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Moderate alcohol and cancer

Ned Calonge, Chair and Ian Saldanha

Committee on Review of Evidence on Alcohol and Health

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Review of Evidence on Alcohol and Health

Consensus Study Report

Committee, consultants and staff

Bruce N. Calonge (Chair).

Associate Dean for Public Health Practice

Professor of Epidemiology
Colorado School of Public Health
Professor of Family Medicine
University of Colorado School of Medicine

Andrew W. Brown

Associate Professor
Department of Biostatistics
University of Arkansas for Medical Sciences

Carlos A. Camargo, Jr.

Professor
Emergency Medicine, Medicine and Epidemiology
Harvard University

Patricia A. Cassano

Alan D. Mathios Professor
Division of Nutritional Sciences
Cornell University

Patrick M. Catalano

Professor in Residence
Reproductive Endocrinology Unit
Harvard University

Kathryn E. Coakley

Assistant Professor
College of Population Health
University of New Mexico Health Sciences Center

Luc Djousse

Associate Professor
Medicine and Nutrition
Harvard University

Jo L. Freudenheim

SUNY Distinguished Professor
Department of Epidemiology and Environmental Health
Associate Dean for Faculty Affairs
School of Public Health Professions
University at Buffalo

Rebecca A. Hubbard

Carl Kawaja and Wendy Holcombe Professor of Public Health
Professor of Biostatistics and Data Science
School of Public Health
Brown University

Michelle K. McGuire

Professor of Nutrition
Director of the Margaret Ritchie School of Family and Consumer Sciences
University of Idaho

Ian J. Saldanha

Associate Professor of Epidemiology and Health Policy and Management
Bloomberg School of Public Health
Johns Hopkins University

Susan M. Smith

Harris-Teeter Dickson Foundation Distinguished Professor in Nutrition
University of North Carolina at Chapel Hill

Linda G. Snetselaar

Professor
Department of Epidemiology and Endocrinology/Metabolism
Colleges of Public Health and Medicine
University of Iowa

Edith V. Sullivan

Professor
Department of Psychiatry and Behavioral Sciences
Stanford University School of Medicine

Deepa Handu**Lisa Moloney****Mary Rozga**

Academy of Nutrition and Dietetics

Katrina B. Stone

Study Director

Alice Vorosmarti

Associate Program Officer

Sarah Poncet

Research Associate

Jennifer Stephenson

Research Associate

Rebecca Morgan

Senior Librarian

Andi Reiser

Senior Program Assistant

Ann L. Yaktine

Director, Food and Nutrition Board

*Former Staff***Takyera Robinson**

Associate Program Officer (*until November 2023*)

Jennifer Mouser

Senior Program Assistant (*until June 2024*)

The Committee's Task and Approach

Congress asked the USDA to contract with the National Academies to convene an expert committee to undertake a review of the current scientific evidence on the relationship between consumption of alcohol and health outcomes—including “certain cancers”

The committee focused on moderate alcohol consumption, defined as consuming alcoholic beverages up to the limit defined by the *Dietary Guidelines for Americans*, meaning two drinks or 28 grams of alcohol in a day for men and one drink or 14 grams of alcohol in a day for women

The Committee developed a list of inclusion and exclusion criteria to identify published literature published in English since 2010 and contracted with the Academy of Nutrition and Dietetics to conduct systematic reviews (SR)

Levels of Certainty

The committee based its framework for assigning certainty to conclusions on methods from the U.S. Preventive Services Task Force:

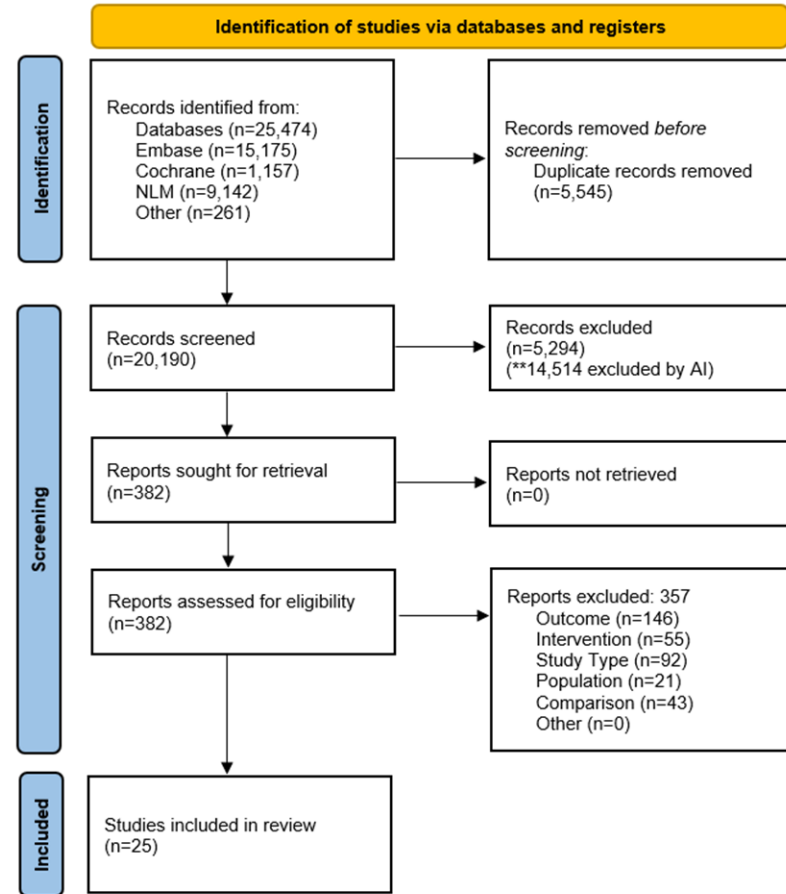
- *High certainty*: Evidence includes consistent results from good quality studies in relevant populations assessing effects on health outcomes; the conclusion is unlikely to be affected by future studies. High certainty is unlikely to be assigned without a randomized controlled trial **(No conclusions were issued with high certainty)**
- *Moderate certainty*: Evidence is sufficient to determine effects on health outcomes but is constrained by issues raised in the quality assessment of the evidence.
- *Low certainty*: Evidence is insufficient to assess effects on health outcomes; additional information from future studies may allow for assessment.

Abstainer Bias

- A key criteria for studies included in the review was that the comparison group did not combine **former** drinkers with **never** drinkers
- This avoids “abstainer bias”—former drinkers can include individuals who stopped drinking due to health reasons and this can bias results, such as overestimating potential benefits of moderate drinking
- Therefore, results in this report are not directly comparable to past evidence and reviews that did not address abstainer bias

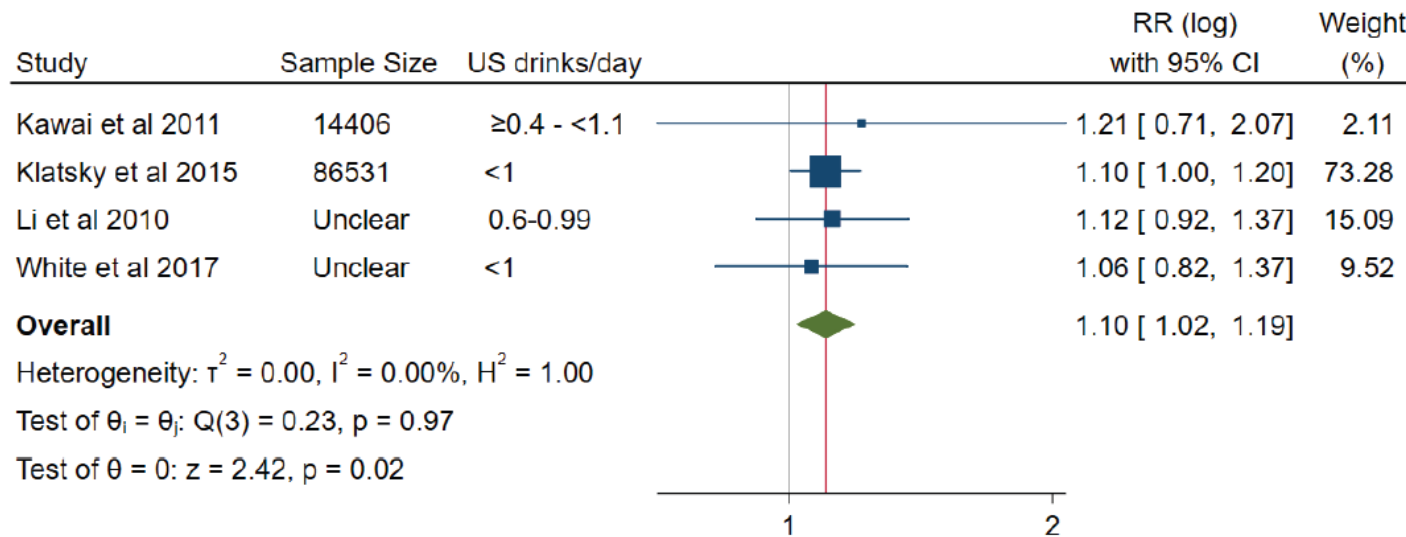
Cancer (Chapter 5)

- Includes
 - Breast (female)
 - Oral, pharyngeal, laryngeal, esophageal
 - Colon, rectal
- Excludes
 - Studies that exclusively examine cancer-related mortality, prevalence, survivorship, or recurrence of cancer
- **25 eligible studies** screened from 20,190



Breast Cancer (Female)

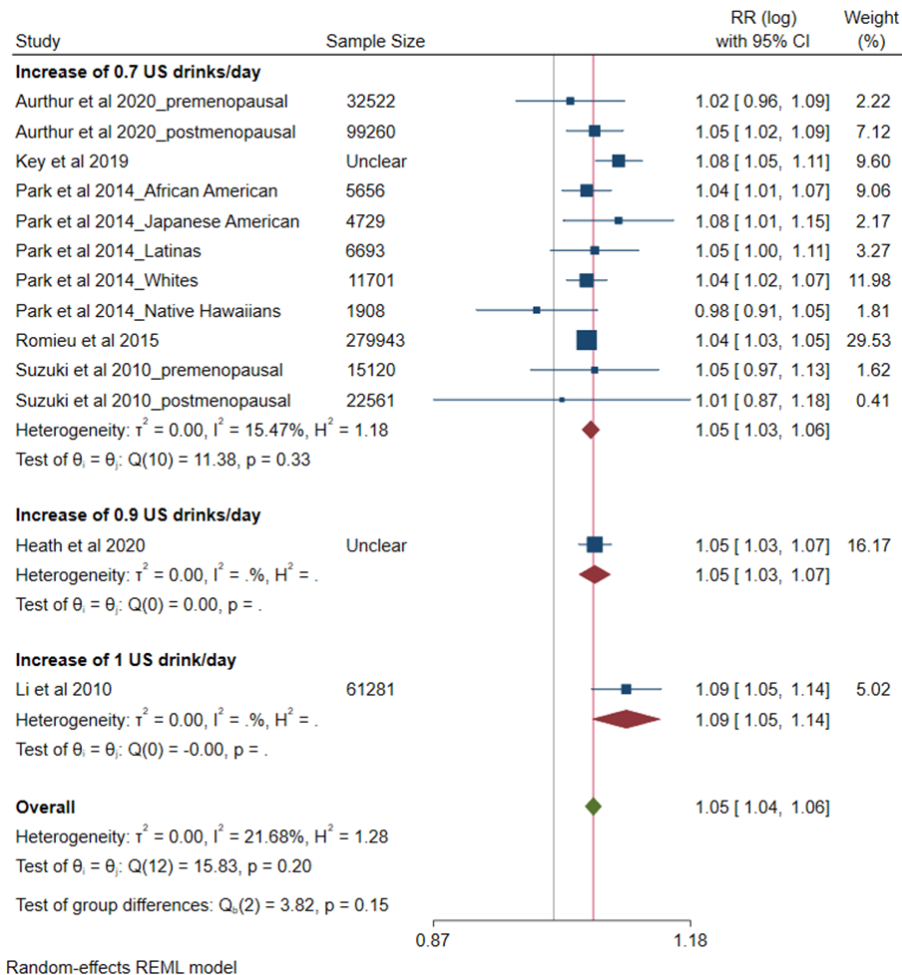
FIGURE 5-2 Associations between moderate alcohol consumption and breast cancer compared to never consuming alcohol



Random-effects REML model

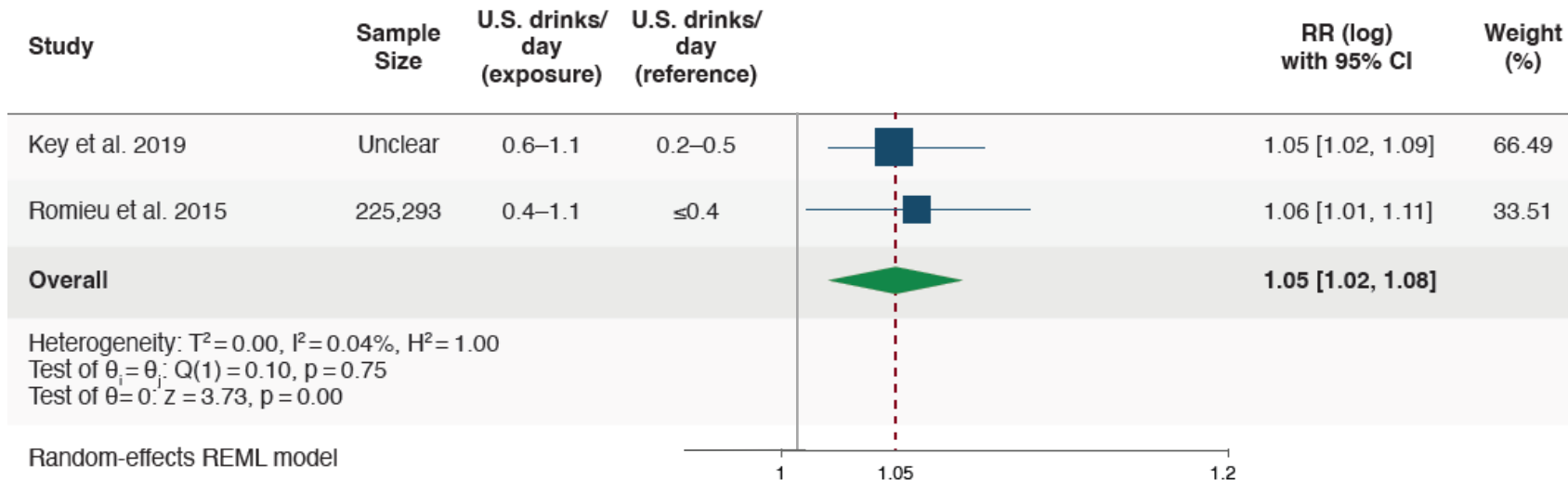
Breast Cancer (Female)

FIGURE 5-3 Meta-analysis of relationship between increasing alcohol consumption by 10–14 grams (0.7-1.0 U.S. drinks/day) and breast cancer



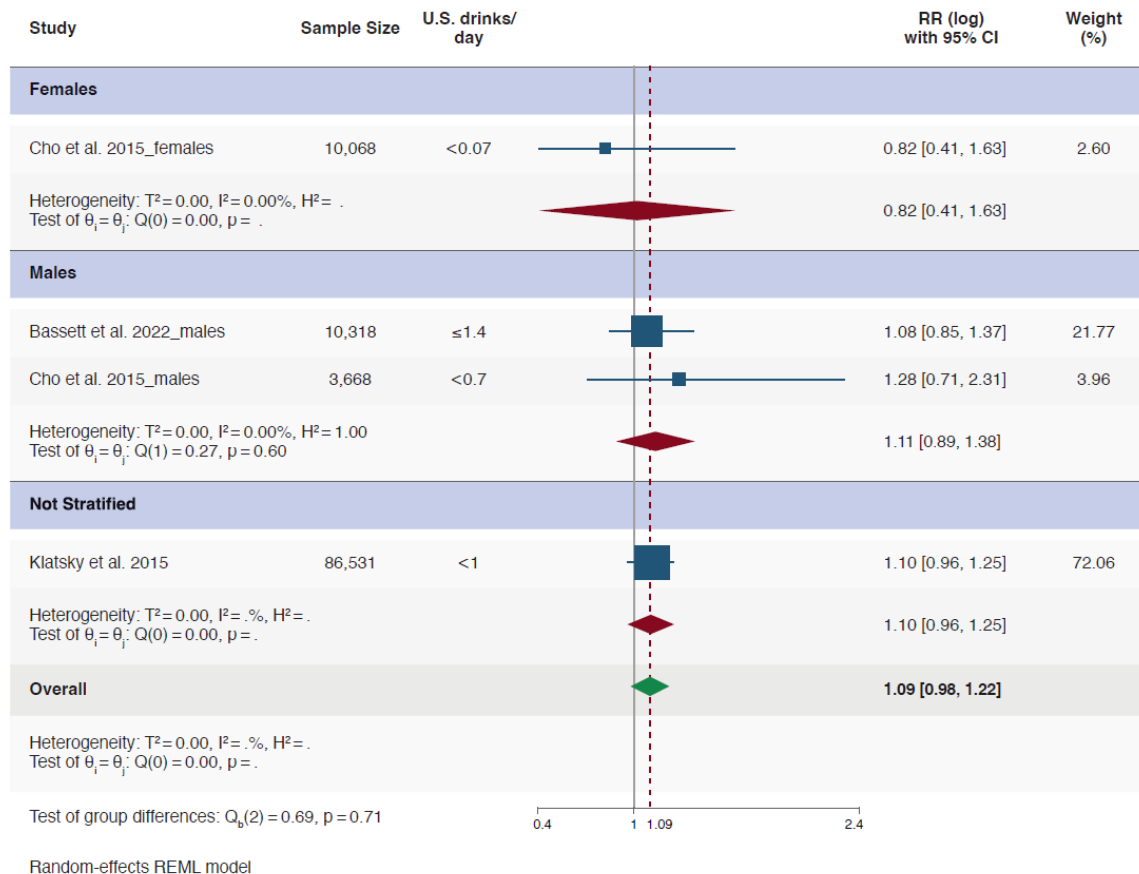
Breast Cancer (Female)

FIGURE 5-4 Meta-analysis on association between higher and lower moderate alcohol consumption and breast cancer



Colorectal Cancer

FIGURE 5-5 Meta-analysis on associations between moderate alcohol consumption and colorectal cancer compared to never consuming alcohol



Cancer Conclusions

Conclusion 5-1: The committee concludes that compared with never consuming alcohol, consuming a moderate amount of alcohol was associated with a higher risk of **breast cancer** (*moderate certainty*).

Conclusion 5-2: The committee concluded that among moderate alcohol consumers, higher versus lower amounts of moderate alcohol consumption were associated with a higher risk of **breast cancer** (*low certainty*).

Conclusion 5-3: The committee determined that no conclusion could be drawn regarding the association between moderate alcohol consumption compared with lifetime non-consumers and risk of **colorectal cancer**.

Research Gaps – Methodological Challenges

- Exposure (alcohol) measurement
 - Standard drink sizes – 14 grams is a “standard drink” in the U.S.
 - Alcoholic beverage type – predominantly wine/predominantly beer/predominantly spirits
 - Drinking patterns – number/timing/frequency/amount (e.g., 1 per day vs. 7 on a night)
 - Intake reporting – self-reporting (often underreported) vs. biochemical markers (expensive for large-scale studies) vs. sales/taxation records
- Comparison groups
 - Inclusion of former drinkers in nondrinker groups (abstainer bias)

Research Gaps – Methodological Challenges

- Analysis issues
 - Confounders & effect modifiers – e.g., age, sex, genetic ancestry, SES, education, diet
 - Mediators – avoidance of adjustment for mediators (may mask/lessen true effects)
- Causal inference study designs
 - Challenges with randomized trials – costs, long duration, blinding, ethical issues
 - Mendelian randomization – no known genes adequately capture differences in alcohol intake

Research Gaps – Cancer-specific gaps

Outcome	Research Gaps (Future studies should . . .)
Cancer	• <u>Breast</u>: Stratify by menopausal status • <u>Colorectal</u>: Include larger sample sizes for greater statistical power • <u>Other sites</u>: Evaluate oral, pharyngeal, laryngeal, esophageal, liver, gastric, pancreas, prostate, urinary bladder, renal (kidney), and endometrial cancer