**Wisconsin Department of Children and Families**

eWReport Practice Group – YJ Referral Report
Session Three: Pivot Table Basics


Do I need a Pivot Table?

Pivot Tables are a tool used in Excel to quickly summarize large amounts of data. With a Pivot Table, you can analyze and explore your data efficiently from one sheet. You'll have the most success using a Pivot Table with sheets that contain granular data like the Youth_Detail and Referral_Detail sheets in the YJ Referral eWReport. Sheets that already include summary data (like the Referral_Summary or County_Referral_Comparison) are not a great fit for this particular tool.

Create a Pivot Table

1. **Open the Insert Ribbon.** Select cell A1 on the "Referral_Detail" sheet and then click "Insert" at the top of the page to reveal the Insert Ribbon.

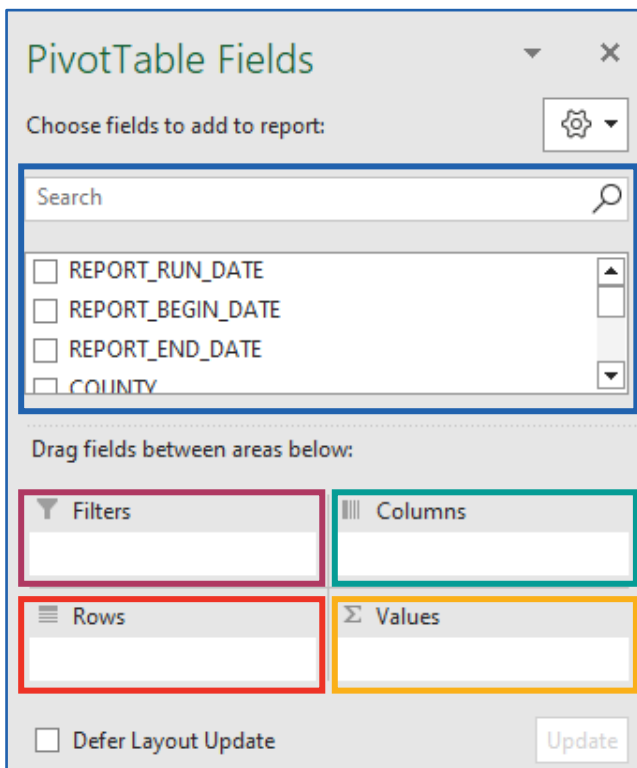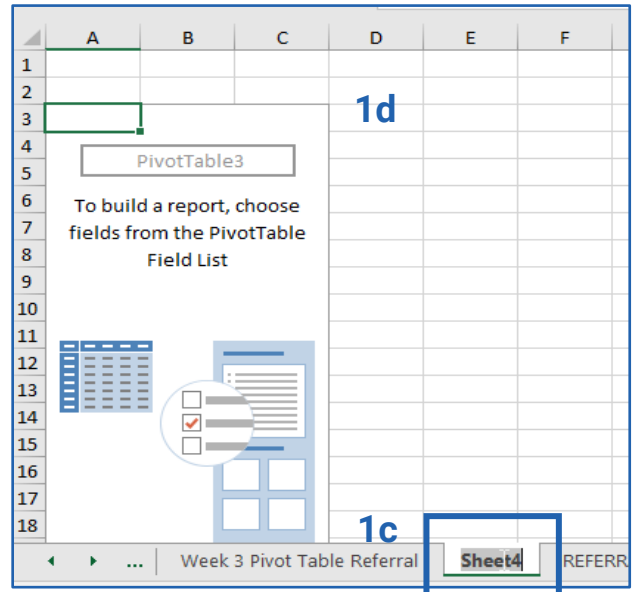   **1a. Click the "Pivot Table" icon** in the Insert Ribbon.
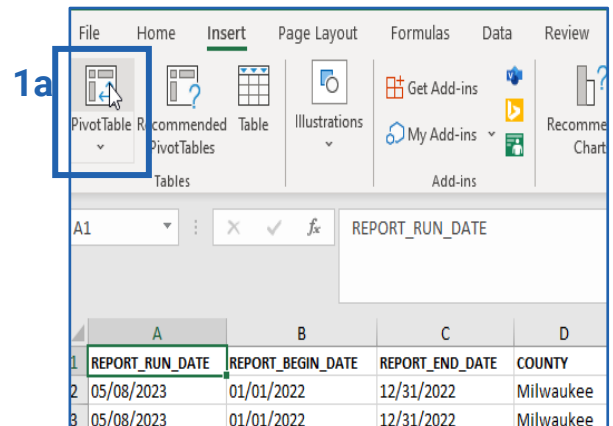
   1b. The menu at the right will open, prompting you to **select data to include in the pivot table**. The "Table/Range" box should already be populated, and a dashed line will appear around your data in the Referral_Detail sheet, indicating that this data has been selected. In the pop up menu, ensure that "New Worksheet" is selected, as this will insert your Pivot Table in a new Excel worksheet. Click "OK."
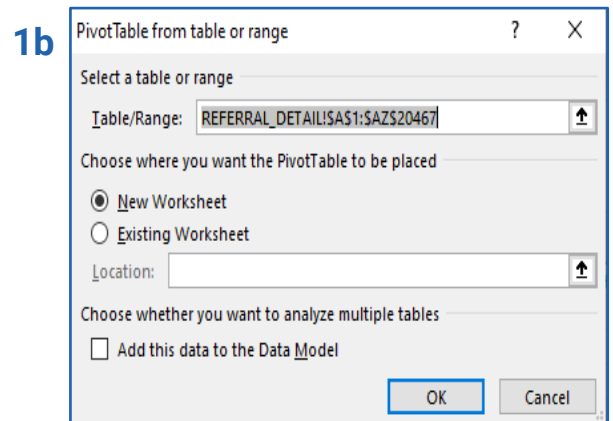
   TROUBLESHOOTING: If you run into issues selecting a range, follow the instructions from the Excel Basics guide to add a table to the Referral Detail sheet. You can then select that table in the Table/Range box and follow the rest of the instructions in step 1b.

Pivot Tables

1c. You should see a new sheet added to your workbook (in our example called "Sheet 4"). **Double-click the title of this new worksheet to rename the tab.** You may choose your title, we used "Week 3 Referral Pivot Table" in group.

1d. In your new sheet, you will notice a blank Pivot Table (shown right). This is where the columns and rows of your Pivot Table will appear once you have selected the variables you would like to view. You should also see a Pivot Table Fields menu on the right side of your window (also shown below). This is where you will select variables (column headers) that appear in the "Referral_Detail" sheet to fill in your Pivot Table for analysis.

PivotTable Fields

Choose fields to add to report:

Search

- [ ] REPORT_RUN_DATE
- [ ] REPORT_BEGIN_DATE
- [ ] REPORT_END_DATE
- [ ] COUNTY

Drag fields between areas below:

▼ Filters	▥ Columns
☰ Rows	Σ Values

- [ ] Defer Layout Update   Update

NOTE: You do not need to drag fields into all four boxes, but least one box should have a field in it to create a Pivot Table.

TIP: Repeat this process with the Youth_Detail sheet to create a Pivot Table you can use for youth-level analysis.

What are PivotTable Fields?: This menu contains fields you will use to fill in your Pivot Table.

■ **Data Fields & Search Bar:** This box contains fields, or the names of column headings that are included in the sheet connected to your Pivot Table (in this case, the Referral Detail tab). Pull fields from this box into the boxes below to fill in your table. You can also use the search bar to more quickly locate a specific field.

■ **Filters:** When you drop a field here, it will allow you to filter out specific data that you do not want included in your analysis.

■ **Columns:** Inserting a field here will result in all the possible values of this variable to appear as column labels (useful for things that are part of a short set like gender or race categories).

■ **Rows:** Inserting a variable here would result in all the possible values of this variable to appear as row labels.

■ **Σ Values:** Use this box to select a field for Excel to calculate. The values field works best with numeric variables as you can sum (add up), count, or even calculate the percentages for rows or columns in your table.

Using a Pivot Table to organize Delinquency Referral Offense Types and Descriptions

2. **Add a Filter.** Type "delinquency" into the search bar in order to locate the field "Referral_Delinquency" (alternatively, scroll through the list of column headers from the Referral_Detail tab to locate it).

> **Fields Needed for Most Common Delinquency Offense Types & Descriptions**
> - **Pull Data from:** Referral Detail Sheet
> - **Filter:** REFERRAL_DELINQUENCY = Yes
> - **Rows:** Offense Type; Offense Description
> - **Values:** Count of REFERRAL_ID

2a. Once the variable "Referral Delinquency" is visible, **click and hold the field name and drag it down to the empty "Filter" box**. Drop it in the box by releasing your cursor. You will know this has worked when you see a filter appear in your sheet.

2a
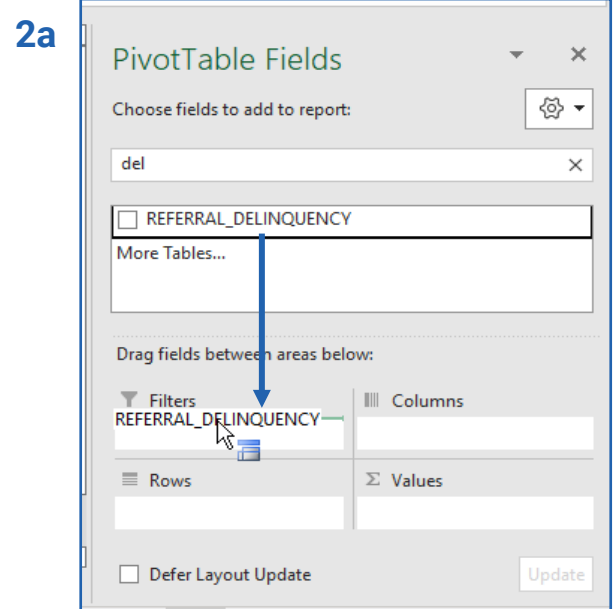
2b. Below is a zoomed in image of the filter bar that should have appeared in your worksheet. **Click the gray arrow that appears next to (All).** A drop down menu should appear. **Click on the word "Yes" so it is highlighted and then click "OK."** Turning on this filter will only display Delinquency referrals in your Pivot Table. You should also see (All) has been changed to (Yes).

2b
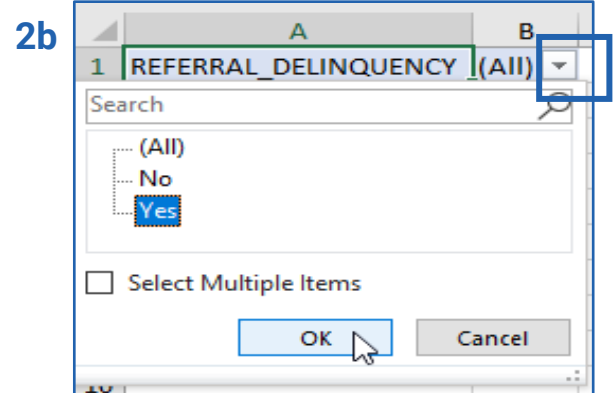
3. **Add a Value.** Return to the search bar and find the variable "Referral ID" by using the search bar or scrolling through the options listed.

3a. Once the variable "Referral ID" is visible, **click and hold the field name and drag it down to the empty Σ Values box.** You will know this has worked when a number appears on your Excel sheet as shown below.

3a

3b. Your table is now showing you the *sum* of referrals from your county with a "Yes" in the Referral_Delinquency column during your selected reporting period. However, because Referral IDs are like a 7-digit unique name for each referral, we want to know the *count* of Referral IDs. **Click the arrow next to Sum of Referral_ID and in the menu that opens, click on "Value Field Settings."**

3c. **In the pop up window that appears, select "Count."** Then click ok to close the pop up window. You should now see the count of Referral IDs displayed in your sheet (and your number will likely be much smaller than our screenshot as this is a count of all 2022 delinquency offenses for the entire state of Wisconsin).

NOTE: Using a Distinct Count in the Value Field. The distinct count variable is most helpful when you are interested in counting *referrals* rather than *offenses.* Remember, despite its name, in the Referral_Detail sheet, 1 row = 1 offense. The distinct count formula we set up with the IF formula assigns a 1 to only one of the offenses associated with a referral, while the rest are assigned a 0. This means when summing the distinct count column, any offenses that were assigned a 0 will not be calculated in the total sum and you could miss some offenses.

4. **Add Rows.** Return to the search bar and find the variable "Offense_Type." Once the variable "Offense_Type" is visible, **click and hold the field name and drag it down to the empty Rows box.** You will know this has worked when you see rows have been added to your Pivot Table.

   4a. The row labels (in the first column of your table) are all of the offenses that were included in delinquency referrals from your county. The screenshot below is statewide data, so it is likely your list will not be quite as long. The value in the second column of your table is the count of each of these offenses. **Make this list easier to review by clicking the gray arrow in the Row Labels header.**

4b. In the menu that appears, **select "More Sort Options..."**(as shown below).

4c. A pop-up menu will appear as shown right. Click the radio button next to "Descending (Z to A) by:" Then using the drop down, click "Count of Referral_ID." This will prompt Excel to sort your Pivot Table by count of offenses from largest to smallest.

4d. Your Pivot Table will then show the most common delinquency offenses in your county. Below you can see this information for the state.

> **NOTE: Offense Categories, Types, and Descriptions**. This eWReport organizes offenses into 3 tiers. Offense categories and types are set in accordance with standards set by the FBI's Uniform Crime Reporting (UCR) program, while offense descriptions correspond with a specific Wisconsin offense statutes. Use of specific statutes can vary from county to county, so DCF frequently uses offense categories and types when sharing data to facilitate statewide and nationwide comparisons.
>
> When deciding whether to use offense types or descriptions for your analysis, consider your purpose and your audience. Depending on level of understanding of offense statutes of your audience or if your goal is to facilitate statewide comparison, it may be best to use offense types in your analysis.

5. **Add Secondary Rows.** Return to the search bar and find the variable "Offense_Description." Once the variable Offense_Description is visible, **click the checkbox next to the field name.** You will know this has worked when you see Offense_Description in the rows box below "Offense_Type" and nested rows have been added to your Pivot Table (see below).

   5a. To sort Offense Descriptions from largest to smallest, right click in offense count column (as seen in the below) and in the menu that appears click sort. From the available options, click "Sort Largest to Smallest." All offenses should now be sorted from largest to smallest.

TIP: Order matters! Make sure expansive categories are listed in the top of a box and narrower categories lower in a box. This will ensure the drilldowns in your table work properly and your data is sorted in a way that is easy to read.

Clearing Your Pivot Table

6. To make a new calculation with your Pivot Table, you'll need to clear some or all of the fields in the Pivot Table Fields menu. There are two strategies you can use to clear fields:

    6a. Clear All: Click on the "Pivot Table Analyze" ribbon, find the "Actions" group, and then click on "Clear." In the dropdown that appears, click "Clear All." You will know this has worked when you see a blank Pivot Table on your screen (like the one in step 1d).

    6b. Clear Selected Fields: If you want to keep a few fields in place, you can individually remove select fields. Navigate to the Pivot Table Fields menu. Click on the field you'd like to remove and drag it out of the box. You can also uncheck the Field name in the Field list.

Breaking Down Delinquency Referrals by Race and Gender

7. **In the Pivot Table Fields menu, find and drag the fields listed in the box to the right into their corresponding areas.** Once completed, your Pivot Table should look similar to the table included below (but will not be identical since the data in your sheet will be unique to your county).

> **Fields Needed for Distribution of Delinquency Referrals by Primary Race and Gender**
> - **Pull Data from:** Referral Detail Sheet
> - **Filter:** REFERRAL_DELINQUENCY = Yes
> - **Columns:** Gender
> - **Rows:** Primary Race
> - **Values:** Sum of Distinct Count*
>
> *Distinct Count is a variable we created using an IF Formula. If you are missing this field, refer to the instructions "Distinct Counts with IF Formula and Filters."*

REFERRAL_DELINQUENCY	Yes			
Sum of Distinct Count	Column Labels			
Row Labels	Female	Male	Unknown	Grand Total
American Indian/Alaska Native	276	343	4	623
Asian	14	64	2	80
Black/African American	877	2453	24	3354
Declined	2	5		7
Native Hawaiian/Other Pacific Islander	6	24		30
Not Documented	190	538	72	800
Unable to Determine	76	242	11	329
White	1805	4699	47	6551
Grand Total	**3246**	**8368**	**160**	**11774**

7 (Black/African American row)

What is this Pivot Table showing me? This table is displaying the recorded race and gender identity for unique delinquency referrals received in your county during the reporting period. In one row from our example above we can see:

- A total of 3,354 delinquency referrals were received for Black youth in 2022.
    - 877 delinquency referrals were for Black female youth.
    - 2,453 delinquency referrals were for Black male youth.
    - 24 delinquency referrals were for Black youth whose gender was documented as unknown.

From this analysis, we learn that while there were many Black youth referred to the YJ system for Delinquency in 2022, about three quarters of those referrals were for Black males.

NOTE: The Primary Race Variable is what the state uses to report on race in YJ Reporting. Some important things to know:

- **Multi-Racial Youth:** The YJ Intake & Referral Report doesn't have a way to indicate multi-racial youth like CPS reporting as we only include "Primary Race" and not Secondary Race, etc.
- **Hispanic/Latino Youth:** There is a separate variable called "Hispanic" that includes information on ethnicity, but a significant amount of data is missing which is a challenge when analyzing outcomes for these youth.
- **Missing Race Data:** Declined, Not Documented, and Unable to Determine are values that are grouped together in YJ reporting and we refer to the race of these youth as "unknown." While a youth can decline to disclose their race, the vase majority of these "unknown youth" have their race documented as "unable to determine." If you notice a significant number of these youth in your county, if you correct the information in sacwis the information will be included in the YJ Intake & Referral Report when it is run the next business day. This proportion of youth was about 12% for the state in 2022, something that we continue to monitor and are concerned with.

Additional info about collecting racial and ethnic data is available in this DCF Desk Guide.

8. **Calculate the percentage of a total.** You can change the raw counts of referrals to percentages of a total to make your analysis more compelling or easier to understand. In the Pivot Table Fields menu, click on the arrow next to "Sum of Distinct Count" in the Values box and select "Value Field Settings…" in the menu that pops up.
    8a. In the pop up box, click on the "Show Values As" tab.
    8b. From the drop down list that appears, click on "% of Grand Total" and then click ok.
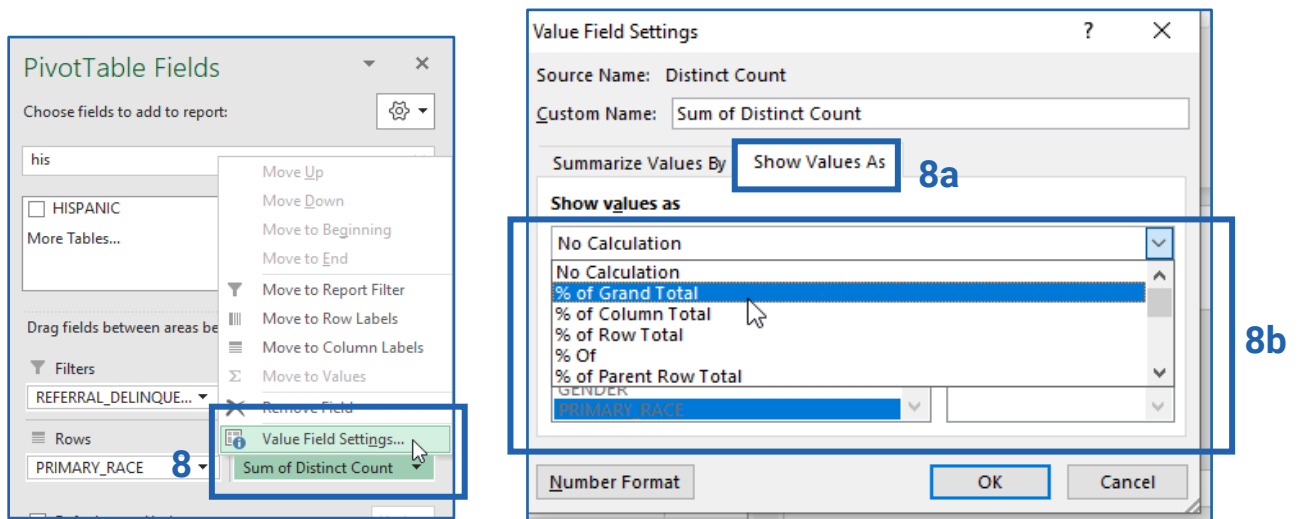
TIP: The Value Field Settings menu is a powerful tool!

- The **Summarize Values By** tab allows you to easily display the count, average, standard deviation, or several other calculations instead of a sum in your Pivot Table.
- The **Show Values As** tab you can quickly calculate the percentage of an entire table (grand total), of a column (helpful to understand the racial composition of each gender category), or of a row (helpful to understand the gender composition of each racial group).

The best way to learn how this menu works is to play around with it!

8c. Your Pivot Table should now look similar to the example below. Here's what we learn from our example summary:

- In reviewing the Grand Total *Row*, we can see 71.07% of delinquency referrals received in 2022 were for male youth.
- In reviewing the Grant Total *Column*, we can see 55.64% of delinquency referrals received in 2022 were for White youth.
- The two largest groups in this Pivot Table are White males (associated with 39.91% of delinquency referrals) and Black males (associated with 20.83% of delinquency referrals).
- The largest group of female youth who received a delinquency referral in 2022 were White.

8c

REFERRAL_DELINQUENCY	Yes			
Sum of Distinct Count	**Column Labels**			
Row Labels	**Female**	**Male**	**Unknown**	**Grand Total**
American Indian/Alaska Native	2.34%	2.91%	0.03%	5.29%
Asian	0.12%	0.54%	0.02%	0.68%
Black/African American	7.45%	20.83%	0.20%	28.49%
Declined	0.02%	0.04%	0.00%	0.06%
Native Hawaiian/Other Pacific Islander	0.05%	0.20%	0.00%	0.25%
Not Documented	1.61%	4.57%	0.61%	6.79%
Unable to Determine	0.65%	2.06%	0.09%	2.79%
White	15.33%	39.91%	0.40%	55.64%
Grand Total	**27.57%**	**71.07%**	**1.36%**	**100.00%**

Optional Review

If you'd like to see any of the Pivot Table skills outlined above demonstrated in a short video, check out the following from Technology for Teachers and Students:

Advanced Excel – Creating Pivot Tables in Excel

Advanced Excel - Recommended Pivot Tables

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