Blackbelt Ribbon heatmap library (as of May 2024)

Geogaphy-National

USA-Contig | USCounties (OH eg.) | Brazil | Germany | Egypt | Argentina | Italy | Australia

Iraq

HexStates | Russia | Ukraine | Israel

UnitedKingdom

Samoa

SouthSudan

Afghanistan | Mexico | Canada

Spain | France

China *(provinces below)* | Chad | Ireland

Japan

Great Lakes | Eithiopia | Sicily

Geography-China

Jiangsu | Shanxi | Shenzhen | Guandon | Beijing | Henan | Anhui | Liaoning

Geography-Counties

Cuyahoga | Portage

Geography-City

LowerManhatten | Boston | LosAngeles | ChicagoNeighborhoods | PittsburghNeighborhoods | EmoryCampus

NewYorkCity

Brent | Brooklyn | StLouis | BuenosAires | Atlanta | Charlston | Strabourg

Cincinnati | Milwaukee | Tokyo | London | SanFrancisco | Columbus | BucyrusEast | BrecksvilleVoting

ChicagoSkyline | ColumbusSkyline | CincySkyline | COTAHeat | OSUOval

CapeCode | Shanghai | Akron Wards | Cleveland | Dallas | Taipei | Copenhagen | OSUCampus | NorthResidence

Moscow

Geography-Global

WorldMap
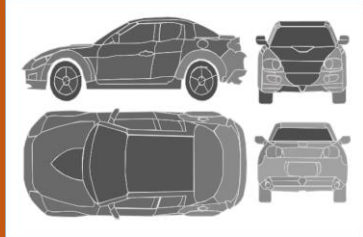
Europe

EastAfrica

NorthernHemis

Tuscany and Islands

Central America

Blueprints

Car_Model1
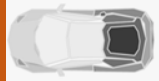
Hospital

TallahasseeMall

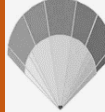TheShoe

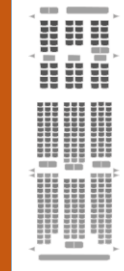RocketShip

Mask_Hockey

Stadium

Lamborghini

Camera

Shoe

Building2

BaseballSpray

Boeing

Jet1

OhioUnion

AirplaneProts

Citi Field Mets

Computer

Shoe2

RotaryPhone

Airplane2

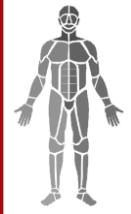Flights

Keyboard Map

Wristwatch

AWingStarfighter

Anatomy
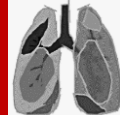
Body-Front

Body-Back

Heart
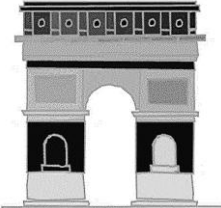
Frog

Footprints

Lungs

Angle Map

Brain

Bird

Butterfly

Eye

Artwork

EagleSalmon

Tiger

ArcDeTriomphe

Brutus

OSULogo

NapoleonD

# Blackbelt Ribbon Add-in Functions

TEXT and REFERENCE FUNCTIONS

	ExtractURL	\<See Chapter 3\>	E.g. =ExtractURL(G5)
	Provides the address of the first hyperlink associated with a cell.		Parameters: • Range of cell in which hyperlink exists
	AlphaNums	\<New 2022\>	E.g. =AlphaNums(G5,1)
	Takes a string of characters and returns only the letters and/or numbers (with spaces) of that string.		Parameters: • Full string containing numbers, letters and other characters • [Optional] 0=Both Numbers and Letters, 1=Just Letters, -1=Just Numbers
	TermCount	\<New 2024\>	E.g. =TermCount(B2:B100," ")
	Provides a sorted nx2 array of unique terms and their count, drawn from a selected range of cells.		Parameters: • Full array of cells with one or more delimited (separated) terms per cell • The term delimiter, such as a space, comma, or semicolon, etc. (e.g., ";")
	TermFreq	\<New 2024\>	E.g. =TermFreq(B2:F100, "Free",0)
	Provides the number of cells in a range that contain a specified term, or alternately the total appearances of term.		Parameters: • Cells with one or more terms for examination • Term of interest for search • [Optional] 1=Number of cells, 0=Total appearances
	VFilters	\<New 2022\>	E.g. =Vfilters(""e"", D5:D34, 0, 4, 3)
	Provides the full multi-column content of rows matching a criteria. {Contributed by Andy Ebenstein 2022}		Parameters: • Filtering criteria; Rows beginning with this content will be returned in detail • Source range of data to be filtered • Member of a comma delimited list of column indices to be returned (1st index=0) • [Optional] Additional members of the above defined list
	HFilters	\<New 2022\>	E.g. =Hfilters(""2010"", D5:D34, 0, 4, 3)
	Provides the full multi-row content of columns matching a criteria. {Contributed by Andy Ebenstein 2022}		Parameters: • Filtering criteria; Rows beginning with this content will be returned in detail • Source range of data to be filtered • Member of a comma delimited list of column indices to be returned (1st index=0) • [Optional] Additional members of the above defined list

GRAPHICAL FUNCTIONS

	AdjustColors	\<See Chapter 5\>	E.g. =AdjustColors(A1,Rand(),""Auto-updating"")
	Adjusts the colors of a HeatMapper generated polygon set, based on header and left column cell colors and 2nd column values.		Parameters: • Upper left cell of associated HeatMapper data series • Either a fixed value, reference or Rand() depending of updating preferences • What content/notes this cell should present to the user")
	PathLength	\<See Chapter 3\>	E.g. =PathLength(P2:R21, TRUE)
	Calculates the total path distance along a sequence of points of any number of dimensions.		Parameters: • Your full data range of observations without headers • TRUE if individual records are in each row, and dimensions are by column
	PolyPtsExtract	\<See Chapter 3\>	E.g. =PolyPtsExtract(""Shape4"",""P1"")
	Extracts all the pairs coordinates of a drawn polygon and stores these in a newly created text box.		Parameters: • The name of the drawn polygon for extract • Name of the destination cell for later text box transfer
	PolyPtsBuild	\<See Chapter 3\>	E.g. =PolyPtsBuild(""P1"",0.5)
	Draws a new polygon using paired data starting in a cell, assuming two columns of data and multiple rows.		Parameters: • Name of the upper left cell in the paired data set • Relative size of the polygon to be drawn; 1 = Original

STATISTICAL FUNCTIONS

	PoissonInvBB	\<See Chapter 4\>	E.g. =PoissonInvBB(4)
	Generates a Poisson distributed random number, given a mean. Optional input for percentage, or random.		Parameters: • Mean value of the Poisson distribution [Optional] Percentile of value desired from distribution
	HistoricalInvBB	\<See Chapter 4\>	E.g. =HistoricalInvBB(c2:c8,d2:d8)
	Generates a historically distributed random number, given an array of events and their probabilities.		Parameters: • Range of events for which you have probability data • Range of probabilities for these events (summing to 1) • [Optional] Percentile of value desired from distribution")
	TriangInvBB	\<New 2024\>	E.g. = TriangInvBB(120,160,200,0.75)
	Generates a Triangular distributed random number, given a lower bound, a peak location, and an upper bound.		Parameters: • Lower bound of distribution • X-location of peak of distribution • Upper bound of distribution • [Optional] Percentile of value desired from distribution

	Stdevif	\<See Chapter 5\>	E.g. =Stdevif(j4:j25,""Low"",m4:m25)
	Delivers the standard deviation of a set of cells subject to a criteria, consistent with AverageIF. As of 2022, allows the final parameter to be a multicolumn range.		Parameters: • Vertical Range of data that will be examined by criteria • Criteria to be checked against for data use • Range of cells that might contain values to include in calculation of standard deviation
	Percentileif	\<See Chapter 5\>	E.g. =Percentileif(j4:j25,""Low"",m4:m25,0.25)
	Delivers the value at the percentile of a set of cell, subject to a criteria, consistent with AverageIF. As of 2022, allows the final parameter to be a multicolumn range for analysis.		Parameters: • Vertical Range of data that will be examined by criteria • Criteria to be checked against for data use • Range that might contain values to include in extraction of percentile value • The percentile level sought for the value to be returned; e.g. 0 = Min, 1 = Max, 0.5 = Median
	MultiAvgif	\<New 2022\>	E.g. = MultiAvgif(C12:C120, "Operations", D12:F120)
	Delivers the average of a set of cells subject to a criteria. Consistent with AverageIF, but allowing multicolumn range as a final range for averaging.		Parameters: • Your full data range of observations without headers • Criteria to be checked against for data use • Range of cells that might contain values to include in calculation of average
	SpearmanBB	\<New 2024\>	E.g. = SpearmanBB(A2:A201,C2:C201)
	Calculates the Spearman rank correlation given two equally sized arrays of values		Parameters: • First array of values • Second array of values
	Linreg	\<New 2022\>	E.g. = Linreg(F48:F73,B48:E73,1,B47:E47)
	Provides linear regression results as per LINEST, but with original arrangement of X-variables, labels and t-tests of significance of coefficients.		Parameters: • Your full data range of Y-values, without headers • Your full range of X-values, without headers • Binary [0,1] specification of whether an intercept is to be estimated • [Optional] Array of X-variable names (headers)
	StepwiseByAIC	\<New 2023\>	E.g. = StepwiseByOLS(G2:G376,A2:F376,1,A1:F1)
	Provides stepwise results for the inclusion of predictor variables in OLS regression, based on AIC contributions (strongest contributors listed on top).		Parameters: • Your full data range of Y-values, without headers • Your full range of X-values, without headers • Your range of X-variable names (headers)
	Bivariate	\<See Chapter 5\>	E.g. =Bivariate(0.5,0.5,X12,X13,Y12,Y13,-0.2)
	Delivers the bivariate distribution frequency at a coordinate pair, given both means, stdevs and correlation.		Parameters: • X coordinate • Y coordinate • X Mean • Y Mean • X Standard Deviation • Y Standard Deviation • X-Y Correlation
	SimpleMA	\<New 2024\>	E.g. = SimpleMA(B2:B201,-1, 3)
	Provides fits statistics for a Moving Average estimation, and estimates optimal n, if input parameter <1		Parameters: • Y-values, without headers • n • [Optional] ObjectiveType (1: MAE, 2: RMSE, 3: MAPE) **NOTE: Components of Output string --→ MAE ; RMSE ; MAPE ; n**
	SimpleES	\<New 2024\>	E.g. = SimpleES(B2:B201,0.412)
	Provides fits statistics for a Simple Exponential Smoothing estimation, estimates optimal alpha, if input <1		Parameters: • Y-values, without headers • alpha • [Optional] ObjectiveType (1: MAE, 2: RMSE, 3: MAPE) **NOTE: Components of Output string --→ MAE ; RMSE ; MAPE ; alpha**
	HoltsDES	\<New 2024\>	E.g. = HoltsDES(B2:B201,-1,0.5, 3)
	Provides fits statistics for a Holts estimation, and estimates optimal parameters (e.g. alpha) if input <0		Parameters: • Y-values, without headers • alpha • beta • [Optional] ObjectiveType (1: MAE, 2: RMSE, 3: MAPE) **NOTE: Components of Output string --→ MAE ; RMSE ; MAPE ; alpha ; beta**
	WintersTES	\<New 2024\>	E.g. = WintersTES(B2:B201,0.1,0.3,-1,4,0,3)
	Provides fits statistics for a Winters estimation, and estimates optimal parameters (e.g. gamma) if input <0		Parameters: • Y-values, without headers • alpha • beta • gamma • Seasonal degree (M) • [Optional] Additive (vs. Multiplicative) • [Optional] ObjectiveType (1: MAE, 2: RMSE, 3: MAPE) **NOTE: Output string --→ MAE ; RMSE ; MAPE ; alpha ; beta ; gamma**

COMPUTATIONAL FUNCTIONS			
	CompSearch_TSP	\<See Chapter 6\>	E.g. =CompSearch_TSP(D$4:E13)
	Comprehensively examines all N! sequences of N X-Y points, and provides best, worst and the option to view all other sequences encountered.		Parameters: • Range of X-Y coordinate pairs • [Optional] Output cell for transfer of all sequences from textbox to spreadsheet • [Optional] Whether the textbox is equipped with an auto-extract macro
	NearestNext_TSP	\<See Chapter 6\>	E.g. =NearestNext_TSP(D$4:E13, Z1, TRUE)
	Applies the Nearest-Next heuristic to examine N*(N+1)/2 sequences of N X-Y points, and provides best and worst encountered, and the option to view all other sequences encountered.		Parameters: • Range of X-Y coordinate pairs • [Optional] Output cell for transfer of all sequences from textbox to spreadsheet • [Optional] Whether the textbox is equipped with an auto-extract macro
	FurthestNext_TSP	\<See Chapter 6\>	E.g. =FurthestNext_TSP(D$4:E13, Z1, TRUE)
	Applies the Furthest-Next heuristic (opposite of Nearest-Next) to examine N*(N+1)/2 sequences of N X-Y points, and provides best and worst encountered, and the option to view all other sequences encountered.		Parameters: • Range of X-Y coordinate pairs • [Optional] Output cell for transfer of all sequences from textbox to spreadsheet • [Optional] Whether the textbox is equipped with an auto-extract macro

ZipTranslate Add-in Functions

▶	**FindZip**	\<ZipTranslate Add-in 2022\>	E.g. = FindZip(B4), where B4 contains 43210
	Takes a given US Zip Code and returns the city, county and state associated.		Parameters: • The Zip Code of interest
▶	**FindIPaddress**	\<ZipTranslate Add-in 2022\>	E.g. = FindIPaddress("149.142.201.252")
	Takes a given IP Address and returns the Zip Code (or other district code), city, region, country and latitude/longitude.		Parameters: • The IP Address of interest (*as text*) {* Note that limits exist on the number of IP Address translations per day}