
Location Verification in ArcGIS Survey123

Supervisors need to ensure that enumerators are collecting data only within their assigned enumeration area (EA). The following steps will configure your ArcGIS Survey123 form to check an enumerator's device location against the boundary coordinates of their assigned EA. If they are within the EA, they will be able to submit their data. If their current location is outside the assigned EA, they will receive an error message on their device and be blocked from submitting data until they are within the assigned area. This will work for enumerators both with and without internet connectivity.

Prerequisites

- A feature layer with a polygon for each enumeration area.
- Each polygon should have a field with the ArcGIS Online username of the enumerator assigned to that EA (name the field "enumeratorname" or adjust the last line in the Python script below to reflect the field name of your enumerator username field).

Steps

1. Generate coordinates for the boundaries of each EA.
 - a. If you have not already done so, publish your polygon feature service to ArcGIS Online or ArcGIS Enterprise. Note the item number of your feature service, which can be found at the end of the URL on the item page after "id=". It should be a long combination of letters and numbers (e.g., 347af3cf52934bfaaa96c9a801571376).
 - b. Open the Python script from this ZIP file titled Feature Layer Geometries to CSV. This can be run in ArcGIS Pro or in ArcGIS Notebooks.
 - c. Follow the instructions in the Python notebook for configuring the inputs needed.
 - i. If your enumerator username field in the feature service is not enumeratorname, then modify the Configuration cell so that it matches.
 - d. Run the notebook, cell by cell, making sure each completes successfully. The output is a .csv file titled enumeration_areas.csv, which has a row for each EA and two columns: the first contains the enumerator's ArcGIS Online username, and the second has the coordinates for the border of the EA polygon.
2. Configure the survey.
 - a. In Survey123 Connect, create a new survey (or open your existing survey).
 - b. In File Explorer, navigate to the folder My Survey Designs and locate the folder associated with the survey you just created.
 - c. Within that folder, create a new folder named media and a new folder named scripts.
 - d. Copy the .csv file titled enumeration_areas, which you generated in step 1, and paste it into the media folder.
 - e. Copy the JavaScript file included in this ZIP file, locationverify, and paste it into the scripts folder.
 - f. Open the XLS form associated with the survey.

- g. Using the XLS form LocationVerify in this ZIP file as a guide, add the seven fields shown below to the top of your form:

Type	Name	Label	Calculation	Constraint	Constraint_message
username	enumerator_id	Enumerator Username			
hidden	ea_extent	EA Extent	pulldata('enumeration_areas', 'geom', 'enumerator', \${enumerator_id})		
geopoint	location	location		boolean-from-string(\${is_within})	enumerator is not within their designated area
hidden	lng	lng	pulldata("@geopoint", \${location}, 'x')		
hidden	lat	lat	pulldata("@geopoint", \${location}, 'y')		
hidden	coords	coords	concat(\${lat}, ",", \${lng})		
text (OR hidden)	is_within	Is enumerator within their designated EA?	pulldata('@javascript', 'locationverify.js', 'doPointInPolyCheck', \${coords}, \${ea_extent})		

Important: In the XLS form, scroll to the field bind::esri:fieldType and set the value to null for the hidden fields. This will prevent the outputs from intermediate steps from being included as fields in the survey submissions.

3. Publish the survey.
 - a. Add and configure the other questions for your survey, then publish the form from Survey123 Connect.