**Excel Workshop #3**

**Formal Statistical Inference**

**Workshop materials: asalaslemand.weebly.com/excel-workshop.html**

**Overview of topics:**

1. Add Developer to Excel Ribbon for Opening VBA (Visual Basic for Application)

<http://www.excel-easy.com/vba/create-a-macro.html>

[https://msdn.microsoft.com/en-ca/library/office/ee814737(v=office.14).aspx#odc\_Office14\_ta\_GettingStartedWithVBAInExcel2010\_WhyUseVBAInExcel2010](https://msdn.microsoft.com/en-ca/library/office/ee814737%28v%3Doffice.14%29.aspx#odc_Office14_ta_GettingStartedWithVBAInExcel2010_WhyUseVBAInExcel2010)

1. Add Data Analysis Tool Pack to Excel Ribbon for Statistical Analysis
2. Export OECD data files (Job security: 2013, 2014, and 2015)

<https://stats.oecd.org/>

1. Clean, Merge files and Combine Files
2. Employ Statistical Methods (e.g., t-test, Regression, and ANOVA)

**Instructions**

**Add Developer to Excel Ribbon:**

* Open Excel.
* Go to File > Option > Customize Ribbon

 In the right-hand menu:

 check off the box next to Developer

 click Ok.

**Add Data Analysis to Excel Ribbons:**

* Go to File > Option > Add-ins

 At the bottom, beside the “Manage” box, click on “Go”

 Check the box for “Analysis Toolpak”

 Click Ok.

**Export OECD data files (Job security: 2013, 2014, and 2015)**

* Copy and paste this address into your internet browser: <https://stats.oecd.org/>
* Under Data by Theme, expand the theme: Social Protection and Well-being
* Expand Social Protection and Well-being folder and select Better Life Index
* We will export a customized data for the years 2013, 2014, and 2015.
* The variable of our interest is Job Security.
* For the years 2013, 2014, and 2015 edition of Better Lifer Index do the following:

Click on Better Life Index – Edition 2013

* Click on Customize from the horizontal menu
* Click on Indicator > Unselect all
* Select only Job Security
* Click on view Data.
* Click on Customize from the horizontal menu
* Click on Inequality > Leave Total as selected and deselect the rest
* Click on view Data.
* Click on Export from the horizontal menu
* Choose Text file (CSV)
* Choose customize format
* Under output, deselect code
* Click on download
* Save as JobSecurity2013

(Note that letters J and S are capital in my name file above; please do the same so that you can exactly follow my soon to come steps).

Repeat the above for:

Better Life Index – Edition 2014 Save your file as: JobSecurity2014

Better Life Index – Edition 2015 Save your file as: JobSecurity2015

**Clean OECD Exported Data in Excel**

1. Open JobSecurity2013 excel file.

 The only columns we want to keep are “Country” and “Value”

1. Click on Developer in excel ribbon.
2. Click on Visual Basic.
3. Click on Insert > Module
4. Copy the codes below and paste it in the VBA module that you opened. The following code will keep the columns “Country” and “Value” and will delete the rest.

Sub deleteIrrelevantColumns()

 Dim currentColumn As Integer

 Dim columnHeading As String

 For currentColumn = ActiveSheet.UsedRange.Columns.Count To 1 Step -1

 columnHeading = ActiveSheet.UsedRange.Cells(1, currentColumn).Value

 'Keep Specified Columns

 Select Case columnHeading

 Case "Country", "Value"

 'Delete remaining columns

 Case Else

 ActiveSheet.Columns(currentColumn).Delete

 End Select

 Next

End Sub

1. Run the code.
2. Go to the excel file that you have open: JobSecurity2013
3. Using the VBA code below, we will change the column heading for “Value” to “Job Security”

Sub Change\_ColumnHeading()

 Range("B1").Value = "Job Security 2013"

End Sub

1. Find the number of rows in the data (length of data)

Private Sub CommandButton\_Click()

 'Check the number of rows in worksheet

 lastrow = ActiveWorkbook.Sheets("JobSecurity2013").UsedRange.Rows.Count

 MsgBox lastrow

End Sub

1. Delete a row based on a content value (Delete all the rows with the text "OECD - Total" in column A):

Sub DeleteRowWithContents()

 Last = Cells(Rows.Count, "A").End(xlUp).Row

 For i = Last To 1 Step -1

 If (Cells(i, "A").Value) = "OECD - Total" Then

 Cells(i, "A").EntireRow.Delete

 End If

 Next i

End Sub

1. Find the number of rows in the data (length of data)

Private Sub CommandButton\_Click2()

 'Check the number of rows in worksheet

 lastrow = ActiveWorkbook.Sheets("JobSecurity2013").UsedRange.Rows.Count

 MsgBox lastrow

End Sub

1. Save the excel file as: JobSecurity2013\_Clean (file type: CSV)
2. Open the next file: JobSecurity2014. Repeat the codes above (change only 2013 to 2014)
3. Save the excel file as: JobSecurity2014\_Clean (file type: CSV)
4. Open the next file: JobSecurity2015. Repeat the codes above (change only 2013 to 2014)
5. Save the excel file as: JobSecurity2015\_Clean (file type: CSV)

**Merge Files into One Excel File**

1. Open a new workbook in excel.
2. Open a new VBA module in Developer.
3. We will merge the three cleaned OECD files.
4. Copy and the paste the codes below.

Sub CombineFiles()

 Dim Path As String

 Dim FileName As String

 Dim Wkb As Workbook

 Dim WS As Worksheet

 Application.EnableEvents = False

 Application.ScreenUpdating = False

 Path = " C:\Users\user\Documents\ExcelWShF16\ExcelWKS3\Job Security Cleaned Files"

 FileName = Dir(Path & "\\*.csv", vbNormal)

 Do Until FileName = ""

 Set Wkb = Workbooks.Open(FileName:=Path & "\" & FileName)

 For Each WS In Wkb.Worksheets

 WS.Copy After:=ThisWorkbook.Sheets(ThisWorkbook.Sheets.Count)

 Next WS

 Wkb.Close False

 FileName = Dir()

 Loop

 Application.EnableEvents = True

 Application.ScreenUpdating = True

 End Sub

1. Delete a worksheet in excel:

Sub Delete\_Sheet1()

Sheet1.Delete

End Sub

**Combine worksheets into one**

* 1. Open a new worksheet. In cell A1, type in the following function:

=JobSecurity2013\_Clean!A1

* 1. Copy down the above function till Cell A37.
	2. In cell B1, type the following function:

=JobSecurity2013\_Clean!B1

* 1. Copy down the above function till Cell B37.
	2. In cell C1, type the following function:

=JobSecurity2014\_Clean!B1

* 1. Copy down the above function till Cell C37.
	2. In cell D1, type the following function:

=JobSecurity2015\_Clean!B1

* 1. Copy down the above function till Cell D37.
	2. Save the file as Combined\_JobSecurity.csv
	3. Open the saved file: Combined\_JobSecurity.csv
	4. Go to Data > Data Analysis
	5. We will perform the following:
* ANOVA
* Regression
* Two Samples Independent t-test
* Paired Samples t-test