



## Pivot Tables

Pivot Tables calculate, summarize, and analyze data, allowing you to see comparisons, patterns, and trends. This job aid gives an overview of how to create and customize a Pivot Table and provides examples of when and how an analyst could use them.

### Part 1: Create a Pivot Table

#### STEP 1

#### Open Data Set in Excel

Your data set must have one row of headers (column headings) with all the data below and contain the fields/columns you want to use in your Pivot Table. Do not upload a file with sub-column headings.

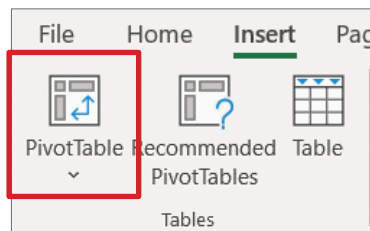
Report #	Start Date	Start Time	USDOT #	MC/MX #	Interstate	Carrier Name	Driver Last Name	Insp. Level	Location Code	Inspector Code	Input Date
IN0000451200	6/9/2022	19:42				1 CENTRAL FREIGHT LINES INC	AGUIRRE	III - Driver-Only Inspection	SR-51	IN0492	6/9/2022
IN0000475027	12/11/2021	8:30	551940	215091	1	STATEWIDE TRANSPORT INC	COOPER	I - Full Inspection	SR-550	IN7334	12/11/2021
IN0000475032	6/16/2022	7:50	344376		1	NEW-WAY MARKETING INC	TRAVIS	II - Walk-Around	SR-60	IN2004	6/16/2022
IN0000562578	1/24/2022	9:30	164311	143594	1	SCHNEIDER NATIONAL BULK CARRIERS INC	GRAHAM	II - Walk-Around	SR-64	IN8291	1/24/2022
IN0000562597	6/29/2022	10:30	843883	370920	1	BUDDY MOORE TRUCKING INC	KOLE	II - Walk-Around	SR-70	IN7334	6/29/2022
IN0000562601	12/19/2021	12:30			0	JPB TRUCKING LLC	COOPER	II - Walk-Around	SR-827	IN1478	12/19/2021
IN0000577055	3/23/2022	12:42			0	BEDSOLE WOOD CORP	TRAVIS	I - Full Inspection	US-136	IN5399	3/23/2022
IN0000577061	3/12/2022	1:19	77767	60271	1	HARPER TRUCK LINE INC	MADSEN	III - Driver-Only Inspection	US-27	IN1478	3/12/2022
IN0000577062	3/9/2022	16:46	1414140		1	JAY DUNHAM TRUCKING	DUNN	II - Walk-Around	US-30	IN2004	3/9/2022
IN0000577076	5/5/2022	23:37	927597	400210	1	EZ LOGISTICS INC	TRAVIS	III - Driver-Only Inspection	US-31	IN6567	5/5/2022
IN0000577078	2/3/2022	17:30	379318	211423	1	HOFFMAN HENRY H.(HOFFMAN TRUCKING)	GRAHAM	III - Driver-Only Inspection	US-35	IN8291	2/3/2022
IN0000577082	11/22/2021	13:11	542703		1	SMITH RICHARD G	TRAVIS	II - Walk-Around	US-41	IN2004	11/22/2021
IN0000577135	6/24/2022	15:19	757655		1	WALKER WORN B TRUCKING	COOPER	I - Full Inspection	TERM	IN5399	6/24/2022
IN0000577136	11/14/2021	7:35	236068	241655	1	TAYLOR PROPANE GAS CO	TRAVIS	III - Driver-Only Inspection	SR-71	IN6567	11/14/2021
IN0000577141	10/31/2021	12:05	154237	138308	1	KLLM INC	GRAHAM	III - Driver-Only Inspection	SR-358	IN1478	10/31/2021

#### STEP 2

#### Insert PivotTable

Click on **any cell with text** in the data set. Doing this prompts Excel to select all the data for your Pivot Table.

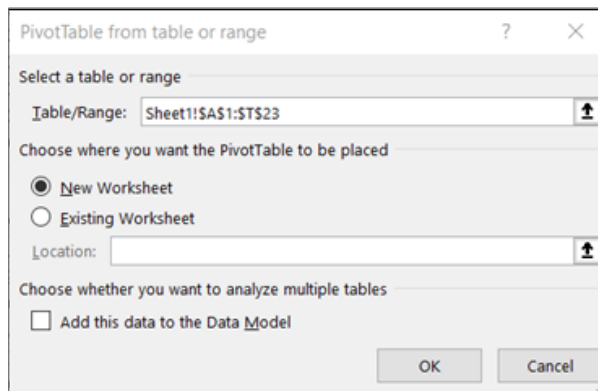
From Excel's top menu bar, select **Insert**, then **PivotTable**.



#### STEP 3

#### Create PivotTable Dialogue Box

Keep the default selections shown below. Click **OK**.



## STEP 4

### A New Worksheet Opens

To the right is a box called **Pivot Table Fields**. To the left is the area your Pivot Table will appear as you build it.

The screenshot shows an Excel spreadsheet with a PivotTable Fields task pane on the right and a PivotTable area on the left. The task pane is titled "PivotTable Fields" and contains a list of fields to add to the report, such as Report #, Start Date, Location Description, Inspector, Code, Insp. Level, Viol., Driver OOS, Vehicle OOS, Cargo Tank Spec. #, HM Insp. Type, and Truck/Bus. Below the list are four quadrants for organizing fields: Filters, Columns, Rows, and Values. The PivotTable area on the left shows a placeholder for "PivotTable2" with instructions: "To build a report, choose fields from the PivotTable Field List".

**A List of Fields:** The column headings from your data set are populated here. Choose which fields to add to your Pivot Table.

**B Quadrants:** Arrange the fields you choose to include in your Pivot Table here. The data you place in each area defines the appearance of the Pivot Table.

**Note:** As you develop the Pivot Table, it will appear to the left in the spreadsheet. If you click the worksheet area outside of the Pivot Table, the PivotTable Fields box disappears. Simply click inside the Pivot Table to make the box re-appear.

## STEP 5

### Build the PivotTable

In the PivotTable Fields box, drag and drop the appropriate field(s) to the **Rows**, **Columns**, **Values**, and **Filters** quadrants. Data is organized by the first field in each quadrant and then subsequent fields. Moving fields among the quadrants will change the data view.

- A Rows:** Start to build your report in the Rows quadrant. The field(s) you drag here are those you want to show up in each row.
- B Columns:** The field(s) you drag to the Columns quadrant are those you want to appear across the top of the Pivot Table.
- C Values:** The Values quadrant supports the data you want to appear in the body of the table. The Values quadrant calculates data. The field(s) you drag here are typically the ones you want to measure by adding or counting.
- D Filters:** This is where you add field(s) that will act as filters to your Pivot Table.

There are two options for placing fields in the quadrants.

**Option 1:** Drag and drop the fields into the quadrants if you want to control where to place the fields.

**Option 2:** Use the checkbox next to each field if you want Excel to assign the field to a quadrant.

**Note:** Remember to Save your PivotTable by selecting **File**, then **Save**.

The screenshot shows the 'PivotTable Fields' task pane. At the top, it says 'Choose fields to add to report:' followed by a search box. Below is a list of fields with checkboxes: Report # (checked), Start Date (checked), Start Time (unchecked), USDOT # (unchecked), MC/MX # (unchecked), Interstate (unchecked), Carrier Name (unchecked), Driver Last Name (unchecked), Insp. Level (unchecked), Location Code (unchecked), and Inspector Code (checked). Below the list is the instruction 'Drag fields between areas below:'. The four quadrants are labeled: D (Filters) containing 'Start Date', B (Columns) which is empty, A (Rows) containing 'Inspector Code', and C (Values) containing 'Count of Report #'. At the bottom, there is a 'Defer Layout Update' checkbox (unchecked) and an 'Update' button. A bracket on the right side of the pane is labeled 'List of Fields' and another bracket is labeled 'Quadrants'.

## Part 2: Explore the Pivot Table

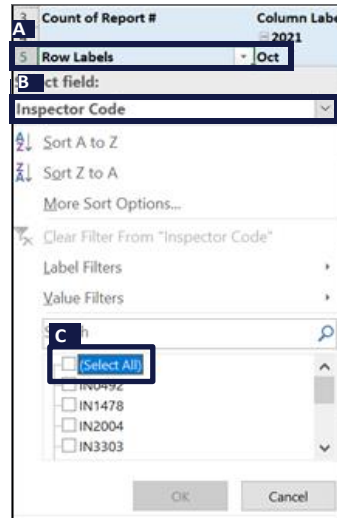
Change how the data displays in the Pivot Table.

### OPTION 1

#### Customize the Data with Filters

Apply filters to rows to view activity for a selected inspector.

- A** In this Pivot Table example, click on the **Row Labels** down arrow to open the **Row Labels** filter.
- B** There is a Select field drop down menu if there are subcategories to your rows. This allows you to filter by row or sub-category.
- C** Uncheck the **(Select All)** checkbox. Check the box **next to an inspector** to view the types and number of inspections completed by a specific inspector(s), and then click **OK**.



### OPTION 2

#### To Reset the Row Filter

Click on the **Row Labels** filter button to open the **Row Labels** filter.

Check the **(Select All)** checkbox, and then click **OK**.

Count of Report #	Column Labels		2022								Grand Total
	2021	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	
Row Labels	IN5399	14	13	6	1	2	21	13	13	16	99
	I - Full Inspection	3	6	2	1	1	6	6	2	6	33
	II - Walk-Around	4	2	1		1	7	6	7	5	33
	III - Driver-Only Inspection	7	5	3			8	1	4	5	33
<b>Grand Total</b>		<b>14</b>	<b>13</b>	<b>6</b>	<b>1</b>	<b>2</b>	<b>21</b>	<b>13</b>	<b>13</b>	<b>16</b>	<b>99</b>

### OPTION 3

## Create a Pivot Chart

In Excel's top menu bar, select **Insert**, and then **Pivot Chart**.



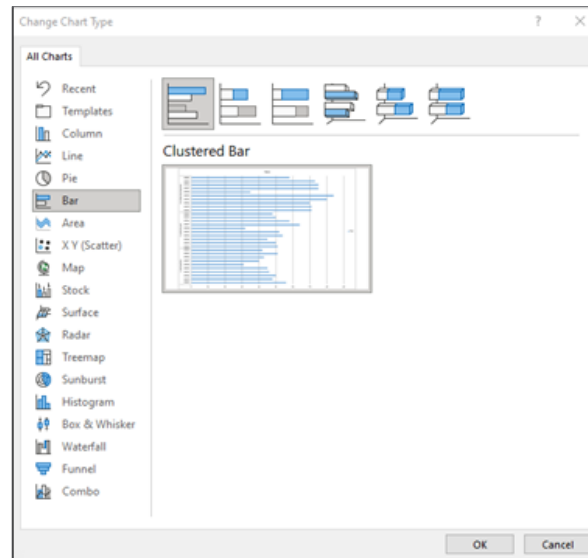
### OPTION 4

## Pivot Chart Options

One option is to create a Bar Graph. Select **Bar** in the dialogue box and choose a **Clustered Bar**. Then click **OK**.

Clicking on **any cell within the Pivot Table** synchronizes the Pivot Table and the Pivot Chart. When you change any filters in the Pivot Table, the Pivot Chart updates automatically. This means a change made to one is reflected in the other.

**Note:** Remember to save your Excel file by clicking **File**, then **Save**.



## Part 3: When to use a Pivot Table

The examples below demonstrate when to use a Pivot Table and how it can assist in a given situation.

### EXAMPLE 1

#### Bus Inspection Results

**Using a Pivot Table:** Shows results of annual inspections (Level VII) on school buses posted to a public website. These are used primarily by the public to address concerns with their transportation providers, as well as by schools to decide which provider to use.

**Result:** Shows the number of passed, failed, and total inspections for a date range.

**Options:** When asked for copies of failed inspections, double click on the cell of the failed inspections record, it will open a separate tab with those record details. Required inspections are available to print. The pivot table saves you from having to write a query in SNET.

The screenshot shows the 'PivotTable Fields' task pane. The 'Choose fields to add to report:' section has a search bar and a list of fields. The following fields are checked: Report #, Start Date, Input Date, Import Date, Last Edit Date, Start Time, End Time, Inspector Code, USDOT #, MC/MX #, and Carrier Name. Below this, the 'Drag fields between areas below:' section is divided into Filters, Columns, Rows, and Values. The Columns area contains 'Special Study 5'. The Rows area contains 'Carrier Name' and 'Location Description'. The Values area is empty. At the bottom, there are checkboxes for 'Defer Layout Update' and an 'Update' button.

### EXAMPLE 2

#### Inspection Timeliness Records by Inspector

**Using a Pivot Table:** Helps to review the timeliness of inspection data, by identifying the inspectors and agencies/zones that are not submitting inspection records on time.

- Research issues/ask questions from there: issues with records getting in or out of SNET; connectivity issue (in rural area); records not hitting their database (saved but not submitted).

**Result:** Data is broken down by inspector and shows the number of days to upload for each inspection.

**Options:** Show counts for just one inspector: use the row labels filter and select the inspector.

- To open inspection record, double click on the number in the Sum of Days Old column, it will open a separate tab with the record details.

- Create a pivot chart to see how displaying data in a chart gives the data a different perspective.

- Can either show all agencies or select only the top number of agencies that have the highest count of late records.

The screenshot shows the 'PivotTable Fields' task pane. The 'Choose fields to add to report:' section has a search bar and a list of fields. The following fields are checked: RECORD EVALUATED BY, RPTNUM, INSP DATE, UPLOAD DATE ORIG, DAYS OLD, SAFETY INSPECTOR KEY, REPORT STATE, INSP START TIME, UPLOAD DOT NUMBER, and DOT NUMBER. Below this, the 'Drag fields between areas below:' section is divided into Filters, Columns, Rows, and Values. The Columns area contains 'Sum of DAYS OLD'. The Rows area contains 'SAFETY INSPECTOR ...' and 'RPTNUM'. The Values area is empty. At the bottom, there are checkboxes for 'Defer Layout Update' and an 'Update' button.

### EXAMPLE 3

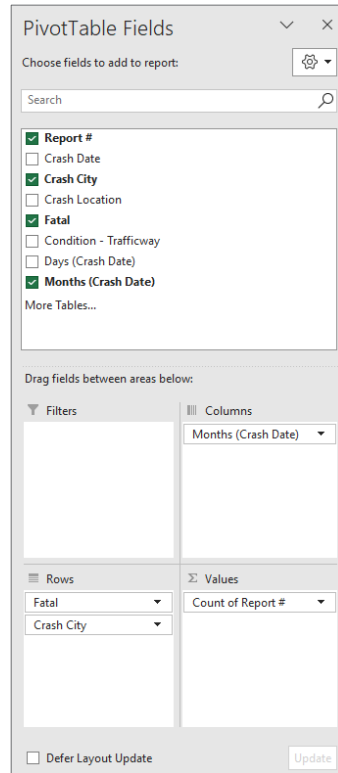
## Fatal and Non-Fatal Crash Records by Month and Area

**Using a Pivot Table:** Helps to understand in which areas of the State crashes are occurring.

**Result:** Data is broken out by fatal and non-fatal crashes, and for each month shows the number of crashes for each area location.

**Options:** Show counts for just fatal records: use the row label filter and select fatal records.

- Show counts by street name instead of location area: remove Crash City from the Pivot Table Fields box, and replace it with Crash Location.
- Show counts grouped by street name instead of by fatal and non-fatal: in the rows quadrant, move Fatal below Crash Location.
- Show records for only a two-way not divided street: add Condition-Trafficway to the filters quadrant. From the new Condition-Trafficway filter option, select the Two-way, not divided street option.
- Create a pivot chart to see how displaying data in a chart gives data a different perspective.



### EXAMPLE 4

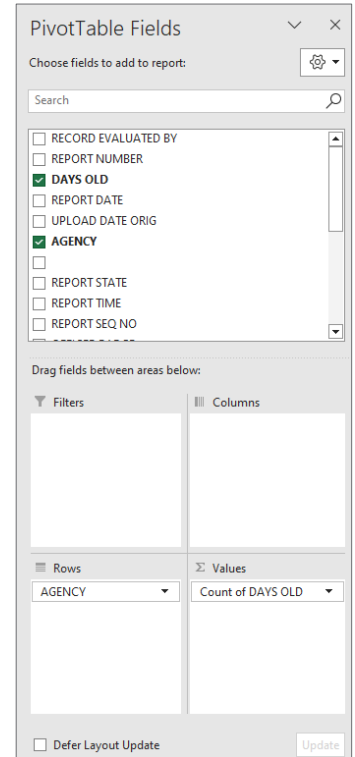
## Crash Timeliness Records by Area

**Using a Pivot Table:** Helps to review the timeliness of inspection data by identifying the inspectors and agencies/zones that are not submitting crash records on time.

**Result:** Data is broken down by agency and shows the count of crash records that were uploaded late.

**Options:** Sort pivot table results in descending order to group together and view the agencies with the highest number of late records. Use Row Labels, More Sort Options, Descending by Count of Days Old.

- Create a pivot chart to see how displaying data in a chart gives the data a different perspective.
- Can either show all agencies or select only the top number of agencies that have the highest count of late records.



## EXAMPLE 5

### Missing Fields on Inspection Reports by Agency

**Using a Pivot Table:** Helps to determine which agencies are not filling in the location field (county) on the inspection report. Filling in this field will auto-populate the State and Country Code.

- Will need to add Last Name to the Excel file before creating the pivot table.

**Result:** Data is broken down by agency and shows the count of inspection records that are missing the location field.

**Options:** View the records for a particular agency: double click on the number in the Sum of Days Old column, it will open a separate tab with the record details.

- Create a pivot chart to see how displaying data in a chart gives the data a different perspective.

## EXAMPLE 6

### Full Inspection Summary

**Using a Pivot Table:** Shows the full inspection summary, including all levels of inspections plus passenger-carrying inspections, Hazardous Materials (HM), and other bulk. This can help you check that inspectors are meeting the requirements to keep their HM certification.

- Some inspectors will call during an inspection asking for their count to see if they need to conduct an HM inspection.

**Result:** Data is broken down by inspector, shows the number of inspections completed for each inspection level/type, and the number of bulk or non-bulk inspections.

**Options:** To organize information by HM inspection type: use column labels filter to view only a specific inspection level and move Inspector Code under HM Inspection Type in Rows quadrant.

- Turn the results table into a pivot chart, which automatically updates with changes to the pivot table.