Introduction:

In recent years, urban centers are undergoing significant changes due to shifting demographics and evolving urban dynamics. However, administrative boundaries have remained largely unchanged, highlighting the need for a reevaluation in light of these transformations. The city of Lisbon is no exception, and in response to these challenges, the Portuguese government implemented administrative reforms in July 2012. The Parliament approved a proposal, including Chapter Two regarding the reconfiguration of Lisbon's parish map, which stipulated that the reconfiguration was based on the principles of territorial organization rationalization and adjustment, with the purpose of creating larger and more balanced parishes. The original 53 parishes were subjected to modifications such as merging or maintenance, resulting in the current 24 parishes that came into effect in January 2013. The implementation of Lisbon's administrative reform was a complex and challenging process, but it resulted in a more modern and efficient administrative structure for the city. Notably, the most modern and trendsetting parish, Parque das Nações(Expo), was born from this reform.

In the classic paper on re-scaling cities (Friedmann & Wolff, 1982), the following important points are expressed viz: The importance of understanding the changing territorial organization of cities and regions in the context of global capitalism, as this can impact the spatial distribution of economic activities, populations, and resources. The need for a comprehensive and nuanced approach to studying world cities that takes into account multiple factors, such as political economy, culture, and social processes.

The potential for world cities to be sites of both inequality and innovation, where the concentration of economic and social activities can create both opportunities and challenges for different segments of the population.

This study aims to propose a redistricting plan for the Lisbon administrative area based on a data-driven approach, utilizing the 2011 census data to inform the decision-making process. The objective of this research is to provide a comprehensive and well-informed redistricting proposal that takes into account the current and future needs of Lisbon's diverse population. By analyzing key demographic variables, such as population density, age distribution, education, employment, housing, and migration patterns, we seek to identify trends, disparities, and opportunities that can inform the redistricting process. In doing so, we aim to ensure that the proposed administrative boundaries are equitable, functional, and reflective of the city's changing demographics.

The study will commence with a meticulous examination of Lisbon's current administrative structure, followed by an analysis of the 2011 census data to underscore the patterns and trends that will inform the proposed redistricting plan. Subsequently, we will utilize advanced methods such as spatial cluster analysis from data science disciplines, regionalization studies, and other relevant tools to pinpoint Lisbon's specific challenges and opportunities at the granular level of the smallest geographical units. This will allow us to outline the goals and objectives of the redistricting process more effectively. Based on these findings, a comprehensive redistricting plan will be developed, with recommendations for redefining administrative boundaries, reallocating resources, and implementing new policies and plans to address the identified needs.

Ultimately, this research aims to contribute to the creation of a more equitable, functional, and responsive administrative framework that can better serve the diverse needs of Lisbon's residents, both now and in the future.

The structure of this paper is as follows: In Section 2, a comprehensive analysis of previous and related studies is presented. Section 3 provides an in-depth discussion on the motivation and significance of this research. Section 4 outlines the methodology employed in this study, while Section 5 elaborates on the step-by-step process from cluster analysis to the final re-regional division plan. The discussion of the results and their implications are presented in Section 6. Finally, Section 7 concludes the paper and provides suggestions for future research endeavors.