- **Title:** DB Assignment 5
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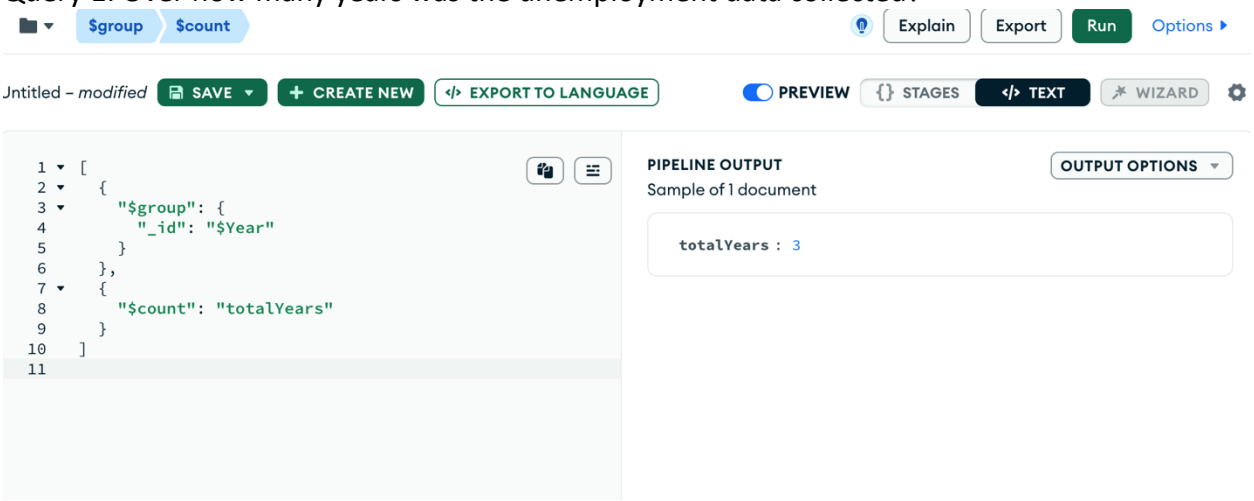
- **Date:** Nov 22

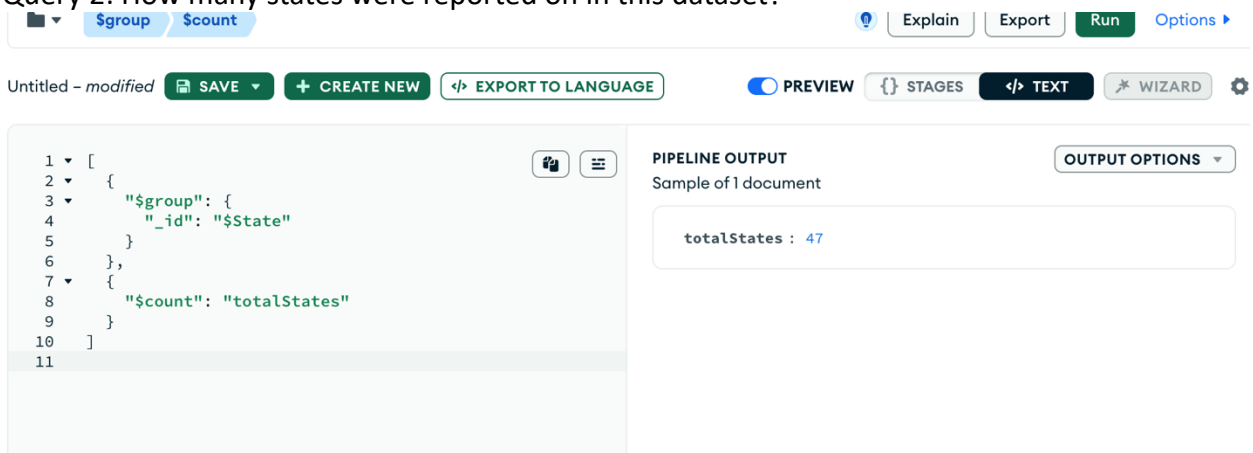
Query 1: Over how many years was the unemployment data collected?




```
db.unemployment.distinct("Year").length;
```

Explanation:
This query retrieves all unique years in the dataset using the distinct method on the Year field. The length property is used to count how many unique years exist, effectively determining over how many years the unemployment data was collected.

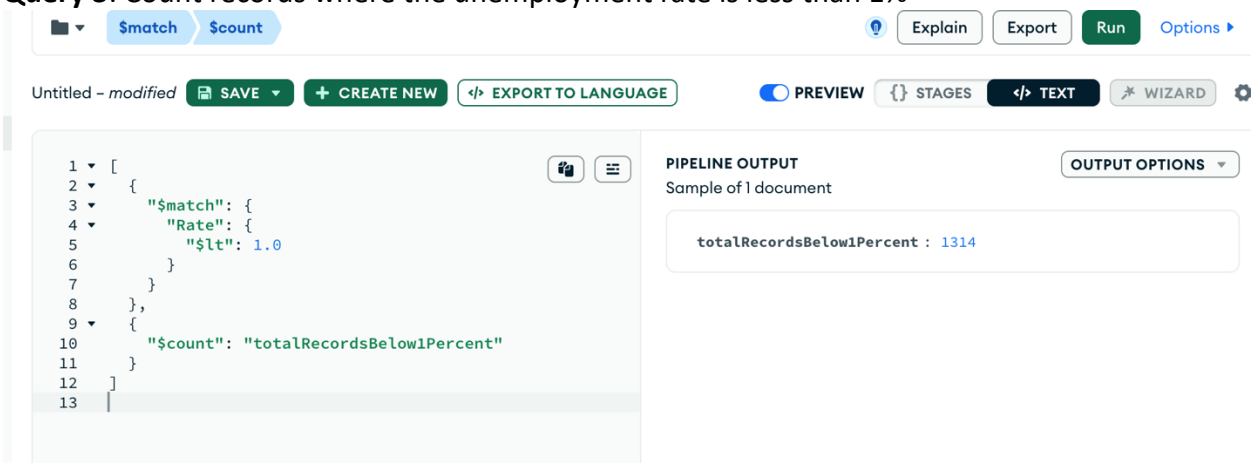
Query 2: How many states were reported on in this dataset?




```
*/
db.unemployment.distinct("State").length;
```

Explanation:
This query extracts all unique state names from the State field using the distinct method. The length property counts the total number of states that appear in the dataset.

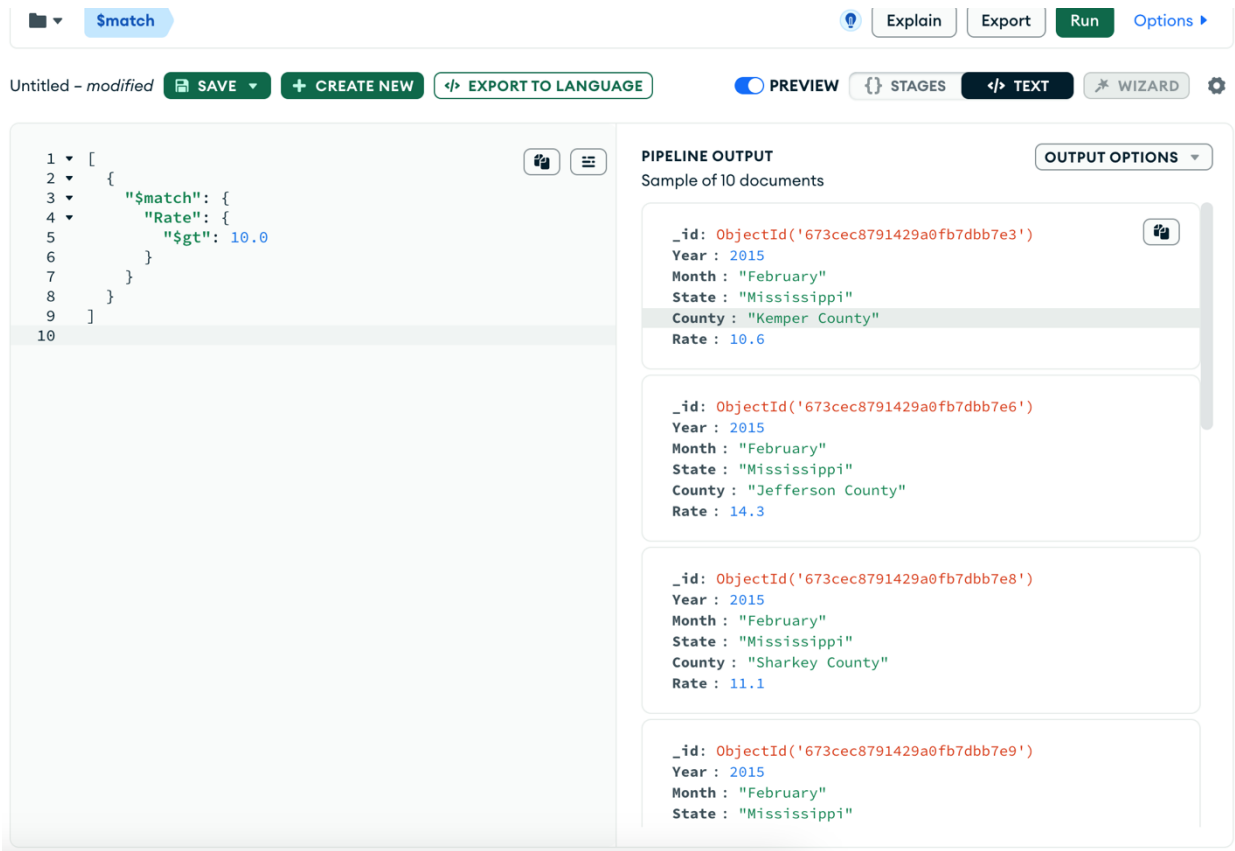
Query 3: Count records where the unemployment rate is less than 1%




```
db.unemployment.find({ Rate: { $lt: 1.0 } }).count();
```

Explanation:
This query finds and counts all records where the Rate field is less than 1.0. It helps identify how many counties had an unemployment rate below 1%.

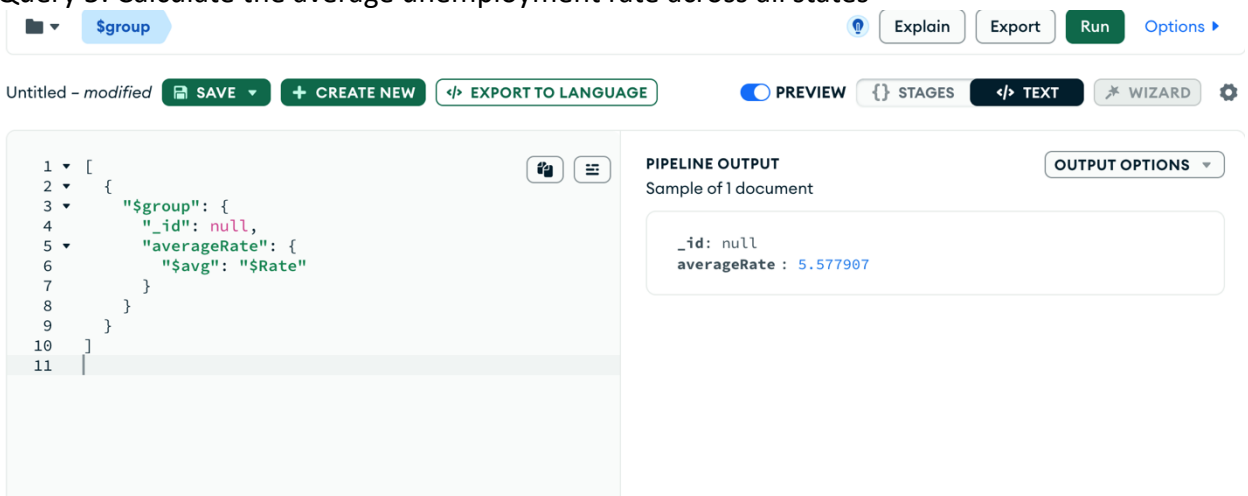
Query 4: Find all counties with unemployment rates higher than 10%.




```
db.unemployment.find({ Rate: { $gt: 10.0 } });
```

Explanation:
This query retrieves all documents where the unemployment Rate is greater than 10%. It provides a list of counties experiencing significantly high unemployment rates.

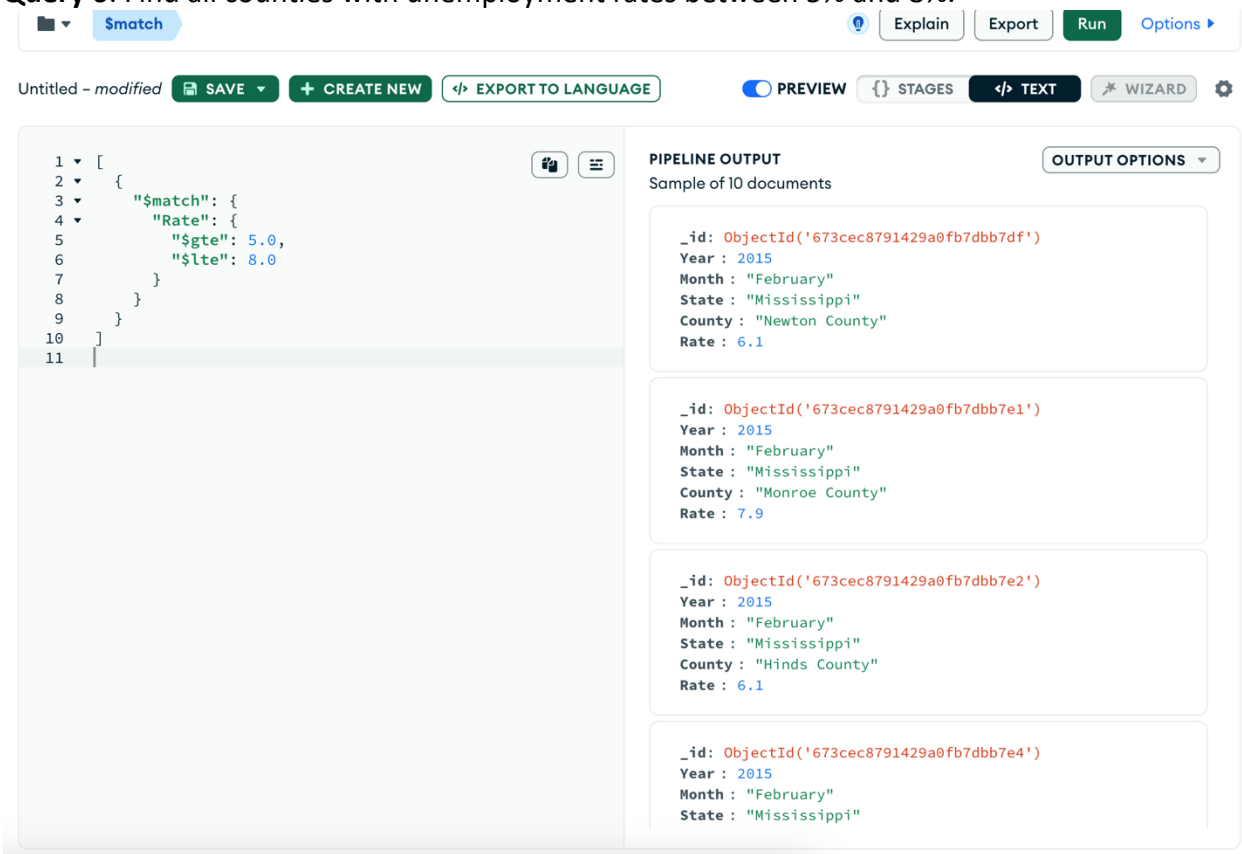
Query 5: Calculate the average unemployment rate across all states




```mongo
db.unemployment.aggregate([
    { $group: { _id: null, averageRate: { $avg: "$Rate" } } }
]);
```

Explanation:
This query uses the $group stage in an aggregation pipeline to calculate the average unemployment rate across all records. The null value for _id ensures that all documents are grouped together.

Query 6: Find all counties with unemployment rates between 5% and 8%.

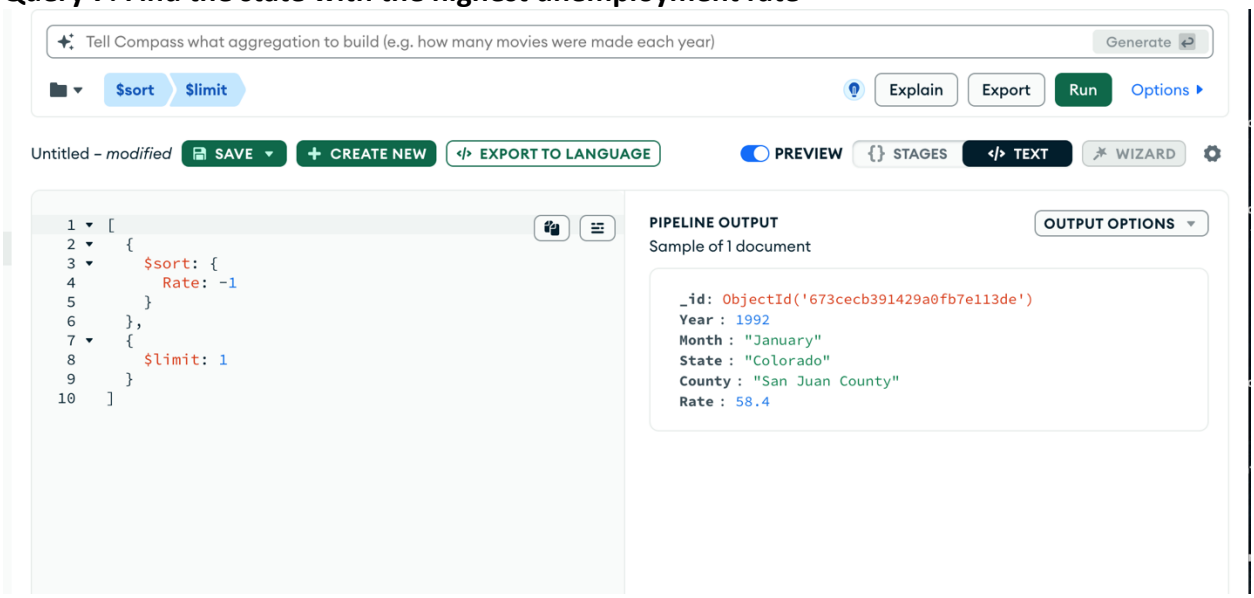



```
db.unemployment.find({ Rate: { $gte: 5.0, $lte: 8.0 } });

/*
```

Explanation:
This query finds all records where the unemployment Rate falls between 5% and 8% (inclusive). It helps identify counties with moderate unemployment rates.

Query 7: Find the state with the highest unemployment rate

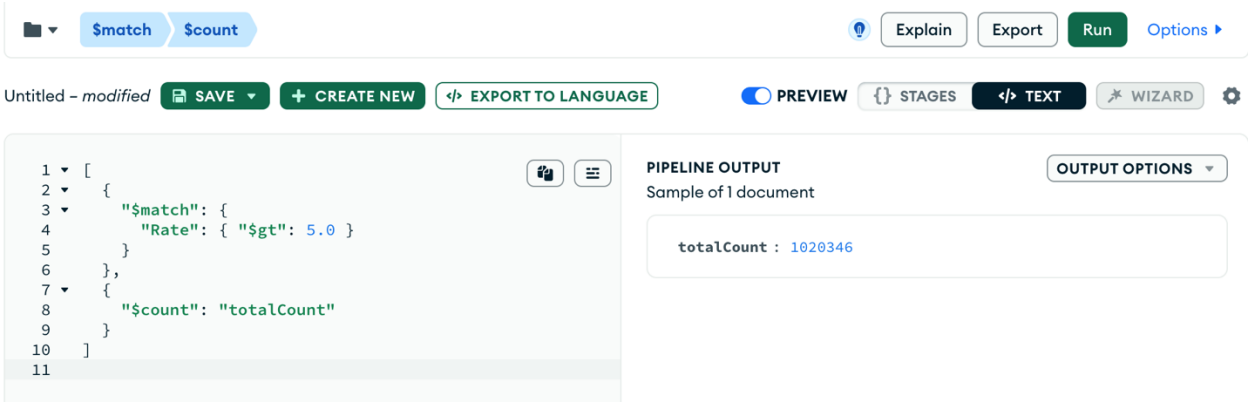



```
db.unemployment.aggregate([
    { $sort: { Rate: -1 } },
    { $limit: 1 }
])
```

Explanation:

This query sorts the dataset in descending order by Rate using the $sort stage and then retrieves the top document using $limit: 1. This document represents the state with the highest unemployment rate.

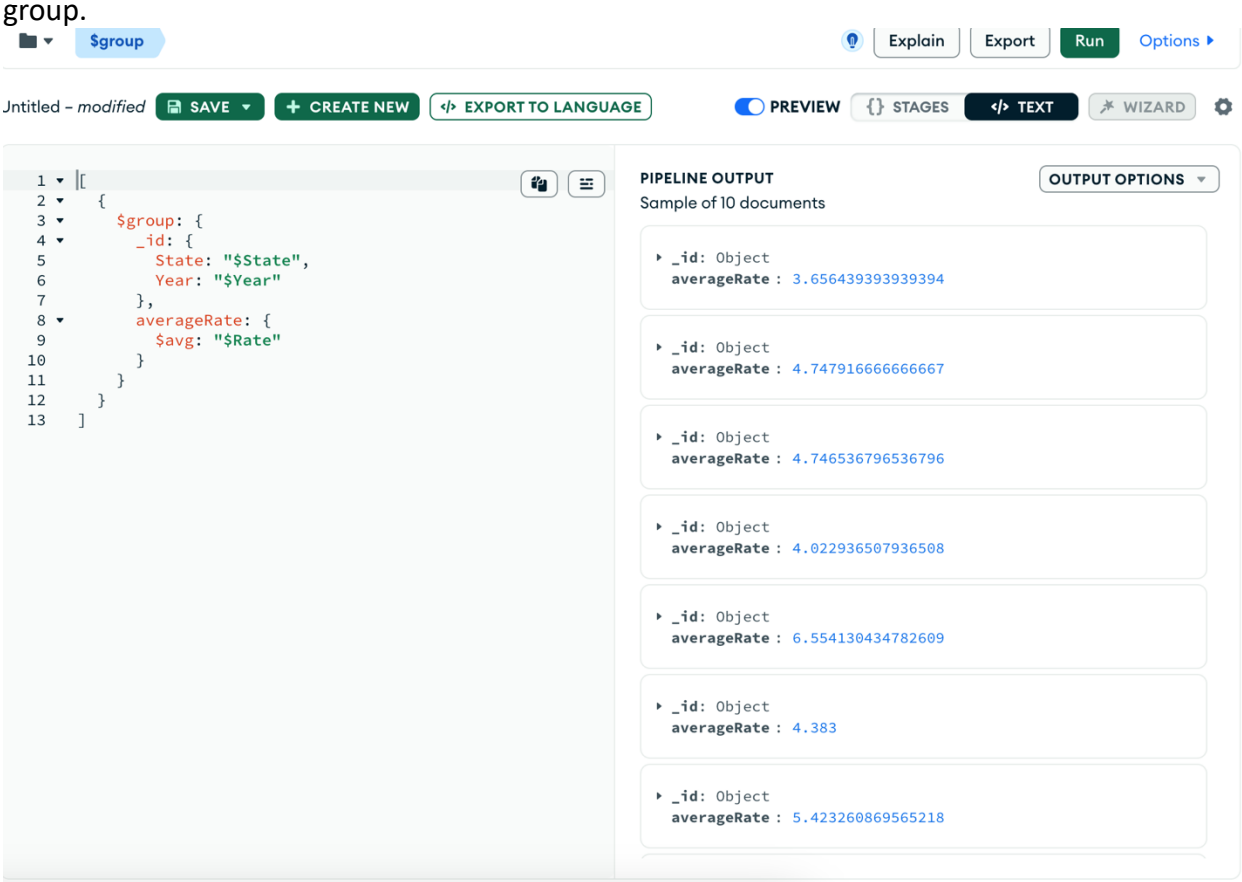
Query 8: Count counties with unemployment rates above 5%.




```
db.unemployment.aggregate([
    { $match: { Rate: { $gt: 5.0 } } },
    { $count: "totalCount" }
]);
```

Explanation:
This query filters documents where the Rate is greater than 5% using the $match stage and counts the resulting records using $count. The count represents the number of counties with an unemployment rate above 5%

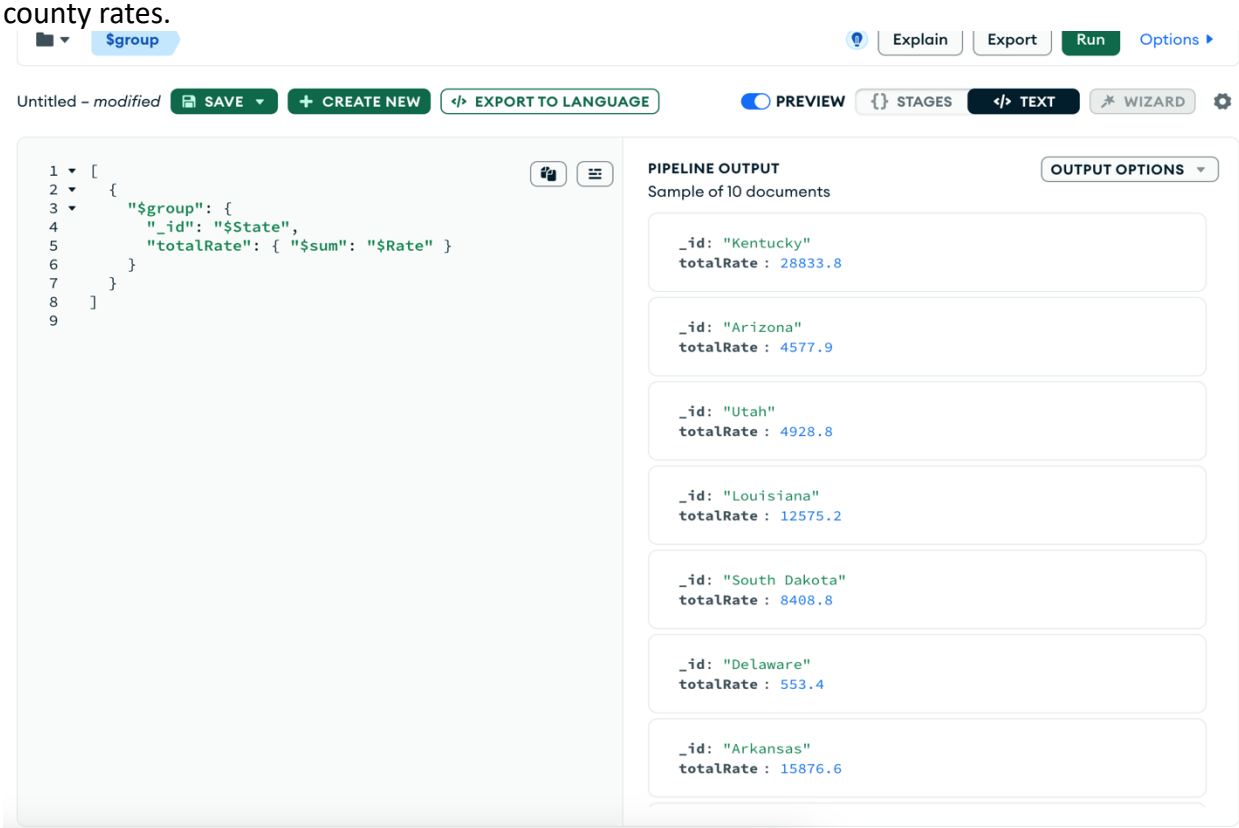
Query 9: Calculate the average unemployment rate per state by year. The query groups documents by State and Year, then calculates the average unemployment rate (Rate) for each group.




```
db.unemployment.aggregate([
    { $group: { _id: "$State", totalRate: { $sum: "$Rate" } } }
]);
```

Explanation:
This query groups the dataset by both State and Year using the $group stage. It then calculates the average unemployment rate for each state in each year.

Query 10: For each state, calculate the total unemployment rate across all counties sum of all county rates.

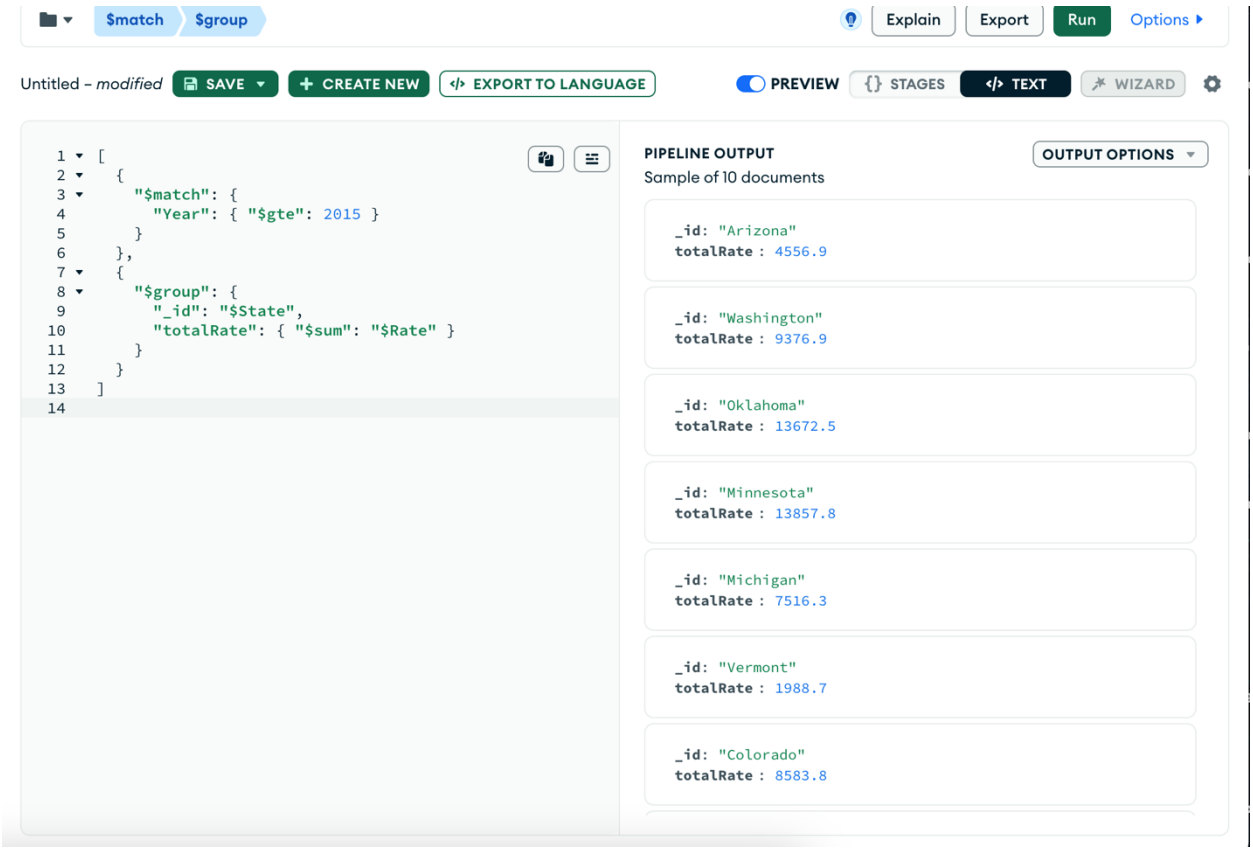



```
db.unemployment.aggregate([
    { $group: { _id: "$State", totalRate: { $sum: "$Rate" } } }
]);
```

Explanation:

This query groups the dataset by State and calculates the total unemployment rate for each state by summing up all the Rate values for counties in that state.

Query 11: Calculate the Total Unemployment Rate Across All Counties for Each State Starting from 2015 Onward




```
db.unemployment.aggregate([
    { $match: { Year: { $gte: 2015 } } },
    { $group: { _id: "$State", totalRate: { $sum: "$Rate" } } }
]);
```

Explanation:
This query first filters the dataset to include only documents from the year 2015 onward using the $match stage. It then groups the filtered data by State and calculates the total unemployment rate for each state.