

The Efficacy of Masks by Kristin Rimberg



Introduction:

COVID-19 is a virus that mimics flu symptoms, except that there is no cure or vaccine to protect us from it. Younger people and people with no health issues, such as asthma or COPD, have a high chance of survival (Mayo Clinic, 2021). As this virus attacks one's lungs, people who have respiratory conditions or elderly people who have a poor immune system are at greater risk. Since masks have been proven to decrease the risk of COVID, many businesses started selling different kinds of masks to help stop the spread.

Objective :

The purpose of this lab was to take multiple masks and tests their efficacy. The COVID virus has been confirmed that it is spread from our respiratory droplets so wearing masks is one way to prevent from catching it.

Masks:

Mask 1 – Cloth Mask

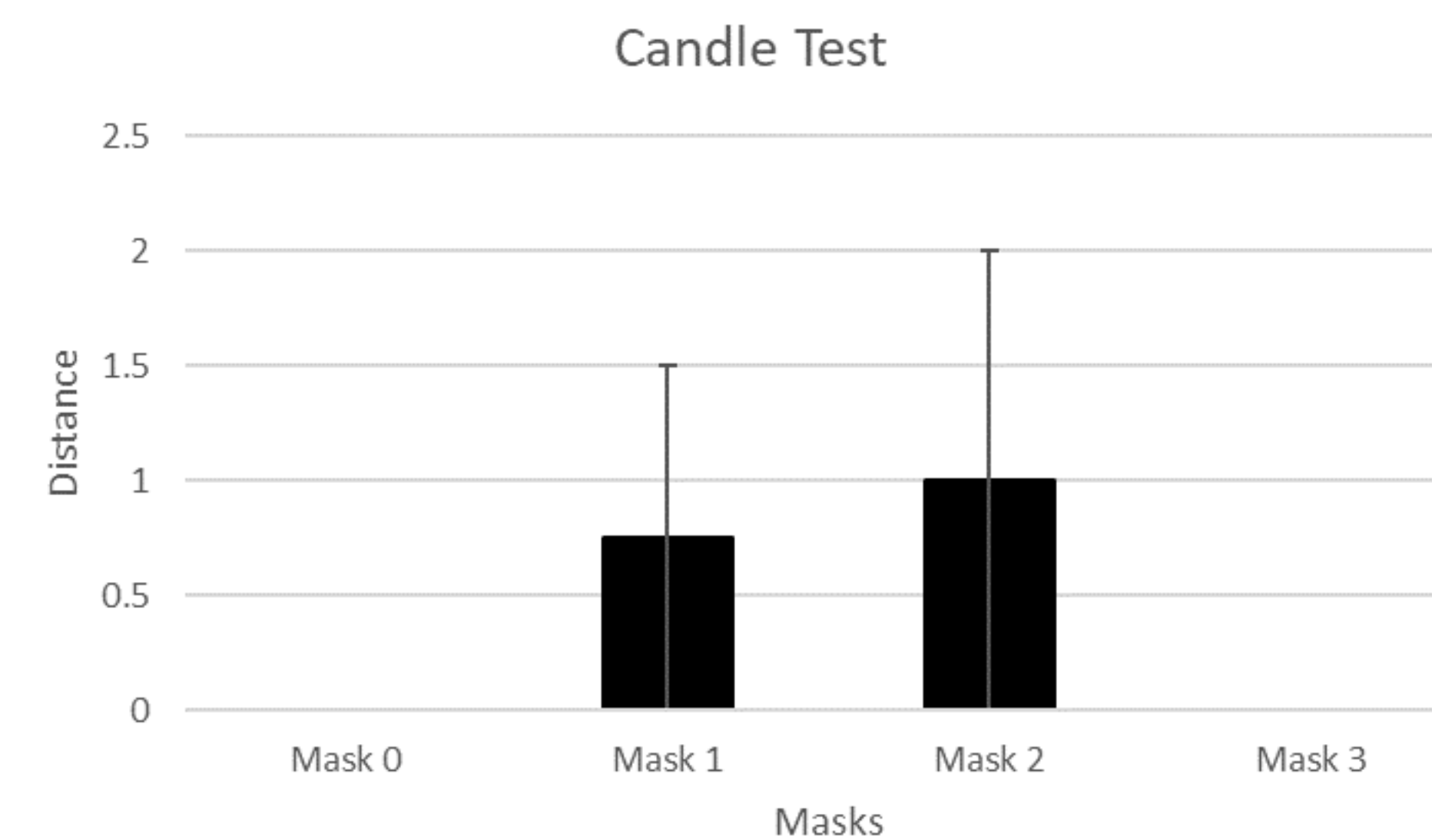
Mask 2 – Disposable Mask

Mask 3 – Bandana

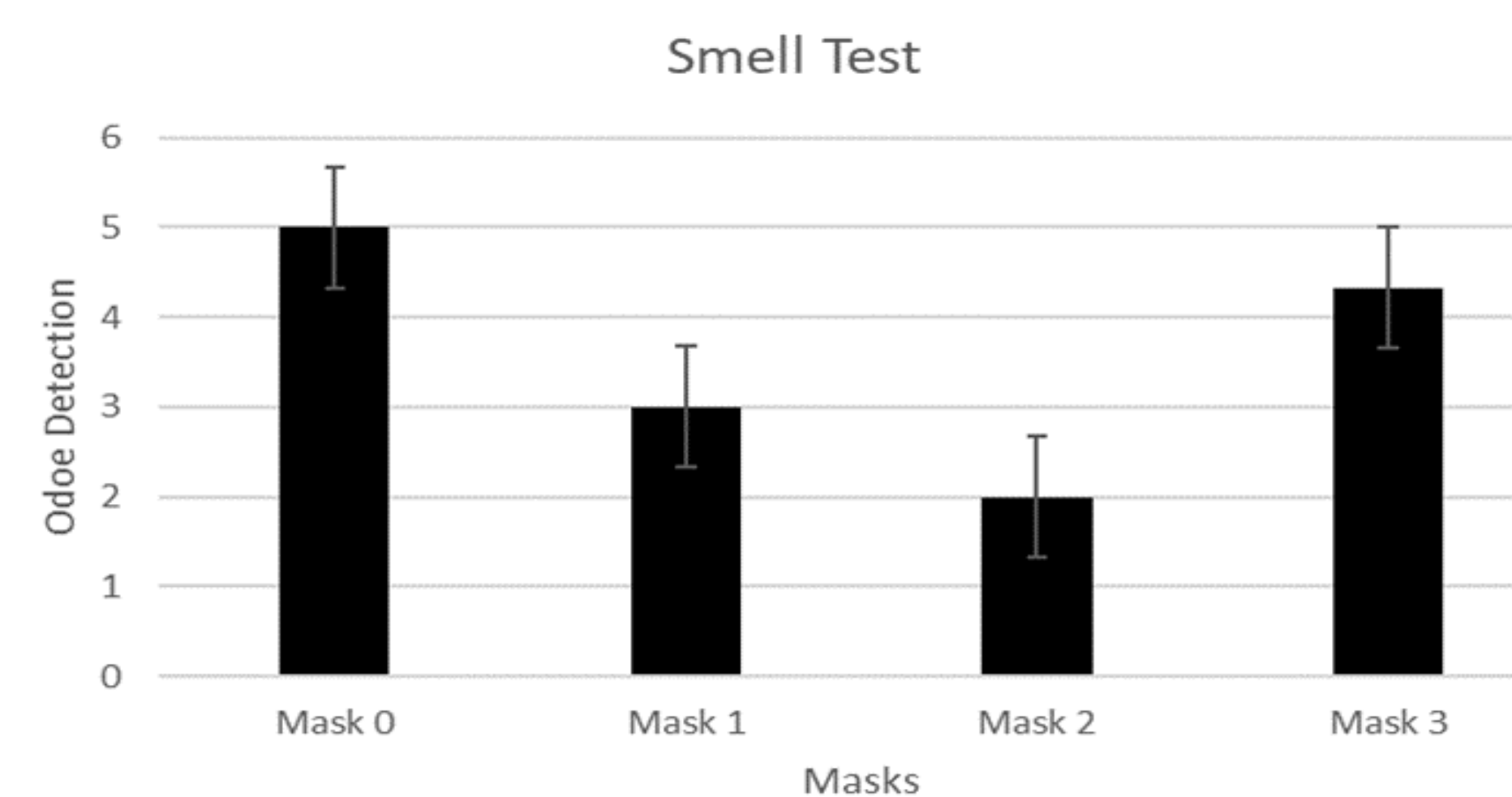
Methods:

In order to test their efficacy, three tests were performed which was the candle test, smell test and water test. For the candle test, a candle was put in front of an individual and four distances were marked away from it: 3, 6, 12, and 24 inches. The next test was for smell, the individual too a perfume and rated 1 to 5 how easy it was to still detect it. The last test was to see how long it took water to seep through the mask. Three rounds were recorded in 5 min. intervals.

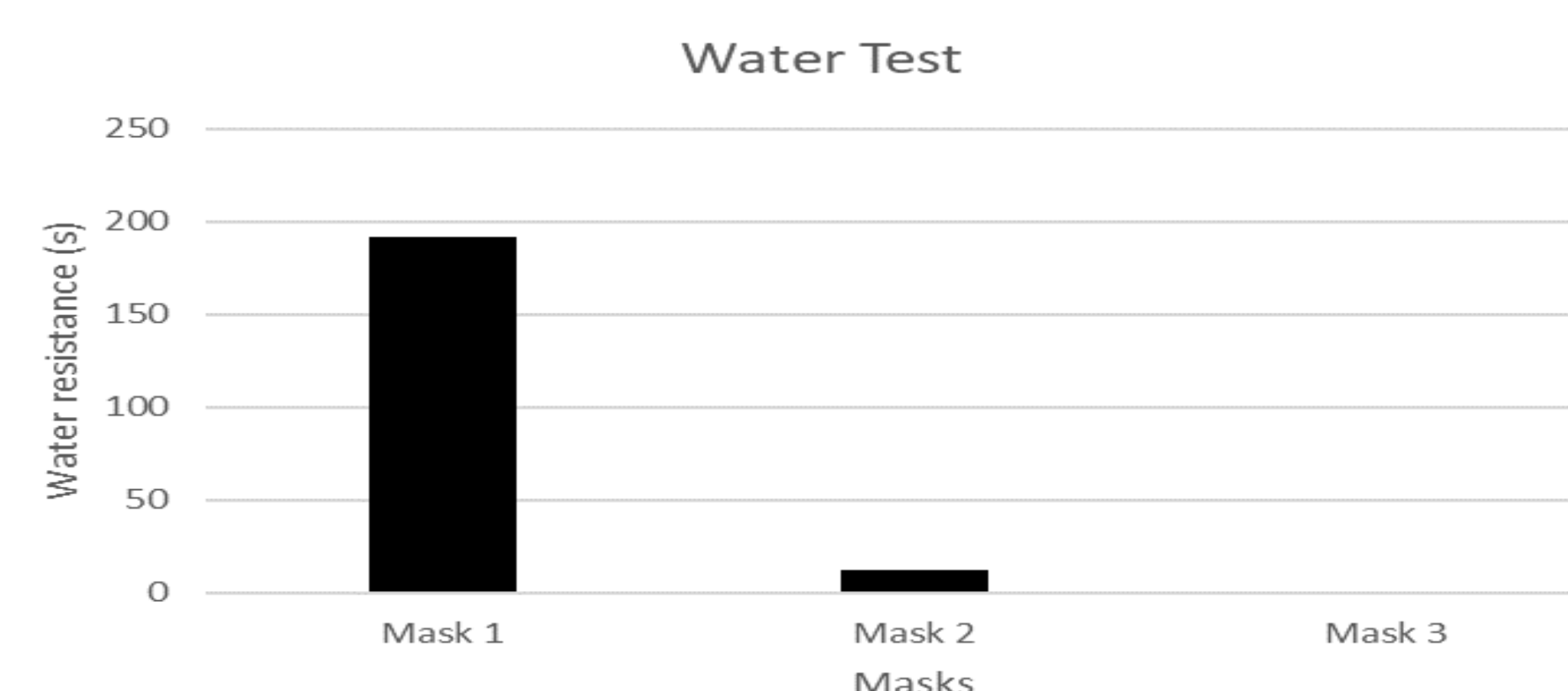
	3 in.	6 in.	12 in.	24 in.
Mask 0	0	0	0	0
Mask 1	0	1	1	1
Mask 2	1	1	1	1
Mask 3	0	0	0	0



Masks	Odor Detection		
Mask 0	5	5	5
Mask 1	4	3	2
Mask 2	3	2	1
Mask 3	5	4	4



Masks	Time of water resistance		
Mask 1	300 sec	265 sec	10 sec
Mask 2	29 sec	6 sec	1 sec
Mask 3	1 sec	0 sec	0 sec



Results:

A candle test was performed, Table 1, to see whether the participant could blow the candle out at various distances. First, a baseline with no mask was performed, then the participant conducted the test with three separate masks. Until it was three inches away, mask 1 worked well until it was three inches away. Since the candle remained lit, mask 2 was the most successful. Mask 3 failed all three tests and shown it was the most ineffective. The results of the scent test shown in table 2, showed that all three masks did not block scent completely. In Table 3, the participant performed a water test with all three masks and the most effective was mask one.

Conclusion:

Since not all masks can be 100 % successful, the results matched my expectations. Social distancing is in order but there are occasions when you come into close contact with individuals, so if you were closer to anyone longer than a few seconds, this would be the better choice. In the beginning businesses used to sell any type of material as a mask. The CDC has also done studies to show that they help decrease the spread. Now, you see they have prioritized selling cloth masks and disposable ones because they are the most accessible.

References:

Brooks J.T., Beezhold D.H., Noti J.D., et al. (2021). Maximizing Fit for Cloth and Medical Procedure Masks to Improve Performance and Reduce SARS-CoV-2 Transmission and Exposure, 2021. MMWR Morb Mortal Wkly Rep 2021;70:254–257. DOI: <http://dx.doi.org/10.15585/mmwr.mm7007e1external icon>

Mayo Clinic. (2021, April 6). COVID-19: Who's at higher risk of serious symptoms?. <https://www.mayoclinic.org/diseases-conditions/coronavirus/in-depth/coronavirus-who-is-at-risk/art-20483301>

Acknowledgements:

Courtney Carroll-professor at UNCP

Christine Bell -MBA program director at UNCP