Aggregation and Calculation

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Terminology

Aggregated Project Indicator: An indicator that aggregates pre-existing, individual-level data stored on a custom object. A user can aggregate results for a project indicator by performing the following operations on the individual-level data: sum, average, count, maximum, or minimum.

Source Object: An object containing individual-level records with data that can be aggregated into a project indicator.

Aggregation Criteria: The rules set by the user that determine how an Aggregated Project Indicator aggregates data from the Source Object, including the operator, custom filters to apply to Source Object records, and fields to determine how the Source Object records are aggregated according to Geographic Area, Reporting Period, Disaggregation Value, or Cross-Disaggregation by Sex.

De-Duplication: When aggregating, the Source Object may contain multiple records with the same value in a certain field (e.g., multiple Attendance records looking up to the same Contact record). Users can select to either aggregate all records, irrespective of that field value, or aggregate only one record per unique field value.

Immediate Parent Record: The parent of a Source Object record, as determined by a lookup or master-detail field on the Source Object. The fields of this object can be used to determine how to aggregate according to Geographic Area, Disaggregation Value, or Cross-Disaggregation by Sex.

Input Project Indicator: A project indicator for which results are entered directly by user on the AddResults page. This type of project indicator is used in the formula/calculation for a calculated project indicator.

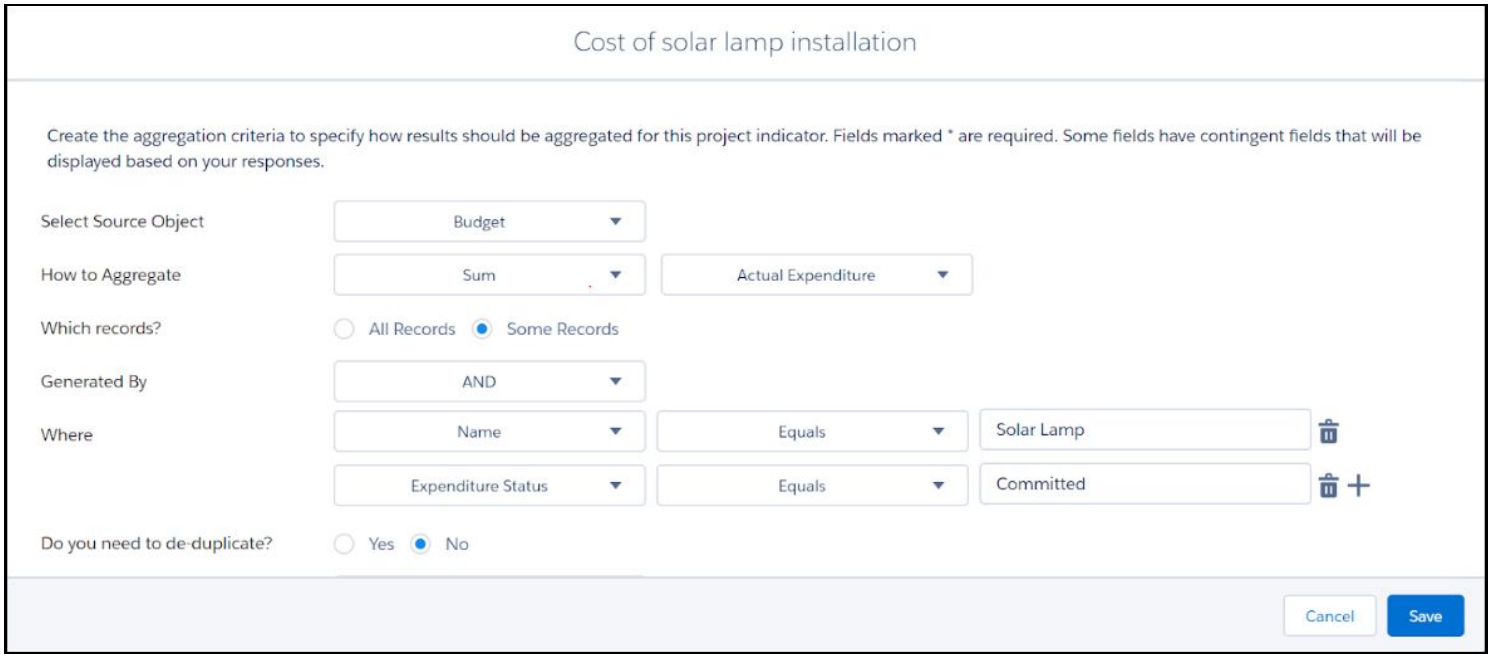
Calculated Project Indicator: A project indicator for which results are calculated by using input project indicator(s) in a mathematical formula. The operations available to create formulas are '+,' '-,' '*,' and '/.' User may choose these operations from a dropdown picklist or may type them directly into the formula box. In addition to this, users may also type numbers or decimal points into the formula box.

Overview

Aggregated Indicators

When creating a new Project Indicator, select 'aggregated' for the *Type of Results* field.
This opens a Aggregation Criteria pop-up where the user selects a source object from which data can be pulled with a selected criteria to calculate an aggregated result for the Project Indicator.

In the example below, I can calculate the total cost of solar lamp installations by summing the individual actual expenditure data stored on a custom object and display this aggregated cost on the AddResults page.

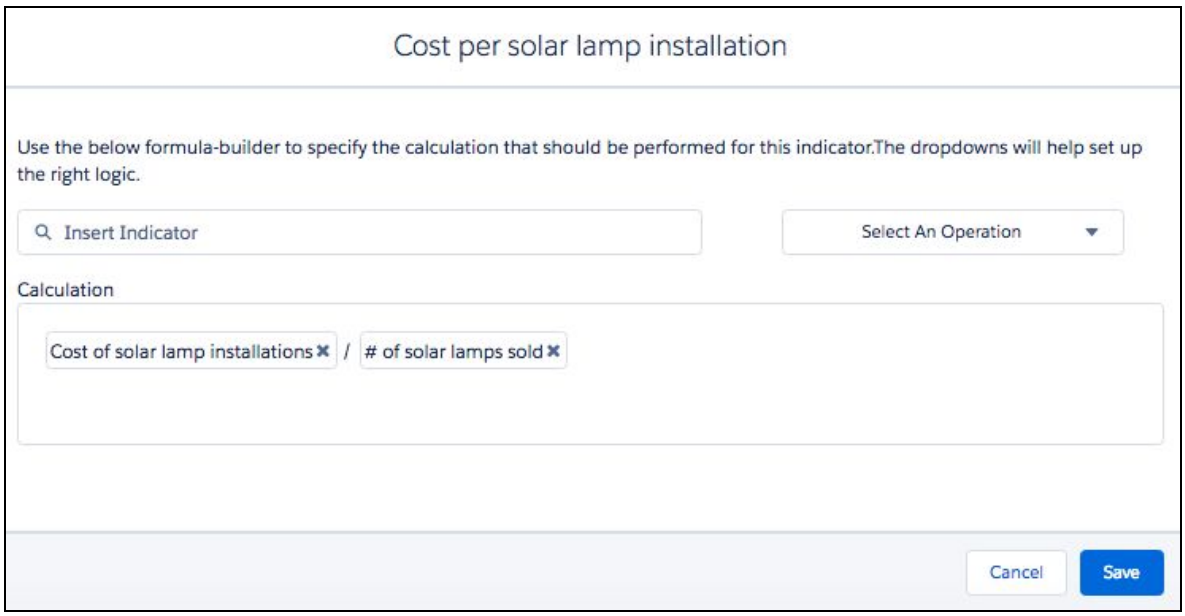


Calculated Indicators

When creating a new Project Indicator, select 'calculated' for the *Type of Results* field.

This opens a Calculation Formula pop-up where the user enters a calculation formula utilizing Input Project indicators.

In the example below, I can calculate the *Cost per solar lamp installation* by creating a formula based my Input Project Indicators - Cost of solar lamp installations and the number of solar lamps sold.



Set-up Instructions

New fields available in the Field sets

1. Indicator__c object
    a. Add New Indicator Popup:
        i. Type_of_Results__c (this is a required field)
2. Project_Indicator__c object
    a. Edit Project Indicator Popup:
        i. Type_of_Results__c
    b. Selected Project Indicators table on ManageIndicators page:
        i. Type_of_Results__c
        ii. Last_Aggregation_Date__c
        iii. Last_Calculation_Date__c
        iv. Calculation_Formula__c
    c. Add Results Info Popover on AddResults page:
        i. Type_of_Results__c
        ii. Last_Aggregation_Date__c
        iii. Last_Calculation_Date__c
        iv. Calculation_Formula__c

Reminder - to make any edits to Field Sets:

1. Ensure that the org is in Classic
2. Navigate to Setup
3. Type in 'Objects' into the 'Quick Find/Search'
4. Select the Object
5. Navigate to 'Field sets'

 NOTE: It is recommended to include **no more than five fields** to display in the *Selected Indicators table*, to be able to view the information in a user-friendly manner

Detailed User Guide

For numeric project indicators, users can create an Aggregated Project Indicator.

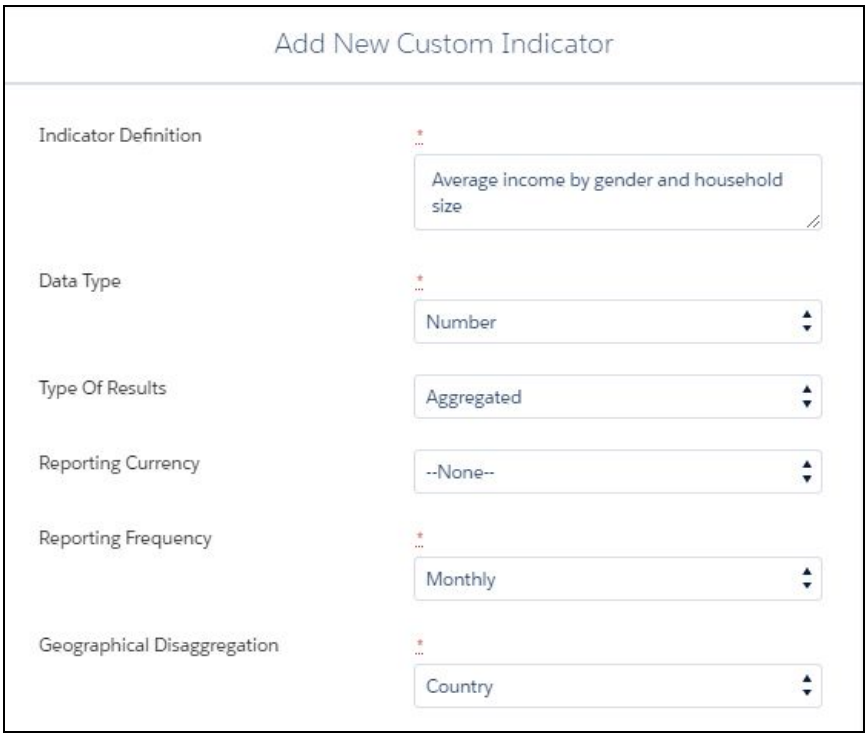
Aggregated Indicators

Creating an aggregated indicator allows a user to take individual-level data that is stored in another Salesforce object and aggregate that information. This feature allows a user to perform the following functions to aggregate results for a project indicator:

- Sum
- Average
- Count
- Maximum
- Minimum

Create an Aggregated Project Indicator

1. Navigate to 'Manage Indicators' and click on the *Add New Custom Indicator* button
2. Fill out the fields that appear in the popup and select 'Aggregated' for the *Type of Results* field.



3. On clicking *Save*, the *Aggregation Criteria* popup will appear where user can create the criteria used to aggregate results for this project indicator.

Create Criteria to Aggregate Results

1. Once the *Aggregation Criteria* popup opens, the user can either set the criteria immediately or select *cancel*. Selecting *cancel* will save the project indicator with no aggregation criteria, allowing the user to return and set the criteria at a later time.
2. In the *Aggregation Criteria* popup, enter the following:

Criterion	Required?	Description
Source Object	Yes	Object in Salesforce that contains the individual-level data to be aggregated
How to Aggregate (Operator)	Yes	How the data will be aggregated, i.e. Sum, Average, Count, Maximum, Minimum
Field that Reporting Period is based on	Yes	The date field on the Source Object that determines which Reporting Period an individual record will be aggregated to
Field that Geographic Area is based on	Yes	The field on the Source Object (or any of its parent objects) that determines which Geographic Area an individual record will be aggregated to.
Active	Yes	This checkbox controls whether the criteria is active and creates results when the batch is run

Custom filters	No	• If multiple filters are created, the user will be prompted to select filter logic
		• The following field types are not currently supported:
		  ○ Date/Time
		• The following field types are available to use as filter criteria:
		  ○ Checkbox
		  ○ Currency
		  ○ Date
		  ○ Formula
		  ○ Relationship (lookup or master-detail) - criteria must use the record Id

		○ Number ○ Percent ○ Picklist (single or multi-select) ○ Text
De-duplication	No	This feature allows the user to choose whether multiple records with the same value in a specified field are considered individually or together when aggregating

Create custom filters by selecting 'Some Records' to display this interface. Select fields on the Source Object in the first picklist and the filter operator in the second picklist. Type directly into the input cell to set the criteria. If multiple filters are used, select the filter logic (AND or OR) in the Specify Filter Logic' dropdown.

 NOTE: The above include criteria that are available for all aggregated indicators. Depending on the disaggregation levels of the Project Indicator (i.e., disaggregation by group and/or cross-disaggregation by sex), additional criteria may be required. See below for the variations that may display depending on disaggregations.

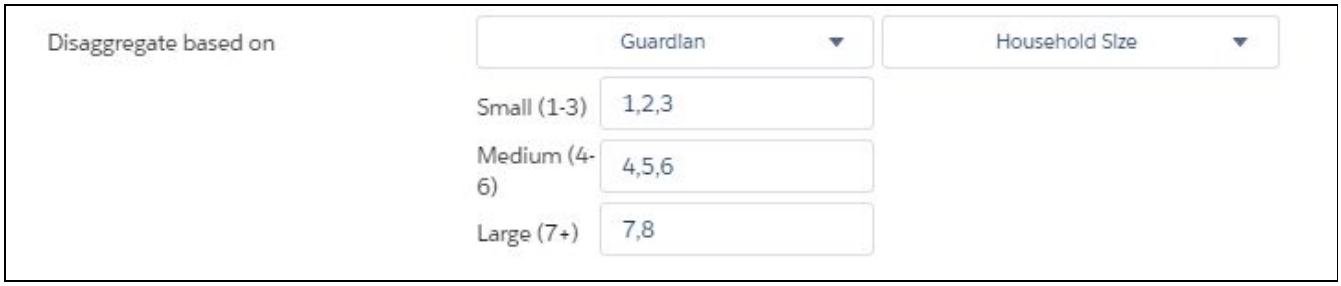
<u>If the Project Indicator is cross-disaggregated by sex:</u>

a. Select the field that sex is based on
    i. This field may sit on an immediate parent record

b. Map the possible values in the field selected in (a) to Amp Impact's sex disaggregation values (Male, Female, Unknown). As depicted below, the Amp Impact sex disaggregation values are listed to the left of the input boxes. For each sex disaggregation value, enter the corresponding field value to be mapped to that disaggregation (e.g. M for Male).

If the Project Indicator is disaggregated by group:

a. Select the field that the disaggregation is based on
    i. This field may sit on an immediate parent record



b. Map the possible values in the field selected in (a) to the custom Disaggregation Values
    i. Multiple field values may be mapped to each custom Disaggregation Value by using commas to separate the field values.

 When creating a new Disaggregation Group, always create one *Other / Unknown* Disaggregation Value to account for records that may be missing that data. While mapping the possible field values to the custom Disaggregation Values, leave the mapping for only this Other/Unknown field blank. Any additional blank mapping will cause the Project Indicator to aggregate incorrectly.

4. After clicking *Save* on the *Aggregated Indicator* popup, the new project indicator will appear in the *Selected Indicators* table on the Manage Indicators page.
5. To edit the aggregation criteria through the Manage Indicators page, click on the *Wrench* icon to open the *Aggregation Criteria* popup and make any changes required.

Calculate Results for an Aggregated Indicator

Click on the *Refresh* icon displayed next to the Project Indicator in the *Selected Indicators* table.

1. A popup will open with the date and time of any previously run aggregations displayed. If no successful aggregations have been run previously, then the date and time field will be blank. If an aggregation has been run previously, the date and time is displayed in user's locale.
2. The result will populate on the Add Results page only if all of the data required has been entered:
    - Aggregation criteria has been correctly set up
    - Records for the source object exist
3. The result will be populated for the corresponding project indicator on the Add Results page.

 NOTE: If the Project Indicator has any level of disaggregation (i.e., cross-disaggregation by sex or a custom disaggregation group), then the Total Column and/or Total Row will be populated on the Add Results page if the "Sum Total" value is selected for the *Calculate Total* field on the project indicator object.

Stop Aggregating Data

If data is no longer being collected for an Aggregated Indicator or the aggregation no longer needs to be calculated, the user can deactivate the Aggregation.

1. Click the *wrench* icon to open the *Aggregation Criteria* popup.
2. Scroll to the bottom and un-check the *Active* checkbox field.
3. Click *Save*.

Once the *Active* checkbox is false, when a user clicks on the *Refresh* icon to aggregate data, the aggregation will not run on click of *Confirm* in the popup.

Calculated Indicators

Creating a calculated project indicator allows a user to use project indicators in a mathematical formula to track results. This feature allows a user to perform the following functions to calculate results for a project indicator:

- Add
- Subtract
- Multiply
- Divide
- Custom formula using any of the operators above and numerical values

 NOTE: In order to create a calculated indicator, at least one project indicator must be created in order to enter a formula

Create an Input Project Indicator

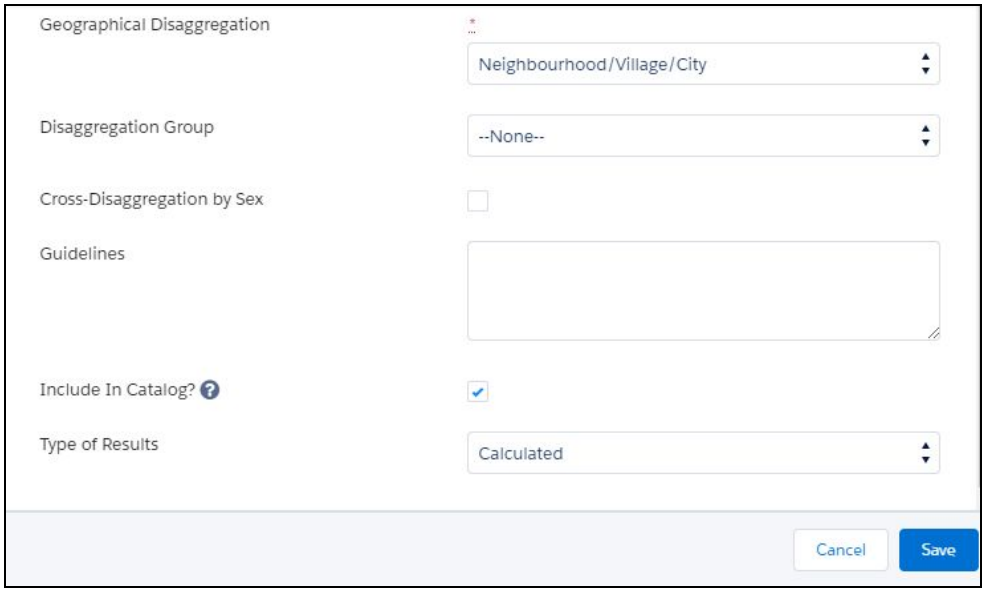
1. Navigate to 'Manage Indicators' and click on 'Add New Custom Indicator'.
2. The input project indicator must be a currency, number or percent indicator.
3. Select the relevant value from the 'Type of Result' picklist. You can use a project. indicator where results are manually input or another Calculated or Aggregated project indicator.
4. Select *Save* after all the information needed has been entered.

 NOTE: When creating a Calculated indicator, input project indicators display in the *Select Indicator* dropdown only if they have the same
- Reporting frequency
- Geographic level
- Level of disaggregation as the Calculated indicator.

For Example: If the Calculated indicator has a disaggregation group and is cross-disaggregated by sex, then the only input indicators that will appear in the dropdown picklist are also disaggregated by the same group and are cross-disaggregated by sex.

Create a Calculated Project Indicator

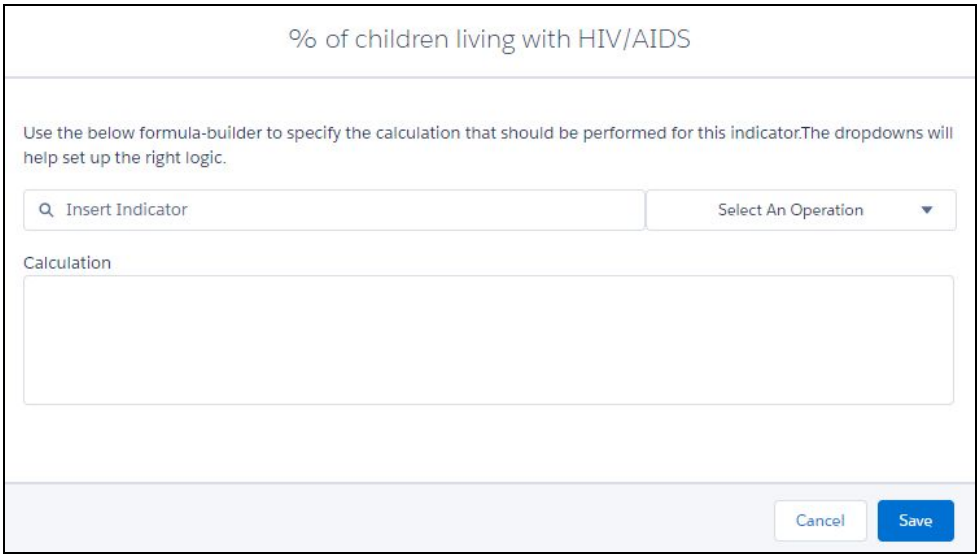
1. Navigate to the Manage Indicators page and click on the *Add New Custom Indicator* button.
2. Fill out the relevant information to create a new project indicator and select 'Calculated' for the *Type of Results* field.



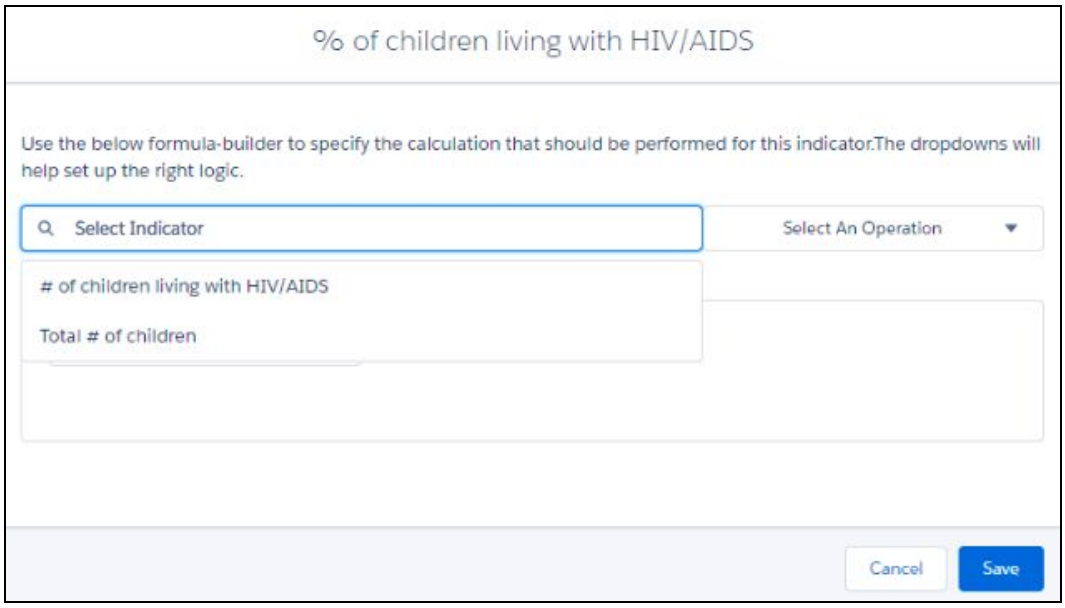
3. On clicking *Save*, the *Calculation Formula* popup will appear where user can create the formula used to calculate results for this project indicator.

Create Calculation Formula

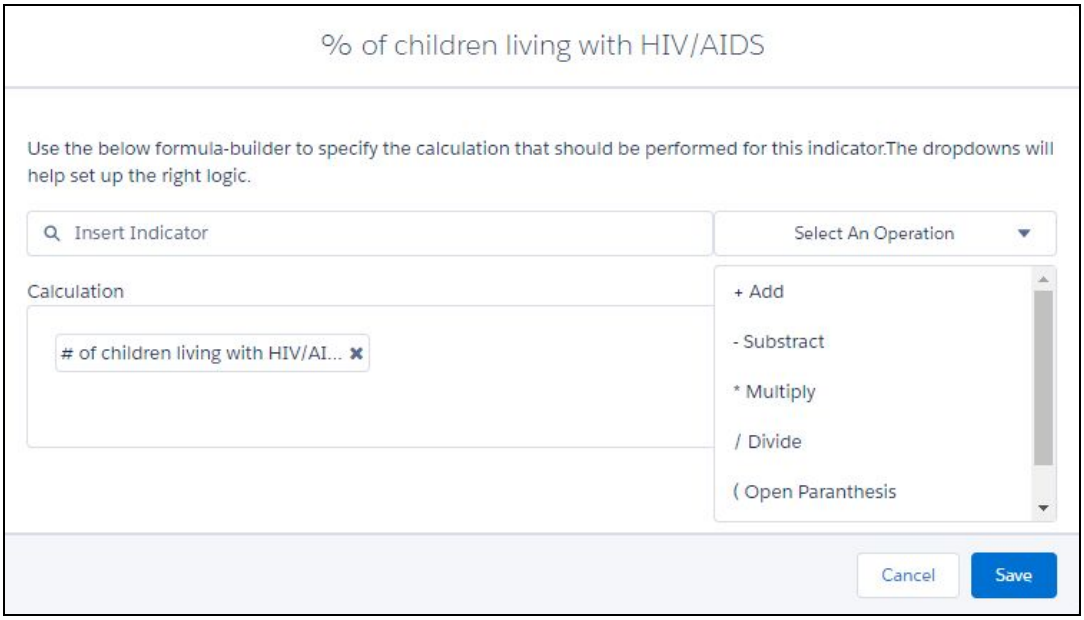
1. Once the *Calculation Formula* popup opens, the user can either create a formula immediately or select *cancel*. Selecting *cancel* will save the project indicator with no calculation formula, allowing the user to return and set the formula at a later time.



2. In the *Calculation Formula* popup, to create a formula, use the *Select Indicator* dropdown to select the first input project indicator.

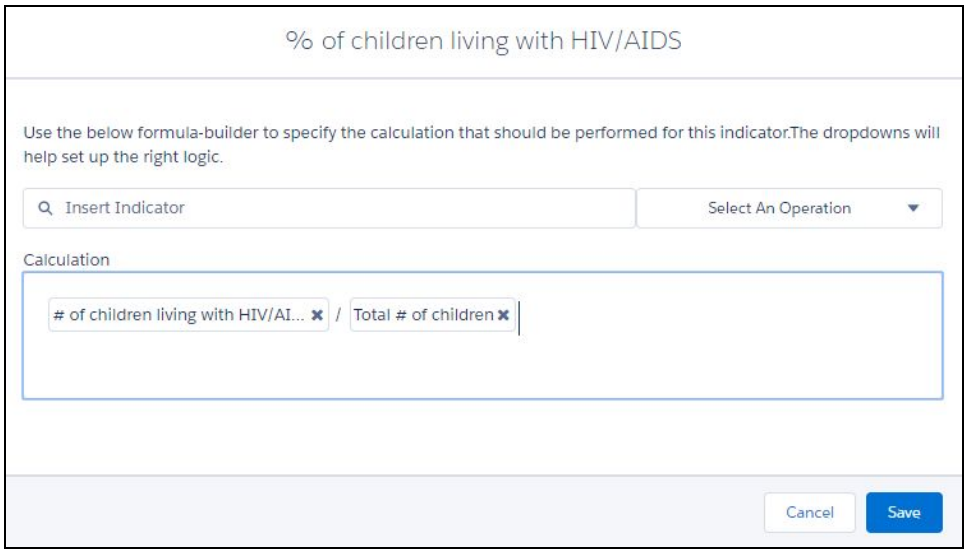


Use the *Select an Operation* dropdown to select the operation desired.



 NOTE: When creating a calculated project indicator that involves **division** in the formula, ensure that the *Number of decimal points allowed* field for that project indicator has been set to either 1 or 2. This can be specified in the *Add New Custom Indicator* popup.

Continue navigating between the dropdown and select additional project indicators or operators as needed. Users can also enter numerical values from their keyboards to create more complex formulas as well.



An incomplete formula - for example, 'input indicator 1 +" - will not be saved. If an incomplete formula is input and a user selects *Save*, an error message will appear in response to the formula that is not mathematically possible. If a user clicks on the 'X' in the right hand corner of the popup, or selects *Cancel*, then the popup will close and the indicator will save with no formula entered.

 NOTE: In order to **multiply** a Percent input indicator with a Number input indicator, the formula must include division by 100 in order to obtain an accurate result.

For Example: (Percent of Students who Passed the Exam * Number of Total Students)/100

3. After clicking 'Save' on the *Calculation Formula* popup, the new project indicator will appear in the *Select Indicators* table on the Manage Indicators page.
4. To edit/add the formula through the Manage Indicators page, click on the *Wrench* icon to open the popup and make any changes required.

 NOTE: Once a calculated indicator has been created, it can be used to create a formula for another calculated indicator.

Calculate Results for a Calculated Indicator

Click on the *Refresh* icon displayed next to the Project Indicator in the *Selected Indicators* table.

1. A popup will open with the date and time of any previously run calculations displayed. If no successful calculations have been run previously, then the date and time field will be blank. If a calculation has been run previously, the date and time is displayed in user's locale.
2. The result will populate on the Add Results page only if all of the data required has been entered:
    a. A mathematically sound formula has been entered
    b. Result records exist for the input indicators involved in the formula
3. The result will be populated for the corresponding project indicator on the Add Results page.

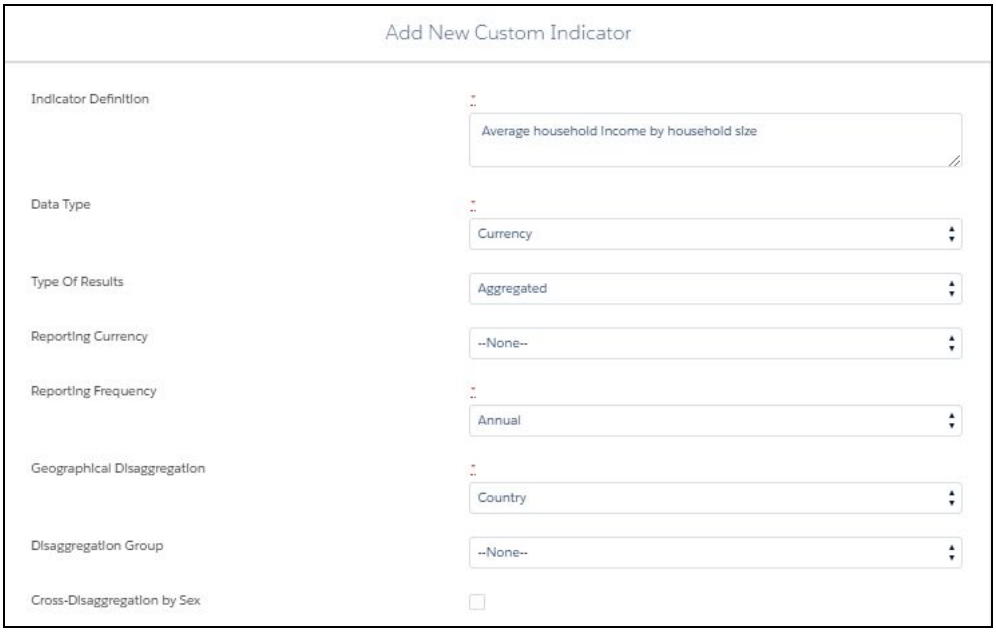
 NOTE: If the Project Indicator has any level of disaggregation (i.e., cross-disaggregation by sex or a custom disaggregation group), then the Total Column and/or Total Row will be populated on the Add Results page if the "Sum Total" value is selected for the *Calculate Total* field on the project indicator object.

Examples

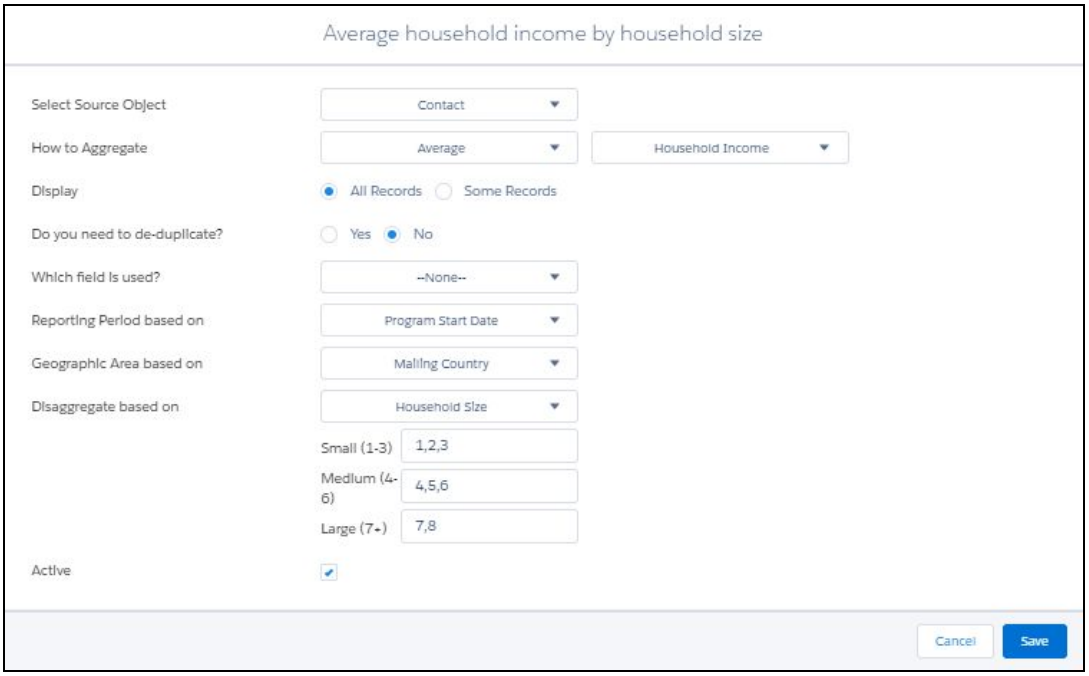
The following pages will walk through an example of an aggregated indicator and calculated indicator respectively.

Aggregated Indicator

In the following example, we will create an Aggregated Indicator to measure the average income by household size for farmers in our coffee program.



Upon saving this window, the aggregation criteria popup will appear. Fill out the information as required:



Upon saving the popup, the aggregated indicator will appear on the *Manage Indicators* page.

To run the aggregation, click the *Refresh* icon and confirm. Navigate to the Add Results page to see the result.

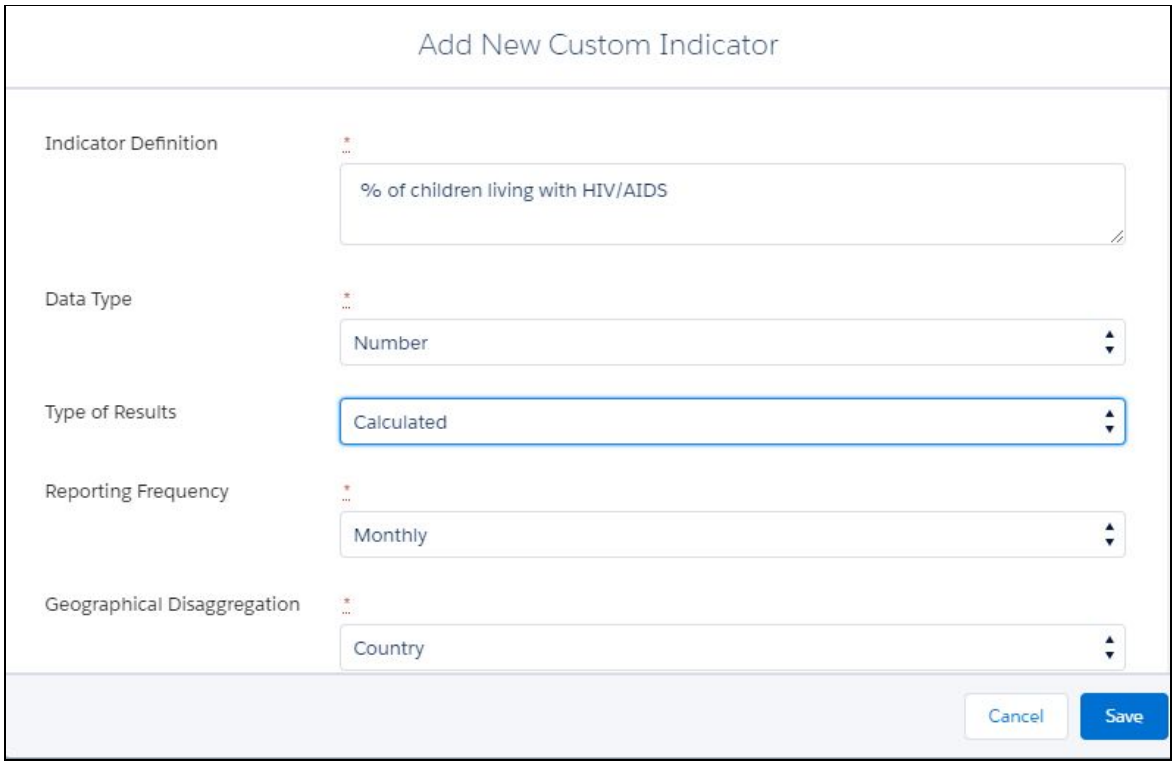
Calculated Indicator

In the following example, we will create a Calculated Indicator to calculate the percent of children living with HIV/AIDS in our Health Access program.

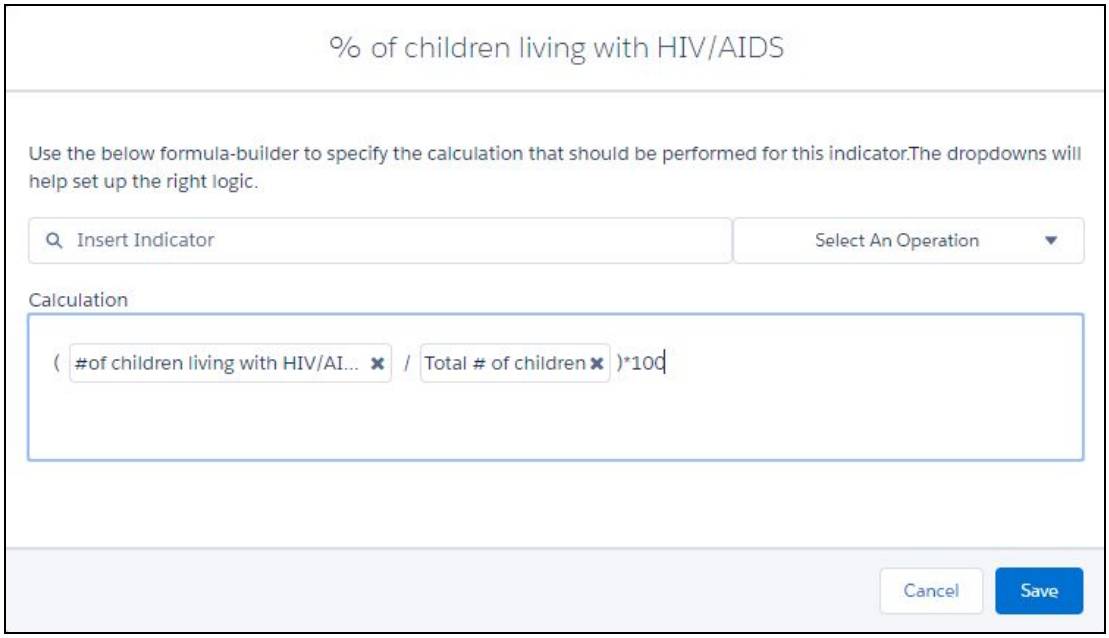
We will first create the two Input Project Indicators:

1. Total number of children
2. Number of children living with HIV/AIDS.

Next, we create the Calculated Indicator.

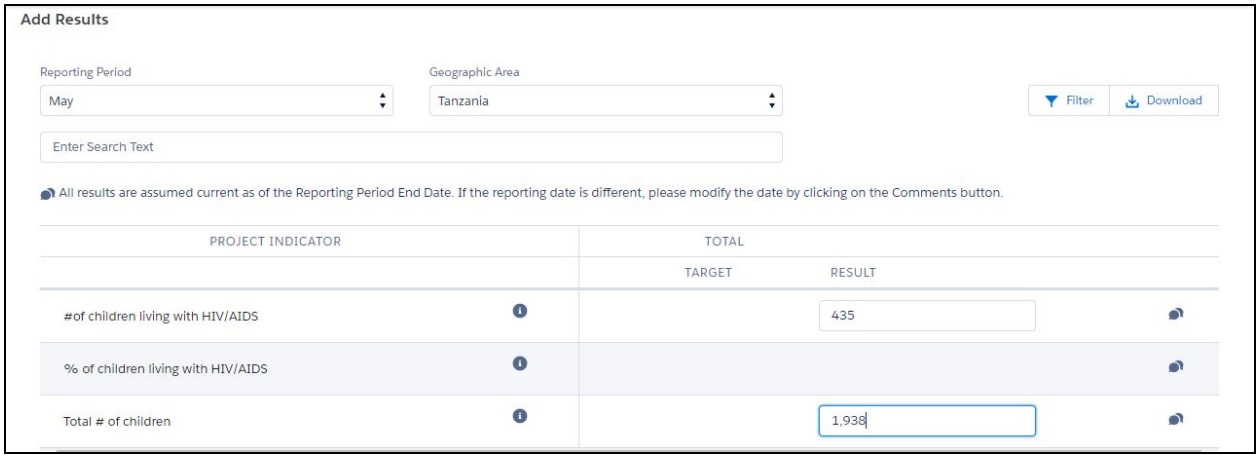
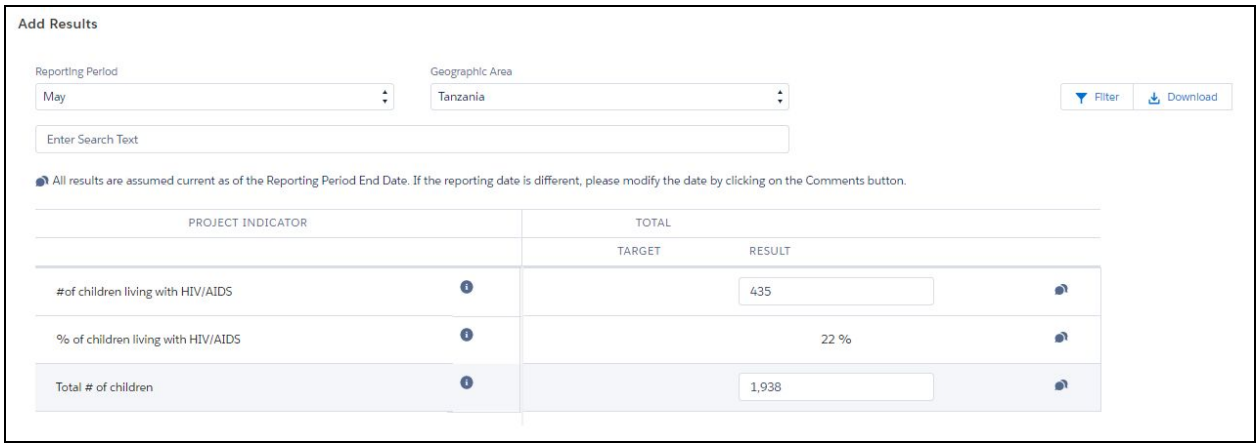


Upon clicking *Save*, the Calculation Formula popup will appear. Enter the necessary formula.



Upon saving the formula, the calculated project indicator will appear on the *Manage Indicators* page.

Navigate to the Add Results page:
Before running the calculation, navigate to the Add Results page to input result values for the two Input project indicators, if they have not been previously entered.



Navigate back to the Manage Indicators page to run the calculation. Click the *Refresh* icon and confirm. Navigate to the Add Results page to see the result.