Se creo una copia de la Base de datos covid, con el nombre copiadatoscovid, en la copia es donde creamos los índices y base de datos original la dejamos intacta.

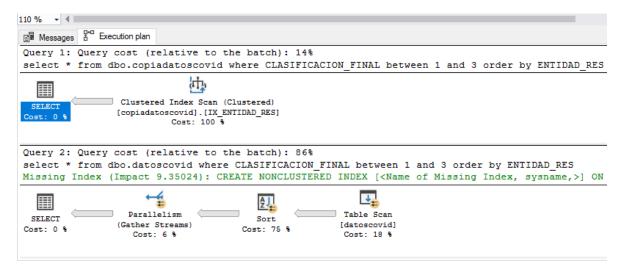
- -- SOBRE LOS INDICES: Decidimos crear indices agrupados ya que son mas rapidos que los no agrupados, ademas de que los no agrupados
- -- empeoran cuando hay demasiados datos. Creamos un indice sobre la columna ENTIDAD\_RES porque sus datos no se repiten, también hicimos
- -- pruebas sobre ENTIDAD\_UM, MUNICIPIO\_RES pero no notamos una diferencia en el rendimiento por lo menos en los planes de ejeucion no vimos
- -- una diferencia en porcentaje. En varias de las consultas se dejo indicado la creación de los índices sobre el filtro de la consulta. Sin embargo la mayoría de los planes de ejecución aquí mostrados son sobre la columna ENITDAD\_RES ya que la creación y eliminación de estos índices son demasiados tardados por la gran cantidad de datos que hay en la base de datos.

```
-- 1 Listar los casos positivos por entidad de residencia
CREATE CLUSTERED INDEX IX_ENTIDAD_RES ON dbo.copiadatoscovid(ENTIDAD_RES)
-- solución 1
select *
from dbo.copiadatoscovid
where CLASIFICACION_FINAL between 1 and 3
order by ENTIDAD_RES

select *
from dbo.datoscovid
where CLASIFICACION_FINAL between 1 and 3
order by ENTIDAD_RES
```

El primer plan de ejecución corresponde a la copia donde creamos el índice agrupado

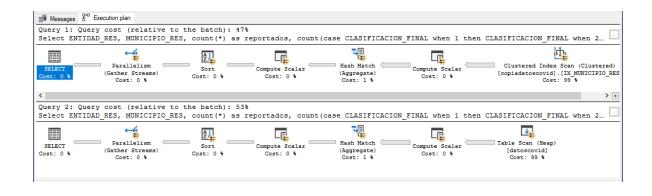
Y el segundo plan de ejecución corresponde a la base de datos original sin índice. Tanto el table scan y el clustered index recorren toda la tabla la diferencia es que el clustered index lo hace de manera ordenada



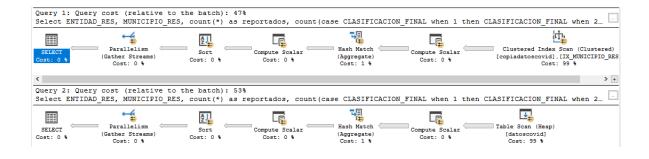
```
-- solución 2
select ENTIDAD_RES, count(*) total_confirmado
from dbo.copiadatoscovid
where CLASIFICACION_FINAL between 1 and 3
group by ENTIDAD_RES
order by ENTIDAD_RES
```

```
select ENTIDAD_RES, count(*) total_confirmado
from dbo.datoscovid
where CLASIFICACION_FINAL between 1 and 3
group by ENTIDAD RES
order by ENTIDAD_RES
Messages Execution plan
Query 1: Query cost (relative to the batch): 47%
 -- solución 2 select ENTIDAD RES, count(*) total confirmado from dbo.copiadatoscovid where CLASIFICACION FINAL between 1
Missing Index (Impact 97.1947): CREATE NONCLUSTERED INDEX [<Name of Missing Index, sysname, >] ON [dbo].[copiadatoscovid]
                                   352
                                                      ←
                                                                        B≅
                  tream Aggregate
                                                                     tream Aggregate
                                 (Aggregate)
                                                 (Gather Streams)
                                                                      (Aggregate)
                                                                                       [copiadatoscovid].[IX_ENTIDAD_RES]
Cost: 98 %
               Cost: 0 %
                                 Cost: 0 %
                                                    Cost: 0 %
                                                                      Cost: 2 %
Query 2: Query cost (relative to the batch): 53%
select ENTIDAD RES, count(*) total confirmado from dbo.datoscovid where CLASIFICACION FINAL between 1 and 3 group by ENT
Missing Index (Impact 97.4517): CREATE NONCLUSTERED INDEX [<Name of Missing Index, sysname,>] ON [dbo].[datoscovid] ([CLi
                                                                                   1
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                                                 Ę
              Parallelism
(Gather Streams)
                                                               Hash Match
                                                                              Table Scan (Heap)
                                  Sort
                                               mpute Scalar
Cost: 0 %
  SELECT
                                                                                [datoscovid]
                                                               (Aggregate)
Cost: 0 %
                                Cost: 0 %
                Cost: 0 %
                                                               Cost: 2 %
                                                                                 Cost: 98 %
-- 2 Listar los casos sospechosos por entidad
-- Solucion 1
CREATE CLUSTERED INDEX IX_ENTIDAD_RES ON dbo.copiadatoscovid(ENTIDAD_RES)
select ENTIDAD UM, ENTIDAD RES, count(*) total sospechosos
from dbo.copiadatoscovid
where CLASIFICACION_FINAL = 6
group by ENTIDAD_UM, ENTIDAD_RES
order by ENTIDAD UM
select ENTIDAD UM, ENTIDAD RES, count(*) total sospechosos
from dbo.datoscovid
where CLASIFICACION_FINAL = 6
group by ENTIDAD UM, ENTIDAD RES
order by ENTIDAD UM
110 % - 4
Query 1: Query cost (relative to the batch): 47%
select ENTIDAD_UM, ENTIDAD_RES, count(*) total_sospechosos from dbo.copiadatoscovid where CLASIFICACION_FINAL =
Missing Index (Impact 98.5681): CREATE NONCLUSTERED INDEX [<Name of Missing Index, sysname,>] ON [dbo].[copiadat
                                                                                                 ιħ
                                     A J
                 Parallelism
                                                                    Hash Match
                                                                                     Clustered Index Scan (Clustered)
                                     Sort
                                                  Compute Scalar
                                                                                     [copiadatoscovid].[IX_ENTIDAD_RES]
               (Gather Streams)
                                                                     (Aggregate)
                                   Cost: 0 %
                                                    Cost: 0 %
                  Cost: 0 %
                                                                     Cost: 1 %
                                                                                              Cost: 99 %
Query 2: Query cost (relative to the batch): 53%
select ENTIDAD_UM, ENTIDAD_RES, count(*) total_sospechosos from dbo.datoscovid where CLASIFICACION_FINAL = 6 grc
Missing Index (Impact 98.7265): CREATE NONCLUSTERED INDEX [<Name of Missing Index, sysname,>] ON [dbo].[datoscov
                                                                                          1
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                                                                                     Table Scan (Heap)
                                                                     Hash Match
  SELECT
                                     Sort
                                                  Compute Scalar
               (Gather Streams)
Cost: 0 %
                                                                                       [datoscovid]
Cost: 99 %
                                                                    (Aggregate)
Cost: 1 %
Cost: 0 %
                                   Cost: 0 %
                                                    Cost: 0 %
-- Solucion 2
select ENTIDAD_RES, count(*) total_sospechosos
from dbo.copiadatoscovid
where CLASIFICACION_FINAL = 6
group by ENTIDAD_RES
```

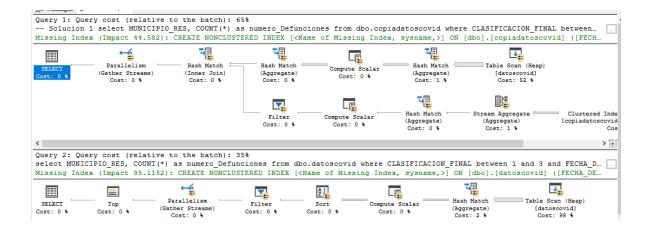
```
select ENTIDAD_RES, count(*) total_sospechosos
from dbo.datoscovid
where CLASIFICACION_FINAL = 6
group by ENTIDAD RES
 Query 1: Query cost (relative to the batch): 47%
  - Solucion 2 select ENTIDAD RES, count (*) total sospechosos from dbo.copiadatoscovid where CLASIFICACION FINAL = 6 group
 Missing Index (Impact 98.9064): CREATE NONCLUSTERED INDEX [<Name of Missing Index, sysname,>] ON [dbo].[copiadatoscovid]
                                                                 躁
                                35
                Stream Aggregate
                                              Parallelism
                                                             Stream Aggregate
                                                                              Clustered Index Scan (Clustered)
             Compute Scalar
                                                                              [copiadatoscovid].[IX_ENTIDAD_RES]
Cost: 99 %
                                            (Gather Streams)
Cost: 0 %
                              (Aggregate)
Cost: 0 %
                                                               (Aggregate)
Cost: 1 %
 Query 2: Query cost (relative to the batch): 53%
 select ENTIDAD_RES, count(*) total_sospechosos from dbo.datoscovid where CLASIFICACION_FINAL = 6 group by ENTIDAD_RES
 Missing Index (Impact 99.0226): CREATE NONCLUSTERED INDEX (<Name of Missing Index, sysname,>) ON [dbo].[datoscovid] ([CLi
                                               唱
                                                               1
                                 Hash Match (
                                                         Table Scan (Heap)
              Parallelism
  SELECT
                             Compute Scalar
             (Gather Streams)
Cost: 0 %
                                                            [datoscovid]
Cost: 99 %
                               Cost: 0 %
-- 3 Listar el top 5 de municipios por entidad con el mayor número de casos
reportados,
   --indicando casos sospechosos y casos confirmados.
CREATE CLUSTERED INDEX IX_MUNICIPIO_RES ON dbo.copiadatoscovid(MUNICIPIO_RES)
DROP INDEX IX_MUNICIPIO_RES ON dbo.copiadatoscovid
-- solución 1
Select ENTIDAD_RES, MUNICIPIO_RES, count(*) as reportados, count(case
CLASIFICACION_FINAL when 1 then CLASIFICACION_FINAL
                                                                               when 2 then
CLASIFICACION FINAL
                                   when 3 then CLASIFICACION_FINAL
                                                  end) as confirmado,
        count(case CLASIFICACION FINAL when 6 then CLASIFICACION FINAL end) as
sospechoso
from dbo.copiadatoscovid
group by ENTIDAD_RES, MUNICIPIO_RES
order by ENTIDAD RES, reportados desc
Select ENTIDAD RES, MUNICIPIO RES, count(*) as reportados, count(case
CLASIFICACION_FINAL when 1 then CLASIFICACION_FINAL
                                                                               when 2 then
CLASIFICACION FINAL
                                   when 3 then CLASIFICACION FINAL
                                                  end) as confirmado,
        count(case CLASIFICACION FINAL when 6 then CLASIFICACION FINAL end) as
sospechoso
from dbo.datoscovid
group by ENTIDAD RES, MUNICIPIO RES
order by ENTIDAD RES, reportados desc
```



```
-- solución 2
select cc.ENTIDAD_RES, cc.MUNICIPIO_RES, cc.confirmado, cs.sospechoso
from (select ENTIDAD_RES, MUNICIPIO_RES, count(*) as sospechoso
      from dbo.copiadatoscovid where CLASIFICACION_FINAL = 6
        group by ENTIDAD_RES, MUNICIPIO RES
      ) cs
inner join
(select ENTIDAD_RES, MUNICIPIO_RES, count (*) as confirmado
 from dbo.copiadatoscovid where CLASIFICACION_FINAL between 1 and 3
group by ENTIDAD_RES, MUNICIPIO_RES) cc
on cc.ENTIDAD_RES = cs.ENTIDAD_RES and cs.MUNICIPIO_RES = cc.MUNICIPIO_RES
order by cc.ENTIDAD_RES, cc.MUNICIPIO_RES
select cc.ENTIDAD_RES, cc.MUNICIPIO_RES, cc.confirmado, cs.sospechoso
from (select ENTIDAD_RES, MUNICIPIO_RES, count(*) as sospechoso
      from dbo.datoscovid where CLASIFICACION_FINAL = 6
        group by ENTIDAD_RES, MUNICIPIO_RES
      ) cs
inner join
(select ENTIDAD_RES, MUNICIPIO_RES, count (*) as confirmado
from dbo.datoscovid where CLASIFICACION_FINAL between 1 and 3
group by ENTIDAD_RES, MUNICIPIO_RES) cc
on cc.ENTIDAD_RES = cs.ENTIDAD_RES and cs.MUNICIPIO_RES = cc.MUNICIPIO_RES
order by cc.ENTIDAD RES, cc.MUNICIPIO RES
```



```
-- 4 Determinar el municipio con el mayor número de defunciones en casos
confirmados.
-- Solucion 1
select MUNICIPIO_RES, COUNT(*) as numero_Defunciones
from dbo.copiadatoscovid
where CLASIFICACION_FINAL between 1 and 3 and FECHA_DEF != '9999-99-99'
group by MUNICIPIO_RES
having COUNT(*) = ( select max(numero_Defunciones)
                                  from (
                                         select MUNICIPIO RES, COUNT(*) as
numero Defunciones
                                         from dbo.datoscovid
                                         where CLASIFICACION_FINAL between 1 and 3
and FECHA_DEF != '9999-99-99'
                                         group by MUNICIPIO_RES ) as aux )
select MUNICIPIO_RES, COUNT(*) as numero_Defunciones
from dbo.datoscovid
where CLASIFICACION_FINAL between 1 and 3 and FECHA_DEF != '9999-99-99'
group by MUNICIPIO RES
having COUNT(*) = ( select max(numero_Defunciones)
                                  from (
                                         select MUNICIPIO RES, COUNT(*) as
numero_Defunciones
                                         from dbo.datoscovid
                                         where CLASIFICACION_FINAL between 1 and 3
and FECHA DEF != '9999-99-99'
                                         group by MUNICIPIO_RES ) as aux )
```

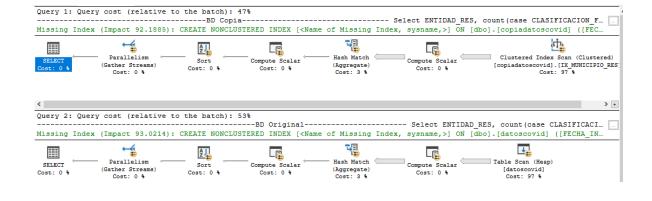


```
-- 5. Determinar por entidad, si de casos sospechosos hay defunciones reportadas
asociadas a neumonia.
-- Solucion 1
select ENTIDAD UM, ENTIDAD RES, count(*)
from dbo.copiadatoscovid
where CLASIFICACION FINAL = 6 and FECHA DEF != '9999-99' and NEUMONIA = 1
group by ENTIDAD_UM, ENTIDAD_RES
select ENTIDAD UM, ENTIDAD RES, count(*)
from dbo.datoscovid
where CLASIFICACION FINAL = 6 and FECHA DEF != '9999-99-99' and NEUMONIA = 1
group by ENTIDAD_UM, ENTIDAD_RES
Query 1: Query cost (relative to the batch): 47% select ENTIDAD_UM, ENTIDAD_RES, count(*) from dbo.copiadatoscovid where CLASIFICACION_FINAL = 6 and FECHA_DEF != '9999-99-99' an...
Missing Index (Impact 97.1657): CREATE NONCLUSTERED INDEX [<Name of Missing Index, sysname,>] ON [dbo].[copiadatoscovid] ([NEUMO...
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  Daralleliam
                                                Stream Aggregate
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                                                                                                        Hash Match
             Compute Scalar
                                                                   Sort
                                                  (Aggregate)
Cost: 0 %
                                                                                                     (Partial Aggregate)
Cost: 2 %
               Cost: 0 %
                                                                  Cost: 0 %
                                                                                                                     > +
Query 2: Query cost (relative to the batch): 53%
select ENTIDAD_UM, ENTIDAD_RES, count(*) from dbo.datoscovid where CLASIFICACION_EINAL = 6 and FECHA_DEF != '9999-99-99' and NEU...
Missing Index [Impact 97.4722): CREATE NONCLUSTERED INDEX [<Name of Missing Index, sysname,>] ON [dbo].[datoscovid] ([NEUMONIA],...
                                                                                                          唱
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                 Parallelism
                                                                                  Parallelism
                                                                                                        Hash Match
                                                Stream Aggregate
                                                                    Sort
             Compute Scalar
Cost: 0 %
                                                                                                     (Partial Aggregate)
Cost: 2 %
                              (Gather Streams)
Cost: 0 %
                                                  (Aggregate)
Cost: 0 %
                                                                               (Repartition Streams)
Cost: 0 %
                                                                  Cost: 0 %
Cost: 0 %
-- Solucion 2
select ENTIDAD_RES, count(*)
from dbo.copiadatoscovid
where CLASIFICACION_FINAL = 6 and FECHA_DEF != '9999-99' and NEUMONIA = 1
```

```
group by ENTIDAD_RES
select ENTIDAD_RES, count(*)
from dbo.datoscovid
where CLASIFICACION FINAL = 6 and FECHA DEF != '9999-99-99' and NEUMONIA = 1
group by ENTIDAD_RES
 - Solucion 2 select ENTIDAD RES, count(*) from dbo.copiadatoscovid where CLASIFICACION FINAL = 6 and FECHA DEF != '9999-99-99' ...
Missing Index (Impact 97.5105): CREATE NONCLUSTERED INDEX [<Name of Missing Index, sysname,>] ON [dbo].[copiadatoscovid] ([NEUMO_
                              35
                                                        4
                                                                         4
                                           A↓
               Parallelism
(Gather Streams)
Cost: 0 %
                                                                 Hash Match
(Partial Aggregate)
Cost: 2 %
                                                                                      Clustered Index Scan (Cluste: [copiadatoscovid].[IX_MUNICIPI
Cost: 98 %
                          Stream Aggregate
                            (Aggregate)
Cost: 0 %
Query 2: Query cost (relative to the batch): 53%
select ENTIDAD_RES, count(*) from dbo.datoscovid where CLASIFICACION_FINAL = 6 and FECHA_DEF != '9999-99-99' and NEUMONIA = 1 gr... 🔃
Missing Index (Impact 97.7799): CREATE NONCLUSTERED INDEX (<Name of Missing Index, sysname,>) ON [dbo].[datoscovid] ([NEUMONIA],...
                              35
                                            ₽Ţ
                                                                                          _
               Stream Aggregate
(Aggregate)
Cost: 0 %
                                                     Parallelism
(Gather Streams)
Cost: 0 %
                                                                     Hash Match
(Partial Aggregate)
Cost: 2 %
                                                                                 Table Scan
[datoscovid]
Cost: 98 %
-- 6. Listar por entidad el total de casos sospechosos, casos confirmados, total de
defunciones en los meses de marzo a agosto 2020 y de
        --diciembre 2020 a mayo 2021.
-- Solucion 1
go
CREATE CLUSTERED INDEX IX_ENTIDAD_RES ON dbo.copiadatoscovid(ENTIDAD_RES)
                             -----BD Copia-----
Select ENTIDAD_RES, count(case CLASIFICACION_FINAL when 6 then CLASIFICACION_FINAL
end) as sospechoso,
        count(*) as reportados, count(case CLASIFICACION_FINAL when 1 then
CLASIFICACION FINAL
                                                                          when 2 then
CLASIFICACION_FINAL
            when 3 then CLASIFICACION_FINAL
     end) as confirmado, COUNT( case when FECHA DEF != '9999-99-99' then FECHA DEF
end ) as total Defunciones
from [dbo].[copiadatoscovid]
where FECHA_INGRESO between '2020-03-01' and '2020-08-31' or FECHA_INGRESO between
'2021-05-01' and '2021-12-31'
group by ENTIDAD RES
order by ENTIDAD RES
                            -----BD Original------
Select ENTIDAD RES, count(case CLASIFICACION FINAL when 6 then CLASIFICACION FINAL
        count(*) as reportados, count(case CLASIFICACION FINAL when 1 then
CLASIFICACION_FINAL
                                                                          when 2 then
```

CLASIFICACION FINAL

```
when 3 then CLASIFICACION_FINAL
     end) as confirmado, COUNT( case when FECHA_DEF != '9999-99' then FECHA_DEF
end ) as total_Defunciones
from dbo.datoscovid
where FECHA_INGRESO between '2020-03-01' and '2020-08-31' or FECHA_INGRESO between
'2021-05-01' and '2021-12-31'
group by ENTIDAD_RES
order by ENTIDAD_RES
Query 1: Query cost (relative to the batch): 47%
                             --BD Copia----
                                                             - Select ENTIDAD_RES, count(case CLASIFICACION_F...
Missing Index (Impact 92.1885): CREATE NONCLUSTERED INDEX [<Name of Missing Index, sysname,>] ON [dbo].[copiadatoscovid] ([FEC.
                                                      堰
                            A J
                                                                     Parallelism
                                                     Hash Match
                                                                                  Clustered Index Scan (Clustered)
                            Sort
                                       mpute Scalar
                                                                  Compute Scalar
           (Gather Streams)
Cost: 0 %
                                                     (Aggregate)
Cost: 3 %
                                                                                 [copiadatoscovid].[IX_MUNICIPIO_RES:
Cost: 97 %
                           Cost: 0 %
                                       Cost: 0 %
                                                                   Cost: 0 %
Query 2: Query cost (relative to the batch): 53%
                                    Missing Index (Impact 93.0214): CREATE NONCLUSTERED INDEX [<Name of Missing Index, sysname,>] ON [dbo].[datoscovid] ([FECHA_IN.
                                                                                     T<sub>E</sub>
                                                                     Parallelism
                                                                                 Table Scan (Heap)
                                                     Hash Match
SELECT
Cost: 0 %
                                       ompute Scalar
Cost: 0 %
                                                                   mpute Scalar
Cost: 0 %
           (Gather Streams)
Cost: 0 %
                                                     (Aggregate)
Cost: 3 %
                                                                                  [datoscovid]
Cost: 97 %
Select MUNICIPIO RES, count(case CLASIFICACION FINAL when 1 then CLASIFICACION FINAL
                                                                when 2 then CLASIFICACION FINAL
when 3 then CLASIFICACION FINAL
                                                   end) as confirmado,
                                            COUNT( case when FECHA DEF != '9999-99-99' then
FECHA_DEF end ) as total_Defunciones
from dbo.copiadatoscovid
where EDAD < 13 and -- Falta la condicion para comorbilidad
group by MUNICIPIO RES
order by confirmado desc
Select MUNICIPIO_RES, count(case CLASIFICACION_FINAL when 1 then CLASIFICACION_FINAL
                                                                when 2 then CLASIFICACION FINAL
when 3 then CLASIFICACION_FINAL
                                                   end) as confirmado,
                                            COUNT( case when FECHA_DEF != '9999-99-99' then
FECHA DEF end ) as total Defunciones
from dbo.datoscovid
where EDAD < 13 and -- Falta la condicion para comorbilidad
group by MUNICIPIO_RES
order by confirmado desc
```



```
-- 7. Listar los 5 municipios con el mayor número de casos confirmados en niños
menos de 13 años con alguna comorbilidad reportada y
       -- cuantos de esos casos fallecieron.
-- Solucion 1
Select top 5 MUNICIPIO_RES, count(case CLASIFICACION_FINAL when 1 then
CLASIFICACION FINAL
                                                       when 2 then CLASIFICACION_FINAL
when 3 then CLASIFICACION_FINAL
                                            end) as confirmado,
                                     COUNT( case when FECHA DEF != '9999-99-99' then
FECHA_DEF end ) as total_Defunciones
from dbo.copiadatoscovid
where EDAD < 13 and ID_REGISTRO in ( select ID_REGISTRO
                                                                  from
dbo.copiadatoscovid
                                                                  where EDAD < 13 and (
(NEUMONIA = 1 \text{ and DIABETES} = 1) \text{ or } (NEUMONIA = 1 \text{ and ASMA} = 1)
              or (NEUMONIA = 1 and HIPERTENSION = 1) or (DIABETES = 1 and ASMA = 1)
              or (DIABETES = 1 and HIPERTENSION = 1) or (ASMA = 1 and HIPERTENSION =
1)))
group by MUNICIPIO_RES
order by confirmado desc
```

```
Select top 5 MUNICIPIO_RES, count(case CLASIFICACION_FINAL when 1 then
CLASIFICACION FINAL
                                                                 when 2 then CLASIFICACION FINAL
when 3 then CLASIFICACION_FINAL
                                                    end) as confirmado,
                                            COUNT( case when FECHA_DEF != '9999-99-99' then
FECHA DEF end ) as total Defunciones
from dbo.datoscovid
where EDAD < 13 and ID REGISTRO in ( select ID REGISTRO
                                                                              from dbo.datoscovid
                                                                              where EDAD < 13 and (
(NEUMONIA = 1 \text{ and DIABETES} = 1) \text{ or } (NEUMONIA = 1 \text{ and } ASMA = 1)
                or (NEUMONIA = 1 and HIPERTENSION = 1) or (DIABETES = 1 and ASMA = 1)
                or (DIABETES = 1 and HIPERTENSION = 1) or (ASMA = 1 and HIPERTENSION =
1)))
group by MUNICIPIO_RES
order by confirmado desc
Query 1: Query cost (relative to the batch): 47%
 -- 7. Listar los 5 municipios con el mayor número de casos confirmados en niños menos de 13 años con alguna comorbilidad repor...
                                         A.J
                                                                    4
                                                                                   唱
                                                      Parallelism
(Gather Streams)
Cost: 0 %
                                                                  Hash Match
(Aggregate)
Cost: 0 %
                                                                               Hash Match
(Right Semi Join)
Cost: 4 %
                                                                                                      > +
Query 2: Query cost (relative to the batch): 53%
Select top 5 MUNICIPIO_RES, count(case CLASIFICACION_FINAL when 1 then CLASIFICACION_FINAL when 2 then CLASIFICACION_FINAL when...
                                         A J
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                          4
                                                      Hash Match
(Right Semi Join)
Cost: 4 %
                        Parallelism
                                                                  Hash Match
                                                                                                 Table Scan
                                                    ompute Scalar
Cost: 0 %
                       (Gather Streams)
Cost: 0 %
                                      (Top N Sort)
Cost: 0 %
                                                                  (Aggregate)
Cost: 0 %
                                                                                                   [datoscov
Cost: 48
                                                                                                     T
                                                                                                    Filter
-- 8. Determinar si en el año 2020 hay una mayor cantidad de defunciones menores de
edad que en el año 2021 y 2022.
-- Solucion 1
Declare @cant2020 int, @cant2021 int, @cant2022 int
set @cant2020 = ( Select COUNT( case when FECHA_DEF like '2020-%' then FECHA_DEF
end ) as total Defunciones
                                    from dbo.copiadatoscovid
                                    where EDAD < 18 ) -- 1776
set @cant2021 = ( Select COUNT( case when FECHA_DEF like '2021-%' then FECHA_DEF
end ) as total_Defunciones
                                    from dbo.copiadatoscovid
                                    where EDAD < 18 ) -- 1636
set @cant2022 = ( Select COUNT( case when FECHA_DEF like '2022-%' then FECHA_DEF
end ) as total_Defunciones
                                    from dbo.copiadatoscovid
                                    where EDAD < 18 ) -- 314
IF @cant2020 > @cant2021 and @cant2020 > @cant2022
        print 'En el año 2020 hubo una mayor cantidad de defunciones en personas
menores de edad que en el año 2021 y 2022'
ELSE
```

```
menores de edad que en el año 2021 y 2022'
-- Solucion 2
Select 2020 as Año, COUNT( case when FECHA_DEF like '2020-%' then FECHA_DEF end )
as total Defunciones
from dbo.copiadatoscovid
where EDAD < 18
UNION ALL
Select 2021 as Año, COUNT( case when FECHA_DEF like '2021-%' then FECHA_DEF end )
as total Defunciones
from dbo.copiadatoscovid
where EDAD < 18
UNION ALL
Select 2022 as Año, COUNT( case when FECHA DEF like '2022-%' then FECHA DEF end )
as total Defunciones
from dbo.copiadatoscovid
where EDAD < 18
Select 2020 as Año, COUNT( case when FECHA DEF like '2020-%' then FECHA DEF end )
as total Defunciones
from dbo.datoscovid
where EDAD < 18
UNION ALL
Select 2021 as Año, COUNT( case when FECHA DEF like '2021-%' then FECHA DEF end )
as total Defunciones
from dbo.datoscovid
where EDAD < 18
UNION ALL
Select 2022 as Año, COUNT( case when FECHA DEF like '2022-%' then FECHA DEF end )
as total Defunciones
from dbo.datoscovid
where EDAD < 18
Query 1: Query cost (relative to the batch): 37%
Select 2021 as Año, COUNT( case when FECHA_DEF like '2021-%' then FECHA_DEF end ) as total_Defunciones from dbo.copiadatoscovi...
                        ŧ
                                                      7
                                        Hash Match
       Parallelism
                                                                                                 Clustered Index
                      Concatenation
                                     Compute Scalar
Cost: 0 %
                                                   Compute Scalar
Cost: 0 %
                                                                                Compute Scalar
Cost: 0 %
                                                                                               [copiadatoscovid]
                                                                  (Aggregate)
Cost: 0 %
      (Gather Streams)
                       Cost: 0 %
        Cost: 0 %
                                                                  Hash Match
                                                                                                          ιŢ
                                        Ę
                                    Compute Scalar
Cost: 0 %
                                                   Compute Scalar
Cost: 0 %
                                                                                Compute Scalar
Cost: 0 %
                                                                  (Aggregate)
Cost: 0 %
                                                                                                [copiadatoscovid]
Query 2: Query cost (relative to the batch): 63%
Select 2020 as Año, COUNT case when FECHA DEF like '2020-%' then FECHA DEF end ) as total Defunciones from dbo.datoscovid whe.
                              1
                                                                          唱
                                                                                                          1
                                                            Ę
             Parallelism
                                                                        Hash Match
                                                                                                       able Scar
                           Concatenation
Cost: 0 %
                                          Compute Scalar
Cost: 0 %
                                                                                       mpute Scalar
Cost: 0 %
 SELECT
           (Gather Streams)
Cost: 0 %
                                                                                                       [datosc
Cost:
                                                                        (Aggregate)
Cost: 0 %
                                                                          唱
                                                                                                          Ψ.
                                                            Ę
                                                                        Hash Match
(Aggregate)
Cost: 0 %
                                                                                                      Table Scar
                                                                          唱
                                                                                                          1
                                              -- 9. Determinar si en el año 2021 hay un pocentaje mayor al 60 de casos reportados
que son confirmados por estudios de laboratorio
         --en comparación al año 2020.
-- Solucion 1
select (aux.Confirmados_Laboratorio*100/aux.Reportados) as Confirmados_Laboratorio
```

print 'En el año 2020 NO hubo una mayor cantidad de defunciones en personas

```
Select count(*) as Reportados, COUNT( case when CLASIFICACION FINAL between 1
and 3 then CLASIFICACION_FINAL end ) as Confirmados,
                                                                           COUNT( case when
CLASIFICACION_FINAL = 3 then CLASIFICACION_FINAL end ) as Confirmados_Laboratorio
         from dbo.copiadatoscovid
         where FECHA_INGRESO like '2021-%' ) as aux
select (aux.Confirmados_Laboratorio*100/aux.Reportados) as Confirmados_Laboratorio
         Select count(*) as Reportados, COUNT( case when CLASIFICACION FINAL between 1
and 3 then CLASIFICACION FINAL end ) as Confirmados,
                                                                           COUNT( case when
CLASIFICACION_FINAL = 3 then CLASIFICACION_FINAL end ) as Confirmados_Laboratorio
         from dbo.datoscovid
         where FECHA_INGRESO like '2021-%' ) as aux
Query 1: Query cost (relative to the batch): 47%
-- 9. Determinar si en el año 2021 hay un pocentaje mayor al 60 de casos reportados que son confirmados por estudios de labora...
Missing Index (Impact 96.1538): CREATE NONCLUSTERED INDEX [<Name of Missing Index, sysname,>] ON [dbo].[copiadatoscovid] ([FEC.
                                                             1
                                               Parallelism
(Gather Streams)
Cost: 0 %
                                                                                   Clustered Index Scan (Clustere [copiadatoscovid].[IX_MUNICIPIO_Cost: 98 %
                                                           Hash Match (
                            Compute Scalar
Cost: 0 %
                                           Compute Scalar
Cost: 0 %
                                                                         Compute Scalar
Cost: 2 %
                                                           (Aggregate)
Cost: 0 %
Ouerv 2: Ouerv cost (relative to the batch): 53%
select (aux.Confirmados_Laboratorio*100/aux.Reportados) as Confirmados_Laboratorio from ( Select count(*) as Reportados, COUNT...
Missing Index (Impact 96.5699): CREATE NONCLUSTERED INDEX [<Name of Missing Index, sysname,>] ON [dbo].[datoscovid] ([FECHA_IN...
                                                                                             4
                                                                            Parallelism
                                                           Hash Match
                                                                                        Table Scan (Heap)
 SELECT
                            Compute Scalar
                                           Compute Scalar
                                                                         Compute Scalar
            (Gather Streams)
Cost: 0 %
                                                           (Aggregate)
Cost: 0 %
                                                                                           [datoscovid]
Cost: 99 %
Cost: 0 %
                              Cost: 0 %
                                             Cost: 0 %
                                                                          Cost: 1 %
-- Solucion 2
Select ( Select count(*)
                 from dbo.copiadatoscovid
                 where FECHA_INGRESO like '2021-%' and CLASIFICACION_FINAL = 3 ) *100/
COUNT(*) as Confirmados_Laboratorio
from dbo.datoscovid
where FECHA_INGRESO like '2021-%'
Select ( Select count(*)
                 from dbo.datoscovid
                 where FECHA_INGRESO like '2021-%' and CLASIFICACION_FINAL = 3 ) *100/
COUNT(*) as Confirmados_Laboratorio
from dbo.datoscovid
where FECHA_INGRESO like '2021-%'
```

Ouerv 1: Ouerv cost (relative to the batch): 49% Select (Select count(\*) from dbo.copiadatoscovid where FECHA INGRESO like '2021-%' and CLASIFICACION FINAL = 3 ) \*100/ CO Missing Index (Impact 46.5387): CREATE NONCLUSTERED INDEX [<Name of Missing Index, sysname,>] ON [dbo].[copiadatoscovid] ( **↑**₽ **₽** Nested Loops □ Parallelism Hash Match Table Scan (Heap) Compute Scalar Compute Scalar (Inner Join) Cost: 0 % (Gather Streams) Cost: 0 % [datoscovid] Cost: 52 % Cost: 0 % Cost: 0 % Query 2: Query cost (relative to the batch): 51% Select ( Select count(\*) from dbo.datoscovid where FECHA\_INGRESO like '2021-%' and CLASIFICACION\_FINAL = 3 ) \*100/ COUNT(\* Missing Index (Impact 49.419): CREATE NONCLUSTERED INDEX [<Name of Missing Index, sysname,>] ON [dbo].[datoscovid] ([CLASI **↑**₽ 4 **₽** Nested Loops Parallelism Hash Match Compute Scalar Compute Scalar (Inner Join) (Gather Streams) (Aggregate) [datoscovid] Cost: 0 % Cost: 1 % Cost: 49 % 唱 4 **↓** Parallelism Hash Match Table Scan (Heap) [datoscovid] Compute Scalar Cost: 0 % (Aggregate) Cost: 49 % Cost: 0 % Cost: 1 %

```
-- 10. Determinar en que rango de edad: menor de edad, 19 a 40, 40 a 60 o mayor de
60 hay mas casos reportados que se hayan recuperado.
-- Nota: Se desprecia la edad 18 y se toma en cuenta dos veces la edad de 40, porque
asi lo indica la consulta.
-- Solucion 1
SELECT *
from
       ( select 'menor de edad' as Rango Edad, COUNT(*) as Recuperados
       from dbo.copiadatoscovid
       where EDAD < 18 and FECHA_DEF = '9999-99-99'
       UNION ALL
       select '19 a 40' as Rango Edad, COUNT(*) as Recuperados
       from dbo.copiadatoscovid
       where EDAD between 19 and 40 and FECHA DEF = '9999-99-99'
       UNION ALL
       select '40 a 60' as Rango_Edad, COUNT(*) as Recuperados
       from dbo.copiadatoscovid
       where EDAD between 40 and 60 and FECHA DEF = '9999-99-99'
       UNION ALL
       select 'mayor a 60' as Rango_Edad, COUNT(*) as Recuperados
       from dbo.copiadatoscovid
       where EDAD > 60 and FECHA DEF = '9999-99-99' ) as aux
where aux.Recuperados = ( SELECT MAX(aux2.Recuperados)
                                         from
                                                ( select 'menor de edad' as
Rango Edad, COUNT(*) as Recuperados
                                                from dbo.copiadatoscovid
```

```
'9999-99-99'
                                                UNION ALL
                                                select '19 a 40' as Rango_Edad,
COUNT(*) as Recuperados
                                                from dbo.copiadatoscovid
                                                where EDAD between 19 and 40 and
FECHA_DEF = '9999-99-99'
                                                UNION ALL
                                                select '40 a 60' as Rango_Edad,
COUNT(*) as Recuperados
                                                from dbo.copiadatoscovid
                                                where EDAD between 40 and 60 and
FECHA DEF = '9999-99-99'
                                                UNION ALL
                                                select 'mayor a 60' as Rango_Edad,
COUNT(*) as Recuperados
                                                from dbo.copiadatoscovid
                                                where EDAD > 60 and FECHA DEF =
'9999-99-99' ) as aux2 )
SELECT *
from
       ( select 'menor de edad' as Rango_Edad, COUNT(*) as Recuperados
       from dbo.datoscovid
      where EDAD < 18 and FECHA DEF = '9999-99-99'
       select '19 a 40' as Rango_Edad, COUNT(*) as Recuperados
       from dbo.datoscovid
       where EDAD between 19 and 40 and FECHA_DEF = '9999-99-99'
      UNION ALL
       select '40 a 60' as Rango Edad, COUNT(*) as Recuperados
       from dbo.datoscovid
       where EDAD between 40 and 60 and FECHA_DEF = '9999-99-99'
      UNION ALL
       select 'mayor a 60' as Rango_Edad, COUNT(*) as Recuperados
       from dbo.datoscovid
       where EDAD > 60 and FECHA_DEF = '9999-99-99' ) as aux
where aux.Recuperados = ( SELECT MAX(aux2.Recuperados)
                                         from
                                                ( select 'menor de edad' as
Rango_Edad, COUNT(*) as Recuperados
                                                from dbo.datoscovid
                                                where EDAD < 18 and FECHA_DEF =
'9999-99-99'
                                                UNION ALL
                                                select '19 a 40' as Rango_Edad,
COUNT(*) as Recuperados
                                                from dbo.datoscovid
                                                where EDAD between 19 and 40 and
FECHA DEF = '9999-99-99'
                                                UNION ALL
                                                select '40 a 60' as Rango_Edad,
COUNT(*) as Recuperados
                                                from dbo.datoscovid
```

where EDAD < 18 and FECHA\_DEF =

FECHA DEF = '9999-99-99' UNION ALL select 'mayor a 60' as Rango\_Edad, COUNT(\*) as Recuperados from dbo.datoscovid where EDAD > 60 and FECHA\_DEF = '9999-99-99' ) as aux2 ) Messages Execution plan Query 1: Query cost (relative to the batch): 47%

SELECT \* from ( select 'menor de edad' as Rango\_Edad, COUNT(\*) as Recuperados from dbo.copiadatoscovid where EDAD < 18 and FEC...

Missing Index (Impact 12.4637): CREATE NONCLUSTERED INDEX [<Name of Missing Index, sysname,>] ON [dbo].[copiadatoscovid] ([FEC... \_ F Parallelism Hash Match Hash Match Hash Match Clustered Concatenation Compute Scalar (Gather Streams) Cost: 0 % (Inner Join) Cost: 0 % (Aggregate) Cost: 0 % (Aggregate) Cost: 0 % [copiadatos Cost: 0 % Cost: 0 % 唱 Hash Match Compute Scalar (Aggregate) [copiadatos Query 2: Query cost (relative to the batch): 53% SELECT \* from ( select 'menor de edad' as Rango\_Edad, COUNT(\*) as Recuperados from dbo.datoscovid where EDAD < 18 and FECHA\_DE... [
Missing Index (Impact 12.4676): CREATE NONCLUSTERED INDEX [<Name of Missing Index, sysname,>] ON [dbo].[datoscovid] ([FECHA\_DE... 1  $\blacksquare$ 7 Parallelism (Gather Streams) Cost: 0 % Hash Match (Inner Join) Cost: 0 % Hash Match Hash Match able Scan SELECT Cost: 0 % Concatenation Compute Scalar Cost: 0 % (Aggregate) Cost: 0 % (Aggregate) Cost: 0 % [datoscor Cost: 1: 唱 1 Hash Match (Aggregate) Cost: 0 % Table Scan [datoscor Cost: 1: mpute Scalar Cost: 0 % 唱 **■** Hash Match ( Table Scan

where EDAD between 40 and 60 and