

Advanced Electronics Practice

# Navigating opportunity in the US personal-protective-equipment market

Divergent forces are creating tailwinds and headwinds for the personal-protective-equipment (PPE) sector, requiring makers to differentiate through innovation, sales channels, and service.

*by Mohit Jaju, Nick Santhanam, and Shekhar Varanasi*



**Think of personal protective equipment (PPE)** and a disposable face mask or steel-toed boots might come to mind. But today, PPE extends beyond the basics to state-of-the-art gear, including clothing with sensors that monitor body temperature and thermoplastic-coated protective gloves that are strong yet flexible.

Technological innovation, the COVID-19 pandemic, a fluctuating economy, and global trade conditions have divided the fortunes of the US PPE market, increasing demand and sales in industries such as healthcare and food service, while temporarily depressing them in typically strong end-user markets such as mining or oil and gas.

These tailwinds and headwinds will continue to have a divergent effect on the \$13.5 billion US PPE business for the next several years, both for end-user industries and specific product segments. Manufacturing and construction are expected to bounce back from challenging market conditions, and PPE sales will rebound with them. At the same time, PPE sales to oil and gas companies will continue to be affected by an expected lingering downturn. PPE producers in such segments as protective gloves, clothing, and masks will continue to feel price pressures from low-cost and private-label competitors.

Industry stakeholders—including raw-material suppliers, pure-play PPE producers, PPE divisions of major conglomerates, and wholesale and retail distributors—need to understand the forces shaping the US market and what they mean for PPE product segments and end users. By monitoring the trends, long-time PPE players can adjust their product mix, sales channels, and production capabilities. Niche players and challengers can protect their core business while looking for opportunities to expand. And investors can spot potential funding opportunities and adjust their portfolios accordingly.

## **The fragmented US market for personal protective equipment**

The US PPE market comprises multiple individual product segments. The four largest make up

80 percent of total PPE sales: protective gloves, protective clothing, protective footwear, and respiratory protection (Exhibit 1). The balance of PPE sales is spread across several smaller product segments, including head, eye, and face coverings; equipment that protects hearing; and equipment that guards against falls. US PPE sales account for about 23 percent of the global total.

Face masks and other respiratory protection may have been in the spotlight of late, but hand protection is the PPE market's single largest product segment, accounting for approximately 30 percent of total US PPE sales in 2019, the latest date for which data are available. Protective clothing is the second-largest PPE product segment (23 percent), followed by protective footwear (15 percent) and respiratory protection (12 percent). Head, eye, face, hearing, and fall protection make up the balance (20 percent).

Increased sales of respiratory-protection gear, protective clothing, and hand protection are expected to help overall US PPE sales increase from \$13.5 billion in 2019 to an estimated \$24.3 billion in 2024, at a CAGR of 12.5 percent. Within healthcare, the pandemic and continued heightened health and safety measures in the industry are expected to drive up sales of respiratory protection by an average 26 percent per year through 2024, making it the fastest-growing PPE product segment.

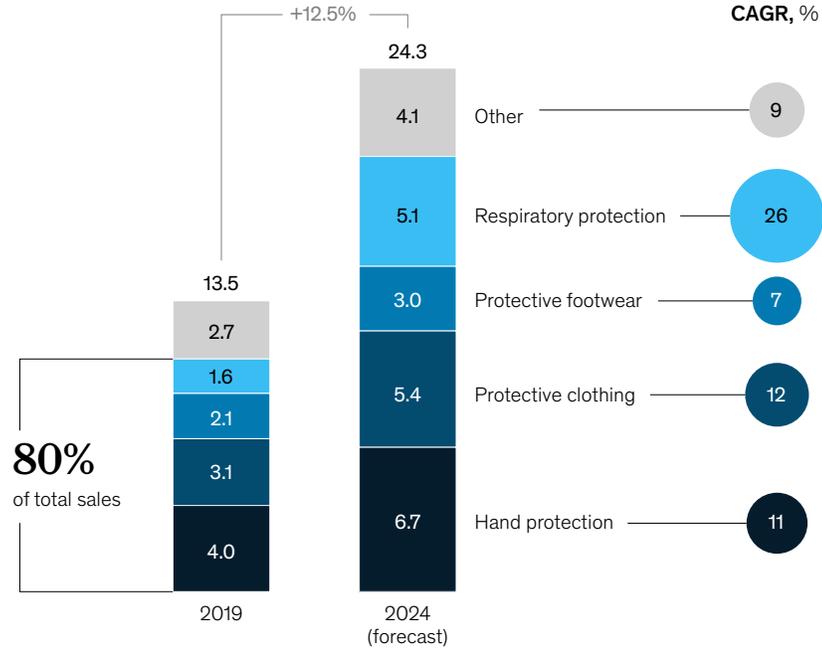
Despite the increased demand in healthcare, manufacturing, construction, and oil and gas remain larger PPE markets, accounting for a cumulative 48 percent of total US sales. Behind manufacturing and construction, the largest US PPE end-user industries are healthcare (13 percent), chemicals (10 percent), and mining (7 percent), with other industries accounting for the remainder (22 percent).

Many PPE product segments are highly fragmented, with top players accounting for a small portion of the total. In the \$4 billion market for hand protection, for example, the five largest players make up only a third of the overall market.

Exhibit 1

**The US PPE market is expected to grow 12.5 percent a year through 2024, with 80 percent of sales in four highly fragmented product segments.**

US PPE market size by segment, \$ billions



Aside from that, dynamics within product segments vary. For example, players in the hand-protection product subsegment are likely to be privately held or units of public companies.

**Six trends shaping demand for personal protective equipment**

Tailwinds are boosting demand for certain PPE product categories and end-user industries, while headwinds are helping inhibit it in others (Exhibit 2).

**Stronger focus on workplace safety**

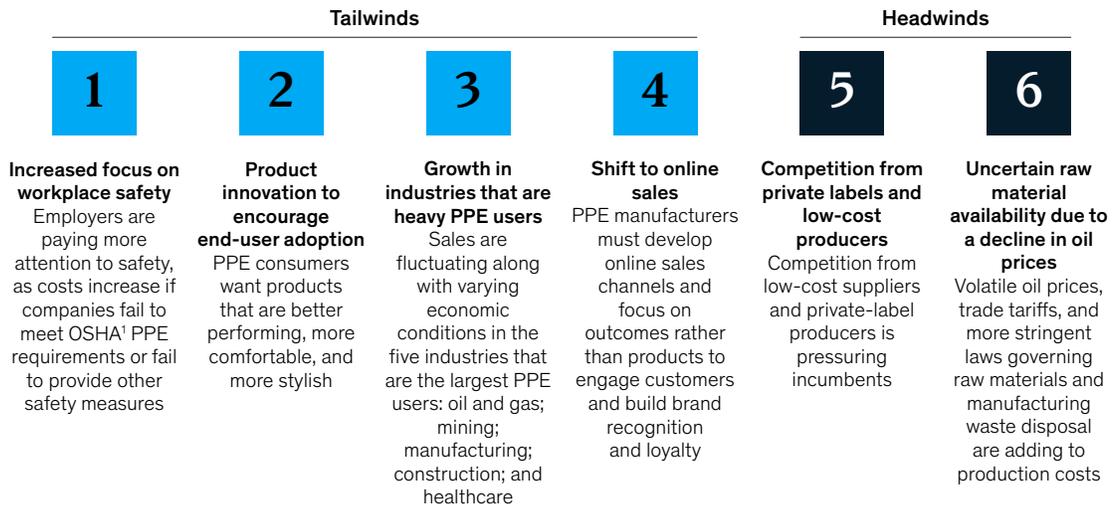
Employers are instituting stricter safety standards and practices because of the pandemic. They also are paying more heed to Occupational Safety and Health Administration (OSHA) workplace safety regulations, as the costs and consequences of failing to meet such standards continue to rise.

From 2016 to 2018, costs associated with work-related injuries increased by 6 percent a year to \$170.8 billion, including lost wages and productivity, medical and administrative expenses, motor-vehicle property damage, and employer costs. Unsafe workplaces also make it more difficult to retain employees and attract new hires, especially in the age of social media where safety-related issues can quickly go viral.

**Product innovation to encourage end-user adoption**

Demand is rising partly because of innovations in design, materials, and manufacturing processes that make PPE safer, more comfortable, or more appealing to users. Safety gloves made of Kevlar are more resistant to cuts than gloves made from other materials, for example. Likewise, fabrics used to make protective clothing are improving because of research into materials such as polyolefins,

**Six trends are acting as tailwinds or headwinds for US PPE sales.**



<sup>1</sup>Occupational Safety and Health Administration.

polyamides, and ultrahigh-molecular-weight polyurethane. For safety glasses, foam linings and antifog coatings provide better visibility and are more comfortable to wear, boosting end-user acceptance and sales.

**Growth in industries that are heavy PPE users**

Divergent economic conditions in the five industries that account for the majority of PPE use have a trickle-down effect on demand. In healthcare, the pandemic increased short-term demand for masks, gloves, and other PPE. However, the global crisis is not expected to have a significant long-term effect on demand.

The pandemic has disrupted construction and industrial production, reducing short-term demand for PPE in those industries. But construction and manufacturing are expected to recover by 2022 and 2024, respectively, and PPE sales are forecast to follow suit. Oil and gas as well as mining are expected to remain depressed, which will continue to cut into demand for PPE.

**A shift to online sales**

The pandemic accelerated online PPE sales, which are forecast to grow from 9.0 percent of total US PPE sales in 2019 to 12.4 percent in 2024. Manufacturers have partnered with online retailers such as Amazon and Alibaba to deliver bulk PPE sales to hospitals and individual consumers. PPE sales through specialists, wholesalers, and maintenance, repair, and operations organizations also are expected to increase through 2024.

In addition, the sales function is evolving from a straightforward proposition of providing products to delivering outcomes along with products. Companies that sell ear protection, for instance, may also train customers' employees on how to use the products to reduce the potential for hearing loss. More and more, selling is about creating brand recognition that enhances customer loyalty and an effective e-commerce strategy. This sales evolution allows PPE vendors to forge stronger partnerships with customers, which they can use to sell a higher level of safety performance along with their products, instead of competing solely on price.

**Competition from private labels and low-cost producers**

Long-time industry players are increasingly vying for business with private-label products and low-cost suppliers. The industry has witnessed an increase in private-label manufacturers that design and produce PPE to a distributor’s specifications.

Makers of low-tech commodity products, such as disposable face masks and nitrile gloves, are the most likely to face ongoing price pressure, especially from countries with low manufacturing and labor costs. Online sales and e-commerce platforms are making it easier for these low-cost producers to sell directly to US customers, regardless of location.

**Uncertain raw materials availability due to a decline in oil prices**

Because PPE materials such as synthetic polymers, aromatic polyamides, and polyethylene are derived

from crude oil, PPE raw-material costs closely follow crude oil prices and availability. In recent years, the volatility in crude oil markets, including substantial price drops, has been a boon for PPE manufacturing costs. Recently, however, those costs have been on the upswing, increasing PPE margin pressures. At the same time, ongoing trade disputes have led to higher prices for imported PPE raw materials, leading to higher manufacturing costs. More stringent laws governing how companies must dispose of manufacturing by-products and waste also have led to higher production costs, further eroding margins.

**Opportunities in PPE product segments**

Current conditions have divided the US PPE market into winners and losers (Exhibit 3). For example, the pandemic has boosted short-term demand for some hand protection and protective footwear used in healthcare and pharmaceuticals

Exhibit 3

**PPE demand declined in some typically strong end-user markets, but increased in those less affected by COVID-19-related slowdowns.**

**Product use and COVID-19 impact by PPE end-user industry, nonexhaustive**

● Major PPE markets

	Hand protection		Protective clothing		Protective footwear		Respiratory protection		Change in demand due to COVID-19
	Disposable gloves	Durable gloves	General use	Specific use	Leather	Rubber, PVC, polyurethane	Disposable masks	Respirators	
Healthcare and pharma	●			●		●	●		↑ Increase ↓ Decrease
Food and food processing	●	●	●			●	●		
Chemicals	●			●	●	●	●		
Services	●	●	●	●				●	
Manufacturing	●	●	●	●	●		●	●	
Construction		●		●	●	●			
Oil and gas		●		●	●	●			
Mining		●		●	●	●			

and in food and food processing. Simultaneously, however, slowdowns in oil and gas, construction, and mining have been hard on demand for protective clothing, footwear, and hand protection in those sectors.

Long-term trends are affecting specific PPE product segments differently (Exhibit 4). In some cases, product differentiation may help makers get an edge.

**Hand protection**

Sales of disposable and durable hand coverings, the largest PPE product segment, are expected to grow by an average of 11 percent per year through 2024, buoyed by product innovation, evolving sales channels, and growth in the construction, manufacturing, and healthcare sectors.

Key uses for hand protection include rubber gloves for safety, disposable latex gloves in the healthcare

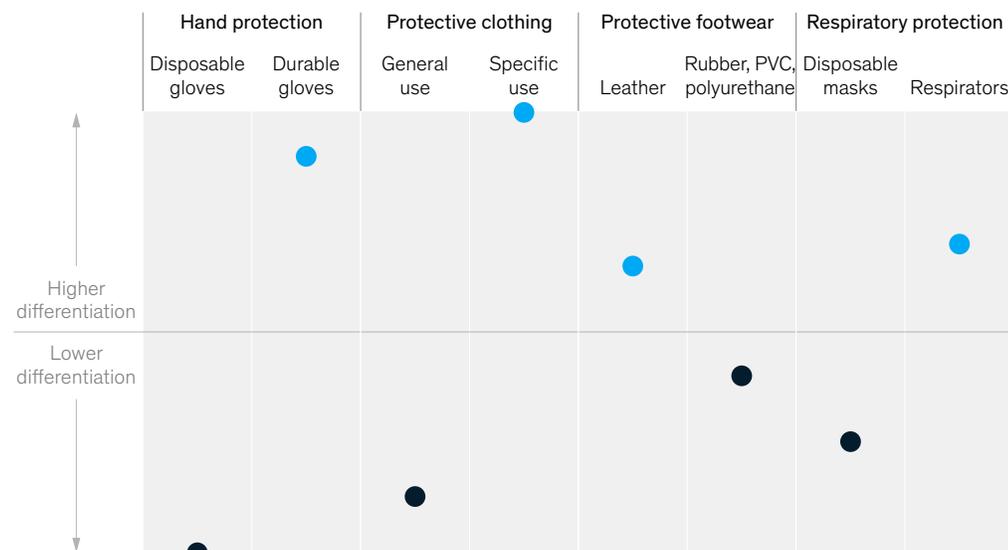
and food industries, and cut-resistant and utility gloves that offer additional grip, which are used in industrial environments. Durable gloves accounted for 57.5 percent of hand-protection PPE sales in 2019, a number that is forecast to remain stable through 2024.

Increased attention on hygiene and safety practices bolstered demand during the pandemic. But new materials also are giving hand-protection manufacturers cause to innovate, which is adding to sales. New materials include biodegradables that break down 40 times faster than previous compounds used in disposable gloves. Innovations extend to durable gloves, including a liquid additive called polyborodimethylsiloxane that hardens on impact. The substance creates a protective coating over thermoplastic rubber that can make gloves stronger and more flexible without making them thicker.

Exhibit 4

**Price-sensitive segments are ripe for disruption, while others can use differentiation to command higher margins.**

**Possible differentiation by PPE product category**



### **Protective clothing**

The protective clothing segment consists of garments primarily used in heavy industrials and healthcare. Heat-resistant and flame-retardant garments and chemical-protective clothing make up 58 percent of the segment, which is expected to grow by an average of 12 percent per year through 2024 to \$5.4 billion. Key industrial applications for protective clothing include coveralls that protect against splashes or prevent cuts on the shop floor and chemical-resistant jackets used in medical and pharmaceutical manufacturing.

Demand in those industries and new product innovations are expected to bolster sales of protective clothing, while competition should continue to increase PPE margin pressures.

Innovations include “smart” clothes and wearable technology that improves employee safety. Smart clothing—which can monitor body temperature as well as detect gas, chemicals, heat, or other potentially hazardous conditions and alert the wearer to take preventative steps—is catching on in process industries such as oil and gas, chemicals, and metals.

The protective-clothing market is expected to see continued strong growth in healthcare, pharmaceuticals, and semiconductors. That could make up for a near-term slowdown of protective-clothing sales in the oil and gas industry, which traditionally has accounted for up to 40 percent of total sales in the segment. As a result, overall sales in the segment are expected to grow by an average of only 7.5 percent through 2024.

### **Protective footwear**

Protective footwear is primarily used in the construction, oil and gas, and mining industries. Key applications in the \$2.1 billion PPE segment include safety boots, toe protectors, and slip-resistant boots. Leather and rubber foot coverings account for two-thirds of this product segment, with the balance coming from polyurethane footwear.

Product innovation is bolstering protective-footwear demand, as is rising safety awareness

and the need for industrial employers to meet OSHA standards for safety shoes and other types of protective footwear. User comfort and safety also are motivating product innovation. For example, advancements in metatarsal protection have led to footwear that’s safer and more comfortable.

### **Respiratory protection**

Respiratory gear is primarily used in healthcare, chemical, food, and metal processing. Key uses of this PPE segment, which registered \$1.6 billion in sales in 2019, include disposable respiratory masks, respirators with airway tubes for medical procedures, and respirators with active filters used in hazardous environments. Measures that healthcare providers put in place during the pandemic created a short-term surge in sales.

### **The path forward for PPE**

The future of the US PPE market will be very different, and stakeholders can’t simply go with the flow. Strategies for adapting to the next normal will depend on their specific position within the PPE market.

Incumbents in the PPE market will face headwinds in certain categories, tailwinds in others, or a combination of both. Players will benefit by developing a solid understanding of these disruptions and taking a proactive approach to change, since the traditional “wait and watch” response will not suffice when change is occurring so rapidly. Winning in the new market will also require a bold approach with a fundamentally different playbook. As part of this shift, companies can rethink where they will play in the market by asking themselves the following questions:

- ***Are we in the right market?*** An understanding of headwinds and tailwinds in critical segments is particularly important here. Companies can consider if their current market is becoming commoditized and if they have the cost leadership required to compete with low-cost countries or private-label manufacturers. They can also think about whether they

have a differentiated product that demands higher margins because of its safety or adoptability features.

- **What are the best growth markets to enter?** To answer this question, companies can identify adjacent markets with strong growth trajectories that they could easily enter. They could then determine if their intellectual property or brand recognition is strong enough to give them a foothold in these growth markets.
- **What would it take to consolidate our position in the existing market?** Companies could evaluate potential strategic partnerships and acquisitions that could strengthen their position in the market.

In addition to reconsidering where to play, companies will benefit from determining how to win in these markets. In this case, the major questions include the following:

- **Are we in the right channels?** One crucial consideration is whether companies have an e-commerce platform or partnerships with PPE specialists that will support sales growth in segments where buyers are quickly moving in that direction.
- **Are we operationally efficient?** Companies can think about whether they are taking steps to become more efficient and improve margins. Some moves might include adopting digitization and increasing automation.
- **Do we need new capabilities?** In some cases, companies might consider opportunities for strategically investing to acquire new capabilities faster. For instance, partnerships

or joint ventures could help them add capacity in cheaper manufacturing locations, or acquisitions might help them gain sales capabilities in new markets.

For investors interested in entering the PPE space, it is an opportune time to make the move. As a first step, they could consider whether their selected target is benefiting from current market forces. For instance, they could determine if it has the infrastructure required to gain from prevalent tailwinds. At the same time, investors can consider if they should divest PPE assets that will continue to be hurt by medium- or long-term market trends, such as the declining demand within the oil and gas industry.

---

Although PPE is used in numerous US industries, tailwinds and headwinds have created vastly different scenarios depending on the end-user business and product. In recent times, regulations and awareness of the importance of protecting people at work have increased demand for certain types of PPE. But demand and margins for other PPE have decreased because of unfavorable economic conditions in specific industries, such as oil and gas, combined with greater numbers of low-cost competitors. Players that have invested in innovation to improve features or safety outcomes have increased market share and margins. To stay competitive, PPE companies must also improve their e-commerce strategy and make operations more efficient. Companies or investors with a PPE portfolio should take a hard look at the segments they compete in and divest poorly performing products to focus on those that are doing well.

**Mohit Jaju** is an associate partner in McKinsey's Houston office; **Nick Santhanam** is a senior partner and **Shekhar Varanasi** is a partner in the Silicon Valley office.

Designed by McKinsey Global Publishing  
Copyright © 2021 McKinsey & Company. All rights reserved.