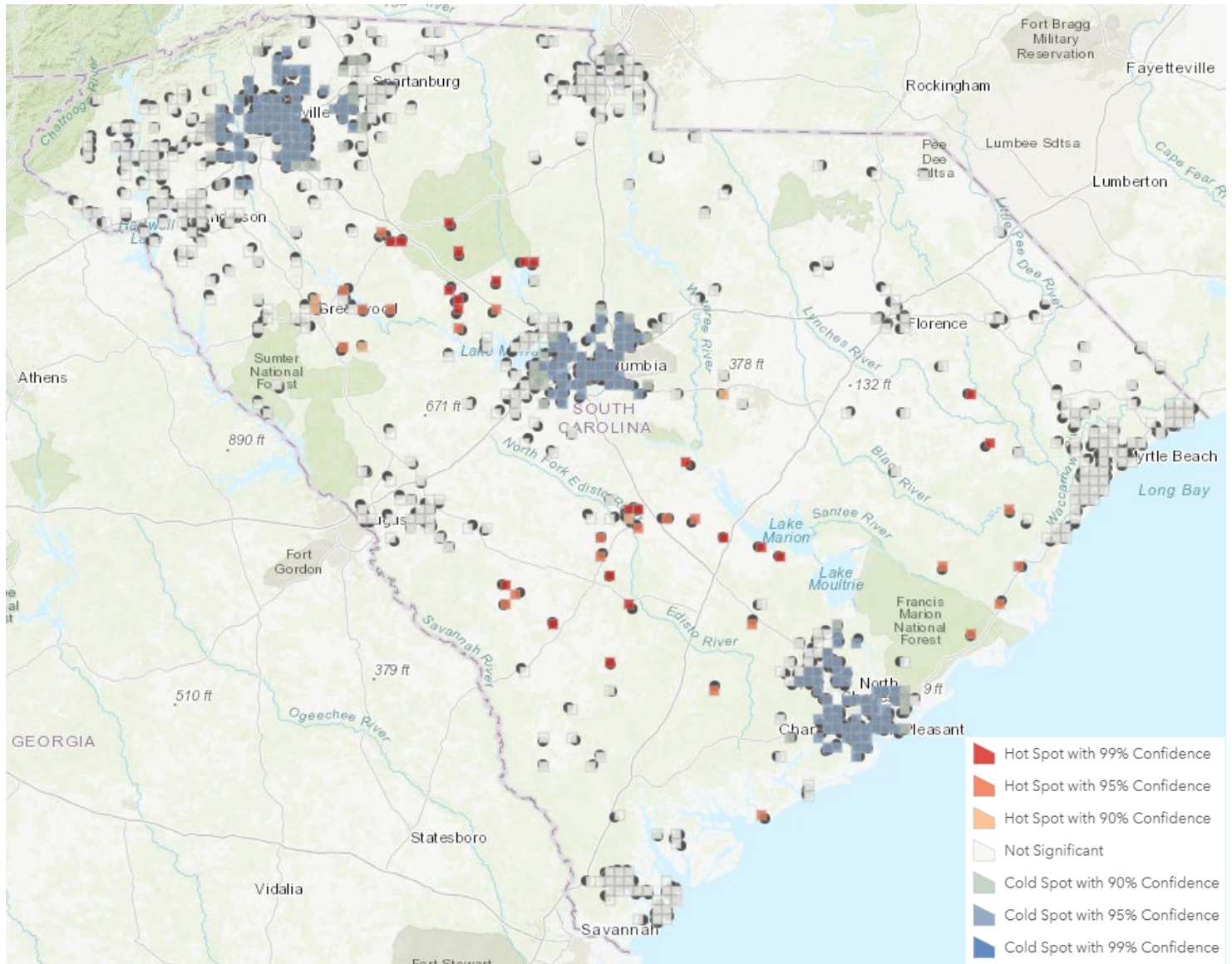


**SC STRONG: South Carolina Sampling and Testing Representative Outreach for Novel coronavirus Guidance**  
Cohort 3: May-June 2021

**1. Participation and Activity**

1A. Cohort 2 participation- From May 1 to June 28, 2021, a total 1,742 residents completed a viral test, 1,516 completed an antibody test, and 1,293 completed at least one test and a matched health survey. A response rate of 0.56% was noted from an original 300,000 initially selected participants. Support and efforts to enroll participants were used to encourage participation. The project phone bank received 191 emails and 366 voicemails. A 24- to 48-hour turnaround response time was achieved by eight dedicated UofSC project staff. Primary project needs were: 18% looking for testing locations; 26% wanting to make an appointment; 19% asking for results; 19% wanting additional information about the survey; and 18% miscellaneous concerns.

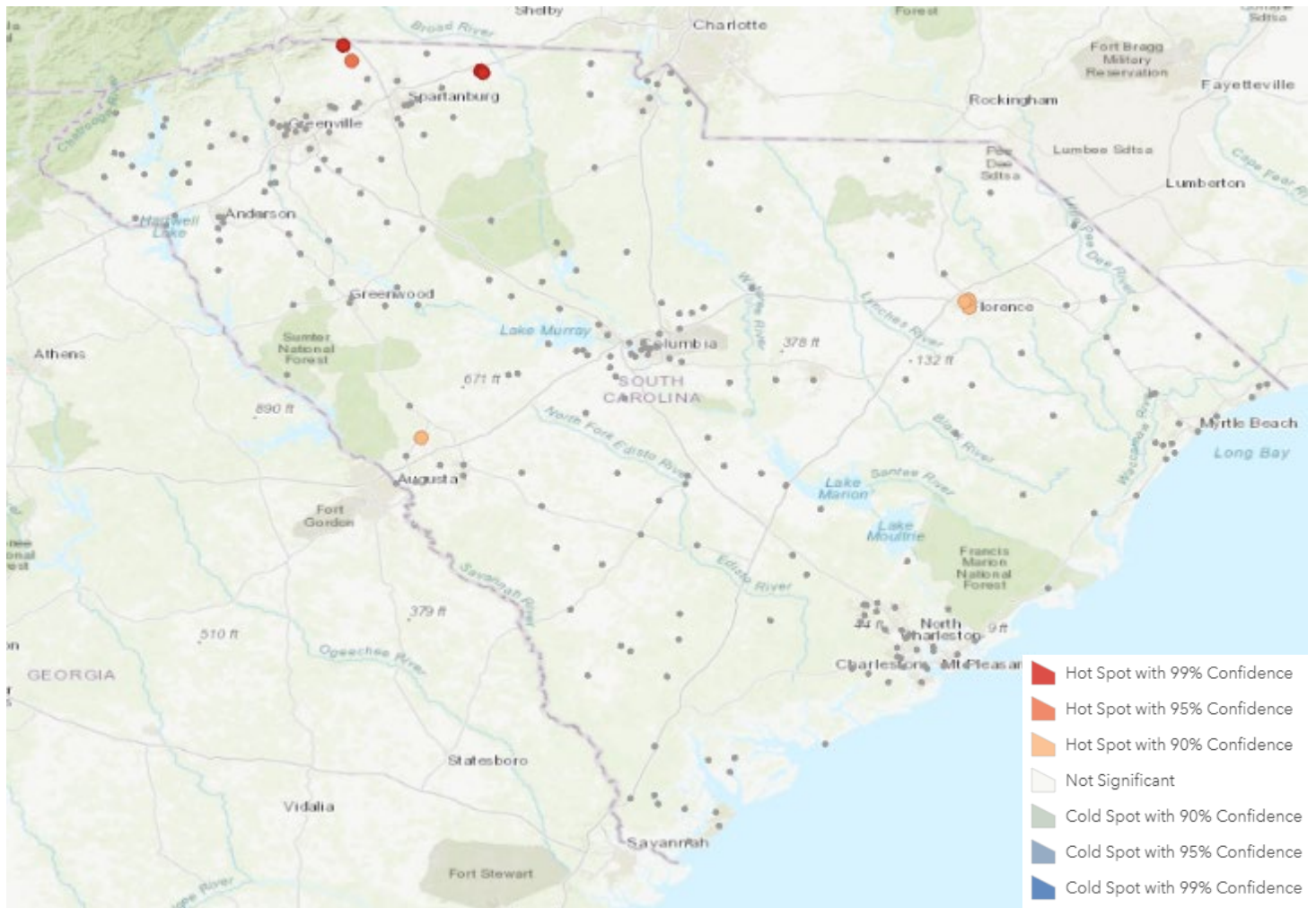
1B. Participant originating locations – Participants originated from a variety of zip codes dispersed across the state. When adjusted for the population size, we found significant “cold spots” (lower-than-expected clustering) in and around Greenville, Richland, and Charleston counties. More-rural areas of the state (e.g., Orangeburg, Newberry, and Greenwood Counties) were significant hot spots when adjusted for population size (see map below). Overall, our participants were more likely to originate from more-rural areas of the state for cohort 3.



**2. Viral Testing Results**

2A: SARS-CoV-2 RT-PCR results - From May 2 to June 28, 2021, a total 1,742 residents completed a viral test. The estimated state incidence was less than 1 per 100 persons [95% CI: 0.24 to 1.68]. Residents of Hispanic ethnicity had the highest estimated incidence: 3.28 of 100 residents identified in this ethnic population. Of note, incident infections were detected among vaccinated persons; however, a statistical difference was not noted. Two persons positive during the current cohort testing period had a prior PCR result 79 days and 149 days prior, suggesting either extended viral detection or reinfection among these two persons.

2B: Virus RNA positive statistical clustering - Four geographic statistical hot spots of infection were identified for PCR-positive persons: Florence, Edgefield, Spartanburg, and Greenville counties.



2C: SARS-CoV-2 incidence stratified by public health region and demographics.

	No. tested for virus***	No. virus positive*	Total population	Estimated incidence proportion† (95% CI)
<b>Total State</b>	1276	8	4,729,875	0.64 (0.24-1.68)
<b>Public Health Region††</b>				
Upstate	415	4	1,382,995	0.56 (0.13-2.30)
Midlands	333	2	1,350,170	1.23 (0.16-8.68)
Lowcountry	297	0	1,123,412	**
Pee Dee	211	2	873,298	0.80 (0.03-17.34)
<b>Race/Ethnicity</b>				
Hispanic	23	1	269,227	3.28 (0.00,100.00)
White, Non-Hispanic	1134	7	3,114,751	0.64 (0.20-2.00)
Black, Non-Hispanic	73	0	1,274,629	**
Other/Unknown	46	0	71,269	**
<b>Age Category</b>				
5-19 yr	29	0	952,137	**
20-59 yr	325	2	2,587,428	0.55 (0.05-5.90)
60+ yr	922	6	1,190,311	0.85 (0.26-2.75)
<b>Gender</b>				
Female	744	5	2,442,789	0.67 (0.12-3.56)
Male	532	3	2,287,087	0.60 (0.13-2.78)
<b>Vaccination Category</b>				
Vaccinated	1026	6	2,087,928	0.59 (0.18-1.95)
Unvaccinated	250	2	3,060,786	0.70 (0.07-6.47)

\*Viral testing was performed using TaqPath COVID-19 RT-PCR Multiplex Assay (Thermo Fisher Scientific, Waltham, MA)

†Post-stratified for non-response and incidence rate is out of 100 residents aged 5 years and older

\*\* Zero count of PCR positive test results among participating Hispanics, calculated an estimate incidence proportion of 0.00000007 (range: 0-1)

### 3. Serologic Results:

**3A: SARS-CoV-2 antibody results** - From May 1 to June 28<sup>th</sup>, a total of 1,102 participants provided samples for IgG and IgM antibody testing. Of this cohort, 24.5% were antibody-positive (IgM positive and/or IgG positive). Another 12.5%

were either recently infected or recently vaccinated (IgM positive only), 8.4% were in a transitional antibody period (IgM and IgG positive), and 12.6% were historically naturally infected (IgG positive only). Note, the IgG antibody assay used only detects naturally acquired antibodies, and those with a COVID-19 vaccine would not test positive on this antibody assay. Conversely, the IgM antibody assay used detects both naturally acquired and vaccine-acquired immunity, although IgM immunity wanes innately over time. No statistical geographic hotspots of antibody prevalence were noted during cohort 3. Poststratification weights were computed based on public health region, race/ethnicity, age, gender, and vaccination status, followed by weighted logistic regression to compute estimated seroprevalence (3B). The overall seroprevalence based on naturally acquired immunity among unvaccinated persons and recently infected or vaccinated South Carolina residents in May and June 2021 was 26.7% (95% CI: 23.3-30.3).

**3B: SARS-CoV-2 seroprevalence stratified by public health region and demographics.**

	<b>Total population</b>	<b>No. tested for antibodies</b>	<b>No. antibody positive<sup>§</sup></b>	<b>Estimated seroprevalence<sup>¶</sup> (95% CI)</b>
<b>Total State</b>	4,729,875	1102	271	26.67 (23.29-30.34)
<b>Public Health Region<sup>††</sup></b>				
Upstate	1,382,995	375	88	24.49 (19.12-30.80)
Midlands	1,350,170	296	71	24.54 (18.58-31.64)
Lowcountry	1,123,412	222	55	27.12 (19.82-35.90)
Pee Dee	873,298	194	55	34.98 (26.23-44.90)
<b>Race/Ethnicity</b>				
Hispanic	269,227	23	6	23.77 (8.95-49.53)
White, Non-Hispanic	3,114,751	973	238	27.33 (23.64-31.35)
Black, Non-Hispanic	1,274,629	63	16	21.25 (11.90-34.92)
Other/Unknown	71,269	43	11	28.51 (15.35-46.71)
<b>Age Category</b>				
5-19 yr	952,137	19	5	26.41 (10.21-53.01)
20-59 yr	2,587,428	289	81	27.35 (22.09-33.32)
60+ yr	1,190,311	794	185	25.83 (22.24-29.77)
<b>Gender</b>				
Female	2,442,789	636	161	27.80 (23.12-33.03)
Male	2,287,087	466	110	25.40 (20.70-30.75)
<b>Vaccination Category</b>				
Vaccinated	2,087,928	889	208	26.52 (22.77-30.64)
Unvaccinated	3,060,786	213	63	26.87 (20.93-33.77)

<sup>§</sup>Antibody positive was defined as being IgG and/or IgM positive on either SARS-CoV-2 IgG assay (Abbott Industries, Abbott Park, IL), COVID-19 IgG/IgM Rapid Test Cassette (Healgen Scientific LLC, Potomac, MD), or Assure COVID-19 IgG/IgM Rapid Test Device (Assure Tech, Hangzhou, Zhejiang)

<sup>¶</sup>post-stratified for non-response and adjusted for specificity = 0.996 and sensitivity = 0.975

#### 4. Survey Results

**4A. Summary of study results:** A total of 1,293 persons who completed at least one SARS-CoV-2 diagnostic test also completed a survey. Having a close friend or family member previously diagnosed with COVID-19 (68% of respondents) or having a high-risk condition were anticipated motivators for participation. Unfortunately, persons of color were underrepresented in the survey. Despite the low overall incidence (<1%), a large number of respondents reported a

history of COVID-19 symptoms in the prior two weeks (16%), highlighting the lack of sensitivity in COVID-19 symptoms for veritable disease. Despite 31% of the cohort reporting prior antibody positive tests on the survey, a lower seroprevalence was noted in the cohort (see section 3B; 27%). The majority of survey respondents (80%) were prior recipients of the COVID-19 vaccine. Of unvaccinated respondents who self-reported wanting to get the vaccine, half reported wanting to take the vaccine in the proceeding weeks versus waiting longer. Lastly, approximately 10% of survey respondents were parents with children currently living at home. Approximately one-fifth reported their child had had a COVID-19 exposure at a daycare or school, with most of these children having less than 5 high-risk exposures requiring quarantine. Parental intent to vaccinate their children was low (<20% on average), with children under 5 years of age having the least likely probability of parental comfort to vaccinate.

4B. Table with detailed survey results:

	All Survey Respondents <sup>††</sup> % (N)	Survey respondents' testing results <sup>§§</sup>	
		SARS-CoV-2 positive N=276	SARS-CoV-2 negative N=1011
<b>Personal Risk Factors</b>			
I work in a nursing home, rehabilitation center or long-term care facility	0.9%(12/1293)	0%(0/276)	1.2%(12/1011)
I am a front-line medical care worker	5.0% (64/1287)	5.1% (14/276)	4.9% (50/1011)
I am an essential worker	11.3% (146/1287)	13.4%(37/276)	10.8% (109/1011)
I have or have had a close family or friend diagnosed with COVID-19	68.0% (874/1281)	69.2% (193/276)	67.4% (681/1011)
I am a person of color:			
<i>Black (non-Hispanic)</i>	5.8% (74/1271)	5.8% (16/276)	5.7% (58/1011)
<i>Hispanic</i>	1.8% (23/1271)	2.2% (6/276)	1.7% (17/1011)
<i>Mixed Race, Native American, Asian or Other (non-Hispanic)</i>	2.6% (33/1271)	3.3% (9/276)	2.4% (24/1011)
I have a defined high-risk comorbid health condition	60.4% (777/1287)	60.5% (167/276)	60.3% (610/1011)
I am 70 years or older	38.9% (500/1287)	30.8% (85/276)	41.0% (415/1011)
My annual household income was less than \$50,000 last year	23.0% (209/909)	17.8% (49/276)	15.8% (160/1011)
In the last two weeks, I have experienced COVID-19 symptoms	16.2% (214/1287)	20.3% (56/276)	15.6% (158/1011)
In the last two weeks, I have never worn a face covering outside of the home	2.9% (37/1284)	3.6% (10/276)	2.7% (27/1011)
I have previously tested positive for active infection	21.9% (169/770)	38.4% (106/276)	6.2%(63/1011)
<i>Median days since prior positive viral test</i>	155		
I have previously tested positive for antibodies	30.7% (54/176)	7.6% (21/276)	3.3% (33/1011)
<i>Median days since prior antibody positive test</i>	54		
<b>Vaccine-Related Questions</b>			
I have had at least one dose of the COVID-19 vaccine	80.4% (1032/1283)	77.2% (213/276)	81.0% (819/1011)
<i>Median days since first vaccination</i>	103		
<i>Median days since last vaccination</i>	80		
I have not had the vaccine, but I plan to take the COVID-19 vaccine:			
<i>In the next few weeks</i>	45.5% (40/88)	5.4% (15/276)	2.5% (25/1011)
<i>I plan to wait longer to take the vaccine</i>	54.5% (48/88)	3.6% (10/276)	3.6% (38/1011)
I think the COVID-19 vaccines are safe <sup>¶¶</sup>	77.9% (998/1281)	72.1% (199/276)	79.0% (799/1011)
I think the COVID-19 vaccines are effective <sup>¶¶</sup>	80.6% (1032/1281)	72.3% (205/276)	81.8% (827/1011)



I feel confident in the design and development of the COVID-19 vaccines <sup>†††</sup>	76.1% (974/1280)	68.5% (189/276)	77.6% (785/1011)
<b>Parenting-Related Questions</b>			
I am a parent to a child under the age of 18 years	9.8% (125/1282)	12.0% (33/276)	9.1% (92/1011)
The following situations apply to my children:			
<i>Plan to put them in a summer camp</i>	28% (35/125)	2.9% (8/276)	2.7% (27/1011)
<i>Has been enrolled in K-12 face-to-face since January 2021</i>	47.2% (59/125)	5.4% (15/276)	4.4% (44/1011)
<i>Has been enrolled in K-12 hybrid since January 2021</i>	12.8% (16/125)	1.1% (3/276)	1.3% (13/1011)
<i>Has been enrolled in K-12 virtual since January 2021</i>	20.8% (26/125)	2.5% (7/276)	1.9% (19/1011)
<i>Has been attending daycare</i>	2.4% (3/125)	0% (0/276)	0.29% (3/1011)
<i>Has been attending after school program or extra-curricular activities</i>	34.4% (43/125)	2.9% (8/276)	3.5% (35/1011)
A child of mine has been exposed to coronavirus infection at school/daycare/afterschool program	17.4% (21/121)	1.8% (5/276)	1.6% (16/1011)
Number of potential COVID-19 exposures I have received in the 2020-2021 school year:			
<5 times	95.2% (20/21)	1.5% (4/276)	1.6% (16/1011)
5-10 times	4.8% (1/21)	0.4% (1/276)	0% (0/1011)
A child of mine has had to quarantine at home due to a school/daycare/afterschool-related COVID-19 exposure	42.9% (9/21)	0.4% (1/276)	0.8% (8/1011)
A child of mine has previously tested positive for active coronavirus infection	18.7% (23/123)	2.5% (7/276)	1.6% (16/1011)
A child in my household has a high-risk medical condition	11.4% (14/123)	0% (0/276)	1.4% (14/1011)
Regarding the vaccination of my children I:			
<i>Plan to vaccinate my 6 month- 2 year old when eligible</i>	0.8% (1/125)	0% (0/276)	0.1% (1/1011)
<i>Plan to vaccinate my 2 – 5 year old when eligible</i>	3.2% (4/125)	0.4% (1/276)	0.3% (3/1011)
<i>Plan to vaccinate my 6 – 11 year old when eligible</i>	19.2% (24/125)	1.8% (5/276)	1.9% (19/1011)
<i>Plan to vaccinate my 12 – 15 year old when eligible</i>	20% (25/125)	2.2% (6/276)	1.9% (19/1011)
<i>Plan to vaccinate my 16 + year old</i>	19.2% (24/125)	2.9% (8/276)	1.6% (16/1011)

†† Total number of affirmative responses over the total number of survey responses for that specific question

§§ Completed either viral RNA, IgM and/or IgG antibody surveillance-related diagnostic assay.

††† Response shown is 'agree' compared to 'neutral' or 'disagree'

\*\*\* Denotes reference category in logistic regression

**5. Infectious disease forecast models** - A SIR statistical model was executed that yielded 54 distinct scenarios. Of these distinct projection scenarios, a few divergent themes emerged. Please note, technical details on forecast model methodology with variable descriptions and graphical displays of each scenario are available in Appendix 1.

- In all scenarios, the alpha variant is predicted to remain the primary variant in circulation between July 1, 2021 to September 30, 2021.
- In the majority of scenarios (76%), infection incidence will linearly decrease in this time frame with an average of 10,000 to 20,000 infected a day at the height of infection.

- In a minority of scenarios (7%), infection incidence will occur in a parabolic-like shape. In these scenarios, infections start high in July, decrease until mid-August when infections begin to incrementally increase again. In each of these predictions, while infection incidence takes a parabolic curve, infection burden is lower in September than in July.
- In a minority of scenarios (11%), infection incidence will increase over the three-month time period in a near exponential-like fashion. This prediction theme reflects a portion of the modelling scenarios with a  $R_0=1.25$ .

**6. Future directions and next steps** - Cohort 4 is planned for Aug. 2<sup>nd</sup>-Sept. 10<sup>th</sup>, 2021. A total of 300,000 persons have been selected for Cohort 4, anticipating a response rate of 1,500 to 2,000 participants.

**7. Disclaimer** - This preliminary report is subject to change. The conclusions, findings, and opinions expressed by authors contributing to this report do not necessarily reflect the official position of the U.S. Department of Health and Human Services, the South Carolina Department of Health and Environmental Control, or the authors' affiliated institutions. Funding for this surveillance initiative was provided by the US Department of Health and Human Services (Grant # NU50CK000542). The funders had no role in the design, data collection and analysis, decision to publish, or preparation of the manuscript.

*Report prepared by Melissa Nolan: [msnolan@mailbox.sc.edu](mailto:msnolan@mailbox.sc.edu)*

*Last updated: 28 July 2021*

## Model Assumptions

### Population Size

We assume there are 5148714 South Carolina Residents. We assume 50% of the population over age 12 will eventually be vaccinated, and no one under age 12 will be vaccinated.

### Basic Reproductive Number of the Regular Strain on April 1<sup>st</sup>

Three scenarios: 0.87, 1.1, 1.8 (<https://epiforecasts.io/covid/posts/subnational/united-states/south-carolina/>)

### Variants

We assume the alpha, beta, and delta variants are circulating in the SC population  
<https://scdhec.gov/covid19/mis-c-covid-19-variants>

The alpha, beta and delta variants are assumed to be 1.5 times more transmissible than other circulating strains.

The vaccines are assumed to be less effective against the beta and delta variants (see the vaccine section for details).

On July 1<sup>st</sup>, 77% of infections are due to the alpha variant, 10% are due to the beta variant, 1% are due to the delta variant, and 12% are due to other strains.

### Immunity

Everyone who recovers from infection is eventually susceptible to infection again. The rate of immunity loss is assumed to be linear over time, with 13% losing immunity in 136 days (SC Strong estimate), 28% losing immunity in 60 days (<https://www.cdc.gov/mmwr/volumes/69/wr/mm6947a2.htm>), or 50% losing immunity in 90 days (ballpark estimate based on CDC 90 guidelines).

All vaccinated individuals eventually become susceptible again. Resusceptibility occurs linearly over time, with 36% of vaccinated individuals lose immunity in 6 months.

### Initial State:

On July 1<sup>st</sup>, 2021, 0.24%, 0.6% or 1.68% of the population is infectious.

On July 1<sup>st</sup>, 2021, either 15% or 26% of the population is temporarily immune due to recent infection. (the 26% is the SC strong estimate of seroprevalence, while the 15% allows for the fact that some seropositive individuals identified by SC strong might be seropositive due to vaccination rather than recent infection.

On July 1<sup>st</sup>, the distribution of vaccinated individuals is estimated as follows

- 18% of individuals received their second of the Pfizer vaccine at least two weeks ago
- 12% of individuals received their second doses of the Moderna vaccine at least two weeks ago
- 2% of individuals received the Johnson and Johnson vaccine at least 6 weeks ago
- 1% of individuals received their second Pfizer dose less than 2 weeks ago
- 1% of individuals received their second Moderna dose less than 2 weeks ago



- 1% of individuals received 1 Pfizer dose
- 1% of individuals have received 1 Moderna dose
- 0.1% of individuals received Johnson and Johnson vaccine within the last 6 weeks.

We assume that 15.41% vaccinated persons also have natural immunity from being infected before/after receiving the vaccine. If an individual has both natural and vaccine derived immunity, the model treats the individual as having natural immunity.

**Vaccination:**

4000 first doses are administered per day until the number of people eligible for vaccination drops below 4000. At that point, 80% of those eligible to receive a first dose receive one each day.

Vaccinated individuals who contract the virus become eligible to be revaccinated after losing their natural immunity. This is a simplifying assumption necessary for the model.

The average time between the first and second doses of the Pfizer vaccine is 21 days, and the average time between the first and second doses of the Moderna vaccine is 28 days.

The first dose of Pfizer and Moderna immediately confers 50% immunity to all viral strains. The second dose confers 75% immunity against all strains for 2 weeks. Two weeks after the second dose, the Pfizer and Moderna vaccines confer 80% immunity against the beta and delta strain, and 95% immunity against all other strains.

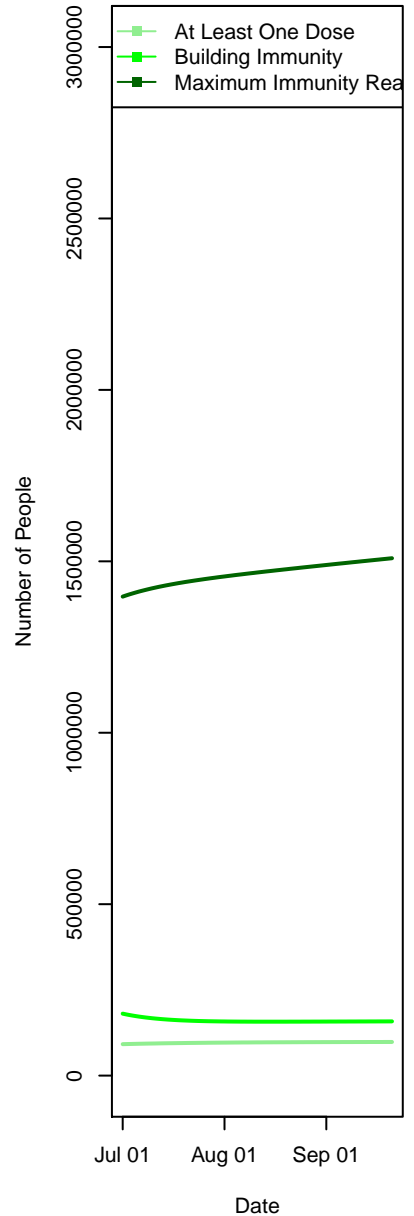
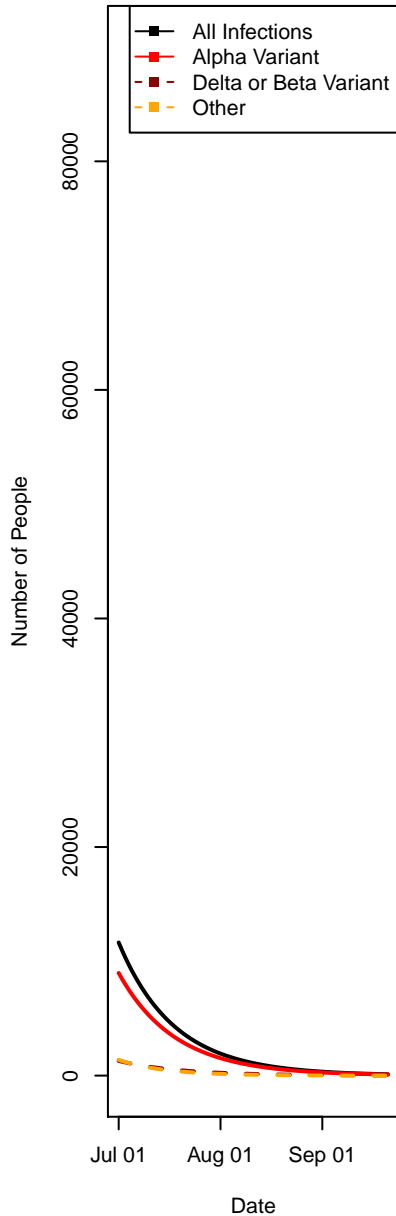
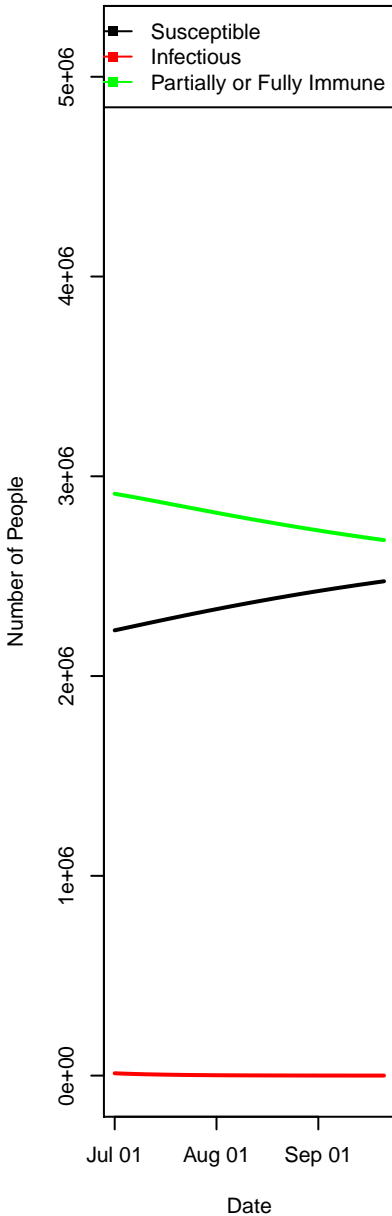
The first dose of the Jansen vaccine confers 50% immunity against all strains for 6 weeks, and 72% immunity against all strains thereafter.

From July 1<sup>st</sup> onward, 56% of vaccines administered are Pfizer, 40% are Moderna, and 4% are Jansen. This is based on the historical proportions of the three vaccine types in the state.

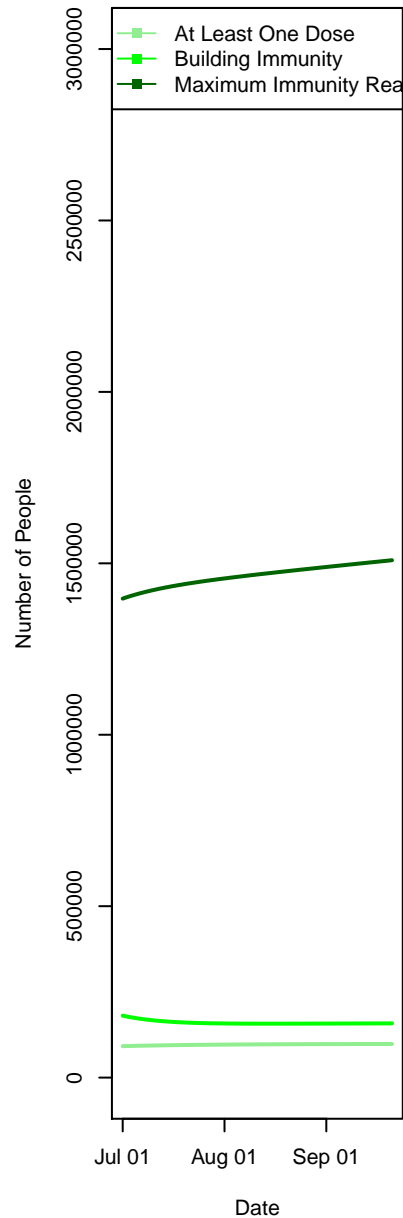
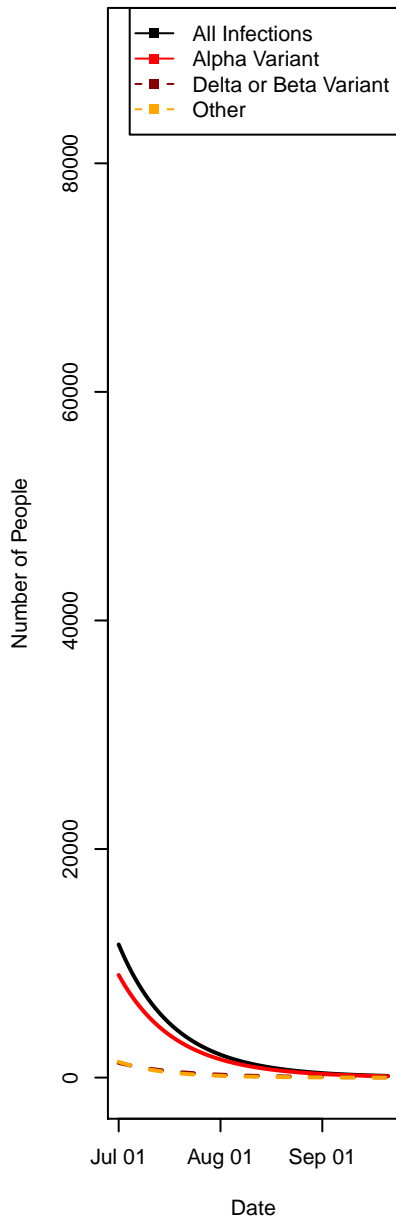
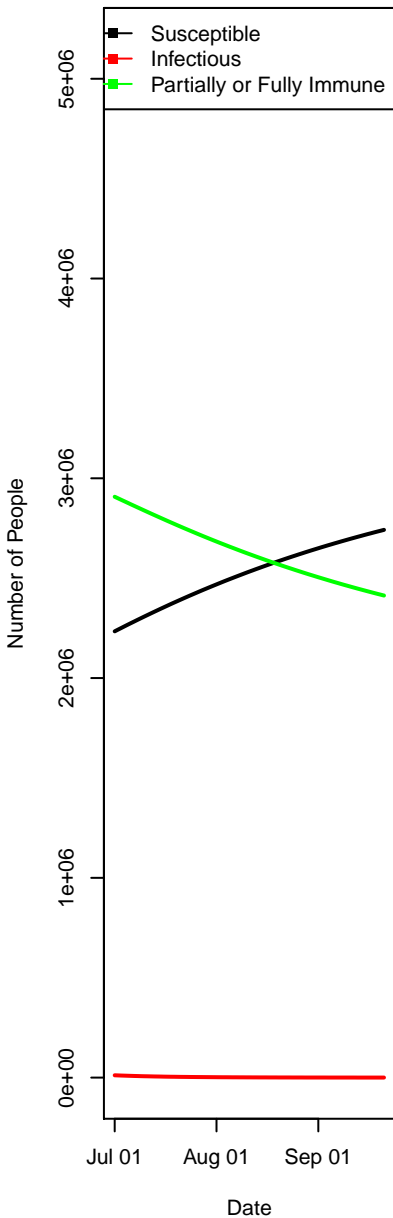
**Contagious Period:**

10 days

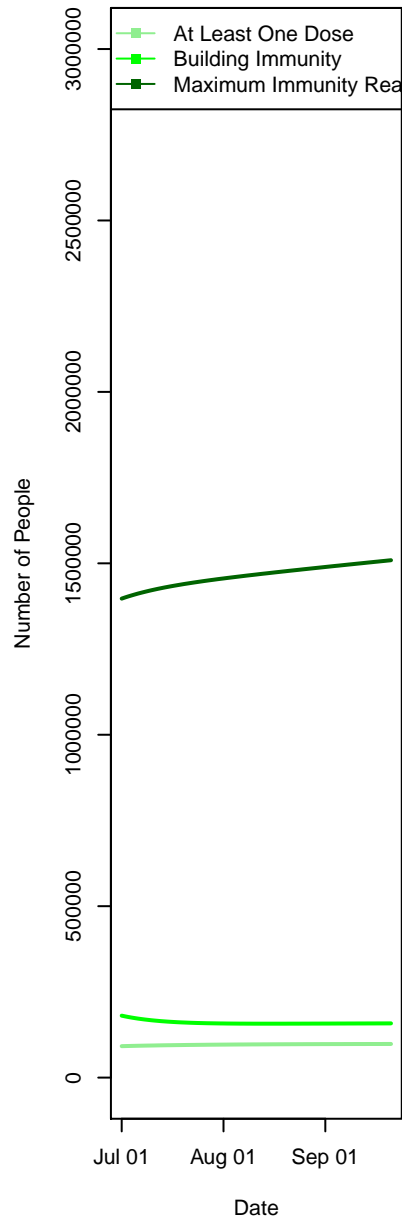
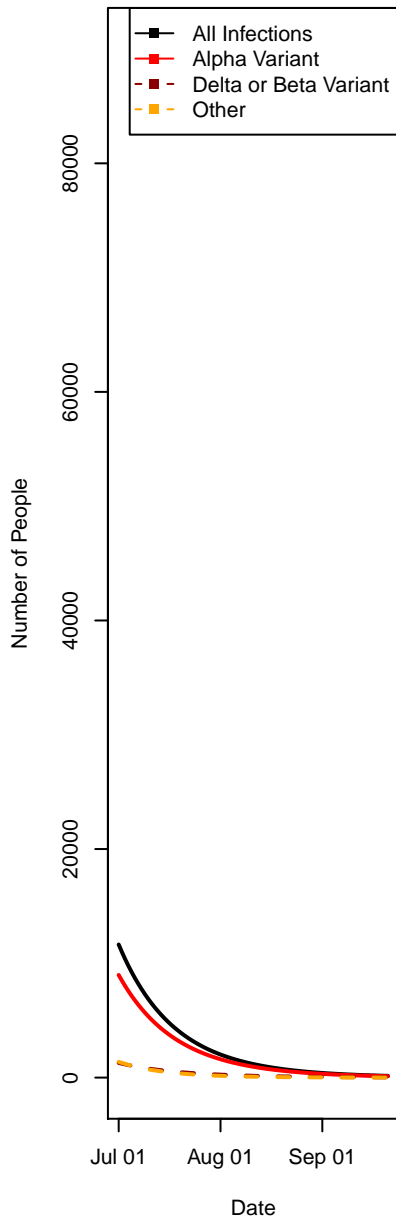
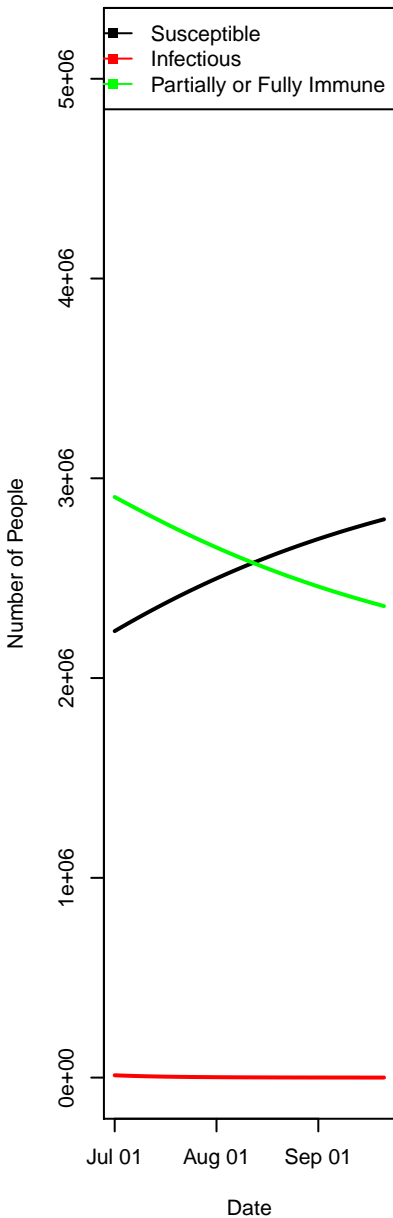
# Scenario 1



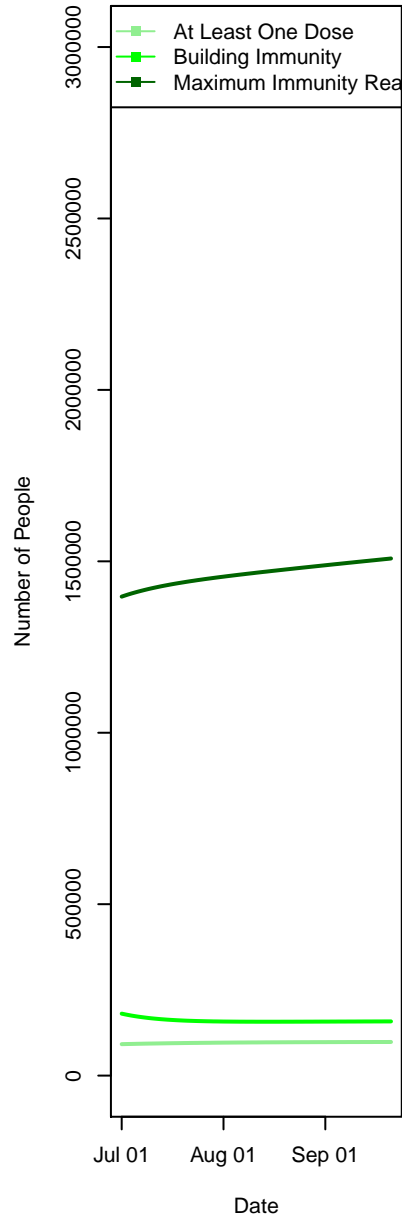
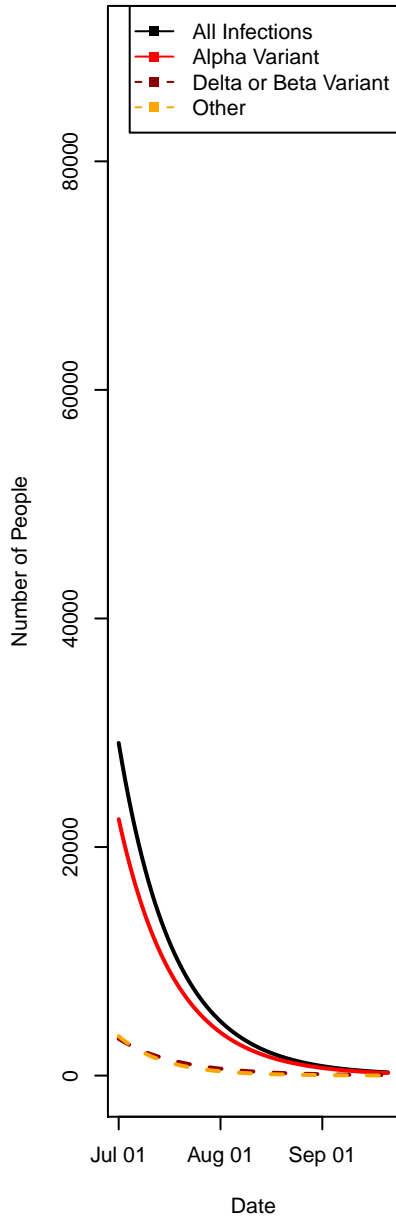
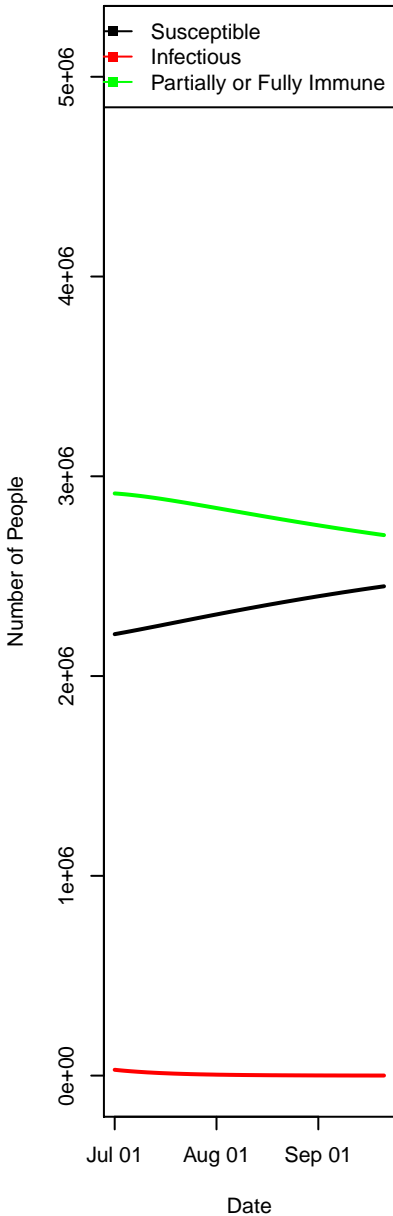
## Scenario 2



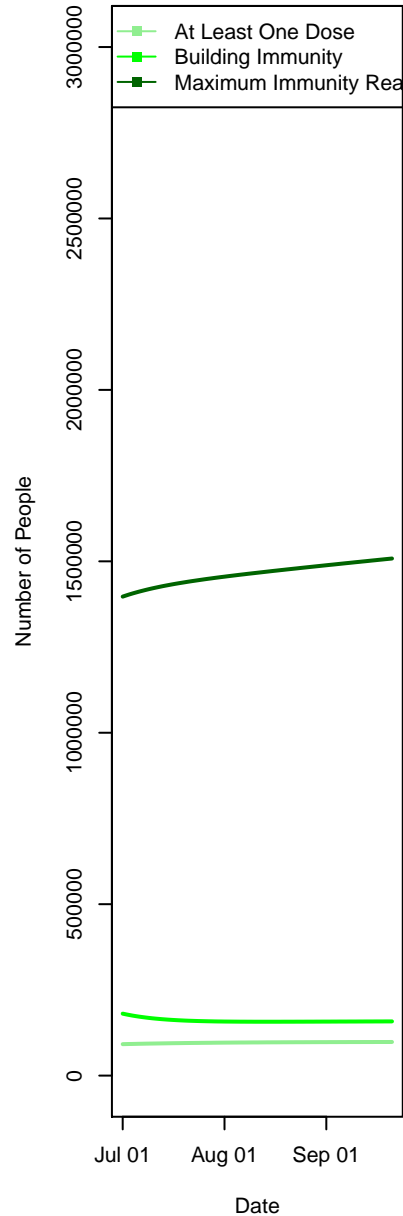
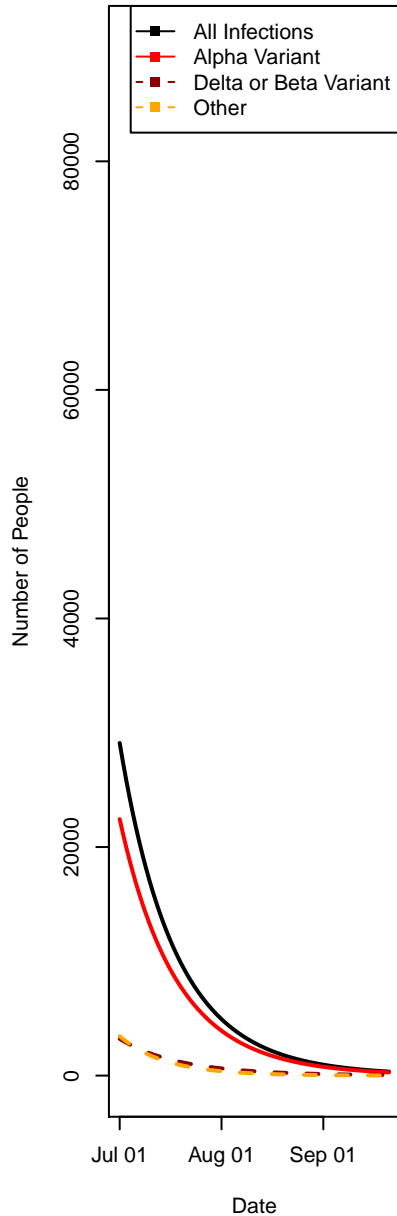
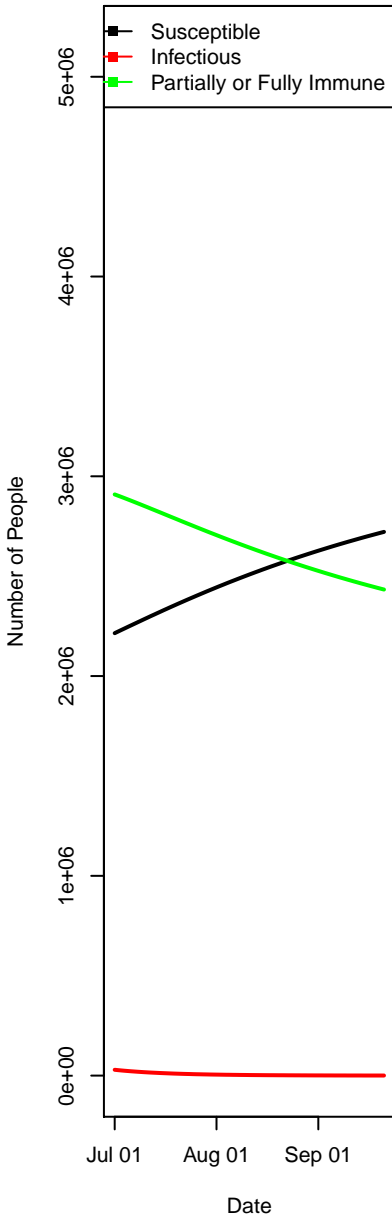
### Scenario 3



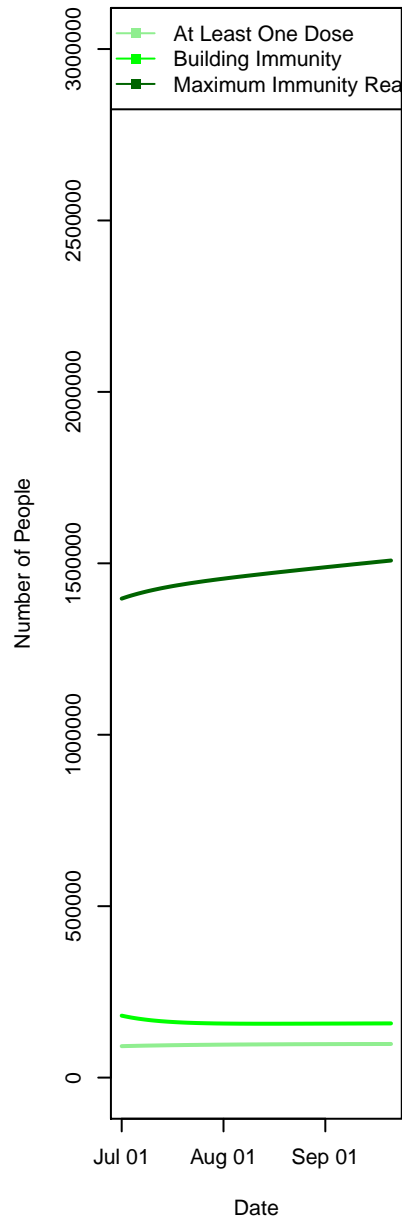
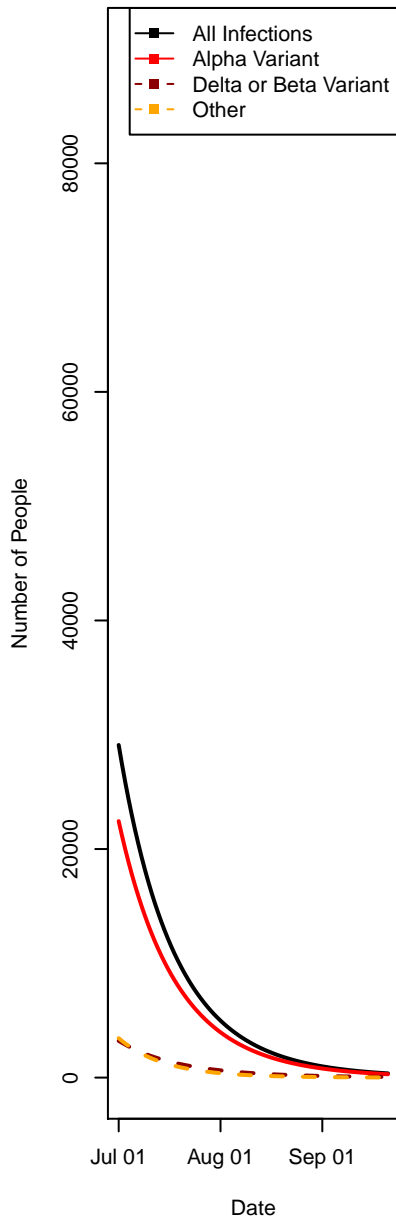
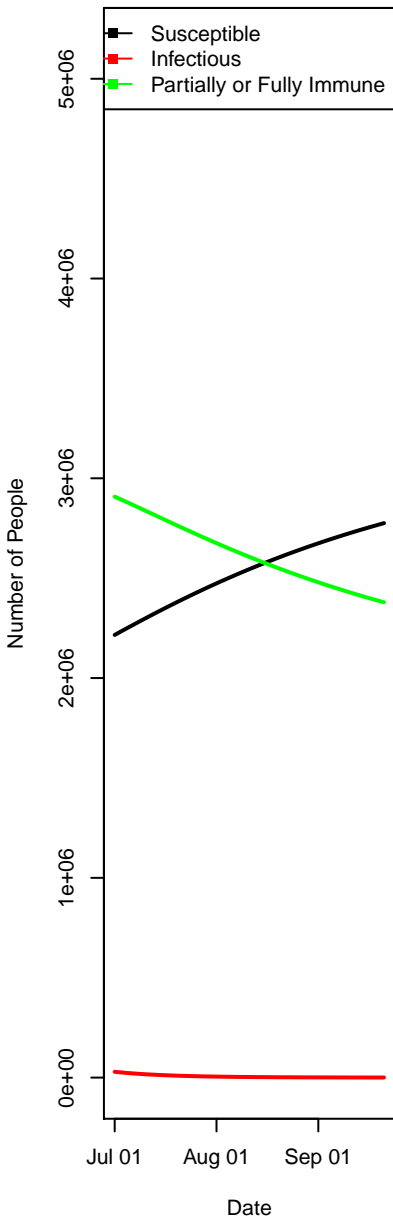
# Scenario 4



# Scenario 5

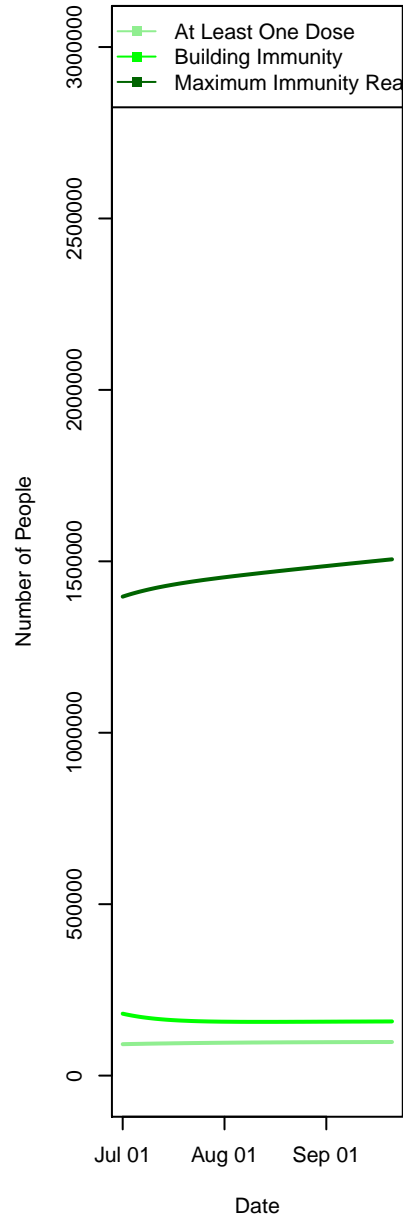
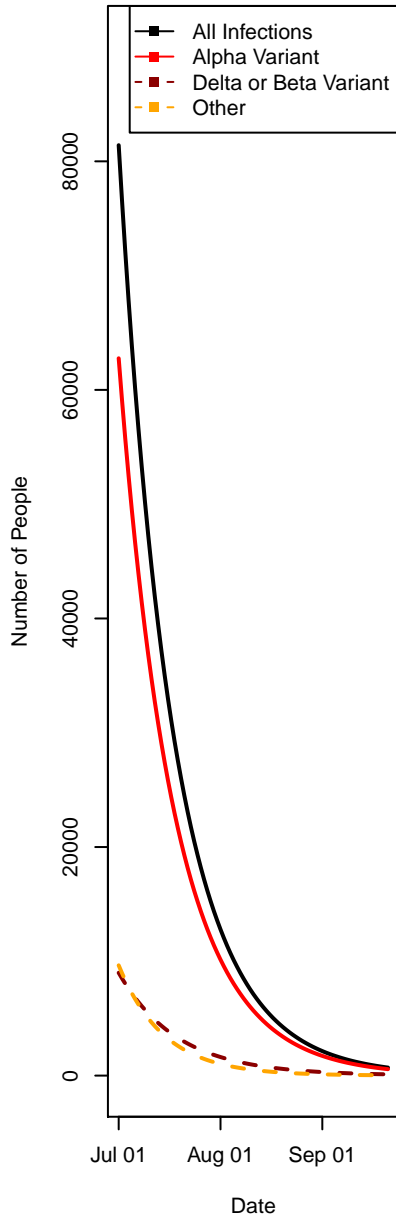
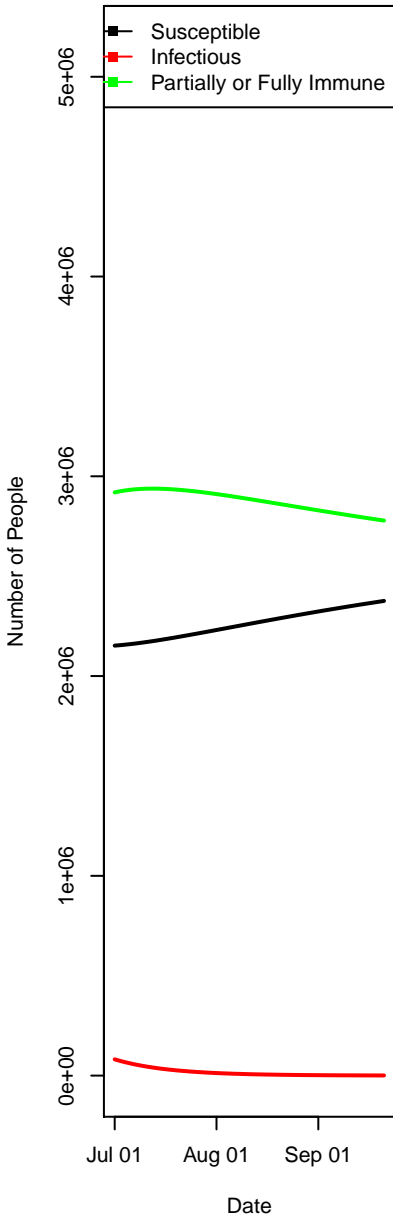


# Scenario 6

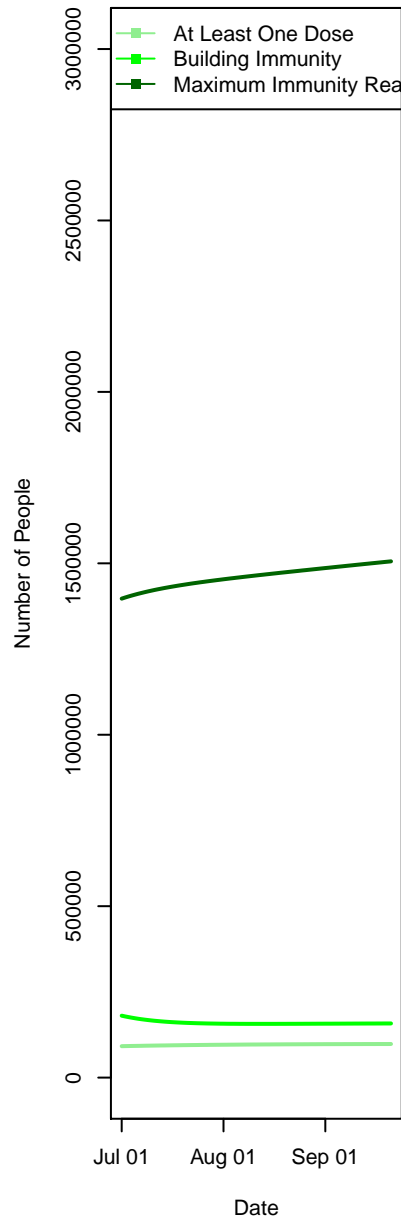
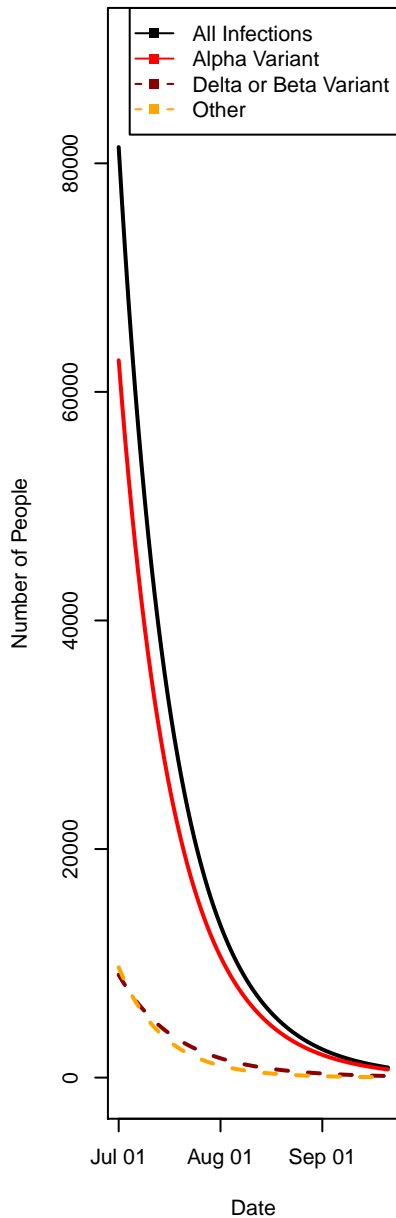
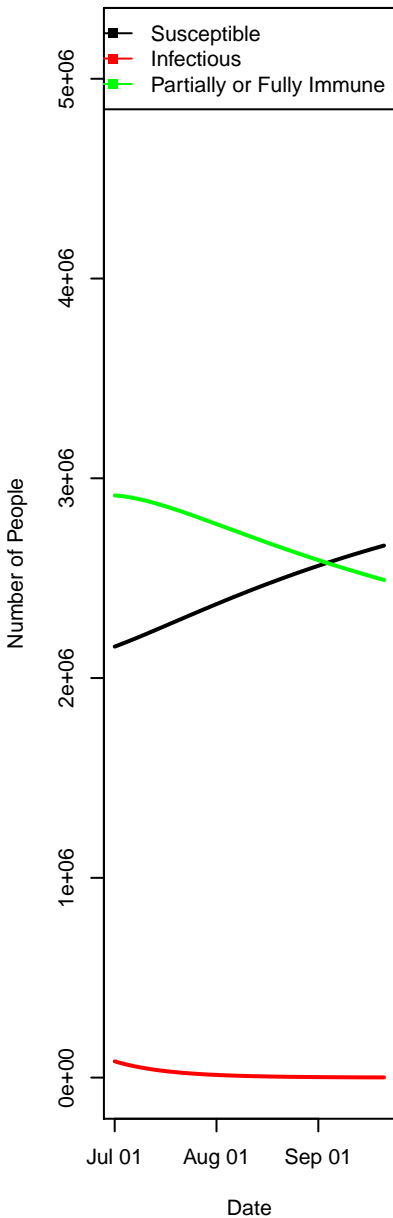




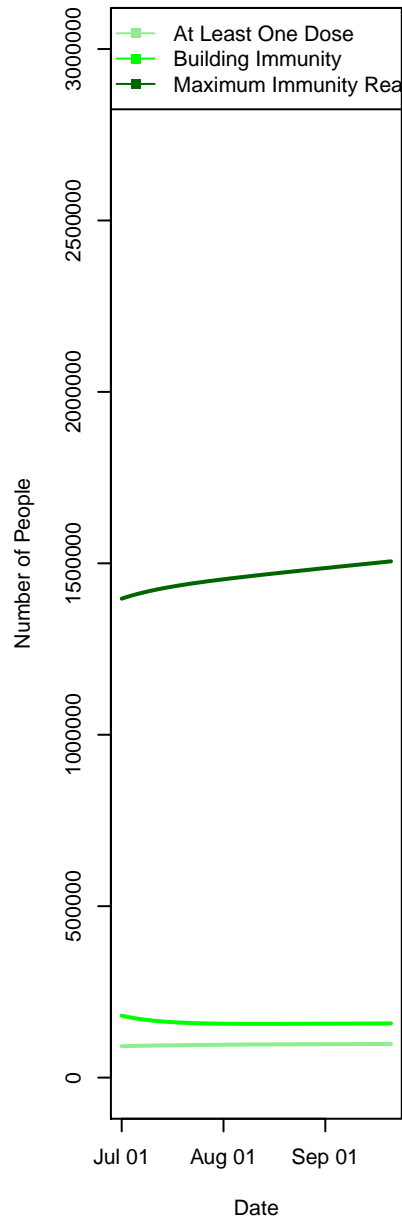
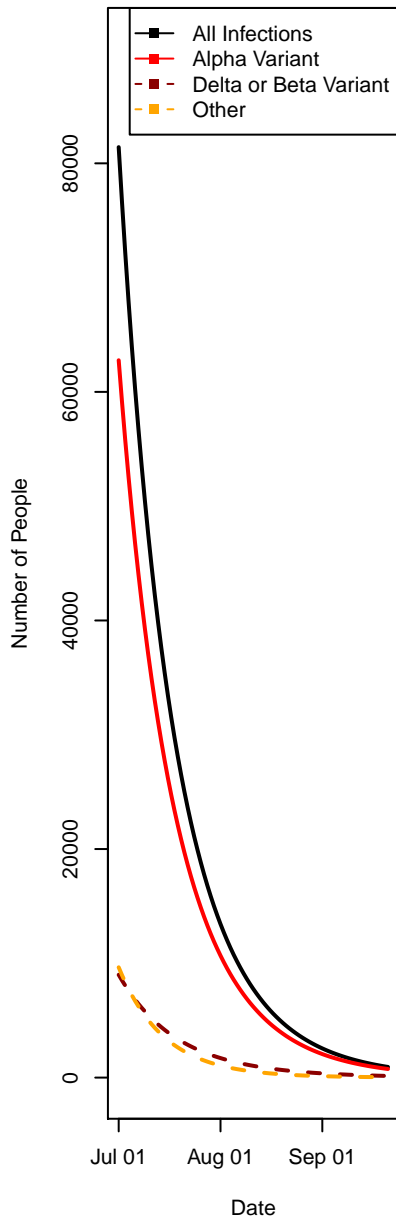
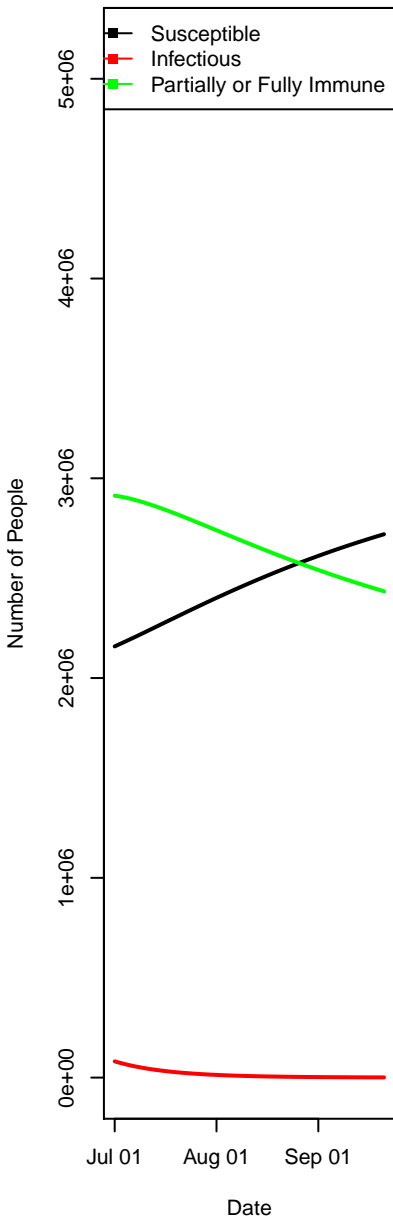
# Scenario 7



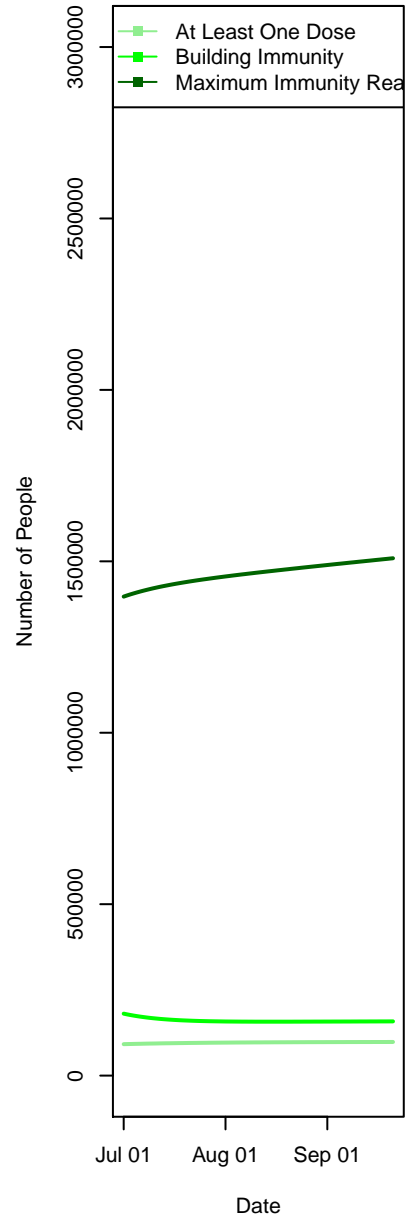
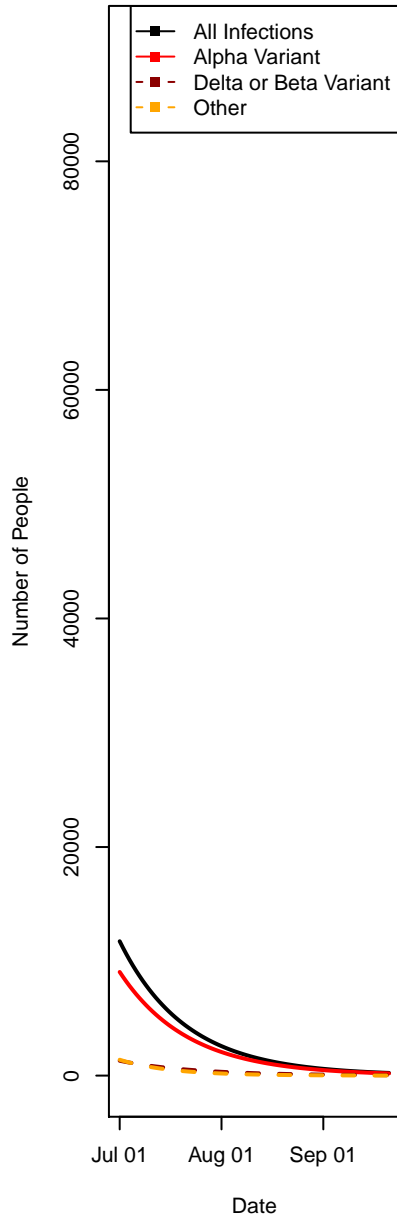
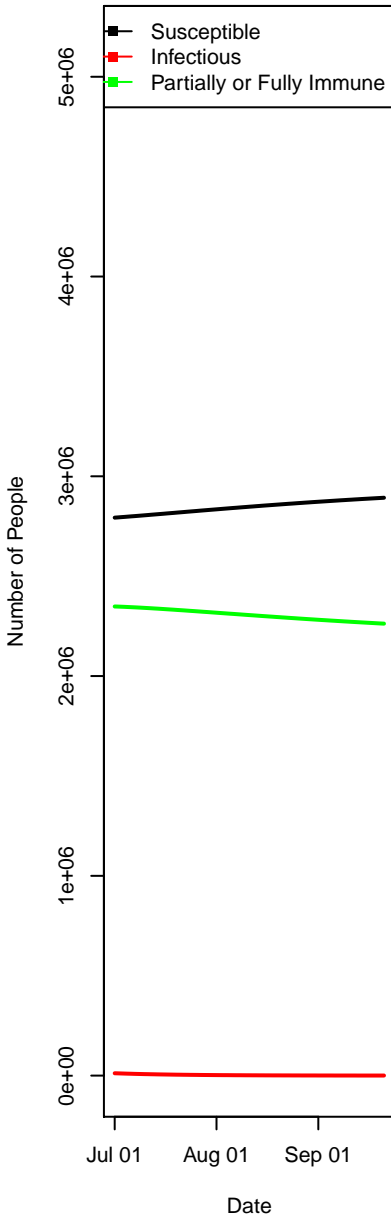
# Scenario 8



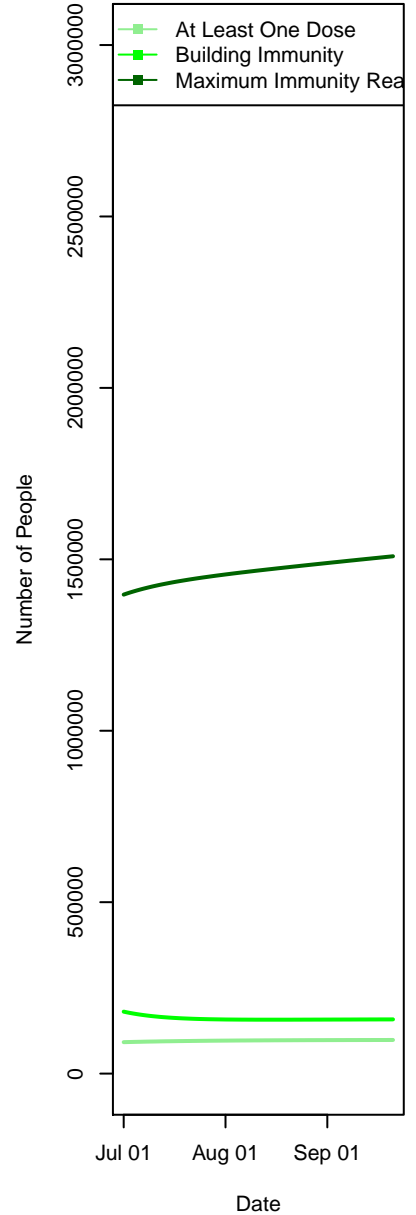
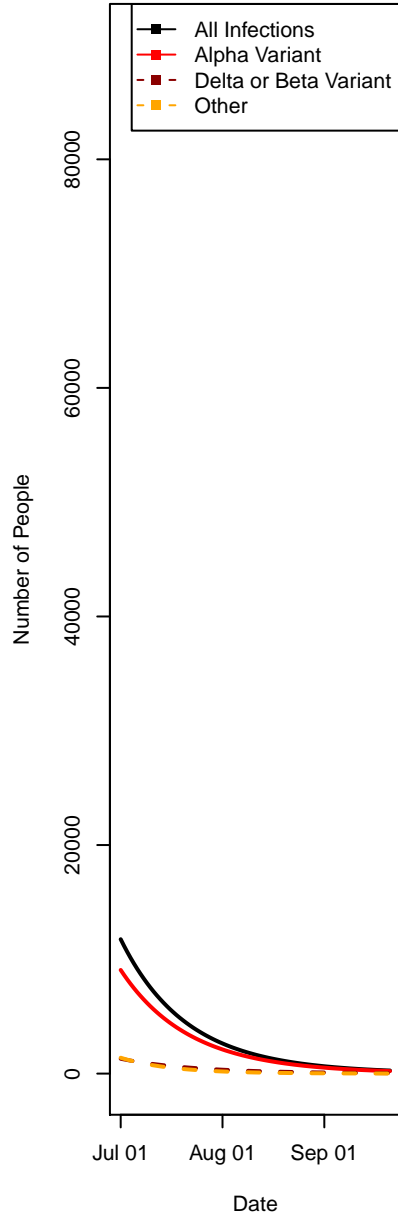
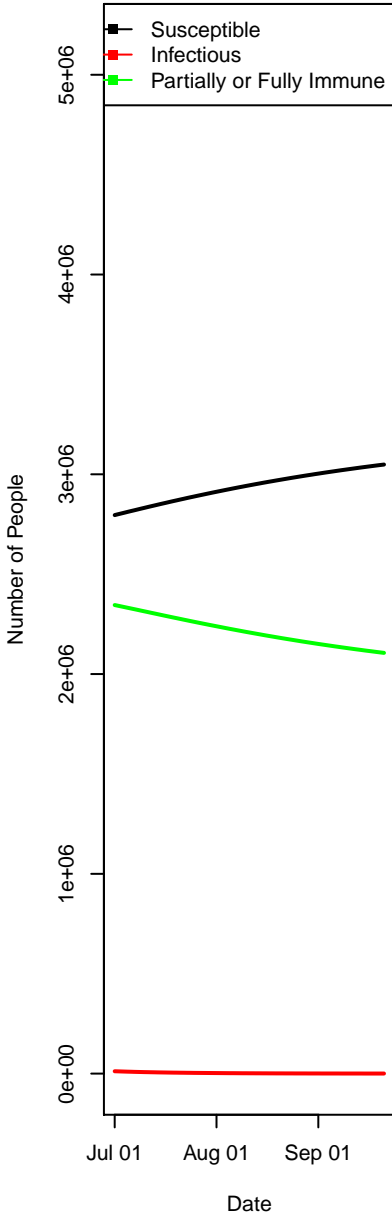
# Scenario 9



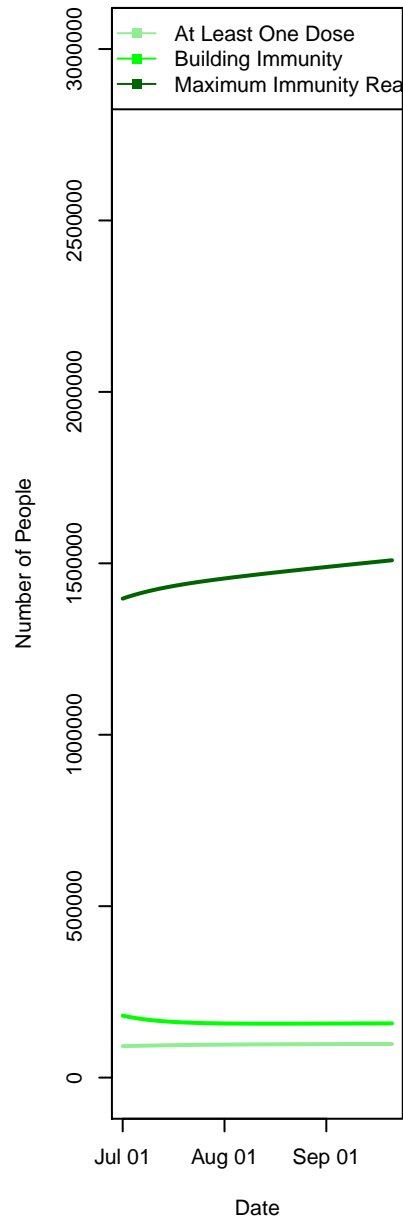
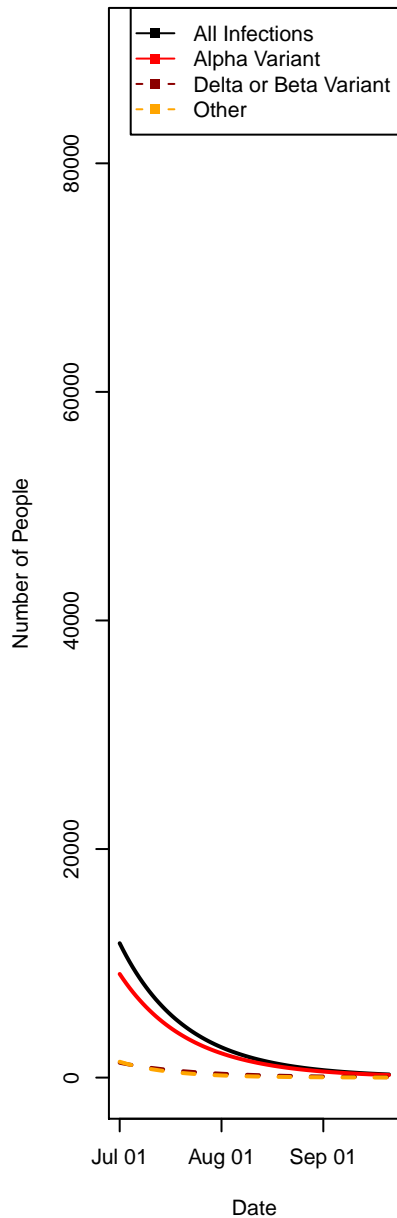
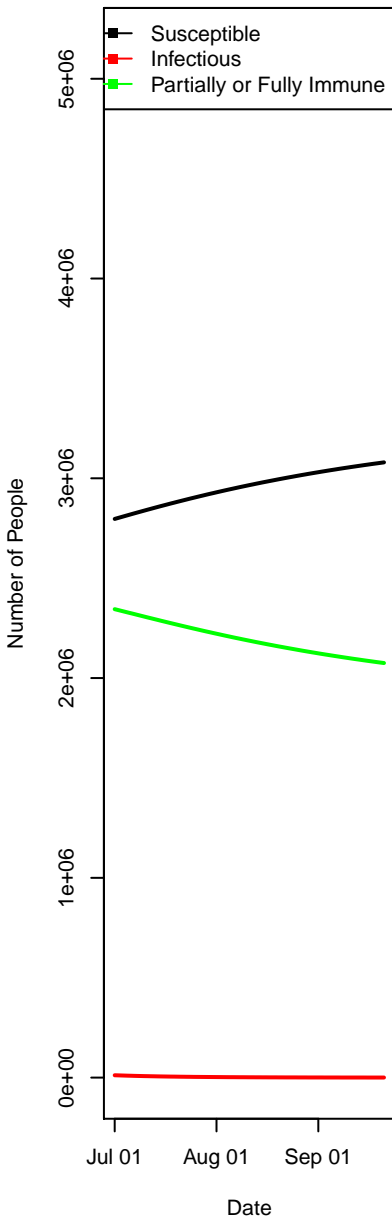
# Scenario 10



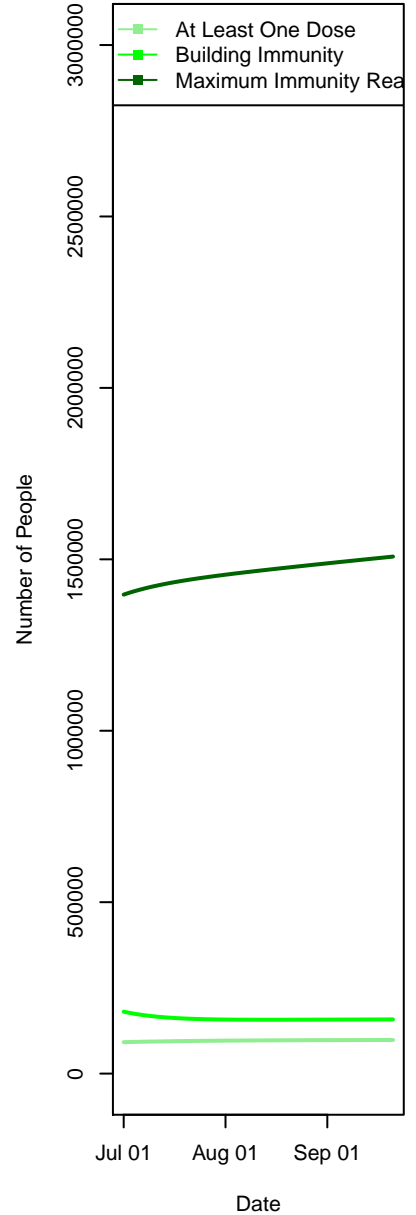
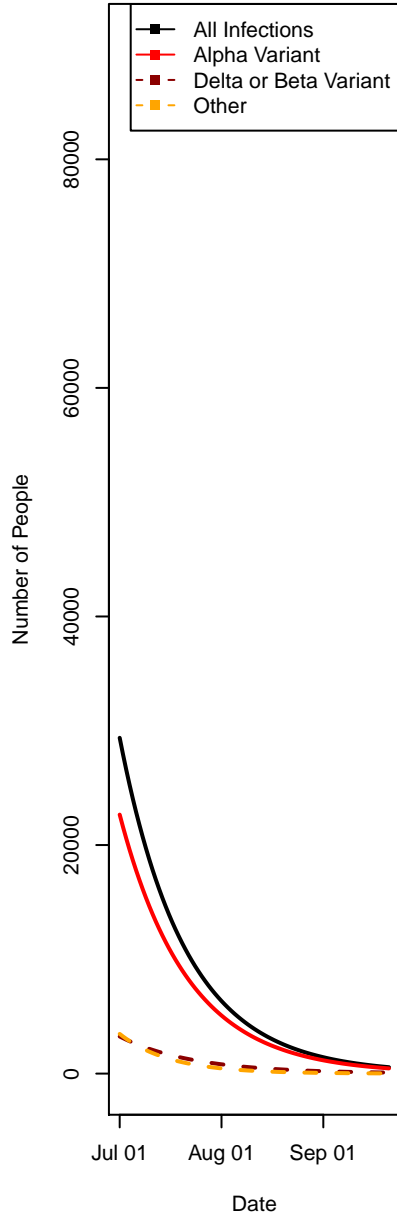
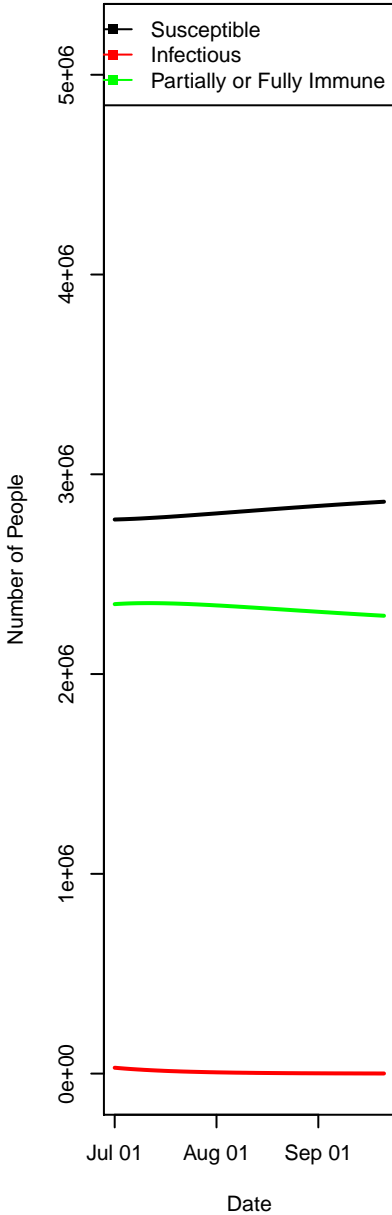
# Scenario 11



# Scenario 12

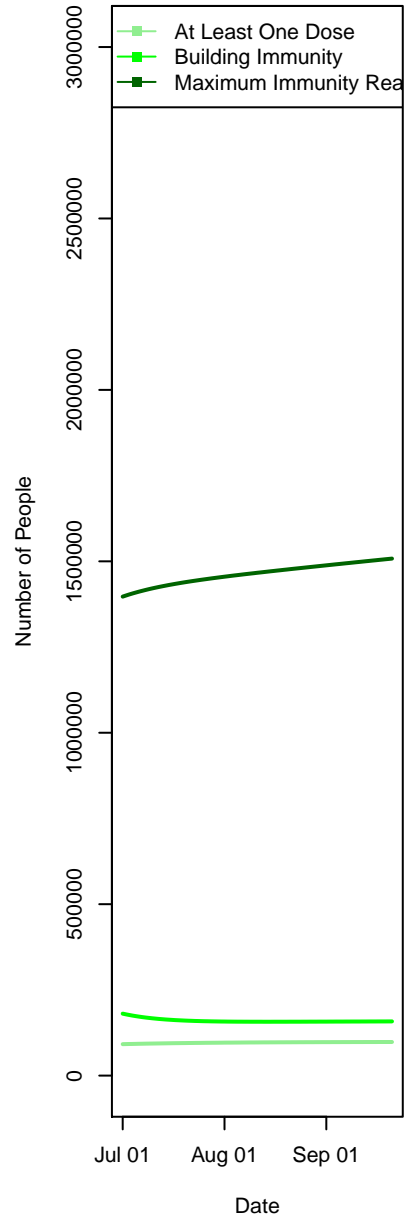
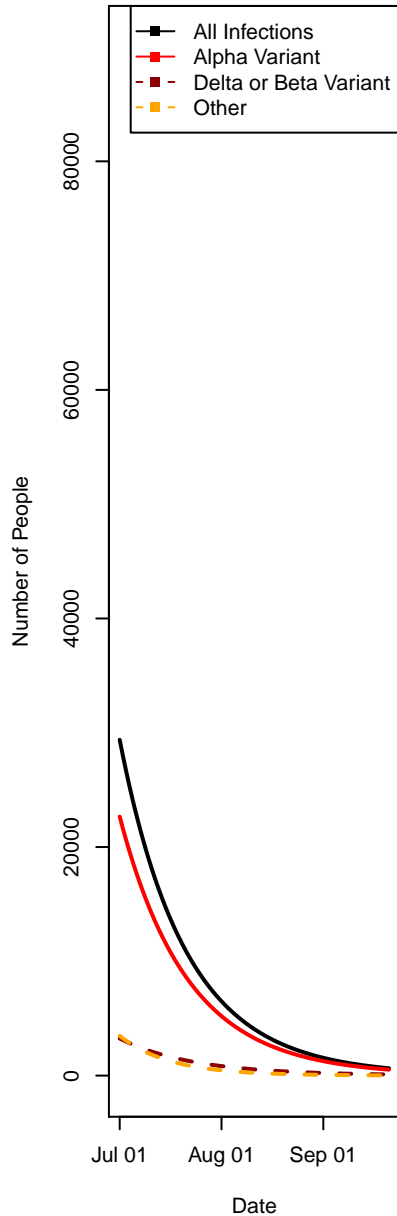
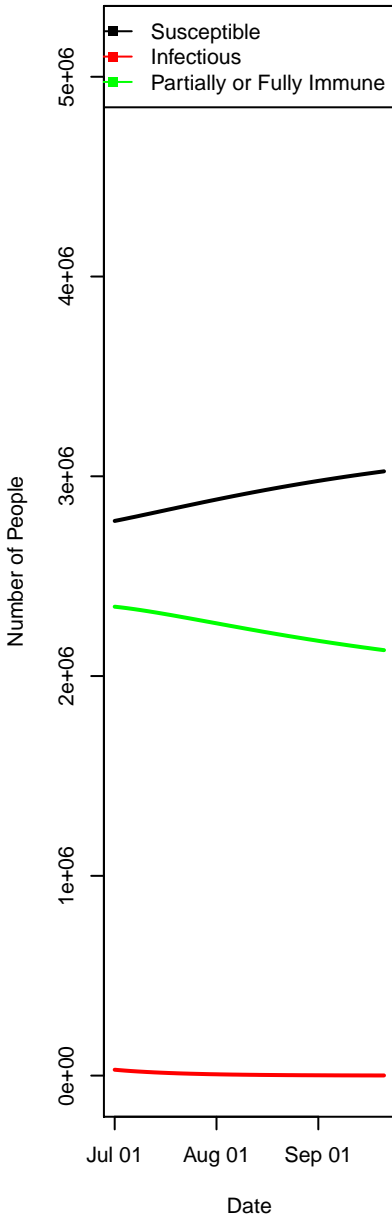


# Scenario 13

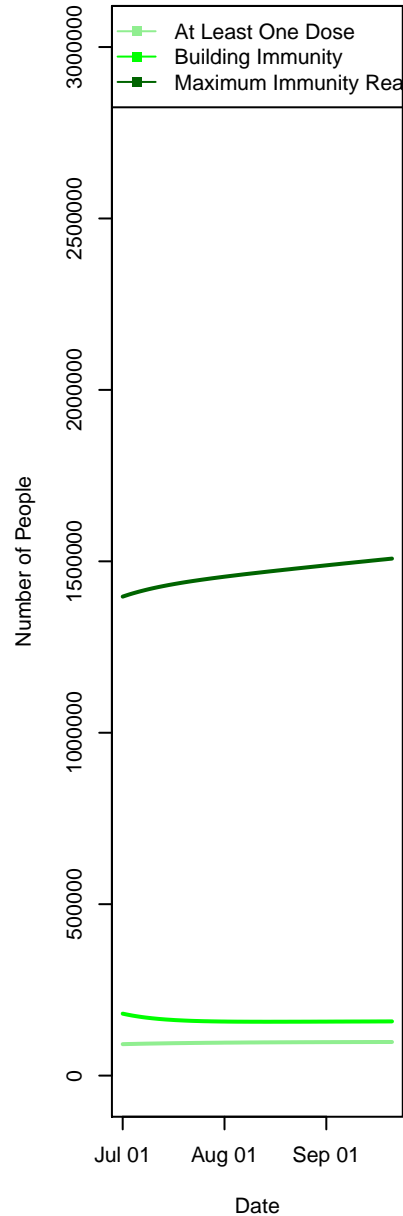
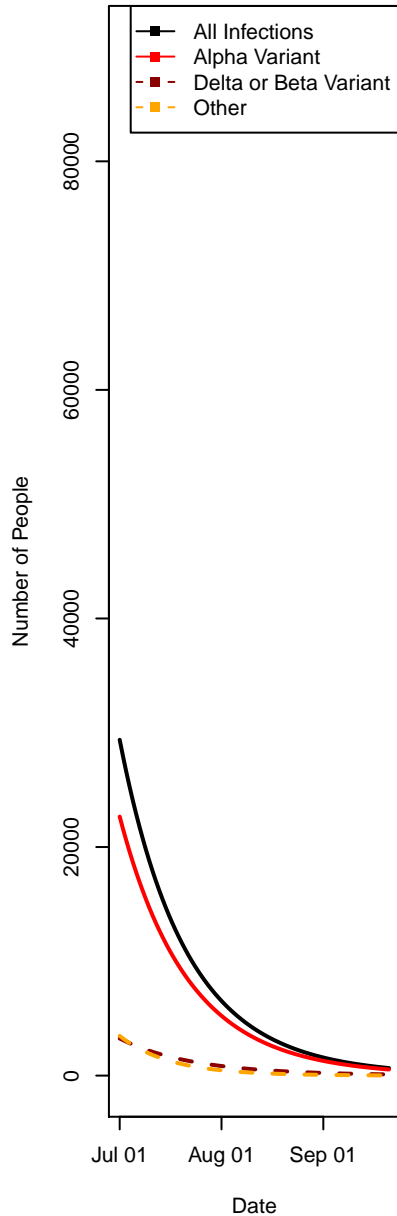
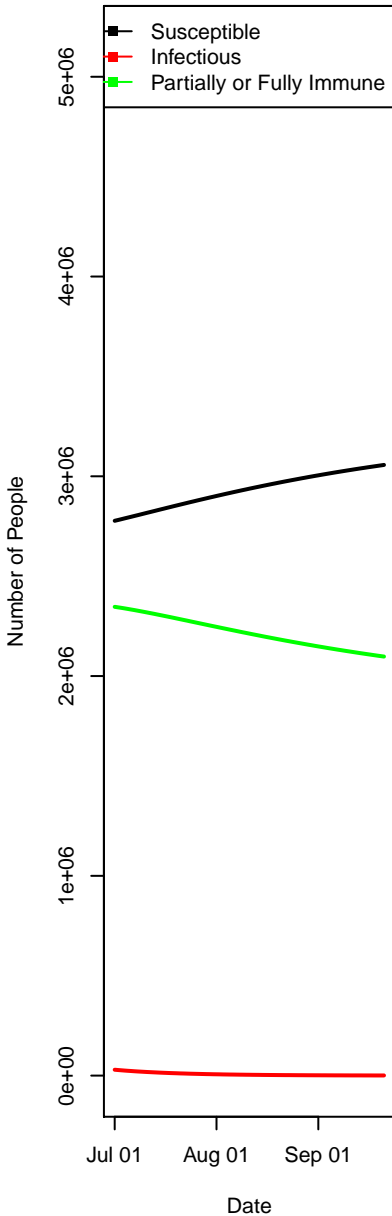




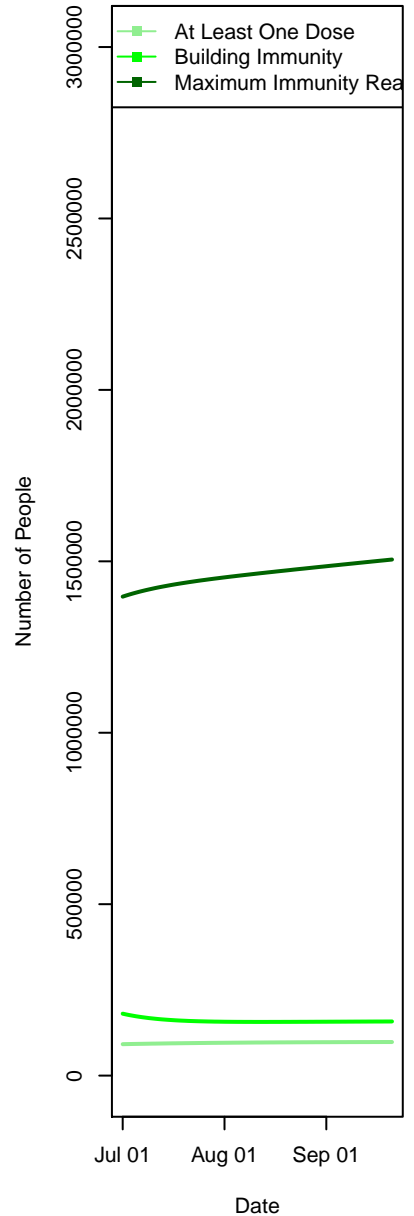
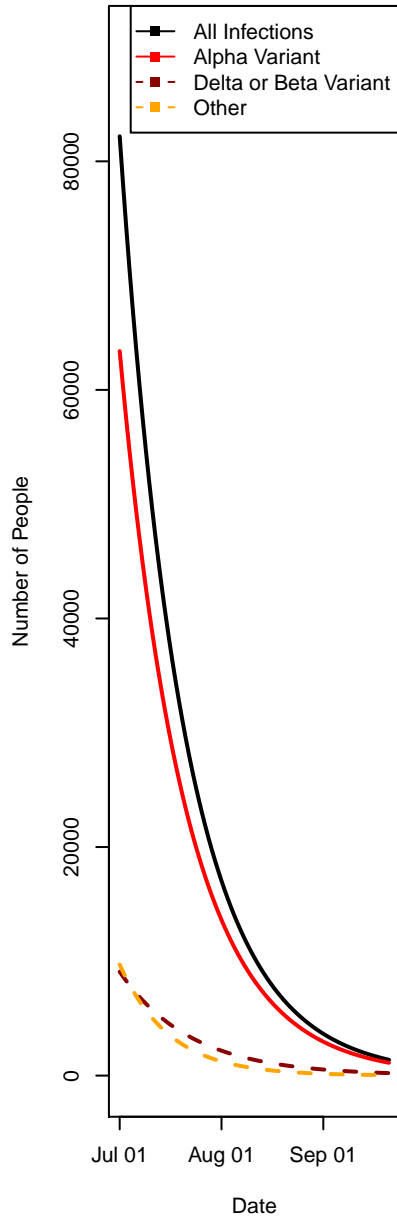
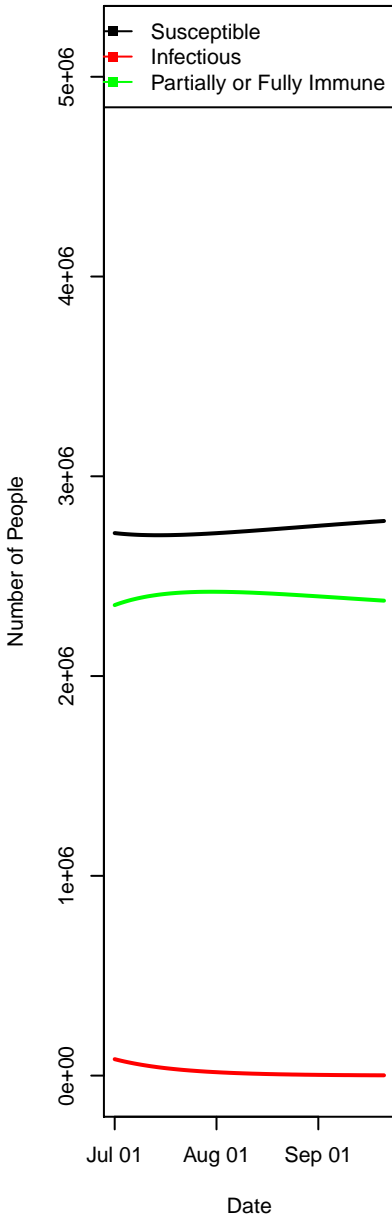
# Scenario 14



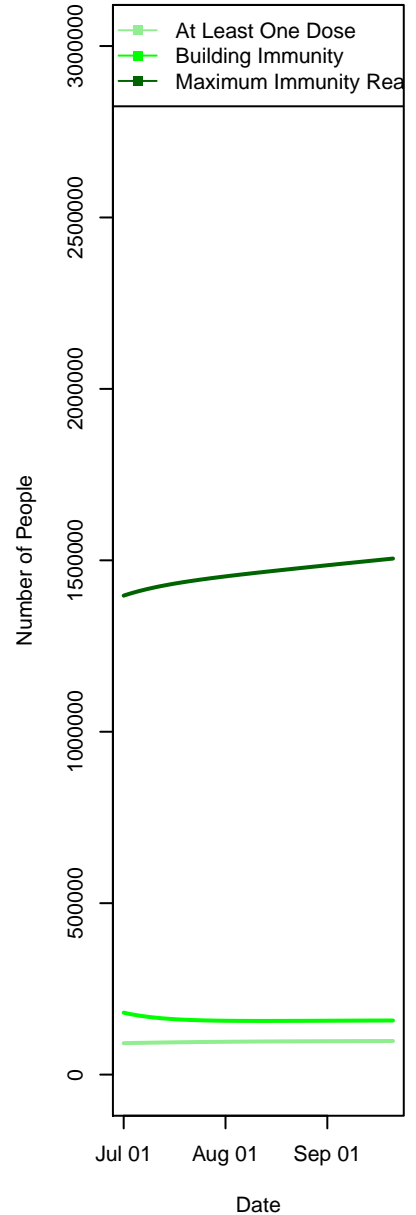
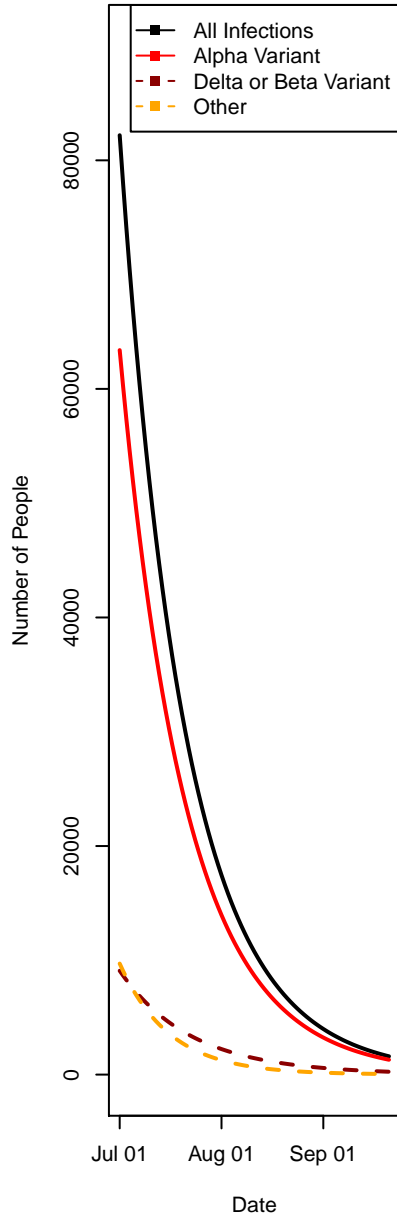
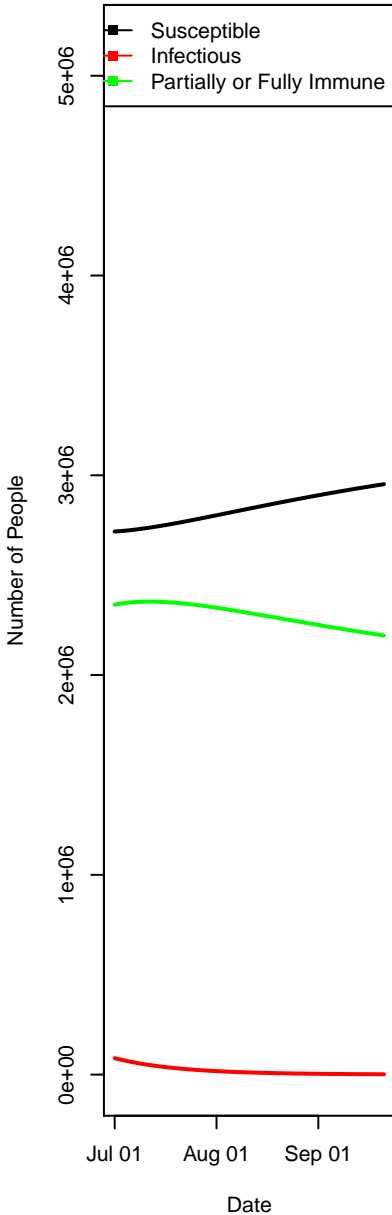
# Scenario 15



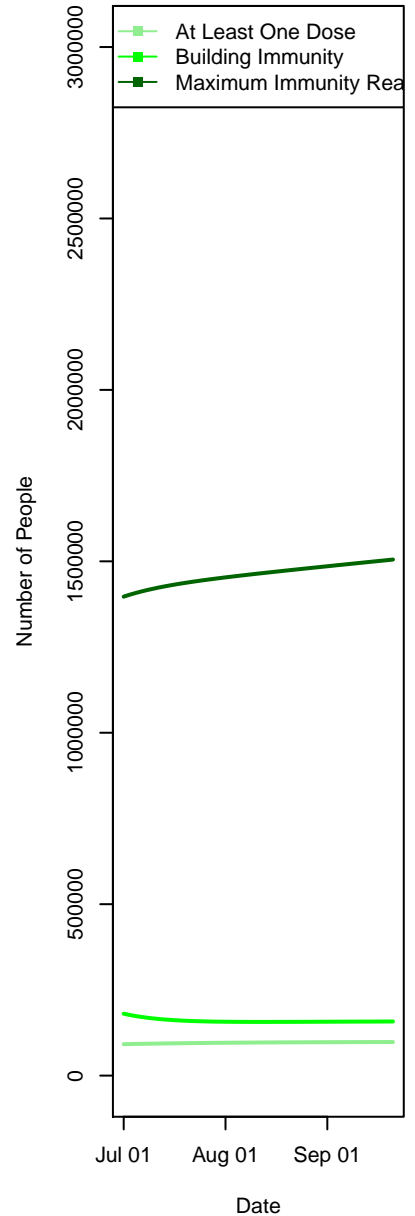
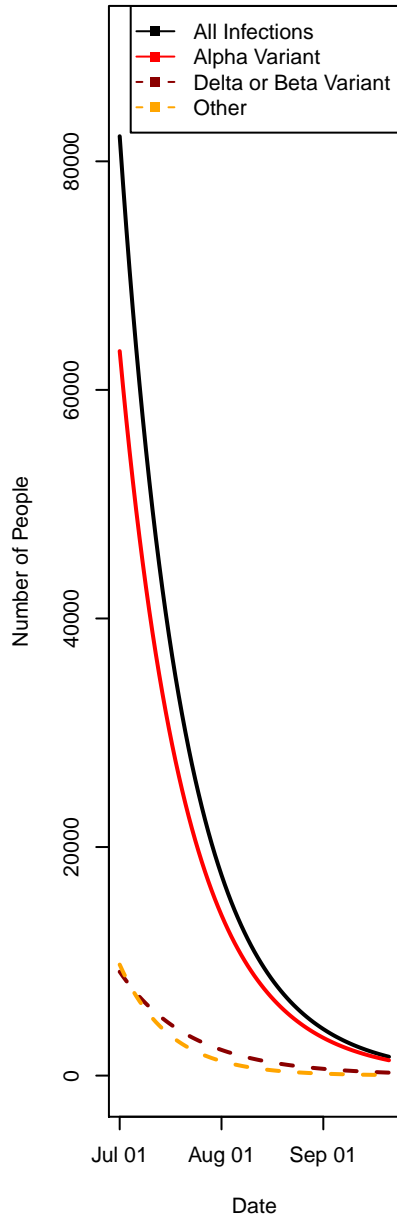
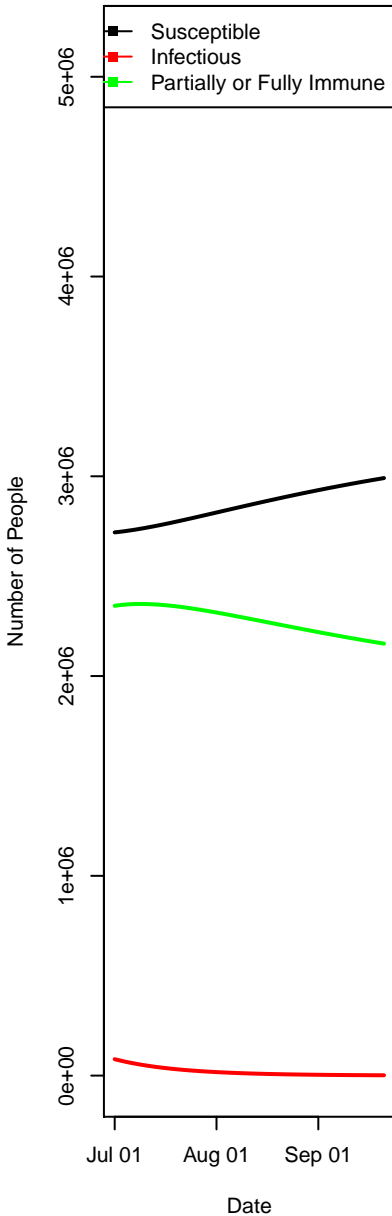
# Scenario 16



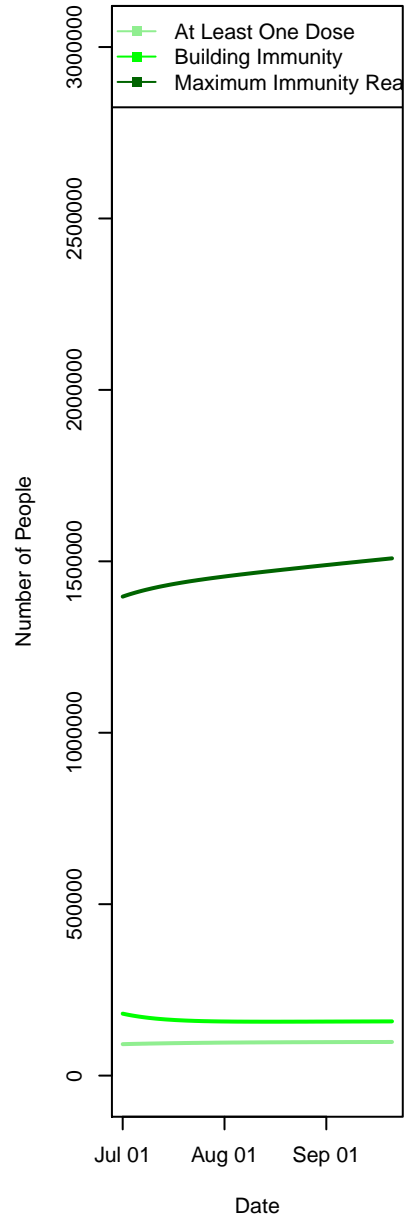
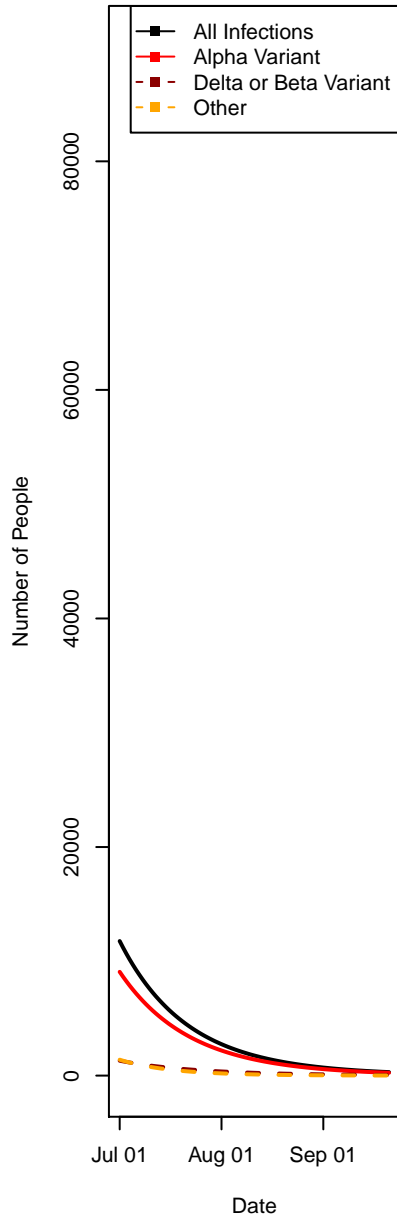
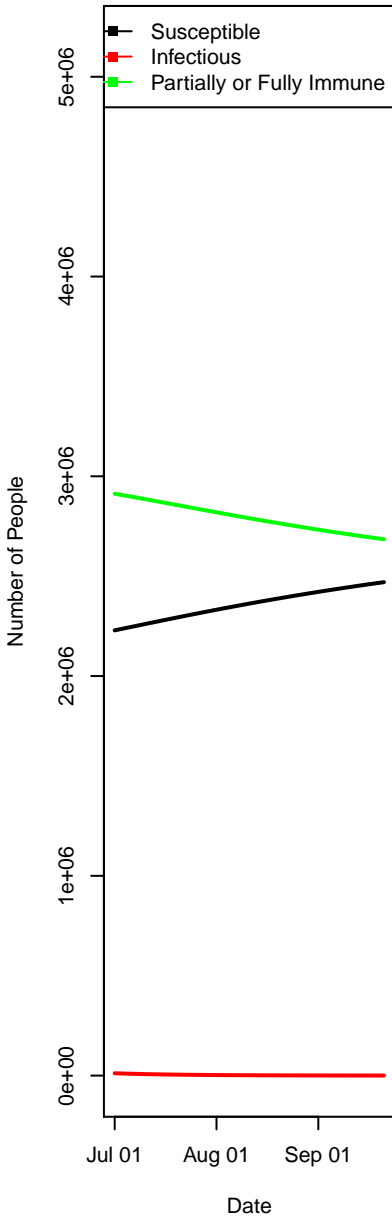
# Scenario 17



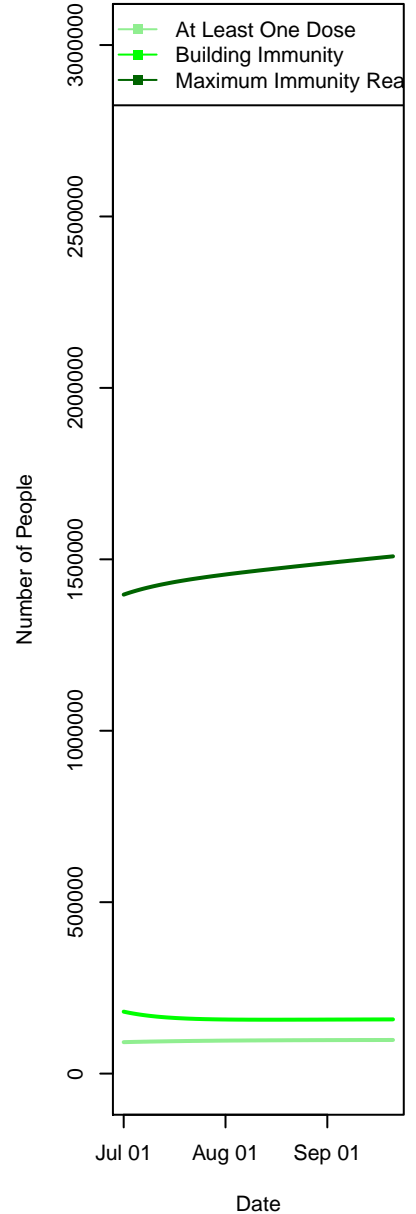
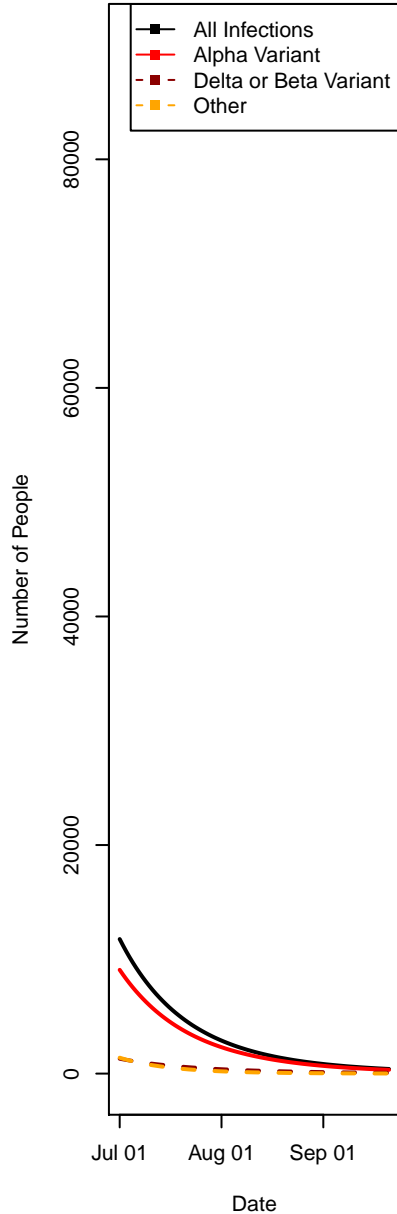
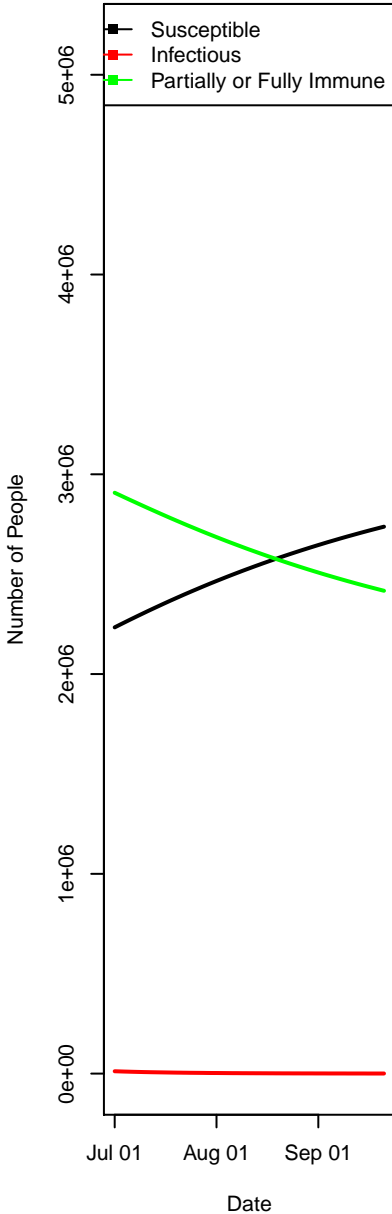
# Scenario 18



# Scenario 19

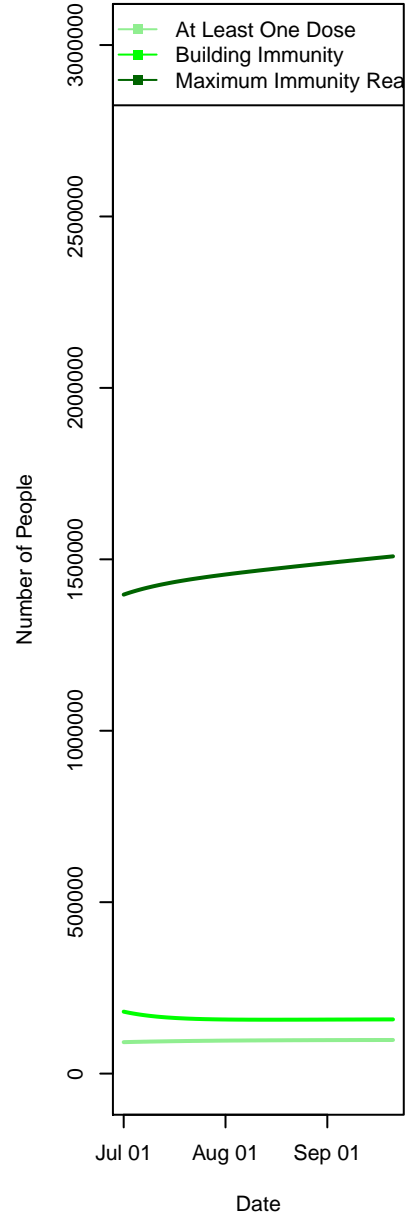
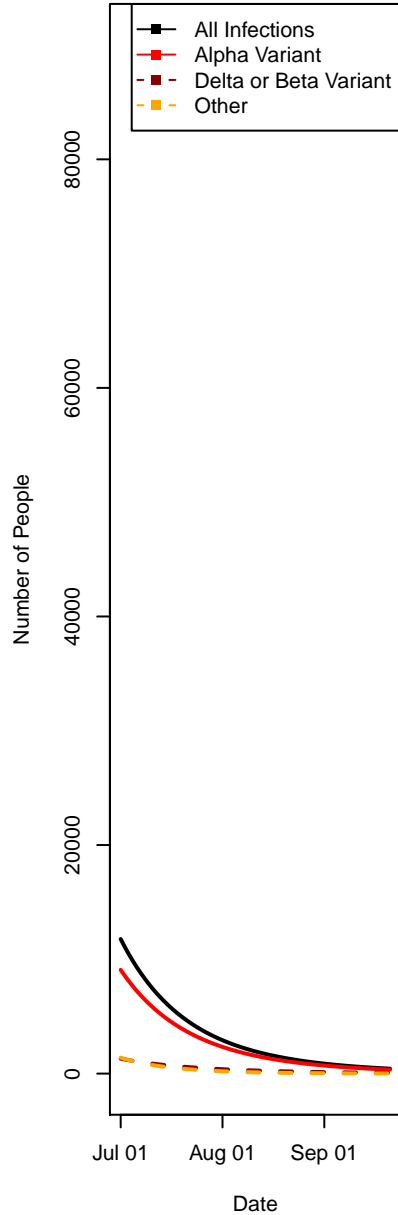
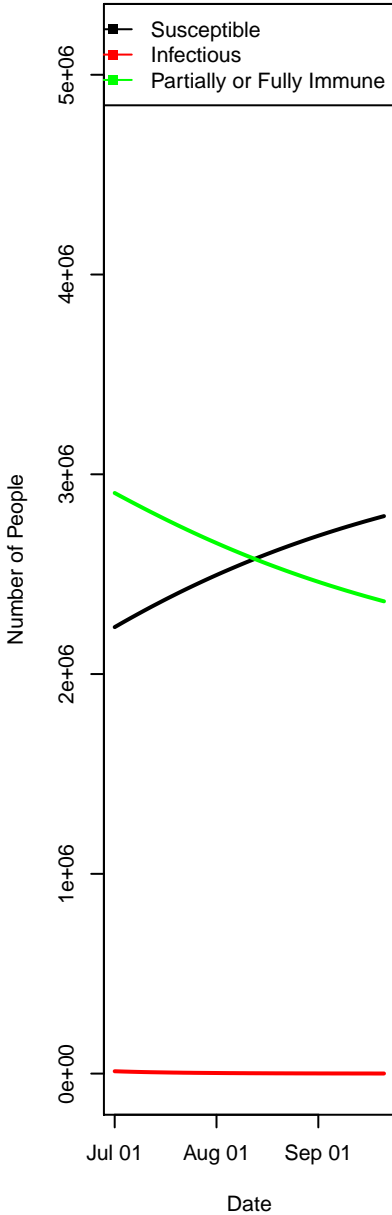


# Scenario 20

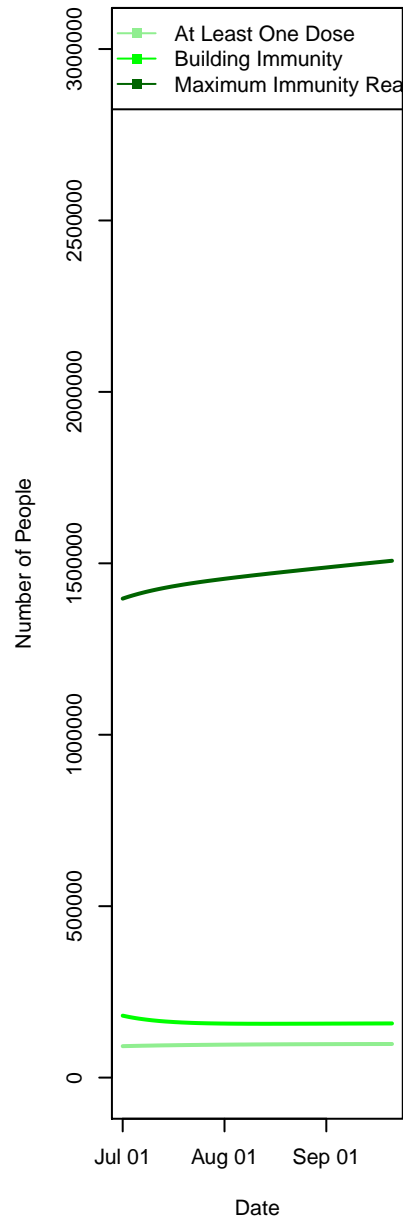
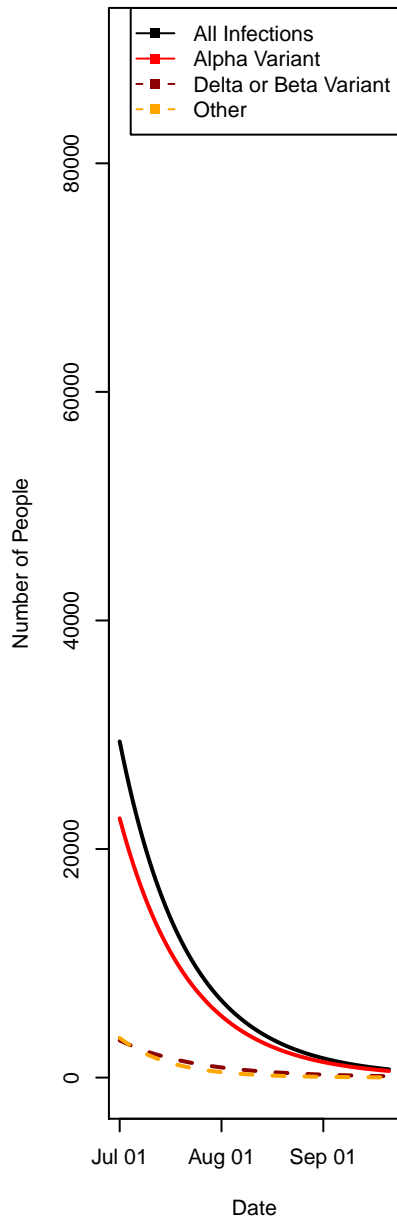
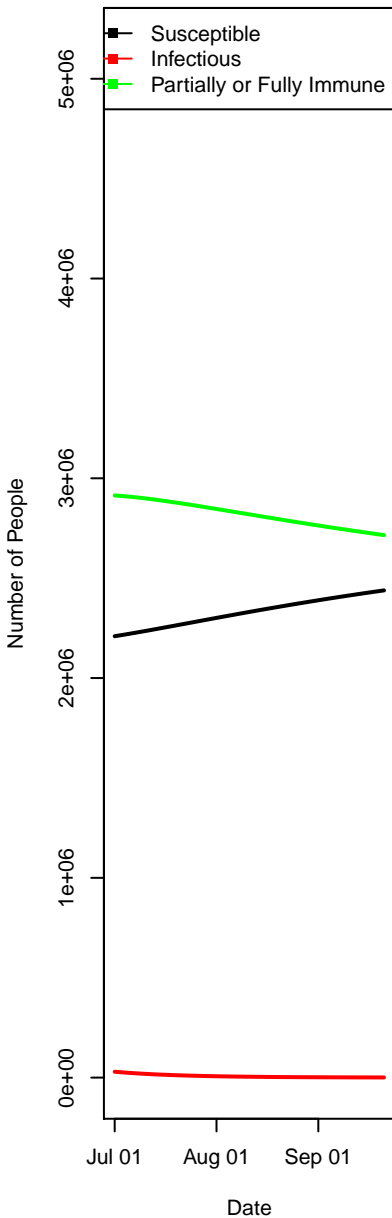




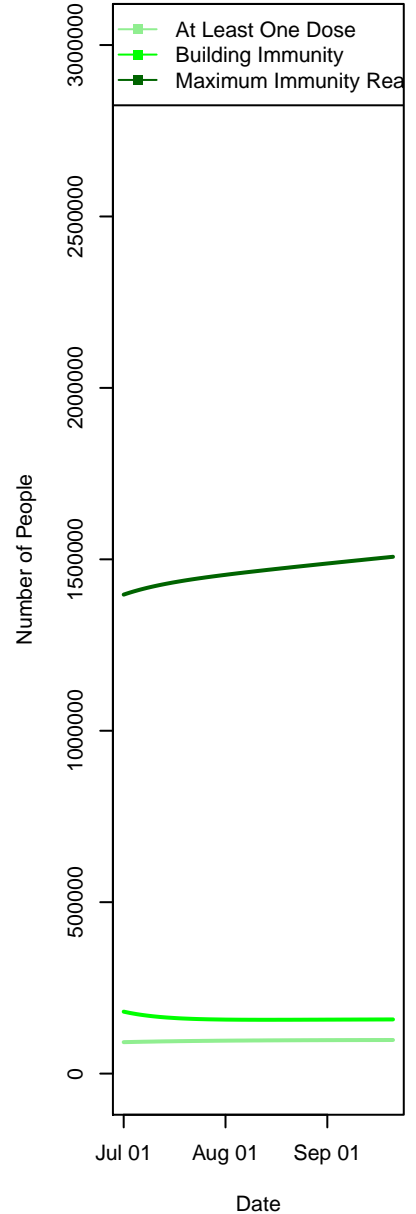
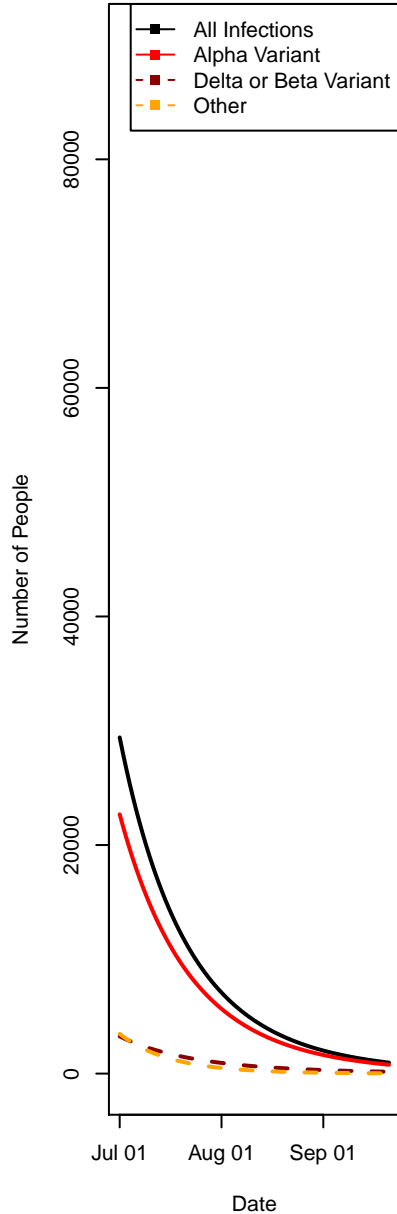
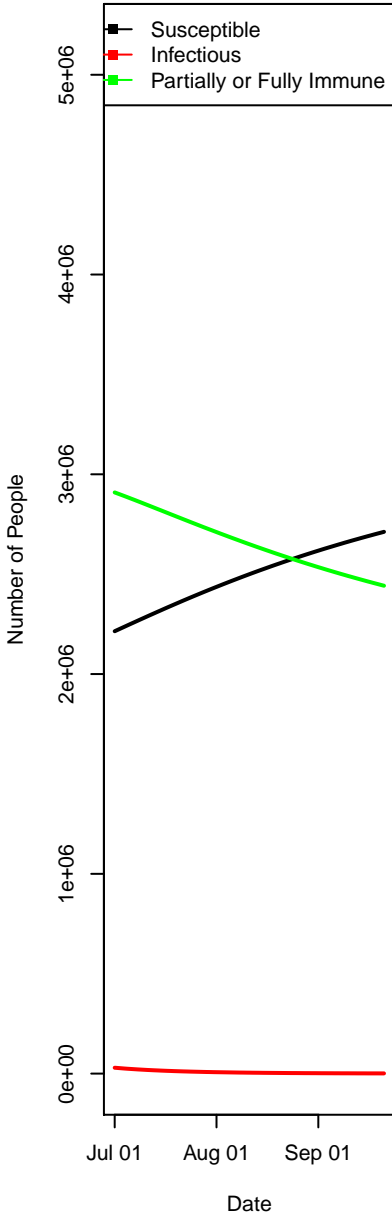
# Scenario 21



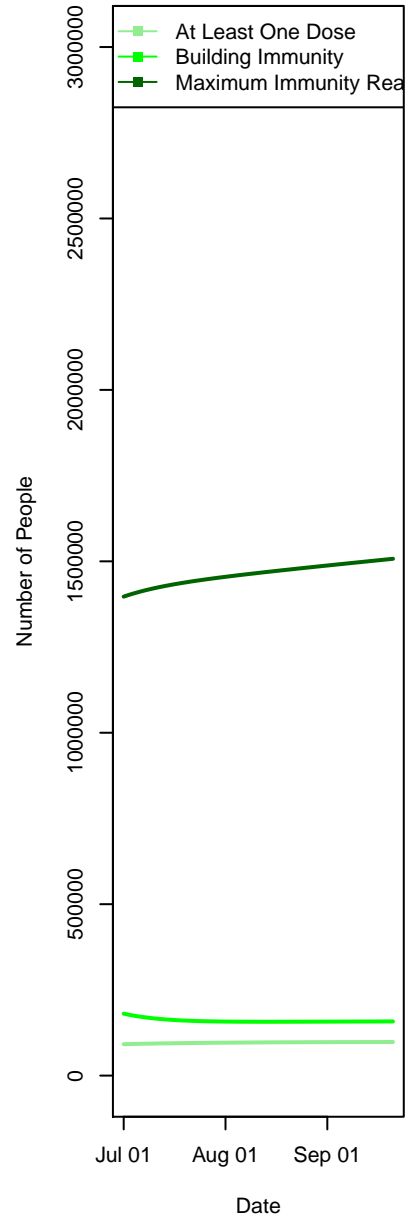
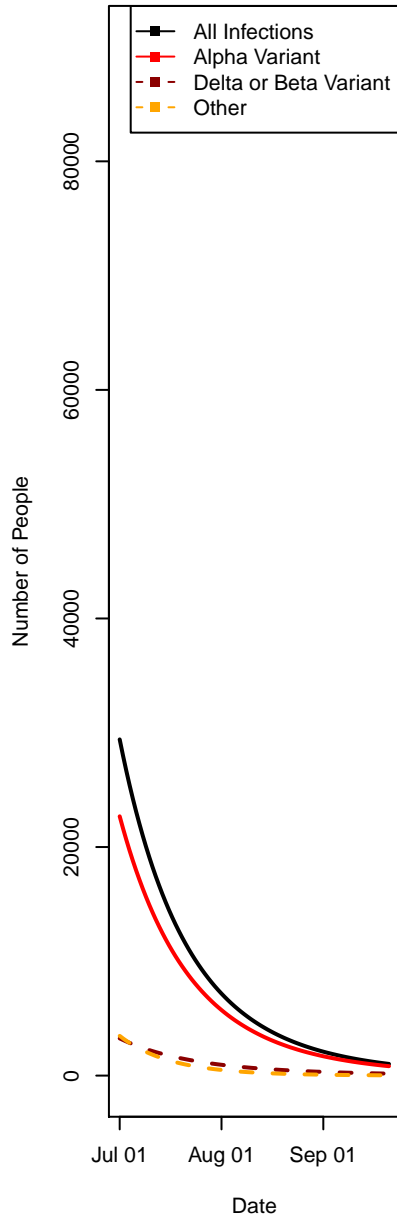
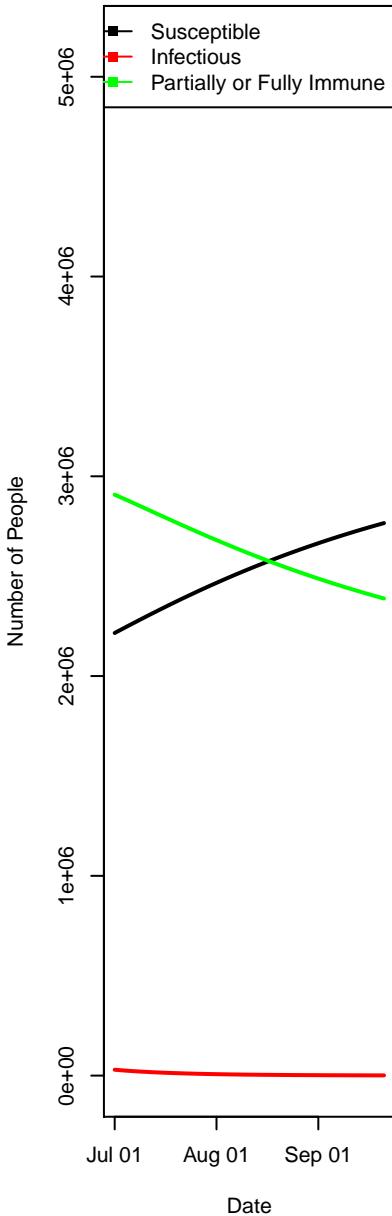
# Scenario 22



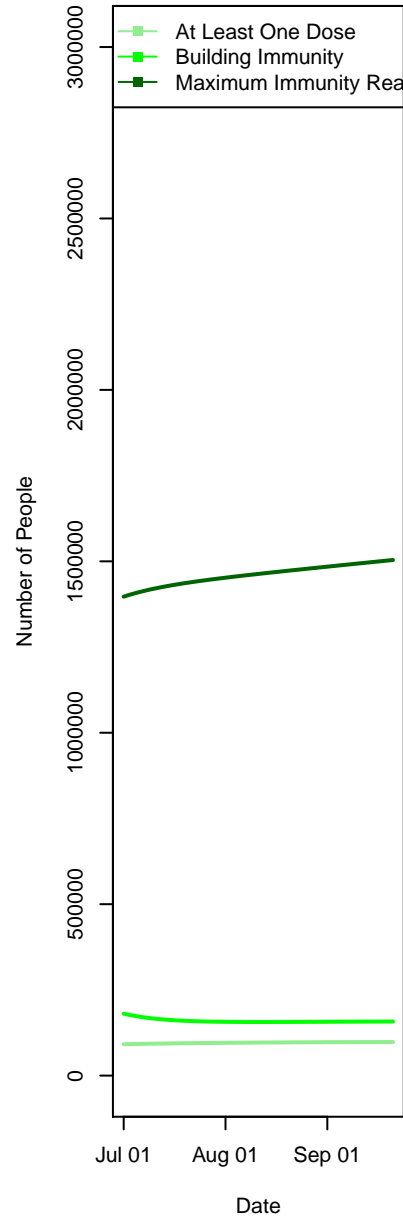
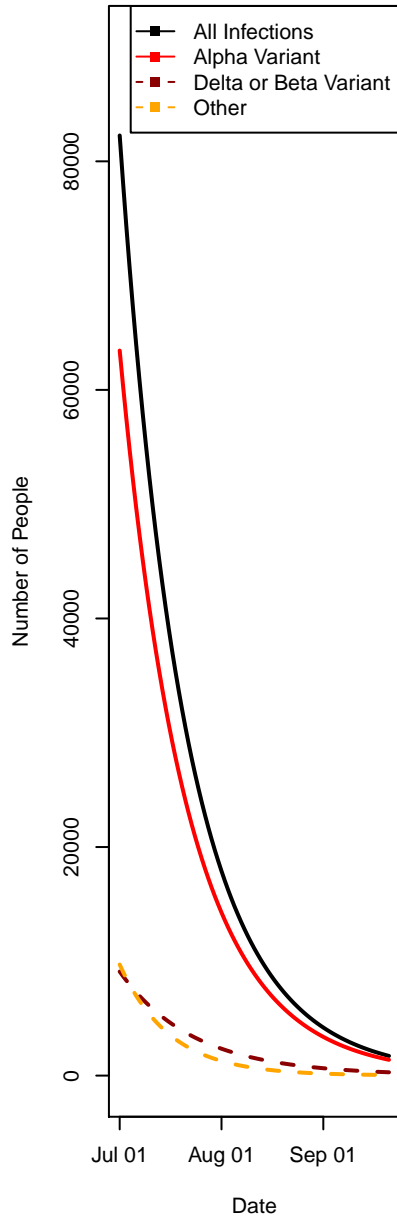
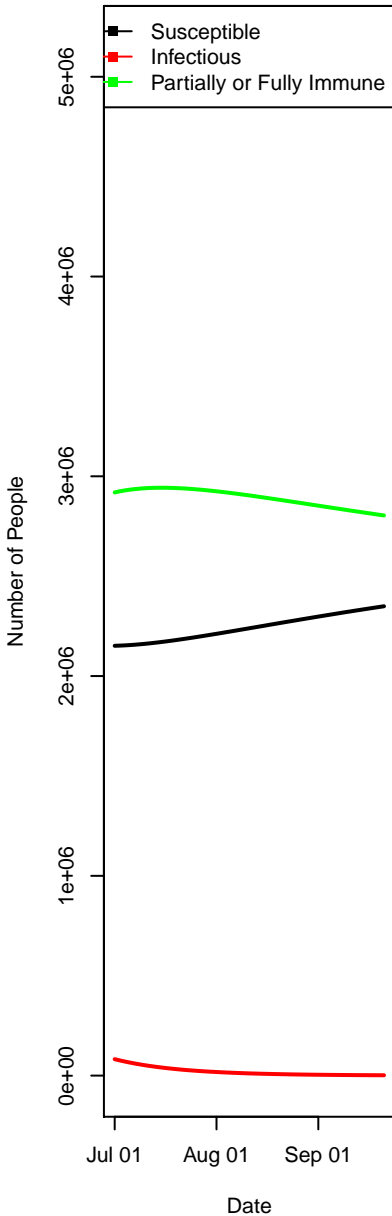
# Scenario 23



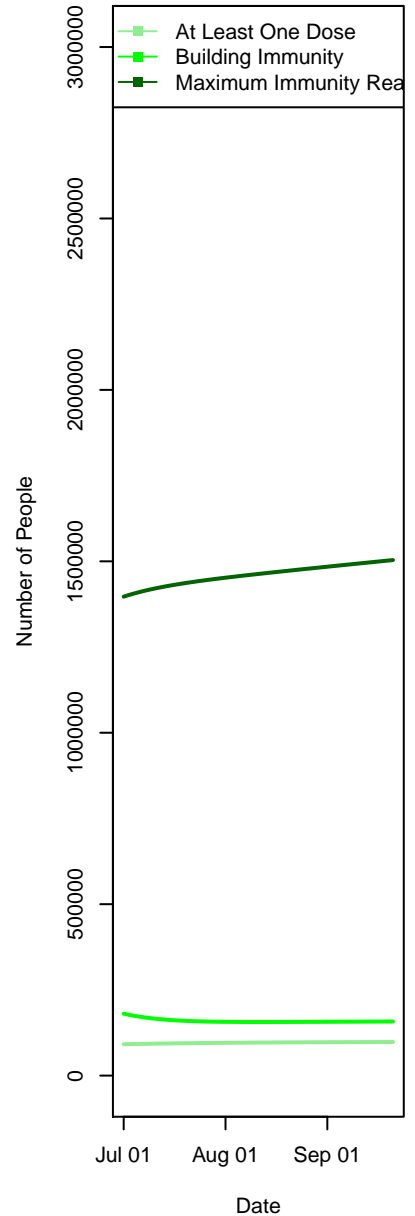
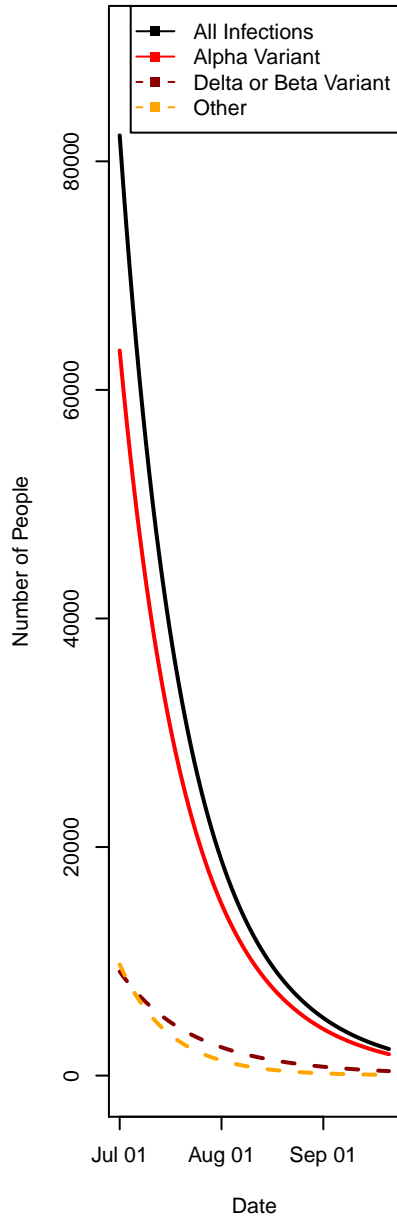
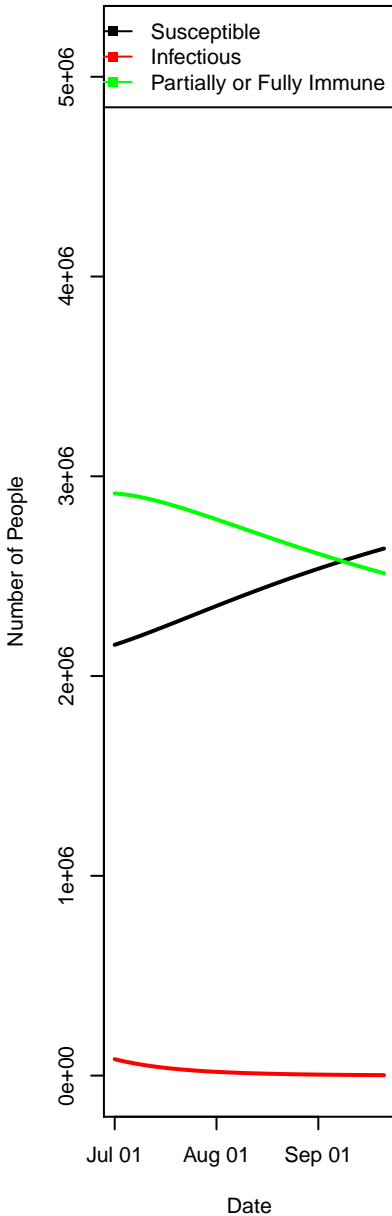
# Scenario 24



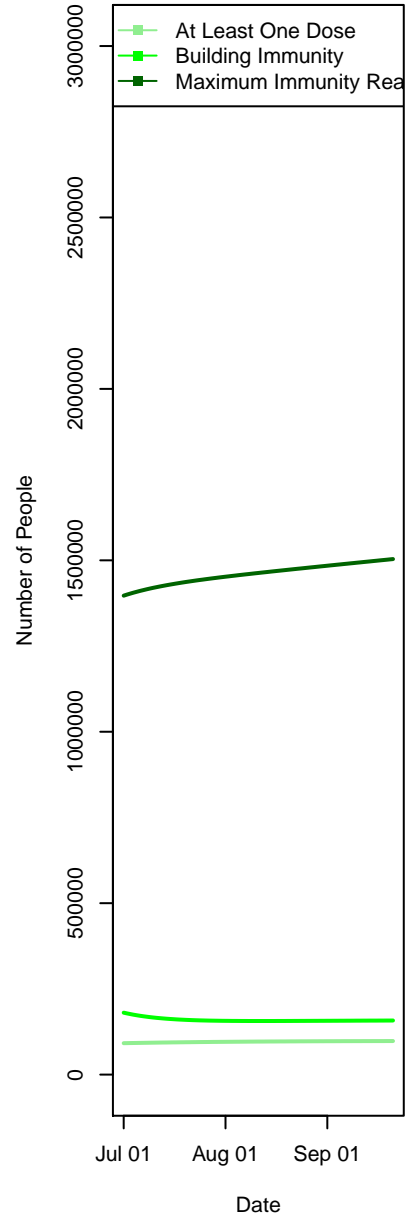
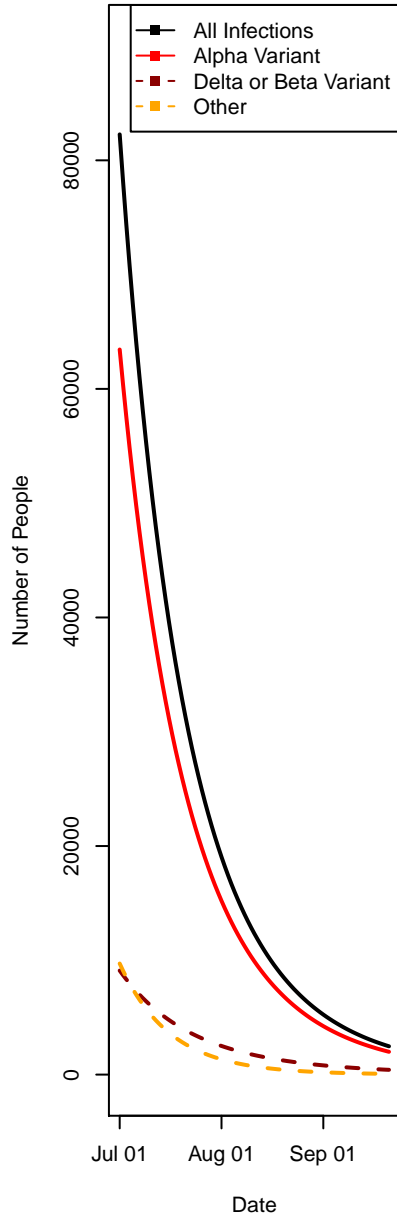
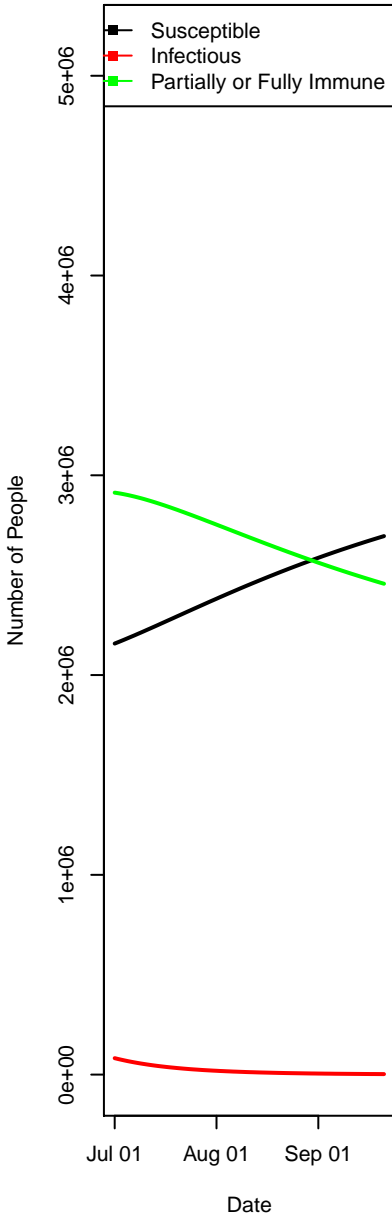
# Scenario 25



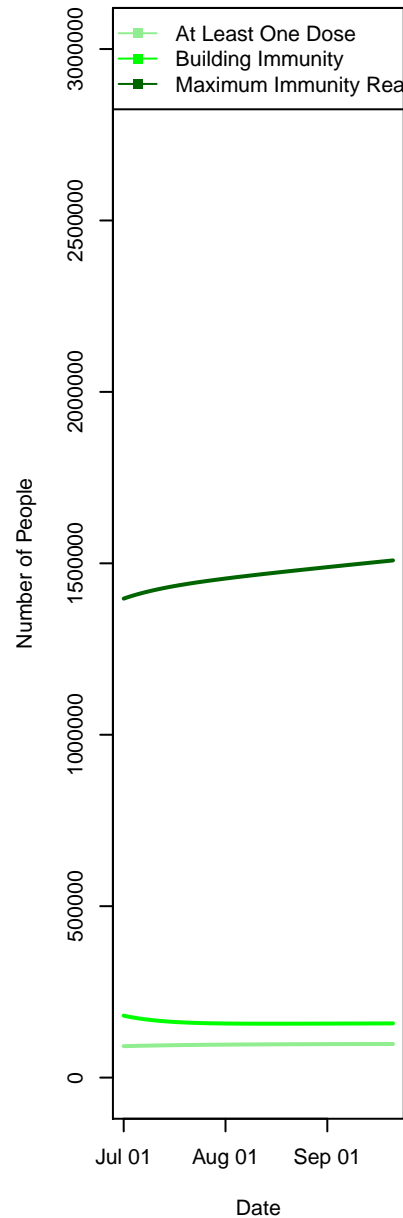
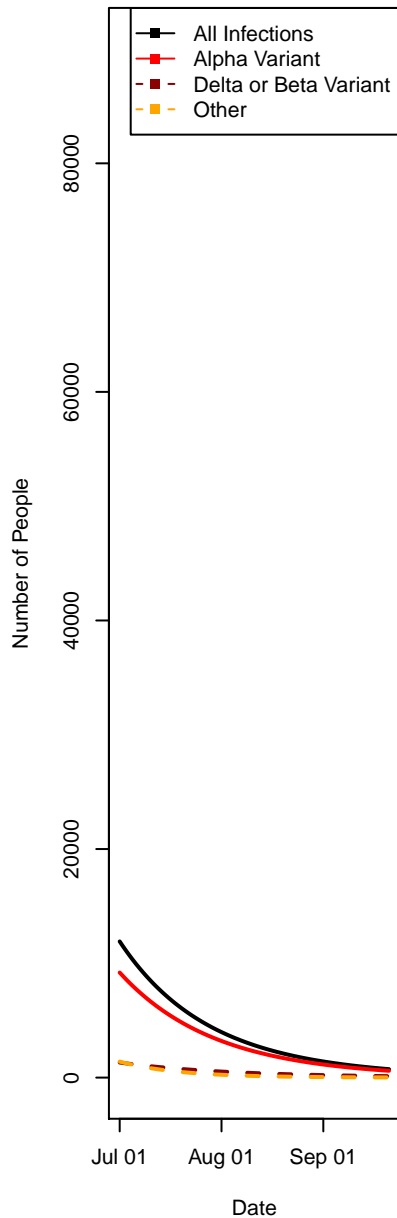
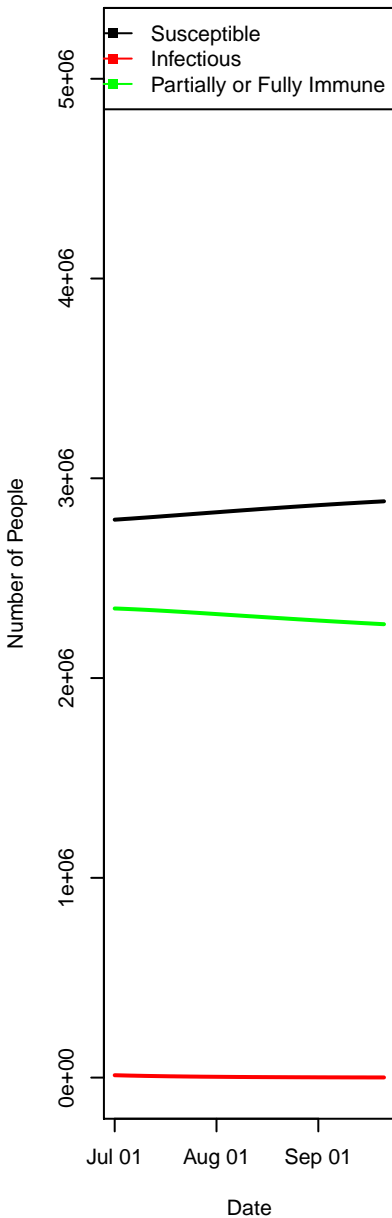
# Scenario 26



# Scenario 27

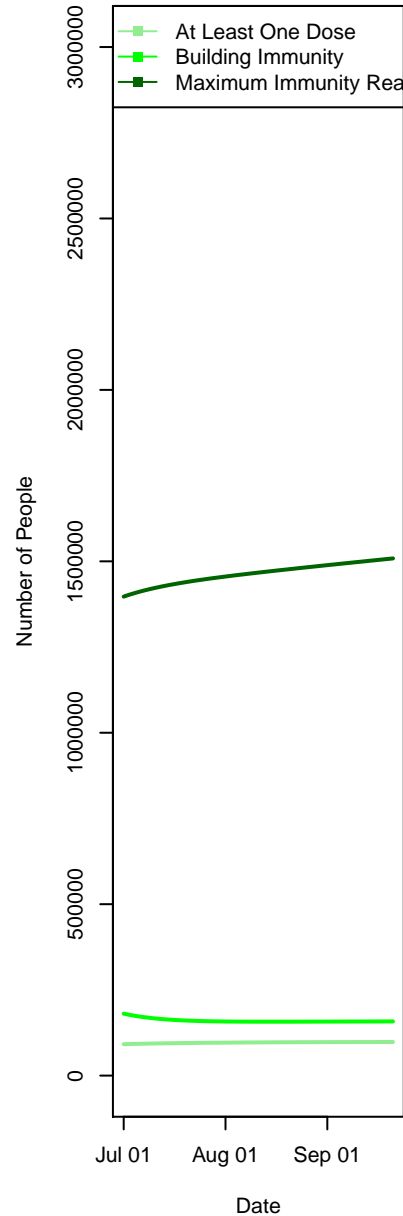
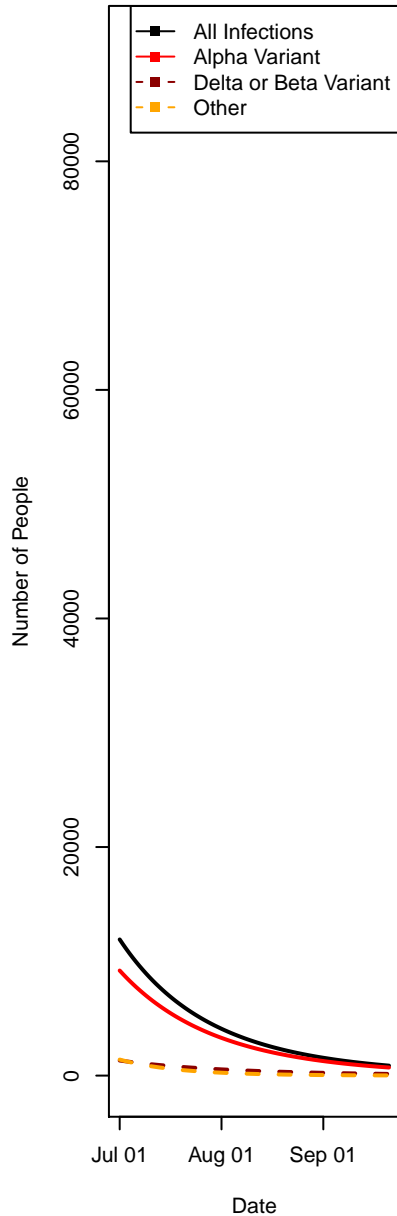
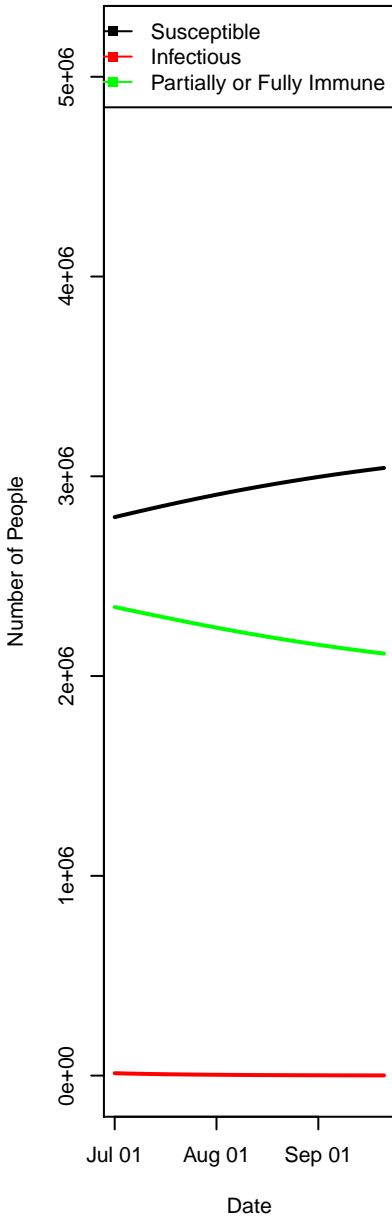


# Scenario 28

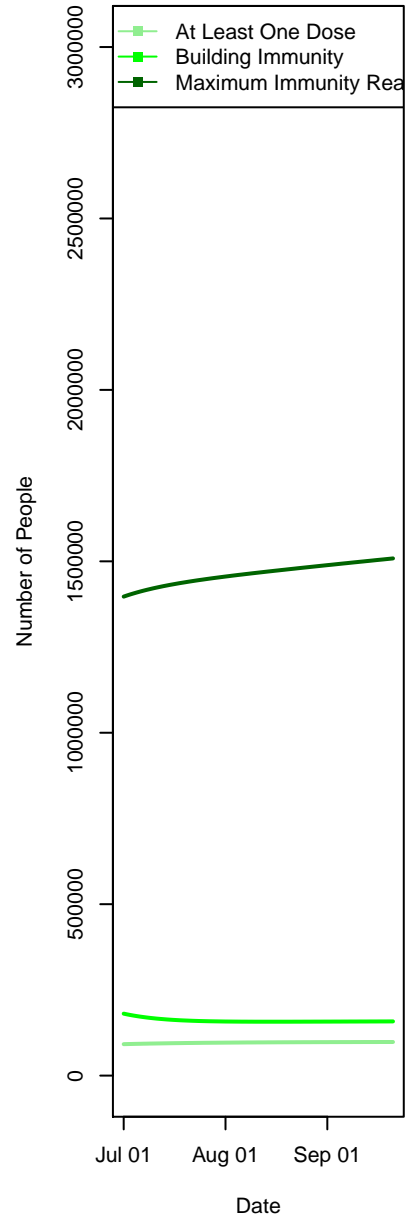
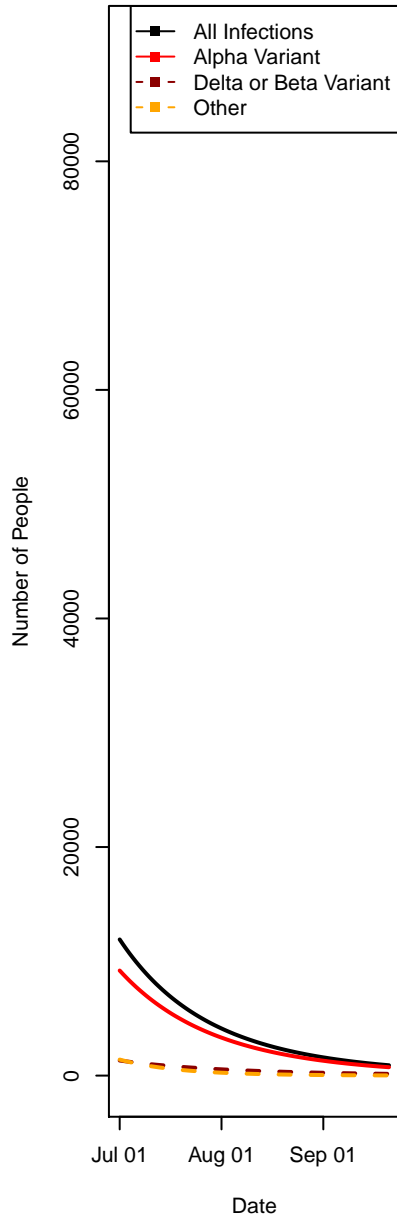
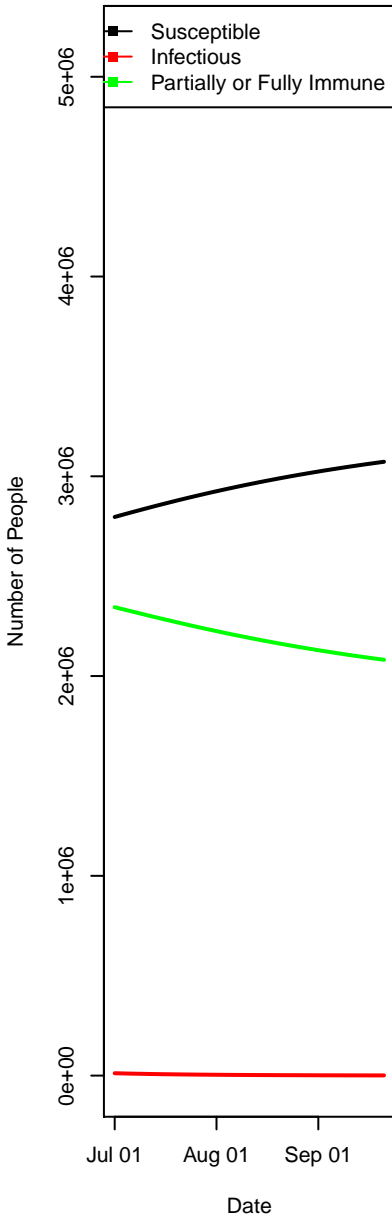




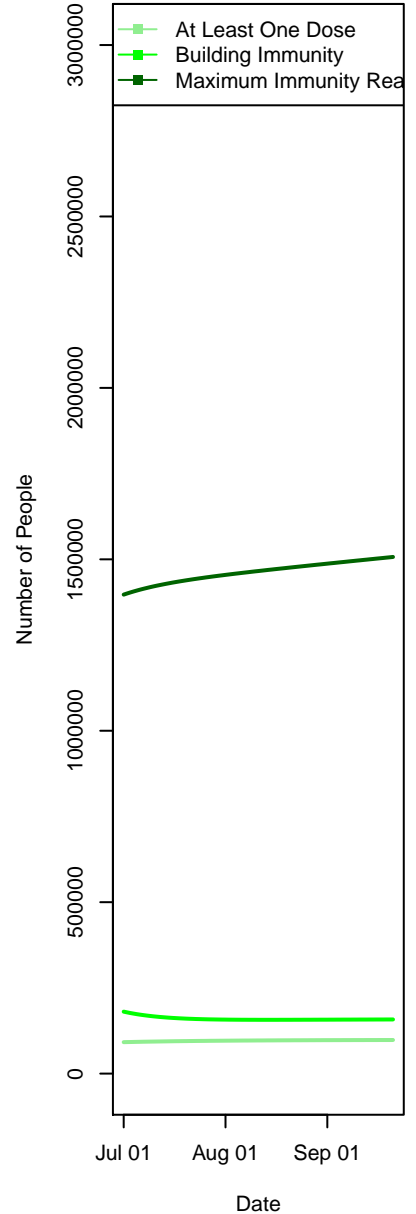
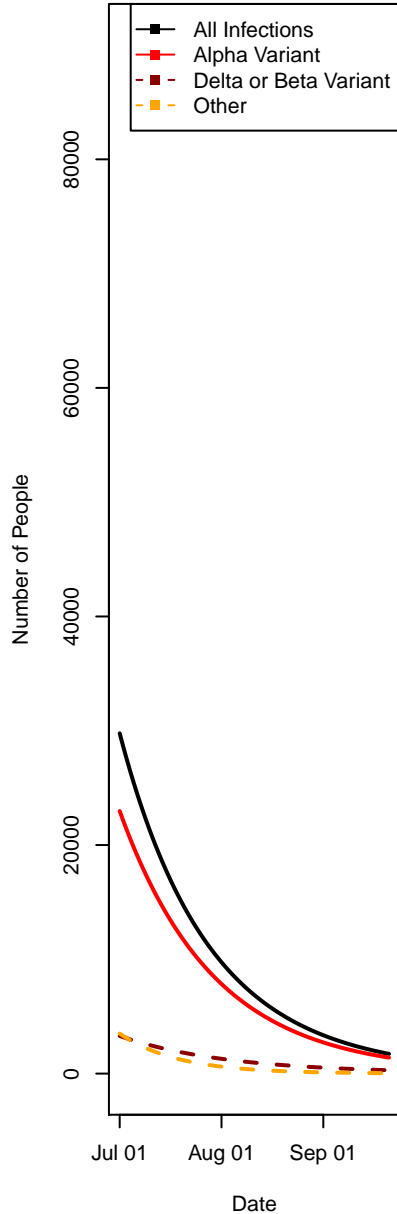
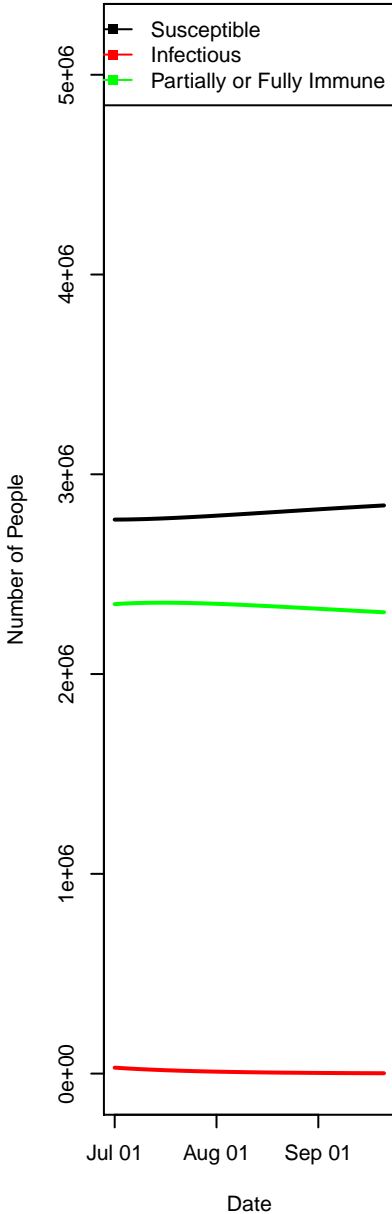
# Scenario 29



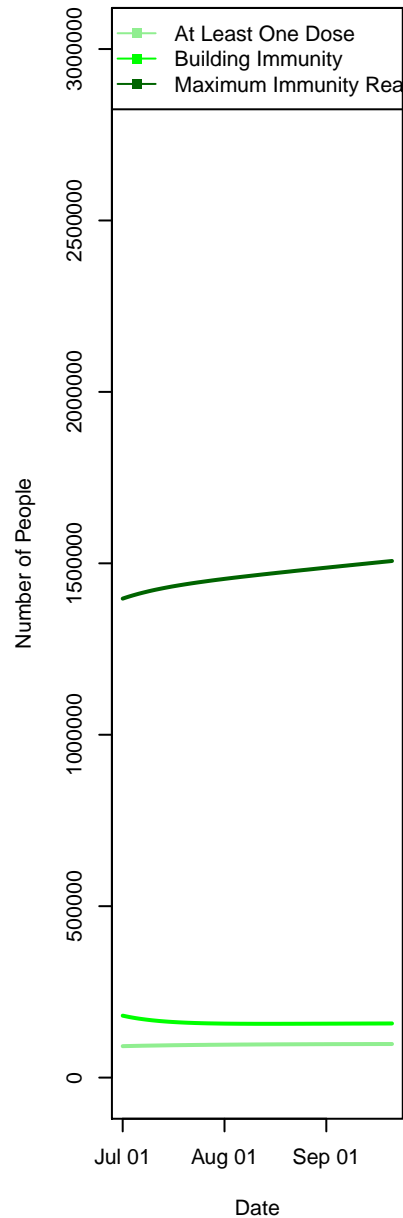
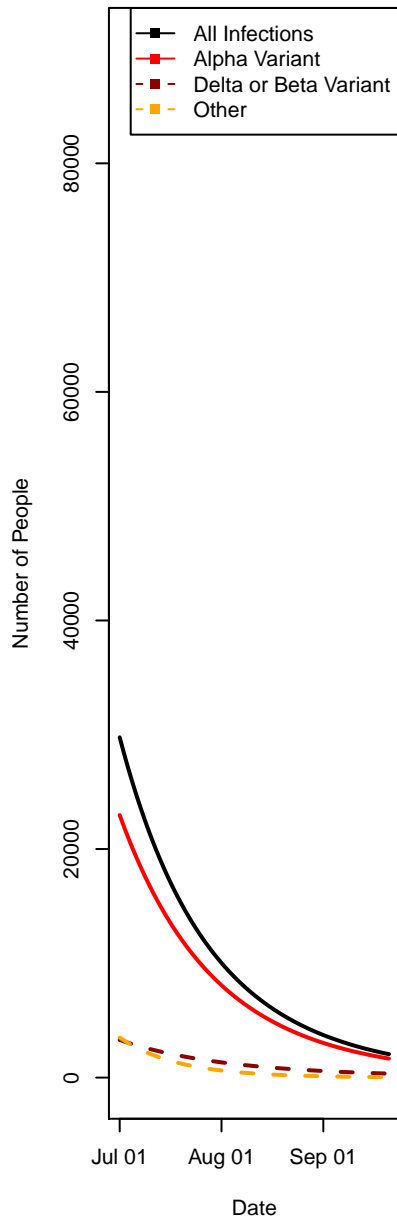
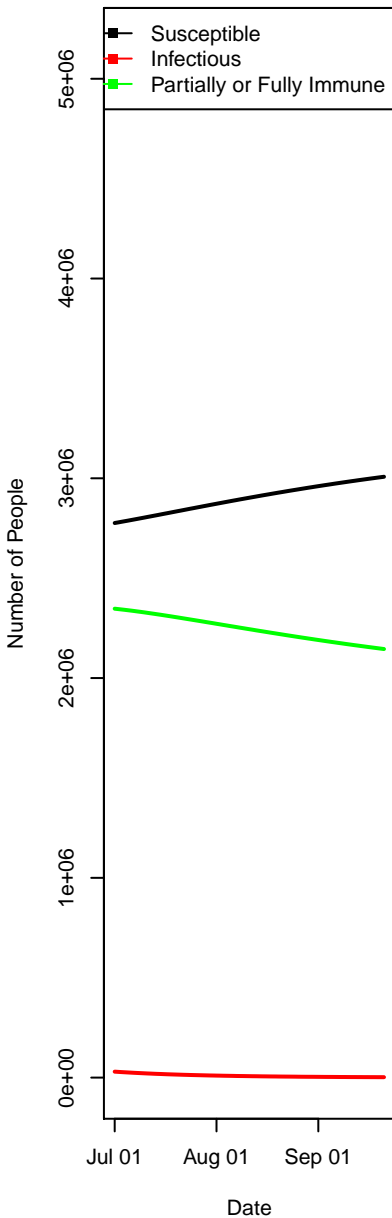
# Scenario 30



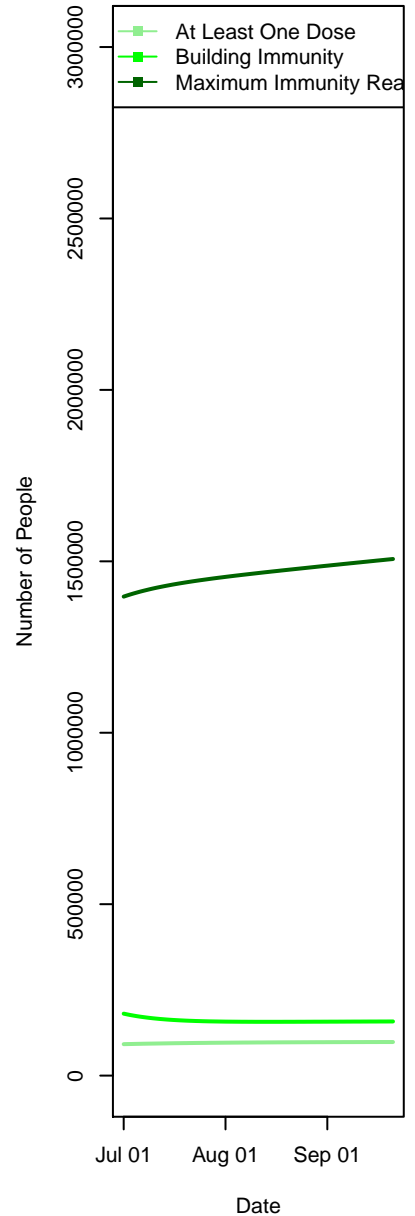
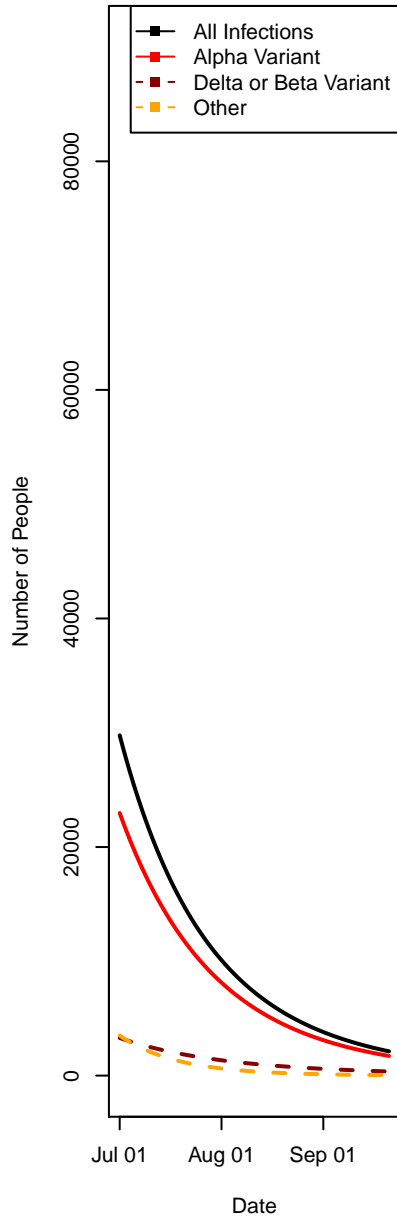
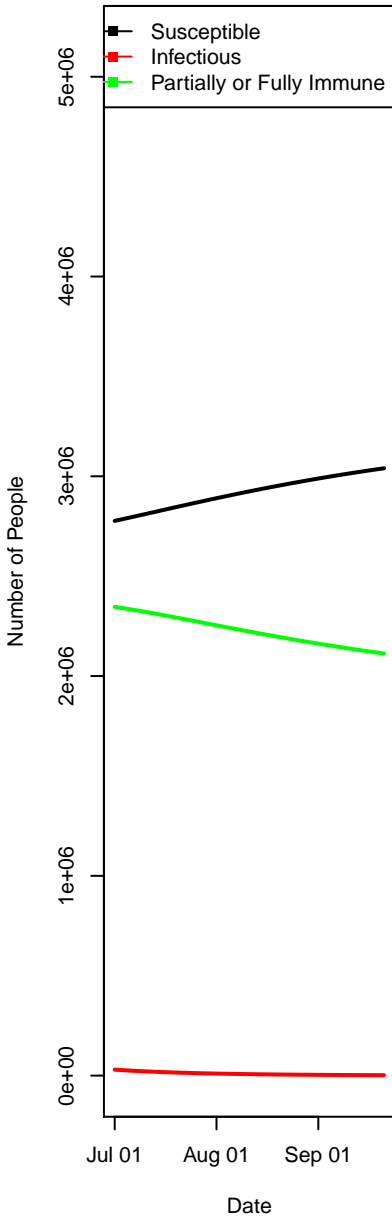
# Scenario 31



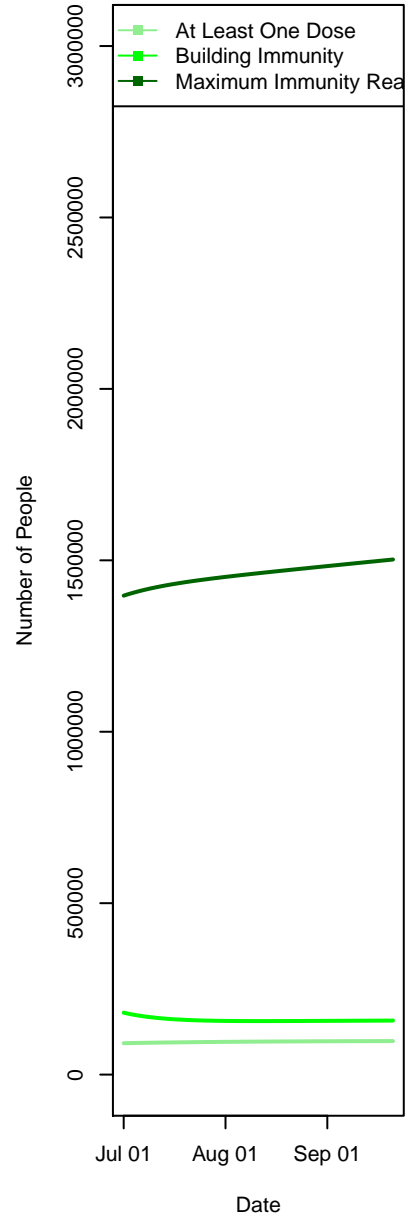
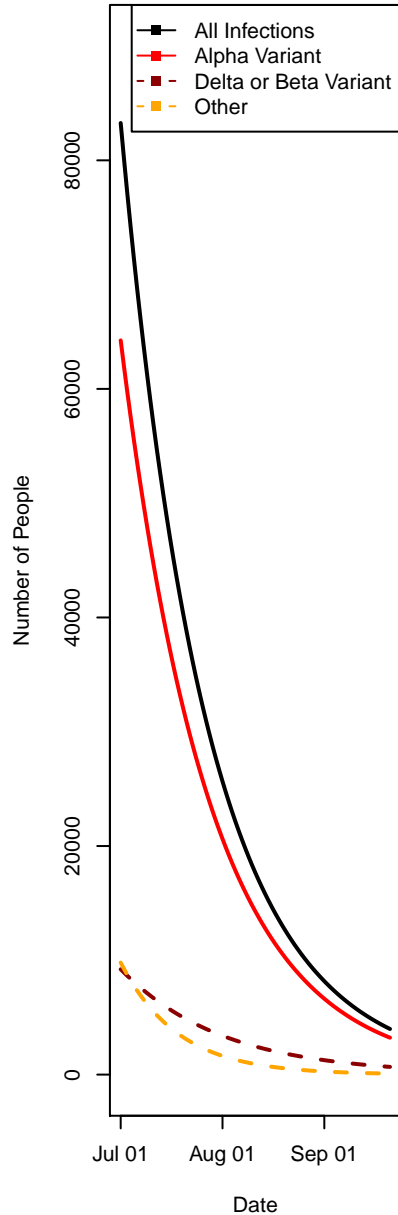
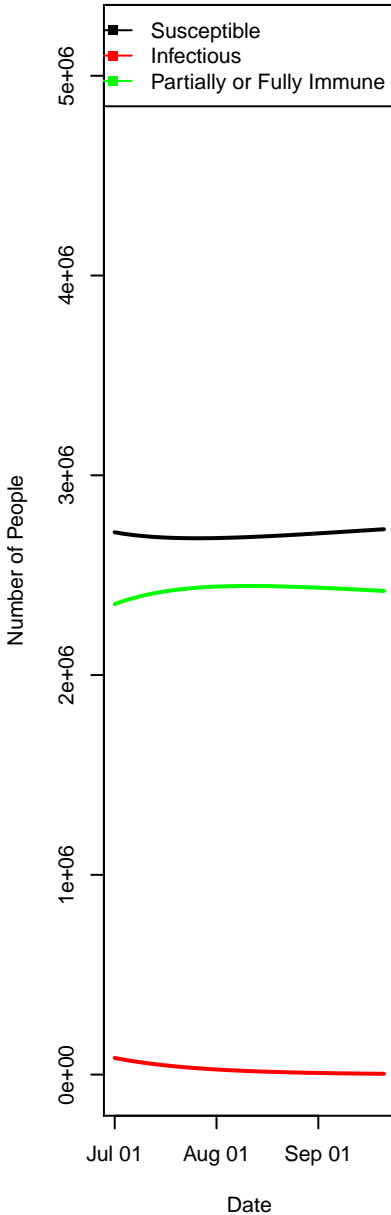
# Scenario 32



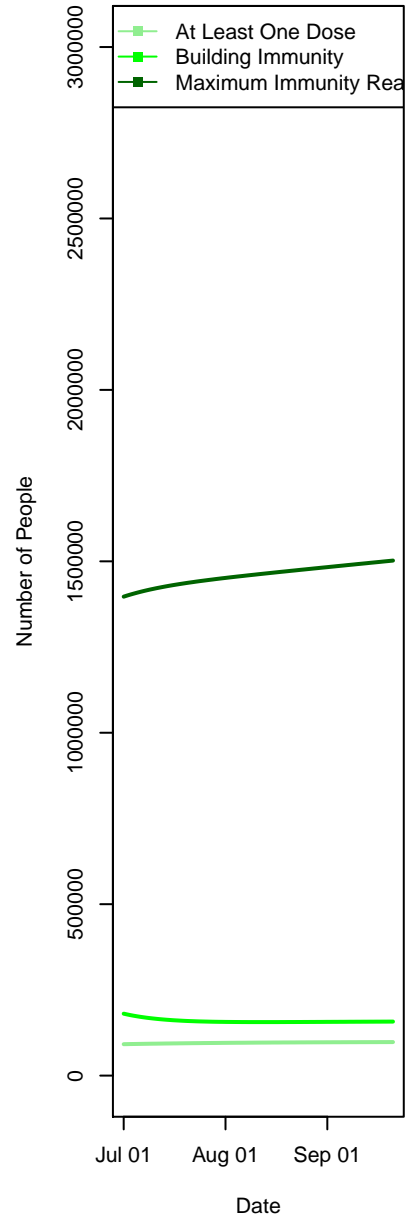
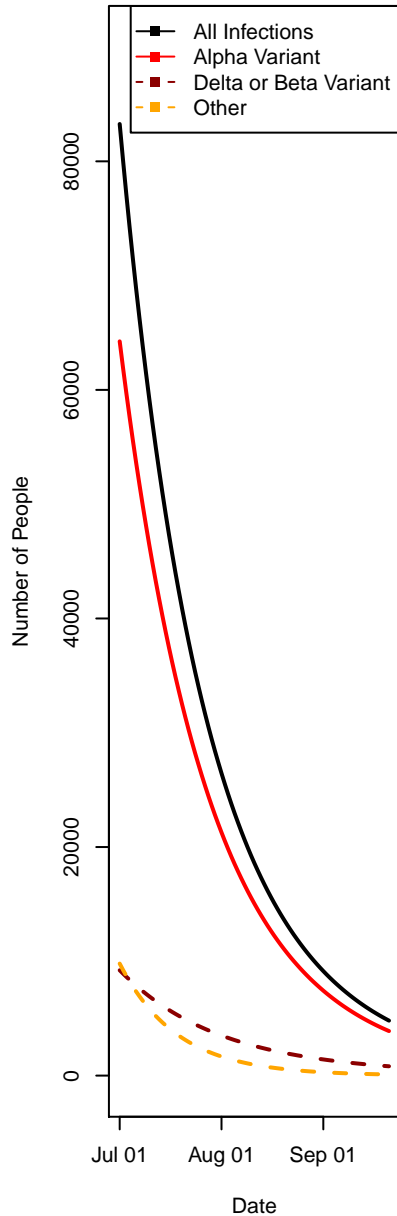
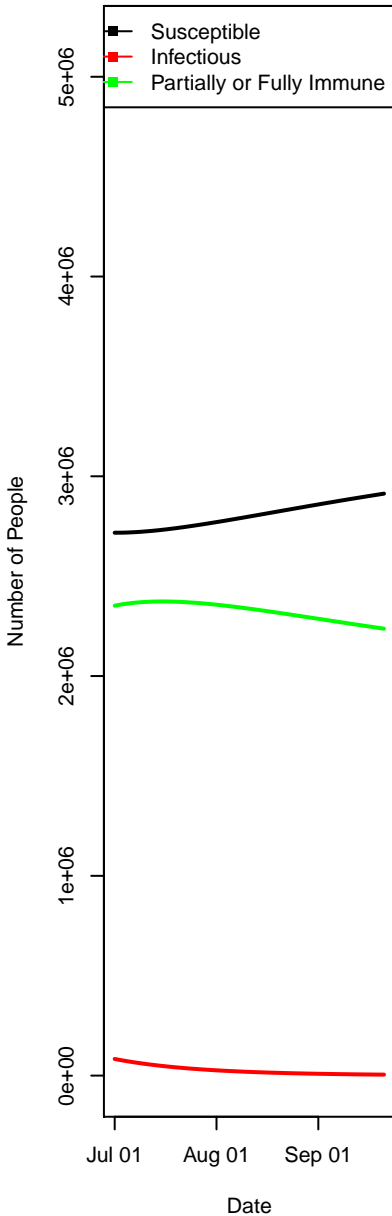
# Scenario 33



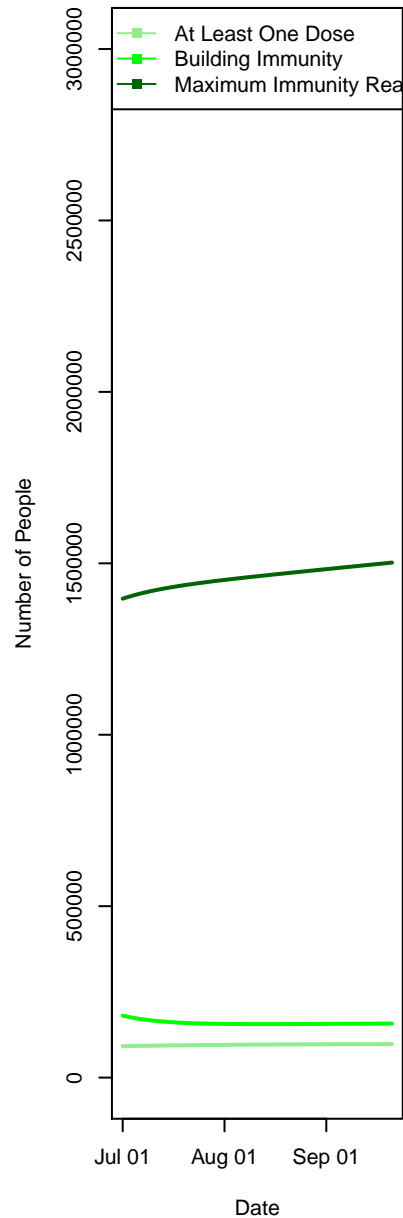
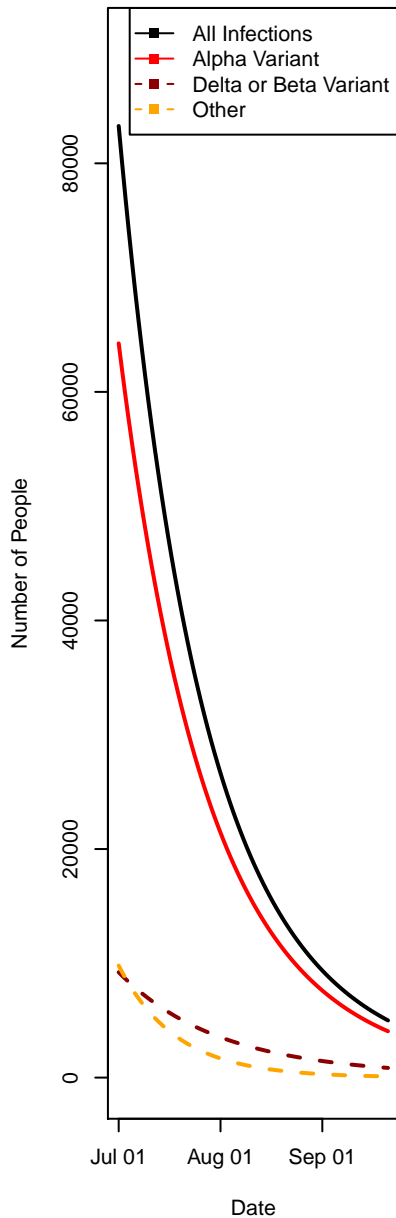
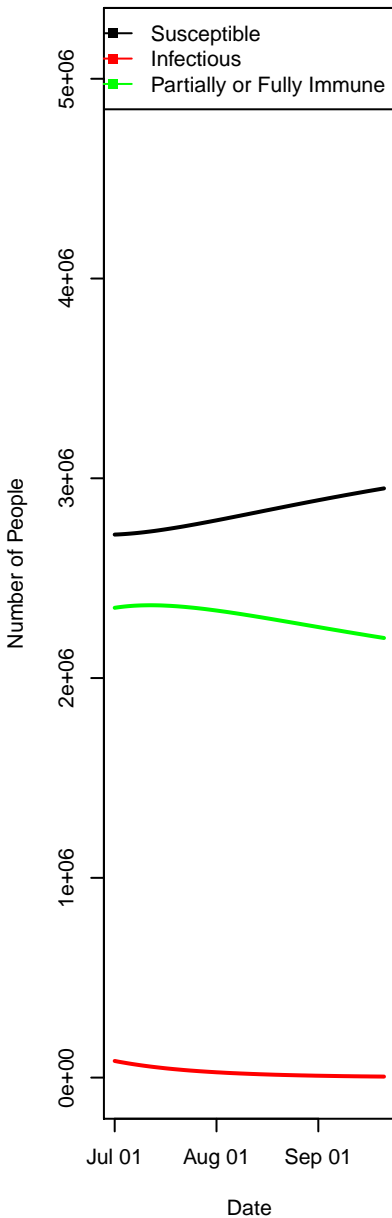
# Scenario 34



# Scenario 35

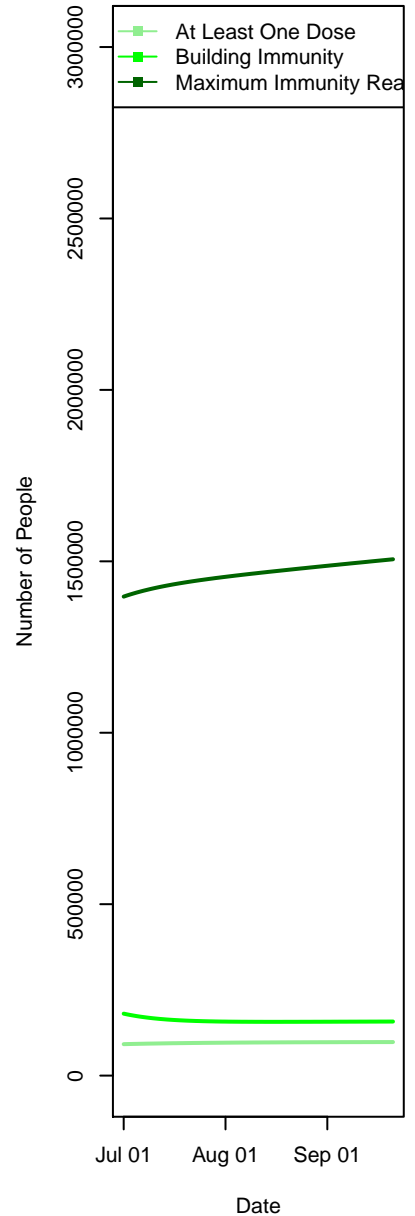
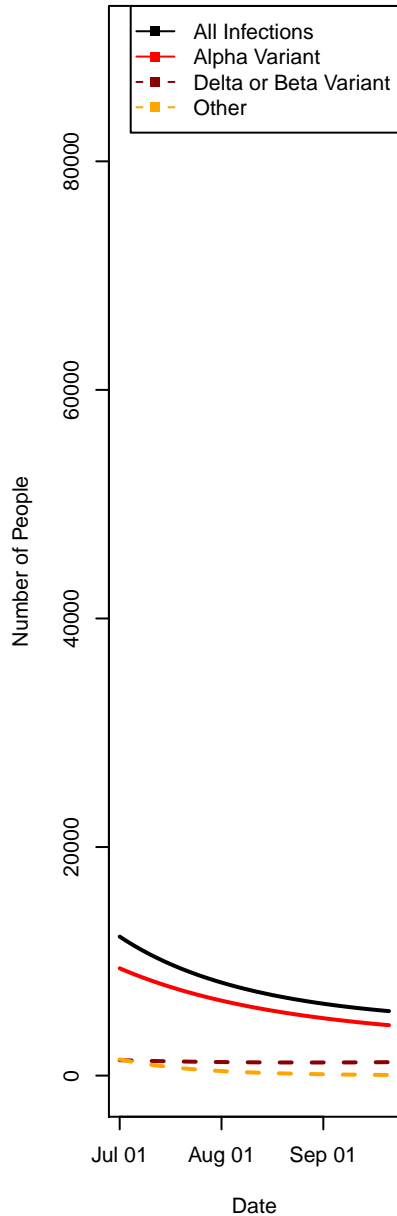
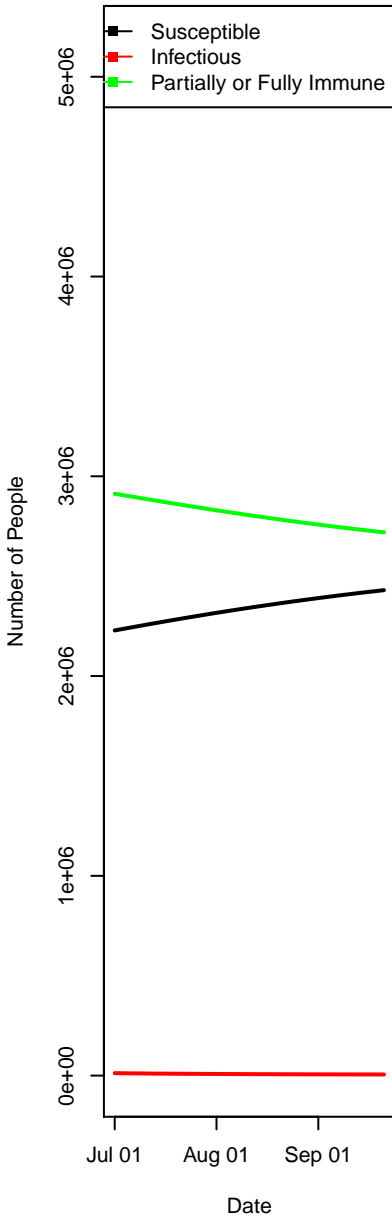


# Scenario 36

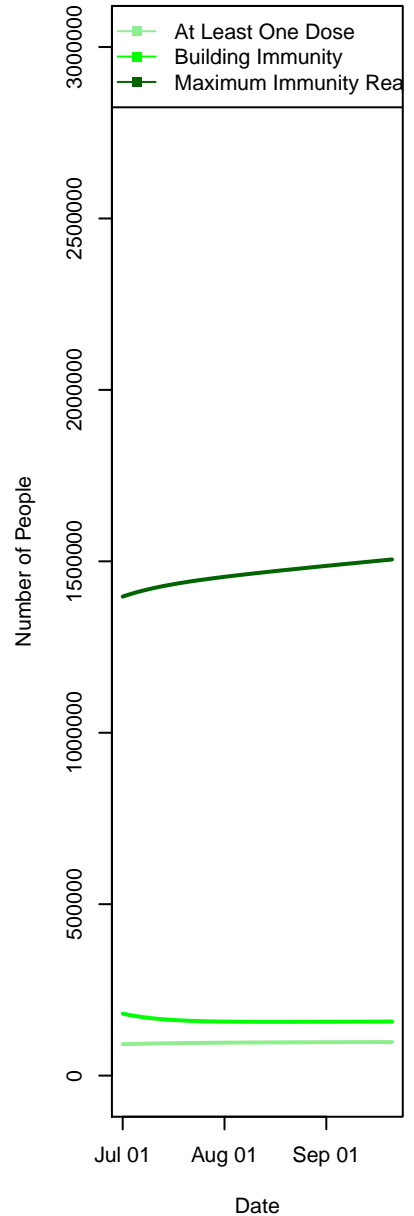
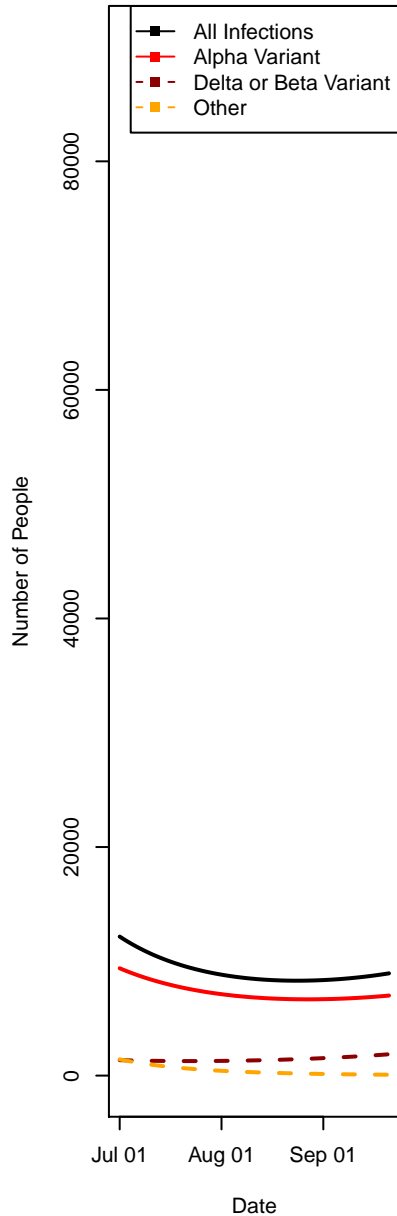
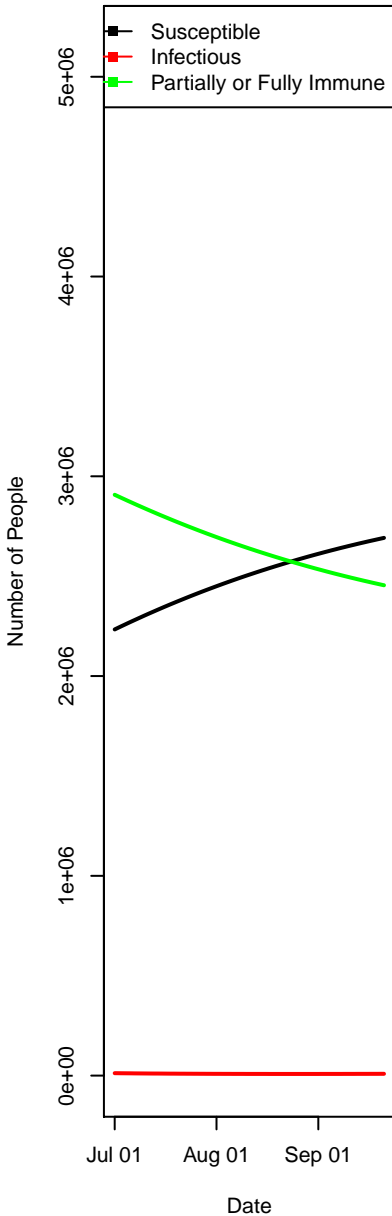




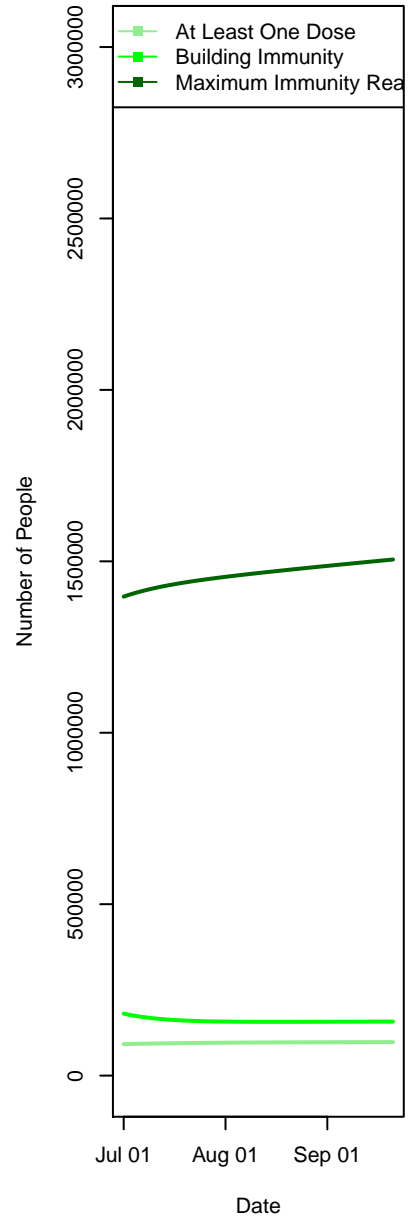
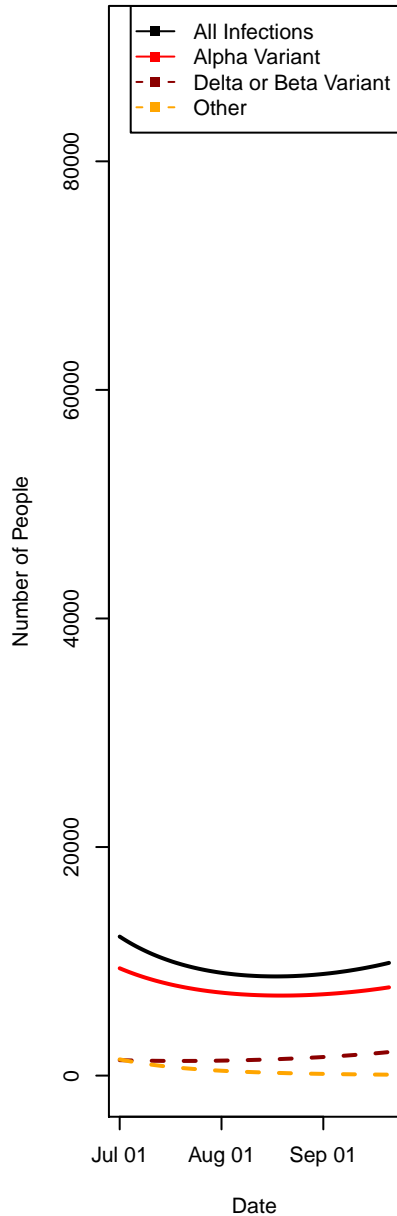
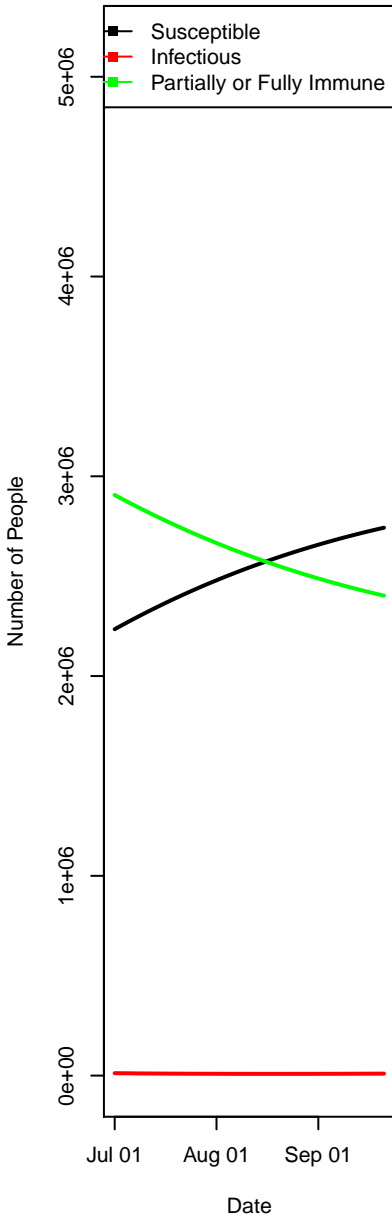
# Scenario 37



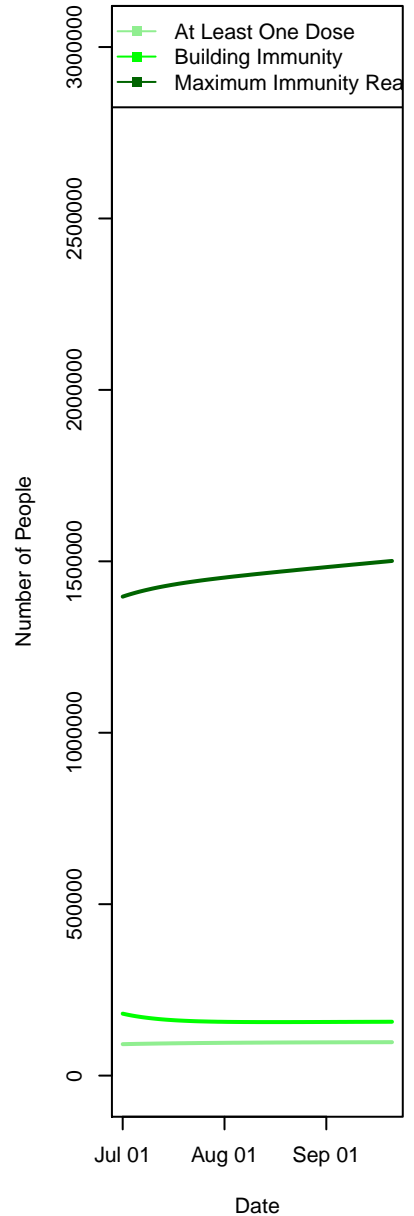
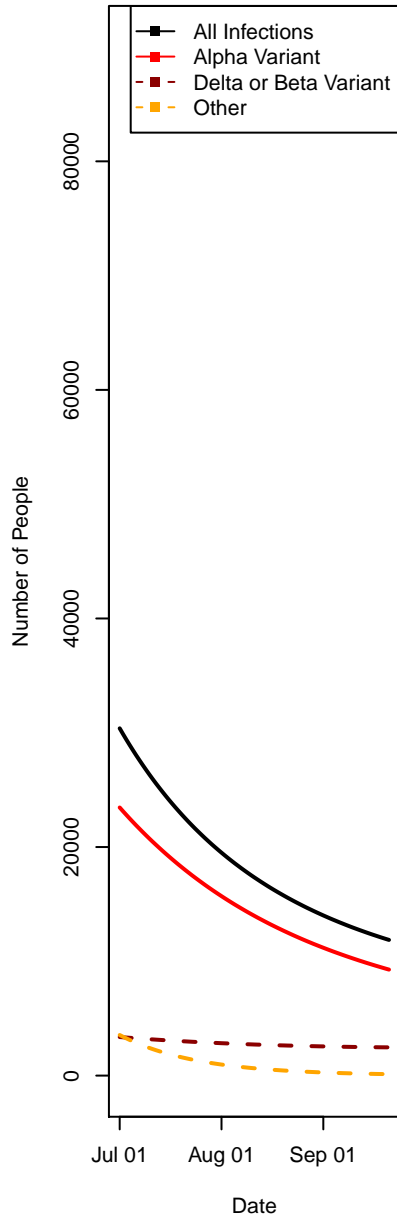
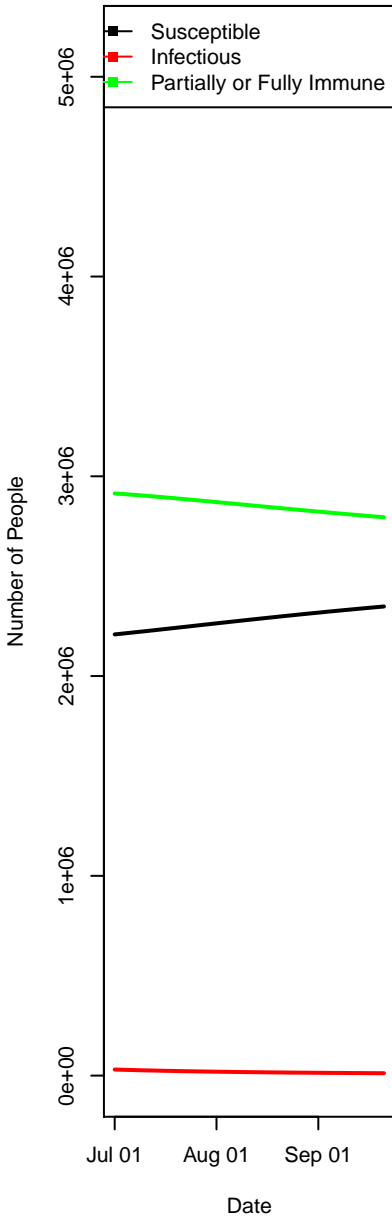
# Scenario 38



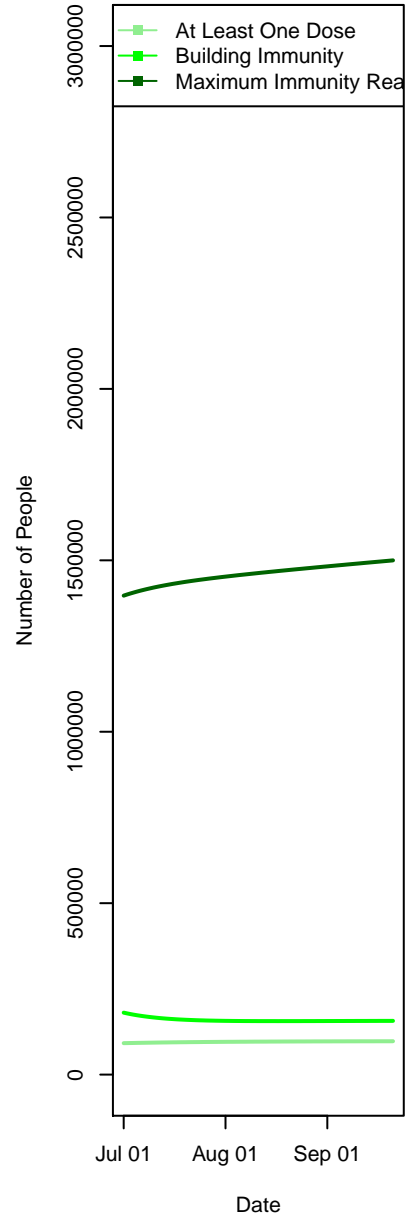
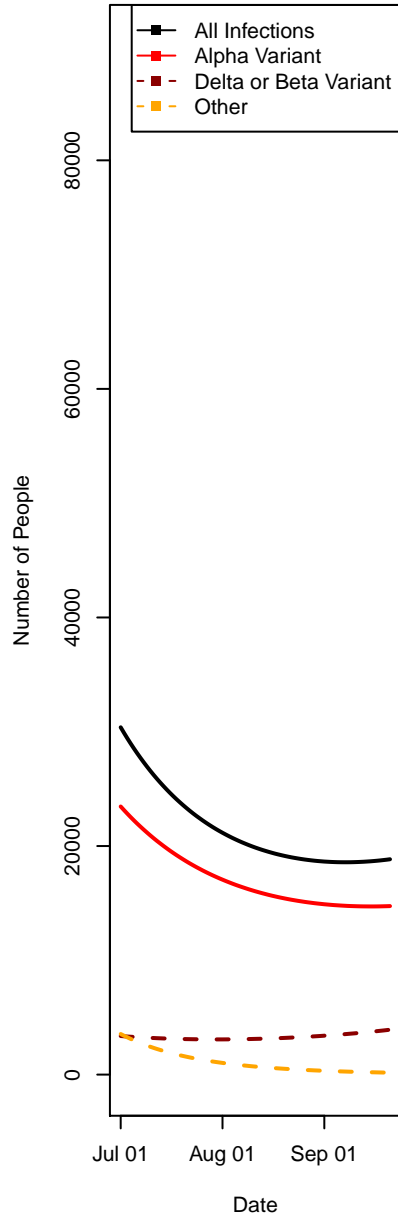
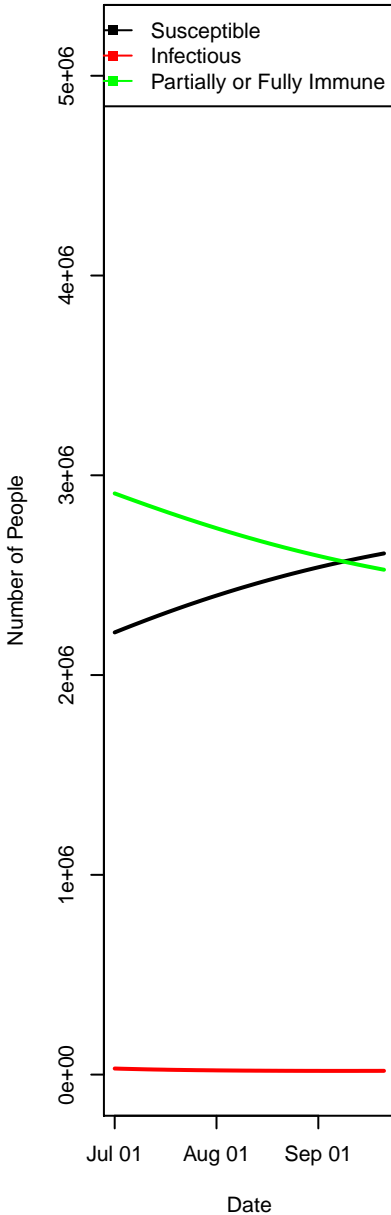
# Scenario 39



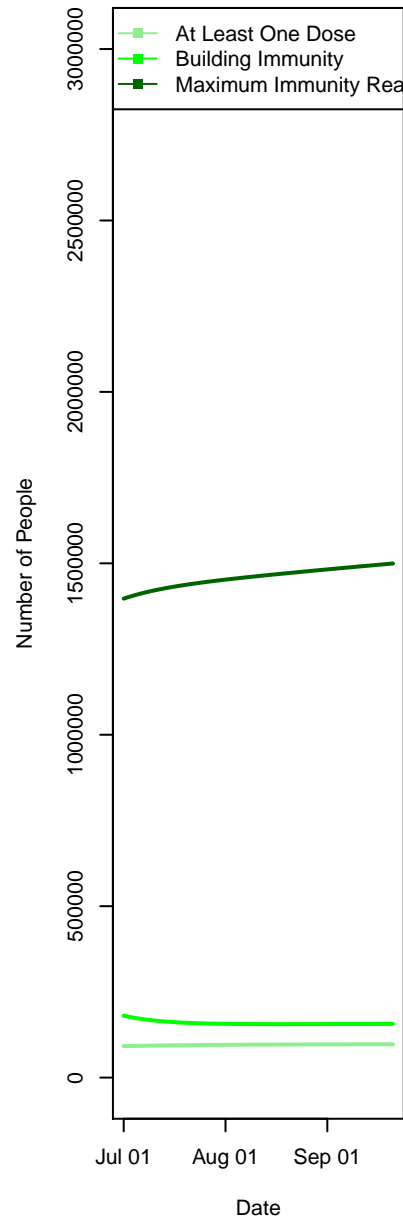
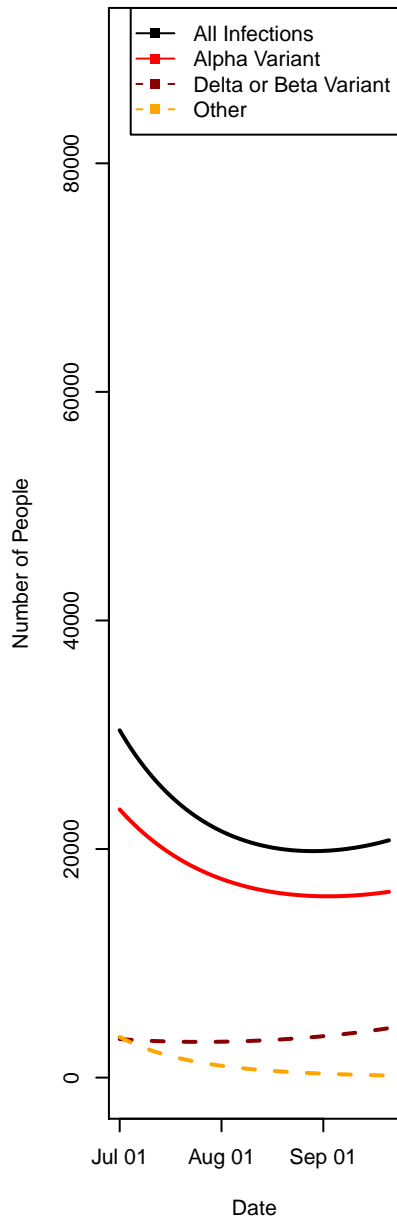
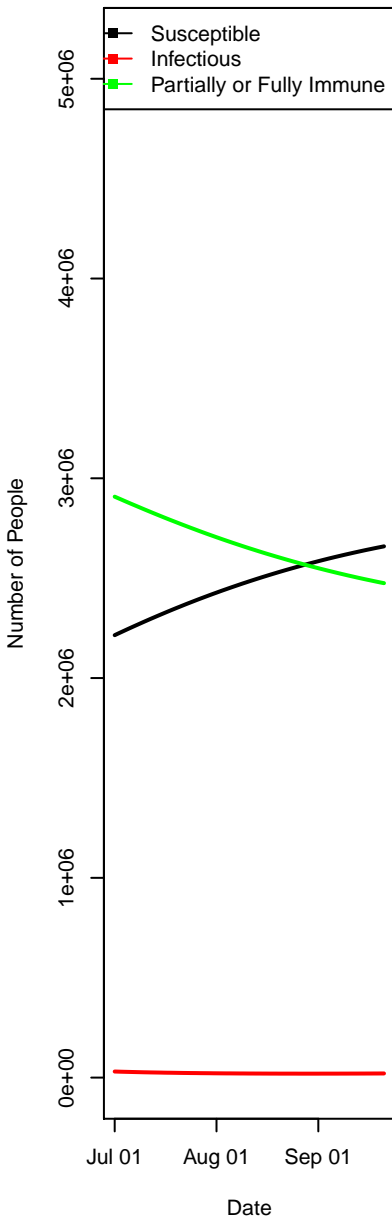
# Scenario 40



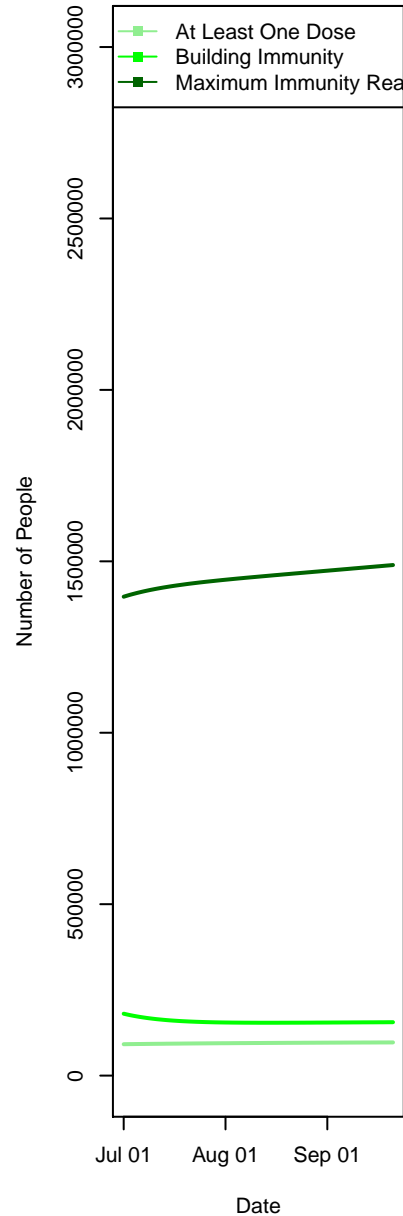
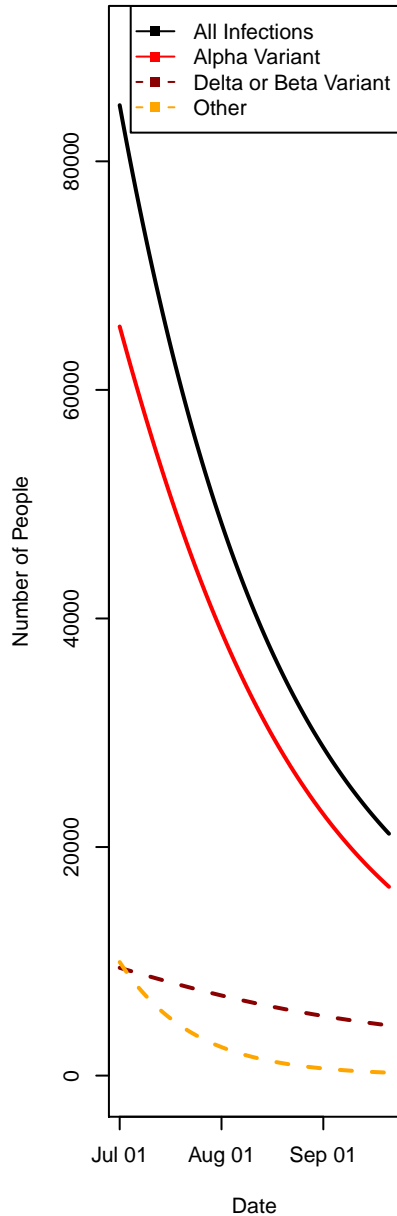
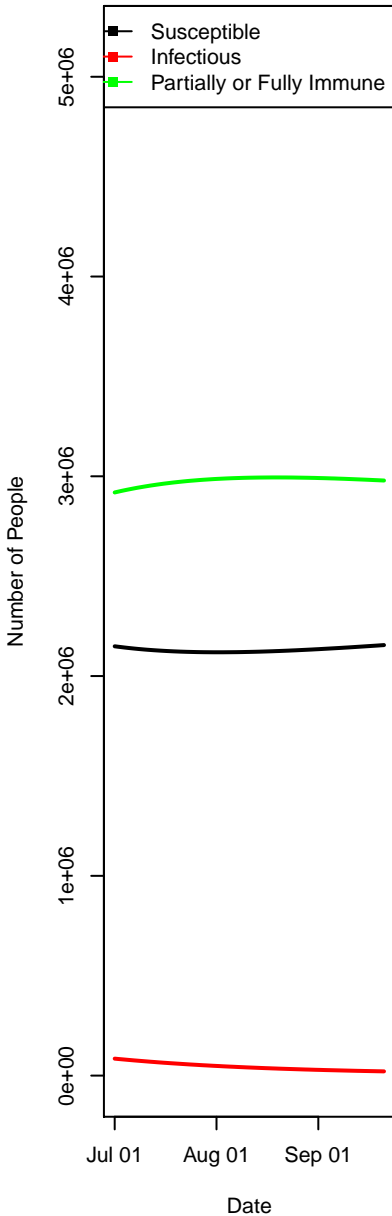
# Scenario 41



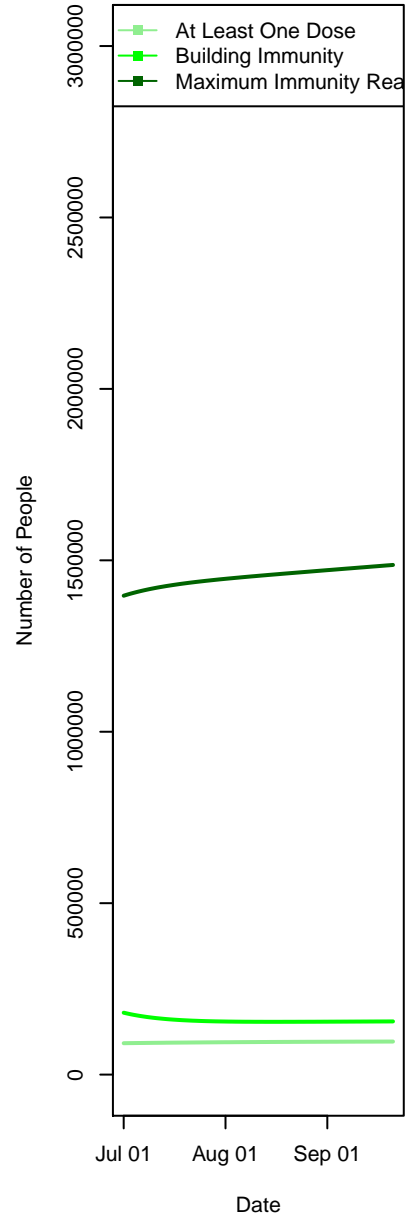
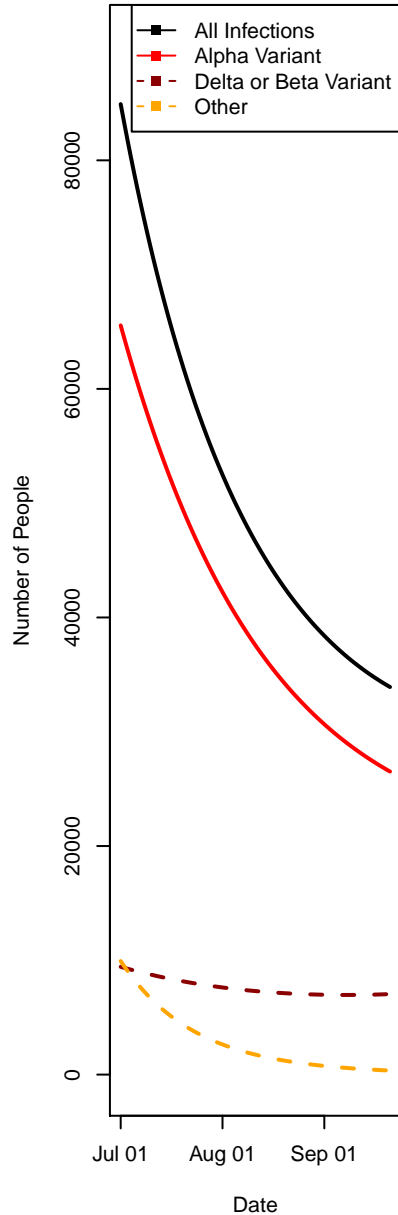
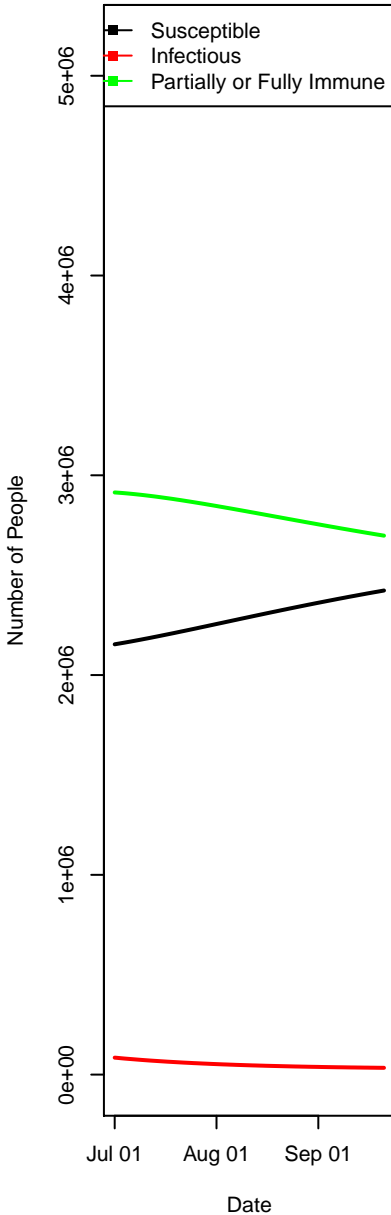
# Scenario 42



# Scenario 43

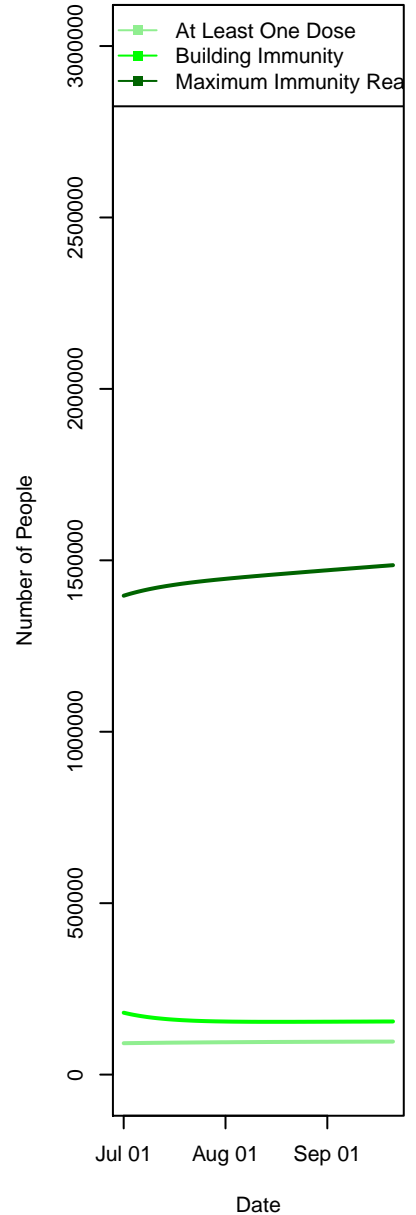
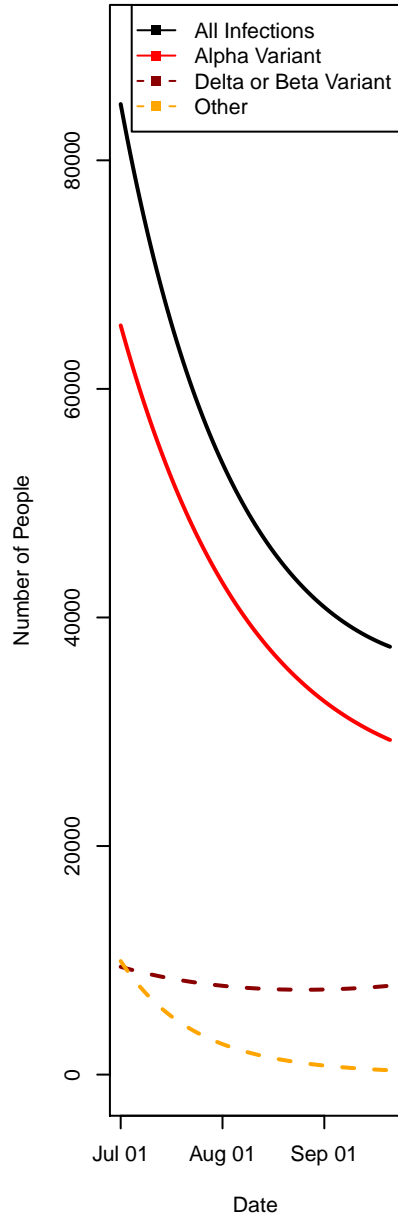
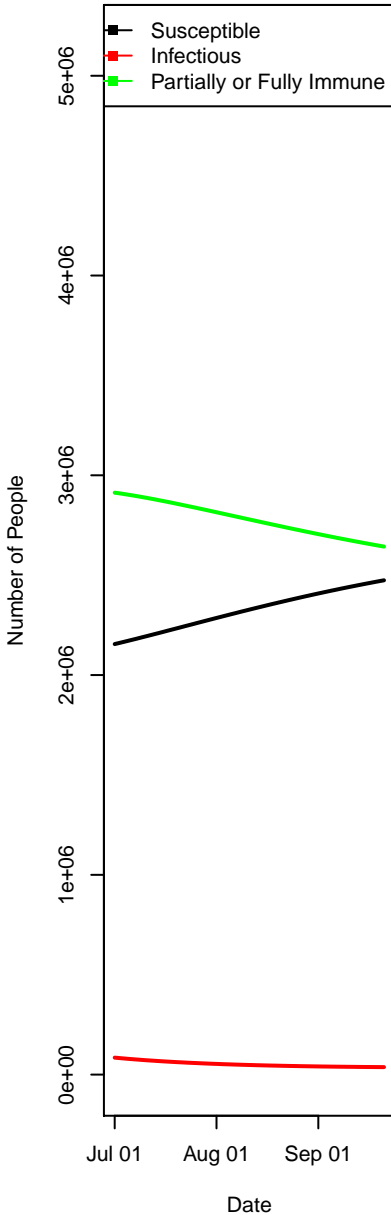


# Scenario 44

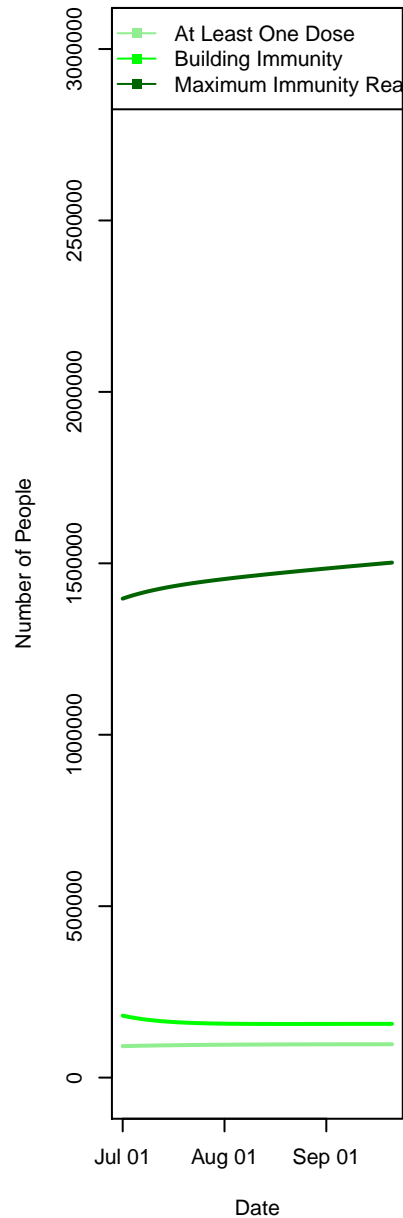
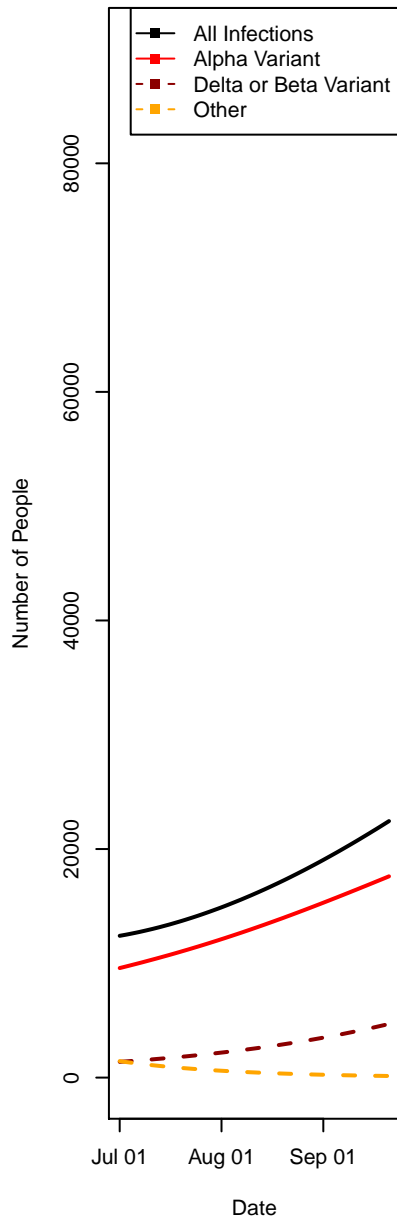
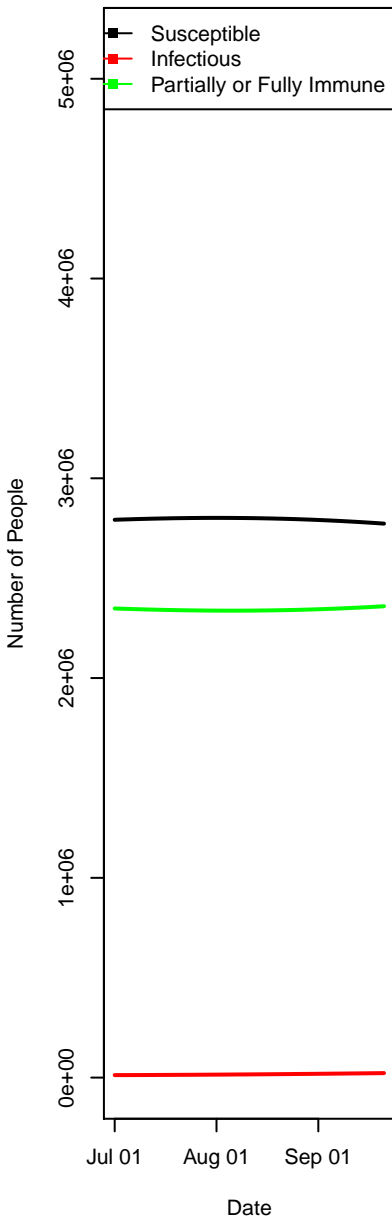




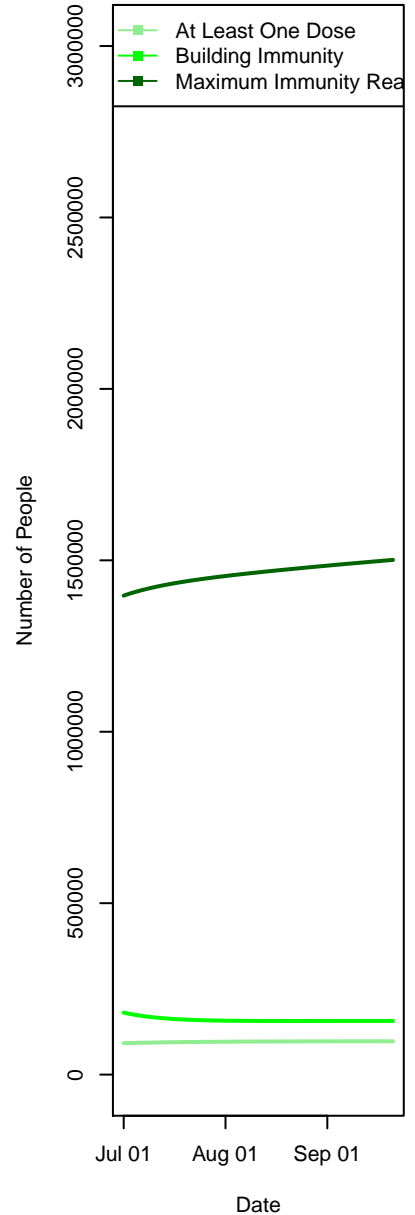
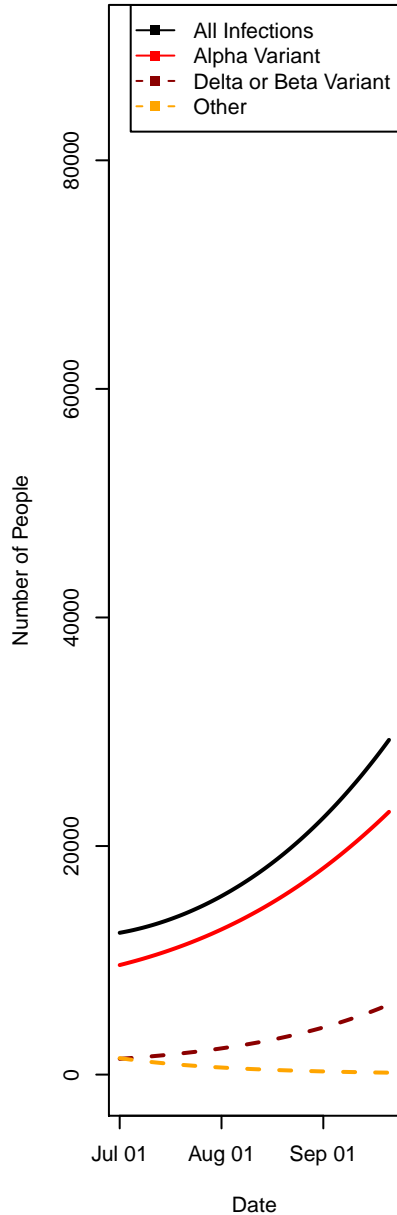
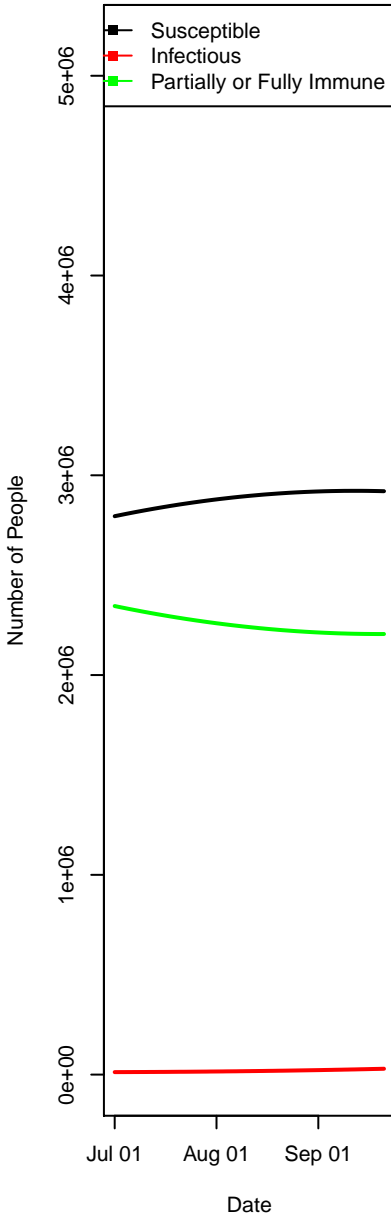
# Scenario 45



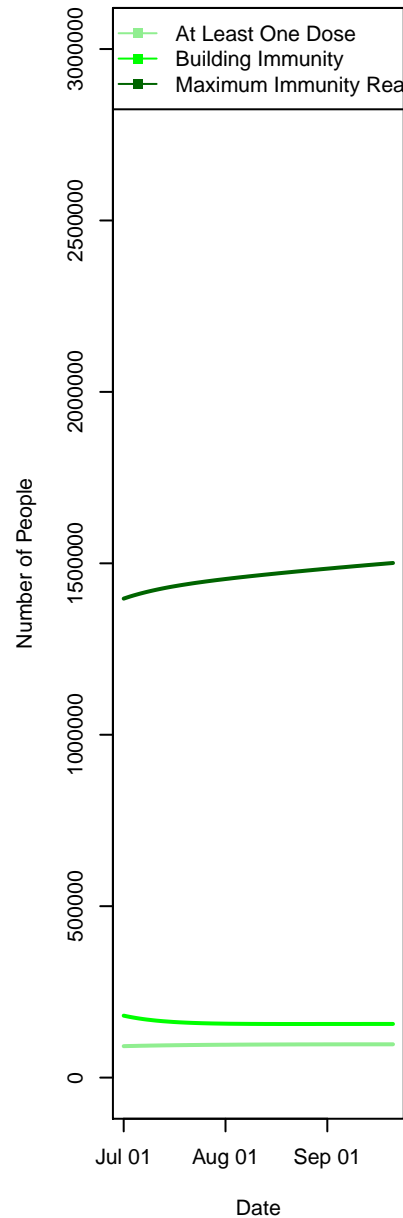
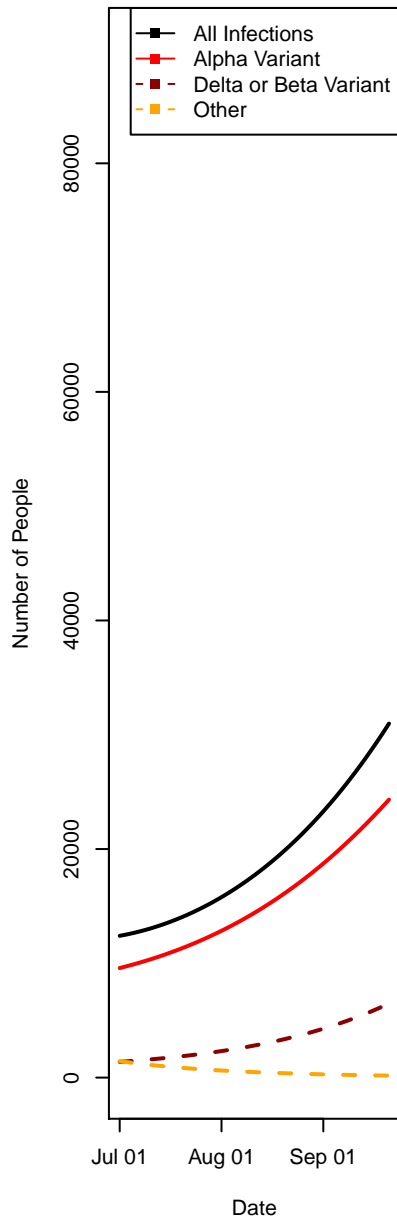
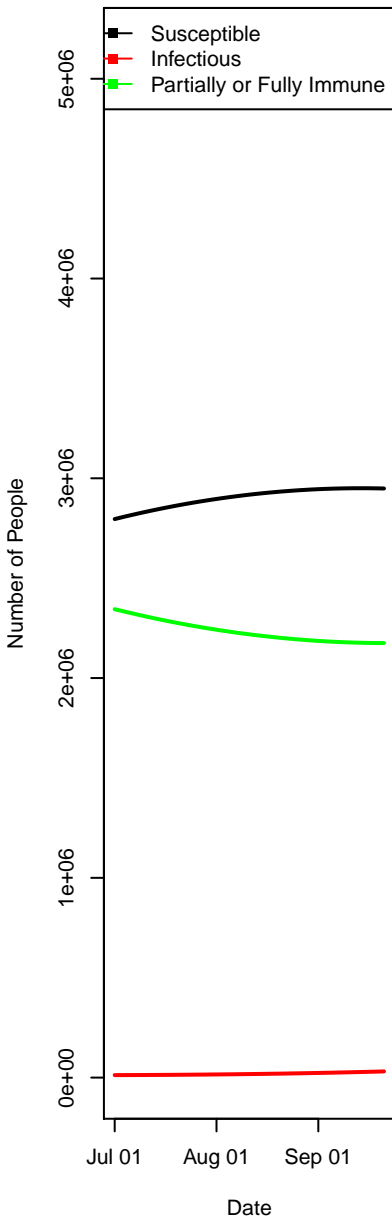
# Scenario 46



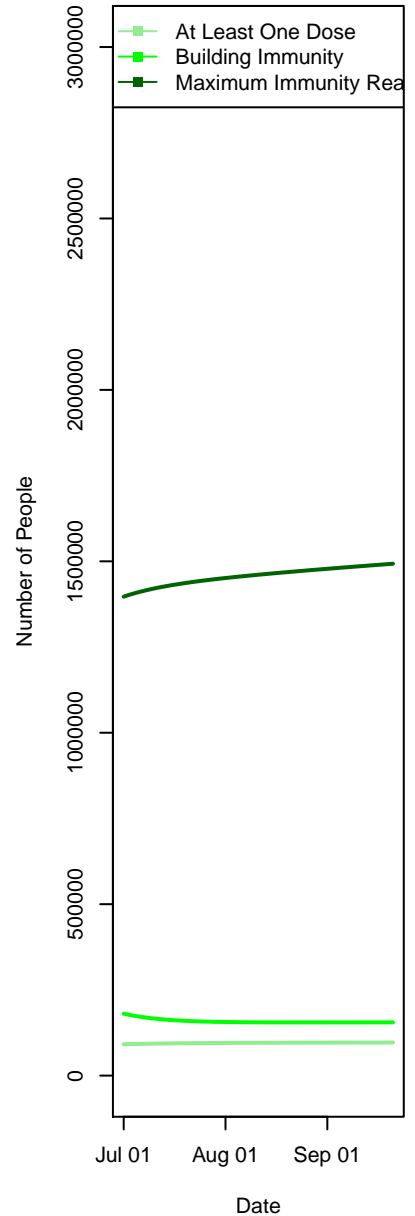
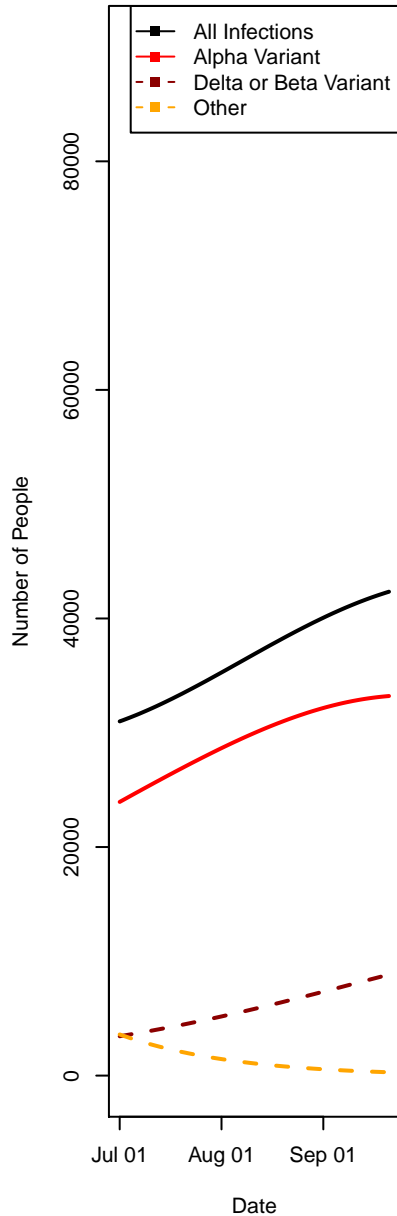
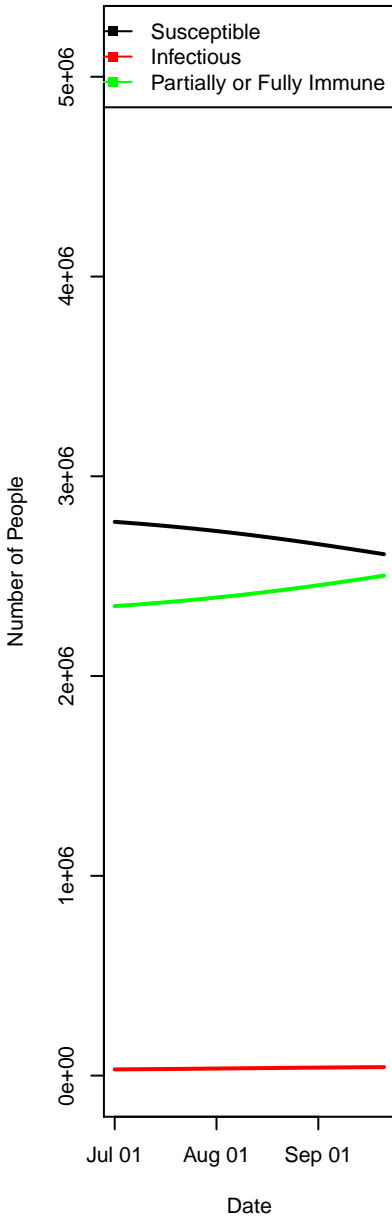
# Scenario 47



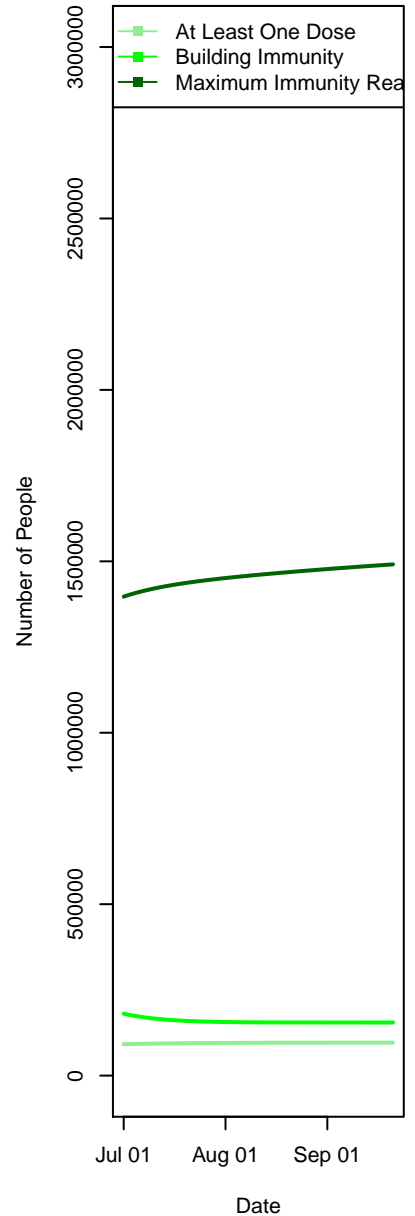
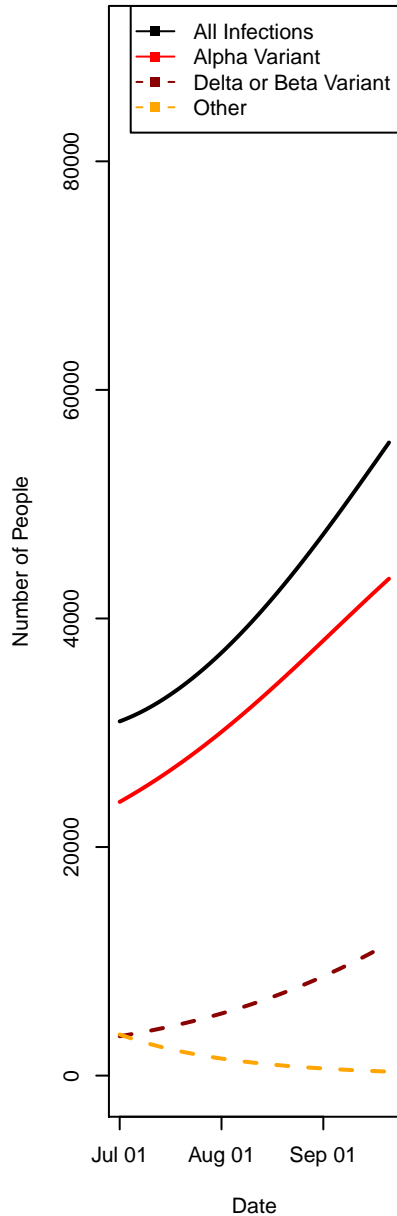
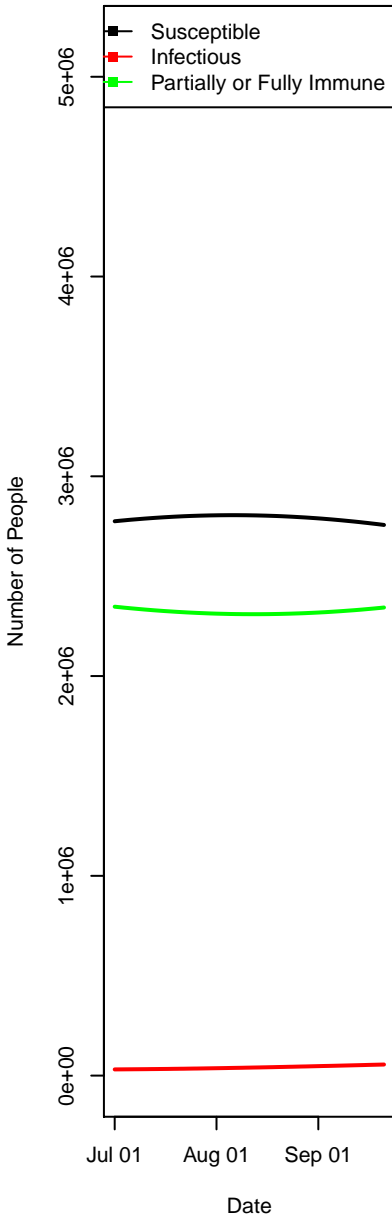
# Scenario 48



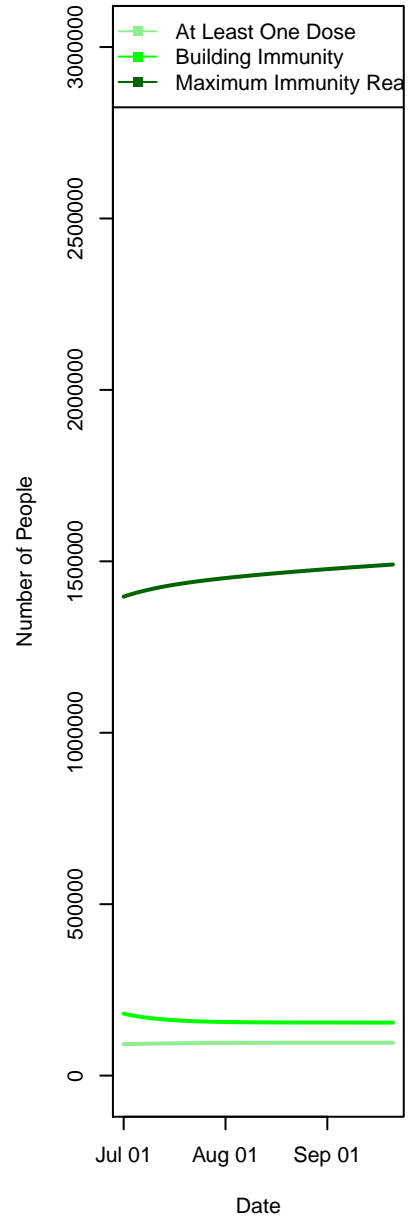
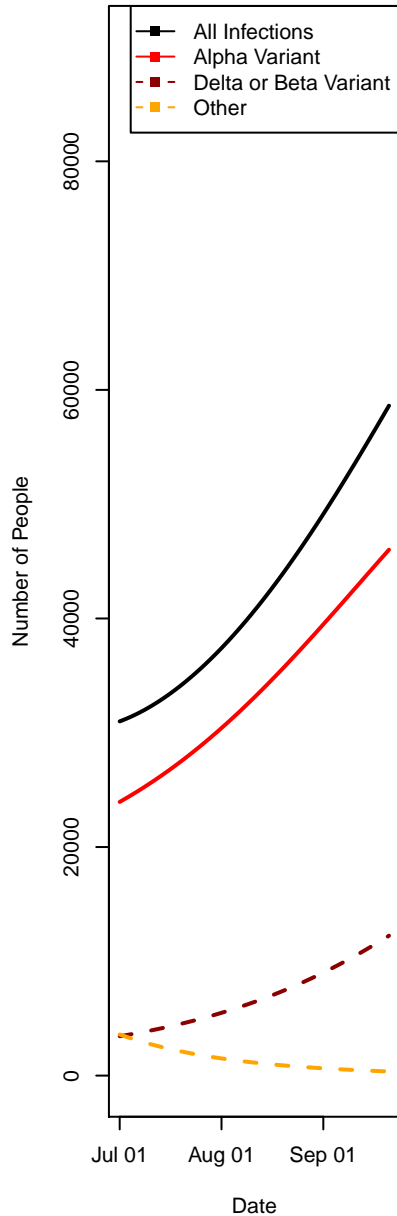
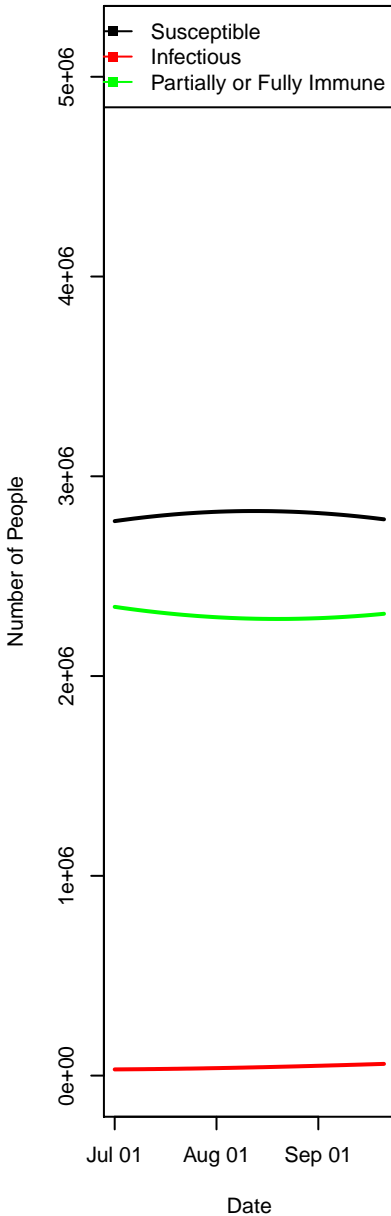
# Scenario 49



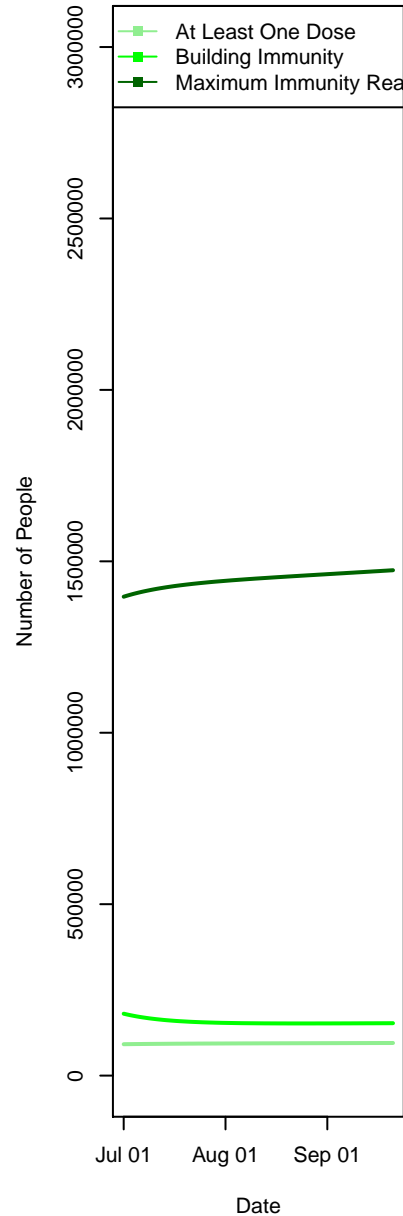
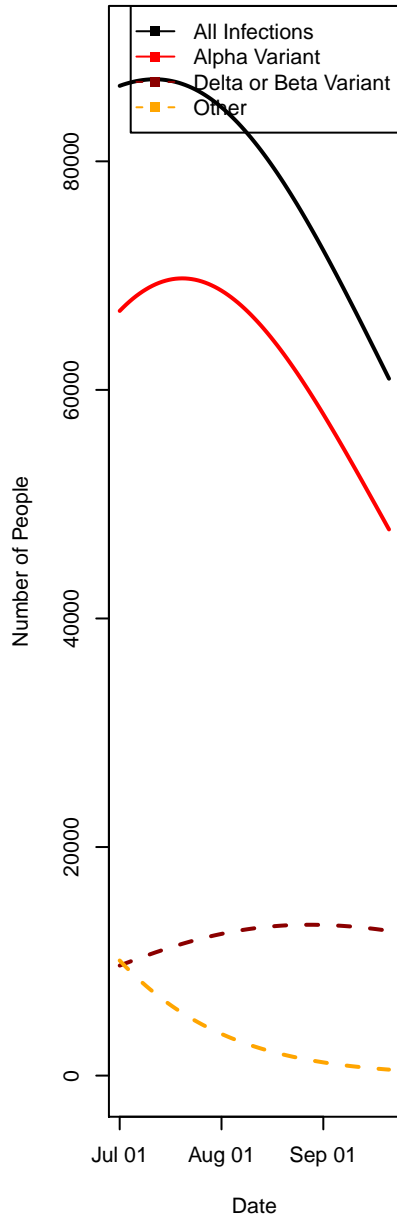
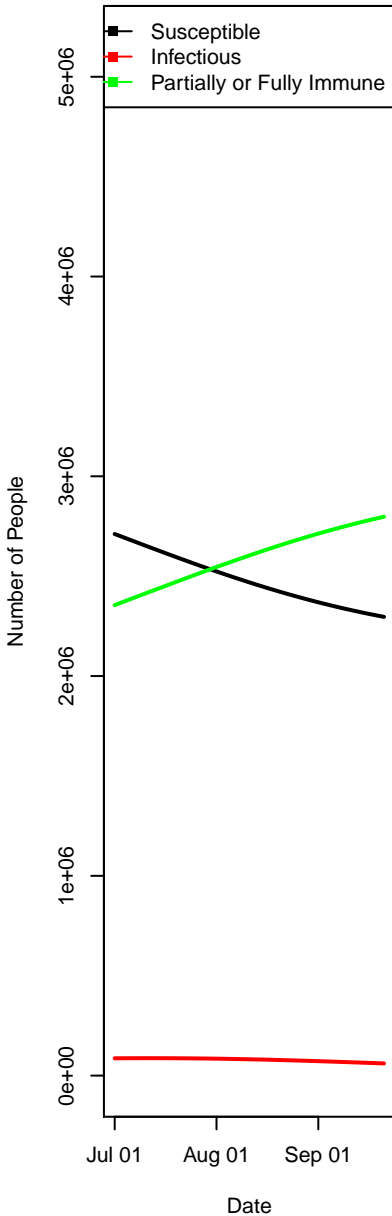
# Scenario 50



# Scenario 51

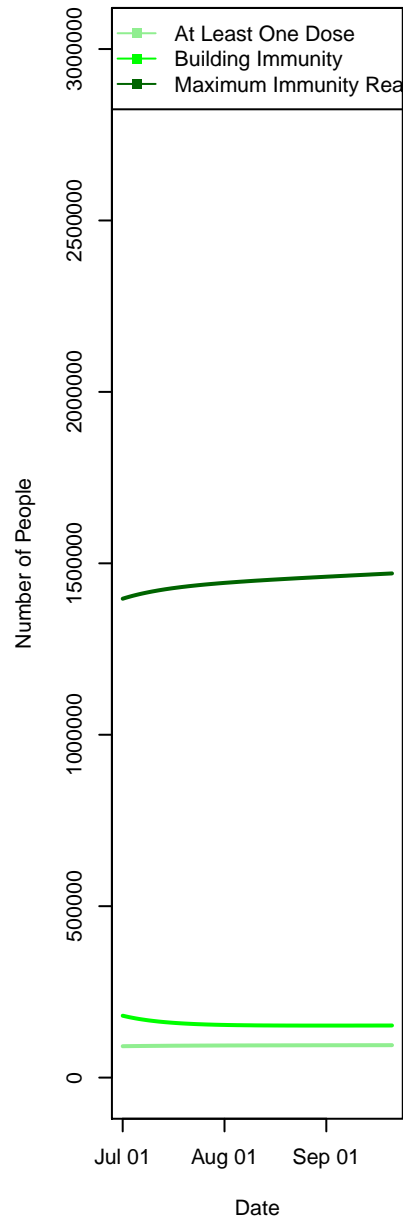
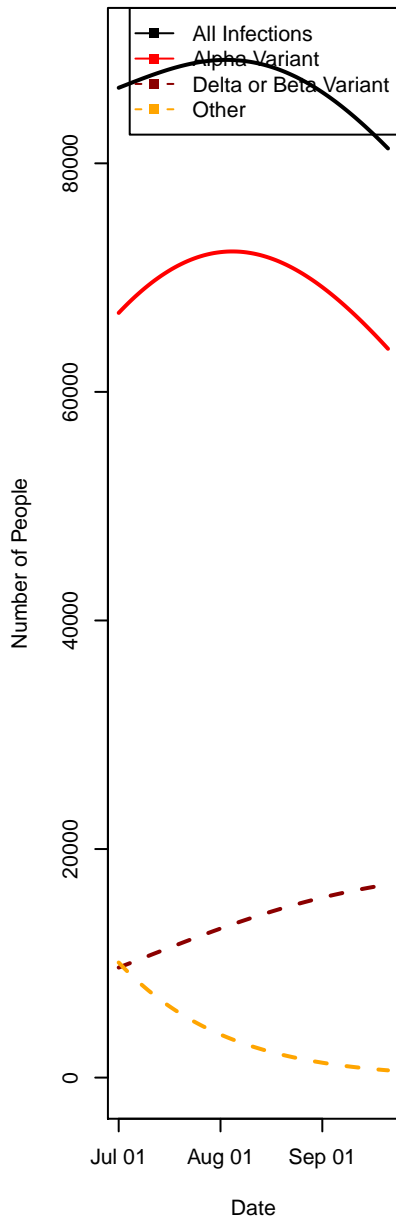
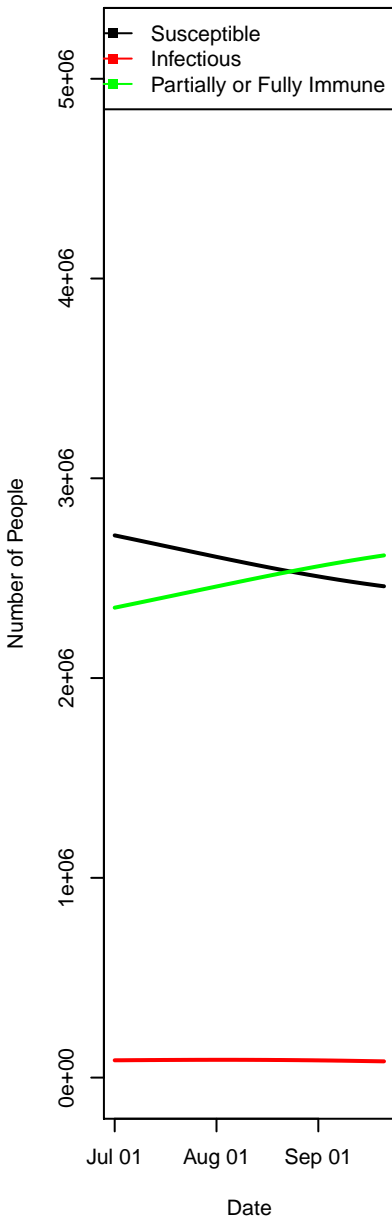


# Scenario 52





# Scenario 53



# Scenario 54

