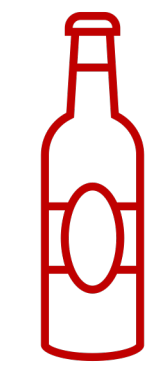


Background

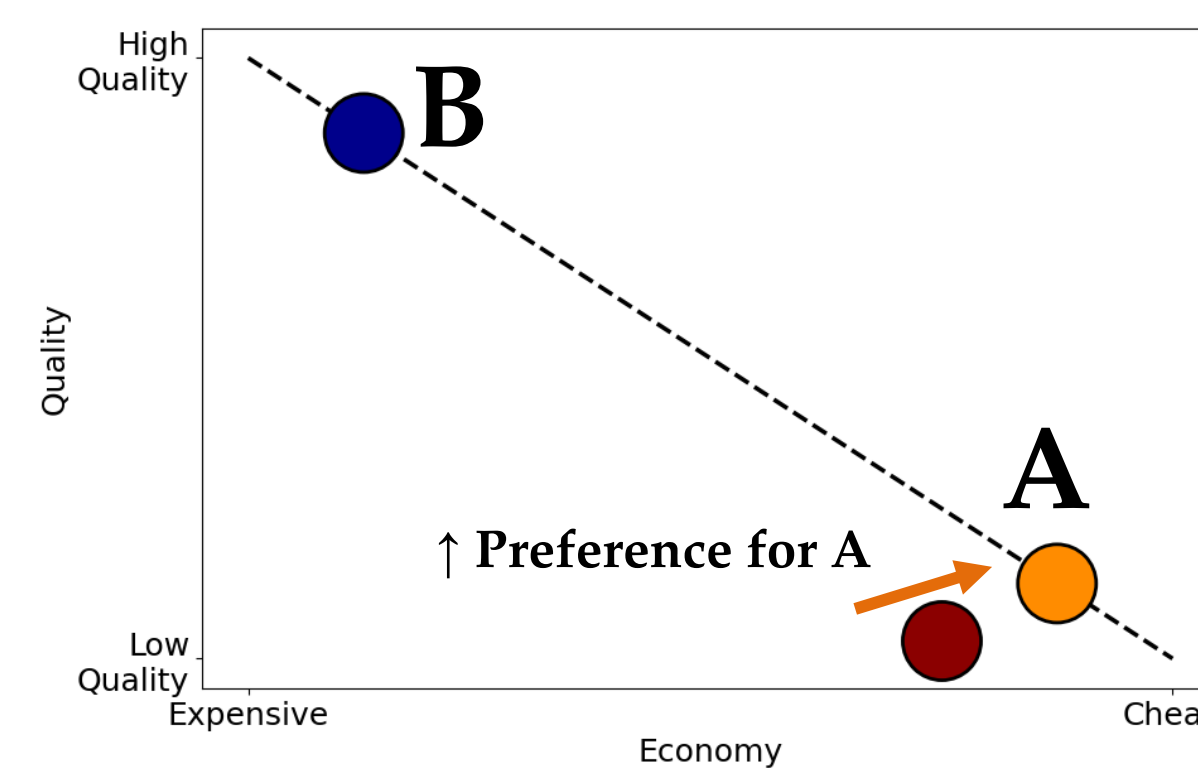
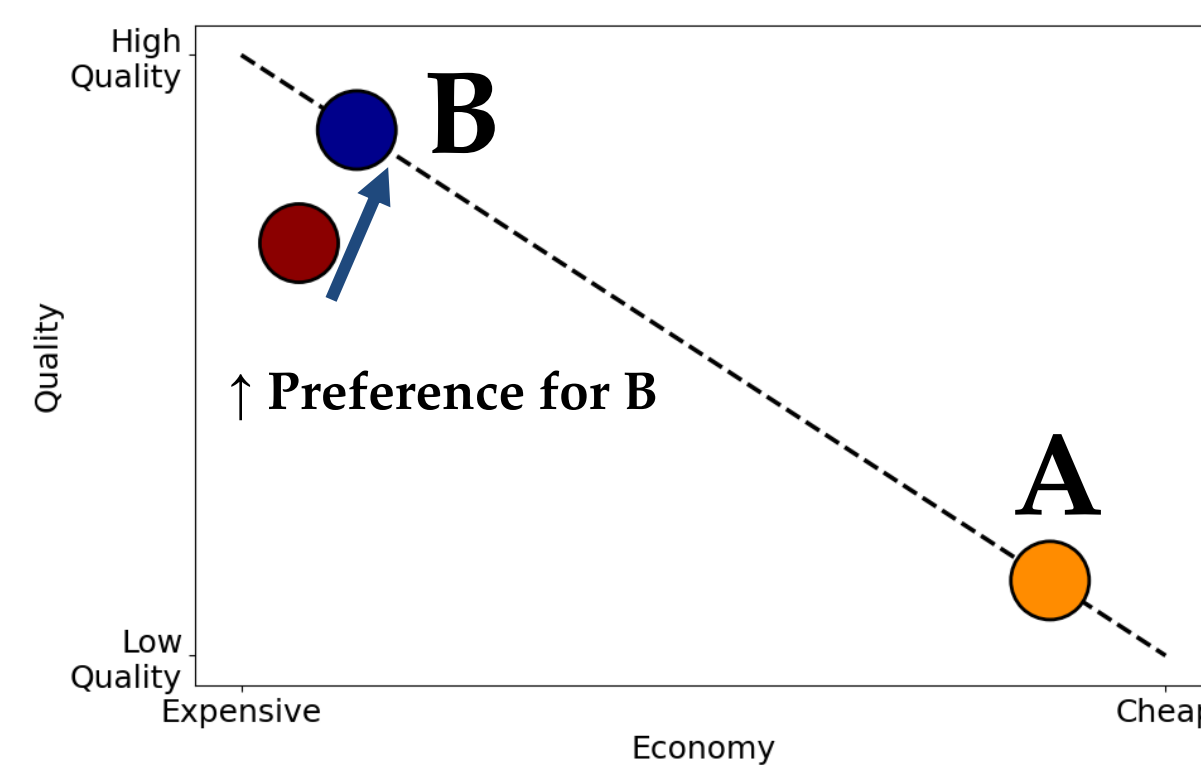
- The **attraction effect** describes a scenario where choice between **two equally valued options** is biased by the addition of a third, irrelevant, alternative—a **decoy**—that is similar to one of the target items.
- Challenges classical theories of rational choice that assume “**independence of irrelevant alternatives**” (IIA).



Wine A:
★★
£ 2.50



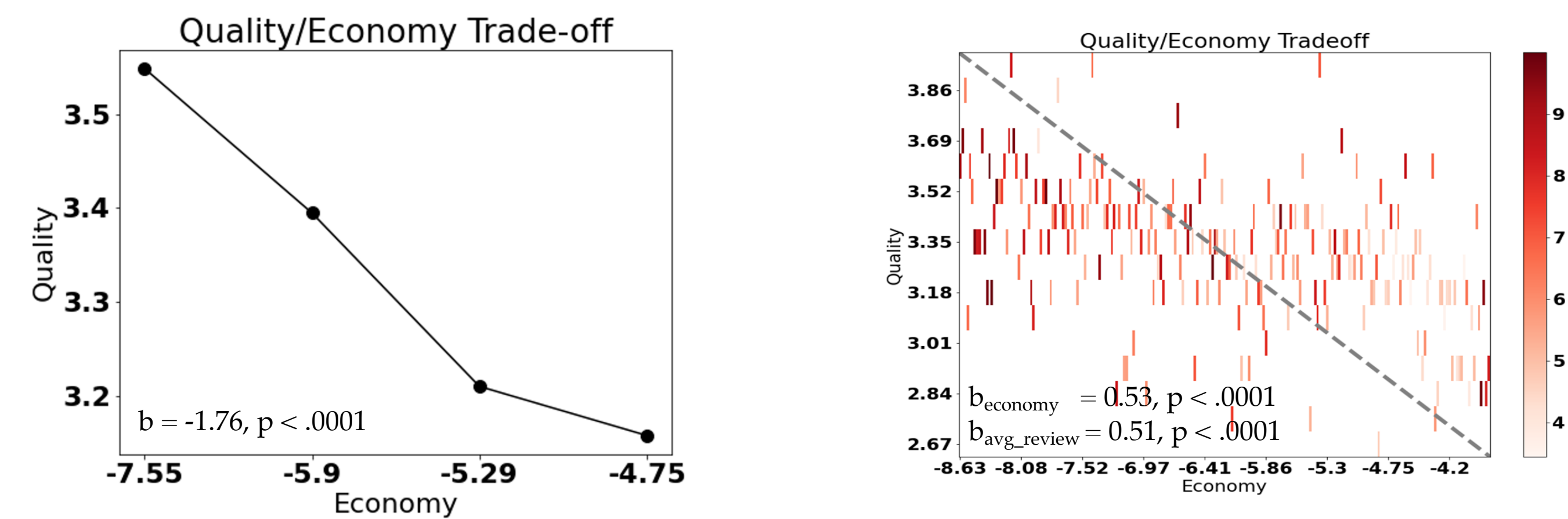
Wine B:
★★★★
£ 7.00



- Despite evidence for attraction effects in tightly constrained lab samples^[1,2], demonstrations in **real-world consumer choice**, where **choice sets are large and varied** and choices are **non-hypothetical**^[3], remain sparse^[e.g., 4].

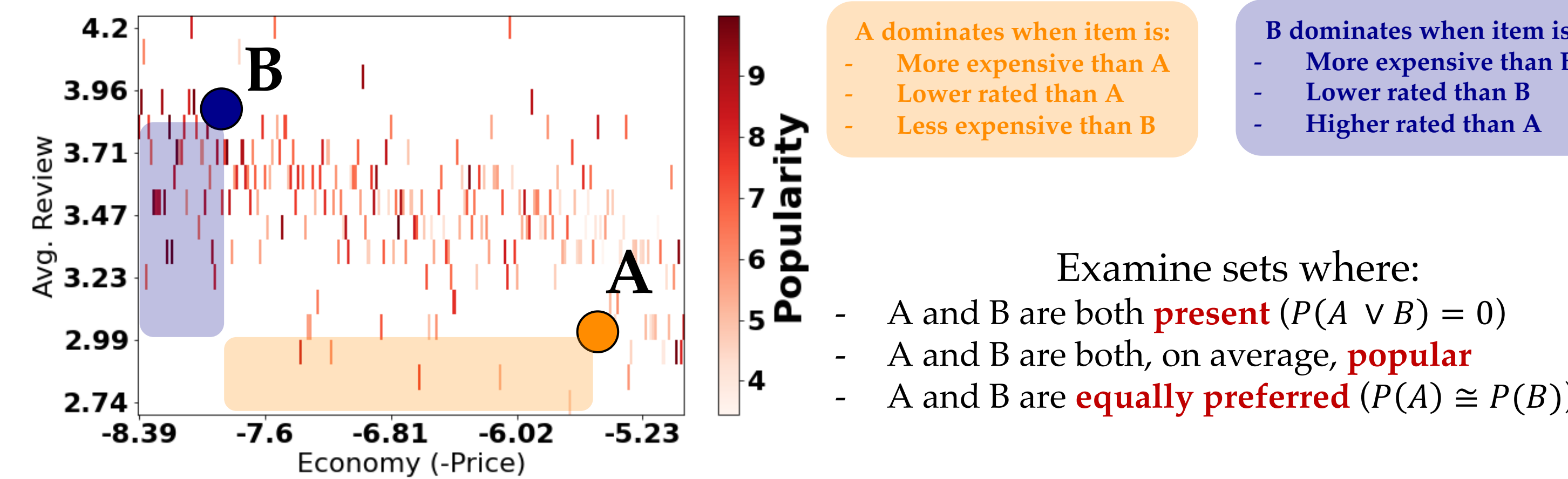
Method (cont.)

Are **cheaper** wines **worse quality**?



How are **decoy effects** defined in **constructed choice sets**?

- For popular wines (top 20 most commonly purchased):

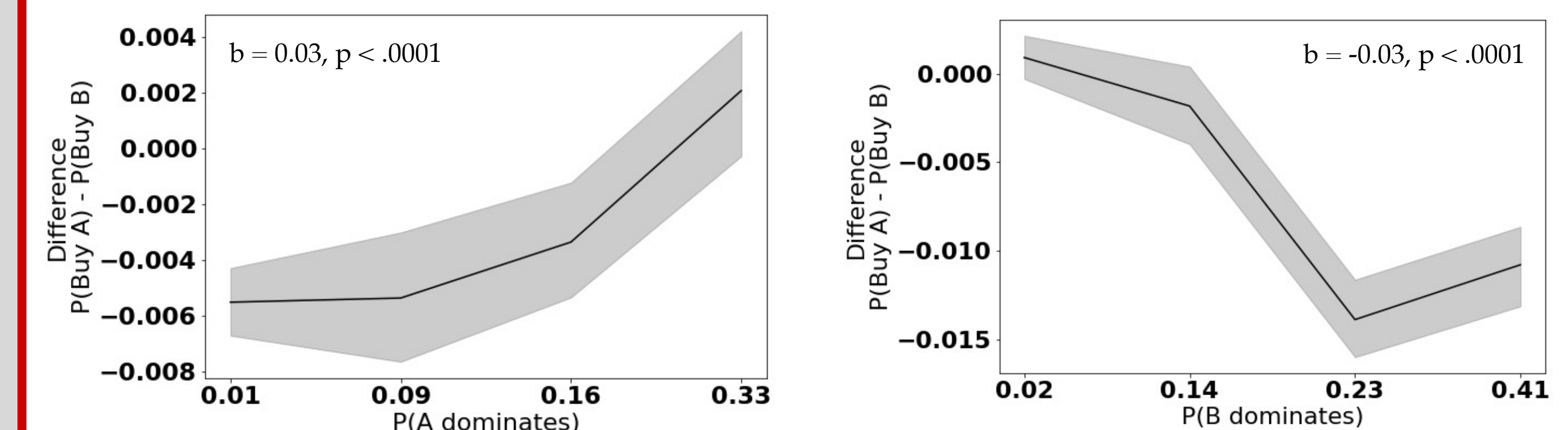


Does preference for A over B change in the presence and value of decoys in a set?

Results (cont.)

- Leveraging the heterogeneity of choice sets in our sample, we examined whether the **density of distractors** (the number of dominated items) predicted the **strength of the attraction effect**^[cf. 9]

Do decoy effects depend on the **density** of distractors?



Choice sets comprised of many similar, but poorer, options predicted stronger preference for the target item than sets of relatively few such distractors.

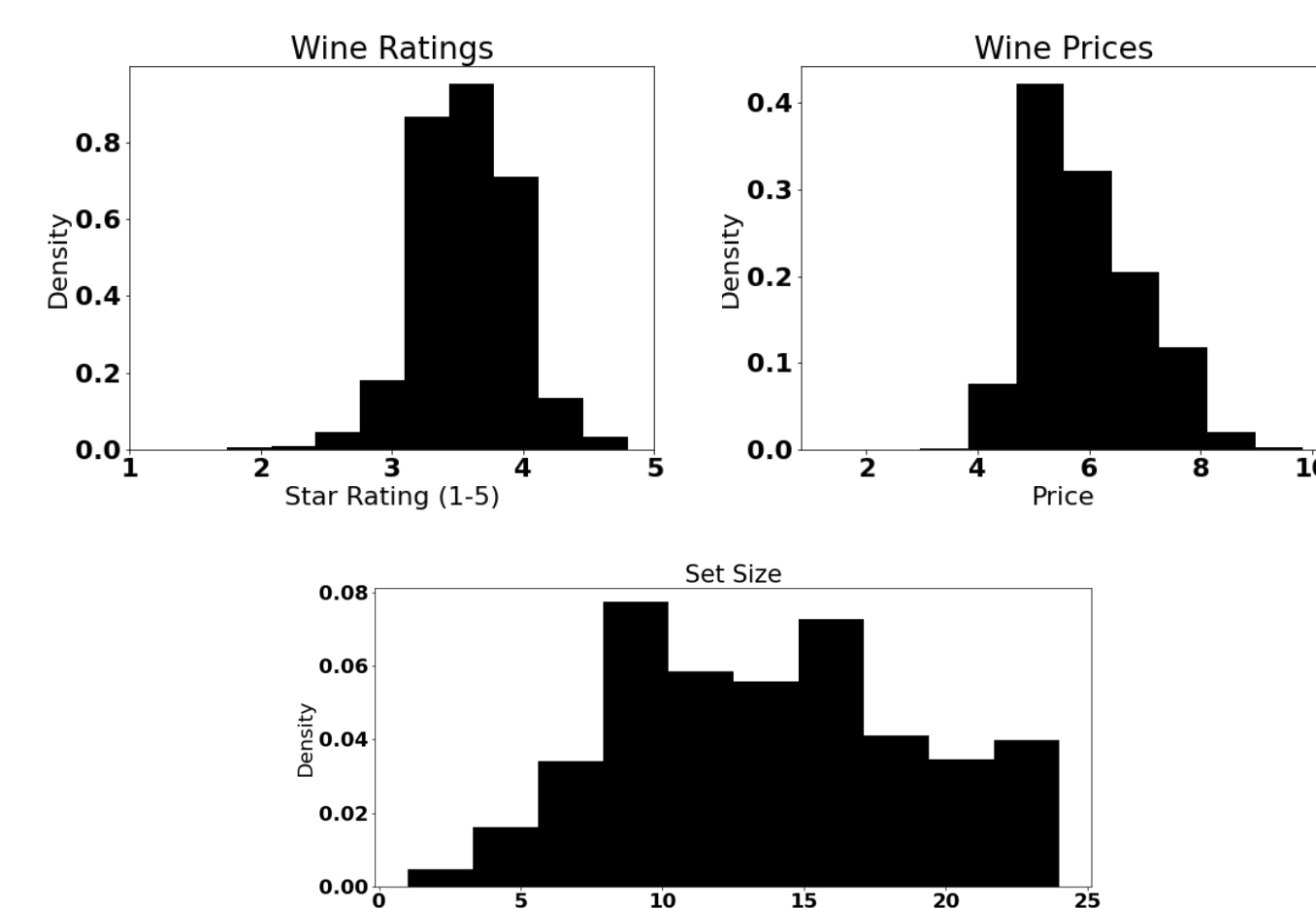
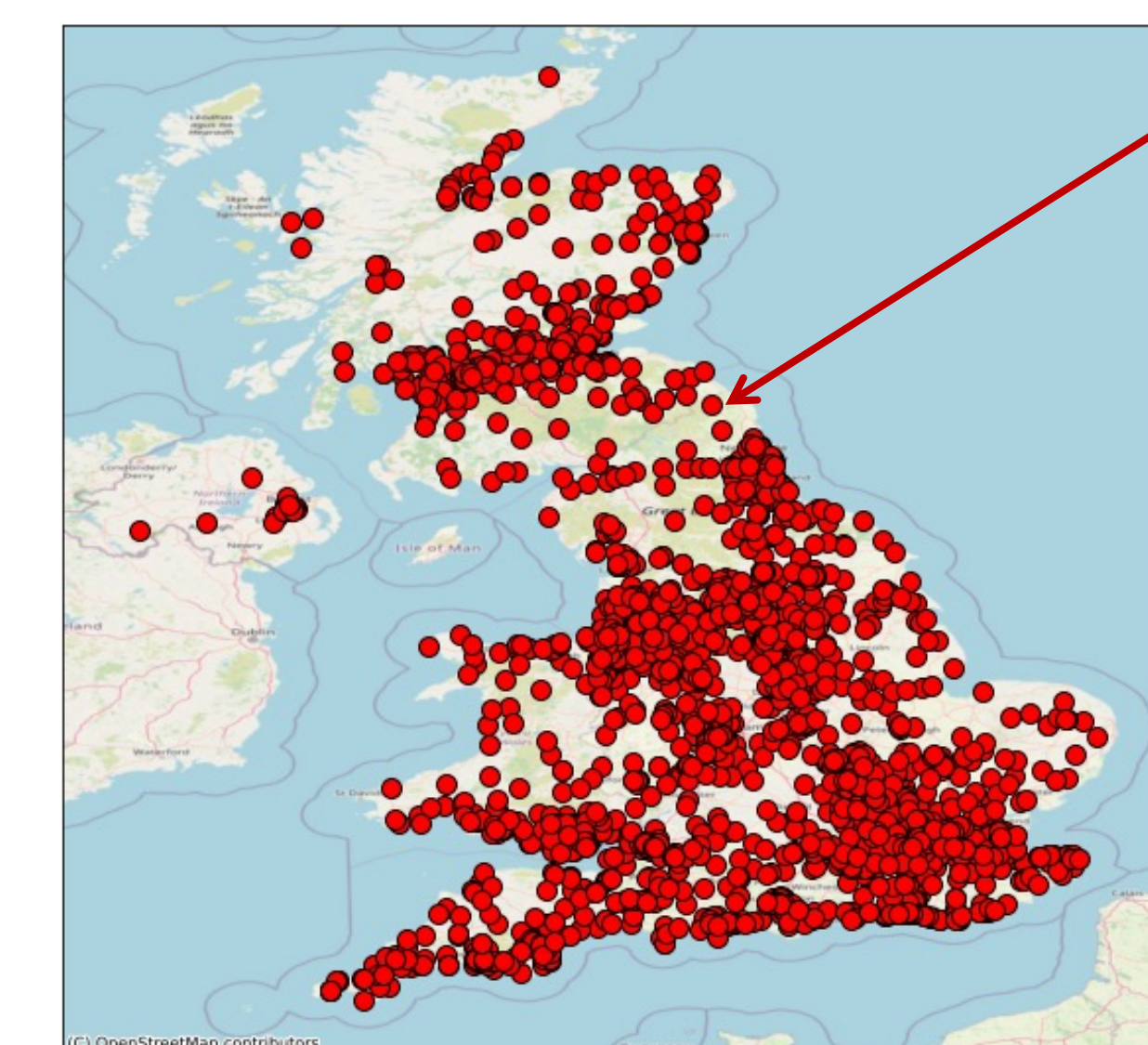
Discussion

- The attraction effect is one of the most documented biases in the study of human choice, yet evidence for its impact on **large-scale, real-world, consumer choice** is scant.
- Using a massive real-world retail dataset of wine purchases from the UK, we find **evidence for the attraction effect** across **constructed choice sets**^[6] that vary in size and composition.
- Leveraging the unique features of our dataset, we find that **sets with more similar, but dominated, options evinced a stronger attraction effect**.
- Future directions:
 - Decoy “**distance effects**”^[9]
 - Formal psychological **model**^[2]
 - Situational** variability (e.g., days of week, time of day)

Method

- Grocery Store Shopping Dataset^[5]
 - 10M purchases from 1.2M customers across 2 673 stores.
- 3, 649, 027 wine purchases from 464 stores between 2019-08-01 and 2019-10-31

- Choice set construction^[6]

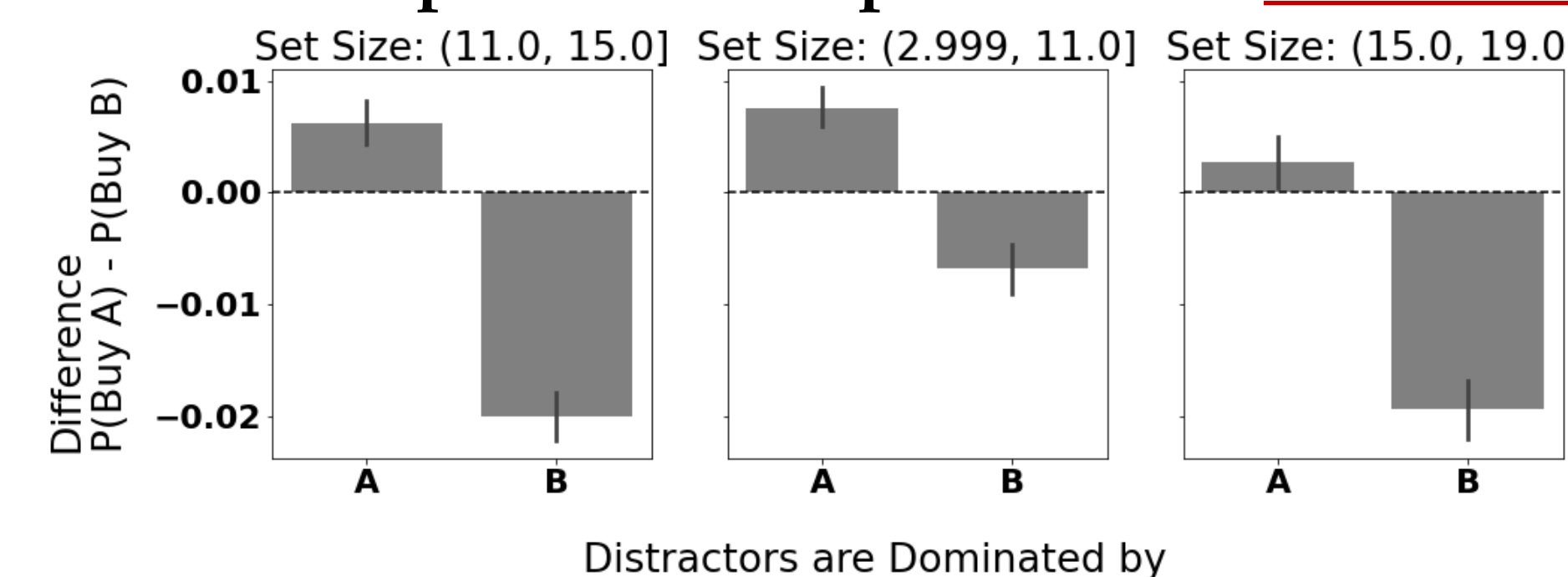


Results

Do people **prefer target wines** when they **dominate distractors**?



Does this preference depend on the **size of the set**?



In line with classical demonstrations of the attraction effect^[8], when distractors are dominated by a target, the likelihood of choosing that target over the other increases.

Relevant Literature

- Milberg et al. (2014). Synthesis of attraction effect research: Practical market implications. *European J. of Mark.*
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- Dolan, E et al. (2022). Using Shopping Data to Improve the Diagnosis of Ovarian Cancer: Survey Study. *JMIR Cancer*.
- Otto, A.R. et al. (2022). Context-dependent choice and evaluation in real-world consumer behavior. *Sci. Rep.*
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