IBM

Forecasting and Planning Quickly and Accurately

Smarter software for a smarter planet

Business Analytics software

Forecasting and Planning Quickly and Accurately: Agenda

- Case Study – Improving Accuracy in about Six Minutes

- General Overview of IBM SPSS Statistics Professional

- To Forecast and Plan Quickly and Accurately

  - Generate a Visualization

  - Identify and Correct Missing Values

  - Address Outliers and Anomalies

  - Access and Leverage a Variety of Analytics

  - Provide Consumable Forecasts and Plans

- Case Study – Forecasting Broadband Usage by Number of Subscribers

- Recap & Questions

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Forecasting and Planning Quickly and Accurately:
A Case Study for Improving Plan Accuracy in about Six Minutes

- Motivating Question

  - "To better understand, market, manage, and plan our inventory, we need to identify the vehicle attributes that are most likely to motivate a purchase."

- Potential Inputs

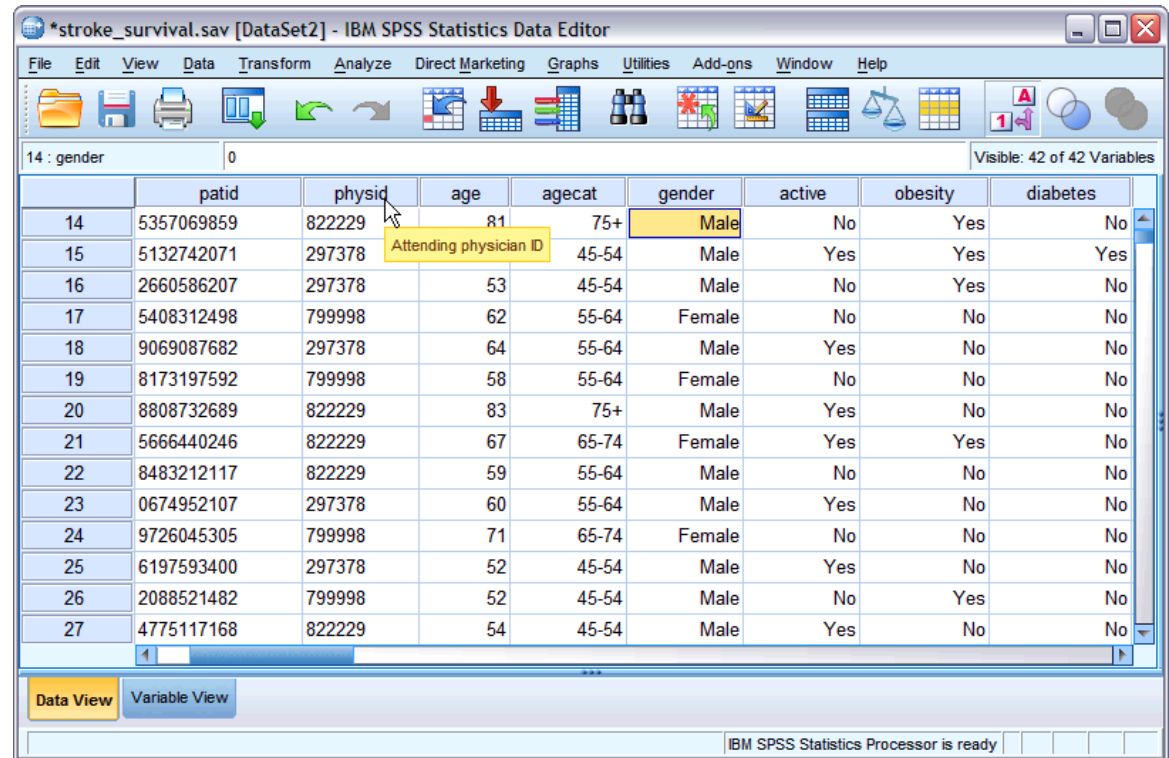 - Make and Model

  - Vehicle type

  - Price

  - Resale value

  - Specs (e.g. engine size, fuel efficiency)

Forecasting and Planning Quickly and Accurately:
A General Overview of IBM SPSS Statistics Professional

- Spreadsheet-like Look and Feel

- Tools for Predictive Analytics and Statistical Analyses during Critical Steps of the Analytic Lifecycle

  - Data Preparation and Management

  - Data Analysis

  - Reporting

Forecasting and Planning Quickly and Accurately: Generate a Visualization

- Visualization Helps Identify Potential Issues and Improves Accuracy

- The Upsides and Downsides of "Ocular Regression"
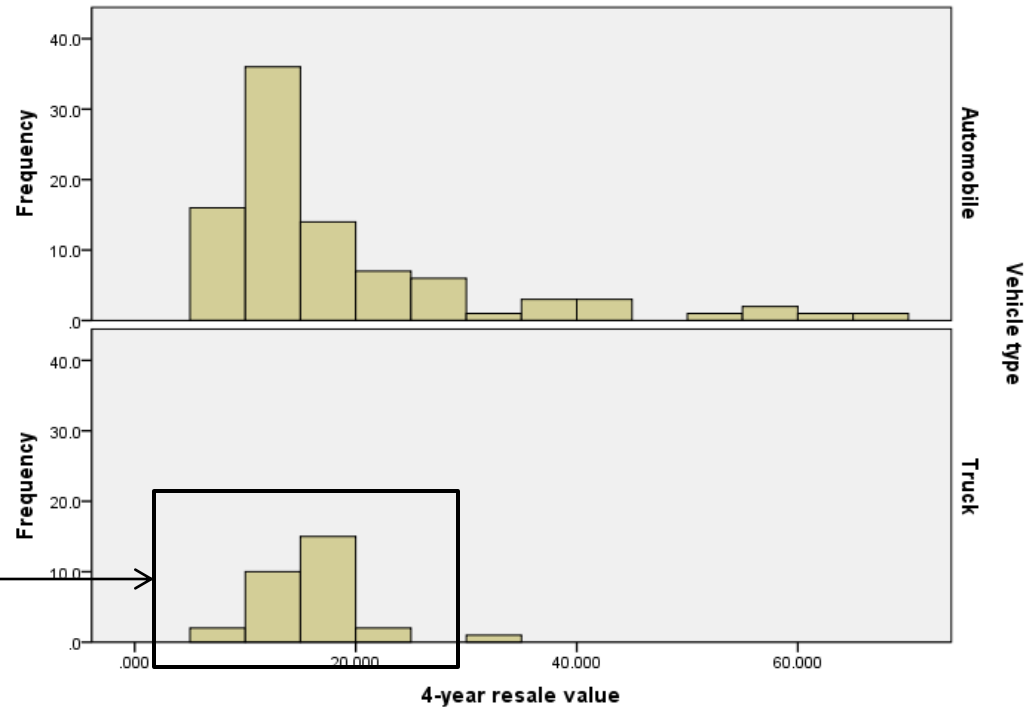
Forecasting and Planning Quickly and Accurately: Identify and Impute Missing Values

- **Missing Data Impacts Precision**

- **Compare Records with Missing Values against Records without**

  - Is there a significant difference?

- **Impute Missing Values with Expected Values using Regression and Expectation-Maximization (EM)**
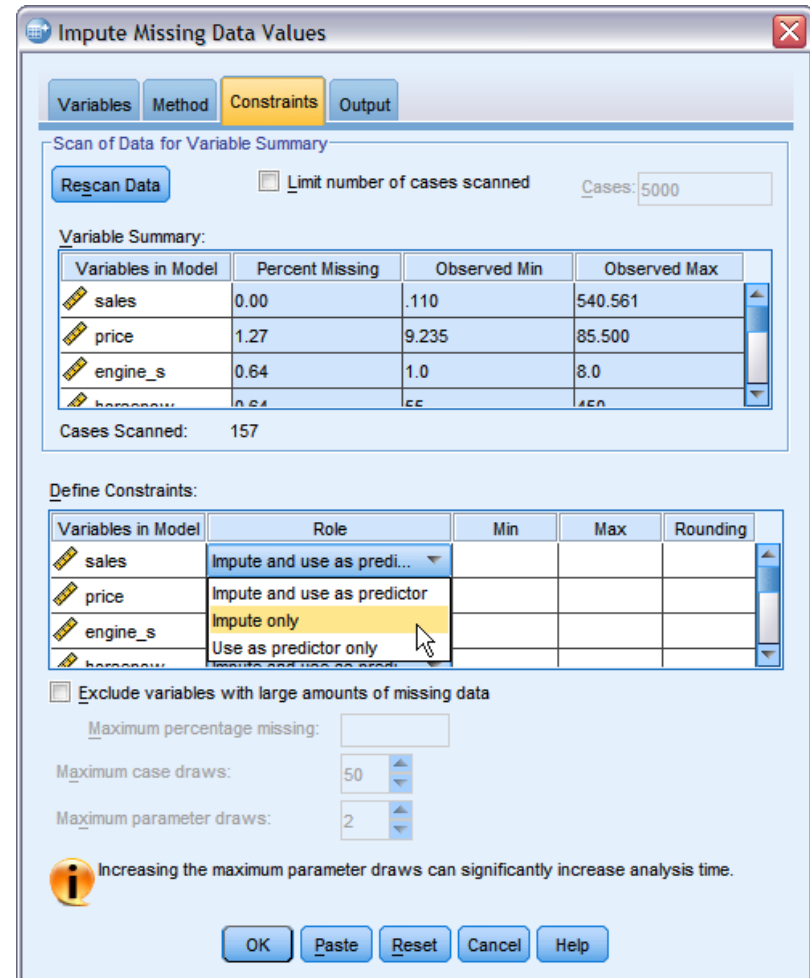
Forecasting and Planning Quickly and Accurately: Address Outliers and Anomalies

- Identify Suspicious or Invalid Cases that can Impact Analysis and Skew Results

  – Visualizations, Descriptive Statistics, and Basic Rules

- Utilize Statistical Transformations to Address Outliers
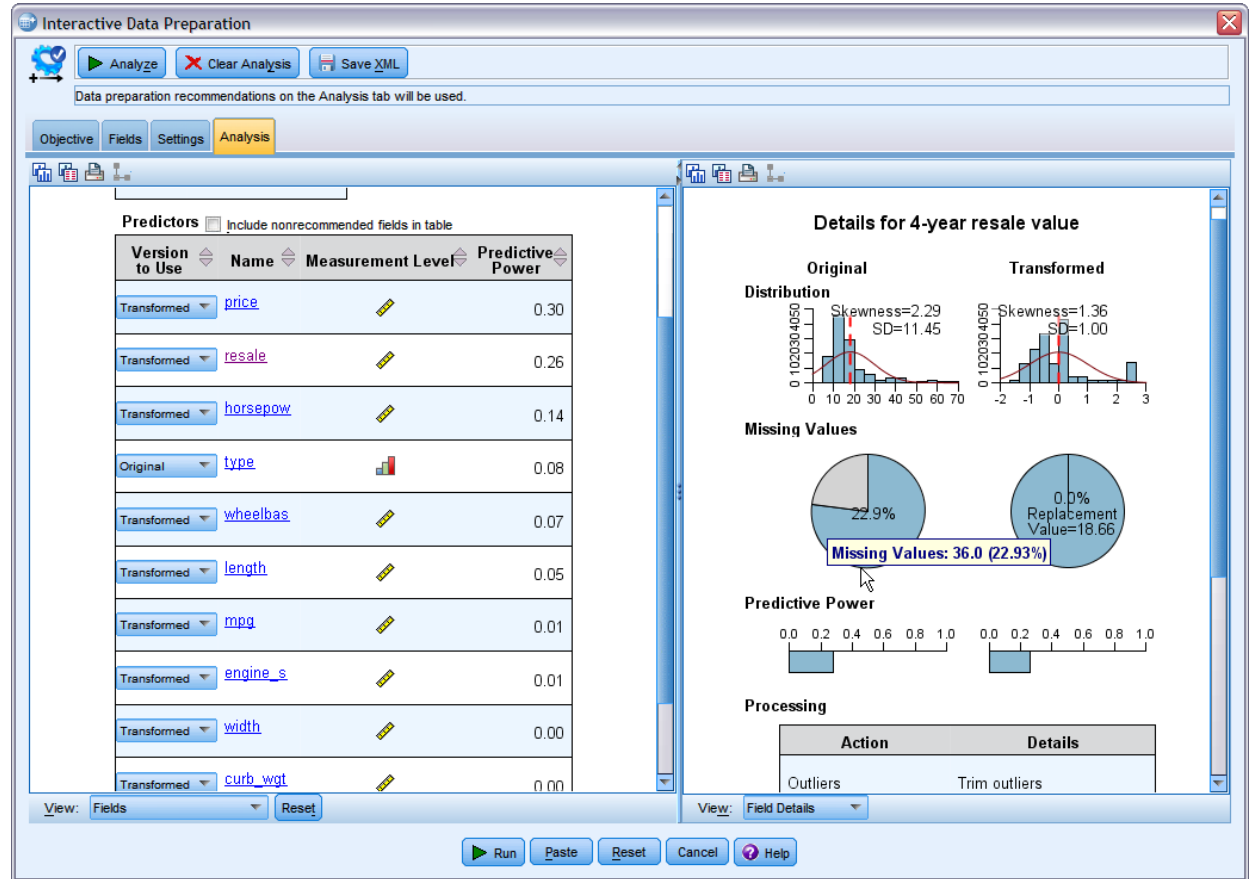
Forecasting and Planning Quickly and Accurately: Access and Leverage a Variety of Analytics

- Accurate = Scrub + Explore + Confirm

- Quick (i.e. Efficient) = Menus + Dialog Boxes + Scripts

Forecasting and Planning Quickly and Accurately: Provide Consumable Forecasts and Plans

- Easily Consumable Tables and Charts are Required

- Raw and Smart Output Help Provide Statistical Context and Support

Forecast

Model		Jan 2011	Feb 2011	Mar 2011
Subscribers for Market 1- Model_1	Forecast	11503	11447	11390
	UCL	11686	11767	11870
	LCL	11321	11126	10910
Subscribers for Market 2- Model_2	Forecast	54893	55856	56704
	UCL	55632	57195	58575
	LCL	54154	54518	54832
Subscribers for Market 3-	Forecast	59656	59305	58954
			60753	61158

	LCL	24586	24966	25298
Subscribers for Market 32-Model_32	Forecast	17239	17582	17925
	UCL	17438	17966	18526
	LCL	17040	17198	17323
Subscribers for Market 33-Model_33	Forecast	18448	18761	19074
	UCL	18710	19188	19701
	LCL	18186	18335	18447

For each model, forecasts start after the last non-missing in the range of the requested estimation period, and end at the last period for which non-missing values of all the predictors are available or at the end date of the requested forecast period, whichever is earlier.

Forecasting and Planning Quickly and Accurately:
Case Study: Forecasting Broadband Usage by No. of Subscribers

- Data from Communications Service Provider (CSP)

- Goal: Understand When to Add Capacity based on Number of Subscribers to the Service

*subscribers.sav [DataSet1] - IBM SPSS Statistics Data Editor

File   Edit   View   Data   Transform   Analyze   Direct Marketing   Graphs   Utilities   Add-ons   Window   Help

56 : Date_   AUG 2010   Visible: 174 of 174 Variables

	Market_83	Market_84	Market_85	Total	YEAR_	MONT...	Date_
41	18341	14102	16?83	1690116	2009	5	MAY 2009
42	19015	14164	16?		2009	6	JUN 2009
43	19660	14296	16796	1758768	2009	7	JUL 2009
44	20482	14326	16935	1791726	2009	8	AUG 2009
45	21211	14349	17179	1824948	2009	9	SEP 2009
46	21893	14333	17601	1860117	2009	10	OCT 2009
47	22471	14229	17816	1894502	2009	11	NOV 2009
48	23112	14514	17937	1934325	2009	12	DEC 2009
49	23686	14856	18003	1975291	2010	1	JAN 2010
50	24669	15182	17875	2014874	2010	2	FEB 2010
51	25469	15709	18214	2054072	2010	3	MAR 2010
52	25868	16155	18557	2092212	2010	4	APR 2010
53	26284	16521	19190	2130023	2010	5	MAY 2010
54	26468	16567	19938	2166995	2010	6	JUN 2010
55	26781	16618	20876	2200427	2010	7	JUL 2010
56	27566	16553	21514	2239873	2010	8	AUG 2010

Subscribers for Market 85

Data View   Variable View

IBM SPSS Statistics Processor is ready

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