

The why, what, and how of conjoint experiments

Megan Denver

The Why

Public opinion research has greatly benefited from experimental vignettes over the past few decades. The ability to randomize conditions of interest while holding constant other important elements in the story or scenario that a respondent sees has enabled researchers to make credible causal inferences. The biggest constraint many of us encounter when designing a vignette is that we want to randomize it all—not just race, but also gender; not just this, but that. On the backend, common reviewer questions involve authenticity: Does this scenario reflect complex reality? Do reported preferences or beliefs reflect how people operate and make decisions in the real world? Are respondents providing socially desirable responses that misrepresent their actual opinions? A conjoint experimental design can alleviate both design restrictions and some of these realism/social desirability concerns.

The What

A conjoint experimental design can be a strong option when the researcher wants respondents to choose between things – such as businesses, political candidates, applicants, or policies. The basic idea is that each survey respondent sees a table that compares two¹ (fully randomized) profiles. Profiles A and B contain the same set of attribute categories, but the order that those categories appear in the profile is randomized across respondents. All attribute levels (or values) are also randomized. Respondents are typically asked to pick (i.e., are forced to choose) between Profile A and Profile B, and in some studies, they are also asked to rate each profile on a Likert scale (Hainmueller et al., 2014). Below is an example screenshot from a recent study Luzi Shi and I conducted, which tested whether a business hiring initiative to employ people with criminal conviction records led to reduced interest in patronizing those businesses.

¹ While most conjoint experiments present pairs, researchers have also used single conjoint designs (see e.g., Hainmuller et al. 2015).

Figure: Example Conjoint Experiment (modified from Shi & Denver, 2025)

YouGov

Task 5 of 5:

We had 5 attribute categories

We created business profiles

	Restaurant A	Restaurant B
Staff composition	Mostly black and Hispanic	Mostly white
Recently made efforts to hire	Veterans	People with a criminal conviction record
Price per person	\$\$ (\$11 - \$30)	\$\$\$\$ (over \$61)
Distance from home	10-minute WALK	20-minute DRIVE
Online reviews about food quality	Excellent	Excellent

The non-bolded entries in the table are randomized attribute levels.

Which of these two restaurants would you choose to eat at?

Restaurant A
 Restaurant B

We used a **forced-choice outcome**

This multidimensional design allows for a wide inclusion of factors—often 5-8 attributes—without losing the ability to detect a causal effect of each attribute, if there is one. This is because conjoint designs rely on average marginal component effect (AMCE), or the probability, on average, that a respondent would change preferences among profiles if one profile attribute changed its level, net of the other attributes. Another way to think about the AMCE: it is the marginal effect of one attribute of interest (e.g., the business hiring initiative in the above figure) when averaged over the joint distribution of the remaining attributes (staff composition, restaurant price, convenience, ratings). This essentially treats, one at a time, any one attribute as the treatment of interest and all other attributes as control variables that happen to be randomized. In fact, unbiased estimates can be obtained without including the other attributes in the model, because they are orthogonal. For this reason, you can have a 2x2x3x3x2x2 (Bushway & Pickett, 2024) or 2x4x3x4x2 (Shi & Denver, 2025) design, which contain around 150-200 profile combinations per study, and remain sufficiently powered with a sample size of approximately 1,000 respondents or less.

In addition, respondents are typically asked to repeat the same task multiple times; in our study, Luzi and I had them complete five tasks (Hainmueller et al., 2014). The order of the attribute categories remained the same within each respondent (to avoid confusion and cognitive burden) but was randomized across respondents. The levels are always randomized within each attribute category. By viewing so many different considerations simultaneously, respondents are presented with more realistic choice sets while also not being directly focused on any one potentially controversial issue (Bansak et al., 2023; Horiuchi et al., 2022). As a result, this method can be particularly useful when there are concerns about authenticity and social desirability bias.

The How

Companies such as YouGov will embed conjoint designs into the survey, which researchers are able to pretest before the survey launches. However, this type of survey platform can be costly; a YouGov survey of 1,000 respondents is around \$7,500 (see Shi & Roche, 2024 for recent platform cost comparisons). For researchers selecting a platform without a conjoint experiment design built-in, political scientists have created software to design and embed the conjoint design into popular survey design programs like Qualtrics (see Strezhnev et al. 2014).

The analysis is also straightforward. It is common to simply run a linear regression with clustered standard errors (because each respondent rates multiple profiles). Stata has a “conjoint” command that automates that process and produces a graph, but we also include modifiable graph code in the example dataset below.

The hardest part, as with experimental study designs more broadly, is selecting the attribute categories and levels that you want to test. Vignettes are still the best design for some experimental research questions, and conjoint and vignettes can be combined within a single study to address complementary questions and/or to ensure that findings generalize beyond any one design.

Looking for an example dataset and code?

"Replication Data for The Transferal of Criminal Record Stigma in the Employment Context: Evidence from Conjoint and Vignette Experiments." Harvard Dataverse, V2.
<https://doi.org/10.7910/DVN/UOC2HR>.

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