esri Australia

GIS for Schools

Professional Learning

| Time	Description
10.00am-10.30am	Introduction to GIS • What is GIS • Why should I use it? • GIS Industry • Careers in GIS Survey123
10.30am-11.00am	MORNING TEA
11.00am-11.15am	Walk to Rural Fire Services GROUP A COLLECT DATA
11.15am-12.00pm	Visit to Rural Fire Services • Real world application of GIS • Hear from industry experts
12.00pm-12.20pm	Walk back to Sydney Olympic Park GROUP B + C COLLECT DATA
12.20pm-1.30pm	ArcGIS Online • Searching for maps in Living Atlas + ArcGIS Online database • Adding your own data via Excel sheet • Saving and sharing your map
1.30pm-2.30pm	LUNCH
2.30pm-3.15pm	ArcGIS Online • Completing analysis • Looking at our Survey results • Administering your account
3.15pm-3.45pm	Story Maps • Story Maps as Educational Tools

Part One: What is GIS and why should I use it?

What is GIS?

- A GIS is a Geographic Information System
- This is a method of capturing, storing and representing information in something called a layer
- Each layer contains its own geographic dataset
- Maps are made in GIS by assembling different types of layers

PARCELS
ZONING
TOPOGRAPHY
WETLANDS
DEMOGRAPHICS
LAND COVER
IMAGERY
BASEMAP
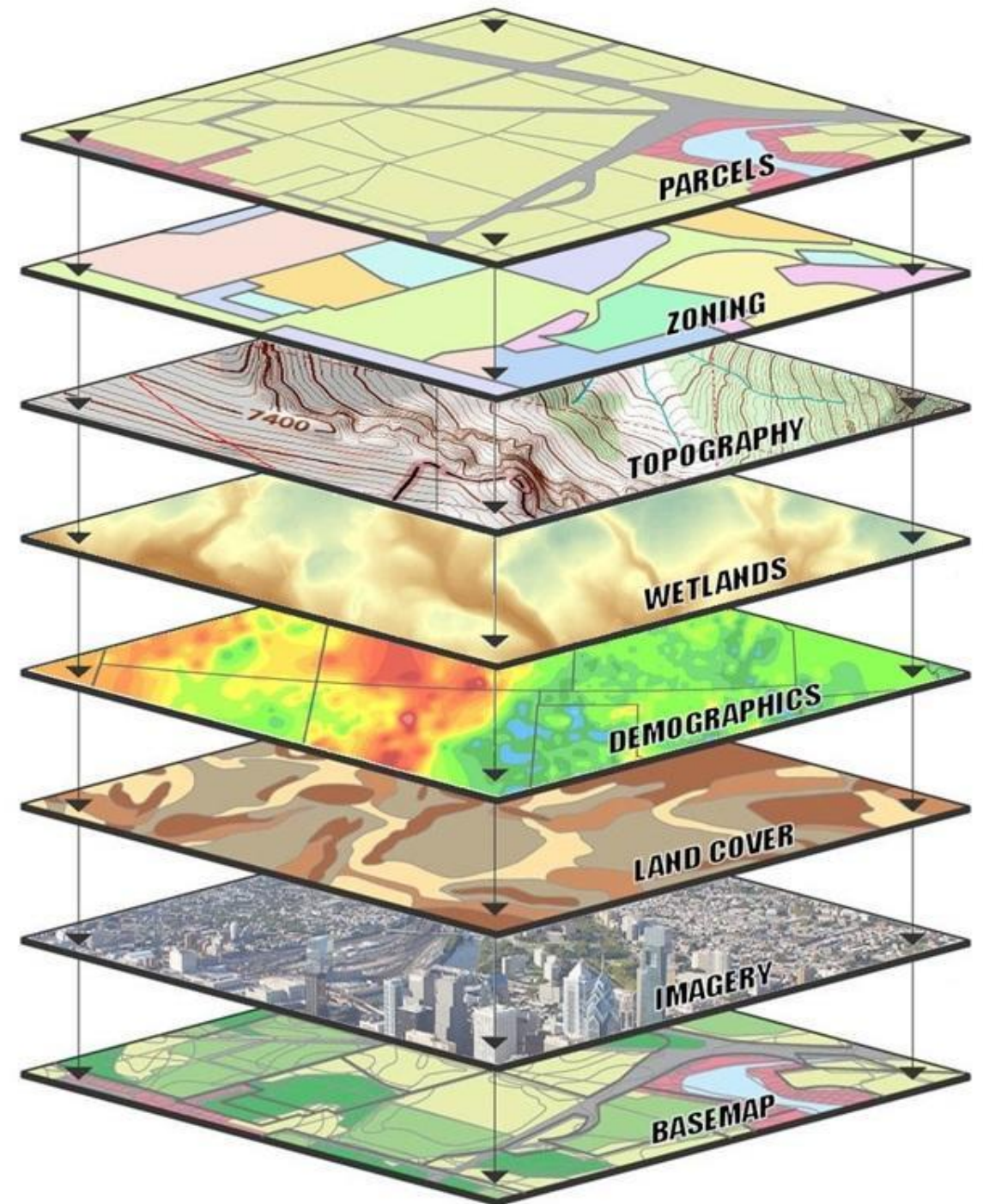
Who uses GIS?

- Research institutes
- Environmental scientists
- Health organisations
- Land use planners
- Government agencies
- Defence force

- Police departments
- Campus administration
- Retail
- Telecommunications
- Agribusiness
- Real estate

- Mining and petroleum
- Transport sector
- Asset management
- Disaster management
- Private businesses

GIS as a Career

- Second largest after the GNSS Industry

- Huge rise in open data

- Increased demand for 'smart cities' in China, India and other Asian countries

- Needed for disaster management

- Government sector highest user

GIS/Spatial Analytics: Global Market Size
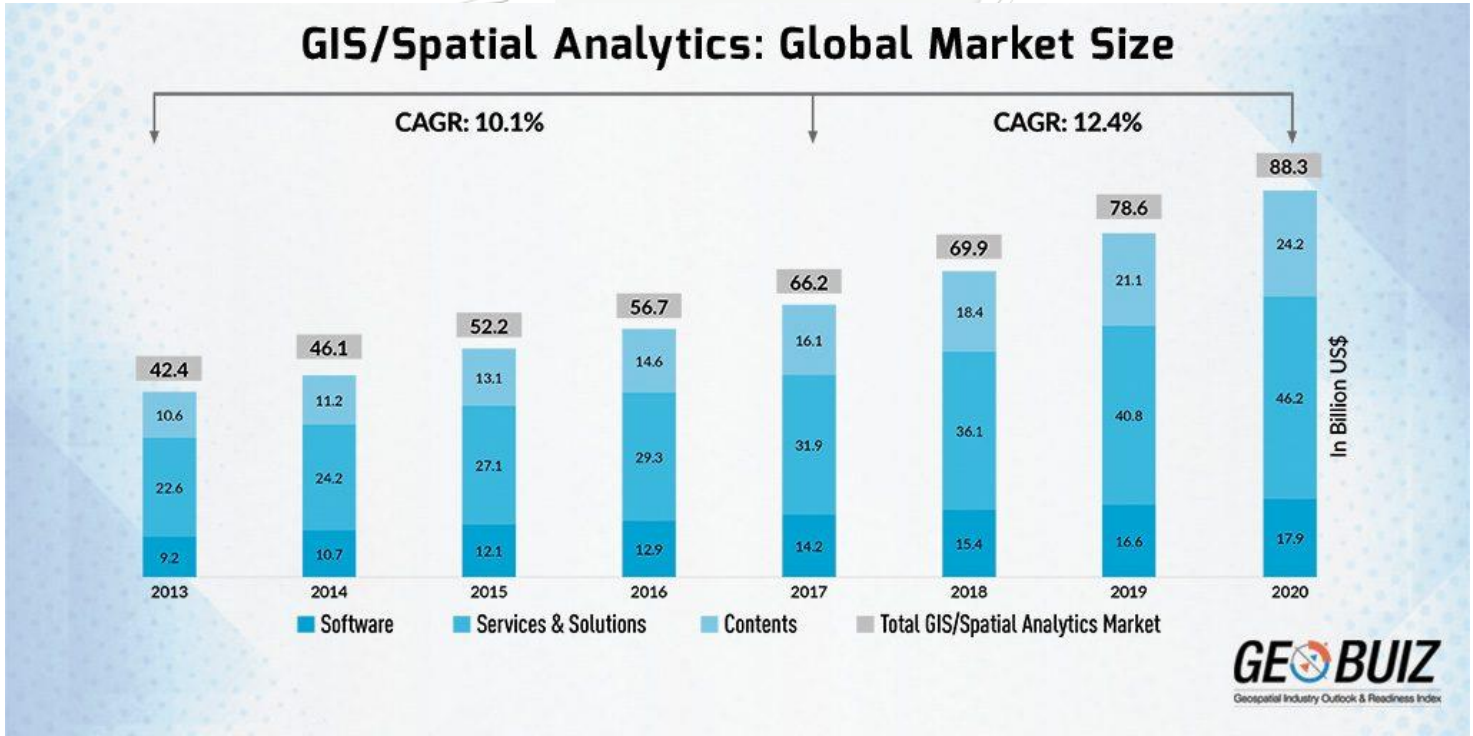
How do I implement it in the classroom?

- "I don't have time!"
- Good GIS practice should not make more work for you as a teacher
- It should be integrated within your normal teaching practice
- Inquiry model and spatial inquiry go hand in hand

BLOG

Teacher Talk: Navigating the GIS Classroom

Australian teachers see the power of using GIS in their classroom, but many aren't sure on the pedagogy and teaching method to use. We look at tried and tested approaches, to help make the transition as smooth as possible.

MORE →

How do I implement it in the classroom?

- Field Trips

- Reports

- Investigations

- Attention Grabbers

Collected data on water quality using Survey123, then plotted land use in the area

How do I implement it in the classroom?

- Collected data on water quality using Survey123, then plotted land use in the area to determine the poor results

- Created choropleth maps of HIV prevalence in Africa

- Mapped local congestion near their school and suggested solutions to ease traffic

Where to start?

500 Schools teaching with GIS

ArcGIS Online

Survey123

Story Maps

How to Guides

Schools | Learning materials | **Professional development** | E-newsletter subscription

Visit https://esriaustralia.com.au/gis-for-schools/professional-development

1. What is GIS and why should I use it?

2. Activating your account

3. Adding students and teachers

4. Introduction to ArcGIS Online

Learning Materials

Schools   **Learning materials**   Professional development   E-newsletter subscription

About   Content   Legend

Contents

- ☑ World Mountain Ranges
- ☐ Tectonic Boundaries
- ☐ Ranges Away From Boundaries
- ☐ PlateMotions (mm / year)
- ☐ Topographic

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Making mountains

Lesson Map: http://esriaustralia.com.au/education/SpatialActivity14

Engage

Where are Australia's biggest mountain ranges?

→ Click on the lesson map URL above to open the lesson map. It shows the global distribution of volcanoes.

☐ Zoom in to Australia. How many significant mountain ranges does Australia have? [7]

☐ What is the name of Australia's largest mountain range? *[The Great Dividing Range]*

Explore

How do mountains form?

→ In the Details pane, under the heading Content, tick the checkbox to turn on the layer called Tectonic Boundaries.

→ Open the Legend, and identify the type of plate movement at each boundary.

☐ Where do volcanoes most commonly occur? *[Along plate boundaries – specifically converging boundaries]*

☐ How do plates interact at these 3 boundaries? *[Converging plates crash towards each other; Diverging plates move away from each other; Transforming plates slide past each other in opposite directions]*

☐ Where do mountain ranges occur in relation to plate boundaries? *[Mostly on top of the boundary, at the edge of plates]*

Explain

Which type of boundary makes the biggest mountains?

☐ Count the number of mountains that occur near each plate boundary.

Time
20 minutes

Activity
Investigate how mountains are formed, by exploring plate tectonics.

Learning Outcome
Students will be able to:

- Identify different types of plate boundaries
- Analyse boundary interactions to determine the cause of mountain ranges
- Understand the formation of plates away from boundaries

ACARA Curriculum Link

Year 8 Geography – Unit 1: Landforms and landscapes

ACHGK048 | ACHGK050 | ACHGS057| ACHGS058 | ACHGS059

Year 9 Science – Earth and space sciences

ACSSU180 | ACSIS166 | ACSUS169 | ACSIS174

Senior secondary Curriculum – Earth and Environmental Science – Unit 1: Introductions to Earth systems

ACSES099 | ACSES098 | ACSES100 | ASES087 | ACSES089

Part Two: Setting up your school and using ArcGIS Online

Navigating ArcGIS Online

GIS for Schools

Edit settings

esri Australia

Download activity log

Subscription ID
7534963280

Feature Data Store ⓘ
🗄 Standard

System health · View details
✓ All systems operational

Created
Mar 16, 2017

Renewal date · Renew
Mar 15, 2021

Credits

View status

Total remaining credits
2,589.58

Last 30 days
1,832.30

Last 24 hours
58.68

Last 30 days

☐ Storage   ☐ Analytics   ☐ Subscriber content

200

100

0

Jan 27, 2019   Feb 26, 2019

Members

Invite members | Manage members

Total members
55

Pending members
0

Members per user type

Creator (formerly Level 2)
55 assigned ━━━━━ -25 available | 30 total

Editor
0 assigned ━━━━━ 30 available | 30 total

+4 more user types

Add-on licenses

Manage add-on licenses

🌐 **ArcGIS Pro Basic**
0 assigned ━━━━━ 30 available | 30 total

🌐 **ArcGIS Pro Standard**
0 assigned ━━━━━ 30 available | 30 total

🛡 **ArcGIS Pro Advanced**
2 assigned ━ 28 available | 30 total

△ **AppStudio for ArcGIS Standard**
0 assigned ━━━━━ 30 available | 30 total

📍 **ArcGIS Business Analyst Web and Mobile Apps**
0 assigned ━━━━━ 30 available | 30 total

+5 more apps

Adding Teachers and Students

Adding Teachers and Students

	A	B	C	D	E	F	G	H	I
1	First Name	Last Name	Email	Username	Role	User Type	Password		
2					Publisher	Creator	Password1		
3					Publisher	Creator	Password1		
4					Publisher	Creator	Password1		
5					Publisher	Creator	Password1		
6					Publisher	Creator	Password1		
7					Publisher	Creator	Password1		
8					Publisher	Creator	Password1		
9					Publisher	Creator	Password1		
10					Publisher	Creator	Password1		
11					Publisher	Creator	Password1		
12					Publisher	Creator	Password1		
13					Publisher	Creator	Password1		
14									
15									
16									
17									
18									
19									
20									

Adding Teachers and Students

GIS for Schools

Overview | **Members** | Licenses | Status | Settings

Invite members | 🔍 Search members | Full name ⌄ | ⊞ ☰

⌄ **Level**

Level 1
Level 2

⌄ **Role**

Administrator
Hidden User
Publisher
User
Viewer

⇅ 1-16 of 55   ≣ Last login

| ☐	Member	Credits remaining ⓘ	Last login ▼	Level	Role	
☐	**Skye Rodgers** srodgers93	No limit	Today	2	Administrator ▼	⋯
☐ TA	**Training account** edu007	No limit	Oct 4, 2018	2	Publisher ▼	⋯
					Administrator	
☐ TU	**Training user** edu001	No limit	Oct 4, 2018	2	Hidden User	⋯
					Publisher	
☐ TA	**training account** edu044	No limit	Oct 1, 2018	2	User	⋯
					Viewer	
☐ TA	**Training account** edu011	No limit	Oct 1, 2018	2	Publisher ▼	⋯

Part Three: Using Survey123

- Replace paper-based field booklets with Survey123, in a simple and intuitive form centric data gathering solution.
- Great for fieldtrips or on-site data collection.
- Automatically graphs and maps your results.

Easy Forms

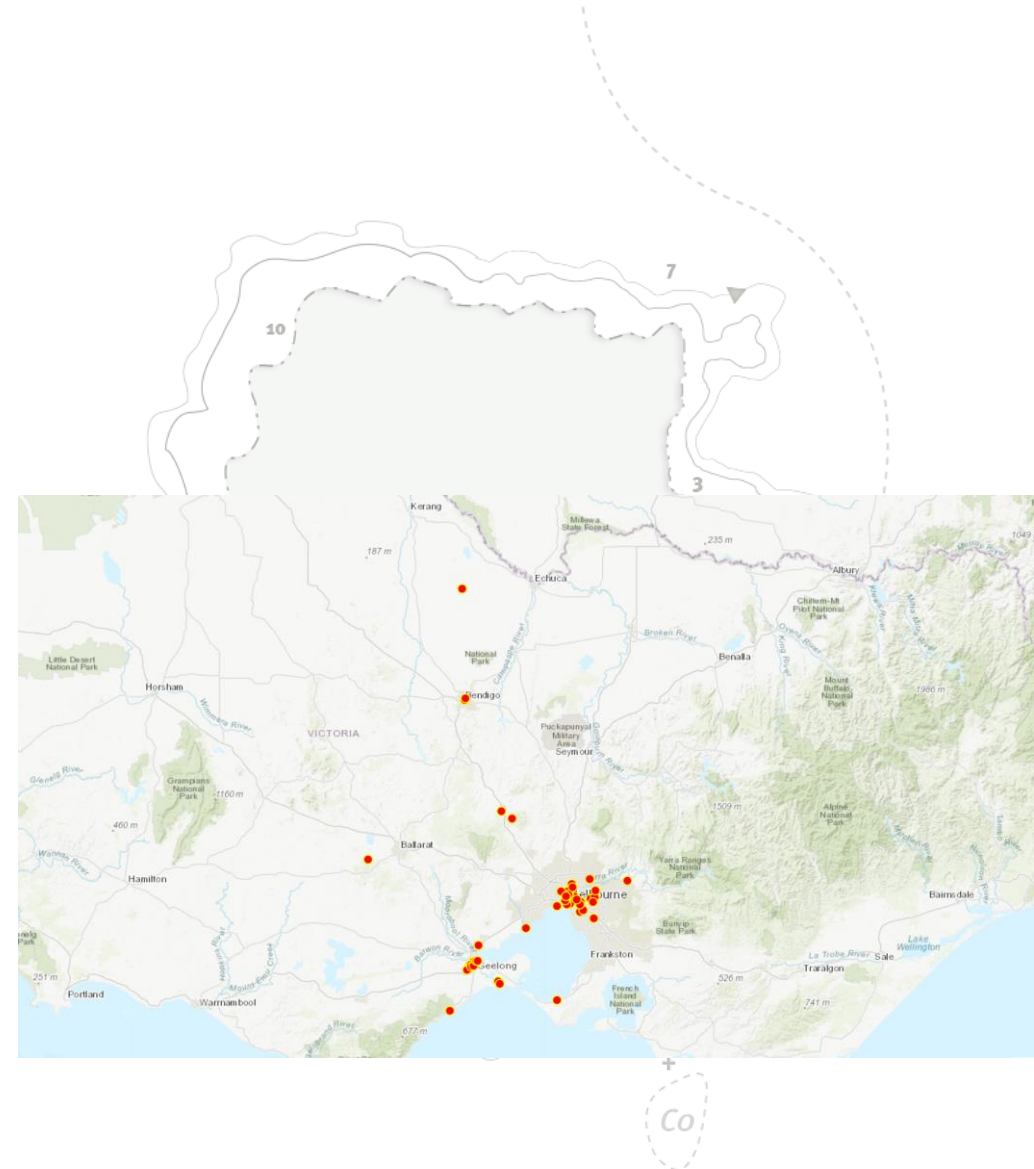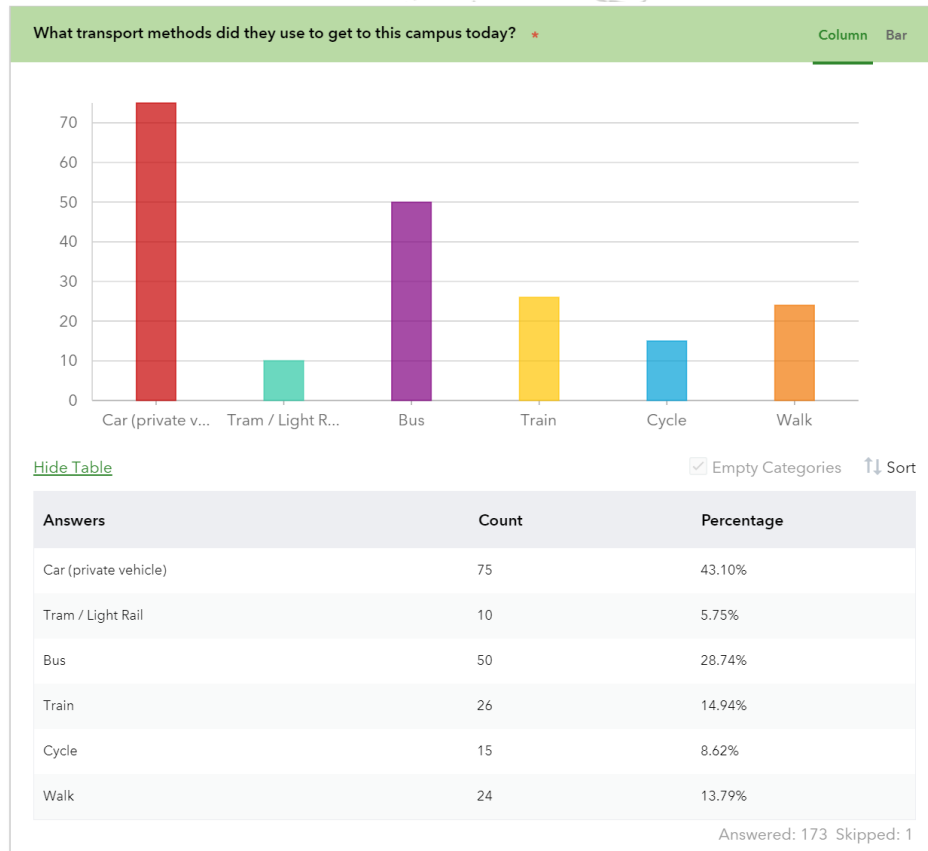**Where are you located** *

Lat: -32.77225 Lon: 146.42578
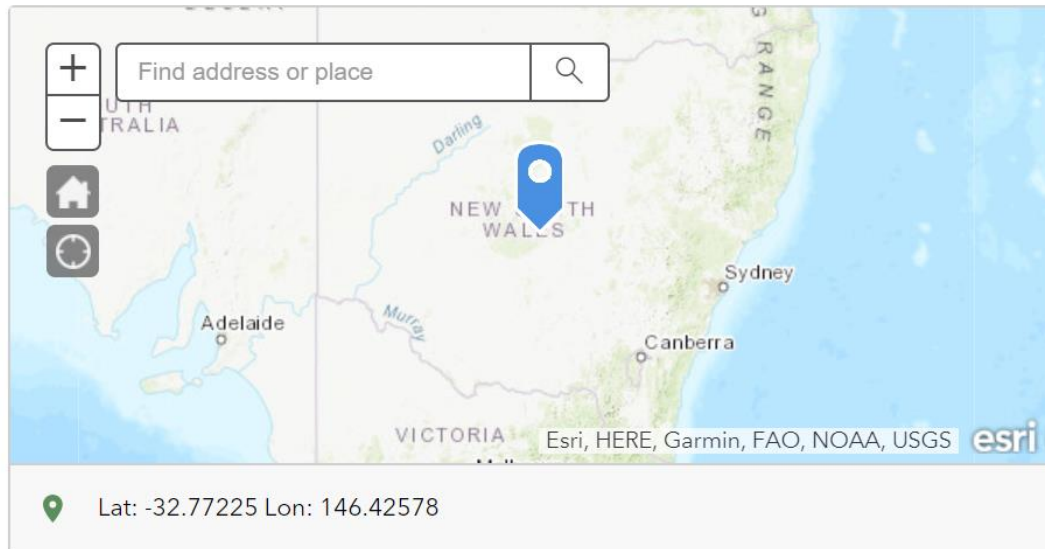
	Singleline Text		Multiline Text
⊙	Single Choice	86	Single Choice Grid
☑	Multiple Choice		Dropdown
☆	Rating	•—o	Likert
1₂³	Number	📅	Date
🕐	Time	🖼	Image
⬆	File Upload	〜	Signature
📍	GeoPoint	✉	Email
🌐	Website	🗒	Note
🖧	Group		

Viewing Results

What transport methods did they use to get to this campus today? *

Column Bar

Answers	Count	Percentage
Car (private vehicle)	75	43.10%
Tram / Light Rail	10	5.75%
Bus	50	28.74%
Train	26	14.94%
Cycle	15	8.62%
Walk	24	13.79%

Hide Table ☑ Empty Categories ↑↓ Sort

Answered: 173 Skipped: 1

Urban Heat Island

- Collecting data on our way to RFS

- Split into groups A, B and C

- Testing surface temperature vs actual temperature
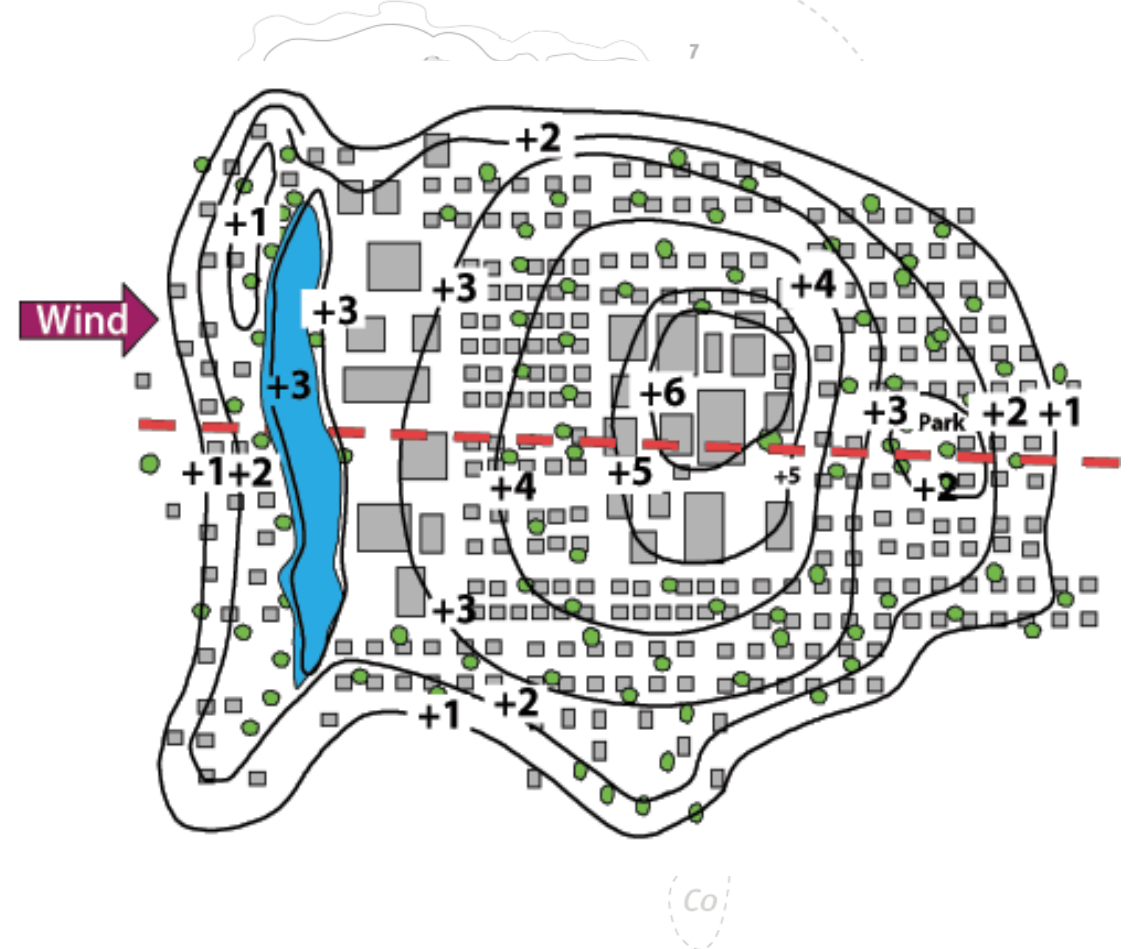
Hypothesis

1. Will we see any evidence of UHI in SOP?

2. What surfaces will be the hottest?

3. Is SOP mainly built or natural?
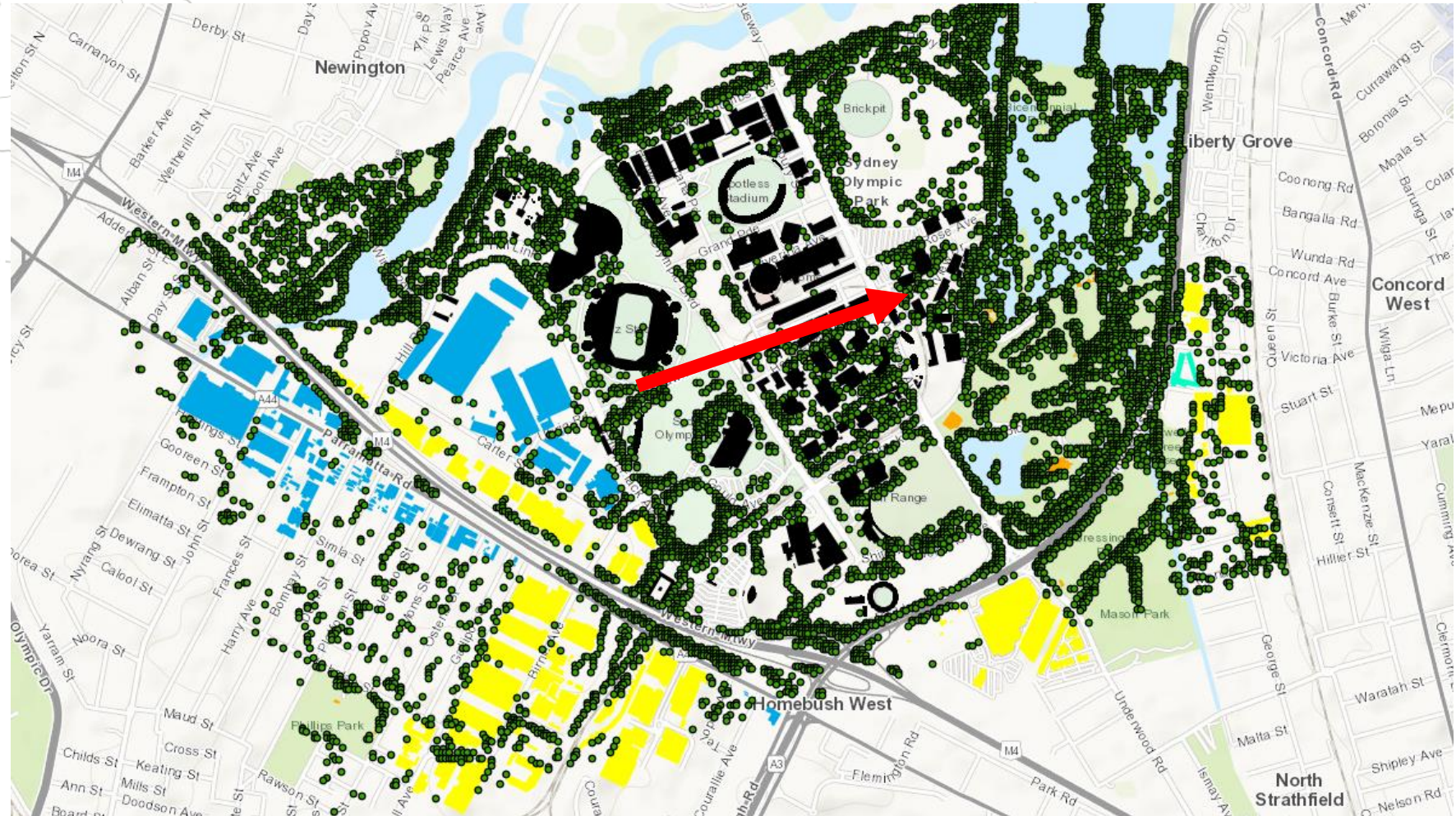
Urban Heat Island

- Upload data to tinyurl.com/gtansw2019
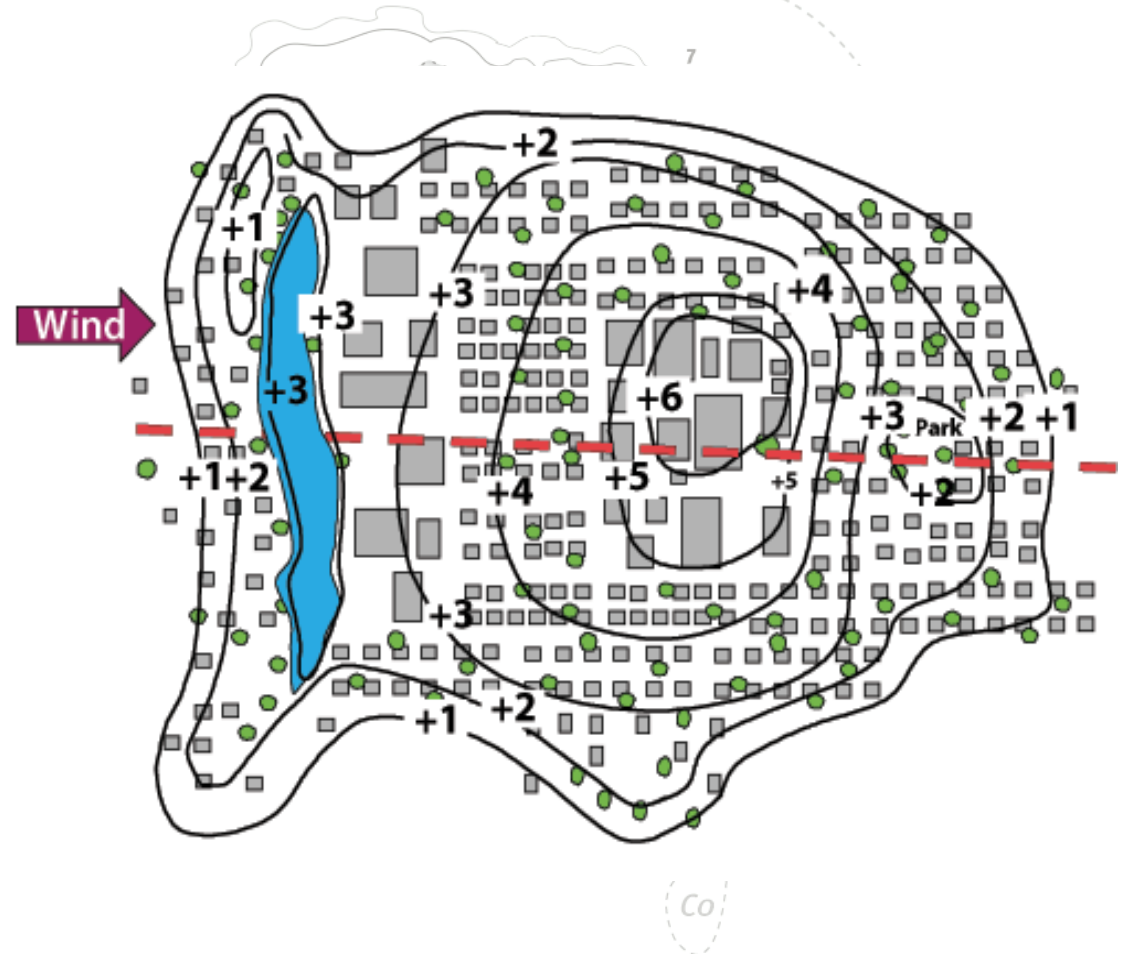
Creating a Survey123

Survey

- Complete the survey at
tinyurl.com/esriinternet
- See the results at
tinyurl.com/esriinternet-answer

Environmental changes

Students:

- investigate changes to their local environment caused by people **VR**

- explore ways people alter the environment eg clear trees for buildings, pollute the air **F**

- examine the environmental effects of people's actions eg loss of habitat, declining biodiversity, climate change **F** ✿

Part Four: Using ArcGIS Online

Layers

Living Atlas

- Esri curated content
- (Mostly) up to date
- Reliable
- Always has credits
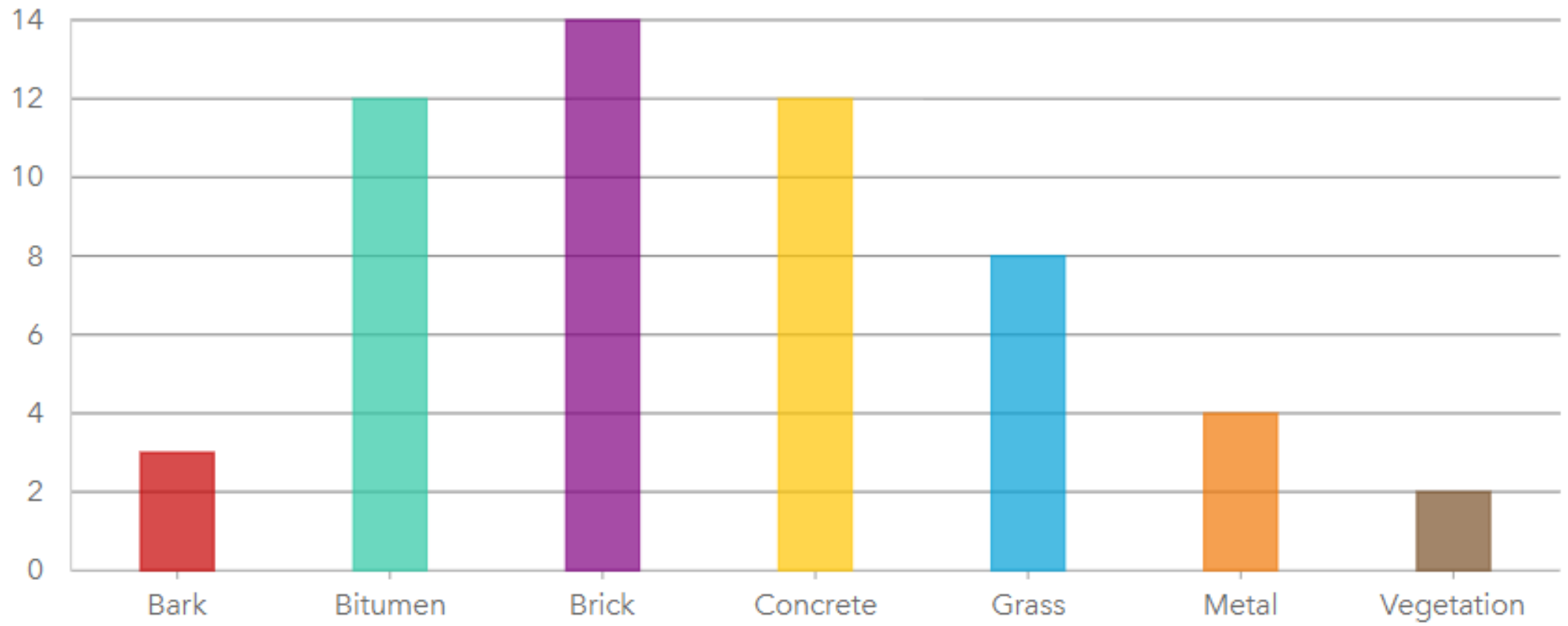
ArcGIS Online

- Organisation curated content
- Can be really useful
- Can be really terrible
- Check the credits

Surface Type

Part Five: Creating a Story Map

What is a Story Map?

"Stories are the communal currency of humanity"

Tahir Shah

Stories are the social and cultural experience of sharing information, in an entertaining way.

Maps can graphically, or geographically, give us a valuable storytelling tool

https://story.maps.arcgis.com/apps/MapSeries/index.html?appid=4aaf9036c7324b0cb5c8ee3e609126e7

Types of Story Maps

Great for long stories with accompanying maps or other multimedia

Great for virtual tours

Create a New Story

Pick an App | Ask the Pros

MAP TOUR

MAP JOURNAL

CASCADE

MAP SERIES

Great for online reports or textbooks

Great for 1 phenomena case studies by large amounts of people
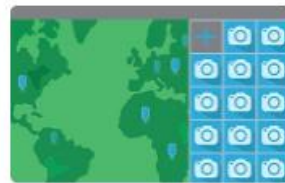
CROWDSOURCE

SHORTLIST

SWIPE/SPYGLASS

BASIC

CLOSE

= need map(s) to begin   = creates a map

Gallery

Demographics & Statistics Atlas
By Andrew Skinner, Esri

Darling Hill Road
By Allen Carroll, Esri

Surveying the South
By The Library of Congress

Behind Barbed Wire
By The Library of Congress

Why Tell Stories?
By Esri Story Maps team

FIRE SAFETY CONCERNS
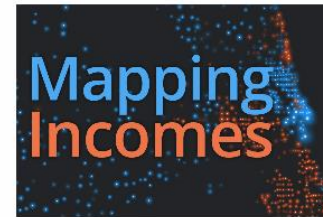By City of Brampton, Ontario, Canada

2018 Report to the Community
By St. Louis Park, MN

Damaged & Defiant: Hurricane Harvey
By Esri Story Maps team / The Dawn Project

Bellingham Housing Statistics
By City of Bellingham, WA

Mapping Incomes
By Esri Story Maps team

US School Shootings By Year: 2013 - 2018
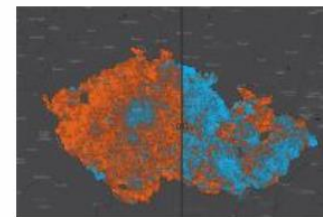By Esri Media team

Global Women's Health Indicators
By Diana Lavery, Esri

Celebrating Lost Loved Ones
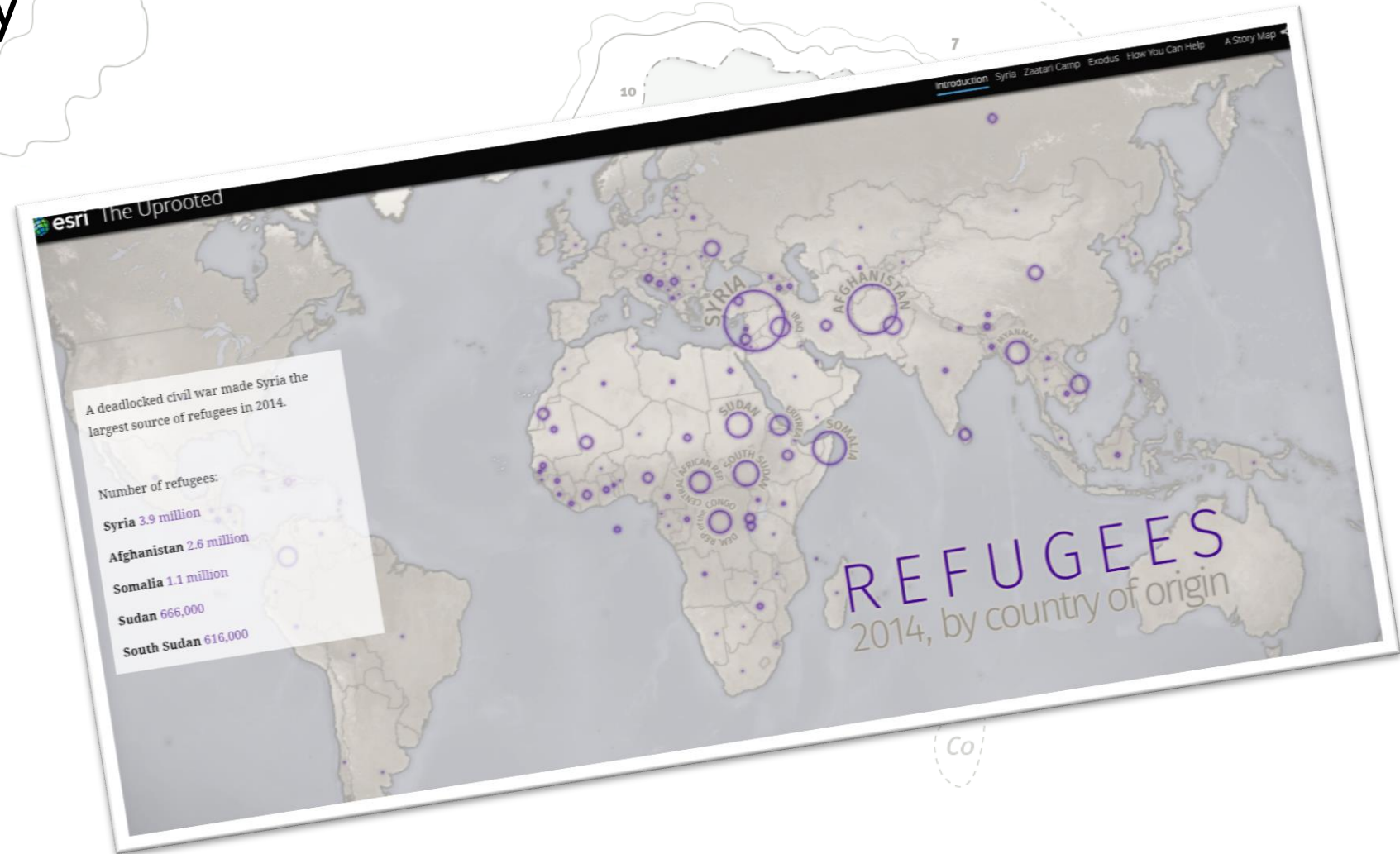By Esri / National Safety Council

Alaska's Justice Ecosystem: Building a Partners
By SRLN / Alaska Court System

Kdo rozhodl volby?
By Arcdata Praha

Browse Galley

Urban Heat Island

- **tinyurl.com/gtanswresult**