

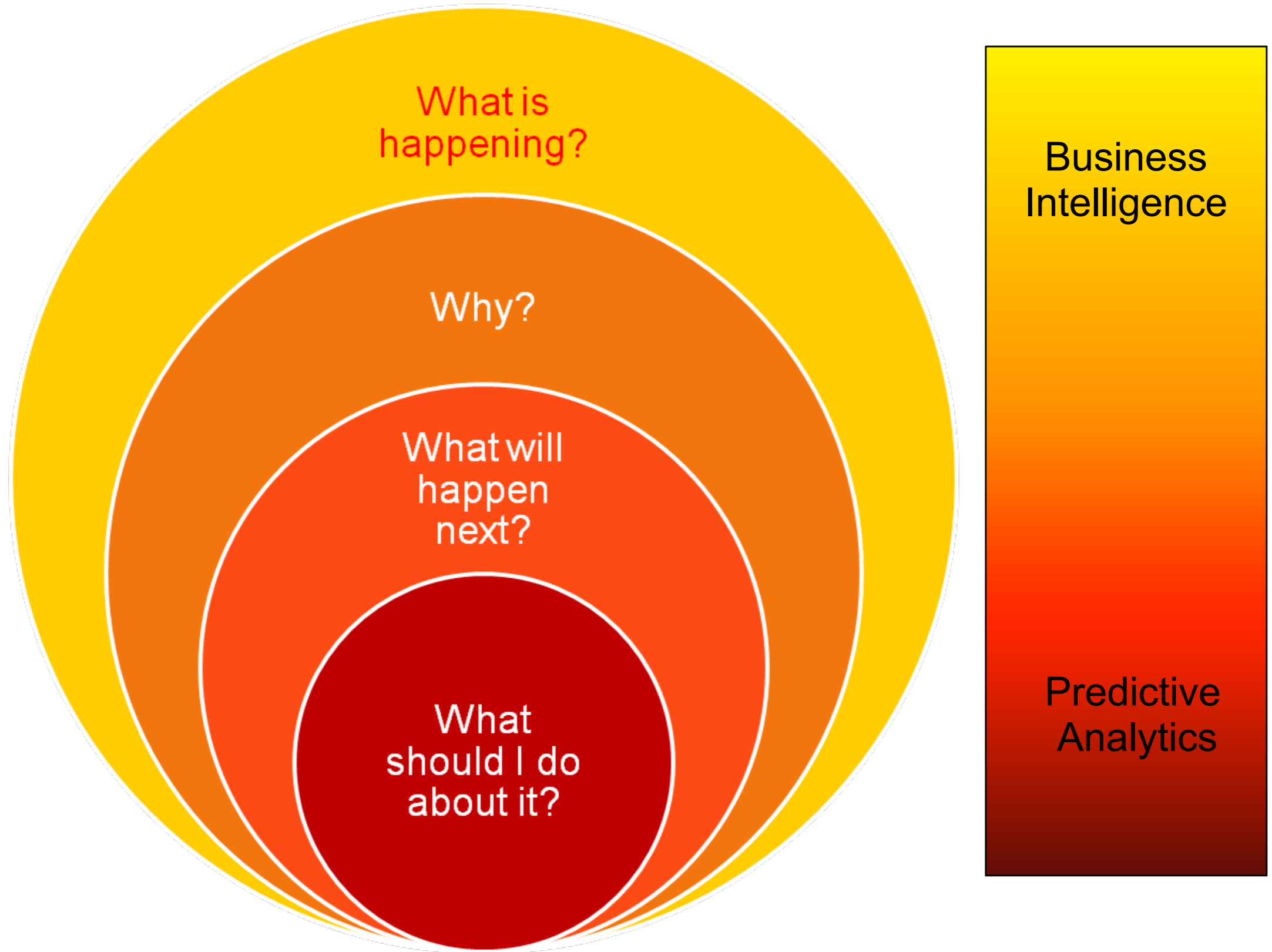
# An Overview of Predictive Analytics

Extending the value of BI with Predictive Analytics



## Agenda

- The Business Intelligence-Predictive Analytics Continuum
- IBM SPSS Background
- Statistics stand-alone and integrated in Cognos
- Predictive Analytics Defined
- Core Capabilities
- Exploiting the Data Landscape
- Examples of Predictive Analytics
- Optimised Decisioning
- Summary



The Business Intelligence – Predictive Analytics Continuum

**July 28, 2009**

**IBM acquires SPSS Inc,  
a leader in predictive analytics  
and statistics,  
for \$1.2B**

**1,300 employees**

**40+ year heritage**

**Drove creation of  
Predictive Analytics  
market**

Now a critical component of the  
Business Analytics family

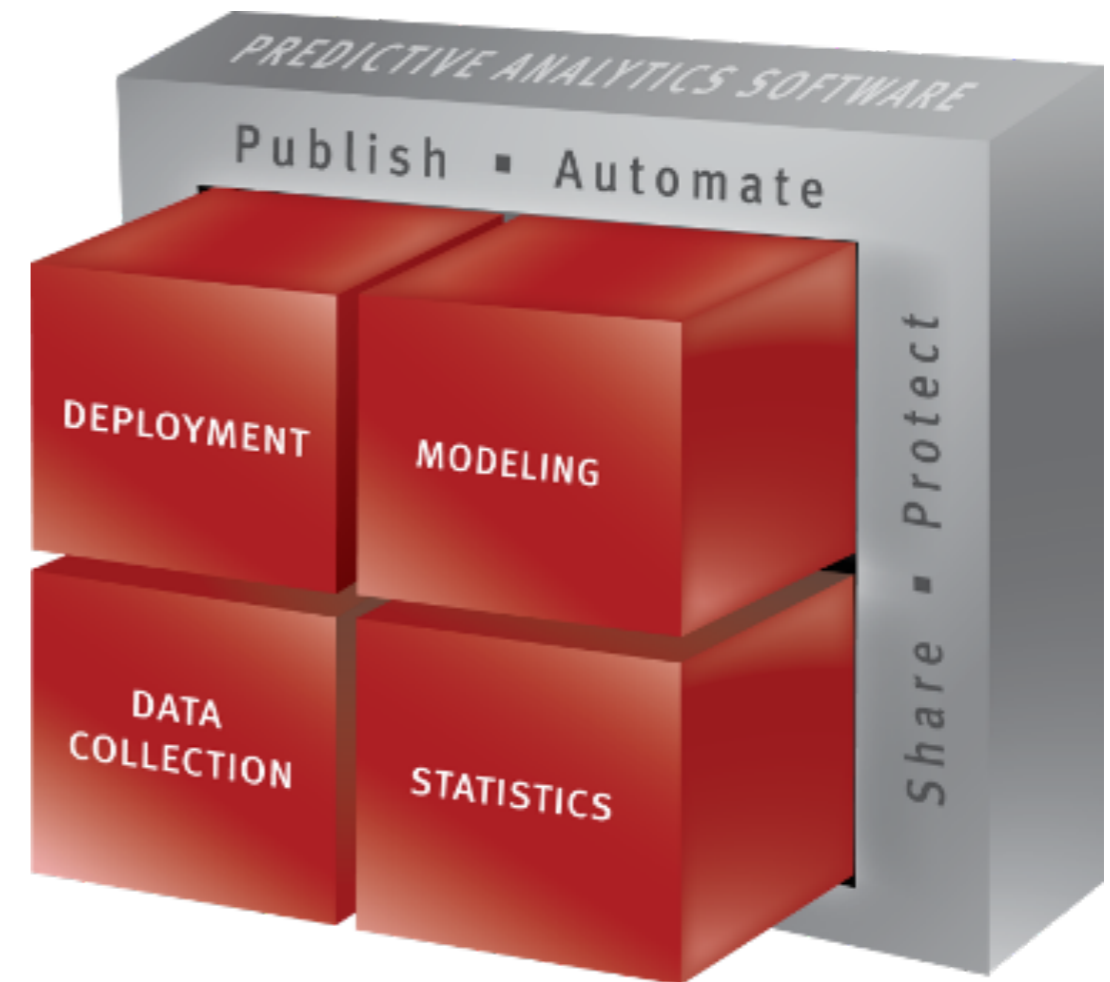
**With one mission in mind --  
Drive optimal outcomes  
through Predictive Analytics**

## SPSS' Mission Statement

- **“Drive optimal outcomes through predictive analytics”**
- Capture customer data from multiple touch points
- Use advanced analytics to gain insight and Predict outcomes
- Turn this knowledge into Action to optimise decision making across all business areas

## How do we achieve this?

- Capture information
  - Attributes
  - Interactions
  - Behaviours
  - Attitudes
- Predict behaviour and preferences
  - Statistics for deeper insight
  - Data Mining for predictive modelling
  - Text Analytics for unstructured insight
- Act on results
  - Efficiently deploying results
  - Dramatically improving business processes
- Manage analytical processes
  - Automate analytical operations
  - Protect and Secure analytical assets



# SPSS Predictive Analytics software

## 4 key categories

### Data Collection

Delivers accurate view of customer attitudes & opinions

- **IBM SPSS Data Collection**

### Statistics

Drives confidence in your results & decisions

- **IBM SPSS Statistics**

### Modeling

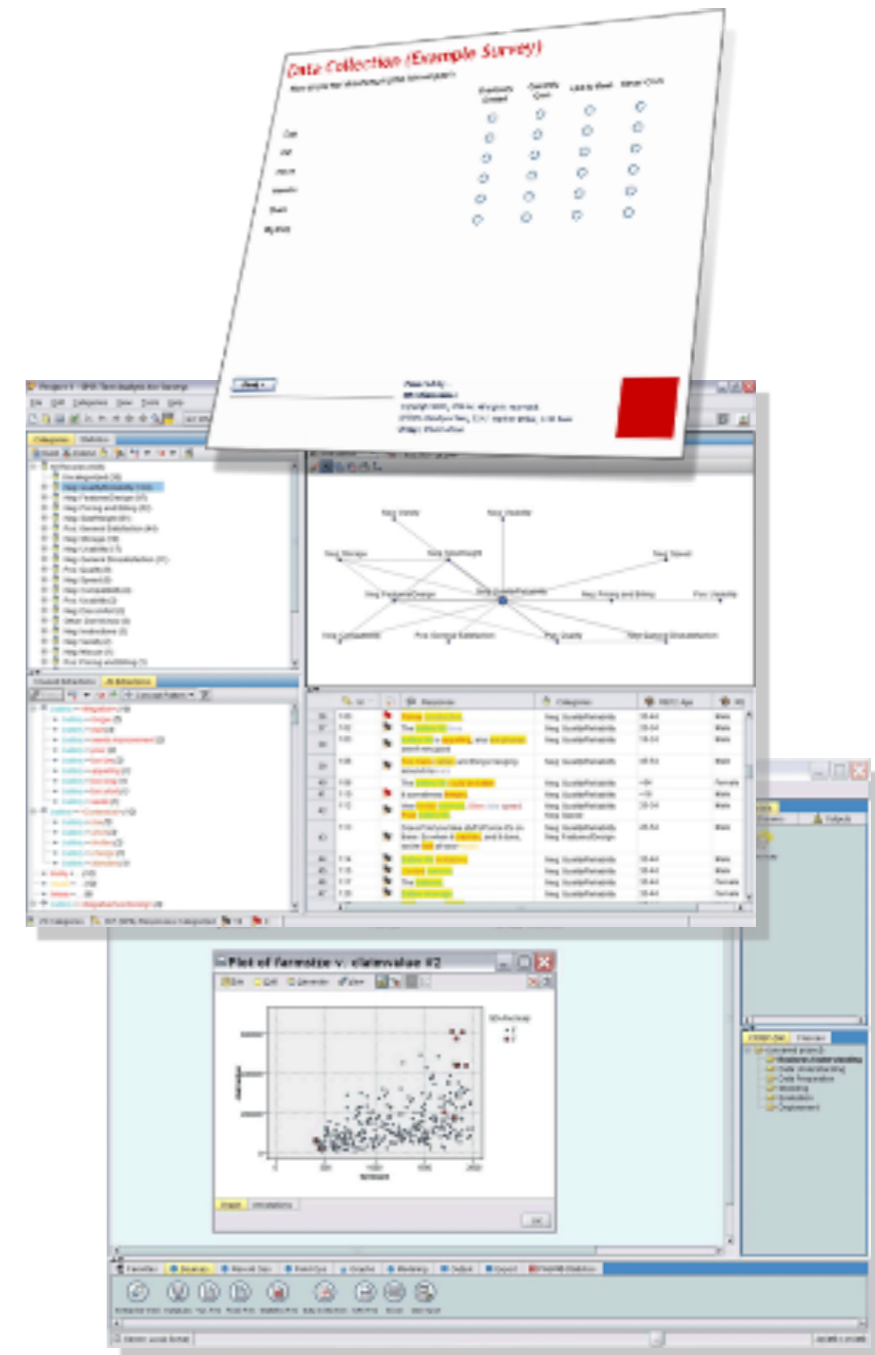
Brings repeatability to ongoing decision making

- **IBM SPSS Modeler**
- **IBM SPSS Text Analytics**

### Deployment

Maximizes the impact of analytics in your operation

- **IBM SPSS Decision Management**
- **IBM SPSS Collaboration & Deployment Services**



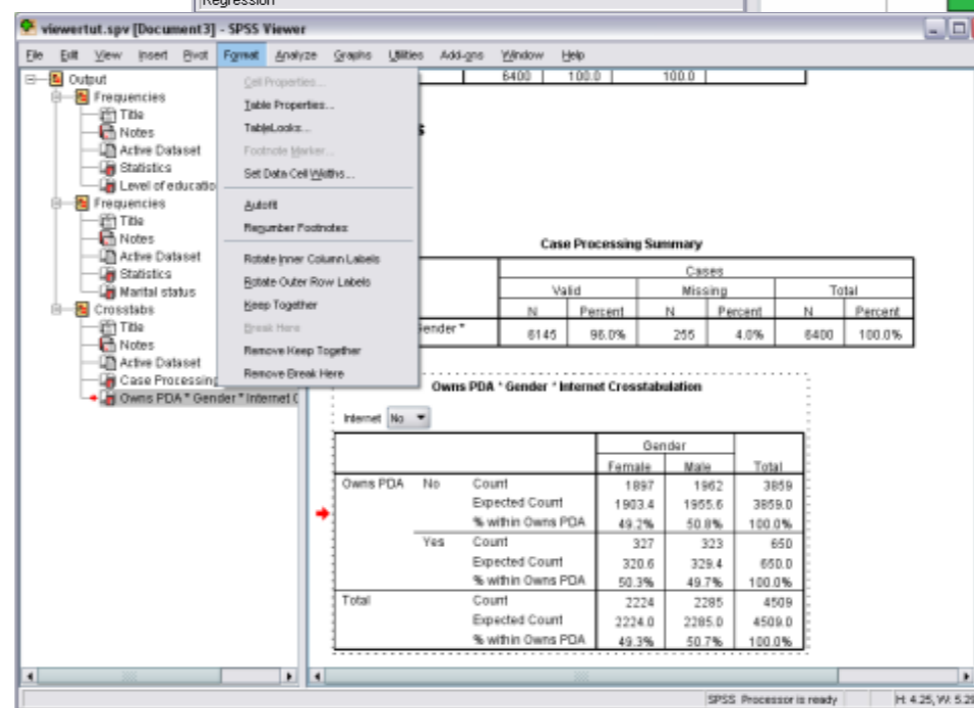
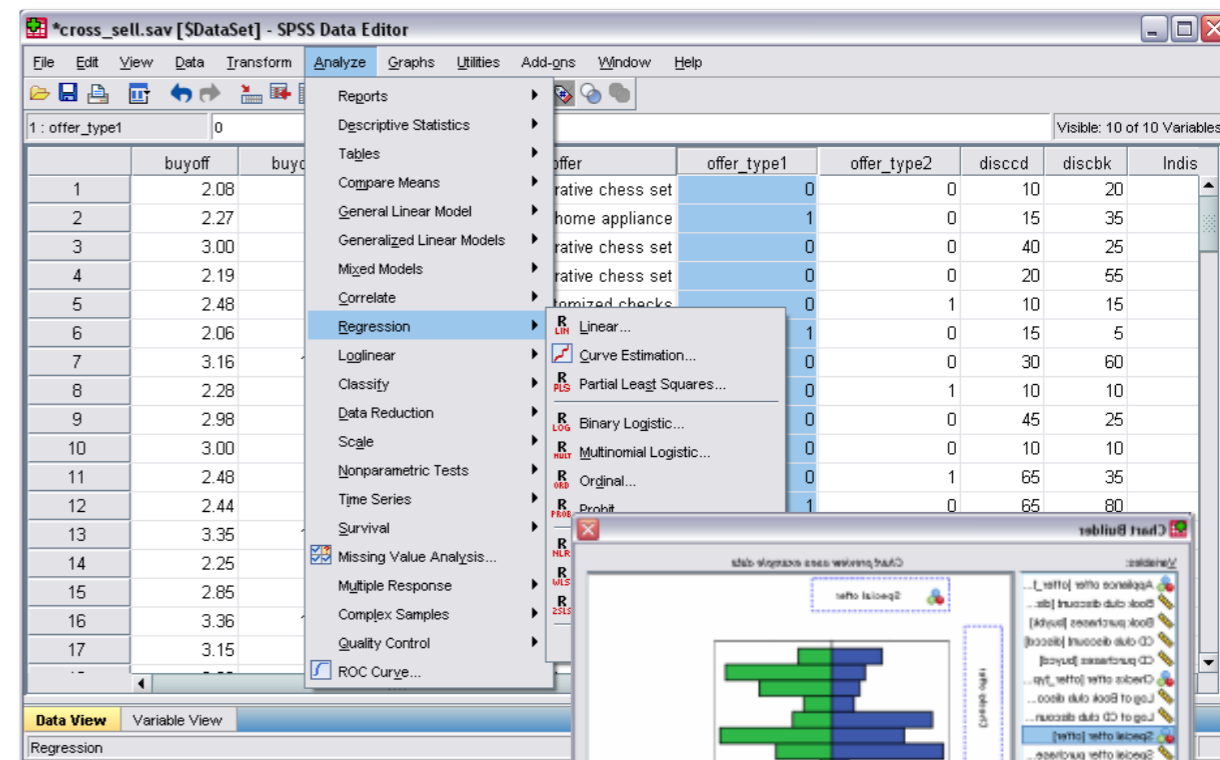
# Make informed decisions with Statistics

## IBM SPSS Statistics

*Validate your assumptions and test hypotheses*

### Solution Highlights

- Generate hypotheses
- Extensive data analysis
- Comprehensive statistical charting





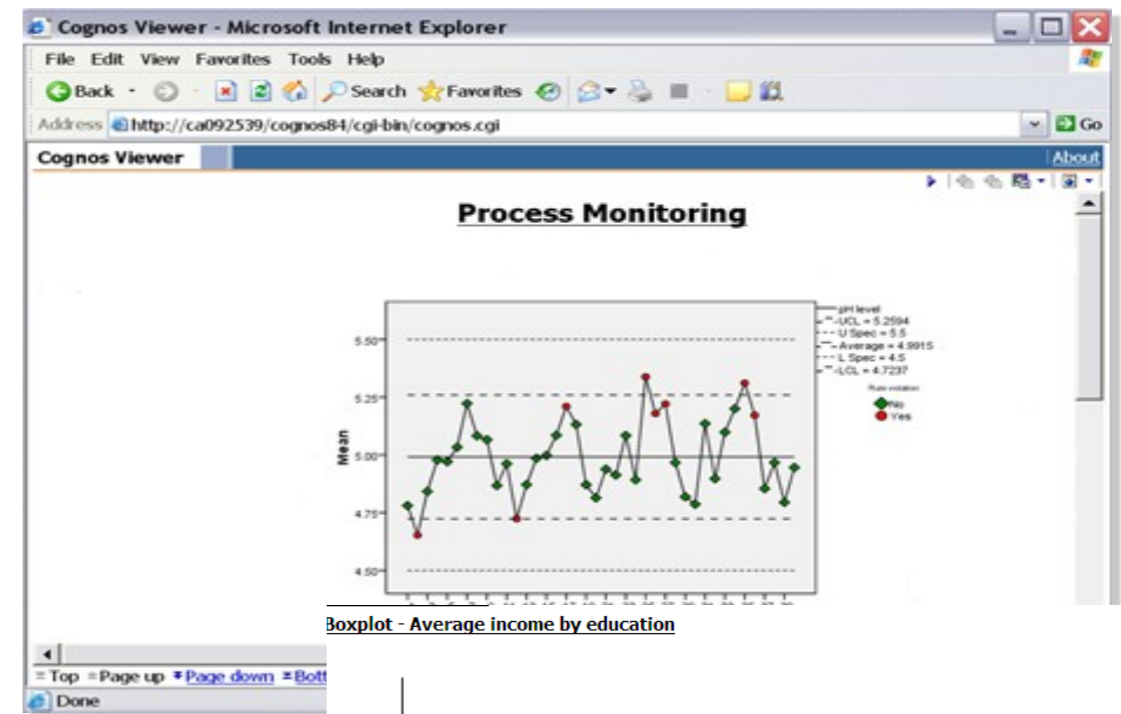
# Make informed decisions with Statistics

## IBM Cognos Report Studio Statistics

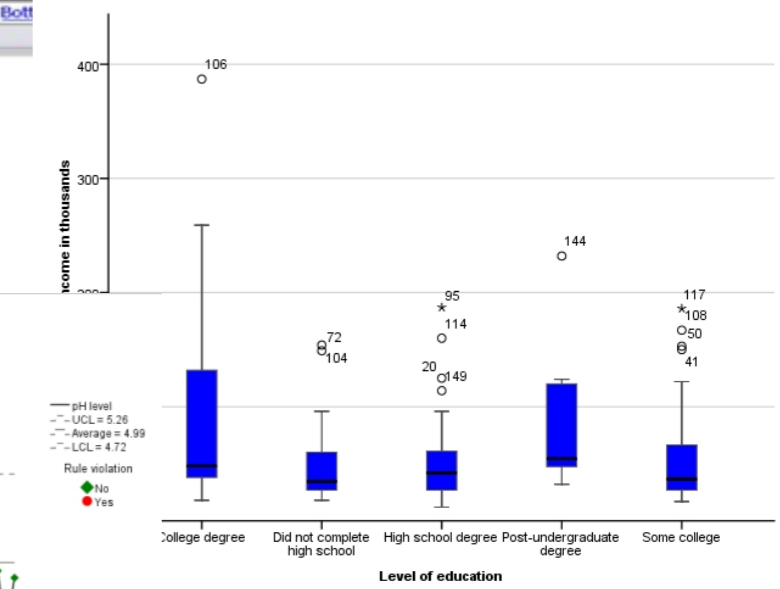
*Include statistical analyses and charts in reports*

### Solution Highlights

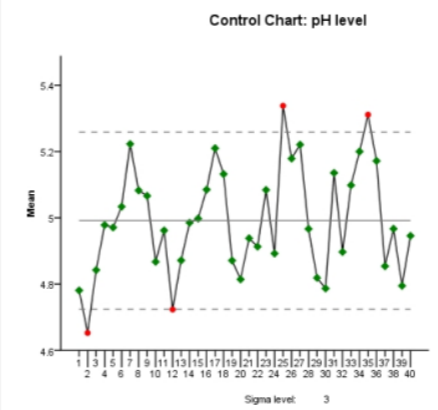
- Range of statistical chart types
- Enhance operational or management reports
- Distribute via regular BI mechanisms
- Based on SPSS Statistics engine



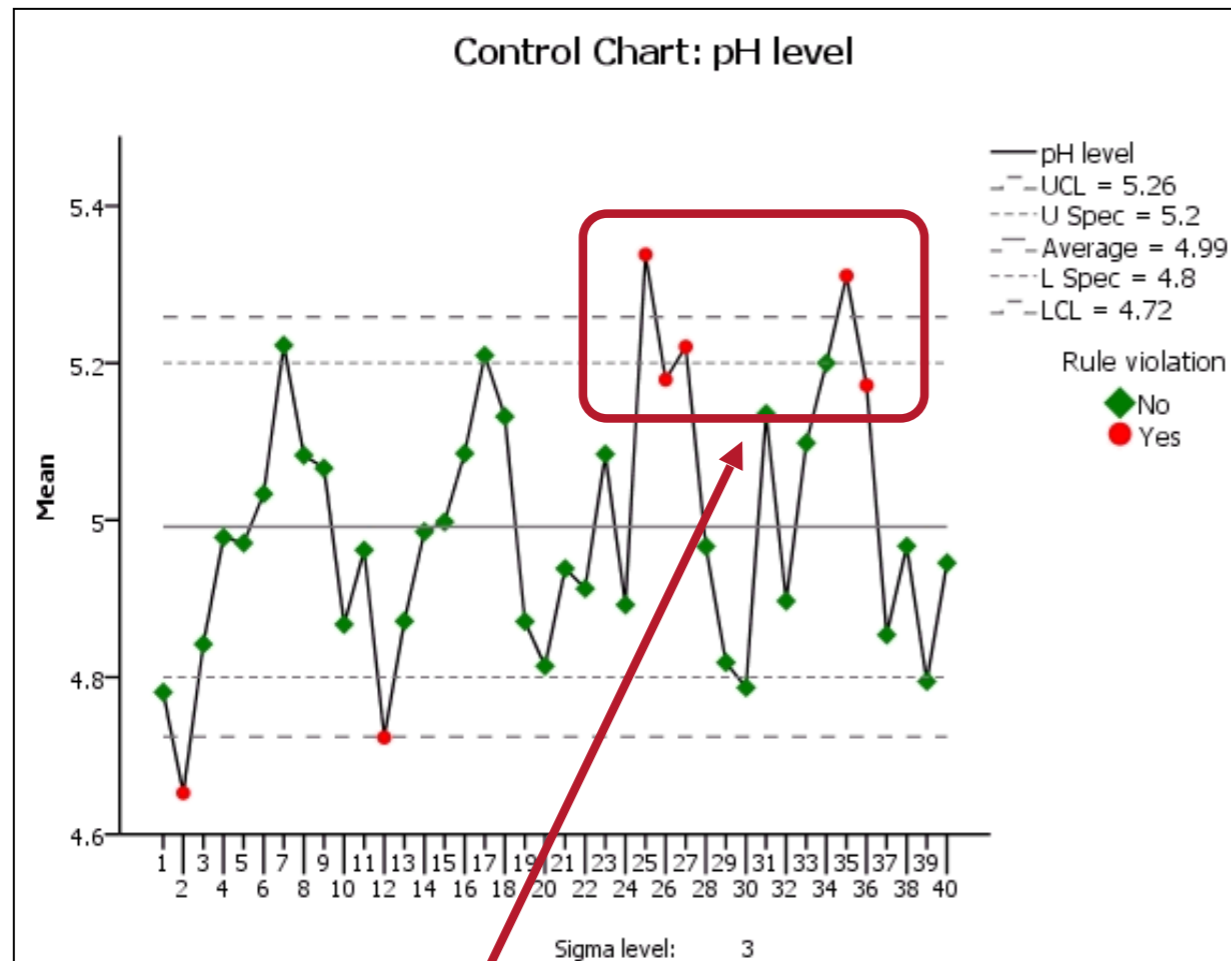
Boxplot - Average income by education



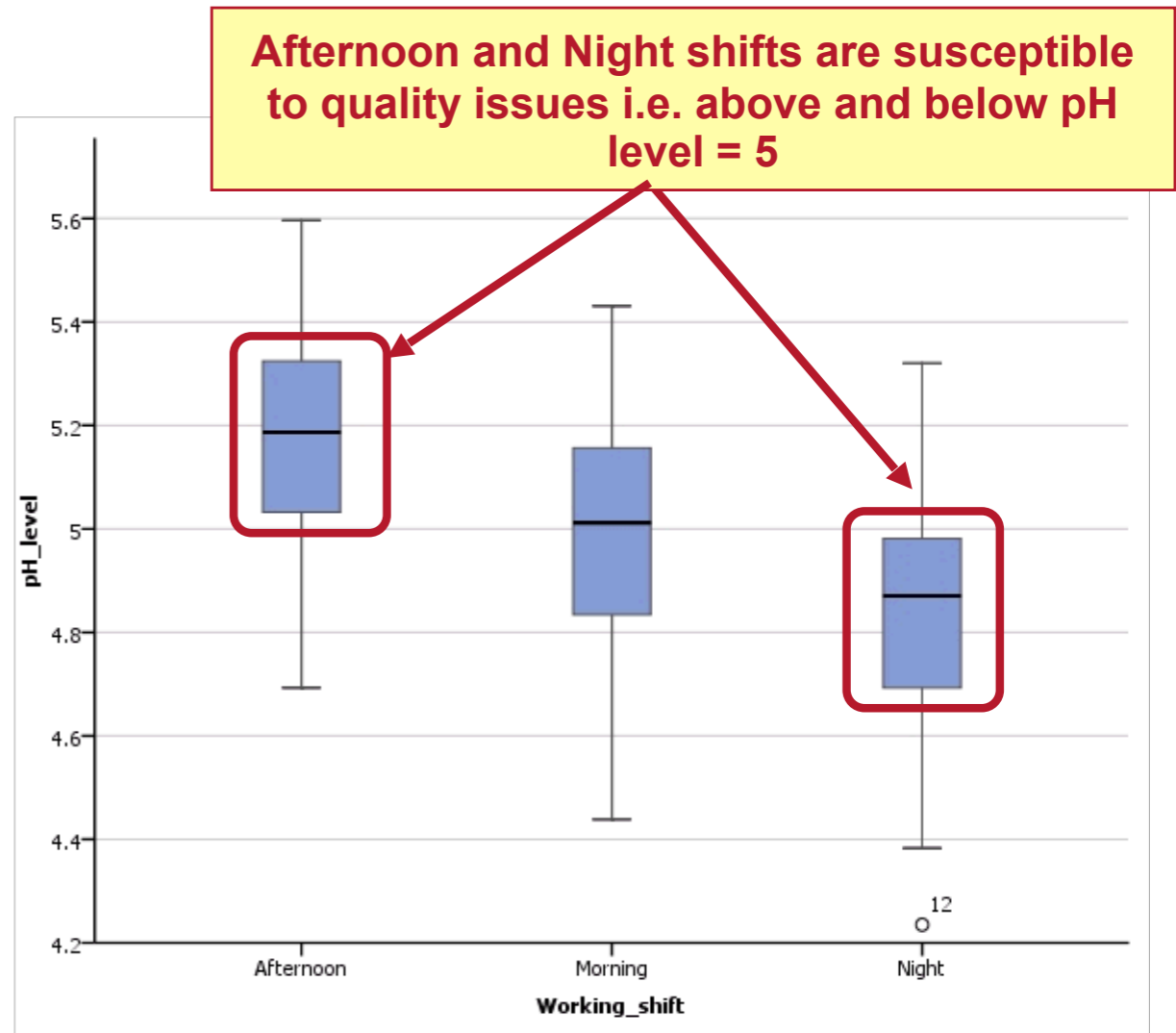
Descriptive Statistics			
	Night	Morning	Afternoon
Mean	4.84	4.98	5.18
Std. Deviation	.213	.220	.211
N	90	78	72
Median	4.87	5.01	5.19
Minimum	4	4	5
Maximum	5	5	6



# Extra value through Statistics



**Quality standards were outside their acceptable means on these occasions**

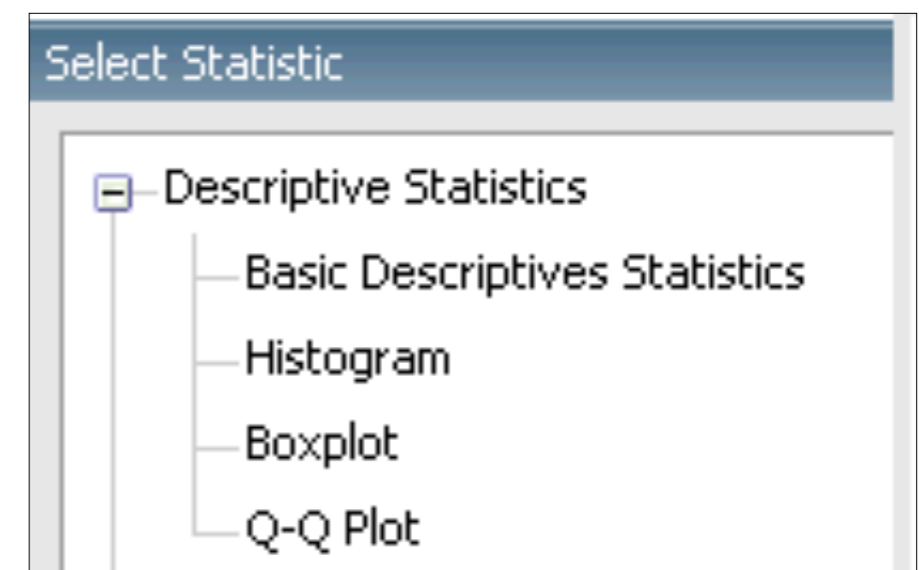


**Rule Violations**  
7 points violate control rules.

Time of measurement	Violations for Points
2	Less than -3 sigma
2	2 points out of the last 3 below -2 sigma
12	Less than -3 sigma
25	Greater than +3 sigma
26	2 points out of the last 3 above +2 sigma
27	2 points out of the last 3 above +2 sigma

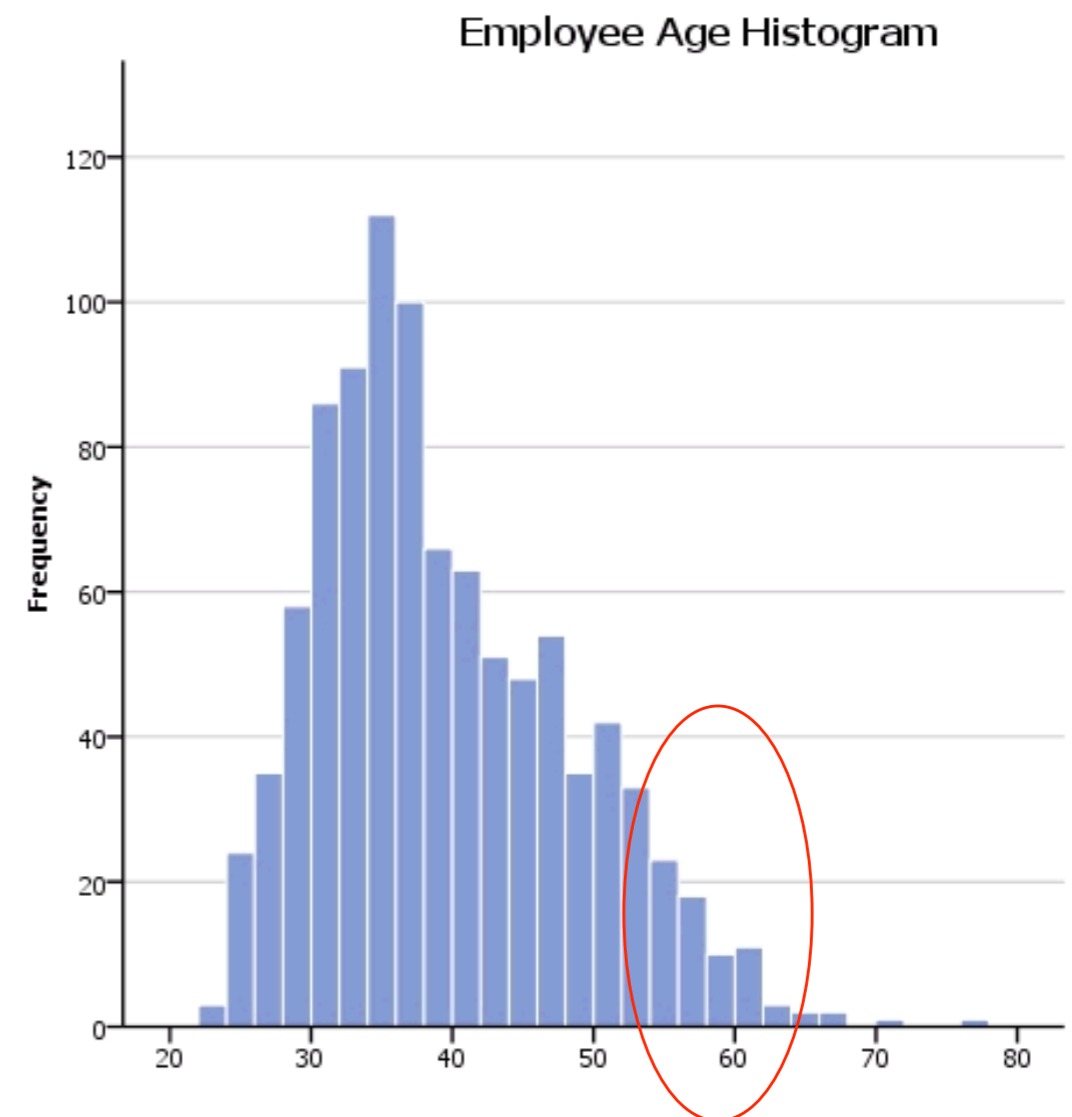
## Distribution and Shape of Data

- Useful in determining how data 'clusters' around certain values, unlike typical BI reports that tend to show simple aggregate values
  - **BI** – *What is my average order value?*
  - **Statistics** – *Do I have many high and low value orders or are they mostly average value?*
- Valuable for determining other tests to use



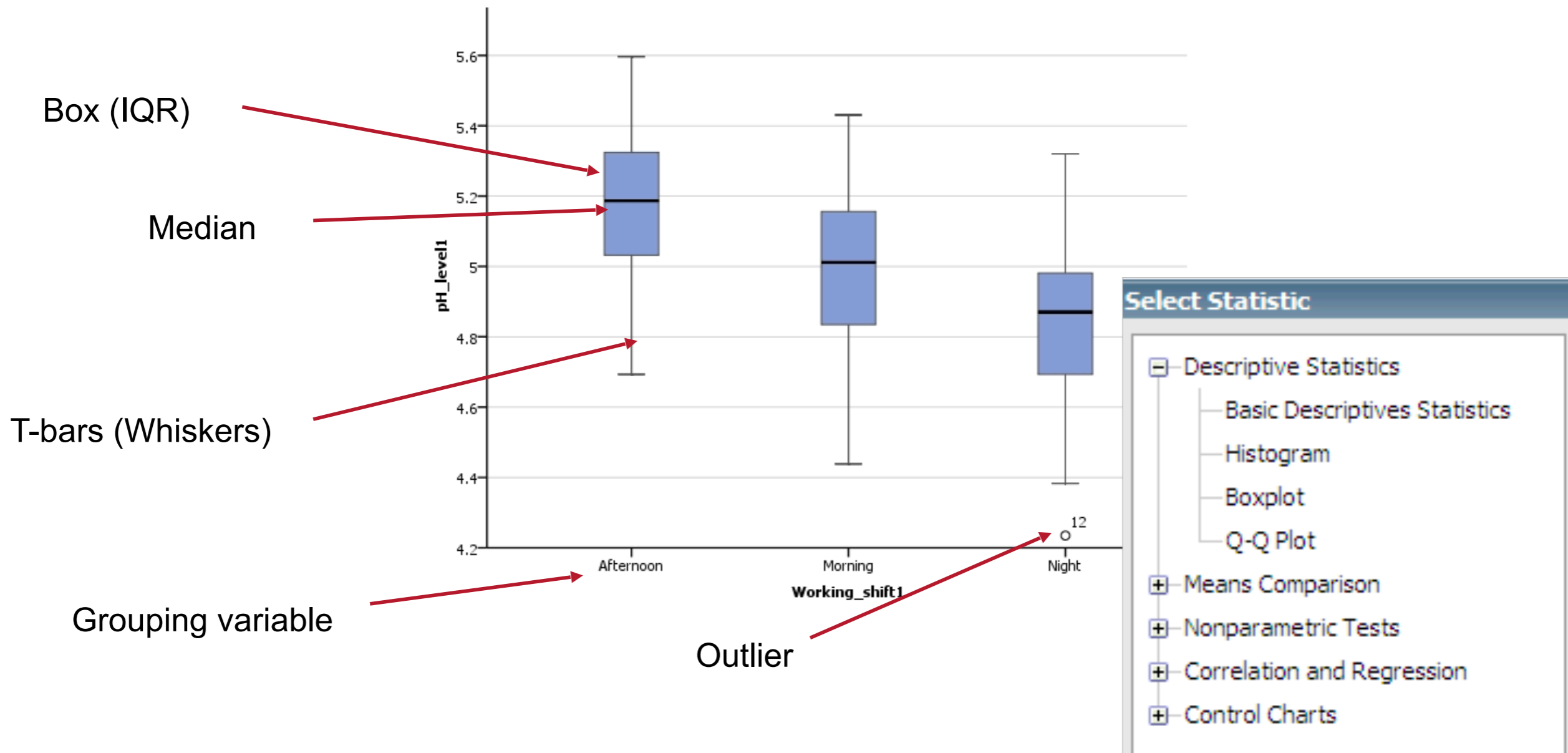
## Visualising Distribution: Histograms

- Certain distributions are easy to see on a histogram
- Bars represent count of occurrences (frequency) of a measure
- Bars are continuous, ascending data values bands (e.g. ages 21-25, 26-30, etc.) NOT aggregate by grouping (e.g. not average age by Branch)
- *“Do we have a ‘bulge’ of employees between 50 and 55?”*



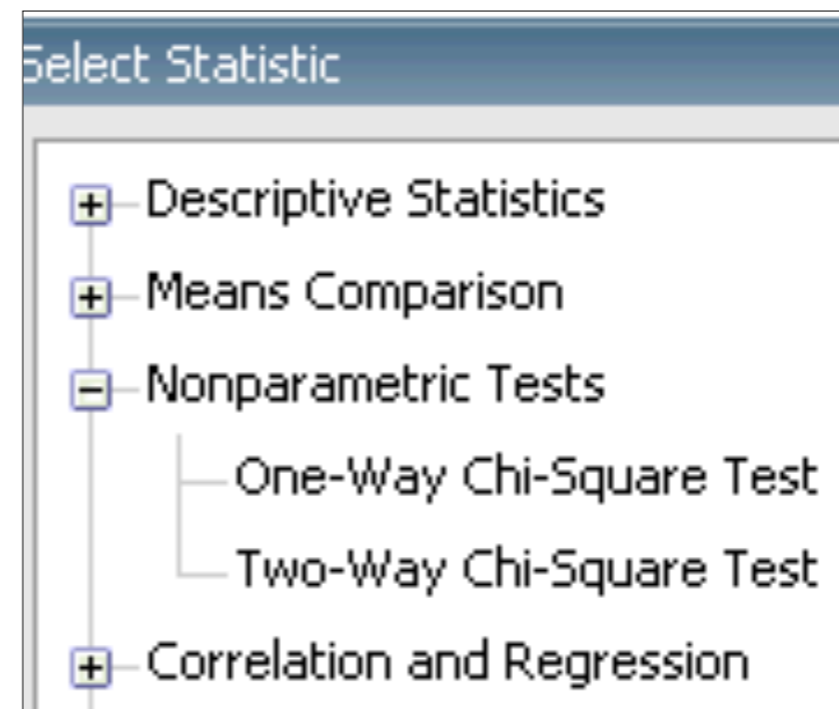
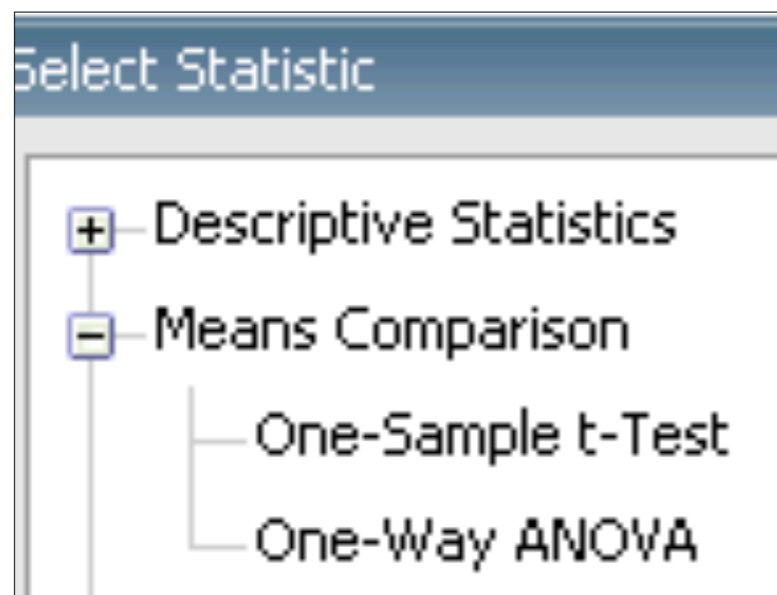
## Visualising Distribution: Box Plots

- Ideal to show middle 50% clustering of your sample and outliers
  - Do I have unusually high or low values in the sample?
- Shows Interquartile Range (IQR), not sigma



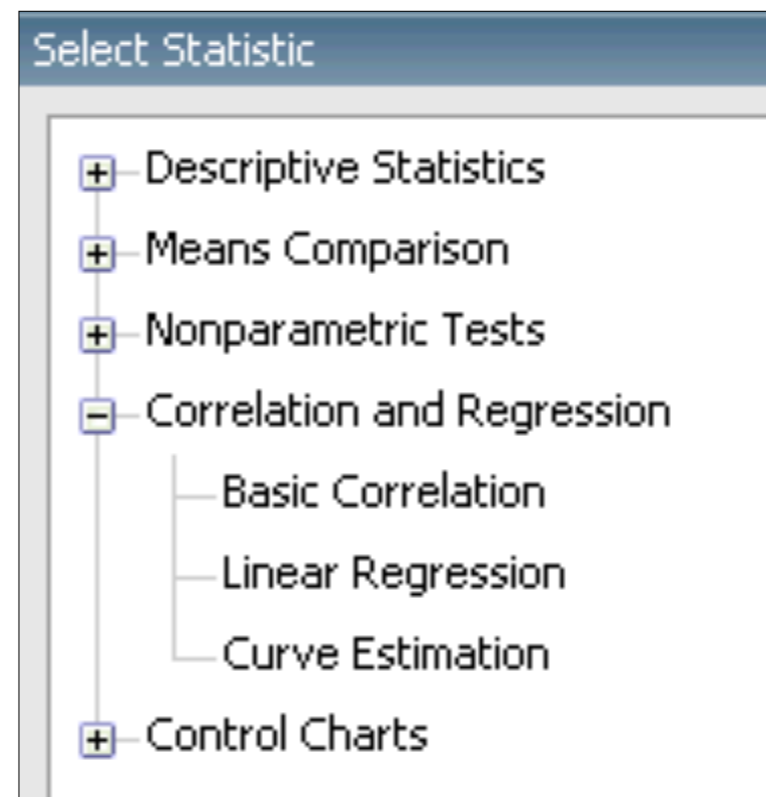
## Means Comparison and Nonparametric Tests

- **Means Comparison** compares the means of two or more groups to determine if the difference between the groups is statistically significant
  - *Is the amount our meal expenses significantly different (statistically) from the industry standard?*
- **Nonparametric tests** are an alternative when the underlying data is less suited to other types of analysis (e.g. Non-normal, rare events, small samples)



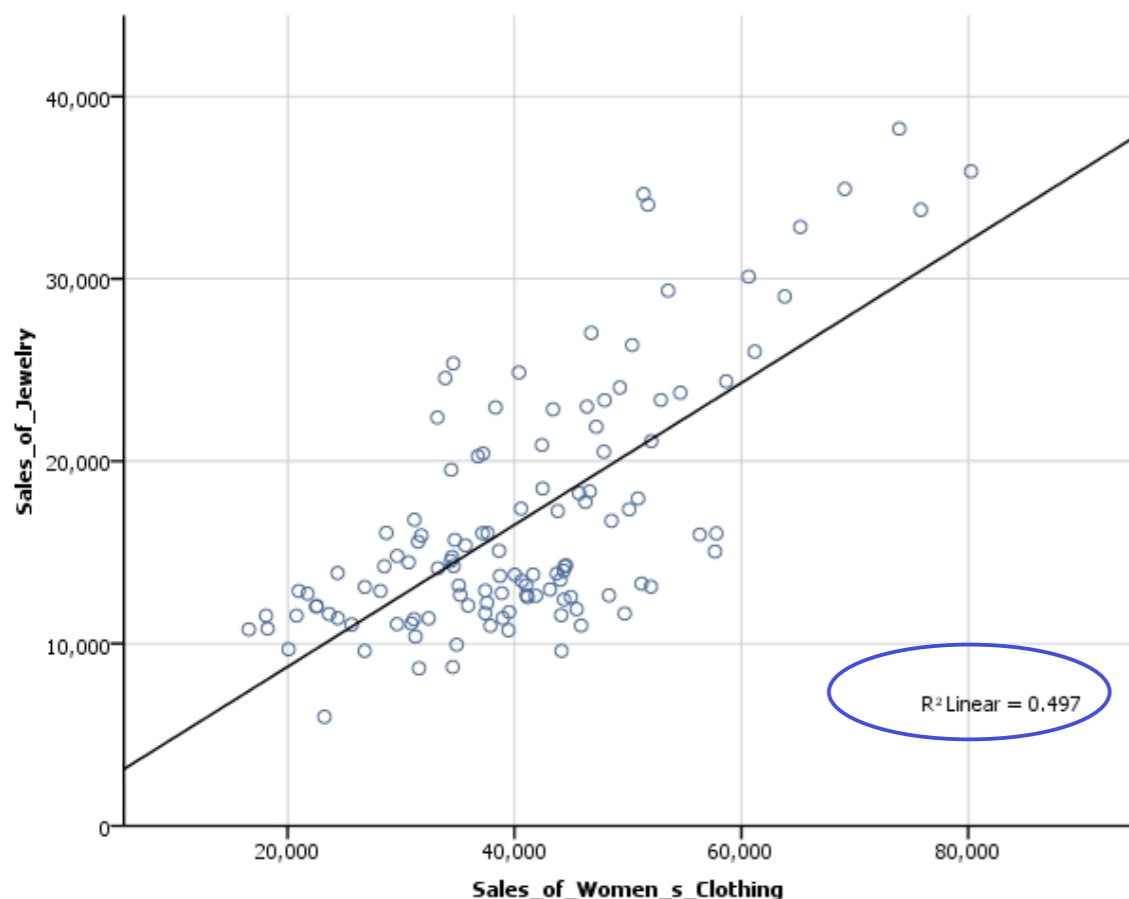
## Correlation and Regression

- **Correlation** determines if two variables are related in some way
  - *Is there a significant correlation between sales revenue and radio advertising?*
- **Regression** can be used to predict changes to a dependent variable when an independent variable is changed
  - *How much additional revenue can I expect if I increase radio advertising by 20%?*



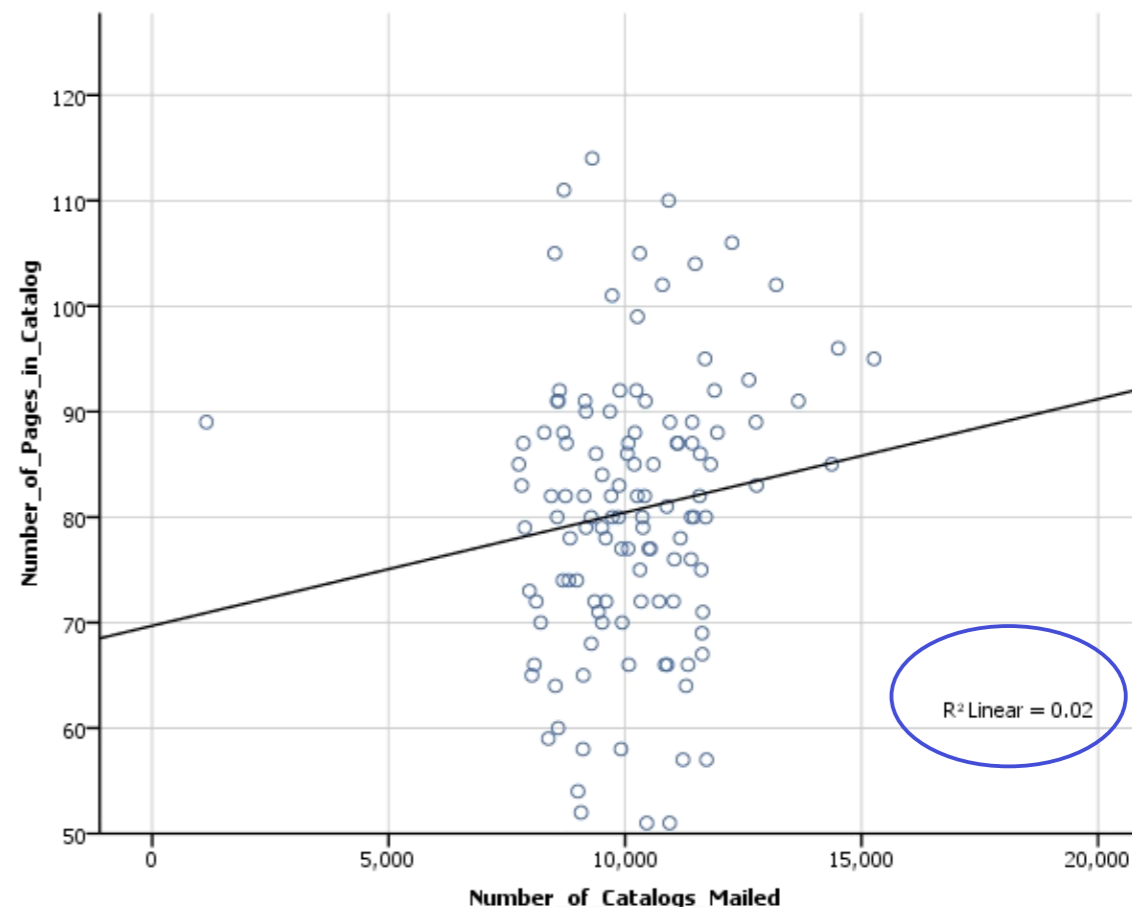
# Basic Correlation

- Correlation between -1 and +1 (0 is not correlated)



Correlations

		Sales of Women's Clothing	Sales of Jewelry
Sales of Women's Clothing	Pearson Correlation	1	.705(**)
	Sig. (2-tailed)		.000
	N	120	120
Sales of Jewelry	Pearson Correlation	.705(**)	1
	Sig. (2-tailed)	.000	



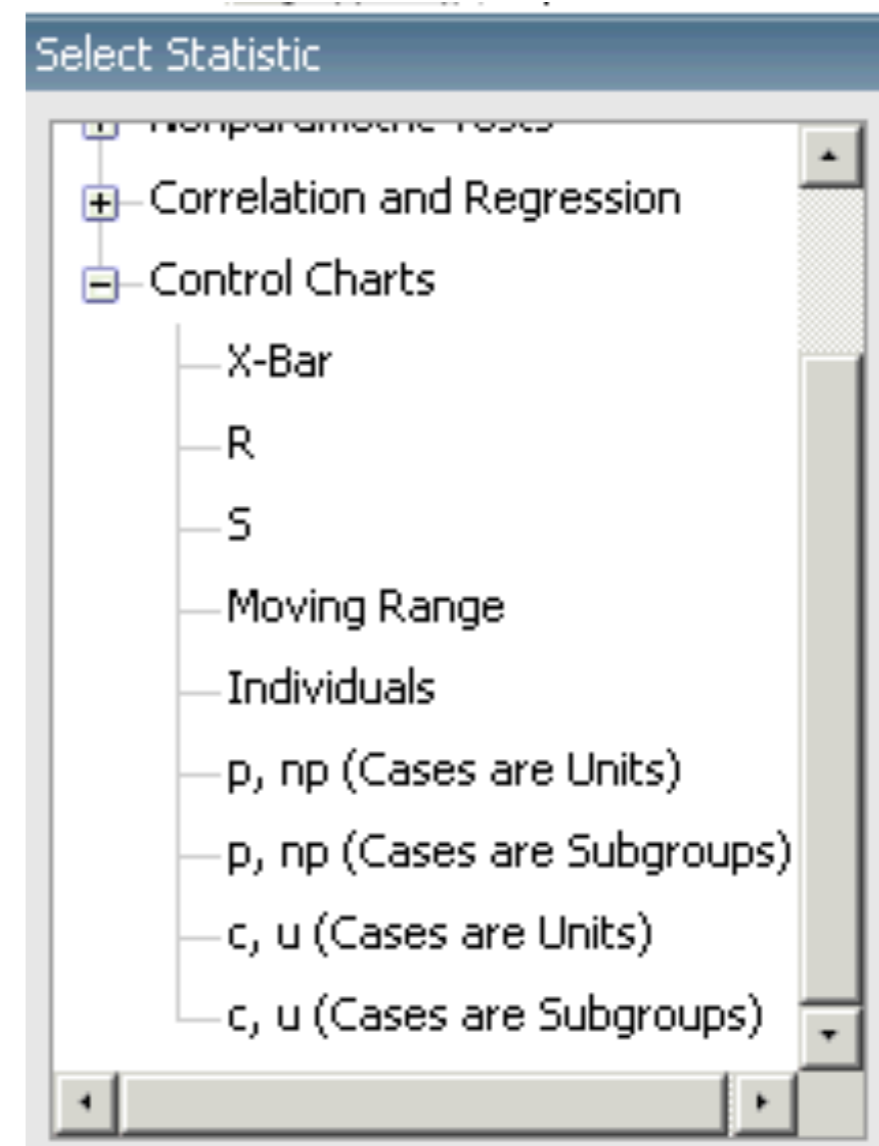
Correlations

		Number of Catalogs Mailed	Number of Pages in Catalog
Number of Catalogs Mailed	Pearson Correlation	1	.140
	Sig. (2-tailed)		.127
	N	120	120
Number of Pages in Catalog	Pearson Correlation	.140	1
	Sig. (2-tailed)	.127	



## Control Charts

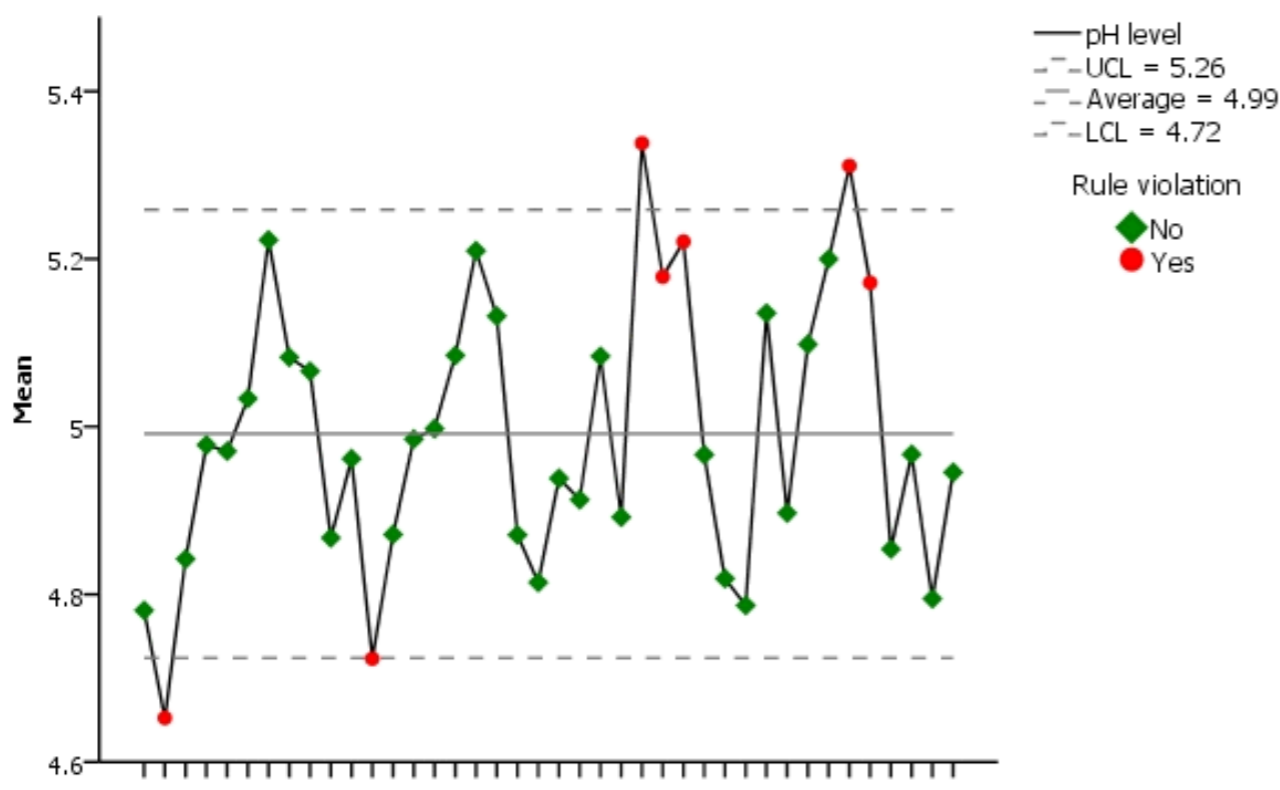
- Used to determine if a processes is 'out of control'
- Designed to check two main areas; not matching specifications and excessive variability
- Very common in manufacturing  
Healthcare / Life Science
- Many charts available (*see appendix*)



## Basic X-Bar Variable Control Chart

- Very common control chart – shows actual values
- Flags failure to meet specifications

Control Chart: pH level



### Rule Violations

7 points violate control rules.

Time of measurement	Violations for Points
2	Less than -3 sigma
2	2 points out of the last 3 below -2 sigma
12	Less than -3 sigma
25	Greater than +3 sigma
26	2 points out of the last 3 above +2 sigma
27	2 points out of the last 3 above +2 sigma
35	Greater than +3 sigma
35	2 points out of the last 3 above +2 sigma
36	2 points out of the last 3 above +2 sigma

## Predictive Analytics:

- **Predictive Analytics helps connect data to effective action by drawing reliable conclusions about current conditions and future events.**
  - Gareth Herschel, Research Director, Gartner Group



**Predictive analytics** encompasses a variety of techniques from **statistics** and **data mining** that analyse current and historical data to make predictions about future events.

- *This is distinct from other analytical realms such as Business Intelligence technology*

# IBM SPSS Predictive Pillars, supporting the smarter planet



**Pillars**

## Predictive Customer Analytics

Acquire  
Grow  
Retain

## Predictive Operational Analytics

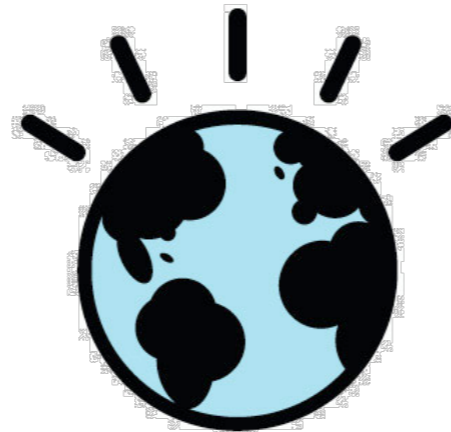
Manage  
Maintain  
Maximise

## Predictive Risk & Threat Analytics

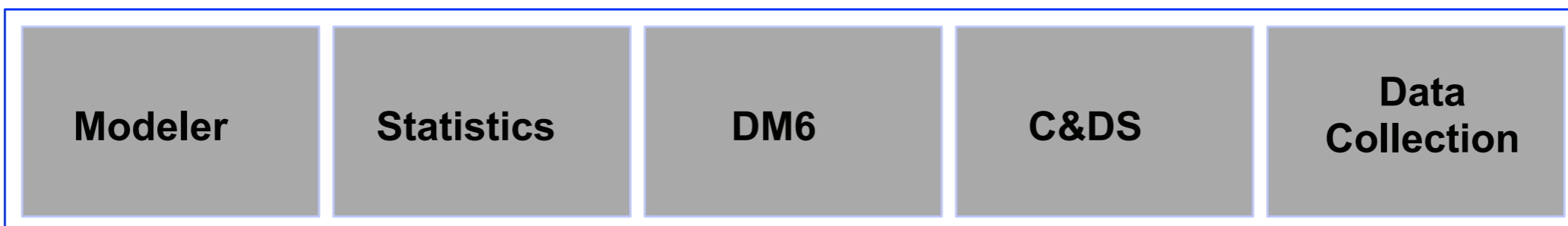
Monitor  
Detect  
Control

- Each supports an end to end solution lifecycle which transcends industry
- Each has an easy to communicate value proposition

# The Three Pillars are supported by the same platform

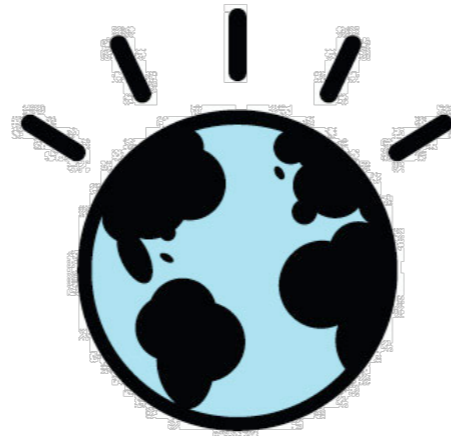


Pillars



**SPSS Platform**

# Industry Solutions are loosely associated with Pillars



Pillars

**Predictive Customer Analytics**

- Up-sell/cross-sell
- Market basket analysis
- Churn Prevention
- Customer segmentation
- Brand Monitoring

⋮

**Predictive Operational Analytics**

- Predictive maintenance
- Assortment planning
- Condition Monitoring
- Reverse logistics
- Allocation management

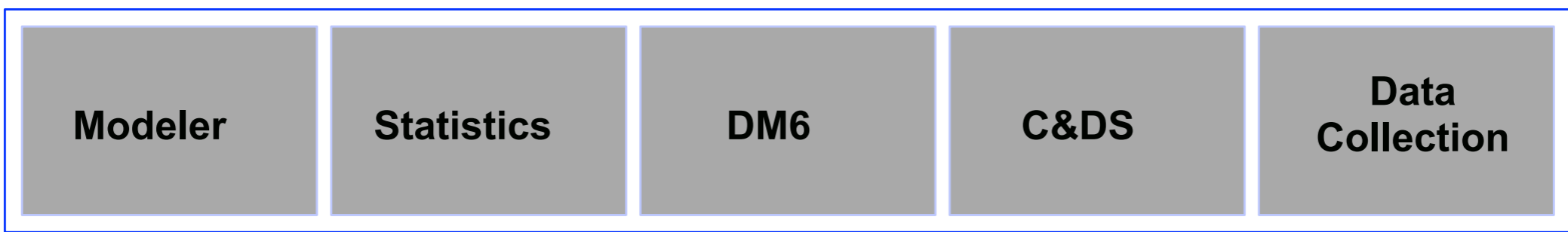
⋮

**Predictive Risk & Threat Analytics**

- Claims fraud
- Credit-card fraud
- Insider Threat
- Signals analysis
- Cyber Security

⋮

Industry Solutions



**SPSS Platform**

# The Data Landscape

High-value, dynamic – source of competitive differentiation

## Interaction data

- E-Mail / chat transcripts
- Call center notes
- Web click-streams
- In person dialogues

## Attitudinal data

- Opinions
- Preferences
- Needs & Desires

360 degree  
Customer View

## • Descriptive data

- Attributes
- Characteristics
- Self-declared info
- (Geo)demographics

## Behavioural data

- Orders
- Transactions
- Payment history
- Usage history

“Traditional”

## Nucleus Research: The Real ROI from SPSS



- 94% of customers achieved a positive ROI, with an average payback period of 10.7 months
- Key benefits achieved include reduced costs, increased productivity, improved customer & employee satisfaction, and greater visibility into operations

**“This is one of the **highest ROI scores** Nucleus has ever seen in its Real ROI series of research reports.”**

*Rebecca Wettermann, Vice President of Research, Nucleus Research*



## Advanced Auto Parts

Automate and optimise merchandising and assortment planning

- Background
  - 3,400 stores & 400,000 products
  - Revenues over \$5bn
- Business Goals
  - Improve DIY business & grow market share
  - Optimise inventory location & availability
- Solution
  - SPSS capabilities help Advance keep its stores stocked with products customers want. A fully automated system supporting effective, proactive decision making, increased profitability & customer satisfaction.



### Results

- **Project achieved \$100m ROI in 90 days**
- **Sales uplift from 9%-44% (business case assumed 2% uplift)**
- **Unproductive inventory reduced from 20% to 4%**

## Cablecom

### Increase Customer Retention Rate

- Background
  - Swiss based Telecom
  - Cable TV, Braodband, Digital Phone, Pre-Paid Mobile
- Business Goals
  - Improve retention rate for braodband customers
- Solution
  - Cablecom used SPSS capabilities to survey a sample of customers in order to measure satisfaction. They combined the resultant *Net Promoter Score* with other data types such as demographics and usage behaviour to estimate the overall satisfaction for their remaining customer base. Finally, they predicted the likelihood of contract cancellation for each customer and took proactive action to resolve dissatisfaction.



- **Predicted satisfaction for key customer groups**
- **Customer Satisfaction increased in 53% of cases**
- **Reduced their customer churn rate in key groups from 19% to 2%**

## Predictive Analytics generate predictions in the form of:

- Likelihood Scores
  - Cost Estimates
  - Risk Values
  - Response Categories
  - Forecasts
  - Recommendations
- 
- *These can be seamlessly integrated into reporting systems*

campaign scores.xls [Compatibility Mode] - Microsoft Excel

Home Insert Page Layout Formulas Data Review View Add-Ins

Clipboard Font Alignment Number Styles Cells Editing

E1

	A	B	C	D	E
1	Customer id	Campaign	Response Probability	Expected Profit	
2	ID12101	Standard Card March Campaign	0.87	17.546	
3	ID12106	Insurance March Campaign	0.94	37.8696	
4	ID12107	Gold Card March Campaign	0.90	8.87707	
5	ID12113	Insurance March Campaign	0.87	15.7358	
6	ID12114	Insurance March Campaign	0.94	55.2047	
7	ID12121	Standard Card March Campaign	0.94	57.8807	
8	ID12128	Insurance March Campaign	0.87	20.114	
9	ID12130	Gold Card March Campaign	0.87	24.2701	
10	ID12133	Premium Card March Campaign	0.87	23.4432	
11	ID12135	Premium Card March Campaign	0.90	37.5219	
12	ID12138	Gold Card March Campaign	0.90	13.381	
13	ID12141	Insurance March Campaign	0.82	26.7742	
14	ID12143	Insurance March Campaign	0.94	55.7165	
15	ID12144	Insurance March Campaign	0.82	27.5715	
16	ID12146	Standard Card March Campaign	0.94	52.6706	

# Predictive Analytics: Building a Model

Table (28 fields, 4,247 records)

	Mosaic Group	Mosaic_Code	Channels	Discount	Duration	InsuranceIncluded	Previous_Bookings	BookingDate	Passengers	Revenue	Profit	Insurance	Interlaken
1	Group 1 Wealthy Achievers,Suburban Areas	Type 1 Wealthy Suburbs, Large Detached Houses 3.0%	Branch	Full Price	Weeke...	Yes	1	2008-06-21 00:00:00	1	1659	0.018	6.610	F
2	Group 1 Wealthy Achievers,Suburban Areas	Type 2 Villages with Wealthy Commuters 2.7%	Branch	Discount	Week	Yes	5	2008-10-28 00:00:00	1	6529	0.022	2.000	T
3	Group 1 Wealthy Achievers,Suburban Areas	Type 3 Mature Affluent Home Owning Areas 2.8%	Branch	Discount	Week	Yes	0	2008-11-09 00:00:00	2	1003	0.022	14.430	T
4	Group 1 Wealthy Achievers,Suburban Areas	Type 4 Affluent Suburbs, Older Families 3.8%	Branch		2 week	Yes	0	2009-02-11 00:00:00	2	235	0.022	1.730	T
5	Group 1 Wealthy Achievers,Suburban Areas	Type 5 Mature, Well-Off Suburbs 2.7%	Branch	Discount	Week	Yes	0	2009-02-26 00:00:00	1	215	0.022	49.770	T
6	Group 2 Affluent Greys,Rural Communities	Type 6 Agricultural Villages, Home Based Workers 1.5%	Branch	Full Price	Weeke...	Yes	1	2009-09-22 00:00:00	1	2855	0.010	31.760	T
7	Group 2 Affluent Greys,Rural Communities	Type 7 Holiday Retreats, Older People, Home Based Workers 0.6%	Branch	Discount	Week	Yes	0	2009-10-26 00:00:00	3	950	0.022	29.650	T
8	Group 3 Prosperous Pensioners,Retirement Areas	Type 8 Home Owning Areas, Well-Off Older Residents 1.4%	Branch	Discount	Week	Yes	1	2009-12-27 00:00:00	1	1104	0.014	9.500	T
9	Group 3 Prosperous Pensioners,Retirement Areas	Type 9 Private Flats, Elderly People 1.1%	Branch	Discount	Week	Yes	1	2010-01-19 00:00:00	2	485	0.022	46.970	T
10	Group 4 Affluent Executives,Family Areas	Type 10 Affluent Working Families with Mortgages 2.8%	Branch	Full Price	Weeke...	No	1	2010-03-19 00:00:00	1	139	0.036	8.230	T
11	Group 4 Affluent Executives,Family Areas	Type 11 Affluent Working Couples with Mortgages, New Homes 1....	Branch	Discount	Week	Yes	0	2009-07-21 00:00:00	2	254	0.022	38.630	F
12	Group 4 Affluent Executives,Family Areas	Type 12 Transient Workforces, Living at their Place of Work 0.4%	Branch	Discount	Week	Yes	2	2008-11-12 00:00:00	2	2124	0.022	27.540	F
13	Group 5 Well-Off Workers,Family Areas	Type 13 Home Owning Family Areas 2.1%	Branch	Full Price	Weeke...	Yes	1	2010-01-25 00:00:00	3	3954	0.018	27.380	F
14	Group 5 Well-Off Workers,Family Areas	Type 14 Home Owning Family Areas, Older Children 3.2%	Branch	Discount	Week	Yes	1	2008-10-05 00:00:00	2	1359	0.014	1.360	F
15	Group 5 Well-Off Workers,Family Areas	Type 15 Families with Mortgages, Younger Children 2.0%	Branch	Last Mi...	10 day	Yes	1	2008-12-02 00:00:00	1	2631	0.014	31.480	F
16	Group 6 Affluent Urbanites,Town and City Areas	Type 16 Well-Off Town & City Areas 1.2%	Branch	Discount	Week	Yes	0	2008-03-05 00:00:00	1	431	0.014	17.000	F
17	Group 6 Affluent Urbanites,Town and City Areas	Type 17 Flats & Mortgages, Singles & Young Working Couples 0....	Branch		2 week	Yes	0	2009-01-09 00:00:00	1	342	0.022	3.370	F
18	Group 6 Affluent Urbanites,Town and City Areas	Type 18 Furnished Flats & Bedsits, Younger Single People 0.4%	Branch	Discount	Week	Yes	0	2009-11-10 00:00:00	2	3408	0.014	30.460	F
19	Group 7 Prosperous Professionals,Metropolitan ...	Type 19 Apartments, Young Professional Singles & Couples 1.0%	Branch	Discount	Week	Yes	1	2008-04-06 00:00:00	1	2781	0.010	8.340	F
20	Group 7 Prosperous Professionals,Metropolitan ...	Type 20 Gentrified Multi-Ethnic Areas 1.0%	Branch	Discount	Week	Yes	1	2009-04-01 00:00:00	2	2001	0.010	12.920	F
21	Group 8 Better-Off Executives,Inner City Areas	Type 21 Prosperous Enclaves, Highly Qualified Executives 0.8%	Branch	Discount	We Week	Yes	2	2008-07-08 00:00:00	2	1836	0.010	7.000	F
22	Group 8 Better-Off Executives,Inner City Areas	Type 22 Academic Centres, Students & Young Professionals 0.7%	Branch	Discount	Week	Yes	1	2009-03-22 00:00:00	4	1810	0.022	15.600	F
23	Group 8 Better-Off Executives,Inner City Areas	Type 23 Affluent City ...	Branch	Discount	Week	Yes	3	2009-05-17 00:00:00	4	4725	0.014	17.000	F
24	Group 8 Better-Off Executives,Inner City Areas	Type 24 Partially Gentrified ...	Branch		Week	Yes	4	2009-06-17 00:00:00	3	4314	0.014	17.000	F
25	Group 8 Better-Off Executives,Inner City Areas	Type 25 Converted Flats ...	Branch		day	Yes	2	2009-07-17 00:00:00	1	2982	0.014	21.000	F
26	Group 9 Comfortable Middle Aqers,Mature Home ...	Type 26 Mature Establi...	Branch		Week	Yes	3	2008-09-13 00:00:00	1	2803	0.018	28.000	F
27	Group 9 Comfortable Middle Aqers,Mature Home ...	Type 27 Rural Areas, M...	Branch		day	Yes	6	2008-07-10 00:00:00	2	2672	0.014	16.000	F
28	Group 9 Comfortable Middle Aqers,Mature Home ...	Type 28 Established Home Owning Areas 4.4%	Branch	Full Price	Week	Yes	3	2009-05-11 00:00:00	1	7092	0.026	17.000	F
29	Group 9 Comfortable Middle Aqers,Mature Home ...	Type 29 Home Owning Areas, Council Tenants, Retired People 2....	Branch	Discount	Week	Yes	2	2009-08-30 00:00:00	1	5671	0.022	45.000	F
30	Group 10 Skilled Workers,Home Owning Areas	Type 30 Established Home Owning Areas, Skilled Workers 4.1%	Branch	Full Price	Weeke...	Yes	1	2008-02-10 00:00:00	2	2417	0.014	13.650	F
31	Group 10 Skilled Workers,Home Owning Areas	Type 31 Home Owners in Older Properties, Younger Workers 4.0%	Branch	Full Price	Weeke...	Yes	6	2008-06-28 00:00:00	4	6276	0.022	33.000	F
32	Group 10 Skilled Workers,Home Owning Areas	Type 32 Home Owning Areas with Skilled Workers 4.7%	Branch	Discount	Week	Yes	3	2008-09-06 00:00:00	2	3124	0.018	18.000	F
33	Group 11 New Home Owners,Mature Communities	Type 33 Council Areas, Some New Home Owners 2.8%	Branch	Discount	Week	Yes	7	2008-09-19 00:00:00	2	5587	0.010	26.000	F
34	Group 11 New Home Owners,Mature Communities	Type 34 Mature Home Owning Areas, Skilled Workers 2.6%	Branch	Discount	Week	Yes	2	2008-09-20 00:00:00	1	2189	0.010	10.000	F
35	Group 11 New Home Owners,Mature Communities	Type 35 Low Rise Estates, Older Workers, New Home Owners 2.7%	Branch	Discount	Week	Yes	2	2008-11-27 00:00:00	2	2281	0.018	14.000	F
36	Group 12 White Collar Workers,Better-Off Multi-E...	Type 36 Home Owning Multi-Ethnic Areas, Young Families 0.9%	Branch	Last Mi...	10 day	Yes	1	2009-05-23 00:00:00	1	4082	0.014	4.000	F
37	Group 12 White Collar Workers,Better-Off Multi-E...	Type 37 Multi-Occupied Town Centres, Mixed Occupations 1.8%	Branch	Full Price	Weeke...	Yes	1	2008-04-28 00:00:00	3	1221	0.018	8.040	T
38	Group 12 White Collar Workers,Better-Off Multi-E...	Type 38 Multi-Ethnic Areas, White Collar Workers 1.3%	Branch	Discount	Week	Yes	6	2008-06-17 00:00:00	2	7013	0.014	35.000	T
39	Group 13 Older People,Less Prosperous Areas	Type 39 Home Owners, Small Council Flats, Single Pensioners 1....	Branch	Discount	Week	No	4	2008-06-22 00:00:00	1	7839	0.014	42.000	T
40	Group 13 Older People,Less Prosperous Areas	Type 40 Council Areas, Older People, Health Problems 1.3%	Branch	Discount	Week	Yes	4	2008-06-23 00:00:00	1	2190	0.018	33.000	T
41	Group 14 Council Estate Residents,Better-Off Ho...	Type 41 Better-Off Council Areas, New Home Owners 2.6%	Branch	Discount	Week	Yes	1	2008-06-25 00:00:00	1	2738	0.022	45.000	T
42	Group 14 Council Estate Residents,Better-Off Ho...	Type 42 Council Areas, Young Families, Some New Home Owners...	Branch	Discount	Week	Yes	2	2008-06-26 00:00:00	2	4305	0.010	39.000	T
43	Group 14 Council Estate Residents,Better-Off Ho...	Type 43 Council Areas, Young Families, Many Lone Parents 1.7%	Branch	Discount	Week	Yes	8	2008-06-28 00:00:00	1	6967	0.014	12.000	T
44	Group 14 Council Estate Residents,Better-Off Ho...	Type 44 Multi-Occupied Terraces, Multi-Ethnic Areas 0.8%	Branch	Discount	Week	Yes	2	2008-07-02 00:00:00	2	7139	0.010	18.000	T
45	Group 14 Council Estate Residents,Better-Off Ho...	Type 45 Low Rise Council Housing, Less Well-Off Families 2.0%	Branch	Discount	Week	Yes	3	2008-07-15 00:00:00	1	2191	0.014	14.000	T
46	Group 14 Council Estate Residents,Better-Off Ho...	Type 46 Council Areas, Residents with Health Problems 1.5%	Branch	Last Mi...	10 day	Yes	3	2008-07-17 00:00:00	2	2631	0.036	18.000	T
47	Group 15 Council Estate Residents,High Unempl...	Type 47 Estates with High Unemployment 0.9%	Branch	Discount	Week	Yes	6	2008-07-20 00:00:00	4	2796	0.018	25.000	T
48	Group 15 Council Estate Residents,High Unempl...	Type 48 Council Flats, Elderly People, Health Problems 0.9%	Branch	Discount	Week	Yes	2	2008-07-25 00:00:00	2	4757	0.022	12.000	T
49	Group 15 Council Estate Residents,High Unempl...	Type 49 Council Flats, Very High Unemployment, Singles 1.1%	Branch		2 week	Yes	5	2008-07-29 00:00:00	1	2292	0.014	2.000	T

Table Annotations

OK

# Predictive Analytics: Building a Model

Interactive List: Interlaken[T] #2

File Edit View Tools Generate

Take Snapshot

Target field: Interlaken  
Target value: T

Segment Finder  
Find segments with: High Probability  
Max. no. of new segments: 10  
Find Segments

id	Segment Rules	Score	Frequency	Probability
	All segments including Remainder		2,164	50.95%
1	age age > 73	T	310	78.88%
2	age, Mosaic Group age > 48 and age <= 60 and Mosaic Group = "Group 10 Skilled Workers,Home Owning Areas"		74	77.89%
3	Mosaic Group, age Mosaic Group = "Group 8 Better-Off Executives,Inner City Areas" and age > 54 and age <= 67	T	76	71.70%
4	age, Mosaic Group age > 26 and age <= 54 and Mosaic Group = "Group 11 New Home Owners,Mature Communities"	T	63	64.29%

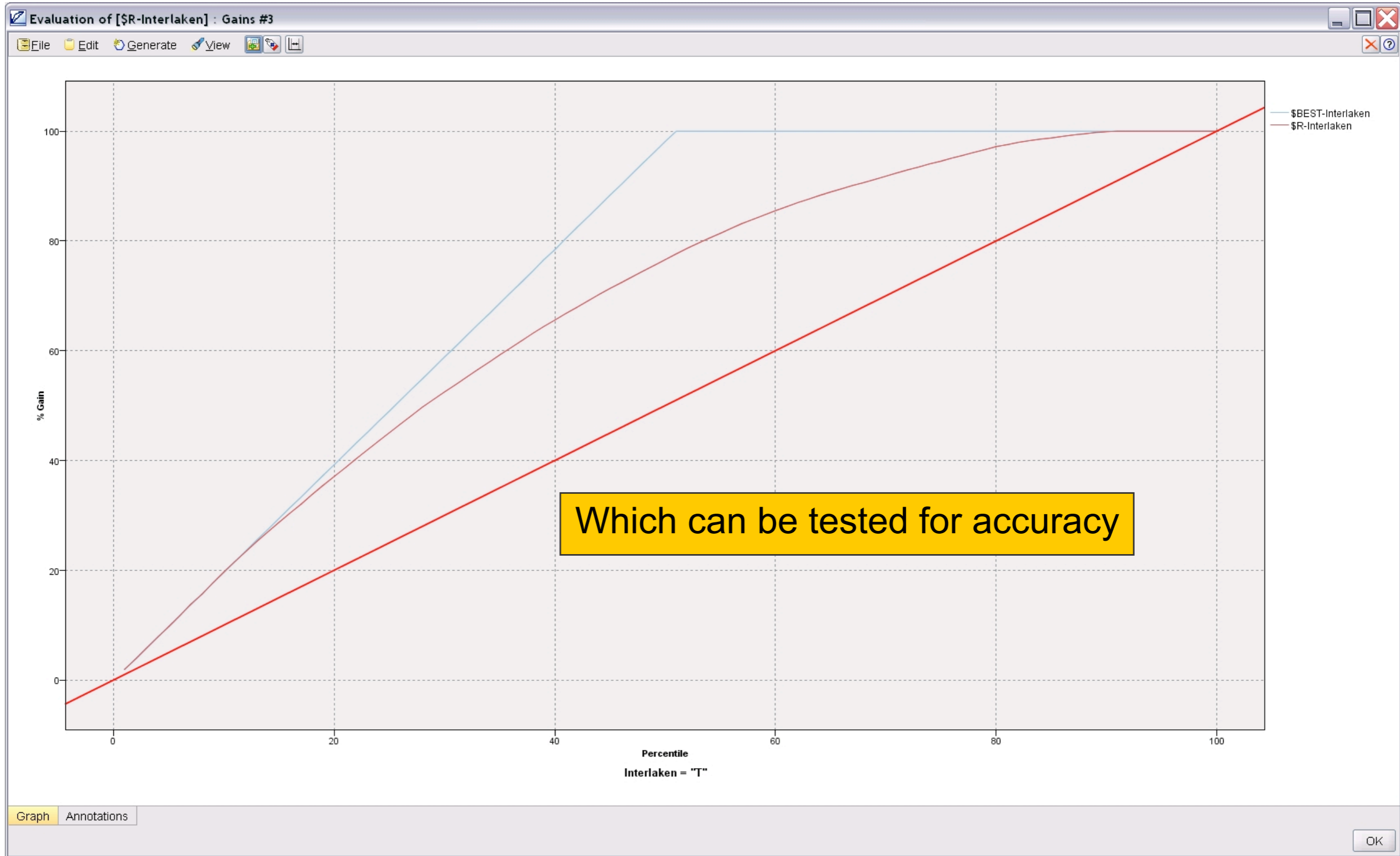
Model Summary, Cover 2,047: Frequency 1,289: Probability 62.97%

Viewer Gains Annotations

OK

To build a predictive model

# Predictive Analytics: Building a Model



# Predictive Analytics: Building a Model

Table (14 fields, 4,247 records) #1

r	BorrAddressProperty	BorrAddressAddress1	Town	County	out Postcode	In_Pcode	Phone	Email	Propensity
1	Pond House	Green Lane	Saltash	Cornwall	PL12	3JY	0402 99149	Kasey.Costello@f76.net	0.270
2	Priddleton Court	Cross Farm	Yeovil	Somerset	BA22	6DF	0163 16162	Susan.Peters@maxsnetinc.com	0.978
3	Kellaways Farm	Monksilver	Moreton-in-Marsh	Gloucestershire	GL56	3QP	0681 89177	Able.Cain@cybserv19.com	0.457
4	Standen Estate Office	Maesbury Marsh	Craven Arms	Shropshire	SY7	9EF	0770 52862	Brian.Campbell@rocksteadyitl.com	0.678
5	Westview Farm	Stratton	Gloucester	Gloucestershire	GL19	4EZ	0104 93337	John.Carbonneau@vipce2k.com	0.373
6	Flat 82, Rosebank	Green Lane	Kinross	Perthshire	KY13	5JR	0146 102739	John.Carson@legolfeurinc.com	0.982
7	Home Farm	Glynarthen	Brigg	South Humberside	DN20	2DY	0973 93280	Ken.Gibb@maxsnetinc.com	0.979
8	Swaithe Hall Farm	Gilsland	Bideford	Devon	EX39	2EH	098 74543	Ron.Moore@actup9.com	0.774
9	Manor House	Nynehead	Newark	Nottinghamshire	NG22	2PD	0653 82945	Orin.Isabella@actup9.com	0.818
10	Caenwydd Farm	Colliers Green	Andover	Hampshire	SP10	7NJ	0670 96503	Mary.Inglis@actup9.com	0.785
11	Holt Lodge Farm	Watermillock	Market Rasen	Lincolnshire	LN8	5BE	0532 107296	Harold.Irwin@rocksteadyitl.com	0.264
12	Scotch Cottage	Thorney Dyke	Guildford	Surrey	GU3	0LL	0915 29085	Jane.Ives@f76.net	0.774
13	Albion Farm	Ambrook Farm	Alston	Cumbria	CA9	8ND	0592 59890	Becky.Rahn@vipce2k.com	0.525
14	Highbridge Farm	Bickington	Brentwood	Essex	CM13	7TD	0648 14474	Richard.Randall@cybserv19.com	0.675
15	Lower Farm	Main Street	Ambrook Farm	Cornwall	PL14	5HG	0976 57810	Louise.Reed@rocksteadyitl.com	0.402
16	Swan Farm	Brandis Corner	Faringdon	Oxfordshire	SN7	2QZ	0239 10201	Laurel.Reid@actup9.com	0.457
17	Court Farm	Feniton	Tonbridge	Kent	TN11	0DW	0536 68467	David.Richards@f76.net	0.016
18	Whitmore Hall	\$null\$	Newport	Gwent	NP6	2EP	0288 19228	Robin.Demers@extrem1.com	0.785
19	Home Farm	Abbey Lane	Llanbrynmair	Powys	SY19	0YJ	0677 84871	Robert.Deale@dz7.com	0.009
20	Pond View Farm	Tewin	Gloque	Dyfed	SA36	2DA	0251 35735	Harris.Burton@holsteing.com	0.009
21	Lochdhu House	Witham Friary	Welsh						0.814
22	58 Monnow Street	Modbury	Buxton						0.333
23	Painsbrook Farm	\$null\$	Montg						0.009
24	South Farm	Cambridge Road	Seah						0.685
25	Frith Common Farm	Part Lane	Haywards Heath	West Sussex	RH16	0JB	0870 26317	Peter.Barnes@dz7.com	0.644
26	Goodnestone Park	Bullen Lane	Llandysul	Dyfed	SA44	3LR	0873 42559	Denise.Chen@dz7.com	0.615
27	Denton Lodge Farm	New Road	Johnstone	Renfrewshire	PA10	9LB	0848 38405	Frances.Chow@dfd18.com	0.565
28	West Bodden Farm	Whitwick Green Road	Wigton	Cumbria	CA7	0BG	0995 48628	Louisa.Schaaf@fzbxinc.com	0.402
29	9 Albert Road	Beckley	Welshpool	Powys	SY21	8JX	030 55248	Nina.Sanchez@fzbxinc.com	0.015
30	Hall Farm	Spinney Lane	London	London	SW17	9TG	070 93645	Oliver.Smith@holsteing.com	0.022
31	Westfield Farm	High Street	Ashford	Kent	TN25	8NH	0548 84349	Tom.Breen@extrem1.com	0.687
32	Norton Grange Farm	Tregamere	Leighton Buzzard	Bedfordshire	LU7	0RD	0523 93671	Jason.Bailey@b17xo2.com	0.525
33	C/O Strutt & Parker	Halls Lane	Pontypool	Gwent	NP4	2RN	0908 103578	Tony.Baker@b17xo2.com	0.785
34	Boythorpe Farm	Southampton Road	Shrewsbury	Shropshire	SY5	5LF	081 27022	Walter.Ball@dfd18.com	0.020
35	Birkby Gate Farm	Bossington	Market Rasen	Lincolnshire	LN8	0RE	0706 29345	Steve.Cassidy@dz7.com	0.015
36	Heatherslaw	The Street	Market Rasen	Lincolnshire	LN8	8AW	0401 42110	Henk.Cavan@weitblickitl.com	0.590
37	Drift Farm	Thorpe le Street	Ely	Cambridgeshire	CB7	5HJ	0868 10063	Kent.Clarke@fzbxinc.com	0.577
38	Greenlands Farm	Pyworthy	Skipton	North Yorkshire	BD23	2JU	0548 61733	Charles.Chamberlain@extrem1.c...	0.293
39	Lee Farm	Short Green	Haltwhistle	Northumberland	NE49	4XF	0682 26132	Olive.Chang@fzbxinc.com	0.685
40	Cruwysshayes Farm	Mount Farm	Christchurch	Dorset	BH23	1AZ	0791 61476	Adrienne.Peters@rutkss.com	0.855
41	Ings Lane Farm	Pages Lane	Worcester	Worcestershire	WR5	8NX	0902 61783	Carol.Kaine@fitexes.com	0.855
42	Jervis	Keats Lane	Ashford	Kent	TN25	0DP	0418 87626	Brian.Kapp@dz7.com	0.453
43	Langham Lodge Bu...	Hunmanby	Penrith	Cumbria	CA11	8YP	0160 83824	Mary.Kay@weitblickitl.com	0.814
44	Swarthbeck Farm	Beaford	Nottingham	Nottinghamshire	NG12	1AZ	0669 42237	Ivor.Kelly@dfd18.com	0.264
45	Chase Farm	Griston	Spalding	Lincolnshire	PE12	0NA	01 19963	Adrienne.Kennedy@fzbxinc.com	0.814
46	Stainborough Fold F...	Bittaford	Penrith	Cumbria	CA10	5AF	0435 36380	Liam.Sauer@holsteing.com	0.293

And used to generate propensity scores

Table Annotations

OK



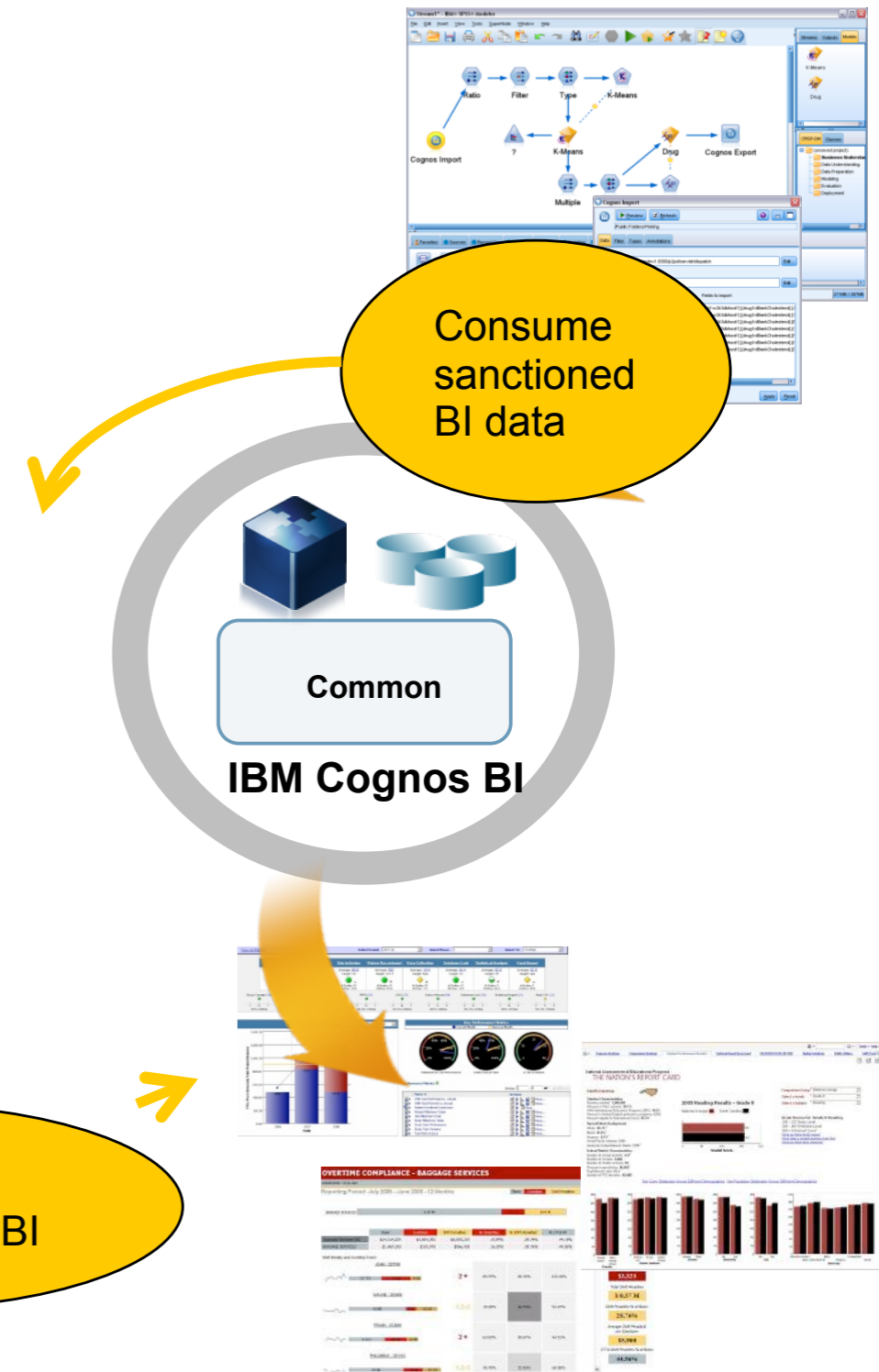
Deliver the power of Predictive Analytics into the hands of the business users

**Uncover key insights in your corporate data by integrating predictive analytics as a core activity to drive business decisions**

## Integration with IBM SPSS Modeler

### Solution Highlights

- Leverage BI to identify problem or situation needing attention
- Develop factual context using reliable trends, patterns and predictions.
- Easily distribute the results to broad user communities



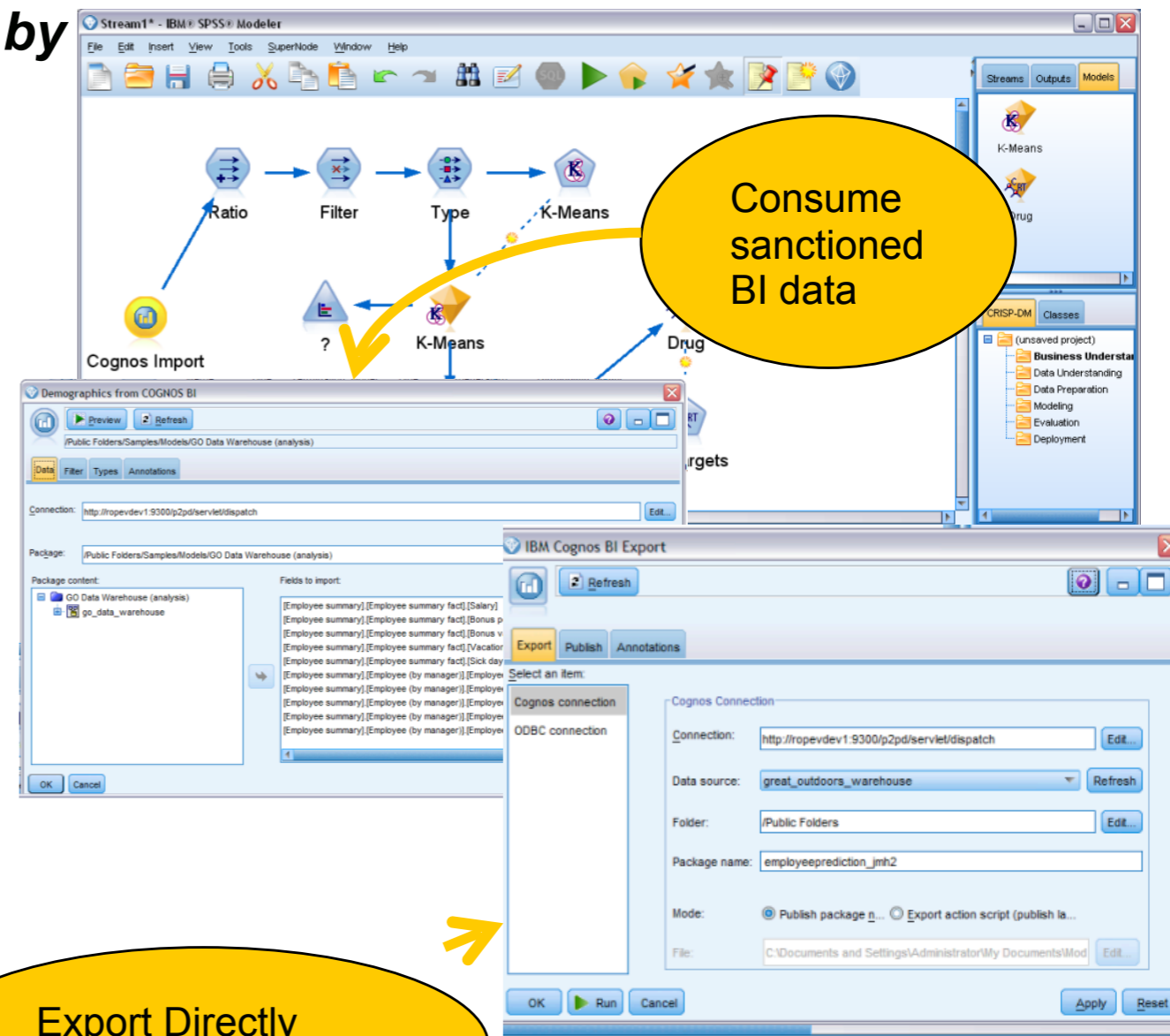
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Export Directly to IBM Cognos BI

# IBM SPSS Decision Management Gets It Done

## *Focusing on Outcomes*

The screenshot displays the IBM SPSS Decision Management interface. The top navigation bar includes the 'ASW Decision Management' logo, a help icon, and a 'Logout' button. Below the navigation bar, the 'applications launchpad' section allows users to 'Choose your functional area:' with four main categories: 'Modeler Advantage' (Predictive modeling for the business user), 'Customer Interactions' (Get the most out of customer interactions), 'First Deployment' (Recommendations where and when you need), and 'Claims Processing' (Decide what to offer customers when they contact your organization, and deliver recommendations to the call center or other interaction points). Each category has a 'Go' button and a 'Deploy' button. The 'Claims Processing' application is expanded, showing a detailed configuration screen. This screen includes a 'Motor Claims' section with a table for 'Model Actions' and 'Matrix Colors'. The 'Model Actions' table has columns for 'High', 'Medium', and 'Low' severity levels, and rows for 'Refer to SIU', 'Standard Processing', and 'Fast Track'. The 'Matrix Colors' section has checkboxes for 'Refer to SIU', 'Standard Processing', 'Fast Track', 'High', 'Medium', and 'Low'. Below the table, there are sections for 'Home Claims', 'Pet Claims', and 'Personal Claims'.

- **A Decision Process Framework with Outcomes Enhanced by Analytics**
- Decision centric user interface (vs. Analytics centric)
- Prebuilt applications for target problems
- Completely customisable
- True web based architecture
- Fully integrated with the IBM SPSS product portfolio
- Interoperable with IBM stack

## Why Decision Management?

- Our churn model says....
  - This customer has a 72% chance of churning in the next billing cycle.
- Should we:
  - Offer her a discount?
  - Direct extra resources to resolve her dissatisfaction?
  - Find her a more appropriate package of products/services?
  - Let her go?
- Is she a profitable customer?
- How is her LTV affected by discounts or a cheaper package?
- How much will it cost to make her more satisfied with the service?



## Why Decision Management?

- Our cross-sell model says....
  - This customer has:
    - 62% chance of accepting a personal loan
    - 69% chance of purchasing life insurance
    - 83% chance of utilising mobile banking
- What should we offer her?
- Is she at risk of defecting?
- What product has the highest margin?
- What product encourages the highest life time value?



**Customer Details**

Last name: James Gender: M

First name: Horsfield

Address: 12 Bay St Age: 27

City: Windsor Profession: Student

Postcode: SL4 5TB

Customer ID: 1030

Estimated Satisfaction:

get info

**Products**

ID	Description	Group
13	Broadband Silver	
14	TV Sports Premium Pack	

**Contact history**

Description	Date	Result
Qtr1 Bill	31/03/10	1

**Customer's current details are displayed**

**Details current call**

Type of contact: -- To be determined --

Description: [Text Area]

Information request

Service

Complaint

Quotation request

Direct sales

Change request

Cancellation

Other

submit

**Customer requests specific information**

**Recommendation**

Interaction	Offer	Action
[Empty Row]		

Customer Details

Last name  Gender

First name

Address  Age

City  Profession

Postcode

Estimated Satisfaction:

Customer ID

get info

Products

ID	Description	Group
13	Broadband Silver	
14	TV Sports Premium Pack	

Contact history

Description	Date	Result
Qtr1 Bill	31/03/10	1

Details current call

Type of contact

Description

Would like more information on his file size download limit

Operative enters query as text string

submit

Recommendation

Interaction	Offer	Action

<b>Customer Details</b>	Last name: James First name: Horsfield Address: 12 Bay St City: Windsor Postcode: SL4 5TB Customer ID: 1030 <input type="button" value="get info"/>	Gender: M Age: 27 Estimated Satisf	<b>Products</b> ID Description Group 13 Broadband Silver 14 TV Sports Premium Pack	<b>Contact history</b> Description Date Result Qtr1 Bill 31/03/10 1
-------------------------	---	--	---	---

**Text data along with demographic, behavioural and transaction data are used to fire the recommendation**

**Details current call**

Type of contact: Information Request

Description: Would like more information on his file size download limit

Recommendation		
Interaction	Offer	Action



Customer Details

Last name  Gender

First name

Address  Age

City  Profession

Postcode

Estimated Satisfaction:

Customer ID

get info

Products

ID	Description	Group
13	Broadband Silver	
14	TV Sports Premium Pack	

Contact history

Description	Date	Result
Qtr1 Bill	31/03/10	1

**Optimisation engine generates an offer in real time**

Details current call

Type of contact

Description  
Would like more information on his file size download limit

submit

Recommendation

Interaction	Offer	Action
Broadband Upgrade	Unlimited Broadband	<input type="text" value="Accepted"/>

## Summary

- Predictive Analytics:
  - Exploits the entire data landscape
  - Can be executed in real time
  - Addresses multiple Business Objectives to drive:
    - Risk Scores
    - Proactive Recommendations
    - Optimal Actions
- Creates Key Performance *Predictors* for Business Intelligence
- SPSS and Cognos represent highly complimentary, best of breed technologies