

# MCA EDCOM REPORT

Wadhwani Assignment 1

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## Introduction

This report forms part of a broader effort to analyze education-to-employment pathways in the Philippines, particularly in relation to the priority sectors identified by EDCOM II. The study began with the development of a tagging pipeline that classified Filipino jobs found in My Career Advisor (MCA) into priority (Y) and non-priority (N) categories using sectoral clusters as reference points, with particular attention given to the way digital technology intersects with other clusters.

Building on the outputs of this pipeline, an exploratory data analysis (EDA) was conducted to examine the distribution of priority-sector jobs across the different industries. To complement this, Professional Regulation Commission (PRC) passing rates were webscraped and assessed, which revealed varying examination results across sectors. The results ranged from very low rates as seen in Civil Engineering (29%), Accountancy (33%), and Interior Design (30%), to consistently high performance in areas such as Dentistry (78%), Nutrition and Dietetics (69%), and Optometry (90%). The analysis returned to the job tagging results for a second EDA, this time connecting the labor market demand identified from the first EDA, with licensure outcomes from the PRC passing rates.

## Priority Sector Tagging Pipeline

The tagging pipeline was constructed using the priority sector clusters identified by EDCOM II. These clusters were the structural basis for identifying industries of national importance. In refining the tagging rules, particular attention was given to how digital technology intersects with the clusters, as per the EDCOM II Year 2 Report. Although digital

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technology is recognized as its own priority area, related competencies also appear across other sectors such as robotics in healthcare, automation in manufacturing, and data-driven tools in finance and tourism. This goes to show that digital skills are an emerging requirement across multiple sectors, and not only central within technology-focused clusters.

With this in mind, the tagging pipeline was designed to capture both sector-specific indicators and the broader correlation with digital-related skills. The following sections present the methodology applied to determine whether jobs fall under priority sectors (Y) or not (N).

## **Advanced Manufacturing**

Jobs in the Manufacturing sector were generally included as part of the Advanced Manufacturing priority sector, with specific filters:

- The job subsector referenced key technical domains such as *Communication, Electric, Electronic, Batter, Comput, Test, or Wiring*.
- The job title referenced advanced industrial processes, specifically containing *Automation, Assemb, Robot, or Design Engineer*.

## **Digital Technology**

Digital Technology jobs were identified through a combination of broad and specific indicators:

- Job titles containing keywords such as *Data, Cyber, 2D, 3D, Medical Claims, Medical Coding, Software, Digital, Computer, Mechatron, or Media*.
- Case-sensitive words in job titles: *AI, IT, or IoT*.
- Additionally, all jobs with the subsector *computer* were tagged.

## **Health**

Jobs in the Human Health and Social Work Activities sector were generally included as part of the Health priority sector, with specific exclusions:

- Titles containing religious or cultural references such as *Marriage, Seminary, Cultur, Missionary, Church, Chaplain, Clergy, Faith, or Religio* were excluded and tagged N.
- All other jobs under this sector were tagged Y.

## **Financial Services**

Jobs were categorized under Financial Services if they fell within:

- The *Administrative and Support Service Activities* sector.
- The *Financial and Insurance Activities* sector.
- Job titles containing *E-comm*, or electronic commerce.

## **Tourism**

Jobs were tagged under Tourism if their subsector matched one of the following:

- *Construction*
- *Water Supply; Sewerage, Waste Management and Remediation*
- *Transportation and Storage*
- *Accommodation and Food Service Activities*

Otherwise, all jobs not meeting the criteria in the pipeline were classified as N.

# Priority Sector EDA

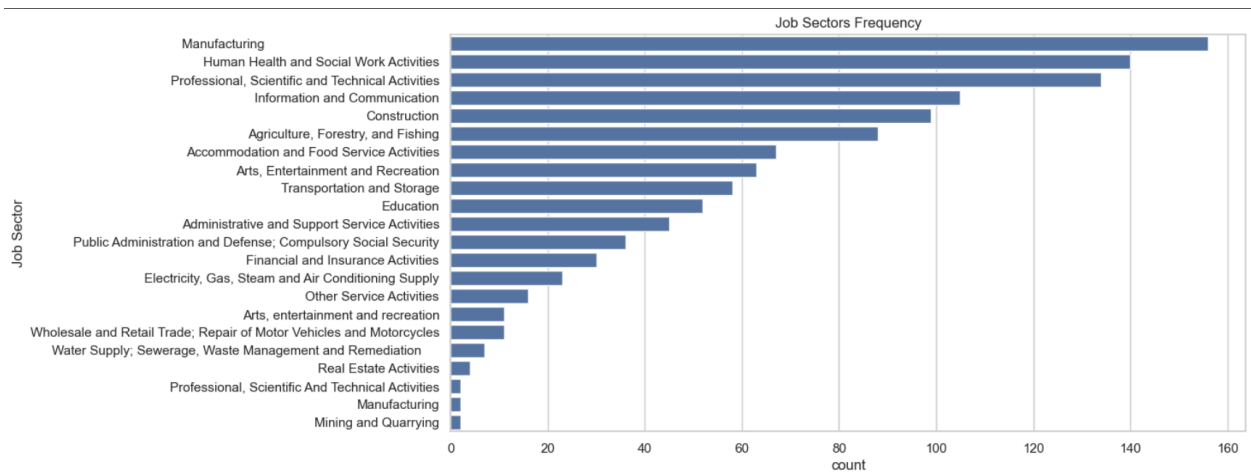


Table 1. Job Sector Frequency

A majority of the job sectors concentrated in manufacturing, human health & social work, and professional/scientific/technical Activities. The distribution follows a long-tail pattern, where only a handful of sectors dominate, while many others have relatively few jobs.

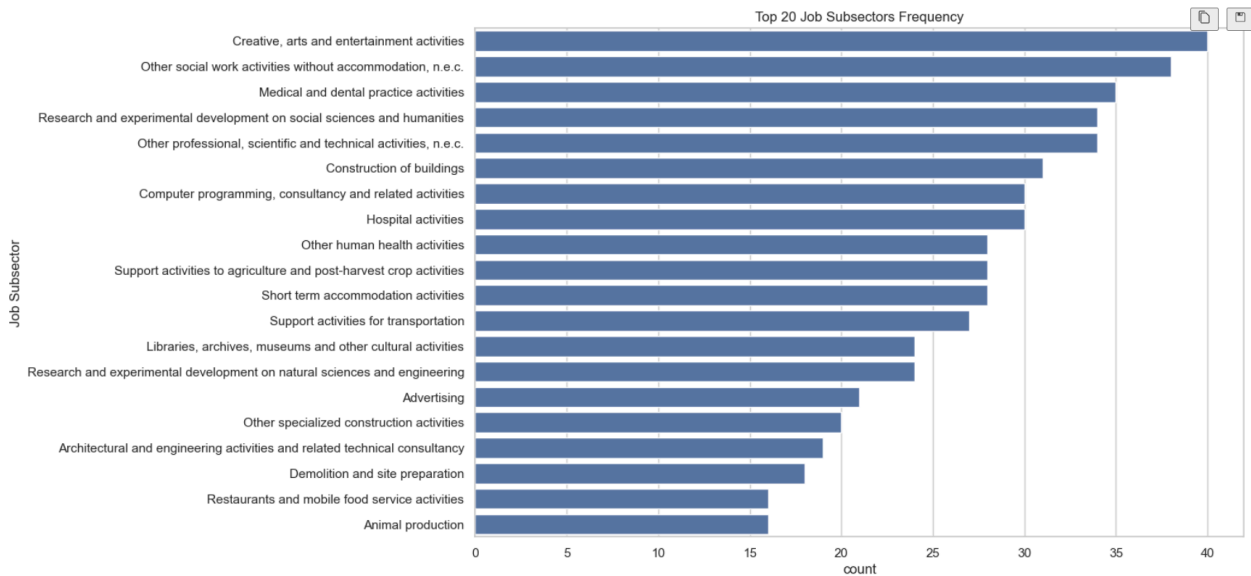
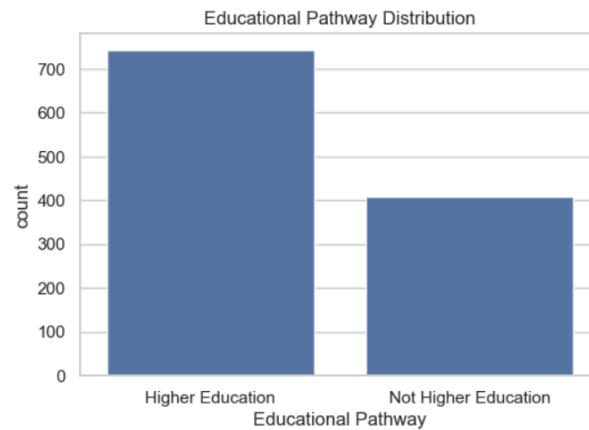


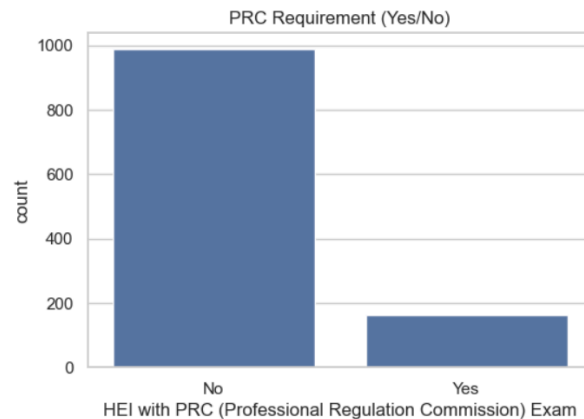
Table 2. Job Subsector Frequency

Among job subsectors, no single area dominates as heavily as in the sector-level view. The most common subsectors are Creative/Arts/Entertainment, Social Work (without accommodation), Medical and Dental Practice, and R&D in Social Sciences/Humanities. The distribution is flatter compared to sectors, meaning opportunities are spread across a wider range of subsectors rather than being concentrated in a few.



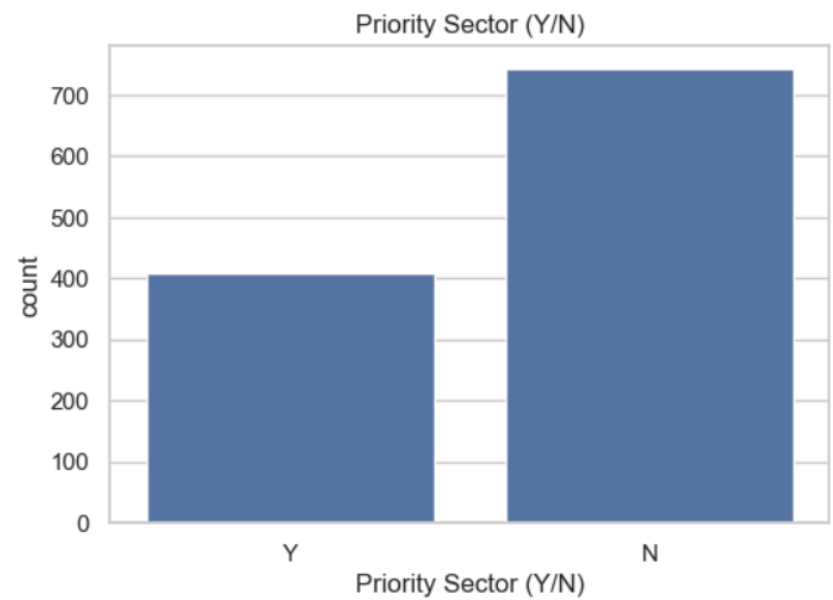
**Table 3. Educational Pathway Distribution**

About two-thirds of jobs in the dataset require higher education, while one-third does not. This suggests that non-higher education pathways (such as vocational training or technical skilling) still represent a significant share of opportunities and should not be overlooked in workforce planning.



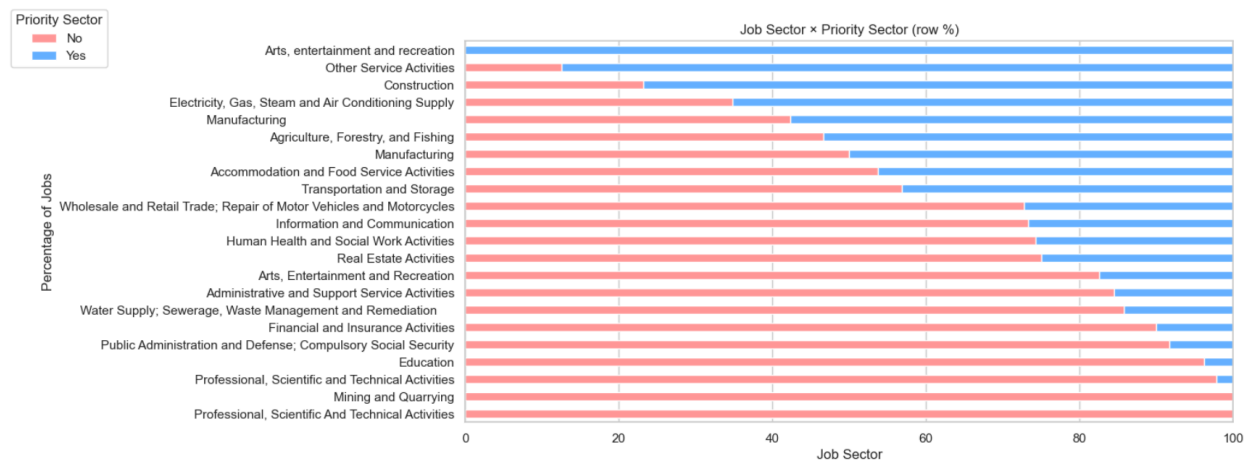
**Table 4. PRC Requirement Distribution**

Most jobs in the dataset (86%) do not require PRC licensing, while only 14% do. This means that the majority of opportunities are accessible without regulatory exams, though the smaller PRC-regulated segment remains vital for professions like healthcare and engineering.



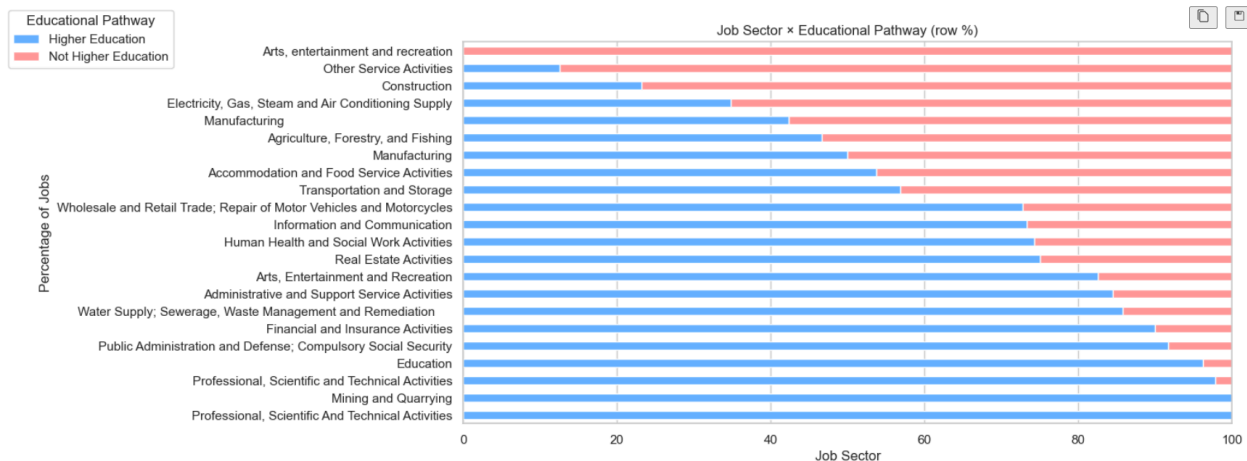
**Table 5. PRC Requirement Distribution**

Around 40% of jobs are flagged as “priority.” Understanding which sectors fall into this category (likely health, ICT, and manufacturing) is important because it shows where policy and industry training efforts should be focused.



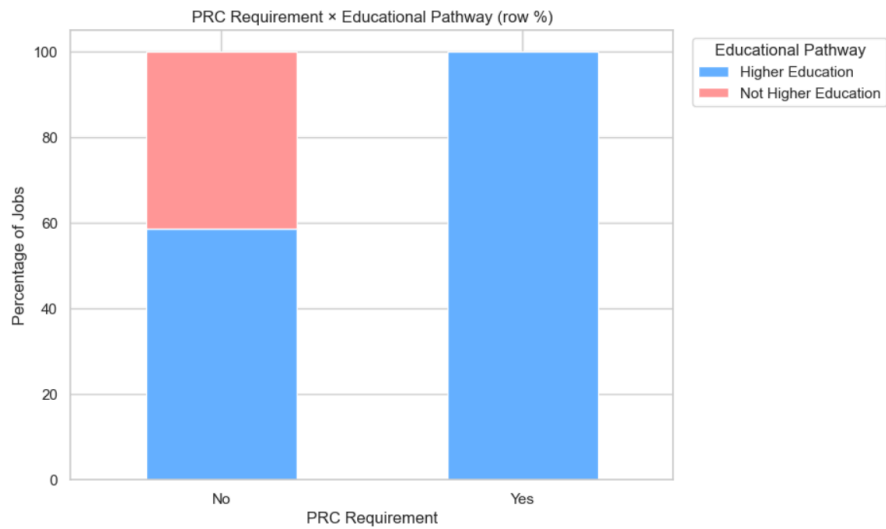
**Table 6. Job Sector cross-tabulated with Priority Sector**

Sectors that are marked entirely blue (Administrative and Support Service Activities & Financial and Insurance Activities), meaning 100% of the jobs under those sectors are marked as "priority." They stand out as *high-focus areas* for government or industry policy. It is likely that more funding, skills training programs, and job creation initiatives are directed towards those sectors as compared to those that are mixed or fully pink.



**Table 7. Job sector cross-tabulated with Educational Pathway**

Sectors such as Professional, Scientific, and Technical Activities; Public Administration; Education; and Financial/Insurance Activities are almost entirely blue. This means jobs in these sectors overwhelmingly require higher education qualifications (college/university degrees). The sectors that are mixed (Wholesale/Retail, Transport & Storage, etc.) suggest multiple entry routes; not only could they be accessed using degrees, but also technical/vocational training. Fields marked purely in red do not require higher formal education whatsoever.



**Table 8. PRC requirement cross-tabulated with educational pathway**

Jobs requiring PRC exams universally demand higher education, showing a strict regulation–education link. By contrast, jobs without PRC requirements are more diverse, spanning both higher education and non-higher education pathways, indicating wider flexibility in entry routes.



## PRC Passing Rate Pipeline

To analyze licensure results, data on PRC examinations were collected through webscraping of official and secondary reporting sites such as the PRC Board, GMA Network, The Philippine Star, and other outlets. For each job sector with a licensure requirement, examination results were extracted to capture the number of passers and examinees for the most recent exam cycle. From these figures, passing rates were computed by dividing the number of passers by the total examinees, yielding a standardized measure of licensure performance across sectors. In total, 46 job sectors were webscraped for the PRC examination results.

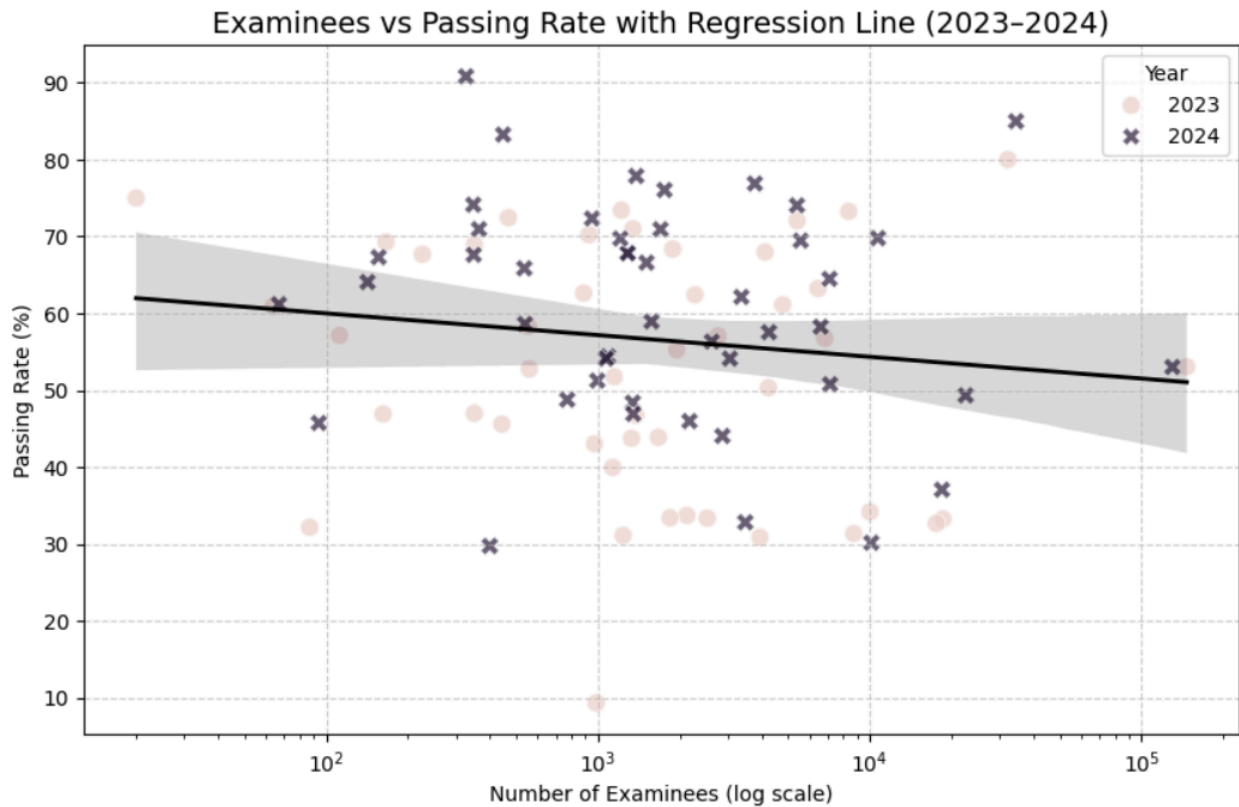
## Professional Regulation Commission (PRC) EDA

year	job_sector	2023	2024	abs_change	rel_change_%
45	Veterinary Medicine	9.34	46.92	37.58	402.355460
15	Fisheries Technology	33.71	66.60	32.89	97.567487
41	Real Estate Service	43.75	76.05	32.30	73.828571
40	Radiologic Technology	31.12	57.55	26.43	84.929306
10	Dental Medicine	43.88	67.83	23.95	54.580675
12	Electrical Engineering	30.87	54.12	23.25	75.315841
34	Optometry	67.69	90.83	23.14	34.185256
2	Agricultural Engineering	33.41	56.34	22.93	68.632146
19	Geology	47.01	67.62	20.61	43.841736
43	Sanitary Engineering	46.91	67.31	20.40	43.487529

year	job_sector	2023	2024	abs_change	rel_change_%
24	Mechanical Engineering	50.34	32.83	-17.51	-34.783472
21	Interior Design	45.60	29.75	-15.85	-34.758772
23	Library Science	62.64	48.77	-13.87	-22.142401
9	Customs Brokers	57.07	44.06	-13.01	-22.796566
11	Dentistry	75.00	67.83	-7.17	-9.560000
26	Medicine	63.24	58.26	-4.98	-7.874763
32	Nutrition and Dietetics	73.42	69.73	-3.69	-5.025879
39	Psychometrician	73.27	69.78	-3.49	-4.763205
25	Medical Technology	72.06	69.47	-2.59	-3.594227
0	Accountancy	31.37	30.17	-1.20	-3.825311

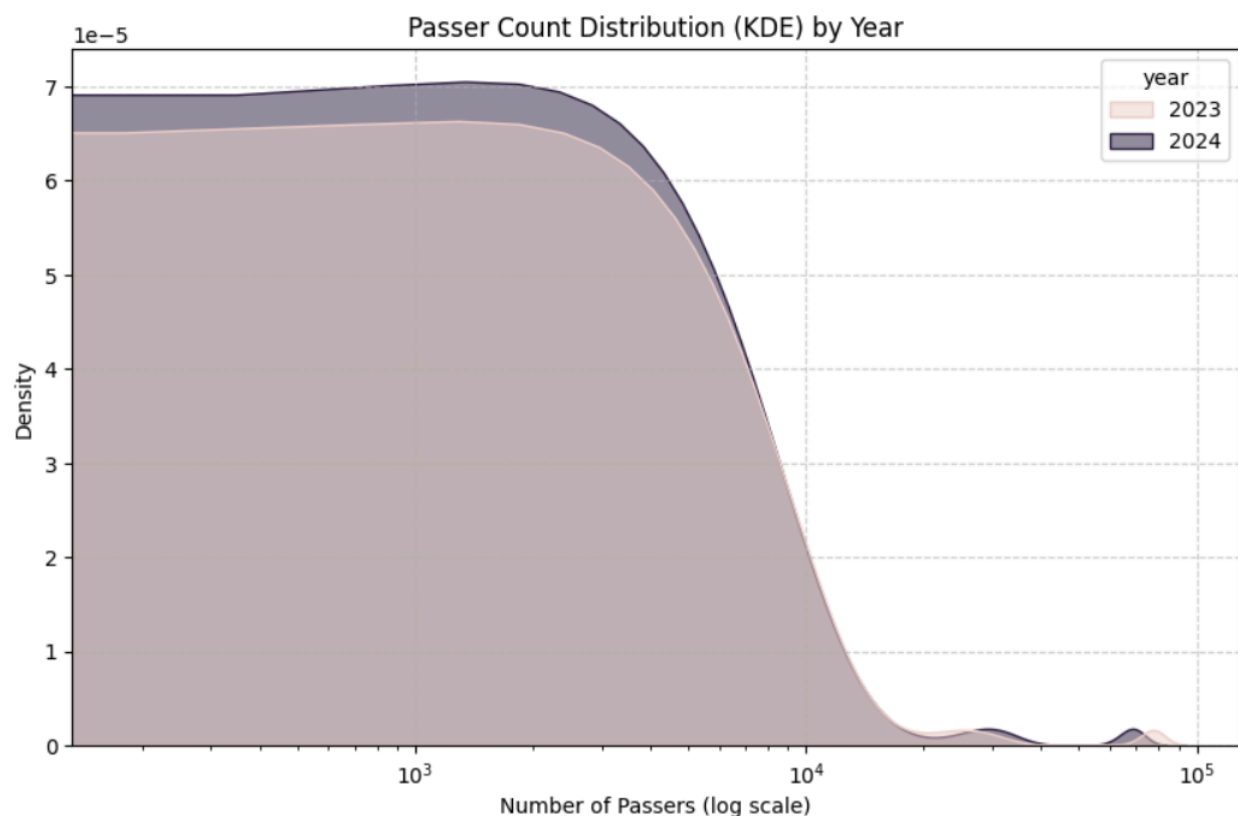
**Figure 1. Absolute and Relative Changes in Passing Rates from 2023 to 2024**

Exams like Veterinary Medicine and Fisheries Technology swing dramatically year-to-year. Their volatility suggests external factors (exam format changes, varying cohort preparedness) play a big role. The engineering sectors present diverse results, with some (electrical, agricultural, and sanitary) showing massive improvements, while others (mechanical) are declining rapidly. Despite small dips, healthcare boards remain among the highest-performing, with values exceeding 50%. In truth, sectors with persistently low passing rates may need curriculum or training reforms.



**Figure 2. Examinees vs. Passing Rate (2023-2024)**

Larger exams such as accountancy, criminology, and teacher’s licensure tend to have lower passing rates. It suggests that exams with more participants are likely to have lower passing rates for the following reasons: stricter standards, more variation within the exam pool, and a heavier filter in those professions. The exams, which range from a hundred to a thousand, have very varied passing rates, which most likely indicates that it depends on the difficulty of the field. The 2023 (circles) and 2024 (Xs) datapoints overlap heavily in the year-to-year comparison, indicating that there is no drastic shift in the passing rates—with the exception of some outlier fields of course.



**Figure 3. Passer Count Distribution (KDE) by Year**

The KDE plot shows that most professions certify only a few hundred to a few thousand passers per year, while a handful of huge exams (e.g., Teachers' Licensure, Criminology, and Accountancy) dominate with tens of thousands of passers. The distribution is highly skewed, with a steep drop after ~10,000 passers. Comparing 2023 and 2024, the shapes of the distributions are almost identical. This means the overall sector size dynamics are stable—large exams remained large, and small exams remained small. A small number of giant licensure exams account for most new professionals each year, while the majority of boards operate at a much smaller scale. This structural pattern did not change between 2023 and 2024.