**Problem**: Find minimum average travel time to respond to calls from the 12 districts in Bloomington from its 2 hospitals within the calls/hr constraints for each hospital and district

**Solution**: Find the **minimum average travel time** for any hospital to respond to a call from any district

**Inputs**: in blue in spreadsheet

* Travel time per call (in minutes) from each district to each hospital
* Average calls/hr from each district

**Objective function: Min** (**Average Travel time**) **= ,** where

* Minimize the total time for responding to all calls from all districts from both hospitals
* **The result is minimum total units (Calls/hr \* Hrs/call)**
  + *Average is not calculated as that would require dividing the equation by total no of calls for both hospitals, which would result in a non-linear problem/solution*
* **Xij** – Calls/hr assigned to district i from hospital j
* **Tij** - Travel time (hrs) per call from district i to hospital j
  + Data is given in minutes, converted to hrs (divide by 60)
* **i (1…12)** for the 12 districts
* **j (1,2)** for the 2 hospitals

**Decision variable**: **Xij** – Calls/hr assigned to district i from hospital j

**Constraints**:

1. **>= 2\*ACDi for all i,** where
   * **ACDi** – Average Calls/hr emanating from each district i
   * Average of both hospitals for each district means 2 is taken to right side of equation to avoid non-linearity
2. **<= MCHj for all j,** where
   * **MCHj** – Maximum Calls/hr that can be assigned to each hospital j, (4.9, 5.5)

**Result**:

* The **minimum average travel time** required to respond to a call is **0.92 units**
* Solver method – Simplex LP was used