Geography’s Impact on the NFL Draft

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# Introduction

This project will look at how geography impacts the NFL draft or if it does at all. There are 32 teams in the NFL spread across the whole country. It is very much a national sport, and teams will often have players from all around the country and even the world. Because of this, geography is not usually thought of as a factor in whom NFL teams draft. However, I have always wondered if geography does play a role in the NFL draft, and this curiosity is what inspired me to take on this project.

# Data Sources

The main data set that will be used in this project comes from collegefootballdata.com. This data set contains data on every pick from the 2024 NFL Draft. Critically for our purposes, this data includes information on each player’s alma mater and hometown. This data set was downloaded as a csv file, and the read\_csv function can be used to transfer that data set into a data frame.

Besides this data set, another data set from collegefootballdata.com will also be used to add information to the draft data set. This data set contains data on every FBS school. For our research, the data on each school’s location will be needed. This data set was downloaded as a csv file and tidied up in a previous assignment. The read\_csv function can be used to transfer the tidy version of that data set into a data frame.

These two data sets will be extremely useful, but they will not provide all the information we need. Further information will be found through my own research and added manually into the data set. Most of this information will come from Wikipedia.

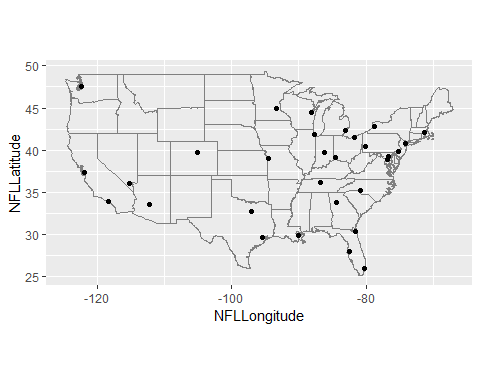
# Tidying the Data

Before we can start looking at this data, we must start by making it tidy. The first thing we can do is remove several unnecessary columns. The ID columns are unique identifiers that are not needed since we are not referencing the larger database, the Year column is unnecessary since we are only looking at 2024, and several of each player’s measurables including height, weight, and their rankings and grades are not relevant to our study. Therefore, all of these columns can be removed. There are also a couple of geography columns that can be removed. The vast majority of players are from the USA, and the few that are not can be specified elsewhere in the data set. We will also not be looking at counties in this project, so that column can be removed too.

The next step is to change some column names. Several of the column names should be changed because they are too long or not specific enough. In fact, the Overall, Round, Pick, and Position columns are the only ones whose names do not need to be changed. Every other column will receive new names.

Now that the columns have been renamed, it is now time to start adding in more data. First of all, we will add data from the fbs data set. We want to match each entry in the data set with the appropriate data from the City, State, Latitude, and Longitude columns from the fbs data set based on the College column. This can be done with a left join. This will not cover every college because not every college in the draft data set is in the FBS, so that data will have to be manually added in later.

The last columns we need to add are geographic data for each NFL team. Once again, this will include city, state, latitude, and longitude. Unfortunately, I do not have access to a data set with this information, so I will have to add the data for each team manually. This information will come from Wikipedia. The following map shows that the coordinates have been added correctly.



Now that we have all the columns we need, we can rearrange these columns into an order that makes more sense. We want to be able to identify each pick from the first column, so the Overall column should come first. This would be followed by other identifiers including the Round, Pick, Player, and Position columns. The Team column would come next followed by the NFL geography columns. The College and Conference columns would come after that followed by the alma mater geography columns. Finally, the hometown geography columns will come last.

Now that the columns are in order, we need to fix some of the data. First of all, you may notice that each NFL team is only identified by their location name. However, there are two teams each named New York and Los Angeles. Therefore, I need to go through and specify which team each one is. Once again, I will be using information from Wikipedia to fill these in. It should be noted that I waited until after assigning geographic data to each team to do this step because the New York and Los Angeles teams each share a stadium.

Now that the teams are taken care of, the last thing to do is fill in any null values. As mentioned earlier, many of these null values will be the result of not every college in the draft data set being in the FBS. Any missing information will be added in manually using my own research. Once again, most of this data will come from Wikipedia. Once this is done, our data set will finally be tidy.

# Analysis of States

Now that the data set has been tidied, we can finally start our analysis on geography’s impact on the NFL draft. The first thing to look at is whether teams tend to look within their own states for draft prospects. We will start off by looking at how many players were drafted by teams in the same state as the college they were drafted out of.

filter(draft, NFLState == AMState) %>% print(width = Inf)

## # A tibble: 7 × 20  
## Overall Round Pick Player Position Team   
## <dbl> <dbl> <dbl> <chr> <chr> <chr>   
## 1 54 2 22 Michael Hall Jr. Defensive Tackle Cleveland   
## 2 96 3 33 Jarrian Jones Cornerback Jacksonville   
## 3 197 6 21 Zion Logue Defensive Tackle Atlanta   
## 4 209 6 33 Joshua Karty Place Kicker LAR   
## 5 215 6 39 Jarrett Kingston Offensive Guard San Francisco  
## 6 225 7 5 Brenden Rice Wide Receiver LAC   
## 7 243 7 23 Jowon Briggs Defensive Tackle Cleveland   
## NFLCity NFLState NFLLatitude NFLLongitude College Conference  
## <chr> <chr> <dbl> <dbl> <chr> <chr>   
## 1 Cleveland OH 41.5 -81.7 Ohio State Big Ten   
## 2 Jacksonville FL 30.3 -81.6 Florida State ACC   
## 3 Atlanta GA 33.8 -84.4 Georgia SEC   
## 4 Inglewood CA 34.0 -118. Stanford Pac-12   
## 5 Santa Clara CA 37.4 -122. USC Pac-12   
## 6 Inglewood CA 34.0 -118. USC Pac-12   
## 7 Cleveland OH 41.5 -81.7 Cincinnati Big 12

## AMCity AMState AMLatitude AMLongitude HTCity HTState  
## <chr> <chr> <dbl> <dbl> <chr> <chr>   
## 1 Columbus OH 40.0 -83.0 Streetsboro OH   
## 2 Tallahassee FL 30.4 -84.3 Brandon MS   
## 3 Athens GA 33.9 -83.4 Lebanon TN   
## 4 Stanford CA 37.4 -122. Burlington NC   
## 5 Los Angeles CA 34.0 -118. Anderson CA   
## 6 Los Angeles CA 34.0 -118. Chandler AZ   
## 7 Cincinnati OH 39.1 -84.5 Cincinnati OH   
## HTLatitude HTLongitude  
## <dbl> <dbl>  
## 1 41.2 -81.3  
## 2 32.3 -90.0  
## 3 36.2 -86.3  
## 4 36.1 -79.4  
## 5 40.4 -122.   
## 6 33.3 -112.   
## 7 39.1 -84.5

As can be seen, only seven players were drafted by teams in the same state as their alma mater. This is certainly surprising as it accounts for under 3% of the 257 draft picks from this year. Furthermore, five of these seven players were drafted in the last two rounds. This could show that geography plays more of an impact in the later rounds of the draft. Another interesting thing to note is that the Cleveland Browns are the only team on this list twice. We will now look at how many players were drafted by teams in the same state as their hometowns.

filter(draft, NFLState == HTState) %>% print(width = Inf)

## # A tibble: 10 × 20  
## Overall Round Pick Player Position Team   
## <dbl> <dbl> <dbl> <chr> <chr> <chr>   
## 1 29 1 29 Tyler Guyton Offensive Tackle Dallas   
## 2 54 2 22 Michael Hall Jr. Defensive Tackle Cleveland   
## 3 75 3 11 Kiran Amegadjie Offensive Tackle Chicago   
## 4 115 4 15 Erick All Tight End Cincinnati   
## 5 116 4 16 Jordan Jefferson Defensive Tackle Jacksonville   
## 6 143 5 8 JD Bertrand Linebacker Atlanta   
## 7 154 5 19 Brennan Jackson Defensive Edge LAR   
## 8 215 6 39 Jarrett Kingston Offensive Guard San Francisco  
## 9 243 7 23 Jowon Briggs Defensive Tackle Cleveland   
## 10 249 7 29 LaDarius Henderson Offensive Tackle Houston

## NFLCity NFLState NFLLatitude NFLLongitude College   
## <chr> <chr> <dbl> <dbl> <chr>   
## 1 Arlington TX 32.7 -97.1 Oklahoma   
## 2 Cleveland OH 41.5 -81.7 Ohio State   
## 3 Chicago IL 41.9 -87.6 Yale   
## 4 Cincinnati OH 39.1 -84.5 Iowa   
## 5 Jacksonville FL 30.3 -81.6 LSU   
## 6 Atlanta GA 33.8 -84.4 Notre Dame   
## 7 Inglewood CA 34.0 -118. Washington State  
## 8 Santa Clara CA 37.4 -122. USC   
## 9 Cleveland OH 41.5 -81.7 Cincinnati   
## 10 Houston TX 29.7 -95.4 Michigan   
## Conference AMCity AMState AMLatitude AMLongitude HTCity   
## <chr> <chr> <chr> <dbl> <dbl> <chr>   
## 1 Big 12 Norman OK 35.2 -97.4 Manor   
## 2 Big Ten Columbus OH 40.0 -83.0 Streetsboro  
## 3 Ivy New Haven CT 41.3 -73.0 Hinsdale   
## 4 Big Ten Iowa City IA 41.7 -91.6 Fairfield   
## 5 SEC Baton Rouge LA 30.4 -91.2 Navarre   
## 6 FBS Independents Notre Dame IN 41.7 -86.2 Roswell   
## 7 Pac-12 Pullman WA 46.7 -117. Temecula   
## 8 Pac-12 Los Angeles CA 34.0 -118. Anderson   
## 9 Big 12 Cincinnati OH 39.1 -84.5 Cincinnati   
## 10 Big Ten Ann Arbor MI 42.3 -83.7 Waxahachie ## HTState HTLatitude HTLongitude  
## <chr> <dbl> <dbl>  
## 1 TX 30.3 -97.6  
## 2 OH 41.2 -81.3  
## 3 IL 41.8 -87.9  
## 4 OH 39.3 -84.6  
## 5 FL 30.4 -86.9  
## 6 GA 34.0 -84.4  
## 7 CA 33.5 -117.   
## 8 CA 40.4 -122.   
## 9 OH 39.1 -84.5  
## 10 TX 32.4 -96.8

As can be seen, there are slightly more players on this list with ten. However, this is still under 4% of the 257 draft picks from this year. Unlike the previous list, these players are much more spread out in the draft order with the second round being the only one not on this list. Once again, the Cleveland Browns are the only team to appear on this list twice. This may show that the Browns focus more on nearby players than other teams. However, it is clear that we will not get the full story from just looking at states.

# Creating Distance Variables

While looking at states could be useful, there is more to geography than states. If we really want to get the full picture of how geography impacts the NFL draft, we need to look at the actual distance between NFL teams, alma maters, and hometowns. Therefore, it would be best to make two new columns: AMDistance and HTDistance. These columns will show how far away each player’s alma mater and hometown are from the NFL team that drafted them. This information will be calculated using the distGeo function. Since this function returns the result in meters, I will divide by 1609.34 to convert it to miles. I will then rearrange these columns to keep the alma mater and hometown geography columns together.

# Checking the Extremities

Now that the distance variables have been created, it would be wise to look at the highest and lowest values of each of these variables. Not only will this give us something interesting to look at, but it will also ensure that everything has been implemented correctly so far. First of all, we will look at the ten players who were drafted by teams closest to their alma maters.

arrange(draft, AMDistance) %>% print(width = Inf)

## # A tibble: 257 × 22  
## Overall Round Pick Player Position Team   
## <dbl> <dbl> <dbl> <chr> <chr> <chr>   
## 1 225 7 5 Brenden Rice Wide Receiver LAC   
## 2 51 2 19 Zach Frazier Center Pittsburgh   
## 3 197 6 21 Zion Logue Defensive Tackle Atlanta   
## 4 32 1 32 Xavier Legette Wide Receiver Carolina   
## 5 35 2 3 Ruke Orhorhoro Defensive Tackle Atlanta   
## 6 139 5 4 Jordan Magee Linebacker Washington   
## 7 85 3 21 Zak Zinter Offensive Guard Cleveland   
## 8 93 3 30 Adisa Isaac Linebacker Baltimore   
## 9 54 2 22 Michael Hall Jr. Defensive Tackle Cleveland   
## 10 219 6 43 Daequan Hardy Cornerback Buffalo

## NFLCity NFLState NFLLatitude NFLLongitude College Conference   
## <chr> <chr> <dbl> <dbl> <chr> <chr>   
## 1 Inglewood CA 34.0 -118. USC Pac-12   
## 2 Pittsburgh PA 40.4 -80.0 West Virginia Big 12   
## 3 Atlanta GA 33.8 -84.4 Georgia SEC   
## 4 Charlotte NC 35.2 -80.9 South Carolina SEC   
## 5 Atlanta GA 33.8 -84.4 Clemson ACC   
## 6 Landover MD 38.9 -76.9 Temple American  
## 7 Cleveland OH 41.5 -81.7 Michigan Big Ten   
## 8 Baltimore MD 39.3 -76.6 Penn State Big Ten   
## 9 Cleveland OH 41.5 -81.7 Ohio State Big Ten   
## 10 Orchard Park NY 42.8 -78.8 Penn State Big Ten   
## AMCity AMState AMLatitude AMLongitude AMDistance HTCity   
## <chr> <chr> <dbl> <dbl> <dbl> <chr>   
## 1 Los Angeles CA 34.0 -118. 5.14 Chandler   
## 2 Morgantown WV 39.7 -80.0 55.1 Fairmont   
## 3 Athens GA 33.9 -83.4 60.5 Lebanon   
## 4 Columbia SC 34.0 -81.0 86.9 Mullins   
## 5 Clemson SC 34.7 -82.8 110. Lagos   
## 6 Philadelphia PA 39.9 -75.2 114. Dover   
## 7 Ann Arbor MI 42.3 -83.7 118. North Andover  
## 8 University Park PA 40.8 -77.9 124. Brooklyn   
## 9 Columbus OH 40.0 -83.0 124. Streetsboro   
## 10 University Park PA 40.8 -77.9 144. Pittsburgh   
## HTState HTLatitude HTLongitude HTDistance  
## <chr> <dbl> <dbl> <dbl>  
## 1 AZ 33.3 -112. 377.   
## 2 WV 39.5 -80.1 66.7  
## 3 TN 36.2 -86.3 200.   
## 4 SC 34.2 -79.3 115.   
## 5 NG 6.46 3.38 5849.   
## 6 DE 39.2 -75.5 74.2  
## 7 MA 42.7 -71.1 550.   
## 8 NY 40.7 -73.9 171.   
## 9 OH 41.2 -81.3 25.7  
## 10 PA 40.4 -80.0 173.   
## # ℹ 247 more rows

As can be seen, Brendan Rice has by far the shortest distance between his alma mater and the team who drafted him. In fact, he did not even have to leave Los Angeles County to go from USC to the Los Angeles Chargers. He was drafted in the seventh round which does lend some credibility to the claim that geography may play more of an impact in the later rounds although the rest of this list does not do much to support that claim. Besides Rice, only three other players have a distance from their alma mater to their NFL team of under 100 miles. Once again, the Cleveland Browns appear on this list twice as do the Atlanta Falcons. We will now look at the opposite end of the spectrum at the ten players who were drafted by teams furthest from their alma mater.

arrange(draft, desc(AMDistance)) %>% print(width = Inf)

## # A tibble: 257 × 22  
## Overall Round Pick Player Position Team   
## <dbl> <dbl> <dbl> <chr> <chr> <chr>   
## 1 221 7 1 Travis Clayton Offensive Guard Buffalo   
## 2 198 6 22 Patrick McMorris Safety Miami   
## 3 92 3 29 Jalen McMillan Wide Receiver Tampa Bay   
## 4 246 7 26 Devin Culp Tight End Tampa Bay   
## 5 125 4 25 Bucky Irving Running Back Tampa Bay   
## 6 37 2 5 Ja'Lynn Polk Wide Receiver New England  
## 7 183 6 7 Darius Muasau Linebacker NYG   
## 8 81 3 17 Christian Haynes Offensive Guard Seattle   
## 9 208 6 32 Dylan Laube Running Back Las Vegas   
## 10 99 3 36 Kamren Kinchens Safety LAR

## NFLCity NFLState NFLLatitude NFLLongitude College   
## <chr> <chr> <dbl> <dbl> <chr>   
## 1 Orchard Park NY 42.8 -78.8 NFL Academy   
## 2 Miami Gardens FL 26.0 -80.2 California   
## 3 Tampa FL 28.0 -82.5 Washington   
## 4 Tampa FL 28.0 -82.5 Washington   
## 5 Tampa FL 28.0 -82.5 Oregon   
## 6 Foxborough MA 42.1 -71.3 Washington   
## 7 East Rutherford NJ 40.8 -74.1 UCLA   
## 8 Seattle WA 47.6 -122. UConn   
## 9 Paradise NV 36.1 -115. New Hampshire  
## 10 Inglewood CA 34.0 -118. Miami   
## Conference AMCity AMState AMLatitude AMLongitude AMDistance  
## <chr> <chr> <chr> <dbl> <dbl> <dbl>   
## 1 IPP London ENG 51.5 -0.133 3574.   
## 2 Pac-12 Berkeley CA 37.9 -122. 2577.   
## 3 Pac-12 Seattle WA 47.7 -122. 2526.   
## 4 Pac-12 Seattle WA 47.7 -122. 2526.   
## 5 Pac-12 Eugene OR 44.1 -123. 2496.   
## 6 Pac-12 Seattle WA 47.7 -122. 2489.   
## 7 Pac-12 Pasadena CA 34.2 -118. 2440.   
## 8 FBS Independents East Hartford CT 41.8 -72.6 2439.   
## 9 CAA Durham NH 43.1 -70.9 2382.   
## 10 ACC Miami Gardens FL 26.0 -80.2 2337.

## HTCity HTState HTLatitude HTLongitude HTDistance  
## <chr> <chr> <dbl> <dbl> <dbl>  
## 1 Basingstoke ENG 51.3 1.09 3629.  
## 2 Santa Ana CA 33.7 -118. 2309.  
## 3 Fresno CA 36.7 -120. 2243.  
## 4 Spokane WA 47.7 -117. 2313.  
## 5 Country Club Hills IL 41.6 -87.7 982.  
## 6 Lufkin TX 31.3 -94.7 1492.  
## 7 Ewa Beach HI 21.3 -158. 4970.  
## 8 Bowie MD 38.9 -76.7 2340.  
## 9 Westhampton NY 40.8 -72.7 2306.  
## 10 Miami FL 25.8 -80.2 2344.  
## # ℹ 247 more rows

As can be seen, Travis Clayton has by far the longest distance between his alma mater and the team who drafted him. This makes sense as he actually did not play college football. Instead, his alma mater is listed as the NFL Academy in London. He was the only player in the draft whose alma mater is not in North America, so he would obviously be at the top of this list. Besides Clayton, the rest of the players on this list are players who played for a college on one side of the country before being drafted by a team on the opposite side of the country. These players are spread out in the draft order with the picks ranging from the second round to the seventh round. The Tampa Bay Buccaneers appear on this list three times which makes sense since they are on the east coast and drafted several players from schools on the west coast. We will now look at the ten players who were drafted by teams closest to their hometowns.

arrange(draft, HTDistance) %>% print(width = Inf)

## # A tibble: 257 × 22  
## Overall Round Pick Player Position Team   
## <dbl> <dbl> <dbl> <chr> <chr> <chr>   
## 1 75 3 11 Kiran Amegadjie Offensive Tackle Chicago   
## 2 115 4 15 Erick All Tight End Cincinnati   
## 3 155 5 20 Jeremiah Trotter Jr. Linebacker Philadelphia  
## 4 143 5 8 JD Bertrand Linebacker Atlanta   
## 5 54 2 22 Michael Hall Jr. Defensive Tackle Cleveland   
## 6 51 2 19 Zach Frazier Center Pittsburgh   
## 7 139 5 4 Jordan Magee Linebacker Washington   
## 8 154 5 19 Brennan Jackson Defensive Edge LAR   
## 9 218 6 42 Devin Leary Quarterback Baltimore   
## 10 32 1 32 Xavier Legette Wide Receiver Carolina

## NFLCity NFLState NFLLatitude NFLLongitude College   
## <chr> <chr> <dbl> <dbl> <chr>   
## 1 Chicago IL 41.9 -87.6 Yale   
## 2 Cincinnati OH 39.1 -84.5 Iowa   
## 3 Philadelphia PA 39.9 -75.2 Clemson   
## 4 Atlanta GA 33.8 -84.4 Notre Dame   
## 5 Cleveland OH 41.5 -81.7 Ohio State   
## 6 Pittsburgh PA 40.4 -80.0 West Virginia   
## 7 Landover MD 38.9 -76.9 Temple   
## 8 Inglewood CA 34.0 -118. Washington State  
## 9 Baltimore MD 39.3 -76.6 Kentucky   
## 10 Charlotte NC 35.2 -80.9 South Carolina

## Conference AMCity AMState AMLatitude AMLongitude AMDistance  
## <chr> <chr> <chr> <dbl> <dbl> <dbl>  
## 1 Ivy New Haven CT 41.3 -73.0 759.   
## 2 Big Ten Iowa City IA 41.7 -91.6 411.   
## 3 ACC Clemson SC 34.7 -82.8 555.   
## 4 FBS Independents Notre Dame IN 41.7 -86.2 557.   
## 5 Big Ten Columbus OH 40.0 -83.0 124.   
## 6 Big 12 Morgantown WV 39.7 -80.0 55.1  
## 7 American Athletic Philadelphia PA 39.9 -75.2 114.   
## 8 Pac-12 Pullman WA 46.7 -117. 884.   
## 9 SEC Lexington KY 38.0 -84.5 435.   
## 10 SEC Columbia SC 34.0 -81.0 86.9  
## HTCity HTState HTLatitude HTLongitude HTDistance  
## <chr> <chr> <dbl> <dbl> <dbl>  
## 1 Hinsdale IL 41.8 -87.9 16.7  
## 2 Fairfield OH 39.3 -84.6 17.5  
## 3 Hainesport NJ 40.0 -74.8 18.4  
## 4 Roswell GA 34.0 -84.4 18.6  
## 5 Streetsboro OH 41.2 -81.3 25.7  
## 6 Fairmont WV 39.5 -80.1 66.7  
## 7 Dover DE 39.2 -75.5 74.2  
## 8 Temecula CA 33.5 -117. 75.5  
## 9 Sicklerville NJ 39.7 -75.0 93.4  
## 10 Mullins SC 34.2 -79.3 115.   
## # ℹ 247 more rows

As can be seen, this list has much shorter distances than the one based on alma maters. Nine players on this list have a distance from their hometown to their NFL teams of under 100 miles, and five of them are from a suburb of the city where their NFL team plays. Once again, these players are spread out in the draft order with the last round being the only one not on this list. The fact that the last round is not on here could be evidence against the claim that geography plays more of an impact in later rounds. No team appears on this list more than once, but the Cleveland Browns and Atlanta Falcons each appear again after being on the closest alma maters list twice. Finally, we will look at the opposite end of the spectrum at the ten players who were drafted by teams furthest from their hometown.

arrange(draft, desc(HTDistance)) %>% print(width = Inf)

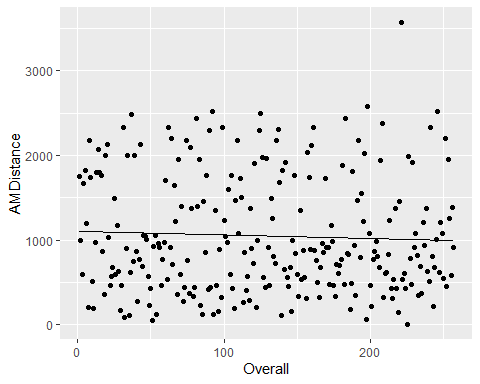
## # A tibble: 257 × 22  
## Overall Round Pick Player Position Team   
## <dbl> <dbl> <dbl> <chr> <chr> <chr>   
## 1 122 4 22 Tory Taylor Punter Chicago   
## 2 35 2 3 Ruke Orhorhoro Defensive Tackle Atlanta   
## 3 183 6 7 Darius Muasau Linebacker NYG   
## 4 84 3 20 Roman Wilson Wide Receiver Pittsburgh   
## 5 87 3 24 Marist Liufau Linebacker Dallas   
## 6 221 7 1 Travis Clayton Offensive Guard Buffalo   
## 7 160 5 25 Edefuan Ulofoshio Linebacker Buffalo   
## 8 251 7 31 Tatum Bethune Linebacker San Francisco  
## 9 118 4 18 Tyrice Knight Linebacker Seattle   
## 10 253 7 33 Cornelius Johnson Wide Receiver LAC   
## NFLCity NFLState NFLLatitude NFLLongitude College   
## <chr> <chr> <dbl> <dbl> <chr>   
## 1 Chicago IL 41.9 -87.6 Iowa   
## 2 Atlanta GA 33.8 -84.4 Clemson   
## 3 East Rutherford NJ 40.8 -74.1 UCLA   
## 4 Pittsburgh PA 40.4 -80.0 Michigan   
## 5 Arlington TX 32.7 -97.1 Notre Dame   
## 6 Orchard Park NY 42.8 -78.8 NFL Academy   
## 7 Orchard Park NY 42.8 -78.8 Washington   
## 8 Santa Clara CA 37.4 -122. Florida State  
## 9 Seattle WA 47.6 -122. UTEP   
## 10 Inglewood CA 34.0 -118. Michigan   
## Conference AMCity AMState AMLatitude AMLongitude AMDistance  
## <chr> <chr> <chr> <dbl> <dbl> <dbl>  
## 1 Big Ten Iowa City IA 41.7 -91.6 204.  
## 2 ACC Clemson SC 34.7 -82.8 110.  
## 3 Pac-12 Pasadena CA 34.2 -118. 2440.  
## 4 Big Ten Ann Arbor MI 42.3 -83.7 231.  
## 5 FBS Independents Notre Dame IN 41.7 -86.2 859.  
## 6 IPP London ENG 51.5 -0.133 3574.  
## 7 Pac-12 Seattle WA 47.7 -122. 2122.  
## 8 ACC Tallahassee FL 30.4 -84.3 2202.  
## 9 Conference USA El Paso TX 31.8 -107. 1374.  
## 10 Big Ten Ann Arbor MI 42.3 -83.7 1955.

## HTCity HTState HTLatitude HTLongitude HTDistance  
## <chr> <chr> <dbl> <dbl> <dbl>  
## 1 Melbourne VIC -37.8 145. 9674.  
## 2 Lagos NG 6.46 3.38 5849.  
## 3 Ewa Beach HI 21.3 -158. 4970.  
## 4 Honolulu HI 21.3 -158. 4661.  
## 5 Kalihi HI 21.3 -158. 3779.  
## 6 Basingstoke ENG 51.3 1.09 3629.  
## 7 Anchorage AK 61.2 -150. 3103.  
## 8 Miami FL 25.8 -80.2 2567.  
## 9 Lakeland FL 28.0 -81.9 2547.  
## 10 Greenwich CT 41.0 -73.6 2477.  
## # ℹ 247 more rows

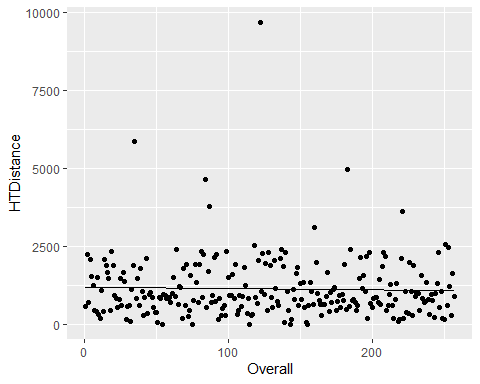
As can be seen, Tory Taylor has by far the longest distance between his hometown and the team who drafted him. This makes sense as he is from Australia. It is not surprising that the only Australian player drafted is a punter as many Australian rules football players have transitioned into being punters in American football. Interestingly, he was drafted by the Chicago Bears who were also on top of the previous list. The next six players are also from overseas. The second player is from Nigeria, the next three are from Hawaii, and the sixth is from England. The next player on this list is from Alaska which makes sense as it is separate from the rest of the United States despite not technically being overseas. The last three players on this list are players from the east coast who were drafted by teams on the west coast. As has been a trend in these lists, these players are spread out in the draft order with the first round being the only one not on this list. This could show that the previous theory that geography plays more of an impact in later rounds could be false. The Buffalo Bills are the only team to appear on this list twice, which is interesting to note as they were also on top of the furthest alma maters list.

# Linear Models

While looking at the extremities seems to show that geography does not play more of an impact in later rounds, these extremities do not provide conclusive evidence. The best way to evaluate this claim is to use a linear model. We will start by looking at a linear model that predicts how far away a player’s alma mater will be from the team that drafts him based on where in the draft the player is picked.



As can be seen, the distance between a player’s alma mater and the team that drafts him does not change much throughout the draft. The average does seem to get a bit lower later on in the draft, but it is not enough to say there is a definitive correlation. We will now look at another linear model that predicts how far away a player’s hometown will be from the team that drafts him based on where in the draft the player is picked.



As can be seen, the trend of this linear model is similar to the previous one. There is a slight downward trend, but it remains mostly steady. There are more outliers in this plot than the previous one, but these outliers are spread out enough to where they do not seem to affect the trend too much. Based on these two linear models, it is safe to say that geography does not play any more of an impact in the later rounds of the NFL draft than it does in the earlier ones.

# Individual Teams

So far, it does not seem like geography has much of an impact on the NFL draft, but there is still more data to look at. As has been mentioned, it seems some teams may focus more on nearby players than other teams. To see if there is any truth to this, we will calculate the average distances for each team to their players’ alma maters and hometowns. We will start off by looking at which teams tend to draft players from the closest colleges.

arrange(summarise(group\_by(draft, Team), AMAvg = mean(AMDistance)), AMAvg) %>% print(n = 32)

## # A tibble: 32 × 2  
## Team AMAvg  
## <chr> <dbl>  
## 1 Cleveland 373.  
## 2 Tennessee 467.  
## 3 Dallas 616.  
## 4 Cincinnati 652.  
## 5 Baltimore 654.  
## 6 Jacksonville 695.  
## 7 NYJ 723.  
## 8 Philadelphia 754.  
## 9 Indianapolis 778.  
## 10 Carolina 780.  
## 11 Pittsburgh 782.  
## 12 Denver 820.  
## 13 Kansas City 856.  
## 14 New Orleans 861.  
## 15 Minnesota 880.  
## 16 Washington 949.  
## 17 Chicago 980.  
## 18 Atlanta 992.  
## 19 NYG 1019.  
## 20 Detroit 1038.  
## 21 Houston 1090.  
## 22 New England 1097.  
## 23 Green Bay 1099.  
## 24 Buffalo 1186.  
## 25 Miami 1459.  
## 26 Tampa Bay 1498.  
## 27 Arizona 1529.  
## 28 LAR 1538.  
## 29 Las Vegas 1596.  
## 30 San Francisco 1686.  
## 31 LAC 1725.  
## 32 Seattle 1812.

As can be seen, the Cleveland Browns are at the top of this list. This is not surprising as they appeared multiple times on several of the previous lists. Meanwhile, the Seattle Seahawks are at the bottom of this list. This makes sense as they are the most geographically isolated team in the NFL. In fact, the bottom six teams on this list are all on the west coast. This makes sense as there are far more college football teams in the eastern half of the country than in the western half. We will not look at which teams tend to draft players from the closest hometowns.

arrange(summarise(group\_by(draft, Team), HTAvg = mean(HTDistance)), HTAvg) %>% print(n = 32)

## # A tibble: 32 × 2  
## Team HTAvg  
## <chr> <dbl>  
## 1 Baltimore 485.  
## 2 Cleveland 525.  
## 3 Tennessee 590.  
## 4 Jacksonville 632.  
## 5 Carolina 655.  
## 6 Cincinnati 736.  
## 7 NYJ 778.  
## 8 New Orleans 866.  
## 9 Indianapolis 908.  
## 10 Kansas City 914.  
## 11 Philadelphia 923.  
## 12 Minnesota 931.  
## 13 Houston 939.  
## 14 New England 989.  
## 15 Washington 1034.  
## 16 Green Bay 1052.  
## 17 Miami 1076.  
## 18 Dallas 1103.  
## 19 Detroit 1128.  
## 20 Denver 1151.  
## 21 Atlanta 1280.  
## 22 Pittsburgh 1348.  
## 23 Las Vegas 1383.  
## 24 Buffalo 1405.  
## 25 Tampa Bay 1434.  
## 26 NYG 1472.  
## 27 San Francisco 1545.  
## 28 Arizona 1602.  
## 29 LAR 1707.  
## 30 LAC 1857.  
## 31 Seattle 1967.  
## 32 Chicago 2397.

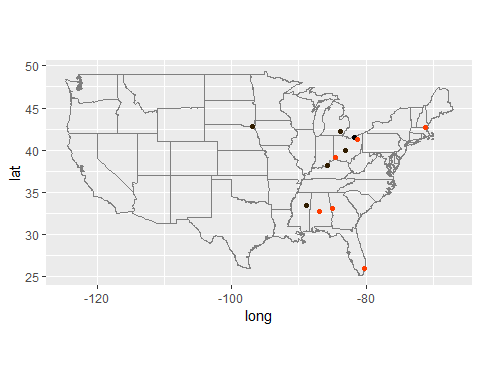
As can be seen, the Baltimore Ravens are on top of this list just ahead of the Cleveland Browns. This is a bit surprising as they did not appear repeatedly in previous lists like the Cleveland Browns did. However, they were in the top five of the previous list based on alma maters. Meanwhile, the Chicago Bears are at the bottom of this list right behind the Seattle Seahawks. This is even more surprising as they are one of the most centrally located teams in the NFL and were right in the middle of the pack in the previous list based on alma maters. To get a closer look at how these teams end up on the top and bottom of these lists, we will look at them individually.

# Cleveland Browns

filter(draft, Team == "Cleveland") %>% print(width = Inf)

## # A tibble: 6 × 22  
## Overall Round Pick Player Position Team   
## <dbl> <dbl> <dbl> <chr> <chr> <chr>   
## 1 54 2 22 Michael Hall Jr. Defensive Tackle Cleveland   
## 2 85 3 21 Zak Zinter Offensive Guard Cleveland   
## 3 156 5 21 Jamari Thrash Wide Receiver Cleveland   
## 4 206 6 30 Nathaniel Watson Linebacker Cleveland   
## 5 227 7 7 Myles Harden Cornerback Cleveland   
## 6 243 7 23 Jowon Briggs Defensive Tackle Cleveland   
## NFLCity NFLState NFLLatitude NFLLongitude College Conference   
## <chr> <chr> <dbl> <dbl> <chr> <chr>   
## 1 Cleveland OH 41.5 -81.7 Ohio State Big Ten   
## 2 Cleveland OH 41.5 -81.7 Michigan Big Ten   
## 3 Cleveland OH 41.5 -81.7 Louisville ACC   
## 4 Cleveland OH 41.5 -81.7 Mississippi State SEC   
## 5 Cleveland OH 41.5 -81.7 South Dakota MVFC   
## 6 Cleveland OH 41.5 -81.7 Cincinnati Big 12   
## AMCity AMState AMLatitude AMLongitude AMDistance HTCity HTState  
## <chr> <chr> <dbl> <dbl> <dbl> <chr> <chr>  
## 1 Columbus OH 40.0 -83.0 124. Streetsboro OH   
## 2 Ann Arbor MI 42.3 -83.7 118. North Andover MA   
## 3 Louisville KY 38.2 -85.8 313. Lagrange GA   
## 4 Starkville MS 33.5 -88.8 677. Maplesville AL   
## 5 Vermillion SD 42.8 -96.9 786. Miami Gardens FL   
## 6 Cincinnati OH 39.1 -84.5 221. Cincinnati OH   
## HTLatitude HTLongitude HTDistance  
## <dbl> <dbl> <dbl>  
## 1 41.2 -81.3 25.7  
## 2 42.7 -71.1 550.   
## 3 33.0 -85.0 612.   
## 4 32.8 -86.9 665.   
## 5 25.9 -80.2 1076.   
## 6 39.1 -84.5 222.

As can be seen, Michael Hall Jr. and Jowon Briggs are both from Ohio and also went to college in Ohio. The Cleveland Browns also drafted Zak Zinter out of Michigan which is actually closer to Cleveland than the two Ohio universities. Myles Harden is the furthest player that the Cleveland Browns drafted based on both metrics as he is from Miami Gardens, FL and played college football at South Dakota. Based on who the Cleveland Browns drafted, it makes sense why they were at or near the top of both lists.

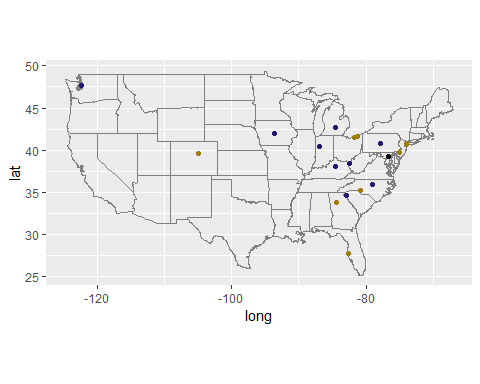


# Baltimore Ravens

filter(draft, Team == "Baltimore") %>% print(width = Inf)

## # A tibble: 9 × 22  
## Overall Round Pick Player Position Team   
## <dbl> <dbl> <dbl> <chr> <chr> <chr>   
## 1 30 1 30 Nate Wiggins Cornerback Baltimore   
## 2 62 2 30 Roger Rosengarten Offensive Tackle Baltimore   
## 3 93 3 30 Adisa Isaac Linebacker Baltimore   
## 4 113 4 13 Devontez Walker Wide Receiver Baltimore   
## 5 130 4 30 T.J. Tampa Cornerback Baltimore   
## 6 165 5 30 Rasheen Ali Running Back Baltimore   
## 7 218 6 42 Devin Leary Quarterback Baltimore   
## 8 228 7 8 Nick Samac Center Baltimore   
## 9 250 7 30 Sanoussi Kane Safety Baltimore   
## NFLCity NFLState NFLLatitude NFLLongitude College Conference   
## <chr> <chr> <dbl> <dbl> <chr> <chr>   
## 1 Baltimore MD 39.3 -76.6 Clemson ACC   
## 2 Baltimore MD 39.3 -76.6 Washington Pac-12   
## 3 Baltimore MD 39.3 -76.6 Penn State Big Ten ## 4 Baltimore MD 39.3 -76.6 North Carolina ACC   
## 5 Baltimore MD 39.3 -76.6 Iowa State Big 12   
## 6 Baltimore MD 39.3 -76.6 Marshall Sun Belt   
## 7 Baltimore MD 39.3 -76.6 Kentucky SEC   
## 8 Baltimore MD 39.3 -76.6 Michigan State Big Ten   
## 9 Baltimore MD 39.3 -76.6 Purdue Big Ten   
## AMCity AMState AMLatitude AMLongitude AMDistance HTCity   
## <chr> <chr> <dbl> <dbl> <dbl> <chr>   
## 1 Clemson SC 34.7 -82.8 468. Atlanta   
## 2 Seattle WA 47.7 -122. 2332. Highlands Ranch   
## 3 University Park PA 40.8 -77.9 124. Brooklyn   
## 4 Chapel Hill NC 35.9 -79.0 268. Charlotte   
## 5 Ames IA 42.0 -93.6 912. Saint Petersburg   
## 6 Huntington WV 38.4 -82.4 318. Cleveland   
## 7 Lexington KY 38.0 -84.5 435. Sicklerville   
## 8 East Lansing MI 42.7 -84.5 475. Mentor   
## 9 West Lafayette IN 40.4 -86.9 553. Harlem ## HTState HTLatitude HTLongitude HTDistance  
## <chr> <dbl> <dbl> <dbl>  
## 1 GA 33.7 -84.4 576.   
## 2 CO 39.6 -105. 1511.   
## 3 NY 40.7 -73.9 171.   
## 4 NC 35.2 -80.8 363.   
## 5 FL 27.8 -82.7 866.   
## 6 OH 41.5 -81.7 308.   
## 7 NJ 39.7 -75.0 93.4  
## 8 OH 41.7 -81.3 298.   
## 9 NY 40.8 -73.9 177.

As can be seen, the Baltimore Ravens did not draft anyone who is either from Maryland or went to college in Maryland. However, most of the players they drafted were from nearby. The only real outlier is Roger Rosengarten who is from Highlands Ranch, CO and played college football at Washington. Adisa Isaac played college football at Penn State which is the closest alma mater to Baltimore. Meanwhile, Devin Leary is from Sicklerville, NJ which is under 100 miles from Baltimore. Based on who the Baltimore Ravens drafted, it makes sense why they were at or near the top of both lists.

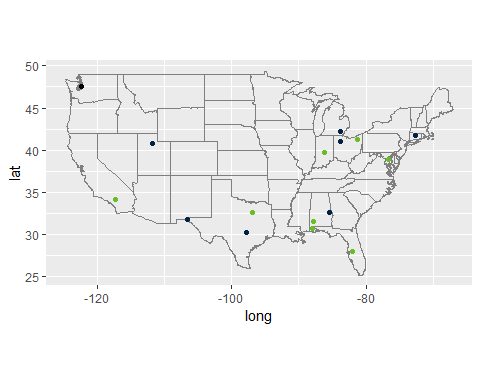


# Seattle Seahawks

filter(draft, Team == "Seattle") %>% print(width = Inf)

## # A tibble: 8 × 22  
## Overall Round Pick Player Position Team NFLCity  
## <dbl> <dbl> <dbl> <chr> <chr> <chr> <chr>   
## 1 16 1 16 Byron Murphy II Defensive Tackle Seattle Seattle  
## 2 81 3 17 Christian Haynes Offensive Guard Seattle Seattle  
## 3 118 4 18 Tyrice Knight Linebacker Seattle Seattle  
## 4 121 4 21 AJ Barner Tight End Seattle Seattle  
## 5 136 5 1 Nehemiah Pritchett Cornerback Seattle Seattle  
## 6 179 6 3 Sataoa Laumea Offensive Guard Seattle Seattle  
## 7 192 6 16 D.J. James Cornerback Seattle Seattle  
## 8 207 6 31 Michael Jerrell Offensive Tackle Seattle Seattle  
## NFLState NFLLatitude NFLLongitude College Conference   
## <chr> <dbl> <dbl> <chr> <chr>   
## 1 WA 47.6 -122. Texas Big 12   
## 2 WA 47.6 -122. UConn FBS Independents   
## 3 WA 47.6 -122. UTEP Conference USA   
## 4 WA 47.6 -122. Michigan Big Ten   
## 5 WA 47.6 -122. Auburn SEC   
## 6 WA 47.6 -122. Utah Pac-12   
## 7 WA 47.6 -122. Auburn SEC   
## 8 WA 47.6 -122. Findlay Great Midwest Athletic  
## AMCity AMState AMLatitude AMLongitude AMDistance HTCity HTState  
## <chr> <chr> <dbl> <dbl> <dbl> <chr> <chr>   
## 1 Austin TX 30.3 -97.7 1770. Desoto TX   
## 2 East Hartford CT 41.8 -72.6 2439. Bowie MD   
## 3 El Paso TX 31.8 -107. 1374. Lakeland FL   
## 4 Ann Arbor MI 42.3 -83.7 1907. Aurora OH   
## 5 Auburn AL 32.6 -85.5 2181. Jackson AL   
## 6 Salt Lake City UT 40.8 -112. 702. Rialto CA   
## 7 Auburn AL 32.6 -85.5 2181. Mobile AL   
## 8 Findlay OH 41.0 -83.8 1943. Indianapolis IN   
## HTLatitude HTLongitude HTDistance  
## <dbl> <dbl> <dbl>  
## 1 32.6 -96.9 1687.  
## 2 38.9 -76.7 2340.  
## 3 28.0 -81.9 2547.  
## 4 41.3 -81.3 2048.  
## 5 31.5 -87.9 2122.  
## 6 34.1 -117. 966.  
## 7 30.7 -88.0 2153.  
## 8 39.8 -86.2 1872.

As can be seen, the Seattle Seahawks did not draft anyone from nearby. Sataoa Laumea is the closest player that the Seattle Seahawks drafted by both metrics as he is from Rialto, CA and played college football at Utah. In fact, he is the only player who is either from or went to college within 1000 miles of Seattle. Christian Haynes played college football for UCONN which is the furthest alma mater from Seattle. Meanwhile, Tyrice Knight is from Lakeland, FL which is about as far from Seattle as you can get in the contiguous United States. Based on who the Seattle Seahawks drafted, it makes sense why they were at or near the bottom of both lists.



# Chicago Bears

filter(draft, Team == "Chicago") %>% print(width = Inf)

## # A tibble: 5 × 22  
## Overall Round Pick Player Position Team NFLCity   
## <dbl> <dbl> <dbl> <chr> <chr> <chr> <chr>   
## 1 1 1 1 Caleb Williams Quarterback Chicago Chicago   
## 2 9 1 9 Rome Odunze Wide Receiver Chicago Chicago   
## 3 75 3 11 Kiran Amegadjie Offensive Tackle Chicago Chicago   
## 4 122 4 22 Tory Taylor Punter Chicago Chicago   
## 5 144 5 9 Austin Booker Defensive Edge Chicago Chicago   
## NFLState NFLLatitude NFLLongitude College Conference AMCity AMState   
## <chr> <dbl> <dbl> <chr> <chr> <chr> <chr>   
## 1 IL 41.9 -87.6 USC Pac-12 Los Angeles CA   
## 2 IL 41.9 -87.6 Washington Pac-12 Seattle WA   
## 3 IL 41.9 -87.6 Yale Ivy New Haven CT   
## 4 IL 41.9 -87.6 Iowa Big Ten Iowa City IA   
## 5 IL 41.9 -87.6 Kansas Big 12 Lawrence KS   
## AMLatitude AMLongitude AMDistance HTCity HTState HTLatitude   
## <dbl> <dbl> <dbl> <chr> <chr> <dbl>  
## 1 34.0 -118. 1750. Washington DC 38.9   
## 2 47.7 -122. 1737. Las Vegas NV 36.2   
## 3 41.3 -73.0 759. Hinsdale IL 41.8   
## 4 41.7 -91.6 204. Melbourne VIC -37.8   
## 5 39.0 -95.2 449. Greenwood IN 39.6

## HTLongitude HTDistance

## <dbl> <dbl>

## 1 -77.0 594.

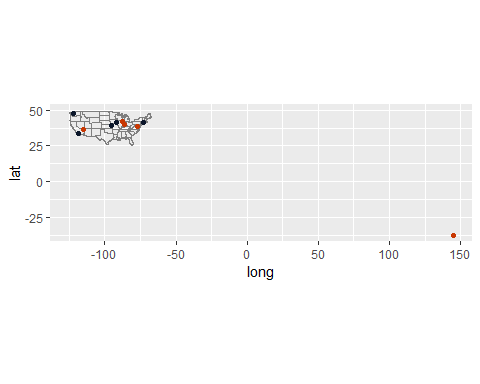
## 2 -115. 1526.

## 3 -87.9 16.7

## 4 145. 9674.

## 5 -86.1 174.

As can be seen, Tory Taylor is from nearly 10000 miles away from Chicago in Melbourne, Australia. This one player explains why the Chicago Bears were at the bottom of the list based on hometowns while being right in the middle of the pack of the list based on alma maters. In fact, they would actually move all the way up to third on the closest hometowns list if this one player were removed. It also does not help that they only drafted five players, so the one outlier had a much bigger impact on the mean than if they had drafted more. Despite being from the furthest hometown, Taylor is actually from the closest alma mater to Chicago as he played at Iowa. I mentioned earlier that it is not surprising to see a punter from Australia, and it is not surprising to see a punter from Iowa either as Iowa is known for its punters. As mentioned earlier, the Chicago Bears have the unique distinction of drafting the players not only from the furthest hometown but also from the closest hometown as Kiran Amegadjie is from the Chicago suburb of Hinsdale, IL. Meanwhile, both of their first-round picks played college football on the west coast as Caleb Williams played at USC while Rome Odunze played at Washington.

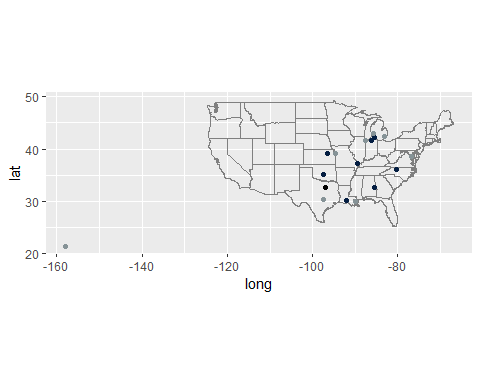


# Dallas Cowboys

filter(draft, Team == "Dallas") %>% print(width = Inf)

## # A tibble: 8 × 22  
## Overall Round Pick Player Position Team NFLCity   
## <dbl> <dbl> <dbl> <chr> <chr> <chr> <chr>   
## 1 29 1 29 Tyler Guyton Offensive Tackle Dallas Arlington  
## 2 56 2 24 Marshawn Kneeland Defensive Edge Dallas Arlington  
## 3 73 3 9 Cooper Beebe Offensive Guard Dallas Arlington  
## 4 87 3 24 Marist Liufau Linebacker Dallas Arlington  
## 5 174 5 39 Caelen Carson Cornerback Dallas Arlington  
## 6 216 6 40 Ryan Flournoy Wide Receiver Dallas Arlington  
## 7 233 7 13 Nathan Thomas Offensive Tackle Dallas Arlington  
## 8 244 7 24 Justin Rogers Defensive Tackle Dallas Arlington  
## NFLState NFLLatitude NFLLongitude College Conference   
## <chr> <dbl> <dbl> <chr> <chr>   
## 1 TX 32.7 -97.1 Oklahoma Big 12   
## 2 TX 32.7 -97.1 Western Michigan Mid-American   
## 3 TX 32.7 -97.1 Kansas State Big 12   
## 4 TX 32.7 -97.1 Notre Dame FBS Independents  
## 5 TX 32.7 -97.1 Wake Forest ACC   
## 6 TX 32.7 -97.1 Southeast Missouri St Big South-OVC   
## 7 TX 32.7 -97.1 Louisiana Sun Belt   
## 8 TX 32.7 -97.1 Auburn SEC   
## AMCity AMState AMLatitude AMLongitude AMDistance HTCity HTState  
## <chr> <chr> <dbl> <dbl> <dbl> <chr> <chr>   
## 1 Norman OK 35.2 -97.4 171. Manor TX   
## 2 Kalamazoo MI 42.3 -85.6 910. Grand Rapids MI   
## 3 Manhattan KS 39.2 -96.6 446. Kansas City KS   
## 4 Notre Dame IN 41.7 -86.2 859. Kalihi HI   
## 5 Winston-Salem NC 36.1 -80.3 988. Waldorf MD   
## 6 Cape Girardeau MO 37.3 -89.5 531. Hazel Crest IL   
## 7 Lafayette LA 30.2 -92.0 345. Chalmette LA   
## 8 Auburn AL 32.6 -85.5 676. Detroit MI   
## HTLatitude HTLongitude HTDistance  
## <dbl> <dbl> <dbl>  
## 1 30.3 -97.6 168.  
## 2 43.0 -85.7 940.  
## 3 39.1 -94.6 460.  
## 4 21.3 -158. 3779.  
## 5 38.6 -76.9 1202.  
## 6 41.6 -87.7 799.  
## 7 29.9 -90.0 464.  
## 8 42.3 -83.0 1013.

The last team I want to look at is the Dallas Cowboys simply because they are my favorite team. They were in the top three of the list based on alma maters while being right in the middle of the pack of the list based on hometowns. This disconnect can be explained by Marist Liufau who is from Kalihi, HI. As mentioned earlier, Hawaii is far from the rest of the United States, so a player from there will drag the average down. As can be seen, Tyler Guyton is from Texas and played college football at Oklahoma which is the closest alma mater to Arlington. Meanwhile, Caelen Carson played college football at Wake Forest which is the furthest alma mater from Arlington.



# Conclusion

While looking at this data has been interesting, we have not been able to prove that geography has much of an impact on the NFL draft. We were able to prove definitively that geography does not play any more of an impact in the later rounds of the NFL draft than the earlier ones. Meanwhile, looking at the individual teams did not provide sufficient evidence that some teams focus more on nearby players than others. To prove this one way or another, we would need to look at more drafts. If the same teams end up near the top and bottom of those lists, then a case could be made that those teams focus more or less on nearby players than others. Looking at previous drafts is beyond the scope of this project, but it would certainly be interesting to look at in the future.

<https://collegefootballdata.com/exporter/draft/picks?year=2024>