MRI resource optimisation

In Arvika, there is 1 MRI-machine, in Karlstad 2 and in Torsby 1. Arvika and Torsby are recently upgraded and therefore do som exams faster than Karlstad. On the other hand, Karlstad has more competence and therefore do some more complicated/rare things. In Karlstad, one of the machines has double field strength so it can do some things that the others can not, while it is unable to do some other things. It is advantageous to do several examinations of the same kind after one another for preparational reasons. There is also an emergency fraction of examinations which may not be relocated and a repeated fraction (annual for example) that should be booked a certain time (more or less) and preferably always on the same camera.

All patients from each location are preferably booked in the same hospital but they may be split with respect to examination type.

The goals would be to keep all machines busy, maximising the production, doing all examinations within, or close to, the time limit (excluding the repeated and emergency fractions, the limits are roughly 1, 2, 3 and 4 weeks, depending on severity), while keeping travel distances and cancellation probabilities low. It would be desirable to arrive at a solution that can be adapted and applied to other similar problems, involving for example different examination types, time limits och locations.

There is a list of approximate population for 64 places in Värmland and the distance from each location to all three hospitals, Arvika, Karlstad and Torsby.