



# Think Like a Criminal: What Goes Wrong When Embezzlement Happens

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CPA/CFF, CFE, CVA

**BKD**

# Introduction



**Bryan Callahan, CPA/CFF, CVA, CFE**  
**Partner, Forensics & Valuation Services**

# AGENDA

- **Recent Trends in Fraud –  
2018 Report to the Nations**
- **Fraud “War Stories”**
- **Ways to Mitigate the Risk**

# REPORT TO THE NATIONS

2018 GLOBAL STUDY ON OCCUPATIONAL FRAUD AND ABUSE



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**2,690**

real cases of occupational fraud

from

**125** countries

in

**23** industry categories

**\$7 BILLION+**  
IN TOTAL LOSSES

**\$130,000**  
MEDIAN LOSS PER CASE

**22%**  
OF CASES CAUSED  
LOSSES OF  
**\$1 MILLION+**



Median duration  
of a fraud scheme

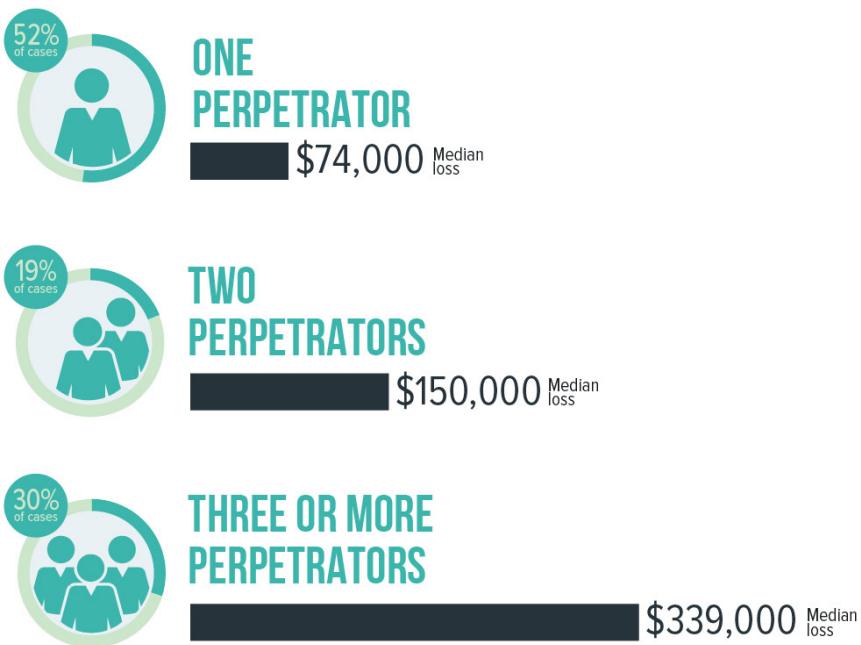


**16**  
MONTHS

**CORRUPTION**

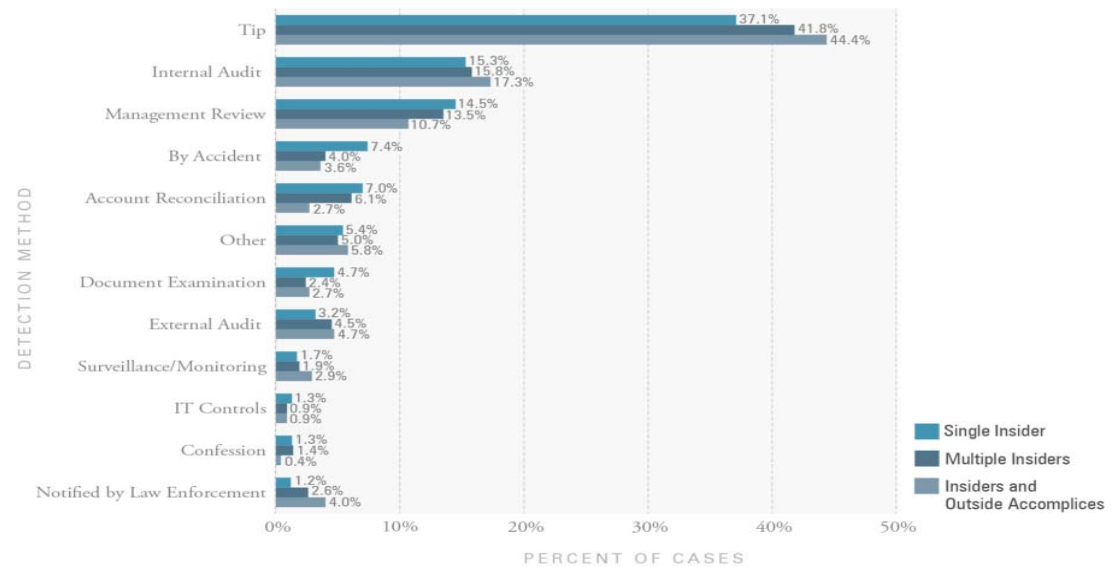
was the most common scheme  
in every global region

FIG. 35 How does the number of perpetrators in a scheme relate to occupational fraud?



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Figure 91: Detection Method by Perpetrators' Relationship to Victim



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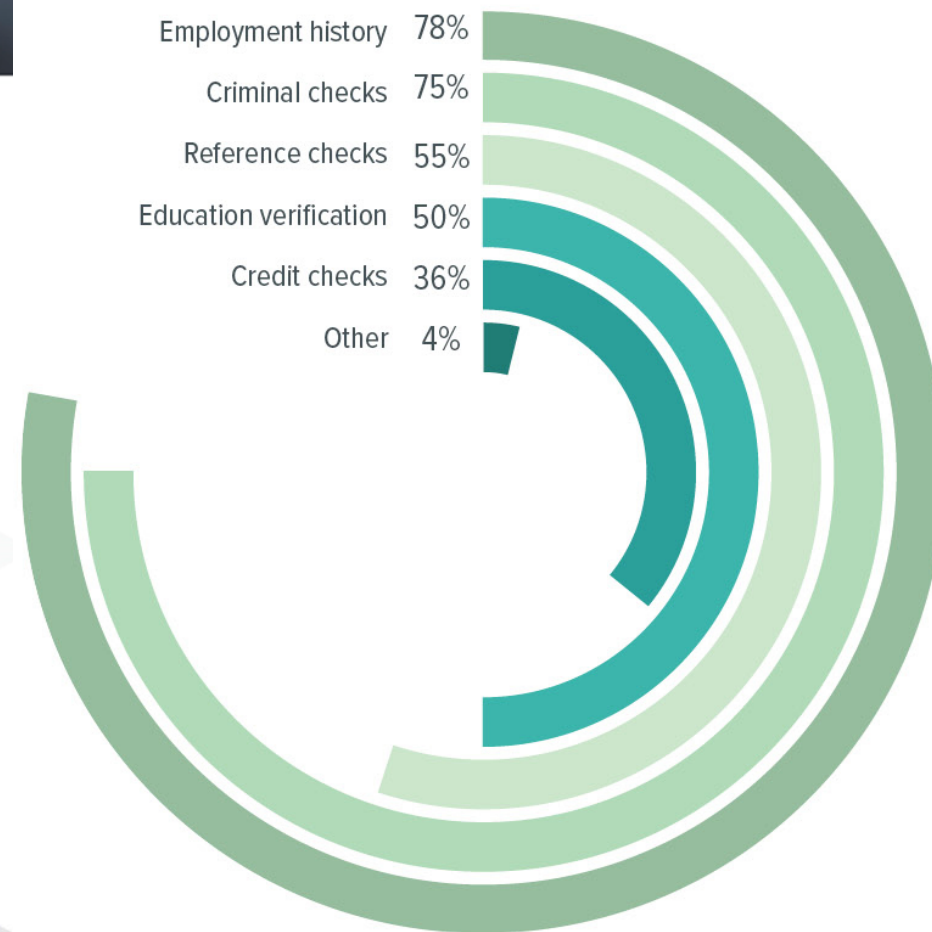
FIG. 36 Do perpetrators tend to have prior fraud convictions?



- Never charged or convicted (89%)
- Charged but not convicted (6%)
- Had prior convictions (4%)
- Other (1%)

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**FIG. 21 What types of background checks were run on the perpetrator prior to hiring?**





IN  
**85%**  
OF CASES

FRAUDSTERS DISPLAYED AT LEAST  
ONE BEHAVIORAL RED FLAG

AND IN

**50%**  
OF CASES

THEY EXHIBITED  
MULTIPLE RED FLAGS

These  
**6 BEHAVIORAL  
RED FLAGS**

have been the most common in every one of our studies dating back to 2008, with a remarkably consistent distribution

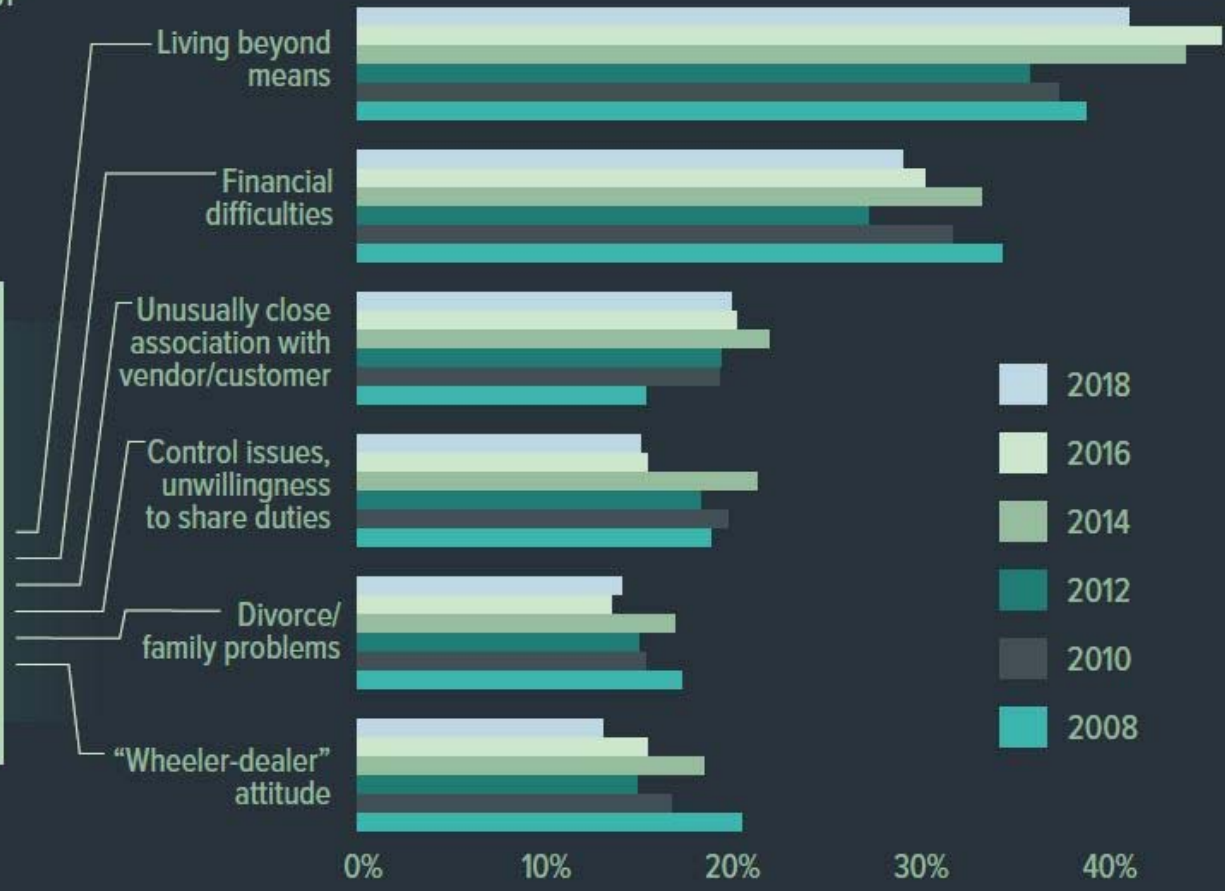
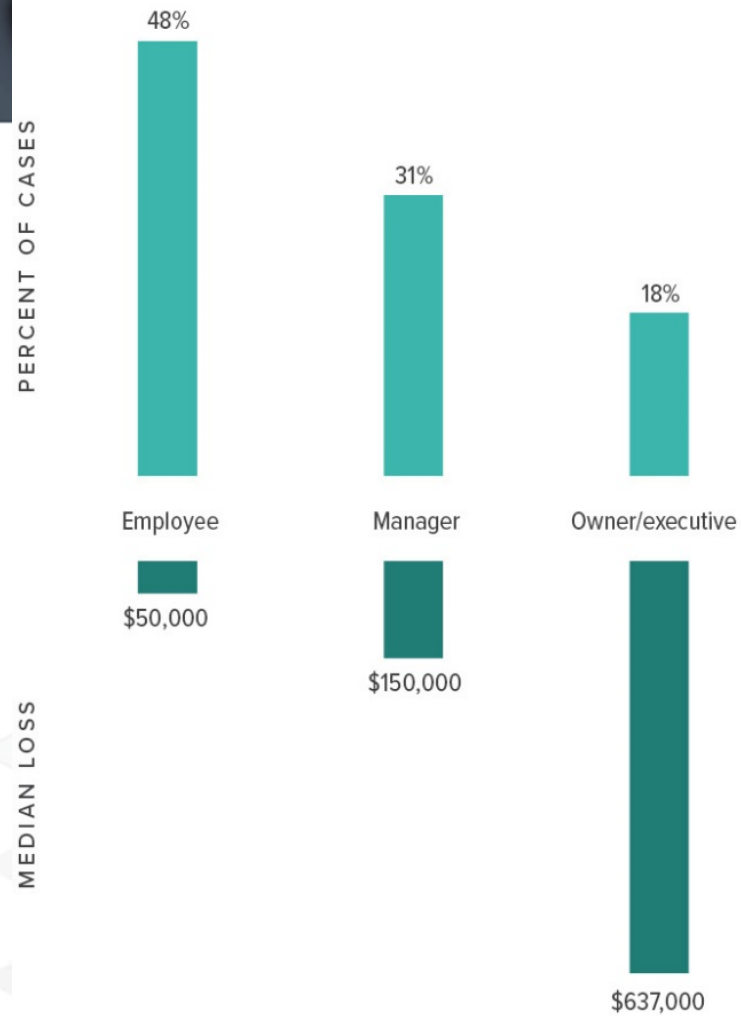


FIG. 88 How does the perpetrator's level of authority relate to occupational fraud in the United States?



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FIG. 30 How does the perpetrator's gender relate to occupational fraud?

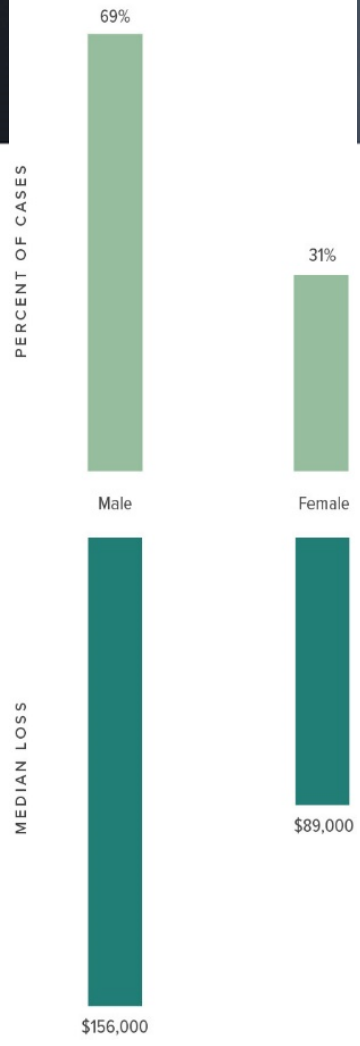


FIG. 32 How does gender distribution and median loss vary based on the perpetrator's level of authority?

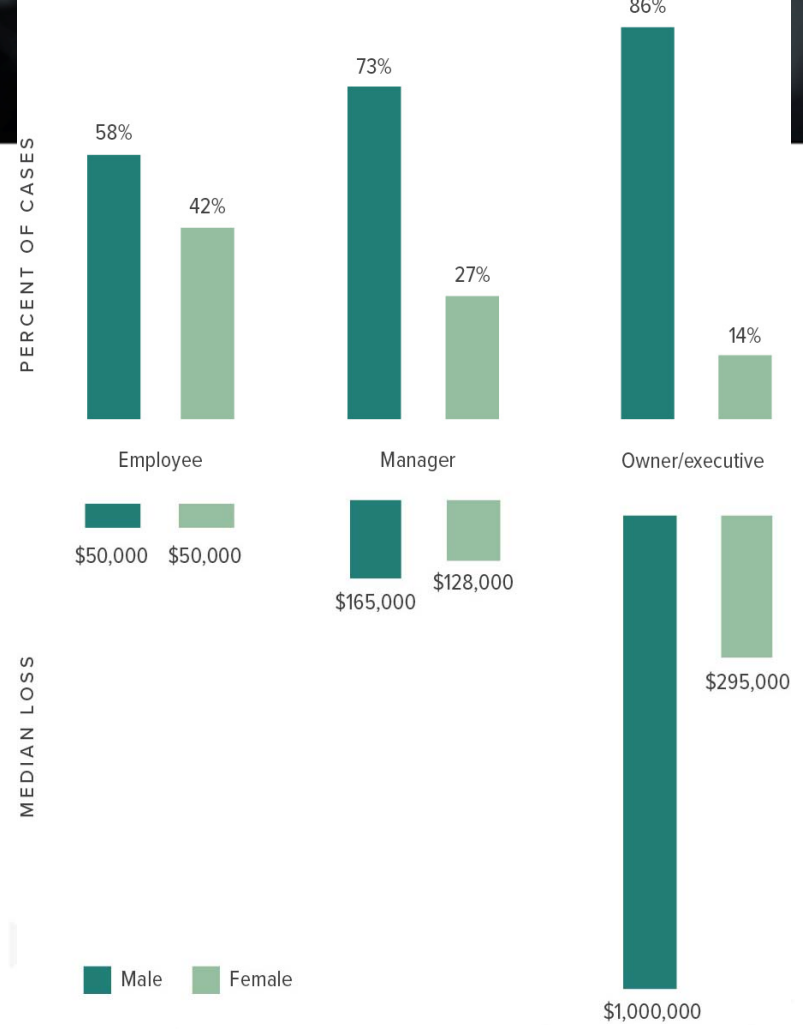


FIG. 29 What are the most common occupational fraud schemes in high-risk departments?

INDUSTRY	Cases	Billing	Cash larceny	Cash on hand	Check and payment tampering	Corruption	Expense reimbursements	Financial statement fraud	Noncash	Payroll	Register disbursements	Skimming
Accounting	290	29%	14%	17%	30%	23%	12%	13%	7%	14%	2%	19%
Operations	266	15%	8%	15%	8%	36%	11%	4%	20%	5%	2%	11%
Executive/upper management	223	35%	14%	16%	15%	62%	29%	30%	20%	12%	3%	9%
Sales	216	10%	12%	12%	6%	34%	13%	6%	25%	2%	5%	14%
Customer service	155	5%	16%	31%	8%	19%	4%	1%	15%	3%	5%	14%
Administrative support	147	33%	7%	21%	14%	26%	22%	8%	19%	13%	3%	14%
Finance	110	17%	15%	21%	16%	37%	13%	16%	15%	6%	2%	10%
Purchasing	94	18%	5%	6%	5%	77%	10%	3%	31%	3%	2%	4%



LESS RISK

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MORE RISK



FIG. 26 How does the perpetrator's tenure relate to occupational fraud?

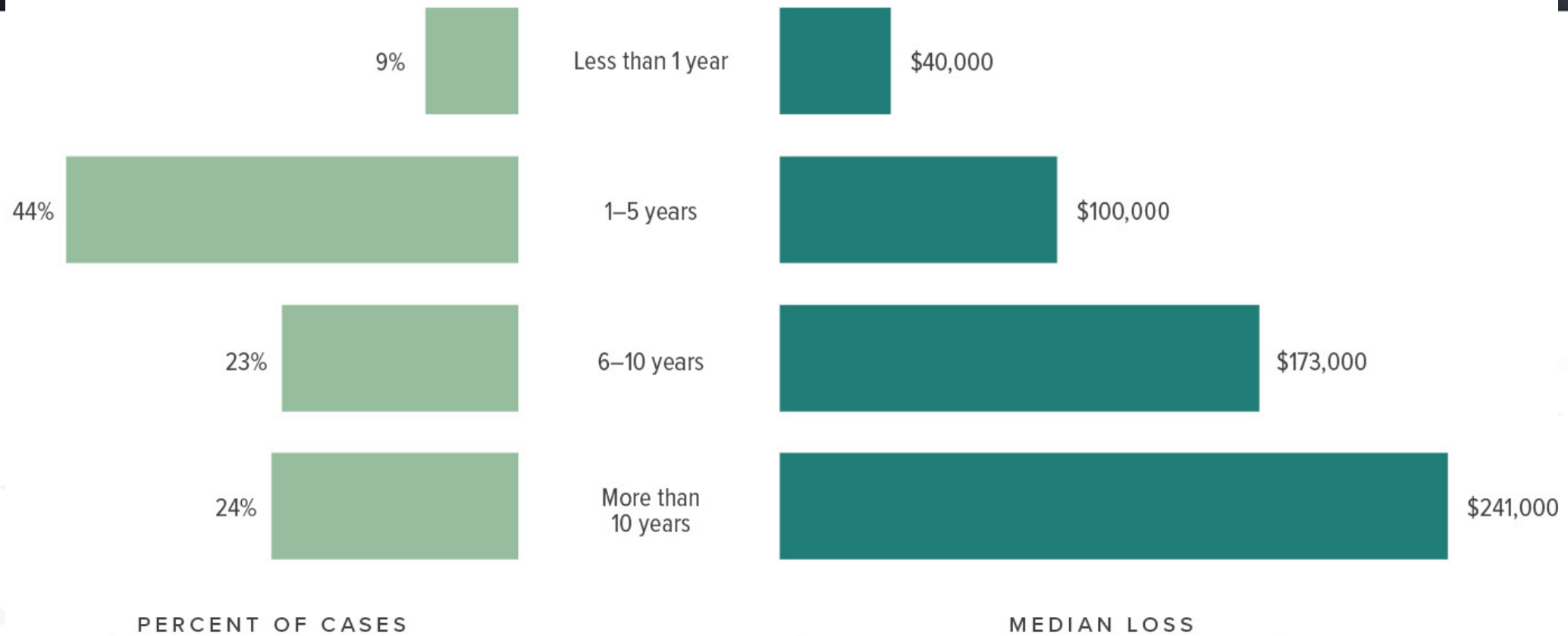
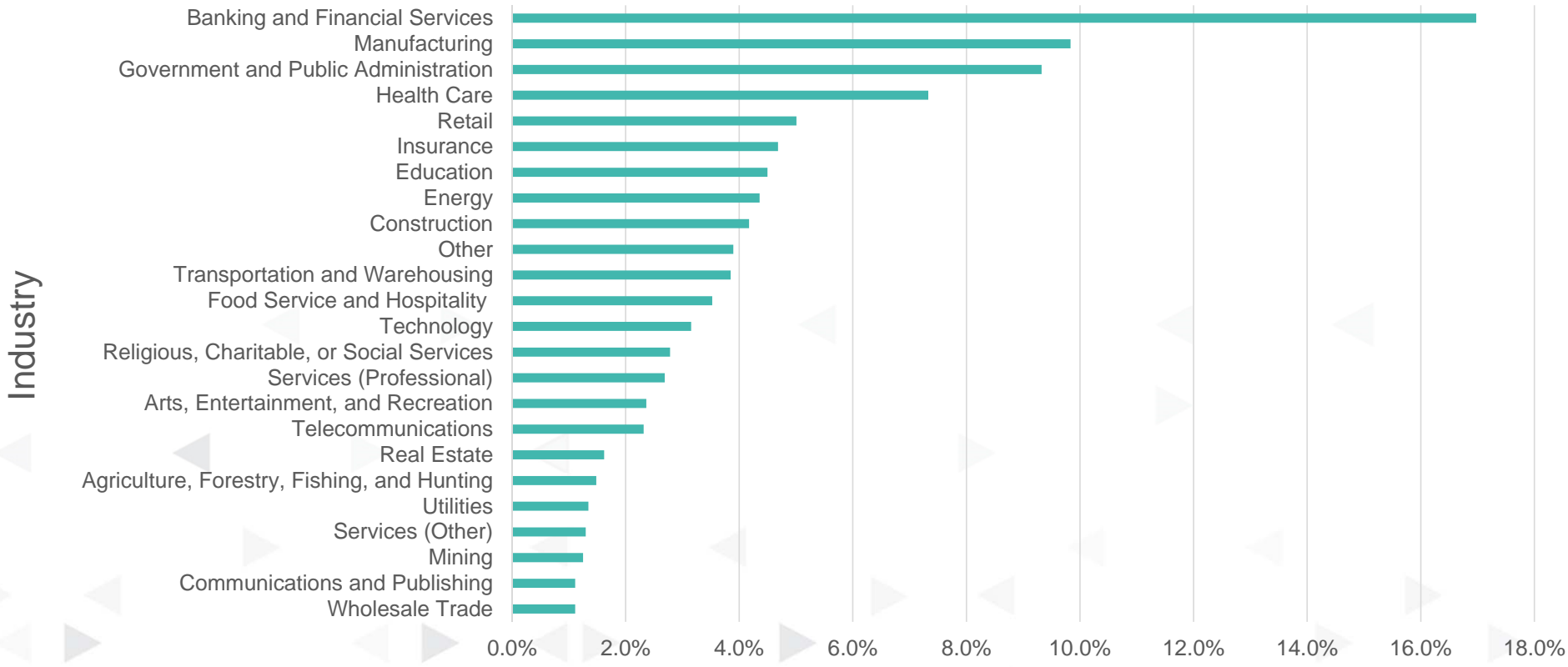


Fig. 15 How does occupational fraud affect organization in different industries?



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FIG. 16 What are the most common occupational fraud schemes in various industries?

INDUSTRY	Cases	Billing	Cash larceny	Cash on hand	Check and payment tampering	Corruption	Expense reimbursements	Financial statement fraud	Noncash	Payroll	Register disbursements	Skimming
Banking and financial services	338	11%	14%	23%	12%	36%	7%	8%	11%	2%	3%	9%
Manufacturing	201	27%	8%	15%	12%	51%	18%	10%	28%	5%	3%	7%
Government and public administration	184	15%	11%	11%	9%	50%	11%	5%	22%	7%	2%	11%
Health care	149	26%	7%	13%	13%	36%	16%	11%	19%	17%	1%	12%
Retail	104	20%	10%	19%	9%	28%	8%	12%	34%	5%	13%	13%
Education	96	23%	19%	19%	6%	38%	18%	6%	19%	6%	0%	14%
Insurance	87	20%	9%	3%	18%	45%	8%	7%	11%	3%	1%	11%
Energy	86	20%	2%	10%	12%	53%	10%	3%	27%	7%	2%	10%
Construction	83	37%	12%	8%	19%	42%	23%	16%	23%	14%	1%	13%
Transportation and warehousing	79	25%	8%	8%	9%	46%	15%	8%	28%	3%	3%	13%
Food service and hospitality	75	17%	16%	20%	11%	29%	12%	12%	24%	7%	0%	23%
Technology	62	26%	5%	10%	8%	42%	21%	16%	32%	8%	0%	6%
Religious, charitable, or social services	58	40%	9%	22%	19%	34%	29%	10%	19%	22%	3%	17%
Services (professional)	54	26%	17%	15%	26%	17%	30%	13%	13%	15%	0%	15%
Arts, entertainment, and recreation	50	14%	20%	36%	6%	32%	12%	8%	18%	4%	8%	28%



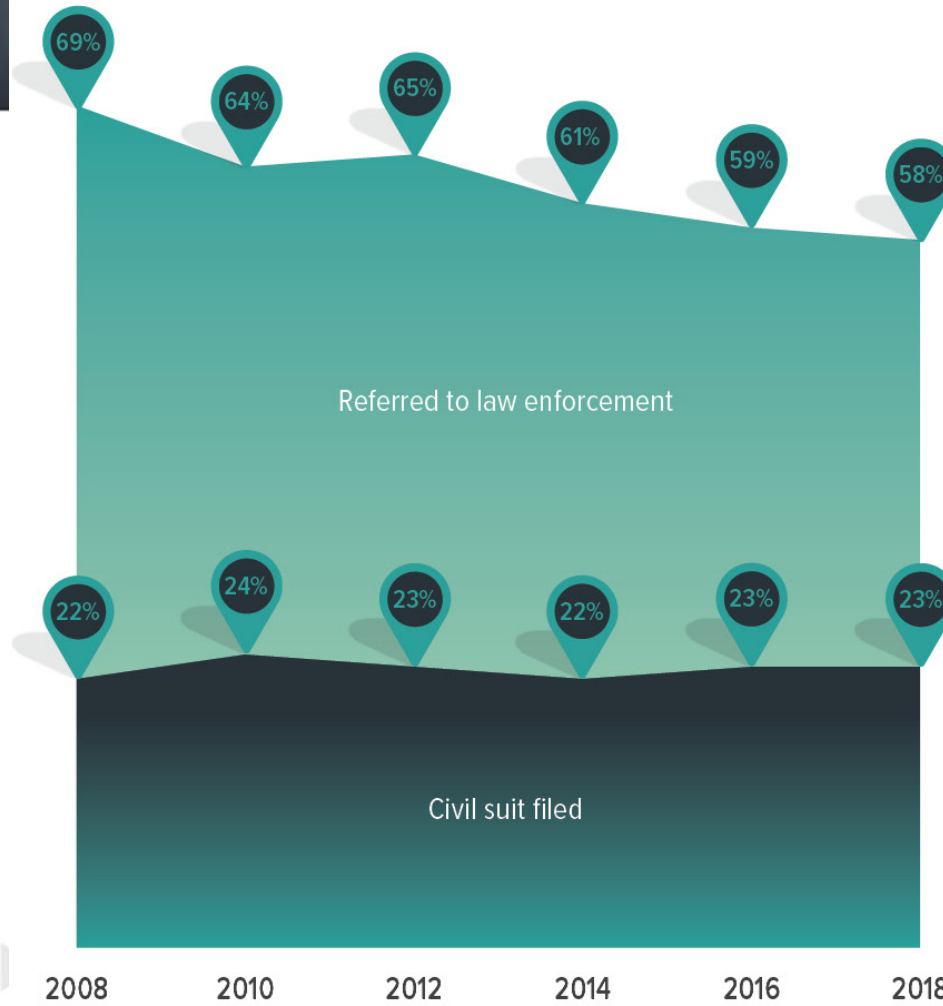
MORE RISK

LESS RISK

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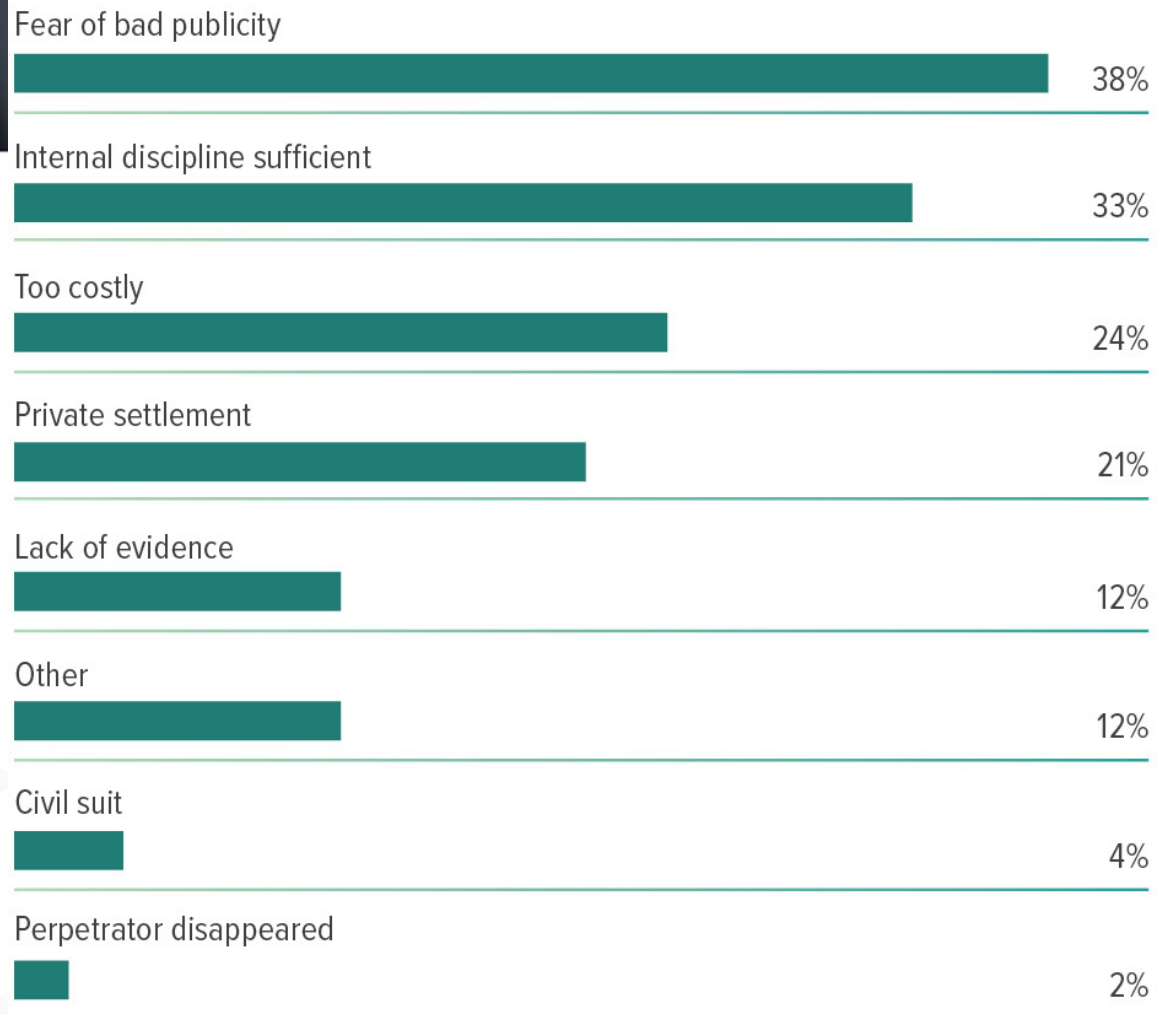


FIG. 43 How often is litigation pursued against occupational fraud perpetrators?



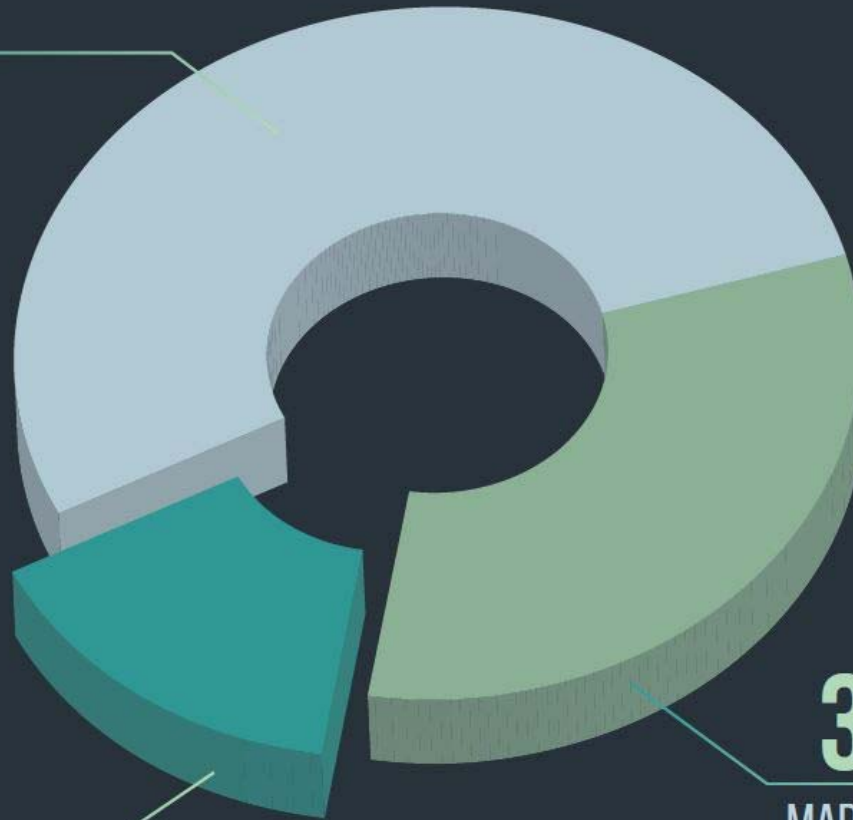
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FIG. 46 Why do organizations decide not to refer cases to law enforcement?



**53%**

RECOVERED  
NOTHING



**15%**

RECOVERED  
ALL LOSSES

**32%**

MADE A PARTIAL  
RECOVERY

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# Profile of Fraud Perpetrator

- No prior criminal history (5%)
- Well liked by co-workers
- Likes to give gifts/compulsive shopper
- Gambling problems not unusual
- Long-term employee
- Rationalizes, starts small or “borrows”
- Lifestyle clues

# Which One Looks Suspicious?



**\$3 million**



**\$4.6 million**



**\$1.0 million**



**\$31 million**



**\$900,000**



**\$1.1 million**



# Real Example #1

- Acted alone
- Did not have credit card in his/her name
- Used his/her supervisor's card (memorized #)
- Long-term employee
- Red flags noted
- Amount

## Real Example #2

- President
- Fictitious loan scheme
- How it was discovered
- What happened next

Loan #	Date Open	Amount	Amount Remaining	In Name Of	Paid off by loan	Cash Proceeds	Comments
19292	4/1/2010	\$ 177,000.00	\$ -		19900	\$ 59,256.54	Cash proceeds are net of \$2,743.46 interest payment. Remaining proceeds paid off previous loans.
19326	4/20/2010	73,750.00	-		19665	(8,296.89)	Proceeds paid off previous loan. Negative cash proceeds due to payment to cover interest.
19336	4/26/2010	41,000.00	-		19602	(4,220.76)	Proceeds paid off previous loan. Negative cash proceeds due to payment to cover interest.
19372	6/1/2010	48,500.00	-		19665	17,180.27	Cash proceeds are net of \$2,819.73 interest payment. Cashier check for \$10,000 in name of Cathy [REDACTED] subsequently deposited into acc [REDACTED] account of [REDACTED]. Remaining proceeds paid off previous loans.
19431	7/23/2010	82,500.00	-		19900	82,500.00	Cash proceeds include \$15,000 cashier check to [REDACTED] State Bank.
19532	8/26/2010	168,400.00	-		21699	(13,372.82)	Proceeds paid off previous loan. Negative cash proceeds due to payment to cover interest.
19539	10/22/2010	118,000.00	92,798.54			49,280.13	Cash proceeds are net of \$719.87 interest payment. Remaining proceeds paid off previous loan.
19602	12/28/2010	112,500.00	-		20277	24,706.48	Cash proceeds are net of \$7,293.52 interest payment. Remaining proceeds paid off previous loan.
19665	3/1/2011	189,250.00	171,067.41			58,728.77	Cash proceeds are net of \$8,271.23 interest payment. Remaining proceeds paid off previous loans.
19578	5/27/2011	62,000.00	46,466.58			62,000.00	All proceeds in cash to savings account.

21408	11/10/2014	45,000.00	45,000.00
21503	1/21/2015	70,000.00	70,000.00
21581	3/17/2015	62,000.00	62,000.00
21694	5/28/2015	260,000.00	260,000.00
21699	5/29/2015	410,000.00	410,000.00
21700	5/29/2015	610,575.54	610,575.54
21754	5/29/2015	535,000.00	535,000.00
21755	6/1/2015	370,000.00	370,000.00
21729	6/22/2015	50,000.00	50,000.00
21825	8/20/2015	85,000.00	45,000.00

\$ 6,706,150.52   \$ 3,410,223.30

45,000.00 All proceeds in cash to savings account  
70,000.00 All proceeds in cash to savings accounts and joint checking  
62,000.00 All proceeds in cash to savings account  
260,000.00 All proceeds in cash to savings account  
(41,670.15) Proceeds paid off previous loans. Negative cash proceeds due to payment to cover interest.  
(53,440.96) Proceeds paid off previous loans. Negative cash proceeds due to payment to cover interest.  
- Proceeds paid off previous loans.  
- Proceeds paid off previous loans.  
50,000.00 All proceeds in cash to savings account  
45,000.00 Proceeds in cashier check to [REDACTED]s, which is entity owned by Mark [REDACTED]

\$ 2,725,539.47 - Gross Cash Proceeds 2010 - 2015

Loan Date	Borrower Name	Loan Amount	Loan Number	Modifications/Extensions	Charge Off Date	Principal Amount	Interest Amount	Total Charge Off
10/22/2010		118,000.00		13 times 'date next pay due' file maintained	9/30/2015	\$ 92,798.54	\$ 2,133.35	\$ 94,931.89
3/1/2011		189,250.00		6 times 'date next pay due' file maintained	9/30/2015	171,067.41	3,427.91	174,495.32
5/27/2011		62,000.00		4 times 'date next pay due' file maintained	9/30/2015	46,466.58	957.47	47,424.05
9/23/2011		354,321.00		9 times 'date next pay due' file maintained	10/2/2015	306,755.50	6,685.59	313,441.09
8/13/2012		185,000.00		5 times 'date next pay due' file maintained	9/30/2015	175,559.73	4,514.06	180,073.79
8/8/2014		70,000.00		2 times 'date next pay due' file maintained	9/30/2015	70,000.00	1,201.99	71,201.99
10/14/2014		90,000.00		N/A	9/30/2015	90,000.00	1,502.88	91,502.88
11/10/2014		45,000.00		N/A	9/30/2015	45,000.00	751.43	45,751.43
1/21/2015		130,000.00		N/A		70,000.00	4,406.64	74,406.64
3/17/2015		62,000.00		N/A		62,000.00	2,803.16	64,803.16
5/28/2015		260,000.00		N/A	9/30/2015	260,000.00	4,505.48	264,505.48
5/29/2015		535,000.00		N/A	9/30/2015	535,000.00	9,186.61	544,186.61
5/29/2015		410,000.00		N/A	9/30/2015	410,000.00	7,040.20	417,040.20
5/29/2015		610,575.00		N/A	9/30/2015	610,575.54	11,396.02	621,971.56
6/1/2015		370,000.00		N/A	9/30/2015	370,000.00	6,178.50	376,178.50
6/22/2015		50,000.00		N/A	10/2/2015	50,000.00	669.52	50,669.52
8/20/2015		85,000.00		N/A	9/30/2015	45,000.00	177.23	45,177.23

\$ 3,410,223.30 \$ 67,538.04 \$ 3,477,761.34

## Real Example #3

- Top Exec
- Former E&Y employee
- “Hard working, smart, trusted”
- Insider knowledge of contracts/bids
- Other employees notice budget discrepancies
- A little digging reveals big problems
- Contractor connected to him – \$3.0 million





# Filed with Missouri Secretary of State

The undersigned is doing business under the following name, and at the following address:

Business name to be registered: Gateway Technical Solutions, LLC

Business address: 1355 McKinley Ave  Residential Address

*(PO Box may only be used in addition to a physical street address)*

City, State and Zip Code: Saint Louis MO 63119

## Owner Information:

If a business entity is an owner, indicate business name and percentage owned. If all parties are jointly and severally liable, percentage of ownership need not be listed. Please attach a separate page for more than three owners. The parties having an interest in the business, and the percentage they own are:

Name of Owners, Individual or Business Entity	Charter # Required If Business Entity	Street and Number, City and State, Zip Code	If listed, Percentage of ownership must equal 100%
Gateway Technical Solutions, LLC	LC0834218	1355 McKinley Ave Saint Louis, MO 63119	100%

## All owners must affirm by signing below

In Affirmation thereof, the facts stated above are true and correct:

(The undersigned understands that false statements made in this filing are subject to the penalties of a false declaration under Section 575.060 RSMo)

Electronically Signed By: David Neff  Fake David Neff 08/17/2012  
*Authorized Signature* *Printed Name* *Date*

# MISSOURI SECRETARY OF STATE JASON KANDER



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## Filed Documents

Date: 10/23/2013  
(Click above to view filed documents that are available.)

### Business Name History

Name	Name Type
David Neff	Legal

### Fictitious Registration - Domestic - Information

Charter Number: X00834217  
Status: Fictitious Active  
Entity Creation Date: 8/5/2007  
State of Business.: MO  
Expiration Date: 8/5/2017

### Owners

Name: Edward Mueth  
Address: 453 Gray Ave  
Saint Louis MO 63119





# From Google Maps – Large Contractor??





# Movin' On Up – \$1.5 million mansion



# Red Flags Abound

- Contractor had no website
- No one knew the owner (he was fake)
- Simple address check revealed small home
- Phone # connected to a cell (no one answered)
- Executive living beyond means

# A Few Vendor/Subcontractor Verification Tips

- A fake company might be “real” company (registered w/secretary of state)
- Free & easy internet resources – use them
  - Secretary of State websites are great
  - Google Maps/Streetview
  - Hit vendor/subcontractor website
  - Look at principals behind company
- Use caution with fee based searches on internet





# DATA ANALYTICS BASICS

# Definitions

## Big Data

*Information of extreme size, diversity and complexity.*

- Gartner, Inc.

Source: <http://www.gartner.com/technology/topics/big-data.jsp>

## Data Analytics

*...processes and activities designed to obtain and evaluate data to extract **useful information** and **answer strategic questions**...*

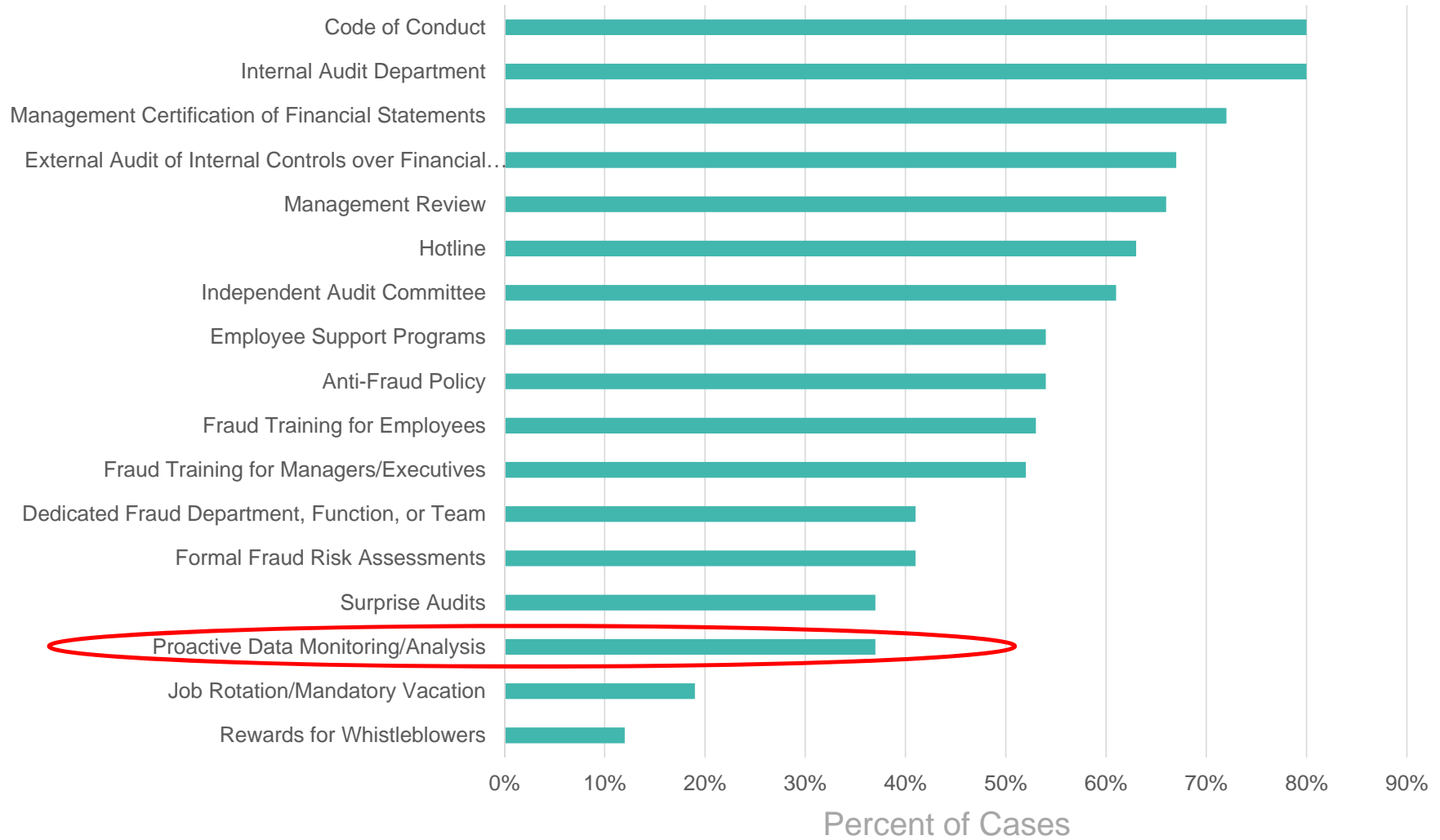
Fig. 18 How does the presence of anti-fraud controls relate to median loss?

Control	Percent of cases	Control in place	Control not in place	Percent reduction
Code of conduct	80%	\$ 110,000	\$250,000	56%
Proactive data monitoring/analysis	37%	\$ 80,000	\$ 165,000	52%
Surprise audits	37%	\$ 75,000	\$ 152,000	51%
External audit of internal controls over financial reporting	67%	\$100,000	\$200,000	50%
Management review	66%	\$100,000	\$200,000	50%
Hotline	63%	\$100,000	\$200,000	50%
Anti-fraud policy	54%	\$100,000	\$ 190,000	47%
Internal audit department	73%	\$108,000	\$200,000	46%
Management certification of financial statements	72%	\$109,000	\$ 192,000	43%
Fraud training for employees	53%	\$100,000	\$ 169,000	41%
Formal fraud risk assessments	41%	\$100,000	\$ 162,000	38%
Employee support programs	54%	\$100,000	\$ 160,000	38%
Fraud training for managers/executives	52%	\$100,000	\$ 153,000	35%
Dedicated fraud department, function, or team	41%	\$100,000	\$ 150,000	33%
External audit of financial statements	80%	\$120,000	\$ 170,000	29%
Job rotation/mandatory vacation	19%	\$100,000	\$ 130,000	23%
Independent audit committee	61%	\$120,000	\$ 150,000	20%
Rewards for whistleblowers	12%	\$ 110,000	\$ 125,000	12%

Fig. 19 How does the presence of anti-fraud controls relate to the duration of fraud?

Control	Percent of cases	Control in place	Control not in place	Percent reduction
Proactive data monitoring/analysis	37%	10 months	24 months	58%
Surprise audits	37%	11 months	24 months	54%
Internal audit department	73%	12 months	24 months	50%
Management certification of financial statements	72%	12 months	24 months	50%
External audit of internal controls over financial reporting	67%	12 months	24 months	50%
Management review	66%	12 months	24 months	50%
Hotline	63%	12 months	24 months	50%
Anti-fraud policy	54%	12 months	24 months	50%
Fraud training for employees	53%	12 months	24 months	50%
Fraud training for managers/executives	52%	12 months	24 months	50%
Formal fraud risk assessments	41%	12 months	24 months	50%
Rewards for whistleblowers	12%	9 months	18 months	50%
Independent audit committee	61%	12 months	23 months	48%
Code of conduct	80%	13 months	24 months	46%
Job rotation/mandatory vacation	19%	10 months	18 months	44%
Dedicated fraud department, function, or team	41%	12 months	20 months	40%
External audit of financial statements	80%	15 months	24 months	38%
Employee support programs	54%	12 months	18 months	33%

Fig. 17 What anti-fraud controls are most common?



# Summary of Categories

Job	Total Transactions	Transaction Count	Categorical Hits	Holiday Transactions	Transactions with Keywords	Transactions at Merchants of Interest	Potential Split Transactions	Transactions on PTO	Round Hundred Dollar Transactions	Weekend Transactions
Sales Representative	1,239,885.17	16,131	6	52	215	178	-	81	21	1,463
Vice President Sales	564,654.06	4,112	6	15	7	62	-	13	4	459
Technical Sales Rep	524,032.93	5,504	6	19	61	34	-	40	2	587
Business Unit Manager	495,998.25	5,001	6	16	10	79	-	12	2	454
Customer Service Rep	270,665.16	3,272	6	13	3	56	-	22	1	300
Executive Vice President	263,505.40	1,724	6	14	7	31	-	2	7	189
Regional Vice President	223,448.47	1,819	6	5	59	11	-	15	2	178
VP Operations	194,824.17	1,433	6	11	1	7	-	5	1	181
Print Production Manager	190,866.42	2,310	6	9	4	19	-	10	2	185
General Manager	156,892.40	1,915	6	5	21	4	-	23	2	215
Plant Manager	101,922.90	1,324	6	2	5	6	-	15	2	141
Production Manager	87,231.55	949	6	1	12	3	-	13	5	72
n/a	406,902.25	3,704	5	10	20	75	-	-	2	316
Sales Division Manager	297,656.65	2,470	5	10	3	31	-	3	-	217
Operations Manager	106,736.03	1,221	5	4	5	20	-	7	-	106
IT Manager	100,892.16	759	5	2	5	29	-	2	-	132
Finance Manager	79,946.48	507	5	1	-	7	-	1	4	39
Chief Financial Officer	77,086.00	317	5	1	15	1	-	1	-	27
CEO & President	72,371.44	433	5	6	5	1	-	1	-	60
Business Development Mgr	64,449.41	803	5	1	3	15	-	-	1	58
Quality Control Manager	50,332.81	634	5	1	-	7	-	5	1	42

# Weekend Purchases

Transaction Date	Transaction Amount	Merchant Name Original	Address	City Name	State Province	Expense Description
7/7/2013	79.08	SHERIDAN NURSERIES EST		MISSISSAUGA	ON	
10/5/2013	28.20	VALUE VILLAGE #2027		MISSISSAUGA	ON	
10/12/2013	56.44	HOMESENSE 013		ETOBICOKE	ON	
1/11/2014	124.42	CLOVERDALE HOME HARDWA		ETOBICOKE	ON	
1/11/2014	50.76	KITCHEN STUFF PLUS #7		ETOBICOKE	ON	
1/11/2014	14.63	HOME OUTFITTERS #5116		TORONTO	ON	
1/11/2014	22.59	TARGET CANADA T3715		TORONTO	ON	
1/11/2014	31.56	HOMESENSE 013		ETOBICOKE	ON	
2/2/2014	36.01	HOUSE WARMINGS INC		OAKVILLE	ON	
2/23/2014	235.04	LULULEMON 262		ETOBICOKE	ON	



# Keyword Search

Transaction Date	Transaction Amount	Merchant Name Original	City Name	Expense Description
9/7/2013	48.22	ALBERTSONS #4132	DALLAS	personal expense to be reimbursed by Amy
8/11/2013	6.36	STARBUCKS #02240 WOODR	WOODRIDGE	Card used in error - will send check
12/5/2013	17.71	NOODLES CO 611	LAGRANGE	Check Included - personal mistake
11/2/2013	2,000.00	PTI MARKETING TECH	8588476613	This was billed by mistake and was credited on January 2014 statement
3/26/2014	65.04	FRONT STREET CAFE	NEW RICHMOND	Personal Expense Check Inclosed
6/29/2013	44.90	LILYDALE BP QPS	LILYDALE	gas for personal vehicle
7/3/2013	31.10	HOLIDAY STNSTORE 0336	BROOKLYN PARK	gas for personal vehicle
7/9/2013	48.05	LILYDALE BP QPS	LILYDALE	gas for personal vehicle
7/13/2013	46.36	LILYDALE BP QPS	LILYDALE	gas for personal vehicle
7/17/2013	35.92	HOLIDAY STNSTORE 0336	BROOKLYN PARK	gas for personal vehicle
7/19/2013	41.19	HOLIDAY STNSTORE 0336	BROOKLYN PARK	gas for personal vehicle
7/21/2013	35.58	LILYDALE BP QPS	LILYDALE	gas for personal vehicle

# Examples of Uses in Examinations

Accounts  
Payable

Payroll

General  
Ledger

Purchasing  
Cards

# Vendor Attribute Analysis – Employee / Vendor Matching

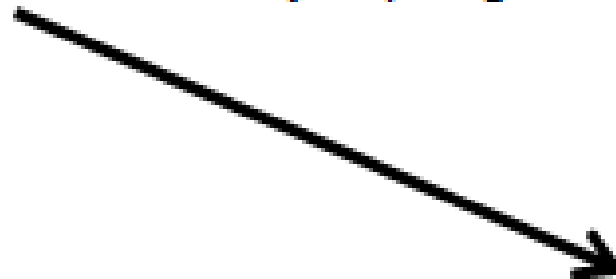
Vendor Information							Employee Information	
Vendor TIN	Vendor nu	Name	City	Total Amount Paid from January 04 to July 2005	Street	Region	NAME	ADDRESS1
227620426	454385		ROANOKE	no activity	605 HIGHLAND AVE SW			605 Highland Ave Sw
241720797	437069		LEXINGTON	\$ 3,786.00	3139 BECKS CHURCH RD			3139 Becks Church Rd.
243464534	509775		LEXINGTON	<b>\$167,708.00</b>	<b>315 RIDGECREST DRIVE</b>			<b>315 Rigdecrest Dr.</b>
250085378	434913		FLORENCE	no activity	436 EAST TIERRA DR			436 E. Tierra
255398736	497638		AUBURN	\$ 1,748.00	1247 DEE KENNEDY RD			1247 Deen Kennedy Rd
259869739	525761		SALINAS	\$ 70.00	1510 LITTLE RIVER DRIVE			1510 Littlriver Dr
260159762	443860		CHATTSWORTH	<b>\$ 13,042.00</b>	<b>151 MONTGOMERY RD</b>			<b>151 Montgomery Road</b>
265960806	445631		FERNANDINA BEACH	\$ 2,472.00	1204 FIR STREET			1204 Fir Street
292649087	496812		KINGSVILLE	\$ 225.00				P.O. Box 141
294847554	473441		ANTIOCH	no activity	5825 CROSSINGS BLVD #216			680 Lake Terrace Drive
319729230	424820		GALESBURG	\$ 920.00	876 LIBERTY STREET			612 California Avenue

Vendor addresses match employee addresses

# Address Mining – Mailbox Services

## Mailbox Service Comparison

Name	Address	City	State	ZIP	FLAG
Syntec Corporation	1221 East Kearney	Springfield	MO	65601	<b>MATCH</b>



**UPS Store**  
**1221 East Kearney**  
**Springfield, MO 65801**

# Address Mining – Proximity

## Latitude/Longitude Comparison

Name	Address	City	State	ZIP	LAT	LONG
AP Clerk	312 East Warwick	Springfield	MO	65807	37.320552	-93.583655
Syntec Corporation	1221 East Kearney	Springfield	MO	65807	37.320289	-93.583836

965 feet

# Address Mining – Geocoding





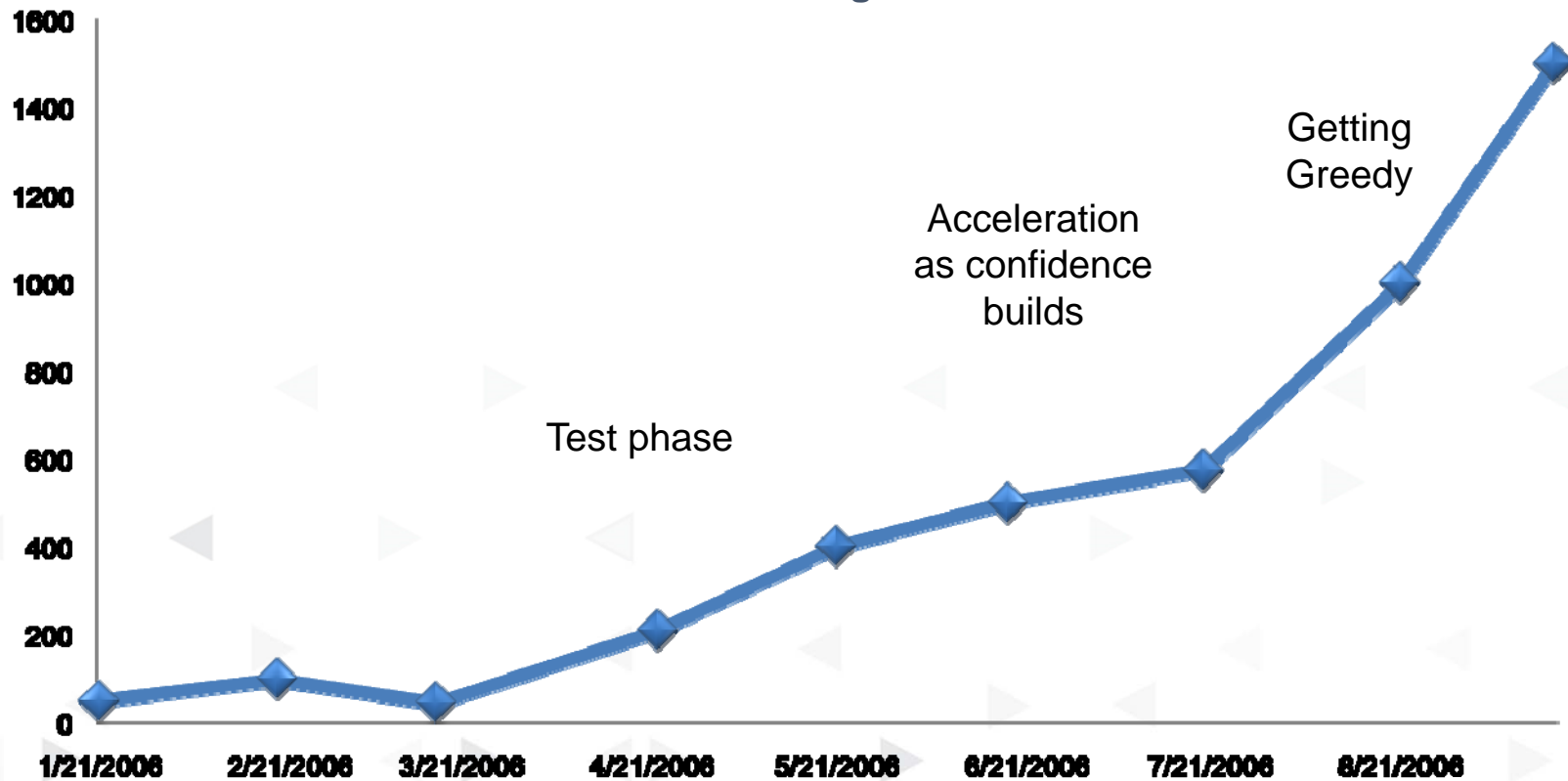
# Employee-Vendor Proximity





# Vendor Trending Analysis

Vendor: JLM Plumbing    Authorized: Janice L. McPhearson





# TEXTUAL ANALYTICS



Relationship Mapping

Named Entity Extraction

Textual Analytics

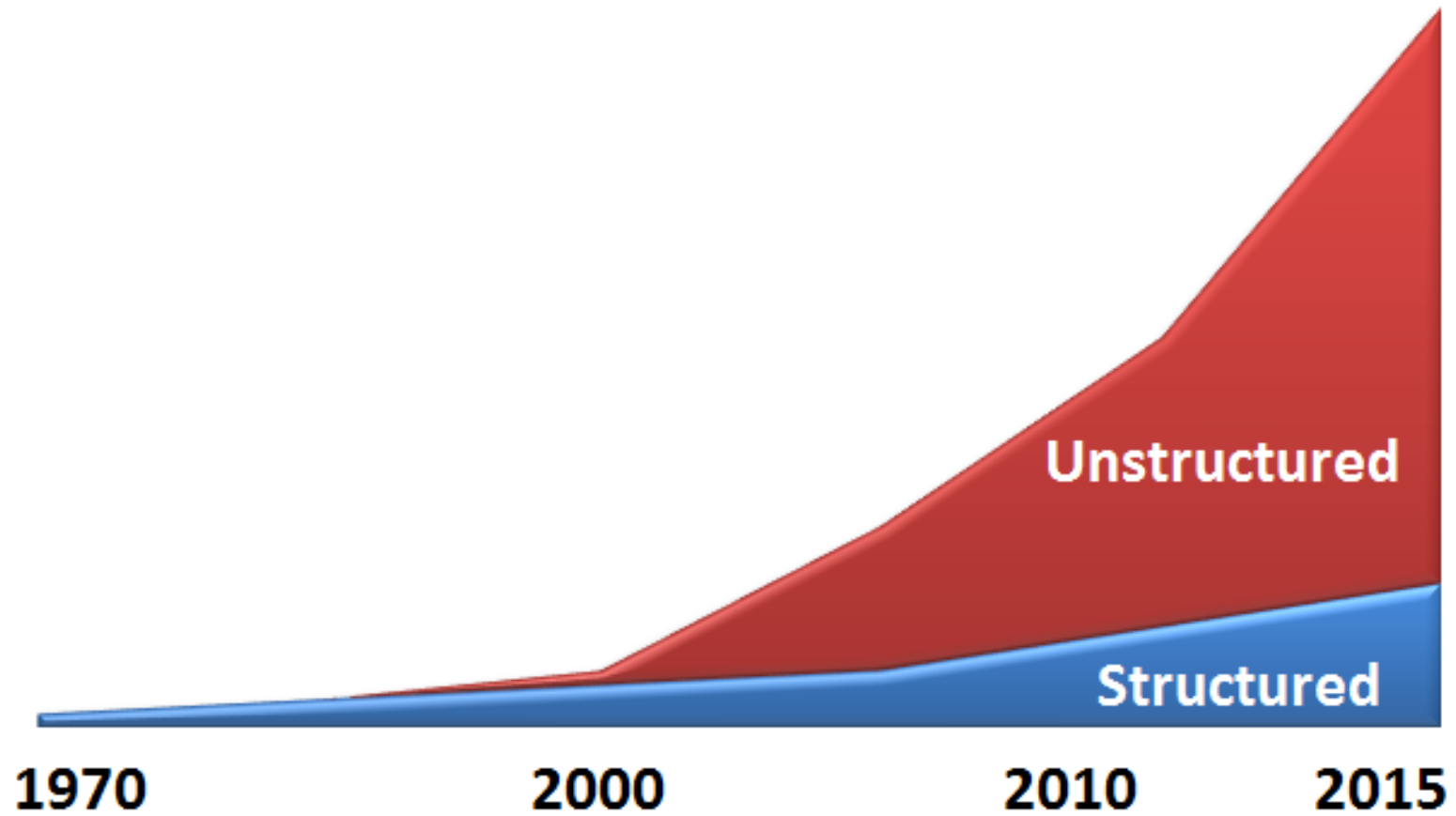
Predictive Coding

Topic Mapping

Digital Forensics

Tone Detection

# Data Types



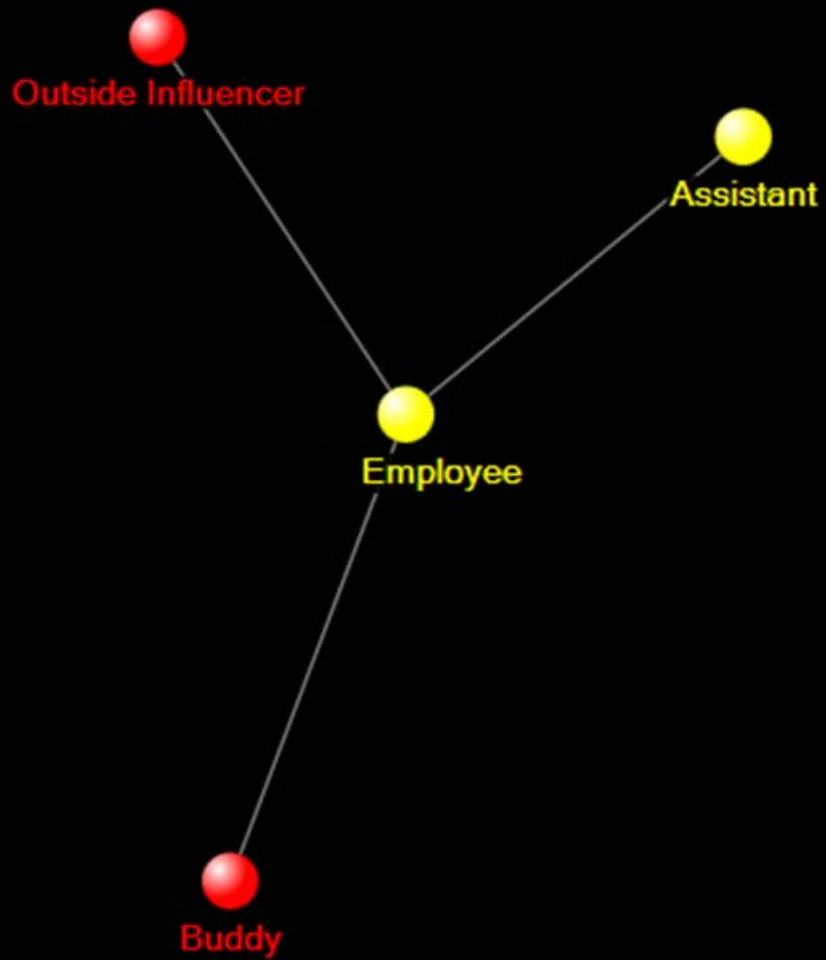


FIG. 16 What are the most common occupational fraud schemes in various industries?

INDUSTRY	Cases	Billing	Cash larceny	Cash on hand	Check and payment tampering	Corruption	Expense reimbursements	Financial statement fraud	Noncash	Payroll	Register disbursements	Skimming
Banking and financial services	338	11%	14%	23%	12%	36%	7%	8%	11%	2%	3%	9%
Manufacturing	201	27%	8%	15%	12%	51%	18%	10%	28%	5%	3%	7%
Government and public administration	184	15%	11%	11%	9%	50%	11%	5%	22%	7%	2%	11%
Health care	149	26%	7%	13%	13%	36%	16%	11%	19%	17%	1%	12%
Retail	104	20%	10%	19%	9%	28%	8%	12%	34%	5%	13%	13%
Education	96	23%	19%	19%	6%	38%	18%	6%	19%	6%	0%	14%
Insurance	87	20%	9%	3%	18%	45%	8%	7%	11%	3%	1%	11%
Energy	86	20%	2%	10%	12%	53%	10%	3%	27%	7%	2%	10%
Construction	83	37%	12%	8%	19%	42%	23%	16%	23%	14%	1%	13%
Transportation and warehousing	79	25%	8%	8%	9%	46%	15%	8%	28%	3%	3%	13%
Food service and hospitality	75	17%	16%	20%	11%	29%	12%	12%	24%	7%	0%	23%
Technology	62	26%	5%	10%	8%	42%	21%	16%	32%	8%	0%	6%
Religious, charitable, or social services	58	40%	9%	22%	19%	34%	29%	10%	19%	22%	3%	17%
Services (professional)	54	26%	17%	15%	26%	17%	30%	13%	13%	15%	0%	15%
Arts, entertainment, and recreation	50	14%	20%	36%	6%	32%	12%	8%	18%	4%	8%	28%



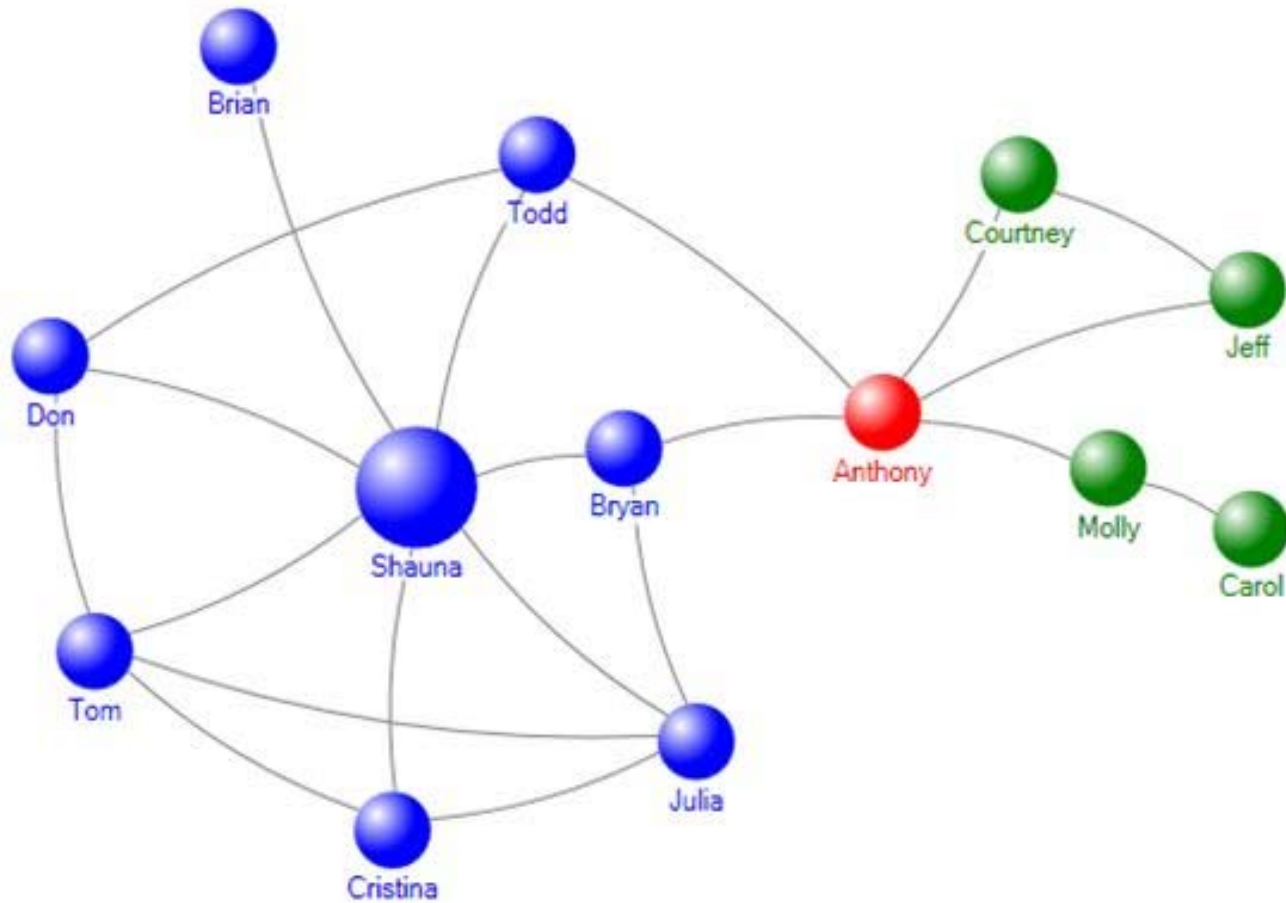
MORE RISK

LESS RISK

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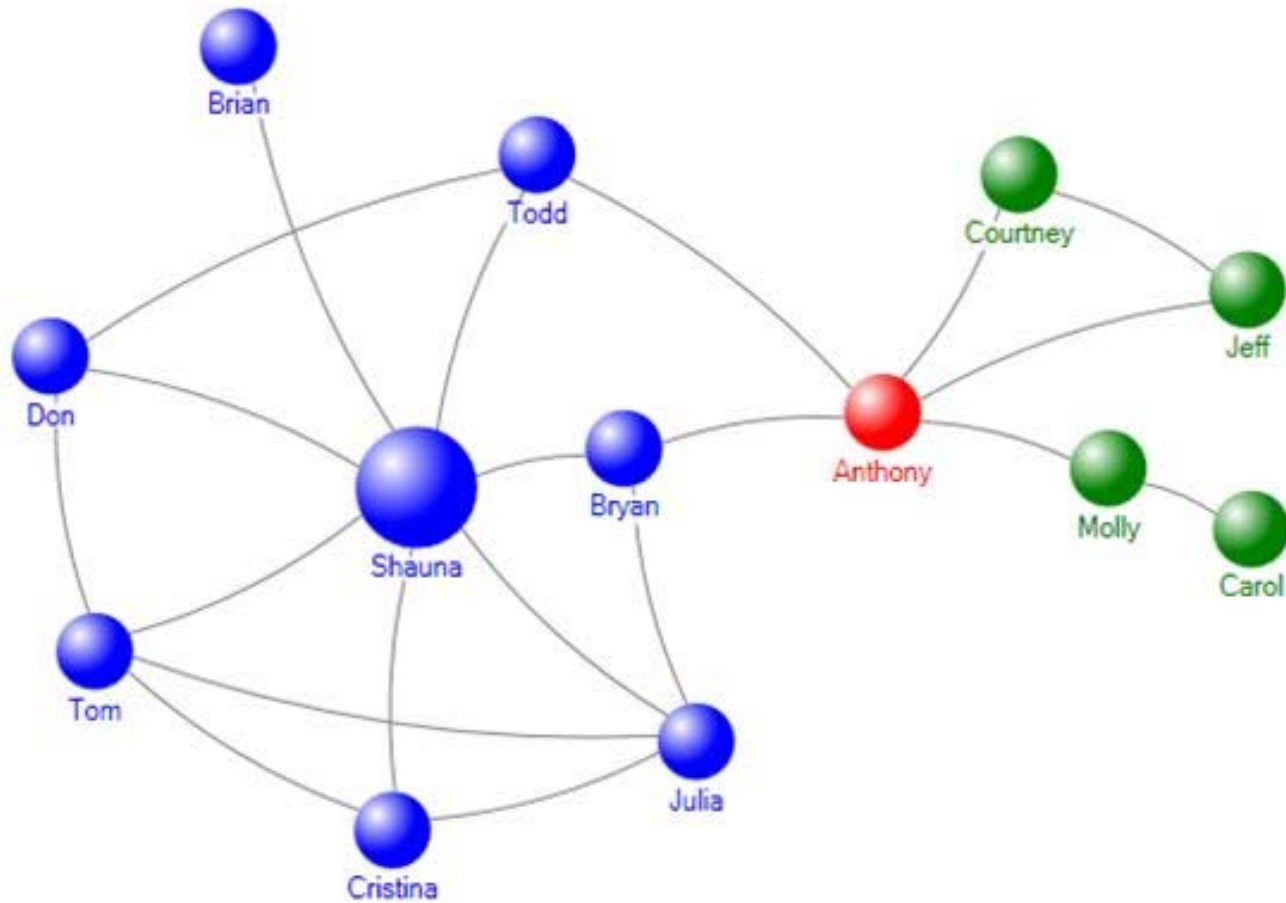


# Degree

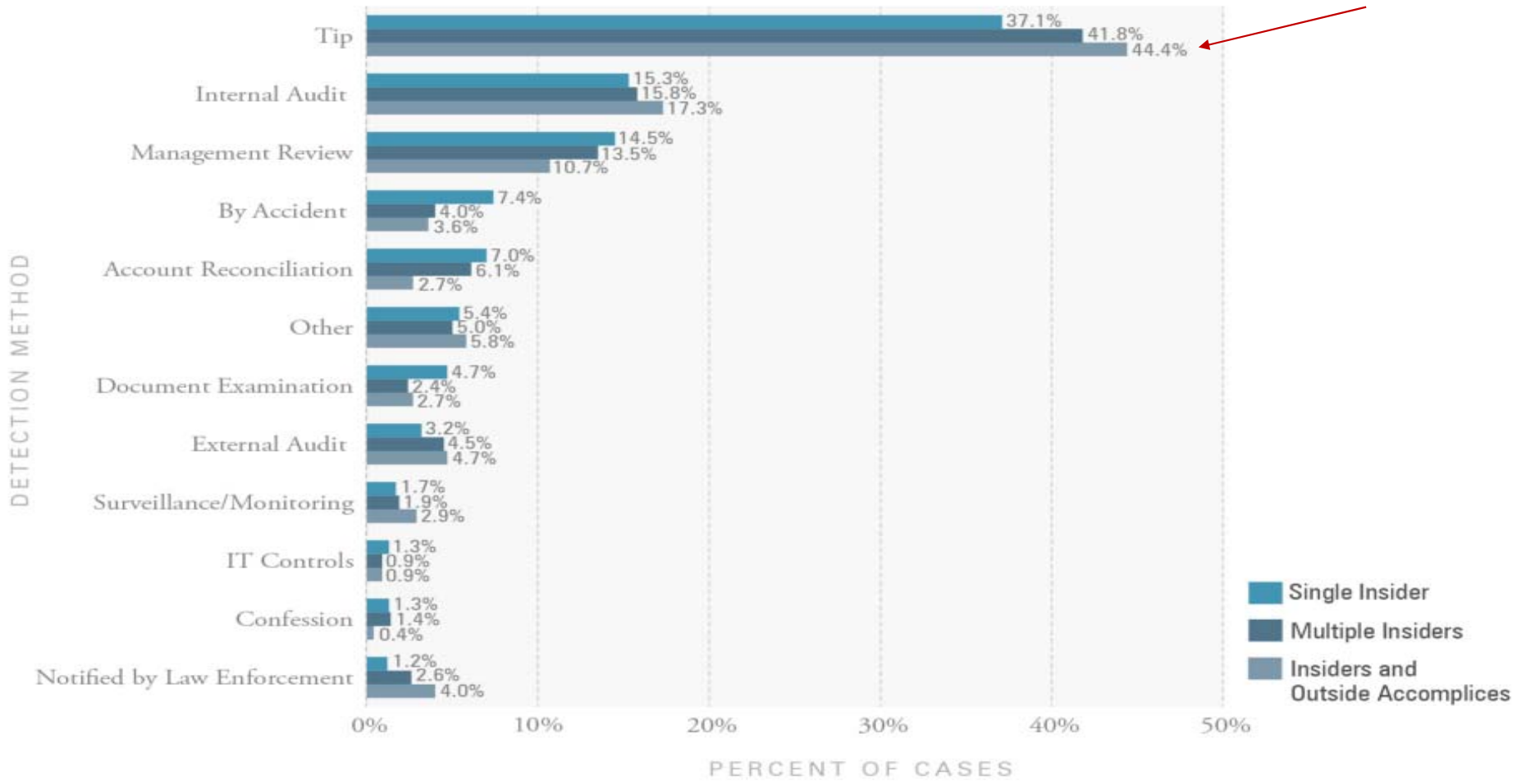




# Betweenness Centrality



**Figure 91: Detection Method by Perpetrators' Relationship to Victim**



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# Questions?

# THANK YOU!



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**BKD**

# Thank You!