

[https://pdmj.org/papers/vermont\\_mask\\_survey/](https://pdmj.org/papers/vermont_mask_survey/)

[https://pdmj.org/papers/vermont\\_mask\\_survey/](https://pdmj.org/papers/vermont_mask_survey/)

# PDMJ

## Primary Doctor Medical Journal

### Vermont Mask Survey Of Fall 2020

Spring 2021

February 10, 2021

Completed peer-review and revised, March 1, 2021

[https://pdmj.org/papers/vermont\\_mask\\_survey/](https://pdmj.org/papers/vermont_mask_survey/)

Amy Hornblas\*

Copyright to each article published by  
[PDMJ.org](https://pdmj.org/) is retained by the author(s).

#### Abstract

The Vermont Mask Survey was created to gather information about the negative health effects Vermonters are experiencing as a result of wearing masks. The negative health effects of wearing masks by health care workers has been the subject of many research studies. (Examples are available for each health effect in the Discussion section.) However, research on the effects of mandating masks among the general public has only just begun. This survey is an initial contribution to these efforts. Being a small sample, this is not a statistical analysis, and more work needs to be done if the magnitude of the problem is to be fully understood. Data gathered from this survey demonstrates that a number of Vermonters across the state are suffering multiple health difficulties as a result of wearing masks. The survey discovered that among respondents who experience difficulties every time they wear a mask: most experience multiple difficulties every time; pre-existing conditions are worsening; and several are not accessing essential services because they cannot wear a mask. Also, 66% of respondents who experience difficulties every time are required to wear a mask at work, and most of them reported working an average of 4 - 5 days per week and between 5 - 8+ hours each day. While the true extent of the health dangers Vermonters are facing by wearing masks is unknown, these survey results suggest that caution around their use is warranted, and more research needs to be done to assess their safety.

\* Amy Hornblas is a licensed health educator in Vermont.

## Contents

Abstract		1
Introduction		2
Methods		3
Survey		4
Results	1 <sup>st</sup> set: Experience Difficulties “Every Time”	5
Results	2 <sup>nd</sup> Set: “Occasionally” or “Never” Experience Difficulties	9
Results	3 <sup>rd</sup> Set: “Never” Experience Difficulties	10
Results	Evidence of Stigma	11
Discussion		12
Conclusion		18
Author / Funding / Conflicts of interest		19
References		20

## Introduction

Universal mask use in community settings for disease prevention is a new practice, and there is little evidence to use as guidance related to its potential health risks (Alberta, 2020, p. 2). In the meantime, employees, customers, patients, students, and the general public have been encouraged by state mandates media messages, and social pressures to wear them in most community settings in Vermont.

If masks are recommended to the general public, The World Health Organization report suggests that decision-makers should continue collecting scientific evidence and “evaluate the impact (positive, neutral or negative) of using masks in the general population (including behavioral and social sciences).” (WHO, 2020, p. 8)

The purpose of this study is to begin compiling evidence in order to better evaluate the potential health hazards Vermonters may be subject to from wearing a mask.

## Methods

The survey results were gathered from July through the first week of October, 2020. The survey was advertised using posters (50 total), which were hung up on bulletin boards at locations in 10 Vermont counties during the three months of the survey. Posters directed participants to a website for a downloadable copy of the survey ([vtmasksurvey.com](http://vtmasksurvey.com)). Completed surveys were mailed in or emailed by the participants. Social media and online surveying was avoided to preserve confidentiality and respondent authenticity.

The 7 health difficulties asked about in the survey were based on the “likely disadvantages” most commonly cited in the research (WHO, 2020, p. 8):

1. Headaches
2. Difficulty Breathing
3. Skin Irritation
4. Difficulty Communicating Clearly
5. Physical Discomfort
6. Mental/Emotional Discomfort
7. Difficulty cleaning your hands every time you touch your mask

Participants were asked to report how often they experience each of the difficulties or symptoms when wearing a mask: *Every Time*, *½ the Time*, *Occasionally*, or *Never*.

Other information requested on the survey included the date, county of residence, whether the respondent was required to wear a mask at work, the average number of days a week, average number of hours at a time, and additional comments. Participants could leave any of the answers blank, if they chose.

Negative Impacts of Wearing Masks for Virus Prevention  
by Employees and the General Public

**Survey Questions**

\* All Questions are Optional \*

1. Today's Date: \_\_\_\_ / \_\_\_\_ /2020
2. County or Town of Residence: \_\_\_\_\_  
(This will help track where the survey has reached)
3. Are you required to wear a mask at work? \_\_\_\_ Yes \_\_\_\_ No \_\_\_\_ N/A
4. Average # of Days a Week Wearing a Mask:  
\_\_\_\_ 1 Day \_\_\_\_ 2 Days \_\_\_\_ 3-4 Days \_\_\_\_ 4-5 Days \_\_\_\_ 6-7 Days
5. Average # of Hours Wearing a Mask Each Day:  
\_\_\_\_ 1 hour or less \_\_\_\_ 2-4 hours \_\_\_\_ 5-7 hours \_\_\_\_ 8 hours \_\_\_\_ 8+ hours
6. On average, how often do you experience the following when wearing a mask:

	Every Time	1/2 of the Time	Occasionally	Never
1. Head-aches				
2. Difficulty Breathing				
3. Skin Irritation				
4. Difficulty Communicating Clearly				
5. Physical Discomfort				
6. Mental/Emotional Discomfort				
7. Difficulty Cleaning Your Hands every time you touch your mask				

7. Additional Comments and Explanations Welcome: (Use additional paper if needed. Please do not include business names or other specifics to keep this survey confidential.)

8. Please initial or sign an "X" to signify that your answers are genuine and represent one Vermont citizen: \_\_\_\_\_

62 individual survey responses were received. 21 reported experiencing difficulties **every time** they wear a mask, 31 **occasionally**, and 10 **never**. While a small sample, research suggests that small samples are not necessarily less accurate (Vissar 1996, Saldivar 2012 p. 5 - 6). Also, most direct-delivery surveys can expect a response rate of about 33% (Lindemann, 2019). This survey relied upon a poster campaign, and purposely avoided social media to ensure more local authenticity. Therefore, a response rate of approximately one response per poster was in line with the expectations. The survey will continue through the winter, and there will be a larger sample to report on in the spring.

There were three distinct sets of survey results, each reporting different levels of difficulties. The results are described below:

## Results

### First Set of Surveys: Experience Difficulties “Every Time”

The first set was made up of surveys from respondents who reported experiencing difficulties every time they wear a mask. The arrival dates of the first set were spread throughout the three months of the survey, and were received both online and through the mail. Respondents in this set were from Rutland, Caledonia, Lamoille, and Washington counties.

All of the 21 respondents in this first set reported having difficulty breathing every time they wear a mask. Three of them reported experiencing all of the 7 difficulties every time. The rest experienced some combination of 3 or more difficulties every time.

**Number of Difficulties Experienced Every Time:**

<i># of Difficulties Experienced “Every Time”</i>	<i># of Respondents</i>
All 7 Difficulties	3
6 Difficulties	1
5 Difficulties	7
4 Difficulties	6
3 Difficulties	4
2 or less	0
<b>TOTAL:</b>	21

The most common problem was difficulty breathing (all 21 respondents), with physical and emotional discomfort the second most common. A third of respondents reported experiencing skin difficulties *every time*, yet that complaint also had the highest number of *never* responses.

**Number of Responses Per Difficulty:**

<u>Type of Difficulty</u>	Every Time	½ of the Time	Occasionally	Never
1. Headaches	8	2	7	4
2. Difficulty Breathing	21			
3. Skin Irritation	7	1	4	8
4. Difficulty Communicating Clearly	16	2	3	
5. Physical Discomfort	17		3	
6. Mental/Emotional Discomfort	17	2	1	
7. Difficulty Cleaning Your Hands every time you touch your mask	14	4	1	1
<b>TOTAL Responses:</b>	100	11	19	13

Most respondents of this set wear a mask an average of 4 - 5 days per week. The two respondents who answered N/A explained in the comment section that they avoid going places where they are required, including the use of public transportation and other essential services.

**Average # of Days a Week Wearing a Mask:**

<u># of Days</u>	<u># of Respondents</u>
N/A (Avoid places that require them)	2
1 Day	1
2 Days	2
3 – 4 Days	3
4 – 5 Days	10
6 – 7 Days	3
<b>TOTAL:</b>	<b>21</b>

**Average # of Hours Wearing a Mask Each Day:**

<u># of Hours</u>	<u># of Respondents</u>
N/A	1
1 or Less Hours	4
2 – 4 Hours	3
5 – 7 Hours	5
8 Hours	3
8 + Hours	5
<b>TOTAL:</b>	<b>21</b>

66% respondents reported that they are required to wear a mask at work. Over half of those wearing them for work wear a mask 5 or more days a week, and between 5 and 8+ hours each day. Those who wear one for work reported the highest number of hours per day in this set.

**Are You Required to wear masks at work?**

	<u># of Respondents</u>
YES	14
NO	2
N/A	4

**Of Those Wearing a Mask at Work,  
How Many Days per Week:**

<u>Days a Week</u>	<u># of Respondents</u>
2 Days	1
3 – 4 Days	2
4 – 5 Days	9
6 -7 Days	2

**Of Those Wearing a Mask at Work,  
How Many Hours per Day:**

<u>Hours Each Day</u>	<u># of Respondents</u>
2 – 4 Hours	2
5 – 7 Hours	4
8 Hours	3
8+ Hours	5

Survey respondents were invited to include additional comments. In the first set of additional comments, five respondents described the negative impact the masks are having on their pre-existing health conditions, including mental and physical conditions. Two reported feeling light-headed. One stated she is pregnant, and found her blood-oxygen levels drop after wearing a mask.

**Additional Comments by Category:**

<i>Type of Difficulty</i>	<i>Comments</i>
1. Headaches	<i>every day</i>
2. Difficulty Breathing	<i>very light headed, coughing</i>
3. Skin Irritation	<i>rash on ears, breaking out like a teenager</i>
4. Difficulty Communicating Clearly	<i>elderly do not hear well, throat irritation due to having to talk louder</i>
5. Physical Discomfort	<i>hot, sweating, not enough air</i>
6. Mental/Emotional Discomfort	<i>panic attacks, feel sad, no smile to greet customers</i>
7. Difficulty Cleaning Your Hands	<i>no chance due to work conditions</i>
Pre-existing conditions impacted:	<i>asthma, breathing problems, PTSD, heart condition, pregnancy</i>

**Additional Comments: *In Their Own Words:***

*"It is very difficult to cut hair with a mask on my client."*

*"As I have asthma, I feel like I am having a panic attack."*

*"Get headaches due to sweating non-stop from the mask, don't sweat when not having hot air on my face from my own breath. Get no fresh air. Rash on my ears."*

*"Everyone I talk to has difficult time breathing. Skin irritation. I'm 50+ years old and my face broke out like a 16 year old!"*

*"Dizziness, shallow breathing, etc..."*

*"Considering lawsuits."*

*"I am pregnant. My blood oxygen level decreases to 94% after wearing a mask."*

*"I have breathing issues and get very light headed due to wearing a mask."*

*"Behind the shield we can wear [the mask] below the nose, out on the floor it has to be up and over the nose! It's hot and not clean air!"*

*"When I have to wear a mask for a longer time (more than 15 minutes), like when grocery shopping, working, hair cut, my heart condition that I had been able to control the past two years with diet and exercise starts to come back."*



*I'm worried this will come back permanently."*

*"I have PTSD and it causes me great distress wearing a mask. I am upset about the mask mandate because businesses decline my entry and it makes it harder to get my daily needs done. I don't have a car and the bus requires a mask so I have to walk everywhere."*

*"I apologize for this poorly filled out survey. I cannot wear a mask so I don't have access to printing services because the library where I go for printing doesn't allow entry without a mask."*

*"Masks make me have coughing fits and then people think I have a cold."*

*"I limit where I go so I don't have to wear one often."*

*"Not leaving the house because of the mask situation.*

*I get very upset when I have to wear the mask. It makes me very sad."*

*"As an 'essential worker' I was instructed by my supervisor to wear a mask... having to speak louder to be heard, which makes my throat raw and sore."*

## Results

### Second Set of Surveys: "Occasionally" or "Never" Experience Difficulties

A second set of surveys was received. These respondents reported experiencing difficulties only *occasionally* or *never*. None of the surveys in this set selected *½ of the time* or *every time* for any difficulty.

There were striking similarities among the survey responses in this set. 30 of the 31 surveys arrived by mail with only 5 different post-mark dates on the envelopes, dated between July 16<sup>th</sup> and August 3<sup>rd</sup>. The envelopes, signatures, and handwriting had distinct similarities, suggesting a common source. (These similarities did not appear in the first set described above.) Due to these factors, and so that those with more severe difficulties can be weighed distinctly, this second set of responses has been tallied separately.

In the second set of surveys *Cleaning Hands* and *Communicating Clearly* were the most common difficulties identified, with *Difficulty Breathing* and *Mental/Emotional Discomfort* far below in second place. They also reported no skin irritation at all.

**SECOND SET- Number of Responses Per Difficulty:**

<i>Type of Difficulty</i>	Every Time	½ of the Time	Occasionally	Never
1. Headaches			1	29
2. Difficulty Breathing			5	25
3. Skin Irritation				30
4. Difficulty Communicating Clearly			14	11
5. Physical Discomfort			3	26
6. Mental/Emotional Discomfort			5	25
7. Difficulty Cleaning Your Hands every time you touch your mask			23	8

All of the responses in the first set of surveys reported 3 or more difficulties *every time*. However, 80% of the second set of surveys reported only one or two difficulties *occasionally*.

**SECOND SET- Number of Difficulties experienced OCCASIONALLY:**

<i># of Difficulties Experienced "Occasionally"</i>	<i># of Respondents</i>
4 Difficulties	1
3 Difficulties	5
2 Difficulties	12
1 Difficulty	13

**Results**

**Third Set of Surveys: "Never" Experience Difficulties**

A third set of 10 surveys were received with the response *never* selected for each difficulty. The target population of this survey are people who do experience difficulties. Therefore the responses from those who do not experience difficulties were omitted from the tallies.

## Results

### Evidence of Stigma

The purpose of this survey is to increase understanding. It is rooted in compassion for the vulnerable people in our community. We need to be able to have open dialogue and investigation, especially if we are going to understand the effects across the community. Unfortunately, there are many people who deny the importance, and even the very existence, of the negative effects of wearing masks. The resulting stigma against those who suffer may be causing health issues of its own.

This survey revealed evidence of the stigma in three ways. For one, many posters advertising the survey were removed from community bulletin boards within days of being hung up. Secondly, there seems to have been an attempt to skew the results, as described above with the second set. Finally, 8 responses were received which contained bullying comments and threats, such as these:

*I had some discomfort wearing my mask the other day. But then, I realized that healthcare professionals wear masks for 10+ hours a day and have no negative side effects. I also realized... that only uneducated dumba..... like yourselves actually think that they know better than expert scientists and professionals.*

*Accordingly, I realized that my discomfort didn't come from wearing my mask. It came from not knowing who you are so that I can punch your retard face.*

Further evidence of this stigma, how it is limiting people's access to services, and testimony about the difficulties experienced by people with pre-existing conditions, can be found on the *No Mask Mandate* petition website (<https://www.change.org/p/governor-phil-scott-no-mask-mandates-in-vermont>). This survey has been signed by nearly 4,000 people who oppose the mandate and feel the decision to wear a mask should be a choice. Several petitioners have left comments on the website confirming the evidence included in this report.

Due to the increased health risks, the Vermont Mask Mandate exempts some people from wearing masks for if they have a medical or developmental condition, or trouble breathing (State of Vermont, 2010). However, there appears to be a stigma that is unnecessarily preventing eligible people from utilizing the exemption, and therefore limiting their safe access to public places.

How much is the stigma itself hurting people psychologically? How many people who should not wear masks are feeling pressured to wear them to avoid confrontations like the ones listed above? How many employers feel compelled to enforce masks on their employees and customers, even when they are aware of the harm they are doing, in order to avoid losing business due to the stigma? Shaming and silencing people does not lead to good health policies. How can we reduce the stigma so that a clear assessment of the issues can be made?

## Discussion

Aside from the obvious quality-of-life issues suffered by the survey respondents, there are also serious long-term health consequences associated with the difficulties they describe. The physiological reasons for the symptoms, and their long-term consequences, are not yet understood.

The research available on the health risks of wearing masks has focused on health care professionals and their use of personal protective equipment (PPE) because, up until recently, that has been their primary use. The discomfort associated with the use of masks in the health care setting is well known, and there has been much research on the subject. However, the underlying causes of the symptoms are still under investigation. Pain and discomfort, whatever the causes, are warning signs that our bodies are experiencing stress, and should not be ignored. In a paper titled *The Physiological Burden of Prolonged PPE Use on Healthcare Workers during Long Shifts*, the authors state: “Dizziness is an important warning sign, as it can be caused by dehydration, hyperventilation (gasping for breath), elevated carbon dioxide [CO<sub>2</sub>] levels in the blood, low blood sugar, and anxiety, among other things.” (Williams, et al, 2020)

There are problems in trying to relate studies of mask use in the medical field to their use in the general public. Health care professionals are not representative of the general population. People who work in the health care field are adults and their jobs require that they are functionally able-bodied. On the other hand, the general public is made up of people of all ages and abilities.

Medical professionals receive training on proper mask hygiene, work in sterile environments, and have ample access to hand-washing facilities. Understanding contamination issues in public settings, such as restaurants and grocery stores, will require new research.

The types of masks approved for use in the medical field are N-95 masks and surgical masks (OSHA, 2020). Further study will be needed to learn the impacts other types of masks (such as cloth masks and gators) and their use by the general public.

People with pre-existing conditions are known to be at greater risk of suffering health difficulties when wearing masks, and are excluded from studies in the medical field. One study explained their reasons for excluding those people from the study: “*Exclusion criteria [for the study] included any medical or physical symptom/condition that could potentially put subjects at risk from prolonged N95 use, including pregnancy, arrhythmias, hypertension, poorly controlled asthma, history of panic attacks or claustrophobia, and/or seizure disorder.*” (Rebmann, et al, 2013, p. 1219)

What follows are samples of available research addressing the 7 difficulties explored in this study, examples of the types of long-term damage they could be causing, and questions to encourage further study:

### 1. Headaches:

Only four survey respondents in the first set reported they **never** have headaches.

- a) Headaches are a well known side effect of wearing N95 masks in health care settings, and evidence shows that their frequency increases over time. (Lim et al 2006, Rebmann et al 2013 p. 1221) “Most healthcare workers develop de novo [new] PPE-associated headaches or exacerbation of their pre-existing headache disorders.” (Ong, et al 2020, p. 864)
- b) Headaches have been linked to a lack of oxygen in studies of health care workers. “The etiopathogenesis of N95 face-mask-associated headaches could possibly be related to hypoxemia, hypercapnia, mechanical factors or the stress associated with its use.” (Lim et al 2006, p. 201)
- c) Headaches have been linked to an increase of CO<sub>2</sub> in the blood as a result of wearing masks for extended periods. Other health complications associated with increased CO<sub>2</sub> include: “Nervous system changes (e.g., increased pain threshold, reduction in cognition – altered judgment, decreased situational awareness, difficulty coordinating sensory or cognitive abilities and motor activity, decreased visual acuity, widespread activation of the sympathetic nervous system that can oppose the direct effects of CO<sub>2</sub> on the heart and blood vessels).” (Williams, et al, 2020)
- d) The Mayo Clinic website lists possible causes, effects, and complications that can develop as a result of daily headaches: “If you have chronic daily headaches, you’re also more likely to have depression, anxiety, sleep disturbances, and other psychological and physical problems.” (Mayo Clinic, 2019)

### 2. Difficulty Breathing:

All of the respondents in the first set reported experiencing difficulty breathing **every time**.

- a) Difficulty breathing is a common complaint in studies of health care workers (Alberta, 2020).
- b) Even though they have been designed for optimal airflow and comfort, N-95’s restrict airflow by 37% (Lee & Wang, 2011).
- c) Due to the breathing difficulties caused by wearing masks, the CDC’s website titled *Considerations for Wearing a Mask* warns: “Cloth face coverings should NOT be placed on children under age 2, anyone who has trouble breathing, or is unconscious, incapacitated, or otherwise unable to remove the mask without assistance.” (CDC, 2020)
- d) The Occupational Safety and Health Administration (OSHA) advises that cloth face coverings: “May be used by almost any worker, although those who have trouble breathing or are otherwise unable to put on or remove a mask without assistance should not wear one.” (OSHA, 2020)
- e) Recent research has found evidence of foreign particles and fibers in some of the masks currently in use, and evidence that wearers may be inhaling these particles into their lungs (Borovoy, 2020).
- f) A pilot study on the effects of long-duration wearing of masks found that: “Wearing N95 respirator and surgical facemask would increase the breathing resistance due to the presence of extra layer through the breathing path. An increase of mean resistance

- during 1.5 hours post mask-wearing period was identified in both sessions, indicating potential change of the upper airway conditions.” (Zhu, et al, 2014, p. 99)
- g) A study on the physiological impacts of N-95’s, concluded: “In healthy healthcare workers, FFR [N95 masks] did not impose any important physiological burden during 1 hour of use, at realistic clinical work rates, but the FFR dead-space carbon dioxide and oxygen levels were significantly above and below, respectively, the ambient workplace standards, and elevated PCO<sub>2</sub> is a possibility.” (Roberge, et al, 2010)
  - h) Research about the causes of difficulty breathing is conflicted. A study of nurses in 2013 found that: “Although physiologic measures of heart rate, O<sub>2</sub>, and CO<sub>2</sub> did not reflect a difficulty with gas exchange, nurses reported feeling more short of breath the longer they wore respiratory protection.” (Rebmann, et al, 2013, p. 1221)
  - i) Concern that surgeons may be experiencing induced deoxygenation when wearing surgical masks during surgery is a concern among researchers. (Beder, et al, 2008) For this and other reasons, masks with low air-flow resistance which allow surgeons to “breathe freely,” are recommended in a 2019 study titled *Understanding the factors involved in determining the bioburdens of surgical masks*. (Liu, et al, 2019)
  - j) Restricted breathing has been linked to permanent damage to the body. For example, restricted breathing experienced by those with conditions such as COPD and asthma has been linked to structural damage in the lungs and changes in immune reactions (Vassilakopoulos, et al, 2004)
  - k) As cited in the sources referenced above, people with breathing difficulties are at a greater risk of difficulty and are advised not to wear masks. In Vermont, 11% of adults and 10% of children have asthma (Vt. Dept. of Health, 2012) and about 5% of Vermonters are living with COPD (American Lung Association, 2013, p. 15).
  - l) If wearing an N-95 mask has been shown to decrease the oxygen levels of pregnant health care workers, should there be warnings and advice for use of masks by pregnant women in the general population? (Tong, 2015)

### 3. Skin Irritation:

About a third of respondents in the first set reported **never**, and another third reported **always** experiencing skin irritation.

- a) According to research, adverse skin problems are common (Alberta, 2020) and will occur with long-term PPE use (Hu, et al, 2020).
- b) A recent study of the effects of masks on the skin while used by the general public showed that certain populations are at risk for irritation, particularly the elderly and others with dry skin. (Szepietowski, et al, 2020). It also found that wearing masks causes itchiness in about 20% of wearers, leading to scratching, which “would markedly affect the effectiveness of face masks.”
- c) An article from Johns-Hopkins Medicine titled *Coronavirus: Tips to Avoid “Maskne” Skin Irritation* describes this common problem, who is most vulnerable, and includes suggestions such as not wearing masks treated with formaldehyde and other allergens, and when to seek medical treatment. (Chien, 2020)
- d) Besides formaldehyde, other allergens have been found in surgical masks that can cause irritation on the skin and ears (Badri, 2017).

- e) The Mayo Clinic warns prolonged skin irritation can cause infections and scarring, loss of sleep, and depression. They suggest the irritant should be avoided, and that treatment should be sought if irritation persists (Mayo, 2020).
- f) As mentioned in the studies above, people with pre-existing skin conditions are more likely to suffer when wearing a mask. About 1 in 4 Americans are impacted by skin disease (AADA 2020).

#### 4. Difficulty Communicating Clearly

All of the respondents in the first set reported some level of difficulty with communication.

- a) Communication difficulties are a known hazard of using PPE, and is a common question in research studies (Rebmann, 2013).
- b) In a study titled *The negative impact of wearing personal protective equipment on communication during coronavirus disease 2019*, communication was found to be negatively affected, resulting in miscommunication and other issues. "Where attempts to deliberately raise voice volume or shout through PPE were simulated, understanding significantly improved as expected. The raising of voice for prolonged periods may lead to issues with voice strain and abuse, in addition to frustration or miscommunication." (Hampton, et al, 2020, p. 4)
- c) The recent universal use of face masks are proving to be devastating to those with hearing loss, and is causing increased isolation and other problems (Chodosh et al 2020, Tagupa 2020). For example, people with hearing loss are experiencing difficulties communicating with their medical care providers, leading to health concerns (Goldin, 2020).
- d) How are people with other conditions which impact communication, such as developmental disabilities, being affected?
- e) Learning to interpret other's non-verbal communication (especially facial expressions), and communicate with others is an important developmental skill children are acquiring (Halberstadt, et al, 2013). What are the long-term effects going to be from denying children this opportunity at key stages of their development?

#### 5. Physical Discomfort

Respondents reported feeling dizzy, hot, pain behind their ears, and throat pain.

- a) Masks have been shown to cause increases in heart rate, overheating, itchiness, general fatigue and feeling unfit, and other sensations in health care workers (Li, et al, 2005).
- b) Among surgeons working in air-conditioned operating rooms "...it is known that heat and moisture trapping occur beneath surgical masks..." (Beder, et al, 2008, p. 122) Should there be limits on requiring their use in occupational settings where workers already experience heat strain, such as commercial kitchens?

## 6. Mental/Emotional Discomfort

Nearly all the respondents in the first set reported mental and emotional discomfort **every time**.

- a) Studies of medical personnel wearing masks have found a number of common complaints that could contribute to mental and emotional discomfort: "Subjective symptoms related to wearing an N95 included nausea, headache, light headedness, visual difficulties, shortness of breath, palpitations, confusion, and difficulty communicating." (Rebmann, et al, 2013)
- b) When we are under stress, particularly due to remembering a past trauma, our heart beat and breathing rate increases, and our bodies use extra oxygen (Kolk, 2014, p. 42 & 270). How does wearing a mask impede our body's ability to meet these extra demands?
- c) There are several members of the community who are likely to feel anxiety when their face is covered and breathing restricted. For example, between 3% and 10% of women in our country have experienced strangulation, perhaps as many as 1% per year. (Sorenson, et al, 2014).
- d) If parity for mental health issues is a value we are working towards in Vermont (8 V.S.A. § 4089b), how do we weigh the fact that a significant portion of the population is likely to experience disabling effects (such as anxiety attacks) when wearing masks?
- e) We know that chronic stress can have damaging effects on the immune system (Silva & Rieger, 2008). How does the chronic stress caused by masks affect the body's ability to stay healthy and fight disease?
- f) If masks have been shown to impact doctor/patient relations, leading to a sense of less empathy and connection (Wong, et al, 2013), what does bringing this experience into the community do to our other relationships?
- g) Previous research on aggression shows that wearing masks decreases empathy and increases people's willingness to use violence. There is concern that their universal use is currently causing an increase of aggression (Grossman, 2020).
- h) To many, seeing masks in the community are a constant reminder to be afraid (Neilson, 2020). How does this response affect the incidence of anxiety problems and their related health issues?

## 7. Difficulty cleaning your hands every time you touch your mask

Difficulty cleaning hands was, far and above, the most common complaint in the second set of surveys.

*"Be aware that masks can become contaminated on the outside. Avoid moving or adjusting the mask. Assume the mask has been contaminated and take proper precautions.*

*Critically, if you wear a mask, you must wash your hands before putting it on, as well as before and after taking it off.*

*Cloth masks should be worn only a short time, as there is some evidence that they can trap virus particles after they become damp, which may put the wearer at greater risk.*



*For those choosing to wear non-medical masks, it may be prudent to carry a bag with several clean masks in it, as well as a plastic bag that can be used to safely store used masks until they can be washed at home.*

*It is critical that used masks be carefully handled to avoid spreading infection to others.”*

- Alberta Health Services, COVID-19 Scientific Advisory Group (2020)

- a) Difficulties washing hands was experienced by more survey respondents than any other issue, suggesting that proper hand hygiene is rarely able to happen in community settings.
- b) Improper mask hygiene poses a serious risk, and this message has been made clear in public education efforts. (Alberta 2020, CDC # 1 & #3 2020, Klompas 2020, Desai & Mehrotra 2020, Nebraska Medicine 2020, WHO 2020 p. 6). For example, the CDC recommendations include: “**Don’t** put the mask around your neck or up on your forehead. **Don’t** touch the mask, and, if you do, wash your hands or use hand sanitizer to disinfect.” (CDC #1, 2020)
- c) The research supporting the need for proper mask hygiene comes from mask use in the medical field. For example, mask use has been shown to increase the rate of influenza like illness (ILI) among health care workers due to the moisture retention, reuse of cloth masks, and poor filtration (MacIntyre, et al, 2015). Surgical masks worn during surgical procedures are known sources of contamination, and there is concern that surgeons are not always following the proper procedures, including re-use of masks: “People often tend to skip steps in daily routines, even in important fields such as surgery.” (Liu, et al, 2019).
- d) Education is necessary if masks are to be used properly. “Educate patients, visitors, and HCP about the importance of performing hand hygiene immediately before and after any contact with their facemask or cloth face covering.” (CDC #2, 2020)
- e) How is mask hygiene practiced currently, in the general public? A recent survey of 2,315 students in Poland found “some practices among young people could be regarded as inappropriate. This can lead to decreased efficacy of face protection and eventual spread of viral infection. Therefore, we believe that our results might be of value in construction of general public education campaigns on the proper use of face masks...” (Matusiak, et al, 2020, p. 3)
- f) Vermont public health officials are not role modeling proper mask hygiene, or tracking use of masks to determine the level of infection associated with them (CCTV, 2020, 58 - 104 minutes).
- g) Improper hand hygiene can spread many dangerous diseases in food service settings (ServeSafe, 2008). How is the current use of masks by staff and customers in restaurants contributing to hand contamination and the incidence of food-borne illnesses?

## Conclusion

Mask wearing in community settings is a new health practice, and it is being universally implemented in Vermont. Fully understanding its effects is crucial to assessing its effectiveness and safety. This survey provides evidence that the use of masks in Vermont is causing a number of citizens to suffer. The potential of long-term mental and physical health consequences is a valid concern, demonstrated clearly in the research.

This report raises a number of questions, such as:

- What percentage of the population is suffering to the same degree as the survey respondents?
- Aside from the quality of life issues, are the health difficulties they are experiencing also causing long-term health impacts?
- Are some segments of the population suffering disproportionately, such as children, the elderly, or the working-class?
- How many people are unable to leave their jobs due to financial reasons, even if wearing a mask for work is causing severe health difficulties?
- How are people with pre-existing conditions being affected?
- Should warnings be given about the health risks, especially for vulnerable populations, such as those who are pregnant or have pre-existing conditions?
- How many people are wearing masks, even though their conditions (such as difficulty breathing) exempt them from doing so?
- If **SARS-CoV-2** is more likely to cause serious harm to a person who has pre-existing health conditions, then does worsening these conditions actually increase their risk of infection?
- How can we address the stigma against those who cannot wear masks?
- How many incidents of communicable diseases are being caused by improper mask hygiene?
- How is immune system function impacted by the physical and psychological stress endured?
- How much do these negative impacts undermine the community's overall resistance to disease?

May we work together as a Vermont community to address these questions.

[https://pdmj.org/papers/vermont\\_mask\\_survey/](https://pdmj.org/papers/vermont_mask_survey/)

**AUTHOR:** Amy Hornblas, BA

**FUNDING:** None.

**CONFLICT OF INTEREST:** There are no potential conflicts of interest.

***About the Author:*** Amy Hornblas is a licensed health educator in Vermont. She received a BA in Community Health in 1994. She has experience educating people of all ages and abilities. Areas of expertise include: disease prevention, nutrition, addiction, effects of trauma, violence-prevention, media literacy, and the development and use of assessment tools.

The *Vermont Mask Survey Fall Report* is published on the website: [vtmasksurvey.com](http://vtmasksurvey.com)

[https://pdmj.org/papers/vermont\\_mask\\_survey/](https://pdmj.org/papers/vermont_mask_survey/)

## References

- Alberta Health Services, COVID-19 Scientific Advisory Group (2020). *What is the effectiveness of wearing medical masks, including home-made masks, to reduce the spread of COVID-19 in the community?* Updated June 19, 2020. Retrieved from: <https://www.albertahealthservices.ca/assets/info/ppih/if-ppih-covid-19-sag-mask-use-in-community-rapid-review.pdf>
- American Academy of Dermatology Association (2020). *Burden of Skin Disease*. Retrieved from: <https://www.aad.org/member/clinical-quality/clinical-care/bsd>
- Badri F. A. (2017). Surgical mask contact dermatitis and epidemiology of contact dermatitis in healthcare workers. *Current Allergy and Clinical Immunology*. 30. 183-188. Retrieved from: [https://www.researchgate.net/publication/323278369\\_Surgical\\_mask\\_contact\\_dermatitis\\_and\\_epidemiology\\_of\\_contact\\_dermatitis\\_in\\_healthcare\\_workers](https://www.researchgate.net/publication/323278369_Surgical_mask_contact_dermatitis_and_epidemiology_of_contact_dermatitis_in_healthcare_workers)
- Beder A., Büyükkoçak U., Sabuncuoğlu H., Keskil Z. A., and Keskil S. (2008). Preliminary report on surgical mask induced deoxygenation during major surgery. *Neurocirugia*. 2008 19: 121-126. Retrieved from: <https://ratical.org/PandemicParallaxView/Bader-SurgMaskIndDeoxygen.pdf>
- Borovoy, B., Huber C., and Makeeta Q. (2020). *Masks, false safety and real dangers, Part 1: Friable mask particulate and lung vulnerability*. 10.13140/RG.2.2.10635.92965. Retrieved from: [https://pdmj.org/papers/masks\\_false\\_safety\\_and\\_real\\_dangers\\_part1/](https://pdmj.org/papers/masks_false_safety_and_real_dangers_part1/)
- CCTV (2020). *COVID-19: Vermont's Response*. Governor's Press Conference. Play at 58 minutes. June 19, 2020. Retrieved from: <https://www.cctv.org/watch-tv/programs/governor-scott-and-administration-officials-covid-19-update-28>
- Centers for Disease Control #1 (2020). *How to Wear Masks*. Content Source: National Center for Immunization and Respiratory Diseases, Division of Viral Diseases. Updated Aug. 7, 2020. Retrieved from: <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/how-to-wear-cloth-face-coverings.html>
- Centers for Disease Control #2 (2020). *Interim Infection Prevention and Control Recommendations for Healthcare Personnel During the Coronavirus Disease 2019 (COVID-19) Pandemic*. Updated July 15, 2020. Retrieved from: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/infection-control-recommendations.html>

[https://pdmj.org/papers/vermont\\_mask\\_survey/](https://pdmj.org/papers/vermont_mask_survey/)

Centers for Disease Control #3 (2020). *Summary of Changes to the Guidance*. July 15, 2020. Retrieved from: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/infection-control-recommendations.html>

Chien A. L.-L. (2020) Coronavirus: Tips to Avoid “Maskne” Skin Irritation. *Johns Hopkins Medicine Health*. Published August 3, 2020. Retrieved from: <https://www.hopkinsmedicine.org/health/conditions-and-diseases/coronavirus/coronavirus-tips-to-avoid-maskne-skin-irritation>

Chodosh J., Weinstein B. E., and Blustein J. (2020). Face masks can be devastating for people with hearing loss; Innovation is urgently needed to ensure clear communication in medical settings. *The BMJ*. 370:m2683. Published July 9, 2020. Retrieved from: <http://dx.doi.org/10.1136/bmj.m2683> <https://www.bmj.com/content/370/bmj.m2683>

Desai A. N. MD, MPH and Mehrotra P. MD, MPH (2020). Medical masks are a tool that can be used to prevent the spread of respiratory infection. *Journal of the American Medical Association: Patient Page*. April 21, 2020, Volume 323, Number 15. Retrieved from: <https://jamanetwork.com/journals/jama/fullarticle/2762694>. doi:10.1001/jama.2020.2331

Dueñas M, Ojeda B, Salazar A, Mico JA, and Failde I. (2016). A review of chronic pain impact on patients, their social environment and the health care system. *Journal of Pain Research*. 2016;9:457–467. Retrieved from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4935027/>. DOI: 10.2147/JPR.S105892

Goldin A. PhD, Weinstein B. PhD, and Shiman N. (2020). ***Speech blocked by surgical masks becomes a more important issue in the Era of COVID-19***. *Hearing Review, Patient Care*. May, 2020. Retrieved from: <https://www.hearingreview.com/hearing-loss/health-wellness/how-do-medical-masks-degrade-speech-reception>

Grossman, D., Lt. Col. (2020). Masks can be Murder. *Linked In*. Published on September 3, 2020. Retrieved from: <https://www.linkedin.com/pulse/masks-can-murder-lt-col-dave-grossman/>

Halberstadt, A., Parker A., and Castro V. (2013). *Nonverbal communication: Developmental perspectives*. Retrieved from: [https://www.researchgate.net/publication/257332909\\_Nonverbal\\_communication\\_Developmental\\_perspectives](https://www.researchgate.net/publication/257332909_Nonverbal_communication_Developmental_perspectives). 10.1515/9783110238150.93.

Hampton T., Crunkhorn R., Lowe N., Bhat J., Hogg E., Afifi W., De S., Street I., Sharma R., Krishnan M., Clarke R., Dasgupta S., Ratnayake S., and Sharma S. (2020). The negative impact of wearing personal protective equipment on communication during coronavirus disease 2019. *The Journal of Laryngology and Otology*. July 3, 2020. Pages 1–5.

[https://pdmj.org/papers/vermont\\_mask\\_survey/](https://pdmj.org/papers/vermont_mask_survey/)

Retrieved from: <https://doi.org/10.1017/S0022215120001437>  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7387788/>

Hu K. MD, Fan J. MD, Li X. MD, Gou X. PhD, Li X. PhD, Zhou X. MD (2020). The adverse skin reactions of health care workers using personal protective equipment for COVID-19. *Medicine*. 2020;99:24 (e20603). Retrieved from:  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7302613/pdf/medi-99-e20603.pdf>

Klompas M., M.D., M.P.H., Morris C. A. M.D., M.P.H., Sinclair J., M.B.A., Pearson M., D.N.P., R.N., and Shenoy E. S., M.D., Ph.D. (2020). *Universal Masking in Hospitals in the Covid-19 Era*. *The New England Journal of Medicine*, 2020; 382:e63. Retrieved from:  
<https://www.nejm.org/doi/pdf/10.1056/NEJMp2006372?articleTools=true>. DOI:  
[10.1056/NEJMp2006372](https://doi.org/10.1056/NEJMp2006372)

Kolk, B. V. D. MD (2014). *The Body Keeps the Score: Brain, Mind, and Body in the Healing of Trauma*. Penguin Books, New York, NY. Pages 42 and 270.

Lee H. P. and Wang D. Y. (2011). Objective Assessment of Increase in Breathing Resistance of N95 Respirators on Human Subjects. *The Annals of Occupational Hygiene*, Volume 55, Issue 8, October 2011, Pages 917–921. Retrieved from:  
<https://academic.oup.com/annweh/article/55/8/917/265317>.  
<https://doi.org/10.1093/annhyg/mer065>

Li Y., Tokura H., Guo Y. P., Wong A. S. W., Wong T., Chung J., and Newton E. (2005). Effects of wearing N95 and surgical facemasks on heart rate, thermal stress and subjective sensations. *International Archives of Occupational and Environmental Health*. Published 2005, 78: 501-509. Retrieved from:  
[https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7087880/pdf/420\\_2004\\_Article\\_584.pdf](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7087880/pdf/420_2004_Article_584.pdf). DOI 10.1007/s00420-004-0584-4

Lim ECH, Seet RCS, Lee K-H, Wilder-Smith EPV, Chuah BYS, Ong BKC (2006). Headaches and the N95 face-mask amongst healthcare providers. *Acta Neurologica*. 2006; 113: 199–202. Retrieved from:  
<https://europepmc.org/backend/ptpmcrender.fcgi?accid=PMC7159726&blobtype=pdf>. DOI: 10.1111/j.1600-0404.2005.00560.x

Lindemann, N. (2019). *What's the Average Survey Response Rate [2019 Benchmark]*. SurveyAnyplace Blog. August 8, 2019. Retrieved from:  
<https://surveyanyplace.com/average-survey-response-rate/>

Liu Z., Yu D. , Ge Y., Wang L., Zhang J., Li, H., Liu F., Zhai Z. (2019). Understanding the factors involved in determining the bioburdens of surgical masks. *Annals of Translational*

[https://pdmj.org/papers/vermont\\_mask\\_survey/](https://pdmj.org/papers/vermont_mask_survey/)

*Medicine*. 2019;7(23):754. Retrieved from:  
<http://atm.amegroups.com/article/view/32465/html> DOI: 10.21037/atm.2019.11.91

MacIntyre C.R., Seale H., Dung T.C., Hien N.T., Nga P.T., Chughtai A.A., Rahman B., Dwyer D. E., and Wang Q. (2015). A cluster randomised trial of cloth masks compared with medical masks in healthcare workers. *BMJ Open*. 2015;5(4):e006577. Retrieved from:  
[https://drive.google.com/file/d/1B34ATIETrTM4tq0khZE64\\_OrjoR42fj4/view](https://drive.google.com/file/d/1B34ATIETrTM4tq0khZE64_OrjoR42fj4/view)

Matusiak L, Szepietowska M., Krajewski P. K., Białynicki-Birula R., Szepietowski J. C. (2020). The use of face masks during the COVID-19 pandemic in Poland: A survey study of 2315 young adults. *Dermatologic Therapy*. 2020;e13909. Retrieved from:  
<https://onlinelibrary.wiley.com/doi/full/10.1111/dth.13909>.  
<https://doi.org/10.1111/dth.13909>

Mayo Clinic (2019). Chronic Daily Headaches. *Patient Care and Health Information*. Retrieved from: <https://www.mayoclinic.org/diseases-conditions/chronic-daily-headaches/symptoms-causes/syc-20370891>

Mayo Clinic (2020). *Itchy skin (pruritus)*. Retrieved from:  
<https://www.mayoclinic.org/diseases-conditions/itchy-skin/symptoms-causes/syc-20355006>

Nebraska Medicine (2020). Coronavirus is not canceled: Wear your mask. *UNMC Nebraska Medicine online*. 2020. Retrieved from:  
<https://www.nebraskamed.com/COVID/coronavirus-is-not-canceled-wear-your-mask>

Neilson S. MD (2020). The surgical mask is a bad fit for risk reduction. *Canadian Medical Association Journal: Medicine and Society*. May 17, 2016. Pages 606-7. Retrieved from: <https://www.cmaj.ca/content/cmaj/188/8/606.full.pdf>

Occupational Safety and Health Administration (2020). *COVID-19 Frequently Asked Questions: Cloth Face Coverings*. Retrieved from: <https://www.osha.gov/coronavirus/faqs#cloth-face-coverings>

Ong J. Y., FRCP, Bharatendu C., MRCP, Goh Y., MRCP, Tang J. Z. Y., MRCEM, Sooi K. W. X., MRCP, Tan Y. L., MBBS, Tan B. Y. Q., MRCP, Teoh H. L., MRCP, Ong S. T., BSc; Allen D. M., FAMS, Sharma V. K., MRCP (2020). Headaches Associated With Personal Protective Equipment- A Cross-Sectional Study Among Frontline Healthcare Workers During COVID-19. *American Headache Society*. March 29, 2020, 60:864-877. ISSN 0017-8748. Retrieved from: <https://headachejournal.onlinelibrary.wiley.com/doi/full/10.1111/head.13811>

[https://pdmj.org/papers/vermont\\_mask\\_survey/](https://pdmj.org/papers/vermont_mask_survey/)

Rebmann T. PhD, RN, CIC, Ruth Carrico PhD, RN, CIC b, Jing Wang PhD, Redmann T. PhD, RN, CIC, Carrico R. PhD, RN, CIC, and Wang J. PhD. (2013). Physiologic and other effects and compliance with long-term respirator use among medical intensive care unit nurses. *American Journal of Infection Control*. 41 (2013) 1218-23. Retrieved from: [https://www.ajicjournal.org/article/S0196-6553\(13\)00592-0/fulltext](https://www.ajicjournal.org/article/S0196-6553(13)00592-0/fulltext) . doi.org/10.1016/j.ajic.2013.02.017

Roberge R. J. MD, MPH, Coca A. PhD, Williams, W. J. PhD, Powell J. B. MSc, and Palmiero A. J. (2010). Physiological Impact of the N95 Filtering Facepiece Respirator on Healthcare Workers. *Respiratory Care*. May 2010, Vol. 55, No. 5. Retrieved from: [https://www.researchgate.net/publication/43344996\\_Physiological\\_impact\\_of\\_the\\_N95\\_filtering\\_facepiece\\_respirator\\_on\\_healthcare\\_workers](https://www.researchgate.net/publication/43344996_Physiological_impact_of_the_N95_filtering_facepiece_respirator_on_healthcare_workers)

Saldivar, M. G., Ph.D. (2012). *A Primer on Survey Response Rate*. Learning Systems Institute Florida State University. Retrieved from: [https://mgsaldivar.weebly.com/uploads/8/5/1/8/8518205/saldivar\\_primer\\_on\\_survey\\_response.pdf](https://mgsaldivar.weebly.com/uploads/8/5/1/8/8518205/saldivar_primer_on_survey_response.pdf)

ServeSafe Essentials (2008). *Chapter 4: The Safe Foodhandler*. Retrieved from: [https://www.smchealth.org/sites/main/files/file\\_attachments/servsafe\\_handwashing\\_guidelines.pdf?1485884271](https://www.smchealth.org/sites/main/files/file_attachments/servsafe_handwashing_guidelines.pdf?1485884271)

Silva L. M. and Rieger R. V. (2008). *Chronic pain, stress, and their psychoneuroimmunologic implications: A literature review*. *Aletheia*. 2008, 28, pages 11 – 20. Retrieved from: <http://pepsic.bvsalud.org/pdf/aletheia/n28/n28a02.pdf>

Sorenson S. B. PhD, Joshi M. PhD, and Sivitz E., BA (2014). A Systematic Review of Epidemiology of Nonfatal Strangulation, a Human Rights and Health Concern. *American Journal of Public Health*. | November 2014, Vol 104, No. 11. Retrieved from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4202982/pdf/AJPH.2014.302191.pdf>. DOI:10. 2105/AJPH.2014.302191

State of Vermont Executive Department (2020). *ADDENDUM 2 TO AMENDED AND RESTATED EXECUTIVE ORDER NO. 01-20 [Strengthening the Use of Facial Coverings]*. Retrieved from: <https://governor.vermont.gov/sites/scott/files/documents/ADDENDUM%20%20TO%20AMENDED%20AND%20RESTATED%20EXECUTIVE%20ORDER%20NO.%2001-20.pdf>

Szepietowski J. C., Matusiak L., Szepietowska M., Krajewski P. K., and Bialynicki-Birula R. (2020). Face Mask-induced Itch: A Self-questionnaire Study of 2,315 Responders During the COVID-19 Pandemic. *Acta Dermato-Venereologica*. 2020; 100: adv00152. Retrieved from: [https://www.medicaljournals.se/acta/content\\_files/files/pdf/100/10/5789.pdf](https://www.medicaljournals.se/acta/content_files/files/pdf/100/10/5789.pdf). DOI: 10.2340/00015555-3536



[https://pdmj.org/papers/vermont\\_mask\\_survey/](https://pdmj.org/papers/vermont_mask_survey/)

- Tagupa, H. (2020). Social Isolation, Loneliness, and Hearing Loss During COVID-19. *The Hearing Journal*. May, 2020, Volume 73, Issue 5. Pages 46-47. Retrieved from: [https://journals.lww.com/thehearingjournal/fulltext/2020/05000/social\\_isolation\\_loneliness\\_and\\_hearing\\_loss.16.aspx](https://journals.lww.com/thehearingjournal/fulltext/2020/05000/social_isolation_loneliness_and_hearing_loss.16.aspx).
- Treede RD, Rief W, Barke A, Aziz Q, Bennett MI, Benoliel R, et al. *A classification of chronic pain for ICD-11*. *Pain*. 2015;156:1003–7. Retrieved from: [https://journals.lww.com/pain/Fulltext/2015/06000/A\\_classification\\_of\\_chronic\\_pain\\_for\\_ICD\\_11.6.aspx](https://journals.lww.com/pain/Fulltext/2015/06000/A_classification_of_chronic_pain_for_ICD_11.6.aspx)
- Tong P. S. Y., Kale A. S., Kailyn Ng K., Loke A. P., Choolani M. A., Lim C. L., Chan Y. H., Chong Y. S., Tambyah P.A., and Yong E. L. (2015). Respiratory consequences of N95-type Mask usage in pregnant healthcare workers—a controlled clinical study. *Antimicrobial Resistance and Infection Control* (2015) 4:48. Retrieved from: <https://aricjournal.biomedcentral.com/articles/10.1186/s13756-015-0086-z> DOI 10.1186/s13756-015-0086-z
- Vassilakopoulos T., Roussos C., and Zakyntinos S. (2004). The immune response to resistive breathing. *European Respiratory Journal*. 2004; 24: 1033–1043. Retrieved from: <https://erj.ersjournals.com/content/erj/24/6/1033.full.pdf> DOI: 10.1183/09031936.04.00067904
- Vermont Department of Health (2012). *The Burden of Asthma in Vermont*. Issued 03.13.2012, r.04.23.2013. Retrieved from: [https://www.healthvermont.gov/sites/default/files/documents/2016/12/HS\\_asthma\\_burden\\_report\\_2012.pdf](https://www.healthvermont.gov/sites/default/files/documents/2016/12/HS_asthma_burden_report_2012.pdf)
- Vermont Statutes Online Database (2020). *Title 8, Banking and Insurance*. 8 V.S.A. § 4089b. Retrieved from: <https://legislature.vermont.gov/statutes/section/08/107/04089b>
- Vissar P. S., Krosnick J.A., Marquette J., Curtin, M. (1996). Mail surveys for election forecasting? **Public Opinion Quarterly**, Volume 60, Issue 2, Summer 1996, Pages 181–227, <https://doi.org/10.1086/297748>
- Williams J., PhD, Cichowicz J. K., MA, Hornbeck A., MSN, APRN, FNP-BC, FNP-C, Pollard J., MS, CPE, and Snyder J., MSN, CRNP (2020). *The Physiological Burden of Prolonged PPE Use on Healthcare Workers during Long Shifts*. CDC 24/7. June 10, 2020. Retrieved from: <https://blogs.cdc.gov/niosh-science-blog/2020/06/10/ppe-burden/>
- Wong C, Yip B, Mercer S, Mercer S., Griffiths S., Kung K., Wong M.C., Chor J., and Wong S. Y. (2013). Effect of facemasks on empathy and relational continuity: a randomized control trial in primary care. *BioMed Central: Family Practice*, 2013;14:200. Retrieved from:

[https://pdmj.org/papers/vermont\\_mask\\_survey/](https://pdmj.org/papers/vermont_mask_survey/)

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3879648/>. Retrieved from:  
<http://www.biomedcentral.com/1471-2296/14/200>

World Health Organization (2020). *Advice on the use of masks in the context of COVID-19 Interim guidance, 5<sup>th</sup> of June, 2020*. (Data file). Retrieved from:  
<https://apps.who.int/iris/handle/10665/332293>

Zhu J. H., Lee S. J., Wang, D. Y., Lee H. P. (2014). Effects of long-duration wearing of N95 respirator and surgical facemask: a pilot study. *Journal of Lung, Pulmonary & Respiratory Research*. *J Lung Pulm Respir Res*. 2014;1(4):97–100. Retrieved from:  
<https://medcraveonline.com/JLPRR/JLPRR-01-00021.pdf>. DOI:  
10.15406/jlpr.2014.01.00021

