



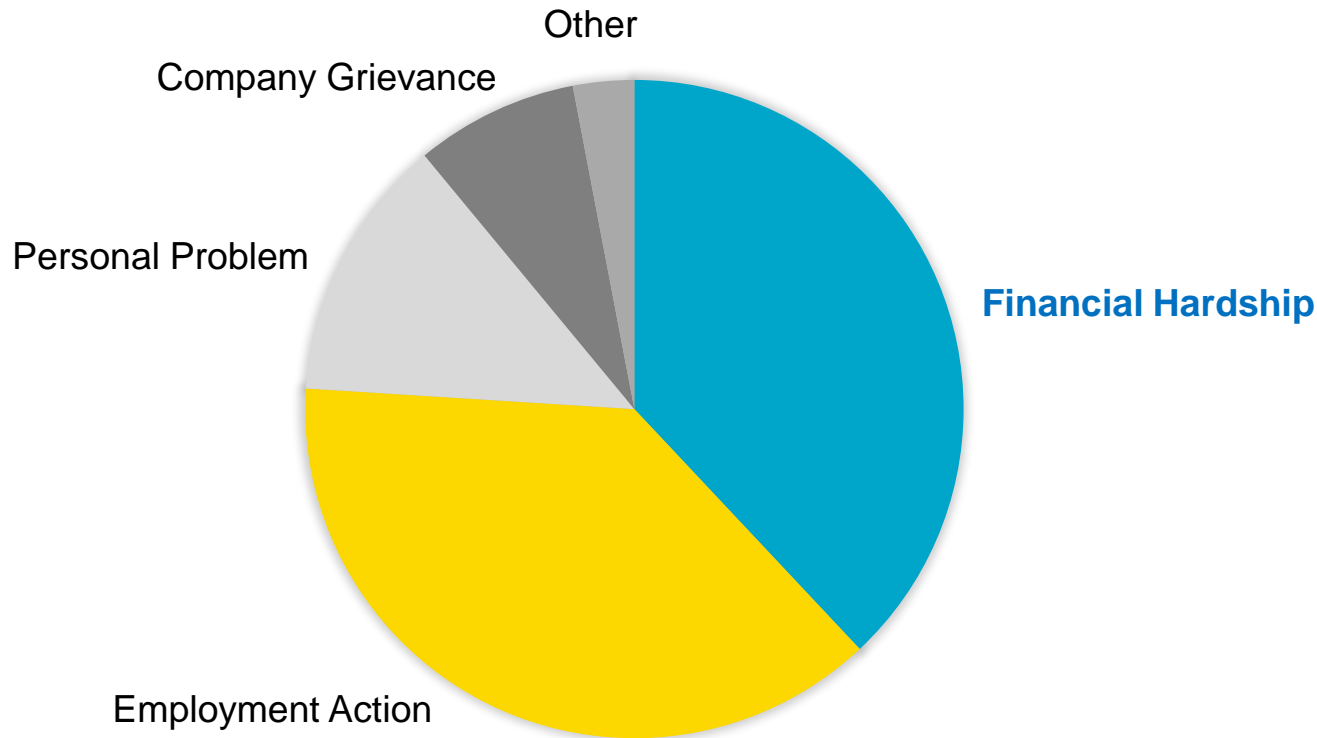
# Using External Data in Insider Threat Programs

**National Insider Threat Special Interest Group Meeting --  
Virginia Chapter**

TransUnion, 2017



# Research shows financial hardship is a contributing factor to insider threats

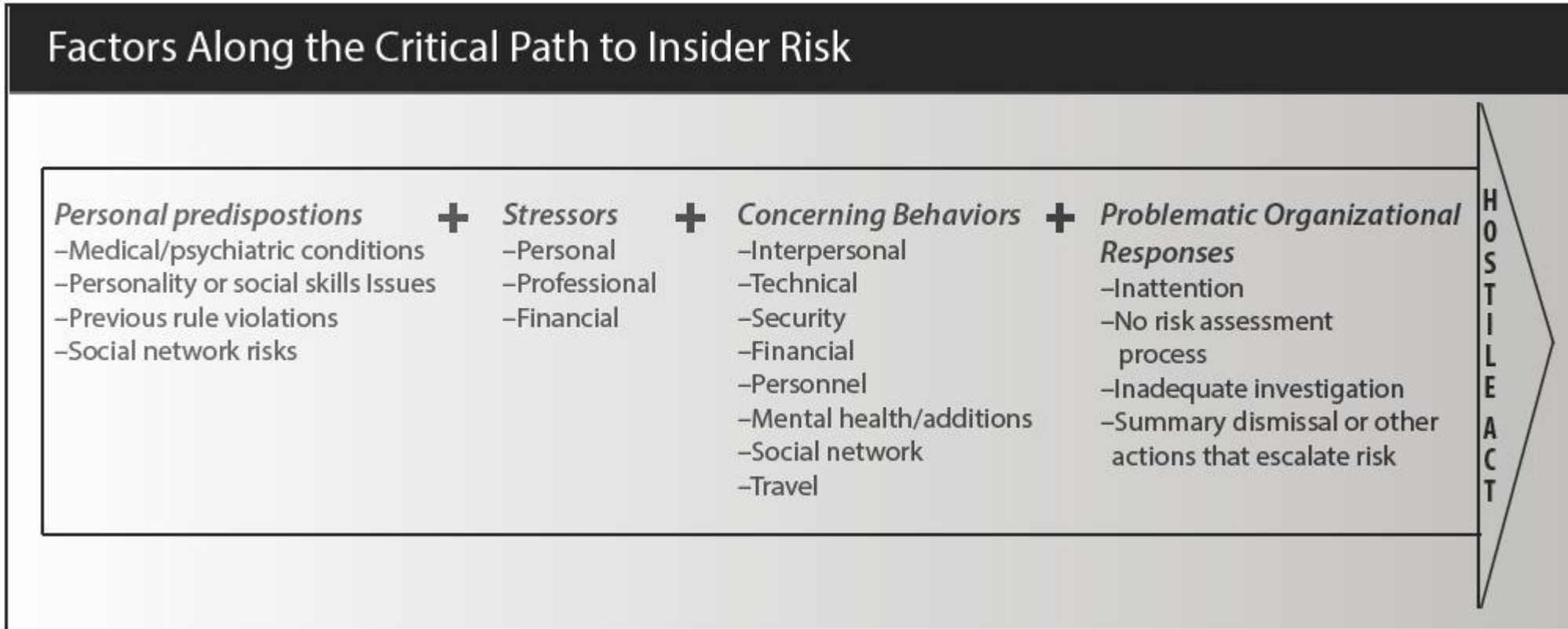


Over half of the insiders were motivated by **financial gain**

41% of insiders experienced a **major life change or loss**. 3 out of 4 had experienced difficulty in coping with it

Kowalski, Conway, Cappelli, Willke (2008), *Insider Threat Study: Illicit Cyber Activity in the Government Sector*, US Secret Service, CERT/SEI Carnegie Mellon University,

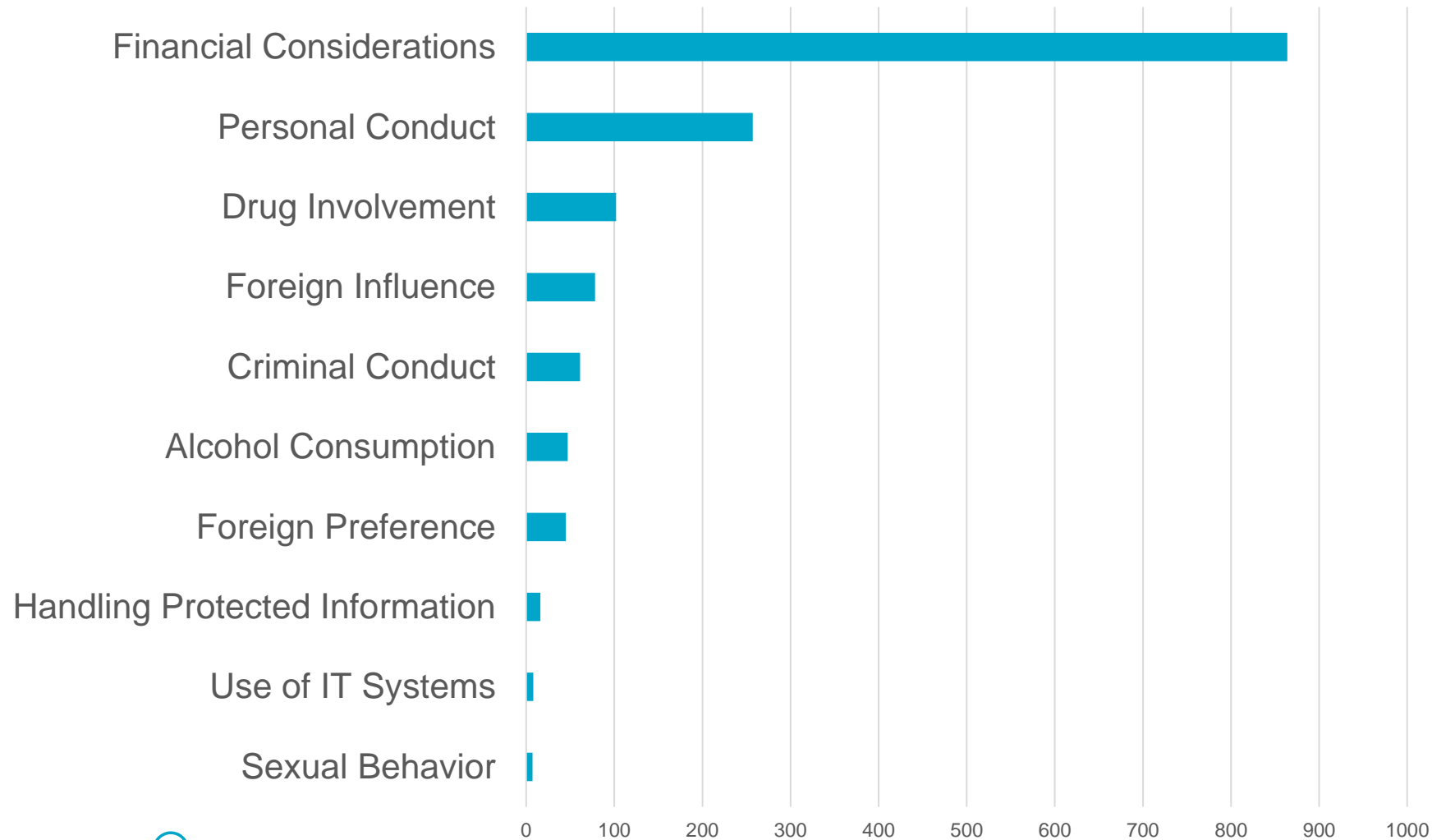
# Accumulation of external and internal factors increase the risk of hostile acts against an organization



Eric Shaw, Laura Sellers (2015), *Application of the Critical-Path Method to Evaluate Insider Risks*, *Studies in Intelligence* Vol 59, No. 2,

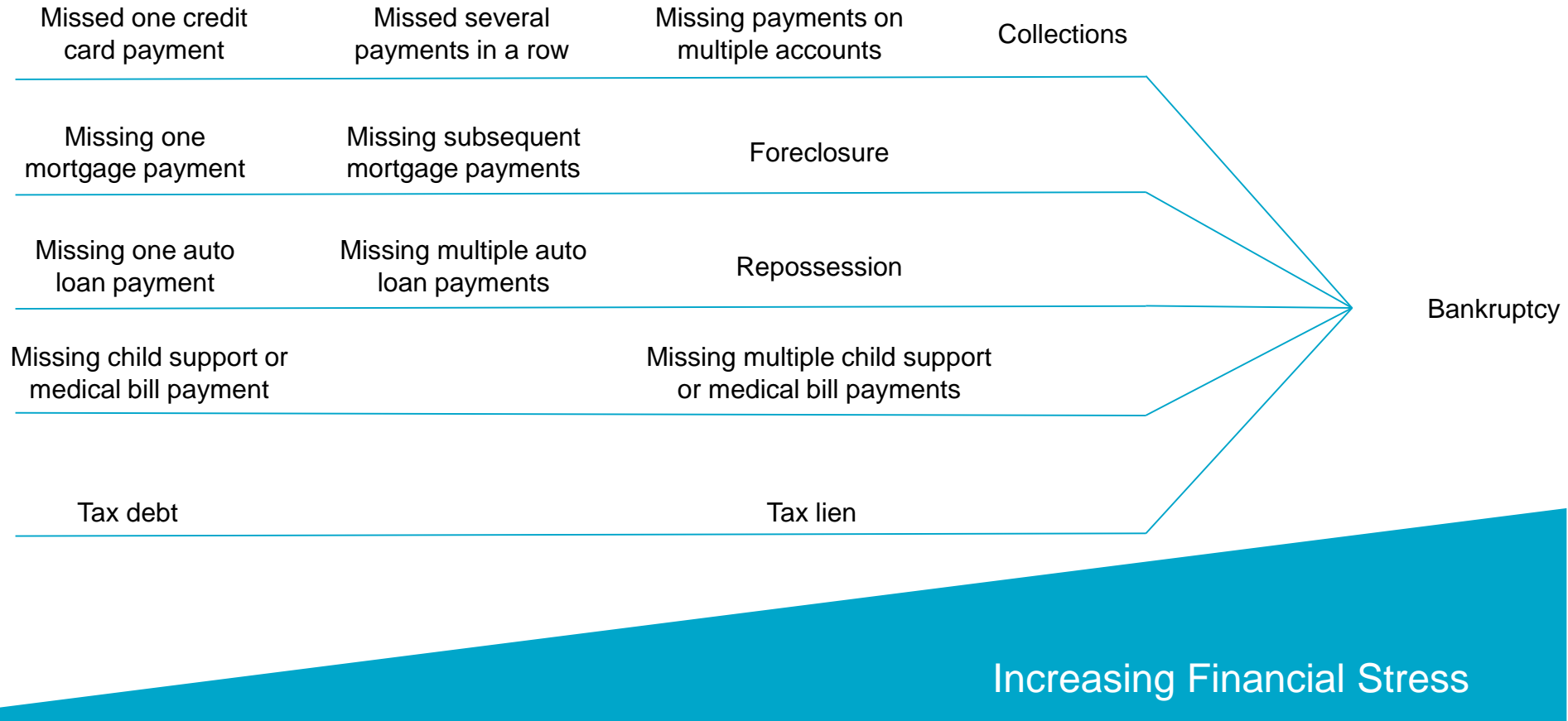


# In 2016, financial considerations were the #1 reason security clearance denials were brought before DOHA





# Financial distress is measurable

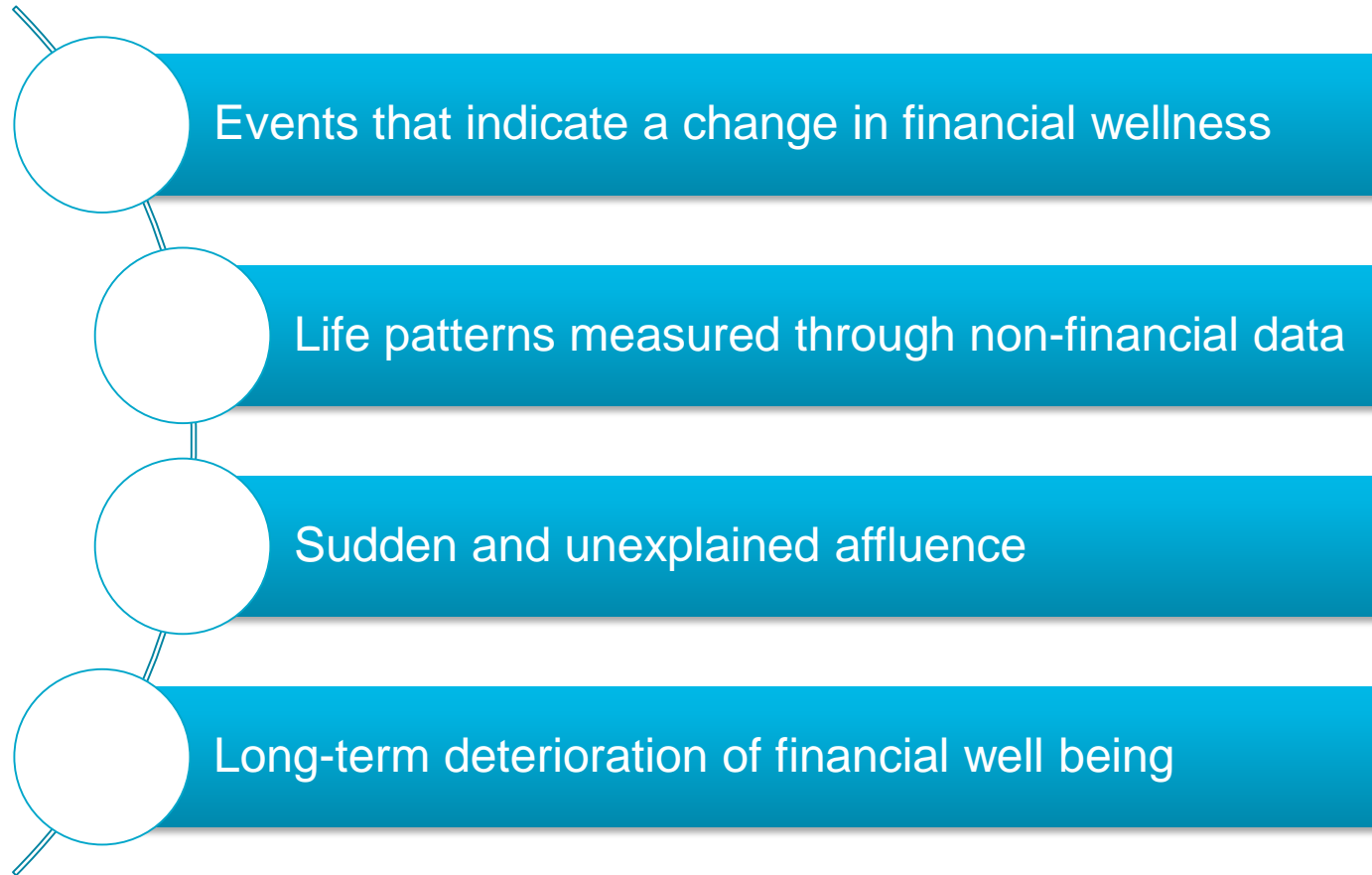




# **Research on External Stressors for Insider Threats**

TransUnion, 2017

# TransUnion's research provides guidance on how to use external data in insider trust programs

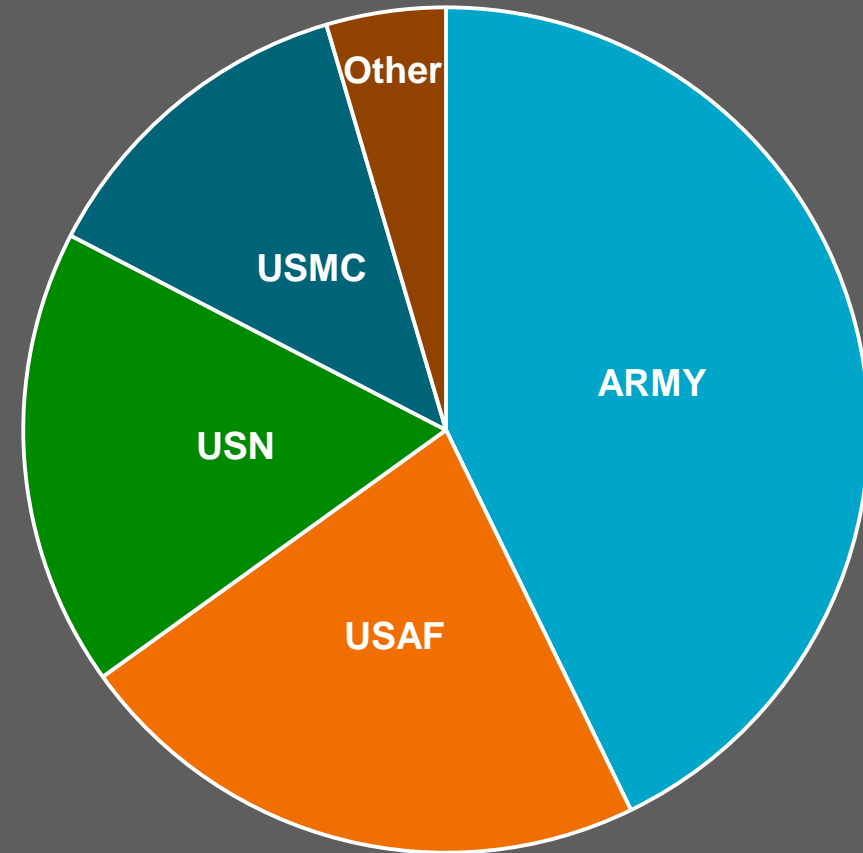


Initial research is divided into three segments\* :

- Armed services
- Intelligence community, homeland security, and justice
- Civilian agencies
- Comparisons to Non-Government

\* Note: Excluded USPS and any entity that could not be uniquely categorized as above

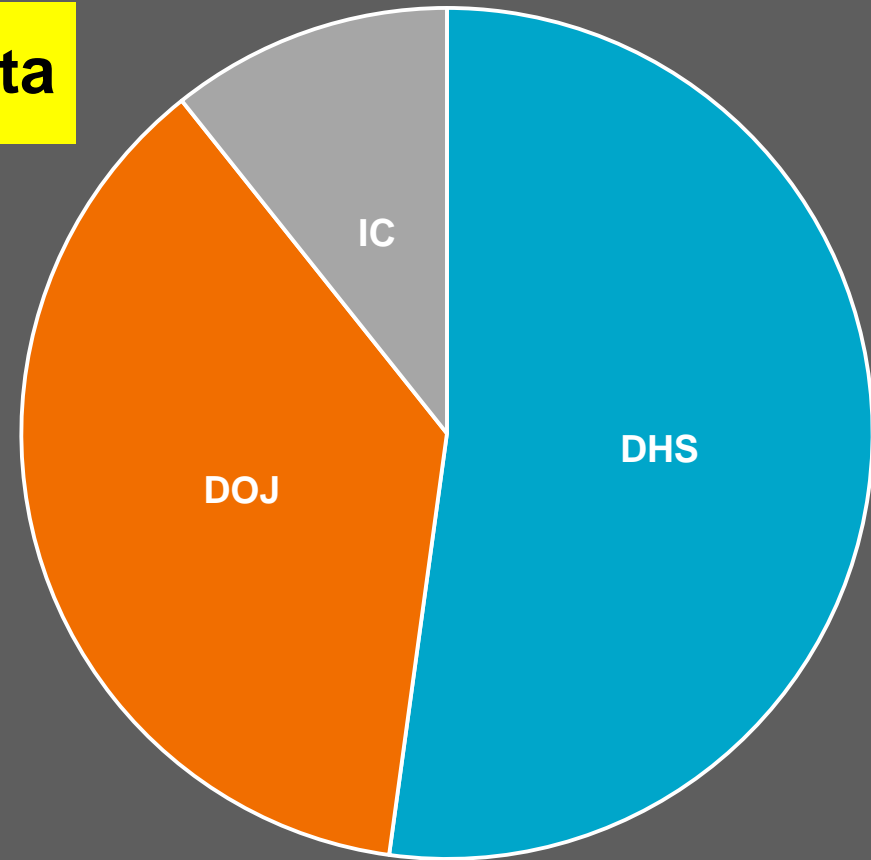
## Armed Services Sample Data



N=483,264

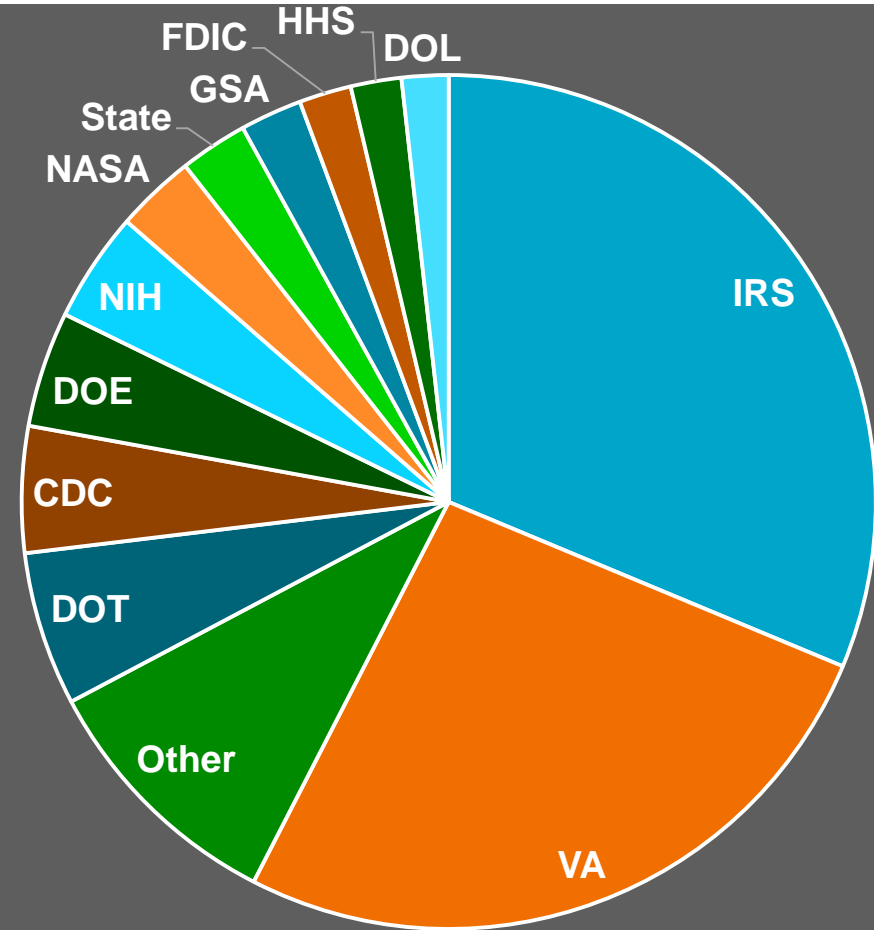


# Justice, Homeland Security, IC Sample Data



N=19,901

# Civilian Agencies Sample Data



N=45,181



# Negative data exists but without context isn't that useful for Insider Threat

Percentage of persons in the given population with negative data

Data Type	Justice, Homeland, IC	Armed Services	Civilian Agencies	How to use in your population ...
Delinquency	54%	48%	61%	~1 in 2 persons
Medical Collection	17%	9%	25%	~1 in 5 persons
Derogatory data	35%	32%	47%	~1 in 3 persons
Lien or Judgement	7%	3%	15%	~1 in 12 persons
Bankruptcy	7%	2%	10%	~1 in 15 persons

97% of derogatory data is a collection or “charge off” the rest are foreclosures and repossessions



# Even severe negative data still lacks context for Insider Threat

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Bankruptcy is an active choice to relieve financial distress. We want to identify and intervene before the person is faced with this choice.



# Sudden changes to a baseline give context and are more useful for insider threat programs

What percentage of our population would have passed a threshold in Q4 of 2016?

Triggered Event	Justice, Homeland, IC	Armed Services	Civilian Agencies	How to use in your population ...
Increase in revolving debt balance (>\$15k)	0.9%	0.3%	0.8%	~1 in 100 would trigger
New delinquency	14%	12%	18%	~1 in 6 would trigger
% of new delinquencies that are 90 or 120 days past due	65%	78%	70%	3 out of 4 triggers would be severe delinquency



# Severe negative data in context is useful and indicative of immediate financial distress

What percentage of our population would have passed a threshold in Q4 of 2016?

Triggered Event	Justice, Homeland, IC	Armed Services	Civilian Agencies
New derogatory information	12%	13%	19%
New Lien, judgement or a bankruptcy filed or discharged	1 out of 200	1 out of 700	1 out of 200
Bankruptcy dismissed*	1 out of 2500	1 out of 7000	1 out of 1200

\*Note: Dismissed bankruptcy means someone filed but was denied bankruptcy protection by a judge



Everything we've talked about so far still has a big context problem

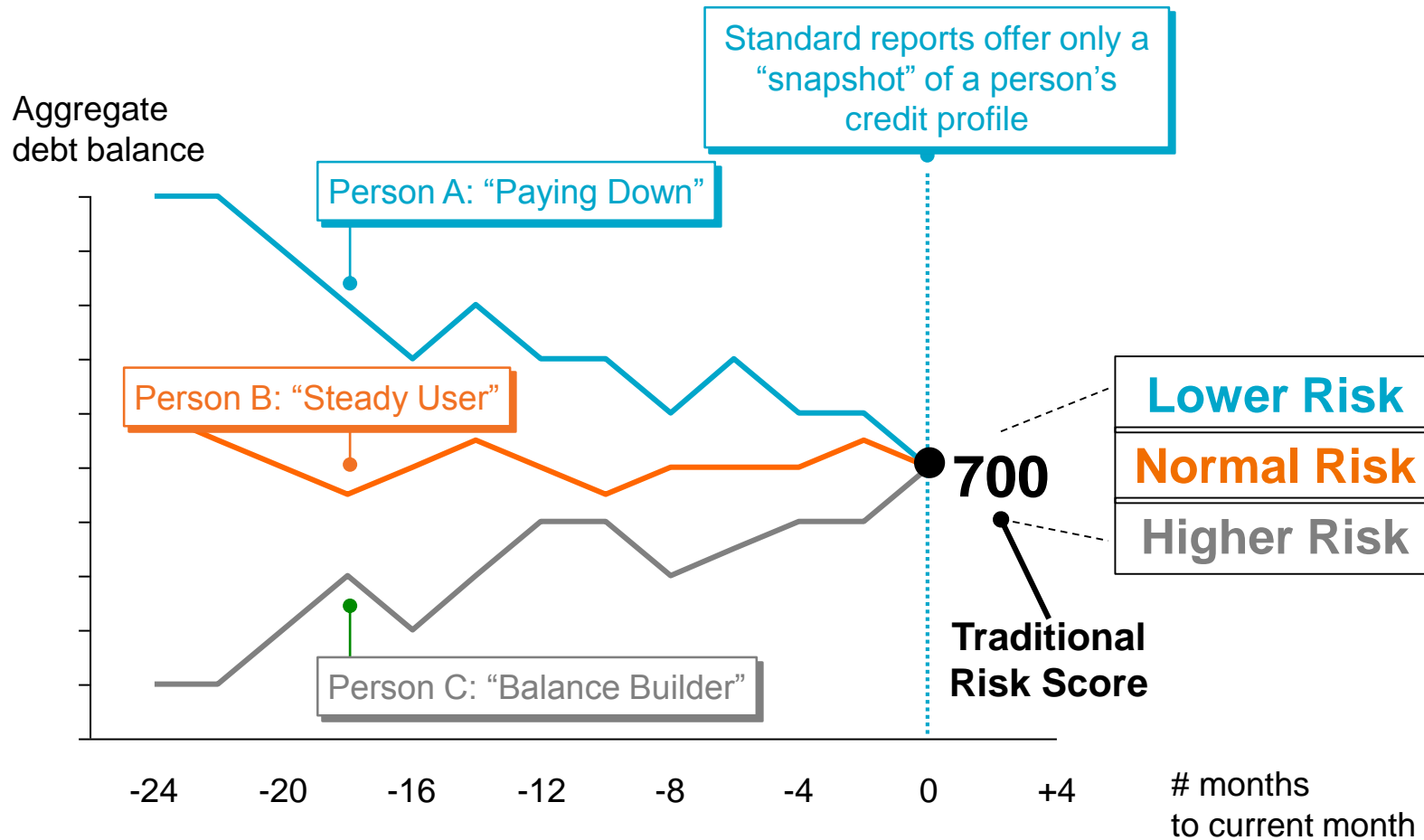


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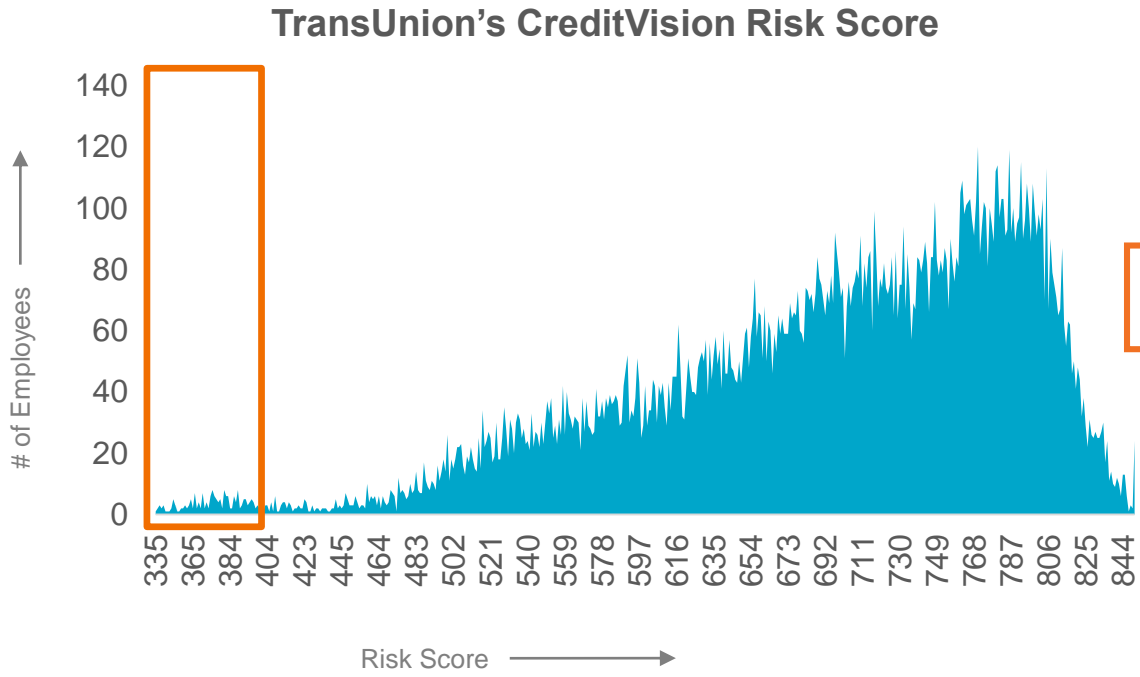




# Knowing financial trajectory using trended data adds better context and is a better trust indicator

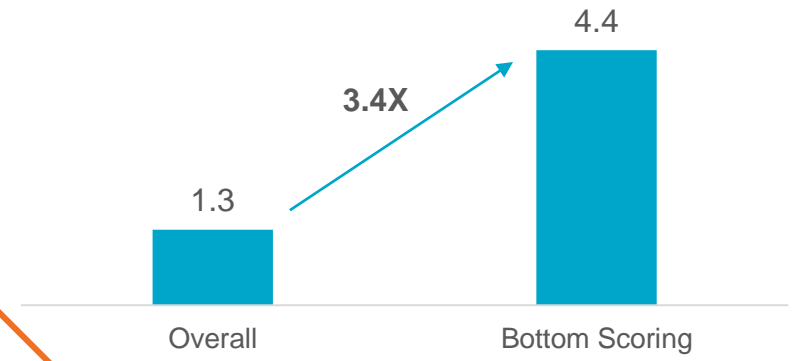


# CreditVision Account Monitoring score shows the risk of something happening with an existing account

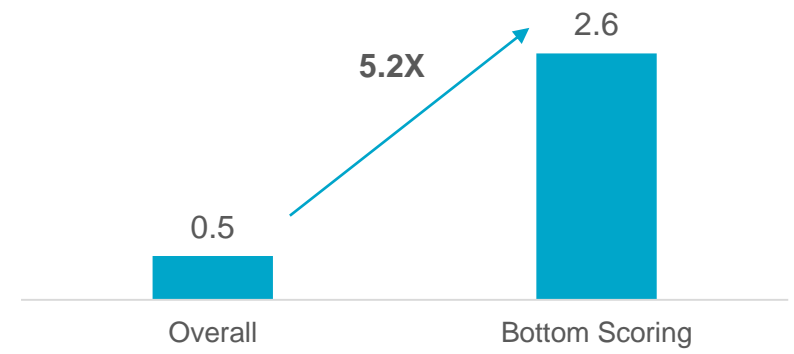


What is going on?

Number of Accounts 30-day Past Due or Worse



Number of Charged-off Accounts

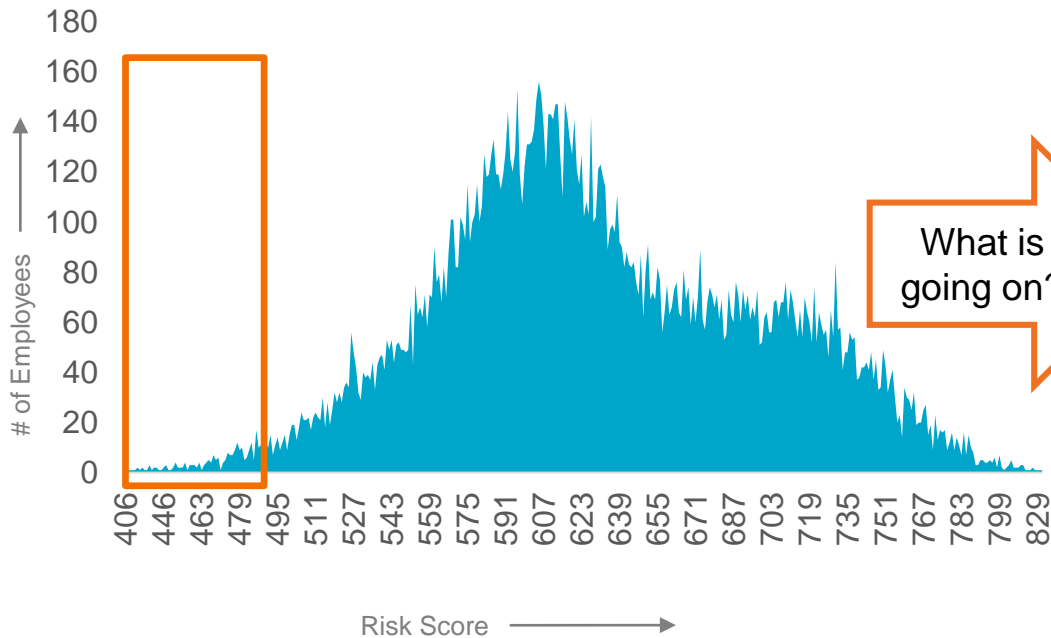


Note: This is the Justice, Homeland, and IC population. However the patterns are similar with the other population groups



# CreditVision Bankruptcy score predicts the likelihood of someone seeking bankruptcy protection within the next two years

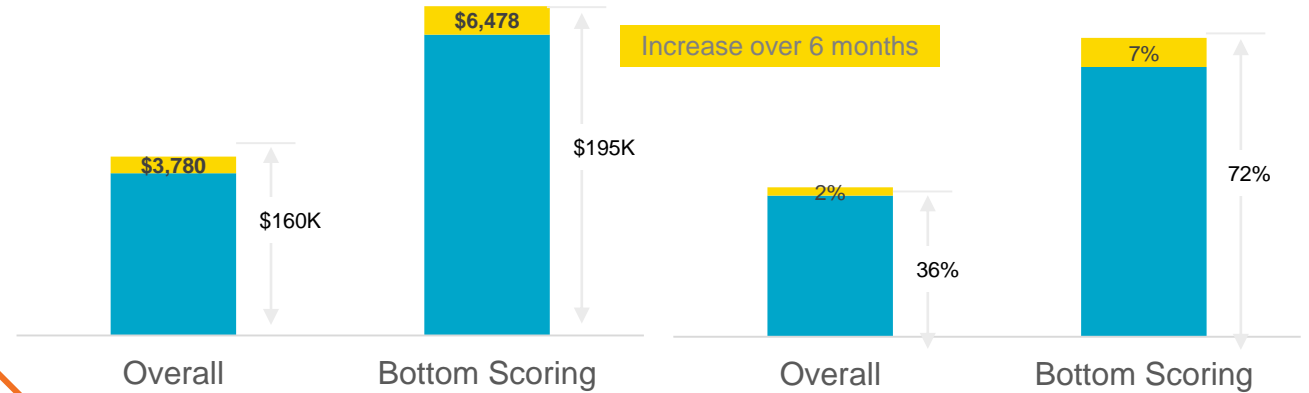
### TransUnion's CreditVision Bankruptcy Score



Note: This is the Justice, Homeland, and IC population. However the patterns are similar with the other population groups

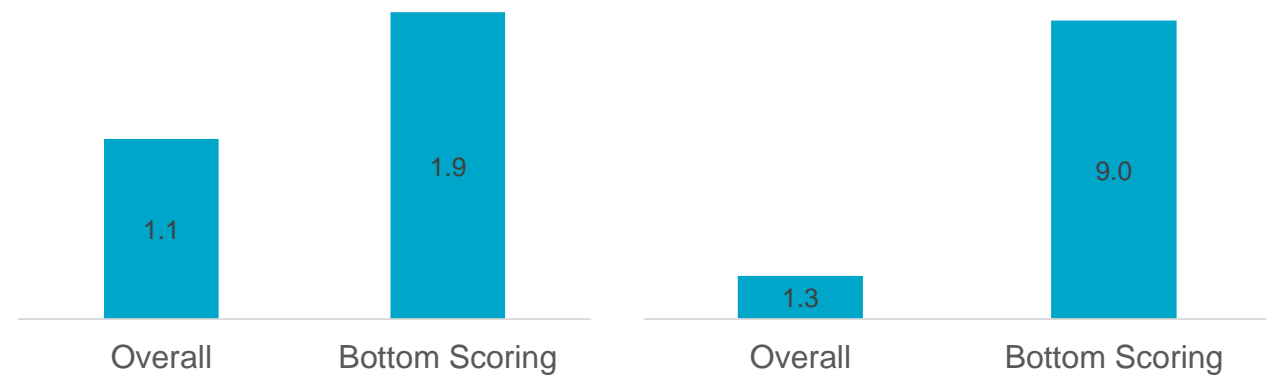
### Overall Debt

### Revolving Credit Utilization



### New Credit Inquiries in 6 Months

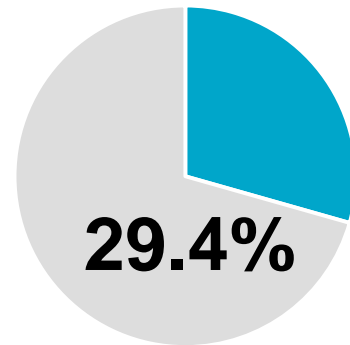
### Number of Accounts 30-day Past Due or Worse



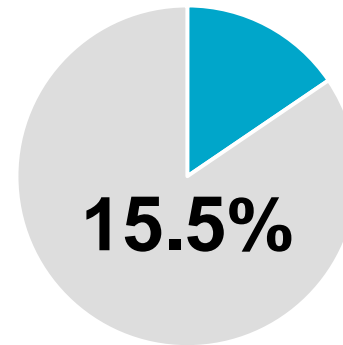


# TransUnion's model for financial distress is FCRA compliant and can be used in Insider Threat programs

- Uses standard attributes and CreditVision algorithms based on trended data
- Financial Distress score beat VantageScore 3.0 as well as CreditVision Scores (New Account, Account Management, Bankruptcy)



At risk of financial distress in the next year  
(probability 1 in 4)



Severely at risk of financial distress in the next year  
(probability 2 in 3)

# Preliminary research into public records

- We have found
  - 26.6% are a hit on the criminal and violations database
  - 1% have a violation reported within the last year
  - 11% have a violation reported within the last seven years
  - 15% have a potentially serious violation or criminal charge ever
- Early conclusions: More difficult to string together alternative data into a signal for increased insider risk than it is for financial stress
  - Data quality and availability is an issue
  - Patterns of behavior are harder

# Other Observations: Synthetic Risk

About 1.5% represented significant synthetic identity risk within “Justice, Homeland, IC” and “Civilian”

7.5% represented significant synthetic identity risk within “Armed Services”

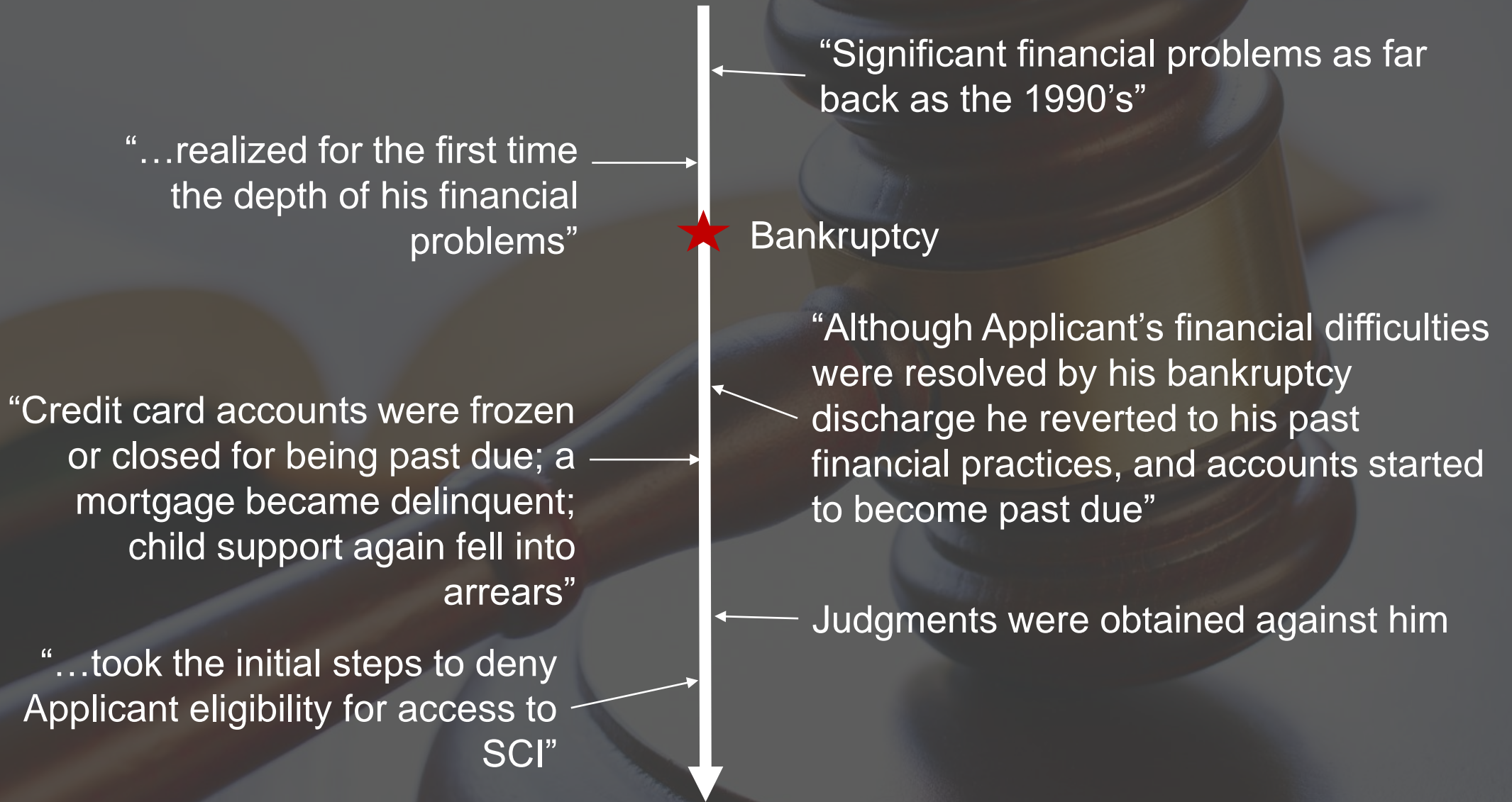
Of those confidently synthetic ..

- Most had a high credit score

- A smaller number with low credit score

- and very small number likely going bankruptcy

# Real DOHA case demonstrates how poor judgement can lead someone to financial distress

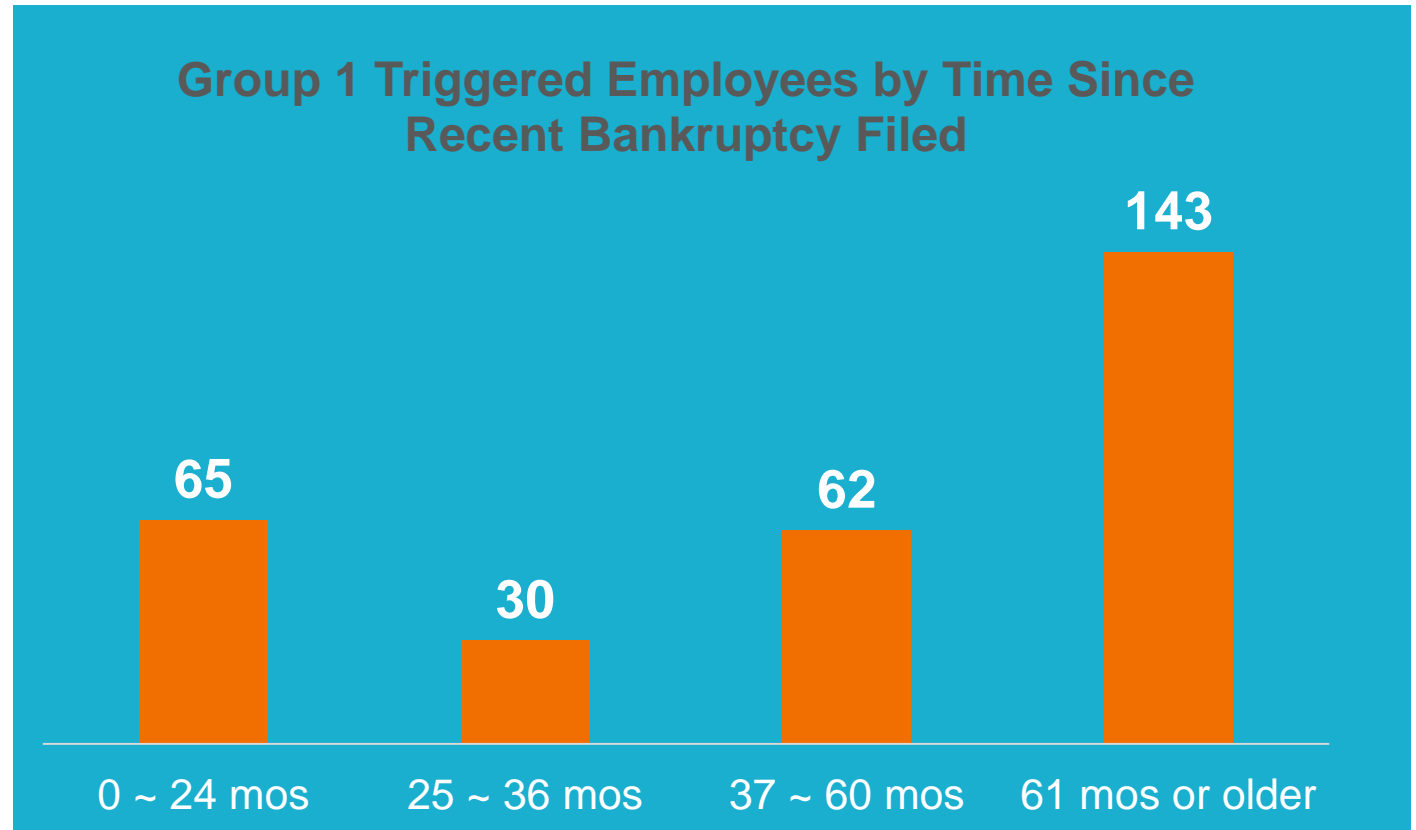




# Instances of financial irresponsibility are measureable and occurring

How many people had at least one of the following occur in Q4, 2016 after previously filing for bankruptcy?

1. New Delinquency
2. New Derogatory
3. New Tax Lien or Judgement
4. New Bankruptcy
5. Significant revolving debt increase





# Closing Thoughts



An Insider Trust program should combine internal data with external data for a complete assessment



Financial stress is one leading indicator of insider risk and easiest to use



Unexplained or sudden affluence is difficult to see as an indicator of illicit behavior



Risk sorting should use long-range scoring from trended data and current triggered events



# Questions?

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