



# Approaches to Bundling

## Two predominant forms of choice modeling

Respondents can either respond to fixed bundles of products

- Experiments are designed and modeled via Choice-Based Conjoint (CBC).

Or, they can put together their own bundles from products that are available

- Experiments are designed and modeled using the Build Your Own (BYO) approach.

### 1. Choice-Based Conjoint (CBC) approach

- Respondents choose a package from sets of differently configured product packages.
- Presence or absence of products is controlled using availability levels.
- Prices may be shown explicitly for each product, as a total (summed) price for each package, or both.
- A “no buy” option is often included along with the configured product packages.
- Respondents are required to make an active choice (either a specific package or a “no buy”) to move on to the next task, but do not make active choices with respect to any individual product.

# Approaches to Bundling

## Two predominant forms of choice modeling

### 2. Build Your Own (BYO) approach

- Typically, respondents are shown one configured package at a time and asked to independently select any products they want from those that are available in the configuration.
- Presence or absence of products is controlled using availability levels.
- Explicit prices are attached to each available product and total package price may be shown as incremental products are selected.
- A “no buy” option is often included for those respondents who don’t want any of the products in a particular package.
- Respondents are required to make active choices among the individual products (either one or more of the desired products or “no buy”) to move on to the next task.

### Market Build Your Own (BYO variation) approach

- Rather than just one configuration at a time, respondents are shown several different configurations at the same time (just as in CBC).
- Respondents can select any products available across the configurations as long as specific product selections are not duplicated – or they can choose “none”.

# Approaches to Bundling

## CBC or BYO?

When applied to the same market research question, are these approaches interchangeable?

Two specific questions for our research:

### 1) Substantive.

From the perspective of the firm, is one approach better than the others?

- As a way to understand consumer responses to bundling?
- As a way to inform go-to-market strategies for “bundleable” products/services?



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### 2) Methodological.

All design criteria being equal, do respondents react and respond to CBC and BYO tasks differently?

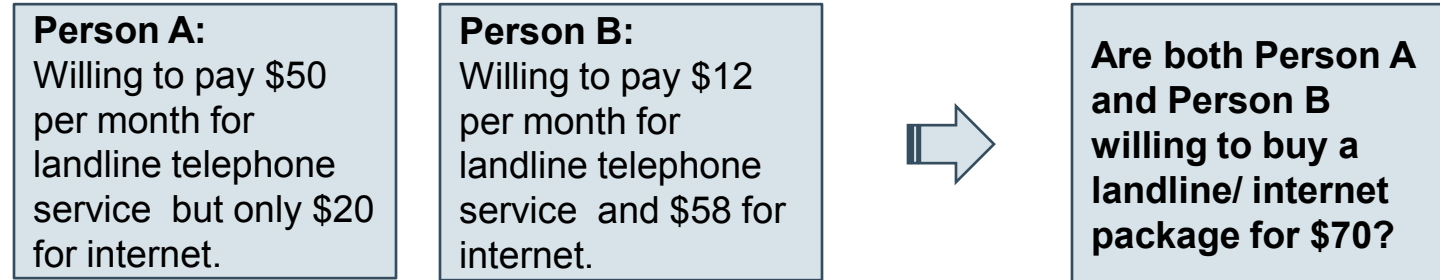
- If so, how should modeled results from each approach be interpreted?



# Bundling Theory

## Reservation price heterogeneity

Reservation price – the highest price an individual consumer is willing to pay for a given product.



*They probably will.*

The package price is not greater than the sum of the reservation prices for both products for both individuals.

Key assumptions relevant for bundling research:

- When offered individually, consumers will buy products that are less than or equal to their reservation price and not buy products that are greater than their reservation price.
- When responding to fixed bundles, the reservation price for the entire bundle (not the individual component products) will determine purchase.
- This bundle reservation price may or may not be the sum of the reservation prices for the individual items making up the bundle.

# Bundling Theory

## Example: Active Bundling vs response to Fixed Bundles

Active Bundling (via individual product selection) Person A

Person B

Landline (\$29.99 per month)	<input checked="" type="checkbox"/> (Reserve Pr. \$50)	<input type="checkbox"/> (Reserve Pr. \$12)
Internet (\$32.99 per month)	<input type="checkbox"/> (Reserve Pr. \$20)	<input checked="" type="checkbox"/> (Reserve Pr. \$58)

**Revenue: \$29.99 + \$32.99 = \$62.98**

Response to Fixed Bundles (take it or leave it) Person A

Person B

Landline/Internet Bundle (\$62.98 per month)	<input checked="" type="checkbox"/> (Reserve Pr. \$70)	<input checked="" type="checkbox"/> (Reserve Pr. \$70)
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**Revenue: \$62.98 + \$62.98 = \$125.96**

Under Active Bundling, Persons A and B will probably buy only one product each (the price of the non-purchased product is higher than their attendant reservation prices).

However, when presented with a Fixed Bundle (take it or leave it), they may buy both products (because the price for the bundle is less than their sum total reservation prices for the products).

# A Case Study

## Home-based entertainment and mobile wireless services

We interviewed n=1,502 US consumers who either subscribe or intend to subscribe one or more home-based entertainment or mobile wireless services.

Respondents were randomly assigned to one of three groups:

Fixed Bundles (n=501)

Single Brand BYO (n=499)

Market BYO (n=502)

All respondents participated in 12 choice tasks specific to their assigned group.









# Methodology

## Fixed Bundles: Choice tasks

In successive tasks, a lineup of pre-configured bundles were presented. Respondents selected the bundle they would buy, or “None of these”.

Brands were presented in random orders across respondents. Each respondent saw the same random order throughout all 12 tasks.

Which of these home-based entertainment packages would you choose?

							
<u>Home High Speed Internet</u>	\$\$\$	\$\$\$	\$\$\$	\$\$\$	not offered	not offered	None of these
<u>Mobile High Speed Internet</u>	\$\$\$	\$\$\$	not offered	not offered	\$\$\$	not offered	
<u>Landline Phone</u>	not offered	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$	
<u>Mobile Phone</u>	not offered	\$\$\$	not offered	\$\$\$	\$\$\$	not offered	
TV ( <u>Cable/Satellite</u> )	Cable \$\$\$	Cable \$\$\$	not offered	Cable \$\$\$	not offered	Cable \$\$\$	
Discount on Total	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$	
Final Cost	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Service order was randomized across respondents. Each respondent saw the same random order throughout all 12 tasks.


Individual services were either “not offered” or offered at one of the three prices for each of the fixed bundles. Discounts were applied to the total cost of the fixed bundles according to the experimental design.

# Methodology

## Single Brand BYO: Choice tasks

In successive tasks, some products were available, others were not. Respondents made an active choice of only those products they would buy or they could select “none”.

Which of the following services would you choose for your own entertainment and/or phone service needs? If you had no current contracts, would you replace your current services with any of these or add any of these services? Each service will be offered by one single provider.  
NOTE: bundling multiple offerings will sometimes lead to a discount.

		
<u>Landline Phone</u>	\$\$\$	<input checked="" type="checkbox"/>
<u>Mobile Phone</u>	\$\$\$	<input checked="" type="checkbox"/>
<u>Cable TV</u>	not offered	
<u>Satellite TV</u>	\$\$\$	<input type="checkbox"/>
<u>Home High Speed Internet</u>	not offered	
<u>Mobile High Speed Internet</u>	not offered	
<b>Discount on Total (\$10 off for each additional package)</b>	\$\$\$	
<b>Final Cost</b>	\$\$\$	
<b>I would not choose any of these services</b>		<input type="checkbox"/>

Each of respondent saw each of the six brands two times each in random orders.

Service order was randomized across respondents. Each respondent saw the same random order throughout all 12 tasks.







Individual services were either “not offered” or offered at one of the three prices for each of the 12 tasks. Discounts were applied to the total cost of the selected products according to the experimental design. The discounts and final cost updated on screen as respondents made selections.

# Methodology

## Market BYO: Choice tasks

In successive tasks, some products were available, others were not. All brands were always available. Respondents made an active choice of only those products they would buy, within and across brands, or they could select “none”.

If you were shopping for any of these services today and these brands offered the following services at the prices shown, which if any would you choose? (You may choose any of the services offered from any of the brands, or none at all. A discount is often available if you choose more than one service from the same brand.)

						
<u>Cable / Satellite TV</u>	<input type="checkbox"/> Satellite \$\$\$	<input type="checkbox"/> Satellite \$\$\$	<input type="checkbox"/> Satellite \$\$\$	<input checked="" type="checkbox"/> Cable \$\$\$	<input type="checkbox"/> Cable \$\$\$	not offered
<u>Landline Phone</u>	<input type="checkbox"/> \$\$\$	not offered	<input type="checkbox"/> \$\$\$	<input checked="" type="checkbox"/> \$\$\$	<input type="checkbox"/> \$\$\$	not offered
<u>Mobile Phone</u>	<input checked="" type="checkbox"/> \$\$\$	<input type="checkbox"/> \$\$\$	not offered	not offered	not offered	not offered
<u>Home High Speed Internet</u>	not offered	<input type="checkbox"/> \$\$\$	not offered	not offered	<input type="checkbox"/> \$\$\$	
<u>Mobile High Speed Internet</u>	<input type="checkbox"/> \$\$\$	not offered	not offered	<input type="checkbox"/> \$\$\$	<input type="checkbox"/> \$\$\$	
<b>Brand Discounts</b>	(none)	(\$20 off each additional service)	(\$10 off each additional service)	– \$10.00 (\$10 off each additional service)	(\$20 off each additional service)	(\$20 off each additional service)
<b>Final Cost per Brand</b>	\$\$\$	–	–	\$\$\$	–	
<b>Grand Total</b>	\$\$\$					
	<input type="checkbox"/> I would not choose any of these services from any of these brands					

Service order was randomized across respondents. Each respondent saw the same random order throughout all 12 tasks.

Individual services were either “not offered” or offered at one of the three prices in all of the brands for each of the 12 tasks. Discounts were applied to the total cost of the selected products according to the experimental design. The discounts and final cost updated on screen as respondents made selections.

# Methodology

## Design considerations

### Features and levels tested

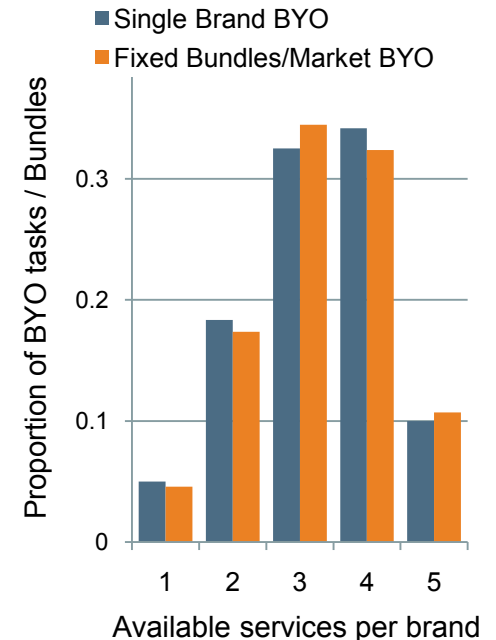
- Brands: AT&T, Comcast Cable, T-Mobile, Time-Warner Cable, Sprint, Verizon.
- Landline phone: Not available, Low, Mid, High.
- Mobile phone: Not available, Low, Mid, High.
- Home internet: Not available, Low, Mid, High.
- Mobile internet: Not available, Low, Mid, High.
- Cable or Satellite television: Not available, Low, Mid, High.
- Discount: None, Low, Mid, High per service per month for each additional service after the first.

Prices were generic to brand. Mid prices were approximately in line with current industry pricing.

Low prices are Mid less 30%  
High prices are Mid plus 50%

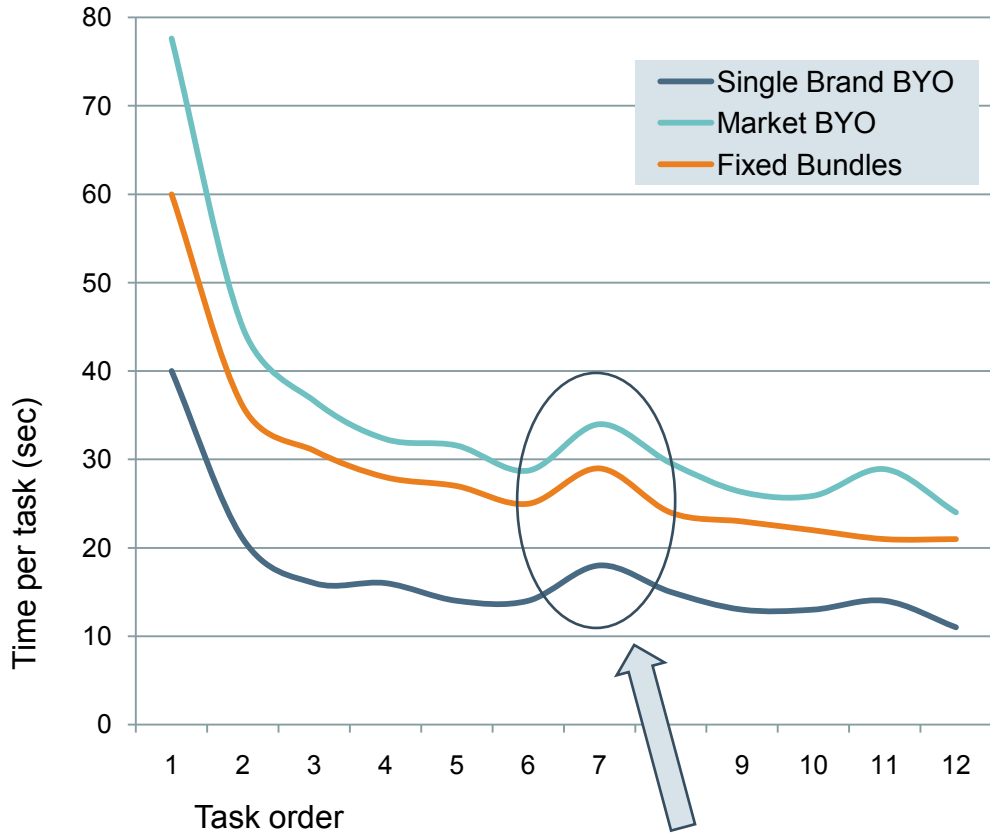
### Availability “constraints”

- Each of the 6 services had not available levels. Designs were constructed for Fixed Bundles and BYO methods such that all the non-television services were independently available on 3 of 5 choice cards and one of the two television services were available on 6 of 7 choice cards (cable and satellite each on 3 of 7 choice cards).
- Cable and satellite television could not both be available from the same brand on any single choice card .



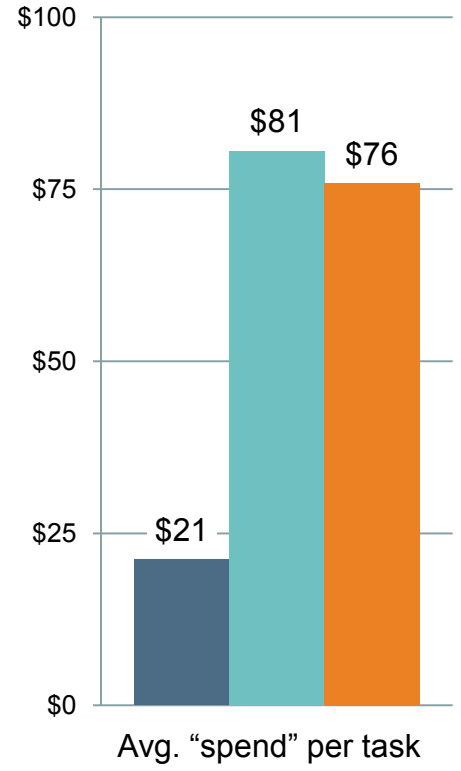
# Descriptive Results

Single Brand BYO took the least amount of time and resulted in the least spend



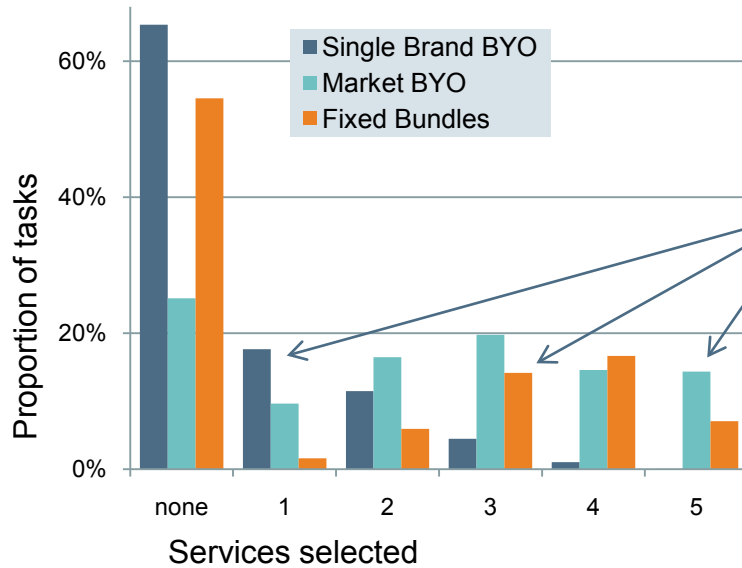
After task #6, we reminded respondents that they had completed half of the tasks.

More than three times as much revenue was generated in Market BYO & Fixed Bundling tasks than in Single Brand BYO tasks (data include tasks where “none” was selected).



# Descriptive Results

## Respondents selected the least number of items in Single Brand BYO

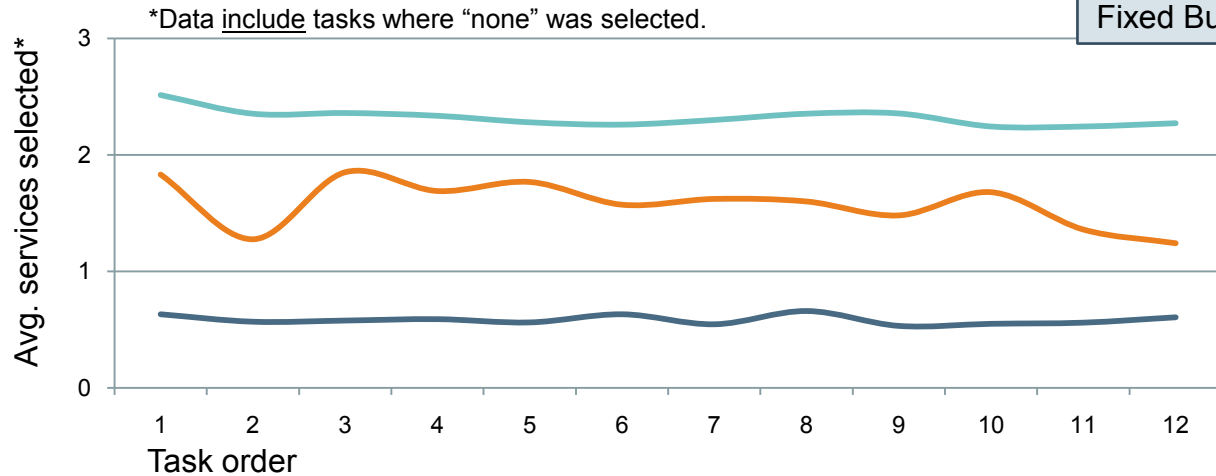


In Fixed Bundling exercises, respondents tended to select bundles of about average size.

In Single Brand BYO exercises, respondents selected about half of the average number of available services.

A larger portion of respondents took five services from Market BYO tasks, but almost none took all five services from a single brand.

Avg. services available per brand per task/bundle:  
 Single Brand BYO: 3.258  
 Market BYO: 3.256  
 Fixed Bundles: 3.256



# Modeling results

## Full parameterization in Fixed Bundles, cross-availability effects in Single Brand BYO

Cross-price results in Single Brand BYO models were erratic. These models were discarded in favor of cross-availability ones.

Intercepts, Brand, Own-price and Discount effects were included in all models.

All models were individual HB analysis using Sawtooth CBC/HB.

### Fit Statistics

	<u>Choice</u>	<u>Param.</u>	<u>% Cert.</u>	<u>RLH</u>	<u>RMS</u>
Fixed Bundles	7	25	.734	.596	1.959
S.B. BYO: Landline	2	16	.880	.920	3.138
S.B. BYO: Mobile phone	2	16	.878	.919	3.159
S.B. BYO: Home internet	2	16	.839	.894	2.936
S.B. BYO: Mobile internet	2	16	.894	.929	3.033
S.B. BYO: Cable TV	2	15	.811	.807	2.618
S.B. BYO: Satellite TV	2	15	.891	.928	3.886

# Modeling results

## Market BYO: same model approach as Single Brand BYO

Each service modeled as a series of choices among brand where that service was available. Each choice was a function of Intercept, Brand, Own-price, Cross-availabilities of other services from the same brand, and Discount effects.

All models were individual HB analysis using Sawtooth CBC/HB.

### Fit Statistics

	<u>Choice</u>	<u>Param.</u>	<u>% Cert.</u>	<u>RLH</u>	<u>RMS</u>
Mkt BYO: Landline	7	16	.789	.730	2.145
Mkt BYO: Mobile phone	7	16	.783	.724	2.172
Mkt BYO: Home internet	7	16	.719	.657	1.965
Mkt BYO: Mobile internet	7	16	.800	.740	1.894
Mkt BYO: Cable TV	7	15	.721	.705	2.020
Mkt BYO: Satellite TV	7	15	.766	.745	2.038

# Market simulations

## Market-level effects of prices, cross-availabilities and discounts

Three simulated conditions for Fixed Bundles and the two BYO variations:

- **Low:** all prices set to LOW; discount: HIGH.
- **Mid:** all prices set to MID; discount: LOW.
- **High:** all prices set to HIGH; discount: NONE.

Three hypothetical markets for each condition:

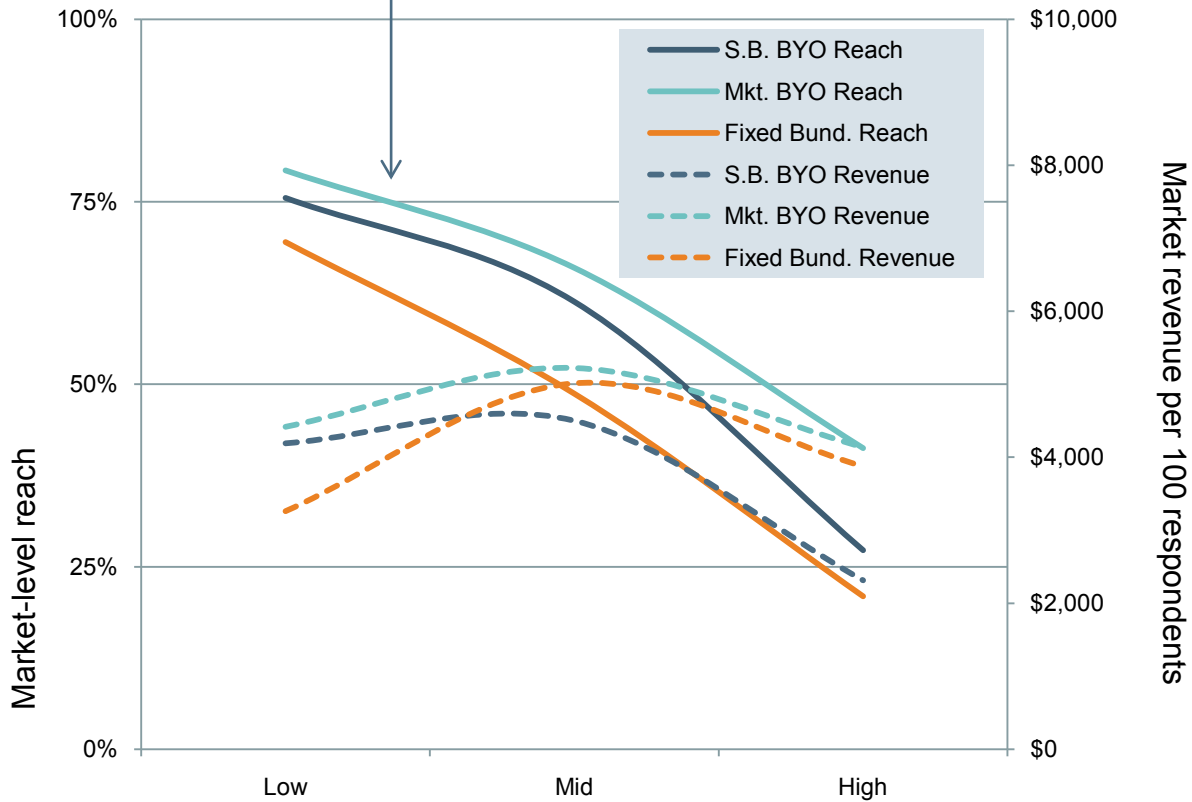
- **Triple Play:** Landline, Home internet and TV available from all brands.
- **Current Market:** a representation of what each brand is currently offering. All brands and services are available, but not all services are available from every brand.
- **Marketplace:** all services available from all brands.

	Include <input checked="" type="checkbox"/>	Inclu
Brand	Brand A	Branc
Landline	Mid <input type="text"/>	Mid <input type="text"/>
Wireless	Mid <input type="text"/>	N/A <input type="text"/>
Home Internet	Mid <input type="text"/>	Mid <input type="text"/>
Mobile Internet	Mid <input type="text"/>	Mid <input type="text"/>
TV	Satellite <input type="text"/>	Cable <input type="text"/>
TV Price	Mid <input type="text"/>	Mid <input type="text"/>
Discount	Low <input type="text"/>	Low <input type="text"/>
<b>Share of Preference</b>	<b>14.8%</b>	<b>14.0</b>
<b>Revenue</b>	<b>\$2,702</b>	<b>\$1,8:</b>
<b>Share of Revenue</b>	<b>33.6%</b>	<b>23.1</b>
<hr/>		
<b>Total Revenue</b>	<b>\$8,054</b>	

# Market simulations

## Triple Play (Landline, Home internet, TV available from all brands)

Single Brand & Market BYO **Reach** were both higher than Fixed Bundles Reach since respondents could take individual items from different brands in the BYO conditions, but had to take one bundle from one brand in Fixed Bundling.



**Total Market Revenue** was largest from Market BYO and Fixed Bundling exercises, especially at mid and high prices.

Prices

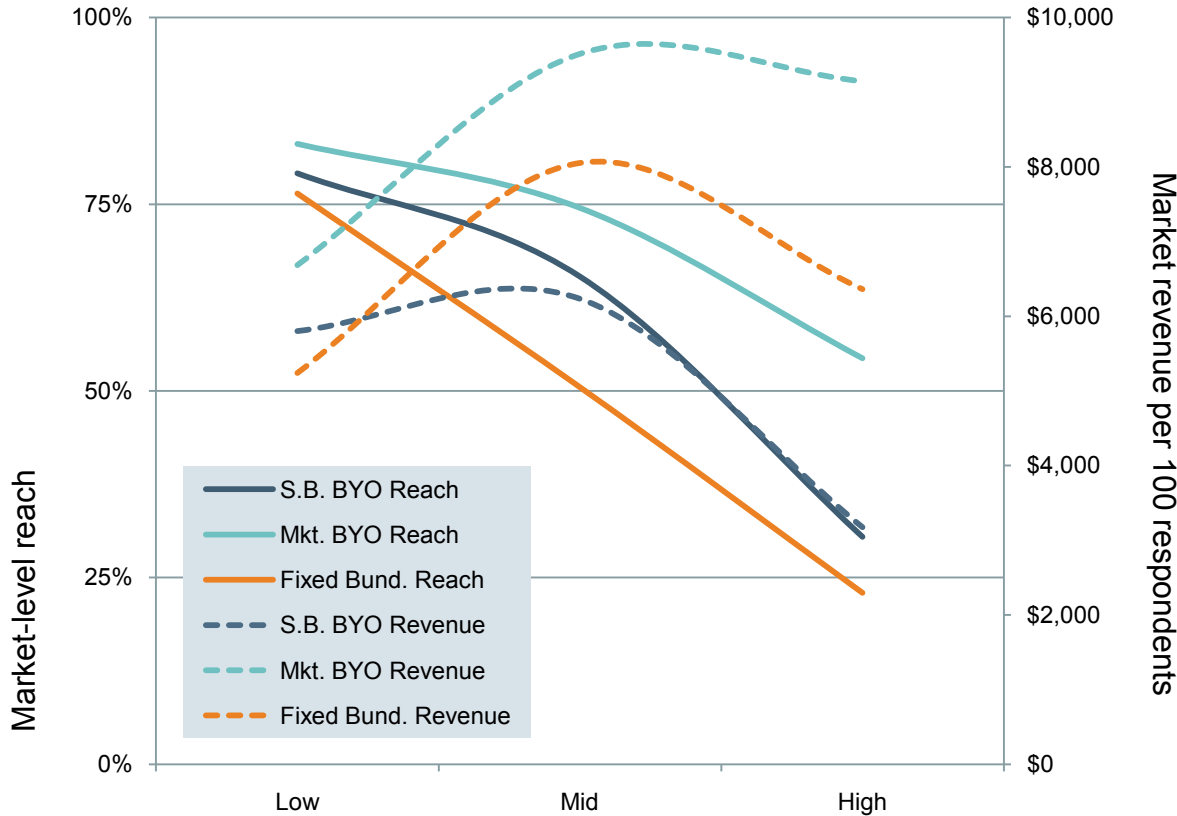
**BYO Reach:** proportion of respondents taking at least one service from any brand in a given simulation.

**Fixed Bundles Reach:** proportion of respondents taking any of the fixed bundles in a given simulation.

# Market simulations

## Current Market (all services available, but not from every brand)

**Total Market Revenue** nearly doubled in Market BYO and Fixed Bundles at mid and high prices when all services are available, even if they are not available from every brand in the market.



**Market Reach** was only slightly higher than it was in Triple Play.

Much of the additional revenue came from “upsell,” or customers purchasing more services because more were available, rather than from the addition of new customers not already purchasing in Triple Play.

Prices

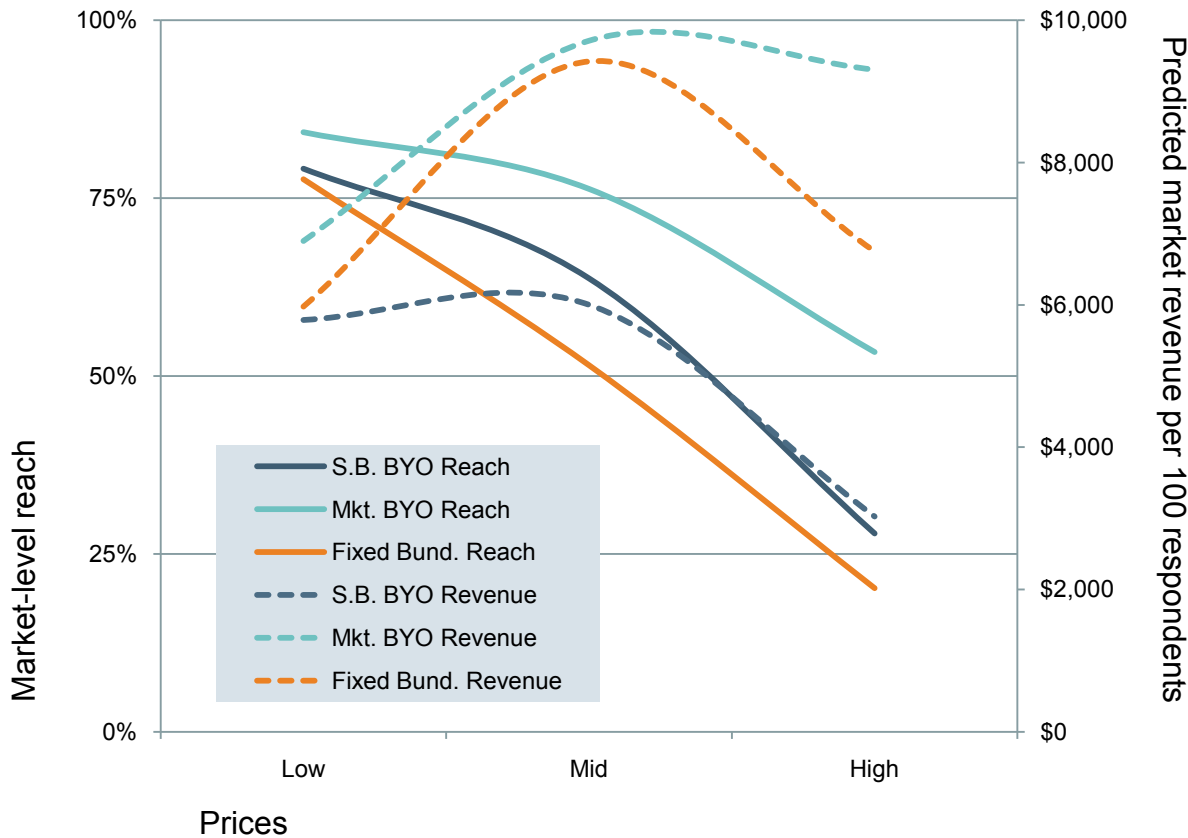
**BYO Reach:** proportion of respondents taking at least one service from any brand in a given simulation.

**Fixed Bundles Reach:** proportion of respondents taking any of the fixed bundles in a given simulation.

# Market simulations

## Marketplace (all services available from all brands)

**Total Market Revenue** resembled that from Current Market, where all services are available, but not all brands offer all services.

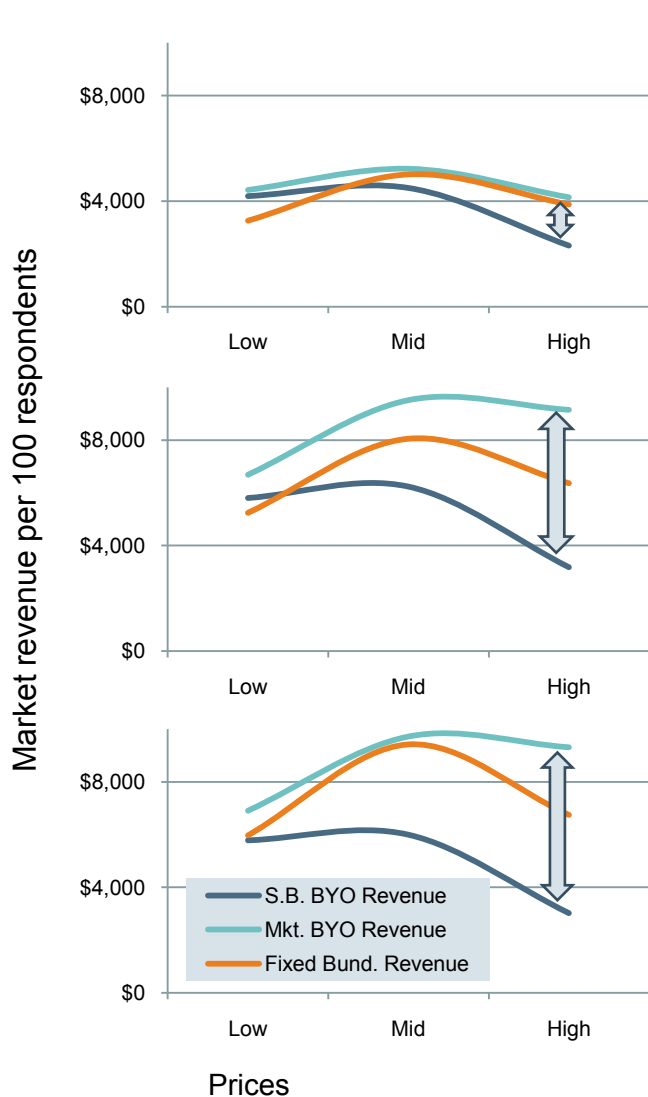


When Fixed Bundles **Reach** dropped off at high prices, revenue for Market BYO outstripped revenue for Fixed Bundles, just as it did in the Current Market simulations.

**BYO Reach:** proportion of respondents taking at least one service from any brand in a given simulation.  
**Fixed Bundles Reach:** proportion of respondents taking any of the fixed bundles in a given simulation.

# Market simulations

## Market BYO and Fixed Bundles consistently generated more revenue



Gap @ High prices  
(Market BYO – Single Brand BYO)

**Triple Play**

**\$1,827**

The **highest** revenue realized always came from Market BYO at mid prices.

The **lowest** revenue realized always came from Single Brand BYO at high prices.

There was a 2:1 to 4:1 ratio from highest to lowest.

**Current Market**

**\$5,970**

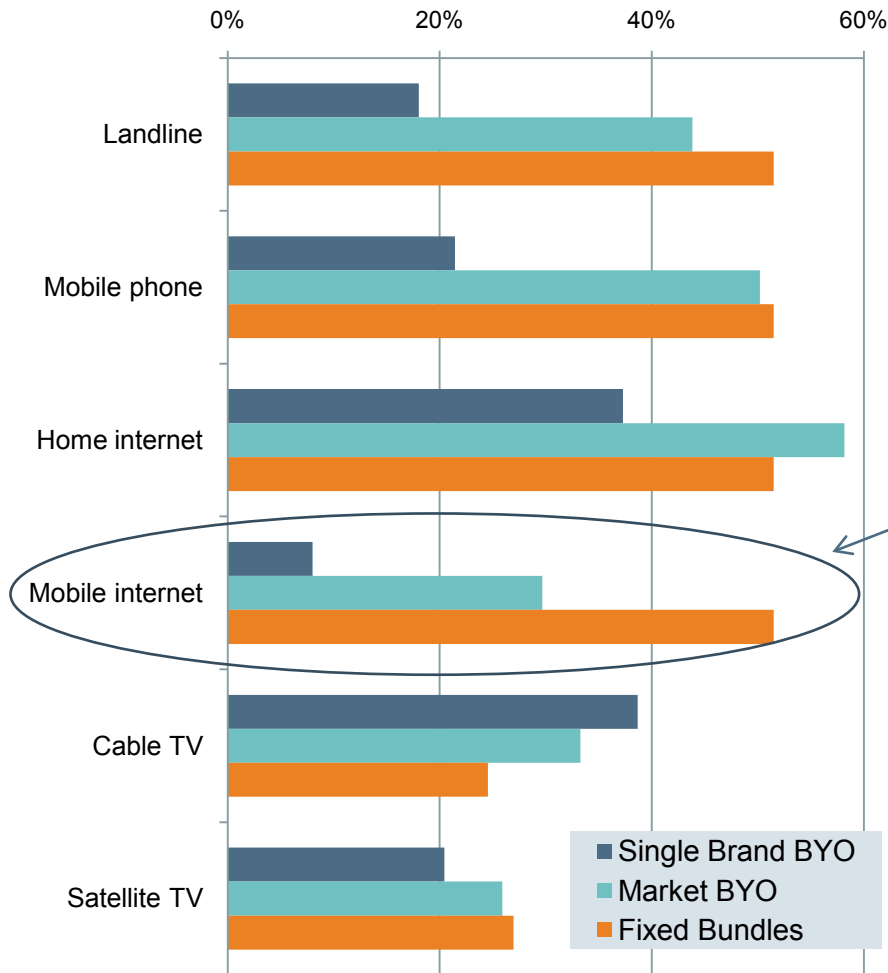
**Marketplace**

**\$6,279**

# Deep dive into Marketplace simulations

## Take rate for individual services was lowest in the Single Brand BYO

Take rate (all services available at mid prices)



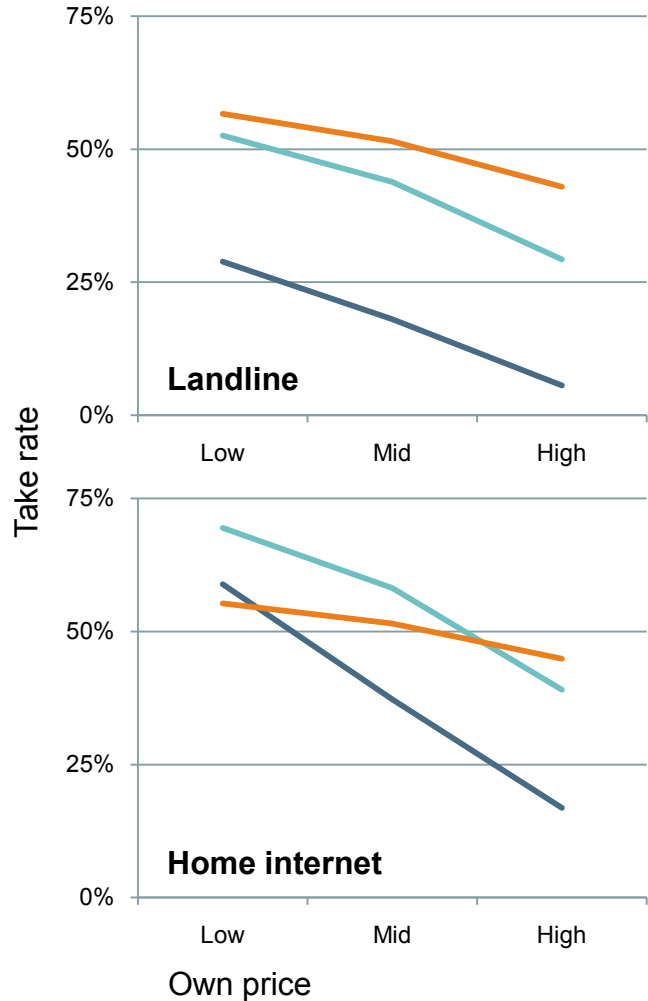
Take rate for a Fixed Bundle containing a given service was typically larger than the take rate for the same service selected individually in the Single Brand BYO.

This seems to be especially true for services that are new-to-market and have yet to gain very much market penetration by themselves (e.g., Mobile internet).

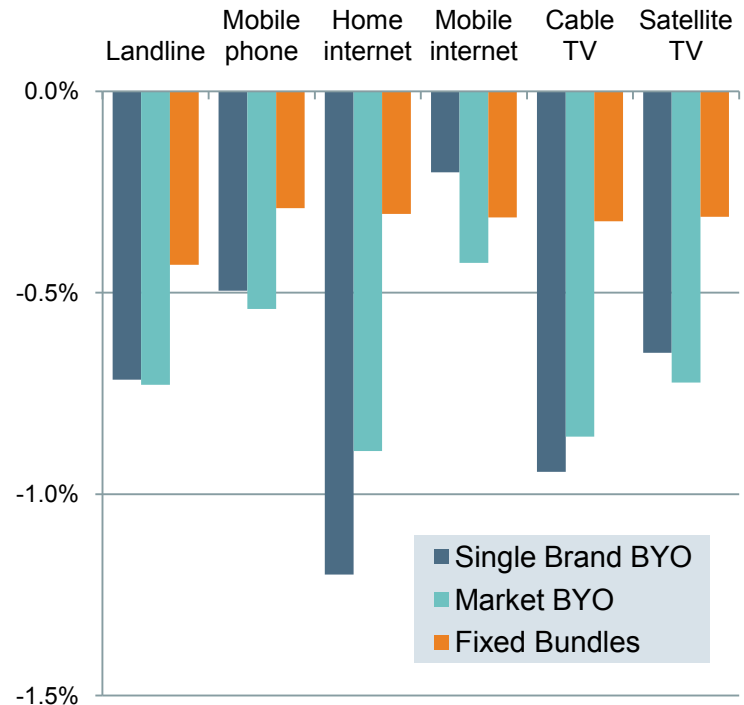
TV, especially cable, appears to be the exception. Take rate of cable TV in the two BYO conditions was higher than in Fixed Bundles.

# Marketplace simulations

Single Brand & Market BYO results showed more price sensitivity based on own-price effects; Slopes were steeper in BYO conditions

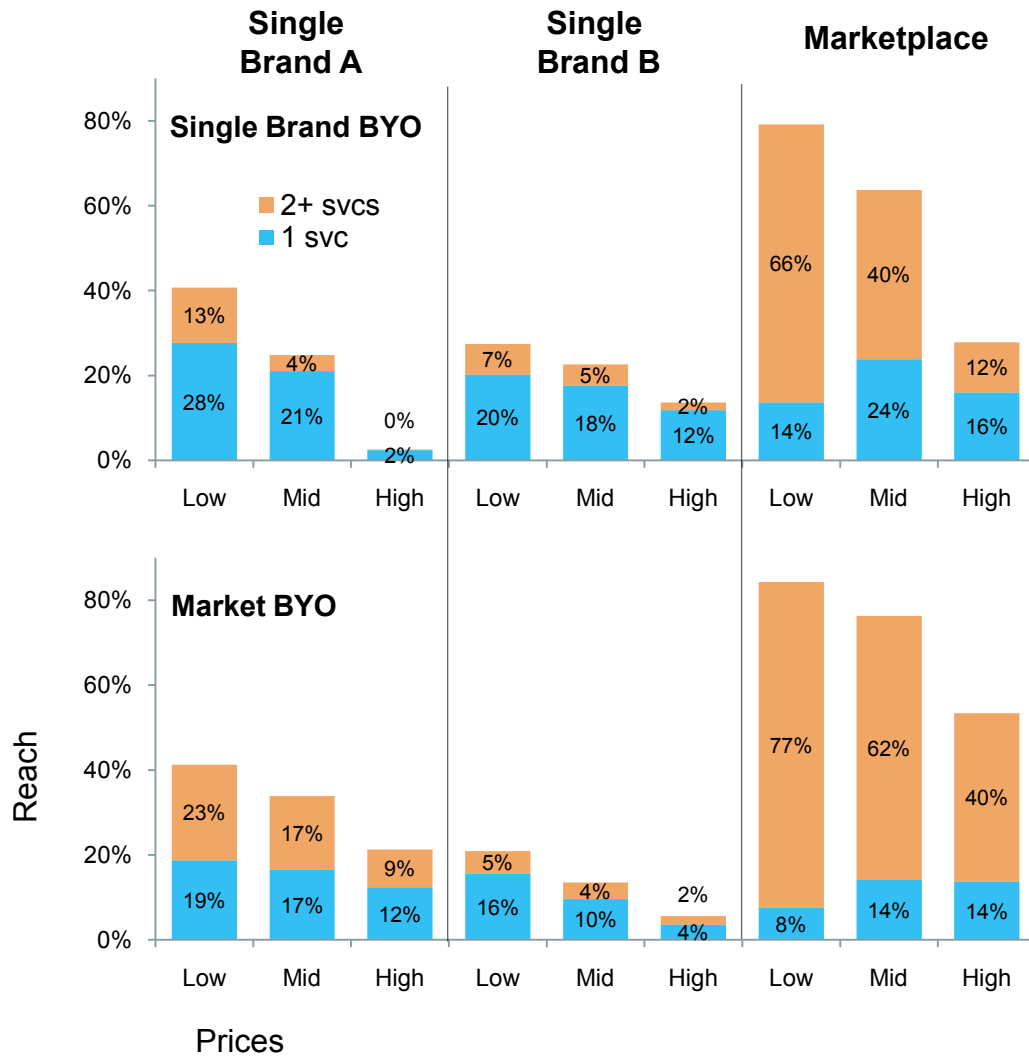


Change in take rate for every \$1 increase in own price



# BYO Marketplace simulations

Respondents chose multiple services in the full marketplace but less so from single brands

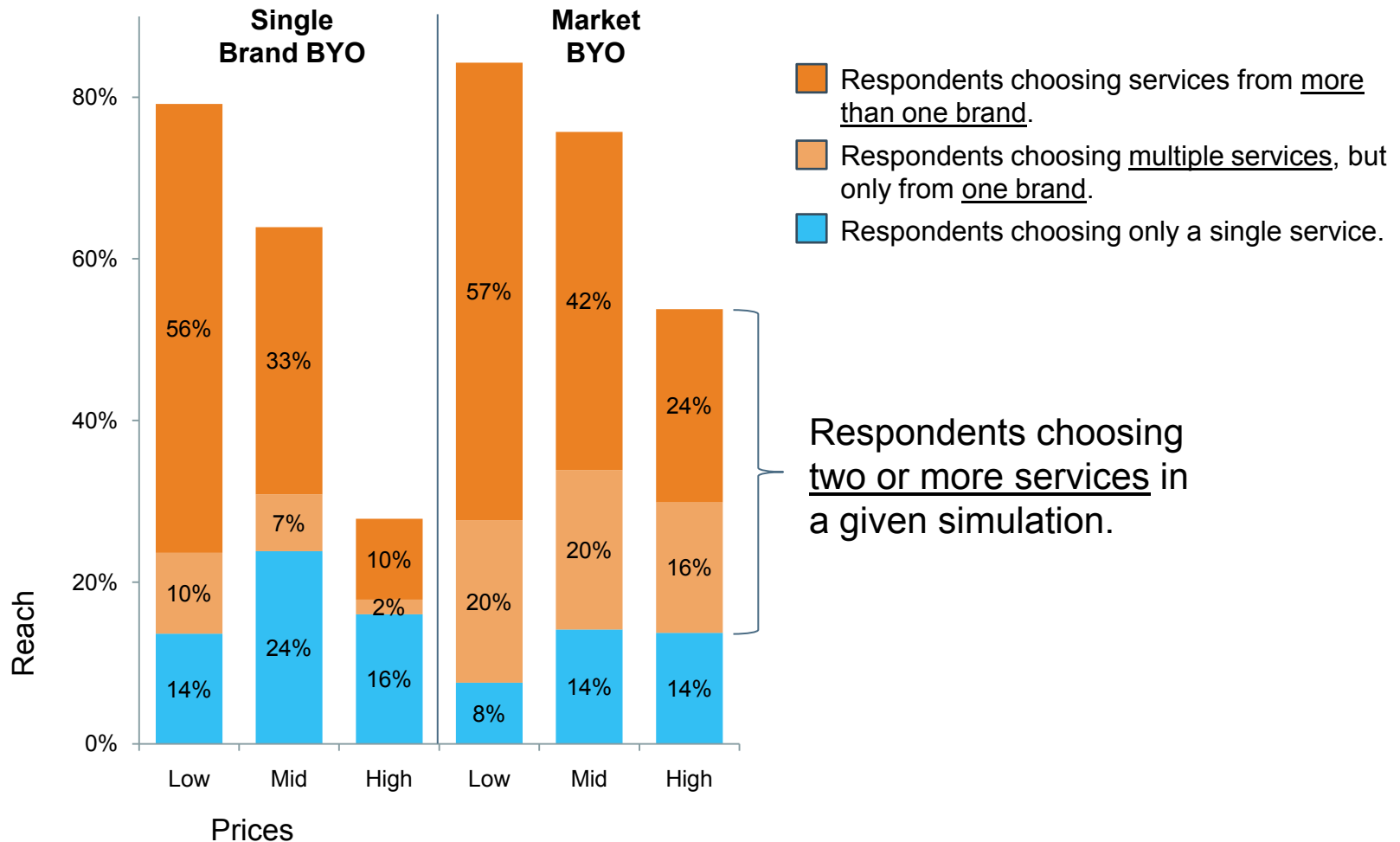


At the **market level**, respondents tended to take two or more services because they took one (or more) from different brands.

At the single **brand level**, respondents were more likely to take just a single service.

# BYO Marketplace simulations

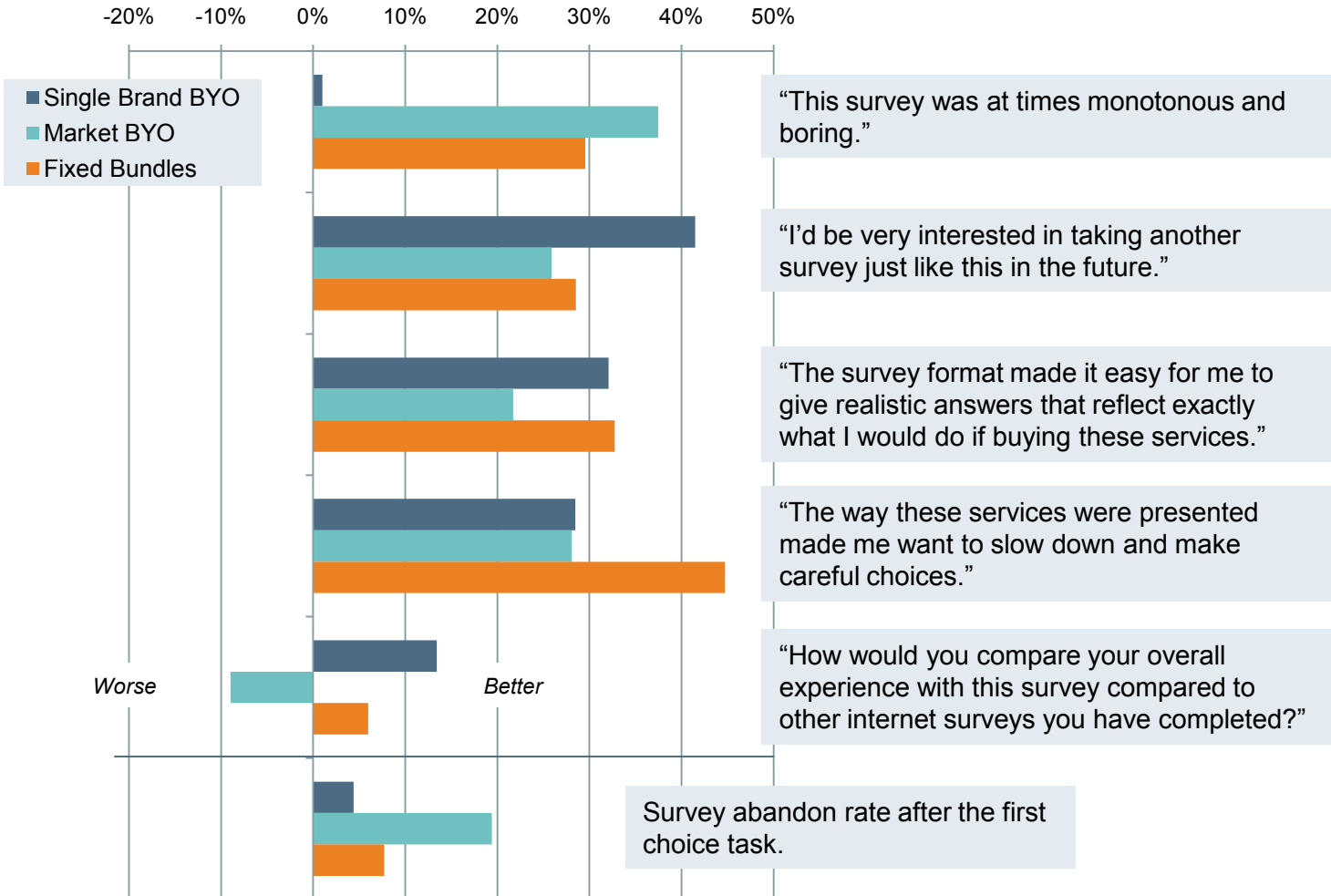
The majority of respondents choosing more than one service chose services from more than one brand, even at the highest prices



# Self evaluation

Respondents liked Single Brand BYO, didn't like & abandoned far more frequently in Market BYO; in Fixed Bundling exercises, they tended to make more careful choices

NET rating (Top 2 Box – Bottom 2 Box); Abandon rate



# Conclusions

Fixed Bundle and the two BYO methods force people to react to different marketplaces

Fixed Bundle, Single Brand BYO and Market BYO methods produce different results.

- Price sensitivity curves for Fixed Bundles are flatter.
- Fixed Bundles and Market BYO result in larger predicted take rates of individual products.
- Single Brand BYO “bundles” have the fewest products chosen, often times only one.

For the firm: revenue and product penetration are maximized using Market BYO or Fixed Bundles.

- More revenue is realized as consumers take more products in bundles than they do in Single Brand BYO.
- New-to-market products may more easily gain a foothold if included in Fixed Bundles than if sold individually.
- Market BYO results in high reach even at high prices.

# Conclusions

Fixed Bundle and the two BYO methods force people to react to different marketplaces

Single Brand BYO and Market BYO also reach those individuals interested in single products who may not be interested in purchasing Fixed Bundles.

In this way, the BYO methods can complement Fixed Bundles.

- With the BYO approaches, consumers can and do take some products from one brand and other products from a different brand.

When there is no brand, Single Brand BYO may be a good alternative for measuring generic willingness-to-pay and take rates.

Mixed Bundling (like that used by Bakken & Bond at Sawtooth in 2004) may be a good alternative in some circumstances.

# Thanks!

**Market Strategies Research  
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