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HR ANALYTICS: A PROJECT REPORT

**Submitted by…**

**Shreyash Gaur (201500674)**

**Devesh Srivastav (201500217)**

**Shivanshu Agrawal (201500666)**

**Siddhant Yadav (201500689)**

**Prakhar Verma (201500495)**

***in partial fulfillment for the award of the degree of***

**BACHELOR OF ENGINEERING**

IN

Computer Engineering and Application

**GLA University, Mathura**

**BONAFEDE CERTIFICATE**

Certified that this project report “**HR ANALYTICS: A PROJECT REPORT**” is the Bonafede work of “**Devesh Srivastav, Shreyash Gaur, Shivanshu Agrawal, Siddhant Yadav & Prakhar Verma**” who carried out the project work under my supervision.

**SIGNATURE** **SIGNATURE**

Mr. Rohit Agarwal Mr Abhishek Tiwari

**HEAD OF THE DEPARTMENT**  **SUPERVISOR**

Computer Science Engineering (CSE) Technical Trainer (Computer Science)

Submitted for the project, viva-voce examination held in the month of November 2022

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Shreyash Gaur (201500674)

Devesh Srivastav (201500217)

Shivanshu Agrawal (201500666)

Siddhant Yadav (201500689)

Prakhar Verma (201500495)

## **ABSTRACT**

Company is facing a problem in identifying the right people for promotion (only for manager position and below) and prepare them in time. Currently they are following a long and tiresome process using conventional methods.

The final promotions are only announced after the evaluation and this leads to delay in transition to their new roles. Hence, company needs our help in identifying the eligible candidates at a particular checkpoint so that they can expedite the entire promotion cycle.

Company have provided multiple attributes around Employee's past and current performance along with demographics. Now the task is to predict whether a potential employee at checkpoint in the test set will be promoted or not after the evaluation process.

**CONTENT**

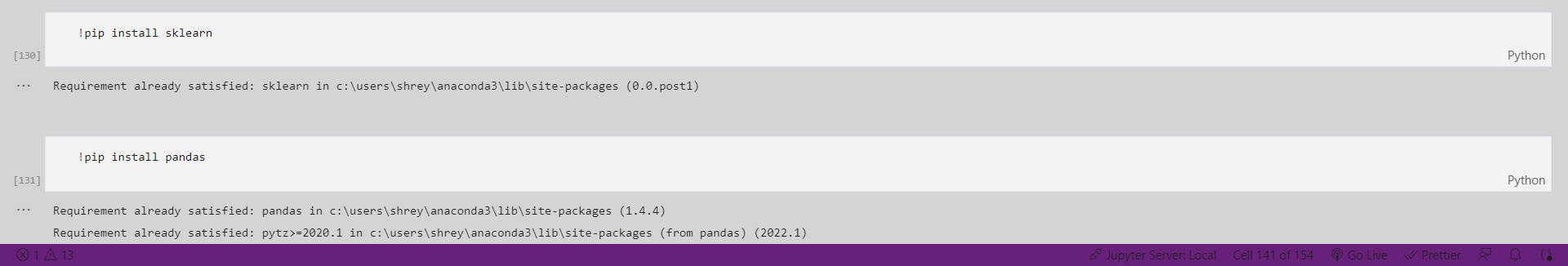
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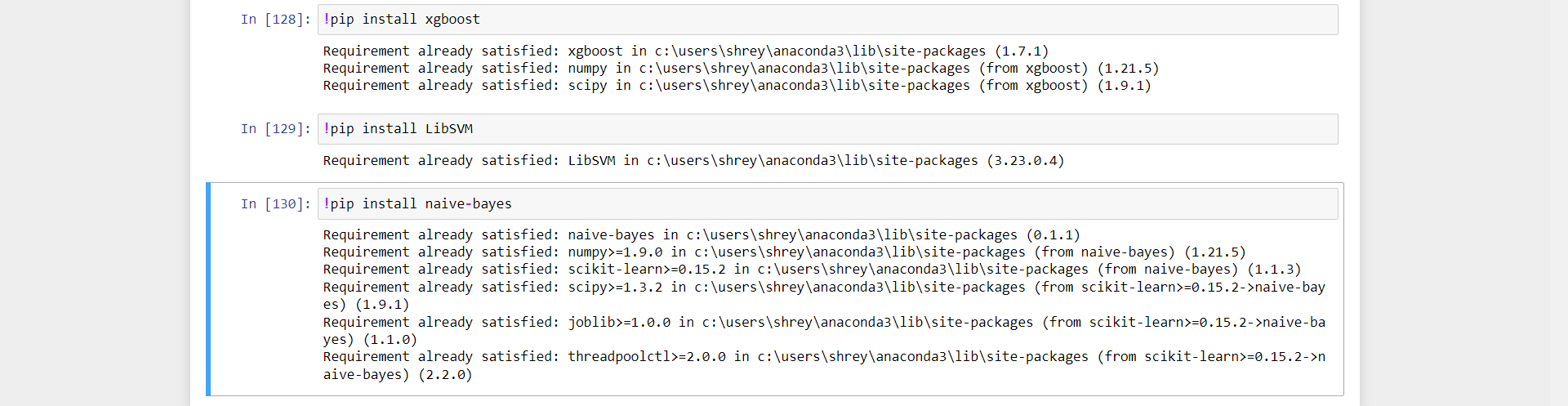
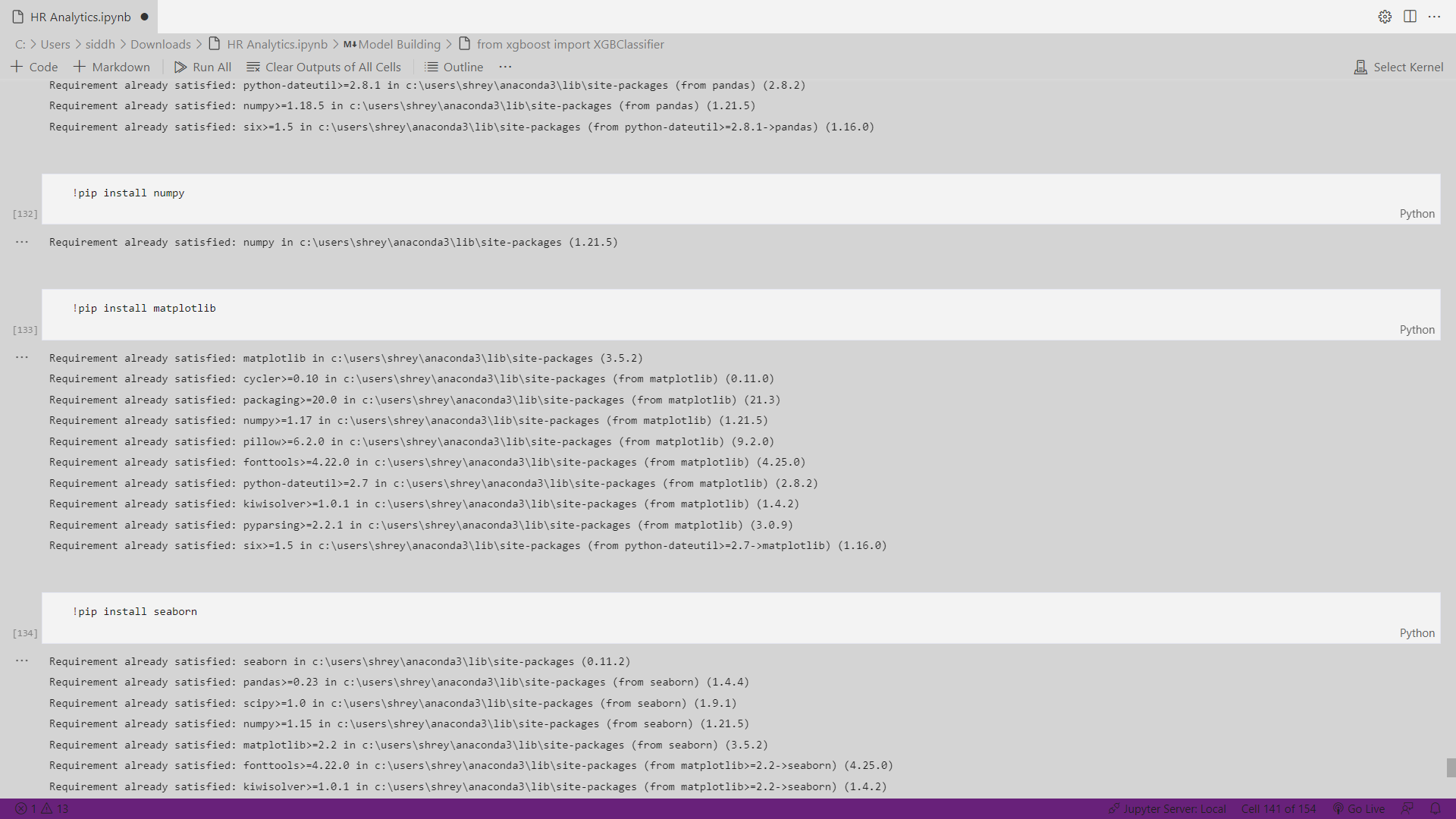
# **INTRODUCTION**

The HR analytics is revolutionizing the way human resources departments operate, leading to higher efficiency and better results overall. Human resources have been using analytics for years. However, the collection, processing and analysis of data has been largely manual, and given the nature of human resources dynamics and HR KPIs, the approach has been constraining HR. Therefore, it is surprising that HR departments woke up to the utility of machine learning so late in the game.

Here is an opportunity to try predictive analytics in identifying the employees most likely to get promoted.

**Library Installation**



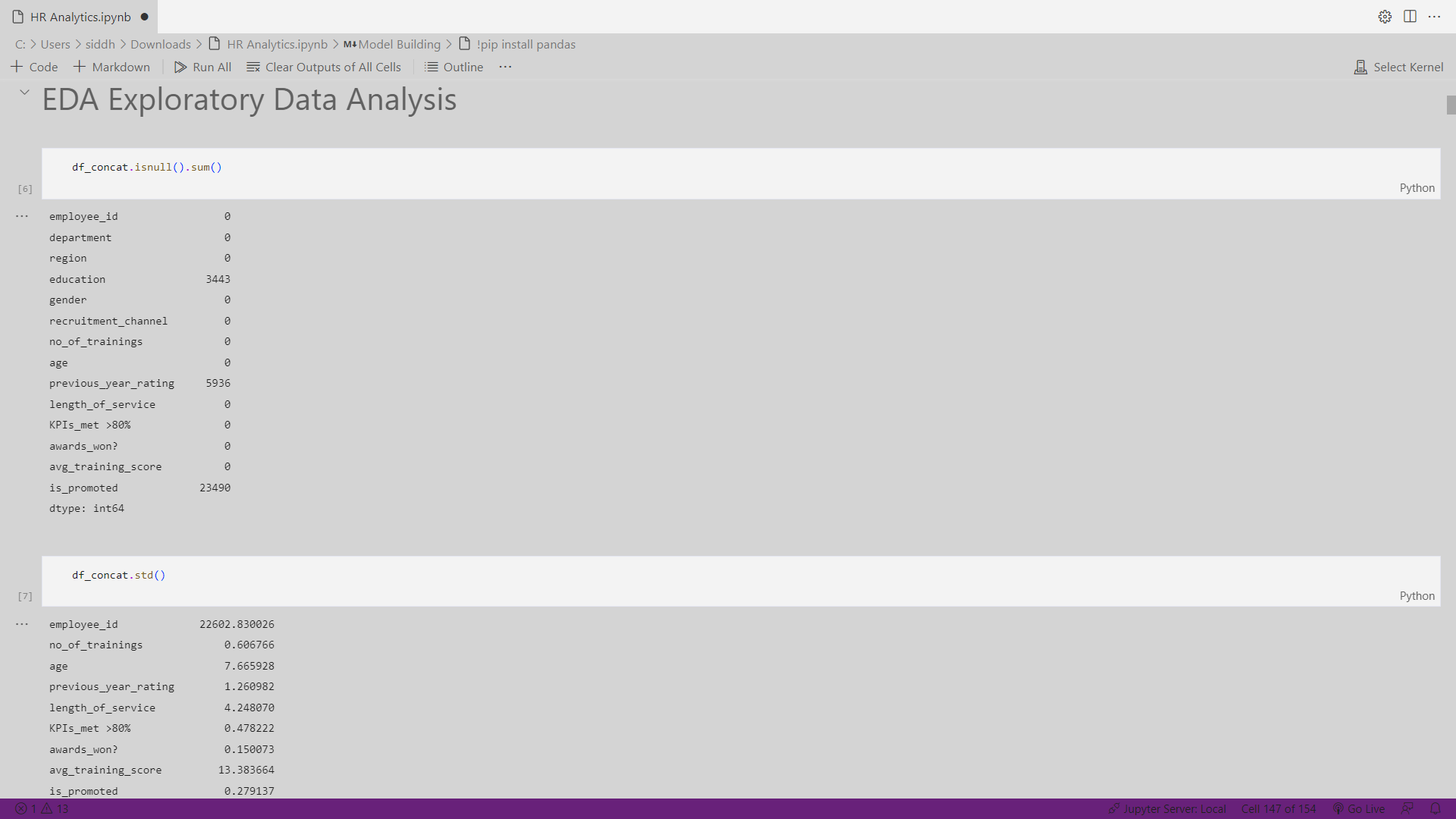


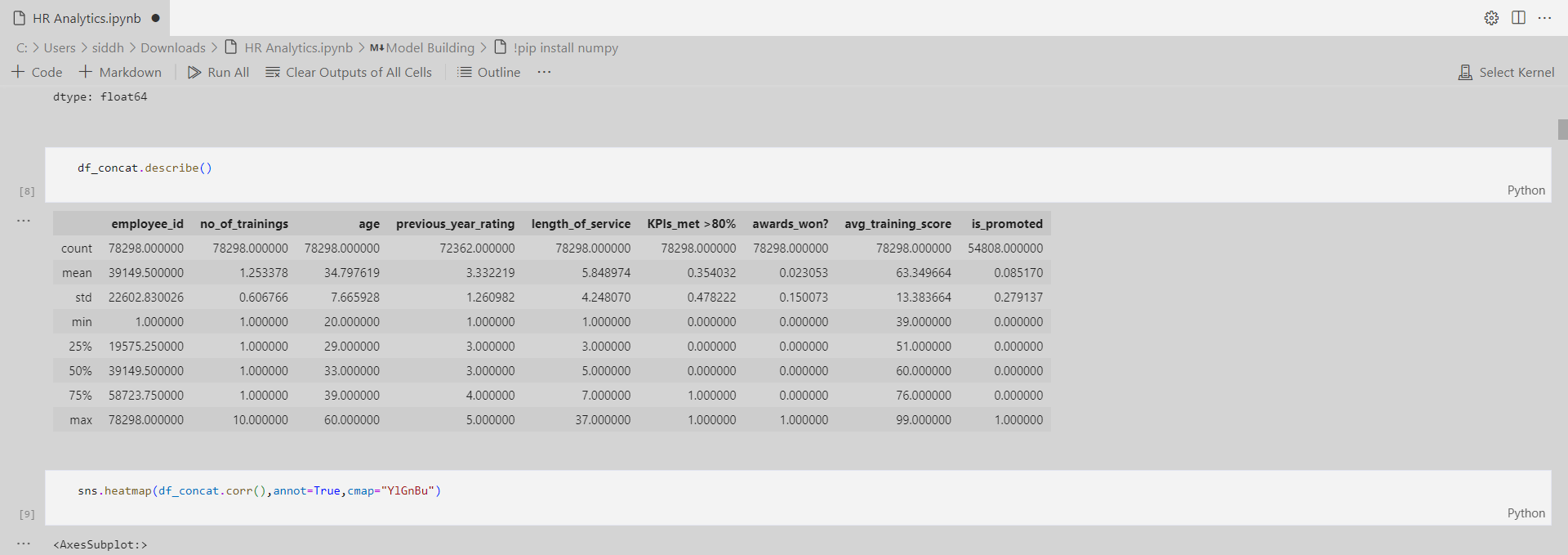
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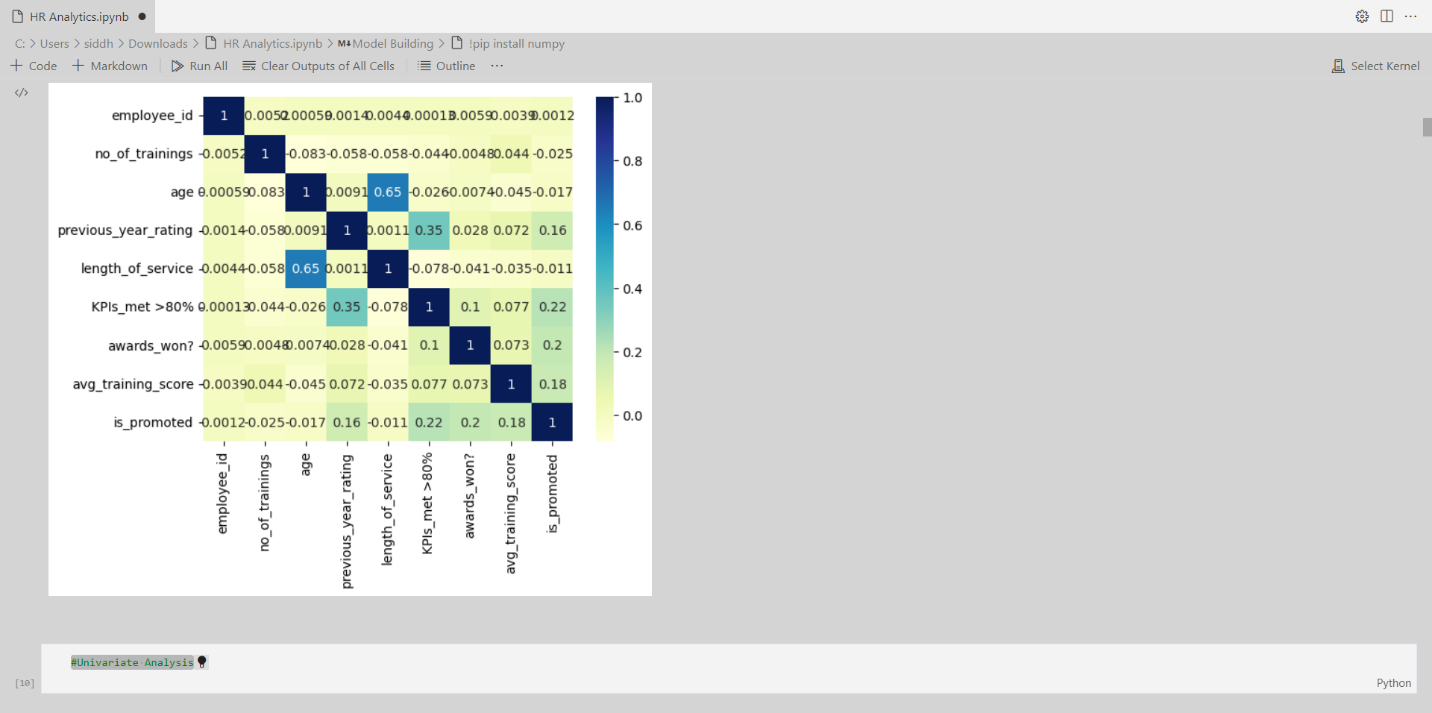


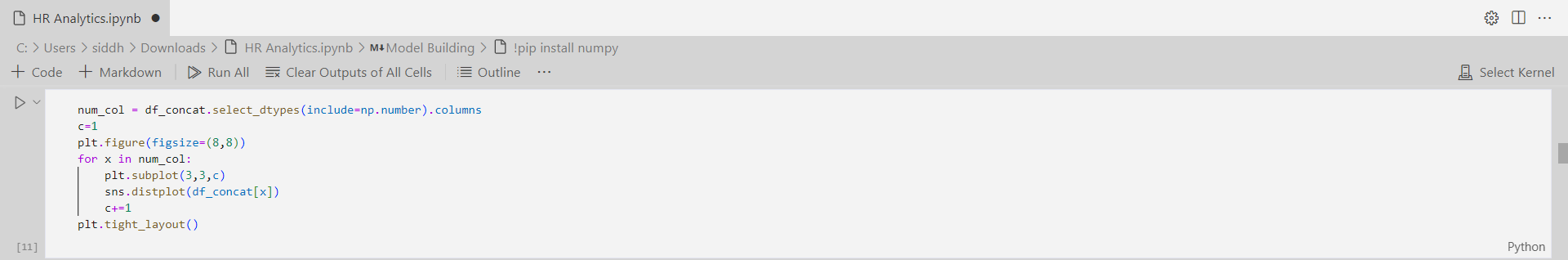
**EDA (Exploratory Data Analysis)**

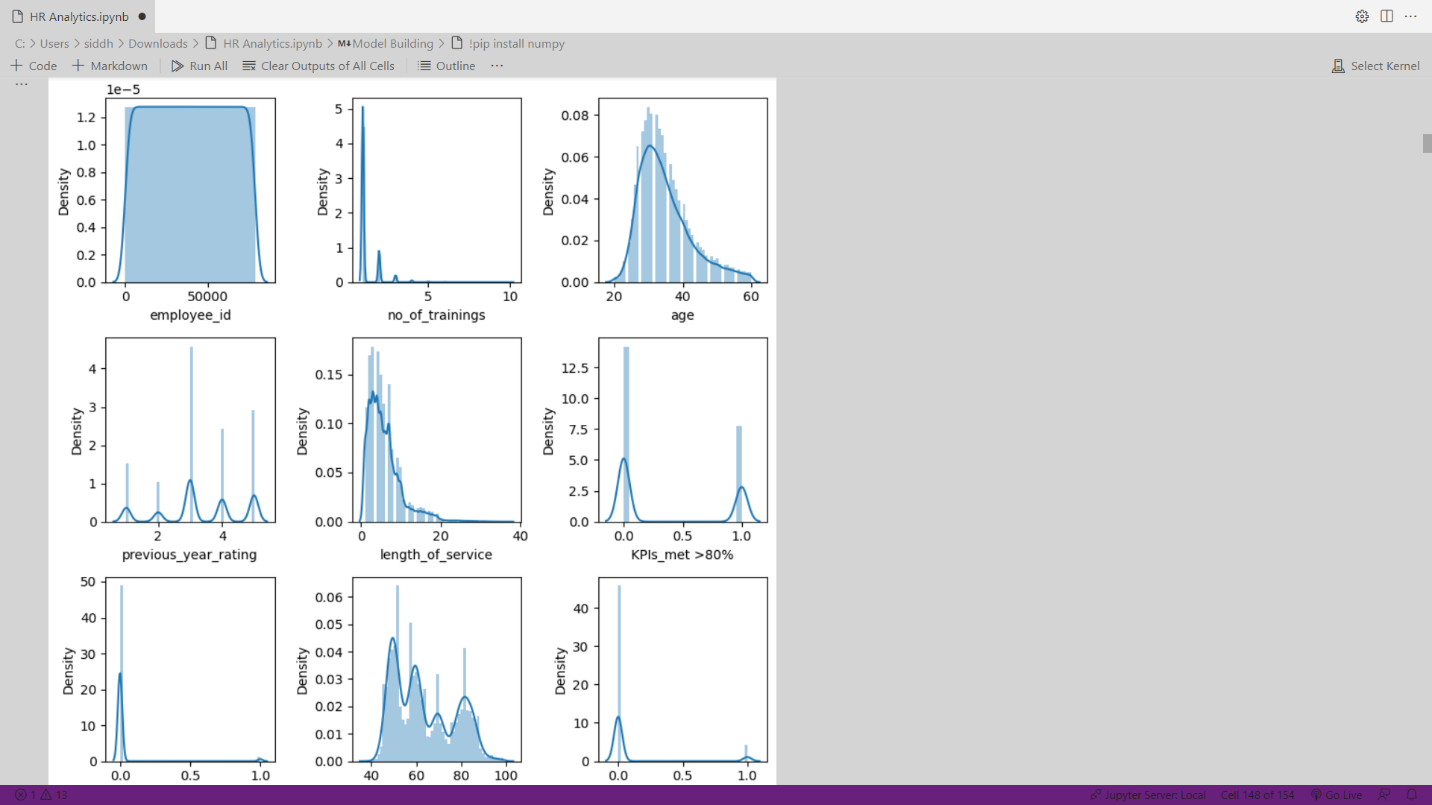
**Exploratory Data Analysis (EDA) is an approach to analyse the data, to summarize its characteristics, often with visual methods. Every machine learning problem solving starts with EDA.**



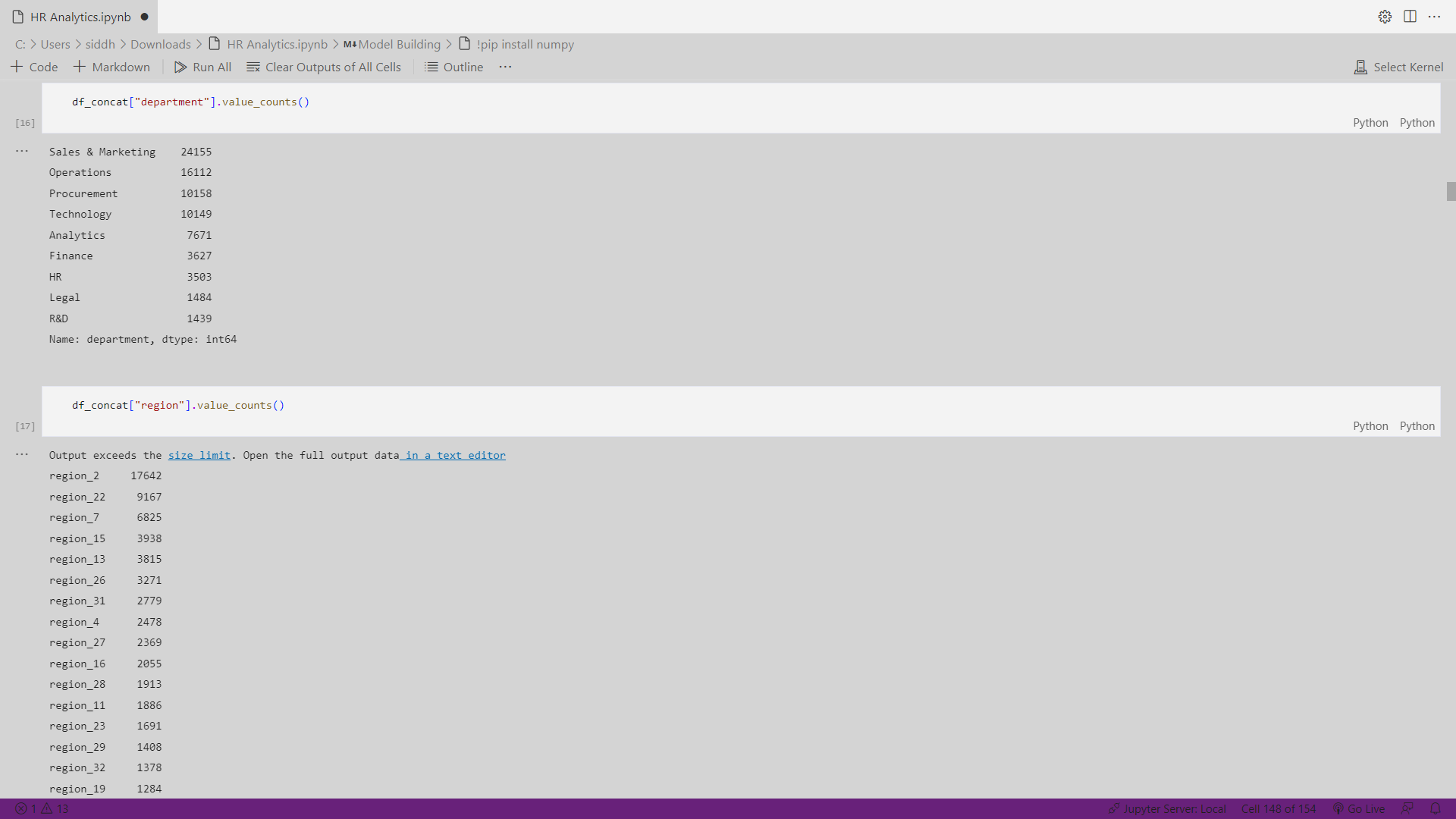








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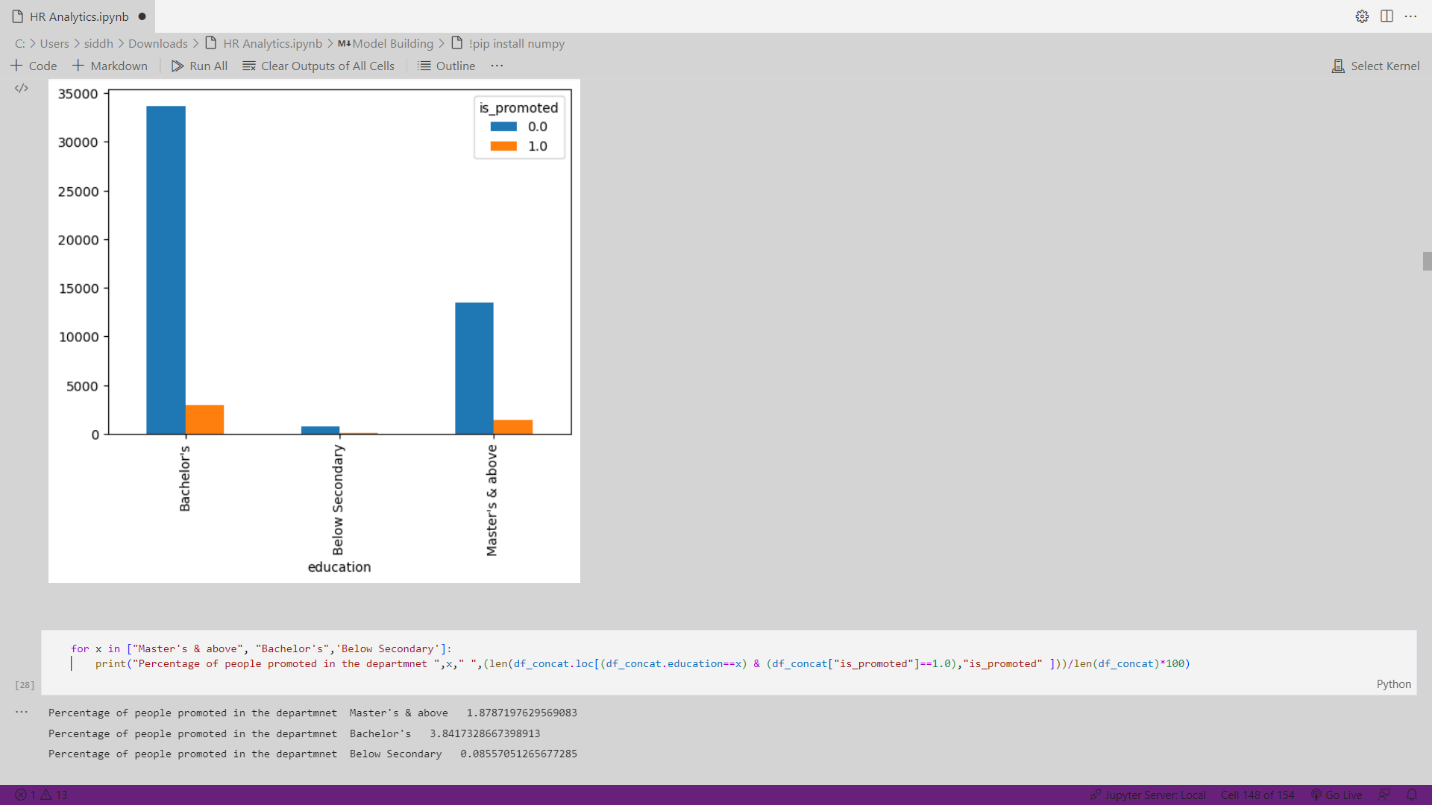


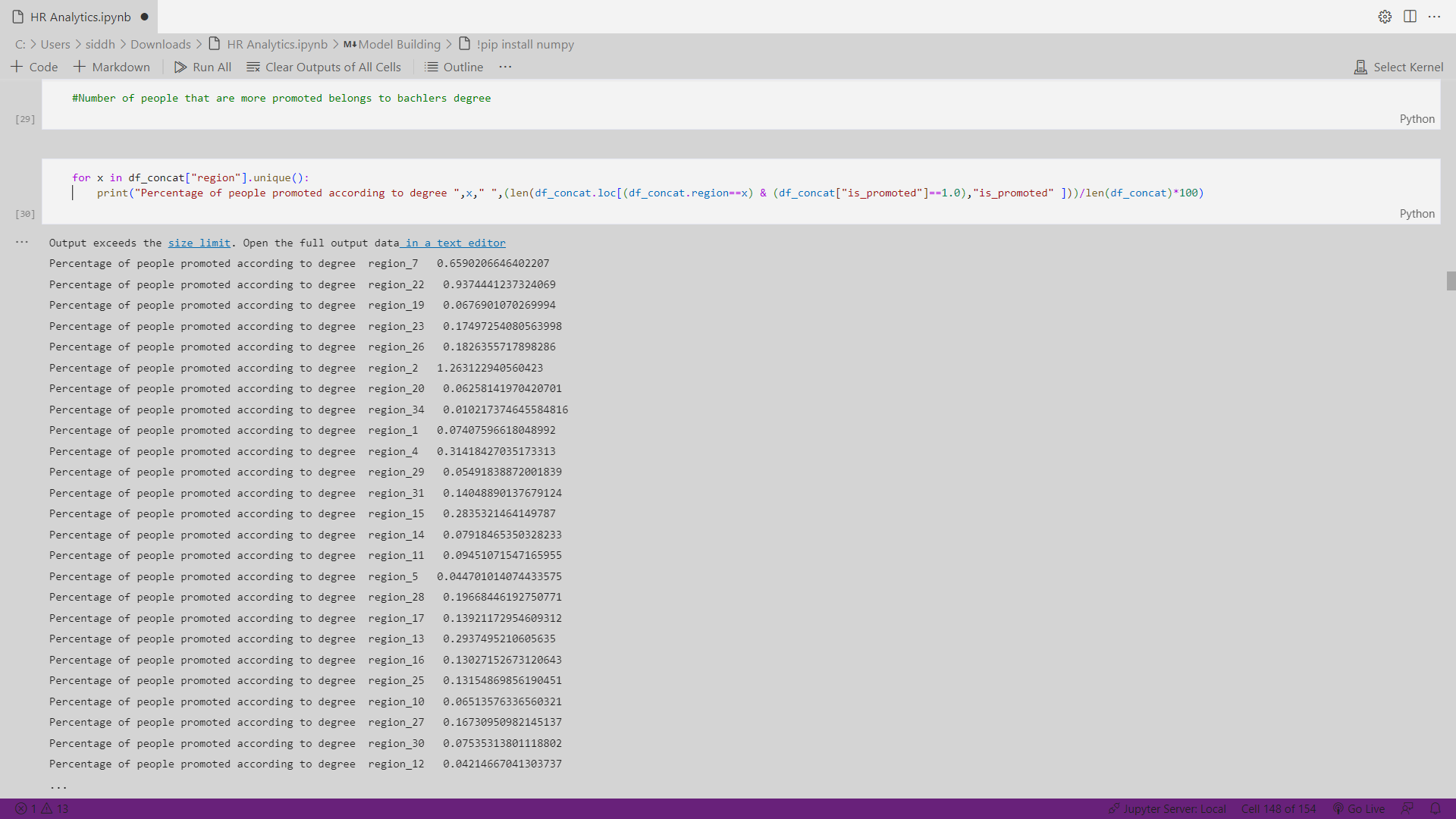
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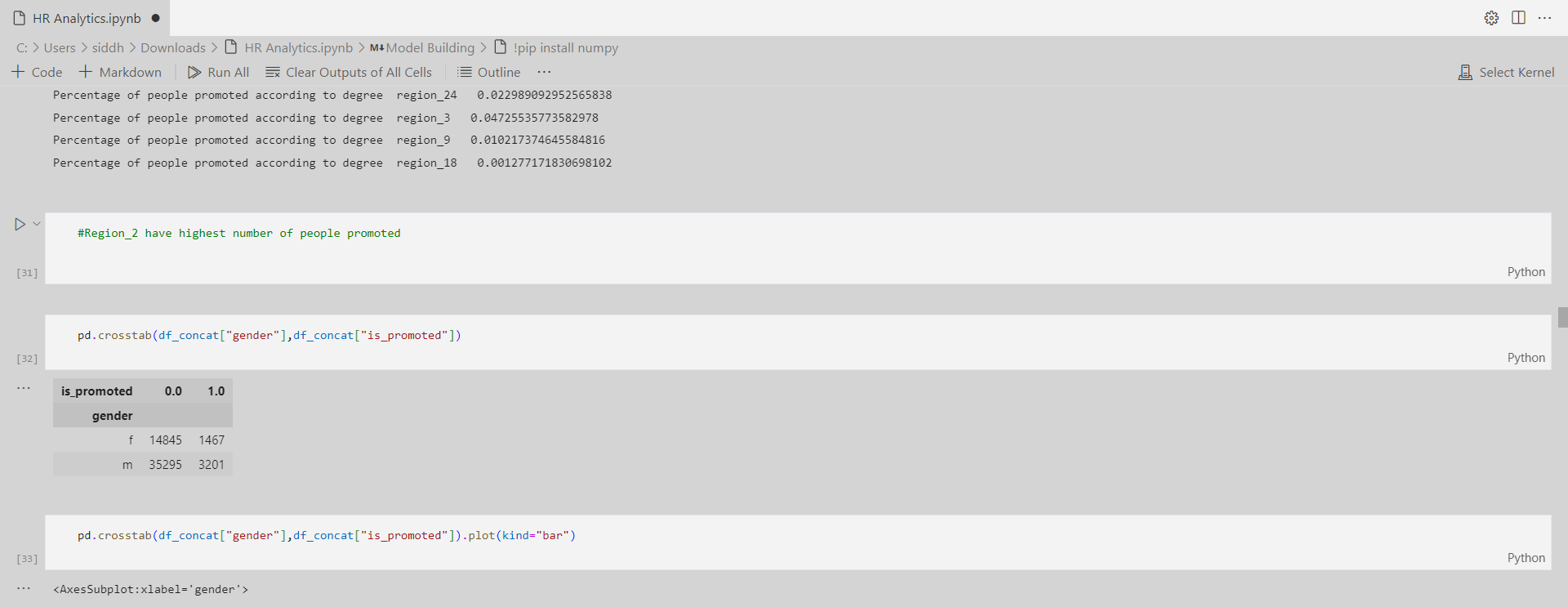
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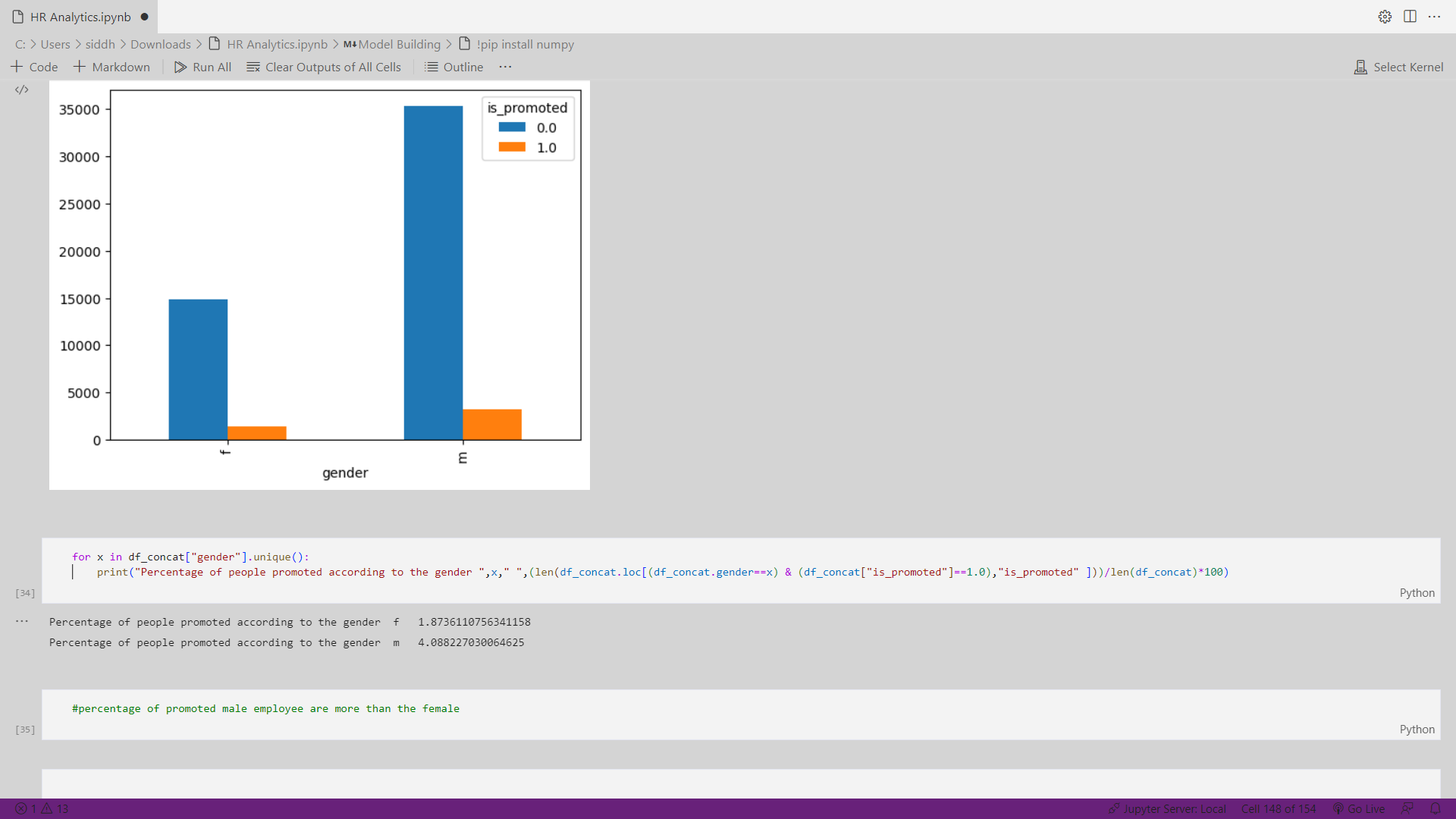
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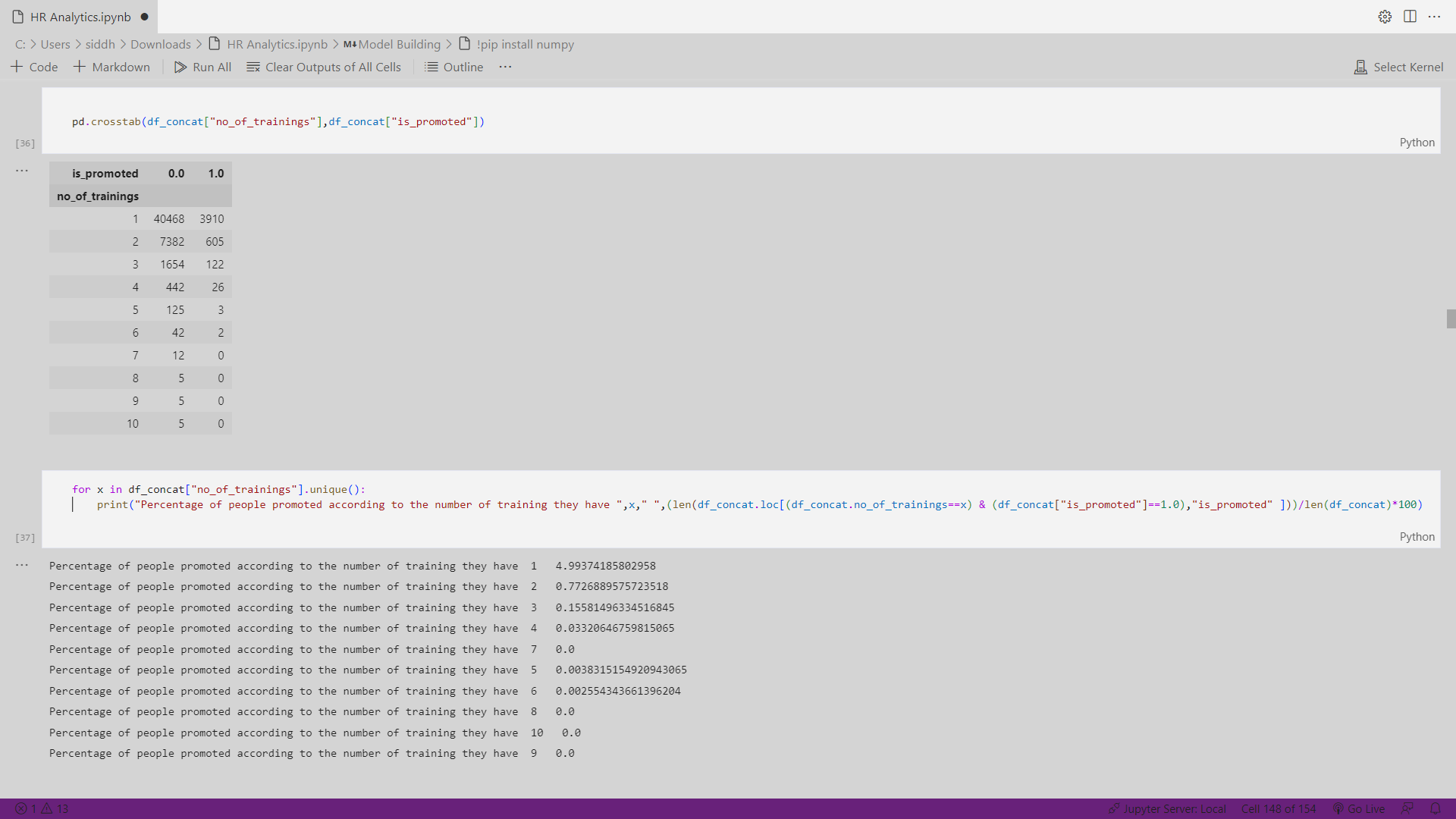
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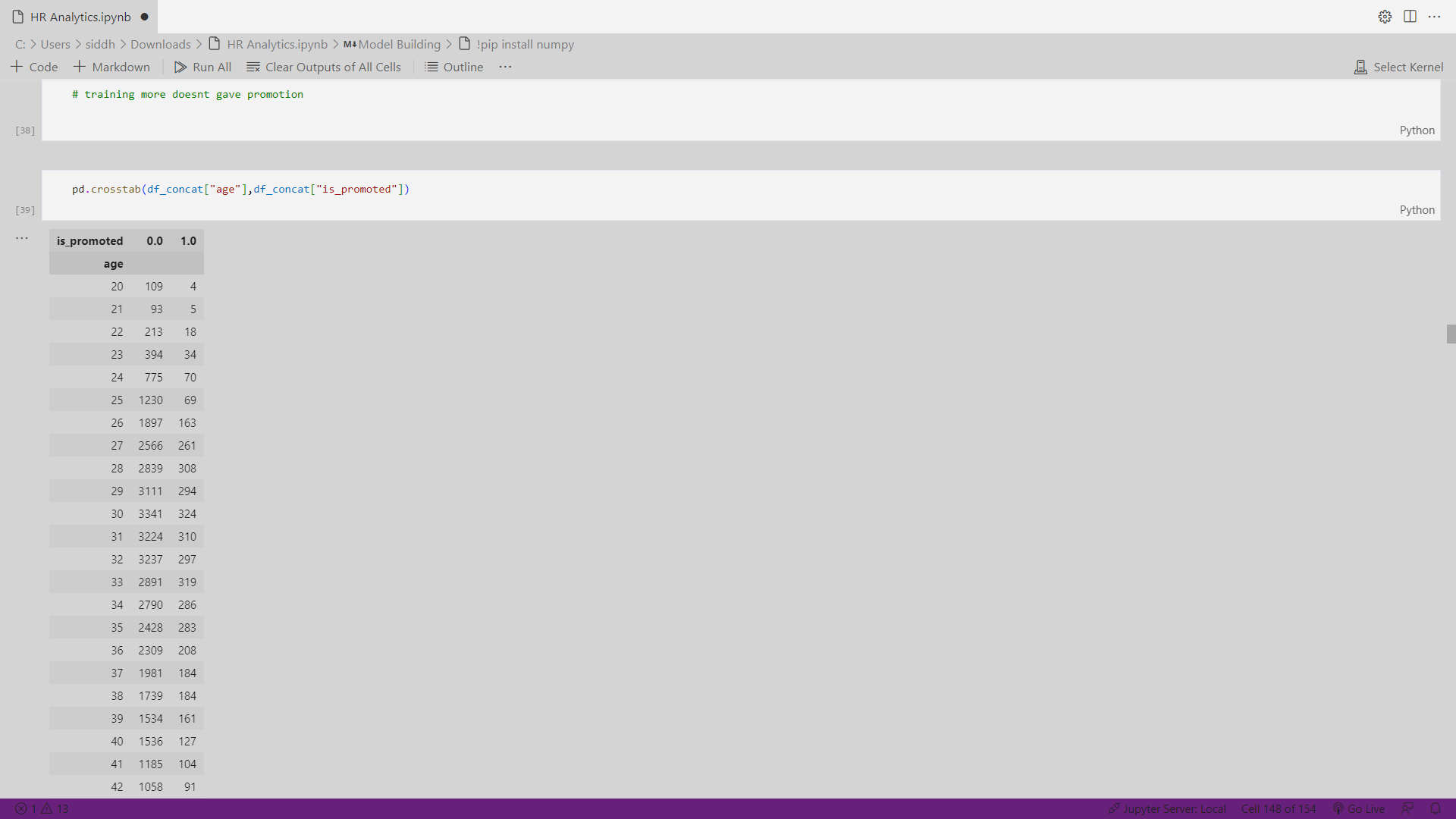


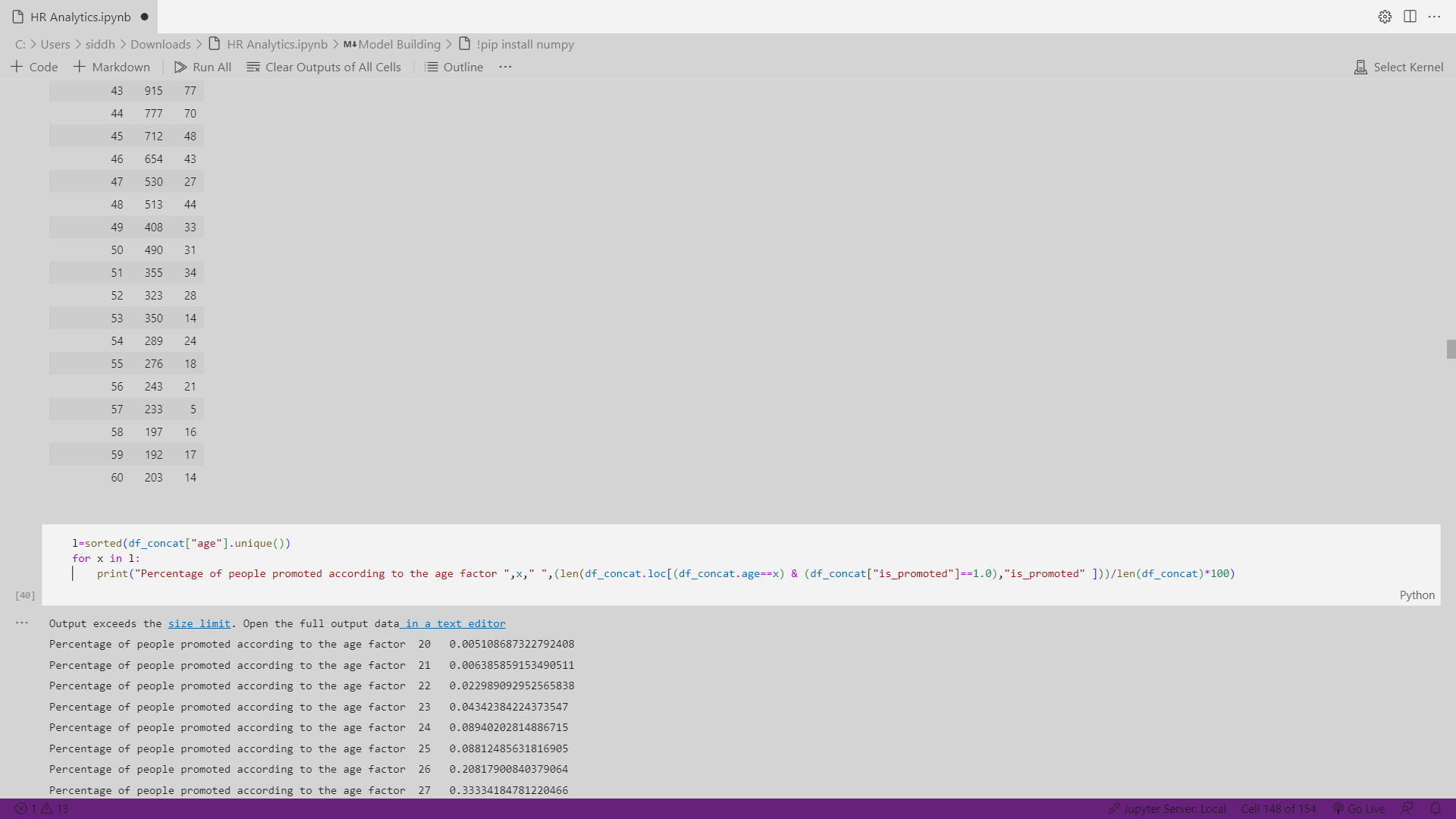


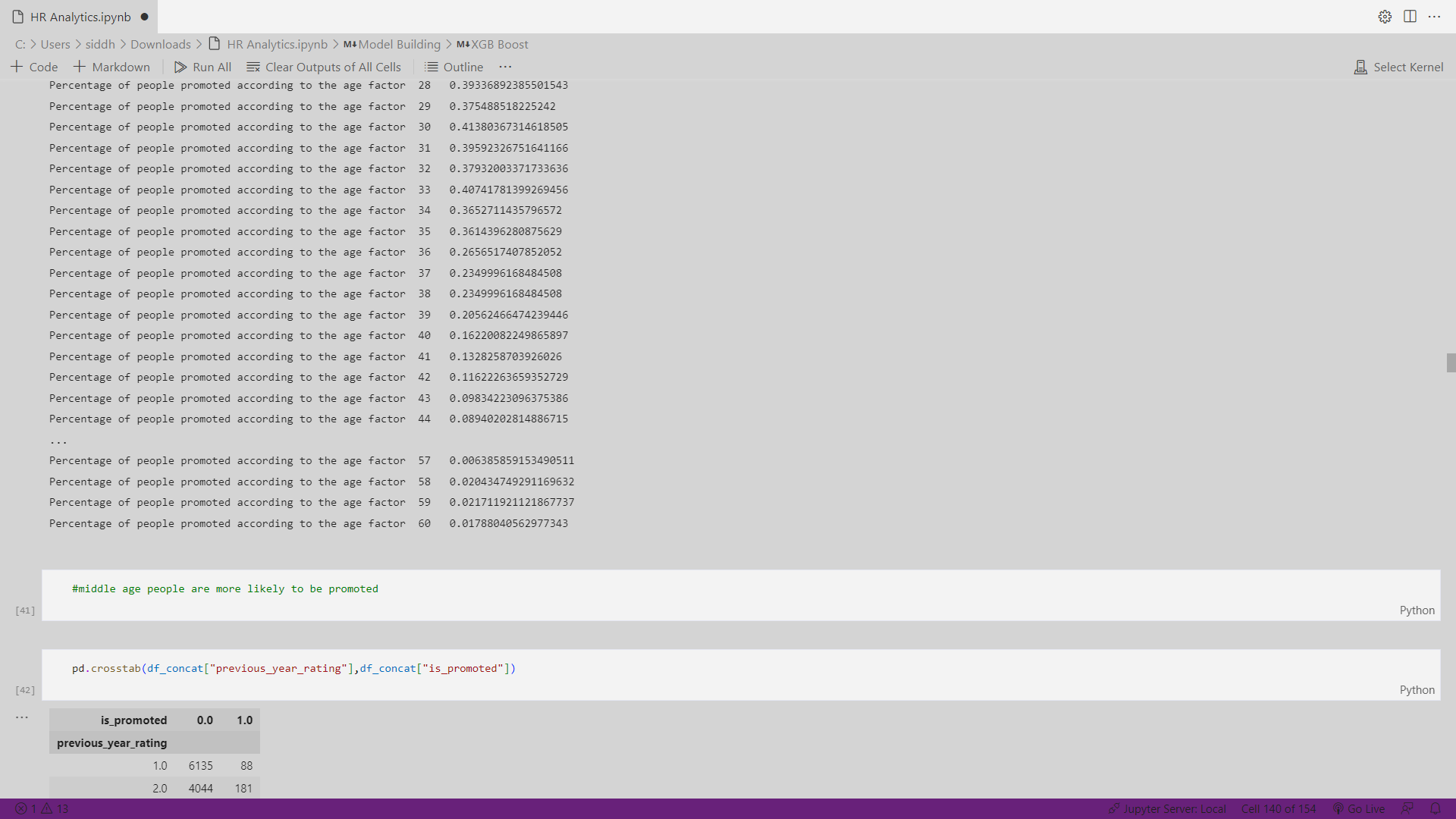


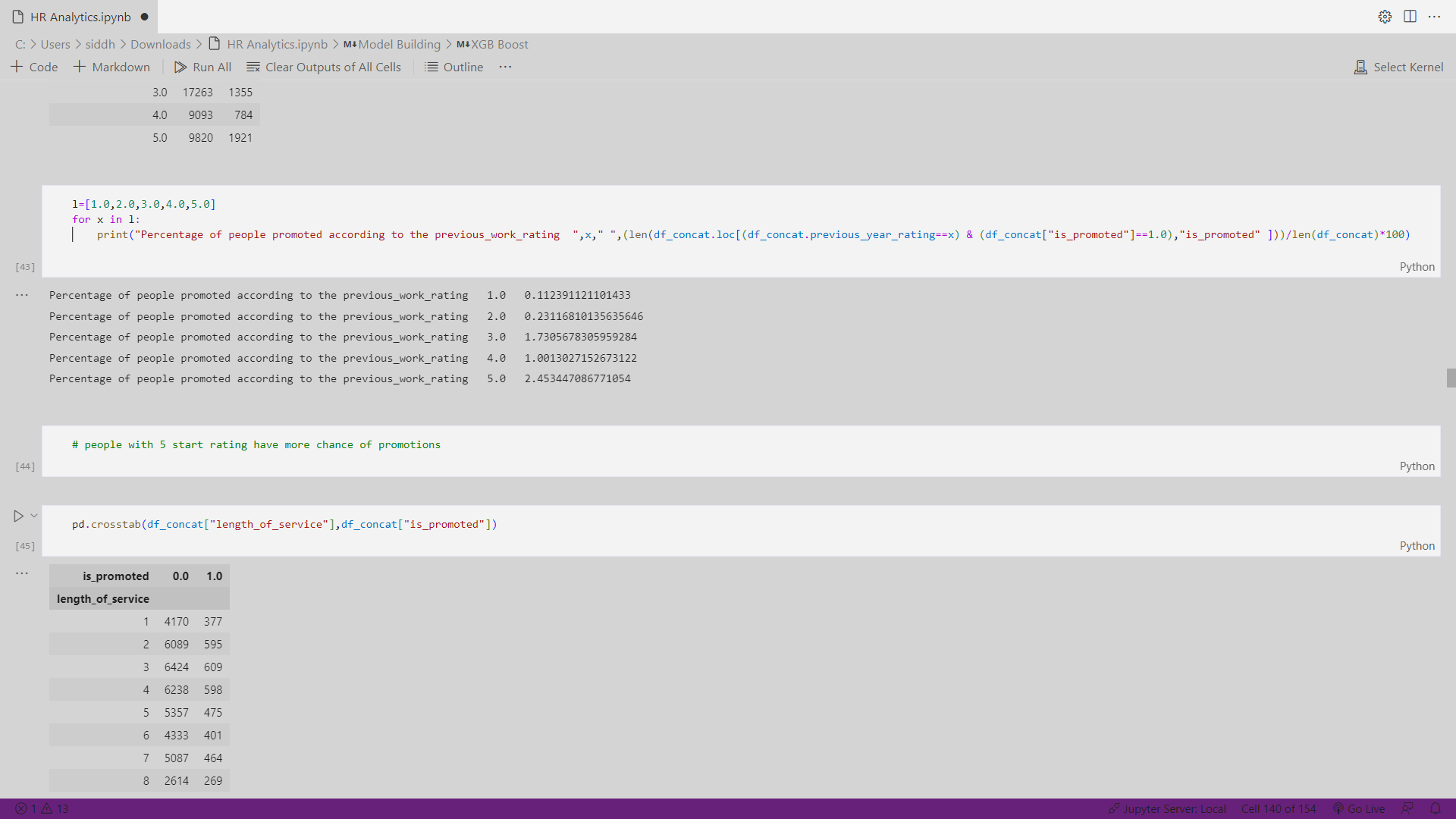


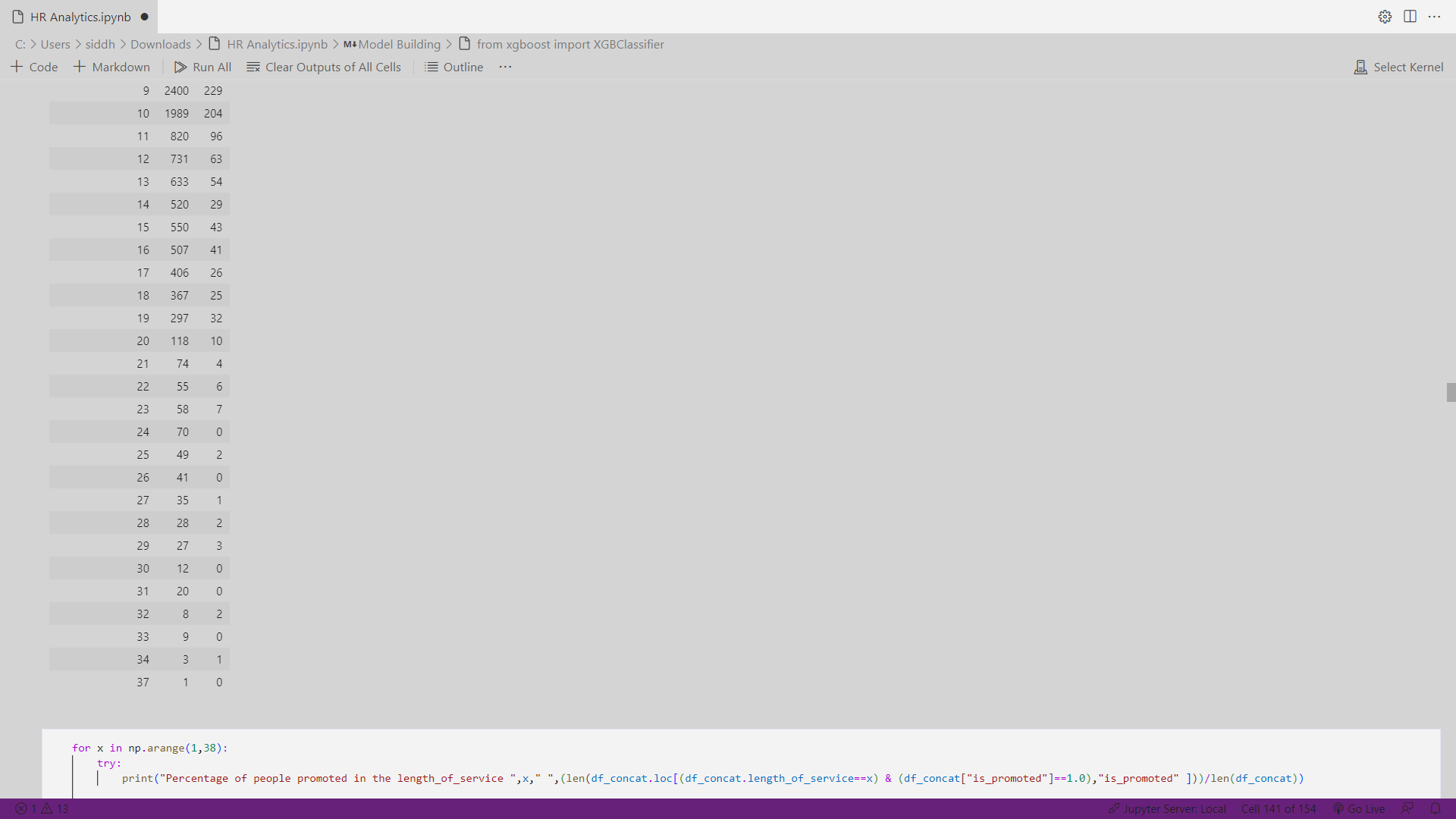


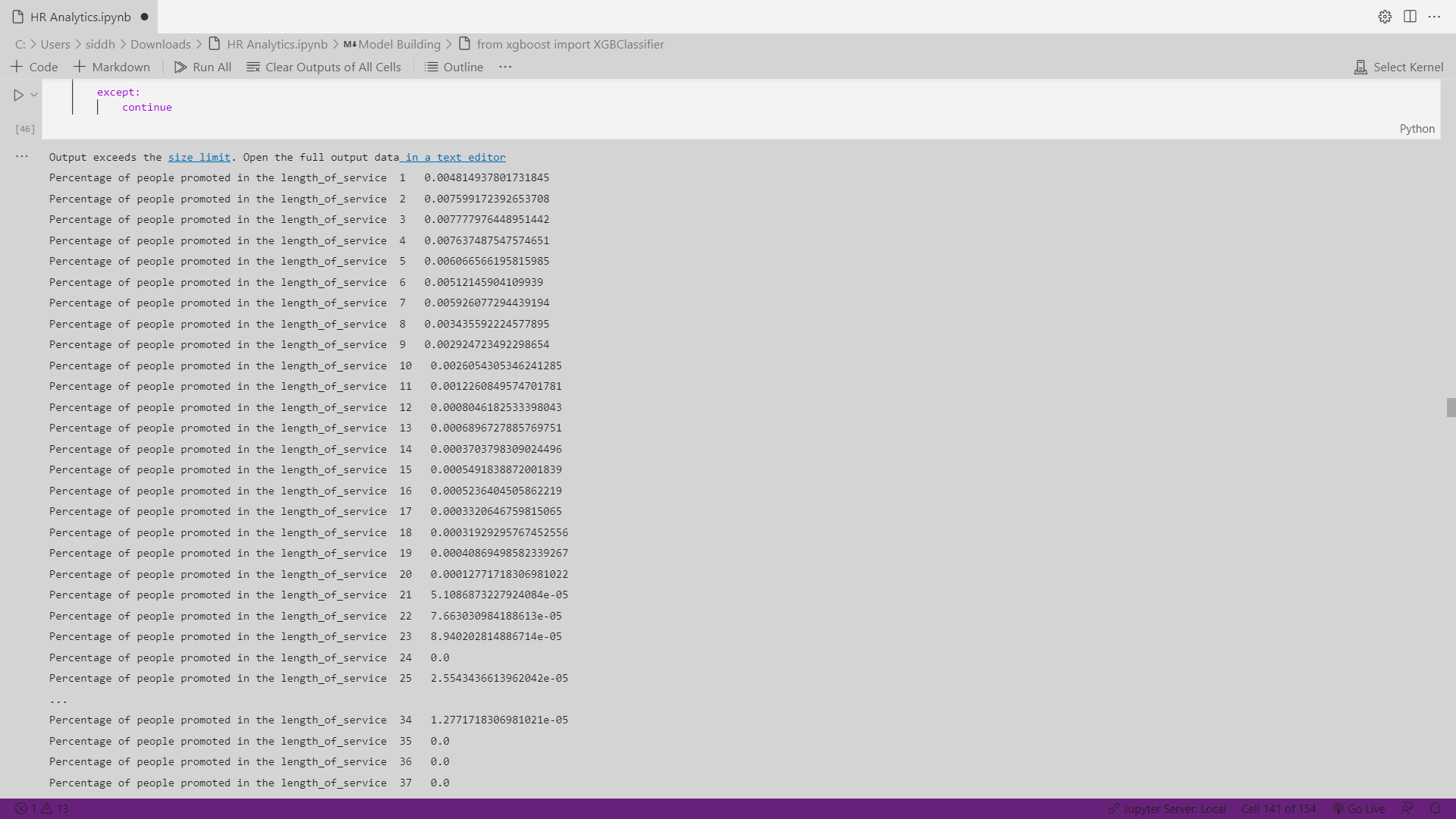




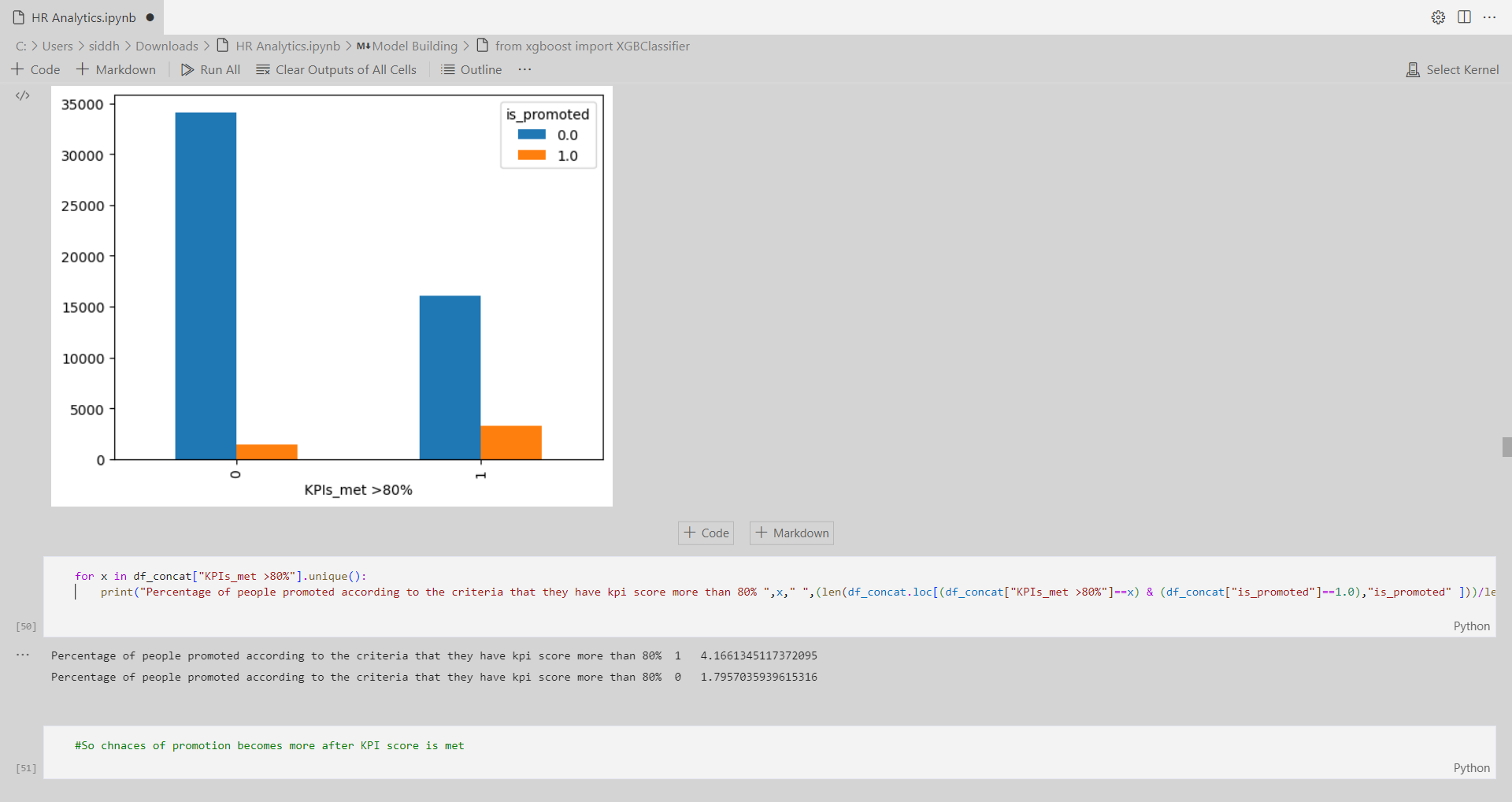


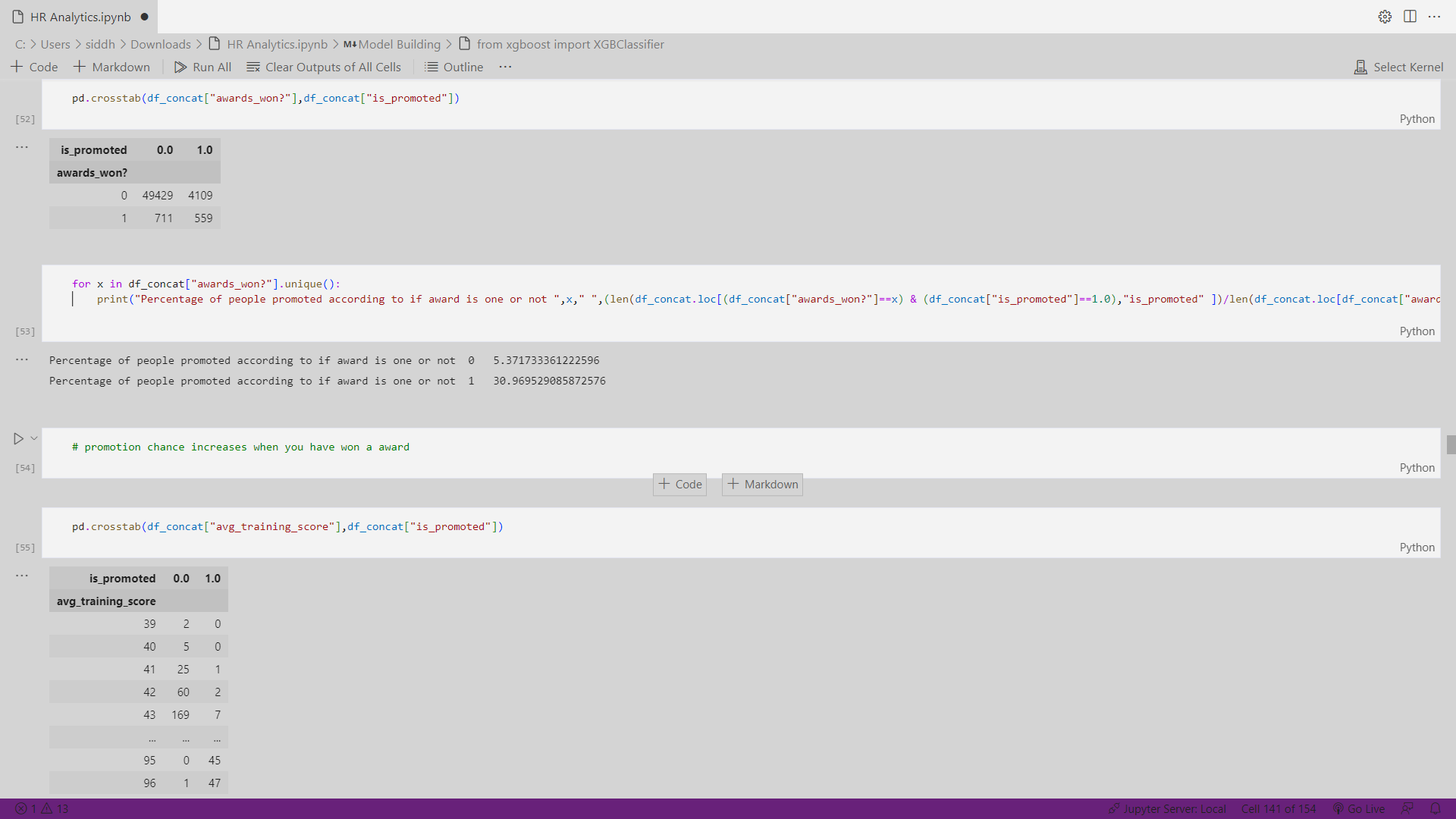


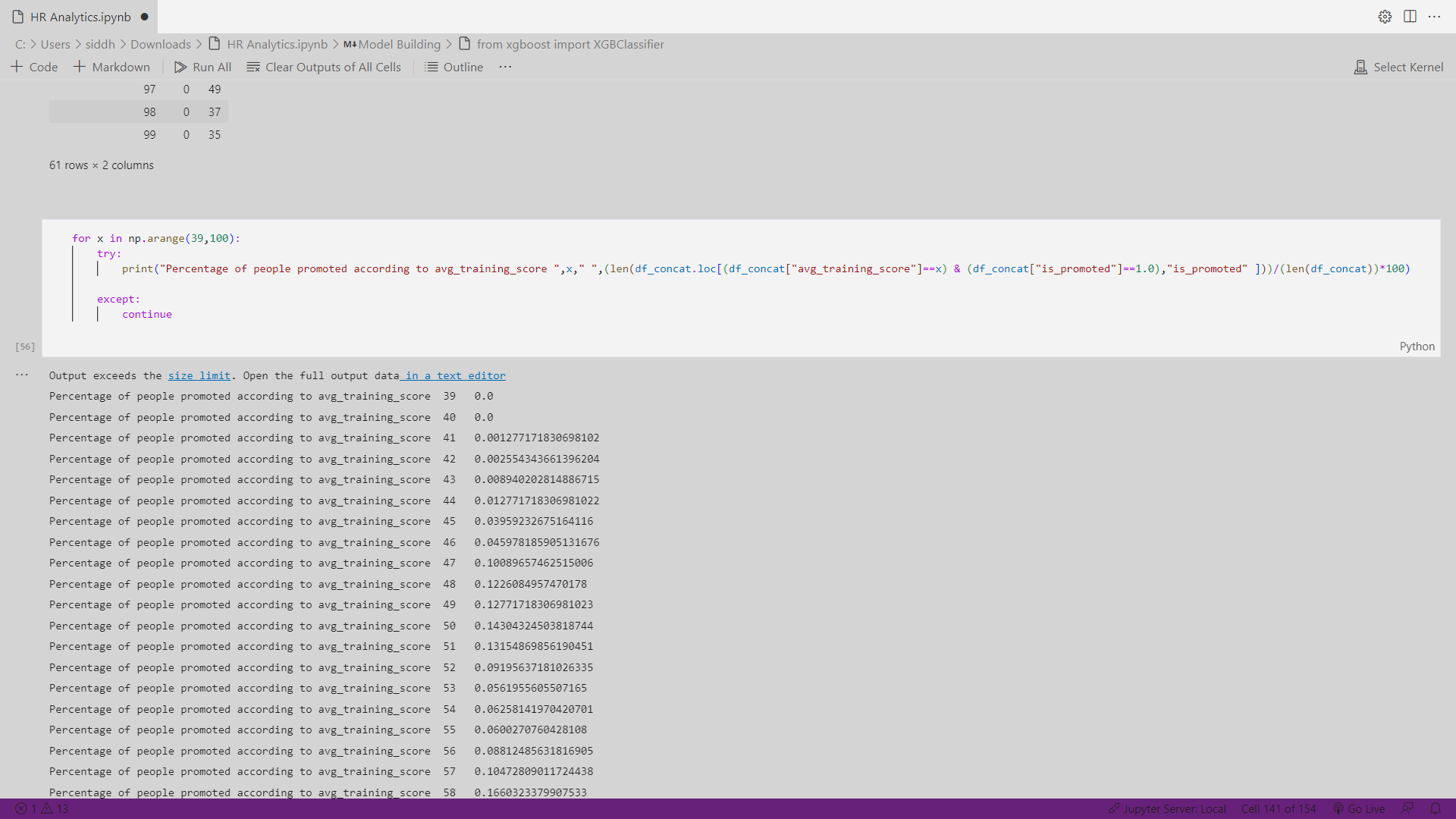


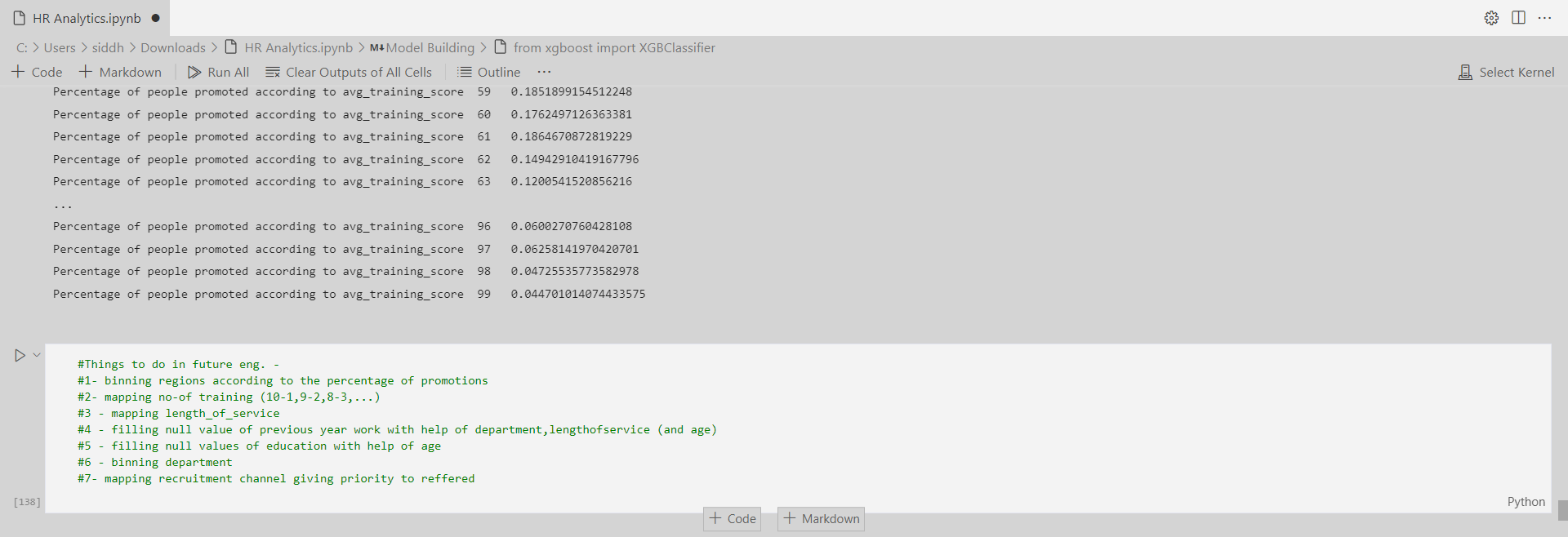




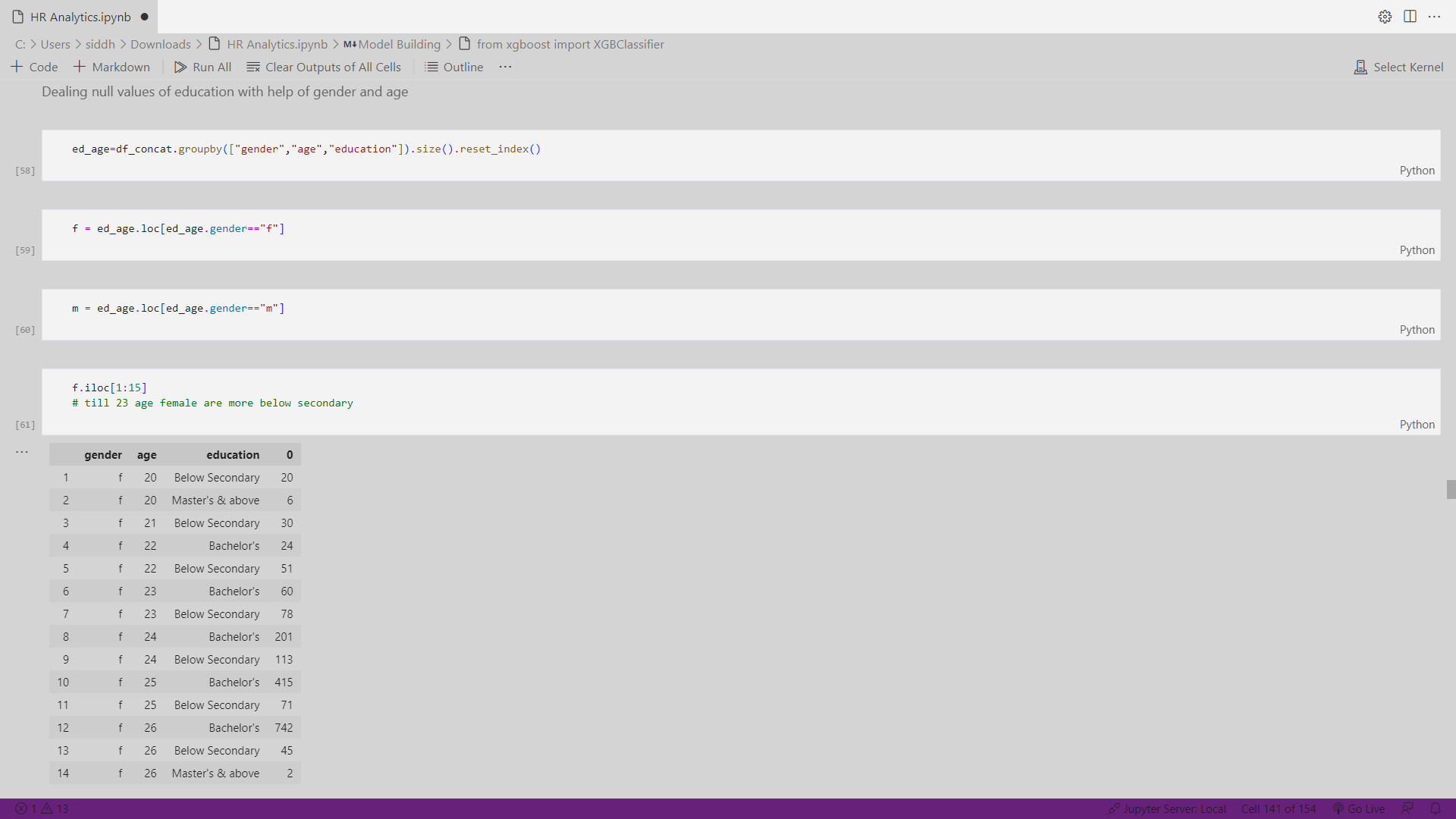


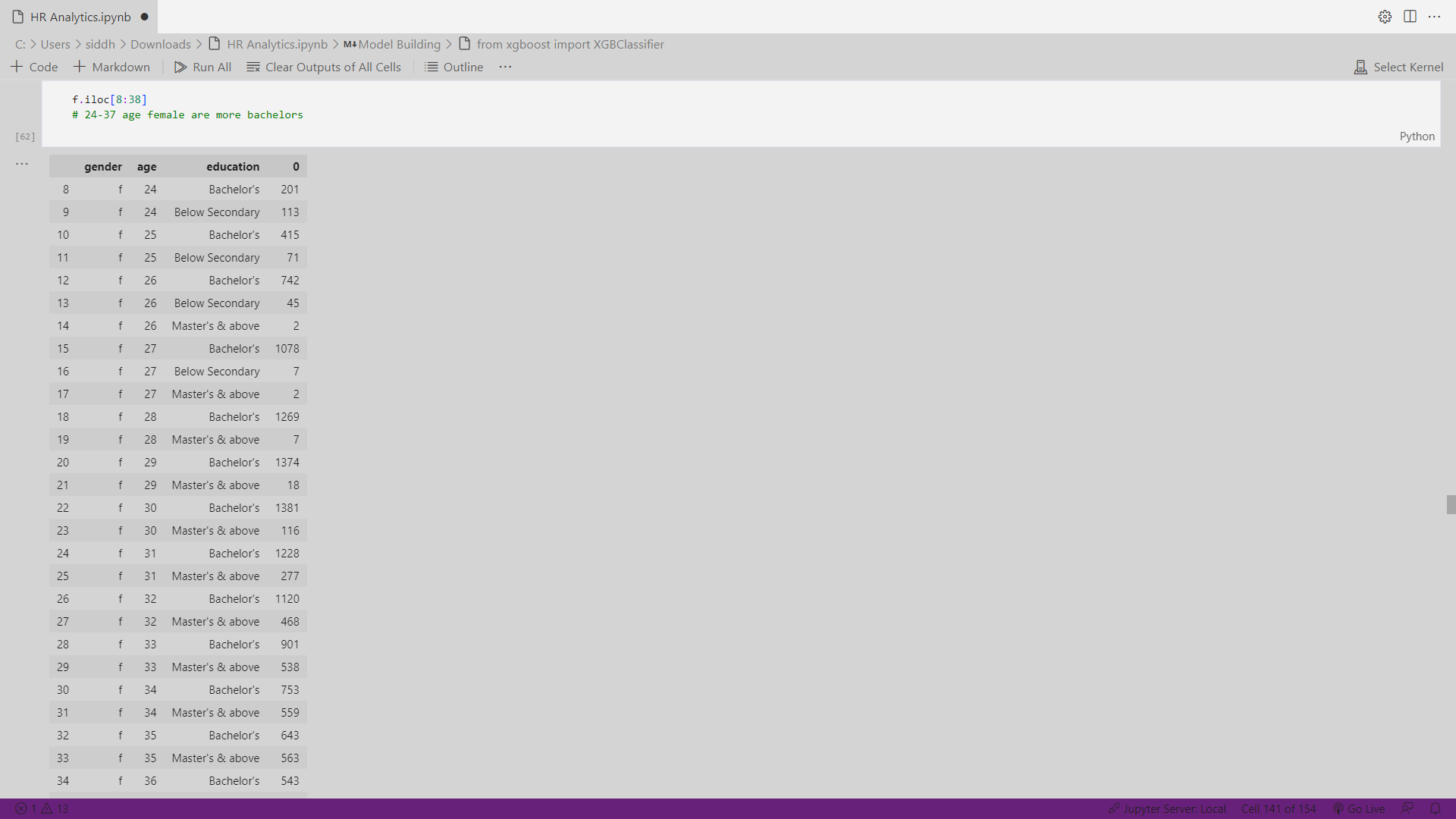


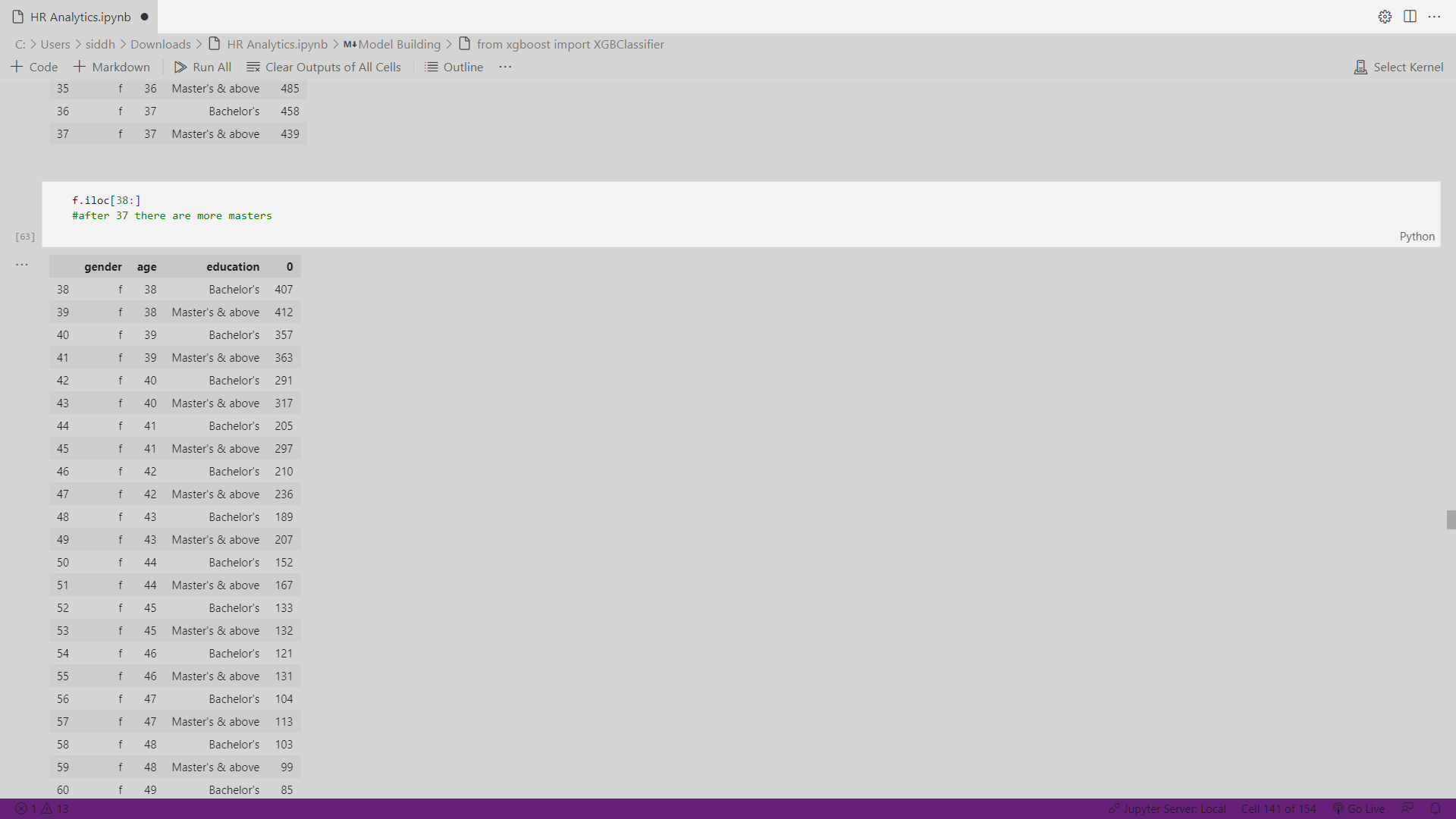


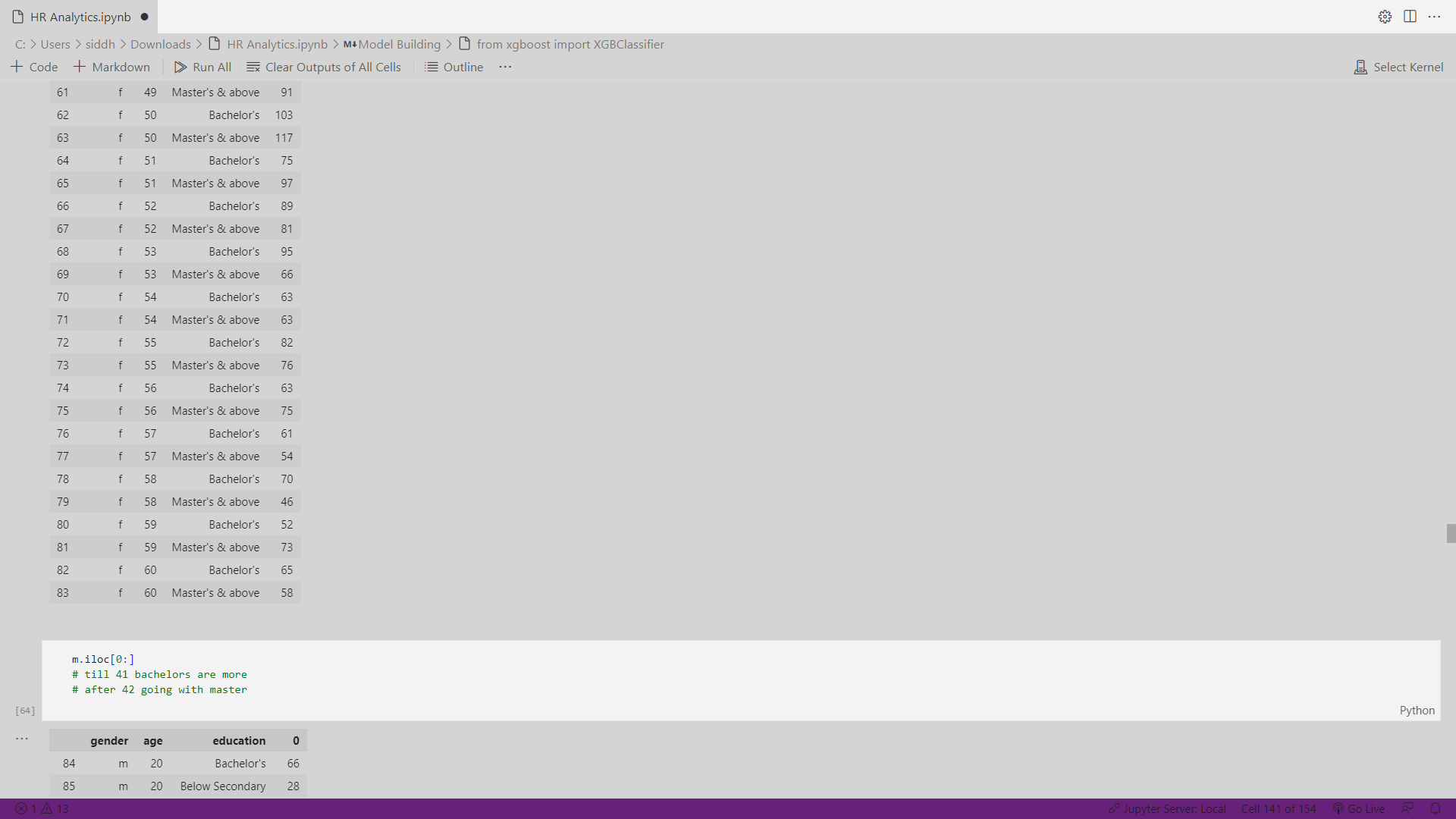


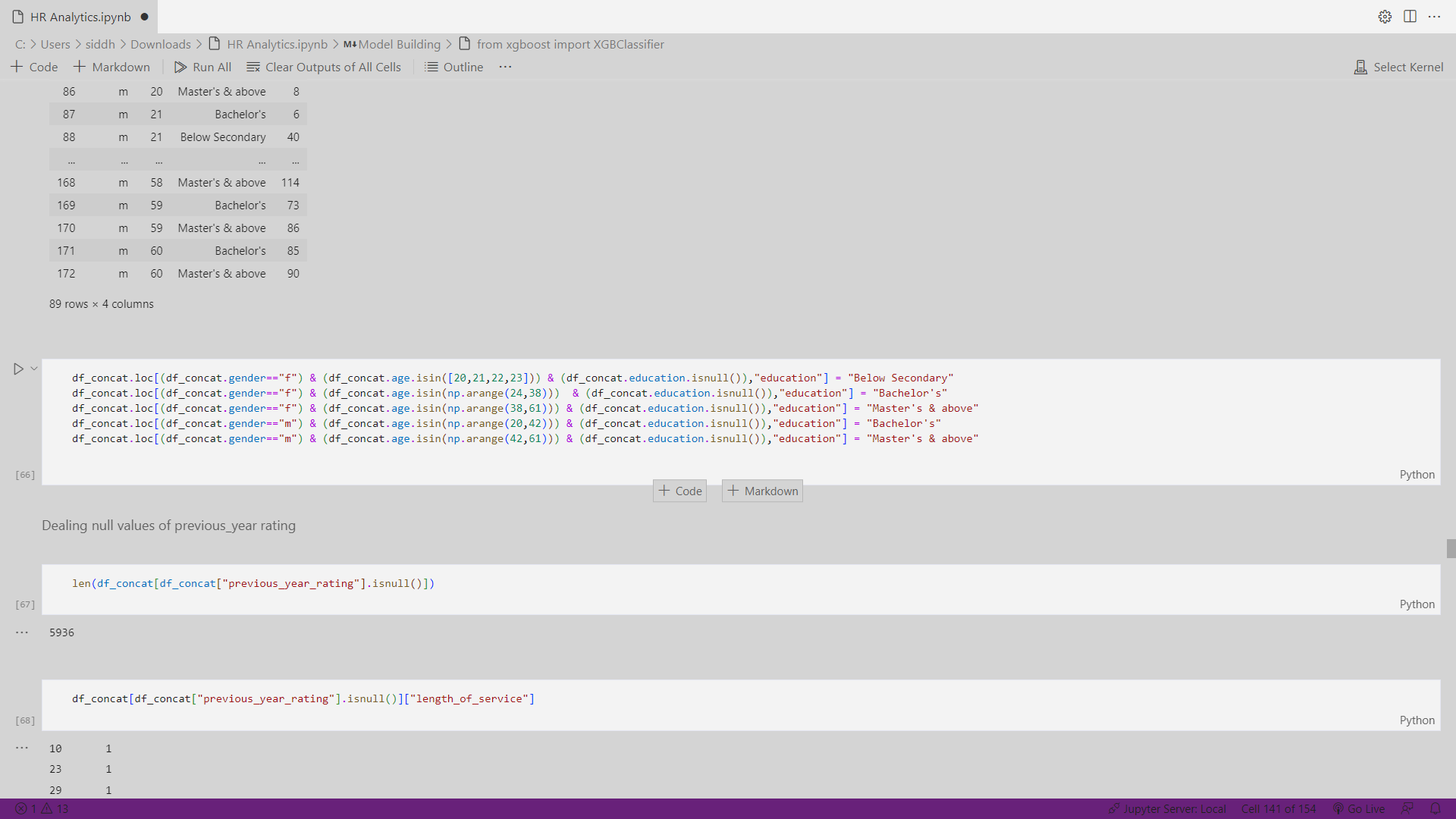
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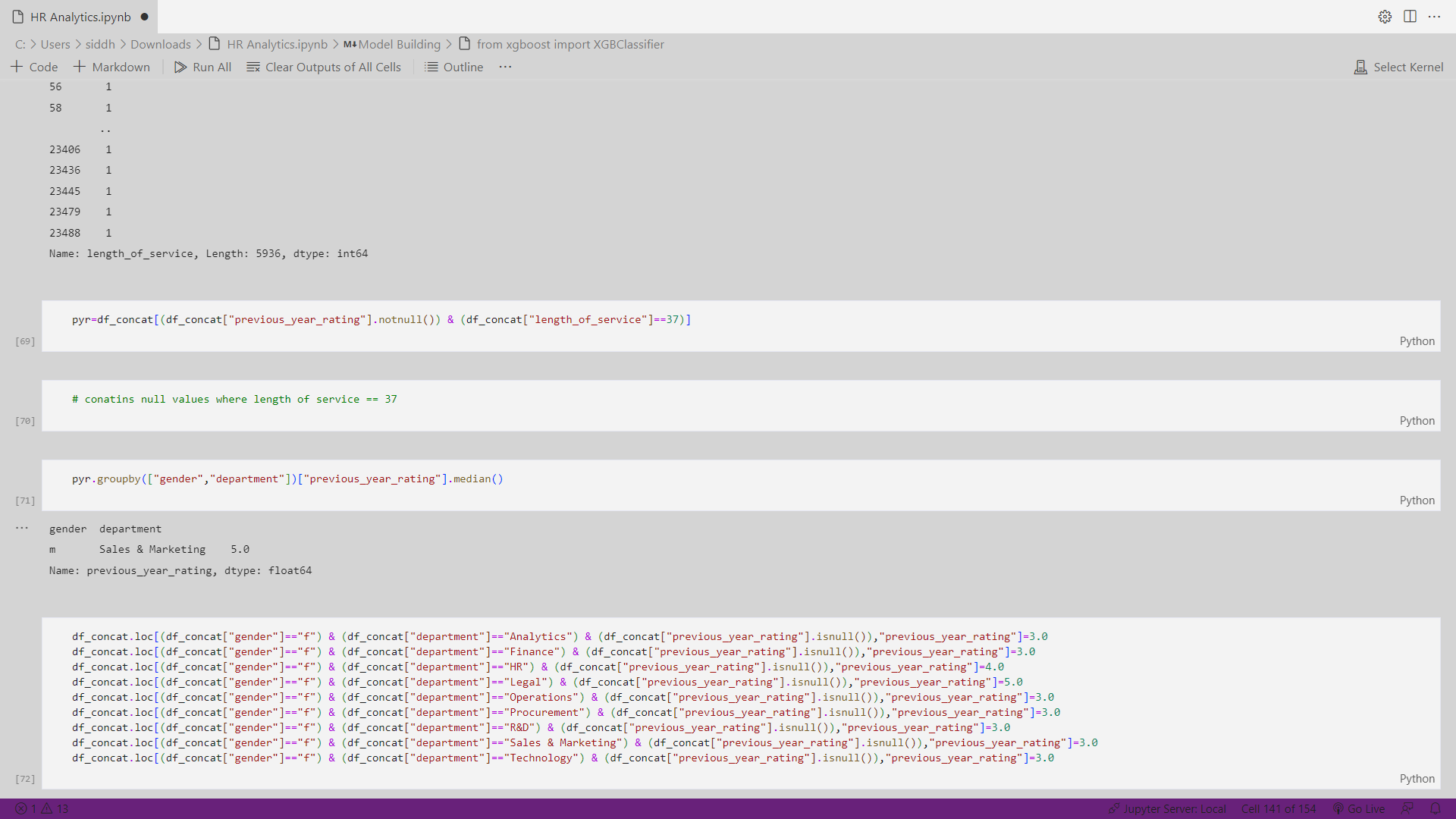


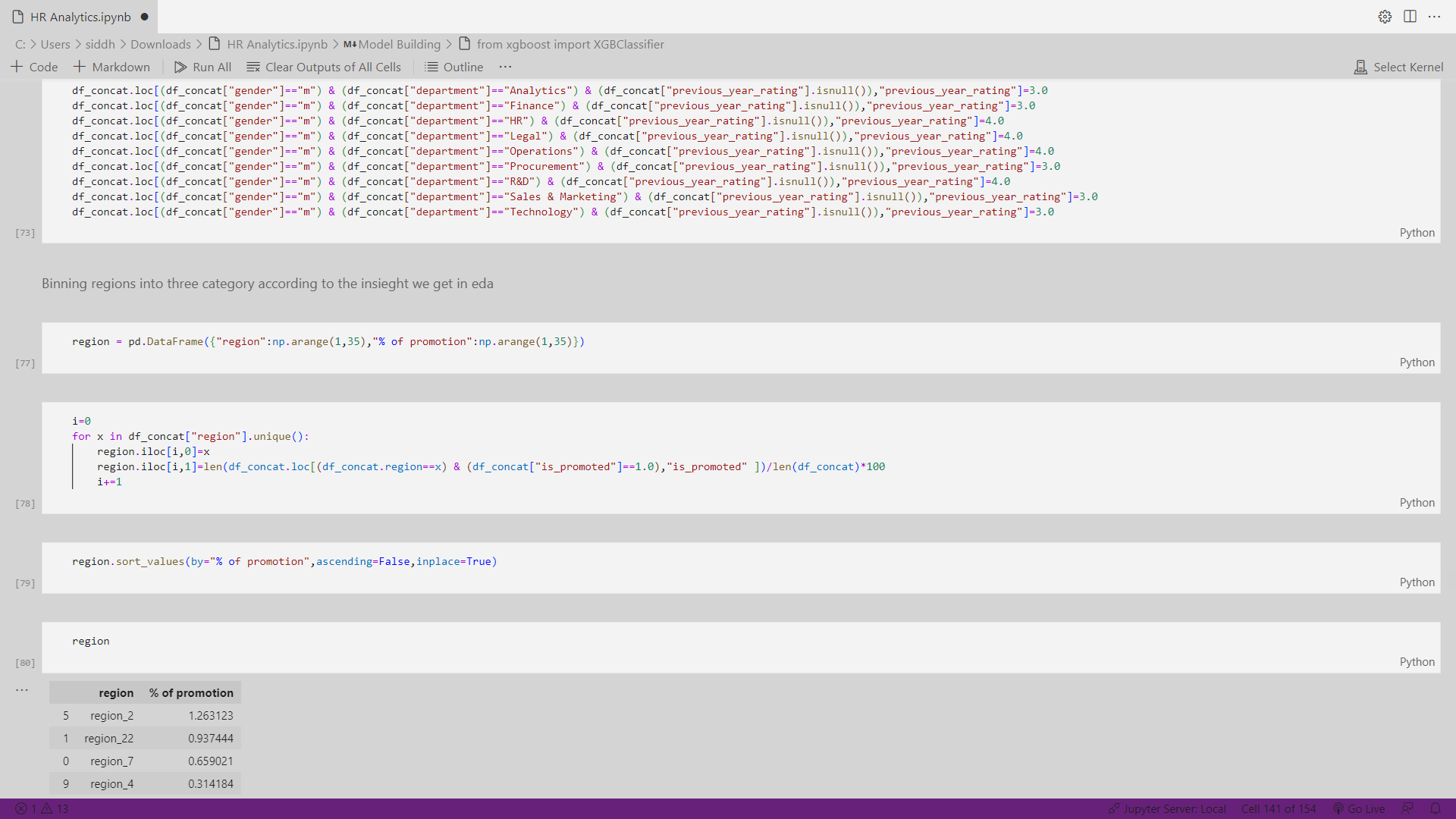


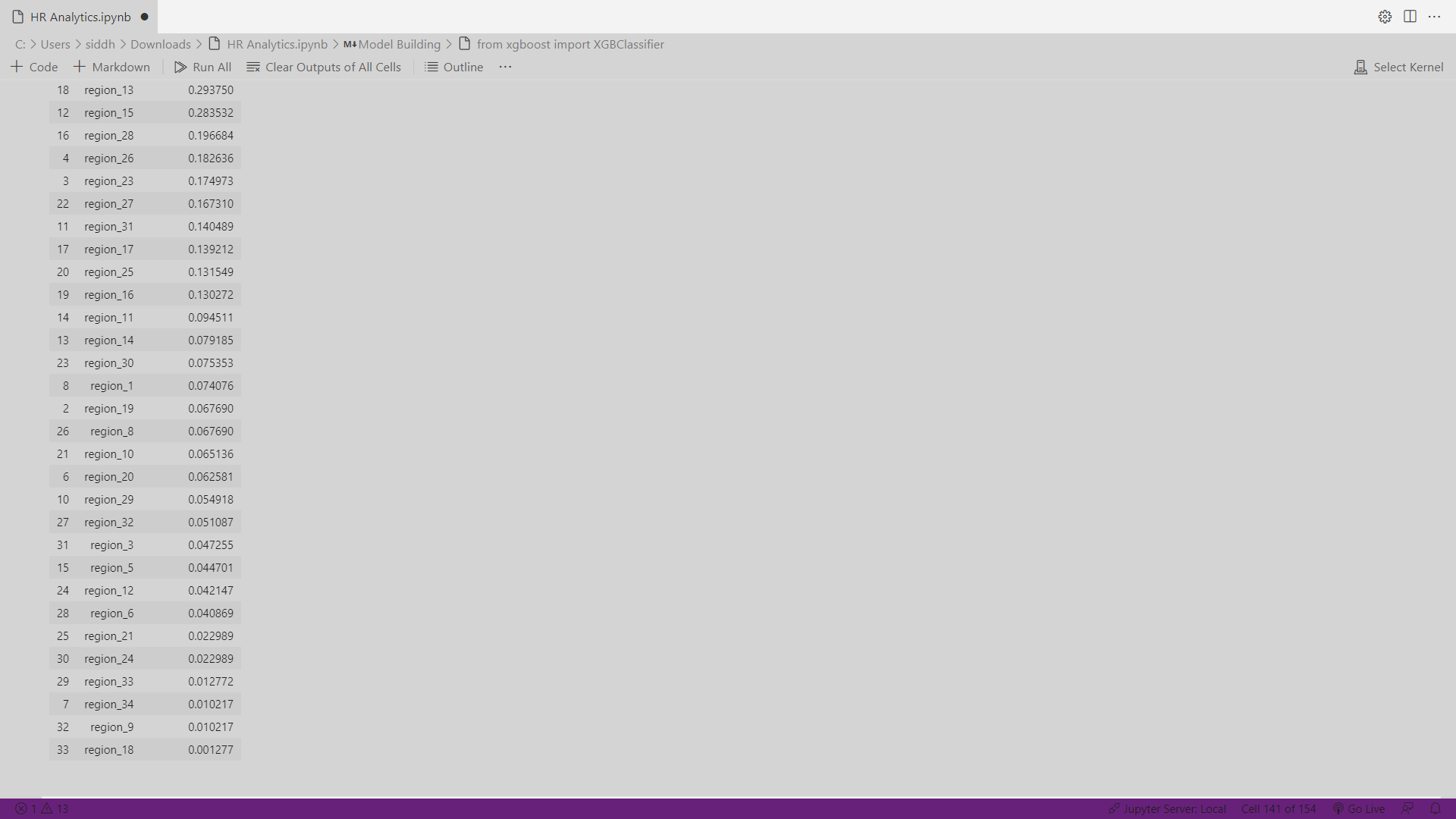


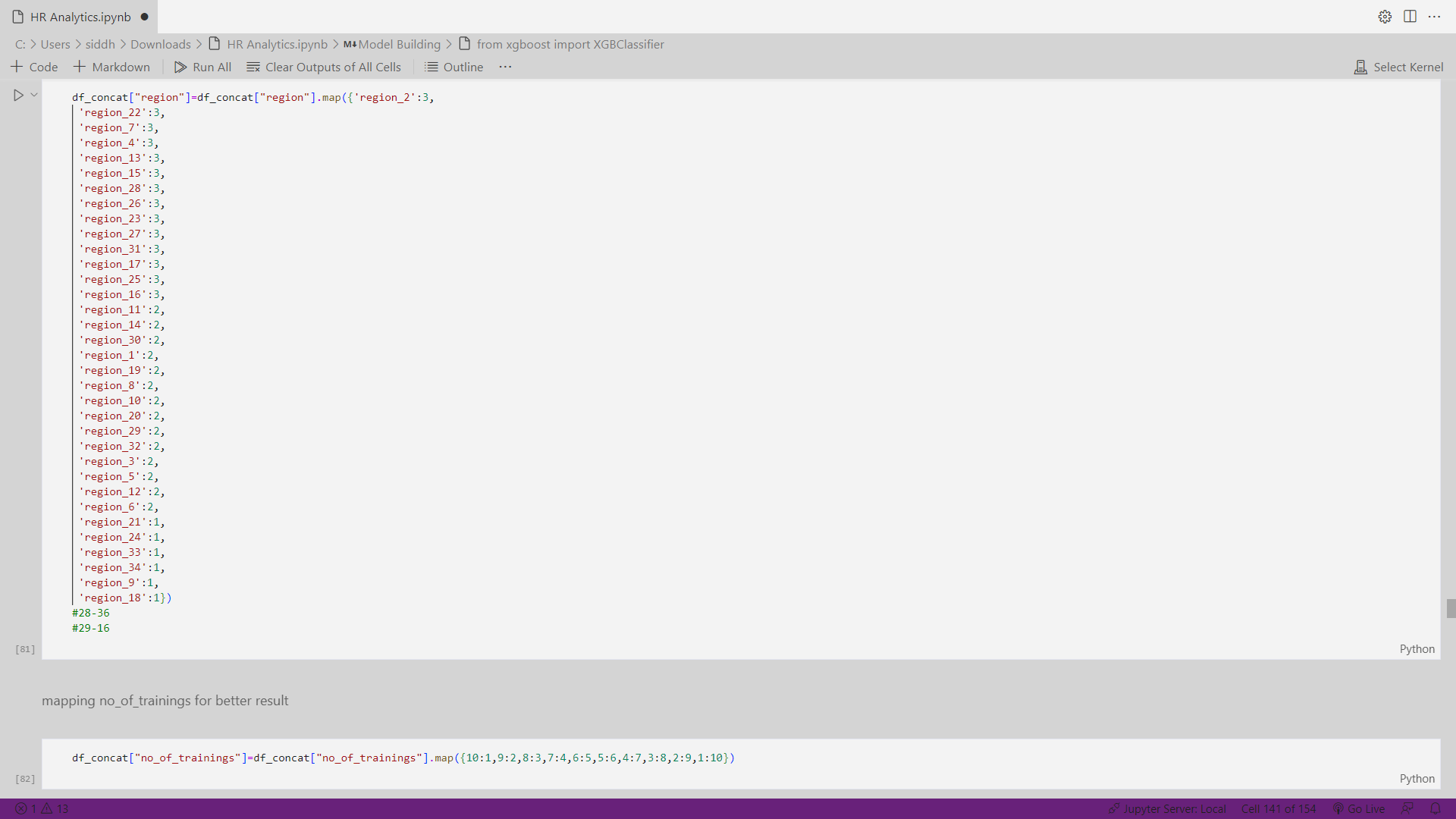


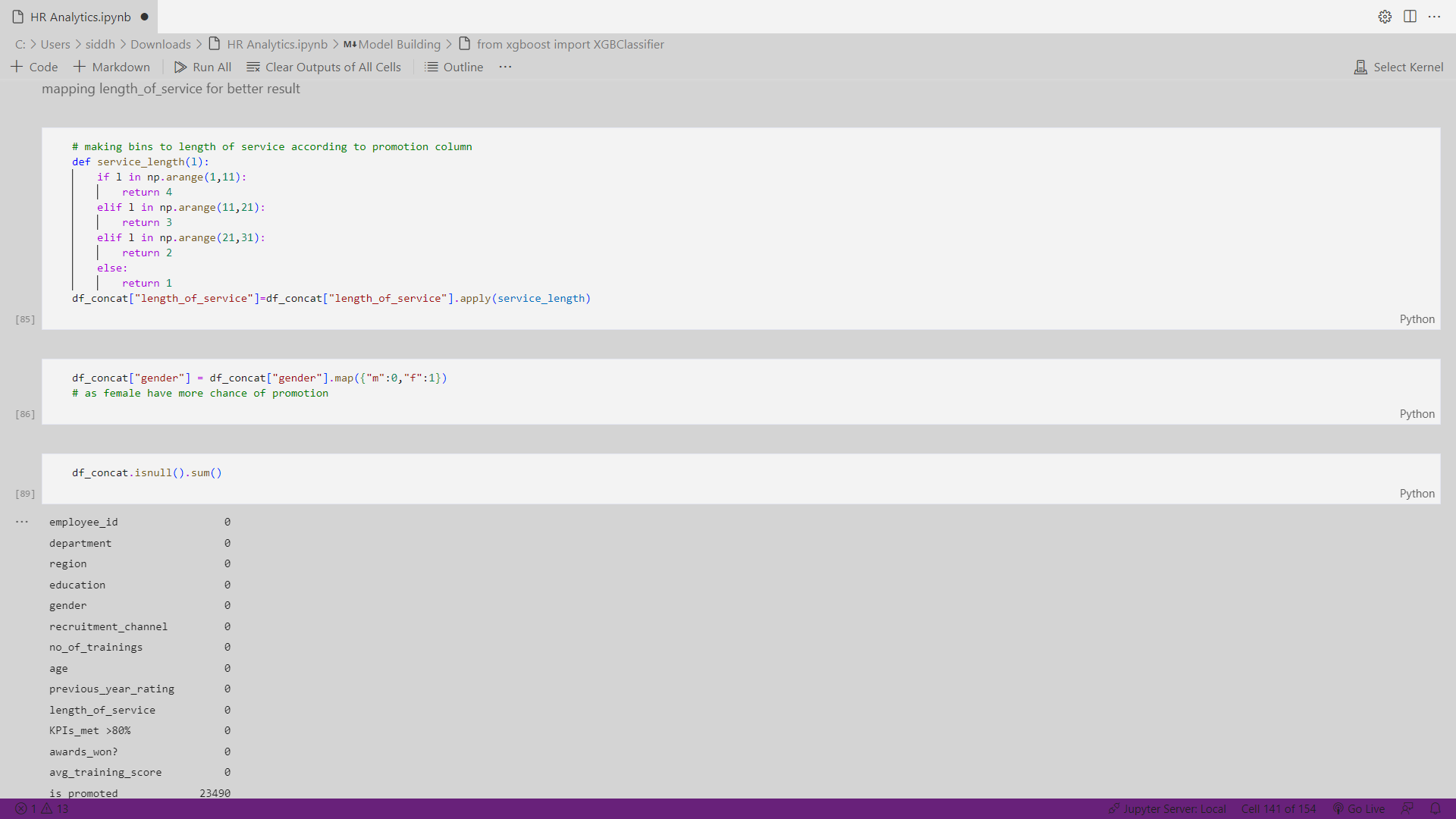






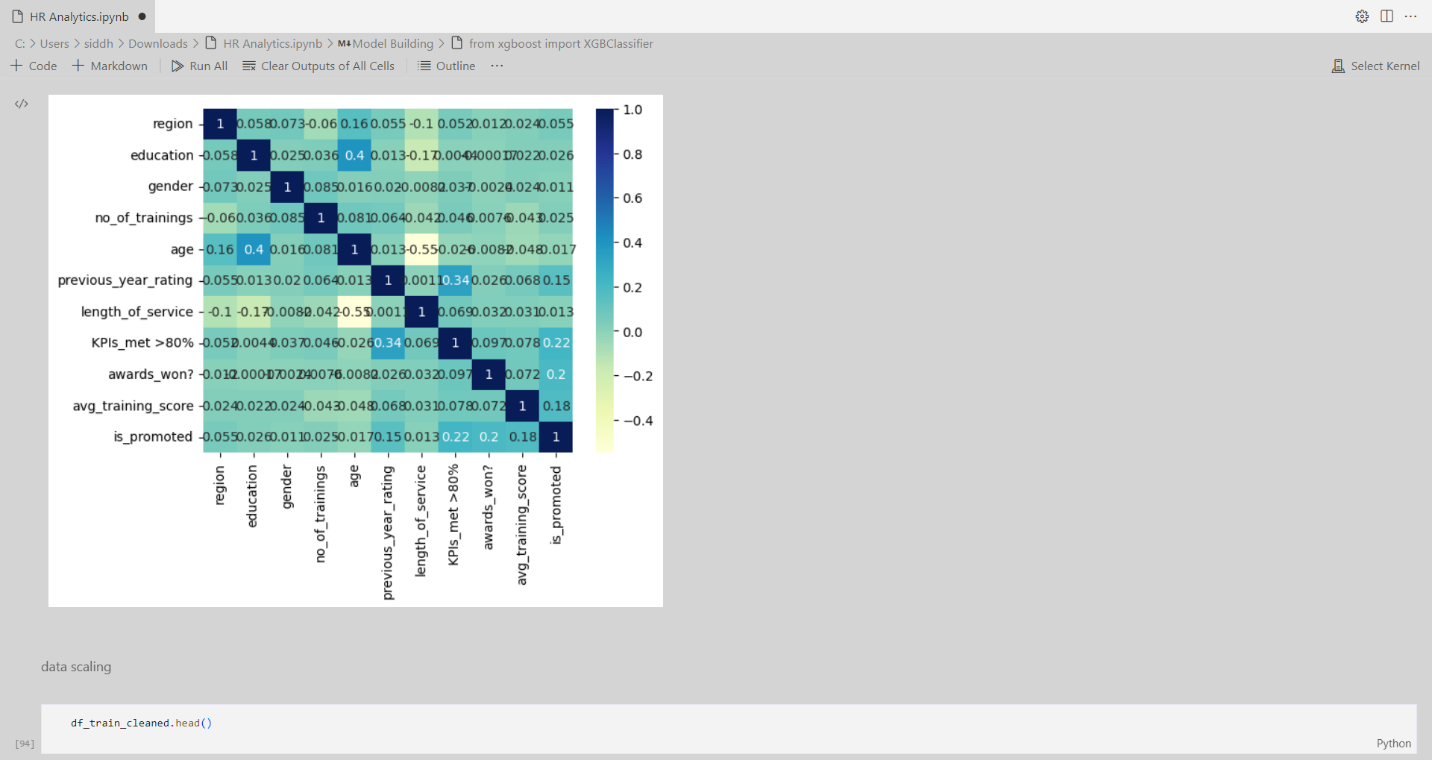


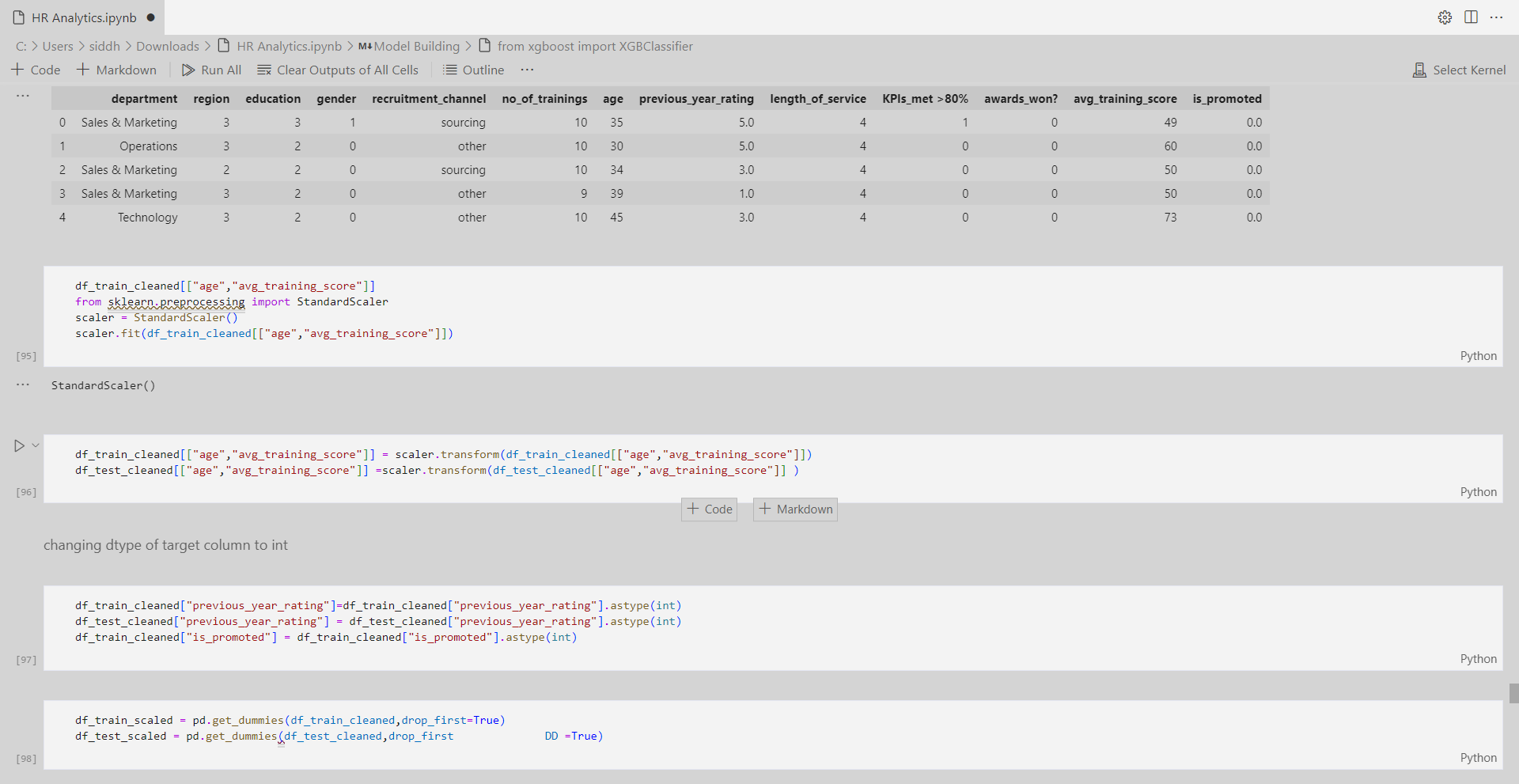


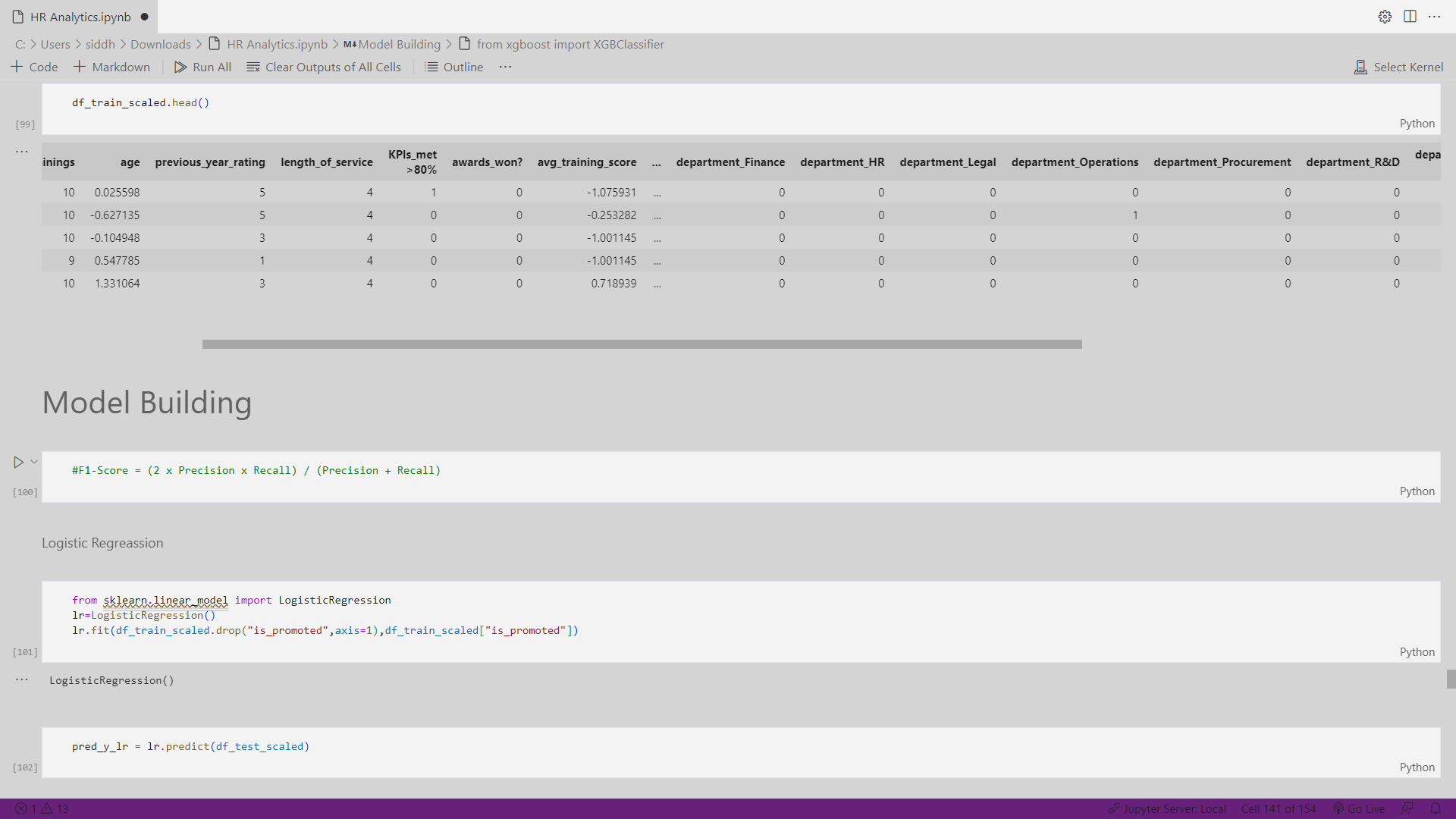


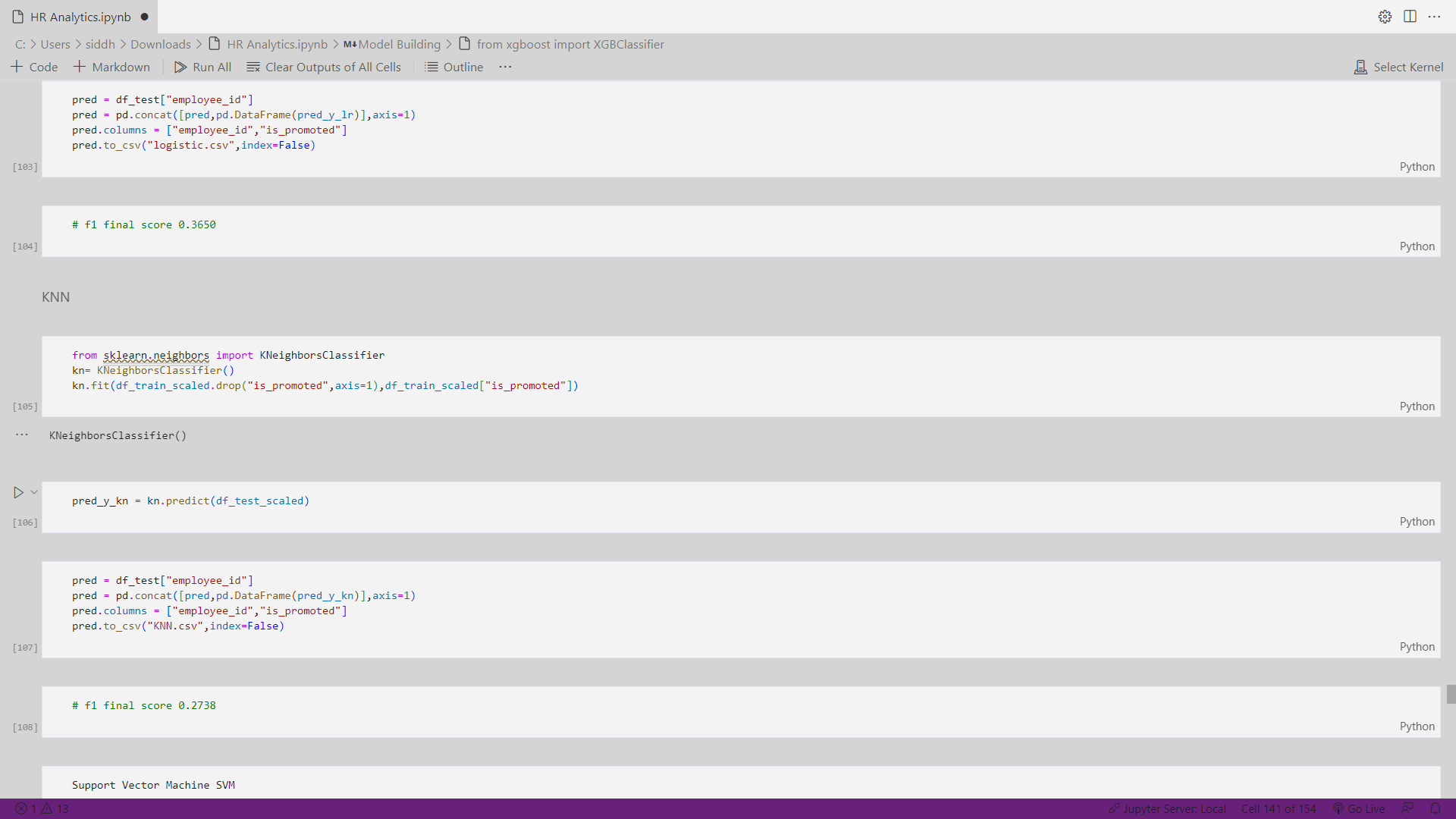
**Data Pre-processing**

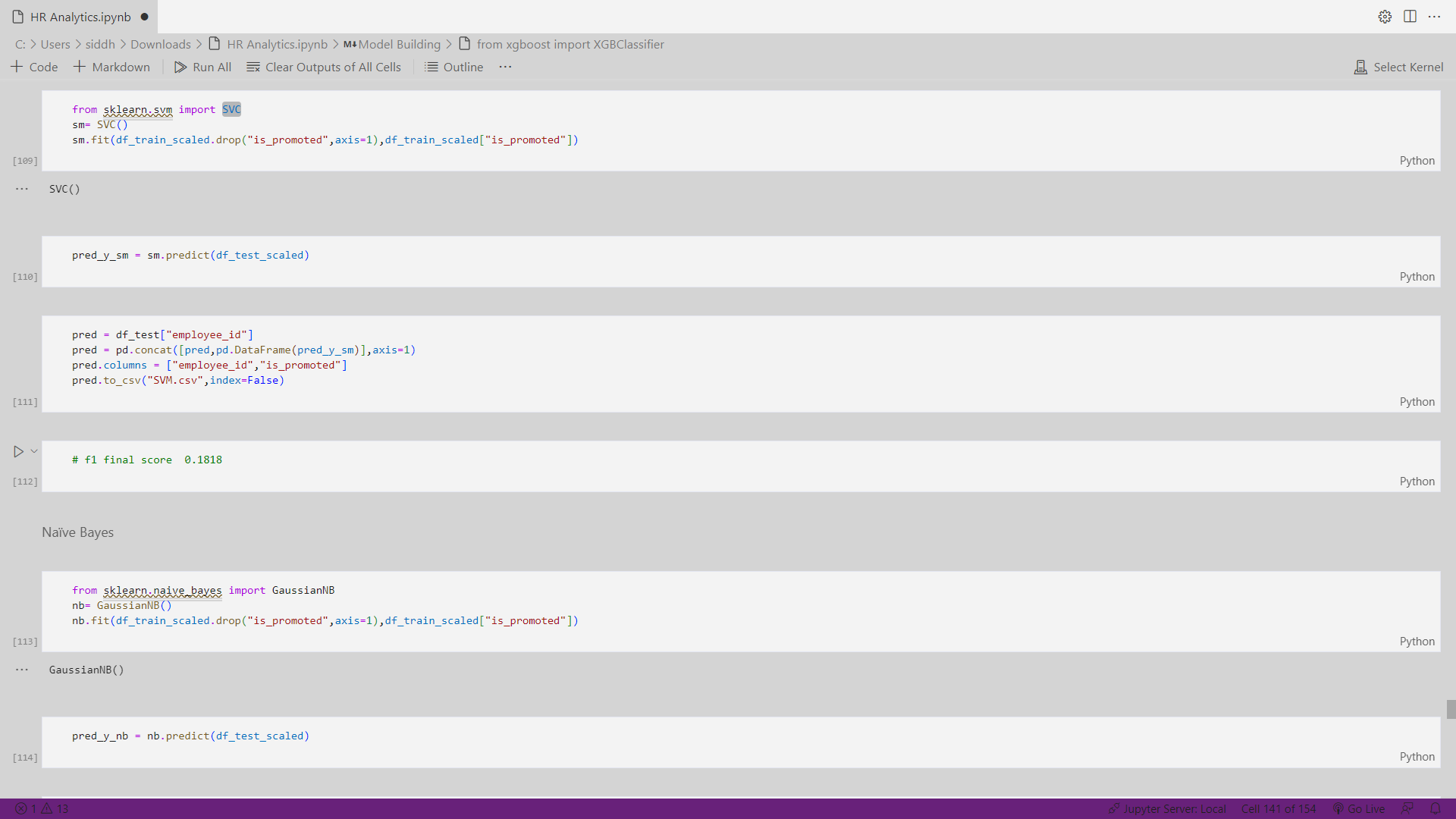


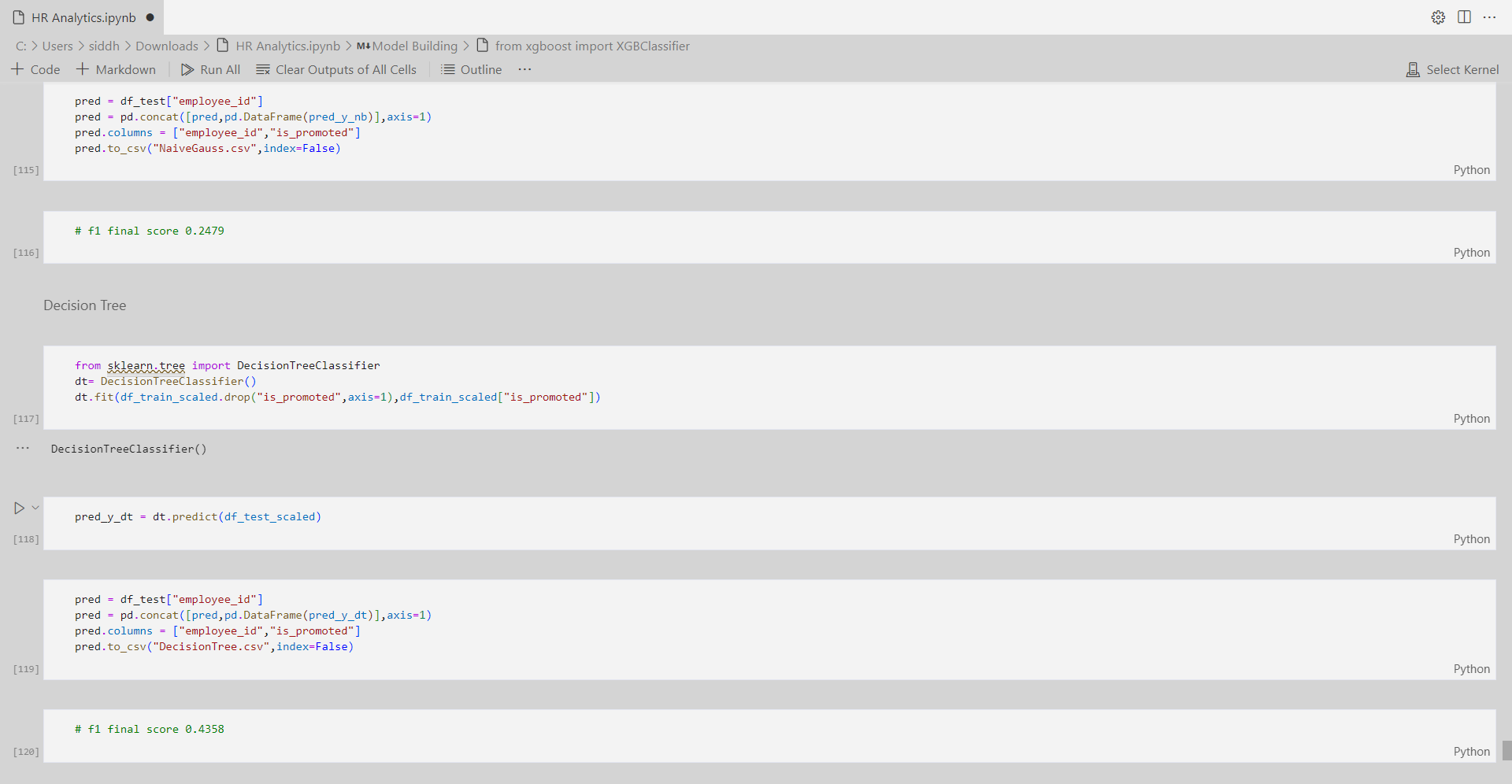


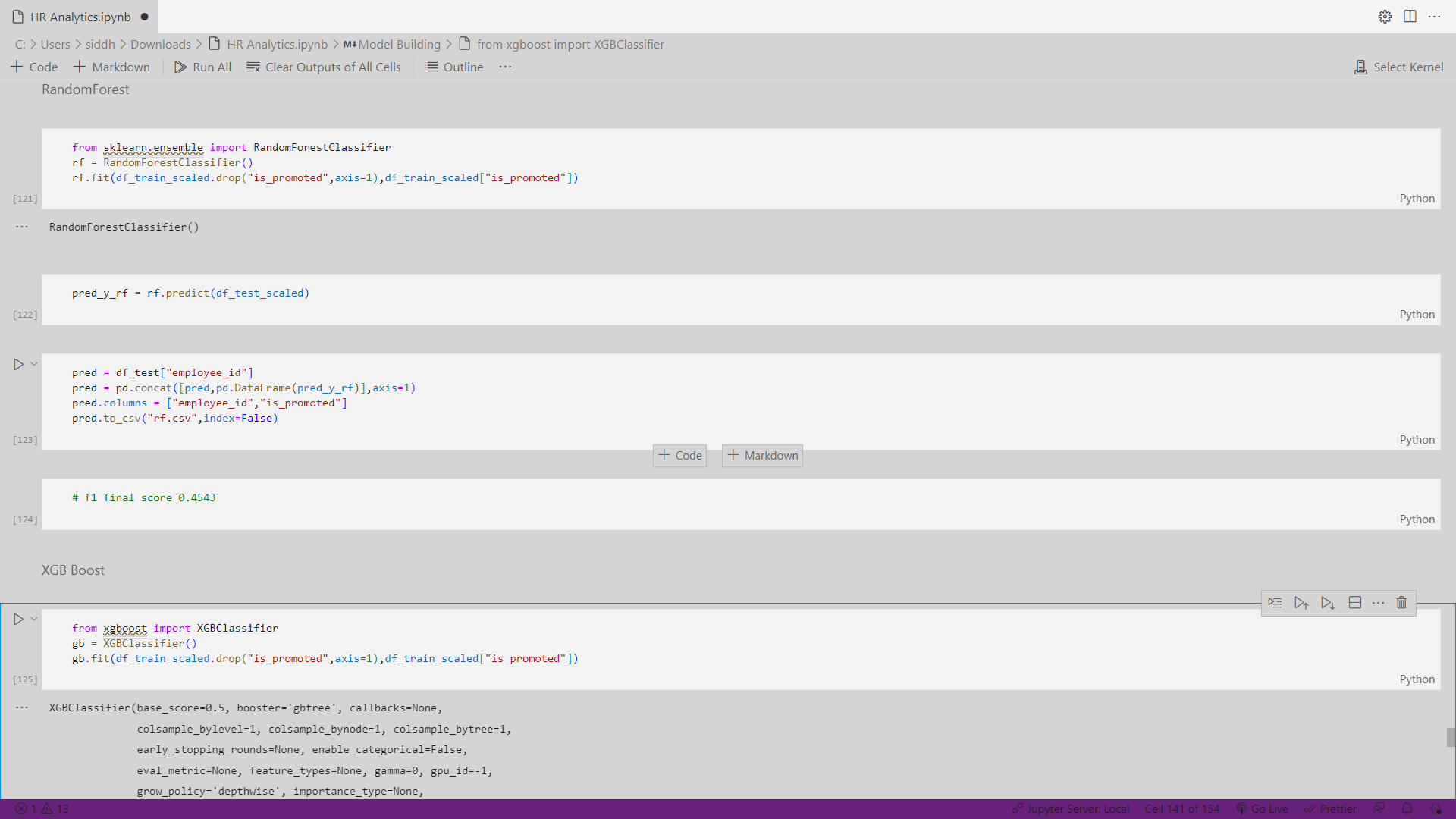


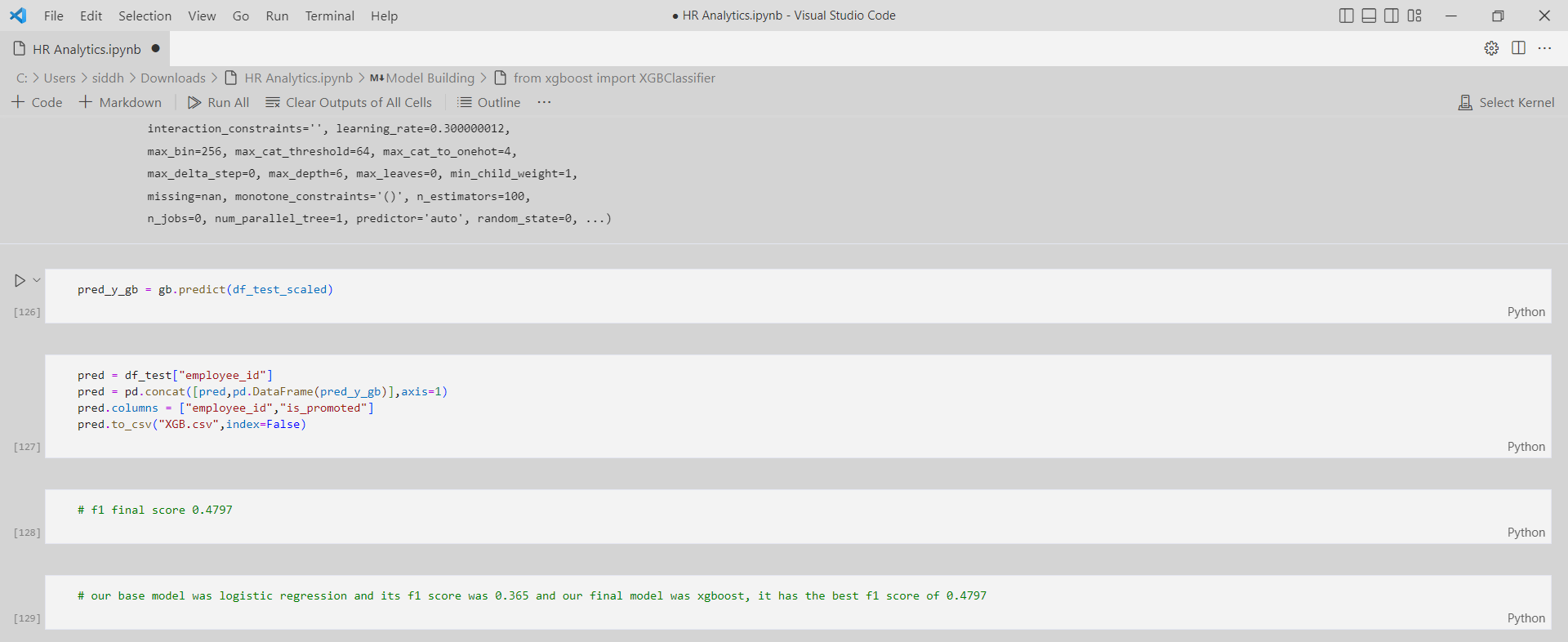












## **WORKING**

Predicting whether a potential employee at checkpoint in the test set will be promoted or not after the evaluation process. We will use a model which will have the best accuracy.

## Evaluation Metric

The evaluation metric for this competition is F1 Score.

## Public and Private Split

Test data is further randomly divided into Public (40%) and Private (60%) data.

**Software Used**

Python is a high-level, general-purpose programming language. Its design philosophy emphasizes code readability with the use of significant indentation. Python is dynamically-typed and garbage-collected. It supports multiple programming paradigms, including structured, object-oriented and functional programming.

### Pandas

It offers data structures and tools for effective data cleaning, manipulation, and analysis. It provides tools to work with different types of data. The primary instrument of Pandas is a two-dimensional table consisting of columns and rows.

NumPy

libraries are based on arrays, enabling you to apply mathematical functions to these arrays. Pandas is actually built on top of NumPy Data visualization methods are a great way to communicate with others and show the meaningful results of analysis. These libraries enable you to create graphs, charts and maps.

Matplotlib

Visualization package is the most well-known library for data visualization, and it’s excellent for making graphs and plots. The graphs are also highly customizable. Another high-level visualization library, Seaborn, is based on matplotlib. Seaborn makes it easy to generate plots like heat maps, time series, and violin plots.

Scikit-learn

The library contains tools for statistical modeling, including regression, classification, clustering and others. It is built on NumPy, SciPy, and matplotlib, and it’s relatively simple to get started. For this high-level approach, you define the model and specify the parameter types you would like to use.

## 

## **REFERENCES**

**Books:**

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* NG Andrew: Machine Learning Yearning; 2018

## **Websites**:

* [Analytics Vidya](https://datahack.analyticsvidhya.com/contest/wns-analytics-hackathon-2018-1/#ProblemStatement)
* [Kaggle](https://www.kaggle.com/)
* [Data Science Dojo](https://datasciencedojo.com/)
* [Google](http://www.google.com/)

## **Faculty Guidelines:**

Mr. Abhishek Tiwari (Technical Trainer in GLA University)

## **GitHub Repository link:**

<https://github.com/shivanshu989/HR_Analytics_Mini_Project.git>