Fact or Fiction: Do face masks make it significantly more difficult to understand speech?

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INTRODUCTION

This study analyses the effects of face masks on speech intelligibility to determine if they cause a significant reduction.

GOALS

1. To determine in face masks cause a significant reduction in speech intelligibility (< 0.6 STI or 87% correctly guessed words or ranked 'Good' in IEC 60268-16)

2. To provide actionable SI statics for the most common mask types used by the public during COVID-19

METHODS

STI: The Speech Transmission Index test

V-MRT: A created perceptual test of SI based on the MRT (Modified Rhyme Test) that takes into account the effect of visual cues.

Subjective: Ranking the mask types by there effect on SI (0 – 5)

Most Commonly used Mask Types Tested

RESULTS & CONCLUSION

Whilst in one test all of the masks tested had a significant effect on speech intelligibility due to discrepancies between the tests results, there is insufficient data to arrive at a single, unchallengeable outcome and therefore further testing is required.
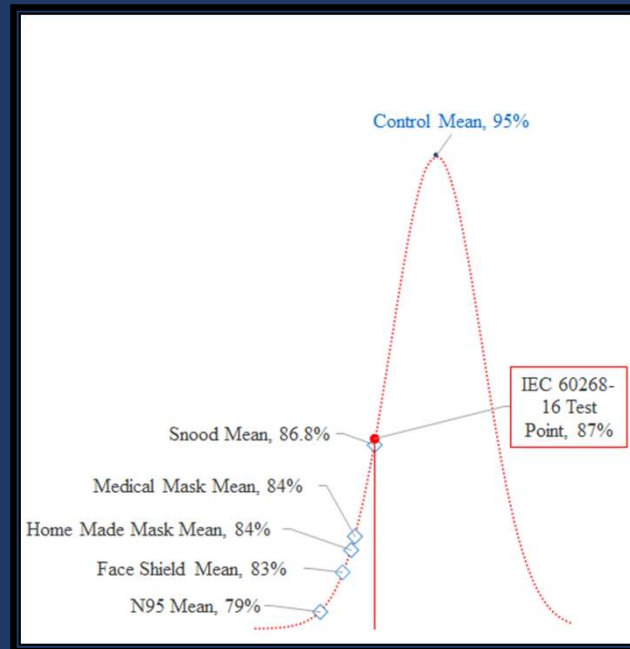
% Accurate Responses by Mask Type Mean of Samples mapped to Control Normal Distribution (V-MRT)
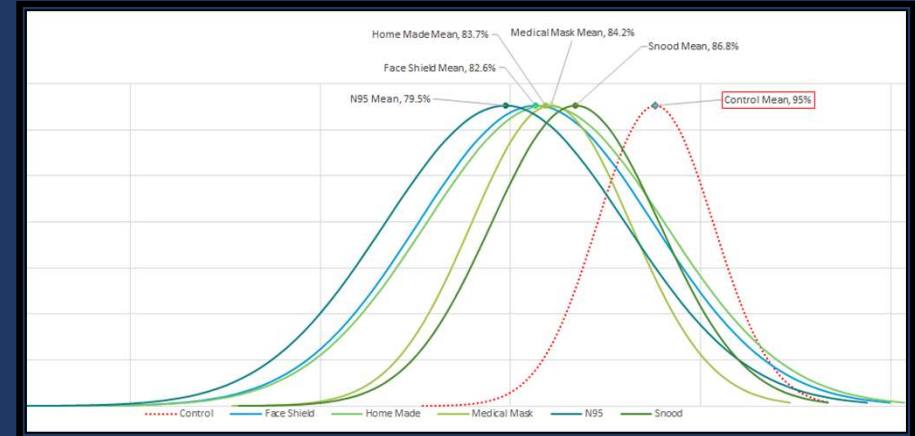
Normal Distribution of Normal Distribution showing % Accurate Responses by Mask Type (V-MRT)

Mask Type	V-MRT %	IEC 60268-16 rating (V-MRT)	STI	IEC 60268-16 rating (STI)	Subjective (0 – 5)
Control	95.3%	Excellent	0.963	Excellent	0
Snood	86.8%	Fair	0.957	Excellent	2
Medical	84.2%	Fair	0.963	Excellent	1
Homemade	83.7%	Fair	0.927	Excellent	3
Face Shield	82.6%	Fair	0.823	Excellent	4
N95	79.5%	Fair	0.850	Excellent	5

Face Mask Results from all methods compared to IEC 60268-16 Standards Rating

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