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Lampiran 1 *Script* Matlab

1. Faktor Lingkungan

```
                                %SUHU
%Faktor lingkungan
Ventilasi = 4                   %Satuan /jam          %Sesuaikan dengan Cafe
Exhalation_mask = 0.5           %Tanpa satuan
Inhalation_mask = 0.5           %Tanpa satuan
Volume = 128                    %Satuan meter kubik   %Sesuaikan dengan Cafe
Jarak = 1                       %Satuan meter
Prevalensi = 0.02               %Tanpa satuan
Jumlah_orang = 20
T1 = 15
T2 = 24                         %Satuan derajat Celcius
T3 = 30
RH = 75                         %Satuan persen
UV = 0                          %Tanpa satuan
%Hanya ini input faktor lingkungannya
Decay_rate_of_virus_1 = (7.569+1.411.*((T1-20.54)/10.66)+0.022.*((RH-45.235)/28.665)+7.553.*((UV-50)/50)+1.397.*((T1-20.54)/10.66).*(UV-50)/50).*60
Decay_rate_of_virus_2 = (7.569+1.411.*((T2-20.54)/10.66)+0.022.*((RH-45.235)/28.665)+7.553.*((UV-50)/50)+1.397.*((T2-20.54)/10.66).*(UV-50)/50).*60
Decay_rate_of_virus_3 = (7.569+1.411.*((T3-20.54)/10.66)+0.022.*((RH-45.235)/28.665)+7.553.*((UV-50)/50)+1.397.*((T3-20.54)/10.66).*(UV-50)/50).*60
Deposition_to_surface = 0.3           %Satuan /jam       %Ketetapan
Additional_control_measures = 0       %Satuan /jam       %Ketetapan
Fraction_of_people_mask = 1           %Tanpa satuan      %Ketetapan
Duration_of_event = 240         %Satuan menit
Durasi = 0.8333:0.8333:Duration_of_event./60
Prob_social_distance = (-18.19*log(Jarak)+43.276)/100
Quanta_exhalation_rate = 9.4    %Satuan /jam      %Sesuaikan dengan Cafe
Quanta_exhalation_rate_new = Quanta_exhalation_rate.*Prob_social_distance
Breathing_rate = 0.54                 %Satuan meter kubik per jam       %Ketetapan
Jumlah_pengulangan_kejadian = 1                 %Sesuaikan dengan Cafe
Orang_terinfeksi = 1                  %Ketetapan
Fraction_of_population_inmune = 0     %Satuan persen     %Ketetapan
Susceptible_people = (Jumlah_orang–Orang_terinfeksi)*(1-Fraction_of_population_inmune)
Total_first_order_loss_rate_1 = Ventilasi+Decay_rate_of_virus_1+Deposition_to_surface+Additional_control_measures
Total_first_order_loss_rate_2 = Ventilasi+Decay_rate_of_virus_2+Deposition_to_surface+Additional_control_measures
Total_first_order_loss_rate_3 = Ventilasi+Decay_rate_of_virus_3+Deposition_to_surface+Additional_control_measures
Net_emission_rate = Quanta_exhalation_rate_new.*(1-Exhalation_mask.*Fraction_of_people_mask).*Orang_terinfeksi
```

```
%SUHU BAGIAN 2
Avg_quanta_concentration_1 = Net_emission_rate./
                             Total_first_order_loss_rate_1./Volume.*(1-(1/
                             Total_first_order_loss_rate_1/.Durasi).*(1-exp(-
                             Total_first_order_loss_rate_1.*Durasi)))
Avg_quanta_concentration_2 = Net_emission_rate./
                             Total_first_order_loss_rate_2./Volume.*(1-(1/
                             Total_first_order_loss_rate_2/.Durasi).*(1-exp(-
                             Total_first_order_loss_rate_2.*Durasi)))
Avg_quanta_concentration_1 = Net_emission_rate./
                             Total_first_order_loss_rate_2./Volume.*(1-(1/
                             Total_first_order_loss_rate_2/.Durasi).*(1-exp(-
                             Total_first_order_loss_rate_2.*Durasi)))
Quanta_inhale_per_person_1=Avg_quanta_concentration_1.*Breathing_rate.*Durasi.*(1
                             -Inhalation_mask.*Fraction_of_people_mask)
Quanta_inhale_per_person_2=Avg_quanta_concentration_2.*Breathing_rate.*Durasi.*(1
                             -Inhalation_mask.*Fraction_of_people_mask)
Quanta_inhale_per_person_3=Avg_quanta_concentration_3.*Breathing_rate.*Durasi.*(1
                             -Inhalation_mask.*Fraction_of_people_mask)

Infeksi_1a = 1-exp(-Quanta_inhale_per_person_1)
Infeksi_1b = 1-exp(-Quanta_inhale_per_person_2)
Infeksi_1c = 1-exp(-Quanta_inhale_per_person_3)
Infeksi_2a = 1-(1-Infeksi_1a.*Prevalensi).^Susceptible_people
Infeksi_2b = 1-(1-Infeksi_1b.*Prevalensi).^Susceptible_people
Infeksi_2c = 1-(1-Infeksi_1c.*Prevalensi).^Susceptible_people
Infeksi_3a = 1-(1-infeksi_2a).^Jumlah_pengulangan_kejadian
Infeksi_3b = 1-(1-infeksi_2b).^Jumlah_pengulangan_kejadian
Infeksi_3c = 1-(1-infeksi_2c).^Jumlah_pengulangan_kejadian

Hasil1a = Infeksi_1a*100
Hasil2a = Infeksi_2a*100
Hasil3a = Infeksi_3a*100
Hasil1b = Infeksi_1b*100
Hasil2b = Infeksi_2b*100
Hasil3b = Infeksi_3b*100
Hasil1c = Infeksi_1c*100
Hasil2c = Infeksi_2c*100
Hasil3c = Infeksi_3c*100

plot(Durasi, Hasil3a, ‘-*r’, Durasi, Hasil3b, ‘-*b’, Durasi, Hasil3c, ‘-*g’)
xlabel(‘Durasi (jam)’)
ylabel(‘Kemungkinan Terinfeksi (%)’)
xlim([0 3])
ylim([0 0.3])                          %Sesuaikan dengan Cafe
title(‘Pengaruh Suhu Terhadap Risiko Penularan SARS-CoV-2 Melalui Aerosol Dalam
    Cafe’)
legend(‘Suhu = 15 derajat Celcius’, ‘Suhu = 24 derajat Celcius’, ‘Suhu = 30 derajat
    Celcius’)
```

%RH

%Faktor lingkungan
Ventilasi = 4 %Satuan satuan /jam %Sesuaikan dengan Cafe
Exhalation_mask = 0.5 %Tanpa satuan
Inhalation_mask = 0.5 %Tanpa satuan
Volume = 128 %Satuan meter kubik %Sesuaikan dengan Cafe
Jarak = 1 %Satuan mmeter
Prevalensi = 0.02 %Tanpa satuan
Jumlah_orang = 20 %Sesuaikan dengan Cafe
RH_1 = 65
RH_2 = 75 %Satuan persen
RH_3 = 85
T = 24 %Satuan derajat Celcius
UV = 0 %Tanpa satuan
%Hanya ini *input* faktor lingkungannya
Decay_rate_of_virus_1 = (7.569+1.411.*((T-20.54)/10.66)+0.022.*((RH_1-45.235)/28.665)+7.553.*((UV-50)/50)+1.397.*((T-20.54)/10.66).*(UV-50)/50).*60
Decay_rate_of_virus_2 = (7.569+1.411.*((T-20.54)/10.66)+0.022.*((RH_2-45.235)/28.665)+7.553.*((UV-50)/50)+1.397.*((T-20.54)/10.66).*(UV-50)/50).*60
Decay_rate_of_virus_3 = (7.569+1.411.*((T-20.54)/10.66)+0.022.*((RH_3-45.235)/28.665)+7.553.*((UV-50)/50)+1.397.*((T-20.54)/10.66).*(UV-50)/50).*60
Deposition_to_surface = 0.3 %Satuan /jam %Ketetapan
Additional_control_measures = 0 %Satuan /jam %Ketetapan
Fraction_of_people_mask = 1 %Tanpa satuan %Ketetapan
Duration_of_event = 150 %Satuan menit
Durasi = 0.8333:0.8333:Duration_of_event./60
Prob_social_distance = (-18.19*log(Jarak)+43.276)/100
Quanta_exhalation_rate = 9.4 %Satuan /jam %Sesuaikan dengan Cafe
Quanta_exhalation_rate_new = Quanta_exhalation_rate.*Prob_social_distance
Breathing_rate = 0.52 %Satuan meter kubik per jam %Ketetapan
Jumlah_pengulangan_kejadian = 1 %Sesuaikan dengan Cafe
Orang_terinfeksi = 1 %Ketetapan
Fraction_of_population_inmune = 0 %Satuan persen %Ketetapan
Susceptible_people = (Jumlah_orang–Orang_terinfeksi)*(1-Fraction_of_population_inmune)
Total_first_order_loss_rate_1 = Ventilasi+Decay_rate_of_virus_1+Deposition_to_surface+Additional_control_measures
Total_first_order_loss_rate_2 = Ventilasi+Decay_rate_of_virus_2+Deposition_to_surface+Additional_control_measures
Total_first_order_loss_rate_3 = Ventilasi+Decay_rate_of_virus_3+Deposition_to_surface+Additional_control_measures
Net_emission_rate = Quanta_exhalation_rate_new.*(1-Exhalation_mask.*Fraction_of_people_mask).*Orang_terinfeksi

```
%RH BAGIAN 2
Avg_quanta_concentration_1 =  Net_emission_rate./
                              Total_first_order_loss_rate_1./Volume.*(1-(1/
                              Total_first_order_loss_rate_1/.Durasi).*(1-exp(-
                              Total_first_order_loss_rate_1.*Durasi)))
Avg_quanta_concentration_2 =  Net_emission_rate./
                              Total_first_order_loss_rate_2./Volume.*(1-(1/
                              Total_first_order_loss_rate_2/.Durasi).*(1-exp(-
                              Total_first_order_loss_rate_2.*Durasi)))
Avg_quanta_concentration_1 =  Net_emission_rate./
                              Total_first_order_loss_rate_2./Volume.*(1-(1/
                              Total_first_order_loss_rate_2/.Durasi).*(1-exp(-
                              Total_first_order_loss_rate_2.*Durasi)))
Quanta_inhale_per_person_1=Avg_quanta_concentration_1.*Breathing_rate.*Durasi.*(1
                             -Inhalation_mask.*Fraction_of_people_mask)
Quanta_inhale_per_person_2=Avg_quanta_concentration_2.*Breathing_rate.*Durasi.*(1
                             -Inhalation_mask.*Fraction_of_people_mask)
Quanta_inhale_per_person_3=Avg_quanta_concentration_3.*Breathing_rate.*Durasi.*(1
                             -Inhalation_mask.*Fraction_of_people_mask)

Infeksi_1a = 1-exp(-Quanta_inhale_per_person_1)
Infeksi_1b = 1-exp(-Quanta_inhale_per_person_2)
Infeksi_1c = 1-exp(-Quanta_inhale_per_person_3)
Infeksi_2a = 1-(1-Infeksi_1a.*Prevalensi).^Susceptible_people
Infeksi_2b = 1-(1-Infeksi_1b.*Prevalensi).^Susceptible_people
Infeksi_2c = 1-(1-Infeksi_1c.*Prevalensi).^Susceptible_people
Infeksi_3a = 1-(1-infeksi_2a).^Jumlah_pengulangan_kejadian
Infeksi_3b = 1-(1-infeksi_2b).^Jumlah_pengulangan_kejadian
Infeksi_3c = 1-(1-infeksi_2c).^Jumlah_pengulangan_kejadian

Hasil1a = Infeksi_1a*100
Hasil2a = Infeksi_2a*100
Hasil3a = Infeksi_3a*100
Hasil1b = Infeksi_1b*100
Hasil2b = Infeksi_2b*100
Hasil3b = Infeksi_3b*100
Hasil1c = Infeksi_1c*100
Hasil2c = Infeksi_2c*100
Hasil3c = Infeksi_3c*100

plot(Durasi, Hasil3a, '-*r', Durasi, Hasil3b, '-*b', Durasi, Hasil3c, '-*g')
xlabel('Durasi (jam)')
ylabel('Kemungkinan Terinfeksi (%)')
xlim([0 3])
ylim([0 0.3])                              %Sesuaikan dengan Cafe
title('Pengaruh RH Terhadap Risiko Penularan SARS-CoV-2 Melalui Aerosol Dalam
      Cafe')
legend('RH = 65%', 'RH = 75%', 'RH = 85%')
```

```
%UV
%Faktor lingkungan
Ventilasi = 4                %Satuan  /jam          %Sesuaikan dengan Cafe
Exhalation_mask = 0.5        %Tanpa satuan
Inhalation_mask = 0.5        %Tanpa satuan
Volume = 128                 %Satuan meter kubik  %Sesuaikan dengan Cafe
Jarak = 1                    %Satuan meter
Prevalensi = 0.02            %Tanpa satuan
Jumlah_orang = 20                                   %Sesuaikan dengan Cafe
UV1 = 0
UV2 = 2.5                    %Tanpa Satuan
UV3 = 3.5
T = 24                       %Satuan derajat Celcius
RH = 75                      %Satuan persen
%Hanya ini input faktor lingkungannya
Decay_rate_of_virus_1 =   (7.569+1.411.*((T-20.54)/10.66)+0.022.*((RH-
                          45.235)/28.665)+7.553.*((UV1-50)/50)+1.397.*((T-
                          20.54)/10.66).*(UV1-50)/50).*60
Decay_rate_of_virus_2 =   (7.569+1.411.*((T-20.54)/10.66)+0.022.*((RH-
                          45.235)/28.665)+7.553.*((UV2-50)/50)+1.397.*((T-
                          20.54)/10.66).*(UV2-50)/50).*60
Decay_rate_of_virus_3 =   (7.569+1.411.*((T-20.54)/10.66)+0.022.*((RH-
                          45.235)/28.665)+7.553.*((UV3-50)/50)+1.397.*((T-
                          20.54)/10.66).*(UV3-50)/50).*60
Deposition_to_surface = 0.3           %Satuan /jam        %Ketetapan
Additional_control_measures = 0       %Satuan /jam        %Ketetapan
Fraction_of_people_mask = 1           %Tanpa satuan       %Ketetapan
Duration_of_event = 240      %Satuan menit
Durasi = 0.8333:0.8333:Duration_of_event./60
Prob_social_distance = (-18.19*log(Jarak)+43.276)/100
Quanta_exhalation_rate = 9.4     %Satuan /jam      %Sesuaikan dengan Cafe
Quanta_exhalation_rate_new = Quanta_exhalation_rate.*Prob_social_distance
Breathing_rate = 0.52                 %Satuan meter kubik per jam        %Ketetapan
Jumlah_pengulangan_kejadian = 1                     %Sesuaikan dengan Cafe
Orang_terinfeksi = 1                  %Ketetapan
Fraction_of_population_inmune = 0     %Satuan persen      %Ketetapan
Susceptible_people =   (Jumlah_orang–Orang_terinfeksi)*(1-
                       Fraction_of_population_inmune)
Total_first_order_loss_rate_1       =     Ventilasi+Decay_rate_of_virus_1+
                                          Deposition_to_surface+
                                          Additional_control_measures
Total_first_order_loss_rate_2       =     Ventilasi+Decay_rate_of_virus_2+
                                          Deposition_to_surface+
                                          Additional_control_measures
Total_first_order_loss_rate_3       =     Ventilasi+Decay_rate_of_virus_3+
                                          Deposition_to_surface+
                                          Additional_control_measures
Net_emission_rate =    Quanta_exhalation_rate_new.*(1-
                       Exhalation_mask.*Fraction_of_people_mask).*Orang_terinfeksi
```

```
%UV BAGIAN 2
Avg_quanta_concentration_1 =  Net_emission_rate./
                              Total_first_order_loss_rate_1./Volume.*(1-(1/
                              Total_first_order_loss_rate_1/.Durasi).*(1-exp(-
                              Total_first_order_loss_rate_1.*Durasi)))
Avg_quanta_concentration_2 =  Net_emission_rate./
                              Total_first_order_loss_rate_2./Volume.*(1-(1/
                              Total_first_order_loss_rate_2/.Durasi).*(1-exp(-
                              Total_first_order_loss_rate_2.*Durasi)))
Avg_quanta_concentration_1 =  Net_emission_rate./
                              Total_first_order_loss_rate_2./Volume.*(1-(1/
                              Total_first_order_loss_rate_2/.Durasi).*(1-exp(-
                              Total_first_order_loss_rate_2.*Durasi)))
Quanta_inhale_per_person_1=Avg_quanta_concentration_1.*Breathing_rate.*Durasi.*(1
                              -Inhalation_mask.*Fraction_of_people_mask)
Quanta_inhale_per_person_2=Avg_quanta_concentration_2.*Breathing_rate.*Durasi.*(1
                              -Inhalation_mask.*Fraction_of_people_mask)
Quanta_inhale_per_person_3=Avg_quanta_concentration_3.*Breathing_rate.*Durasi.*(1
                              -Inhalation_mask.*Fraction_of_people_mask)

Infeksi_1a = 1-exp(-Quanta_inhale_per_person_1)
Infeksi_1b = 1-exp(-Quanta_inhale_per_person_2)
Infeksi_1c = 1-exp(-Quanta_inhale_per_person_3)
Infeksi_2a = 1-(1-Infeksi_1a.*Prevalensi).^Susceptible_people
Infeksi_2b = 1-(1-Infeksi_1b.*Prevalensi).^Susceptible_people
Infeksi_2c = 1-(1-Infeksi_1c.*Prevalensi).^Susceptible_people
Infeksi_3a = 1-(1-infeksi_2a).^Jumlah_pengulangan_kejadian
Infeksi_3b = 1-(1-infeksi_2b).^Jumlah_pengulangan_kejadian
Infeksi_3c = 1-(1-infeksi_2c).^Jumlah_pengulangan_kejadian

Hasil1a = Infeksi_1a*100
Hasil2a = Infeksi_2a*100
Hasil3a = Infeksi_3a*100
Hasil1b = Infeksi_1b*100
Hasil2b = Infeksi_2b*100
Hasil3b = Infeksi_3b*100
Hasil1c = Infeksi_1c*100
Hasil2c = Infeksi_2c*100
Hasil3c = Infeksi_3c*100

plot(Durasi, Hasil3a, '-*r', Durasi, Hasil3b, '-*b', Durasi, Hasil3c, '-*g')
xlabel('Durasi (jam)')
ylabel('Kemungkinan Terinfeksi (%)')
xlim([0 3])
ylim([0 0.2])                          %Sesuaikan dengan Cafe
title('Pengaruh UV Terhadap Risiko Penularan SARS-CoV-2 Melalui Aerosol Dalam
      Cafe')
legend('UV = 0', 'UV = 2.5', 'UV = 3.5')
```

```
                    %PREVALENSI
%Faktor lingkungan
UV    =   0                  %Tanpa satuan
T     =   24                 %Satuan derajat Celcius
RH    =   75                 %Satuan persen
Ventilasi = 4                %Satuan /jam           %Sesuaikan dengan Cafe
Exhalation_mask = 0.5
Inhalation_mask = 0.5
Volume = 128                 %Satuan meter kubik  %Sesuaikan dengan Cafe
Jarak = 1                    %Satuan meter
Prevalensi_1 = 0.01
Prevalensi_2 = 0.03          %Tanpa satuan
Prevalensi_3 = 0.05
Jumlah_orang = 20                                   %Sesuaikan dengan Cafe
%Hanya ini input faktor lingkungannya
Decay_rate_of_virus = (7.569+1.411.*((T-20.54)/10.66)+0.022.*((RH-
                    45.235)/28.665)+7.553.*((UV-50)/50)+1.397.*((T-
                    20.54)/10.66).*(UV-50)/50).*60
Deposition_to_surface = 0.3           %Satuan /jam       %Ketetapan
Additional_control_measures = 0       %Satuan /jam       %Ketetapan
Fraction_of_people_mask = 1           %Tanpa satuan      %Ketetapan
Duration_of_event = 240      %Satuan menit
Durasi = 0.8333:0.8333:Duration_of_event./60
Prob_social_distance = (-18.19*log(Jarak)+43.276)/100
Quanta_exhalation_rate = 9.4      %Satuan /jam       %Sesuaikan dengan Cafe
Quanta_exhalation_rate_new = Quanta_exhalation_rate.*Prob_social_distance
Breathing_rate = 0.52                 %Satuan meter kubik per jam         %Ketetapan
Jumlah_pengulangan_kejadian = 1                     %Sesuaikan dengan Cafe
Orang_terinfeksi = 1                  %Ketetapan
Fraction_of_population_inmune = 0     %Satuan persen     %Ketetapan
Susceptible_people =   (Jumlah_orang–Orang_terinfeksi)*(1-
                       Fraction_of_population_inmune)
Total_first_order_loss_rate  = Ventilasi+Decay_rate_of_virus_1+ Deposition_to_surface+
                               Additional_control_measures
Net_emission_rate =  Quanta_exhalation_rate_new.*(1-
                     Exhalation_mask.*Fraction_of_people_mask).*Orang_terinfeksi
Avg_quanta_concentration =  Net_emission_rate./
                            Total_first_order_loss_rate./Volume.*(1-(1/
                            Total_first_order_loss_rate./Durasi).*(1-exp(-
                            Total_first_order_loss_rate.*Durasi)))
Quanta_inhale_per_person=Avg_quanta_concentration.*Breathing_rate.*Durasi.*(1-
                         Inhalation_mask.*Fraction_of_people_mask)
Infeksi_1a = 1-exp(-Quanta_inhale_per_person)
Infeksi_2a = 1-(1-Infeksi_1a.*Prevalensi_1).^Susceptible_people
Infeksi_2b = 1-(1-Infeksi_1b.*Prevalensi_2).^Susceptible_people
Infeksi_2c = 1-(1-Infeksi_1c.*Prevalensi_3).^Susceptible_people
Infeksi_3a = 1-(1-infeksi_2a).^Jumlah_pengulangan_kejadian
Infeksi_3b = 1-(1-infeksi_2b).^Jumlah_pengulangan_kejadian
Infeksi_3c = 1-(1-infeksi_2c).^Jumlah_pengulangan_kejadian

Hasil1a = Infeksi_1a*100
Hasil2a = Infeksi_2a*100
Hasil3a = Infeksi_3a*100
```

```
%PREVALENSI BAGIAN 2

Hasil1b = Infeksi_1b*100
Hasil2b = Infeksi_2b*100
Hasil3b = Infeksi_3b*100
Hasil1c = Infeksi_1c*100
Hasil2c = Infeksi_2c*100
Hasil3c = Infeksi_3c*100

plot(Durasi, Hasil3a, ‘-*r’, Durasi, Hasil3b, ‘-*b’, Durasi, Hasil3c, ‘-*g’)
xlabel(‘Durasi (jam)’)
ylabel(‘Kemungkinan Terinfeksi (%)’)
xlim([0 3])
ylim([0 0.6])                                    %Sesuaikan dengan Cafe
title(‘Pengaruh Prevalensi Terhadap Risiko Penularan SARS-CoV-2 Melalui Aerosol
    Dalam Cafe’)
legend(‘Prevalensi = 0.01’, ‘Prevalensi = 0.03’, ‘Prevalensi = 0.05’)
```

```
                              %VENTILASI
%Faktor lingkungan
UV   =  0                       %Tanpa satuan
T    =  24                      %Satuan derajat Celcius
RH   =  75                      %Satuan persen
Ventilasi_1 = 2
Ventilasi_2 = 4                 %Satuan /jam          %Sesuaikan dengan Cafe
Ventilasi_3 = 6
Exhalation_mask = 0.5
Inhalation_mask = 0.5
Volume = 128                    %Satuan meter kubik   %Sesuaikan dengan Cafe
Jarak = 1                       %Satuan meter
Prevalensi = 0.02               %Tanpa satuan
Jumlah_orang = 20                                     %Sesuaikan dengan Cafe
%Hanya ini input faktor lingkungannya
Decay_rate_of_virus = (7.569+1.411.*((T-20.54)/10.66)+0.022.*((RH-
                      45.235)/28.665)+7.553.*((UV-50)/50)+1.397.*((T-
                      20.54)/10.66).*(UV-50)/50).*60
Deposition_to_surface = 0.3              %Satuan /jam      %Ketetapan
Additional_control_measures = 0          %Satuan /jam      %Ketetapan
Fraction_of_people_mask = 1              %Tanpa satuan     %Ketetapan
Duration_of_event = 240    %Satuan menit
Durasi = 0.8333:0.8333:Duration_of_event./60
Prob_social_distance = (-18.19*log(Jarak)+43.276)/100
Quanta_exhalation_rate = 9.4     %Satuan /jam      %Sesuaikan dengan Cafe
Quanta_exhalation_rate_new = Quanta_exhalation_rate.*Prob_social_distance
Breathing_rate = 0.52                    %Satuan meter kubik per jam        %Ketetapan
Jumlah_pengulangan_kejadian = 1                       %Sesuaikan dengan Cafe
Orang_terinfeksi = 1                     %Ketetapan
Fraction_of_population_inmune = 0        %Satuan persen    %Ketetapan
Susceptible_people =  (Jumlah_orang–Orang_terinfeksi)*(1-
                      Fraction_of_population_inmune)
Total_first_order_loss_rate_1 =  Ventilasi_1+Decay_rate_of_virus+
                                 Deposition_to_surface+ Additional_control_measures
Total_first_order_loss_rate_2 =  Ventilasi_2+Decay_rate_of_virus+
                                 Deposition_to_surface+ Additional_control_measures
Total_first_order_loss_rate_3 =  Ventilasi_3+Decay_rate_of_virus+
                                 Deposition_to_surface+ Additional_control_measures

Net_emission_rate =  Quanta_exhalation_rate_new.*(1-
                     Exhalation_mask.*Fraction_of_people_mask).*Orang_terinfeksi
Avg_quanta_concentration_1 = Net_emission_rate./
                             Total_first_order_loss_rate_1./Volume.*(1-(1/
                             Total_first_order_loss_rate_1./Durasi).*(1-exp(-
                             Total_first_order_loss_rate_1.*Durasi)))
Avg_quanta_concentration_2 = Net_emission_rate./
                             Total_first_order_loss_rate_2./Volume.*(1-(1/
                             Total_first_order_loss_rate_2./Durasi).*(1-exp(-
                             Total_first_order_loss_rate_2.*Durasi)))
Avg_quanta_concentration_3 = Net_emission_rate./
                             Total_first_order_loss_rate_3./Volume.*(1-(1/
                             Total_first_order_loss_rate_3./Durasi).*(1-exp(-
                             Total_first_order_loss_rate_3.*Durasi)))
```

```
%VENTILASI BAGIAN 2

Quanta_inhale_per_person_1=Avg_quanta_concentration_1.*Breathing_rate.*Durasi.*(1
                                    -Inhalation_mask.*Fraction_of_people_mask)
Quanta_inhale_per_person_2=Avg_quanta_concentration_2.*Breathing_rate.*Durasi.*(1
                                    -Inhalation_mask.*Fraction_of_people_mask)
Quanta_inhale_per_person_3=Avg_quanta_concentration_3.*Breathing_rate.*Durasi.*(1
                                    -Inhalation_mask.*Fraction_of_people_mask)

Infeksi_1a = 1-exp(-Quanta_inhale_per_person_1)
Infeksi_1b = 1-exp(-Quanta_inhale_per_person_2)
Infeksi_1c = 1-exp(-Quanta_inhale_per_person_3)

Infeksi_2a = 1-(1-Infeksi_1a.*Prevalensi_1).^Susceptible_people
Infeksi_2b = 1-(1-Infeksi_1b.*Prevalensi_2).^Susceptible_people
Infeksi_2c = 1-(1-Infeksi_1c.*Prevalensi_3).^Susceptible_people

Infeksi_3a = 1-(1-infeksi_2a).^Jumlah_pengulangan_kejadian
Infeksi_3b = 1-(1-infeksi_2b).^Jumlah_pengulangan_kejadian
Infeksi_3c = 1-(1-infeksi_2c).^Jumlah_pengulangan_kejadian

Hasil1a = Infeksi_1a*100
Hasil2a = Infeksi_2a*100
Hasil3a = Infeksi_3a*100

Hasil1b = Infeksi_1b*100
Hasil2b = Infeksi_2b*100
Hasil3b = Infeksi_3b*100

Hasil1c = Infeksi_1c*100
Hasil2c = Infeksi_2c*100
Hasil3c = Infeksi_3c*100

plot(Durasi, Hasil3a, '-*r', Durasi, Hasil3b, '-*b', Durasi, Hasil3c, '-*g')
xlabel('Durasi (jam)')
ylabel('Kemungkinan Terinfeksi (%)')
xlim([0 3])
ylim([0 0.6])                              %Sesuaikan dengan Cafe
title('Pengaruh Ventilasi Terhadap Risiko Penularan SARS-CoV-2 Melalui Aerosol
      Dalam Cafe')
legend('Ventilasi = 2/jam', 'Ventilasi = 4/jam', 'Ventilasi = 6/jam')
```

```
                                   %JARAK FISIK
%Faktor lingkungan
UV    =   0                    %Tanpa Satuan
T     =   24                   %Dalam derajat Celcius
RH    =   75                   %Dalam persen
Ventilasi = 4                  %Dalam satuan /jam   %Sesuaikan dengan Cafe
Exhalation_mask = 0.5
Inhalation_mask = 0.5
Volume = 128                   %Dalam meter kubik  %Sesuaikan dengan Cafe
Jarak_1 = 0.2
Jarak_2 = 0.5                  %Dalam meter
Jarak_3 = 1
Prevalensi = 0.02
Jumlah_orang = 20                                  %Sesuaikan dengan Cafe
%Hanya ini input faktor lingkungannya
Decay_rate_of_virus = (7.569+1.411.*((T-20.54)/10.66)+0.022.*((RH-
                      45.235)/28.665)+7.553.*((UV-50)/50)+1.397.*((T-
                      20.54)/10.66).*(UV-50)/50).*60
Deposition_to_surface = 0.3            %Satuan /jam       %Ketetapan
Additional_control_measures = 0        %Satuan /jam       %Ketetapan
Fraction_of_people_mask = 1            %Tanpa satuan      %Ketetapan
Duration_of_event = 150     %Satuan menit
Durasi = 0.8333:0.8333:Duration_of_event./60

Prob_social_distance_1 = (-18.19*log(Jarak_1)+43.276)/100
Prob_social_distance_2 = (-18.19*log(Jarak_2)+43.276)/100
Prob_social_distance_3 = (-18.19*log(Jarak_3)+43.276)/100

Quanta_exhalation_rate = 9.4      %Satuan /jam      %Sesuaikan dengan Cafe
Quanta_exhalation_rate_new_1 = Quanta_exhalation_rate.*Prob_social_distance_1
Quanta_exhalation_rate_new_2 = Quanta_exhalation_rate.*Prob_social_distance_2
Quanta_exhalation_rate_new_3 = Quanta_exhalation_rate.*Prob_social_distance_3

Breathing_rate = 0.52                  %Satuan meter kubik per jam         %Ketetapan
Jumlah_pengulangan_kejadian = 1                    %Sesuaikan dengan Cafe
Orang_terinfeksi = 1                   %Ketetapan
Fraction_of_population_inmune = 0      %Satuan persen     %Ketetapan
Susceptible_people =  (Jumlah_orang–Orang_terinfeksi)*(1-
                      Fraction_of_population_inmune)
Total_first_order_loss_rate  =  Ventilasi+Decay_rate_of_virus+  Deposition_to_surface+
                                Additional_control_measures

Net_emission_rate_1 = Quanta_exhalation_rate_new_1.*(1-
                      Exhalation_mask.*Fraction_of_people_mask).*Orang_terinfeksi
Net_emission_rate_2 = Quanta_exhalation_rate_new_2.*(1-
                      Exhalation_mask.*Fraction_of_people_mask).*Orang_terinfeksi
Net_emission_rate_3 = Quanta_exhalation_rate_new_3.*(1-
                      Exhalation_mask.*Fraction_of_people_mask).*Orang_terinfeksi
```

```
%JARAK FISIK BAGIAN 2

Avg_quanta_concentration_1 = Net_emission_rate_1./
                             Total_first_order_loss_rate./Volume.*(1-(1/
                             Total_first_order_loss_rate./Durasi).*(1-exp(-
                             Total_first_order_loss_rate.*Durasi)))
Avg_quanta_concentration_2 = Net_emission_rate_2./
                             Total_first_order_loss_rate./Volume.*(1-(1/
                             Total_first_order_loss_rate./Durasi).*(1-exp(-
                             Total_first_order_loss_rate.*Durasi)))
Avg_quanta_concentration_3 = Net_emission_rate_3./
                             Total_first_order_loss_rate./Volume.*(1-(1/
                             Total_first_order_loss_rate./Durasi).*(1-exp(-
                             Total_first_order_loss_rate.*Durasi)))

Quanta_inhale_per_person_1=Avg_quanta_concentration_1.*Breathing_rate.*Durasi.*(1
                           -Inhalation_mask.*Fraction_of_people_mask)
Quanta_inhale_per_person_2=Avg_quanta_concentration_2.*Breathing_rate.*Durasi.*(1
                           -Inhalation_mask.*Fraction_of_people_mask)
Quanta_inhale_per_person_3=Avg_quanta_concentration_3.*Breathing_rate.*Durasi.*(1
                           -Inhalation_mask.*Fraction_of_people_mask)

Infeksi_1a = 1-exp(-Quanta_inhale_per_person_1)
Infeksi_1b = 1-exp(-Quanta_inhale_per_person_2)
Infeksi_1c = 1-exp(-Quanta_inhale_per_person_3)

Infeksi_2a = 1-(1-Infeksi_1a.*Prevalensi_1).^Susceptible_people
Infeksi_2b = 1-(1-Infeksi_1b.*Prevalensi_2).^Susceptible_people
Infeksi_2c = 1-(1-Infeksi_1c.*Prevalensi_3).^Susceptible_people

Infeksi_3a = 1-(1-infeksi_2a).^Jumlah_pengulangan_kejadian
Infeksi_3b = 1-(1-infeksi_2b).^Jumlah_pengulangan_kejadian
Infeksi_3c = 1-(1-infeksi_2c).^Jumlah_pengulangan_kejadian

Hasil1a = Infeksi_1a*100
Hasil2a = Infeksi_2a*100
Hasil3a = Infeksi_3a*100

Hasil1b = Infeksi_1b*100
Hasil2b = Infeksi_2b*100
Hasil3b = Infeksi_3b*100

Hasil1c = Infeksi_1c*100
Hasil2c = Infeksi_2c*100
Hasil3c = Infeksi_3c*100

plot(Durasi, Hasil3a, ‘-*r’, Durasi, Hasil3b, ‘-*b’, Durasi, Hasil3c, ‘-*g’)
xlabel(‘Durasi (jam)’)
ylabel(‘Kemungkinan Terinfeksi (%)’)
xlim([0 3])
ylim([0 0.6])                              %Sesuaikan dengan Cafe
title(‘Pengaruh Jarak Terhadap Risiko Penularan SARS-CoV-2 Melalui Aerosol Dalam
      Cafe’)
```

```
                         %EFISIENSI MASKER
%Faktor lingkungan
UV    =   0                    %Tanpa Satuan
T     =   24                   %Dalam derajat Celcius
RH    =   75                   %Dalam persen
Ventilasi = 1.5                %Dalam satuan /jam   %Sesuaikan dengan Cafe
Exhalation_mask_1 = 0.23
Exhalation_mask_2 = 0.5
Exhalation_mask_3 = 0.9
Inhalation_mask_1 = 0.23
Inhalation_mask_2 = 0.5
Inhalation_mask_3 = 0.9
Volume = 128                   %Dalam meter kubik  %Sesuaikan dengan Cafe
Jarak = 1                      %Dalam meter
Prevalensi = 0.02
Jumlah_orang = 20                                  %Sesuaikan dengan Cafe
%Hanya ini input faktor lingkungannya
Decay_rate_of_virus = (7.569+1.411.*((T-20.54)/10.66)+0.022.*((RH-
                      45.235)/28.665)+7.553.*((UV-50)/50)+1.397.*((T-
                      20.54)/10.66).*(UV-50)/50).*60


Deposition_to_surface = 0.3            %Satuan /jam       %Ketetapan
Additional_control_measures = 0        %Satuan /jam       %Ketetapan
Fraction_of_people_mask = 1            %Tanpa satuan      %Ketetapan
Duration_of_event = 150     %Satuan menit
Durasi = 0.8333:0.8333:Duration_of_event./60
Prob_social_distance = (-18.19*log(Jarak)+43.276)/100

Quanta_exhalation_rate = 9.4      %Satuan /jam       %Sesuaikan dengan Cafe
Quanta_exhalation_rate_new = Quanta_exhalation_rate.*Prob_social_distance
Breathing_rate = 0.52                  %Satuan meter kubik per jam        %Ketetapan
Jumlah_pengulangan_kejadian = 1                    %Sesuaikan dengan Cafe
Orang_terinfeksi = 1                   %Ketetapan
Fraction_of_population_inmune = 0      %Satuan persen     %Ketetapan
Susceptible_people =  (Jumlah_orang–Orang_terinfeksi)*(1-
                      Fraction_of_population_inmune)
Total_first_order_loss_rate  =  Ventilasi+Decay_rate_of_virus+  Deposition_to_surface+
                             Additional_control_measures

Net_emission_rate_1 = Quanta_exhalation_rate_new.*(1-
                      Exhalation_mask_1.*Fraction_of_people_mask).*Orang_terinfeks
                      i
Net_emission_rate_2 = Quanta_exhalation_rate_new.*(1-
                      Exhalation_mask_2.*Fraction_of_people_mask).*Orang_terinfeks
                      i
Net_emission_rate_3 = Quanta_exhalation_rate_new.*(1-
                      Exhalation_mask_3.*Fraction_of_people_mask).*Orang_terinfeks
                      i
```

```
%EFISIENSI MASKER BAGIAN 2

Avg_quanta_concentration_1 = Net_emission_rate_1./
    Total_first_order_loss_rate./Volume.*(1-(1/
    Total_first_order_loss_rate./Durasi).*(1-exp(-
    Total_first_order_loss_rate.*Durasi)))
Avg_quanta_concentration_2 = Net_emission_rate_2./
    Total_first_order_loss_rate./Volume.*(1-(1/
    Total_first_order_loss_rate./Durasi).*(1-exp(-
    Total_first_order_loss_rate.*Durasi)))
Avg_quanta_concentration_3 = Net_emission_rate_3./
    Total_first_order_loss_rate./Volume.*(1-(1/
    Total_first_order_loss_rate./Durasi).*(1-exp(-
    Total_first_order_loss_rate.*Durasi)))

Quanta_inhale_per_person_1=Avg_quanta_concentration_1.*Breathing_rate.*Durasi.*(1
    -Inhalation_mask_1.*Fraction_of_people_mask)
Quanta_inhale_per_person_2=Avg_quanta_concentration_2.*Breathing_rate.*Durasi.*(1
    -Inhalation_mask_2.*Fraction_of_people_mask)
Quanta_inhale_per_person_3=Avg_quanta_concentration_3.*Breathing_rate.*Durasi.*(1
    -Inhalation_mask_3.*Fraction_of_people_mask)

Infeksi_1a = 1-exp(-Quanta_inhale_per_person_1)
Infeksi_1b = 1-exp(-Quanta_inhale_per_person_2)
Infeksi_1c = 1-exp(-Quanta_inhale_per_person_3)

Infeksi_2a = 1-(1-Infeksi_1a.*Prevalensi_1).^Susceptible_people
Infeksi_2b = 1-(1-Infeksi_1b.*Prevalensi_2).^Susceptible_people
Infeksi_2c = 1-(1-Infeksi_1c.*Prevalensi_3).^Susceptible_people

Infeksi_3a = 1-(1-infeksi_2a).^Jumlah_pengulangan_kejadian
Infeksi_3b = 1-(1-infeksi_2b).^Jumlah_pengulangan_kejadian
Infeksi_3c = 1-(1-infeksi_2c).^Jumlah_pengulangan_kejadian

Hasil1a = Infeksi_1a*100
Hasil2a = Infeksi_2a*100
Hasil3a = Infeksi_3a*100
Hasil1b = Infeksi_1b*100
Hasil2b = Infeksi_2b*100
Hasil3b = Infeksi_3b*100
Hasil1c = Infeksi_1c*100
Hasil2c = Infeksi_2c*100
Hasil3c = Infeksi_3c*100

plot(Durasi, Hasil3a, '-*r', Durasi, Hasil3b, '-*b', Durasi, Hasil3c, '-*g')
xlabel('Durasi (jam)')
ylabel('Kemungkinan Terinfeksi (%)')
xlim([0 3])
ylim([0 0.6])                    %Sesuaikan dengan Cafe
title('Pengaruh Efisiensi Masker Terhadap Risiko Penularan SARS-CoV-2 Melalui
    Aerosol Dalam Cafe')
legend('Efisiensi Masker = 23%', 'Efisiensi Masker = 50%', 'Efisiensi Masker  = 90%')
```

```
%VOLUME RUANGAN
%Faktor lingkungan
UV    =   0                %Tanpa Satuan
T     =   24               %Dalam derajat Celcius
RH    =   75               %Dalam persen
Ventilasi = 4              %Dalam satuan /jam   %Sesuaikan dengan Cafe
Exhalation_mask = 0.5
Inhalation_mask = 0.5
Volume_1= 96
Volume_2 = 112             %Dalam meter kubik  %Sesuaikan dengan Cafe
Volume_3 = 128
Jarak = 1                  %Dalam meter
Prevalensi = 0.02
Jumlah_orang = 20                               %Sesuaikan dengan Cafe
Decay_rate_of_virus = (7.569+1.411.*((T-20.54)/10.66)+0.022.*((RH-
                      45.235)/28.665)+7.553.*((UV-50)/50)+1.397.*((T-
                      20.54)/10.66).*(UV-50)/50).*60


Deposition_to_surface = 0.3          %Satuan /jam      %Ketetapan
Additional_control_measures = 0      %Satuan /jam      %Ketetapan
Fraction_of_people_mask = 1          %Tanpa satuan     %Ketetapan
Duration_of_event = 150     %Satuan menit
Durasi = 0.8333:0.8333:Duration_of_event./60
Prob_social_distance = (-18.19*log(Jarak)+43.276)/100

Quanta_exhalation_rate = 9.4      %Satuan /jam      %Sesuaikan dengan Cafe
Quanta_exhalation_rate_new = Quanta_exhalation_rate.*Prob_social_distance
Breathing_rate = 0.52                %Satuan meter kubik per jam         %Ketetapan
Jumlah_pengulangan_kejadian = 1                 %Sesuaikan dengan Cafe
Orang_terinfeksi = 1                 %Ketetapan
Fraction_of_population_inmune = 0    %Satuan persen    %Ketetapan
Susceptible_people =  (Jumlah_orang–Orang_terinfeksi)*(1-
                      Fraction_of_population_inmune)
Total_first_order_loss_rate  =  Ventilasi+Decay_rate_of_virus+  Deposition_to_surface+
                               Additional_control_measures

Net_emission_rate =  Quanta_exhalation_rate_new.*(1-
                     Exhalation_mask.*Fraction_of_people_mask).*Orang_terinfeksi
Avg_quanta_concentration_1 = Net_emission_rate./
                             Total_first_order_loss_rate./Volume_1.*(1-(1/
                             Total_first_order_loss_rate./Durasi).*(1-exp(-
                             Total_first_order_loss_rate.*Durasi)))
Avg_quanta_concentration_2 = Net_emission_rate./
                             Total_first_order_loss_rate./Volume_2.*(1-(1/
                             Total_first_order_loss_rate./Durasi).*(1-exp(-
                             Total_first_order_loss_rate.*Durasi)))
Avg_quanta_concentration_3 = Net_emission_rate./
                             Total_first_order_loss_rate./Volume_3.*(1-(1/
                             Total_first_order_loss_rate./Durasi).*(1-exp(-
                             Total_first_order_loss_rate.*Durasi)))
```

```
%VOLUME RUANGAN BAGIAN 2

Quanta_inhale_per_person_1=Avg_quanta_concentration_1.*Breathing_rate.*Durasi.*(1
                            -Inhalation_mask_1.*Fraction_of_people_mask)
Quanta_inhale_per_person_2=Avg_quanta_concentration_2.*Breathing_rate.*Durasi.*(1
                            -Inhalation_mask_2.*Fraction_of_people_mask)
Quanta_inhale_per_person_3=Avg_quanta_concentration_3.*Breathing_rate.*Durasi.*(1
                            -Inhalation_mask_3.*Fraction_of_people_mask)

Infeksi_1a = 1-exp(-Quanta_inhale_per_person_1)
Infeksi_1b = 1-exp(-Quanta_inhale_per_person_2)
Infeksi_1c = 1-exp(-Quanta_inhale_per_person_3)

Infeksi_2a = 1-(1-Infeksi_1a.*Prevalensi_1).^Susceptible_people
Infeksi_2b = 1-(1-Infeksi_1b.*Prevalensi_2).^Susceptible_people
Infeksi_2c = 1-(1-Infeksi_1c.*Prevalensi_3).^Susceptible_people

Infeksi_3a = 1-(1-infeksi_2a).^Jumlah_pengulangan_kejadian
Infeksi_3b = 1-(1-infeksi_2b).^Jumlah_pengulangan_kejadian
Infeksi_3c = 1-(1-infeksi_2c).^Jumlah_pengulangan_kejadian

Hasil1a = Infeksi_1a*100
Hasil2a = Infeksi_2a*100
Hasil3a = Infeksi_3a*100

Hasil1b = Infeksi_1b*100
Hasil2b = Infeksi_2b*100
Hasil3b = Infeksi_3b*100

Hasil1c = Infeksi_1c*100
Hasil2c = Infeksi_2c*100
Hasil3c = Infeksi_3c*100

plot(Durasi, Hasil3a, '-*r', Durasi, Hasil3b, '-*b', Durasi, Hasil3c, '-*g')
xlabel('Durasi (jam)')
ylabel('Kemungkinan Terinfeksi (%)')
xlim([0 3])
ylim([0 0.25])                              %Sesuaikan dengan Cafe
title('Pengaruh Volume Ruangan Terhadap Risiko Penularan SARS-CoV-2 Melalui
      Aerosol Dalam Cafe')
legend('Volume = 96 meter kubik ', 'Volume = 112 meter kubik, 'Volume = 128 meter
         kubik')
```

```
                                %JUMLAH ORANG
%Faktor lingkungan
UV    =   0                  %Tanpa Satuan
T     =   24                 %Dalam derajat Celcius
RH    =   75                 %Dalam persen
Ventilasi = 4                %Dalam satuan /jam   %Sesuaikan dengan Cafe
Exhalation_mask = 0.5
Inhalation_mask = 0.5
Volume = 128                 %Dalam meter kubik  %Sesuaikan dengan Cafe
Jarak = 1                    %Dalam meter
Prevalensi = 0.02
Jumlah_orang_1 = 10                              %Sesuaikan dengan Cafe
Jumlah_orang_2 = 15
Jumlah_orang_3 = 20
Decay_rate_of_virus = (7.569+1.411.*((T-20.54)/10.66)+0.022.*((RH-
                      45.235)/28.665)+7.553.*((UV-50)/50)+1.397.*((T-
                      20.54)/10.66).*(UV-50)/50).*60


Deposition_to_surface = 0.3            %Ketetapan
Additional_control_measures = 0        %Ketetapan
Fraction_of_people_mask = 1            %Ketetapan
Duration_of_event = 240      %Dalam menit
Durasi = 0.8333:0.8333:Duration_of_event./60
Prob_social_distance = (-18.19*log(Jarak)+43.276)/100

Quanta_exhalation_rate = 9.4                     %Sesuaikan dengan Cafe
Quanta_exhalation_rate_new = Quanta_exhalation_rate.*Prob_social_distance

Breathing_rate = 0.52                  %Ketetapan
Jumlah_pengulangan_kejadian = 1
Orang_terinfeksi = 1                   %Ketetapan
Fraction_of_population_inmune = 0      %Ketetapan
Susceptible_people_1 =  (Jumlah_orang_1–Orang_terinfeksi)*(1-
                        Fraction_of_population_inmune)
Susceptible_people_2 =  (Jumlah_orang_2–Orang_terinfeksi)*(1-
                        Fraction_of_population_inmune)
Susceptible_people_3 =  (Jumlah_orang_3–Orang_terinfeksi)*(1-
                        Fraction_of_population_inmune)

Total_first_order_loss_rate  =  Ventilasi+Decay_rate_of_virus+  Deposition_to_surface+
                                Additional_control_measures

Net_emission_rate =  Quanta_exhalation_rate_new.*(1-
                     Exhalation_mask.*Fraction_of_people_mask).*Orang_terinfeksi
Avg_quanta_concentration =  Net_emission_rate./
                            Total_first_order_loss_rate./Volume.*(1-(1/
                            Total_first_order_loss_rate./Durasi).*(1-exp(-
                            Total_first_order_loss_rate.*Durasi)))
Quanta_inhale_per_person=Avg_quanta_concentration.*Breathing_rate.*Durasi.*(1-
                         Inhalation_mask_1.*Fraction_of_people_mask)
```

```
%JUMLAH ORANG BAGIAN 2

Infeksi_1a = 1-exp(-Quanta_inhale_per_person)

Infeksi_2a = 1-(1-Infeksi_1a.*Prevalensi_1).^Susceptible_people
Infeksi_2b = 1-(1-Infeksi_1b.*Prevalensi_2).^Susceptible_people
Infeksi_2c = 1-(1-Infeksi_1c.*Prevalensi_3).^Susceptible_people

Infeksi_3a = 1-(1-infeksi_2a).^Jumlah_pengulangan_kejadian
Infeksi_3b = 1-(1-infeksi_2b).^Jumlah_pengulangan_kejadian
Infeksi_3c = 1-(1-infeksi_2c).^Jumlah_pengulangan_kejadian

Hasil1a = Infeksi_1a*100
Hasil2a = Infeksi_2a*100
Hasil3a = Infeksi_3a*100

Hasil1b = Infeksi_1b*100
Hasil2b = Infeksi_2b*100
Hasil3b = Infeksi_3b*100

Hasil1c = Infeksi_1c*100
Hasil2c = Infeksi_2c*100
Hasil3c = Infeksi_3c*100

plot(Durasi, Hasil3a, '-*r', Durasi, Hasil3b, '-*b', Durasi, Hasil3c, '-*g')
xlabel('Durasi (jam)')
ylabel('Kemungkinan Terinfeksi (%)')
xlim([0 3])
ylim([0 0.6])                                    %Sesuaikan dengan Cafe
title('Pengaruh Jumlah Orang Terhadap Risiko Penularan SARS-CoV-2 Melalui Aerosol
    Dalam Cafe')
legend('Jumlah Orang = 10', 'Jumlah Orang = 15', 'Jumlah Orang = 20')
```

2. Pengacakan Faktor Lingkungan

```
%RANDOM GENERATOR
%Halmar Halide, Departemen Geofisika Unhas
clear
clc
rng default
r = randi (3,1000,9)          %Acak untuk 1000 kejadian, ada 9 input, dan masing-masing
                                input terdapat 3 kategori
                              %1 = minimum, 2 = medium, 3 = maksimum
[mm, nn]=size(r);
in1=r(:,1)    ;in2=r(:,2)    ;in3=r(:,3)    in4=r(:,4)    ;in5=r(:,5)    ;in6=r(:,6)
in7=r(:,7) ;in8=r(:,8) ;in9=r(:,9)
%Loop untuk deklarasi semua input dengan 3 kategori: min, med, maks
for i = 1:mm
    if in1(i)==1
      suhu(i)=15;
    else if in1(i)==2;
      suhu(i)=24;
      else
      suhu(i)=30;
      end
    end
end
for j = 1:mm
    if in2(j)==1
      rh(j)=65;
    else if in2(j)==2;
      rh(j)=75;
      else
      rh(j)=85;
      end
    end
end
for k = 1:mm
    if in3(k)==1
      uv(k)=0;
    else if in3(k)==2;
      uv(k)=2.5;
      else
      uv(k)=3.5;
      end
    end
end
for l = 1:mm
    if in4(l)==1
      jarak(l)=0.2;
    else if in4(l)==2;
      jarak(l)=0.5;
      else
      jarak(l)=1;
      end
    end
end
```

```
%RANDOM GENERATOR BAGIAN 2
%Halmar Halide, Departemen Geofisika Unhas
for m = 1:mm
    if in5(m)==1
      ventilasi(m)=2;
    else if in5(m)==2;
      ventilasi(m)=4;
      else
      ventilasi(m)=6;
      end
    end
end
for n = 1:mm
    if in6(n)==1
      exhalationmask(n)=0.23;
    else if in6(n)==2;
      exhalationmask(n)=0.5;
      else
      exhalationmask(n)=0.9;
      end
    end
end
for o = 1:mm
    if in7(o)==1
      prevalensi(o)=0.01;
    else if in7(o)==2;
      prevalensi(o)=0.03;
      else
      prevalensi(o)=0.05;
      end
    end
end
for p = 1:mm
    if in8(p)==1
      inhalationmask(p)=0.23;
    else if in8(p)==2;
      inhalationmask(p)=0.5;
      else
      inhalationmask(p)=0.9;
      end
    end
end
for q = 1:mm
    if in9(q)==1
      durasi(q)=240;
    else if in9(q)==2;
      durasi(q)=360;
      else
      durasi(q)=480;
      end
    end
end
```

```
%RANDOM GENERATOR BAGIAN 3
%Halmar Halide, Departemen Geofisika Unhas
T=suhu'
RH=rh'
UV=uv'
Ventilasi=ventilasi'
Decay_rate_of_virus = (7.569+1.411.*((T-20.54)/10.66)+0.022.*((RH-
                      45.235)/28.665)+7.553.*((UV-50)/50)+1.397.*((T-
                      20.54)/10.66).*(UV-50)/50).*60
Deposition_to_surface=0.3
Additional_control_measures=0
Exhalation_mask_efficiency=exhalationmask'
Fraction_of_people_mask=1
Inhalation_mask_efficiency=inhalationmask'
Panjang=30            %Satuan meter
Lebar=20              %Satuan meter
Tinggi=7              %Satuan meter
Volume=Panjang*Lebar*Tinggi
Durasi=durasi'
Quanta_exhalation_rate=65.1
Prob_social_distance=(-18.19*log(jarak')+43.276)/100
Quanta_exhalation_rate_new=Quanta_exhalation_rate*Prob_social_distance
Breathing_rate=0.52
Jumlah_pengulangan_kejadian=1
Prevalensi=0.02
Jumlah_orang=100
Infective_people=1
Fraction_of_population_inmune=0
Susceptible_poople=(Jumlah_orang-Infective_people)*(1-
                    Fraction_of_population_inmune)
Total_first_order_loss_rate=Ventilasi+Decay_rate_of_virus+Deposition_to_surface+Add
                            itional_control_measures
Net_emission_rate=Quanta_exhalation_rate_new.*(1-     Exhalation_mask_efficiency.*
                  Fraction_of_people_mask).* Infective_people
Avg_quanta_concentration=Net_emission_rate./
                            Total_first_order_loss_rate./Volume.*(1-(1./
                            Total_first_order_loss_rate./Durasi).*(1-exp(-
                            Total_first_order_loss_rate.*Durasi)))
Quanta_inhale_per_person=Avg_quanta_concentration.*Breathing_rate.*Durasi.*(1-
                            Inhalation_mask_efficiency.*Fraction_of_people_mask)
Infeksi_1=1-exp(-Quanta_inhale_per_person)
Infeksi_2=1-(1-Infeksi_1.*prevalensi').^susceptible_people
Infeksi_3=1-(1-Infeksi_2)^Jumlah_pengulangan_kejadian
hasil1=Infeksi_1*100
hasil2=Infeksi_2*100
hasil3=Infeksi_3*100
hasil=[suhu' rh' uv' jarak' ventilasi' maskerout' maskerin' durasi' hasil3']
formatSpec= '%10.2f    %10.2f    %10.2f    %10.2f    %10.2f    %10.4f\n';
fprintf(formatSpec,hasil')
```

3. Metode Stepwise

```
%KALKULATOR PERSENTASE KEBENARAN MODEL STEPWISE
%Halmar Halide, Departemen Geofisika Unhas
load rank1000.txt              %Sesuaikan dengan nama file .txt
factors=rank1000(:,1:9);
aerosol=rank1000(:,10);
md1=stepwiseselm(factors,aerosol,'PEnter',0.05)
%Output
%Linear regression model:
%  y~1 + x9 + x3*x4 + x3*x7 + x3*x10 + x4*x7 + x4*x10
%Estimated Coefficients:
%                        Extimate    SE        tStat     pValue
%      (Intercept)       0.27593     0.24167   1.1417    0.25662
%         x3             0.07762     0.06198   1.2523    0.21376
%         x4             0.04571     0.12066   0.3789    0.70570
%         x7             -0.39145    0.12349   -3.1699   0.00209
%         x9             -0.00090    0.00032   -2.6381   0.00984
%         x10            0.00126     0.00440   0.28729   0.77456
%         x3:x4          -0.07044    0.01311   -5.3714   6.1845e-07
%         x3:x7          0.18754     0.03371   5.5630    2.7555e-07
%         x3:x10         -0.00268    0.07607   -3.5351   0.00065
%         x4:x7          -0.00287    0.00109   -2.6434   0.00969
%         x4:x10         0.00722     0.00234   3.0758    0.00278
%Number of observations: 100, Error degrees of freedom: 89
%Root Mean Squared Error: 0.136
%R-squared: 0.739, Adjusted R-squared: 0.71
%F-statistics vs. Constant model: 25.2, pValue: 6.64e-22
```

4. Pemodelan Risiko Terinfeksi SARS-CoV-2 Melalui Aerosol

4.1. Grafik Data Observasi dan Prediksi Risiko Infeksi SARS-CoV-2 Melalui Aerosol

```
clc;

load plotk1000.txt                    %Sesuaikan dengan nama file .txt
obs=plotk1000(:,1);
preb=plotk1000(:,2);
eve=plotk1000(:,3);
[m,n]=size(obs);time=1:m

figure(1);
plot(eve,obs,'o',eve.preb,'-x');

hold on
axis([0 1000    -3 40])
xlabel('Kejadian')
ylabel('Kemungkinan Terinfeksi (%)')
tittle({'Kemungkinan Risiko Terinfeksi SARS-CoV-2 Melalui Aerosol';'Dalam GPIB
       Immanuel Makassar untuk 1000 Kejadian'})
legend('Observasi','Prediksi')
text(20,32, 'Prediktor = Suhu, RH, UV, durasi, jarak, ventilasi, masker, prevalensi')
text(20,28, 'R = 0.81')
text(20,24, 'Volume ruang = 4200 meter kubik')
text(20,20, 'Jumlah jemaat = 100 orang')
print –dtiff GrafikPrediksi1000.tif      %Sesuaikan dengan nama file .tif
```

4.2. Diagram Tebar Data Observasi dan Prediksi Risiko Terinfeksi SARS-CoV-2 Melalui Aerosol

```
clear;
clc

load plotk500.txt
obs=plotk500(:,1);
preb=plotk500(:,2);

satu=ones(size(obs));

[m,n]=size(obs);
time=1:m;

t=1:m;

data=obs;
tetha=45;
R=[cosd(tetha) sind(tetha);-sind(tetha) cosd(tetha)];

pls=preb;
dp1s=[obs(t) pls(t)];
nip1s=(R*dp1s');
jp1s=nip1s(:,2);
jrk_p1s=norm(jp1s);
sjp1s=std(jp1s);
RMSE_preb=sqrt(mean((pls(t)-obs(t)).^2));
korr_preb=xcorr(pls(t),obs(t),'coeff');
k_preb=korr_preb(m);

axis('square')
xa=min(preb):max(obs);
ya=min(preb):max(obs);
figure (1);
axis('square');
plot(data,preb,'ob'),hold on
plot(xa,ya,'-r','LineWidth',1),hold off
xlabel('Observasi')
ylabel('Prediksi')
axis square([{'Diagram Tebar Data Observasi dan Data Prediksi';'Risiko Terinfeksi
                SARS-CoV-2 Melalui Aerosol di Cafe (500 Kejadian'}])
text(-0.5,8,{'Prediktor = Suhu, RH, UV, durasi, jarak,';'ventilasi, masker, prevalensi'})
text(-0.5,7,'R = 0.789')

axis([min(preb) max(preb) min(preb) max(preb)])
print –dtiff DiagramTebar500.tif        %Sesuaikan dengan nama file.tif
```