/\*\*\*\*\*\* Simulate Peer Group Performance on Patients of the clinician \*\*\*\*\*\*/

USE Benchmarking

/\*

Description of the data:

 Comorbidities are in columns DRG and HCC.

 The column Dr indicates clinician or peer group.

 Outcomes of care are in column LOS.

\*/

-- Calculate pattern of care for clinician

DECLARE @total as float

SET @total = (SELECT COUNT([ID])FROM [dbo].[clinician] WHERE Dr='Clinician')

SELECT [DRG] as DRGa

 ,[HCC] as HCCa

 ,Avg(CAST([LOS] as Float)) as LOSa

 ,COUNT([ID]) as NumA

 ,COUNT([ID])/@total as ProbA

INTO #Clinician

FROM dbo.Clinician

WHERE Dr='Clinician' -- Select the clinician

GROUP BY [DRG], [HCC]

-- Calculate pattern of care for peer group

DECLARE @totalb as float

SET @totalb = (SELECT COUNT([ID])FROM [dbo].[clinician] WHERE Dr='Peer')

SELECT [DRG] as DRGb

 ,[HCC] as HCCb

 ,Avg([LOS]) as LOSb

 ,COUNT([ID]) as Numb

 ,COUNT([ID])/@totalb as ProbB

INTO #Peer

FROM dbo.Clinician

WHERE Dr='Peer' -- Select peer group

GROUP BY [DRG], [HCC]

-- Match clinicians and peer group on common strata

SELECT CASE When HCCa IS null Then HCCb Else HCCa END as HCCa

 , CASE When DRGa IS null Then DRGb Else DRGa END DRGa

 -- Does not matter if outcomes for clinician is null

 , CASE WHEN LOSa IS NULL Then -1 Else LOSa END AS LOSa

 , CASE When NUMa IS null Then 0 Else NUMa END NUMa

 , CASE When ProbA IS null Then 0 Else ProbA END AS ProbA

 , CASE When HCCb IS null Then HCCa Else HCCb END as HCCb

 , CASE When DRGb IS null Then DRGa Else DRGb END AS DRGb

 , CASE When NUMb IS null Then 0 Else NUMb END NUMb

 , CASE When ProbB IS null Then 0 Else ProbB END AS ProbB

 , LOSb -- Null values require synthetic case calculations

INTO #Match

FROM #Clinician Full Join #Peer on DRGa=DRGb and HCCa = HCCb

-- Overlap between peer and clinician cases

SELECT Round(100.\*CAST (SUM(NUMa)

-SUM(CASE WHEN LOSb is null then NUMa else 0 end) AS float)/

CAST(SUM(NUMa) as Float),2) AS [Overlap without Synthetic Cases]

FROM #Match

 -- Calculate peer group's performance, if it had clinician's patients

 SELECT NumA

 , HCCa AS HCC

 , DRGa AS DRG

 , ProbA

 , LOSa

 , ProbA AS ProbB -- Switch probabilities of peer group to clinician

 -- For missing outcomes, calculate synthetic outcomes:

 , CASE WHEN LOSb IS NULL THEN

 (SELECT AVG(LOS) FROM dbo.clinician INNER JOIN #Match ON HCC=HCCb

 WHERE Dr='Peer' and LOSb is null) \* --Average for a marginal

 (SELECT AVG(LOS) FROM dbo.clinician INNER JOIN #Match ON DRG=DRGb

 WHERE Dr='Peer' and LOSb is null) / --Average for complement marginal

 (SELECT AVG(LOS) FROM dbo.clinician -- Average for entire set

 WHERE Dr='Peer')

 ELSE LOSb END AS LOSb

 INTO #All

 FROM #Match

-- Overlap between peer and clinician cases

SELECT Round(100.\*CAST (SUM(NUMa)

-SUM(CASE WHEN LOSb is null then NUMa else 0 end) AS float)/

CAST(SUM(NUMa) as Float),2) AS [Overlap with Synthetic Cases]

FROM #All

 Select Round(SUM(ProbA

 \*CASE WHEN LOSb is null then 0 else LOSa End),2) As [Clinician LOS]

 , Round(SUM(ProbB\*LOSb),2) AS [Peer LOS]

 , Round(((Cast(SUM(ProbB\*LOSb) as float)

-Cast(SUM(ProbA\*CASE WHEN LOSb is null then 0 else LOSa End) as float))\*100)

 /Cast(SUM(ProbB\*LOSb) as float),2) AS [Percent More Efficient]

 FROM #ALL