

TABLE C.5: Notation and Formulas for the Performance Measures of a Finite Population Queuing Model

Notation

D = Probability that a customer or object will have to wait in queue

F = Efficiency Factor = 1 – Percentage of customers or objects waiting in queue

H = Average number of customer or objects being served

J = Average number of customers or objects not in queue or in service

L = Average number of customers or objects waiting for service

M = Number of service channels

N = Number of potential customers

T = Average service time

U = Average time between customer or object service requirements per customer/object

W = Average time a customer or object waits in line

X = Service factor

Performance Measures

Service factor: $X = \frac{T}{T + U}$

Average number waiting: $= L = N(1 - F)$

Average waiting time: $W = \frac{L(T + U)}{N - L} = \frac{T(1 - F)}{T + U}$

Average number running: $J = NF(1 - X)$

Average number being served: $H = FNX$

Number in Population: $N = J + L + H$