

# Standard Drinks and Actual Drink Sizes: A Literature Review

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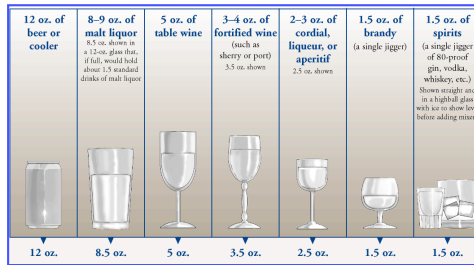
## Objective

- Conduct the first comprehensive review of the studies testing drinkers' definitions and use of standard drinks.
- Examine the implications for future policies, health promotion efforts and research.

## Standard Drinks

- The National Institute on Alcohol Abuse and Alcoholism defines drink sizes to establish guidelines for alcohol use. One standard drink corresponds to (Figure 1):

Figure 1. NIAAA's Definition of Standard Drinks.



Excerpted from NIH Publication No. 07-3769

- Other countries propose guidelines for drinking; however there are important variations in the limits and drink sizes recommended (Table 1).

Table 1. Standard Drink Sizes for Selected Countries.

Standard Drinks (grams of ethanol)	Countries
8	United Kingdom
9.9	Netherlands
10	Australia
12	Denmark, France
13.6	Canada
14	United States
17	Hungary
19.75	Japan

Source: International Center for Alcohol Policies (2007)

- Surveys assessing drinking levels rely on the notion of standard drinks when enquiring about participants' alcohol consumption.
- Even within a country, researchers do not use the same standard sizes. For example, the Harvard School of Public Health College Alcohol Survey specifies a standard drink as 4 oz of wine and a 1.25 oz of liquor (12 oz of beer).
- Surveys are based on the assumption that respondents know and understand the concept of standard drink and are able to use it.

## Literature Search

- Databases: Medline and PsycInfo
- Publication Dates: Before December 2007
- Keywords: Standard drink, units of alcohol, and standard unit, combined with alcohol, in the "all text" field
- Number of hits: 271
- Selection and hand search of reference lists resulted in 18 studies published between 1981 and 2007
- Six studies were conducted in the United States, seven in Australia, four in the United Kingdom, and one in the Netherlands (reference list available upon request).
- Tasks Used in the Studies Reviewed**
  - Give the size of a standard drink (or amount of ethanol)
  - Pour a standard drink
  - Pour one's usual drink
  - Identify the size of one's usual drink among photographs of drinking cups / glasses.

## Results

- Overall, there is a strong general tendency to over-size drinks and to under-estimate the alcohol content of beverages: Drinkers pour more than the volume of a standard drink, and they underrate the volume of alcohol in drinks.
- These effects are stronger for hard liquor and wine than for beer.

### Beer

- Most college students knew the national standards for regular beer and this knowledge was associated with pouring accuracy (Stockwell *et al.*, 1991; White *et al.*, 2003; 2005).
- Drinkers from general populations reported pouring beers of standard size when the beer was of regular strength and was poured from regular bottles (Kerr *et al.*, 2005; Stockwell & Stirling, 1989).
- When beer was stronger, participants over-sized their drinks -- conversely they underestimated the volumes of alcohol contained in the drinks (Hasking *et al.*, 2005; Stockwell & Stirling, 1989).
- Over-sizing of drinks occurred when individuals were pouring beer from a large container (2.5 gallons) (White *et al.*, 2003; 2004).

### Hard Liquor

- Drinks of hard liquor or spirits were systematically over-sized with volumes up to three standard drinks (Gill *et al.*, 2007; Gill & O'May, 2007; Kerr *et al.*, 2005; White *et al.*, 2003; 2005).
- In Australia where the standard size corresponds to the common size of a serving of spirits, two third of a student sample knew the standard (Hasking *et al.*, 2005).
- The over-sizing of spirits increased with cup size and was greater for stronger spirits (Gill & O'May, 2007; White *et al.*, 2003; 2005).
- Drinkers were even less accurate with mixed drinks than with shots (Hasking *et al.*, 2005; White *et al.*, 2003; 2005).
- Even experienced bartenders poured more alcohol in mixed drinks than the standard (Wansink *et al.*, 2005).

### Wine

- Knowing the standard size of wine reduced the volumes poured (White *et al.*, 2005).
- Drinkers were rather unaware of standard sizes of wine, and volumes poured exceeded the standard size by 8 to 40% in the United States and the Netherlands (Kerr *et al.*, 2005; Lemmens, 1994; White *et al.*, 2005).
- In the UK where the national standard is stricter, almost every single study participant poured wine in excess and the average volume poured nearly doubled the UK unit of alcohol (Gill & Donaghy, 2004; Gill & O'May, 2007).
- The volumes poured increased with the size of the cups / glasses, the size of the pouring containers, and the strength of wine (Hasking *et al.*, 2005; Stockwell *et al.*, 1991; Stockwell & Honig, 1990; Stockwell & Stirling, 1989; White *et al.*, 2005).

## Implications

### Assessing Alcohol Consumption

- Correcting consumption estimates by using the self-defined sizes increases considerably these estimates for malt liquor, beer, hard liquor, and wine, as well as total consumption estimates (Kaskutas & Graves, 2001; Kerr *et al.*, 2005; Lemmens, 1994).
- This implies that the prevalence of alcohol use in the United States, the United Kingdom, Australia, the Netherlands, and most likely other countries, may be considerably underestimated.
- Researchers using the concept of standard drinks to estimate alcohol consumption should also assess self-defined sizes of drinks and provide consumption estimates both with and without adjusting for self-defined sizes of drinks.

### International Comparisons of Alcohol Consumption Levels

- The studies reviewed presented too much heterogeneity for a cross-cultural comparison of self-defined drinks.
- We still need to address this issue: Does the discrepancy between self-defined drink sizes and national standard sizes vary systematically between countries?
- How could we interpret international variations? Would the discrepancy be smaller in countries that have larger standard drink sizes? Would it be smaller in countries where standard sizes correspond better to the most common beverage strengths, serving containers or drinking cups / glasses?
- The UK appeared to have the greatest discrepancy between self-defined sizes and standard drinks. It is also the country with the smallest standard drink sizes. However the results are based on a small set of studies that were the only one to use real alcohol; assessments of the usual drinks were conducted outside the home; and a restricted set of glasses was used instead of the glasses usually used at home.

### Research

- Researchers should test the role of multiple factors in accounting for the over-sizing effects; among them, the role of perceptual biases and mathematical complexity.
- Researchers need to test the impact of social and psychological factors on drink sizes: e.g., Individuals may feel socially more comfortable to pour greater volumes in larger cups as their availability may indicate social tolerance for pouring (and drinking) more; pouring alone or in groups may affect drink sizes in a manner consistent with social norms; also pouring alcohol rather than water (as in most studies) may produce even greater effects.

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