

Adding Formulas to an Object Type

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Overview

A Formula uses numeric and variable values (e.g., select lists, numeric or date fields, or workflow states) to generate Incident Severity, Estimated Damage, or Incident Likelihood. Formulas are added to an Object Type through a Relationship or Reference.

A formula appears on a form as a number, label (e.g., Low, Medium, High), numbers and labels, gauge, or as a formula card.

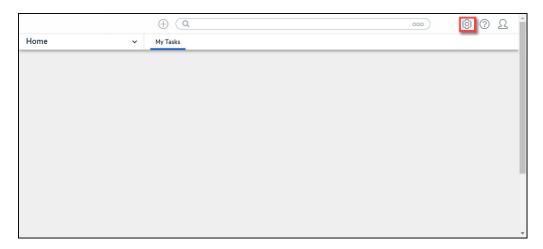
Related Information/Setup

For more information on formulas, see the following articles:

- Formulas Overview
- Variables, Operators & Functions
- Time Functions
- Null Values in Formulas
- Formula Examples
- Formulas on Forms

Navigation

1. From the *Home* screen, click the Administration icon.



Administration Icon

2. From the *Admin Overview* screen, click the **Object Types** tile on the *Data Models* section.



Admin Overview	(~	€ (q		<u>•••</u>
Data Model		_	Views	
Object Types		Object Type Groups	Configurable Forms	LIII Data Visualizations
o o Fields	Assessments	Data Definitions		

Object Types Tile

- From the *Object Types* screen, enter an **Object Type Name** in the **Search** field to narrow down the Object Types list.
- 4. Click the **Object Type's Name** you want to edit.

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Data Mod	el ~	Object Types	Object Type Groups	Fields	Assessments	Data Definition	
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Act	Activity						
AT	<mark>Activity</mark> Type						
F	Finding Results or evidence from a	a specific audit <mark>activ</mark>	ty				
L	Log Single entry of related <mark>act</mark>	<mark>ivity</mark> to an Investigat	ion or Case, used for evid	entiary purpo:	ses, including times	and costs.	
Т	Task Actionable record for key	data objects (Incider	nt, Case, <mark>Activity</mark>) with use	er assignment	, date tracking and (email notifications.	
						NIEW OBJECT T	YPE UNIVERSE

Click the Object Type's Name

5. From the *Edit Object Type* screen, scroll down and select the *Formulas* tab.



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Related Forms							
Activity Type - CC - C	reate						Priority: none
Activity Type - CC - Ed	lit						Priority: none
Activity Type - IRM - L	ibrary						Priority: none
Related Data Definitions							
Activity Type							
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Formulas Tab

6. From the *Formulas* tab, click on the **+ Add Formula** button.



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Add Formula Button

Adding a Formula to an Object Type

 From the *Create New Formula* screen, enter a formula name in the Name field (e.g., Estimated Vehicle Damage).



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CONFIGURE DES	CRIPTION CONC.	ATENATION				

Name Field

- 2. Click the **Create** button.
- 3. The *Formulas* tab will appear, listing the newly created formula.
- 4. Click the new formula to open the **Edit Formula** pop-up.

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Data Mod	el 🗸	Object Types	Object Type Groups	Fields	Assessments	Data Definition			
	∑ Formula (CDV-RCN)/CDV wi			EDIT F	ORMULA		×		
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	Highest Single Calcu		le		TAILS				
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	∑ Formula MAXCDV will render	with a None			Number of Properties	5			
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	Number of Propertie ∑ Formula will render with a No			VA	RIABLES				
	Number of Valuations ∑ Formula Val Will render with a None			+ ADD VARIABLE					
	Total Client Declared		ngs	FO	RMULA				~ ~

Edit Formula Pop-up

- 5. **(Optional)** Enter a description documenting the Formulas internal use in the **Description** field.
- 6. From the *Variables* section, Click the + Add Variable button.



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	Highest Single Cus	tomer Declared	Value	*	Name					1
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	Lowest Single Calc ∑ Formula MINRCN will rende		ue	D	escription					
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	Number of Projects								le.	
	Number of Propert ∑ Formula will render with a M			V	ARIABLES					
	Number of Valuatio Σ Formula Val will render with				+ ADD VARIABLE					
	Total Client Declare ∑ Formula SUMCDV will rend		ngs	F	DRMULA					. .

+ Add Variable Button

- 7. From the Variables section, select a Variable Type from the drop-down list. A Variable is a value in which the formula calculations are performed.
 - Field: After selecting the Field variable, the following field will appear:
 - Available Components: Select a field or formula from the Available **Components** drop-down field adding it directly to the Object Type.



Note:

Fields can be added to formulas after they are added to an Object Type or if they are associated through a relationship or reference. Only numeric fields, date fields, and select lists with numeric values are accepted. For more information, see the Fields article.

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Variable Type = Field

• Relationship: After selecting the Relationship variable, the following fields will appear:



- Relationship: Select the Object Type Relationship from the drop-down list.
 Relationships connect two or more objects. The user must add a Relationship to an Object Type to appear on the Relationship drop-down list. See the Add
 Relationships to an Object Type article for further information on adding a Relationship to an Object Type.
- Available Components: Select a field or formula from the Available
 Components drop-down field adding it directly to the Object Type.
- Sub Type: Select a Sub Type from the drop-down list. Subtypes specify how the data from multiple objects are compiled, calculated, and displayed. For more information on Subtypes, see the Sub Type Table in the Variables, Operations, & Functions article.
 - Array: Creates a set of values from the variable.
 - **Sum:** Calculates a total from the variable's set of values and returns a single number. Select list variables cannot use Sum Sub Types.
 - **Count:** The number of times a variable has been added to an object.
 - Average: Calculates an average number from the variable's set of values. Select list variables cannot use Average Sub Types.
 - **Every:** Checks if the variable contains a value on the objects in the relationship/reference.
 - Min: Calculates the lowest number from the variable's set of values.
 Select list variables cannot use Min Sub Types.
 - Max: Calculates the highest number from the variable's set of values.
 Select list variables cannot use Max Sub Types.

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	Single Calcul NRCN will render w	ated RCN Value						CANCEL	✓ CRE/	TE	
Number	of Locations										

Variable Type = Relationship



- **Reference:** After selecting the **Reference** variable, the following fields will appear:
 - Reference: Select the Object Type Reference from the drop-down list.
 References indicate that an object is connected to another object through a relationship. References are automatically created when a relationship is created. For further information on adding a Relationship to an Object Type, see the Add References to an Object Type article.
 - Available Components: Select a field or formula from the Available
 Components drop-down field adding it directly to the Object Type.
 - **Sub Type:** Select a **Sub Type** from the drop-down list. Subtypes specify how the data from multiple objects are compiled, calculated, and displayed.

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ACTCOUNT		Variable Type Reference
∑ Formula ACT will render with a None	_	Reference ×
Activity DoW Σ Formula mod((((timediff(SUPPLIED_DT,0,"	'hours")+TimeZone	Available Components
Activity ToD ∑ Formula mod(((timediff(SUPPLIED_DT,0,")))	nours")+TimeZone!	Sub Type
Count		Array
∑ Formula COUNT will render with a None		Name 🎯
Earliest Response Time		*
∑ Formula timeDiff(ARRIVEDDAT, ASSIGNED	DDA,"minutes") w	Description
Estimated Vehicle Damage	2	
Linked Incident Count		Treat empty values as Null
∑ Formula IncExists will render with a Label		CANCEL 🗸 CREATE

Variable Type = Reference

- **Property:** After selecting the **Property** variable, the following field will appear:
 - **Property:** Select a **Property** type from the drop-down list:
 - Is Submitter Confidential: This property type creates a formula that compares the number of confidential submissions against the number of not confidential submissions for customers that use the

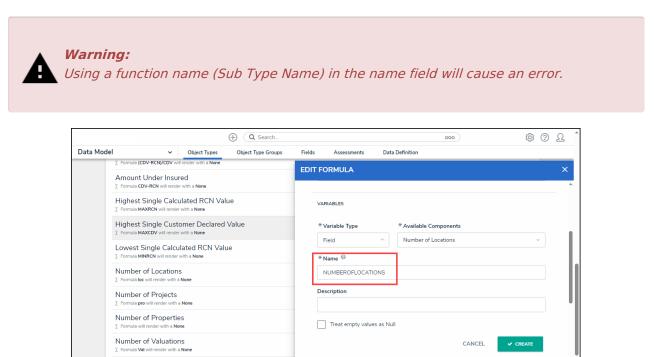
Confidential Reporting Portal.



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		ngle Calcula RCN will render w	ated RCN Value									_	. .

Variable Type = Property

- 8. The system will automatically populate the **Name** field with the field or formula's unique ID by default.
- 9. (Optional) Enter a Variable name in the Name field.



Variable Name

10. (Optional) Enter a Variable description in the Description field.

Total Client Declared Value - Buildings Σ Formula SUMCDV will render with a None

- 11. **(Optional)** Select the **Treat empty values as Null** checkbox to exclude blank objects from a formula calculation. For more information, see the Null Values in Formulas article.
- 12. Click the **Create** button to add the variable. The system will perform the Syntax Validation function, and an error message will appear under the **Formula** field, reminding the user to add the variable name to the **Formula** field.



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	Lowest Single Calculated RCN Value Σ Formula MINRCN will render with a None		N	Formula: Number of Loc	lues as null: false	×		ı		
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	Total Client Declared		ngs		SAVE FORMULA	√× RECALCU	LATE AND REFORMAT			
	Total Replacement (Cost Amount -	Buildings	l						. .

Variable Error Message

13. Click the **Insert Variable** button and select a Variable from the dropdown menu. The selected Variable will be added to the Formula field.

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Data Model Object Types Object Type Groups	Fields Assessments Data Definition
Σ Formula -VAL will render with a None	EDIT FORMULA X
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Highest Single Calculated RCN Value Σ Formula MAXRCN will render with a None	Treat empty values as Null
Highest Single Customer Declared Value ∑ Formula MAXCDV will render with a None	CANCEL V CREATE
Lowest Single Calculated RCN Value ∑ Formula MINRCN will render with a None	NUMBEROFLOCATIONS X Formula: Number of Locations Treat empty values as null: false
Number of Locations ∑ Formula loc will render with a None	FORMULA
Number of Projects ∑ Formula pro will render with a None	INSERT VARIABLE V
Number of Properties ∑ Formula will render with a None	NUMBEROFLOCATIONS
Number of Valuations ∑ Formula Val will render with a None	Error: Please remove numberoflocations or add them to the formula.
Total Client Declared Value - Buildings ∑ Formula SUMCDV will render with a None	SAVE FORMULA
Total Replacement Cost Amount - Buildings	

Insert Variable Button

14. Click the **Save Formula** button. The **Formula** field will indicate if the Formula syntax is correct. If the Formula syntax is correct the Formula will be saved.



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Data Model		Object Types	Object Type Groups	Fields	Assessments	Data Definition				
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	Total Client Declare		ngs		SAVE FORMULA	√× RECALC	CULATE AND REFORMAT			
	Total Replacement (Cost Amount -	Buildings							

Formula Syntax

Note:

Click the **Expand** *icon on the Formula field to open the* **Expandable** *screen mode.*

 Σ Formula -VAL will render with a None	EDIT FORMULA
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Highest Single Calculated RCN Value	Treat empty values as Null
Highest Single Customer Declared Value	CANCEL Y CREATE
Lowest Single Calculated RCN Value 5 Formula MINRCN will render with a None	NUMBEROFLOCATIONS X Formula: Number of Locations Treat empty values as null: false
Number of Locations Σ Formula loc will render with a None	FORMULA
Number of Projects Σ Formula pro will render with a None	
Number of Properties ∑ Formula NUMBEROFLOCATIONS will render with a None	
Number of Valuations Σ Formula Val will render with a None	Formula syntax is correct. Formula saved.
Total Client Declared Value - Buildings Σ Formula SUMCDV will render with a None	SAVE FORMULA VK RECALCULATE AND REFORMAT
Total Replacement Cost Amount - Buildings	

- 15. Repeat steps 11 16 to add additional variables.
- 16. Click the **x** icon next to the variable to delete the variable.



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Data Model ~ Object Types	Object Type Groups Fields Assessments Data Definition
	EDIT FORMULA
All of the formulas that have been built Activity.	VARIABLES
ACTCOUNT Σ Formula ACT will render with a None	Variable Type
Activity DoW ∑ Formula mod((((timediff(SUPPLIED_DT,0,"hours")+TimeZone	Select one V
Activity ToD Σ Formula mod(((timediff(SUPPLIED_DT,0,"hours")+TimeZonet	*
Count Σ Formula COUNT will render with a None	Description
Earliest Response Time ∑ Formula timeDiff(ARRIVEDDAT, ASSIGNEDDA,"minutes") w	CANCEL CREATE
Estimated Vehicle Damage	REPORTEDDA
Linked Incident Count ∑ Formula IncExists will render with a Label	Field: Reported Date/Time Treat empty values as null: false

X Icon - Delete a Variable

- 17. From the *Formula* section, enter a Formula using the variable name(s) you entered in the Name field under the *Variables* section. Include operators and functions in the Formula field (e.g., INCIDENTSE==3). For more information on Operators, see the Operators Table in the Variables, Operators, & Functions article.
- A system notification will appear under the Formula field, indicating that Your formula is not saved.
- 19. The **Recalculate and Reformat** button will be greyed out, preventing invalid formulas from being sent to the processing queue and causing a potential slowdown.

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Internal Audit Project - Con	trol Workflow	EDIT FORMULA				×	
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IT Compliance Assessment	Control Workflo	ow.					
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IT Risk Assessment Contro	l Workflow	Your formula is not saved.					
Concatenations		SAVE FORMULA	√× RECAL	CULATE AND REFORMAT			
CONFIGURE NAME CONCATEN	IATION	DISPLAY					
CONFIGURE DESCRIPTION CO Overview Fields (46)	NCATENATION Formulas (11)	Relation					

System Notification - Your Formula is Not Saved

20. Click on the Save Formula button. The system will perform a Syntax Validation on the



formula if the formula is:



Warning:

The **Autosave** function was removed from the **Edit Formula** pop-up. Changes to the **Formula** field require a user to click the **Save Formula** button.

Changes not manually saved will be discarded, and the system will revert to the previously saved state.

• Valid: A system notification will appear under the Formula field; Formula syntax is correct. Formula saved. The Recalculate and Reformat button will be active.

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IT Compliance Asse	essment	Control Workflo	w						
Internal Controls As	ssessme	nt - Control Wo	rkflow	VARIABLE	* 		2		
Compliance Testing	Workflo	ow (Prototype)	SUM(COU	NT)			÷		
IT Risk Assessment	t Control	Workflow	Formula sy	ntax is co	rrect. Formula save	ed.		' _	
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CONFIGURE DESCRIP		NCATENATION	Format	Dam	ge as				L
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System Notification - Valid Formula

• Invalid: A system notification will appear under the Formula field; Error Syntax error in part (char 1). The formula is not saved. The error will indicate the character (char) location of the error in the formula and that the formula is invalid and not saved. The **Recalculate and Reformat** button will be greyed out, preventing invalid formulas from being sent to the processing queue and causing a potential slowdown.

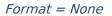


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Control Status			FORMULA				
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Internal Controls Assessme	ent - Control Wo	orkflow	INSERT VARIABLE	*		2	
Compliance Testing Workf	low (Prototype)		SUM(COUNT			÷	
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Overview Fields (46)	Formulas (11)	Relation	None Y N	one ~			1
			ℑ REFORMAT				

System Notification - Invalid Formula

- 21. (**Optional**) Click the **Recalculate and Reformat** button to recalculate all the formulas in your organization.
- 22. In the *Display* section, select a format from the **Format** drop-down list:
 - **None:** Uses no display formats.

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Activity ToD ∑ Formula mod(((timediff(SUPPLIED_DT.0,")	nours")+TimeZonet	FORMULA							
Count ∑ Formula COUNT will render with a None		REPORTEDDA							
Earliest Response Time	DDA,"minutes") w	SAVE FORMULA		CALCULATE AND R	EFORMAT				
Estimate Vehicle Damage 5 Formula REPORTEDDA will render with a M	lone	DISPLAY		_					
Linked Incident Count		Format Rang	e as						
On Site Time ∑ Formula timeDiff(MAXCLEAREDDATE, MIR	NARRIVEDDAT,"mi	None Y No	ne ~						
Priority Σ Formula PRIORITY will render with a Label		C REFORMAT							
Time Coent									-



• Numeric: Allows the user to choose how the numbers will be displayed using the



options on the table.

- **Num:** Displays numbers in numeric format.
- %: Displays numbers using percentage format.
- **\$:** Displays numbers using dollar format.
- **0.00:** Displays numbers using decimal format.
- **Layout:** Previews the number format selected.

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a Model ~ Object Types Object	Type Groups Fields Assessments Data Definition
Overview Fields (46) Formulas (11) Relation	EDIT FORMULA X
	FORMULA
All of the formulas that have been built Control .	INSERT VARIABLE 🗸
# of Related Citations Σ Formula COUNT will render with a Result	SUM(COUNT) ∢ ►
% of Samples Failed Σ Formula (FAILED/TESTED) will render with a Label and Result	Formula syntax is correct. Formula saved.
% of Samples Tested Σ Formula (TESTED/TOTAL) will render with a Label and Result	
Control Self-Assessment Σ Formula CONTROLSELF will render with a Label	DISPLAY
Design Effectiveness Σ Formula DESIGNEFF will render with a Label	Format Layout Range as
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Net Loss 5 Formula NETLOSS will render with a None	

Format = Numeric

- Range as:
 - **None:** The formula will display the numeric results only.
 - **Label:** The formula will display the range labels only (e.g., Low, Medium, High) in the color selected for that range.
 - Label and Result: The formula will display the numeric results and labels (e.g., Low – 1000) in the color selected for that range.
 - **Result:** The formula will display the numeric results only in the color selected for that range.
- 23. If a user selects **Label**, **Label and Results**, or **Results** from the **Range as** drop-down list, the system will automatically add three default formula labels **Low**, **Medium**, and **High**.



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Estimate Vehicle Damage		Low I	Û	
∑ Formula REPORTEDDA will render with a L	abel and Result	everything up to, and including, 33		
Linked Incident Count		Medium d	Û	
$\boldsymbol{\Sigma}$ Formula IncExists will render with a Label		above 33; up to, and including, 66		
On Site Time		High 🖉	Û	
∑ Formula timeDiff(MAXCLEAREDDATE, MIN	ARRIVEDDAT,"mi	above 66; up to, and including, 100 and above		
Priority		ADD LABEL		
∑ Formula PRIORITY will render with a Label				
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Formula Labels

24. Click the **Edit** icon next to the **Formula Label** you want to edit.

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ata Model	 Object Types 	Object Type Groups Fields Assessments Data Definition	
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Estimate Vehicle Dam	age	🛑 Low 🥒 🏛	
∑ Formula REPORTEDDA will render	with a Label and Result	everything up to, and including, 33	
Linked Incident Count	:	🦲 Medium 🥒 🏛	
$\boldsymbol{\Sigma}$ Formula IncExists will render with a	a Label	above 33; up to, and including, 66	
On Site Time		High 🖉 🏛	
∑ Formula timeDiff(MAXCLEAREDD	ATE, MINARRIVEDDAT,"mi	above 66; up to, and including, 100 and above	
Priority		ADD LABEL	
∑ Formula PRIORITY will render with	a Label		

Edit Icon

25. The **Formula Label** fields will appear, allowing the user to edit the field values:



- **Color:** Click the **Color** drop-down to reveal the color picker and select a new color for the label. You can also type a hex color into this field to select a color.
- Label: Enter a new name for the label in the Label field.
- Max Value: Enter a maximum value in the Max Value field, creating a numeric value range for the Formula Label.

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Estimate Vehicle Damage ∑ Formula REPORTEDDA will render with a Label and R	#00a591 ~ Low 33]		
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On Site Time Σ Formula timeDiff(MAXCLEAREDDATE, MINARRIVED	High above 66; up to, and including, 100 and above	Ø	Û	
Priority ∑ Formula PRIORITY will render with a Label Times Creat	ADD LABEL			ļ

Formula Label Fields

26. Click the **Save** icon to save your changes.



Data Model 🗸 🗸		Object Type Groups	Fields Asse	essments Data D	ooo	\$ \$
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On Site Time ∑ Formula timeDiff(MAXCLEAREDDATE, Priority ∑ Formula PRIORITY will render with a La		High above 66; up to, and ADD LABEL	d including, 100 and a	ibove	đ	Û

Save Icon

27. Click the **Delete** icon to delete a Formula Label.

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Estimate Vehicle Damage		#00a591	Low	33			
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On Site Time Σ Formula timeDiff(MAXCLEAREDDATE, M	IINARRIVEDDAT,"mi	High above 66; up to, and	d including, 100 and	above			Û
		ADD LABEL					



28. Click Add Label button to add a new label.



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Earliest Response Time 2 REFORMAT Earliest Response Time Color Label Max Value Image: Color Estimate Vehicle Damage #00a591 v Low 33 Image: Color Image: Color <td< td=""><td>∑ Formula mod(((timediff(SUPPLIED_DT,0,"hours")+TimeZor</td></td<>	∑ Formula mod(((timediff(SUPPLIED_DT,0,"hours")+TimeZor
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above 33: up to and including 66	∑ Formula REPORTEDDA will render with a Label and Result
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On Site Time High ∅ ∅ ∑ Formula timeDiff[MAXCLEAREDDATE, MINARRIVEDDAT,"mi above 66; up to, and including, 100 and above	
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Add Label Button

 If changes are made to the Formula Label on the *Display* section, you must click the Reformat button before the changes are displayed.

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		#00a591	Low	33			
Linked Incident Count Σ Formula IncExists will render with a	Label	Medium above 33; up to, and	l including, 66			1	Ì
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Reformat Button

30. Click the **x** in the **Edit Formula** pop-up header to close the pop-up.



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Earliest Response Time	EDDA,"minutes") w	Color	Label	Max Value		~	Û
Estimate Vehicle Damage	_	# 00a591 ~	Low	33			
Linked Incident Count		Medium above 33; up to, and	including, 66			din .	Û
On Site Time	INARRIVEDDAT,"mi	High above 66; up to, and	including, 100 and a	above		an .	Û
Priority Σ Formula PRIORITY will render with a Labo	el	ADD LABEL					
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x Closes the Edit Formula Pop-up