



## Abstract

Various surfaces in the WPI freshman residence hall bathrooms were tested for bacteria. Ways to reduce bacteria counts were explored.

## Background

- Common surfaces in public restrooms contain:
  - Staphylococcus aureus* [1]
  - Escherichia coli* [1]
  - Fecal bacteria of the genus *Enterococcus*, known to cause urinary tract and wound infections.[2]
- Nationally, only 85% of people wash their hands after using the bathroom.[3]
- At WPI, only 73% of freshmen wash their hands after using the bathroom.

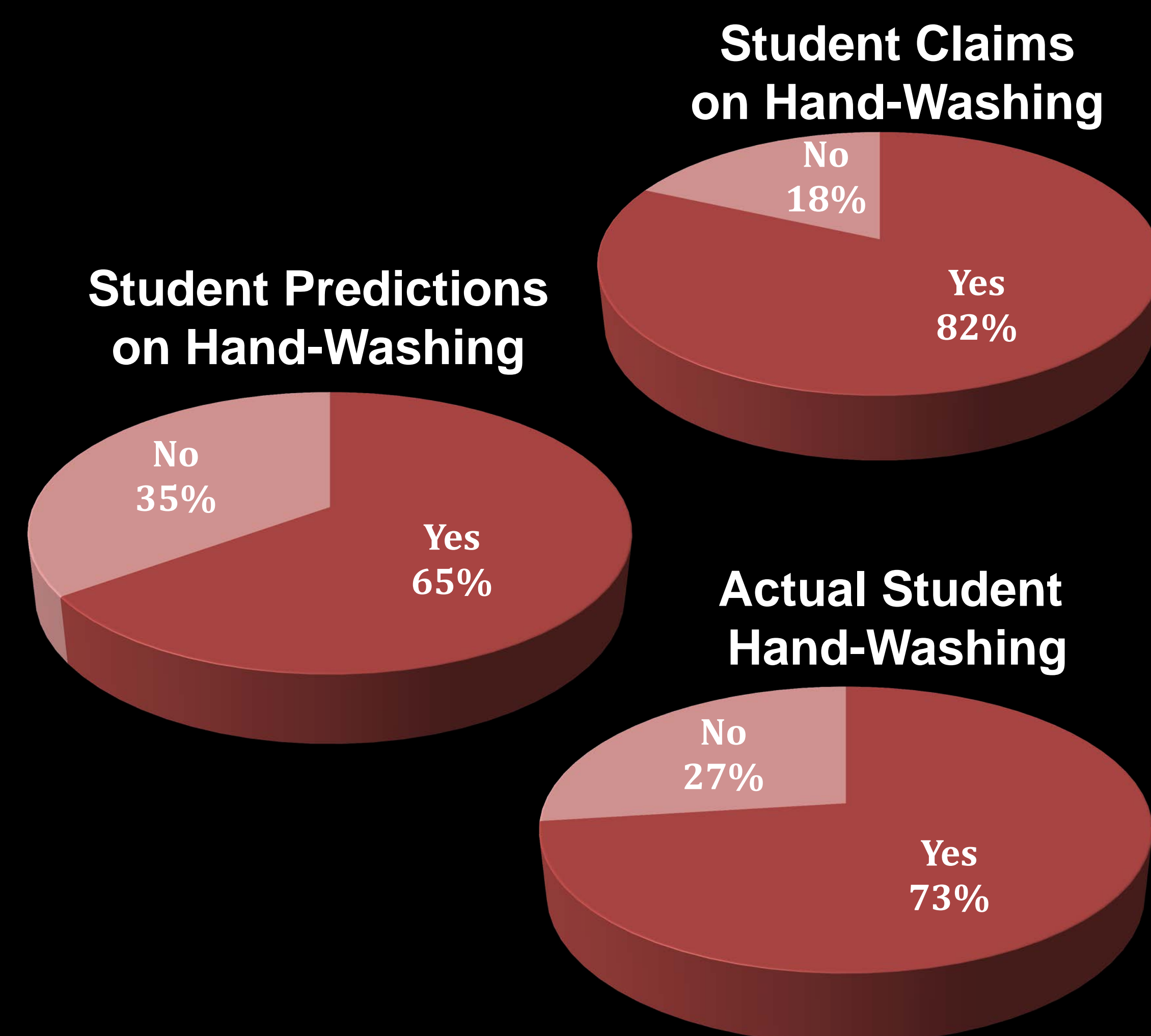
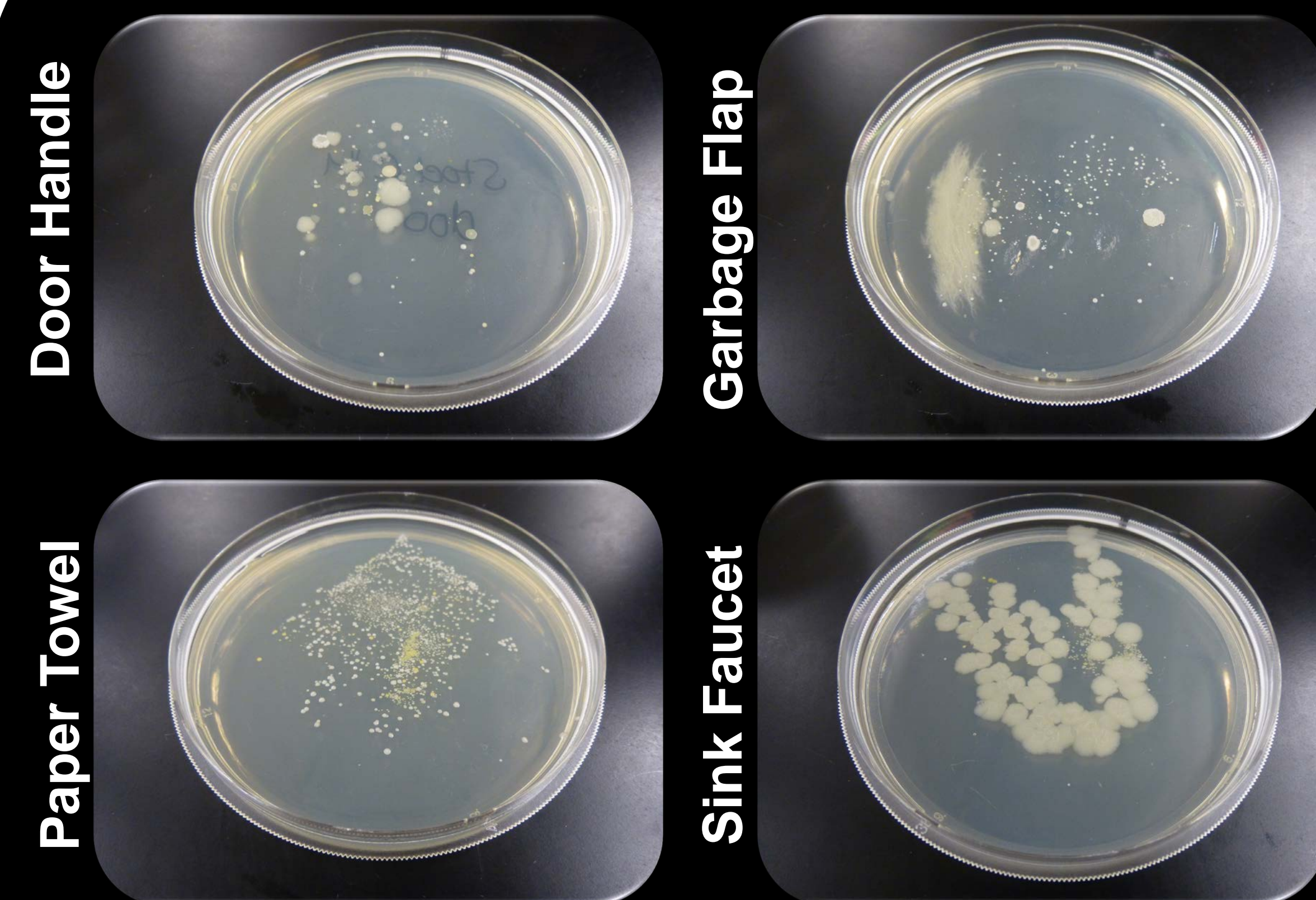
## Need

To minimize the risk of pathogen transmission between students through contact with bathroom surfaces

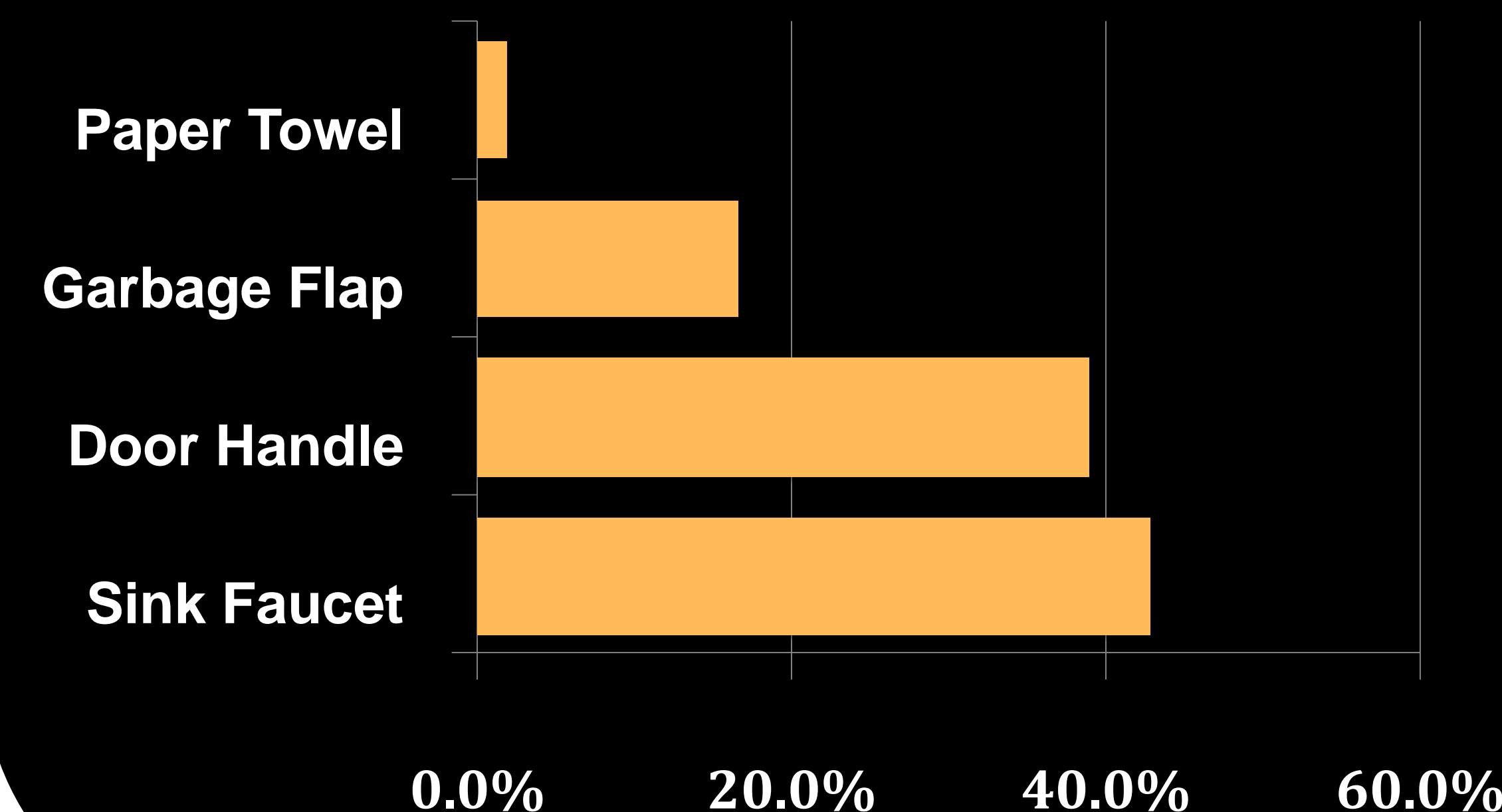
## Approach

- Test WPI freshman residence hall bathroom surfaces to determine the amount of bacteria
- Conduct a survey to find prevalence of disease and perceptions of bathroom surfaces
- Create a hands-free door opening prototype

## Data



Student Predictions for Surface Bacteria Counts



## Results

- Survey predictions of MOST to LEAST bacteria:
  - Sink Faucet Handle (42.4%)
  - Door Handle (38.8%)
  - Garbage Can Flap (16.4%)
  - Paper Towel Dispenser (1.81%)
- Actual order of MOST to LEAST bacteria:
  - Paper Towel Dispenser
  - Garbage Can Flap
  - Sink Faucet Handle
  - Door Handle

## Recommendations

- Method for drying hands: Automatic paper towel dispenser
- Garbage: Remove garbage flap
- Sink: Replace faucet handles with wrist blade handles
- Door: Install door opening device

## Acknowledgments

Thank you to Jack Ferraro for his assistance and generosity in helping us to build our door opening prototype.



## References

- Kaye, K. S. (2011, November). *Public restrooms contained too many bacteria to count* | *Infectious Disease News*. Retrieved Oct 21, 2011.
- Laino, C. (2011, Oct 21). *Bacteria Are Hard to Avoid in Public Bathrooms*. Retrieved Oct 24, 2012.
- Sansoni, Hyde, (2010). *Public Handwashing Takes a Hike*. *American Cleaning Institute*.

