Transportation Model

Brandy Via

Dummy Warehouse

Production scheduling for Heart Start.

In this problem, the total production is 220, while the total demands are only 210. So, we create a dummy warehouse.

- The variables xij refer to production at plant i for delivery to warehouse j
- Note that the objective function coefficients include the cost of production
- As it is not possible to deliver to a nonexistent warehouse, the coefficients for the dummy warehouse have been set to zero.
- The complete formulation is below.

```
/* Objective function */
min: 622 x11 + 614 x12 + 630 x13 + 0 x14 + 641 x21 + 645 x22 + 649 x23 + 0x24;

/* Constraints */
x11 + x12 + x13 + x14  = 100;
x21 + x22 + x23 + x24  = 120;
x11 + x21 = 80;
x12 + x22 = 60;
x13 + x23 = 70;
x14 + x24 = 10;
```

```
library(lpSolveAPI)
y <- read.lp("HeartStart.lp")
y
```

```
## Model name:
##            x11   x12   x13   x14   x21   x22   x23   x24
## Minimize   622   614   630     0   641   645   649     0
## R1           1     1     1     1     0     0     0     0  =  100
## R2           0     0     0     0     1     1     1     1  =  120
## R3           1     0     0     0     1     0     0     0  =   80
## R4           0     1     0     0     0     1     0     0  =   60
## R5           0     0     1     0     0     0     1     0  =   70
## R6           0     0     0     1     0     0     0     1  =   10
## Kind       Std   Std   Std   Std   Std   Std   Std   Std
## Type      Real  Real  Real  Real  Real  Real  Real  Real
## Upper      Inf   Inf   Inf   Inf   Inf   Inf   Inf   Inf
## Lower        0     0     0     0     0     0     0     0
```

Solve the problem.

```
solve(y)
```

```
## [1] 0
```

```
get.objective(y)
```

```
## [1] 132790
```

```
get.variables(y)
```

```
## [1]  0 60 40  0 80  0 30 10
```