

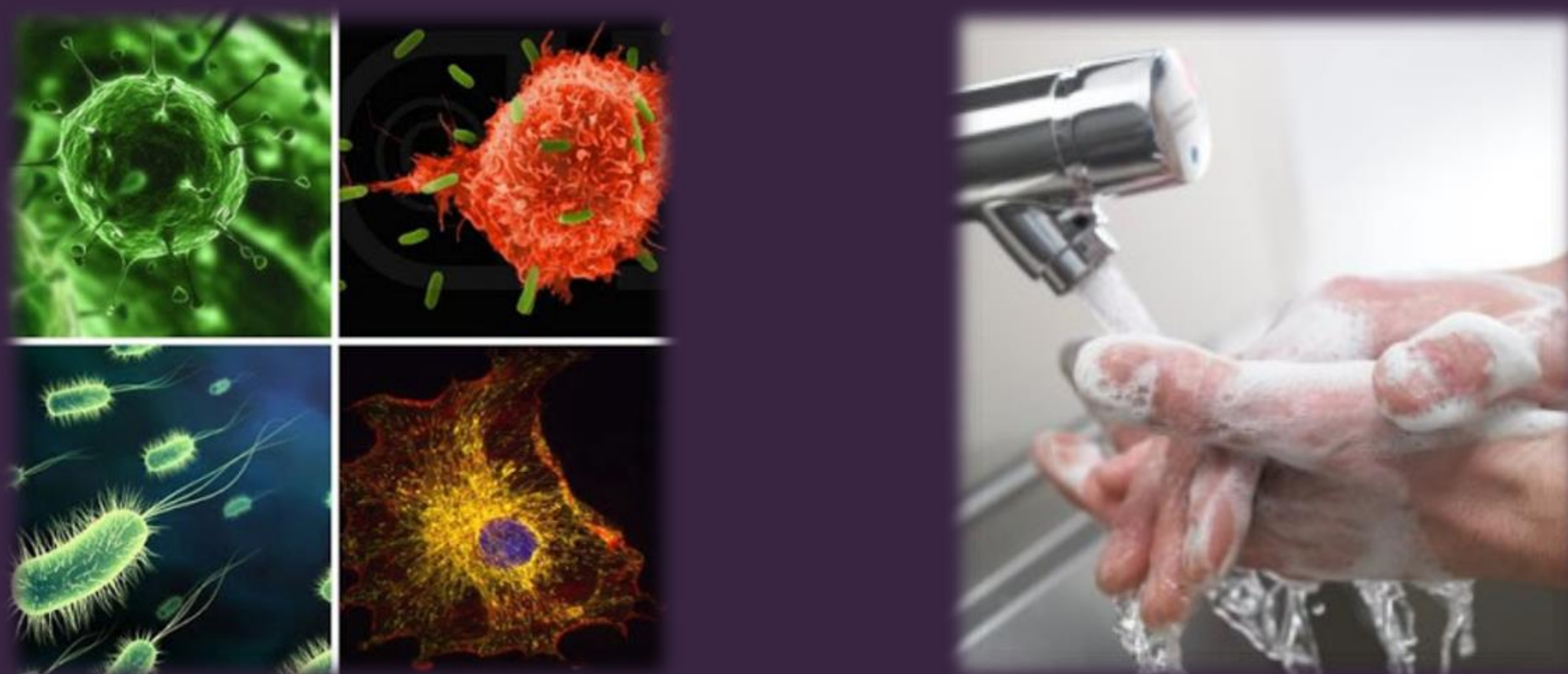
## Evaluating the effectiveness of surveys versus observations in determining the handwashing behaviours and compliance of the general population when using public restrooms

### Background

Hands are a prime source of pathogens (Allegranzi & Pittet, 2009), often acting as carriers for communicable diseases (Curtis & Cairncross, 2003) which collectively; are the second leading cause of death worldwide (Seimet, 2016).

Good handwashing behaviour and compliance is recognised as being the best, simple method for preventing the spread of communicable diseases (Kapil et al, 2015). Spending the correct amount of time handwashing is key in reducing the number of pathogens on hands (Cogen et al., 2004). Handwashing compliance amongst the general population is often poor (Sultana et al., 2016), with some studies estimating hands are only washed with soap on 5% to 20% of key occasions like after using the toilet (Scott et al., 2003; Biran et al, 2012; Freeman et al, 2014). Public restrooms play a key role in influencing handwashing behaviours and compliance; acting as locations which harbor a range of communicable pathogens which are readily transmissible person to person (Flores et al., 2011).

To date, few studies have in the U.K. have examined the handwashing behaviours and compliance of the general population when using public restrooms. This information is necessary in reducing the national burden from communicable diseases in terms of ill health and mortality by helping inform public health officials and health policy-makers on the design of effective interventions which will improve behaviour and compliance.



### Aim & Objectives

1. Identify the handwashing behaviours and compliance of the general population;
  - Survey the general population on their handwashing knowledge and attitudes when using public restrooms to determine factors for non-compliance
  - Use a novel observational method to determine the handwashing behaviours and compliance of the general population when using public restrooms
  - Evaluate the effectiveness of both methods in determining the handwashing behaviours and compliance of the general population when using public restrooms

### Methods

- Public restrooms in a large, multi-campus University based in the U.K. were selected as the primary location for this research. A mixed-methods approach was used when fulfilling the research aims and objectives
- A qualitative, cross-sectional, self-reporting survey was used to question the general population on their handwashing knowledge and attitudes, behaviours, compliance and usage of public restrooms
- Thermal-imaging cameras were used to covertly observe the handwashing behaviours and compliance of members of the general population when using public restrooms



### Key Findings

Figure 1. Self-reported Handwashing Times of the General Population when using Public Restrooms

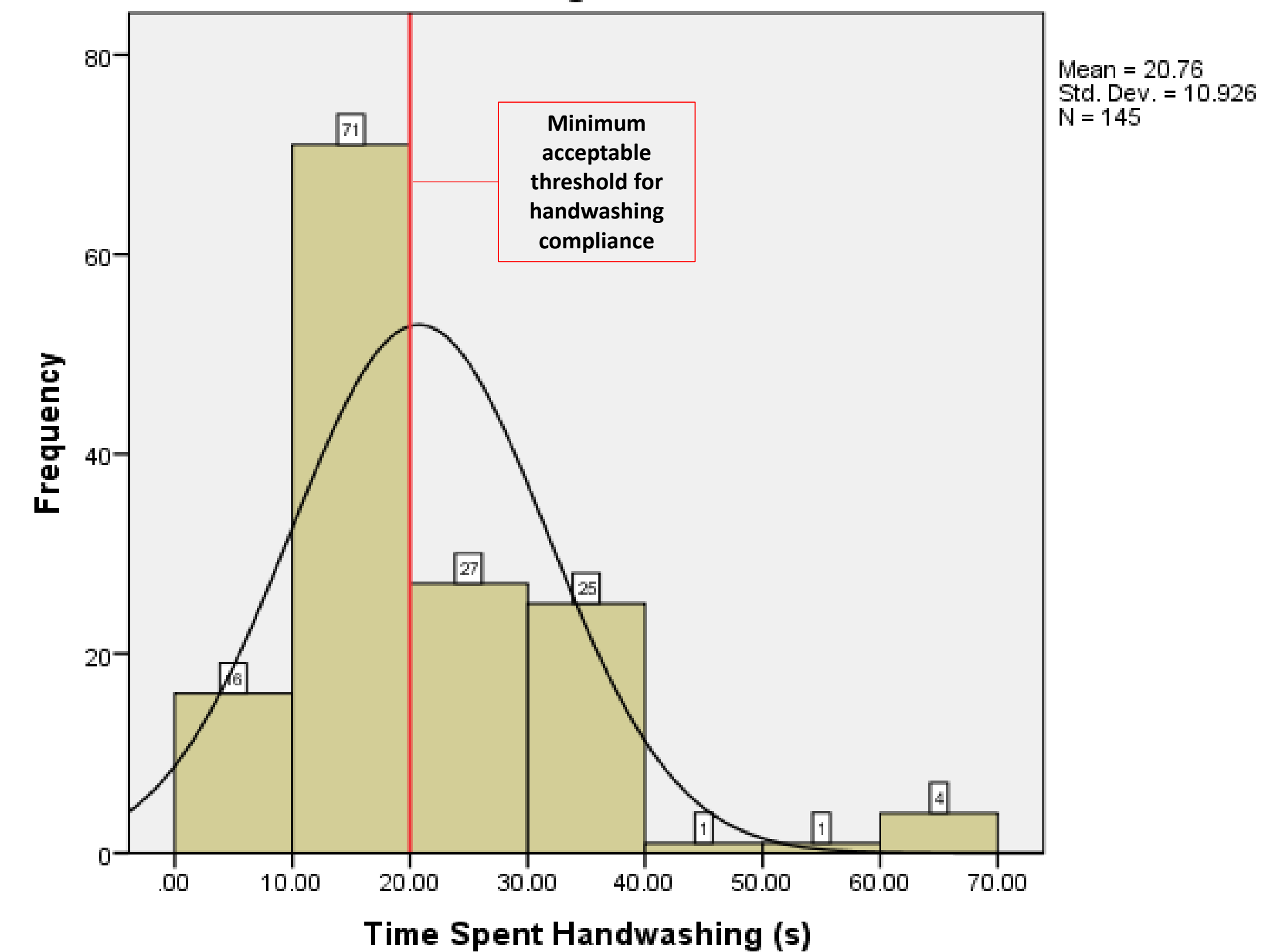
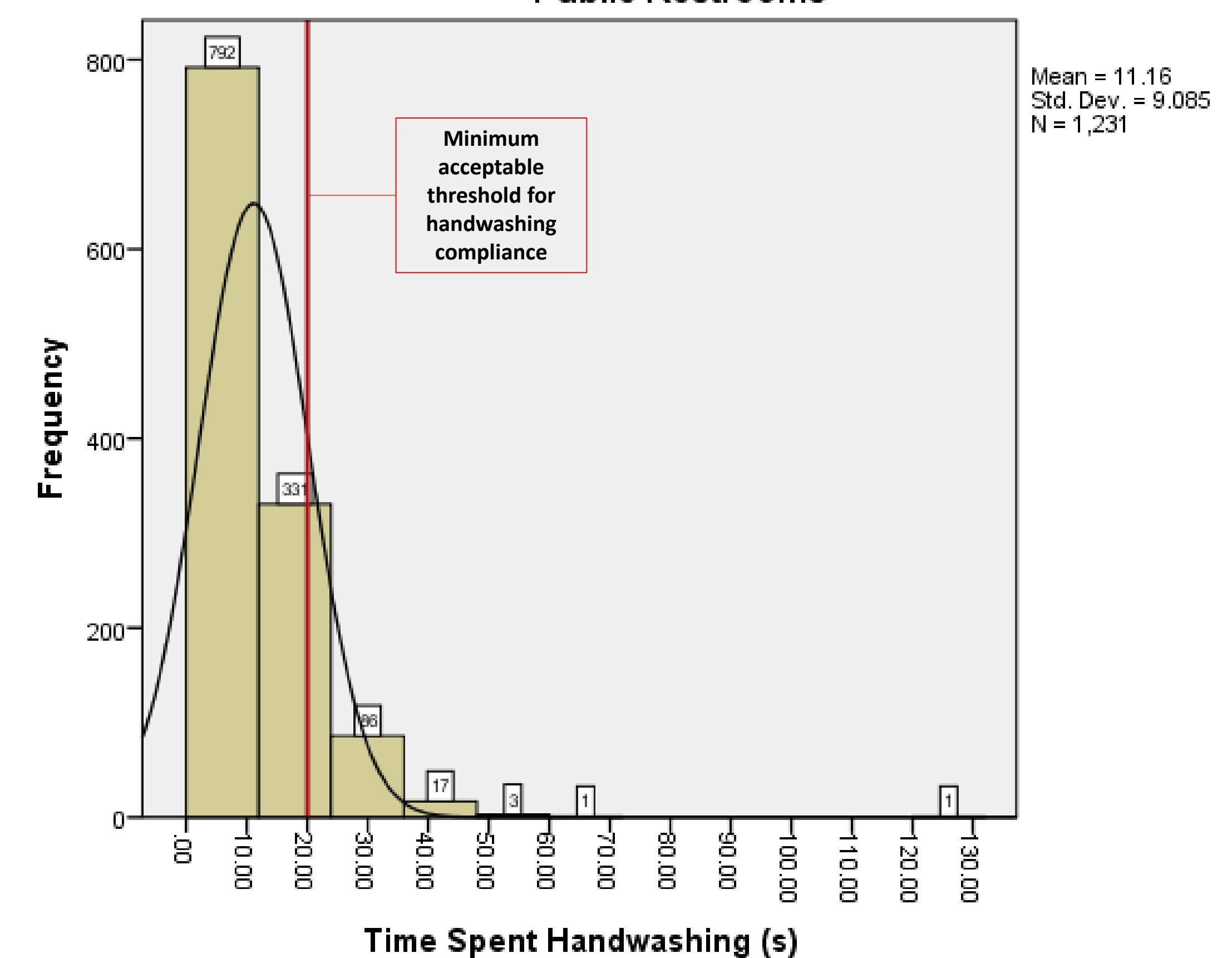


Figure 2. Observed Handwashing Times of the General Population when using Public Restrooms



### Conclusions

- Direct observation is a more accurate and reliable method for determining the handwashing behaviours and compliance of the general population when using public restrooms than using self-reporting surveys.
- Observed handwashing times ( $M = 11.16$ ,  $SD = 9.085$ ) indicate handwashing compliance remains poor amongst the general population compared to self-reported handwashing times ( $M = 20.76$ ,  $SD = 10.926$ ).
- Need for novel interventions focused on time spent handwashing to improve overall behaviour and compliance.

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