**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({$and:[{city:"ATLANTA"},{state:"GA"}]})

{ "\_id" : "30303", "city" : "ATLANTA", "loc" : [ -84.388846, 33.752504 ], "pop" : 1845, "state" : "GA" }

{ "\_id" : "30305", "city" : "ATLANTA", "loc" : [ -84.385145, 33.831963 ], "pop" : 19122, "state" : "GA" }

{ "\_id" : "30306", "city" : "ATLANTA", "loc" : [ -84.351418, 33.786027 ], "pop" : 20081, "state" : "GA" }

{ "\_id" : "30307", "city" : "ATLANTA", "loc" : [ -84.335957, 33.769138 ], "pop" : 16330, "state" : "GA" }

{ "\_id" : "30308", "city" : "ATLANTA", "loc" : [ -84.375744, 33.771839 ], "pop" : 8549, "state" : "GA" }

{ "\_id" : "30309", "city" : "ATLANTA", "loc" : [ -84.388338, 33.798407 ], "pop" : 14766, "state" : "GA" }

{ "\_id" : "30310", "city" : "ATLANTA", "loc" : [ -84.423173, 33.727849 ], "pop" : 34017, "state" : "GA" }

{ "\_id" : "30311", "city" : "ATLANTA", "loc" : [ -84.470219, 33.722957 ], "pop" : 34880, "state" : "GA" }

{ "\_id" : "30312", "city" : "ATLANTA", "loc" : [ -84.378125, 33.746749 ], "pop" : 17683, "state" : "GA" }

{ "\_id" : "30313", "city" : "ATLANTA", "loc" : [ -84.39352, 33.76825 ], "pop" : 8038, "state" : "GA" }

{ "\_id" : "30314", "city" : "ATLANTA", "loc" : [ -84.425546, 33.756103 ], "pop" : 26649, "state" : "GA" }

{ "\_id" : "30315", "city" : "ATLANTA", "loc" : [ -84.380771, 33.705062 ], "pop" : 41061, "state" : "GA" }

{ "\_id" : "30316", "city" : "ATLANTA", "loc" : [ -84.333913, 33.721686 ], "pop" : 34668, "state" : "GA" }

{ "\_id" : "30317", "city" : "ATLANTA", "loc" : [ -84.31685, 33.749788 ], "pop" : 16395, "state" : "GA" }

{ "\_id" : "30318", "city" : "ATLANTA", "loc" : [ -84.445432, 33.786454 ], "pop" : 53894, "state" : "GA" }

{ "\_id" : "30319", "city" : "ATLANTA", "loc" : [ -84.335091, 33.868728 ], "pop" : 32138, "state" : "GA" }

{ "\_id" : "30324", "city" : "ATLANTA", "loc" : [ -84.354867, 33.820609 ], "pop" : 15044, "state" : "GA" }

{ "\_id" : "30326", "city" : "ATLANTA", "loc" : [ -84.358232, 33.848168 ], "pop" : 125, "state" : "GA" }

{ "\_id" : "30327", "city" : "ATLANTA", "loc" : [ -84.419966, 33.862723 ], "pop" : 18467, "state" : "GA" }

{ "\_id" : "30329", "city" : "ATLANTA", "loc" : [ -84.321402, 33.823555 ], "pop" : 17013, "state" : "GA" }

Type "it" for more

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

> db.zipcodes.aggregate([

{$match:

{$and:[{city:"ATLANTA"},{state:"GA"}]

}}

])

{ "\_id" : "30303", "city" : "ATLANTA", "loc" : [ -84.388846, 33.752504 ], "pop" : 1845, "state" : "GA" }

{ "\_id" : "30305", "city" : "ATLANTA", "loc" : [ -84.385145, 33.831963 ], "pop" : 19122, "state" : "GA" }

{ "\_id" : "30306", "city" : "ATLANTA", "loc" : [ -84.351418, 33.786027 ], "pop" : 20081, "state" : "GA" }

{ "\_id" : "30307", "city" : "ATLANTA", "loc" : [ -84.335957, 33.769138 ], "pop" : 16330, "state" : "GA" }

{ "\_id" : "30308", "city" : "ATLANTA", "loc" : [ -84.375744, 33.771839 ], "pop" : 8549, "state" : "GA" }

{ "\_id" : "30309", "city" : "ATLANTA", "loc" : [ -84.388338, 33.798407 ], "pop" : 14766, "state" : "GA" }

{ "\_id" : "30310", "city" : "ATLANTA", "loc" : [ -84.423173, 33.727849 ], "pop" : 34017, "state" : "GA" }

{ "\_id" : "30311", "city" : "ATLANTA", "loc" : [ -84.470219, 33.722957 ], "pop" : 34880, "state" : "GA" }

{ "\_id" : "30312", "city" : "ATLANTA", "loc" : [ -84.378125, 33.746749 ], "pop" : 17683, "state" : "GA" }

{ "\_id" : "30313", "city" : "ATLANTA", "loc" : [ -84.39352, 33.76825 ], "pop" : 8038, "state" : "GA" }

{ "\_id" : "30314", "city" : "ATLANTA", "loc" : [ -84.425546, 33.756103 ], "pop" : 26649, "state" : "GA" }

{ "\_id" : "30315", "city" : "ATLANTA", "loc" : [ -84.380771, 33.705062 ], "pop" : 41061, "state" : "GA" }

{ "\_id" : "30316", "city" : "ATLANTA", "loc" : [ -84.333913, 33.721686 ], "pop" : 34668, "state" : "GA" }

{ "\_id" : "30317", "city" : "ATLANTA", "loc" : [ -84.31685, 33.749788 ], "pop" : 16395, "state" : "GA" }

{ "\_id" : "30318", "city" : "ATLANTA", "loc" : [ -84.445432, 33.786454 ], "pop" : 53894, "state" : "GA" }

{ "\_id" : "30319", "city" : "ATLANTA", "loc" : [ -84.335091, 33.868728 ], "pop" : 32138, "state" : "GA" }

{ "\_id" : "30324", "city" : "ATLANTA", "loc" : [ -84.354867, 33.820609 ], "pop" : 15044, "state" : "GA" }

{ "\_id" : "30326", "city" : "ATLANTA", "loc" : [ -84.358232, 33.848168 ], "pop" : 125, "state" : "GA" }

{ "\_id" : "30327", "city" : "ATLANTA", "loc" : [ -84.419966, 33.862723 ], "pop" : 18467, "state" : "GA" }

{ "\_id" : "30329", "city" : "ATLANTA", "loc" : [ -84.321402, 33.823555 ], "pop" : 17013, "state" : "GA" }

Type "it" for more.

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

> db.zipcodes.aggregate([ {$match:{city:"ATLANTA"}}, {$count:"ATLANTA\_ZIP"} ])

{ "ATLANTA\_ZIP" : 41 }

OR

> db.zipcodes.aggregate([ {$match:{city:"ATLANTA"}},

... {$group:{\_id:"$city",

... count:{$sum:1}

... }}

... ])

{ "\_id" : "ATLANTA", "count" : 41 }

1. use $group to find the total population in Atlanta.

> db.zipcodes.aggregate([ {$match:{city:"ATLANTA"}},

{$group:

{\_id:{city:"$city",state:"$state"},

total:{$sum:"$pop"}

}}])

{ "\_id" : { "city" : "ATLANTA", "state" : "NY" }, "total" : 472 }

{ "\_id" : { "city" : "ATLANTA", "state" : "LA" }, "total" : 2466 }

{ "\_id" : { "city" : "ATLANTA", "state" : "MO" }, "total" : 977 }

{ "\_id" : { "city" : "ATLANTA", "state" : "NE" }, "total" : 261 }

{ "\_id" : { "city" : "ATLANTA", "state" : "ID" }, "total" : 208 }

{ "\_id" : { "city" : "ATLANTA", "state" : "IN" }, "total" : 2450 }

{ "\_id" : { "city" : "ATLANTA", "state" : "TX" }, "total" : 9024 }

{ "\_id" : { "city" : "ATLANTA", "state" : "KS" }, "total" : 320 }

{ "\_id" : { "city" : "ATLANTA", "state" : "GA" }, "total" : 609591 }

{ "\_id" : { "city" : "ATLANTA", "state" : "MI" }, "total" : 2299 }

{ "\_id" : { "city" : "ATLANTA", "state" : "IL" }, "total" : 1978 }

>

**Populations By State**

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

> db.zipcodes.aggregate([{$group:{\_id:"$state",total\_pop:{$sum:"$pop"}}}])

{ "\_id" : "KS", "total\_pop" : 2475285 }

{ "\_id" : "DE", "total\_pop" : 666168 }

{ "\_id" : "MS", "total\_pop" : 2573216 }

{ "\_id" : "VT", "total\_pop" : 562758 }

{ "\_id" : "WI", "total\_pop" : 4891769 }

{ "\_id" : "HI", "total\_pop" : 1108229 }

{ "\_id" : "IN", "total\_pop" : 5544136 }

{ "\_id" : "AK", "total\_pop" : 544698 }

{ "\_id" : "DC", "total\_pop" : 606900 }

{ "\_id" : "IL", "total\_pop" : 11427576 }

{ "\_id" : "TN", "total\_pop" : 4876457 }

{ "\_id" : "FL", "total\_pop" : 12686644 }

{ "\_id" : "PA", "total\_pop" : 11881643 }

{ "\_id" : "NC", "total\_pop" : 6628637 }

{ "\_id" : "SC", "total\_pop" : 3486703 }

{ "\_id" : "OH", "total\_pop" : 10846517 }

{ "\_id" : "LA", "total\_pop" : 4217595 }

{ "\_id" : "AR", "total\_pop" : 2350725 }

{ "\_id" : "MI", "total\_pop" : 9295297 }

{ "\_id" : "OK", "total\_pop" : 3145585 }

1. sort the results by population, highest first

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

{ "\_id" : "CA", "pop" : 29754890 }

{ "\_id" : "NY", "pop" : 17990402 }

{ "\_id" : "TX", "pop" : 16984601 }

{ "\_id" : "FL", "pop" : 12686644 }

{ "\_id" : "PA", "pop" : 11881643 }

{ "\_id" : "IL", "pop" : 11427576 }

{ "\_id" : "OH", "pop" : 10846517 }

{ "\_id" : "MI", "pop" : 9295297 }

{ "\_id" : "NJ", "pop" : 7730188 }

{ "\_id" : "NC", "pop" : 6628637 }

{ "\_id" : "GA", "pop" : 6478216 }

{ "\_id" : "VA", "pop" : 6181479 }

{ "\_id" : "MA", "pop" : 6016425 }

{ "\_id" : "IN", "pop" : 5544136 }

{ "\_id" : "MO", "pop" : 5110648 }

{ "\_id" : "WI", "pop" : 4891769 }

{ "\_id" : "TN", "pop" : 4876457 }

{ "\_id" : "WA", "pop" : 4866692 }

{ "\_id" : "MD", "pop" : 4781379 }

{ "\_id" : "MN", "pop" : 4372982 }

Type "it" for more

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

population?

> db.zipcodes.aggregate([

{$group: {\_id:"$state",pop:{$sum:"$pop"}} },

{$sort:{pop: -1} },

{$limit :3}

])

{ "\_id" : "CA", "pop" : 29754890 }

{ "\_id" : "NY", "pop" : 17990402 }

{ "\_id" : "TX", "pop" : 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:"$city",state:"$state"},

pop:{$sum:"$pop"}

}

}

])

{ "\_id" : { "city" : "LAMONT", "state" : "FL" }, "pop" : 1409 }

{ "\_id" : { "city" : "WARREN", "state" : "NH" }, "pop" : 886 }

{ "\_id" : { "city" : "FREMONT", "state" : "IN" }, "pop" : 4248 }

{ "\_id" : { "city" : "WILSON", "state" : "WI" }, "pop" : 1415 }

{ "\_id" : { "city" : "BOYNE CITY", "state" : "MI" }, "pop" : 7244 }

{ "\_id" : { "city" : "OAKFIELD", "state" : "TN" }, "pop" : 2239 }

{ "\_id" : { "city" : "MOSCOW", "state" : "IA" }, "pop" : 752 }

{ "\_id" : { "city" : "THIEF RIVER FALL", "state" : "MN" }, "pop" : 11401 }

{ "\_id" : { "city" : "NEW FRANKLIN", "state" : "MO" }, "pop" : 1595 }

{ "\_id" : { "city" : "PLAINVIEW", "state" : "NE" }, "pop" : 1978 }

{ "\_id" : { "city" : "SAN JOSE", "state" : "NM" }, "pop" : 844 }

{ "\_id" : { "city" : "BOWMAN", "state" : "ND" }, "pop" : 2432 }

{ "\_id" : { "city" : "ALPINE", "state" : "AZ" }, "pop" : 243 }

{ "\_id" : { "city" : "REYNOLDS", "state" : "GA" }, "pop" : 2455 }

{ "\_id" : { "city" : "BOONVILLE", "state" : "NY" }, "pop" : 5768 }

{ "\_id" : { "city" : "NORTH BINGHAM", "state" : "PA" }, "pop" : 1585 }

{ "\_id" : { "city" : "ATTICA", "state" : "NY" }, "pop" : 9372 }

{ "\_id" : { "city" : "WELCOME", "state" : "MN" }, "pop" : 1435 }

{ "\_id" : { "city" : "BELTRAMI", "state" : "MN" }, "pop" : 517 }

{ "\_id" : { "city" : "ENGLEWOOD", "state" : "TN" }, "pop" : 3419 }

Type "it" for more

1. sort the results by population, highest first

> db.zipcodes.aggregate([

{$group:

{\_id:{city:"$city",state:"$state"},

pop:{$sum:"$pop"}

}

},

{$sort:{pop:-1}}

])

{ "\_id" : { "city" : "CHICAGO", "state" : "IL" }, "pop" : 2452177 }

{ "\_id" : { "city" : "BROOKLYN", "state" : "NY" }, "pop" : 2300504 }

{ "\_id" : { "city" : "LOS ANGELES", "state" : "CA" }, "pop" : 2102295 }

{ "\_id" : { "city" : "HOUSTON", "state" : "TX" }, "pop" : 2095918 }

{ "\_id" : { "city" : "PHILADELPHIA", "state" : "PA" }, "pop" : 1610956 }

{ "\_id" : { "city" : "NEW YORK", "state" : "NY" }, "pop" : 1476790 }

{ "\_id" : { "city" : "BRONX", "state" : "NY" }, "pop" : 1209548 }

{ "\_id" : { "city" : "SAN DIEGO", "state" : "CA" }, "pop" : 1049298 }

{ "\_id" : { "city" : "DETROIT", "state" : "MI" }, "pop" : 963243 }

{ "\_id" : { "city" : "DALLAS", "state" : "TX" }, "pop" : 940191 }

{ "\_id" : { "city" : "PHOENIX", "state" : "AZ" }, "pop" : 890853 }

{ "\_id" : { "city" : "MIAMI", "state" : "FL" }, "pop" : 825232 }

{ "\_id" : { "city" : "SAN JOSE", "state" : "CA" }, "pop" : 816653 }

{ "\_id" : { "city" : "SAN ANTONIO", "state" : "TX" }, "pop" : 811792 }

{ "\_id" : { "city" : "BALTIMORE", "state" : "MD" }, "pop" : 733081 }

{ "\_id" : { "city" : "SAN FRANCISCO", "state" : "CA" }, "pop" : 723993 }

{ "\_id" : { "city" : "MEMPHIS", "state" : "TN" }, "pop" : 632837 }

{ "\_id" : { "city" : "SACRAMENTO", "state" : "CA" }, "pop" : 628279 }

{ "\_id" : { "city" : "JACKSONVILLE", "state" : "FL" }, "pop" : 610160 }

{ "\_id" : { "city" : "ATLANTA", "state" : "GA" }, "pop" : 609591 }

Type "it" for more

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

population?

> db.zipcodes.aggregate([

{$group:

{

\_id:{city:"$city"},

pop:{$sum:"$pop"}

}

},

{$sort:{pop:-1}},

{$limit:3}

])

{ "\_id" : { "city" : "CHICAGO" }, "pop" : 2452177 }

{ "\_id" : { "city" : "BROOKLYN" }, "pop" : 2341387 }

{ "\_id" : { "city" : "HOUSTON" }, "pop" : 2123053 }

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

**Bonus**

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

> db.zipcodes.aggregate([

{$group:

{

\_id:{state:"$state"},

avgPop:{$avg:"$pop"}

}

}

])

{ "\_id" : { "state" : "DC" }, "avgPop" : 25287.5 }

{ "\_id" : { "state" : "RI" }, "avgPop" : 14539.391304347826 }

{ "\_id" : { "state" : "IL" }, "avgPop" : 9238.137429264349 }

{ "\_id" : { "state" : "UT" }, "avgPop" : 8404.146341463415 }

{ "\_id" : { "state" : "ND" }, "avgPop" : 1632.4092071611253 }

{ "\_id" : { "state" : "NE" }, "avgPop" : 2749.3710801393727 }

{ "\_id" : { "state" : "MO" }, "avgPop" : 5141.496981891348 }

{ "\_id" : { "state" : "GA" }, "avgPop" : 10201.914960629922 }

{ "\_id" : { "state" : "AL" }, "avgPop" : 7126.255731922399 }

{ "\_id" : { "state" : "MT" }, "avgPop" : 2544.420382165605 }

{ "\_id" : { "state" : "CO" }, "avgPop" : 7955.929951690821 }

{ "\_id" : { "state" : "WA" }, "avgPop" : 10055.148760330578 }

{ "\_id" : { "state" : "CT" }, "avgPop" : 12498.539923954373 }

{ "\_id" : { "state" : "TX" }, "avgPop" : 10164.333333333334 }

{ "\_id" : { "state" : "MD" }, "avgPop" : 11384.235714285714 }

{ "\_id" : { "state" : "NY" }, "avgPop" : 11279.248902821317 }

{ "\_id" : { "state" : "NJ" }, "avgPop" : 14315.162962962962 }

{ "\_id" : { "state" : "WY" }, "avgPop" : 3239.4857142857145 }

{ "\_id" : { "state" : "ID" }, "avgPop" : 4126.020491803279 }

{ "\_id" : { "state" : "ME" }, "avgPop" : 2991.8243902439026 }

Type "it" for more

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

> db.zipcodes.aggregate([

{$group:

{\_

id:{state:"$state"},

avgPop:{$avg:"$pop"}}

},

{$sort:{avgPop:-1}},

{$limit:3}

])

{ "\_id" : { "state" : "DC" }, "avgPop" : 25287.5 }

{ "\_id" : { "state" : "CA" }, "avgPop" : 19627.236147757256 }

{ "\_id" : { "state" : "FL" }, "avgPop" : 15779.407960199005 }