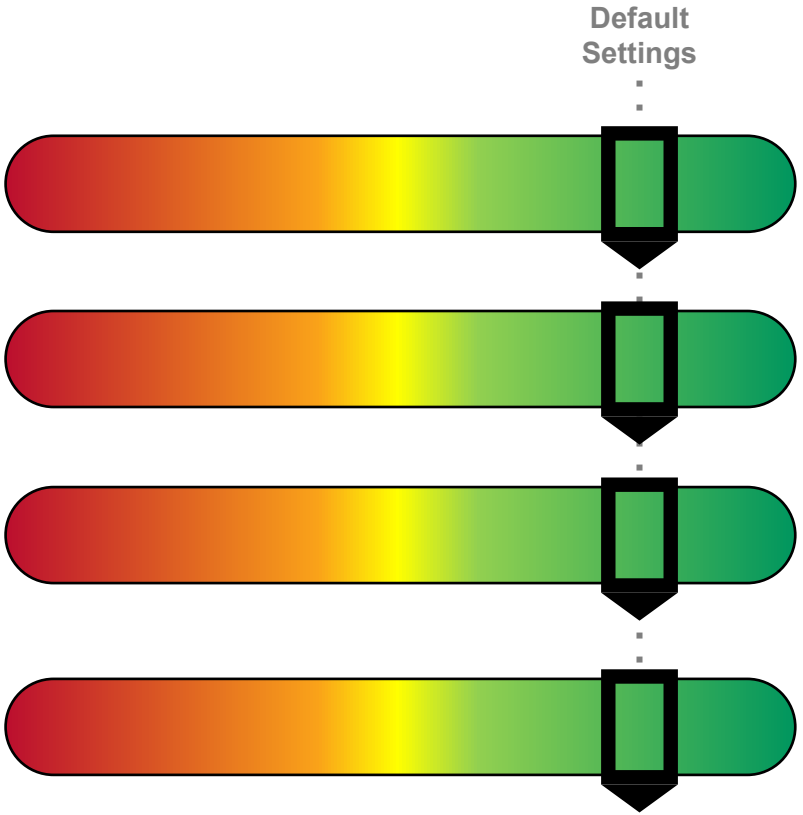
D **Closing the Case**

Three takeaways for better fraud detection

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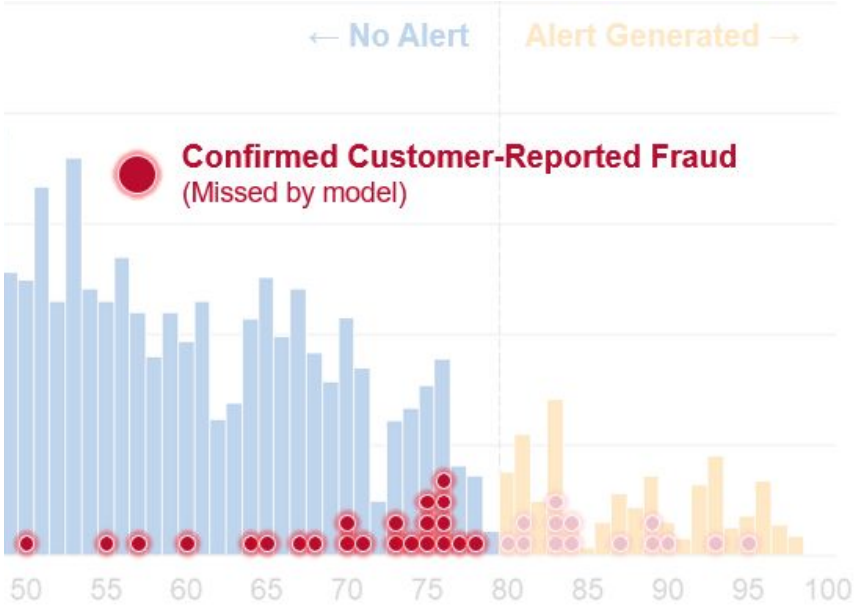
1. Model Not Tuned to the Bank's Risks

- Using out-of-the-box settings means that:
  - Time may be wasted on low-quality alerts
  - Model doesn't reflect bank's risk tolerance
  - False positive rate may be too high
- Proper tuning actually *saves* time!



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2. Inadequate Testing of Missed Fraud

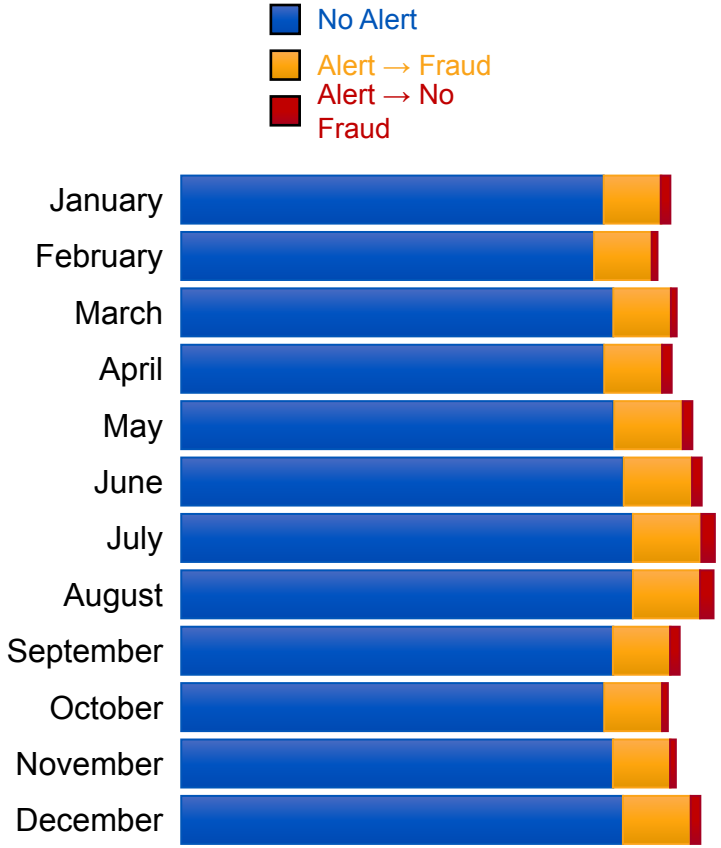


- Review confirmed fraud cases that did not generate alerts and ask:
  - Why wasn't this caught?
  - Should the model have caught it?
  - Is there a gap in coverage?
- Evidence-based approach to check that the model works

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3. Weak Ongoing Monitoring

- Establish meaningful performance indicators that tracks:
  - Changes in false positive rate, alert-to-detection rate, precision, recall, etc.
  - Performance by relevant customer segmentations
  - Dollar amount of money saved (e.g., the "value detection rate")
- Common roadblock: *"But the software doesn't have this report…"*



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Open for business

0%

Not on my watch

100%



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D·C·G
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CCBN™ California Community Banking Network

Questions & Answers

The New Fraud Landscape—Fighting the Emerging Threats of Tomorrow

October 27, 2026

Mark Haberland | Managing Director | MHaberland@darlingconsulting.com

Sam Chen | Quantitative Consultant | SChen@darlingconsulting.com

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Thank you!

The New Fraud Landscape—Fighting the Emerging Threats of Tomorrow

October 27, 2026

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