

# FIVE BOROUGH FOOD FLOW

2016 New York City Food Distribution  
& Resiliency Study Results



# SUMMARY OF FINDINGS

The Five Borough Food Flow is a study of the last-mile food distribution system that feeds New York City and its millions of visitors every year. This complex network of food hubs, distribution centers, trucking routes, and point-of-sale outlets ranks among the largest food distribution systems in the nation. With demand on the rise and billions of pounds of food flowing through the city every year, this study helps us understand how New York City's food distribution system is changing and informs our work to make it sounder, stronger, and more resilient.

## SIZE AND STRUCTURE OF FOOD DISTRIBUTION SYSTEM

Approximately **19 BILLION LBS. OF FOOD** are distributed throughout New York City each year from approximately **42,000 SEPARATE POINT-OF-SALE OUTLETS**

**MORE THAN 50%** of the last-mile food distribution<sup>1</sup> into New York City begins from within the five boroughs

**46% OF FOOD** is refrigerated or frozen, with lower shelf-life and specific infrastructure requirements

Distributor market share split will remain largely the same **OVER NEXT 10 YEARS**

## GEOGRAPHIC DISTRIBUTION OF FOOD BUSINESSES

**CLUSTERING IS BENEFICIAL TO FOOD BUSINESSES** because of efficiencies with receiving shipments and accommodating customer pick-up

**HUNTS POINT IS THE LARGEST GEOGRAPHIC HUB** in New York City for food distribution

Many factors go into the decision about where to locate a food business, but distributors will generally pick a location in New York City if more than **50-60% OF THEIR CUSTOMERS ARE LOCATED WITHIN THE CITY**

## PREPAREDNESS

The city's point-of-sale outlets keep **4 TO 5 DAYS OF FOOD** in stock on average

Because of the high fragmentation of the food distribution system (i.e., thousands of distributors serving tens of thousands of outlets), **THE FOOD SYSTEM IS UNLIKELY TO BE SIGNIFICANTLY IMPACTED BY DISRUPTION TO A SINGLE DISTRIBUTOR**; however, there are infrastructure and localized risks to the food distribution system

Point-of-sale outlets are **MORE LIKELY TO BUY INSURANCE TO ADDRESS RISK** rather than make physical investments in resiliency

## TRANSPORTATION AND TRUCK ROUTES

**99% OF LAST-MILE DELIVERY** is done by truck

Top **4 BRIDGES AND 2 TUNNELS CARRY MORE THAN 50%** of food volume into New York City

## FOOD DISTRIBUTION JOBS

Food distribution jobs can be **HIGH-QUALITY, ACCESSIBLE INDUSTRIAL JOBS**<sup>2</sup>

**DISTRIBUTION LABOR JOBS** are less at risk of being automated relative to food manufacturing jobs

<sup>1</sup> Last-mile distribution refers to the process of how food is transported from wholesale suppliers to consumer point-of-sale locations (i.e., grocery stores, markets, restaurants), including the modes of transportation used and the physical routes taken to its final location

<sup>2</sup> As evaluated by mean average salary and percentage of workers with associate's degree or greater

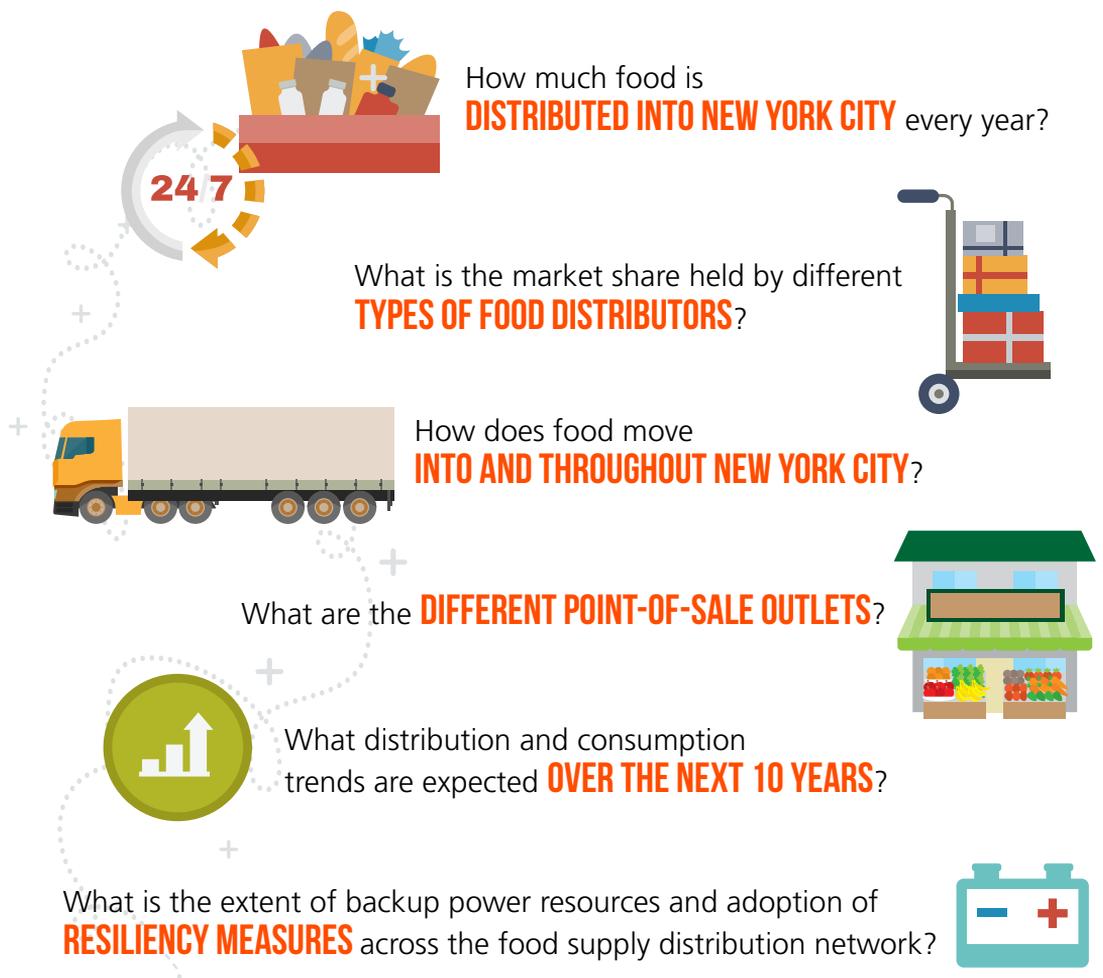
# INTRODUCTION

**NEW YORK CITY'S FOOD DISTRIBUTION SYSTEM** is among the largest in the United States. It serves the City's 8.4 million residents, over 60 million annual tourists, and hundreds of thousands of commuters on a daily basis. The Mayor's Office of Recovery and Resiliency (ORR) and New York City Economic Development Corporation (NYCEDC) commissioned a groundbreaking study to better understand the city's food distribution system on recommendations from the City's comprehensive reports, *A Stronger, More Resilient New York*<sup>3</sup> and *OneNYC: The Plan for a Strong and Just City*. These comprehensive plans contain actionable recommendations both for rebuilding the communities impacted by Superstorm Sandy and increasing the resilience of infrastructure and buildings—including the food supply—citywide. The City will use findings from this study to shape investments in improving New York City's food supply system, with a focus on resiliency and modernization. Resiliency is defined as the ability for the food system—both the distribution supply chain and the point-of-sale outlet network—to withstand and/or recover quickly from system interruption. Modernization is defined as upgrading facilities and infrastructure to meet the business, logistics, and food safety needs of a twenty-first-century food distribution system.

## WHAT IS LAST-MILE FOOD DISTRIBUTION?

**Last-mile distribution** refers to the process of how food is transported from wholesale suppliers to consumer point-of-sale locations (i.e., grocery stores, markets, restaurants), including the modes of transportation used and the physical routes taken to its final location.

The study explores the size, structure, and resiliency of New York City's last-mile food distribution system in order to explain:



Understanding this landscape will help the City make informed policy decisions with regards to New York City's food networks and the data collected will be used to improve the city's last-mile food distribution. Furthermore, the study is informing the City's plans for the future of several large industrial City assets in Hunts Point and Sunset Park that are home to many food distribution and manufacturing businesses and freight infrastructure. Our research will also help inform the ongoing Community Development Block Grant Disaster Recovery (CDBG-DR) Hunts Point Resiliency feasibility studies, which aim to advance energy resiliency and flood risk reduction on the peninsula and promote a pilot project in energy resiliency.

<sup>3</sup> The report can be downloaded at <http://www.nyc.gov/html/sirr/html/report/report.shtml>

<sup>4</sup> More information available at <http://www.huntspointresiliency.nyc>

# ABOUT THE STUDY

The scope of the study is limited to the last-mile distribution of food in New York City in order to understand the local supply system across the five boroughs. The study focuses exclusively on how the food gets to consumer point-of-sale locations once it arrives in the greater New York City region. It does not explore the wholesale supply chain before this last mile. The study does not go into detail on the location of farms, food producers, or manufacturers, nor does it examine how food reaches New York City's wholesale suppliers. During the interview process, the study team asked the wholesalers and distributors about their contingency planning for any upstream disruptions (i.e., change in the availability of supply from the farms, food producers or manufacturers they typically source from). The wholesalers and distributors indicated that there are multiple available sources to purchase from if their regular supplier was unavailable.

It is also important to note that this study is separate from and does not incorporate the emergency feeding plan activated in the event of natural disasters or other emergencies as coordinated by New York City Emergency Management with City and Federal agencies and non-profit partners.



## GOALS OF THE FOOD SUPPLY STUDY

- Understand **key economic trends** in New York City's food manufacturing and distribution ecosystem to inform modernization of the City's industrial properties
- Identify **major risks in the food distribution system** to inform the steps necessary to make the system more resilient



## AREAS OF FOCUS

The study improves the City's understanding of:

- **Locations:** Where critical food supply hubs and distribution channels operate
- **Amounts:** Measuring the food supply by volume and food type
- **Infrastructure:** The physical systems that house the food supply hubs, as well as the distribution network of the food supply and its critical dependencies



## METHODOLOGY

- Conducted **over 80 in-depth interviews** with distributors and retailers across the food supply chain
- Organized **nearly 600 in-person surveys** of different consumer point-of-sale outlets across all five boroughs
- Engineered **over 50 surveys** with chain point-of-sale outlets to assess distribution profiles
- Aggregated **secondary data** sources
- Developed a **database of point-of-sale outlets** based on multiple public and private data sources
- Examined **key trends** impacting point-of-sale outlets and distributors to create a risk assessment framework
- Developed **scenarios** to identify how the food supply chain might shift if portions of the system are unable to operate

# FINDING 1

## SIZE AND STRUCTURE OF THE FOOD DISTRIBUTION SYSTEM

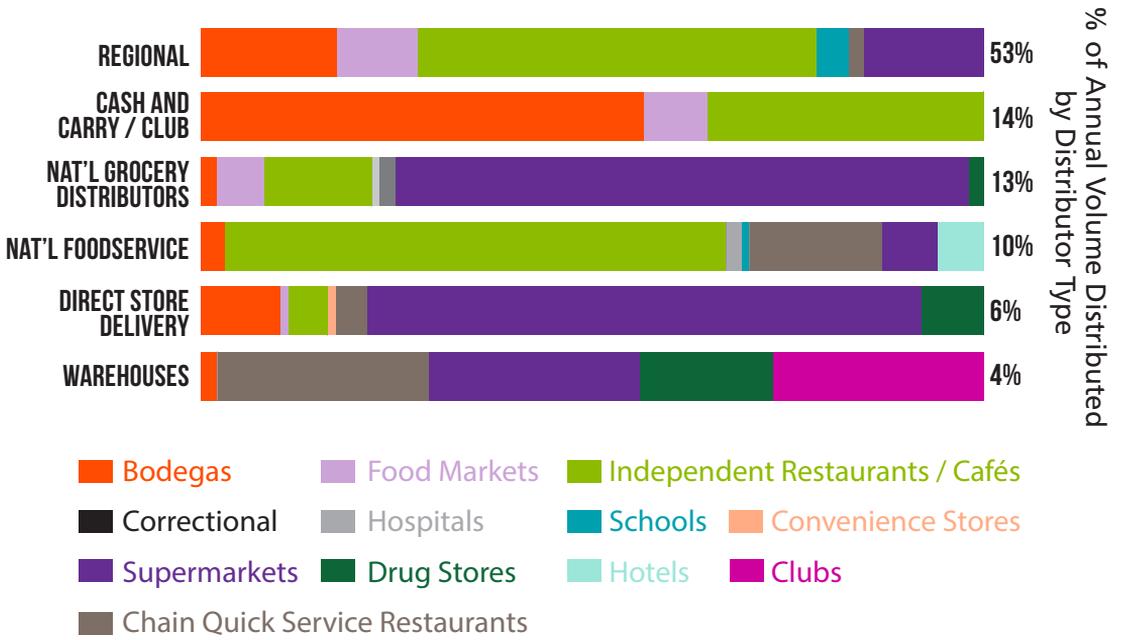
New York City's food supply chain is a dynamic system comprised of numerous food distributors and a variety of point-of-sale outlets, and this study identifies what types of distributors serve what kinds of outlets.

FOOD DISTRIBUTORS	<b>NATIONAL FOODSERVICE DISTRIBUTORS</b>	Distributors with national networks that primarily serve food service outlets and institutions. <i>Example: Sysco, US Foods</i>
	<b>NATIONAL GROCERY DISTRIBUTORS</b>	Large distributors that primarily serve supermarkets. <i>Example: C&amp;S, Wakefern</i>
	<b>CASH AND CARRY DISTRIBUTORS</b>	Large warehouse distributors that require customers to shop onsite and do not deliver. <i>Example: Jetro/Restaurant Depot</i>
	<b>REGIONAL DISTRIBUTORS</b>	Small- to mid-sized distributors primarily serving regional markets that sell to a range of customers. <i>Example: Katzman Produce, Pierless Fish, Krasdale</i>
	<b>DIRECT-STORE-DELIVERY</b>	Manufacturers delivering directly to retail outlets. <i>Example: Pepsi, Coca Cola, Goya, Boar's Head</i>
	<b>WAREHOUSE</b>	Restaurant/retailer warehouses distributing to affiliated outlets (i.e., supermarkets, chain quick service restaurants). <i>Example: Domino's</i>
POINT-OF-SALE OUTLETS	<b>INDEPENDENT RESTAURANTS AND CAFÉS</b>	Includes both establishments that provide sit-down meals and those whose patrons order or select items and pay before eating. Food and drink may be consumed on premises, taken out, or delivered to customers' locations. <i>Example: Ten Tan Restaurant, Gabby's Pizza, Tosca Restaurant</i>
	<b>BODEGAS</b>	A small store (< 5,000 SF) in an individual location that sells a limited range of food and is mainly focused on dry goods and beverages. Bodega data also includes independent restaurants and cafés < 5,000 SF. <i>Example: Hiho Deli Grocery, Villa Grocery, Myrtle Convenience Deli</i>
	<b>CHAIN QUICK SERVICE RESTAURANTS</b>	A restaurant characterized by its fast food cuisine and minimal table service. <i>Example: McDonalds, Subway, Starbucks</i>
	<b>FOOD MARKETS</b>	A consumer-facing marketplace that only sells one product, be it fish, fruit, vegetables, or meat. <i>Example: CNC Fish Market, Kingston Fruit and Vegetables, Family Traore Halal Meat Market</i>
	<b>DRUG STORES</b>	A chain retail store where medicines and miscellaneous articles (i.e., food, cosmetics, and film) are sold; food represents ~20–30% of their products. <i>Example: Duane Reade, Walgreens, CVS</i>
	<b>CHAIN SUPERMARKETS</b>	A large self-service retail market that sells food and household goods. <i>Example: Gristedes, Associated Supermarkets, Whole Foods</i>
	<b>CHAIN CONVENIENCE STORES</b>	A conveniently located chain store with extended opening hours that stocks a limited range of household goods and groceries. <i>Example: 7-Eleven, M2M</i>
	<b>CLUBS</b>	A retail store with a wide variety of merchandise where customers buy large, wholesale quantities. <i>Example: Costco, BJ's, Sam's</i>
	<b>OTHER</b>	Point-of-sale outlets also include institutions such as schools, hospitals, correctional institutions, day care centers, and senior centers.

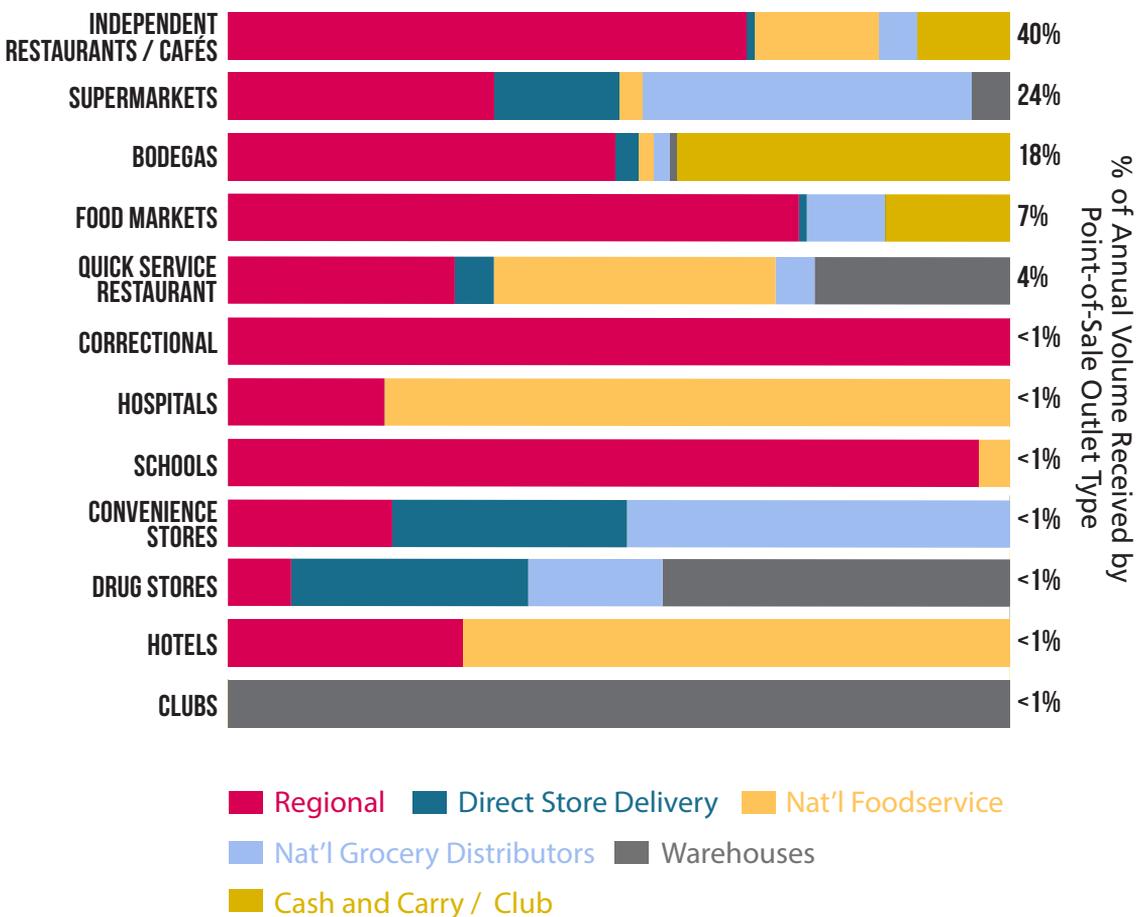
# LAST-MILE SUPPLY CHAIN

Roughly 19 billion lbs. of food flow through thousands of distributors and end up at around 42,000 point-of-sale outlets. Regional distributors predominantly serve independent restaurants, supermarkets, and bodegas. Cash and carry distributors mostly supply independent restaurants and bodegas. All point-of-sale outlets are sourced from several types of distributors – no outlet has a single source.

## WHERE DISTRIBUTORS SEND THEIR FOOD

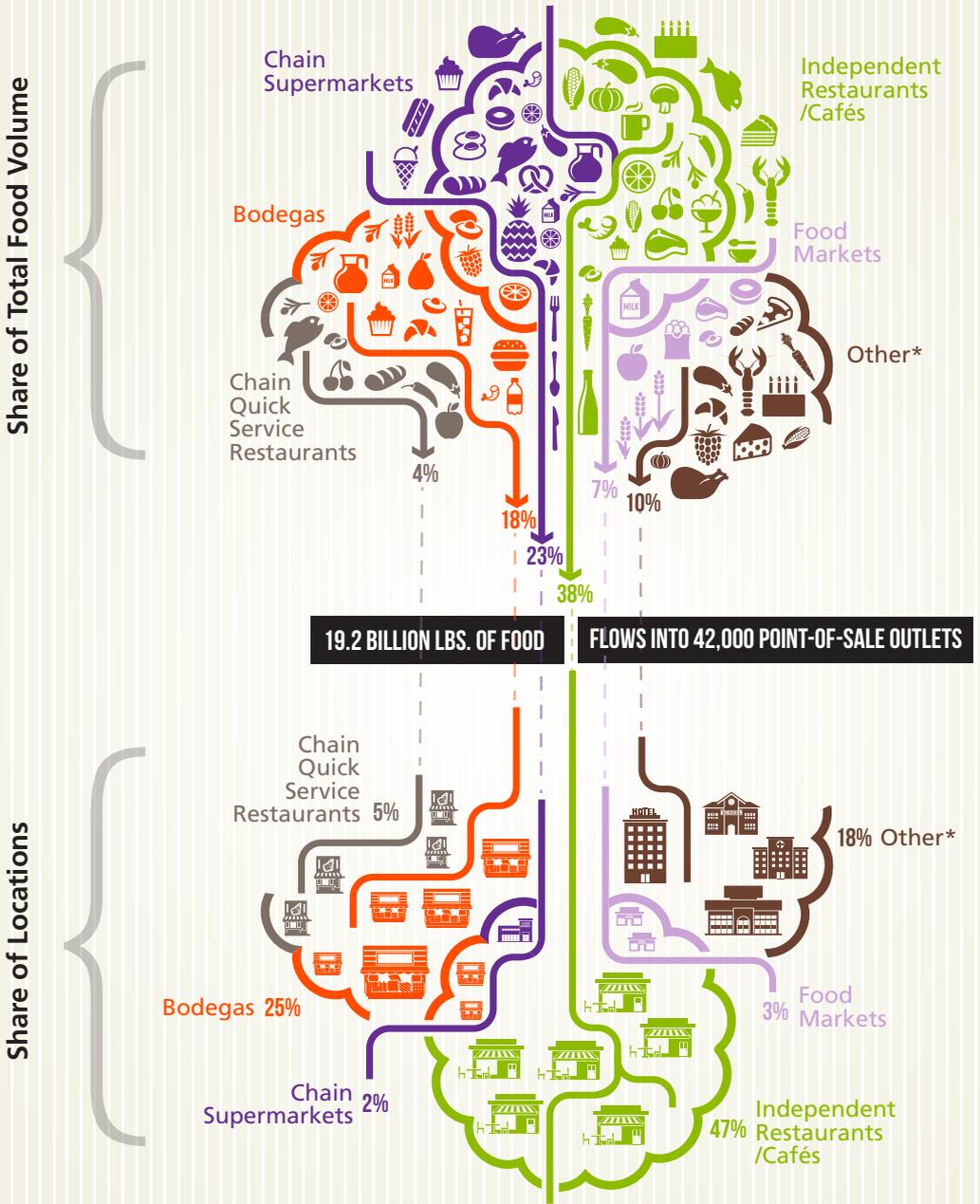


## WHERE POINT-OF-SALE OUTLETS GET THEIR FOOD



# FOOD FLOW

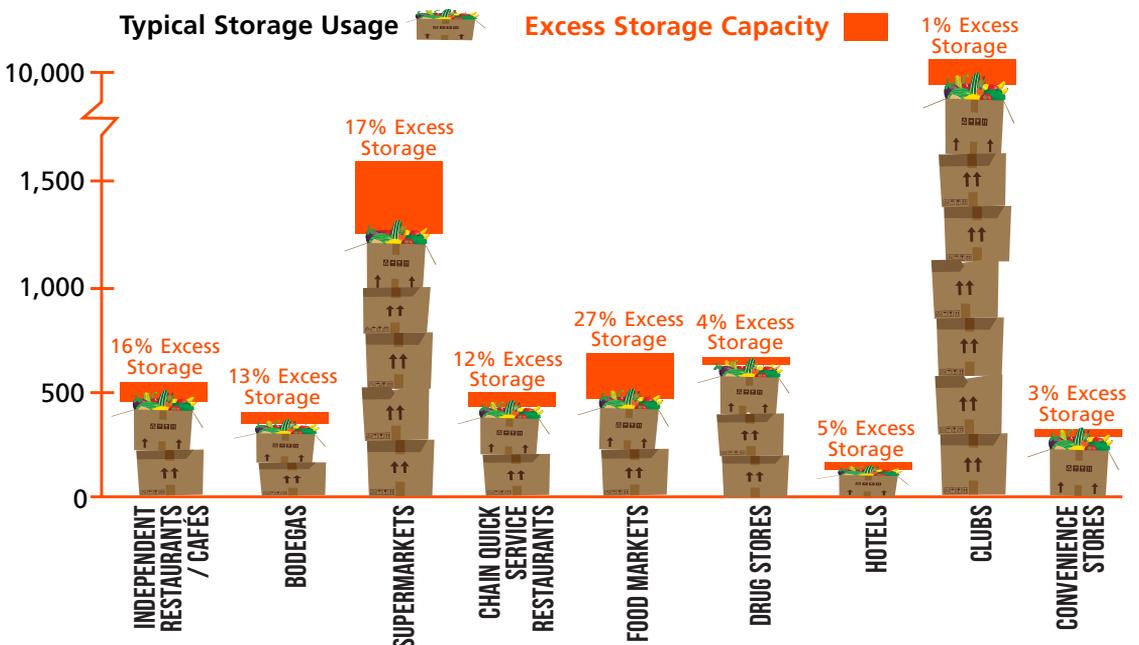
There are over 42,000 point-of-sale outlets in New York City. Consumers access almost 40% of annual food volume through independent restaurants and cafés. Chain supermarkets are the second highest source of food volume despite having far fewer stores relative to other point-of-sale channels. There are over 10,000 independent bodegas but only 100 chain convenience stores. Consumers access more food through the school system each year than through club stores (i.e., Costco).



\* Other includes schools, drug stores, clubs, hotels, hospitals, chain convenience stores, correctional institutions, online grocery, food banks, universities, farmers markets, green carts, and caterers

# ON-SITE STORAGE

Due to limited storage space at the point-of-sale outlets and just-in-time inventory management, point-of-sale outlets rely on continuous food deliveries.



# PROJECTED DEMAND FOR FOOD IN NYC

Demand for food in New York City is growing at 1.6% per year (double the national average of 0.7%). This increase will lead to roughly 50,000 unique food outlets by 2025, but the point-of-sale ratio is not expected to change dramatically.

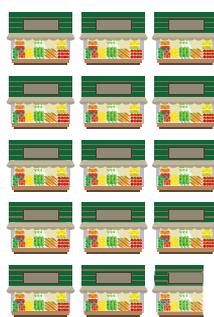
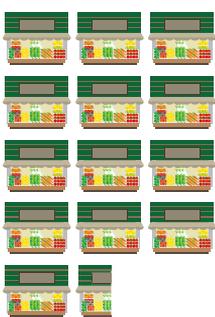
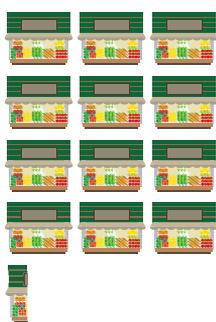


 = 10,000 POINT-OF-SALE OUTLETS

42K

45.7K

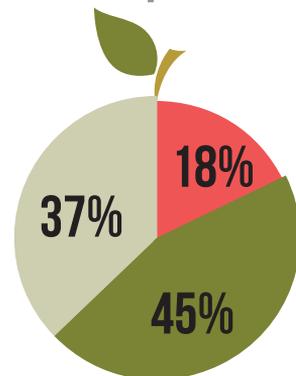
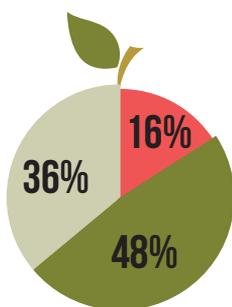
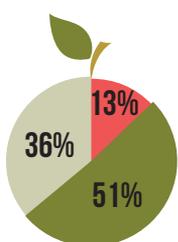
49.4K



 = 1 BILLION LBS. OF FOOD PER YEAR BY DEMAND



Between 2015 and 2025, cash and carry wholesalers are expected to slightly increase their market share by pulling a small percentage of that share from regional distributors.



- Regional Distributors
- Cash and Carry
- Other Distributors

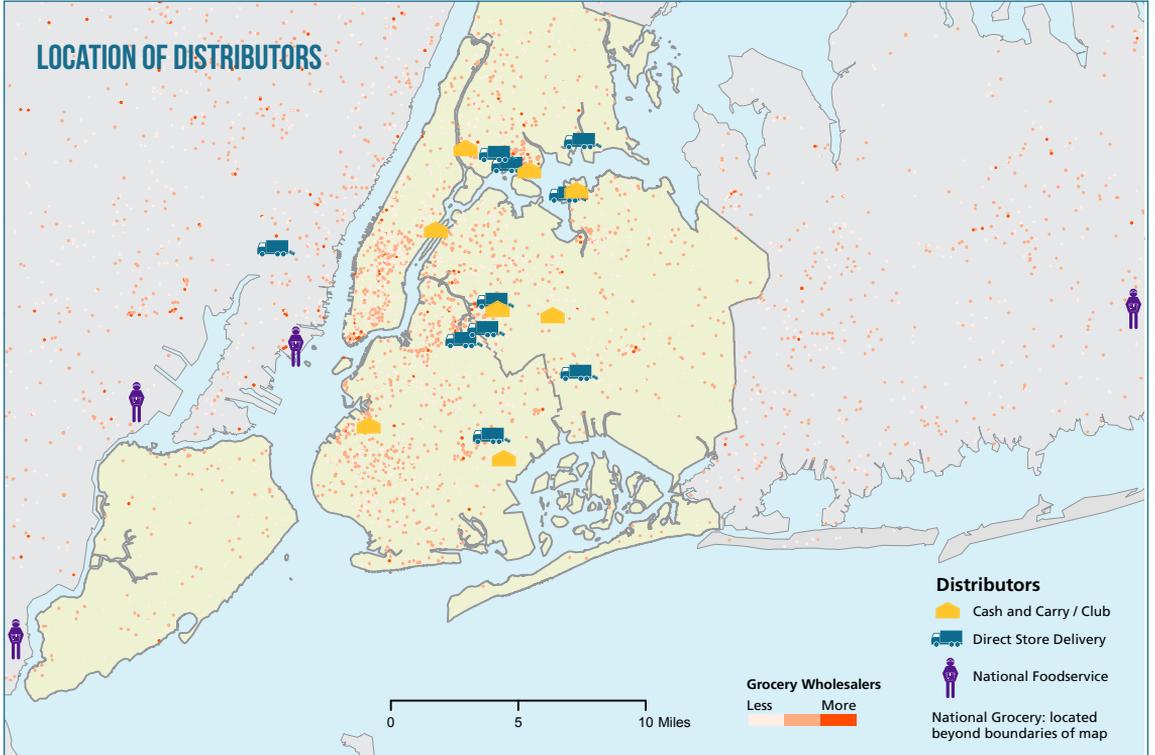
Online grocery is expected to capture **6% OF THE POINT-OF-SALE MARKET** by 2025, up from **3% IN 2015**.

# FINDING 2

## GEOGRAPHIC DISTRIBUTION OF FOOD BUSINESSES

The study investigates where food businesses cluster in the city and the reasons why these businesses choose their locations.

There are several major food distribution clusters across the city, including Hunts Point, College Point, and Sunset Park. **HUNTS POINT IS THE LARGEST GEOGRAPHIC HUB FOR FOOD DISTRIBUTION BY VOLUME.**

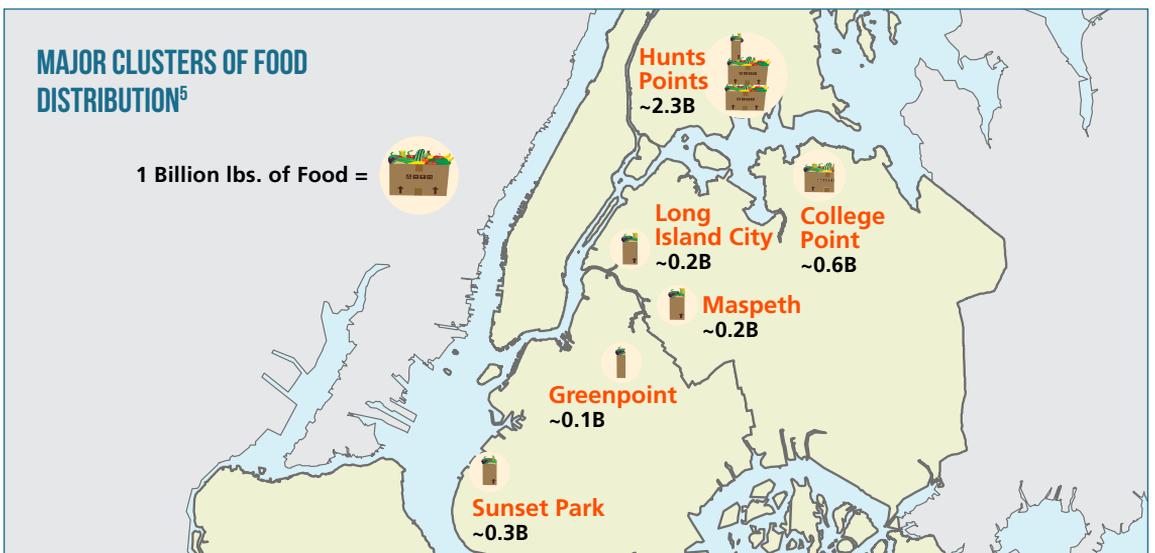


Source: Dun & Bradstreet 2015

**DISTRIBUTORS WILL GENERALLY PICK A LOCATION IN NEW YORK CITY IF MORE THAN 50-60% OF THEIR CUSTOMERS ARE LOCATED WITHIN THE CITY.** For these distributors, the cost of rent in New York City is typically counterbalanced by the cost of transportation incurred if located outside of the five boroughs. Other factors contributing to locational decisions include energy costs, labor costs, access to labor, and public incentives, among others.

Being located in New York City also gives distributors access to a large employee and customer base. Uncertainty about future rent increases and availability of modern Class A industrial space may cause some to consider relocating to and/or planning expansions elsewhere in the region. **DISTRIBUTORS SEEK FACILITIES THAT CAN PROVIDE 24+ FOOT CEILING HEIGHTS, 2+ LOADING DOCKS, LARGE POWER SUPPLY TO MATCH BUSINESS NEEDS, LOW FLOOD RISK, AND CONFINED AREAS FOR WASTE MANAGEMENT.**

**DISTRIBUTORS AND MANUFACTURERS PREFER TO BE LOCATED CLOSE TOGETHER DUE TO THE BENEFITS OF CLUSTERING.** These benefits include cost efficiencies when receiving shipments and increased revenue because customers can shop at several nearby manufacturers and distributors during the same trip.



<sup>5</sup> Figures represent volume of food distributed from that location into New York City only and does not include additional food volume that is exported outside of the city for consumption by customers in the greater region.



# HUNTS POINT FOOD DISTRIBUTION CENTER

The Hunts Point Food Distribution Center is the largest single geographic cluster of food distribution into New York City, measured by annual distribution volume (lbs.) to New York City customers.



**4.5  
BILLION  
LBS.**

of food is distributed through the Hunts Point Food Distribution Center annually.

**~50% (2.3 BILLION LBS.)** goes to New York City and 50% outside the city,

employing **8,500 DIRECT JOBS**



**12%** of all food distributed to New York City comes  
**FROM THE HUNTS POINT FOOD DISTRIBUTION CENTER**

 = New York City



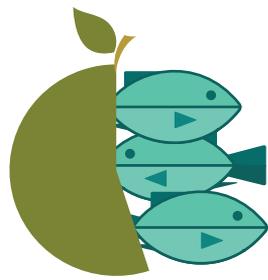
For categories in which the Hunts Point Food Distribution Center specializes, the market share is even greater:



**PRODUCE**  
**25%**  
(0.9 billion lbs.)



**MEAT**  
**35%**  
(1.1 billion lbs.)



**FISH**  
**~45%**  
(0.1 billion lbs.)

Independent restaurants are the largest customer segment served by Hunts Point  
**HUNTS POINT FOOD DISTRIBUTION CENTER**



# FINDING 3

## PREPAREDNESS<sup>6</sup>

Keeping New Yorkers supplied with the food they love means limiting disruption within the region's food distribution supply chain. This supply chain includes wholesalers and distributors that move food through the region. It also includes the places where consumers access food, such as restaurants, shops, and pantries.

### DISTRIBUTORS

The **DISTRIBUTION LANDSCAPE IS HIGHLY FRAGMENTED** with no single distributor or geographic hub having higher than a 15% share. The study finds that there are **LIMITED SYSTEMIC RISKS** because **THE FOOD SYSTEM IS UNLIKELY TO BE SIGNIFICANTLY IMPACTED BY DISRUPTION TO A SINGLE DISTRIBUTOR**; other distributors are often able to backfill gaps created by individual outages in the system.

Although the food distribution system is unlikely to be significantly impacted by the disruption of a single distributor, there are still **INFRASTRUCTURE AND LOCALIZED RISKS** to the system that remain. Some locations, such as those in the floodplain, are at a higher risk.

**NATIONAL FOODSERVICE DISTRIBUTORS AND NATIONAL GROCERY DISTRIBUTORS ARE BETTER PREPARED** for disruption **THAN REGIONAL DISTRIBUTORS OR CASH AND CARRY WHOLESALERS**. National food service distributors and national grocery distributors tend to be larger business operations that make greater investments in backup power, backup fuel stock, and other resiliency measures. These companies also tend to have multiple locations in the region that could serve New York City if the primary distribution points were unavailable.

Regional distributors and cash and carry wholesalers also have the potential to substitute and cover gaps in supply if other regional distributors or cash and carry locations are unavailable. There is less of an ability to quickly shift supply chains because regional distributors and cash and carry stores represent a greater number of individual businesses, and many of these locations rely on customer pick-up business (i.e., on-site customer shopping) tied to specific geographic areas. For example, if a cash and carry location in the Bronx were unavailable, customers would need to travel to Brooklyn or Queens to access the same type of distributor.

### POINT-OF-SALE OUTLETS

Due to the limited amount of on-site storage space at point-of-sale outlets, the New York City food system holds **ROUGHLY 4 TO 5 DAYS OF REGULAR CONSUMPTION** of food stock on average. These outlets typically rely on continuous food deliveries, known as just-in-time inventory. If a weather event is anticipated in advance, certain outlets may be able to send additional deliveries in order to restock their shelves more frequently to balance consumer rushes. This makes continuity of distribution increasingly important.

#### TYPICAL DAYS OF STOCK BY POINT-OF-SALE OUTLET TYPE



<sup>6</sup> As noted, the focus of this study is on the wholesale food distribution supply chain and point-of-sale outlets. This information will inform New York City Emergency Management's Food Access Plan.

### Finding 3, Point-of-Sale Outlets continued

Many point-of-sale outlets in New York City rent their store space from a landlord who manages the entire building. As renters, they have limited ability and less of an incentive to make structural resiliency investments, such as backup power or the elevation of critical mechanical and electrical systems.

**IN MANY INSTANCES, POINT-OF-SALE OUTLETS PRIORITIZE MAINTAINING INCOME CONTINUITY** than operational continuity during disruptions; therefore, **THEY ARE MORE LIKELY TO INVEST IN BUSINESS AND/OR FLOOD INSURANCE THAN IN PHYSICAL PREPAREDNESS**, such as a backup generator, since insurance is a lower cost option for ensuring income continuity.

## CONSUMERS

Consumers face additional vulnerabilities if they are low-income, lack mobility, face geographic isolation or have limited choices of where to purchase food on a daily basis. These **EVERYDAY CHALLENGES IN ACCESSING HEALTHY AND AFFORDABLE FOOD CAN WORSEN THE IMPACT OF DISRUPTIONS FURTHER UP THE SUPPLY CHAIN.**

## FINDING 4

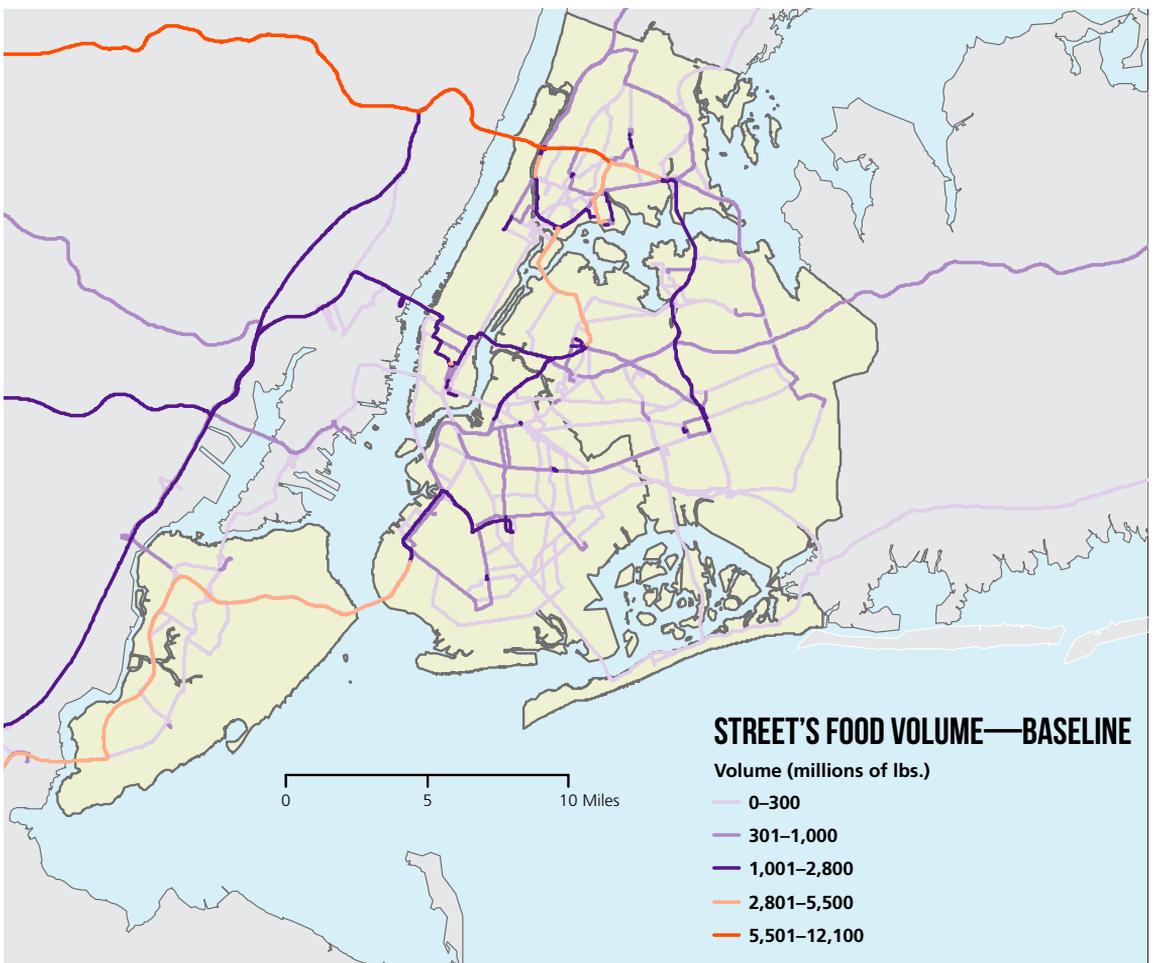
### TRANSPORTATION AND TRUCK ROUTES

Transportation systems and truck routes are key infrastructures for the flow of all commodities, including food, into New York City. The city's geography creates dependencies on a limited number of bridges and tunnels for goods moving by truck.

The city's food distribution system **relies on bridges and tunnels** to reach their consumers since 99% of the last-mile distribution is done by truck.

A combination of **FOUR MAJOR BRIDGES AND TWO TUNNELS CARRY OVER 50% OF TOTAL FOOD** volume.

## TYPICAL ROUTES OF FOOD DISTRIBUTION TRUCKS INTO NEW YORK CITY

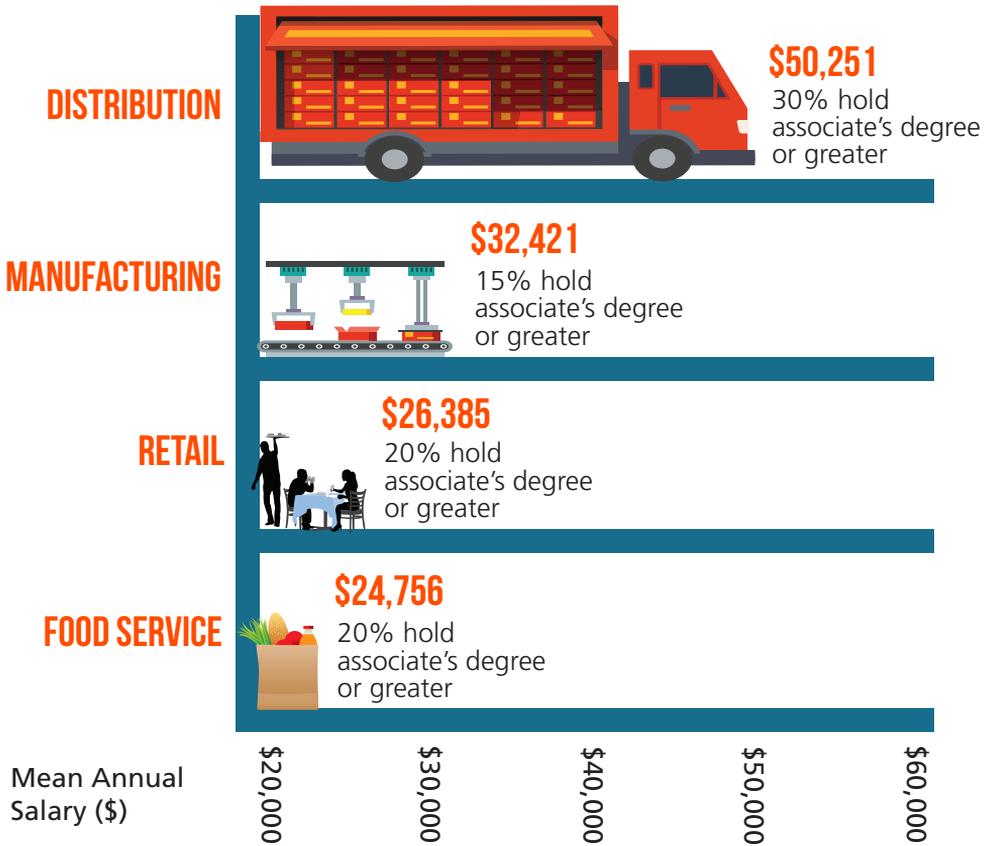


**Note:** This map shows the typical routes that all food distribution trucks travel into New York City under normal conditions, as measured in volume (lbs.) of food. Similar to the rest of the study, this map includes food supply volume for last-mile delivery into the city; unlike the data in the rest of the study, this map also includes food supply volume traveling from distribution centers and manufacturers to their last-mile delivery hubs and food supply volume that passes through distribution hubs in New York City for final consumption elsewhere in the region.

# FINDING 5

## FOOD DISTRIBUTION JOBS

### MEAN SALARY & EDUCATION BY FOOD SECTOR JOB TYPE

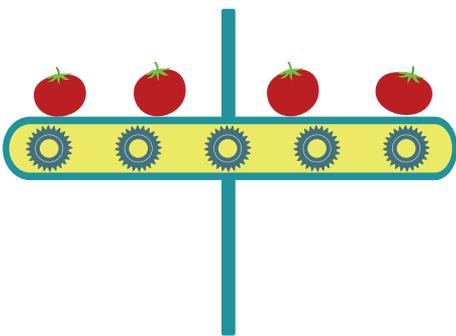


Employment in the food distribution sector includes high-quality industrial jobs, with many of these positions specifically in the transportation of goods.

### PROJECTED FOOD SECTOR JOB TRENDS

#### FOOD MANUFACTURING JOBS WILL INCREASE BY 0.3%.

A greater share will be in management/operations (+3%) and sales/marketing (+3%), and a lesser share will be in labor (-6%).



#### FOOD DISTRIBUTION JOBS WILL INCREASE BY 0.4%.

A greater share will be in labor (+1%), a lesser share will be in management/operations (-1%), and the sales/marketing share will remain the same.



The differing trends in labor jobs (warehouse/production) is attributed to the fact that food **distribution** labor jobs are less at risk of being replaced by automation than food **manufacturing** labor jobs.

## NEXT STEPS

The Five Borough Food Flow study developed a primary dataset and complex analytical tools for the City to use to inform policy around food system resiliency and economic development. This document includes the data and findings from the study. As the next step, the City will convene an interagency group to integrate this dataset into other resiliency efforts, evaluate potential policy decisions, and develop a strategy to communicate with private businesses and community groups to determine how to best strengthen the food supply system.



### PREPAREDNESS AND TRANSPORTATION DEPENDENCIES

- **Integrate and coordinate findings** with ongoing studies, such as the CDBG-DR Hunts Point Resiliency feasibility studies led by ORR and NYCEDC, the Regional Resiliency Assessment for Commodities lead by NYC Emergency Management, freight planning efforts led by NYCEDC, and the Resilient Retail and Resilient Industry studies led by the Department of City Planning.
- **Evaluate potential** for additional resiliency measures in certain strategic geographic locations for distributors and point-of-sale outlets.
- **Identify ways to support** food distributors and point-of-sale outlets during an emergency event.
- **Engage with community groups** to discuss the potential for partnerships to advance resiliency in certain strategic geographic locations.



### FOOD SYSTEM STRUCTURE, DISTRIBUTION TRENDS, CLUSTERING, AND JOBS

- Continue the implementation of the **\$150 million Hunts Point Food Distribution Center modernization plan** that was announced by Mayor de Blasio in March 2015, which supports the regional distributors highlighted in this study. This investment ensures that the industrial food cluster in Hunts Point comprises of modern and resilient facilities with diverse, job-intensive food uses that foster innovation and entrepreneurship and supports a world-class distribution center.
- Tenant the **new 55,000 SF food manufacturing hub** at the Brooklyn Army Terminal Annex Building, as announced in August 2016, and pursue additional opportunities to support food distribution businesses on the City's Sunset Park industrial properties.
- Explore opportunities to integrate **additional modes of freight transportation** into the food supply chain and distribution system.