Leveraging Attitudinal & Behavioral Data to Better Understand Global & Local Trends in Customer Loyalty & Retention

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Why is Loyalty Important?

"Firms who have superior levels of customer loyalty and retention have consistently higher profits."*

***Reichheld, 1996, The Loyalty Effect

Loyalty Economics

Revenue growth → learn product line - buy more

Cost savings → longer revenue streams to depreciate acquisition costs over

Referrals → reduced acquisition costs

Price premium → don't require discounts/promotions

How do we build customer loyalty?

Superior value!

$$\text{Customer Value*} = \frac{\text{Results + Process Quality}}{\text{Price + Customer Access Cost}}$$

* Heskett, Sasser & Schlesinger, 1997, The Service Profit Chain

Measuring Loyalty & Retention

Loyalty → complex and multi-dimensional

Attitudes and behaviors → not linear or continuous

Customers → heterogeneous

Need to collect data on different components of loyalty!

Behavioral Measures

Tenure → length of time a customer

Churn → customer status

Depth of relationship → # of product/services

Recency → time since last transaction

Frequency → transaction activity

Monetary → value of transaction activity

Attitudinal Measures

Satisfaction
Likelihood to recommend
Likelihood to continue service
Perceived value for the money
Expectations of Service (Exceed/Meet/Fail)
Share of wallet
Perceived Fairness (Distributive/Procedural/Interactional)*

* Bowman & Narayandas. JMR August 2001

Strengths & Weakness of Behavioral Measures of Loyalty

Strengths

Data already exists

Available for ALL customers

Weaknesses

Describes “what” but not “why”

Difficult to infer cause and effect

Strengths & Weakness of Attitudinal Measures of Loyalty

Strengths

Flexibility

Describes “why” customers are loyal

Weaknesses

Requires additional data collection

Expensive → only collected on a sample

Is there a way to combine the strengths of behavioral and attitudinal measures of loyalty in an integrated way?

Customer Panel Research

Cohorts of customers tracked over time

Behavior and attitudes on the same customers

Cause and effect observed in measures over time

Rich data to support complex models

Setting Up Loyalty Panels

Censoring

Sampling & weights

Timing of surveys

Panel attrition

Hybrid Model

Reporting the results

What is censoring?

Event **not observed** during the study period

Values in range recorded as a **single value**

Right censoring → value greater than c

Left censoring → value less than c

Interval censoring → a < value < b

Why is censoring important?

Changes our answer → biased results

Informative/Noninformative censoring

Noninformative → individuals censored at c should be representative of those who are not censored

Informative → Severe bias

Sampling

Clear definition → unit of analysis(study population), unit of measurement

E.g., attrition rate (*unit of measurement*) of broadband customers (*unit of analysis*)

Advantage → know the distribution of the unit of measurement, e.g., historical attrition rates

Oversample low incidence categories → greatly aid prediction

Sampling Weights

Based on event outcomes → e.g., current customer/former customer

$$weight_o = \frac{population\_proportion_o}{sample\_proportion_o}$$

Sampling Weights Over Time

Population attrition rates vary over time → sampling weights should follow suit

$$weight_{ot} = \frac{population\_proportion_{ot}}{sample\_proportion_{ot}}$$

Timing of Surveys

Need multiple waves of surveys → repeated measures

Close as possible to the unit of measurement

E.g., attrition analyzed quarterly → surveys should be completed within the quarter

Panel Attrition

Panelists → not participate in all waves

Why? → understand potential biases

E.g., high level managers less likely to participate in multiple waves of survey

To the extent possible → want to measure potential sources of systematic bias and include in model as controls

What is a Hybrid Model?

Combines statistical modeling and data mining

Statistical models → good for estimating global trends

Data mining → good for estimating local trends

Bias/Variance Tradeoff

Global v. Local models (Bias-Variance Tradeoff)

The more **global** a model → the more **biased** the prediction for at least some regions of the data

The more **local** a model → the **higher the variance** of the prediction due to the smaller amount of relevant data being used in the prediction

Hybrid Tree - Hazard Model

Step 1 → Use classification tree to find interactions between attitudes from survey, behaviors from database and time

Step 2 → Create indicator variables for terminal nodes

Step 3 → Use terminal node indicators and other variables in discrete hazard model

Classification Trees

Identifies complex relationships by searching for significant **interactions** between inputs that predict the outcome

E.g., income greater than $100K **AND** graduate degree has a lower attrition rate than income lower than $100K **AND** non-graduate degree

Classification Trees

Produces segments (**terminal nodes**) rather than individual scores → all individuals in a terminal node have the same probability of attrition

Very robust to **outliers** in the data

Can easily deal with **missing values**

Hazard Modeling (Survival Analysis)

Hazard rate → number of events per time interval

Derive **survival rate** → probability event greater than time t

One model provides time profiles of **churn** and **loyalty** rates

Allows for **censoring** and **time-varying covariates**

Discrete Hazard Model

Discrete time intervals → months, quarters, etc.

Censoring → one row per interval until event or censoring date

Binary Logistic regression → 0/1 at each time interval

Multiple events (competing risks) → use multinomial logistic regression

Repeated events → just code it!

Benefits of Hybrid Models

Excellent for jointly modeling **global** and **local** trends

Minimizes **bias/variance** tradeoff

Easy to interpret → main effects and interactions

Costs of Hybrid Models

Takes longer!

- → estimating two separate models
- → still need to transform global variables
- → dataset can be difficult to set up correctly

Tree software can be **expensive!**

Reporting the Results

Estimated hazard functions can be used to create **simulations** (what if scenarios) of the impact of different **marketing strategies** or **critical failures** in service delivery on loyalty and retention rates

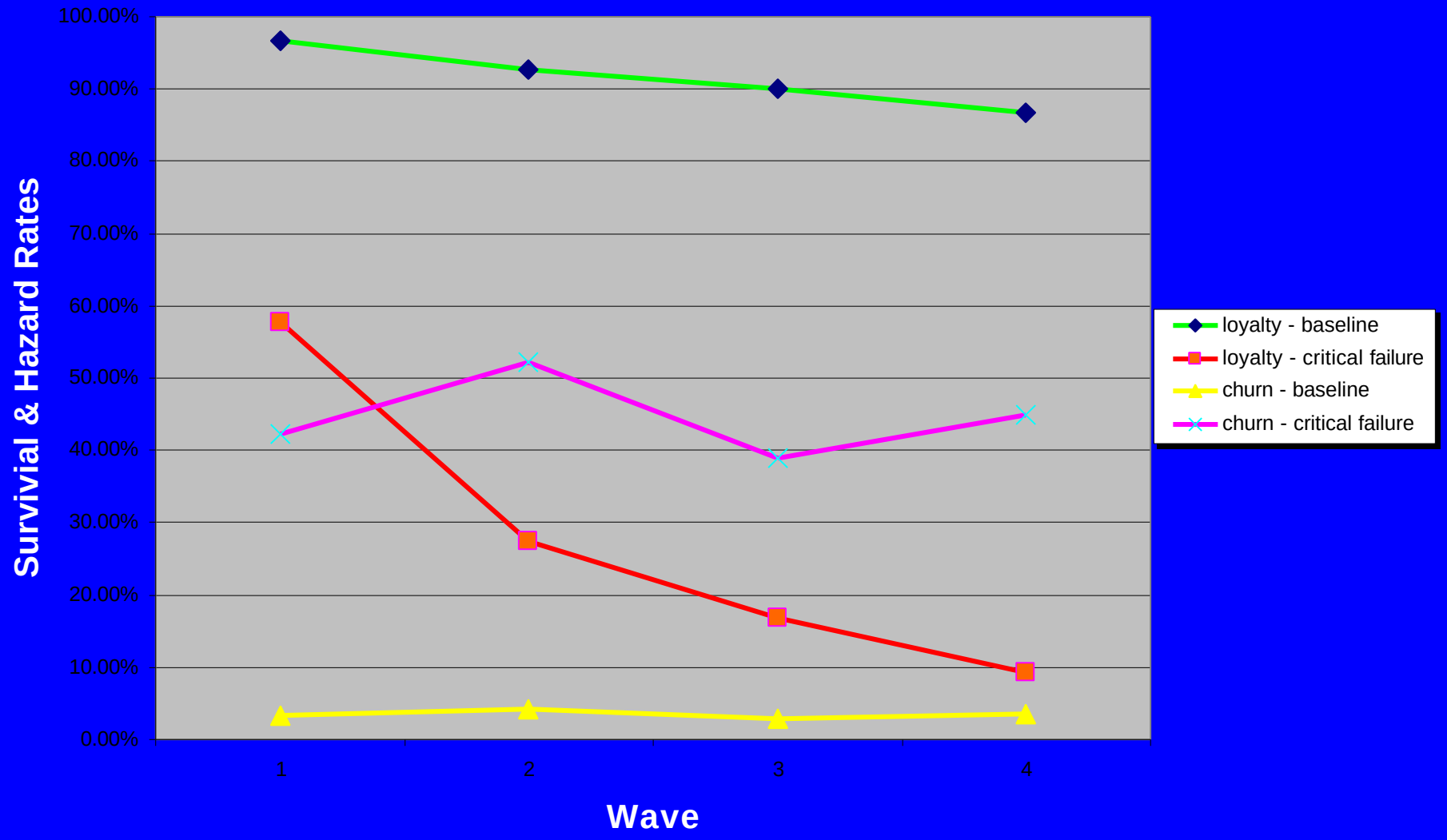
Create **graphs** of **survival** and **hazard rates** over time for different scenarios using spreadsheets

Reporting the Results

Call Center Example

What would be the **change** in loyalty and retention rates if a **critical failure** happened at the call center?

Loyalty & Churn: Critical Failure



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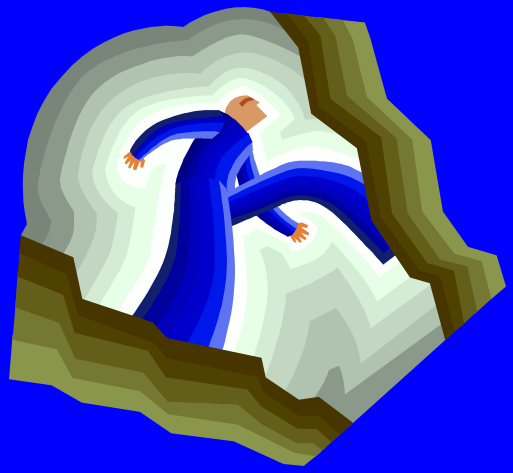
Conclusion

Customer panels → allow estimation of attitudinal and behavioral measures of loyalty and retention

Hybrid models → identify global and local trends that are not easily found using other methods

Simulation to aid strategy development → graph impact of different marketing initiatives and critical service delivery failures

Final Thoughts



"Making the simple complicated is commonplace; making the complicated simple, awesomely simple, that's creativity."

Charles Mingus

Discussion & Comments

If you have any additional comments or questions about this presentation, please contact me

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