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Lampiran 1 *Script* Matlab

1. Faktor-faktor Lingkungan

```
%program menghitung resiko tertular covid-19 kasus: classroom
%Gebrina Rezki S
%Pembimbing : Halmar Halide
%Dept Geofisika FMIPA Unhas

%suhu
T1 = 18
T2 = 24
T3 = 30
RH = 55 %dalam persen, min:20, med:40, max:70
UV = 0 %tanpa satuan, min:0, med:2.5, max:3.5
decay_rate_of_this_virus_1=(7.569+1.411*((T1-20.54)/10.66)+ 0.022*((RH-45.235)/28.665)+...
                          7.553*(((UV*0.9)-50)/50)+1.397*((T1-20.54)/10.66)*(((UV*0.9)-50)/50))*60 %(Dabisch P. dkk., 2020)
decay_rate_of_this_virus_2=(7.569+1.411*((T2-20.54)/10.66)+ 0.022*((RH-45.235)/28.665)+...
                          7.553*(((UV*0.9)-50)/50)+1.397*((T2-20.54)/10.66)*(((UV*0.9)-50)/50))*60%(Dabisch P. dkk., 2020)
decay_rate_of_this_virus_3=(7.569+1.411*((T3-20.54)/10.66)+ 0.022*((RH-45.235)/28.665)+...
                          7.553*(((UV*0.9)-50)/50)+1.397*((T3-20.54)/10.66)*(((UV*0.9)-50)/50))*60 %(Dabisch P. dkk., 2020)

ventilation_outside_air=4 % satuan h-1, min:2, med:4, max:6
deposition_to_surface=0.3
additional_control_measures=0

exhalation_mask_efficiency=0.4 %satuan persen
fraction_of_people_mask=1 %satuan persen


volume =  1080 % satuan m3
duration_of_event = 150 %satuan menit
Durasi = 0.8333:0.8333:duration_of_event./60 %satuan jam

jarak = 1
prob_social_distance = (-18.19*log(jarak)+43.276)/100 %rumus (10). )Sun C. dan Zhai Z, 2020).
quanta_exhalation_rate = 10
quanta_exhalation_rate_new = quanta_exhalation_rate.*prob_social_distance

breathing_rate=0.52
inhalation_mask_efficiency = 0.3
number_of_repetition_event=16
prob_of_being_infective=0.009

jumlah_orang = 240
infective_people = 1
fraction_of_population_inmune = 0
susceptible_people= (jumlah_orang - infective_people)*(1-fraction_of_population_inmune)

Total_first_order_loss_rate_1 = ventilation_outside_air + decay_rate_of_this_virus_1 + deposition_to_surface + additional_control_measures
```

```
Total_first_order_loss_rate_2 = ventilation_outside_air +
decay_rate_of_this_virus_2 + deposition_to_surface +
additional_control_measures
Total_first_order_loss_rate_3 = ventilation_outside_air +
decay_rate_of_this_virus_3 + deposition_to_surface +
additional_control_measures

Net_emission_rate = quanta_exhalation_rate_new.*(1 -
exhalation_mask_efficiency.*fraction_of_people_mask).*infective_pe
ople

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)))

Quanta_inhale_per_person_1 =
Avg_quanta_concentration_1.*breathing_rate.*Durasi.*(1 -
inhalation_mask_efficiency.*fraction_of_people_mask)
Quanta_inhale_per_person_2 =
Avg_quanta_concentration_2.*breathing_rate.*Durasi.*(1 -
inhalation_mask_efficiency.*fraction_of_people_mask)
Quanta_inhale_per_person_3 =
Avg_quanta_concentration_3.*breathing_rate.*Durasi.*(1 -
inhalation_mask_efficiency.*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.*prob_of_being_infective).^susceptible_people
Infeksi_2b = 1 - (1 -
Infeksi_1b.*prob_of_being_infective).^susceptible_people
Infeksi_2c = 1 - (1 -
Infeksi_1c.*prob_of_being_infective).^susceptible_people

Infeksi_3a = 1 - (1 - Infeksi_2a).^ number_of_repetition_event
Infeksi_3b = 1 - (1 - Infeksi_2b).^ number_of_repetition_event
Infeksi_3c = 1 - (1 - Infeksi_2c).^ number_of_repetition_event

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,'-*b', Durasi, hasil3b,'-*r', Durasi,
hasil3c,'-*g')
xlabel('Durasi (jam)')
ylabel('Risiko Terinfeksi (%)')
xlim([0 3])
ylim([0 1.5])
title({'Pengaruh Suhu terhadap Risiko Terinfeksi Aerosol SARS-CoV-
2'; 'di dalam Ruang Kelas (Volume = 1080m3)'})
legend({'suhu = 18', 'suhu = 24','suhu = 30'})

%%

%RH
RH1 = 40
RH2 = 55
RH3 = 70
T = 24
UV = 0 %tanpa satuan, mini:0, med:2.5, max:4
decay_rate_of_this_virus_1=(7.569+1.411*((T-20.54)/10.66)+
0.022*((RH1-45.235)/28.665)+...
                          7.553*(((UV*0.9)-50)/50)+1.397*((T-
20.54)/10.66)*(((UV*0.9)-50)/50))*60 %(Dabisch P. dkk., 2020)
decay_rate_of_this_virus_2=(7.569+1.411*((T-20.54)/10.66)+
0.022*((RH2-45.235)/28.665)+...
                          7.553*(((UV*0.9)-50)/50)+1.397*((T-
20.54)/10.66)*(((UV*0.9)-50)/50))*60%(Dabisch P. dkk., 2020)
decay_rate_of_this_virus_3=(7.569+1.411*((T-20.54)/10.66)+
0.022*((RH3-45.235)/28.665)+...
                          7.553*(((UV*0.9)-50)/50)+1.397*((T-
20.54)/10.66)*(((UV*0.9)-50)/50))*60 %(Dabisch P. dkk., 2020)

ventilation_outside_air=4 % satuan h-1, min:2, med:4, max:6
deposition_to_surface=0.3
additional_control_measures=0

exhalation_mask_efficiency=0.4 %satuan persen
fraction_of_people_mask=1 %satuan persen


volume =  1080 % satuan m3
duration_of_event = 150 %satuan menit
Durasi = 0.8333:0.8333:duration_of_event./60 %satuan jam

jarak = 1
prob_social_distance = (-18.19*log(jarak)+43.276)/100 %rumus (10).
)Sun C. dan Zhai Z, 2020).
quanta_exhalation_rate = 10
quanta_exhalation_rate_new =
quanta_exhalation_rate.*prob_social_distance
```

```
breathing_rate=0.52
inhalation_mask_efficiency = 0.3
number_of_repetition_event=16
prob_of_being_infective=0.009

jumlah_orang = 240
infective_people = 1
fraction_of_population_inmune = 0

susceptible_people= (jumlah_orang - infective_people)*(1-
fraction_of_population_inmune)
Total_first_order_loss_rate_1 = ventilation_outside_air +
decay_rate_of_this_virus_1 + deposition_to_surface +
additional_control_measures
Total_first_order_loss_rate_2 = ventilation_outside_air +
decay_rate_of_this_virus_2 + deposition_to_surface +
additional_control_measures
Total_first_order_loss_rate_3 = ventilation_outside_air +
decay_rate_of_this_virus_3 + deposition_to_surface +
additional_control_measures

Net_emission_rate = quanta_exhalation_rate_new.*(1 -
exhalation_mask_efficiency.*fraction_of_people_mask).*infective_pe
ople

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)))

Quanta_inhale_per_person_1 =
Avg_quanta_concentration_1.*breathing_rate.*Durasi.*(1 -
inhalation_mask_efficiency.*fraction_of_people_mask)
Quanta_inhale_per_person_2 =
Avg_quanta_concentration_2.*breathing_rate.*Durasi.*(1 -
inhalation_mask_efficiency.*fraction_of_people_mask)
Quanta_inhale_per_person_3 =
Avg_quanta_concentration_3.*breathing_rate.*Durasi.*(1 -
inhalation_mask_efficiency.*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.*prob_of_being_infective).^susceptible_people
```

```
Infeksi_2b = 1 - (1 -
Infeksi_1b.*prob_of_being_infective).^susceptible_people
Infeksi_2c = 1 - (1 -
Infeksi_1c.*prob_of_being_infective).^susceptible_people

Infeksi_3a = 1 - (1 - Infeksi_2a).^ number_of_repetition_event
Infeksi_3b = 1 - (1 - Infeksi_2b).^ number_of_repetition_event
Infeksi_3c = 1 - (1 - Infeksi_2c).^ number_of_repetition_event

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,'-*b', Durasi, hasil3b,'-*r', Durasi,
hasil3c,'-*g')
xlabel('Durasi (jam)')
ylabel('Risiko Terinfeksi (%)')
xlim([0 3])
ylim([0 1.5])
title({'Pengaruh RH terhadap Risiko Terinfeksi Aerosol SARS-CoV-
2'; 'di dalam Ruang Kelas (Volume = 1080m3)'})
legend('RH = 40', 'RH = 55','RH = 70')

%%
%uv

RH = 55
T = 24
UV1 = 0 %tanpa satuan, mini:0, med:2.5, max:4
UV2 = 2.5
UV3 = 3.5
decay_rate_of_this_virus_1=(7.569+1.411*((T-20.54)/10.66)+
0.022*((RH-45.235)/28.665)+...
                          7.553*(((UV1*0.9)-50)/50)+1.397*((T-
20.54)/10.66)*(((UV1*0.9)-50)/50))*60 %(Dabisch P. dkk., 2020)
decay_rate_of_this_virus_2=(7.569+1.411*((T-20.54)/10.66)+
0.022*((RH-45.235)/28.665)+...
                          7.553*(((UV2*0.9)-50)/50)+1.397*((T-
20.54)/10.66)*(((UV2*0.9)-50)/50))*60%(Dabisch P. dkk., 2020)
decay_rate_of_this_virus_3=(7.569+1.411*((T-20.54)/10.66)+
0.022*((RH-45.235)/28.665)+...
                          7.553*(((UV3*0.9)-50)/50)+1.397*((T-
20.54)/10.66)*(((UV3*0.9)-50)/50))*60 %(Dabisch P. dkk., 2020)

ventilation_outside_air=4 % satuan h-1, min:2, med:4, max:6
deposition_to_surface=0.3
additional_control_measures=0
```

```
exhalation_mask_efficiency=0.4 %satuan persen
fraction_of_people_mask=1 %satuan persen


volume =  1080 % satuan m3
duration_of_event = 150 %satuan jam
Durasi = 0.8333:0.8333:duration_of_event./60 %satuan jam

jarak = 1
prob_social_distance = (-18.19*log(jarak)+43.276)/100 %rumus (10).
)Sun C. dan Zhai Z, 2020).
quanta_exhalation_rate = 10
quanta_exhalation_rate_new =
quanta_exhalation_rate.*prob_social_distance

breathing_rate=1.52
inhalation_mask_efficiency = 0.3
number_of_repetition_event=16
prob_of_being_infective=0.009

jumlah_orang = 240
infective_people = 1
fraction_of_population_inmune = 0
susceptible_people= (jumlah_orang - infective_people)*(1-
fraction_of_population_inmune)

Total_first_order_loss_rate_1 = ventilation_outside_air +
decay_rate_of_this_virus_1 + deposition_to_surface +
additional_control_measures
Total_first_order_loss_rate_2 = ventilation_outside_air +
decay_rate_of_this_virus_2 + deposition_to_surface +
additional_control_measures
Total_first_order_loss_rate_3 = ventilation_outside_air +
decay_rate_of_this_virus_3 + deposition_to_surface +
additional_control_measures

Net_emission_rate = quanta_exhalation_rate_new.*(1 -
exhalation_mask_efficiency.*fraction_of_people_mask).*infective_pe
ople

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)))
```

```
Quanta_inhale_per_person_1 =
Avg_quanta_concentration_1.*breathing_rate.*Durasi.*(1 -
inhalation_mask_efficiency.*fraction_of_people_mask)
Quanta_inhale_per_person_2 =
Avg_quanta_concentration_2.*breathing_rate.*Durasi.*(1 -
inhalation_mask_efficiency.*fraction_of_people_mask)
Quanta_inhale_per_person_3 =
Avg_quanta_concentration_3.*breathing_rate.*Durasi.*(1 -
inhalation_mask_efficiency.*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.*prob_of_being_infective).^susceptible_people
Infeksi_2b = 1 - (1 -
Infeksi_1b.*prob_of_being_infective).^susceptible_people
Infeksi_2c = 1 - (1 -
Infeksi_1c.*prob_of_being_infective).^susceptible_people

Infeksi_3a = 1 - (1 - Infeksi_2a).^ number_of_repetition_event
Infeksi_3b = 1 - (1 - Infeksi_2b).^ number_of_repetition_event
Infeksi_3c = 1 - (1 - Infeksi_2c).^ number_of_repetition_event

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,'-*b', Durasi, hasil3b,'-*r', Durasi,
hasil3c,'-*g')
xlabel('Durasi (jam)')
ylabel('Risiko Terinfeksi (%)')
xlim([0 3])
ylim([0 4])
title({'Pengaruh Indeks UV terhadap Risiko Terinfeksi Aerosol
SARS-CoV-2'; 'di dalam Ruang Kelas (Volume 1080m3)'})
legend('UV = 0', 'UV = 2.5','UV = 3.5')

%%

%jarak

T = 24
RH = 55%dalam persen, mini:20, med:50, max:70
UV = 0 %tanpa satuan, mini:0, med:2.5, max:4
```

```
decay_rate_of_this_virus=(7.569+1.411*((T-20.54)/10.66)+
0.022*((RH-45.235)/28.665)+...
                              7.553*(((UV*0.9)-50)/50)+1.397*((T-
20.54)/10.66)*(((UV*0.9)-50)/50))*60 %(Dabisch P. dkk., 2020)

ventilation_outside_air=4 % satuan h-1, min:2, med:4, max:6
deposition_to_surface=0.3
additional_control_measures=0

exhalation_mask_efficiency=0.4 %satuan persen
fraction_of_people_mask=1 %satuan persen


volume =  1080 % satuan m3
duration_of_event = 150 %satuan jam
Durasi =0.8333:0.8333:duration_of_event./60 %satuan jam
jarak1 = 0.5
jarak2 = 1
jarak3 = 2
prob_social_distance_1 = (-18.19*log(jarak1)+43.276)/100 %rumus
(10). )Sun C. dan Zhai Z, 2020).
prob_social_distance_2 = (-18.19*log(jarak2)+43.276)/100 %rumus
(10). )Sun C. dan Zhai Z, 2020).
prob_social_distance_3 = (-18.19*log(jarak3)+43.276)/100 %rumus
(10). )Sun C. dan Zhai Z, 2020).
quanta_exhalation_rate = 10
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
inhalation_mask_efficiency = 0.3
number_of_repetition_event=16
prob_of_being_infective=0.009

jumlah_orang = 240
infective_people = 1
fraction_of_population_inmune = 0
susceptible_people= (jumlah_orang - infective_people)*(1-
fraction_of_population_inmune)

Total_first_order_loss_rate= ventilation_outside_air +
decay_rate_of_this_virus + deposition_to_surface +
additional_control_measures


Net_emission_rate_1 = quanta_exhalation_rate_new_1.*(1 -
exhalation_mask_efficiency.*fraction_of_people_mask).*infective_pe
ople
Net_emission_rate_2 = quanta_exhalation_rate_new_2.*(1 -
exhalation_mask_efficiency.*fraction_of_people_mask).*infective_pe
ople
```

```
Net_emission_rate_3 = quanta_exhalation_rate_new_3.*(1 -
exhalation_mask_efficiency.*fraction_of_people_mask).*infective_pe
ople

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_efficiency.*fraction_of_people_mask)
Quanta_inhale_per_person_2 =
Avg_quanta_concentration_2.*breathing_rate.*Durasi.*(1 -
inhalation_mask_efficiency.*fraction_of_people_mask)
Quanta_inhale_per_person_3 =
Avg_quanta_concentration_3.*breathing_rate.*Durasi.*(1 -
inhalation_mask_efficiency.*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.*prob_of_being_infective).^susceptible_people
Infeksi_2b = 1 - (1 -
Infeksi_1b.*prob_of_being_infective).^susceptible_people
Infeksi_2c = 1 - (1 -
Infeksi_1c.*prob_of_being_infective).^susceptible_people

Infeksi_3a = 1 - (1 - Infeksi_2a).^ number_of_repetition_event
Infeksi_3b = 1 - (1 - Infeksi_2b).^ number_of_repetition_event
Infeksi_3c = 1 - (1 - Infeksi_2c).^ number_of_repetition_event

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,'-*b', Durasi, hasil3b,'-*r', Durasi,
hasil3c,'-*g')
xlabel('Durasi (jam)')
ylabel('Risiko Terinfeksi(%)')
xlim([0 3])
ylim([0 1.6])
title({'Pengaruh Jarak terhadap Risiko Terinfeksi Aerosol SARS-
CoV-2'; 'di dalam Ruang Kelas (Volume 1080m3)'})
legend('jarak = 0.5 meter', 'jarak = 1 meter','jarak = 2 meter')

%%
%ventilasi

T = 24
RH = 55%dalam persen, mini:20, med:50, max:70
UV = 0 %tanpa satuan, mini:0, med:2.5, max:4
decay_rate_of_this_virus=(7.569+1.411*((T-20.54)/10.66)+
0.022*((RH-45.235)/28.665)+...
                          7.553*(((UV*0.9)-50)/50)+1.397*((T-
20.54)/10.66)*(((UV*0.9)-50)/50))*60 %(Dabisch P. dkk., 2020)

ventilation_outside_air_1=2
ventilation_outside_air_2=4
ventilation_outside_air_3=6
deposition_to_surface=0.3
additional_control_measures=0

exhalation_mask_efficiency=0.4 %satuan persen
fraction_of_people_mask=1 %satuan persen


volume =  1080 % satuan m3
duration_of_event = 150 %satuan jam
Durasi = 0.8333:0.8333:duration_of_event./60 %satuan jam

jarak = 1
prob_social_distance = (-18.19*log(jarak)+43.276)/100 %rumus (10).
)Sun C. dan Zhai Z, 2020).
quanta_exhalation_rate = 10
quanta_exhalation_rate_new =
quanta_exhalation_rate.*prob_social_distance

breathing_rate=0.52
inhalation_mask_efficiency = 0.3
number_of_repetition_event=16
prob_of_being_infective=0.009

jumlah_orang = 240
infective_people = 1
fraction_of_population_inmune = 0
susceptible_people= (jumlah_orang - infective_people)*(1-
fraction_of_population_inmune)
```

```
Total_first_order_loss_rate_1 = ventilation_outside_air_1 +
decay_rate_of_this_virus + deposition_to_surface +
additional_control_measures
Total_first_order_loss_rate_2 = ventilation_outside_air_2 +
decay_rate_of_this_virus + deposition_to_surface +
additional_control_measures
Total_first_order_loss_rate_3 = ventilation_outside_air_3 +
decay_rate_of_this_virus + deposition_to_surface +
additional_control_measures

Net_emission_rate = quanta_exhalation_rate_new.*(1 -
exhalation_mask_efficiency.*fraction_of_people_mask).*infective_pe
ople

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)))

Quanta_inhale_per_person_1 =
Avg_quanta_concentration_1.*breathing_rate.*Durasi.*(1 -
inhalation_mask_efficiency.*fraction_of_people_mask)
Quanta_inhale_per_person_2 =
Avg_quanta_concentration_2.*breathing_rate.*Durasi.*(1 -
inhalation_mask_efficiency.*fraction_of_people_mask)
Quanta_inhale_per_person_3 =
Avg_quanta_concentration_3.*breathing_rate.*Durasi.*(1 -
inhalation_mask_efficiency.*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.*prob_of_being_infective).^susceptible_people
Infeksi_2b = 1 - (1 -
Infeksi_1b.*prob_of_being_infective).^susceptible_people
Infeksi_2c = 1 - (1 -
Infeksi_1c.*prob_of_being_infective).^susceptible_people

Infeksi_3a = 1 - (1 - Infeksi_2a).^ number_of_repetition_event
Infeksi_3b = 1 - (1 - Infeksi_2b).^ number_of_repetition_event
Infeksi_3c = 1 - (1 - Infeksi_2c).^ number_of_repetition_event

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,'-*b', Durasi, hasil3b,'-*r', Durasi,
hasil3c,'-*g')
xlabel('Durasi (jam)')
ylabel('Risiko Terinfeksi(%)')
xlim([0 3])
ylim([0 1.8])
title({'Pengaruh Ventilasi terhadap Risiko Terinfeksi Aerosol
SARS-CoV-2'; 'di dalam Ruang Kelas (Volume 1080m3)'})
legend('Ventilasi = 2', 'Ventilasi = 4','Ventilasi = 6')

%%
%masker exhalation

T  = 24
RH = 55%dalam persen, mini:20, med:50, max:70
UV = 0 %tanpa satuan, mini:0, med:2.5, max:4
decay_rate_of_this_virus=(7.569+1.411*((T-20.54)/10.66)+
0.022*((RH-45.235)/28.665)+...
                          7.553*(((UV*0.9)-50)/50)+1.397*((T-
20.54)/10.66)*(((UV*0.9)-50)/50))*60 %(Dabisch P. dkk., 2020)

ventilation_outside_air=4
deposition_to_surface=0.3
additional_control_measures=0

exhalation_mask_efficiency_1=0.2
exhalation_mask_efficiency_2=0.4
exhalation_mask_efficiency_3=0.95
fraction_of_people_mask=1

volume =  1080 % satuan m3
duration_of_event = 150
Durasi = 0.8333:0.8333:duration_of_event./60 %satuan jam

jarak = 1
prob_social_distance = (-18.19*log(jarak)+43.276)/100 %rumus (10).
)Sun C. dan Zhai Z, 2020).
quanta_exhalation_rate = 10
quanta_exhalation_rate_new =
quanta_exhalation_rate.*prob_social_distance

breathing_rate=0.52
inhalation_mask_efficiency = 0.3
number_of_repetition_event=16
prob_of_being_infective=0.009
```

```
jumlah_orang = 240
infective_people = 1
fraction_of_population_inmune = 0
susceptible_people= (jumlah_orang - infective_people)*(1-
fraction_of_population_inmune)

Total_first_order_loss_rate = ventilation_outside_air +
decay_rate_of_this_virus + deposition_to_surface +
additional_control_measures

Net_emission_rate_1 = quanta_exhalation_rate_new.*(1 -
exhalation_mask_efficiency_1.*fraction_of_people_mask).*infective_
people
Net_emission_rate_2 = quanta_exhalation_rate_new.*(1 -
exhalation_mask_efficiency_2.*fraction_of_people_mask).*infective_
people
Net_emission_rate_3 = quanta_exhalation_rate_new.*(1 -
exhalation_mask_efficiency_3.*fraction_of_people_mask).*infective_
people

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_efficiency.*fraction_of_people_mask)
Quanta_inhale_per_person_2 =
Avg_quanta_concentration_2.*breathing_rate.*Durasi.*(1 -
inhalation_mask_efficiency.*fraction_of_people_mask)
Quanta_inhale_per_person_3 =
Avg_quanta_concentration_3.*breathing_rate.*Durasi.*(1 -
inhalation_mask_efficiency.*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.*prob_of_being_infective).^susceptible_people
Infeksi_2b = 1 - (1 -
Infeksi_1b.*prob_of_being_infective).^susceptible_people
Infeksi_2c = 1 - (1 -
Infeksi_1c.*prob_of_being_infective).^susceptible_people
```

```
Infeksi_3a = 1 - (1 - Infeksi_2a).^ number_of_repetition_event
Infeksi_3b = 1 - (1 - Infeksi_2b).^ number_of_repetition_event
Infeksi_3c = 1 - (1 - Infeksi_2c).^ number_of_repetition_event

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,'-*b', Durasi, hasil3b,'-*r', Durasi,
hasil3c,'-*g')
xlabel('Durasi (jam)')
ylabel('Risiko Terinfeksi (%)')
xlim([0 3])
ylim([0 1.8])
title({'Pengaruh Masker terhadap Risiko Terinfeksi Aerosol SARS-
CoV-2'; 'di dalam Ruang Kelas (Volume 1080m3)'})
legend(' Masker Kain', 'Masker Bedah','Masker N95')

%%

%prevalensi

T  = 24
RH = 55%dalam persen, mini:20, med:50, max:70
UV = 0 %tanpa satuan, mini:0, med:2.5, max:4
decay_rate_of_this_virus=(7.569+1.411*((T-20.54)/10.66)+
0.022*((RH-45.235)/28.665)+...
                          7.553*(((UV*0.9)-50)/50)+1.397*((T-
20.54)/10.66)*(((UV*0.9)-50)/50))*60 %(Dabisch P. dkk., 2020)

ventilation_outside_air=4 % satuan h-1, min:2, med:4, max:6
deposition_to_surface=0.3
additional_control_measures=0

exhalation_mask_efficiency=0.4 %satuan persen
fraction_of_people_mask=1 %satuan persen


volume =  1080 % satuan m3
duration_of_event = 150 %satuan jam
Durasi = 0.8333:0.8333:duration_of_event./60 %satuan jam

jarak = 1
prob_social_distance = (-18.19*log(jarak)+43.276)/100 %rumus (10).
)Sun C. dan Zhai Z, 2020).
quanta_exhalation_rate = 10
```

```
quanta_exhalation_rate_new =
quanta_exhalation_rate.*prob_social_distance

breathing_rate=0.52
inhalation_mask_efficiency = 0.3
number_of_repetition_event=16
prob_of_being_infective_1=0.008
prob_of_being_infective_2=0.009
prob_of_being_infective_3=0.01

jumlah_orang = 240
infective_people = 1
fraction_of_population_inmune = 0
susceptible_people= (jumlah_orang - infective_people)*(1-
fraction_of_population_inmune)

Total_first_order_loss_rate_1 = ventilation_outside_air +
decay_rate_of_this_virus + deposition_to_surface +
additional_control_measures

Net_emission_rate = quanta_exhalation_rate_new.*(1 -
exhalation_mask_efficiency.*fraction_of_people_mask).*infective_pe
ople

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)))

Quanta_inhale_per_person_1 =
Avg_quanta_concentration_1.*breathing_rate.*Durasi.*(1 -
inhalation_mask_efficiency.*fraction_of_people_mask)

Infeksi_1 = 1-exp(-Quanta_inhale_per_person_1)



Infeksi_2a = 1 - (1 -
Infeksi_1.*prob_of_being_infective_1).^susceptible_people
Infeksi_2b = 1 - (1 -
Infeksi_1.*prob_of_being_infective_2).^susceptible_people
Infeksi_2c = 1 - (1 -
Infeksi_1.*prob_of_being_infective_3).^susceptible_people

Infeksi_3a = 1 - (1 - Infeksi_2a).^ number_of_repetition_event
Infeksi_3b = 1 - (1 - Infeksi_2b).^ number_of_repetition_event
Infeksi_3c = 1 - (1 - Infeksi_2c).^ number_of_repetition_event

hasil1=Infeksi_1*100

hasil2a=Infeksi_2a*100
hasil3a=Infeksi_3a*100

hasil2b=Infeksi_2b*100
hasil3b=Infeksi_3b*100
```

```
hasil2c=Infeksi_2c*100
hasil3c=Infeksi_3c*100

plot(Durasi, hasil3a,'-*b', Durasi, hasil3b,'-*r', Durasi,
hasil3c,'-*g')
xlabel('Durasi (jam)')
ylabel('Risiko Terinfeksi (%)')
xlim([0 3])
ylim([0 1.5])
title({'Pengaruh Prevalensi terhadap Risiko Terinfeksi Aerosol
SARS-CoV-2'; 'di dalam Ruang Kelas (Volume 1080m3)'})
legend('Prevalensi = 0.8%', 'Prevalensi = 0.9%','Prevalensi = 1%')

%%
%masker inhalation

T  = 24
RH = 55%dalam persen, mini:20, med:50, max:70
UV = 0 %tanpa satuan, mini:0, med:2.5, max:4
decay_rate_of_this_virus=(7.569+1.411*((T-20.54)/10.66)+
0.022*((RH-45.235)/28.665)+...
                           7.553*(((UV*0.9)-50)/50)+1.397*((T-
20.54)/10.66)*(((UV*0.9)-50)/50))*60 %(Dabisch P. dkk., 2020)

ventilation_outside_air=4
deposition_to_surface=0.3
additional_control_measures=0

exhalation_mask_efficiency=0.4
fraction_of_people_mask=1


volume =  1080 % satuan m3
duration_of_event = 150
Durasi = 0.8333:0.8333:duration_of_event./60 %satuan jam

jarak = 1
prob_social_distance = (-18.19*log(jarak)+43.276)/100 %rumus (10).
)Sun C. dan Zhai Z, 2020).
quanta_exhalation_rate = 10
quanta_exhalation_rate_new =
quanta_exhalation_rate.*prob_social_distance

breathing_rate=0.52
inhalation_mask_efficiency_1 = 0.12
inhalation_mask_efficiency_2 = 0.3
inhalation_mask_efficiency_3 = 0.95
number_of_repetition_event=16
prob_of_being_infective=0.009

jumlah_orang = 240
infective_people = 1
fraction_of_population_inmune = 0
```

```
susceptible_people= (jumlah_orang - infective_people)*(1-
fraction_of_population_inmune)

Total_first_order_loss_rate = ventilation_outside_air +
decay_rate_of_this_virus + deposition_to_surface +
additional_control_measures

Net_emission_rate= quanta_exhalation_rate_new.*(1 -
exhalation_mask_efficiency.*fraction_of_people_mask).*infective_pe
ople

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_1 =
Avg_quanta_concentration.*breathing_rate.*Durasi.*(1 -
inhalation_mask_efficiency_1.*fraction_of_people_mask)
Quanta_inhale_per_person_2 =
Avg_quanta_concentration.*breathing_rate.*Durasi.*(1 -
inhalation_mask_efficiency_2.*fraction_of_people_mask)
Quanta_inhale_per_person_3 =
Avg_quanta_concentration.*breathing_rate.*Durasi.*(1 -
inhalation_mask_efficiency_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.*prob_of_being_infective).^susceptible_people
Infeksi_2b = 1 - (1 -
Infeksi_1b.*prob_of_being_infective).^susceptible_people
Infeksi_2c = 1 - (1 -
Infeksi_1c.*prob_of_being_infective).^susceptible_people

Infeksi_3a = 1 - (1 - Infeksi_2a).^ number_of_repetition_event
Infeksi_3b = 1 - (1 - Infeksi_2b).^ number_of_repetition_event
Infeksi_3c = 1 - (1 - Infeksi_2c).^ number_of_repetition_event

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,'-*b', Durasi, hasil3b,'-*r', Durasi,
hasil3c,'-*g')
xlabel('Durasi (jam)')
ylabel('Risiko Terinfeksi (%)')
xlim([0 3])
ylim([0 1.8])
title({'Pengaruh Masker terhadap Risiko Terinfeksi Aerosol SARS-
CoV-2'; 'di dalam Ruang Kelas (Volume 1080m3)'})
legend('Masker Kain', 'Masker Bedah','Masker N95')
```

2. Pengacakan Faktor Lingkungan

```
     %random generator
%halmar halide, geophysics dept unhas
clear
clc
rng default
%r = randi(3,10,5) % acak utk 10 eksperimen, ada 5 input dan
masing-masing input salah satu dari 3 kategori
%r = randi(3,6,5) % acak utk 6 eksperimen, ada 5 input dan
masing-masing input salah satu dari 3 kategori
r = randi(3,1000,9) % acak utk 5 eksperimen, ada 8 input dan
masing-masing input salah satu dari 3 kategori
%1 = min, 2=rata-rata, 3=maks
%input utk kasus kita, ada 8 input: suhu (i1), kelembaban
(i2),indeks UV (i3),
%                       durasi (i4), jarak antara org (i5),
ventilasi (i6),
%                       exhalation (i7), prevalensi (i8),
inhalation (i9)

%hasilnya:
%r =
%
%     1     3     2     1     3     1     2     2
%     3     1     3     3     2     1     1     2
%     1     2     1     2     2     1     3     3
%     3     1     1     2     2     1     3     2
%     3     3     1     1     2     1     2     1
%
[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)
%hist(i1) %gambar histogram

%andai input1 suhu min=19, rata-rata=22, maks=26 [derj Celcius)
%andai input2 rh min=20, rata-rata=40, maks=60 [%]
%andai input3 indexUV min=0, rata-rata=2.5, maks=3.5 [tanpa
satuan]
%andai input4 durasi min=10, rata-rata=12, maks=14 [jam]
%andai input5 jarak antar-org min=1, rata-rata=1.5, maks=2
[meter]
%andai input6 ventilasi min=2, rata-rata=4, maks=6 [per hour]
%andai input7 efisiensi masker min=0.5, rata-rata=0.85,
maks=0.95 [meter]
```

```
%andai input8 prevalensi min=0.006, rata-rata=0.007, maks=0.008
[persen]

%LOOP utk deklarasi semua input dgn 3 keadaan: min, ave dan max
for i=1:mm
    if in1(i)==1
        suhu(i)=18;
    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)=40;
    else if in2(j)==2
        rh(j)=55;
        else
            rh(j)=70;
        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
        durasi(l)=0.8;
    else if in4(l)==2;
        durasi(l)=1.7;
        else
            durasi(l)=2.5;
        end
    end
end


for m=1:mm
    if in5(m)==1
        jarak(m)=0.5;
    else if in5(m)==2;
        jarak(m)=1;
        else
```

```
                jarak(m)=2;
            end
        end
    end

    for n=1:mm
        if in6(n)==1
            ventilasi(n)=2;
        else if in6(n)==2;
            ventilasi(n)=4;
            else
                ventilasi(n)=6;
            end
        end
    end

    for o=1:mm
        if in7(o)==1
            exhalation(o)=0.2;
        else if in7(o)==2;
            exhalation(o)=0.4;
            else
                exhalation(o)=0.95;
            end
        end
    end

    for p=1:mm
        if in8(p)==1
            prevalensi(p)=0.6;
        else if in8(p)==2;
            prevalensi(p)=0.7;
            else
                prevalensi(p)=0.8;
            end
        end
    end
    for q=1:mm
        if in9(q)==1
            inhalation(q)=0.12;
        else if in9(q)==2;
            inhalation(q)=0.3;
            else
                inhalation(q)=0.95;
            end
        end
    end
%exitt

T=suhu'
RH=rh'
UV=uv'
ventilation_outside_air=ventilasi'
decay_rate_of_this_virus=(7.569+1.411 .*((T-20.54)/10.66)+
0.022.*((RH-45.235)/28.665)+...
```

```
                            7.553.*(((UV.*0.9)-50)/50)+1.397.*((T-
20.54)/10.66).*(((UV.*0.9)-50)/50)).*60%(Dabisch P. dkk., 2020)
deposition_to_surface=0.3
additional_control_measures=0

exhalation_mask_efficiency= exhalation' %satuan persen
fraction_of_people_mask=1 %satuan persen
inhalation_mask_efficiency = inhalation'

volume = 1080;%satuan m3
Durasi = durasi'

quanta_exhalation_rate = 25
prob_social_distance= (-18.19*log(jarak')+43.276)/100 %rumus (10),
(Sun C. dan Zhai Z, 2020).
quanta_exhalation_rate_new=quanta_exhalation_rate.*prob_social_dis
tance

breathing_rate=0.52
number_of_repetition_event=16
prob_of_being_infective=0.009

jumlah_orang = 240
infective_people = 1
fraction_of_population_inmune = 0
susceptible_people= (jumlah_orang - infective_people)*(1-
fraction_of_population_inmune)

Total_first_order_loss_rate = ventilation_outside_air +
decay_rate_of_this_virus + deposition_to_surface +
additional_control_measures %(Kurnitski J., 2020)

Net_emission_rate = quanta_exhalation_rate_new.*(1 -
exhalation_mask_efficiency.*fraction_of_people_mask).*infective_pe
ople

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)))%(Kurnitski J., 2020)

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) %(Kurnitski J., 2020)

Infeksi_2 = 1 - (1 - Infeksi_1.*prevalensi').^susceptible_people

Infeksi_3 = 1 - (1 - Infeksi_2).^ number_of_repetition_event

hasil1=Infeksi_1*100
hasil2=Infeksi_2*100
hasil3=Infeksi_3*100 %
```

```
hasil=[suhu' rh' uv' durasi' jarak' ventilasi' exhalation'
prevalensi' inhalation' hasil3]

save vol10801000.txt hasil -ascii
```

3. Metode Stepwise

```
%calculate persentasi kebenaran model stepwise hotspot cambodia
%prof halmar halide, geophysics dept. fmipa
load vol10801000.txt
factors= vol10801000(:,1:9);% ENSO MJO IOD MONSOON sesuai urutan
data prediktor pada file excel skripsi
hotspot= vol10801000(:,10); %dibuat pada kolom terakhir
mdl = stepwiselm(factors,hotspot,'PEnter',0.05) %
%%output
%Linear regression model:
 %    y ~ 1 + x9 + x3*x4 + x3*x7 + x3*x10 + x4*x7 + x4*x10

 %Estimated Coefficients:
 %                     Estimate         SE          tStat       pValue
 %                    __________    _________    _______
__________
 %
 %   (Intercept)        0.27593       0.24167      1.1417
0.25662
 %    x3                0.077624      0.061988      1.2523
0.21376
 %   x4               0.045713       0.12066     0.37885
0.7057
 %    x7                -0.39145       0.12349     -3.1699
0.0020915
 %   x9              -0.000855     0.0003241     -2.6381
0.0098417
 %    x10              0.0012633     0.0043973     0.28729
0.77456
 %   x3:x4           -0.070439      0.013114     -5.3714     6.1845e-
07
 %    x3:x7              0.18754      0.033712       5.563     2.7555e-
07
 %   x3:x10         -0.0028699     0.0010857     -2.6434
0.0096999
 %   x4:x7            -0.26892      0.076072     -3.5351
0.00064937
    %    x4:x10           0.0072217     0.0023479      3.0758
   0.0027889


%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-statistic vs. constant model: 25.2, p-value = 6.64e-22
```

4. Pemodelan risiko terinfeksi Aerosol Virus SARS-CoV-2

Grafik data observasi dan prediksi

```
clc;

load plot1000v3.txt
obs=plot1000v3(:,1);
preb=plot1000v3(:,2);

eve=plot1000v3(:,3);

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

figure(1);
plot(eve,obs,'.-b',eve,preb,'.-r');

hold on
axis([0 1000 -15 155]);
xlabel('Event')
ylabel('Risiko Terinfeksi')
title({'Grafik Data Observasi dan Prediksi Risiko Terinfeksi
Aerosol Virus SARS-CoV-2';'1000 Kejadian'})
legend ('Observasi', 'Prediksi')
text (4,145, 'Volume Ruang Kelas = 1080m3')
text (4,135,{'Prediktor = Suhu, RH, Indeks UV, Durasi, Jarak,
Ventilasi, Masker, Prevalensi'})
text (4,125, 'R = 0.96')
```

Diagram tebar data observasi dan prediksi

```
clear;
clc

load plot1000v3.txt
obs= plot1000v3(:,1);
preb= plot1000v3(:,2);

satu=ones(size(obs));

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

%exitt
t=1:m;

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

p1s=preb;
dp1s=[obs(t) p1s(t)];
nip1s=(R*dp1s');
jp1s=nip1s(:,2);
```

```
jrk_p1s=norm(jp1s);
sjp1s=std(jp1s);
RMSE_preb = sqrt(mean((p1s(t)-obs(t)).^2));
korr_preb=xcorr(p1s(t),obs(t),'coeff');
k_preb=korr_preb(m);
%exitt

axis('square')
xa=min(preb):max(preb);
ya=min(preb):max(preb);

figure (1);
axis('square');
plot(data,preb,'ob'),hold on
plot(xa,ya,'-r','LineWidth',1),hold off
xlabel('Observasi')
ylabel('Prediksi')
%title({'Diagram Tebar Populasi Bintang Laut Mahkota Duri di Great
Barrier Reef  Tahun 1992-2018'});
%axis square
title({'Diagram Tebar Data Observasi dan Data Prediksi'; 'Risiko
Terinfeksi Aerosol Virus SARS-CoV-2';'1000 Kejadian'})
text (0,115, 'Volume Ruang Kelas = 1080m3')
text (0,105, 'r = 0.96')
text (0,95, 'RMSE = 5.82')
%text(1.2,2.4,'Prediksi')
%text(1.2,2.2,'r =0.7160')
%text(0.1,1.5,'Prediktor =
suhu,rh,uv,durasi,jarak,ventilasi,masker,prevalensi,people')
%text(3,37000,'MJO4MONSOON5, MJO4MONSOON2')
%text(0.1,1.4,'R = 0.786')

%text(25,1150,'R Square = 0.34')
axis([min(preb) max(preb) min(preb) max(preb)])
print -dtiff korelasi1.tif
```