

Microsoft Excel – Database Functions

There are a dozen Database functions in Excel. Among the most popular are:

DAVERAGE **DCOUNT** **DCOUNTA**
DGET **DMAX** **DMIN** **DSUM**

Each of the database functions has the same three (3) arguments:

Database (Required) - The range of cells that makes up the list or database. The first row of the list contains labels for each column (fields).

Field (Required) - Indicates which column is used in the function. Enter the column label surrounded by double quotation marks, such as "Age" or "Inv Amt," or a column number (without quotation marks), representing the position of the database column: 1 for the first column, 2 for the second column, and so on.

Criteria (Required) - Is the range of cells that contains the conditions that you specify. The criteria range must include at least one column label and at least one cell below the column label in which you specify a condition for the column.

Assume the following data on a worksheet named, "Expanded DB"

	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
1		91							58							\$ 44,078.99	\$ 15,604.99	\$ 11,290.02	\$ 14,674.43	\$ 2,509.55
2	First Name	Last Name	Address	City	State	Zip Code	DOB	AgeGrp	Age	Name	Inv#	Patient#	Ins	Inv Date	Inv Age	Inv Amt	<30	31-60	61-90	>90
3	DICK	Clark	1 Times Square	#N/A	NY	10001	11/30/29	90	92	DICK, Clark	1000	Clat1000	Aetna	2/22/22	74	\$ 470.17	\$ -	0	470.17	0
4	RONDA	Tolstoy	30 Cucumber Avenue	GREAT NECK	NY	11020	10/10/77	40	44	RONDA Tolstoy	1001	Tol1001	Oxford	5/4/22	3	\$ 173.14	\$ 173.14	0	0	0
5	MARILYN	Struddle	235 N. Pond Avenue	FREEPOR	NY	11520	2/29/80	40	42	MARILYN Struddle	1002	Str1002	Oxford	4/10/22	27	\$ 31.48	\$ 31.48	0	0	0
6	JAMES	Newsworthy	2 College Way	GARDEN CITY	NY	11530	8/31/66	50	55	Newsworthy, JAMES	1003	New1003	BCBS	4/10/22	27	\$ 754.09	\$ 754.09	0	0	0
7	WALTER	Smith	56 St Patrick Avenue	GARDEN CITY	NY	11530	12/25/74	40	47	W. Smith	1004	Smi1004	Cigna	4/12/22	25	\$ 790.58	\$ 790.58	0	0	0
8	ROBERT	Dino	720 Northern Blvd	GREENVALE	NY	11548	7/30/60	60	61	RO. Dino	1005	Din1005	Humana	2/19/22	77	\$ 763.37	\$ -	0	763.37	0
9	JOSEPH	Smith	1053 Broadway	GREENVALE	NY	11548	6/4/57	60	64	06	1006	Smi1006	United HC	3/30/22	38	\$ 567.86	\$ -	567.86	0	0
10	DIANE	Balle	PO Box 11576	GREENVALE	NY	11548	6/30/61	60	60	Balle, DIANE	1007	Bal1007	Aetna	2/10/22	86	\$ 859.96	\$ -	0	859.96	0
11	MARYANNE	Northrup	1775 E. Chestnut Street	LONG BEACH	NY	11561	3/15/67	50	55	MA. Northrup	1008	Nor1008	Oxford	2/4/22	92	\$ 242.16	\$ -	0	0	242.16
12	LOUIS	Hues	150 Washington St.	FARMINGDALE	NY	11735	1/15/56	60	66	MA. Northrup	1009	Hue1009	BCBS	2/28/22	70	\$ 807.82	\$ -	0	807.82	0
13	JOHN	Egon	100 Eagle Place	LEVITTOWN	NY	11756	5/20/79	40	42	JO. Egon	1010	Ego1010	Cigna	3/25/22	43	\$ 22.50	\$ -	22.5	0	0
14	ANDREW S	Minler	100 Stewart Ave.	LEVITTOWN	NY	11756	11/8/71	50	50	Andrew Sam	1011	Mil1011	Humana	3/14/22	54	\$ 98.40	\$ -	98.4	0	0
15	PETE	Gwangi	4925 Mexico Road	LEVITTOWN	NY	11756	4/24/72	50	50	GWANGI	1012	Gwa1012	United HC	5/7/22	0	\$ 373.71	\$ 373.71	0	0	0
16	KEN	Smith	200 Jerusalem Ave.	LEVITTOWN	NY	11756	9/29/65	50	56	Smith, KEN	1013	Smi1013	Aetna	3/4/22	64	\$ 975.46	\$ -	0	975.46	0
17	BETTY	Barfello	2345 South Service Road	PLAINVIEW	NY	11803	9/4/59	60	62	Barfello, BETTY	1014	Bar1014	United HC	3/27/22	41	\$ 191.79	\$ -	191.79	0	0
18	GEOGIAN	Krespe	50 Roosevelt Drive	PLAINVIEW	NY	11803	4/1/81	40	41	Krespe, GEOGIAN	1015	Kre1015	Aetna	4/23/22	14	\$ 762.56	\$ 762.56	0	0	0
19	SEAN	Connery	123 Secret Service Rd	HICKSVILLE	NY	12345	8/25/30	90	91	Connery, SEAN	1016	Con1016	Oxford	3/26/22	42	\$ 847.12	\$ -	847.12	0	0
20	IGNATZ	Schmurtz	1500 Seamans Neck Road	MANHASSET	NY	TBA	5/12/59	60	62	Schmurtz, IGNATZ	1017	Sch1017	BCBS	2/20/22	76	\$ 992.27	\$ -	0	992.27	0
21	MARION	Eberthal	PO Box 9999	MANHASSET	NY	TBA	11/22/62	50	59	Eberthal, MARION	1018	Ebe1018	Cigna	3/9/22	59	\$ 342.23	\$ -	342.23	0	0
22	DICK	Clark	1 Times Square	#N/A	NY	10001	11/30/29	90	92	Clark, DICK	1000	Clat1000	Humana	3/18/22	50	\$ 723.40	\$ -	723.4	0	0
23	RONDA	Tolstoy	30 Cucumber Avenue	GREAT NECK	NY	11020	10/10/77	40	44	Tolstoy, RONDA	1001	Tol1001	United HC	4/12/22	25	\$ 792.14	\$ 792.14	0	0	0
24	MARILYN	Struddle	235 N. Pond Avenue	FREEPOR	NY	11520	2/29/80	40	42	Struddle, MARILYN	1002	Str1002	Aetna	3/16/22	52	\$ 786.51	\$ -	786.51	0	0
25	JAMES	Newsworthy	2 College Way	GARDEN CITY	NY	11530	8/31/66	50	55	Newsworthy, JAMES	1003	New1003	Oxford	5/2/22	5	\$ 934.16	\$ 934.16	0	0	0
26	WALTER	Smith	56 St Patrick Avenue	GARDEN CITY	NY	11530	12/25/74	40	47	Smith, WALTER	1004	Smi1004	BCBS	4/1/22	36	\$ 76.29	\$ -	76.29	0	0

If we want to retrieve the total "Inv Amt" for charges to "Oxford," you need to setup a couple of rows for the criteria. If we do this on a separate sheet named, "D-Functions," Then the formula to add up just the "Inv Amts" for "Oxford would be:

=DSUM('Expanded DB'!B2:U93,"Inv Amt", 'D-Functions'!O1:O2)

This applies the syntax for the DSUM function:

DSUM(database, field, criteria)

Where the:

Database = 'Expanded DB'!B2:U93

Field = "Inv Amt"

Criteria = 'D-Functions'!O1:O2

As a check, we can build a Pivot Table or use the SUMIF function:

=SUMIF('Expanded DB'!N2:N93,'D-Functions'!O2,'Expanded DB'!Q2:Q93)

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You might consider adding the Absolute Cell References To your formulas to protect from the formulas changing if you copy them elsewhere on your spreadsheet. Just add the \$ symbol as depicted here:

=DSUM('Expanded DB'!\$B\$2:\$U\$93,"Inv Amt", 'D-Functions'!\$O\$1:\$O\$2)

A more useful technique would be to set the criteria up for all columns (or a group of columns), and employ multiple criteria. Using this example:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
1		Title	First Name	Last Name	Address	City	State	Zip Code	DOB	AgeGrp	Age	Name	Inv#	Patient#	Ins	Inv Date	Inv Age	Inv Amt	<30	31-60	61-90	>90
2										50					Oxford							
3					Freeport										Oxford							

The example in row 5 below uses simply the O1:O2 Criteria range. The SUMIF confirms the answer.

5	DSUM		3739.25	--Uses Criteria of \$O\$1:\$O\$2 --> DSUM("Expanded DB'!\$B\$2:\$U\$93,"Inv Amt", 'D-Functions'!\$O\$1:\$O\$2)																		
6	SUMIF		3739.25																			
7																						
8	DSUM		2699.13	--Uses Criteria of \$B\$1:\$V\$3 --> DSUM("Expanded DB'!\$B\$2:\$U\$93,"Inv Amt", 'D-Functions'!\$B\$1:\$V\$3)																		

But the example in row 8 uses the entire range, B1: V3.

The answers could be reached but substituting the column number, 16, in place of “Inv Amt” for Field:

=DSUM('Expanded DB'!\$B\$2:\$U\$93,16, 'D-Functions'!\$B\$1:\$V\$3)

Summary of the other popular D-Functions:

DAVERAGE	Calculates the average of the target numbers which match the criteria.
DCOUNT	Counts how many <i>numeric</i> values match the criteria. (Numbers Only)
DCOUNTA	Counts how many NON-BLANK CELLS match the criteria. (Anything)
DGET	Returns a single value in a given field from a record that matches criteria. DGET will throw the #NUM error if more than one record matches criteria.
DMAX DMIN	Returns the maximum or minimum value of those cells matching the criteria.
DPRODUCT	Multiplies all of the numbers found that match the criteria.