**Food Co-op Problem Logistics**

Hours of Co-op:

Mon-Thurs. 8am-6pm

Fri/Sat. 8am-8pm

Sun. 12-6pm

Total of 70 hours/week open. Total of 75 co-op members. Total 35 two-hour time slots.

Each co-op member must work two hours/week.

For any given time slot, there is a one in 35 (2.8%) chance that that is the slot they plan to show up for. (But then something may come up and they don’t show up as planned?)

In scheduled approach, workers often arrive late, or never show up, but do not leave early (since everyone knows their posted schedule).  
In randomized approach, workers arrive on time (since their choice), but often leave early (since their schedule/current hours not known to everyone else).

APPROACH

Assume that everyone works a consecutive two-hour block.

Scheduled workers:

Chance of arriving 15 minutes late is 35%.

Chance of arriving 30 minutes late is 15%.

Chance of arriving 45 minutes late is 7%.

Chance of arriving 60 minutes late is 3%.

Chance of arriving 75 minutes late is 1%.

Chance of arriving 90 minutes or later is nominal.

Chance of leaving 15 minutes early is 10%

Chance of leaving 30 minutes early is 3%

Chance of leaving 45 or more minutes early is nominal

Chance of not showing up is 20%.

Unscheduled workers:

Chance that they planned to work a given time slot, 1 in 35 (~ 3%) for each of 45 members

Chance of arriving 15 minutes late is 10%

Change of arriving 30 minutes late is 5%

Chance of leaving 15 minutes early is 24%.

Chance of leaving 30 minutes early is 8%.

Chance of leaving 45 minutes early or more is nominal.