



— VISION 2016 —

TAKE CONTROL

A ROADMAP FOR **GROWTH**



#vision2016

The digital channel:

Measuring the attack rate to balance fraud detection and customer friction in a post-EMV world





— VISION 2016 —

TAKE CONTROL

A ROADMAP FOR **GROWTH**



#vision2016



Introducing:

- **David Britton**
Experian
 - ▶ 19 years in cyber fraud prevention
 - ▶ Work within the Global Fraud & ID Product group
 - ▶ One of the first “Internet fraud investigators”
 - ▶ I hate passwords
 - ▶ I think we can build frictionless security methods



Attack vectors

Industrialization of fraud

10,000

Estimated number of fraud rings in the U.S. alone



Shift to spear-phishing

91% Number of cyber attacks originating from spear phishing each year – includes vishing, SMiShing, etc.



Source: TechCrunch (2015)

Data breaches

2,200,000,000+

The number of records exposed as a result of data breaches since beginning 2013



Source: Risk Based Security/Open Security Foundation, Data Breach Quick View (February 2014)

Explosion in malware

75,000,000

Unique strains of MALWARE detected in 2014



Source: PandaLabs (2015)



— VISION 2016 —

TAKE CONTROL

A ROADMAP FOR GROWTH

#vision2016

**What is the
“attack rate”?**





Attack rate defined...



Total attempts
of fraud against
the business





— VISION 2016 —

TAKE CONTROL

A ROADMAP FOR GROWTH

#vision2016

Why do we care?





Do you know ...

... what a “Brannock Device” is?

7000–8000 BC

1925 AD





The Brannock Device





Why measure “attack rate”?

The size of the problem should dictate the size of the solution

Or ... if you don't know how big the attack is, how will you know if you have the right-sized solution





— VISION 2016 —

TAKE CONTROL

A ROADMAP FOR GROWTH

#vision2016

How can we measure attack rate?



WARNING!!

We are going to do some MATH ...

$$k = \frac{1}{4\pi \epsilon_0 \epsilon_r} \quad Z = Z_{ob} \cdot \mu_{ok} = \frac{\Delta}{f_1 f_2} \Delta t = \frac{\Delta t'}{\sqrt{1-v^2/c^2}} \quad \mu = \frac{d}{f} = \frac{d}{v} = N \cdot m_0 = \frac{Q}{N_A} \frac{M_m \phi_e}{\Delta t} = \frac{\Delta E}{\Delta t} h$$

$$\log \frac{L}{L_0} = 4 \log \frac{T_{ef}}{K} + 2 \log \frac{R}{R_0} - 4 \log \frac{T_0}{K} \quad \frac{\sin \alpha}{\sin \beta} = \frac{v_1}{v_2} = \frac{w_2}{w_1} \quad \lambda = \frac{h}{\sqrt{2eU_{me}}} \quad M_e = \sigma T^4 \quad m_0 = \frac{M_m}{N_A} = \frac{M_r \cdot 10^{-3}}{N_A} H_2$$

$$v_k = \sqrt{\frac{3kT}{m_0}} = \sqrt{\frac{3kTN_A}{M_m}} = \sqrt{\frac{3R_m T}{M_r \cdot 10^{-3}}} \quad \rho = \frac{E}{c} = \frac{hf}{c} = \frac{h}{\lambda} \quad V = V_1(1 + \beta \Delta t) \quad U_{ef} = \frac{U_m}{\sqrt{2}} \quad f_0 = \frac{1}{2\pi \sqrt{CL}}$$

$$I_m^2 = U_m^2 \left[\frac{1}{R^2} + \left(\frac{1}{X_c} - \frac{1}{X_L} \right)^2 \right] \quad X_L = \frac{U_m}{I_m} = \omega L = 2\pi f L \quad \vec{F}_m = \vec{B} I l = \frac{\mu I_1 I_2}{2\pi d} l \quad \sigma = \frac{Q}{S} \quad \psi_2$$

$$R = R_0 \sqrt[3]{A} \quad E = mc^2 \quad E_k = \frac{h^2}{8mL^2} \quad \beta = \frac{\Delta I_c}{\Delta I_B} \quad \rho = \frac{\vec{F}}{\Delta S} = \frac{m \Delta \vec{v}}{\Delta S \Delta t} \quad \vec{B} = \mu \frac{NI}{l} \quad R = \rho \frac{l}{S} \quad M = \frac{F_g}{r^2} = \frac{m_1 m_2}{r^2} \quad \sigma = \frac{Q}{S} \quad \psi_2$$

$$M_0 = \frac{4\pi^2 r^3}{3T^2} \quad v = \frac{wh}{8mL^2} \quad \phi_e = \frac{L}{4\pi r^2} \quad U = \frac{W_{AB}}{\phi} = \frac{|E_{PA} - E_{PB}|}{\phi} = |\varphi_A - \varphi_B| \quad \phi = mc \Delta t \quad \rho$$

$$F_d = M_z \frac{v^2}{r} = M_z \frac{4\pi^2 r}{T^2} \quad \nabla \times \left(\frac{\partial \vec{B}}{\partial t} \right) = -\frac{\partial}{\partial t} (\text{rot } \vec{B}) = -\mu_0 \frac{\partial}{\partial t} \left(\frac{\partial B}{\partial t} \right) = \epsilon_0 \mu_0 \frac{\partial^2 E}{\partial t^2} \quad f_0$$

$$v_k = \sqrt{\frac{M_z}{R_z}} \quad F_x = \frac{1}{2} C_x \rho S v^2 \quad E = \frac{E_c}{a} \int_{-a/L}^{+a/L} \sin(\omega t + \phi) dy \quad \oint \vec{H} d\vec{l} = \iint_S \left(\vec{J} + \frac{\partial \vec{D}}{\partial t} \right) \cdot d\vec{S} \quad \lambda = \frac{h w_2}{T} \quad L = 1$$

$$F_v = \int \frac{F_n}{R} \quad 1 \text{ pc} = \frac{1 \text{ AU}}{r} \quad \mu = U_m \sin \omega(t - T) = U_m \sin 2\pi \left(\frac{t}{T} - \frac{x}{\lambda} \right) \quad E_k = \frac{1}{2} m v^2 S = \frac{1}{A} \frac{dW}{dt} \quad F_g = \frac{M_0 M_z}{r^2} \quad v = \frac{1}{\sqrt{\epsilon \cdot \mu}}$$

$$\int_{C(s)} \vec{E} d\vec{l} = - \iint_S \frac{\partial \vec{B}}{\partial t} \cdot d\vec{S} \quad E_e = k \frac{q_1 q_2}{r^2} \quad \vec{\psi} = \iint_S \vec{B} d\vec{S} = AD \quad \left(\frac{E_t}{E_0} \right)_{\parallel} = \frac{2 \cos \vartheta_1 \cos \vartheta_2}{\cos(\vartheta_1 - \vartheta_2) \sin \dots}$$

$$E = \frac{F_e}{\phi_0} = k \frac{Q}{r^2} \quad \oint \vec{B} d\vec{l} = \mu \iint_S \vec{J} d\vec{S} \quad f' = \frac{w_a \cdot w_b}{(w_a - 1)(w_b - w_a)} \frac{w_1}{x} + \frac{w_2}{x'} = \frac{w_2 - w_1}{r} \quad \vec{S} = \frac{1}{\mu_0}$$

$$E_v = E_0 \sin(kx - \omega t + \phi) \quad \beta = \frac{w_1}{c} (\alpha + \gamma) + \delta \quad \phi = \frac{2\pi \sin \vartheta}{\mu} \quad B_t = \sqrt{\epsilon \cdot \mu} E \cdot \sin(\dots)$$



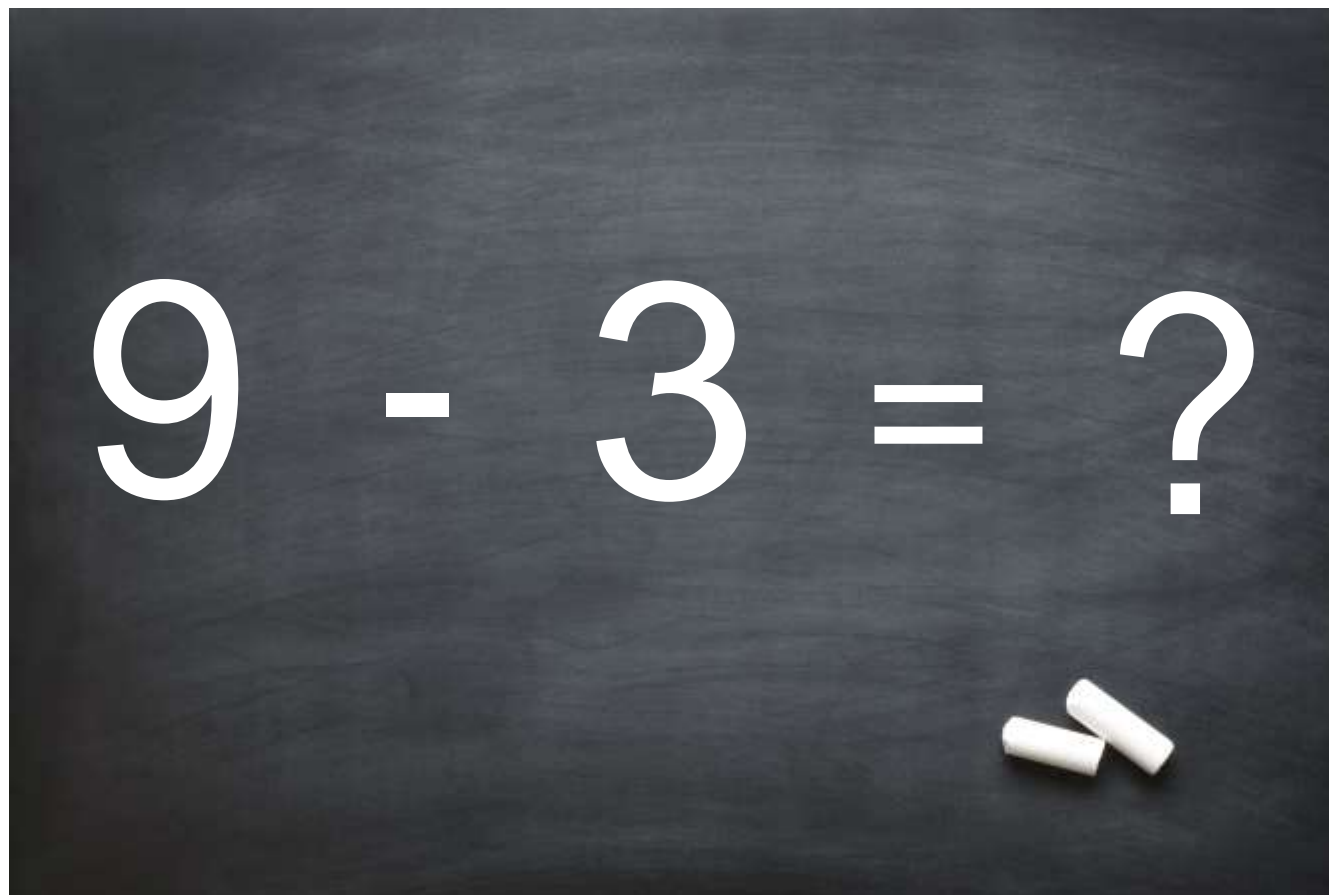
Let's "warm up"

$$3 + 2 = ?$$





A little harder...






Now ... super tricky ...

$$10 \div 100 = ?$$





Now ... super-DOOPER tricky ...

$$\frac{(2 + (5 - 2))}{25} = ?$$






What is included in the “attack rate”

Losses

(confirmed fraud)

Fraud caught

(confirmed fraud)

Good customers caught (“oops!”)

(false positives)

Total sales or traffic

(by count or by amount)





What is the “attack rate”

$$\begin{array}{r} \text{Losses} \\ \text{(confirmed fraud)} \\ \\ \text{Fraud caught} \\ \text{(confirmed fraud)} \\ \hline \\ \text{Good customers caught} \\ \text{(false positives)} \\ \hline \\ \text{Total attack} = \end{array} \begin{array}{l} + \\ \\ - \\ \\ = \end{array}$$



Calculating the “rate”

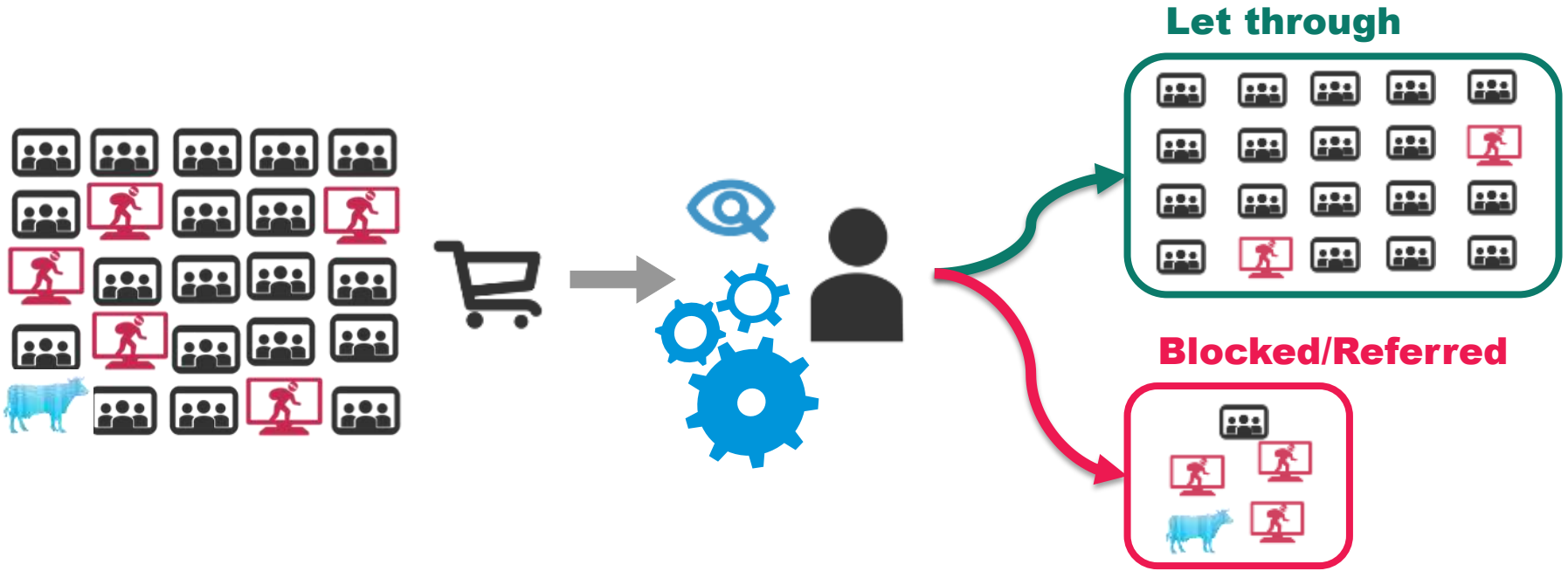
$$\frac{\text{Total attack}}{\text{Total traffic}} = \text{Attack rate}$$

Everything else is
a good transaction...





Understanding attack rate



Total attack rate =



(Caught + missed)

Minus



(False positives)

Divided by



(Total sales)



Attack rates vary ...

... based on industry and geography ...

... and based on protections in place

Industry	Average attack rate
FS – account takeover	0.003%
FS – account opening	8%
E-commerce	3.2%
Airlines	2.6%
Jewelry	5.07%
Electronics	5.60%
VoIP	30% – 50%



Best practices for obtaining feedback

- Communicate with the customer – and fraudster (yup, I said it!)
- Don't deploy solutions that immediately tell the customer/fraudster they have been blocked – separate the process into three parts:

- 1) Accept the customer's request (and let them know you received it)
- 2) Perform the risk assessment (this can be instantaneous – just don't communicate it to the consumer)
- 3) Communicate: If there is a need to block or challenge, open up a line of communication:

"We noticed suspicious activity ... please contact us at 800-555-5555, or email us at specific.email@mybusiness.com"



- Close loop with customer service, if client calls them
 - ▶ Drop box voicemail / email
 - ▶ All customer service reps know to route it to fraud team
- Clarify the confirmed fraud data into appropriate categories (chargebacks, reason codes, etc.)
- Work with law enforcement – close the loop



EMV moves Fraud upstream

Application, enrollment, account takeover

- Fraudsters blocked using counterfeit cards at POS



- Fraudsters move upstream – apply for brand new cards using stolen ID data
- Or provision stolen cards into mobile wallet
- Or gain access to accounts to make purchases

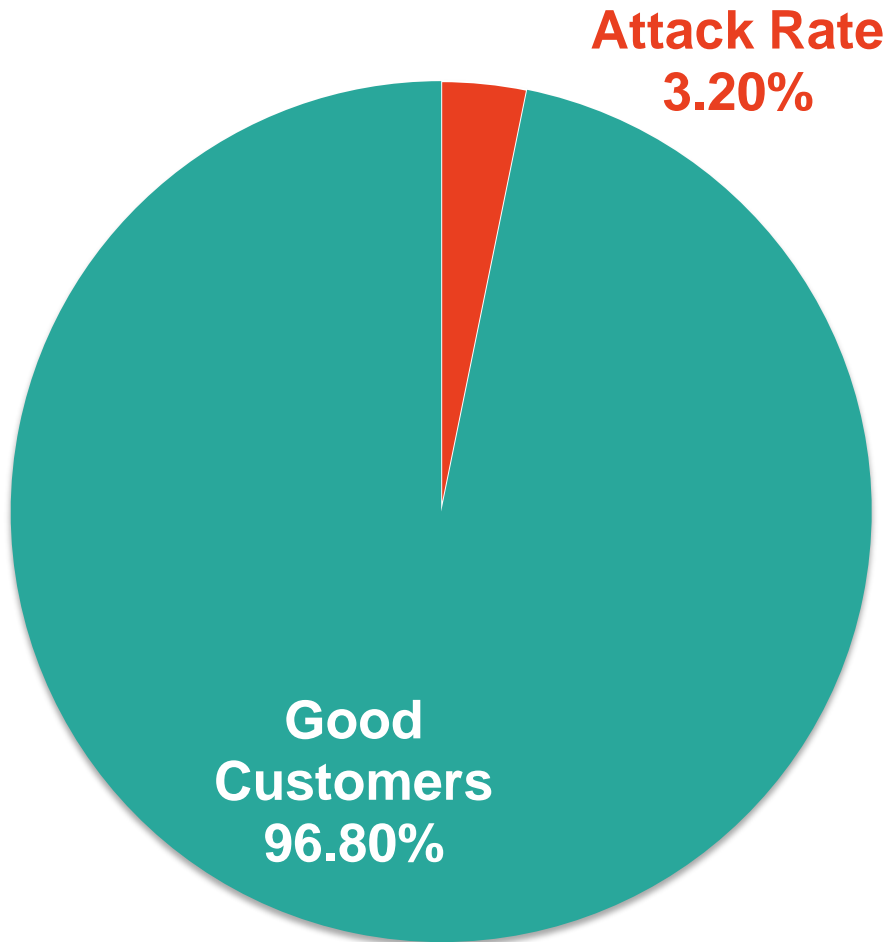


- Fraudsters use new cards everywhere



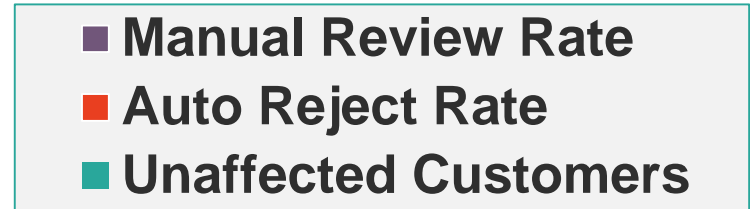
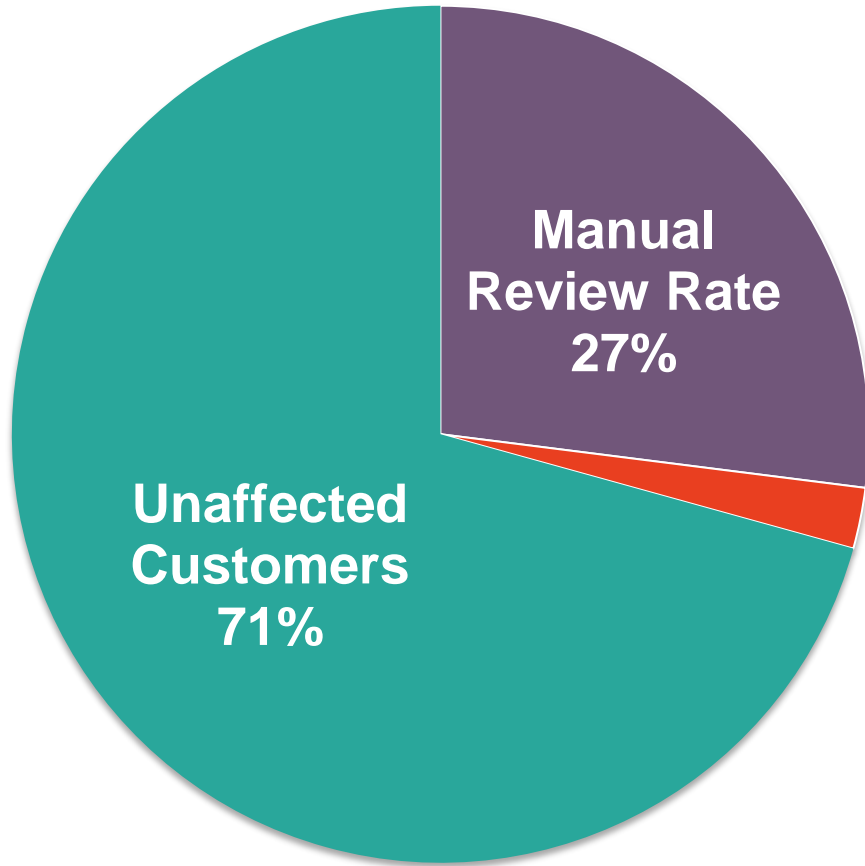


Attack rate should shape strategy





Industry status quo



Auto Reject Rate
2%

29% Customer impact??



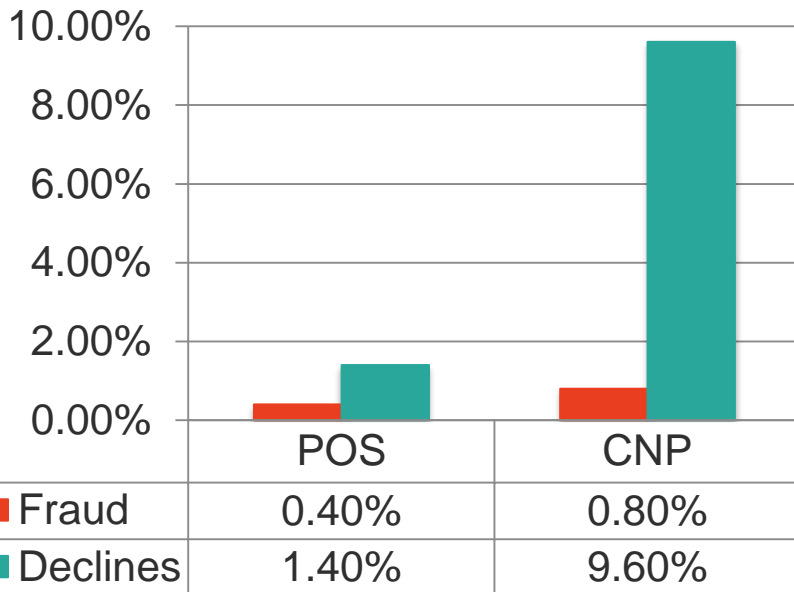
Overly tight controls damage online business

CNP is disproportionately impacted by fraud policy

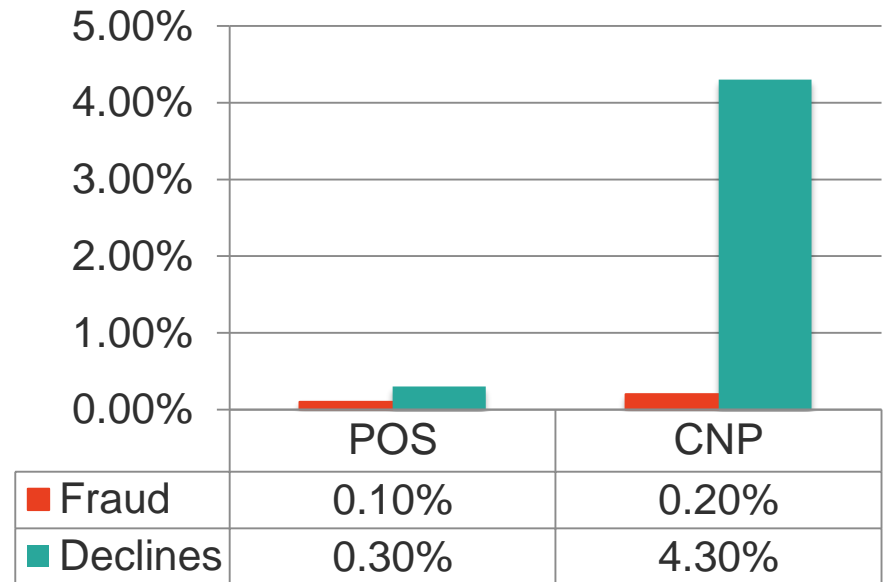
CNP fraud losses approximately **2x** POS fraud losses

CNP transactions declined at **5x-15x** the rate of POS transactions

Credit



Debit



— VISION 2016 —

TAKE CONTROL
A ROADMAP FOR **GROWTH**

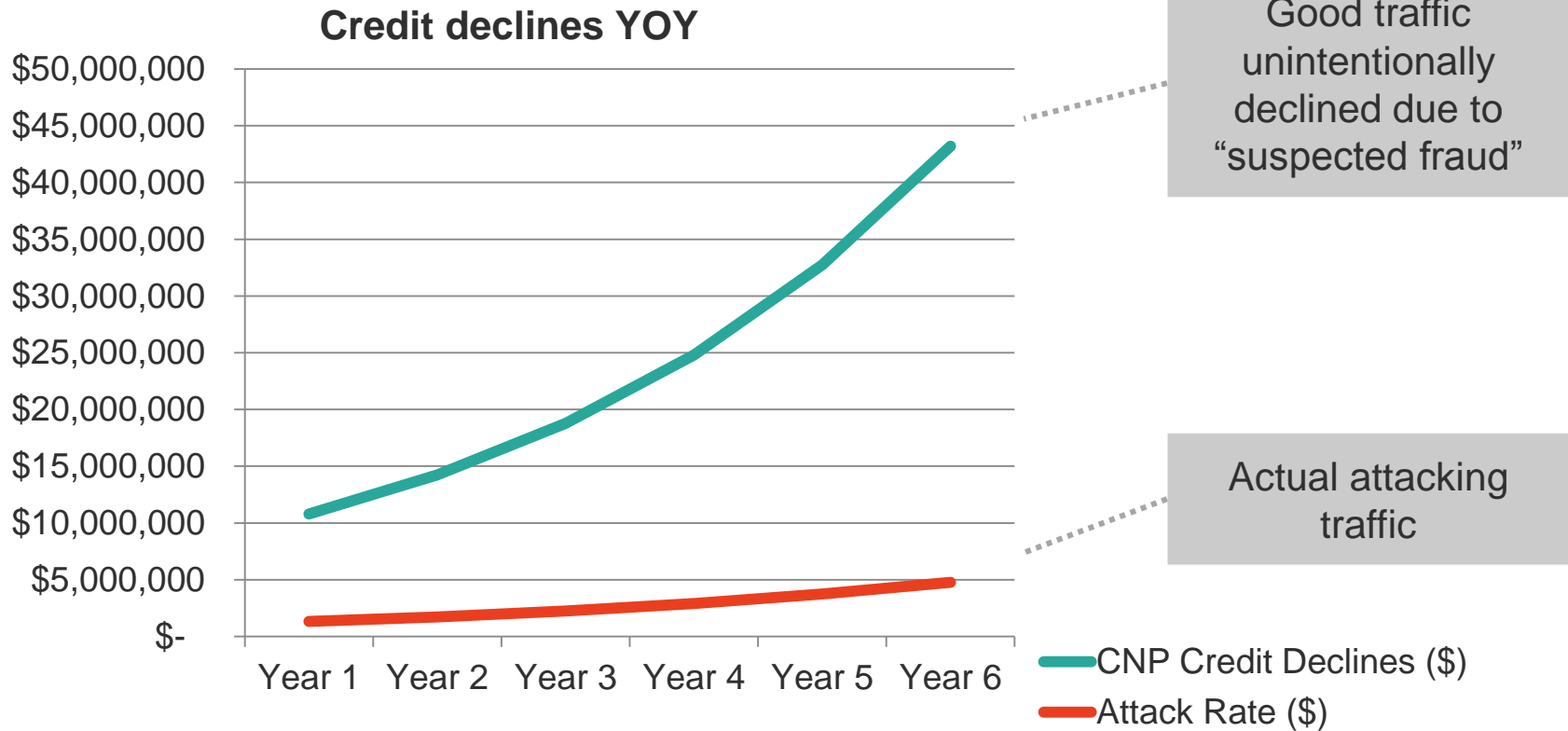




Impact of draconian countermeasures

Massive false-positive increase

EXAMPLE



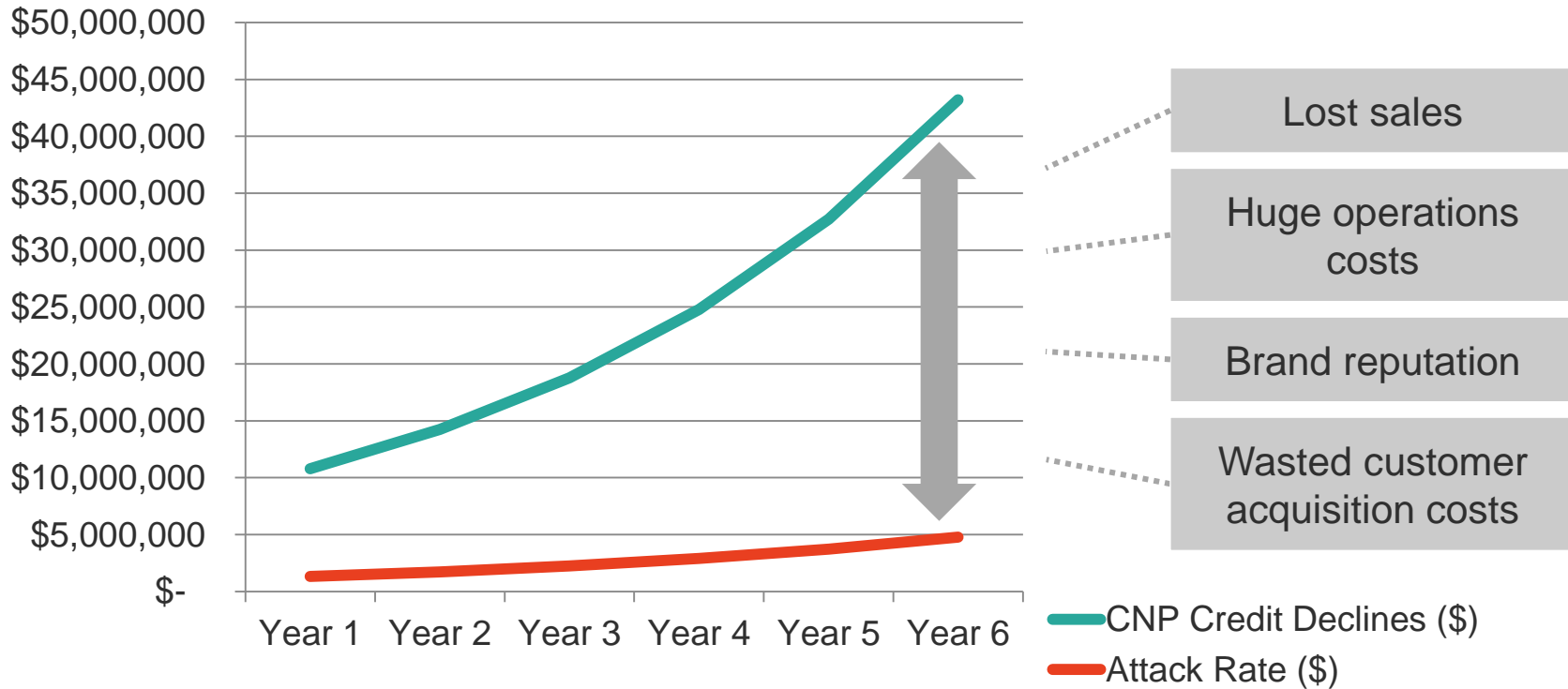


Impact of draconian countermeasures

Massive false-positive increase

EXAMPLE

Credit declines YOY



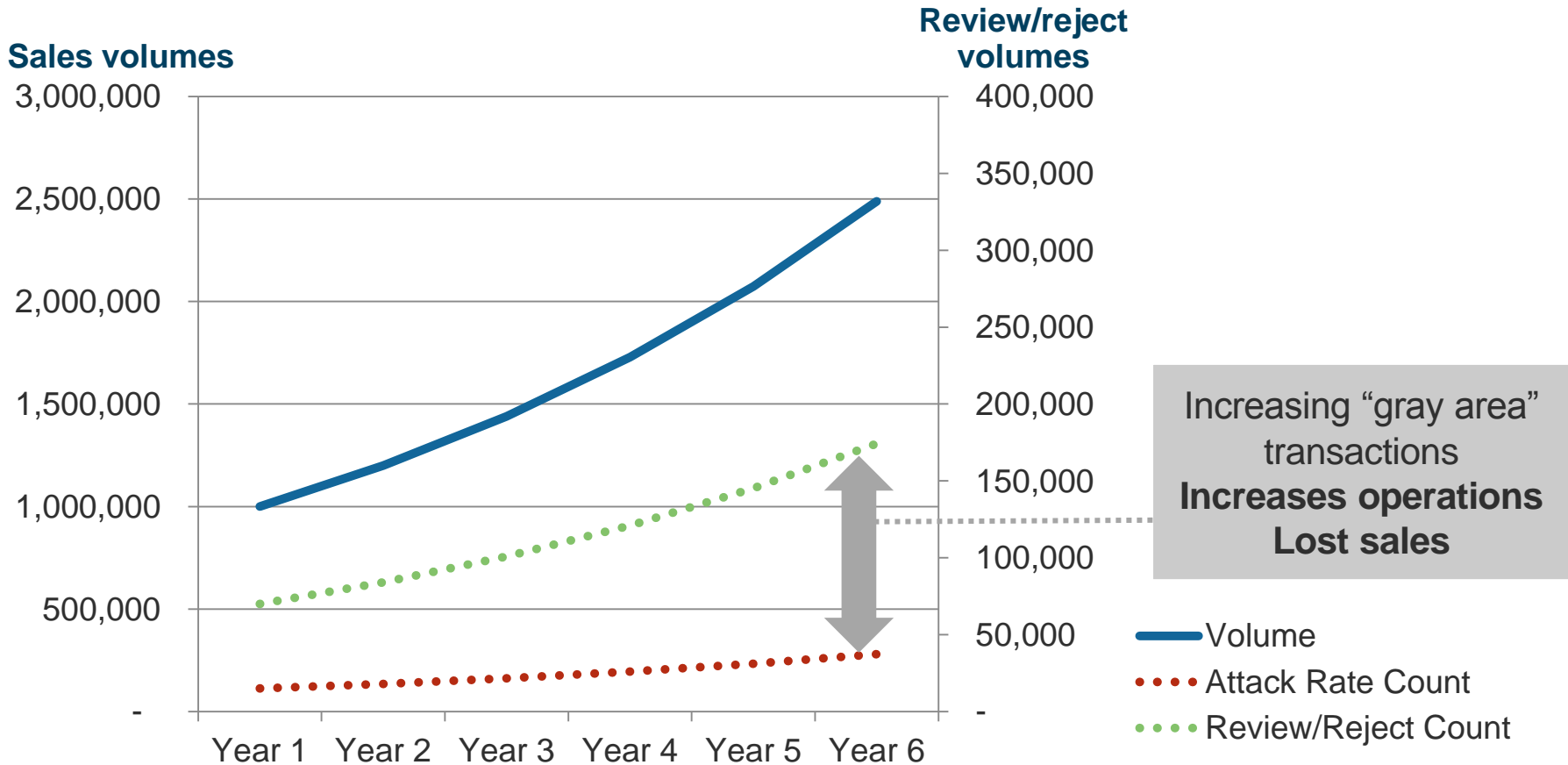


Volume growth with static detection

Still a negative impact on attack and review

EXAMPLE

- At 20% growth in volume
- At “constant” attack/review rate
- Increasing operations costs



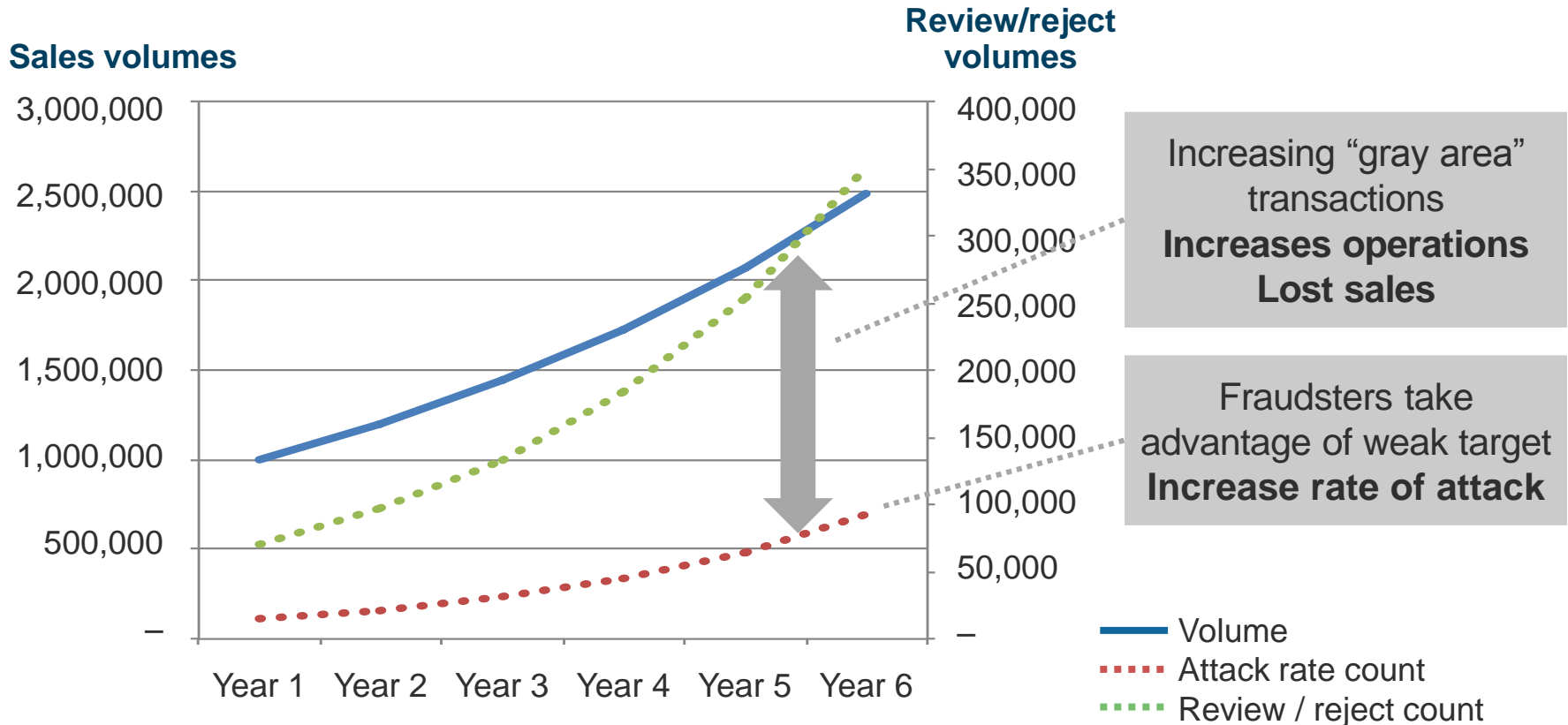


Impact if detection “falls behind”

Significant negative impact on attack and review

EXAMPLE

- 20% growth in volume
- 20% increase in attack rate
- “Only” 15% growth in review rate



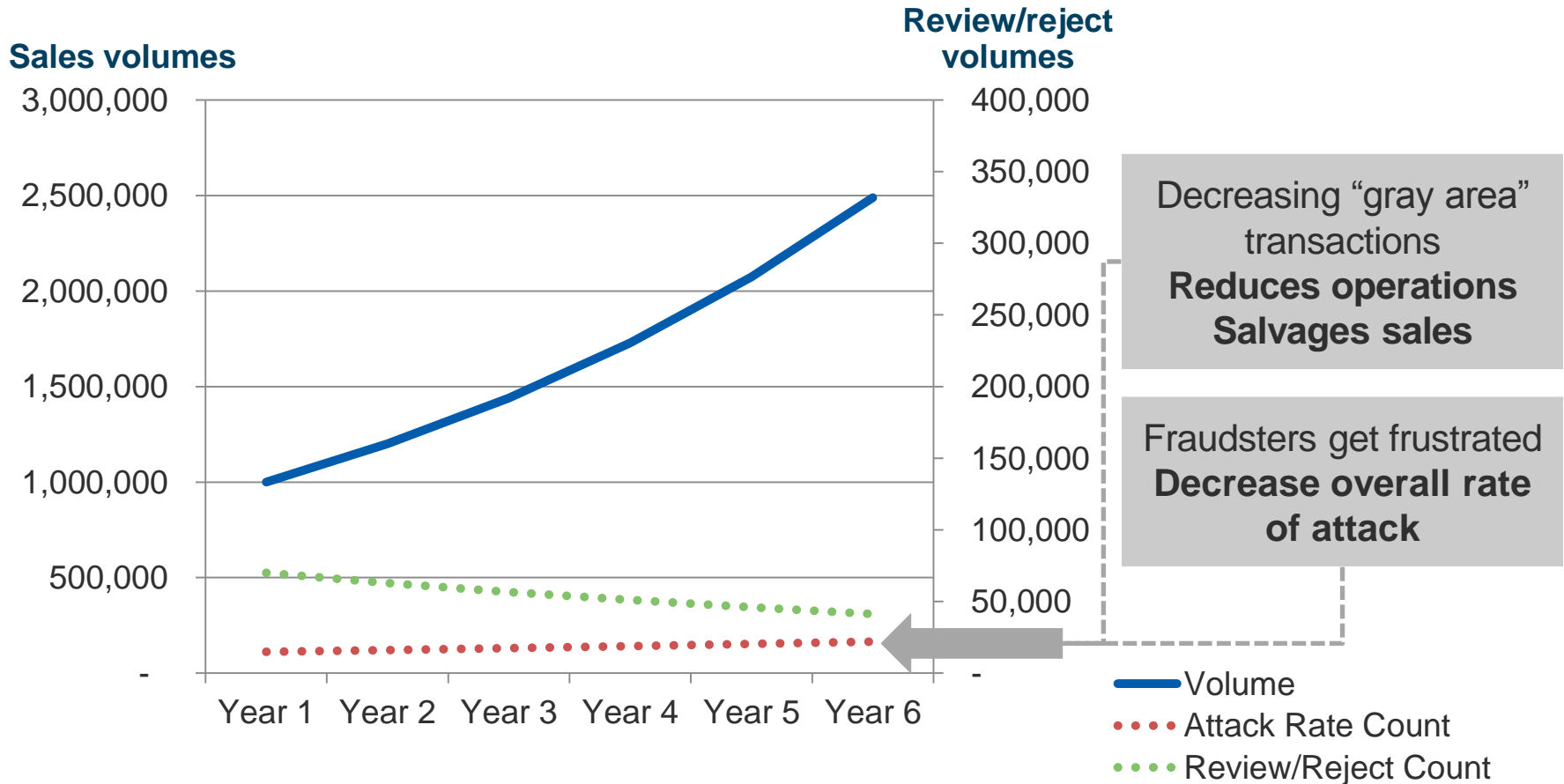


Volume growth with effective detection

Positive impact on attack and review

EXAMPLE

- 20% growth in volume
- -10% decreasing attack rate
- -25% decreasing review rate





Fraudsters exploit weakest link

Real world example

PHASE 1



Major us airline
protects website
fraud reduced by

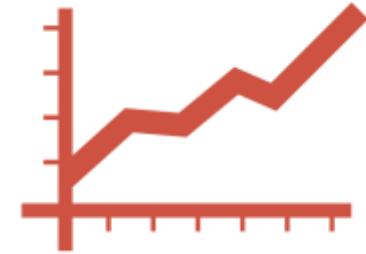
42%

+



Call center
unprotected

=



Call center fraud
increases by

72%



Fraudsters exploit weakest link

Real world example

PHASE 2



Major us airline
protects website
fraud reduced by

42%

+



Phase 2 call
center also
protected

=



Total attack rate drops from

1.2% to 0.07%

Fraud chargeback loss

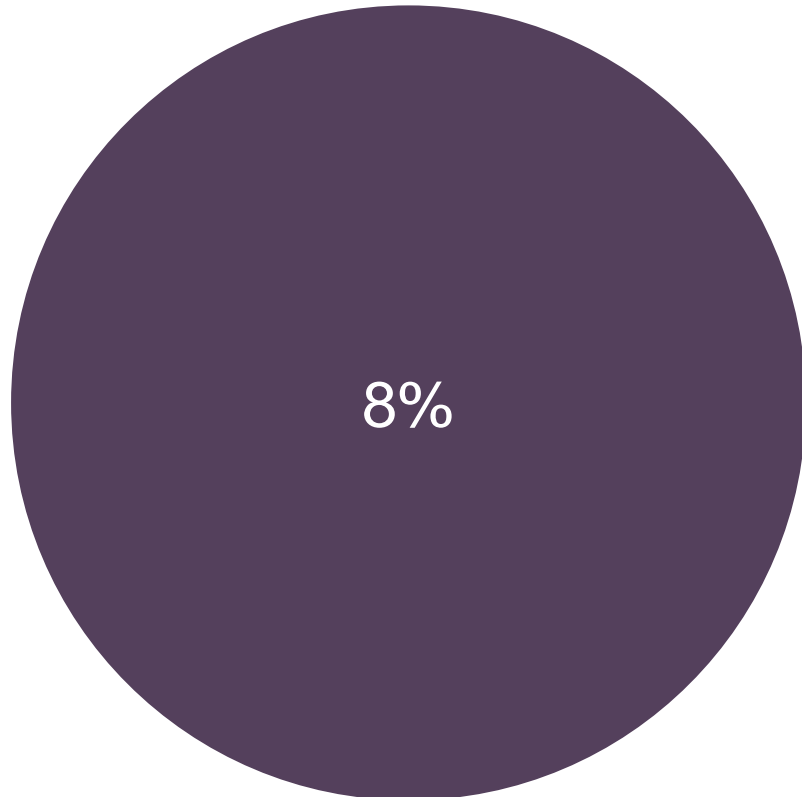
0.02%



Protections in place?

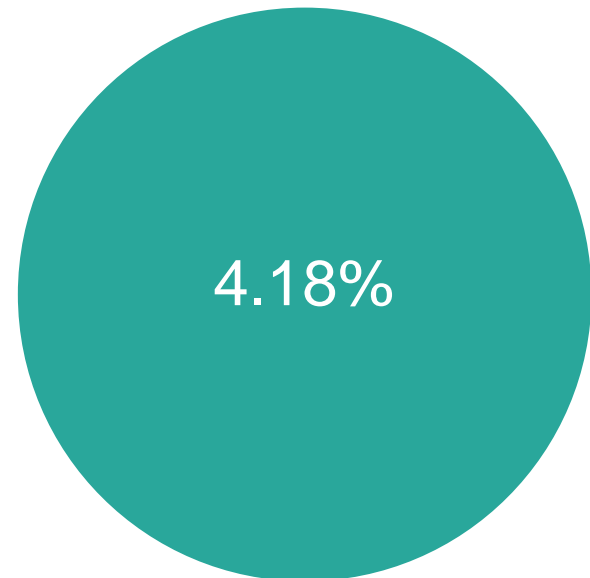
Account opening – attack rate

With “good” fraud solutions in place



Industry average

With “great” fraud solutions in place



Experian FraudNet

— VISION 2016 —

TAKE CONTROL
A ROADMAP FOR **GROWTH**



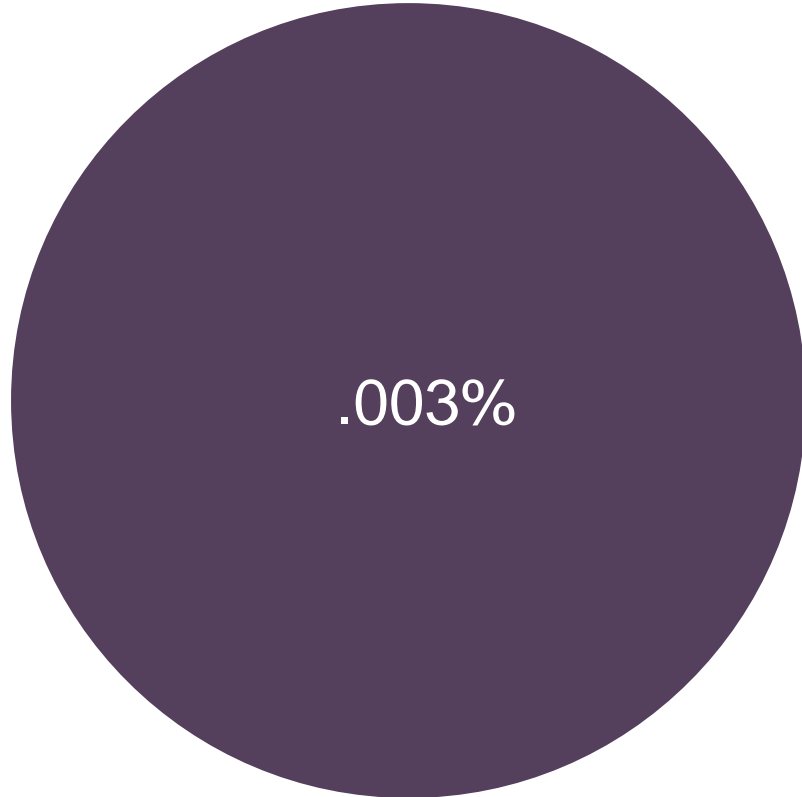
#vision2016



Protections in place?

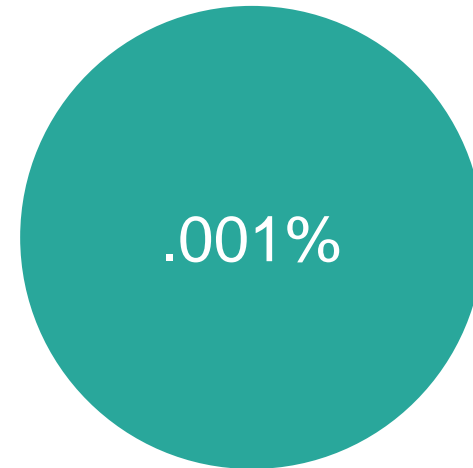
Account takeover – attack rate

With “good” fraud solutions in place



Industry average

With “great” fraud solutions in place



Experian FraudNet

— VISION 2016 —

TAKE CONTROL
A ROADMAP FOR **GROWTH**



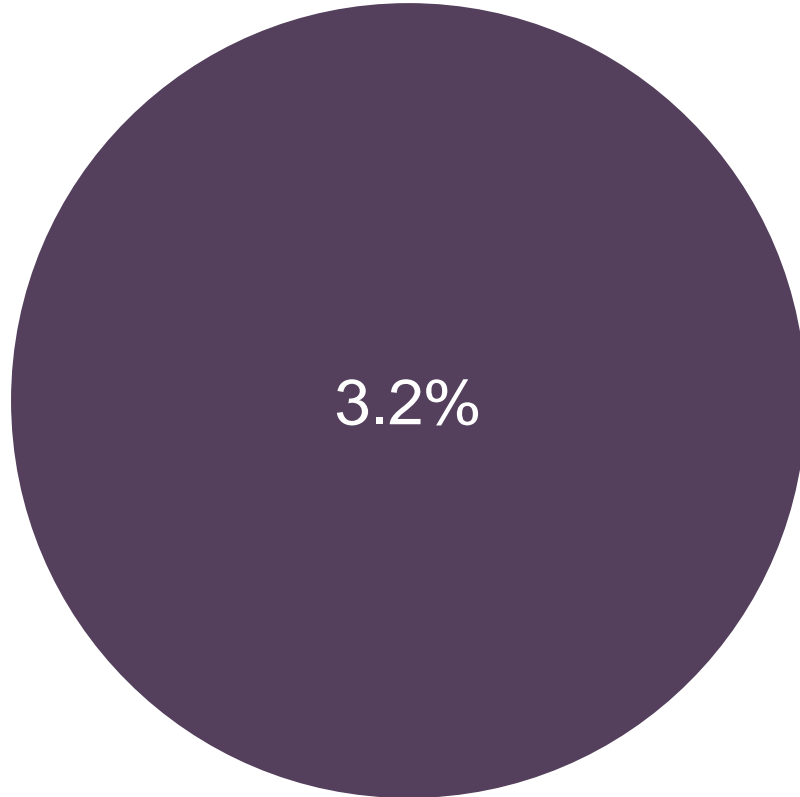
#vision2016



Protections in place?

eCommerce – attack rate

With “good” fraud solutions in place



Industry average

With “great” fraud solutions in place



Experian FraudNet

— VISION 2016 —

TAKE CONTROL
A ROADMAP FOR **GROWTH**





How to prepare

Know the numbers – measure the following:

- Attack rate
- Review rate
- False positive (“oops”) rate
- Loss rate

Aggressively move to ACCURATE detection systems

- Don't just look at fraud capture rates
- Dig deep into review / outsort / reject rates
- Don't deny legitimate sales

Work across the channels

- Engage with risk teams in different channels
- Collaborate
- Share findings – consolidate attack reports





— VISION 2016 —

TAKE CONTROL

A ROADMAP FOR GROWTH

#vision2016



**For additional information,
please contact:**

David.Britton@experian.com



Follow us on Twitter:

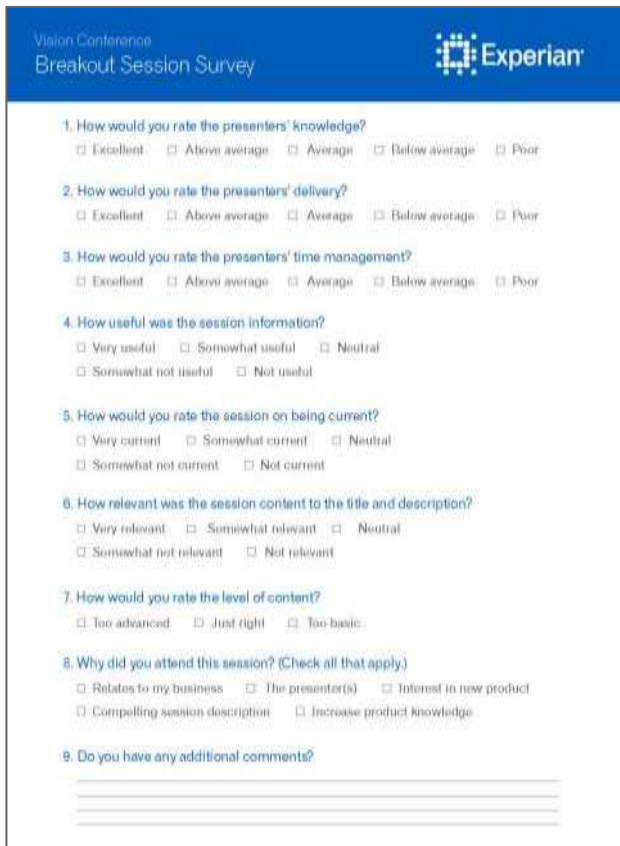
@ExperianVision | #vision2016

Share your thoughts about Vision 2016!

Please take the time now to give us your feedback about this session. You can complete the survey in the mobile app or request a paper survey.

1 Select the Survey button and complete

2 Select the breakout session you attended



Vision Conference
Breakout Session Survey

Experian

1. How would you rate the presenters' knowledge?
 Excellent Above average Average Below average Poor

2. How would you rate the presenters' delivery?
 Excellent Above average Average Below average Poor

3. How would you rate the presenters' time management?
 Excellent Above average Average Below average Poor

4. How useful was the session information?
 Very useful Somewhat useful Neutral
 Somewhat not useful Not useful

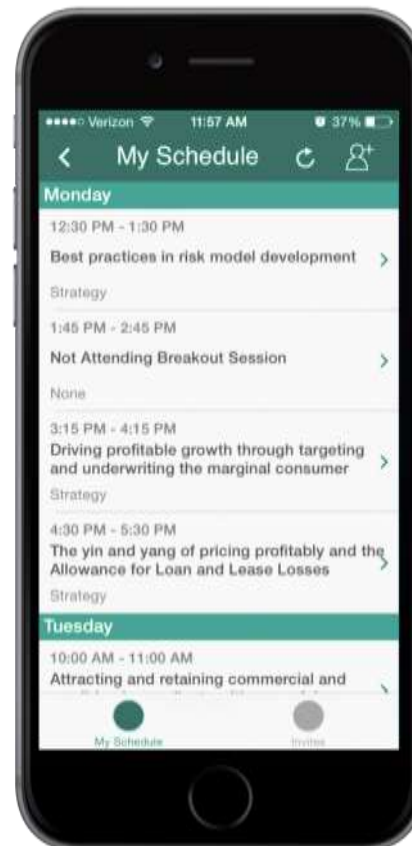
5. How would you rate the session on being current?
 Very current Somewhat current Neutral
 Somewhat not current Not current

6. How relevant was the session content to the title and description?
 Very relevant Somewhat relevant Neutral
 Somewhat not relevant Not relevant

7. How would you rate the level of content?
 Too advanced Just right Too basic

8. Why did you attend this session? (Check all that apply)
 Relates to my business The presenter(s) Interest in new product
 Compelling session description Increase product knowledge

9. Do you have any additional comments?





— VISION 2016 —

TAKE CONTROL

A ROADMAP FOR

GROWTH

