

## Appendix Report:

### An Overview of the Impacts of the Covid 19 Pandemic on Freight and Goods Movement

The single most impactful event that has occurred since the completion and approval of the Rhode Island Freight and Goods Movement Plan in July of 2017 has been the Covid-19 Global Pandemic which has re-shaped and fundamentally altered production and consumption patterns, travel patterns, the nature of work, and of course, the movement of freight and goods across our surface transportation system. No single event has disrupted the movement of freight so profoundly since at least World War 2. This seismic and historic disruption in the movement of goods is still being felt in 2022 as commodity inflation brought on by supply chain disruptions continues to impact consumer goods, container ship bottlenecks along west coast ports further delays shipments of goods across the country, and trucking companies struggle to hire drivers to keep up with unprecedented demand in e-commerce deliveries and growth in new warehousing and distribution facilities to adapt to online shopping.

These profound cleavages from the Covid-19 Pandemic initially led to a major drop off in passenger vehicle VMT in the first half of 2020, with national VMT in April 2020 down 40



Empty Streets in Providence March 2020. Photo Credit Kris Craig, Providence Journal.

percent below VMT from April 2019.<sup>1</sup> However, as passenger vehicle VMT dropped significantly due to the various quarantine and stay at home restrictions placed by states and the federal government in response to Covid 19, overall freight movement only fell by 10% as consumers shifted shopping patterns from brick and mortar stores to direct home deliveries

of goods during lockdowns and restrictions on public gathering limits<sup>2</sup>.

This shift in shopping patterns and direct to consumer delivery has accelerated trends in last mile delivery that were noted in the previous version of the Freight and Goods Movement Plan but have been accelerated by the large acceptance of telework or

<sup>1</sup> TRIP Freight Network Report December 2021, Pages 3-6

<sup>2</sup> Ibid.



Empty Streets in Providence April 2020. Photo Credit Josh O'Neill, Division of Statewide Planning Staff.

“work from home” policies that have more people consuming goods at home and having durable goods shipped direct to their home. Nearly two years after the Covid-19 Pandemic began, many employers have continued work from home policies, and an out-migration from urban to suburban or rural areas has also contributed to the unprecedented expansion of last mile delivery growth.

The Pandemic has brought about a new

understanding of the importance of the nation's supply chain structure and freight delivery modes amongst the public as well as new possibilities for government to invest in the surface transportation system that support the movement of goods. With the passage of the Infrastructure Investment and Jobs Act on November 15, 2021, Rhode Island is set to receive over \$1.7 billion dollars for highway and bridge maintenance over five years. This Bill, in addition to State Bond Question #7 passed in 2021 which invests \$60 Million in infrastructure at the Port of Davisville, means that Rhode Island now has significant dollars invested in freight related infrastructure throughout the state to help address these tremendous shifts in freight volumes and freight trucking on the surface transportation network.

Throughout this Plan update, data tables will show the profound changes in freight volumes and economic impacts from the Covid-19 Pandemic with data points both pre and post Pandemic for economic data such as monthly unemployment rates, the value of imports by industry, and the total number of freight related companies in Rhode Island. Additionally, the impact of Covid is shown in data pertaining to passenger and air cargo volumes at our airports, total truck volumes on our highways, ship calls at Rhode Island ports, vehicle safety and crash data, freight bottleneck locations on our freight network, and the short term and long-term freight commodity flow forecast.

## **Last Mile Delivery and Land Use**

When the Pandemic first began to impact the United States in March of 2020, national and state governments responded to the danger of the new virus by implementing an unprecedented shutdown of all commerce and community functions, essentially creating a temporary lockdown of society which accelerated an ongoing shift in consumer consumption patterns from brick-and-mortar retail shopping to online shopping and direct home delivery. These government protective measures combined with the fear of shopping amongst crowds during the Pandemic created a surge in online shopping and residential delivery that changed Last Mile Delivery patterns in ways we are still grappling with today. These direct to customer deliveries of goods have increased the number of trucks and vans on local roadways and added new dimensions to competing uses of the curb and new ways of thinking about curbside management and the use of public rights of way for freight deliveries. All these abrupt changes have put pressure on local governments to think about new ways of managing street curb parking, with the most pressure in urban areas with more limited parking options.

In the Fall of 2020, the Rhode Island Division of Statewide Planning (DSP), working in partnership with the FHWA Resource Center, conducted a four-part virtual “Freight and Land



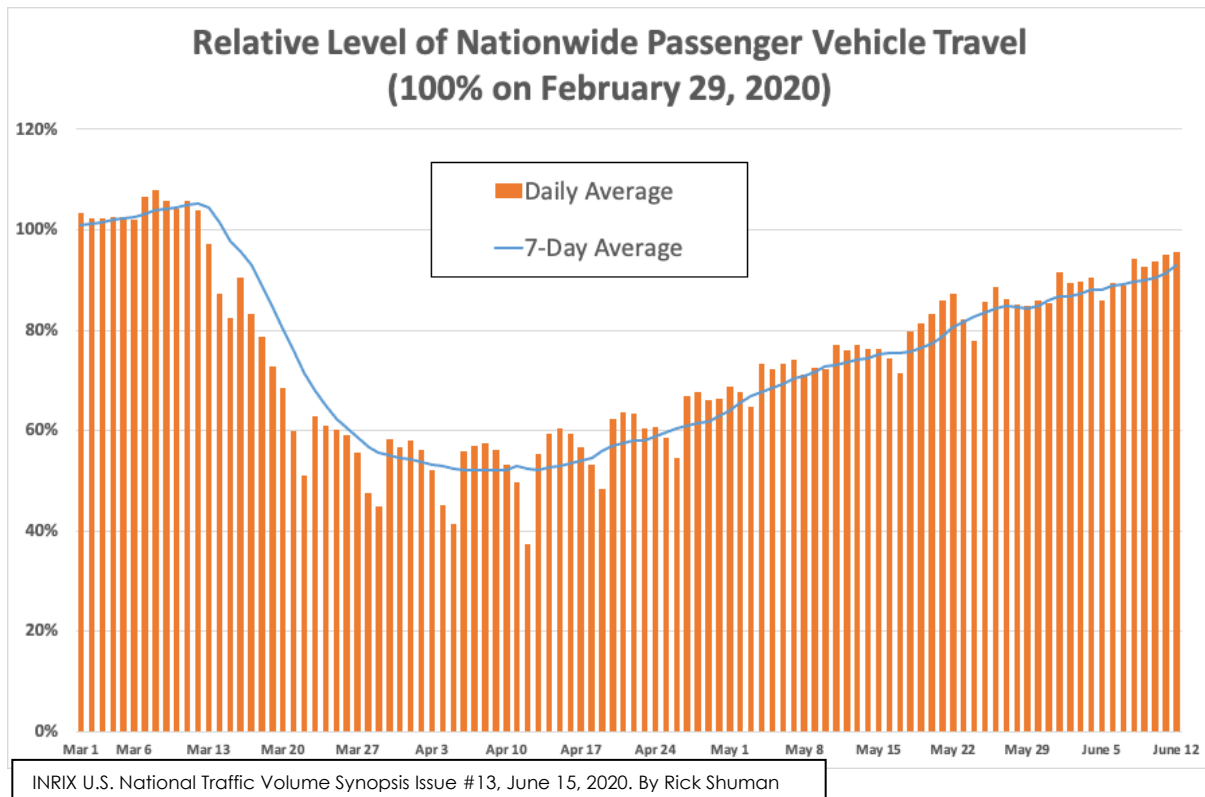
Amazon Delivery Van. Adobe stock photo.

Use” training series primarily geared towards municipal planning officials to help them understand the various impacts that freight movement had at the local level and to discuss some of the Covid induced freight changes impacting community planning. As part of this training series, we discussed techniques for how municipalities could better manage curbside delivery and last mile issues relating to freight. We also explored types of performance zoning standards that could be implemented for freight related land uses, mitigation strategies for freight impacts, and related tools for practitioners that can help evaluate freight demand and implement appropriate land use tools to ensure outcomes in line with community priorities.

Communities will continue to see increases in freight deliveries on local roadways and local planners will need to implement local land use regulations to deal with them. One change at the local planning level has been the understanding that freight planning will play a more vital role in local land use concerns going forward.

## **Passenger VMT and Freight Truck Volumes**

While travel habits have shifted closer to “normal” in 2022, travel behavior following the initial Covid Lockdowns of the Spring and Summer of 2020 saw steep declines in overall travel. The lockdowns created a 56% overall reduction in travel during late March and early April of 2020, but by the summer of 2020 overall travel was within 10% of its pre-Covid volume in Rhode Island and in some states, actually began to exceed pre-Covid volumes. Although passenger VMT has fluctuated within 10% of Pre-Pandemic levels in the last two years regionally, the large acceptance of telework/work from home policies in both the private and public sector has had a noticeable longer lasting effect on VMT and peak period congestion intervals.



In the Spring of 2020, while overall passenger VMT decline precipitously in the initial lockdowns to prevent the spread of Covid-19, the corollary increase in direct-to-consumer delivery of goods, prevented freight truck freight volumes from falling anywhere near the drop in passenger volumes. Nationally, by June of 2020 long-haul truck volumes were only down 3% from their Pre-Pandemic norm (control week of February 22, 2020) and in 22 states, the long-haul truck volumes exceeded their Pre-Pandemic volumes<sup>3</sup>, largely boosted by the dramatic change in demand for consumer goods and supply chain

<sup>3</sup> INRIX U.S. National Traffic Volume Synopsis Issue #13, June 15, 2020. By Rick Shuman

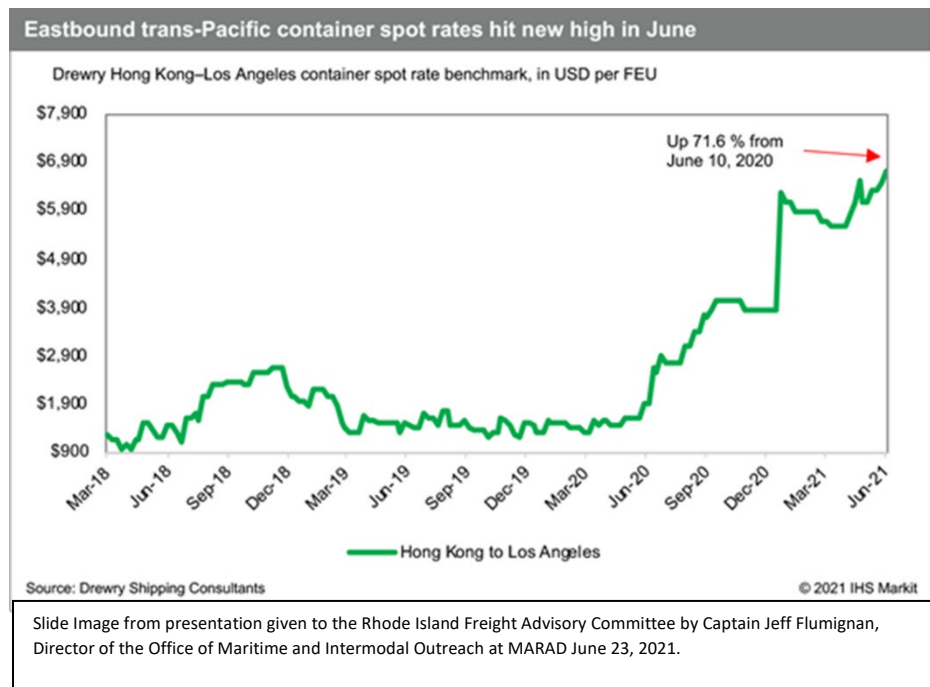
shifts that were taking place to address the initial shortfalls created by hoarding of consumer goods during lockdown.

## **Ports**

The vast increase in demand for consumer goods in America during the Pandemic and the various lockdowns and “Zero Covid” policies in manufacturing economies like China, Taiwan, and South Korea have led to unprecedented supply chain bottlenecks with shipping capacity strained at the world's major Ports in 2021 and 2022. The disruptions in maritime shipping related to the Pandemic saw at first a decline in cargo container imports in the Spring and Summer of 2020 and then a rise in container imports in the second half of 2020. The rising consumer demand in the second half of 2020 was the beginning of a rapid economic recovery that increased merchandise trade. In the second half of 2020, the value of U.S. imports of maritime freight transport services (which relate to the transport of U.S. goods imports by foreign maritime vessels) increased by 16.5 percent compared to the same period in 2019.<sup>4</sup> U.S. imports from Asia were nearly 30 percent higher in December 2020 than in December 2019, precipitated by the surge in online purchases.

The number of shipping containers in circulation during the second half of 2020 was insufficient to meet customer storage demands and higher than anticipated consumer demand for imports.<sup>5</sup> This trend continued into 2021 and led to historic logjams of container vessels at the largest ports across the country. The limited supply of vessels and cargo containers relative to consumer demand has led to massive, unprecedented

increases in shipping freight rates. From June of 2020 to June of 2021 the container spot rate for eastbound Trans-Pacific containers (Hong-Kong to Los Angeles) increased from \$1,500 dollars per forty-foot equivalent container unit (FEU) to \$7,000 dollars per FEU. These costs are being passed on



<sup>4</sup> United States International Trade Commission, “The Impact of the Covid-19 Pandemic on Freight Transportation Services and U.S. Merchandise Imports”. Publication 5239 Released on November 12, 2021.

<sup>5</sup> Ibid.

down the supply chain and contributing to rising inflation across an array of consumer goods. The year over year inflation rate in the consumer price index reached nearly seven percent in November of 2021 compared to a year earlier. One of the largest annual increases in Inflation on record.<sup>6</sup>

While Rhode Island's Ports do not import containerized freight like the larger neighboring Ports in Boston and New York City, our Ports still felt the impacts of global trade disruption caused by the Pandemic, primarily in the form of the semi-conductor chip shortage for automobiles which dramatically impacted the total imports of automobiles at the Port of Davisville in 2021. The Port of Davisville is one of the top 10 auto import Ports in the United States and had reached a record level of imports in 2019, importing nearly 300,000 automobiles before the beginning of the Pandemic.



Picture of new auto imports at the Port of Davisville taken by Josh O'Neill, Division of Statewide Planning staff on October 23, 2018, as part of the Municipal Freight Scan project.

2020 saw the first decline in auto imports at the Port of Davisville in many years. Overall, auto imports were down 27% in 2020 at the Port of Davisville due to the various transportation disruptions caused by government mandated quarantines, shutdowns, and related labor disruptions in manufacturing<sup>7</sup>. Then, in the summer of 2021, the semi-conductor chip shortage and related container bottlenecks globally caused a 15% drop in imports from the high reached in 2019. Major automotive manufacturers such as Ford, Nissan, Volkswagen, and Subaru scaled back production in 2021 due to the lack of available semi-conductor components. This shortfall in production is still being felt in 2022 and will not totally resolve itself until semi-conductor production in the automotive industry reaches its Pre-Pandemic levels.

<sup>6</sup> The U.S. Consumer Price Index Report for November 2021, released on December 10, 2021.

<sup>7</sup> Quonset Development Corporation, 2020 Annual Statutory Report. Released April 2020.

## **Air Freight**

While passenger VMT saw dramatic and unprecedented declines in 2020, air freight was perhaps the transportation mode most disrupted by the Covid-19 Pandemic initially by the lockdowns, and then by the hesitancy of people to fly for fear of getting infected with Covid. In the years preceding the Pandemic, passenger and air cargo volumes had steadily increased at Rhode Island's major airport, T.F. Green international Airport. In 2017 and 2018, T.F. Green had nearly double the amount of total air cargo as occurred in 2015 and 2016.<sup>8</sup> Total passengers had hit a decade long high in 2018 of 4,298,345 total passengers flying T.F. Green, only to see a dramatic 70% decline in 2020 when the Pandemic hit, and only 1,311,595 Passengers flew to or from T.F. Green International Airport. The Table below shows the dramatic fall off in total passengers, aircraft operations, and air freight cargo in 2020 relative to prior years.

### **T.F. Green Airport Passenger and Air Cargo, 2015 to 2020**

<b>Year</b>	<b>Passengers</b>	<b>Aircraft Operations</b>	<b>Total Cargo (lbs.)</b>	<b>Cargo: Import (lbs.)</b>	<b>Cargo: Export (lbs.)</b>
<b>2015</b>	<b>3,566,769</b>	<b>65,061</b>	<b>27,040,498</b>	<b>11,482,939</b>	<b>15,557,559</b>
<b>2016</b>	<b>3,653,029</b>	<b>70,088</b>	<b>27,718,271</b>	<b>11,482,939</b>	<b>16,391,886</b>
<b>2017</b>	<b>3,937,947</b>	<b>72,595</b>	<b>43,553,895</b>	<b>17,735,716</b>	<b>25,798,179</b>
<b>2018</b>	<b>4,298,345</b>	<b>70,948</b>	<b>59,208,511</b>	<b>23,780,580</b>	<b>35,427,931</b>
<b>2019</b>	<b>3,989,925</b>	<b>69,761</b>	<b>27,849,924</b>	<b>11,337,732</b>	<b>16,512,192</b>
<b>2020</b>	<b>1,311,597</b>	<b>46,353</b>	<b>31,242,746</b>	<b>12,157,796</b>	<b>19,084,950</b>

*Source: RIAC, Passenger, Aircraft Operations, and Air Freight Cargo totals (2015 to 2020); Submitted by Dan Porter, Vice President of Planning at the Rhode Island Airport Corporation, 4-19-21.*

In 2021, passenger travel has seen a large rebound thanks to the roll out of FDA approved Covid-19 vaccines and large pent-up demand for travel. It remains to be seen how durable this rebound in travel will be and how new variants of Covid-19 will impact air travel and air freight in the coming years. New warehouse and distribution facilities being permitted and built currently across Rhode Island may increase slightly some demand for air cargo in the coming years, however air cargo freight remains a relatively small component of overall freight movement by mode in Rhode Island compared to trucks, rail, and ports.

<sup>8</sup> See Table 14 in this Plan entitled "T.F. Green Airport Passenger and Air Cargo 2015 -2020".

## **Potential Longer-Term Trends**

The COVID-19 pandemic has caused a variety of social, economic, and environmental changes. The COVID-19 pandemic upended the global economy and the international movement of freight and goods. Most notable in the early months of the Covid-19 Pandemic there were reductions in mobility across all transportation sectors as quarantines, stay at home orders, capacity restrictions, and travel bans were implemented to stop the spread of the virus. As these restrictions were gradually relaxed or removed in the United States later in 2020, many of the raw goods and manufacturing supply countries continued with stringent Pandemic restrictions (such as China's "Zero Covid" policy) which caused widespread logistics disruptions and shortages of some consumer goods. In addition to these major supply chain disruptions, there were immediate unprecedented economic impacts, with unemployment skyrocketing in the Spring of 2020 and then gradually declining as the economy reopened, recently returning to pre-Covid unemployment rates nationally in 2022.

In Rhode Island, we have observed all of these disruptions in the last several years on our highways, at our Ports, in our supermarkets, and at our workplaces. The movement of freight and goods is a vital part of our society, our economy, and the critical network that operates as the invisible motor keeping our businesses, schools, and communities running. We expect that certain trends that have been more noticeable during the Pandemic will become longer lasting. The seismic shift in consumer shopping via online platforms rather than brick and mortar shops is likely here to stay and will have major impacts on warehousing and distribution center growth and last mile delivery congestion on local roadways. Freight bottlenecks and peak period congestion will continue to fluctuate from Pre-Pandemic patterns as telework options gain long term use amongst a larger proportion of the workforce. And our Ports will continue to play a large role in supplying commodities to residents from energy supplies to automobiles.

As we will lay out in this critical plan update, Rhode Island seeks to bounce back from this Pandemic with a stronger and more resilient freight transportation network. In this Plan we will seek to identify the policies, procedures, and investments that will make our freight transportation network more resilient to future disruptions. Our freight investment strategy will make use of major enhanced funding sources provided by the Infrastructure Investment and Jobs Act (IIJA) of 2021 and use this opportunity meet our goals of operational efficiency, economic growth, and freight connectivity.