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1.   Introduction

The use of geographic information in decision-making is a fundamental for everyday life that often goes unnoticed. From selecting the most efficient route to work, to finding the address of a store via a smartphone, people constantly make decisions based on the analysis of geographic information, often without realizing it.

Geographic Information Systems (GIS) are valuable tools that allow for analyzing spatial data more efficiently and accurately. Using GIS, it is possible to visualize geographic data, identify patterns and trends, and make informed decisions in various contexts, including urban planning, natural resource management, traffic management, and much more. In summary, GIS is an essential tool for improving the efficiency and accuracy of decision-making based on geographic information.

According to López Trigal (2015), a GIS is an integrated system composed of hardware, software, data, and users that allows for capture, storage, manage and analyze digital information, besides the creation of graphics and maps, including the representation of alphanumeric data. Burrough (1986) defines GIS as a computerized model of geographic reality, designed to meet specific information needs, allowing for the creation, sharing, and application of useful information based on data and maps.

For many decades, GIS has been used in issues related to land and natural resource management, environment, military coordination, and in contexts related to Earth sciences, such as geography and geology. Recently, its potential use has also been explored in unprecedented fields as in Human and Social Sciences research (Del Bosque, Fernández Freire, Martín-Forero Morente, & Pérez Asensio, 2012).

ArcGIS Pro is ESRI's flagship application, encompassing classic desktop GIS functionality. ArcGIS Pro includes a set of tools that enable the visualization and management of geographic information, and has an extensible architecture, involving new functionalities. These extensions include the Spatial Analyst, 3D Analyst, and the well-known Geostatistical Analyst.

The objective of this technical manual is to introduce basic GIS concepts through the exploration of case studies that cover the entire map creation process. Although ArcGIS Pro has a wealth of tools, it is important to note that not all of them can be covered exhaustively. Instead, the purpose of this document is to help users become familiar with