



***off* lode**

# Putting Cheques in Place to Identify Fraud

**Dr. Paul Bracewell**

*Director of Analytics, Offlode*

**Flavio Palaci**

*Senior Consultant, Marsh*

**August 2008**

**MARSH**

# Overview

- Business Problem: **Suspected Internal Fraud**
- Business Benefit: **Identification and Prevention**
- Data: **Creating a Framework for Investigation**
- Identify Fraud: **What was Being Done?**
- Characterise Fraud: **Where else Affected?**
- Outcomes: **“Sleep at Night” Factor**



# Business Problem

- Cheques were stolen from a mail room, bypassing the client's internal processes;
- Client had no visibility of what payments were expected, or when;
- Challenge was to find something that might not have existed.



# Business Benefit

## Initial Benefit

- We identified 25% of fraud with analytics,
- this identified the fraudster,
- which lead the client to 100% of the fraud.
- Initial ROI greater than 40:1.

## Ongoing Benefit

- Approach replicable for client – Prevention
- Deployable SAS® Fraud scenario – Automation
- Ongoing ROI much, much greater than 40:1.



# Creating a Framework for Investigation

## Where to Start?

- Create a *Single Process View*,
- Enabling payments/people/suppliers to be tracked.

## But:

- Multiple unconnected systems,
- Approximately 20 tables in each system,
- Complicated relationships between tables.



# Identify Fraud

We need a starting point to get us *into* the data

## 1: **Exclusion Analysis**

- *What doesn't match up?*

## 2: **Entity Behavioural Analysis**

- *How do entities normally behave – any changes?*

## 3: **Examine “Items” of Interest**

- *What was unusual from Steps 1 and 2?*



# Stage 1: Exploration

“Missingness” in client cheque payment behaviour.

ClientID	Date	Cheques per month	Total Payment	Days between transactions
aaaaa	Sep-XW	1	\$1,276	.
aaaaa	Mar-XX	2	\$769	181
aaaaa	Oct-XX	1	\$851	214
aaaaa	Dec-XY	1	\$1,198	426
aaaaa	Jan-XZ	1	\$1,093	31

- This is our chance to get inside the data and work out if there is anything really going on



# Stage 1: Exploration

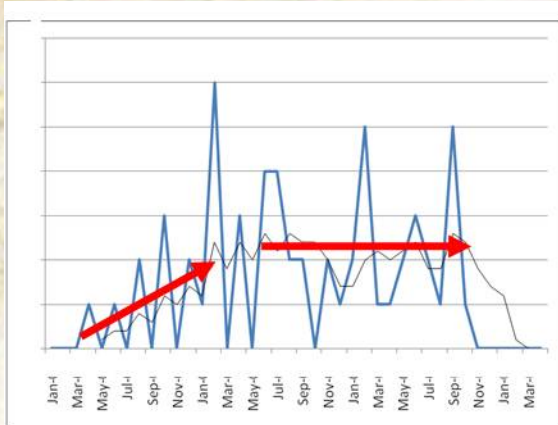


ClientID	Date	Cheques per month	Total Payment	Days between transactions
aaaaa	Sep-XW	1	\$1,276	.
aaaaa	Mar-XX	2	\$769	181
aaaaa	Oct-XX	1	\$851	214
aaaaa	May-XY	1	~\$1037	~213
aaaaa	Dec-XY	1	\$1,198	426 ~213
aaaaa	Jan-XZ	1	\$1,093	31

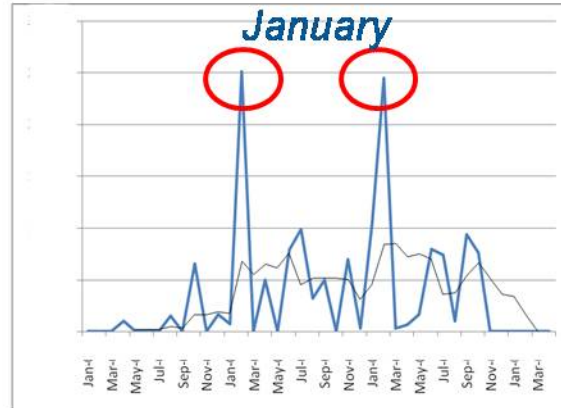
- Estimated payment of \$1037 was scheduled for May20XY
- *Later found a cheque for \$677 was sent in May 20XY*



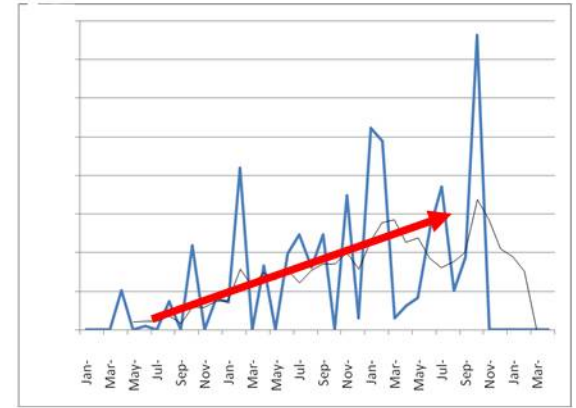
# Stage 2: Confirmation



Number "Missing"



Total Value "Missing"

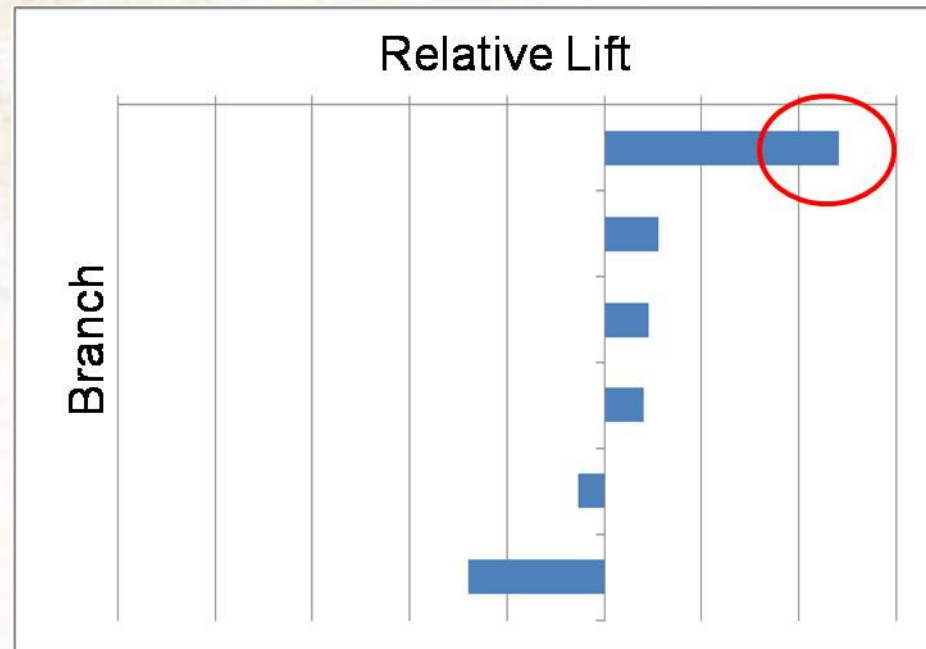


Average Value "Missing"

- Plots show estimated time and amounts
- Graphs indicate a suspicious pattern
- *Later found that 1 in 12 flags were fraud*



# Stage 3: Refinement



- One branch had **significantly more** unusual activity than compared to the other branches.
- *This is the branch where the fraud was committed.*

# Stage 4: Fraud

## **Successfully Identified Fraud**

- Cheques stolen from mailroom
- Fraudster confessed

## **But:**

- Is it happening anywhere else?
- Can we make sure it won't happen again?



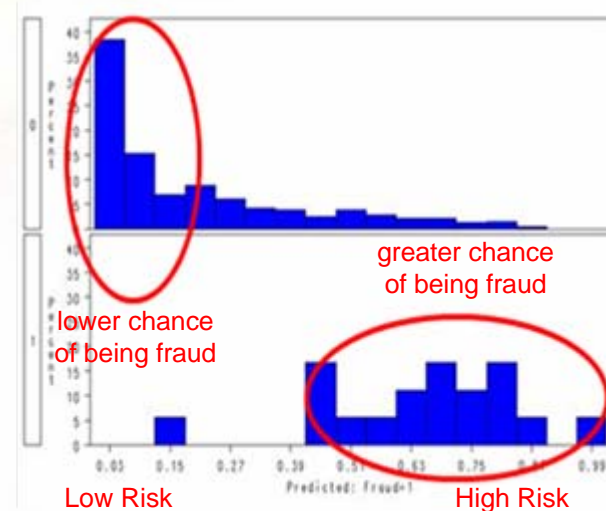
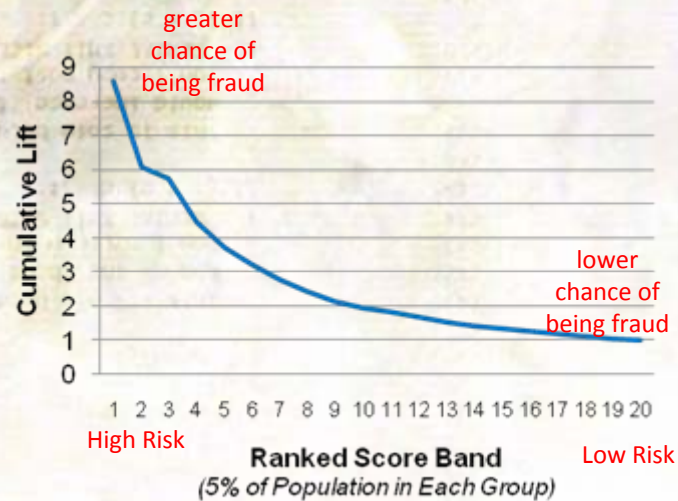
# Stage 5: Extension

This fraud was characterised by 3 basic indicators:

- Timing of Payment
- Size of Payment
- Interaction between Timing and Size of Payment



# Characterise the Fraud



- Each client given a score indicating the chance they had been affected by this type of fraud.
- Expected amount and date of payment estimated for clients whose scores triggered an alert.

# Outcome: “Sleep at Night”

Risk Band	Hit Rate	Capture Rate
1	2 in 3	20%
2	1 in 5	25%
3	1 in 7	92%
4	1 in 100	100%
5	n/a	100%

- Client Scores placed into Risk bands.
- The branch where the fraud occurred had **250%** more *Risk Band 1* alerts than any other branch.
- Another branch with elevated number of *Risk Band 1* alerts was audited.





*offlode*

[www.offlode.com](http://www.offlode.com)