

Atlanta Population

1. use `db.zipcodes.find()` to filter results to only the results where city is ATLANTA and state is GA.

```
db.zipcodes.find({city:"ATLANTA",state:"GA"})
```

2. use `db.zipcodes.aggregate` with `$match` to do the same as above.

```
db.zipcodes.aggregate([{$match:{city:"ATLANTA",state:"GA"}}])
```

3. use `$group` to count the number of zip codes in Atlanta.

```
db.zipcodes.aggregate([{$match:{city:"ATLANTA"}},{ $group:{_id:{$_id:"$pop"}},{ $count:"Number of zip code"}}])
```

4. use `$group` to find the total population in Atlanta.

```
db.zipcodes.aggregate([{$group:{_id:"$city",population:{$sum:"$pop"}},{ $match:{_id:"ATLANTA"}}])
```

Populations By State

1. use `aggregate` to calculate the total population for each state

```
db.zipcodes.aggregate([{$group:{_id:"$state",Totalpopulation:{$sum:"$pop"}}}])
```

2. sort the results by population, highest first

```
db.zipcodes.aggregate([{$group:{_id:"$state",Totalpopulation:{$sum:"$pop"}},{ $sort:{Totalpopulation:-1}}])
```

3. limit the results to just the first 3 results. What are the top 3 states in population?

```
db.zipcodes.aggregate([{$group:{_id:"$state",Totalpopulation:{$sum:"$pop"}},{ $sort:{Totalpopulation:-1}},{ $limit:3}])
```

```
{_id: 'CA', Totalpopulation: 29754890 },
{ _id: 'NY', Totalpopulation: 17990402 },
{ _id: 'TX', Totalpopulation: 16984601 }
}
```

Populations by City

1. use aggregate to calculate the total population for each city (you have to use city/state combination). You can use a combination for the `_id` of the `$group`: { city: '\$city', state: '\$state' }

```
db.zipcodes.aggregate([{$group:{_id:"$city",population:{$sum:"$pop"}}}])
```

2. sort the results by population, highest first

```
db.zipcodes.aggregate([{$group:{_id:{city:"$city",state:"$state"},population:{$sum:"$pop"}},{
$sort:{"population":-1}}])
```

3. limit the results to just the first 3 results. What are the top 3 cities in population?

```
db.zipcodes.aggregate([{$group:{_id:{city:"$city",state:"$state"},population:{$sum:"$pop"}},{
$sort:{"population":-1}},{$limit:3}])
```

4. What are the top 3 cities in population in Texas?

```
{_id: { city: 'CHICAGO', state: 'IL' }, population: 2452177 },
{ _id: { city: 'BROOKLYN', state: 'NY' }, population: 2300504 },
{ _id: { city: 'LOS ANGELES', state: 'CA' }, population: 2102295 }
```

Bonus

1. Write a query to get the average city population for each state.

```
db.zipcodes.aggregate([{$group:{_id:"$city",AvgPopulation:{$avg:"$pop"}}}])
```

2. What are the top 3 states in terms of average city population?

```
db.zipcodes.aggregate([{$group:{_id:"$city",AvgPopulation:{$avg:"$pop"}},{
$sort:{"AvgPopulation":-1}},{$limit:3}])
```

```
{_id: 'BELL GARDENS', AvgPopulation: 99568 },
{ _id: 'ARLETA', AvgPopulation: 88114 },
{ _id: 'SOUTH GATE', AvgPopulation: 87026 }
```