Using SAS DDE, SAS Macro and Excel VBA Macros to Create Automated Graphs for Multiple MS Excel Workbooks

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Introduction

Generating detailed Microsoft (MS) Excel reports is an integral aspect of business reporting. An effective report contains data presented in user-friendly and easy-to-read format.

Our Unit generates and distributes MS Excel reports to 19 different Managed Care Organizations (MCOs) each week. Prior to inserting graphs, these reports contained seven different data tables. They are produced by importing data from a SQL database into SAS, which are then summarized in an elaborate SAS program and output to several large MS Excel tables. A sample copy of these reports can be found in Appendix B.

We obtained feedback from MCOs that the people reviewing these reports are often not data analysts, but rather managers who need to quickly identify trends and anomalies. Additionally, senior management in the Department also need to be able to understand, at-a-glance, an MCO's behavior over time. To facilitate analysis and decision-making by stakeholders from varying backgrounds, it was suggested that we add line graphs to accompany each data table.

Adding a line graph for each table in each MS Excel report presented a business challenge for our Unit, as manually creating 133 graphs every week would have been a time-consuming process. Therefore, we developed an efficient solution that automatically generates graphs for each report. Our methodology combines the capabilities of Base SAS, SAS Dynamic Data Exchange (DDE) with Microsoft Excel Visual Basic Application (VBA) macro.

Methods

The following step-by-step process was implemented to automatically generate graphs using SAS and MS Excel.

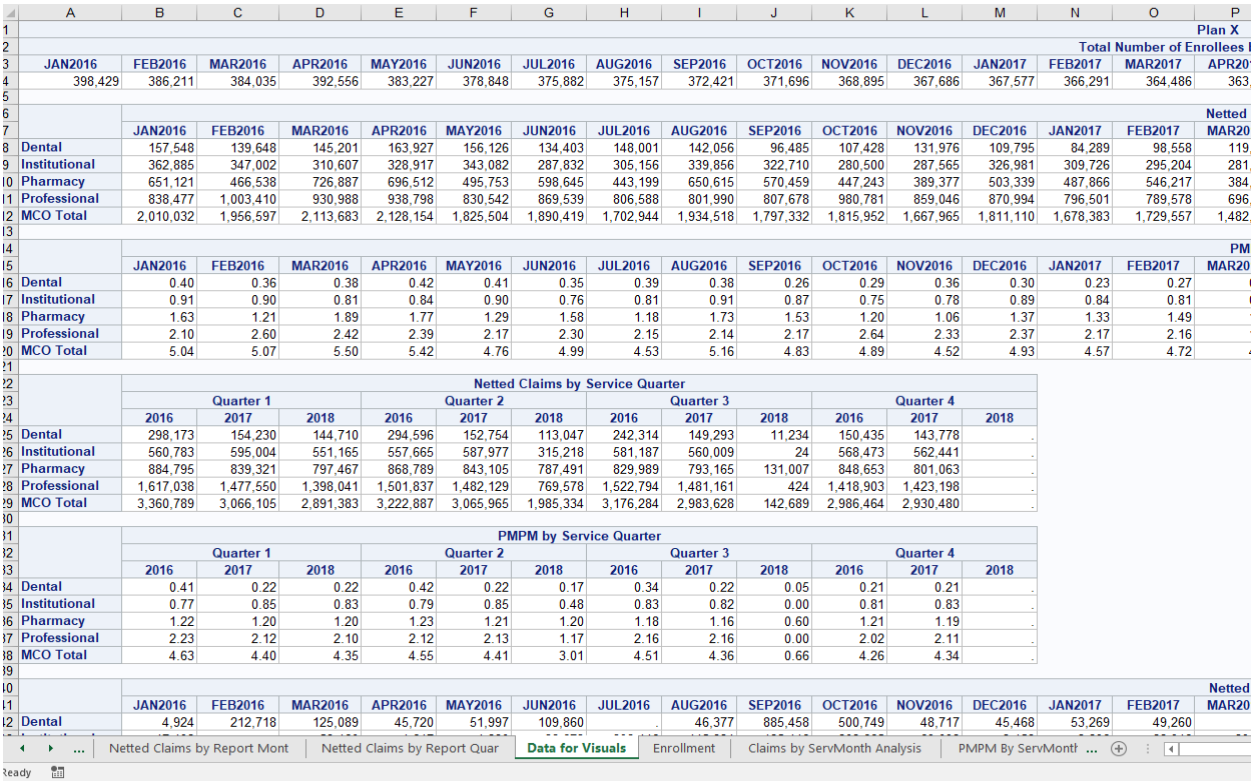
Create Data Summary Sheet

As the data was not in a format conducive to generating automated visualizations, we first created a summary sheet in MS Excel that the VBA macro could reference to pull the data for the graphs. The summary sheet is generated in SAS using the same SAS macro used to create the other spreadsheets in the MS Excel report. All together the summary sheet consists of seven tables, one table for each graph. Only data necessary for each graph is included in the summary sheet. An example of the SAS code used to generate the original reports, along with the SAS code to generate the summary sheet, can be found in Table 2 of Appendix A.

To ensure consistency between the graphs, each table for every report is in the same format, with the rows and columns representing the same variables. Any variation in the summary sheet format, for any of the reports, could lead to wrong data pulled into the graphs. For example, if

values for a given row were missing for one Managed Care Organization, but not for any others, we input null values to maintain consistency between tables. If no dummy data was inserted, the order in which MS Excel reads data rows for the graphs would become altered, displaying the wrong values.

The summary sheet was named ‘Data for Visuals’. A screenshot of the summary sheet can be seen in Figure 1.



Plan X

Total Number of Enrollees I

	JAN2016	FEB2016	MAR2016	APR2016	MAY2016	JUN2016	JUL2016	AUG2016	SEP2016	OCT2016	NOV2016	DEC2016	JAN2017	FEB2017	MAR2017	APR20
	398,429	386,211	384,035	392,556	383,227	378,848	375,882	375,157	372,421	371,696	368,895	367,686	367,577	366,291	364,486	363

Netted

	JAN2016	FEB2016	MAR2016	APR2016	MAY2016	JUN2016	JUL2016	AUG2016	SEP2016	OCT2016	NOV2016	DEC2016	JAN2017	FEB2017	MAR20
Dental	157,548	139,648	145,201	163,927	156,126	134,403	148,001	142,056	96,485	107,428	131,976	109,795	84,289	98,558	119
Institutional	362,885	347,002	310,607	328,917	343,082	287,832	305,156	339,856	322,710	280,500	287,565	326,981	309,726	295,204	281
Pharmacy	651,121	466,538	726,887	696,512	495,753	598,645	443,199	650,615	570,459	447,243	389,377	503,339	487,866	546,217	384
Professional	838,477	1,003,410	930,988	938,798	830,542	869,539	806,588	801,990	807,678	980,781	859,046	870,994	796,501	789,578	696
MCO Total	2,010,032	1,956,597	2,113,683	2,128,154	1,825,504	1,890,419	1,702,944	1,934,518	1,797,332	1,815,952	1,667,965	1,811,110	1,678,383	1,729,557	1,482

PM

	JAN2016	FEB2016	MAR2016	APR2016	MAY2016	JUN2016	JUL2016	AUG2016	SEP2016	OCT2016	NOV2016	DEC2016	JAN2017	FEB2017	MAR20
Dental	0.40	0.36	0.38	0.42	0.41	0.35	0.39	0.38	0.26	0.29	0.36	0.30	0.23	0.27	
Institutional	0.91	0.90	0.81	0.84	0.90	0.76	0.81	0.91	0.87	0.75	0.78	0.89	0.84	0.81	
Pharmacy	1.63	1.21	1.89	1.77	1.29	1.58	1.18	1.73	1.53	1.20	1.06	1.37	1.33	1.49	
Professional	2.10	2.60	2.42	2.39	2.17	2.30	2.15	2.14	2.17	2.64	2.33	2.37	2.17	2.16	
MCO Total	5.04	5.07	5.50	5.42	4.76	4.99	4.53	5.16	4.83	4.89	4.52	4.93	4.57	4.72	

Netted Claims by Service Quarter

	Quarter 1			Quarter 2			Quarter 3			Quarter 4		
	2016	2017	2018	2016	2017	2018	2016	2017	2018	2016	2017	2018
Dental	298,173	154,230	144,710	294,596	152,754	113,047	242,314	149,293	11,234	150,435	143,778	
Institutional	560,783	595,004	551,165	557,665	587,977	315,218	581,187	560,009	24	568,473	562,441	
Pharmacy	884,795	839,321	797,467	868,789	843,105	787,491	829,989	793,165	131,007	848,653	801,063	
Professional	1,617,038	1,477,550	1,398,041	1,501,837	1,482,129	769,578	1,522,794	1,481,161	424	1,418,903	1,423,198	
MCO Total	3,360,789	3,066,105	2,891,383	3,222,887	3,065,965	1,985,334	3,176,284	2,983,628	142,689	2,986,464	2,930,480	

PMPM by Service Quarter

	Quarter 1			Quarter 2			Quarter 3			Quarter 4		
	2016	2017	2018	2016	2017	2018	2016	2017	2018	2016	2017	2018
Dental	0.41	0.22	0.22	0.42	0.22	0.17	0.34	0.22	0.05	0.21	0.21	
Institutional	0.77	0.85	0.83	0.79	0.85	0.48	0.83	0.82	0.00	0.81	0.83	
Pharmacy	1.22	1.20	1.20	1.23	1.21	1.20	1.18	1.16	0.60	1.21	1.19	
Professional	2.23	2.12	2.10	2.12	2.13	1.17	2.16	2.16	0.00	2.02	2.11	
MCO Total	4.63	4.40	4.35	4.55	4.41	3.01	4.51	4.36	0.66	4.26	4.34	

Netted

	JAN2016	FEB2016	MAR2016	APR2016	MAY2016	JUN2016	JUL2016	AUG2016	SEP2016	OCT2016	NOV2016	DEC2016	JAN2017	FEB2017	MAR20
Dental	4,924	212,718	125,089	45,720	51,997	109,860		46,377	885,458	500,749	48,717	45,468	53,269	49,260	

Netted Claims by Report Mont | Netted Claims by Report Quar | Data for Visuals | Enrollment | Claims by ServMonth Analysis | PMPM By ServMonth

Ready

Figure 1 Summary Sheet named Data for Visuals. The data for graphs is pulled from this sheet.

Writing a VBA Macro to Create Graphs

A VBA macro was then developed to create graphs based on the seven summary sheet tables. First, we created a rough blueprint of the code by recording the macro manually. Once recorded, the underlying code was edited in the VBA Editor.

We tailored the macro to create graphs that would maintain continuity with the style of the original report. To do this, we edited the macro to determine the font type, color and size. In addition, we added legends, vertical and horizontal axes labels, and chart titles for the various chart elements. Similar to the summary sheet, this detail was required to facilitate standardization across all 19 reports, so that all could be produced using the same macro. Tailoring the code to our business needs also prevented “bugs” in programming that can arise when running the same code, based on dynamic data, over a long time.

For example, each month an additional month's worth of data is added to each report. The September report contains data from January to September, and the October report contains data from January to October. Since the data for the graphs was being pulled from the summary sheet, the VBA code had to be modified to read all available columns and rows in the summary sheet, and not just a fixed range set in code.

The VBA macro was named ChartsMacro. The complete VBA Code can be found in Table 1 of Appendix A.

Adding a Macro to Personal.xlsb Workbook

The macro created using the above process was written in the Personal Excel workbook. This was done by using the 'Record macro' option in the MS Excel Developer Tab, and selecting to store macro in Personal Macro Workbook. This step is crucial to the entire process because a macro saved in this workbook can be accessed and run for any MS Excel workbook, without the need to open the Personal.xlsb workbook separately. Saving the macro in Personal MS Excel workbook enabled us to use SAS DDE to trigger it for our reports. A Personal MS Excel workbook is present in the C:\Users\user name\AppData\Roaming\Microsoft\Excel\XLStart folder on Windows 10.

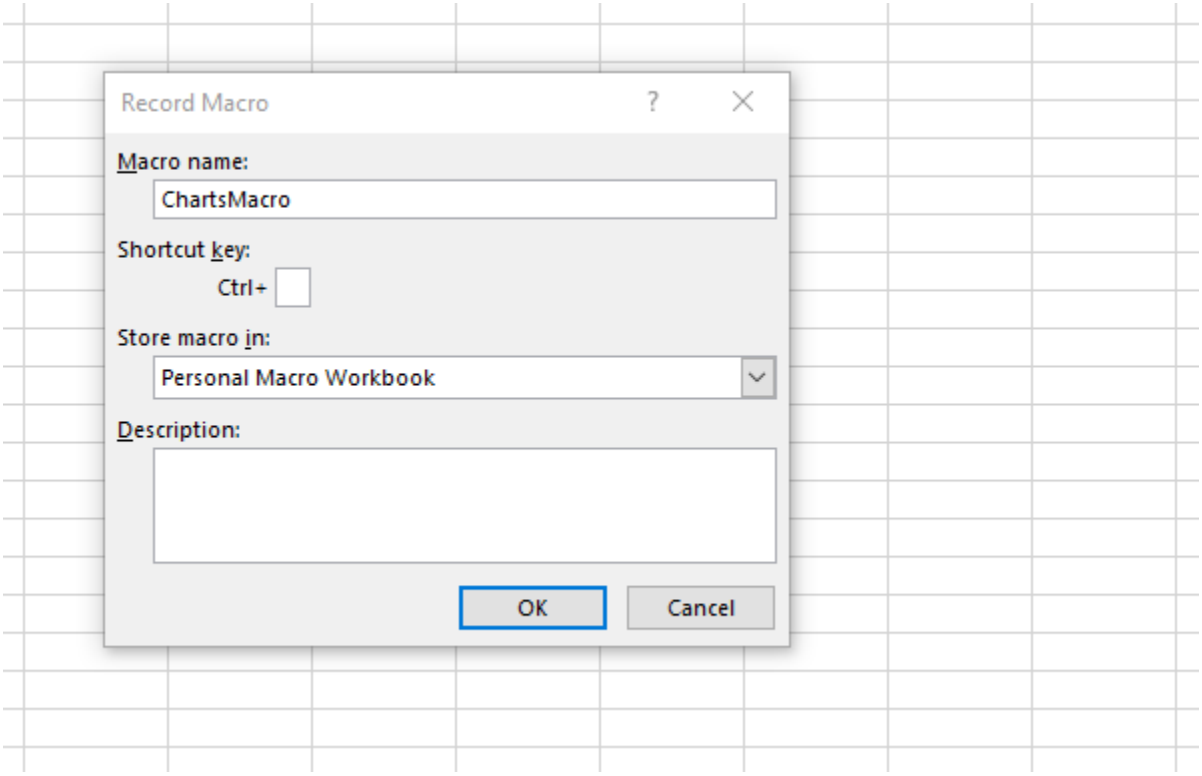


Figure 2 Storing the VBA Macro in Personal.xlsb Workbook

Writing a SAS Program to Trigger the VBA Code

We then updated the SAS program that generates the original MS Excel reports to include code for generating graphs. The code uses SAS DDE to access existing reports in MS Excel and run the VBA macro, which is what creates the graphs for each report.

The program begins by assigning a cycle number (cycle_num). This variable represents a processing cycle. It changes every week, and it is the variable that differentiates each report.

```
%let cycle_num=2144;
```

Using the X command, SAS prompts MS Excel to open. The NOXWAIT option enables SAS to automatically return to the SAS session after the commands in MS Excel have been executed without the need to type 'EXIT'.[1] The NOXSYNC option allows SAS to return to the session after executing a Windows command without the need to close the Windows application.[2]

```
options noxwait noxsync;

X "Start Excel";


%macro graph (plan=);

filename CMDS DDE 'EXCEL|SYSTEM';

data _null_;
     file CMDS ;
put "[open(""C:\path\Cycle &cycle_num.\&plan. Issuer Claim
Metrics Cyc &cycle_num. (&SYSDATE.).xlsx"")]";
put '[run("PERSONAL.XLSB!ChartsMacro")]';
run;

data null;
     file CMDS;
put '[save()]';
put "[File.Close()]";
run;


%mend graph;

%graph (plan=Plan1)
%graph (plan=Plan2)
%graph (plan=Plan3)
%graph (plan=Plan4)
```

[1] SAS® 9.4 Companion for Windows, Fifth Edition XWAIT System Option: Windows
http://support.sas.com/documentation/cdl/en/hostwin/69955/HTML/default/viewer.htm#n0xwt90ik8vxdrn13708w6n3nm4o.htm

[2] SAS® 9.4 Companion for Windows, Fifth Edition XSYNC System Option: Windows
http://support.sas.com/documentation/cdl/en/hostwin/69955/HTML/default/viewer.htm#n0dnk0of8vh258n1jcq8iqyjku7f.htm

```
%graph (plan=Plan5)
%graph (plan=Plan6)
%graph (plan=Plan7)
%graph (plan=Plan8)
%graph (plan=Plan9)
%graph (plan=Plan10)
%graph (plan=Plan11)
%graph (plan=Plan12)
%graph (plan=Plan13)
%graph (plan=Plan14)
%graph (plan=Plan15)
%graph (plan=Plan16)
%graph (plan=Plan17)
%graph (plan=Plan18)
%graph (plan=Plan19)
quit();
```

The code placed inside the macro enables SAS to command changes with MS Excel files. The first line: filename cmds dde 'excel|system' delegates SAS the ability to control the MS Excel file. The series of put statements execute the following changes to each MS Excel file:

a. Open the individual Workbook in which graphs are to be added.
b. Run the ChartsMacro stored in the Personal.xlsb workbook; the macro in turn triggers the graphs to be generated within in Workbook.
c. Save the changes made to the file and close it.

When those three steps have executed for each organization's Workbook, the SAS macro moves on to the next organization's report listed in the SAS macro invocation statements. It takes SAS a matter of seconds to repeat the commands for each report.

Note that SAS does not need to open the Personal workbook to run the Chartsmacro. It only needs to open the MS Excel Workbook files.

The graphs generated as a result of this process can be found in Appendix C.

Discussion

This methodology improved the efficiency with which our Unit could create and disseminate weekly reports. The SAS program itself has built-in flexibility that allow for any number and type of graphs to be added for any number of reports. The graphs are in a reader-friendly format, and they can be readily traced back to the original data for further analysis.

The graphs have facilitated trend analysis, enabling managers to quickly interpret data and make key decisions based on available information in a more effective manner.

To reduce the administrative burden of developing a new methodology, initially we explored other methods to solve this problem. Such exploration included creating graphs in SAS and exporting those to MS Excel, using the same channel as the original SAS program, ODS Excel.

However, the graphs created using that method were in a picture format, which had no functionality that would allow an end user to manipulate the graphs' underlying data.

The SAS program and VBA macro are portable. Specifically, all programs necessary for creating the reports are stored on our network drive and can be accessed and executed by all employees in the Unit.

Our solution demonstrates that a combination of SAS DDE, SAS macros and MS Excel can be used to efficiently create many tailored, reader-friendly reports.

References:

Lim, Choon-Chern. 2006. "Step-by-Step in Using SAS® DDE to Create an Excel Graph Based on N Observations from a SAS Data Set." *Proceedings of the SAS Users Group International 2006 Conference.* San Francisco, CA: SAS Institute Inc. Available at http://www2.sas.com/proceedings/sugi31/154-31.pdf

Benjamin Jr, William. 2012. "Yes! SAS® ExcelXP Will Not Create a Microsoft Excel Graph, but SAS Users Can Command Microsoft Excel to Automatically Create Graphs from SAS ExcelXP." *Proceedings from SAS Global Forum 2012 Conference.* Orlando, FL: SAS Institute Inc. Available at https://support.sas.com/resources/papers/proceedings12/013-2012.pdf

Appendix A: Program Code

Table 1: VBA Code for Creating Graphs Based on 'Data for Visuals' Sheet

```
Sub ChartsMacro()
 Dim sht As Worksheet
 Dim LastRow As Long
 Dim LastColumn As Integer
 Dim SecLastColumn As Integer
 Dim Title_plan As String

 Set sht = Worksheets("Data for Visuals")
 LastColumn = sht.UsedRange.Columns.Count
 SecLastColumn = LastColumn - 1

 Title_plan = Sheets("Data for Visuals").Range("A1").Value



    Sheets(Sheets.Count).Select
    Sheets.Add(After:=ActiveSheet).Name = "Enrollment"
    Sheets("Enrollment").Select
    Range("E9").Select
    ActiveSheet.Shapes.AddChart2(227, xlLine).Select
    ActiveSheet.Shapes("Chart 1").ScaleWidth 2.09375, msoFalse, _
        msoScaleFromBottomRight
    ActiveSheet.Shapes("Chart 1").ScaleHeight 1.6996525955, msoFalse,
_
        msoScaleFromBottomRight
    ActiveSheet.Shapes("Chart 1").ScaleWidth 1.4487562189, msoFalse,
_
        msoScaleFromTopLeft
    ActiveSheet.Shapes("Chart 1").ScaleHeight 1.3421860479, msoFalse,
_
        msoScaleFromTopLeft
    ActiveSheet.Shapes("Chart 1").ScaleWidth 1.0123626374, msoFalse,
_
        msoScaleFromTopLeft
    ActiveSheet.Shapes("Chart 1").ScaleHeight 1.0517503805, msoFalse,
_
        msoScaleFromTopLeft
    Application.CutCopyMode = False
    Application.CutCopyMode = False
    Application.CutCopyMode = False
    ActiveChart.ChartTitle.Characters.Font.Name = "Arial"
    ActiveChart.ChartTitle.Characters.Font.Size = "16"
    ActiveChart.ChartTitle.Characters.Font.Bold = True
    With ActiveChart
        .HasTitle = True
```

```
        .ChartTitle.Caption = Title_plan & " - Total Enrollment Over
Months"
    End With
    ActiveChart.SetSourceData Source:=Sheets("Data for
Visuals").Range(Sheets("Data for Visuals").Cells(4, 1), Sheets("Data
for Visuals").Cells(4, SecLastColumn))
    ActiveChart.FullSeriesCollection(1).Name = "='Data for
Visuals'!$A$1:$AA$1"
    ActiveChart.FullSeriesCollection(1).XValues = Range(Sheets("Data
for Visuals").Cells(3, 1), Sheets("Data for Visuals").Cells(3,
SecLastColumn))
    ActiveChart.Axes(xlValue, xlPrimary).HasTitle = True
    ActiveChart.Axes(xlValue, xlPrimary).AxisTitle.Characters.Text =
"Number of Enrollees"
    ActiveChart.Axes(xlValue).AxisTitle.Font.Name = "Arial"
    ActiveChart.Axes(xlValue).AxisTitle.Font.Size = 12
    ActiveChart.Axes(xlValue).AxisTitle.Font.Bold = True
    ActiveChart.Axes(xlValue).TickLabels.Font.Name = "Arial"
    ActiveChart.Axes(xlValue).TickLabels.Font.Size = 10
    ActiveChart.Axes(xlValue).TickLabels.Font.Bold = True
    ActiveChart.Axes(xlCategory).TickLabels.Font.Name = "Arial"
    ActiveChart.Axes(xlCategory).TickLabels.Font.Size = 11
    ActiveChart.Axes(xlCategory).TickLabels.Font.Bold = True


    Sheets(Sheets.Count).Select
    Sheets.Add(After:=ActiveSheet).Name = "Claims by ServMonth
Analysis"
    Sheets("Claims By ServMonth Analysis").Select
    Range("M42").Select
    ActiveSheet.Shapes.AddChart2(201, xlColumnClustered).Select
    ActiveSheet.Shapes("Chart 1").ScaleWidth 2.09375, msoFalse, _
        msoScaleFromBottomRight
    ActiveSheet.Shapes("Chart 1").ScaleHeight 1.6996525955, msoFalse,
_
        msoScaleFromBottomRight
    ActiveSheet.Shapes("Chart 1").ScaleWidth 1.4487562189, msoFalse,
_
        msoScaleFromTopLeft
    ActiveSheet.Shapes("Chart 1").ScaleHeight 1.3421860479, msoFalse,
_
        msoScaleFromTopLeft
    ActiveSheet.Shapes("Chart 1").ScaleWidth 1.0123626374, msoFalse,
_
        msoScaleFromTopLeft
    ActiveSheet.Shapes("Chart 1").ScaleHeight 1.0517503805, msoFalse,
_
        msoScaleFromTopLeft
   ' ActiveSheet.Shapes("Chart 1").IncrementLeft -66.75
   ' ActiveSheet.Shapes("Chart 1").IncrementTop -12
    Application.CutCopyMode = False
```

```
    Application.CutCopyMode = False
    Application.CutCopyMode = False
    Application.CutCopyMode = False
    Application.CutCopyMode = False
    Application.CutCopyMode = False
    ActiveChart.SeriesCollection.NewSeries
    ActiveChart.FullSeriesCollection(1).Name = "=""Dental"""
    ActiveChart.FullSeriesCollection(1).Values = Range(Sheets("Data
for Visuals").Cells(8, 2), Sheets("Data for Visuals").Cells(8,
LastColumn))
    ActiveChart.SeriesCollection.NewSeries
    ActiveChart.FullSeriesCollection(2).Name = "=""Institutional"""
    ActiveChart.FullSeriesCollection(2).Values = Range(Sheets("Data
for Visuals").Cells(9, 2), Sheets("Data for Visuals").Cells(9,
LastColumn))
    ActiveChart.SeriesCollection.NewSeries
    ActiveChart.FullSeriesCollection(3).Name = "=""Pharmacy"""
    ActiveChart.FullSeriesCollection(3).Values = Range(Sheets("Data
for Visuals").Cells(10, 2), Sheets("Data for Visuals").Cells(10,
LastColumn))
    ActiveChart.SeriesCollection.NewSeries
    ActiveChart.FullSeriesCollection(4).Name = "=""Professional"""
    ActiveChart.FullSeriesCollection(4).Values = Range(Sheets("Data
for Visuals").Cells(11, 2), Sheets("Data for Visuals").Cells(11,
LastColumn))
    ActiveChart.SeriesCollection.NewSeries
    ActiveChart.FullSeriesCollection(5).Name = "=""Total"""
    ActiveChart.FullSeriesCollection(5).Values = Range(Sheets("Data
for Visuals").Cells(12, 2), Sheets("Data for Visuals").Cells(12,
LastColumn))
    ActiveChart.FullSeriesCollection(5).XValues = Range(Sheets("Data
for Visuals").Cells(7, 2), Sheets("Data for Visuals").Cells(7,
LastColumn))
    ActiveChart.ChartTitle.Characters.Font.Name = "Arial"
    ActiveChart.ChartTitle.Characters.Font.Size = "16"
    ActiveChart.ChartTitle.Characters.Font.Bold = True
    With ActiveChart
        .HasTitle = True
        .ChartTitle.Text = Title_plan & " - Netted Claims by Service
Month"
    End With
    ActiveChart.HasLegend = True
    ActiveChart.Legend.Width = 150
    With ActiveChart.Legend
        For i = 1 To .LegendEntries.Count
            .LegendEntries(i).Font.Name = "Arial"
            .LegendEntries(i).Font.Size = 10
            .LegendEntries(i).Font.Bold = True
        Next
    End With
    ActiveWindow.LargeScroll ToRight:=-1
```

```
    ActiveChart.Axes(xlValue, xlPrimary).HasTitle = True
    ActiveChart.Axes(xlValue, xlPrimary).AxisTitle.Characters.Text =
"Number of Netted Claims"
    ActiveChart.Axes(xlValue).AxisTitle.Font.Name = "Arial"
    ActiveChart.Axes(xlValue).AxisTitle.Font.Size = 12
    ActiveChart.Axes(xlValue).AxisTitle.Font.Bold = True
    ActiveChart.Axes(xlValue).TickLabels.Font.Name = "Arial"
    ActiveChart.Axes(xlValue).TickLabels.Font.Size = 10
    ActiveChart.Axes(xlValue).TickLabels.Font.Bold = True
    ActiveChart.Axes(xlCategory).TickLabels.Font.Name = "Arial"
    ActiveChart.Axes(xlCategory).TickLabels.Font.Size = 11
    ActiveChart.Axes(xlCategory).TickLabels.Font.Bold = True


    Sheets(Sheets.Count).Select
    Sheets.Add(After:=ActiveSheet).Name = "PMPM By ServMonth
Analysis"
    Sheets("PMPM By ServMonth Analysis").Select
    Range("C4").Select
    ActiveSheet.Shapes.AddChart2(201, xlColumnClustered).Select
    ActiveSheet.Shapes("Chart 1").ScaleWidth 2.09375, msoFalse, _
        msoScaleFromBottomRight
    ActiveSheet.Shapes("Chart 1").ScaleHeight 1.6996525955, msoFalse,
_
        msoScaleFromBottomRight
    ActiveSheet.Shapes("Chart 1").ScaleWidth 1.4487562189, msoFalse,
_
        msoScaleFromTopLeft
    ActiveSheet.Shapes("Chart 1").ScaleHeight 1.3421860479, msoFalse,
_
        msoScaleFromTopLeft
    ActiveSheet.Shapes("Chart 1").ScaleWidth 1.0123626374, msoFalse,
_
        msoScaleFromTopLeft
    ActiveSheet.Shapes("Chart 1").ScaleHeight 1.0517503805, msoFalse,
_
        msoScaleFromTopLeft
    Application.CutCopyMode = False
    Application.CutCopyMode = False
    Application.CutCopyMode = False
    Application.CutCopyMode = False
    Application.CutCopyMode = False
    Application.CutCopyMode = False
    Application.CutCopyMode = False
    ActiveChart.SeriesCollection.NewSeries
    ActiveChart.FullSeriesCollection(1).Name = "=""Dental"""
    ActiveChart.FullSeriesCollection(1).Values = Range(Sheets("Data
for Visuals").Cells(16, 2), Sheets("Data for Visuals").Cells(16,
LastColumn))
    ActiveChart.SeriesCollection.NewSeries
    ActiveChart.FullSeriesCollection(2).Name = "=""Institutional"""
```

```
    ActiveChart.FullSeriesCollection(2).Values = Range(Sheets("Data
for Visuals").Cells(17, 2), Sheets("Data for Visuals").Cells(17,
LastColumn))
    ActiveChart.SeriesCollection.NewSeries
    ActiveChart.FullSeriesCollection(3).Name = "=""Pharmacy"""
    ActiveChart.FullSeriesCollection(3).Values = Range(Sheets("Data
for Visuals").Cells(18, 2), Sheets("Data for Visuals").Cells(18,
LastColumn))
    ActiveChart.SeriesCollection.NewSeries
    ActiveChart.FullSeriesCollection(4).Name = "=""Professional"""
    ActiveChart.FullSeriesCollection(4).Values = Range(Sheets("Data
for Visuals").Cells(19, 2), Sheets("Data for Visuals").Cells(19,
LastColumn))
    ActiveChart.SeriesCollection.NewSeries
    ActiveChart.FullSeriesCollection(5).Name = "=""Total"""
    ActiveChart.FullSeriesCollection(5).Values = Range(Sheets("Data
for Visuals").Cells(20, 2), Sheets("Data for Visuals").Cells(20,
LastColumn))
    ActiveChart.FullSeriesCollection(5).XValues = Range(Sheets("Data
for Visuals").Cells(15, 2), Sheets("Data for Visuals").Cells(15,
LastColumn))
    ActiveChart.ChartTitle.Characters.Font.Name = "Arial"
    ActiveChart.ChartTitle.Characters.Font.Size = "16"
    ActiveChart.ChartTitle.Characters.Font.Bold = True
    With ActiveChart
        .HasTitle = True
        .ChartTitle.Text = Title_plan & " - PMPM by Service Month"
    End With
    ActiveChart.HasLegend = True
    ActiveChart.Legend.Width = 150
    With ActiveChart.Legend
        For i = 1 To .LegendEntries.Count
            .LegendEntries(i).Font.Name = "Arial"
            .LegendEntries(i).Font.Size = 10
            .LegendEntries(i).Font.Bold = True
        Next
    End With
    ActiveChart.Axes(xlValue, xlPrimary).HasTitle = True
    ActiveChart.Axes(xlValue, xlPrimary).AxisTitle.Characters.Text =
"Netted Claims Per Member Per Month(PMPM)"
    ActiveChart.Axes(xlValue).AxisTitle.Font.Name = "Arial"
    ActiveChart.Axes(xlValue).AxisTitle.Font.Size = 12
    ActiveChart.Axes(xlValue).AxisTitle.Font.Bold = True
    ActiveChart.Axes(xlValue).TickLabels.Font.Name = "Arial"
    ActiveChart.Axes(xlValue).TickLabels.Font.Size = 10
    ActiveChart.Axes(xlValue).TickLabels.Font.Bold = True
    ActiveChart.Axes(xlCategory).TickLabels.Font.Name = "Arial"
    ActiveChart.Axes(xlCategory).TickLabels.Font.Size = 11
    ActiveChart.Axes(xlCategory).TickLabels.Font.Bold = True

    Sheets(Sheets.Count).Select
```

```
    Sheets.Add(After:=ActiveSheet).Name = "Claims by ServQ"
    Sheets("Claims by ServQ").Select
    Range("A2").Select
    ActiveSheet.Shapes.AddChart2(201, xlColumnClustered).Select
    ActiveSheet.Shapes("Chart 1").ScaleWidth 2.09375, msoFalse, _
        msoScaleFromBottomRight
    ActiveSheet.Shapes("Chart 1").ScaleHeight 1.6996525955, msoFalse,
_
        msoScaleFromBottomRight
    ActiveSheet.Shapes("Chart 1").ScaleWidth 1.4487562189, msoFalse,
_
        msoScaleFromTopLeft
    ActiveSheet.Shapes("Chart 1").ScaleHeight 1.3421860479, msoFalse,
_
        msoScaleFromTopLeft
    ActiveSheet.Shapes("Chart 1").ScaleWidth 1.0123626374, msoFalse,
_
        msoScaleFromTopLeft
    ActiveSheet.Shapes("Chart 1").ScaleHeight 1.0517503805, msoFalse,
_
        msoScaleFromTopLeft
    Application.CutCopyMode = False
    Application.CutCopyMode = False
    Application.CutCopyMode = False
    Application.CutCopyMode = False
    Application.CutCopyMode = False
    Application.CutCopyMode = False
    Application.CutCopyMode = False
    ActiveChart.SeriesCollection.NewSeries
    ActiveChart.FullSeriesCollection(1).Name = "=""Dental"""
    ActiveChart.FullSeriesCollection(1).Values = "='Data for
Visuals'!$B$25:$M$25"
    ActiveChart.SeriesCollection.NewSeries
    ActiveChart.FullSeriesCollection(2).Name = "=""Institutional"""
    ActiveChart.FullSeriesCollection(2).Values = "='Data for
Visuals'!$B$26:$M$26"
    ActiveChart.SeriesCollection.NewSeries
    ActiveChart.FullSeriesCollection(3).Name = "=""Pharmacy"""
    ActiveChart.FullSeriesCollection(3).Values = "='Data for
Visuals'!$B$27:$M$27"
    ActiveChart.SeriesCollection.NewSeries
    ActiveChart.FullSeriesCollection(4).Name = "=""Professional"""
    ActiveChart.FullSeriesCollection(4).Values = "='Data for
Visuals'!$B$28:$M$28"
    ActiveChart.SeriesCollection.NewSeries
    ActiveChart.FullSeriesCollection(5).Name = "=""Total"""
    ActiveChart.FullSeriesCollection(5).Values = "='Data for
Visuals'!$B$29:$M$29"
    ActiveChart.FullSeriesCollection(5).XValues = "='Data for
Visuals'!$B$23:$M$24"
    ActiveChart.ChartTitle.Characters.Font.Name = "Arial"
```

```
    ActiveChart.ChartTitle.Characters.Font.Size = "16"
    ActiveChart.ChartTitle.Characters.Font.Bold = True
    With ActiveChart
        .HasTitle = True
        .ChartTitle.Text = Title_plan & " - Netted Claims by Service
Quarter"
    End With
    ActiveChart.HasLegend = True
    ActiveChart.Legend.Width = 150
    With ActiveChart.Legend
        For i = 1 To .LegendEntries.Count
            .LegendEntries(i).Font.Name = "Arial"
            .LegendEntries(i).Font.Size = 10
            .LegendEntries(i).Font.Bold = True
        Next
    End With
    ActiveChart.Axes(xlValue, xlPrimary).HasTitle = True
    ActiveChart.Axes(xlValue, xlPrimary).AxisTitle.Characters.Text =
"Netted Claims by Service Quarter"
    ActiveChart.Axes(xlValue).AxisTitle.Font.Name = "Arial"
    ActiveChart.Axes(xlValue).AxisTitle.Font.Size = 12
    ActiveChart.Axes(xlValue).AxisTitle.Font.Bold = True
    ActiveChart.Axes(xlValue).TickLabels.Font.Name = "Arial"
    ActiveChart.Axes(xlValue).TickLabels.Font.Size = 10
    ActiveChart.Axes(xlValue).TickLabels.Font.Bold = True
    ActiveChart.Axes(xlCategory).TickLabels.Font.Name = "Arial"
    ActiveChart.Axes(xlCategory).TickLabels.Font.Size = 11
    ActiveChart.Axes(xlCategory).TickLabels.Font.Bold = True

    Sheets(Sheets.Count).Select
    Sheets.Add(After:=ActiveSheet).Name = "PMPM By ServQ Analysis"
    Sheets("PMPM By ServQ Analysis").Select
    Range("A2").Select
    ActiveSheet.Shapes.AddChart2(201, xlColumnClustered).Select
    ActiveSheet.Shapes("Chart 1").ScaleWidth 2.09375, msoFalse, _
        msoScaleFromBottomRight
    ActiveSheet.Shapes("Chart 1").ScaleHeight 1.6996525955, msoFalse,
_
        msoScaleFromBottomRight
    ActiveSheet.Shapes("Chart 1").ScaleWidth 1.4487562189, msoFalse,
_
        msoScaleFromTopLeft
    ActiveSheet.Shapes("Chart 1").ScaleHeight 1.3421860479, msoFalse,
_
        msoScaleFromTopLeft
    ActiveSheet.Shapes("Chart 1").ScaleWidth 1.0123626374, msoFalse,
_
        msoScaleFromTopLeft
    ActiveSheet.Shapes("Chart 1").ScaleHeight 1.0517503805, msoFalse,
_
        msoScaleFromTopLeft
```

```
    Application.CutCopyMode = False
    Application.CutCopyMode = False
    Application.CutCopyMode = False
    Application.CutCopyMode = False
    Application.CutCopyMode = False
    Application.CutCopyMode = False
    ActiveChart.SeriesCollection.NewSeries
    ActiveChart.FullSeriesCollection(1).Name = "=""Dental"""
    ActiveChart.FullSeriesCollection(1).Values = "='Data for
Visuals'!$B$34:$M$34"
    ActiveChart.SeriesCollection.NewSeries
    ActiveChart.FullSeriesCollection(2).Name = "=""Institutional"""
    ActiveChart.FullSeriesCollection(2).Values = "='Data for
Visuals'!$B$35:$M$35"
    ActiveChart.SeriesCollection.NewSeries
    ActiveChart.FullSeriesCollection(3).Name = "=""Pharmacy"""
    ActiveChart.FullSeriesCollection(3).Values = "='Data for
Visuals'!$B$36:$M$36"
    ActiveChart.SeriesCollection.NewSeries
    ActiveChart.FullSeriesCollection(4).Name = "=""Professional"""
    ActiveChart.FullSeriesCollection(4).Values = "='Data for
Visuals'!$B$37:$M$37"
    ActiveChart.SeriesCollection.NewSeries
    ActiveChart.FullSeriesCollection(5).Name = "=""Total"""
    ActiveChart.FullSeriesCollection(5).Values = "='Data for
Visuals'!$B$38:$M$38"
    ActiveChart.FullSeriesCollection(5).XValues = "='Data for
Visuals'!$B$32:$M$33"
    ActiveChart.ChartTitle.Characters.Font.Name = "Arial"
    ActiveChart.ChartTitle.Characters.Font.Size = "16"
    ActiveChart.ChartTitle.Characters.Font.Bold = True
    With ActiveChart
        .HasTitle = True
        .ChartTitle.Text = Title_plan & " - PMPM by Service Quarter"
    End With
    ActiveChart.HasLegend = True
    ActiveChart.Legend.Width = 150
    With ActiveChart.Legend
        For i = 1 To .LegendEntries.Count
            .LegendEntries(i).Font.Name = "Arial"
            .LegendEntries(i).Font.Size = 10
            .LegendEntries(i).Font.Bold = True
        Next
    End With
    ActiveChart.Axes(xlValue, xlPrimary).HasTitle = True
    ActiveChart.Axes(xlValue, xlPrimary).AxisTitle.Characters.Text =
"Claims per Member per Month(PMPM)"
    ActiveChart.Axes(xlValue).AxisTitle.Font.Name = "Arial"
    ActiveChart.Axes(xlValue).AxisTitle.Font.Size = 12
    ActiveChart.Axes(xlValue).AxisTitle.Font.Bold = True
    ActiveChart.Axes(xlValue).TickLabels.Font.Name = "Arial"
```

```
    ActiveChart.Axes(xlValue).TickLabels.Font.Size = 10
    ActiveChart.Axes(xlValue).TickLabels.Font.Bold = True
    ActiveChart.Axes(xlCategory).TickLabels.Font.Name = "Arial"
    ActiveChart.Axes(xlCategory).TickLabels.Font.Size = 11
    ActiveChart.Axes(xlCategory).TickLabels.Font.Bold = True

    Sheets(Sheets.Count).Select
    Sheets.Add(After:=ActiveSheet).Name = "Claims By RepM Analysis"
    Sheets("Claims By RepM Analysis").Select
    Range("A2").Select
    ActiveSheet.Shapes.AddChart2(201, xlColumnClustered).Select
    ActiveSheet.Shapes("Chart 1").ScaleWidth 2.09375, msoFalse, _
        msoScaleFromBottomRight
    ActiveSheet.Shapes("Chart 1").ScaleHeight 1.6996525955, msoFalse,
_
        msoScaleFromBottomRight
    ActiveSheet.Shapes("Chart 1").ScaleWidth 1.4487562189, msoFalse,
_
        msoScaleFromTopLeft
    ActiveSheet.Shapes("Chart 1").ScaleHeight 1.3421860479, msoFalse,
_
        msoScaleFromTopLeft
    ActiveSheet.Shapes("Chart 1").ScaleWidth 1.0123626374, msoFalse,
_
        msoScaleFromTopLeft
    ActiveSheet.Shapes("Chart 1").ScaleHeight 1.0517503805, msoFalse,
_
        msoScaleFromTopLeft
    Application.CutCopyMode = False
    Application.CutCopyMode = False
    Application.CutCopyMode = False
    Application.CutCopyMode = False
    Application.CutCopyMode = False
    Application.CutCopyMode = False
    ActiveChart.SeriesCollection.NewSeries
    ActiveChart.FullSeriesCollection(1).Name = "=""Dental"""
    ActiveChart.FullSeriesCollection(1).Values = Range(Sheets("Data
for Visuals").Cells(42, 2), Sheets("Data for Visuals").Cells(42,
LastColumn))
    ActiveChart.SeriesCollection.NewSeries
    ActiveChart.FullSeriesCollection(2).Name = "=""Institutional"""
    ActiveChart.FullSeriesCollection(2).Values = Range(Sheets("Data
for Visuals").Cells(43, 2), Sheets("Data for Visuals").Cells(43,
LastColumn))
    ActiveChart.SeriesCollection.NewSeries
    ActiveChart.FullSeriesCollection(3).Name = "=""Pharmacy"""
    ActiveChart.FullSeriesCollection(3).Values = Range(Sheets("Data
for Visuals").Cells(44, 2), Sheets("Data for Visuals").Cells(44,
LastColumn))
    ActiveChart.SeriesCollection.NewSeries
    ActiveChart.FullSeriesCollection(4).Name = "=""Professional"""
```

```
    ActiveChart.FullSeriesCollection(4).Values = Range(Sheets("Data
for Visuals").Cells(45, 2), Sheets("Data for Visuals").Cells(45,
LastColumn))
    ActiveChart.SeriesCollection.NewSeries
    ActiveChart.FullSeriesCollection(5).Name = "=""Total"""
    ActiveChart.FullSeriesCollection(5).Values = Range(Sheets("Data
for Visuals").Cells(46, 2), Sheets("Data for Visuals").Cells(46,
LastColumn))
    ActiveChart.FullSeriesCollection(5).XValues = Range(Sheets("Data
for Visuals").Cells(41, 2), Sheets("Data for Visuals").Cells(41,
LastColumn))
    ActiveChart.ChartTitle.Characters.Font.Name = "Arial"
    ActiveChart.ChartTitle.Characters.Font.Size = "16"
    ActiveChart.ChartTitle.Characters.Font.Bold = True
    With ActiveChart
        .HasTitle = True
        .ChartTitle.Text = Title_plan & " - Netted Claims by Report
Month"
    End With
    ActiveChart.HasLegend = True
    ActiveChart.Legend.Width = 150
    With ActiveChart.Legend
        For i = 1 To .LegendEntries.Count
            .LegendEntries(i).Font.Name = "Arial"
            .LegendEntries(i).Font.Size = 10
            .LegendEntries(i).Font.Bold = True
        Next
    End With
    ActiveChart.Axes(xlValue, xlPrimary).HasTitle = True
    ActiveChart.Axes(xlValue, xlPrimary).AxisTitle.Characters.Text =
"Netted Claims by Report Month"
    ActiveChart.Axes(xlValue).AxisTitle.Font.Name = "Arial"
    ActiveChart.Axes(xlValue).AxisTitle.Font.Size = 12
    ActiveChart.Axes(xlValue).AxisTitle.Font.Bold = True
    ActiveChart.Axes(xlValue).TickLabels.Font.Name = "Arial"
    ActiveChart.Axes(xlValue).TickLabels.Font.Size = 10
    ActiveChart.Axes(xlValue).TickLabels.Font.Bold = True
    ActiveChart.Axes(xlCategory).TickLabels.Font.Name = "Arial"
    ActiveChart.Axes(xlCategory).TickLabels.Font.Size = 11
    ActiveChart.Axes(xlCategory).TickLabels.Font.Bold = True

    Sheets(Sheets.Count).Select
    Sheets.Add(After:=ActiveSheet).Name = "Claims By RepQ Analysis"
    Sheets("Claims By RepQ Analysis").Select
    Range("A2").Select
    ActiveSheet.Shapes.AddChart2(201, xlColumnClustered).Select
    ActiveSheet.Shapes("Chart 1").ScaleWidth 2.09375, msoFalse, _
        msoScaleFromBottomRight
    ActiveSheet.Shapes("Chart 1").ScaleHeight 1.6996525955, msoFalse,
_
        msoScaleFromBottomRight
```

```
    ActiveSheet.Shapes("Chart 1").ScaleWidth 1.4487562189, msoFalse,
_
        msoScaleFromTopLeft
    ActiveSheet.Shapes("Chart 1").ScaleHeight 1.3421860479, msoFalse,
_
        msoScaleFromTopLeft
    ActiveSheet.Shapes("Chart 1").ScaleWidth 1.0123626374, msoFalse,
_
        msoScaleFromTopLeft
    ActiveSheet.Shapes("Chart 1").ScaleHeight 1.0517503805, msoFalse,
_
        msoScaleFromTopLeft
    Application.CutCopyMode = False
    Application.CutCopyMode = False
    Application.CutCopyMode = False
    Application.CutCopyMode = False
    Application.CutCopyMode = False
    Application.CutCopyMode = False
    ActiveChart.SeriesCollection.NewSeries
    ActiveChart.FullSeriesCollection(1).Name = "=""Dental"""
    ActiveChart.FullSeriesCollection(1).Values = "='Data for
Visuals'!$B$51:$M$51"
    ActiveChart.SeriesCollection.NewSeries
    ActiveChart.FullSeriesCollection(2).Name = "=""Institutional"""
    ActiveChart.FullSeriesCollection(2).Values = "='Data for
Visuals'!$B$52:$M$52"
    ActiveChart.SeriesCollection.NewSeries
    ActiveChart.FullSeriesCollection(3).Name = "=""Pharmacy"""
    ActiveChart.FullSeriesCollection(3).Values = "='Data for
Visuals'!$B$53:$M$53"
    ActiveChart.SeriesCollection.NewSeries
    ActiveChart.FullSeriesCollection(4).Name = "=""Professional"""
    ActiveChart.FullSeriesCollection(4).Values = "='Data for
Visuals'!$B$54:$M$54"
    ActiveChart.SeriesCollection.NewSeries
    ActiveChart.FullSeriesCollection(5).Name = "=""Total"""
    ActiveChart.FullSeriesCollection(5).Values = "='Data for
Visuals'!$B$55:$M$55"
    ActiveChart.FullSeriesCollection(5).XValues = "='Data for
Visuals'!$B$49:$M$50"
    ActiveChart.ChartTitle.Characters.Font.Name = "Arial"
    ActiveChart.ChartTitle.Characters.Font.Size = "16"
    ActiveChart.ChartTitle.Characters.Font.Bold = True
    With ActiveChart
        .HasTitle = True
        .ChartTitle.Text = Title_plan & " - Netted Claims by Report
Quarter"
    End With
    ActiveChart.HasLegend = True
    ActiveChart.Legend.Width = 150
    With ActiveChart.Legend
```

```
        For i = 1 To .LegendEntries.Count
            .LegendEntries(i).Font.Name = "Arial"
            .LegendEntries(i).Font.Size = 10
            .LegendEntries(i).Font.Bold = True
        Next
    End With
    ActiveChart.Axes(xlValue, xlPrimary).HasTitle = True
    ActiveChart.Axes(xlValue, xlPrimary).AxisTitle.Characters.Text =
"Netted Claims by Report Quarter"
    ActiveChart.Axes(xlValue).AxisTitle.Font.Name = "Arial"
    ActiveChart.Axes(xlValue).AxisTitle.Font.Size = 12
    ActiveChart.Axes(xlValue).AxisTitle.Font.Bold = True
    ActiveChart.Axes(xlValue).TickLabels.Font.Name = "Arial"
    ActiveChart.Axes(xlValue).TickLabels.Font.Size = 10
    ActiveChart.Axes(xlValue).TickLabels.Font.Bold = True
    ActiveChart.Axes(xlCategory).TickLabels.Font.Name = "Arial"
    ActiveChart.Axes(xlCategory).TickLabels.Font.Size = 11
    ActiveChart.Axes(xlCategory).TickLabels.Font.Bold = True

End Sub
```

Table 2 SAS Code to generate the Claim Metrics reports

```
/*Create Output*/

%let cycle_num=2144;

%macro metrics (plan=);

ods listing close; *<--do not delete this. Prevents errors in the Report
Specs tab;
ods excel file="C:\path\Cycle &cycle_num.\&plan. Issuer Claim Metrics Cyc
&cycle_num. (&SYSDATE.).xlsx"
      style=htmlblue OPTIONS(SHEET_name="Report Specifications"
absolute_column_width="125");
proc print data = spec.Report_specifications label noobs;
var Medicaid_Issuer_Claim_Metrics_Re/
style(column)=data[tagattr='wrap:yes'];
label Medicaid_Issuer_Claim_Metrics_Re = "Medicaid Issuer Claim Metrics
Report Specifications";
run;

ods excel OPTIONS(SHEET_name="Monthly Enrollment"
absolute_column_width="none");
/*Enrollment by service month*/
proc tabulate data = enr_srvmnt_tot;
class plan_alias plan_id plan_name hios_id service_month;
```

```
var sum_enr;
table plan_alias="MCO"*(hios_id="HIOS ID"*((plan_name="Plan
Name"*plan_id="Plan ID"))),
            service_month="Service Month"*sum_enr=" "*sum="
"*(f=comma24.0*{style={tagattr="format:###,###,###"}});
format plan_name $en_ty. plan_id $en_ty. hios_id  $en_ty.;
where plan_alias ="&plan.";
run;

/*Netted Claims by Service Month*/
ods excel OPTIONS(SHEET_name="Netted Claims by Service Month"
absolute_column_width="none");
 proc tabulate data = allmonthsumry;
class plan_alias plan_id plan_name hios_id encounter_type service_month;
var netted_claim_count;
table
plan_alias="MCO"
*(hios_id="HIOS ID"
*(plan_name="Plan Name"*plan_id="Plan ID"))
*(encounter_type=" ")
      , service_month=" "
      *netted_claim_count=" "
      *sum=" "
      *(f=comma24.0*{style={tagattr="format:###,###,###"}});
format encounter_type $en_ty. plan_name $en_ty. plan_id $en_ty. hios_id
$en_ty.;
where plan_alias ="&plan.";
run;

/*Caculate PMPM by service month*/
ods excel OPTIONS(SHEET_name="PMPM by Service Month"
absolute_column_width="none");
 proc tabulate data = allmonthsumry;
class plan_alias plan_id plan_name hios_id encounter_type service_month;
var  PMPM;
table
plan_alias="MCO"
*(hios_id="HIOS ID"
*(plan_name="Plan Name"*plan_id="Plan ID"))
*(encounter_type=" ")
      , service_month=" "
      *PMPM=" "
      *sum=" "
      *(f=6.2);
format encounter_type $en_ty. plan_name $en_ty. plan_id $en_ty. hios_id
$en_ty.;
where plan_alias ="&plan.";
run;

/*Netted Claims by Service Quarter*/
ods excel OPTIONS(SHEET_name="Netted Claims by Service Quarter"
absolute_column_width="none");
proc tabulate data = allsumry;
class plan_alias plan_id plan_name hios_id encounter_type serv_qtr year;
var netted_claim_count;
table
plan_alias="MCO"
```

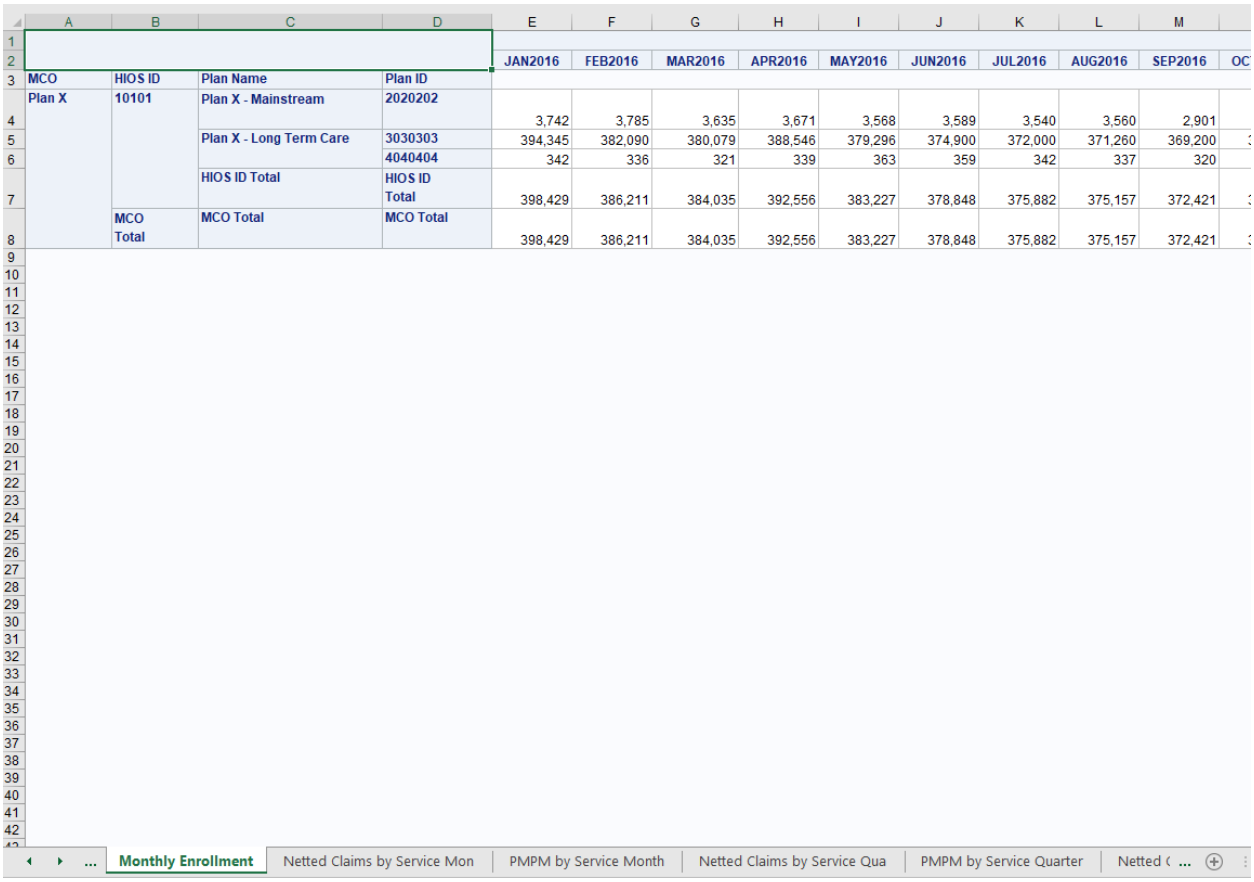
```
*(hios_id="HIOS ID"
*(plan_name="Plan Name"*plan_id="Plan ID"))
*(encounter_type=" ")
      , serv_qtr=" "
      *year=" "
      *netted_claim_count=" "
      *sum=" "
      *(f=comma24.0*{style={tagattr="format:###,###,###"}});
format serv_qtr qutr. encounter_type $en_ty. plan_name $en_ty. plan_id
$en_ty. hios_id  $en_ty.;
where plan_alias ="&plan.";
run;


/*PMPM by service quarter*/
ods excel OPTIONS(SHEET_name="PMPM by Service Quarter"
absolute_column_width="none");
proc tabulate data = allsumry;
class plan_alias plan_id plan_name hios_id encounter_type serv_qtr year;
var  PMPM;
table
plan_alias="MCO"
*(hios_id="HIOS ID"
*(plan_name="Plan Name"*plan_id="Plan ID"))
*(encounter_type=" ")
      , serv_qtr=" "
      *year=" "
      *PMPM=" "
      *sum=" "
      *(f=6.2);
format serv_qtr qutr. encounter_type $en_ty. plan_name $en_ty. plan_id
$en_ty. hios_id  $en_ty.;
where plan_alias ="&plan.";
run;

/*Netted Claims by Report Month*/
data rptmnth_claim; set allmonth_rsumry; keep plan_alias plan_id plan_name
hios_id encounter_type report_month netted_claim_count; run;
ods excel OPTIONS(SHEET_name="Netted Claims by Report Month"
absolute_column_width="none");
proc tabulate data = rptmnth_claim;
class plan_alias plan_id plan_name hios_id encounter_type REPORT_month;
var netted_claim_count;
table
plan_alias="MCO"
*(hios_id="HIOS ID"
*(plan_name="Plan Name"*plan_id="Plan ID"))
*(encounter_type=" ")
      ,REPORT_month=" "
      *netted_claim_count=" "
      *sum=" "
      *(f=comma24.0*{style={tagattr="format:###,###,###"}});
format encounter_type $en_ty. plan_name $en_ty. plan_id $en_ty. hios_id
$en_ty.;
where plan_alias ="&plan.";
run;
```

```
/*Netted Claims by Report Quarter*/
data rptmnth_claim; set all_rsumry; keep plan_alias plan_id plan_name
hios_id encounter_type rpt_qtr netted_claim_count year; run;
ods excel OPTIONS(SHEET_name="Netted Claims by Report Quarter "
absolute_column_width="none");
proc tabulate data = rptmnth_claim;
class plan_alias plan_id plan_name hios_id encounter_type rpt_qtr year;
var netted_claim_count;
table
plan_alias="MCO"
*(hios_id="HIOS ID"
*(plan_name="Plan Name"*plan_id="Plan ID"))
*(encounter_type=" ")
      ,rpt_qtr=" "
      *year=" "
      *netted_claim_count=" "
      *sum=" "
      *(f=comma24.0*{style={tagattr="format:###,###,###"}});
format rpt_qtr qutr. encounter_type $en_ty. plan_name $en_ty. plan_id
$en_ty. hios_id  $en_ty.;
where plan_alias ="&plan.";
run;

/*Sheets for Creating Charts*/
ods excel OPTIONS(SHEET_name="Data for Visuals" absolute_column_width="none"
sheet_interval="none");
proc tabulate data=enr_srvmnt4;
class plan_alias service_Month;
var sum_enr;
table sum="&plan."*sum_enr='Total Number of Enrollees by Service
Month'*service_Month=''*(f=comma24.0*{style={tagattr="format:###,###,###"}})
;;
where plan_alias="&plan.";
run;


proc tabulate data=servmnth classdata=classdata1 format=COMMA.0;
class plan_alias encounter_type service_Month;
var netted_claim_count;
table encounter_type=' ' ALL= 'MCO Total', sum=' ' * netted_claim_count=
'Netted Claims by Service Month' * service_Month = '
'*(f=comma24.0*{style={tagattr="format:###,###,###"}});
where plan_alias="&plan.";
run;

proc tabulate data=Allmonthsumry1(where=(plan_name='xMCO Total'))
classdata=classdata2 format=COMMA.2;
class plan_alias encounter_type service_Month;
var PMPM;
table encounter_type= ' ', sum=' '*PMPM= 'PMPM By Service Month' *
service_Month= ' ';
format encounter_type $en_ty.;
where plan_alias="&plan.";
run;

proc tabulate data=servmnth classdata=classdata1 format=COMMA.0;
class plan_alias encounter_type serv_qtr year;
```

```
var netted_claim_count;
table encounter_type='' ALL= 'MCO Total' , sum=' '*netted_claim_count=
'Netted Claims by Service Quarter' *serv_qtr=' ' *
year=''*(f=comma24.0*{style={tagattr="format:###,###,###"}});
format serv_qtr qutr.;
where plan_alias="&plan.";
run;

proc tabulate data=allsumry1(where=(plan_name='xMCO Total'))
classdata=classdata3 format=COMMA.2;
class plan_alias encounter_type serv_qtr year;
var PMPM;
table encounter_type='', sum='' * PMPM= 'PMPM by Service Quarter'*serv_qtr=
' ' * year='';
format serv_qtr qutr. encounter_type $en_ty.;
where plan_alias="&plan.";
run;

proc tabulate data=rptmnth classdata=classdata4 format=COMMA.0;
class plan_alias encounter_type report_month;
var netted_claim_count;
table encounter_type='' ALL='MCO Total', sum=''*netted_claim_count='Netted
Claims by Report Month' *
report_month=''*(f=comma24.0*{style={tagattr="format:###,###,###"}});
where plan_alias="&plan.";
run;

proc tabulate data=rptmnth classdata=classdata4 format=COMMA.0;
class plan_alias encounter_type rpt_qtr year;
var netted_claim_count;
table encounter_type='' ALL= 'MCO Total',sum=''*netted_claim_count='Netted
Claims by Report Quarter' * rpt_qtr='' *
year=''*(f=comma24.0*{style={tagattr="format:###,###,###"}});
format rpt_qtr qutr.;
where plan_alias="&plan.";
run;

ods excel close;
%mend metrics;

%metrics (plan=Plan1)
%metrics (plan=Plan2)
%metrics (plan=Plan3)
%metrics (plan=Plan4)
%metrics (plan=Plan5)
%metrics (plan=Plan6)
%metrics (plan=Plan7)
%metrics (plan=Plan8)
%metrics (plan=Plan9)
%metrics (plan=Plan10)
%metrics (plan=Plan11)
%metrics (plan=Plan12)
%metrics (plan=Plan13)
%metrics (plan=Plan14)
%metrics (plan=Plan15)
%metrics (plan=Plan16)
%metrics (plan=Plan17)
```

```
%metrics (plan=Plan18)
%metrics (plan=Plan19)
```

Appendix B: Screenshots of the MS Excel Workbook



	A	B	C	D	E	F	G	H	I	J	K	L	M
1													
2					JAN2016	FEB2016	MAR2016	APR2016	MAY2016	JUN2016	JUL2016	AUG2016	SEP2016
3	MCO	HIOS ID	Plan Name	Plan ID									
4	Plan X	10101	Plan X - Mainstream	2020202	3,742	3,785	3,635	3,671	3,568	3,589	3,540	3,560	2,901
5			Plan X - Long Term Care	3030303	394,345	382,090	380,079	388,546	379,296	374,900	372,000	371,260	369,200
6				4040404	342	336	321	339	363	359	342	337	320
7			HIOS ID Total	HIOS ID Total	398,429	386,211	384,035	392,556	383,227	378,848	375,882	375,157	372,421
8		MCO Total	MCO Total	MCO Total	398,429	386,211	384,035	392,556	383,227	378,848	375,882	375,157	372,421

Monthly Enrollment | Netted Claims by Service Mon | PMPM by Service Month | Netted Claims by Service Qua | PMPM by Service Quarter | Netted

Figure 3 Monthly Enrollment Sheet

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1						JAN2016	FEB2016	MAR2016	APR2016	MAY2016	JUN2016	JUL2016	AUG2016	SEP2016
2	MCO	HIOS ID	Plan Name	Plan ID										
3	Plan X	10101	Plan X - Mainstream	2020202	Dental	524	530	691	697	535	502	637	890	464
4					Institutional	15,380	14,042	17,484	17,327	16,020	13,243	14,514	16,162	11,836
5					Pharmacy	20,169	19,493	16,139	16,556	17,840	17,550	15,399	19,473	12,967
6					Professional	17,176	16,616	17,739	16,887	13,880	17,227	16,744	17,408	13,200
7					Plan ID Total	53,249	50,681	52,053	51,467	48,275	48,523	47,294	53,934	38,467
8			Plan X - Long Term Care	3030303	Dental	156,949	139,081	144,430	163,189	155,511	133,839	147,312	141,079	95,992
9					Institutional	347,024	332,418	292,661	310,837	326,195	273,677	290,160	322,996	310,128
10					Pharmacy	630,952	447,045	710,748	679,956	477,913	581,095	427,800	631,142	557,492
11					Professional	820,238	985,792	912,190	920,854	815,486	851,023	788,640	783,359	793,780
12					Plan ID Total	1,955,163	1,904,337	2,060,028	2,074,836	1,775,105	1,839,634	1,653,912	1,878,576	1,757,392
13				4040404	Dental	75	37	80	41	80	61	51	88	29
14					Institutional	482	541	462	753	868	912	482	698	746
15					Pharmacy	.	.	.	.	.	.	.	.	.
16					Professional	1,064	1,001	1,059	1,058	1,176	1,289	1,204	1,223	1,018
17					Plan ID Total	1,621	1,579	1,602	1,851	2,124	2,262	1,737	2,009	1,792
18				HIOS ID Total	Dental	157,548	139,648	145,201	163,927	156,126	134,403	148,001	142,056	96,485
19					Institutional	362,885	347,002	310,607	328,917	343,082	287,832	305,156	339,856	322,710
20					Pharmacy	651,121	466,538	726,887	696,512	495,753	598,645	443,199	650,615	570,459
21					Professional	838,477	1,003,410	930,988	938,798	830,542	869,539	806,588	801,990	807,678
22					HIOS ID Total	2,010,032	1,956,597	2,113,683	2,128,154	1,825,504	1,890,419	1,702,944	1,934,518	1,797,332
23		MCO Total	MCO Total	MCO Total	Dental	157,548	139,648	145,201	163,927	156,126	134,403	148,001	142,056	96,485
24					Institutional	362,885	347,002	310,607	328,917	343,082	287,832	305,156	339,856	322,710
25					Pharmacy	651,121	466,538	726,887	696,512	495,753	598,645	443,199	650,615	570,459
26					Professional	838,477	1,003,410	930,988	938,798	830,542	869,539	806,588	801,990	807,678
27					MCO Total	2,010,032	1,956,597	2,113,683	2,128,154	1,825,504	1,890,419	1,702,944	1,934,518	1,797,332
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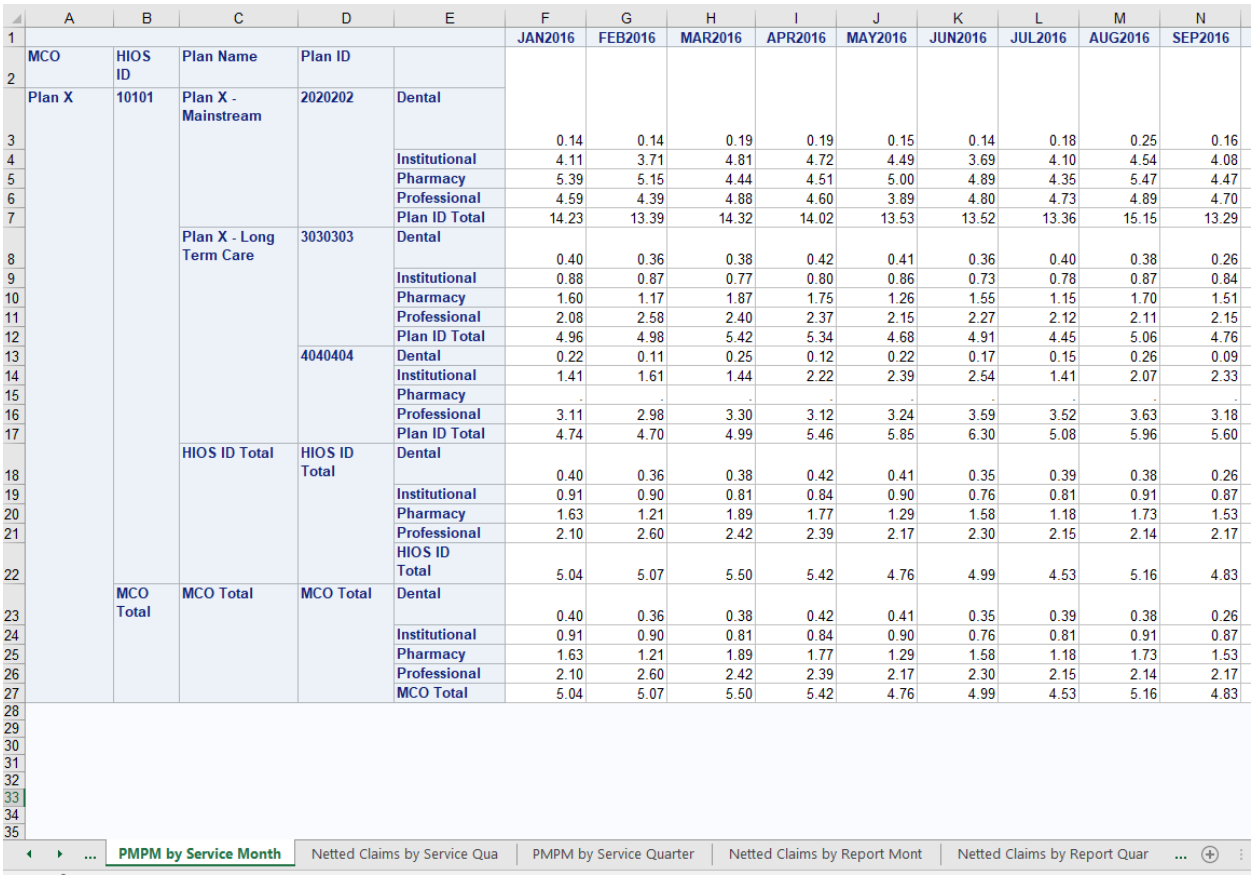
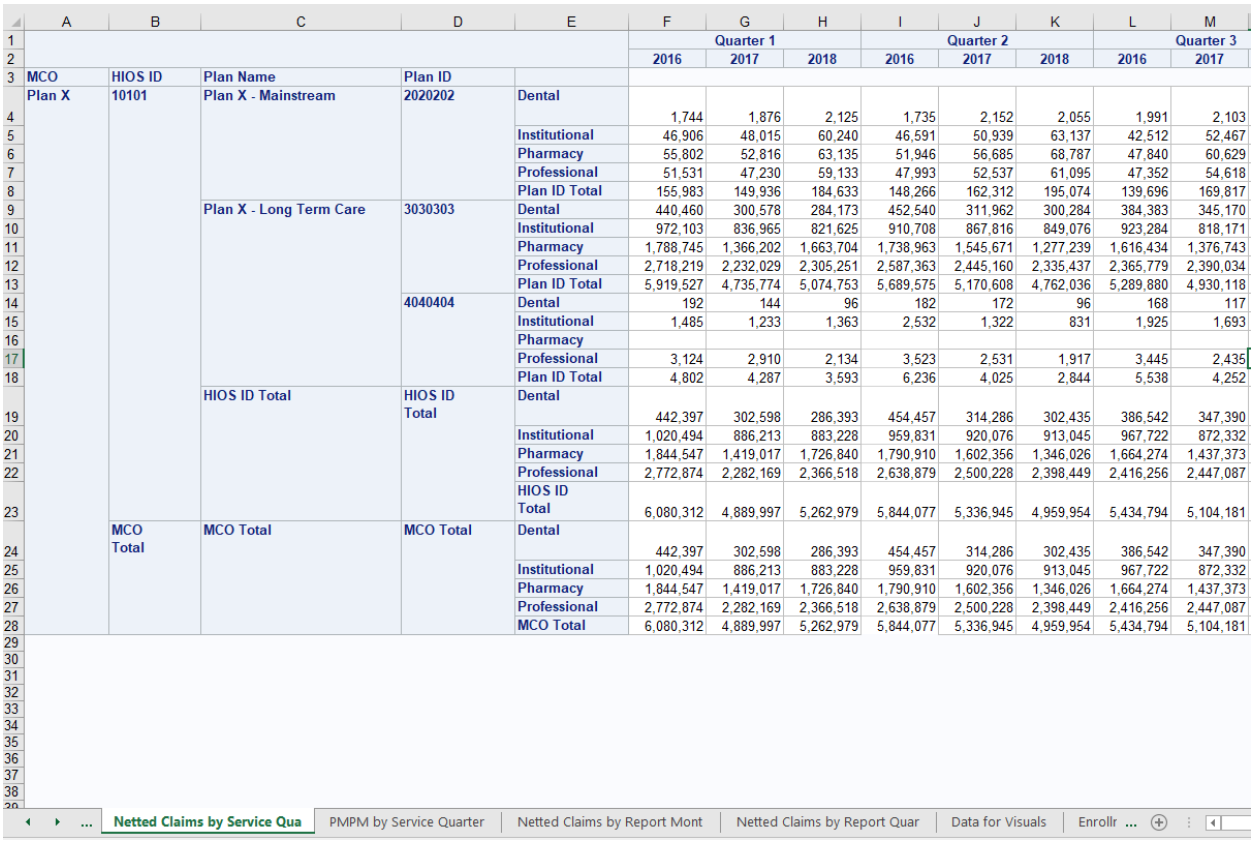
... Netted Claims by Service Mon | PMPM by Service Month | Netted Claims by Service Qua | PMPM by Service Quarter | Netted Claims by Report Mont ...

Figure 4 Netted Claims by Service Month



MCO	HIOS ID	Plan Name	Plan ID		JAN2016	FEB2016	MAR2016	APR2016	MAY2016	JUN2016	JUL2016	AUG2016	SEP2016
Plan X	10101	Plan X - Mainstream	2020202	Dental	0.14	0.14	0.19	0.19	0.15	0.14	0.18	0.25	0.16
				Institutional	4.11	3.71	4.81	4.72	4.49	3.69	4.10	4.54	4.08
				Pharmacy	5.39	5.15	4.44	4.51	5.00	4.89	4.35	5.47	4.47
				Professional	4.59	4.39	4.88	4.60	3.89	4.80	4.73	4.89	4.70
				Plan ID Total	14.23	13.39	14.32	14.02	13.53	13.52	13.36	15.15	13.29
		Plan X - Long Term Care	3030303	Dental	0.40	0.36	0.38	0.42	0.41	0.36	0.40	0.38	0.26
				Institutional	0.88	0.87	0.77	0.80	0.86	0.73	0.78	0.87	0.84
				Pharmacy	1.60	1.17	1.87	1.75	1.26	1.55	1.15	1.70	1.51
				Professional	2.08	2.58	2.40	2.37	2.15	2.27	2.12	2.11	2.15
				Plan ID Total	4.96	4.98	5.42	5.34	4.68	4.91	4.45	5.06	4.76
			4040404	Dental	0.22	0.11	0.25	0.12	0.22	0.17	0.15	0.26	0.09
				Institutional	1.41	1.61	1.44	2.22	2.39	2.54	1.41	2.07	2.33
				Pharmacy	.	.	.	.	.	.	.	.	.
				Professional	3.11	2.98	3.30	3.12	3.24	3.59	3.52	3.63	3.18
				Plan ID Total	4.74	4.70	4.99	5.46	5.85	6.30	5.08	5.96	5.60
		HIOS ID Total	HIOS ID Total	Dental	0.40	0.36	0.38	0.42	0.41	0.35	0.39	0.38	0.26
				Institutional	0.91	0.90	0.81	0.84	0.90	0.76	0.81	0.91	0.87
				Pharmacy	1.63	1.21	1.89	1.77	1.29	1.58	1.18	1.73	1.53
				Professional	2.10	2.60	2.42	2.39	2.17	2.30	2.15	2.14	2.17
				HIOS ID Total	5.04	5.07	5.50	5.42	4.76	4.99	4.53	5.16	4.83
	MCO Total	MCO Total	MCO Total	Dental	0.40	0.36	0.38	0.42	0.41	0.35	0.39	0.38	0.26
				Institutional	0.91	0.90	0.81	0.84	0.90	0.76	0.81	0.91	0.87
				Pharmacy	1.63	1.21	1.89	1.77	1.29	1.58	1.18	1.73	1.53
				Professional	2.10	2.60	2.42	2.39	2.17	2.30	2.15	2.14	2.17
				MCO Total	5.04	5.07	5.50	5.42	4.76	4.99	4.53	5.16	4.83

Figure 5 PMPM By Service Month



	A	B	C	D	E	F	G	H	I	J	K	L	M
1							Quarter 1			Quarter 2			Quarter 3
2						2016	2017	2018	2016	2017	2018	2016	2017
3	MCO	HIOS ID	Plan Name	Plan ID									
4	Plan X	10101	Plan X - Mainstream	2020202	Dental	1,744	1,876	2,125	1,735	2,152	2,055	1,991	2,103
5					Institutional	46,906	48,015	60,240	46,591	50,939	63,137	42,512	52,467
6					Pharmacy	55,802	52,816	63,135	51,946	56,685	68,787	47,840	60,629
7					Professional	51,531	47,230	59,133	47,993	52,537	61,095	47,352	54,618
8					Plan ID Total	155,983	149,936	184,633	148,266	162,312	195,074	139,696	169,817
9			Plan X - Long Term Care	3030303	Dental	440,460	300,578	284,173	452,540	311,962	300,284	384,383	345,170
10					Institutional	972,103	836,965	821,625	910,708	867,816	849,076	923,284	818,171
11					Pharmacy	1,788,745	1,366,202	1,663,704	1,738,963	1,545,671	1,277,239	1,616,434	1,376,743
12					Professional	2,718,219	2,232,029	2,305,251	2,587,363	2,445,160	2,335,437	2,365,779	2,390,034
13					Plan ID Total	5,919,527	4,735,774	5,074,753	5,689,575	5,170,608	4,762,036	5,289,880	4,930,118
14				4040404	Dental	192	144	96	182	172	96	168	117
15					Institutional	1,485	1,233	1,363	2,532	1,322	831	1,925	1,693
16					Pharmacy								
17					Professional	3,124	2,910	2,134	3,523	2,531	1,917	3,445	2,435
18					Plan ID Total	4,802	4,287	3,593	6,236	4,025	2,844	5,538	4,252
19			HIOS ID Total	HIOS ID Total	Dental	442,397	302,598	286,393	454,457	314,286	302,435	386,542	347,390
20					Institutional	1,020,494	886,213	883,228	959,831	920,076	913,045	967,722	872,332
21					Pharmacy	1,844,547	1,419,017	1,726,840	1,790,910	1,602,356	1,346,026	1,664,274	1,437,373
22					Professional	2,772,874	2,282,169	2,366,518	2,638,879	2,500,228	2,398,449	2,416,256	2,447,087
23					HIOS ID Total	6,080,312	4,889,997	5,262,979	5,844,077	5,336,945	4,959,954	5,434,794	5,104,181
24		MCO Total	MCO Total	MCO Total	Dental	442,397	302,598	286,393	454,457	314,286	302,435	386,542	347,390
25					Institutional	1,020,494	886,213	883,228	959,831	920,076	913,045	967,722	872,332
26					Pharmacy	1,844,547	1,419,017	1,726,840	1,790,910	1,602,356	1,346,026	1,664,274	1,437,373
27					Professional	2,772,874	2,282,169	2,366,518	2,638,879	2,500,228	2,398,449	2,416,256	2,447,087
28					MCO Total	6,080,312	4,889,997	5,262,979	5,844,077	5,336,945	4,959,954	5,434,794	5,104,181
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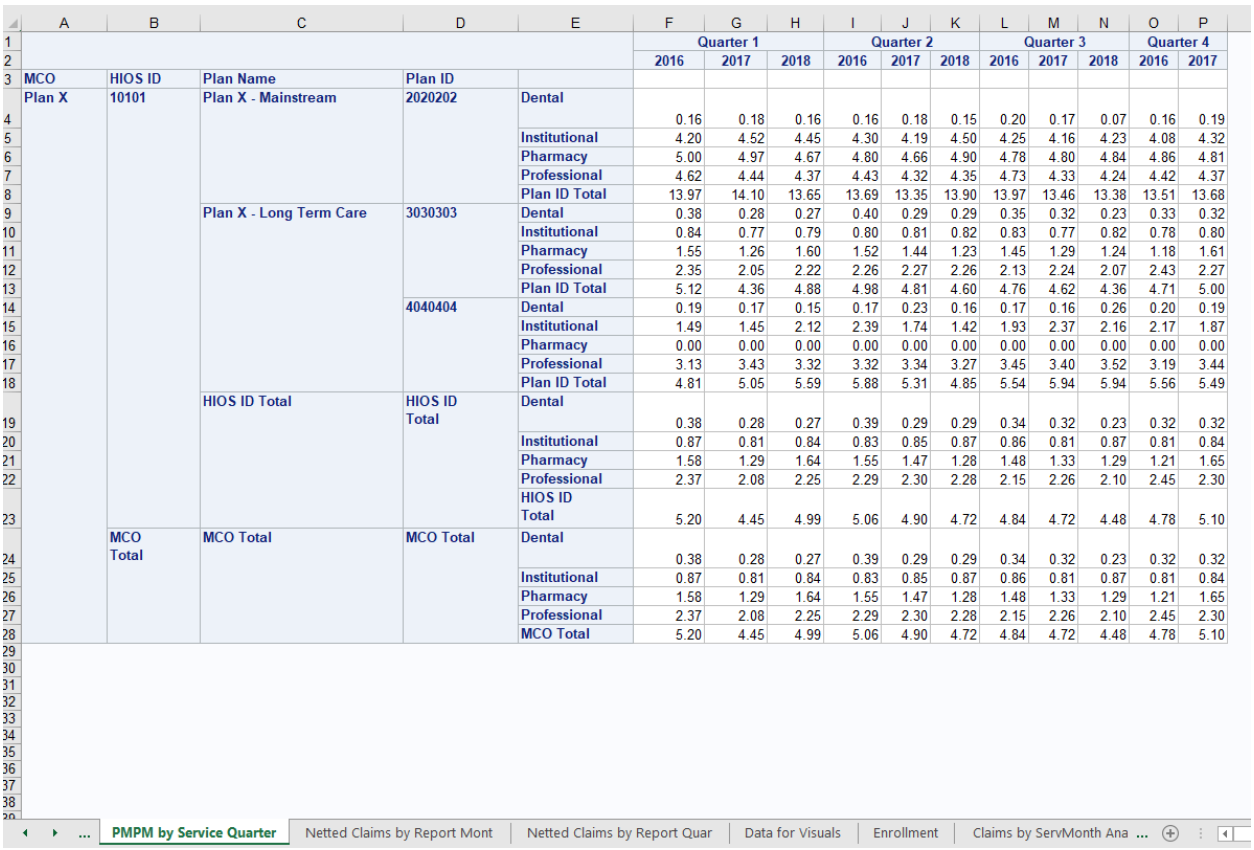
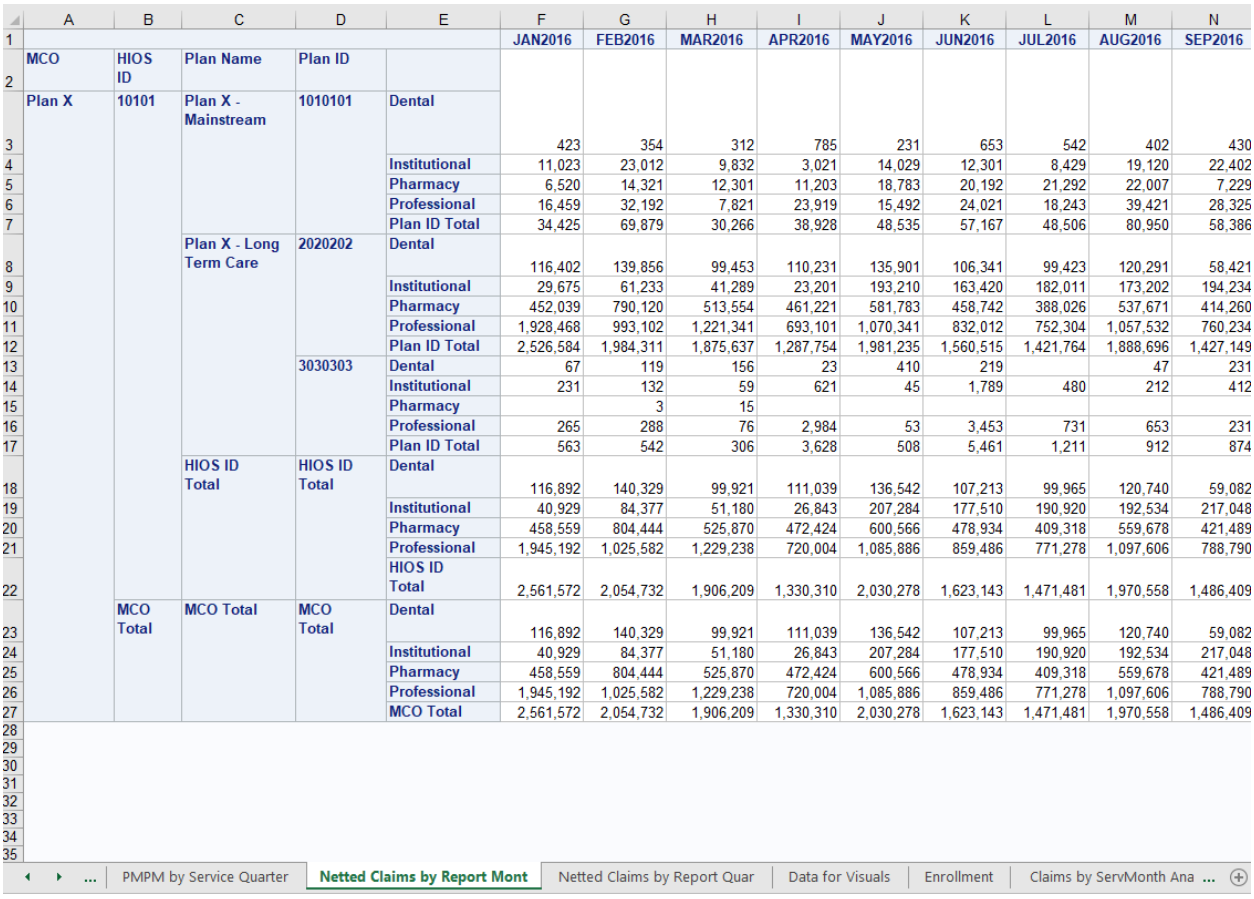
Figure 6 Netted Claims by Service Quarter



					Quarter 1			Quarter 2			Quarter 3			Quarter 4	
					2016	2017	2018	2016	2017	2018	2016	2017	2018	2016	2017
MCO	HIOS ID	Plan Name	Plan ID												
Plan X	10101	Plan X - Mainstream	2020202	Dental	0.16	0.18	0.16	0.16	0.18	0.15	0.20	0.17	0.07	0.16	0.19
				Institutional	4.20	4.52	4.45	4.30	4.19	4.50	4.25	4.16	4.23	4.08	4.32
				Pharmacy	5.00	4.97	4.67	4.80	4.66	4.90	4.78	4.80	4.84	4.86	4.81
				Professional	4.62	4.44	4.37	4.43	4.32	4.35	4.73	4.33	4.24	4.42	4.37
				Plan ID Total	13.97	14.10	13.65	13.69	13.35	13.90	13.97	13.46	13.38	13.51	13.68
		Plan X - Long Term Care	3030303	Dental	0.38	0.28	0.27	0.40	0.29	0.29	0.35	0.32	0.23	0.33	0.32
				Institutional	0.84	0.77	0.79	0.80	0.81	0.82	0.83	0.77	0.82	0.78	0.80
				Pharmacy	1.55	1.26	1.60	1.52	1.44	1.23	1.45	1.29	1.24	1.18	1.61
				Professional	2.35	2.05	2.22	2.26	2.27	2.26	2.13	2.24	2.07	2.43	2.27
				Plan ID Total	5.12	4.36	4.88	4.98	4.81	4.60	4.76	4.62	4.36	4.71	5.00
			4040404	Dental	0.19	0.17	0.15	0.17	0.23	0.16	0.17	0.16	0.26	0.20	0.19
				Institutional	1.49	1.45	2.12	2.39	1.74	1.42	1.93	2.37	2.16	2.17	1.87
				Pharmacy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Professional	3.13	3.43	3.32	3.32	3.34	3.27	3.45	3.40	3.52	3.19	3.44
				Plan ID Total	4.81	5.05	5.59	5.88	5.31	4.85	5.54	5.94	5.94	5.56	5.49
		HIOS ID Total	HIOS ID Total	Dental	0.38	0.28	0.27	0.39	0.29	0.29	0.34	0.32	0.23	0.32	0.32
				Institutional	0.87	0.81	0.84	0.83	0.85	0.87	0.86	0.81	0.87	0.81	0.84
				Pharmacy	1.58	1.29	1.64	1.55	1.47	1.28	1.48	1.33	1.29	1.21	1.65
				Professional	2.37	2.08	2.25	2.29	2.30	2.28	2.15	2.26	2.10	2.45	2.30
				HIOS ID Total	5.20	4.45	4.99	5.06	4.90	4.72	4.84	4.72	4.48	4.78	5.10
	MCO Total	MCO Total	MCO Total	Dental	0.38	0.28	0.27	0.39	0.29	0.29	0.34	0.32	0.23	0.32	0.32
				Institutional	0.87	0.81	0.84	0.83	0.85	0.87	0.86	0.81	0.87	0.81	0.84
				Pharmacy	1.58	1.29	1.64	1.55	1.47	1.28	1.48	1.33	1.29	1.21	1.65
				Professional	2.37	2.08	2.25	2.29	2.30	2.28	2.15	2.26	2.10	2.45	2.30
				MCO Total	5.20	4.45	4.99	5.06	4.90	4.72	4.84	4.72	4.48	4.78	5.10

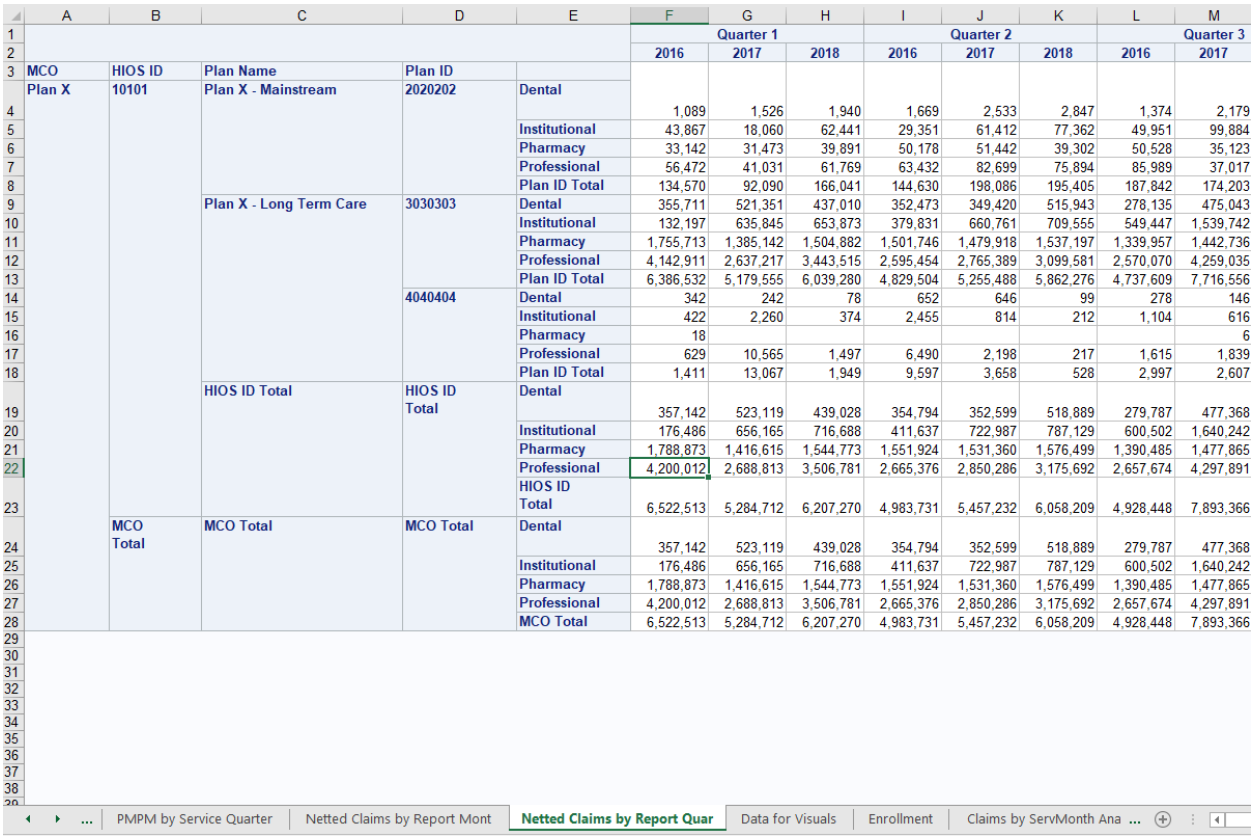
PMPM by Service Quarter | Netted Claims by Report Mont | Netted Claims by Report Quar | Data for Visuals | Enrollment | Claims by ServMonth Ana ...

Figure 7 PMPM By Service Quarter



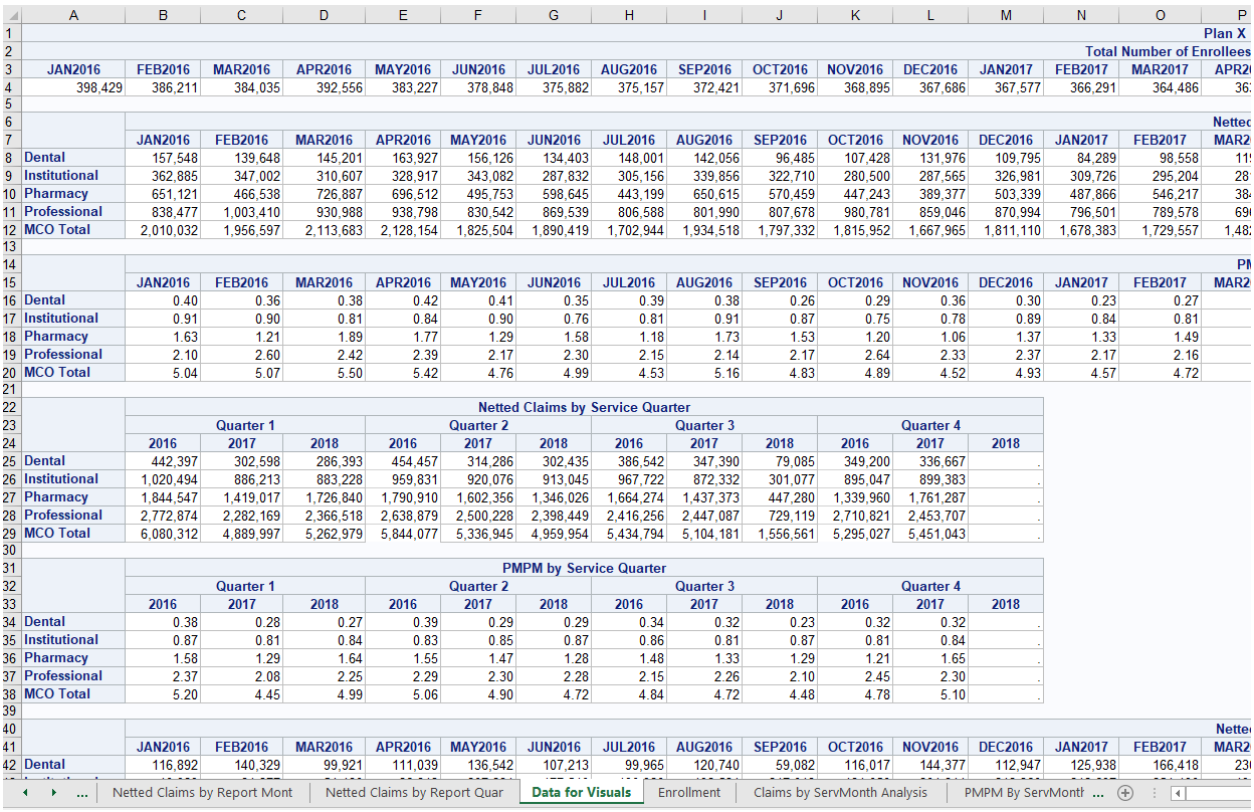
MCO	HIOS ID	Plan Name	Plan ID		JAN2016	FEB2016	MAR2016	APR2016	MAY2016	JUN2016	JUL2016	AUG2016	SEP2016
Plan X	10101	Plan X - Mainstream	1010101	Dental	423	354	312	785	231	653	542	402	430
				Institutional	11,023	23,012	9,832	3,021	14,029	12,301	8,429	19,120	22,402
				Pharmacy	6,520	14,321	12,301	11,203	18,783	20,192	21,292	22,007	7,229
				Professional	16,459	32,192	7,821	23,919	15,492	24,021	18,243	39,421	28,325
				Plan ID Total	34,425	69,879	30,266	38,928	48,535	57,167	48,506	80,950	58,386
		Plan X - Long Term Care	2020202	Dental	116,402	139,856	99,453	110,231	135,901	106,341	99,423	120,291	58,421
				Institutional	29,675	61,233	41,289	23,201	193,210	163,420	182,011	173,202	194,234
				Pharmacy	452,039	790,120	513,554	461,221	581,783	458,742	388,026	537,671	414,260
				Professional	1,928,468	993,102	1,221,341	693,101	1,070,341	832,012	752,304	1,057,532	760,234
				Plan ID Total	2,526,584	1,984,311	1,875,637	1,287,754	1,981,235	1,560,515	1,421,764	1,888,696	1,427,149
			3030303	Dental	67	119	156	23	410	219		47	231
				Institutional	231	132	59	621	45	1,789	480	212	412
				Pharmacy		3	15						
				Professional	265	288	76	2,984	53	3,453	731	653	231
				Plan ID Total	563	542	306	3,628	508	5,461	1,211	912	874
		HIOS ID Total	HIOS ID Total	Dental	116,892	140,329	99,921	111,039	136,542	107,213	99,965	120,740	59,082
				Institutional	40,929	84,377	51,180	26,843	207,284	177,510	190,920	192,534	217,048
				Pharmacy	458,559	804,444	525,870	472,424	600,566	478,934	409,318	559,678	421,489
				Professional	1,945,192	1,025,582	1,229,238	720,004	1,085,886	859,486	771,278	1,097,606	788,790
				HIOS ID Total	2,561,572	2,054,732	1,906,209	1,330,310	2,030,278	1,623,143	1,471,481	1,970,558	1,486,409
	MCO Total	MCO Total	MCO Total	Dental	116,892	140,329	99,921	111,039	136,542	107,213	99,965	120,740	59,082
				Institutional	40,929	84,377	51,180	26,843	207,284	177,510	190,920	192,534	217,048
				Pharmacy	458,559	804,444	525,870	472,424	600,566	478,934	409,318	559,678	421,489
				Professional	1,945,192	1,025,582	1,229,238	720,004	1,085,886	859,486	771,278	1,097,606	788,790
				MCO Total	2,561,572	2,054,732	1,906,209	1,330,310	2,030,278	1,623,143	1,471,481	1,970,558	1,486,409

Figure 8 Netted Claims by Report Month



	A	B	C	D	E	F	G	H	I	J	K	L	M
1							Quarter 1			Quarter 2			Quarter 3
2						2016	2017	2018	2016	2017	2018	2016	2017
3	MCO	HIOS ID	Plan Name	Plan ID									
4	Plan X	10101	Plan X - Mainstream	2020202	Dental	1,089	1,526	1,940	1,669	2,533	2,847	1,374	2,179
5					Institutional	43,867	18,060	62,441	29,351	61,412	77,362	49,951	99,884
6					Pharmacy	33,142	31,473	39,891	50,178	51,442	39,302	50,528	35,123
7					Professional	56,472	41,031	61,769	63,432	82,699	75,894	85,989	37,017
8					Plan ID Total	134,570	92,090	166,041	144,630	198,086	195,405	187,842	174,203
9			Plan X - Long Term Care	3030303	Dental	355,711	521,351	437,010	352,473	349,420	515,943	278,135	475,043
10					Institutional	132,197	635,845	653,873	379,831	660,761	709,555	549,447	1,539,742
11					Pharmacy	1,755,713	1,385,142	1,504,882	1,501,746	1,479,918	1,537,197	1,339,957	1,442,736
12					Professional	4,142,911	2,637,217	3,443,515	2,595,454	2,765,389	3,099,581	2,570,070	4,259,035
13					Plan ID Total	6,386,532	5,179,555	6,039,280	4,829,504	5,255,488	5,862,276	4,737,609	7,716,556
14				4040404	Dental	342	242	78	652	646	99	278	146
15					Institutional	422	2,260	374	2,455	814	212	1,104	616
16					Pharmacy	18							6
17					Professional	629	10,565	1,497	6,490	2,198	217	1,615	1,839
18					Plan ID Total	1,411	13,067	1,949	9,597	3,658	528	2,997	2,607
19			HIOS ID Total	HIOS ID Total	Dental	357,142	523,119	439,028	354,794	352,599	518,889	279,787	477,368
20					Institutional	176,486	656,165	716,688	411,637	722,987	787,129	600,502	1,640,242
21					Pharmacy	1,788,873	1,416,615	1,544,773	1,551,924	1,531,360	1,576,499	1,390,485	1,477,865
22					Professional	4,200,012	2,688,813	3,506,781	2,665,376	2,850,286	3,175,692	2,657,674	4,297,891
23					HIOS ID Total	6,522,513	5,284,712	6,207,270	4,983,731	5,457,232	6,058,209	4,928,448	7,893,366
24		MCO Total	MCO Total	MCO Total	Dental	357,142	523,119	439,028	354,794	352,599	518,889	279,787	477,368
25					Institutional	176,486	656,165	716,688	411,637	722,987	787,129	600,502	1,640,242
26					Pharmacy	1,788,873	1,416,615	1,544,773	1,551,924	1,531,360	1,576,499	1,390,485	1,477,865
27					Professional	4,200,012	2,688,813	3,506,781	2,665,376	2,850,286	3,175,692	2,657,674	4,297,891
28					MCO Total	6,522,513	5,284,712	6,207,270	4,983,731	5,457,232	6,058,209	4,928,448	7,893,366

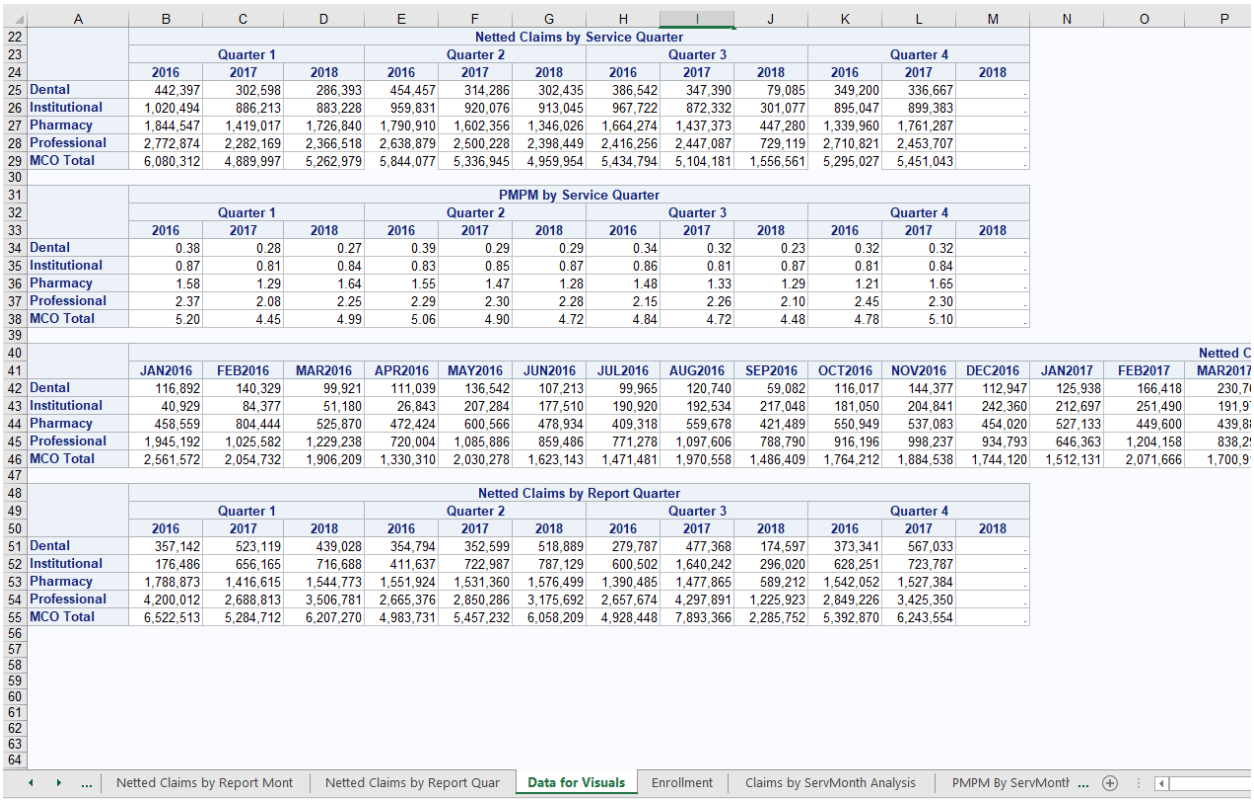
Figure 9 Netted Claims by Report Quarter



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1																Plan X
2																Total Number of Enrollees
3	JAN2016	FEB2016	MAR2016	APR2016	MAY2016	JUN2016	JUL2016	AUG2016	SEP2016	OCT2016	NOV2016	DEC2016	JAN2017	FEB2017	MAR2017	APR2
4	398,429	386,211	384,035	392,556	383,227	378,848	375,882	375,157	372,421	371,696	368,895	367,686	367,577	366,291	364,486	36
5																
6																Nettec
7		JAN2016	FEB2016	MAR2016	APR2016	MAY2016	JUN2016	JUL2016	AUG2016	SEP2016	OCT2016	NOV2016	DEC2016	JAN2017	FEB2017	MAR2
8	Dental	157,548	139,648	145,201	163,927	156,126	134,403	148,001	142,056	96,485	107,428	131,976	109,795	84,289	98,558	11
9	Institutional	362,885	347,002	310,607	328,917	343,082	287,832	305,156	339,856	322,710	280,500	287,565	326,981	309,726	295,204	28
10	Pharmacy	651,121	466,538	726,887	696,512	495,753	598,645	443,199	650,615	570,459	447,243	389,377	503,339	487,866	546,217	38
11	Professional	838,477	1,003,410	930,988	938,798	830,542	869,539	806,588	801,990	807,678	980,781	859,046	870,994	796,501	789,578	69
12	MCO Total	2,010,032	1,956,597	2,113,683	2,128,154	1,825,504	1,890,419	1,702,944	1,934,518	1,797,332	1,815,952	1,667,965	1,811,110	1,678,383	1,729,557	1,48
13																
14																PM
15		JAN2016	FEB2016	MAR2016	APR2016	MAY2016	JUN2016	JUL2016	AUG2016	SEP2016	OCT2016	NOV2016	DEC2016	JAN2017	FEB2017	MAR2
16	Dental	0.40	0.36	0.38	0.42	0.41	0.35	0.39	0.38	0.26	0.29	0.36	0.30	0.23	0.27	
17	Institutional	0.91	0.90	0.81	0.84	0.90	0.76	0.81	0.91	0.87	0.75	0.78	0.89	0.84	0.81	
18	Pharmacy	1.63	1.21	1.89	1.77	1.29	1.58	1.18	1.73	1.53	1.20	1.06	1.37	1.33	1.49	
19	Professional	2.10	2.60	2.42	2.39	2.17	2.30	2.15	2.14	2.17	2.64	2.33	2.37	2.17	2.16	
20	MCO Total	5.04	5.07	5.50	5.42	4.76	4.99	4.53	5.16	4.83	4.89	4.52	4.93	4.57	4.72	
21																
22		Netted Claims by Service Quarter														
23		Quarter 1			Quarter 2			Quarter 3			Quarter 4					
24		2016	2017	2018	2016	2017	2018	2016	2017	2018	2016	2017	2018			
25	Dental	442,397	302,598	286,393	454,457	314,286	302,435	386,542	347,390	79,085	349,200	336,667	.			
26	Institutional	1,020,494	886,213	883,228	959,831	920,076	913,045	967,722	872,332	301,077	895,047	899,383	.			
27	Pharmacy	1,844,547	1,419,017	1,726,840	1,790,910	1,602,356	1,346,026	1,664,274	1,437,373	447,280	1,339,960	1,761,287	.			
28	Professional	2,772,874	2,282,169	2,366,518	2,638,879	2,500,228	2,398,449	2,416,256	2,447,087	729,119	2,710,821	2,453,707	.			
29	MCO Total	6,080,312	4,889,997	5,262,979	5,844,077	5,336,945	4,959,954	5,434,794	5,104,181	1,556,561	5,295,027	5,451,043	.			
30																
31		PMPM by Service Quarter														
32		Quarter 1			Quarter 2			Quarter 3			Quarter 4					
33		2016	2017	2018	2016	2017	2018	2016	2017	2018	2016	2017	2018			
34	Dental	0.38	0.28	0.27	0.39	0.29	0.29	0.34	0.32	0.23	0.32	0.32	.			
35	Institutional	0.87	0.81	0.84	0.83	0.85	0.87	0.86	0.81	0.87	0.81	0.84	.			
36	Pharmacy	1.58	1.29	1.64	1.55	1.47	1.28	1.48	1.33	1.29	1.21	1.65	.			
37	Professional	2.37	2.08	2.25	2.29	2.30	2.28	2.15	2.26	2.10	2.45	2.30	.			
38	MCO Total	5.20	4.45	4.99	5.06	4.90	4.72	4.84	4.72	4.48	4.78	5.10	.			
39																
40																Nette
41		JAN2016	FEB2016	MAR2016	APR2016	MAY2016	JUN2016	JUL2016	AUG2016	SEP2016	OCT2016	NOV2016	DEC2016	JAN2017	FEB2017	MAR2
42	Dental	116,892	140,329	99,921	111,039	136,542	107,213	99,965	120,740	59,082	116,017	144,377	112,947	125,938	166,418	23

Netted Claims by Report Mont | Netted Claims by Report Quar | Data for Visuals | Enrollment | Claims by ServMonth Analysis | PMPM By ServMonth

Figure 10 Summary Sheet Named Data for Visuals



		Netted Claims by Service Quarter											
		Quarter 1			Quarter 2			Quarter 3			Quarter 4		
		2016	2017	2018	2016	2017	2018	2016	2017	2018	2016	2017	2018
25	Dental	442,397	302,598	286,393	454,457	314,286	302,435	386,542	347,390	79,085	349,200	336,667	.
26	Institutional	1,020,494	886,213	883,228	959,831	920,076	913,045	967,722	872,332	301,077	895,047	899,383	.
27	Pharmacy	1,844,547	1,419,017	1,726,840	1,790,910	1,602,356	1,346,026	1,664,274	1,437,373	447,280	1,339,960	1,761,287	.
28	Professional	2,772,874	2,282,169	2,366,518	2,638,879	2,500,228	2,398,449	2,416,256	2,447,087	729,119	2,710,821	2,453,707	.
29	MCO Total	6,080,312	4,889,997	5,262,979	5,844,077	5,336,945	4,959,954	5,434,794	5,104,181	1,556,561	5,295,027	5,451,043	.

		PMPM by Service Quarter											
		Quarter 1			Quarter 2			Quarter 3			Quarter 4		
		2016	2017	2018	2016	2017	2018	2016	2017	2018	2016	2017	2018
34	Dental	0.38	0.28	0.27	0.39	0.29	0.29	0.34	0.32	0.23	0.32	0.32	.
35	Institutional	0.87	0.81	0.84	0.83	0.85	0.87	0.86	0.81	0.87	0.81	0.84	.
36	Pharmacy	1.58	1.29	1.64	1.55	1.47	1.28	1.48	1.33	1.29	1.21	1.65	.
37	Professional	2.37	2.08	2.25	2.29	2.30	2.28	2.15	2.26	2.10	2.45	2.30	.
38	MCO Total	5.20	4.45	4.99	5.06	4.90	4.72	4.84	4.72	4.48	4.78	5.10	.

																Netted C
		JAN2016	FEB2016	MAR2016	APR2016	MAY2016	JUN2016	JUL2016	AUG2016	SEP2016	OCT2016	NOV2016	DEC2016	JAN2017	FEB2017	MAR2017
42	Dental	116,892	140,329	99,921	111,039	136,542	107,213	99,965	120,740	59,082	116,017	144,377	112,947	125,938	166,418	230,7
43	Institutional	40,929	84,377	51,180	26,843	207,284	177,510	190,920	192,534	217,048	181,050	204,841	242,360	212,697	251,490	191,9
44	Pharmacy	458,559	804,444	525,870	472,424	600,566	478,934	409,318	559,678	421,489	550,949	537,083	454,020	527,133	449,600	439,8
45	Professional	1,945,192	1,025,582	1,229,238	720,004	1,085,886	859,486	771,278	1,097,606	788,790	916,196	998,237	934,793	646,363	1,204,158	838,2
46	MCO Total	2,561,572	2,054,732	1,906,209	1,330,310	2,030,278	1,623,143	1,471,481	1,970,558	1,486,409	1,764,212	1,884,538	1,744,120	1,512,131	2,071,666	1,700,9

		Netted Claims by Report Quarter											
		Quarter 1			Quarter 2			Quarter 3			Quarter 4		
		2016	2017	2018	2016	2017	2018	2016	2017	2018	2016	2017	2018
51	Dental	357,142	523,119	439,028	354,794	352,599	518,889	279,787	477,368	174,597	373,341	567,033	.
52	Institutional	176,486	656,165	716,688	411,637	722,987	787,129	600,502	1,640,242	296,020	628,251	723,787	.
53	Pharmacy	1,788,873	1,416,615	1,544,773	1,551,924	1,531,360	1,576,499	1,390,485	1,477,865	589,212	1,542,052	1,527,384	.
54	Professional	4,200,012	2,688,813	3,506,781	2,665,376	2,850,286	3,175,692	2,657,674	4,297,891	1,225,923	2,849,226	3,425,350	.
55	MCO Total	6,522,513	5,284,712	6,207,270	4,983,731	5,457,232	6,058,209	4,928,448	7,893,366	2,285,752	5,392,870	6,243,554	.

Netted Claims by Report Mont | Netted Claims by Report Quar | Data for Visuals | Enrollment | Claims by ServMonth Analysis | PMPM By ServMonth

Figure 11 The lower rows of Data for Visuals sheet

Appendix C: Graphs

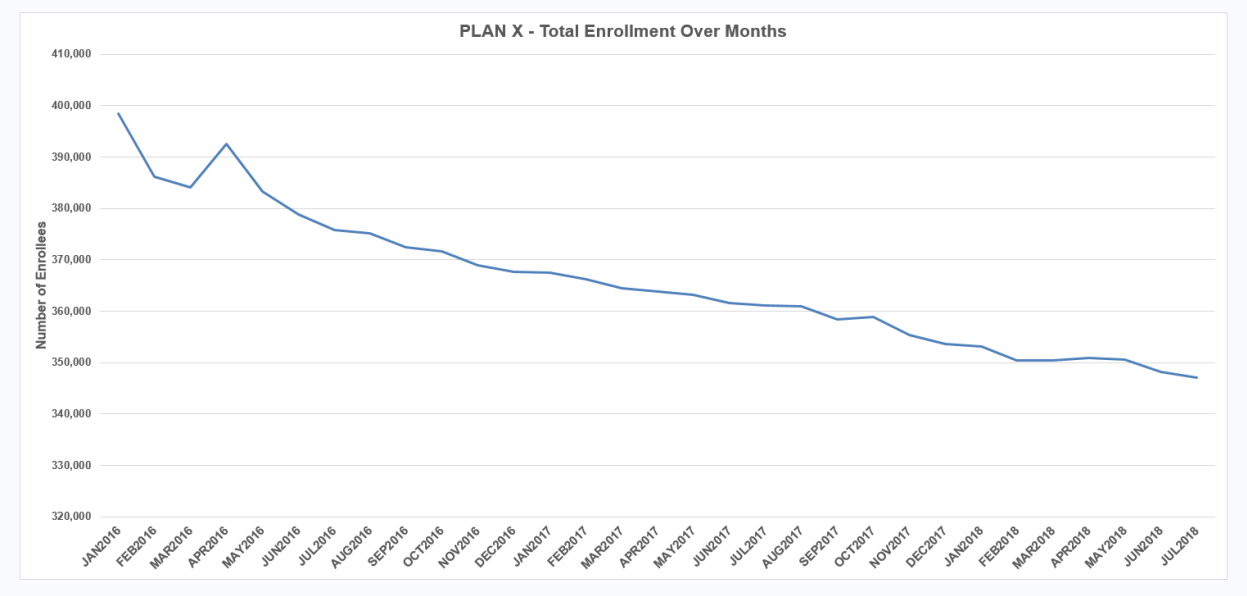


Figure 12 Graph Showing Total Enrollment Over Months

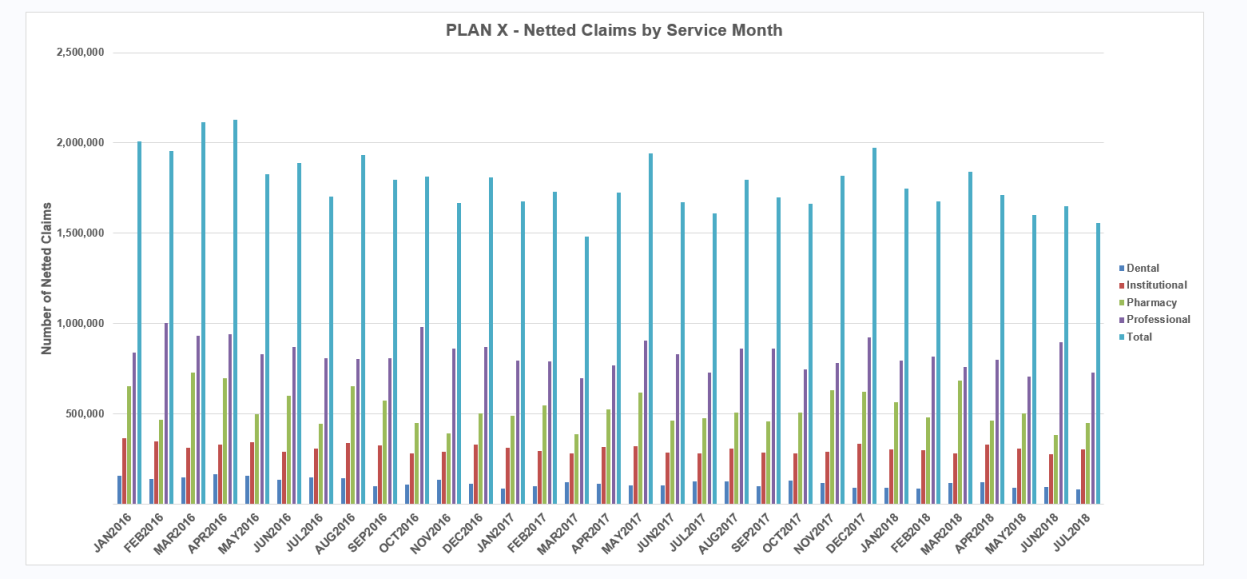


Figure 13 Graph Showing Netted Claims by Service Months

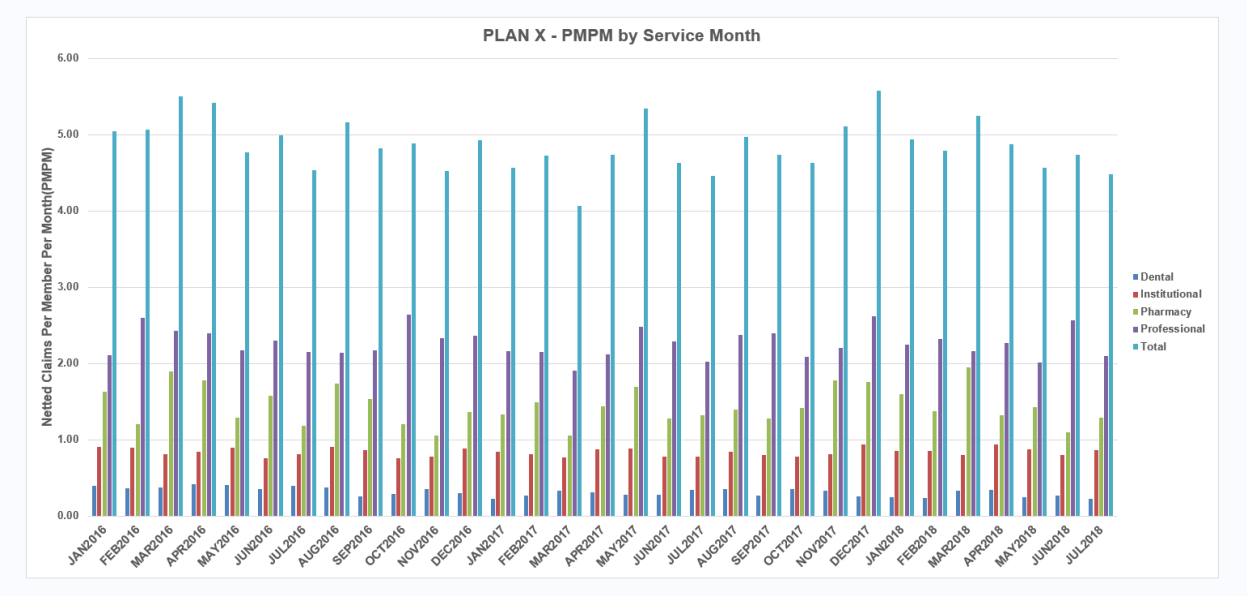


Figure 14 Graph Showing PMPM Claims by Service Month

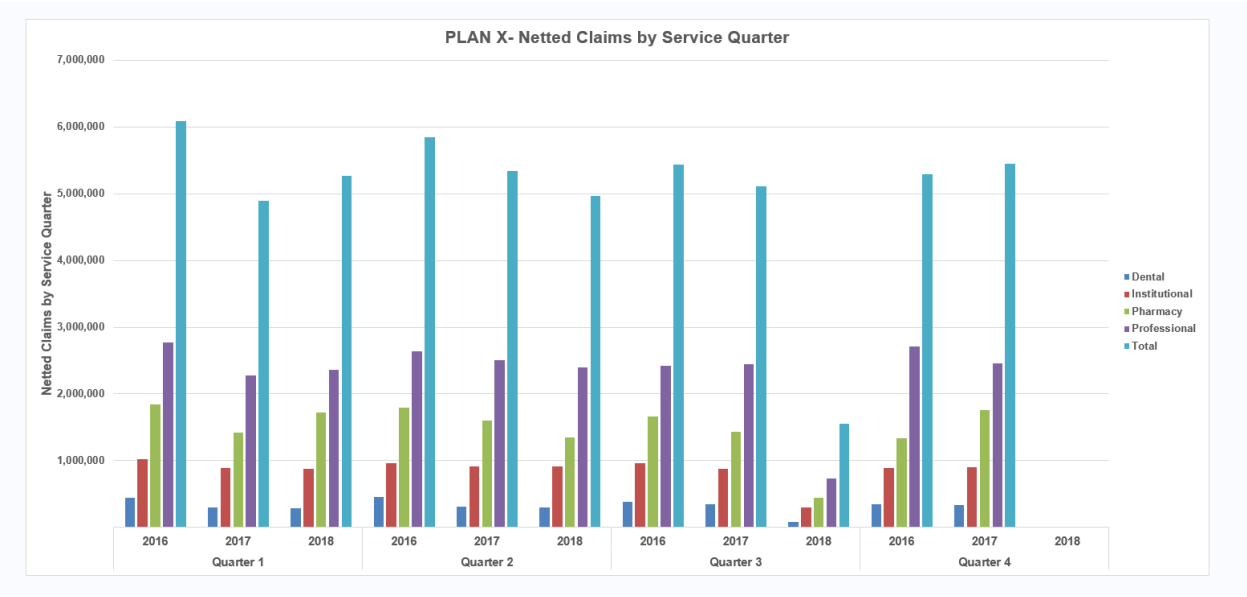


Figure 15 Graph Showing Netted Claims by Service Quarter

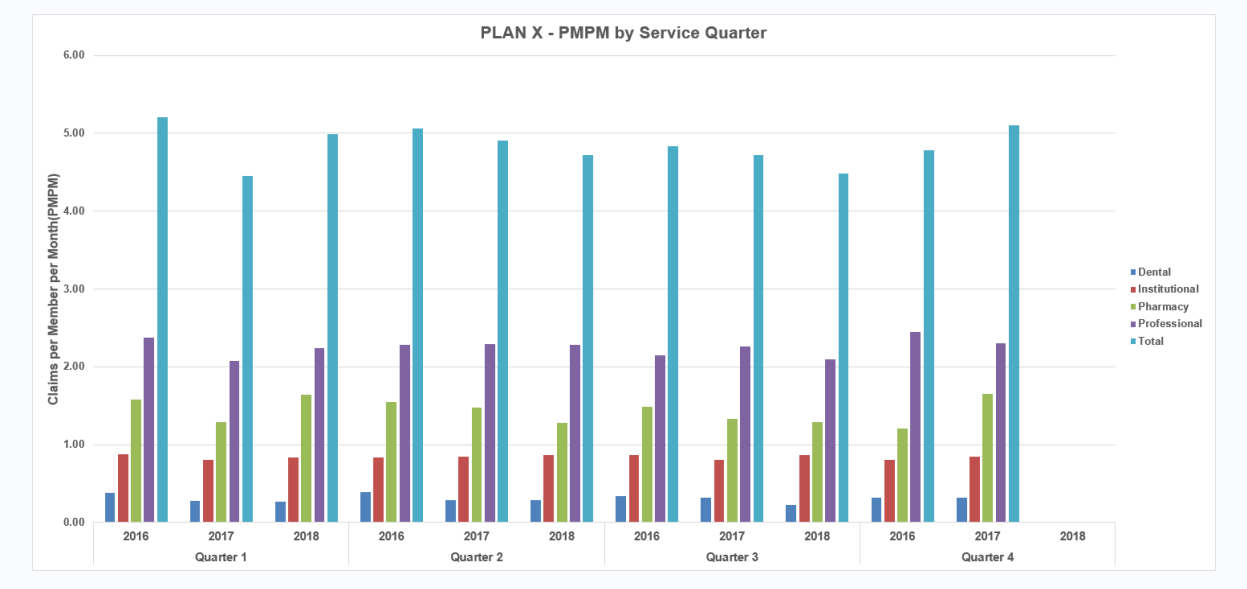


Figure 16 Graph Showing PMPM Claims by Service Quarter

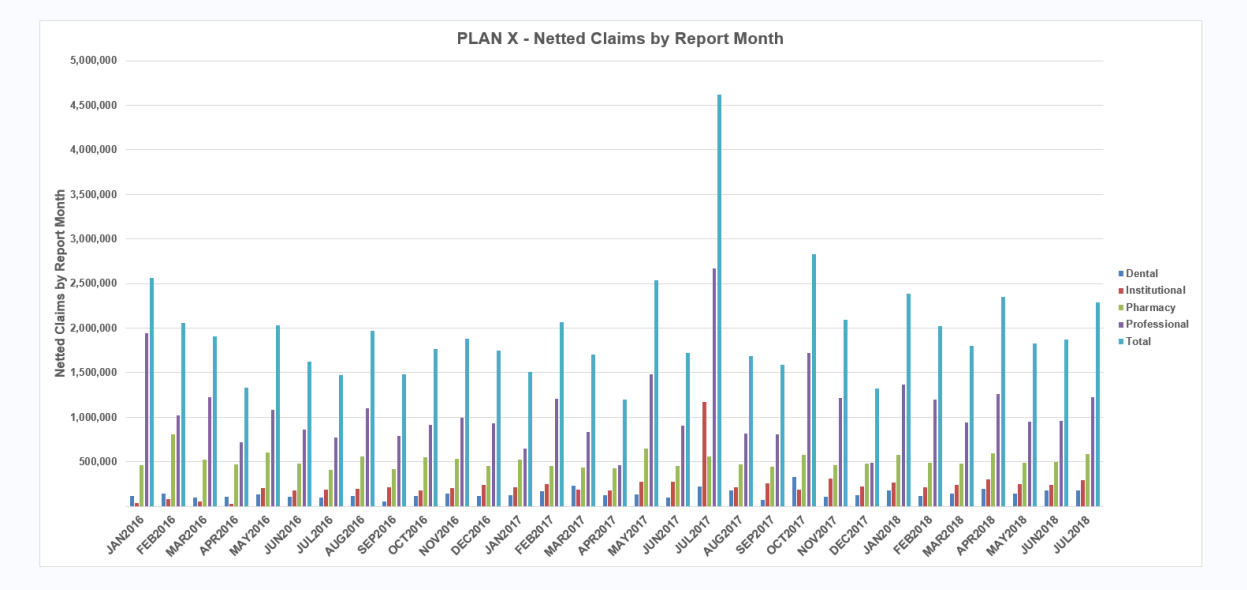


Figure 17 Graph Showing Netted Claims by Report Month

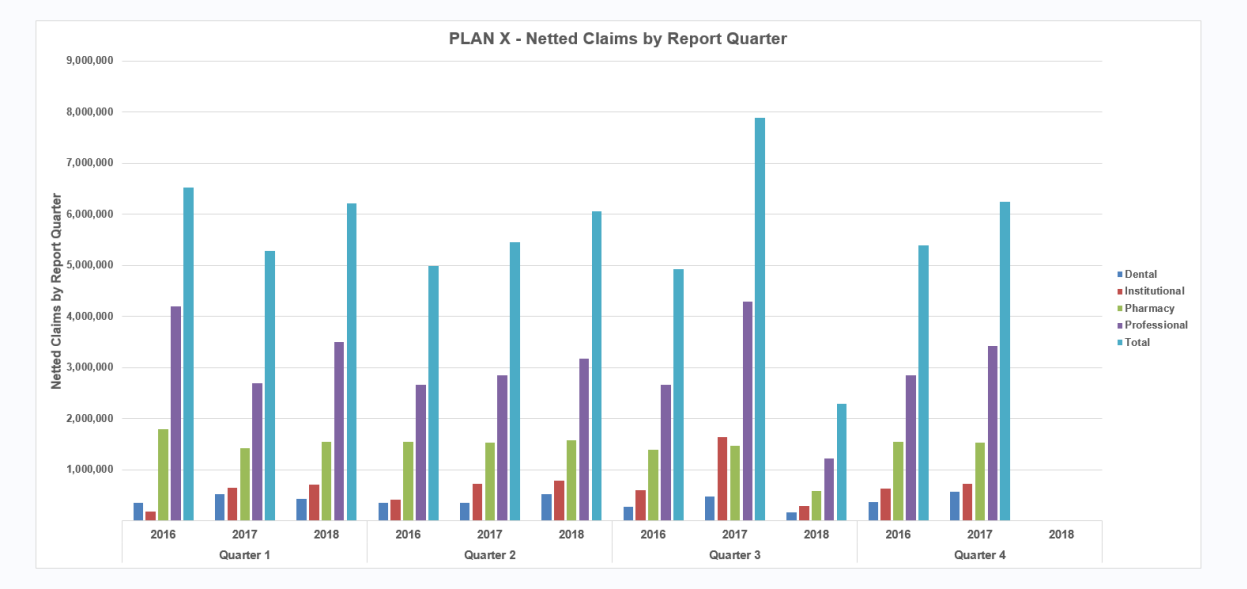


Figure 18 Graph Showing Netted Claims by Report Quarter