Manitoba Green Workforce Comparative Analysis

This document examines available green Labour Market Information (LMI) literature to evaluate and compare definitions, scope, methodology and results across pubblications.

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Manitoba Environmental Industries Association

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About ECO Canada

Environmental Careers Organization of Canada (ECO Canada) is a not-for-profit organization founded in 1992 to help nurture Canada's growing environmental sector. For over 30 years, we've offered programs and services to help individuals build meaningful environmental careers, provide employers with resources to find and keep the best environmental practitioners and inform educators and governments of employment trends to ensure the ongoing prosperity of Canada's growing environmental sector.

ECO Canada investigates current environmental skills and labour trends within the environmental employment sector. It provides up-to-date, timely, relevant insights that can be applied in policy, business, and educational contexts. The complete collection of reports is available at eco.ca.

Purpose and Scope

ECO Canada (ECO) (eco.ca) is an organization dedicated to ensuring access to a trained workforce in the environmental workspace. The Manitoba Environmental Industries Association (MEIA) (meia.mb.ca) equips its members with the information they need to stay current on governmental policy and legislation, increase their knowledge of environmental practices, and gain business development knowledge.

This document's comparative analysis collects all relevant literature and Labour Market Information (LMI) sources related to Manitoba's green workforce. The objective is to provide an overview of the data and compare green workforce definitions, scope, methodology, and results across different publications. As a preliminary assessment, the analysis collects quantitative and qualitative information to understand the difference between available sources compared to ECO.

Executive Summary

Several organizations have researched the workforce and the environmental workforce, albeit sometimes only partially, over the past eight years. This summary provides an overview and an assessment of the sources available. The findings are organized according to their quantitative and qualitative nature. All major differences between sources are available in the following table, which collects major findings, definitions and methodologies for a fast assessment of the findings.

Table 1

Comparison of Environmental Labour Market Information Sources

Source	Definition of Green Workforce	General Employment Data	Environmental Employment Data	Methodology
Clean Technology Data Strategy	Environmental goods and services Clean technology goods and services	N/A	Environmental Sector: 5,657 Cleantech Sector: 8,854 Both: 14,511	Commodity ratios for environmental goods and services are applied to an input-output model of the Canadian economy to estimate GDP, exports and employment related to Clean Technology and Environmental activity
Manitoba Labour Market Outlook	N/A	2020 Labour Demand: 659,900 2020-2025 Labour Demand Growth 2021-2025 Net Hiring: 141,700	N/A	Industry employment is forecasted from 2021 to 2025 based on historical patterns Labour demand is calculated as employment x (1 + natural rate of unemployment)
Environmental Scan – Manitoba 2020-2021	N/A	2020 Employment 630,900	N/A	N/A
Green and Growing Manitoba's Commitment to Green Jobs	2011 UNEP definition of Green Economy and Green Jobs	N/A	N/A	N/A
Making a Living, Sustainably	2011 UNEP definition of Green Economy and Green Jobs	N/A	N/A	N/A
Tomorrow Now: Manitoba's Green Plan	Offers green definition to specific industries	N/A	N/A	N/A
ECO Canada	Core Environmental Workforce (competency-based) All Environmental Workforce (output-based)	2020 Employment: 627,870 2025 Employment: 685,750 2020-2025 Employment Growth: 57,880 2020-2025 Replacement Demand: 83,920 2020-2025 Net Hiring: 141,800	2020 Env. Employment: 21,670 2025 Env. Employment: 23,920 2020-2025 Env. Employment Growth: 2,250 2020-2025 Replacement Demand 2,240 2020-2025 Net hiring: 5,190	Environmental workforce shares are estimated using job posting analysis Environmental workforce shares are applied to LFS employment data to derive environmental employment Total employment is projected using a consensus economic/industry forecast for each province/territory

Compared to ECO Canada, the Clean Technology Data Strategy (CTDS) provides historical estimates of the clean tech and environmental workforce using a narrower definition of environmental work, tracking two broad categories, "environmental goods and services" and "clean technology goods and services." On top of that, it restricts its sources solely from Statistics Canada, and the results risk being volatile during inter-census periods. On the other hand, ECO Canada considers a broader definition of the green workforce, provides projections of future employment and hiring demand and compiles data from Statistics Canada and other sources. Therefore, the results of the two methods are expected to be different. According to CTDS, Manitoba's environmental workforce in 2020 included **14,511** workers, compared to the **21,670** found by ECO Canada.

Regarding Manitoba's workforce overall, ECO Canada's findings are comparable to the Manitoba Labour Market Outlook. However, the only other source offering an analysis of the environmental workforce in Manitoba is CTDS.

All the other sources collected in this analysis offer qualitative information on Manitoba's green labour force. One major hurdle is that these sources are relatively dated and are losing relevance, especially those that provide projections that have already passed. Out of these, the most relevant information is the definition of green economy and green workforce, which are both taken from the UNEP definition, and consistently used across different Manitoba sources.

There is one major takeaway from this analysis, which is that Manitoba is lacking homogeneity in how the environmental workforce is assessed. Continuity in assessing and providing information and assessments of the environmental labour market is also essential for long-term projections and periodic evaluations of the workforce's health. Manitoba would benefit significantly from the collaboration between institutions to establish definitions and methodologies for assessing the local environmental workforce. ECO Canada welcomes the opportunity to participate in such an effort.

Quantitative Findings

Clean Technology Data Strategy[1]

The Clean Technology Data Strategy (CTDS), a joint initiative led by Natural Resources Canada, Innovation, Science and Economic Development Canada and the Clean Growth Hub, provides information to measure the clean technology's economic, environmental, and social contributions to Canada. Statistics Canada defines clean technology (cleantech) as "any good or service designed with the primary purpose of contributing to remediating or preventing any environmental damage"; and "any good or service that is less polluting or more resource-efficient than equivalent normal products that furnish similar utility."

[1] Canada, I. (2022, April 20). *Clean Technology Data strategy*. Clean Growth Hub. Retrieved May 24, 2022, from https://www.ic.gc.ca/eic/site/099.nsf/eng/h_00019.html

CTDS provides data via several Statistics Canada sources:

- The Environmental and Clean Technology Products Economic Account (ECTPEA) provides information on the economic impact of cleantech and environmental products by measuring its share of gross domestic product and employment and other economic variables such as exports, imports, and output.
- The Natural Resources Satellite Account (NRSA) provides the same economic variables as ECTPEA, but for the natural resources sector, including energy, mining, and forestry.
- The Survey of Environmental Goods and Services (SEGS) collects data on sales and exports of environmental and cleantech goods and services to estimate their production nationally and by province or territory. This data is also used to produce employment estimates associated with the production of environmental cleantech.
- The Environmental Protection Expenditures Survey (EPES) collects data from companies to provide national and regional estimates of capital and operating expenditures on environmental protection and resource management activities, as well as drivers and obstacles to their purchase. It is an essential indicator of Canadian investment in environmental protection.
- The Human Resource Module (HRM) for the NRSA and ECTPEA provides information on age, sex, education level, occupation, hours worked, immigration and Indigenous status of workers in the natural resources, environmental and cleantech sectors.
    - The aim of this last data source is to provide timely and reliable statistics on the human resource dimension of natural resources and environmental and clean technology production in Canada.
    - It complements and enhances the analytical capacity of the NRSA and ECTPEA, allowing for a broader insight into their role in the economy.
    - The HRM provides annual estimates for the years 2009 up to 2020.
    - Data sources underlying the HRM are the Canadian Productivity Accounts (CPA), the Canadian System of National Accounts (CSNA), the Census of Population, the Labour Force Survey (LFS) and NRSA and ECTPEA accounts.
    - The basic methodology consists of seven steps: (I) taking totals from the CPA for jobs, hours worked, and wages and salaries. (II) Disaggregating these totals, using data from the CPA for full-time and part-time jobs. (III) Distributing the CPA totals across occupations, sex and age groups, level of education, indigenous identity, and immigrant status based on census data. (IV) Building time series from these benchmarks (inter-census periods). Where applicable, LFS data for the corresponding series is used. Still, when LFS data is deemed too volatile or unreliable, the inter-census period is interpolated using a straight-line method. (V) Projecting the time series past the latest census using LSF growth rates for the corresponding series. (VI) Benchmarking the gull times series to the CPA totals. (VII) Applying industry ratios from the NRSA and ECTPEA to the entire economy HRM (created in steps (I) to (VI))

The CTDS tracks two broad categories, (1) environmental goods and services and (2) clean technology goods and services.

Table 2

Employment in Manitoba's environmental and cleantech sector (2020) [2]

	Cleantech Sector	Environmental Sector	Both
# of Jobs in Canada	210,237	112,736	322,972
# of Jobs in Manitoba	8,854	5,657	14,511
Percentage of Canadian Jobs	4%	5%	4%

According to CTDS data, in 2020, Manitoba had **14,511** green jobs, of which **8,854** were in the cleantech sector, and **5,657** were in the environmental sector. Respectively, these accounted for 4% of the total jobs in the province, 4% in the cleantech sector and 5% in the environmental sector.

Table 3

Environmental and Clean Technology Products Economic Account, employment[3]

Industry	2016	2017	2018	2019[4]	2020[5]
Total, all industries	16,752	17,270	17,252	16,546	14,511
Utilities	4,329	4,208	4,113	4,354	4,174
Electric power generation, transmission, and distribution	4,304	4,179	4,079	4,314	4,135
Engineering construction	8,549	7,919	7,973	6,421	4,999
Electric power engineering	7,837	7,163	7,503	5,767	4,412
Manufacturing	879	1,126	1,050	1,333	1,259
Electric equipment manufacturing	424	585	553	614	535
Professional, scientific and technical services	552	977	1,000	948	890
Administrative and support, waste management and remediation services	868	1,241	1,251	1,707	1,546
Waste management and remediation services	815	1,180	1,191	1,656	1,483
Other industries	1,574	1,799	1,865	1,784	1,643

Other industries includes Agriculture, forestry, logging, fishing, hunting, and trapping (BS110), Mining, quarrying, and oil and gas extraction (BS210), Wholesale trade (BS410), Retail trade (BS4A0), Transportation and warehousing (BS4B0), Information and cultural industries (BS510), Finance, insurance, real estate, rental and leasing and holding companies (BS5B0), Educational services (BS610), Owner occupied dwellings (BS53C), Health care and social assistance (BS620); Arts, entertainment and recreation (BS710), Accommodation and food services (BS720), Other services (except public administration) (BS810), Non-profit institutions serving households (NP000), Government health and education services (GS600, GS610 and GS620), and other Government services (GS910, GS920, GS930, and GS940) industries.

[2] Canada, I. (2022, April 20). *Clean Technology Data strategy*. Clean Growth Hub. Retrieved May 24, 2022, from https://www.ic.gc.ca/eic/site/099.nsf/eng/00046.html

[3] *Environmental and Clean Technology Products Economic Account, employment...* Government of Canada, Statistics Canada. (2022, January 6). Retrieved May 25, 2022, from https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3610063201

[4] Data for 2019 is preliminary.

[5] Data for 2020 is preliminary

Manitoba Labour Market Outlook 2021-2025[6]

There is no mention of a green or environmental workforce.

The Manitoba Labour Market Outlook provides a five-year forecast of the expected supply and demand of labour in the province. It provides a quantitative assessment, including supply requirements, entrants, international immigrants, interprovincial migrants, and career transitioners.

The report aims to improve the understanding of Manitoba's labour market and the critical issues involved in achieving market goals and was developed as a tool to support government policy and career planning for job seekers and students. Additionally, the report is intended to complement existing work and occupation projection and forecasting, including the Canadian Occupational Projection System (COPS) and labour market forecasts prepared for particular industries by sector councils, government departments and other groups.

The report is based on the Manitoba Economic Development and Jobs (EDJ) work with Workplace Education Manitoba (WEM); WEM created an occupation model that links industry forecasts to occupational forecasts and subsequently estimates labour demand by education program and skills requirements.

The methodology of this report explores linkages between industries, occupations, educational programs, skills, and other attributes required for employment. The data is obtained from Statistics Canada's Labour Force Survey, benchmarked to the various Census releases. Employment forecasts are produced using Holt-Winters Seasonal Smoothing Method, and the entire report is based on 1,2,3, and 4-digit NOC. Labour demand by Classification of Instructional Program (CIP) is computed using NOC to CIP cross-tabulation.

The Manitoba Labour Market Outlook reported that Manitoba's labour demand was **659,900 in 2020** (see Table 4) and that the province will see **141,700** job openings between 2021 and 2025, with a 57% turnover in the labour force due to worker retirements. Forecasts predict approximately **28,300** total job openings per year. 112,100 new workers will join the employed labour force between 2021 and 2025, with an average of 22,400 workers per year. The unemployment rate is expected to decline from 8.0% in 2020 to 6.2% by 2021 and back to 5.1% and 5.0% by 2025. The fastest-growing industries between 2021 and 2025 are transportation and warehousing; forestry, fishing, mining, quarrying, oil and gas; healthcare and social assistance. Lastly, the labour supply is expected to exceed an average of 6,900 per year, resulting in a moderate labour surplus.

Table 4

Manitoba Labour Demand Growth 2021-2025 (thousands)

2020	2021	2022	2023	2024	2025
659.9	679.7	706.3	711.3	716.5	721.3
	+19.8	+26.6	+5.0	+5.2	+4.8

[6] *Manitoba Labour Market Outlook 2021-2025*. Government of Manitoba. (n.d.). Retrieved May 31, 2022, from https://www.gov.mb.ca/jec/lmi/

Environmental Scan – Manitoba 2020 - 2021[7]

There is no mention of a green or environmental workforce.

Service Canada develops Economic/Environmental Scans to provide a general overview of demographic, economic and labour market conditions and trends. The data is collected from Statistics Canada and the Conference Board of Canada.

The results show employment decreased 3.7% to **630,900** in 2020, following three consecutive years of employment growth. Both full-time (-3.6%) and part-time (-4.4%) employment decreased on an annual basis. Manitoba's annual unemployment rate (8.0%) in 2020 was the lowest of any province in Canada and below the national average of 9.5%. The annual youth unemployment rate increased 5.1 percentage points to 16.2% in 2020. This demographic group was disproportionately impacted by job losses incurred during the pandemic. Meanwhile, youth represent approximately 15% of those working in Manitoba, accounting for 44% of jobs lost in the province between 2019 and 2020. In 2020, Manitoba's annual labour force participation rate declined 1.1 percentage point to 65.5% but remained above the national average (64.1%). Despite COVID, there were 18,200 job vacancies in Manitoba in the fourth quarter of 2020 – up 19.0% compared to the same period in 2019. Over a third of these job vacancies were in the health care and social assistance industry.

Most significant job gains in 2020

- Educational services +5.2%, up 2.7K jobs
- Professional, scientific, and technical services +5.4%, up 1.6K jobs
- Other services (except public administration) +2.2%, up 0.6K jobs

Most considerable job losses in 2020

- Accommodation and food services -19%, down 8.1K jobs
- Manufacturing -7.7%, down 5.0K jobs
- Construction -7.8%, down 4.0K jobs

Qualitative Findings

Green and Growing Manitoba's Commitment to Green Jobs[8]

This document outlines Manitoba's commitments to improve the green economy and help grow green jobs. Overall, the report promotes Manitoba's green economy and the commitments made by the province aimed at bringing positive environmental changes, from the workforce to energy-efficient buildings.

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[7] *Environmental Scan - Manitoba: 2020-2021.*Government of Canada. (2022, March 14).. Job Bank. Retrieved May 31, 2022, from https://www.jobbank.gc.ca/trend-analysis/job-market-reports/manitoba/environmental-scan

[8] *Green and Growing Manitoba's Commitment to Green Jobs*. Government of Manitoba. (n.d.). Retrieved May 31, 2022, from https://www.gov.mb.ca/sd/climate/pdf/green_growing.pdf

Although the document does mention ECO Canada's designation of "environmental professional" when speaking of the workforce, it takes definitions of the green economy from the United Nations Environmental Program (UNEP) 2011 publication "Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication – a Synthesis for Policy Makers." UNEP defines a green economy as "one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities." In its simplest expression, a green economy is low carbon, resource-efficient and socially inclusive. UNEP defines green jobs as

> "work in agriculture, industry, services and administration that contributes to preserving or restoring the quality of the environment. Green jobs are found in many sectors of the economy, from energy supply to recycling, from agriculture and construction to transportation. They help cut the consumption of energy, raw materials, and water through high-efficiency strategies, de-carbonize the economy and reduce greenhouse gas emissions, minimize or avoid all forms of waste and pollution, and protect and restore ecosystems and biodiversity."

Making a Living, Sustainably – Green Jobs and Sustainability Careers[9]

According to this report, green jobs can

- Contribute directly or indirectly to the well-being of the planet
- Be found in a wide variety of sectors and occupations
- Be both technically and non-technically oriented
- Require a combination of skills and knowledge

Additionally, it follows UNEP definitions of "green jobs" and "green economy" outlined above.

Tomorrow Now: Manitoba's Green Plan[10]

It highlights the importance of instilling green skills, knowledge and values in young people and explaining that they can bring knowledge and attitudes to their work relevant to sustainable development.

The plan outlines what values and aptitudes employers are looking for, such as:

- Global mindset
- Rootedness in community
- Concern for equity and human rights
- Respect for diversity
- Sense of urgency
- Capacity for innovation and new ideas
- Integrated thinking
- Respect for science as part of the solution
- Personal commitment to a sustainable lifestyle

[9] *Making a Living, Sustainably – Green Jobs and Sustainability Careers*. Education for Sustainable Development. (n.d.). Retrieved May 31, 2022, from https://www.edu.gov.mb.ca/k12/esd/

[10] *Tomorrow Now Manitoba's green plan: Toward a new provincial climate ...* (n.d.). Retrieved May 31, 2022, from https://www.iisd.org/system/files/publications/tomorrow-now-manitoba-green-plan-consultation-paper-built-environment.pdf

And the following skills and abilities:

- Bridging and combining disciplines and skills
- Planning with a long-term outlook
- Communicating and networking
- Managing people and projects
- Implementing financial planning (preparing budgets, monitoring costs)
- Dealing with uncertainty and unpredictability
- Applying a systems approach
- Translating complex ideas

The growing concentration of green jobs and sustainability careers in Canada

- **Green energy**: focus on sustainable generation, transmission, distribution, storage and energy use. Work areas include engineering and technical support, energy auditing, manufacturing and marketing of alternative and renewable energy components and systems
- **Green manufacturing**: focus on manufacturing methods that reduce waste and pollution. Work areas include skilled trades, business sales, management services, and environmental monitoring
- **Green building and transportation**: focus on construction methods that reduce waste and improve energy and water efficiency and systems for transporting people and foods in environmentally responsible ways. Work areas include green construction, landscape design and gardening, architecture, and urban and rural planning
- **Agriculture and natural resource management**: focus on managing land, water, and natural resources responsibly and sustainably. Work areas include sustainable farming, fisheries, forestry, mining, and environmental monitoring
- **Green hospitality**: focus on ecotourism and promoting locally produced foods and services. Work areas include sustainable tourism, restaurant management and culinary arts
- **Communications and engagement**: focus on educating, inspiring and persuading people to become more responsible citizens. Work areas include education and training, advertising and marketing, research, arts and culture, journalism and media relations, public awareness, and social media communications
- **Green economic development**: focus on shaping policies, laws, regulations, and financial instruments that contribute proactively to developing a responsible, sustainable economy. Work areas include policy analysis, law and politics, investment portfolio management, and accounting (socially responsible investing, full-cost accounting)

ECO Canada – Findings and Methodology

This final section will include ECO Canada's findings and methodology behind its environmental labour market estimates. ECO Canada gathers and analyzes trends within the green economy to provide up-to-date, relevant, and credible information on Canada's workforce. Just as the evolving nature of the environmental workforce, ECO Canada also adapts to changing trends to better serve and deliver insightful information.

Since 2017, ECO has revised its understanding of the environmental workforce and changed it to a more inclusive definition. ECO established that there are two classification streams within the environmental workforce.

Figure 1

The Environmental Workforce Defined

Any worker, regardless of industry, requiring environmental-specific competencies or training as defined within ECO Canada's competency standards and sector framework.

Direct employees of firms classified under the environmental goods and service sector, regardless of occupation and whether roles require environmental-specific competencies

Labour demand estimates are presented for **core environmental workers**, as explained above, and **all environmental workers**, [11] which represent core environmental workers and those employed by environmental goods and services firms.

Data is available by **occupation**, which is then defined and grouped using the National Occupational Standard (NOC) at the 4-digit level.[12] The labour demand model begins with a textual analysis of online job postings to estimate how environmentally intensive different occupations are. The estimate is referred to as the "environmental job share" or **EnviroShare**. The EnviroShare is then applied to a long-term forecast of the demand for labour in the Canadian economy to project the number of environmental workers needed in the coming decade.

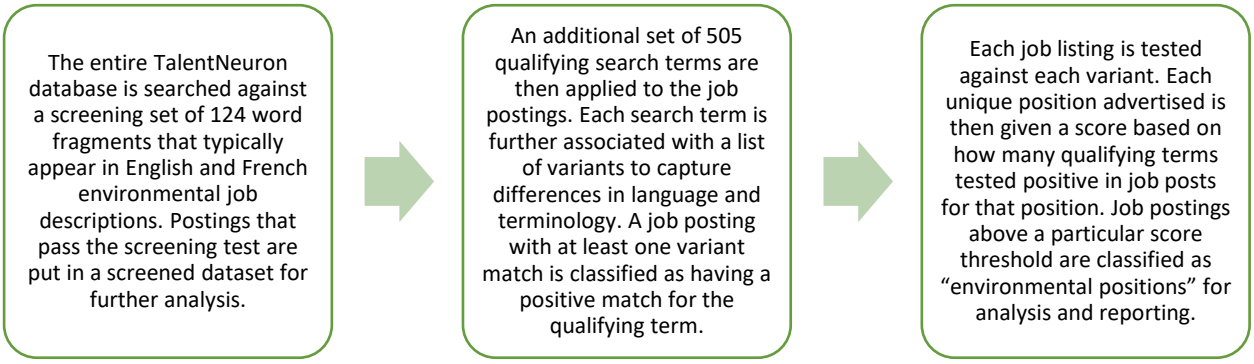
To estimate the share of environmental jobs in the Canadian economy, ECO Canada uses a dataset compiled by Gartner TalentNeuron, which includes data from sources such as Monster.ca, the Canadian Job Bank, Emploi-Québec, WorkBC, BCJobs.ca, JobServe, ECO Job Board, as well as the job boards of individual companies. Job postings are searched for keywords to identify jobs with environmental components and filtered through two stages.

[11] A number of environmental goods and services employees require environmental competencies. To avoid double-counting, these workers have been mapped to the core environmental workforce.

[12] Employment and Social Development. "Government of Canada." Retrieved from https://noc.esdc.gc.ca/Home/Welcome/a308df153fa841b592453cf154e97c86?GoCTemplateCulture=en-CA

Figure 2

Identifying Environmental Job Postings



To estimate the size of the environmental workforce, environmental job shares are applied to published annual employment data from Statistics Canada and adjusted against Census data. This approach does risk overstating the size of the environmental workforce, but the lack of a baseline set of data to compare these results to does not allow quantifying the extent of this issue. The continuance of this analysis to include additional years of data will continue to improve the representativeness of the dataset used to quantify occupations.

Estimates of future hiring requirements for environmental workers include expansion demand and replacement demand. Expansion demand represents the new number of jobs estimated to be available as environmental activity increases over time. It is determined by calculating the variance between 2020 and 2025 employment. Replacement demand is the number of job openings that result from current workers leaving the labour force and requiring replacement.

Future trends in environmental labour demand are prepared by Prism Economics and Analysis. These forecasts are developed to align with the following measures:

- M3 scenario for population growth and age distribution published by Statistics Canada
- Labour participation rates from the Canadian Occupational Projection System (COPS) model
- GDP growth in accordance with an average of long-term growth forecasts published by the Parliamentary Budget Office, the Department of Finance Canada, and the Organization for Economic Co-operation and Development (OECD)
- Sectoral trends for industries within this framework provided by Stokes Economics
- Occupational distributions based on the industrial organization found in the 2016 Census and from industry trends in labour productivity seen in the Canadian economy from 2010 to 2016

Table 5

ECO Canada's environmental employment estimates for Manitoba

	Total Employment	Environmental Employment	Core Env. Employment
2020	627,870	21,670	7,170
2025	685,750	23,920	8,460
Growth	57,880	2,250	1,290
Replacement Demand	83,920	2,940	1,090
Net Hiring	141,800	5,190	2,380