

S2 Appendix. Algorithm 2: Computing Number of Visitors without Double Counting for a Single Configuration*

***Note:**

A configuration defines which subset of IDs from the set of all candidate sites should be optimized (e.g. selecting 2 RHU sites for upgrading).

Input:

- (1) *site_list*: List of site IDs based on the defined configuration,
- (2) *pop*: List of population values at each population point for the entire city,
- (3) *exp_visitors*: Matrix of expected visitors (of size: $n_population_points \times n_facilities$, eq 2). We use this as a reference

Algorithm:

1. $total_visitors_count \leftarrow 0$
2. For *site_id* in *site_list*:
 - a. $actual_demand \leftarrow$ List of the number of visitors from each population point that may travel to the site (*site_id*) to the site corresponding to *site_id*, Calculated as the minimum value between the remaining population (*pop*) and the expected number of visitors from the population point (*exp_visitors* at *site_id*)
 - b. $pop \leftarrow$ Reduce the remaining population at each population point (*pop*) by the $actual_demand$ at *site_id*
 - c. $total_visitors_count \leftarrow$ Increment the number of visitors for this configuration ($total_visitors_count$) by the number of visitors contributed by *site_id* ($sum(actual_demand)$)

Output: Total expected visitors $total_visitors_count$ for the defined configuration