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What's the Score?

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Outline

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INTRODUCTION

Internal Audit Quality

- The IIA defines the internal audit function as:

"an independent, objective assurance and consulting activity designed to add value and improve an organization's operations. It helps an organization accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control, and governance processes (IIA, 2000)."

- The quality of internal audit is important to Internal as well as External audit professions (Gramling and Vandervele, 2006)

Why is this important?

- High quality Internal audit functions are associated with lower levels of earnings management (Prawitt, Smith, and Wood, 2008)
- Control Assessment quality affects all organizations
- Quality Reviews: focus the efforts without losing the quality of internal audits
- Internal controls are aligned with risk assessments (Spira and Page, 2002)

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PROBLEM

What is the problem about?

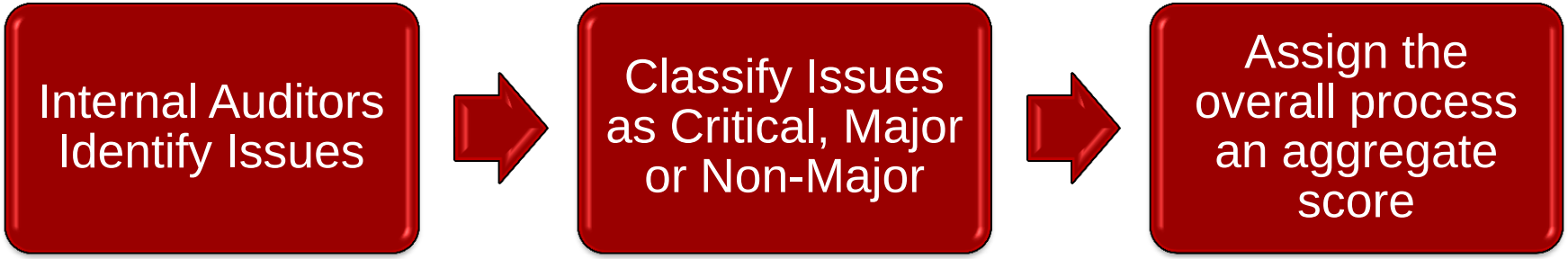
- Two types of control risk assessment used in this study:
  - Control Self Assessment (CSA): done by business process owners
  - Audit assessment: done by the internal auditors
- Preparer's judgment: issue classification (Critical, Major, Non-major) and business process risk level (Low, Moderate, High)
- Quality review of control risk assessments
- Learning tool: a tool that helps non-experts improve decisions

What we would like to do

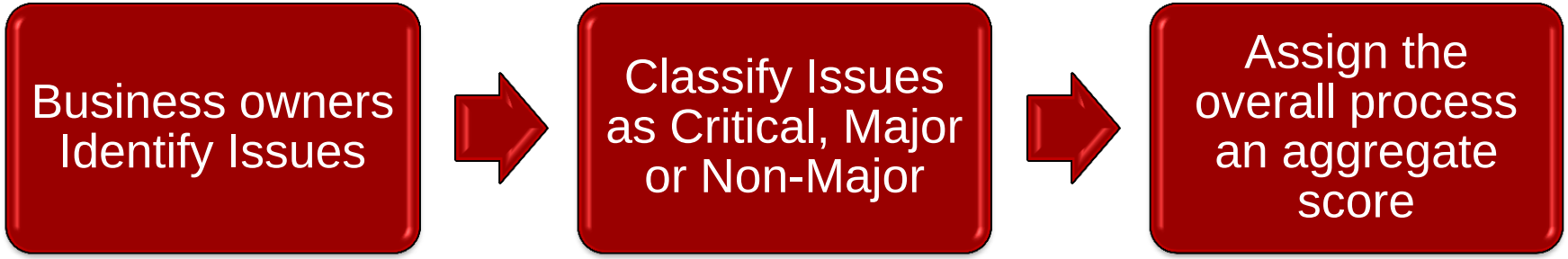
- **Real Time:** Use historic data from previous years to evaluate work paper assigned scores as they are submitted
- **Teachable moment:** Use the model as a benchmark, and ask score approver to explain any deviations from this model
- **Improve internal audit quality:** use the teachable moment to encourage discussion related to scoring to reduce variations in scores
- **Risk Based Sampling:** Focus on outliers, thus improving efficiency without affecting the quality

How are the scores assigned?

- Audit Score



- Control Self Assessment Score



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METHODOLOGY

Data

- Description
  - Risk assessment scores (L, M, H)
  - 2 files:
    - Control self assessment scores: 9593 records
    - Audit scores: 924 records

	FY 08/09	FY 09/10	FY 10/11	All (08-11)
AS	344	305	275	924
CSA	3310	3138	3145	9593

- Validation and Preprocessing
  - Aggregating issues counts and transformation of some variables
  - Filtered out records prior to FY 08/09
  - Grouped them by Fiscal years (see table above)

Ordered Logistic Regression

- Standard Logistic distribution
- Ordinal variables: variables are ranked, but real distance between ranks is unknown
- In this study, the Scores fall in three ordinal classes (Low, Medium, High)
- Formula

$$\boldsymbol{logit}[\boldsymbol{Pr}(\boldsymbol{Y} > \boldsymbol{j})] = \boldsymbol{\beta_0} + \boldsymbol{\beta_1 X_1} + \boldsymbol{\beta_2 X_2} + \cdots + \boldsymbol{\beta_k X_k}$$

  - logit = log odds
  - Pr = probability
  - Y = ordered response variable
  - j = level of the response variable

Models

- **Audit Score Model**

$$AS = \beta_0 + \beta_1 CC + \beta_2 MC + \beta_3 NMC$$

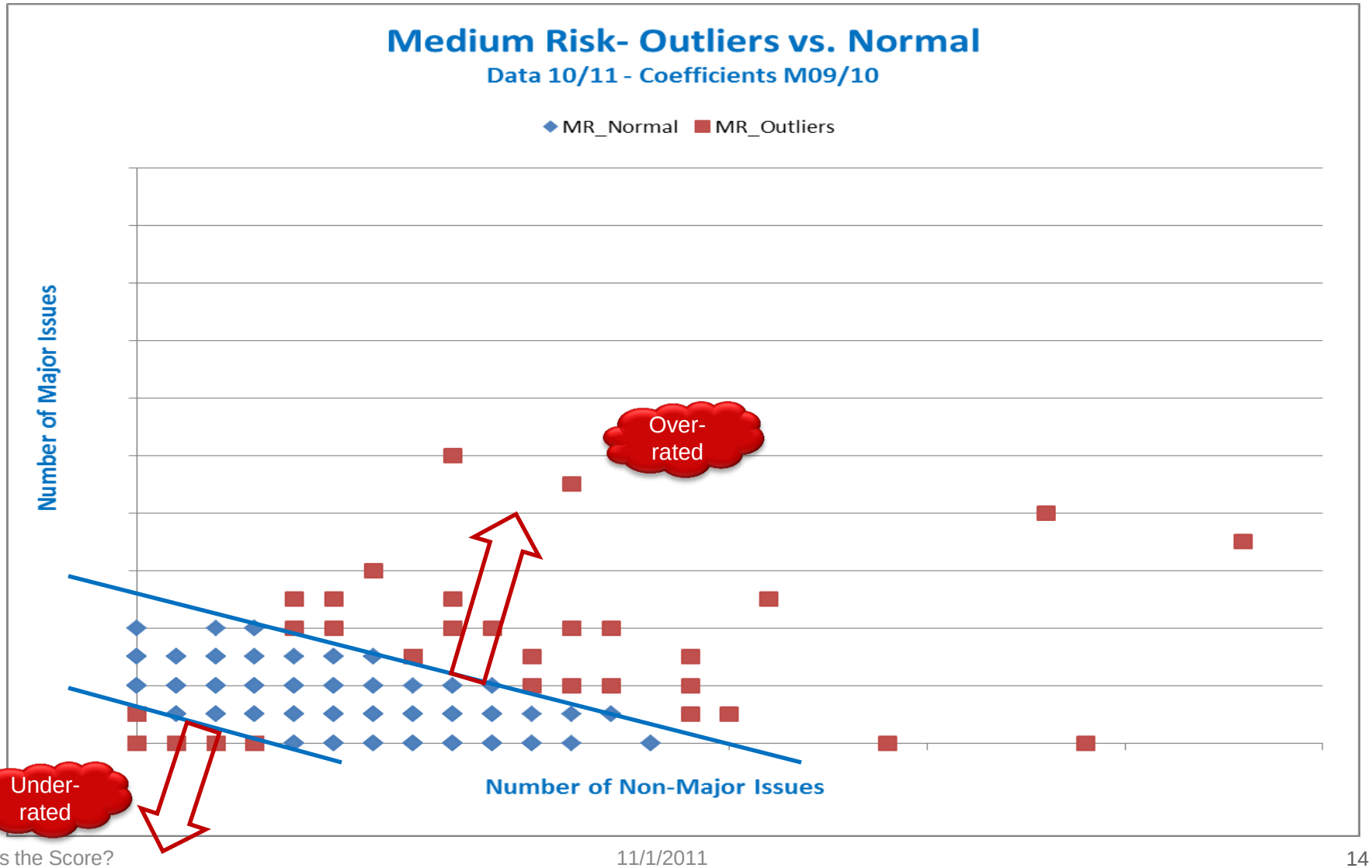
  - AS = Audit Score
  - CC = Number of critical issues (identified by the auditor)
  - MC = Number of Major issues (identified by the auditor)
  - NMC = Number of Non-Major issues (identified by the auditor)

- **CSA Score Model**

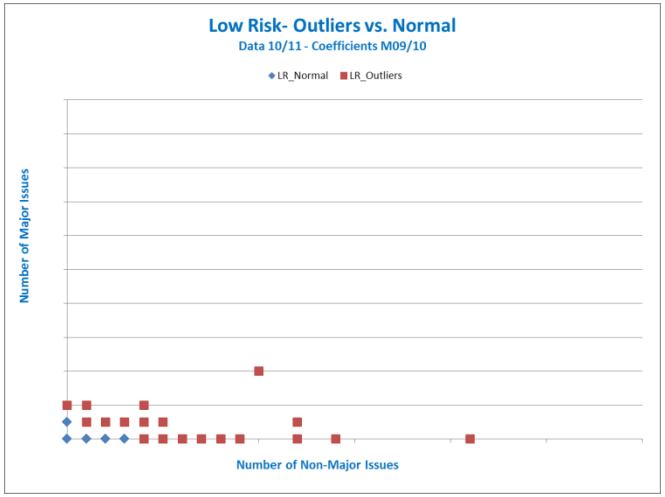
$$CSA = \beta_0 + \beta_1 CC + \beta_2 MC + \beta_3 NMC$$

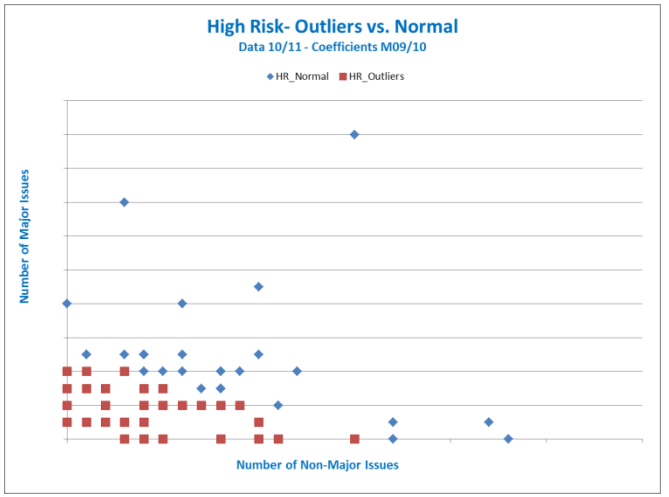
  - CSA = Control Self Assessment score
  - CC = Number of critical issues (identified by the CSA preparer)
  - MC = Number of Major issues (identified by the CSA preparer)
  - NMC = Number of Non-Major issues (identified by the CSA preparer)

Findings

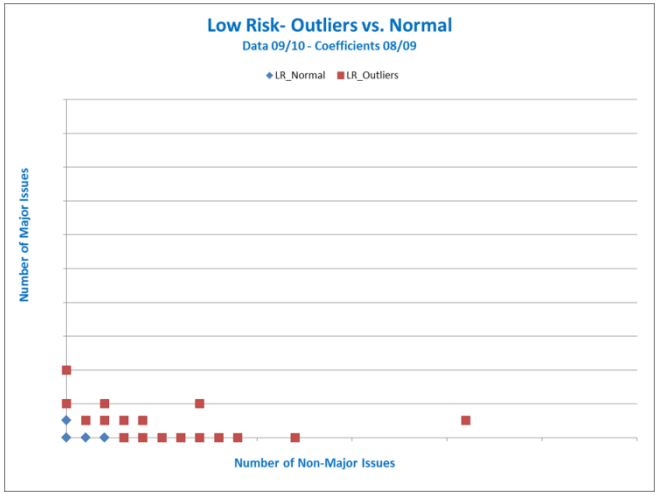

Medium Risk- Outliers vs. Normal
Data 10/11 - Coefficients M09/10
MR_Normal
MR_Outliers
Number of Major Issues
Number of Non-Major Issues
Over-rated
Under-rated

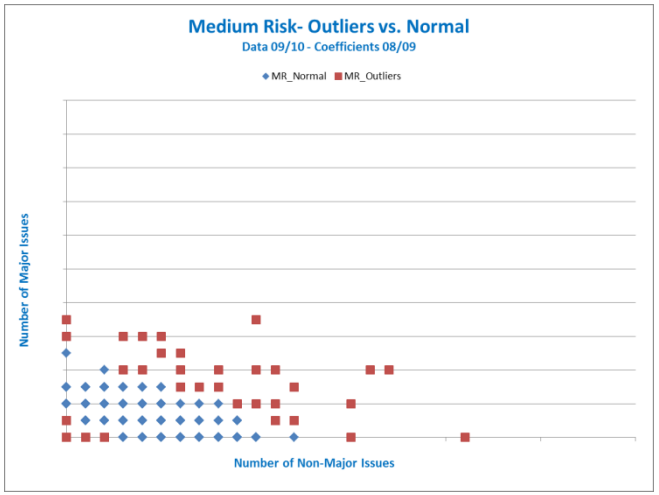
More Graphs

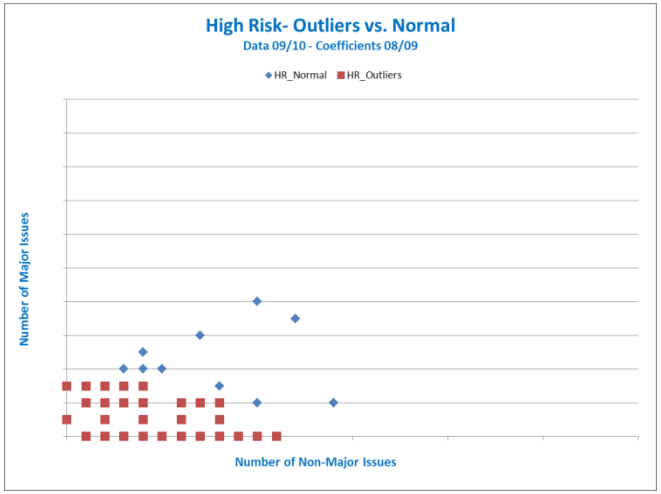

Low Risk- Outliers vs. Normal
Data 10/11 - Coefficients M09/10
LR_Normal
LR_Outliers
Number of Major Issues
Number of Non-Major Issues


High Risk- Outliers vs. Normal
Data 10/11 - Coefficients M09/10
HR_Normal
HR_Outliers
Number of Major Issues
Number of Non-Major Issues

More Graphs


Low Risk- Outliers vs. Normal
Data 09/10 - Coefficients 08/09
LR_Normal
LR_Outliers
Number of Major Issues
Number of Non-Major Issues


Medium Risk- Outliers vs. Normal
Data 09/10 - Coefficients 08/09
MR_Normal
MR_Outliers
Number of Major Issues
Number of Non-Major Issues


High Risk- Outliers vs. Normal
Data 09/10 - Coefficients 08/09
HR_Normal
HR_Outliers
Number of Major Issues
Number of Non-Major Issues

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CONCLUSION AND BUSINESS IMPACT

Conclusion and Business Impact

Our model can:

- Be effective in identifying anomalous scores
- Verify preparers' judgment in assigning scores
- Increase the efficiency of quality reviews by focusing on exceptions (audit by exception)
- Be used as a consistency check (serve as a benchmark)
- Be used as a teaching technique to help non-experts (non-auditors) assign more accurate risk scores or explain unexpected scores

Thank You!