



COVID-19's Lessons for the Built Environment

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Within the last month, in a span of less than three months, the United States surpassed 100,000 deaths from the COVID-19 pandemic. Not a day seemingly goes by without another 500 to 1,000 lives being lost, and we find ourselves appalled at the almost cavalier way some of our leaders seem to be approaching this unprecedented loss of life and the continuing and unremitting danger being faced by our physicians and nurses as well as all the other workers who are continuing to try to hold together an increasingly fragile supply chain to deliver all of our basic needs. More to the point, it's been stunning how badly they have done in educating the public about this virus and the absence of critical thinking about several structural inadequacies in our society that have been highlighted by this pandemic.

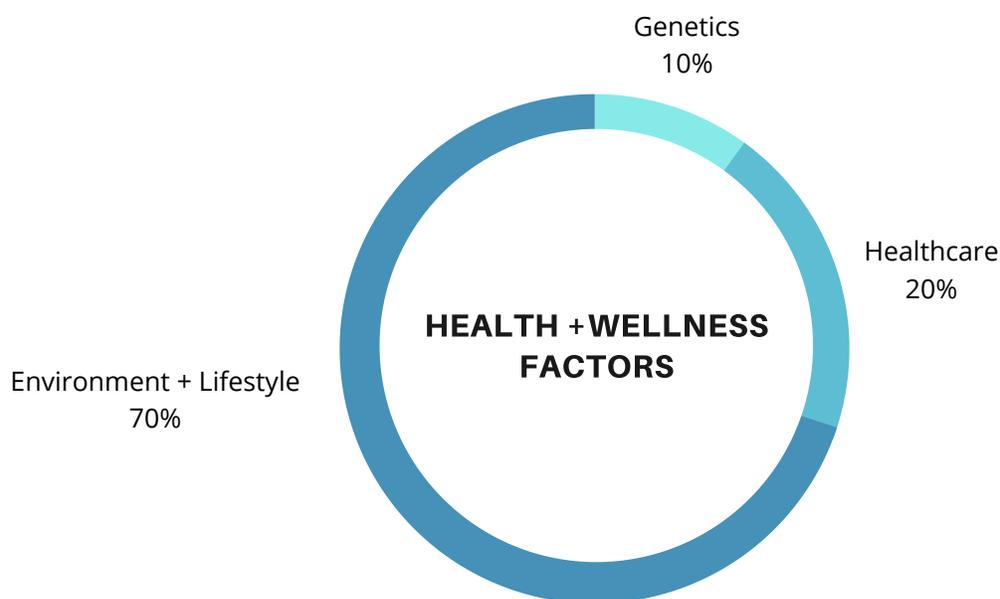
As architects and sustainability consultants, examining each of those areas is beyond our pay grade and areas of expertise, but they include an examination of the country's for-profit health care system predicated on the linkage between health insurance and employment, ongoing socio-economic inequities between white communities and communities of color and the divide between urban/suburban and exurban/rural communities too, the fragility of the service-based economy that has emerged in the United States from the ashes of its old, mid-20th Century industrial-based economy, and the long-term decay and, in some cases, collapse of international institutions that should have been bolstered the past two or three decades given the international trend toward globalization. Each of these topics would be a book (or three) in of itself, but I wanted to take this moment to talk a little bit about how COVID-19 has really illustrated a need for the United States to invest in wellness-focused built environments and healthier communities.

Your Health and Wellness: 10/20/70

To begin, I want you to think about all the aspects that influence your health and wellness as one big pie chart. Roughly speaking, 10% of that pie is your genetics. Genetics tell us your predisposition towards cancer, diabetes, heart disease, etc. that is encoded in your DNA you inherit from your mom and dad and grandparents. Generally, there's not much we can do about our genetics, so let's set that aside in this discussion.

The next 20% of the pie is our access to healthcare, mostly the acute health care that's needed anytime we become ill or injured. How quickly can we get to a physician? How skilled are they? How good are the treatments they can prescribe or the diagnostic and surgical tools they can wield? In 2018, the United States spent 17.7% of our GDP, on health care [according to the Centers for Medicare and Medicaid Services](#). That's over \$3.6 trillion dollars, annually, toward a small 20% slice of the pie that makes up our overall health and wellness.

So, what's the rest? Roughly 70% (depending on the study you're looking at) of your health and wellness is determined by your environment and your lifestyle choices. As a rule, with some notable exceptions in recent history, we in the United States have reasonably good environmental factors: access to clean air, clean water, etc.



Our lifestyle choices leave more to be desired, though. These include some of the obvious insurance industry questions: do you smoke, drink to excess, or use narcotics or other controlled substances? But they also include our activity levels as well as our nutrition, which are areas where the United State struggles greatly relative to many other developed countries.

Our food staples include, among other things, far more sugar than the foods consumed in places like the Pacific Rim or Europe, and our activity levels also fall well below that of our international counterparts. On the latter account, some of our lower activity levels can be chalked up to the United States' lower density and lesser reliance on human-powered means of transportation like walking and biking. But, while these provide small excuse for our lower activity levels, the fact of the matter is we simply are far more sedentary than many of our international contemporaries.

As a consequence, [according to the CDC](#), a staggering six in ten American adults suffer from a chronic disease either because of genetics, environmental factors, their lifestyle choices, or some confluence of the three. Four in ten American adults suffer from two or more of those chronic diseases.² And, [according to an Emory University study in 2007](#), the American rates of chronic disease were notably higher than in Europe:

- Older U.S. adults (50 and older) were twice as likely as older European adults to have heart disease.
- 12.2% of older U.S. adults had cancer, compared with 5.4% of older European adults.
- 16% of older U.S. adults had diabetes, compared with 11% of older European adults.
- 33.1% of older U.S. adults were classified as obese, compared with 17.1% of older European adults.
- 53% of older U.S. adults were active or former smokers, compared with 43% of older European adults.³

But it's not just adults that suffer from these issues with chronic illnesses (remember this concept, you will need it later). [Roughly one in four children in the United States also suffer from at least one form of chronic illness and one in twenty has multiple chronic conditions.](#) The most prevalent reason is the high rate of childhood obesity in the United States (20%, [according to the CDC](#)) which largely traces back to nutrition and activity levels. Young and old alike, Americans are simply not that healthy to begin with on average. While we have a technologically advanced health care industry in the United States led by the best practitioners anywhere in the world, we're still being outpaced by countries that spend less on their health care systems and have lesser levels of medical sophistication.

Consequently, we're shoveling money into a public health system that's ultimately destined to fail. Long before "bending down the curve" of COVID-19 was a thing, health policy experts were trying to "bend down the curve" of escalating healthcare costs in the United States. [Between 1970 and 2018, the cost per capita of healthcare in the United States \(adjusted for inflation\) rose from \\$1,832 per person to \\$11,172 per person due in no small part to the ever-escalating rate of chronic illnesses in America.](#) When we participated in the IWBI's first Well Accredited Professional training at the Cleveland Clinic for Wellness in 2015, the doctors there posited that the only way to make America's current healthcare system economically sustainable was to leverage better environmental factors and champion better lifestyle choices to drive down the rates of chronic illness in the United States. Without a focused effort to accomplish these end goals, higher morbidity and higher healthcare costs would be inevitable.

Americans Are Likely More Vulnerable to COVID-19

Granted, the death rate per capita in the United States has been lower than most developed nations, spare Germany, but we suspect what we'll discover at the end of this crises is that the average American was statistically more likely to be vulnerable to COVID-19. Mitigating factors like the lower density of the United States slowing the virus' spread, earlier implementation of social distancing compared to other countries like the United Kingdom, and the aforementioned greater might of the American healthcare system likely saved us an even higher death toll. But, compared to many of our contemporaries, we still suspect the average American patient admitted for the coronavirus had a harder set of cards to play.

One of the stupidest things, frankly, that was witnessed in the early days of this pandemic was the national media and the general public's uncritical recitation of the "fact" that coronavirus only affected old people. We never knew a virus or other pathogen to check someone's ID to see their chronological age. Our suspicion was that the far more accurate thing to say was that coronavirus disproportionately affects those with pre-existing health conditions, which include chronic health conditions. And yes, as already noted, Americans over 50 are far more likely to have those chronic health conditions, but in the United States even a significant number of young people also have these pre-existing health conditions, too. So, we watched with horror as younger people, who believed themselves immune to the virus' attack, downplayed and often ignored the danger in the early days of the crises.

Since then, significant numbers of younger victims have also succumbed to the illness. “Comorbidity” began to enter the country’s lexicon quickly as an [April 22, 2020 study of 5,700 COVID-19 patients admitted to New York City area hospitals published in the Journal of the AMA](#) confirmed that 94 percent of the patients had a pre-existing chronic health problem and 88 percent had two or more. The three most prevalent chronic conditions were hypertension (56.6 percent), obesity (41.7 percent), and diabetes (33.8 percent). Indeed, a [Washington Post story published in April](#) with the help of the Yale School of Health notes that over 15,000 “excess deaths” in the early days of the pandemic in the United States may have been COVID-19-related deaths misdiagnosed as deaths due to those existing morbidities.

Understanding a little more about the insidious way the virus operates further shines a light on how existing chronic conditions may play right into its hands, so to speak. First, it’s important to dispel the notion that COVID-19 only attacks a patient’s lungs. Far from it. As an [article in Science Magazine](#) notes,

“[The disease] can attack almost anything in the body with devastating consequences,” says cardiologist Harlan Krumholz of Yale University and Yale-New Haven Hospital, who is leading multiple efforts to gather clinical data on COVID-19. “Its ferocity is breathtaking and humbling.”

The virus typically enters the through the nose or mouth and travels down the windpipe where it initially does battle with the body’s immune system, manifesting itself in the publicly well-known symptoms of a dry cough, fever, sore throat, and headaches. If the virus reaches the lungs, then it becomes far more deadly feasting on the air sacs in the lungs and triggering



an immune system response that presents as pneumonia making it difficult to breath and impairing the lungs’ ability to take oxygen and transfer it to the bloodstream. Patients with pre-existing respiratory issues may succumb to these symptoms, but one of the interesting and frightening facts about the virus is that its impacts on the greater cardiovascular system may be even more deadly.

In some patients, the body reacts to the reduced ability of the lungs to oxygenate the blood stream by making the cardiac system work harder, in which case a weak heart could obviously be a liability. But, in other cases the immune system response may take the form of a massive “cytokine storm” in which the body overreacts and begins to attack not just the virus, but also healthy tissues, causing damage to patients’ veins and capillaries and blood clots that can damage the heart and veins causing heart attacks, strokes, and seizures. Damage to the veins also impairs the ability to move oxygen from the lungs to the rest of the body, possibly more so than damage to the air sacs in the lungs.

If COVID-19 targets blood vessels, that could also help explain why patients with pre-existing damage to those vessels, for example from diabetes and high blood pressure, face higher risk of serious disease. Recent Centers for Disease Control and Prevention (CDC) data on hospitalized patients in 14 U.S. states found that about one-third had chronic lung disease—but nearly as many had diabetes, and fully half had pre-existing high blood pressure.

Mangalmurti says she has been “shocked by the fact that we don’t have a huge number of asthmatics” or patients with other respiratory diseases in HUP’s ICU. “It’s very striking to us that risk factors seem to be vascular: diabetes, obesity, age, hypertension.”

The virus may also attack the kidneys directly or, more likely, by starving the body’s filtering organs of the oxygen-rich blood they need to do their job, putting kidney failure on the table as another way that COVID-19 kills. The virus will also attack the intestines, causing diarrhea in some patients, and conjunctivitis and inflammation in the eyes. Medication during intense hospitalization can also damage the liver, too. In other words, the virus can attack the body in a multitude of ways meaning it can exploit any number of pre-existing chronic illnesses from respiratory issues caused by smoking to vascular issues caused by heart disease to kidney disease caused by diabetes to liver damage caused by alcoholism. And because Americans are statistically more likely to have any number of these chronic illnesses across multiple age and demographic groups, COVID-19 is likely a deadlier opponent for the average American patient.

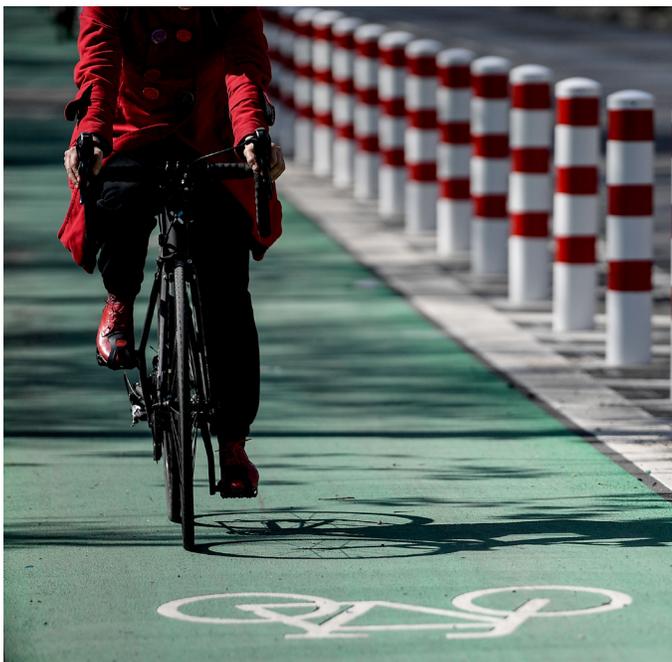
A Wake-Up Call for Public Health and Wellness

When the current crisis is over, and we have a vaccine and/or therapeutic treatments to deal with this virus, the focus will inevitably turn toward lessons learned from the pandemic. Some of these will be obvious. We'll invariably see a push to strengthen international institutions and partnerships to identify and contain outbreaks in their infancy before the spread around the world. Here in the United States, we'll almost certainly see a more significant investment in the physical and human assets necessary to fight future outbreaks. That will likely include increasing hospital capacity across the country and especially in exurban and rural areas of the nation that have seen their health systems atrophy due to lack of funding. We'll also likely see an across the board investment in stockpiling the tools and equipment of the trade from ventilators to gowns to face shields, and masks. And, I suspect we'll see a push to train more medical professionals to staff these new facilities and use the greater abundance of equipment.

It should also be understood that all of the above alone would just be an investment in the same strategic approach that made us more susceptible to COVID-19 to begin with. In the aftermath of the national trauma caused by the coronavirus, we need to gain the wisdom to stop throwing piles of money at that 20% of our health and wellness pie alone and start to make greater investments in improving the environmental factors and lifestyle choices that make up 70% of the health and wellness pie and will help make our people more resilient to future illnesses and make our healthcare system more economically sustainable. At the end of World War II, the United States invested in the Marshall Plan to rebuild Europe and head off the economic inequities that led to the rise of fascism that happened after World War I. It was wildly successful. Similarly, we must learn our lessons after COVID-19 and not only make our healthcare system stronger, but also invest in the built environment improvements and advocacy that curtail the chronic illnesses that have made COVID-19 such a deadly potion.

It seems inevitable that the economic recovery from the current pandemic will include some form of federal infrastructure program as a part of a Keynesian stimulus approach. Such federal infrastructure programs should emphasize and prioritize infrastructure that promotes health and wellness. This will mean public investments in amenities that improve activity levels and promote greater fitness in communities.

Safe bike lanes and sidewalk improvements in urban and suburban areas should be considered a part of the post COVID-19 health and wellness strategy. Improved and expanded parks with hiking trails and sporting facilities ranging from pools to basketball courts should also be tactical weapons in our war on chronic illness. It should also include investing in solutions to the food insecurity problem that exists across the full spectrum of urban and rural areas of the country. One of the more interesting observations of this quarantine era was on [April 2 when the New York Times](#) used cell phone GPS tracking data to show which areas of the country were not honoring stay-at-home orders. You don't have to squint that hard to see some correlation with the [USDA's 2016 map of food deserts](#). Improving access to healthy foods in poor urban and rural areas alike ought to also be a goal of the post COVID-19 strategy.



Building-level investments in health and wellness ought to also be incentivized. At Epsten Group, we believe in certification programs that focus on health and wellness advances that have been vetted by healthcare practitioners and scientists across the world. And by participating in these certification programs, facilities have a letter of attestation to prove that they have incorporated these design ideas, behavior influencers, and policies.

Obviously, new hospitals and community clinics are a natural fit for pursuing certifications in programs like the IWBI's WELL Building Standard and the LEED Healthcare Rating System, but other facilities can also be designed and built with health and wellness in mind. And in the same sense, senior living communities can look to the Fitwel Communities rating system for guidance on design measures and policies to increase health and wellness for their programs. When certification isn't a great fit, we can look to these rating systems to apply some of the more important health and wellness strategies as a start. Offices and schools can integrate improved air and water filtration, provide ample access points for clean drinking water, emphasize active vertical circulation and furnishings, and even include cafeterias and dining halls mindfully sequenced to promote better nutritional choices, as well as healthier food prep and hygiene. All of the above can easily dovetail with sustainability-related goals to reduce water and energy consumption, curtail vehicle miles traveled by traditional internal combustion vehicles, and provide larger green spaces for mental health, public recreation, all with microclimate and carbon sequestration benefits with the end game of contributing to a healthier, more prosperous, and more just world.



Where We Are Placing Our Faith

We've seen the benefit of incorporating health and wellness into our own company, so it makes our job easy when it comes to speaking from experience on the aspects within rating systems that make sense for our clients based on their values, culture, goals, and budget. While the design-based health and wellness aspects of our new office space aren't being utilized during the pandemic, we have shifted our focus on mental health as people continued to work from home. While working from home, we have also been sharing research and articles so that our entire consulting group can answer questions that may come from our clients as we look to return to the office. And, not surprisingly, what we have found to be most useful for our clients is research that discusses building faith and trust for their team that returning to the office doesn't place people at risk or build unnecessary stress.

Where we have built our own faith is bound to the Fitwel and WELL rating systems. We have educated our staff on the environmentally friendly, yet effective cleaning supplies that we have fully stocked that are outlined in our policies built from these rating systems. We already have signage throughout the office reminding people to wash their hands. We will use a UV wand to clean our list of high touch surfaces frequently, and



we have placed hand sanitizer stations at key entry points. We have HEPA filtration devices that are already in use to focus on our air quality. But above all of these measures, we have the policies and the rigor from our rating systems that ensure that we will continue to follow these health-safety measures and offer education focused on mental and physical health as we look to move forward in what is our new normal.

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