Philippines Data Analytics Sector Labor Market Intelligence Report

CirroLytix Research Services
2021

Executive Summary

This labor market intelligence report provides a holistic overview of the supply, demand, and mismatch of skills in the Analytics Sector of the Philippines with the aim of informing skills trends and supporting growth of the labor market amidst the Fourth Industrial Revolution coupled with implications brought by the global pandemic. By conducting a mixed method research, the study examined various data sources such as quantitative, qualitative, and big data to understand interplay of supply and demand for skills and corresponding key insights and recommendations intended to guide the Analytics Association of the Philippines as the Skills Sector Council create an inclusive skills development roadmap. This report also presents a first attempt in estimating the Philippine analytics workforce and with backcasted and forecasted projections from 2008 to 2028.

The report highlights the need to standardize the definitions of Analytics roles, leveraging the framework proposed by the Analytics Association of the Philippines. We discuss the need for more specialized Analytics courses, the production of more instructors, Analytics as a distinct sector from IT-BPM, and the prospect of professional licensing and certification for the sector. We highlight existing trends that promote the development of the Analytics labor sector such as women participation, work from home arrangements, online learning, the emergence of Analytics communities, and the impending importance of Data and AI Ethics.

Objectives

The LMI will enable the AAP to plan and execute strategies in anticipating skills needs and mismatch. Specifically, the objective of the LMI is to deepen understanding of:

● Trends and composition of the Analytics labor market demand and supply

● The demand for Analytics jobs and anticipated shortages of skilled workers in the digital economy

● Estimation of the total data analytics labor force and expected growth trends

● Impacts of the ongoing COVID-19 pandemic and implications of the broader economic trend to analytics

Data Sources

|	Big Data	Quantitative	Qualitative
Objective	Infer intention and characteristics of populations from digital traces. Surface contextual insights and behavior from anonymous and unprompted data gathering.	Quantify data and generalize results from a sample of the population of interest. Measure the incidence of particular occurrence, view, or opinion in a chosen sample.	Gain an understanding of underlying reasons or motivations. Uncover trends or provide insights into the setting of a problem.
Data Sources	Facebook API Linked In Webscraping	Secondary Data Sources Small-Scale Survey SPARTA Surveys Analytics Curricula	FGDs KIIs Document Review

Sections

- Defining the Analytics Job Environment
- Economic Conditions and COVID-19 Implications
- Public Interest Data and Labor Force Distribution
- Validating the AAP Professional Maturity Framework
- Skills Supply, Demand, and Mismatch
- Labor Force Estimation
- Government Regulations
- Interview Findings
- Recommendations for Labor Force Development

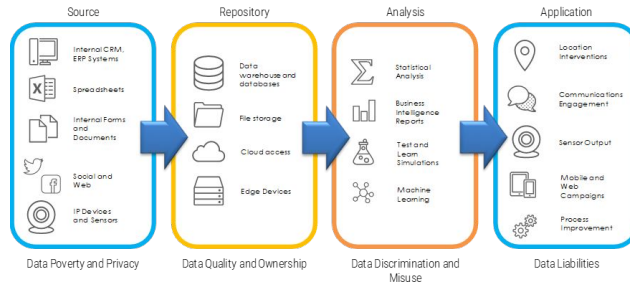# Defining the Analytics Job Environment

The Analytics Job Environment
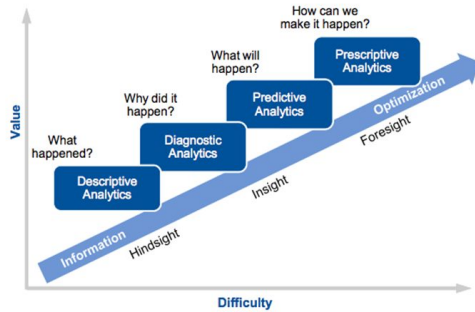
Fourth Industrial Revolution

Gartner Ascendancy
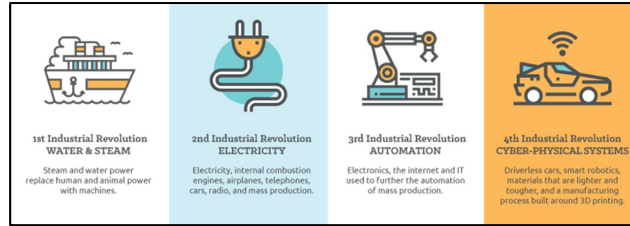
Data Value Chain

CRISP-DM

Fourth Industrial Revolution

1st Industrial Revolution
WATER & STEAM

Steam and water power replace human and animal power with machines.

2nd Industrial Revolution
ELECTRICITY

Electricity, internal combustion engines, airplanes, telephones, cars, radio, and mass production.

3rd Industrial Revolution
AUTOMATION

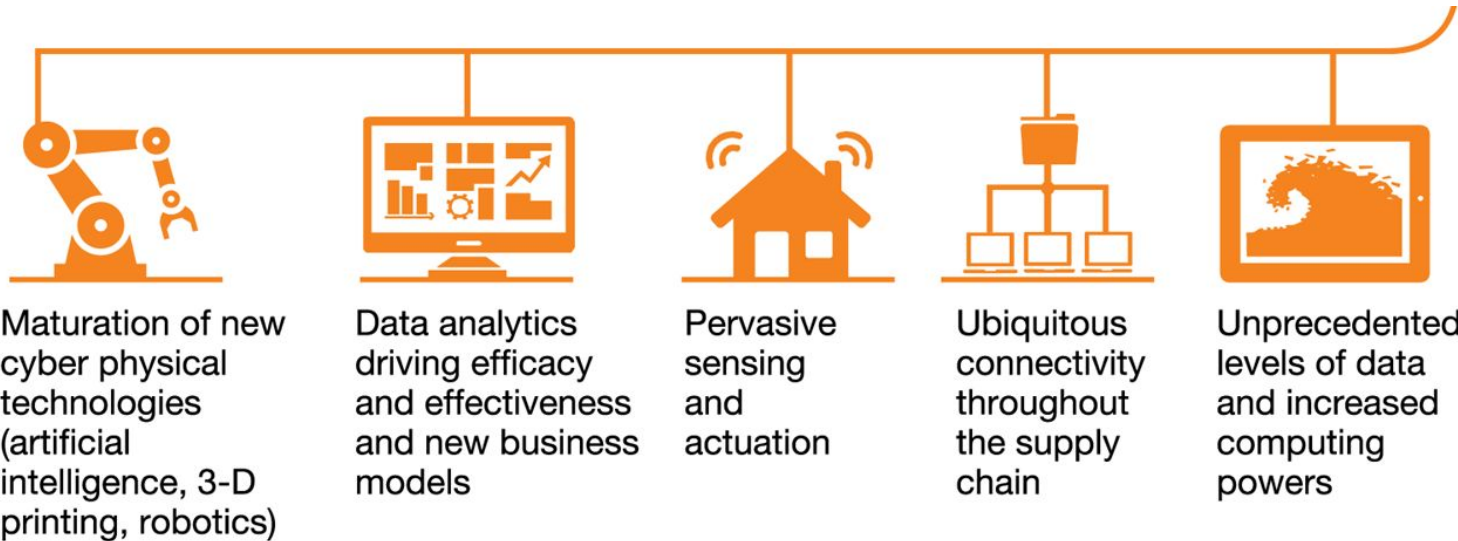Electronics, the internet and IT used to further the automation of mass production.

4th Industrial Revolution
CYBER-PHYSICAL SYSTEMS

Driverless cars, smart robotics, materials that are lighter and tougher, and a manufacturing process built around 3D printing.
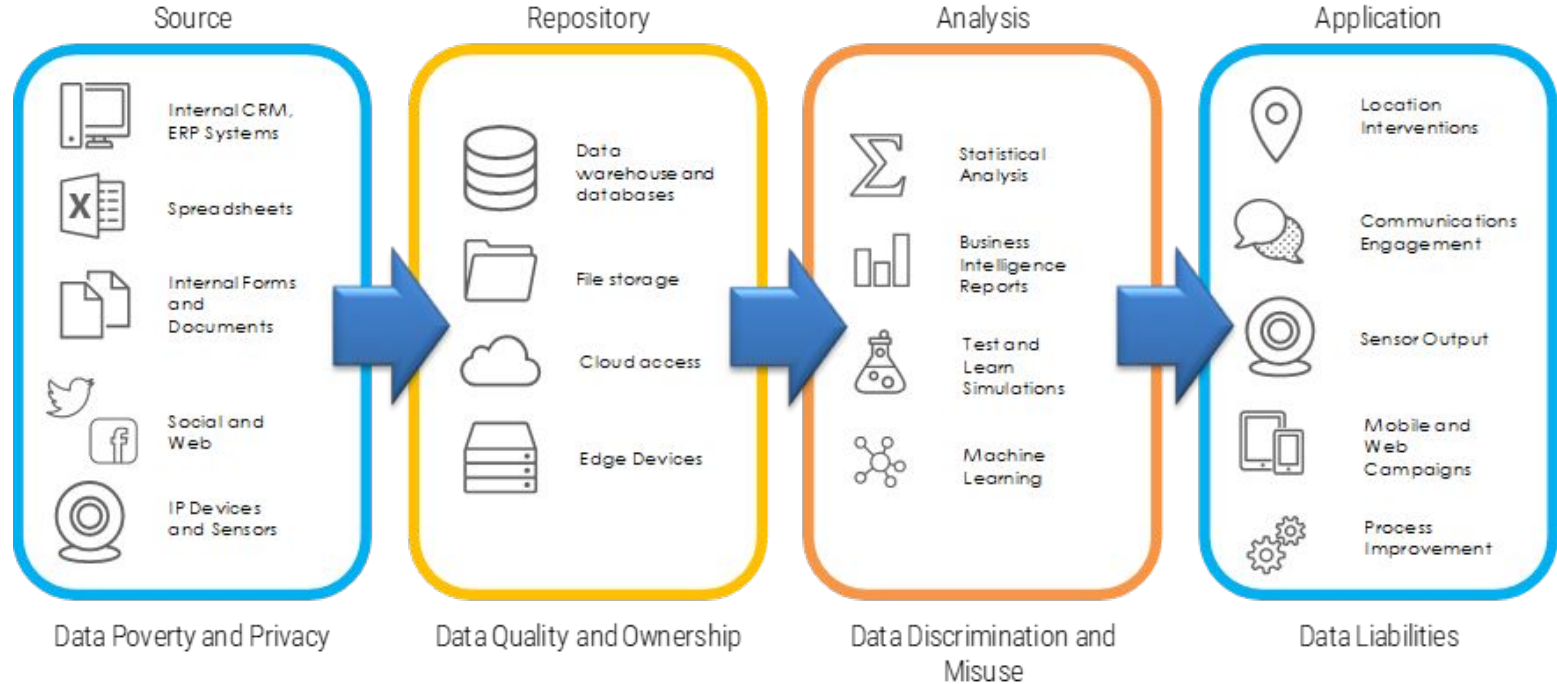
World Economic Forum (2015)

Fourth Industrial Revolution

Maturation of new cyber physical technologies (artificial intelligence, 3-D printing, robotics)

Data analytics driving efficacy and effectiveness and new business models

Pervasive sensing and actuation

Ubiquitous connectivity throughout the supply chain

Unprecedented levels of data and increased computing powers

McKinsey&Company | Source: *Forbes*; World Economic Forum

McKinsey (2015)

Data Value Chain

Source — Internal CRM, ERP Systems; Spreadsheets; Internal Forms and Documents; Social and Web; IP Devices and Sensors

Repository — Data warehouse and databases; File storage; Cloud access; Edge Devices

Analysis — Statistical Analysis; Business Intelligence Reports; Test and Learn Simulations; Machine Learning

Application — Location Interventions; Communications Engagement; Sensor Output; Mobile and Web Campaigns; Process Improvement

Data Poverty and Privacy

Data Quality and Ownership

Data Discrimination and Misuse

Data Liabilities

GAAM

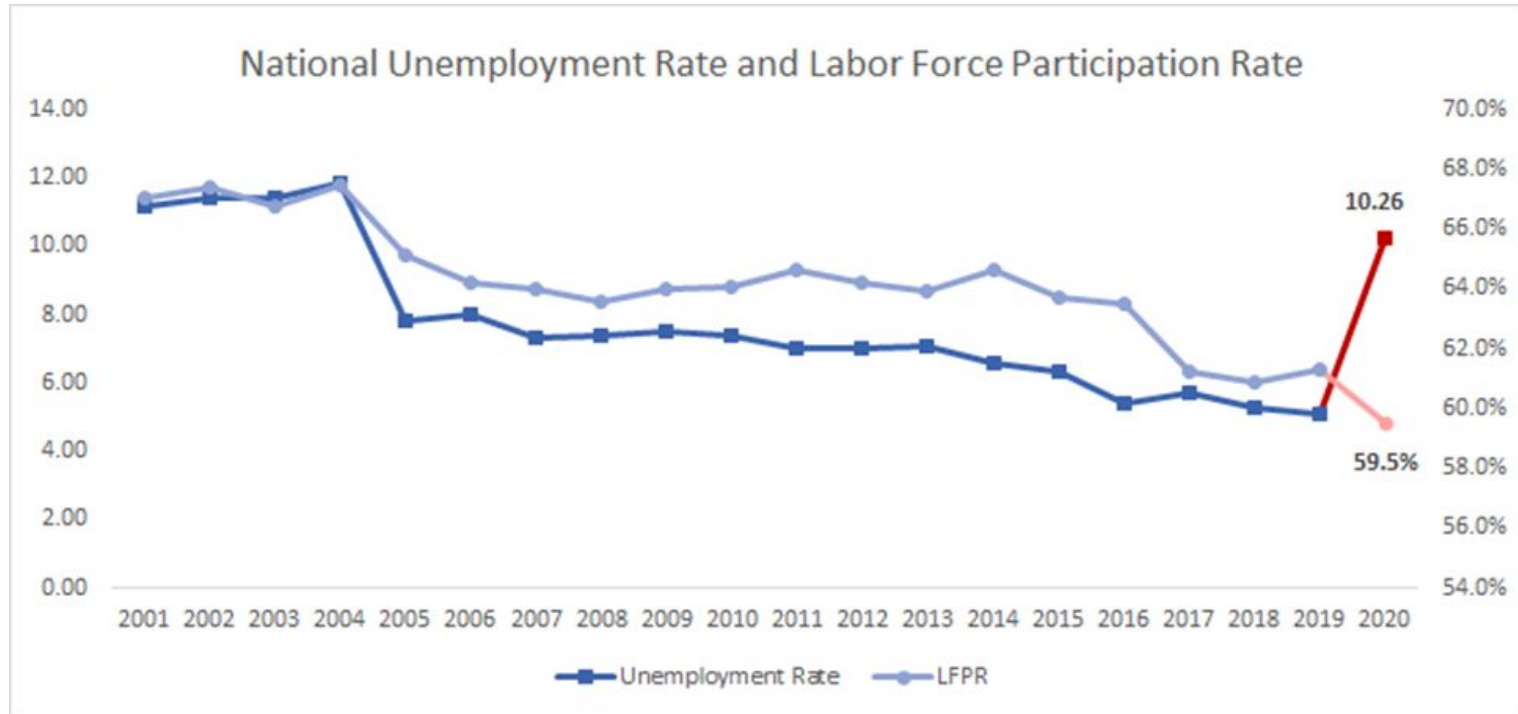The Gartner Analytics Ascendancy Model
(GAAM)

CRISP-DM

The Cross Industry Standard Process Model
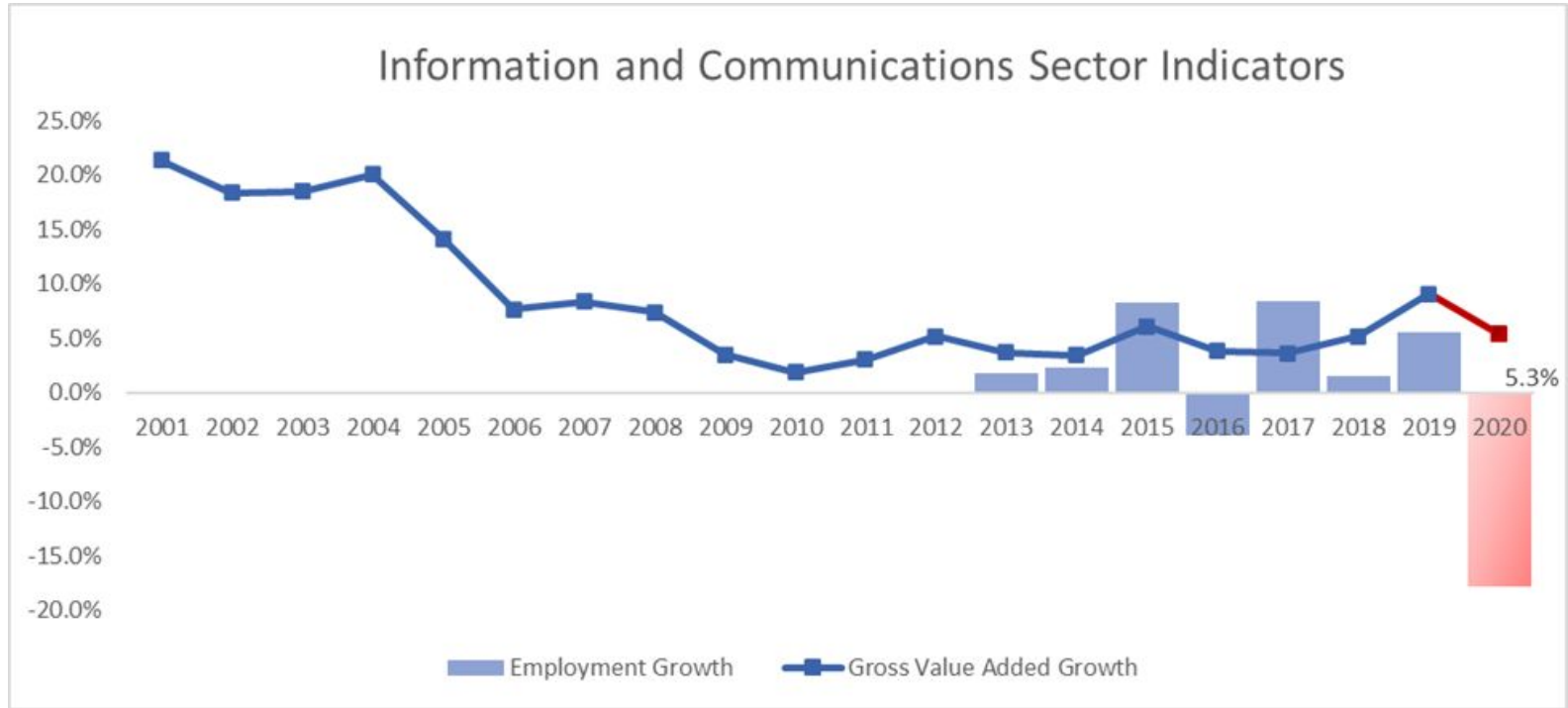for Data Mining (CRISP-DM)

Analytics Job Environment

- The Fourth Industrial Revolution puts data on center stage rather than a support function
- Managing data is complex, with many moving parts
- Requires a wide range of talents, both technical skills and soft skills
- Apart from knowledge of technology and mathematics, project management, leadership, and problem solving are inherent in the process
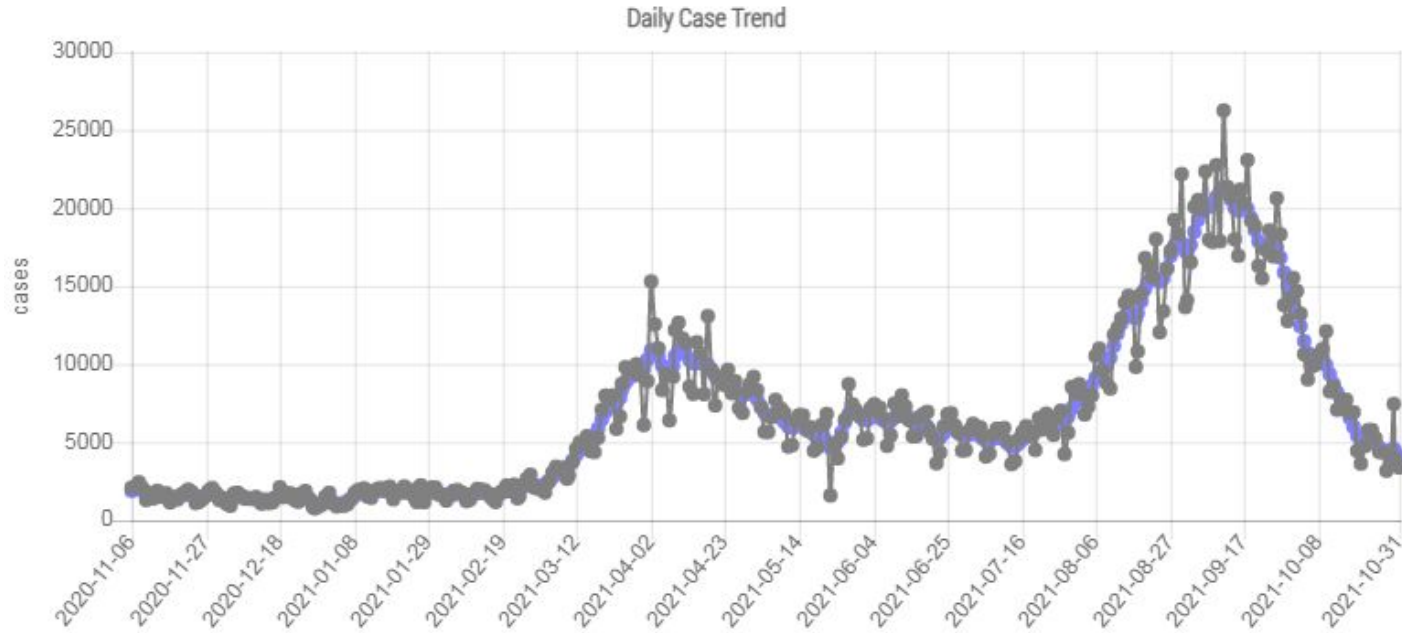
Economic Conditions and COVID-19 Implications
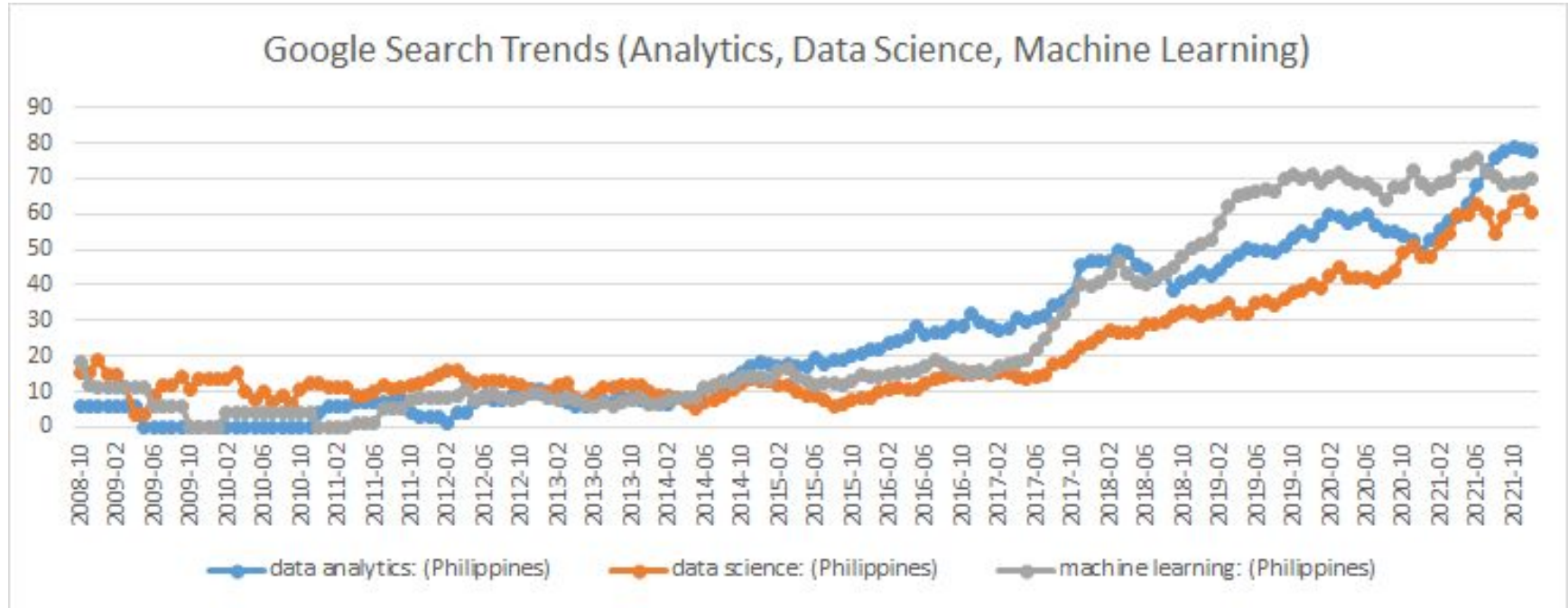
National Level Statistics

National Unemployment Rate and Labor Force Participation Rate

Sectoral Level Statistics

Information and Communications Sector Indicators

Legend: Employment Growth, Gross Value Added Growth

COVID-19 Pandemic

Daily Case Trend

DOH Data Drop, L4H 31 October 2021

Public Interest Data

Search Interest

Google Search Trends (Analytics, Data Science, Machine Learning)

Sector Communities

Name	Members (No.)
Programmers,Developers	59,905
DEVCON Philippines	39,757
NASA Space Apps Philippines	29,481
Data Science World - R & Python Free Courses ✪	24,200
DEVCON Community Group	20,600
Project SPARTA	19,098
Data Ethics PH	13,800
Community: SPARTA PH	11,900
Data Science Philippines Discussion Group (Moderated)	10,000
Gteknolohiya	9,183
WiTech	8,926
She loves data	8,876
Software DevOps & Data	6,700
Data Science Philippines	6,436
Data Science Manila	5,300
FTW Foundation	4,979
Philippine Data Platform Forums	4,300
She Loves Data Group - Datadriven community for women in tech empowerment	3,500
Philippine Data Scientists Community - eScience	2,900
Women Who Code Manila	2,845
Python Philippines	2,652
Amagi Academy: Tech Courses and Communities	2,529
Eskwelabs Data Science Aral-Aral Group	2,300
Databeers Manila	2,227

Facebook Pages

Analytics Association of the Philippines - Public Forum	2,200
AI Pilipinas	2,200
Women Who Code Manila	1,700
R User Group - Philippines	1,506
AI Society	1,309
Big Data Analytics PH	1,300
Azure User Group Manila Meetup	1,239
Analytics Association of the Philippines	1,160
Power BI Users Meetup	1,110
MS in Data Science - AIM Group	1,060
School of Data Philippines	981
AWS AI/ML	962
AI Pilipinas	849
PizzaPy - Cebu Python Users Group	826
Analytics for Pinoys	816
Artificial Intelligence Philippines	812
Ph Cyber Geeks	745
WE-Tech Community	680
DataScience and BigData Cebu	595
[Manila] BIG DATA Tech Group	591
SPARTA PH: Data Engineer	452
PizzaPy - Cebu Python Users Group	409
AIM-Master of Science in Data Science	385
DataScience and BigData Cebu	378
DataScience.PH	360
Digital Analytics Philippines	356
AZUGMNL Azure User Group Manila	324
Manila Women in Machine Learning and Data Science	305
PyData Philippines	292
Talas Data Science Community	256
AI Design Philippines	243
Manila Artificial Intelligence & Deep Learning	229
Manila Analytics Freelancers	203
APAC Azure Data Communities	199
South Luzon Analytics Freelancers	171
MapR Users Meetup	143
Mindanao Analytics Freelancers	138
Robotic Process Automation (RPA) - Manila	108
Manila Excel Ninjaz Meetup	105
DataSpark - Manila Meetups	97
TheThingsNetwork Philippines	95
Analytics Association of the Philippines - Association Members	92
Iloilo Analytics Freelancers	80
Power BI Philippines UG	42
North Luzon Analytics Freelancers	21
Data and Analytics Manila	16

**70 communities**
82,634 individuals (est)

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Sector Interest by Region

Region	Analytics		Data Science		Artificial Intelligence	
BARMM	3,800	1%		0%		0%
CAR	8,700	2%	7,100	2%	110,000	2%
NATIONAL CAPITAL REGION [NCR]	160,000	31%	120,000	30%	1,400,000	22%
ILOCOS REGION [REGION I]	18,000	3%	13,000	3%	260,000	4%
CAGAYAN VALLEY [REGION II]	11,000	2%	7,700	2%	150,000	2%
CENTRAL LUZON [REGION III]	53,000	10%	41,000	10%	760,000	12%
CALABARZON [REGION IV-A]	92,000	18%	77,000	19%	1,100,000	17%
MIMAROPA [REGION IV-B]	8,200	2%	6,400	2%	110,000	2%
BICOL REGION [REGION V]	17,000	3%	14,000	3%	270,000	4%
WESTERN VISAYAS [REGION VI]	28,000	5%	19,000	5%	360,000	6%
CENTRAL VISAYAS [REGION VII]	36,000	7%	28,000	7%	760,000	12%
EASTERN VISAYAS [REGION VIII]	14,000	3%	9,400	2%	170,000	3%
ZAMBOANGA PENINSULA [REGION IX]	10,000	2%	7,300	2%	150,000	2%
NORTHERN MINDANAO [REGION X]	17,000	3%	14,000	3%	240,000	4%
DAVAO REGION [REGION XI]	21,000	4%	20,000	5%	280,000	4%
SOCCSKSARGEN [REGION XII]	14,000	3%	10,000	2%	200,000	3%
CARAGA [REGION XIII]	8,300	2%	6,300	2%	110,000	2%
Philippines	520,000		400,200		6,430,000	

Facebook Ads API

Public Interest and Labor Distribution

Public Interest and Labor Distribution
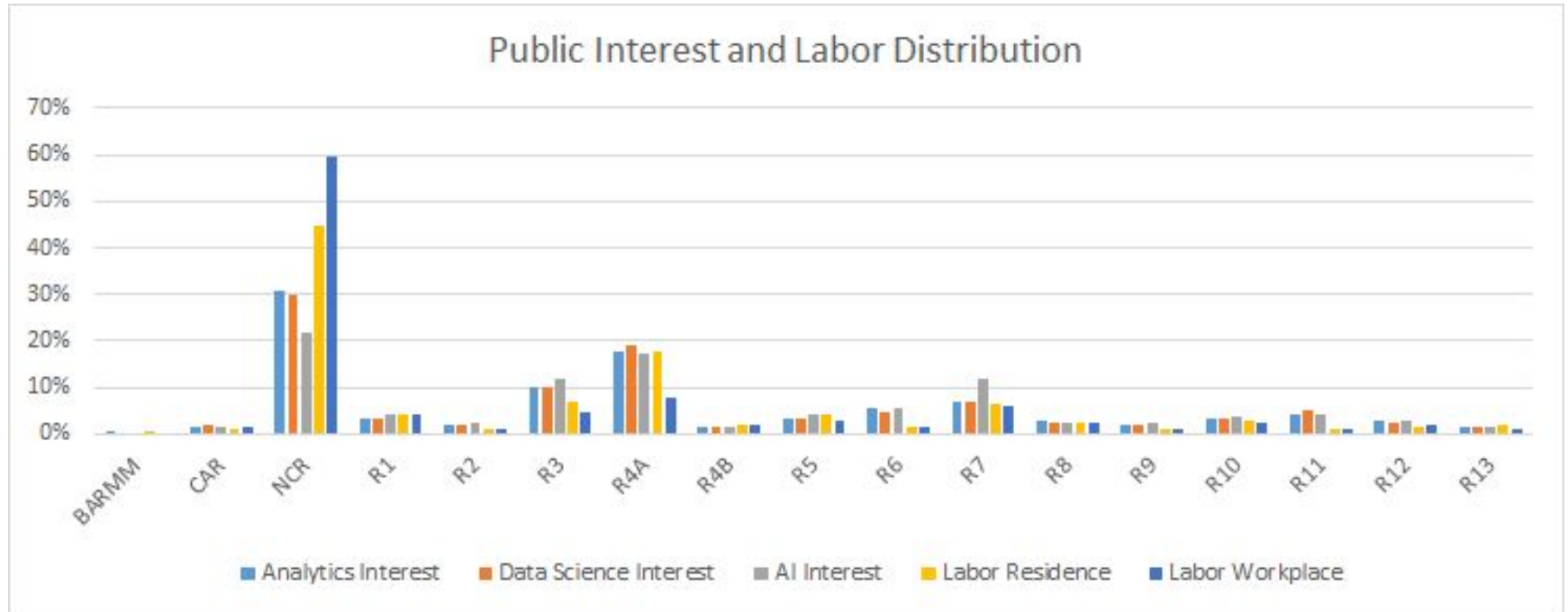
Validating the AAP Professional Maturity Framework

Analytics Job Families and Competencies

	Data Steward	Data Engineer	Data Scientist	Functional Analyst	Analytics Manager
Role	Develops, enforces, and maintains an organization's data governance process to ensure that data assets provide the organization with high-quality data	Designs, constructs, tests, and maintains data infrastructures including applications that extract, clean, transform, and load data from transactional systems to centralized data repositories	Leverages statistical techniques and creates analytical models to derive new insights from quantitative and qualitative data	Utilizes data and leverages on derived insights to help organizations make better decisions on a specific functional domain	Develops and guides data-driven projects, from initiation to planning, execution to performance monitoring, to closure.
Field	• Business • Industry	• Information Technology • Information Science • Computer Science	• Mathematics • Statistics	• Business • Industry	• Project Management
Titles	• Data Privacy Officer • Data Security Officer • Data Governance Manager • Data Curator • Data Librarian	• ETL Developer • Data Architect • Data Warehousing Professional • Big Data Engineer	• Statistician • Statistical Modeler • Advanced Analytics Professional	• Research Analyst • HR Analyst • Marketing Analyst • Financial Analyst • Operations Analyst	• Chief Data Officer • Project Manager • Data Engineering Manager • Data Science Manager • Analytics Translator

Competencies:
- Domain Knowledge & Application
- Data Management & Governance
- Operational Analytics
- Data Visualization & Presentation
- Research Methods
- Data Engineering Principles
- Statistical Techniques
- Data Analytics Methods & Algorithms
- Computing
- 21st Century Skills

HEI Analytics Curricula

Job Postings - Skills Comparison

Job Postings - Clustering

Comparison of Analytics Curricula

Competency	Ateneo (MSDS)	UPD (PMDS)	AIM (MSDS)	Mapua (MBA)	UA&P (MABA)
Data Management and Governance			AI Ethics		Ethics and Law in Data Analytics
Operational Analytics					
Domain Knowledge & Application					
Data visualization			Data Viz and Storytelling		Descriptive Analytics, Visualization, Storytelling
Research Methods		Knowledge Discovery in Data		Data Analysis and Design	
Data Engineering	Data Mining		Data Mining and Wrangling	Data Integration and Warehousing	Data Engineering
Statistical Techniques	Applied Statistics	Statistical Inference for Data Science Computational Statistics Statistical Machine Learning	Applied Computational Statistics	Statistical Analysis and Fundamentals of Analytics	Mathematics for Analytics Statistical Techniques
Data Analytics Methods and Algorithms		Forecasting Analytics	Mathematics for Data Science Introduction to Data Science Machine Learning I Machine Learning II Network Science	Predictive Modelling and Machine Learning Prescriptive Analytics	Analytics Algorithms Analytics Algorithms 2
Computing	Programming with Databases Big Data Processing	Programming for Data Analytics	Programming for Data Science Big Data and Cloud Computing	Programming 1: Introduction to Analytical Tools Programming II: Application of Analytics	Basic Computing Programming for Databases

Source: School Websites

Comparison of Analytics Curricula

Leadership and 21st Century Skills			Management Communications Language of Business Human Behavior in Organizations Marketing in the Digital Economy Business Economics Project Management Financial Management Innovation Management with Design Thinking Negotiating Change Operations Management Strategic Management Managing for Sustainable Development Impact	Professional Issues and Social Concerns Strategic Management Special Topics in Business Analytics	Business Strategy and Analytics Fundamentals of Business Mgt Data-driven Organization Insight Development and Innovation Human Perspective in Analytics Management of Analytics Projects

Source: School Websites

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Skills Sought by Job Category

Skills	Data Scientist	Data Engineer	Data Analyst	Analytics Manager
Data Management and Governance	6%	5%	7%	4%
Operational Analytics	24%	14%	11%	48%
Data visualization	49%	21%	74%	74%
Research Methods	42%	22%	35%	57%
Data Engineering	60%	39%	36%	48%
Data Analytics Methods and Algorithms	56%	22%	39%	78%
Computing	60%	39%	74%	74%
Leadership	61%	31%	24%	96%

Skill Requirement Comparison
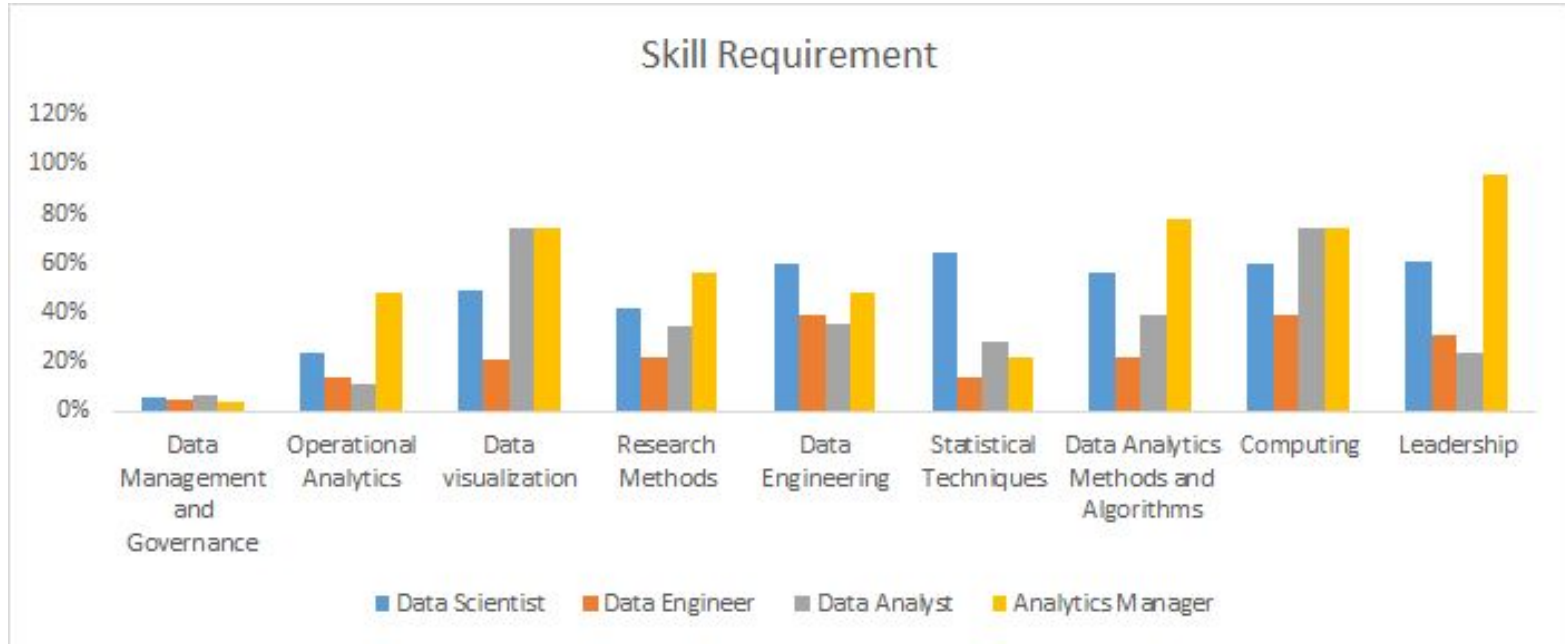
Source: Job Postings

Skill Prioritization

Skill Rank Importance
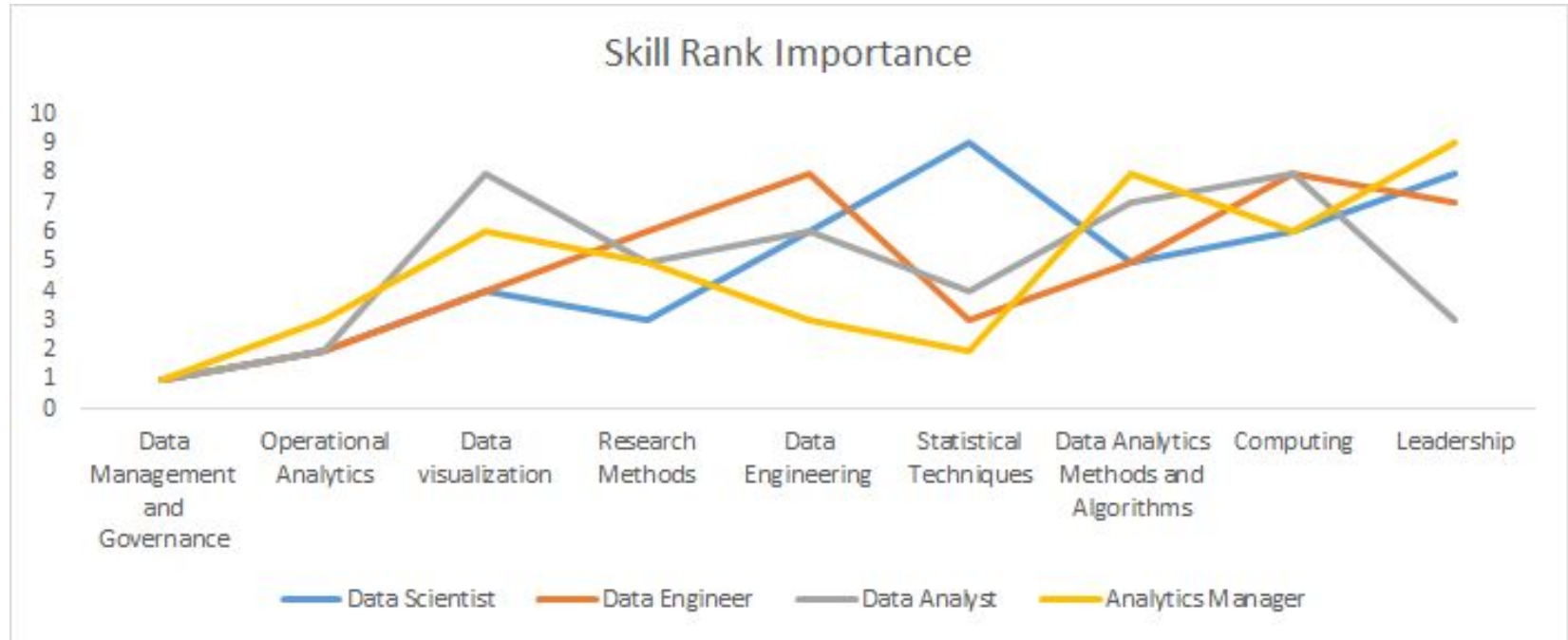
Source: Job Postings

Job Similarity

	Data Scientist	Data Engineer	Data Analyst	Analytics Manager
Data Scientist		0.51	0.29	0.34
Data Engineer	0.51		0.60	0.57
Data Analyst	0.29	0.60		0.48
Analytics Manager	0.34	0.57	0.48	

Source: Job Postings

Job Clustering

Senior Academic

Analytics Manager

Data Analyst / Scientist

Academic Assistant

Data Analyst / Business

Data Analyst / Engineer

Source: Small Scale Survey

Skills by Job Cluster

Cluster	Key Words	Skills Table			

Senior Academic — Skills Table

Roles and Responsibilities	Main Job	Hard Skills	Soft Skills
support	training	skill	communication
student	support	model	solve
practice	customer	programming	problem
training	development	analytic	teamwork
learn	data	data	work
manage	provide	development	skill
faculty	college	research	team
service	health	technology	leadership
experience	plan	design	think
education	faculty	education	management

Data Analyst Scientist — Skills Table

Roles and Responsibilities	Main Job	Hard Skills	Soft Skills
data	data	data	communication
create	create	programming	teamwork
report	report	statistical_modelling	problem
insight	insight	sql	solve
plan	dashboard	python	think
business	conduct	data_visualization	management
analytic	sale	visualization_data	time
perform	process	analytic	collaboration
process	plan	storytelle	work
sale	information	clean	make

Data Analyst Engineer

Roles and Responsibilities	Main Job	Hard Skills	Soft Skills
data	customer	programming	communication
customer	data	skill	problem
report	process	data_analysis	solve
development	research	design	teamwork
analysis	plan	knowledge	skill
conduct	analytic	data	management
business	management	research	think
manage	ensure	analysis	stakeholder
dashboard	report	project_management	collaboration
identify	product	statistic	work

Analytics Manager

Roles and Responsibilities	Main Job	Hard Skills	Soft Skills
data	data	programming	communication
team	develop	data	problem
develop	team	statistic	solve
analytic	analytic	knowledge	teamwork
manage	manage	model	management
company	management	software	leadership
business	project	analysis	team
solution	development	business	think
development	business	analytic	skill
model	application	design	work

Academic Assistant

Roles and Responsibilities	Main Job	Hard Skills	Soft Skills
teach	teach	programming	communication
research	student	data	teamwork
student	research	computer	skill
extension	development	analysis	solve
college	course	research	problem
conduct	management	network	leadership
community	conduct	model	analysis
activity	graduate	skill	management
facilitate_learning	level	design	write
instruction	activity	data_analysis	adaptability

Data Analyst Business

Roles and Responsibilities	Main Job	Hard Skills	Soft Skills
report	report	programming	communicat
project	data	data	problem
data	team	proficiency	solve
process	project	analytic	manageme
strategy	management	excel	teamwork
program	business	skill	time
plan	assist	management	skill
risk	ensure	data_analysis	think
management	analytic	knowledge	project
research	audit	analysis	work

Skills Supply, Demand, and Mismatch

A. Supply for Labor

CHED Graduate Trends

	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
Total Ched	481,331	496,949	522,570	564,769	585,288	632,076	645,973	703,327	751,310	796,576
Analytics Disciplines										
Business Administration and Related	117,399	125,840	141,327	164,541	169,846	185,358	185,858	202,895	207,178	233,194
Engineering and Tech	49,373	57,439	56,690	59,399	63,539	70,646	76,423	82,794	86,860	87,083
IT-Related Disciplines	49,786	54,225	66,672	72,879	72,976	74,477	77,250	73,646	77,747	81,477
Mathematics	2,021	1,903	2,038	2,984	2,428	2,698	2,736	3,034	3,446	3,192
Natural Science	3,949	3,910	4,330	6,626	6,094	6,966	6,828	7,160	8,693	8,249
Social and Behavioral Sciences	12,723	13,168	13,816	15,953	18,831	21,160	22,281	22,324	25,099	26,240
	235,251	256,485	284,873	322,382	333,714	361,305	371,376	391,853	409,023	439,435
Analytics Pool	48.9%	51.6%	54.5%	57.1%	57.0%	57.2%	57.5%	55.7%	54.4%	55.2%

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Distribution of Jobs

Company Industry	Job Postings	
Information Technology & Services	276	33%
Financial Services	169	20%
Internet	91	11%
Accounting	36	4%
Insurance	26	3%
Civil Engineering	23	3%
Computer Software	20	2%
Management Consulting	19	2%
Staffing & Recruiting	18	2%
Hospital & Health Care	14	2%
Outsourcing/Offshoring	13	2%
Others	122	15%
Total	827	

Linked-in Webscrape, Job Search: Analytics

Distribution of Jobs

Industry	Respondents	
IT, BPO, and Business Services	54	25%
Education	51	24%
Banking / Finance / Insurance	22	10%
Manufacturing	10	5%
Agriculture	10	5%
Healthcare	9	4%
Telecommunication	6	3%
Retail	6	3%
Energy	5	2%
Real Estate and Property	3	1%
Consumer goods / FMCG	3	1%
Others	36	17%
Total	215	

AAP, Small-Scale Survey

Project SPARTA Cohorts

	Functional Analyst (domain, industry)	Analytics Manager (project management)	Data Scientist (statistical models, algorithms)	Data Steward (data governance, policy)	Data Engineer (ETL, data warehouse)
Count of SPARTA Scholars	3,160	2,600	6,057	2,982	3,082
% of Scholars	18%	15%	34%	17%	17%
Self-Rated Skills Maturity (0-3)					
Domain Knowledge & Application	1.12	1.23	0.93	0.80	0.82
Data Management & Governance	0.91	1.10	0.80	0.87	0.79
Operational Analytics	1.12	1.28	0.80	0.62	0.64
Data Visualization & Presentation	1.20	1.33	1.23	0.86	1.00
Research Methods	1.01	1.22	1.45	0.81	0.96
Data Engineering Principles	0.22	0.34	0.33	0.20	0.63
Statistical Techniques	0.66	0.83	1.12	0.50	0.59
Data Analytics Methods & Algorithms	0.55	0.75	0.89	0.43	0.57
Computing	0.69	0.82	0.96	0.57	1.01
With Working Experience	1,097	791	1,442	668	580
% Working	35%	30%	24%	22%	19%

SPARTA
Tracer Survey

Jobs by Sector

Row Labels	Female		Male		Grand Total		Female Participation
IT, BPO, and Business Services	14	17%	40	30%	54	25%	0.26
Education	20	24%	31	23%	51	24%	0.39
Banking / Finance / Insurance	10	12%	12	9%	22	10%	0.45
Agriculture	5	6%	5	4%	10	5%	0.50
Manufacturing	4	5%	6	5%	10	5%	0.40
Healthcare	4	5%	5	4%	9	4%	0.44
Retail	4	5%	2	2%	6	3%	0.67
Telecommunication	2	2%	4	3%	6	3%	0.33
Energy	1	1%	4	3%	5	2%	0.20
Others	18	22%	24	18%	42	20%	0.43
Grand Total	82		133		215		0.38

AAP, Small Scale Survey

Workers by Location

Row Labels	Residence		Workplace	
BARMM	1	0%		0%
CAR	2	1%	3	1%
NCR – National Capital Region	96	45%	128	60%
Region I – Ilocos Region	9	4%	9	4%
Region II – Cagayan Valley	2	1%	2	1%
Region III – Central Luzon	15	7%	10	5%
Region IV-A – CALABARZON	38	18%	17	8%
Region IV-B - MIMAROPA	4	2%	4	2%
Region V – Bicol Region	9	4%	6	3%
Region VI – Western Visayas	3	1%	3	1%
Region VII – Central Visayas	14	7%	13	6%
Region VIII – Eastern Visayas	5	2%	5	2%
Region IX – Zamboanga Peninsula	2	1%	2	1%
Region X – Northern Mindanao	6	3%	5	2%
Region XI – Davao Region	2	1%	2	1%
Region XII – SOCCSKSARGEN	3	1%	4	2%
Region XIII – Caraga	4	2%	2	1%
Grand Total	215		215	

Residence	\ Workplace	CAR	NCR – National Capital Region	Region I – Ilocos Region	Region II – Cagayan Valley	Region III – Central Luzon	Region IV-A – CALABARZON	Region IV-B - MIMAROPA	Region V – Bicol Region	Region VI – Western Visayas	Region VII – Central Visayas	Region VIII – Eastern Visayas	Region IX - Zamboanga Peninsula	Region X – Northern Mindanao	Region XI – Davao Region	Region XII – SOCCSKSARGEN	Region XIII – Caraga
	BARMM															0.5	
	CAR	0.9															
	NCR – National Capital Region		44.2			0.5											
	Region I – Ilocos Region			4.2													
	Region II – Cagayan Valley				0.9												
	Region III – Central Luzon		2.8			4.2											
	Region IV-A – CALABARZON		9.8				7.9										
	Region IV-B - MIMAROPA							1.9									
	Region V – Bicol Region	0.5	0.9						2.8								
	Region VI – Western Visayas									1.4							
	Region VII – Central Visayas		0.5								6.0						
	Region VIII – Eastern Visayas											2.3					
	Region IX – Zamboanga Peninsula												0.9				
	Region X – Northern Mindanao		0.5											2.3			
	Region XI – Davao Region														0.9		
	Region XII – SOCCSKSARGEN															1.4	
	Region XIII – Caraga		0.9														0.9

B. Demand for Labor

Job Postings by Sector

Row Labels	Female		Male		Grand Total		Female Participation
IT, BPO, and Business Services	14	17%	40	30%	54	25%	0.26
Education	20	24%	31	23%	51	24%	0.39
Banking / Finance / Insurance	10	12%	12	9%	22	10%	0.45
Agriculture	5	6%	5	4%	10	5%	0.50
Manufacturing	4	5%	6	5%	10	5%	0.40
Healthcare	4	5%	5	4%	9	4%	0.44
Retail	4	5%	2	2%	6	3%	0.67
Telecommunication	2	2%	4	3%	6	3%	0.33
Energy	1	1%	4	3%	5	2%	0.20
Others	18	22%	24	18%	42	20%	0.43
Grand Total	82		133		215		0.38

Wage Distribution (Gender)

Row Labels	Female		Male		Grand Total	
15,000 and below	11	13%	15	11%	26	12%
15,001 to 25,000	15	18%	18	14%	33	15%
25,001 to 35,000	18	22%	22	17%	40	19%
35,001 to 45,000	5	6%	19	14%	24	11%
45,001 to 55, 000	5	6%	9	7%	14	7%
55,001 to 65,000	6	7%	10	8%	16	7%
65,001 to 75,000	7	9%	4	3%	11	5%
75,001 to 85,000	3	4%	4	3%	7	3%
85,001 to 95,000	2	2%	2	2%	4	2%
95,001 to 100,000	1	1%	1	1%	2	1%
100,001 to 125,000	5	6%	7	5%	12	6%
125,001 to 250, 000	4	5%	14	11%	18	8%
250,001 and above		0%	8	6%	8	4%
Grand Total	82		133		215	
Average Salary	49,421		76,936		66,442	

Wage Distribution (Age)

Row Labels	19-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60+	Grand Total
15,000 and below	30%	14%	9%	7%	4%	0%	20%	0%	0%	12%
15,001 to 25,000	33%	14%	18%	10%	13%	0%	0%	33%	0%	15%
25,001 to 35,000	7%	25%	21%	17%	17%	9%	0%	33%	50%	19%
35,001 to 45,000	15%	13%	12%	7%	4%	9%	40%	0%	0%	11%
45,001 to 55, 000	4%	12%	6%	2%	9%	0%	0%	0%	0%	7%
55,001 to 65,000	11%	7%	3%	10%	4%	18%	0%	0%	0%	7%
65,001 to 75,000	0%	3%	12%	7%	0%	9%	0%	33%	0%	5%
75,001 to 85,000	0%	0%	3%	10%	9%	0%	0%	0%	0%	3%
85,001 to 95,000	0%	1%	3%	2%	4%	0%	0%	0%	0%	2%
95,001 to 100,000	0%	3%	0%	0%	0%	0%	0%	0%	0%	1%
100,001 to 125,000	0%	3%	6%	7%	13%	18%	0%	0%	0%	6%
125,001 to 250, 000	0%	4%	6%	12%	13%	18%	40%	0%	50%	8%
250,001 and above	0%	0%	0%	10%	9%	18%	0%	0%	0%	4%
Grand Total	27	69	33	42	23	11	5	3	2	215
Average Salary	25,556	44,312	52,197	98,036	99,457	146,364	92,500	40,001	108,751	66,442

Wage Distribution (Industry)

	IT, BPO, and Business Services	Education	Banking / Finance / Insurance	Manufacturing	Agriculture	Healthcare	Telecommunication	Retail	Energy	Others	Grand Total
15,000 and below	11%	10%	5%	20%	30%	0%	0%	33%	0%	17%	12%
15,001 to 25,000	9%	20%	14%	30%	20%	22%	17%	0%	0%	17%	15%
25,001 to 35,000	20%	41%	5%	10%	0%	11%	0%	33%	20%	5%	19%
35,001 to 45,000	7%	12%	14%	0%	10%	0%	17%	0%	0%	21%	11%
45,001 to 55, 000	9%	2%	0%	10%	30%	0%	17%	0%	20%	5%	7%
55,001 to 65,000	9%	6%	9%	0%	0%	22%	0%	0%	40%	5%	7%
65,001 to 75,000	7%	0%	9%	10%	0%	0%	17%	0%	0%	7%	5%
75,001 to 85,000	2%	4%	5%	0%	0%	11%	0%	0%	0%	5%	3%
85,001 to 95,000	2%	0%	0%	10%	10%	0%	0%	0%	0%	2%	2%
95,001 to 100,000	0%	0%	9%	0%	0%	0%	0%	0%	0%	0%	1%
100,001 to 125,000	7%	2%	14%	0%	0%	0%	33%	0%	0%	5%	6%
125,001 to 250, 000	9%	4%	14%	10%	0%	22%	0%	17%	20%	7%	8%
250,001 and above	6%	0%	5%	0%	0%	11%	0%	17%	0%	5%	4%
Average Salary	76,806	38,922	92,160	50,250	34,250	113,334	67,501	106,250	77,501	67,381	66,442

Wage Distribution (Location)

Row Labels	BARMM	CAR	NCR – National Capital Region	Region I – Ilocos Region	Region II – Cagayan Valley	Region III – Central Luzon	Region IV-A – CALABARZON	Region IV-B - MIMAROPA	Region V – Bicol Region	Region VI – Western Visayas	Region VII – Central Visayas	Region VIII – Eastern Visayas	Region IX - Zamboanga Peninsula	Region X – Northern Mindanao	Region XI – Davao Region	Region XII – SOCCSKSARGEN	Region XIII – Caraga	Grand Total
15,000 and below	100	0	5	11	50	13	5	25	22	0	14	80	50	33	50	33	0	12
15,001 to 25,000	0	50	10	11	50	13	18	25	22	33	14	0	0	33	50	33	25	15
25,001 to 35,000	0	0	13	22	0	33	16	50	33	33	36	0	50	33	0	33	0	19
35,001 to 45,000	0	50	11	11	0	7	16	0	11	33	7	0	0	0	0	0	25	11
45,001 to 55, 000	0	0	7	11	0	0	11	0	11	0	7	0	0	0	0	0	0	7
55,001 to 65,000	0	0	9	11	0	20	5	0	0	0	0	0	0	0	0	0	25	7
65,001 to 75,000	0	0	7	0	0	7	8	0	0	0	0	0	0	0	0	0	0	5
75,001 to 85,000	0	0	2	11	0	7	5	0	0	0	0	20	0	0	0	0	0	3
85,001 to 95,000	0	0	1	0	0	0	5	0	0	0	7	0	0	0	0	0	0	2
95,001 to 100,000	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
100,001 to 125,000	0	0	9	0	0	0	5	0	0	0	7	0	0	0	0	0	0	6
125,001 to 250, 000	0	0	14	11	0	0	5	0	0	0	7	0	0	0	0	0	25	8
250,001 and above	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Average Salary	7,500	30,001	97,006	56,112	13,750	38,334	53,816	21,875	26,112	30,001	48,929	22,000	18,750	19,167	13,750	19,167	76,876	66,442

Work From Home

Industry Group

Row Labels	WFH Before	WFH During	Change
IT, BPO, and Business Services	46%	87%	41%
Education	29%	69%	39%
Banking / Finance / Insurance	27%	86%	59%
Manufacturing	30%	60%	30%
Agriculture	100%	90%	-10%
Healthcare	33%	67%	33%
Telecommunication	67%	100%	33%
Retail	33%	67%	33%
Energy	20%	100%	80%
Others	45%	60%	14%
Grand Total	41%	75%	34%

Work From Home

Employment Group

	WFH Before	WFH During	Change
Academic (including schools, training centers, universities, colleges)	35%	75%	40%
Government	43%	57%	14%
Not-for-profit, NGO	50%	75%	25%
Owned Business (including freelancers and professionals)	60%	80%	20%
Private sector	42%	81%	39%
Grand Total	41%	75%	34%

Re-training Rate

	Training Rate	Seeking Jobs
Row Labels		
IT, BPO, and Business Services	76%	72%
Education	84%	47%
Banking / Finance / Insurance	86%	59%
Manufacturing	50%	70%
Agriculture	80%	90%
Healthcare	100%	44%
Telecommunication	83%	67%
Retail	83%	83%
Energy	80%	60%
Others	88%	69%
Grand Total	82%	64%
Academic (including schools, training centers, universities, colleges)	84%	53%
Government	86%	49%
Not-for-profit, NGO	100%	75%
Owned Business (including freelancers and professionals)	80%	80%
Private sector	79%	72%
Grand Total	82%	64%

C. Skills Mismatch

Skill Utilization and Mismatch

Industry	Underutilization Rate	Mismatch Rate
IT, BPO, and Business Services	26%	56%
Education	12%	45%
Banking / Finance / Insurance	27%	36%
Manufacturing	30%	50%
Agriculture	10%	70%
Healthcare	33%	44%
Telecommunication	0%	33%
Retail	17%	17%
Energy	0%	100%
Others	12%	48%
Total	18%	49%

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Skill Utilization and Mismatch

Industry	Underutilization Rate	Mismatch Rate
IT, BPO, and Business Services	26%	56%
Education	12%	45%
Banking / Finance / Insurance	27%	36%
Manufacturing	30%	50%
Agriculture	10%	70%
Healthcare	33%	44%
Telecommunication	0%	33%
Retail	17%	17%
Energy	0%	100%
Others	12%	48%
Total	18%	49%

Industry Maturity (SPARTA)

Rank	Top 10 Industries	Analytics Maturity Rating
1	Banking	3.24
2	Financial Services	3.01
3	Business Process Management	3.00
4	Telecommunications	2.99
5	Information Technology	2.94
6	Aerospace	2.91
7	Hospitality	2.81
8	Research	2.72
9	Insurance	2.70
10	Computers and Technology	2.69

Industry Maturity (SPARTA Tracer)

Rank	Bottom 10 Industries	Analytics Maturity Rating
1	Wholesale	1.79
2	Mining	2.17
3	Non-Profit	2.20
4	Real Estate	2.21
5	Retail	2.23
6	Healthcare	2.27
7	Travel and Tourism	2.30
8	Agriculture and Fishing	2.31
9	Food Services	2.32
10	Government	2.32

Industry Maturity (SPARTA Tracer)

Rank	Top 10 Industries	% of DSA FTE
1	Research	20%
2	Advertising	19%
3	Computers and Technology	16%
4	Travel and Tourism	15%
5	Food Services	14%
6	Wholesale	14%
7	Non-Profit	14%
8	Retail	13%
9	Information Technology	13%
10	Media, Arts, and Entertainment	13%

Industry Maturity (SPARTA Tracer)

Rank	Bottom 10 Industries	% of DSA FTE
1	Insurance	5%
2	Automotive	6%
3	Mining	6%
4	Transportation	6%
5	Hospitality	7%
6	Banking	8%
7	Manufacturing	8%
8	Energy and Utilities	8%
9	Healthcare	9%
10	Telecommunications	9%

Labor Force Estimation

APEC Projection

Economy	Current DSA Workers	Projected DSA Workers Needed	Percent Change
Malaysia	4,000 (Year 2016)	20,000 (Year 2020)	400%
Philippines	147,420 (Year 2016)	340,880 (Year 2022)	131%
Singapore	9,300 (Year 2015)	15,000 (Year 2018)	61%
United States	2,350,000 (Year 2015)	2,720,000 (Year 2020	16%

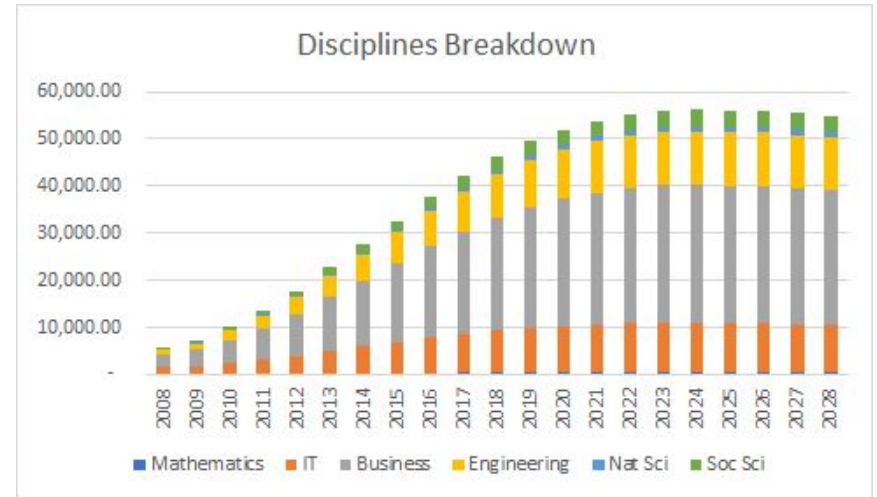AAP, APEC Project DARE 2017
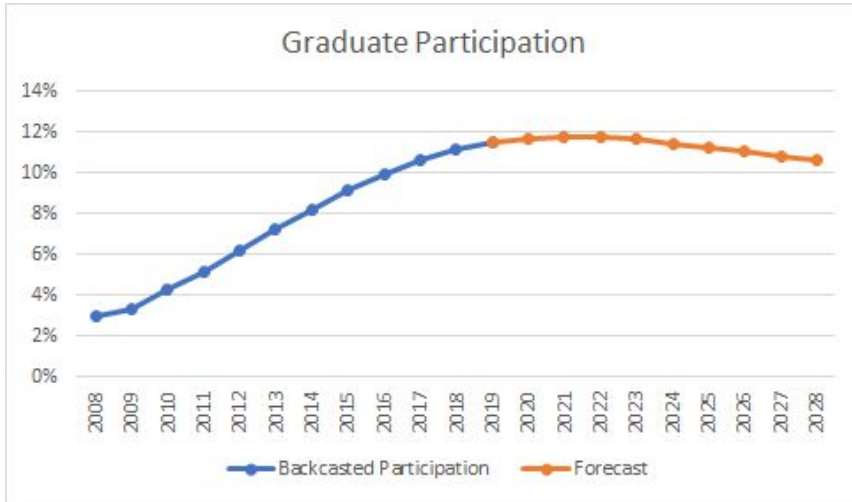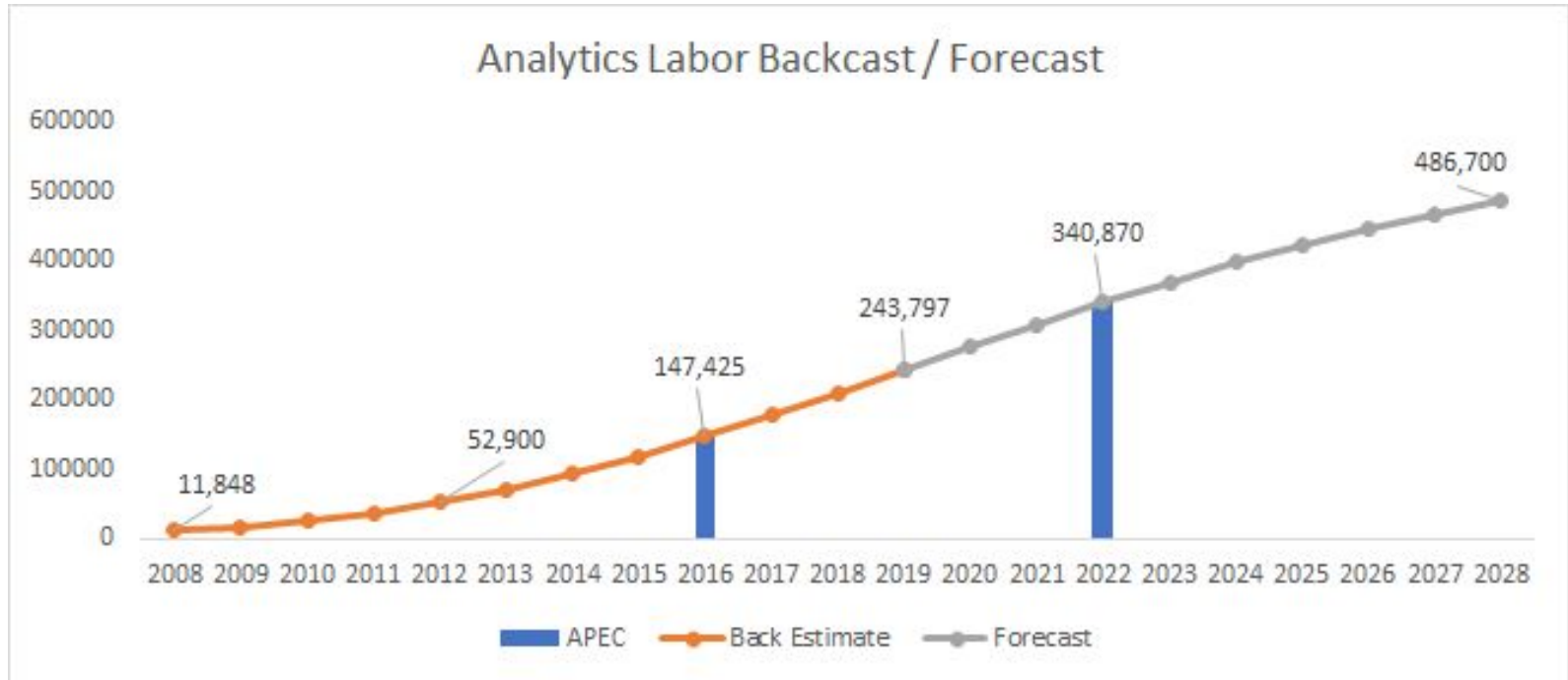
Waterfall Calculation
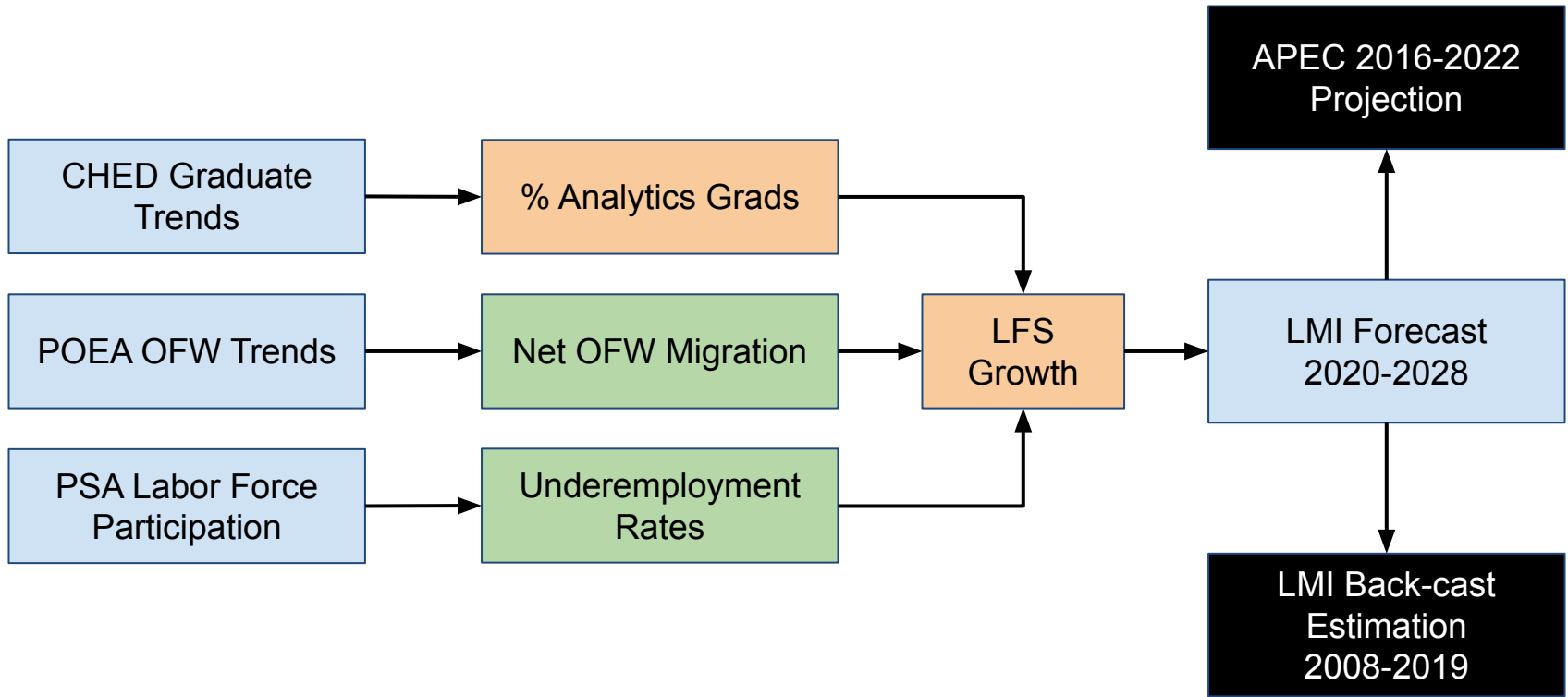
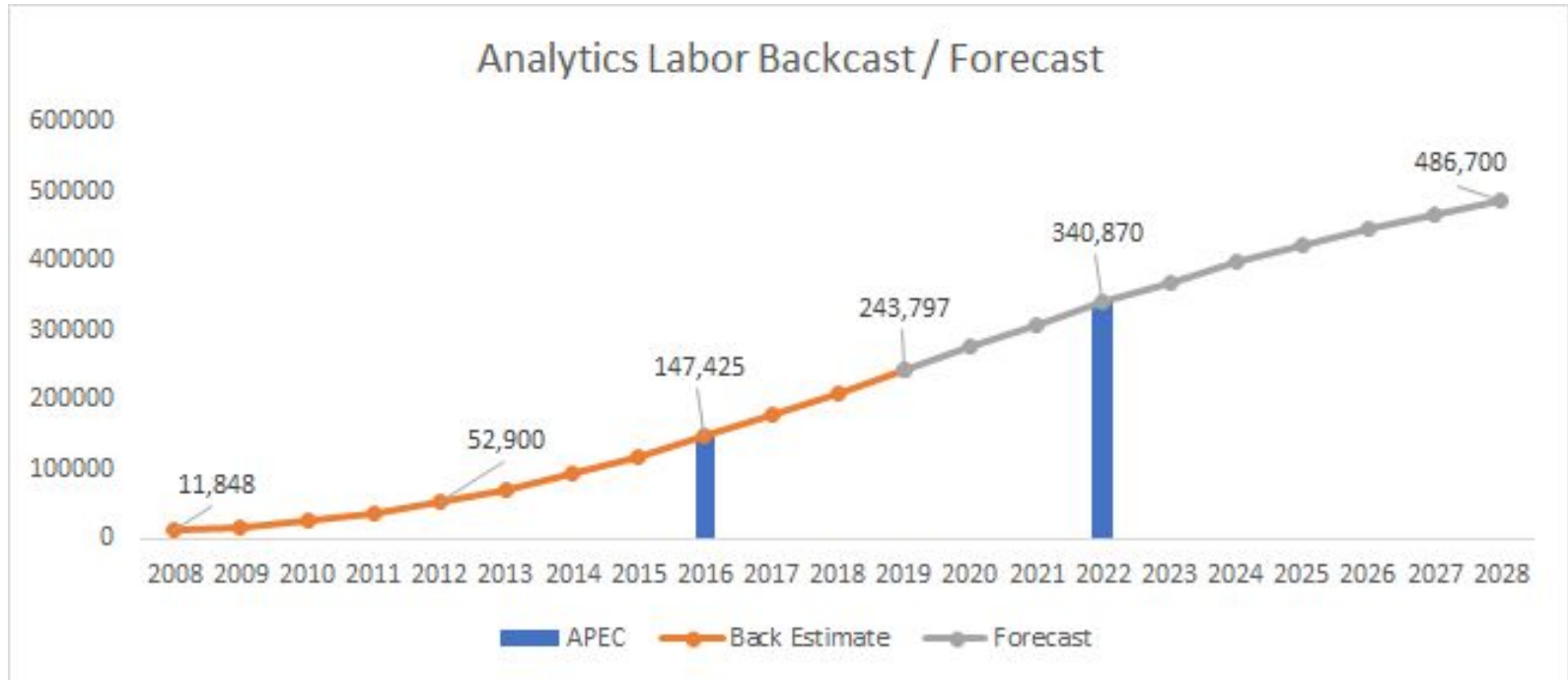# CHED Graduate Trends
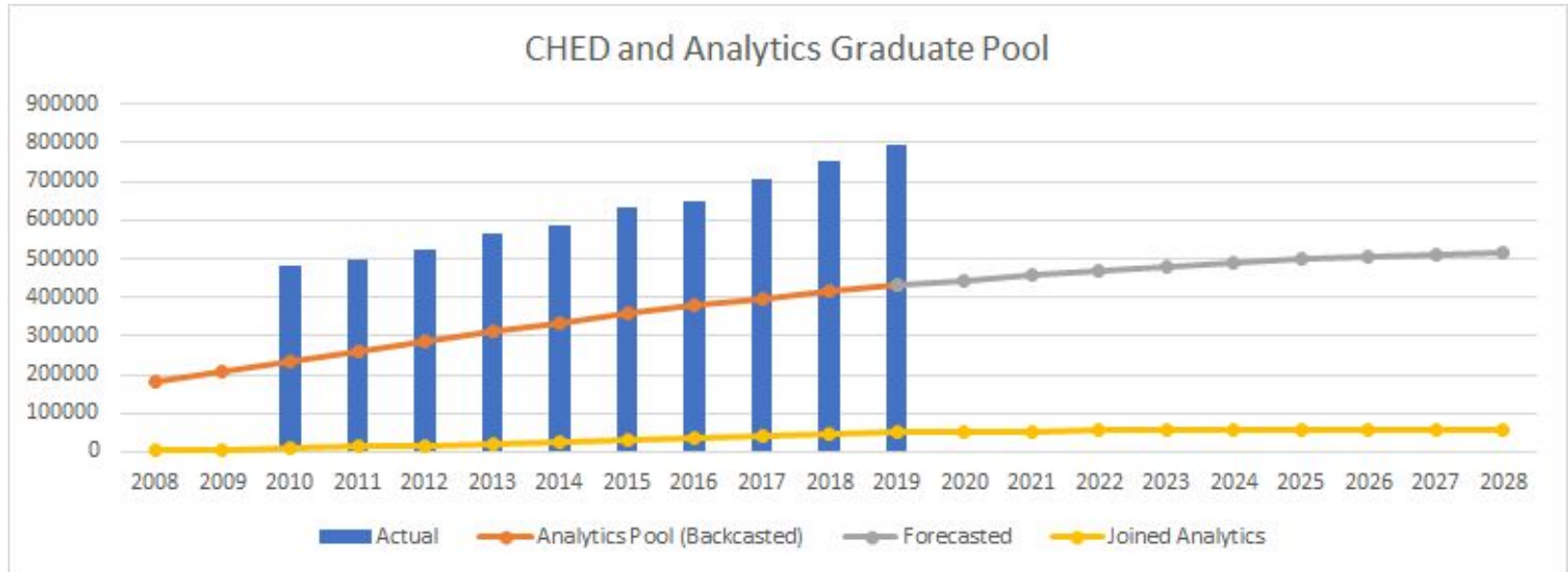
Source: CHED / PSA

Analytics Participation

Source: Calculated

Waterfall Calculation

Analytics Labor Backcast / Forecast

Legend: APEC, Back Estimate, Forecast

Data labels: 11,848; 52,900; 147,425; 243,797; 340,870; 486,700

Source: APEC / Calculated

Waterfall Calculation

Analytics Labor Backcast / Forecast

APEC — Back Estimate — Forecast

11,848
52,900
147,425
243,797
340,870
486,700

Source: APEC / Calculated

Labor Force and Search Interest

Analytics Labor Backcast / Forecast
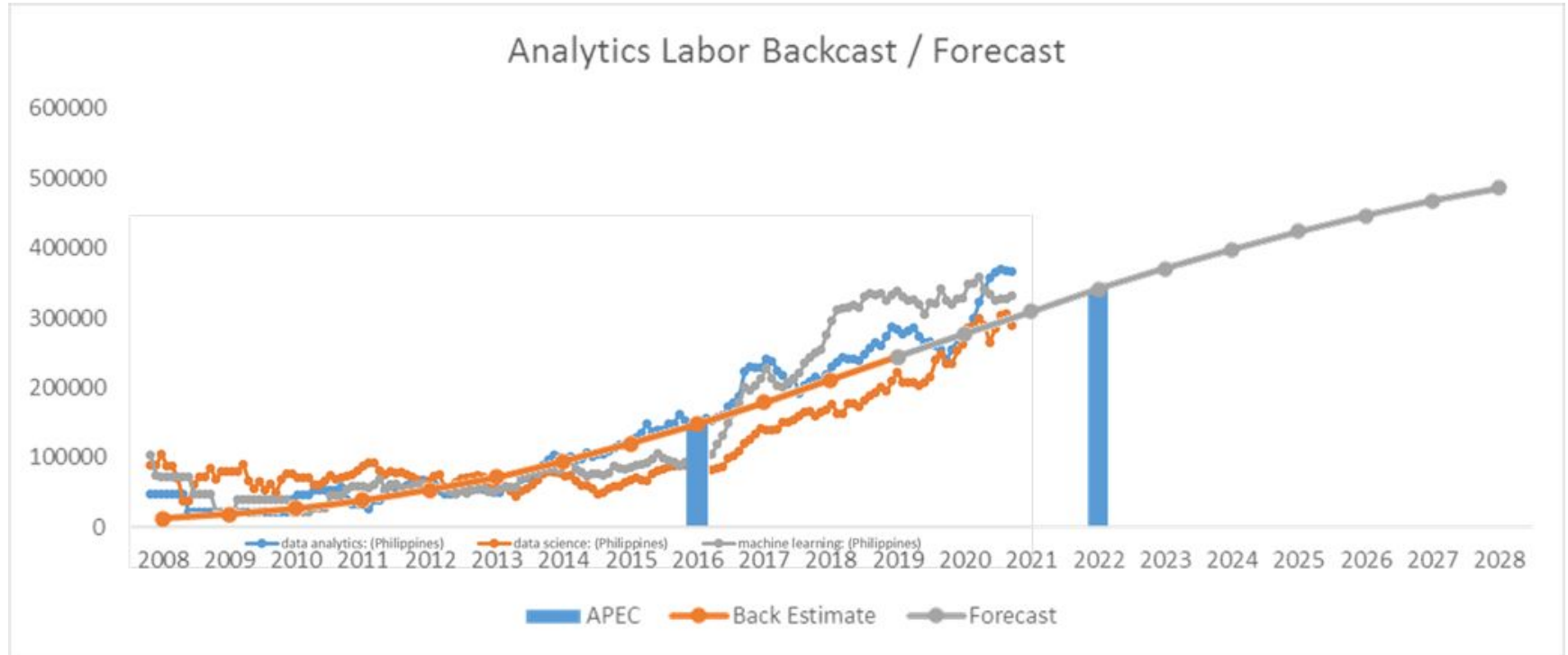
Government Regulation

Key Regulations

- Cybercrime Prevention Act of 2012 : RA 10175
- Data Privacy Act of 2012 : RA 10173
- Intellectual Property Code of the Philippines : RA 8293
- The Special Economic Zone Act of 1995. : RA 7916 (as amended by Republic Act No. 8748)
- Freedom of Information (FOI) Program : EO No. 2, 2016
- Innovative Startup Act : RA 11337
- National Broadband Plan : DICT
- Telecommuting Act : RA 11165
- The Anti-Terrorism Act of 2020 : RA 11479
- Philippine Innovation Act : RA 11293
- Philippine Forensic DNA Database Act : HB 7204
- Freelancers Protection Act : Senate Bill 1810
- Net Neutrality Bill : Senate Bill 2103
- Full Digital Transformation Act of 2020 : Senate Bill 1793
- National Digital Careers Bill : Senate Bill 1469
- Open Access to Data Transmission Act : Senate Bill 911
- Jobs NextAct : Senate Bill 2271
- National Employment Recovery Strategy (NERS) : Executive Order No 140 of 2021

Interview Findings

Thematic Areas

COVID-19 Pandemic	Skills Gaps and Mismatch	Current Trends in Bridging the Skills Gap
- Working from Home - Online Learning	- Job Description / Roles Disparity - Old Jobs with New Branding - Blending the Technical with Business	- Industry - The Search for Unicorns - Individuals are Preoccupied with Upskilling - Non-Traditional Education Is Flourishing - HEIs Are Beginning to Move - Government Has Yet to Recognize Analytics

Recommendations for Labor Force Development

Summary of Key Insights and Recommendations	
Definitions of Analytics roles need to be standardized	1. The AAP framework can provide a backbone for establishing a baseline but needs to be further validated. 2. Specialized Courses Are Needed More 3. Produce more Analytics teachers 4. Analytics as a distinct sector from IT-BPM 5. Explore professional licensing and certification
Analytics Labor Development	1. Encourage Women to take up Analytics 2. Improve Broadband Infrastructure to support Work From Home - diversify from NCR-centricity 3. Double Down on Online Learning 4. Support Analytics Communities 5. Embed Data and AI Ethics into Policies and Practices

Thank You!
Philippines Data Analytics Sector Labor Market Intelligence Report

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