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Product Testing and Claims Support

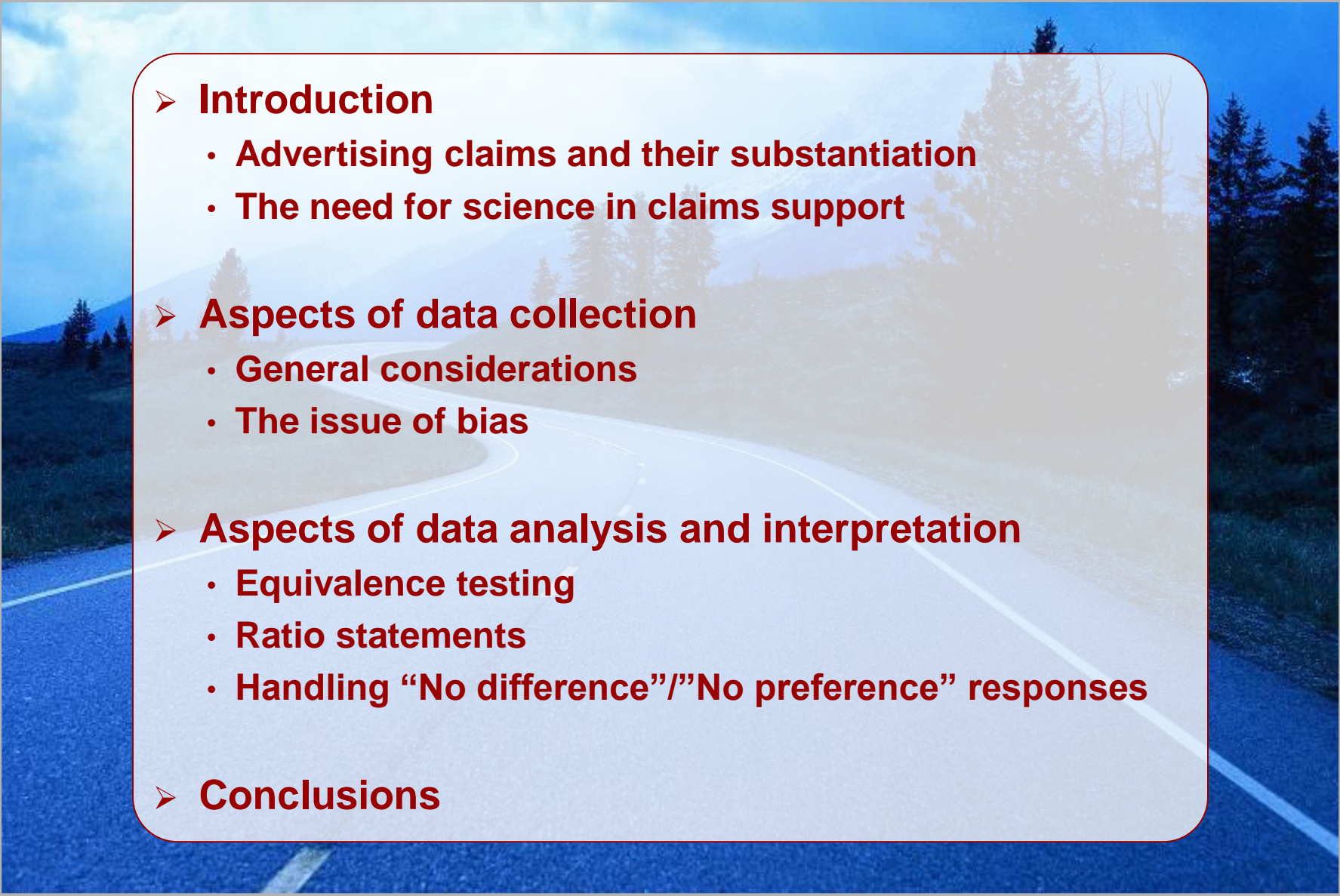## *Test de Productos y Soporte de Reclamaciones*

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The Institute for Perception

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Introduction

Advertising Claims and Their Substantiation

> Comparative advertising improves sales and that of your competitors, but…
> - ❖ There may be competitor challenges
> - ❖ You may need to challenge your competitors' claims if they affect your business

> Why is there no rule-book to follow?
> - ❖ There is no limit to the level of technical knowledge that can be introduced in a legal contest
> - ❖ Methods of design and analysis are continually evolving
> - ❖ Product testing for claims support has characteristics that make it different from testing for other objectives such as quality assurance or product development

> Claims support is a critical business activity for many consumer products companies in certain categories with aggressive competitors
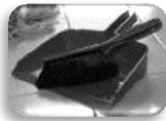
> In order to ensure that a true and relevant message is conveyed to the consumer, proper support to any advertising claim is critical

Examples of Competitive Claims Cases

- *Performance of two vacuum cleaners*

- *Dust pick-up performance of two dusters*

- *Comparisons of multiple fragrance variants of two manufacturers of malodor treatments for carpets*

- *Relative effectiveness of two cold sore treatments*

- *Comparisons of two early detection pregnancy kits*

- *Sequential monadic in-home use tests of two fabric refreshers*

- *Comparisons of two beers on color and taste*

- *Dropped call rates for two cell phone service providers*

- *Relative performance of two tooth whitening methods*

- *…*

Stephen Breyer, Associate Justice of the Supreme Court

…I believe there is an increasingly important need for law to reflect sound science. I remain optimistic about the likelihood that it will do so.

…We must build legal foundations that are sound in science as well as in law.

The reason is a simple one. The legal disputes before us increasingly involve the principles and tools of science… Decisions should reflect a proper scientific and technical understanding so that the law can respond to the needs of the public.

Source:
Breyer, S. (2000). Introduction. In F.M. Smith (Ed.), *Reference Manual on Scientific Evidence* (2nd ed.) 1-8. Washington, DC: Federal Judicial Center.
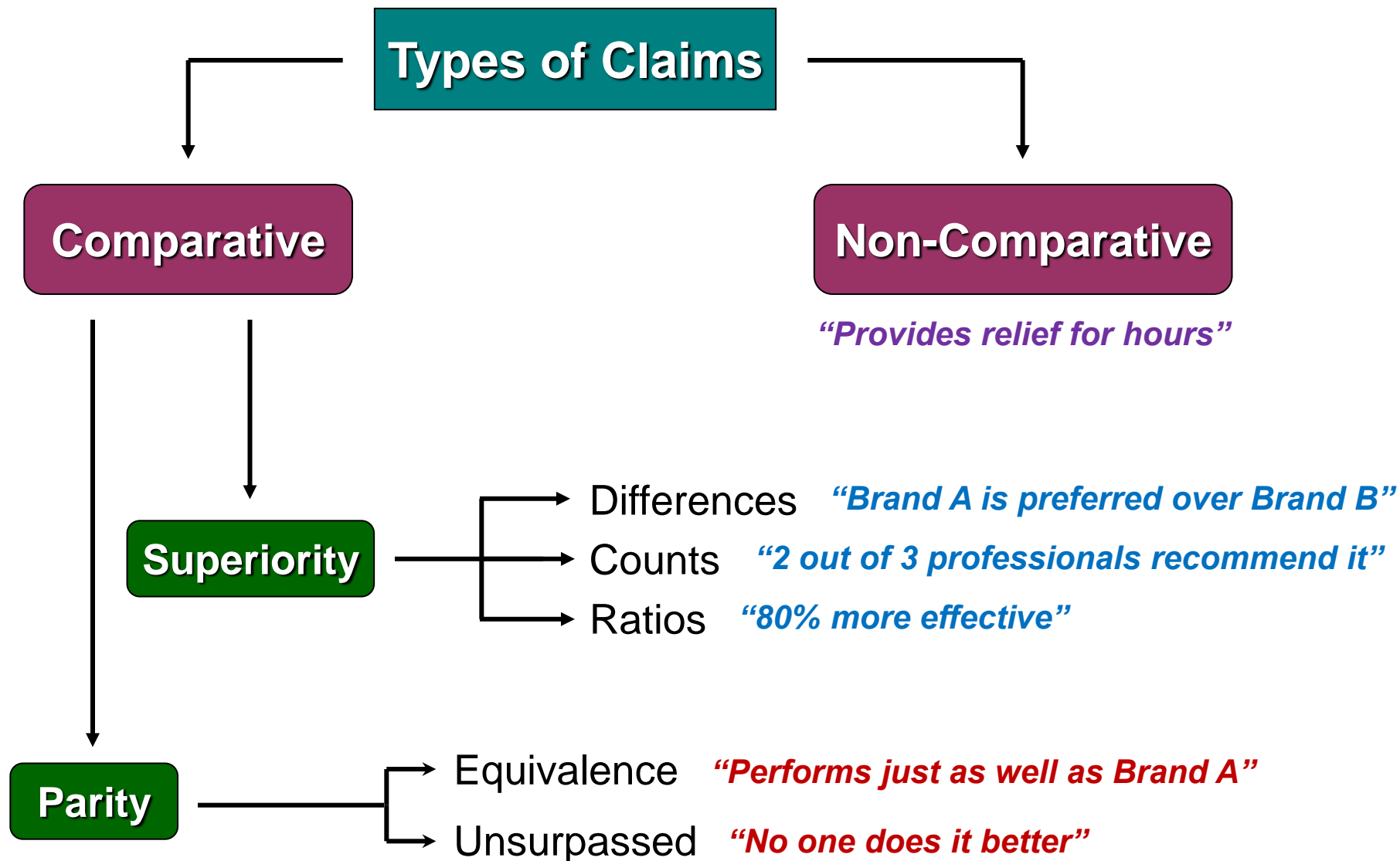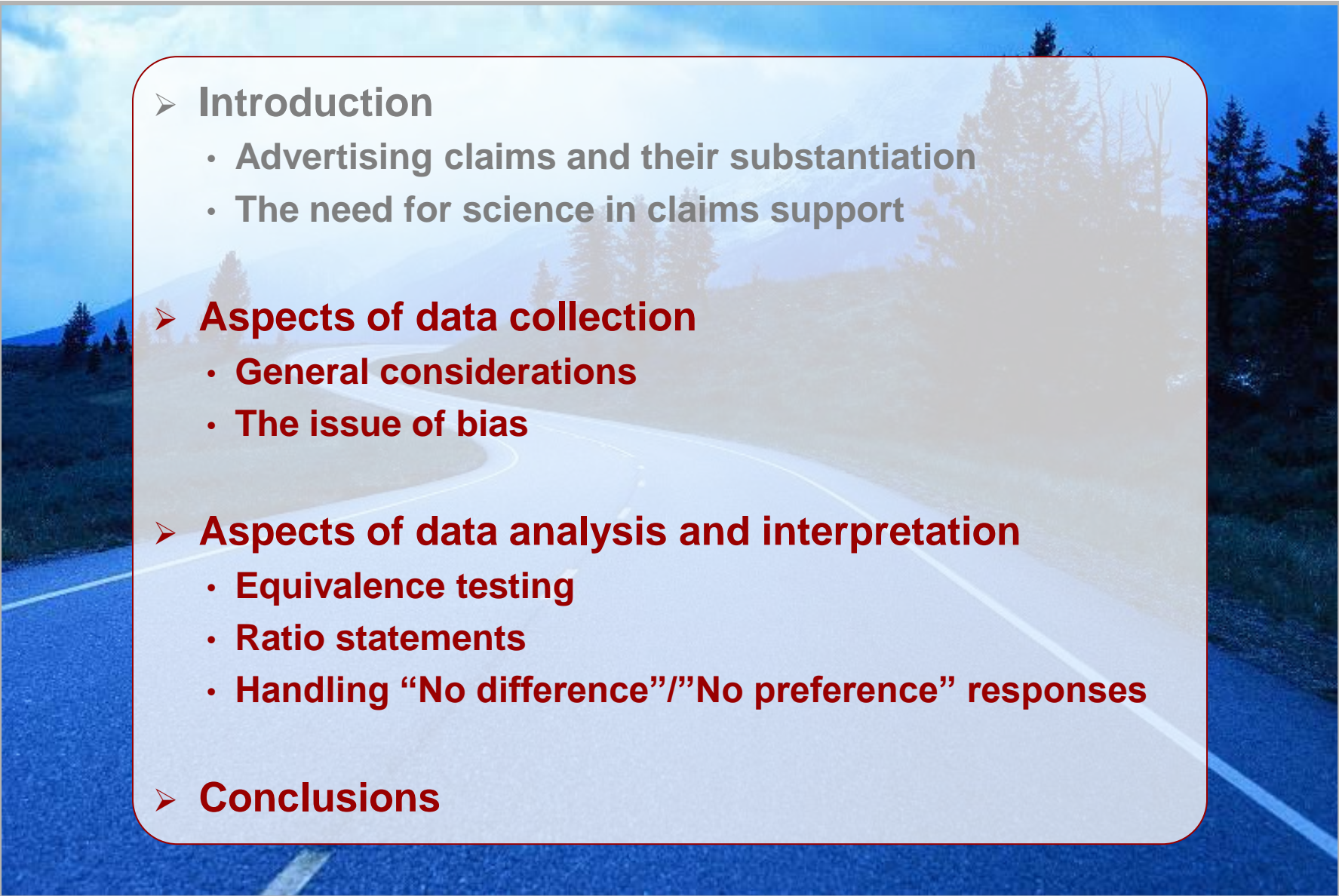
Product Testing in Claims Support

Types of Claims

Comparative

Non-Comparative

"Provides relief for hours"

Superiority

Differences *"Brand A is preferred over Brand B"*

Counts *"2 out of 3 professionals recommend it"*

Ratios *"80% more effective"*

Parity

Equivalence *"Performs just as well as Brand A"*

Unsurpassed *"No one does it better"*

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Aspects of Data Collection

Based on
the ASTM E1958 Standard Guide

Designing Tests for Claims Support

- Claims should precede testing

- Wording of a claim determines the tests to be conducted

- Target of the claim determines the sub-group tested

  - **"Choosy mothers choose X for their children"** is a statement about mothers not children

  - Recency of use or positive future usage intent

  - If the claim is not specific to brand usage, exclusive brand users should not be used exclusively

    - Heavy users only if heavy users are involved in the claim

Markets

- National claim should represent all major regions
  - Northeast
  - Southeast
  - Central
  - West

- Two markets per region

- More than one test site per city
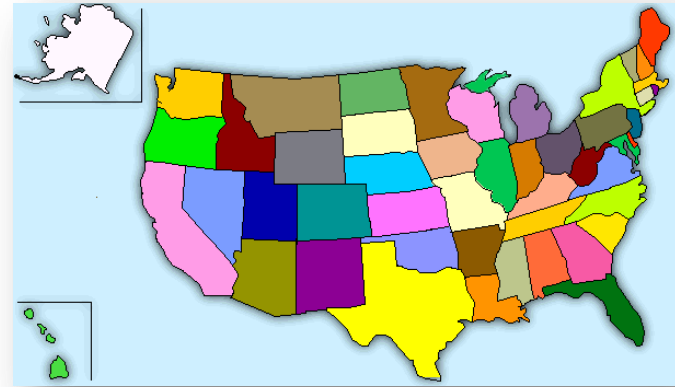
Selection of Products

- Non-brand specific claims against "other leading brands"
  - 85% or more of the national market
  - Top two brands unless highly fractionated
  - Top two in the four major geographic areas

- "Competitive" brands must compete in the same market segment

- Forms
  - Same form if multiple forms exist
  - If only different forms available claim should state this
    - "Instant X tastes as good as ready-made Y"

 X

 Y

Data Collection Strategies

- **Data collection**
  - Qualitative research not acceptable for claims support

  - Central Location Test (CLT)

  - Home Use Test (HUT)

- **Monadic**
  - Destructive tests (clinical trials)
  - Test with high levels of adaptation (hot peppers)
  - Tests requiring extensive recovery (tooth whitening)

- **Sequential monadic**
  - Many in-home use tests for control
  - Two products cannot be tested at the same time – e.g., body washes

- **Direct comparisons**
  - Side-by-side tests such as beers, colas, orange juices
  - Products with rapid sensory recovery

Note on Bias

- In statistical terms a statistic is biased if it does not estimate a population parameter accurately

- In surveys and product testing the following biases can occur

  - Position (first product in a preference test)
  - Response (likelihood of saying "yes" or "no difference")
  - Code (high 3-digit codes sometimes get high ratings)
  - Design (poor quota sampling - demographic imbalance)

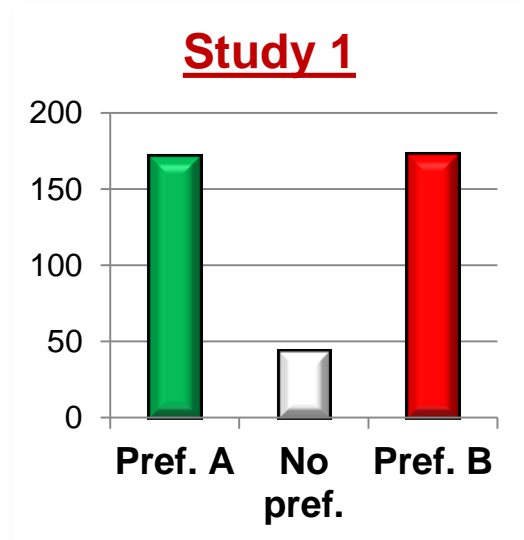- Whether bias occurs determines whether one needs a placebo or control product

- Two beverage studies with on a preference-type attribute
- 8 city test
- 2 three-digit codes (# # #)
- In each study both products appeared under both codes for 4 of the cities to balance code bias: ○ *low code*, ◯ *high code*

➤ **Study 1**
- ❖ **A**: ○ in 4 cities, ● in the other 4
- ❖ **B**: ● in 4 cities, ○ in the other 4

➤ **Study 2**
- ❖ **C**: ● in 4 cities, ● in the other 4
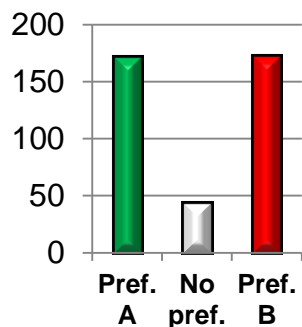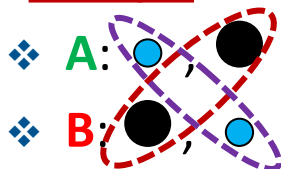- ❖ **D**: ● in 4 cities, ● in the other 4

Study 1

	200		
	150		
	100		
	50		
	0		
	Pref. A	No pref.	Pref. B
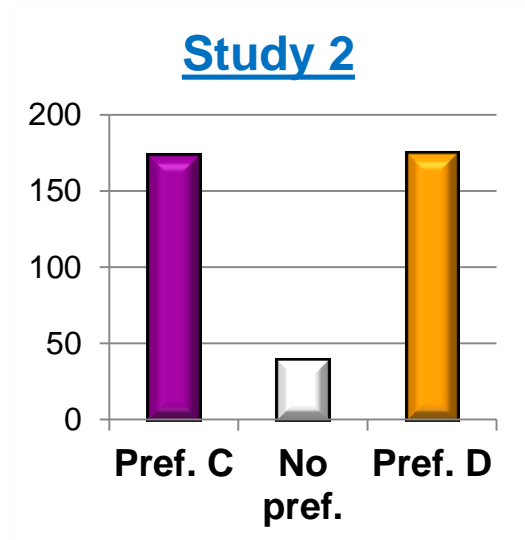
No appreciable difference

Study 2

	200		
	150		
	100		
	50		
	0		
	Pref. C	No pref.	Pref. D

Study 1

❖ **A**: ○ , ●

❖ **B**: ● , ○

Study 2

❖ **C**: ● , ●

❖ **D**: ● , ●
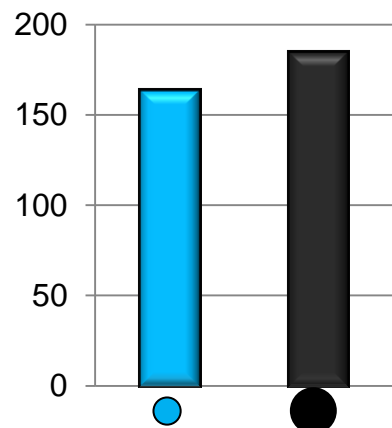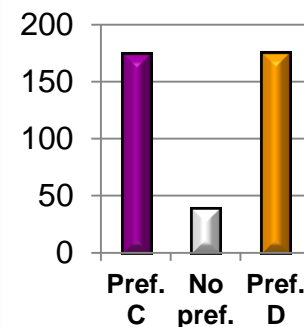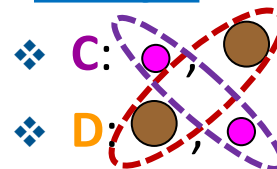
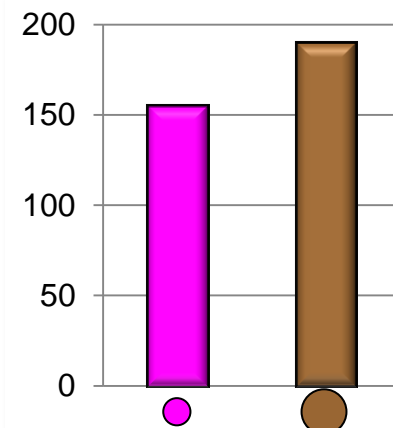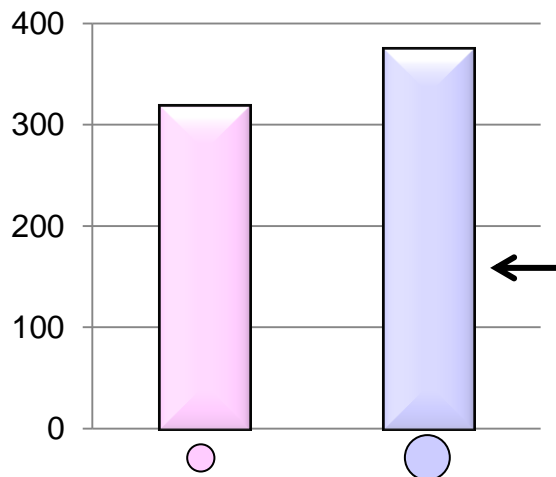**TOTAL**

When products were similar, the high codes were chosen irrespective of product

Position Bias
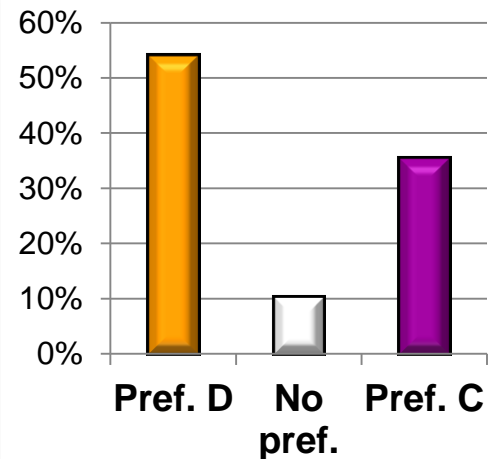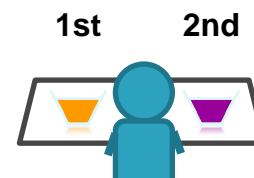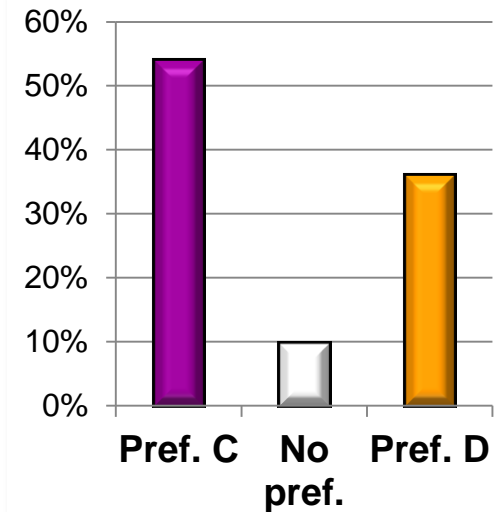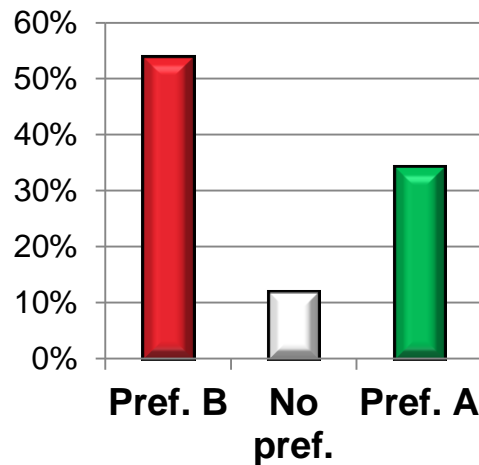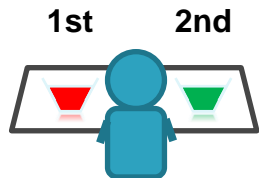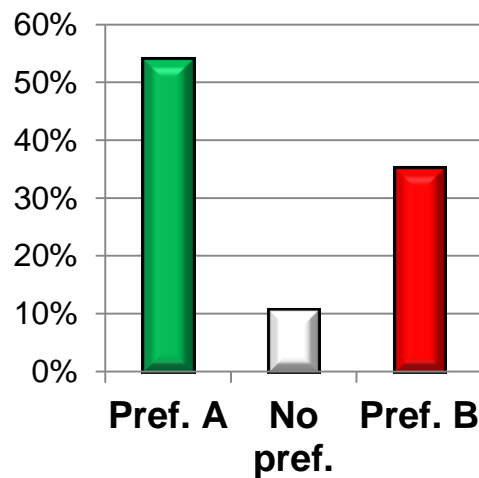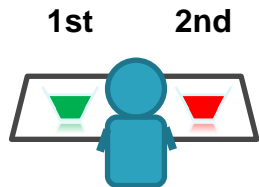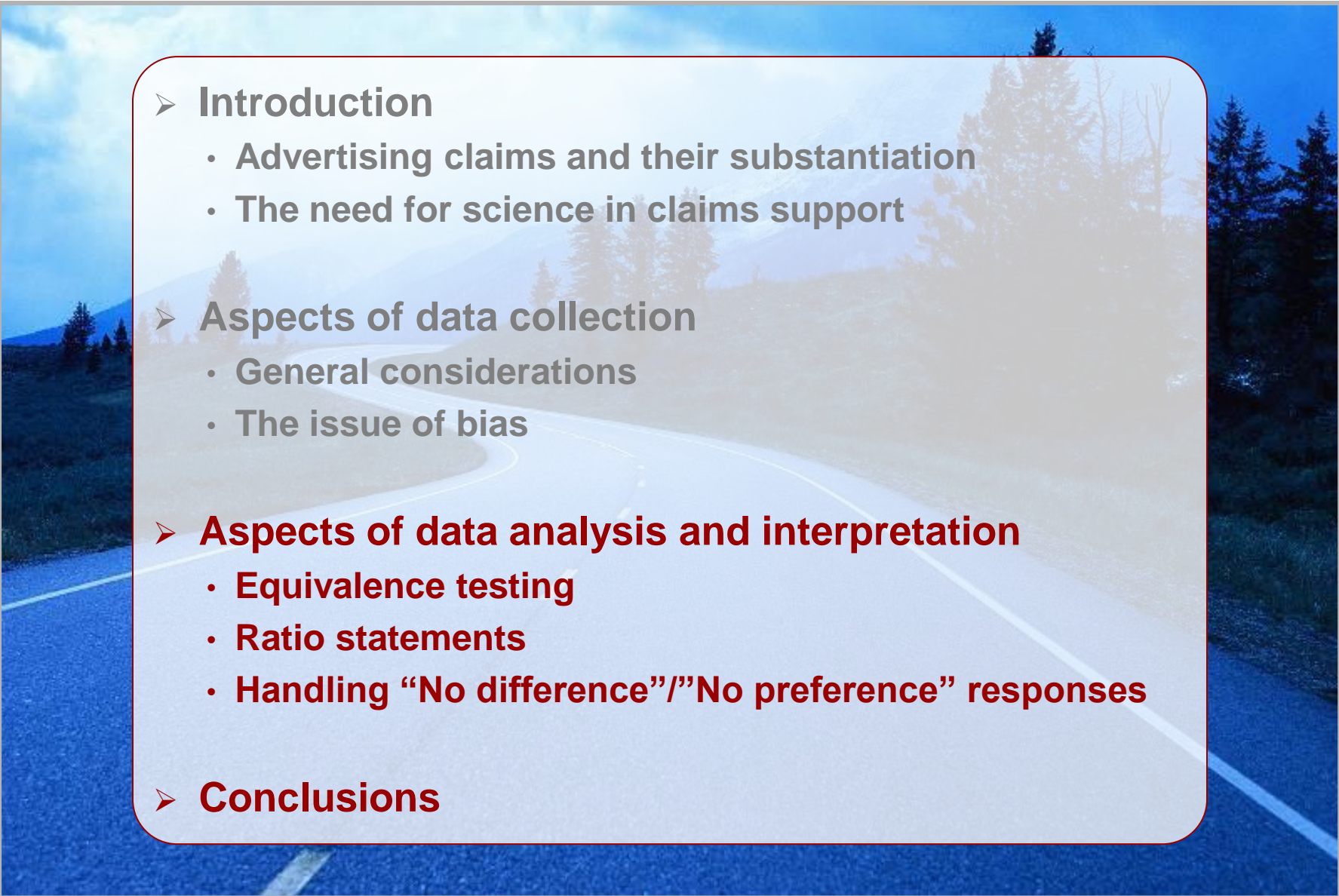
Study 1

Study 2

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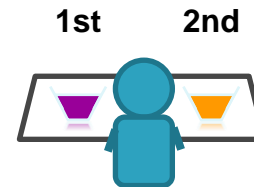# Aspects of Data Analysis and Interpretation

Equivalence

Equivalence Examples Involving Claims

- Dropped calls

- Dust pick-up

- Equivalent sweetening of two sweeteners

- Potato chips liked equally

- Generic drug performs the same as a brand name

Examples of Equivalence Bounds

Not equivalent	Equivalent	Not equivalent

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | **-0.3** | 0 | **0.3** | *Mean difference* |

log(0.8) = **-0.223**   **log(1.25)** = **0.223**   *Drug testing*

45%   **55%**   *Forced choice*

"Which do you prefer?"
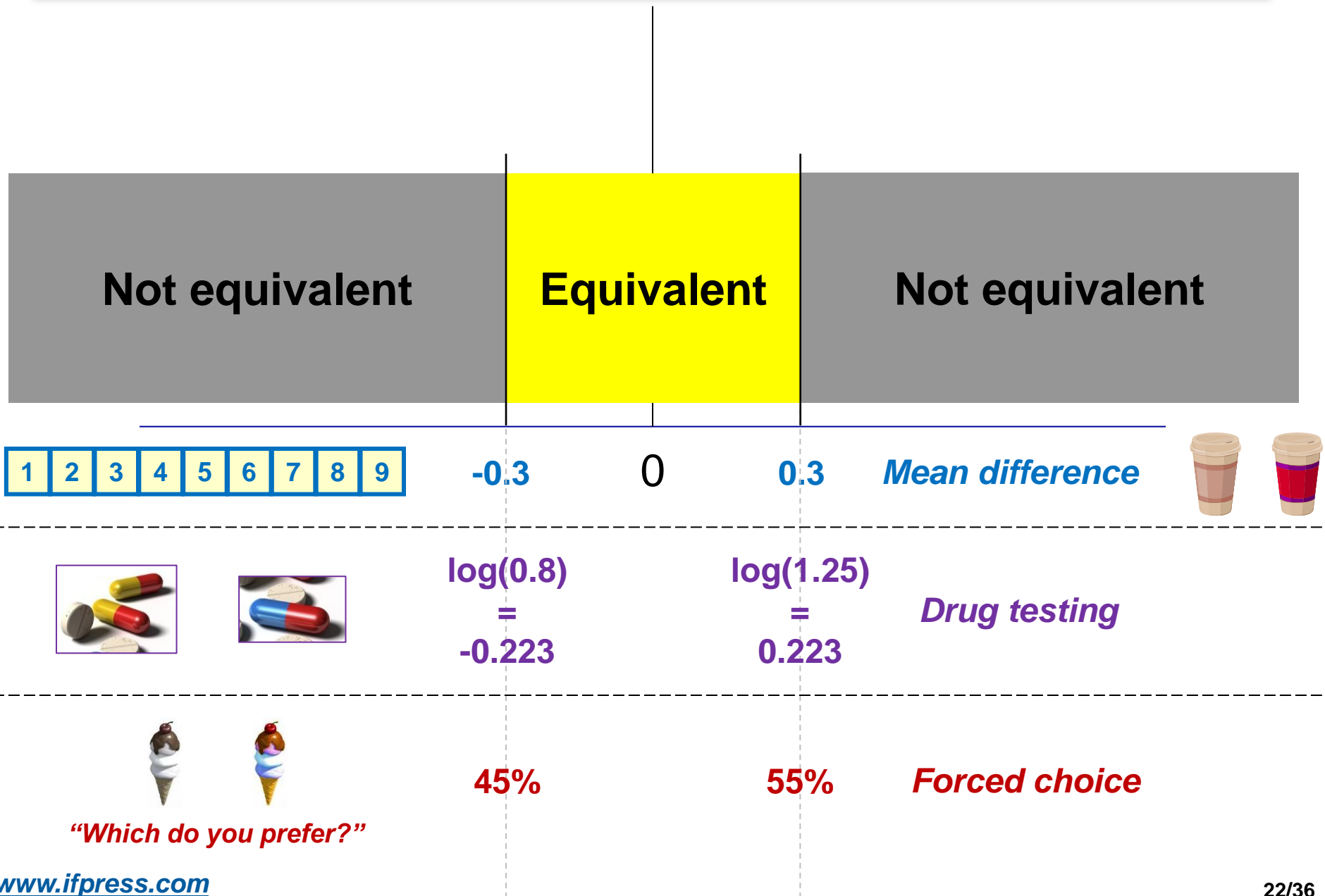
Example: *Sweetness comparison: Sucrose and Artificial Sweetener*

A   B

In a paired test the observed *lower choice count* must fall between the table value and *0.5n* inclusive to declare support for an equivalence hypothesis at the 95% level.

- ➢ 650 consumers
- ➢ Taste A and B
- ➢ "Which of the two is sweeter?"
- ➢ Are we within the 45-55 bounds?

Results		
A is sweeter	318	49%
B is sweeter	332	51%
Total	*650*	

n	count		n	count		n	count
400	196		600	290		800	384
405	199		605	293		805	386
410	201		610	295		810	388
415	203		615	297		815	391
420	206		620	300		820	393
425	208		625	302		825	395
430	210		630	304		830	398
435	213		635	307		835	400
440	215		640	309		840	402
445	218		645	311		845	405
450	220		**650**	**314**		850	407
455	222		655	316		855	409
460	225		660	318		860	411
465	227		665	321		865	414
470	229		670	323		870	416
475	232		675	325		875	418
480	234		680	328		880	421
485	237		685	330		885	423
490	239		690	332		890	425
495	241		695	335		895	428
500	244		700	337		900	430

0.45 – 0.55 bounds   *Ennis & Ennis (2010)*

- **Lower choice count = 318**
- **0.5n** = 0.5 * 650 = **325**
- **Conclusion: 325** > **318** > **314** ➔ The sweetener and sucrose are equivalent on sweetness intensity at the 95% level confidence

Ratio and Multiplicative Claims

Examples of Multiplicative Statements

- Compared to a competitor…

  – Carpet treatment **reduces** malodor **five times better**

  – Tooth whitening treatment **is twice as effective**
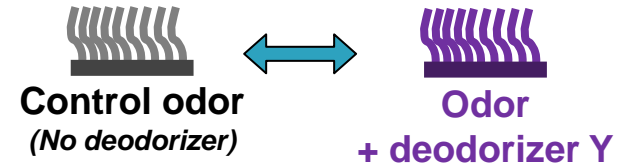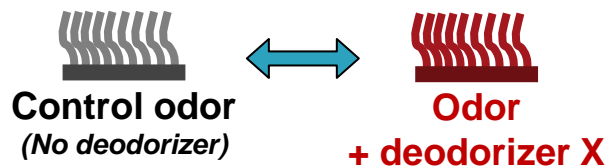
  – Air freshener **lasts 20% longer**

  – Cleaning product **performs "up to 30%" better**
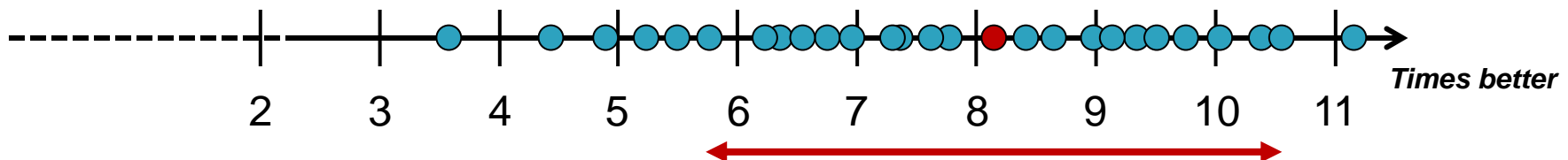
Note: Data Needed to Support a Ratio Claim

- Example
  - 100 consumers
  - Compare the efficacy of two carpet deodorizers
 - Task: "Which sample has less odor?"

Control odor
(No deodorizer)

Odor + deodorizer X

Control odor
(No deodorizer)

Odor + deodorizer Y

  - Results: **Performance X** = 8.2 * **Performance Y**

- Can we claim "*X performs 8 times better than Y*"?
  - No because the measurement estimate "8.2" has variance

 - Another experiment with 100 consumers will yield a different result

2   3   4   5   6   7   8   9   10   11

Times better

- Example *(Cont.)*
  - 100 consumers
  - Compare the efficacy of two carpet deodorizers
  - Task: "Which sample has less odor?"
  - Results: **Performance X** = 8.2 * **Performance Y**

X   **Y**

Control odor
(No deodorizer)   Odor
+ deodorizer X
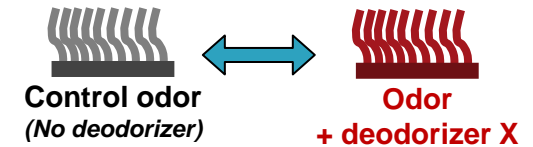
- Based on these results, we can claim that the performance of **X** is almost 3 times better than that of **Y** (2.95), but we cannot claim "8 times"

2   3   4   5   6   7   8   9   10   11   *Times better*
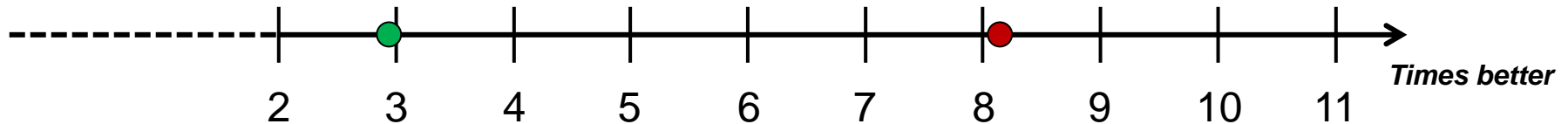
- <u>Conclusion</u>: It is essential to take into account the variability associated with the parameter estimation to avoid misleading the consumer on the relative performance of competitor products

Handling
No Difference/Preference
Responses

Preference testing

- Setting
  - Present **product A** and **product B**
  - Do you prefer **A** or do you prefer **B**?

| A | B |

- Should you have a "No preference" option?
  - Tendency for scientific community to avoid it
    - Binomial test simple
    - Respondents 'should' have preferences
    - Can collect 'No preference' responses if volunteered

  - Tendency for legal community to favor it
    - Legal considerations
    - Differences may not be meaningful if forced
    - Greater resolution to data

Handling "No Preference" Responses
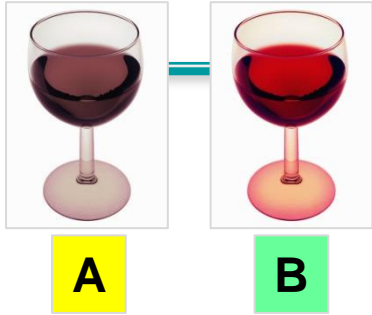
"Which sample do you prefer or do you have no preference?"

A	B	No pref.

- Research to study 4 methods to handle "No preference" answers

  1. **Discard 'No preference' responses**
     - Conduct binomial test on remaining data
     - Report results among those who expressed a preference

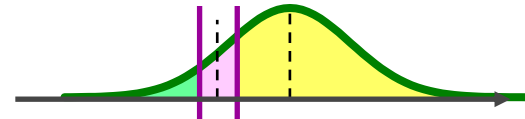 2. **Distribute 'No preference' responses equally**
     - Conduct binomial test

  3. **Distribute 'No preference' responses proportionally**
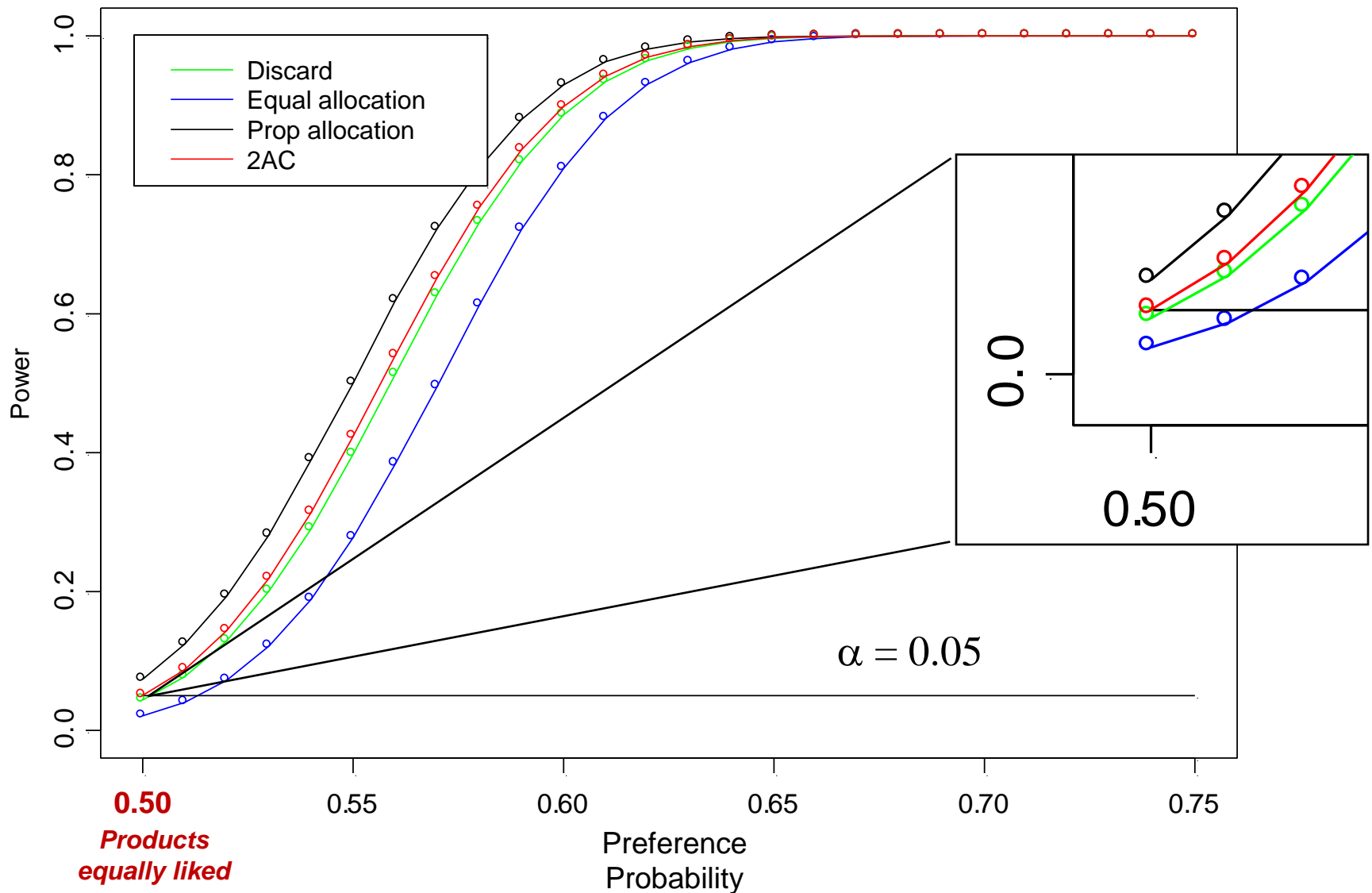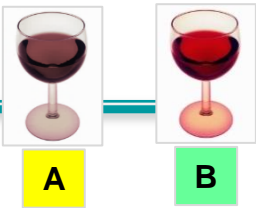   - Conduct binomial test

  4. **Apply Thurstonian 2-AC model**

- 100,000 simulations

Summary

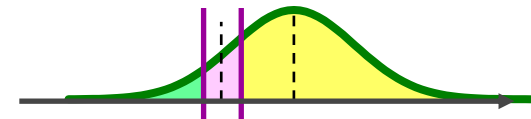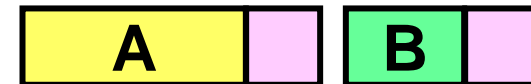| A	B	No pref.

- **Discarding 'No Preference'** responses statistically correct but results in qualified statements

- **Equal distribution** method is conservative but useful when more sophisticated methods not available

- **Proportional distribution** method is liberal and is not recommended

- **Thurstonian 2-AC** offers additional information and is recommended when available

  - ASTM now recommends
    - Offer "no preference" option
    - Split "no preference" equally
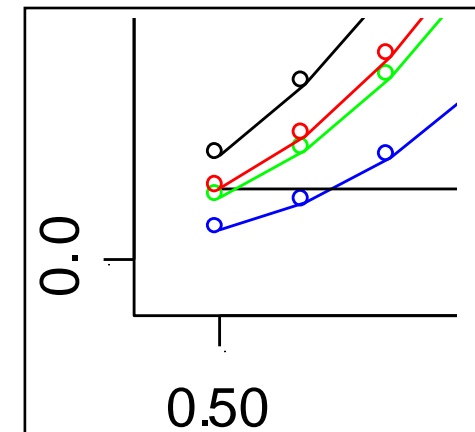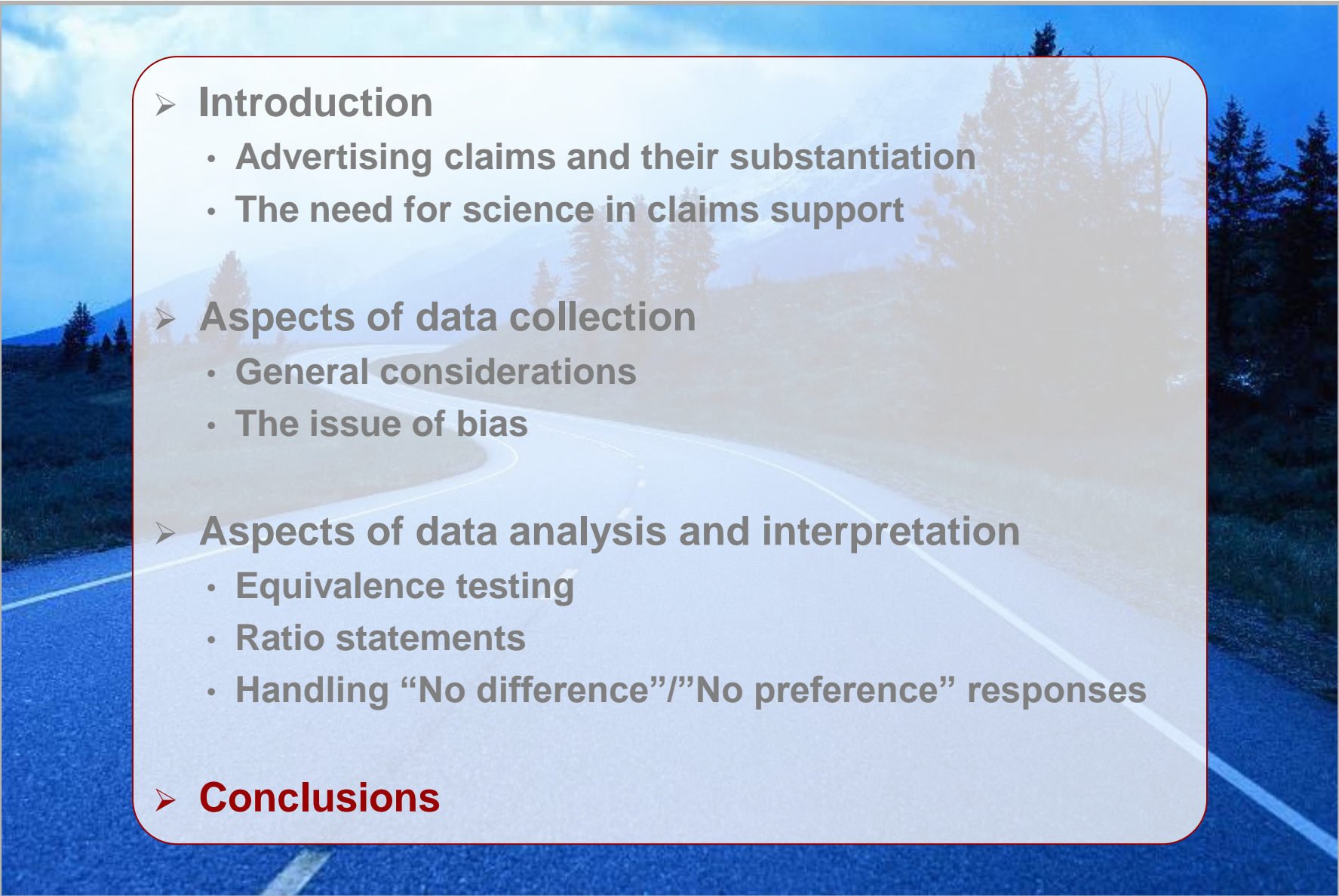   - Model with justification

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Conclusions

Advertising Claims and Their Substantiation

- Companies increasingly use performance or comparative claims in advertising to reach the consumers and try to alter their purchase behavior

- In order to support a claim, very careful experimental and analytical approaches must be considered
  - Confirm that the right population is sampled
  - Ensure that a clear and controlled protocol is followed during the data collection
  - Plan for suitable analyses that will allow the substantiation of the claim

- While such information can help the consumer make better decision, it is essential that all claims be properly supported to avoid the broadcasting of unfounded product benefit messages

- Following a systematic and scientific approach to claims substantiation is essential to protect the interest of a company as well as those of the consumer

Product Testing and Claims Support

Test de Productos y Soporte de Reclamaciones

Thank You For Your Attention
Any Questions?

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