HAZARD VULNERABILITY DATA EXPLORER

DATA EXPLORATION WIDGET FOR FLORIDA SOCIAL VULNERABILITY INDEX (SoVI), MEDICAL VULNERABILITY INDEX (MedVI), HAZARDS VULNERABILITY (HazVI) INDEX AND COMMUNITY RESILIENCE INDEX

2014 User's Guide

Use Cases 2

Exploring Vulnerabilities and Hazards
Identifying Vulnerable Populations

Planning Program
Bureau of Preparedness and Response
Division of Emergency Preparedness and Community Support

Table of Contents

Use Cases 3
Exploring vulnerabilities and hazards 4
Guided Exercises 4
Exercise 1: Exploring Vulnerabilities and hazards: vulnerability interactions and combinations 4
Exercise 2: Flash flood: Identifying vulnerable populations 12
Exercise 3: Wildfire: Identifying vulnerable populations 20
Answer Key 26
Exercise 1: Exploring vulnerabilities and hazards 26
Exercise 2: Using the geographical search function to identify vulnerable populations: Flash Flood covers southern half of Tampa 27
Exercise 3: Using the geographical search function to identify vulnerable populations: Wildfire springs up across Polk County 28

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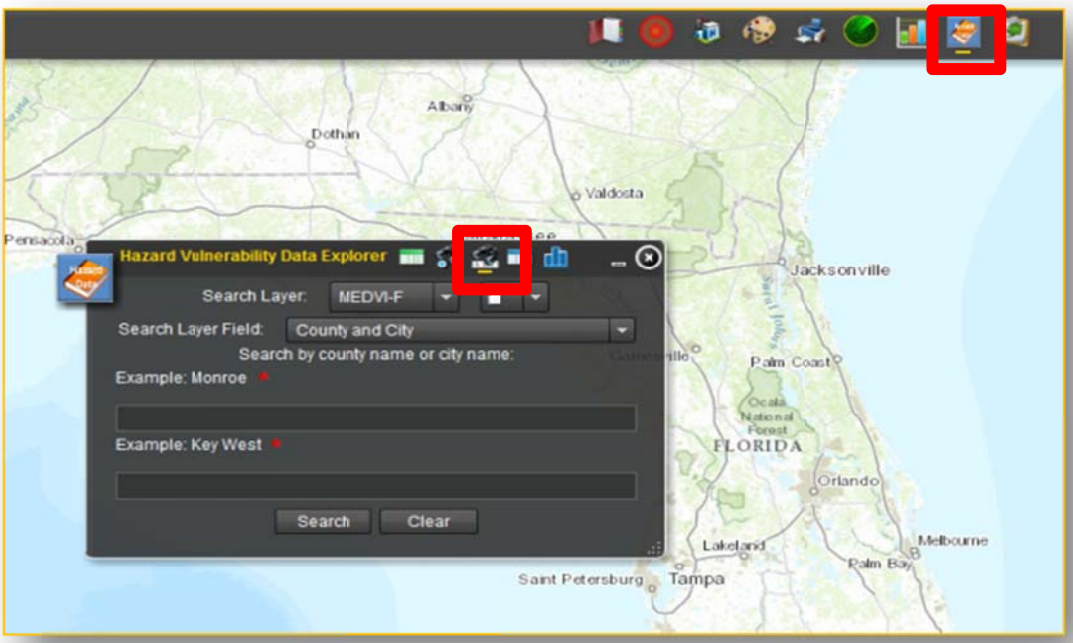
Use Cases

This set of exercises will help to better familiarize you to the set of HVDE data search widgets.

Open the HVDE widget at

1. http://gis.doh.state.fl.us/ESF8PlanningMap/ The widget is also available at http://129.252.37.169:8400/medviapp/index.html
2. Identify the icon on the screen:

3. After you do that you should see the following screen:



The widget automatically opens with the *Text Search* functionality enabled. This portion of the widget enables us to utilize the data provided by the HVDE (MedVI, SoVI, and HazVI) alone or in combination with specific hazard layers for exploration, planning, and reporting.

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Exploring vulnerabilities and hazards

Guided Exercises

Exercise 1: Exploring Vulnerabilities and hazards: vulnerability interactions and combinations

Using the select layer field dropdown, explore the following hazard specific interactions and write your results:

How many tracts have the following combinations?

1. High SoVI, High MedVI, and 100 year flood threat?
    a. What is the population of these places?
    b. Which county has the highest number of census tracts that meet this criterion?

Follow these instructions to answer the exercise:

1. Click on the widget's icon to open the application. It opens with the *Test Search* functionality enabled.
2. The *Search Layer* will show MEDVI (or MEDVI-F).
3. In the *Search Layer Field* use the drop-down and select *MedVI, SoVI and FLOOD 100 Zone*.
    a. Choose *High* from the drop-down for SoVI and MedVI, and *Intersecting hazard zone*. (It is possible to choose other combinations of MedVI and SoVI).

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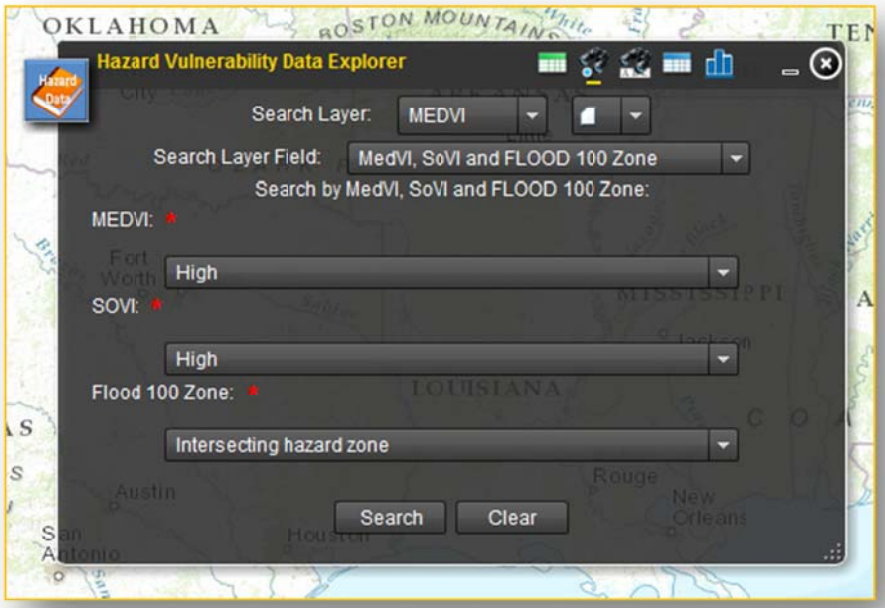
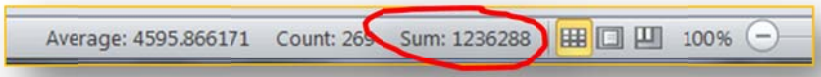


b. Export the information as a .csv file into Excel.
c. In the .csv/Excel file, select the *TractID* column and find the total count on the bottom bar:

d. Select the *Pop2010* column and find the total count on the bottom bar or use the Auto-sum function.



e. Sort the *County* column, expand the selection and identify the county that repeats the most because it has the largest number of Census tracts.
f. Filter the county to obtain a table with only the corresponding values. Polk has the largest number of Census tracts.

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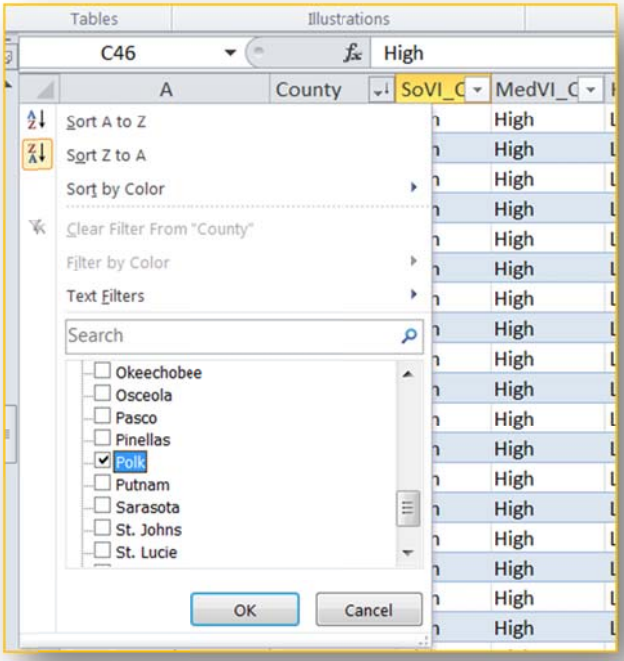
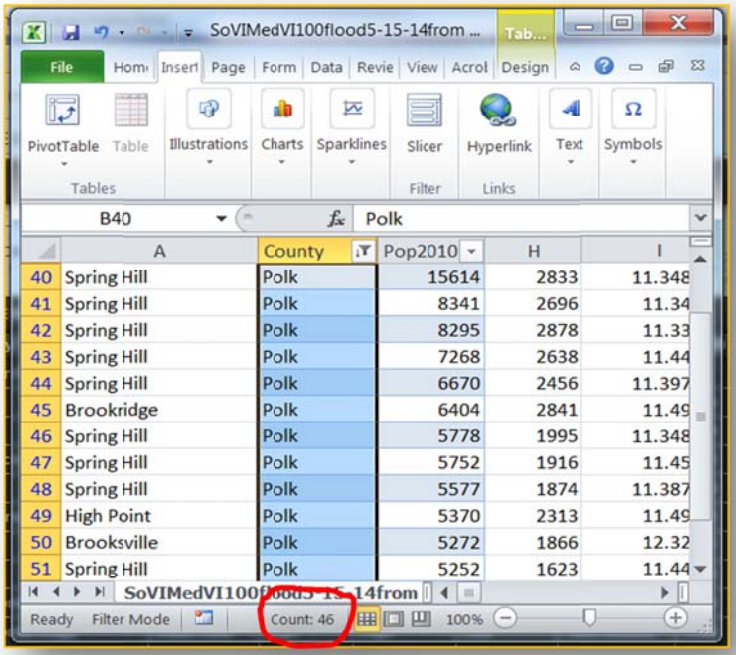


g. After filtering, the spread sheet shows only the information for Polk County. Find out the total count of census tracts at the bottom bar (the exercise does not ask for the total population).



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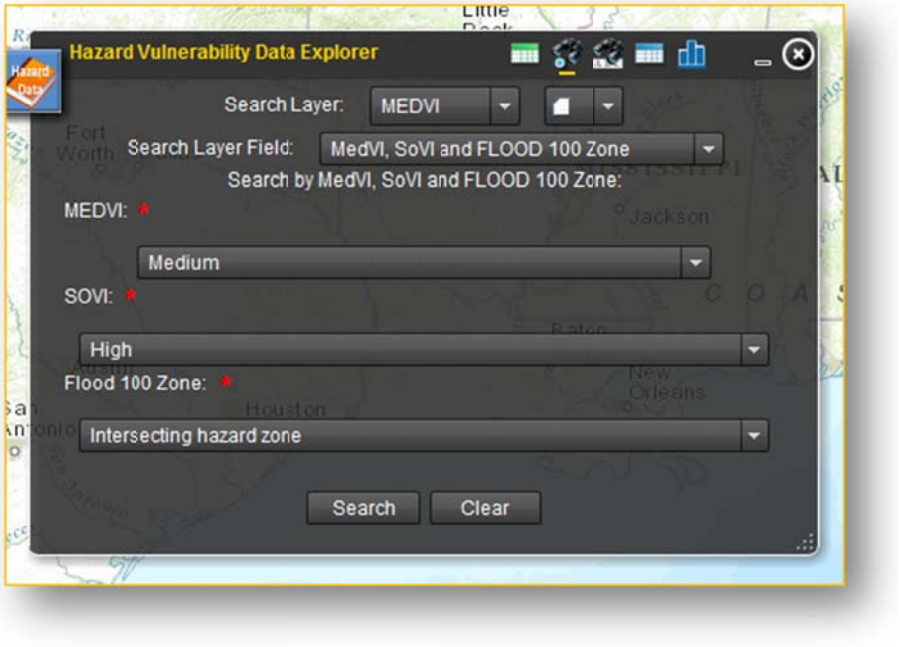
2. High SoVI, Medium MedVI, and 100 year flood threat?

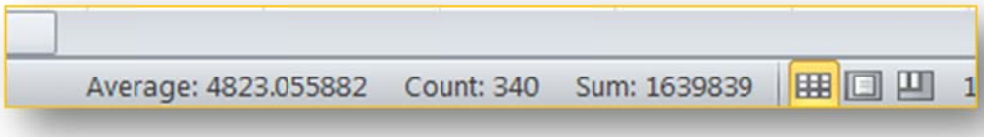
1. Search following the criteria and export the data into a .csv file.



2. Count the number of records on number of census tracts in the file.

2a. What is the population of these places?

1. Select the *Pop2010* column and find the total count at the bottom bar.



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2b. Why are there so many more/less that fall into this category?

In the High SoVI- High MedVI there are 296 census tracts and in the High SoVI – Medium MedVI there are 340 census tracts. There are more medium medical vulnerability groups because the classification scheme used (standard deviation).

2c. What are three things you can you use this information for from a planning perspective?

i. User specified answer
ii. User specified answer
iii. User specified answer

Answers will vary.

3. Compare general statistics for the populations at risk from hurricane winds with those at risk from hurricane storm surge.

3a. How many census tracts have high medical vulnerability and low social vulnerability in each?
Wind: Surge:

3b. What is the population of these places?
Wind: Surge:

1. Follow these instructions to answer the question about the "hurricane wind zone":
   a. In the *Search Layer* choose *MEDVI.*
   b. In the Search *Layer Field* use the drop-down and select MedVI, SoVI and Hurricane Wind Zone.
   c. Choose *High* from the drop-down for MedVI, *Low* for SoVI and *Intersecting hazard zone*. (It is possible to choose other combinations of MedVI and SoVI).
   d. Click the *Search* button.

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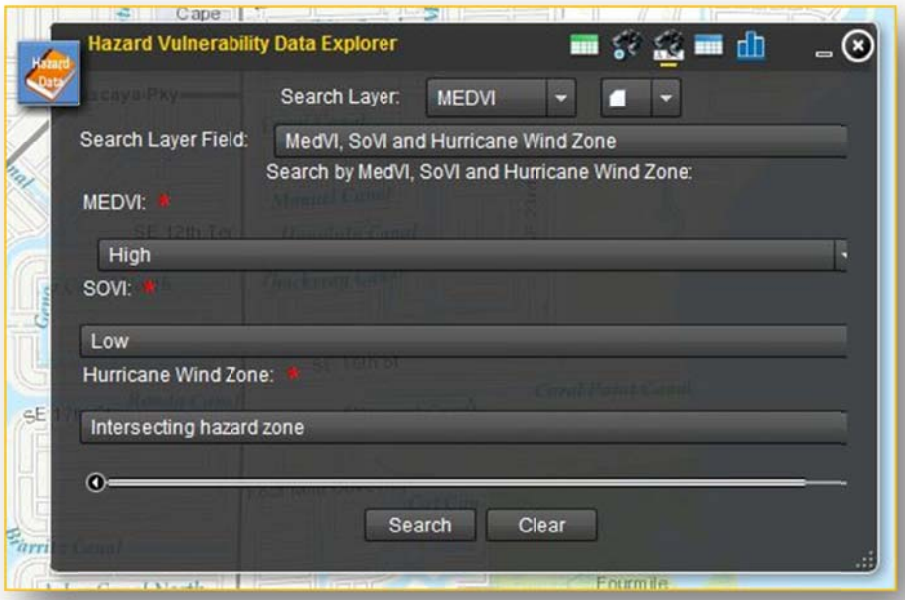
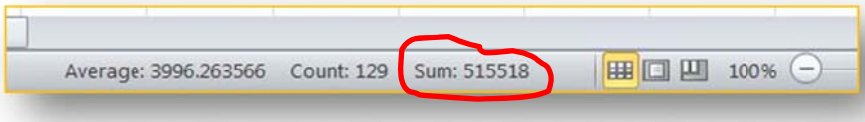


e. Export the information into a .csv file.
   - In the .csv file, select the *TractID* column and find the total count on the bottom bar.

   - Select the *Pop2010* column and find the total count on the bottom bar or use the *Autosum function.*



2. Follow these instructions to answer the question about the "hurricane surge zone":

   a. In the *Search Layer* choose MEDVI.
   b. In the *Search Layer Field* use the drop-down and select "*MedVI, SoVI and Hurricane Surge Zone*."
   c. From the drop-down, choose "*High"* for MedVI, and Low for SoVI and *Intersecting hazard zo*ne. (Explore all the possibilities).
   d. Click the *Search* button.

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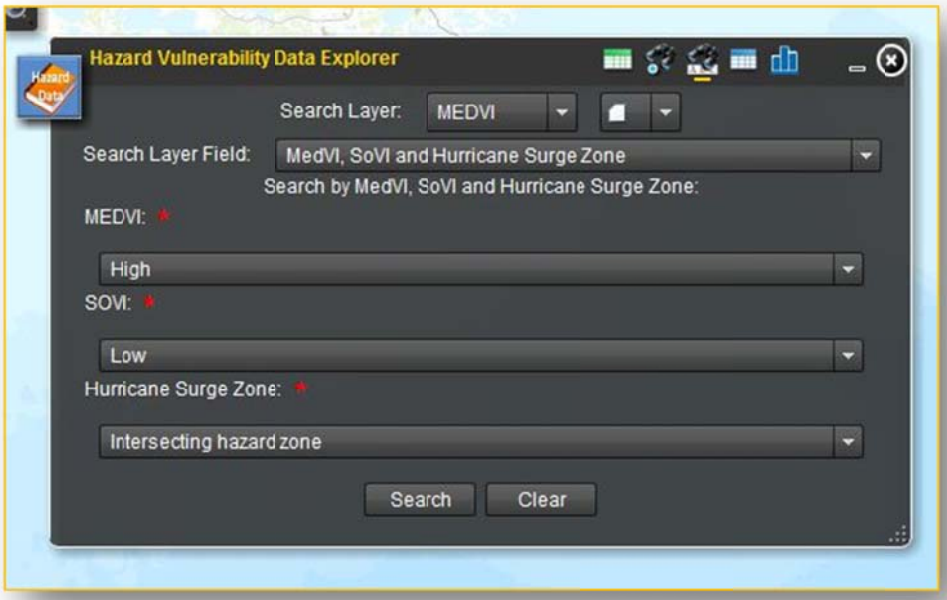
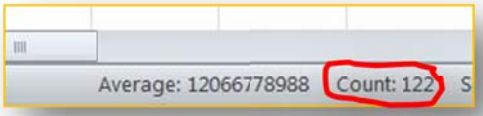
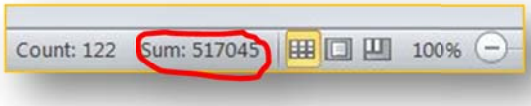


e. Export the information into a .csv file.

- In the .csv/Excel file, select the *TractID* column and find the total count on the bottom bar.



- Select the Pop2010 column and find the total count on the bottom bar or use the Autosum function.



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3c. What can this information be used for?

iv. User specified answer
v. User specified answer
vi. User specified answer

Answers will vary.

3d. What is missing that you need to make useful decisions?

i. User specified answer
ii. User specified answer
iii. User specified answer

Answers will vary.

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Exercise 2: Flash flood: Identifying vulnerable populations

A rapid onset hazard has just occurred in your county of interest. Use the appropriate geography in the geographical search function to answer the following questions.

City of Interest	Hazard
Tampa	Flash flood covers southern half of Tampa

1. Which geography is most appropriate for your hazard?
2. How many tracks are impacted:
3. What is the breakdown of underlying vulnerabilities, population, and housing units at risk

Vulnerable tracts	SoVI	MedVI	HazVI
High			
Medium			
Low			

Population	SoVI	MedVI	HazVI
High			
Medium			
Low			
Total Population			

Housing Units	SoVI	MedVI	HazVI
High			
Medium			
Low			
Total Housing Units			

4. What is your plan of action as you make your way to the EOC?
5. What information from this widget helps to inform your actions during the first operational period?

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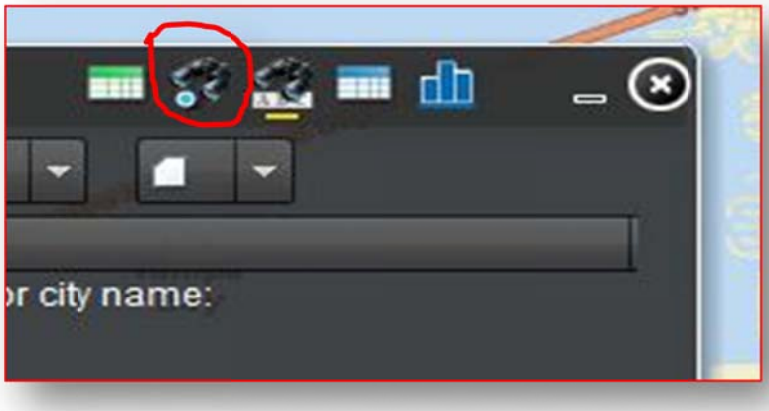
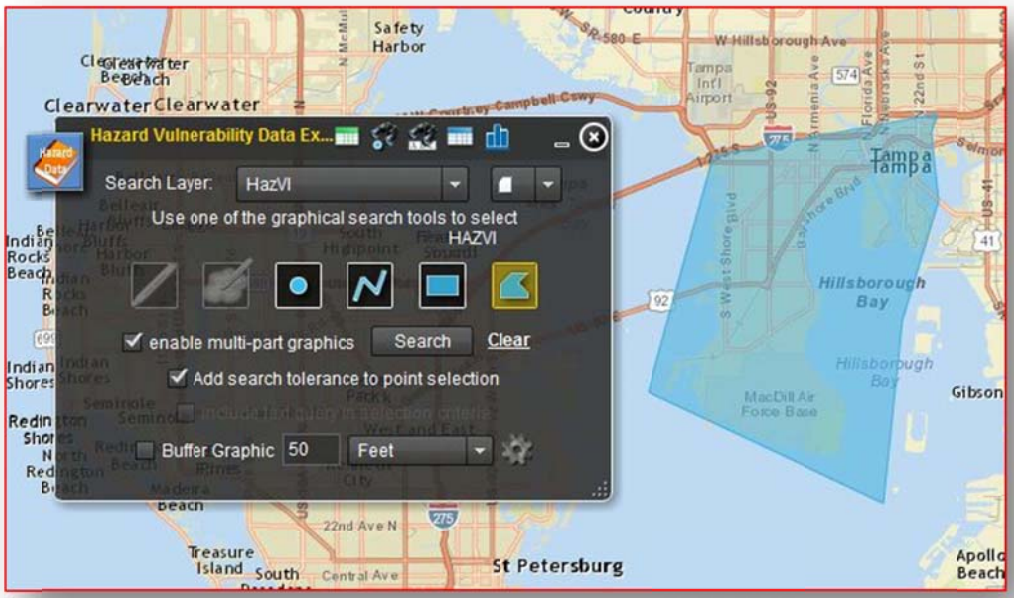
Procedure to answer this exercise:

1. Identify and click on the *"Geographical Search"* feature in the HVDE window.



2. Choose the *"Polygon"* tool.
3. Select the southern area of Tampa (the selection may vary).



a. The tool will refine the selection.

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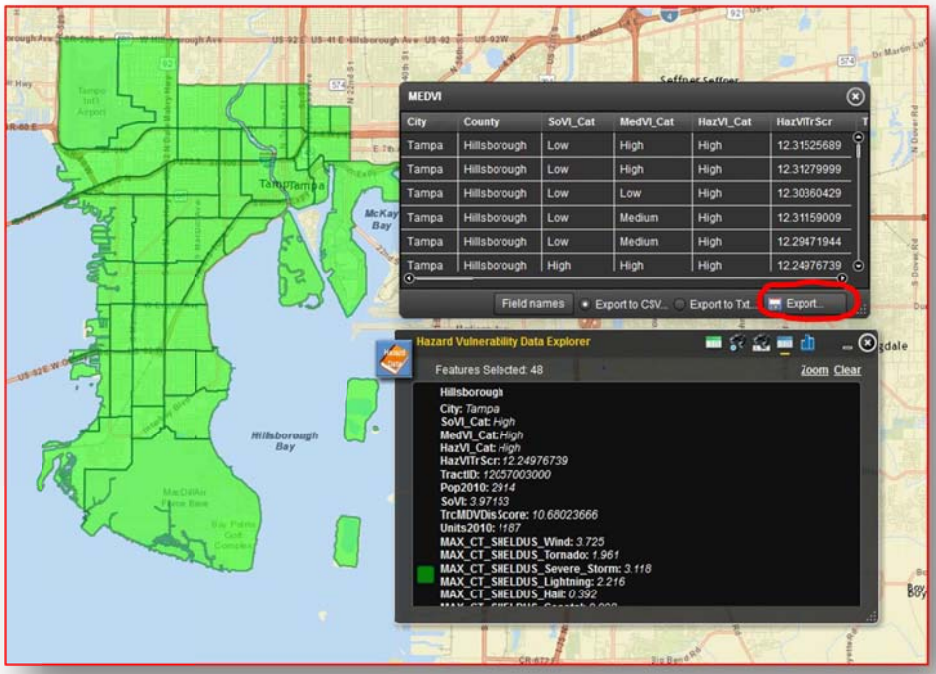
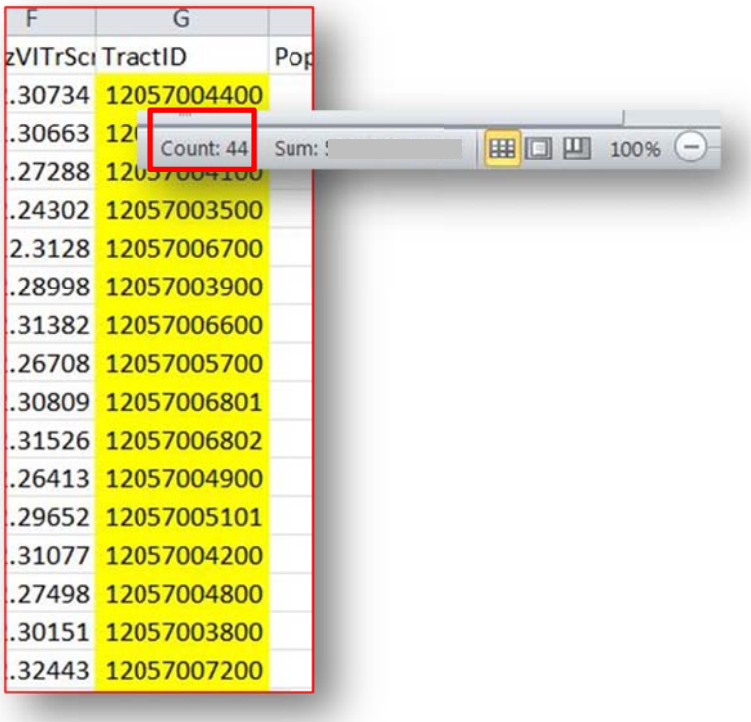
4. Export the data saving it as a .csv file.



5. In the .csv file select the column *TractID* and count the total number of tracts.



F	G	
zVITrScı	TractID	Pop
.30734	12057004400	
.30663	12[illegible]	
.27288	12[illegible]	
.24302	12057003500	
2.3128	12057006700	
.28998	12057003900	
.31382	12057006600	
.26708	12057005700	
.30809	12057006801	
.31526	12057006802	
.26413	12057004900	
.29652	12057005101	
.31077	12057004200	
.27498	12057004800	
.30151	12057003800	
.32443	12057007200	

Count: 44 Sum: [illegible] 100%

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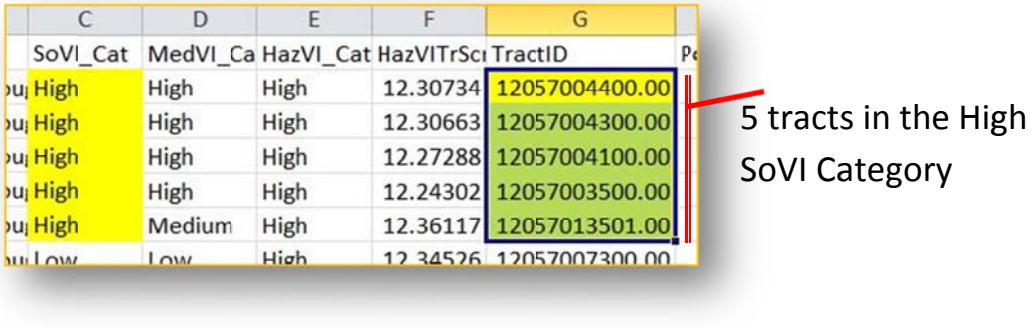
6. In the .csv file, identify the *SoVI_Cat* and sort it (A – Z).
7. Select the rows with the "High" *SoVI_Cat* and count the number of tract in the *TractID* column.



C	D	E	F	G
SoVI_Cat	MedVI_Ca	HazVI_Cat	HazVITrSc	TractID
High	High	High	12.30734	12057004400.00
High	High	High	12.30663	12057004300.00
High	High	High	12.27288	12057004100.00
High	High	High	12.24302	12057003500.00
High	Medium	High	12.36117	12057013501.00
Low	Low	High	12.34526	12057007300.00

8. Repeat the same steps to determine the tract values for *High*, *Medium* and *Low* SoVI, MedVi and HazVI.

Determine the total population and the specific population for each vulnerable category

Population	SoVI	MedVI	HazVI
High			
Medium			
Low			
Total population			

Estimation of the population breakdown

Break downs of the population can be determined by counting the values in each column (total), and by sorting and counting each group.

1. Creating a pivot table allows to count large amounts of data and to save time.
   a. Start creating a pivot table by selecting the all the data in the worksheet.
   b. In the menu *"Insert"* click on *PivotTable* and drag the fields into the areas as shown below.

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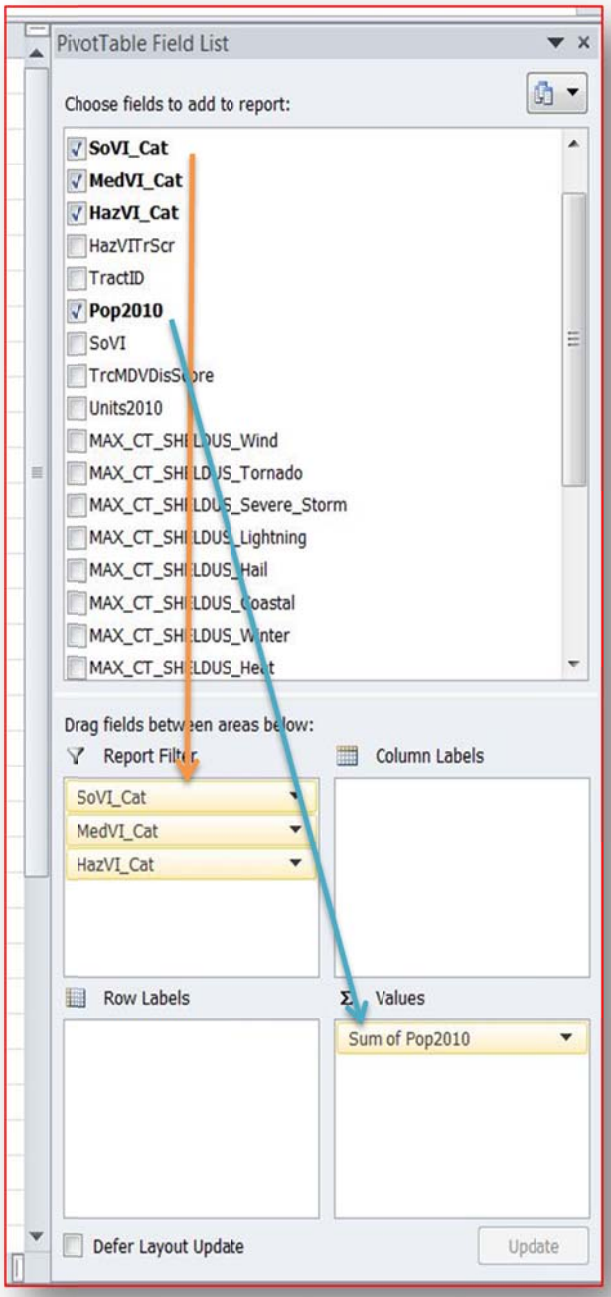

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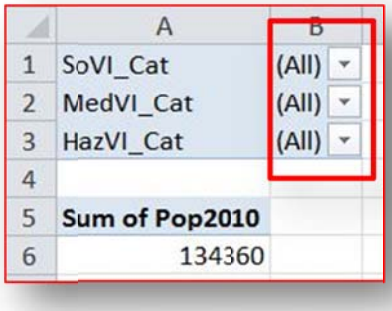
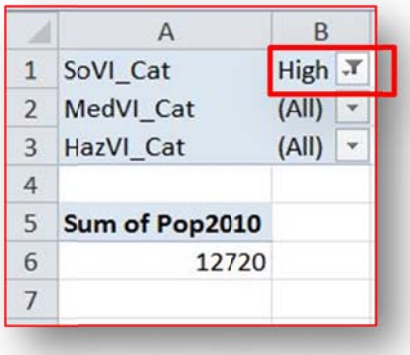
c. Filter the *High, Medium* and *Low* values in the pivot table using the drop-down menu for each category. The population for that category is displayed in the table.

Total Population



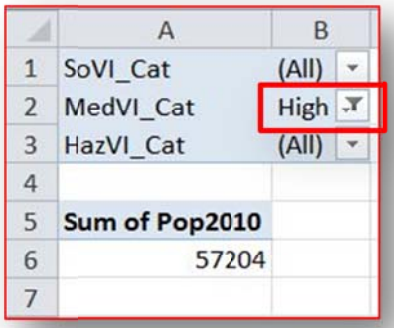
	A	B
1	SoVI_Cat	(All)
2	MedVI_Cat	(All)
3	HazVI_Cat	(All)
4		
5	**Sum of Pop2010**	
6	134360	

Population in High SoVI category



	A	B
1	SoVI_Cat	High
2	MedVI_Cat	(All)
3	HazVI_Cat	(All)
4		
5	**Sum of Pop2010**	
6	12720	
7		

Population in High MedVI category



	A	B
1	SoVI_Cat	(All)
2	MedVI_Cat	High
3	HazVI_Cat	(All)
4		
5	**Sum of Pop2010**	
6	57204	
7		

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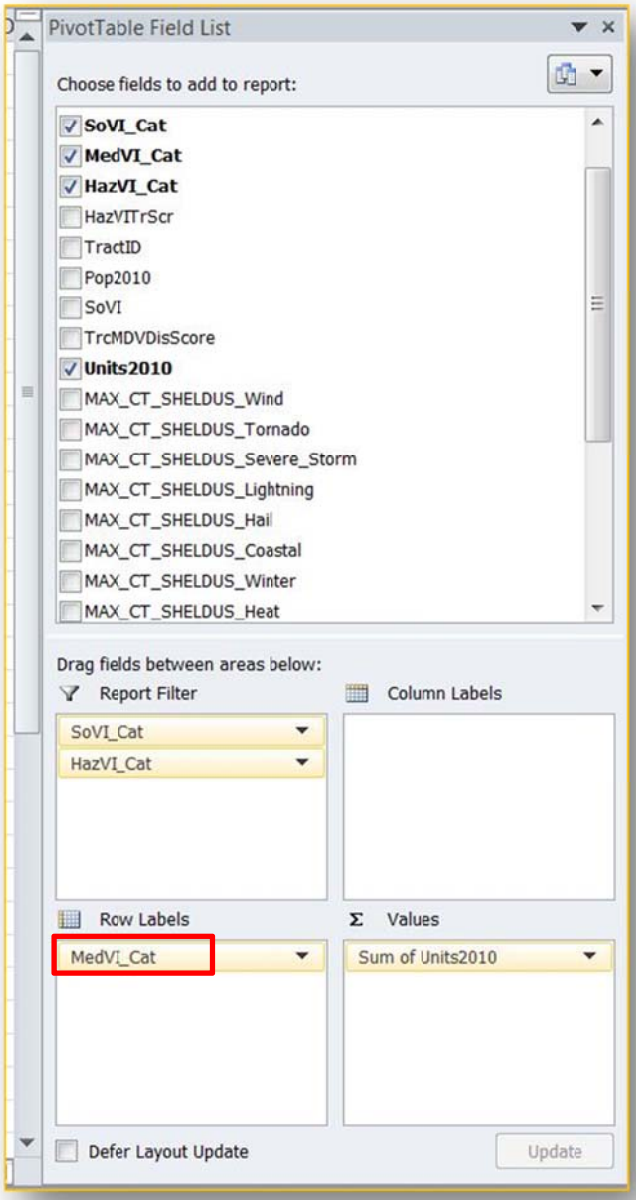
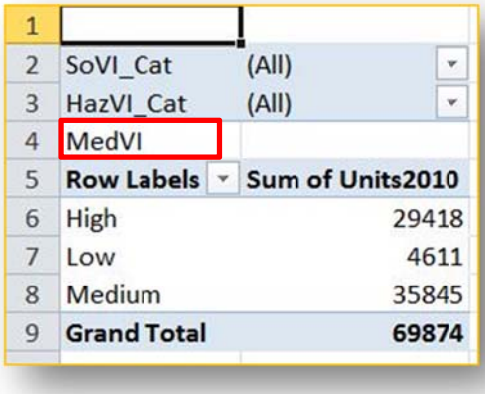
Estimation of the housing units breakdown

1. Break downs of the housing units can be determined by counting the values in each column (total) or by creating a pivot table. The process of creating a pivot table for the housing values differs from the process used for the population counts. Adopting either process is a personal preference as both are correct.
2. The *Field List* for the pivot table is arranged to provide the vulnerable housing unit count for *High, Medium* and *Low* categories in one table at once. The picture below shows *"MedVI"* as the first category chosen. The table breaks down the housing units count in *High, Medium* and *Low* Med VI subcategories. The name of the category was added manually.





1		
2	SoVI_Cat	(All)
3	HazVI_Cat	(All)
4	MedVI	
5	**Row Labels**	**Sum of Units2010**
6	High	29418
7	Low	4611
8	Medium	35845
9	**Grand Total**	**69874**

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a. The table breaks down the housing unit count in *High, Medium* and *Low* SoVI subcategories. The name of the category was added manually.

1		
2	HazVI_Cat	(All)
3	MedVI_Cat	(All)
4	SoVI	
5	**Row Labels**	**Sum of Units2010**
6	High	5513
7	Low	49487
8	Medium	14874
9	**Grand Total**	**69874**

b. The table breaks down the housing unit count only in *High* HazVI subcategory. The name of the category was added manually

1		
2	MedVI_Cat	(All)
3	SoVI_Cat	(All)
4	HazVI	
5	**Row Labels**	**Sum of Units2010**
6	High	69874
7	**Grand Total**	**69874**

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Exercise 3: Wildfire: Identifying vulnerable populations

A rapid onset hazard has just occurred in you county of interest. Use the appropriate geography in the geographical search function to answer the following questions.

County of Interest	Hazard
Polk	Wildfire springs up across county

1. Which geography is most appropriate for your hazard?
2. How many tracks are impacted?
3. What is the breakdown of underlying vulnerabilities, population, and housing units at risk?

Tracts-vulnerabilities	SoVI	MedVI	HazVI
High			
Medium			
Low			

Population	SoVI	MedVI	HazVI
High			
Medium			
Low			
Total population			

Housing Units	SoVI	MedVI	HazVI
High			
Medium			
Low			
Total Housing			

4. What is your plan of action as you make your way to the EOC?
5. What information from this widget helps to inform your actions during the first operational period?

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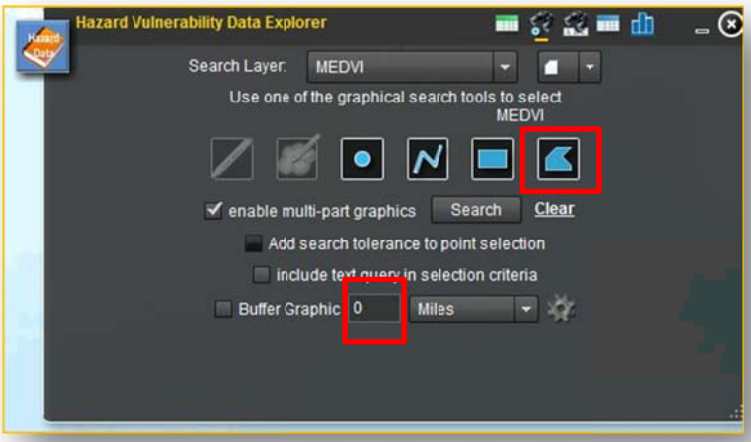
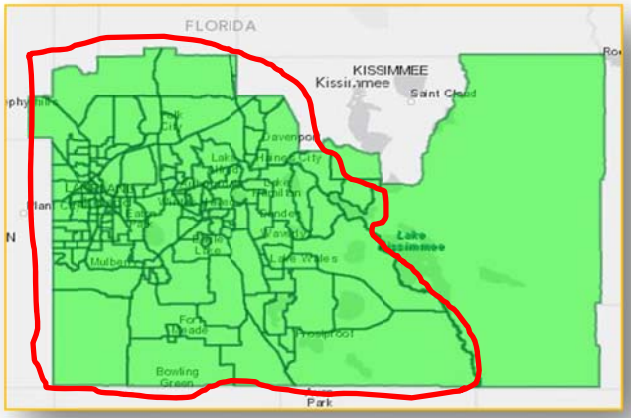
Procedure to answer this exercise:

There are two ways to obtain the information in the HVDE:

1. Using the *"Graphical Search"* and the "*Polygon tool"* (adjust the Buffer Graphic to 0 miles) to select Polk County.



2. The search will identify Polk County in the map and other neighboring areas. To obtain the data for Polk County only, it is necessary to export the data and filter it in the .csv/Excel spreadsheet.



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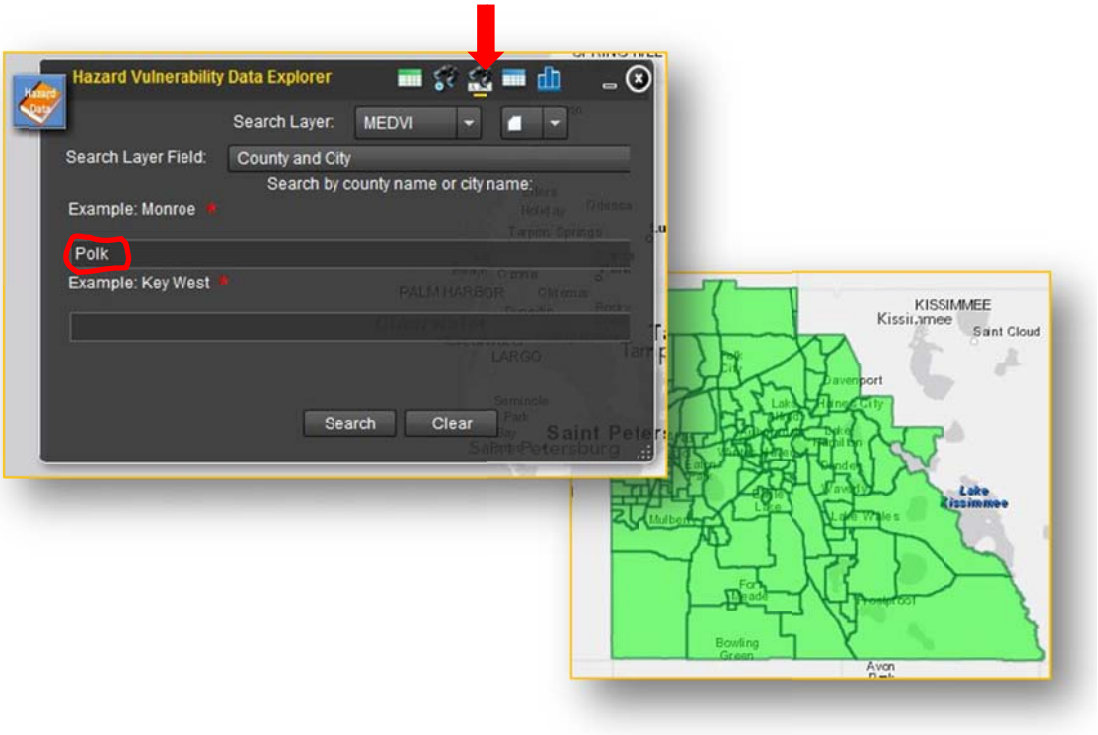
a. Using the *"Text Search"* to select Polk County will produce the data for Polk County exclusively.



b. Export the data into a .csv file.

c. Count the number of vulnerable tracts by selecting the *"TractID"* column.

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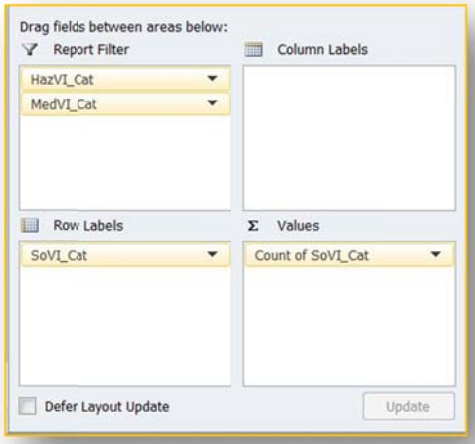
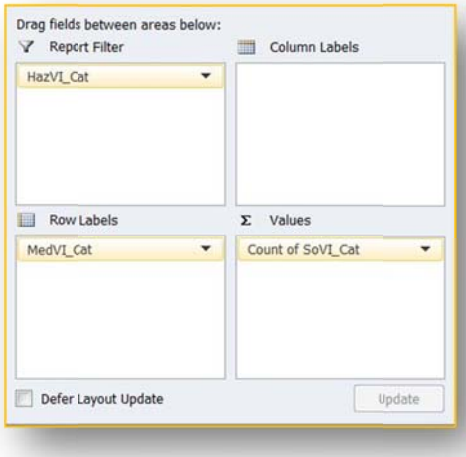
d. Identify the tracts in the SoVI, MedVI and HazVI subcategories (*High, Medium* and *Low*) by creating a pivot table as shown below.

SoVI tracts



HazVI_Cat	(All)
MedVI_Cat	(All)
SoVI	
Row Labels	**Count of SoVI_Cat**
High	52
Low	24
Medium	78
Grand Total	**154**

MedVI tracts



HazVI_Cat	(All)
MedVI	
Row Labels	**Count of SoVI_Cat**
High	153
Medium	1
Grand Total	**154**

e. Repeat the same procedure for HazVI tracts.

HazVI	
Row Labels	**Count of SoVI_Cat**
High	154
Grand Total	**154**

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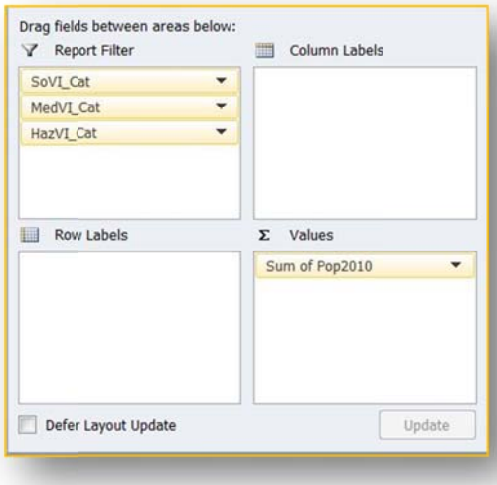
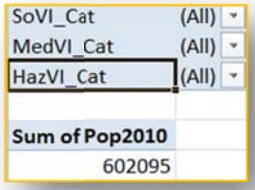
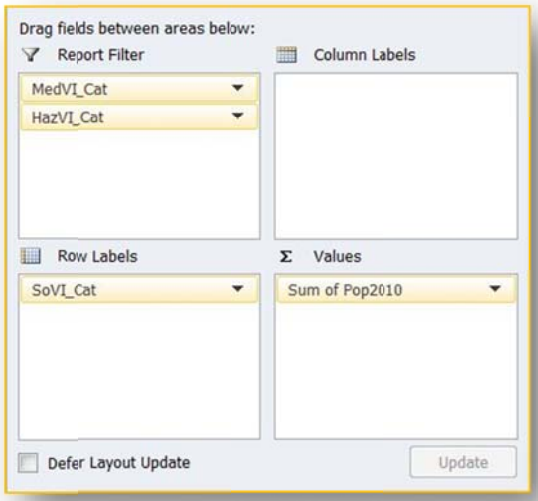
3. Determining the total population at risk in Polk County

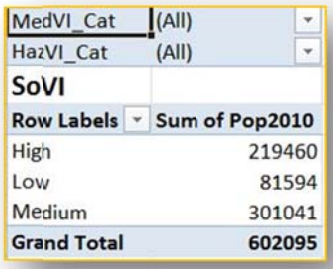
   a. Create a pivot table to estimate the total population, the population in the categories (SoVI, MedVI and HazVI) and in the subcategories (*High*, *Medium*, and *Low*) as shown below.





   b. Change the fields in the pivot table to estimate the population of the SoVI subcategories.





MedVI_Cat	(All)
HazVI_Cat	(All)
SoVI	
Row Labels	**Sum of Pop2010**
High	219460
Low	81594
Medium	301041
Grand Total	**602095**

- Follow the same procedure to estimate the population for the MedVI and HazVI categories.

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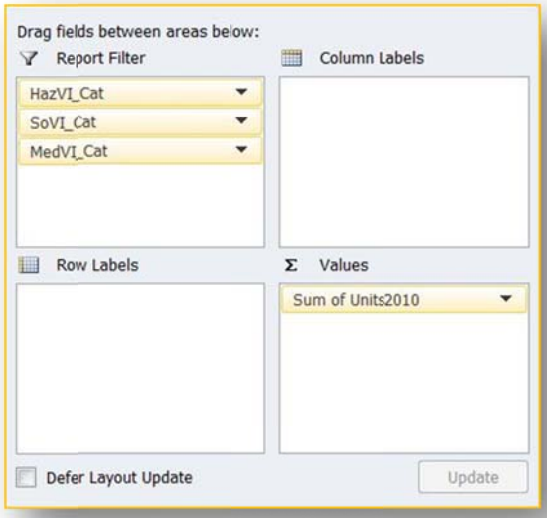
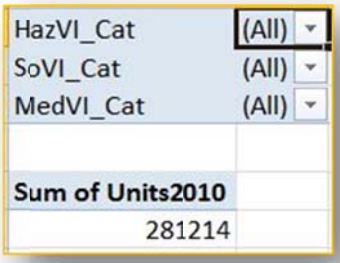
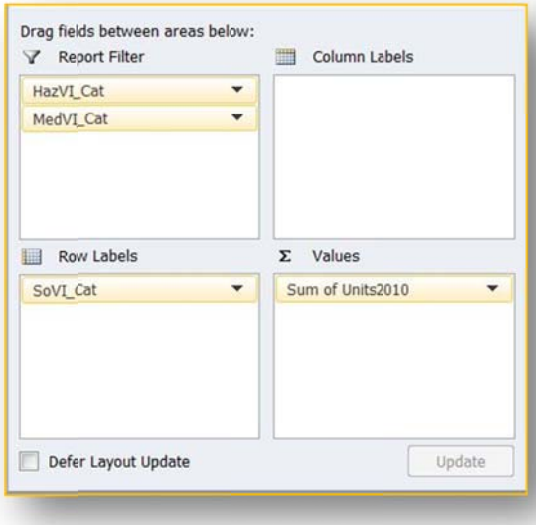
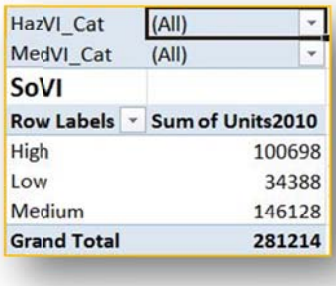
4. Determine the housing units in the SOVI, MedVI HazVI and its subcategories.

   a. Follow the same procedure outlined above to determine the total of housing units at risk.









   b. Repeat the same steps to estimate the housing units in the MedVI and HazVI subcategories.

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Answer Key

Exercise 1: Exploring vulnerabilities and hazards

1. 269

1a. 1,236,288

1b. Polk County - 46

2. 340

2a. 1639839

2b. There are more medium medical vulnerability groups because of the classification scheme used (standard deviation).

2c. User specified answer.

2ci. User specified answer.

2cii. User specified answer.

2ciii. User specified answer.

3aWind. 129

3aSurge. 122

3bWind. 515,518

3bSurge. 517,045

3ci. User specified answer.

3cii. User specified answer.

3ciii. User specified answer.

3di. User specified answer.

3dii. User specified answer.

3diii. User specified answer.

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Exercise 2: Using the geographical search function to identify vulnerable populations: Flash Flood covers southern half of Tampa

1. Polygon

2. ~ 44

Vulnerable Tracts	SoVI	MedVI	HazVI
High	5	19	43
Medium	11	21	0
Low	27	3	0

Population	SoVI	MedVI	HazVI
High	12720	57204	134360
Medium	32447	68144	0
Low	89193	9012	0
Total Population	134360		

Housing Units	SoVI	MedVI	HazVI
High	5513	29418	69874
Medium	14874	35845	0
Low	49487	4611	0
Total Housing	69874		

3. User specified answer.

4. User specified answer.

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Exercise 3: Using the geographical search function to identify vulnerable populations: Wildfire springs up across Polk County

1. Polygon or County/City search

2. ~ 154 with high or extreme wildfire risk.

Tracts-vulnerabilities	SoVI	MedVI	HazVI
High	52	153	154
Medium	78	1	0
Low	24	0	0

Population	SoVI	MedVI	HazVI
High	219460	602092	602095
Medium	301041	3	0
Low	81594	0	0
Total population	602095		

Housing Units	SoVI	MedVI	HazVI
High	100698	281213	281214
Medium	146128	1	0
Low	34388	0	0
Total Housing	281214		

3. User specified answer.

4. User specified answer.

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