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# Is That Safe To Eat?

Design, The Grocery Store, and The  
Future of Shopping

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▲  
**U.S. Coal and Coke  
 Company Store in  
 Gary, West Virginia.**  
 (Courtesy of the U.S. Na-  
 tional Archives and Records  
 Administration)

Most people have witnessed firsthand the impact that the COVID-19 pandemic has had on grocery shopping. From new spatial requirements that existing store layouts are unable to meet to shortages in product availability, the pandemic has highlighted the limitations of existing stores. How can the grocery store evolve as a result of the lessons we are learning?

### HISTORY AND CURRENT ISSUES

Relatively speaking, grocery stores are a new concept in the way people shop for food. Before the early twentieth century, Americans visited multiple stores to make their purchases. Customers did not shop for themselves. Instead, a grocery list would be handed to a clerk who would retrieve and pack items. These stores were often run on a credit system which meant cash was not carried. There were no labels, no brands. Markets were essential in providing people with fresh fruits and vegetables. It wasn't until 1912, when the Great Atlantic & Pacific Tea Company (A&P) introduced their first economy grocery store, and 1916, when Piggly Wiggly opened the first self-service grocery store, that the way Americans shopped for food drastically changed. (Appendix A provides further research)



**Physical stores may not always be necessary.”**

While the grocery store model has mostly remained unchanged since then, new competitors have emerged. Warehouses, first introduced in the early 1970s, have become popular as they offer bulk shopping combined with discount pricing. Walmart’s success in selling groceries along with general merchandise allowed Target to follow suit. Whole Foods’ focus on organic and local foods resulted in grocery stores designating organic sections of their own. Most recently, Peapod and other online grocers have shown that physical stores may not always be necessary. (Appendix B provides further research)

**Original Piggly-Wiggly Store in Memphis, Tennessee, 1918.**  
(Courtesy of the Library of Congress) ▶



In addition to increased competition, the COVID-19 pandemic has created new complications for the grocery store. Weakened supply chains, including meat processing plants that have been forced to temporarily close, have left grocery stores with product shortages and an uncertainty of how long they will continue. Existing store layouts make it difficult for shoppers to maintain a distance of six feet from others. Grocery store employees, considered essential during the pandemic, must regularly expose themselves to the virus and many have become ill. (Appendix C provides further research)



The pandemic has raised several questions:

- Will limiting the number of shoppers in a grocery store be permanent?
- How will grocery stores ensure that employee and customer safety is a top priority?
- How can customers be encouraged to feel that the packages they bring into their homes are “safe?”
- Are there other venues for purchasing produce, meat, and dairy that don’t rely on a food system that can so easily be broken?
- How will increased familiarity with food delivery services, curbside pick-up, and farmers’ markets affect the grocery store?

**Aerial view of a Fred Meyer superstore in Redmond, Washington.**  
(Courtesy of Piqsels) ▶



We have included various considerations and conceptual ideas that can be used for both existing and future grocery stores.

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## CONTRIBUTOR

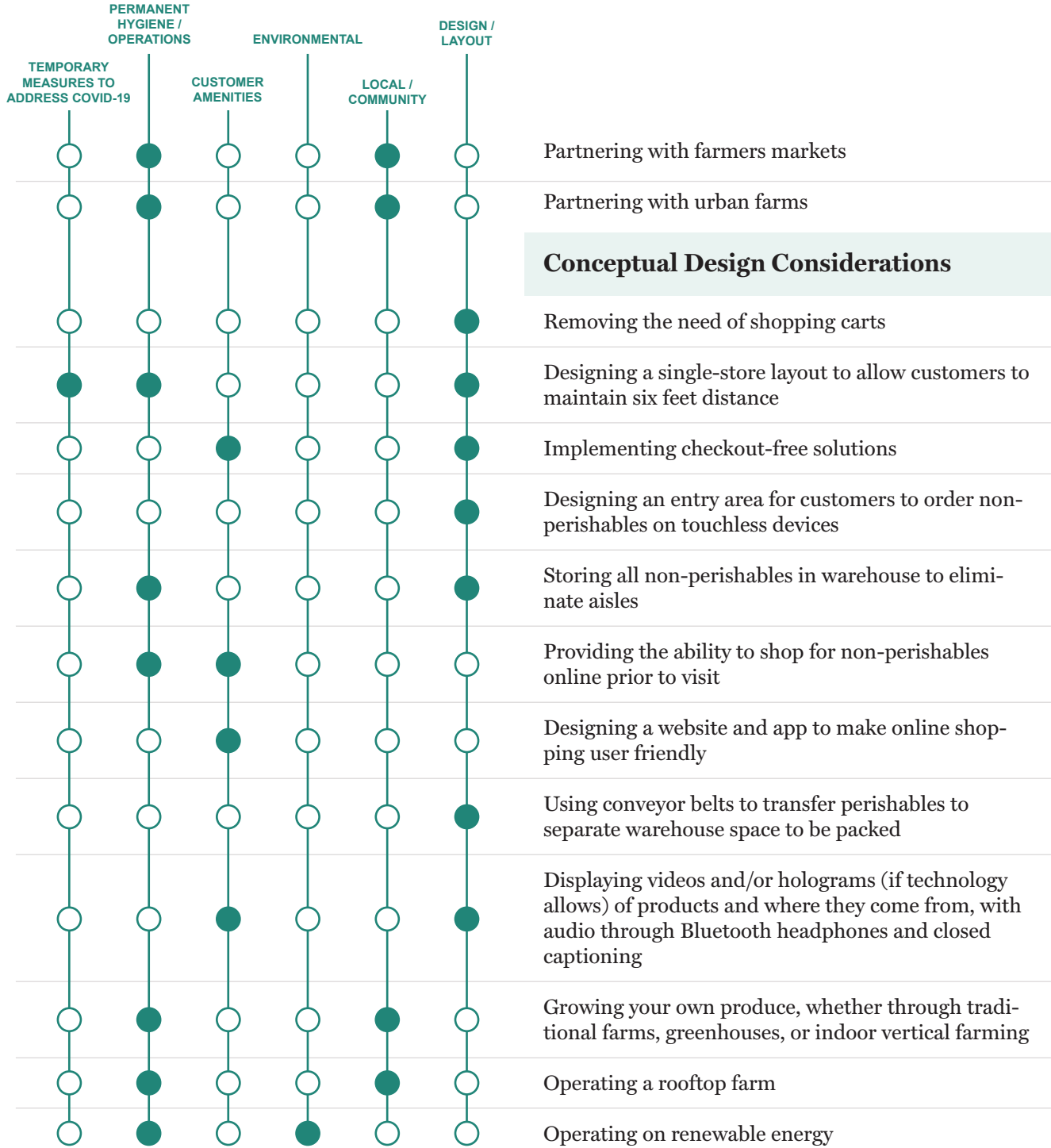


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# Considerations & Conceptual Ideas

TEMPORARY MEASURES TO ADDRESS COVID-19	PERMANENT HYGIENE / OPERATIONS	CUSTOMER AMENITIES	ENVIRONMENTAL	LOCAL / COMMUNITY	DESIGN / LAYOUT	
●	○	○	○	○	○	<b>Entry Area Considerations</b>
○	●	○	○	○	○	Providing masks and gloves at store entry
○	○	○	○	○	○	Installing contactless doors
●	●	○	○	○	●	Installing a shoe sanitizing station at entry to minimize germs carried through store
●	○	○	○	○	○	Ensuring shopping carts are regularly cleaned and sanitized
●	●	○	○	○	●	Providing outdoor covering for customers waiting in line
○	○	○	○	○	○	<b>In-Store Considerations</b>
○	●	○	○	○	○	Improving air circulation through windows or high-performance air purification filters
○	●	○	○	○	○	Upgrading mechanical system to include disinfecting lights
●	●	○	○	○	●	Installing self-dispensing hand sanitizing stations throughout store
●	●	○	○	○	○	Ensuring surfaces are regularly cleaned and sanitized
●	●	○	○	○	○	Ensuring break areas and restrooms are regularly cleaned and sanitized
●	●	○	○	○	○	Training all employees on cleaning procedures
●	○	○	○	○	○	Providing regular temperature checks for employees
●	●	○	○	○	○	Limiting the number of customers in the store at one time
●	●	○	○	○	○	Decreasing amount of product handled by customers to limit spread of virus
○	●	○	○	○	●	Allowing customers to shop for produce, meat, seafood, and dairy, but requiring employees to handle these items

TEMPORARY MEASURES TO ADDRESS COVID-19	PERMANENT HYGIENE / OPERATIONS	CUSTOMER AMENITIES	ENVIRONMENTAL	LOCAL / COMMUNITY	DESIGN / LAYOUT	
○	●	○	●	○	○	Displaying produce in bins to reduce plastic packaging
○	●	○	●	○	○	Wrapping meat and seafood in paper to reduce single-use plastic and Styrofoam
○	●	○	●	○	○	Offering packaging-free options
○	○	●	●	○	○	Increasing the amount of organic, pesticide-free, hormone-free, and rBST-free products
○	●	○	○	○	○	Offering fewer SKUs
○	●	●	○	○	○	Using advanced analytics to determine what is popular among customers
<b>Check-Out Considerations</b>						
○	●	○	○	○	●	Installing plexiglass at all registers
●	○	○	○	○	○	Reducing number of registers to allow more space between employees and customers
●	○	○	○	○	○	Requiring customers to pack groceries at check out
○	●	●	○	○	●	Installing contactless payment options
○	○	○	●	○	○	Examining cost and environmental benefits of plastic bags vs. reusable bags
<b>Curbside Pickup / Home Delivery Considerations</b>						
○	●	●	○	○	●	Creating a separate curbside pickup area for online orders
○	●	●	○	○	○	Partnering with an online grocer to provide home delivery
<b>Purchasing Considerations</b>						
○	○	●	○	○	○	Providing a membership service that offers discounts to customers while increasing profitability
○	●	○	○	●	○	Purchasing from local and/or regional growers and producers to decrease potential product shortages



**Conceptual Design Considerations**

## APPENDIX A - HISTORY

In 1912, the Great Atlantic & Pacific Tea Company (A&P) introduced their first economy grocery store. Where their earlier stores sold limited items including teas, coffees and spices, customers could now purchase a wide range of groceries on a cash-and-carry basis.<sup>1</sup> Shortly after, in 1916, Piggly Wiggly opened as the first self-service grocery store in the U.S. Customers now followed a single aisle that allowed them to browse and shop for what they wanted.<sup>2</sup> King Kullen, Safeway, and Kroeger followed soon after and altered the way Americans shopped for food.

Several factors contributed to the grocery store's early success. Outside of convenience, commercial uses of the cardboard box and the tin can kept food fresh.<sup>3</sup> The birth of the railroad during the Industrial Revolution meant that produce could be transported over a greater distance. This allowed larger amounts to be brought to rapidly expanding cities. Wholesale terminal markets, like the Hunts Point Market, were strategically built near railroads and highways as a place to store produce before it was distributed locally.<sup>4</sup> The automobile and home refrigeration meant Americans could purchase more than they previously would have as they no longer needed to carry items home. They could also buy a greater quantity of perishable items and store them in refrigerators.<sup>5</sup> By the 1950s, the transition to grocery stores was mostly complete, and by the 1960's, they were selling 70 percent of the nation's groceries.<sup>6</sup>

## APPENDIX B - OTHER FOOD SHOPPING VENUES

### Farmers' Markets

The first farmers' market in the U.S. dates to 1730, where a 120

1 Johnson, Colleen. "The Evolution of the Grocery Store," Philips Edison & Company. July 6, 2017. <https://www.phillipse-dison.com/about/social-media/blogs/july-2017/the-evolution-of-the-grocery-store>

2 Macfadyen, Tevere. "The Rise of the Supermarket," American Heritage. October/November 1985. <https://www.american-heritage.com/rise-supermarket>

3 Johnson, "The Evolution of the Grocery Store," Philips Edison & Company.

4 Friedman, Avi. "From roadside trading to hipster supermarkets, how we buy food reflects the state of the economy," Quartz. January 26, 2017. <https://qz.com/895122/the-history-of-markets-reveals-a-lot-about-the-state-of-the-economy-and-society/>

5 Johnson, "The Evolution of the Grocery Store," Philips Edison & Company.

6 Macfadyen, "The Rise of the Supermarket," American Heritage.



square foot lot in the center of Lancaster, PA was designated by city planners as a public market.<sup>7</sup> Farmers' markets continued to pop up throughout the country and have maintained significance throughout the years. During WWII, while California farmers watched their fruit rot as they were unable to sell to short-staffed canneries, city residents struggled to find fresh produce.<sup>8</sup> These circumstances led to San Francisco's first farmers' market in August 1943. There are now more than 8,600 markets in the U.S.,<sup>9</sup> with over 400 in New York State.<sup>10</sup> The large increase in popularity over recent years can be attributed to many factors including the local, quality produce that shoppers find, as well as a providing a connection to small, family run farms.

### **Bodegas**

Bodegas, known as corner stores outside of New York City, have been a part of daily life for years, serving as a convenient place to buy a quart of milk or a loaf of bread. Not only do they often carry products specific to the neighborhoods they're located in, they also carry items in smaller sizes, providing an option for people who can't afford grocery store prices. In many low-income neighborhoods, bodegas are often the only nearby food source and therefore the only option in finding fresh fruits and vegetables. While they continue to play a significant role in where people shop for groceries, rising rents and food prices are forcing many to close.<sup>11</sup>

### **Warehouse Models**

The first warehouse model was introduced by the A&P in 1971. While it was not successful in the long-term, Costco and Sam's Club both emerged shortly after and remain two of the largest chains in the U.S. Costco operates its business model on memberships, low prices, and great value. By offering roughly 3,700 SKUs to customers<sup>12</sup> – the average grocery store offers between

7 Neal, Arthur. "Meet Me at the Market' – The Evolution of a Farmers Market," USDA. April 26, 2019. <https://www.usda.gov/media/blog/2013/08/07/meet-me-market-evolution-farmers-market>

8 White, April. "The Wartime Origins of Farmers Markets," JSTOR Daily. August 10, 2017. <https://daily.jstor.org/the-war-time-origins-of-farmers-markets/>

9 Farmers Market Coalition. <https://farmersmarketcoalition.org/education/qanda/>

10 New York State Department of Agriculture and Markets. <https://agriculture.ny.gov/farming/farmers-markets>

11 Hayasaki, Erika. "The N.Y. bodega is in a corner," Los Angeles Times. August 8, 2018. <https://www.latimes.com/archives/la-xpm-2008-aug-08-na-bodega8-story.html>

12 KLM. "Costco Wholesale: A Warehouse Powerhouse,"

15,000 and 60,000 depending on its size<sup>13</sup> – and many private label items, Costco focuses on selling popular items while having less product, allowing the company to be profitable. Its discount prices and bulk items continue to attract shoppers. Even with its required yearly membership fee, Costco now has over 98 million cardholders.<sup>14</sup>

### Discount Retailers

In 1988, Wal-Mart opened its first supercenter, causing perhaps the largest disruption to the grocery store. Combining general merchandise and groceries allowed customers to do an even greater portion of their shopping in a single location. Convenience and low prices, two of the foundations of Wal-Mart's business model, generated over \$180 billion in grocery sales for the company in 2018.<sup>15</sup> Today, it is the nation's largest grocer. Wal-Mart's success spurred Target, the second-largest discount retailer in the U.S., to add groceries to its stores in 1995. In 2009, it introduced its P-Fresh program which focused on an updated layout to increase available grocery products.<sup>16</sup>

### Online Platforms

The first online grocery delivery platform was introduced by Peapod in 1989. In the years since, others have followed including FreshDirect, Mercato, Instacart, and most notably, Amazon Fresh and later, its expanded delivery service through the company's purchase Whole Foods in 2017. While twenty two percent of apparel sales and thirty percent of computer and electronic sales are made online<sup>17</sup>, the same cannot be said for groceries. Online

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Digital Initiative. December 6, 2015. <https://digital.hbs.edu/platform-rciom/submission/costco-wholesale-a-warehouse-powerhouse/>

13 Peer, Darlene. "What Does SKU Mean in the Grocery Business?" Chron. June 4, 2020. <https://smallbusiness.chron.com/sku-mean-grocery-business-75577.html#:~:text=According%20to%20the%20Food%20Marketing,from%2015%2C000%20to%2060%2C000%20SKUs.>

14 Conway, Jan. "Number of Costco warehouses 2019, by country," Statista. January 7, 2020. <https://www.statista.com/statistics/284431/number-of-costco-warehouses-2013-by-country/>

15 Meyersohn, Nathaniel. "Scathing report says Walmart's grocery store dominance must be stopped," CNN. June 27, 2019. <https://www.cnn.com/2019/06/27/business/walmart-groceries-monopoly-amazon-antitrust/index.html>

16 Trefis Team. "How is Target's Grocery Business Evolving?" Nasdaq. September 23, 2013. <https://www.nasdaq.com/articles/how-targets-groceries-business-evolving-2013-09-23>

17 Semuels, Alana. "Why People Still Don't Buy Groceries Online," The Atlantic. February 5, 2019. <https://www.theatlantic.>

sales are currently at about three percent.<sup>18</sup> To be successful, online grocers will need to attract more customers – many people still want to pick their own fruits and vegetables – while attempting to lower operating costs. Delivering groceries is not as simple as delivering clothes. Perishables need to be kept cold. Shipping costs are high. Traffic causes delivery delays.

## APPENDIX C - CURRENT ISSUES

As Americans limit their number of trips to decrease exposure to the virus, they are more often buying in bulk, leaving certain products hard to find. Stores have attempted to solve this problem by limiting the quantity customers can purchase of a single item. While this is a quick fix, it is only a temporary solution to a larger problem, one seen in the stories of farmers once again watching their food go to waste without a way to get it to those in need. The current U.S. food system has divided farmers into two groups, one which grows for grocery stores and a second for restaurants, schools, and other large-scale purchasers.<sup>19</sup> Policies developed over the years, which now make it almost impossible to reroute where food is sent, have left the latter group of farmers without a platform to sell their food as the pandemic shuttered schools and restaurants.

In recent weeks, major meat processing plants, including Tyson and Smithfield, have been forced to temporarily close due to high numbers of COVID-19 cases among employees. This may not have led to meat shortages at grocery stores throughout the country if not for the fact that only four companies process more than 80 percent of beef, and another four companies process 57 percent of pork. It has become clear that a slight disturbance in a single plant can cause ripple effects for many.

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com/technology/archive/2019/02/online-grocery-shopping-has-been-slow-catch/581911/

18 “Here are some interesting facts and figures about the US grocery shopping habits,” StartUpPort.

<http://startup-port.com/blog/interesting-facts-figures-us-grocery-shopping-habits/>

19 Pollan, Michael. “The Sickness in Our Food Supply,” The New York Review of Books. June 11, 2020. [https://www.nybooks.com/articles/2020/06/11/covid-19-sickness-food-supply/?utm\\_medium=email&utm\\_campaign=NYR%20Michael%20Pollan%20on%20our%20food%20system&utm\\_content=NYR%20Michael%20Pollan%20on%20our%20food%20system+CID\\_22ba651e808da23d6723e363914ed74a&utm\\_source=Newsletter&utm\\_term=The%20Sickness%20in%20Our%20Food%20Supply](https://www.nybooks.com/articles/2020/06/11/covid-19-sickness-food-supply/?utm_medium=email&utm_campaign=NYR%20Michael%20Pollan%20on%20our%20food%20system&utm_content=NYR%20Michael%20Pollan%20on%20our%20food%20system+CID_22ba651e808da23d6723e363914ed74a&utm_source=Newsletter&utm_term=The%20Sickness%20in%20Our%20Food%20Supply)

Outside of product shortages, COVID-19 has imposed new spatial requirements on grocery stores that are difficult for existing store layouts to meet. To allow shoppers to maintain a distance of six feet, limiting the number of people in a store at a single time has become necessary. Even so, narrow aisles make it difficult to maintain space, as customers attempt to pick groceries while worrying that they are too close to fellow shoppers. Stores' attempts to create one-way aisles have not been successful as signs are not always visible or enforced. And there's still the problem of how to separate check-out registers from shopping aisles, as the current layout results in clusters of shoppers all in one place.

Bringing COVID-19 into homes remains a concern, as people are anxious that traces of the virus may be hidden on the foods they are buying. While the FDA has found no evidence of this<sup>20</sup>, grocery stores will need to take measures to curb this fear.

And while many Americans can limit their exposure to COVID-19, grocery store employees are regularly on the front-lines as their jobs are considered essential. More and more continue to fall ill and as of May 2020, over 60 grocery store employees have died throughout the country.<sup>21</sup>

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20 "Shopping for Food During the COVID-19 Pandemic – Information for Consumers," U.S. Food & Drug Administration. <https://www.fda.gov/food/food-safety-during-emergencies/shopping-food-during-covid-19-pandemic-information-consumers>

21 Quintanilla, Itxy. "How Many Grocery Store Workers Have Died From Coronavirus?" The LAist. May 21, 2020. <https://laist.com/latest/post/20200521/how-many-grocery-store-workers-have-died-coronavirus>



**Katz Architecture works as a partner to building managers, design professionals, and city agencies to ensure the ongoing integrity of our built environment."**

**NEXT STEPS**

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## About This Series

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**Throughout history, the built environment has transformed in response to the psychological and physical reactions to disease. Likewise, there is a long tradition in architecture of retrofitting buildings for health and hygiene.**

In New York City in 1832, a cholera outbreak attributed to the lack of clean water, killed 5,000 people over the course of three months. In response, five years later, work began on the Croton Aqueduct and a complex system to supply enough water for indoor plumbing - an unheard of luxury before that time.

America's first tuberculosis sanatorium opened in 1885 at Saranac Lake, in Upstate New York where patients were encouraged to sit in wide, glass-enclosed "cure porches" to take in natural light and fresh air. The idea of a sleeping porch or sunroom thus worked its way into the architectural vocabulary of residential buildings from that point forward.

In the days and weeks ahead, New York will face some very difficult challenges. Spaces that seemed adequate before the pandemic will no longer function properly. The building lobby, the office, the restaurant, the grocery store, the apartment, even our green spaces will all require more permanent measures of separation and cleanliness. All of this will need to be done with great speed and with severely limited budgets.

Katz Architecture focuses on the restoration, renovation, preservation, and maintenance of the physical environment. In that capacity, our services include feasibility studies, design, code and zoning consulting, team formation, filing and construction administration services. We have been in practice since 2002, and remain committed to the health, well being, and future of this city.

We continue to actively research the specific architectural implications of the COVID-19 pandemic and the potential new types of spaces and uses that will result from it. We view this as an extension of the work we have always been doing. As a firm, we remain firmly committed to finding order and creating light-filled, hygienic, and uplifting places for people to live, work, and play – and we continue to be ready for those challenges and opportunities.