



INSIGHTS INTO HEALTHIER INDOOR ENVIRONMENTS: RETAIL

In retail, success hinges on the ability to provide a shopping experience that makes people feel confident to come, stay and spend – an ability that was dramatically disrupted by COVID-19. And while required closures and consumer concerns resulted in significant declines in retail traffic and revenue, expectations of healthy indoor spaces will continue long after the pandemic is over. With the right strategies in place, retailers can help provide consumers with the confidence to come back in the short term and seize opportunities to maximize health, productivity and profits moving forward.

THE NEED

The need for retail stores to transparently and clearly communicate about their health and safety measures was listed among the top new shopping behavior trends of 2020.¹ Addressing this need with appropriate healthy building solutions will help drive the return of an industry that most people count on as part of daily life and millions more rely on for employment.



Shopping activities, including buying food, clothing and other essentials, **represent 20% of all household trips and 15% of all vehicle miles traveled in the United States.**²



The retail sector employs 15 million workers – approximately 10% of the U.S. workforce.³



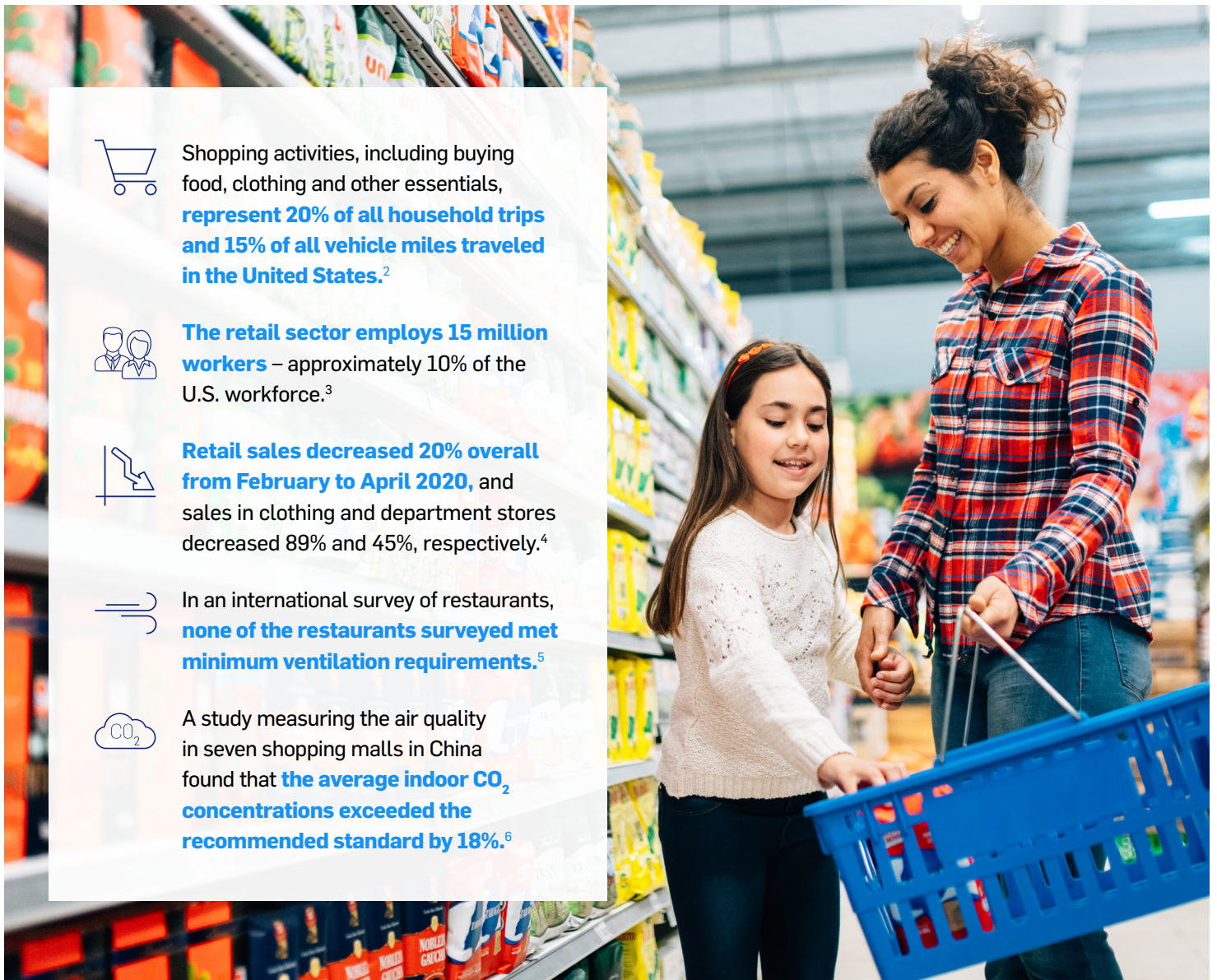
Retail sales decreased 20% overall from February to April 2020, and sales in clothing and department stores decreased 89% and 45%, respectively.⁴



In an international survey of restaurants, **none of the restaurants surveyed met minimum ventilation requirements.**⁵



A study measuring the air quality in seven shopping malls in China found that **the average indoor CO₂ concentrations exceeded the recommended standard by 18%.**⁶



THE QUANTIFIABLE BENEFITS OF HEALTHIER RETAIL SPACES

Even before COVID-19, building owners and operators across all industries – including retail – were recognizing the importance of health to the occupant experience. In retail specifically, healthier indoor spaces are tied to benefits beyond human health, with the ability to contribute to better experiences, productivity and overall retail performance.



CUSTOMER EXPERIENCES



Creating healthier, people-centered environments can not only promote health and enhance the work performance of building occupants, but can also have a **positive effect on customer satisfaction and shopping revenues.**⁷



In one study of shopping malls in China, the overall environmental **satisfaction of customers was higher with a green-certified mall building** compared with the conventional mall building, and satisfaction with indoor environmental quality (IEQ) was greatest when the customer was aware that the building was green.⁸



EMPLOYEE PRODUCTIVITY AND SATISFACTION



It is well established in scientific literature that **improved IEQ promotes more productive work environments.**⁹



One multinational retailer enhanced daylighting and airflow and integrated healthier materials into one retail location and subsequently reported an associated **22% increase in employee satisfaction.**¹⁰



RETAIL PERFORMANCE



It is estimated that in some retail settings, **for every 1% increase in dwell time, there is a 1.3% increase in sales.**¹¹



In one prototype Walmart store in Kansas, **sales were significantly higher in the half of the store with newly installed skylights.** As a result, Walmart improved daylighting design in all new stores moving forward.¹⁰

ACTIONABLE STRATEGIES AND SOLUTIONS

Carrier Healthy Buildings capabilities can help provide confidence to shoppers and support buildings throughout their lifecycle, from performing health and safety assessments to upgrading building technologies and enhancing operations for optimal performance.

ASSESSMENTS



UPGRADES



OPERATIONS





ASSESSMENTS

There are a variety of indoor air quality (IAQ) and ventilation solutions to choose from — but not every solution fits every building's needs. To determine which solutions best meet your building's needs, Carrier provides **IAQ assessments**. Assessments can be customized to each building or follow a prescriptive assessment approach and include monitoring and testing.



VENTILATION

Strategies

- **Prioritize maximizing fresh air delivery rates to achieve 30 cfm/person.** Occupancy loads can also be decreased to achieve recommended air delivery rates per person.
- **Eliminate or reduce air recirculation** (thus maximizing fresh outdoor air) to the extent possible.

Solutions

- **Automated Logic WebCTRL® building automation system** is the hub for intelligent integrations of technologies throughout a building. From heating,



ventilating and air-conditioning systems to security and access control to fire, lighting and more, WebCTRL enhances efficiency through greater visibility and control of all building systems.

- **Carrier rooftop units with EcoBlue™ technology** provide high-efficiency operation with a simplified design that helps lower installation and maintenance costs.



FILTRATION

Strategies

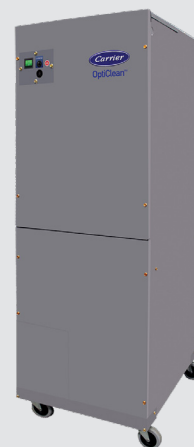
- In buildings with mechanical ventilation systems, **existing filters can be upgraded to filters with efficiency ratings of at least MERV** (Minimum Efficiency Reporting Value) **13 or the highest MERV rating the system can handle.**
- **Portable air cleaners with high-efficiency particulate air (HEPA) filters may be useful to reduce exposures** to airborne droplets and aerosols emitted from infectious individuals in buildings.

Solutions

- **Carrier filtration** technologies include various MERV filters, HEPA filters for particulate matter and Infinity™ electrostatic filters for airborne pathogens. Carrier also offers devices using UVC light, which are intended to target viruses, and UV photocatalytic oxidation to help remove volatile organic compounds and improve IAQ.



- **The Carrier OptiClean™ air scrubber** helps clean contaminated air and removes airborne particles with HEPA filtration.* An easy way to supplement an HVAC system without replacing or modifying existing equipment, the OptiClean air scrubber plugs into a standard outlet and can be easily rolled into place in a variety of retail settings.
- **Electrostatic filters** use static electricity to catch particles as they pass through the filter and help protect buildings from harmful microscopic particles.



*HEPA filter is 99.97% effective for particles that are 0.3 microns or larger.





CONTROLS AND SERVICES

Strategies

- Retail owners and operators should verify that ventilation and filtration, as well as other mechanical, electrical and fire and life safety systems, are operating as designed, properly maintained before resuming operations and regularly maintained throughout the year.
- Testing can be done through the use of low-cost IAQ monitors.** If CO₂ concentrations are measured at levels below 1,000 ppm while buildings are occupied, then the outdoor air ventilation is likely performing according to acceptable minimum standards. Higher CO₂ concentrations may indicate that other strategies for increasing outdoor air ventilation are necessary.
- To promote healthy indoor environments, real-time monitoring for a variety of pollutants and IAQ parameters, including (but not limited to) carbon monoxide, ozone, volatile organic compounds, formaldehyde and other aldehydes, temperature, humidity, noise and light, is recommended.

Solutions

- Remote Airside Management** provides continuous validation of IAQ parameters, periodic checks of equipment health and continuous airside commissioning, enabled by a command center.



- Abound, a cloud-native platform**, unlocks and unites siloed building data to create smarter and more resilient spaces that improve occupant wellness.

ABOUND



- OptiPoint™ IAQ displays** are full-color interfaces that provide building occupants with real-time visibility into indoor air quality and building health metrics in their immediate area.
- Remote Energy Management** connects HVAC and other building systems to provide advanced cloud-based analytics that help optimize energy efficiency, equipment uptime, occupant comfort and operational productivity. Carrier's digital services are based on actionable insights by the EcoEnergy Insights CORTIX™ building IoT platform.
- FireWorks™ Incident Management Platform** functions as a remote monitoring and control system for stand-alone buildings and expansive retail locations alike, and is ready to provide coordinated, timely communications during threats in environments.
- Carrier's best-in-class BluEdge™ service platform** offers IAQ assessments, wellness services, retro-commissioning and more. As a result, retail locations can operate at their peak performance, providing lower energy and maintenance costs and a more productive, healthier building environment.



TOUCHLESS PRODUCTS

Strategies

- No-contact infrastructure** is an engineering control method used to **reduce the indirect spread of pathogens** from fomites. This includes technologies such as automatic dispensers of hand soap/hand sanitizer/paper towels, automatic toilet flushers, hands-free garbage cans and **automatic doors**.

Solutions

- BlueDiamond™ touchless access** enables building occupants to eliminate a significant number of access touch points through implementation of industry-leading mobile credentialing technology, supporting a healthier and safer building.



THE BOTTOM LINE

Healthy indoor environments are critical in helping retailers to safely bring customers back in the short term, and to keep them coming back in the future. Through healthy building strategies, retailers can harness opportunities to restore confidence, enhance experiences and drive profitability.

To learn more about healthy buildings solutions and strategies for retail, [connect with a Carrier expert today.](#)

1 Charm, Coggins, Robinson and Wilkie (2020)
2 R. J. Lee, Sener, Mokhtarian and Handy (2017)
3 Zaatari, Novoselac and Siegel (2016)
4 Deloitte (2020)

5 Bohanon et al. (2003), Li et al. (2020)
6 Du et al. (2020)
7 UK Green Building Council (2016)
8 Du, Zhang and Lv (2020)

9 Allen et al. (2016); Allen and Macomber (2020);
Coley, Greeves and Saxby (2007)
10 Hescong, Wright and Okura (2013)
11 World Green Building Council (2016)



HEALTHYBUILDINGS

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