WHAT'S ON YOUR MENU?

Finding the value in your customer's complex choices

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Sawtooth Software

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Introduction

How do you determine what your customers want?

Client Use Only

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Ask or Observe

In-market product tests

Direct questions

Wait and see what your competitors do

Monitor what they are chatting about online

Hypothetical tests, such as conjoint analysis

Standard Choice Models

Which one of these options would you buy?

Fettucini Alfredo with Chicken	Southwestern Chicken Salad	Bacon & Bleu Burger	Teriyaki Salmon
Includes 1 side dish	Side dishes not included	Includes chips	Includes 2 side dishes
$10.99	$9.99	$13.99	$14.99

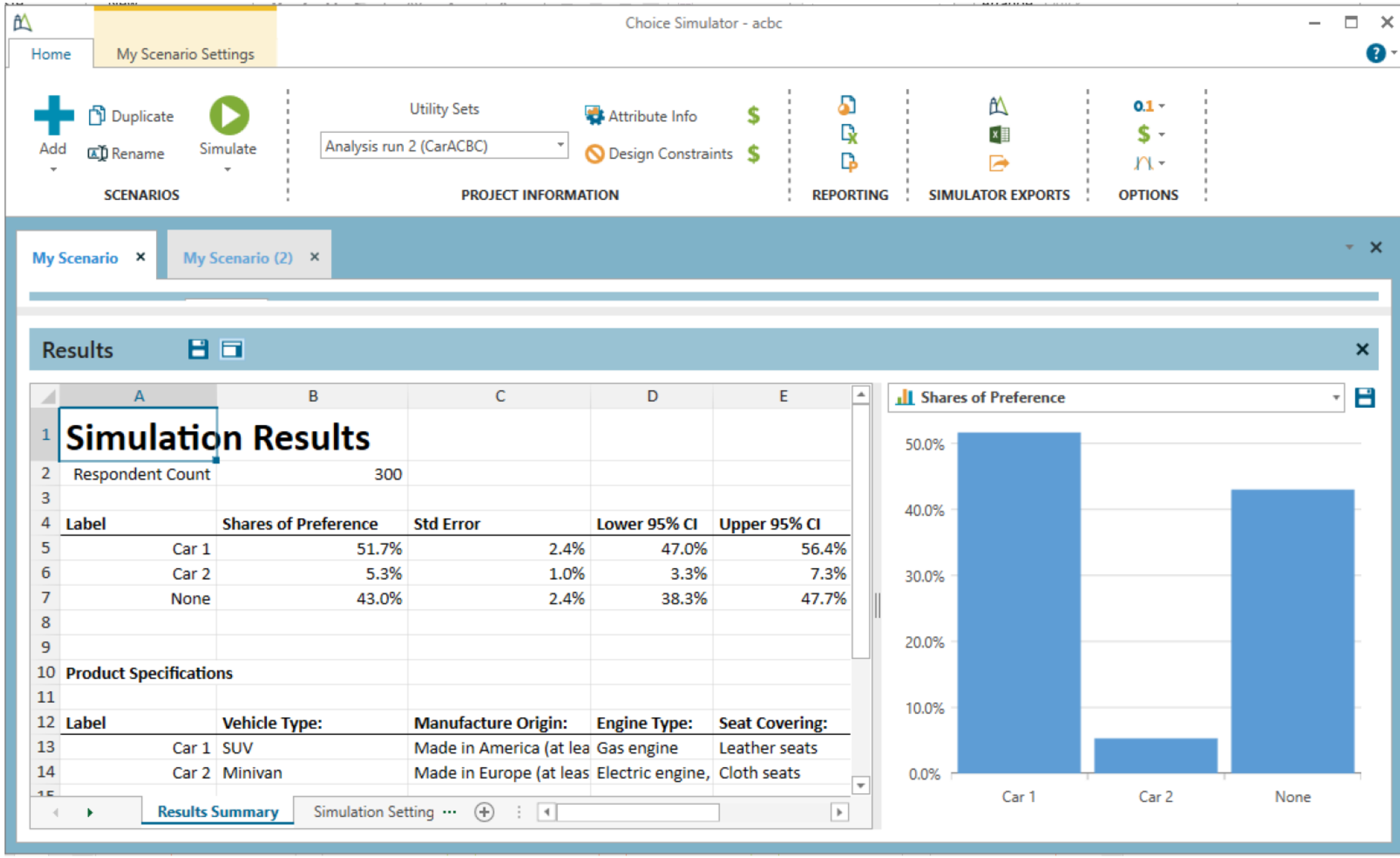
Benefits of Choice Modelling

Able to test large number of combinations at little cost

Resulting models provide simulation capability, even for concepts not tested directly

But…

They are limited to a single independent choice



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But what about these situations?

Cell phone plan/phone purchase

Bundling telecommunications

Restaurant menus

Choosing features to add to a new car

Multi-subscription bundles

Business software suites

Cruise inclusions vs. add-ons

Insurance policy riders

Transportation

…and on and on

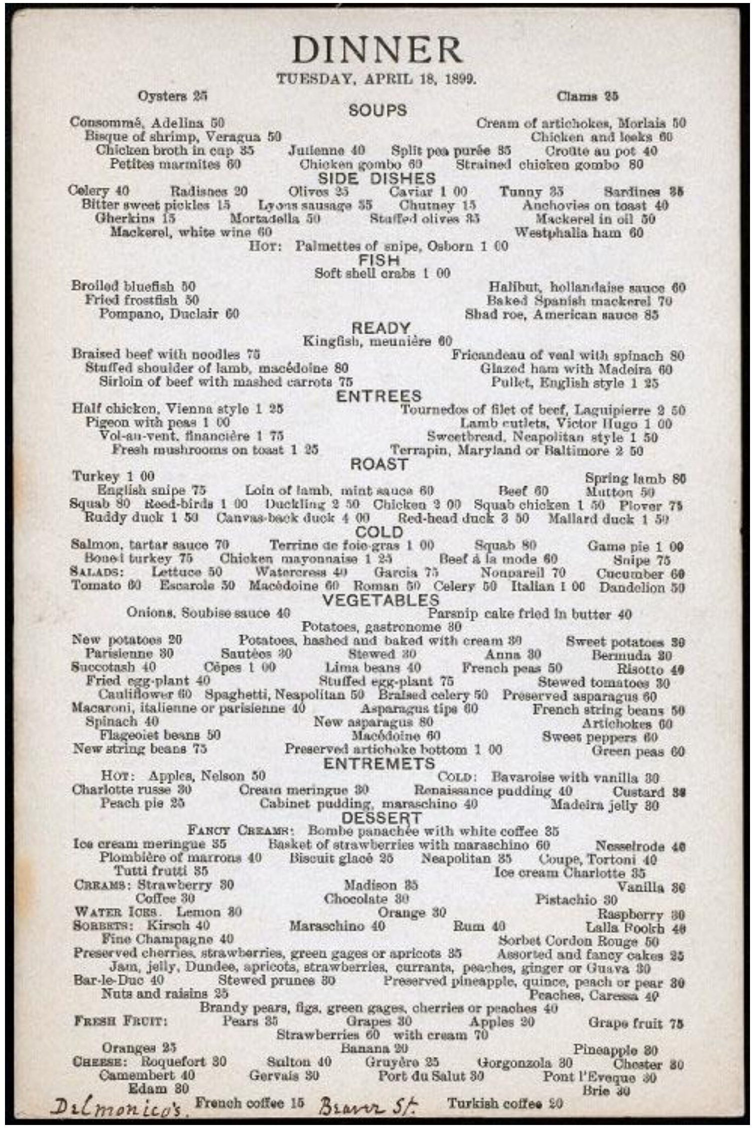
Menu Based Choice

Menu Based Choice exercises allow you to simultaneously measure multiple correlated decisions in situations where the consumer “creates” their own product bundle.

Delmonico’s, New York City, 1899

Goal: Create a model for ***each item*** on the menu

Menu choices dependent on its price, configuration, but also other items price, configuration.



DINNER

TUESDAY, APRIL 18, 1899.

Oysters 25 Clams 25

SOUPS

Consommé, Adelina 50 Cream of artichokes, Morlais 50
Bisque of shrimp, Veragua 50 Chicken and leeks 60
Chicken broth in cup 35 Julienne 40 Split pea purée 35 Croûte au pot 40
Petites marmites 60 Chicken gombo 60 Strained chicken gombo 80

SIDE DISHES

Celery 40 Radishes 20 Olives 25 Caviar 1 00 Tunny 35 Sardines 35
Bitter sweet pickles 15 Lyons sausage 35 Chutney 15 Anchovies on toast 40
Gherkins 15 Mortadella 50 Stuffed olives 35 Mackerel in oil 50
Mackerel, white wine 60 Westphalia ham 60
Hot: Palmettes of snipe, Osborn 1 00

FISH

Soft shell crabs 1 00
Broiled bluefish 50 Halibut, hollandaise sauce 60
Fried frostfish 50 Baked Spanish mackerel 70
Pompano, Duclair 60 Shad roe, American sauce 85

READY

Kingfish, meunière 60
Braised beef with noodles 75 Fricandeau of veal with spinach 80
Stuffed shoulder of lamb, macédoine 80 Glazed ham with Madeira 60
Sirloin of beef with mashed carrots 75 Pullet, English style 1 25

ENTREES

Half chicken, Vienna style 1 25 Tournedos of filet of beef, Laguipierre 2 50
Pigeon with peas 1 00 Lamb cutlets, Victor Hugo 1 00
Vol-au-vent, financière 1 75 Sweetbread, Neapolitan style 1 50
Fresh mushrooms on toast 1 25 Terrapin, Maryland or Baltimore 2 50

ROAST

Turkey 1 00 Spring lamb 80
English snipe 75 Loin of lamb, mint sauce 60 Beef 60 Mutton 50
Squab 80 Reed-birds 1 00 Duckling 2 50 Chicken 2 00 Squab chicken 1 50 Plover 75
Ruddy duck 1 50 Canvas-back duck 4 00 Red-head duck 3 50 Mallard duck 1 50

COLD

Salmon, tartar sauce 70 Terrine de foie-gras 1 00 Squab 80 Game pie 1 00
Boned turkey 75 Chicken mayonnaise 1 25 Beef à la mode 60 Snipe 75
Salads: Lettuce 50 Watercress 40 Garcia 75 Nonpareil 70 Cucumber 60
Tomato 60 Escarole 50 Macédoine 60 Roman 50 Celery 50 Italian 1 00 Dandelion 50

VEGETABLES

Onions, Soubise sauce 40 Parsnip cake fried in butter 40
Potatoes, gastronome 30
New potatoes 20 Potatoes, hashed and baked with cream 30 Sweet potatoes 30
Parisienne 30 Sautées 30 Stewed 30 Anna 30 Bermuda 30
Succotash 40 Cèpes 1 00 Lima beans 40 French peas 50 Risotto 40
Fried egg-plant 40 Stuffed egg-plant 75 Stewed tomatoes 30
Cauliflower 60 Spaghetti, Neapolitan 50 Braised celery 50 Preserved asparagus 60
Macaroni, italienne or parisienne 40 Asparagus tips 60 French string beans 50
Spinach 40 New asparagus 80 Artichokes 60
Flageolet beans 50 Macédoine 60 Sweet peppers 60
New string beans 75 Preserved artichoke bottom 1 00 Green peas 60

ENTREMETS

Hot: Apples, Nelson 50 Cold: Bavaroise with vanilla 30
Charlotte russe 30 Cream meringue 30 Renaissance pudding 40 Custard 30
Peach pie 25 Cabinet pudding, maraschino 40 Madeira jelly 30

DESSERT

Fancy Creams: Bombe panachée with white coffee 35
Ice cream meringue 35 Basket of strawberries with maraschino 60 Nesselrode 40
Plombière of marrons 40 Biscuit glacé 25 Neapolitan 35 Coupe, Tortoni 40
Tutti frutti 35 Ice cream Charlotte 35
Creams: Strawberry 30 Madison 35 Vanilla 30
Coffee 30 Chocolate 30 Pistachio 30
Water Ices. Lemon 30 Orange 30 Raspberry 30
Sorbets: Kirsch 40 Maraschino 40 Rum 40 Lalla Rookh 40
Fine Champagne 40 Sorbet Cordon Rouge 50
Preserved cherries, strawberries, green gages or apricots 35 Assorted and fancy cakes 25
Jam, jelly, Dundee, apricots, strawberries, currants, peaches, ginger or Guava 30
Bar-le-Duc 40 Stewed prunes 30 Preserved pineapple, quince, peach or pear 30
Nuts and raisins 25 Peaches, Caressa 40
Brandy pears, figs, green gages, cherries or peaches 40
Fresh Fruit: Pears 35 Grapes 30 Apples 20 Grape fruit 75
Strawberries 60 with cream 70
Oranges 25 Banana 20 Pineapple 30
Cheese: Roquefort 30 Stilton 40 Gruyère 25 Gorgonzola 30 Chester 30
Camembert 40 Gervais 30 Port du Salut 30 Pont l'Eveque 30
Edam 30 Brie 30
Delmonico's French coffee 15 Beaver St. Turkish coffee 20

PD-US, https://en.wikipedia.org/w/index.php?curid=5848801

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Top Sky deals in February

GREAT VALUE	NETFLIX INCLUDED	ONLINE EXCLUSIVE OFFER
Sky Entertainment TV	Sky Entertainment TV + Ultimate On Demand & Netflix	Sky Entertainment TV + Sports + HD
✓ Sky Entertainment TV ✓ 388 channels + 20 HD	✓ Entertainment & Box Sets ✓ 388 channels + 20 HD	✓ Entertainment & HD & Sports ✓ 430 channels + 62 HD
£22.00 for 18 months Prices may change during this period	**£34.00** for 18 months Prices may change during this period	**£50.00** for 18 months Prices may change during this period
(usually £27.00) **Upfront cost:** £25.00	(usually £39.00) **Upfront cost:** £20.00	(usually £61.00) **Upfront cost:** £25.00
See deal	See deal	See deal
Over 300 channels including exclusive Sky Originals	Over 1,000 shows on demand from Sky Box Sets and Netflix all in a single pack – in stunning HD.	Watch live action from all 8 Sky Sports channels, in HD as standard, with the Complete Sports pack.

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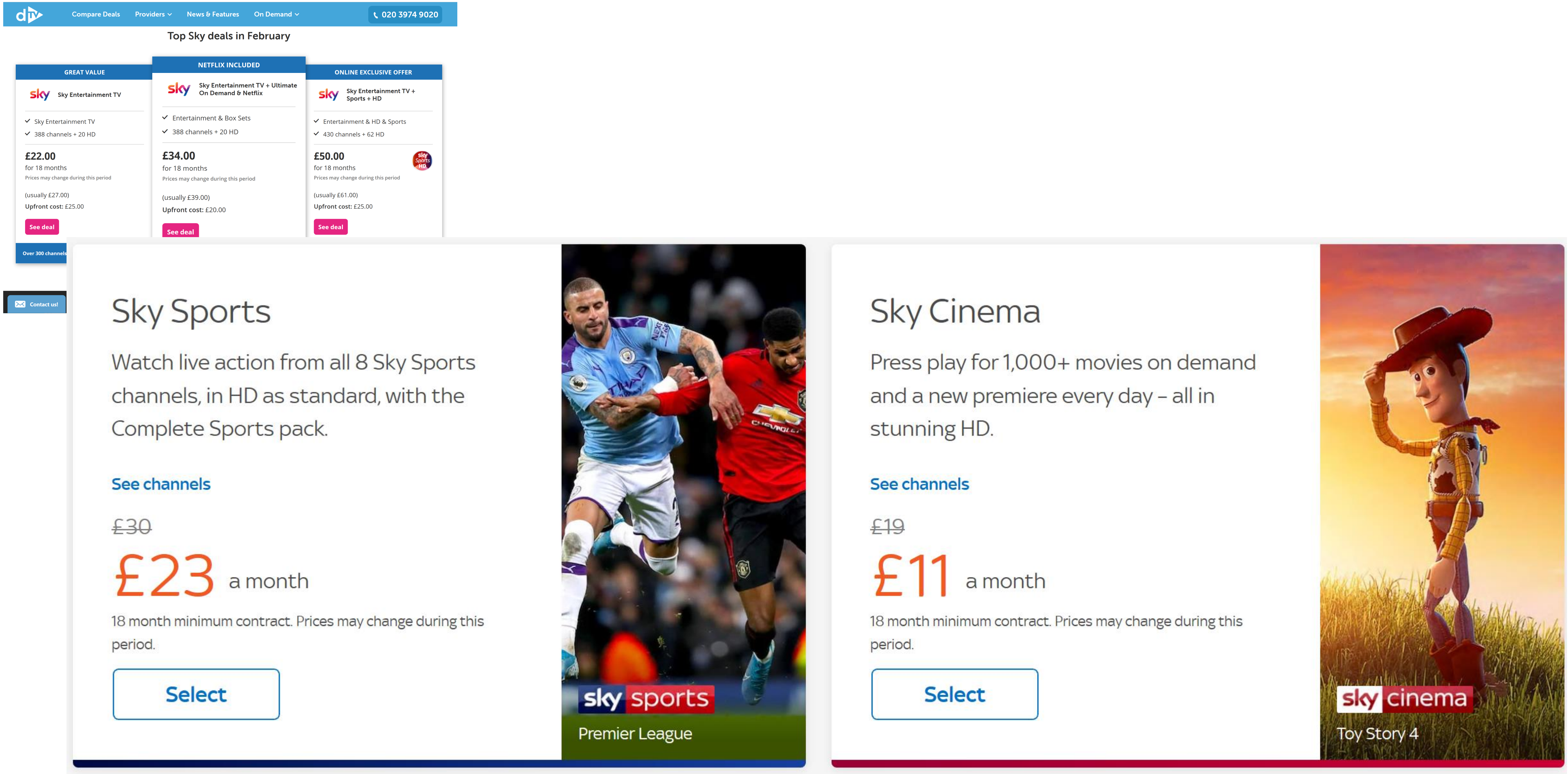

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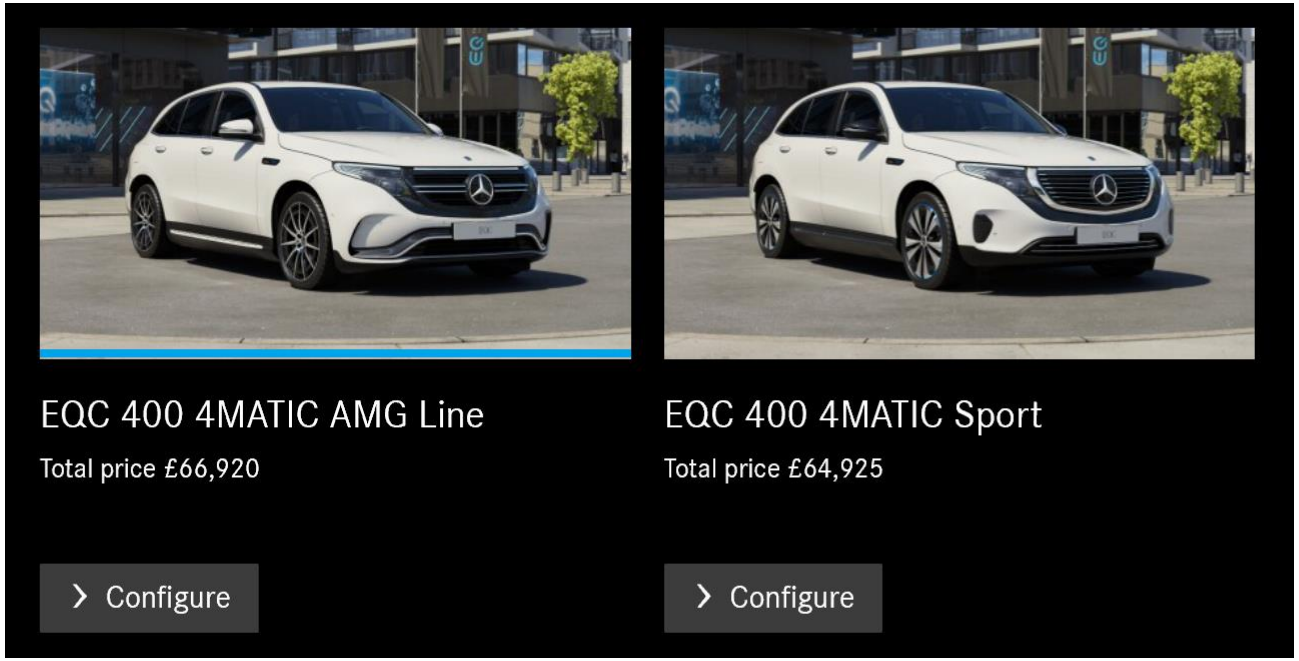

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EQC 400 4M

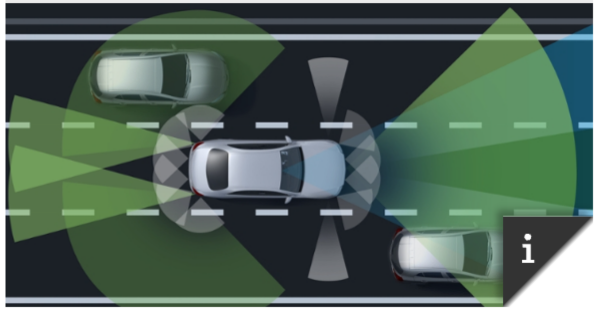
Total price £66,92

Configure

Packages

Driving Assistance Package
£1,695

Follow the road to autonomous driving: The latest systems support you based on the situation with speed adaptation, steering, lane changes and even when there is a risk of collision. The risk of an accident is reduced – passengers



i

Premium Package
£4,645

- Smartphone integration package
- Apple Car Play
- Android Auto
- Premium Package
- 53.3 cm (21-inch) AMG multi-spoke light-alloy wheels
- MBUX augmented reality for navigation

i

Premium Plus Package
£6,895

- Smartphone integration package
- Apple Car Play
- Android Auto
- Premium Plus package
- 53.3 cm (21-inch) AMG multi-spoke light-alloy wheels
- MBUX augmented reality for navigation

i

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Benefits of Menu Approach

Still get price elasticity, cross effects, all the benefits of conjoint models

But now we can model the real-world complexity of actual decision making process

Case study

TGI FRIDAYS

Founded
in **1965**

850
restaurants

c.60 countries worldwide
80+ UK restaurants

Value for money, quality and
enhanced customer dining

Commissioned research to optimise the pricing of key dishes on their menu in order to maximise profit

In addition to individual dishes, Set menu deals which bundle together multiple courses also offered

Analysis needed to further take in to account cannibalisation to and from key competitors

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Study details

Sample

UK only

N = 1,490
(online panel)

Aged 16-35

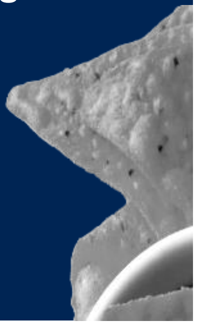
Young Adult / Family life stage

Eat out monthly or more in 'branded' restaurants serving alcoholic drinks and offering full table service

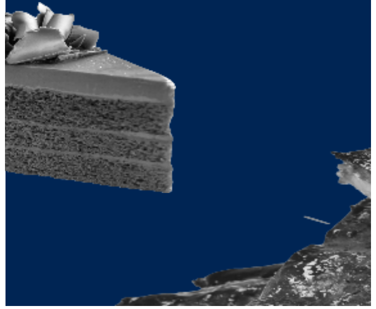
Must have a TGI Fridays in their 'area'

Choice Design

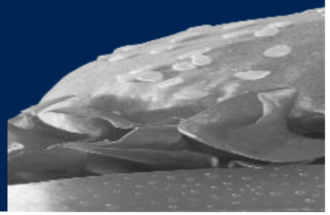
5 Starters



2 Bundled offers



10 Main courses



6 Desserts

5 Drinks

Desserts were collapsed in to Large and Small desserts and only one drink option (Cocktails) was analysed

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Questionnaire flow

1. Screening

U&A demographic and screening questions

Most recent occasion

Satisfaction ratings

2. Stage 1 - CBC

Determine cannibalisation to/from TGI Fridays

Choose most preferred competitor menu (Fixed price – Single choice)

Choice Based Conjoint exercise with TGI Fridays menu vs. winning competitor menu

Only TGI Friday’s prices changing

3. Stage 2 - MBC

Determine choice/price sensitivity within the TGI Fridays menu

MBC exercise with the price of all dishes varying each time

Option to choose none of the dishes and leave the restaurant

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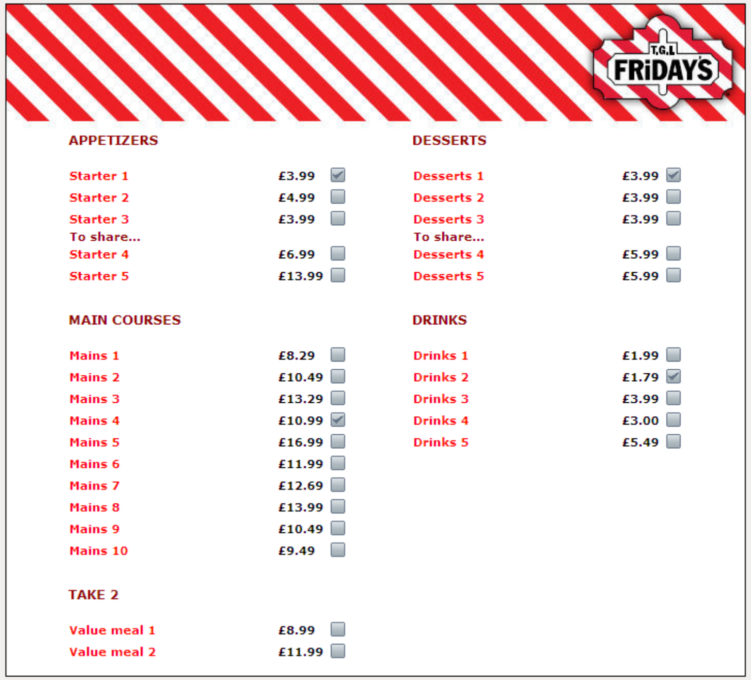
Example screenshots

Stage 1 - CBC

Stage 2 - MBC



Given the choices above, I would leave this restaurant without eating

Modelling considerations

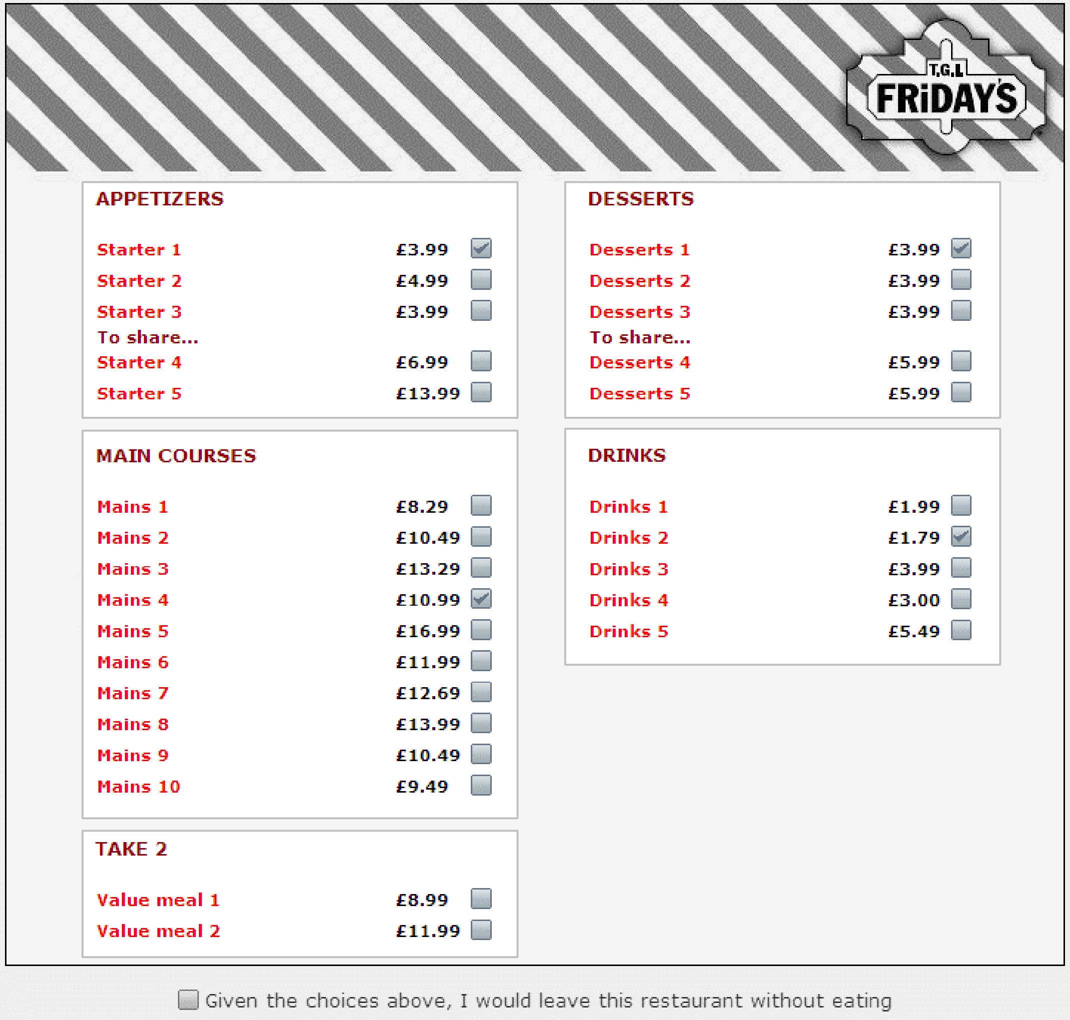
Imposed limitations

1. Respondents can select a maximum of one dish per menu area

2. Cannot select the same dish multiple times

3. If a Take 2 meal is selected then the respondent cannot select any other dish (and vice versa)

4. If the last occasion was a Friday – Sunday then the Take 2 option was not available (mimicked real life situation)



Note: Survey data on last occasion suggested c.96% chose a main course

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Analysis Stage 1

Total Sample N=1490 ▼

- Filter
- Menu Prices
- Importance Summary
- Importance Chart
- Set Band A/B Prices
- Filter Summary
- Competitor Elasticity
- Menu Analysis
- Help Guide
- Export Chart

Starters	Price
Starter 1	£7.99
Starter 2	£3.99
Starter 3	£5.59
Starter 4	£3.99
Starter 5	£13.29

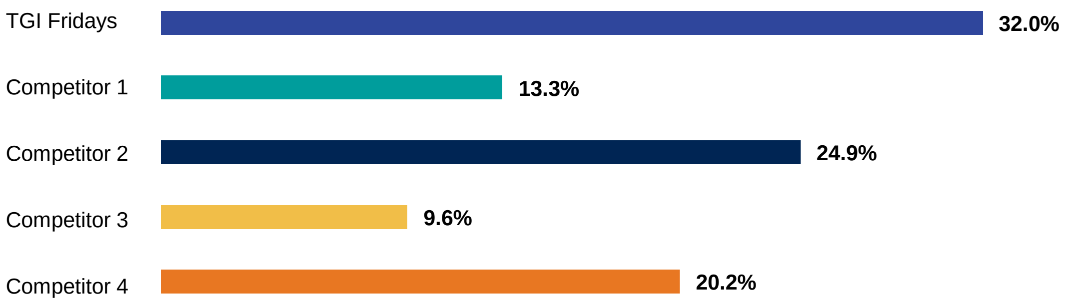
Value meals	
Value meal 1	£9.99
Value meal 2	£12.99

Mains	Price
Main 1	£7.99
Main 2	£10.29
Main 3	£12.99
Main 4	£8.99
Main 5	£14.99
Main 6	£12.99
Main 7	£12.99
Main 8	£12.69
Main 9	£9.49
Main 10	£8.99

Desserts	Price
Dessert 1	£3.99
Dessert 2	£5.99

Drinks	
Drink 1	£4.49

Simulation Results



CBC model to gauge change in footfall as a result of changes in menu price

At the base case TGI Fridays obtained 32% preference share

Changes to this value would alter the number of customers that would go in to a TGI Fridays in an average month – which then feeds in to profit calculation

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Analysis Stage 2

Total Sample N=1490 ▼

- Filter
- Menu Prices
- Importance Summary
- Importance Chart
- Set Band A/B Prices
- Filter Summary
- Competitor Elasticity
- Menu Analysis
- Help Guide
- Export Chart

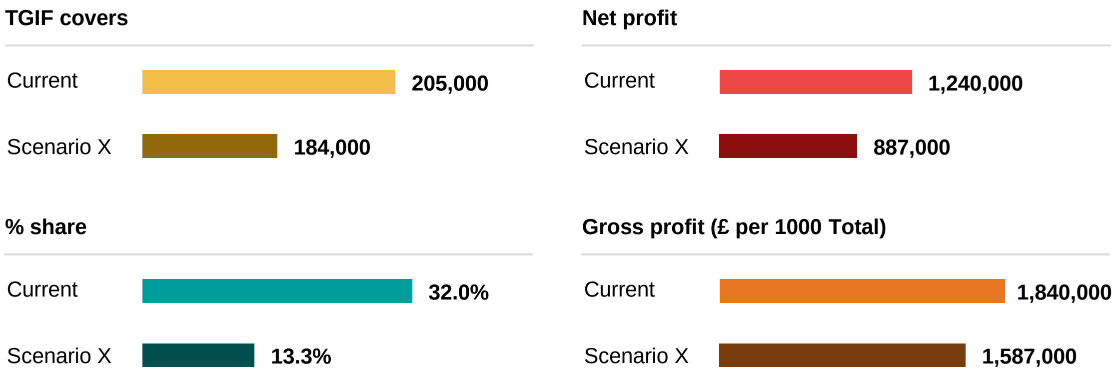
Starters	Price	% of choice
Starter 1	£7.99	3.3%
Starter 2	£3.99	11.3%
Starter 3	£5.59	11.0%
Starter 4	£3.99	6.4%
Starter 5	£13.29	5.0%

Value meals		
Value meal 1	£9.99	13.1%
Value meal 2	£12.99	1.0%

Mains	Price	% of choice
Main 1	£7.99	18.4%
Main 2	£10.29	10.1%
Main 3	£12.99	10.8%
Main 4	£8.99	3.9%
Main 5	£14.99	3.8%
Main 6	£12.99	6.6%
Main 7	£12.99	6.3%
Main 8	£12.69	4.5%
Main 9	£9.49	6.5%
Main 10	£8.99	7.1%

Desserts	Price	% of choice
Dessert 1	£3.99	9.7%
Dessert 2	£5.99	5.3%

Drinks		
Drink 1	£4.49	9.0%



MBC model to gauge change in preference for the different menu items as price changes

Data weighted by how often they go to TGI Fridays

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Checking results

Sensitivity of each item as other items change price

Effect on dish (columns); Changing price of dish from low to high price (rows)

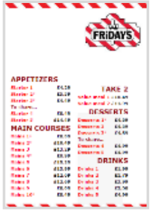
	S1	S2	S3	S4	S5	VM1	VM2	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	D1	D2	DR1
S1		0.7	0.1	1.1	0.0	-.0.5	-0.3	-0.6	0.0	-0.1	0.0	-0.1	0.1	0.0	-0.1	-0.2	0.0	0.1	-0.4	-0.1
S2	0.4		1.0	2.8	0.1	-0.9	-0.5	-0.8	-0.4	0.1	-0.3	0.1	0.1	0.0	0.1	0.1	0.0	-0.4	0.2	0.8
S3	0.1	1.2		0.9	0.0	0.5	0.7	-0.6	-0.1	-0.2	-0.1	0.1	0.1	0.0	-0.2	-0.3	-0.2	0.0	0.1	-0.2
S4	0.7	0.7	0.8		0.2	-0.4	0.3	-0.7	-0.4	0.1	-0.4	-0.1	-0.1	-0.2	-0.1	-0.2	-0.2	-0.2	-0.2	-0.1
S5	0.0	0.1	0.0	0.2		0.0	-0.3	-0.2	0.0	0.1	0.0	-0.2	0.0	-0.1	0.2	0.0	-0.3	-0.5	0.7	1.1
VM1	0.3	0.5	0.2	0.4	0.5		2.9	1.3	0.1	0.1	0.5	0.3	0.1	0.0	0.3	0.5	0.4	0.8	0.6	0.5
VM2	0.0	0.3	0.1	0.1	-0.1	4.1		-0.1	0.0	0.0	0.2	-0.1	-0.1	0.0	-0.1	0.0	0.1	-0.5	-0.1	-0.6
M1	-0.2	-0.8	-0.1	-0.5	0.0	1.9	0.3		1.8	0.2	1.4	0.1	0.1	0.1	0.3	0.8	0.9	-0.9	-0.9	0.2
M2	-0.1	-0.1	-0.1	0.1	0.0	0.2	0.2	22		0.1	0.9	0.1	0.2	0.1	0.5	0.5	0.8	-0.8	-0.5	0.5
M3	-0.1	-0.3	0.0	0.4	0.0	0.0	-0.2	0.1	0.0		0.1	0.1	0.0	0.0	0.1	0.0	0.0	1.0	0.3	0.3
M4	0.1	-0.3	-0.2	0.1	0.0	0.2	0.3	0.9	0.5	0.3		0.2	0.1	0.1	0.2	0.3	0.4	0.1	0.0	-0.4
M5	0.2	0.4	0.1	-0.1	0.1	0.1	-0.2	0.0	0.0	0.1	0.2		0.0	0.0	0.1	0.0	0.0	0.7	-0.1	0.1
M6	0.2	0.1	0.0	0.4	0.0	-0.4	-0.1	0.1	0.1	0.0	0.3	0.1		0.2	0.2	0.2	0.0	-0.4	-0.3	0.0
M7	-0.1	-0.6	0.0	-0.6	0.2	-0.9	-0.5	0.1	0.2	0.0	0.2	0.0	0.2		0.4	0.2	0.0	0.4	-0.1	-0.8
M8	0.0	0.4	0.1	0.1	0.0	-0.2	0.1	0.2	0.4	0.0	0.2	0.1	0.1	0.3		0.2	0.2	0.0	0.0	0.8
M9	0.1	-0.4	-0.1	-0.9	0.0	1.6	0.0	0.8	0.4	0.0	0.5	0.1	0.1	0.2	0.4		0.7	-1.4	-0.9	-0.3
M10	0.3	0.3	0.1	1.1	0.4	0.2	-0.5	0.7	0.5	0.0	0.4	0.0	0.1	0.0	0.1	0.5		0.9	0.9	1.2
D1	-0.1	-0.3	0.0	-0.4	0.0	0.6	0.4	1.0	-0.5	-0.2	-0.4	-0.1	-0.1	0.0	0.0	-0.4	-0.3		3.0	0.0
D2	0.1	0.4	0.2	0.7	-0.2	-1.6	0.0	-0.2	0.0	0.2	0.1	0.1	0.1	0.0	0.0	0.0	-0.2	3.7		0.0
DR1	-0.1	0.3	0.0	0.4	0.0	0.7	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.6	-0.1	

Within category all cross-effects should be positive

Cross-effects outside category should be a mixture of positive and negative effects

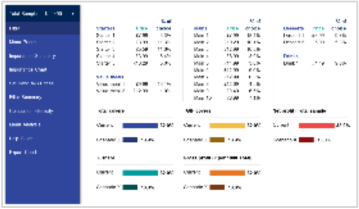
Profit optimisation

Ultimate goal of the project was to increase net profit so analysis needed to show best combination of prices



1. **Stage 1**
Determine # monthly covers

2. **Stage 2**
Determine volume of each dish



3. **Client data**
Provided all fixed and variable costs

Optimisation analysis done via Oracle Crystal Ball software

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In 3 months, net profit has increased by

31%

vs. previous year (same stores), and significantly higher than in the control restaurants (12%)

Real world results

In 3 months, net profit has increased by 31% vs. previous year (same stores), and significantly higher than in the control restaurants

	Test restaurants Jan - Mar	**Control restaurants** Jan - Mar
Average number of covers	118	106
Average total weekly sales	114	106
Average total weekly profit	**131**	**112**
Average spend per head (core food)	96	99
Average customer satisfaction score	125	121

Note: Index score vs. previous year (100) - Profit adjusted for uncontrollable costs

MBC Tips

MBC projects can become complex and expensive very quickly. Be pragmatic!

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MBC Tips

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MBC Tips

Context is extremely important – What is the occasion? Who is buying? Are there different menus by time?

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MBC Tips

Don’t under-estimate the time needed in the set-up phase

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THANK YOU.

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