

Supply chain resilience for manufacturing companies is the company's ability to recover and return to normal working conditions. This project was to study the supply chain resilience of manufacturing companies located in Connecticut in hopes that through the research patterns could be determined and conclusions could be drawn that would lead to new ways of managing supply chains. Connecticut experiences many types of severe weather, including hurricanes, tornados and blizzards. These storms often leave the surrounding areas out of power, and the roads closed due to debris. Connecticut is also famous for its I 91 and I 95 corridors which connect New York and Boston, the largest cities in New England. Due to these roads, the majority of shipments and transportation through the State is via roadways. Connecticut is also home to Bradley International Airport, which receives UPS and FedEx shipments, along with ports, which are famous for their heating oil shipments. This research was completed through use of a survey and creating a simulation using Anylogic. The survey questions both the capabilities and vulnerabilities of the participating companies. This survey was sent to manufacturing companies who were members of the New Haven Manufacturing Association, the Connecticut Technologies Council, and other local manufacturing associations. Manufacturing companies that chose to be members of these groups became the focus of this research. The premise of this research was to be capable of making suggestions for the improvement of the companies.

The outcomes of this research were quite unexpected. Half of the companies surveyed do not have a disaster preparedness plan, even though seventy-nine percent of the companies reported shutdowns due to natural disasters. On average, it took the companies surveyed 5.7 days to return to normal working conditions. One company took 6.5 weeks to begin production again after an unexpected shut down. In addition to this, only three companies reported making

changes to their preparedness plans after their most recent disasters. After electrical outages, employee morale was the next greatest financial effecter. This was followed by the exchange rate with the euro, hurricanes and flooding, and road closures, which were all rated as being equally financially disruptive. Road closures are also a concern for these manufacturing companies. The majority of companies report that their main form of transportation is via trucks. The federal highway administration reports that 1,985,500 cars are registered in Connecticut, and 1,085,447 trucks (FHA). These numbers do not include motorcycles, RV's and other vehicles that use the roads in Connecticut. These numbers also do not account for cars and trucks that are out of state and are just passing through Connecticut. With all of these vehicles using the roads in Connecticut, small accidents can cause major shipping delays. From this research, it can be concluded that manufacturing companies in Connecticut are most vulnerable to power outages. This can most likely be mitigated by the implementation of automatic generators which would allow companies to maintain normal operating procedures during power outages.

“Highway Statistics Series.” *U.S. Department of Transportation/Federal Highway Administration*, 2010, www.fhwa.dot.gov/policyinformation/statistics/2010/mv1.cfm.