

Table I. Input for transportation cost.

Transportation cost associated with non-vulnerable population (\tilde{tp}_{src}^1)			
r=1			
s	c=1	c=2	c=3
1	(49,61,65,83,85,101,125,140,152,161)	(41,47,55,59,64,89,92,111,125,132)	(63,78,82,104,112,130,135,148,159,169)
2	(24,29,31,55,59,62,81,85,105,110,115)	(32,39,49,65,79,92,102,125,132,140)	(47,55,68,82,105,111,122,142,150,156)
3	(19,28,33,41,47,65,71,80,82,86)	(42,44,55,60,64,89,93,114,127,131)	(31,47,53,57,71,83,121,153,161,167)
4	(15,28,31,32,35,49,61,68,71,78)	(12,29,32,35,37,43,68,83,85,90)	(21,31,36,51,56,82,85,108,111,116)
5	(26,29,39,62,76,81,99,105,110,116)	(34,51,56,61,76,81,121,134,151,168)	(45,52,60,76,89,116,123,138,144,152)
6	(38,45,64,83,90,115,123,138,144,152)	(44,52,63,81,93,100,108,110,116)	(78,82,104,112,130,135,148,159,169)
7	(43,48,64,83,85,118,121,138,155,168)	(31,47,53,57,71,83,121,153,161,167)	(41,42,65,88,91,115,123,128,143,152)
r=2			
1	(15,28,31,38,41,49,72,80,85,91)	(20,25,32,39,41,51,52,58,63,69)	(32,39,49,65,79,92,99,105,110,115)
2	(30,45,52,70,88,91,98,105,127,133)	(22,27,30,53,64,82,88,103,109,112)	(41,58,71,88,109,111,118,138,151,156)
3	(43,48,64,83,89,115,123,138,143,152)	(29,31,40,49,64,69,78,81,105,111)	(47,55,68,82,105,110,122,142,150,156)
4	(30,47,56,59,63,81,121,153,162,168)	(30,47,56,59,63,81,121,153,162,168)	(43,44,56,63,66,91,111,119,135,148)
5	(17,29,41,51,56,82,91,108,112,115)	(29,31,40,49,64,69,78,81,105,111)	(24,41,56,59,64,76,110,135,163,170)
6	(15,28,31,38,41,49,72,80,85,91)	(18,24,29,34,39,51,59,62,68,70)	(43,44,59,60,66,89,93,115,122,131)
7	(49,59,72,89,116,133,151,165,171,184)	(45,87,99,97,142,211,231,255,276,289)	(37,44,59,63,69,91,115,121,135,139)
r=3			
1	(15,21,30,33,38,41,48,51,55,66)	(5,8,14,18,22,25,28,38,43,49)	(33,43,51,69,85,93,100,109,128,133)
2	(21,41,52,61,79,93,100,108,111,115)	(49,59,72,89,106,121,132,149,157,161)	(28,39,61,69,88,101,121,138,149,156)
3	(30,47,56,59,71,81,121,153,162,168)	(42,61,69,82,110,126,132,135,152,168,170)	(69,78,94,110,126,132,135,152,168,176)
4	(13,25,32,41,51,69,77,82,105,112,132)	(25,32,36,55,71,82,85,108,112,132)	(21,28,37,43,47,68,75,110,121,135)
5	(12,31,35,41,46,69,78,81,101,111)	(24,29,31,60,76,81,85,113,121,126)	(45,52,60,81,107,116,123,139,151,153)
6	(11,25,30,34,38,44,48,51,55,66)	(2127,40,54,66,92,101,106,111,120)	(32,44,55,61,69,91,115,127,131,140)
7	(12,21,31,34,41,51,75,110,121)	(32,47,55,57,65,85,121,153,166,171)	(44,48,71,80,98,111,121,138,151,177)
r=4			
1	(42,52,61,81,89,111,121,138,148,156)	(28,32,39,48,62,69,78,81,105,111)	(41,47,55,59,64,86,121,151,162,172)
2	(11,18,21,28,34,39,42,48,51,56)	(36,51,55,61,64,90,95,108,122,133)	(65,78,85,109,138,141,150,156,169,177)
3	(21,28,34,44,47,61,72,80,82,88)	(43,44,56,60,66,89,93,115,122,131)	(33,48,52,59,70,83,120,152,160,167)
4	(22,30,31,34,43,66,72,80,82,86)	(22,27,42,43,58,70,78,82,106,114)	(11,33,38,51,59,83,87,108,106,114)
5	(22,29,33,55,62,81,84,105,110,116)	(37,44,59,63,69,91,115,121,135,139)	(43,59,72,91,106,123,141,149,152,157)
6	(32,47,54,57,71,83,120,153,163,167)	(25,27,44,45,58,72,78,83,101,114)	(42,44,55,60,64,89,93,114,127,131)
7	(41,88,99,96,140,211,221,255,282,317)	(32,47,53,56,71,89,128,132,162,164)	(44,59,70,89,106,120,132,149,154,164)
Additional transportation cost for vulnerable population (\tilde{ad}_{src})			
r=1			
1	(22,33,48,51,73,83,99,108,128,131)	(11,28,32,38,44,66,72,80,85,93)	(19,21,22,26,31,41,51,62,69,77)
2	(33,45,58,62,98,102,112,132,145,158)	(11,21,26,32,43,49,72,80,85,91)	(5,19,21,31,32,41,78,80,82,87)
3	(11,18,21,24,27,29,34,41,45,56)	(9,14,19,21,26,31,42,45,48,51)	(6,13,15,17,22,25,34,38,40,42)
4	(13,18,24,26,31,39,42,48,51,56)	(25,41,52,71,94,105,112,132,145,158)	(12,31,33,39,63,67,72,81,89,92)
5	(6,21,28,31,36,41,48,56,61,73)	(11,15,19,21,28,55,64,76,89,90)	(5,9,10,13,15,17,18,19,21,26)
6	(6,11,18,19,21,23,34,39,41,45)	(15,28,31,38,48,65,72,80,85,91)	(12,18,20,25,34,41,42,48,51,56)
7	(6,14,19,25,34,39,45,50,51,56)	(18,21,28,34,36,49,72,81,85,99)	(18,21,28,34,36,49,72,81,85,99)
r=2			
1	(9,25,31,35,41,83,87,108,113,131)	(15,21,23,29,32,39,61,80,85,91)	(43,44,55,61,64,89,93,115,127,131)
2	(41,42,65,88,91,115,123,128,143,152)	(11,33,38,51,59,83,87,108,113,117)	(41,46,55,78,94,101,122,155,168,198)
3	(12,42,44,53,62,76,112,128,143,152)	(9,28,31,40,45,81,89,92,109,123)	(41,46,65,98,108,115,125,128,143,152)
4	(42,44,55,61,83,89,112,129,134,155)	(41,42,65,90,119,121,133,141,154)	(34,51,62,69,77,89,93,114,127,131)
5	(35,43,56,76,121,144,161,168,175,187)	(11,33,38,43,48,76,87,108,113,117)	(42,44,51,54,61,89,93,134,154,167)
6	(6,21,24,28,41,45,72,81,89,92)	(11,18,21,28,43,49,51,55,67,94)	(42,44,56,60,63,90,94,114,127,131)
7	(3,7,8,10,11,13,17,18,19,20)	(17,29,44,48,53,101,108,109,115,121)	(38,44,52,54,61,90,94,139,154,167)
r=3			
1	(11,28,31,33,36,40,45,51,62,71)	(13,33,38,50,55,83,87,108,113,117)	(42,44,55,60,83,89,94,119,127,141)
2	(34,41,55,60,64,89,94,114,127,134)	(41,42,65,71,111,131,141,150,152,167)	(42,44,47,71,92,106,112,121,138,162)
3	(42,44,55,78,84,89,121,125,132,137)	(32,35,68,92,109,121,134,151,167,178)	(41,42,54,88,128,144,157,173,189,192)
4	(11,33,38,41,43,55,81,101,113,117)	(34,35,41,43,50,89,93,112,128,137)	(12,23,31,36,41,67,87,100,108,117)
5	(11,24,36,56,64,67,71,78,82,98)	(6,33,45,51,59,98,105,108,113,117)	(33,45,65,71,101,123,133,142,151,165)
6	(15,17,21,25,31,36,41,48,85,91)	(12,31,4,51,54,100,105,108,117,118)	(42,44,55,58,60,89,121,129,133,154)
7	(11,31,40,41,43,55,82,103,113,117)	(42,44,55,58,61,91,132,145,156,165)	(27,31,45,90,115,120,130,142,154,160)
r=4			
1	(34,42,65,88,91,119,123,128,141,152)	(8,34,38,42,54,83,87,91,101,113)	(42,44,55,59,85,91,93,109,154,171)
2	(12,18,22,25,36,39,41,48,52,56)	(41,44,55,56,68,89,92,113,126,130)	(35,42,65,88,106,154,166,178,196,234)
3	(15,28,31,38,488,65,72,80,85,91)	(42,44,55,60,64,89,93,114,127,131)	(41,42,51,57,68,115,123,128,131,140)
4	(12,20,31,38,45,56,72,80,85,111)	(8,21,38,42,54,66,69,99,121,137)	(15,41,50,52,54,58,92,113,126,130)

5	(42,44,55,60,73,119,122,134,148,154)	(32,41,56,60,64,89,93,121,130,178)	(29,35,69,92,111,118,138,151,168,173)
6	(8,21,33,36,40,72,98,105,121,127)	(11,33,41,42,44,64,87,108,113,117)	(31,44,58,60,67,90,94,114,127,131)
7	(11,42,50,52,54,58,93,113,156,167)	(38,45,56,60,69,101,121,132,139,157)	(30,39,65,96,120,123,130,140,155,168)

Table II. Input for transportation time and time free from delay.

Time taken to transportation population (\bar{t}_{src})			
r=1			
s	c=1	c=2	c=3
1	(43,60,70,91,106,120,133,151,58,160)	(18,21,32,37,51,52,55,62,72,88)	(30,50,52,59,72,92,131,161,166,179)
2	(31,47,56,59,62,85,121,150,170,178)	(24,30,35,51,69,82,98,109,121,132)	(44,59,89,112,124,139,145,151,154,164)
3	(11,22,34,48,62,70,81,95,108,119)	(16,26,32,40,48,69,79,83,106,109)	(42,48,55,61,66,88,91,112,120,127)
4	(38,40,61,68,78,82,85,123,138,152)	(35,42,56,61,69,93,106,117,122,138)	(33,49,51,55,79,106,116,153,160,167)
5	(13,21,28,32,41,55,68,71,85,92)	(42,51,54,79,89,95,132,162,169,178)	(13,25,32,68,71,77,89,91,105,109)
6	(30,47,52,58,72,83,121,154,161,166)	(41,59,70,93,115,125,132,151,154,164)	(11,25,32,49,61,69,77,99,105,119)
7	(41,62,75,90,106,122,132,151,154,160)	(45,70,71,112,129,132,145,159,169,178)	(38,51,70,82,101,120,132,139,144,151)
r=2			
1	(20,31,39,52,63,80,86,101,110,117)	(15,25,32,43,59,72,78,95,108,119)	(42,50,55,62,69,93,120,150,172,182)
2	(21,26,32,41,48,72,78,106,119,121)	(12,23,36,43,53,65,73,81,105,112)	(36,66,76,95,112,126,141,151,161,178)
3	(40,51,57,59,62,83,106,115,122,132)	(21,30,45,52,57,80,83,104,110,117)	(11,26,33,42,52,69,72,81,103,109)
4	(28,47,59,57,71,95,121,161,166,167)	(21,25,32,48,66,82,114,129,144,158)	(31,48,53,58,80,87,121,156,161,185)
5	(42,44,56,61,66,89,92,109,111,120,148)	(44,60,70,74,81,92,109,111,120,148)	(22,25,32,49,66,73,77,82,105,109)
6	(16,25,30,41,50,69,78,82,100,109)	(12,21,28,30,46,56,57,58,59,66)	(20,29,34,56,61,82,84,106,113,116)
7	(32,42,56,57,65,88,121,154,166,177)	(18,28,33,44,63,70,81,95,105,109)	(40,60,70,90,110,120,132,150,153,162)
r=3			
1	(20,30,35,57,63,75,82,109,111,118)	(20,28,31,34,43,49,50,55,59,73)	(40,49,58,60,75,89,101,115,133,140)
2	(18,21,28,31,45,85,88,108,116,121)	(41,55,72,89,106,121,132,151,154,166)	(42,51,55,79,109,115,120,138,155,167)
3	(41,58,68,81,95,109,130,141,155,178)	(38,59,71,93,101,110,115,138,148,173)	(23,31,46,52,74,82,93,106,110,130)
4	(21,25,28,30,36,59,77,82,105,109)	(22,33,49,55,68,81,101,105,114,129)	(21,29,33,45,59,71,81,99,105,109)
5	(40,49,58,62,77,82,88,109,118,125)	(23,29,39,51,55,81,84,102,110,127)	(41,59,70,75,87,120,132,149,154,164)
6	(33,47,51,54,66,85,122,153,167,171)	(28,47,50,57,62,72,112,153,162,167)	(33,50,55,58,64,85,122,154,166,173)
7	(21,30,33,57,63,78,84,106,110,115)	(45,55,59,65,85,122,150,160,183)	(42,50,54,66,81,110,150,169,170,188)
r=4			
1	(35,47,59,63,79,86,147,153,177,192)	(15,26,33,42,53,69,81,95,121,131)	(22,31,36,42,48,50,49,78,82,93)
2	(16,21,28,35,52,80,89,104,110,116)	(33,50,55,61,65,103,131,151,166,176)	(21,25,31,42,53,82,95,104,112,116)
3	(41,47,58,65,73,89,106,118,126,131)	(40,46,57,62,76,80,85,115,123,133)	(41,44,57,58,66,85,93,109,128,135)
4	(33,49,54,69,79,95,121,153,161,167)	(13,25,32,45,66,71,77,82,101,120)	(20,25,43,45,60,65,70,93,111,121)
5	(21,25,38,49,66,71,80,99,109,138)	(13,29,32,55,68,75,77,82,105,109)	(43,49,56,73,78,89,93,115,123,130)
6	(21,30,33,51,66,80,84,107,111,116)	(33,47,55,62,65,82,115,153,166,170)	(13,28,32,42,55,72,80,95,112,125)
7	(32,41,45,50,55,82,118,153,166,171)	(35,47,55,62,73,85,121,169,171,189)	(40,44,56,61,66,90,93,112,123,130)
Time free from delay ($\bar{t}_{fd_{src}}$)			
r=1			
1	(23,30,33,58,65,78,82,106,105,115)	(15,26,39,40,48,67,79,81,106,110)	(11,22,29,36,51,55,68,71,96,110)
2	(41,49,60,62,75,82,88,110,114,131)	(40,65,68,72,80,85,90,109,120,125)	(65,78,129,138,141,145,150,168,191,199)
3	(14,22,28,38,45,61,68,83,91,105)	(31,48,55,61,62,85,123,153,170,172)	(29,45,56,58,66,80,126,150,167,173)
4	(18,45,48,62,72,80,139,162,174,181)	(43,56,65,88,106,112,117,128,143,152)	(41,55,75,90,105,116,123,139,143,150)
5	(40,50,58,62,78,82,89,105,116,125)	(43,49,58,65,81,86,95,109,118,125)	(21,32,35,58,62,79,81,102,110,115)
6	(37,42,68,93,109,121,139,141,152,178)	(41,49,65,88,109,110,121,125,138,150)	(42,55,60,62,85,89,105,110,113,150)
7	(15,26,36,40,48,70,73,84,103,111)	(59,68,86,126,135,169,191,212,239,256)	(33,47,51,126,135,169,191,212,239,259)
r=2			
1	(39,49,55,62,76,82,89,109,120,125)	(13,21,28,32,44,60,73,82,85,110)	(40,51,54,67,81,109,150,171,173,190)
2	(20,30,33,61,65,80,89,106,129,131)	(41,50,58,63,77,82,85,107,118,120)	(40,49,56,62,78,82,88,109,138,154)
3	(22,51,55,59,66,85,120,153,165,171)	(41,55,65,88,106,115,132,153,166,181)	(20,30,36,57,63,81,86,110,114,120)
4	(36,61,80,88,106,118,121,128,140,155)	(31,47,50,54,66,82,126,151,167,173)	(36,43,73,88,110,121,123,135,143,152)
5	(21,33,38,59,64,78,84,101,109,110)	(30,42,65,88,93,115,124,128,143,152)	(13,21,26,29,36,45,52,71,85,92)
6	(32,47,53,54,70,81,121,48,160,175)	(10,27,38,43,61,73,80,100,102,109)	(30,47,52,54,66,84,120,150,170,171)
7	(17,26,33,41,47,70,78,81,104,110)	(40,52,58,65,76,82,98,112,136,145)	(41,53,62,82,93,141,152,163,190,230)
r=3			
1	(40,49,58,60,79,80,88,109,115,125)	(21,33,39,45,63,70,79,80,105,109)	(26,47,51,54,60,70,110,120,130,171)
2	(33,49,55,54,67,85,135,153,167,201)	(30,47,50,59,79,118,132,154,160,180)	(35,51,55,68,82,110,150,171,174,190)
3	(41,46,70,88,109,135,141,145,165,178)	(35,49,60,68,80,85,99,110,121,145)	(25,50,51,54,73,85,145,175,182,192)
4	(11,18,21,28,32,42,68,70,82,98)	(38,49,60,62,81,86,105,109,120,135)	(12,26,38,42,62,73,81,99,101,109)
5	(18,36,48,60,65,78,80,100,105,112)	(14,21,29,32,42,55,68,72,84,90)	(19,21,28,36,41,60,70,90,100,103)
6	(41,53,66,75,81,105,132,151,154,160)	(33,47,51,54,72,105,122,153,167,171)	(40,50,65,109,115,140,150,160,190,229)
7	(32,49,59,63,78,83,90,109,118,126)	(40,42,66,88,90,115,124,128,145,152)	(60,72,90,129,138,170,191,220,231,260)
r=4			
1	(33,47,55,68,79,85,141,153,188,195)	(16,35,44,48,60,69,79,83,106,109)	(19,26,30,40,52,69,79,105,108,118)

2	(14,21,30,33,51,64,68,70,89,97)	(35,52,55,75,82,105,150,171,175,190)	(33,47,57,65,82,101,124,153,167,171)
3	(21,47,50,67,82,86,123,152,166,170)	(26,51,52,58,63,87,120,150,167,173)	(21,48,53,61,78,82,99,124,148,166)
4	(38,49,81,88,109,115,124,128,144,152)	(45,51,58,66,81,85,98,110,118,125)	(41,49,65,88,109,115,123,135,143,159)
5	(21,30,33,58,63,78,82,110,111,115)	(38,52,61,68,80,85,92,110,126,139)	(38,47,50,62,78,90,122,148,170,178)
6	(40,49,60,69,74,83,85,110,118,125)	(38,42,86,109,110,115,123,138,172,183)	(21,30,33,57,63,78,84,106,110,115)
7	(35,47,50,54,81,95,120,153,166,170)	(40,42,66,88,93,125,131,148,151,162)	(28,49,52,55,67,84,119,152,168,172)

Table III. Input for time permitted to be delay and not-permitted to be delay.

Time permitted to be delay ($\widetilde{\text{tpd}}_{\text{src}}$)			
r=1			
s	c=1	c=2	c=3
1	(41,52,58,63,79,82,87,109,117,120)	(22,31,33,60,62,80,82,106,111,116)	(21,62,37,43,58,71,84,107,112,115)
2	(27,50,51,55,70,85,119,148,161,170)	(38,49,70,85,109,115, 123,135,145,168)	(11,23,28,35,42,55,70,75,82,90)
3	(37,42,65,90,96,110,123,127,140,153)	(41,71,89,101,119,147,155,168,188,210)	(21,30,33,66,81,93,101,110,115,119)
4	(37,62,70,105,121,130,138,148,150,160)	(40,43,66,89,90,116,123,128,144,152)	(41,62,75,101,120,128,132,151,154,160)
5	(31,50,55,63,70,84,121,140,158,170)	(30,47,53,54,67,81,122,150,165,177)	(33,40,52,56,68,84,119,149,169,172)
6	(40,63,79,101,120,129,148,155,165,189)	(38,60,70,90,120,131,149,166,174,195)	(28,47,55,61,81,98,118,150,165,170)
7	(20,30,33,58,63,80,84,106,111,116)	(61,72,91,149,165,170,191,220,232,260)	(42,55,65,92,110,115,123,128,143,152)
r=2			
1	(31,47,53,54,67,85,121,150,169,171)	(15,26,33,41,69,72,79,84,107,109)	(38,55,75,93,108,115,124,144,153)
2	(41,51,58,63,80,82,98,115,129,145)	(27,50,52,59,66,80,120,152,170,172)	(32,50,51,54,82,105,126,150,153,162)
3	(37,42,65,90,96,110,123,127,140,153)	(41,71,89,101,119,147,155,168,188,210)	(21,30,33,66,81,93,101,110,115,119)
4	(37,62,70,105,121,130,138,148,150,160)	(40,43,66,89,90,116,123,128,144,152)	(41,62,75,101,120,128,132,151,154,160)
5	(29,48,52,54,66,89,120,150,157,177)	(40,60,78,106,120,131,148,155,168,181)	(19,30,38,41,48,71,81,114,120,124)
6	(40,62,74,90,106,120,132,151,155,160)	(40,49,58,75,78,91,105,109,118,125)	(39,43,65,89,91,116,124,128,144,148)
7	(41,51,60,63,78,84,90,107,115,119)	(35,45,59,66,79,84,125,151,171,173)	(39,61,77,92,121,159,168,171,176,201)
r=3			
1	(26,50,52,59,69,85,120,148,163,170)	(22,45,50,55,63,93,115,152,168,170)	(35,47,50,53,82,95,120,153,166,176)
2	(41,59,65,88,105,115,123,132,143,155)	(38,43,70,82,111,120,130,144,160,172)	(41,66,73,93,108,115,121,128,143,150)
3	(35,62,90,105,119,138,149,166,171,198)	(18,31,48,66,79,95,105,122,148,168)	(38,55,70,90,108,121,128,138,150,161)
4	(16,26,28,32,41,61,72,80,102,109)	(41,42,51,68,82,115,118,121,135,152)	(40,49,58,69,88,91,101,105,112,125)
5	(41,49,58,63,77,82,89,108,118,125)	(14,26,37,40,49,70,73,85,102,111)	(21,29,33,51,55,71,80,106,110,111)
6	(38,68,80,85,107,120,133,150,154,162)	(32,44,68,90,111,120,123,134,143,152)	(79,95,105,115,127,133,145,169,177,212)
7	(31,46,53,54,67,84,121,150,168,171)	(40,62,76,91,106,123,132,150,155,160)	(59,72,99,138,168,180,196,220,232,260)
r=4			
1	(40,42,69,88,110,121,38,142,159,172)	(38,51,61,68,81,88,95,110,122,135)	(23,31,35,57,62,79,85,110,128,132)
2	(16,26,36,48,61,69,80,90,106,109)	(52,71,75,101,114,128,132,150,154,158)	(40,42,69,95,114,119,131,140,150,160)
3	(40,42,70,98,110,115,128,130,143,152)	(37,44,69,85,96,106,131,139,143,150)	(36,42,65,89,90,115,126,130,140,153)
4	(38,62,75,96,120,129,139,151,154,161)	(40,42,55,68,89,110,118,120,135,153)	(41,62,75,89,128,130,132,151,154,160)
5	(41,49,59,62,78,83,88,107,116,125)	(31,47,53,54,67,84,121,150,171,172)	(42,50,66,102,111,115,123,129,143,153)
6	(31,47,53,54,67,85,120,151,170,173)	(37,61,71,91,122,131,152,166,176,201)	(41,55,61,78,81,83,90,110,120,126)
7	(41,43,66,88,98,120,131,135,149,160)	(38,60,80,91,107,120,130,152,154,161)	(40,44,69,88,92,112,121,125,141,152)
Time not-permitted to be delay ($\widetilde{\text{tnpd}}_{\text{src}}$)			
r=1			
1	(40,55,62,78,82,83,91,108,120,126)	(37,50,58,63,77,80,88,110,118,124)	(41,49,58,63,78,81,90,109,117,125)
2	(49,51,65,83,88,112,123,128,142,152)	(40,66,80,93,112,129,145,151,154,160)	(52,76,100,138,178,188,206,220,236,266)
3	(21,30,33,57,60,78,100,121,134,139)	(44,68,85,102,114,131,150,166,171,180)	(37,66,75,91,115,120,130,148,150,158)
4	(45,66,75,101,120,122,133,152,162,168)	(39,60,83,99,130,133,139,155,170,199)	(38,75,99,110,129,150,162,170,190,215)
5	(31,45,62,70,79,82,120,153,171,175)	(38,55,65,85,91,115,123,130,140,150)	(45,50,60,70,82,120,129,138,149,152)
6	(39,72,90,102,121,140,157,170,190,220)	(44,80,86,95,114,147,159,170,190,210)	(45,65,70,88,93,115,123,133,150,169)
7	(38,51,60,66,75,80,90,110,119,127)	(62,76,102,148,168,188,206,223,259,267)	(35,66,79,93,110,123,145,151,165,185)
r=2			
1	(40,43,66,87,90,116,124,128,144,153)	(20,31,35,61,75,79,102,106,110,115)	(38,66,81,105,120,122,150,160,180,209)
2	(34,45,58,66,80,84,125,149,172,173)	(38,42,64,89,92,115,124,128,144,152)	(36,55,65,91,100,119,131,136,143,152)
3	(42,70,77,89,107,122,132,144,153,160)	(50,71,105,130,148,150,155,168,188,210)	(39,42,61,71,85,105,112,120,128,152)
4	(30,56,75,98,115,145,150,168,189,210)	(41,75,90,106,110,125,145,155,170,190)	(55,91,99,109,119,150,155,168,188,210)
5	(42,45,66,88,92,113,120,130,142,160)	(39,70,93,102,120,147,156,170,187,209)	(42,50,60,72,80,83,95,110,126,139)
6	(41,63,79,102,120,130,148,155,166,185)	(41,42,50,71,82,115,123,128,143,152)	(50,62,70,89,106,120,132,151,154,160)
7	(30,35,41,45,81,110,120,128,143,152)	(39,42,65,99,106,115,123,138,150,154)	(45,72,95,106,145,150,155,178,199,235)
r=3			
1	(39,43,64,89,92,112,123,129,140,152)	(37,50,69,91,102,120,126,135,143,152)	(38,42,66,90,99,120,125,138,150,167)
2	(39,66,80,92,112,123,136,152,159,180)	(35,70,80,99,115,130,144,159,169,190)	(50,62,75,90,126,139,155,160,172,190)
3	(49,70,89,100,138,150,155,175,190,200)	(38,40,60,75,90,117,120,128,140,154)	(39,72,90,100,112,150,151,168,188,210)
4	(25,30,33,57,63,78,84,106,110,115)	(50,60,78,88,100,115,123,129,144,155)	(38,70,82,108,122,130,148,160,170,189)
5	(28,36,58,65,78,105,111,128,139,149)	(22,31,39,57,64,77,84,106,109,115)	(21,38,48,57,70,78,80,109,110,112)
6	(40,63,80,106,120,129,148,156,162,185)	(32,60,70,80,90,135,150,160,175,209)	(52,71,93,120,152,158,160,180,210,235)

	r=3		
1	(39,43,64,89,92,112,123,129,140,152)	(37,50,69,91,102,120,126,135,143,152)	(38,42,66,90,99,120,125,138,150,167)
2	(39,66,80,92,112,123,136,152,159,180)	(35,70,80,99,115,130,144,159,169,190)	(50,62,75,90,126,139,155,160,172,190)
3	(49,70,89,100,138,150,155,175,190,200)	(38,40,60,75,90,117,120,128,140,154)	(39,72,90,100,112,150,151,168,188,210)
4	(25,30,33,57,63,78,84,106,110,115)	(50,60,78,88,100,115,123,129,144,155)	(38,70,82,108,122,130,148,160,170,189)
5	(28,36,58,65,78,105,111,128,139,149)	(22,31,39,57,64,77,84,106,109,115)	(21,38,48,57,70,78,80,109,110,112)
6	(40,63,80,106,120,129,148,156,162,185)	(32,60,70,80,90,135,150,160,175,209)	(52,71,93,120,152,158,160,180,210,235)
7	(50,60,65,88,96,115,123,128,143,154)	(55,68,75,93,109,122,148,151,160,175)	(50,78,100,150,180,195,210,230,250,270)
	r=4		
1	(43,60,85,96,119,120,151,166,174,189)	(32,45,59,67,79,85,120,151,173,174)	(43,49,62,69,77,82,88,109,118,139)
2	(22,35,45,61,76,80,92,106,110,116)	(38,70,89,92,120,138,145,160,180,210)	(52,72,88,95,112,131,148,151,160,161)
3	(42,74,91,100,109,145,155,172,185,222)	(30,65,80,106,120,130,148,159,165,190)	(43,60,80,102,121,129,144,155,160,189)
4	(35,63,80,103,120,130,140,159,165,193)	(30,55,76,88,109,121,128,132,138,141)	(43,72,92,106,145,147,155,170,188,211)
5	(38,42,66,75,80,90,100,105,156,160)	(42,62,79,89,105,122,130,150,152,162)	(41,55,80,120,129,136,144,159,170,190)
6	(40,63,80,106,120,129,148,156,162,185)	(32,60,70,80,90,135,150,160,175,209)	(52,71,93,120,152,158,160,180,210,235)
7	(48,68,80,109,125,129,150,155,170,195)	(50,70,89,101,122,141,155,171,188,211)	(58,69,88,109,120,125,132,155,159,175)

Table IV. Input for carbon emission, volunteer, psychologist, relief centre, affected population, delay cost, and budget.

Carbon emission because of energy consumption ($\tilde{e}c_r$)			
r=1	(230,290,356,410,475,520,770,810,850,920)	r=2	(112,254,312,378,501,522,533,712,735,778)
r=3	(355,389,401,425,558,855,912,925,989,1021)	r=4	(298,356,395,412,588,905,931,942,990,1102)
Carbon emission because of waste production ($\tilde{w}p_r$)			
r=1	(98,248,302,312,407,447,533,620,670,721)	r=2	(245,312,366,415,519,632,771,812,891,910)
r=3	(258,312,389,420,493,712,820,839,921,967)	r=4	(389,411,512,551,758,889,958,1225,1322,1359)
Carbon emission because of food preparation ($\tilde{f}p_r$)			
r=1	(210,248,278,312,360,529,765,832,892,911)	r=2	(271,333,391,402,453,720,839,874,932,992)
r=3	(201,308,325,417,581,590,635,715,822,945)	r=4	(281,322,390,412,585,912,948,982,1102,1145)
Number of individual a single volunteer can handle (\tilde{n})			
(8,14,16,18,20,26,35,39,41,43)			
Cost associated with the expense on single volunteer ($\tilde{v}c_s$)			
s=1	(784,845,923,1157,1198,1235,1326,1458,1549,1854)	s=2	(952,1021,1201,1322,1489,1542,1654,1691,1701,1833)
s=3	(952,1021,1201,1322,1563,1789,2012,2256,2458,2789)	s=4	(812,922,975,1103,1156,1265,1311,1421,1578,1869)
s=5	(977,1032,1220,1398,1610,1799,2256,2478,2784,2986)	s=6	(711,812,895,1025,1125,1156,1203,1299,1305,1375)
s=7	(856,956,1022,1078,1145,1298,1458,1655,1788,1871)		
Psychologist and mental health service cost ($\tilde{p}sm_r$)			
r=1	(381,485,521,678,801,923,989,1258,1455,1490)	r=2	(741,823,851,1101,1154,1206,1258,1429,1689,1902)
r=3	(912,978,1021,1098,1184,1369,1520,1745,2091,2289)	r=4	(922,1125,1356,1458,1661,1856,2458,2748,2856,3125)
Minimum standard relief cost ($\tilde{m}sl_r^1$)			
r=1	(912,1078,1231,1391,1612,1822,2278,2410,2856,3025)	r=2	(1033,1256,1359,1652,2155,2369,2689,3298,3369,3598)
r=3	(1011,1089,1299,1654,1859,2158,2428,2788,2895,3256)	r=4	(1021,1099,1259,1415,1665,1921,2356,2569,2895,3256)
Additional minimum standard relief cost ($\tilde{a}ms_r$)			
r=1	(401,478,568,570,751,935,1125,1356,1425,1521)	r=2	(292,355,412,426,478,939,1025,1089,1121,1256)
r=3	(345,422,510,520,675,725,985,1212,1421,1568)	r=4	(375,426,533,551,799,921,1256,1452,1658,1785)
Capacity of relief centre ($\tilde{c}pr_r$)			
r=1	(1121,1256,1410,2369,2530,2684,2789,3354,3698,4120)	r=2	(1200,1352,1458,2209,2586,2651,2845,2985,3325,3568)
r=3	(1564,1685,1985,2095,2712,3210,3354,3685,3958,4457)	r=4	(1425,1620,2322,2510,2560,2685,2895,3265,3658,4012)
Capacity of conveyance ($\tilde{c}pc_r$)			
c=1	(2305,2541,2894,2915,3012,3321,3458,3785,4120,4568)	c=2	(2512,2469,2788,2935,3210,3354,4120,4562,4985,5321)
c=3	(2103,2469,2788,2935,3210,3354,4120,4562,4985,5321)		
Population at source (\tilde{P}_s)			
s=1	(489,810,855,959,1121,1185,1321,1365,1458,1520)	s=2	(521,621,652,689,705,822,875,901,1068,1120)
s=3	(588,631,712,788,815,877,921,1070,1256,1356)	s=4	(489,660,705,745,859,968,1120,1352,1458,1546)
s=5	(552,635,711,788,809,856,985,1098,1124,1245)	s=6	(741,823,851,988,1154,1206,1258,1429,1689,1895)
s=7	(912,978,1021,1059,1125,1369,1520,1745,2091,2120)		
Delay cost and unfair cost			
\tilde{del}^1	(59,68,92,115,166,178,191,225,236,241)	\tilde{del}^2	(68,91,109,126,169,204,218,259,289,316)
\tilde{Unf}	(32,41,62,72,75,91,95,137,152,171)		
Budget restrictions for additional minimum standard relief (\tilde{Bud}^1)			
(3845680,4896356,5245680,6142568,6854320,7231456,8124356,8235689,8723569,9256869)			
Budget restriction for assistance and therapists (\tilde{Bud}^2)			
(2986530,3125469,3568950,3856420,4356420,4689521,4895620,5123568,5486956,5689546)			
Overall budget restrictions (ovbud)			
(16023560,19856300,22356800,24689520,27895600,30021540,36895600,37956200,38256890,40568950)			
Carbon cap for each relief centre (\tilde{ccap}_r)			
r=1	(2986536,3125429,3985001,4265978,4989950,5689201,5830120,6023560,6252307,6435689)		
r=2	(2856320,3356850,3601202,3956209,4102145,4459802,4756201,5012459,5148752,5365420)		

r=3	(4123568,4369560,4568560,4852030,5568542,6125358,6895620,7689530,8120465,8568953)
Carbon cap for transportation ($\bar{c}cap^{tp}$)	
	(2815890,3251210,3671240,3961521,4406214,4810541,4990720,5320570,5586051,5789086)

Table V. Inputs for distance and carbon emission.

Distance between source and relief centre (\bar{d}_{sr})			
r=1			
r	s=1	s=2	s=3
1	(36,35,71,92,118,132,138,152,168,192)	(31,38,71,99,105,118,131,151,170,183)	(12,31,69,77,89,100,105,139,169,222)
2	(28,42,51,55,67,124,131,162,191,234)	(30,61,71,114,122,141,148,171,190,212)	(32,70,82,114,139,141,148,188,190,235)
3	(12,31,44,62,82,105,109,111,117,134)	(12,31,49,82,92,100,105,108,133,156)	(45,58,71,92,105,118,121,132,155,161)
4	(11,32,41,52,54,100,106,108,118,121)	(35,42,43,51,55,100,151,168,196,234)	(25,43,70,99,132,141,156,170,200,239)
r	s=4	s=5	s=6
1	(29,40,66,90,120,154,169,177,179,201)	(38,75,101,122,178,201,245,266,312,345)	(38,75,101,122,178,201,245,266,312,345)
2	(28,43,70,81,117,158,166,172,182,235)	(31,45,80,95,121,165,178,191,222,234)	(31,45,80,95,121,165,178,171,222,234)
3	(32,45,52,62,78,123,145,183,218,230)	(25,41,56,98,132,151,164,202,221,245)	(25,41,56,98,132,151,164,202,221,245)
4	(40,55,72,93,122,161,181,189,223,253)	(30,42,49,73,82,111,123,135,149,151)	(30,42,49,73,82,111,123,135,149,151)
r	s=7		
1	(35,41,59,81,135,182,241,260,281,293)		
2	(38,43,69,101,153,180,210,238,289,321)		
3	(45,58,66,71,95,102,111,113,128,145)		
4	(33,45,51,57,66,81,92,101,105,126)		
Carbon emission per km with an additional capacity in conveyance ($\bar{a}\bar{c}c_{src}$)			
r=1			
s	c=1	c=2	c=3
1	(0.5,0.7,0.9,1.1,5.2,2.9,3.2,3.6,4.1)	(0.7,0.9,1.1,2.2,3.4,5.6,7)	(0.2,1.1,1.5,1.7,2.2,1.2,5.2,7.3,4.5)
2	(0.7,0.9,1.1,1.5,2.5,3.4,1.5,5.6,5.7,5)	(1.5,2,3,3.5,4.4,5.5,5.2,5.6,6.8)	(0.5,0.9,1.3,1.6,2.1,2.6,3.2,4.1,5.2,6.5)
3	(1.1,1.8,2.2,3.1,3.6,4.5,5.5,6.7,1.8,3)	(1.5,2.5,3.2,4.2,5.1,5.5,6.9,7.8,9,3)	(1.1,2.2,3.3,3.2,3.8,4.1,5.5,6.1,7.2,7.7)
4	(0.3,0.4,0.6,0.7,1.1,1.7,1.9,2.1,2.3,2.5)	(0.2,0.3,0.5,0.6,1.2,1.3,1.6,2.2,2.5,2.6)	(0.1,0.6,0.7,0.8,1.3,1.4,1.8,2.2,1.2,5)
5	(0.8,2.1,3.3,4.2,5.6,6.5,7.8,9)	(0.7,1.1,1.3,1.6,2.2,2.2,4.3,3.2,3.5)	(1.2,3.5,4.4,5.6,8,10,11,13)
6	(1.2,2.2,5.3,4.2,6.2,8,10,10.7,13)	(1.2,2.2,5.3,4.2,6.2,8,10,10.7,13)	(1.5,2.3,4.5,7.2,10,13,15,16)
7	(0.5,2.3,3.1,3.5,4.7,5.6,7,8)	(0.8,2.2,3.4,3.1,3.8,4.5,7.5,8)	(0.5,2.3,2.4,5.6,6.5,7.8,9)
r=2			
1	(2.3,4.5,5.5,5.6,6.5,6.6,5,7)	(1.2,5.3,3.5,4.4,5.5,6.5,7,8)	(1.5,2.5,3.5,5.5,5.6,6.5,7.7,5,7)
2	(1.6,2.3,2.8,3.3,2.4,6.5,9.6,2.7,3.8,1)	(1.1,6.1,8.3,5.6,5.9,5.12,5.14,5.15,6)	(1.2,1.9,2.2,5.5,7.2,10.2,13.1,15.2,15.7)
3	(0.1,0.5,0.7,1.1,3.1,5.1,7.1,9.2,1.2,6)	(1.2,2.1,3.3,8.4,2.6,2.8,2.9,9.10,7,13.2)	(0.8,2.2,2.7,3.1,3.8,4.7,5.1,7.2,7.5,8.2)
4	(0.4,1.1,1.2,1.7,2.2,6.3,2.4,3.5,3.6,8)	(0.2,1.1,1.3,1.5,1.8,2.2,2.4,2.8,3.3,5)	(0.2,1.2,1.3,1.8,2.1,2.6,3.1,4.3,5.4,7.5)
5	(1.1,5.2,5.3,5.7,8,11,15,16)	(1.3,2.3,1.3,5.4,2.6,8.5,10,10.5,12)	(0.5,1.1,5.1,7.1,8.2,2.4,3.3,2,4)
6	(0.2,1.1,1.4,1.5,2.2,2.2,4.2,8,4,5)	(1.2,2.7,3.3,8.4,7.5,6,7.5,8)	(1.2,3.4,5.5,5.5,6.7,5.8,9)
7	(1.2,3.3,8.4,6.2,8,10,11,14)	(1.1,5.2,2.5,5.7,10,14,15,16)	(1.2,2.5,3.4,4.2,6.8,11,13,15)
r=3			
1	(1.5,2.2,5.3,3.5,4.4,5.5,5.5,6,5)	(0.5,0.9,1.1,2.1,3.1,9.2,3.2,4.2,6,3)	(0.6,0.8,1.2,1.3,1.5,1.8,2.2,2.5,2.8,3)
2	(1.1,5.2,1.3,2.6,1.8,10.2,13,15.7,16.2)	(0.3,0.4,0.5,0.9,1.1,7.1,9.2,1.2,2.3,1)	(0.2,0.8,1.4,1.8,2.3,2.9,3.5,4.3,5.5,7)
3	(0.1,0.4,0.5,0.6,1.1,1.8,1.9,2.2,1.2,4)	(1.1,1.6,2.2,3.1,6.8,7,10.2,14,16,18)	(1.2,1.6,2.3,2.5,2.6,5,10,12.5,15,16)
4	(1.5,2.5,3.4,4.2,6.5,8.2,10,11,13)	(1.5,2.2,2.5,5.5,5.7,11,13,15.5,16)	(1.2,5.3,5.4,4.2,6.5,8,10,11.5,14)
5	(1.2,3.3,5.4,2.5,6.6,5.7,8.5,9)	(0.8,2.3,4.5,5.6,7.7,5.8,9,5)	(0.1,0.4,0.7,0.6,1.3,1.5,2.2,2.2,3.2,4)
6	(0.8,2.5,3.3,1.3,8.4,5.5,7.7,5,8)	(1.5,1.8,2.3,4.5,7,10,13,15.5,16)	(0.8,2.3,4.5,5.5,6.5,7.8,9)
7	(0.5,1.1,4.1,5.1,8.2,2.2,5.2,8.3,2.3,5)	(2.3,4.5,6,11,12,13,14,20)	(0.3,0.4,0.5,1.1,3.1,5.1,9.2,2.2,2.3)
r=4			
1	(1.4,2.2,7.3,5.4,6.8,9,10,12)	(0.8,2.3,3.4,5.5,5.6,5.7,5.8,9)	(0.8,2.2,5.3,4.4,7.5,7.7,5,8)
2	(0.4,1.1,1.2,1.7,2.2,6.3,2.4,3.5,3.6,8)	(0.3,1.1,1.1,2.1,6.2,1.2,4.2,5.2,8,4)	(0.2,0.5,0.7,1.1,2.1,3.1,5.1,8.2,2.2,8)
3	(1.2,5.3,3.4,5.5,6.6,6.2,7.5,7.9,8)	(0.2,0.4,0.5,0.8,1.1,1.5,2.2,1.2,2,2,4)	(0.2,1.1,1.3,1.5,1.8,2.2,2.4,2.8,3.3,5)
4	(0.8,2.2,5.4,2.5,6.6,5.7,5.8,5.9,5)	(1.2,2.5,3.2,4.4,5.6,5.8,5.9,6,10.7,13.5)	(1.2,2.3,1.4,8.5,2.6,7.7,5.7,8,8)
5	(0.3,1.1,1.5,1.6,1.8,2.2,4.3,3.5,4)	(1.1,9.2,3.5,7,10,13,15.2,16)	(0.1,0.3,0.5,0.8,1.1,1.5,1.9,2.2,3,3)
6	(1.2,2.5,3.4,4.2,7.8,2,10,11,13)	(0.5,1.1,2.1,5.2,2.5,3,5,6,7)	(1.2,2.3,6.3,8.4,6.9,10,11,14)
7	(0.1,0.3,0.4,0.6,1.1,1.6,1.7,2.1,2.3,2,4)	(0.8,2.1,2.5,3.3,5.5,8.6,7.2,8,2,9)	(0.3,0.4,0.5,0.8,1.1,1.5,1.6,2.1,2.2,2,4)