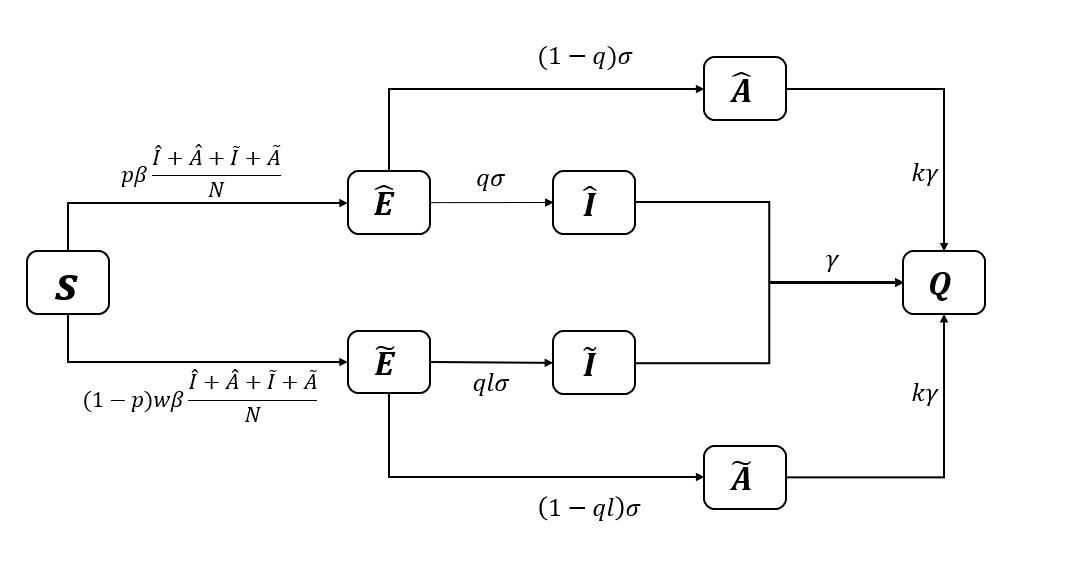
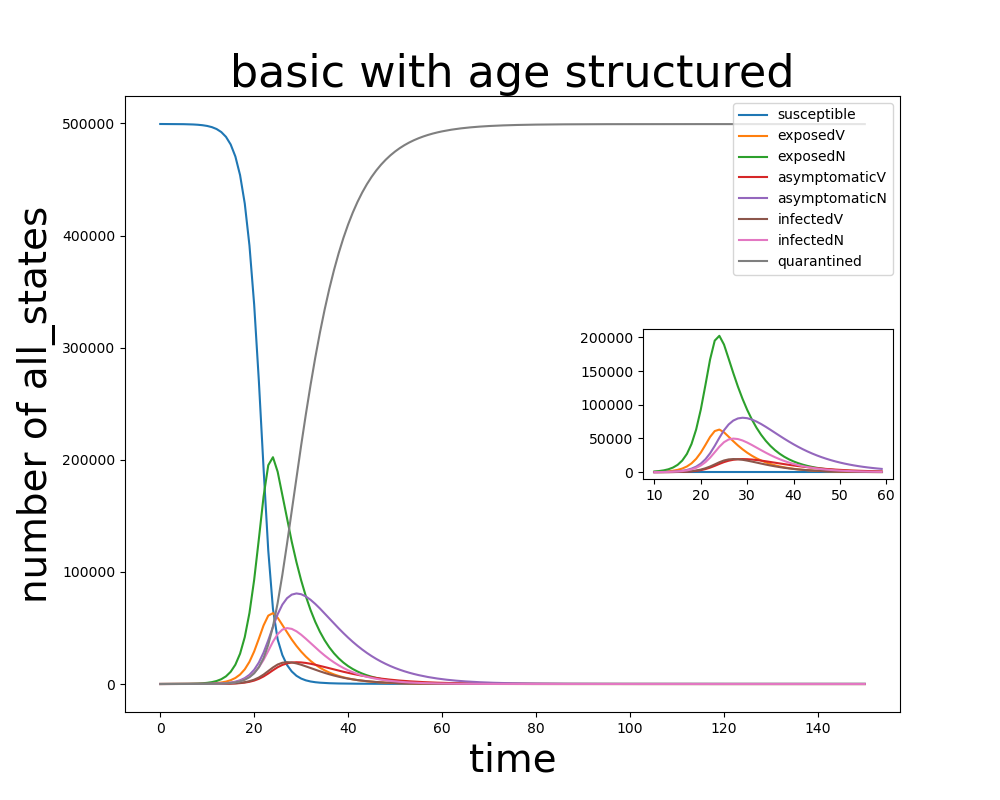
疫苗分配

## 模型



### 传染病方程

（1）



传播部分

转移部分；

接着，计算下一代矩阵K：



得到K的最大特征值为基本再生数R0：

### R的变化dR

取其中i被j组的传播做i组和j组的传播矩阵。

则传播部分T

转移部分



所以i和j的R就是

如果i年龄段p变化，用表示此次分配给i组的疫苗量。所以 ,新的, 发生扰动，则导致发生变化，所以i年龄段势必会引起总体传播的变化，量化为如下：

#### 疫苗分配算法[6]

1. Divide the vaccine stock into units as.
2. For each group ***i*** {

For each group ***j*** {

Calculate

}

Calculate

}

1. For each unit of vaccine to :

Find max ;

Allocate vaccine to group ***i*** ;

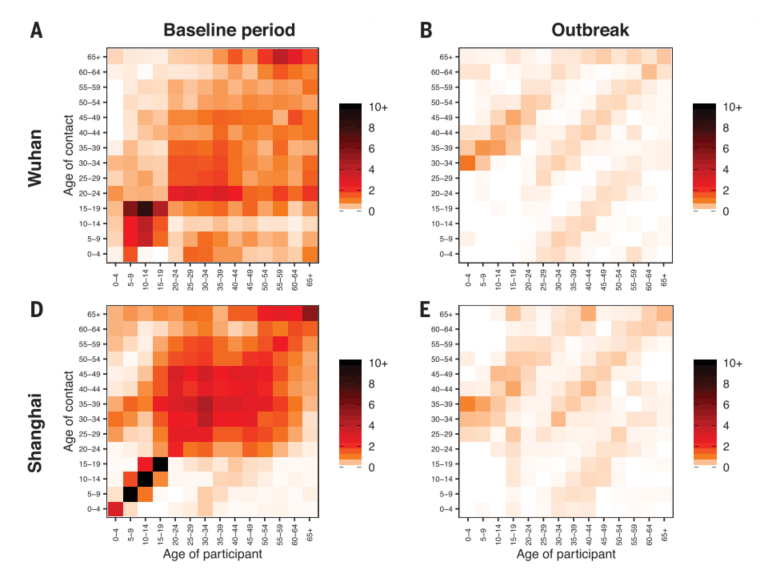
Calculate and update the vaccinate proportion of group i;

Calculate the new of group ***i*** and update;

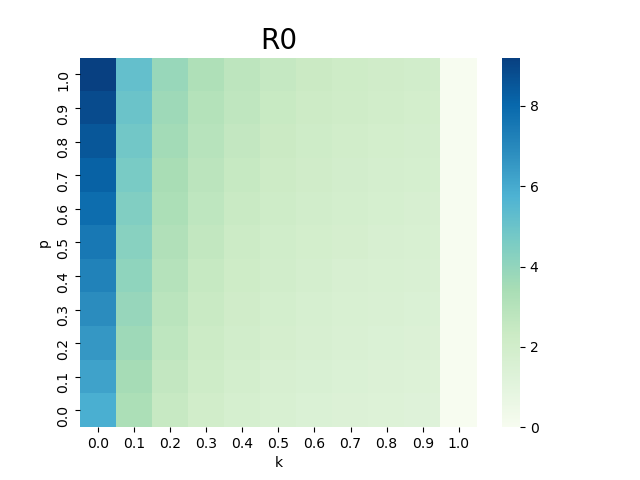
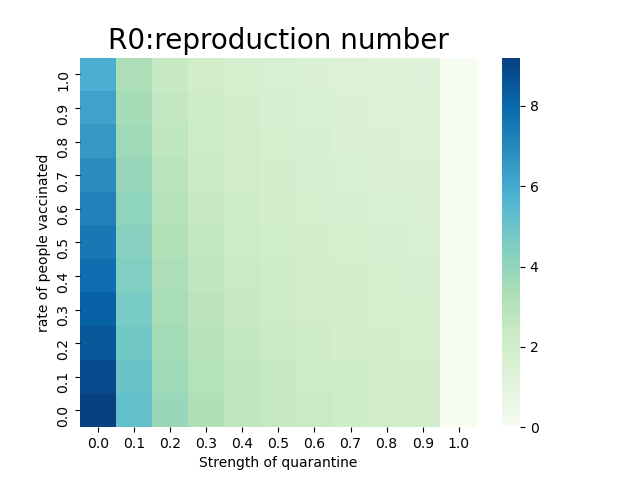
### 非药物干预

社交限制，学校关闭，和限制办公。(Lai et al. 2020)

(Zhang et al. 2020)



筛查和隔离。

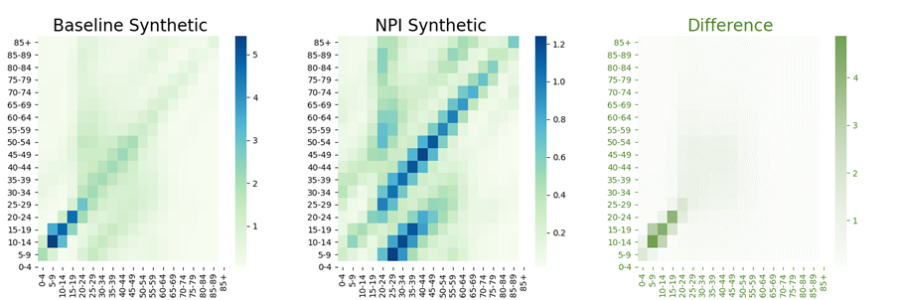


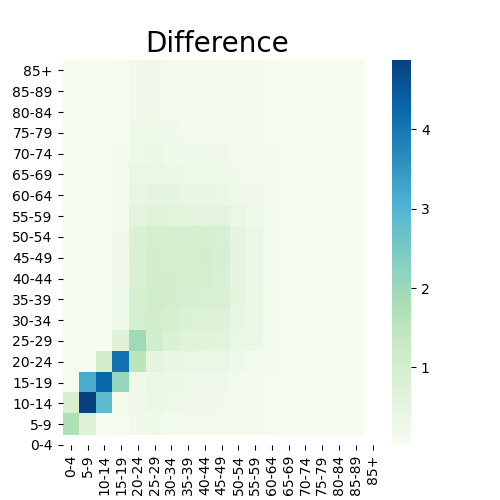
不打疫苗的比例和无症状隔离发现率的上升

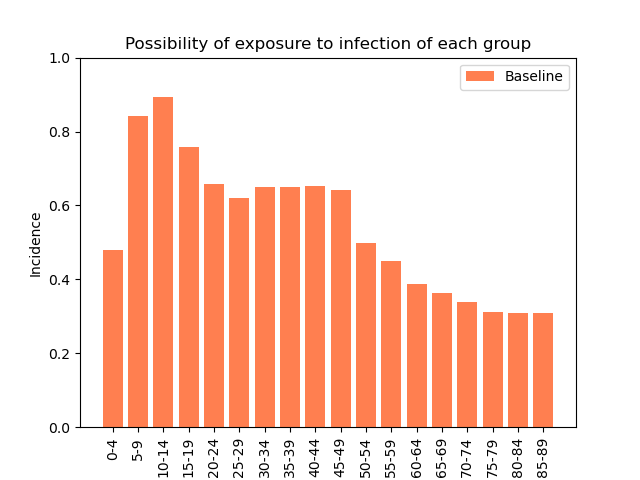
baseline

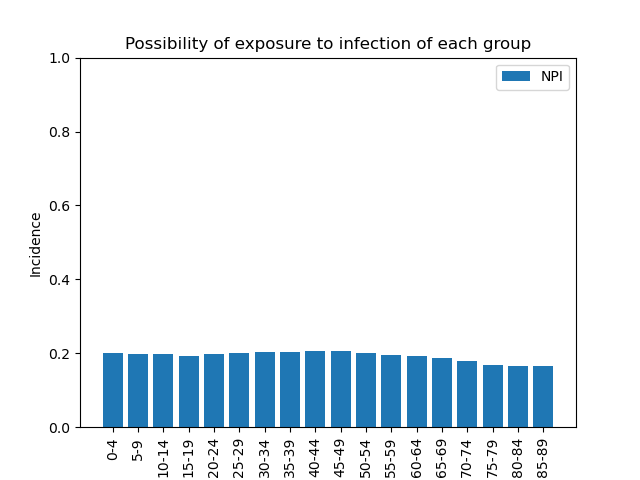
总感染人数 417537.8157754197

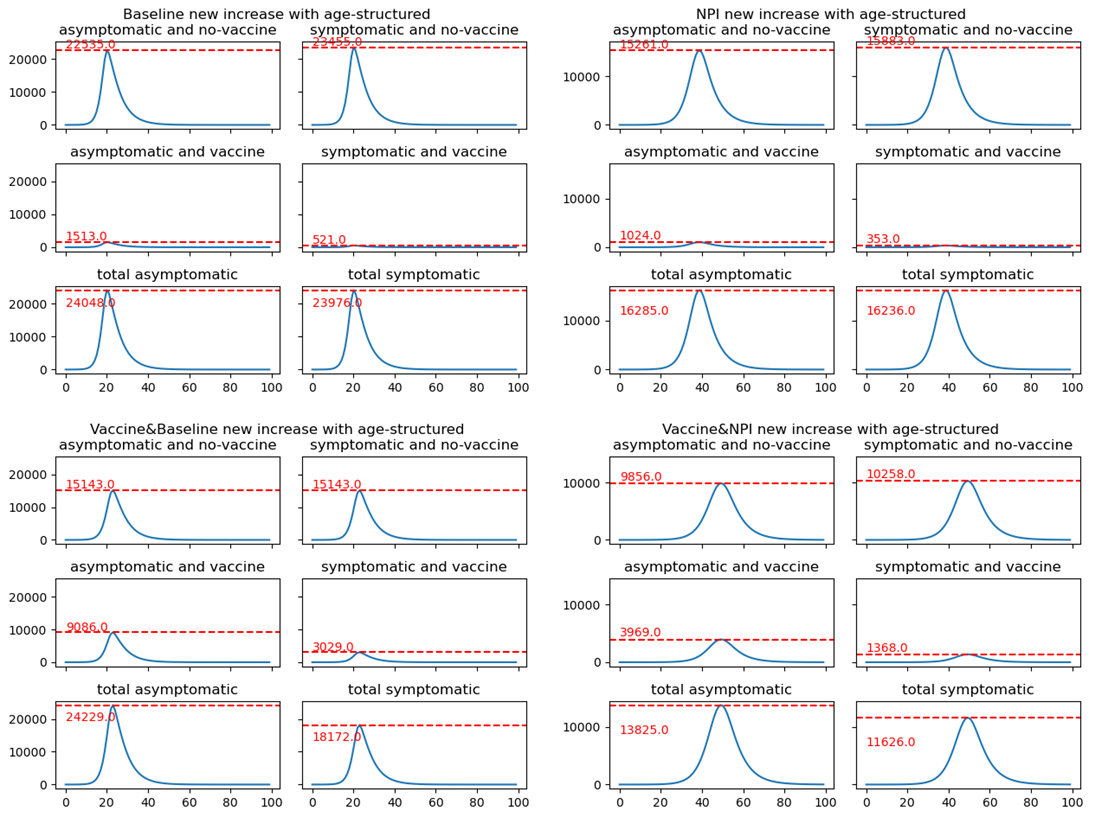
总感染率 0.8359048491612073











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6. Wallinga J , Boven M V , Palese L P . Optimizing infectious disease interventions during an emerging epidemic[J]. Proceedings of the National Academy of Sciences, 2010, 107(2):923-928.

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