CONJOINT OUTPUT

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Conjoint Analysis (CA) produces three main types of output: (1) a measure of importance of each attribute, (2) a measure of preference for each "level" within each attribute, and (3) a simulator that allows comparison between the full combinations of attributes and levels (e.g., full rate options) to determine the percent of the sample population who would prefer a particular rate option if offered some set of options.

(1) **Measures of Attribute Importance**. The analytical model determines the impact of each attribute on customer choice. Respondents will consider some attributes more heavily or more frequently in making their choices than other attributes, so this is captured in Attribute Importance ratings. The Importance ratings are expressed as a percentage, so that Importance ratings of all the attributes sum to 100%.   These ratings represent the influence that the attribute has compared to other attributes. Since these ratings are on a common "ratio" scale (of 100%), we can compare two attributes directly. For example, an attribute with an Importance rating of 30% has twice the impact on choices as an attribute with a rating of 15%.

(2) **Measures of Preference ("Utility") for each Level**. Within an attribute, the different levels receive a utility score (sometimes called "part-worth") that indicates overall preference for each level compared to the other levels in the attribute. This is purely a comparative measure between levels within the attribute on a scale centered on 0. Utility scores for the levels within an attribute that are further apart indicate stronger preference differences between the levels, while utility scores clustered near the scale mid-point (e.g., 0) indicate that respondents have relatively weak preference differences. Stronger preference differences between levels within an attribute also translates into higher Importance ratings.

(3) **Full Choice Preference Simulator**. Probably the most important output of Conjoint Analysis comes from the Preference Simulator.   All of the choice data from all respondents is combined into a simulator tool that allows comparison between fully specified options (in this case, the electricity rate options). The tool user creates a set of full rate options from the attributes and levels, and the tool calculates the percent of respondents who would prefer each of the specified options. The tool user can make changes to a particular attribute to determine the impact of the change on respondent preference.

(1) ATTRIBUTE IMPORTANCE RATINGS

The following is an example of Attribute Importance Ratings

HYPOTHETICAL EXAMPLE

Attribute	Importance Rating
Rate Type	45%
kWh	26%
Customer Charge	23%
Demand Charge	6%
Sum	100%

In this example, the attribute "Rate Type" has the most impact on customer rate preferences, followed by "kWh" "Customer Charge," and "Demand Charge." In other words, when customers made their rate plan choices, they gave the most weight or consideration to the "Rate Type" attribute, and they gave the least weight or consideration to the "Demand Charge." Also, "Rate Type" (45% Importance) was over 7 times as impactful on choice as "Demand Charge" (6% Importance). This implies that changes in "Rate Type" have far more impact on choice than changes in "Demand Charge."

The following is an example of "utility" scores for an attribute (e.g., Customer Charge).

HYPOTHETICAL EXAMPLE

"Customer Charge" Levels	Utility Score
None	0.938
$5	0.033
$10	-0.424
$15	-0.547
Sum	0

In this example, the attribute "Customer Charge" has four levels: None, $5, $10, and $15. The "none" level has a much higher "utility" score compared to the next level (i.e., $5), so customers liked rate options that did not have any customer charge more than options with a customer charge. The gap in utility scores narrows as the levels increase, indicating declining relative "badness" as the charges increase. In other words, moving from "none" to "$5" is more negative than moving from "$5" to "$10," which in turn is more negative than moving from "$10" to "$15." This is an example of a non-linear relationship between the levels.

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(2) "UTILITY" SCORES FOR ATTRIBUTE LEVELS: EXAMPLE 2

The following is another example of "utility" scores for an attribute (e.g., Rate Type).

HYPOTHETICAL EXAMPLE

"Rate Type" Levels	Utility Score
Flat	2.150
TOU	0.450
Tier	-2.600
Sum	0

In this example, the attribute "Rate Type" has three levels: Flat, TOU, and Tier. The gap in utility scores is relatively wide compared to the previous example, indicating that rate type has more impact on rate choice than customer charge. Here, Flat is the most preferred, followed by TOU and then Tier. Also, the gap between Flat and TOU is smaller than the gap between TOU and Tier, indicating that preference for TOU is closer to Flat than to Tier. This is another example of a non-linear relationship between the levels.

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(3) PREFERENCE SIMULATOR: EXAMPLE 1

The following is an example of the Preference Simulator. In this example, we are comparing between three rate options that are substantially different from each other. We can create any comparison of combinations that exist in the data set by varying the levels for each attribute, so we can also compare between options that are very similar (so might differ only on one attribute). This allows us to test the impact on customer preference of a change in one of the attributes. Here, we are comparing between three options, but the number of options that we compare can range from 2 to 50 (or more).

HYPOTHETICAL EXAMPLE

Attribute	Rate Option 1	Rate Option 2	Rate Option 3
Rate Type	TIER	TOU	FLAT
Customer Charge	None	None	$15
Demand Charge	None	Per Max kW: $5	None
kWh	0.14, 0.17	0.20, 0.12, 0.08	0.18
Share (of Preference)	55%	19%	26%

Share of Preference represents the percent of the respondents who would choose each of the rate options if given this set of options to choose from.

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