

A Comprehensive Survey Based Covid-19 Perception Study For Post Lockdown Period In India: A Health Belief Model

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RATIONALE

- Amidst corona pandemic Government and health authorities have introduced some interventions like social distancing, face mask and good hygienic practice to prevent the transmissions among people.
- To understand people behaviour and perception towards these interventions are to be observed so that any factor concern should be addressed to health authorities.

INTRODUCTION

- The population behaviour are basic thing for managing of this outbreak, especially during the initial stage when no treatment or immunization is available, and the main option is the commitment in alternative methods, for example, wearing mask, hygiene practice hand sanitizer and social distancing and isolation .
- Relying on various perceived belief's impairment cause a fear for the infection.
- HBM is a health behaviour or perception change model (social and psychological) it was made to predict, explain and identify the health-related behaviours of population, specifically with regard to enhance the health services

CONSTRUCT	DEFINITION
PERCEIVED SUSCEPTIBILITY	Comments indicating an assessment of the increased likelihood of getting COVID-19 infection, highlighting increasing local prevalence and high importation of cases.
PERCEIVED SEVERITY	Comments indicating an assessment of increase in the perceived seriousness and the consequences of getting infected by COVID-19 (e.g. hospitalization, pneumonia, death, highlighting mortality risk).
PERCEIVED BENEFITS	Comments supporting, in favour of physical distancing measures (e.g. school closure, working from home, cancellation of events, mass gathering) to reduce transmission of COVID-19
PERCEIVED BARRIERS	Comments mentioning the difficulties, challenges, and negative effects of physical distancing (e.g. loss of freedom, violation of individual rights, inconvenience, loss of income, etc.) as well as perceived ineffectiveness of physical distancing
PRE-HEALTH MOTIVATION	Comments indicating building blocks which ultimately motivate or demotivate a person to take necessary healthcare seeking action, are primarily determined and control the peer psychological characteristics.

Table 1: Health Belief Model

OBJECTIVES

- This study focuses over evaluating and developing a strategy to identify the health belief of people during post lockdown.
- An attempt is made to measure the five dimensions of health belief (perceived susceptibility, perceived severity, perceived barrier, perceived benefit, and pre-health motivation) and to estimate the measure of association between them.
- Along with that an influence of education on health belief dimension was aimed.

METHODOLOGY

- **Study Design:** Quantitative study
- **Study Population:** The target population are people from various sectors between 18-60 age group, focusing on students(unemployed) and working population.
- **Time Frame:** The time frame of questionnaire was 10 days post lockdown (i.e. from 6 June 2020 to 15 June 2020) and Covid-19 infection spreading exponentially during the study.

- **Data Collection:** Data collection process was conducted through online platform by google forms and a composed electronic questionnaire which disseminated post lockdown by social networks. The questionnaire was distributed to students and working population of both government and private sector.
- **Study Sample:** 353 participants responded to questionnaire.
- **Data Analysis:** Estimation of data analysis were done by IBM SPSS version 26.0

Survey Developments & Rating Instruments:

- Preceding studies focused over measuring the health beliefs in India due to Covid-19 post lockdown (6 June 2020).
- As studies is concerned with health belief among people perception so questionnaire was framed with Covid-19 related health belief.
- A structured packet of questionnaire was framed based on demographic information in age, gender, education, monthly income, preferred healthcare delivery system, any prior chronic disease and preferred mode of transport.
- Other than that, the main focus was on measuring the health belief model to explore the 5 dimension i.e. perceived susceptibility, perceived severity, perceived barrier, perceived benefit, and pre-health motivation based on psychological or personality characteristics

Inclusion and Exclusion Criteria:

- People of age between 18 to 60 were included. Hence forth individual age less than 18 and greater than 60 were excluded. The major focus was on working population as they have influential health behaviour which can be studied as significant post lockdown. The study basically focuses over health belief post lockdown (June) of an individual to perceive preventive as well as good hygiene measures only.

RESULTS

- Around 353 responses were recorded indicating the descriptive mean age of sample (μ) is 25.45 and standard deviation (σ) is 5.8 indicating that the age majorly distributed among 19-31.

	Mean		Std. Deviation	Variance
	Statistic	Std. Error	Statistic	Statistic
PSU	1.7403	.04046	.76014	.578
PSE	2.1039	.03956	.74318	.552
PBE	2.2153	.03848	.72302	.523
PBA	2.4297	.04099	.77005	.593
PM	2.0652	.03996	.75071	.564

Table 2: Descriptive statistics for perceived susceptibility, perceived severity, perceived barrier, perceived benefit, and pre-health motivation.

VARIABLE	CHARACTERISTICS	FREQUENCY
GENDER		
	Male	182 (51.5)
	Female	171 (48.5)
EDUCATION		
	Primary Education	6 (1.7)
	Secondary Education	26(7.3)
	Diploma	10 (2.8)
	Graduate	167 (47.3)
	Post-Graduate	132 (37.3)
	Doctorate	12(3.4)
	No Education	0
MONTHLY INCOME		
	Less than 10,000	20 (5.6)
	10,000 to 25,000	64 (18.1)
	25,000 to 50,000	44(12.4)
	More than 50,000	32 (9)
	Unemployed	193(54.6)
CHRONIC DISEASE		
	Hypertension or cardiac disorder	2 (.6)
	Diabetes	8 (2.2)
	Respiratory disorder	8 (2.2)
	Other	8 (2.2)
	None	327 (92.6)
HEALTHCARE SYSTEM		
	Government (PHC, CHC)	92 (26)
	Private	261 (74)
TRANSPORTATION		
	Public	64 (18.1)
	Personal	225 (63.7)
	Walking	14 (4)
	Private (Ola, Uber, Taxi)	50 (14.2)

Table 3: Demographic Variable of respondent sample (N= 353).

	Questions	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
	Routine Risk	190(53.8)	70(19.8)	63(17.8)	8(2.3)	22(6.2)
Perceived Susceptibility	Place or group exposure	239(67.7)	64(18.1)	20(5.7)	8(2.3)	22(6.2)
	Prior health condition(diabetes)	182(51.6)	77(21.8)	50(14.2)	18(5.1)	26(7.4)
	Impairment of daily living activities	171(48.4)	82(23.2)	64(18.1)	18(5.1)	18(5.1)
Perceived Severity	Population symptoms	106(30)	99(28)	98(27.8)	22(6.2)	28(7.9)
	Covid symptoms (shortness of breath)	46(13)	28(7.9)	32(9.1)	28(8)	219(62)
	Social distancing	186(52.7)	87(24.6)	46(13)	16(4.5)	18(5.1)
Perceived Benefit	Prevention by antiviral drug	50(14.2)	59(16.7)	126(35.7)	68(19.3)	50(14.2)
	Using mask	115(32.6)	106(30)	86(24.4)	30(8.5)	16(4.9)
	Prevention by good hygiene practice	189(53.5)	102(28.9)	36(10.2)	8(2.3)	18(5.1)
Perceived Barrier	Ability to work from home	129(36.5)	74(21)	76(21.5)	26(7.4)	48(13.6)
	Risk of losing job	92(26.1)	62(17.6)	87(24.6)	38(10.8)	74(21)
	Use of alternative transport	197(55.8)	82(23.2)	46(13)	16(4.5)	12(3.4)
Pre-health Motivation	Using vitamin C tablet	54(15.3)	80(22.7)	150(42.5)	37(10.5)	32(9.1)
	Handwashing minimize infection	147(41.6)	124(35.1)	50(14.2)	20(5.7)	12(3.4)
	Using sanitizer, mask, gloves	205(58.1)	78(22.1)	38(10.8)	24(6.8)	8(2.3)
	Staying home	188(53.3)	80(22.7)	50(14.2)	17(4.8)	18(5.1)

Table 4: Frequencies (n) and percentages (%) distribution of Health belief model constructs

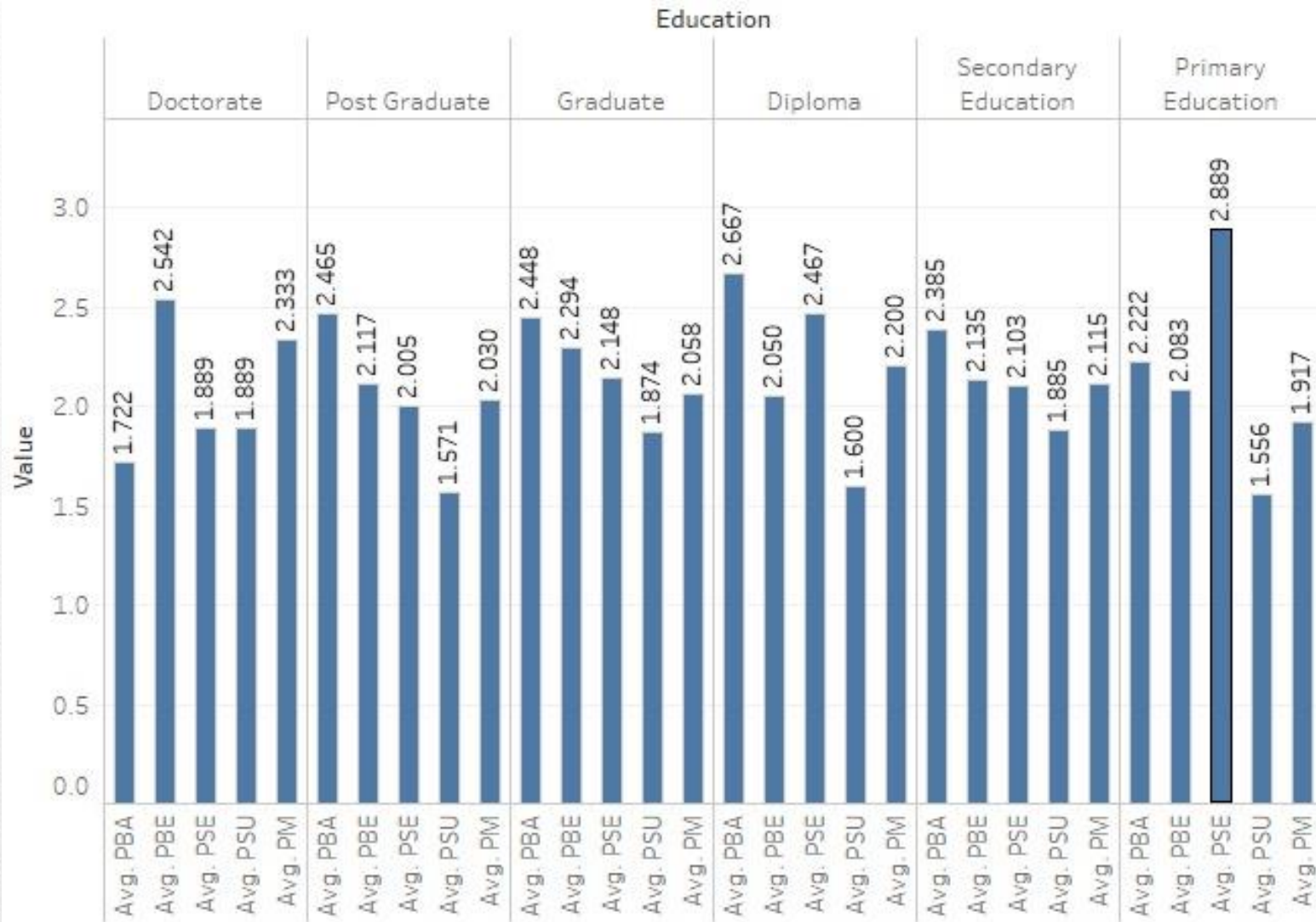
		PSU	PSE	PBE	PBA	PM
PSU	Pearson Correlation	1	.322**	.283**	.177**	.372**
	Sig. (2-tailed)		.000	.000	.001	.000
PSE	Pearson Correlation	.322**	1	.050	.077	.215**
	Sig. (2-tailed)	.000		.350	.147	.000
PBE	Pearson Correlation	.283**	.050	1	.172**	.638**
	Sig. (2-tailed)	.000	.350		.001	.000
PBA	Pearson Correlation	.177**	.077	.172**	1	.258**
	Sig. (2-tailed)	.001	.147	.001		.000
PM	Pearson Correlation	.372**	.215**	.638**	.258**	1
	Sig. (2-tailed)	.000	.000	.000	.000	

** . Correlation is significant at the 0.01 level (2-tailed).

Table 5: Correlation between perceived susceptibility, perceived severity, perceived barrier, perceived benefit and pre-health motivation influenced post lockdown

		Primary Education	Secondary Education	Diploma	Graduation	Post-Graduation	Doctorate
Perceived	Excellent	4	16	8	94	98	8
susceptibility	Good	2	6	2	49	24	0
	Average	0	4	0	16	8	2
	Poor	0	0	0	8	2	2
Perceived	Excellent	0	8	2	63	68	6
Severity	Good	4	16	6	76	40	4
	Average	2	2	2	28	24	2
	Poor	0	0	0	0	0	0
Perceived	Excellent	2	10	6	51	46	0
Benefit	Good	2	12	2	82	70	10
	Average	2	4	2	28	16	0
	Poor	0	0	0	6	0	2
Perceived	Excellent	2	8	0	41	32	6
Barrier	Good	2	8	6	76	56	6
	Average	2	8	4	44	42	0
	Poor	0	2	0	6	2	0
Pre-health	Excellent	2	8	6	74	54	6
motivation	Good	4	16	0	65	60	2
	Average	0	2	4	22	18	2
	Poor	0	0	0	6	0	2

Table 6: Cross tabulation of education with health belief variables



Descriptive statistics of five dimension based on level of education.

Chi-Square Test

	Education	PSU	PBE	PSE	PBA	PM
Chi-Square	433.442 ^a	492.884 ^b	221.547 ^c	75.558 ^d	248.057 ^b	182.292 ^e
df	5	12	14	8	12	13
Asymp. Sig.	.000	.000	.000	.000	.000	.000

a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 58.8.

b. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 27.2.

c. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 23.5.

d. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 39.2.

e. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 25.2.

Table 7: Chi-Square (χ) statistics for education and five dimension of health belief

Reliability Analysis (Cronbach Alpha)

The efficacy and reliability of this Likert seventeen statement scale was found high, as the value of Cronbach alpha is 0.764 and the self -developed scale for five-dimension average value gives a reliability of 0.632.

This indicates that a reliability of our study is excellent, and our scale can be preferred for estimating health belief perception or behaviour of an individual.

CONCLUSION

- An attempt is made to estimate the health belief faced by people (18-60) amidst of Covid-19 post lockdown.
- All the 5 dimensions of health belief (perceived susceptibility, perceived severity, perceived barrier, perceived benefit, and pre-health motivation) was given equal weightage and it was found that people are having upright psychological behaviour for cues to action.
- About 69.8% of individuals have a right health belief experienced post lockdown.
- It had been observed that among genders based no significant difference in health behaviour was being observed that is both male and females have almost same kind of belief.
- The seventeen statement Likert scale gives a wide idea in estimating the health belief, descriptive gives an idea about average values which were mean and standard deviation for perceived susceptibility 1.74; 0.04, perceived severity 3.10; 0.39, perceived benefit 2.21; 0.038, perceived barrier 2.42; 0.04 and pre-health motivation 2.06; 0.39 respectively.

- The health belief model-based on e-questionnaire related with the ratio scale is a significant tool to comprehend the public behaviour and perception on Covid-19 infection risks in both qualitative and quantitative manner, considerably more informative than the commonly used questionnaires construct and psychological metrics, such as Likert-type ordinal scales.
- Our health belief model enabled the confirmation of mainstream perception about covid-19 infection risks. The advantage in our approach lays in the possibility of quickly, directly, and quantitatively identifying individual perception profiles for all dimension in the e-questionnaire, serving as a great ally for communication processes and public health education.

PART – 2
ONLINE COURSE



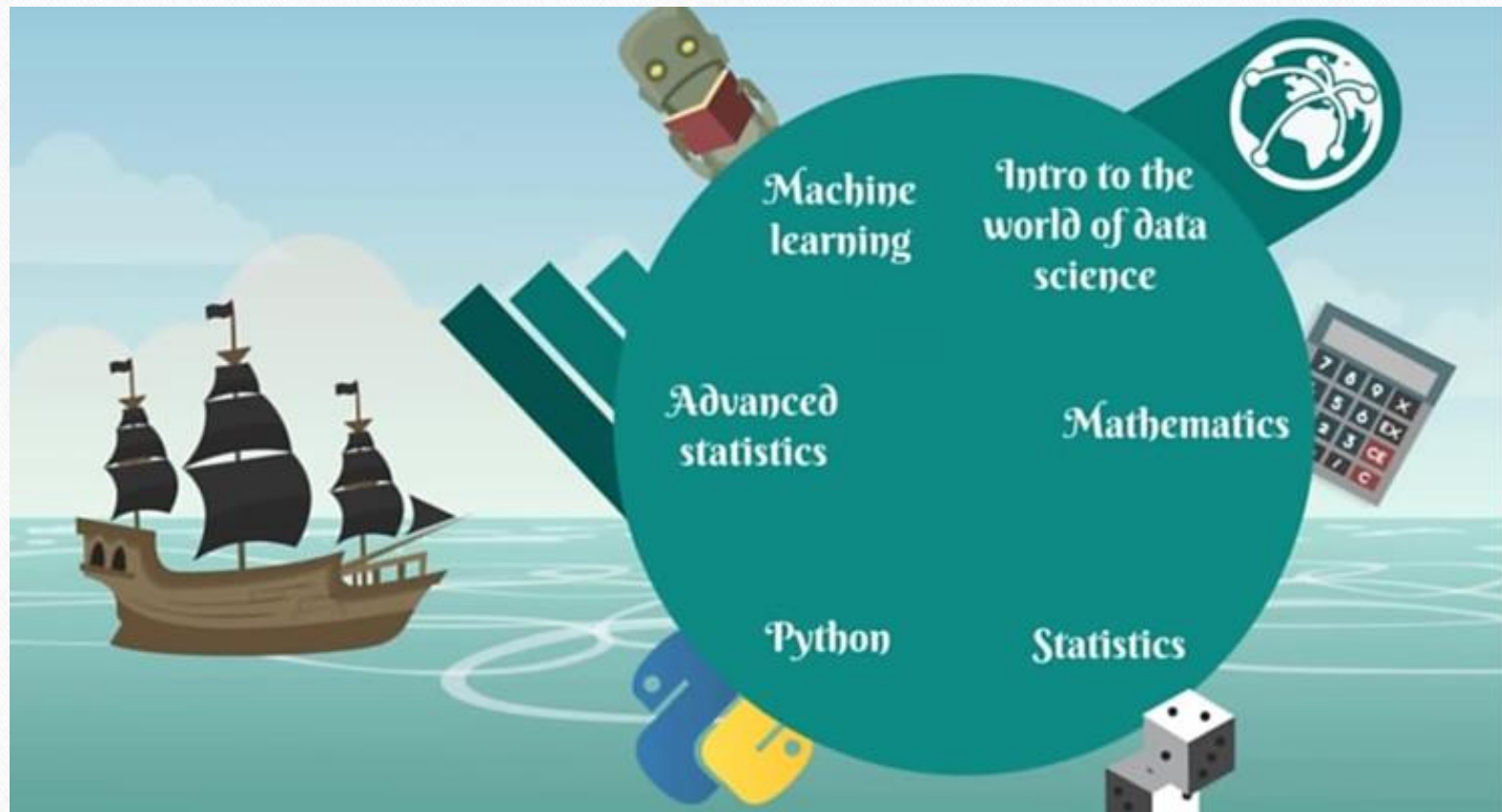
THE DATA SCIENCE COURSE 2020: COMPLETE DATA SCIENCE BOOTCAMP

WHY THIS COURSE....?

- Data scientist is one of the best suited professions to thrive this century. It is digital, programming-oriented, and analytical.
- Therefore, it comes as no surprise that the demand for data scientists has been surging in the job marketplace.
- However, supply has been very limited. It is difficult to acquire the skills necessary to be hired as a data scientist

COURSE OBJECTIVES

- To analyze data driven decisions require well organized and relevant data stored in a digital format.
- To use data how to create reports and dashboards to gain business insights.
- To assess potential future scenarios by using advanced statistical methods.
- To understand various business driven processes like basic customer data financial, trading data, price Optimization, inventory management, User experience, sales forecasting, fraud detection and client retention
- To utilize artificial intelligence to predict behavior in unprecedented ways.
- To learn data preprocessing and data analysis various statistical tools like regression and clustering analysis.
- To understand basic of python, machine learning, artificial intelligence and statistical methods.



LEARNING METHODOLOGY

The instructors were Martin and Ylia from 365 careers team on Udemy platform.

- 29 hours on-demand video lectures
- With 90 articles and 154 downloadable resources
- Multiple real-life business cases (Case Study)
- An unsolved assignment and quiz

COURSE MODULE

This course was divided into 8 sections namely

The field of data science - Introducing various data science disciplines, career in data science

Probability - Bayesian interface, permutation combination, probability distributions and probability in Healthcare

Statistics - Descriptive statistics practical examples, inferential statistics and hypothesis testing`

Python - Basic syntax, functions, iterations, advanced statistics method in Python, linear equation, multiple regression, Logistic regression and clustering analysis.

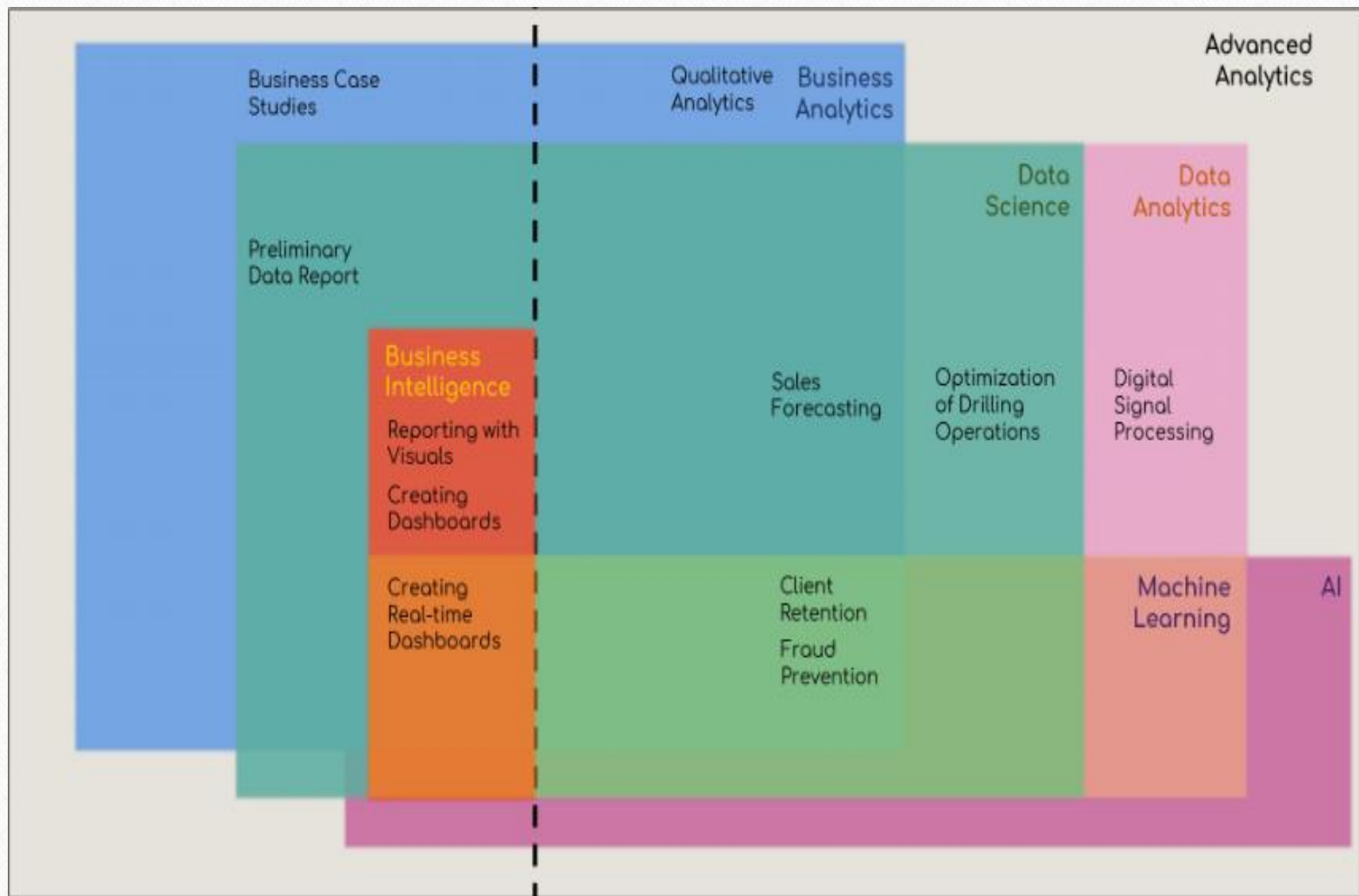
Deep learning - Neural networking, TensorFlow, overfitting & underfitting and MNIST data set

Business case analysis by deep learning TensorFlow

Case study

Analyzing the Predicted Outputs in Tableau

	Data		Data Science			
	TRADITIONAL	BIG	BUSINESS INTELLIGENCE	TRADITIONAL METHODS	MACHINE LEARNING	
WHEN it is applied	At the beginning of your analysis		After the data has been gathered & organized	After BI reports have been created and discussed		
			PAST	NOW	FUTURE	
WHY you need it	data-driven decisions require well-organized and relevant raw data stored in a digital format		use data to create reports and dashboards to gain business insights	Predictive Analytics assess potential future scenarios by using advanced statistical methods		utilize artificial intelligence to predict behavior in unprecedented ways
WHAT techniques are involved	DATA COLLECTION PREPROCESSING - class labeling (categorical vs numerical) - data cleansing - dealing with missing values CASE SPECIFIC - e.g. balancing & shuffling datasets 	DATA COLLECTION PREPROCESSING - class labeling (number, text, digital images, digital video data, digital audio data) - data cleansing - dealing with missing values CASE SPECIFIC - text data mining - confidentiality - preserving data mining techniques 	ANALYZE THE DATA EXTRACT INFO AND PRESENT IT IN THE FORM OF: - metrics - KPIs - reports - dashboards 	REGRESSION  LOGISTIC REGRESSION CLUSTERING  FACTOR ANALYSIS TIME SERIES 	SUPERVISED LEARNING - SVMs - NNs - deep learning - random forests - bayesian networks UNSUPERVISED LEARNING - k-means - deep learning REINFORCEMENT LEARNING similar to supervised learning, but instead of minimizing the loss, one maximizes reward	
WHERE	BASIC CUSTOMER DATA HISTORICAL STOCK PRICE DATA	SOCIAL MEDIA FINANCIAL TRADING DATA	PRICE OPTIMIZATION INVENTORY MANAGEMENT	USER EXPERIENCE (UX) SALES FORECASTING	FRAUD DETECTION CLIENT RETENTION	
HOW using what tools	PROGRAMMING LANGUAGES  SOFTWARE 	PROGRAMMING LANGUAGES  SOFTWARE 	PROGRAMMING LANGUAGES  SOFTWARE 	PROGRAMMING LANGUAGES  SOFTWARE 	PROGRAMMING LANGUAGES  SOFTWARE 	
WHO	DATA ARCHITECT DATA ENGINEER DATABASE ADMINISTRATOR	BIG DATA ARCHITECT BIG DATA ENGINEER	BI ANALYST BI CONSULTANT BI DEVELOPER	DATA SCIENTIST DATA ANALYST	DATA SCIENTIST MACHINE LEARNING ENGINEER	
ARE YOU AWARE	200,000 lines of data is not necessarily big data. It is not just volume that defines a data set as 'big,' - variety, variability, velocity, veracity, and other characteristics are determinative as well.		Qualitative analysis tools such as SWOT are not used for quantitative analysis. Hence, they are not part of business intelligence.	Software like Excel, SPSS, and Stata, can be successfully used by data science teams in many companies.	In deep learning, there is still a debate on WHY the algorithms used outperform all conventional methods.	



KEY LEARNINGS

The course provides the entire toolbox that need to become a data scientist.

Developed the data science skills:
Statistical analysis, Python programming with NumPy, pandas, matplotlib, and Seaborn, Advanced statistical analysis, Tableau, Machine Learning with stats models and scikit-learn, Deep learning with TensorFlow

Learn how to pre-process data

Understand the mathematics behind Machine Learning

Start coding in Python and learn how to use it for statistical analysis

Perform linear and logistic regressions in Python

Carry out cluster and factor analysis

Be able to create Machine Learning algorithms in Python, using NumPy, stats models and scikit-learn

Applying skills to real-life business cases

Use state-of-the-art Deep Learning frameworks such as Google's TensorFlow develop a business intuition while coding and solving tasks with big data

Unfold the power of deep neural networks

Improve Machine Learning algorithms by studying underfitting, overfitting, training, validation, n-fold cross validation, testing, and how hyperparameters could improve performance.

ACHEIVE

Certificate of Completion

***This is to certify that Vinit Yadav successfully
completed 29 total hours of The Data Science
Course 2020: Complete Data Science Bootcamp
online course on July 10, 2020***

365 Careers *365 Careers Team*
365 Careers, Instructor 365 Careers Team, Instructor



Certificate no: UC-2bfc76bb-765d-4007-8d79-2dd4ca400722
Certificate url: ude.my/UC-2bfc76bb-765d-4007-8d79-2dd4ca400722

#BeAble



thank you!

**“Change the way you look at things and
the things you look at change.”**

— Wayne W. Dyer