

Hantz_Angrand_Acquisition_Project_Proposal

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November 11, 2018

1.-Problem

Recently Kaggle has tried to get the pulse of data science around the world through a survey. The results of the survey is available to everybody that participated in the survey. Kaggle also encourages its community to deep dive into the data in order to discover about the many communities comprised in the survey.

In this perspective I want to discover how the involvement of minorities group in data science. We want specifically explore the impact, priorities, or concerns of the minorities group of data science and machine learning.

What is a minority group? The definition varies from one person to another. For this study we define minorities as a group that experiences a narrowing of opportunities (success, wealth etc) that is low compared to their number in the society. (<https://academic.udayton.edu/race/01race/minor01.htm>)

Then compare to the size of this group in the general population do they get involved in data science as the same percentage or are their revenues compare to other group in the survey. Also determine what are the priorities or concerns of this group in data science perspective.

2.-Data

Kaggle conducts an industry wide survey that represents that wants to understand the state of data science and machine learning. The survey was live in October and more than 20000 people participate in the survey. The results include who are working with data, what is happening with machine learning in different industries and the best ways for new data scientist to break into the field.

The data can be found here. <https://www.kaggle.com/kaggle/kaggle-survey-2018> or via API kaggle datasets download -d kaggle/kaggle-survey-2018

```
library(tidyverse)
```

```
## -- Attaching packages ----- tidyverse 1.2.1
```

```
## v ggplot2 3.1.0      v purrr   0.2.5
```

```
## v tibble  1.4.2      v dplyr   0.7.6
```

```
## v tidyr   0.8.1      v stringr 1.3.1
```

```
## v readr   1.1.1      v forcats 0.3.0
```

```
## -- Conflicts ----- tidyverse_conflicts()
```

```
## x dplyr::filter() masks stats::filter()
```

```
## x dplyr::lag()     masks stats::lag()
```

```
#Load the data
```

```
srv_18<-read.csv("C:/Users/hangr/Documents/Acquisition and data management/FinalProject/multipleChoiceR
```

```
head(srv_18)
```

```
## Time.from.Start.to.Finish..seconds.
```

```
## 1 Duration (in seconds)
```

```
## 2 710
```

```
## 3 434
```

```
## 4 718
```

```

## 5                                621
## 6                                731
##                                Q1
## 1 What is your gender? - Selected Choice
## 2                                Female
## 3                                Male
## 4                                Female
## 5                                Male
## 6                                Male
##                                Q1_OTHER_TEXT
## 1 What is your gender? - Prefer to self-describe - Text
## 2                                -1
## 3                                -1
## 4                                -1
## 5                                -1
## 6                                -1
##                                Q2                                Q3
## 1 What is your age (# years)? In which country do you currently reside?
## 2                                45-49                                United States of America
## 3                                30-34                                Indonesia
## 4                                30-34                                United States of America
## 5                                35-39                                United States of America
## 6                                22-24                                India
##
## 1 What is the highest level of formal education that you have attained or plan to attain within the next 5 years?
## 2                                Doctorate
## 3                                Bachelor's degree
## 4                                Master's degree
## 5                                Master's degree
## 6                                Master's degree
##                                Q5
## 1 Which best describes your undergraduate major? - Selected Choice
## 2                                Other
## 3                                Engineering (non-computer focused)
## 4                                Computer science (software engineering, etc.)
## 5                                Social sciences (anthropology, psychology, sociology, etc.)
## 6                                Mathematics or statistics
##
## 1 Select the title most similar to your current role (or most recent title if retired): - Selected Choice
## 2                                Consultant
## 3                                ( )
## 4                                Data Scientist
## 5                                Not employed
## 6                                Data Analyst
##                                Q6_OTHER_TEXT
## 1 Select the title most similar to your current role (or most recent title if retired): - Other - Text
## 2                                .
## 3                                .
## 4                                .
## 5                                .
## 6                                .
##
## 1 In what industry is your current employer/contract (or your most recent employer if retired)? - Selected Choice
## 2

```

```

## 3 Manufacturing
## 4 I
## 5
## 6 I
## Q7_1
## 1 In what industry is your current employer/contract (or your most recent employer if retired)? - Other
## 2
## 3
## 4
## 5
## 6
## Q8
## 1 How many years of experience do you have in your current role?
## 2
## 3 5-10
## 4 0-1
## 5
## 6 0-1
## Q9
## 1 What is your current yearly compensation (approximate $USD)?
## 2
## 3 10-20,000
## 4 0-10,000
## 5
## 6 0-10,000
## Q10
## 1 Does your current employer incorporate machine learning methods into their business?
## 2 I do not know
## 3 No (we do not use ML methods)
## 4 I do not know
## 5
## 6 I do not know
##
## 1 Select any activities that make up an important part of your role at work: (Select all that apply)
## 2
## 3
## 4
## 5
## 6
##
## 1 Select any activities that make up an important part of your role at work: (Select all that apply)
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## 1 Select any activities that make up an important part of your role at work: (Select all that apply)
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## 1 Select any activities that make up an important part of your role at work: (Select all that apply)
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## 1 Select any activities that make up an important part of your role at work: (Select all that apply)
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## 1 Select any activities that make up an important part of your role at work: (Select all that apply)
## 2
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##
## 1 What is the primary tool that you use at work or school to analyze data? (include text response) -
## 2                                     Cloud-based data software & APIs (AWS, Google Cloud, etc.)
## 3                                     Basic statistical software (Microsoft Excel, Google Sheets, etc.)
## 4                                     Local or hosted development environments (RStudio, Jupyter, etc.)
## 5                                     Local or hosted development environments (RStudio, Jupyter, etc.)
## 6                                     Advanced statistical software (Stata, SAS, etc.)
##
## 1 What is the primary tool that you use at work or school to analyze data? (include text response) -
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##
## 1 What is the primary tool that you use at work or school to analyze data? (include text response) -
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##

1 What is the primary tool that you use at work or school to analyze data? (include text response) -

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##

1 What is the primary tool that you use at work or school to analyze data? (include text response) -

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##

1 Which of the following integrated development environments (IDE's) have you used at work or school

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1 Which of the following integrated development environments (IDE's) have you used at work or school

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1 Which of the following integrated development environments (IDE's) have you used at work or school

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## 1 Which of the following integrated development environments (IDE's) have you used at work or school
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1 Which of the following integrated development environments (IDE's) have you used at work or school

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##

1 Which of the following hosted notebooks have you used at work or school in the last 5 years? (Sele

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1 Which of the following hosted notebooks have you used at work or school in the last 5 years? (Sele

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1 Which of the following hosted notebooks have you used at work or school in the last 5 years? (Sele

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## 1 Which of the following hosted notebooks have you used at work or school in the last 5 years? (Sele
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## 1 Which of the following hosted notebooks have you used at work or school in the last 5 years? (Sele
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## 1 Which of the following hosted notebooks have you used at work or school in the last 5 years? (Sele
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## 1 Which of the following hosted notebooks have you used at work or school in the last 5 years? (Sele
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## 1 Which of the following hosted notebooks have you used at work or school in the last 5 years? (Sele
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## 5
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##
## 1 Which of the following hosted notebooks have you used at work or school in the last 5 years? (Sele
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##
## 1 Which of the following cloud computing services have you used at work or school in the last 5 years
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## 1 Which of the following cloud computing services have you used at work or school in the last 5 years
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## 1 Which of the following cloud computing services have you used at work or school in the last 5 years
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## 1 Which of the following cloud computing services have you used at work or school in the last 5 years
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## 1 Which of the following cloud computing services have you used at work or school in the last 5 years
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## 6
##
## 1 Which of the following cloud computing services have you used at work or school in the last 5 years
## 2

```

```
## 1 Which of the following cloud computing services have you used at work or school in the last 5 years?
## 2
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## 5
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##
```

```
## 1 What programming languages do you use on a regular basis? (Select all that apply) - Selected Choice
## 2
## 3
## 4
## 5
## 6
##
```

```
## 1 What programming languages do you use on a regular basis? (Select all that apply) - Selected Choice
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```
## 1 What programming languages do you use on a regular basis? (Select all that apply) - Selected Choice
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```
## 1 What programming languages do you use on a regular basis? (Select all that apply) - Selected Choice
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## 1 What programming languages do you use on a regular basis? (Select all that apply) - Selected Choice
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## 1 What programming languages do you use on a regular basis? (Select all that apply) - Selected Choice
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## 1 What programming languages do you use on a regular basis? (Select all that apply) - Selected Choice
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Q
## 1 What programming languages do you use on a regular basis? (Select all that apply) - Selected Choice
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Q
## 1 What programming languages do you use on a regular basis? (Select all that apply) - Selected Choice
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## 1 What programming languages do you use on a regular basis? (Select all that apply) - Selected Choice
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Q1
## 1 What programming languages do you use on a regular basis? (Select all that apply) - Selected Choice
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## 6
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Q16_P
## 1 What programming languages do you use on a regular basis? (Select all that apply) - Selected Choice
## 2
## 3
## 4
## 5
## 6
##
Q
## 1 What programming languages do you use on a regular basis? (Select all that apply) - Selected Choice
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## 6
##
Q16_L
## 1 What programming languages do you use on a regular basis? (Select all that apply) - Selected Choice
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## 4
## 5

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```

## 6
##
## 1 What programming languages do you use on a regular basis? (Select all that apply) - Selected Choice
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## 6
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## 1 What programming languages do you use on a regular basis? (Select all that apply) - Selected Choice
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## 6
##
## 1 What programming languages do you use on a regular basis? (Select all that apply) - Selected Choice
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## 4
## 5
## 6
##
## 1 What programming languages do you use on a regular basis? (Select all that apply) - Selected Choice
## 2
## 3
## 4
## 5
## 6
##
## 1 What programming languages do you use on a regular basis? (Select all that apply) - Other - Text
## 2 -1
## 3 -1
## 4 -1
## 5 -1
## 6 -1
##
## Q17
## 1 What specific programming language do you use most often? - Selected Choice
## 2
## 3
## 4 Java
## 5 Python
## 6 SQL
##
## Q17_OTHER_TEXT
## 1 What specific programming language do you use most often? - Other - Text
## 2 -1
## 3 -1
## 4 -1
## 5 -1
## 6 -1
##
## 1 What programming language would you recommend an aspiring data scientist to learn first? - Selected
## 2
## 3

```

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##

Q18_OTHER.

1 What programming language would you recommend an aspiring data scientist to learn first? - Other -

2

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##

1 What machine learning frameworks have you used in the past 5 years? (Select all that apply) - Sele

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##

1 What machine learning frameworks have you used in the past 5 years? (Select all that apply) - Sele

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##

1 What machine learning frameworks have you used in the past 5 years? (Select all that apply) - Sele

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##

1 What machine learning frameworks have you used in the past 5 years? (Select all that apply) - Sele

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##

1 What machine learning frameworks have you used in the past 5 years? (Select all that apply) - Sele

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##

1 What machine learning frameworks have you used in the past 5 years? (Select all that apply) - Sele

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##

1 What machine learning frameworks have you used in the past 5 years? (Select all that apply) - Sele

```

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## 5
## 6
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## 1 What machine learning frameworks have you used in the past 5 years? (Select all that apply) - Sele
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## 1 What machine learning frameworks have you used in the past 5 years? (Select all that apply) - Sele
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## 1 What machine learning frameworks have you used in the past 5 years? (Select all that apply) - Sele
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## 1 What machine learning frameworks have you used in the past 5 years? (Select all that apply) - Sele
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## 1 What machine learning frameworks have you used in the past 5 years? (Select all that apply) - Sele
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## 1 What machine learning frameworks have you used in the past 5 years? (Select all that apply) - Sele
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```

```
## 1 What machine learning frameworks have you used in the past 5 years? (Select all that apply) - Selected
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## 4
## 5
## 6
##
## 1 What machine learning frameworks have you used in the past 5 years? (Select all that apply) - Selected
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## 6
##
## 1 What machine learning frameworks have you used in the past 5 years? (Select all that apply) - Selected
## 2
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## 4
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## 6
##
## 1 What machine learning frameworks have you used in the past 5 years? (Select all that apply) - Selected
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## 3
## 4
## 5
## 6
##
## 1 What machine learning frameworks have you used in the past 5 years? (Select all that apply) - Other
## 2
## 3
## 4
## 5
## 6
##
## 1 Of the choices that you selected in the previous question, which ML library have you used the most?
## 2
## 3
## 4
## 5
## 6
##
## 1 Of the choices that you selected in the previous question, which ML library have you used the most?
## 2
## 3
## 4
```

```

## 5
## 6
##
## 1 What data visualization libraries or tools have you used in the past 5 years? (Select all that apply)
## 2
## 3
## 4
## 5
## 6
##
## 1 What data visualization libraries or tools have you used in the past 5 years? (Select all that apply)
## 2
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## 1 What data visualization libraries or tools have you used in the past 5 years? (Select all that apply)
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## 1 What data visualization libraries or tools have you used in the past 5 years? (Select all that apply)
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## 1 What data visualization libraries or tools have you used in the past 5 years? (Select all that apply)
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## 1 What data visualization libraries or tools have you used in the past 5 years? (Select all that apply)
## 2
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##
## 1 What data visualization libraries or tools have you used in the past 5 years? (Select all that apply)
## 2

```



```

## 3
## 4
## 5
## 6
##
## 1 What data visualization libraries or tools have you used in the past 5 years? (Select all that apply)
## 2
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## 1 What data visualization libraries or tools have you used in the past 5 years? (Select all that apply)
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## 1 What data visualization libraries or tools have you used in the past 5 years? (Select all that apply)
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## 1 What data visualization libraries or tools have you used in the past 5 years? (Select all that apply)
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## 1 What data visualization libraries or tools have you used in the past 5 years? (Select all that apply)
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## 1 What data visualization libraries or tools have you used in the past 5 years? (Select all that apply)
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##
## 1 Of the choices that you selected in the previous question, which specific data visualization libraries or tools did you use?
## 2
## 3
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## 5
## 6
##

```

```

## 1 Of the choices that you selected in the previous question, which specific data visualization libra
## 2
## 3
## 4
## 5
## 6
##
## Q23
## 1 Approximately what percent of your time at work or school is spent actively coding?
## 2 0% of my time
## 3 1% to 25% of my time
## 4 75% to 99% of my time
## 5 50% to 74% of my time
## 6 75% to 99% of my time
##
## Q24
## 1 How long have you been writing code to analyze data?
## 2 I have never written code but I want to learn
## 3 I have never written code but I want to learn
## 4 5-10 years
## 5 5-10 years
## 6 5-10 years
##
## Q25
## 1 For how many years have you used machine learning methods (at work or in school)?
## 2 I have never studied machine learning but plan to learn in the future
## 3 I have never studied machine learning but plan to learn in the future
## 4 < 1 year
## 5 4-5 years
## 6 2-3 years
##
## Q26
## 1 Do you consider yourself to be a data scientist?
## 2 Maybe
## 3 Definitely not
## 4 Definitely yes
## 5 Probably yes
## 6 Maybe
##
## 1 Which of the following cloud computing products have you used at work or school in the last 5 years?
## 2
## 3
## 4
## 5
## 6
##
## 1 Which of the following cloud computing products have you used at work or school in the last 5 years?
## 2
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## 1 Which of the following cloud computing products have you used at work or school in the last 5 years?
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## 6
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## 1 Which of the following cloud computing products have you used at work or school in the last 5 years
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## 1 Which of the following cloud computing products have you used at work or school in the last 5 years
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## 1 Which of the following cloud computing products have you used at work or school in the last 5 years?
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## 1 Which of the following machine learning products have you used at work or school in the last 5 years?
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##
## 1 Which of the following machine learning products have you used at work or school in the last 5 years?
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## 1 Which of the following machine learning products have you used at work or school in the last 5 years?
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## 1 Which of the following machine learning products have you used at work or school in the last 5 years?
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## 1 Which of the following machine learning products have you used at work or school in the last 5 years?
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## 1 Which of the following machine learning products have you used at work or school in the last 5 years?
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## 1 Which of the following machine learning products have you used at work or school in the last 5 years?
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[illegible]


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## 1 Which of the following machine learning products have you used at work or school in the last 5 years?
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## 1 Which of the following machine learning products have you used at work or school in the last 5 years?
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## 1 Which of the following machine learning products have you used at work or school in the last 5 years?
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## 1 Which of the following machine learning products have you used at work or school in the last 5 years?
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## 1 Which of the following relational database products have you used at work or school in the last 5 y
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## 1 Which of the following relational database products have you used at work or school in the last 5 y
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## 1 Which of the following relational database products have you used at work or school in the last 5 y
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## 1 Which of the following relational database products have you used at work or school in the last 5 y

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## 1 Which of the following relational database products have you used at work or school in the last 5 y
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## 1 Which of the following relational database products have you used at work or school in the last 5 y
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## 1 Which of the following relational database products have you used at work or school in the last 5 y
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## 1 Which of the following relational database products have you used at work or school in the last 5 y
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## 1 Which of the following relational database products have you used at work or school in the last 5 y
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## 1 Which of the following relational database products have you used at work or school in the last 5 y
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## 1 Which of the following relational database products have you used at work or school in the last 5 y
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## 1 Which of the following relational database products have you used at work or school in the last 5 y
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## 1 Which of the following relational database products have you used at work or school in the last 5 y
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## 1 Which of the following relational database products have you used at work or school in the last 5 y
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##
## 1 Which of the following big data and analytics products have you used at work or school in the last
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##
## 1 Which of the following big data and analytics products have you used at work or school in the last
## 2

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##

1 Which of the following big data and analytics products have you used at work or school in the last

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##

1 Which of the following big data and analytics products have you used at work or school in the last

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##

1 Which of the following big data and analytics products have you used at work or school in the last

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##

1 Which of the following big data and analytics products have you used at work or school in the last

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##

1 Which of the following big data and analytics products have you used at work or school in the last

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##

1 Which of the following big data and analytics products have you used at work or school in the last

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##

1 Which of the following big data and analytics products have you used at work or school in the last

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##

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## 1 Which of the following big data and analytics products have you used at work or school in the last
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## 1 Which of the following big data and analytics products have you used at work or school in the last
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## 1 Which of the following big data and analytics products have you used at work or school in the last
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## 1 Which of the following big data and analytics products have you used at work or school in the last
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## 1 Which of the following big data and analytics products have you used at work or school in the last
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## 1 Which of the following big data and analytics products have you used at work or school in the last
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##

1 Which of the following big data and analytics products have you used at work or school in the last

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##

1 Which of the following big data and analytics products have you used at work or school in the last

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##

1 Which of the following big data and analytics products have you used at work or school in the last

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##

1 Which of the following big data and analytics products have you used at work or school in the last

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##

1 Which of the following big data and analytics products have you used at work or school in the last

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##

1 Which of the following big data and analytics products have you used at work or school in the last

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##

1 Which of the following big data and analytics products have you used at work or school in the last

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4

5

6

##

1 Which of the following big data and analytics products have you used at work or school in the last

2

3

```

## 4
## 5
## 6
##
## 1 Which of the following big data and analytics products have you used at work or school in the last
## 2
## 3
## 4
## 5
## 6
##
## 1 Which types of data do you currently interact with most often at work or school? (Select all that a
## 2
## 3
## 4
## 5
## 6
##
## 1 Which types of data do you currently interact with most often at work or school? (Select all that a
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## 6
##
## 1 Which types of data do you currently interact with most often at work or school? (Select all that a
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## 1 Which types of data do you currently interact with most often at work or school? (Select all that a
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## 1 Which types of data do you currently interact with most often at work or school? (Select all that a
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## 1 Which types of data do you currently interact with most often at work or school? (Select all that a
## 2
## 3
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## 5
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##
## 1 Which types of data do you currently interact with most often at work or school? (Select all that a

```

```

## 2
## 3
## 4
## 5
## 6
##
## 1 Which types of data do you currently interact with most often at work or school? (Select all that a
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## 3
## 4
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## 6
##
## 1 Which types of data do you currently interact with most often at work or school? (Select all that a
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## 3
## 4
## 5
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##
## 1 Which types of data do you currently interact with most often at work or school? (Select all that a
## 2
## 3
## 4
## 5
## 6
##
## 1 Which types of data do you currently interact with most often at work or school? (Select all that a
## 2
## 3
## 4
## 5
## 6
##
## 1 Which types of data do you currently interact with most often at work or school? (Select all that a
## 2
## 3
## 4
## 5
## 6
##
## 1 What is the type of data that you currently interact with most often at work or school? - Selected
## 2
## 3
## 4
## 5
## 6

```

Time Series
Numerical

```

##
## 1 What is the type of data that you currently interact with most often at work or school? - Other Data
## 2
## 3
## 4
## 5
## 6
##
## Q33_Part_1
## 1 Where do you find public datasets? (Select all that apply) - Selected Choice - Government websites
## 2
## 3
## 4 Government websites
## 5 Government websites
## 6
##
## 1 Where do you find public datasets? (Select all that apply) - Selected Choice - University research
## 2
## 3
## 4
## 5
## 6
##
## 1 Where do you find public datasets? (Select all that apply) - Selected Choice - Non-profit research
## 2
## 3
## 4
## 5
## 6
##
## 1 Where do you find public datasets? (Select all that apply) - Selected Choice - Dataset aggregator/
## 2
## 3
## 4 Dataset aggregator/
## 5 Dataset aggregator/
## 6
##
## 1 Where do you find public datasets? (Select all that apply) - Selected Choice - I collect my own data
## 2
## 3
## 4
## 5 I collect my own data
## 6
##
## 1 Where do you find public datasets? (Select all that apply) - Selected Choice - Publicly released data
## 2
## 3
## 4
## 5
## 6 Publicly released data
##
## Q33_Part_7
## 1 Where do you find public datasets? (Select all that apply) - Selected Choice - Google Search
## 2
## 3
## 4

```

```

## 5
## 6
##
## 1 Where do you find public datasets? (Select all that apply) - Selected Choice - Google Dataset Search Q33_Part_
## 2
## 3
## 4
## 5
## 6
##
## 1 Where do you find public datasets? (Select all that apply) - Selected Choice - GitHub Q33_Part_9
## 2
## 3
## 4
## 5
## 6
##
## 1 Where do you find public datasets? (Select all that apply) - Selected Choice - None/I do not work v
## 2
## 3
## 4
## 5
## 6
##
## 1 Where do you find public datasets? (Select all that apply) - Selected Choice - Other Q33_Part_11
## 2
## 3
## 4
## 5
## 6
##
## 1 Where do you find public datasets? (Select all that apply) - Other - Text Q33_OTHER_TEXT
## 2 -1
## 3 -1
## 4 -1
## 5 -1
## 6 -1
##
## 1 During a typical data science project at work or school, approximately what proportion of your time
## 2
## 3
## 4
## 5
## 6
##
## 1 During a typical data science project at work or school, approximately what proportion of your time
## 2
## 3
## 4
## 5
## 6
##
## 1 During a typical data science project at work or school, approximately what proportion of your time
## 2

```

```

## 3
## 4
## 5
## 6
##
## 1 During a typical data science project at work or school, approximately what proportion of your time
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## 3
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##
## 1 During a typical data science project at work or school, approximately what proportion of your time
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## 3
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## 5
## 6
##
## 1 During a typical data science project at work or school, approximately what proportion of your time
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## 3
## 4
## 5
## 6
##
## 1 During a typical data science project at work or school, approximately what proportion of your time
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## 3
## 4
## 5
## 6
##
## 1 What percentage of your current machine learning/data science training falls under each category?
## 2
## 3
## 4
## 5
## 6
##
## 1 What percentage of your current machine learning/data science training falls under each category?
## 2
## 3
## 4
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## 6
##
## 1 What percentage of your current machine learning/data science training falls under each category?
## 2
## 3
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## 5
## 6
##
##

```

```

## 1 What percentage of your current machine learning/data science training falls under each category?
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##
## 1 What percentage of your current machine learning/data science training falls under each category?
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##
## 1 What percentage of your current machine learning/data science training falls under each category?
## 2
## 3
## 4
## 5
## 6
##
## 1 What percentage of your current machine learning/data science training falls under each category?
## 2
## 3
## 4
## 5
## 6
##
## 1 On which online platforms have you begun or completed data science courses? (Select all that apply)
## 2
## 3
## 4
## 5
## 6
##
## 1 On which online platforms have you begun or completed data science courses? (Select all that apply)
## 2
## 3
## 4
## 5
## 6
##
## 1 On which online platforms have you begun or completed data science courses? (Select all that apply)
## 2
## 3
## 4
## 5
## 6
##
## 1 On which online platforms have you begun or completed data science courses? (Select all that apply)
## 2
## 3
## 4
## 5

```

```

## 6
##
## 1 On which online platforms have you begun or completed data science courses? (Select all that apply)
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## 6
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## 1 On which online platforms have you begun or completed data science courses? (Select all that apply)
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## 1 On which online platforms have you begun or completed data science courses? (Select all that apply)
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## 1 On which online platforms have you begun or completed data science courses? (Select all that apply)
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## 1 On which online platforms have you begun or completed data science courses? (Select all that apply)
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## 1 On which online platforms have you begun or completed data science courses? (Select all that apply)
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## 6
##
## 1 On which online platforms have you begun or completed data science courses? (Select all that apply)
## 2
## 3

```



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## 4
## 5
## 6
##
## 1 On which online platforms have you begun or completed data science courses? (Select all that apply)
## 2
## 3
## 4
## 5
## 6
##
## 1 On which online platforms have you begun or completed data science courses? (Select all that apply)
## 2
## 3
## 4
## 5
## 6
##
## 1 On which online platform have you spent the most amount of time? - Selected Choice
## 2
## 3
## 4 DataCamp
## 5 Coursera
## 6 Coursera
## Q37_OTHER_TEXT
## 1 On which online platform have you spent the most amount of time? - Other - Text
## 2 -1
## 3 -1
## 4 -1
## 5 -1
## 6 -1
##
## 1 Who/what are your favorite media sources that report on data science topics? (Select all that apply)
## 2
## 3
## 4
## 5
## 6
##
## 1 Who/what are your favorite media sources that report on data science topics? (Select all that apply)
## 2
## 3
## 4
## 5
## 6
##
## 1 Who/what are your favorite media sources that report on data science topics? (Select all that apply)
## 2
## 3
## 4
## 5
## 6
##
## 1 Who/what are your favorite media sources that report on data science topics? (Select all that apply)
```

```

## 2
## 3
## 4
## 5
## 6
##
## 1 Who/what are your favorite media sources that report on data science topics? (Select all that appl
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## 1 Who/what are your favorite media sources that report on data science topics? (Select all that appl
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## 1 Who/what are your favorite media sources that report on data science topics? (Select all that appl
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## 1 Who/what are your favorite media sources that report on data science topics? (Select all that appl
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## 6
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## 1 Who/what are your favorite media sources that report on data science topics? (Select all that appl
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## 3
## 4
## 5
## 6

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##
## 1 Who/what are your favorite media sources that report on data science topics? (Select all that apply)
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## 5
## 6
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## 1 Who/what are your favorite media sources that report on data science topics? (Select all that apply)
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## 1 Who/what are your favorite media sources that report on data science topics? (Select all that apply)
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## 5
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## 1 Who/what are your favorite media sources that report on data science topics? (Select all that apply)
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##
## 1 Who/what are your favorite media sources that report on data science topics? (Select all that apply)
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## 4
## 5
## 6
##
## 1 Who/what are your favorite media sources that report on data science topics? (Select all that apply)
## 2
## 3
## 4
## 5
## 6
##
## 1 Who/what are your favorite media sources that report on data science topics? (Select all that apply)
## 2
## 3
## 4

```

```

## 5
## 6
##
## 1 Who/what are your favorite media sources that report on data science topics? (Select all that apply)
## 2
## 3
## 4
## 5
## 6
##
## 1 Who/what are your favorite media sources that report on data science topics? (Select all that apply)
## 2
## 3
## 4
## 5
## 6
##
## 1 Who/what are your favorite media sources that report on data science topics? (Select all that apply)
## 2
## 3
## 4
## 5
## 6
##
## 1 Who/what are your favorite media sources that report on data science topics? (Select all that apply)
## 2
## 3
## 4
## 5
## 6
##
## 1 How do you perceive the quality of online learning platforms and in-person bootcamps as compared to
## 2
## 3
## 4
## 5
## 6
##
## 1 How do you perceive the quality of online learning platforms and in-person bootcamps as compared to
## 2
## 3
## 4
## 5
## 6
##
## 1 Which better demonstrates expertise in data science: academic achievements or independent projects?
## 2 Independent projects are equally important as academic achievements
## 3 Independent projects are equally important as academic achievements
## 4 Independent projects are equally important as academic achievements
## 5 Independent projects are much more important than academic achievements
## 6 Independent projects are slightly more important than academic achievements
## Q41_Part_1
## 1 How do you perceive the importance of the following topics? - Fairness and bias in ML algorithms:
## 2

```

```
## 3
## 4
## 5
## 6
##
## 1 How do you perceive the importance of the following topics? - Being able to explain ML model outputs
## 2
## 3
## 4
## 5
## 6
##
## Q41_Part_3
## 1 How do you perceive the importance of the following topics? - Reproducibility in data science
## 2
## 3
## 4
## 5
## 6
##
## 1 What metrics do you or your organization use to determine whether or not your models were successful?
## 2
## 3
## 4
## 5
## 6
##
## 1 What metrics do you or your organization use to determine whether or not your models were successful?
## 2
## 3
## 4
## 5
## 6
##
## 1 What metrics do you or your organization use to determine whether or not your models were successful?
## 2
## 3
## 4
## 5
## 6
##
## 1 What metrics do you or your organization use to determine whether or not your models were successful?
## 2
## 3
## 4
## 5
## 6
##
```

```

## 1 What metrics do you or your organization use to determine whether or not your models were successful?
## 2
## 3
## 4
## 5
## 6
##
## 1 Approximately what percent of your data projects involved exploring unfair bias in the dataset and/or model?
## 2
## 3
## 4
## 5
## 6
##
## 1 What do you find most difficult about ensuring that your algorithms are fair and unbiased? (Select all that apply)
## 2
## 3
## 4
## 5
## 6
##
## 1 What do you find most difficult about ensuring that your algorithms are fair and unbiased? (Select all that apply)
## 2
## 3
## 4
## 5
## 6
##
## 1 What do you find most difficult about ensuring that your algorithms are fair and unbiased? (Select all that apply)
## 2
## 3
## 4
## 5
## 6
##
## 1 What do you find most difficult about ensuring that your algorithms are fair and unbiased? (Select all that apply)
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## 1 What do you find most difficult about ensuring that your algorithms are fair and unbiased? (Select all that apply)
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## 1 What do you find most difficult about ensuring that your algorithms are fair and unbiased? (Select all that apply)
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## 1 In what circumstances would you explore model insights and interpret your model's predictions? (Se
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## 1 In what circumstances would you explore model insights and interpret your model's predictions? (Se
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## 1 In what circumstances would you explore model insights and interpret your model's predictions? (Se
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## 1 Approximately what percent of your data projects involve exploring model insights?
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## 5 20-30
## 6 20-30
##
## 1 What methods do you prefer for explaining and/or interpreting decisions that are made by ML models?
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[illegible]


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## 1 What methods do you prefer for explaining and/or interpreting decisions that are made by ML models?
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## 1 What methods do you prefer for explaining and/or interpreting decisions that are made by ML models?
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## 1 What methods do you prefer for explaining and/or interpreting decisions that are made by ML models?
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## 1 What methods do you prefer for explaining and/or interpreting decisions that are made by ML models?
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## 1 What methods do you prefer for explaining and/or interpreting decisions that are made by ML models?
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```
## 1 Do you consider ML models to be "black boxes" with outputs that are difficult or impossible to explain?
## 2
## 3
## 4 I am confident that I can explain the outputs of most if not all ML models.
## 5 Yes, most ML models are "black boxes" and their outputs are difficult to explain.
## 6 I am confident that I can understand and explain the outputs of many but not all ML models.
##
## 1 What tools and methods do you use to make your work easy to reproduce? (Select all that apply) - Select all that apply
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## 1 What tools and methods do you use to make your work easy to reproduce? (Select all that apply) - Select all that apply
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## 1 What tools and methods do you use to make your work easy to reproduce? (Select all that apply) - Select all that apply
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## 1 What tools and methods do you use to make your work easy to reproduce? (Select all that apply) - S
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## 1 What barriers prevent you from making your work even easier to reuse and reproduce? (Select all tha
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## 1 What barriers prevent you from making your work even easier to reuse and reproduce? (Select all tha
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1 What barriers prevent you from making your work even easier to reuse and reproduce? (Select all that apply)
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1 What barriers prevent you from making your work even easier to reuse and reproduce? (Select all that apply)
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1 What barriers prevent you from making your work even easier to reuse and reproduce? (Select all that apply)
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```
#Display column names  
names(srv_18)
```

```
## [1] "Time.from.Start.to.Finish..seconds."  
## [2] "Q1"  
## [3] "Q1_OTHER_TEXT"  
## [4] "Q2"  
## [5] "Q3"  
## [6] "Q4"  
## [7] "Q5"  
## [8] "Q6"  
## [9] "Q6_OTHER_TEXT"  
## [10] "Q7"  
## [11] "Q7_OTHER_TEXT"  
## [12] "Q8"  
## [13] "Q9"  
## [14] "Q10"  
## [15] "Q11_Part_1"  
## [16] "Q11_Part_2"  
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## [20] "Q11_Part_6"  
## [21] "Q11_Part_7"  
## [22] "Q11_OTHER_TEXT"  
## [23] "Q12_MULTIPLE_CHOICE"  
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## [28] "Q12_Part_5_TEXT"  
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## [395] "Q50_OTHER_TEXT"
```

```
#Count many records
count(srv_18)
```

```
## # A tibble: 1 x 1
##       n
##   <int>
## 1 23860
```

In conclusion we want to classify the data by revenue and study the lowest part of the revenue to understand their level of implication in data science and machine learning. We will further use some machine learning algorithm to get more insight from the survey.