Methods and applications of GIS in mapping linguistic data
Why maps?

Maps can make large amounts of complicated data easy to understand.

The amount of information does not change, but is more *accessible*.

Almost everyone already has experience with maps in some form.

Maps can elicit emotions and perceptions in ways text alone cannot.

Maps acknowledge the relationships between language and space.
Language mapping

The symbolic arrangement of information about languages onto maps of (parts of) the physical world to understand relationships between languages, people, and space.

Thematic mapping: human information on top of physical geography
Digital mapping

The production or adaption of linguistic maps electronically.

Digital maps are static (nonmoving) or dynamic (moving or interactive).

Digitally available maps are accessible to wider audiences.

They can be updated, altered, and changed as necessary.

Interactive maps can present multimedia and engaging information.
GIS: Geographic Information Systems

Scientific approach to understanding spatial phenomena (Mark, 2003).

Any variety of thematic data that has geographic co-ordinates.

Large amounts of spatial data are created, modeled, archived, and disseminated using software packages with a variety of functions.
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Considered in the GIS field to be the most professional / authoritative.

Strengths

Many different programs: ArcMap, ArcReader, ArcGISPro, etc.
Also includes large databases of geographic information and tutorials.
Contains a wide variety of tools and functions for data manipulation.

Weaknesses

Most programs are prohibitively expensive for individuals ($1500/year)
Many ArcGIS files cannot be transferred to other programs
The languages of Chaharmahal va Bakhtiari Province, Iran

A distribution created using Voronoi (Thiessen) Polygons

The sparsely-populated Chaharmahal va Bakhtiari Province is located in Western Iran and is home to a wide variety of languages. Languages such as Chaharmahal and Bakhtiari are Indo-Trionic (and are related to Persian, and distantly English) while Turkic is unsurprisingly related to languages such as Turkish. This map shows a simplistic distribution of such languages in the small province, and is an example of Iran's linguistic diversity.
Residents of Jackson County, MO have, on average, access to 14.1 supermarkets within a 10 minute drive, and 0.5 supermarkets within a 10 minute walk. Compare the estimated populations in poverty or without a vehicle.
Open source GIS program available on multiple platforms (e.g. MacOS).

**Strengths**

Supported by a large community of programmers and geographers.
Contains most of the tools also available in ArcGIS.
High degree of flexibility surrounding the presentation aspect of maps.

**Weaknesses**

Each new release has its own set of bugs (becoming harder to find).
Versions on different operating systems have different features.
Google Earth

Couples GIS data with satellite imagery and aerial photography.

Most features are designed for interacting with and viewing spatial data. Users can upload their own information, but options are limited.

Advanced data manipulation and calculations are more difficult to do.

Google can use the information you upload for their own purposes.

(See the Your Content in our Services section of Google’s Privacy Policy)
GIS and linguistic/cultural empowerment

Mapping has historically been *top-down*.
   Top-down: a small group imparts information on passive viewers.

Indigenous/minority groups are at the mercy of others’ decisions.
   Those who control maps control much of the public’s knowledge.

GIS can make mapping a *bottom-up* process by communities, groups.
   Knowledge can be mapped in culturally appropriate ways.
   This is still an imperfect process: *it takes time to learn GIS.*
Some applications of GIS in language support

Engaging and meaningful education:
  Interactive/multimedia maps can teach words and phrases.

Educating others about one’s land and language:
  Maps communicate the presence of people and language(s).

Fostering pride and knowledge of traditional and historical space.
  Maps can reveal relationships between language and space.
Which GIS programs work best for you?

Your/the language’s history, current vitality, and status.
Attitudes toward language use and support.

Your/the community’s relations with majority societies.
The community’s access to computers, funding, and training.
Community members’ willingness to work with GIS projects.
Other related projects in community empowerment.
The intended audience (community members, public, government, etc.)
Final remarks

GIS can foster communities’ knowledge and interest in language information, and make this information more accessible.

Many different software packages address different needs and goals.

GIS requires specific training, skills, experience, and often funding.

There are alternatives that may incorporate GIS elements, such as cybercartography (later talks).
Selected References:


Further reading:


