

2010

Alcohol Kills Bacteria

Luke Goodman
Worcester Polytechnic Institute

Brittany Jones

David Karbassi

Angela Wood

Follow this and additional works at: <http://digitalcommons.wpi.edu/gps-posters>

Recommended Citation

Goodman, Luke; Jones, Brittany; Karbassi, David; and Wood, Angela, "Alcohol Kills Bacteria" (2010). *Great Problems Seminar Posters*. Book 51.
<http://digitalcommons.wpi.edu/gps-posters/51>

This Text is brought to you for free and open access by the Great Problems Seminar at DigitalCommons@WPI. It has been accepted for inclusion in Great Problems Seminar Posters by an authorized administrator of DigitalCommons@WPI.

ALCOHOL KILLS... Bacteria

Reducing Ineffective and Counterproductive Use of Hand Sanitizers

Members: Luke Goodman (RBE), Brittany Jones (BBT), David Karbassi (BBT), Angela Wood (BBT/PW) Advisors: Jill Rulfs (BBT), Helen Vassallo (MGMT)

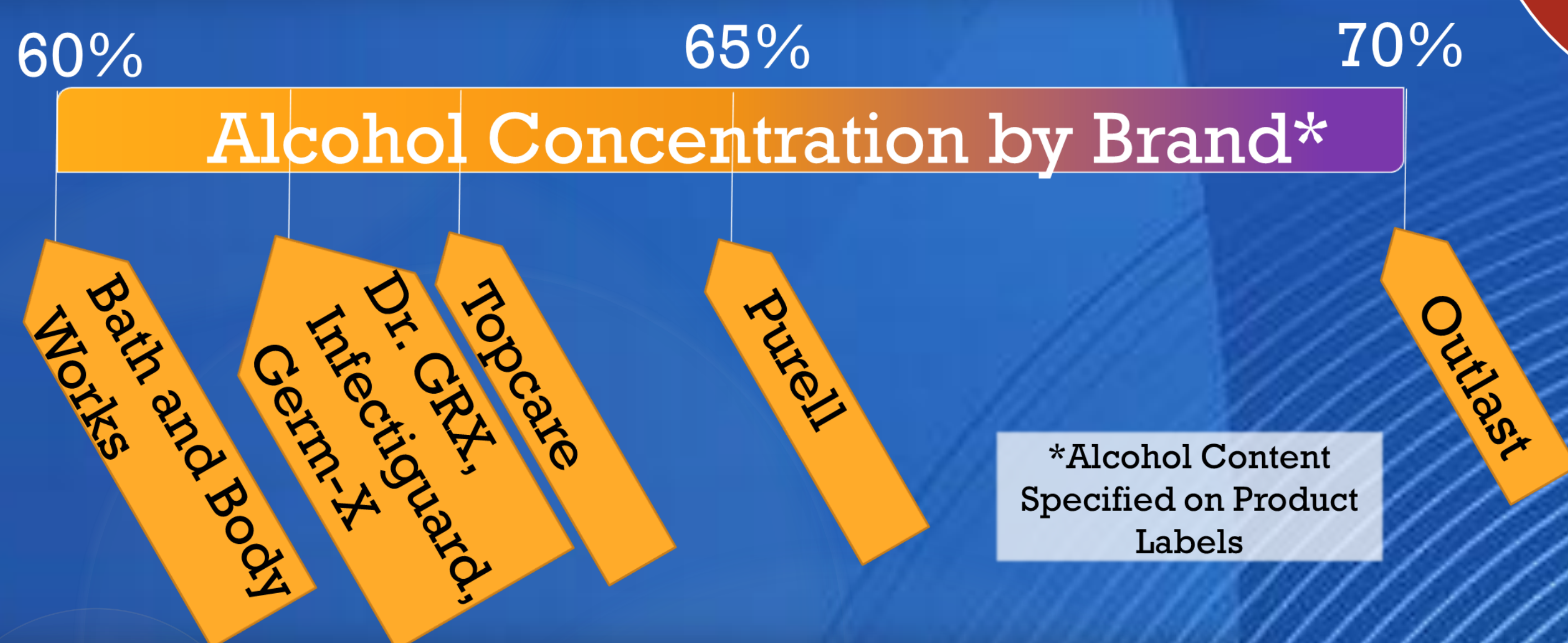
Need

To promote better hand hygiene in the WPI community, thereby decreasing the spread of disease.

Approach

- Design a survey to gather information regarding use and understanding of hand sanitizer
- Distribute the survey to the WPI student body through email
- Distribute "info cards" to raise awareness

Literature Review



- Alcohol-based sanitizers must contain at least 60% alcohol to be effective
- QACs such as Benzethonium and Benzalkonium Chloride are antimicrobial agents found in hand sanitizers, surface cleaners, etc.
- Research in progress shows bacteria developing resistance to QACs and other agents

Data

Chart I: Frequency of Use (Times per Day)

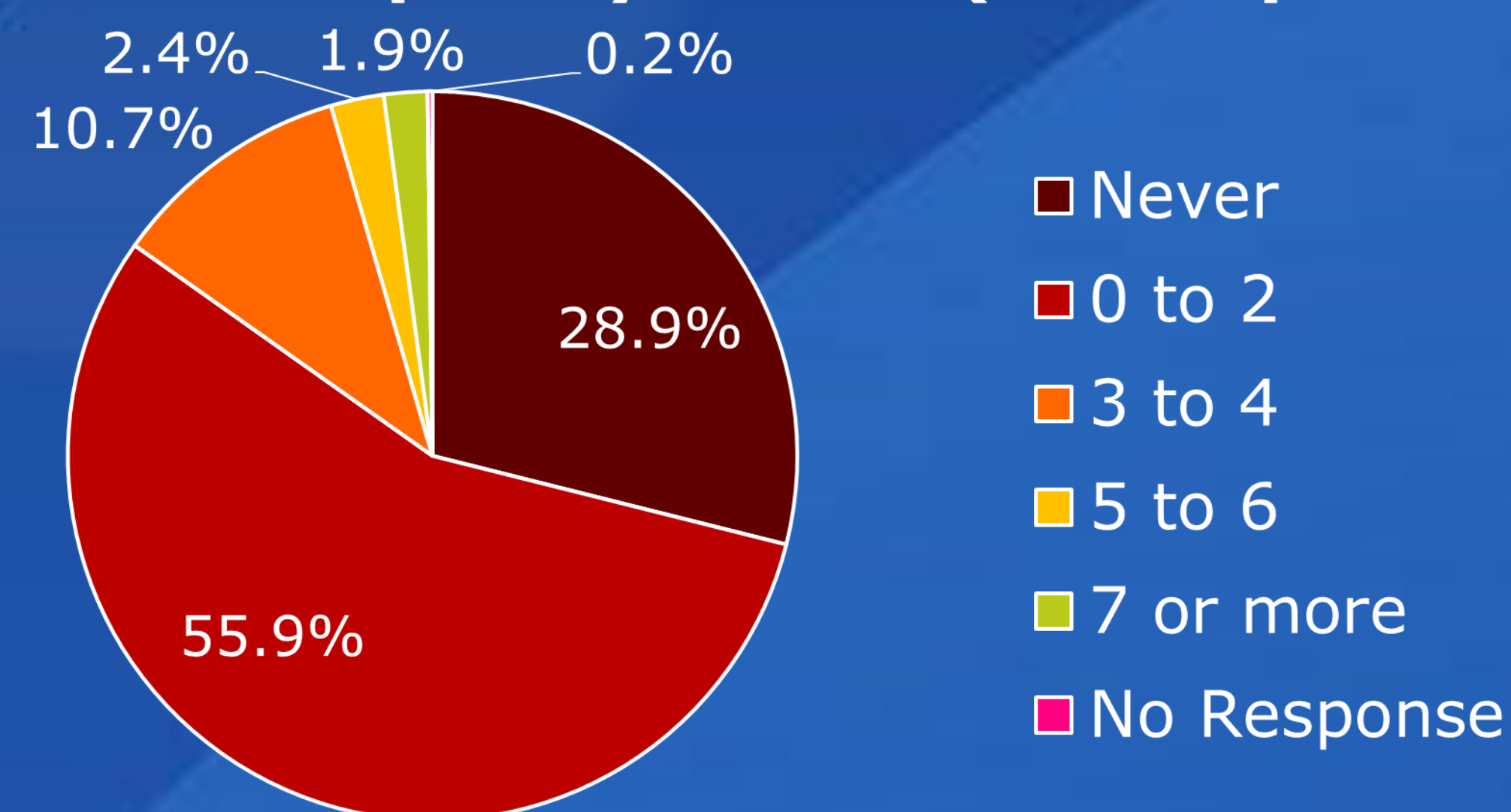


Chart II: Awareness of Different Active Ingredients

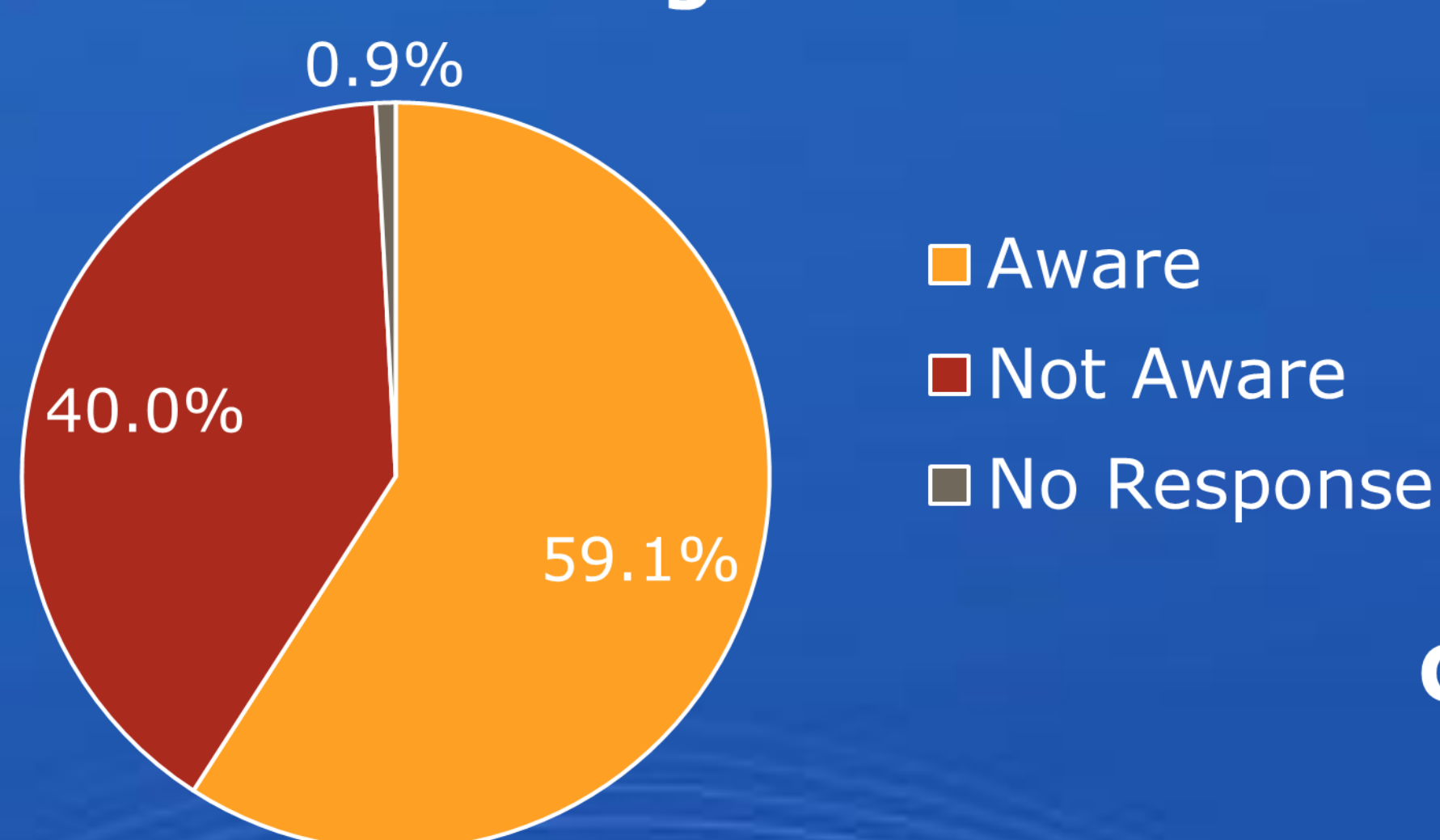


Chart III: Preferred Active Ingredients

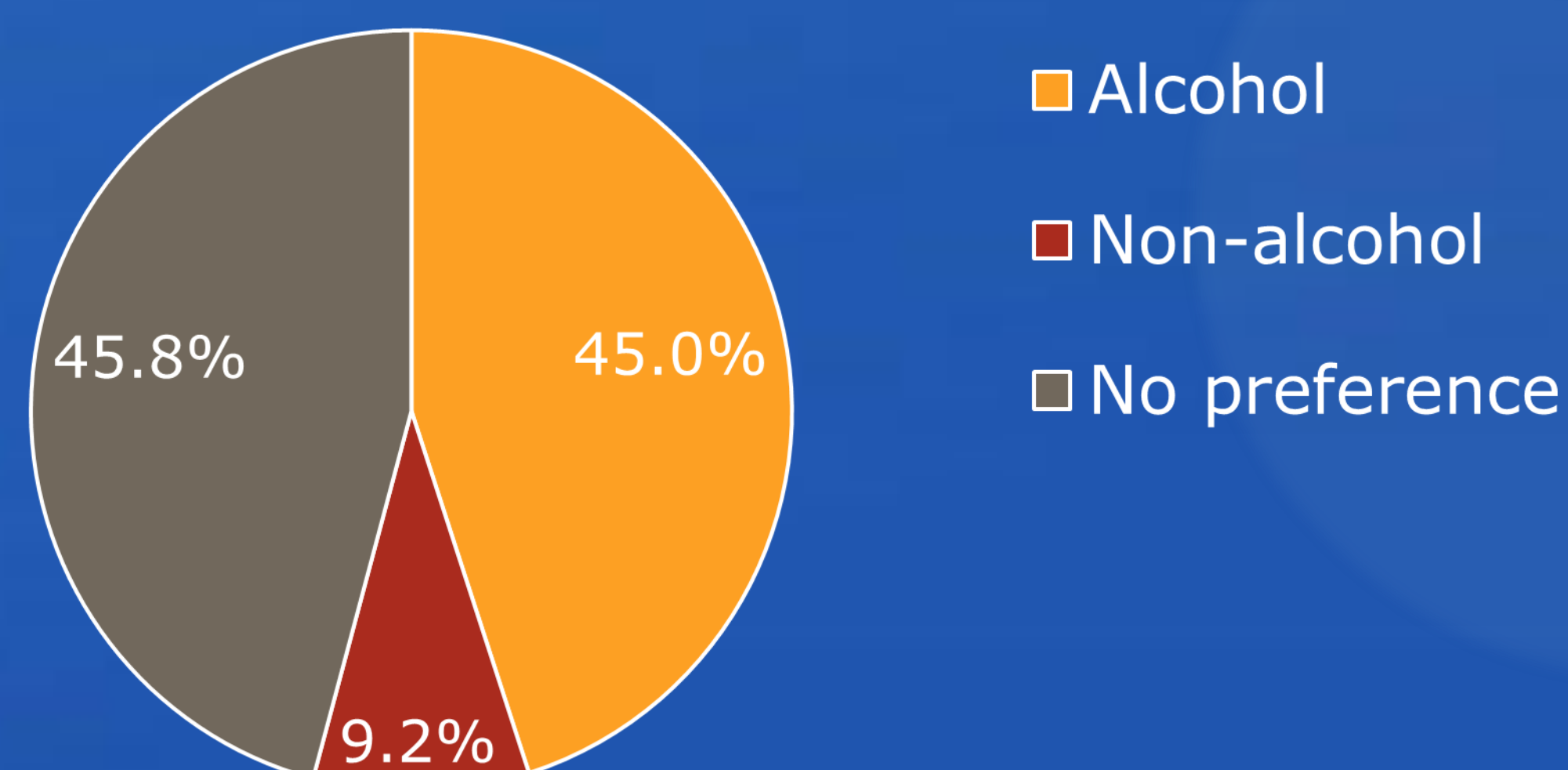
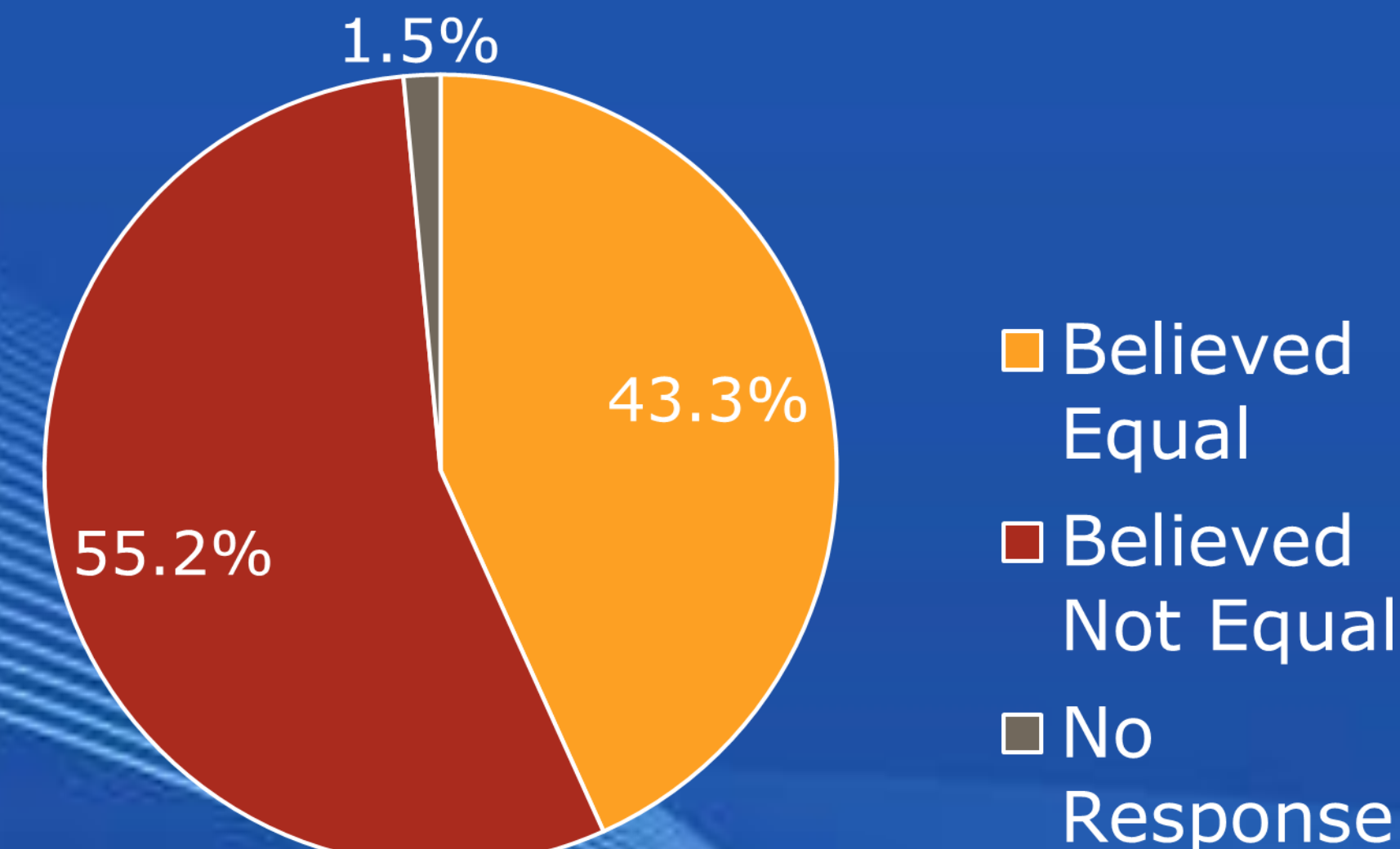


Chart IV: Effectiveness of Different Alcohol Concentrations



Outcome

- Total responses: 467
- Important Findings:
 - Chart I: The WPI community uses hand sanitizer, but not excessively
 - Charts II and III: Many are unaware of or simply don't consider the active ingredients in the sanitizer they use
 - Chart IV: Similarly, many are unaware that a minimum concentration of alcohol (60%) is required to be effective

Considerations

- Hawthorne Effect: questions designed to avoid this, but it may have influenced the results regardless
- The "Preferred Active Ingredients" chart excludes the "No Response" category

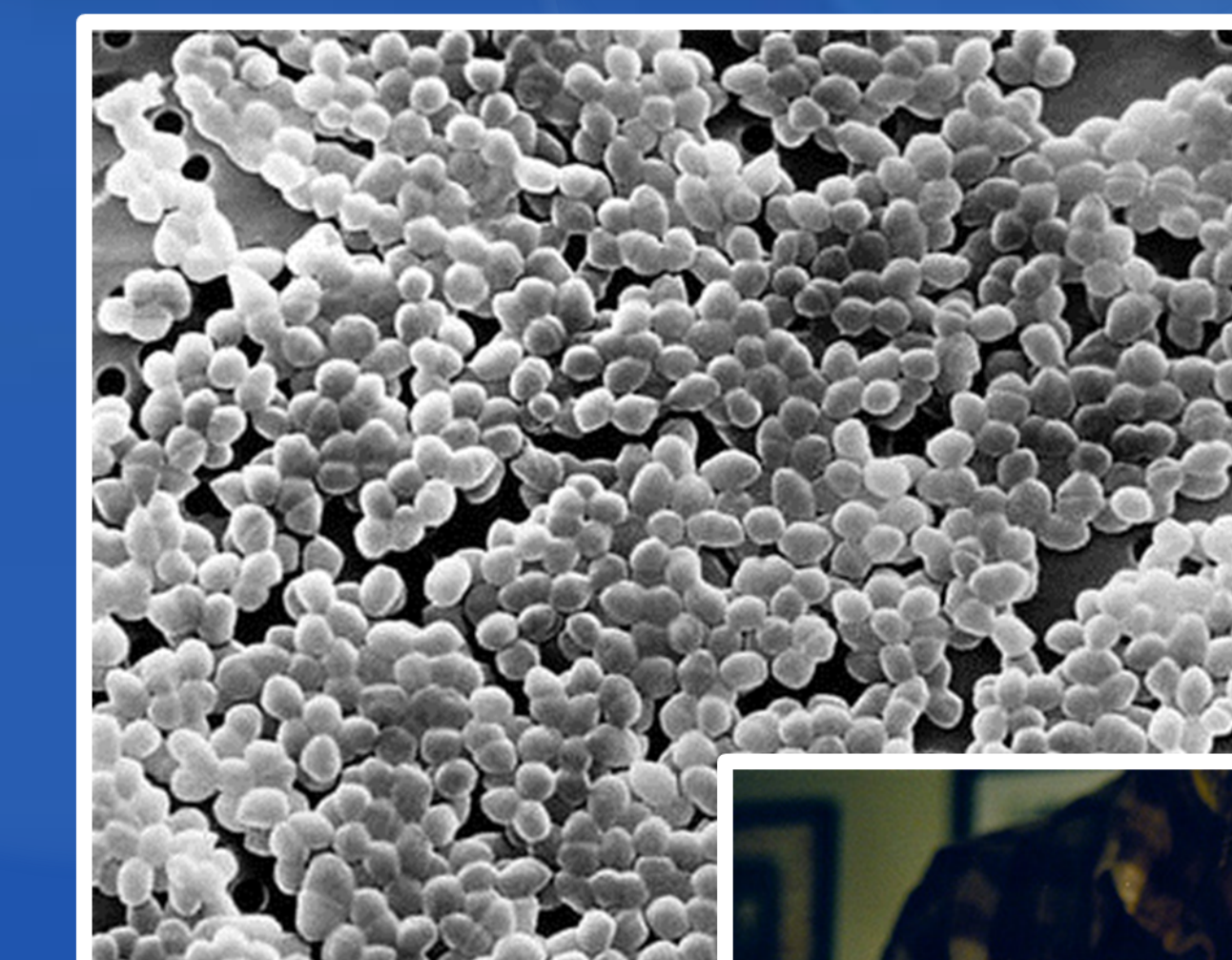


Image I



Image II

Image Sources:

I: http://content9.eol.org/content/2009/11/25/03/07773_large.jpg
 II: http://farm3.static.flickr.com/2739/4402085217_31183b8c74.jpg

Acknowledgements

We would like to thank Jill Rulfs, Helen Vassallo, and the ATC for their help.

References

Aiello, Allison E. et al. "Effect of Hand Hygiene on Infectious Disease Risk in the Community Setting: A Meta-Analysis." *Emerging Infectious Diseases*. 14(12):2244-2250. Print.

"Americans Use Hand Sanitizers for Peace of Mind but Don't Know Leading Hand Sanitizers Stop Working After Two Minutes." *PR Newswire* 4 Nov. 2010. *Academic OneFile*. Web. 7 Dec. 2010.

Am J Infect Control. 2007 May; 35(4): 231-236.

Braoudaki, M., and A. C. Hilton. "Adaptive Resistance to Biocides in *Salmonella enterica* and *Escherichia coli* O157 and Cross-Resistance to Antimicrobial Agents." *Journal of Clinical Microbiology*. (2004): 73-78. Print.

Carson, Robyn T. "Use of Antibacterial Consumer Products Containing Quaternary Ammonium Compounds and Drug Resistance in the Community." *Journal of Antimicrobial Chemotherapy*. (2008): 1160-61. Print.

"Health Buzz: FDA Will Review Academic Safety of Antibacterial in Soap." *Wall Street Journal* 12 April 2010. LexisNexis Academic. Web. 7 Dec. 2010.

"The bugs stop here." *Men's Health* Mar. 2010:64. *Academic OneFile*. Web. 7 Dec. 2010.

Background from: <http://www.public-domain-image.com/backgrounds/slides/abstract-waves-on-a-blue-background.html>