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L A M P I R A N

Lampiran 1 Program menghitung resiko tertular covid-19 kasus: supermarket

```
%program menghitung resiko tertular covid-19 kasus: supermarket
%Miftah Kaherunnisa
%Pembimbing : Prof. Dr. Halmar Halide,M.Sc dan Dr. Muh. Alimuddin
Hamzah,M.Eng
%Dept Geofisika FMIPA Unhas
%Agustus 2020
%Infeksi

%suhu
T1 = 18
T2 = 23
T3 = 28
RH = 40%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=0.075 % 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

panjang = 70.71 %meter
lebar = 70.71 %meter
tinggi = 4 %meter
volume =  panjang*lebar*tinggi% satuan m3
duration_of_event = 360 %satuan menit
Durasi = 0:1: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 = 42
quanta_exhalation_rate_new = quanta_exhalation_rate.*prob_social_distance

breathing_rate=1.38
inhalation_mask_efficiency = 0.3
number_of_repetition_event=1
prob_of_being_infective=0.006

jumlah_orang = 5000
```

```
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_people

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([1 6])
ylim([0 10])
title({'Pengaruh Suhu terhadap Risiko Terinfeksi Aerosol SARS-CoV-2'; 'di
dalam Supermarket dengan Kerapatan 1'})
legend({'suhu = 18', 'suhu = 23','suhu = 28'})

%%

%RH
RH1 = 40
RH2 = 60
RH3 = 80
T = 23
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=0.075 % 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

panjang = 70.71 %meter
lebar = 70.71 %meter
tinggi = 4 %meter
volume =  panjang*lebar*tinggi% satuan m3
duration_of_event = 360 %satuan jam
```

```
Durasi = 0:1:duration_of_event./60

jarak = 1
prob_social_distance = (-18.19 .*log(jarak)+43.276)./100 %rumus (10). )Sun C.
dan Zhai Z, 2020).
quanta_exhalation_rate = 42
quanta_exhalation_rate_new = quanta_exhalation_rate.*prob_social_distance

breathing_rate=1.38
inhalation_mask_efficiency = 0.3
number_of_repetition_event=1
prob_of_being_infective=0.006

jumlah_orang = 5000
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_people

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([1 6])
ylim([0 10])
title({'Pengaruh RH terhadap Risiko Terinfeksi Aerosol SARS-CoV-2'; 'di dalam
Supermarket dengan kerapatan 1'})
legend('RH = 40', 'RH = 60','RH = 80')

%%
%uv

RH = 40
T = 23
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=0.075 % 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

panjang = 70.71 %meter
lebar = 70.71 %meter
tinggi = 4 %meter
volume =  panjang*lebar*tinggi% satuan m3
duration_of_event = 360 %satuan jam
Durasi = 0:1:duration_of_event./60

jarak = 1
prob_social_distance = (-18.19 .*log(jarak)+43.276)./100 %rumus (10). )Sun C.
dan Zhai Z, 2020).
quanta_exhalation_rate = 42
quanta_exhalation_rate_new = quanta_exhalation_rate.*prob_social_distance

breathing_rate=1.38
inhalation_mask_efficiency = 0.3
number_of_repetition_event=1
prob_of_being_infective=0.006

jumlah_orang = 1250
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_people

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([1 6])
ylim([0 10])
title({'Pengaruh Indeks UV terhadap Risiko Terinfeksi Aerosol SARS-CoV-2';
'di dalam Supermarket dengan kerapatan 0.25'})
legend('UV = 0', 'UV = 2.5','UV = 3.5')

%%

%jarak
```

```
T = 23
RH = 40%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=0.075 % 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

panjang = 70.71 %meter
lebar = 70.71 %meter
tinggi = 4 %meter
volume =  panjang*lebar*tinggi% satuan m3
duration_of_event = 360 %satuan jam
Durasi = 0:1:duration_of_event./60

jarak1 = 0.1
jarak2 = 0.5
jarak3 = 1
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 = 42
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=1.38
inhalation_mask_efficiency = 0.3
number_of_repetition_event=1
prob_of_being_infective=0.007

jumlah_orang = 1250
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_people
```

```
Net_emission_rate_2 = quanta_exhalation_rate_new_2.*(1 -
exhalation_mask_efficiency.*fraction_of_people_mask).*infective_people
Net_emission_rate_3 = quanta_exhalation_rate_new_3.*(1 -
exhalation_mask_efficiency.*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([1 6])
ylim([0 20])
title({'Pengaruh Jarak terhadap Risiko Terinfeksi Aerosol SARS-CoV-2'; 'di
dalam Supermarket dengan kerapatan 0.25'})
legend('jarak = 0.1 meter', 'jarak = 0.5 meter','jarak = 1 meter')

%%
%ventilasi

T = 23
RH = 40%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=0.075
ventilation_outside_air_2=0.15
ventilation_outside_air_3=0.45
deposition_to_surface=0.3
additional_control_measures=0

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

panjang = 70.71 %meter
lebar = 70.71 %meter
tinggi = 4 %meter
volume =  panjang*lebar*tinggi% satuan m3
duration_of_event = 360 %satuan jam
Durasi = 0:1:duration_of_event./60

jarak = 1
prob_social_distance = (-18.19 .*log(jarak)+43.276)./100 %rumus (10). )Sun C.
dan Zhai Z, 2020).
quanta_exhalation_rate = 42
quanta_exhalation_rate_new = quanta_exhalation_rate.*prob_social_distance

breathing_rate=1.38
inhalation_mask_efficiency = 0.3
number_of_repetition_event=1
prob_of_being_infective=0.006

jumlah_orang = 1250
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_people

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([1 6])
ylim([0 15])
title({'Pengaruh Ventilasi terhadap Risiko Terinfeksi Aerosol SARS-CoV-2';
'di dalam Supermarket dengan kerapatan 0.25'})
legend('Ventilasi = 0.075', 'Ventilasi = 0.15','Ventilasi = 0.45')

%%
%masker exhalation

T  = 23
RH = 40%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=0.15
deposition_to_surface=0.3
additional_control_measures=0

exhalation_mask_efficiency_1=0.1
exhalation_mask_efficiency_2=0.4
exhalation_mask_efficiency_3=0.95
fraction_of_people_mask=1

panjang = 70.71 %meter
lebar = 70.71 %meter
tinggi = 4 %meter
volume =  panjang*lebar*tinggi% satuan m3
duration_of_event = 360
Durasi = 0:1:duration_of_event./60

jarak = 1
prob_social_distance = (-18.19 .*log(jarak)+43.276)./100 %rumus (10). )Sun C.
dan Zhai Z, 2020).
quanta_exhalation_rate = 42
quanta_exhalation_rate_new = quanta_exhalation_rate.*prob_social_distance

breathing_rate=1.38
inhalation_mask_efficiency = 0.3
number_of_repetition_event=1
prob_of_being_infective=0.006
```

```
jumlah_orang = 1250
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([1 6])
ylim([0 15])
title({'Pengaruh {Exhalation Mask} terhadap Risiko Terinfeksi Aerosol SARS-
CoV-2'; 'di dalam Supermarket dengan kerapatan 0.25'})
legend('Face Shield', 'Masker Bedah','Masker N95')

%%

%prevalensi

T  = 23
RH = 40%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=0.15 % 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

panjang = 70.71 %meter
lebar = 70.71 %meter
tinggi = 4 %meter
volume =  panjang*lebar*tinggi% satuan m3
duration_of_event = 360 %satuan jam
Durasi = 0:1:duration_of_event./60

jarak = 1
prob_social_distance = (-18.19*log(jarak)+43.276)/100 %rumus (10). )Sun C.
dan Zhai Z, 2020).
quanta_exhalation_rate = 42
quanta_exhalation_rate_new = quanta_exhalation_rate.*prob_social_distance

breathing_rate=1.38
inhalation_mask_efficiency = 0.5
```

```
number_of_repetition_event=1
prob_of_being_infective_1=0.003
prob_of_being_infective_2=0.006
prob_of_being_infective_3=0.009

jumlah_orang = 1250
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_people

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([1 6])
ylim([0 15])
title({'Pengaruh Prevalensi terhadap Risiko Terinfeksi Aerosol SARS-CoV-2';
'di dalam Supermarket dengan kerapatan 0.25'})
legend('Prevalensi = 0.003', 'Prevalensi = 0.006','Prevalensi = 0.009')

 %%
%masker inhalation

T  = 23
RH = 40%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=0.15
deposition_to_surface=0.3
additional_control_measures=0

exhalation_mask_efficiency=0.4
fraction_of_people_mask=1

panjang = 70.71 %meter
lebar = 70.71 %meter
tinggi = 4 %meter
volume =  panjang*lebar*tinggi% satuan m3
duration_of_event = 360
Durasi = 0:1:duration_of_event./60

jarak = 1
prob_social_distance = (-18.19 .*log(jarak)+43.276)./100 %rumus (10). )Sun C.
dan Zhai Z, 2020).
quanta_exhalation_rate = 42
quanta_exhalation_rate_new = quanta_exhalation_rate.*prob_social_distance

breathing_rate=1.38
inhalation_mask_efficiency_1 = 0.1
inhalation_mask_efficiency_2 = 0.3
inhalation_mask_efficiency_3 = 0.95
number_of_repetition_event=1
prob_of_being_infective=0.006

jumlah_orang = 1250
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_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_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([1 6])
ylim([0 15])
title({'Pengaruh {Inhalation Mask}  terhadap Risiko Terinfeksi Aerosol SARS-
CoV-2'; 'di dalam Supermarket dengan kerapatan 0.25'})
legend('Face Shield', 'Masker Bedah','Masker N95')
```

Lampiran 2 Random generator

```
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(3,100,9) % 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),
%                       masker (i7), prevalensi (i8)

%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)=23;
        else
            suhu(i)=28;
        end
    end
end

for j=1:mm
    if in2(j)==1
        rh(j)=40;
```

```
    else if in2(j)==2
        rh(j)=60;
        else
            rh(j)=80;
        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)=2;
    else if in4(l)==2;
        durasi(l)=4;
        else
            durasi(l)=6;
        end
    end
end


for m=1:mm
    if in5(m)==1
        jarak(m)=0.1;
    else if in5(m)==2;
        jarak(m)=0.5;
        else
            jarak(m)=1;
        end
    end
end

for n=1:mm
    if in6(n)==1
        ventilasi(n)=0.075;
    else if in6(n)==2;
        ventilasi(n)=0.15;
        else
            ventilasi(n)=0.45;
        end
    end
end

for o=1:mm
    if in7(o)==1
        maskerout(o)=0.1;
```

```
    else if in7(o)==2;
        maskerout(o)=0.4;
        else
            maskerout(o)=0.95;
        end
    end
end

for p=1:mm
    if in8(p)==1
        prevalensi(p)=0.003;
    else if in8(p)==2;
        prevalensi(p)=0.006;
        else
            prevalensi(p)=0.009;
        end
    end
end
for q=1:mm
    if in9(q)==1
        maskerin(q)=0.1;
    else if in9(q)==2;
        maskerin(q)=0.3;
        else
            maskerin(q)=0.95;
        end
    end
end


%%%%%LANJUTKAN "FOR....END" UTK SEMUA INPUT LAINNYA SESUAI URUTAN INPUT DI
ATAS


%ini jangan dihapus
%ini contoh menghitung besaran 'jumlah' dari kelima inpt diatas
%jumlah=suhu'+rh'+uv'+durasi'+jarak'

%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 .*0.185)-50)./50)+1.397 .*((T-
20.54)./10.66).*(((UV .*0.185)-50)./50)) .*60 %Dabisch P. dkk., 2020
deposition_to_surface=0.3
additional_control_measures=0

exhalation_mask_efficiency= maskerout' %satuan persen
fraction_of_people_mask=1 %satuan persen
inhalation_mask_efficiency = maskerin'
```

```
panjang = 70.71; %satuan meter
lebar = 70.71;%satuan meter
tinggi = 4;%satuan meter
volume = panjang.*lebar.*tinggi;%satuan m3
Durasi = durasi'

quanta_exhalation_rate = 42
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_distance

breathing_rate=1.38
number_of_repetition_event=1
prob_of_being_infective=0.009

jumlah_orang = 1250
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_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)))%(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 % ini adalah hasil perhitungan resiko infeksi krn sdh
mengcakup infeksi 1 dan 2


%tampilan inputs dan output yg akan menjadi input program stepwise
%regression

%ini contoh saja
```

```
hasil=[suhu' rh' uv' durasi' jarak' ventilasi' maskerout' prevalensi'
maskerin' hasil3]
formatSpec = '%10.2f %10.2f %10.2f %10.2f %10.2f %10.4f\n';
fprintf(formatSpec,hasil')
```

Lampiran 3 Calculate persentasi kebenaran model stepwise supermarket

```
load A12.txt
factors= A12(:,1:9);% ENSO MJO IOD MONSOON sesuai urutan data prediktor pada
file excel skripsi
hotspot= A12(:,10); %dibuat pada kolom terakhir
mdl = stepwiselm(factors,hotspot,'PEnter',0.05) %
%%output
%Linear regression model:
%    y ~ 1 + x2*x3 + x2*x7 + x3*x4 + x3*x5 + x3*x6 + x3*x7 + x4*x7 + x5*x7 +
x6*x7

%Estimated Coefficients:
%                    Estimate         SE          tStat       pValue
%                   __________    __________    _______    __________
%
%    (Intercept)        23.678        1.9535     12.121    1.0299e-29
%    x2              -0.077156      0.012683    -6.0836    2.3895e-09
%    x3                 -3.106       0.21945    -14.153    2.6528e-38
%    x4               0.040221     0.0033684     11.941    5.5202e-29
%    x5                -3.9637       0.79476    -4.9873    8.5476e-07
%    x6                -1.3095       0.20447    -6.4044     3.579e-10
%    x7                -23.598        2.8163     -8.379    5.8319e-16
%    x2:x3           0.0064167     0.0014417     4.4507    1.0634e-05
%    x2:x7            0.055078      0.018737     2.9395     0.0034447
%    x3:x4          -0.0029965    0.00037371    -8.0183    8.1241e-15
%    x3:x5              0.3674      0.089172     4.1202    4.4531e-05
%    x3:x6             0.11509      0.023186     4.9636    9.6024e-07
%    x3:x7              2.8498        0.1459     19.533    4.4219e-63
%    x4:x7           -0.027897     0.0047251    -5.9041    6.6809e-09
%    x5:x7              2.3885        1.1503     2.0764      0.038385
%    x6:x7             0.81361       0.28671     2.8378     0.0047336


%Number of observations: 500, Error degrees of freedom: 484
%Root Mean Squared Error: 2.55
%R-squared: 0.78,  Adjusted R-Squared 0.773
%F-statistic vs. constant model: 114, p-value = 3.81e-148
```

Lampiran 4 Diagram time series

```
clc;

load B112.txt
obs=B112(:,1);
pred=B112(:,2);

eve=B112(:,3);

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

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

hold on
axis([1 1000 -2 25]);
xlabel ('Event')
ylabel ('Infeksi')
title({'Model Prediksi Kemungkinan Infeksi di Supermarket' '(Jumlah Kasus =
1000 dan Kerapatan 1 orang/m2)'})
legend ('Observasi','Prediksi')
text(2,24,'Prediktor=Suhu,Kelembaban,Indeks UV,Durasi,Jarak,Exhalation
Mask,Prevalensi dan Inhalation Mask')
text(2,23,'R=0.838')
text(2,22,'RMSE=0.999')
```

Lampiran 5 diagram tebar

```
clear;
clc

load C112.txt
obs= C112(:,1);
preb= C112(:,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=linspace(min(preb),max(obs),3);
ya=linspace(min(preb),max(obs),3);

figure (1);
axis('square');
plot(data,preb,'o'),hold on
plot(xa,ya,'-r','LineWidth',1),hold off
%plot(xa,ya,'r'),hold off
xlabel('Observasi')
ylabel('Prediksi')
%title({'Diagram Tebar Populasi Bintang Laut Mahkota Duri di Great Barrier
Reef  Tahun 1992-2018'});
axis square
title({'\rm\bf Diagram Tebar Data Observasi dan Data Prediksi Resiko Infeksi
' 'di Dalam Supermarket (Jumlah Kasus = 1000, Kerapatan 1 orang/m2)'})
%text(1.2,2.4,'Prediksi')
%text(1.2,2.2,'r =0.7160')
text(0,20,'Prediktor= Suhu,Kelembaban,Indeks UV,Durasi,Jarak,Exhalation
Mask,Prevalensi, dan Inhalation Mask')
%text(3,37000,'MJO4MONSOON5, MJO4MONSOON2')
text(0,21,'R = 0.838')
```

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