Forecasting Model Similarity

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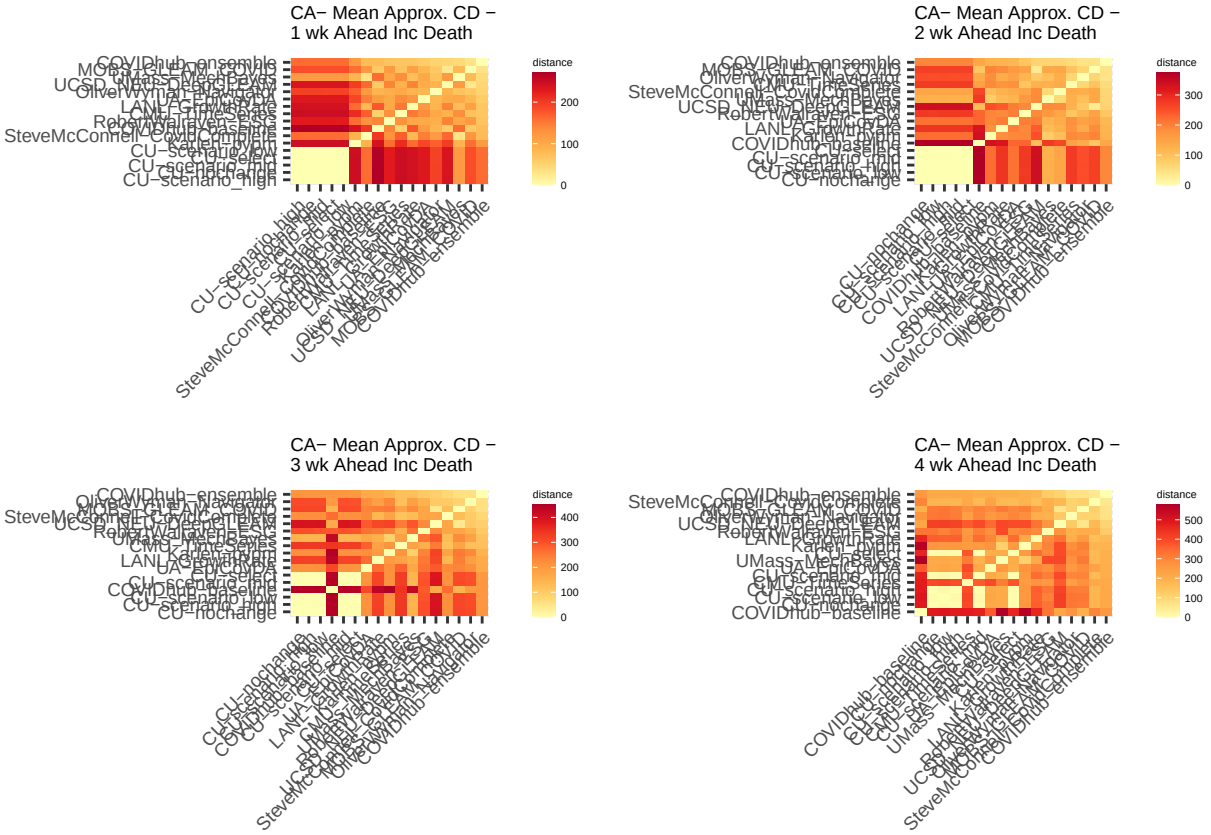
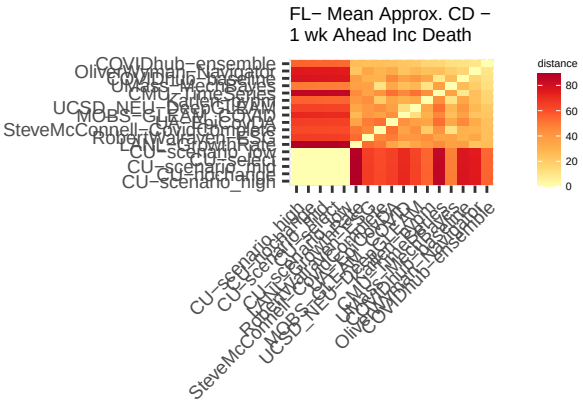
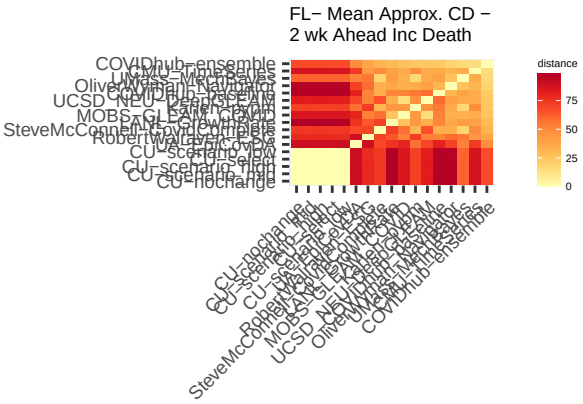
COVID-19 Forecasting Model Similarity Analysis for 1-4 Week Ahead Incident Death

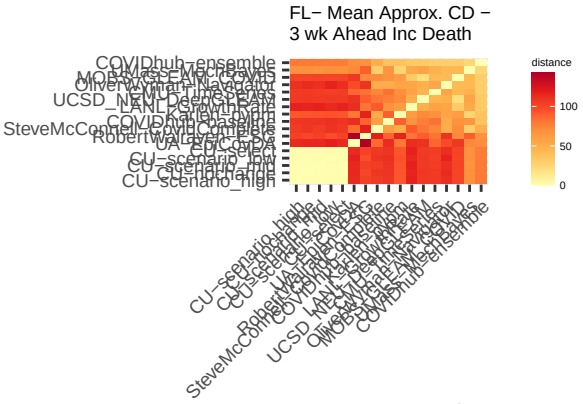
The pairwise approximated Cramer's distances are calculated for the models that have complete submissions for all target, all 5 locations with the highest number of COVID-19 deaths of at least 20,000 by the end of February 2021, all probability levels, from mid-October 2020 until May 24th, 2021 .

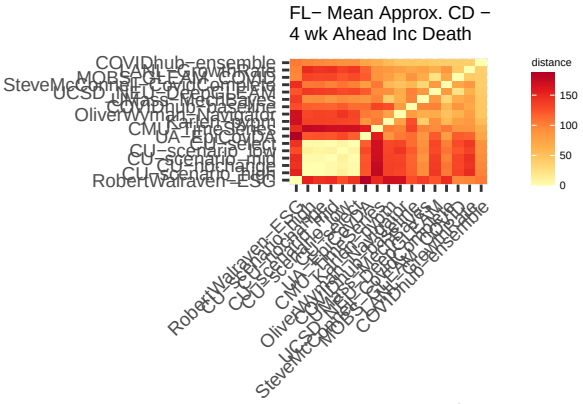
We can visualize the mean approximated pairwise distances across all time points in a heat map shown below. The distance from the model to itself is zero. The $x-$axis is arranged based in an ascending order of the model's approximate pairwise distance from the COVIDhub-ensemble. So, the first model is the model that is most dissimilar (on average) to the ensemble in this time frame.

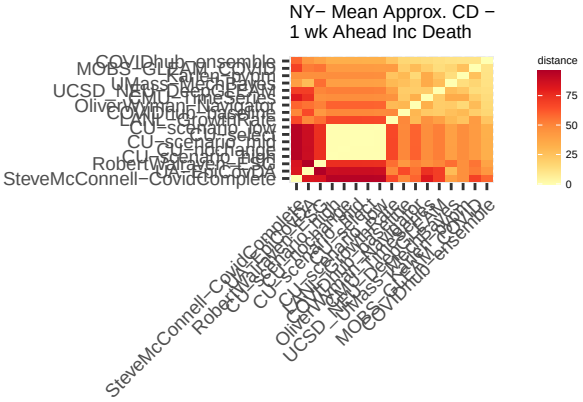


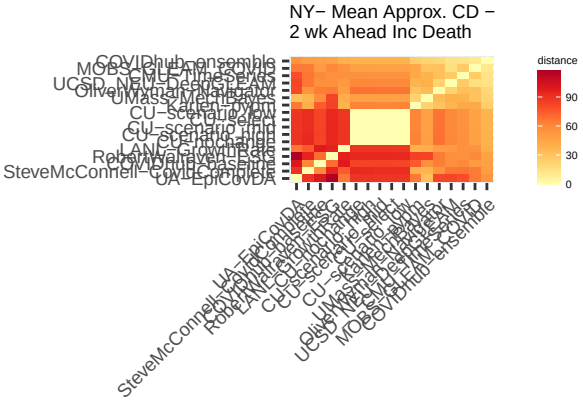

FL− Mean Approx. CD −
1 wk Ahead Inc Death
distance
80
60
40
20
0
COVIDhub−ensemble
OliverWyman−Navigator
UMass−MechBayes
CMU−TimeSeries
UCSD_NEU−DeepSTEAM
MOBS−GLEAM_COVID
SteveMcConnell−CovidComplete
RobertWalraven−ESG
LANL−GrowthRate
CU−scenario_low
CU−scenario_mid
CU−nochange
CU−scenario_high

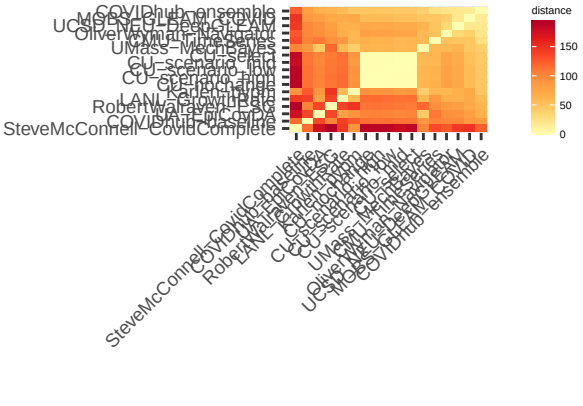

FL− Mean Approx. CD −
2 wk Ahead Inc Death
distance
75
50
25
0
COVIDhub−ensemble
OliverWyman−Navigator
UCSD_NEU−DeepSTEAM
MOBS−GLEAM_COVID
SteveMcConnell−CovidComplete
RobertWalraven−ESG
CU−scenario_low
CU−scenario_mid
CU−nochange
CU−scenario_high

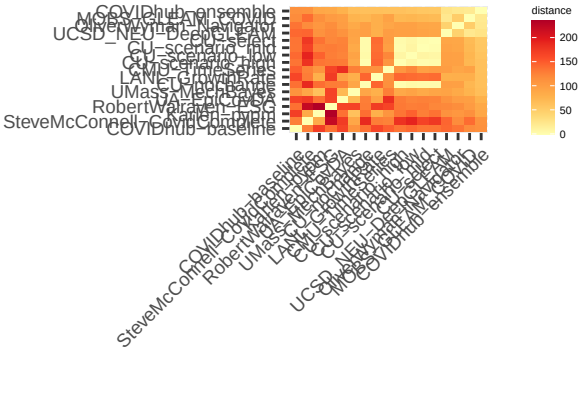

FL− Mean Approx. CD −
3 wk Ahead Inc Death
distance
100
50
0
COVIDhub−ensemble
UCSD_NEU−DeepSTEAM
SteveMcConnell−CovidComplete
RobertWalraven−ESG
CU−scenario_low
CU−scenario_mid
CU−scenario_high

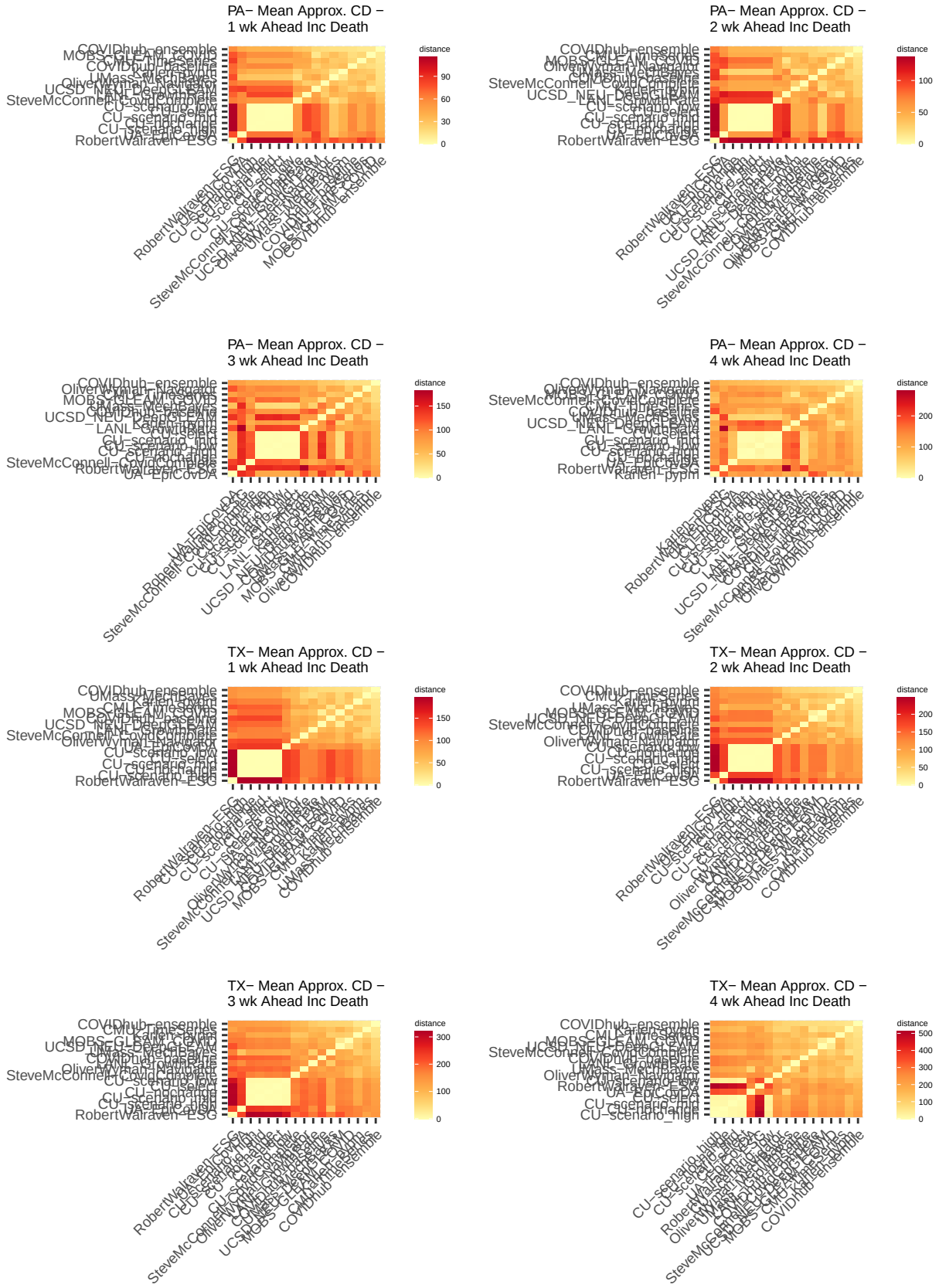

FL− Mean Approx. CD −
4 wk Ahead Inc Death
distance
150
100
50
0
COVIDhub−ensemble
SteveMcConnell−CovidComplete
UCSD_NEU−DeepSTEAM
OliverWyman−Navigator
CMU−TimeSeries
RobertWalraven−ESG
CU−scenario_low
CU−scenario_mid
CU−scenario_high


NY− Mean Approx. CD −
1 wk Ahead Inc Death
distance
75
50
25
0
COVIDhub−ensemble
MOBS−GLEAM_COVID
UMass−MechBayes
UCSD_NEU−DeepSTEAM
OliverWyman−Navigator
LANL−GrowthRate
CU−scenario_low
CU−scenario_mid
CU−nochange
CU−scenario_high
RobertWalraven−ESG
SteveMcConnell−CovidComplete


NY− Mean Approx. CD −
2 wk Ahead Inc Death
distance
90
60
30
0
COVIDhub−ensemble
MOBS−GLEAM_COVID
UCSD_NEU−DeepSTEAM
OliverWyman−Navigator
CU−scenario_low
CU−scenario_mid
CU−scenario_high
LANL−GrowthRate
RobertWalraven−ESG
COVIDhub−baseline
SteveMcConnell−CovidComplete
UA−EpiCovDA

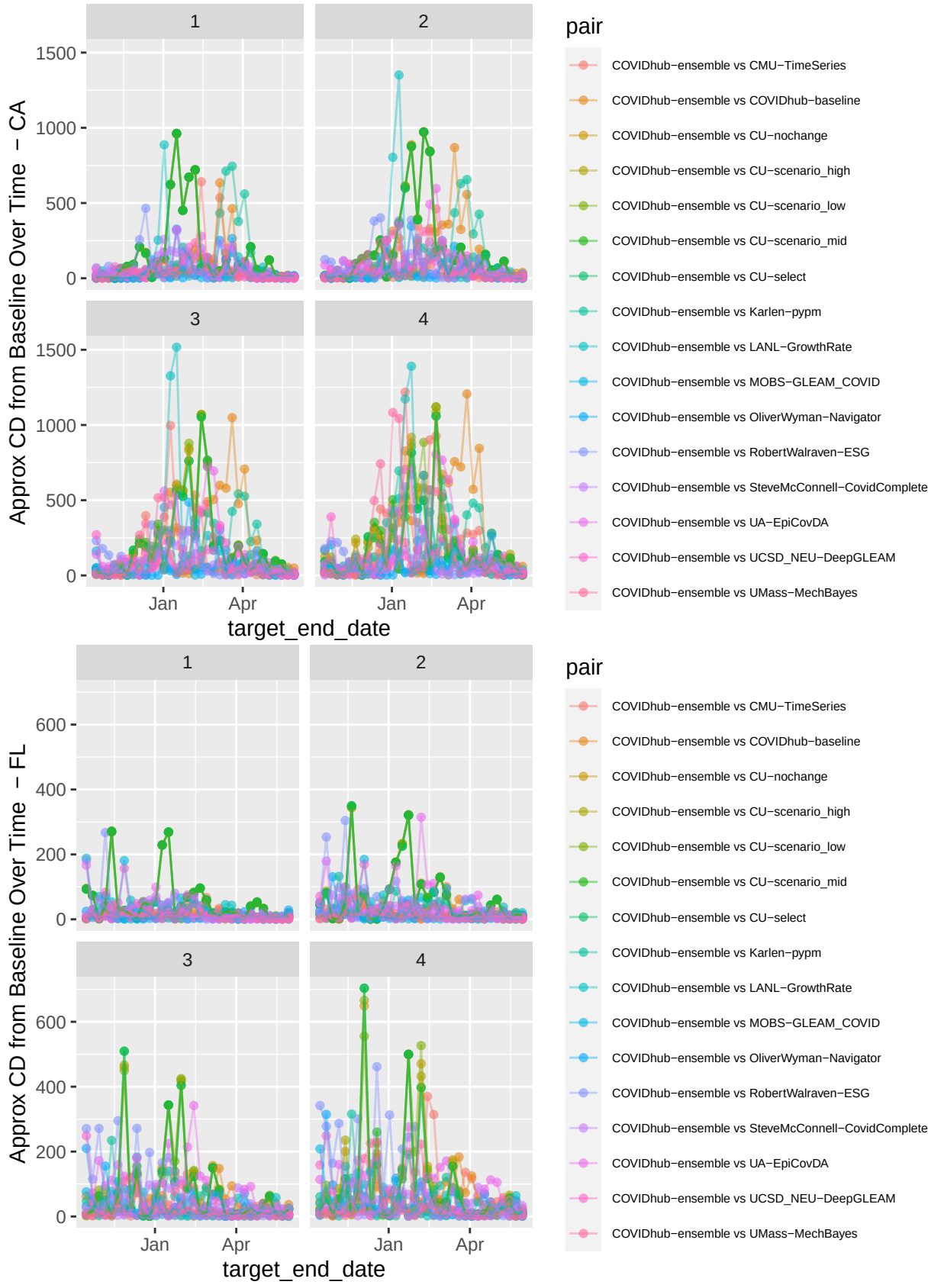

NY− Mean Approx. CD −
3 wk Ahead Inc Death
distance
150
100
50
0
COVIDhub−ensemble
UCSD_NEU−DeepSTEAM
OliverWyman−Navigator
UMass−MechBayes
CU−scenario_mid
CU−scenario_low
CU−nochange
CU−scenario_high
LANL−GrowthRate
RobertWalraven−ESG
UA−EpiCovDA
COVIDhub−baseline
SteveMcConnell−CovidComplete

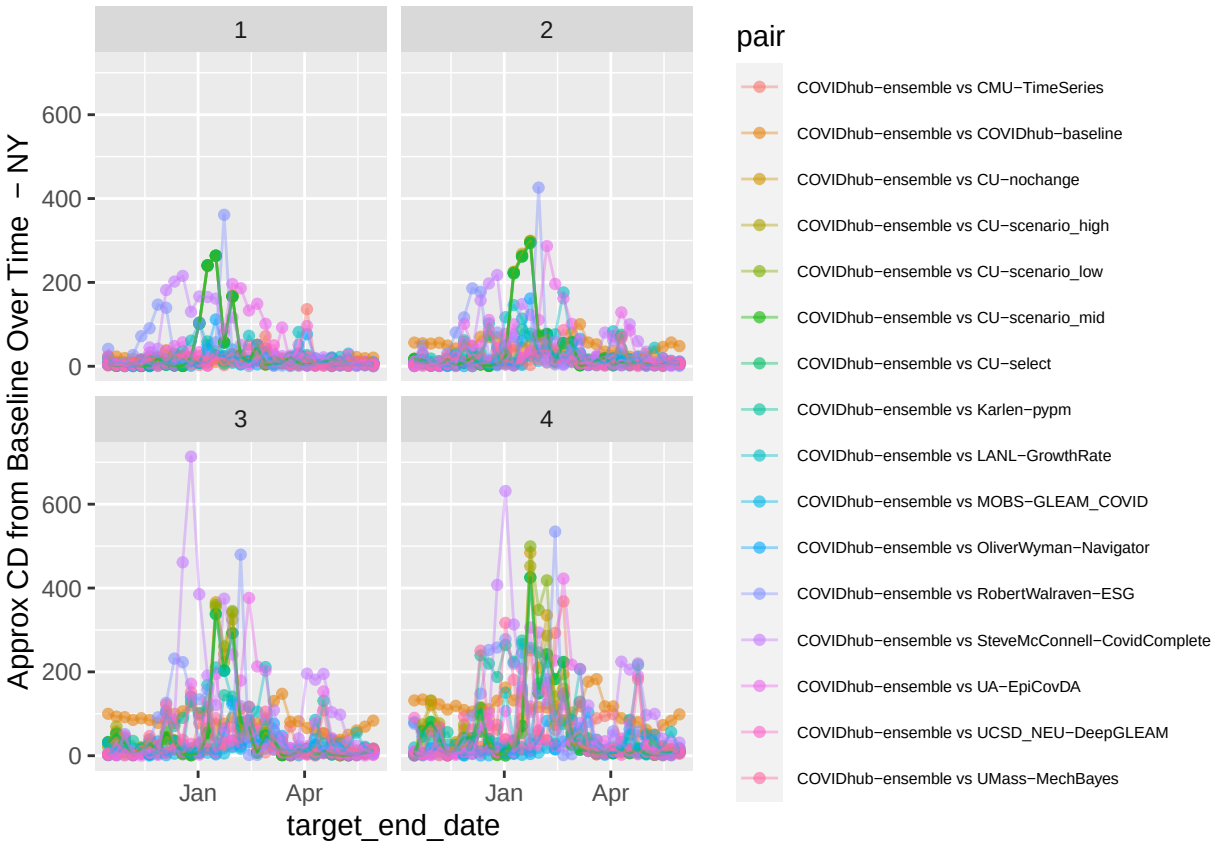

NY− Mean Approx. CD −
4 wk Ahead Inc Death
distance
200
150
100
50
0
COVIDhub−ensemble
MOBS−GLEAM_COVID
UCSD_NEU−DeepSTEAM
CU−scenario_mid
CU−scenario_low
CU−nochange
CU−scenario_high
LANL−GrowthRate
UMass−MechBayes
RobertWalraven−ESG
UA−EpiCovDA
COVIDhub−baseline
SteveMcConnell−CovidComplete

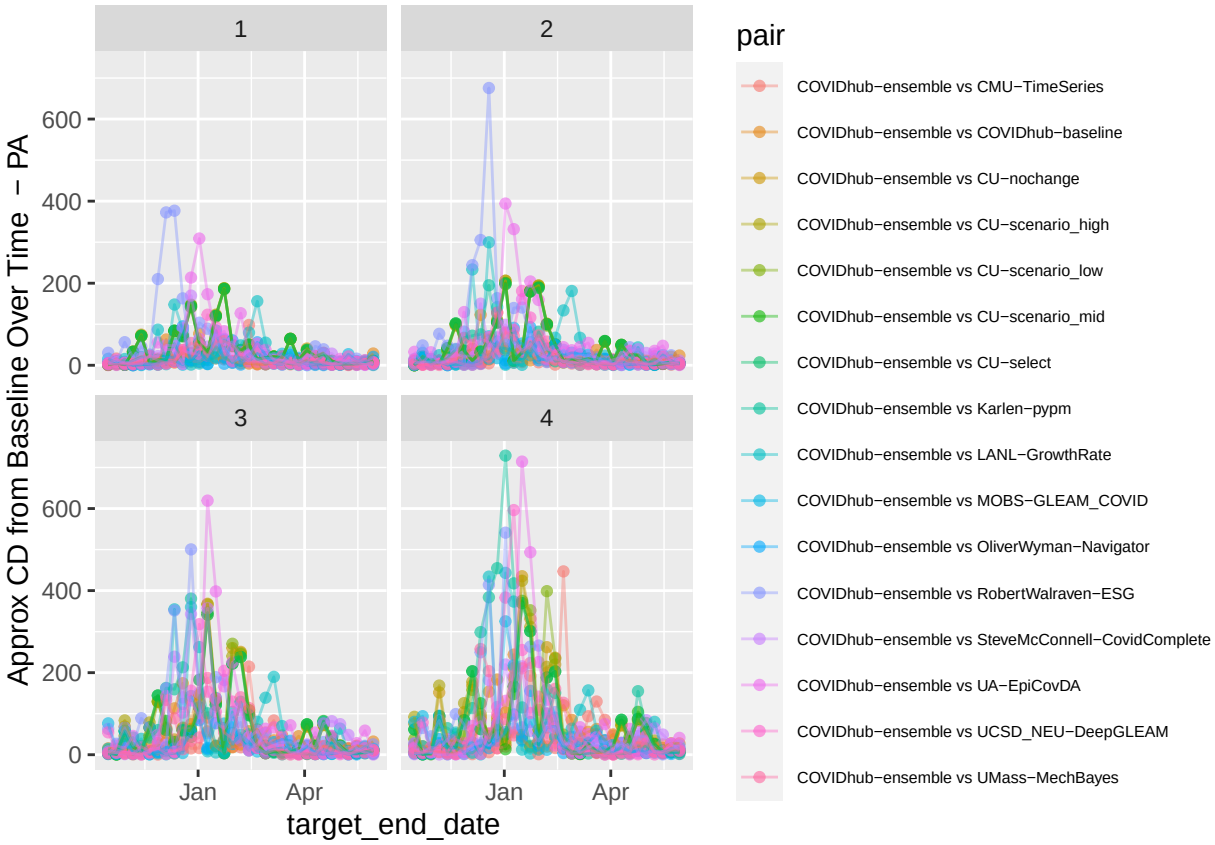


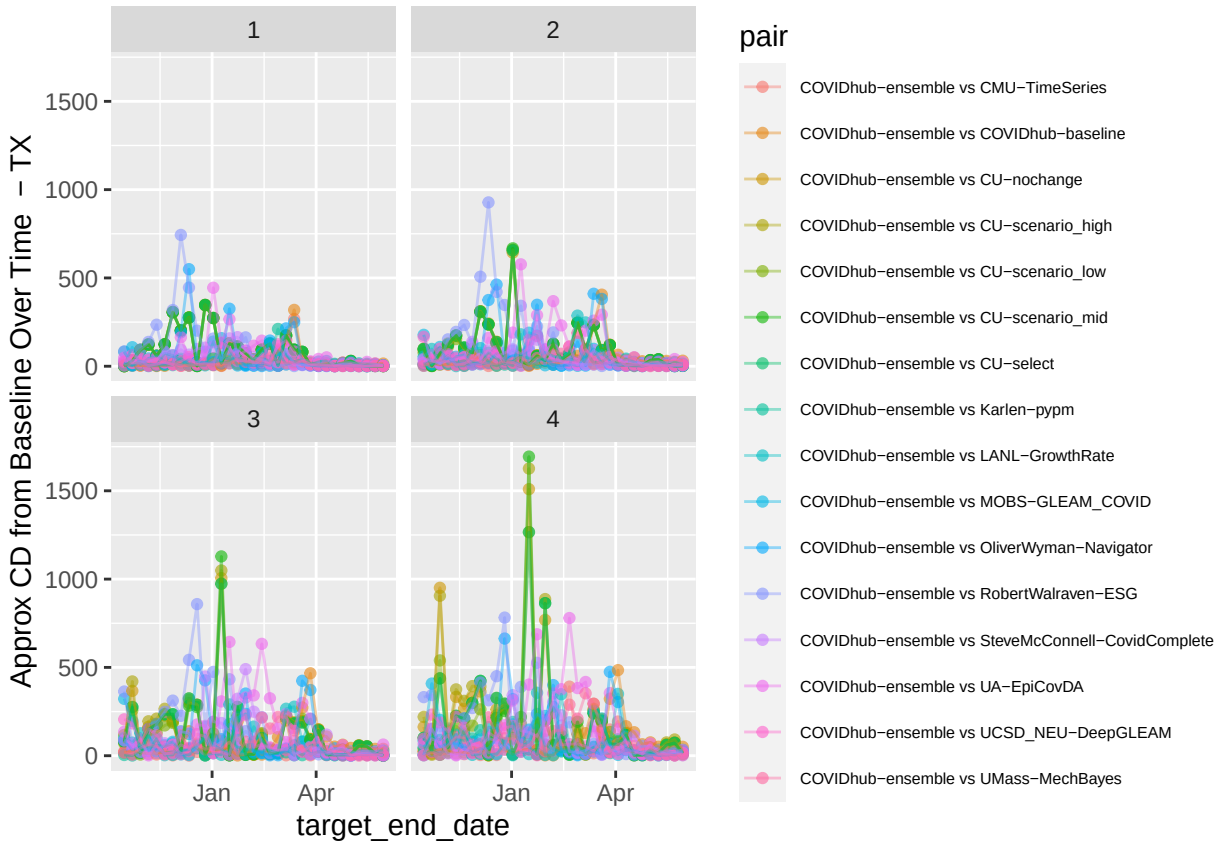
We can also look at the approximated pairwise distances to see how the models become more similar or

dissimilar over time.

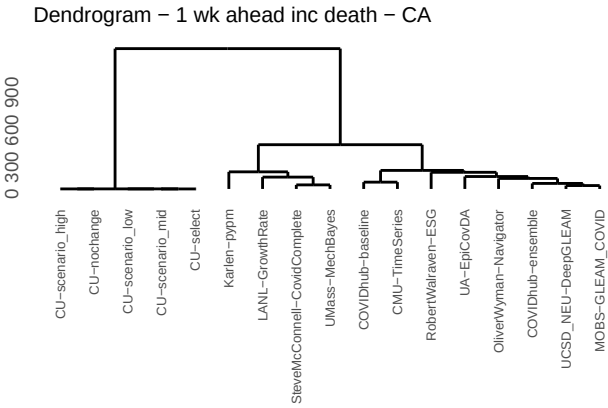


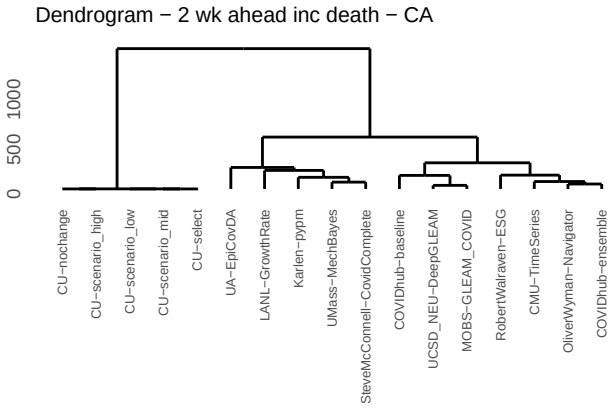

1
2
3
4
600
400
200
0
Jan
Apr
Approx CD from Baseline Over Time – NY
target_end_date
pair
COVIDhub−ensemble vs CMU−TimeSeries
COVIDhub−ensemble vs COVIDhub−baseline
COVIDhub−ensemble vs CU−nochange
COVIDhub−ensemble vs CU−scenario_high
COVIDhub−ensemble vs CU−scenario_low
COVIDhub−ensemble vs CU−scenario_mid
COVIDhub−ensemble vs CU−select
COVIDhub−ensemble vs Karlen−pypm
COVIDhub−ensemble vs LANL−GrowthRate
COVIDhub−ensemble vs MOBS−GLEAM_COVID
COVIDhub−ensemble vs OliverWyman−Navigator
COVIDhub−ensemble vs RobertWalraven−ESG
COVIDhub−ensemble vs SteveMcConnell−CovidComplete
COVIDhub−ensemble vs UA−EpiCovDA
COVIDhub−ensemble vs UCSD_NEU−DeepGLEAM
COVIDhub−ensemble vs UMass−MechBayes

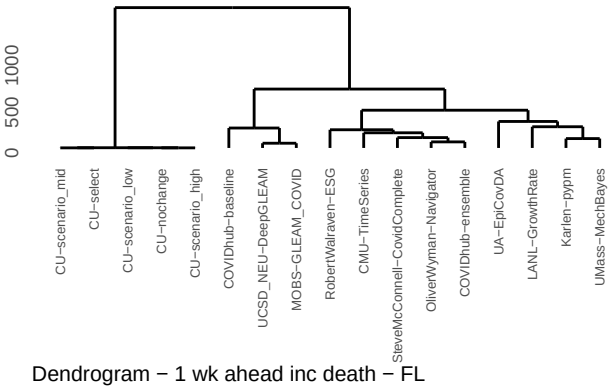

1
2
3
4
600
400
200
0
Jan
Apr
Approx CD from Baseline Over Time – PA
target_end_date
pair
COVIDhub−ensemble vs CMU−TimeSeries
COVIDhub−ensemble vs COVIDhub−baseline
COVIDhub−ensemble vs CU−nochange
COVIDhub−ensemble vs CU−scenario_high
COVIDhub−ensemble vs CU−scenario_low
COVIDhub−ensemble vs CU−scenario_mid
COVIDhub−ensemble vs CU−select
COVIDhub−ensemble vs Karlen−pypm
COVIDhub−ensemble vs LANL−GrowthRate
COVIDhub−ensemble vs MOBS−GLEAM_COVID
COVIDhub−ensemble vs OliverWyman−Navigator
COVIDhub−ensemble vs RobertWalraven−ESG
COVIDhub−ensemble vs SteveMcConnell−CovidComplete
COVIDhub−ensemble vs UA−EpiCovDA
COVIDhub−ensemble vs UCSD_NEU−DeepGLEAM
COVIDhub−ensemble vs UMass−MechBayes

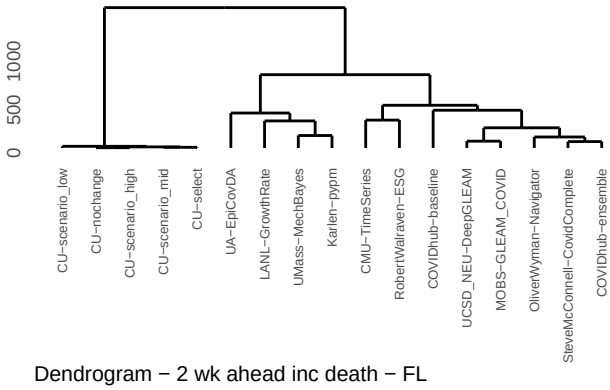


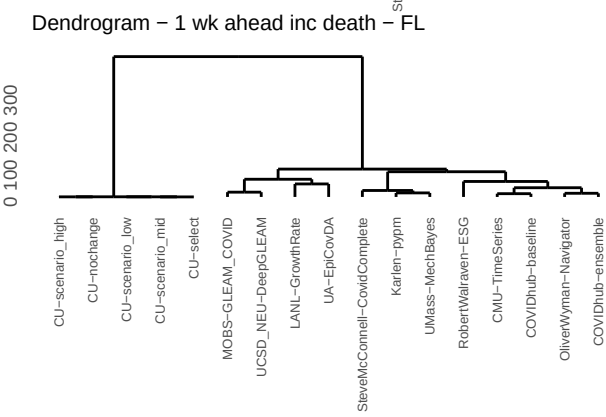
We can cluster the distances using hierarchical clustering. Different linkages will result in different clusters, we probably should investigate more later.

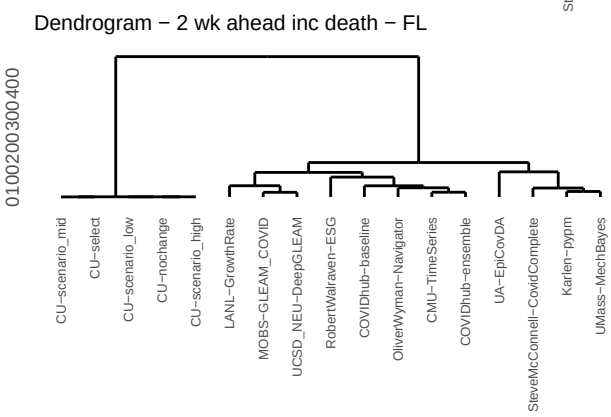

Dendrogram − 1 wk ahead inc death − CA
0 300 600 900
CU−scenario_high
CU−nochange
CU−scenario_low
CU−scenario_mid
CU−select
Karlen−pypm
LANL−GrowthRate
SteveMcConnell−CovidComplete
UMass−MechBayes
COVIDhub−baseline
CMU−TimeSeries
RobertWalraven−ESG
UA−EpiCovDA
OliverWyman−Navigator
COVIDhub−ensemble
UCSD_NEU−DeepGLEAM
MOBS−GLEAM_COVID

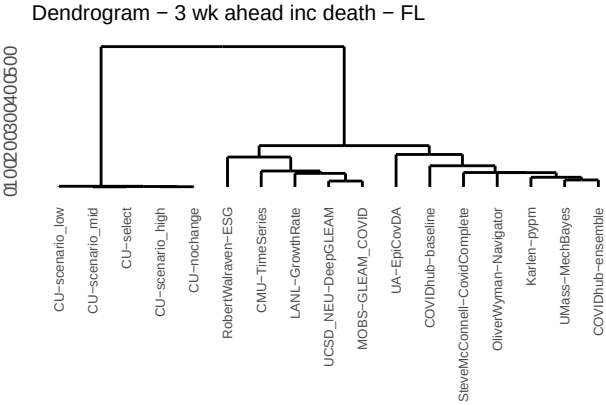

Dendrogram − 2 wk ahead inc death − CA
0 500 1000
CU−nochange
CU−scenario_high
CU−scenario_low
CU−scenario_mid
CU−select
UA−EpiCovDA
LANL−GrowthRate
Karlen−pypm
UMass−MechBayes
SteveMcConnell−CovidComplete
COVIDhub−baseline
UCSD_NEU−DeepGLEAM
MOBS−GLEAM_COVID
RobertWalraven−ESG
CMU−TimeSeries
OliverWyman−Navigator
COVIDhub−ensemble

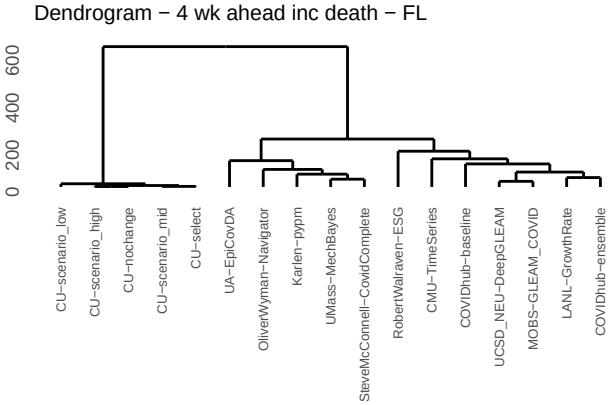

Dendrogram − 3 wk ahead inc death − CA
0 500 1000
CU−scenario_mid
CU−select
CU−scenario_low
CU−nochange
CU−scenario_high
COVIDhub−baseline
UCSD_NEU−DeepGLEAM
MOBS−GLEAM_COVID
RobertWalraven−ESG
CMU−TimeSeries
SteveMcConnell−CovidComplete
OliverWyman−Navigator
COVIDhub−ensemble
UA−EpiCovDA
LANL−GrowthRate
Karlen−pypm
UMass−MechBayes


Dendrogram − 4 wk ahead inc death − CA
0 500 1000
CU−scenario_low
CU−nochange
CU−scenario_high
CU−scenario_mid
CU−select
UA−EpiCovDA
LANL−GrowthRate
UMass−MechBayes
Karlen−pypm
CMU−TimeSeries
RobertWalraven−ESG
COVIDhub−baseline
UCSD_NEU−DeepGLEAM
MOBS−GLEAM_COVID
OliverWyman−Navigator
SteveMcConnell−CovidComplete
COVIDhub−ensemble


Dendrogram − 1 wk ahead inc death − FL
0 100 200 300
CU−scenario_high
CU−nochange
CU−scenario_low
CU−scenario_mid
CU−select
MOBS−GLEAM_COVID
UCSD_NEU−DeepGLEAM
LANL−GrowthRate
UA−EpiCovDA
SteveMcConnell−CovidComplete
Karlen−pypm
UMass−MechBayes
RobertWalraven−ESG
CMU−TimeSeries
COVIDhub−baseline
OliverWyman−Navigator
COVIDhub−ensemble


Dendrogram − 2 wk ahead inc death − FL
0 100 200 300 400
CU−scenario_mid
CU−select
CU−scenario_low
CU−nochange
CU−scenario_high
LANL−GrowthRate
MOBS−GLEAM_COVID
UCSD_NEU−DeepGLEAM
RobertWalraven−ESG
COVIDhub−baseline
OliverWyman−Navigator
CMU−TimeSeries
COVIDhub−ensemble
UA−EpiCovDA
SteveMcConnell−CovidComplete
Karlen−pypm
UMass−MechBayes


Dendrogram − 3 wk ahead inc death − FL
0 100 200 300 400 500
CU−scenario_low
CU−scenario_mid
CU−select
CU−scenario_high
CU−nochange
RobertWalraven−ESG
CMU−TimeSeries
LANL−GrowthRate
UCSD_NEU−DeepGLEAM
MOBS−GLEAM_COVID
UA−EpiCovDA
COVIDhub−baseline
SteveMcConnell−CovidComplete
OliverWyman−Navigator
Karlen−pypm
UMass−MechBayes
COVIDhub−ensemble


Dendrogram − 4 wk ahead inc death − FL
0 200 400 600
CU−scenario_low
CU−scenario_high
CU−nochange
CU−scenario_mid
CU−select
UA−EpiCovDA
OliverWyman−Navigator
Karlen−pypm
UMass−MechBayes
SteveMcConnell−CovidComplete
RobertWalraven−ESG
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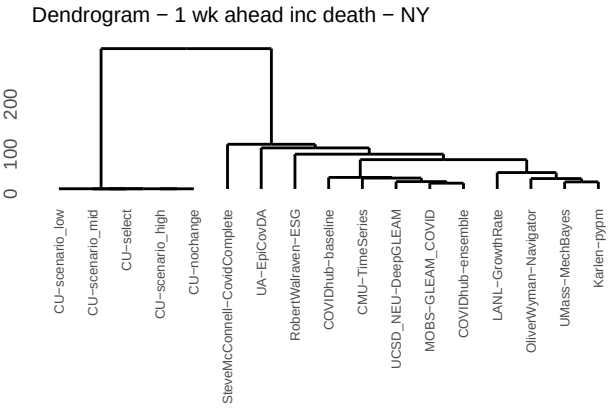
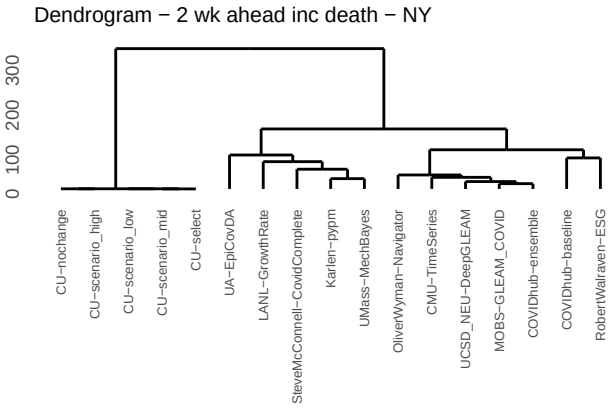
COVIDhub−baseline
UCSD_NEU−DeepGLEAM
MOBS−GLEAM_COVID
LANL−GrowthRate
COVIDhub−ensemble


Dendrogram − 1 wk ahead inc death − NY
0 100 200
CU−scenario_low
CU−scenario_mid
CU−select
CU−scenario_high
CU−nochange
SteveMcConnell−CovidComplete
UA−EpiCovDA
RobertWalraven−ESG
COVIDhub−baseline
CMU−TimeSeries
UCSD_NEU−DeepGLEAM
MOBS−GLEAM_COVID
COVIDhub−ensemble
LANL−GrowthRate
OliverWyman−Navigator
UMass−MechBayes
Karlen−pypm


Dendrogram − 2 wk ahead inc death − NY
0 100 200 300
CU−nochange
CU−scenario_high
CU−scenario_low
CU−scenario_mid
CU−select
UA−EpiCovDA
LANL−GrowthRate
SteveMcConnell−CovidComplete
Karlen−pypm
UMass−MechBayes
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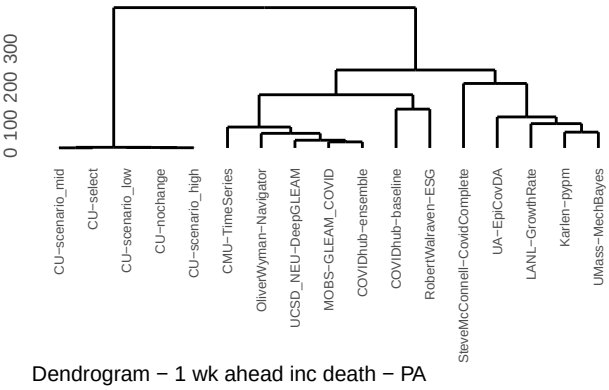
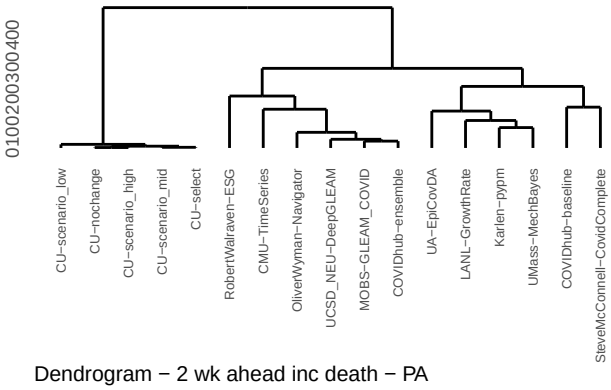
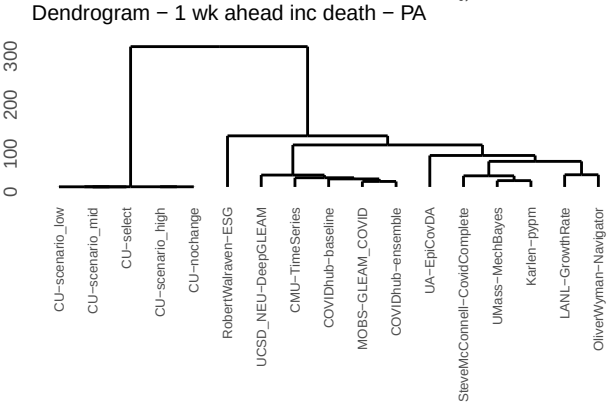
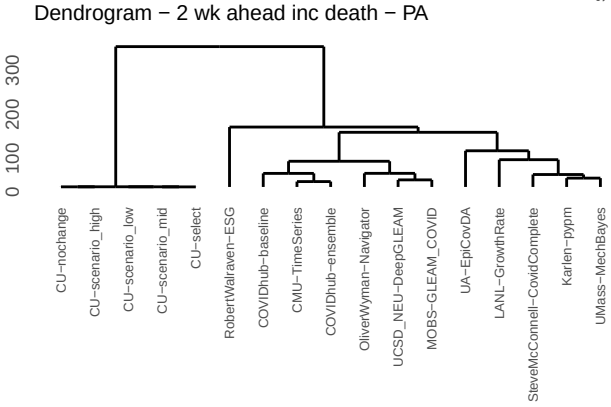
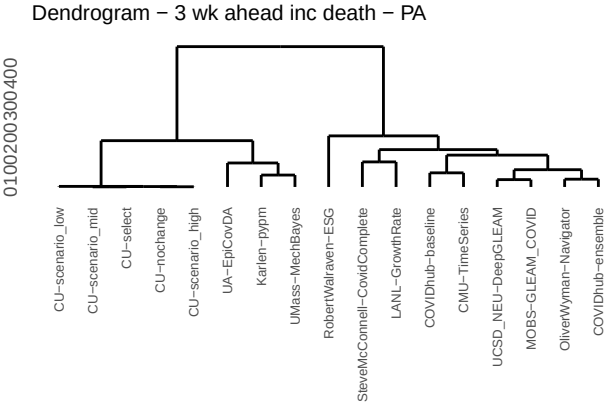
UCSD_NEU−DeepGLEAM
MOBS−GLEAM_COVID
COVIDhub−ensemble
COVIDhub−baseline
RobertWalraven−ESG

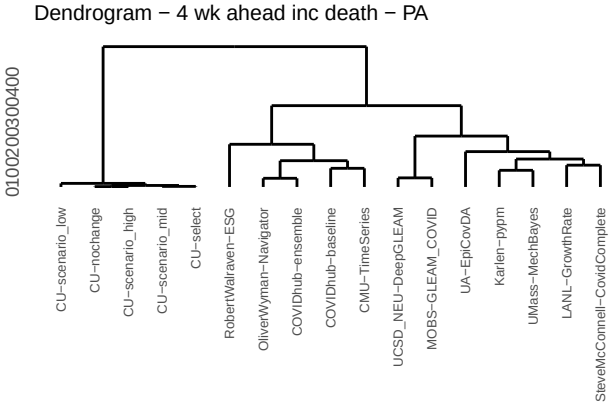

Dendrogram − 3 wk ahead inc death − NY
0 100 200 300
CU−scenario_mid
CU−select
CU−scenario_low
CU−nochange
CU−scenario_high
CMU−TimeSeries
OliverWyman−Navigator
UCSD_NEU−DeepGLEAM
MOBS−GLEAM_COVID
COVIDhub−ensemble
COVIDhub−baseline
RobertWalraven−ESG
SteveMcConnell−CovidComplete
UA−EpiCovDA
LANL−GrowthRate
Karlen−pypm
UMass−MechBayes

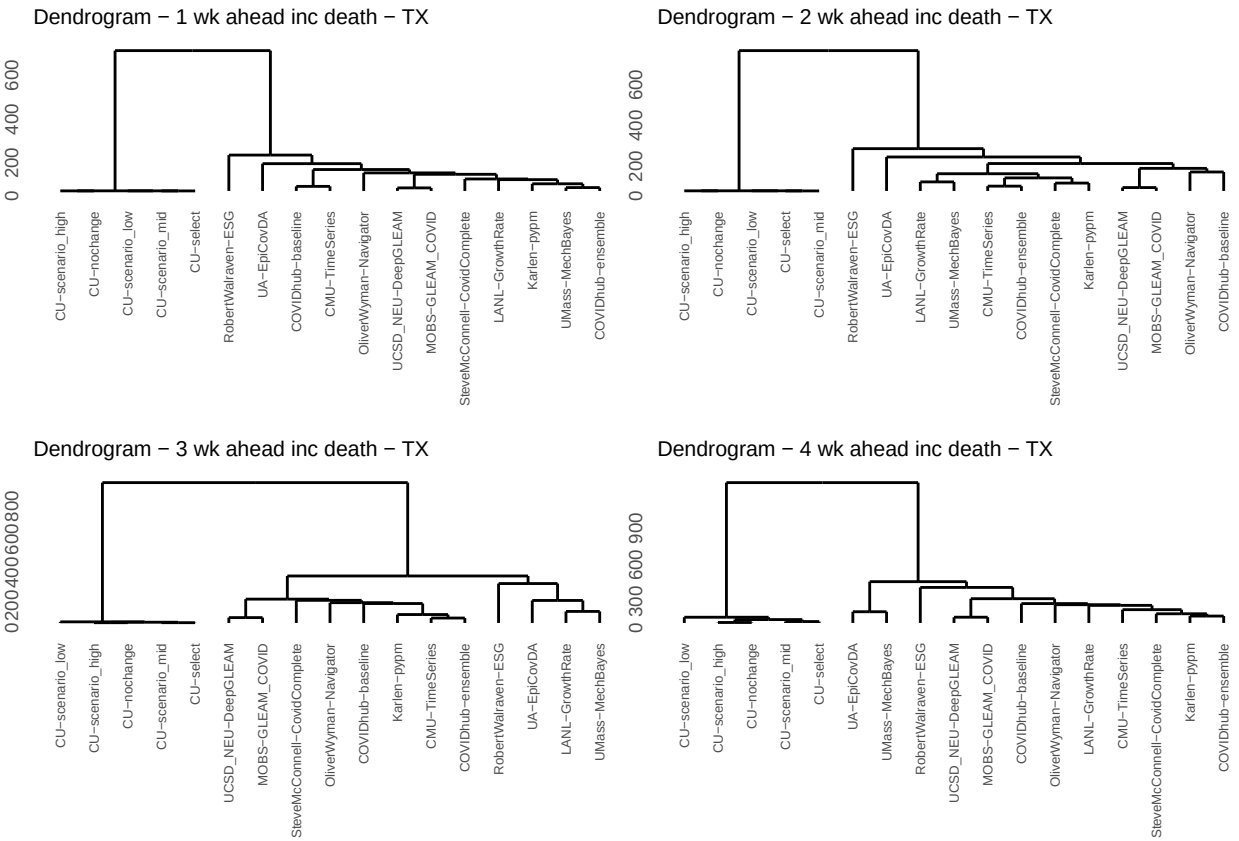

Dendrogram − 4 wk ahead inc death − NY
0 100 200 300 400
CU−scenario_low
CU−nochange
CU−scenario_high
CU−scenario_mid
CU−select
RobertWalraven−ESG
CMU−TimeSeries
OliverWyman−Navigator
UCSD_NEU−DeepGLEAM
MOBS−GLEAM_COVID
COVIDhub−ensemble
UA−EpiCovDA
LANL−GrowthRate
Karlen−pypm
UMass−MechBayes
COVIDhub−baseline
SteveMcConnell−CovidComplete


Dendrogram − 1 wk ahead inc death − PA
0 100 200 300
CU−scenario_low
CU−scenario_mid
CU−select
CU−scenario_high
CU−nochange
RobertWalraven−ESG
UCSD_NEU−DeepGLEAM
CMU−TimeSeries
COVIDhub−baseline
MOBS−GLEAM_COVID
COVIDhub−ensemble
UA−EpiCovDA
SteveMcConnell−CovidComplete
UMass−MechBayes
Karlen−pypm
LANL−GrowthRate
OliverWyman−Navigator


Dendrogram − 2 wk ahead inc death − PA
0 100 200 300
CU−nochange
CU−scenario_high
CU−scenario_low
CU−scenario_mid
CU−select
RobertWalraven−ESG
COVIDhub−baseline
CMU−TimeSeries
COVIDhub−ensemble
OliverWyman−Navigator
UCSD_NEU−DeepGLEAM
MOBS−GLEAM_COVID
UA−EpiCovDA
LANL−GrowthRate
SteveMcConnell−CovidComplete
Karlen−pypm
UMass−MechBayes


Dendrogram − 3 wk ahead inc death − PA
0 100 200 300 400
CU−scenario_low
CU−scenario_mid
CU−select
CU−nochange
CU−scenario_high
UA−EpiCovDA
Karlen−pypm
UMass−MechBayes
RobertWalraven−ESG
SteveMcConnell−CovidComplete
LANL−GrowthRate
COVIDhub−baseline
CMU−TimeSeries
UCSD_NEU−DeepGLEAM
MOBS−GLEAM_COVID
OliverWyman−Navigator
COVIDhub−ensemble

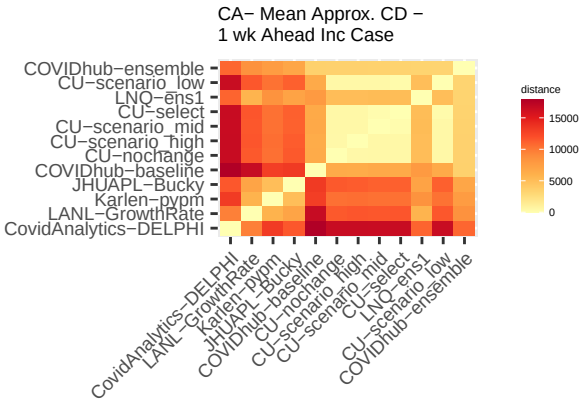

Dendrogram − 4 wk ahead inc death − PA
0 100 200 300 400
CU−scenario_low
CU−nochange
CU−scenario_high
CU−scenario_mid
CU−select
RobertWalraven−ESG
OliverWyman−Navigator
COVIDhub−ensemble
COVIDhub−baseline
CMU−TimeSeries
UCSD_NEU−DeepGLEAM
MOBS−GLEAM_COVID
UA−EpiCovDA
Karlen−pypm
UMass−MechBayes
LANL−GrowthRate
SteveMcConnell−CovidComplete

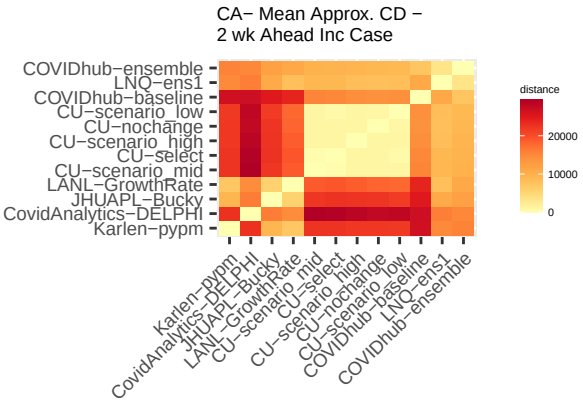


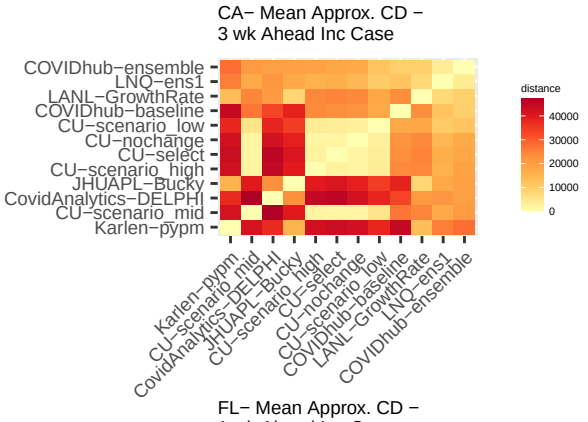
COVID-19 Forecasting Model Similarity Analysis for 1-4 Week Ahead Incident Case

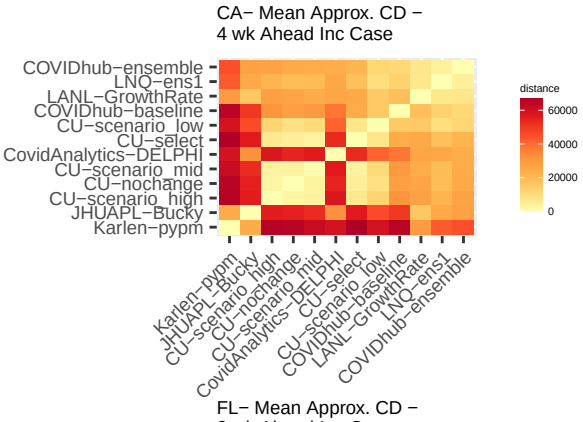
The pairwise approximated Cramer's distances are calculated for the models that have complete submissions for all target, all probability levels, from mid-October 2020 until May 24th,2021 for 5 locations with the highest incident cases in the week of February 27, 2021.

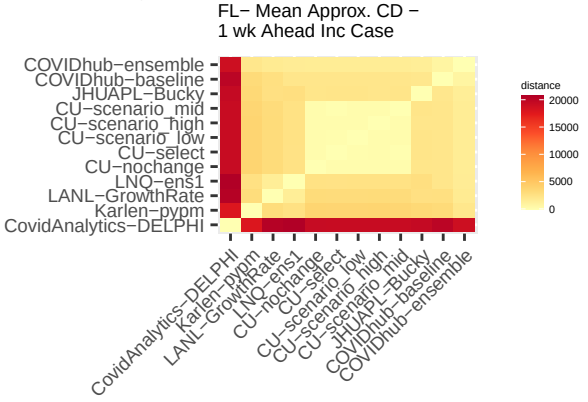
Below are the heatmaps of mean approximated pairwise CD across time by location-target:

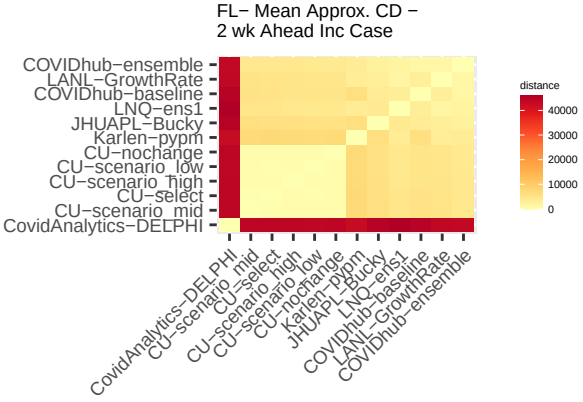

CA− Mean Approx. CD −
1 wk Ahead Inc Case
COVIDhub−ensemble
CU−scenario_low
LNQ−ens1
CU−select
CU−scenario_mid
CU−scenario_high
CU−nochange
COVIDhub−baseline
JHUAPL−Bucky
Karlen−pypm
LANL−GrowthRate
CovidAnalytics−DELPHI
distance
15000
10000
5000
0

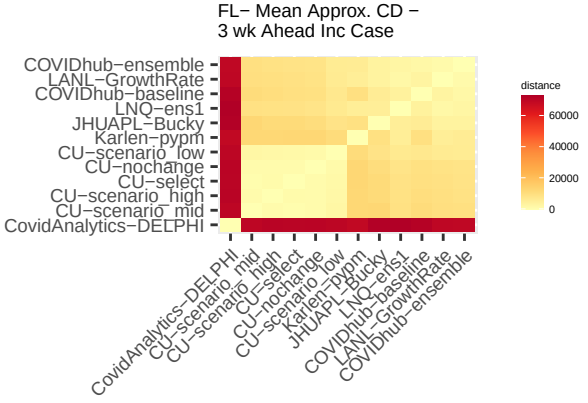

CA− Mean Approx. CD −
2 wk Ahead Inc Case
COVIDhub−ensemble
LNQ−ens1
COVIDhub−baseline
CU−scenario_low
CU−nochange
CU−scenario_high
CU−select
CU−scenario_mid
LANL−GrowthRate
JHUAPL−Bucky
CovidAnalytics−DELPHI
Karlen−pypm
distance
20000
10000
0

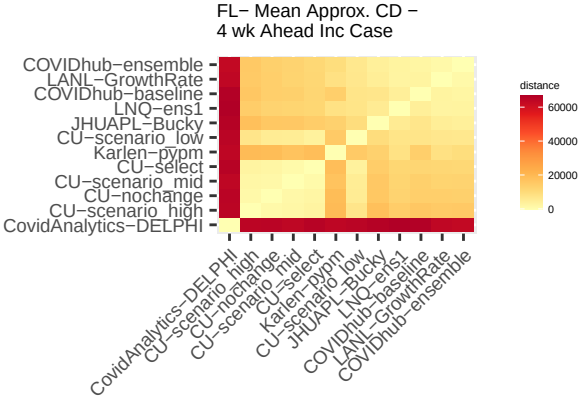

CA− Mean Approx. CD −
3 wk Ahead Inc Case
COVIDhub−ensemble
LNQ−ens1
LANL−GrowthRate
COVIDhub−baseline
CU−scenario_low
CU−nochange
CU−select
CU−scenario_high
JHUAPL−Bucky
CovidAnalytics−DELPHI
CU−scenario_mid
Karlen−pypm
distance
40000
30000
20000
10000
0

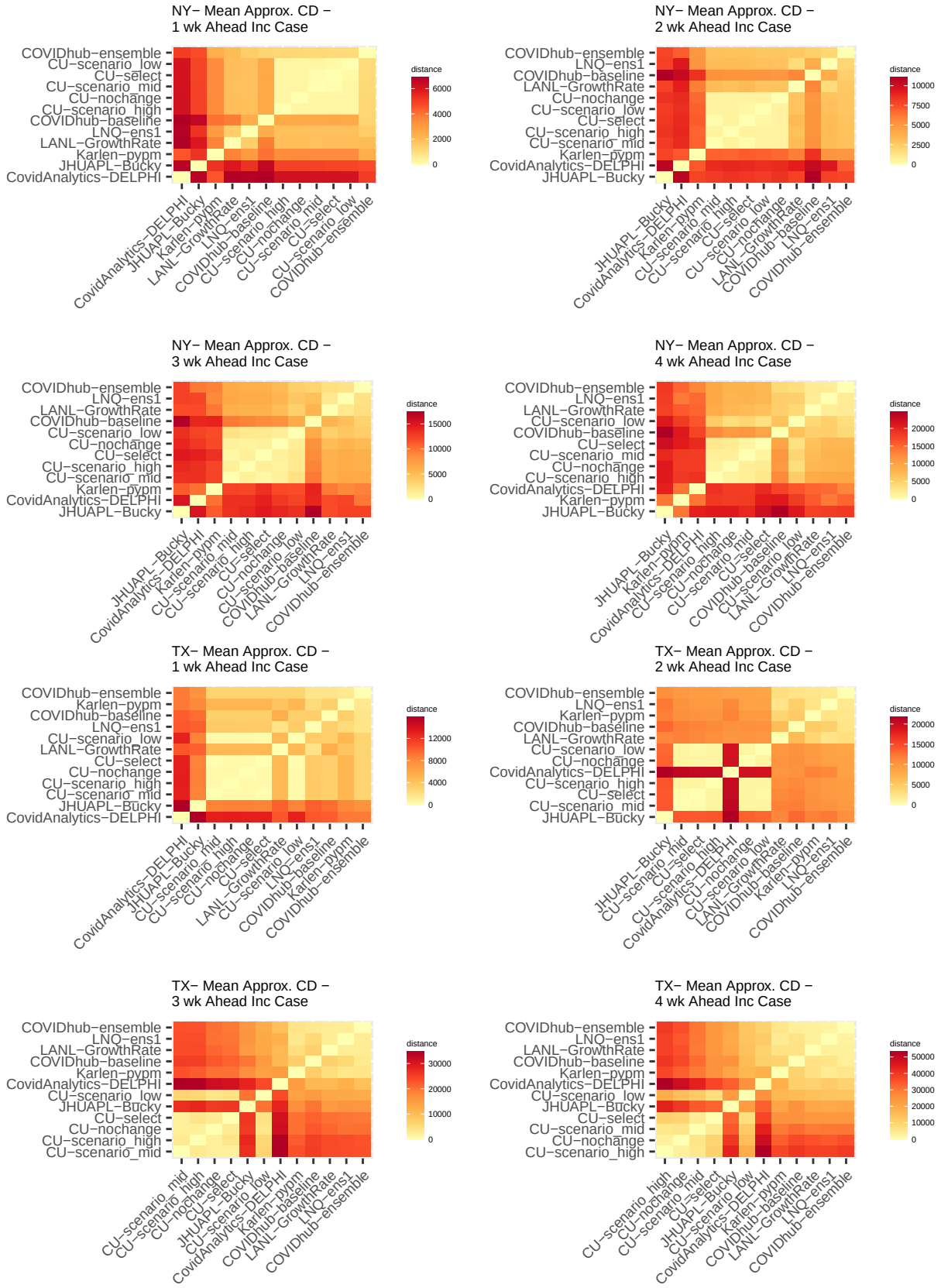

CA− Mean Approx. CD −
4 wk Ahead Inc Case
COVIDhub−ensemble
LNQ−ens1
LANL−GrowthRate
COVIDhub−baseline
CU−scenario_low
CU−select
CovidAnalytics−DELPHI
CU−scenario_mid
CU−nochange
CU−scenario_high
JHUAPL−Bucky
Karlen−pypm
distance
60000
40000
20000
0


FL− Mean Approx. CD −
1 wk Ahead Inc Case
COVIDhub−ensemble
COVIDhub−baseline
JHUAPL−Bucky
CU−scenario_mid
CU−scenario_high
CU−scenario_low
CU−select
CU−nochange
LNQ−ens1
LANL−GrowthRate
Karlen−pypm
CovidAnalytics−DELPHI
distance
20000
15000
10000
5000
0


FL− Mean Approx. CD −
2 wk Ahead Inc Case
COVIDhub−ensemble
LANL−GrowthRate
COVIDhub−baseline
LNQ−ens1
JHUAPL−Bucky
Karlen−pypm
CU−nochange
CU−scenario_low
CU−scenario_high
CU−select
CU−scenario_mid
CovidAnalytics−DELPHI
distance
40000
30000
20000
10000
0

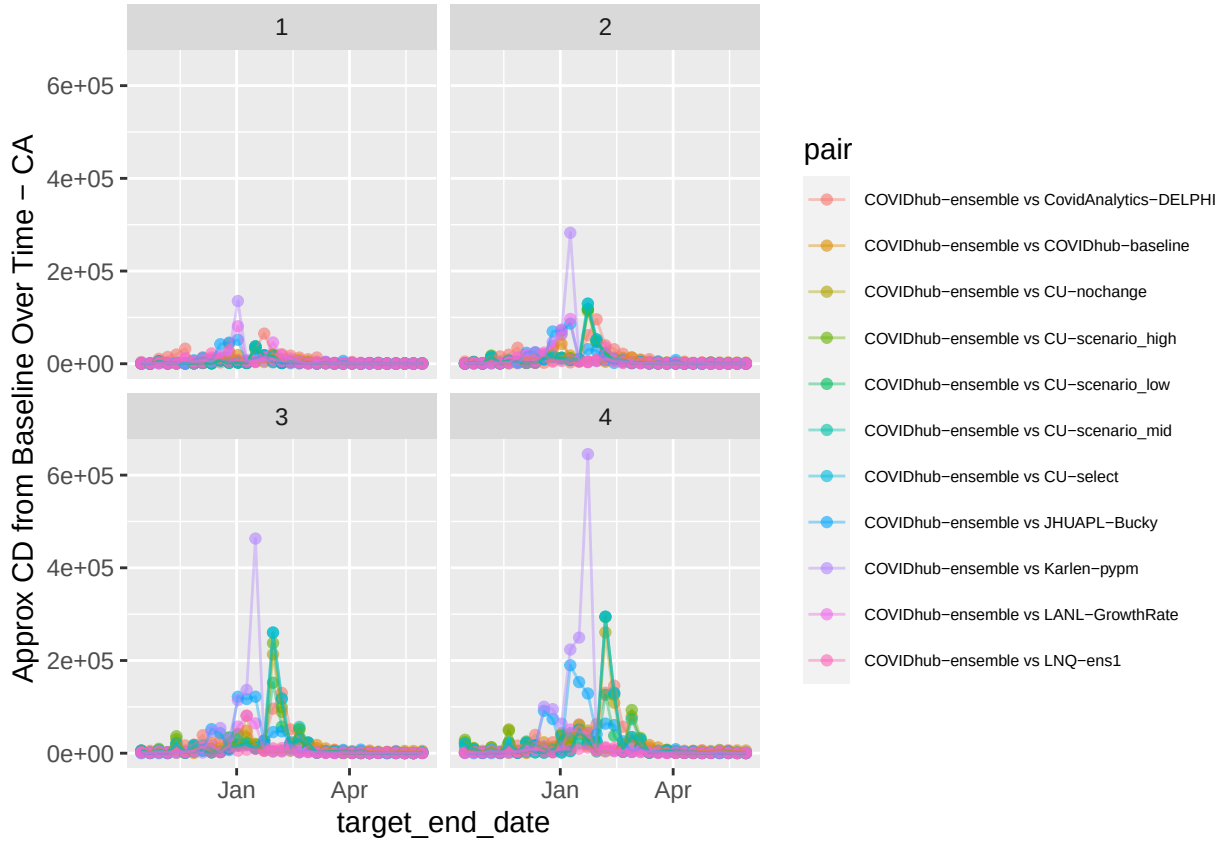

FL− Mean Approx. CD −
3 wk Ahead Inc Case
COVIDhub−ensemble
LANL−GrowthRate
COVIDhub−baseline
LNQ−ens1
JHUAPL−Bucky
Karlen−pypm
CU−scenario_low
CU−nochange
CU−select
CU−scenario_high
CU−scenario_mid
CovidAnalytics−DELPHI
distance
60000
40000
20000
0

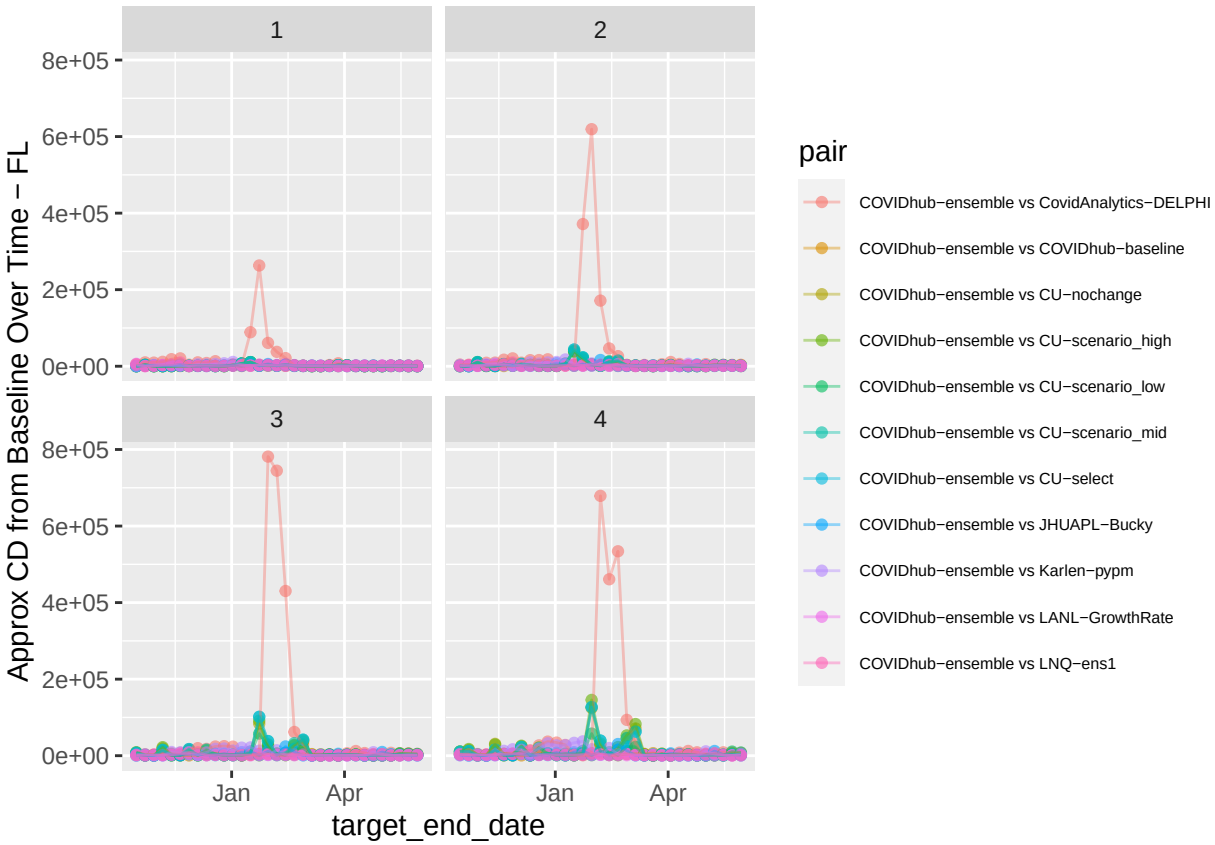

FL− Mean Approx. CD −
4 wk Ahead Inc Case
COVIDhub−ensemble
LANL−GrowthRate
COVIDhub−baseline
LNQ−ens1
JHUAPL−Bucky
CU−scenario_low
Karlen−pypm
CU−select
CU−scenario_mid
CU−nochange
CU−scenario_high
CovidAnalytics−DELPHI
distance
60000
40000
20000
0

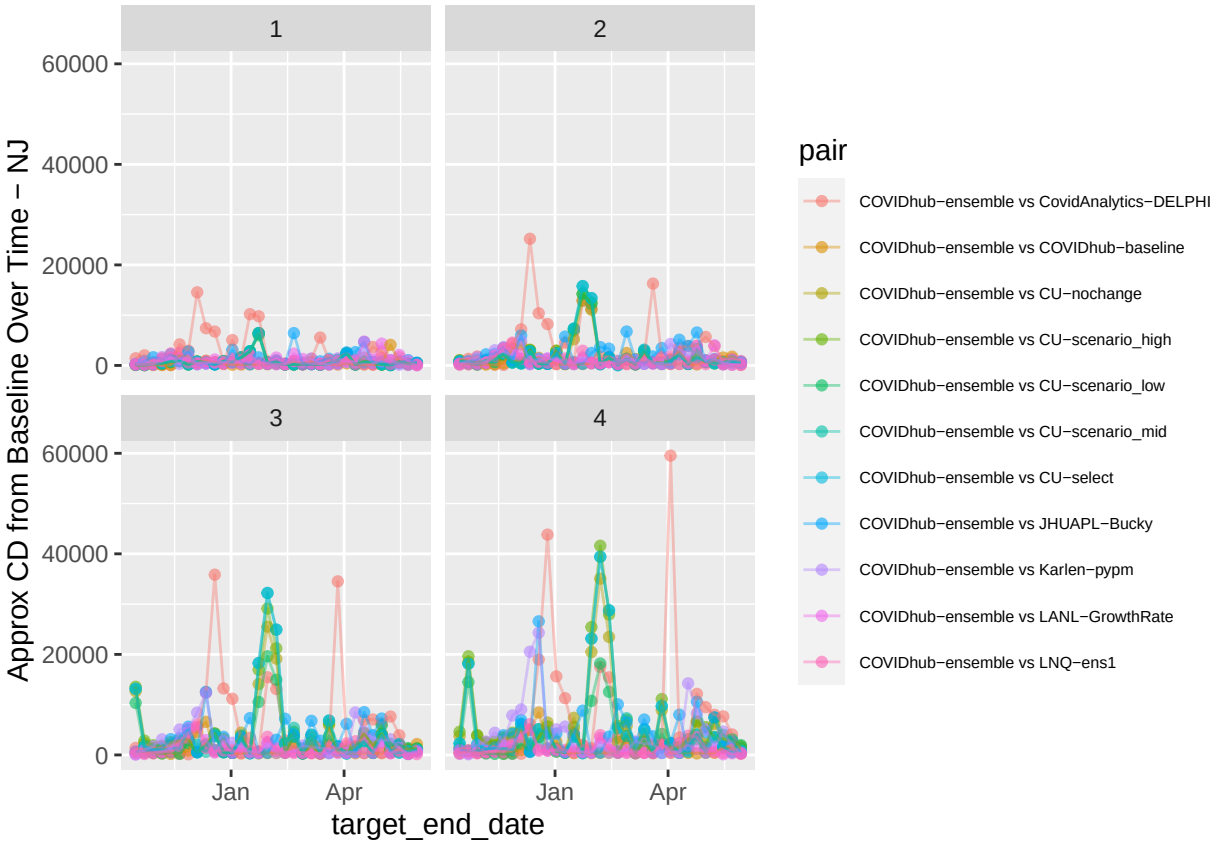


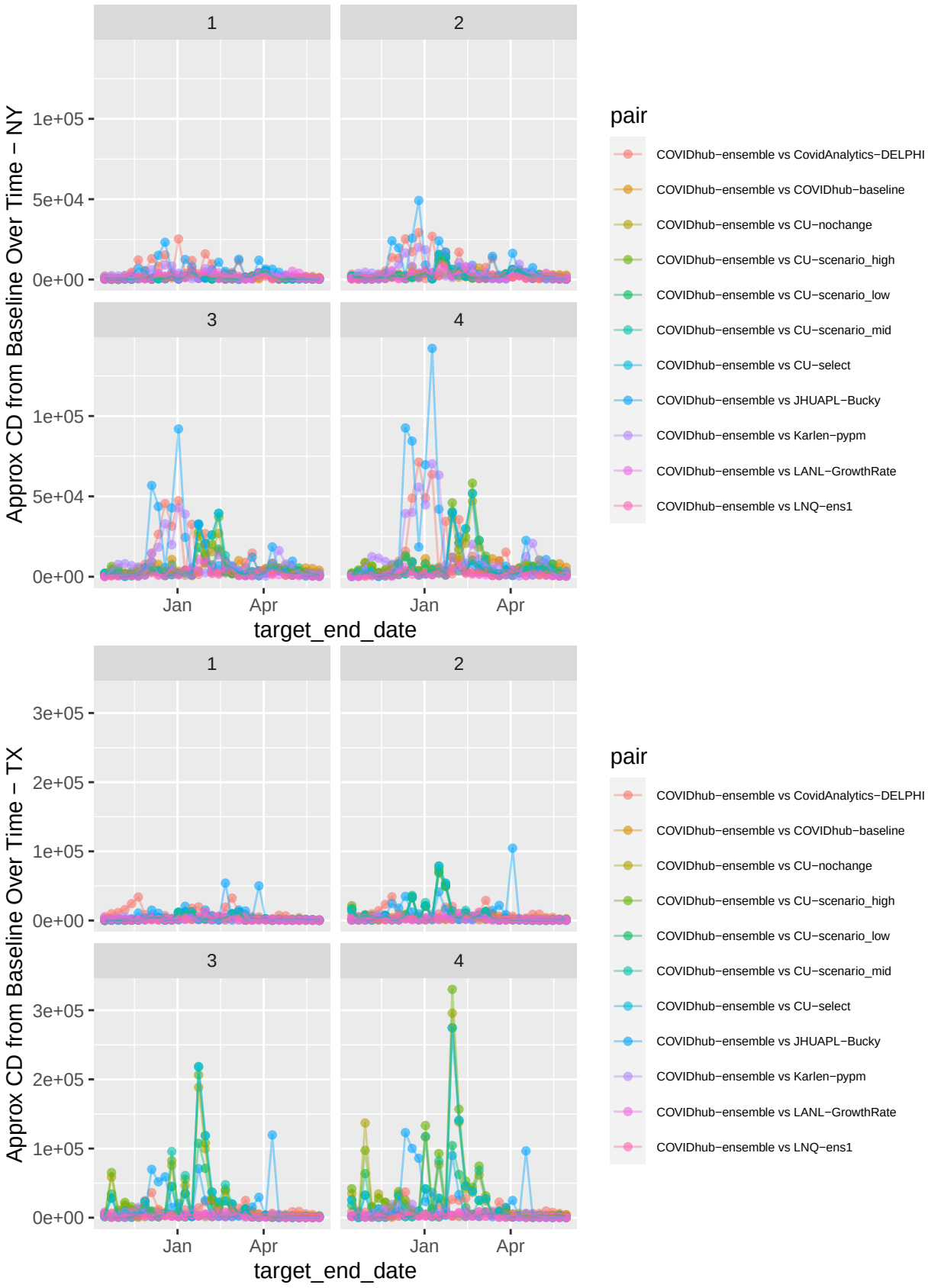
Below are the plots of approximated pairwise distances over time. Unlike indicent death targets, there are

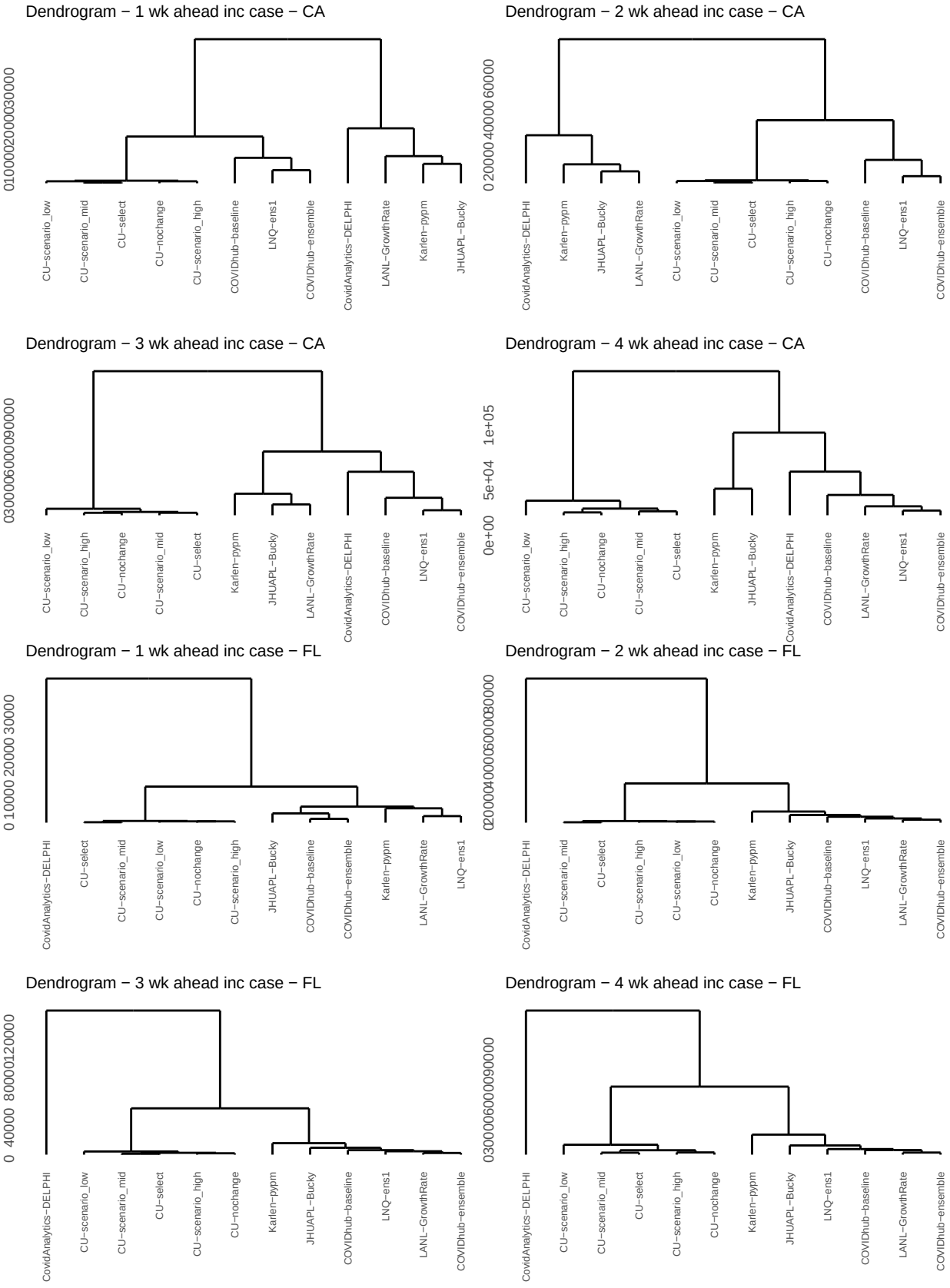
too many model pairs to show (12 models for inc death and 17 models for inc case, so we have a combination of 6 choose 2 with no repeats (15) vs a combination of 11 choose 2 with no repeats (55)). So, I only pick the first 15 of the combinations:

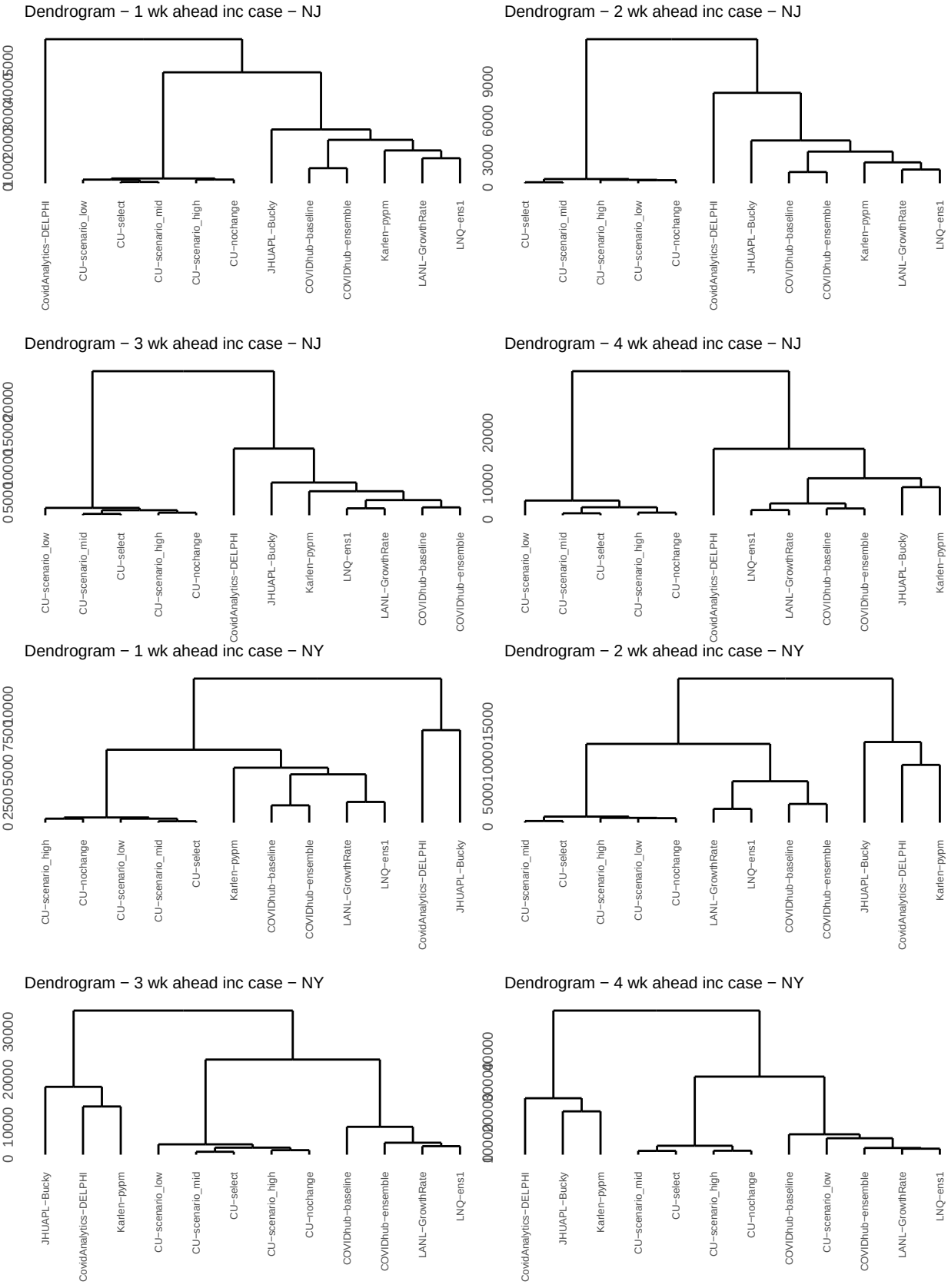


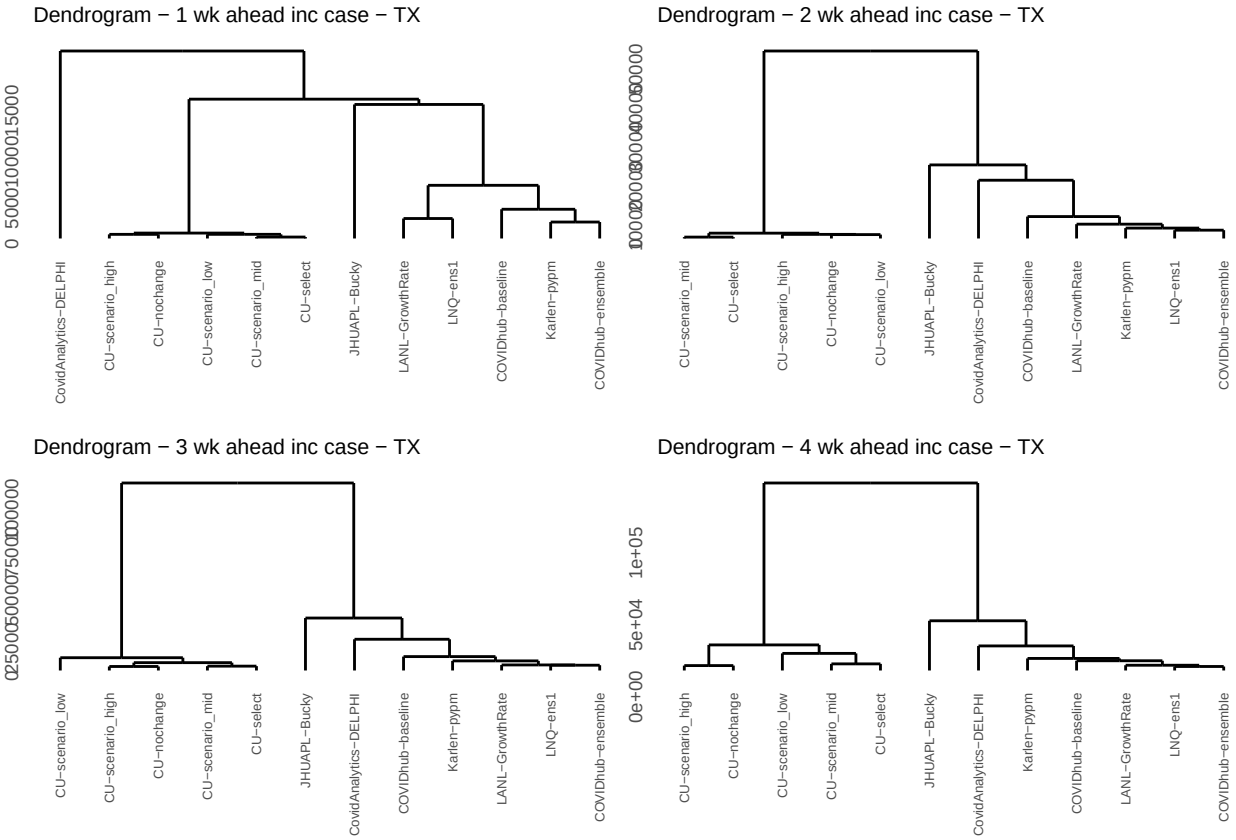

1
2
3
4
8e+05
6e+05
4e+05
2e+05
0e+00
Approx CD from Baseline Over Time – FL
Jan
Apr
target_end_date
pair
COVIDhub−ensemble vs CovidAnalytics−DELPHI
COVIDhub−ensemble vs COVIDhub−baseline
COVIDhub−ensemble vs CU−nochange
COVIDhub−ensemble vs CU−scenario_high
COVIDhub−ensemble vs CU−scenario_low
COVIDhub−ensemble vs CU−scenario_mid
COVIDhub−ensemble vs CU−select
COVIDhub−ensemble vs JHUAPL−Bucky
COVIDhub−ensemble vs Karlen−pypm
COVIDhub−ensemble vs LANL−GrowthRate
COVIDhub−ensemble vs LNQ−ens1


1
2
3
4
60000
40000
20000
0
Approx CD from Baseline Over Time – NJ
Jan
Apr
target_end_date
pair
COVIDhub−ensemble vs CovidAnalytics−DELPHI
COVIDhub−ensemble vs COVIDhub−baseline
COVIDhub−ensemble vs CU−nochange
COVIDhub−ensemble vs CU−scenario_high
COVIDhub−ensemble vs CU−scenario_low
COVIDhub−ensemble vs CU−scenario_mid
COVIDhub−ensemble vs CU−select
COVIDhub−ensemble vs JHUAPL−Bucky
COVIDhub−ensemble vs Karlen−pypm
COVIDhub−ensemble vs LANL−GrowthRate
COVIDhub−ensemble vs LNQ−ens1


1
2
3
4
Approx CD from Baseline Over Time – NY
1e+05
5e+04
0e+00
Jan
Apr
target_end_date
pair
COVIDhub−ensemble vs CovidAnalytics−DELPHI
COVIDhub−ensemble vs COVIDhub−baseline
COVIDhub−ensemble vs CU−nochange
COVIDhub−ensemble vs CU−scenario_high
COVIDhub−ensemble vs CU−scenario_low
COVIDhub−ensemble vs CU−scenario_mid
COVIDhub−ensemble vs CU−select
COVIDhub−ensemble vs JHUAPL−Bucky
COVIDhub−ensemble vs Karlen−pypm
COVIDhub−ensemble vs LANL−GrowthRate
COVIDhub−ensemble vs LNQ−ens1
Approx CD from Baseline Over Time – TX
3e+05
2e+05
1e+05
0e+00


Dendrogram − 1 wk ahead inc case − CA
Dendrogram − 2 wk ahead inc case − CA
Dendrogram − 3 wk ahead inc case − CA
Dendrogram − 4 wk ahead inc case − CA
Dendrogram − 1 wk ahead inc case − FL
Dendrogram − 2 wk ahead inc case − FL
Dendrogram − 3 wk ahead inc case − FL
Dendrogram − 4 wk ahead inc case − FL


Dendrogram − 1 wk ahead inc case − NJ
CovidAnalytics−DELPHI
CU−scenario_low
CU−select
CU−scenario_mid
CU−scenario_high
CU−nochange
JHUAPL−Bucky
COVIDhub−baseline
COVIDhub−ensemble
Karlen−pypm
LANL−GrowthRate
LNQ−ens1
Dendrogram − 2 wk ahead inc case − NJ
0 3000 6000 9000
CU−select
CU−scenario_mid
CU−scenario_high
CU−scenario_low
CU−nochange
CovidAnalytics−DELPHI
JHUAPL−Bucky
COVIDhub−baseline
COVIDhub−ensemble
Karlen−pypm
LANL−GrowthRate
LNQ−ens1
Dendrogram − 3 wk ahead inc case − NJ
0 5000 10000 15000 20000
CU−scenario_low
CU−scenario_mid
CU−select
CU−scenario_high
CU−nochange
CovidAnalytics−DELPHI
JHUAPL−Bucky
Karlen−pypm
LNQ−ens1
LANL−GrowthRate
COVIDhub−baseline
COVIDhub−ensemble
Dendrogram − 4 wk ahead inc case − NJ
0 10000 20000
CU−scenario_low
CU−scenario_mid
CU−select
CU−scenario_high
CU−nochange
CovidAnalytics−DELPHI
LNQ−ens1
LANL−GrowthRate
COVIDhub−baseline
COVIDhub−ensemble
JHUAPL−Bucky
Karlen−pypm
Dendrogram − 1 wk ahead inc case − NY
0 2500 5000 7500 10000
CU−scenario_high
CU−nochange
CU−scenario_low
CU−scenario_mid
CU−select
Karlen−pypm
COVIDhub−baseline
COVIDhub−ensemble
LANL−GrowthRate
LNQ−ens1
CovidAnalytics−DELPHI
JHUAPL−Bucky
Dendrogram − 2 wk ahead inc case − NY
0 5000 10000 15000
CU−scenario_mid
CU−select
CU−scenario_high
CU−scenario_low
CU−nochange
LANL−GrowthRate
LNQ−ens1
COVIDhub−baseline
COVIDhub−ensemble
JHUAPL−Bucky
CovidAnalytics−DELPHI
Karlen−pypm
Dendrogram − 3 wk ahead inc case − NY
0 10000 20000 30000
JHUAPL−Bucky
CovidAnalytics−DELPHI
Karlen−pypm
CU−scenario_low
CU−scenario_mid
CU−select
CU−scenario_high
CU−nochange
COVIDhub−baseline
COVIDhub−ensemble
LANL−GrowthRate
LNQ−ens1
Dendrogram − 4 wk ahead inc case − NY
CovidAnalytics−DELPHI
JHUAPL−Bucky
Karlen−pypm
CU−scenario_mid
CU−select
CU−scenario_high
CU−nochange
COVIDhub−baseline
CU−scenario_low
COVIDhub−ensemble
LANL−GrowthRate
LNQ−ens1


Dendrogram − 1 wk ahead inc case − TX
0
5000
10000
15000
CovidAnalytics−DELPHI
CU−scenario_high
CU−nochange
CU−scenario_low
CU−scenario_mid
CU−select
JHUAPL−Bucky
LANL−GrowthRate
LNQ−ens1
COVIDhub−baseline
Karlen−pypm
COVIDhub−ensemble
Dendrogram − 2 wk ahead inc case − TX
CU−scenario_mid
CU−select
CU−scenario_high
CU−nochange
CU−scenario_low
JHUAPL−Bucky
CovidAnalytics−DELPHI
COVIDhub−baseline
LANL−GrowthRate
Karlen−pypm
LNQ−ens1
COVIDhub−ensemble
Dendrogram − 3 wk ahead inc case − TX
CU−scenario_low
CU−scenario_high
CU−nochange
CU−scenario_mid
CU−select
JHUAPL−Bucky
CovidAnalytics−DELPHI
COVIDhub−baseline
Karlen−pypm
LANL−GrowthRate
LNQ−ens1
COVIDhub−ensemble
Dendrogram − 4 wk ahead inc case − TX
0e+00
5e+04
1e+05
CU−scenario_high
CU−nochange
CU−scenario_low
CU−scenario_mid
CU−select
JHUAPL−Bucky
CovidAnalytics−DELPHI
Karlen−pypm
COVIDhub−baseline
LANL−GrowthRate
LNQ−ens1
COVIDhub−ensemble