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# Awareness of the Alcohol-Cancer Link

*William Klein, PhD  
Associate Director  
Behavioral Research Program  
Division of Cancer Control and Population Sciences*

**BEHAVIORAL RESEARCH PROGRAM**

DIVISION OF CANCER CONTROL AND POPULATION SCIENCES

# Awareness of the Link between Alcohol Consumption and Cancer across the World: A Review

Jennifer K. Scheidele; William M.P. Klein

- Reviewed 32 studies examining lay awareness of alcohol as a risk factor for cancer in 16 countries
- Results show that awareness appears to be low and varies internationally; it is relatively higher in the UK, Morocco, and Australia
- Potential strategies to increase awareness include alcohol bottle labeling and fostering patient/physician discussions regarding the link

Table 1. Summary of studies conducted including methods, participant demographics, and sample size

Year surveyed (not published)	First author	Country	Recognition of abstention as a cancer prevention strategy	Recognition of alcohol as a risk factor	Question format (open-ended vs. listed)	Gender surveyed	Cancer type explored	Age group	Sample size
1988	Hill	Australia	8%	N/A	List	Both	All	16+	3527
1988-1989	Baghurst	Australia	N/A	35%	Open-end	Both	All	18+	1095
1989	Hall	Australia	N/A	0%	Open-end	Both	None	18-65	500
1990	Horowitz	USA	N/A	13%	List	Both	Oral	18+	41104
1991-1992	Makris	Greece	N/A	26% Blood 22.1% Esophagus 14.1% Brain 3.2% Liver	List	Both	All	18-25 (college)	1136
1996	Kristeller	USA	N/A	13/5	List	Both	Specified	25-83	1095
1999	Nichols	USA	N/A	8%	Open-end	Female	All	10-13	62
1999	La Vecchia	Italy	N/A	86.7%	List	Both	All	16+	5579
1999-2000	La Vecchia	Belgium	75.8%	N/A	List	Both	All	16+	5579
1999-2000	La Vecchia	France	84%	N/A	List	Both	All	20+	5579
1999-2000	La Vecchia	Spain	82%	N/A	List	Both	All	16+	5579
1999-2000	La Vecchia	Portugal	83.5%	N/A	List	Both	All	16+	5579
1999-2001	Peacey	North, Europe	N/A	17.8%	List	Female	Disease	17-30	2547
1999-2001	Peacey	East, Europe	N/A	15%	List	Female	Breast	17-30	2285
1999-2001	Peacey	South, Europe	N/A	15%	List	Female	Breast	17-30	2372
1999-2001	Peacey	Asia	N/A	5.8%	List	Female	Breast	17-30	1255
1999-2001	Peacey	Africa/South Amer.	N/A	12.3%	List	Female	Breast	17-30	1145
1999-2001	Peacey	Amer USA	N/A	10.1%	List	Female	Breast	17-30	1120
2001	West	UK	N/A	19.4%	Open-end	Both	Oral	16+	3384
2002	Sanderson	UK	N/A	N/A	Open-end	Both	All	16-75	1747
2002	Garcia	Spain	N/A	8%	List	Both	All	1438	1438
2003	Inoue	Japan	N/A	21.7%	List	Both	All	20+	2000
2003	Hawkins	USA	3.8%	N/A	Open-end	Both	All	18+	5589
2004	Redeker	UK	N/A	33%	List	Both	All	15+	4233
2004	Messina	USA	N/A	N/A	List	Both	Colorectal	50+	1093
2004	Bowden	Australia	N/A	22.4%	List	Both	All	18+	2700
2006	Spector	USA	N/A	N/A	Open-end	Female	Breast	35-74	32
2005	AICR	USA	N/A	33%	List	Both	All	18+	1010
2007	AICR	USA	N/A	37%	List	Both	All	18+	1022
2007-2008	MacTiernan	Australia	N/A	57.5%	List	Both	All	18+	2094
2008	El Rhazi	Morocco	N/A	81%	List	Both	All	18+	2891
2009	AICR	USA	N/A	46%	List	Both	All	18+	1255
2009	Cotter	Australia	N/A	48%	List	Both	Disease	18-65	1255
2011	Lagerlund	Denmark	N/A	43.3%	List	Both	All	30+	3000
2011	Lagerlund	Sweden	N/A	47.4%	List	Both	All	30+	3070
2011	Gosein	Trinidad	N/A	12.4%	List	Female	Breast	40+	441
2012	Bowden	Australia	N/A	36.6%	List	Both	All	18+	2700
2012	Namuyi	Kenya	N/A	47.5%	Open-end	Both	Breast	18+	1335
2013	AICR	USA	N/A	38%	List	Both	All	18+	1026
2013	Monteiro	Portugal	N/A	24.6%	Open-end	Both	Oral	18-96	1116
2013	Buykx	Australia	N/A	47.4%	List	Both	All	18-91	2482
2013	Buykx	Australia	N/A	55.3%	List	Both	All	20-29	365
2015	Ryan	Ireland	N/A	42%	Open-end	Both	All	18-74	748
2015	Buykx	England	N/A	46.9% (when given a list) 12.9% (when open-ended)	Both	Both	All	18+	2100
2015	AICR	USA	N/A	43%	List	Both	All	18+	1108
2016	Merten	USA	N/A	86% (liver)	Given	Both	All	18-25	728
2017	AICR	USA	N/A	39%	List	Both	All	18+	N/A

<https://aacrjournals.org/cebpa/article/27/4/429/71526/Awareness-of-the-Link-between-Alcohol-Consumption>

## Evaluating Correlates of Awareness of the Association between Drinking Too Much Alcohol and Cancer Risk in the United States

Kara P. Wiseman and William M.P. Klein



- Thirty-eight percent of the US population believed there was an association (38.36%), 36.17% were uncertain, and 25.47% believed there was no association
- People believing that everything causes cancer and people who had ever looked up information about cancer had 1.61 and 1.80 higher odds of reporting “Yes” [95% confidence intervals (CI), 1.08–2.42 and 1.27–2.57, respectively]

<https://aacrjournals.org/cebp/article/28/7/1195/71974/Evaluating-Correlates-of-Awareness-of-the>

## Do Beliefs about Alcohol and Cancer Risk Vary by Alcoholic Beverage Type and Heart Disease Risk Beliefs?

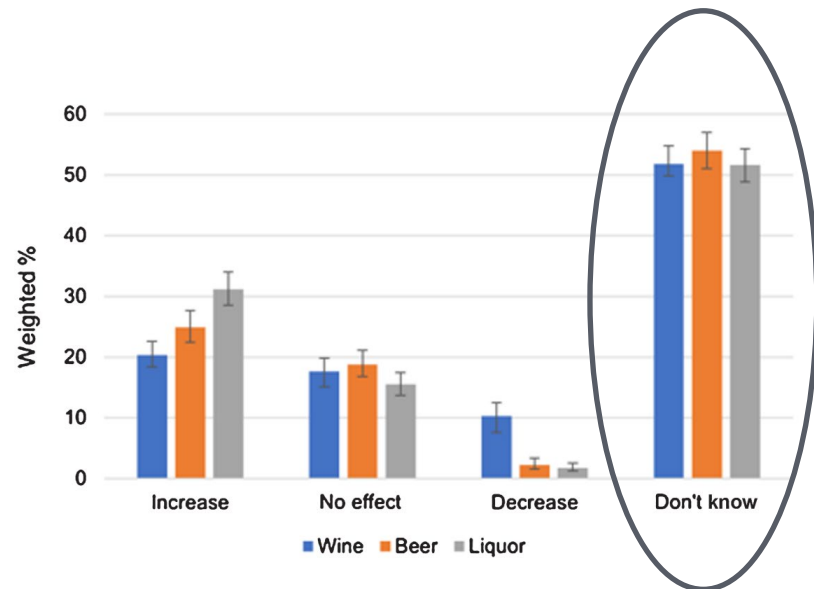
Andrew B Seidenberg <sup>1</sup>, Kara P Wiseman <sup>2</sup>, William M P Klein <sup>1</sup>

Affiliations + expand

PMID: 36453075 PMID: PMC9839574 (available on 2023-07-09)

DOI: 10.1158/1055-9965.EPI-22-0420

- Results illustrate a lack of awareness that alcohol is a risk factor for cancer
- Many believe that current labeling is not sufficient; a petition has been signed by various professional associations and societies, advocating for rotating warning labels



Weighted proportion of US American adults' beliefs about how wine, beer, and liquor consumption affect cancer risk (error bars 1/4 95% CI)

# Health Information National Trends Survey (HINTS) data



## Public Awareness of Alcohol as a Risk Factor for Cancer

Alcohol consumption increases the risk of developing several types of cancer, including liver, colorectal, esophageal, and breast, and it is estimated that alcohol use accounts for about 6% of all incident cancer cases and 4% of all cancer deaths in the United States. Although alcohol has been recognized as a carcinogen for decades, awareness of the link between alcohol and cancer among the general public remains low. Nationally representative surveys consistently demonstrate that less than half of the population is aware that alcohol is a risk factor for cancer. Furthermore, research suggests that certain demographic, behavioral, and cognitive characteristics (such as age, sex, cancer history, drinking behavior, information seeking, health self-efficacy, and beliefs about cancer) may be associated with awareness that alcohol increases cancer risk.

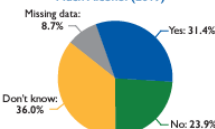
Increasing awareness of the link between cancer and alcohol use, especially among high-risk populations, could be important to reducing the burden of alcohol-related cancers. An accurate understanding of risk could help change public attitudes toward alcohol use, help individuals make informed decisions about their drinking behavior, and motivate people to comply with public health recommendations to reduce alcohol consumption. Research suggests that media campaigns, individual counseling in health care settings, and placement of warning labels on alcohol products may be potentially effective strategies for increasing awareness of the association between alcohol and cancer.

Alcohol use has increased significantly in the United States over the past few decades, particularly among women, racial/ethnic minority populations, and individuals of lower socioeconomic status. Studies also suggest that alcohol consumption increased significantly during the COVID-19 pandemic (especially among women)—making it increasingly important to inform the public about the relationship between alcohol and cancer risk.

## Quick Facts

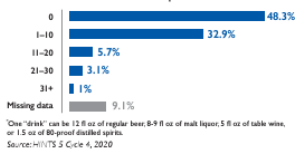
- Alcohol is a known risk factor for several cancers, including liver, breast, colorectal, and esophageal cancers.
- Alcohol consumption is increasing in the United States, particularly among women, racial/ethnic minority groups, and individuals of lower socioeconomic status.
- There is no safe amount of alcohol when it comes to cancer risk. Although heavy drinking carries the greatest risk, even low and moderate levels of alcohol consumption increase cancer risk.
- Because they contain ethanol, all types of alcoholic beverages, including wine, beer, and liquor, can increase cancer risk.
- Studies suggest that most Americans are unaware that alcohol increases cancer risk.

Percentage of Americans Who Think Cancer Can Result from Drinking Too Much Alcohol (2019)



Source: HINTS 5 Cycle 3, 2019

Alcohol Consumption by American Adults (2020)

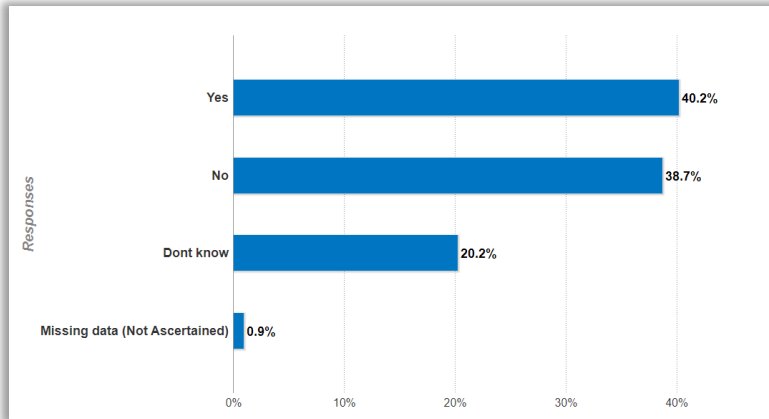


This HINTS® Brief examines awareness of alcohol as a cancer risk factor among American adults.

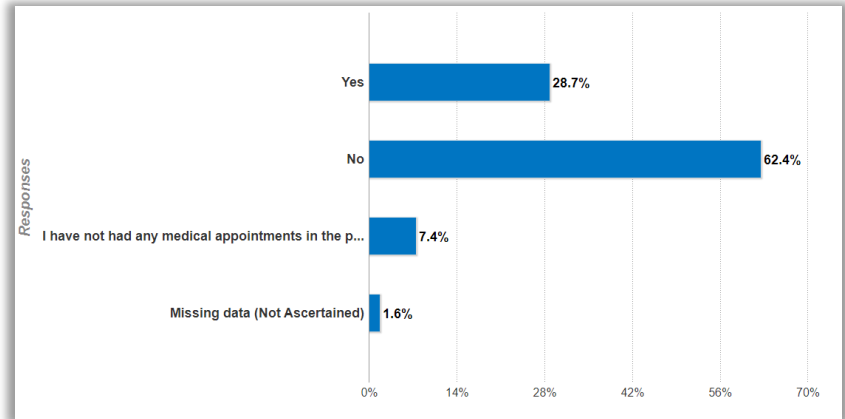
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# Health Information National Trends Survey (HINTS) data

- Have you ever heard or read that alcohol increases the risk of cancer? HINTS 6 (2022)



- In the past 12 months, have you heard about the negative health consequences of drinking alcohol from doctors or other health care professionals? HINTS 6 (2022)





- Most Americans supported adding warning labels (65.1%) and drinking guidelines (63.9%), whereas only 34.4% supported banning outdoor alcohol advertising
- Americans reporting that alcohol had no effect/decreased cancer risk had lower odds of support for advertising ban (OR=0.56), warning labels (OR=0.43), and guidelines (OR=0.46) than Americans aware of the alcohol–cancer link
- Moreover, heavier drinkers had lower odds of support for advertising ban (OR=0.41), warning labels (OR=0.59), and guidelines (OR=0.60) than nondrinkers



Research Article

## Awareness of Alcohol as a Carcinogen and Support for Alcohol Control Policies

Andrew B. Seidenberg PhD, MPH<sup>1</sup>  , Kara P. Wiseman PhD, MPH<sup>2</sup>,  
Raimee H. Eck PhD, MPH, MPA<sup>1</sup>, Kelly D. Blake ScD<sup>1</sup>, Heather N. Platter PhD, MS<sup>1</sup>,  
William M.P. Klein PhD<sup>1</sup>

Increasing public awareness  
of the alcohol–cancer link  
may increase support for  
alcohol control policies

<https://www.sciencedirect.com/science/article/pii/S074937972100430X#:~:text=Alcohol%20use%20increases%20cancer%20risk,support%20for%20alcohol%20control%20policies.>

## Clinician Role in Patient Awareness Regarding Carcinogenic Nature of Alcohol Consumption in the US: a Nationally Representative Survey

Concise Research Report | Published: 10 September 2021

Volume 37, pages 2116–2119, (2022) [Cite this article](#)

- Clinician discussion associated with higher awareness of the carcinogenic nature of alcohol, independent of other known correlates of awareness and irrespective of cancer status

<https://link.springer.com/article/10.1007/s11606-021-07113-9>

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# Warning labels worldwide

The New York Times

## Which Countries Warn That Alcohol May Cause Cancer?

A quarter of nations worldwide have health risk labels on alcohol.  
But only South Korea has a warning about liver cancer.

### Latest news

All →

#### What's in the bottle: Ireland leads the way as the first country in the EU to introduce comprehensive health labelling of alcohol products

May 26, 2023, 12:51 PM

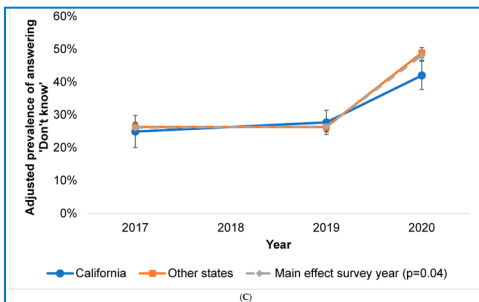
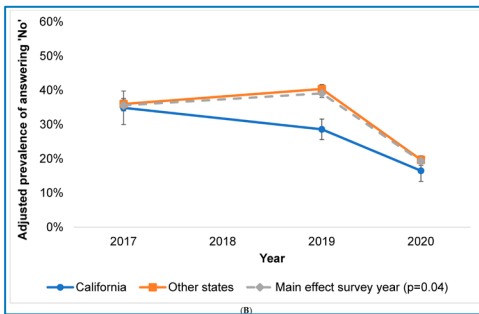
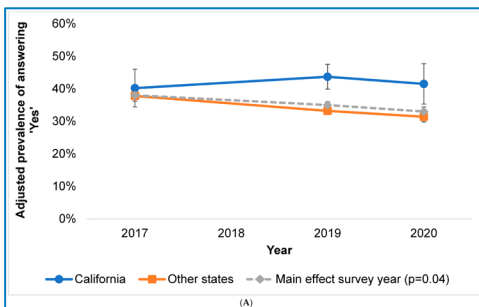
Health information on alcohol products allows consumers to make informed choices about the risks of consuming alcohol. Ireland is the first country in the European Union (EU) to ensure that, from 2026, all alcohol products will have comprehensive labelling about health risks from consumption, including warnings about the risks of developing cancers.



Scheufler-Mychmanis, N., Weierstraße, A., Volante, K., Stockwell, T., Zhao, J., Hammond, D., McClellan, J., Gendreau, T., R., Parvati, C., & Nelson, E. (2023). Examining the impact of alcohol labels on awareness and knowledge of national drinking guidelines: a real-world study in Yukon, Canada. *Journal of Studies on Alcohol and Drugs*, 81, 262-272. doi:10.15288/jstud.2023.81.262

Created by Alexandra Janssens  
Art Direction: Steven Janssens

<https://www.jsad.com/page/news/mar2020>



Open Access Article

## Awareness of Alcohol and Cancer Risk and the California Proposition 65 Warning Sign Updates: A Natural Experiment

by Alexandra Budenz<sup>1</sup>, Richard P. Moser<sup>2</sup>, Raimee Eck<sup>3</sup>, Tanya Agurs-Collins<sup>3</sup>, Timothy S. McNeel<sup>4</sup> , William M. P. Klein<sup>2</sup>  and David Berrigan<sup>3,\*</sup>  

- This study examines knowledge of the association between alcohol use and cancer risk in California compared to the rest of the US before and after the 2018 P65 update
- The 1986 warning signs may have had an enduring effect on awareness, though the update, so far, has not
- Further efforts are needed to determine how to increase alcohol and cancer knowledge to address the burden of alcohol-attributable cancers

<https://www.mdpi.com/1660-4601/19/19/11862>

# Warning label research at NCI

- Inspired in part by history of support for tobacco labeling research and 2020 petition to update US alcohol warning labels
- Online experiments with message conditions and probes concerning responses including thoughts and intentions
- Topics include:
  - **Message certainty** – ‘causes cancer’ vs ‘may cause cancer’
  - **Risk relationship**– ‘no safe level,’ ‘the more you drink, the higher the risk,’ ‘the less you drink, the lower the risk’
  - **Warning source** – ‘government’ vs ‘Surgeon General’

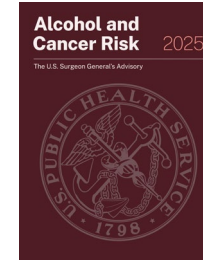


Image:  
<https://www.wcrf.org/our-blog/how-ireland-beat-the-odds-to-introduce-cancer-warning-labels-on-alcohol/>



## Current Label

GOVERNMENT WARNING:

(1) According to the Surgeon General, women should not drink alcoholic beverages during pregnancy because of the risk of birth defects. (2) Consumption of alcoholic beverages impairs your ability to drive a car or operate machinery, and may cause health problems.

# NCI Alcohol & Cancer Warning Labels Message Experiments: **Key Findings**

<b>Causal language</b> messaging:	WARNING: Drinking alcohol <b>causes</b> cancer.	Increased	perceptions of cancer risk associated with alcohol
		Decreased	perceived credibility
<b>Cancer type</b> messaging:	WARNING: Drinking alcoholic beverages can cause several types of cancer, <b>including colon cancer.</b>	Increased	perceived credibility
		Decreased	negative emotional reactions
<b>Message source</b> messaging:	<b>SURGEON GENERAL'S WARNING:</b> Drinking alcoholic beverages can cause several types of cancer.	Increased	perceived credibility
<b>Risk relationship</b> messaging:	SURGEON GENERAL'S WARNING: Drinking alcoholic beverages can cause several types of cancer, <b>including colon and breast cancer. There is no safe level of alcohol consumption.</b>	Increased	perceived alcohol-related cancer risk perceived message novelty interest in learning more intentions to reduce alcohol consumption
		Decreased	perceived certainty about alcohol-related cancer risk message believability

## Reports

# Feelings of vulnerability in response to threatening messages: Effects of self-affirmation ☆

William M.P. Klein <sup>a,b,\*</sup>, Peter R. Harris <sup>c</sup>, Rebecca A. Ferrer <sup>b</sup>, Laura E. Zajac <sup>a</sup>

<sup>a</sup> University of Pittsburgh, USA

<sup>b</sup> National Cancer Institute, USA

<sup>c</sup> University of Sheffield, UK

## ARTICLE INFO

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## ABSTRACT

We examined effects of self-affirmation on feelings of vulnerability and behavioral intentions following exposure to personally threatening messages varying in message strength. In Experiment 1, female alcohol consumers read a strong message linking alcohol to breast cancer risk. Self-affirmed participants exhibited higher feelings of vulnerability concerning consumption levels and personal risk. In Experiment 2, female caffeine consumers read a weak or strong message linking caffeine to breast disease. Self-affirmed participants reported greater feelings of vulnerability to breast disease and greater intentions to reduce caffeine consumption (relative to control participants) only when reading the strong message. Effects on intentions were mediated by effects on feelings of vulnerability. These studies show that feelings of vulnerability can mediate effects of self-affirmation on intentions to change behavior under threat, although only in the presence of strong messages.

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<https://www.tandfonline.com/doi/full/10.1080/08870446.2021.1945060#d1e374>



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**William Klein, Ph.D.**  
Associate Director  
Behavioral Research Program  
Division of Cancer Control and Population Sciences  
National Cancer Institute  
[kleinwm@mail.nih.gov](mailto:kleinwm@mail.nih.gov)

Meet our staff online and contact Program Directors:  
<https://staffprofiles.cancer.gov/brp/prgmStaffHome.do>

# How much do Europeans know about the link between alcohol use and cancer? Results from an online survey in 14 countries

- 2022-2023
- N = 19,601

## Results

- 90% indicated a causal role of alcohol for liver disease
- 68% for heart diseases
- 53% for cancer
  - 39% aware of the link between alcohol use and colon cancer
  - 28% regarding oral cancer
  - 15% regarding female breast cancer
- Knowledge levels varied across different countries and population groups

<https://pubmed.ncbi.nlm.nih.gov/38378598/>