**Problem Statement**

Find the per-person rate that utilizes the available funding while respecting caps on the total amount of funds that can be awarded.

**Definitions**

**Problem statements**

Such that:

**Methods**

The following formulation represents a non-convex, monotonic, constrained optimization problem. The problem is non-convex because we need to take the minimum of two affine functions. Due to non-convexity, straightforward applications of optimization algorithms such as Simplex will not work. Potential solutions are reformulating the problem into a convex optimization, modified gradient descent (modified because the minimum function isn’t strictly differentiable), or bisection. However, given that the search space on the per-person rate is relatively small, we can simply perform enumeration and pick the per-person rate that minimizes the objective function. In this case, we search the space of [0-$4,000] over every cent resulting in 400,001 searches. If the search space becomes greatly enlarged in a future application new methods will need to be used.