Data:

* List of all available matches
* Umpire availabilities
* Preference for one or two games
* Umpire skill level
* Umpire’s club affiliation
* 66 divisions ~ 6 teams per ~ 200 games per Sunday. ~ 80 venues

Restrictions:

* Two games must be back-to-back at same location.
* Appointed to appropriate skill levels
* 1-3 umpire appointed to each game. Normally 2.
* Can’t umpire club that they are affiliated with.

Hi Joyce, we have chosen to work on an instance of the referee assignment problem.

The Yarra Junior Football League (YJFL) is the largest junior Australian rules football league. Sports leagues have the problem of scheduling matches. An essential aspect of this is supplying umpires to officiate matches. The YJFL runs over 200 matches across 66 divisions every Sunday during the season. The league currently appoints umpires to each game manually. Our aim will be to automate this process.

We have data for umpires working in a subsection of the league, that is responsible for around 60-70 matches each week. Given a fixture of matches the aim is to assign umpire to all of them in an ‘optimal’ way. The fixture specifies match time, location, and teams playing each other.

Umpires’ availabilities are specified. Umpires and matches are also assigned a skill level, so the idea is to appoint umpires to matches that are appropriate for them. Some umpires may also be playing club footy so it is important that they are never allowed to officiate matches for their own club. Umpires also have a preference to do one or two games. When doing two games they should be back to back at the same location. Generally two field umpires are appointed to each match, but at higher levels this can be three or if necessary at lower levels game could be done with just one umpire. Some umpires may also partner with each other so they always do the same matches.

The objective function would be to maximise the roster in a combination of ways. We would want all games to have umpires assigned. Umpires preferences should be met as best as possible. Appropriate matches should be assigned relative to the umpires skill.