

## SUB-NATIONAL UNIT (SNU) FUNCTIONALITY

### Pivot table guide for analyzing data gathered from assessing the functionality of sub-national units

A pivot table is a versatile Microsoft Excel tool that empowers you to analyse, summarize, and interpret large datasets in a user-friendly manner.

#### Why Use a Pivot Table for this SNU analysis?

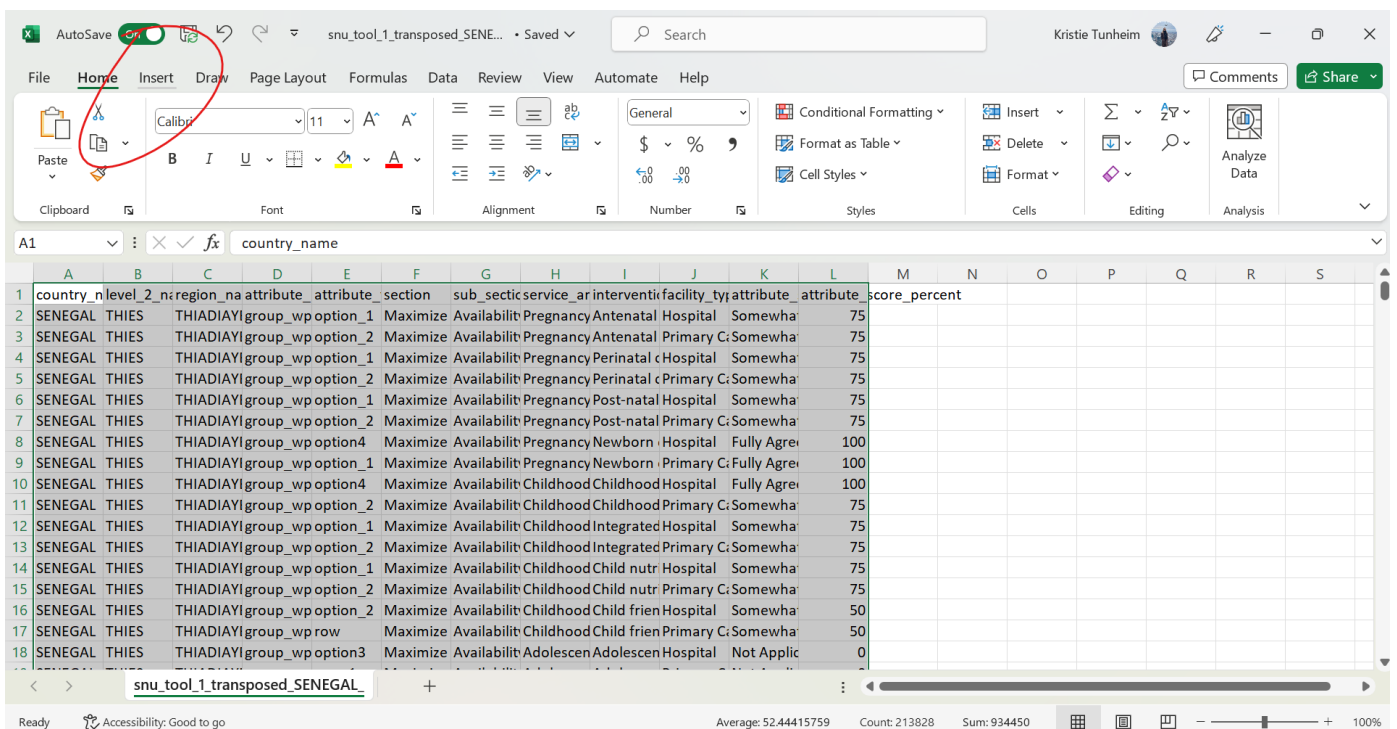
**Summarize Data:** Pivot tables help you summarize and consolidate the large quantities of data gathered from districts and regions into a more manageable format. They allow you to view data from different angles and perspectives, making it easier to identify patterns and trends that indicate where new interventions need to be strategized and implemented.

**Filtering and Sorting:** Pivot tables provide tools to filter and sort data based on various criteria. This helps you isolate specific subsets either by region, district, section, sub-section, service area, intervention, or facility type for closer examination.

**Visual Representation:** Pivot tables often come with visualization options like charts and graphs, making it simpler to comprehend data and communicate findings to others.

### Pivot Table Introduction

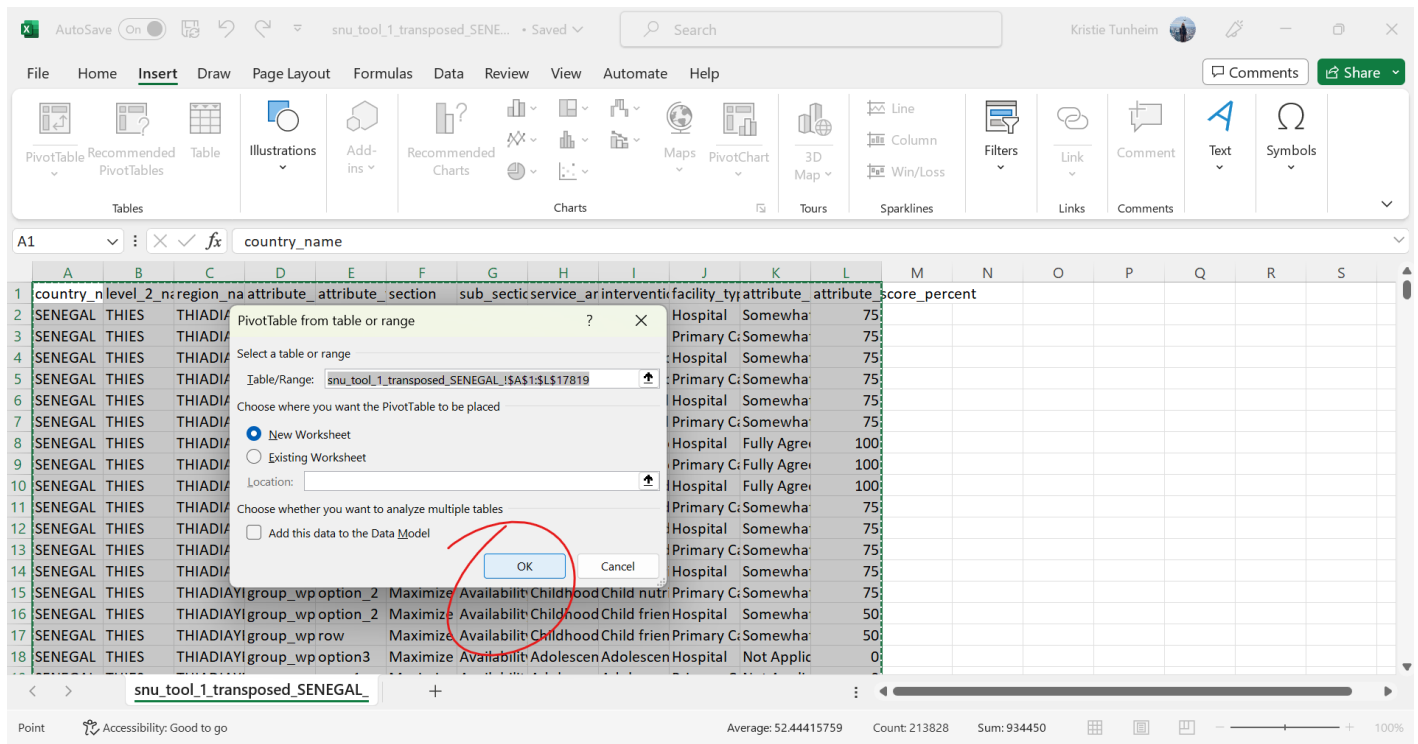
Step 1: Open Excel, click and highlight all of the data you would like you analyze in the pivot table. When all your data is highlighted, click "Insert" on the top.



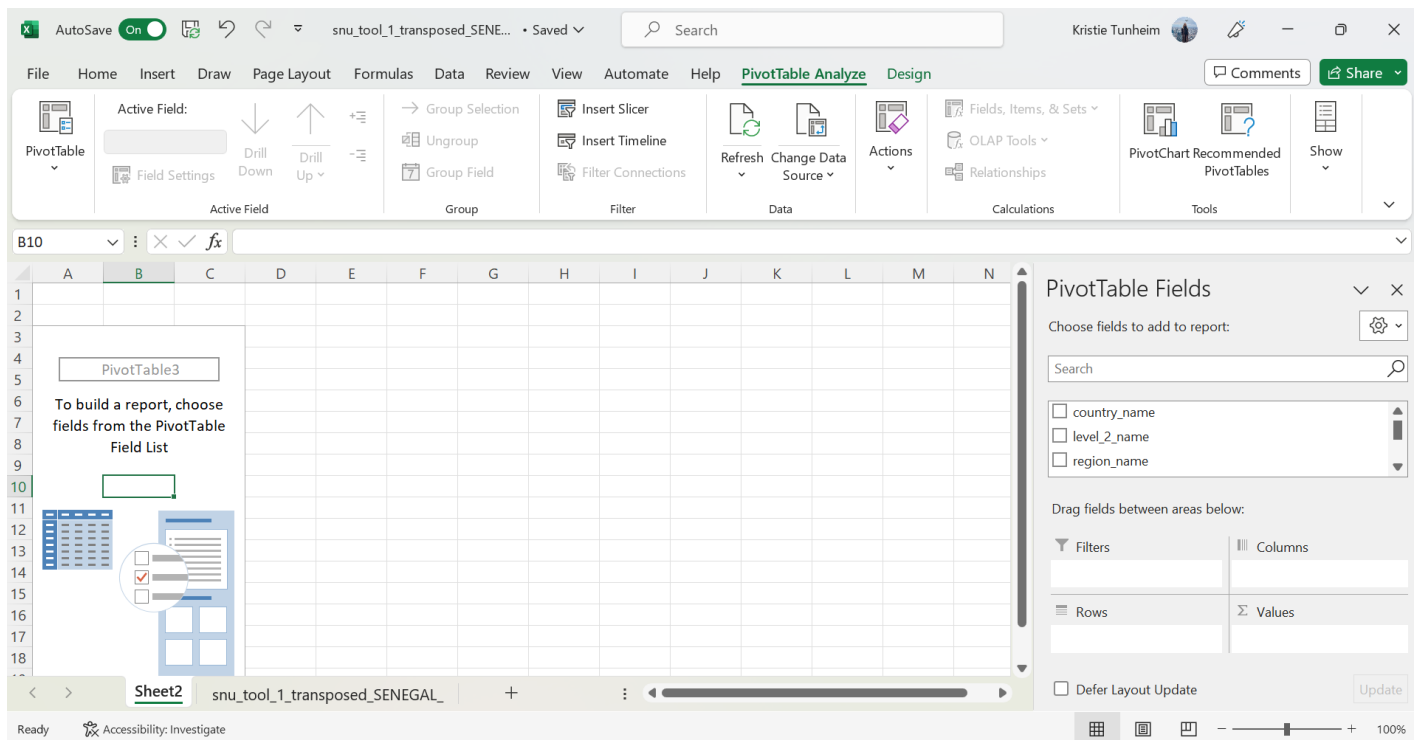
The screenshot shows the Microsoft Excel interface with the 'Insert' tab selected. The 'PivotTable' option is highlighted in the 'Tables' group. The data range is selected as A1:S18. The data table is as follows:

country_name	country_n_level_2	region_name	attribute	attribute_section	sub_section	service_area	intervention	facility_type	attribute	attribute_score_percent
SENEGAL	THIES	THIADIAYI	group_wp_option_1	Maximize	Availabilit	Pregnancy	Antenatal	Hospital	Somewha	75
SENEGAL	THIES	THIADIAYI	group_wp_option_2	Maximize	Availabilit	Pregnancy	Antenatal	Primary C	Somewha	75
SENEGAL	THIES	THIADIAYI	group_wp_option_1	Maximize	Availabilit	Pregnancy	Perinatal	c Hospital	Somewha	75
SENEGAL	THIES	THIADIAYI	group_wp_option_2	Maximize	Availabilit	Pregnancy	Perinatal	c Primary C	Somewha	75
SENEGAL	THIES	THIADIAYI	group_wp_option_1	Maximize	Availabilit	Pregnancy	Post-natal	Hospital	Somewha	75
SENEGAL	THIES	THIADIAYI	group_wp_option_2	Maximize	Availabilit	Pregnancy	Post-natal	Primary C	Somewha	75
SENEGAL	THIES	THIADIAYI	group_wp_option4	Maximize	Availabilit	Pregnancy	Newborn	Hospital	Fully Agre	100
SENEGAL	THIES	THIADIAYI	group_wp_option_1	Maximize	Availabilit	Pregnancy	Newborn	Primary C	Fully Agre	100
SENEGAL	THIES	THIADIAYI	group_wp_option4	Maximize	Availabilit	Childhood	Childhood	Hospital	Fully Agre	100
SENEGAL	THIES	THIADIAYI	group_wp_option_2	Maximize	Availabilit	Childhood	Childhood	Primary C	Somewha	75
SENEGAL	THIES	THIADIAYI	group_wp_option_1	Maximize	Availabilit	Childhood	Integrated	Hospital	Somewha	75
SENEGAL	THIES	THIADIAYI	group_wp_option_2	Maximize	Availabilit	Childhood	Integrated	Primary C	Somewha	75
SENEGAL	THIES	THIADIAYI	group_wp_option_1	Maximize	Availabilit	Childhood	Child	nutr Hospital	Somewha	75
SENEGAL	THIES	THIADIAYI	group_wp_option_2	Maximize	Availabilit	Childhood	Child	nutr Primary C	Somewha	75
SENEGAL	THIES	THIADIAYI	group_wp_option_2	Maximize	Availabilit	Childhood	Child	frien Hospital	Somewha	50
SENEGAL	THIES	THIADIAYI	group_wp_row	Maximize	Availabilit	Childhood	Child	frien Primary C	Somewha	50
SENEGAL	THIES	THIADIAYI	group_wp_option3	Maximize	Availabilit	Adolescen	Adolescen	Hospital	Not Applic	0

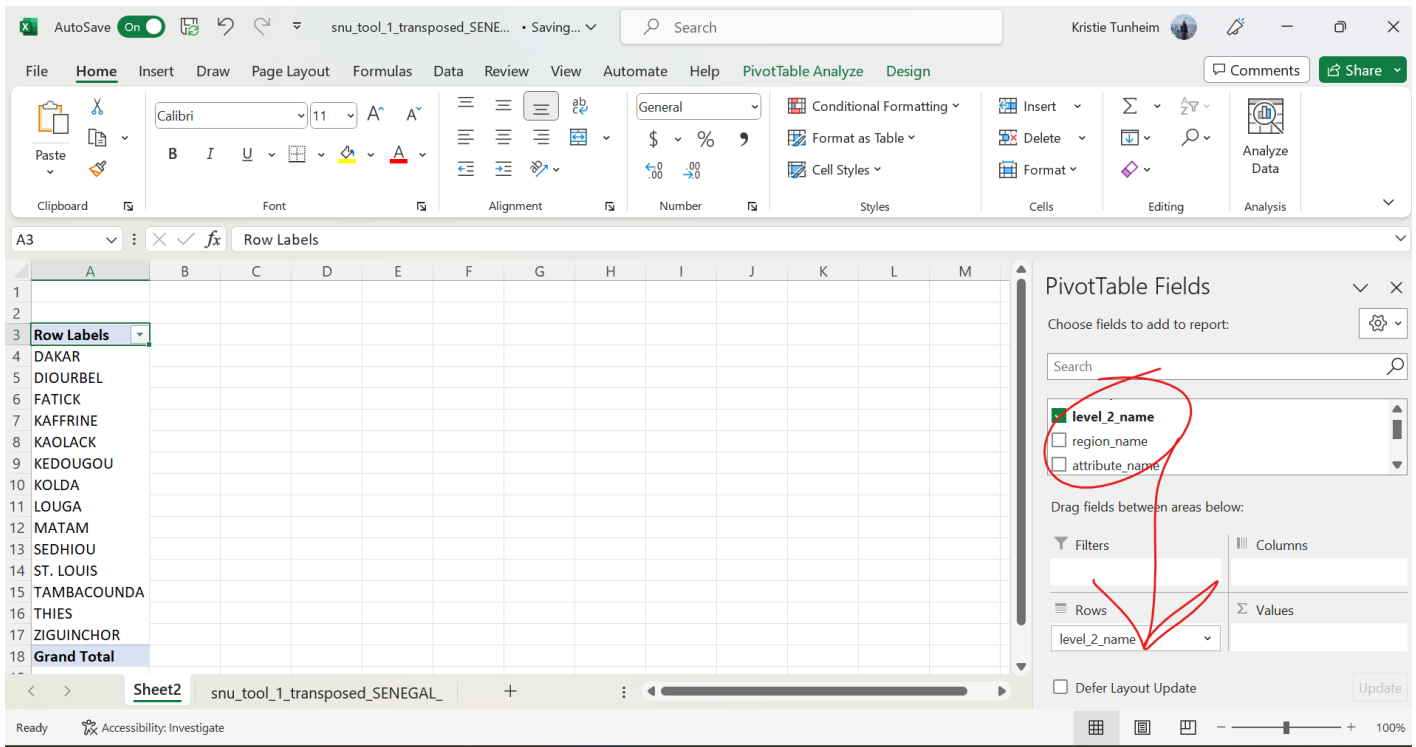
Step 2. After you click "Insert," click "Pivot Table," and a box should appear. Click OK.



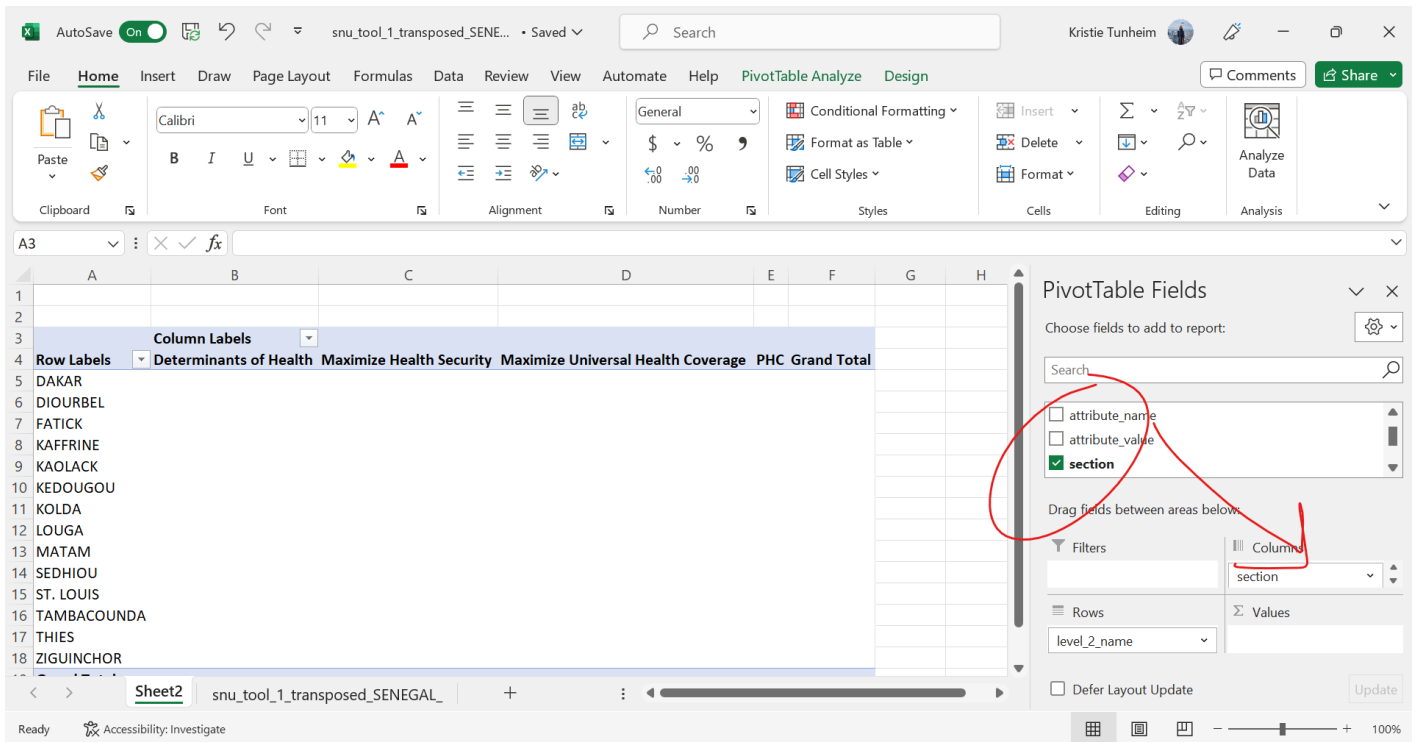
Step 3. Once you click on OK, a new tab will be automatically created that will look like this:



Step 4. Now we are ready to start choosing fields on the right side of the page to organize our data into a pivot table to begin analyzing it. We will start with a basic view using the SNU data, aggregating section averages by region. The first step is to click and hold onto the title to drag “level\_2\_name” (indicating region) into “Rows” and watch the table transform adding the new table element.



5. Then drag “Section” to “Columns.”



6. Next scroll all the way to the bottom of the PivotTable Fields list and drag “attribute\_score\_percent” and drop it in the “Values”.

The screenshot shows the Excel interface with a PivotTable. The PivotTable Fields task pane on the right shows 'attribute\_score\_percent' moved to the 'Values' area. The PivotTable data is as follows:

Row Labels	Determinants of Health	Maximize Health Security	Maximize Universal Health Coverage	PHC	Grand Total
DAKAR	21075	26450	75500	22925	145950
DIOURBEL	5525	6700	17725	5225	35175
FATICK	9250	10000	31550	8325	59125
KAFFRINE	9300	8325	25550	7775	50950
KAOLACK	14850	14075	38575	13275	80775
KEDOUGOU	3200	2550	8900	2750	17400
KOLDA	5225	5875	17925	5100	34125
LOUGA	7550	10775	23850	8925	51100
MATAM	13450	9075	40325	12175	75025
SEDHIOU	2925	3400	8875	2725	17925
ST. LOUIS	14225	12025	41500	13200	80950
TAMBACOUNDA	12075	10175	39700	11300	73250
THIES	20750	19825	63050	19225	122850
ZIGUINCHOR	16525	14875	43775	14675	89850
<b>Grand Total</b>	<b>155925</b>	<b>154125</b>	<b>476800</b>	<b>147600</b>	<b>934450</b>

7. What we see here in the table are the Sums of the scores and we want to see the arithmetic mean. To change this, click on the right side of the “Sum of attribute\_score\_percent” in the “Values box” and click on “Value Field Settings” and change from “Sum” to “Average”.

The screenshot shows the same Excel interface as above, but with the context menu open for the 'Sum of attribute\_score\_percent' field in the Values area. The 'Value Field Settings...' option is highlighted with a red circle.

8. Click "Average," then click OK.

The screenshot shows the 'Value Field Settings' dialog box in Excel. The 'Source Name' is 'attribute\_score\_percent' and the 'Custom Name' is 'Average of attribute\_score\_percent'. Under 'Summarize value field by', the 'Average' option is selected. The background shows a PivotTable with the following data:

	Maximize Universal Health Coverage	PHC	Grand Total
DAKAR	75500	22925	145950
DIOURBEL	17725	5225	35175
FATICK	31550	8325	59125
KAFFRINE	25550	7775	50950
KAOLACK	38575	13275	80775
KEDOUGOU	8900	2750	17400
KOLDA	17925	5100	34125
LOUGA	23850	8925	51100
MATAM	40325	12175	75025
SEDHIOU	8875	2725	17925
ST. LOUIS	41500	13200	80950
TAMBACOUNDA	39700	11300	73250
THIES	63050	19225	122850
ZIGUINCHOR	43775	14675	89850
<b>Grand Total</b>	<b>476800</b>	<b>147600</b>	<b>934450</b>

9. This then shows us the average scores per region within the tool's sections.

The screenshot shows the PivotTable after applying the 'Average' function. The PivotTable has the following data:

Row Labels	Determinants of Health	Maximize Health Security	Maximize Universal Health Coverage	PHC	Grand Total
DAKAR	48.78472222	66.79292929	52.43055556	50.94444444	53.6975717
DIOURBEL	57.55208333	76.13636364	55.390625	52.25	58.236755
FATICK	48.17708333	56.81818182	49.296875	41.625	48.9445364
KAFFRINE	64.58333333	63.06818182	53.22916667	51.83333333	56.2362031
KAOLACK	77.34375	79.97159091	60.2734375	66.375	66.8667219
KEDOUGOU	66.66666667	57.95454545	55.625	55	57.615894
KOLDA	54.42708333	66.76136364	56.015625	51	56.4983444
LOUGA	39.32291667	61.22159091	37.265625	44.625	42.3013245
MATAM	56.04166667	41.25	50.40625	48.7	49.6854305
SEDHIOU	30.46875	38.63636364	27.734375	27.25	29.6771523
ST. LOUIS	59.27083333	54.65909091	51.875	52.8	53.6092715
TAMBACOUNDA	62.890625	57.8125	62.03125	56.5	60.6374172
THIES	48.03240741	50.06313131	43.78472222	42.72222222	45.1986755
ZIGUINCHOR	68.85416667	67.61363636	54.71875	58.7	59.5033113
<b>Grand Total</b>	<b>55.05826271</b>	<b>59.3701849</b>	<b>50.50847458</b>	<b>50.0338983</b>	<b>52.4441576</b>

From here, you can get creative and explore the data building on the previous 9 steps to get you started. Below are a few tools you can use to gain more comfort with using pivot tables for data analysis.

If we wanted to change the axis and put the sections on the left and the regions on the right, we would just swap the Rows and Columns to see this change.

The screenshot shows an Excel spreadsheet with a PivotTable. The PivotTable Fields task pane is open on the right. In the 'Rows' field, 'section' is selected. In the 'Columns' field, 'level\_2\_name' is selected. The 'Values' field contains 'Average of attribute\_score\_percent'. The PivotTable in the background shows data for various regions (DAKAR, DIOURBEL, FATICK, KAFFRINE, KAOLACK, KEDOUGOU, KOLDA, LOUGA, MATAMORALES) across different health determinants.

Average of attribute_score_percent	Column Labels	DAKAR	DIOURBEL	FATICK	KAFFRINE	KAOLACK	KEDOUGOU	KOLDA	LOUGA	MATAMORALES
Determinants of Health		48.78472222	57.55208333	48.17708333	64.58333333	77.34375	66.66666667	54.42708333	39.32291667	56.0
Maximize Health Security		66.79292929	76.13636364	56.81818182	63.06818182	79.97159091	57.95454545	66.76136364	61.22159091	
Maximize Universal Health Coverage		52.43055556	55.390625	49.296875	53.22916667	60.2734375	55.625	56.015625	37.265625	
PHC		50.94444444	52.25	41.625	51.83333333	66.375	55	51	44.625	
Grand Total		53.69757174	58.23675497	48.94453642	56.23620309	66.86672185	57.61589404	56.49834437	42.3013245	49.6

If we wanted to create a chart with this data, we would simply click on "Insert" above and click on "Recommended Charts" to see the options.

The screenshot shows the 'Insert' tab selected in the Excel ribbon. The 'Recommended Charts' button is circled in red. A 'Recommended Charts' dialog box is open, prompting the user to select data for a chart. The PivotTable Fields task pane is also visible on the right, showing the same configuration as in the previous screenshot.



Let's choose a Clustered Column chart. However, this looks a bit too busy so let's click on the "filter" button in the pivot table to reduce the chart to PHC only.

The screenshot shows the Excel interface with a PivotTable and a PivotChart. The PivotTable is filtered to show data for 'PHC'. The PivotChart is a clustered column chart showing the average of attribute scores for each region. The 'Filter' dialog box is open, and the 'PHC' checkbox is selected.

level_2_name	DAKAR	DIOURBEL	FATICK	KAFFRINE	KAOLACK	KEDOUGOU	KOLDA	LOUGA	MATAM	SEDHIOU	ST. LOUIS	TAMBACOUNDA	THIES	ZIGUINCHOR	Grand Total
Average of attribute_score_percent	50.94444444	52.25	41.625	51.83333333	66.375	55	51	44.625	48.7	27.25	52.8	56.5	42.72222222	58.7	50.03389831
Grand Total	50.94444444	52.25	41.625	51.83333333	66.375	55	51	44.625	48.7	27.25	52.8	56.5	42.72222222	58.7	50.03389831

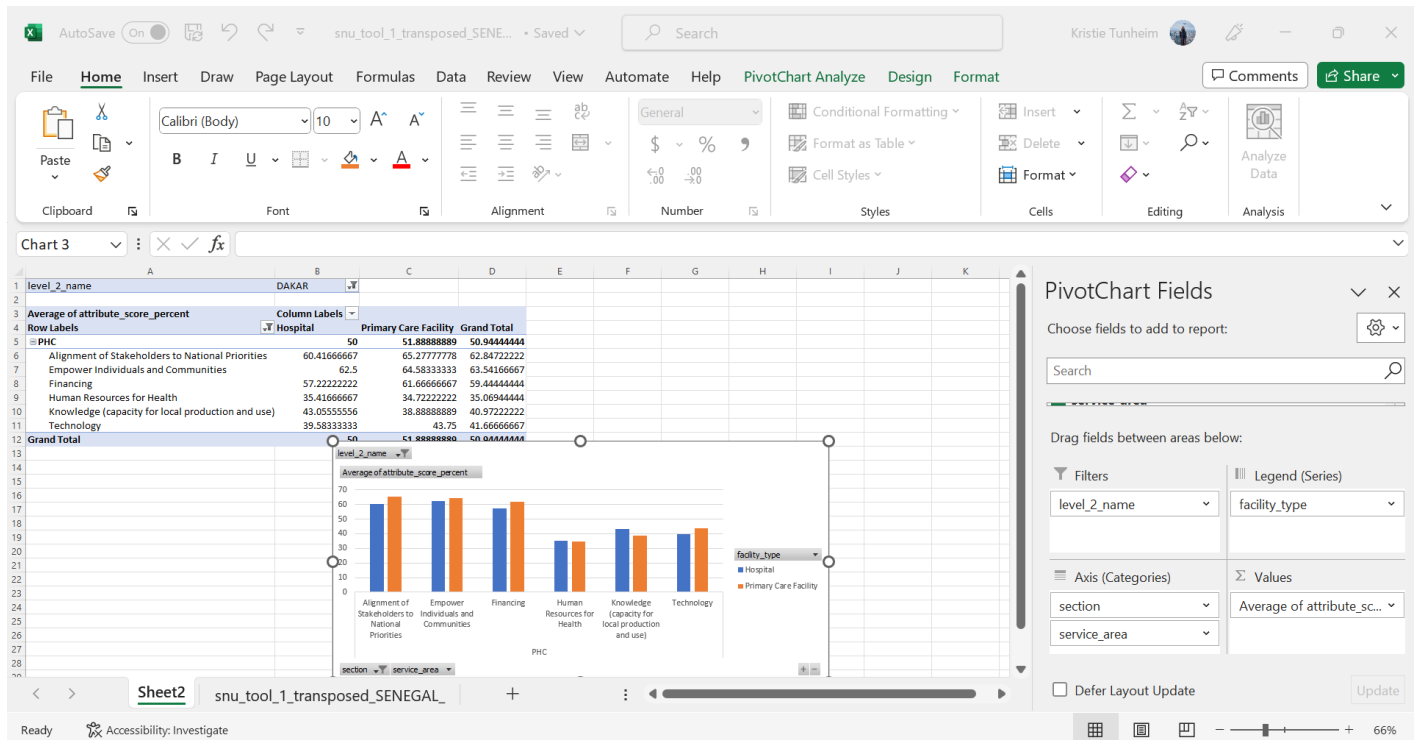
Here's what the new chart looks like after modifying the filters.

The screenshot shows the Excel interface with the same PivotTable and PivotChart. The PivotTable is filtered to show data for 'PHC'. The PivotChart is a clustered column chart showing the average of attribute scores for each region, with the 'PHC' filter applied.

level_2_name	DAKAR	DIOURBEL	FATICK	KAFFRINE	KAOLACK	KEDOUGOU	KOLDA	LOUGA	MATAM	SEDHIOU	ST. LOUIS	TAMBACOUNDA	THIES	ZIGUINCHOR	Grand Total
Average of attribute_score_percent	50.94444444	52.25	41.625	51.83333333	66.375	55	51	44.625	48.7	27.25	52.8	56.5	42.72222222	58.7	50.03389831
Grand Total	50.94444444	52.25	41.625	51.83333333	66.375	55	51	44.625	48.7	27.25	52.8	56.5	42.72222222	58.7	50.03389831

Next, let's drill down to the service areas of Primary health care (PHC) application within one region comparing by facility type. This can be organized by grabbing fields and organizing them in the "Rows" and "Columns". Notice how this shows the scoring differences between Hospitals and Primary Care Facilities.

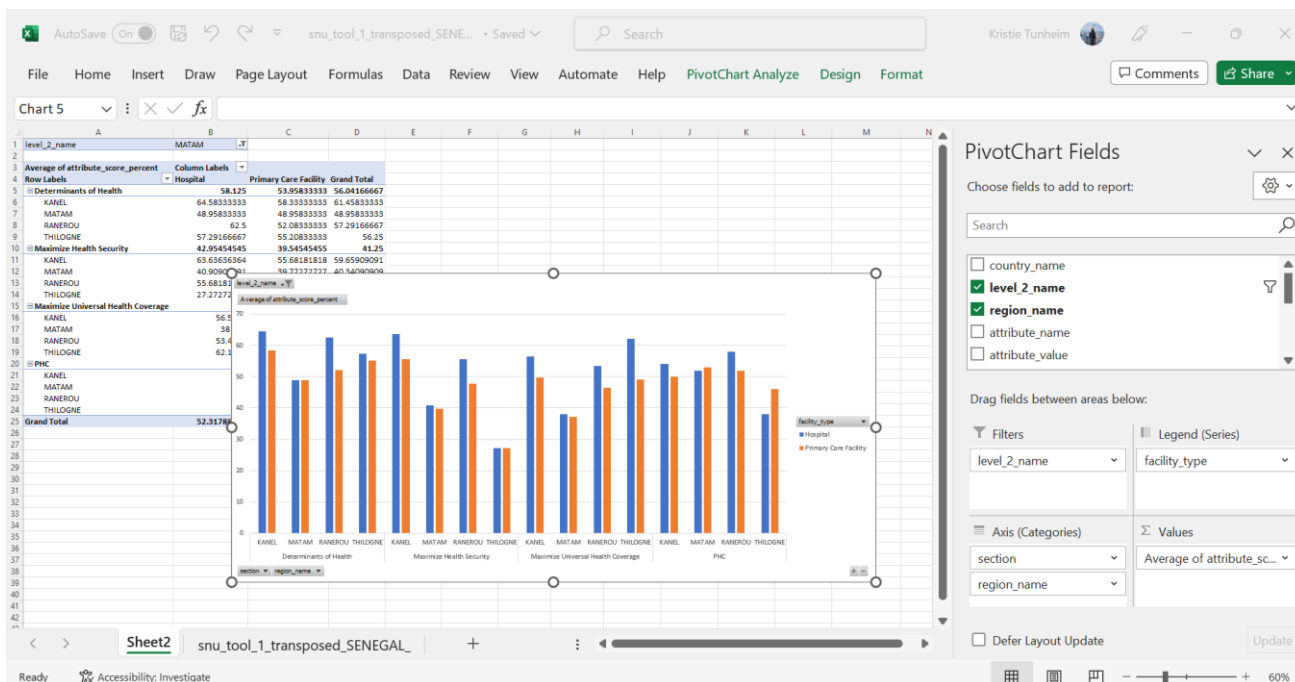
You can see on the right how I organized these fields to develop this table. I again went to Insert > Recommended Charts > Clustered Column to generate this graph.



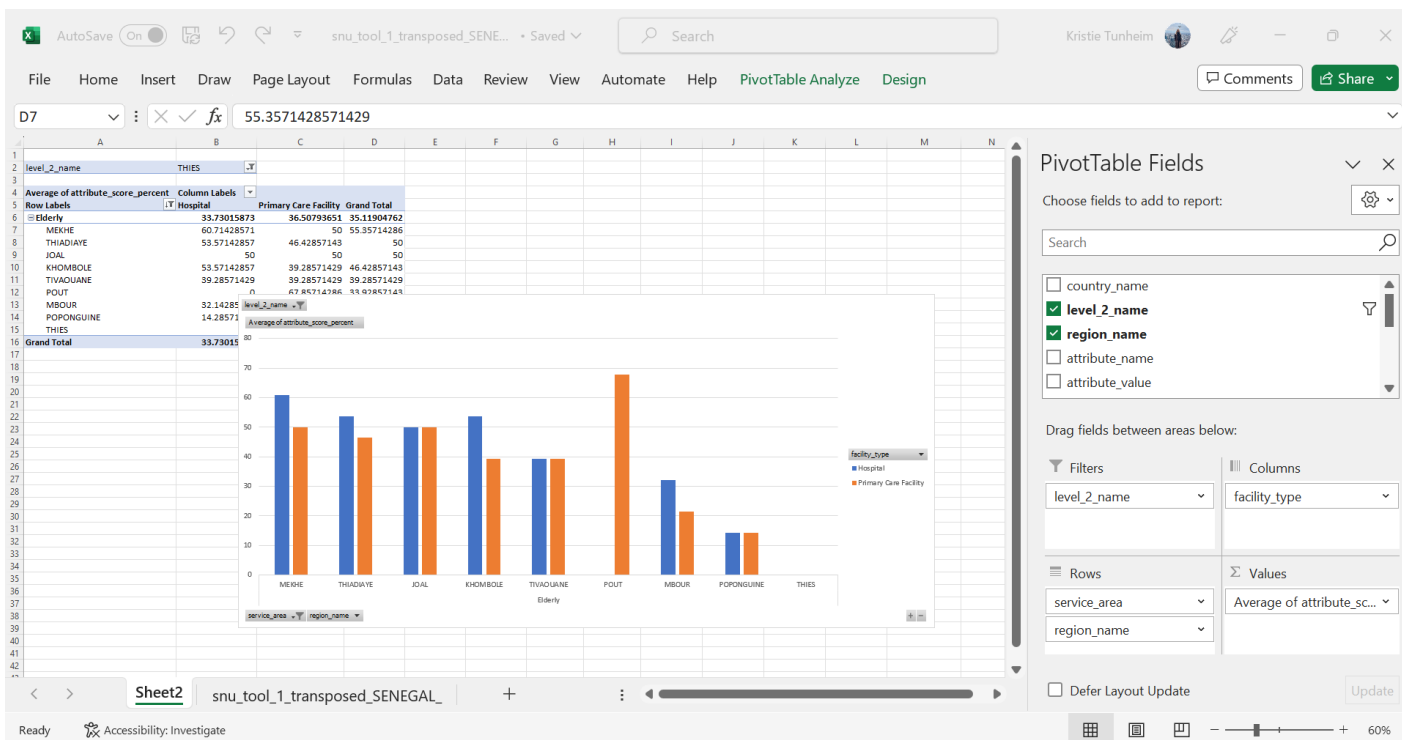
Here are a few more disaggregation possibilities to consider when organizing your analysis:

- Regional Health Outcomes within Matam's four districts (Data from one country is used for illustration here)

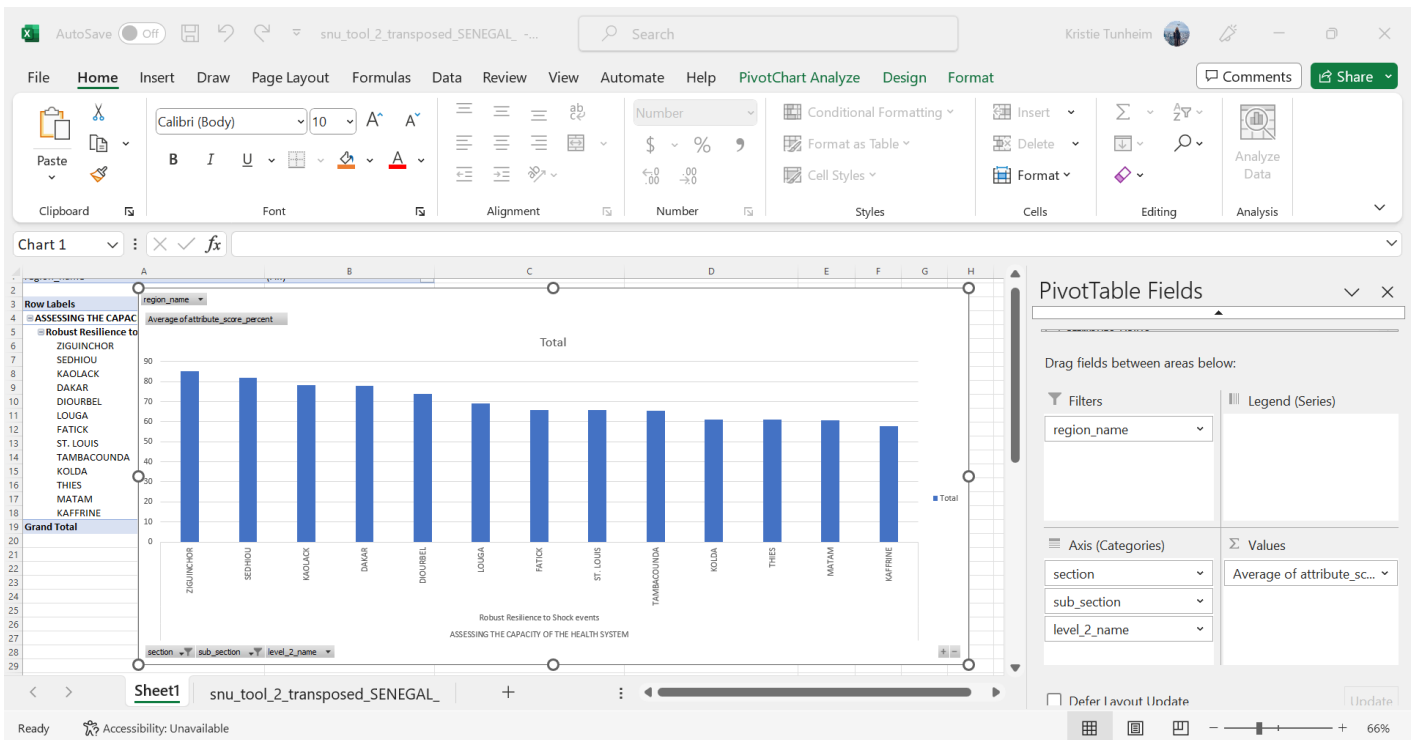




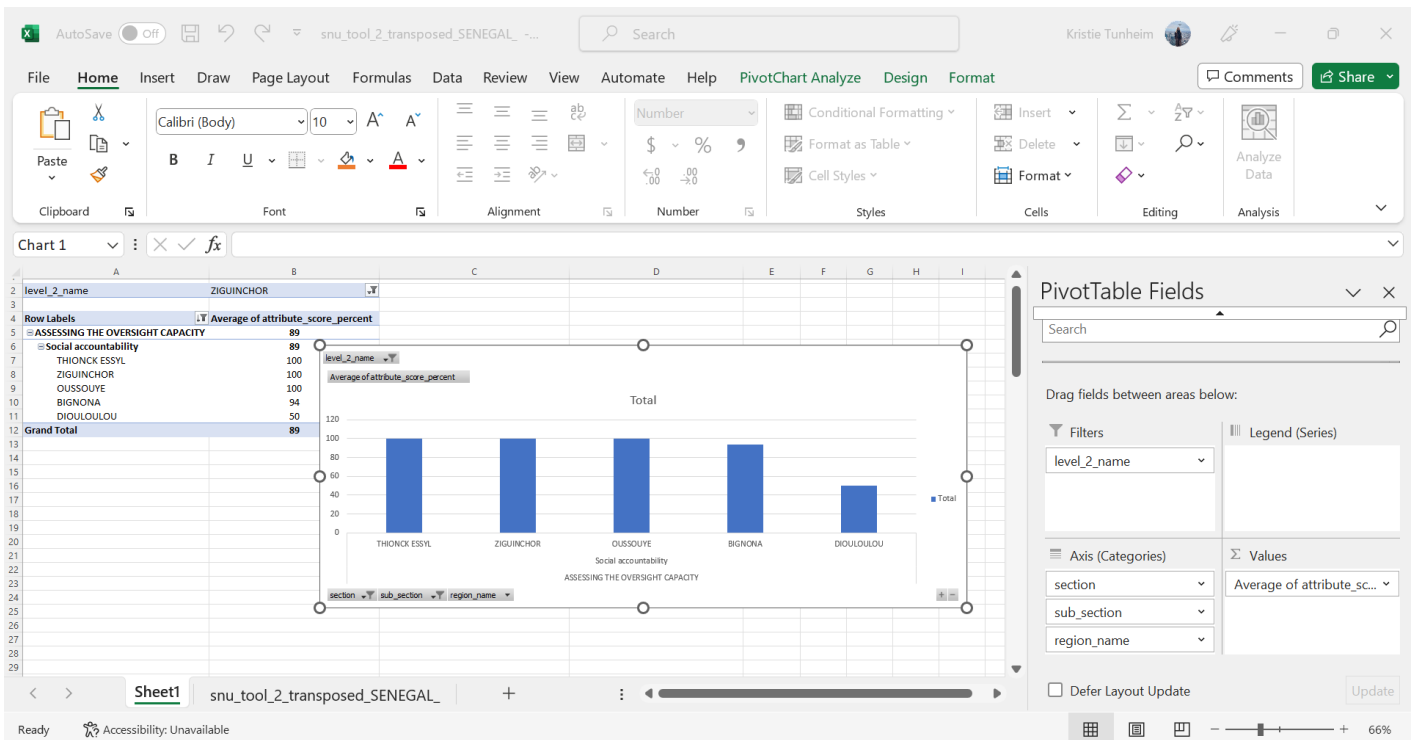
- Availability of Essential Services for the Elderly age cohort within Thies region



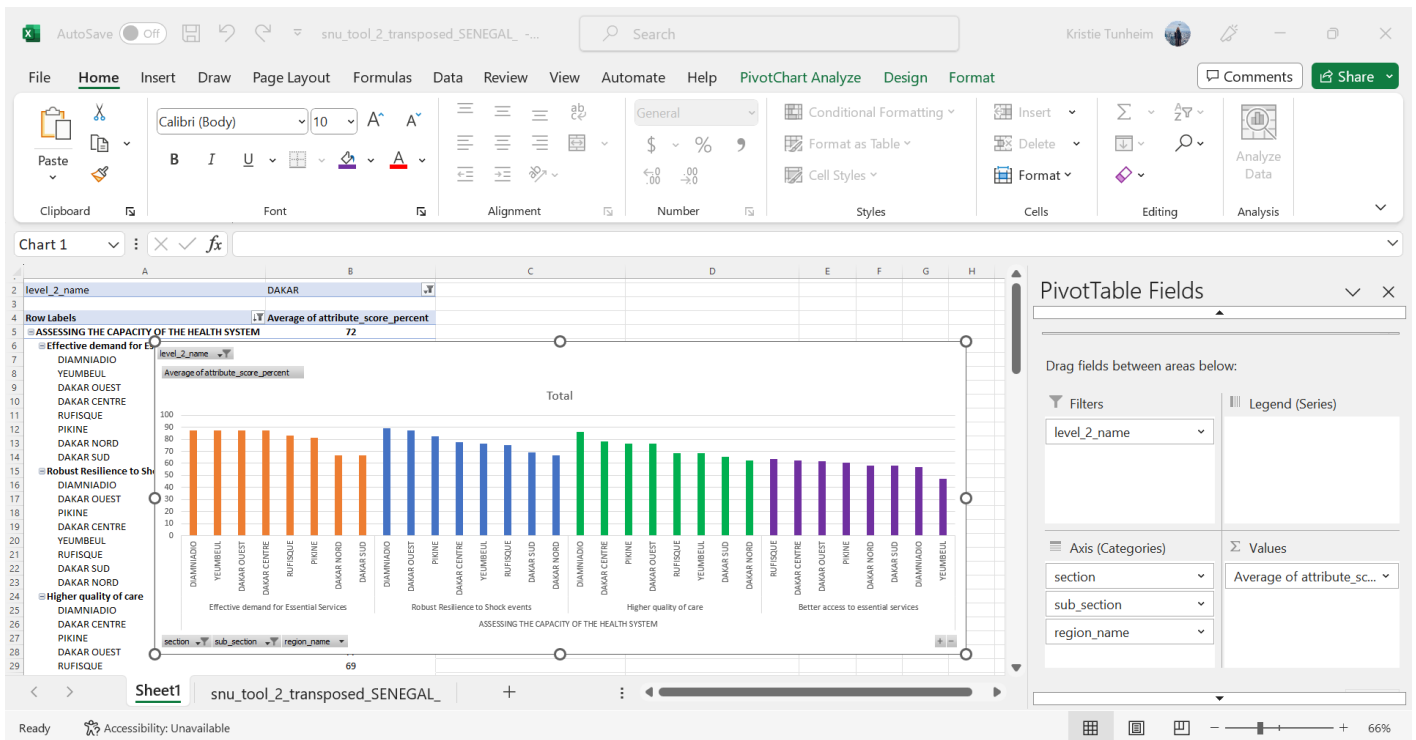
- Health Systems Capacity: Robust Resilience to Shock Events comparing all regions



- Oversight Capacity: Social Accountability in Ziguinchor region



- Health Services Capacity by Districts in Dakar  
(colors can be changed by double clicking on the bar and clicking the paint bucket to change the individual bars)



A pivot table is a versatile tool that empowers you to analyse, summarize, and interpret large datasets in a user-friendly manner. Here are a few more helpful tips when analysing and interpreting the SNU data:

When pasting charts into a presentation, we recommend that you paste them as an image, to avoid tables being modified live as they are created in Excel. Please also refer to the tool composition for recommended disaggregation and guidelines on specific analyses to be performed.