



Cold storage in private households: recommendations and consumer real life behaviour

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Introduction



Introduction

- Foodborne diseases : relevant public health problem (rki, 2002)

- Origin: Restaurants, canteens, communal catering, **private households**

- Influencing factors:
 - Inadequate storage and cooking temperatures
 - Contaminated raw materials
 - Improper food handling



Introduction

Preventive measures

- Production, transport, storage and retail display:
→ hygiene of foodstuff regulated by law
- Transport to private homes and in private households:
→ no regulations
→ **numerous recommendations to assist consumer**

How is the quality of these recommendations?
Do consumers agree with these recommendations?
How do consumers act in real life?



Introduction

Aim of the present study:

- Analysis of consistency and correctness of recommendations concerning proper handling of perishable food
- Investigation of consumer real life behaviour regarding cold storage of perishable food
- Assessment of real life consumer behaviour with regard to food safety and hygiene



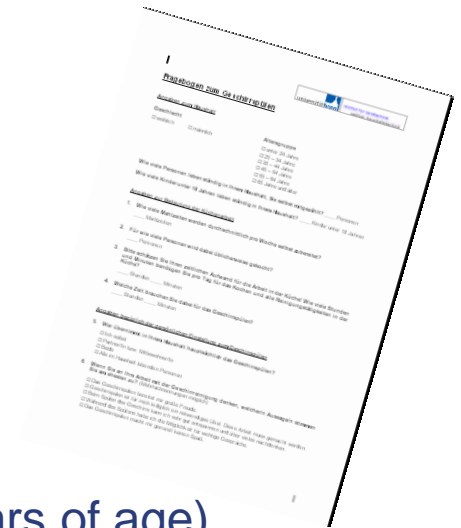
Materials and Methods



Concept of the studies

Implementation of an online survey (n=1000)

- 4 Countries: D, F, E, GB
- Recruitment/ Hosting: Market research company
- Quotation: Young single household (< 30 years of age)
Elder single household (> 55 years of age)
Couple household
Household with 3 or 4 members
Extended family households (≥ 5 persons)
- Questionnaire: 43 questions covering the aspects: demography, temperature adjustment, food storage behaviour
- Data analysis: SPSS, version 14





Concept of the studies

Implementation of an in-home study (n=100)

Quotation: Identically equal to online survey

Recruitment: 2 market research companies with large European panels

Temp.-Logger: Data were recorded every minute over a period of 11 days
Logger was placed and fixed centrally on the middle shelf of the refrigerator

Photos: One photo of the compartment and one of the opened door was taken every day over a period of 14 days
Digital cameras were provided





Analysis of recommendations

- Online search via Google™:
 - Food storage refrigerator
 - Lebensmittellagerung Kühlschrank
 - Almacenaje de alimentos refrigerador
 - Conservation des aliments réfrigérateur

- Review of the first ten hits of each keyword

- Comparison with scientifically sound recommendations (source: Federal Institute for Risk Assessment (BfR))



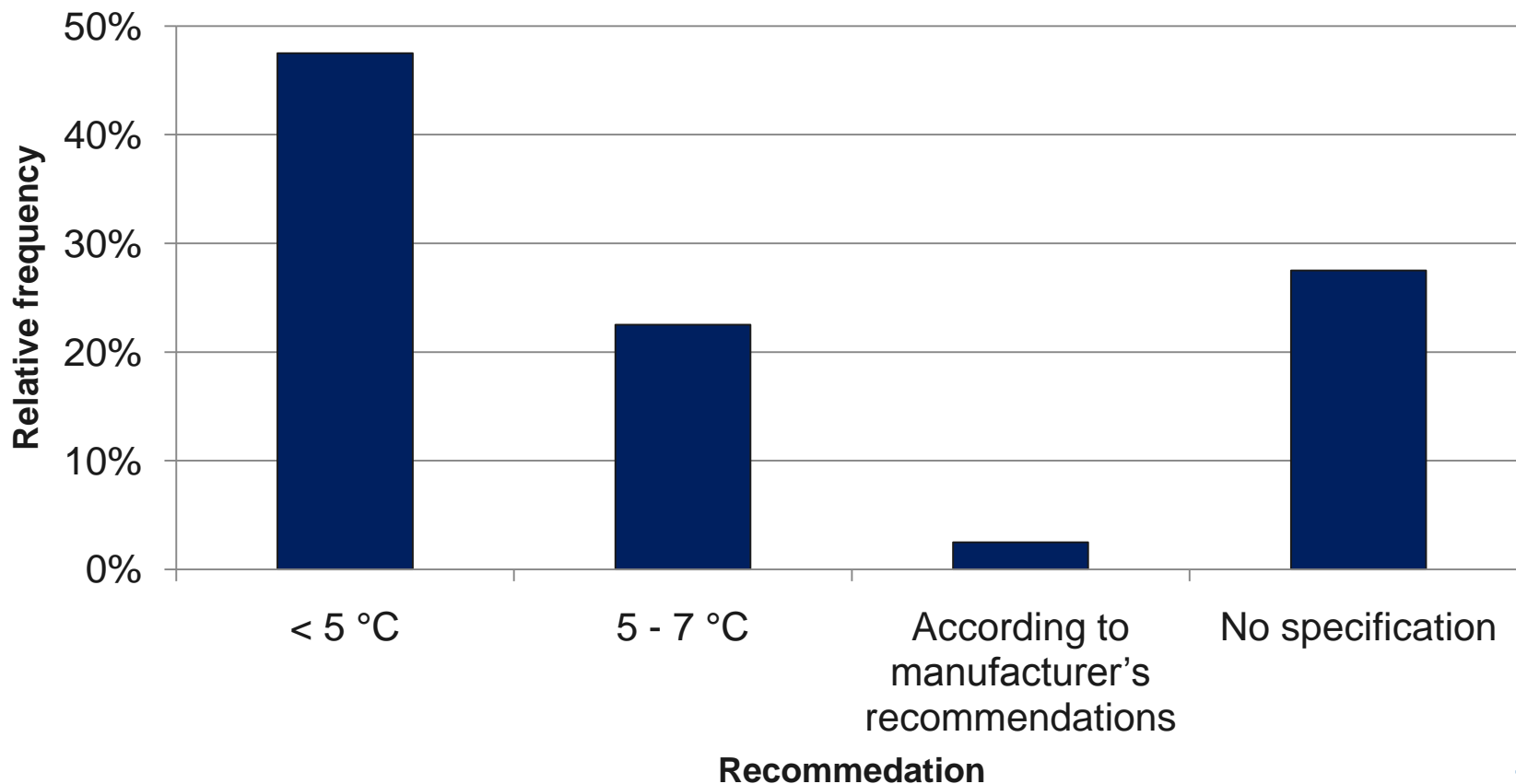
Results and Discussion



Temperature adjustment of the refrigerator

Scientifically sound vs. publicly available recommendations

Scientifically sound recommendation: **Optimal temperature adjustment: < 5 °C**

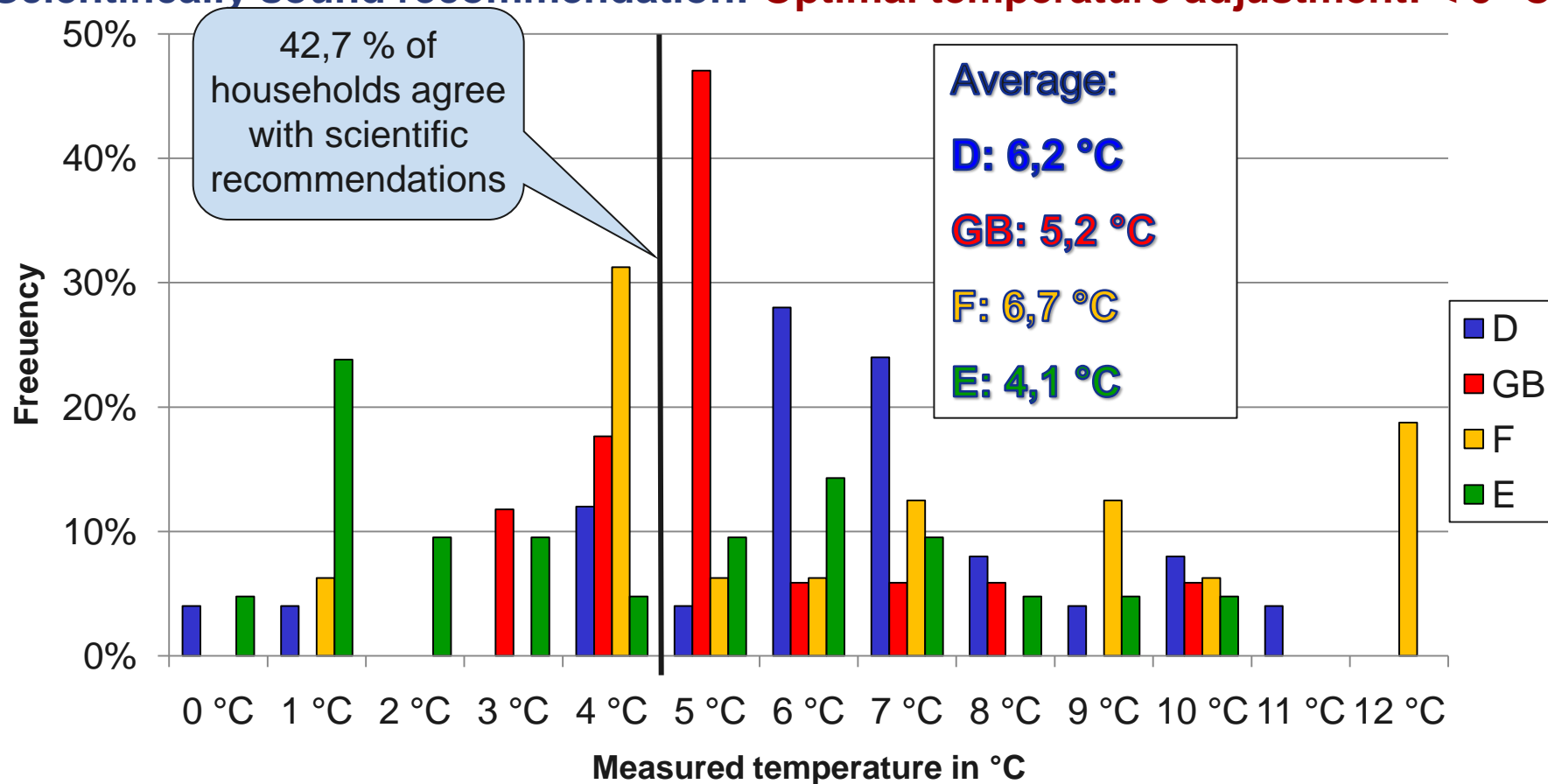




Temperature adjustment of the refrigerator

Consumer behaviour

Scientifically sound recommendation: **Optimal temperature adjustment: < 5 °C**

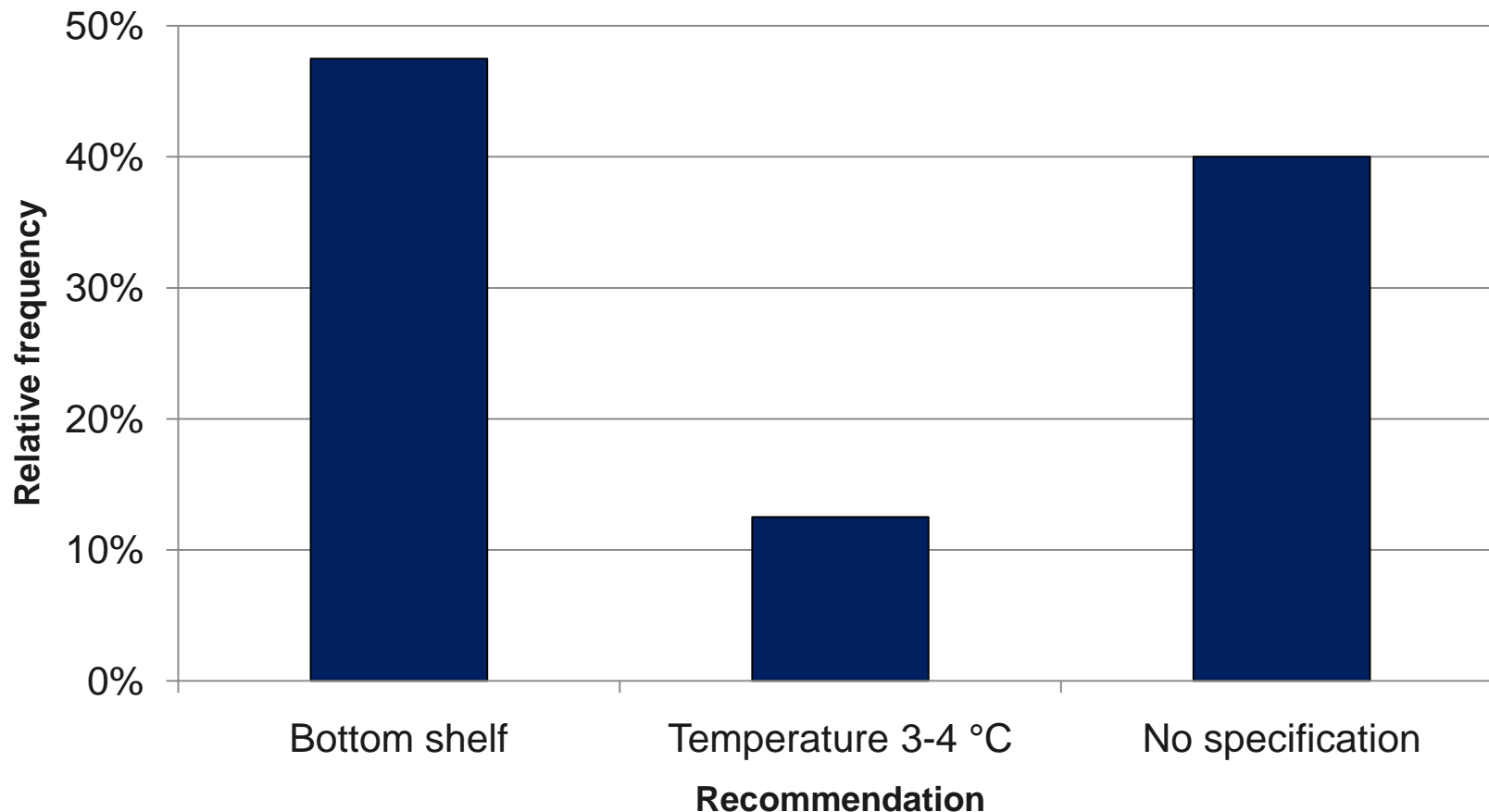




Optimal place to store meat, poultry and fish

Scientifically sound vs. publicly available recommendations

Scientifically sound recommendation: bottom shelf on the bottom drawer

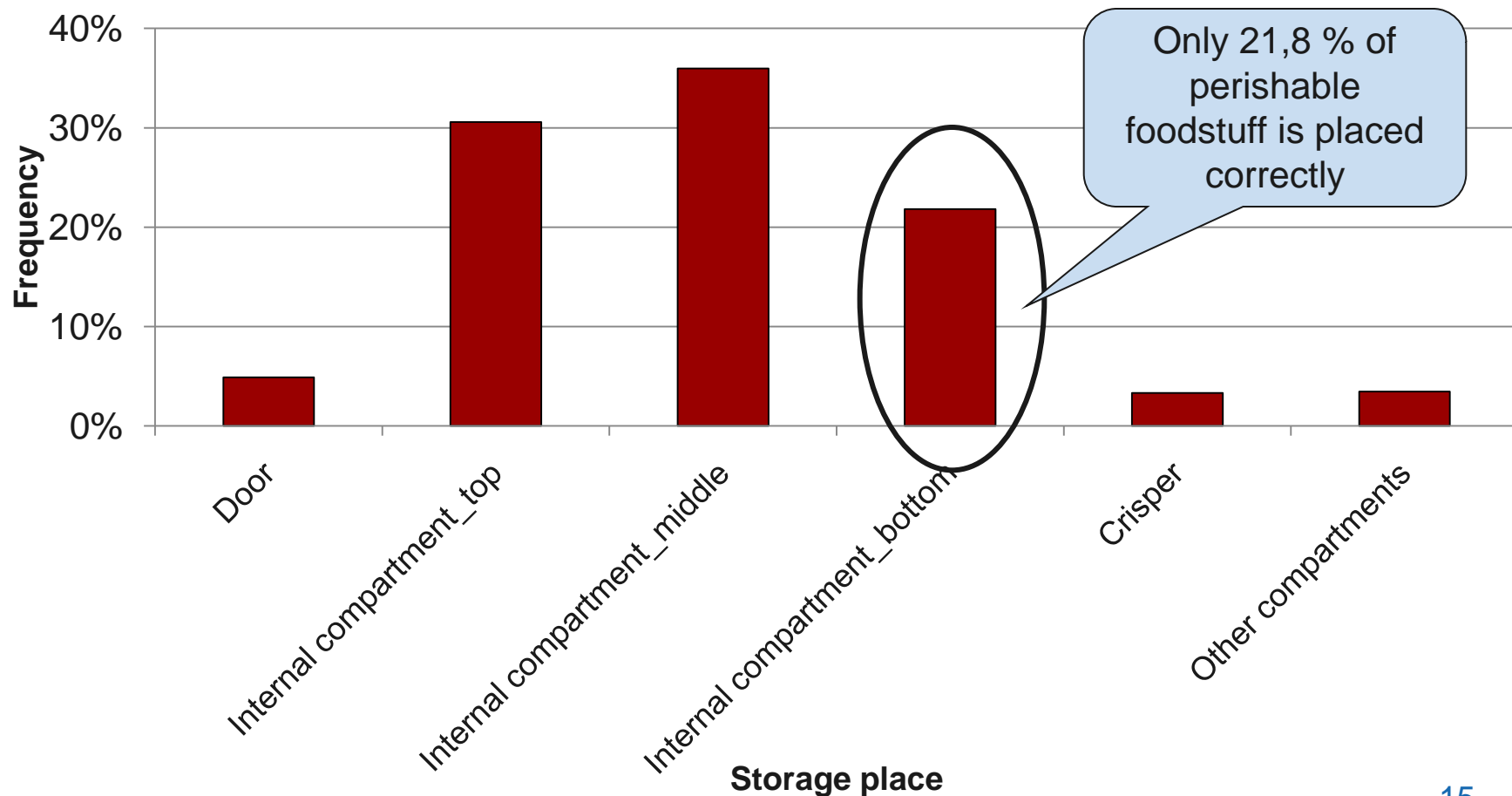




Optimal place to store meat, poultry and fish

Consumer behaviour

Scientifically sound recommendation: bottom shelf on the bottom drawer

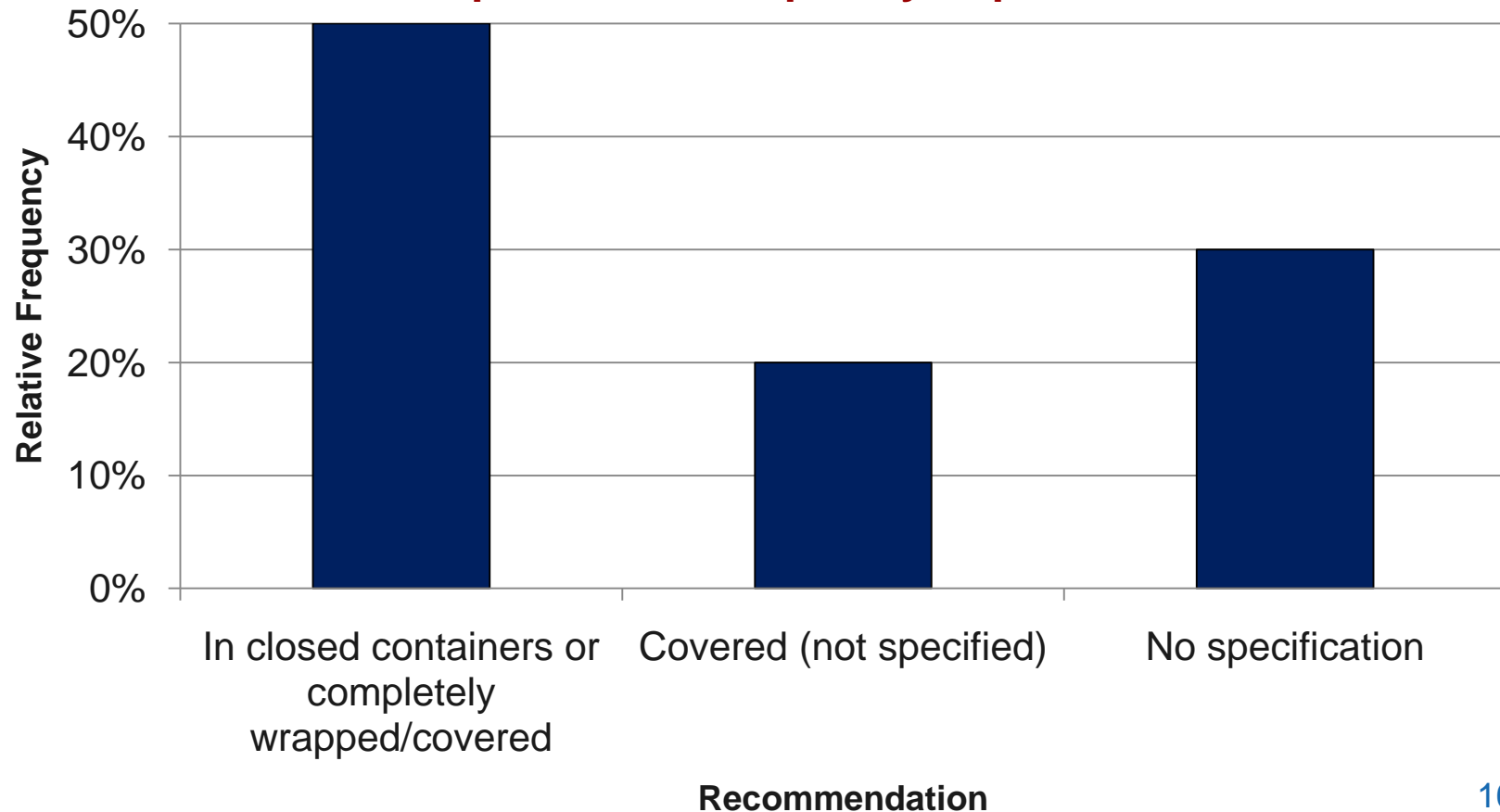




Packaging/ wrapping of food

Scientifically sound vs. publicly available recommendations

Scientifically sound recommendation: Store food (especially raw meat/ fish) in closed containers or wrap/ cover it completely to prevent cross-contamination

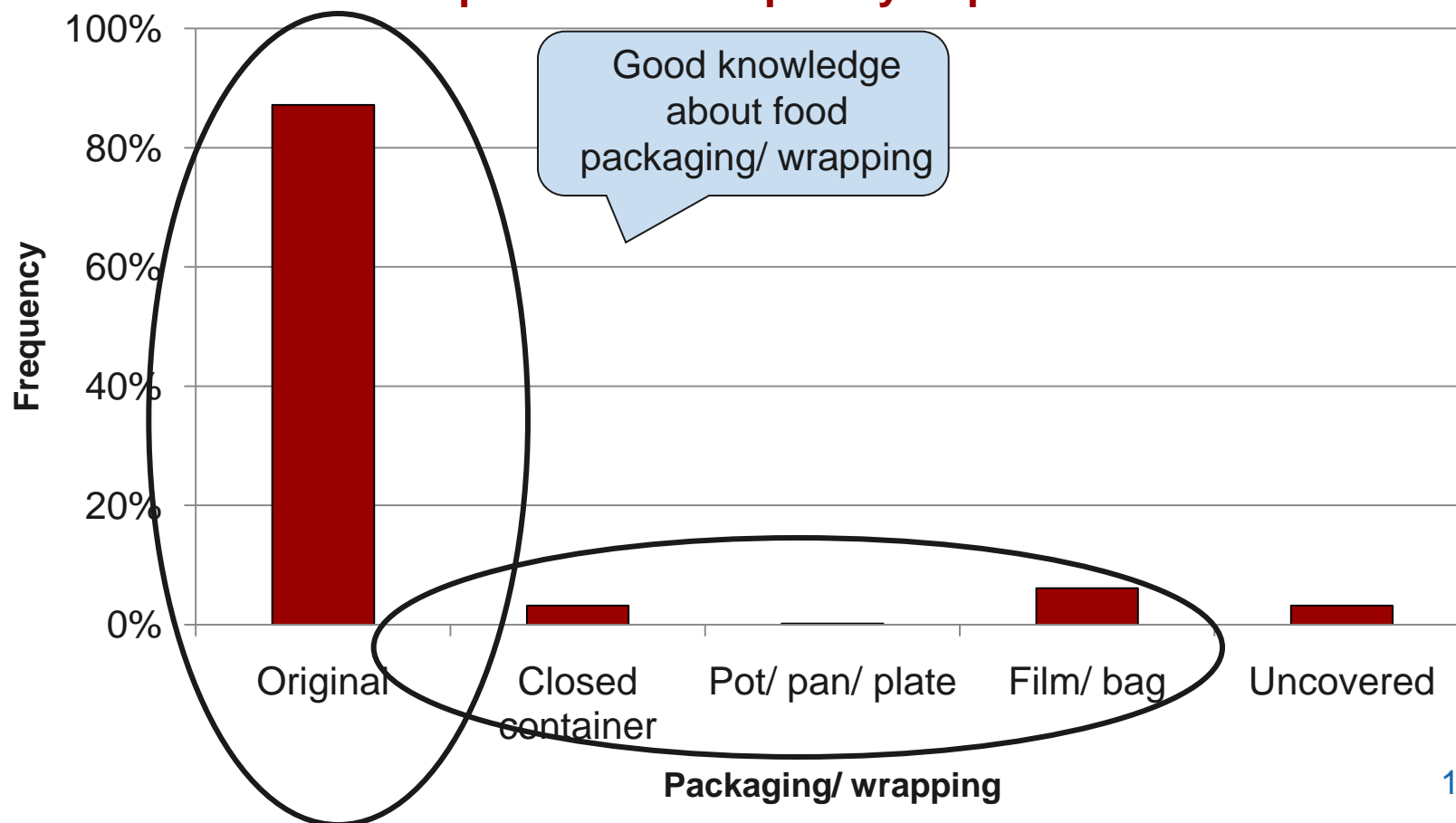




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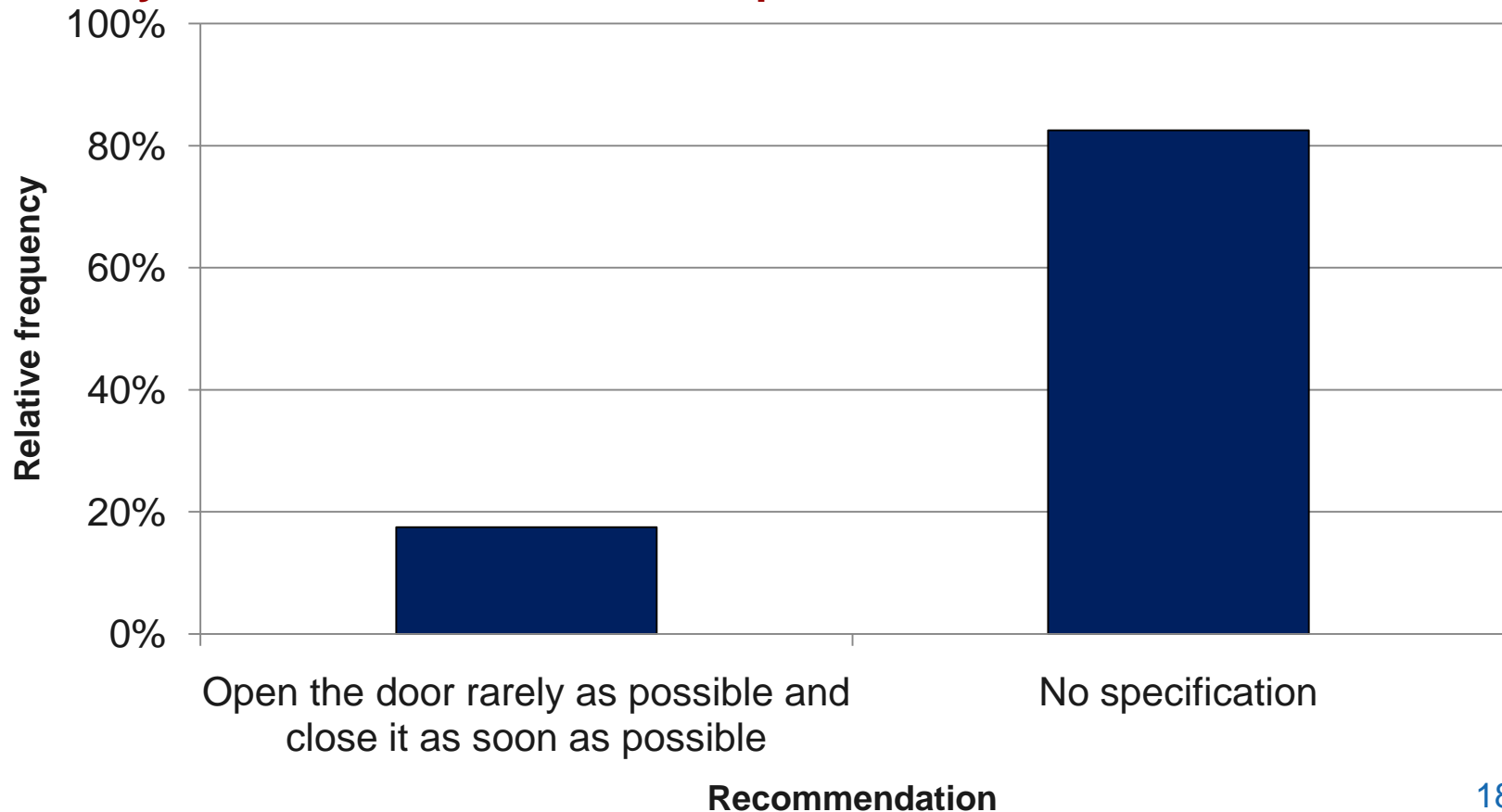




Prevention of temperature rise inside the refrigerator

Scientifically sound vs. publicly available recommendations

Scientifically sound recommendation: Only open the door as often as necessary and do not leave the door open

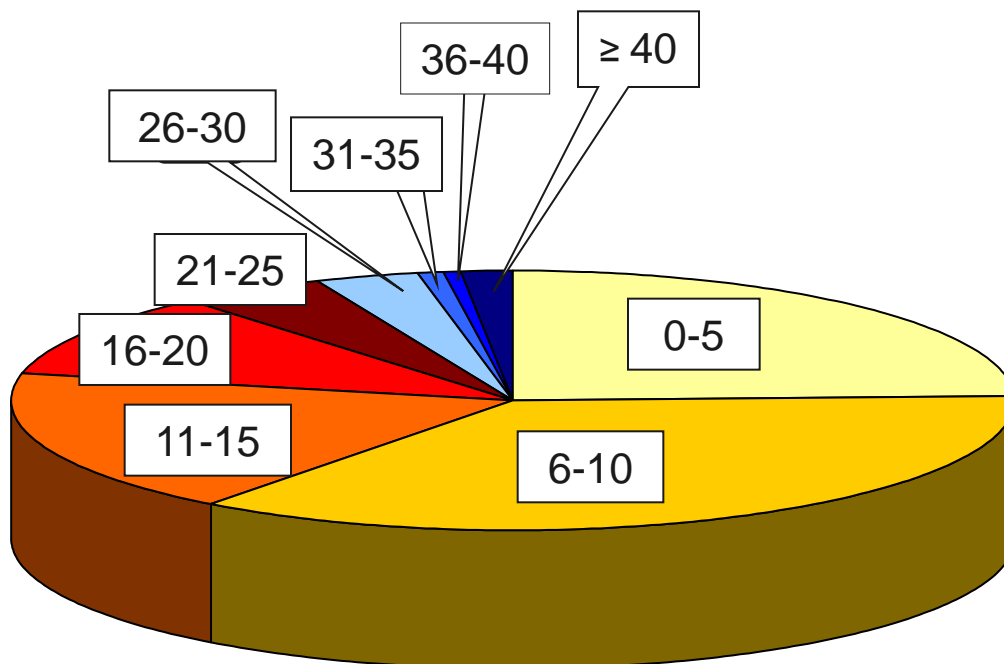




Prevention of temperature rise inside the refrigerator

Consumer behaviour

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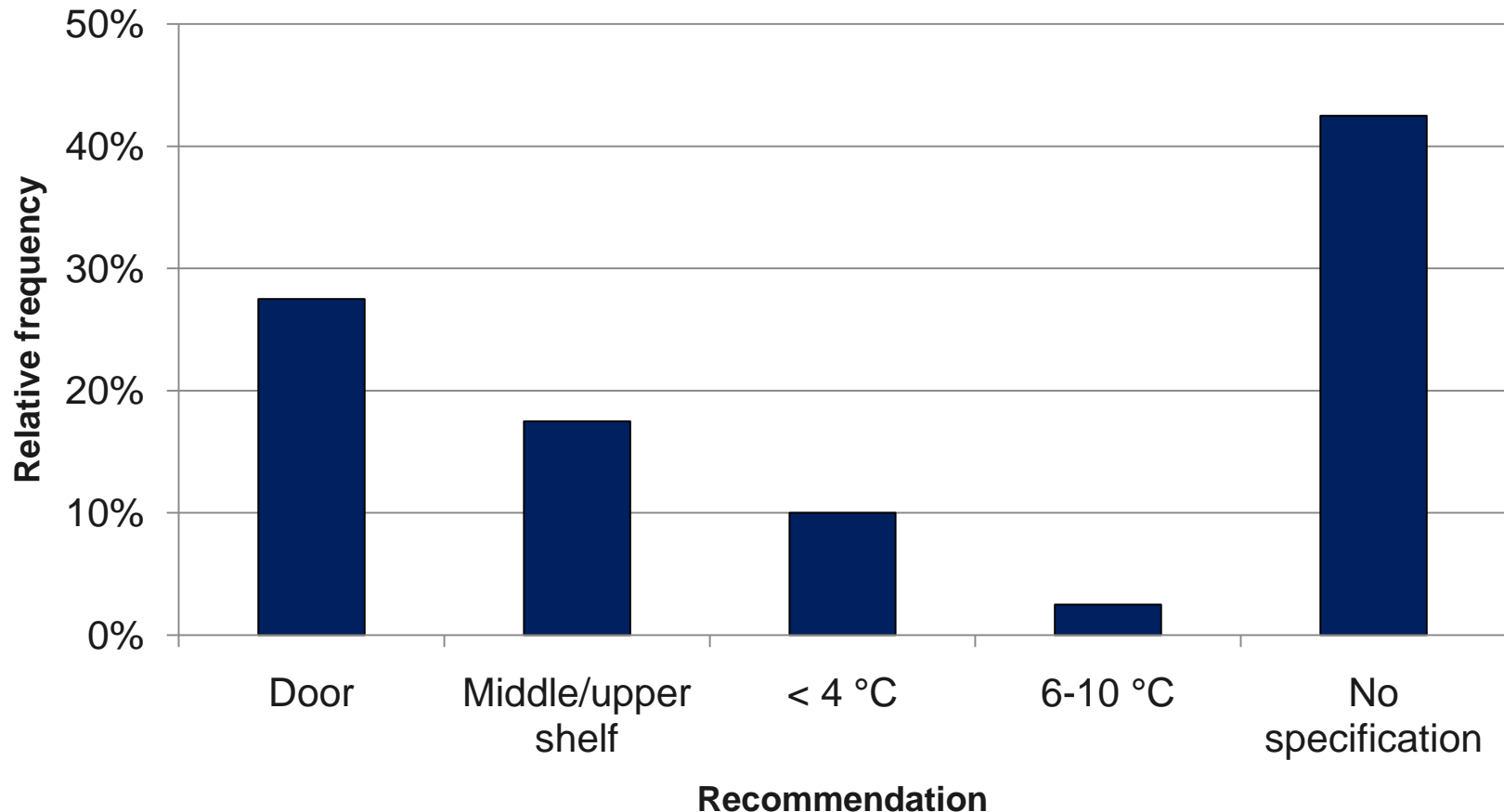
Mean:
11 openings/ day



Optimal place to store raw eggs

Scientifically sound vs. publicly available recommendations

Scientifically sound recommendation: Maximal storage temperature: 7 °C

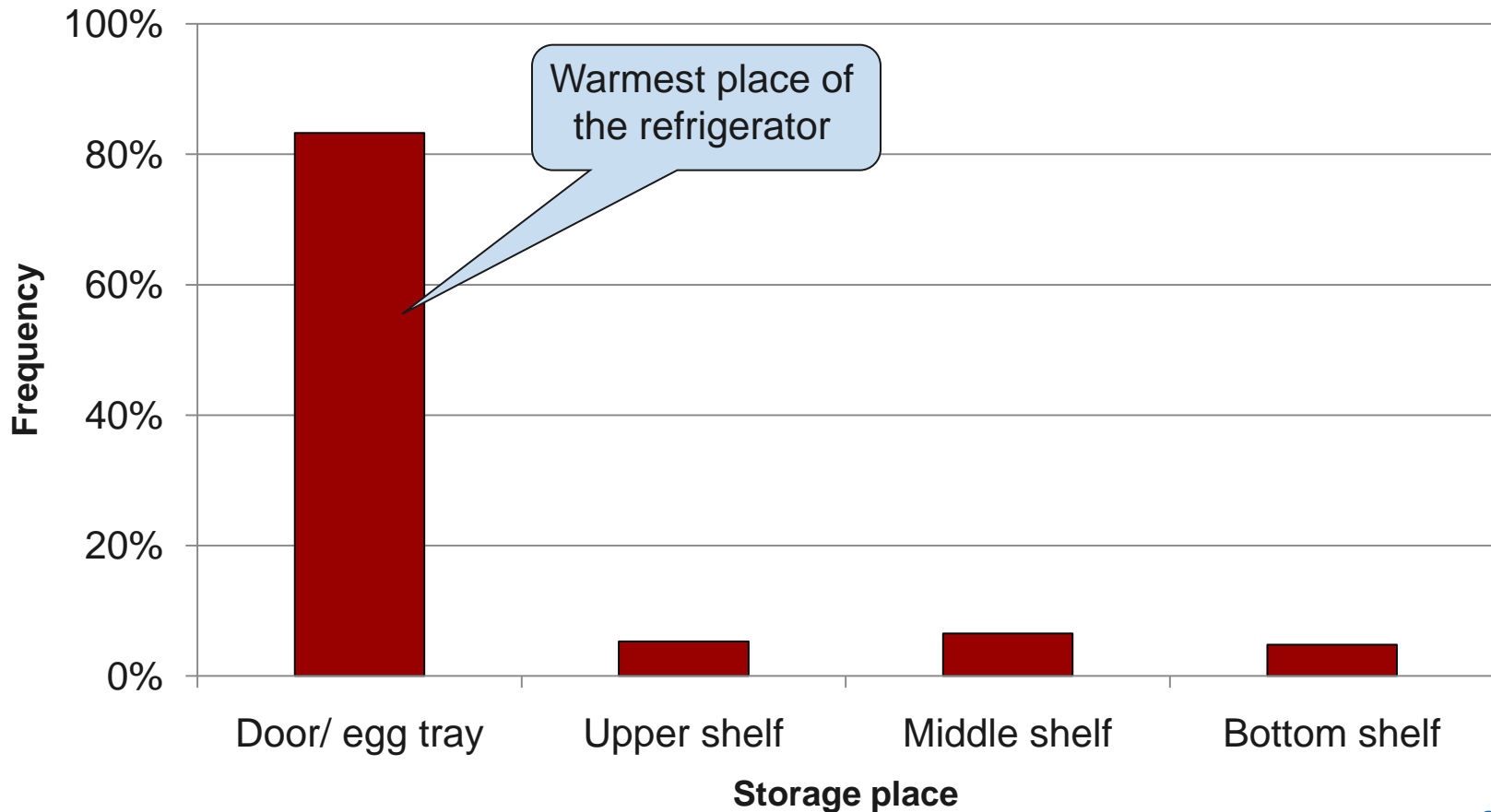




Optimal place to store raw eggs

Consumer behaviour

Scientifically sound recommendation: **Maximal storage temperature: 7 °C**





Summary/ Conclusion



Summary *Consumer behaviour*

- 57,3 % of measured temperatures exceeded the recommended temperature of the BfR
→ adequate food handling is not guaranteed
- 78,2 % of meat, poultry and fish products are stored inadequately
- 83,3 % of raw eggs are stored at the warmest place of the refrigerator



Summary *Consumer behaviour*

- Good consumer knowledge with regard to adequate food packaging and wrapping
- Frequency of door openings extremely high in some households
 - potential risk of temperature rise inside the refrigerator



Summary *Publicly available recommendations*

- Recommendations do not always agree with scientifically sound advice
- Recommendations concerning temperature adjustment are not consistent
- Several recommendations only cover few aspects of adequate food storage and handling
→ no comprehensive support



Conclusion

- Food storage at home most critical link in food chain
 - Consumer's role in maintaining cold chain is important
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- Recommendations have to be improved
 - Appropriate dissemination of information material



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Thank you for your attention!

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