# IBM Capstone Project for Data Sciences

## Exploring the desert: Analysis of venues density in Tucson - AZ

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## 1. Introduction

Figure 1 - View of Downtown Tucson. Source: pixabay.com

The city of Tucson is located in the south of the state of Arizona in the United States. It is home of the 33rd largest population in the country, 2nd in its state, spread over 624 $km^2$. Although it stands among the most populated cities, its population density of 888 people/km² is low, meaning that the city buildings are rather scattered over the area than condensed. The city has not grown as much vertically as horizontally, so, tall buildings are not so common. Moreover, the city stands in the Sonoran Desert, so temperatures around 40ºC are common during 5 months, every year.

Moving around the city can be difficult, given the aforementioned conditions. The aim of this project is to provide meaningful information about the density of of venues in different Tucson neighborhoods to provide support for several choices, such as suitable areas to live, depending on one's need of public transportation, a potential good location for a business, priority areas for an enhancement in public transportation and other matters.

## 2. Data

### 2.1. Neighborhood names

The website *city-data.com* provides a range of information for US neighborhoods, including race and of inhabitants, household income, house values, education, means of transportation and many other information. From this source, we obtained the names of Tucson's neighborhoods.

### 2.2. The Foursquare API

The Foursquare API provides information about millions of venues and users from all over the world. With a developer's account, it is possible to search venues based on its location, category, name and many other features. In this study, we are interested in venues of all categories around specific geographic coordinates - the coordinates of our neighborhoods.