



BUILDING ASSURANCE USING DATA ANALYTICS

Julian Cunningham
Principal Auditor, Bolton Council

Bolton
Council



AGENDA

1. Context/Milestones
2. Data Analytics: Why?
3. The Set Up: How?
4. Reporting: Who and When?
5. The Analytics: What?
6. Headline Results
7. Pros and Cons
8. More IDEAs

1. Context/Milestones

- 2004-2012:
 - 100+ Oracle Discoverer Reports developed plus use of Scheduler
- Dec 2011:
 - Foundation IDEA Training
- 2012/13:
 - IDEA In-House Training Pack & Sessions Developed/Delivered
- 2013/14:
 - Duplicate Payment Identification Process Developed/Delivered
- 2014/15:
 - CIA retires (Aug '14); IA restructure begins (completed Mar '16)
- June 2015:
 - CIA asks for development of continuous audit re financial systems
- November 2015 – June 2016:
 - New data analytics programme developed.



2. Why Data Analytics?

- **Earlier/more timely** detection of potential fraud, error or noncompliance with expected key internal controls.
- **Whole population analysis** of complete transaction datasets rather than random sampling.
- **Automated and customised datasets** can be created to provide better intelligence on system data.

3. Audit Highlight & Assurance (AHA)

How to set up AHA for Core Financial Systems (CFS):

- Establish scope of CFS audit universe
- Agree key control objectives for each system area
- Assess with system managers feasibility/validity of producing highlight (trend) data and assurance analytics for controls
- Produce system planning matrix to flag AHA controls, non-AHA controls and AHA data sources for all system areas (e.g. Oracle, Academy)
- Confirm and validate data sources
- Develop analytics and log data sources and file formats
- Assess validity of analytics/trend results
- Develop reporting format and agreed timetable
- Automate data analytics
- Quarterly/annual review of accuracy/value of results

Timetabling & Reporting

Reporting timetable (Quarter 2):

- 1 - 15 Oct:
 - Obtain source data, run IDEA scripts and validate results
- 16 Oct:
 - Submit detailed AHA results to nominated assurance contacts including transaction level detail (14 days to respond to assurance analytics)
- 1 – 14 Nov:
 - Collate assurance responses and produce draft AHA Excel summary
- 15 Nov:
 - Meet Deputy Treasurer to discuss latest results/responses
- 30 Nov:
 - Submit final AHA Excel summary to Treasurer & Deputy Treasurer

Audit Highlight & Assurance (AHA)

AUDIT UNIVERSE and AHA TIMETABLE (2016-19)		
Income, Ledger & Bank		Payments, Treasury & Budgets
Accounts Receivable		Accounts Payable
Bank Reconciliations		Budget Setting, Monitoring & Reporting
Council Tax		Housing Benefits
General Ledger		Payroll
Income Collection (excluding CT/NDR)		Purchase Cards (VISA)
NDR (Business Rates)		Treasury Management
2016/17	2017/18	2018/19

5. AHA (Income)

Audit Ref	ACCOUNTS RECEIVABLE Highlight and Trend	16/17 Q4	17/18 Q1	17/18 Q2	17/18 Q3	17/18 Q4
2.01	Duplicate AR accounts set up (same names & addresses) Accounts (No)		X	X	X	X
4.01a	AR previous years' total arrears Value (£)		£	£	£	£
4.01a	AR previous years' total arrears Accounts (No)		X	X	X	X
5.01a	AR accounts receiving write-offs: Value (£)		£	£	£	£
5.01a	AR accounts receiving write-offs: Accounts (No)		X	X	X	X
5.02a	AR accounts receiving credit memos: Value (£)		£	£	£	£
5.02a	AR accounts receiving credit memos: Credit Memos (No)		X	X	X	X

5. AHA (Income)

Audit Ref	ACCOUNTS RECEIVABLE Assurance	No of Records	Total (£)	RAG	Follow Up By
3.02	AR customers billed £1k+ with VAT of £100+ where for same customers 75% bills exclude VAT.	X	£	G	Group Accountants
4.01b	Individual AR customers with arrears balances over £20k and seek assurance recovery is being actioned.	X	£	A	AR Manager
5.01b	Identify individual AR accounts receiving £5k+ total write-offs and seek assurance that these have been authorised by a senior manager.	X	£	G	AR Manager
5.02b	Identify credit memos raised over £5k and seek assurance that are valid and approved.	X	£	G	Group Accountants

5. AHA (Income)

Audit Ref	COUNCIL TAX Highlight and Trend	16/17 Q4	17/18 Q1	17/18 Q2	17/18 Q3	17/18 Q4
6.01a	CT previous years' total arrears: Value (£)	£	£	£	£	£
6.01a	CT previous years' total arrears: Accounts (No)	X	X	X	X	X
9.01a	CT refunds paid to individual CT accounts: Value (£)	£	£	£	£	£
9.01a	CT refunds paid to individual CT accounts: Accounts (No)	X	X	X	X	X
9.01b	CT accounts paid £1k+ total of refunds: Value (£)	£	£	£	£	£
9.01b	CT accounts paid £1k+ total of refunds: Accounts (No)	X	X	X	X	X
10.01a	CT accounts receiving write-offs: Value (£)	£	£	£	£	£
10.01a	CT accounts receiving write-offs: Accounts (No)	X	X	X	X	X

5. AHA (Income)

Audit Ref	COUNCIL TAX Assurance	No of Records	Total (£)	RAG	Follow Up By
3.01a	Non-matching CT Bands between Academy and VOA datasets.	X	£	G	Revenues Manager
3.01b	Non-matching CT Property Refs between Academy and VOA datasets.	X	£	G	Revenues Manager
6.01b	Individual CT accounts with £6k+ total previous years' arrears.	X	£	G	Revenues Manager
9.01c	Same CT accounts or bank accounts in receipt of £100+ duplicate refund amounts.	X	£	G	Revenues Manager
10.01b	Individual CT accounts receiving £5k+ total write-offs.	X	£	G	Revenues Manager

5. AHA (Income)

Audit Ref	NDR (Business Rates) Highlight and Trend	16/17 Q4	17/18 Q1	17/18 Q2	17/18 Q3	17/18 Q4
6.01a	NDR previous years' total arrears: Value (£)	£	£	£	£	£
6.01a	NDR previous years' total arrears: Accounts (No)	X	X	X	X	X
9.01a	NDR refunds paid to individual NDR accounts: Value (£)	£	£	£	£	£
9.01a	NDR refunds paid to individual NDR accounts: Accounts (No)	X	X	X	X	X
9.01b	NDR accounts paid £20k+ total of refunds: Value (£)	£	£	£	£	£
9.01b	NDR accounts paid £20k+ total of refunds: Accounts (No)	X	X	X	X	X
10.01a	NDR accounts receiving write-offs: Value (£)	£	£	£	£	£
10.01a	NDR accounts receiving write-offs: Accounts (No)	X	X	X	X	X

5. AHA (Income)

Audit Ref	NDR (Business Rates) Assurance	No of Records	Total (£)	RAG	Follow Up By
3.01a	Non-matching NDR RVs between Academy and VOA datasets	X	£	G	Revenues Manager & BR Manager
3.01b	Non-matching NDR Property Refs between Academy and VOA datasets	X	£	G	Revenues Manager & BR Manager
6.01b	Individual NDR accounts with £20k+ total previous years' arrears	X	£	G	Revenues Manager & BR Manager
9.01c	Same NDR accounts or bank accounts in receipt of £100+ duplicate refund amounts.	X	£	G	Revenues Manager & BR Manager
10.01b	Individual NDR accounts receiving £5k+ total write-offs	X	£	G	Revenues Manager & BR Manager

5. AHA (Payments, Treasury & Budgets)

Audit Ref	ACCOUNTS PAYABLE Highlight and Trend	16/17 Q4	17/18 Q1	17/18 Q2	17/18 Q3	17/18 Q4
10.01	Payments to suppliers over £100k: Value (£)	£	£	£	£	£
10.01	Payments to suppliers over £100k: Records (No)	X	X	X	X	X
10.01	Payments to suppliers over £100k: Suppliers (No)	X	X	X	X	X

5. AHA (Payments, Treasury & Budgets)

Audit Ref	ACCOUNTS PAYABLE Assurance	No of Records	Total (£)	RAG	Follow Up By
2.01	BACS payments >£20k where the supplier bank account number has changed.	X	£	A	Exchequer Services Manager
2.02	Cheque payments >£1k where the supplier address has changed. (NB for Single Site suppliers only).	X	£	G	Exchequer Services Manager HB Assessment Manager (if HB cheques)
4.05	Payments £500+ in total via AP where Supplier bank account number, sort code and postcode match with current employee.	X	£	G	Group Accountants
6.01	Possible unidentified duplicate payments.	X	£	G	AP Supervisor
7.01	Gaps in the cheque sequence.	N/a	N/a	G	Exchequer Services Manager
9.01	Number of suppliers paid over £1k without VAT where >75% of payments for same supplier included VAT.	X	£	A	Group Accountants

5. AHA (Payments, Treasury & Budgets)

DEPT	BUDGETS Highlight and Trend	16/17 Budget	16/17 Actual	17/18 Budget	17/18 Q1	17/18 Q2
AD	01 - EE SPEND	£	£	£	£	£
AD	02 - NON EE SPEND	£	£	£	£	£
AD	03 - INCOME	£	£	£	£	£
AG	01 - EE SPEND	£	£	£	£	£
AG	02 - NON EE SPEND	£	£	£	£	£
AG	03 - INCOME	£	£	£	£	£
AY	01 - EE SPEND	£	£	£	£	£
AY	02 - NON EE SPEND	£	£	£	£	£
AY	03 - INCOME	£	£	£	£	£
CH	01 - EE SPEND	£	£	£	£	£
CH	02 - NON EE SPEND	£	£	£	£	£
CH	03 - INCOME	£	£	£	£	£
CX	01 - EE SPEND	£	£	£	£	£
CX	02 - NON EE SPEND	£	£	£	£	£
CX	03 - INCOME	£	£	£	£	£
DR	01 - EE SPEND	£	£	£	£	£
DR	02 - NON EE SPEND	£	£	£	£	£
DR	03 - INCOME	£	£	£	£	£
ED	01 - EE SPEND	£	£	£	£	£
ED	02 - NON EE SPEND	£	£	£	£	£
ED	03 - INCOME	£	£	£	£	£
EN	01 - EE SPEND	£	£	£	£	£
EN	02 - NON EE SPEND	£	£	£	£	£
EN	03 - INCOME	£	£	£	£	£
FS	01 - EE SPEND	£	£	£	£	£
FS	02 - NON EE SPEND	£	£	£	£	£
FS	03 - INCOME	£	£	£	£	£
HG	01 - EE SPEND	£	£	£	£	£
HG	02 - NON EE SPEND	£	£	£	£	£
HG	03 - INCOME	£	£	£	£	£
PH	01 - EE SPEND	£	£	£	£	£
PH	02 - NON EE SPEND	£	£	£	£	£
PH	03 - INCOME	£	£	£	£	£
		£	£	£	£	£

5. AHA (Payments, Treasury & Budgets)

Audit Ref	BUDGETS Assurance	No of Records	Total (£)	RAG	Follow Up By
2.02	From analytical review, identify total overspend in year for revenue Cost Centres where net spend > +/-£250k, budget overspend is >£100k.	X	£	G	Group Accountants
2.03	For revenue Cost Centres with in-year net spend of > +/-£250k but for which no budget has been established, enquire as to what financial monitoring arrangements operate for these Cost Centres.	X	£	G	Group Accountants

5. AHA (Payments, Treasury & Budgets)

Audit Ref	HOUSING BENEFITS Highlight and Trend	16/17 Q4	17/18 Q1	17/18 Q2	17/18 Q3	17/18 Q4
3.02a	Overpayments paid to HB claimants: Value (£)		£	£	£	£
3.02a	Overpayments paid to HB claimants: Accounts (No)		X	X	X	X
3.03a	Discretionary Housing Payments (DHP) paid to HB claimants: Value (£)		£	£	£	£
3.03a	Discretionary Housing Payments (DHP) paid to HB claimants: Accounts (No)		X	X	X	X

5. AHA (Payments, Treasury & Budgets)

Audit Ref	HOUSING BENEFITS Assurance	No of Records	Total (£)	RAG	Follow Up By
3.02b	Identify HB overpayments £5k+ and seek assurance recovery is being actioned.	X	£	G	Head of Revenues & Benefits
3.03b	Identify Top 20 value DH payments and seek assurance these were authorised by HB Management.	X	£	G	Head of Revenues & Benefits

5. AHA (Payments, Treasury & Budgets)

Audit Ref	PAYROLL Highlight and Trend	16/17 Q4	17/18 Q1	17/18 Q2	17/18 Q3	17/18 Q4
10.01	Top 20 payees in receipt of overtime pay (BC Officers only): Value (£)	£	£	£	£	£
11.01	Top 20 payees in receipt of non-overtime additions to basic (BC Officers only): Value (£)	£	£	£	£	£

5. AHA (Payments, Treasury & Budgets)

Audit Ref	PAYROLL Assurance	No of Records	Total (£)	RAG	Follow Up By
5.01	Leavers still to be removed from the current HR establishment.	N/a	N/a	G	Exchequer Services Manager
5.02	Leavers paid twice or more after Leave Date where each Net Pay amount is £1,000+.	X	£	G	Exchequer Services Manager
7.01	Employees where basic pay is higher than expected for pay grade. (BMBC Staff on Grades 1 to 15 only).	X	£	A	Exchequer Services Manager
10.01b	Top 20 payees in receipt of overtime pay (BC Officers only): Value (£)	X	£	A	Line Managers
11.01b	Top 20 payees in receipt of non-overtime additions to basic (BC Officers only): Value (£)	X	£	G	HR Leads

5. AHA (Payments, Treasury & Budgets)

Audit Ref	PURCHASE CARDS (VISA) Highlight and Trend	16/17 Q4	17/18 Q1	17/18 Q2	17/18 Q3	17/18 Q4
1.02a	Card payments (excl. Schools) Value (£)		£	£	£	£
1.02a	Card payment (excl. Schools) (No of cardholders)		X	X	X	X
1.02a	Card payments (excl. Schools) (No of payments)		X	X	X	X
1.02b	Individual card payments (excl. Schools) over £1k Value (£)		£	£	£	£
1.02b	Individual card payments (excl. Schools) over £1k (No of cardholders)		X	X	X	X
1.02b	Individual card payments (excl. Schools) over £1k (No of payments)		X	X	X	X

5. AHA (Payments, Treasury & Budgets)

Audit Ref	PURCHASE CARDS (VISA) Assurance	No of Records	Total (£)	RAG	Follow Up By
3.01	Payments above single transaction limits.	X	£	A	Senior Admin & Payment Card Assistant
1.01b	Cardholders issued with two or more active cards.	X	£	G	Group Accountants
1.02c	Active cardholders who have not used their card in last two quarters.	X	£	A	Group Accountants

5. AHA (Payments, Treasury & Budgets)

Audit Ref	TREASURY MANAGEMENT Highlight and Trend	16/17 Q4	17/18 Q1	17/18 Q2	17/18 Q3	17/18 Q4
5.03	Payments Account £500k+ transfer payments: Value (£)		£	£	£	£
5.03	Payments Account £500k+ transfer payments: Records (No)		X	X	X	X
5.03	Payments Account £500k+ transfer payments: Payees (No)		X	X	X	X

5. AHA (Payments, Treasury & Budgets)

Audit Ref	TREASURY MANAGEMENT Assurance	No of Records	Total (£)	RAG	Follow Up By
2.02	Identify and report overall daily bank balances in the latest quarter, to indicate the extent to which residual balances are reasonable (i.e. around £500k).	X	£	G	Tax & Treasury Team

6. AHA Q4 Headlines (Income)

OVERALL 2017-18 RAG RATING		Comments		
Accounts Receivable	A	Issues (see below). AR previous years' total arrears fell from £Xm (Q1 end) to £Xm (Q4 end).		
Council Tax	G	CT previous years' total arrears increased slightly year-on-year between 1617 Q4 end and 1718 Q4 end from £Xm to £Xm.		
NDR	G	NDR previous years' total arrears increased year-on-year between 1617 Q4 end and 1718 Q4 end from £Xm to £Xm. NB However after adjusting re two large new debtors worth £Xm, the true total arrears figure is £Xm. i.e. same as 12 months ago.		
System	Sheet	Audit Ref	Data Analytic	Issue
Accounts Receivable	Assurance 1718	4.01b	Individual AR customers with arrears balances over £20k and seek assurance recovery is being actioned.	3 new £20k+ owing accounts since last quarter. Seems to be a problem in receiving info late re deceased persons. Internal Audit are due to carry out a Councilwide review of arrangements re deceased person notifications.

6. AHA Q4 Headlines (Payments, Treasury & Budgets)

OVERALL 2017-18 RAG RATING		Comments
Accounts Payable	G	£Xk duplicate payments identified in 2017/18 via our monthly duplicate payment review that have been recovered. Some outstanding issues (see next slide).
Budget Setting, Monitoring & Reporting	G	Given ongoing year-end adjustments, agreed with that reporting spend v budget data analytics will be deferred until 2018/19 Qtr 1.
Housing Benefit	G	Revenues Manager advised that there will be a potential increase in HB overpayments identified due to Real Time Information referrals.
Payroll	A	Various issues particularly re obtaining assurance on overtime (see next slide). £Xk overtime overpayments identified re two employees paid £xxx/hour in error.
Purchase Cards	A	Still some admin issues re: <ul style="list-style-type: none"> • card transactions exceeding transaction limits and; • assurance re active cards no longer needed (see next slide).
Treasury Management	G	No issues.

6. AHA Q4 Headlines (Payments, Treasury & Budgets)

System	Sheet	Audit Ref	Data Analytic	Issue
Accounts Payable	Assurance 1718	2.01	BACS payments >£20k where the supplier bank a/c number changed.	Yet to receive confirmation that bank verification checks were completed re two suppliers paid £X since the bank a/c changed.
Accounts Payable	Assurance 1718	9.01	Number of suppliers paid over £1k without VAT where >75% of payments for same supplier included VAT.	VAT anomalies are not always regarded as worthy of investigation. We need to re-evaluate how best to obtain assurance on accuracy/validity of VAT prior to our 2018/19 assurance work.
Payroll	Assurance 1718	7.01	Employees where basic pay > expected for grades 1-15.	Exchequer Services Manager to give reasons for two employees' basic pay exceeding pay grade.
Payroll	Assurance 1718	10.01b	Top 20 payees in receipt of overtime pay (BC Officers).	Assurance responses not received from 2/11 line managers. Three exceptions in relation to: <ul style="list-style-type: none"> • two employees overpaid £Xk in total; and • one Highways officer questioning the accuracy of overtime dates worked but sign-off by Head of Service was confirmed.
Purchase Cards	Assurance 1718	3.01	Payments above single transaction limits.	Assurance not received re reason for card limits being exceeded (i.e. was a temporary increase approved?)
Purchase Cards	Assurance 1718	1.02c	Active cardholders who have not used their card in last two quarters.	Assurance outstanding re whether four cardholders still have a business need for a purchase card.

7. Pros & Cons (Non-Respondents & Escalators)



Right audience? Realistic demands?

7. Pros & Cons (Non-Respondents & Escalators)



- **Timely insight into process and data quality issues**
- **Regular oversight of whole population data**
- **New ways to share business intelligence**
- **Identifying “key escalators” re non-respondents**

8. More IDEAs

- AHA Year 3: plan to trial an IDEA income trend analytic, though no plans re ledger or bank recs.
- FMS Bank History (Schools): automated IDEA script to analyse payments, cheque gap sequence and receipts.
- IR35: IDEA script created to identify “more likely” IR35 suppliers by excluding those more likely to be “outside scope” given known:
 - supplier names
 - invoice description narratives
 - batch payment categories
 - ledger subjective codes
- Procurement: IDEA script created to identify suppliers paid over tender limit to check to Contracts Register.



Questions?



Contact:

Julian Cunningham

Principal Auditor

Bolton Council

julian.cunningham@bolton.gov.uk