

MIDTERM EXAM

Fall 2022

Data Analytics for Management

Professor Iegor Vyshnevskyi

School ID:

Name/Section:

*Although this is a take-home exam, students must work individually when solving problems on the exam. Your submitted Report must be individual, original, and free of unearned advantages. Zero tolerance for cheating will be applied. Answer all questions. **The deadline for submission is 6 pm Monday (October 24).** Please upload your report together with other working files via the System by the deadline. **Enjoy! (Total points: 100)***

Here are suggested strategies for the exam:

- *I am not looking for very long discursive statements. Short but accurate and logical ones will do just fine. A simply more test will not do better. However, tables or graphs without explanation will be viewed as incomplete.*
- *Exam hours are very bad hours to waste time expressing your own personal prejudices. Thus, think carefully about whether your arguments are backed by data and related illustrations.*
- *Please make sure that you plan your Report well, align graphs and text appropriately, and use the space given efficiently.*

Some Technical Instructions.

1. *Your report cannot be more than 5 pages.*
2. *The assignment is on below page 2.*
3. *There is a place below, page 3, to put your work in.*
4. *Think carefully on the most appropriate visualization (i.e., graph types).*
5. *The data is in the file “MIDTERM EXAM_data”.*

Assignment

1. CLEANING DATA

- Remove rows with missing or zero values in ‘workers’ column
- Remove columns which have no use (for example, profile and url columns)
- Adjust the column “revenue” in order to be able to make proper calculations during the next stage

2. DATA ANALYSIS AND VISUALIZATION

- Determine average revenue in each of the industries.
- Which industries saw the largest amount of companies to be established?
- Which industries saw the largest average growth rate?
- Which states saw the largest amount of companies to be established?
- Which states saw the largest revenue?
- Which states saw the largest average growth rate?
- Determine top 10 cities with the largest average growth rate in the state, which has the largest average growth rate.
- Determine top 10 industries, which have the largest increase in staff (new workers)
- Determine top 10 companies with the biggest rate of decrease in staff number. What industries these companies belong to?
- Determine top 10 companies with the biggest growth rate, which were able to reduce the staff. What industries these companies belong to?
- Determine top 10 companies with the highest revenue for each industry. What industries these companies belong to?

3. CONCLUSION

- Basing on the analysis you’ve made, what could be your suggestion for launching new business:
 - What location you would suggest?
 - What sector you would suggest?
 - What approximate amount of new employees would you suggest to hire?

Data here: <https://www.kaggle.com/datasets/mysarahmadbhat/inc-5000-companies>

The Analytical Report

