Grant Thornton

Fraud, Waste and Abuse Tactical Campaign

Thursday, December 5th, 2019

Linda Miller, Principal

Leigh Sheldon, Senior Manager

Today's Topics

- Fraud Risk Mitigation & Analytics Practice

- Introduction to Data Visualization

- Benefits of Data Visualization

- Best Practices

- Detecting and Preventing Fraud Through Data Visualization

- Program Integrity Solution Model

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The goal is to turn data into information, and information into insight.

—Carly Fiorina

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Fraud Risk Mitigation & Analytics Practice

Grant Thornton Value Proposition

Grant Thornton is the industry leader in the full lifecycle of solutions related to preventing and detecting fraud. Our approach uses a set of risk-based methods and associated tools that allow organizations to implement solutions to mitigate fraud through: 1) Fraud Risk Assessment, 2) Fraud Analytics, 3) Antifraud Strategies.

With the signing of the Fraud Reduction and Data Analytics Act of 2015 (FRDAA), agencies are required to implement fraud risk management programs that align with GAO's Fraud Risk Management Framework. Grant Thornton draws on our unique expertise with this framework and the field of fraud risk management to develop best-in-class solutions for the federal government.

We have integrated our innovative risk assessment process with the development of analytics solutions to ensure we target the solution development at the highest priority areas. We have exceptionally strong qualifications in the space, including a Fortune 100 insurance company, Treasury, National Institutes of Health, the Department of Veterans Affairs and the Department of Agriculture.

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Fraud Risk Mitigation & Analytics Practice

Grant Thornton Capabilities

• **Fraud Risk Assessment:** An innovative, activity-based fraud risk assessment methodology that goes beyond traditional perception-based risk assessment to provide a more comprehensive understanding of the factors that create the opportunity for fraud. Our proprietary methodology has a two-phased approach, and begins with a five-step, activity-based quantitative assessment, followed by facilitated fraud risk workshops.

• **Fraud Analytics:** A suite of tools to help detect and ultimately prevent fraud though business rules detection models as well as scenario-based predictive models.

• **Antifraud Strategies.** A proprietary fraud risk maturity model based on the GAO Framework, which we use to help agencies develop effective antifraud strategies

Solution	Potential Outputs
Maturity Assessment	• Fraud Risk Maturity Assessment • Fraud Risk Maturity Roadmap
Enterprise Antifraud Strategy	• Antifraud Organizational Program Manual • Fraud Stakeholder Matrix • Enterprise Antifraud Strategy
Fraud Risk Assessment	• Fraud Risk Map • Fraud Risk Assessment Summary • Fraud Risk Profiles • Mitigation Strategies
Fraud Analytics	• Analytic Dashboards • Detection and Remediation Plans for identified Fraud Use Cases • Prioritized Cases to Target
Monitoring Tools	• Revised Antifraud Strategy, including Treatments and Analytics Plan • Improved Data Strategy for Increased Detection

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Introduction to Data Visualization

FRAUD RISK ASSESSMENT

Rule-Based Analytics	Anomaly Detection Analytics	Predictive Analytics	Network / Link Analytics	Text Analytics
Known Patterns	Unknown Patterns	Complex Patterns	Linked Patterns	Text Patterns

Common Fraud	Criminal Fraud	Organized Fraud

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Introduction to Data Visualization

- Data visualization is the graphical representation of data.

- By using visual elements like charts, graphs, and maps, data visualization tools provide an accessible way to quickly understand trends, outliers, and patterns in data—especially for busy decision-makers.

Can You Spot the Outliers?

How About Now?

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Benefits of Data Visualization

Leveraging data visualization can empower an organization to take advantage of the numerous benefits; a few are outlined below.

Availability of Tools

Interactive Results

Communicate Findings Effectively

Facilitate Better Decision-Making

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Best Practices for Data Visualization

There are such things as good and bad data visualizations.

To the right are **five best practices** to keep in mind so that your data visualization is useful and clear—and to ensure that you are effectively telling your fraud story.

- Take Action
- Remember Your Audience
- Understand the Purpose
- Show the Underlying Data
- Design Iteratively

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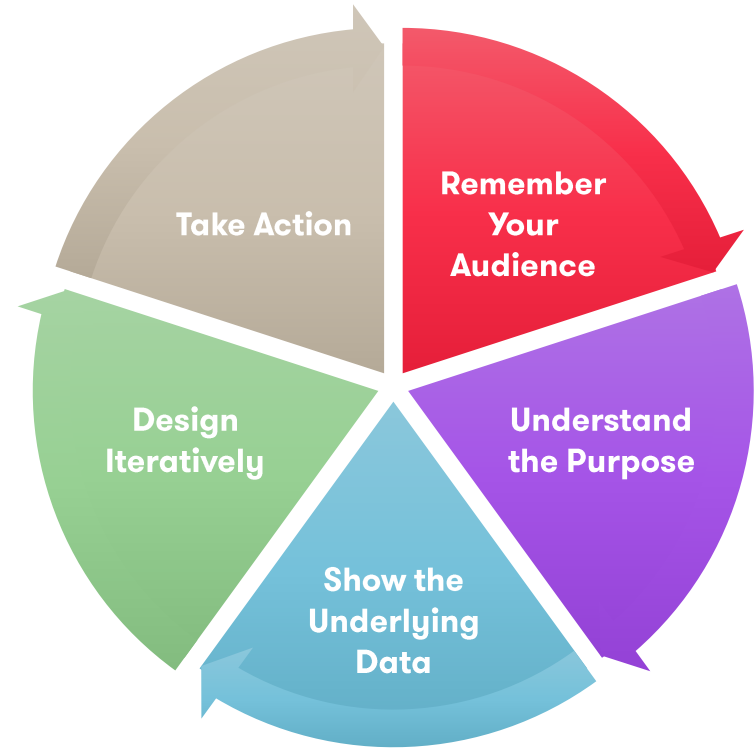
Common Mistakes

Visualization mistakes can be grouped into two main categories:

Design Mistakes

- Arranging information poorly

- Exceeding a single screen

- Misusing or overusing color

- Cluttering the display with visual effects

- Designing an unattractive display

Information Mistakes

- Inadequate context for the data

- Displaying excessive detail or precision

- Expressing measures indirectly

- Misreading your audience

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Mistakes in This Visualization

- Wasted space on top

- Too much information at once

- Extremely cluttered

- May not be correctly considering audience

- Large use of unrelated color, no clear indication of meaning

- Repetitive information

- Poor choice of visualizations

Program Integrity: Vendor - All Records Transactions

Choose Applicable
Fraud Test:

| All Records | ▼ |

BOC Roll Up Name

| (All) | ▼ |

Org-Roll Up

| (All) | ▼ |

Expense

($15,423) ──────────○──── $15,016,090

Transaction Date

1/2/2015 ○──────────────── 12/25/2018

Top Vendors by Amount

Vendor	
Vendor 184	$32,883,728
Vendor 161	$10,493,262
Vendor 186	$4,863,751
Vendor 115	$3,814,741
Vendor 154	$2,007,532
Vendor 98	$1,657,517
Vendor 53	$1,609,559
Vendor 18	$1,303,694
Vendor 36	$1,210,670
Vendor 84	$797,999
Vendor 163	$769,245

Top Vendors by Number of Records

Vendor	
Vendor 53	103
Vendor 31	31
Vendor 115	29
Vendor 57	22
Vendor 136	21
Vendor 186	19
Vendor 163	18
Vendor 18	18
Vendor 44	16
Vendor 107	15
Vendor 108	15

All Records Locations and Amount

© OpenStreetMap contributors

24 unknown
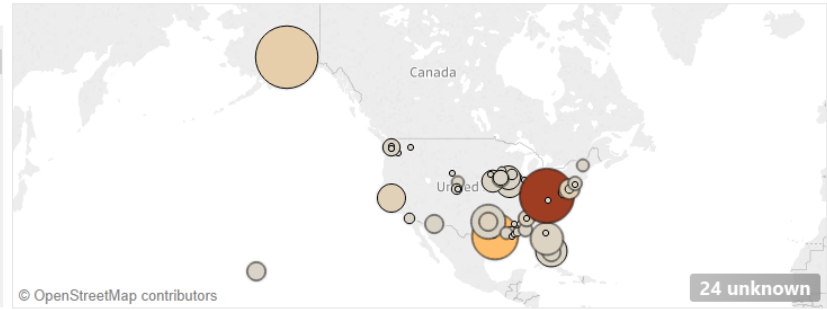
Total Vendor Transactions by Month

Average: 15.208333333
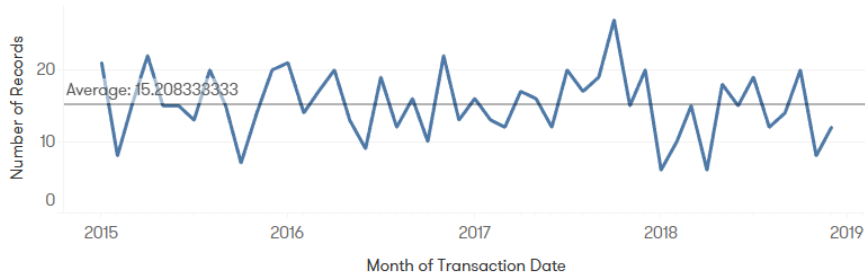
Expense vs. Number of Records

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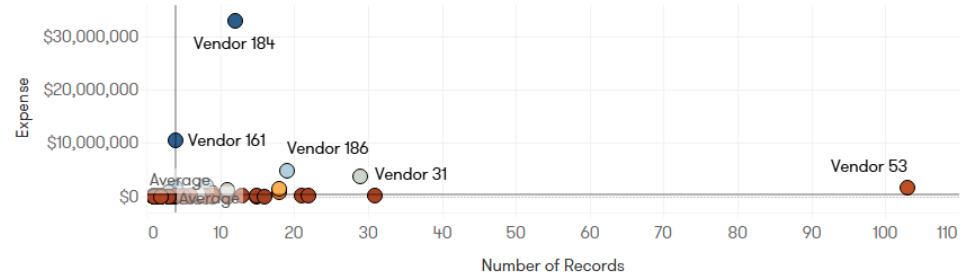
Visualization Types

Strategic

- Provide quick overview to monitor health and opportunities
- Focus on high-level performance measures

Operational

- Used mainly for monitoring operations
- Dynamic and immediate in nature

Analytical

- Require additional context (comparison, history, evaluations)
- Highly interactive

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Visualization Types
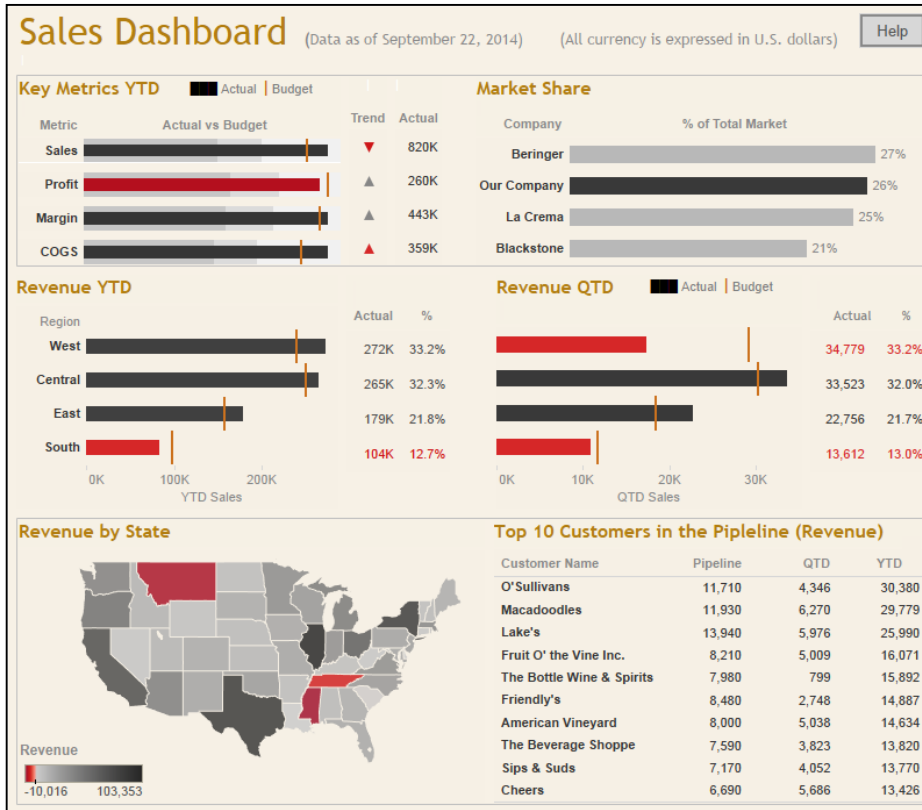
Strategic

- Most important information only

- Color used sparingly

- No clutter

Visualization Types
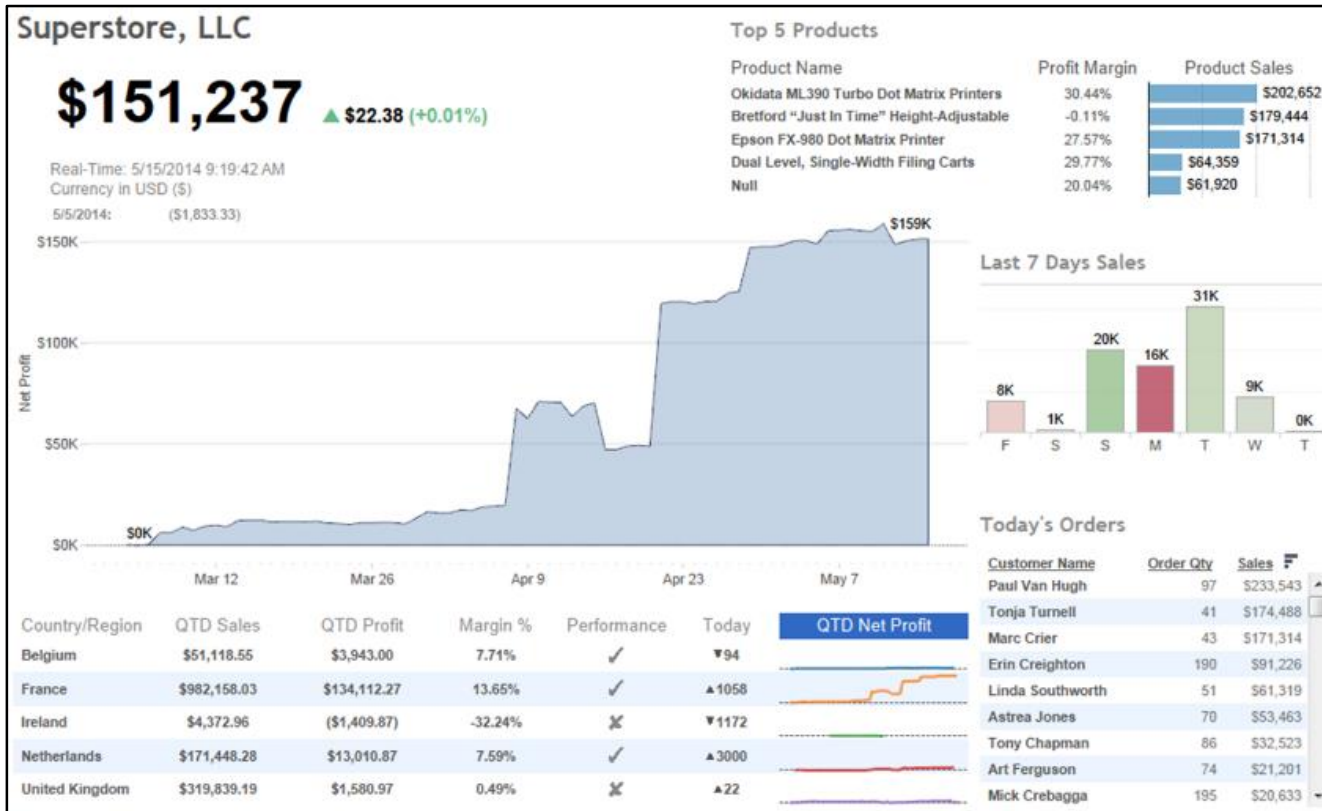
Operational

- Frequent information updates

- Immediately monitor information

Visualization Types
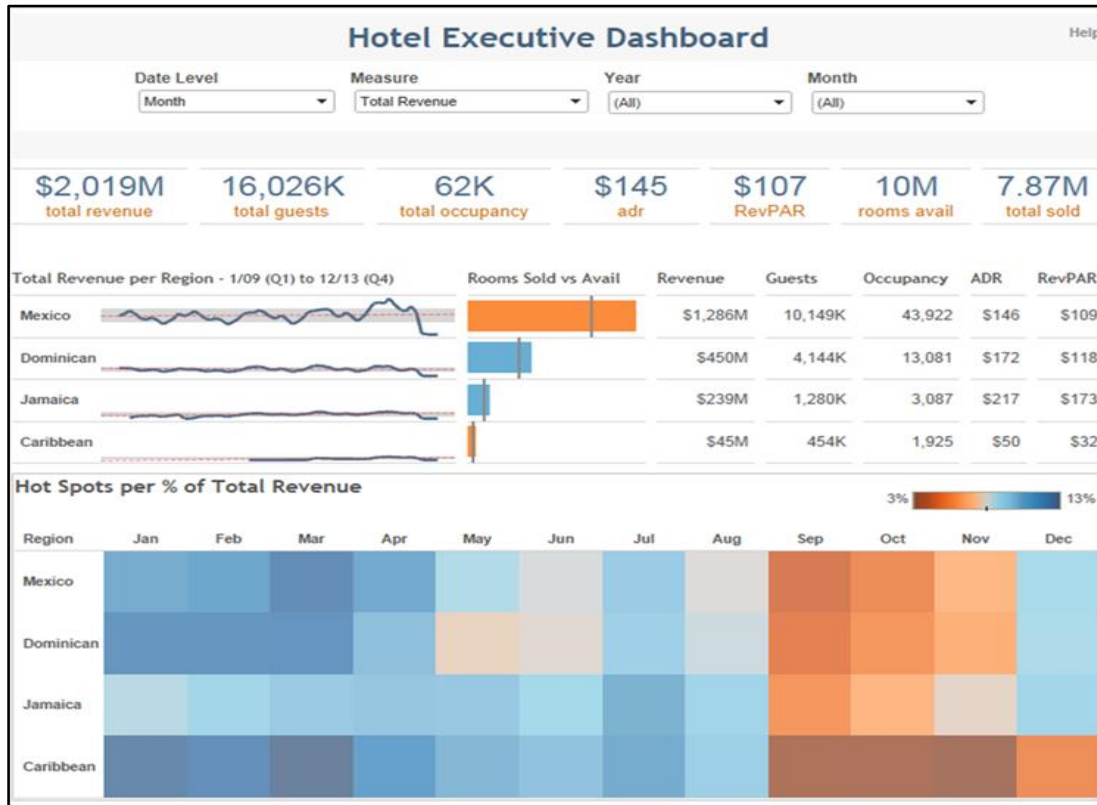
Analytical

- Identify seasonality and opportunities

- Light borders, logical groupings

- Use of heat maps

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Detecting and Preventing Fraud
Case Study 1

What?

- **Do you know whether fraud is being committed with your organization's company credit cards or purchase/travel cards?**

- Grant Thornton performed a fraud risk assessment for an organization related to its card purchases; this assessment was paired with an effort to leverage analytical tools and methodologies to help mitigate risk within this area.

- **Metrics Available:** Holiday and weekend transactions, personnel holding multiple cards, tax charged.

How?

- Data related to cardholders and financial records were blended in order to evaluate questionable transactions that should be pulled for additional research; this practice effectively lowered the organization's fraud risk related to improper card usage.

- The Grant Thornton team used Alteryx, a multi-purpose, self-service analytics platform, for data cleansing, blending, and preparation.

- The team also leveraged Tableau for the development of the visual analytics storyline, using its interactive dashboard capabilities to identify suspicious transactions.

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Holiday Transactions

Transactions made on Federal Holidays (including days on which the holiday is "observed") need to be subjected to a high level of scrutiny to ensure that they are not made for personal use. Use the filters and graphs to navigate through all transactions that were made on a Federal Holiday.

Holiday Spending
$55,006.57

of Transactions
18,394

Transaction Date
October 1, 20 March 31, 201

Year of Transaction ..
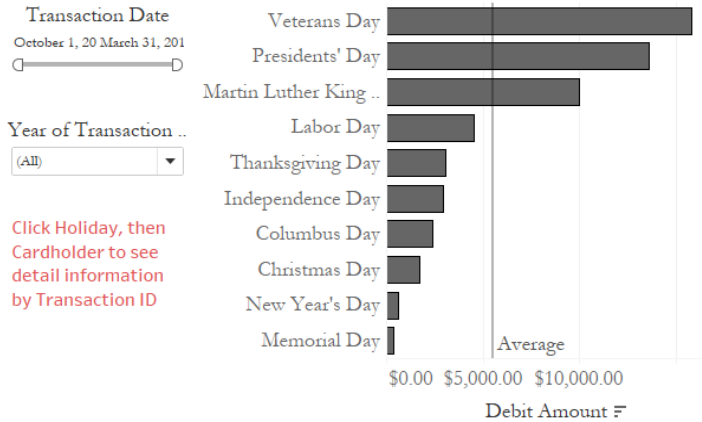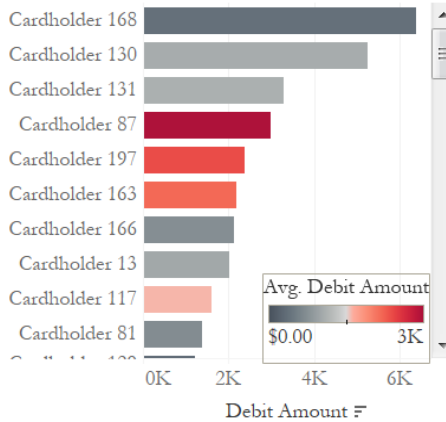(All)

Click Holiday, then Cardholder to see detail information by Transaction ID

Holiday Spending chart (Debit Amount):
- Veterans Day
- Presidents' Day
- Martin Luther King ..
- Labor Day
- Thanksgiving Day
- Independence Day
- Columbus Day
- Christmas Day
- New Year's Day
- Memorial Day
- Average

$0.00 $5,000.00 $10,000.00
Debit Amount

# of Transactions chart (Debit Amount):
- Cardholder 168
- Cardholder 130
- Cardholder 131
- Cardholder 87
- Cardholder 197
- Cardholder 163
- Cardholder 166
- Cardholder 13
- Cardholder 117
- Cardholder 81

Avg. Debit Amount
$0.00 3K

0K 2K 4K 6K
Debit Amount

Transaction..	Day of Transacti..	Cardholder	Card Acco..	MCC Description	Merchant	Debit Amou..	Credit Amo..
136226029	October 13, 2014	Cardholder 212	0702	DIRECT MARKET..	Merchant 1318	$541.00	$0.00
137259504	October 13, 2014	Cardholder 114	7592	TELECOMMUNIC..	Merchant 257	$741.98	$0.00
137715658	November 11, 2..	Cardholder 129	3041	CATERERS	Merchant 1114	$220.50	$0.00
137715659	November 11, 2..	Cardholder 129	3041	CATERERS	Merchant 1114	$220.50	$0.00
137718827	November 11, 2..	Cardholder 51	6681	COMPUTER MAI..	Merchant 1554	$5.57	$0.00
137722845	November 11, 2..	Cardholder 117	9002	COMPUTER MAI..	Merchant 1554	$1,605.26	$0.00
137723860	November 11, 2..	Cardholder 105	1258	BUSINESS SERVI..	Merchant 1645	$0.00	($72.98)
137726515	November 11, 2..	Cardholder 168	7288	TELECOMMUNIC..	Merchant 256	$192.80	$0.00
137726516	November 11, 2..	Cardholder 168	7288	TELECOMMUNIC..	Merchant 256	$52.88	$0.00
137730942	November 11, 2..	Cardholder 4	1771	STATIONERY. OF..	Merchant 546	$126.72	$0.00

Benefits Achieved

- The dashboards created allow for more effective research into questionable card transactions, replacing a process that had been performed manually.

- The solution provides a set of formalized investigative procedures that standardize the tests and checks used at all levels.

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Detecting and Preventing Fraud
Case Study 2

What?

- **Do you work with third parties, such as medical providers or vendors? Do you know if they are committing fraud against your organization?**

- We performed a fraud risk assessment for an organization related to payments to medical providers; this assessment was paired with an effort to leverage analytical tools to help detect suspicious providers.

- High-Risk Medical Services Selected: Chiropractic, sleep study, acupuncture, physical therapy, drug testing, radiation oncology

- Data was aggregated by provider, aligned to specific fraud schemes, and then tests were developed to identify suspicious providers.

- The Grant Thornton team leveraged Tableau for the development of the visual analytics storyline, using its interactive dashboard capabilities to identify suspicious providers.

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Detecting and Preventing Fraud
Case Study 2

Medical Service	Fraud Scheme	Test
• Acupuncture • Chiropractic • Physical Therapy	• Billing timed codes that amount to over 24 hours per day	• Avg. # of minutes billed per day • Avg. # of visits billed per day • % of days billing over 6 hours
• Drug Test	• Redundant or excessive testing	• Avg. # of drug test procedures per patient • Single visits with more than one drug test
• Sleep Study • Chiropractic	• Submitting multiple claims for one visit	• % of visits with more than one claim per visit • % of duplicate billing without required modifier

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Detecting and Preventing Fraud
Case Study 2

425 Providers   182k Claims   20k Patients $69M Dollars

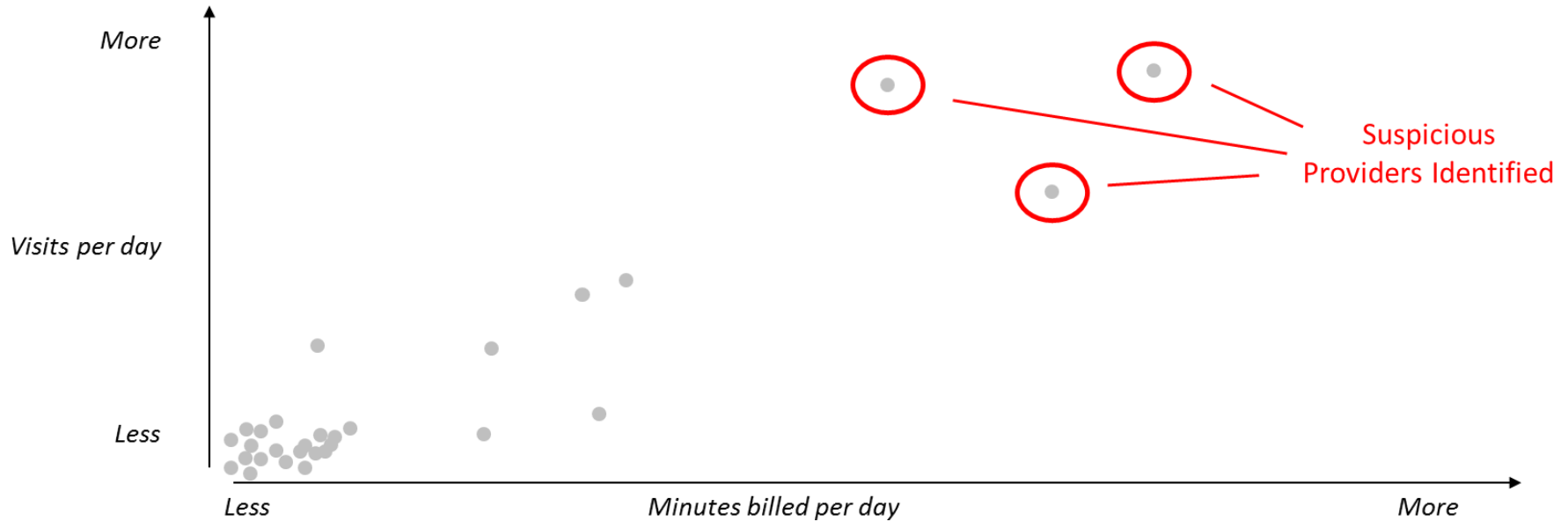| Model	Model (# of Tests)	Total # Providers Reviewed	Total # Providers Flagged	Total $ Paid to Flagged Providers
Acupuncture	55	389	59	$9,933,009
Chiropractor	78	565	48	$5,220,429
Drug Testing	52	323	30	$7,055,697
Radiation Oncology	53	1,080	240	$40,863,485
Physical Therapy	78	4,723	102	$16,805,660
Sleep	54	210	20	$2,297,172

*Totals are inclusive of duplicate patients across models due to overlapping procedures.
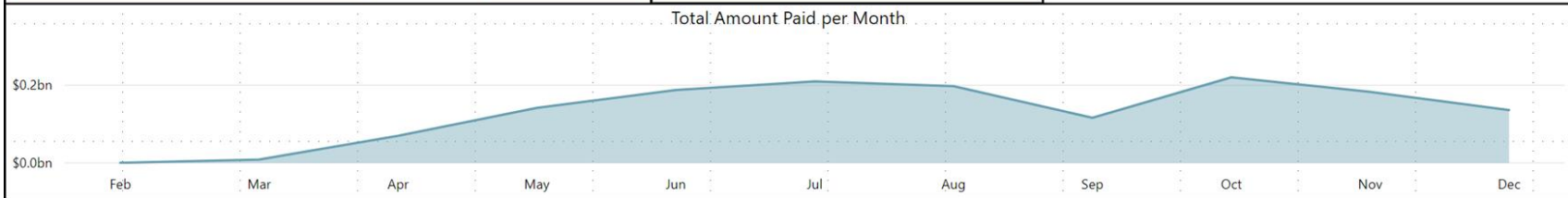
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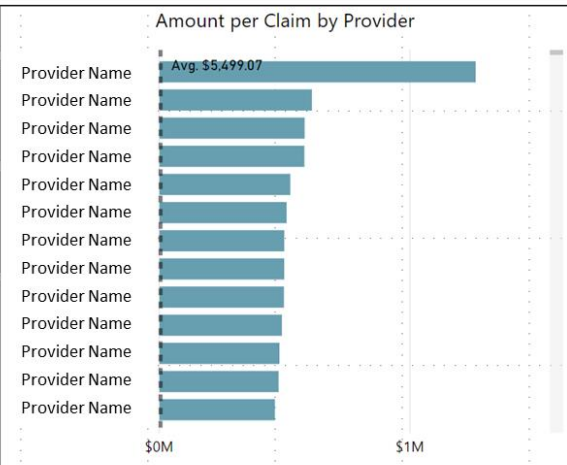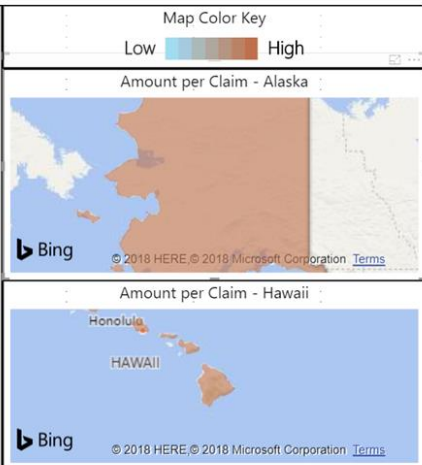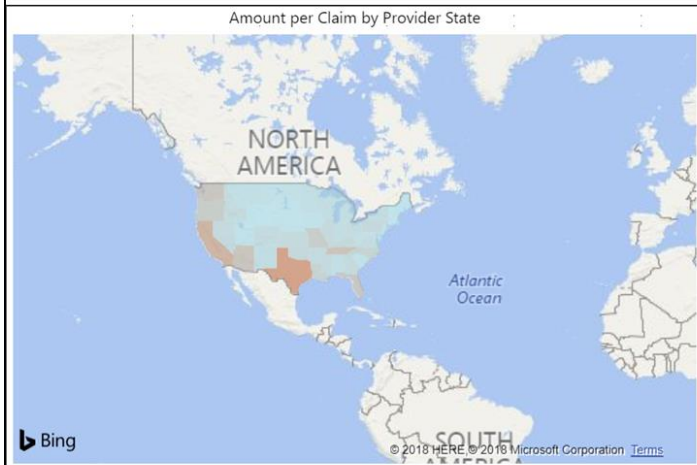
Detecting and Preventing Fraud
Case Study 2

Sleep Study Model: "Billing Anomalies"
Fraud Scheme: Provider bills for services not rendered by consistently billing for more services per visit than were received by patient.

Detecting and Preventing Fraud
Case Study 3

Challenge

A worker's compensation office required insights into whether there were any indications of FWA by employee claimants, medical providers and law firms.

While the client maintained data sets across a variety of source systems, they required the application of analytics to better understand potential FWA in order to identify fraud prevention and detection processes.

At the time of engagement, the client was not leveraging data visualizations or the application of robust analytics to review / monitor their data to glean insights into potentially fraudulent activities.

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Detecting and Preventing Fraud
Case Study 3

Solution

Developed visualizations leveraging Tableau to identify anomalies within the data that merit further review. In addition, they helped to serve as a guide for further analysis, tracking and monitoring of claims payments.

Through the application of simple visualization capabilities within Tableau (such as bar charts, scatter plots, geospatial maps), we could identify insights, many of which were not identifiable without the visualizations

The visualizations provided immediate insights into areas of potential FWA, that can be prioritized for immediate action versus those to begin performing continuous monitoring moving forward.

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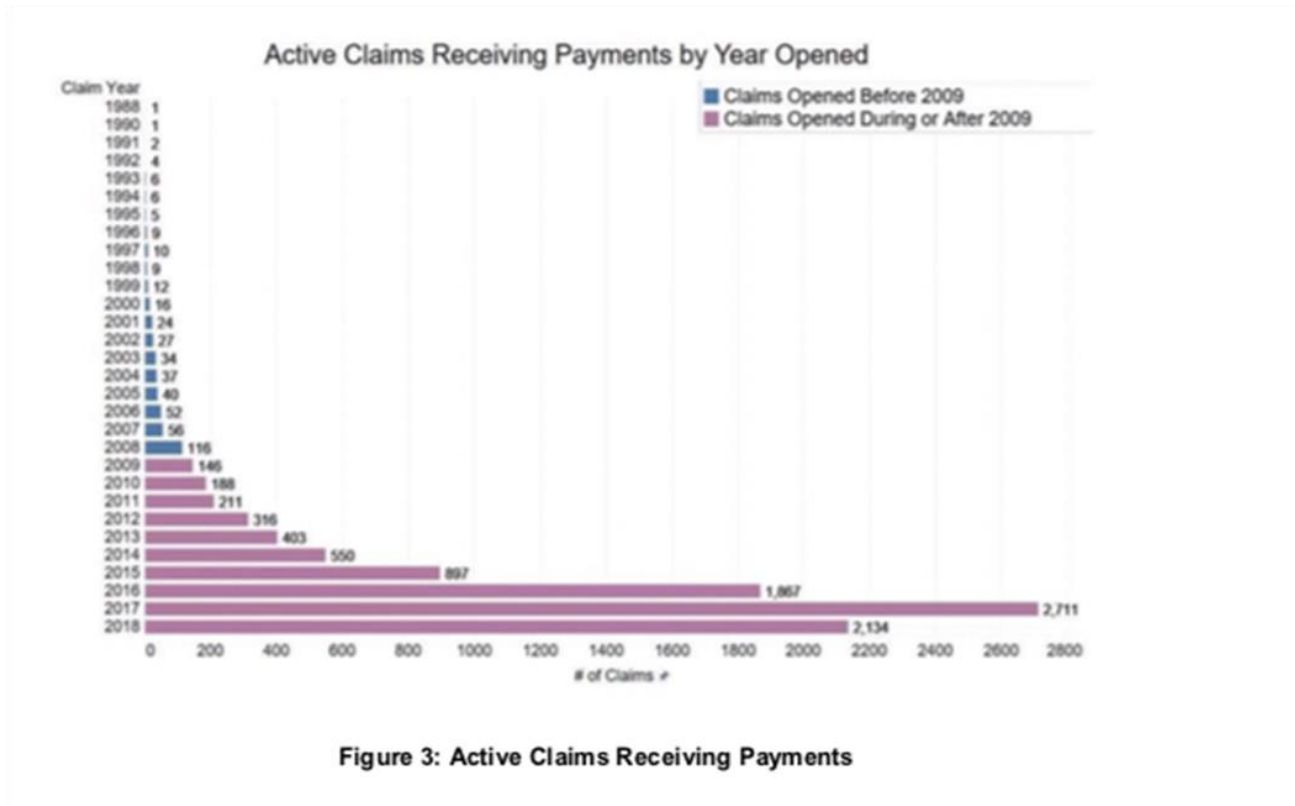
Detecting and Preventing Fraud
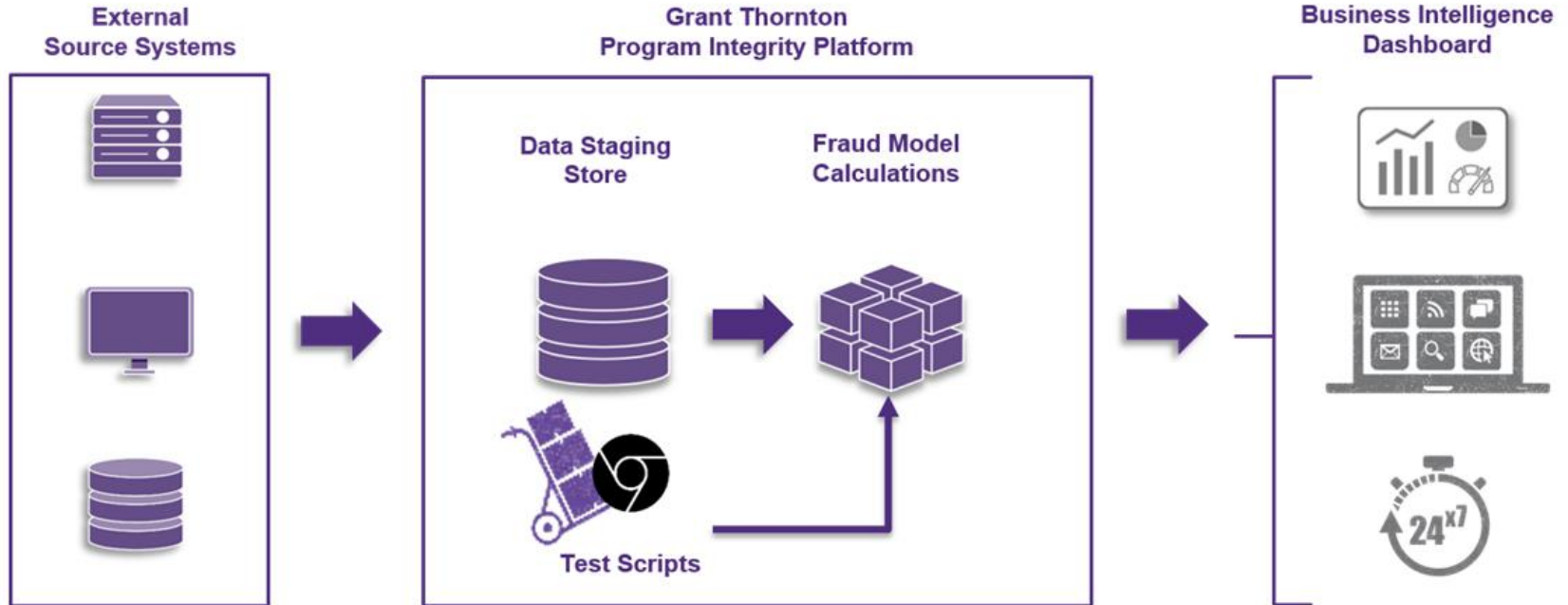## Case Study 3

Figure 3: Active Claims Receiving Payments

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Program Integrity Solution

Contact Information

Linda Miller, Principal
(571) 444 1990
Linda.S.Miller@us.gt.com

Leigh Sheldon, Senior Manager
(703) 837 4434
Leigh.Sheldon@us.gt.com

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