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FILENAME CDDEP '/folders/myfolders/Thabo Mabuka/ARI/CDDEP paper/20210525_Data extraction file_Thabo.xlsx';
Libname CDDEP '/folders/myfolders/Thabo Mabuka/ARI/CDDEP paper';
OPTIONS nofmterr;

Proc Import Datafile=CDDEP
    DBMS=XLSX
    Replace
    OUT=CDDEP.CDDEP;
    GETNAMES=YES;
Run;

****3. Model Results Analysis***;
Proc Contents Data=CDDEP.CDDEP;
Run;

Proc SQL;
Create Table CDDEP.CDDEP_Result As Select Entry_Number,Type_of_Model,Countries_Covered, R0_Values,Peak_Case_Count,
Date_of_Peak_Cases,Peak_Death_Count,Date_of_Peak_Deaths,Cumulative_Case_Count,Time_of_Cumulative_Cases,
Cumulative_Death_Count,Time_of_Cumulative_Death_Estimat,Modelled_NPI_Classification,Cases_Averted_by_NPIs,
Deaths_Averted_by_NPIs,Effect_of_Timing_of_Restrictions,Comments from CDDEP.CDDEP;
Quit;

Data CDDEP.CDDEP_Result;
Set CDDEP.CDDEP_Result;
If
Type_of_Model=' ' AND
Countries_Covered=' ' AND
R0_Values=' ' AND
Peak_Case_Count=' ' AND
Date_of_Peak_Cases=' ' AND
Peak_Death_Count=' ' AND
Date_of_Peak_Deaths=' ' AND
Cumulative_Case_Count=' ' AND
Time_of_Cumulative_Cases=' ' AND
Cumulative_Death_Count=' ' AND
Time_of_Cumulative_Death_Estimat=' ' AND
Modelled_NPI_Classification=' ' AND
Cases_Averted_by_NPIs=' ' AND
Deaths_Averted_by_NPIs=' ' AND
Effect_of_Timing_of_Restrictions=' ' AND
Comments=' ' then delete;
Run;

***Ro Values****;
Proc Contents Data=CDDEP_Result;
Run;

Proc Freq Data=CDDEP_Result;
Tables R0_Values/Missing;
Run;

***Sorting out the Countries_Covered in Entries 01,M23,M10,P2, P18,M30,P24,M31 and M32;
Data CDDEP.CDDEP_Result1;
Set CDDEP.CDDEP_Result(Rename=(Time_of_Cumulative_Death_Estimat=Time_of_Cumulative_Death_Est));
Countries_Covered =Compress(Strip(Countries_Covered));
R0_Values=Compress(Strip(R0_Values));
Peak_Case_Count =Compress(Strip(Peak_Case_Count));
Date_of_Peak_Cases =Compress(Strip(Date_of_Peak_Cases));
Peak_Death_Count =Compress(Strip(Peak_Death_Count));
Cumulative_Case_Count =Compress(Strip(Cumulative_Case_Count));
Time_of_Cumulative_Case =Compress(Strip(Time_of_Cumulative_Case));
Cumulative_Death_Count =Compress(Strip(Cumulative_Death_Count));
Time_of_Cumulative_Death_Est =Compress(Strip(Time_of_Cumulative_Death_Est));
Modelled_NPI_Classification =Compress(Strip(Modelled_NPI_Classification));
Cases_Averted_by_NPIs =Compress(Strip(Cases_Averted_by_NPIs));
Deaths_Averted_by_NPIs =Compress(Strip(Deaths_Averted_by_NPIs));
Deaths_Averted_by_NPIs =Compress(Strip(Deaths_Averted_by_NPIs));

If Entry_Number='01' OR Entry_Number='M23' OR Entry_Number='M10' /*Entry_Number='P2'*/
OR Entry_Number='P18' OR Entry_Number='M30' OR Entry_Number='P24' OR Entry_Number='M31'
OR Entry_Number='M32'
then Do i=1 to (Countw(Countries_Covered));
    Countries_Covered=scan(Countries_Covered_,i,',');
    R0_Values=scan(R0_Values_,i,'Y');
    Peak_Case_Count=scan(Peak_Case_Count_,i,'');
    Date_of_Peak_Cases=scan(Date_of_Peak_Cases_,i,'');
    Peak_Death_Count=scan(Peak_Death_Count_,i,'');
    Cumulative_Case_Count=scan(Cumulative_Case_Count_,i,'');

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        Time_of_Cumulative_Case=scan(Time_of_Cumulative_Case_,i,'');
        Cumulative_Death_Count=scan(Cumulative_Death_Count_,i,'');
        Time_of_Cumulative_Death_Est=scan(Time_of_Cumulative_Death_Est_,i,'');
        Modelled_NPI_Classification=scan(Modelled_NPI_Classification_,i,'');
        Cases_Averted_by_NPIs=scan(Cases_Averted_by_NPIs_,i,'');
        Deaths_Averted_by_NPIs=scan(Deaths_Averted_by_NPIs_,i,'');
        Output;
    End;
    Drop i Countries_Covered_ R0_Values_ Peak_Case_Count_ Date_of_Peak_Cases_ Peak_Death_Count_ Cumulative_Case_Count_
        Time_of_Cumulative_Case_ Cumulative_Death_Count_ Time_of_Cumulative_Death_Est_ Modelled_NPI_Classification_
        Cases_Averted_by_NPIs_ Deaths_Averted_by_NPIs_;
    Proc Sort; by Entry_Number;
    Run;

    **Sorting out P18 further***;
    Proc Contents Data=CDDEP_Result2;
    Run;

    Proc Freq Data=CDDEP_Result2;
    Run;

    Data CDDEP.CDDEP_Result2;
    Set CDDEP.CDDEP_Result1(Where=(Entry_Number='P18'));

    **R0_Values**;;
    R0_Values_=Compress(Strip(R0_Values_));
    R0_Values_Stats=Substr(R0_Values_,1,3);
    R0_Values_Stats_Range=Substr(R0_Values_,6,7);

    **Peak_Case_Count**;;
    Peak_Case_Count_=Compress(Strip(Peak_Case_Count_));
    Position=Find(Peak_Case_Count_, 'F');
    Peak_Case_Count_Stats=Tranwrd(Substr(Peak_Case_Count_,1,Position), 'F', '');

    **Date of Peak Cases***;
    Date_of_Peak_Cases_=Compress(Strip(Date_of_Peak_Cases_));
    Position=Find(Date_of_Peak_Cases_, '0');
    Date_of_Peak_Cases_Stats=Substr(Date_of_Peak_Cases_,Position+2,7);
    Position=Find(Date_of_Peak_Cases_, ',');
    Date_of_Peak_Cases_Stats_Range=Substr(Date_of_Peak_Cases_,Position+1,12);

    ***Peak_Death_Count***;
    Peak_Death_Count_=Compress(Strip(Peak_Death_Count_));
    Position=Find(Peak_Death_Count_, 'W');
    Peak_Death_Count_Stats=Substr(Peak_Death_Count_,1,Position-1);
    Position=Find(Peak_Death_Count_, '(');
    Position1=Find(Peak_Death_Count_, ')');
    Peak_Death_Count_Stats_Range=Substr(Peak_Death_Count_,Position,Position1-Position+1);

    ***Cumulative_Case_Count***;
    Cumulative_Case_Count_=Compress(Strip(Cumulative_Case_Count_));
    Position=Find(Cumulative_Case_Count_, 'W');
    Cumulative_Case_Count_Stats=Substr(Cumulative_Case_Count_,1,Position-1);
    Position=Find(Cumulative_Case_Count_, '(');
    Position1=Find(Cumulative_Case_Count_, ')');
    Cumulative_Case_Count_Stats_Rng=Substr(Cumulative_Case_Count_,Position,Position1-Position+1);

    ****Cumulative_Death_Count***;
    Cumulative_Death_Count_=Compress(Strip(Cumulative_Death_Count_));
    Position=Find(Cumulative_Death_Count_, 'U');
    Cumulative_Death_Count_Stats=Substr(Cumulative_Death_Count_,1,Position-1);
    Position=Find(Cumulative_Death_Count_, '(');
    Position1=Find(Cumulative_Death_Count_, ')');
    Cumulative_Death_Count_Stats_Rng=Substr(Cumulative_Death_Count_,Position,Position1-Position+1);

    Drop R0_Values_ Peak_Case_Count_ Date_of_Peak_Cases_ Peak_Death_Count_ Cumulative_Case_Count_ Cumulative_Death_Count_ Position
    Run;

    Proc Contents Data=CDDEP.CDDEP_Result3;
    Run;

    Proc Freq Data=CDDEP.CDDEP_Result3;
    Run;

    **Sorting out the Countries_Covered in Entries 01,M23,M10,P2,M30,P24,M31 and M32 further;
    Data CDDEP.CDDEP_Result3;
    Set CDDEP.CDDEP_Result1(Where=(Entry_Number<>'P18'));
    **R0_Values**;;

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R0_Values_=Compress(Strip(R0_Values));
R0_Values_Stats=Tranwrd(Substr(R0_Values_,1,4),',','');
Position=Find(R0_Values_, '(');
Position1=Find(R0_Values_, ')');
R0_Values_Stats_Range=Substr(R0_Values_,Position,Position1-Position+1);

**Peak_Case_Count**;  

Peak_Case_Count_=Compress(Strip(Peak_Case_Count));
Position=Find(Peak_Case_Count_, ',');
Peak_Case_Count_Stats=Tranwrd(Substr(Peak_Case_Count_,Position),',','');
Drop R0_Values_ Position Position1;  

If Entry_Number='01' then do  

  Peak_Case_Count_Stats1=Input(Peak_Case_Count_Stats, $995.);
  Peak_Case_Count_Stats2=Peak_Case_Count_Stats1*1000;
  Peak_Case_Count_Stats=Put(Peak_Case_Count_Stats2, Best8.);
End;  

**Date of Peak Cases**;  

Date_of_Peak_Cases_=Compress(Strip(Date_of_Peak_Cases));
Position=Find(Date_of_Peak_Cases_, '-');
Date_of_Peak_Cases_Stats=Tranwrd(Substr(Date_of_Peak_Cases_,Position),'-','');
If Date_of_Peak_Cases_='44034' then Date_of_Peak_Cases_Stats='44034';

***Peak_Death_Count***;  

Peak_Death_Count_Stats=Peak_Death_Count;  

Peak_Death_Count_Stats_Range='';

***Cumulative_Case_Count***;  

Cumulative_Case_Count_=Compress(Strip(Cumulative_Case_Count));
Position=Find(Cumulative_Case_Count_, '-');
Position1=Find(Cumulative_Case_Count_, ',');
Cumulative_Case_Count_Stats=tranwrd(tranwrd(Substr(Cumulative_Case_Count_,Position,Position1-Position+1),'-',','),',','');
If Cumulative_Case_Count_='23281' then Cumulative_Case_Count_Stats='23281';
If Cumulative_Case_Count_='53630' then Cumulative_Case_Count_Stats='53630';
Position=Find(Cumulative_Case_Count_, '(');
Position1=Find(Cumulative_Case_Count_, ')');
Cumulative_Case_Count_Stats_Rng=Substr(Cumulative_Case_Count_,Position,Position1-Position+1);

****Cumulative_Death_Count***;  

Cumulative_Death_Count_=Compress(Strip(Cumulative_Death_Count));
If Cumulative_Death_Count_='4600' then Cumulative_Death_Count_Stats='4600';
Cumulative_Death_Count_Stats_Rng='';

Drop R0_Values_ Peak_Case_Count_ Date_of_Peak_Cases_ Peak_Death_Count_ Cumulative_Case_Count_ Cumulative_Death_Count_ Position  

Run;

****Sorting out the rest of the Entries***;  

Proc Freq Data=CDDEP.CDDEP_Result4;  

Run;

Data CDDEP.CDDEP_Result4;  

Set CDDEP.CDDEP_Result(Where=(Entry_Number not in ('P18','01','M23','M10','P18','M30','P24','M31','M32')));
**R0_Values**;  

R0_Values_=Compress(Strip(R0_Values));
Position=Find(R0_Values_, ',');
R0_Values_Stats=Tranwrd(Substr(R0_Values_,1,Position),',','');
Position=Find(R0_Values_, '(');
Position1=Find(R0_Values_, ')');
R0_Values_Stats_Range=Substr(R0_Values_,Position,Position1-Position+1);
If R0_Values_='1.5,1.5-3.0' then R0_Values_Stats_Range='(1.5-3.0)';

**Peak_Case_Count**;  

Peak_Case_Count_=Compress(Strip(Peak_Case_Count));
Position=Find(Peak_Case_Count_, ',');
Peak_Case_Count_Stats=Tranwrd(Substr(Peak_Case_Count_,1,Position),',','');
If Peak_Case_Count_Stats='77500asymptomatic(45000-110000)'  

then Peak_Case_Count_Stats='737500';

**Date of Peak Cases**;  

Date_of_Peak_Cases_=Compress(Strip(Date_of_Peak_Cases));
Date_of_Peak_Cases_Stats=Date_of_Peak_Cases_;

***Peak_Death_Count***;  

Peak_Death_Count_=Compress(Strip(Peak_Death_Count));
Position=Find(Peak_Death_Count_, ',');
Peak_Death_Count_Stats=Tranwrd(Substr(Peak_Death_Count_,1,Position),',','');
If Peak_Death_Count_Stats='76519(47824-114779)' then Peak_Death_Count_Stats='76519';

***Cumulative_Case_Count***;  

Cumulative_Case_Count_=Compress(Strip(Cumulative_Case_Count));
Position=Find(Cumulative_Case_Count_, ',');
Cumulative_Case_Count_Stats=tranwrd(Substr(Cumulative_Case_Count_,1,Position),',','');

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If Cumulative_Case_Count_='9000000-16000000' then Cumulative_Case_Count_Stats='12500000';
Position=Find(Cumulative_Case_Count_,'(');
Position1=Find(Cumulative_Case_Count_,')');
Cumulative_Case_Count_Stats_Rng=Substr(Cumulative_Case_Count_,Position,Position1-Position+1);
If Cumulative_Case_Count_='9000000-16000000' then Cumulative_Case_Count_Stats_Rng='(9000000-16000000)';
If Cumulative_Case_Count_Stats_Rng='(95%CI74 156 965-77 800 029)' then Cumulative_Case_Count_Stats_Rng='(74156965-77800029)';

****Cumulative_Death_Count***;
Cumulative_Death_Count_=Compress(Strip(Cumulative_Death_Count_));
Position=Find(Cumulative_Death_Count_,'(');
Cumulative_Death_Count_Stats=tranwrd(Substr(Cumulative_Death_Count_,1,Position),',','');
Position=Find(Cumulative_Death_Count_,'(');
Position1=Find(Cumulative_Death_Count_,')');
Cumulative_Death_Count_Stats_Rng=Substr(Cumulative_Death_Count_,Position,Position1-Position+1);

Drop R0_Values_ Peak_Case_Count_ Date_of_Peak_Cases_ Peak_Death_Count_ Cumulative_Case_Count_ Cumulative_Death_Count_ Position
Run;

****Combining Sorted Results;
Proc Freq Data=CDDEP.CDDEP_Result_Final;
Tables Entry_Number Countries_Covered/Missing;
Run;

Data CDDEP.CDDEP_Result_Final;
Length R0_Values_Stats $200. Peak_Death_Count_Stats $200. Cumulative_Death_Count_Stats $200.;
Set CDDEP.CDDEP_Result2 CDDEP.CDDEP_Result3 CDDEP.CDDEP_Result4;
Run;

*Merging of Results and Methodology for Analysis;

Filename Method '/folders/myfolders/Thabo Mabuka/ARI/CDDEP paper/CDDEP_METHODODOLOGY_FINAL_MERGER.xlsx';

Proc Import Datafile=Method
DBMS=XLSX Replace
Out=CDDEP.Method_Merge;
Getnames=YES;
Run;

Filename Result '/folders/myfolders/Thabo Mabuka/ARI/CDDEP paper/CDDEP_RESULT_FINAL.xlsx';

Proc Import Datafile=Result
DBMS=XLSX Replace
Out=CDDEP.Result_Merge;
Getnames=YES;
Run;

Proc Sort Data=CDDEP.Method_Merge;
by Entry_Number Countries_Covered;
Run;

Proc Sort Data=CDDEP.Result_Merge;
by Entry_Number Countries_Covered;
Run;

Proc Contents Data=CDDEP.Result_Merge2;
Run;

Data CDDEP.Result_Analysis (Rename=(Peak_Active_Cases=Reported_Peak_Active_Cases
Peak_Date=Reported_Peak_Date
COVID_Cases_Endt=Reported_Cumu_COVID_Cases
COVID_Deaths_Endt=Reported_Cumu_Deaths_Cases));
Retain Entry_Number Countries_Covered Type_of_Model Time_Period_of_Simulation
Cumulative_Tests Cumulative_Tests_per_thousand
R0_Values R0_Values_Stats R0_Values_Stats_Range
First_Reported_Date First_Cases First_Reported_Death_Date First_Deaths
Peak_Date Date_of_Peak_Cases Date_of_Peak_Cases_Stats Date_of_Peak_Cases_Stats_Range
Peak_Active_Cases Peak_Case_Count Peak_Case_Count_Stats
Date_of_Peak_Deaths Peak_Death_Count Peak_Death_Count_Stats Peak_Death_Count_Stats_Range
COVID_Cases_Endt Cumulative_Case_Count Cumulative_Case_Count_Stats Cumulative_Death_Count_Stats_Rng
COVID_Deaths_Endt Cumulative_Death_Count Cumulative_Death_Count_Stats Cumulative_Death_Count_Stats_Rng
COVID_Recovered_Endt
Cases_Averted_by_NPIs Deaths_Averted_by_NPIs Effect_of_Timing_of_Restrictions;
Merge CDDEP.Result_Merge (In=A) CDDEP.Method_Merge (In=B);
by Entry_Number Countries_Covered;
Run;

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