/\* Estimate parameters of multiplicative model for lung cancer \*/

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Use AgeDx

-- Concatinate comorbidities to construct strata

DROP TABLE #Concatenate

SELECT [ID]

 ,[Dead]

 ,'C'+ str(Cancer,1)+str([I401.9],1)+str([I496.],1)+str([I272.4],1)+str([I305.1],1)+str([I486.],1)+str([I530.81],1)+str([I414.01],1)+str([I285.9],1)+str([I427.31],1)+str([I600.00],1)+str([I311.],1)+str([I491.21],1)+str([I276.1],1)+str([I428.0],1)+str([I276.51],1)+str([I276.8],1)+str([I599.0],1)+str([I403.90],1)+str([IE849.7],1)+str([I309.81],1)+str([I585.9],1)+str([I300.00],1)+str([I414.00],1)+str([I443.9],1)+str([I244.9],1)+str([I724.2],1)+str([IV58.61],1)+str([I250.00],1)+str([I427.89],1)+str([I788.20],1)+str([I280.9],1)+str([I786.6],1)+str([I518.89],1)+str([I786.59],1)+str([I787.91],1)+str([IV45.81],1)+str([IE849.0],1)+str([I070.54],1)+str([I303.90],1)+str([I287.5],1)+str([IV45.82],1) AS AllVariables

INTO #Concatenate

FROM [AgeDx].[dbo].[lung]

Go

-- 829799 unique patients

-- Start an index, balance data, and calculate the intercept (corner case)

DROP TABLE #Intercept

Create Table #Intercept (Variable int, Intercept float)

DECLARE @Index INT

SET @index = 2 -- First entry is letter C and should be ignored

WHILE (@Index <=43)

BEGIN

 PRINT @Index

 -- Calculate mortality for cases

 Drop Table #Cases

 Select SUM(Dead) as cDead

 , SUM(dead)+SUM(1-dead) AS cCases

 , STUFF(AllVariables,@Index,1, '\_') AS cStrata

 INTO #Cases

 FROM #Concatenate

 WHERE SUBSTRING(AllVariables, @Index, 1)='1'

 GROUP BY STUFF(AllVariables,@Index,1, '\_')

 -- Calculate mortality for controls

 Drop Table #Controls

 Select SUM(dead) as mDead

 , SUM(Dead)+SUM(1-Dead) AS mCases

 , STUFF(Allvariables,@Index,1, '\_') AS mStrata

 INTO #Controls

 FROM #Concatenate

 WHERE SUBSTRING(AllVariables, @Index, 1)='0'

 GROUP BY STUFF(AllVariables,@Index,1, '\_')

 -- Match cases and controls

 Drop Table #matched

 Select @Index as Variable

 , Round(CAST(cDead as float)/CAST(cCases as float) - CAST(mDead as float)/CAST(mCases as Float),2) as Diff

 , Round(CAST(mDead as float)/CAST(mCases as Float),2) AS mProb

 , Round(CAST(cDead as float)/CAST(cCases as Float),2) AS cProb

 , mCases

 , cCases

 , cStrata AS Strata

 INTO #matched

 FROM #cases inner join #controls on cStrata = mStrata

 Where cCases >9 AND mCases>9 and

 CAST(cDead as float)/CAST(cCases as float) - CAST(mDead as float)/CAST(mCases as Float)>=0 -- Delete violations of independence

 -- Calculate intercept

 Insert INTO #Intercept

 Select Max(@Index)-1 As [Variable Number]

 , (SUM(cProb)\*SUM(mProb\*mProb)-SUM(mProb)\*SUM(cProb\*mProb))/(COUNT(@index)\*SUM(mProb\*mProb)-SUM(mProb)\*SUM(mProb)) AS Intercept

 FROM #Concatenate inner join #matched on STUFF(AllVariables,@Index,1, '\_') = #matched.strata

 WHERE SUBSTRING(AllVariables, @Index, 1)='1'

 SET @Index = @Index + 1

 END

GO

SELECT \* FROM #Intercept

