DATA ANALYTICS: *REAL AND PRACTICAL APPLICATIONS*

36TH ANNUAL FIDUCIARY RISK MANAGEMENT CONFERENCE

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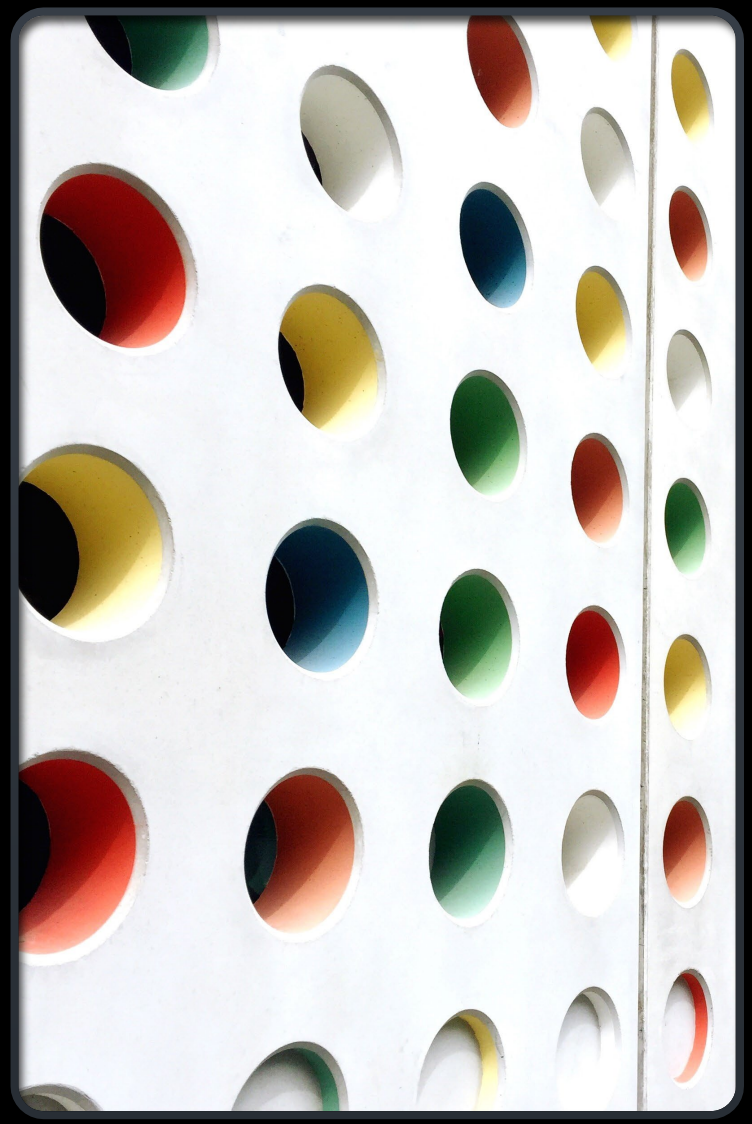
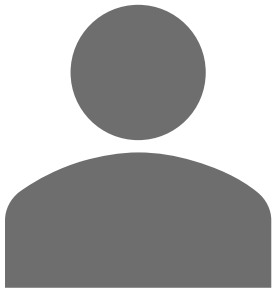
Machelle L. Rinko, CPA, CIA, CFIRS
Jenna Pruitt-Fricke, CIA, CFIRS





INTRODUCTION

- Name
- Institution Size
- # of Internal Auditors
- 1 – 5 scale, what level of analytics


ANALYTICS

OVERVIEW

DATA ANALYTICS

HOW INTERNAL AUDITORS CAN USE DATA ANALYTICS

INTERACTIVE DISCUSSION/DEMOS

FINAL THOUGHTS

QUESTIONS

DATA ANALYTICS

According to the 2022 IIA Pulse report, among those audit leaders who would spend more on technology, 68% want to invest more in data analytics.

What is Data Analytics?

Data analytics in its broadest and simplest term is the science of analyzing raw data to make conclusions about that information.

Today

Advanced data analytics – the analysis of large volumes of data and/or high-velocity data, which presents unique computational and data-handling challenges.

INTERNATIONAL PROFESSIONAL PRACTICES FRAMEWORK – STANDARDS[1]

- **STANDARD 1220** – DUE PROFESSIONAL CARE
- INTERNAL AUDITORS MUST APPLY THE CARE AND SKILL EXPECTED OF A REASONABLY PRUDENT AND COMPETENT INTERNAL AUDITOR. DUE PROFESSIONAL CARE DOES NOT IMPLY INFALLIBILITY.

- **1220.A2** – IN EXERCISING DUE PROFESSIONAL CARE INTERNAL AUDITORS MUST CONSIDER THE USE OF TECHNOLOGY-BASED AUDIT AND OTHER DATA ANALYSIS TECHNIQUES.

- **TECHNOLOGY-BASED AUDIT TECHNIQUES:**
- ANY AUTOMATED AUDIT TOOL, SUCH AS GENERALIZED AUDIT SOFTWARE, TEST DATA GENERATORS, COMPUTERIZED AUDIT PROGRAMS, SPECIALIZED AUDIT UTILITIES, AND COMPUTER-ASSISTED AUDIT TECHNIQUES. (CAATS)

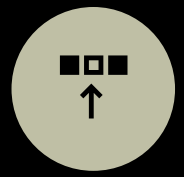
1The Institute of Internal Auditors International Standards for the Professional Practice of Internal Auditing (Standards) Revised: October 2016; Effective: January 2017

BENEFITS

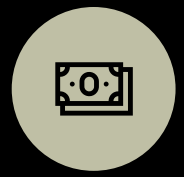
INCREASED EFFICIENCY

IMPROVED ASSURANCE

INCREASED EFFECTIVENESS



RESOURCE DEPLOYMENT



COST SAVINGS

CONTINUOUS AUDITING

GREATER AUDIT COVERAGE

SIMPLE RIGHT?

- Ask the Question
- Define/Determine the analytic
- Locate, organize, and analyze
- Answer the question
- Repeat

CHALLENGES/MISTAKES

- No defined project plan
- No goal or objective
- Time, money, expertise
- Focus on software training
- Scattered Analysis
- Early dive in
- Recreating the wheel
- No checkup
- Over-reliance on Technology

HOW INTERNAL AUDITORS CAN USE DATA ANALYTICS

DATA ANALYTICS TOOLS

- Desktop Based – Excel, Access
- Server-based (SQL)
- Integrated – SAP, People Soft, JDE, Oracle
- Report Writers – Business Objects, Cognos
- Auditing Software – IDEA, SAS, Artubus, ACL
- DA Visualization Software – Tableau, Qlikview/Qlik Sense

HOW IA USES DATA ANALYTICS

Annual Planning Phase

Audit Segment Planning

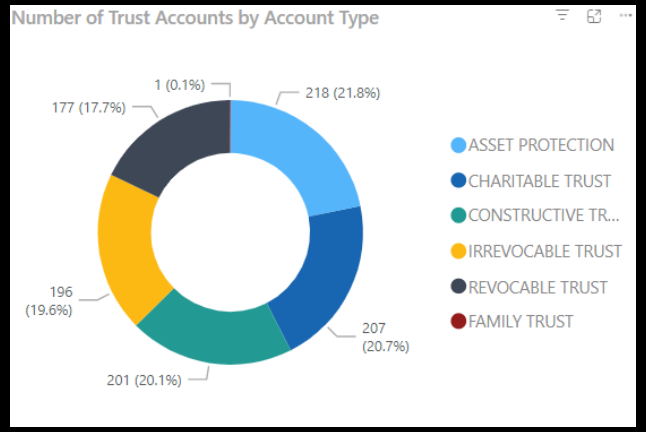
Fieldwork

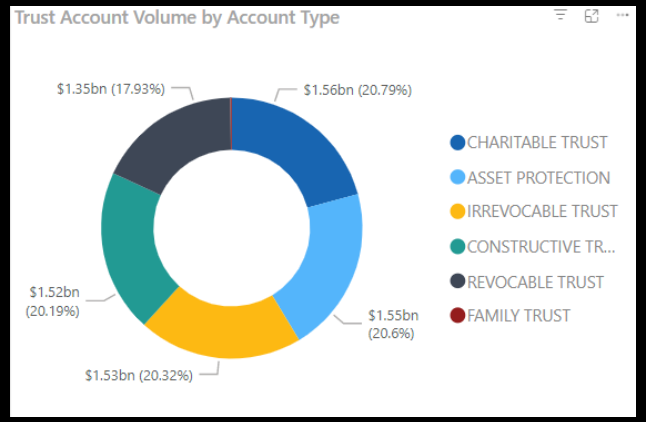
Reporting

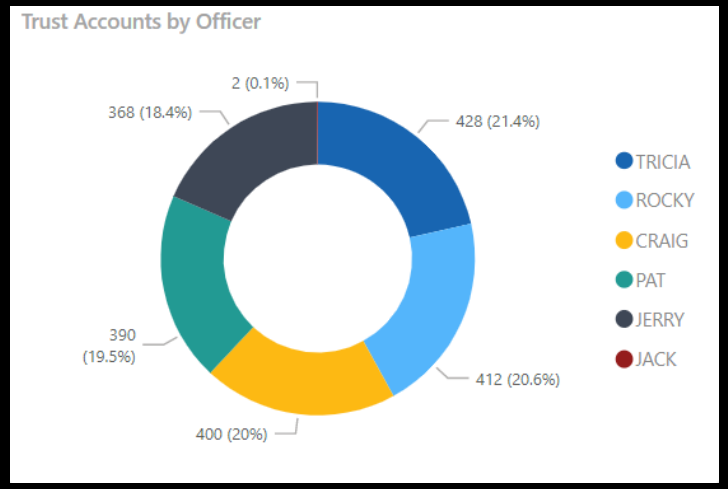
AUDIT PLANNING – RISK ASSESSMENTS

1. Identify or obtain your library of potential risks
2. Define your KRIs
3. Determine your data sources
4. Connect your data sources - schedule the analytics
5. Review your results – potential adjustment of risk ratings and audit timing
6. Report your results – use dashboards
7. Repeat

Auditable Unit	Prior Audit Frequency	2023 Audit Frequency	Prior Direction of Risk	2023 Direction of Risk	Prior Audit	Year 2023	Year 2024
Reconciliations	2	1	↔	↑	2022	X	X
Disbursements	1	1	↔	↔	2022	X	X
Fees	2	2	↔	↑	2022	-	X

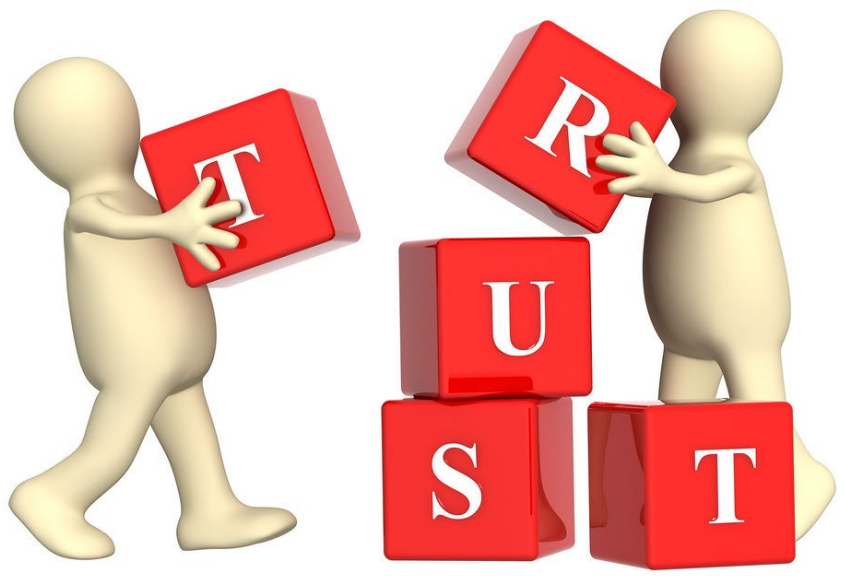






AUDIT PLANNING

- Annual audit plans should be based on results of risk assessments.
- The ability to analyze trends in full populations of data should transform how you approach your audits.
  - Increase/Decrease in Accounts
  - Increase/Decrease in fee income
  - Increase in total shares/assets held
  - Trust Officer with Significant increase in accounts from prior year
  - Account Type and/or type of asset breakdown across the whole portfolio
  - Increase in Commission payouts
- The results of analysis should define the scope.
- Significant changes in audit approach may be needed.



TRUST INTERNAL AUDITS

HOW SHOULD I START?

Select and complete an audit or audit segment using data analytics.

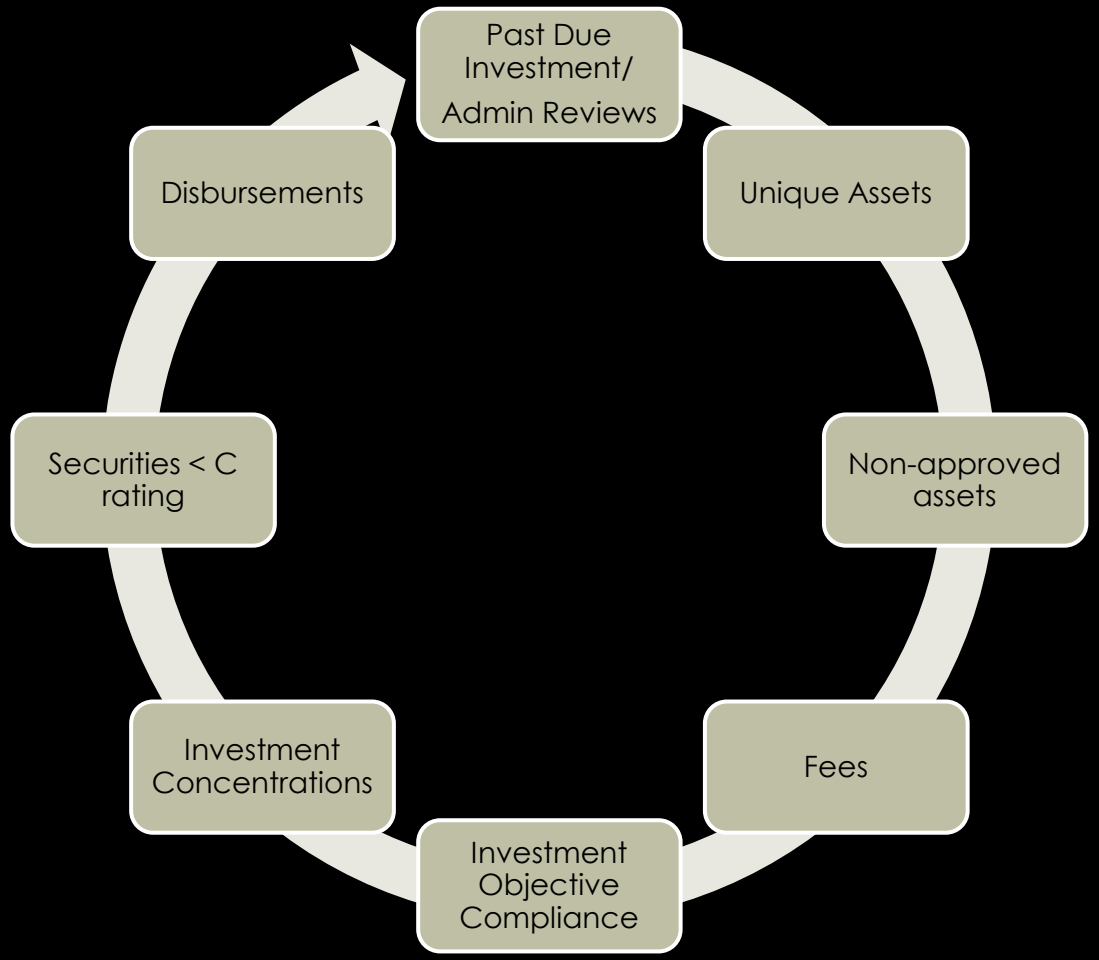
Understand and know what is already available.

- Reporting Tools
- Data Sets (complete/accurate)

Create a dashboard that you can use during multiple phases.

- Audit Planning/Planning Memos
- Scoping
- Fieldwork
- Reporting

SAMPLE ANALYTICS TO CONSIDER



DATA ATTRIBUTES TO CONSIDER

- Understand and focus on the critical/high risk areas.
- Goal is to obtain all information needed in one report.
- Data points to consider:

- Account Name
- Account Number
- Account Capacity Code
- Administrative Officer
- Investment Officer
- Date Opened
- Date Closed
- Date of Death
- Investment Review Frequency Code
- Last Investment Review Date
- Investment Authority Code
- Investment Objective Code
- Fee Plan Code
- Fee Discount
- Statement Frequency Code
- Last Statement Date
- Statement Mailing Address
- Investment Allocations

Example 1 – Annual Review Completion

Rule

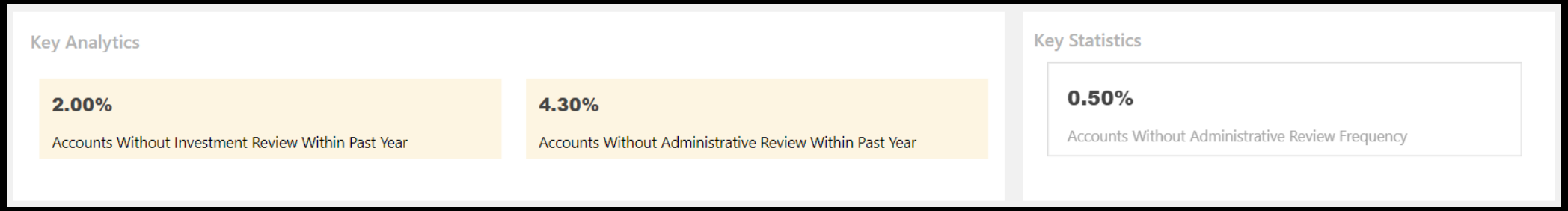
1. Identify any accounts that have not had an investment review within the past year as of the date of the testing.
2. Identify any accounts that have not had an administrative review within the past year as of the date of the testing.
3. Identify accounts without an administrative review cycle.

Data Fields Needed

1. Annual Investment Review Date
2. Annual Administrative Review Date
3. Annual Administrative Review Frequency
4. Standard Account Information (i.e., account name, open date, account type, etc.).

Next Steps

1. What does this tell you? What would you do after you saw this feedback from the analytics?



Accounts Without Administrative Review Frequency

Account Number	Account Name	Administrator	Investment Officer	Account Type
100517	CLIENT 125	LILLY	ROCKY	CHARITABLE TRUST
100517	KIRBEE ROZENZWEIG	LILLY	ROCKY	CHARITABLE TRUST
100582	CLIENT 167	BOB	PAT	CHARITABLE TRUST
100582	MAVIS HAGGETT	BOB	PAT	CHARITABLE TRUST

Accounts Without Investment Review Within Past Year

Account Number	Account Name	Administrator	Investment Officer	Account Type	Date of Last Investment Review
100612	CLIENT 40	BILL	ROCKY	CHARITABLE TRUST	03/27/2021
100612	SHIRLEEN COHRS	BILL	ROCKY	CHARITABLE TRUST	03/27/2021
100720	CLIENT 41	BILL	ROCKY	REVOCABLE TRUST	03/27/2021
100720	OLAV PEERY	BILL	ROCKY	REVOCABLE TRUST	03/27/2021

Example 2 – Statement Recipients

Rule

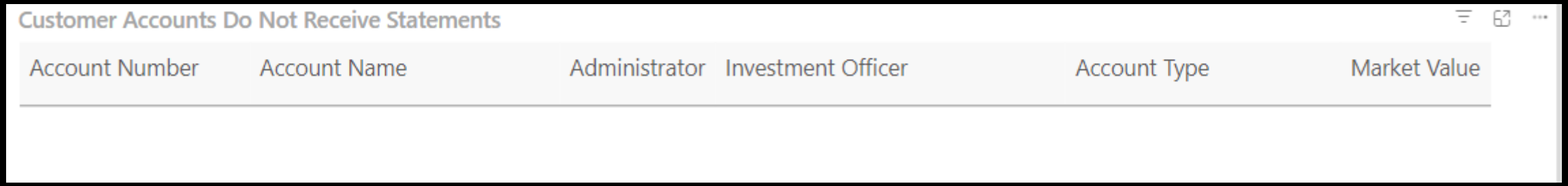
1 . Identify customer accounts that are not set up to receive a statement

Data Fields Needed

1. *Statement Recipients (name or yes/no)*
2. Standard Account Information (i.e., account name, open date, account type, etc.).

Next Steps

1. What does this tell you? What would you do after you saw this feedback from the analytics?



Example 3 – Investment Objectives for Custodial Accounts

Rule

1. Identify custody accounts with investment discretion or investment objective assigned.

Data Fields Needed

1. *Account Type*
2. *Investment Discretion*
3. *Investment Objective*

Next Steps

1. What does this tell you? What would you do after you saw this feedback from the analytics?

C	H	I	J	AB
Accoun	Adminis	Investm	Account Type	Investment Authority/Discretion
Client 3	Bob	Pat	Custody	Sole
Client 8	Rose	Craig	Custody	Sole
Client 12	Suzy	Craig	Custody	Sole
Client 29	Bill	Craig	Custody	Sole
Client 31	Suzy	Craig	Custody	Sole
Client 33	Lilly	Jerry	Custody	Sole
Client 34	Bob	Pat	Custody	Sole
Client 37	Bill	Pat	Custody	Sole
Client 38	Frank	Jerry	Custody	Sole
Client 39	Rose	Jerry	Custody	Sole

C	J	AA	AC
Accoun	Account Type	Investment Objective	Investment Authority/Discretion
Client 3	Custody	Balanced	Sole
Client 12	Custody	Growth and Income	Sole
Client 31	Custody	Aggressive Growth	Sole
Client 33	Custody	Balanced	Sole
Client 37	Custody	Aggressive Growth	Sole
Client 38	Custody	Aggressive Growth	Sole
Client 39	Custody	Aggressive Growth	Sole

Example 4 – Accounts with Asset Concentrations

Rule

1. Identify accounts w/ concentrations (assets above 10% of total holdings)

Data Fields Needed

1. *Account Name*
2. *Account Type*
3. *Investment Objective*
4. *Asset Type Percentage (equities, fixed income, cash)*
5. *Access to Standard Asset Allocation Models (likely not part of data set)*

Next Steps

1. What does this tell you? What would you do after you saw this feedback from the analytics?

Account Name	Account Number	Investment Objectiv	Asset Allocation Percentage Fixed Incom	Asset Allocation Percentage Equities	Asset Allocation Percentage Cash and Equivalents
Client 5	100474	Aggressive Growth	8.8	89.2	2
Client 1	100026	Balanced	80	10	10
Client 7	100705	Balanced	45	53	2
Client 15	100148	Balanced	60	30	10
Client 21	100166	Cash Preservation	50	45	5
Client 25	100259	Growth	70	20	10
Client 32	100299	Growth	80	10	10
Client 35	100727	Growth	40	40	20

EXAMPLE ASSET ALLOCATION MODELS

Cash Preservation	100 C / 0 FI / 0 E
Balanced	10 C / 45 FI / 45 E
Growth	5 C / 25 FI / 70 E
Aggressive Growth	5 C / 5 FI / 90 E

Example 5 – Security Ratings

Rule

1. Identify investment discretion accounts with a security rating of "C" or below and classification of security ratings for investment discretion accounts

Data Fields Needed

1. *Account Type*
2. *Account Name*
3. *Security Name*
4. *Security Rating*

Next Steps

1. What does this tell you? What would you do after you saw this feedback from the analytics?

Account Name	Account Number	Investment Grade Fixed Income
Client 492	100070	BBB
Client 497	100846	BB
Client 501	100670	
Client 505	100310	C
Client 514	100406	A
Client 515	100430	B
Client 521	100165	AAA
Client 525	100998	AA
Client 527	100575	AA
Client 535	100215	BB
Client 544	100380	AA
Client 545	100522	D

Row Labels	Count of Account Name
A	228
AA	140
AAA	187
B	124
BB	136
BBB	105
C	32
D	35
(blank)	13
Grand Total	**1000**

Example 6 – Accounts without a Fee Schedule

Rule

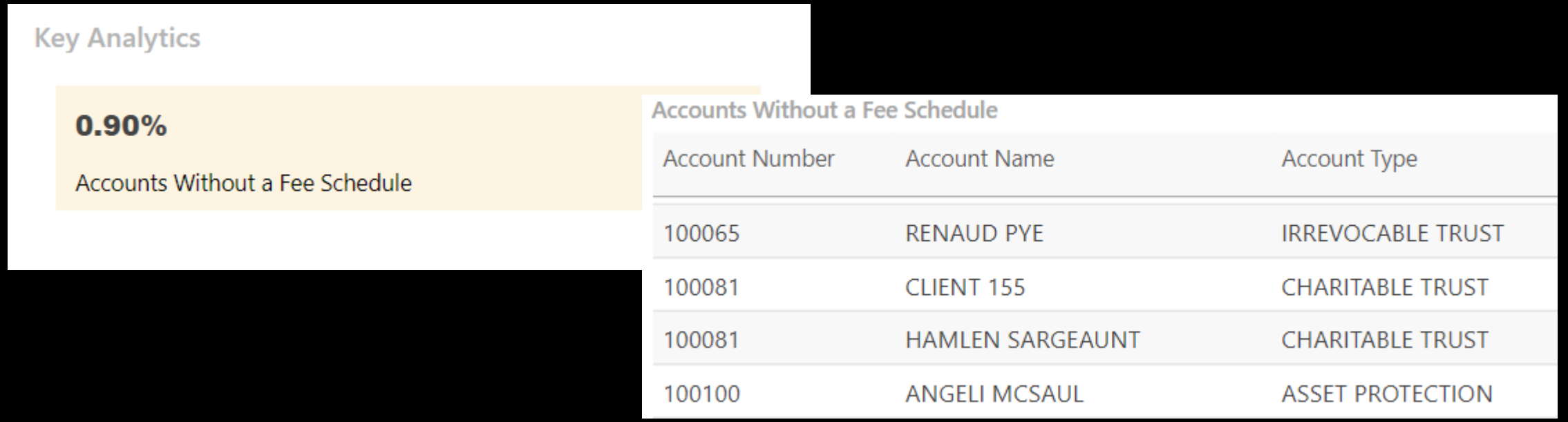
1. *Identify any accounts that are not assigned a fee schedule/code*

Data Fields Needed

1. *Account Name*
2. *Fee Schedule/Fee Schedule Block*

Next Steps

1. What does this tell you? What would you do after you saw this feedback from the analytics?



Example 7 – Zero balance open accounts

Rule

1. *Identify any assets that do not have current market value.*

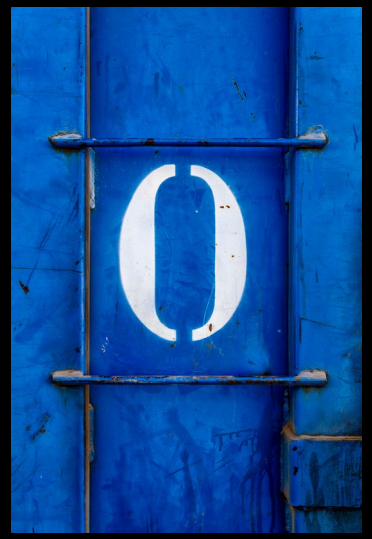
Data Fields Needed

1. *Account Name*
2. *Account Number*
3. *Account Type*
4. *Account Open Date*
5. *Account Market Value*

Next Steps

1. What does this tell you? What would you do after you saw this feedback from the analytics?





Example 8 – Unapproved Assets

Rule

1. Identify discretionary accounts with non-approved list holdings

Data Fields Needed

1. *Asset holdings list*
2. *Approved holdings list*

Next Steps

1. What does this tell you? What would you do after you saw this feedback from the analytics?

Example 9 – Trust Accounting System Users That are Not Employees

Rule

1. Identify any trust accounting system users that are no longer employed by the company.

Data Fields Needed

1. *User Listing*
2. *Employee Listing*

Next Steps

1. What does this tell you? What would you do after you saw this feedback from the analytics?

Within Excel:
Column 1 – User Names
Column 2 – Employee Listing
Column 3 – Employee Titles

→

Within Excel:
1. Highlight columns 1 & 2
2. Conditional Formatting
3. Highlight Duplicate Values

→

Users	Employee Listing	Employee Title
Linda Smith	Linda Smith	Trust Admin
Kay Smith	Kay Smith	Trust Ops
Candy Apple	Candy Apple	Trust Ops
Joe Birch	Joe Birch	Trust Admin
Jordan Cane	Jordan Cane	Trust Exec
Zach Wilson	Zach Wilson	Trust Admin
Cathy Wilson	John Doe	Lending Officer
Machelle Yulo	Anthea York	Loan Operations
Morgan Diamond	Machelle Yulo	Branch Operations
	Christine Doe	Info Security Officer

- Highlighted names in the user column ARE on the employee listing
- Un-highlighted names are users that are NOT on the employee listing.

FINAL THOUGHTS

- Core Skill for all Auditors
- Good Documentation Still Required
- Don’t be driven by the data
- Storage of data

Don't Be Afraid to Adjust Your Course

Machelle Rinko, CPA, CIA, CFIRS

Internal Audit & Risk Management Consultant

Machelle.Rinko@gmail.com

M: 330.501.3474

Jenna Pruitt-Fricke, CIA, CFIRS

Internal Audit Senior Manager, Crowe LLP

Jenna.Pruitt@crowe.com

M: 812.374.6375