



# Non-sugar sweeteners: helpful or harmful? The challenge of developing intake recommendations with the available research

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# Funding Disclosures

## Non-Sugar Sweeteners

Sucralose and Aspartame impact on glycemic indices

Role: PI; NIH R21AG075344

Saccharin and Acesulfame Potassium impact on glycemic indices

Role: PI; NIH R21AG080358

## Weight Stigma

Weight stigma and dietary assessment

Role: PI; NIH R21NR020405

## Ultra-Processed Foods

UPF and vascular function

Role: Co-I; NIH R21AG075930

UPF and reward processing

Role: Co-I; NIH R211HD109722

UPF and glycemic indices

Role: Co-I NIH R21AG077143

## Overall Premise



- ❖ Current evidence on non-sugar sweetener intake is inadequate
- ❖ Further research is needed to determine the health effects of individual non-sugar sweeteners
- ❖ Evidence is especially lacking for specific population subgroups

# Non-Sugar Sweetener Guidelines

**World Health Organization** – Recommend against NSS for weight control and NCD prevention in non-diabetic populations due to possible long-term unfavorable health effects

**American Diabetes Association** – NSS may be an acceptable alternative to sugar-sweetened products when consumed in moderation, and NSS do not seem to significantly affect glycemic control, although impact on weight management is unclear in those with diabetes

**Dietary Guidelines for Americans** – Suggest using NSS to replace caloric sweeteners, but long-term use is discouraged

**American Heart Association/American Diabetes Association Joint Statement** – No clear conclusion regarding effects of NSS on appetite, energy intake, body weight, cardiometabolic risk factors, or the reduction of added sugars

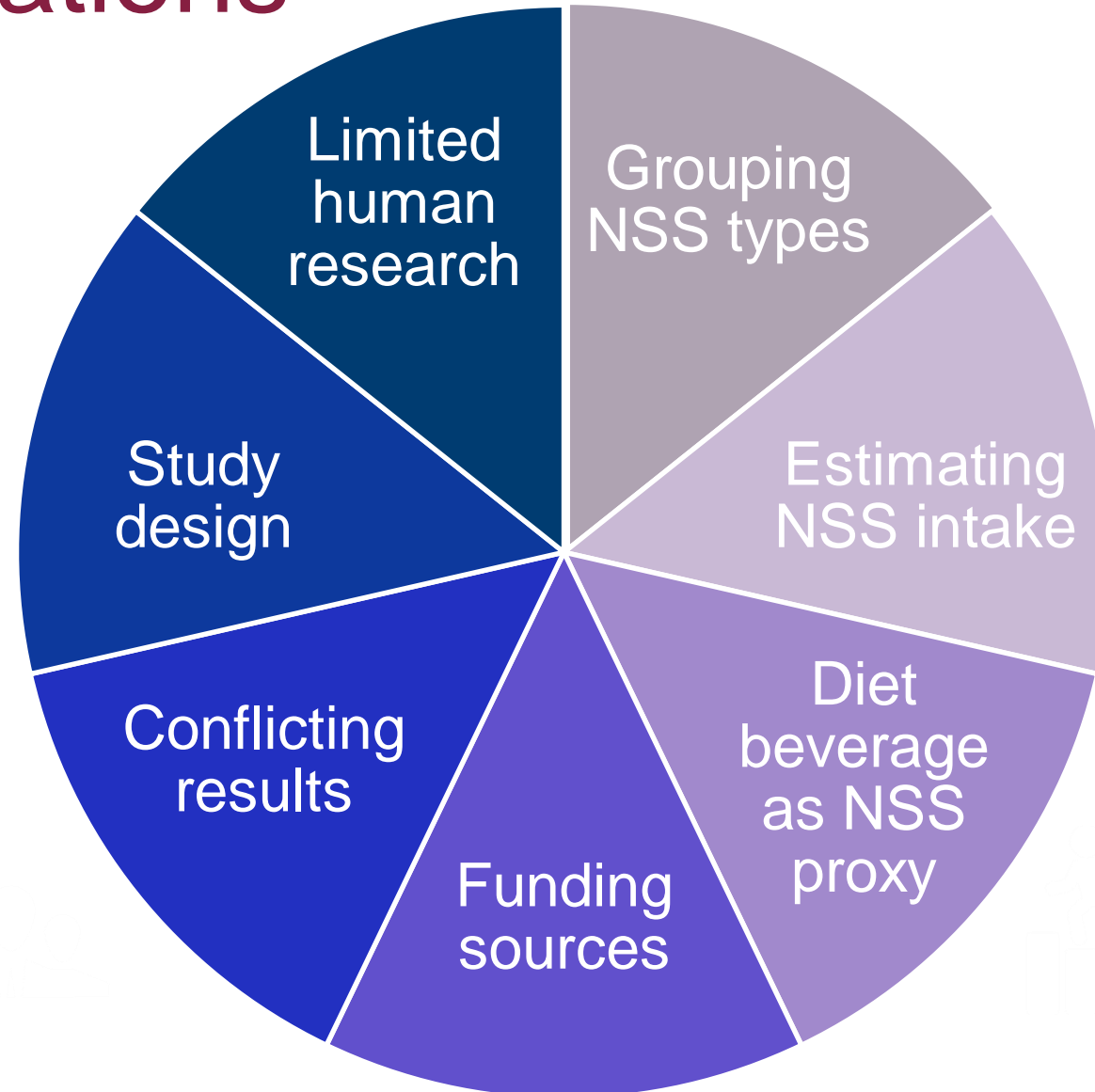
**Academy of Nutrition and Dietetics** – Adults with diabetes should be informed that intake of aspartame, sucralose, and steviol glycosides will not have a significant influence on glycemic control

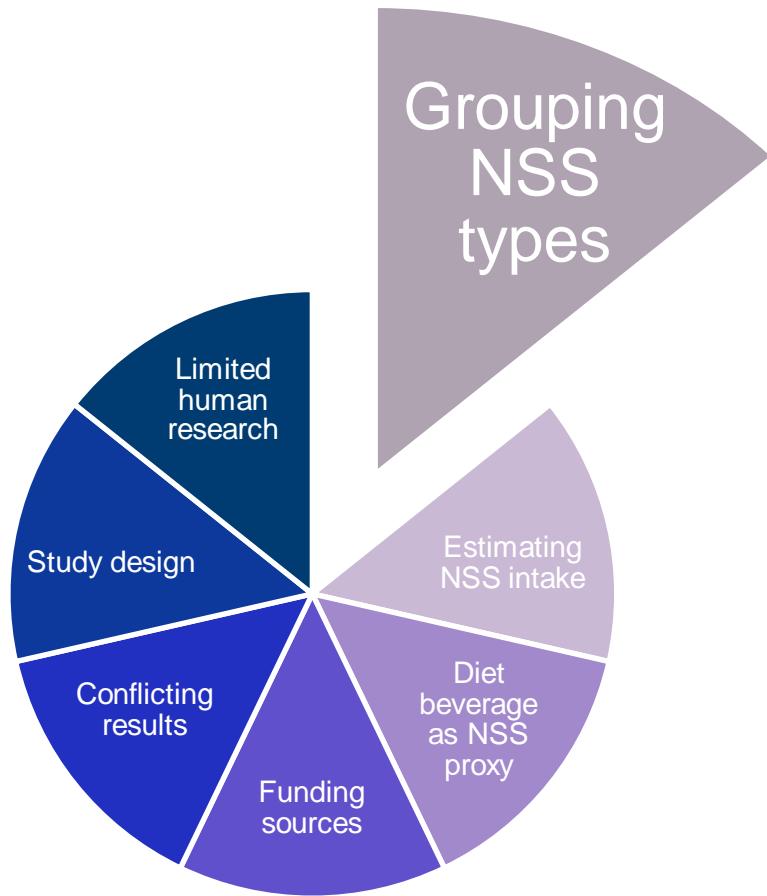


# Why can't we all just get along?



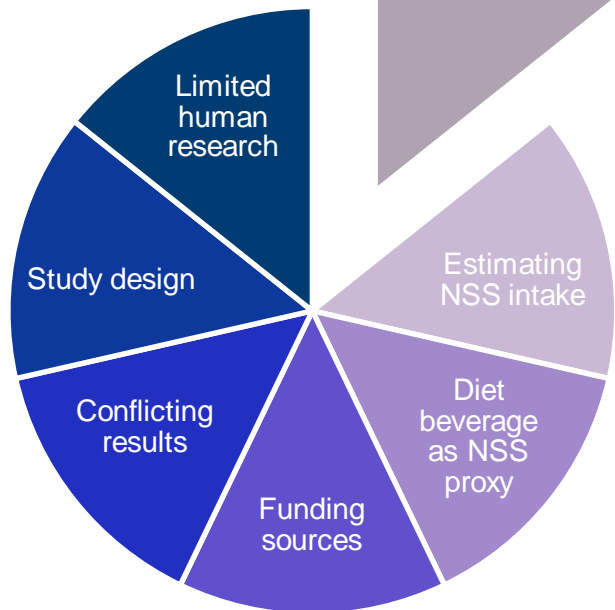
# Reasons for inconclusive NSS recommendations



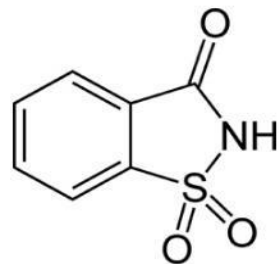




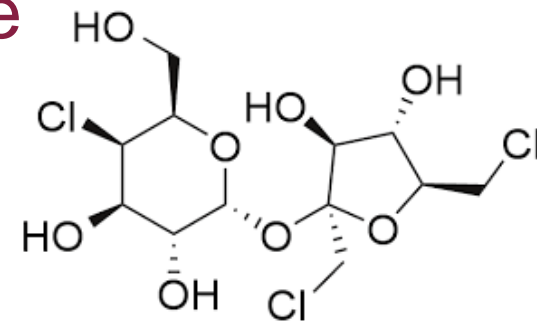
Grouping  
NSS  
types



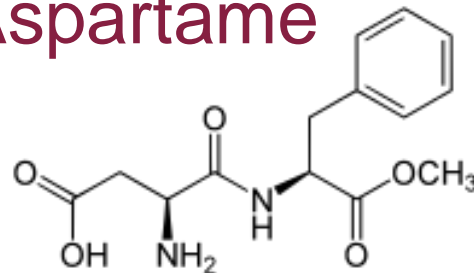
**Saccharin**



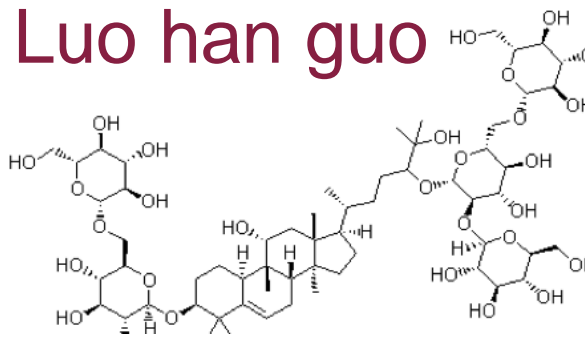
**Sucralose**



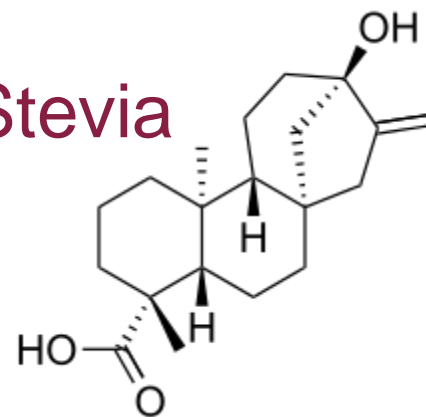
**Aspartame**



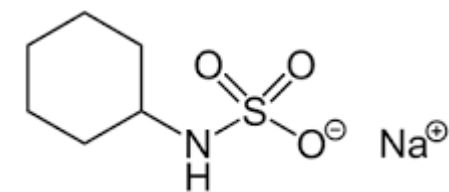
**Luo han guo**



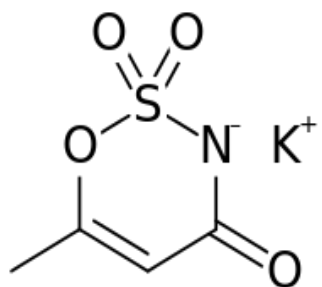
**Stevia**



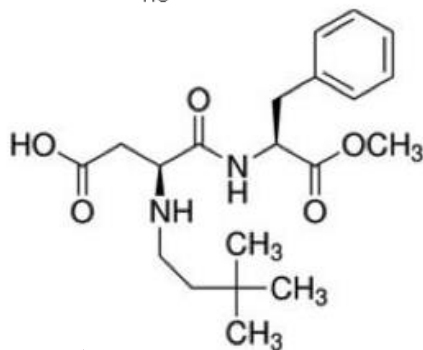
**Cyclamate**



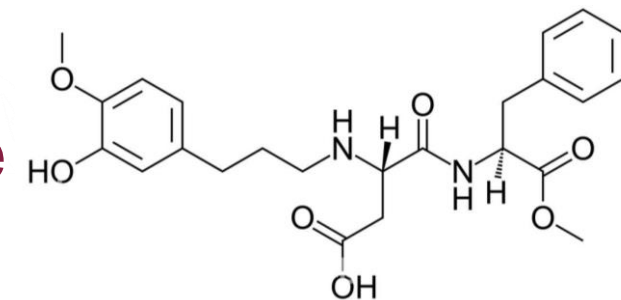
**Acesulfame  
Potassium**

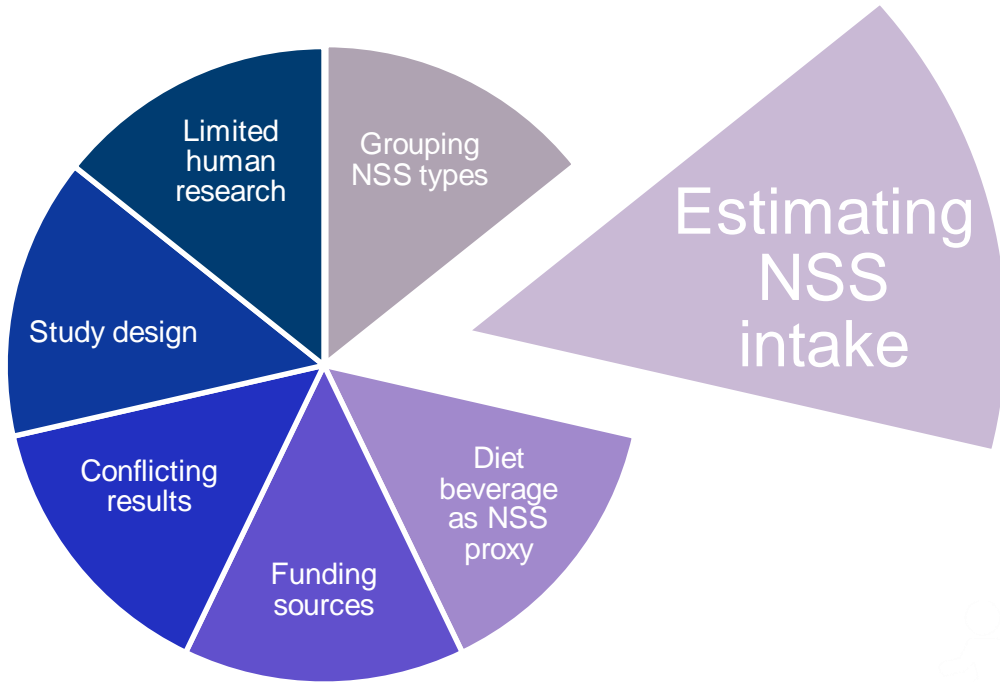


**Neotame**



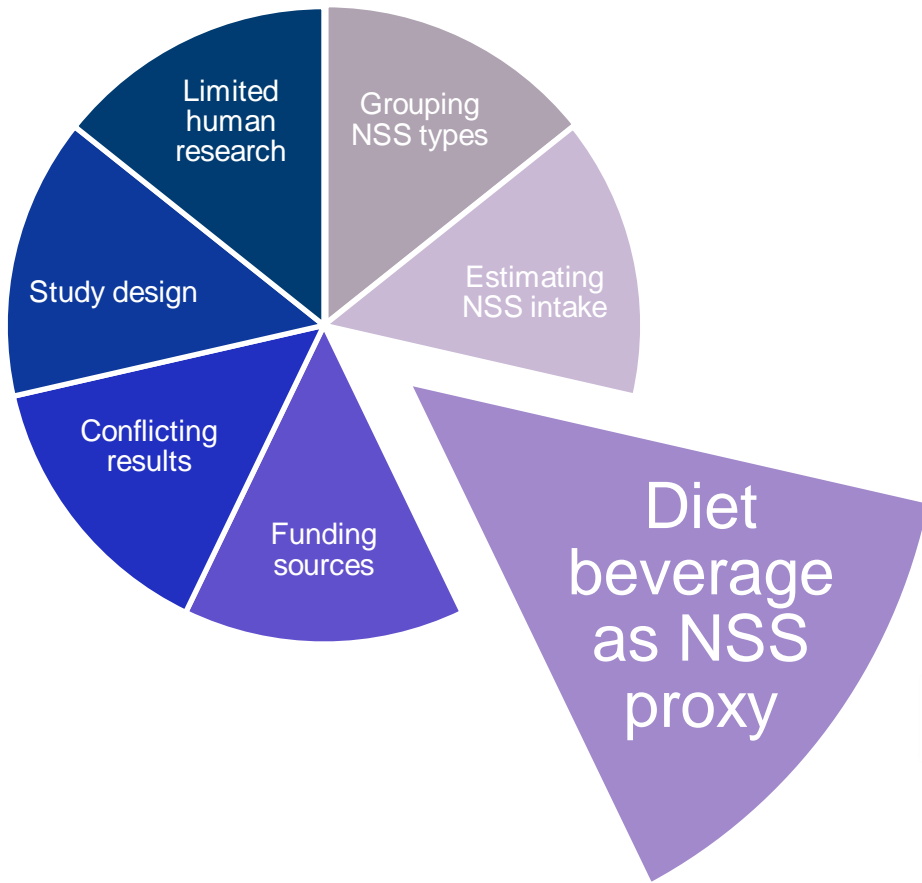
**Advantame**





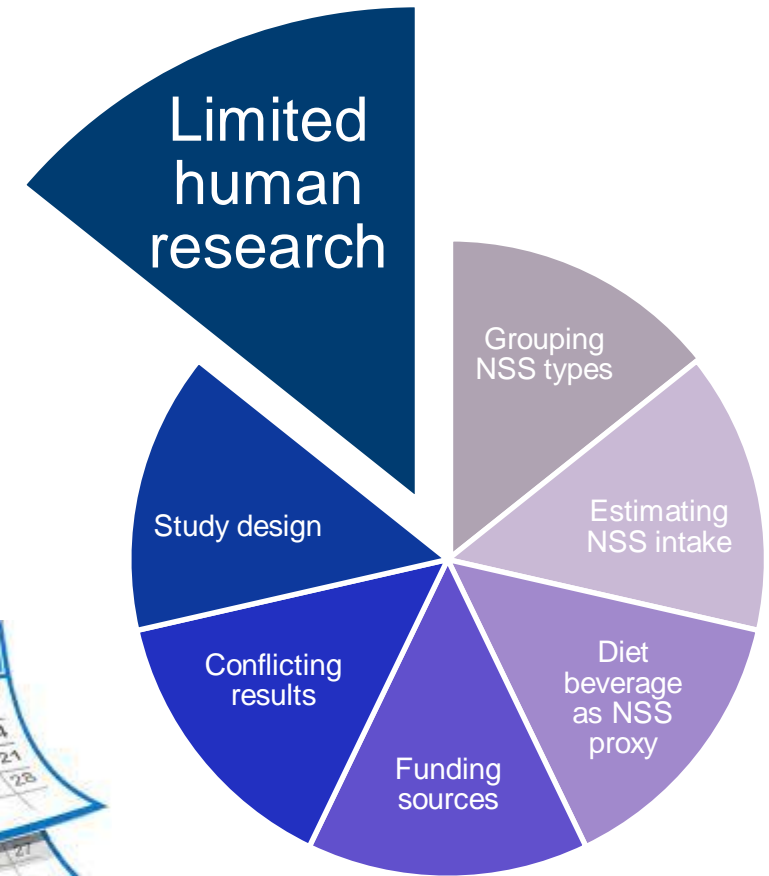
- Dietary databases
- Inability to identify NSS consumed
- NSS dietary assessment methods





- Diet sodas have many NSS types and NSS combinations
- Diet sodas are most frequently consumed source of NSS
- But highest contributors to actual NSS intake...

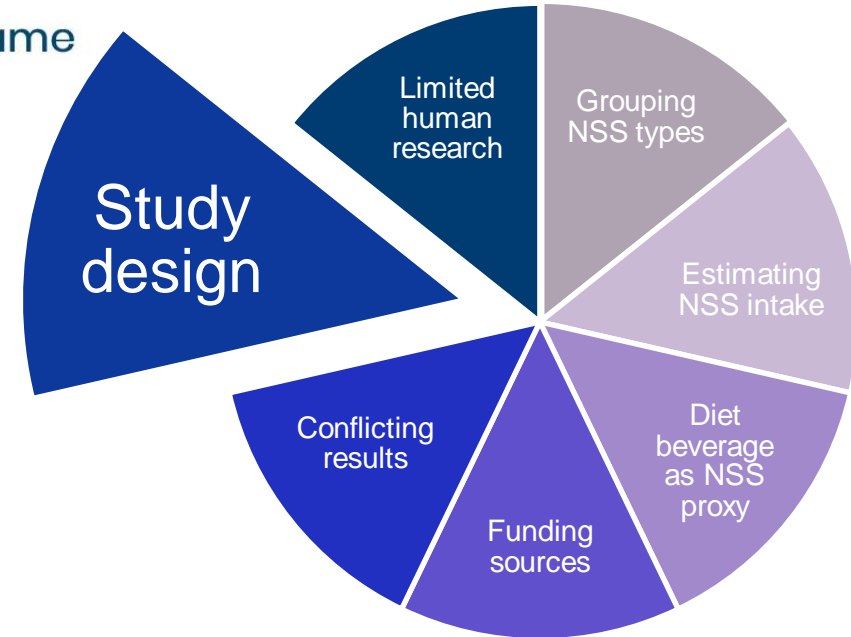
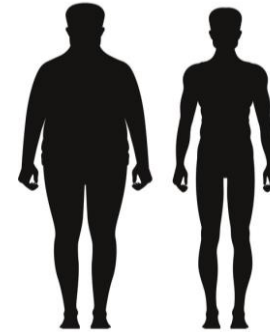






saccharin  
 advantame  
 stevia  
 acesulfame potassium  
 cyclamate  
 sucralose  
 neotame  
 luo han guo  
 aspartame

- Type of NSS studied
- Amount of NSS given
  - ADI based on weight
- Route of administration
  - Capsule vs oral



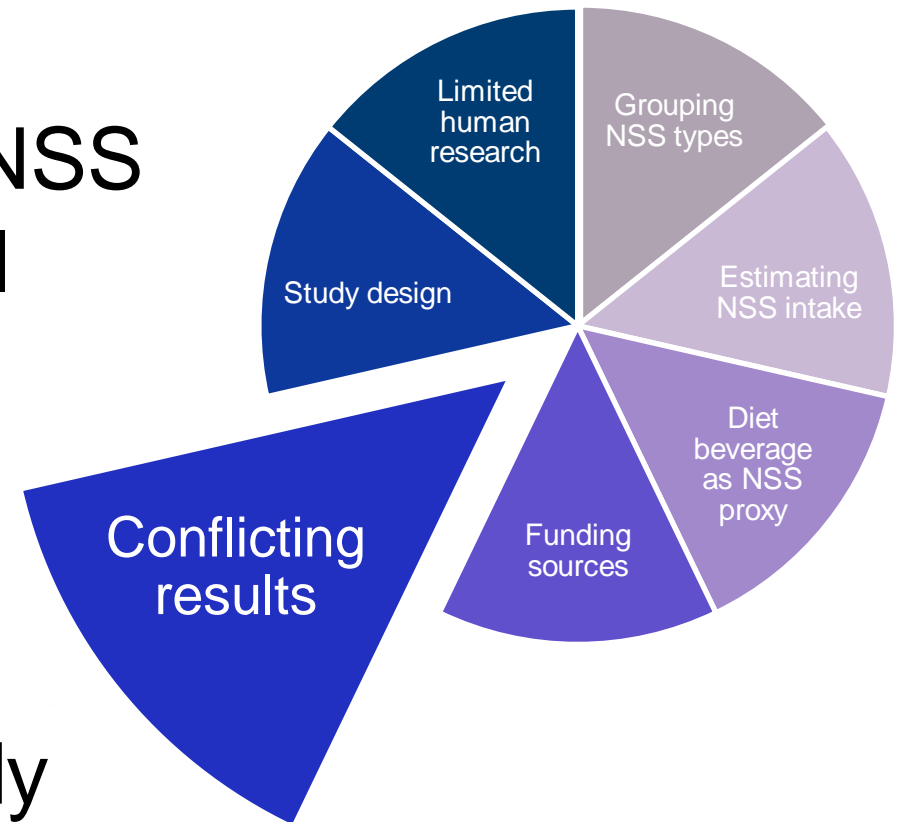
Sweet Taste Receptors



- Interaction with other foods
  - Lack of controlled feeding studies



- Many RCT/interventions trials show NSS intake as potentially helpful or neutral
- Observational trials tend to suggest detrimental impacts of NSS intake
- Strengths and weakness to both study designs



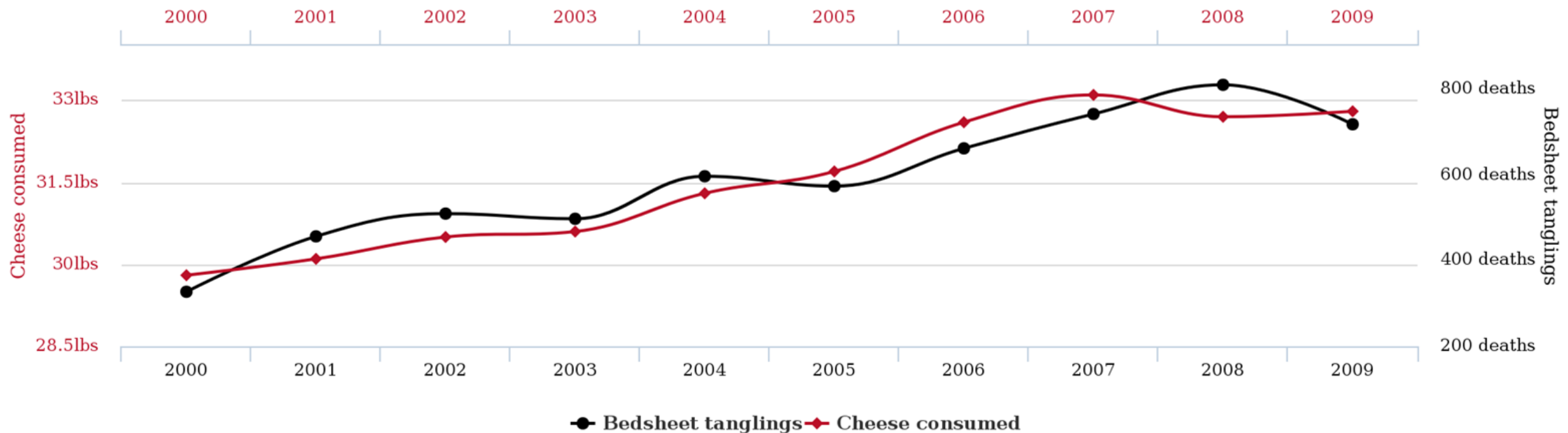


# Correlation $\neq$ Causation

**Per capita cheese consumption**

correlates with

**Number of people who died by becoming tangled in their bedsheets**

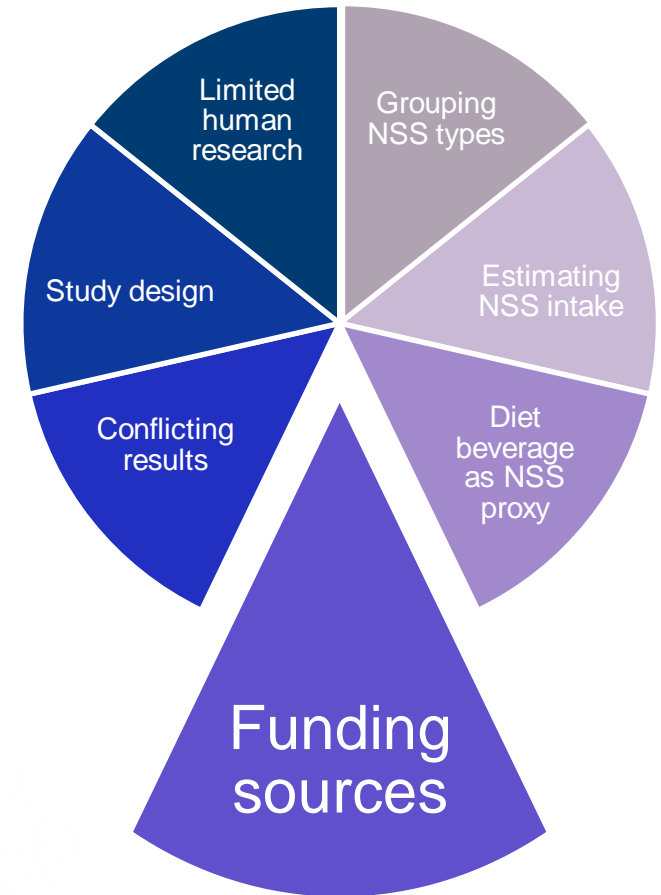


- Concern for financial conflicts of interest
- Makes it difficult to interpret existing evidence

Industry  
Funding



Government  
and non-profit  
funding



# Can we make conclusive recommendations?

## Non-Sugar Sweeteners



# Recommendations to Move Forward

How we design and interpret upcoming research can shape the future of non-sugar sweetener guidelines and recommendations



Thank you!



Human Nutrition, Foods and Exercise

“A concerted effort should be made to develop targeted guidelines for individual types of NSS and specific population subgroups to provide clear and safe intake recommendations for policy makers, healthcare providers, and consumers.”

## Contact Information

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