鑽石公主號的估計 ：

Bata(鑽石公主號):

1. [[2.43177520e-04]
2. [1.35464644e-04]
3. [1.84145520e-04]
4. [1.28530299e-05]
5. [2.35414133e-05]
6. [1.34642472e-04]
7. [6.33695027e-05]
8. [5.77826689e-05]
9. [6.86187155e-05]
10. [5.87553929e-05]
11. [6.69516960e-05]
12. [5.12343400e-05]
13. [3.95678153e-05]
14. [8.20168770e-06]
15. [3.35027345e-05]]

平均 Beta : 7.878727682554501e-05

==========

去掉極端值的 Beta :

[[6.33695027e-05]
[5.77826689e-05]
[6.86187155e-05]
[5.87553929e-05]
[6.69516960e-05]
[5.12343400e-05]]

去掉極端值的 Beta 平均 ：6.111871934461365e-05

==========

R0 (Gamma = 1/20) :

1. [[18.0486355]
2. [10.05418586]
3. [13.66728049]
4. [0.95395188]
5. [1.74724369]
6. [9.99316431]
7. [4.70328449]
8. [4.28862968]
9. [5.09288106]
10. [4.36082526]
11. [4.96915488]
12. [3.80261272]
13. [2.93672325]
14. [0.60872926]
15. [2.48657295]]

==========

R0 (無條件捨去取整數) :

1. [[18]
2. [10]
3. [13]
4. [0]
5. [1]
6. [9]
7. [4]
8. [4]
9. [5]
10. [4]
11. [4]
12. [3]
13. [2]
14. [0]
15. [2]]

==========
利用差分方程所估計並去掉極端值的平均 Beta : 6.111871934461365e-05
==========

Beta = 去掉極端值並且取平均, Gamma = 1/4(參考自 Journal of Travel Medicine),
R0 = 0.9072462699514451

Beta = 去掉極端值並且取平均, Gamma = 1/10(參考自 Journal of Travel Medicine),
R0 = 2.268115674878613

Beta = 去掉極端值並且取平均, Gamma = 1/20(參考自 Lancet),
R0 = 4.536231349757226
==========
Logistic curve fitting 所得出的 Beta : 0.0001285167026920737
==========
Beta = 羅吉斯迴歸所得出, Gamma = 1/4(參考自 Journal of Travel Medicine),
R0 = 1.907701934761142

Beta = 羅吉斯迴歸所得出, Gamma = 1/10(參考自 Journal of Travel Medicine),
R0 = 4.769254836902855

Beta = 羅吉斯迴歸所得出, Gamma = 1/20(參考自 Lancet),
R0 = 9.53850967380571
==========
==========

2003 香港 SARS 估計 :

Gamma(2003 香港 SARS):

1. [[0.00638298]
2. [0.01428571]
3. [0.2281746]
4. [0.15421304]
5. [0.21653819]
6. [0.21301775]
7. [0.10800508]
8. [0.11614907]
9. [0.05788177]
10. [0.03660769]
11. [0.02909091]]

平均 Gamma : 0.1073042542963298

==========

週累積病例數 :

1. [[229]
2. [480]
3. [720]
4. [1258]
5. [1702]
6. [2180]
7. [2598]
8. [2821]
9. [3044]
10. [3152]
11. [3227]
12. [3286]]

==========

週累積病例數之最大值假設為總人數 N : 3286

==========

Logistic curve fitting 所得出的 Beta : [0.00048611]

==========

Computer output:
>>G:/SCUMATH_Project/Project_ver2/Diamond_2003SARS/Analysis.py:482:
RuntimeWarning: overflow encountered in exp
  return 3286 / (1 + 3285 * np.exp(-r * (t-5)))

利用周一和王庭萱所用的估計方法所得出的 Beta : 0.14029214850882532
此數值估計方法發生數據 overflow 問題。
==========
Beta (2003 香港 SARS):
1. [[0.00036985]
2. [0.00018198]
3. [0.00029952]
4. [0.0002172]
5. [0.00023988]
6. [0.00026485]
7. [0.0002131]
8. [0.00030468]
9. [0.00027719]
10. [0.00034464]
11. [0.00061013]]
==========
R0 (2003 香港 SARS):
1. [[190.40110768]
2. [41.8592378]
3. [4.3134805]
4. [4.62808107]
5. [3.64019904]
6. [4.08553509]
7. [6.48351584]
8. [8.61983615]
9. [15.73650354]
10. [30.93610994]
11. [68.91778523]]
==========
Pauline van den Driessche 的書上資料之 R0 (2003 香港 SARS) :3.5
去掉極端值 10 以下之平均 R0 (2003 香港 SARS) : 5.295107948401484
羅吉斯迴歸所估計之 R0 (2003 香港 SARS) : 14.886193333386808

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2. J. Rocklöv, J. Rocklöv, J. Rocklöv, COVID-19 outbreak on the Diamond Princess cruise ship : estimating the epidemic potential and effectiveness of public health countermeasures, Journal of Travel Medicine, P.11

3. Pauline van den Driessche, Reproduction numbers of infectious disease models, Infection Disease Modelling 2 (2007) P.289

4. 周一, 王庭萱, Logistic curve fitting to dengue fever data