

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)
- $PMin_p$ - minimum daily processing at processing facility $p \in P$ (L)
- $PMax_p$ - maximum daily processing at processing facility $p \in P$ (L)
- $TRound$ - cost of round trip travel (\$/km)

Variables

- X_{fp} - binary 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.

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

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

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

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

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