SPATIAL TECHNOLOGIES: GIS

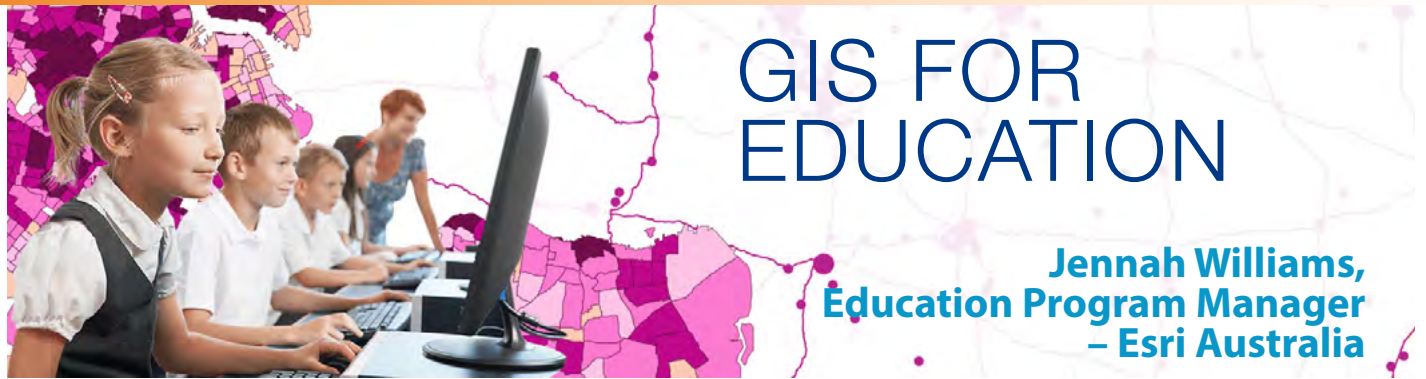# GIS FOR EDUCATION

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The Program

In 2017, Esri Australia started their GIS for Schools Program, providing over 26 of Esri's most popular applications in a free education bundle, designed to enhance learning, develop 21st century skills and engage students into solving current real world problems.

The ArcGIS bundle includes applications such as Survey123, Storymaps, ArcGIS Online, Quick Capture, Drone2Map, ArcGIS Pro and more. Each of these applications can be used in unison to create a picture of your desired learning goal and identify 'where' action needs to be taken. Esri's Education Department provide an engaging training program, including workshops, seminars, and webinars to teach educators to utilise these resources and grow their skills all provided free of charge.

GIS in the classroom

ArcGIS has unlimited potential for classroom education allowing students to create sophisticated, original content that ensures outstanding results whilst providing an engaging hands on experience for the students to develop in demand skills.

Students can create choropleth maps (Figure 1) demonstrating relationships between multiple attributes at the click of a button.

Students also have the ability to create trace downstream maps, flowline maps (Figure 2) and more that can all be customised and designed for the specific needs and preferences of the students.
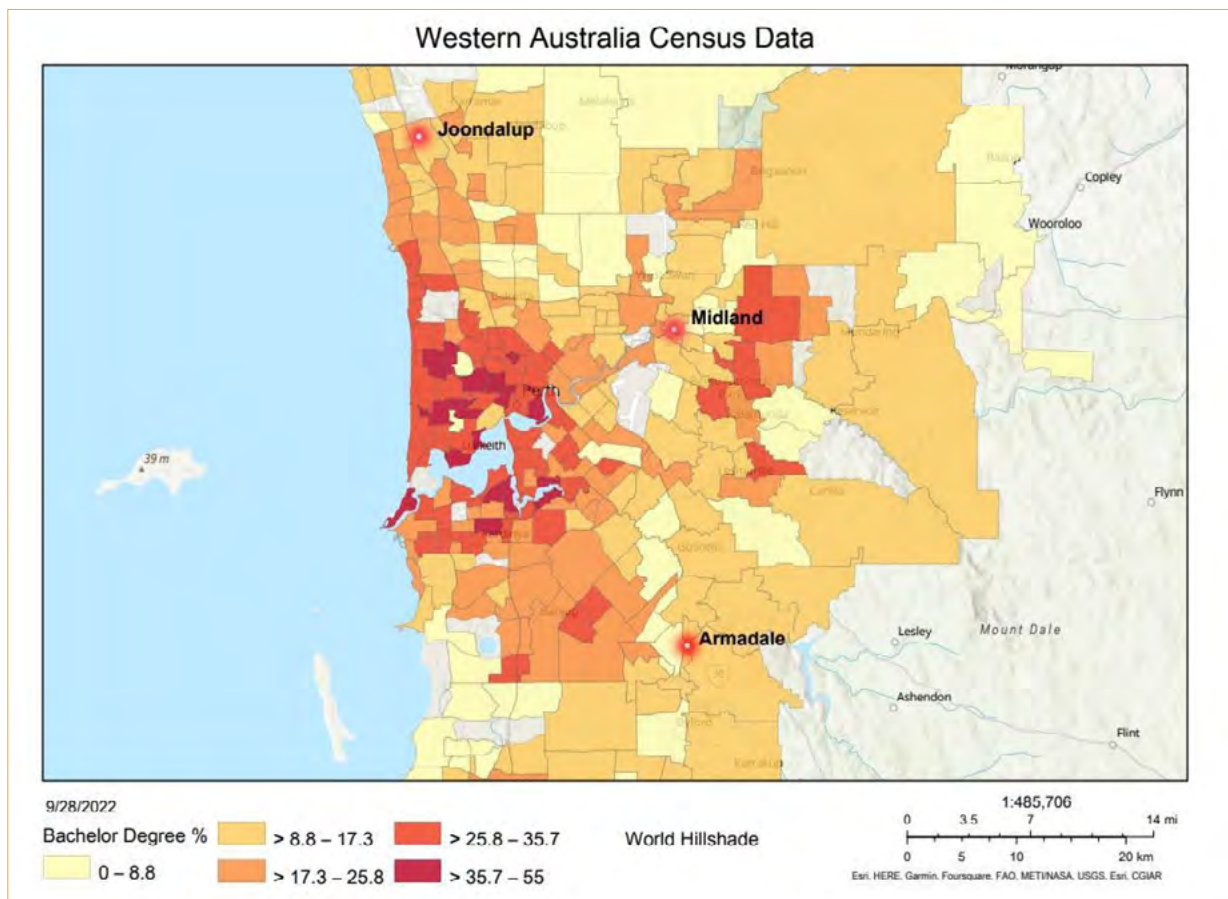
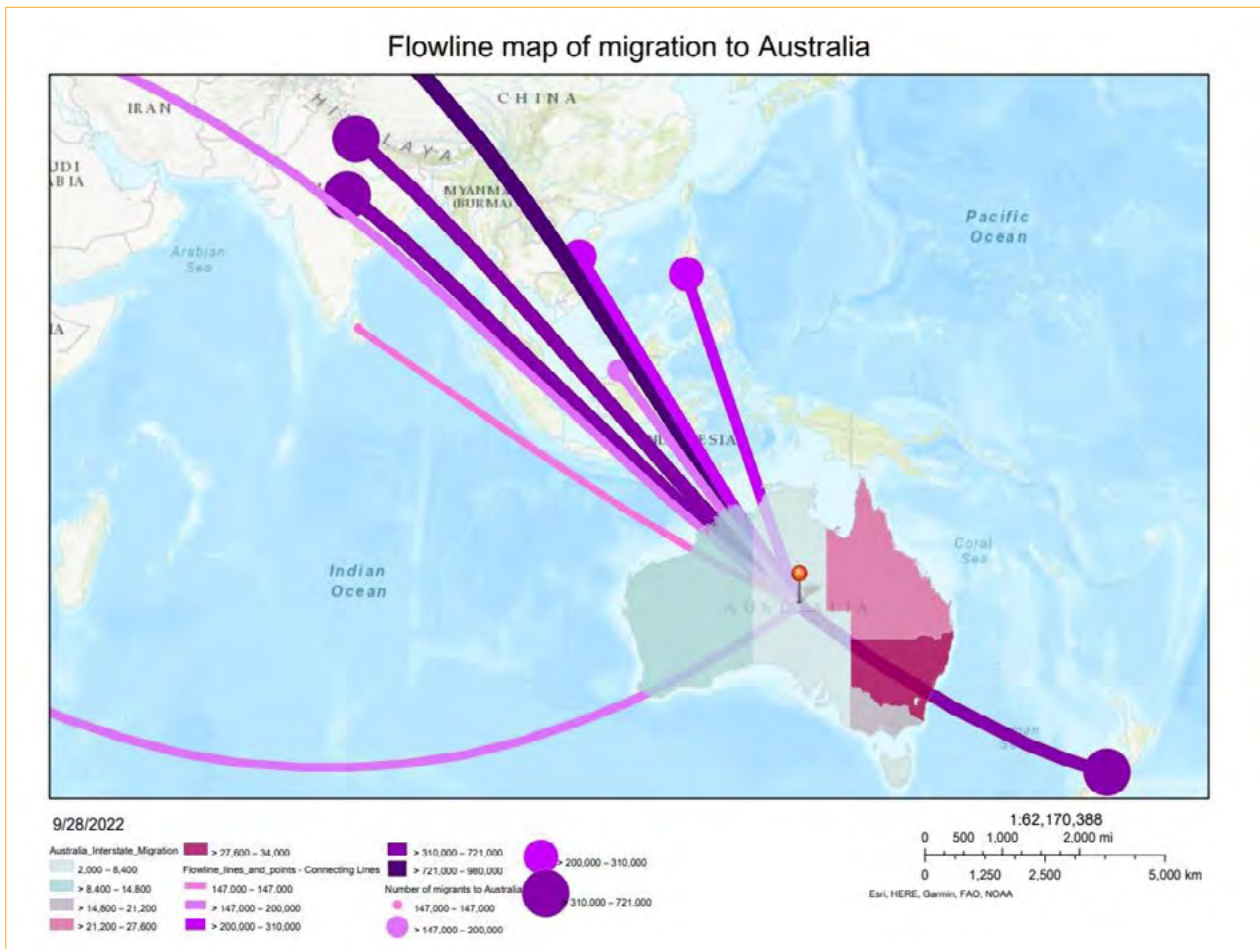**Figure 1 – Choropleth map example**

Western Australia Census Data

Figure 2 – Flowline map example

Finally, students can present work or educators can teach engaging content on Storymaps, an interactive and immersive application to tell your story, incorporate maps, media, data, survey results and more to tell the story of your research and present your findings or educate your students in an immersive and imaginative way that really gets people's attention. Create your own Storymaps or use some of the thousands created for your use in the Storymaps Gallery.

Esri Australia have also created a variety of classroom learning materials to allow educators to implement ArcGIS applications without the added pressure of creating lesson plans. Our ready-made lesson plans are grade and topic specific and are developed around the 5 E's strategy. Each lesson plan includes a teacher's edition, a student booklet and an activity using a GIS application, such as a Storymap or ArcGIS Online activity (Figure 3). These lesson plans are a fantastic way to introduce GIS into your classroom to allow the students and the educators to develop experience with the technology.

**Figure 3 – Classroom Lesson Plans example**

GIS in the field

Field excursions are a highlight of geography topics, they allow students to participate in real world experiences in a hands on environment. Implementing applications such as Survey123 and Quick Capture into field excursions can make the experience even better, diminishing the need for excess paper, pens, rulers and other materials in the field, students can collect professional, accurate data using just their phones, whether offline in a remote area, or online in the busy city.

By incorporating survey123 into the project you can design from the ground up and personalise a project specific survey explicit to your goals, that automatically maps your data, analyses the results (Figure 4), and produces accurate and reliable graphs and maps to clearly understand your data, which can be used over many years to create annual data sets. See Survey123 in action by a school in Queensland

Figure 4 – Analysis of Results in Survey123 example
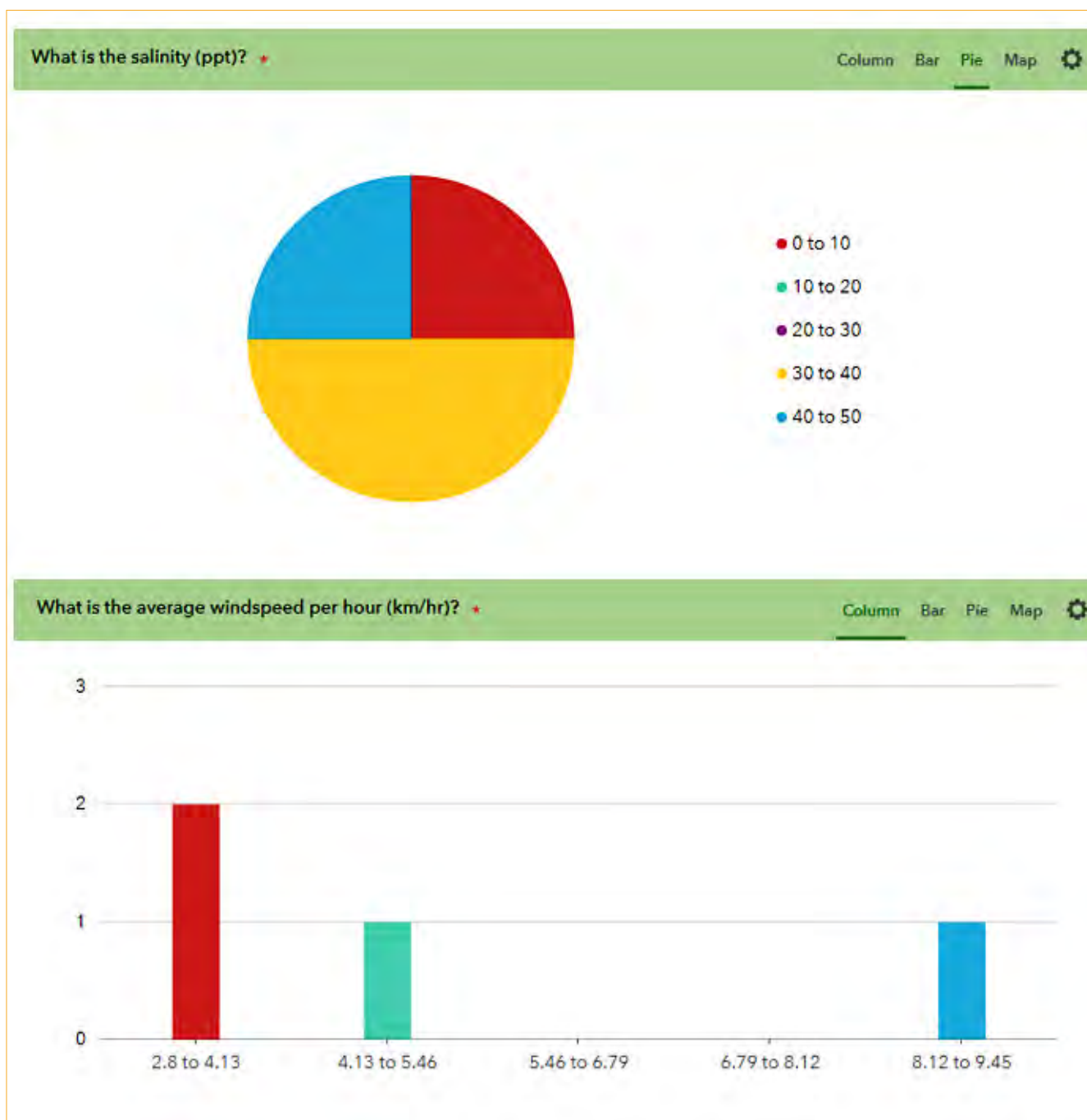
Another useful incorporation, specifically for locating and mapping amenities, features, and human impacts, would be combining Quick Capture, an application where the survey takers simply press an icon button to add data to their map.

This data can then be integrated into ArcGIS Online, where you can search and add multiple layers to show relationships and gaps within the data (Figure 5). These maps can be layered and designed to show multiple data sets on one map and help to visualise where your research should go next.

Figure 5 – Map displaying Survey123 and Quick Capture Field Data

For more information on using ArcGIS products in your classroom and field excursions contact – Jennah Williams on **education@esriaustralia.com.au**