

# Statistical Thinking For Data Science And Analytics

## Common financial statement fraud schemes

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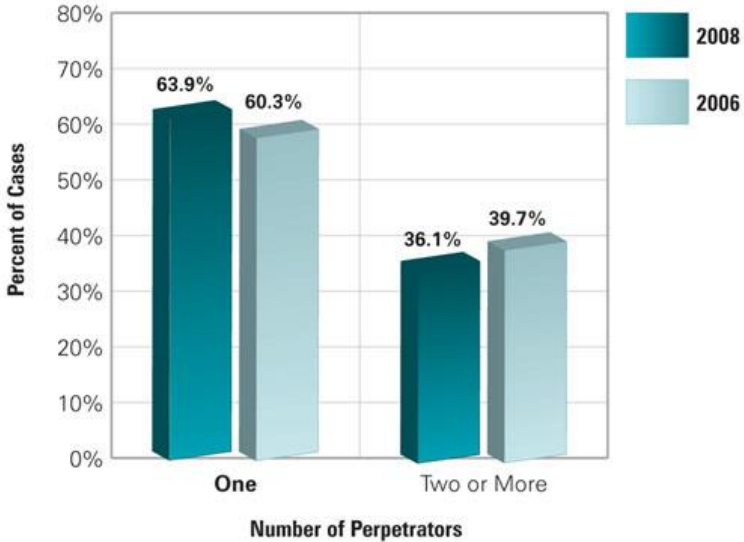
# Common financial statement fraud schemes

## Impact of Collusion

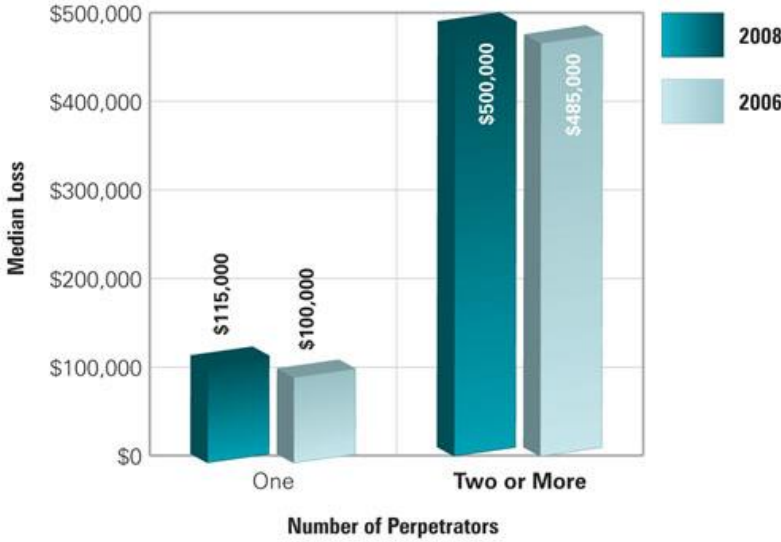
- In nearly two-thirds of the fraud schemes covered by our study, the perpetrator acted alone, a proportion that was consistent with our 2006 study.
- However, in both studies, schemes that involved two or more individuals resulted in a median loss over four times higher than the amount lost in schemes committed by a single perpetrator.
- This finding may reflect the fact that collusion often enables employees to circumvent specific controls that would otherwise detect or limit the impact of a fraud.

# Common financial statement fraud schemes

### Number of Perpetrators — Frequency



### Number of Perpetrators — Median Loss

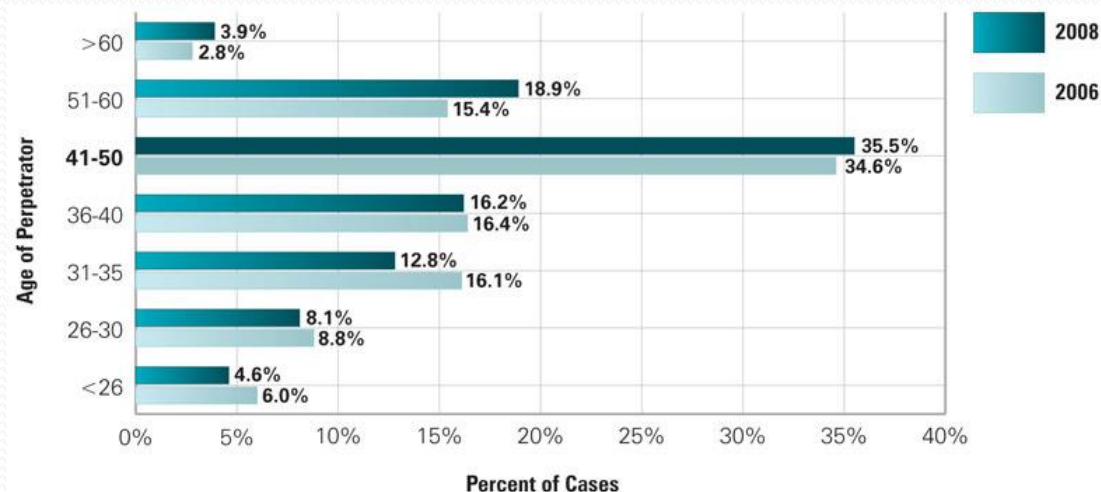


# Common financial statement fraud schemes

## Perpetrator's Age

- More than half of the fraud cases we studied involved a fraudster over the age of 40, and over one-third of the schemes were perpetrated by individuals between the ages of 41 and 50. The distribution of ages was very similar to that from our 2006 study.

Age of Perpetrator — Frequency

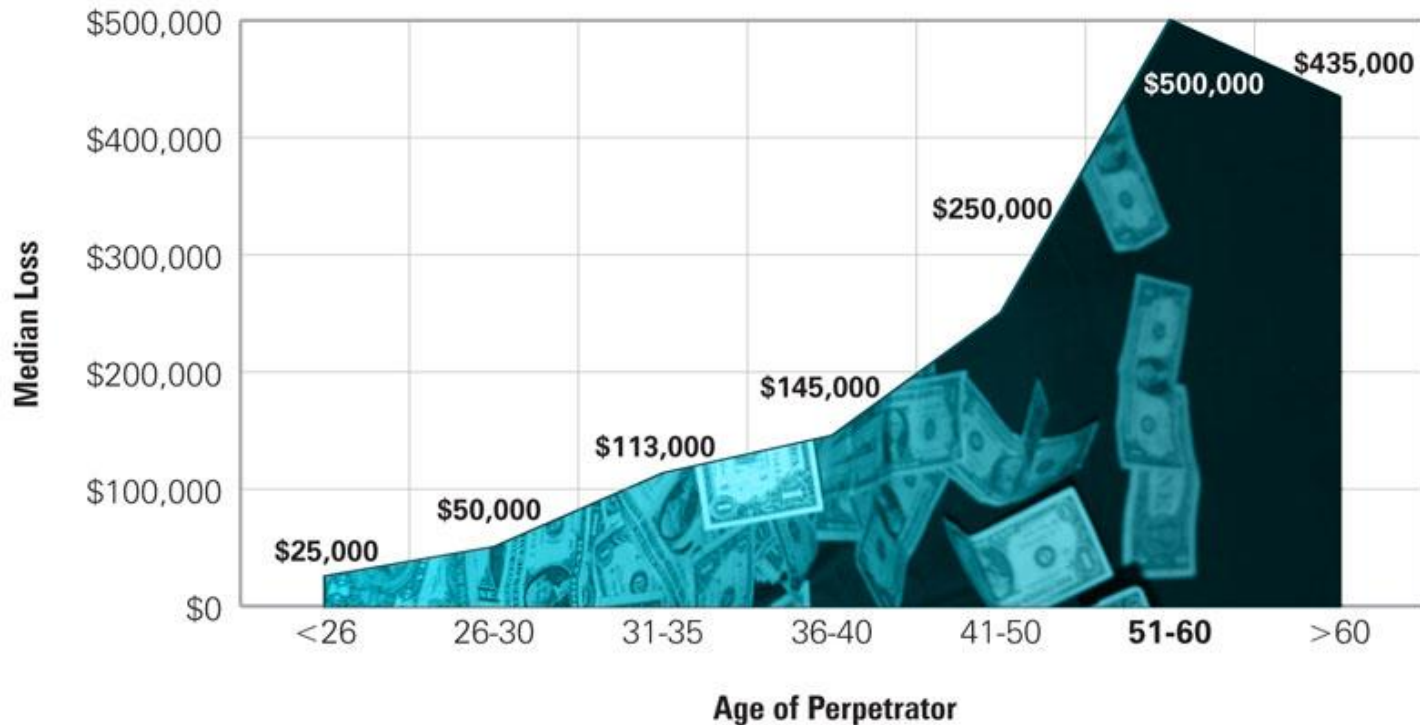


## Common financial statement fraud schemes

- Generally speaking, higher-level positions within a company are occupied by more experienced employees, meaning that older individuals often hold positions with more authority over and access to company resources.
- This likely explains why the median loss from fraud in our study rose as the age of the perpetrator increased.
- Schemes perpetrated by individuals in their 50s resulted in a median loss of \$500,000, twice as high as any age bracket below them.

## Age of Perpetrator — Median Loss

# Common financial statement fraud schemes



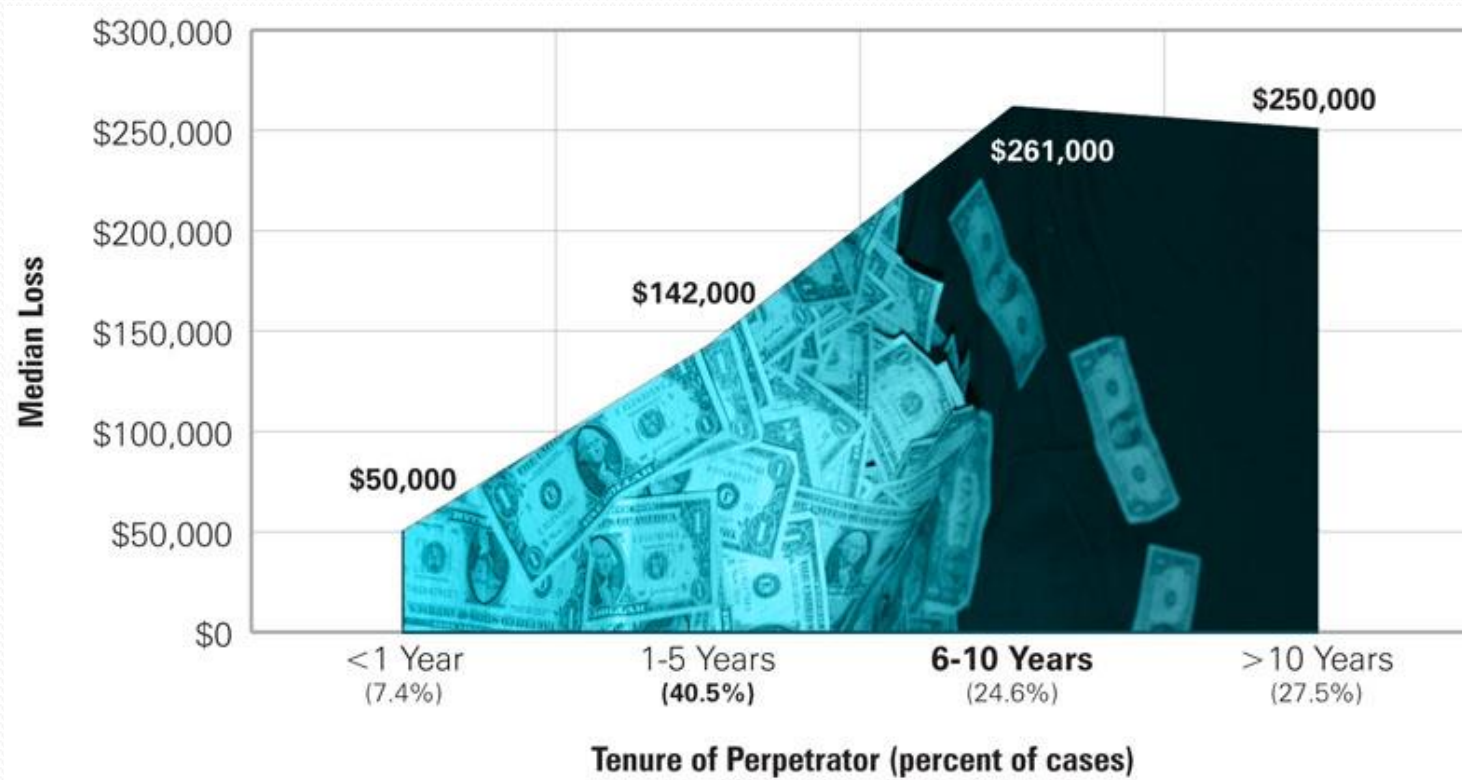
# Common financial statement fraud schemes

## Tenure of Perpetrator

- There was no strong correlation in our study between the amount of time an individual had worked for an organization and when that person was likely to begin committing fraud.
- Approximately 48% of perpetrators had worked at the organization for five years or less, while about 52% had been with their organization for more than five years.
- However, we did find that, generally speaking, longer-term employees tend to commit much larger frauds. This is consistent with our findings from previous surveys.

# Common financial statement fraud schemes

## Tenure of Perpetrator — Frequency and Median Loss



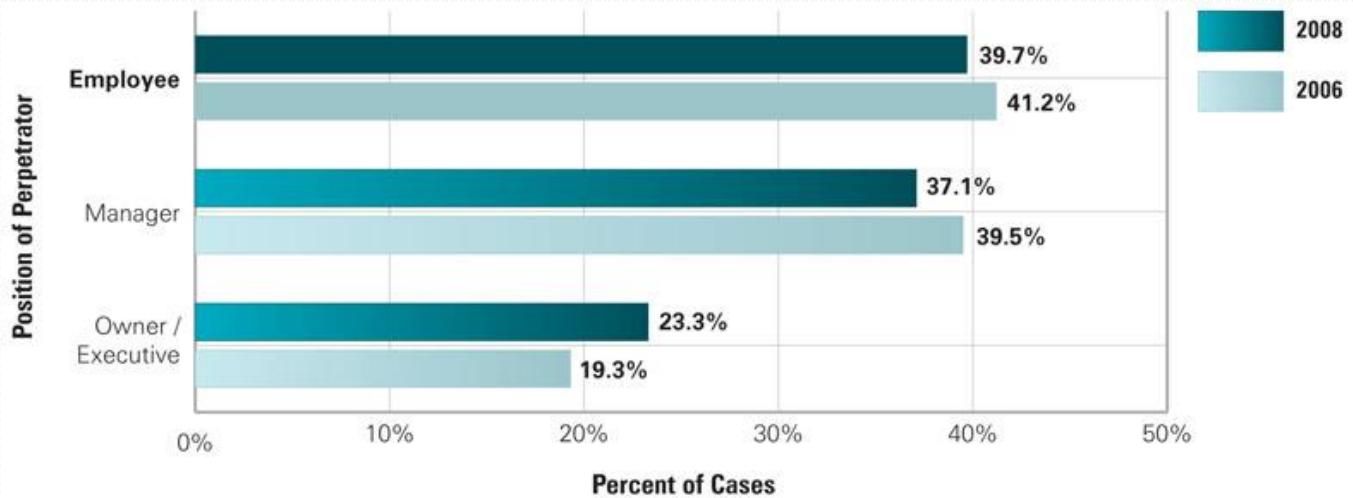
# Common financial statement fraud schemes

## Perpetrator's Position

- We examined the fraudsters in our study based on their positions within the victim organization and found that the majority of occupational frauds are committed by employees and managers.
- Owners and executives are involved less often (just under one-quarter of all cases), but the median loss in their frauds was \$834,000, which is over five times greater than the losses caused by managers and more than 11 times higher than the median loss caused by employees.

## Position of Perpetrator — Frequency

# Common financial statement fraud schemes



## Position of Perpetrator — Median Loss

# Common financial statement fraud schemes



# Common financial statement fraud schemes

- Frauds committed by employees were also discovered much sooner than those involving their superiors. In fact, frauds in which the primary perpetrator was a manager, owner, or executive lasted a median duration of two years — twice as long as those cases involving lower-level employees

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Median Duration of Frauds by Position of Perpetrator	
Position	Median Months to Detection
Employee	12
Manager / Supervisor	24
Owner / Executive / Officer	24

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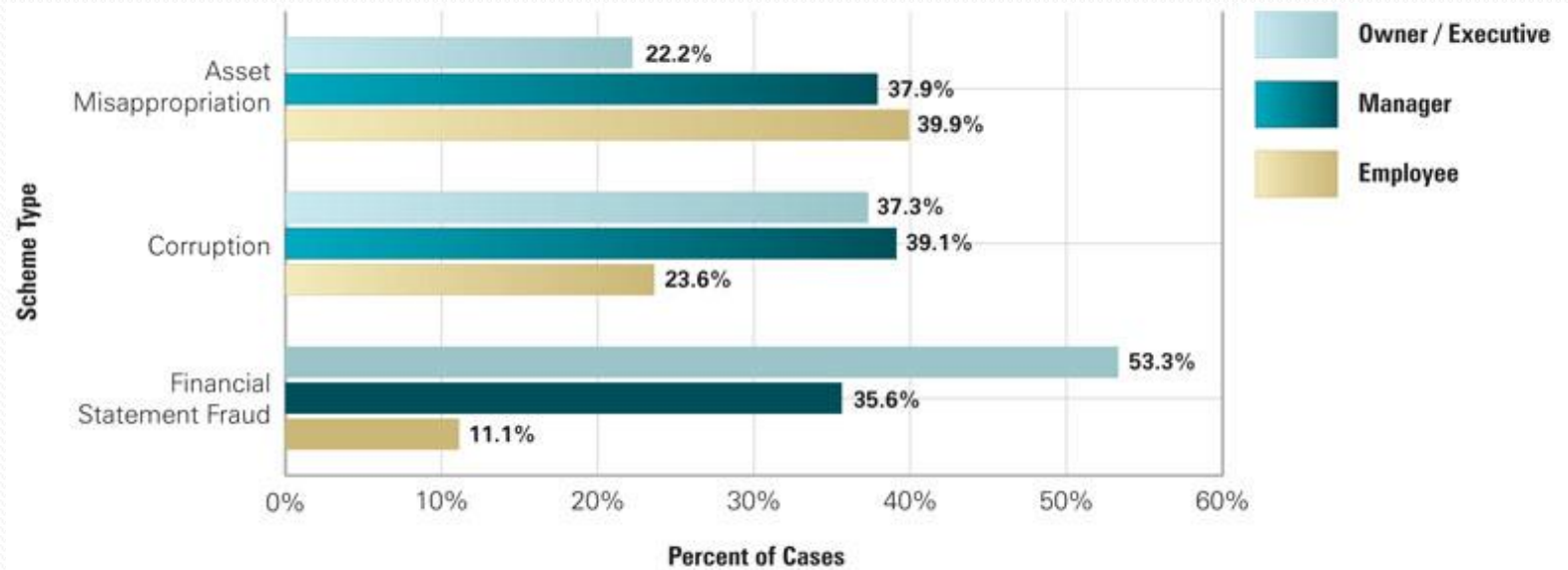
# Common financial statement fraud schemes

## Scheme Type by Position

- The following chart presents a breakdown of the three major categories of occupational fraud based on the position of the perpetrator.
- Less than one-fourth of the fraudsters in our study were owner/executives, but they were responsible for over half of all financial statement frauds and almost 40% of all corruption cases.

## Type of Fraud Scheme by Perpetrator's Position

# Common financial statement fraud schemes



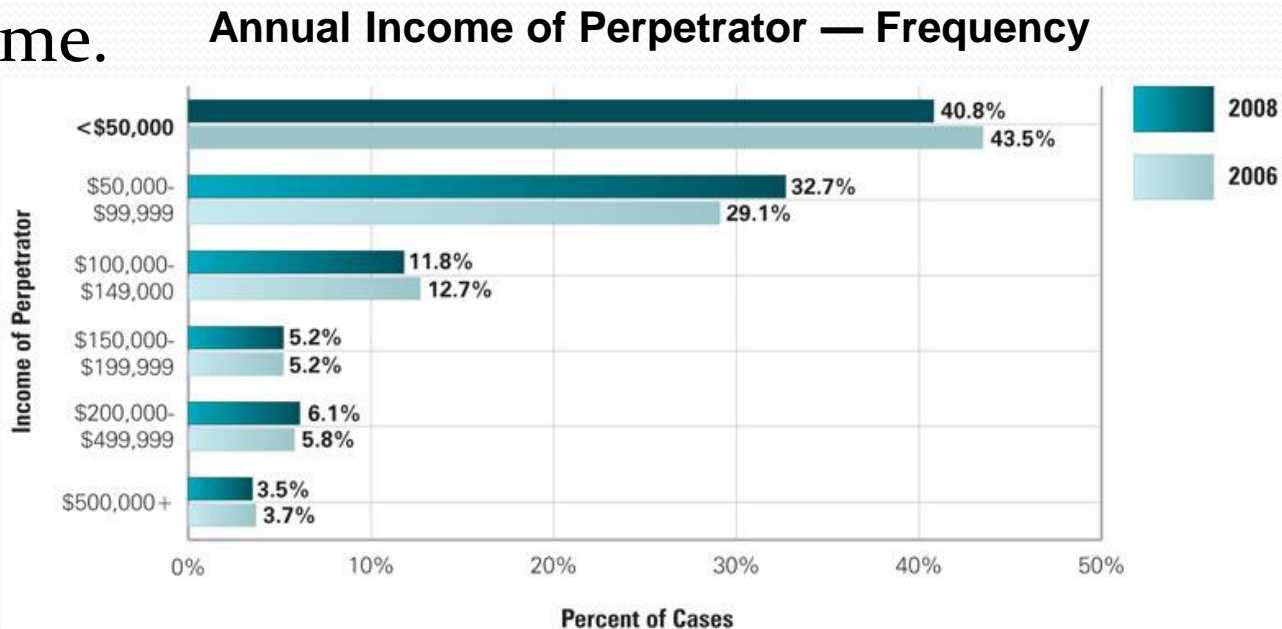
# Common financial statement fraud schemes

## Perpetrator's Annual Income

- Over 40% of all frauds in our study were perpetrated by employees who earned less than \$50,000 per year at the time of the fraud.
- Further, the percentage of perpetrators in each income bracket decreased as his or her reported annual salary increased.
- This information likely reflects the typical salary structure at most organizations (i.e., there are generally more low-paid employees than high-paid employees).
- It is also possible that lower-income individuals have more motivation to engage in fraud.

# Common financial statement fraud schemes

- We know that intense financial pressure is a key contributing factor to many occupational fraud schemes. Lower-income individuals may be more susceptible to financial pressures and this may contribute to the high rate of fraud schemes committed by those with under \$50,000 in annual income.



## Common financial statement fraud schemes

- While the number of fraudsters decreased as income brackets rose, the median loss for the fraud schemes in our study increased directly with the annual income of the perpetrator.
- Those perpetrators earning less than \$50,000 per year caused a median loss of \$75,000, while on the other end of the pay scale, employees with the highest annual salaries caused the greatest median losses.
- The 29 schemes perpetrated by individuals who earned over \$500,000 were associated with a median loss of \$50 million dollars — 50 times that of any other income bracket.

## Median Loss Based on Perpetrator's Annual Income

# Common financial statement fraud schemes



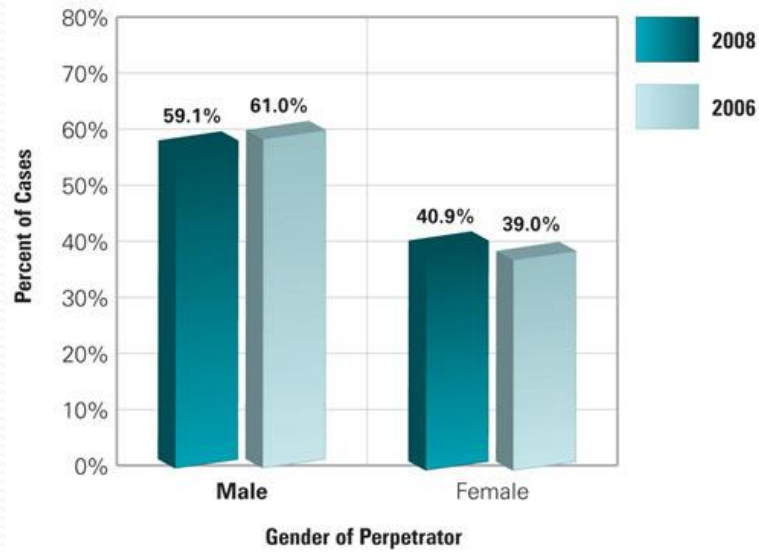
# Common financial statement fraud schemes

## Perpetrator's Gender

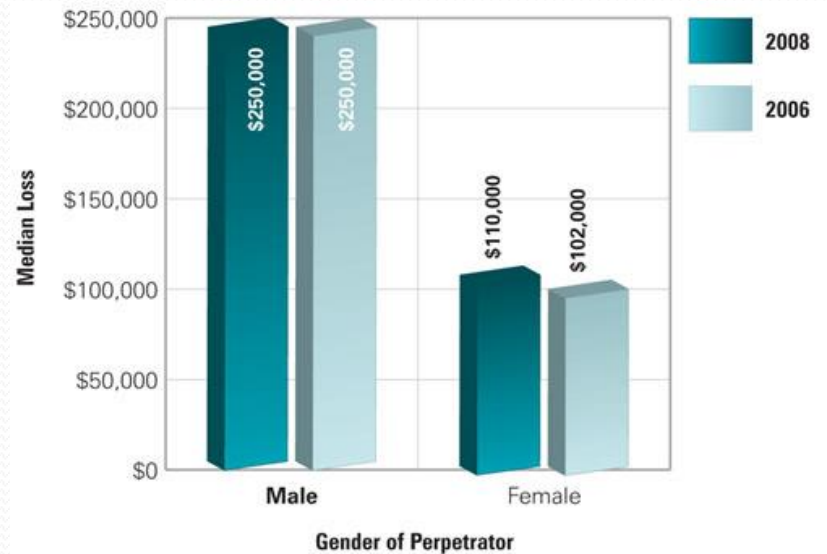
- As in our past studies, the majority of fraud cases were perpetrated by males.
- Men are also associated with a median loss more than twice as great as that caused by women.
- We have previously hypothesized that these disparities between the genders are reflective of the remaining “glass ceiling” phenomenon, which results in males holding more management and executive-level positions in many organizations and thus having greater opportunity to commit larger-dollar frauds.

# Common financial statement fraud schemes

## Gender of Perpetrator — Frequency



## Gender of Perpetrator — Median Loss



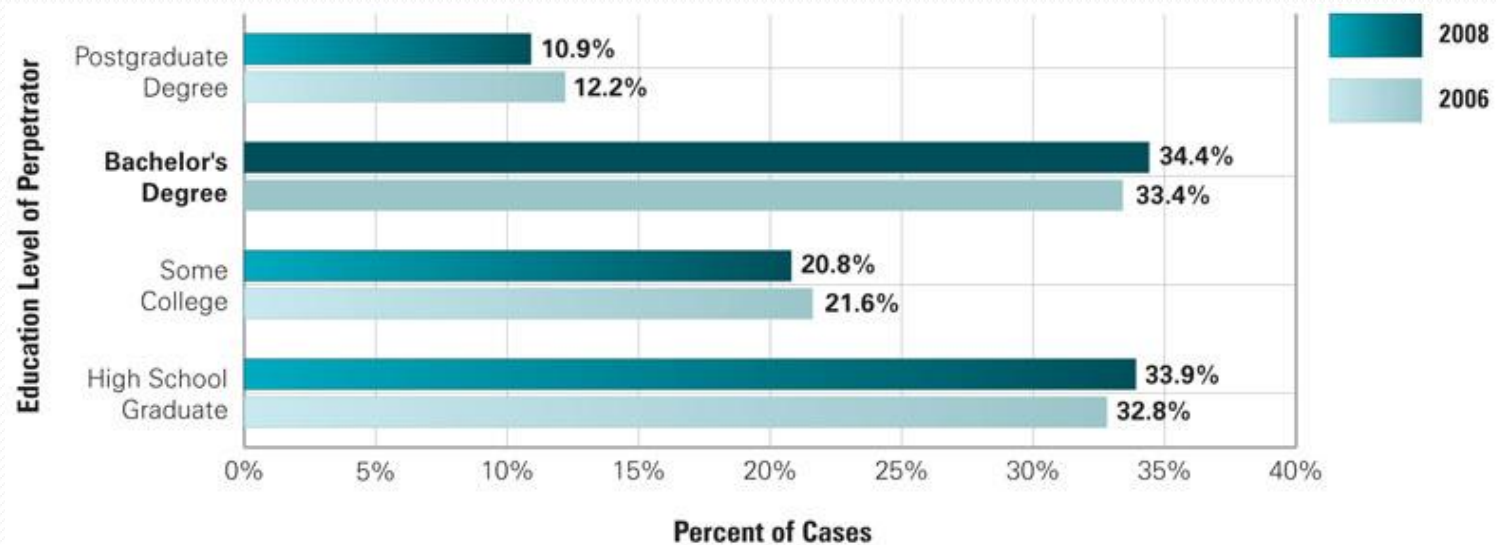
# Common financial statement fraud schemes

## Perpetrator's Education Level

- The education level of Common financial statement fraud schemes in this study was very similar to the breakdown observed in our 2006 study. Only 11% of Common financial statement fraud schemes had obtained a post-graduate degree, while over half of the criminals had attended or graduated from college. Thirty-four percent of the fraudsters were high school graduates with no subsequent education.
- As the perpetrator's education level rose, so did the median loss caused by the fraud scheme. Employees with a college degree stole a median amount of \$210,000 — more than twice as much as individuals with only a high school education.
- Fraudsters who had a graduate-level education caused a much greater median loss, at \$550,000. This trend is consistent with the results of our 2006 study.

# Common financial statement fraud schemes

## Education of Perpetrator — Frequency



# Common financial statement fraud schemes

## Education of Perpetrator — Median Loss



# Common financial statement fraud schemes

## Perpetrator's Department

- We also examined Common financial statement fraud schemes based on the department they worked in at the time of the fraud.
- Of the 800 cases in which information about the perpetrator's department was provided, the highest percentage of schemes involved those in the accounting department.
- Because these employees are responsible for processing and recording the organization's financial transactions, accounting staff generally have the greatest access to its fiscal assets, as well as the most opportunity to conceal a fraud scheme.

## Common financial statement fraud schemes

- Executives and upper management were the second-most common category of fraudsters.
- Internal auditors, who are charged with ensuring the effectiveness of the organization's internal controls, were the least common perpetrators of the fraud schemes in our study.
- Although only eight cases were perpetrated by employees in the legal department, these schemes resulted in the greatest median loss of \$1.1 million.

## Common financial statement fraud schemes

- Frauds undertaken by executives and upper management-level employees were the second most costly, causing a median loss of \$853,000.
- Perpetrators who worked in customer service did the least damage with their schemes.
- The median loss for cases involving a fraudster in customer service was \$45,000, well below the median loss of \$175,000 for all cases in our study.

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Number of Cases Based on Perpetrator's Department			
Department	# of Cases	Pct. of Cases	Median Loss
Accounting	231	28.9%	\$200,000
Executive / Upper Management	142	17.8%	\$853,000
Operations	129	16.1%	\$80,000
Sales	93	11.6%	\$106,000
Customer Service	49	6.1%	\$45,000
Finance	31	3.9%	\$252,000
Warehousing / Inventory	24	3.0%	\$100,000
Purchasing	22	2.8%	\$600,000
Manufacturing and Production	19	2.4%	\$100,000
Information Technology	16	2.0%	\$93,000
Marketing / Public Relations	8	1.0%	\$80,000
Legal	8	1.0%	\$1,100,000
Board of Directors	8	1.0%	\$93,000
Human Resources	7	0.9%	\$325,000
Research and Development	7	0.9%	\$562,000
Internal Audit	6	0.8%	\$93,000

Median Loss Based on Perpetrator's Department			
Department	# of Cases	Pct. of Cases	Median Loss
Legal	8	1.0%	\$1,100,000
Executive / Upper Management	142	17.8%	\$853,000
Purchasing	22	2.8%	\$600,000
Research and Development	7	0.9%	\$562,000
Human Resources	7	0.9%	\$325,000
Finance	31	3.9%	\$252,000
Accounting	231	28.9%	\$200,000
Sales	93	11.6%	\$106,000
Warehousing / Inventory	24	3.0%	\$100,000
Manufacturing and Production	19	2.4%	\$100,000
Information Technology	16	2.0%	\$93,000
Board of Directors	8	1.0%	\$93,000
Internal Audit	6	0.8%	\$93,000
Operations	129	16.1%	\$80,000
Marketing / Public Relations	8	1.0%	\$80,000
Customer Service	49	6.1%	\$45,000

# Common financial statement fraud schemes

## **Scheme Types by Department**

- The methods implemented by fraudsters generally depend on the opportunities that are available to commit fraud; i.e., the access they have to organizational assets or financial records.
- Therefore, it stands to reason that the department in which an employee works will determine, to a certain degree, the fraud scheme that he or she undertakes.
- We sought to determine which types of fraud were most frequently committed by employees in various departments. We limited this analysis to the four departments for which there were more than 50 cases — accounting, executive and upper management, operations, and sales — so that we would have sufficient samples from which to draw this information.

# Common financial statement fraud schemes

## **Accounting**

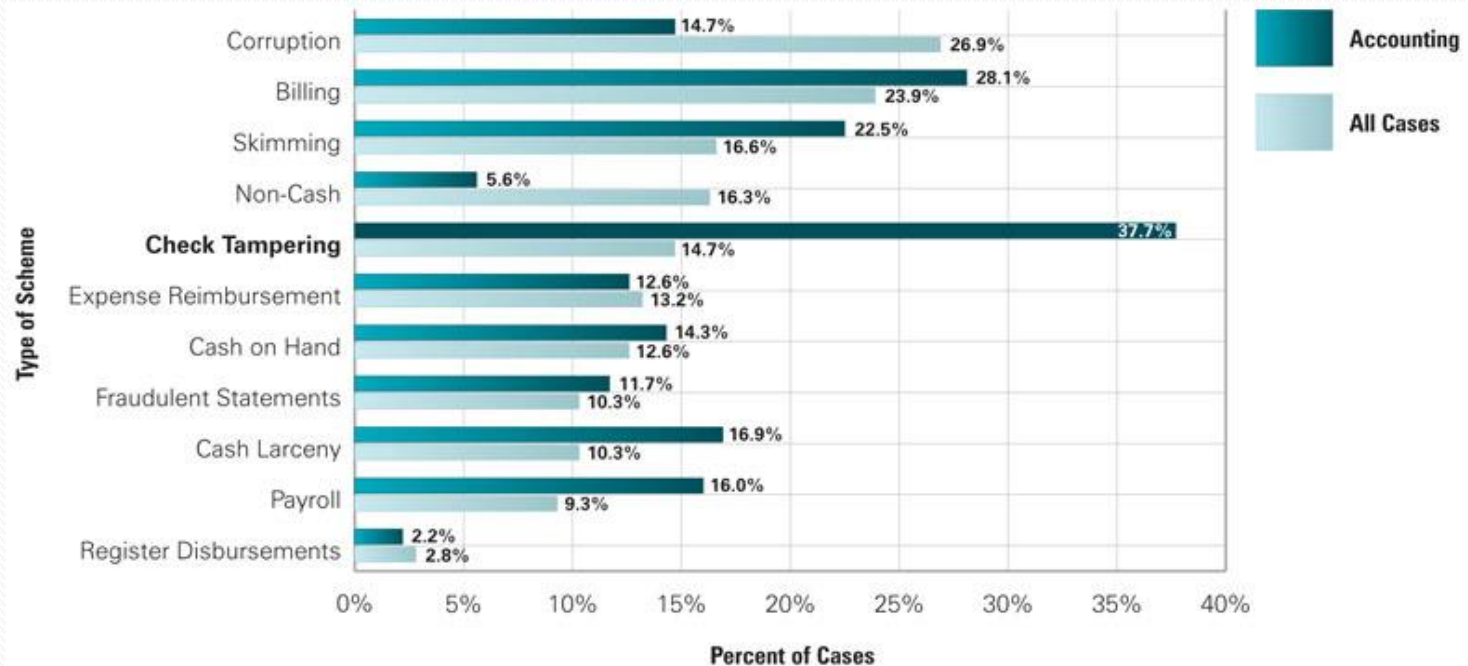
- Our study included 231 cases that involved an employee in the accounting department.
- Over one-third of these cases involved check tampering, a much higher rate than in any other department.
- The accounting department is typically responsible for the cash disbursements function, which in many cases gives accounting employees the opportunity to produce fraudulent checks.

## Common financial statement fraud schemes

- Accounting personnel were also more likely than other employees to engage in cash larceny, payroll fraud, and billing schemes.
- They were significantly less likely to engage in corruption, possibly because the accounting department tends to have less contact with outside vendors and customers than other departments.
- Accounting employees also had a very low rate of non-cash misappropriations.

## Occupational Fraud Schemes by Accounting Personnel (231 Cases)<sup>18</sup>

# Common financial statement fraud schemes



<sup>18</sup>The sum of percentages in this chart exceeds 100 percent because several cases involved multiple schemes from more than one category.

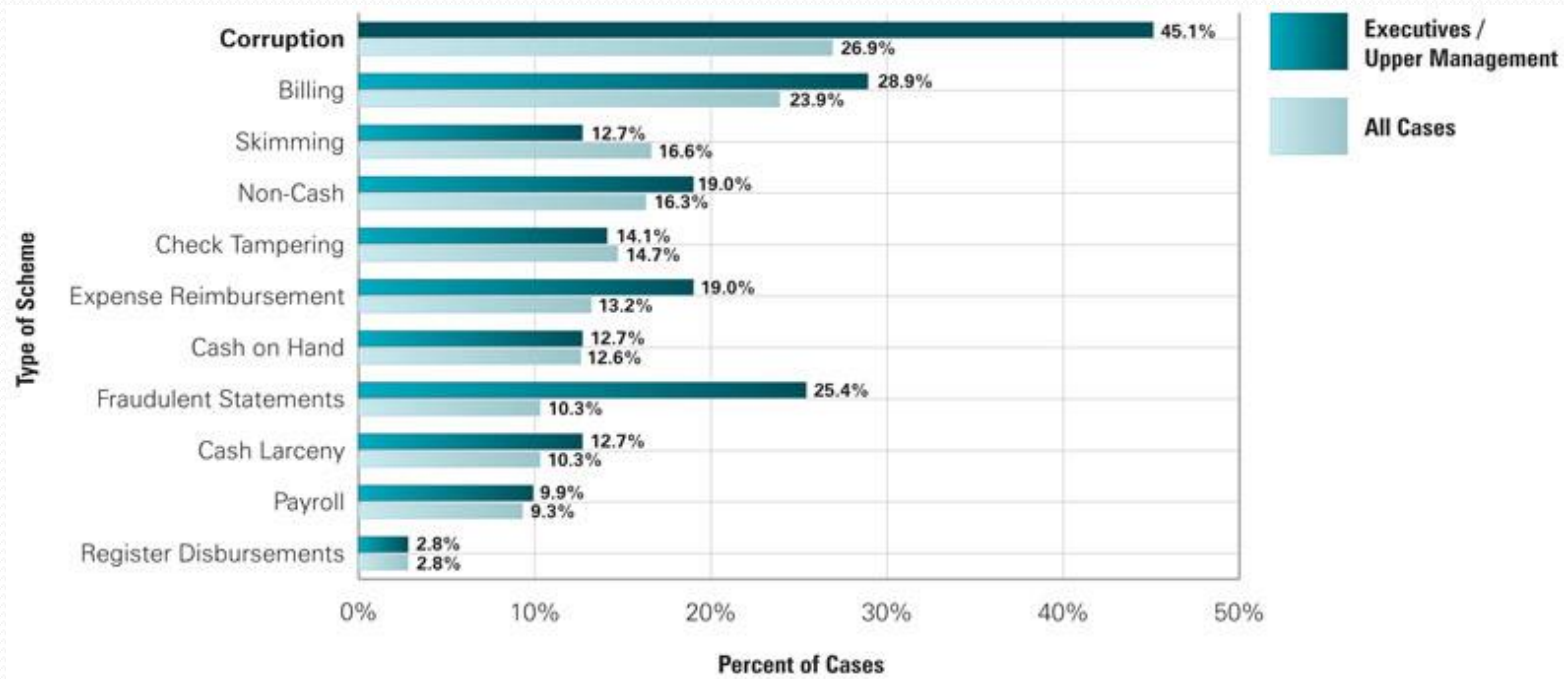
# Common financial statement fraud schemes

## Executive and Upper Management

- Executives and upper management-level employees were much more likely to engage in corruption and fraudulent statement schemes than their counterparts in other departments.
- We reviewed 142 frauds by executives and over 45% of them involved corruption, whereas corruption cases only made up 27% of cases overall.
- Similarly, over one-fourth of all executive-level cases involved fraudulent financial statements, which was more than twice the rate for our survey in general.
- As discussed previously, executives and upper management employees generally have the most incentive to falsify financial statements, so it is not surprising that that type of scheme would be more common in the executive suite than in other areas of an organization.

# Common financial statement fraud schemes

## Occupational Fraud Schemes by Executives and Upper Management (142 Cases)<sup>19</sup>



<sup>19</sup>The sum of percentages in this chart exceeds 100 percent because several cases involved multiple schemes from more than one category.

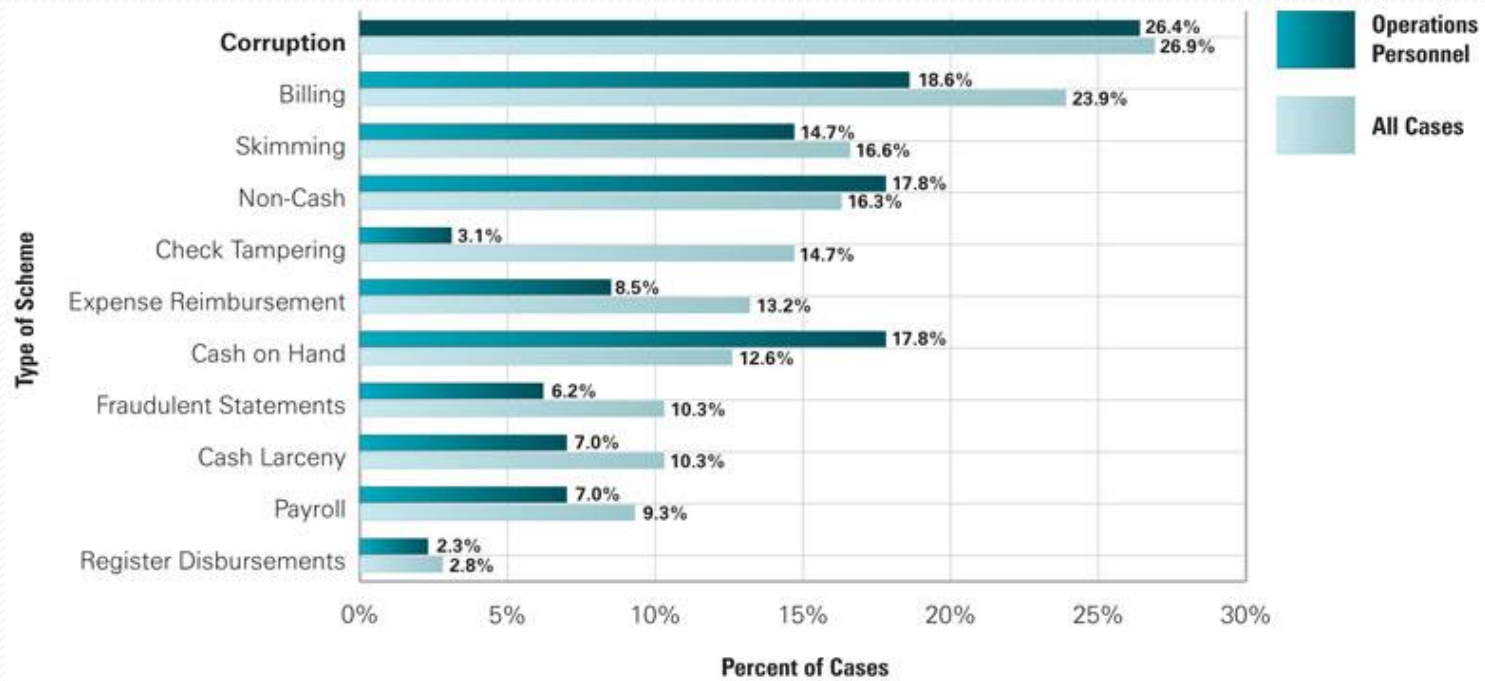
# Common financial statement fraud schemes

## Operations

- Employees who performed the primary operations of the victim organization were responsible for 129 of the 959 cases in our study.
- The rates for all forms of fraudulent disbursements (billing schemes, expense reimbursements, check tampering, payroll, and register disbursements) were lower among operations employees than in all cases.
- Check tampering, in particular, was very uncommon in the operations-staff schemes we received.
- Only four of 129 cases in this category involved check tampering. On the other hand, operations personnel misappropriated cash on hand at a higher rate than other departments.

## Occupational Fraud Schemes by Operations Personnel (129 Cases)<sup>20</sup>

# Common financial statement fraud schemes



<sup>20</sup>The sum of percentages in this chart exceeds 100 percent because several cases involved multiple schemes from more than one category.

# Common financial statement fraud schemes

## Sales

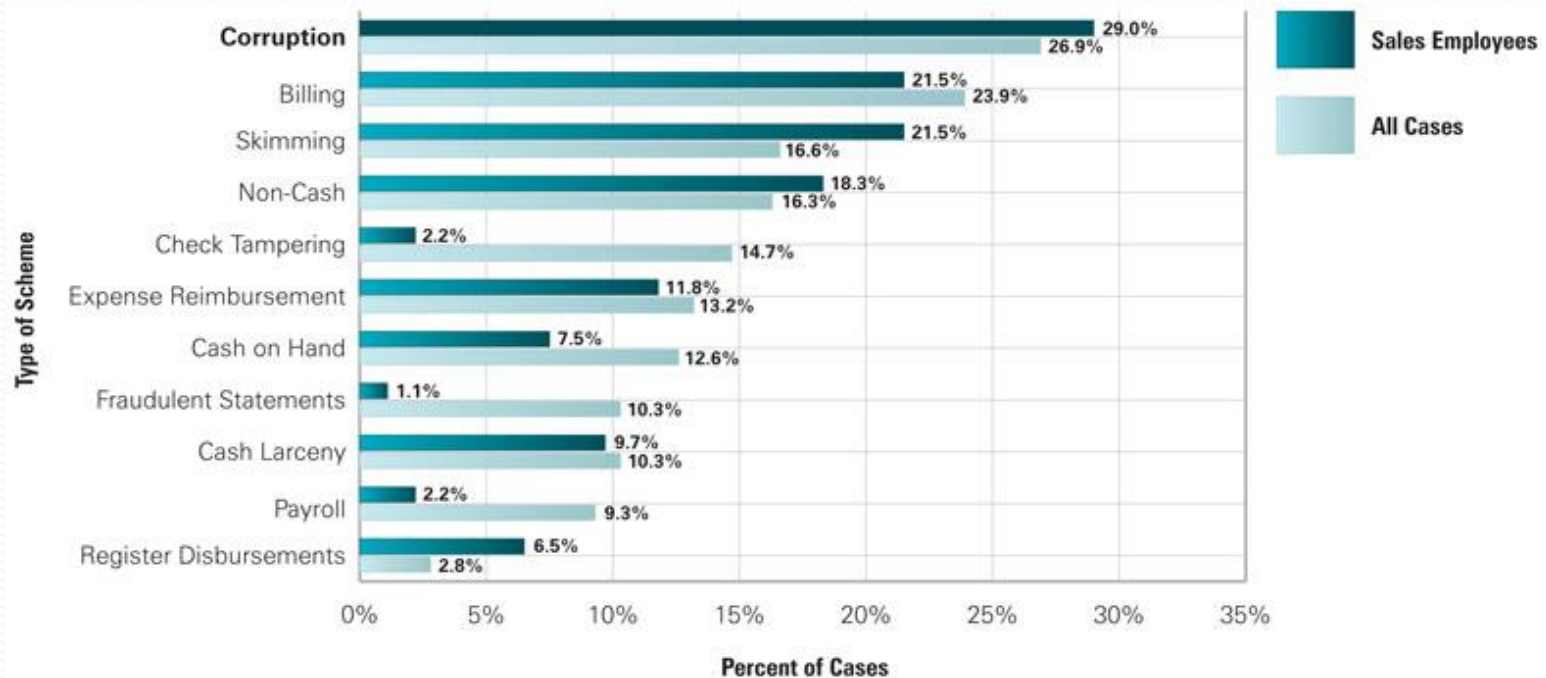
- As in other departments, fraudsters who work in sales will typically undertake schemes that relate to their daily activities.
- In the 93 cases in our study that were perpetrated by sales personnel, 29% included some form of corruption, which was slightly higher than the overall rate.
- These schemes often involve collusion with an outside party, such as accepting a bribe from a customer for selling merchandise at a reduced price.

## Common financial statement fraud schemes

- Sales personnel were also more likely to engage in skimming, which involves the theft of incoming customer payments before they are recorded by the victim organization.
- These schemes occurred in 22% of sales department frauds, as opposed to 17% overall.
- Conversely, sales personnel were very unlikely to engage in check tampering (sales staff typically has very little if any contact with the cash disbursements function), and we found only one financial statement fraud case perpetrated by an employee from the sales department.

# Common financial statement fraud schemes

## Occupational Fraud Schemes by Sales Employees (93 Cases)<sup>21</sup>



<sup>21</sup>The sum of percentages in this chart exceeds 100 percent because several cases involved multiple schemes from more than one category.

# Common financial statement fraud schemes

## Departments with the Most Financial Statement Fraud

- Although they occurred in only 10% of all cases in our study, financial statement fraud schemes were by far the most costly form of fraud.
- As part of our analysis, we examined which employees are most frequently responsible for financial statement schemes.
- Over 70% of the financial statement frauds in our study were perpetrated by individuals in either the executive suite or the accounting department.

# Common financial statement fraud schemes

- Employees in these two roles are charged with the primary responsibility for the financial statements — accountants with correctly processing the financial information that comprises the reported numbers, and executives with ensuring the completeness and accuracy of the official statements.

Financial Statement Fraud		
Department	# of Cases	Pct. of Cases
Executive / Upper Management	36	40.9%
Accounting	27	30.7%
Operations	8	9.1%
Finance	5	5.7%
Purchasing	3	3.4%
Manufacturing and Production	2	2.3%
Warehousing / Inventory	2	2.3%
Board of Directors	1	1.1%
Customer Service	1	1.1%
Internal Audit	1	1.1%
Legal	1	1.1%
Sales	1	1.1%

# Common financial statement fraud schemes

## Departments with the Most Corruption Cases

- Corruption schemes, such as bribery and conflicts of interest, characteristically involve the exertion of the perpetrator's influence in a way that unfairly influences a business transaction.
- Consequently, it is those individuals with the most authority over the organization's operational and financial activities who are most likely to engage in these types of schemes.
- As would be expected, executives and upper management-level employees — individuals who typically hold the most power within the organization — were most often cited as Common financial statement fraud schemes in the corruption schemes in our study.

# Common financial statement fraud schemes

- Employees involved in the daily business operations of the organization and those in the accounting department were each involved in 16% of the corruption cases.

Corruption		
Department	# of Cases	Pct. of Cases
Executive / Upper Management	64	29.1%
Operations	34	15.5%
Accounting	34	15.5%
Sales	27	12.3%
Finance	10	4.5%
Purchasing	9	4.1%
Customer Service	8	3.6%
Warehousing / Inventory	8	3.6%
Manufacturing and Production	5	2.3%
Board of Directors	3	1.4%
Human Resources	3	1.4%
Information Technology	3	1.4%
Legal	3	1.4%
Research and Development	3	1.4%
Internal Audit	1	0.5%
Marketing / Public Relations	1	0.5%

# Common financial statement fraud schemes

## Asset Misappropriation Schemes by Department

- We also examined each subcategory of asset misappropriation to determine what departments were most commonly associated with each given form of fraud.
- The results of this analysis are shown in the following tables. The goal is to help organizations better understand where risks of particular forms of fraud are likely to exist, which will in turn help them develop more targeted anti-fraud controls.

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Skimming		
Department	# of Cases	Pct. of Cases
Accounting	52	39.1%
Sales	20	15.0%
Operations	19	14.3%
Executive / Upper Management	18	13.5%
Customer Service	13	9.8%
Finance	5	3.8%
Legal	3	2.3%
Board of Directors	1	0.8%
Information Technology	1	0.8%
Internal Audit	1	0.8%

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Cash Larceny		
Department	# of Cases	Pct. of Cases
Accounting	39	44.8%
Executive / Upper Management	18	20.7%
Operations	9	10.3%
Sales	9	10.3%
Customer Service	4	4.6%
Finance	3	3.4%
Legal	2	2.3%
Board of Directors	1	1.1%
Information Technology	1	1.1%
Internal Audit	1	1.1%

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Billing		
Department	# of Cases	Pct. of Cases
Accounting	65	33.2%
Executive / Upper Management	41	20.9%
Operations	24	12.2%
Sales	20	10.2%
Purchasing	11	5.6%
Finance	8	4.1%
Manufacturing and Production	8	4.1%
Information Technology	5	2.6%
Customer Service	4	2.0%
Marketing / Public Relations	3	1.5%
Board of Directors	2	1.0%
Research and Development	2	1.0%
Human Resources	1	0.5%
Internal Audit	1	0.5%
Legal	1	0.5%

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Payroll		
Department	# of Cases	Pct. of Cases
Accounting	37	47.4%
Executive / Upper Management	14	17.9%
Operations	9	11.5%
Finance	4	5.1%
Human Resources	3	3.8%
Internal Audit	2	2.6%
Manufacturing and Production	2	2.6%
Sales	2	2.6%
Board of Directors	1	1.3%
Customer Service	1	1.3%
Information Technology	1	1.3%
Research and Development	1	1.3%
Warehousing / Inventory	1	1.3%

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### Expense Reimbursement

Department	# of Cases	Pct. of Cases
Accounting	29	26.9%
Executive / Upper Management	27	25.0%
Operations	11	10.2%
Sales	11	10.2%
Finance	5	4.6%
Manufacturing and Production	4	3.7%
Marketing / Public Relations	4	3.7%
Purchasing	4	3.7%
Customer Service	3	2.8%
Information Technology	3	2.8%
Internal Audit	3	2.8%
Research and Development	2	1.9%
Board of Directors	1	0.9%
Legal	1	0.9%

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### Check Tampering

Department	# of Cases	Pct. of Cases
Accounting	87	67.4%
Executive / Upper Management	20	15.5%
Finance	7	5.4%
Operations	4	3.1%
Board of Directors	2	1.6%
Legal	2	1.6%
Manufacturing and Production	2	1.6%
Sales	2	1.6%
Customer Service	1	0.8%
Human Resources	1	0.8%
Internal Audit	1	0.8%

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Cash on Hand		
Department	# of Cases	Pct. of Cases
Accounting	33	32.4%
Operations	23	22.5%
Executive / Upper Management	18	17.6%
Customer Service	11	10.8%
Sales	7	6.9%
Finance	4	3.9%
Board of Directors	2	2.0%
Information Technology	1	1.0%
Internal Audit	1	1.0%
Legal	1	1.0%
Manufacturing and Production	1	1.0%

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Non-Cash		
Department	# of Cases	%
Executive / Upper Management	27	22.1%
Operations	23	18.9%
Sales	17	13.9%
Warehousing / Inventory	17	13.9%
Accounting	13	10.7%
Information Technology	7	5.7%
Manufacturing and Production	6	4.9%
Research and Development	4	3.3%
Customer Service	3	2.5%
Purchasing	2	1.6%
Finance	1	0.8%
Internal Audit	1	0.8%
Legal	1	0.8%

# Common financial statement fraud schemes

<b>Register Disbursement</b>		
<b>Department</b>	<b># of Cases</b>	<b>Pct. of Cases</b>
Sales	6	27.3%
Accounting	5	22.7%
Executive / Upper Management	4	18.2%
Customer Service	3	13.6%
Operations	3	13.6%
Internal Audit	1	4.5%

# Common financial statement fraud schemes

## **Background Checks and Perpetrator's Criminal and Employment History**

- Background checks are frequently used as part of the hiring process in order to ensure the reliability of an organization's workforce.
- More than half of the victim organizations in our study conducted a background check on the employment history of the fraudster, and 40% ran a criminal background check on the employee prior to hiring.

## Common financial statement fraud schemes

- Unfortunately, the effectiveness of background checks in preventing fraud is limited.
- As we found in our previous studies, the vast majority of employees who commit occupational fraud are first-time offenders.
- In 87% of the cases in our survey, the perpetrator had never been charged with or convicted of a fraud-related offense prior to the discovery of his or her scheme.
- Additionally, 83% of the fraudsters had never previously been punished or terminated by an employer for fraud or abuse.

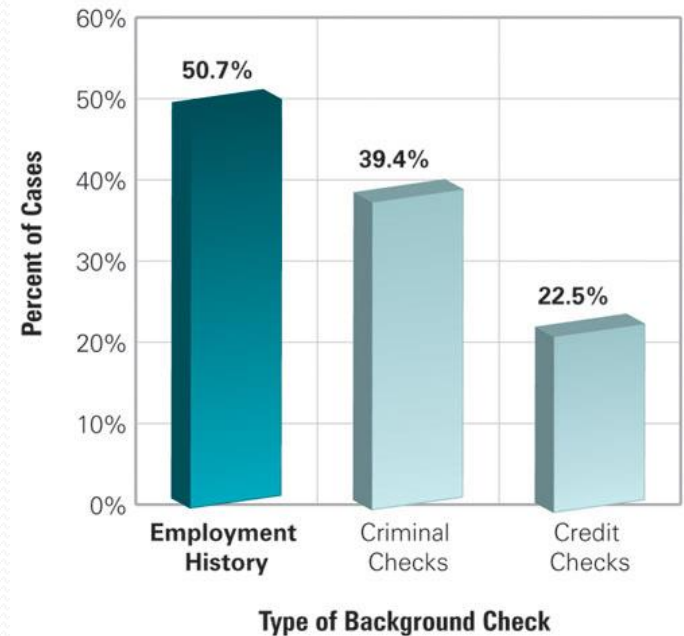
## Common financial statement fraud schemes

- In addition, there is evidence that employment background checks are ineffective at identifying potential fraudsters even when those persons have had previous employment-related issues involving fraud.
- In over half of the cases we reviewed where the employee had been punished or terminated by a previous employer for a fraud-related offense, the victim organization had checked the individual's employment history as part of the hiring process.
- Assuming the majority of these organizations did not knowingly hire past fraudsters, it seems likely that the past misconduct did not turn up on these background checks.

# Common financial statement fraud schemes

- While it is impossible to say why the employment background checks failed in these circumstances, we do know that many employers are reluctant to share negative information about past employees for fear of potential legal liability.
- In other cases, organizations simply ask a new hire for references and fail to conduct an independent check on their own.

Types of Background Checks Conducted<sup>22</sup>



<sup>22</sup>The sum of percentages in this chart exceeds 100 percent because some organizations conducted more than one type of background check.

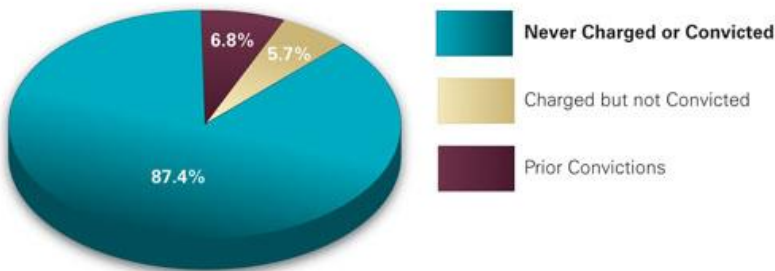
## Common financial statement fraud schemes

- This is an ineffective method of checking an applicant's employment background and is unlikely to turn up any evidence of past misconduct.
- While we do believe that employment background checks are an important fraud prevention measure, our limited data on this point indicate that many organizations need to implement better methods for ensuring the accuracy of background information they receive.
- Finally, we note that credit checks were by far the least common form of background check performed by victim organizations.

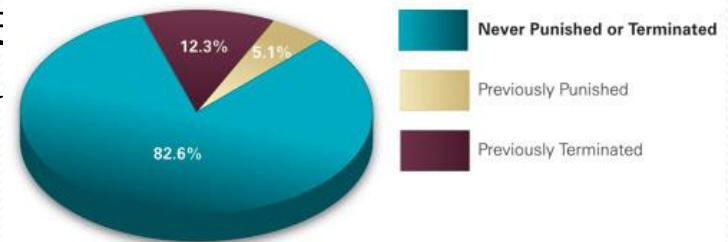
# Common financial statement fraud schemes

- Past research indicates that financial pressures are one of the key motivating factors of occupational fraud, and indeed, in our survey we found that the two most commonly cited behavioral red flags among fraudsters were “financial difficulties” and “living beyond one’s means.”

Perpetrator’s Criminal History



Perpetrator’s Employment History



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on new applicants.

## Behavioral Red Flags Displayed by Perpetrators

# Common financial statement fraud schemes

- Fraudsters often display certain behaviors or characteristics that may serve as warning signs to coworkers, superiors, and other daily contacts.
- For example, some perpetrators act unusually irritable, some suddenly start spending lavishly, and some become increasingly secretive about their professional activities.
- It is important to note that the presence of these symptoms does not in and of itself signify that a fraud is occurring or will occur in the future.
- However, these red flags are often indicators of employee misconduct and an organization's management and anti-fraud personnel should be trained to understand and identify the potential warning signs of fraudulent conduct.

## Common financial statement fraud schemes

- We presented survey respondents with a list of common warning signs and asked which, if any, were displayed by the perpetrator prior to the discovery of the fraud.
- The most frequently cited behavioral red flag in the cases reported to us involved the fraudster living beyond his or her financial means.
- This warning sign was present in 39% of all cases in our study. Other common warning signs included financial difficulties and a general “wheeler-dealer” mentality.

# Common financial statement fraud schemes

- Schemes in which the perpetrator held an unusually close relationship with a vendor or customer caused the greatest median loss to the victim organization (\$410,000).
- The median loss for cases where the fraudster displayed a wheeler-dealer attitude was only slightly less at \$405,000.
- These two warning signs were commonly associated with the corruption schemes reported in our survey.

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**Behavioral Red Flags Present During Fraud Scheme — Sorted by Frequency**

Behavioral Red Flag	# of Cases	Pct. of Cases <sup>23</sup>	Median Loss
Living beyond means	370	38.6%	\$250,000
Financial difficulties	327	34.1%	\$111,000
Wheeler-dealer attitude	195	20.3%	\$405,000
Control issues, unwillingness to share duties	179	18.7%	\$250,000
Divorce / family problems	164	17.1%	\$118,000
Unusually close association with vendor / customer	146	15.2%	\$410,000
Irritability, suspiciousness, or defensiveness	130	13.6%	\$180,000
Addiction problems	128	13.3%	\$225,000
Past legal problems	83	8.7%	\$184,000
Past employment-related problems	76	7.9%	\$163,000
Complaining about inadequate pay	70	7.3%	\$132,000
Refusal to take vacations	65	6.8%	\$250,000
Excessive pressure from within organization	62	6.5%	\$388,000
Instability in life circumstances	47	4.9%	\$58,000
Excessive family / peer pressure for success	40	4.2%	\$90,000
Complaining about lack of authority	35	3.6%	\$120,000

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<sup>23-24</sup>The sum of percentages in this table exceeds 100 percent because in several cases the perpetrator exhibited more than one behavioral red flag.

# Common financial statement fraud schemes

## Behavioral Red Flags Based on Scheme Type

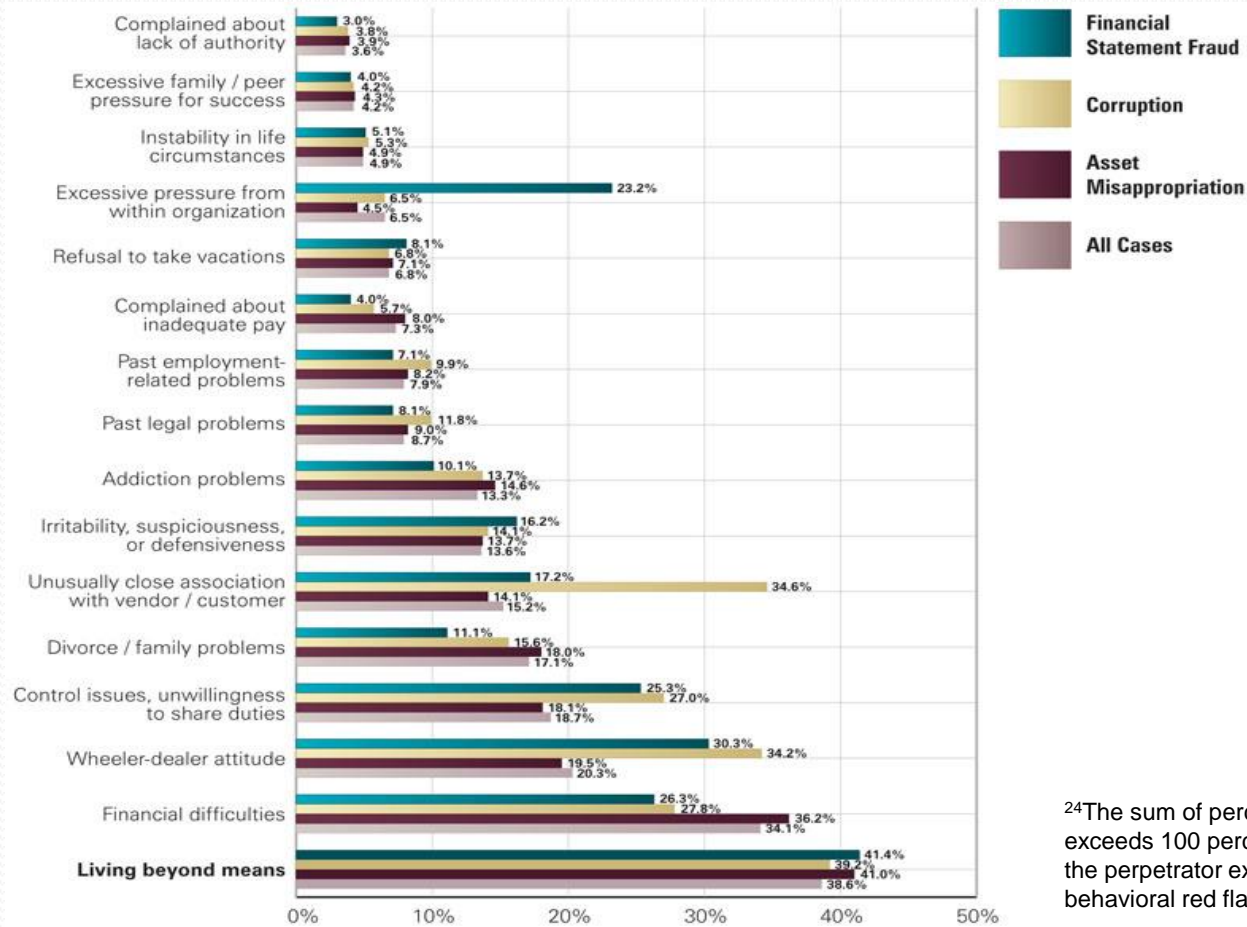
- We analyzed the specific warning signs of fraud based on the types of schemes that were committed to see if there were any notable correlations.
- As the next chart illustrates, the frequency of various behavioral red flags followed a fairly uniform curve regardless of the type of fraud the perpetrator committed; however, there were some obvious outliers.
- For example, in 23% of financial statement fraud cases, the perpetrator was under excessive pressure to perform from within the organization. This red flag was present in less than 7% of all other forms of fraud.
- Excessive pressure to perform appears to be a key motivator for financial statement fraud, as is often seen in cases where fictitious revenues are created or liabilities concealed in the name of “earnings management.”

# Common financial statement fraud schemes

- Similarly, we see a significant spike in the red flag of “unusually close association with a vendor” that is tied to corruption schemes. This red flag occurred in over one-third of all corruption cases, but in less than 18% of all others.
- This result makes sense given the fact that corruption schemes typically involve bribery or conflicts of interest, both schemes that often rely on an improper relationship between an employee and a third party. Control issues and a wheeler-dealer attitude were also both commonly identified in corruption and financial statement fraud cases.
- Asset misappropriation red flags tended to follow the overall distribution more closely, but we did find that “financial difficulties” were much more commonly associated with asset misappropriations than with corruption or financial statement frauds.

# Common financial statement fraud schemes

## Behavioral Red Flags Present During Fraud Scheme<sup>24</sup>



<sup>24</sup>The sum of percentages for each scheme type exceeds 100 percent because in several cases the perpetrator exhibited more than one behavioral red flag.

# Reference

- Adventures in Financial Data Science: The empirical properties of financial data and some other things that interested me... Book 1 of 2: Financial Data Science | by Graham Giller | Nov 17, 2020
- Statistical Analysis of Network Data with R (Use R!) Part of: Use R! (70 Books) | by Eric D. Kolaczyk and Gábor Csárdi | Jun 3, 2020
- Statistical Data Analysis Using SAS: Intermediate Statistical Methods (Springer Texts in Statistics) Part of: Springer Texts in Statistics (70 Books) | by Mervyn G. Marasinghe and Kenneth J. Koehler | Apr 23, 2018
- A Common-Sense Guide to Data Structures and Algorithms, Second Edition: Level Up Your Core Programming Skills by Jay Wengrow | Sep 1, 2020
- Statistical Data Analysis (Oxford Science Publications) by Glen Cowan | Jun 4, 1998
- How to do Linguistics with R: Data exploration and statistical analysis by Natalia Levshina | Nov 25, 2015