PACIFIC PARADISE

April 4th, 2022

Attention: William Barker

Communication 6

Thank you for your help with planning our Vaccine Distribution Strategy over the six-week period. Your insights have encouraged us to consider other options, particularly since some of our CCDs have recently received an influx of refugees that were not reflected in our original population numbers.

For now we will return to the data we provided you for Communication 2, where we ignored scheduling across the weeks. The revised population values for the CCDs are:

CCD	Population
0	4465
1	5912
2	5883
3	5588
4	3880
5	5093
6	3846
7	5408
8	3900
9	5720
10	4893
11	6215
12	5733
13	4136
14	5033
15	5941
16	5461
17	5621
18	3575

19	6481
20	4805
21	4574
22	5817
23	3738
24	4583

To accommodate these increases, we now have a maximum capacity at each ID of 51000 doses, and the cost of a dose of vaccine at each ID is shown in the following table:

	ID-A	**ID-B**	**ID-C**
Cost ($/dose)	177	142	155

Distances between locations are all as before.

The maximum number of doses that can be administered at each LVC is 15000. It seems we cannot meet demand with this current capacity so we are considering the option of upgrading one or more LVCs. The cost of upgrading each LVC is given in the following table:

LVC0	**LVC1**	**LVC2**	**LVC3**	**LVC4**	**LVC5**	**LVC6**	**LVC7**
1414000	1246000	1598000	1606000	1967000	1339000	1403000	1365000

Upgrading an LVC increases capacity by 50% (an additional 7500 doses). These tables are available as a Python file.

Which LVCs should we upgrade? Please provide us with the optimal total cost of upgrades and vaccine distribution.

$ 23250359

Communication 7

Given the option of upgrading some LVCs, we have realised that we could also achieve savings by closing one or more of the LVCs. The estimated savings from closing each LVC is given in the following table:

LVC0	**LVC1**	**LVC2**	**LVC3**	**LVC4**	**LVC5**	**LVC6**	**LVC7**
4471000	4211000	3220000	5533000	4362000	3547000	4938000	5339000

Which LVCs should we upgrade and which should we close? Please provide us with the optimal total cost of upgrades, closures and vaccine distribution.

$ 19191430

Communication 8

Now that we can rationalise our LVCs, we would like to simplify our messaging to the public by assigning each CCD to only one LVC, rather than allowing them to be split between two or more.

We realise this may affect the choice for LVC upgrades and closures. Please provide us with the optimal total cost of upgrades, closures and vaccine distribution.

$ 22574416

Communication 9

In addition to our Vaccination Distribution Strategy, we are looking at a range of other public health options to try to eradicate this virus from Pacific Paradise. Each one of these options has a cost and different probabilities of eradicating the virus within each CCD, as shown in the following table:

CCD	0.95	0.975	0.99	0.995
0	53000	122000	242000	400000
1	69000	110000	248000	435000
2	62000	135000	205000	449000
3	70000	136000	205000	454000
4	54000	140000	237000	431000
5	69000	129000	219000	441000
6	65000	114000	250000	435000
7	57000	122000	239000	469000
8	61000	105000	212000	455000
9	67000	116000	245000	472000
10	62000	111000	258000	416000
11	50000	118000	245000	445000
12	55000	120000	202000	435000
13	61000	120000	231000	440000
14	51000	130000	201000	470000
15	59000	115000	218000	404000
16	63000	125000	222000	462000
17	67000	120000	256000	418000
18	67000	120000	221000	443000

19	61000	119000	250000	456000
20	66000	125000	222000	465000
21	70000	109000	200000	433000
22	69000	117000	203000	448000
23	69000	125000	218000	424000
24	66000	140000	255000	428000

This table is available as a Python file.

What options should we choose in each CCD to minimise the total cost while giving an overall probability of eradicating the virus in all CCDs of at least 80%? Please provide us with the minimum total cost of these public health options.

$ 6726000

Communication 10

Unfortunately, we cannot commit to the $6726000 budget you proposed for an 80% eradication probability. We would like to know the maximum overall probability of eradication for lower budgets instead. Please provide us with some options.

We look forward to reading your final report.