

Recent Advances in Survey-Based Analyses of Brand Market Share

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Outline

- Typical Questions Addressed By Survey-Based Models of Brand Market Share
- How Survey-Based Choice Tasks Simulate Customer Purchase Behavior
- Unique Benefits of Customer-level Choice Models
- Case Studies
 - Local telephone competition
 - High-speed internet access
- Demonstration of Benefits
 - Brand market share, competitive impacts and price or feature elasticities for specific market segments
 - Market segmentation based on individual purchase behavior
 - Targeting customers with high purchase motivation
 - Targeting customers with high switching (churn) propensity
 - Tailoring product and marketing message to specific audiences.



Typical Questions Addressed By Survey-Based Models of Brand Market Share

- How should my services and features be priced? ...in order to
 - Maximize revenue or profits
 - Preserve or grow market share
- What is the potential impact on my brand if a competitor changes pricing?
- What bundle of brand, price, and product features maximizes revenue in a competitive context?

Brand Name

Price Structure

Price Level

Functionality

Capacity/Speed

Bundling With Other Services

Promotions

Billing

Customer Service

- What is the impact when a new brand or service enters the category?
 - Potential penetration, customer market share and revenue
 - Change in customer and revenue market shares and impact on my brand
 - Incremental and cannibalized revenue
- What bundles of services will most improve revenue?



Typical Questions Addressed By Survey-Based Models of Brand Market Share

- What is price elasticity for specific services of specific brands?
 - Thresholds
 - Cross-effects with specific competitors
- Will changes in prices and/or features appeal to a group of customers whose total telecom spending make that group profitable?
- How can I score my customer database to target high-appeal and high-spending groups?



Benefits Without Customer-Level Modeling

- Model respondent choice probabilities as a function of product prices, features and individual-level attitudinal and demographic data.
- Build a market simulator for the total market and all relevant sub-markets.
- Simulate all combinations of prices and features to maximize revenue, or customer share, for your brand.
- Benefits
 - Make better pricing decisions
 - Real-time revision of revenue forecasts when prices, service offerings, and bundles change
 - Obtain new insights to better formulate strategic and tactical recommendations for your company.



Unique Benefits With Customer-Level Modeling

- Same steps as before, but also
 - Model the distribution of preferences for each brand and service
 - Estimate a complete model for each customer (based on customer choices and the preference distributions from above)
 - Segment the market based on customer-level models.
- Use segment- or customer-level models to
 - Score internal customer database with purchase and brand switching propensities
 - Target customers with high purchase motivation
 - Tailor product and marketing message to specific audiences.
- Benefits of customer-level modeling are the same as before, but also
 - TARGET basic services and features to those more likely to buy
 - BUILD service BUNDLES that MAXIMIZE TOTAL REVENUE
 - RETAIN more customers
 - ACQUIRE more customers.



What Research Design Elements Produce Accurate Market Shares & Price Impacts?

- Create hypothetical choice tasks to closely resemble purchase decisions customers would face in the market place (more on this later).
- Force respondents to consider trade-offs among features, benefits, and price, much as in the real world where customers have budget constraints.
- Adjust for overstatement of purchase motivation or switching among competitive alternatives in the category.
 - For existing brands, services and bundles
 - ▶ Use inertia model to adjust choice model market shares
 - ▶ Use full awareness/distribution of existing service market shares at an alternative price to adjust model coefficients.
 - For new brands, services or bundles where no existing sales data are available
 - ▶ Use inertia model to adjust choice model market shares
 - ▶ Use full awareness/distribution forecast of new service market shares at a proposed price to adjust choice model coefficients.



Questionnaire Content/Example

- Brands bought/most often
- Preferences for customers' evoked/competitive brand set using pairwise constant-sum chipping game (optional)
- Choice exercise responses
 - Condition the respondent via a description of the expected market environment
 - ▶ General trends, products and services available, changes in competitive activity, new brands entering the marketplace, general trends.
 - Interviewer provides respondent with a set of 4 to 8 choice cards, presenting descriptions of the attributes relevant services
 - ▶ prices, discounts, bundles and features
 - Descriptions or levels that these attributes take will vary across choice sets and across brands/services within each choice set.
 - Respondents state which product(s) in each choice set they would purchase and, when appropriate, how many they would purchase in a specified period of time (e.g. 3 months).
- Other diagnostic, demographic and profiling questions
- Typical length of interview is 20 minutes



Choice Set Creation Guidelines

- Use industry knowledge and common sense to make survey choice exercises more realistic
- Explicitly include the most important brands and substitute/complementary services in the hypothetical choice sets.
- Avoid survey bias associated with learning, boredom, and anchoring to earlier questions or choice tasks
- Make the questionnaire straightforward and simple from the respondent's perspective
- Customize prices by brand and market.

High Speed Internet Access Example of A Choice Set

*Would you purchase any of the high-speed
Internet access options shown? Which one?*

High Speed Internet Access Options	
<u>Option 342</u>	
RBOC DSL	\$59.95
<u>Option 582</u>	
AT&T@Home or Road Runner Cable Modem	\$59.95
<u>Option 742</u>	
Brand B DSL	\$59.95
I will not purchase any of these High Speed Internet Access Options	

Bundles Example of A Choice Set

Which package, if any, would you purchase within the next 3 months?

	<i>Package P</i>	<i>Package S</i>	<i>Package G</i>	<i>J</i>
Package includes:				
Unlimited Local Calling	Yes	No	Same as Package S PLUS Voice Mail	None of These
High-Speed Internet Access	No	No		
Calling Features				
Caller ID	Yes	No		
Call Waiting	Yes	No		
Call Forwarding	Yes	No		
Call Return	Yes	No		
Three-way Calling	Yes	No		
Voice mail	Yes	No		
Provider	Brand A	Brand B	Brand B	
Price per Month	\$79.00	\$49.95	\$59.95	



Data Collection

Telephone-Mail-Telephone

- Telephone-Mail-Telephone combines the convenience of telephone interviewing/recruiting with mailed visual stimulus materials.
 - Respondents refer to mailed stimulus materials during a telephone interview (20 to 25 minutes).



Data Collection

Online Interviews

- Online interviews allow qualified respondents to evaluate an on-screen visual representation of choice sets.
 - Pop-up windows provide additional product detail, if needed, eliminating excess text on the screen.
 - Adjustment factors are available, if necessary, to match brand and technology preferences among the general population (including off-line).



Data Collection

In-Person Interviews

- In-person interviews permits exposure to a physical set of competitive products (if appropriate).
 - Consumers can interact with the "real thing," or a photographic representation.
 - ▶ Having actual products, e.g. cellular telephones, present is especially important when visual characteristics (including what is communicated on the packaging) are thought to have a substantial impact on the purchase-decision.
 - Recruit respondents to a central location.
 - Intercept potential respondents in a shopping mall.



Case Study

Communications Bundling

- A large communications company desires to market specific bundles of communications services, including
 - Local telephone service
 - Long distance
 - Cellular/Wireless
 - Paging
 - Internet Access
 - Video
- The company funds a communications bundling research study to determine which bundles of communications services would create the greatest demand.



Communications Bundling Case Study -- Define Competitive Set

- Select important brands
 - Incumbent Local Telephone Companies
 - Well-Known Long Distance Telephone Companies
 - Well-Known Entertainment Industry Company
 - Other brands



Communications Bundling Case Study -- Write Glossary of Terms

- Write glossary of terms to present to respondents
 - Introduces key words that will appear on choice cards
 - Presents a brief definition for each key word.
- Example of Key Words and definitions
 - Local Telephone Service - a phone line providing dial tone
 - Long Distance - for calls outside your local calling area that are NOT designated as local toll
 - Video - cable or satellite television service
 - Paging
 - Cellular - digital or analog mobile phone service
 - Internet Access



Communications Bundling Case Study -- Present Possible Offerings

- Example of Possible Long Distance Service Offerings
 - Long Distance \$5.95/month, \$.06/minute for anytime minutes
 - Long Distance \$7.95/month, \$.04/minute for anytime minutes
 - Long Distance Flat rate, \$50 for 1000 anytime minutes, \$.04/minute for additional minutes

Communications Bundling Case Study -- Example Choice Card

If you were to change any of the communication services that you currently subscribe to today, which one of these bundles, if any, would be your first choice?

Please write first choice here _____.

Which one of these bundles, if any, would be your second choice? Please write second choice here _____.

Local Telephone Company		
Bundle #1	Monthly Cost	Rates
Phone line and all available calling features plus Wireline-Wireless Mailbox	\$30.00	
Long Distance	\$50.00	1000 anytime minutes, \$.04/minute overage
Video - Basic	\$35.00	
Cellular - Premium (5% off each additional phone)	\$90.00	600 anytime minutes, \$.25/minute each additional minute
Internet - Narrowband	\$20.00	
Price	\$220.00	
Discount	\$33.00 (15%)	
You Pay	\$187.00	

Long Distance Company A		
Bundle #2	Monthly Cost	Rates
Phone line and all available calling features (optional additional line for	\$30.00	
Long Distance	\$5.95	\$.06/minute for anytime minutes
Video - Premium	\$75.00	
Pager - 1-way local numeric (5% off each additional pager)	\$10.00	
Cellular - Enhanced (10% off each additional phone)	\$35.00	300 anytime minutes, \$.30/minute each additional minute
Internet - Narrowband	\$20.00	
Price	\$194.95	
Discount	\$0.00 (0%)	
You Pay	\$194.95	

Video Company		
Bundle #3	Monthly Cost	Rates
Phone line	\$15.00	
Long Distance	\$7.95	\$.04/minute for anytime minutes
Video - Premium	\$75.00	
Pager - 1-way local word & numeric	\$15.00	
Cellular - Enhanced (10% off each additional phone)	\$35.00	300 anytime minutes, \$.30/minute each additional minute
Price	\$166.95	
Discount	\$56.08 (30%)	
You Pay	\$116.87	

Video Company		
Bundle #4	Monthly Cost	Rates
Phone line and any three features plus free Voicemail	\$25.00	
Long Distance	\$50.00	1000 anytime minutes, \$.04/minute overage
Pager - 1-way local numeric (10% off each additional pager)	\$10.00	
Price	\$80.00	
Discount	\$0.00 (0%)	
You Pay	\$80.00	

Long Distance Company B		
Bundle #5	Monthly Cost	Rates
Phone line	\$15.00	
Long Distance	\$7.95	\$.04/minute for anytime minutes
Video - Premium	\$75.00	
Cellular - Premium	\$90.00	600 anytime minutes, \$.25/minute each additional minute
Internet - Narrowband	\$20.00	
Price	\$204.95	
Discount	\$20.50 (10%)	
You Pay	\$184.46	

I would not choose any of these packages



Communications Bundling Case Study - Analytical Steps

- Estimate mixed logit model of package choice using method of simulated likelihood (MSL)
 - ➔ Normal distributions for each level of each service that defines the bundle.
- Estimate each customer's choice model parameters
 - ➔ Locate the position of each customer on each parameter distribution, given the hypothetical package choices made in the survey.



VALIDATION - Does it really work?

Communications Bundling Case Study

- Cluster customers based on choice model parameters
 - Each cluster will be used to define a bundle.
- Compare bundling results from two different approaches:
 - Customer-level choice modeling using survey-based choice data as outlined above
 - Simple rating questions:

(RE-READ IF NECESSARY: Which of the following services would you ideally like to include in a package offered by one company? Please use a scale from 0 to 5 where 5 is most important and 0 is not at all important. You may use any number between 0 and 5 to indicate the importance of each service.)

Not At All							Most
Important							Important
0	1	2	3	4	5		

- Examine results of both approaches to determine if they are different and whether one set of is more reasonable or believable?



VALIDATION

Communications Bundling Case Study

- Due to the proprietary nature of the results, we cannot provide actual numbers.
- However, we can make some general comments about the results:
 - Customer-level choice
 - A bundle of 3 services will be purchased by 85% of the customers
 - A different bundle of 3 services will be purchased 7% of the customers
 - A bundle of 5 services will be purchased by 4% of the customers
 - Four more bundles of 2 to 4 services will each be purchased by 4% of customers.
 - Simple survey ratings
 - One bundle of five very popular services will be purchased by 60% of the customers
 - A different bundle of 3 services will be purchased by 27% of customers
 - A bundle of 6 services will be purchased by 7% of customers
 - About 7% of customers are not very interested in any particular bundle.



VALIDATION

Communications Bundling Case Study

- Results based on the customer-level choice modeling are more believable
 - Simple Survey Results
 - ▶ It is hard to believe that so many customers (60%) would really want to purchase five different services in one bundle from a single provider.
 - Customer-level Choice Modeling Results
 - ▶ It is more believable that most customers (85%) would be primarily interested in a bundle of only 3 services.
- Why does the customer-level choice modeling produce more realistic results?
 - Widely accepted fact: Ratings data contains overstatement.
 - Choice task is more realistic since it reflects the trade-offs that consumers make in real purchase situations.

Communications Bundling Case Study

Tailoring Marketing Message To Specific Audiences

- Examples of variables that can be tested for discriminatory power in predicting segment membership.
- Variables such as these can be used to tailor the marketing message to the target segment for each bundle.

Examples of Variables Found To Discriminate Segments

Pager/Beeper user
Number of Pagers/Beepers
Internet Access
Work from Home
Household Size
Number of Children <12
Beliefs about providers
Monthly Local and LD bill
Monthly LD bill
Monthly Internet bill
Age group
Income
Families w/Kids
Families w/Kids 0-11
Families w/Kids 12-17
Work at Home

Communications Bundling Case Study - Analytical Steps (cont.)

- Develop a scoring model to populate customer database
 - Model individual choice parameters as a function of database variables.
- For example, a regression model might specify the utility of adding internet access to the bundle is a linear function of
 - Current internet access status (have / have not)
 - Household size
 - Current monthly internet bill.



Case Study

Local Telephone Competition

- An incumbent local telephone company desires to create targeted pricing strategies to
 - Secure additional revenue from existing loyal and/or inert customers
 - Improve retention among high risk/high value customers
 - Win back customers lost to competitor local telephone service providers.
- The incumbent local telephone company funds a local telephone services pricing research study.



Local Telephone Case Study

Define Competitive Set

- Select important brands
 - Incumbent local telephone company
 - Well-known brand market entrants
 - Lesser-known brand market entrants
- Select popular service bundles
 - Local + Vertical Features
 - Local + IntraLATA
 - Local + IntraLATA + Vertical Features
 - Local + Vertical Features + IntraLATA + InterLATA
- Select popular price plans
- Select price ranges

Local Telephone Case Study

Create Choice Cards

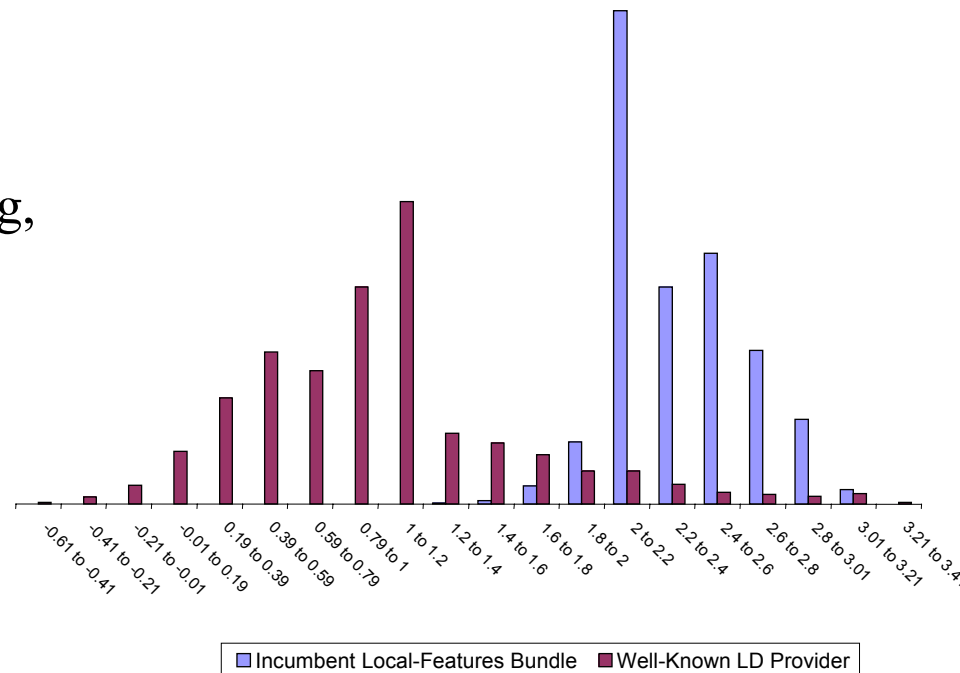
Please review each calling plan option and its calling features below. Each row describes a different calling plan option.									
1) Which ONE calling plan option would you choose?				2) Which calling features, if any, would you choose?					
Calling Plan Options ↓	Characteristics - Calling Plan			Calling Features - Monthly Fee					
	Flat Monthly Fee for Phone Line	Range of Unlimited Free Calling Included in Flat Monthly Fee	Long Distance Rates	Caller ID	Call Waiting	Call Forwarding	Call Return	Three-way Calling	Voicemail
Option 253 → Incumbent Flat Rate Local Phone Service	\$19.20	Your Current Local Calling Area	N/A	\$6.00	\$5.50	\$4.40	\$4.00	\$5.00	\$6.75
Option 938 → Incumbent Bundled Offer A	\$34.00	Your Current Local Calling Area	N/A	Included	Included	Included	Included	Included	\$2.35
Option 636 → New Brand 1 Bundled Offer	\$24.95	Your Current Local Calling Area	N/A	Included	Included	Included	Included	Included	\$4.95
Option 870 → New Brand 2 Bundled Offer	\$49.95	Your Current Local Calling Area	200 minutes free; then, 6.9¢ state-to-state calls and 10¢ in-state calls	Included	Included	Included	Included	Included	Included

Local Telephone Case Study

Estimate Customer-Specific Choice Parameters

- Estimate mixed logit model of brand/plan choice using method of simulated likelihood (MSL)
 - ➔ Most likely distribution for each parameter (local, intraLATA, interLATA calling, vertical features, recurring monthly fee)
- Estimate each customer's choice model parameters
 - ➔ Locate the position of each customer on the parameter distributions, given the hypothetical brand/plan choices made in the survey.

Distributions of 2 Different MSL Model Coefficients

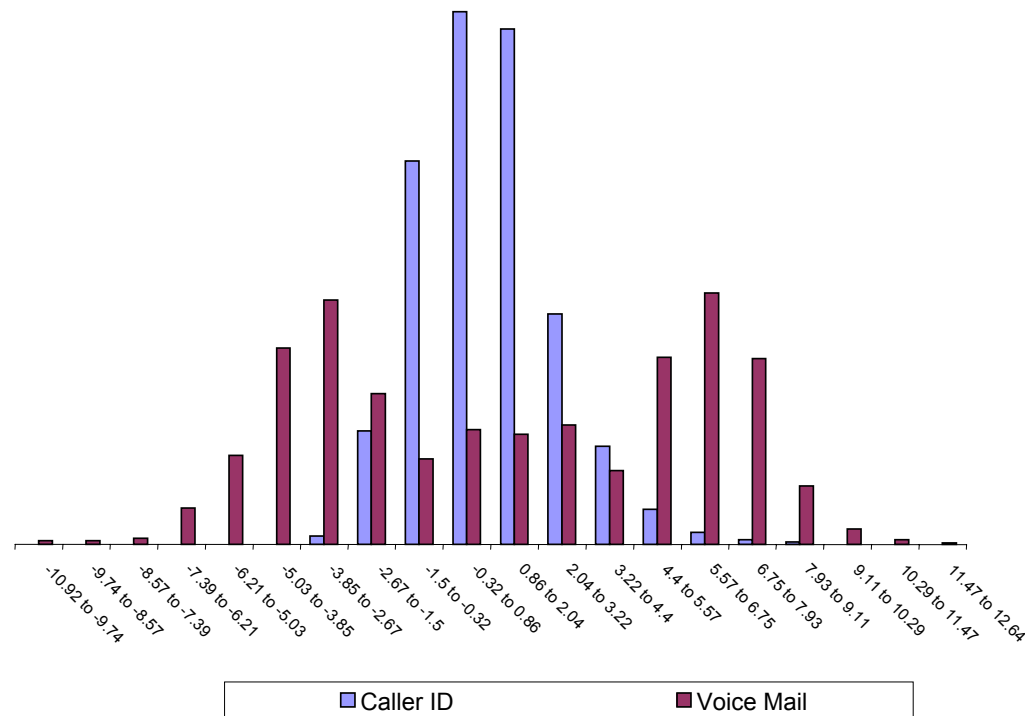


Local Telephone Case Study

Estimate Customer-Specific Choice Parameters (cont.)

- Estimate mixed logit model of feature choice using Hierarchical Bayes (HB)
- HB estimation procedure delivers respondent-level coefficients for each feature and price

Distributions of 2
Different HB
Model Coefficients



Local Telephone Case Study

Build Excel Simulator

- Build simulator and simulate brand market share, competitive impacts and price or feature elasticities for specific market segments.
- Example of a simulator interface is as follows*:

Plan/Feature/Service	Cost	Proposed Price	Margin	Predicted Share	Expected Subs	Expected Revenue	Expected Margin
Incumbent Flat Rate	\$0.00	\$15.00	\$15.00	58.4%	315,180	\$4,727,706	\$4,727,706
Incumbent Bundled Offer A	\$0.00	\$30.00	\$30.00	30.0%	162,010	\$4,860,306	\$4,860,306
New Brand 1 Bundled Offer	\$0.00	28.00	\$28.00	10.0%	54,003	\$1,512,095	\$1,512,095
New Brand 2 Bundled Offer	\$0.00	NA	NA	0.0%	-	\$0	\$0
New Brand 3 Bundled Offer	\$0.00	50.00	\$50.00	1.6%	8,840	\$441,999	\$441,999
Caller ID	\$0.00	\$7.00	\$7.00	6.8%	36,703	\$256,919	\$256,919
Call Waiting	\$0.00	\$5.00	\$5.00	12.8%	69,190	\$345,951	\$345,951
Call Forwarding	\$0.00	\$4.00	\$4.00	0.1%	341	\$1,363	\$1,363
Call Return	\$0.00	\$5.00	\$5.00	1.6%	8,531	\$42,653	\$42,653
3-Way Calling	\$0.00	\$5.00	\$5.00	0.8%	4,206	\$21,028	\$21,028
Voice Mail With Flat Rate	\$0.00	\$7.00	\$7.00	4.3%	23,342	\$163,396	\$163,396
Voice Mail With Bundled Offer A	\$0.00	\$3.00	\$3.00	27.2%	147,137	\$441,411	\$441,411

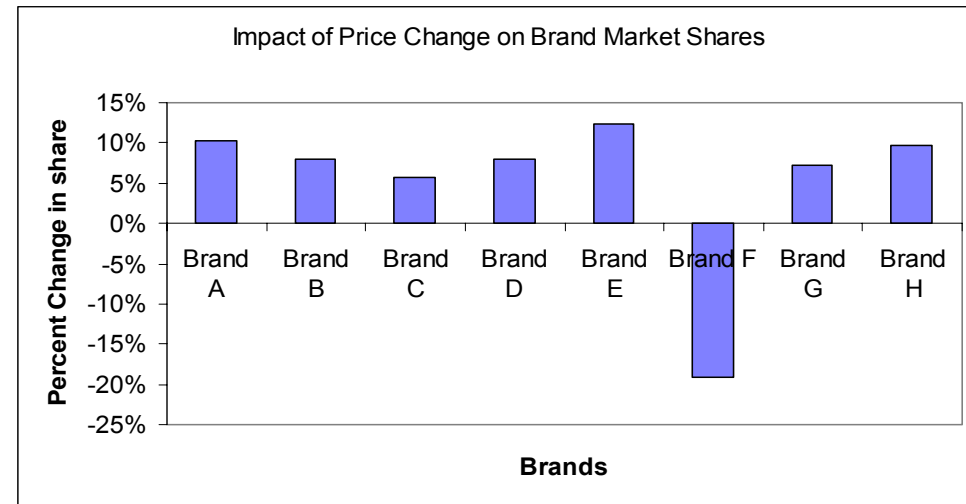
*Numbers are fictitious

- The user simply inputs the costs and prices; NA is entered if the brand/plan is not available in the actual market.
- Simulations can be performed for any sub-segment too!

Local Telephone Case Study

Brand Market Share and Competitive Impacts

- Simulation results can be charted to estimate incremental changes of market share and cannibalization.
- In the example at the right, when the price of brand F goes up, its share is drawn more than proportionately by brands A, E, and H and less than proportionately by brands C and G.



Local Telephone Case Study

Price Elasticities

Price Changed

Plan/Feature/Service	Incumbent Flat Rate	Incumbent Bundle	Caller ID	Call Waiting	Call Forwarding	Call Return	3-Way Calling	Voice Mail	Incumbent DSL
Incumbent Flat Rate									
Incumbent Bundle									
New Brand 1 Bundle									
New Brand 2 Bundle									
New Brand 3 Bundle									
Caller ID									
Call Waiting									
Call Forwarding									
Call Return									
3-Way Calling									
Voice Mail									
Incumbent High Speed Internet									
Brand A High Speed Internet									
Brand B High Speed Internet									

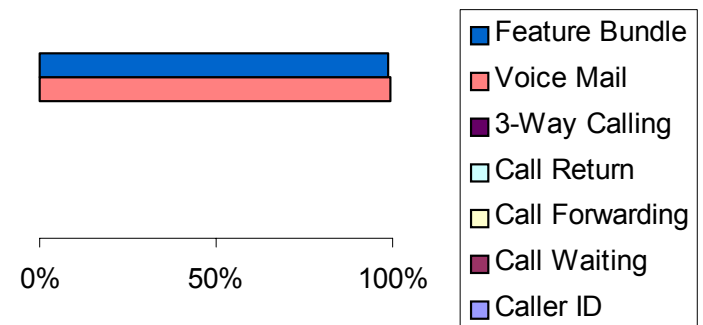
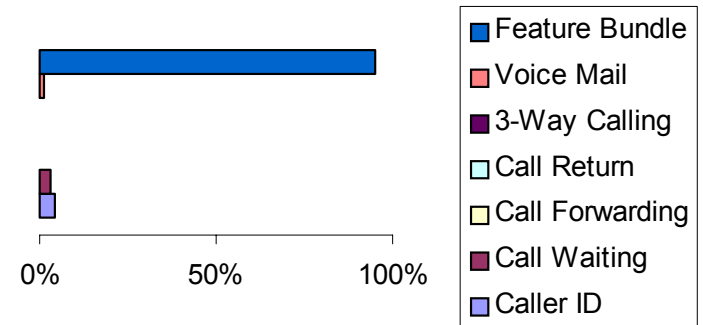
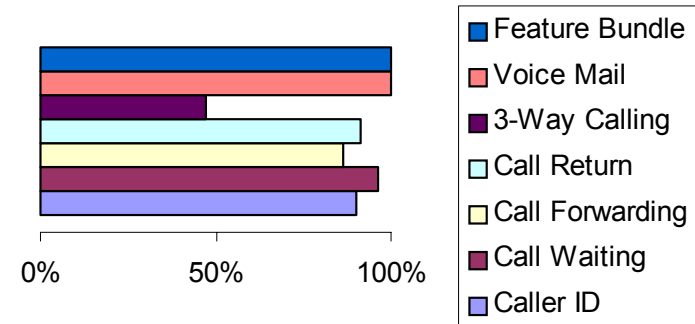
Price Elasticity = % Change in number of subscribers due to a 1% price increase.

Cross Price Elasticity = % Change in number of subscribers for one service due to a 1% price increase of another service.

Local Telephone Case Study

Targeting Customers With High Purchase Propensity

- These three customers have very different probabilities of purchasing vertical features and a feature bundle.
- Feature probabilities can be modeled based on database variables to populate a customer database and target individual customers.



Local Telephone Case Study

Targeting Customers With High Switching Propensity

- Assuming a 10% lower price for the well-known LD provider, the customers to the left of the diagonal line have a high propensity to switch.
- Model these switching propensities based on database variables to target individual customers.

