MICROSOFT EXCEL: DESCRIPTIVE STATISTICS

Working with predefine functions

To use predefined function:

 Place the mouse in the cell where you want to obtained the result and from Insert menu chouse fx... option and All (under "Or select a category" option)

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1	PainScore			Param	neter	AGE (vears old)	SBP (mmHa)	DBP (mmHa)	ASAT (UI/L)	PainScore		
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9	/			Amplitude (Range)	Or enlant a set						н	
10	3			Variance Standard deviation		Or select a cat				·		н
12	2			Standard deviation		Select a function	¢					
12	2			Coefficient of variation	n	ASINH						
14				Coefficient of variation		ATAN						
15	2			Minimum		ATAN2 ATANH						
16	4			1st quartile		AVEDEV						
17	2			2nd quartile (median))	AVERAGE						
18	6			3rd quartile		AVERAGEA	mbart nun	ahar2)				Ш
19	6			maximum		Returns the av	erage (arith	metic mean) of	its aroument	s, which can be	numbers or	
20	4			95th percentile		names, arrays,	, or reference	es that contair	numbers.			Ш
21	7											Ш
22	4			Skewness								Ш
23	3			Kurtosis								н
24	3					Help on this func	tion			ОК	Cancel	
25	1			Interpre	tation	(years old)		(mmng)				J
26	2			Are data normally dis	stributed? (yes/no)							T
27	4			Coefficient of variation	n							
00	5											

From the "Select a function" window chouse the function according with the statistic that you want to calculate. For example, to calculate the arithmetic mean of Age the AVERAGE predefine function will be choose. In the window of the function (Function Arguments), under the Number1, please select the array were the data for age are in the data raw (e.g. E2:E31 for Age)

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	ID GEI	NDER	OBEZITY	SMOKING	AGE	SBP	DBP	ASAT	DainS	0100				Dar	amotor			AGE	SB	P	DBP	A
1	10 (F	/M)	(yes=1/no=2)	(yes=1/no=2)	(years old)	(mmHg)	(mmHg)	(UI/L)	Failis	core				Fai	ameter			(years o	old) (mm	Hg)	(mmHg)	(
2 65	7078 F		0	0	66	140	103	22		6								Cen	trality			
3 66	9364 F		0	1	55	123	102	23		6			Arithmet	tic mean				GE(E2:E3	1)			
4 65	3110 F		0	1	46	149	83	19		5	_		Median						I	_		
5 67	'8150 M		1	1	1 74	147	84	25		4	Function	Argumer	its								2 X	<u> </u>
6 70	9570 F		0	0	62	127	74	51		1		-		-			-			-		
7 68	1296 F		0	1	59	130	86	43		3	AVERA	GE										
8 70	1284 F		0	0	59	111	101	42		1		Nu	mber1 E2:	E31			- 🔝	{66;55;46	;74;62;59;59;	60;60;	53;79	
9 69	8792 F		0	0	60	140	100	43		7		N	mber?				- 🖾	number				
10 65	8195 M		1	1	60	11/	11/	39		3								number				
11 65	2243 F		0	1	53	115	109	23		2												
12 65	7032 F		0	1	/9	112	83	31		3												
13 65	0070		0	0	/0	162	98	19		2												
14 70	19079 F		0	0	53	160	/5	28		1												_
15 70	15027 IVI		1	1	44	151	/4	33		2							-	61.13333	333			
10 6/	9410 F		0	1	1 657	144	8/	23		4	Returns	the average	e (arithmetic	mean) of its	argument	ts, which	can be r	numbers or r	names, arrays,	or refe	rences that	
10 04	0000		0	0	2 00	152	09	20		4	contain	numbers.										
10 03	7060 5		0	1	62	100	94	10		0			Nu	mber1: n	umber 1, nu	umber 2,	. are 1	to 255 nume	ric arguments	for whi	ch you want i	the 📗
20 67	7909 F		0	1	46	120	102	24		0				a	verage.							
20 07	7200 IVI		0	0	40	133	103	10		4												
27 66	6963 E		0	1	100	106	90	41		4												
22 00	0000 F		0	0	1 63	135	105	20		4	Formula	result = 1	1.133333333									
24 63	7427 F		0	0	77	130	105	32		2	Help on	this functio	n						OK		Cancel	
24 03	14211		0	0	·	170	30	52		3		and rarread	<u> </u>									
25 65	3608 M		1	1	64	146	74	12		1		_		merp	retation			lyears (old) (mm	Ha)	(mmHa)	1
26 65	7735 M		0	1	70	140	99	19		2			Are data	normally	distribut	ed2 (ve	s/no)	Ucarse	in (inin	·9/	(initially)	
27 67	6119 F		0	0	76	143	111	51		4			Coefficie	ent of varia	tion	cu: (ye	5			-		
		-			· · · · · ·	140	· · · · ·			-				the set further						-		_

Validate the selection of the data by click on OK button.

- Once you include the function in the first cell, you can use copy the inserted function for the next variables:
 - o Select the cells that contain the data that you want to fill into adjacent cells.
 - Drag the fill handle across the cells that you want to fill.
 - OR
- Select the cells that contain the data that AND the cell you want to copy the function
 On the Home tab, in the Editing group, click Fill, and then click Right.

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L M N O P Q	Left T	L	M N O	P Q
Parameter AGE SBP DBP ASAT (years old) (mmHg) (mmHg) (UI/L) PainScr	Across Worksheets	Parameter	AGE SBP DBP (years old) (mmHg) (mmH	ASAT g) (UI/L) PainScore
Centrality	≦eries		Centrality	
rithmetic mean 61	Justify	Arithmetic mean	61 140	92 30
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User-defined functions

- To implement user-defined functions using predefine functions (exemplification for central value):
 - Select the cell were you want the results
 - o = (equal sign)
 - Open the first round bracket ('(')
 - \circ Type MAX
 - Open a second round bracket ('(')
 - \circ Select the array of data (E2:E31) for Age
 - Close the second round bracket (')')
 - o +
 - Type MIN
 - Open the third round bracket ('(')
 - Select the array of data (E2:E31) for Age
 - Close the third round bracket (')')
 - Close the first round bracket (')')
 - / (division sign)
 - o 2
 - o Validate the function with ENTER

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	AVERAGE	•	(= × 🗸	<i>f</i> ∗ =(ma	x(E2:E31)+mi	n(E2:E31))	/2					
	E	F	G	Н	l.	J	K	L		M	N	0
	AGE	SBP	DBP	ASAT	PainScore			Param	eter	AGE	SBP	DBP
1	(years old)	(mmHg)	(mmHg)	(UI/L)	1 uniocore					(years old) (mmHg)	(mmHg)
2	66	140	103	22	6					Centra	ity	
3	55	123	102	23	6			Arithmetic mean			61 140	92
4	46	149	83	19	5			Median				
5	74	147	84	25	4			Mode				
6	62	127	74	51	1			Central value				
7	59	130	86	43	3			Geometric mean				
8	59	111	101	42	1					Sprea	d	
9	60	140	100	43	1			Amplitude (Range) =(max(E2:E31)+min(31))/2
10	60	11/	11/	39	3			Variance			_	
11	53	115	109	23	2			Standard deviation				
12	79	112	83	31	3			Standard Error				
13	70	162	98	19	2			Coefficient of variation				
14	53	160	/5	28	1					Localiza	tion	
15	44	151	(4	33	2			Minimum			_	I
16	65	144	87	23	4			1st quartile				<u> </u>
1/	53	152	89	20	2			2nd quartile (median)			_	
18	64	186	94	15	6			3rd quartile				
19	63	94	11	24	6			maximum				+
20	46	139	103	31	4			Soth percentile		Char		
21	5/	138	99	19	1			Chause		Shap		
22	66	195	96	41	4			Skewness			_	<u> </u>
23	63	130	105	29	3			KuttdSIS				
24		170	30	32	3					ACE	CDD	DPD
25	64	146	74	42	1			Interpret	ation	AGE (voars old		
20	70	1/12	00	42	2			Are data normally dia	tributed2 (vec/pc)	lyears old	(minig)	(initial)
20	70	143	111	51	2			Coefficient of variation	(insureur (yes/10)			+
21	53	140	81	36	4			Coemcrenic Of Valiation				
20	03	199	53	30	0 A							
30	50	1/3	111	40	4							
31	66	140	85	28	3							
32	00	120	05	20	4							
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Installation of Data Analysis

[Microsoft Excel – More commands - Add-Ins- Analysis ToolPak]



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Pri	ides data analysis tools for statistical and engineering analysis	

To compute descriptive statistics parameters by example1.[Data – Analysis - Data Analysis – Descriptive statistics]



2. Descriptive Statistics dialog box:

- 1. Input Range: select the range where the data (including the label of variable) are (e.g. for our request the data are \$A\$1:\$A\$100).
- 2. Specify that you have Labels in first row.
- 3. Output options: Output range: specify the first cell from which the output will be displayed (place the output in the same worksheet as the date).
- 4. Specify that you want *Summary Statistics* and *Confidence Level for Mean*.

Input Range:	\$A\$	1:\$C\$10	0	ОК
Grouped By:	0	olumns		Cancel
	0	lows		Help
✓ Labels in first row				
Output options				
Output Range:	\$G\$	51		
New Worksheet Ply:				
New Workbook				
Summary statistics]			
Confidence Level for Me	an:	95	%	
Kth Largest:	1			
Kth Smallest:	1			

5. The result will be like in the image bellow (it is just an example and did not included the data used in your exercise):

	-		-					
	Α	В	С	D	E	F	G	H
							PI	
1	Age (Years)		Height (m)	1	Neight (kg))	(kg/m3)	
2								
3	Mean	9.536585	Mean	1.434472	Mean	54.15854	Mean	17.86532
4	Standard I	0.314959	Standard I	0.017014	Standard [1.7314	Standard I	0.235473
5	Median	9	Median	1.44	Median	50	Median	17.46244
6	Mode	7	Mode	1.48	Mode	50	Mode	17.48148
7	Standard I	3.493067	Standard I	0.188694	Standard [19.20215	Standard I	2.611522
8	Sample Va	12.20152	Sample Va	0.035605	Sample Va	368.7226	Sample Va	6.820048
9	Kurtosis	-0.2201	Kurtosis	0.031329	Kurtosis	0.415053	Kurtosis	0.44969
10	Skewness	0.310202	Skewness	0.049093	Skewness	0.70613	Skewness	0.680054
11	Range	16	Range	0.92	Range	99	Range	13.09715
12	Minimum	2	Minimum	0.94	Minimum	18	Minimum	12.7431
13	Maximum	18	Maximum	1.86	Maximum	117	Maximum	25.84025
14	Sum	1173	Sum	176.44	Sum	6661.5	Sum	2197.434
15	Count	123	Count	123	Count	123	Count	123

6. Move the name of variables one cell to the right and delete redundant columns. Display the decimal numbers with 2 decimals. Your results will look like those in the image bellow:

K	L	M	N	0	P	Q	R	S	Т
	Age	Height	Weight	PI	Cholesterol	HDL	TG	LDL1	LDL2
	(Years)	(m)	(kg)	(kg/m3)	(mg/dL)	(mg/dL)	(mg/dL)	(mg/dL)	(mg/dL)
Mean	9.54	1.43	54.16	17.87	162.60	39.61	86.63	105.67	108.23
Standard Error	0.31	0.02	1.73	0.24	3.15	0.66	3.91	3.18	3.68
Median	9	1.44	50	17	162	40	80	102.4	103.9091
Mode	7	1.48	50	17	164	40	58	110.2	#N/A
Standard Deviation	3.49	0.19	19.20	2.61	34.95	7.32	43.35	35.24	40.76
Sample Variance	12.20	0.04	368.72	6.82	1221.64	53.65	1879.46	1242.06	1661.75
Kurtosis	-0.22	0.03	0.42	0.45	15.09	-0.37	2.50	14.62	3.93
Skewness	0.31	0.05	0.71	0.68	2.47	0.01	1.33	2.45	1.22
Range	16.00	0.92	99.00	13.10	311.00	36.00	239.00	305.80	299.81
Minimum	2.00	0.94	18.00	12.74	84.00	24.00	11.00	32.80	0.91
Maximum	18.00	1.86	117.00	25.84	395.00	60.00	250.00	338.60	300.73
Sum	1173.00	176.44	6661.50	2197.43	20000.00	4872.00	10656.00	12996.80	13312.05
Count	123	123	123	123	123	123	123	123	123
Interpretation	Interpretation by oxample (birth weight variable):								

7.	interpretation by example (birth weight variable):
Mean	The arithmetic average of the 99 newborn child included into the study was equal with 3143.63
	gram.
Standard Error	The standard error of the mean for the birth weight was of 53.66.
Median	The observation that split the distribution of birth weight in half was equal with 3200 gram.
Mode	The observation value associated with the highest frequency is equal for our study with 3000 gram.
Standard	The population standard deviation for birth weight is equal with 533.94.
deviation	
Variance	The standard deviation squared for birth weight was equal with 285096.85.
Kurtosis	The distribution of the birth weight is peakedness distribution comparing with normal distribution,
	kurtosis being equal with 2.55.
Skewness	The negative value of the -0.85 for our sample research problem indicates that the distribution of
	the birth weight is negatively skewed. The negative skew indicates that the longer tail extends in the
	direction of low values in the distribution.
Range	The range for our distribution is found by subtracting 930 from 4400, producing a range equal to
	3470.
Minimum	The lowest value of birth weight by newborn in the studies sample was of 930.
Maximum	The highest value of birth weight by newborn in the studied sample was of 4400.
Sum	The sum of the values in the distribution in the studied sample was of 311220.
Count	The number of observations in the birth weight distribution the studied sample, n = 99
Confidence level	The value obtained represents the amount of error subtracted from and added to the sample mean
(95.0%)	when constructing the confidence interval from the population mean. For our problem, the 95%
	confidence interval is: $3037.14 \le \mu \le 3250.13$