

Identifying New Business Opportunities In South Dublin City, Ireland

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1. Introduction

1.1 Background

The European country of Ireland has been experiencing an economic boom for the past few decades. Whereas once the nation served as a source of poor immigrants, escaping poverty or even famine, today Ireland ranks sixth in global GDP-per-Capita rankings (at \$76,745 per person), behind only Brunei, Singapore, Luxembourg, Macao, and Qatar (\$79,003pp, \$94,105pp, \$107,641pp, \$115,367pp, and \$128,647pp respectively).

Ireland's economy has been growing steadily since the 2008 Economic Crisis, with the latest figures showing that GDP grew by 8.2% during the 2018-2019 Fiscal Year, to \$382.5 billion.

Dublin City, the capital of Ireland, contains much of this wealth: 28% of the Irish population, and \$115 billion GDP. With a GDP-per-Capita of \$86,649 per person, Dublin is amongst the wealthiest cities in the world. As Dublin's GDP increases (1.1% growth during 2018-2019 Fiscal Year), and the city's population increases (1.3% growth during 2018 calendar year), the economic opportunity of the city is set to steadily increase.

As the city sprawls outwards, beyond its traditional bounds, the surrounding regions are experiencing rapid development, in the forms of residential, commercial, and light industrial infrastructure. One such region which has undergone massive changes over the past twenty years, is Dún Laoghaire–Rathdown (pronounced *done-leery-rath-down*).

During each passing year, acres and acres of farmland are converted into housing estates, shopping malls, apartment blocks, and high-rise offices. Enormous potential exists for new businesses and services to set up shop amongst this rapid expansion. Since Ireland is a European Union member state, these opportunities extend to potential business-owners across the entire continent, who have full rights to migrate to, and create businesses, in Dublin.

2.2 Business Problem

The aim of this project is to analyse the county of Dún Laoghaire–Rathdown, and identify opportunities for new businesses and services, in a range of sectors. Specific areas within the Dún Laoghaire–Rathdown region, which have experienced growth in recent years, will be highlighted, as well as specific businesses and services which show potential in these areas.

2.3 Value of Project

This report will identify business opportunities that demonstrate a high-level of economic promise, in precise regions of a major European Union city, that are undergoing monetary and population growth. As such, the findings will prove valuable to potential investors and entrepreneurs from Dublin, from Ireland, or from anywhere within the EU.

2. Data Description

2.1 Data Sources

Previous population growth within the Dún Laoghaire–Rathdown region will be used as an indicator of both future population growth, and future economic growth potential. Ireland holds a census every five years. As of the time of writing, the most recent censuses were held in 2011, and 2016. The findings of the census are published online by the Central Statistics Office (CSO), and can be found at: www.cso.ie.

As part of the office's analysis into the 2016 census, the CSO compared the populations of every Electoral District within the Dún Laoghaire–Rathdown region, to their 2011 values. A table showing the 2011 and 2016 populations for each District is available at: www.cso.ie/en/media/csoie/census/documents/census2016/Table_5.pdf.

As well as predicting the future economic and population growth in each Dún Laoghaire–Rathdown Electoral District, this report also analyses the business potential of a range of services and sectors in each, by reviewing the existing businesses in each District.

To find existing businesses, the coordinates for each Electoral District is passed into Foursquare, a social networking service that can provide real-time data on shops, restaurants, gyms, and more. The data was gathered through a series of requests through Foursquare's Developer application program interface, found at: www.developer.foursquare.com.

2.2 Data Wrangling

Due to the accurate recording and publishing of population data by the CSO, very little wrangling was required. For each Electoral District within the Dún Laoghaire–Rathdown region, the following was recorded into a DataFrame: Name, 2011 Population, 2016 Population (total), 2016 Population (male), 2016 Population (female), 2011-2016 Percentage Population Change.

To find the latitude and longitude coordinates of each Electoral District, the Names of the Districts had to be transformed into formats readable by the Python geocoding client, called Geopy. This was achieved by identifying the Names containing hyphens, deleting the string sections that preceded the hyphens (as well as the hyphens and spaces), and appending the strings with ", Dublin, Ireland".

The average population density of Dún Laoghaire–Rathdown is 1,700 persons/km². Using the population data from the CSO, a square-kilometer estimate was therefore able to be made for each Electoral District. The Districts were each modelled as circles, with centre points as defined by Geopy, and radii as calculated from their square-kilometer estimates.

When calling on the Foursquare API to provide business data for each Electoral District, the centre points (X) and radii (Y) of each model were used to find all venues with X metres, from point Y.

2.3 Relevant Features

After the data was collected from various sources, and wrangled into usable formats, the following features were used for analysis:

- Name of Electoral District
- 2016 Population of Electoral District
- 2011 to 2016 Population Growth of Electoral District
- Number of venues in Electoral District in each business category
- Percentage of total venues claimed by each category

3. Methodology

4. Results

5. Discussion

6. Conclusion