The demand for wine and substitute products:

A survey of the literature

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Key findings

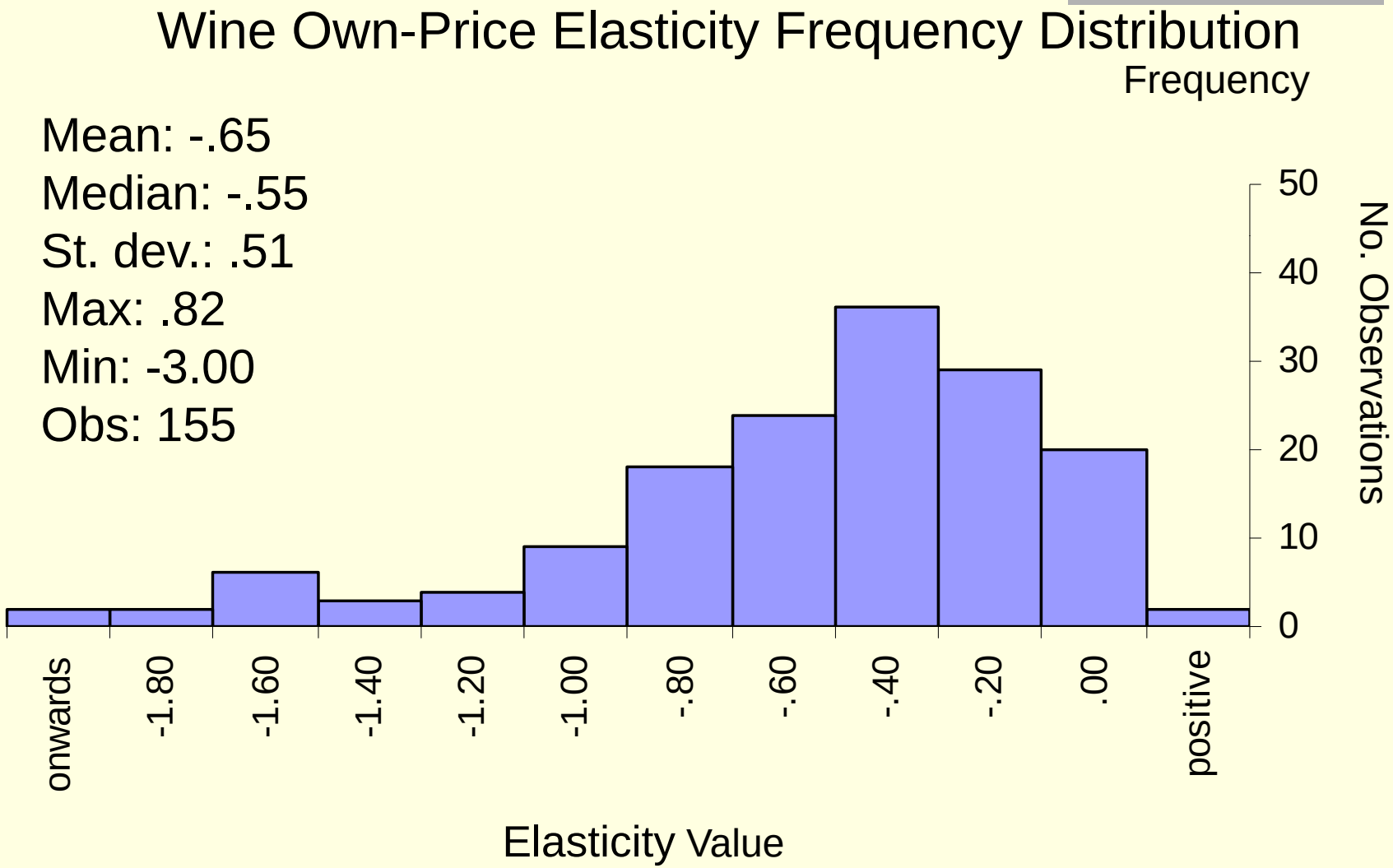
- Demand for alcoholic beverages is price inelastic
  - Imported beverages are more elastic
  - Trend for more elastic demand since 1958
- Country effects are generally not statistically different
  - Stigler and Becker (1977, p. 76) “tastes neither change capriciously nor differ importantly between people”
  - Wine in France is an exception
- Framework of analysis matters
  - Consider just elasticity point estimate -- OLS
  - Consider the point estimate and the SE -- WLS

Data for the study

- 102 papers provided elasticity estimates
  - From Stone (1945) to the present
  - English speaking country bias
- Occasionally more than one country considered
- In some cases more than one type of estimate

Beer	Wine	Spirits
154 estimates	155 estimates	162 estimates

Standard data summary: wine



Summary country details for wine

Country	Est.	Mean	S.D	Country	Est.	Mean	S.D

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Canada	33	-.80	.39				
Cyprus	2	-.40	.23				
Denmark	2	-.61	.45				
Finland	9	-1.14	.63				
France	3	-.07	.02				
Germany	1	-.38	-				
Ireland	3	-1.33	.46				
Italy	1	-1.00	-				
Japan	2	-.10	.05				

Summary country details for wine

Country	Est.	Mean	S.D	Country	Est.	Mean	S.D
Australia	18	-.66	.67	N'lands	1	-.50	-
Canada	33	-.80	.39	N. Z.	8	-.56	.28
Cyprus	2	-.40	.23	Norway	7	-.37	.43
Denmark	2	-.61	.45	Poland	1	.82	-
Finland	9	-1.14	.63	Portugal	1	-.68	-
France	3	-.07	.02	Spain	3	-.98	3
Germany	1	-.38	-	Sweden	12	-.83	.41
Ireland	3	-1.33	.46	U.K.	39	-.72	.56
Italy	1	-1.00	-	U.S.	31	-.55	.45
Japan	2	-.10	.05				

Meta-analysis framework

- Meta-analysis question:
  - Is the observed variation in elasticity estimates due to sampling error only?
- Stepwise process of analysis
  - Step one: consider the fixed effects model
  - Step two: consider the random effects model
  - If both the fixed and random effects models are rejected design a meta-regression

Meta-analysis approaches

- Fixed effects model
  - Find the weighted mean where the weights are the inverse of the estimate variance
  - Test statistic is based on the sum of the weighted mean square differences
  - High values lead to rejection of null that the reported elasticity estimates are from the same population

Meta-analysis approach continued

- Random effects model
  - Proceed as for fixed effects but reduce the weight to very precise estimates
- Meta-regression approach
  - Observations can be grouped together according to study characteristics
  - Grouping are likely to be based around country, estimation method, time period, data frequency, etc.

Compensated wine estimates

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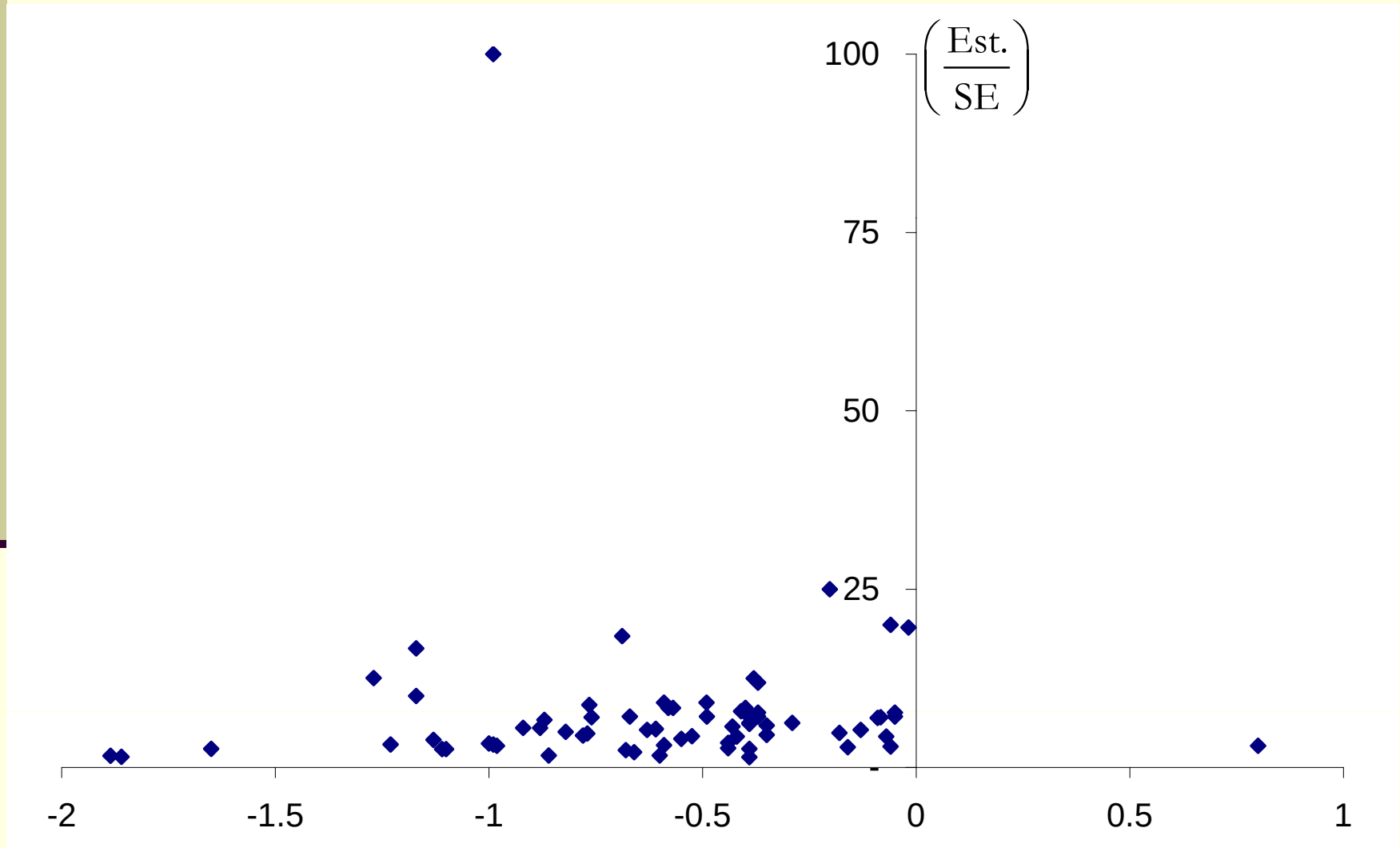
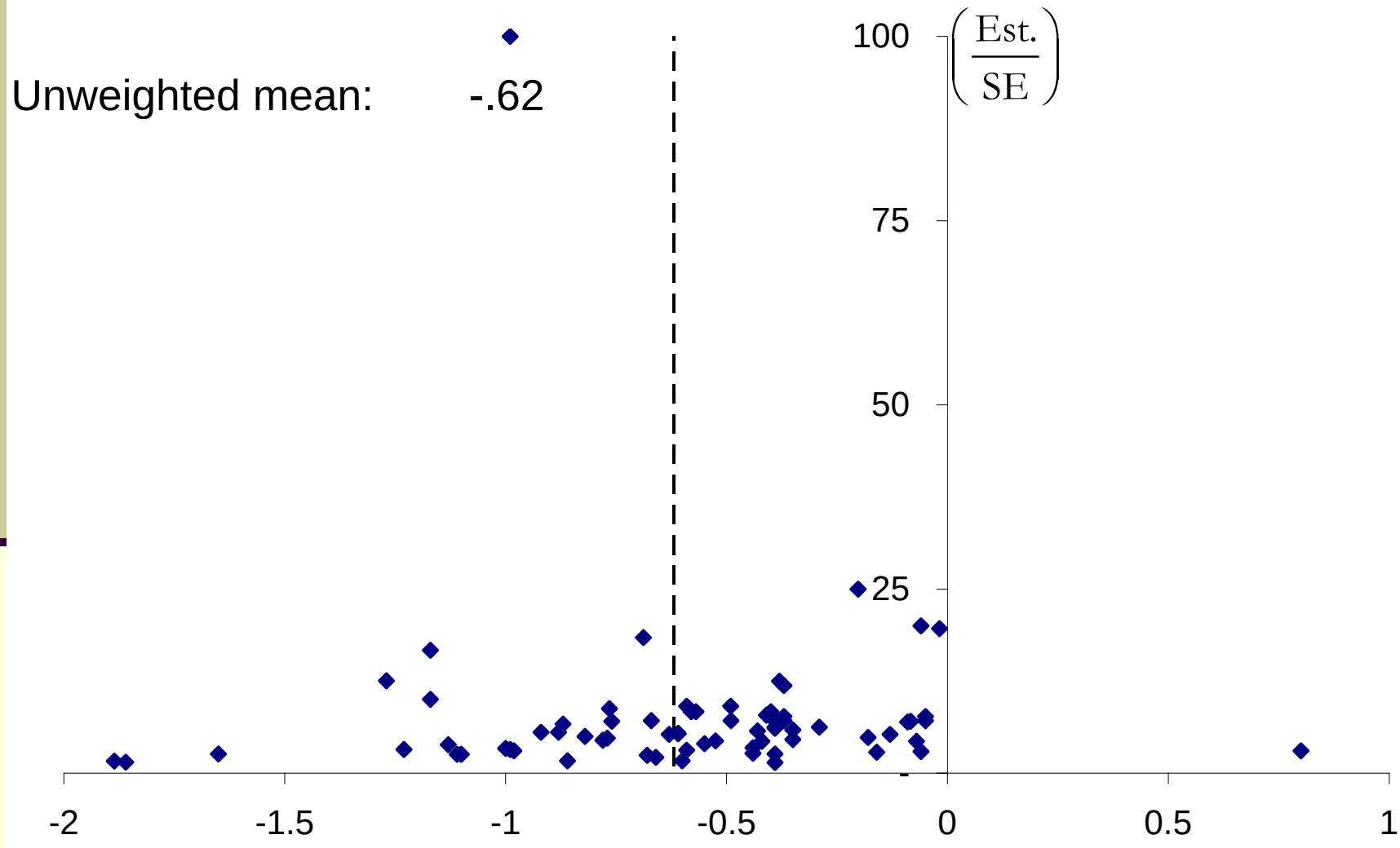
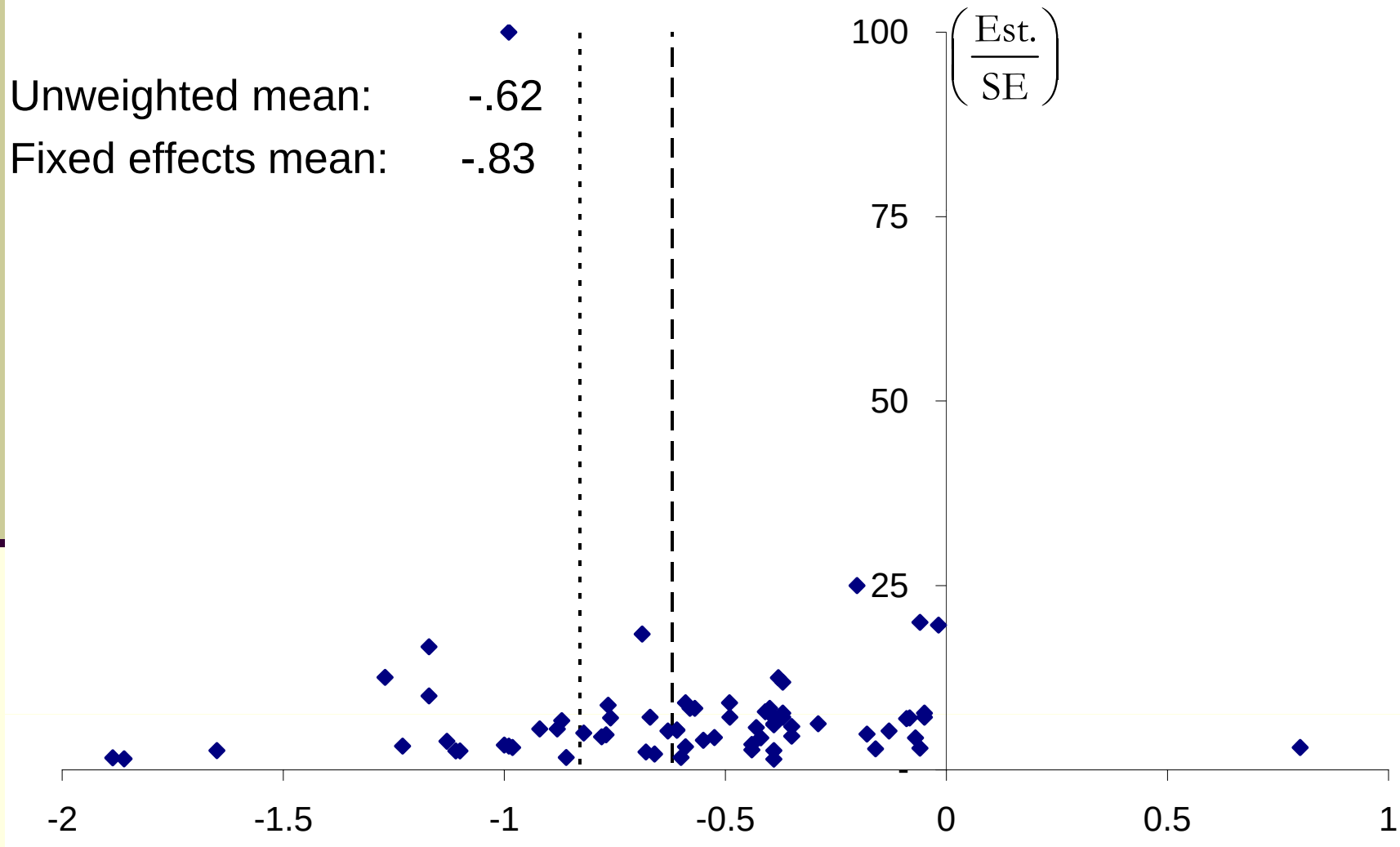


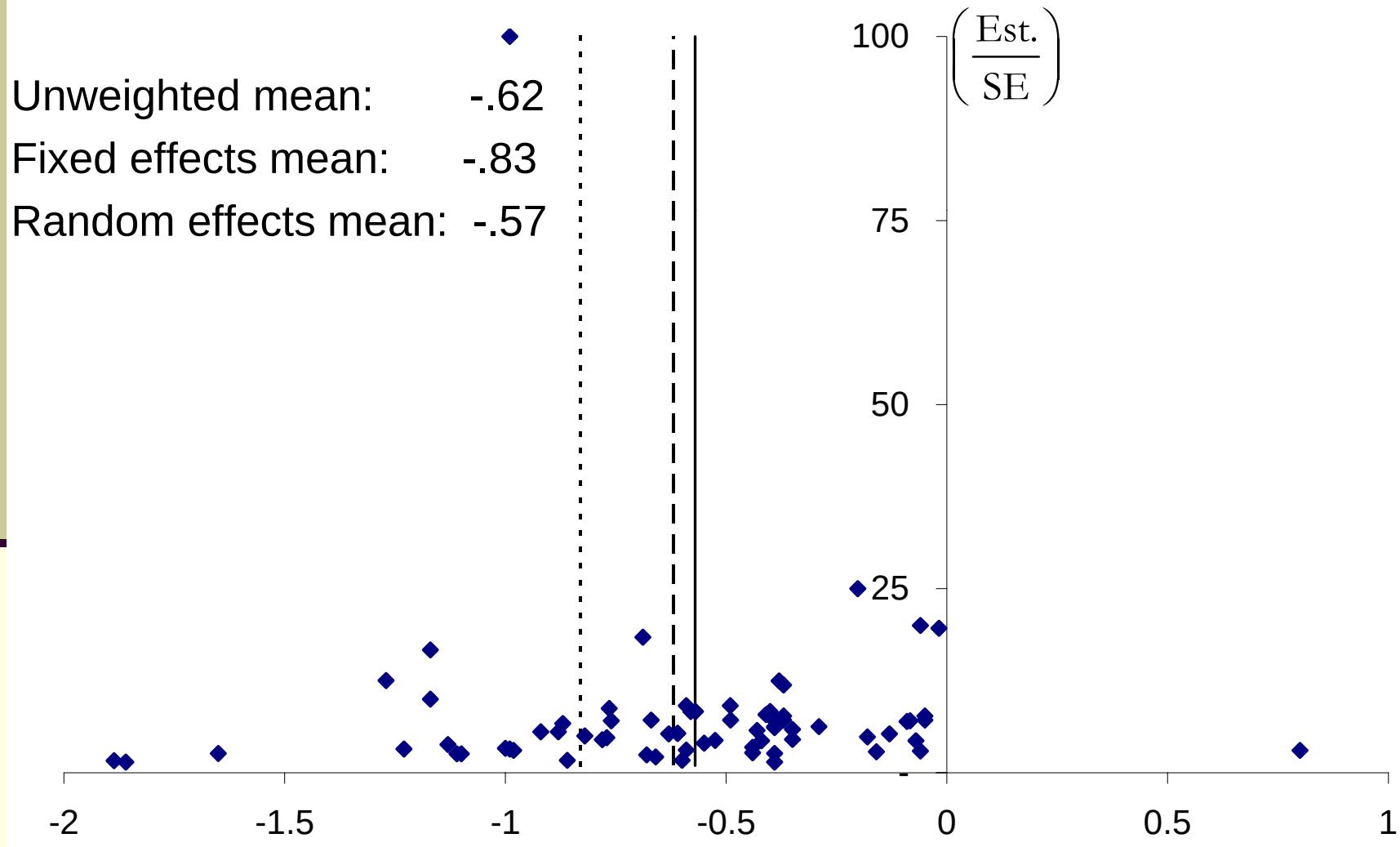
Compensated wine estimates



Compensated wine estimates



Compensated wine estimates



Summary testing results

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- So try meta-regression
  - WLS where weights are inverse variance

Interesting findings: Time

- The time trend variable
  - Enters as a quadratic,
  - 1958 is the point of most inelastic demand
  - The trend is gentle and between 1958 and 1994 the implied trend increase in elasticity is .13
  - OLS – between 1958 and 1994 more inelastic
- A possible relationship with illicit substances
  - Marijuana, Ecstasy, Speed, etc. could be substitutes
  - Speculative so other suggestions welcome

Interesting findings: Country effects

- Pair-wise testing – 66 comparisons per beverage

Average Rejection Rates

Beer	Wine	Spirits
12 percent	21 percent	12 percent

- The main exceptions relate to wine:
  - Wine in France: 73 percent rejection rate (inelastic)
  - Wine in UK: 45 percent rejection rate (elastic)
  - Wine Canada: 45 percent rejection rate (elastic)
  - Beer in NZ: 45 percent rejection rate (inelastic)

Final points of note

- Paper available with details and an appendix covering each paper
- The approach could be a useful framework for some of the hedonic literature on expert opinion etc.