THE VEHICLE INSPECTION AND EMISSIONS-TESTING PROCESS

Anylogic Simulation

SOURCE

- 75 personal vehicles per day (standardized size only)
- 8 working hours (from 8.00 AM to 5.00 PM)
- Arrival rate: 9 vehicles/hour

DETAILED DESCRIPTION OF THE PROCESS

The process follows in sequence the activities in the table below. In addition, for each kind of activity, the duration is provided.

Name	Delay type	Time units	Min	Value	Max	Resource allocated
Check-in	Uniform	Minutes	0.1		2	Receptionist
Call insurance	Triangular	Minutes	20	30	60	
Move vehicle	Triangular	Minutes	2	5	20	Inspector Base 2
Inspection at Base 2	Uniform	Minutes	4		10	Inspector Base 2
Inspection at Base 3	Uniform	Minutes	1		2	Inspector Base 3
Inspection at Base 4	Uniform	Minutes	4		12	Inspector Base 4
Recording results		Minutes		1		Receptionist

Probabilities:

- Vehicle inspected at Lane 1: 45%
- Vehicle inspected at Lane 2: 45%
- Vehicle inspected at Lane 3: 10%
- Vehicles failed the inspection at Base 2 (first inspection): 15,23%
- Vehicles failed the inspection at Base 3 (second inspection): 1,75%
- Vehicles passed the inspection at Base 4 (third inspection): 92,37%

RESOURCED INVOLVED

The resources involved in the process are the following:

- Receptionist: 1
- Inspectors:
    - 3 dedicated to each base, working at Lane 1, 2 and 3

Working schedule:

- Monday – Friday
- 8.00 AM – 17.00 PM
- 1 hour of pause at 12.00 AM

SIMULATION RESULTS

The main elements that should be monitored in the simulation model are the following:

- Completed vehicle inspection
- Mean utilization of the stations
- Mean utilization of the resources
- Throughput time for vehicle inspection (Base 2 – Base 4)
- Waiting time