# IT 3703 Data Analytics – Google Data Studio Lab 3: Analysis and Reporting

Prepared by Jack G. Zheng, Summer 2022

This lab is to help students practice data calculation and analysis with Google Data Studio using pivot table and calculated fields.

**Tasks**

1. Descriptive analysis: pivot table and aggregation

First, understand how Google Data Studio groups and summarizes your data <https://support.google.com/datastudio/answer/9320174>

Then, based on your readings on pivot table (readings in the study guide), practice some pivot table queries using the great outdoors sample data. Check pivot table reference in GDS here: <https://support.google.com/datastudio/answer/7516660>

Last, examine the data provided in the attached Excel file. It’s some data about remodeling project cost and values (see <http://www.remodeling.hw.net/cost-vs-value/2019>). Import this data to your Data Studio, and create pivot tables to answer the following questions (preferably one pivot table for each question):

1. What is the total cost by states?
2. What is the total cost by states and years (each state in each year)?
3. What is the average resale value of upscale projects in each state?

Take screenshots or other proof that your pivot tables can provide direct and concise answers to the questions above. Include this part in the lab report.

For additional resources, check:

* <https://www.optimizesmart.com/understanding-aggregation-in-google-data-studio/>
* <https://www.optimizesmart.com/super-duper-guide-google-analytics-pivot-tables/>
* More about dimensions and metrics in GDS: <https://www.optimizesmart.com/dimensions-and-metrics-in-google-data-studio/#more-58486>

2. Calculated fields

Review calculated fields from lab 2 first.

Read this article: use calculated fields for math <https://www.optimizesmart.com/doing-basic-maths-on-numeric-fields-via-calculated-fields/#more-58634>

Continue from the pivot table task, please answer the following question:

1. What is the total real cost (defined as “cost - resale value”) for all project types?
2. What is the average real cost (defined as “cost - resale value”) for all project types in each region?

Include this part in the lab report.

3. Data blending

Follow this video tutorial to create similar reports <https://www.youtube.com/watch?v=fIeJFyjS_D8>

The data can be obtained here <https://docs.google.com/spreadsheets/d/1F5A2Oaajv1KhLRcE5aGt9c9bDMsuvIU9nlyP78-UTHI/edit>).

4. Query the BigQuery (optional)

Follow the two article below to learn about query data from BigQuery

* <https://www.sqlshack.com/build-a-google-bigquery-report-with-google-data-studio/>
* <https://cloud.google.com/blog/topics/developers-practitioners/bigquery-explained-querying-your-data>

**Submission**

Submit the following two items to D2L (do not ZIP them together):

1. A lab report in PDF format. This report should include required parts with screenshots, labels, and descriptions. All screens must be clear, original, and show the complete screen.
2. Download the reports and submit them as well.

**Grading**

The lab is assessed based on:

* Completion of required tasks.
* Satisfaction of submission requirements.
* The quality of lab report, including completeness and explanation of screenshots and the work you have done.

**Rubric:**

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| **Score** | **Summary** | **Rating Description** |
| 10 | Outstanding work; beyond expectation. | Correctly completed all tasks.  Satisfied all submission requirements.  Excellent report with clear original screenshots and explanation. |
| 8-9 | Good work; meet expectations. | Correctly completed all tasks.  Satisfied most submission requirements.  Good report with clear original screenshots; explanation may need improvement. |
| 6-7 | Adequate work; need improvement. | Mostly completed all tasks.  Satisfied most submission requirements.  Too simple report without labels or explanations. Missing key required screenshots, or unclear/unqualified screenshots. |
| <6 | Lack of effort. | Missing some parts and tasks.  Did not follow submission requirements.  Poor report with unclear, partial or edited screenshots. No explanations at all. |