



Mid-Term Employment Projections: Combined Forecast Approach

How-To Guide

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On the basis of the existing short-term (2-year) and long-term (10-year) employment projections processes, states can choose to produce industry and occupational employment projections for any one year from 2 through 9 years. The following steps enable states to produce that mid-term projection.

1. Create the 2-year and 10-year industry and occupational projections using the state’s existing approach in the Projections Software Suite. The two datasets should be produced as close to each other in time as possible (e.g., 2016-2026 and 2017-2019).
2. Merge the long and short term data together by appending the rows into a single table (or into a .csv file if outside the database).
3. Create that table with the column names described below and name the table “WID_TBL”, within your ProjectionsSuite database.
4. Remove all commas from the industry/occupational titles, otherwise the .csv file will identify these as delimiters.

SQL Column Name:	Type	Matincode	Matocode	Estemp	Projemp	avgopenings
Definition:	Industry or Occupation Code	Industry or Occupation Title	Short-term base employment, “estemp”	Short-term average annual openings	Short-term projected employment, “projemp”	Long-term base employment, “estemp”
Data Type:	Text/String	Text/String	Float	Float	Float	Float

5. Copy the SQL code in Appendix A into a SQL query. The code points to the “ProjectionsSuite” database. If you imported the tables into a different database, replace “ProjectionsSuite” with your database’s name in line 1’s code; “USE ProjectionsSuite”.
6. The SQL code in Appendix A, “How_To_MidTermCalc_WID” will perform the following functions:
 - a. Annualize the short-term and long-term growth rates; and
 - b. Multiply the appropriate ratio* for the mid-term years by the annualized growth rate and then multiply that result by the number of years equal to the mid-term timeframe and
 - c. Produce the annual openings for each projected year.

Formula example for 5-year projections:

$$\left(\left((0.4X(1 + (ST \text{ Annualized Rate}))) * 5 \right) * ST \text{ Base} \right) + \left(\left((0.6X(1 + (LT \text{ Annualized Rate}))) * 5 \right) * LT \text{ Base} \right)$$

5-year ratio for short term	Short-term growth rate divided by 2	# of years projected	Short-term base employment	5-year ratio for long term	Long-term growth rate divided by 10	# of years projected	Long-term base employment
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- The final output contains the original base employment and projections from the short-term and long-term source data, as well as the 3 through 9 year timeframes' projections and average annual openings.
- The user can then choose which timeframe to publish and apply the appropriate suppression rules to the final output data.

***Mid-Term Projections Ratios**

Timeframe	3 year	4 year	5 year	6 year	7 year	8 year	9 year
Short-Term Ratio	0.6	0.5	0.4	0.3	0.2	0.1	0.01
Long-Term Ratio	0.4	0.5	0.6	0.7	0.8	0.9	0.99

- The output of the code will begin with the same table structure described on the first page of this guide, followed by the mid-term projections ("twoyear", "threeyear" etc) which are then followed by the Average Openings for each year ("ThreeYearAvg", "FourYearAvg").

APPENDIX A

```
USE projectionsSuite

DROP TABLE IF EXISTS #TEMP1

DROP TABLE IF EXISTS #TEMP2

DROP TABLE IF EXISTS #TEMP3

DROP TABLE IF EXISTS #TEMP4

DROP TABLE IF EXISTS #TEMP5

DROP TABLE IF EXISTS #TEMP6

DROP TABLE IF EXISTS #TEMP7

--Begin the first calculation to find the difference between projempections and estemp employments and null if there is no difference
select matincode,matoccode,Type,estemp,projemp,AvgOpenings,([projemp]-[estemp])as Diff
into #Temp1
from dbo.WID_Tbl

--Calculate and annualize the short term growth rates and calculate avgopenings share of projections
select *,
([Diff]/nullif([estemp],0)/2) as AnIRt,
(AvgOpenings/nullif(projemp,0)) as AverageOpenings
into #Temp2
from #Temp1
where Type='ST'

--Calculate and annualize the long term growth rates and calculate avgopenings share of projections
select *,
([Diff]/nullif([estemp],0)/10) as AnIRt,
(AvgOpenings/nullif(projemp,0)) as AverageOpenings
into #Temp3
from #Temp1
where Type='LT'

--calculate the short term data for the mid-term projected employments, 3-9 year time frames for occupations and industries
select *
into #Temp4
from
```

```

(select matincode,matoccode,Type,ANLrt as ST_AnLrt,estemp,
(((0.6*(1+([AnLrt]*3))))*estemp)) as ST_ThreeYear,
(((0.5*(1+([AnLrt]*4))))*estemp)) as ST_FourYear,
(((0.4*(1+([AnLrt]*5))))*estemp)) as ST_FiveYear,
(((0.3*(1+([AnLrt]*6))))*estemp)) as ST_SixYear,
(((0.2*(1+([AnLrt]*7))))*estemp)) as ST_SevenYear,
(((0.1*(1+([AnLrt]*8))))*estemp)) as ST_EightYear,
(((0.01*(1+([AnLrt]*9))))*estemp)) as ST_NineYear,estemp as sT_estemp,projemp as ST_projemp,AverageOpenings as ST_AverageOpenings
from #Temp2)a

```

--calculate the long term data for the mid-term projected employments, 3-9 year time frames for occupations and industries

```

select *
into #Temp5
from
(select matincode,matoccode,Type,ANLrt as LT_AnLrt,
(((0.4*(1+([AnLrt]*3))))*estemp)) as LT_ThreeYear,
(((0.5*(1+([AnLrt]*4))))*estemp)) as LT_FourYear,
(((0.6*(1+([AnLrt]*5))))*estemp)) as LT_FiveYear,
(((0.7*(1+([AnLrt]*6))))*estemp)) as LT_SixYear,
(((0.8*(1+([AnLrt]*7))))*estemp)) as LT_SevenYear,
(((0.9*(1+([AnLrt]*8))))*estemp)) as LT_EightYear,
(((0.99*(1+([AnLrt]*9))))*estemp)) as LT_NineYear,estemp as LT_estemp,projemp as LT_projemp,AverageOpenings as LT_AverageOpenings
from #Temp3)b

```

--combine the short and long term mid-term projections data

```

select #Temp4.matincode,#Temp4.matoccode,LT_estemp,ST_projemp as twoyear, ST_Threeyear+LT_ThreeYear as
Threeyear,ST_fouryear+LT_fourYear as fouryear,ST_fiveyear+LT_fiveYear as fiveyear,ST_sixyear+LT_sixYear as sixyear,ST_sevenyear+LT_sevenYear as
sevenyear,ST_eightyear+LT_eightYear as eightyear,ST_nineyear+LT_nineYear as nineyear,LT_Projemp as tenyear,
ST_Averageopenings,LT_AverageOpenings
into #Temp6
from #Temp4
join #Temp5 on #Temp4.matincode=#Temp5.matincode and #temp4.matoccode=#temp5.matoccode
order by matincode,matoccode

```

--produce the table that includes mid-term projections and combines them with the average openings data

```

select matincode,matoccode,LT_estemp,twoyear,ThreeYear,

```

```

FourYear,FiveYear,SixYear,SevenYear,EightYear,NineYear,tenyear,
(((0.6*([ST_AverageOpenings]))*ThreeYear)+((0.4*([LT_AverageOpenings]))*ThreeYear)) as ThreeYearAvg,
(((0.5*([ST_AverageOpenings]))*FourYear)+((0.5*([LT_AverageOpenings]))*FourYear)) as FourYearAvg,
(((0.4*([ST_AverageOpenings]))*FiveYear)+((0.6*([LT_AverageOpenings]))*FiveYear)) as FiveYearAvg,
(((0.3*([ST_AverageOpenings]))*SixYear)+((0.7*([LT_AverageOpenings]))*SixYear)) as SixYearAvg,
(((0.2*([ST_AverageOpenings]))*SevenYear)+((0.8*([LT_AverageOpenings]))*SevenYear)) as SevenYearAvg,
(((0.1*([ST_AverageOpenings]))*EightYear)+((0.9*([LT_AverageOpenings]))*EightYear)) as EightYearAvg,
(LT_AverageOpenings*NineYear) as NineYearAvg
from #Temp6
order by matancode,matoccode

```