Remote Sensing For Studying Environmental Health

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Introduction

• Remote sensing is a technique for measuring physical properties without direct contact.

Purpose

- Define remote sensing
- · Describe applications environmental health.

Methods for Using Remote Sensors

- Sensors can be mounted on satellites, aircraft, drones, vehicles, or people.
- · Some data are free and publicly available.
- NASA, USGS, Google Earth Engine, Google Street View
- Data are preprocessed and analyzed using software applications.
 - ArcGIS Pro, ENVI



Figure 1. Remote sensing platforms¹

Potential Applications of Remote Sensing

Examples of Data Sources & Measures	
Variable	Data Source
Air Quality	Satellite and ground sensors
Temperature	Satellite thermal infrared sensorsLand cover data
Noise	Ground level sensors
Light	Satellite nighttime images
Urbanization	Historic satellite imagery
Climate Change	 Satellite sensors that detect smoke, changes in sea level, etc.
Greenspace	 Satellite imagery of land cover Google Street View imagery

Examples of Research Questions and Approaches

- 1. Describe amount and distribution of greenspace in the sample.
 - Descriptive statistics, Getis-Ord Gi* statistic to assess distribution types
- 2. Examine whether greenspace is associated with perceived stress.
- Conduct linear regression or geographically weighted regression
- 3. Identify hot spots or areas where greenspace is higher.
 - Calculate hot spot analysis



Greenspace Example: Google Street View

Figure 2. Google Street View Green View Index exemplar²

Conclusion

- Interdisciplinary training and collaboration are vital to apply remote sensing.
- Remote sensing is a tool that can be embraced to understand the contributions of environment to human health - a key focus of nursing science.

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References

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