

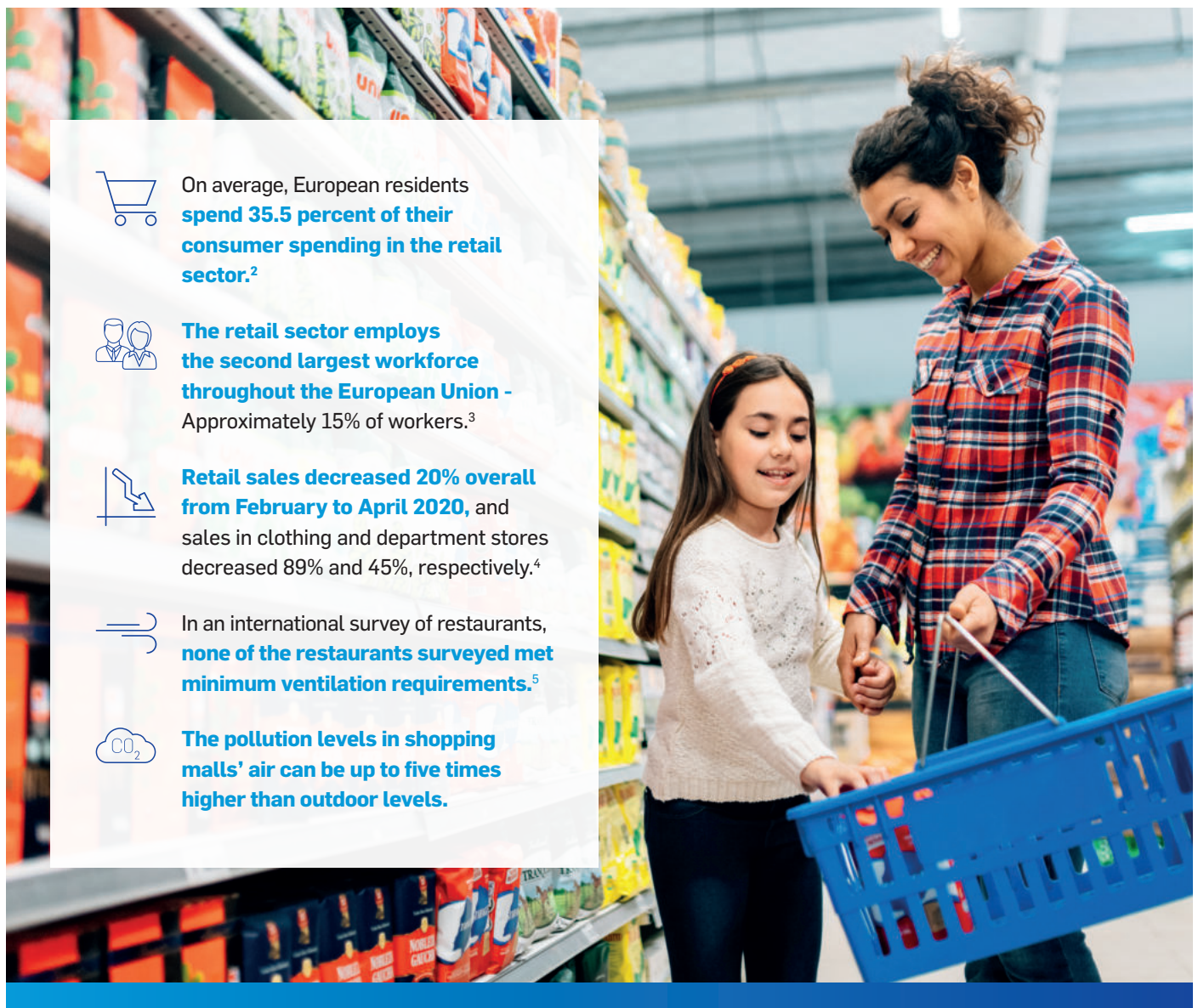


INSIGHTS INTO HEALTHIER INDOOR ENVIRONMENTS: RETAIL

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.



On average, European residents **spend 35.5 percent of their consumer spending in the retail sector.**²



The retail sector employs the second largest workforce throughout the European Union - Approximately 15% of workers.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



The pollution levels in shopping malls' air can be up to five times higher than outdoor levels.



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.**⁶



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.**⁷



EMPLOYEE PRODUCTIVITY AND SATISFACTION



It is well established in scientific literature that **improved IEQ promotes more productive work environments.**⁸

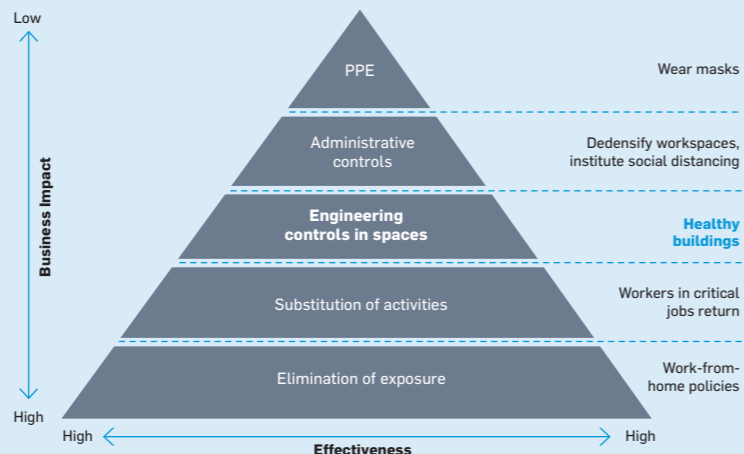


One multinational retailer enhanced daylighting and airflow and integrated healthier materials into one retail location and subsequently reported an associated **22% increase in employee satisfaction.**⁹

THE ROLE OF HEALTHY BUILDINGS IN REOPENING

Creating a healthy building through engineering controls in spaces is a key component of combating COVID-19. It's a strategy that balances overall effectiveness with the financial impact it can have on the business.

Allen, J. G., & Macomber, J. D. (2020, April). What Makes an Office Building "Healthy." Harvard Business Review



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



OPERATIONS

UPGRADES



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 51 m³/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

- **Carrier i-Vu supervision** 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, i-Vu supervision enhances efficiency through greater visibility and control of all building systems.

- **Our rooftops unit (RTU)** can improve the intake of fresh outdoor air, providing a reliable, flexible and energy-efficient solution for healthier indoor environments.



FILTRATION

Strategies

- In buildings with mechanical ventilation systems, **existing filters can be upgraded to filters with efficiency ratings of at least F7 (ePM2.5 >65%), and up to the highest fine particle classification or even HEPA filters,** if the available pressure drop of the system enables.
- **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 ePM filters and HEPA filters for particulate matter. 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 plugs into a standard outlet and can be easily rolled into place in a variety of retail settings.



*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.

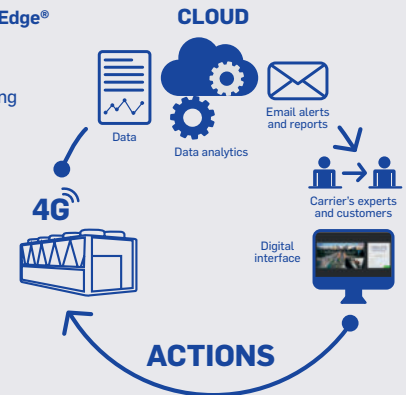
Solutions

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



- **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.

- **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.



PREDICTIVE MAINTENANCE

- Remote connection through BMS manages IAQ and ventilation in line with best practices
- Make changes and fix issues remotely
- Optimize maintenance and operational costs
- 24 x 7 command center



HVAC EUROPEAN DIGITAL PORTAL (ABOUND™ HVAC PERFORMANCE)

- Provide advanced remote analytics
- Optimize energy efficiency, equipment uptime, occupant comfort and operational productivity
- Actionable insights by different communication protocols
- Optimize autonomously or through a remote application



RETROFIT SPARE PART SOLUTIONS

INNOVATIVE TECHNOLOGIES

- M5 filters
- New filtering media technologies
- High filtration efficiency on PM2.5 particles

ADD-ON RETROFIT ALTERNATIVES

- AHU-UVC add-on kits
- Carbon surface & F7 filtering technology options
- Add-ons are easy to install in the universal frames of existing AHUs
- Effective against viruses, bacteria, small particles and VOCs

RANGE OF FILTRATION SOLUTIONS

- High-efficiency filtration solutions
- A large variety of air filters
- Solutions for our full product range (AHU, RTU, TFCU)
- More than 1300 references of air filters to cover all sizes / filtration needs

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 GFK Study, European Retail in 2020 and 2021 (June 2021)

³ Eurocommerce, Analysis of the labour market in retail and wholesale

⁴ Deloitte (2020)

⁵ Bohanon et al. (2003), Li et al. (2020)

⁶ UK Green Building Council (2016)

⁷ World Green Building Council (2016)

⁸ Allen et al. (2016); Allen and Macomber (2020);

Coley, Greeves and Saxby (2007)

⁹ Heschong, Wright and Okura (2013)

