



KARP RESOURCES

HOSTOS COMMUNITY COLLEGE

Final Presentation;

Phase One

July 18, 2013



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GOALS FOR TODAY'S DISCUSSION

Recap key outcomes of June meeting

Provide an update on research completed

Share findings from data gathering that inform the curriculum map

Present and discuss the updated curriculum map



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Proposed curriculum map

- Map overview
- Detail on proposed curriculum elements
- Potential partners

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WORK TO DATE

Completed 5 baseline interviews

Compiled overview of qualitative food trends shaping the industry

Developed a detailed quantitative assessment of employment and industry outlook, including expected job growth by category nationwide and in NYC

Compiled detailed job profiles for 20 food jobs, and provided details from interviews for 15 more

Scanned more than 50 educational programs – nationally (4-yr and 2-yr) and in NYC

- Identified 10 educational programs for further review and conducted review of offerings

Conducted 16 industry and government interviews in NYC and regionally to understand employer perspectives on education

Identified an example set of over 90 organizations that Hostos might partner with to provide internship opportunities, site visits or advise to the program



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RECAP OF JUNE MEETING

Agreed on broader goals for food studies curriculum

Explored broader food and food employment trends

- Keen interest in drilling down to understand the details of unfamiliar jobs
- Ensure that regional opportunities are included

Discussed direction of preliminary curriculum map

- Interest in adding culinary opportunities to the picture
- Deciding where programs fits in existing offerings is part of broader implementation phase
- Interested in hearing independent recommendations from both consultants
- Emphasized importance of including all findings, to “let Hostos decide” how to move forward



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GOALS FOR FOOD STUDIES PROGRAM

After an initial meeting, and several baseline interviews, we see the following measures of success for a Hostos Community College Food Studies program

To succeed at Hostos, a food studies program must:

- Prepare graduates for clearly defined job opportunities and provide students with proper support (advising) to attain jobs
- Provide a platform for students to engage with systems-level food issues, as future leaders
- Build on institutional assets, interdisciplinary connections and deep connection and commitment to the community
- Leverage significant partnership and connections within the broader NYC community for Hostos (as a convener) and for students (through hands-on experience)
- Balance applied training and academic concepts, both in coursework and faculty make-up
- Make meaningful connections between 3 levels of educational attainment that are the focus for most Hostos students: Continuing Education, Associates Degrees and Bachelors Degrees



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THERE ARE 9 KEY CONTENT AREAS AT PLAY FOR THE FOOD STUDIES CURRICULUM

- A. Food Science
- B. Food Safety
- C. Health & Wellness
- D. Food Operations
- E. Culinary Arts
- F. Sustainability
- G. Food Justice
- H. Food Policy & Regulations
- I. Food Technology / IT Systems



The following slides provide a synthesized set of research findings in each of these areas, leading to the proposed curriculum map



INTERVIEWEES SHARED SEVERAL THEMES THAT APPLY TO ALL POTENTIAL OFFERINGS

Soft skills are absolutely critical and are often lacking in potential new hires

- Verbal and written communication, bilingual
- Problem solving
- “Better than average” basic math
- Computer literacy
- Professionalism and etiquette
- Organizational skills
- Team-work, collaboration, and relationship-building
- Leadership, supervisory and coaching skills
- Research skills- “how to go out and find”

Experience trumps education (except in the hard sciences)...

...Though some believe this will change

- “We joke that running a supermarket used to be as simple as lining up cans on a shelf. But with increasing technology, regulation and health issues? That’s all changing”

Integrated knowledge base – layering business expertise with understanding of sustainability, or nutrition/wellness with culinary knowledge – is a differentiator for candidates

Changes in industry are driving changes to jobs across the board (e.g., banning GMOs, sustainable seafood, increased food safety regulation)

- Careers exist in HACCP compliance, food safety inspection and food product formulation to achieve health and nutrition specifications



FOOD SCIENCE AND ITS SUBFIELDS ARE MOST PROMISING AREAS FOR JOBS

Food science shows the strongest job forecast of all the potential food studies subject areas

- Agricultural & Food Science Technicians, Food Scientists & Technologists, Dietitians & Nutritionists, and Dietetic Technicians all expected to grow 7% or more from 2010 to 2020¹

Food science job seniority and pay are significantly correlated to educational attainment – with just a few years experience, BS median salary is \$54,000 vs. \$70,250 with an MS

Food science is a vast, growing and rapidly diversifying sector, encompassing three educational categories with significant opportunity for HCC

- Product formulation and research
- Food safety
- Health & Wellness (e.g., nutrition, dietetics)

Product formulation activities are driven by private industry, where food scientists are needed to meet demand for new food products and ensure quality and safety

Research activities are broken out across private industry and government and are expected to increase due to greater awareness of nutrition, health and food safety

Based on our scan, few community colleges nationwide offer an Associate's Degree in this field with immediate employment as an "off-ramp"



FOOD SAFETY KNOWLEDGE IS IN HIGH DEMAND ACROSS MANY POSITIONS

Food safety needs stated by employers span all three levels of education attainment

- Continuing Education (e.g., ServSafe food handling or HACCP certification)
- Associates (e.g., HACCP Compliance Clerk, Food Inspector, Food Safety Lab Tech.)
- Bachelor's (e.g., Quality Assurance Mgr., Food Scientist, Food Safety Mgr. and Technologist)

Nearly all interviewees – across industry and government sectors – highlighted the importance of food safety regulations across a variety of positions and departments

- From warehouse and operations to on-site food labs to sales and marketing to procurement

Several commented that the impending Food Safety Modernization Act will have unknown implications on jobs, and will require employees that understand the new laws

Job outlook for this area includes several highlights

- New federal food inspection jobs expected to drive growth in technician-level occupations, but government funding commitments to implement new regulations remain uncertain¹
- Private industry biggest growth driver among bachelor's degree occupations

One interviewee mentioned the lack of HACCP certification programs in NYC offered in Spanish

1. FDA, <http://www.fda.gov/Food/GuidanceRegulation/FSMA/ucm351868.htm>, May 2013.



HEALTH, WELLNESS & NUTRITION KNOWLEDGE ARE BECOMING INCREASINGLY RELEVANT

Jobs in health and wellness are expected to grow significantly

- Dietitian & Nutritionist occupations (BA required) to grow nearly 20% from 2010 to 2020¹
- Dietetic Technician occupations (Assoc. required) to grow 16% from 2010 to 2020²

Knowledge of nutrition science and/or education credentials is becoming relevant in many nontraditional settings, such as retail, community health, pharmacies, and food manufacturing

- Food companies are hiring nutritionists for research, product development and communications roles
- “Down the road, we will likely have registered dietitians in every store” (retailer)

Community Health Workers³ with nutrition knowledge was identified as an emerging opportunity

- The increasing focus on “accountable care” is positioning community health workers to do more work with nutrition, in a culturally-relevant context

This area of study represents a significant opportunity for higher education, as many of the nutritionist and dietician positions require at least a Bachelor’s degree (e.g. Registered Dietician)

- Hunter College offers bachelor’s degrees in Nutrition & Food Science and Community Health

^{1,2} Employment Projections Program, US Department of Labor, US Bureau of Labor Statistics

³ Community Health Workers are members of a community trained to provide health care services targeted to the needs of their community.



FOOD OPERATIONS POSITIONS BENEFIT FROM BROADER SUPPLY CHAIN CONTEXT

“Operations” includes warehousing, distribution, logistics, production/process efficiencies, supply chain management, sourcing/procurement, and sales and marketing

Food is the fastest growing manufacturing sector in NYC, employing ~14,000 people

Several employers said that while an Associate’s Degree is not required for most positions, it offers an opportunity for employees to enter a company at higher than entry level

- One distribution company said a candidate with an Associate’s from a program that includes hands-on learning would enter in a role supporting management at ~\$35–40k starting salary

Several interviewees spoke to the value of understanding the complete supply chain context for operational roles

Many employers, particularly the larger companies, like candidates with a strong fundamental business/operations knowledge and prefer to shape employees’ training beyond that in-house

- Wakefern established “ShopRite University” for trainings related to management skills, customers service, COOL¹ implementation, and more
- Sysco puts sales staff through an 8 week full-time intensive sales training

This area may offer several potential certification programs, such as Certified Purchasing Manager, Certified Inventory Control Manager and Quality Control Certificate (see appendix for more detail)

¹ Country of Origin Labeling (COOL) is a federal labeling law that requires retailers to indicate clearly the geographic origin of designated food products.



CULINARY KNOWLEDGE ENHANCES OPPORTUNITIES OUTSIDE OF FOODSERVICE

Employment data suggests that culinary foodservice jobs will grow nearly 10% from 2010–2020

- But these jobs are often lower pay, lower hours, lower benefits
- Higher-paying management jobs are shrinking, with Chefs & Head Cooks projected to decline by 0.8% and Foodservice Managers expected to decline by 3.3%¹

While foodservice manager jobs are not on the rise, an education that bridges culinary, nutrition and food safety skills would differentiate candidates for these desirable positions

Culinary education that includes nutrition, food safety, food production, and/or business skills— is valued far beyond the foodservice sector

- Culinary knowledge is an asset for sales, marketing, procurement and customer relations positions as those areas increasingly include menu and product development
- In the health care industry, community health workers with culinary backgrounds and knowledge about food and culture will increasingly be sought

There are at least 6 degree- or certificate-granting culinary programs in the NYC-metro area, including 3 community colleges granting Associate's Degrees (see appendix for detail)

If Hostos is interested in pursuing culinary arts, it could choose to partner or create a standalone program

- And there are benefits to both approaches



SUSTAINABILITY WAS NOT CITED AS A SIGNIFICANT DRIVER OF EMPLOYMENT

Sustainability covers the full cycle of the food supply chain from production practices to waste minimization planning, including environmental, social, and economic inputs and outputs

Sustainability is key trend within the food space and a source of continuous improvement

- Significant interest and motivator of consumers, driving significant corporate action

However, we heard very little mention of sustainability as a driver of employment in interviews

Even companies taking a lead in sustainability see it as a knowledge base that is strongest when paired with other more traditional skillsets, such as operations or business management

- “Trend is to embed sustainability in the business rather than hire for specific sustainability roles”
- “If you do want to work in corporate sustainability, you need to know a function. I wouldn’t suggest getting a dedicated degree in sustainability. First, figure out the function where you want to work and then think about how the lens of sustainability can help you improve performance within that function”

Interviewees agree that sustainability is a lasting trend, and knowledge of these principles and practices will give graduates a competitive edge

While sustainability programs exist nationwide, they often focus on farming and food production



EMPLOYERS SEEK TACTICAL KNOWLEDGE OF FOOD POLICY AND REGULATIONS

The overwhelming theme from industry interviews was that relevant knowledge of food policy and regulations is tactical – how they will influence business operations

- Regulations related to produce import/export, migratory species in the seafood industry, or HACCP compliance
- “We are always looking for “THE” HACCP coordinator, the person who knows the rules inside and out and knows our operations and goes through our logs daily to ensure we’re compliant”

One interviewee put the policy work in the context of the law

- “The best policy people have been those that have understood what would be a problem legally. Also [knowledge of] how policy gets passed at the local, state, federal levels. This is important and transferrable”

Several of the programs that we profiled include food policy coursework or emphasis, but none offer this as a standalone program



FOOD JUSTICE KNOWLEDGE NOT CRITICAL FOR EMPLOYERS, BUT KEY FOR LEADERSHIP

None of the comparable programs that we scanned offer food justice as a standalone course of study

Food justice is addressed within the framework of various food systems or food studies programs

- Several programs analyze the economic, political, social and ecological issues surrounding the existing food system

Given Hostos' emphasis on developing leadership within the food space, including food justice concepts as part of a course of study seems critical

- Regardless of employer's stated needs



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TECHNOLOGY JOBS IN THE FOOD INDUSTRY REQUIRE SPECIFIC TECH KNOWLEDGE And Benefit From General Food Knowledge

Operational and systems expertise is highly valued by employers (see earlier slide)

And general computer literacy (defined as competency with data management, internet research and Microsoft office programs) is a “must have” across sectors, departments and jobs

However, interviewees said that most companies use custom IT systems and do not expect new hires to enter knowing how to use those specific technologies

The skills that employers are looking for are technology-specific, not food-specific

- Food knowledge required to create systems and run technology functions within food businesses is higher-level knowledge of how a food supply chain functions

None of the food programs that we scanned offer a program (or track) in food & technology



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IMPLICATIONS OF FINDINGS FOR A HOSTOS FOOD STUDIES CURRICULUM

Experience is king for employers



Offer integrated hands-on experience wherever possible

Food science & food safety job opportunities are growing, closely tied to ed. attainment



Offer stand-alone programs in these areas with strong connections to higher ed.

Health & wellness is becoming relevant in more and more settings



Link a stand-alone program with comm. health, industry and cultural context

Degree attainment offers a pathway to more senior operational roles



Offer deep experiential learning alongside basic business coursework



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IMPLICATIONS OF FINDINGS FOR A HOSTOS FOOD STUDIES CURRICULUM

Understanding the elements of the food supply chain and their impact is relevant in nearly every job



Offer required core classes to ensure every grad attains this knowledge

Employers seek to embed sustainability across the firm



Embed sustainability across the coursework

Culinary knowledge enhances opportunities outside of foodservice



If program is offered, enable connections to nontraditional industry pathways

Tech jobs in food companies require tech-specific skills only



Do not build food-tech specific offering



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Proposed curriculum map

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PROPOSED FOOD STUDIES CURRICULUM "MAP"

Food Studies Degree Programs

Stand-alone programs with full course offerings resulting in a certificate or degree

Food Operations (A.A.)

Food Science and Food Safety (A.S.)

Nutrition, Health, and Wellness (A.S.)

Food Studies Tracks

Series of courses to complement degree programs & other HCC programs



Sustainability & Food



Food Policy & Regulation



Culinary



Core Offerings: Food, Justice & Leadership

Core Food Studies class(es) lay a foundation for all degree programs and tracks, and define themes arching over all Food Studies offerings. What all Food Studies students should learn to become leaders and critical thinkers.



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THE FOLLOWING SLIDES PROVIDE KEY DETAIL ABOUT EACH ELEMENT OF THE MAP

- | | |
|---------------------------------|--|
| Description | <ul style="list-style-type: none">• Brief statement describing this element of the curriculum |
| Skill-sets/Educational outcomes | <ul style="list-style-type: none">• Important concepts and skills that will be taught in this program, based on industry needs and job requirements |
| Cross-listing opportunities | <ul style="list-style-type: none">• Existing HCC degree programs or departments that may offer classes relevant to this element of the program, which may be cross-listed |
| Complementary programs | <ul style="list-style-type: none">• Existing degree programs at HCC which might benefit from taking coursework in this area to enhance employability outcomes |
| Jobs | <ul style="list-style-type: none">• Jobs that graduates of the program may seek, broken down by level of educational attainment• Sources: employment data scan, industry interviews, and KR knowledge |
| Partnership opportunities | <ul style="list-style-type: none">• List of potential partners for HCC in implementing this curriculum, along with brief description of how they might partner• This includes curriculum/dual-degree partners |
| Outcome statement | <ul style="list-style-type: none">• Statement of what graduates of this program will be able to do |



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FOOD OPERATIONS, A.A.

Focus areas

Management, metrics, operations and logistics of food industry operations in the public and private sector. Integrates sustainability strategies.

Skill Building

Sustainable supply chain management, Traceability, Strategic sourcing, Accounting & industry economics, Inventory management

Graduates will be able to execute core operations functions, applying sustainability concepts and skills to a variety of food business settings.

Jobs available to graduates (ed. attainment req'd)

- *Food Service Manager (C.E.; A.A.)
- Quality Control Technician (C.E.)
- Inventory Control Specialist (C.E.)
- Sustainability Coordinator (C.E.)
- Warehouse/Inventory Assistant (A.A.)
- *Inventory Control/Logistics Assistant (A.A.)
- Procurement Assistant (A.A.)
- Supply Chain Assistant (B.A.)
- Route Optimization (B.A.)
- *Logistician/Logistics Manager (B.A.)
- Route Optimization Analyst (B.A.)
- *Warehouse Inventory Manager (B.A.)

* Detailed descriptions in appendix



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FOOD SCIENCE AND FOOD SAFETY, A.S.

Focus areas

food's scientific properties and compositions and the science of food safety, with an eye to increasing individual and public health

Skill Building

Food safety, Quality Control, Food Science (microbiology, chemistry), Food Labeling, Product Development, Sanitation, HACCP / ServSafe Certifications

Graduates will have technical science skills and broad supply chain perspective to develop products and ensure food safety, and enhance individual and public health.

Jobs available to graduates (ed. attainment req'd)

- Perishable Department, Food Retail (C.E.)
- *Food Science Technician (A.S.)
- *Agricultural Technician (A.S.)
- *HACCP Clerk / Coordinator (A.S.)
- *Food Retail Assistant Department Manager (A.S.)
- *Quality Assurance Inspector (A.S.)
- *Food Scientist / Technologist (B.S.)
- *Environmental Scientist / Specialist (B.S.)

* Detailed descriptions in appendix



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NUTRITION, HEALTH & WELLNESS, A.S.

Focus areas

Integrated approach to personal and public health and wellness, within the context of the food system's impacts on individual and community health

Skill Building

Foundational science, Anatomy of nutrition and dietetics, Individual and population-based nutrition, Dietetics, Motivational interviewing, Nutrition counseling

Graduates will have the nutrition knowledge and community context to serve a variety of nutrition and dietetic needs across several industries

Jobs available to graduates (ed. attainment req'd)

- *Dietetic Technician (C.E.)
- *Community Health Worker (C.E., A.S., B.S.)
- *Food Service Manager (A.S.)
- *Dietitian (B.S.)
- *Nutritionist (B.S.)
- *Research / Program Assistant (B.S.)
- *Health Educator (B.S.)

* Detailed descriptions in appendix



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CULINARY ARTS

ASSOCIATES, CERTIFICATE OR TRACK, T.B.D.

Focus areas

Foundational culinary skills and techniques paired with in-depth food systems context, from production and sourcing to health and food safety

Skill Building

Knife skills; Diverse ingredient identification and usage; Food safety certification (ServSafe); Understanding of food system from production to consumption.

Graduates will have technical culinary skills and broad understanding of food to apply culinary knowledge in diverse work environments.

Jobs available to graduates (ed. attainment req'd)

- *Food Prep Worker (some culinary training)
- *Cook (some training)
- *First-Line Supervisor (some training)
- *Chef or Head Cook (some training)
- *Food Service Manager (some training)
- *Baker (some training)
- Sales/Marketing Associate (C.E., A.A., B.A.)
- Entrepreneurship opportunities (varied)



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FOOD STUDIES TRACKS

The following tracks would be a series of courses that would enhance Food Studies certificate and degree programs – differentiating them from comparable programs – and could serve as a complement to several existing Hostos programs.

Sustainability and Food

Focus areas

Principles and practice of sustainability in the urban environment, Social, cultural, ethical, ecological, environmental, health, & financial perspectives on sustainability

Skill Building

High level, in depth understanding of food business sustainability principles, Applying food-related sustainability principles in a variety of settings

Food Policy & Regulation

Focus areas

Public policy and regulation of food industry at all levels (including Ag., Public Health, Environmental & Procurement), Food labeling and nutrition, Public benefits, International trade.

Skill Building

Understanding of political debate, legislation and regulation guiding food supply chain, and their impact on individuals and communities.



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ENTREPRENEURSHIP TBD OFFERING

A training module focused on entrepreneurship would complement Hostos' programming and mission far beyond food studies. Creating it as a body of coursework, track or certificate program in parallel with the food studies program contributes to creating graduates and leaders who can not just excel in their careers, but build businesses, programs, organizations and initiatives that address social, health and environmental justice issues that manifest across the food system.

Focus areas

Entrepreneurship and innovation principles and practice, Taught by entrepreneurs with a case study approach and assignments structured for team work and collaboration, Goal of creating creative thinkers and leaders who innovate in support of social, environmental and food justice.

Skill Building

Development of the hard and soft skills required to launch a business, organization or initiative, including: leadership skills, innovative marketing, business planning, business modeling, negotiation skills, presentation skills, scaling new ventures, market research, industry analysis/competition analysis, collaboration, and venture financing



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LIKELY RELATIONSHIP OF EXISTING HOSTOS PROGRAMS TO FOOD STUDIES

Existing Hostos Programs	Food Ops.	Food Science & Safety	Health, Wellness, Nutrition	Culinary Arts	Sustainability & Food	Food Policy & Regulation	Entrepreneurship
Accounting	↔				+		+
Allied Health					+	+	+
Biology		↔					+
Business Management	↔			↔	+	+	↔
Chemical Engineering		+					+
Chemistry		↔					+
Civil Engineering	+				+	+	+
Community Health			+	+	+		+
Environmental Science		↔					+
Health Education			↔			+	+
Liberal Arts	+		+		+		+
Mechanical Engineering	+	+			+		+
Nutrition			↔	↔			+
Nursing			+				+
Office Technology	↔						+
Public Administration	↔					+	
Public Interest Paralegal Studies						+	
Pharmacology			↔				
Physical Education			↔				+
Physical Sciences		↔					+
Teacher Education			↔		+		+

 Complimentary program
  Cross-listing opportunity



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THE FOLLOWING SLIDES CONTAIN DETAILS ABOUT EXAMPLE PARTNERSHIP OPPORTUNITIES

- Intern
 - A partner seen as a strong potential provider of hands-on learning experiences for Hostos students in the form of credit-bearing internships
- Visit
 - A partner seen as a strong potential provider of hands-on learning experiences for Hostos students in the form of site visits, inquiry-based field trips, or guest speakers
- Advise
 - A partner seen as a strong potential provider of foundational knowledge and/or advise in shaping a specific program's curriculum or course content
- Highlights
 - Notes on what specific (and special) practice, knowledge, or perspective this potential partner brings to Hostos



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FOOD OPERATIONS

Example Partnership Opportunities

1 of 3

Partner Types	Potential Partner	Location	Intern	Visit	Advise	Highlights
Industry	Wakefern (Shoprite)	Keasbey, NJ (Corporate)	✓	✓	✓	Expressed interest in Hostos partnership; has internship program; strong partner to other colleges (including investment); Retailers cooperative with more than 300 stores in the region and a long history of creating career development paths for employees
	Sysco Metro	Jersey City, NJ	✓	✓	✓	Expressed interest in Hostos partnership; Sysco has 140 Operating Companies in North America and another 50 wholly owned subsidiaries; leaders in distribution, food safety, operations, sales marketing, traceability.
	Sarabeth's	Bronx, NY	✓	✓		Mid-size manufacturer with 9 restaurants as well; Typifies successful NYC-grown specialty food manufacturing companies, a growing sector.
	Citarella	Bronx, NY	✓	✓	✓	Specialty full service grocers with significant prepared and imported food depts.; along with competitors (Zabar's, Fairway, Balduccis, Dean and DeLuca), represents an important retail segment in NYC
	Unilever	Englewood Cliffs, NJ	✓	✓	✓	Learning opportunities/excellence in multiple categories: R&D, science, marketing, sales, operations
	Fairway	NY, NY	✓	✓		Fast growing; gourmet and affordable; seen as catalyst for neighborhood investment; green infrastructure
	Great Performances	NY, NY	✓	✓		The largest independently-owned catering company in NYC, also woman-owned; leaders in local food purchasing and marketing, community based initiatives and operating venues; also operate a farm upstate



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FOOD OPERATIONS

Example Partnership Opportunities

2 of 3

Partner Types	Potential Partner	Location	Intern	Visit	Advise	Highlights
Industry, <i>cont.</i>	Zabar's	NY, NY	✓	✓	✓	Gourmet market with urban farming enterprise
	Baldor	Bronx, NY	✓	✓		Sets the bar for high quality, top level service, distribution, and value-added food processing ; strong FT employee retention/benefits program; looking into partnership potential with St. Joseph's currently
	FreshDirect	Bronx, NY	✓	✓		Innovative logistics, trucking, packing, marketing, culinary; technology jobs in which food background would be valued
	IBM	Armonk, NY			✓	Creates technology for food commodity pricing, traceability, and more; blue chip leader in this sector though many smaller, independent companies also serve NYC's food industry with tech solutions
	Ecolab	St. Paul, MN			✓	Leading food safety consulting, training, implementation, as well as supplier of cleaning, maintenance supplies and equipment, with 42,000 employees (technicians, consultants, scientists, etc.)
	PepsiCo	Purchase, NY	✓	✓	✓	Learning opportunities/excellence in multiple categories: R&D, science, marketing, sales, operations
	Dufour Pastry Kitchens	Bronx, NY	✓	✓	✓	Award winning products from local manufacturer – culinary, marketing, supply chain/operations, science opportunities
	Brightfarms	NY, NY	✓	✓		Urban farming: linking policy with civil engineering, businesses, production, natural sciences



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FOOD OPERATIONS

Example Partnership Opportunities

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Partner Types	Potential Partner	Location	Intern	Visit	Advise	Highlights
Industry, <i>cont.</i>	Red Rabbit	NY, NY	✓	✓		New, small and rapidly growing, represents growing segment of "values based" businesses; provides alternative selections (healthy, sustainably sourced) for public sector meals; existing internship program
Government	Dept. Labor Office of Workforce Investment	Washington			✓	Work together or use their tools to design models and career ladders (some examples on website)
	NYC EDC	NY, NY			✓	Food Manufacturers Growth Fund, and co-sponsors of various entrepreneurship programs
Non-profit	WhedCo	Bronx, NY	✓			Expressed interest in Hostos partnership; entrepreneurship training and services, kitchen incubator; economic/community development, supporting healthy retail enterprises
	Unions (e.g. UFCW, local 1500)	Westbury, NY			✓	Some union locals partner with colleges to drive skill and industry specific trainings.
	GroceryWORKS	Brooklyn, NY			✓	Funded by NY City Council, food retail job training; after 3 years, 70% of the program's ~150 graduates have jobs in the sector, ¾ of those jobs are FT
	Institute for Supply Management	Tempe, AZ			✓	Lead trainer and certifier in food supply chain and operations categories
Educational	St. Joseph's University				✓	Food Marketing program has strong partnerships – could be interesting model of how to do this
	Baruch Zicklin School				✓	Partnership for dual-degree in business



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HEALTH, WELLNESS & NUTRITION

Example Partnership Opportunities

1 of 2

Partner Types	Potential Partner	Location	Intern	Visit	Advise	Highlights
Industry	Wakefern/ShopRite	Keasbey, NJ (Corporate)	✓	✓		Expressed interest in Hostos partnership; Retailer bringing dietitians in-house now
	Red Rabbit	NY, NY	✓	✓		Healthy institutional meal production
	Wegmans	Rochester, NY (Corporate)	✓	✓	✓	Retailer with dieticians across stores (for 15+ yrs) – leader in wellness-at-retail initiatives; long track record of local food purchasing, working with farmers, and strong marketing; no NYC-area stores, but are growing across the eastern seaboard.
	Sustainable Food Systems, LLC	CT		✓	✓	Very small independent consultancy, working with large and small institutions on meal service change: sustainability, operations, culinary, marketing
Government	NYC Dept. of Health	NY, NY	✓	✓		Diverse programming related to increasing healthy food access and consumption, including Shop Healthy which has worked with 1,000+ NYC corner stores to carry and promote healthy foods
	NYC Dept. of Education/ SchoolFood	Queens, NY	✓	✓	✓	Serves almost one million meals a day, revamping menus to increase health and shift sourcing
	NYC Department for the Aging	NY, NY	✓	✓		Institutional meals, regulations, aging population
	Center for Economic Opportunity	NY, NY	✓		✓	Shop Healthy NYC healthy food access program, and others
Non-profit	City Harvest	NY, NY	✓	✓		Community health and food access in Bronx and beyond; strong warehousing and operations



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HEALTH, WELLNESS & NUTRITION

Example Partnership Opportunities

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Partner Types	Potential Partner	Location	Intern	Visit	Advise	Highlights
Non-profit, <i>cont.</i>	Montefiore Hospital	Bronx, NY	✓	✓	✓	Expressed interest in Hostos partnership; strong community health program; wellness leader; believes in food as critical component of health and supports community-based nutrition and local retail initiatives
	GrowNYC	NY, NY	✓	✓		Strong agriculture, food, health, nutrition, environmental education, recycling, composting programs, including Greenmarket farmers markets (with nutrition education on-site)
	Food Bank of NYC	Bronx, NY	✓	✓		Food access, healthy food programming; strong warehousing and operations in nonprofit sector
	Health Care Without Harm	Reston, VA			✓	National organization working with hospitals to improve meal programs
	Hunger and Environmental Nutrition	dispersed			✓	A “practice group” of the Academy of Nutrition and Dietetics – integrated approach to environmental, personal and community health; can advise on directions in the sector, new employment opportunities, new skills needed
Educational	Hunter College/CUNY	NY, NY			✓	BS (& MS) in Nutrition & Food Science, BS Comm. Health
	Brooklyn College	Brooklyn, NY			✓	BA in Nutrition



KARP RESOURCES

FOOD SCIENCE & FOOD SAFETY

Example Partnership Opportunities

1 of 2.

Partner Types	Potential Partner	Location	Intern	Visit	Advise	Highlights
Industry	Down East Seafood	Bronx, NY	✓	✓	✓	Seafood company focused on environmental sustainability, stringent adherents to food safety protocol
	Ecolab	St. Paul, MN			✓	Food safety consulting, training, implementation
	EHA Consulting Group	NY, NY	✓	✓	✓	Food safety consulting, training, implementation
	Institute of Food Technologists	Chicago, IL			✓	National association- large network of professionals/ employers; strong perspective on training and industry direction
	Sarabeth's	Bronx, NY	✓	✓		Food manufacturer and restaurant business; product development and food safety adherence
	Baldor	Bronx, NY	✓	✓	✓	On-site food safety lab
Government	NYC Dept. of Health	NY, NY	✓		✓	Lead public food safety inspectors in NYC for kitchens in restaurants, hotels, schools and retail store with substantial prepared foods sales
	NY State Dept. of Agriculture and Markets	NY, NY (and Albany, NY)	✓		✓	Public food safety inspectors in NYC, NYSDAM inspects retailers (those with limited prepared food sales) and manufacturers that don't process meat, fish or dairy



KARP RESOURCES

FOOD SCIENCE & FOOD SAFETY

Example Partnership Opportunities

2 of 2.

Partner Types	Potential Partner	Location	Intern	Visit	Advise	Highlights
Government, <i>cont.</i>	US Department of Agriculture	Washington, D.C.	✓	✓	✓	USDA divisions Food Safety and Inspection Service, Office of the Chief Scientist, and Food and Nutrition Services regulate and enforce food safety; inspects meat, poultry and dairy processing facilities
	Food and Drug Administration	Washington, D.C	✓	✓	✓	Will lead implementation of the Food Safety Modernization Act; lead agency researching, regulating and enforcing food safety nationally; inspects the seafood manufacturing sector
Non-profit	Minorities in Agriculture, Natural Resources and Related Sciences	Chapters nationally		✓	✓	National association to encourage network building across related industries and provide supports for ethnic groups historically under-represented
Educational	Rutgers			✓	✓	Food Innovation Center leads trainings
	North Shore Community College				✓	Strong food science program at CC level



KARP RESOURCES

CULINARY ARTS (PROGRAM/TRACK)

Example Partnership Opportunities

1 of 2.

Partner Types	Potential Partner	Location	Intern	Visit	Advise	Highlights
Industry	Sysco	Jersey City, NJ	✓	✓		Expressed interest in Hostos partnership; foodservice program; strong representation of culinary skills in sales departments
	Red Rabbit	NY, NY	✓	✓		Private sector approach to healthy institutional meals
	Sustainable Food Systems, LLC	CT		✓	✓	Consultant working with foodservice providers to improve health and sustainability of institutional meals
Government	Dept. of Education/ SchoolFood	Queens, NY	✓	✓	✓	Serves almost one million meals a day, revamping menus to increase health and shift sourcing
Non-profit	Black Culinary Alliance				✓	Focused on culinary and foodservice opportunities for people of color; partner with impressive list of colleges and corporate partners (Compass, Food Network, Restaurant Associates)
	Blue Hill/ Stone Barns Center	Pocantino Hills, NY		✓		Multi-faceted: fine dining restaurant, farm, educational programming
	James Beard Foundation	NY, NY	✓	✓	✓	High level network of professionals, strong educational programming, leader in national conversation about food



KARP RESOURCES

CULINARY ARTS (PROGRAM/TRACK)

Example Partnership Opportunities

2 of 2.

Partner Types	Potential Partner	Location	Intern	Visit	Advise	Highlights
Non-profit, <i>cont.</i>	Hot Bread Kitchen	NY, NY	✓	✓		Revenue generating non-profit model supporting immigrant women's food entrepreneurship
	Family Cook Productions	NY, NY	✓	✓		Culinary and nutrition education for kids and families (a health promotion approach to culinary)
Educational	International Culinary Center (ICC)	NY, NY			✓	Interesting partnership for pathway and integrated learning with New School
	Monroe College	New Rochelle, NY			✓	Local culinary school with student run restaurant incorporates experiential learning



KARP RESOURCES

SUSTAINABILITY & FOOD (TRACK)

Example Partnership Opportunities

1 of 2.

Partner Types	Potential Partner	Location	Intern	Visit	Advise	Highlights
Industry	Down East Seafood	Bronx, NY	✓	✓	✓	Sustainability strategy: sourcing, recycling, green fleet
	Pret A Manger	NY, NY	✓	✓	✓	Strong sustainability strategy including sourcing
	Gourmet Guru	Bronx, NY	✓	✓	✓	Strategy: values-based sourcing
	Sysco Metro	Jersey City, NJ	✓	✓	✓	Expressed interest in Hostos partnership; implementation of sustainability initiatives at scale; leader in traceability and operational efficiencies
	Walmart	Bentonville, AR	✓	✓		Largest retailer and private employer in the world (though not currently in NYC); growing jobs/careers at store and corporate levels: buyers, sales, sustainability, community engagement, etc.
Government	NYC Office of the Food Policy Coordinator	NY, NY	✓		✓	Working with the Mayor's office on short, medium and long term food system strategies for NYC
	NYC Dept. of Health	NY, NY	✓		✓	Programs bridging health, sustainability and food
Non-profit	Sustainable South Bronx	Bronx, NY	✓	✓	✓	Strong established organization working toward sustainability and justice—food as extension
	BLK ProjeK	Bronx, NY	✓	✓		Focused on food, justice, sustainability and economic development in the Bronx
	Sustainable Food Lab	VT			✓	In-depth, up-to-date perspective on how corporations and the industry at large see, create and implement sustainability initiatives



KARP RESOURCES

SUSTAINABILITY & FOOD (TRACK)

Example Partnership Opportunities

2 of 2.

Partner Types	Potential Partner	Location	Intern	Visit	Advise	Highlights
Non-profit, <i>cont.</i>	Rainforest Alliance	NY, NY	✓			Lead certifier of sustainable agriculture products
	Brooklyn Food Coalition	Brooklyn, NY		✓		Working toward a just and sustainable food system in Brooklyn
	GrowNYC	NY, NY	✓	✓		Strong agriculture, food, health, nutrition, environmental education, recycling, composting programs, including Greenmarket farmers' markets and New Farmer Development Program (ag entrepreneurship for immigrant farmers)
	Just Food	NY, NY	✓	✓		Strong educational, food justice and urban production programming; connecting New Yorkers with fresh local foods
	Montefiore	Bronx, NY	✓	✓	✓	Expressed interest in Hostos partnership; wellness programs bridging food, health and sustainability
Educational	City College of NY/ CUNY	NY, NY			✓	Sustainability in the Urban Environment M.S
	Pratt Institute	Brooklyn, NY			✓	Sustainable Planning and Development programs, with emphasis on urban planning, including food



KARP RESOURCES

FOOD POLICY & REGULATION (TRACK)

Example Partnership Opportunities

1 of 2

Balancing those who influence policy with those who work to adhere to it

Partner Types	Potential Partner	Location	Intern	Visit	Advise	Highlights
Industry	Brightfarms	NY, NY	✓	✓		Urban farming: linking policy with civil engineering, businesses, production, natural sciences
	Down East Seafood	Bronx, NY	✓	✓	✓	Seafood operations: links policy with food safety, business, operations, health
	Sarabeth's	Bronx NY	✓	✓		Manufacturing/processing: adherence to labeling, food safety and health policy
	Sysco/ Metro	Jersey City, NJ	✓	✓	✓	Expressed interest in Hostos partnership; distribution, product development: adherence to food safety regs, food product developer, strong quality assurance team at corporate level
	Montefiore	Bronx, NY	✓	✓	✓	Expressed interest in Hostos partnership; public and private health care providers: bridges policy with food, health/allied health professions, accounting, billing, business
	EmblemHealth	NY, NY	✓	✓	✓	Insurance: bridges policy with food, health/allied health professions, accounting, billing, business; partnering with GrowNYC and NYC DOH to provide health info at Greenmarkets
Government	NYC Office of the Food Policy Coordinator	NY, NY	✓		✓	Working with the Mayor's office to shape healthy food policies
	Department of Health	NY, NY	✓			Enforcer of health code regulations, shaper and implementer of public health policy



KARP RESOURCES

FOOD POLICY & REGULATION (TRACK)

Example Partnership Opportunities

2 of 2

Balancing those who influence policy with those who work to adhere to it

Partner Types	Potential Partner	Location	Intern	Visit	Advise	Highlights
Government, <i>cont.</i>	NYC Human Resources Administration/Dept. of Social Services	NY, NY	✓	✓		Administrators of food benefits policies and programs including SNAP and WIC
	US Department of Agriculture	Washington, D.C.	✓	✓	✓	With the FDA, the federal government's lead implementer of food/ag policy and regulation
	NYC agencies procuring food	NY, NY	✓	✓		Adherence to local, state and federal regulations; interagency collaboration to shift internal and external regulations
	Food and Drug Administration	Washington, D.C.	✓	✓	✓	Will lead implementation of the Food Safety Modernization Act; with USDA, lead agency researching, regulating and enforcing food safety
Non-profit	Food Systems Network NYC	NY, NY		✓		Local network focused on promoting healthy sustainable food, working to influence local and national policy
	NY Coalition Against Hunger	NY, NY		✓		Working on influencing hunger, access, affordable food policy
	World Hunger Year	NY, NY		✓		Working on influencing hunger, access, affordable food policy
Educational	The New School Food Studies				✓	Bachelors and Masters degree programs focused on food and policy
	NYU Food Studies				✓	Bachelors and Masters degree programs focused on food, health and policy



KARP RESOURCES

Introduction and project update

Synthesis of key findings

Proposed curriculum map

- Map overview
- Detail on proposed curriculum elements
- Potential partners

Appendix of supporting data



KARP RESOURCES

APPENDIX CONTENTS

Hostos context

Supporting information about broader Hostos context

Food trends

Key food and industry trends

Employment data

Findings from analysis of employment data

Job profiles

Detailed job profiles for key jobs

Ed. programs

Findings from scan of educational programs

Interviewees

Government and industry interviewees



CURRICULUM SHOULD SPAN THREE CURRENT LEVELS OF EDUCATIONAL ATTAINMENT

Continuing Education

- More than 80% growth over 7 years, to almost 11,000 students/year
- Significant pipeline for Associate's Degree programs
- Successful Cont. Ed. Programs can become degree programs
- Current formats range from weekend sessions to credit-granting certificate programs to custom trainings designed for corporate clients

Associate's Degree

- 4,651 students enrolled (full time equivalent) in Associate's Degree programs
- Highest enrollment in Liberal Arts (#1), Nursing (#2) and Teacher Education (#3)
- 10 departments house 21 degree programs
- Graduation rates by degree program:
 - 34% Associate of Arts (2 programs)
 - 15% Associate in Science (6 programs)
 - 46% Associate in Applied Science (13 programs)
- 54% of graduates enroll in senior colleges

Bachelor's Degree

- Approximately 54% of Associates degree graduates move on to BA/BS programs through partner or other institutions
- "Dual-degree" programs currently offered through Criminal Justice, Chemical Engineering, Civil Engineering and Community Health – increasing integration with other CUNY institutions
- Popular option – clear trajectory appeals to students.
 - 560 students currently enrolled in Criminal Justice dual degree.



KARP RESOURCES

HOSTOS HAS SIGNIFICANT ASSETS THAT A FOOD STUDIES PROGRAM CAN BUILD ON

Complementary departments, degree programs & infrastructure

- Business, nutrition, allied health, public administration, natural sciences,
- Complementary faculty research (e.g. urban agriculture)
- Increased focus on health and wellness: Allied Health and Natural Science Building Complex; health equity and food justice programming to include farm share programs and farmers markets on campus.

Rich roots in the Bronx

- Strong existing connections with industry and government, motivation to increase strategic networking with industry
- Center for Bronx Nonprofits at Hostos

Entrepreneurial energy, familial culture

- Culture of constant review and improvement under current administration
- Institutional culture that is supportive, progressive, demanding of innovation

CUNY connection

- Increasing integration across schools within CUNY system (i.e. dual degree programs, seamless pathways to senior college)

Continuing Education

- Large and strategically growing footprint in the community
- Programs that can “go live” quickly- strong testing ground
- History of working with industry experts to meet industry demand



KEY TRENDS IN THE FOOD INDUSTRY

Sustainability

- Demand for products considered “sustainable”
- Labyrinth of claims, certifications and certifiers
- Environmental impact and efficiencies in production, processing, packaging and waste management

Local Food, Origin, and Terroir

- “Local” as a driver of “sustainability”
- Terroir and seasonality—place and time—embraced, and authenticity sought.
- Cultural relevance and diversity
- Source local. Cook global: locally sourced foods, authentic ethnic flavors

Attention to Food Justice

- Food access
- Food sovereignty
- Urban farming
- Shifts in retail (e.g. mobile vending, corner store revitalization)

Healthy Eating/Focus on Nutrition & Wellness

- Bottom up and top down focus on nutrition, increasing every year
- Intersection of diet related chronic disease, obesity, and affordable, accessible healthy food.
- New definitions – and broad ranging definitions – of healthy, and new foods
- “Grounded in science”
- Smaller portion sizes



KEY TRENDS IN THE FOOD INDUSTRY

What's Old is New Again

- Nose-to-tail and root-to-stem eating
- “Eating like grandma ate”
- Changes in retail formats accompanying changes in the methods and meanings of eating at home

Convenience

- No time, no tools
- The healthy/convenient paradox
- More formats to facilitate convenience

Policies and Regulation

- Government-driven and industry-driven, on behalf of consumers and workers
- Food safety
- Labor
- Public health

Technology

- Business-to-Consumer: information gathering/sharing, marking, mobile technologies
- Business-to-Business: POS systems, scanners in warehousing, processing robotics, in-house tech development
- Consumer-to-Consumer: social media broadcasting of food experiences



KEY TRENDS IN EMPLOYMENT & EDUCATION REQUIREMENTS

Employment:

- Most occupations, including food and food-related jobs, expected to grow
- Strongest growth in food-related jobs projected in science-based occupations
- Largest volume of jobs in foodservice, but growth mixed and wages (usually) lower
- Government data illustrates “big picture” but not specific trends, such as sustainability or food justice

Educational requirements:

- Jobs requiring postsecondary education expected to grow faster than those that don't
- In NYC, actual educational attainment is often greater than job requirements

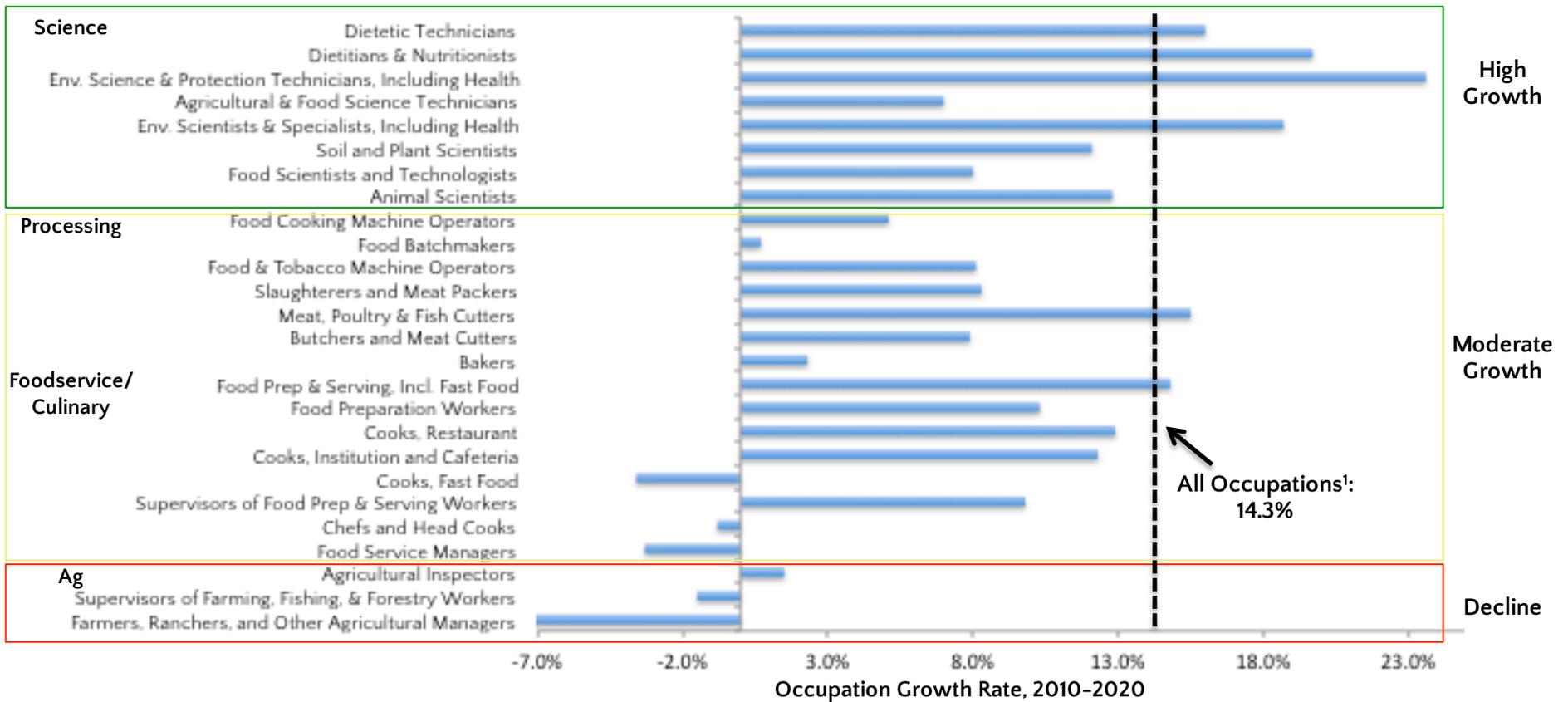


KARP RESOURCES

Employment data

US EMPLOYMENT FORECAST: MOST FOOD SECTOR JOBS GROWING

Projected Growth Rates for Relevant Occupations, 2010-2020



“New” jobs in sustainability, urban ag and related areas assessed via qualitative research

1. This is the projected rate of growth across all occupations in the US from 2010 to 2020.
Source: Employment Projections program, U.S. Department of Labor, U.S. Bureau of Labor Statistics



NYC EMPLOYMENT FORECAST: SIMILARITIES TO NATIONAL TRENDS

New York City will add over 420,000 jobs from 2010 to 2020, an increase of 10.4%.

NYC overall employment trends

- NYC private sector employment is growing

Private sector employment growth April 2012 – April 2013			
	NYC	NYS	US
Growth %	2.5%	1.9%	2.0%

- NYC government employment is decreasing
- Largest number of current jobs openings in:
 - Management (5,643)
 - Computer and Mathematical (5,191)
 - Business and Financial Operations (3,051)
 - Sales and Related (2,361)

NYC food-related employment outlook

- Most food jobs rated “very favorable” or “favorable¹”

Very Favorable & Favorable Outlook		
Occupation	Avg. Openings/Yr	% Change, 2010-2020
Combined Food Prep & Serving	2,120	17.5%
Food Prep Workers	1,010	3.8%
Bakers	150	1.4%
Dietitians & Nutritionists	100	10.8%
Butchers & Meat Cutters	80	7.8%
Env. Science & Protection Techicians	30	12.8%
Env. Scientists & Specialists	30	14.9%

- Strong **growth** in **science** occupations
- Large **volumes** in **foodservice**
- A few jobs rated “unfavorable” or “very unfavorable”

Unfavorable & Very Unfavorable Outlook		
Occupation	Avg. Openings/Yr	% Change, 2010-2020
Food Service Managers	110	-4.1%
Chefs & Head Cooks	60	0.9%

1. Occupation outlooks are rated very favorable, favorable, unfavorable, or very unfavorable based on annual average job openings and percent change in employment, 2010 to 2020.
Source: New York State Department of Labor, Division of Research and Statistics

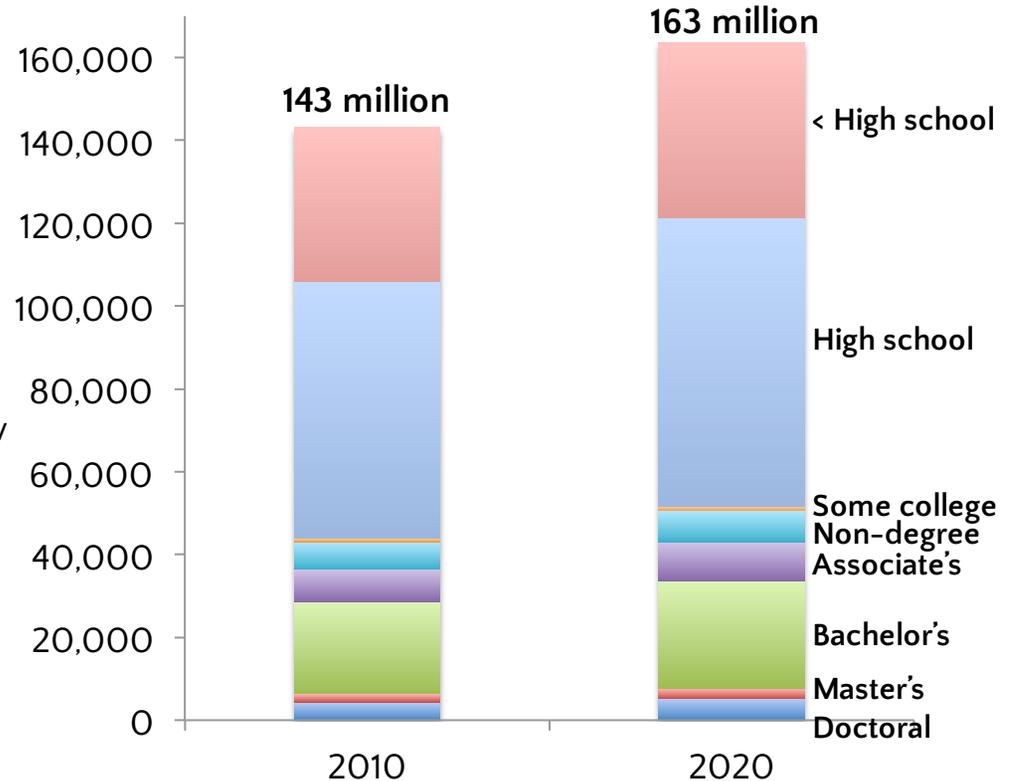


MORE JOBS TO REQUIRE HIGHER EDUCATION

Number of Jobs by Education Requirements, 2010 and 2020, Total US

Job Growth and Education

- Largest growth projected in jobs requiring postsecondary education (% growth)
 - Associate's degree jobs (18.0%)
 - Bachelor's degree jobs (16.5%)
 - Postsecondary non-degree jobs (16.9%)
 - Master's degree jobs (21.7%)
- Jobs requiring a high school education to grow 12.2%
- Associate, bachelor, and postsecondary jobs represent 26.3% of occupations in 2020
- In NYC, employment data suggests for many jobs, actual educational attainment is greater than required education





KARP RESOURCES

DIETITIANS & NUTRITIONISTS

Fast Facts:

2010 Median Pay:	\$53,250/yr or \$25.60/hr
Entry level education:	Bachelor's degree
Number of jobs (US), 2010:	64,400
Job Outlook, 2010-2020:	20%

2010 employment by industry:

Hospitals:	32%
Self employed:	15%
Nursing care facilities:	8%
Outpatient care centers:	6%
Physician offices:	4%

Types of dietitians/nutritionists:

- **Clinical dietitians** provide medical nutrition therapy. They work in hospitals, long-term care facilities, and other institutions. They create individualized and group nutritional programs based on the health needs of patients or residents. Clinical dietitians may further specialize, such as working only with patients with kidney diseases and may work with other healthcare professionals.
- **Management dietitians** plan meal programs and work in food service settings such as cafeterias, hospitals, and food corporations. They may be responsible for buying food and for carrying out other business-related tasks. Management dietitians may oversee kitchen staff or other dietitians.
- **Community dietitians** educate the public on topics related to food and nutrition, often working with specific groups of people, such as pregnant women. They work in public health clinics, government and non-profit agencies, (HMOs), and other settings.

Duties:

- Explain nutrition issues
- Assess patients' and clients' health needs and diet
- Develop meal plans, taking both cost and clients' preferences into account
- Evaluate the effects of meal plans and change the plans as needed
- Promote better nutrition by giving talks to groups about diet, nutrition, and the relationship between good eating habits and preventing/managing disease
- Keep up with the latest nutritional science research
- Some dietitians and nutritionists provide customized information for specific individuals (e.g., for weight loss, for medical conditions)
- Most states require licensure of dietitians and nutritionists. Many employers require/prefer the **Registered Dietitian credential**, administered by the AND.

Outlook:

More dietitians and nutritionists will be needed to provide care for people with conditions such as diabetes and heart disease. An aging population also will increase the need for dietitians and nutritionists in nursing homes.



DIETETIC TECHNICIANS

Fast Facts:

2010 Median Pay:	\$27,060/yr
Entry level education:	High school diploma/equivalent
Number of jobs (US), 2010:	24,200
Job Outlook, 2010-2020:	16%

2010 employment by industry:

Health care and social assistance:	82%
Government:	11%

Duties:

Assist in the provision of food service and nutritional programs, under the supervision of a dietitian. May plan and produce meals based on established guidelines, teach principles of food and nutrition, or counsel individuals.

Dietetic technicians typically do the following:

- Observe patient food intake and report progress and dietary problems to dietitian
- Prepare a major meal, following recipes and determining group food quantities
- Obtain and evaluate dietary histories of individuals to plan nutritional programs
- Analyze menus or recipes, standardize recipes, or test new products
- Plan menus or diets or guide individuals or families in food selection, preparation, or menu planning, based upon nutritional needs and established guidelines.
- Supervise food production or service or assist dietitians or nutritionists in food service supervision or planning
- Develop job specifications, job descriptions, or work schedules
- Select, schedule, or conduct orientation or in-service education programs
- Provide dietitians with assistance researching food, nutrition, or food service systems
- Determine food and beverage costs and assist in implementing cost control procedures

Outlook:

Detailed outlook not provided.



KARP RESOURCES

COMMUNITY HEALTH WORKERS

Fast Facts:

2010 Median Pay:	\$34,620/yr or \$16.64/hr
Entry level education:	Bachelor's degree
Number of jobs (US), 2012:	38,020
Job Outlook, 2010-2020:	21.8%*

*Community and Social Service Specialists, All Other (includes CHW)

2012 employment by industry:

Individual and family services:	21%
Local government:	15%
General medical and surgical hospitals:	8%
Outpatient care centers:	7%
Residential disability, mental health and substance abuse facilities:	5%

Duties:

- Assist individuals and communities to adopt healthy behaviors.
- Conduct outreach for medical personnel or health organizations to implement programs in the community that promote, maintain, and improve individual and community health.
- May provide information on available resources, provide social support and informal counseling, advocate for individuals and community health needs, and provide services such as first aid and blood pressure screening.
- May collect data to help identify community health needs.

Notes:

Community Health Workers were added to the Standard Occupational Classification (SOC) during the most recent update in 2010. A detailed profile for this occupation is not currently available in the Occupational Outlook Handbook. Projections for this occupation have been included within Community and Social Service Specialists, All Other* (SOC 21-1798).

Community and Social Service Specialists, All Other* are expected to grow by 22% from 2010 to 2020.



Fast Facts:

2010 Median Pay:	\$45,830/yr or \$22.03/hr
Entry level education:	Bachelor's degree
Number of jobs (US), 2010:	63,400
Job Outlook, 2010-2020:	37%

2010 employment by industry:

Health care:	37%
Government:	21%
Religious, grantmaking, civic, professional, etc. organizations:	15%
Social assistance:	12%
Educational services:	9%

Occupational overview by setting:

- In **health care facilities**, they often work one-on-one with patients and their families. They teach patients about their diagnoses and about necessary treatments or procedures, direct people to outside resources and help organize health screenings and health classes. They train medical staff to interact better with patients.
- In **colleges**, health educators create programs and materials on topics that affect young adults, such as smoking and alcohol use. They may train students to be peer educators and lead programs on their own.
- In **public health departments**, health educators administer public health campaigns on topics such as proper nutrition. During emergencies, they provide safety information to the public and the media. They help health-related nonprofits obtain funding and other resources. Some health educators work with other professionals to create public policies that support healthy behaviors.
- In **nonprofits (including community health organizations)**, health educators create programs and materials about health issues for the community. In addition, they may lobby policymakers to pass laws to improve public health.
- In **private businesses**, health educators identify common health problems among employees and create programs to improve health. They work with management to develop incentives for employees to adopt healthy behaviors and recommend changes to the workplace.

Duties:

- Assess the needs of the people they serve, and help people find health services or information
- Develop programs and events to teach people about health topics
- Create and distribute health-related posters, pamphlets, and other educational materials
- Supervise staff who implement health education programs
- Collect and analyze data to learn about their audience and evaluate the effectiveness of programs and materials
- Advocate for improved health resources and policies

Outlook:

Employment of health educators is expected to grow by 37% from 2010 to 2020, much faster than the average for all occupations. Growth will be driven by efforts to reduce healthcare costs by teaching people about healthy habits and behaviors.



KARP RESOURCES

AGRICULTURAL AND FOOD SCIENTISTS

Fast Facts:

2010 Median Pay:	\$58,450/yr or \$28.10/hr
Entry level education:	Bachelor's degree and above
Number of jobs (US), 2010:	33,500
Job Outlook, 2010-2020:	10%

2010 employment by industry (food scientists & technologists):

Food manufacturing:	35%
Scientific research and development services:	13%
Colleges, universities and professional schools:	8%

Types of agricultural and food scientists:

- **Animal scientists** typically conduct research on domestic farm animals. With a focus on food production, they explore animal genetics, nutrition, reproduction, diseases, growth, and development. They work to develop efficient ways to produce and process meat, poultry, eggs, and milk.
- **Food scientists and technologists** use chemistry and other sciences to study the underlying principles of food. They analyze nutritional content, discover new food sources, and research ways to make processed foods safe and healthy. Food technologists generally work in product development, applying findings from food science research to develop new or better ways of selecting, preserving, processing, packaging, and distributing food. Some food scientists use nanotechnology to develop sensors that can detect contaminants in food. Other food scientists enforce government regulations, inspecting food processing areas to ensure that they are sanitary and meet waste management standards.
- **Soil and plant scientists** conduct research on soil, crops and other agricultural products.

Duties:

- Conduct research and experiments concerning animal nutrition and field crops
- Develop ways to improve the quantity and quality of field crops and farm animals
- Create new food products and develop new and better ways to process, package, and deliver them
- Study the composition of soil as it relates to plant growth
- Communicate research findings to the scientific community, food producers, and the public

Outlook:

Employment of agricultural and food scientists is expected to increase by 10% from 2010 to 2020, about as fast as the average for all occupations. Ongoing animal science research, as well as an increased reliance on food safety through biotechnology and nanotechnology, is expected to increase demand for agricultural and food scientists moderately. Job growth for food scientists and technologists is expected to be driven by the demand for new food products and food safety measures. Food research is expected to increase because the public is more aware of nutrition, health, food safety, and the need to keep herd animals from getting infections. Most growth over the next 10 years will be in private industry. Private industry has increased its demand for agricultural and food scientists because their expertise is necessary for developing food, crops, and drugs, along with ensuring quality and safety.



KARP RESOURCES

AGRICULTURAL AND FOOD SCIENCE TECHNICIANS

Fast Facts:

2010 Median Pay:	\$32,760/yr or \$15.75/hr
Entry level education:	Associate's degree
Number of jobs (US), 2010:	21,300
Job Outlook, 2010-2020:	7%

2010 employment by industry:

Colleges, universities and professional schools:	27%
Support activities for ag and forestry:	13%
Scientific research and development services:	8%
Animal slaughtering and processing:	7%
Dairy product manufacturing:	5%

Types of agricultural and food science technicians:

- **Agricultural technicians** who work in *private industry* focus on the condition of crops and animals, not on processed foods.
- **Food science technicians** who work in *private industry* inspect food and crops, including processed food, to ensure the product is fit for distribution. A large portion of food science technicians' time is spent inspecting foodstuffs, chemicals, and additives to determine whether they are safe and have the proper combination of ingredients.
- **Agricultural and food science technicians** who work for the *federal government* monitor regulatory compliance for the Food and Drug Administration (FDA), the Department of Agriculture, and other agencies. As a result of the recent passage of the FDA Food Safety Modernization Act, the frequency of food inspections has increased, along with improvements in performance standards.

Duties:

Agricultural technicians typically do the following:

- Follow protocols to prepare, analyze, and store crop or animal samples properly
- Examine animals and other specimens to determine the presence of diseases or other problems
- Measure ingredients used in testing or animal feed and other purposes, and prepare and operate complex equipment to do laboratory tests
- Compile and analyze test results that go into charts, presentations, and reports

Food science technicians typically do the following:

- Prepare samples following established procedures
- Test food, food additives, and food containers to ensure they comply with established safety standards
- Help food scientists with food research, development, and quality control
- Analyze chemical properties of food to determine ingredients and formulas
- Compile and analyze test results that go into charts, presentations, and reports

Outlook:

Employment of agricultural and food technicians is expected to grow by 7% from 2010 to 2020, slower than the average for all occupations. Most growth over the next 10 years is expected to be in federal food inspection jobs. Jobs in private industry will grow at a more modest rate.



KARP RESOURCES

ENVIRONMENTAL SCIENTISTS AND SPECIALISTS

Fast Facts:

2010 Median Pay:	\$61,700/yr or \$29.66/hr
Entry level education:	Bachelor's degree
Number of jobs (US), 2010:	89,400
Job Outlook, 2010-2020:	19%

2010 employment by industry:

State government, excl. education and hospitals:	23%
Management, scientific and technical consulting services:	19%
Architectural, engineering and related services:	13%
Local government, excl. education and hospitals:	13%
Federal government, excl. postal service:	7%

Types of environmental scientists and specialists:

- **Environmental health specialists** study how environmental factors impact human health. They investigate potential health risks, such as unsafe drinking water, disease, and food safety. They also educate the public about potential health risks present in the environment.
- **Environmental protection specialists** monitor the effect human activity has on the environment. They investigate sources of pollution and develop prevention, control, and remediation plans.
- **Environmental chemists** study the effects that various chemicals have on ecosystems.

Duties:

- Determine data collection methods for research projects, investigations, and surveys
- Collect environmental data, such as samples of air, soil, water, food, and other materials, for scientific analysis
- Analyze samples, surveys, and other information to identify and assess threats to the environment
- Develop plans to prevent, control, or fix environmental problems, such as pollution and harm to land or water
- Develop plans to restore polluted or contaminated land or water
- Provide information and guidance to government officials, businesses, and the general public on possible environmental hazards and health risks
- Prepare technical reports and presentations that explain their research and findings

Outlook:

Employment of environmental scientists and specialists is expected to grow by 19% from 2010 to 2020, about as fast as the average for all occupations. Heightened public interest in the hazards facing the environment, as well as the increasing demands placed on the environment by population growth, is projected to spur demand for environmental scientists and specialists. Further demand is also expected as a result of new and increasingly complex environmental laws and regulations. Most employment growth for environmental scientists and specialists is projected to be in private consulting firms that help clients monitor and manage environmental concerns and comply with regulations. More businesses are expected to consult with environmental scientists in the future to help them minimize the impact their operations have on the environment. For example, environmental consultants help businesses develop practices that minimize waste, prevent pollution, and conserve resources.



KARP RESOURCES

ENVIRONMENTAL SCIENCE AND PROTECTION TECHNICIANS

Fast Facts:

2010 Median Pay:	\$41,380/yr or \$19.90/hr
Entry level education:	Associate's degree
Number of jobs (US), 2010:	29,600
Job Outlook, 2010-2020:	24%

2010 employment by industry:

Management, scientific and technical consulting services:	24%
Local government, excl. education and hospitals:	23%
Architectural, engineering and related services:	19%
Testing laboratories:	12%
State government, excl. education and hospitals:	12%

Occupational overview by setting:

- In **state and local governments**, environmental science and protection technicians enforce regulations that protect the environment and people's health. They inspect businesses and public places and investigate complaints related to air quality, water quality, and food safety. They may issue fines or close establishments that violate environmental or health regulations.
- In **private consulting firms**, environmental science and protection technicians help clients monitor and manage the environment and comply with regulations. For example, they help businesses develop cleanup plans for contaminated sites, and they recommend ways to reduce, control, or eliminate pollution. They also conduct feasibility studies for, and monitor the environmental impact of, new construction projects.

Duties:

- Inspect establishments, including public places and businesses, to ensure that there are no environmental, health, or safety hazards
- Set up and maintain equipment used to monitor pollution levels, such as remote sensors that measure emissions from smokestacks
- Collect samples of air, soil, water, and other materials for laboratory analysis
- Perform scientific tests to identify and measure levels of pollutants in samples
- Prepare charts and reports that summarize test results
- Discuss test results and analyses with clients

Outlook:

Employment of environmental science and protection technicians is expected to grow by 24% from 2010 to 2020, faster than the average for all occupations. Heightened public interest in the hazards facing the environment, as well as the increasing demands placed on the environment by population growth, is projected to spur demand for environmental scientists and specialists. Most employment growth for environmental science and protection technicians is projected to be in private consulting firms. More businesses and governments are expected to use these firms in the future to help them monitor and manage the environment and comply with regulations. Job opportunities available in state and local governments will vary from year to year with the budgets of state and local environmental protection agencies.



KARP RESOURCES

LOGISTICIANS

Fast Facts:

2010 Median Pay:	\$70,800/yr or \$34.04/hr
Entry level education:	Bachelor's degree
Number of jobs (US), 2010:	108,900
Job Outlook, 2010-2020:	26%

2010 employment by industry:

Federal government:	28%
Manufacturing:	22%
Professional, scientific and technical services:	16%
Management of companies and enterprises:	9%
Wholesale trade:	6%

Duties:

Analyze and coordinate an organization's supply chain—the system that moves a product from supplier to consumer. Manage the entire life cycle of a product, which includes how a product is acquired, distributed, allocated, and delivered. Logisticians typically do the following:

- Develop business relationships with suppliers and customers
- Work to understand customers' needs and how to meet them
- Direct the allocation of materials, supplies, and finished products
- Design strategies to minimize the cost or time required to move goods
- Review the success of logistical functions and identify areas for improvement
- Present performance data to management
- Propose improvements to management and customers
- Stay current on advances in logistics technology and incorporate new technologies into procedures, which includes how a product is acquired, distributed, allocated, and delivered

Logisticians may get **certification through the American Society of Transport and Logistics (ASTL) or the International Society of Logistics (SOLE)**. The voluntary certification offered by each organization typically requires a combination of education, experience, and passing an exam.

Outlook:

Employment of logisticians is expected to grow 26% from 2010 to 2020, and will be driven by the important role logistics play in an increasingly global economy. The performance of a company's logistical and supply chain process is an important factor in a company's profitability. Employment is expected to grow rapidly as companies need logisticians to move products efficiently, solve problems, and identify areas for improvement. Planning for and moving military supplies and personnel also require an enormous amount of logistical work. Employment of logisticians in government and contracting firms will continue to grow to meet the needs of the military.

Job prospects should be good for those with a bachelor's degree in supply chain management, industrial engineering, business, or a related field. Prospects should be best for those with a college degree and work experience related to logistics, particularly previous experience using logistical software or doing logistical work for the military.



KARP RESOURCES

TRANSPORTATION, STORAGE, AND DISTRIBUTION MANAGERS (1)

Fast Facts:

2010 Median Pay:	\$80,210/yr
Entry level education:	High school diploma/equivalent
Number of jobs (US), 2010:	98,600
Job Outlook, 2010-2020:	10%

2010 employment by industry:

Transportation and warehousing:	31%
Wholesale trade:	16%
Government:	15%
Manufacturing:	11%

Types of transportation, storage, and distribution managers

- **Transportation managers** plan, direct, or coordinate the transportation operations within an organization or the activities of organizations that provide transportation services.
- **Storage and distribution managers** plan, direct, or coordinate the storage or distribution operations within an organization or the activities of organizations that are engaged in storing or distributing materials or products.
- **Logistics managers** plan, direct, or coordinate purchasing, warehousing, distribution, forecasting, customer service, or planning services. Manage logistics personnel and logistics systems and direct daily operations.

Duties:

Plan, direct, or coordinate transportation, storage, or distribution activities in accordance with organizational policies and applicable government laws or regulations. Duties are detailed on the following slide.



TRANSPORTATION, STORAGE, AND DISTRIBUTION MANAGERS (2)

Duties, transportation managers:

- Analyze expenditures and other financial information to develop plans, policies, or budgets for increasing profits or improving services
- Set operations policies and standards, including determining safety procedures for the handling of dangerous goods
- Plan, organize, or manage the work of subordinate staff to ensure that the work is accomplished in a manner consistent with organizational requirements
- Negotiate and authorize contracts with equipment and materials suppliers, and monitor contract fulfillment
- Collaborate with other managers or staff members to formulate and implement policies, procedures, goals, or objectives
- Monitor spending to ensure that expenses are consistent with approved budgets
- Supervise workers assigning tariff classifications and preparing billing
- Promote safe work activities by conducting safety audits, attending company safety meetings, or meeting with individual staff members
- Direct investigations to verify and resolve customer or shipper complaints
- Direct procurement processes including equipment research and testing, vendor contracts, or requisitions approval

Duties, storage and distribution managers:

- Prepare and manage departmental budgets
- Supervise the activities of workers engaged in receiving, storing, testing, and shipping products or materials
- Interview, select, and train warehouse and supervisory personnel
- Plan, develop, or implement warehouse safety and security programs and activities
- Prepare or direct preparation of correspondence, reports, and operations, maintenance, and safety manuals
- Issue shipping instructions and provide routing information to ensure that delivery times and locations are coordinated
- Confer with department heads to coordinate warehouse activities, such as production, sales, records control, or purchasing
- Review invoices, work orders, consumption reports, or demand forecasts to estimate peak delivery periods and to issue work assignments
- Inspect physical conditions of warehouses, vehicle fleets, or equipment and order testing, maintenance, repairs, or replacements
- Schedule or monitor air or surface pickup, delivery, or distribution of products or materials

Duties, logistics managers:

- Resolve problems concerning transportation, logistics systems, imports or exports, or customer issues
- Collaborate with other departments to integrate logistics with business systems/processes, such as customer sales, order management, accounting, or shipping
- Maintain metrics, reports, process documentation, customer service logs, or training or safety records
- Supervise the work of logistics specialists, planners, or schedulers
- Direct inbound or outbound logistics operations, such as transportation or warehouse activities, safety performance, or logistics quality management
- Direct or coordinate comprehensive logistical or reverse logistical functions for product life cycles
- Negotiate with suppliers or customers to improve supply chain efficiency or sustainability
- Direct distribution center operation to ensure achievement of cost, productivity, accuracy, or timeliness objectives
- Negotiate transportation rates or services
- Analyze the financial impact of proposed logistics changes, such as routing, shipping modes, product volumes or mixes, or carriers



KARP RESOURCES

FOOD SERVICE MANAGERS

Fast Facts:

2010 Median Pay:	\$48,130/yr or \$23.14/hr
Entry level education:	High school diploma/equivalent
Number of jobs (US), 2010:	320,600
Job Outlook, 2010-2020:	-3%

2010 employment by industry:

Limited service eating places:	20%
Full service restaurants:	20%
Special food services:	4%
Traveler accommodation:	2%
Elementary and secondary schools:	2%

Duties:

Responsible for the daily operations of restaurants and other establishments that prepare and serve food and beverages to customers. Managers ensure that customers are satisfied with their dining experience. Foodservice managers typically do the following:

- Interview, hire, train, oversee, and sometimes fire employees
- Oversee the inventory and ordering of food and beverage, equipment, and supplies
- Monitor food preparation methods, portion sizes, and the overall presentation of food
- Comply with health and food safety standards and regulations
- Monitor the actions of employees and patrons to ensure everyone's personal safety
- Investigate and resolve complaints regarding food quality or service
- Schedule staff hours and assign duties
- Keep budgets and payroll records and review financial transactions
- Establish standards for personnel performance and customer service

The **Foodservice Management Professional (FMP)** designation is a voluntary certification that shows professional competence, particularly for managers who learned their skills on the job. The National Restaurant Association Educational Foundation awards the FMP designation to managers who meet several criteria, including passing a written exam, completing coursework, and meeting experience requirements.

Outlook:

Employment of food service managers is expected to decline 3% from 2010 to 2020, as the number of eating and drinking establishments opening is expected to decline from the previous decade. Despite these reductions, new employment opportunities for food service managers will emerge in grocery stores and other retail and recreation industries to meet the growing demand for quick food in a variety of settings. Job opportunities for food service managers are expected to be highly competitive. Most openings will result from the need to replace managers who retire or transfer to other occupations.

Most food service managers have less than a bachelor's degree, but some postsecondary education is increasingly preferred for many manager positions. Many food service management companies and national or regional restaurant chains recruit management trainees from college hospitality or food service management programs, which require internships and real-life experience to graduate.



KARP RESOURCES

CHEFS AND HEAD COOKS

Fast Facts:

2010 Median Pay:	\$40,630/yr or \$19.53/hr
Entry level education:	High school diploma/equivalent
Number of jobs (US), 2010:	100,600
Job Outlook, 2010-2020:	-1%

2010 employment by industry:

Full service restaurants:	46%
Traveler accommodation:	11%
Special food services:	9%
Other amusement and recreation industries:	6%
Limited-service eating places:	5%

Types of chefs and head cooks:

- **Executive chefs, head cooks, and chefs de cuisine** are primarily responsible for overseeing the operation of a kitchen. They coordinate the work of sous chefs and other cooks, who prepare most of the meals. Executive chefs also have many duties beyond the kitchen. They design the menu, review food and beverage purchases, and often train employees. Some executive chefs are primarily occupied by administrative tasks and spend little time in the kitchen.
- **Sous chefs** are a kitchen's second-in-command. They supervise the restaurant's cooks, do some meal preparation tasks, and report results to the head chefs. **Personal chefs** plan and prepare meals in private homes. They also may order groceries and supplies, serve meals, and wash dishes and utensils. Personal chefs are often self-employed or employed by a private cooking company, preparing food for a variety of customers.
- **Private household chefs** typically work full time for one client, such as a corporate executive, university president, or diplomat, who regularly entertains.

Duties:

- Check freshness of food and ingredients
- Supervise and coordinate activities of cooks and other food preparation workers
- Develop recipes and determine how to present the food Plan menus and ensure uniform serving sizes and quality of meals Inspect supplies, equipment, and work areas for cleanliness and functionality
- Hire, train, and supervise cooks and other food preparation workers
- Order and maintain inventory of food and supplies needed to ensure efficient operations
- Monitor sanitation practices and ensure that kitchen safety standards

Outlook:

Employment of chefs and head cooks is projected to experience little or no change from 2010 to 2020. Population and income growth is expected to result in greater demand for more high-quality dishes at a variety of dining venues, including many up-scale establishments. However, employment growth will be tempered as many restaurants, in an effort to lower costs, use lower-level cooks to perform the work normally done by chefs and head cooks. Job opportunities will be best for chefs and head cooks with several years of work experience. The majority of job openings will stem from the need to replace workers who leave the occupation. There will be strong competition for jobs at upscale restaurants, hotels, and casinos, which tend to pay more. Workers with a combination of business skills, previous work experience, and creativity will have the best job prospects.

Job profiles



KARP RESOURCES

COOKS

Fast Facts:

2010 Median Pay:	\$20,260/yr or \$9.74/hr
Entry level education:	Culinary training recommended
Number of jobs (US), 2010:	2,050,800
Job Outlook, 2010-2020:	8%

2010 employment by industry:

Full service restaurants:	41%
Limited-service eating places:	27%
Health care and social assistance:	8%
Elementary and secondary schools:	6%

Types of cooks:

- **Institution and cafeteria cooks** work in the kitchens of schools, cafeterias, businesses, hospitals, and other institutions. For each meal, they prepare a large quantity of a limited number of entrees, vegetables, and desserts, according to preset menus.
- **Restaurant cooks** usually prepare a wide selection of dishes and cook most orders individually. Some restaurant cooks may order supplies, set menu prices, and plan the daily menu.
- **Short-order cooks** prepare foods in restaurants and coffee shops that emphasize fast service and quick food preparation. They usually prepare sandwiches, fry eggs, and cook french fries, often working on several orders at the same time.
- **Fast-food cooks** prepare a limited selection of menu items in fast-food restaurants, such as hamburgers and fried chicken.
- **Private household cooks** plan and prepare meals in private homes, according to the client's tastes and dietary needs. They order groceries and supplies, clean the kitchen, and wash dishes and utensils. Most typically work for one full-time client.

Duties:

- Check freshness of food and ingredients before cooking
- Weigh, measure, and mix ingredients according to recipes
- Bake, roast, grill, broil, fry, boil and steam meats, fish, vegetables, and other foods
- Garnish, arrange, and serve food
- Clean work areas, equipment, utensils, dishes, and silverware
- Cook, hold, and store food or food ingredients

Outlook:

Overall employment of cooks is projected to grow 8% from 2010 to 2020, slower than the average for all occupations. As people continue to eat out and buy prepared foods, more restaurants will open, and food-service operations such as those found inside grocery stores will serve more prepared food dishes, spurring demand for cooks. Employment growth for cooks will also increase as, in an effort to lower costs, many full-service restaurants will hire lower level cooks instead of chefs and head cooks. Overall job opportunities are expected to be good due to a combination of employment growth and current workers leaving the occupation. Cooks with formal training will have the best job prospects.



KARP RESOURCES

FIRST-LINE SUPERVISORS OF FOOD PREPARATION AND SERVING WORKERS

Fast Facts:

2010 Median Pay:	\$29,560/yr
Entry level education:	High school diploma/equivalent
Number of jobs (US), 2010:	801,100
Job Outlook, 2010-2020:	10%

2010 employment by industry:

Accommodation and food service:	76%
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Duties:

- Train workers in food preparation, and in service, sanitation, and safety procedures.
- Compile and balance cash receipts at the end of the day or shift.
- Perform various financial activities such as cash handling, deposit preparation, and payroll.
- Supervise and participate in kitchen and dining area cleaning activities.
- Estimate ingredients and supplies required to prepare a recipe.
- Resolve customer complaints regarding food service.
- Control inventories of food, equipment, smallware, and liquor, and report shortages to designated personnel.
- Purchase or requisition supplies and equipment needed to ensure quality and timely delivery of services.
- Observe and evaluate workers and work procedures to ensure quality standards and service, and complete disciplinary write-ups.
- Specify food portions and courses, production and time sequences, and workstation and equipment arrangements.

Outlook:

Detailed outlook not provided.



KARP RESOURCES

FOOD PREPARATION WORKERS

Fast Facts:

2010 Median Pay:	\$19,100/yr or \$9.18/hr
Entry level education:	Less than high school
Number of jobs (US), 2010:	813,700
Job Outlook, 2010-2020:	10%

2010 employment by industry:

Full service restaurants:	25%
Limited-service eating places:	21%
Grocery stores:	14%
Nursing and residential care facilities:	7%
Elementary and secondary schools:	7%

Duties:

- Clean and sanitize work areas, equipment, utensils, and dishes
- Weigh or measure ingredients, such as meat and cheeses
- Prepare fresh condiments, including lettuce, tomatoes, and onions
- Cut and grind meats, poultry, and seafood to prepare for cooking
- Mix ingredients for salads Store food in designated containers and storage areas to prevent spoilage
- Take and record temperatures of food and food storage areas
- Place food trays over food warmers for immediate service

Outlook:

Employment of food preparation workers is expected to grow by 10% from 2010 to 2020, about as fast as the average for all occupations. People will continue to eat out and take carry-out meals home. In response, more restaurants will open and nontraditional food service operations, such as those found inside grocery stores, will serve more prepared food dishes. In addition, because preparing fresh and made-from-scratch meals is labor intensive, many chefs at upscale restaurants will require the help of food preparation workers. However, a growing number of fast-food restaurants and school and hospital cafeterias are customizing their food orders from wholesalers and distributors in an effort to lower costs. As more food service establishments use these cost-saving strategies, the need for food preparation workers to wash, portion, and season ingredients should be diminished. Job opportunities for food preparation workers are expected to be good because of the need to replace the large number of workers who leave the occupation each year, since turnover in the occupation is fairly high. Those with related work experience should have the best job opportunities at large or upscale restaurants.



KARP RESOURCES

FOOD PROCESSING OCCUPATIONS

Fast Facts:

2010 Median Pay:	\$23,950/yr or \$11.51/hr
Entry level education:	Less than high school
Number of jobs (US), 2010:	311,300
Job Outlook, 2010-2020:	12%

2010 employment by industry (based on type of job):

Butchers & meat cutters:	Grocery stores
Meat, poultry and fish cutters and trimmers:	Food manufacturing plants

Types of food processing workers:

- **Butchers and meat cutters** cut and trim meat from larger, wholesale portions into steaks, chops, roasts, and other cuts that shoppers want.
- **Meat, poultry, and fish cutters and trimmers** produce ready-to-eat, partially cooked, easy-to-prepare, and display-ready packages of meat, poultry, and fish products at processing plants, ultimately for sale in grocery and specialty food stores.
- **Fish cutters and trimmers** remove non-edible parts and then cut the fish into steaks or fillets. In retail stores, these workers also may wait on customers and clean fish to order. Some processing is done aboard ships, where fish are caught, processed, and flash frozen to preserve freshness.
- **Roasting, baking, and drying machinery operators and tenders** work primarily in animal processing plants but also roast, bake, or dry other food and nonfood products, such as tortillas, fruits and vegetables, dairy products, coffee beans, and tobacco products.

Duties:

Butchers and meat cutters typically do the following:

- Cut steaks and chops, shape and tie roasts and grind meats for sale as chopped meats or sausage
- Prepare and package meats for display cases and help customers with special orders

Meat, poultry and fish cutters and trimmers typically do the following:

- Perform a cut in the production of a meat, poultry, or fish product; clean, trim, and cut carcasses to prepare them for further processing
- Inspect products for defects and irregularities
- Label or identify goods to make transporting and using them easy

Roasting, baking and drying machinery operators typically do the following:

- Control the temperature, humidity, and pressure of machinery using thermostats and valves and ensure that gauges and sensors work properly
- Fill work orders, weigh, and otherwise check products to ensure accuracy

Outlook:

Employment of food processing occupations is expected to grow by 12% from 2010 to 2020, about as fast as the average for all occupations. More people around the world are demanding prepared and pre-cut food. These trends are expected to drive demand for food processing workers, even as new machines make the work more productive. As the food processing industry becomes more consolidated, production processes become more streamlined. Therefore, the ability of processing facilities to employ meat cutters and trimmers should remain strong because of reduced costs in other areas of the industry.



KARP RESOURCES

FOOD PROCESSING OPERATORS

Fast Facts:

2010 Median Pay:	\$24,250/yr or \$11.66/hr
Entry level education:	High school diploma/equivalent
Number of jobs (US), 2010:	131,000
Job Outlook, 2010-2020:	2%

2010 employment by industry:

Bakeries and tortilla manufacturing:	19%
Fruit and vegetable preserving/specialty food manufacturing:	14%
Animal slaughtering and processing:	9%
Dairy product manufacturing:	8%
Sugar and confectionery product manufacturing:	7%

Types of food processing operators:

- **Food batchmakers** are more likely to work in facilities producing baked goods, pasta, and tortillas. They mix ingredients to make dough, load and unload ovens, operate noodle extruders, and do tasks specific to large-scale commercial baking.
- **Food cooking machine operators and tenders** operate or tend cooking equipment to prepare food products. For example, workers who preserve and can fruits and vegetables usually operate equipment that boils water to cook and preserve their products.

Duties:

- Set up and calibrate equipment for daily use
- Weigh ingredients and make mixtures
- Control temperatures, oil or water flow rates, humidity, and pressures of cooking machinery with thermostats and valves
- Operate mixers and manage ingredients to meet product quality and uniformity standards
- Monitor products by watching, tasting, or listening to machinery and report equipment malfunctions in a timely manner
- Comply with food safety regulations and maintain clean workspaces and equipment to meet health and safety standards
- Fill work orders and weigh and otherwise check products to ensure accuracy and quality
- Dismantle, clean, and store equipment for future use

Outlook:

Employment of food batchmakers is expected to experience little or no change, growing 1% from 2010 to 2020. Employment of food cooking machine operators and tenders is expected to grow by 5% from 2010 to 2020, slower than the average for all occupations. Food processing operators are concentrated in food manufacturing industries. These industries are always seeking ways to increase productivity, usually through automation, which decreases the need for workers. Food processing industries are becoming more and more consolidated. Job prospects should be best in rural areas or near smaller cities where the large processing facilities are located.



KARP RESOURCES

SLAUGHTERERS AND MEAT PACKERS

Fast Facts:

2010 Median Pay:	\$23,380/yr or \$11.24/hr
Entry level education:	Less than high school
Number of jobs (US), 2010:	89,100
Job Outlook, 2010-2020:	8%

2010 employment by industry:

Slaughtering and processing facilities:	-100%
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Duties:

- Slaughter animals and cut meat and poultry into smaller portions
- Operate machinery, such as motorized saws, conveyors, or electrical stunning equipment
- Grind, chop, or cut meat into retail sizes and package it for shipping
- Comply with industry health standards
- Some types of slaughterers follow religious specifications. For example, halal and kosher slaughterers follow strict guidelines during the slaughtering process to make sure that the product can qualify for religious specifications of what is permissible to eat

Outlook:

Employment of slaughterers and meat packers is expected to grow by 8% from 2010 to 2020, slower than the average for all occupations. An expanding population and international trade will create demand for meat and related products. As the meat-processing industry becomes more integrated, production processes are becoming more streamlined. The ability of processing facilities to employ slaughterers and meat packers should remain strong because of reduced costs in other areas of the industry. A growing global population and increasing wealth among developing countries should cause demand for meat and poultry to increase worldwide. Compared to food products from other countries, U.S.-made food products are produced under very high quality and safety standards. As a result, exports of U.S. meat and poultry products face few extra quality and safety regulations when imported by other countries. The animal slaughtering and processing industry is continuing to consolidate. Most jobs are in areas where there are large processing facilities. The majority of large meat-packing plants are located in the Midwestern and High Plains regions of the country. The five states with the largest number of slaughterers and meat packers are Texas, North Carolina, Minnesota, Nebraska, and Iowa. Processing facilities tend to be in rural areas or near smaller cities.

Job profiles



KARP RESOURCES

BAKERS

Fast Facts:

2010 Median Pay:	\$23,450/yr or \$11.27/hr
Entry level education:	Less than high school
Number of jobs (US), 2010:	149,800
Job Outlook, 2010-2020:	2%

2010 employment by industry:

Bakeries and tortilla manufacturing:	31%
Grocery stores:	27%
Limited service eating places:	12%
Other general merchandise stores:	8%
Full service restaurants:	4%

Types of bakers:

- **Commercial bakers** are commonly employed in manufacturing facilities that produce breads and pastries. In these manufacturing facilities, bakers use high-volume mixing machines, ovens, and other equipment to mass produce standardized baked goods. They follow daily instructions for production schedules and recipes, and also may develop new recipes.
- **Retail bakers** work primarily in grocery stores and specialty shops, including bakeries. In these settings, they produce smaller quantities of baked goods for people to eat in the shop or for sale as specialty baked goods. Retail bakers may take orders from customers, prepare baked goods to order, and serve customers. Some retail bakers own bakery shops or other types of businesses where they make and sell breads, pastries, pies, and other baked goods.

Duties:

- Check the quality of ingredients
- Prepare equipment for baking
- Measure and weigh flour and other ingredients
- Combine measured ingredients in mixers or blenders
- Knead, roll, cut, and shape dough
- Place dough in pans, molds, or on sheets
- Place and bake items in hot ovens or on grills, and observe color and state of products being baked
- Apply glazes, icings, or other toppings using spatulas or brushes

Outlook:

Employment of bakers is expected to experience little or no change from 2010 to 2020. As the nation's population grows, people will continue to demand more baked goods to eat at home or to eat at grocery stores, bakeries, and restaurants. However, manufacturing facilities are increasingly using more automated and computerized production processes, which reduce the need for bakers. As a result, employment growth of bakers is expected to be limited. Highly skilled, experienced bakers should have the best job opportunities because of the growing demand for specialty products that require years of baking experience.



ADDITIONAL JOB INFORMATION PROVIDED IN INTERVIEWS

Job title	Relationship to map	Detail available
Inventory Control/Logistics Assistant, distribution	<ul style="list-style-type: none"> Food Operations 	<ul style="list-style-type: none"> Entry level \$30-36,000
Perishable Department, retail	<ul style="list-style-type: none"> Food Science & Food Safety 	<ul style="list-style-type: none"> Tier 2 union job- \$12-15/hr, FT + benefits (NJ rates)
Community Health Worker	<ul style="list-style-type: none"> Nutrition, Health, Wellness (or Community Health + Culinary) 	<ul style="list-style-type: none"> with nutrition background increasingly sought
HACCP Clerk	<ul style="list-style-type: none"> Food Science & Food Safety 	<ul style="list-style-type: none"> \$14/hr, FT + benefits
HACCP Coordinator	<ul style="list-style-type: none"> Food Science & Food Safety 	<ul style="list-style-type: none"> \$15-18/hr, FT + benefits – Coordinator title results from higher education
Assistant Store Manager	<ul style="list-style-type: none"> Food Operations 	<ul style="list-style-type: none"> \$20/hr, FT + benefits, union (NYC rates)
Grocery Store Manager	<ul style="list-style-type: none"> Food Operations 	<ul style="list-style-type: none"> \$2,000/week, FT + benefits, union (NYC rates)
Quality Assurance Inspectors	<ul style="list-style-type: none"> Food Science & Food Safety 	<ul style="list-style-type: none"> Wide variation across industry on wages and ed. attainment requirements
Warehouse Inventory Manager, food distribution sector	<ul style="list-style-type: none"> Food Operations 	<ul style="list-style-type: none"> Bachelor's required for Manager position – \$40-80,000/FT + benefits, depending on experience
Research/Program Assistant, nonprofit sector (e.g. hospital wellness program)	<ul style="list-style-type: none"> Nutrition, Health & Wellness (and Sustainability and Food) 	<ul style="list-style-type: none"> \$37-45,000 starting. Often Bachelor's holders. Potential to advance within organizations.
Sales Assistant	<ul style="list-style-type: none"> Broad range of degree and track combinations (e.g. Business + Sustainability and Food) 	<ul style="list-style-type: none"> \$35-40,000 starting salary + benefits and commission. Associates degree not mandatory but worth an estimate 10% increase in start salary



ADDITIONAL JOB INFORMATION PROVIDED IN INTERVIEWS

Job title	Relationship to map	Detail available
International Purchasing, seafood sector	<ul style="list-style-type: none"> • Business + Food Policy) 	<ul style="list-style-type: none"> • \$70,000 FT + benefits
Marketing/Social Media	<ul style="list-style-type: none"> • Broad range of degree and track combinations (e.g. Digital Design + Sustainability and Food; or Business + Culinary) 	<ul style="list-style-type: none"> • Wide variation in salary base and in educational attainment requirements, but high demand
Merchandising/Supply Chain Assistant	<ul style="list-style-type: none"> • Food Operations (or Business + Sustainability and Food) 	<ul style="list-style-type: none"> • Manager position would require Bachelor's or higher
Accounts Payable/Receivable	<ul style="list-style-type: none"> • Accounting + Sustainability and Food 	<ul style="list-style-type: none"> • Large job opportunity in any company's head office, particularly as sustainability accounting increases
Grocery/Food Marketing and Merchandising Manager	<ul style="list-style-type: none"> • Food Operations 	<ul style="list-style-type: none"> • \$45,000–60,000, commensurate with experience and education



MEANINGFUL FOOD INDUSTRY CERTIFICATIONS

Operations

- Certified Purchasing Manager
- Certified Professional in Supplier Diversity
- Certified in Supply Management
- Certified Professional in Supply Chain Management
- Quality Control Certificate
- Certified Purchasing Manager
- Inventory Control Certificate.

Food Safety

- ServSafe (or equivalent)
- HACCP cert.
- Certified Food Protection Professional
- Certified Food Safety Manager

Note: Food safety certification requirements vary across geographic location.

Health and Wellness

- Certificate in Health and Behavior Change (no known such certificate is yet offered)
- Community Health Worker

Note: Many nutrition and health-related certificate programs exist and many requiring a Bachelors or Masters for eligibility. The 2 listed here were those explicitly mentioned/ sought by interviewees.

Culinary

- Certified Culinary Professional (CCP)
- Certified Culinarian (culinary + food safety)

Source: Information gleaned from industry interviews were the primary source of this list. Follow up research was conducted through the websites of the Institute for Supply Management, American Dietetic Association, the Food and Drug Administration, American Nutrition Association, and International Association of Culinary Professionals.



NYC SCAN REVEALS EXISTING PROGRAMS IN FOOD STUDIES, NUTRITION AND CULINARY

Food Studies

Bachelor's degree & higher
Interdisciplinary approach to
study of food and the
modern food system

Career paths can include
policy, advocacy, media,
business, and social
entrepreneurship

Schools include:

- NYU
- The New School

Nutrition and Food Science

Bachelor's degree & higher
Topics include nutrition, food
preparation and safety,
foodservice management,
and epidemiology

Career paths include food
science technical specialists,
corporate nutrition roles,
registered dietitian or
community health worker

Schools include:

- NYU
- LaGuardia
- Queens College
- Columbia
- NYIT
- Hunter College

Culinary

Certificate, associate's and
bachelor's

Landscape includes top
rated culinary schools and
community colleges

Career paths include
foodservice, restaurants,
entrepreneurship, media and
higher education

Schools include:

- ICE
- ICC
- Monroe College
- Kingsborough CC



KARP RESOURCES

NATIONAL SCAN REVEALS TWO CATEGORIES OF RELEVANT PROGRAMS

Food Studies, Food Systems & Sustainability

Community Colleges offer programs in farm & food systems, sustainable agriculture and sustainable food systems

- Sustainability programs often include education in food production, along with understanding the various impacts (economic, social, etc.) of the food system

Colleges & Universities offer programs in food studies and sustainable food & farming

Careers include sustainability development specialist, agricultural operations management, policy-making, community organizing,

- Schools include:
 - Greenfield Community College
 - Sheridan Community College
 - Rio Salado/Mesa Community College
 - U Mass Amherst
 - University of New Hampshire
 - College of the Atlantic

Nutrition and Food Science

Community Colleges offer programs in food science & safety, and food processing & technology

- Most programs appear targeted toward continuing education, but a few prepare associate's recipients to enter the workforce.

Colleges & Universities offer bachelor's, master's and doctoral degrees in nutrition, dietetics and food science

Career paths include dietitian, nutritionist, food scientist and technologist, food science technician, HACCP coordinator, quality assurance inspector or manager

Schools include:

- North Shore Community College
- Southern State Community College
- Rutgers University
- Cornell University
- Most land grant universities

Nutrition and Food Science programs offer more well-defined career paths



KARP RESOURCES

LIST OF INTERVIEWEES

Sector	Affiliation	Interviewee Name and Title
Processing	Down East Seafood	Ed Taylor, President
Wholesale Aggregators and Distribution	Sysco, Metro NY	Michael P. Salvatore, III CEC
	Gourmet Guru	Madeline Reidy, Marketing Associate
	Baldor	Michael Muzyk, President and Henry Foreman, Director of HR
Supermarkets/Retail	Shop Rite/Wakefern	Grace McCabe, Director of Support Services and Lori Bettaneschi, Human Resources Coordinator
Terminal and other markets	Hunts Point Produce Market	Myra Gordon, Executive Director
Foodservice and restaurants	Sodexo	Rachel Sylvan, Director of Engagement, Office of Sustainability
	Red Rabbit	Herb Schwab, Director of Operations
Non-profit	City Harvest	Debra Lucarello, Director of Human Resources
Economic Development	WhedCo	Kerry McLean, Director of Community Development
	NYC Economic Development Corporation	Julie Stein, Assistant Vice President of Development & Miquela Craytor, Vice President, Industrial Initiatives
	Hunts Point EDC	Josephine Infante, Executive Director
Health	NYC Department of Health	Cathy Nonas, Director of Nutrition and Physical Activity
	Montefiore Hospital	Renee Shanker, Director of Montefiore's Associate Wellness Program
Policy	NYC Mayor's Office, Food Policy Coordinator	Kim Kessler, NYC Food Policy Coordinator
	USDA Agricultural Marketing Service	Debbie Tropp, Branch Chief, Farmers Market and Direct Marketing Research