Massachusetts Department of Public Health

DPH

MDPH Tuesday Infectious Disease Webinar Series

February 10, 2026

Scott Troppy, MPH, PMP, Senior Surveillance Epidemiologist

Kate Hamdan, MPH, Surveillance Epidemiologist

Makayla Petty, MPH, Epidemiologist, Greater Boroughs Partnership for Health

Gruha Patel, BDS, MPH, Regional Epidemiologist, Melrose Health Department

Overview of Today's Discussion

1. Which reports are accessible to you in MAVEN?
2. Why are MAVEN reports useful?
3. Best MAVEN reports for PivotTables
4. Overview of how to run a report in MAVEN
5. Overview of PivotTables and basic steps
6. Presentations and demonstrations from local epidemiologists
    - Makayla Petty - MAVEN Flu and COVID data use case
    - Gruha Patel – MIIS Vaccine data use case

Which Reports can you access?

Report access will vary depending on the role and responsibilities of the user in MAVEN. For example: Local Board of Health staff who is responsible for disease case investigation and following up will only have access to LBOH related reports.

Examples of Commonly run LBOH reports:

- LBOH Basic Line List
- LBOH Events by Time Period
- LBOH Count – Events Per Disease and Classification in Jurisdiction
- LBOH Event Information Extract by Disease Category and Region

Why are MAVEN reports useful?

- Reports provide a view of all events within a jurisdiction or facility that exist in MAVEN regardless if they're recent, old, or the investigation status is pending or completed.
  - Reports include case information, demographic information, case counts, and notes.

- Reports provide the ability to view your data in aggregate or list format.

- Reports provide a timely view of your data to allow for quicker response and follow-up.

- Reminder, we covered this on a MAVEN webinar about reports: Webinar on MAVEN Reports

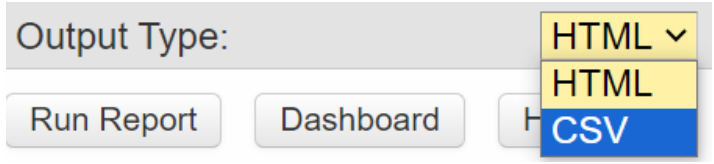
Best Reports for PivotTables

- The best type of report to use in a PivotTable is a **case-level** report formatted as a list.

- Microsoft Excel tables are already in list format and are good candidates for PivotTable source data.

CaseID	Disease	Disease Classificat	Event Date	Create Date	First Name	Middle Name	Last Name	County	CRF_COMPLETE	CRF_COMPLETED_BY
100002504	MENUT	CONFIRMED	3/7/2023	3/7/2023	Tammy	T	Menutest	Middlesex County	YES	LBOH
100003870	BAB	PROBABLE	9/1/2023	12/8/2023	Frank	A	Babtest	Middlesex County	YES	LBOH
100003878	LEG	CONFIRMED	9/1/2023	12/8/2023	Joey	I	Legtest	Middlesex County	YES	LBOH

- Most MAVEN reports contain case-level information in list format. Reports can be download as CSV or HTML files. The CSV file can be opened using Microsoft Excel.



What is the difference between CSV and XLSX?

CSV

- Stands for "comma separated values"
- Is a file type that works with Excel and other programs
- Is a simpler format and does not have all the functions
  - For example, you cannot save multiple sheets in one CSV file

XLSX

- The newer format type for Excel
- Has all the functionality that Excel has to offer
- Upgrade of the XLS format
- MAVEN reports currently only output to CSV format and not XLSX but you can ‘Save As’ to convert to XLSX format.

How to run a report in MAVEN

Tip sheet on MAVEN reports

Step 1: Navigate to reports page

- Select the report that you would like to run.

Step 2: Select parameters

- Parameters allow you to customize your report output. Different reports may have different options for parameters.
- Most reports will include at minimum: Event Date, Report Format, Classification, and Official City.

How to run a report in MAVEN

Step 3: Run Report

- When you have your parameters set, hit 'Run Report'.
- If you ran the report in CSV format, a file will appear in your downloads folder or the folder where your file downloads usually default.
- Depending on the size of your report, the export may take a few minutes to complete. Please, be patient and do not navigate away from the screen while the report is running.
- If you ran the report in HTML format, a new screen should appear in your web browser with your report.
- **Please make sure to delete the file from your downloads or default folder once you have moved or stored it appropriately.**

Overview of PivotTables

- What are **PivotTables** and why are they useful?
- How to set up a **PivotTable**
  - Navigating Excel
  - Set up your data
  - Inserting a Pivot Table
- Summarizing data with a **PivotTable**
- Tips and tricks
  - Updating a PivotTable
  - Saving your results
  - Adding charts
  - More resources

What are PivotTables?

- A **Pivot Table** is a table of aggregated, grouped values
- A **PivotTable** is Microsoft's function to create Pivot Tables within Excel. Other spreadsheet software may have similar functions under a different name.
  - Easily aggregates (adds, finds the average of etc.) another table or a set of data by one or more categories
  - For example, a PivotTable could count a list of cases by year and town
- Aggregation can include sums, averages, or other statistics
- Groups can be nearly anything included in the data set
- Can make graphs/charts too
- Useful because it's a fast way to look at data

Why use a PivotTable?

F	G	H	I
Age (in years)	Gender	Is case Hispanic?	Race
60.0219	Female	No	White
85.1116	Male	No	White
70.3655	Female	No	White
53.3142	Male	No	White
79.4552	Male	Unknown	White
67.9398	Male	No	White
55.1321	Female	No	White
83.3922	Female	Unknown	White
55.4771	Male	Yes	White
58.6502	Female	Unknown	White,Other
28.898	Male	No	White,Other
32.9062	Female	No	White,American Indian
30.8583	Female	No	White
31.8905	Female	Unknown	White
21.2375	Female	No	White
49.41	Male	No	White
32.7912	Male	No	White

- Looking at a data set like this one, how would you answer the following questions:
  - How many cases have their gender listed as "female"?
  - What percent of cases identify as Hispanic?
  - What's the age distribution of cases?

Example PivotTable

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1														
2														
3	Count of Event Date	Column Labels												
4	Row Labels	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Grand Total
5	⊞2020		1	99	652	99	18	6	10	8	27	46	129	1095
6	⊞2021	116	44	22	17	10	4	6	18	26	17	28	99	407
7	⊞2022	154	21											175
8	Grand Total	270	66	121	669	109	22	12	28	34	44	74	228	1677
9														

Navigating Excel

- Excel is a part of the Microsoft Office software

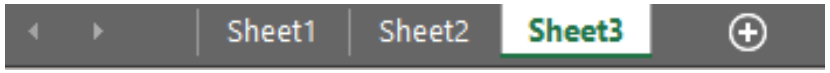
- For this webinar we are using Microsoft Excel for Microsoft 365 on Windows
  - If you have an older version, you should still have PivotTables (PivotTables were added to Excel in 1994!)
  - Web version of Excel also has PivotTables

- Basic steps for PivotTables will be the same
  - Some parts might have slightly different names, colors, buttons, depending on your version of Excel

Key Excel terminology

Excel: Refers to Microsoft Excel, a software program sold by Microsoft that creates spreadsheets

Workbook: An Excel file. The file can contain multiple spreadsheets within it.

Sheet: An individual spreadsheet within the workbook. Some people call them "tabs" because they look like this at the bottom: 

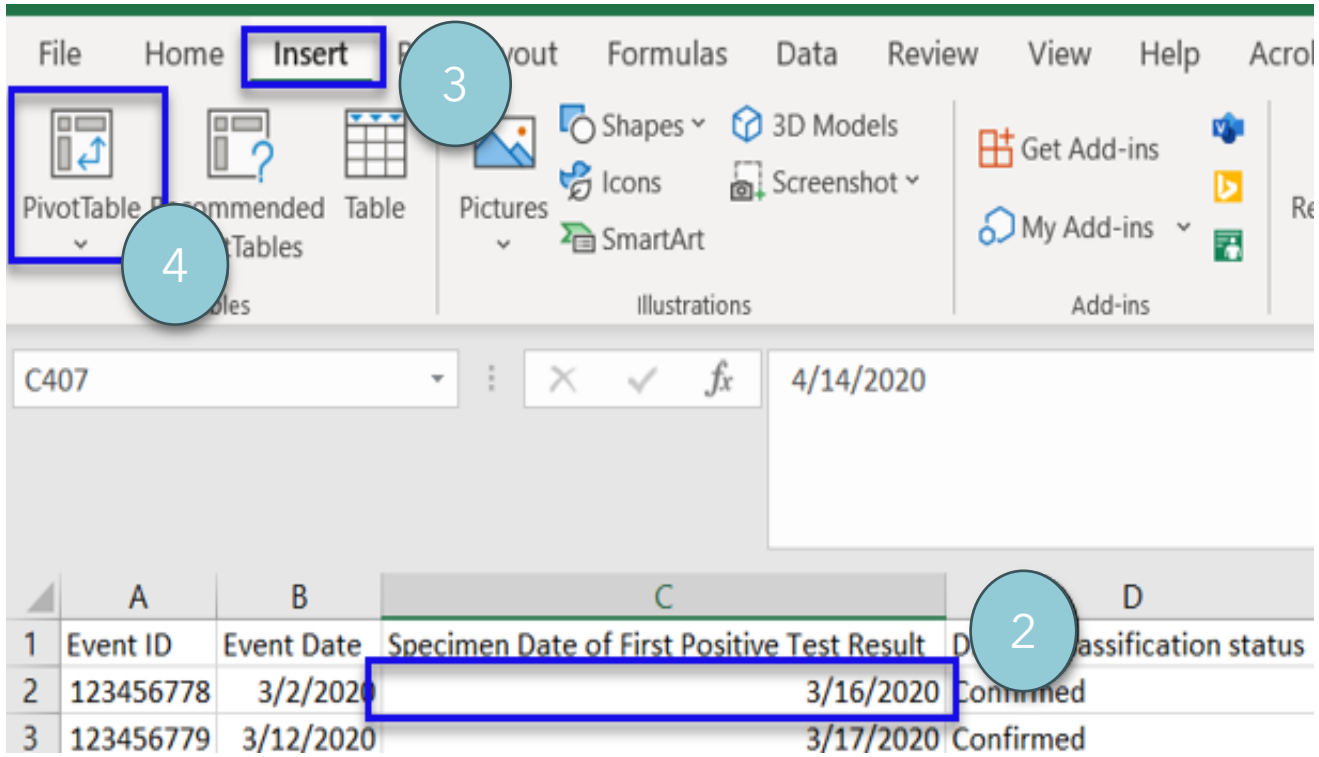
Ribbon: Menu at the top of all Microsoft programs

Tab: Sections within the Ribbon

Set up your data for PivotTables

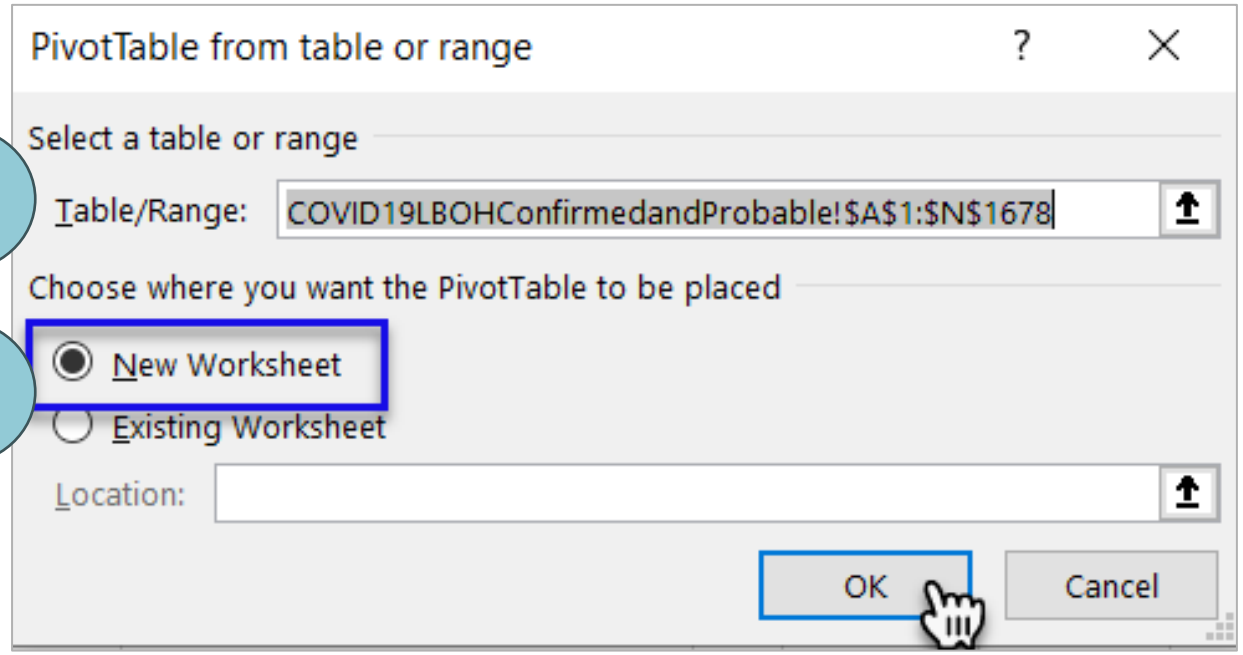
- PivotTables are only as good as the data within them
- Considering deleting or not selecting columns you won't use
- Do the same for titles, footnotes, or other "extras“
- Seeing a lot of missing or incorrect values? Make sure your cases in MAVEN are filled out completely

How to create a PivotTable



1. Open your Workbook and go to the Sheet with your data
2. Place cursor in one of the fields in the spreadsheet
3. Go to the Ribbon and click on Insert tab
4. Click on PivotTable button

How to create a PivotTable

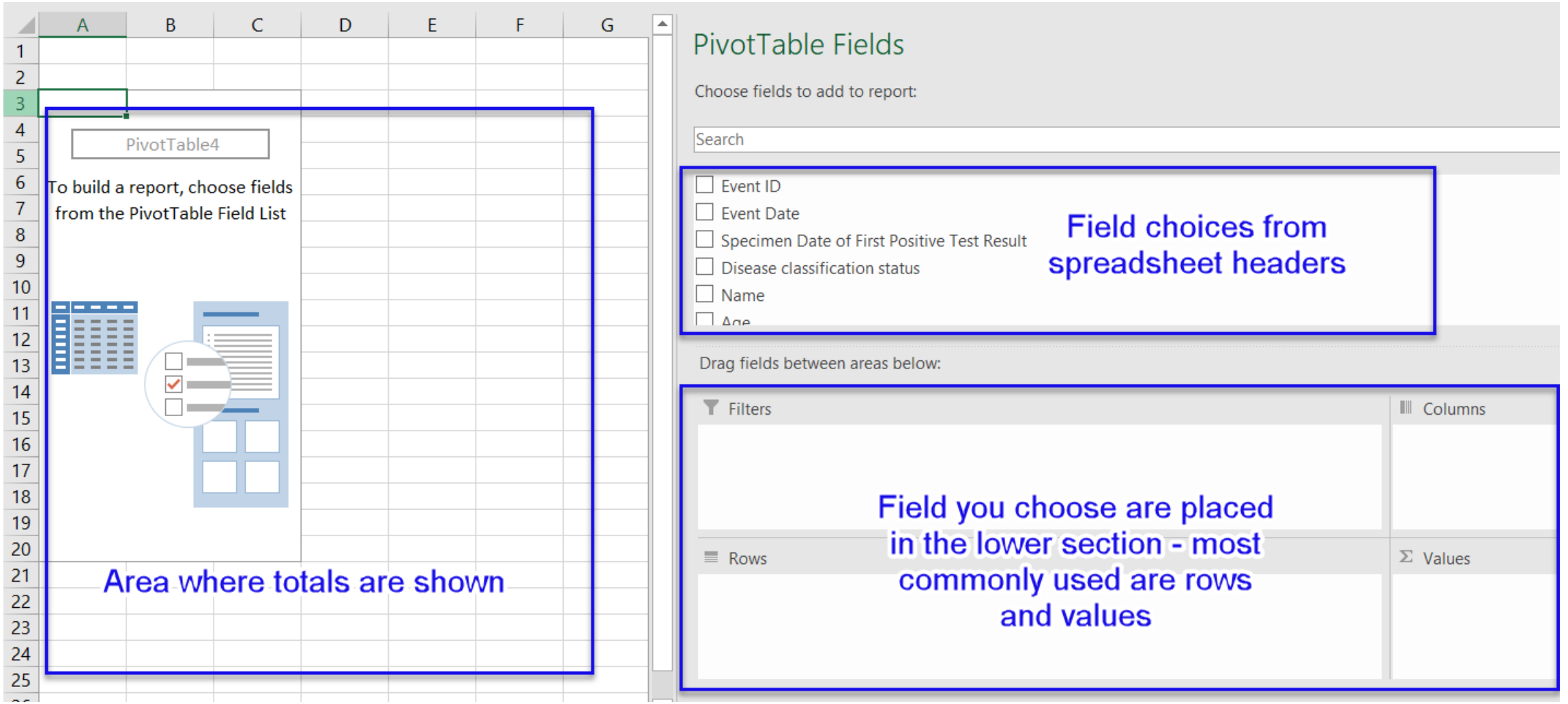


A new window will open

5. Confirm PivotTable settings

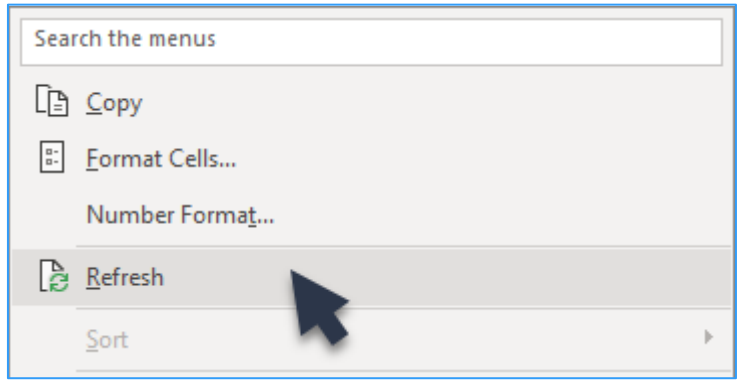
- 5.1 Table/ Range includes all your data
- 5.2 Select where you want the new PivotTable to be placed (we recommend a new sheet)

New PivotTable

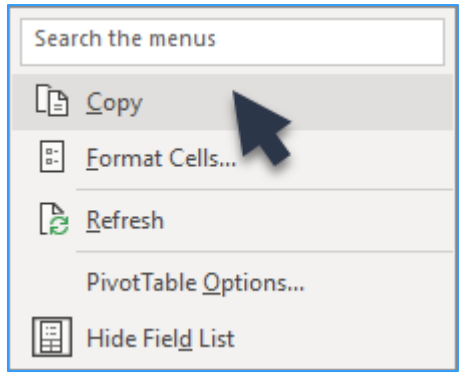


Tips and Tricks

- Refresh the data in your PivotTable
  - If you correct or update data in your data table, you want it to show on the PivotTable
  - Right-click on the PivotTable and choose Refresh
  - Remember! Making corrections and updates in MAVEN is the only way to make sure that the data are correct every time you run your reports



- Save your results
  - If you don't want your table to be changed or want to change the formatting, consider saving your PivotTable as a separate table
  - Select the whole table, copy it, go to a new place in your workbook, and paste it, choosing "Values" in the Paste Options



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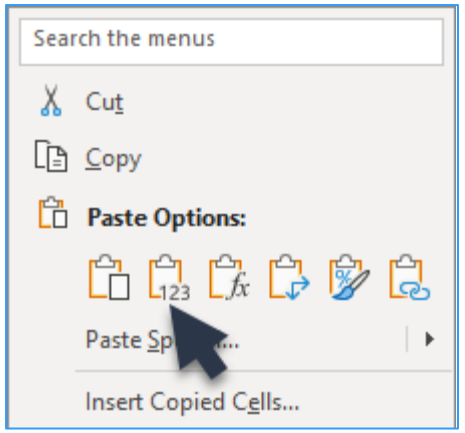

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Tip Sheet

Tip Sheet on PivotTables

Pivot Table Demonstration/Use Cases

- Local Regional Epidemiologists
  - Makayla Petty MAVEN Flu and COVID Data use case
  - Gruha Patel MIIS Vaccine Data use case

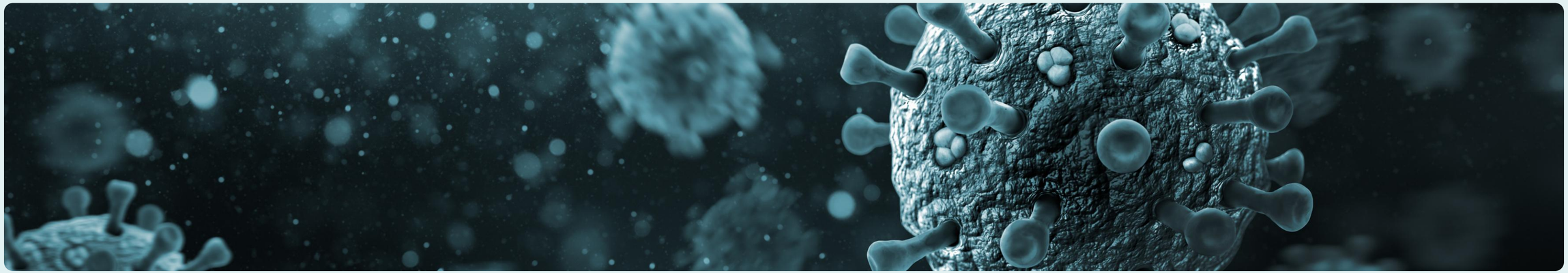
Greater Boroughs Partnership for Health

Makayla Petty, MPH
Regional Epidemiologist

February, 10th, 2026

Pivot Tables for Respiratory Illness Monitoring

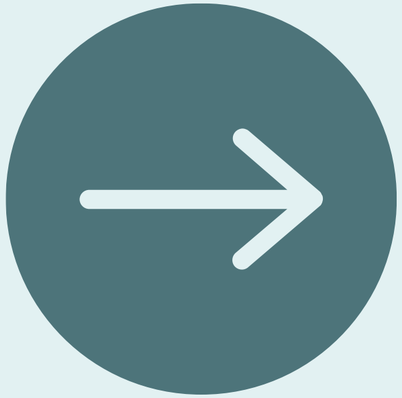
Using MAVEN data to track case counts in an SSA



Why Pivot Tables?

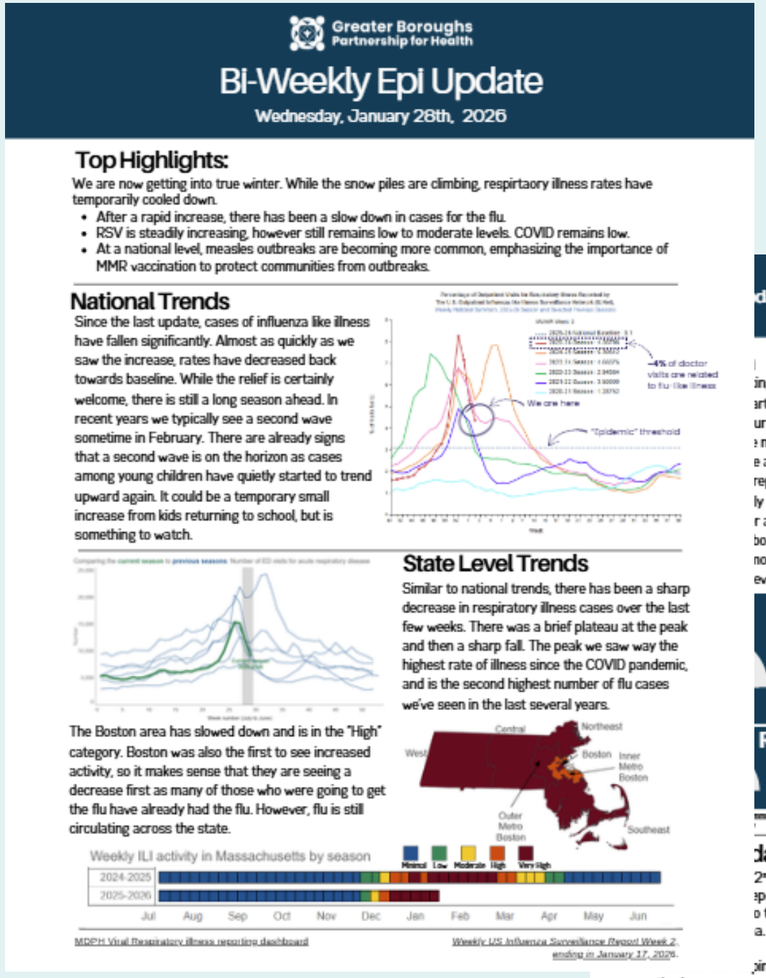
- Pivot tables are a useful way to organize and analyze data quickly.
- By starting with a base set of data, you can create various charts and tables to better understand trends
- By continuing to add to that dataset you can create a monitoring system that can flex with your needs and questions that arise

One table... so many options



Like:

Routine Disease Updates



Greater Boroughs Partnership for Health

Bi-Weekly Epi Update

Wednesday, January 28th, 2026

Top Highlights:

We are now getting into true winter. While the snow piles are climbing, respirtaory illness rates have temporarily cooled down.

- After a rapid increase, there has been a slow down in cases for the flu.
- RSV is steadily increasing, however still remains low to moderate levels. COVID remains low.
- At a national level, measles outbreaks are becoming more common, emphasizing the importance of MMR vaccination to protect communities from outbreaks.

National Trends

Since the last update, cases of influenza like illness have fallen significantly. Almost as quickly as we saw the increase, rates have decreased back towards baseline. While the relief is certainly welcome, there is still a long season ahead. In recent years we typically see a second wave sometime in February. There are already signs that a second wave is on the horizon as cases among young children have quietly started to trend upward again. It could be a temporary small increase from kids returning to school, but is something to watch.

State Level Trends

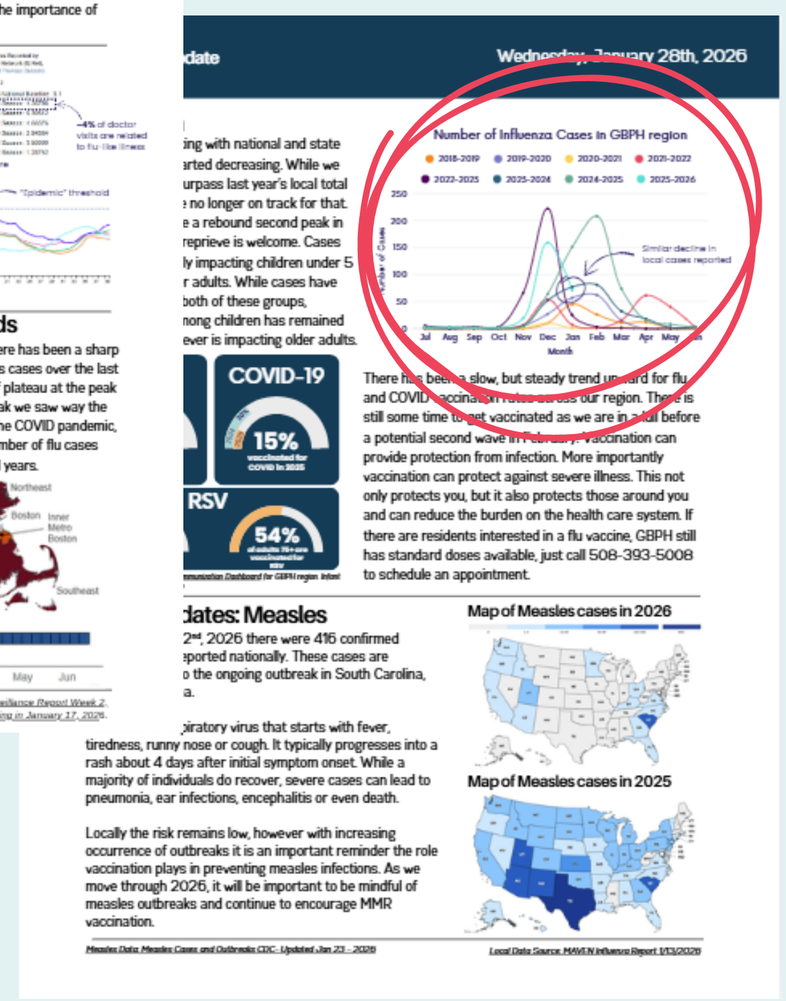
Similar to national trends, there has been a sharp decrease in respiratory illness cases over the last few weeks. There was a brief plateau at the peak and then a sharp fall. The peak we saw way the highest rate of illness since the COVID pandemic, and is the second highest number of flu cases we've seen in the last several years.

The Boston area has slowed down and is in the "High" category. Boston was also the first to see increased activity, so it makes sense that they are seeing a decrease first as many of those who were going to get the flu have already had the flu. However, flu is still circulating across the state.

Weekly ILI activity in Massachusetts by season

MDPH Viral Respiratory Illness reporting dashboard

Weekly US Influenza Surveillance Report Week 2, ending on January 17, 2026.



...date

Wednesday, January 28th, 2026

...ing with national and state
...rted decreasing. While we
...urpass last year's local total
...e no longer on track for that.
...e a rebound second peak in
...reprieve is welcome. Cases
...ly impacting children under 5
...r adults. While cases have
...both of these groups,
...nong children has remained
...ever is impacting older adults.

There has been a slow, but steady trend upward for flu and COVID vaccination rates across our region. There is still some time to get vaccinated as we are in a lull before a potential second wave in February. Vaccination can provide protection from infection. More importantly vaccination can protect against severe illness. This not only protects you, but it also protects those around you and can reduce the burden on the health care system. If there are residents interested in a flu vaccine, GBPH still has standard doses available, just call 508-393-5008 to schedule an appointment.

...dates: Measles

...2nd, 2026 there were 416 confirmed
...ported nationally. These cases are
...o the ongoing outbreak in South Carolina,
...a.

...piratory virus that starts with fever, tiredness, runny nose or cough. It typically progresses into a rash about 4 days after initial symptom onset. While a majority of individuals do recover, severe cases can lead to pneumonia, ear infections, encephalitis or even death.

Locally the risk remains low, however with increasing occurrence of outbreaks it is an important reminder the role vaccination plays in preventing measles infections. As we move through 2026, it will be important to be mindful of measles outbreaks and continue to encourage MMR vaccination.

Map of Measles cases in 2026

Map of Measles cases in 2025

Measles Data: Measles Cases and Outbreaks CDC - Updated Jan 23 - 2026

Local Data Source: MAVEN Influenza Report 1/31/2026

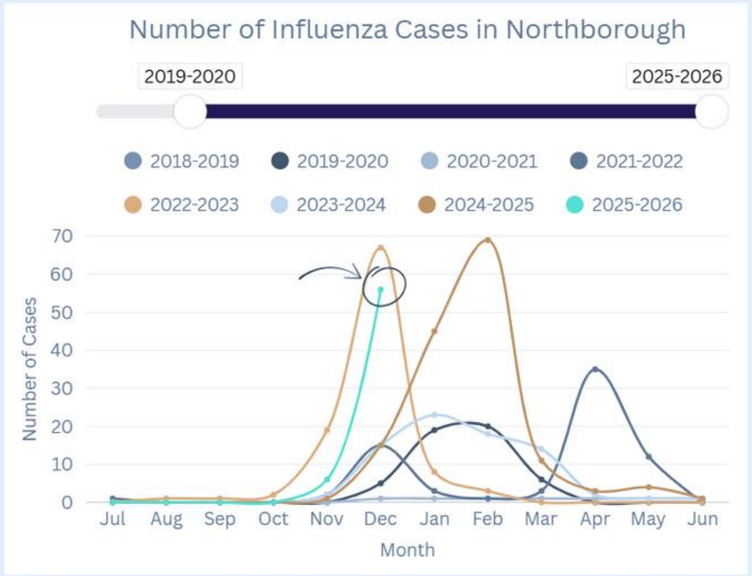
Or: Detailed BOH Presentations

FLU

Symptoms:

- fever
- cough
- sore throat
- fatigue
- body aches

Rates are very high, but is showing some signs of peaking.

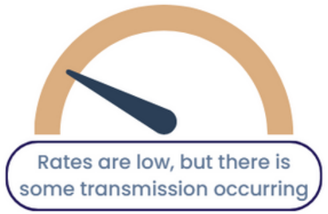


Data Source: MAVEN, Confirmed, Probable, and Suspect Cases reported as of 1/13/2026

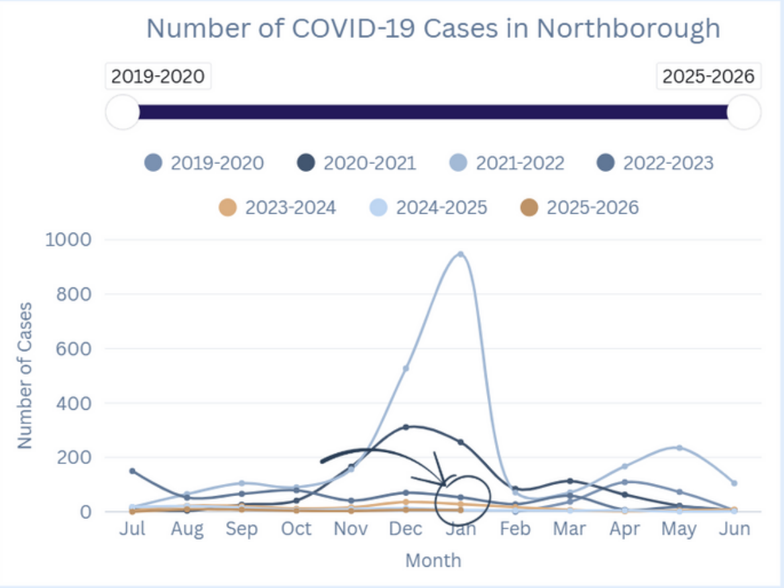
COVID-19

Symptoms:

- fever
- cough
- sore throat
- sneezing
- runny/stuffy nose



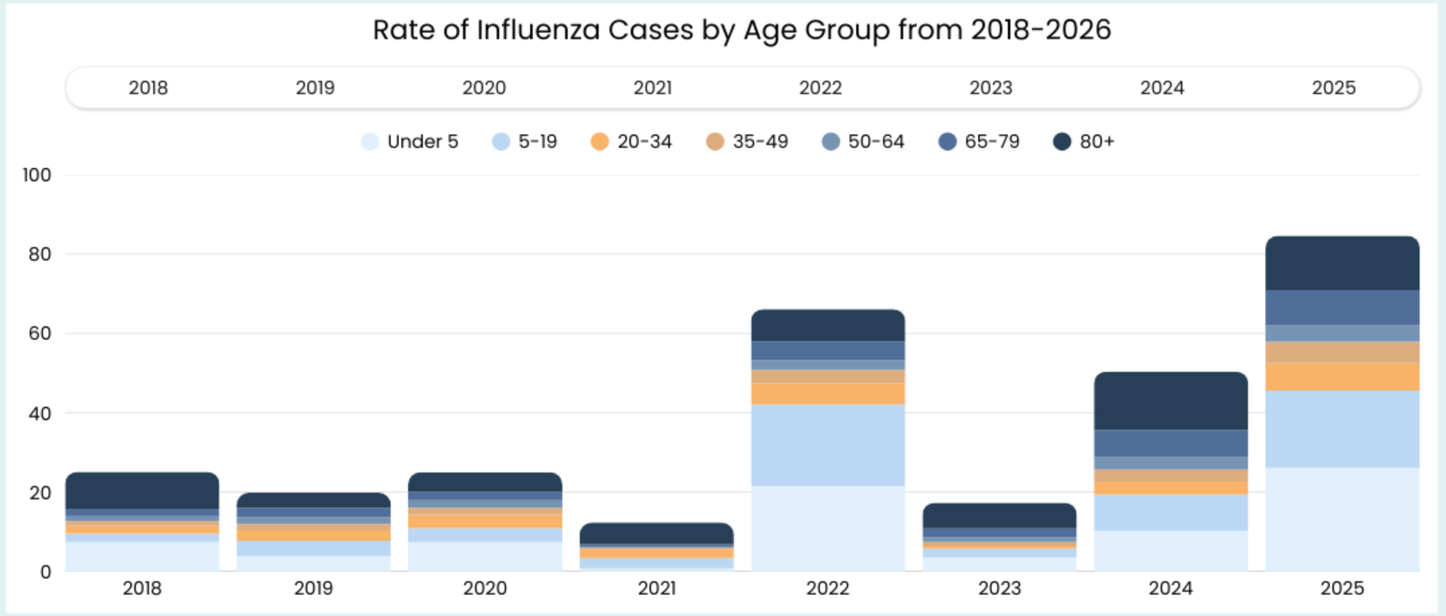
Rates are low, but there is some transmission occurring

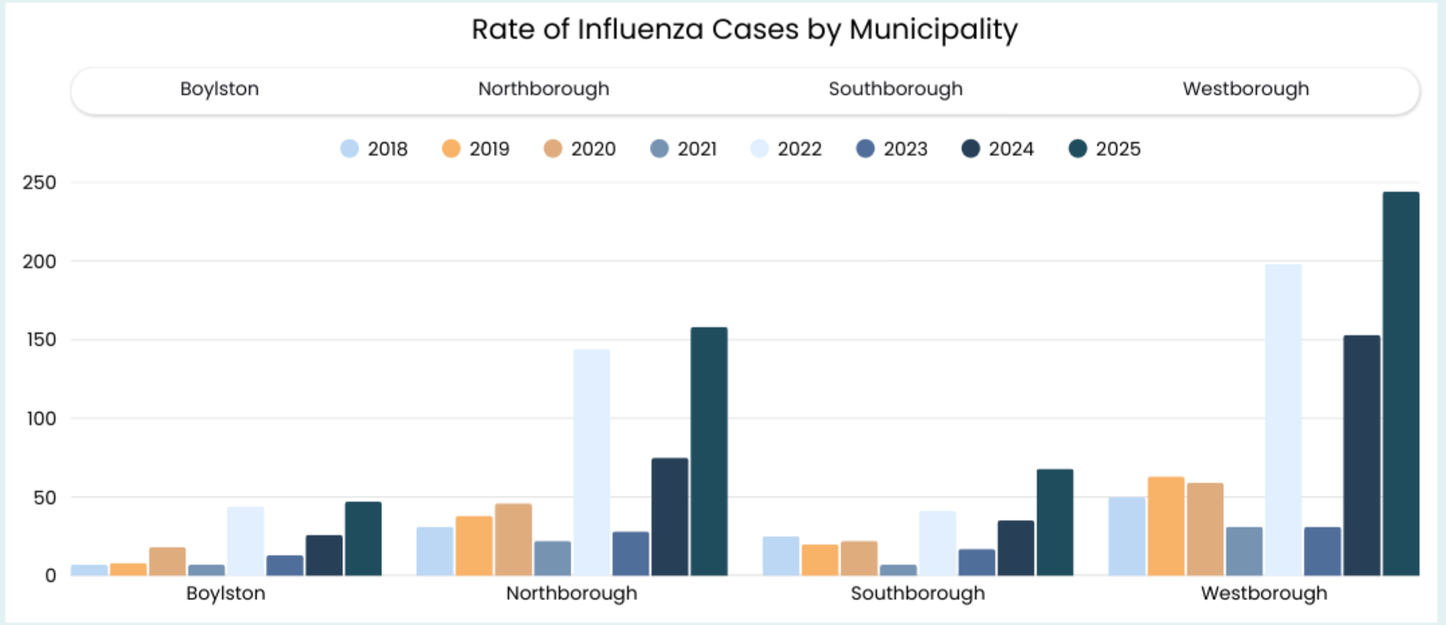


Data Source: MAVEN, Confirmed, Probable, and Suspect Cases reported as of 1/13/2026

Or:

Tracking trend across groups



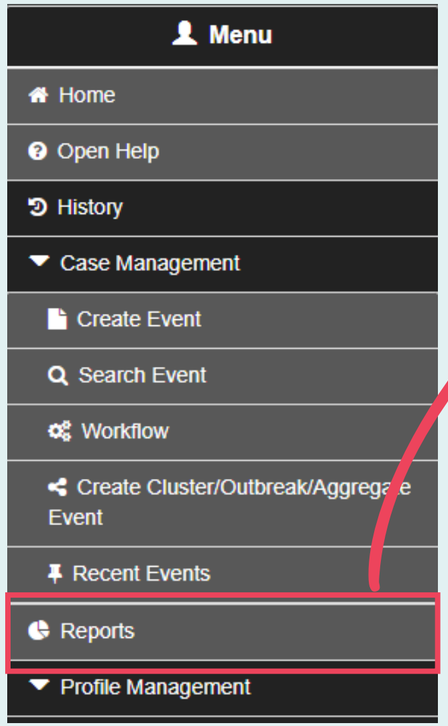


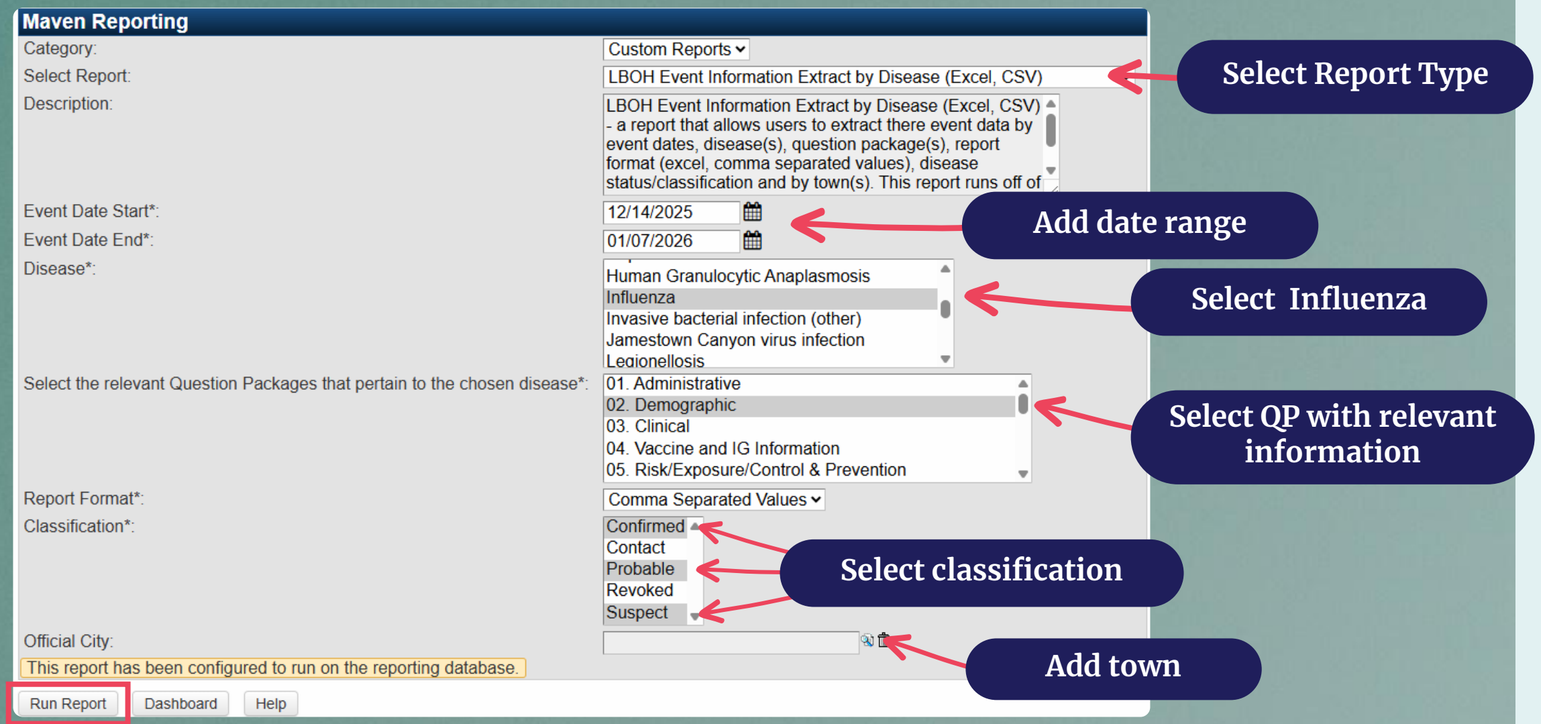
General Process

1. Pulling Data from MAVEN
2. Compiling, formatting and cleaning data
3. Insert a Pivot Table with raw data
4. Format variables
5. Create base pivot table
6. Visualize table
7. Assess and Adjust

Step 1

Pulling Data from MAVEN



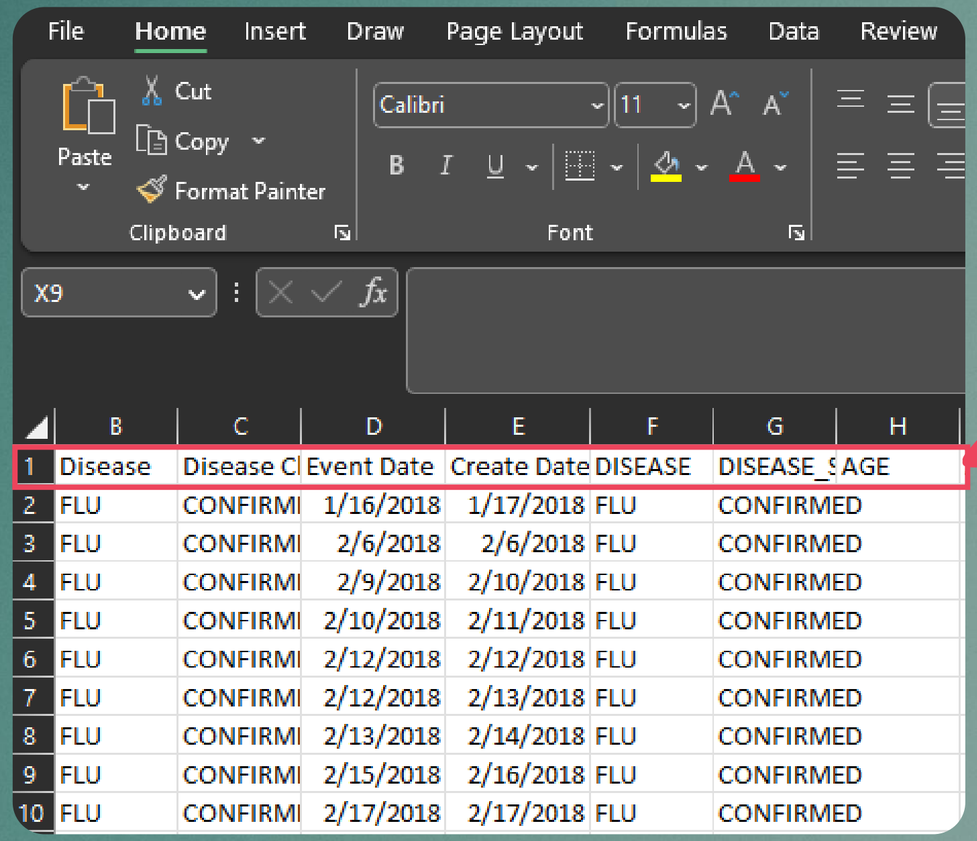


Tips:

1. For Pivot tables you *typically* want some type of report that produces a line list with individual level data.
2. To select multiple items in the Disease, QP, or Classification sections use CTRL + SHIFT and select all the items you want.
3. Test out different QP to see the output and determine with option gives you the information you need/want.

Step 2

Compiling, Formatting and Cleaning



	B	C	D	E	F	G	H
1	Disease	Disease Cl	Event Date	Create Date	DISEASE	DISEASE_S	AGE
2	FLU	CONFIRMI	1/16/2018	1/17/2018	FLU	CONFIRMED	
3	FLU	CONFIRMI	2/6/2018	2/6/2018	FLU	CONFIRMED	
4	FLU	CONFIRMI	2/9/2018	2/10/2018	FLU	CONFIRMED	
5	FLU	CONFIRMI	2/10/2018	2/11/2018	FLU	CONFIRMED	
6	FLU	CONFIRMI	2/12/2018	2/12/2018	FLU	CONFIRMED	
7	FLU	CONFIRMI	2/12/2018	2/13/2018	FLU	CONFIRMED	
8	FLU	CONFIRMI	2/13/2018	2/14/2018	FLU	CONFIRMED	
9	FLU	CONFIRMI	2/15/2018	2/16/2018	FLU	CONFIRMED	
10	FLU	CONFIRMI	2/17/2018	2/17/2018	FLU	CONFIRMED	

Tip: *Create a "Master Excel" workbook where you can add data and update it regularly from MAVEN.*

Column headers are going to be your "variables" aka what you use to sort and categorize in your pivot table

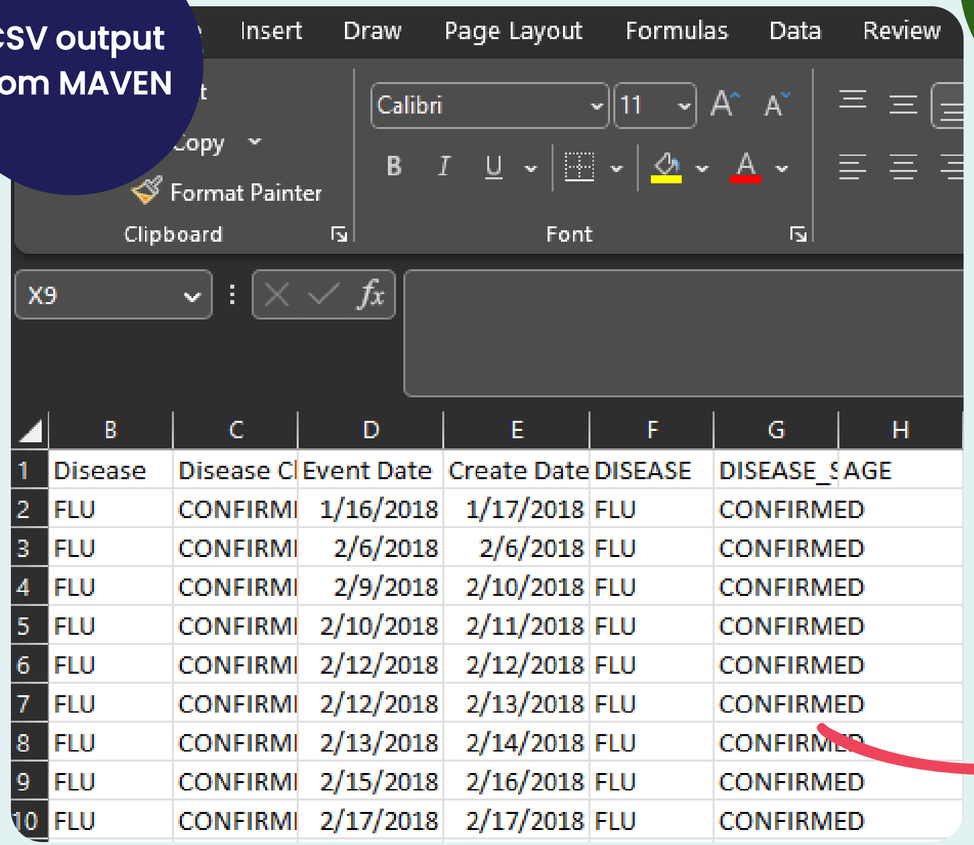
Considerations:

- What columns or "variables" are actually necessary?
- Be mindful of keeping PHI variables in Excel workbooks
- When adding columns or data categories, add to the end of the data

Step 2

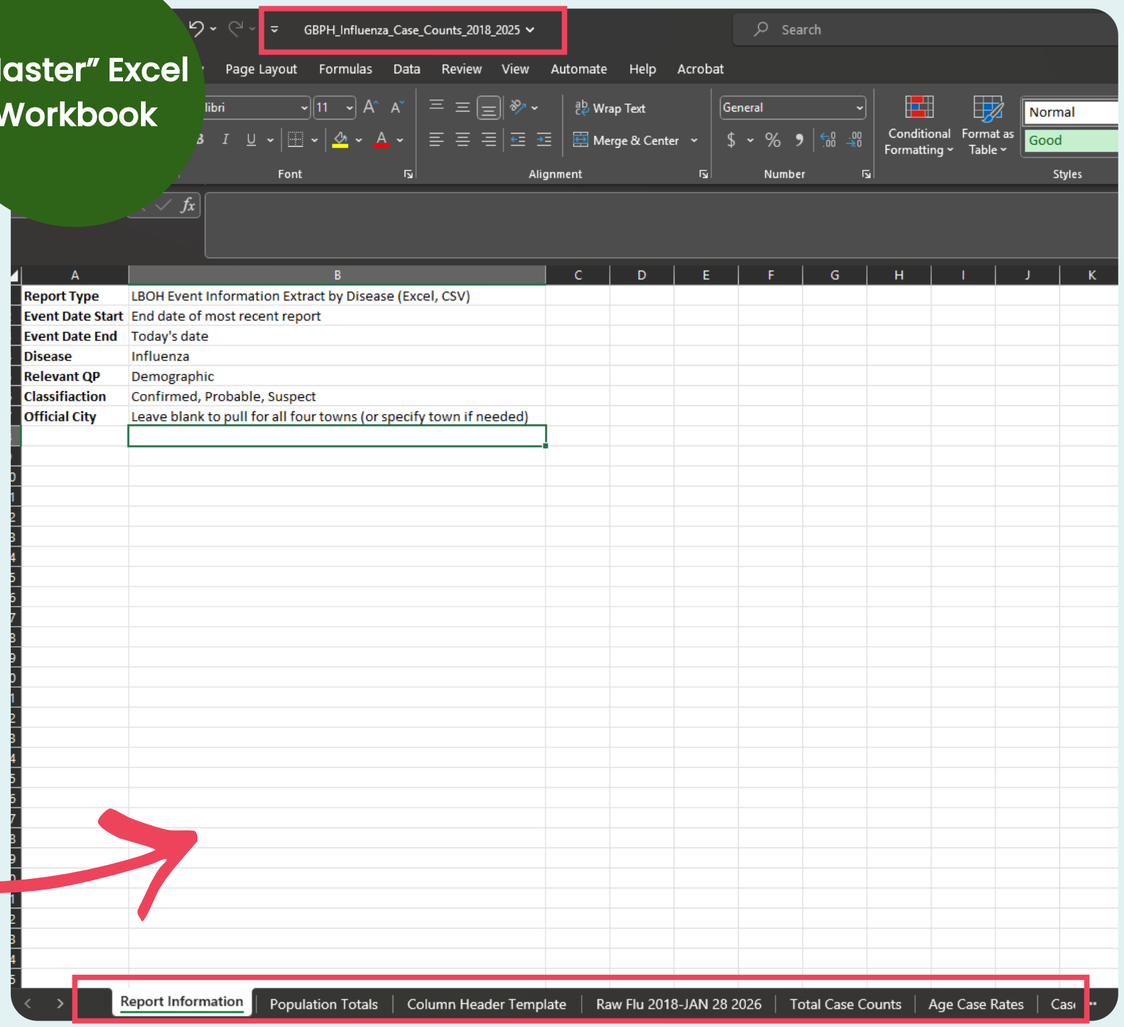
Compiling, Formatting and Cleaning

CSV output from MAVEN



	B	C	D	E	F	G	H
1	Disease	Disease Cl	Event Date	Create Date	DISEASE	DISEASE_S	AGE
2	FLU	CONFIRMI	1/16/2018	1/17/2018	FLU	CONFIRMED	
3	FLU	CONFIRMI	2/6/2018	2/6/2018	FLU	CONFIRMED	
4	FLU	CONFIRMI	2/9/2018	2/10/2018	FLU	CONFIRMED	
5	FLU	CONFIRMI	2/10/2018	2/11/2018	FLU	CONFIRMED	
6	FLU	CONFIRMI	2/12/2018	2/12/2018	FLU	CONFIRMED	
7	FLU	CONFIRMI	2/12/2018	2/13/2018	FLU	CONFIRMED	
8	FLU	CONFIRMI	2/13/2018	2/14/2018	FLU	CONFIRMED	
9	FLU	CONFIRMI	2/15/2018	2/16/2018	FLU	CONFIRMED	
10	FLU	CONFIRMI	2/17/2018	2/17/2018	FLU	CONFIRMED	

"Master" Excel Workbook



	A	B
1	**Report Type**	LBOH Event Information Extract by Disease (Excel, CSV)
2	**Event Date Start**	End date of most recent report
3	**Event Date End**	Today's date
4	**Disease**	Influenza
5	**Relevant QP**	Demographic
6	**Classifiaction**	Confirmed, Probable, Suspect
7	**Official City**	Leave blank to pull for all four towns (or specify town if needed)

Report Information | Population Totals | Column Header Template | Raw Flu 2018-JAN 28 2026 | Total Case Counts | Age Case Rates | Cas

Step 2

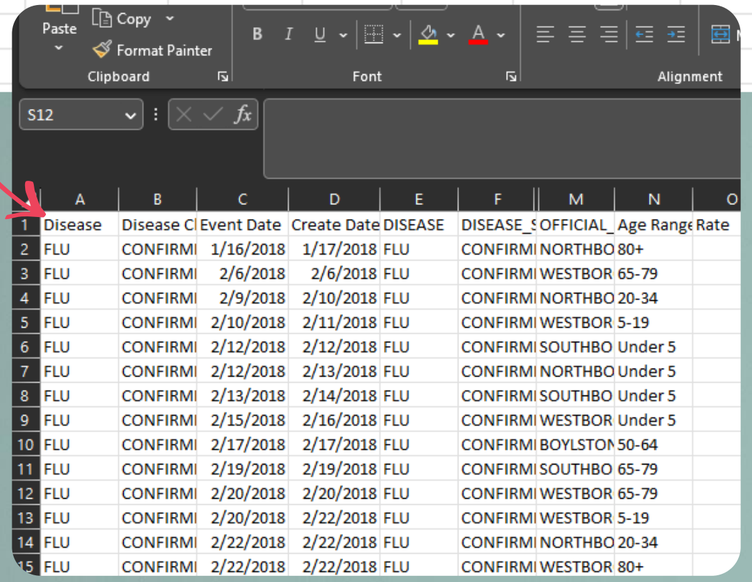
Compiling, Formatting and Cleaning

	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	Disease	Disease Classification Stat	Event Date	Create Date	DISEASE	DISEASE_STATUS	AGE	AGE_YEARS	BIRTH_DATE	CALC_RACE	GENDER	HISPANIC	OFFICIAL_CITY	RACE_0
2	Disease	Disease Classification Stat	Event Date	Create Date	First Na	Middle Name	Last Nan	County	DISEASE	DISEASE_ST	AGE_MC	AGE_YEAI	BIRTH_DATE	CALC_RAC
3														
4														

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	CaseID	Disease	Disease Classification Status	Event Date	Create Date	DISEASE	DISEASE_STATUS	AGE	AGE_YEARS	BIRTH_DATE	CALC_RACE	GENDER	HISPANIC	OFFICIAL_CITY	RACE_0
2															
3															
4															

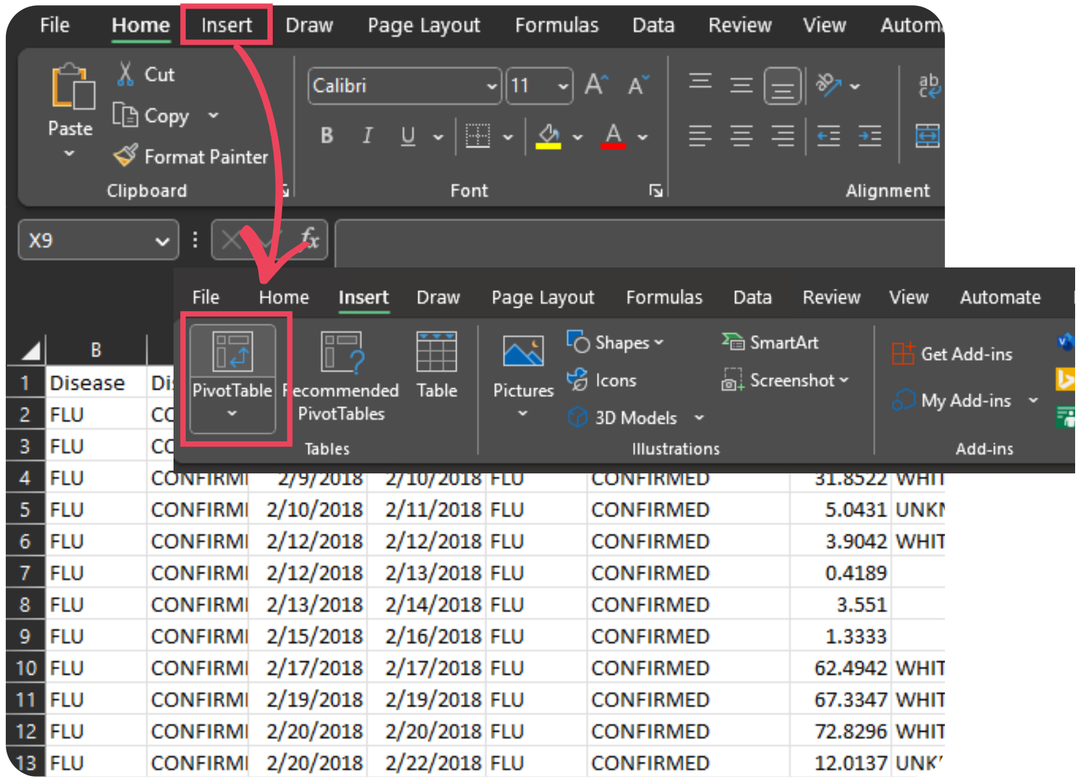
Creating a template:

- Once you have column headers (“variables”) you will use, keep those in a seperate sheet in a workbook that you will use to update data
- Copy and paste the output data from MAVEN into your template sheet below the standard column headers
- Delete the columns in the MAVEN data that don’t match the column headers in the template
- Once the columns match, copy the data and past it into a seperate sheet where you keep a running line list of data



	A	B	C	D	E	F	M	N	O
1	Disease	Disease Cl	Event Date	Create Date	DISEASE	DISEASE_S	OFFICIAL_	Age Range	Rate
2	FLU	CONFIRMI	1/16/2018	1/17/2018	FLU	CONFIRMI	NORTHBO	80+	
3	FLU	CONFIRMI	2/6/2018	2/6/2018	FLU	CONFIRMI	WESTBOR	65-79	
4	FLU	CONFIRMI	2/9/2018	2/10/2018	FLU	CONFIRMI	NORTHBO	20-34	
5	FLU	CONFIRMI	2/10/2018	2/11/2018	FLU	CONFIRMI	WESTBOR	5-19	
6	FLU	CONFIRMI	2/12/2018	2/12/2018	FLU	CONFIRMI	SOUTHBO	Under 5	
7	FLU	CONFIRMI	2/12/2018	2/13/2018	FLU	CONFIRMI	NORTHBO	Under 5	
8	FLU	CONFIRMI	2/13/2018	2/14/2018	FLU	CONFIRMI	SOUTHBO	Under 5	
9	FLU	CONFIRMI	2/15/2018	2/16/2018	FLU	CONFIRMI	WESTBOR	Under 5	
10	FLU	CONFIRMI	2/17/2018	2/17/2018	FLU	CONFIRMI	BOYLSTON	50-64	
11	FLU	CONFIRMI	2/19/2018	2/19/2018	FLU	CONFIRMI	SOUTHBO	65-79	
12	FLU	CONFIRMI	2/20/2018	2/20/2018	FLU	CONFIRMI	WESTBOR	65-79	
13	FLU	CONFIRMI	2/20/2018	2/22/2018	FLU	CONFIRMI	WESTBOR	5-19	
14	FLU	CONFIRMI	2/22/2018	2/22/2018	FLU	CONFIRMI	NORTHBO	20-34	
15	FLU	CONFIRMI	2/22/2018	2/22/2018	FLU	CONFIRMI	WESTBOR	80+	

**screen shot with data has some columns hidden to maintain data privacy, but in the real data set, the columns would match*



	B							
1	Disease	Di						
2	FLU	CO						
3	FLU	CO						
4	FLU	CONFIRMI	2/9/2018	2/10/2018	FLU	CONFIRMED	31.8522	WHIT
5	FLU	CONFIRMI	2/10/2018	2/11/2018	FLU	CONFIRMED	5.0431	UNKN
6	FLU	CONFIRMI	2/12/2018	2/12/2018	FLU	CONFIRMED	3.9042	WHIT
7	FLU	CONFIRMI	2/12/2018	2/13/2018	FLU	CONFIRMED	0.4189	
8	FLU	CONFIRMI	2/13/2018	2/14/2018	FLU	CONFIRMED	3.551	
9	FLU	CONFIRMI	2/15/2018	2/16/2018	FLU	CONFIRMED	1.3333	
10	FLU	CONFIRMI	2/17/2018	2/17/2018	FLU	CONFIRMED	62.4942	WHIT
11	FLU	CONFIRMI	2/19/2018	2/19/2018	FLU	CONFIRMED	67.3347	WHIT
12	FLU	CONFIRMI	2/20/2018	2/20/2018	FLU	CONFIRMED	72.8296	WHIT
13	FLU	CONFIRMI	2/20/2018	2/22/2018	FLU	CONFIRMED	12.0137	UNK

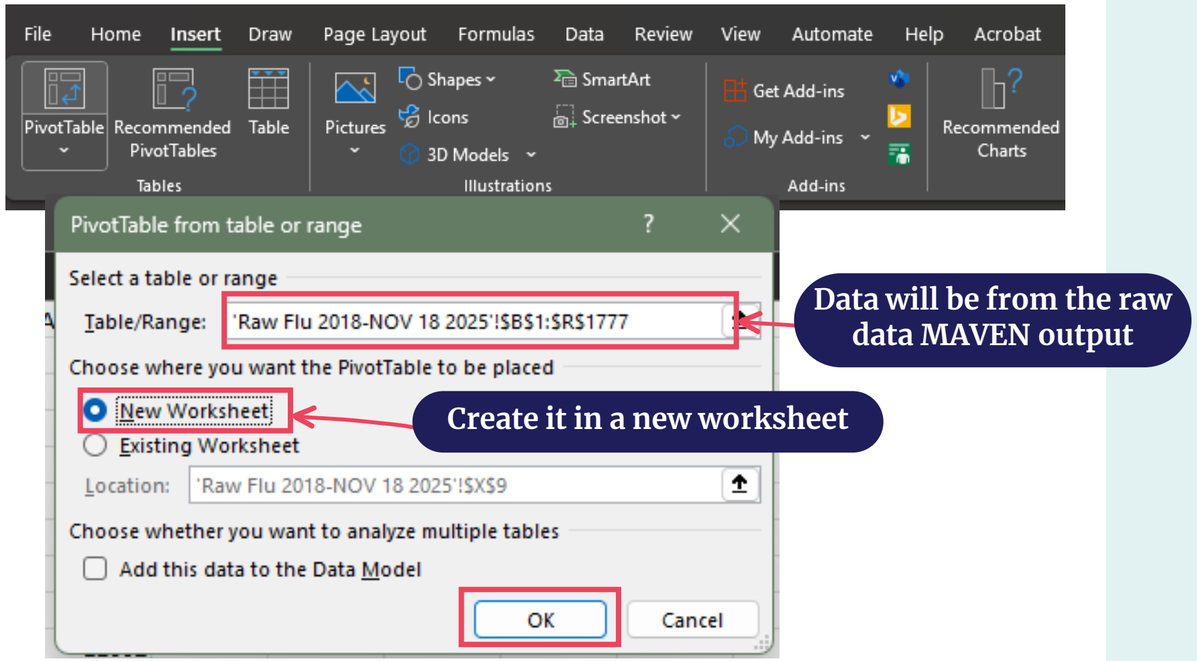
Now that data is formatted and simplified, we can create a pivot table from the basic line list.

Step 3

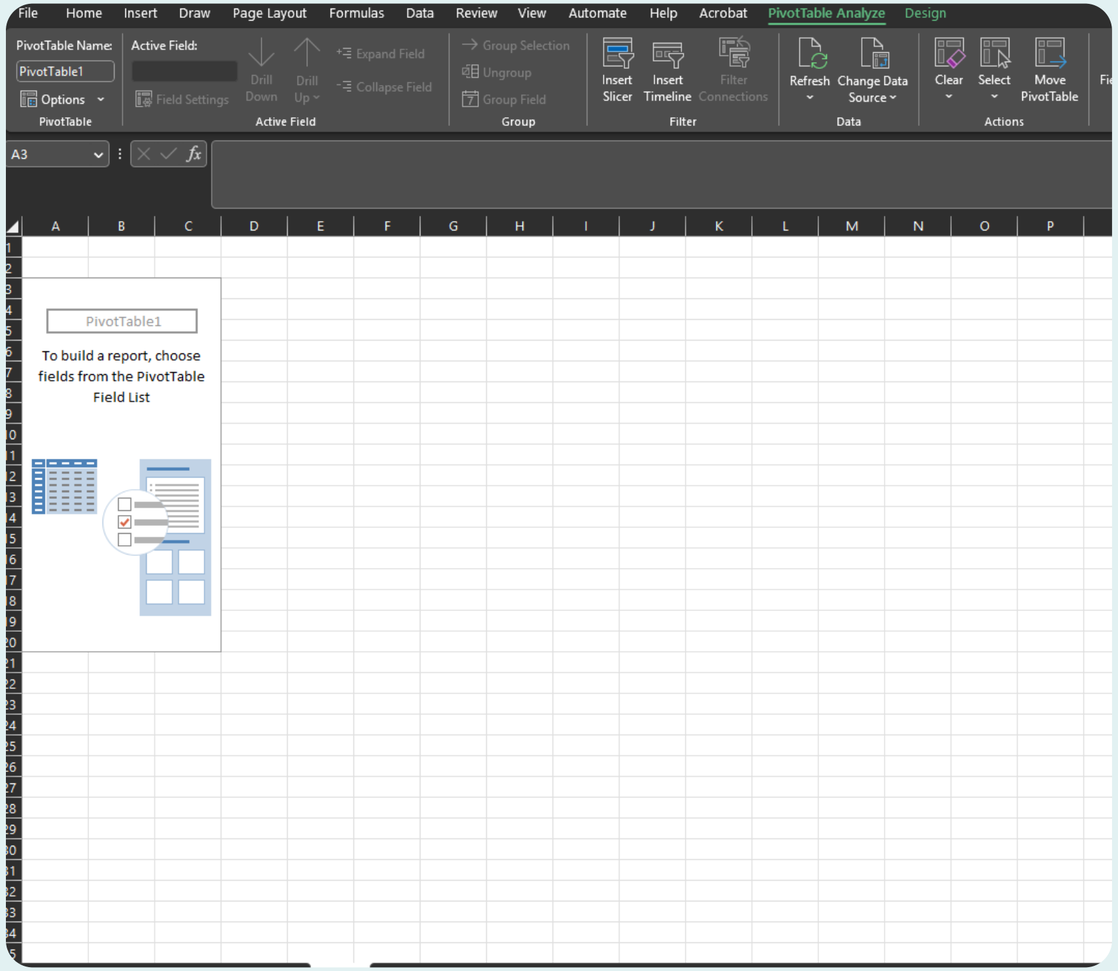
Insert a Pivot Table from formatted data

Step 3

Insert a Pivot Table from formatted data



Now that data is formatted and simplified, we can create a pivot table from the basic line list.

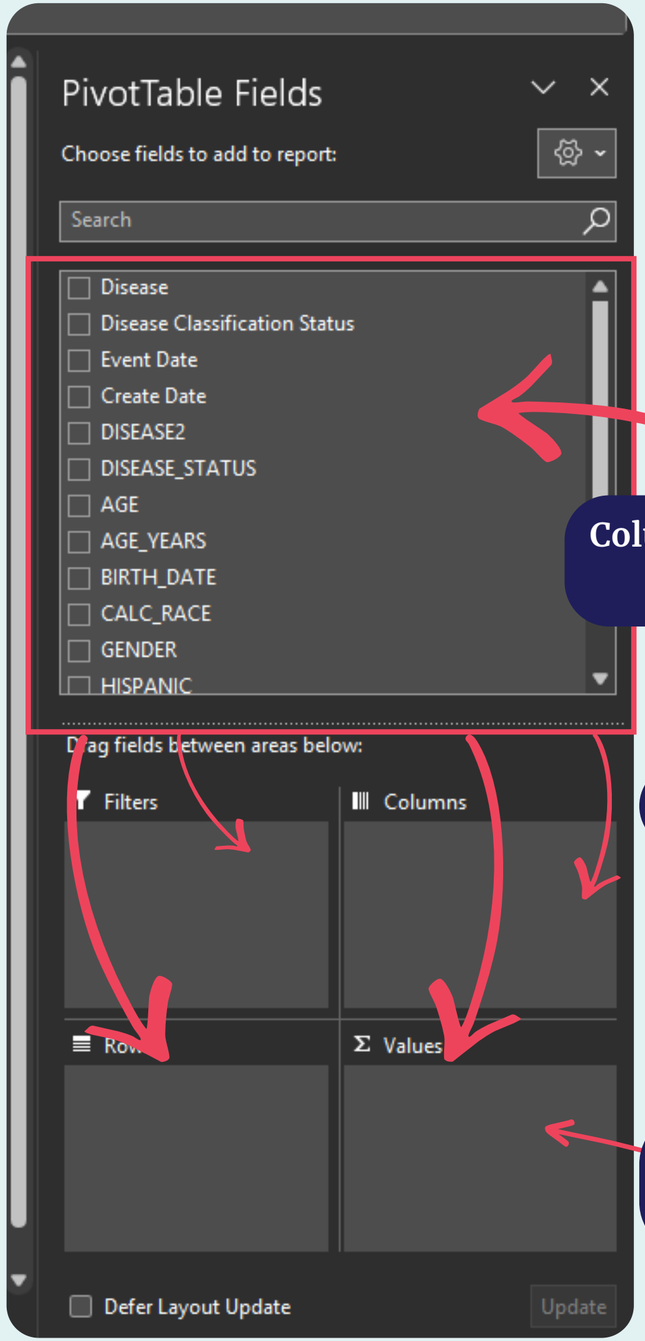


You have a “table”. . .

Now what?

Step 4

Formatting Variables

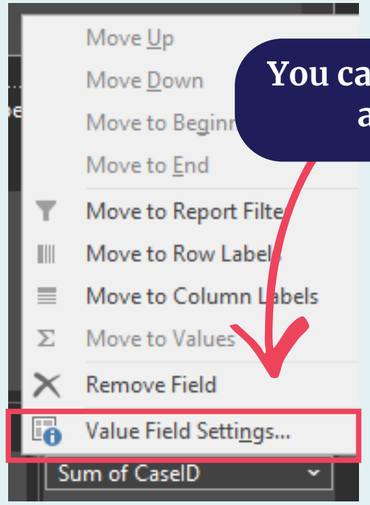


Column headers are now the clickable options to create a Pivot Table

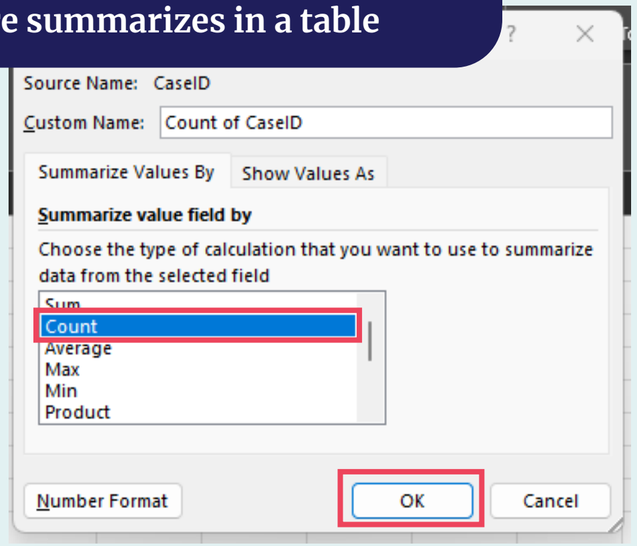
Drag and drop into "buckets"

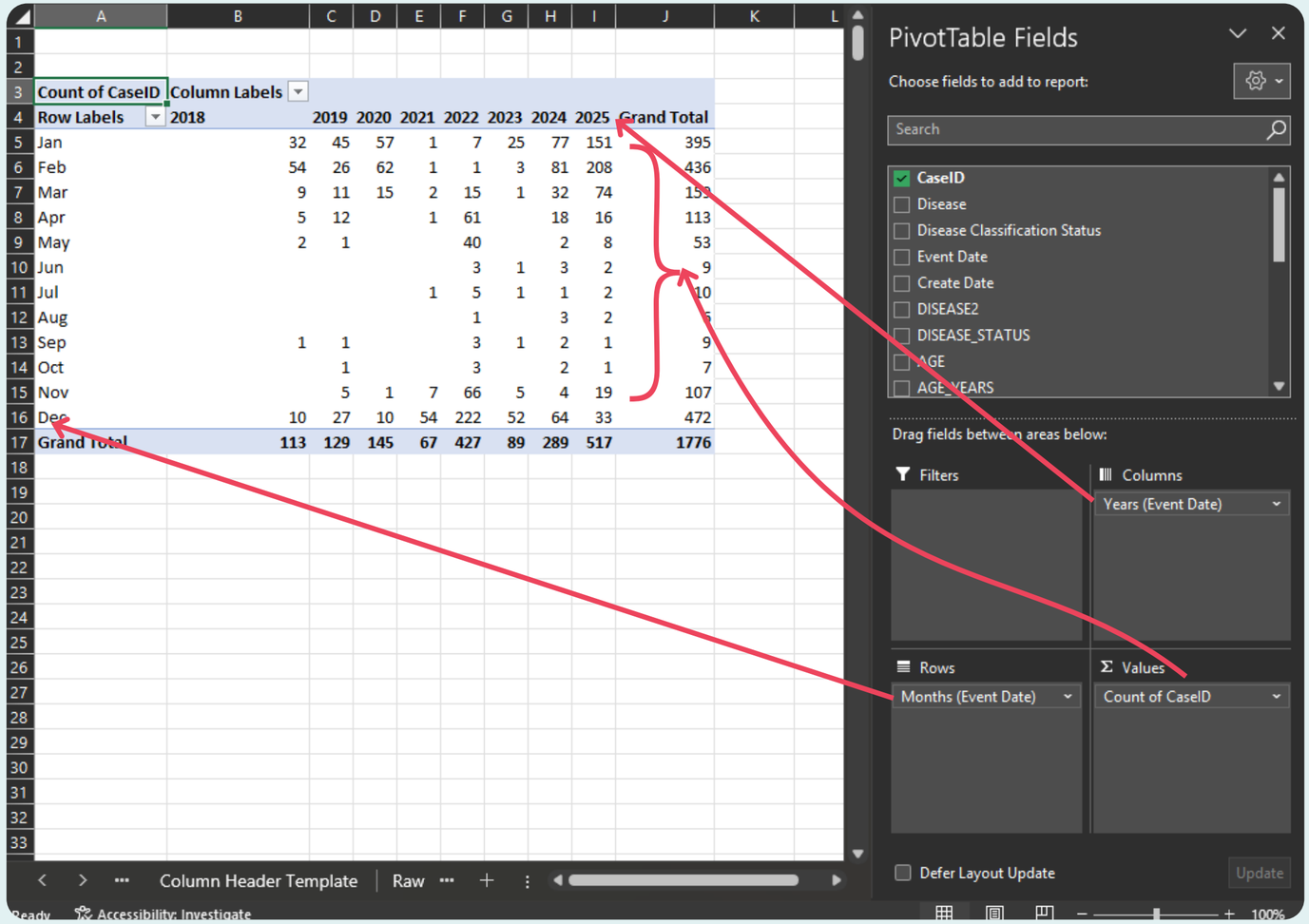
Select the variable that you want to be "counted" from the data

Tip: You want to pick something that every line is going to have



You can customize how the variables are summarizes in a table

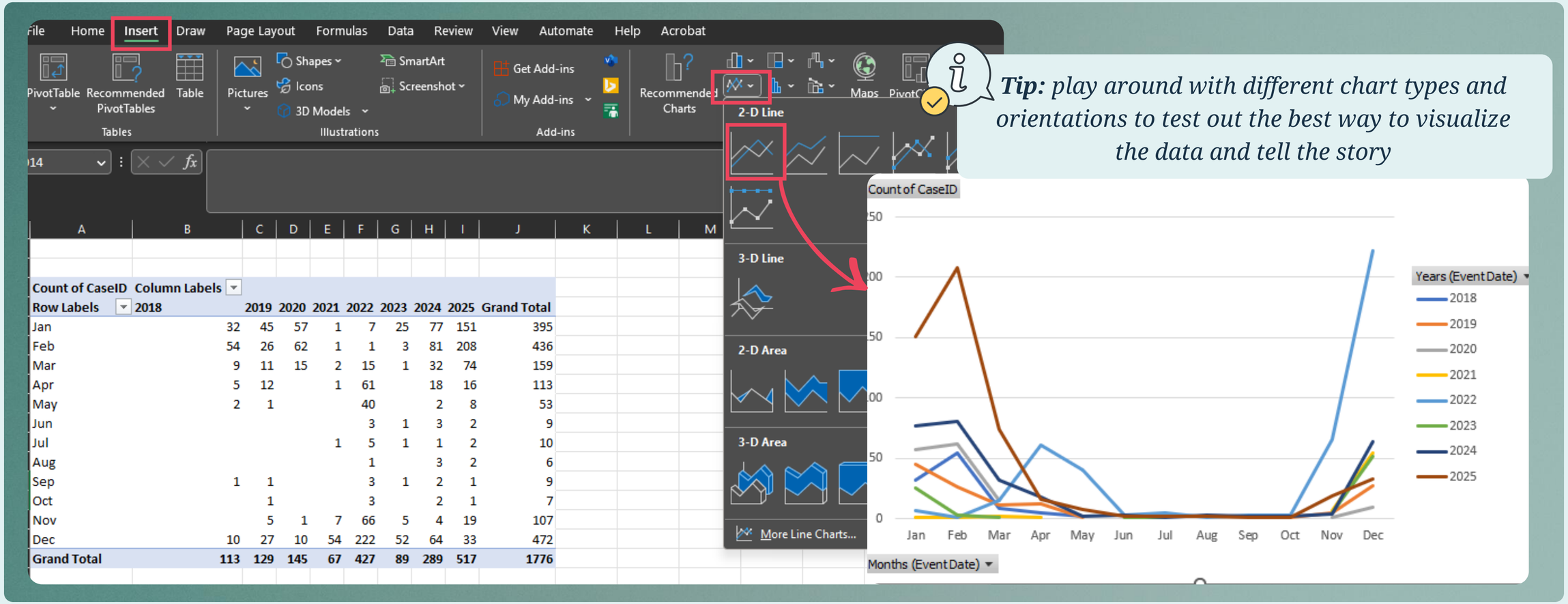




Now you can “see” the data

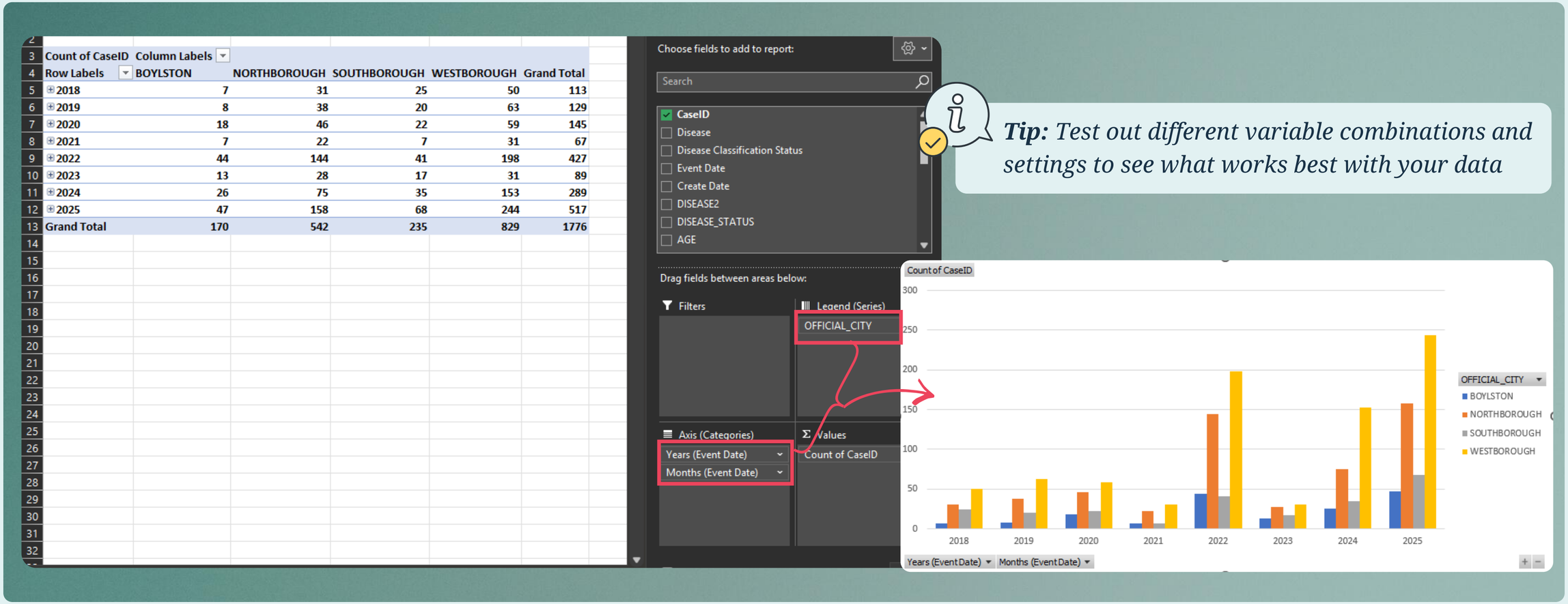
Creating a table by dragging and dropping variables can help you see the data and better understand how you want to set it up.

Step 5 Visualizing a data table



Count of CaseID	Column Labels								
Row Labels	2018	2019	2020	2021	2022	2023	2024	2025	Grand Total
Jan	32	45	57	1	7	25	77	151	395
Feb	54	26	62	1	1	3	81	208	436
Mar	9	11	15	2	15	1	32	74	159
Apr	5	12		1	61		18	16	113
May	2	1			40		2	8	53
Jun					3	1	3	2	9
Jul				1	5	1	1	2	10
Aug					1		3	2	6
Sep	1	1			3	1	2	1	9
Oct		1			3		2	1	7
Nov		5	1	7	66	5	4	19	107
Dec	10	27	10	54	222	52	64	33	472
Grand Total	113	129	145	67	427	89	289	517	1776

Step 6 Assess and Adjust



Count of CaseID	Column Labels				
Row Labels	BOYLSTON	NORTHBOROUGH	SOUTHBOROUGH	WESTBOROUGH	Grand Total
2018	7	31	25	50	113
2019	8	38	20	63	129
2020	18	46	22	59	145
2021	7	22	7	31	67
2022	44	144	41	198	427
2023	13	28	17	31	89
2024	26	75	35	153	289
2025	47	158	68	244	517
Grand Total	170	542	235	829	1776

Tip: *Test out different variable combinations and settings to see what works best with your data*

General Process

1. Pulling Data from MAVEN
2. Compiling, formatting and cleaning data
3. Insert a Pivot Table with raw data
4. Format variables
5. Create base pivot table
6. Visualize table
7. Assess and Adjust

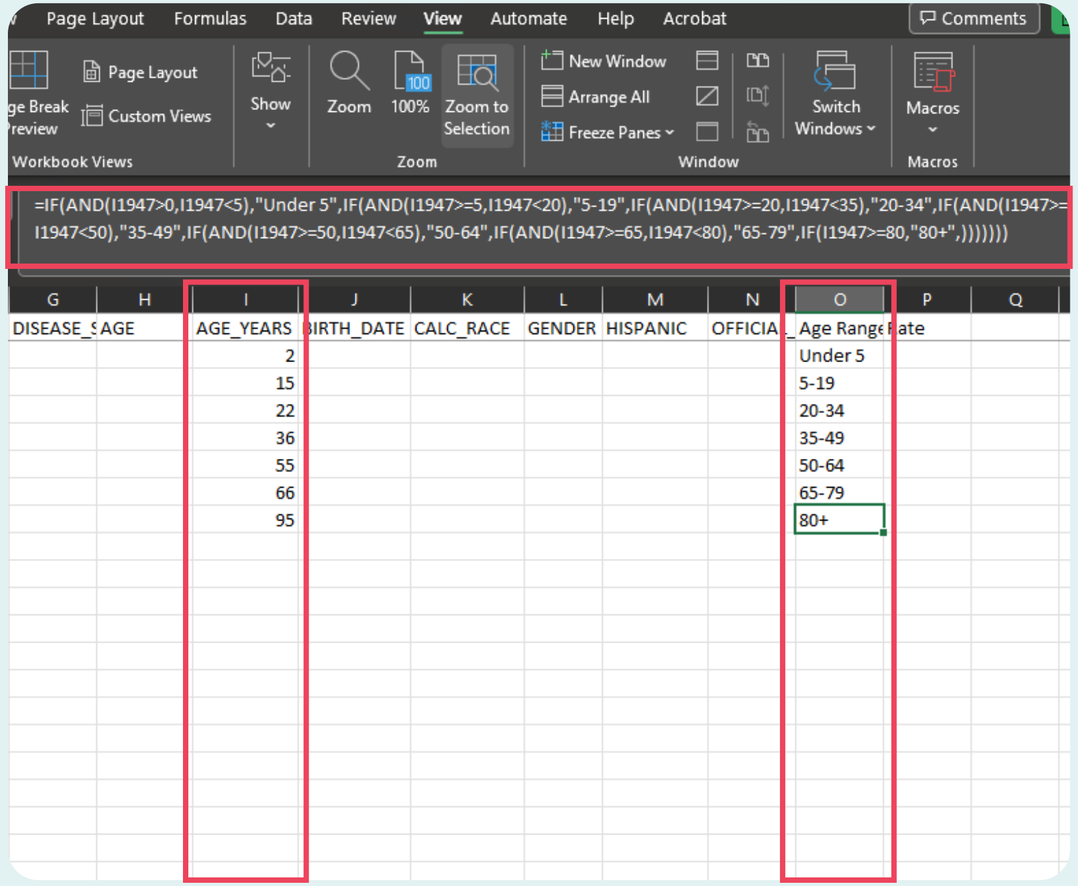
Doing more with Data

Ways to add on more insight to Pivot Table Data

Three ways to customize your data

1. Grouping
2. Additional Analysis
3. Data Visualization

1. Grouping: Creating Age Groups



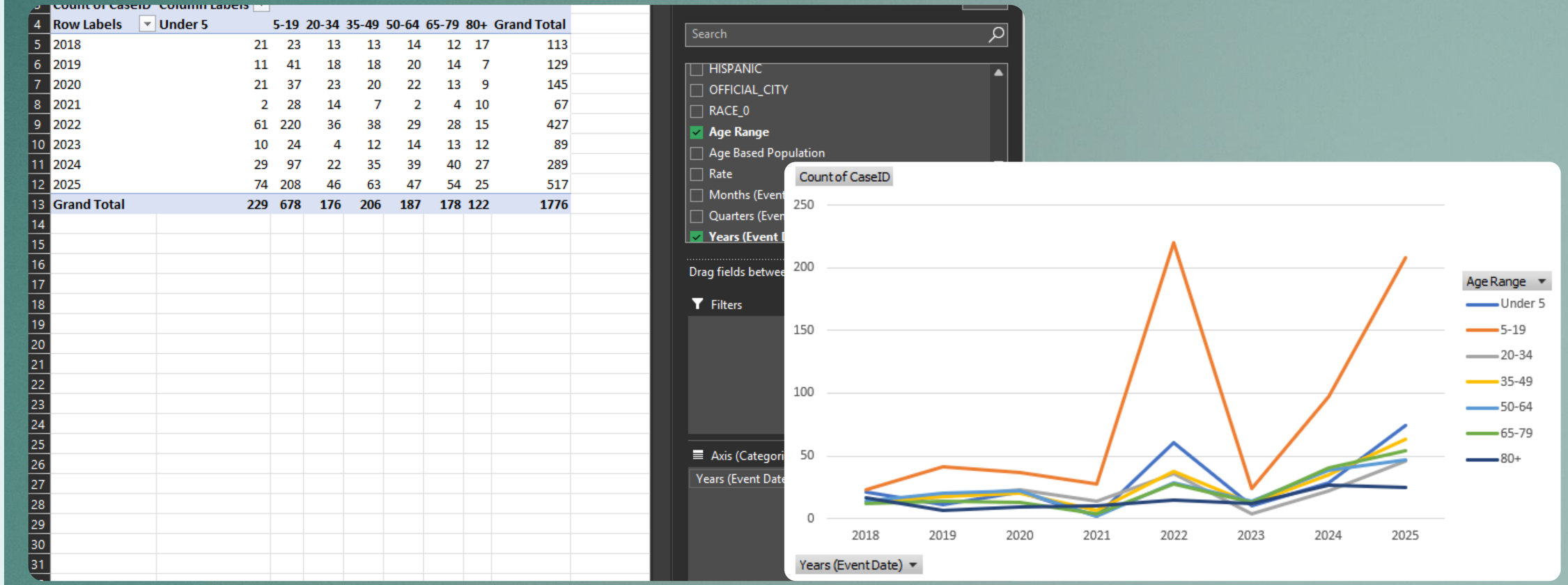
Using the variables from original data you can create groupings with a formula:

```
=IF(AND(I1947>0,I1947<5),"Under 5",
IF(AND(I1947>=5,I1947<20),"5-19",
IF(AND(I1947>=20,I1947<35),"20-34",
IF(AND(I1947>=35,I1947<50),"35-49",
IF(AND(I1947>=50,I1947<65),"50-64",
IF(AND(I1947>=65,I1947<80),"65-79",
IF(I1947>=80,"80+",)))))))
```

What the formula is saying: IF in column I row 1947, the number is greater than 0 AND less than 5, then call it Under 5, if it is not between those values, then move to the next condition.

1. Grouping: Creating Age Group

Count of CaseID	Column Labels							
Row Labels	Under 5	5-19	20-34	35-49	50-64	65-79	80+	Grand Total
2018	21	23	13	13	14	12	17	113
2019	11	41	18	18	20	14	7	129
2020	21	37	23	20	22	13	9	145
2021	2	28	14	7	2	4	10	67
2022	61	220	36	38	29	28	15	427
2023	10	24	4	12	14	13	12	89
2024	29	97	22	35	39	40	27	289
2025	74	208	46	63	47	54	25	517
Grand Total	229	678	176	206	187	178	122	1776

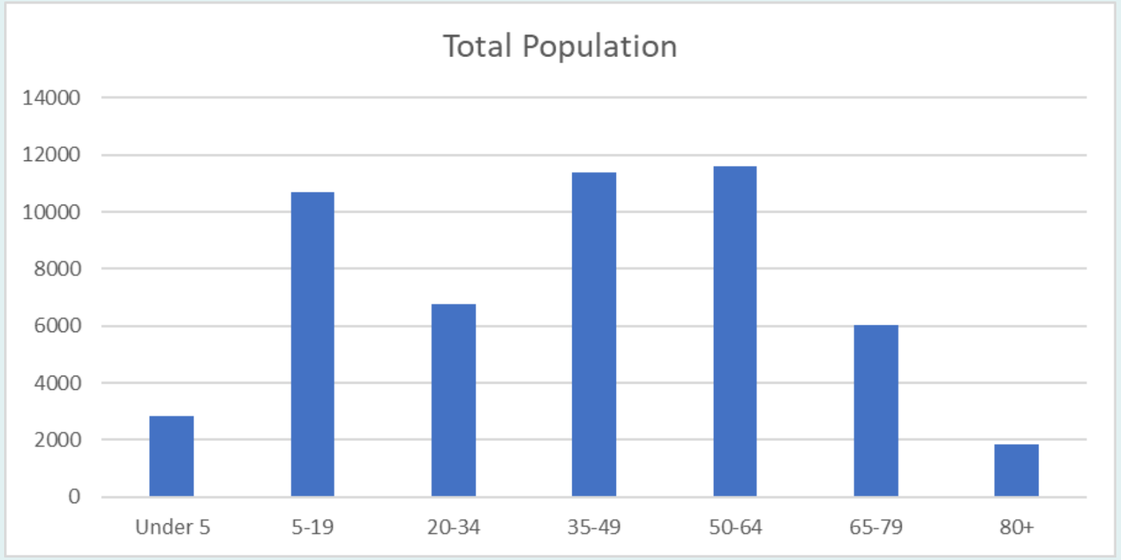


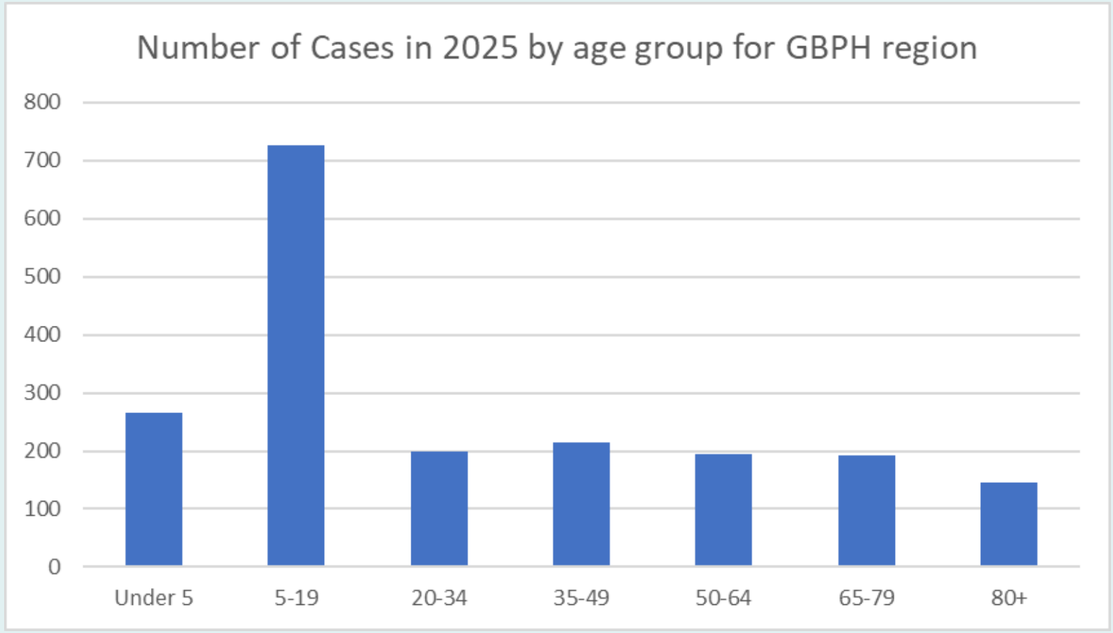
2. Additional Analysis: Rates by Age Group

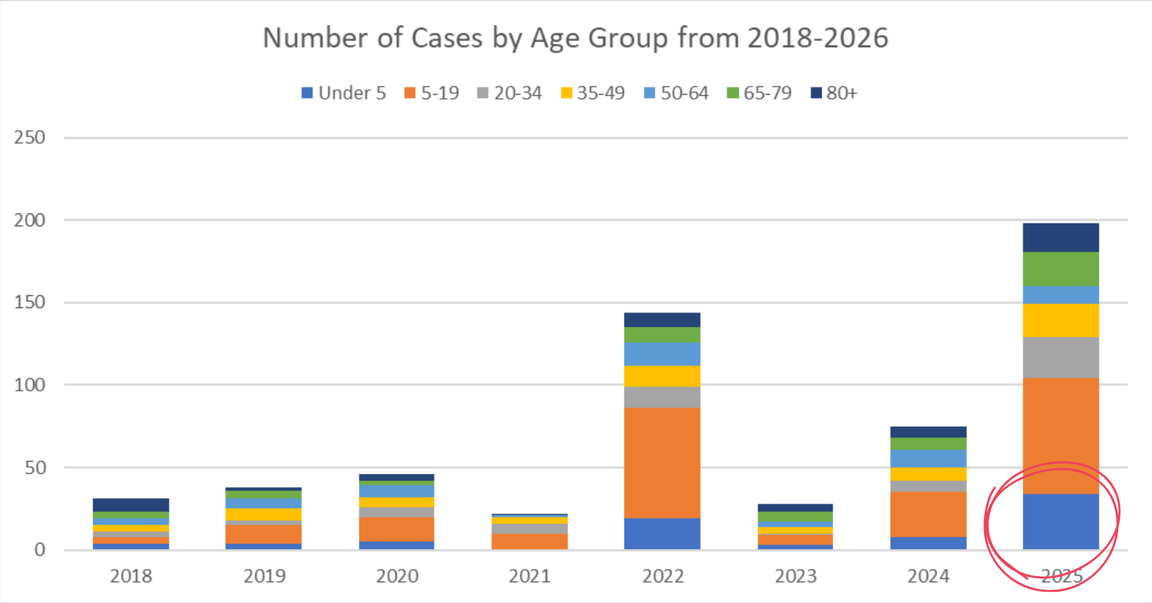
Age Group	Northborough	Southborough	Westborough	Boylston	Total
Under 5	667	706	1189	275	2837
5-19	3062	2246	4671	697	10676
20-34	2269	1417	2533	527	6746
35-49	3040	2290	4865	1202	11397
50-64	4024	2421	3953	1204	11602
65-79	2139	980	2076	852	6047
80+	493	381	814	139	1827
Total	15694	10441	20101	4896	51132

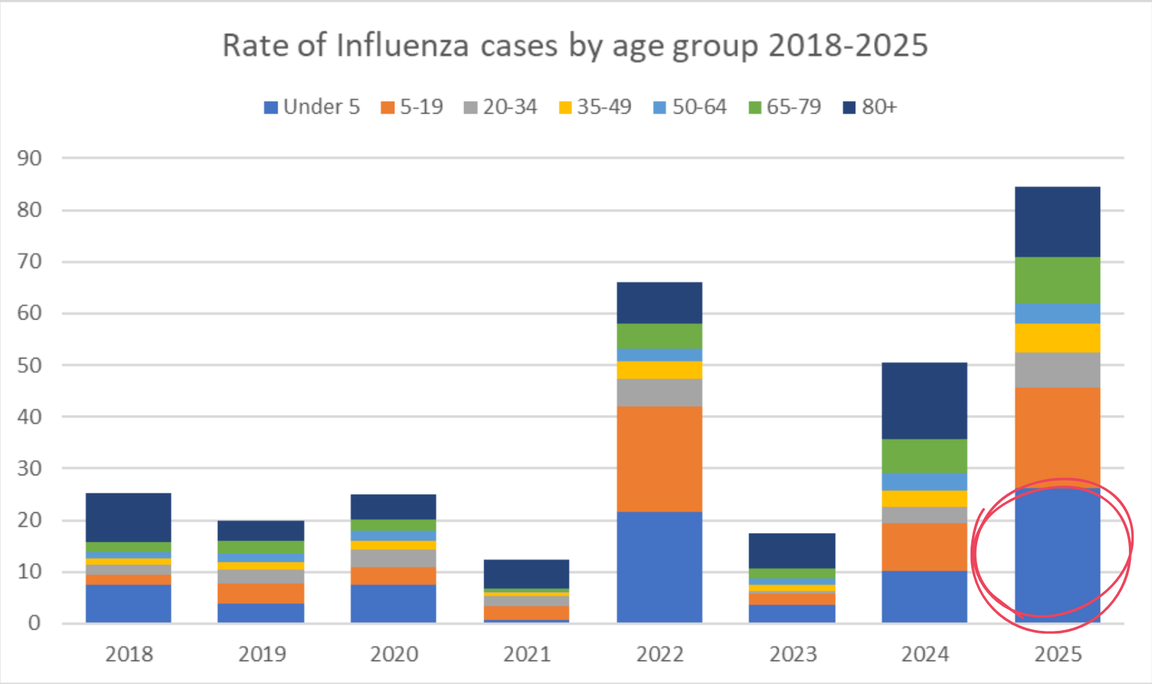
General Formula:

$$\left(\frac{\text{Total cases in a season}}{\text{Total population}}\right) * 1000$$





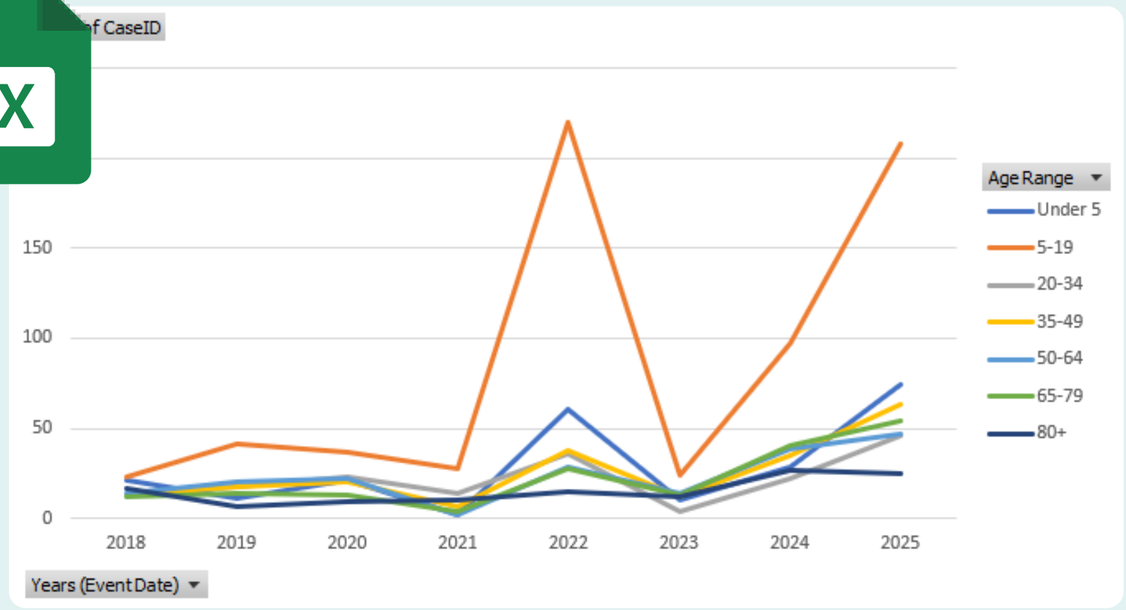


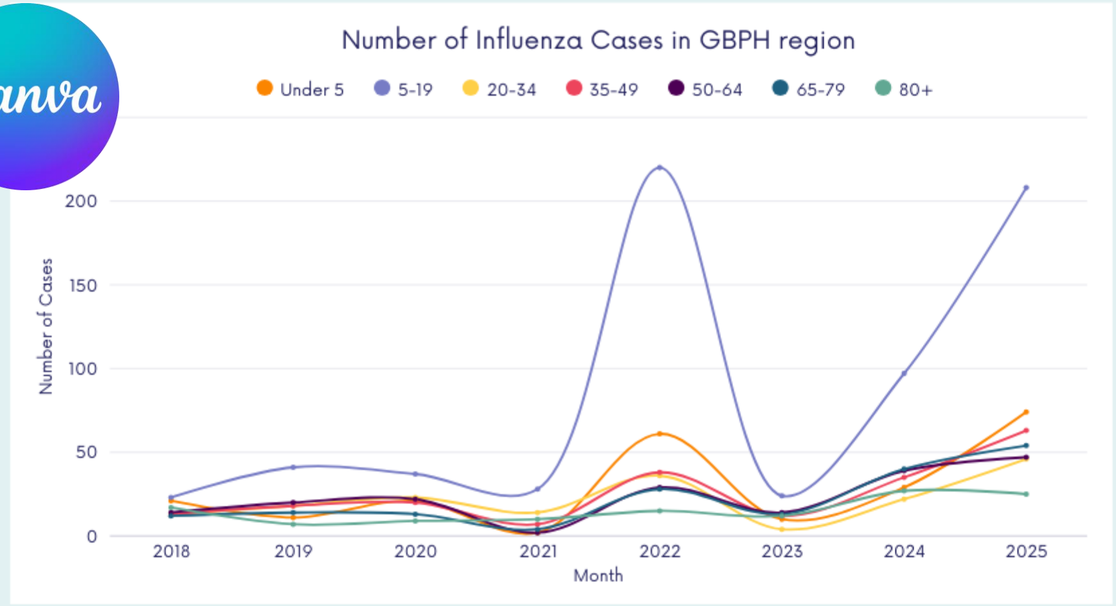


2. Additional Analysis: Rates by Age Group

Viewing cases by a rate of the population helps account for the different sizes of the age groups

Age Group	Northborough	Southborough	Westborough	Boylston	Total
Under 5	667	706	1189	275	2837
5-19	3062	2246	4671	697	10676
20-34	2269	1417	2533	527	6746
35-49	3040	2290	4865	1202	11397
50-64	4024	2421	3953	1204	11602
65-79	2139	980	2076	852	6047
80+	493	381	814	139	1827
Total	15694	10441	20101	4896	51132





3. Data Visualization

taking it to the next level

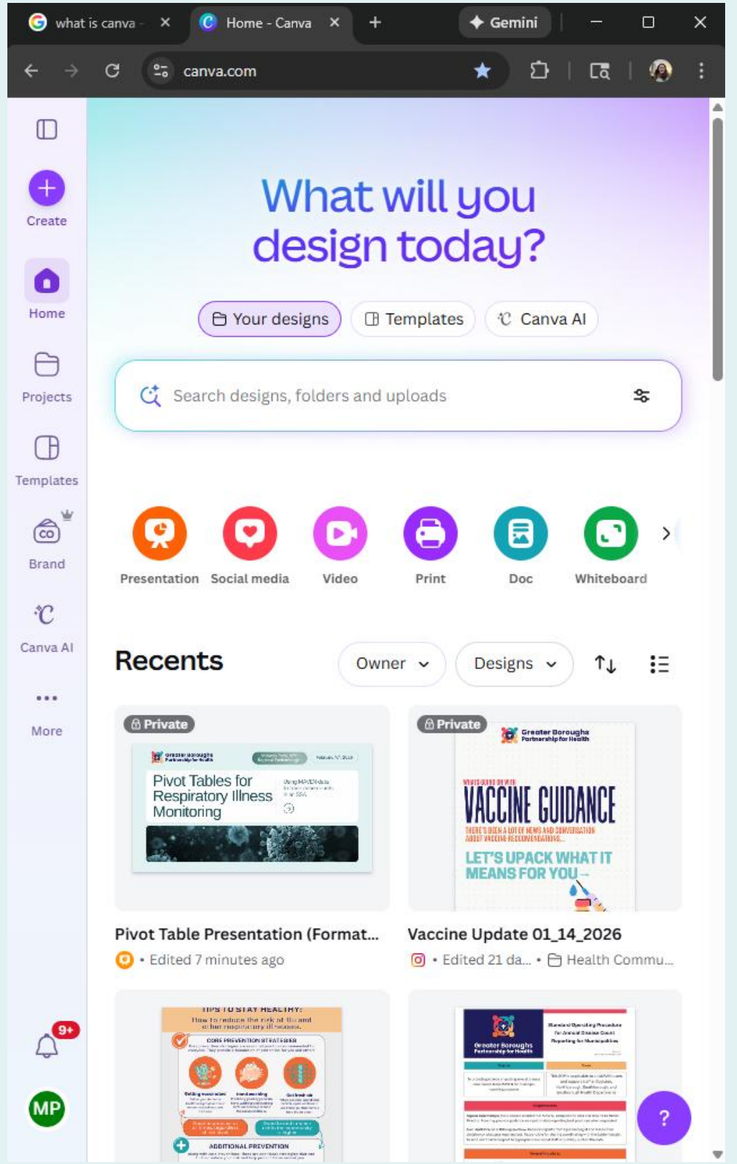
Taking the output from Excel and communicating it out.

What is Canva?

- Web-bases graphic design platform
- Can create a free account
- User-friendly
- Customize Templates
- Can collaborate with other users

What you can do:

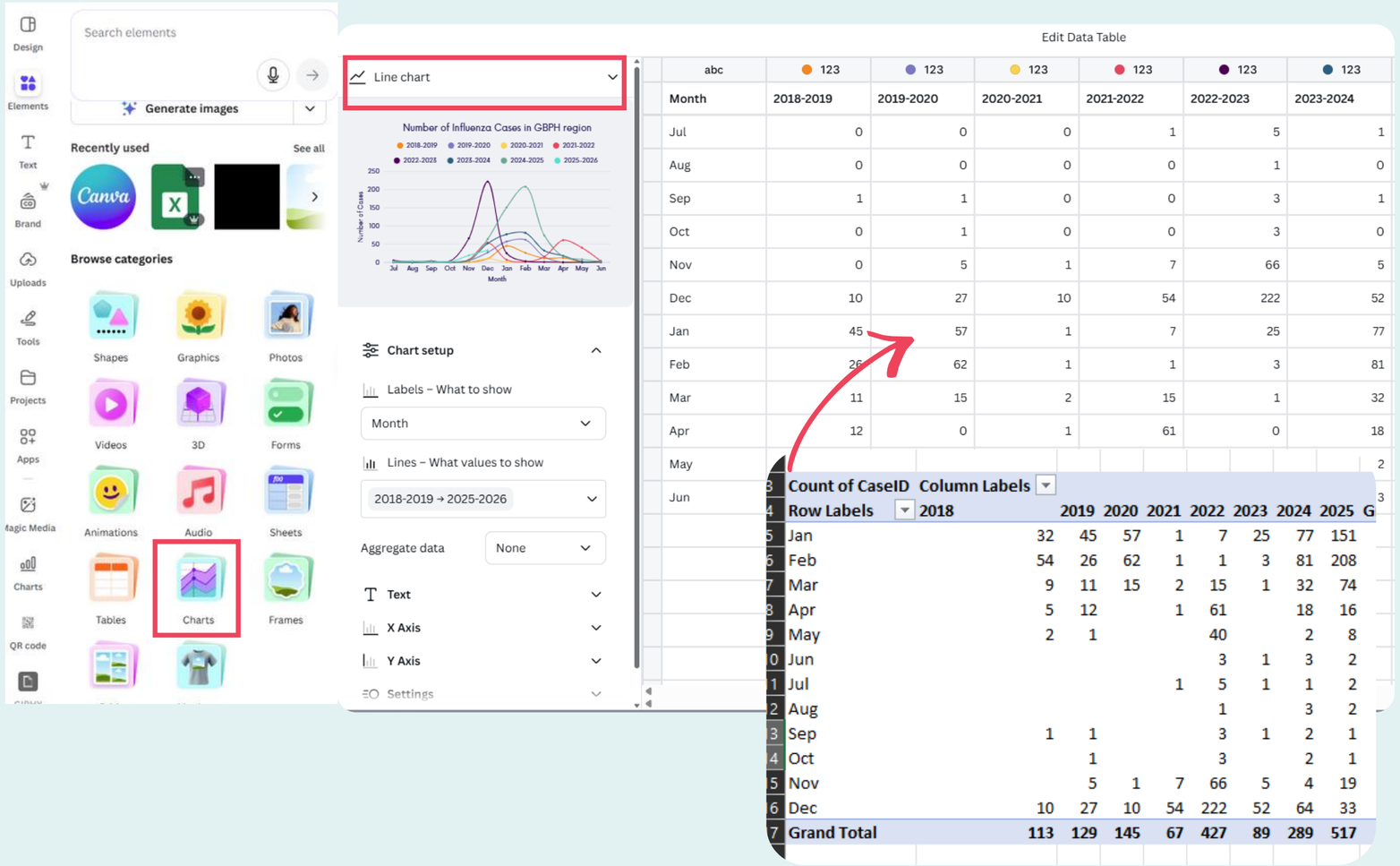
- Presentations
- Social Media
- Flyers
- Documents
- Brainstorming



Telling the data story: User friendly visuals

While you can use Excel to create charts and graphs, you can also use other tools to create impactful visuals by:

1. Copy the output from your Pivot table
2. Paste that data into Canva
3. Test out various charts to see what fits your data story the bets



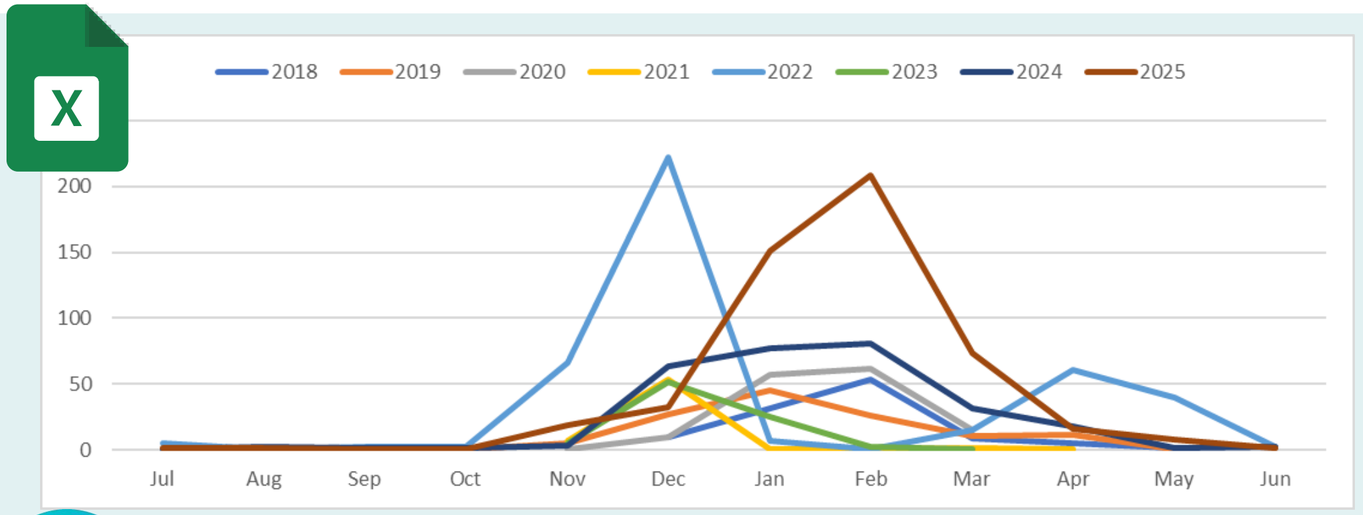
Month	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024
Jul	0	0	0	1	5	1
Aug	0	0	0	0	1	0
Sep	1	1	0	0	3	1
Oct	0	1	0	0	3	0
Nov	0	5	1	7	66	5
Dec	10	27	10	54	222	52
Jan	45	57	1	7	25	77
Feb	26	62	1	1	3	81
Mar	11	15	2	15	1	32
Apr	12	0	1	61	0	18
May						2
Jun						3

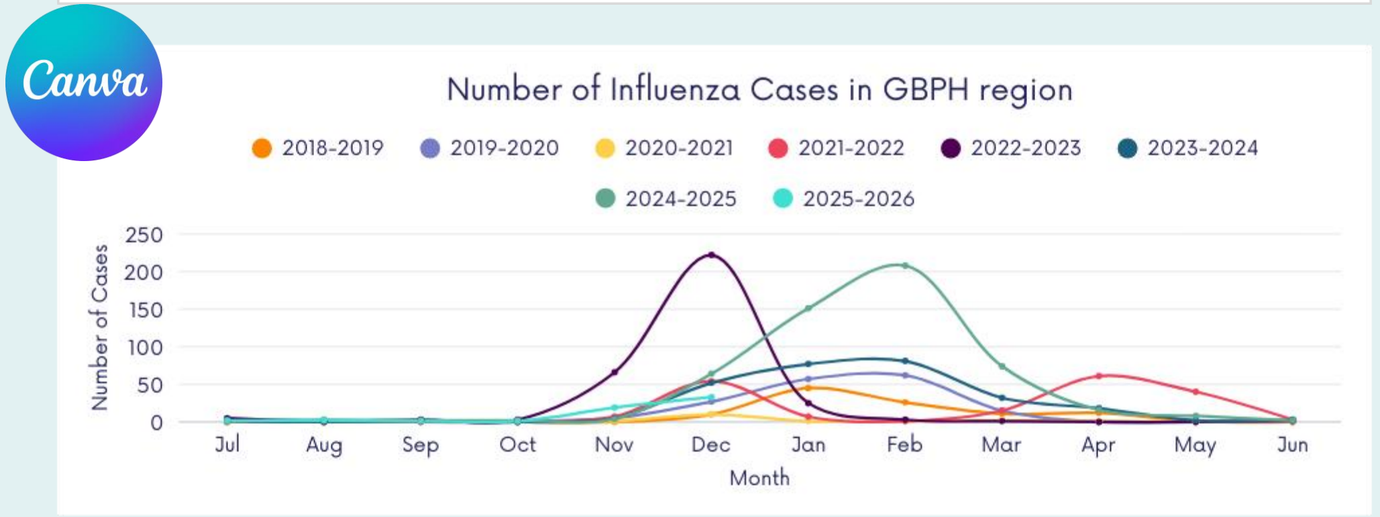
Count of CaseID	Column Labels							
Row Labels	2018	2019	2020	2021	2022	2023	2024	2025 G
Jan	32	45	57	1	7	25	77	151
Feb	54	26	62	1	1	3	81	208
Mar	9	11	15	2	15	1	32	74
Apr	5	12		1	61		18	16
May	2	1			40		2	8
Jun					3	1	3	2
Jul				1	5	1	1	2
Aug					1		3	2
Sep	1	1			3	1	2	1
Oct		1			3		2	1
Nov		5	1	7	66	5	4	19
Dec	10	27	10	54	222	52	64	33
Grand Total	113	129	145	67	427	89	289	517

Telling the data story: User friendly visuals

The two graphs tell the same story

- Excel helps with data analysis and orgaization
- Canva helps making user friendly visuals that you can incorporate into other communications





In Summary

- Pivot Tables provide a quick, flexible way to assess and summarize data
- There are 7 steps to go from MAVEN reports to creating a Pivot Table to use in communications, presentation, or trend tracking
- There are additional steps you can take to customize your reports through custom grouping, additional analysis, or data visualization platforms

One table... so many options

Thank you!

MAKAYLA PETTY, MPH

Greater Boroughs Partnership for Health

Regional Epidemiologist/Shared Service Coordinator

mpetty@town.northborough.ma.us

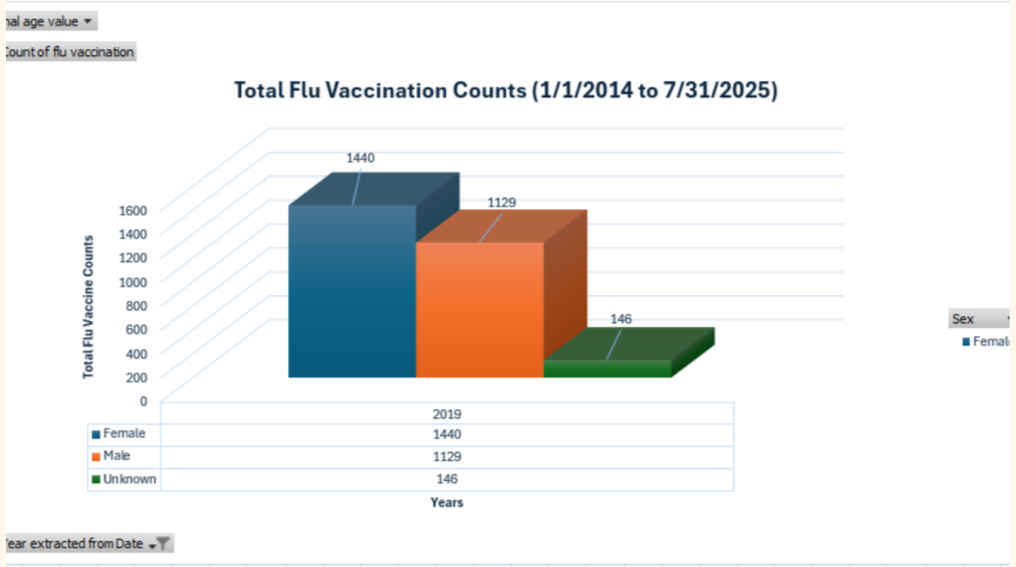
USING PIVOT TABLES TO UNDERSTAND PUBLIC HEALTH DATA

GRUHA PATEL
REGIONAL EPIDEMIOLOGIST
(MYSTIC VALLEY PUBLIC HEALTH COALITION)

Table of Contents

Raw Data vs. Summary Data

Feature	Raw MIIS Data (The Chaos)	Summary Pivot Table (The Clarity)
View	5000 rows of individual shots	5 rows of annual totals
Effort	Manual sorting and filtering	Instant visual comparison
Insight	"Patient X got a Flu shot."	"Flu shot uptake is down 10% this year."



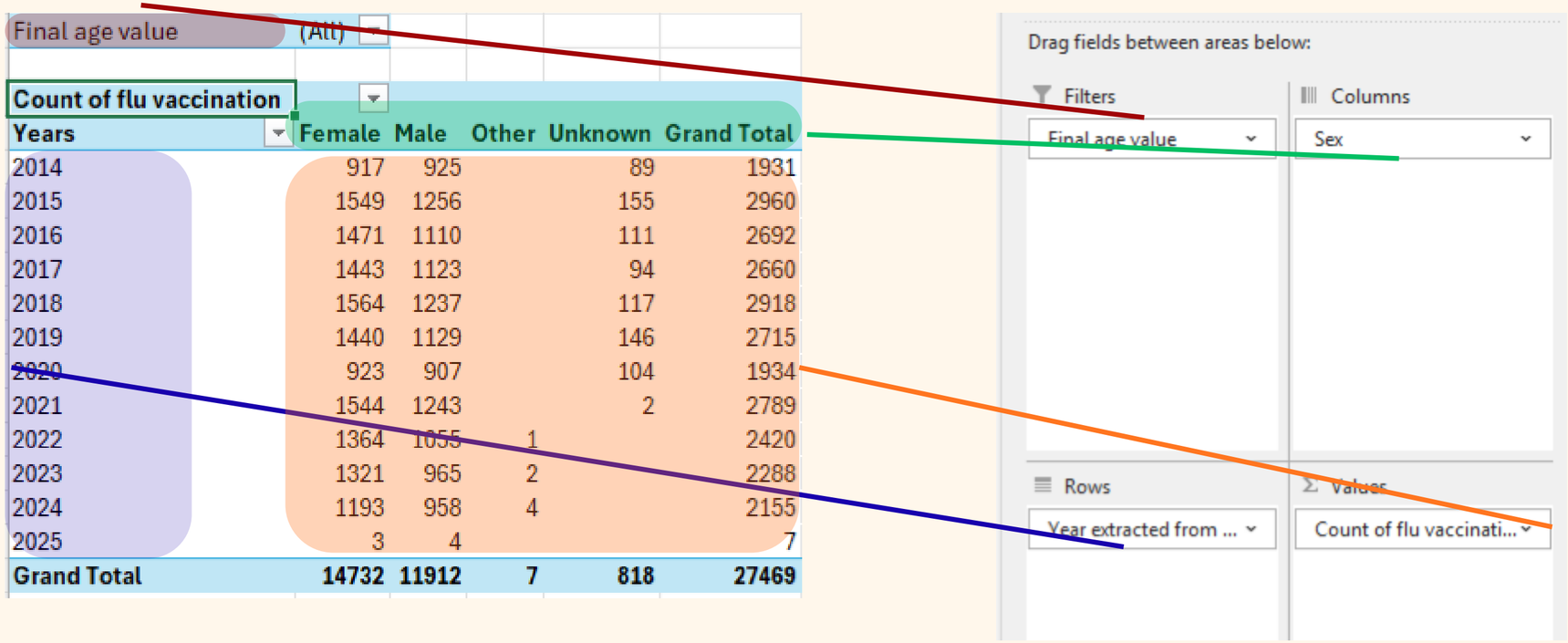
Last Name	First Name	Middle Name	MIIS ID	Birth Date	Age	Sex	Race	Ethnicity	Street A
			23466259		24 yr 7 mo	Female	White	not Hispanic or Latino	
			3231861		85 yr 1 mo	Female	Other Race;White	not Hispanic or Latino	
			3231861		85 yr 1 mo	Female	Other Race;White	not Hispanic or	

Street Address	Address Line 2	City	State	Zip	MRN	Department	Vaccine	Lot Number	Date Given	Record Source Type
		Winchester	MA	01890			Flu-LAIV4		10/22/2014	Administered
		Winchester	MA	01890			Flu-IIV4, p-free High Dose		10/10/2023	Administered
		Winchester	MA	01890			Flu-IIV4, p-free		10/11/2022	Administered

Key Message:
Data is only useful if it tells a story. Pivot Tables are the "translator."

Count of flu vaccination					
Years	Female	Male	Other	Unknown	Grand Total
2014	917	925		89	1931
2015	1549	1256		155	2960
2016	1471	1110		111	2692
2017	1443	1123		94	2660
2018	1564	1237		117	2918
2019	1440	1129		146	2715
2020	923	907		104	1934
2021	1544	1243		2	2789
2022	1364	1055	1		2420
2023	1321	965	2		2288
2024	1193	958	4		2155
2025	3	4			7
Grand Total	**14732**	**11912**	**7**	**818**	**27469**

The Anatomy of a Pivot Table



Final age value	(All)				
Count of flu vaccination					
Years	Female	Male	Other	Unknown	Grand Total
2014	917	925		89	1931
2015	1549	1256		155	2960
2016	1471	1110		111	2692
2017	1443	1123		94	2660
2018	1564	1237		117	2918
2019	1440	1129		146	2715
2020	923	907		104	1934
2021	1544	1243		2	2789
2022	1364	1055	1		2420
2023	1321	965	2		2288
2024	1193	958	4		2155
2025	3	4			7
Grand Total	14732	11912	7	818	27469

Pivot tables use four main components:

Rows – The primary grouping (*Example: Year extracted from the date*)

Columns – The comparison category (*Example: Sex*)

Values – The numerical data (*Example: Count of flu vaccination*)

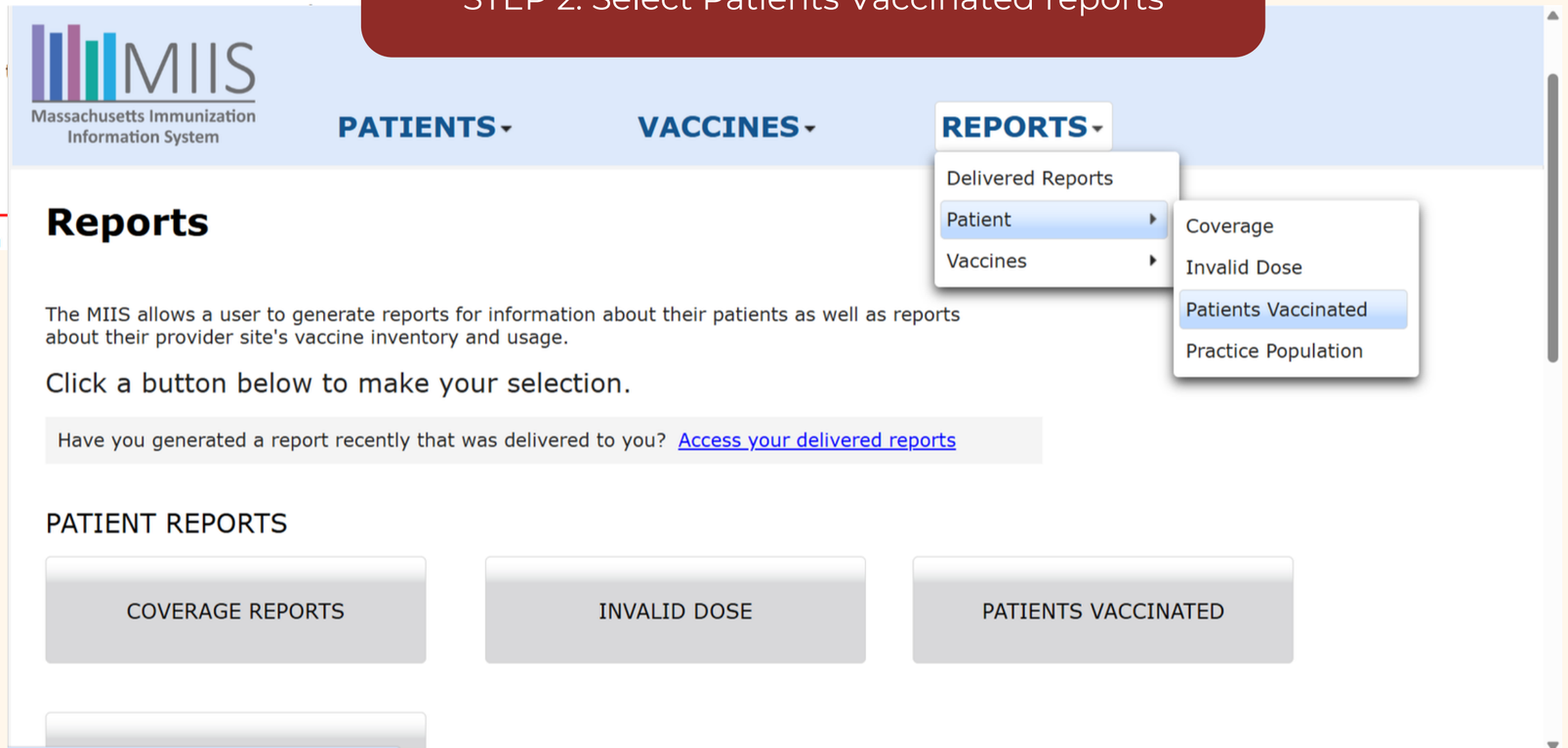
Filters – Narrowing the scope (*Example: Final age value*)

Key idea: *You choose the question – the pivot table does the counting*

Example : MIIS Immunization Data (Winchester)

STEP 1: Log in to your MIIS account

STEP 2: Select Patients Vaccinated reports



STEP 3: Select the parameters of your report

Patients Vaccinated Report

Input Parameters

This report displays patients who received at least one dose of a Selected Vaccine during the specified Administration Date range as well as details for each of the vaccines given.

Report Name: Flu Vaccination Winchester

Population:

(•) Include my patients ( ) Include all residents (This will include patients with a home, or guardian, or mailing address in the town of interest; the address displayed is the most recently updated, which may be outside the town of interest if there are two addresses on record)

Vaccine Administration Date Range (FROM): 01/01/2011 (TO): 07/31/2025

*Record Source Type To Include: Administered

*Vaccine Groups: Flu

Available Vaccines:	
	Flu nasal, unspecified
	Flu, S. Hemisphere, unspecified
	Flu, unspecified
	Flu-IIV3
	Flu-IIV3(TIV), whole virus
	Flu-IIV3(TIV)-ID
	Flu-IIV3, S.Hemisphere PF
	Flu-IIV3, p-free High Dose

▾ Limit Report By Immunization Information

STEP 4: Download your report from MIIS

MIIS
Massachusetts Immunization Information System

PATIENTS ▾ VACCINES ▾ REPORTS ▾

- Delivered Reports
- Patient ▸
- Vaccines ▸

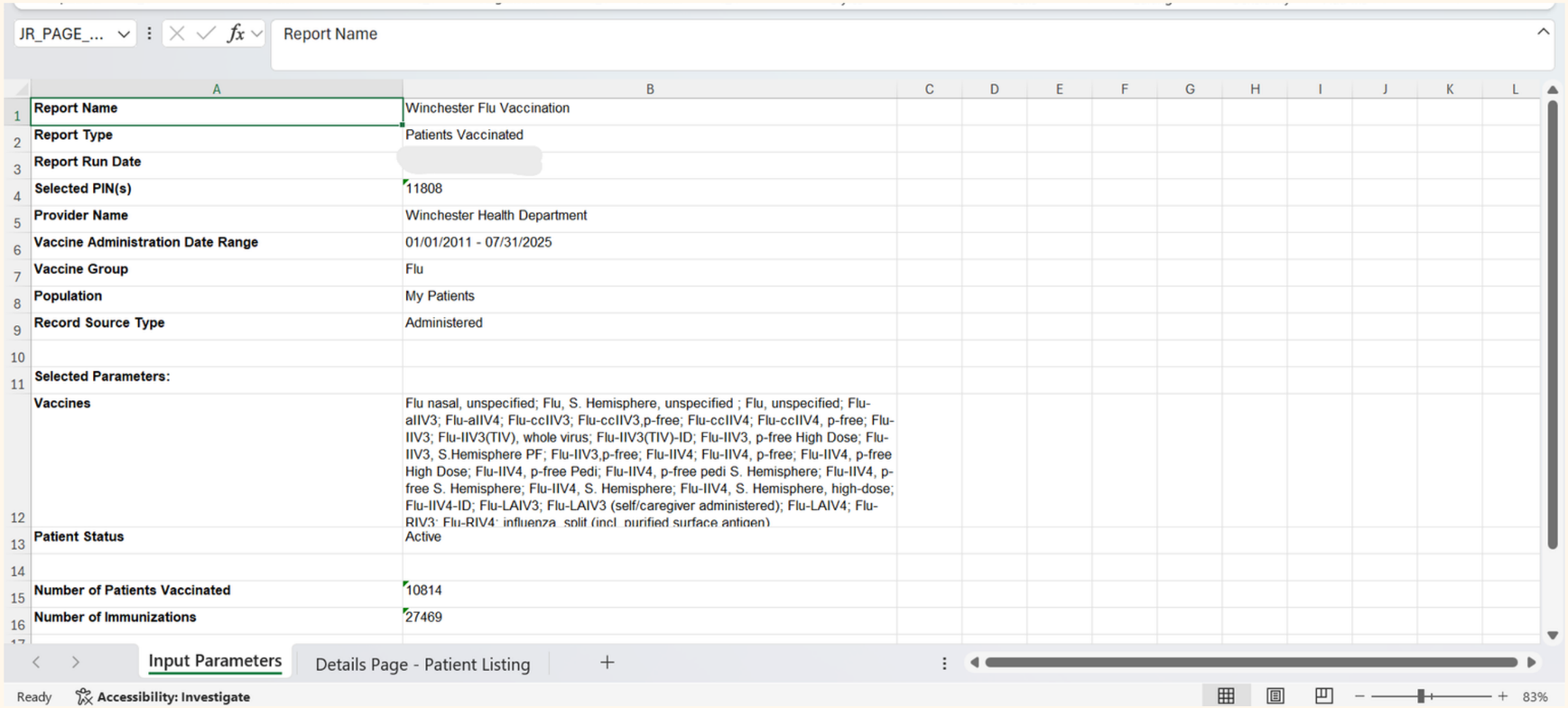
Delivered Reports

Reports to Include: (•) Mine Only ( ) Full Practice

REPORT TYPE	INITIATED DATE	DELIVERED DATE	USER NAME
Patients Vaccinated Report Excel	[redacted]	[redacted]	Gruha Patel
Patients Vaccinated Report Excel	[redacted]	[redacted]	Gruha Patel
Patients Vaccinated Report Excel	[redacted]	[redacted]	Gruha Patel

Cancel

How Raw data and report appear in Excel



JR_PAGE_... | fx | Report Name

	A	B
1	**Report Name**	Winchester Flu Vaccination
2	**Report Type**	Patients Vaccinated
3	**Report Run Date**	
4	**Selected PIN(s)**	11808
5	**Provider Name**	Winchester Health Department
6	**Vaccine Administration Date Range**	01/01/2011 - 07/31/2025
7	**Vaccine Group**	Flu
8	**Population**	My Patients
9	**Record Source Type**	Administered
10		
11	**Selected Parameters:**	
12	**Vaccines**	Flu nasal, unspecified; Flu, S. Hemisphere, unspecified ; Flu, unspecified; Flu-aIIV3; Flu-aIIV4; Flu-ccIIV3; Flu-ccIIV3,p-free; Flu-ccIIV4; Flu-ccIIV4, p-free; Flu-IIV3; Flu-IIV3(TIV), whole virus; Flu-IIV3(TIV)-ID; Flu-IIV3, p-free High Dose; Flu-IIV3, S.Hemisphere PF; Flu-IIV3,p-free; Flu-IIV4; Flu-IIV4, p-free; Flu-IIV4, p-free High Dose; Flu-IIV4, p-free Pedi; Flu-IIV4, p-free pedi S. Hemisphere; Flu-IIV4, p-free S. Hemisphere; Flu-IIV4, S. Hemisphere; Flu-IIV4, S. Hemisphere, high-dose; Flu-IIV4-ID; Flu-LAIV3; Flu-LAIV3 (self/caregiver administered); Flu-LAIV4; Flu-RIV3; Flu-RIV4; influenza, split (incl. purified surface antigen)
13	**Patient Status**	Active
14		
15	**Number of Patients Vaccinated**	10814
16	**Number of Immunizations**	27469

Input Parameters | Details Page - Patient Listing | +

Ready | Accessibility: Investigate | 83%

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
1	**Last Name**	**First Name**	**Middle Name**	**MIIS ID**	**Birth Date**	**Age**	**Sex**	**Race**	**Ethnicity**	**Street Address**	**Address Line 2**	**City**	**State**	**Zip**	**MRN**	**Department**	**Vaccine**	**Lot Number**	**Date Given**	**Record Source Type**
2				23466259		24 yr 7 mo	Female	White	not Hispanic or Latino			Winchester	MA	01890			Flu-LAIV4		10/22/2014	Administered
3				3231861		85 yr 1 mo	Female	Other Race;White	not Hispanic or Latino			Winchester	MA	01890			Flu-IIV4, p-free High Dose		10/10/2023	Administered
				3231861		85 yr 1 mo	Female	Other Race;White	not Hispanic or			Winchester	MA	01890			Flu-IIV4, p-free		10/11/2022	Administered

Mini Guidebook for Patient vaccinated report

MIIS
Massachusetts Immunization Information System

MINI GUIDE

Report Series

Patients Vaccinated Report

MIIS Helpdesk | P. 617-983-4335 | F. 857-323-8321 | miishelpdesk@mass.gov | www.miisresourcecenter.com | https://sso.hhs.state.ma.us

Step 1 Navigation

There are 2 ways to access *Patients Vaccinated Report:*

Option A:

https://resources.miisresourcecenter.com/trainingcenter/Patient%20Vaccinated%20Report_Mini%20Guide.pdf
https://resourcecenter.miis.dph.mass.gov/pages/ResourceCenterTrainingCenter#patientReportsForReportsSectionDetail

Streamlining the Chaos: Essential Data cleaning step

Age	Year Component	Month component	derived age	Final age value	Sex	Race	Ethnicity	City	State	Zip	Resident status	Vaccine	Date Given	Year extracted from Date	Record Source Type
24 yr 7 mo	24	7	24.58	25.00	Female	White	not Hispanic or Latino	Winchester	MA	01890	Winchester	Flu-LAIV4	10/22/2014	2014	Administered
85 yr 1 mo	85	1	85.08	85.00	Female	Other Race;White	not Hispanic or Latino	Winchester	MA	01890	Winchester	Flu-IIV4, p-free High Dose	10/10/2023	2023	Administered
85 yr 1 mo	85	1	85.08	85.00	Female	Other Race;White	not Hispanic or Latino	Winchester	MA	01890	Winchester	Flu-IIV4, p-free High Dose	10/11/2022	2022	Administered
85 yr 1 mo	85	1	85.08	85.00	Female	Other Race;White	not Hispanic or Latino	Winchester	MA	01890	Winchester	Flu-IIV3, p-free High Dose	10/06/2015	2015	Administered
23 yr 1 mo	23	1	23.08	23.00	Male	Other Race;White	not Hispanic or Latino	Winchester	MA	01890	Winchester	Flu-IIV4, p-free	10/22/2014	2014	Administered
27 yr 4 mo	27	4	27.33	27.00	Female	White	not Hispanic or Latino	Winchester	MA	01890	Winchester	Flu-LAIV4	10/23/2015	2015	Administered

Year Component

=VALUE(LEFT(C2,FIND(" yr",C2)-1))

Month Component

=VALUE(MID(C2,FIND("yr",C2)+3,FIND(" mo",C2)-FIND("yr",C2)-3))

Derived Age

=$D2 + $E2/12

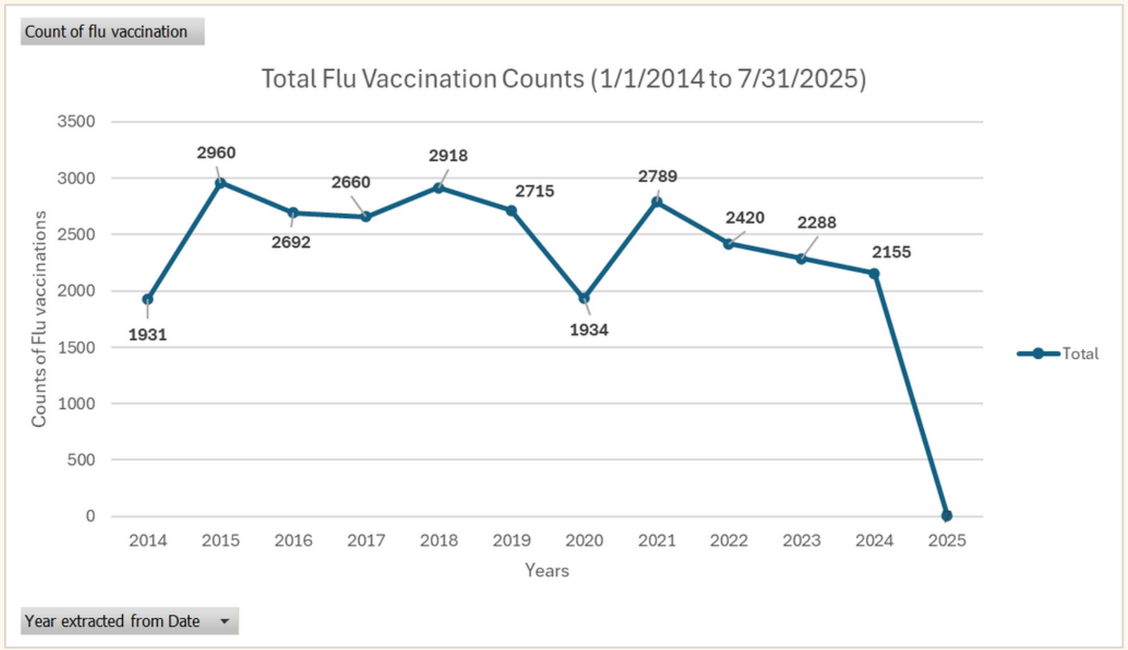
Year Extracted from Date

=YEAR($P2)

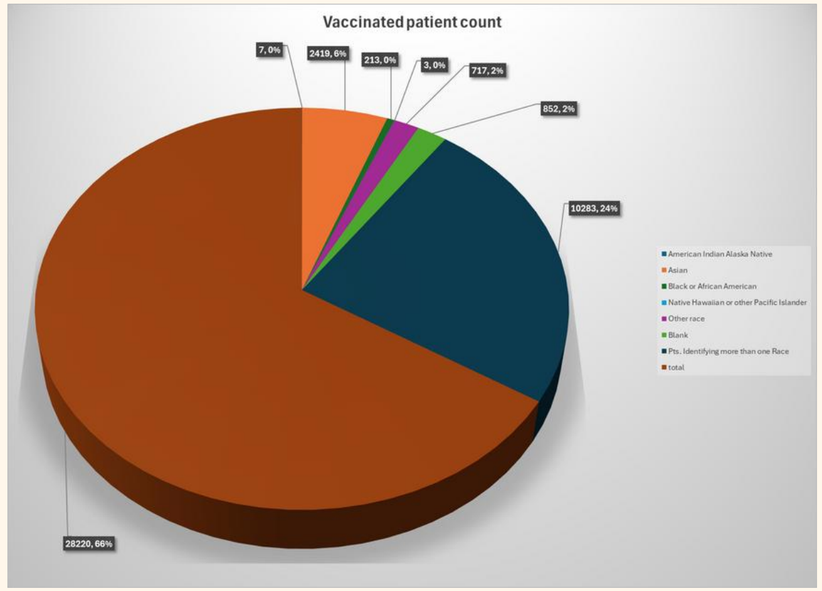
Original String	Year Component	Month Component	Calculation	Final Value (Age)
24 yr 7 mo	24	7	$24 + (7/12)$	**24.58**
85 yr 1 mo	85	1	$85 + (1/12)$	**85.08**

If value is 24.1...	Formula	Result	Logic
Round (Scientific)	`=ROUND(B2, 0)`	**24**	Rounds to the *closest* whole number.
Round UP	`=ROUNDUP(B2, 0)`	**25**	Forces the number to the next highest integer, even if it's 24.01.

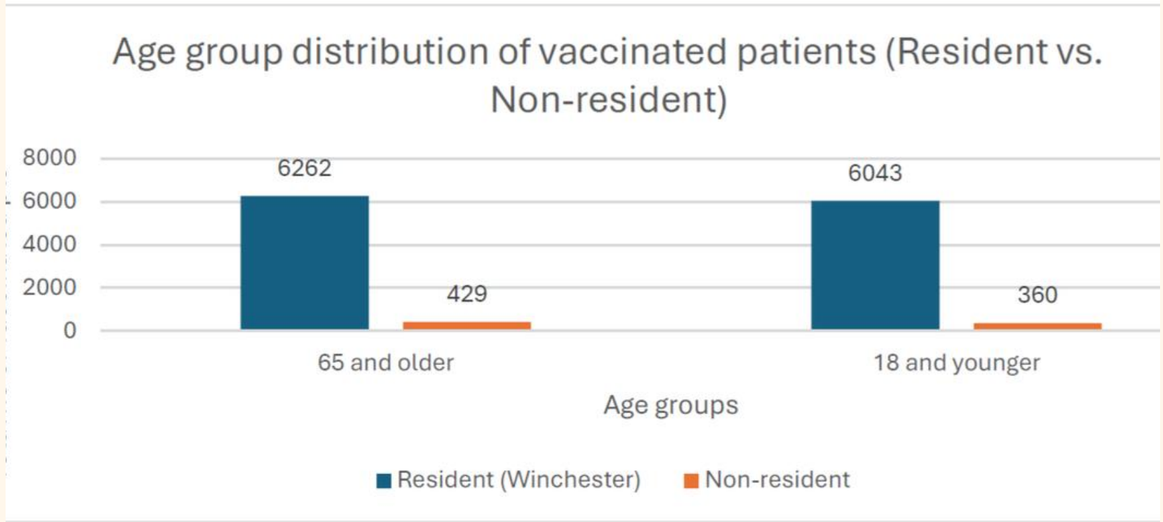
Question 1: "How many people did we vaccinated from 2011 Jan till July 2025? (The trend)"



Question 3: "Who are we missing? (Race/ Ethnicity Gaps)" (The Equity)



Question 2: "Who are we reaching? (Age and Residency)" (The outreach)



Exploring All Categories with Slicers

Why Slicers? They are “one-click”filters.

Slicers used: Year, Residency status, age group, race/ethnicity

Why this matters:

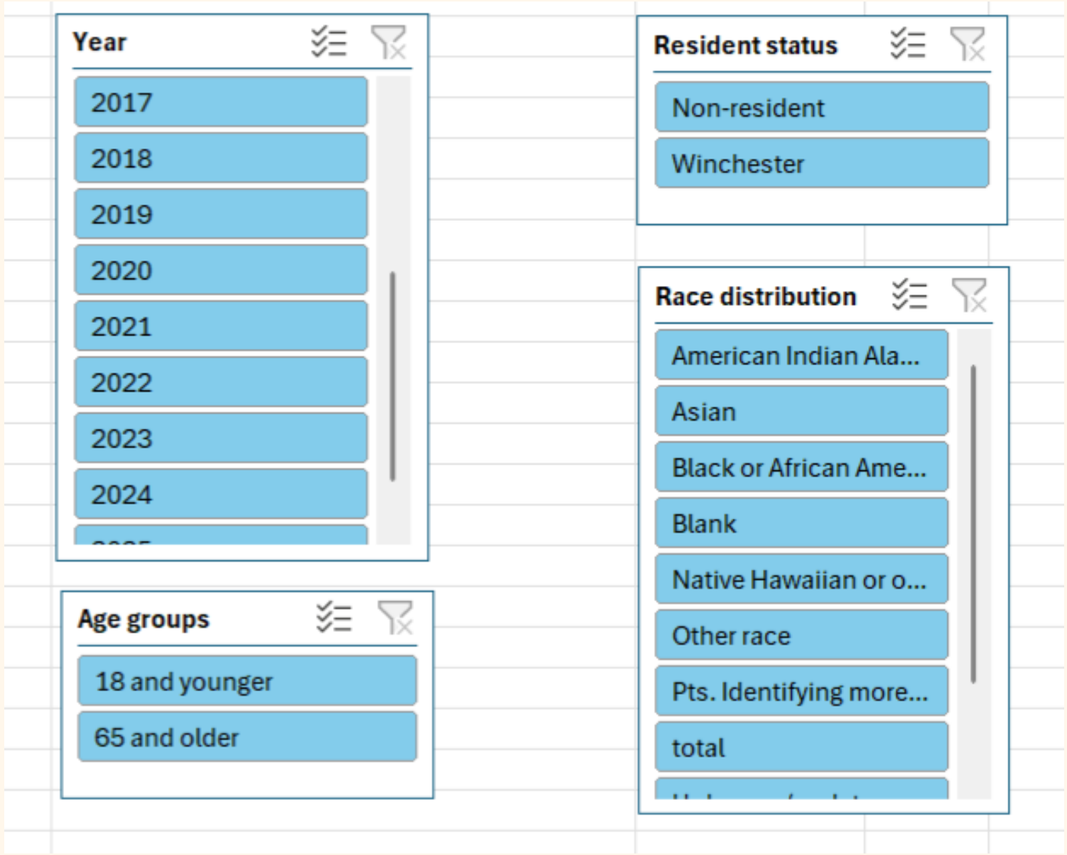
- Quickly focus on specific populations
- Answer ad hoc questions in real time
- Support meetings, reports, and community discussions

Key message:
Slicers turn summary tables into interactive public health tools

Exploring All Categories with Slicers

The Scenario: You are in a meeting. Someone asks: “What do the non-resident trends looks like?”

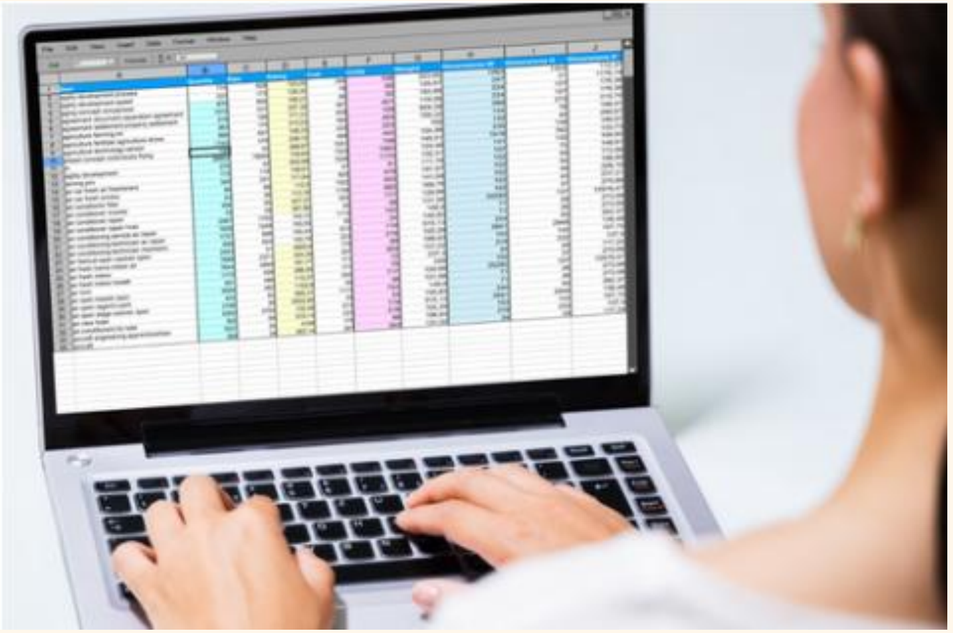
The Action: Click the “Non-Resident button on the Slicer. The whole chart updates instantly.



Using Pivot Tables in Local Public Health

Key Message:

Pivot tables are a practical tool local public health teams can use everyday – and you don't have to do it alone.



Key points:

1. Epidemiologists already use these methods routinely
2. You can partner with your epidemiologists to create tables like these
3. Or, with basic training, build them yourself in Excel
4. Useful for counts, trends, coverage, and comparisons
5. Saves time and improves consistency in reporting

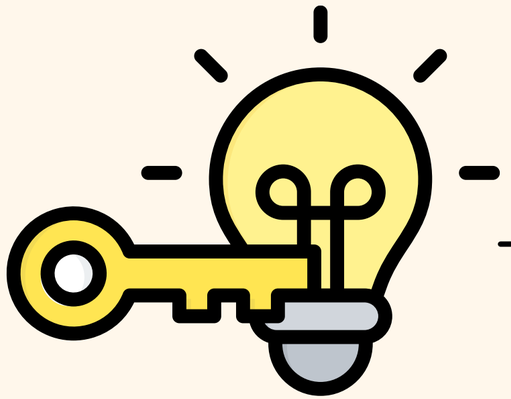
How your Epidemiologists Can Support You

Your Epidemiologist as a Data Partner

What they can help with:

- Setting up pivot tables from MIIS or MAVEN data
- Defining correct denominators and time periods
- Identifying meaningful trends vs noise
- Validating results before sharing publicly
- Helping translate data into actionable insights

Why this matters – Strong collaboration leads to faster, more confident public health decisions.



Key Takeaway

Pivot tables help local public health teams move from raw data to clear, actionable insights – quickly and efficiently.

Final Message:

- You don't need to be a data expert
- You just need the right tools – and the right partners

THANK YOU

QUESTIONS?
GPATEL@CITYOFMELROSE.ORG