

TA Works - Formulation Validation

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The performance of the formulation was tested against the previous heuristic for the last seven terms.

Key statistics

1. In six out of seven terms, the formulation improved the quality and/or coverage
 - Only once, the heuristic model matched the optimal solution
2. The formulation has a **100% success rate** for assigning all feasible matches
3. Only one in fourteen tests showed the formulation result in worse performance.
 - Test -> Term: Spring 2017, Category: Average Quality Score of Matches.
 - A 11% increase in coverage was traded for a 0.7 lose in average quality, the desired behavior based on the user's preference for coverage.

#	Historical Term	Percent of Feasible Matches Created (higher percent = better coverage)		Average Quality Score of Matches (lower score = better quality)	
		Heuristic	Formulation	Heuristic	Formulation
1	Winter 2016	100%	100%	2.9	2.8
2	Spring 2016	100%	100%	3.0	2.8
3	Fall 2016	100%	100%	3.1	2.9
4	Winter 2017	97%	100%	3.4	3.4
5	Spring 2017	89%	100%	2.9	3.6
6	Fall 2017	100%	100%	2.9	2.8
7	Winter 2018	100%	100%	2.6	2.6



Better performance from the formulation with respect to the heuristic



Worse performance from the formulation with respect to the heuristic