# THE TRUE COST OF COMPLIANCE

## A Benchmark Study of Multinational Organizations

Research Report

Independently Conducted by Ponemon Institute LLC

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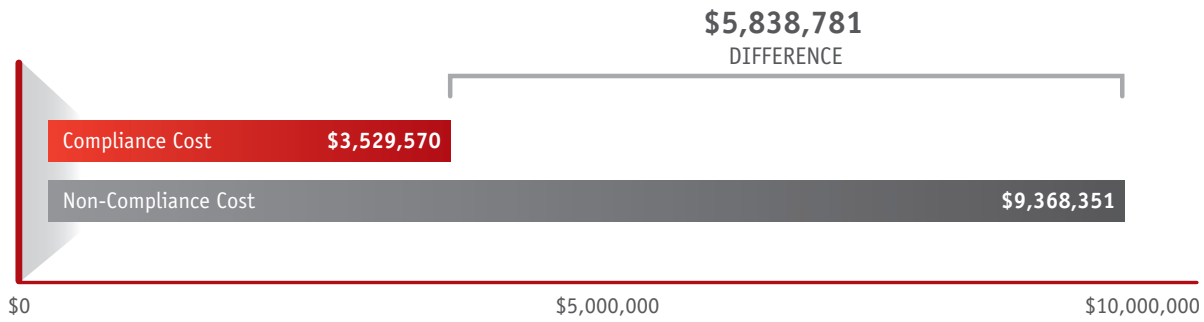
Ponemon INSTITUTE




# I
# EXECUTIVE SUMMARY

Multinational organizations in all industries must comply with privacy and data protection laws, regulations and policies designed to protect individuals' sensitive and confidential information. Compliance requires organizations to adopt and implement a variety of costly activities related to process, people and technologies. These activities include ensuring that they have professional staff dedicated to compliance as well as enabling technologies to curtail risk. They also require organizations to allocate funds to pay legal and non-legal penalties for non-compliance.

Ponemon Institute and Tripwire, Inc. conducted The True Cost of Compliance study to determine the full economic impact of compliance activities for a representative sample of 46 multinational organizations. This benchmark study is the first to use empirical data to estimate the full cost of an organization's compliance efforts, including the cost of non-compliance with laws, regulations and policies. To be as accurate as possible in this estimate, 160 functional leaders were interviewed in these organizations.

What we learned is that while the average cost of compliance for the organizations in our study is $3.5 million, the cost of non-compliance is much greater. The average cost for organizations that experience non-compliance related problems is nearly $9.4 million. Thus, investing in the compliance activities described in this study can help avoid non-compliance problems such as business disruption, reduced productivity, fees, penalties and other legal and non-legal settlement costs.

The findings also suggest that an organization views meeting legal and regulatory requirements as more important than meeting compliance with internal policies and procedures. In terms of external compliance, respondents indicated that the most important and difficult requirements to comply with are those of the PCI DSS, various state privacy and data protection laws, the European Union Privacy Directive, and Sarbanes-Oxley.

## THE COST OF NON-COMPLIANCE CAN BE MORE EXPENSIVE THAN INVESTING IN COMPLIANCE ACTIVITIES

The extrapolated average cost of compliance for 46 organizations in our study is more than $3.5 million, with a range of $446,000 to over $16 million. Adjusting total cost by organizational headcount (size) yields a per capita compliance cost of $222 per employee.

The extrapolated average cost of non-compliance for 46 organizations is nearly $9.4 million, with a range of $1.4 million to nearly $28 million. Adjusting total cost by organizational headcount (size) yields a per capita non-compliance cost of $820 per employee.

Data protection and enforcement activities are the most costly compliance activities. In terms of the direct expense categories, data protection technologies and incident management top the list. The lowest compliance cost activities concern policy development and communications. In terms of direct expense categories, staff certification and redress are the lowest.

Business disruption and productivity losses are the most expensive consequences of non-compliance. The least expensive consequences are fines, penalties and other settlement costs.

***On average, non-compliance cost is 2.65 times the cost of compliance for the 46 organizations.*** With the exception of two cases, non-compliance cost exceeded compliance cost.

## INDUSTRY AND ORGANIZATIONAL SIZE AFFECT THE COST OF COMPLIANCE AND NON-COMPLIANCE

Results show that the total cost of compliance varies significantly by the organization's industry segment, with a range of $6.8 million for education and research to more than $24 million for energy. The difference between compliance and non-compliance cost also varies by industry. Energy shows the smallest difference at $2 million, and technology shows the largest difference at $9.4 million.

When adjusting compliance and non-compliance costs by each organization's headcount, we see smaller-sized companies (5,000 or fewer employees) as incurring substantially higher per capita compliance costs than larger-sized companies (more than 5,000 employees).

While the study found that the cost of compliance is affected by organizational size, it is also affected by the number of regulations and the amount of sensitive or confidential information an organization is required to safeguard.

## THE GAP BETWEEN COMPLIANCE AND NON-COMPLIANCE COST IS RELATED TO DATA BREACH FREQUENCY

We tested the premise that increasing the amount of compliance spending offsets the cost of non-compliance. Our findings show a positive correlation between the percentage difference between compliance and non-compliance costs and the number of lost or stolen records during a 12-month period. In other words, the smaller the gap between compliance and non-compliance costs, the lower the frequency of compromised records.

## THE MORE EFFECTIVE AN ORGANIZATION'S SECURITY STRATEGY IS, THE LOWER THE COST OF NON-COMPLIANCE

We used a well-known indexing method called the security effectiveness score (SES)[1] to measure each organization's security posture. As a result, we determined that security effectiveness is unrelated to compliance cost. However, SES appears to be inversely related to non-compliance cost. Thus, organizations with a higher score, which indicates a more favorable security posture, experience a lower cost of non-compliance.

Per capita non-compliance cost is inversely related to the percentage of compliance spending in relation to the total IT budget. ***Clearly, a higher percentage for compliance spending relative to the total IT budget is an indication that corporate investment in compliance reduces the negative consequences and cost of non-compliance.***

## ONGOING COMPLIANCE AUDITS REDUCE THE TOTAL COST OF COMPLIANCE

Per capita non-compliance cost appears to be inversely related to the frequency of compliance audits, whereas organizations that do not conduct compliance audits experience the highest compliance cost when adjusted for size.

## LAWS AND REGULATIONS ARE THE MAIN DRIVERS FOR INVESTMENT IN COMPLIANCE ACTIVITIES

Finally, results suggest that compliance with laws and regulations (external focus) appears to be the most important mission of compliance efforts. Regulations that are a priority include the Payment Card Industry Data Security Standard (PCI DSS), various state privacy and data protection laws (such as MA 201 in Massachusetts), the European Union Privacy Directive, and Sarbanes-Oxley. Organizations are investing in specialized technologies to protect their data, such as file integrity monitoring, security information and event management, access management, data loss prevention, and encryption.

[1] Ponemon Institute initially developed the Security Effectiveness Score in its 2005 Encryption Trends Study. The purpose of the SES is to define the security posture of responding organizations. The SES is derived from the rating of 25 leading information security and data protection practices. This indexing method has been validated by more than 30 independent studies conducted since June 2005. The SES provides a range of +2 (most favorable) to -2 (least favorable). An index value above zero is net favorable.

# II
# KEY FINDINGS

The key findings presented below are based on the benchmark analysis of 46 organizations. We obtained information about each organization's total compliance cost utilizing an activity-based costing method and a proprietary diagnostic interviewing technique involving 160 functional leaders. Our research methods captured information about direct and indirect costs associated with compliance activities during a 12-month period. We define a compliance activity as one that organizations use to meet the specific rules, regulations, policies and contracts that are intended to protect information assets.

Our benchmarking efforts also captured the direct, indirect and opportunity costs associated with non-compliance events during a 12-month period. We define non-compliance cost as the cost that results when an organization fails to comply with rules, regulations, policies, contacts, and other legal obligations. Part IV of this report discusses our benchmarking methods in greater detail.

In the course of interviewing functional leaders we determined key trends and commonalities about total compliance cost. For many organizations, compliance has a very broad scope that includes global privacy, financial data integrity, data loss notification, credit cardholder protection, and other regulatory mandates. It also includes self-regulatory standards, including ISO, NIST and others.

In the course of our research, we learned that many organizations face multiple and sometimes competing compliance mandates. These mandates require constant monitoring and frequent audits. As a result, compliance can be a significant cost burden that includes the need for dedicated professional staff, enabling technologies to curtail risk and allocation of funds to pay legal and non-legal penalties for non-compliance.

### Figure 1: Average Compliance and Non-Compliance Costs

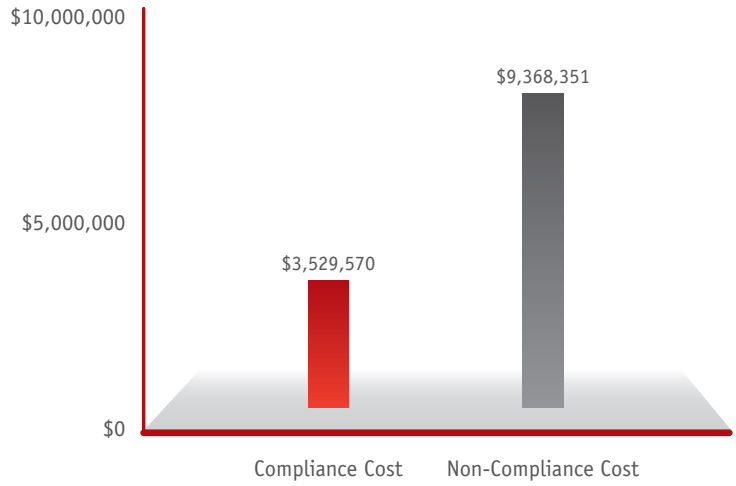



Figure 1 shows the average extrapolated cost of compliance and non-compliance based on the cost framework described in Part 3. According to the figure, non-compliance costs are 2.65 times higher than compliance costs, with a difference of nearly $6 million. The findings demonstrate the value of investing in activities that enable an organization to avoid non-compliance.

## Figure 2: Percentage Cost Structure for Compliance Costs

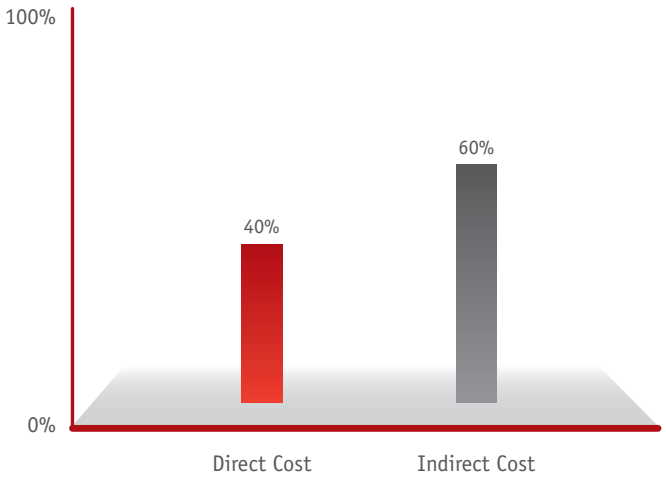



Figure 2 reports the cost structure on a percentage basis for all data compliance cost activities combined. The figure shows that indirect cost such as administrative overhead accounts for 60 percent of compliance cost activities. Direct cost such as payments to consultants, auditors or other outside experts accounts for 40 percent.

Table 1: Key statistics on the cost of compliance for six activity centers (USD)

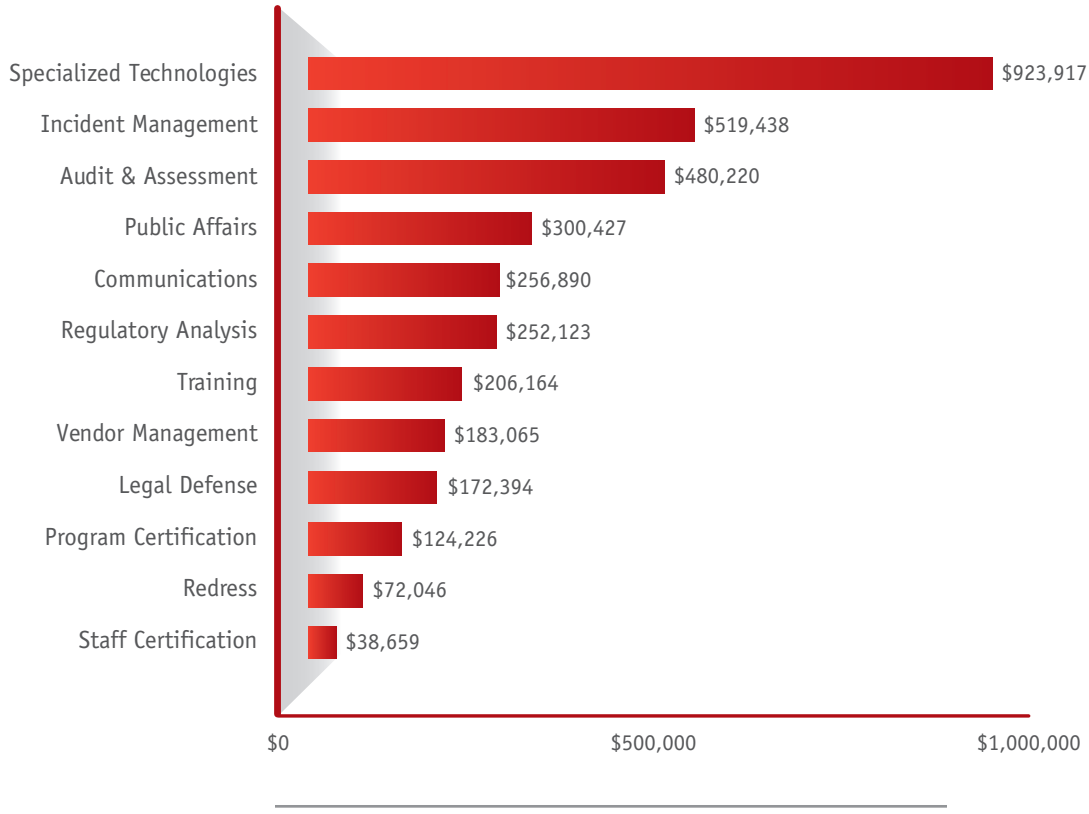
| Activity centers | Total | Average | Median | Maximum | Minimum |
|---|---|---|---|---|---|
| Policy | 13,703,854 | 297,910 | 148,675 | 1,686,805 | 13,796 |
| Communications | 15,783,469 | 343,119 | 166,363 | 2,009,736 | 13,732 |
| Program management | 20,325,527 | 441,859 | 246,576 | 2,168,351 | 48,628 |
| Data security* | 47,570,815 | 1,034,148 | 793,352 | 3,753,816 | 135,685 |
| Compliance monitoring | 29,280,953 | 636,542 | 326,181 | 3,186,971 | 32,872 |
| Enforcement | 35,695,589 | 775,991 | 266,753 | 4,488,671 | 31,731 |
| Total | 162,360,207 | 3,529,570 | 2,023,111 | 16,049,151 | 445,697 |

*Sixty-four percent of this center pertains to the direct and indirect costs associated with enabling security technologies.

Table 1 summarizes the total, average, median, maximum and minimum compliance costs for each of the six activity centers defined in our cost framework in Part IV. Please note that these cost statistics are defined for a 12-month period. Data security represents the largest cost center for the benchmark sample, while policy represents the smallest.

The following two figures show the average compliance cost activities for 46 organizations. As shown in Figure 3, compliance costs relating to data protection technologies and incident management represent the two largest expenditure categories.

## Figure 3: Compliance Costs by Expense Categories




## Figure 4: Compliance Costs by Functional Areas

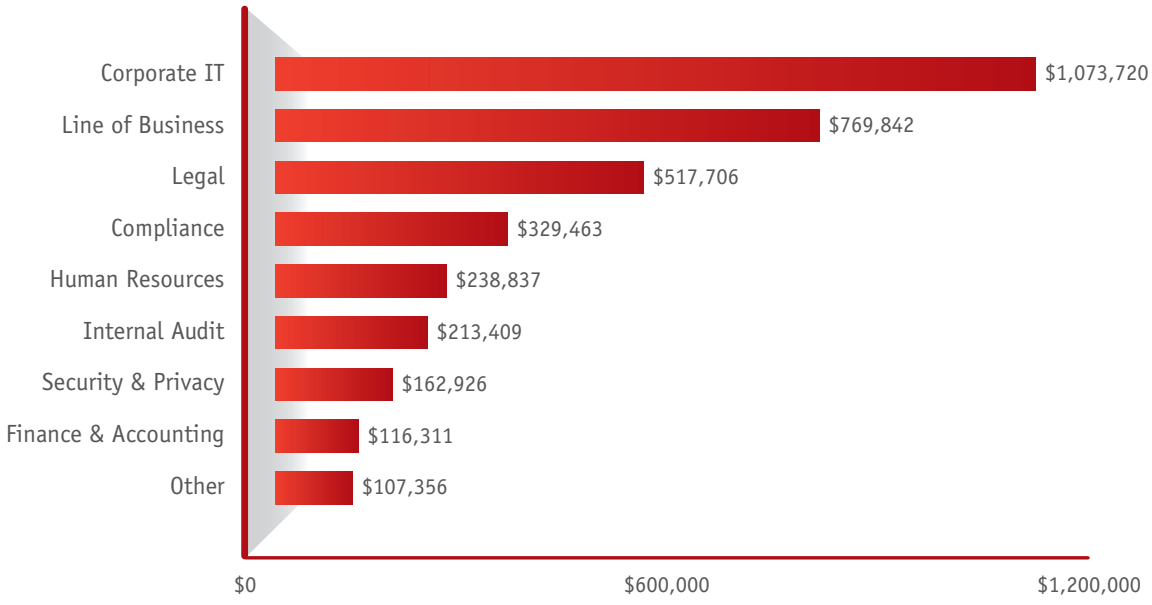



Figure 4 shows IT lines of business and legal as the functional areas most likely to control data compliance expenditures.

## Figure 5: Percentage Cost Structure for Non-Compliance Costs

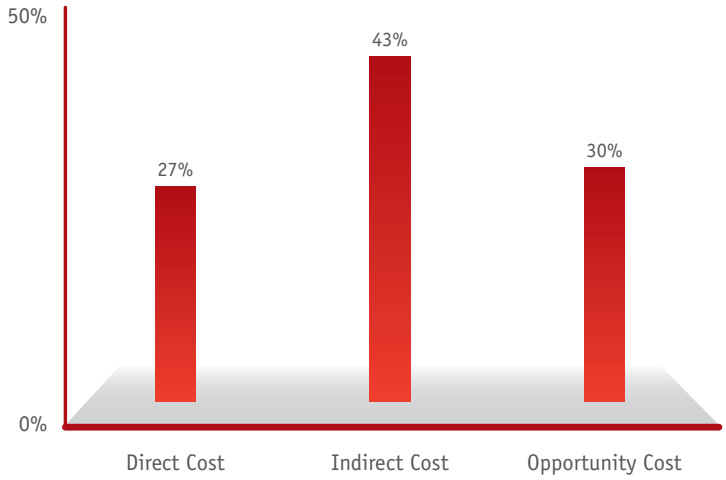



Figure 5 reports the cost structure on a percentage basis for non-compliance costs. As shown, indirect cost such as data center downtime or diminished employee productivity accounts for 43 percent of non-compliance cost. Opportunity costs such as the organization's inability to execute a marketing campaign because of consumer privacy concerns represent 30 percent. Direct cost such as revenue loss or customer churn represents 27 percent of non-compliance costs.

Table 2: Cost of non-compliance for four consequences

| Cost consequences | Total | Average | Median | Maximum | Minimum |
|---|---|---|---|---|---|
| Business disruption | 151,691,110 | 3,297,633 | 2,432,126 | 16,552,877 | - |
| Productivity loss | 112,138,567 | 2,437,795 | 2,324,717 | 6,446,758 | - |
| Revenue loss | 100,324,880 | 2,180,976 | 1,983,464 | 6,538,555 | 154,675 |
| Fines, penalties & other | 66,789,568 | 1,451,947 | 1,075,627 | 7,493,699 | 80,384 |
| Total | 430,944,126 | 9,368,351 | 9,336,084 | 27,974,860 | 1,386,758 |

Table 2 summarizes the total, average, median, maximum and minimum non-compliance cost for each one of four consequences defined in our framework for a 12-month period. Business disruption represents the most costly consequence, while fines, penalties and other settlement costs represent the least costly consequences of compliance failure.

## Figure 6: Compliance and Non-Compliance Costs

Ascending order by total compliance cost


Figure 6 shows compliance and non-compliance costs for 46 organizations. These observations are presented in ascending order of the total compliance cost (with a range of $2 million to over $40 million per annum). The figure shows that in all but two cases, non-compliance costs exceed compliance costs.

***It is our belief that the gap between compliance and non-compliance provides evidence that organizations do not spend enough resources on core compliance activities. In other words, if companies spent more on compliance in areas such as audits, enabling technologies, training, expert staffing and more, they would recoup those expenditures and possibly more through a reduction in non-compliance cost.***

## Figure 7: Compromised Sensitive or Confidential Records Lost or Stolen Over 12 Months

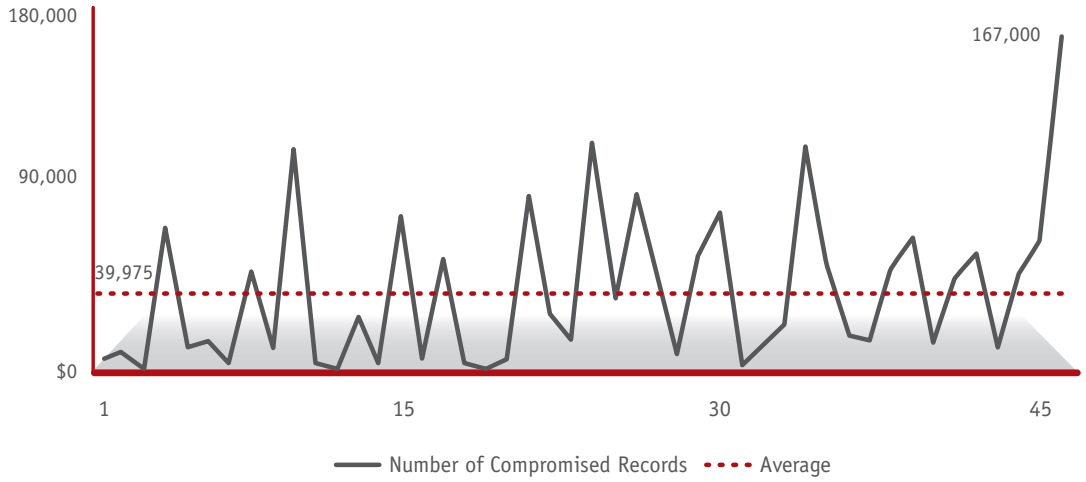



Figure 7 reports the approximate number of compromised sensitive or confidential records over the past 12 months as experienced by 46 organizations. The variation in lost or stolen records appears to be significant, ranging from a low of zero to a high of 167,000, and having an average of 40,000.

## Figure 8: Compromised Records in Ascending Order by the Percentage

Ascending order by the percentage gap between compliance and non-compliance cost

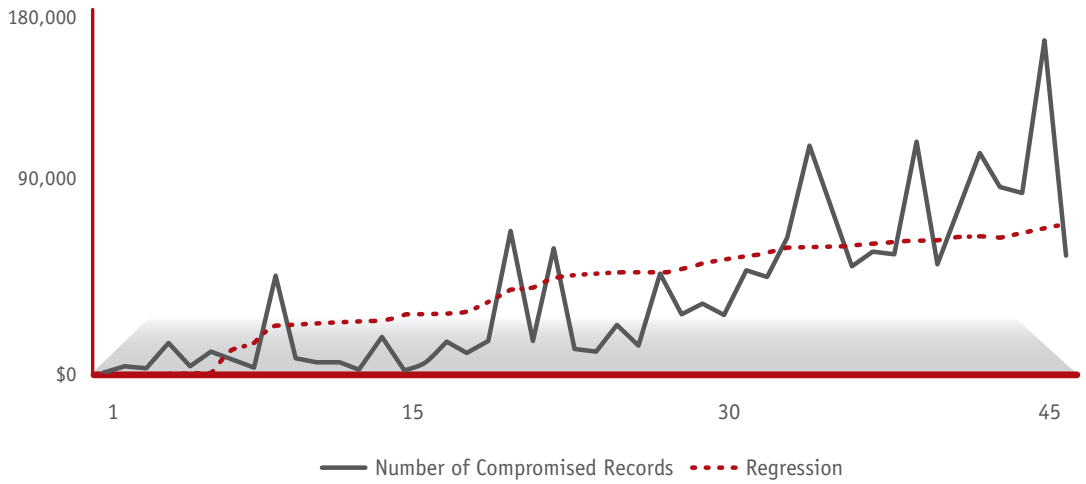



Figure 8 compares the percentage gap calculated to the number of compromised records shown in Figure 7. We hypothesize that the wider the gap between non-compliance and compliance cost, the greater the data loss. Clearly, the graph shows an upward sloping regression line. This slope suggests organizational data loss is related to the gap between compliance and non-compliance cost.

## Figure 9: Total Compliance Cost by Industry in Millions of USD

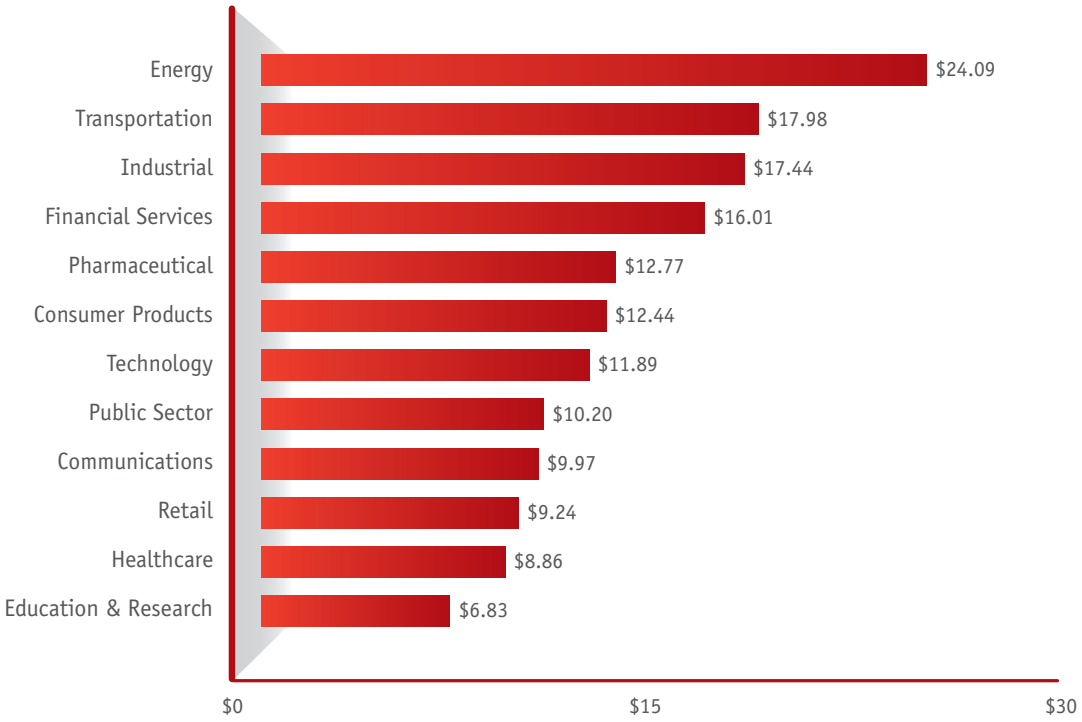



Figure 9 provides the total compliance cost for 12 industry segments included in our benchmark sample. The analysis by industry is limited because of a small sample size; however, it is interesting to see wide variation across segments ranging from a high of more than $24 million (energy) to a low of $6.8 million (education and research).

## Figure 10: Percentage Gap Between Non-Compliance and Compliance Cost by Industry

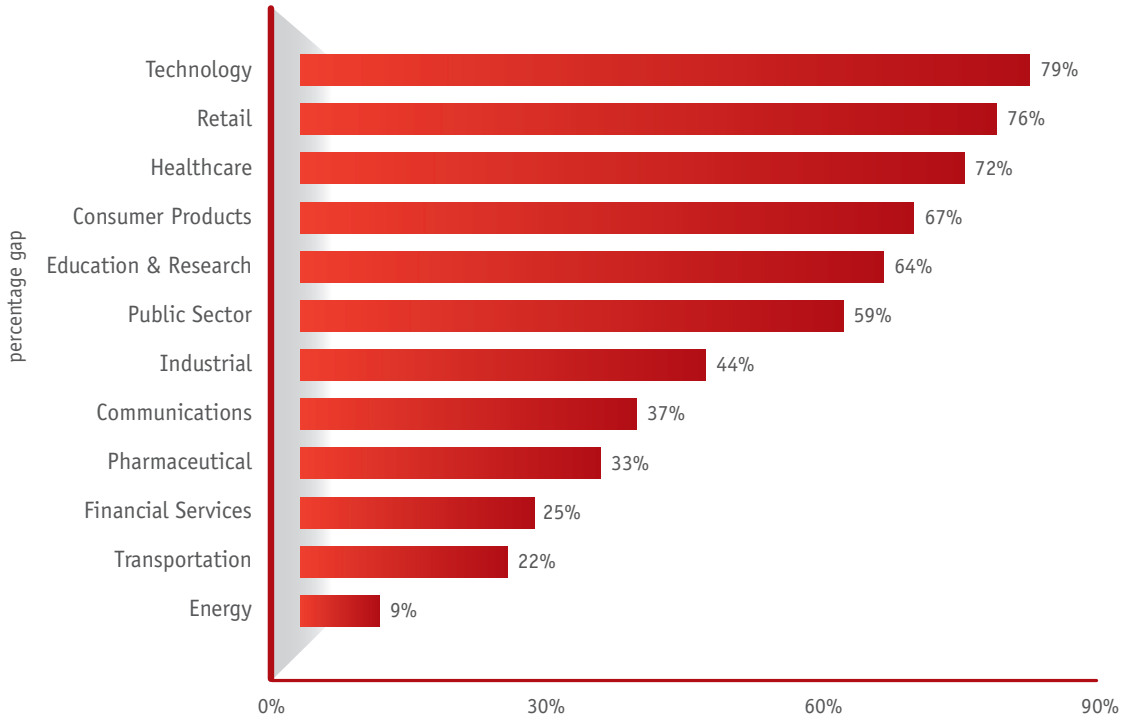



Figure 10 reports the percentage gap between compliance and non-compliance costs by industry. In contrast to the above analysis, energy also has the smallest percentage gap at nine percent and the technology segment has the largest gap at 79 percent.

## Figure 11: Average Number of Compromised Records by Industry

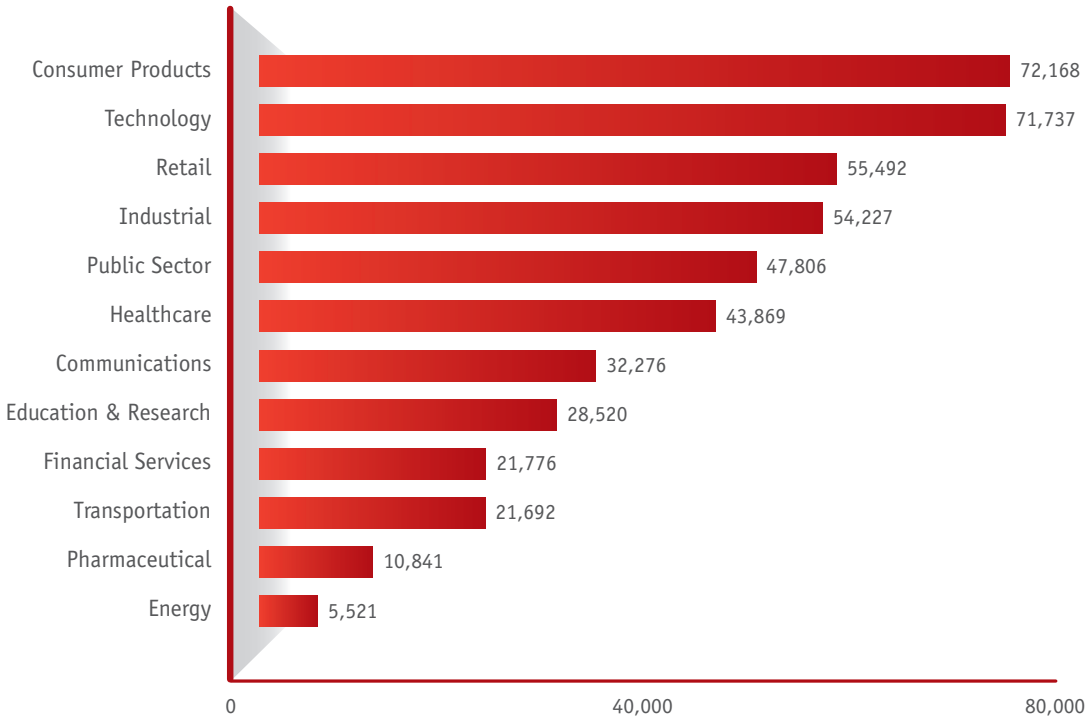



Figure 11 reports the average number of compromised records over a 12-month period by industry classification. Though not a perfect match, there appears to be a close relationship between the average number of lost or stolen records and the percentage gap by industry shown in Figure 10.

## Figure 12: Compliance Cost and Non-Compliance Cost by Headcount in Millions of USD


Figure 12 reports the average compliance and non-compliance costs by the approximate global headcount (size) of benchmark companies. Not surprisingly, compliance and non-compliance costs increase according to the organization's size.

## Figure 13: Per Capita Compliance Cost and Non-Compliance Cost by Headcount in USD

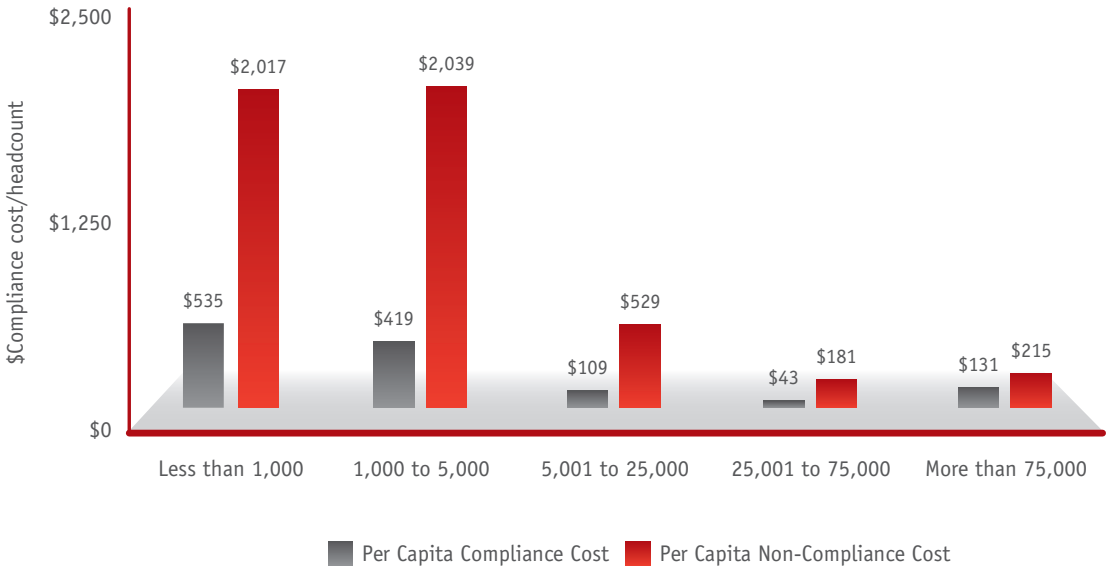
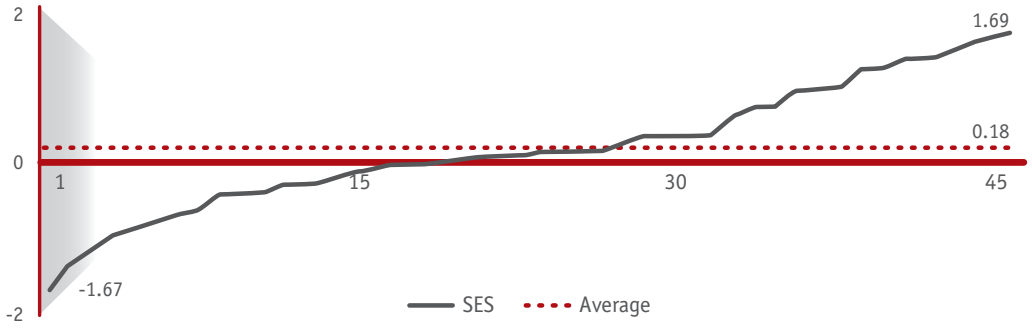



Figure 13 provides an analysis of compliance and non-compliance cost on a per capita basis. This figure shows an economy of scale. Specifically, when adjusted by headcount (size), both compliance and non-compliance costs are highest for organizations with fewer than 5,000 employees and smallest for organizations with 25,000 to 75,000 employees. This result may be partially explained by the fact that organizations hold or have access to vast amounts of sensitive or confidential information irrespective of size. In addition, the per capita difference is much more significant for non-compliance than compliance cost, wherein per capita non-compliance cost is about ten times higher for organizations with fewer than 5,000 employees versus organizations with more than 25,000 employees.

## Figure 14: Benchmark Sample in Ascending Order by Security Effectiveness Score




In this benchmark study, we utilize an indexing methodology known as the Security Effectiveness Score (SES) to measure an organization's ability to meet reasonable security objectives. Recent research shows that the higher the SES index, the more effective the organization is in protecting information assets and critical infrastructure.

As with prior Ponemon Institute research, we measured the security posture of participating organizations as part of the benchmarking process for this study. Figure 15 reports each benchmark company's SES in ascending order of security effectiveness. The SES range of possible scores is -2 (minimum score) to +2 (maximum score). Index results for the present benchmark sample vary from a low of -1.67 to a high of +1.69, with a mean value of 0.18.

## Figure 15: Security Effectiveness Score for 12 Industry Segments

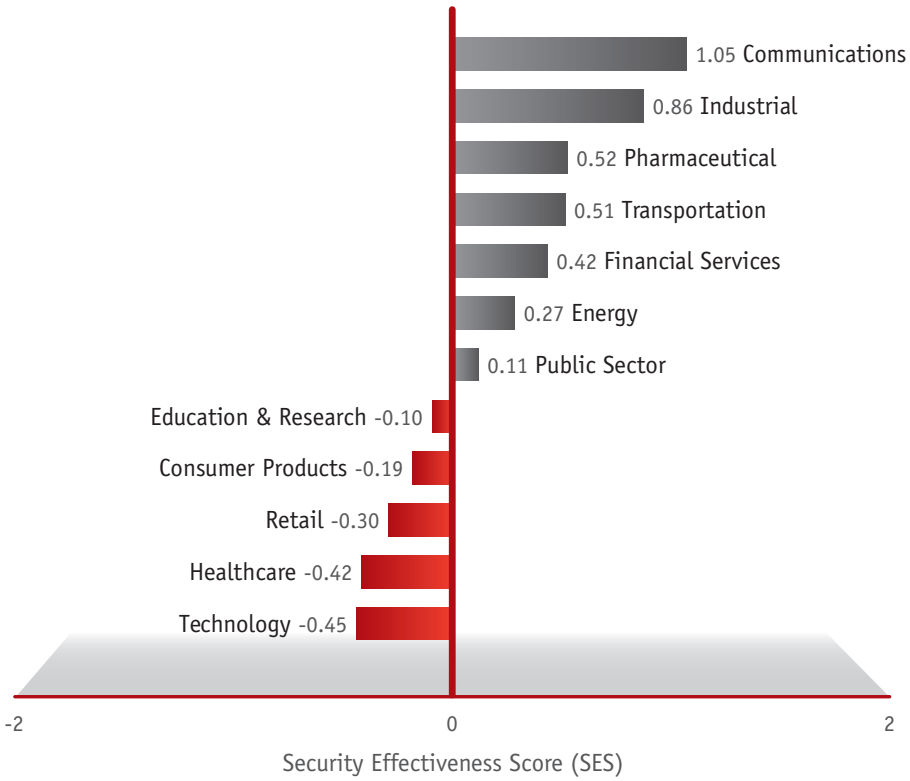



Figure 15 shows the average SES index for 12 industry segments. Although the sample size is too small to draw definitive conclusions about industry effects, these results do show marked variation in index values from a high of 1.05 for companies in the communications industry to a low of -0.45 for companies in the technology sector.

## Figure 16: Pilot and Regression for Security Effectiveness Score and Per Capita Compliance Cost

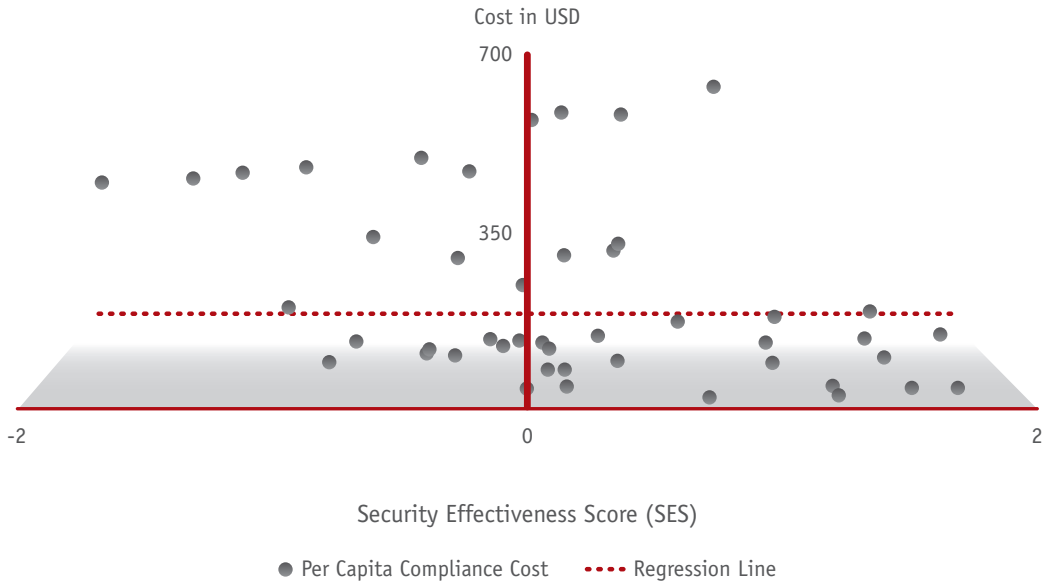



Figure 16 plots the SES index against each organization's per capita compliance cost. The graph also provides a regression line for this series. The regression slope is nearly flat, suggesting no apparent relationship between compliance cost and security effectiveness.

## Figure 17: Pilot and Regression for Security Effectiveness Score and Per Capita Non-Compliance Cost

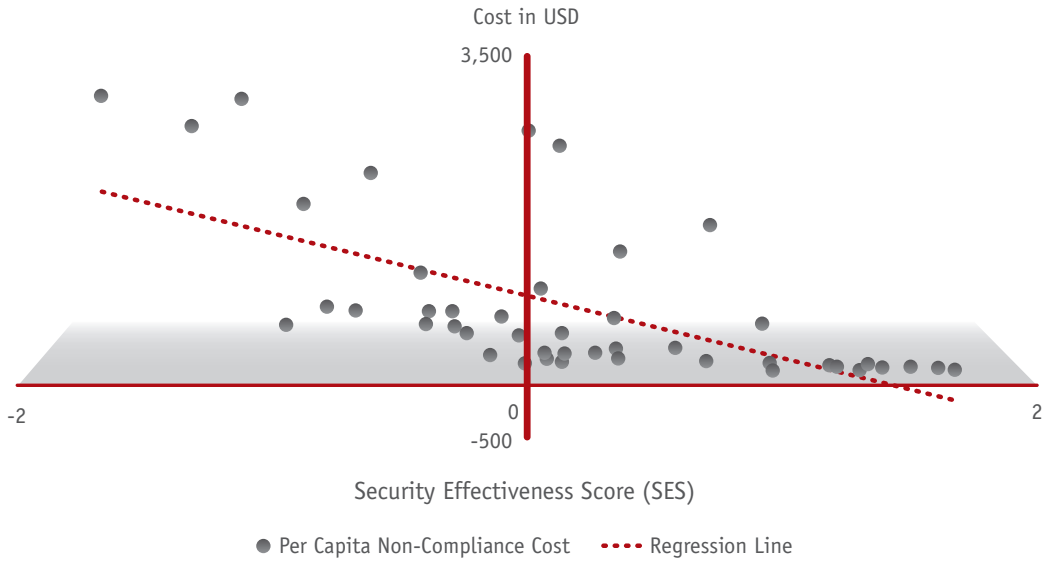



Figure 17 plots the SES against each organization's per capita non-compliance cost. Similar to the previous figure, the graph provides a regression line for the series. Here the regression line slopes downward, suggesting an inverse relationship between non-compliance cost and security effectiveness. ***In other words, organizations with a strong security posture enjoy a lower non-compliance cost.***

## Figure 18: Regressions for Security Effectiveness Score and Four Non-Compliance Cost Components


To better understand the inverse relationship shown above, we regressed the four component parts of non-compliance cost against the SES. As shown in Figure 18, each non-compliance cost component is inversely sloping, suggesting that security effectiveness moderates the cost of business disruption, productivity loss, and revenue loss, as well as fines, penalties and other settlement costs.

## Figure 19: Per Capita Non-Compliance Cost by Security Effectiveness Score Quartile in USD

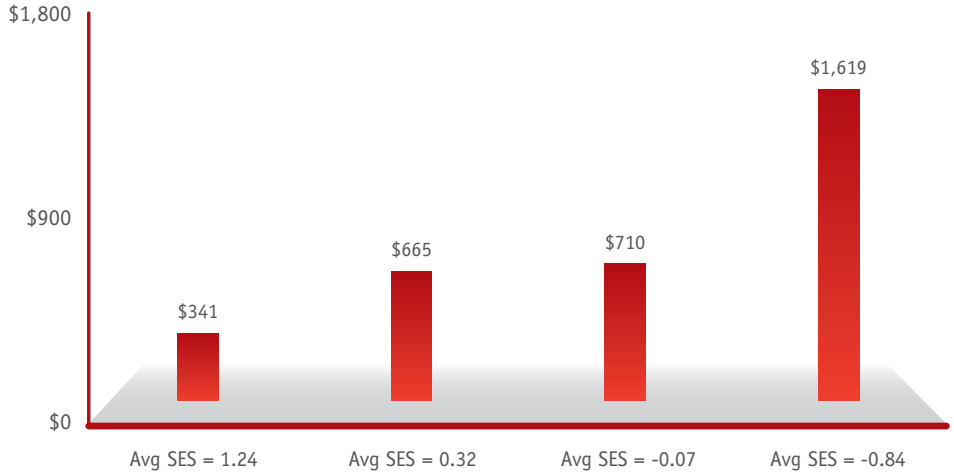
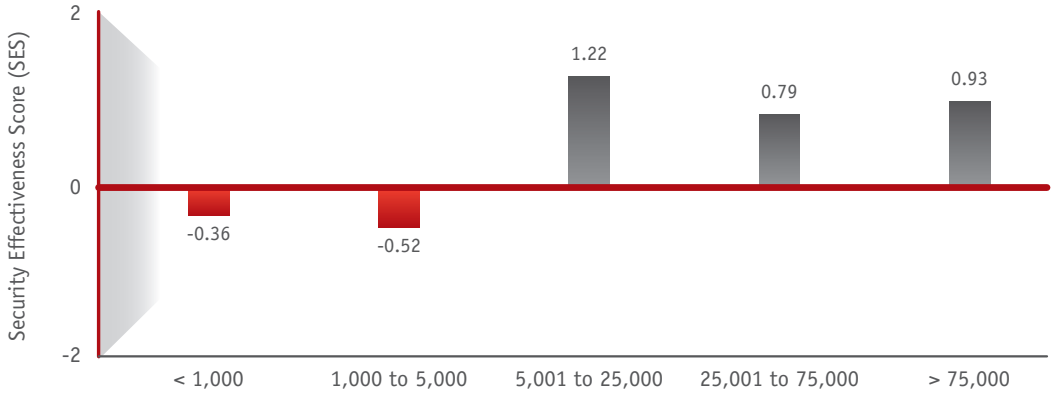



Figure 19 reports the average per capita non-compliance cost by four SES quartiles. As clearly indicated, the first quartile (with the highest SES quartile average at +1.24) achieves an average per capita non-compliance cost of only $341. The fourth quartile (with the lowest SES quartile average at -0.84) experiences an average per capita non-compliance cost of $1,619.

## Figure 20: Average Security Effectiveness Score by Organizational Headcount (Size)




In Figure 20, we compare the average SES according to five organizational headcount ranges. As previously noted, larger-sized companies appear to enjoy a much lower per capita cost of both compliance and non-compliance. This chart shows companies with more than 5,000 employees achieve a higher level of security effectiveness than companies with less than 5,000 employees. This finding may partially explain why the per capita compliance and non-compliance costs of smaller-sized companies were substantially higher than larger-sized companies.

## Figure 21: Internal Audit Frequency

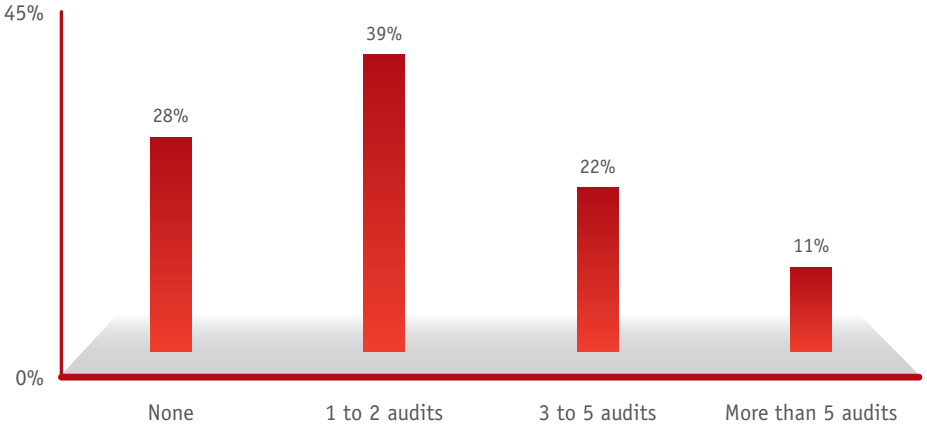



Figure 21 reports the internal compliance audit frequency of participating benchmark companies on an annual basis.[2] Surprisingly, 28 percent of companies say they do not conduct compliance audits, and only 11 percent say they conduct more than five audits each year.

[2] Please note that all audits examined in this analysis were all internally conducted either by in-house or contract (outsourced) staff.

## Figure 22: Per Capita Compliance and Non-Compliance Cost by Audit Frequency in USD

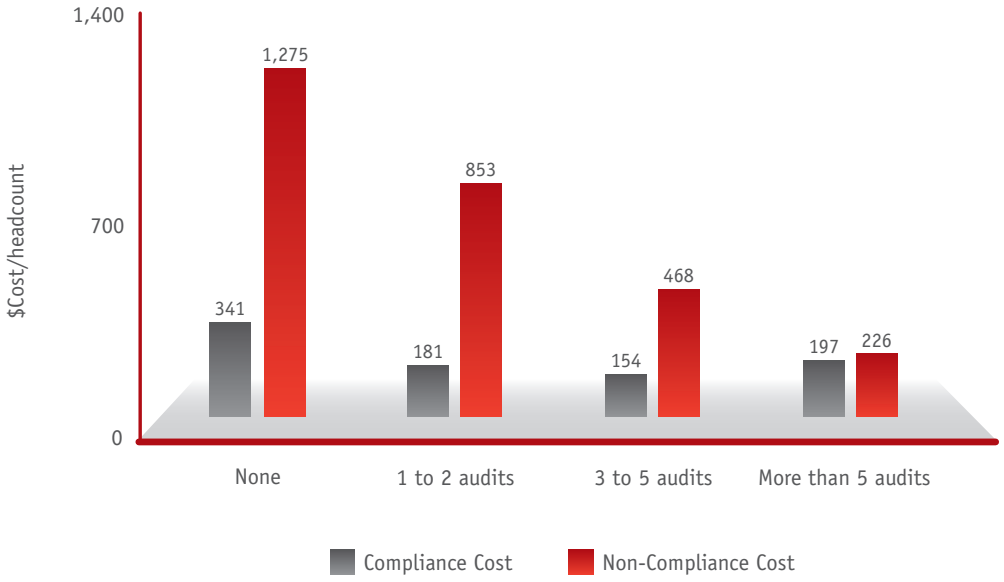



Figure 22 shows the relationship between per capita compliance and non-compliance cost and internal audit frequency. Organizations that conduct three to five internal compliance audits per year have the lowest per capita compliance cost (average $154). The highest compliance cost (average $341) is associated with organizations that do not conduct any internal compliance audits.

This figure shows an inverse relationship between per capita non-compliance cost and audit frequency. Here, the highest per capita non-compliance cost (average $1,275) is associated with organizations that do not conduct audits. The lowest per capita non-compliance cost (with an average of $226) is associated with organizations that conduct five or more audits.

## Figure 23: Percentage of Compliance Spending to the Total IT Budget

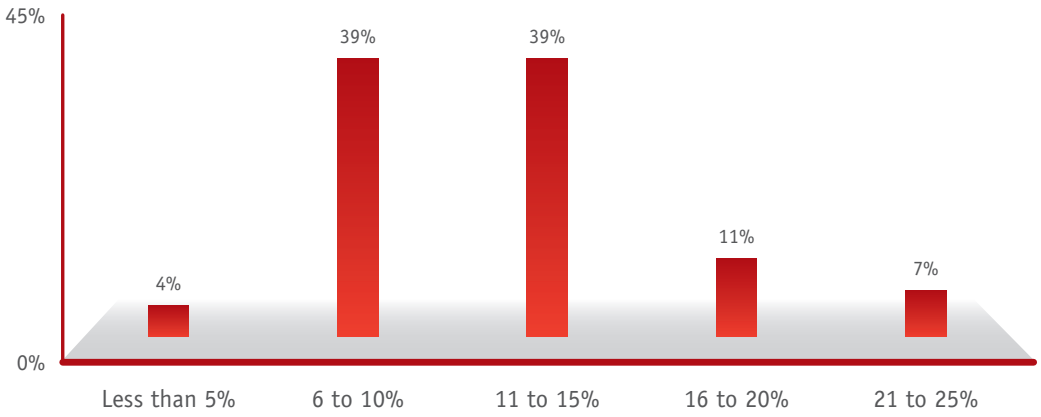



Figure 23 reports the percentage of compliance spending with respect to each organization's total IT budget. The extrapolated average percentage for all 46 benchmarked companies is 11.9 percent.

## Figure 24: Per Capita Compliance and Non-Compliance Cost by Percentage of IT Budget in USD

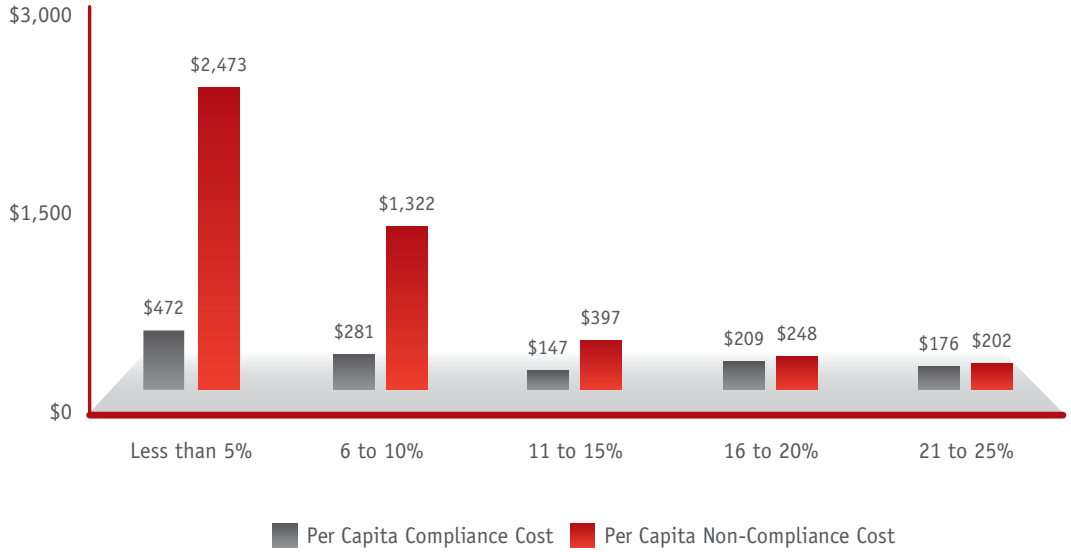



Figure 24 reveals another interesting relationship between the percentage compliance spending and per capita cost. As shown, the gap between compliance and non-compliance cost is inversely related to the percentage of compliance spending in relation to the total IT budget. In other words, spending on core compliance activities reduces the cost of non-compliance—a finding that supports our earlier hypothesis.

Table 3: Perceived importance and difficulty of data compliance regulations

| Regulations | Regulations viewed as most important | | Regulations viewed as most difficult to comply with | | Priority |
|---|---|---|---|---|---|
| | Frequency | Percentage | Frequency | Percentage | |
| PCI DSS | 138 | 86% | 75 | 47% | 1 |
| US state laws for data breach | 106 | 66% | 68 | 43% | 2 |
| Sarbanes-Oxley | 103 | 64% | 57 | 36% | 3 |
| EU Privacy Directive | 86 | 54% | 52 | 33% | 4 |
| HIPAA (including HITECH) | 78 | 49% | 19 | 12% | 5 |
| International laws by country | 57 | 36% | 18 | 11% | 6 |
| Federal Privacy Act | 26 | 16% | 7 | 4% | 7 |
| COPPA | 26 | 16% | 6 | 4% | 8 |
| GLBA | 24 | 15% | 5 | 3% | 9 |
| FISMA | 20 | 13% | 3 | 2% | 10 |
| FACTA | 15 | 9% | 3 | 2% | 11 |
| FCRA | 11 | 7% | 2 | 1% | 12 |
| CANSPAM | 9 | 6% | 1 | 1% | 13 |
| Other | 7 | 4% | 0 | 0% | 14 |

Our final analysis examines how 160 respondents in our sample of 46 benchmarked organizations view different data compliance regulations in terms of importance and difficulty. Although certain regulations like HIPAA and GLBA are industry-specific, the summarized data in Table 3 is for all industries of surveyed respondents. This data clearly shows that PCI DSS, various US state data breach or privacy laws such as Massachusetts, Sarbanes-Oxley and the EU Privacy Directive are of greatest concern to respondents.

## Figure 25: Approximate Allocation of Average Compliance Cost by Area of Focus in USD

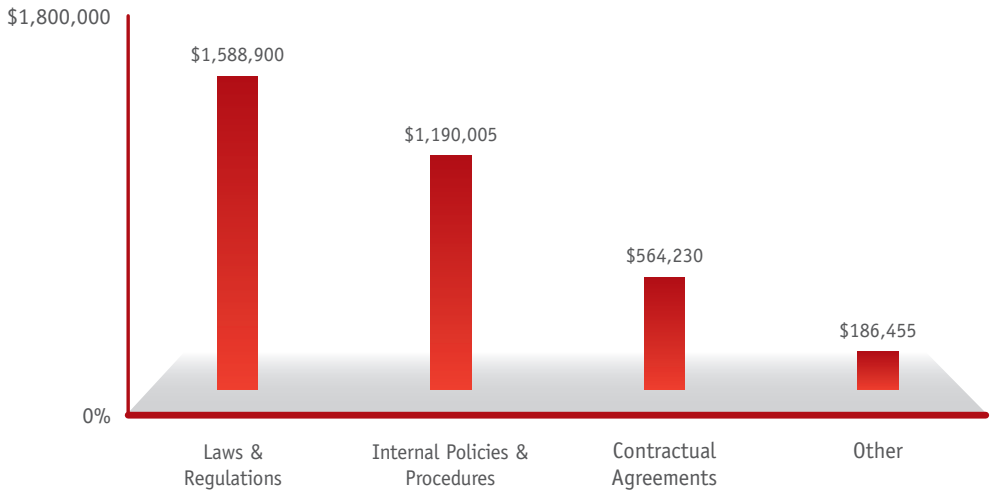



Figure 25 summarizes how compliance dollars are spent by the sample of 46 benchmarked organizations. The largest cost allocation, 45 percent, is for compliance with laws and regulations (such as those listed in the above table). The second largest cost allocation, 34 percent, is for compliance with internal policies and procedures. The remaining compliance cost allocation pertains to contractual agreements with various parties, including business partners, vendors and data protection authorities (16 percent), or other miscellaneous issues.

# III
# SAMPLE OF PARTICIPATING ORGANIZATIONS

## Figure 26: Industry Classification of the Benchmark Sample

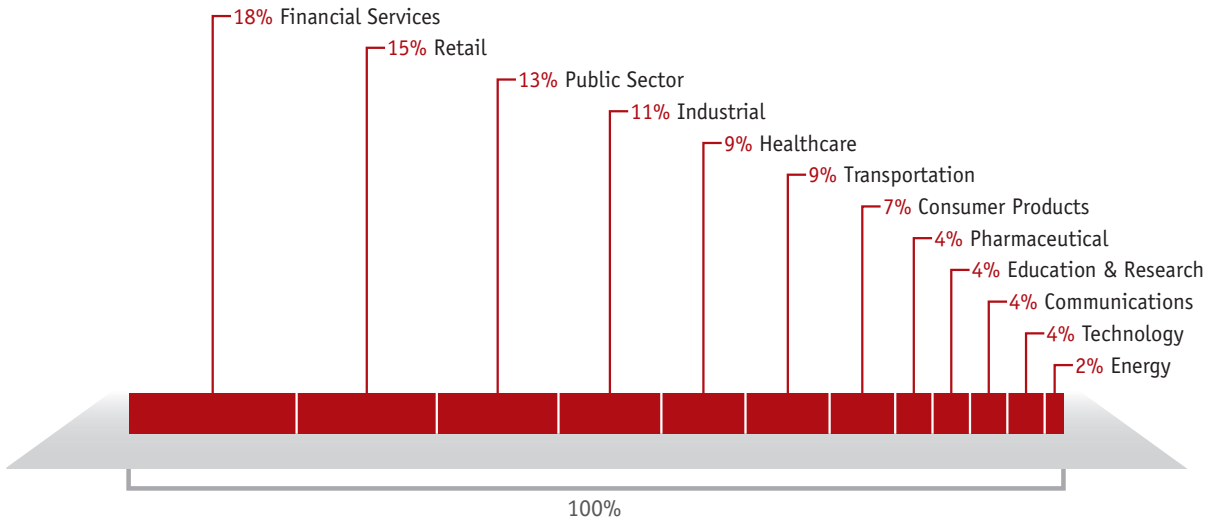



Figure 26 reports the percentage of companies by industry that participated in the benchmark study. Our final sample, which included a total of 46 organizations, served as the basis for our analysis. Financial services, retail and public sector organizations represent the three largest segments.

## Figure 27: Participating Respondents by their Approximate Job Function or Title

Computed from 160 separate interviews

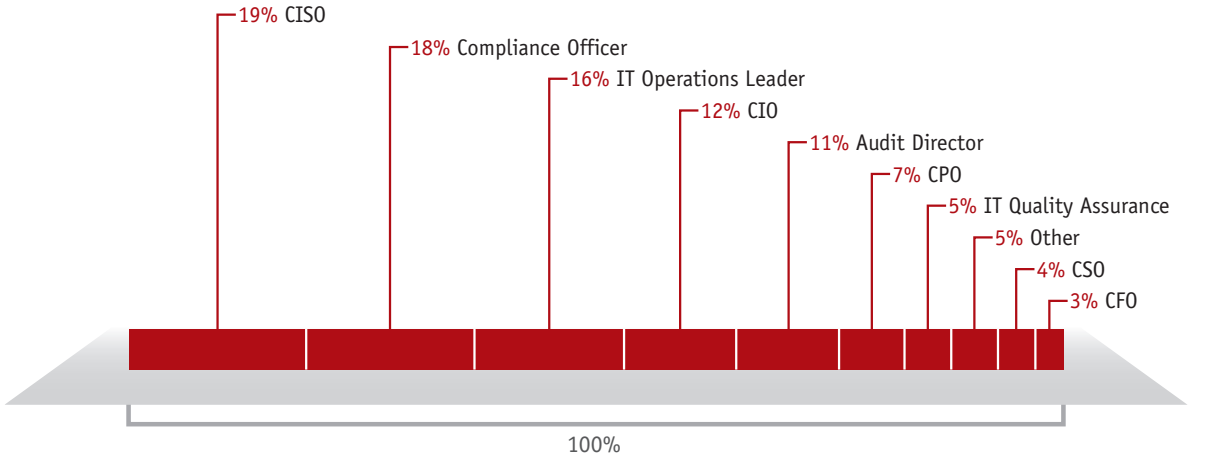
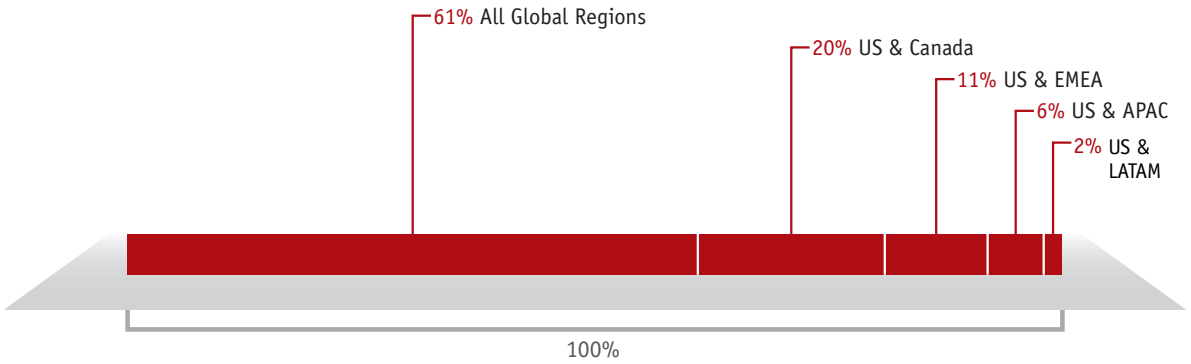



Figure 27 reports the approximate job functions or titles of participants who completed the diagnostic interview. In total, 160 individuals with responsibility for data protection and compliance activities were engaged in the benchmark research process.

## Figure 28: Distribution of Participating Organizations by Global Region




On average, benchmark methods required between three and four interviews to capture enough information to extrapolate compliance and non-compliance costs. Respondents in information security, compliance, and IT operations represent the top three functional areas participating in these diagnostic interviews.

Figure 28 reports the percentage frequency of multinational companies based on their global footprint. While all 46 organizations operate in more than one country, 61 percent operate in all global regions. Twenty percent operate in the United States and Canada.

## Figure 29: Distribution of Participating Organizations by Global Headcount

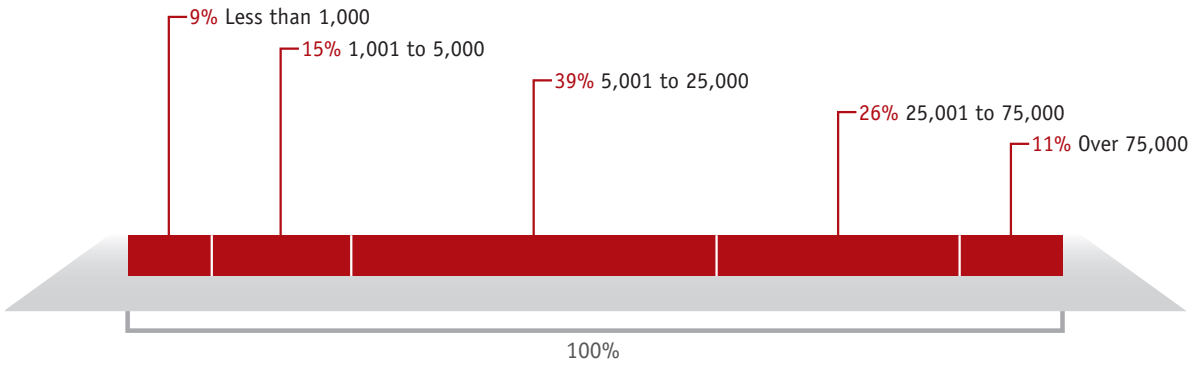



Figure 29 summarizes the global headcount of participating organizations, wherein the largest segment includes organizations with 5,001 to 25,000 full-time equivalent employees. Accordingly, headcount is used as a means of inferring organizational size in this research.

# IV
# COST FRAMEWORK

Our primary method for determining the total cost of compliance relies on the objective collection of cost data. Using a well-known cost accounting method, we were able to segment detailed cost data into discernible activity centers that explain the entire data protection and compliance mandate within benchmarked companies.[3] We determined that the following six cost activity centers span the full economic impact of compliance costs associated with protecting data. Within each center we compile the direct and indirect costs associated with each activity.

**Compliance policies:** Activities associated with the creation and dissemination of policies related to the protection of confidential or sensitive information such as customer data, employee records, financial information, intellectual properties and others.

**Communications:** Activities and associated costs that enable a company to train or create awareness of the organization's policies and related procedures for protecting sensitive or confidential information. This activity includes all downstream communications to employees, temporary employees, contractors and business partners. It also includes the required notifications about policy changes and data breach incidents.

**Program management:** Activities and associated costs related to the coordination and governance of all program activities within the enterprise, including direct and indirect costs related to privacy and IT compliance.

**Data security:** All activities and technologies used by the organization to protect information assets. Activities include professional security staffing, implementation of control systems, backup and disaster recovery operations and others.

**Compliance monitoring:** All activities deployed by the organization to assess or appraise compliance with external, internal and contractual obligations. It includes costs associated with internal audits, third-party audits, technology, verification programs, professional audit staffing and others.

**Enforcement:** Activities related to detecting non-compliance, including incident response. These activities also include redress activities such as hotlines, remedial training of employees who violate compliance requirements, and voluntary self-reporting to regulators.

In addition to the above internal activities, most companies incur tangible costs and opportunity losses as a result of non-compliance with data protection requirements and laws. An example of a non-compliance event includes end-user violations of company policies such as the misuse of Internet applications or use of insecure devices in the workplace. Other examples include contractual violations with vendors or business partners, organizational changes imposed by regulators, data loss incidents, theft of intellectual properties and many others. Our total compliance cost framework includes the four broadly defined consequences of non-compliance as follows:

**Business disruption:** The total economic loss that results from non-compliance events or incidents such as the cancellation of contracts, business process changes imposed by regulators, shutdowns of business operations and others.

**Productivity loss:** The time for accomplishing work-related responsibilities that employees lose (and related expenses) because the systems and other critical processes they rely on experience downtime.

**Lost revenues:** The loss in revenue sustained as a result of non-compliance with data protection requirements and laws. This includes customer turnover and diminished loyalty due to lost trust and confidence in the organization.

**Fines, penalties and other settlement costs:** The total fines, penalties and other legal or non-legal settlements associated with data protection non-compliance issues. This includes expenditures for engaging legal defense and other experts to help resolve issues associated with compliance infractions and data breaches.

[3] Ponemon Institute's cost of data breach studies conducted over the past six years utilizes activity-based cost to define the total economic impact of data loss or theft that requires notification. See, for example, 2009 Cost of Data Breach, Ponemon Institute January 2010.

## Figure 30: Total Compliance Cost Framework

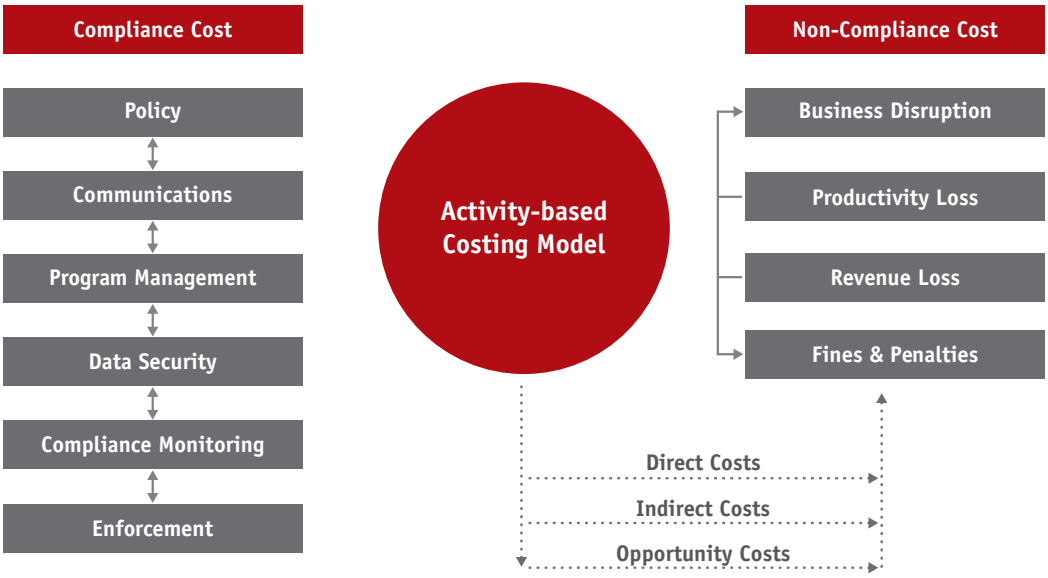



Figure 30 presents the activity-based costing framework used in this research. The framework consists of six cost center activities denoted as "compliance costs," and four cost consequences denoted as "non-compliance costs." As shown, the six compliance costs are policy, communications, program management, data security, compliance monitoring and enforcement.

Each of these activities generates direct, indirect and opportunity costs. The consequences for failing to comply with data compliance requirements include business disruption, productivity losses, and revenue losses, as well as fines, penalties and other cash outlays. In the study, we used two sets of costs for each benchmarked organization, which combined make up the total cost of compliance.

# V
# BENCHMARK METHODS

To obtain information about each organization's total compliance cost, the researchers utilized an activity-based costing method and a proprietary diagnostic interviewing technique. Following are the approximate titles of the 160 functional leaders from the benchmarked organizations who participated in our study:

- Chief Information Officer
- Chief Information Security Officer
- Chief Compliance Officer
- Chief Financial Officer
- Chief Privacy Officer
- Internal Audit Director
- IT Compliance Leader
- IT Operations Leader
- Human Resource Leader
- Data Center Management

The benchmark instrument contains a descriptive cost for each one of the six cost activity centers. Within each activity center, the survey requires respondents to specify a cost range that estimates direct cost, indirect cost and opportunity cost, which are defined as follows:

**Direct cost** – the direct expense outlay to accomplish a given activity.

**Indirect cost** – the amount of time, effort and other organizational resources spent, but not as a direct cash outlay.

**Opportunity cost** – the cost resulting from lost business opportunities as a result of compliance infractions that diminish the organization's reputation and goodwill.

Our research methods captured information about all costs grouped into six core compliance activities:

- Policy development and upstream communication
- Training, awareness and downstream communication
- Data protection program activities
- Data security practices and controls
- Compliance monitoring
- Enforcement

Our benchmark instrument was designed to collect descriptive information from individuals who are responsible for data protection efforts within their organizations. The research design relies upon a shadow costing method used in applied economic research. This method does not require subjects to provide actual accounting results, but instead relies on broad estimates based on the experience of individuals within participating organizations. Hence, the costs we extrapolated are those incurred directly or indirectly by each organization as a result of their efforts to achieve compliance with a plethora of data protection requirements. Our methods also permitted us to collect information about the economic consequences of non-compliance.

The benchmark framework in Figure 1 presents the two separate cost streams used to measure the total cost of compliance for each participating organization. These two cost streams pertain to cost center activities and consequences experienced by organizations during or after a non-compliance event. Our benchmark instrument also contained questions designed to elicit the actual experiences and consequences of each incident. This cost study is unique in addressing the core systems and business activities that drive a range of expenditures associated with a company's efforts to comply with known requirements.

Within each category, cost estimation is a two-stage process. First, the survey requires individuals to provide direct cost estimates for each cost category by checking a range variable. A range variable is used instead of a point estimate to preserve confidentiality (in order to ensure a higher response rate). Next, the survey requires participants to provide a second estimate that indicates indirect cost and separately, opportunity cost. These estimates are calculated based on the magnitude of these costs relative to a direct cost within a given category. Finally, we conducted a follow-up interview to validate the cost estimates provided by the respondents, and when necessary, to resolve potential discrepancies).

The size and scope of survey items is limited to known cost categories that cut across different industry sectors. In our experience, a survey that focuses on process yields a higher response rate and higher quality results. We also use a paper instrument, rather than an electronic survey, to provide greater assurances of confidentiality.

To maintain complete confidentiality, the survey instrument does not capture company-specific information of any kind. Research materials do not contain tracking codes or other methods that could link responses to participating companies.

To keep the benchmark instrument to a manageable size, we carefully limited items to only those cost activities we consider crucial to the measurement of data protection compliance costs rather than all IT compliance costs. Based on discussions with subject matter experts, the final set of items focus on a finite set of direct and indirect cost activities. After collecting benchmark information, each instrument is examined carefully for consistency and completeness. In this study, two companies were rejected because of incomplete, inconsistent or blank responses.

The study was launched in November, 2010 and fieldwork concluded in January, 2011. The recruitment started with a personalized letter and a follow-up phone call to 209 organizations for possible participation in our study. While 69 organizations initially agreed to participate, 46 organizations permitted researchers to complete the benchmark analysis.

The time period used in the analysis of compliance costs was 12 months. Because we collected information only during this continuous 12-month time frame, the study cannot gauge seasonal variation on specific cost categories.

# VI
# CONCLUSION

To reduce the total cost of compliance and offset the risk of non-compliance, security strategies should integrate enabling technologies with people, policies and operational processes. The following attributes are most strongly correlated with creating an effective security posture while meeting an organization's compliance goals. Table 4 reports the ten attributes from the security effectiveness score instrument that have the highest inverse correlation with non-compliance cost (as computed from the 46 benchmark companies). In other words, these 10 attributes lend the greatest support to a strong compliance culture.

Table 4: Security effectiveness attributes with the highest negative correlation to non-compliance cost

| Security effectiveness scoring attributions | Correlation* |
|---|---|
| Monitor and strictly enforce security policies | -0.34 |
| Conduct audits or assessments on an ongoing basis | -0.32 |
| Attract and retain professional security personnel | -0.31 |
| Ensure minimal downtime or disruptions to systems resulting from security issues | -0.30 |
| Prevent or curtail viruses, malware and spyware infections | -0.29 |
| Measure the effectiveness of security program components | -0.28 |
| Ensure security program is consistently managed | -0.27 |
| Know where sensitive or confidential information is physically located | -0.26 |
| Secure endpoints to the network | -0.25 |
| Identify and authenticate end-users before granting access to confidential information | -0.23 |

*Non-parametric correlation method utilized because of small sample size

Many of the 10 security effectiveness attributes pertain to governance and oversight of the organization's security initiatives. Organizations can adopt the following steps to achieve a governance infrastructure that supports compliance across the enterprise:

- Appoint a high-level individual to lead activities around compliance with data protection laws and requirements
- Ensure board-level oversight of compliance activities (through the board's audit committee)
- Ensure the budget for compliance is adequate to meet specific goals and objectives
- Establish a cross-functional steering committee to oversee local compliance requirements
- Implement metrics that define compliance program success
- Ensure senior executives receive critical reports when compliance issues reach crisis levels

***Achieving critical and complex goals related to compliance requires holistic and integrated security solutions that seamlessly address every area of the organization that compliance impacts.*** Recent benchmark research conducted by Ponemon Institute provides insights from information security leaders on how to build an integrated and holistic security strategy.

Today's security initiatives require organizations to anticipate how changing threats will affect their organization's ability to comply with external, internal and contractual demands. We have identified four primary security areas that affect all organizations: external and internal threats to security, the changing workforce, changing business models and processes, and the changing world. Understanding the implications of these security challenges can help organizations succeed in aligning their core practices and technologies across the enterprise in ways that minimize the risk of compliance failure. Organizations can respond to these individual security challenges in the following ways:

- Changing threats require an organization to make security an integral part of its culture; keep pace with technological

advances; build security into business processes to reduce compliance risks; understand the latest threats; and actively assess the insider threat.

- The changing workforce requires organizations to make sure security keeps pace with organizational restructuring and change; audit, grant or withdraw access rights to property and systems; have adequate screening procedures for new employees; and determine if remote workers are securely accessing the network.

- Business changes require organizations to secure business processes during periods of transition; understand operational dependencies; verify that business partners have sufficient security practices in place; secure the transfer of information assets between different organizations; and review, audit, and when necessary, revoke access rights.

- Finally, a quickly changing environment requires organizations to have the technologies and plans in place to deal with attacks upon the critical infrastructure, theft of information assets, and other criminal incidents.

- The implications for an organization that does not manage compliance risks with the right integrated and holistic response to data security and related compliance challenges are a decrease in revenue that results from both the loss of customer trust and loyalty and the inability to deliver services and products.

- Beyond the economic impact, non-compliance increases the risk of losing valuable information assets such as intellectual property, physical property and customer data. Further, non-compliant organizations risk becoming victims of cyber fraud, business disruption, and many other consequences that might lead to business failure.

***We believe our study demonstrates that an investment in both external and internal compliance activities is beneficial not only to an organization's security stature, but also to its overall operations.*** We have shown that by investing in compliance activities, organizations reduce the risk created by non-compliance. In addition, employing the above practices can allow organizations to experience greater compliance gains for a given level of investment. Further, the results of this study will help corporate IT and lines of business demonstrate the value of investing in their compliance activities.

## CAVEATS

This study utilizes a confidential and proprietary benchmark method that has been successfully deployed in earlier Ponemon Institute research. However, there are inherent limitations to benchmark research that need to be carefully considered before drawing conclusions from findings.

**Non-statistical results:** The purpose of this study is descriptive rather than normative inference. The current study draws upon a representative, non-statistical sample of data centers, all located in the United States. Statistical inferences, margins of error and confidence intervals cannot be applied to these data given the nature of our sampling plan.

**Non-response:** The current findings are based on a small representative sample of completed case studies. An initial mailing of benchmark surveys was sent to a reference group of over 200 separate organizations. Forty-six organizations provided usable benchmark surveys. Non-response bias was not tested so it is always possible companies that did not participate are substantially different in terms of the methods used to manage the detection, containment and recovery process, as well as the underlying costs involved.

**Sampling-frame bias:** Because our sampling frame is judgmental, the quality of results is influenced by the degree to which the frame is representative of the population of companies being studied. It is our belief that the current sampling frame is biased toward companies with more mature compliance programs.

**Company-specific information:** The benchmark information is sensitive and confidential. Thus, the current instrument does not capture company-identifying information. It also allows individuals to use categorical response variables to disclose demographic information about the company and industry category. Industry classification relies on self-reported results.

**Unmeasured factors:** To keep the survey concise and focused, we decided to omit other important variables from our analyses such as leading trends and organizational characteristics. The extent to which omitted variables might explain benchmark results cannot be estimated at this time.

**Estimated cost results:** The quality of survey research is based on the integrity of confidential responses received from benchmarked organizations. While certain checks and balances can be incorporated into the data capture process, there is always the possibility that respondents did not provide truthful responses. In addition, the use of a cost estimation technique (termed shadow costing methods) rather than actual cost data could create significant bias in presented results.

[4] Non-parametric correlation method utilized because of small sample size

## APPENDIX 1: SUMMARIZED COMPLIANCE COST DATA FOR 46 BENCHMARKED ORGANIZATIONS

The following table summarizes the compliance cost for 46 benchmarked companies (USD).

| ID# | Policy | Communication | Program management | Data security | Compliance monitoring | Enforcement | Total |
|---|---|---|---|---|---|---|---|
| 1 | 550,648 | 210,864 | 498,175 | 1,339,760 | 776,366 | 265,287 | 3,641,100 |
| 2 | 446,557 | 289,013 | 630,915 | 1,776,346 | 682,628 | 730,033 | 4,555,492 |
| 3 | 279,788 | 659,796 | 773,779 | 1,408,469 | ,330 | 686,581 | 4,708,743 |
| 4 | 334, | 598,494 | 544,820 | 1,340,140 | 466,457 | 617,083 | 3,901,394 |
| 5 | 405,501 | 421,450 | 494,041 | 1,083,907 | 865,221 | 776,208 | 4,046,328 |
| 6 | 96,126 | 14,264 | 94,186 | 149,584 | 124,343 | 102,765 | 581,268 |
| 7 | 1,104,599 | 1,673,422 | 1,841,672 | 3,753,816 | 3,186,971 | 4,488,671 | 16,049,151 |
| 8 | 196,658 | 151,261 | 329,446 | 678,499 | 458,177 | 162,888 | 1,976,929 |
| 9 | 644,957 | 664,241 | 621,988 | 1,613,640 | 1,389,769 | 2,105,350 | 7,039,945 |
| 10 | 91,056 | 267,731 | 246,533 | 666,479 | 305,448 | 581,786 | 2,159,033 |
| 11 | 153,381 | 209,156 | 312,915 | 730,326 | 233,236 | 392,165 | 2,031,179 |
| 12 | 575,667 | 356,883 | 370,243 | 1,140,231 | 1,057,060 | 1,034,786 | 4,534,870 |
| 13 | 31,429 | 101,884 | 53,737 | 135,685 | 86,520 | 67,537 | 476,792 |
| 14 | 143,968 | 133,568 | 175,625 | 578,804 | 143,736 | 64,491 | 1,240,192 |
| 15 | 36,761 | 25,946 | 48,628 | 184,579 | 90,708 | 59,075 | 445,697 |
| 16 | 1,302,120 | 1,025,146 | 1,426,657 | 2,902,498 | 2,733,365 | 1,621,399 | 11,011,185 |
| 17 | 116,859 | 13,732 | 171,449 | 712,128 | 120,656 | 31,731 | 1,166,555 |
| 18 | 130,759 | 53,267 | 196,436 | 671,340 | 188,658 | 501,686 | 1,742,146 |
| 19 | 1,686,805 | 29,736 | 1,461,105 | 2,348,785 | 1,696,734 | 4,226,085 | 13,429,250 |
| 20 | 397,451 | 613,277 | 420,593 | 1,125,598 | 777,889 | 1,713,504 | 5,048,312 |
| 21 | 103,720 | 141,859 | 236,323 | 718,894 | 270,722 | 490,152 | 1,961,670 |
| 22 | 75,844 | 143,995 | 239,910 | 610,412 | 227,870 | 129,588 | 1,427,619 |
| 23 | 743,649 | 880,959 | 1,225, | 2,561,789 | 1,469,677 | 4,118,242 | 10,999,816 |
| 24 | 92,586 | 236,968 | 227,158 | 759,254 | 399,243 | 66,120 | 1,781,329 |
| 25 | 155,870 | 116,878 | 220,896 | 718,717 | 181,546 | 63,768 | 1,457,675 |
| 26 | 115,633 | 57,315 | 286,567 | 802,614 | 265,696 | 83,930 | 1,611,755 |
| 27 | 105,487 | 101,770 | 110,092 | 589,605 | 162,345 | 70,042 | 1,139,341 |
| 28 | 1,082,810 | 1,313,210 | 2,168,351 | 2,620,405 | 2,997,309 | 2,628,795 | 12,810,880 |
| 29 | 85,199 | 69,818 | 153,765 | 591,023 | 227,645 | 145,503 | 1,272,953 |
| 30 | 77,060 | 139,531 | 2845 | 690,321 | 340,914 | 489,621 | 2,021,452 |
| 31 | 655,531 | 654,099 | 1,032,528 | 1,678,494 | 1,905,917 | 3,673,134 | 9,599,703 |
| 32 | 237,479 | 382,895 | 555,232 | 977,514 | 398,542 | 430,848 | 2,982,510 |
| 33 | 212,083 | 186,019 | 254,091 | 816,294 | 338,862 | 210,363 | 2,017,712 |
| 34 | 68,113 | 157,859 | 205,410 | 610,458 | 313,499 | 535,648 | 1,890,987 |
| 35 | 18,271 | 39,886 | 89,562 | 519,783 | 88,733 | 91,805 | 848,040 |
| 36 | 180,656 | 87,246 | 203,693 | 695,941 | 282,769 | 574,464 | 2,024,769 |
| 37 | 28,992 | 90,530 | 79,974 | 369,153 | 32,872 | 34,475 | 635,996 |
| 38 | 13,796 | 16,280 | 107,980 | 287,030 | 38,796 | 281,258 | 745,140 |
| 39 | 184,477 | 130,493 | 147,412 | 823,775 | 173,917 | 202,983 | 1,663,057 |
| 40 | 109,247 | 191,817 | 301,495 | 938,927 | 529,364 | 174,026 | 2,244,876 |
| 41 | 216,205 | 228,313 | 222,848 | 854,625 | 296,330 | 237,655 | 2,055,976 |
| 42 | 194,550 | 158,518 | 246,618 | 944,863 | 498,570 | 111,113 | 2,154,232 |
| 43 | 31,236 | 134,658 | 190,659 | 805,721 | 202,001 | 55,865 | 1,420,140 |
| 44 | 117,418 | 332,484 | 358,327 | 784,090 | 563,258 | 168,706 | 2,324,283 |
| 45 | 24,705 | 174,207 | 220,803 | 875,848 | 494,681 | 268,219 | 2,058,463 |
| 46 | 47,747 | 122,731 | 243,385 | 584,651 | 295,603 | 130,155 | 1,424,272 |
| Avg | 297,910 | 343,119 | 441,859 | 1,034,148 | 636,542 | 775,991 | 3,529,569 |

## APPENDIX 2: SUMMARIZED NON-COMPLIANCE COST DATA FOR 46 BENCHMARKED ORGANIZATIONS

The following table summarizes non-compliance cost for 46 benchmarked companies (USD).

| ID# | Business disruption | Productivity loss | Revenue loss | Fines, penalties & settlement costs | Total |
|---|---|---|---|---|---|
| 1 | 1,894,201 | 886,772 | 2,506,798 | 2,504,853 | 7,792,624 |
| 2 | 2,530,352 | 2,961,739 | 3,254,316 | 2,451,421 | 11,197,829 |
| 3 | 3,510,825 | 3,522,002 | 2,521,616 | 978,761 | 10,533,203 |
| 4 | 7,655,995 | 1,719,063 | 2,225,011 | 707,799 | 12,307,868 |
| 5 | 6,067,953 | 4,591,037 | 3,996,297 | 811,886 | 15,467,173 |
| 6 | 530,415 | - | 546,622 | 309,721 | 1,386,758 |
| 7 | 7,712,747 | 5,402,988 | 700,438 | 310,856 | 14,127,029 |
| 8 | 1,399,309 | 3,401,988 | 3,157,199 | 1,666,473 | 9,624,969 |
| 9 | 4,747,903 | 1,663,583 | 1,606,138 | 191,044 | 8,208,668 |
| 10 | 3,804,836 | 5,150,215 | 4,552,824 | 1,938,156 | 15,446,031 |
| 11 | 465,637 | 423,498 | 710,214 | 704,687 | 2,304,036 |
| 12 | 3,117,942 | 3,111,298 | 1,767,796 | 80,384 | 8,077,420 |
| 13 | 535,602 | 652,483 | 346,224 | 383,742 | 1,918,051 |
| 14 | - | 1,384,147 | 741,359 | 799,265 | 2,924,771 |
| 15 | 765,450 | - | 540,296 | 1,763,402 | 3,069,148 |
| 16 | 16,552,877 | 53,154 | 6,538,555 | 1,344,968 | 24,489,553 |
| 17 | 1,613,945 | 2,229,318 | 1,756,673 | 1,972,003 | 7,571,939 |
| 18 | 709,556 | 1,049,803 | 1,315,445 | 1,065,976 | 4,140,781 |
| 19 | 6,020,835 | 748,078 | 1,899,101 | 2,383,793 | 11,051,807 |
| 20 | - | 4,501,598 | 1,571,536 | 2,390,360 | 8,463,494 |
| 21 | 2,663,217 | 6,446,758 | 2,513,763 | 3,431,797 | 15,055,534 |
| 22 | 1,805,479 | 2,841,799 | 1,526,188 | 579,088 | 6,752,554 |
| 23 | 5,078,817 | 4,014,515 | 2,790,129 | 427,940 | 12,311,402 |
| 24 | 4,359,921 | 3,898,962 | 2,637,710 | 668,455 | 11,565,048 |
| 25 | 2,539,821 | - | 2,444,529 | 1,382,552 | 6,366,902 |
| 26 | 2,285,952 | 2,175,764 | 4,288,741 | 2,810,190 | 11,560,647 |
| 27 | 630,284 | 1,613,219 | 2,498,983 | 2,103,072 | 6,845,558 |
| 28 | 10,610,045 | 5,174,955 | 4,696,161 | 7,493,699 | 27,974,860 |
| 29 | 3,878,864 | 3,135,708 | 2,067,828 | 2,841,451 | 11,923,852 |
| 30 | 2,236,557 | 3,849,895 | 3,882,527 | 1,831,169 | 11,800,148 |
| 31 | 3,683,109 | 2,763,377 | 3,044,502 | 885,412 | 10,376,400 |
| 32 | 3,386,634 | 2,420,115 | 2,666,676 | 1,085,278 | 9,558,703 |
| 33 | 2,178,924 | 2,158,495 | 1,726,303 | 1,809,951 | 7,873,673 |
| 34 | 5,424,731 | 1,420,338 | 2,123,134 | 1,888,016 | 10,856,219 |
| 35 | 1,532,994 | 1,721,369 | 1,668,480 | 700,800 | 5,623,643 |
| 36 | 2,152,478 | 469,623 | 1,387,055 | 526,313 | 4,535,469 |
| 37 | 1,393,876 | - | 154,675 | 146,806 | 1,695,357 |
| 38 | 328,189 | - | 557,464 | 671,041 | 1,556,694 |
| 39 | 1,955,264 | 3,536,600 | 1,304,047 | 2,689,848 | 9,485,760 |
| 40 | 2,333,900 | 3,800,776 | 1,763,831 | 869,986 | 8,768,492 |
| 41 | 1,621,980 | 5,697,483 | 2,539,403 | 795,896 | 10,654,763 |
| 42 | 6,413,603 | 3,550,955 | 3,178,774 | 147,334 | 13,290,666 |
| 43 | 3,035,969 | 204,740 | 1,478,622 | 798,862 | 5,518,192 |
| 44 | 3,383,818 | 2,603,496 | 1,201,703 | 1,997,390 | 9,186,408 |
| 45 | 2,076,828 | 1,761,714 | 2,320,328 | 1,369,728 | 7,528,597 |
| 46 | 5,063,475 | 3,425,150 | 1,608,866 | 2,077,943 | 12,175,433 |

## APPENDIX 3: 24 SECURITY EFFECTIVENESS SCORE (SES) ITEMS

The following table summarizes the average SES by item for 46 benchmarked companies.

| Security effectiveness scoring attributions | Item score |
|---|---|
| Determine the root cause of data loss or theft | 0.20 |
| Identity all significant data breach incidents | 0.27 |
| Know where sensitive or confidential information is physically located | -0.48 |
| Secure sensitive or confidential data at rest | -0.02 |
| Secure sensitive or confidential data in motion | -0.57 |
| Secure endpoints to the network | 0.40 |
| Identify and authenticate end-users before granting access to confidential information | 0.42 |
| Protect sensitive or confidential information used by outsourcers | 1.05 |
| Prevent or curtail the theft of information assets | 0.19 |
| Prevent or curtail external penetration or hacking attempts | 0.02 |
| Limit physical access to devices containing sensitive or confidential information | -0.15 |
| Measure the effectiveness of security program components | -0.38 |
| Ensure minimal downtime or disruptions to systems resulting from security issues | 0.61 |
| Test (prove) compliance with legal and regulatory requirements | -0.94 |
| Test (prove) compliance with self-regulatory mandates | 1.53 |
| Prevent or curtail viruses, malware and spyware infections | -0.01 |
| Ensure security patches are updated in a timely and comprehensive fashion | -0.48 |
| Control all live data used in systems development activities | -0.14 |
| Monitor and strictly enforce security policies | 0.57 |
| Attract and retain professional security personnel | 1.62 |
| Training and awareness program for all users | -0.16 |
| Conduct audits or assessments on an ongoing basis | 1.08 |
| Ensure security program is consistently managed | -0.06 |
| Prevent or curtail denial of service attacks | 0.19 |
| Monitor networks, systems and logs for unusual events | -0.14 |
| Average security effectiveness score | 0.18 |

## Ponemon Institute LLC
## Advancing Responsible Information Management

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