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Num_county_6_facility_14, ('county 6', 'facility 15'):
Num_county_6_facility_15, ('county 6', 'facility 16'):
Num_county_6_facility_16, ('county 6', 'facility 17'):
Num_county_6_facility_17, ('county 6', 'facility 18'):
Num_county_6_facility_18, ('county 6', 'facility 19'):
Num_county_6_facility_19, ('county 6', 'facility 20'):
Num_county_6_facility_20, ('county 6', 'facility 21'):
Num_county_6_facility_21, ('county 6', 'facility 22'):
Num_county_6_facility_22, ('county 6', 'facility 23'):
Num_county_6_facility_23
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, ('county 7', 'facility 2'): Num_county_7_facility_2
, ('county 7', 'facility 3'): Num_county_7_facility_3
, ('county 7', 'facility 4'): Num_county_7_facility_4
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, ('county 7', 'facility 6'): Num_county_7_facility_6
, ('county 7', 'facility 7'): Num_county_7_facility_7
, ('county 7', 'facility 8'): Num_county_7_facility_8
, ('county 7', 'facility 9'): Num_county_7_facility_9
, ('county 7', 'facility 10'):
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Num_county_7_facility_11, ('county 7', 'facility 12'):
Num_county_7_facility_12, ('county 7', 'facility 13'):
Num_county_7_facility_13, ('county 7', 'facility 14'):
Num_county_7_facility_14, ('county 7', 'facility 15'):
Num_county_7_facility_15, ('county 7', 'facility 16'):
Num_county_7_facility_16, ('county 7', 'facility 17'):
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Num_county_7_facility_18, ('county 7', 'facility 19'):
Num_county_7_facility_19, ('county 7', 'facility 20'):
Num_county_7_facility_20, ('county 7', 'facility 21'):
Num_county_7_facility_21, ('county 7', 'facility 22'):
Num_county_7_facility_22, ('county 7', 'facility 23'):
Num_county_7_facility_23
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    county 7', 'facility 23'): Num_county_7_facility_23  
, ('county 8', 'facility 1'): Num_county_8_facility_1  
, ('county 8', 'facility 2'): Num_county_8_facility_2  
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, ('county 8', 'facility 5'): Num_county_8_facility_5  
, ('county 8', 'facility 6'): Num_county_8_facility_6  
, ('county 8', 'facility 7'): Num_county_8_facility_7  
, ('county 8', 'facility 8'): Num_county_8_facility_8  
, ('county 8', 'facility 9'): Num_county_8_facility_9  
, ('county 8', 'facility 10'):  
    Num_county_8_facility_10, ('county 8', 'facility 11'):  
    Num_county_8_facility_11, ('county 8', 'facility 12'):  
    Num_county_8_facility_12, ('county 8', '  
    facility 13'): Num_county_8_facility_13, ('county 8  
, 'facility 14'): Num_county_8_facility_14, ('county  
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county 8', 'facility 16'): Num_county_8_facility_16  
, ('county 8', 'facility 17'):  
    Num_county_8_facility_17, ('county 8', 'facility 18'):  
    Num_county_8_facility_18, ('county 8', 'facility  
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facility 20'): Num_county_8_facility_20, ('county 8  
, 'facility 21'): Num_county_8_facility_21, ('county  
    8', 'facility 22'): Num_county_8_facility_22, ('  
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, ('county 9', 'facility 1'): Num_county_9_facility_1  
, ('county 9', 'facility 2'): Num_county_9_facility_2  
, ('county 9', 'facility 3'): Num_county_9_facility_3  
, ('county 9', 'facility 4'): Num_county_9_facility_4  
, ('county 9', 'facility 5'): Num_county_9_facility_5  
, ('county 9', 'facility 6'): Num_county_9_facility_6  
, ('county 9', 'facility 7'): Num_county_9_facility_7  
, ('county 9', 'facility 8'): Num_county_9_facility_8  
, ('county 9', 'facility 9'): Num_county_9_facility_9  
, ('county 9', 'facility 10'):  
    Num_county_9_facility_10, ('county 9', 'facility 11'):  
    Num_county_9_facility_11, ('county 9', 'facility  
12'): Num_county_9_facility_12, ('county 9', '  
facility 13'): Num_county_9_facility_13, ('county 9
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8 ', 'facility 14'): Num_county_9_facility_14, ('county
9', 'facility 15'): Num_county_9_facility_15, ('
county 9', 'facility 16'): Num_county_9_facility_16
, ('county 9', 'facility 17'):
Num_county_9_facility_17, ('county 9', 'facility 18
'): Num_county_9_facility_18, ('county 9', 'facility
19'): Num_county_9_facility_19, ('county 9', ' '
facility 20'): Num_county_9_facility_20, ('county 9
', 'facility 21'): Num_county_9_facility_21, ('county
9', 'facility 22'): Num_county_9_facility_22, ('
county 9', 'facility 23'): Num_county_9_facility_23}
9 {'facility 15': Z_facility_15, 'facility 16':
Z_facility_16, 'facility 17': Z_facility_17, ' '
facility 18': Z_facility_18, 'facility 19':
Z_facility_19, 'facility 20': Z_facility_20, ' '
facility 21': Z_facility_21, 'facility 22':
Z_facility_22, 'facility 23': Z_facility_23}
10 Covid-19-Facility-Location-Problem:
11 MINIMIZE
12 2.5*Num_county_1_facility_1 + 40.078048854703496*
Num_county_1_facility_10 + 43.73213921133975*
Num_county_1_facility_11 + 38.160843806184374*
Num_county_1_facility_12 + 38.81043674065006*
Num_county_1_facility_13 + 45.069390943299865*
Num_county_1_facility_14 + 3.5355339059327378*
Num_county_1_facility_15 + 12.5*
Num_county_1_facility_16 + 23.048861143232223*
Num_county_1_facility_17 + 10.307764064044152*
Num_county_1_facility_18 + 13.462912017836262*
Num_county_1_facility_19 + 7.905694150420949*
Num_county_1_facility_2 + 23.048861143232216*
Num_county_1_facility_20 + 25.124689052802225*
Num_county_1_facility_21 + 27.95084971874737*
Num_county_1_facility_22 + 33.63406011768428*
Num_county_1_facility_23 + 20.155644370746373*
Num_county_1_facility_3 + 29.261749776799064*
Num_county_1_facility_4 + 17.5*
Num_county_1_facility_5 + 16.00781059358212*
Num_county_1_facility_6 + 23.584952830141507*
Num_county_1_facility_7 + 34.00367627183861*
Num_county_1_facility_8 + 35.0*

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12	Num_county_1_facility_9 + 11.180339887498949*
	Num_county_2_facility_1 + 43.15669125408017*
	Num_county_2_facility_10 + 37.16517186829626*
	Num_county_2_facility_11 + 36.40054944640259*
	Num_county_2_facility_12 + 40.0*
	Num_county_2_facility_13 + 42.720018726587654*
	Num_county_2_facility_14 + 7.5*
	Num_county_2_facility_15 + 3.5355339059327378*
	Num_county_2_facility_16 + 14.57737973711325*
	Num_county_2_facility_17 + 14.57737973711325*
	Num_county_2_facility_18 + 7.905694150420949*
	Num_county_2_facility_19 + 2.5*
	Num_county_2_facility_2 + 19.03943276465977*
	Num_county_2_facility_20 + 28.50438562747845*
	Num_county_2_facility_21 + 27.613402542968153*
	Num_county_2_facility_22 + 30.207614933986427*
	Num_county_2_facility_23 + 10.0*
	Num_county_2_facility_3 + 21.50581316760657*
	Num_county_2_facility_4 + 22.360679774997898*
	Num_county_2_facility_5 + 15.0*
	Num_county_2_facility_6 + 18.027756377319946*
	Num_county_2_facility_7 + 28.50438562747845*
	Num_county_2_facility_8 + 38.81043674065006*
	Num_county_2_facility_9 + 22.638462845343543*
	Num_county_3_facility_1 + 44.721359549995796*
	Num_county_3_facility_10 + 27.041634565979923*
	Num_county_3_facility_11 + 32.59601202601325*
	Num_county_3_facility_12 + 39.528470752104745*
	Num_county_3_facility_13 + 37.583240945932275*
	Num_county_3_facility_14 + 20.155644370746373*
	Num_county_3_facility_15 + 10.0*
	Num_county_3_facility_16 + 5.0*
	Num_county_3_facility_17 + 22.360679774997898*
	Num_county_3_facility_18 + 11.180339887498949*
	Num_county_3_facility_19 + 15.206906325745546*
	Num_county_3_facility_2 + 15.811388300841898*
	Num_county_3_facility_20 + 32.01562118716424*
	Num_county_3_facility_21 + 26.925824035672523*
	Num_county_3_facility_22 + 25.0*
	Num_county_3_facility_23 + 3.5355339059327378*
	Num_county_3_facility_3 + 11.180339887498949*

12	Num_county_3_facility_4 + 28.50438562747845*
	Num_county_3_facility_5 + 17.67766952966369*
	Num_county_3_facility_6 + 12.747548783981964*
	Num_county_3_facility_7 + 20.615528128088304*
	Num_county_3_facility_8 + 41.608292442733095*
	Num_county_3_facility_9 + 12.5*
	Num_county_4_facility_1 + 25.124689052802225*
	Num_county_4_facility_10 + 38.242646351945886*
	Num_county_4_facility_11 + 26.575364531836627*
	Num_county_4_facility_12 + 24.622144504490258*
	Num_county_4_facility_13 + 33.63406011768428*
	Num_county_4_facility_14 + 17.67766952966369*
	Num_county_4_facility_15 + 19.52562418976664*
	Num_county_4_facility_16 + 24.622144504490258*
	Num_county_4_facility_17 + 5.5901699437494745*
	Num_county_4_facility_18 + 16.00781059358212*
	Num_county_4_facility_19 + 19.03943276465977*
	Num_county_4_facility_2 + 17.5*
	Num_county_4_facility_20 + 10.307764064044152*
	Num_county_4_facility_21 + 16.00781059358212*
	Num_county_4_facility_22 + 24.622144504490258*
	Num_county_4_facility_23 + 26.575364531836627*
	Num_county_4_facility_3 + 27.950849718747367*
	Num_county_4_facility_4 + 2.5*Num_county_4_facility_5 + 10.307764064044152*Num_county_4_facility_6 + 20. 155644370746373*Num_county_4_facility_7 + 27. 950849718747367*Num_county_4_facility_8 + 20.0*
	Num_county_4_facility_9 + 12.5*
	Num_county_5_facility_1 + 30.92329219213245*
	Num_county_5_facility_10 + 30.207614933986427*
	Num_county_5_facility_11 + 24.622144504490258*
	Num_county_5_facility_12 + 27.5*
	Num_county_5_facility_13 + 31.32491021535417*
	Num_county_5_facility_14 + 14.57737973711325*
	Num_county_5_facility_15 + 10.307764064044152*
	Num_county_5_facility_16 + 13.462912017836262*
	Num_county_5_facility_17 + 7.5*
	Num_county_5_facility_18 + 5.5901699437494745*
	Num_county_5_facility_19 + 12.747548783981964*
	Num_county_5_facility_2 + 9.013878188659973*
	Num_county_5_facility_20 + 16.770509831248425*

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12 Num_county_5_facility_21 + 15.206906325745546*
  Num_county_5_facility_22 + 19.52562418976664*
  Num_county_5_facility_23 + 16.00781059358212*
  Num_county_5_facility_3 + 17.5*
  Num_county_5_facility_4 + 12.5*
  Num_county_5_facility_5 + 2.5*Num_county_5_facility_6
    + 10.307764064044152*Num_county_5_facility_7 + 20.
  155644370746373*Num_county_5_facility_8 + 26.
  925824035672523*Num_county_5_facility_9 + 25.
  739075352467502*Num_county_6_facility_1 + 32.
  01562118716424*Num_county_6_facility_10 + 16.
  770509831248425*Num_county_6_facility_11 + 17.
  67766952966369*Num_county_6_facility_12 + 25.
  739075352467502*Num_county_6_facility_13 + 22.
  638462845343543*Num_county_6_facility_14 + 26.
  575364531836627*Num_county_6_facility_15 + 18.
  027756377319946*Num_county_6_facility_16 + 10.0*
  Num_county_6_facility_17 + 20.615528128088304*
  Num_county_6_facility_18 + 14.142135623730951*
  Num_county_6_facility_19 + 23.048861143232216*
  Num_county_6_facility_2 + 5.0*
  Num_county_6_facility_20 + 22.360679774997898*
  Num_county_6_facility_21 + 14.142135623730951*
  Num_county_6_facility_22 + 10.0*
  Num_county_6_facility_23 + 17.67766952966369*
  Num_county_6_facility_3 + 7.0710678118654755*
  Num_county_6_facility_4 + 22.638462845343543*
  Num_county_6_facility_5 + 12.747548783981964*
  Num_county_6_facility_6 + 3.5355339059327378*
  Num_county_6_facility_7 + 7.0710678118654755*
  Num_county_6_facility_8 + 30.10398644698074*
  Num_county_6_facility_9 + 30.0*
  Num_county_7_facility_1 + 7.905694150420949*
  Num_county_7_facility_10 + 38.81043674065006*
  Num_county_7_facility_11 + 20.0*
  Num_county_7_facility_12 + 11.180339887498949*
  Num_county_7_facility_13 + 25.495097567963928*
  Num_county_7_facility_14 + 35.0891721190455*
  Num_county_7_facility_15 + 34.8209706929603*
  Num_county_7_facility_16 + 35.53167600887974*
  Num_county_7_facility_17 + 22.638462845343543*

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12	Num_county_7_facility_18 + 30.207614933986427*
	Num_county_7_facility_19 + 35.79455265819088*
	Num_county_7_facility_2 + 24.748737341529164*
	Num_county_7_facility_20 + 7.905694150420949*
	Num_county_7_facility_21 + 14.57737973711325*
	Num_county_7_facility_22 + 23.717082451262847*
	Num_county_7_facility_23 + 40.311288741492746*
	Num_county_7_facility_3 + 35.53167600887974*
	Num_county_7_facility_4 + 15.0*
	Num_county_7_facility_5 + 22.360679774997898*
	Num_county_7_facility_6 + 28.284271247461902*
	Num_county_7_facility_7 + 30.207614933986427*
	Num_county_7_facility_8 + 2.5*Num_county_7_facility_9 + 22.360679774997898*Num_county_8_facility_1 + 19. 03943276465977*Num_county_8_facility_10 + 27.5*
	Num_county_8_facility_11 + 14.142135623730951*
	Num_county_8_facility_12 + 15.0*
	Num_county_8_facility_13 + 21.213203435596427*
	Num_county_8_facility_14 + 26.100766272276378*
	Num_county_8_facility_15 + 22.638462845343543*
	Num_county_8_facility_16 + 21.50581316760657*
	Num_county_8_facility_17 + 14.57737973711325*
	Num_county_8_facility_18 + 17.67766952966369*
	Num_county_8_facility_19 + 25.124689052802225*
	Num_county_8_facility_2 + 10.606601717798213*
	Num_county_8_facility_20 + 7.905694150420949*
	Num_county_8_facility_21 + 3.5355339059327378*
	Num_county_8_facility_22 + 12.747548783981964*
	Num_county_8_facility_23 + 26.925824035672523*
	Num_county_8_facility_3 + 21.50581316760657*
	Num_county_8_facility_4 + 11.180339887498949*
	Num_county_8_facility_5 + 10.0*
	Num_county_8_facility_6 + 14.142135623730951*
	Num_county_8_facility_7 + 17.67766952966369*
	Num_county_8_facility_8 + 16.00781059358212*
	Num_county_8_facility_9 + 34.73110997362451*
	Num_county_9_facility_1 + 16.770509831248425*
	Num_county_9_facility_10 + 22.360679774997898*
	Num_county_9_facility_11 + 2.5*
	Num_county_9_facility_12 + 9.013878188659973*
	Num_county_9_facility_13 + 9.013878188659973*

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12 Num_county_9_facility_14 + 38.07886552931954*
  Num_county_9_facility_15 + 32.88236609491476*
  Num_county_9_facility_16 + 27.950849718747367*
  Num_county_9_facility_17 + 27.041634565979923*
  Num_county_9_facility_18 + 27.950849718747367*
  Num_county_9_facility_19 + 36.40054944640259*
  Num_county_9_facility_2 + 17.5*
  Num_county_9_facility_20 + 16.770509831248425*
  Num_county_9_facility_21 + 9.013878188659973*
  Num_county_9_facility_22 + 9.013878188659973*
  Num_county_9_facility_23 + 35.0891721190455*
  Num_county_9_facility_3 + 24.622144504490258*
  Num_county_9_facility_4 + 23.048861143232216*
  Num_county_9_facility_5 + 21.360009363293827*
  Num_county_9_facility_6 + 20.155644370746373*
  Num_county_9_facility_7 + 16.00781059358212*
  Num_county_9_facility_8 + 17.67766952966369*
  Num_county_9_facility_9 + 897169*Z_facility_15 +
  897169*Z_facility_16 + 897169*Z_facility_17 + 897169*
  Z_facility_18 + 897169*Z_facility_19 + 897169*
  Z_facility_20 + 897169*Z_facility_21 + 897169*
  Z_facility_22 + 897169*Z_facility_23 + 500000*
  temporary_facility_15 + 500000*temporary_facility_16
  + 500000*temporary_facility_17 + 500000*
  temporary_facility_18 + 500000*temporary_facility_19
  + 500000*temporary_facility_20 + 500000*
  temporary_facility_21 + 500000*temporary_facility_22
  + 500000*temporary_facility_23 + 0.0
13 VARIABLES
14 Num_county_1_facility_1 Continuous
15 Num_county_1_facility_10 Continuous
16 Num_county_1_facility_11 Continuous
17 Num_county_1_facility_12 Continuous
18 Num_county_1_facility_13 Continuous
19 Num_county_1_facility_14 Continuous
20 Num_county_1_facility_15 Continuous
21 Num_county_1_facility_16 Continuous
22 Num_county_1_facility_17 Continuous
23 Num_county_1_facility_18 Continuous
24 Num_county_1_facility_19 Continuous
25 Num_county_1_facility_2 Continuous

```

26	Num_county_1_facility_20	Continuous
27	Num_county_1_facility_21	Continuous
28	Num_county_1_facility_22	Continuous
29	Num_county_1_facility_23	Continuous
30	Num_county_1_facility_3	Continuous
31	Num_county_1_facility_4	Continuous
32	Num_county_1_facility_5	Continuous
33	Num_county_1_facility_6	Continuous
34	Num_county_1_facility_7	Continuous
35	Num_county_1_facility_8	Continuous
36	Num_county_1_facility_9	Continuous
37	Num_county_2_facility_1	Continuous
38	Num_county_2_facility_10	Continuous
39	Num_county_2_facility_11	Continuous
40	Num_county_2_facility_12	Continuous
41	Num_county_2_facility_13	Continuous
42	Num_county_2_facility_14	Continuous
43	Num_county_2_facility_15	Continuous
44	Num_county_2_facility_16	Continuous
45	Num_county_2_facility_17	Continuous
46	Num_county_2_facility_18	Continuous
47	Num_county_2_facility_19	Continuous
48	Num_county_2_facility_2	Continuous
49	Num_county_2_facility_20	Continuous
50	Num_county_2_facility_21	Continuous
51	Num_county_2_facility_22	Continuous
52	Num_county_2_facility_23	Continuous
53	Num_county_2_facility_3	Continuous
54	Num_county_2_facility_4	Continuous
55	Num_county_2_facility_5	Continuous
56	Num_county_2_facility_6	Continuous
57	Num_county_2_facility_7	Continuous
58	Num_county_2_facility_8	Continuous
59	Num_county_2_facility_9	Continuous
60	Num_county_3_facility_1	Continuous
61	Num_county_3_facility_10	Continuous
62	Num_county_3_facility_11	Continuous
63	Num_county_3_facility_12	Continuous
64	Num_county_3_facility_13	Continuous
65	Num_county_3_facility_14	Continuous
66	Num_county_3_facility_15	Continuous

67	Num_county_3_facility_16	Continuous
68	Num_county_3_facility_17	Continuous
69	Num_county_3_facility_18	Continuous
70	Num_county_3_facility_19	Continuous
71	Num_county_3_facility_2	Continuous
72	Num_county_3_facility_20	Continuous
73	Num_county_3_facility_21	Continuous
74	Num_county_3_facility_22	Continuous
75	Num_county_3_facility_23	Continuous
76	Num_county_3_facility_3	Continuous
77	Num_county_3_facility_4	Continuous
78	Num_county_3_facility_5	Continuous
79	Num_county_3_facility_6	Continuous
80	Num_county_3_facility_7	Continuous
81	Num_county_3_facility_8	Continuous
82	Num_county_3_facility_9	Continuous
83	Num_county_4_facility_1	Continuous
84	Num_county_4_facility_10	Continuous
85	Num_county_4_facility_11	Continuous
86	Num_county_4_facility_12	Continuous
87	Num_county_4_facility_13	Continuous
88	Num_county_4_facility_14	Continuous
89	Num_county_4_facility_15	Continuous
90	Num_county_4_facility_16	Continuous
91	Num_county_4_facility_17	Continuous
92	Num_county_4_facility_18	Continuous
93	Num_county_4_facility_19	Continuous
94	Num_county_4_facility_2	Continuous
95	Num_county_4_facility_20	Continuous
96	Num_county_4_facility_21	Continuous
97	Num_county_4_facility_22	Continuous
98	Num_county_4_facility_23	Continuous
99	Num_county_4_facility_3	Continuous
100	Num_county_4_facility_4	Continuous
101	Num_county_4_facility_5	Continuous
102	Num_county_4_facility_6	Continuous
103	Num_county_4_facility_7	Continuous
104	Num_county_4_facility_8	Continuous
105	Num_county_4_facility_9	Continuous
106	Num_county_5_facility_1	Continuous
107	Num_county_5_facility_10	Continuous

108	Num_county_5_facility_11	Continuous
109	Num_county_5_facility_12	Continuous
110	Num_county_5_facility_13	Continuous
111	Num_county_5_facility_14	Continuous
112	Num_county_5_facility_15	Continuous
113	Num_county_5_facility_16	Continuous
114	Num_county_5_facility_17	Continuous
115	Num_county_5_facility_18	Continuous
116	Num_county_5_facility_19	Continuous
117	Num_county_5_facility_2	Continuous
118	Num_county_5_facility_20	Continuous
119	Num_county_5_facility_21	Continuous
120	Num_county_5_facility_22	Continuous
121	Num_county_5_facility_23	Continuous
122	Num_county_5_facility_3	Continuous
123	Num_county_5_facility_4	Continuous
124	Num_county_5_facility_5	Continuous
125	Num_county_5_facility_6	Continuous
126	Num_county_5_facility_7	Continuous
127	Num_county_5_facility_8	Continuous
128	Num_county_5_facility_9	Continuous
129	Num_county_6_facility_1	Continuous
130	Num_county_6_facility_10	Continuous
131	Num_county_6_facility_11	Continuous
132	Num_county_6_facility_12	Continuous
133	Num_county_6_facility_13	Continuous
134	Num_county_6_facility_14	Continuous
135	Num_county_6_facility_15	Continuous
136	Num_county_6_facility_16	Continuous
137	Num_county_6_facility_17	Continuous
138	Num_county_6_facility_18	Continuous
139	Num_county_6_facility_19	Continuous
140	Num_county_6_facility_2	Continuous
141	Num_county_6_facility_20	Continuous
142	Num_county_6_facility_21	Continuous
143	Num_county_6_facility_22	Continuous
144	Num_county_6_facility_23	Continuous
145	Num_county_6_facility_3	Continuous
146	Num_county_6_facility_4	Continuous
147	Num_county_6_facility_5	Continuous
148	Num_county_6_facility_6	Continuous

149	Num_county_6_facility_7	Continuous
150	Num_county_6_facility_8	Continuous
151	Num_county_6_facility_9	Continuous
152	Num_county_7_facility_1	Continuous
153	Num_county_7_facility_10	Continuous
154	Num_county_7_facility_11	Continuous
155	Num_county_7_facility_12	Continuous
156	Num_county_7_facility_13	Continuous
157	Num_county_7_facility_14	Continuous
158	Num_county_7_facility_15	Continuous
159	Num_county_7_facility_16	Continuous
160	Num_county_7_facility_17	Continuous
161	Num_county_7_facility_18	Continuous
162	Num_county_7_facility_19	Continuous
163	Num_county_7_facility_2	Continuous
164	Num_county_7_facility_20	Continuous
165	Num_county_7_facility_21	Continuous
166	Num_county_7_facility_22	Continuous
167	Num_county_7_facility_23	Continuous
168	Num_county_7_facility_3	Continuous
169	Num_county_7_facility_4	Continuous
170	Num_county_7_facility_5	Continuous
171	Num_county_7_facility_6	Continuous
172	Num_county_7_facility_7	Continuous
173	Num_county_7_facility_8	Continuous
174	Num_county_7_facility_9	Continuous
175	Num_county_8_facility_1	Continuous
176	Num_county_8_facility_10	Continuous
177	Num_county_8_facility_11	Continuous
178	Num_county_8_facility_12	Continuous
179	Num_county_8_facility_13	Continuous
180	Num_county_8_facility_14	Continuous
181	Num_county_8_facility_15	Continuous
182	Num_county_8_facility_16	Continuous
183	Num_county_8_facility_17	Continuous
184	Num_county_8_facility_18	Continuous
185	Num_county_8_facility_19	Continuous
186	Num_county_8_facility_2	Continuous
187	Num_county_8_facility_20	Continuous
188	Num_county_8_facility_21	Continuous
189	Num_county_8_facility_22	Continuous

```
190 Num_county_8_facility_23 Continuous
191 Num_county_8_facility_3 Continuous
192 Num_county_8_facility_4 Continuous
193 Num_county_8_facility_5 Continuous
194 Num_county_8_facility_6 Continuous
195 Num_county_8_facility_7 Continuous
196 Num_county_8_facility_8 Continuous
197 Num_county_8_facility_9 Continuous
198 Num_county_9_facility_1 Continuous
199 Num_county_9_facility_10 Continuous
200 Num_county_9_facility_11 Continuous
201 Num_county_9_facility_12 Continuous
202 Num_county_9_facility_13 Continuous
203 Num_county_9_facility_14 Continuous
204 Num_county_9_facility_15 Continuous
205 Num_county_9_facility_16 Continuous
206 Num_county_9_facility_17 Continuous
207 Num_county_9_facility_18 Continuous
208 Num_county_9_facility_19 Continuous
209 Num_county_9_facility_2 Continuous
210 Num_county_9_facility_20 Continuous
211 Num_county_9_facility_21 Continuous
212 Num_county_9_facility_22 Continuous
213 Num_county_9_facility_23 Continuous
214 Num_county_9_facility_3 Continuous
215 Num_county_9_facility_4 Continuous
216 Num_county_9_facility_5 Continuous
217 Num_county_9_facility_6 Continuous
218 Num_county_9_facility_7 Continuous
219 Num_county_9_facility_8 Continuous
220 Num_county_9_facility_9 Continuous
221 Z_facility_15 Continuous
222 Z_facility_16 Continuous
223 Z_facility_17 Continuous
224 Z_facility_18 Continuous
225 Z_facility_19 Continuous
226 Z_facility_20 Continuous
227 Z_facility_21 Continuous
228 Z_facility_22 Continuous
229 Z_facility_23 Continuous
230 0 <= temporary_facility_15 <= 1 Integer
```

```
231 0 <= temporary_facility_16 <= 1 Integer
232 0 <= temporary_facility_17 <= 1 Integer
233 0 <= temporary_facility_18 <= 1 Integer
234 0 <= temporary_facility_19 <= 1 Integer
235 0 <= temporary_facility_20 <= 1 Integer
236 0 <= temporary_facility_21 <= 1 Integer
237 0 <= temporary_facility_22 <= 1 Integer
238 0 <= temporary_facility_23 <= 1 Integer
239
240 Welcome to the CBC MILP Solver
241 Version: 2.10.3
242 Build Date: Dec 15 2019
243
244 command line - C:\Python\Python39\lib\site-packages\
pulp\apis\..\solverdir\cbc\win\64\cbc.exe C:\Users\
RISHIM~1\AppData\Local\Temp\
4c72d41d05d3446e8d1ddac0d7c3589d-pulp.mps timeMode
elapsed branch printingOptions all solution C:\Users
\RISHIM~1\AppData\Local\Temp\
4c72d41d05d3446e8d1ddac0d7c3589d-pulp.sol (default
strategy 1)
245 At line 2 NAME           MODEL
246 At line 3 ROWS
247 At line 38 COLUMNS
248 At line 723 RHS
249 At line 757 BOUNDS
250 At line 767 ENDATA
251 Problem MODEL has 33 rows, 225 columns and 441
elements
252 Coin0008I MODEL read with 0 errors
253 Option for timeMode changed from cpu to elapsed
254 Continuous objective value is 6.44565e+07 - 0.00
seconds
255 Cgl0004I processed model has 33 rows, 225 columns (9
integer (9 of which binary)) and 441 elements
256 Cbc0038I Initial state - 0 integers unsatisfied sum
- 0
257 Cbc0038I Solution found of 6.44565e+07
258 Cbc0038I Relaxing continuous gives 6.44565e+07
259 Cbc0038I Before mini branch and bound, 9 integers at
bound fixed and 196 continuous
```

```
260 Cbc0038I Mini branch and bound did not improve
    solution (0.01 seconds)
261 Cbc0038I After 0.01 seconds - Feasibility pump
    exiting with objective of 6.44565e+07 - took 0.00
    seconds
262 Cbc0012I Integer solution of 64456468 found by
    feasibility pump after 0 iterations and 0 nodes (0.
    01 seconds)
263 Cbc0001I Search completed - best objective 64456468.
    04775398, took 0 iterations and 0 nodes (0.01
    seconds)
264 Cbc0035I Maximum depth 0, 0 variables fixed on
    reduced cost
265 Cuts at root node changed objective from 6.44565e+07
    to 6.44565e+07
266 Probing was tried 0 times and created 0 cuts of
    which 0 were active after adding rounds of cuts (0.
    000 seconds)
267 Gomory was tried 0 times and created 0 cuts of which
    0 were active after adding rounds of cuts (0.000
    seconds)
268 Knapsack was tried 0 times and created 0 cuts of
    which 0 were active after adding rounds of cuts (0.
    000 seconds)
269 Clique was tried 0 times and created 0 cuts of which
    0 were active after adding rounds of cuts (0.000
    seconds)
270 MixedIntegerRounding2 was tried 0 times and created
    0 cuts of which 0 were active after adding rounds of
    cuts (0.000 seconds)
271 FlowCover was tried 0 times and created 0 cuts of
    which 0 were active after adding rounds of cuts (0.
    000 seconds)
272 TwoMirCuts was tried 0 times and created 0 cuts of
    which 0 were active after adding rounds of cuts (0.
    000 seconds)
273 ZeroHalf was tried 0 times and created 0 cuts of
    which 0 were active after adding rounds of cuts (0.
    000 seconds)
274
275 Result - Optimal solution found
```

276  
277 Objective value: 64456468.04775398  
278 Enumerated nodes: 0  
279 Total iterations: 0  
280 Time (CPU seconds): 0.01  
281 Time (Wallclock seconds): 0.01  
282  
283 Option for printingOptions changed from normal to all  
284 Total time (CPU seconds): 0.02 (Wallclock seconds): 0.02  
285  
286 -----  
-----  
-----  
287 Cost of building temporary facility = 4500000.0  
288 Allocation cost of allocating patients to existing facility = 25578.847754216495  
289 ----- plan for temporary facility -----  
290 build temporary facility 15  
291 build temporary facility 16  
292 build temporary facility 17  
293 build temporary facility 18  
294 build temporary facility 19  
295 build temporary facility 20  
296 build temporary facility 21  
297 build temporary facility 22  
298 build temporary facility 23  
299 ----- Covid-19 Patients Assignment Plan -----  
300 281.0 patients from county 1 are assigned to facility 1  
301  
302 281.0 TOTAL PATIENTS FROM county 9 ARE ASSIGNED TO facility 1  
303 -----  
-----  
304 11.0 patients from county 1 are assigned to facility 2  
305 176.0 patients from county 2 are assigned to

305 facility 2  
306  
307 187.0 TOTAL PATIENTS FROM county 9 ARE ASSIGNED TO  
facility 2  
308 -----  
-----  
309 200.0 patients from county 3 are assigned to  
facility 3  
310  
311 200.0 TOTAL PATIENTS FROM county 9 ARE ASSIGNED TO  
facility 3  
312 -----  
-----  
313 223.0 patients from county 3 are assigned to  
facility 4  
314  
315 223.0 TOTAL PATIENTS FROM county 9 ARE ASSIGNED TO  
facility 4  
316 -----  
-----  
317 281.0 patients from county 4 are assigned to  
facility 5  
318  
319 281.0 TOTAL PATIENTS FROM county 9 ARE ASSIGNED TO  
facility 5  
320 -----  
-----  
321 281.0 patients from county 5 are assigned to  
facility 6  
322  
323 281.0 TOTAL PATIENTS FROM county 9 ARE ASSIGNED TO  
facility 6  
324 -----  
-----  
325 45.0 patients from county 3 are assigned to facility  
7  
326 177.0 patients from county 6 are assigned to  
facility 7  
327  
328 222.0 TOTAL PATIENTS FROM county 9 ARE ASSIGNED TO  
facility 7

329 -----  
-----  
330 200.0 patients from county 6 are assigned to  
facility 8  
331  
332 200.0 TOTAL PATIENTS FROM county 9 ARE ASSIGNED TO  
facility 8  
333 -----  
-----  
334 250.0 patients from county 7 are assigned to  
facility 9  
335  
336 250.0 TOTAL PATIENTS FROM county 9 ARE ASSIGNED TO  
facility 9  
337 -----  
-----  
338 125.0 patients from county 7 are assigned to  
facility 10  
339  
340 125.0 TOTAL PATIENTS FROM county 9 ARE ASSIGNED TO  
facility 10  
341 -----  
-----  
342 187.0 patients from county 6 are assigned to  
facility 11  
343  
344 187.0 TOTAL PATIENTS FROM county 9 ARE ASSIGNED TO  
facility 11  
345 -----  
-----  
346 300.0 patients from county 9 are assigned to  
facility 12  
347  
348 300.0 TOTAL PATIENTS FROM county 9 ARE ASSIGNED TO  
facility 12  
349 -----  
-----  
350 187.8 patients from county 7 are assigned to  
facility 13  
351 55.2 patients from county 8 are assigned to facility  
13

352 57.0 patients from county 9 are assigned to facility  
13

353

354 300.0 TOTAL PATIENTS FROM county 9 ARE ASSIGNED TO  
facility 13

355 -----  
-----

356 243.0 patients from county 9 are assigned to  
facility 14

357

358 243.0 TOTAL PATIENTS FROM county 9 ARE ASSIGNED TO  
facility 14

359 -----  
-----

360 100.0 patients from county 1 are assigned to  
facility 15

361

362 100.0 TOTAL PATIENTS FROM county 9 ARE ASSIGNED TO  
facility 15

363 -----  
-----

364 100.0 patients from county 2 are assigned to  
facility 16

365

366 100.0 TOTAL PATIENTS FROM county 9 ARE ASSIGNED TO  
facility 16

367 -----  
-----

368 166.8 patients from county 3 are assigned to  
facility 17

369

370 166.8 TOTAL PATIENTS FROM county 9 ARE ASSIGNED TO  
facility 17

371 -----  
-----

372 29.2 patients from county 1 are assigned to facility  
18

373 70.8 patients from county 4 are assigned to facility  
18

374

375 100.0 TOTAL PATIENTS FROM county 9 ARE ASSIGNED TO

375 facility 18  
376 -----  
-----  
377 100.0 patients from county 5 are assigned to  
facility 19  
378  
379 100.0 TOTAL PATIENTS FROM county 9 ARE ASSIGNED TO  
facility 19  
380 -----  
-----  
381 51.0 patients from county 5 are assigned to facility  
20  
382 49.0 patients from county 6 are assigned to facility  
20  
383  
384 100.0 TOTAL PATIENTS FROM county 9 ARE ASSIGNED TO  
facility 20  
385 -----  
-----  
386 55.0 patients from county 4 are assigned to facility  
21  
387 45.0 patients from county 8 are assigned to facility  
21  
388  
389 100.0 TOTAL PATIENTS FROM county 9 ARE ASSIGNED TO  
facility 21  
390 -----  
-----  
391 100.0 patients from county 8 are assigned to  
facility 22  
392  
393 100.0 TOTAL PATIENTS FROM county 9 ARE ASSIGNED TO  
facility 22  
394 -----  
-----  
395 19.4 patients from county 6 are assigned to facility  
23  
396 80.6 patients from county 8 are assigned to facility  
23  
397  
398 100.0 TOTAL PATIENTS FROM county 9 ARE ASSIGNED TO

```
398 facility 23
399 -----
400
401 Process finished with exit code 0
402
```