



E-Commerce in Massachusetts

Southwest Advisory Planning Committee Meeting

Prepared by the Metropolitan Area Planning Council
October 19, 2021

Hidden and in Plain Sight: Impacts of E-Commerce in Massachusetts



Report Objective:

Better understand how e-commerce affects our communities, and to provide a resource for municipalities and policy makers grappling with the rapid growth and multiplying impacts of this expanding form of retail.

Report Chapters

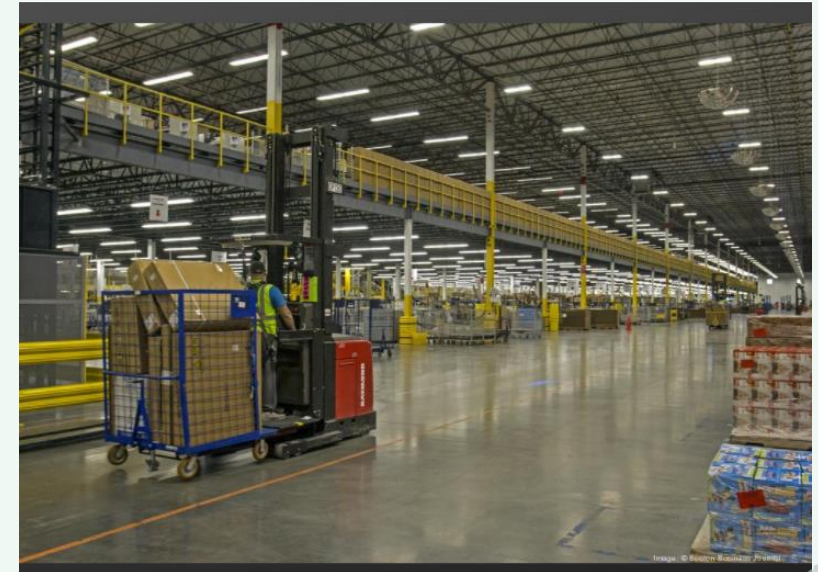
- 01.** Defining E-Commerce
- 02.** Transportation Challenges
- 03.** Land Use Challenges
- 04.** Context of COVID-19
- 05.** Future Trends and Additional Research Areas
- 06.** Potential Policy Responses
- 07.** Next Steps and Research
- 08.** Actionable Steps

Defining E-Commerce

The buying and selling of good or services via the internet, and the transfer of money and data to complete the sale.

E-commerce **supply chain logistics** primarily refers to the processes involved in **storing and shipping inventory** for an online store or marketplace, including inventory management and the picking, packing, and shipping of online orders.

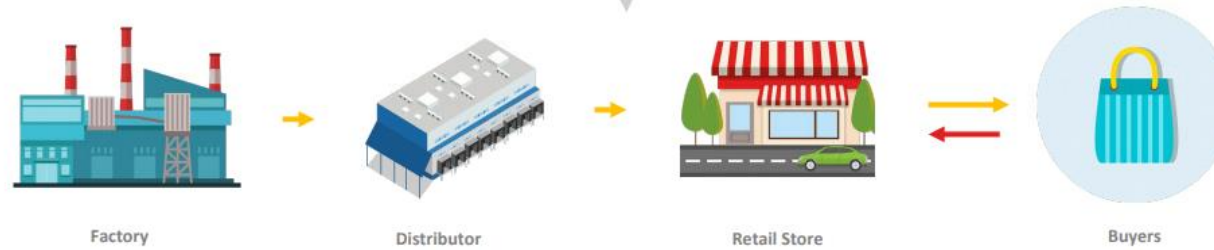
Modified from <https://www.the-future-of-commerce.com/2020/01/19/what-is-e-commerce-definition-examples/> and the Council of Supply Chain Management Professionals at <https://cscmp.org> and <https://www.shipbob.com/blog/ecommerce-logistics/>



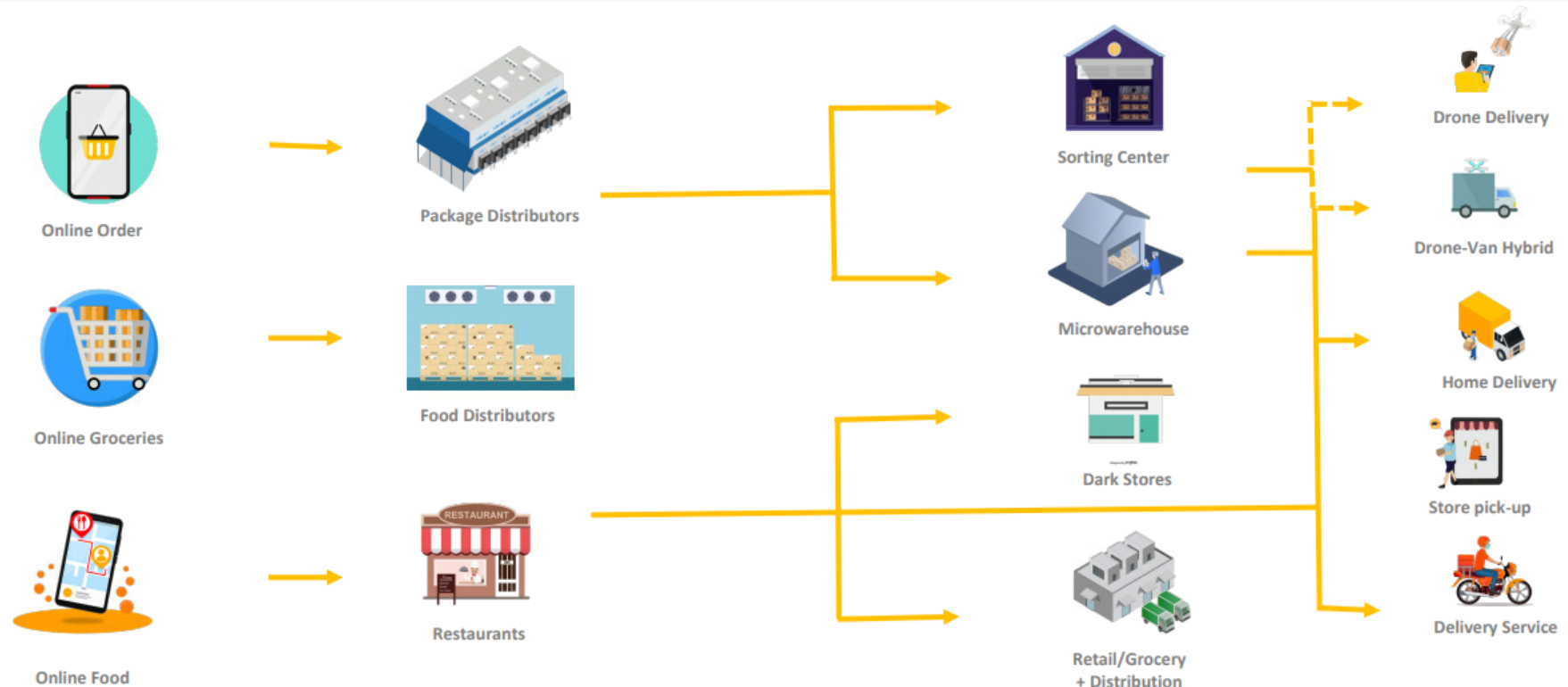
Amazon Fulfillment Center in Fall River
(Boston Globe and Boston Business Journal)

Defining E-Commerce

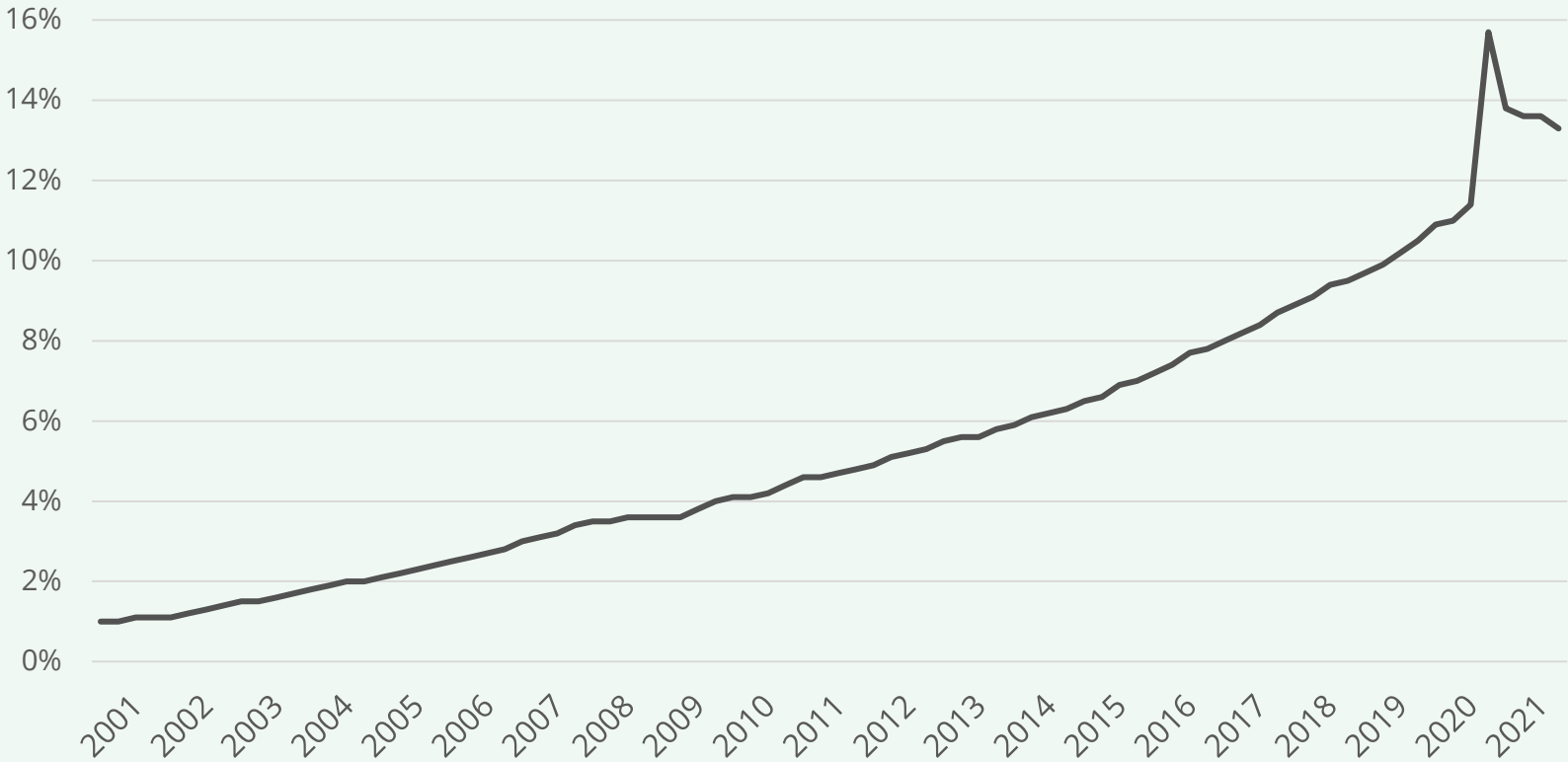
Traditional Delivery Model



Trending Delivery Model

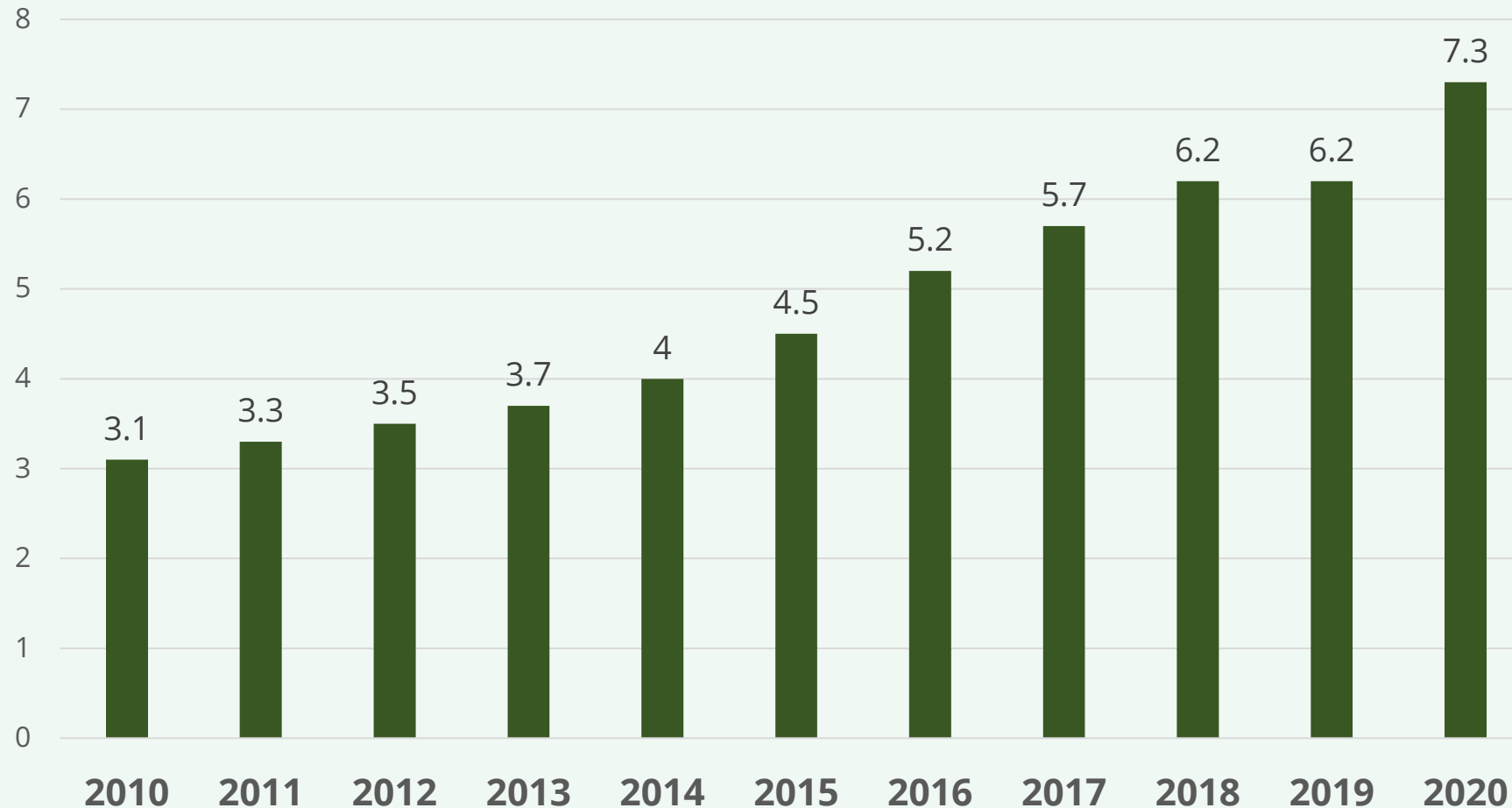


Percent of US Retail Sales Online



US Census Bureau, estimate based upon quarterly U.S. retail sales in dollars (adjusted). 2021 Figures preliminary.

US Postal Service Package Deliveries (billions)



Source: <https://facts.usps.com/table-facts/>

Transportation Challenges

In theory, a consolidated delivery system of online orders should have fewer miles travelled compared to driving for shopping.

But there are factors to consider:

- Multiple boxes and multiple warehouses via a single online order.
- Size and emissions of delivery vehicles.
- People choosing same-day or next-day shipping, requiring less optimized distribution/routing.
- Customers both shopping on-line and in stores, and "Click and Collect"/"BOPIS" (trips not being offset).
- E-commerce return rates can be 30% or higher (in-store: 10%).



Amazon E-Commerce Facilities in Massachusetts

- ▶ No facilities before 2014
- ▶ Currently 34 active (5.2 million square feet) and future facilities (6.2 million square feet)
- ▶ If all future facilities become operational, total square footage could reach 11.4 million square feet

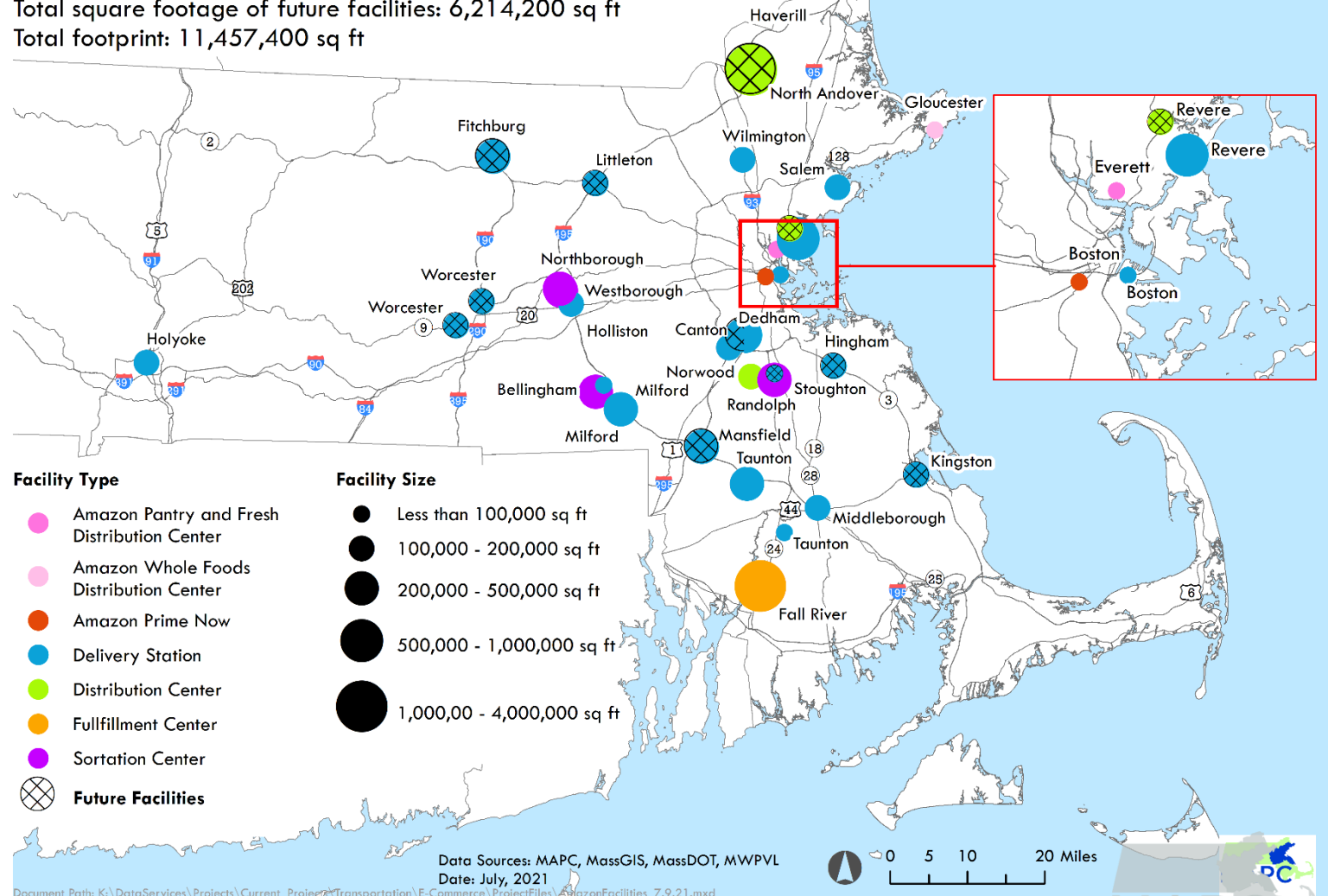
Amazon E-commerce Facilities in Massachusetts, 2021

34 facilities

Total square footage of active facilities: 5,244,000 sq ft

Total square footage of future facilities: 6,214,200 sq ft

Total footprint: 11,457,400 sq ft

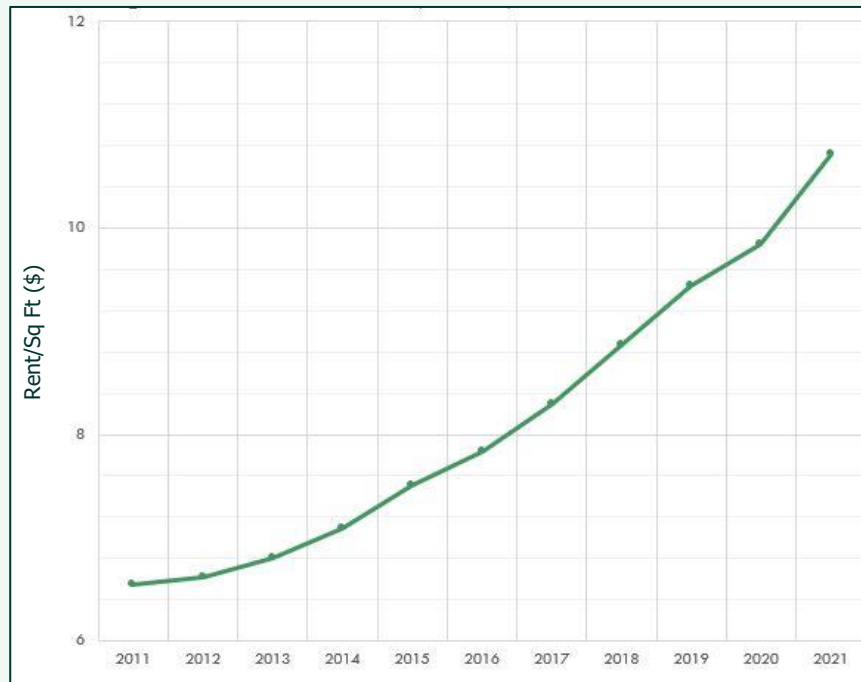


Source: MWPVL

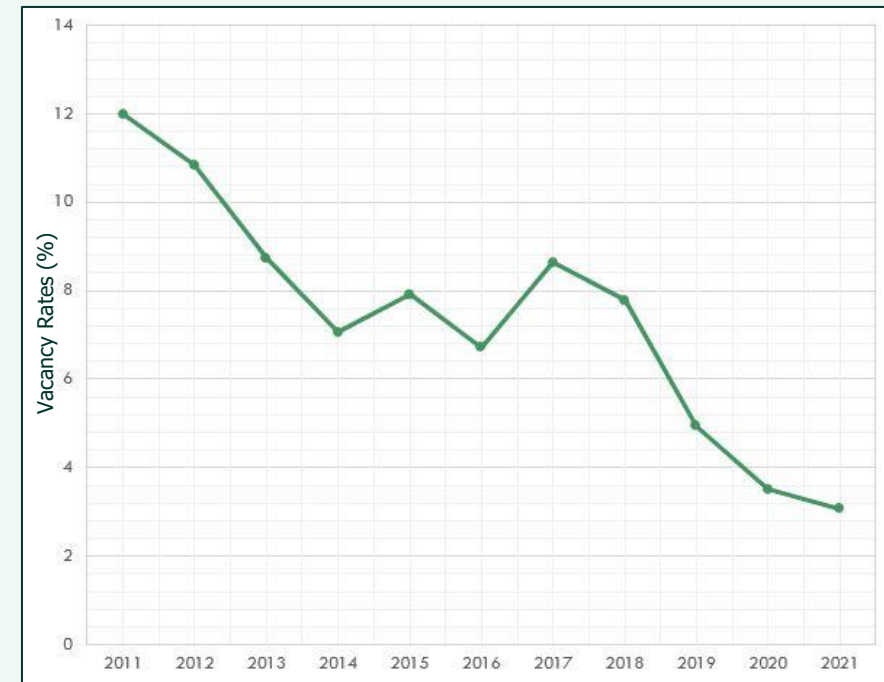
https://www.mwpvl.com/html/amazon_com.html and various media reports compiled by MAPC.

Industrial Real Estate Market in SWAP

**Change in Industrial Land Rents
(median) from 2011-2021**



**Change in Industrial Vacancy Rates
(median) from 2011-2021**



Brick and Mortar Retail



The U.S. has more retail space per capita than any other country.

- Considered to be "overbuilt."
- Store closures reached an all-time high in 2017 and again in 2019.
- Retail sales are not declining – rather the retail landscape is transitioning.

Further developments since the release of Hidden and In Plain Sight....



Repurposing of Traditional Brick and Mortar Retail Sites

- Examples: Dark Stores and Ghost Kitchens
- Implications: Parking, Curbside Usage, Street Vitality, Local Economy?



Food and Beverage Growing in its Share of E-Commerce

- Increase in cold storage space (temperature-controlled warehousing) - still a speculative sector

Potential Policy Responses to E-Commerce

▶ **Regional Coordination Among Municipalities**

Develop a transportation and land use design playbook for municipalities.

▶ **Increase Transparency in the Growing E-commerce Industry**

Require e-commerce companies to report information and metrics (e.g., location of facilities, employment, transportation).

▶ **Establish Incentives for Efficient Deliveries**

Set a fee structure that incentivizes companies and customers to opt for more sustainable delivery operations (e.g., combine orders into a single delivery, use common delivery/pick up areas, and not choose expedited deliveries).

▶ **Implement Curb Management Strategies**

Apply dynamic pricing models (e.g., peak-period surcharges for deliveries).

Establish enforcement mechanisms (e.g., in-field and/or remote (camera, GPS)).

▶ **Track Innovations in E-commerce**

Monitor new developments against public-sector performance standards (e.g., traffic congestion, GHG emissions, employment, equitable service).



What keeps
you up at
night?

Proposed Online Playbook Topic Areas

01. Industrial Warehouse Market Conditions

02. Trip Generation and Vehicular Activities

(Impact Studies, Trip Forecasting, Curb Use, and Parking)

03. Site Plan Review/Special Permit Process

04. Traffic Mitigation

(Restriction Zones, Off-site Parking, Transportation Demand Management, Fueling Operations, Signage, and Vehicle Idling)

05. Taxbase

06. Brick and Mortar Stores

(Dark and Semi-Dark Stores, Ghost Kitchens, and Parcel Lockers)

07. Project Monitoring Post Occupancy and Corrective Actions

08. Practices Outside Massachusetts

(California's Indirect Source Rule, Amazon's Housing Equity Fund)

09. Other?

Thank you!

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<https://metrocommon.mapc.org/reports/20>

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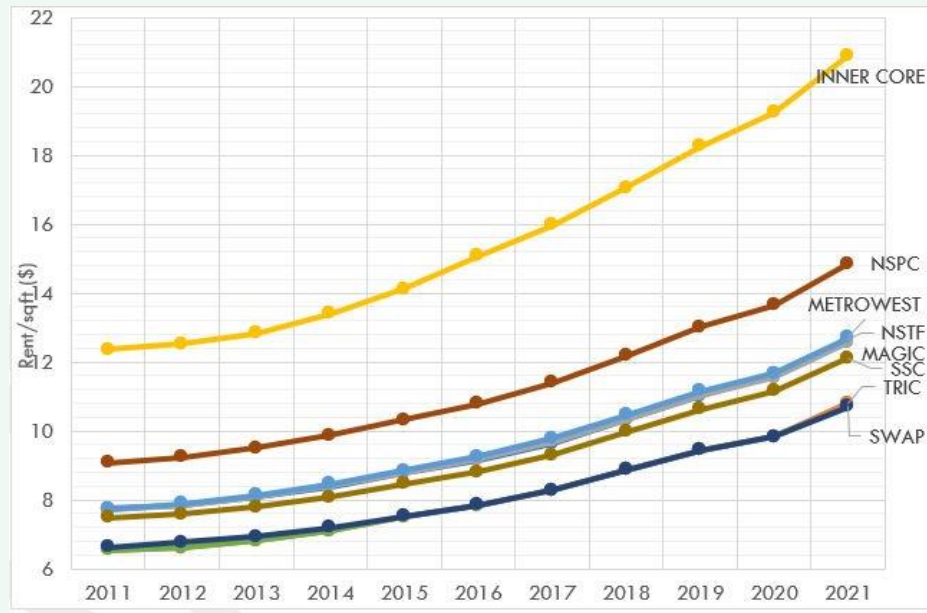
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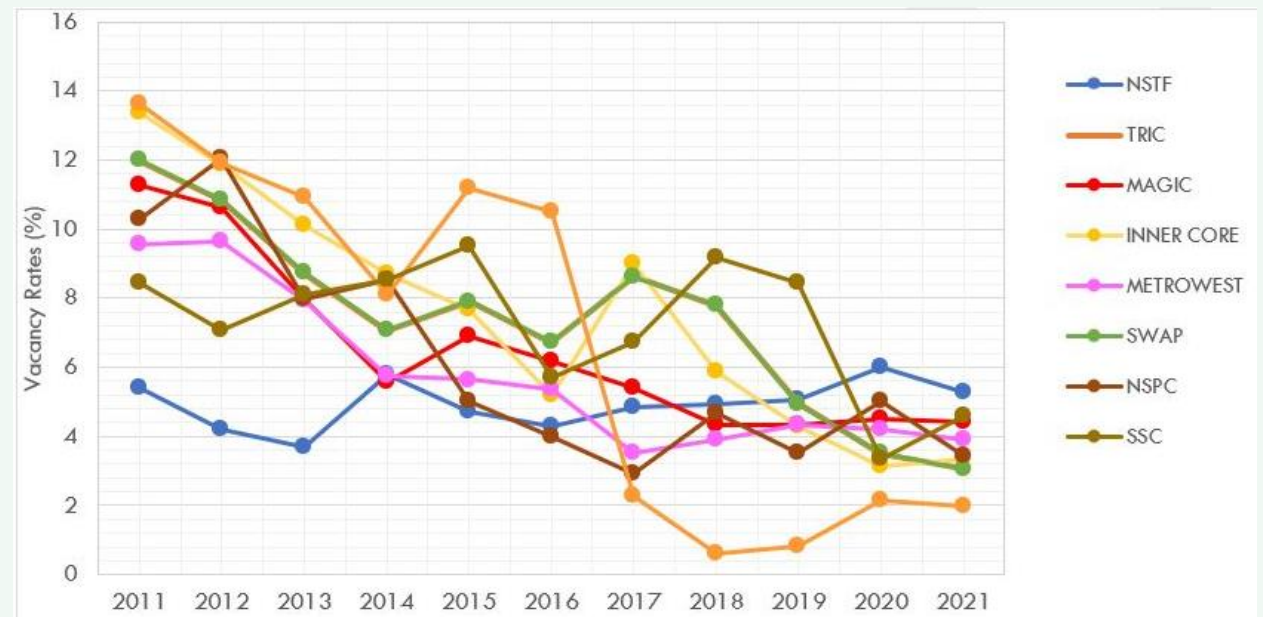


Industrial Real Estate Market in Massachusetts

Change in Industrial Land Rents (median) from 2011-2021



Change in Industrial Vacancy Rates (median) from 2011-2021





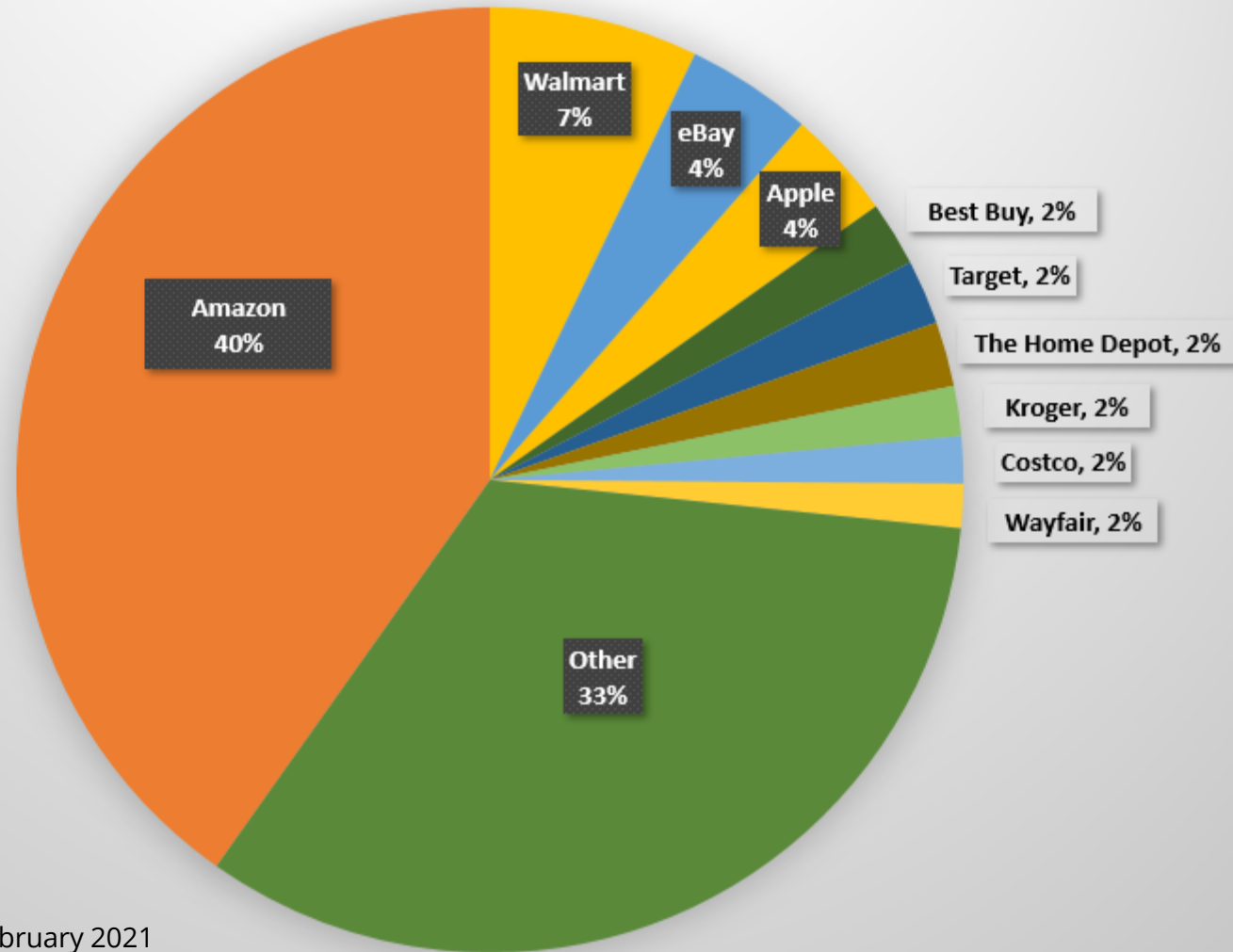
Transportation Challenges

Curb Impacts

- In cities commercial vehicles comprise nearly 30% of parking activity and more than 50% of parking violations. (Smart Cities Dive, 2020)
- Boston: substantial variation in curb space utilization and violations within only a few hundred feet throughout the day.
- Curb management pilots underway in Seattle, D.C., Toronto, Boston.

There is a lack of data on deliveries in defined geographies (cities, towns, neighborhoods) to determine whether e-commerce is creating trips, or replacing trips.

Top Ten US Retail E-commerce Companies Percent of Total E-commerce Sales – 2021



Source: eMarketer, February 2021