GIS for Public Health

Facilitator

Dr. Danielle Vienneau, Swiss TPH, University of Basel
Dr. Kees de Hoogh, Swiss TPH, University of Basel

Description

The physical and social environment that surrounds us plays an important part in our health and wellbeing. The geography concept of 'place' thus cannot be ignored in public health. Whether investigating the level of environmental pollution, access to recreation or health services, or the patterns or spread of disease, Geographic Information Systems (GIS) provide the standard platform for exploring spatial attributes and relationships between our environment and health.

This course offers an introduction to GIS and how it is used in public health and epidemiological research. It will introduce students to the basics including: working with and integrating spatial and non-spatial data; geographic scale and spatial precision; projections; geocoding; visualisation; thematic mapping; and understanding spatial relationships. Specific skills and tools will also be introduced in relation to methods for route analysis and for spatial linkage of exposure, contextual and confounder information for epidemiological or health risk assessment studies. Students will apply their new skills in a case study based on available datasets for defined topics.

This course will be a mix of lectures, demonstrations and practical time for hands-on data analysis in ArcGIS and QGIS (emphasis on ArcGIS).

No prior knowledge of GIS is required, though completion of pre-course work is essential preparation for this intensive course.

Objectives

Students will gain knowledge in the fundamentals of GIS for spatial data handling and analysis. By the end of the course, students will

- Understand how GIS can be used to enhance public health and research;

- Be able to acquire, add, manipulate, visualise and map spatial data in a GIS; and

- Be able to perform basic spatial analyses in ArcGIS and QGIS.

Ann Walser
Graduate Campus Manager
awalser@ssphplus.ch
+41 31 631 58 94
https://ssphplus.ch/en/graduate-campus

Dates	**Part 1 Basic training:** 2 – 6 November 2020 (class will be split in half, thus 2 days <u>in person</u> for each group. Group A: Monday, Tuesday; Group B: Wednesday, Friday. See attached schedule)
	Part 2 Project: Online project partner work (anytime during 9-27 November). Scheduled help sessions, per group, will be given week of 9-13 November 2020. Written report due 27 November 2020.
Eligibility	Open to PhD students of SSPH+ public health program; other students and external participants are welcome to apply for limited spaces
Course Structure	5-days hands on experience on GIS software, spread over 2 weeks to facilitate social distancing. Main lectures will be pre-recorded and available in advance.
	Part 1 (1 ECTS) includes exercises, in class discussion and pre-course and homework assignments. Your preference for group, if specified, will be considered. Desktop computers with GIS software installed will be used.
	Part 2 (1 ECTS) is conducted online via zoom (break out rooms). It involves working in pairs to conduct a project selected from available topics. Each pair will receive several scheduled help sessions spaced throughout the week. Assessment will be based on a short written report with well-designed and executed maps, due 2 weeks later (27 November 2020). Participants will use their own laptops in Part 2, and can decide which GIS software to use for the project. Basic software install instructions will be provided for ArcGIS (proprietary, most universities have license) and QGIS (open source), but installation is the responsibility of the participant (in consultation with your IT service if needed).
Assessment	Part 1 assignments; Part 2 written report (see above)
Credits	**Max 2 ECTS (1 ECTS for each part**; N.B it is possible to only take Part 1, but not Part 2**)**
	Preparation/homework 8 h, Contact 45 h
	(1 ECTS corresponds to appr. 25-30 hours workload)

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| **Location** | Part 1 Basic training: University of Basel, Biozentrum Room 105 |
| | Part 2 Project: Zoom breakout groups |

Course Fees	SSPH+ PhD Students	30.- CHF (processing fee)
	PPHS PhD Students	30.- CHF (processing fee)
	External MD/PhD Students	600.- CHF
	External Academics	1700.- CHF
	Other Participants	2500.- CHF

(The cost scheme depends on the Number of ECTS. Per ECTS participants are asked to pay 300,- CHF, 850,- CHF or 1250,-CHF, respectively)

| **Registration** | Please register online on our website |

| **Registration date** | **2 October 2020** |

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Schedule

Time	Duration	Day 1 <mark>Group A: Mon 2 Nov</mark> <mark>Group B: Wed 4 Nov</mark>	Day2 <mark>Group A: Tues 3 Nov</mark> <mark>Group B: Fri 6 Nov</mark>
0900-1045	1h45	Course Intro (KdH, 15min) 1.Quick start to GIS Intro (DV, 15min) Exercise 1 (1h15)	4.Projections and geocoding Intro (DV, 15min) Exercise 4 (1h30)
1045-1100	15min	Break	
1100-1200	1h	1.Quick start to GIS continued (30min) 2.Spatial relationships and analysis Intro (KdH, 15min)	4.Projections and geocoding continued (30min) Discuss Part 2 (30min)
1200-1300	1h	Lunch	
1300-1500	2h	2.Spatial relationships and analysis Exercise 2 (2h)	5.Open source GIS Intro (KdH, 15min) Exercise 7 (1h45)
1500-1515	15min	Break	
1515-1700	1h45	3.Working with raster data Intro (KdH, 15min) Exercise 3 (1h30)	6. Decision making with Route Analysis Intro (KdH, 15min) Exercise 6 (1h30)

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