

# Increased Reshoring Efforts in Response to Global Emergencies

**Michaela Fromm, Emily Johnson, Sascha Keir, Jack Lugo,  
Tatum Shore and Mohamed Awwad**

Industrial and Manufacturing Engineering Department  
California Polytechnic State University  
San Luis Obispo, CA 93407, USA

mcfromm@calpoly.edu, ejohns94@calpoly.edu, skeir@calpoly.edu, jllugo@calpoly.edu,  
tlshore@calpoly.edu, mawwad@calpoly.edu

## Abstract

The initial effects of the COVID-19 pandemic first impacted China and quickly spread worldwide by late March 2020. China, the epicenter of the pandemic and the main supplier of many products worldwide, was the first to shut down many of their manufacturing plants without notice. In conjunction with an increase in demand for many products, this abrupt pause induced severe tension on the global supply chain from companies around the world. These shortages of many crucial products, such as PPE, highlighted the need for reshoring of certain industries to the United States to promptly and adequately respond to future global emergencies. This paper will explore how medical industries' supply chains were impacted by the Covid-19 pandemic and analyze the viability of reshoring essential products to the United States while continuing to import for other industries.

## Keywords

Supply Chain, Reshoring, COVID-19, Essential Products, Medical Industries

## Biographies

**Michaela Fromm** is a graduate student at California Polytechnic State University, San Luis Obispo. She is currently a fourth-year student pursuing a Bachelor of Science degree in Industrial Engineering and a Minor in Statistics. She will also be completing a Master's in Engineering Management while at Cal Poly and graduating in June 2021.

**Emily Johnson** is a graduate student at California Polytechnic State University, San Luis Obispo. She is currently a fourth-year student pursuing a Bachelor of Science degree in Industrial Engineering. She will also be completing a Master's in Engineering Management while at Cal Poly and graduating in June 2021.

**Sascha Keir** is an undergraduate student at California Polytechnic State University, San Luis Obispo. She is currently pursuing a Bachelor of Science degree in Industrial Engineering, graduating in June of 2021.

**Jack Lugo** is a graduate student at California Polytechnic State University, San Luis Obispo. He is currently pursuing a Bachelor of Science degree in Industrial Engineering while concurrently earning his Master of Science degree in Engineering Management, both of which will conclude in June of 2021.

**Tatum Shore** is a graduate student at California Polytechnic State University, San Luis Obispo. She is currently a fourth-year student pursuing a Bachelor of Science degree in Industrial Engineering. She is concurrently earning her Master of Science degree in Engineering Management and graduating in June of 2021. After completing her time at Cal Poly, she will start at Deloitte as a Strategy Analyst.

**Mohamed Awwad** is an Assistant Professor in the Department of Industrial and Manufacturing Engineering at California Polytechnic State University (Cal Poly), San Luis Obispo, CA. He received his Ph.D. and M.S. degrees in Industrial Engineering from the University of Central Florida, Orlando, FL, USA. Additionally, he holds M.S. and B.S. degrees in Mechanical Engineering from Cairo University, Egypt. Before joining Cal Poly, San Luis Obispo, Dr. Awwad held several teaching and research positions at the State University of New York at Buffalo (SUNY Buffalo),

the University of Missouri, Florida Polytechnic University, and the University of Central Florida. His research and teaching interests include applied operations research, logistics & supply chain, blockchain technology, distribution center design, unconventional logistics systems design, and OR applications in healthcare and the military.