

**STRATEGIES FROM THE  
WELL BUILDING STANDARD  
TO SUPPORT IN THE FIGHT  
AGAINST COVID-19**

**Prevention and Preparedness, Resilience and Recovery**



Buildings, communities and organizations play a leading role in supporting our health and well-being, as well as our collective ability to prepare for and respond to global health challenges like the one we're experiencing now.

“ If managed poorly, [buildings] can spread disease. But if we get it right, we can enlist our schools, offices, and homes in this fight. ”

- Joseph Allen, DSc, MPH

Co-Chair, IWBI Task Force on COVID-19 and Other Respiratory Infections: Prevention and Preparedness, Resilience and Recovery; Assistant Professor of Exposure and Assessment Science and Director of the Healthy Buildings Program at Harvard's T.H. Chan School of Public Health



## WELL STRATEGIES IN ACTION

The WELL Building Standard (WELL), a framework utilized by 4,100 projects across more than 540 million square feet, was created to help people thrive in the buildings where we spend our lives. With its research backing and global focus, we believe that WELL can be an especially pertinent and helpful tool during this time. Many of the evidence-based strategies within it, spanning building design and operations, as well as company policies and culture, provide an actionable framework for organizations and communities responding to COVID-19\* and preparing for a safer and healthier future.

To that end, we've identified and grouped select, applicable strategies from the [WELL Building Standard v2 pilot \(WELL v2\)](#) around key themes that reflect how organizations can approach prevention and preparedness, resilience and recovery in relation to COVID-19 and other respiratory infections, from enhancing air quality to supporting mental health. Each specific strategy is linked to more information within the digital version of the WELL v2 system.

1. Promote clean contact
2. Improve air quality
3. Maintain water quality
4. Manage risk and create organizational resilience
5. Support movement and comfort, including work from home
6. Strengthen immune systems
7. Foster mental resilience
8. Champion community resilience and recovery

Our intention had been to bring WELL v2 out of pilot in March. However, in light of the COVID-19 pandemic, we put those plans on pause, and on March 19, IWBI launched the Task Force on COVID-19 and Other Respiratory Infections: [Prevention and Preparedness, Resilience and Recovery](#), a concerted global effort to help further define the leading role buildings, organizations and communities can play in reducing the health burden from this and other infectious diseases.

Chaired by 16 renowned experts, and populated by over 540 thought leaders and authorities from across public health, medicine, design, real estate, government and academia, the Task Force goals are two-fold:

- Inform new Guidelines for Prevention and Preparedness, Resilience and Recovery for individuals, organizations and communities to help them better integrate actionable insights and proven strategies into how they manage both their buildings and their organizations.
- Assess ways in which the WELL Building Standard can be further strengthened in this moment and also into the future, reflecting any new research and incorporating evidence-backed strategies that have evolved in response to the COVID-19 pandemic.

While these more comprehensive guidelines are still underway, we hope this document will serve as a roadmap to help you plot the path forward toward a brighter, healthier and more secure future.

## HOW TO READ THIS DOCUMENT

**WELL v2 consists of 10 concepts focused on human health:**



Air



Thermal Comfort



Water



Sound



Nourishment



Materials



Light



Mind



Movement



Community

This document groups applicable features from the WELL v2 pilot into eight key themes that organizations can activate. We encourage you to follow the links to each WELL feature for information on implementation, evidence and general background.

\*SARS-Co-V-2 (severe acute respiratory syndrome) is the virus that causes the disease, COVID-19. This paper will refer to COVID-19 throughout. World Health Organization.

# 1 | PROMOTE CLEAN CONTACT

COVID-19 is spread primarily through close contact with an infected person via respiratory droplets. Research suggests that the virus can remain airborne for up to three hours and on some surfaces for up to 72 hours.<sup>1</sup> Maintaining good cleaning protocols and handwashing habits can support individual and organizational resilience by helping reduce the chance of infection. Soap has been found to be more effective than hand sanitizer in community settings, though hand sanitizer with at least 60% alcohol by volume can also be used.<sup>2</sup>

## WELL STRATEGY

Reduce exposure to pathogens, allergens and hazardous cleaning chemicals

### Handwashing - [WELL Feature W08](#)

Reduce pathogen transmission associated with washing and drying hands by providing sufficiently large sinks, disposable soap containers and hand-drying towels.

### Cleaning Products & Protocol - [WELL Feature X09](#)

Implement a rigorous cleaning protocol that addresses high-touch surfaces, provide annual trainings, maintain cleaning logs and restrict use of hazardous or harmful ingredients in cleaning, disinfection and sanitization products.



## 2 | IMPROVE AIR QUALITY

Air stagnation may concentrate airborne viruses or dust, so it is critical to keep indoor air as refreshed as possible. Research has shown that increased ventilation in a building can reduce the chance of influenza; a study published in 2019 found that ensuring even minimum levels of outdoor air ventilation reduced influenza transmission as much as having 50-60% of the people in a building vaccinated.<sup>3</sup>

Without proper maintenance and filtration, heating, ventilation and air conditioning systems can build up mold and particulates that can propagate respiratory diseases, especially after periods of inactivity.<sup>4,5</sup>

There is also evidence that humidity can play a role in the survival of viruses such as COVID-19.<sup>6</sup> As such, maintaining relative humidity between 40% and 60% may help to limit the spread and survival of COVID-19.<sup>7</sup> Organizations should weigh the effectiveness and complexity of humidification systems against other air purification strategies.

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### WELL STRATEGY

**Reduce indoor air quality issues by providing adequate ventilation and filtration**

#### **Ventilation Effectiveness** - [WELL Feature A03](#)

Bring in fresh air from the outside through mechanical and/or natural means to dilute human and product-generated air pollutants.

#### **Enhanced Ventilation** - [WELL Feature A06](#)

Implement advanced ventilation strategies such as increased outdoor air supply, demand-control ventilation, displacement ventilation and advanced air distribution that can enhance air quality.

#### **Operable Windows** - [WELL Feature A07](#)

Provide operable windows and encourage building users to open windows when outdoor air quality is acceptable.

#### **Air Filtration** - [WELL Feature A12](#)

Implement adequate air filtration and document a maintenance protocol for installed filters.

 **Microbe and Mold Control** - [WELL Feature A14](#)

Implement ultraviolet air treatment.



WELL  
FEATURE  
A07

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## WELL STRATEGY

**Manage humidity and control sources of indoor moisture**

 **Moisture Management** - [WELL Feature W07](#)

Implement design strategies to limit moisture accumulation and the potential of mold growth from water infiltration and condensation within buildings.

 **Humidity Control** - [WELL Feature T07](#)

Limit the growth of pathogens and maintain relative humidity levels that are conducive to human health and well-being.

## 3 | MAINTAIN WATER QUALITY

Exposure to a range of contaminants in water can result in negative health impacts including the spread of infectious disease.<sup>8</sup> Water is typically treated with chlorine to keep it free of pathogens. However, if left stagnant after a period of vacancy, chlorine is likely to lose its disinfection power, creating opportunity for pathogens to contaminate the water.<sup>9</sup>

### WELL STRATEGY

Test your water to ensure it's safe for use

#### **Fundamental Water Quality** - [WELL Feature W01](#)

Meet performance thresholds for turbidity and coliforms for all water likely to come in contact with building occupants.

#### **Water Contaminants** - [WELL Feature W02](#)

Provide drinking water that meets performance thresholds for dissolved metals, organic pollutants and disinfectants.

#### **Enhanced Water Quality** - [WELL Feature W04](#)

Provide drinking water that meets performance thresholds for contaminants that affect aesthetics and taste.

#### **Water Quality Consistency** - [WELL Feature W05](#)

Filter drinking water and perform quarterly water quality tests.



## 4 | **MANAGE** RISK AND CREATE ORGANIZATIONAL RESILIENCE

Emergency preparedness planning is a risk management approach that enables rapid response. Organizations should regularly re-evaluate their emergency preparedness plans; adaptability and flexibility are essential components of preparedness and recovery.<sup>10</sup> A key thing to consider in response to COVID-19 is support for working parents.<sup>11,12</sup> Because of global school closures, many professionals are full-time caregivers at home and are struggling to balance responsibilities.<sup>13</sup>

Organizations should align their emergency preparedness plans with data that reflects the diverse needs of their employees. Occupant surveys are an established tool for understanding and evaluating people's perceptions of indoor environmental conditions, wellness policies and their own health and well-being.<sup>14</sup> Decision makers can use survey results to measure progress, identify priority areas for response and implement plans to make the organization or building healthier, safer and more productive.<sup>15</sup>

Regularly capturing occupant feedback can enable organizations to have a baseline from which to inform and create organizational policies and protocols, including emergency protocols. Many surveys can be customized for an organization's specific needs to address topics like worker performance, satisfaction and well-being before, during and after a period of remote work. Surveying employees when they return to their physical workplace after an extended absence can help leadership to evaluate the effectiveness of the strategies that were deployed before, during and after. Return-to-work surveys can also help identify current mental health challenges and inform new support strategies for employees.

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### WELL STRATEGY

#### Prepare for emergencies



##### **Emergency Preparedness** - [WELL Feature C15](#)

Develop an emergency management plan and supporting resources.



##### **Family Support** - [WELL Feature C10](#)

Enable working parents and caregivers to care for members of their family.

## WELL STRATEGY

Be informed by evidence



### Occupant Survey - [WELL Feature C03](#)

Establish minimum standards for the evaluation of occupant experience, health and well-being.



### Enhanced Occupant Survey - [WELL Feature C04](#)

Collect and respond to in-depth feedback from building users on their comfort, satisfaction, behavior, health and other robust factors related to their well-being, both before and during occupancy.



## 5 | **SUPPORT** MOVEMENT AND COMFORT, INCLUDING WORK FROM HOME

Current stay-at-home orders worldwide have turned COVID-19 into the “...world’s largest work-from-home experiment”<sup>16</sup> with many companies scrambling to set up their staff remotely. While data is scarce, prior to the onset of COVID-19, up to 44% of companies globally did not allow remote work. Organizations therefore may not be prepared to provide guidance to their teams as to how to create a functional and comfortable home workspace and work-from-home experience.<sup>17</sup>

Ergonomics is the study of how the work environment meets the user’s needs. With more people working from home than ever, understanding how to provide remote-work ergonomics and support for physical activity and movement throughout the day is key. While WELL does not directly address work-from-home-scenarios, many strategies can be meaningfully adapted for home-based work.

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### WELL STRATEGY

#### Support movement and proper ergonomics

##### **Visual and Physical Ergonomics** - [WELL Feature V02](#)

Reduce physical strain and injury as well as improve comfort, safety and general well-being through ergonomic design and education.

##### **Active Furnishings** - [WELL Feature V07](#)

Discourage prolonged sitting and sedentary behaviors by providing active workstations and furnishings.

##### **Enhanced Ergonomics** - [WELL Feature V10](#)

Collaborate with a qualified professional to audit ergonomic conditions and provide recommendations for improvement.

##### **Self-Monitoring** - [WELL Feature V12](#)

Provide occupants access to wearables that can monitor individual physical activity metrics.

## 6 | STRENGTHEN IMMUNE SYSTEMS

Based on the effects of previous SARS outbreaks, COVID-19 is predicted to have lasting physical and mental health impacts.<sup>18</sup> Providing individuals with access to health-promotion strategies, education and resources can help them to cultivate healthy habits and resilience in response to physical and mental health stressors. A healthy immune system helps the body fight infections and reduces co-morbidities that are associated with a greater risk for infection.<sup>19</sup>

Smoking can increase comorbidities for influenza such as chronic obstructive pulmonary disease (COPD). Those who smoke or have COPD are at increased risk for developing COVID-19.<sup>20</sup> Smoking is associated with multiple negative health outcomes such as reduced life expectancy, respiratory infections, coronary heart disease and cancer.<sup>21</sup>

Chronic disease increases vulnerability to COVID-19; the consumption of fruits and vegetables is a key component of a healthy dietary pattern for the prevention of chronic disease.<sup>22</sup> Further, adequate hydration is important for maintaining overall health. Water is a major component of cells and the dominant component of fluid between the cells and is the medium for the transport of nutrients and waste throughout the body.<sup>23</sup>

Physical inactivity has been attributed to a rise in premature mortality and chronic diseases, including type 2 diabetes, cardiovascular disease, depression, stroke, dementia and some forms of cancer.<sup>24-26</sup> Combating sedentary habits by incorporating movement and exercise throughout the day is known to positively impact health on multiple fronts.<sup>25</sup>

Poor quality sleep, or not enough sleep, has been associated with a range of negative health outcomes, including impaired immune function.<sup>27</sup> Exposure to daylight and circadian lighting design has been shown to have a positive impact on sleep quality.<sup>28</sup>

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### WELL STRATEGY

#### Offer physical and mental health benefits



##### **Health Services and Benefits** - [WELL Feature C05](#)

Provide access to essential health services, screenings and assessments.



##### **Mental Health Support** - [WELL Feature M03](#)

Increase availability of and access to mental health support services and care.

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## WELL STRATEGY

### Cultivate a culture of health



#### **Health Promotion** - [WELL Feature C06](#)

Cultivate a culture of health through various health promotion strategies, including regular communications, stakeholder involvement and health risk assessments.

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## WELL STRATEGY

### Mitigate the risks of smoking



#### **Smoke-free Environment** - [WELL Feature A02](#)

Deter smoking, minimize occupant exposure to secondhand smoke and reduce smoke pollution.



#### **Tobacco Prevention and Cessation**- [WELL Feature M13](#)

Provide access to tobacco cessation support programs and promote prevention by providing education on the health consequences of tobacco use.

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## WELL STRATEGY

### Stay nourished and hydrated



#### **Fruits and Vegetables** - [WELL Feature N01](#)

Promote the consumption of fruits and vegetables by making them easily accessible.



#### **Drinking Water Promotion**- [WELL Feature W06](#)

Promote hydration by making high-quality drinking water readily available.

## WELL STRATEGY

### Enable physical activity throughout the day

#### **Physical Activity Opportunities** - [WELL Feature V06](#)

Provide complimentary physical activity opportunities led by qualified professionals.

#### **Physical Activity Spaces and Equipment** - [WELL Feature V08](#)

Provide access to dedicated physical activity spaces and equipment at no cost.

#### **Physical Activity Promotion** - [WELL Feature V11](#)

Provide a diverse range of physical activity incentives.

## WELL STRATEGY

### Promote healthy sleep habits

#### **Circadian Lighting Design** - [WELL Feature L03](#)

Provide appropriate exposure to light for maintaining circadian health and aligning the circadian rhythm with the day-night cycle.

#### **Sleep Support** - [WELL Feature M11](#)

Support healthy, restorative and consistent sleep habits through policies, education and resources.



# 7 | FOSTER MENTAL RESILIENCE

Mental health is not simply the absence of a mental health condition.<sup>29</sup> Rather, it's a state of well-being in which individuals are able to live to their fullest potential, cope with the normal stresses of life, work productively and contribute to their community.<sup>29</sup> Stress is known to weaken the immune system and chronic stress is associated with increased risk of numerous adverse health consequences, such as depression, cardiovascular disease, diabetes and upper respiratory infection.<sup>29,30</sup> Having access to health services, mental health support and restorative programming are important before, during and after any health crisis.

A connection with nature through plants, water, light and views, as well as an indirect connection through natural materials, patterns, colors or images, has been found to improve mood, recovery from stress and concentration.<sup>31</sup> Research has also shown that breaks from work are linked to employee well-being, higher life satisfaction and mood, sustained workplace performance, lower burnout and fewer health complaints.<sup>32</sup>

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## WELL STRATEGY

### Maintain mental health



#### **Mental Health Promotion** - [WELL Feature M01](#)

Promote mental health and well-being through a commitment to mental health education, programming and initiatives.



#### **Mental Health Education** - [WELL Feature M04](#)

Promote mental health awareness and support by making mental health education and training available.



#### **Stress Support** - [WELL Feature M05](#)

Identify and mitigate sources of workplace stress and provide programs that support stress management.



#### **Restorative Opportunities** - [WELL Feature M06](#)

Create opportunities for mental recovery and restoration by providing micro- and macro-breaks from the workplace.

 **Restorative Programing** - [WELL Feature M08](#)

Support access to programs that promote restoration, relaxation and relief from mental fatigue or stress.

## WELL STRATEGY

### Provide access to nature and natural light

 **Access to Nature** - [WELL Feature M02](#)

Incorporate nature into the design of interior and exterior spaces by integrating plants, water, light and views, as well as natural materials, patterns, colors or images.

 **Enhanced Access to Nature** - [WELL Feature M09](#)

Provide enhanced access to plants, water and natural views.

 **Light Exposure and Education** - [WELL Feature L01](#)

Provide appropriate light exposure in indoor environments by using daylighting or electric lighting strategies, and provide education about the importance of light for health.

 **Enhanced Daylight Access** - [WELL Feature L05](#)

Integrate daylight into indoor environments and provide windows with views outside.



WELL  
FEATURE  
M02



## 8 | SUPPORT COMMUNITY RESILIENCE AND RECOVERY

Providing spaces for community engagement and connection can foster social cohesion, community empowerment and collective trust; all of which have been linked to positive mental and physical health outcomes.<sup>33</sup> Companies that do not demonstrate strong social values through community engagement initiatives may experience lower employee morale, engagement, pride and productivity.<sup>34</sup> Individuals with community and social support generally have better mental health than those without strong community connections.<sup>35</sup>

In addition, strong local food networks help communities prepare for emergencies. Pandemics, wars and natural disasters disrupt supply chains and can heighten food insecurity globally.<sup>36</sup> Local food networks can provide some security during the disruption of national or global supply chains while supporting small and medium sized farms.<sup>37</sup> Additionally, engaging with local suppliers not only helps local businesses, but can also result in social benefits and healthier eating habits.<sup>38,39</sup>

### WELL STRATEGY

#### Support local communities and foster community connections



##### **Civic Engagement** - [WELL Feature C11](#)

Encourage the creation of opportunities for individuals to become actively involved in and connected to the surrounding community through engagement and volunteerism.



##### **Community Access and Engagement**- [WELL Feature C16](#)

Create opportunities for community members to connect and collaborate.

### WELL STRATEGY

#### Provide access to localized food sources



##### **Food Production** - [WELL Feature N12](#)

Improve access to fresh produce and provide opportunities for on-site food production.



##### **Local Food Environment**- [WELL Feature N13](#)

Support healthy food access and reduce environmental barriers to healthy eating.

Explore the WELL features listed above in greater detail on [wellcertified.com](https://wellcertified.com).

Visit [wellcertified.com/placesmatter](https://wellcertified.com/placesmatter) to stay up to date on all of our efforts and resources related to COVID-19.

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1. van Doremalen N, Bushmaker T, Morris DH, et al. Aerosol and Surface Stability of SARS-CoV-2 as Compared with SARS-CoV-1. *New England Journal of Medicine*. 2020/04/16 2020;382(16):1564-1567. doi:10.1056/NE-JMc2004973
2. Center for Disease Control. Show me the Science- When & How to Use Hand Sanitizer in Community Settings. CDC. Accessed April 14, 2020. <https://www.cdc.gov/handwashing/show-me-the-science-hand-sanitizer.html>
3. Smieszek T, Lazzari G, Salathé M. Assessing the Dynamics and Control of Droplet- and Aerosol-Transmitted Influenza Using an Indoor Positioning System. *Scientific Reports*. 2019/02/18 2019;9(1):2185. doi:10.1038/s41598-019-38825-y
4. Mendell MJ, Mirer AG, Cheung K, Tong M, Douwes J. Respiratory and allergic health effects of dampness, mold, and dampness-related agents: a review of the epidemiologic evidence. *Environmental health perspectives*. 2011;119(6):748-756. doi:10.1289/ehp.1002410
5. Bekö G, Clausen G, Weschler CJ. Is the use of particle air filtration justified? Costs and benefits of filtration with regard to health effects, building cleaning and occupant productivity. *Building and Environment*. 2008/10/01/ 2008;43(10):1647-1657. doi:https://doi.org/10.1016/j.buildenv.2007.10.006
6. Kim SW, Ramakrishnan MA, Raynor PC, Goyal SM. Effects of humidity and other factors on the generation and sampling of a coronavirus aerosol. *Aerobiologia*. 2007/12/01 2007;23(4):239-248. doi:10.1007/s10453-007-9068-9
7. Dietz L, Horve PF, Coil DA, Fretz M, Eisen JA, Van Den Wymelenberg K. 2019 Novel Coronavirus (COVID-19) Pandemic: Built Environment Considerations To Reduce Transmission. *mSystems*. 2020;5(2):e00245-20. doi:10.1128/mSystems.00245-20
8. Nieuwenhuijsen MJ, Martinez D, Grellier J, et al. Chlorination disinfection by-products in drinking water and congenital anomalies: Review and meta-analyses. *Environmental health perspectives*. 2009;117(10):1486-1493. doi:10.1289/ehp.0900677
9. Wang H, Masters S, Edwards MA, Falkinham JO, Pruden A. Effect of Disinfectant, Water Age, and Pipe Materials on Bacterial and Eukaryotic Community Structure in Drinking Water Biofilm. *Environmental Science & Technology*. 2014/02/04 2014;48(3):1426-1435. doi:10.1021/es402636u
10. Homeland Security. National Disaster Recovery Framework. 2016:53. June 2016. [https://www.fema.gov/media-library-data/1466014998123-4bec8550930f774269e0c5968b120ba2/National\\_Disaster\\_Recovery\\_Framework2nd.pdf](https://www.fema.gov/media-library-data/1466014998123-4bec8550930f774269e0c5968b120ba2/National_Disaster_Recovery_Framework2nd.pdf)
11. Labor USDo. Employment Characteristics of Families - 2016. 2017.
12. Metlife Mature Market I. The Metlife Study of Caregiving Costs to Working Caregivers: Double Jeopardy for Baby Boomers Caring for their Parents. 2011:24. <https://www.caregiving.org/wp-content/uploads/2011/06/mmi-caregiving-costs-working-caregivers.pdf>
13. UNESCO. COVID-19 Educational Disruption and Response. UNESCO. April 15, 2020. Accessed April 15, 2020. <https://en.unesco.org/covid19/educationresponse>
14. Frontczak M, Schiavon S, Goins J, Arens E, Zhang H, Wargocki P. Quantitative relationships between occupant satisfaction and satisfaction aspects of indoor environmental quality and building design. *Indoor Air*. 2012;22(2):119-131. doi:10.1111/j.1600-0668.2011.00745.x
15. Health Enhancement Research Organization, American College of Occupational and Environmental Medicine, Alliance. CC. Biometric health screening for employers: consensus statement of the health enhancement research organization, American College of Occupational and Environmental Medicine, and care continuum alliance. *J Occup Environ Med*. Oct 2013;55(10):1244-51. doi:10.1097/JOM.0b013e3182a7e975
16. Banjo S, Yap, Livia., Murphy, Colum., Chan, Vinicy. The Coronavirus Outbreak has become the world's largest work-from-home-experiment. *Time*: Time; 2020.
17. Owl Labs. 2018 Global State of Remote Work. Accessed April 15, 2020. <https://www.owllabs.com/state-of-remote-work/2018>
18. Kaushal Shah DK, Hema Mekala, Birinder Mann, Krishna Desai, Rikinkumar S. Patel. Focus on Mental Health During the Coronavirus (COVID-19) Pandemic: Applying Learnings from the Past Outbreaks. *Cureus*. 2020;12(3) doi:doi:10.7759/cureus.7405
19. Center for Disease Control. Coronavirus Disease 2019 (Covid-19): Situation Summary. CDC. Updated April 7, 2020. Accessed March 26th, 2020. <https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/summary.html>

20. Jha P, Ramasundarahettige C, Landsman V, et al. 21st-Century Hazards of Smoking and Benefits of Cessation in the United States. *New England Journal of Medicine*. 2013;368(4):341-350. doi:10.1056/NEJMsa1211128
21. United States. Public Health Service. Office of the Surgeon General QUSPHSOotSG. The health consequences of smoking--50 years of progress : a report of the Surgeon General. Health consequences of smoking, fifty years of progress : a report of the Surgeon General. U.S. Department of Health and Human Services, Public Health Service, Office of the Surgeon General; 2014.
22. World Health Organization. Diet, nutrition and the prevention of chronic diseases-Report of the joint WHO/FAO expert consultation. 2003.
23. Institute of MEdicine. Dietary Reference Intakes for Water, Potassium, Sodium, Chloride and Sulfate. In: Washington, DC: The National Academies Press; 2005. doi:10.17226:10925.
24. World Health Organization. Physical Activity. World Health Organization. Updated 23 February 2018. Accessed April 15, 2020. <https://www.who.int/en/news-room/fact-sheets/detail/physical-activity>
25. Center for Disease Control. Facts about Physical Activity. CDC. Accessed Dec 6, 2017. <https://www.cdc.gov/physicalactivity/data/facts.htm>.
26. Sallis JF, Bull F, Guthold R, et al. Progress in physical activity over the Olympic quadrennium. *Lancet*. Sep 24 2016;388(10051):1325-36. doi:10.1016/s0140-6736(16)30581-5
27. Centers for Disease Control and Prevention. Short sleep duration among workers- United States, 2010. Vol. 61. 2012:281-285. *Morbidity and Mortality Weekly Report*. <https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6116a2.htm>
28. Boubekri M, Cheung IN, Reid KJ, Wang CH, Zee PC. Impact of windows and daylight exposure on overall health and sleep quality of office workers: A case-control pilot study. *J Clin Sleep Med*. 2014;10(6):603-611.
29. World Health Organization. Mental health: strengthening our response. WHO. <http://www.who.int/mediacentre/factsheets/fs220/en/>. Published 2016. Accessed January 11, 2018.
30. American Psychological Association. (2006). Stress Weakens the Immune System. <https://www.apa.org/research/action/immune>
31. Kant I, Beurskens a JHM, Amelsvoort LGPM Van, Swaen GMH. An epidemiological approach to study fatigue in the working population: the Maastricht Cohort Study. 2003:32-39.
32. Fritz C, Ellis AM, Demsky C a., Lin BC, Guros F. Embracing work breaks: Recovery from work stress. *Organ Dyn*2013;42(January):274-280.
33. Clark CJ, Guo H, Lunos S, et al. Neighborhood cohesion is associated with reduced risk of stroke mortality. *Stroke*. 2011;42(5):1212-1217. doi:10.1161/STROKEAHA.110.609164.
34. Turner YS. The Civic 50: Best Practices in Corporate Community Engagement. 2015:1-8. [https://www.conference-board.org/retrievefile.cfm?filename=TCB-GT-V1N9-Best\\_Practices\\_CorpCommunityEngmnt1.pdf&type=subsite](https://www.conference-board.org/retrievefile.cfm?filename=TCB-GT-V1N9-Best_Practices_CorpCommunityEngmnt1.pdf&type=subsite).
35. U.S. Department of Health and Human Services. Healthy People 2020: Social Determinants of Health. <https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-of-health>. Accessed February 7, 2018.
36. World Food Programme. Covid-19 Pandemic. March 20.
37. Roy et al. (2019). 'Supply Chain Analysis of farm to restaurant sales.' Case studies in Food Retailing and. Distribution. Ed. John Byrom and Dominic Medway. Elsevier.
38. Litt JS, Soobader MJ, Turbin MS, Hale JW, Buchenau M, Marshall JA. The influence of social involvement, neighborhood aesthetics, and community garden participation on fruit and vegetable consumption. *Am J Public Health*. 2011;101(8):1466-1473.
39. Crompton D, Cheadle A, Solomon L, Maring P, Wong E, Reed KM. Kaiser Permanente's Farmers' Market Program: Description, impact, and lessons learned. *J Agric*. 2011;2(22):29-36. doi:10.5304/jafscd.2012.022.010.