



Optimizing Host Locations



Jon LeFrois and Owen Spolyar



Background:

- The Eastern Collegiate Volleyball Association (ECVA) is a league made up of men's club volleyball across the east coast.
- ECVA is broken into two divisions based on skill (Division I and Division II)
- ECVA is broken into four regional divisions based on location (North, Central, South, Southeast)
- Some regional divisions have subregions, like Division II North splits into Division II Northeast and Division II Northwest.

More Background:

- 108 teams
- 15 states, DC, and 1 province
- 19 tournaments across the league, including one league championship



Goal: Find the best college in each subregion to host a tournament.

The Algorithm:

The algorithm determines the best host is the one where the least cumulative distance is traveled. This could have been also interpreted as most convenient for all teams. We created a brute force algorithm to ensure that our host is the ideal host. This algorithm runs in $\theta(n^2)$.

The pseudocode for this algorithm can be seen to the right.

```
bestHost(teamList){
    best, host = -1
    for(i from 0 to teamList.size){
        dist = 0
        for( j from 0 to teamList.size){
            dist = dist + getDist(i, j)
        }
        if(dist < best || best < 0){
            best = dist
            host = i
        }
    }
    return host;
}
```

Results:

Central 1: Maryland and George Washington

Central-East 2: Loyola and UMBC

Central-West 2: Youngstown State and Franciscan

North 1: Syracuse and Binghamton

North-East 2: Clarkson and Binghamton - B

North-West 2: St. Bonaventure and Buffalo - B

South 1: App State and North Carolina

South 2: App State - B and North Carolina - B