

New Orleans 2007 Workshop — Tips For Using Microsoft Excel to Analyze EMSC Data and Generate Reports Pivot Tables and Other Goodies

Introduction

In this document, we will describe several more advanced features of Excel. In our opinion, these are especially useful when one is faced with analysis of large datasets, such as might be encountered when analyzing EMS data. Again, there are many other programs and utilities that are used to analyze data. We have chosen to illustrate EMSC data analysis using Excel because the program is widely available, fairly intuitive to use, and has capabilities that are useful to EMS data analysis.

Educational Objectives

After reading this document, you will:

- 1. Understand how to use Excel as a "front end" to databases contained within other programs such as SQL Server, Oracle, or Access.
- 2. Appreciate the utility of PivotTables, and be able to set one up.
- 3. Know how to invoke the data analysis tools available to run statistics within Microsoft Excel.

Connecting to External Databases

In our opinion, Excel is a superb tool to use as a "front end" to large databases. To accomplish this, you must have an ODBC connection set up. This will not be demonstrated in this workbook because setting up the ODBC requires specific knowledge of databases, and requires setting up computer permissions to allow the user access to the database.

The main advantage of connecting directly to the databases is to identify only the data you want, and then have it sent you. This is in contrast to asking the database server to send you everything and let you sort it out in Excel. Suppose you have a million EMS records. Your spreadsheet can't even hold that many rows, and you are really only interested in 5 year old victims of drowning. By using Excel properly, you can request 5 year old drowning victims, the database will do the work of finding them, and then only those records will be sent to your Excel spreadsheet.

Once an ODBC is set up, you can connect to an external database. This is accomplished by first clicking on "Data" – "Get External Data" – "New Data Query" (Figure 1). The next step will be to choose the data source you wish to access. For this example, we will be showing how to retrieve a Microsoft Access Database. However, the steps for accessing other database managers are not much different and Excel walks you through nicely. To retrieve data from an Access Database, you need to click on the "MS Access Database" in the Choose Data Source box. It will then ask you to specify the file location of the Access Database you wish to use.

Figure 1: Bringing external da	ata into Excel	
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After you have connected to the data source, Microsoft Query will begin. Since Microsoft Query is also used in PivotTables and Charts, we will spend some time discussing this product. The first box specifies the columns you wish to include in your query (Figure 2). In this box you are also able to preview the data elements in each field. Clicking "Next" will then bring up the box for filtering the data (Figure 3). For our example, we restricted the data to those records where the age is between 0 and 17 years.

Figure 2: Choosing columns in Microsoft Query	Figure 3: Filtering the data in Microsoft Query
Query Wizard - Choose Columns 🛛	Query Wizard - Filter Data 🔀
What columns of data do you want to include in your query? Available tables and columns: Columns in your query: EMSView year EMSView Columns in your query: County patsourc Immed Immed Preview of data in selected column: Assisted Ventilation	Filter the data to specify which rows to include in your query. If you don't want to filter the data, click Next. Column to filter: Only include rows where: year Age EMSNum is greater than or equal to County And patsourc Influence tmt ucyschilts ArseArtIs
Preview Now Options < Back Next > Cancel	Cancel

The next box allows you to sort the data by any column. The final box has several different options for handling the data. The default is to return it to Excel, but you are also allowed to choose to further edit the data in Microsoft Query. If you chose to edit it further, you will be able to write your own SQL script. Figure 4 contains a screen shot of the returned data in Excel.

Figure 4: The Excel table that was generated by retrieving data from Access.

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<u>PivotTables</u>

Filters and formulas are great, but PivotTables offer an alternative that is often more useful. PivotTables are an excellent way to quickly summarize large amounts of data and display them in relative terms in a table format; PivotTable are very good for the kind of data analysis that EMS workers often need to do. Creating a PivotTable is a bit less intuitive than working directly on the spreadsheet with filters and formulas; data analysis with PivotTables creates a new table entirely, that often appears on a different worksheet than the data analyzed.

Using PivotTables requires that your worksheet be properly set up with some entry in every cell in the top row of the data table to be analyzed (this entry will serve as the variable name in the PivotTable). To start the PivotTable platform click on "Data" \rightarrow "PivotTable and PivotChart Report" (just PivotTable Report in some versions). The first dialog box allows you to choose how you will get the data and whether you want a pivot table or a pivot chart. In addition, when you use Excel to access large external databases, PivotTables are often much more practical than trying to read the database values into a huge spreadsheet. The options for where the data can be obtained include an Excel table and an external data source. If you choose an external data source you follow the same steps as mentioned above in connecting to an external data source.

Exercise: Use a PivotTable to analyze the proportion of EMS runs done by paramedics and EMTs in the various counties. (If you start by selecting the entire data table, Excel will pre-fill the data source box for you. Else, or if you are using an external data source, you can specify it later.)

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• Select Data Menu \rightarrow PivotTable Report and PivotChart Report

- The following dialog box comes up on the ٠ data table:
- Choose "Microsoft Excel database" for the data source and "PivotTable" for the report that you want to create. Then click "Next".



- The Step 2 dialog box appears.
- The data source range may already be filled in, as it is here, or you can fill it in. This can be done by clicking & dragging in the data table if you like; you can collapse the dialog box to get it out of the way by clicking in the little box to the right of the data range entry box.
- Click Next, and the step 3 dialog ٠ box appears. Here, just click on "New worksheet", click "Finish", and the PivotTable appears on a new, blank worksheet.

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- The PivotTable is also blank because you haven't yet chosen the data that you would like it to analyze. This is done by dragging items from the Field List onto the PivotTable area.
- Note that the word "field" is used for variables; means the same thing. (Field or variable names are the headers for the data columns on the main spreadsheet.)
- Here, we are planning to analyze the number of runs of various characteristics, so you can choose any variable (column) that has an entry for every record.
- Click on Pt_num (which is just an identifier and so exists for every record) and drag it into the "Drop Data Items Here" area of the PivotTable.
- You haven't yet told Excel how you would like to express these data, so it chooses "Sum of EMS num" for you. This is not helpful, since you want to analyze counts. Right click or double click on the cell containing "Sum of EMS num".

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This will enable you to bring up the PivotTable Field dialog box, that will let you choose different ways of summarizing data.

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- ٠ From the PivotTable Field List, drag "age" over to the column part of the PivotTable (the cell directly under "Count of Pt Num).
- ٠ The PivotTable then fills out and shows you the number of runs for each age contained in the data, as shown here.

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Exercise: Try analyzing a different variable and expressing it as a percent of the total.

- Click on the "age" cell in the PivotTable and drag it back to the Field List.
- Drag "Prov_Imprs" to the column area of the PivotTable.
- Then, right click on the cell containing "Count of Pt_Num" and bring up the Field Settings dialog box.
- Click on "Options".
- Click on "% of total" and click OK.

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7	Airway obstruction	172				Proc_02	
8	Allergic reactions	83				CPR att	
9	Altered level of consciousness	307				- Med	
10	Back Pain	13					
11	Behavioral/psychiatric disorder	215				Disposition	
12	Cardiac arrest	99				Destination	
13	Chest pain/discomfort	317				Prov_Imprs	
14	Diabetic symptoms (hypoglycemia)	74				Disp_Comp	
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25	Routine Transfer	99					
26	Seizure	1058					
27	Sick Person/Specific Diagnosis	64					
28	Stroke/CVA	9					
29	Traumatic injury	9490					
30	Unknown Problem/Man Down	118					
31	Grand Total	14526					
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Result: Values are now expressed as percent of total (right).

Important: When creating a new PivotTable, use an existing PivotTable as the data source if possible (it's a choice in the PivotTable Wizard). Your file will become excessively large otherwise.

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Prov_Imprs	Total
Abdominal pain/problem	1.94%
Air Transport Team Transfer	0.06%
Airway obstruction	1.18%
Allergic reactions	0.57%
Altered level of consciousness	2.11%
Back Pain	0.09%
Behavioral/psychiatric disorder	1.48%
Cardiac arrest	0.68%
Chest pain/discomfort	2.18%
Diabetic symptoms (hypoglycemia)	0.51%
Ear Problem	0.03%
Electrocution	0.08%
Eye Problems	0.03%
Headache	0.10%
Hyperthermia	0.24%
Hypothermia	1.00%
Inhalation injury (toxic gas)	0.65%
Poisoning/drug ingestion	4.52%
Pregnancy/OB delivery	0.94%
Respiratory distress	6.98%
Routine Transfer	0.68%
Selzure	7.28%
Sick Person/Specific Diagnosis	0.44%
Stroke/CVA	0.06%
Traumatic injury	65.33%
Unknown Problem/Man Down	0.81%
Crond Total	100.00%

Exercise: Try making a table with two data columns.

- Create a PivotTable and drag "Pt_Num" into the data area twice.
- You should see a table as shown here.
- Click on the cell containing the word "Data" and drag it one cell rightward.
- The two "Pt_Num" data rows have become columns.
- Use the Field Setting dialog box to change one column to Count and the second column to % of total.
- Drag "Prov_Imprs" into the row area.

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0.81%

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100.00%

Count of Pt_Num Count of Pt_Num2 1.94% 282

Data

Prov_Imprs Abdominal pain/problem

Cardiac arrest Chest pain/discomfort

Airway obstruction

Allergic reactions

Ear Problem Electrocution

Eye Problems

Headache Hyperthermia

Seizure

Stroke/CVA

Grand Total

Air Transport Team Transfer

Altered level of consciousness Back Pain

Behavioral/psychiatric disorder

Hypothermia Inhalation injury (toxic gas)

Sick Person/Specific Diagnosis

Unknown Problem/Man Down

Poisoning/drug ingestion

Pregnancy/OB delivery Respiratory distress

Routine Transfer

Traumatic injury

Diabetic symptoms (hypoglycemia)

Result: The final result should resemble the table on the showing two data columns.

Note: It may be difficult to undo the two data column arrangement.

Exercise: Create a table and eliminate blank cells from analysis.

- Create a table analyzing the variable "med" as below left. Click on the little arrow on the right hand side of the cell containing the word "med".
- A list comes up of variables to show. De-select for "blank".
- You can also right-click in the cell you want to hide

Result: A table like the one on the right below. This

be useful if you want to remove blank or null values from the denominator.

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20	Lasix-Furos		- U.U1%							
21	Morphine S	Hide Field List	J.U6%							
22	Narcan-Naloxor	ne HCL	0.05%							
23	Nitrostat-Tri Ni	trogiycerine	0.03%							
24	Normal Saline		1.39%							
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20	Pitocin-Ovytoci	ine chizine ricc	0.03%							
30	Thiamine		0.00%							
31	Valium-Diazena	m	0.08%							
32	Xvlocaine-Lidor	caine-Direct JV	0.10%							
33	Xvlocaine-Lidoo	caine-IV Drip	0.03%							
34	Grand Total		100.00%							
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3)	<u>File Edit View Insert Format Tools</u>	; <u>D</u> ata <u>W</u> indow <u>H</u>					
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5	Albuteral Sulfate	3.72%					
6	Aminophylline	0.04%					
7	Atropine-Atropine Sulfate	0.38%					
8	Benadryl-Diphenhydramine	0.13%					
9	Bretylol-Bretylium Tosylate	0.04%					
10	Decadron or Hexadrol Dexameth	0.04%					
11	Demeral-Meperidine 0.73%						
12	Dextrose 5%	0.26%					
13	Dextrose 50%	0.90%					
14	Epinephrine 1:10,000 0.68%						
15	Epinephrine 1:1000	0.64%					
16	Intropin-Dopamine HCL	0.04%					
17	Ipecac Syrup	0.43%					
18	Lactated Ringers	63.94%					
19	Lasix-Furosemide	0.04%					
20	Morphine Sulfate	0.34%					
21	Narcan-Naloxone HCL	0.30%					
22	Nitrostat-Tri Nitroglycerine	0.21%					
23	Normal Saline	8.64%					
24	Nubain	0.26%					
25	Other Medications	14.63%					
26	Oxygen	1.80%					
27	Phenegran-Promethizine HCL	0.17%					
28	Pitocin-Oxytocin	0.17%					
29	Thiamine	0.09%					
30	Valium-Diazepam	0.51%					
31	Xylocaine-Lidocaine-Direct IV	0.64%					
32	Xylocaine-Lidocaine-IV Drip	0.21%					
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Exercise: Create a two-variable PivotTable.

- Create a PivotTable for Prov_Imprs
- Drag "gender" into the column area.
- This should yield a table like the one on the right.

C	OUNT OF PT_NUM	Gender			
P	rov_Imprs	F	M	U	Grand Total
A	bdominal pain/problem	174	106	2	282
A	ir Transport Team Transfer	6	3		9
A	irway obstruction	81	91		172
A	llergic reactions	47	36		83
A	Itered level of consciousness	187	119	1	307
B	ack Pain	7	6		13
B	ehavioral/psychiatric disorder	110	104	1	215
C	ardiac arrest	39	60		99
C	hest pain/discomfort	152	164	1	317
D	iabetic symptoms (hypoglycemia)	36	38		74
Ea	ar Problem	2	2		4
E	ectrocution	4	7		11
E	ye Problems	3	2		5
H	eadache	8	5	1	14
H	yperthermia	21	14		35
H	ypothermia	69	76		145
Ir	nhalation injury (toxic gas)	45	50		95
P	olsoning/drug ingestion	366	289	2	657
P	regnancy/OB delivery	91	45	1	137
R	espiratory distress	498	514	2	1014
R	outine Transfer	49	50		99
S	elzure	497	557	4	1058
S	ick Person/Specific Diagnosis	38	26		64
S	troke/CVA	5	4		9
Tr	raumatic injury	4572	4880	38	9490
U	nknown Problem/Man Down	63	54	1	118
G	rand Total	7170	7302	54	14526

Exercise: Try adding a second variable to the column area.

- Drag "med" into the column area.
- The result is shown below. It is messy, too big to see at once.
- There is an alternative way to show additional detail.

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	A5 🔹 🏂 Prov_Imprs									
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3	Count of Pt_Num	Med 💌	Gender 💌		50) 50)	5. 93			5. 50	
4					Total	Albuteral Sulfate		Albuteral Sulfate Total	Aminophylline	Aminophylline Tota
5	Prov_Imprs 🗸	ÎF ∣	M	U		F	М		F	
6	Unknown Problem/Man Down	56	51	1	108					
7	Traumatic injury	4100	4192	37	8329	1		1	1	
8	Stroke/CVA	3	3		6					
9	Sick Person/Specific Diagnosis	29	18		47				6	
10	Seizure	405	431	4	840					
11	Routine Transfer	38	39		77					
12	Respiratory distress	385	405	2	792	45	37	82		
13	Pregnancy/OB delivery	73	42	1	116					
14	Poisoning/drug ingestion	265	207	2	474					
15	Inhalation injury (toxic gas)	44	45		89					
16	Hypothermia	38	47		85	1	1	2		
17	Hyperthermia	19	13		32					
18	Headache	6	4	1	11					
19	Eye Problems	3	2		5					
20	Electrocution	2	6		8					
21	Ear Problem	2	2		4					
22	Diabetic symptoms (hypoglycemia)	21	15		36					
23	Chest pain/discomfort	93	99	1	193	1		1		
24	Cardiac arrest	23	36		59					
25	Behavioral/psychiatric disorder	105	99	1	205					
26	Back Pain	7	4		11					
27	Altered level of consciousness	139	85	1	225	1		1		
28	Allergic reactions	33	28		61					
29	Airway obstruction	72	85		157					
30	Air Transport Team Transfer	6	2		8					
31	Abdominal pain/problem	117	92	1	210					
32	Grand Total	6084	6052	52	12188	49	38	87	1	
33								DivotTable Field List		

Exercise: The settings of the row and column fields can be changed by right clicking and then clicking on "Field Setting." For example, you can change the pivot table to show only the top 10 injury/illness codes in terms of frequency.

- Right-click the Prov Imprs cell.
- Click on "Field Setting".
- Click on "Advanced" in the field setting dialog box.
- The "Advanced Options dialog box appears.

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rans	port ream rra	rister	O	3	
ay o	bstruction		81	91	
rgio r	eactions		47	36	
red le	evel of conscio	usness	187	119	1
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- To show only the top 10, click on "Automatic" under "Autoshow Options".
- Click OK and the PivotTable shown below on the left appears, showing only the top ten.

To sort these data in order of most frequent:

- Go to the "Advanced Options" dialog box as noted above.
- Click on "Descending" under "Autosort". The PivotTable becomes the one on the right below:

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_	A4 🝷 🏂 Prov_Imprs					
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	Count of Pt_Num	Gender 🔻			84	
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	Abdominal pain/problem	174	106	2	282	
	Airway obstruction	81	91		172	
	Altered level of consciousness	187	119	1	307	
	Behavioral/psychiatric disorder	110	104	1	215	
	Chest pain/discomfort	152	164	1	317	
D	Hypothermia	69	76		145	
1	Poisoning/drug ingestion	366	289	2	657	
2	Respiratory distress	498	514	2	1014	
3	Seizure	497	557	4	1058	
4	Traumatic injury	4572	4880	38	9490	
5	Grand Total	6706	6900	51	13657	
5						2
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4	Prov_Imprs -	∬ F	М	U	Grand Total	
5	Traumatic injury	4572	4880	38	9490	
6	Seizure	497	557	4	1058	
7	Respiratory distress	498	514	2	1014	
8	Poisoning/drug ingestion	366	289	2	657	
9	Hypothermia	69	76		145	
10	Chest pain/discomfort	152	164	1	317	
11	Behavioral/psychiatric disorder	110	104	1	215	
12	Altered level of consciousness	187	119	1	307	
13	Airway obstruction	81	91		172	
14	Abdominal pain/problem	174	106	2	282	
15	Grand Total	6706	6900	51	13657	
16						4

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Drag "med" back to the Field list and doubleclick on a row item in the PivotTable.

• Select any of the variables to get more detail.

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1 Drop Page Fields Here 2 3 3 Count of Pt_Num 4 Prov_Imprs 5 Unknown Problem/Man Down 6 Traumatic injury 4 Prov_Imprs 7 Stroke/CVA 8 Sick Person/Specific Diagnosis 9 Sick Person/Specific Diagnosis 9 Seizure 10 Routine Transfer 12 Pregnancy/OB delivery 13 Poisoning/drug ingestion 14 Inhalation injury (toxic gas) 15 Hypothermia 16 Hyperthermia 17 Headache 19 Electrocution 10 Ear Problem 11 14 12 Problems 19 Electrocution 10 Diabetic symptoms (hypoglyce) OK Cancel 1 11 317 2 Chose the field containing the 10 Diabetic symptoms (hypoglyce) OK OK Cancel 1		А		В		с		D	E	
2 3 Count of Pt_Num Gender ▼ 4 Prov_Imprs ▼ F M U Grand Total 5 Unknown Problem/Man Down 63 54 1 118 6 Traumatic injury 4572 4880 38 9490 7 Stroke/CVA 5 4 9 8 Sick Person/Specific Diagnosis 38 26 644 9 Seizure 4 1058 99 10 Routine Transfer Show Detail 4 1058 10 Routine Transfer Show Detail 4 1058 11 Respiratory distress Choose the field containing the detail you want to show: 1 137 13 Poisoning/drug ingestion Ind_Date 44 495 14 Inhalation injury (toxic gas) Ind_Date 445 495 15 Hypothermia Proc_O2 1 144 5 19 Electrocution Electrocution 1 317 20 Ear Problem OK Cancel 74	1		rop P	age Fields I	lere					
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7 Stroke/CVA 5 4 9 8 Sick Person/Specific Diagnosis 38 26 64 9 Seizure 4 1058 10 Routine Transfer 99 11 Respiratory distress Choose the field containing the detail you want to ghow: 2 1014 12 Pregnancy/OB delivery Choose the field containing the detail you want to ghow: 2 657 13 Poisoning/drug ingestion Agency_Num 1 137 14 Inhalation injury (toxic gas) Incl_Date 44 15 Hyperthermia Hoc_Tmt1 95 16 Hyperthermia Proc_Tmt1 95 17 Headache Proc_O2 1 18 Eye Problems GK Cancel 74 10 Bispetition Med 1 317 22 Chest pain/discomfort 0K Cancel 74 21 Diabetic symptoms (hypoglyce) 0K Cancel 74 22 Chest pain/discomfort 39 60 99 24 Behavioral/psychiatric disorder 110 104 1 25 Back Pain 7 6 13	6	Traumatic injury		4572		4880		38		9490
8 Sick Person/Specific Diagnosis 38 26 64 9 Seizure 4 1058 10 Routine Transfer 99 99 11 Respiratory distress Choose the field containing the 2 1014 12 Pregnancy/OB delivery detail you want to ghow: 1 137 13 Poisoning/drug ingestion Agency_Num 1 137 14 Inhalation injury (toxic gas) Inci_Cnty 95 95 15 Hypothermia Proc_Tmt1 95 145 16 Hyperthermia Proc_Tmt1 95 1 14 18 Eye Problems Ever Problem 11 14 14 20 Ear Problem VMed 11 11 14 22 Chest pain/discomfort 39 60 99 99 24 Behavioral/psychiatric disorder 110 104 1215 25 Back Pain 7 6 13 26 Altered level of consciousness 187 119 130 <	7	Stroke/CVA		5		4		1		9
9 Seizure 4 1058 10 Routine Transfer 99 11 Respiratory distress Choose the field containing the detail you want to show: 2 1014 12 Pregnancy/OB delivery detail you want to show: 1 137 13 Poisoning/drug ingestion Agency_Num 2 657 14 Inhalation injury (toxic gas) Ind_Cnty 95 95 15 Hypothermia Proc_Tmt1 95 95 16 Hyperthermia Proc_Tmt1 95 1 14 18 Eye Problems CPR att 55 55 56 19 Electrocution Displaytion 11 11 14 20 Ear Problem 0K Cancel 74 4 21 Diabetic symptoms (hypoglyce 0K Cancel 74 21 22 Chest pain/discomfort 39 60 99 99 22 Chest pain/discomfort 39 60 99 99 24 Behavioral/psychiatric disorder 110	8	Sick Person/Specific Diagnosis		38		26				64
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11 Respiratory distress Choose the field containing the detail you want to show: 2 1014 12 Pregnancy/OB delivery detail you want to show: 1 137 13 Poisoning/drug ingestion Agency_Num 2 657 14 Inhalation injury (toxic gas) Incl_Oate 145 15 Hypothermia Proc_Tmt1 95 16 Hyperthermia Proc_O2 1 18 Eye Problems CrPR att 55 19 Electrocution Med 1 20 Ear Problem 4 21 Diabetic symptoms (hypoglyce) OK Cancel 22 Chest pain/discomfort 10 317 23 Cardiac arrest 39 60 99 24 Behavioral/psychiatric disorder 110 104 1 25 Back Pain 7 6 13 26 Altered level of consciouspess 187 119 1	10	Routine Transfer	31104	Detail						99
12 Pregnancy/OB delivery detail you want to show: 1 137 13 Poisoning/drug ingestion Agency_Num 2 657 14 Inhalation injury (toxic gas) Inci_Oate 95 15 Hypothermia Inci_Oate 145 16 Hyperthermia Proc_Tmt1 95 17 Headache Proc_O2 1 18 Eye Problems CPR att 55 19 Electrocution Med 1 20 Ear Problem 0K Cancel 74 21 Diabetic symptoms (hypoglyce) 0K Cancel 74 22 Chest pain/discomfort 10 104 1 23 Cardiac arrest 39 60 99 24 Behavioral/psychiatric disorder 110 104 1 25 Back Pain 7 6 13 26 Altered level of consciouspases 187 119 1	11	Respiratory distress	Choo	se the field co	ntaining	, the		2		1014
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14 Inhalation injury (toxic gas) Incl_Date 95 15 Hypothermia Incl_Date 145 16 Hyperthermia Age 145 17 Headache Proc_Tmt1 35 17 Headache Proc_O2 1 18 Eye Problems CPR att 5 19 Electrocution Dispetition 4 21 Diabetic symptoms (hypoglyce) OK Cancel 74 22 Chest pain/discomfort 39 60 99 24 Behavioral/psychiatric disorder 110 104 1 25 Back Pain 7 6 13 26 Altered level of consciouspess 187 119 1 307	13	Poisoning/drug ingestion	Ager	ncy_Num			~	2		657
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17 Headache Proc.O2 1 14 18 Eye Problems CPR. att 5 19 Electrocution Dispersion 11 20 Ear Problem OK Cancel 11 21 Diabetic symptoms (hypoglyce) OK Cancel 74 22 Chest pain/discomfort 39 60 99 24 Behavioral/psychiatric disorder 110 104 1 25 Back Pain 7 6 13 26 Altered level of consciouspess 187 119 1	16	Hyperthermia	Proc	_Tmt1						35
18 Eye Problems CPR att 5 19 Electrocution Med 11 20 Ear Problem 4 21 Diabetic symptoms (hypoglyce) OK Cancel 22 Chest pain/discomfort 1 317 23 Cardiac arrest 39 60 99 24 Behavioral/psychiatric disorder 110 104 1 25 Back Pain 7 6 13 26 Altered level of consciouspess 187 119 1	17	Headache	Proc	_02				1		14
19 Electrocution Image: Control of	18	Eye Problems	CPR	_att						5
20 Ear Problem 4 21 Diabetic symptoms (hypoglyce) OK Cancel 74 22 Chest pain/discomfort 39 60 99 24 Behavioral/psychiatric disorder 110 104 1 215 25 Back Pain 7 6 13 30 26 Altered level of consciouspess 187 119 1 307	19	Electrocution	Disp	estion			~			11
21 Diabetic symptoms (hypoglycet OK Cancel 74 22 Chest pain/discomfort 1 317 23 Cardiac arrest 39 60 99 24 Behavioral/psychiatric disorder 110 104 1 215 25 Back Pain 7 6 13 26 Altered level of consciouspess 187 119 1 307	20	Ear Problem								4
22 Chest pain/discomfort 1 317 23 Cardiac arrest 39 60 99 24 Behavioral/psychiatric disorder 110 104 1 215 25 Back Pain 7 6 13 307 26 Altered level of consciousness 187 119 1 307	21	Diabetic symptoms (hypoglycei		ОК		Cancel				74
23 Cardiac arrest 39 60 99 24 Behavioral/psychiatric disorder 110 104 1 215 25 Back Pain 7 6 13 302 26 Altered level of consciouspess 187 119 1 307	22	Chest pain/discomfort	_					1		317
24 Behavioral/psychiatric disorder 110 104 1 215 25 Back Pain 7 6 13 13 26 Altered level of consciousness 187 119 1 307	23	Cardiac arrest		39	-	60				99
25 Back Pain 7 6 13 26 Altered level of consciousness 187 119 1 307	24	Behavioral/psychiatric disorder		110		104		1	-	215
26 Altered level of consciousness 1 187 119 11 307	25	Back Pain		7		6		24		13
	26	Altered level of consciousness		187	-	119		1		307
27 Allergic reactions 47 36 83	27	Allergic reactions		47		36				83
28 Airway obstruction 81 91 172	28	Airway obstruction		81		91				172
29 Air Transport Team Transfer 6 3 9	29	Air Transport Team Transfer		174		100				202
SU Abuominai panyproblem 174 106 2 282 S1 Crand Total 7170 7300 54 14536	30	Crand Total		1/4	-	7202		2		282
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Result: Here is shown the result of expanding detail for the variable "med" for patients with Prov_Imprs of "Traumatic injury".

B	<u>File Edit View Insert Format Tools I</u>	<u>D</u> ata <u>W</u> indow <u>H</u> elp				
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4	Prov_Imprs 💽	Med 💽	F	М	U	Grand Total
5	Unknown Problem/Man Down		63	54	1	118
6	Traumatic injury		4100	4192	37	8329
7		Albuteral Sulfate	1			1
8		Aminophylline	1			1
9		Benadryl-Diphenhydramine	1			1
10		Bretylol-Bretylium Tosylate		1		1
11		Demeral-Meperidine	8	9		17
12		Dextrose 5%		1		1
13		Dextrose 50%		2		2
14		Epinephrine 1:10,000	1	3		4
15		Epinephrine 1:1000		1		1
16		Intropin-Dopamine HCL		1		1
17		Lactated Ringers	303	460	1	764
18		Morphine Sulfate	1	6		7
19		Narcan-Naloxone HCL		1		1
20		Nitrostat-Tri Nitroglycerine	1	1		2
21		Normal Saline	27	63		90
22		Nubain	3	2		5
23		Other Medications	105	119		224
24		Oxygen	12	9		21
25		Phenegran-Promethizine HCL	2	2		4
26		Pitocin-Oxytocin	1	2		3
27		Valium-Diazepam	1	1		2
28		Xylocaine-Lidocaine-Direct IV	3	4		7
29		Xylocaine-Lidocaine-IV Drip	1			1
30	Traumatic injury Total		4572	4880	38	9490
31	Stroke/CVA		5	4		9

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Exercise: Grouping. Sometimes you may want to group several items into one. For instance, the PivotTable at right shows several Prov-Imprs entries that are related to head and neck problems. You might want to make a new item that summarizes all 3.

- Select the categories you want to group.
- Right-click on the selection to bring up a menu box.
- Select Group and Outline → Group

Result: A new item is created that is a grouping of the 6 selected, as seen below. Excel names it "Group 1", it can be renamed in the formula bar. It also appears as a new item in the Field List.

	icrosoft Excel - New Orleans S	tude	ent Da	taset					13
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3	Count of Pt_Num		_	Gender				Course of Table	
4	Prov_Imprs			F CO	IMI		0	Grand Total	1
5	Unknown Problem/Man Dov	n		63		4000	1	118	5
7	Ctrate (CVA			4572	1	4880	38	9490	-
0	Struke/CVA Siek Barson/Chaoifia Diagn	ocic		3		9			7
0	Sick Person/Specific Diagn	USIS	_	30		20	1	1050	*
9	Bouting Transfor		_	40		557		1030	2
11	Posniratory distress			409		514	2	1014	1
12	Pregnancy/OB delivery	490		45	- 1	101-	7		
13	Poisoping/drug ingestion	366		280	2	657	7		
14	Inhalation injury (toxic das	2	-	45		50	-	001	
15	Hypothermia	<u> </u>		69		76		149	
16	Hyperthermia			21		14		35	1
17	Headache	-		8		5	1	14	4
18	Eve Problems					2			5
19	Ear Problem		Eorma	t Cells		2		4	4
20	Electrocution	191	PivotC	hart		7		11	1
21	Diabetic symptoms (hypog		D: 17			38		74	1
22	Chest pain/discomfort	0.7	PIVOU	able <u>w</u> izard		164	1	317	7
23	Cardiac arrest	2	<u>R</u> efree	sh Data		60		99	2
24	Behavioral/psychiatric diso		Hide			104	1	215	5
25	Back Pain		1110			6		13	3
26	Altered level of consciousr		Select		•	119	1	307	7
27	Allergic reactions		Group	and Show Det	ail 🕨	-3	Hide Detail	83	3
28	Airway obstruction		Order				-	172	2
29	Air Transport Team Transf	en en		2	-	13	onow Decali	9)
30	Abdominal pain/problem	2	Field 9	iettings		\$	Group	282	2
31	Grand Total		Table	Options		4	Ingroup	14526	i
32			Hide D	ivotTable Toolt	har				
33							_		
34		E	Hide F	ield List					
35									

The detail can be collapsed by doubleclicking on "Group 1", to yield the result seen at the bottom of the page.

			2012	N N N I	211	
9	Seizure		497	337	4	1020
10	Routine Transfer		49	50		99
11	Respiratory distress		498	514	2	1014
12	Pregnancy/OB delivery		91	45	1	137
13	Poisoning/drug ingestion		366	289	2	657
14	Inhalation injury (toxic gas)	45	50		95	
15	Hypothermia	69	76		145	
16	Hyperthermia	_	21	14		35
17	Group1	Headache	8	5	1	14
18		Eye Problems	3	2		5
19		Ear Problem	2	2		4
20	Electrocution	-	4	7		11
21	Diabetic symptoms (hypoglycemia)		36	38		74
22	Chest_nain/discomfort		152	164	1	317

	Respiratory astress	1.00	011	51	1011
12	Pregnancy/OB delivery	91	45	1	137
13	Poisoning/drug ingestion	366	289	2	657
14	Inhalation injury (toxic gas)	45	50		95
15	Hypothermia	69	76		145
16	Hyperthermia	21	14		35
17	Group1	13	9	1	23
18	Electrocution	4	7		11
19	Diabetic symptoms (hypoglycemia)	36	38		74
20	Chest pain/discomfort	152	164	1	317

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We can also change the values types displayed in the data cells. For example, we can have the data values be the average age. This is done by first changing the data field to be age then choosing average under the field setting.

Table of average age by diagnosis and gender. Here, age is the data field, gender the column field, inj_code the row field. Average is selected in the Field Setting dialog box.

H27	✓ fx					
	A	В		С	D	E
			-			
Average	of Age	Gender	-			
Prov_Imp	ors 💽	F		M	U	Grand Total
Unknowr	n Problem/Man Down	11.	1	10.1	0.0	10.5
Traumati	ic injury	12.	9	12.2	10.9	12.5
Stroke/C	VA	7.	6	16.3	0	11.4
Sick Pers	son/Specific Diagnosis	8.	0	9.3		8.5
Seizure		6.	9	7.5	9.3	7.2
Routine '	Transfer	9.	6	6.9		8.3
Respirato	ory distress	8.	4	6.0	8.5	7.2
Pregnanc	cy/OB delivery	15.	3	11.0	0.0	13.7
Poisoning	g/drug ingestion	13.	0	10.5	15.0	11.9
Inhalatio	n injury (toxic gas)	9.	2	8.5		8.9
Hypothe	rmia	9.	9	9.3	0,	9.6
Hyperthe	ermia	З.	2	4.1		3.6
Headach	e	15.	1	15.2	16.0	15.2
Eye Prob	lems	12.	7	11.5		12.2
Ear Prob	lem	2.	5	2.5		2.5
Electroc	ution	11.	3	7.7		9.0
Diabetic	symptoms (hypoglycemia)	12.	3	12.4		12.4
Chest pa	in/discomfort	12.	2	13.0	0.0	12.6
Cardiac a	arrest	5.	2	5.1		5.2
Behavior	al/psychiatric disorder	15.	2	15.6	10.0	15.4
Back Pai	n	15.	0	15.0		15.0
Altered I	evel of consciousness	13.	6	11.3	0.0	12.7
Allergic r	eactions	13.	1	10.8		12.1
Airway o	bstruction	4.	6	4.7		4.6
Air Trans	port Team Transfer	5.	0	2.0		4.0
Abdomin	al pain/problem	13.	8	11.9	6.0	13.0
Grand To	otal	12.	0	11.1	9.9	11.5
	H27 Average Prov_Im; Unknowr Traumati Stroke/C Sick Pers Seizure Routine Respirato Pregnano Poisoning Inhalatio Hypothel Hypothel Hypothel Hypothel Hypothel Hypothel Ear Prob Electroco Diabetic Chest pa Cardiac Behavior Bechavior Back Pai Altered I Altergi r Air Trans	H27 A Average of Age Prov_Imprs Unknown Problem/Man Down Traumatic injury Stroke/CVA Sick Person/Specific Diagnosis Seizure Routine Transfer Respiratory distress Pregnancy/OB delivery Poisoning/drug ingestion Inhalation injury (toxic gas) Hypothermia Hyperthermia Headache Eye Problems Ear Problems Ear Problems Ear Problems Ear Problems Ear Problems Electrocution Diabetic symptoms (hypoglycemia) Chest pain/discomfort Cardiac arrest Behavioral/psychiatric disorder Back Pain Altered level of consciousness Aliergic reactions Airway obstruction Air Transport Team Transfer Abdominal pain/problem	H27 A B Average of Age Gender Prov_Imprs F Unknown Problem/Man Down 111. Traumatic injury 122. Stroke/CVA 77. Sick Person/Specific Diagnosis 88. Seizure 66. Routine Transfer 99. Respiratory distress 98. Pregnancy/OB delivery 115. Poisoning/drug ingestion 113. Inhalation injury (toxic gas) 99. Hypothermia 99. Hypothermia 99. Hypothermia 99. Hypothermia 99. Hypothermia 91. Hypothermia 91. Hypothermia 92. Hypothermia 93. Headache 115. Eye Problems 122. Ear Problems 122. Ear Problems 122. Chest pain/discomfort 122. Cardiac arrest 55. Behavioral/psychiatric disorder 155. Behavioral/psychiatric disorder 155. Altered level of consciousness 113. Altered level of consciousness 113. Alteransport Team Transfer 55. Bohavioral/problem 113. Grand Total 122.	H27 A B A B Average of Age Gender Prov_Imprs F Unknown Problem/Man Down 11.1 Traumatic injury 12.9 Stroke/CVA 7.6 Sick Person/Specific Diagnosis 8.0 Seizure 6.9 Routine Transfer 9.6 Respiratory distress 8.4 Pregnancy/OB delivery 15.3 Poisoning/drug ingestion 13.0 Inhalation injury (toxic gas) 9.2 Hypothermia 9.9 Hyperthermia 3.2 Headache 15.1 Eye Problems 12.7 Electrocution 11.3 Diabetic symptoms (hypoglycemia) 12.2 Cardiac arrest 5.2 Behavioral/psychiatric disorder 15.2 Back Pain 15.0 Altered level of consciousness 13.6 Allergic reactions 13.1 Airway obstruction 4.6 Air Transport Team Transfer 5.0 Abdominal pain/problem 13.8 Grand Total 12.0	H27 A B C A B C Average of Age Gender (▼) Prov_Imprs ▼ F M Unknown Problem/Man Down 11.1 10.1 Traumatic injury 12.9 12.9 Stroke/CVA 7.6 16.3 Sick Person/Specific Diagnosis 8.0 9.3 Seizure 6.9 7.5 Routine Transfer 9.6 6.9 Respiratory distress 8.4 6.0 Pregnancy/OB delivery 15.3 11.0 Poisoning/drug ingestion 13.0 10.5 Inhalation injury (toxic gas) 9.2 8.5 Hypethermia 9.9 9.3 Hypethermia 3.2 4.1 Headache 15.1 15.2 Eye Problems 12.7 11.5 Electrocution 11.3 7.7 Diabetic symptoms (hypoglycemia) 12.3 12.4 Chest pain/discomfort 12.2 13.0 Cardiac arrest 5.2 5.1 Behavioral/psychiatric disorder 15.2 15.6 Back Pain 15.0 15.0 Altered level of consciousness 13.6 11.3 Altered level of	H27 A B C D A B C D A A B C D Average of Age Gender -

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Microsoft Excel - New Orleans Student Dataset

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	А	В	С	D
1	Incid_Cnty	Beach 🔽		
2				
З	Average of Age	Gender 🔻)	
4	Prov_Imprs 🔽	F	М	Grand Total
5	Traumatic injury	14.7	13.9	14.3
6	Sick Person/Specific Diagnosis	7.0	0.0	3.5
7	Seizure	1.0	7.0	5.5
8	Routine Transfer		0.0	0.0
9	Respiratory distress	4.7	13.0	8.0
10	Pregnancy/OB delivery	16.8		16.8
11	Poisoning/drug ingestion	18.0	16.0	17.0
12	Hyperthermia	0.0	15.0	7.5
13	Chest pain/discomfort		11.0	11.0
14	Cardiac arrest		18.0	18.0
15	Behavioral/psychiatric disorder	16.0		16.0
16	Altered level of consciousness	18.0	17.5	17.7
17	Airway obstruction	2.0		2.0
18	Abdominal pain/problem	12.6	11.6	12.1
19	Grand Total	13.5	12.9	13.2
20				

Another nice feature in PivotTables is the page field, a spot at the top of the PivotTable. This allows you to put another data element in as a "Page". Adding a page value allows you to filter the table by this value. In this example, we have put Incid_Cnty into the Page Field enabling us to disply only records from a individal county. You can also right click on the table and choose "Show Pages" to create this table in separate worksheets, one for each value of the page field.

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Other things about Excel PivotTables:

- PivotTables can be named. Right click anywhere in the table and bring up the "Table Options dialog box.
- Data are still connected to the database. This allows you to update the tables when the database changes.
- A potentially useful feature is called "drilldown".
- Try double-clicking on any cell in a PivotTable.
- A new spreadsheet will appear populated only by the records referred to in that cell. You might want to do this if you want to concentrate on a certain subset of the data that you have identified via the PivotTable analysis.

A	В		С	D	
Incid_Cnty	Beach	•			
	-	_			
Average of Age	Gender	-			
Prov_Imprs	F	_	M	Grand Total	
Traumatic injury	14	ł.7	13.9	14.3	
Sick Person/Specific Diagnosis	7	7.0	0.0	3.5	
Seizure	1	0	7.0	5.5	
Routine Transfer			0.0	0.0	
Respiratory distress	4	ł.7	13.0	8.0	
Pregnancy/OB delivery	16	5.8		16.8	
Poisoning/drug ingestion	18	3.0	16.0	17.0	
Hyperthermia 🛛 😽	Eormat C	ells		7.5	
Chest pain/discomfort				11.0	
Cardiac arrest 🛄	Pivot <u>C</u> ha	rt		18.0	
Behavioral/psychiatric disord 🔢	PivotTabl	e <u>W</u>	<u>(</u> izard	16.0	
Altered level of consciousne 🍦	Refresh (Data	•	17.7	
Airway obstruction		Jaco	•	2.0	
Abdominal pain/problem	Hi <u>d</u> e			12.1	
Grand Total	Select		•	13.2	
	-	1.01			
	<u>G</u> roup an		now Decall 🕨		
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	-	-			

Microsoft Excel Data Analysis Add-In

The normal installation of Excel does not automatically load the Data Analysis Add-In. To see if your machine has this loaded, check the "Tools" menu to see if it is available. This is shown below- note that "Data Analysis" is listed as the last tool.

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If you do not see this item then you must install the add-in. It is already on your hard drive – you merely have to do a few simple things. Select the "Tools" – "Add-Ins" - "Analysis Toolpak". While you are there, make sure the ODBC Add-In is also selected so you can connect to an external database. Click OK and you're done.

Add-Ins available:			
Access Links Analysis ToolPak Analysis ToolPak Analysis ToolPak - VBA Autosave Add-in Conditional Sum Wizard Euro Currency Tools Internet Assistant VBA Lookup Wizard MS Query Add-in ODBC Add-in		OK Cancel	
Analysis ToolPak Provides functions and interf data	aces for financial and s analysis	scientific	

Now that the add-in is available, click "Tool" - "Data Analysis" and you will get a data analysis dialog box.



This dialog allows you to access a large variety of common statistical procedures. Each works with special wizards to help you figure out how to set up the analysis. If you selected descriptive statistics, for instance, you would see the wizard that is shown below.

Input Input Range: Grouped By: © Columns © Rows Labels in First Row Output options Output options © Qutput Range: © New Worksheet Ply: © New Worksheet Ply: © New Worksheet Ply: © Summary statistics © Confidence Level for Mean: 95 % Kth Largest: 1	escriptive Statistics			? ×
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	Kth S <u>m</u> allest:	1		

If, of course, you aren't sure what you are seeing, click on the "Help" button and this ties you into the extensive on line documentation of the program. If you still need help, please feel free to contact NEDARC at (801) 585-9761 or www.nedarc.org for further assistance.