

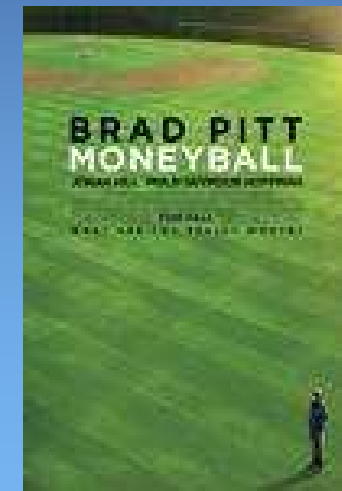
MoneyBall Meets Travel

Advances, Successes & Lessons Learned

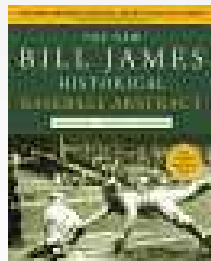
Douglas Gray, MSOR, MBA
Chief Solutions Officer
Blue Star Infotech



Warren Lieberman, PhD
Founder & President
Veritec Solutions



Analytics is Mainstream in Baseball & Popular Culture



Sabermetrics



MoneyBall Crosses Sports & Borders!



Analytics is Mainstream in Business Media

THE WALL STREET JOURNAL

Bloomberg
BusinessWeek

FINANCIAL TIMES

InformationWeek

The
Economist

Analytics has become Mainstream in Travel & Hospitality over 25+ years

Hertz.com


Marriott
HOTELS · RESORTS · SUITES

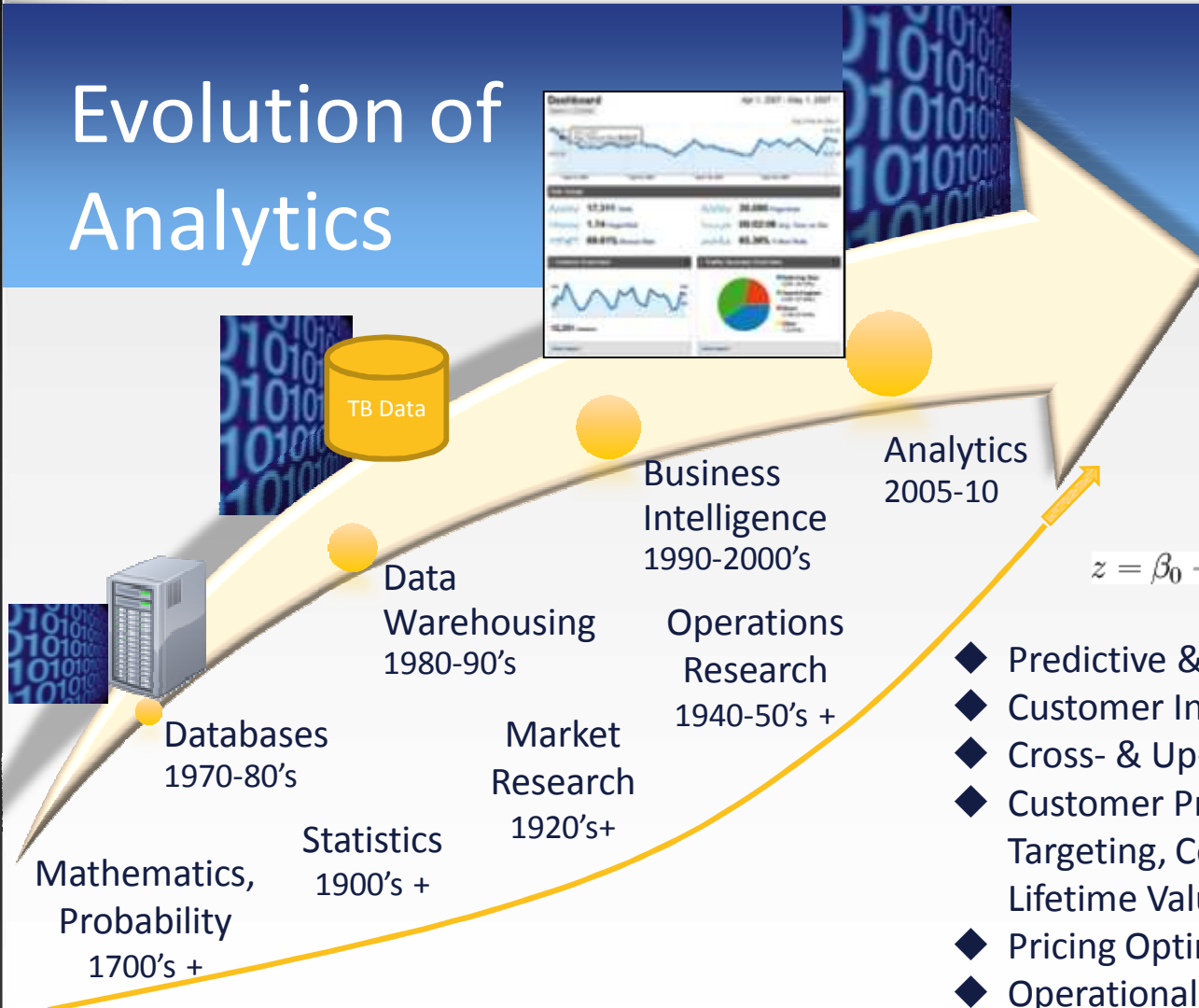


American Airlines



Evolution of Analytics

"Lever to move the needle on economic performance"



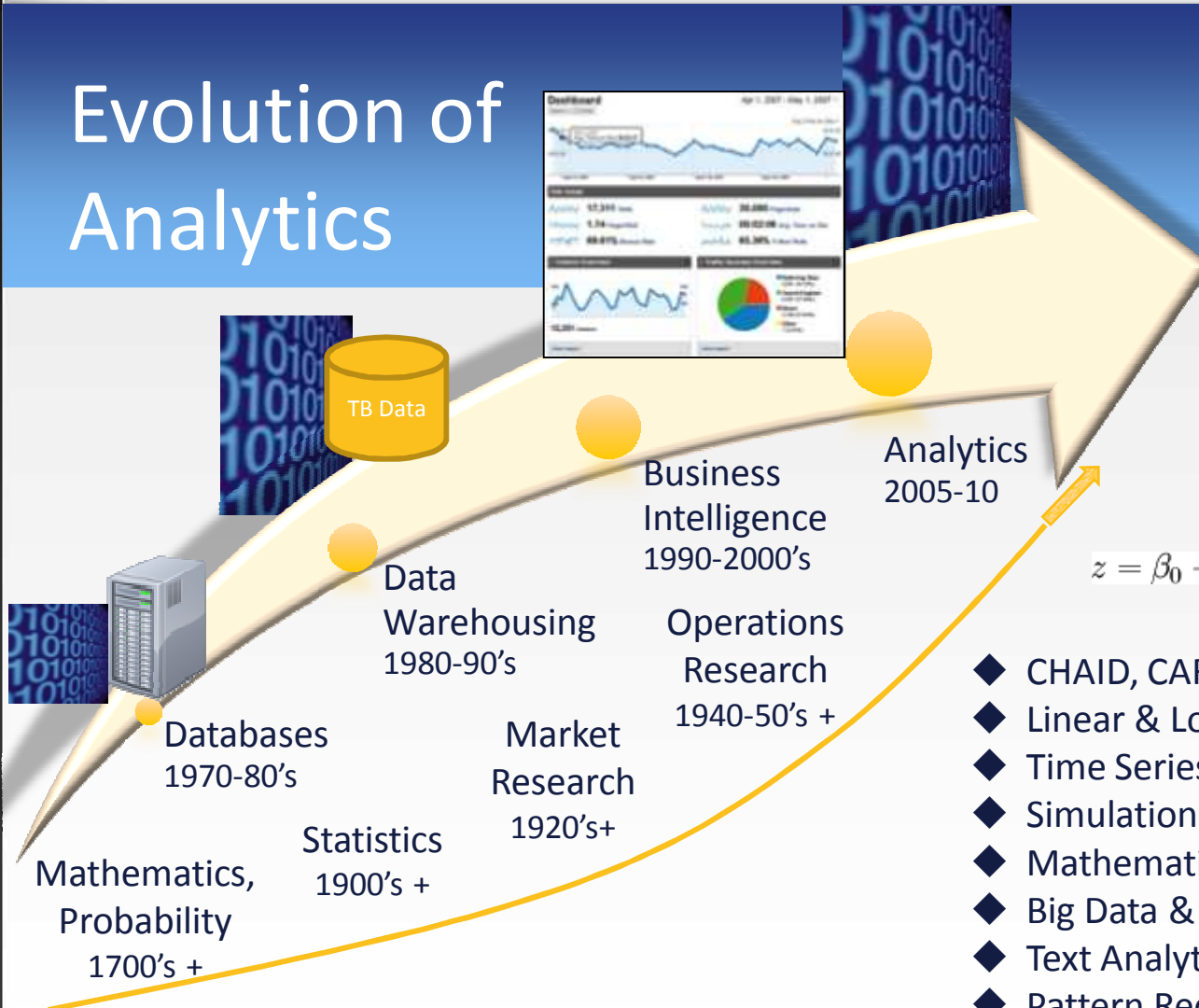
$$f(z) = \frac{e^z}{e^z + 1} = \frac{1}{1 + e^{-z}}$$

$$z = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \dots + \beta_k x_k,$$

- ◆ Predictive & Marketing Analytics
- ◆ Customer Intelligence & Social Media
- ◆ Cross- & Up-sell Loyalty & Retention
- ◆ Customer Profiling, Segmentation, Targeting, Consumption Propensity, & Lifetime Value
- ◆ Pricing Optimization/Revenue Management
- ◆ Operational Analysis & Optimization

Evolution of Analytics

"Lever to move the needle on economic performance"

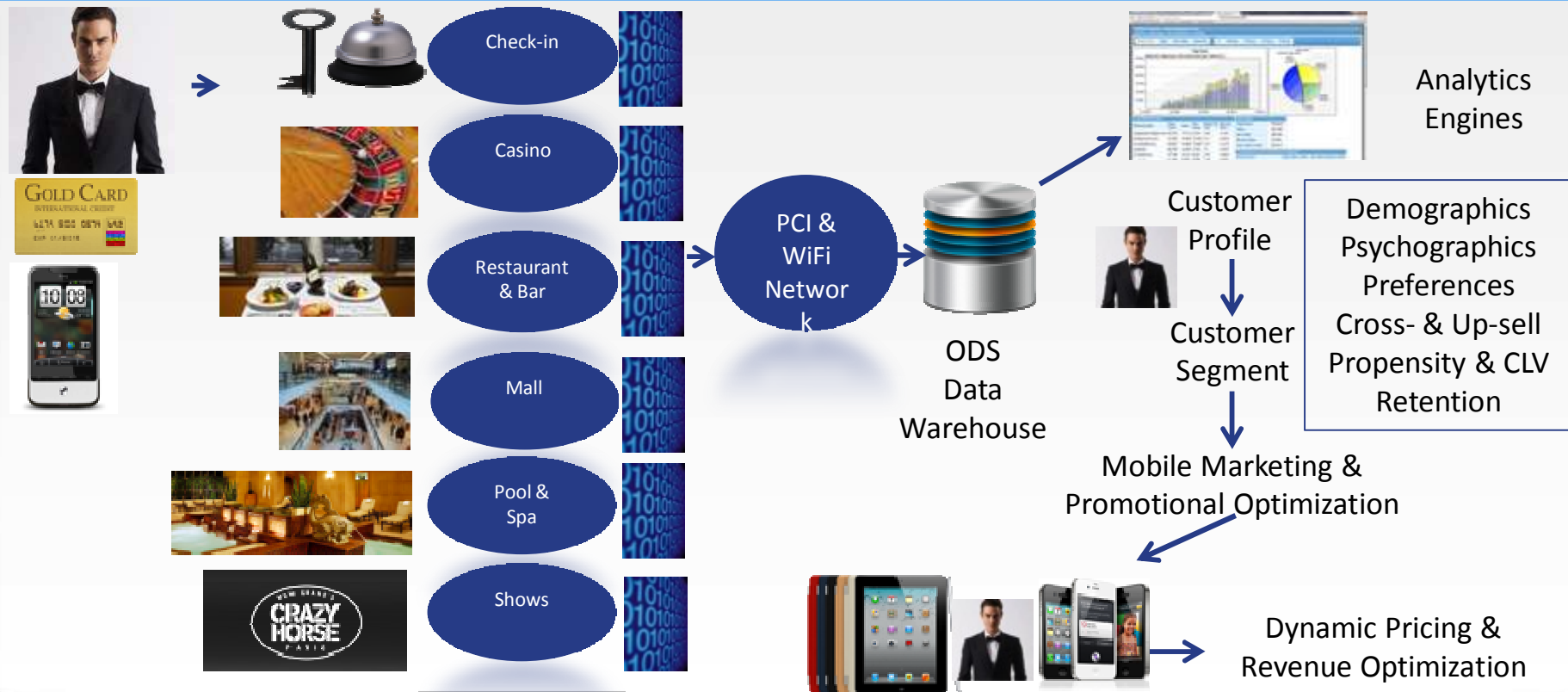


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- ◆ CHAID, CART, & Latent Class Models
- ◆ Linear & Logistic Regression
- ◆ Time Series Analysis & Forecasting
- ◆ Simulation & Scenario Analysis
- ◆ Mathematical Programming
- ◆ Big Data & Social Media
- ◆ Text Analytics & Data Mining
- ◆ Pattern Recognition & Trend Analysis

Analytics, Mobility & Loyalty Programs in Hospitality & Gaming



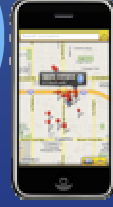
Analytics, Mobility & Loyalty – Measuring the Impact



Market Share Growth
36% (1998) → 43% (2004)
Same Store Sales Gains 23/24 Quarters
Failed to Meet R & P (1991-97)



maximize $c^T x$
 subject to $Ax \leq b$
 and $x \geq 0$





- ◆ Pioneers in OR at AA
- ◆ Strategy Assessment & Roadmap
- ◆ BI & Analytics Practice
- ◆ Data Management Infrastructure
 - ◆ Data Warehousing
 - ◆ Data Governance
- ◆ Systems Integration

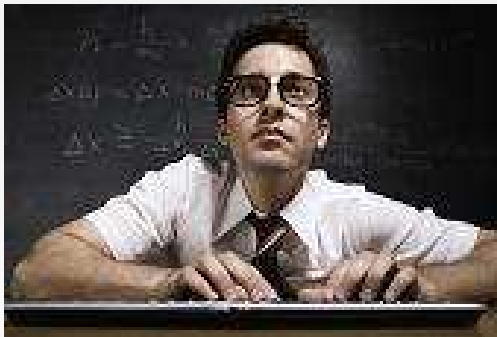


- ◆ Pioneers in YM & OR at AA, RCCL
- ◆ Revenue Management
- ◆ Pricing Optimization
- ◆ Models & Algorithms
 - ◆ Demand Forecasting
 - ◆ Inventory Management
- ◆ Consulting
- ◆ Applications Development

Travel Analytics Partnership

- ◆ Analytics Strategy & Consulting
- ◆ Enterprise Solutions Development
 - ◆ Revenue Management
 - ◆ Pricing Optimization

“We were into Analytics before Analytics was cool”



1980s – '90s
Warren & Doug

American Airlines
Decision Technologies

2002 – A's True Story
2011 – *MoneyBall*, Movie
Starring Brad Pitt & Jonah Hill



Keynote Speaker

Pricing & Revenue Management Pioneer & Expert
in Travel & Hospitality

Warren Lieberman, PhD
President
Veritec Solutions

Motivation



Action



Analytics: Part Art, Part Science



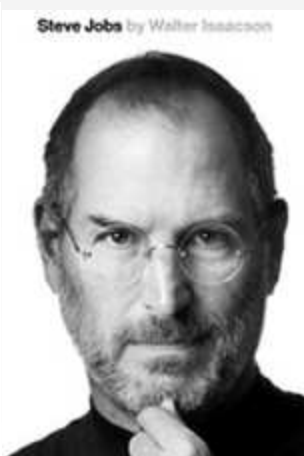
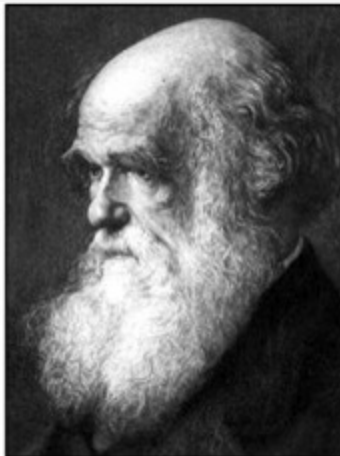
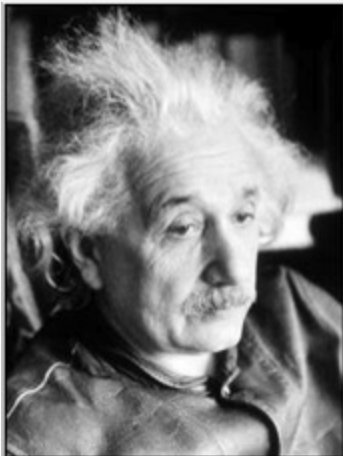
Analytics: Appropriate Art and Science



So What is this “Art of Business?”

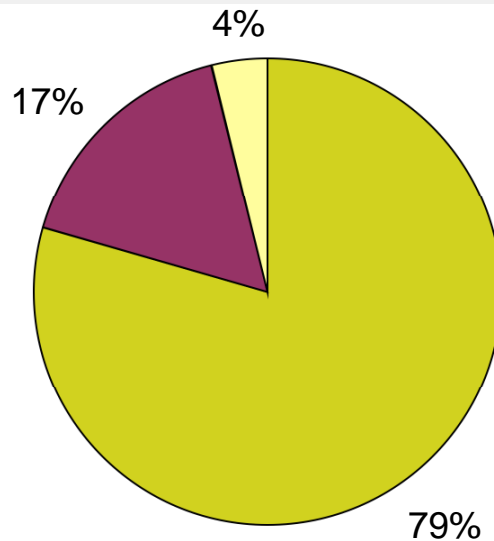
3 Elements

- ① Asking the right questions
- ② Framing the opportunity
- ③ Communication

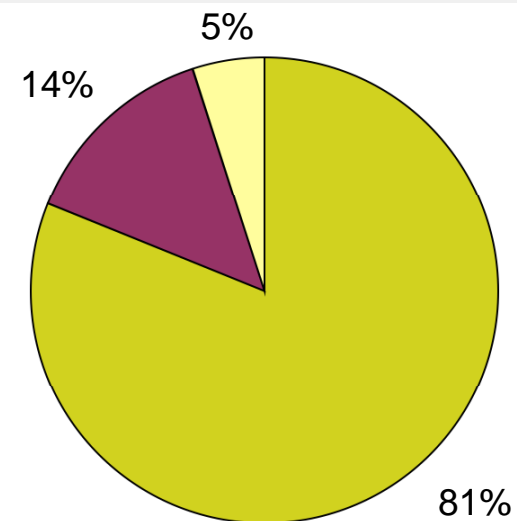


Business Science: Basic Analytics

Many Items available for sale

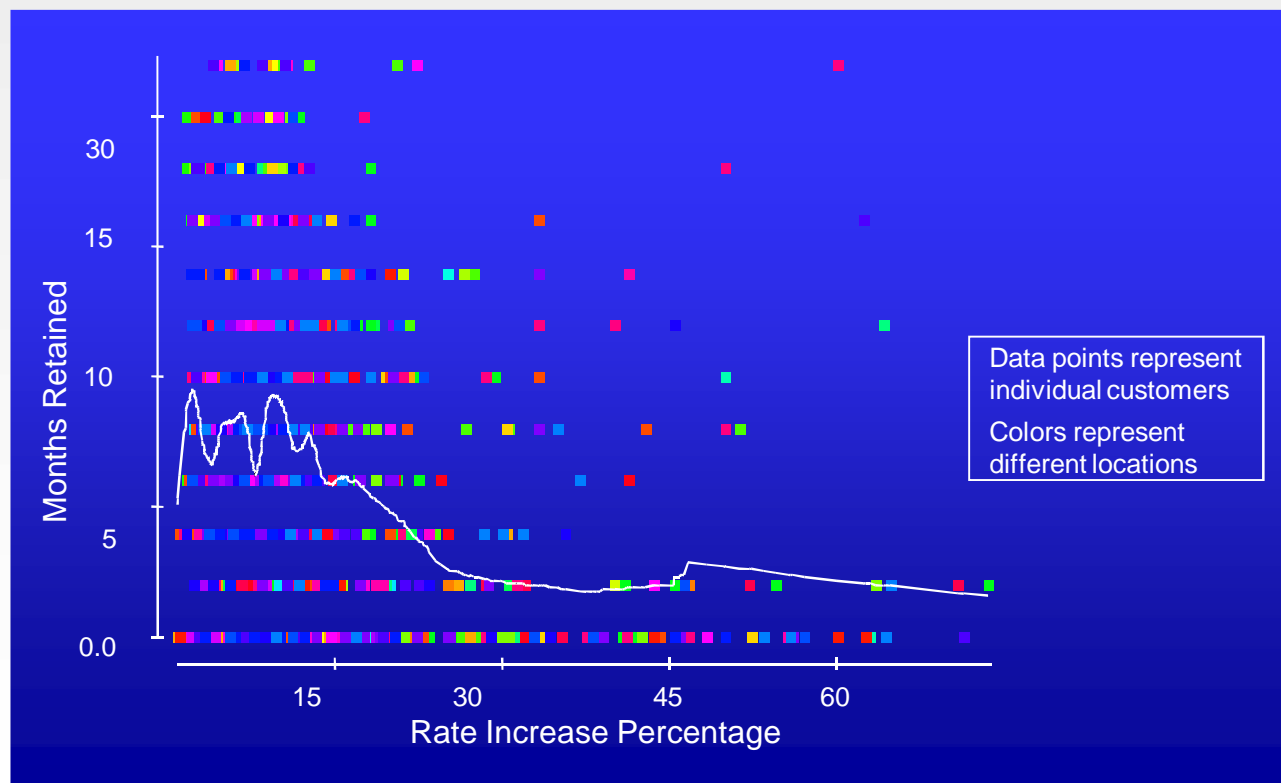


Few Items for Sale (< 10% of Stock)



- No Promotion
- Controllable Promotion
- Affiliation Discount

Business Science: Complex Analytics



Business Science: Non-Intuitive Analytics

Profits increase despite significant drop in sales *and* revenue!



Selling Price	\$3.89	\$3.93
Change in Price (Pct)		1.0%
Cost of Sale	\$3.59	\$3.59
Net Revenue	\$0.30	\$0.34
Margin (Pct)	8.4%	9.4%
Impact on Profit (pct)		13.0%
Sales Volume	100	90
Change (pct)		-10.0%
Total Revenue	\$389	\$354
Change in Total Rev		-9.1%
Total Profit	\$30	\$31
Change in Total Profit		1.7%

Three Phases of Analytics: Where is Your Company?

Phase 1: Descriptive Reporting

- Provides access to current and historical information
- Analysts use judgment to assess meaning and what to do

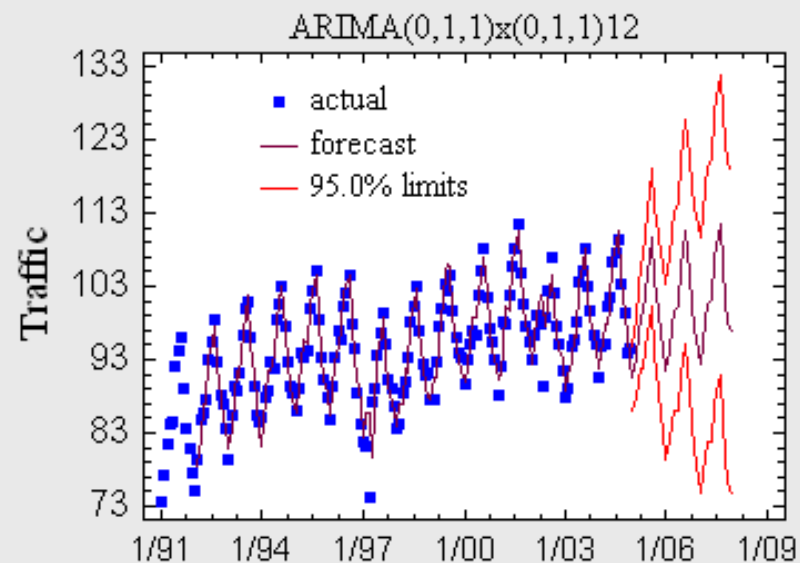


Three Phases of Analytics: Where is Your Company?

Phase 2: Predictive Reporting

- Anticipatory
- Forecasts of future conditions
- Analysts use judgment to assess meaning and what to do

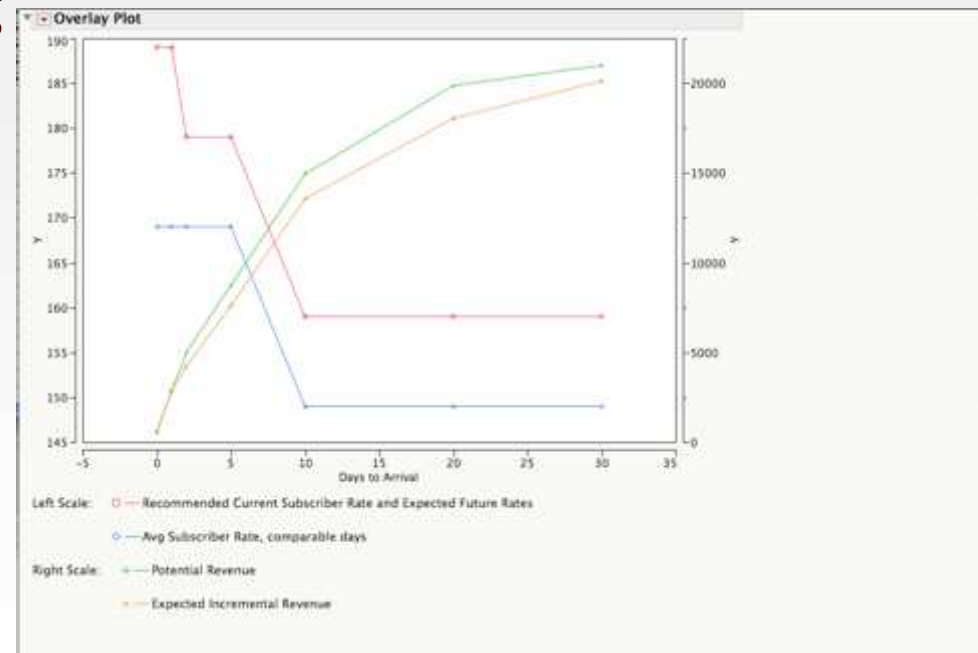
Time Sequence Plot for Traffic



Three Phases of Analytics: Where is Your Company?

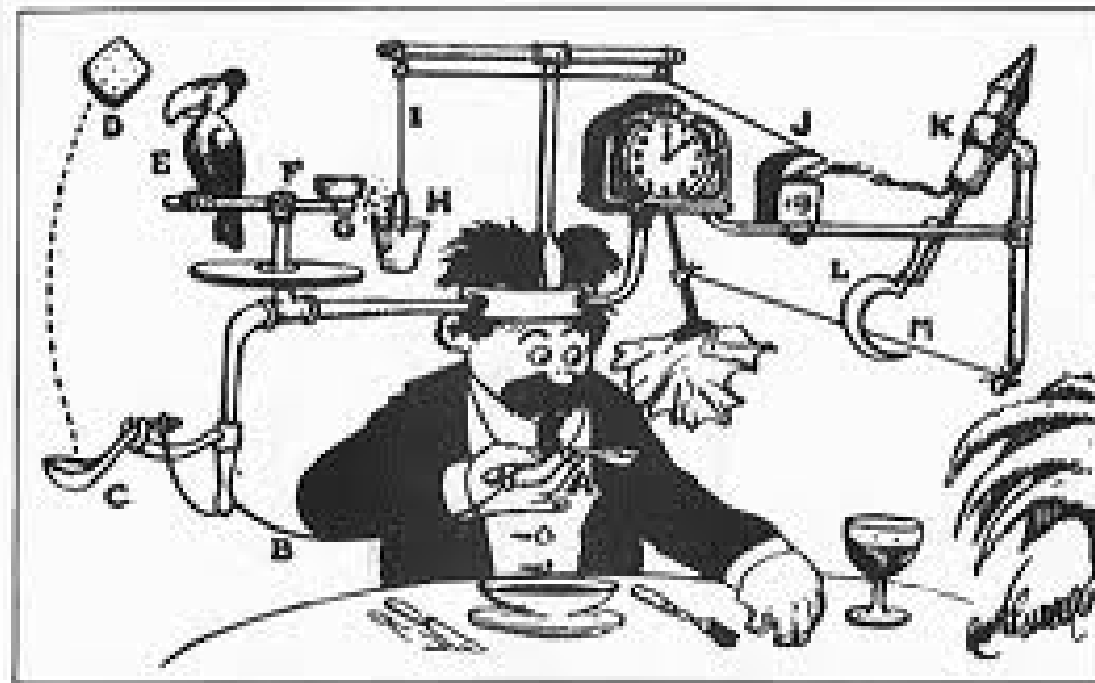
Phase 3: Prescriptive Reporting

- *Offers* Guidance
- Incorporates forecasts of future conditions
- Analysts use experience and knowledge to evaluate recommendations and decide what to do



It all Begins with a Systematic Approach

Self-Operating Napkin



A Systematic Approach to Pricing

Evaluate performance of current prices

- Characterize situations where they perform well or poorly



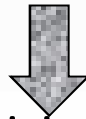
Identify specific opportunities

- Market segment, customer type(s), geography, utilization, etc.



Estimate and Implement more profitable prices

- Use distribution channels and communicate actions as appropriate



Evaluate impact of revised pricing structure



Technology Makes Real Time Pricing a Reality: It's a New Game!

- Customized, personalized offers can be created at a level that has never before been possible
- Example: Combining mobile phone GPS technology with customer purchase history drives incremental profits – *doing this well requires the right analytics!*



- Long-term success requires relevant offers
- Value, not noise

Powerful Analytics Enable Extracting Actionable Information From Data



Disjunctive Mapping

Advances in understanding consumer behavior.

By Michael Raskin and Warren Lieberman

The last time I went to a movie it was because the movie received good reviews, I liked two of the actors and my television was broken. The last time I go to a movie it might be because some friends ask me to join them and have dinner afterward, even though the movie may not interest me, enjoying dinner with my friends will be sufficiently satisfying that I'll go anyway.



Consumers' diverse desires, such as reasons for attending a movie, give a picture for marketing, particularly for modeling consumer behavior.

The reasons we go to a movie are different, but the outcome (going to a movie) is the same. If we consider just 10 reasons that can influence going to a movie - a good review, invited by friends, tired of hanging around the house, having a free pass that will expire soon, someone else is seeing it, being the first, the TV is broken, the movie theater is air conditioned, intrigued by the trailer the movie is set in - 1,024 possible combinations emerge. And many combinations of these reasons are genuinely diverse. Going to a movie for social reasons, not wanting a free pass to go to waste, having a love of cinema, having a look for a particular genre and so on, in various combinations, are not all manifestations of a few underlying driving forces. Rather, the combinations are matches of diverse desires with products that can serve multiple purposes.

ORMS Today – December 2011

Michael Raskin and Warren Lieberman

<http://www.informs.org/ORMS-Today/Public-Articles/December-Volume-38-Number-6/Disjunctive-Mapping>

The Art of Business: Within Your Reach!



Concluding Thoughts

Actions Speak Louder than Words

But

Analytics and Analyst Expertise
Extract Maximum Value from Data,
So Actions Achieve your Goals



BLUE STAR

BLUE STAR INFOTECH

ENGINEERING BUSINESS OUTCOMES



**VERITEC
SOLUTIONS**

Thank You!

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