

## Pt6

### Sets

- $F$  : Farms
- $P$  : Facilities

### Data

- $Supply_f$  - milk supply from each farm  $f \in F$  (L)
- $Distance_{fp}$  - distance between farm  $f \in F$  and processing facility  $p \in P$  (km)
- $PMin$  - minimum daily processing at processing facility  $p \in P$  (L)
- $PMax$  - maximum daily processing at processing facility  $p \in P$  (L)
- $TRound$  - cost of round trip travel (\$/km)

### Variables

- $X_{fp}$  - boolean assignment of farms  $f \in F$  to processing facilities  $p \in P$

### Objective function

$$\min \left( \sum_{f \in F} \sum_{p \in P} Distance_{fp} \times TRound \right)$$

### Constraints

- Total milk processed at processing facility  $p \in P$  cannot exceed the processing capacity.

$$\sum_{f \in F} X_{fp} \times Supply_f \leq PMax, \quad \forall p \in P$$

- Total milk processed at processing facility  $p \in P$  must meet the minimal operational requirement.

$$\sum_{f \in F} X_{fp} \times Supply_f \geq PMin, \quad \forall p \in P$$

- Each farm  $f \in F$  must be assigned to exactly one processing facility.

$$\sum_{p \in P} X_{fp} = 1, \quad \forall f \in F$$