Spatial Analytics for Rancho Cucamonga:
A City on a Map

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EXECUTIVE SUMMARY

Managing a city with its different departments, resources and assets can be a challenging problem especially when considering the dynamic events (fire, traffic accidents, 911 calls, road closures, etc. ...) that take place each day. The overall performance of how a city is performing depends on the efficiency of different departments. Taking into account that the needed information resides in the silos of different departments, there is a need to connect the dots to see the overall picture. The operational period of the city of Rancho Cucamonga starts at 8:00 AM and ends at 4:00 PM. During that period, the city manager and other department directors need to track incidents and events happing in the city in order to respond effectively and in a timely matter. This case shows how a city has used location analytics in an innovative way to provide the capability for city management to monitor daily incidents using a single dashboard screen.

Keywords: *Decision Making, Geographic Information System (GIS), Local Government, Operational Dashboard, Spatial Analytics*

ORGANIZATIONAL BACKGROUND

The City

Rancho Cucamonga is a city located 40 miles east of Los Angeles in the region of Southern California in Inland Empire. Rancho Cucamonga is relatively a small city covering just over 39.87 sq. miles (103.3 km^2) (Wikipedia, 2014). The city is positioned between three major highways, I-10, I-15 and I-210 and near Ontario airport which makes the city ideal for logistics and distribution businesses. The city is also a major destination for families coming from orange county and retirees for its schools and assisted living homes. The city was incorporated in 1977 (Community & Economic Profile, 2012) from agricultural communities mainly. About 168,181 people live in the city (Community & Economic Profile, 2012). The median household income is $72,713 (Eaton, 2013). The city is comprised of a mixture of races including Whites 39.8%, Hispanic/Latino 36.4%, Asians 11.3%, African American 9.1%, Native American 0.2% and others 3.2% (Eaton,

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2013). The age distribution is 0-9 years (14.3%), 10-19 (14.6%), 20-24 (6.4%), 25-34 (15.0%), 35-44 (15.7%), 45-54 (16.9%) and 6.8% of city residents are 65 years or older (Community & Economic Profile, 2012). Rancho is one of the safest cities in the state of California and even in the country with just over 24.3 major crimes per 1,000 people (Community & Economic Profile, 2012). All of these attributes placed the city as 42nd in the best places to live by Money magazine in 2006 (Money, 2006).

Management Structure

The city is managed by elected and appointed officials. The Administrative Services organizational chart is presented in Figure 1. The city is governed by a council-manager form of government ("FAQ: council-manager", n.d.). Four city council members, mayor, city clerk and city treasurer are elected by the voters of the city ("FAQ: run for office", n.d.). Those elected officials hire a city manager to run the daily operations of the city and also they choose a city attorney. The city manager once appointed, choses an assistant city manager. The council focuses on long term planning, approving budgets and setting polices and legislations while the city manager carries out the council's policies, supervises the city's staff and reports the city's status to the council ("FAQ: City Manager's function", n.d.). The city consists of many departments including the City Manager's Office, Administrative Services, Animal Services, Building and Safety, City Clerk's Office, Community Services, Engineering and Public Works, Fire Protection District, Library Services, Planning, Police Department, and Redevelopment Agency. The head of the administrative services serves as the Deputy City Manager. The administrative services department includes many divisions that serve other city departments including finance, GIS/special districts, human resources, information services (IT) and purchasing. The city has a staff of about 486 full time employees (City of Rancho Cucamonga, 2011) plus 400-500 part time employees and volunteers. The annual financial report on June 30, 2012 showed that the city's various revenues had $235.653 million in income and $209.020 million in expenses with a $26.632 million increase in net asset compared to the previous year (Lance et al., 2012). This financial status, allows the city to carry out new innovative cutting edge technology projects along with various health initiatives and programs.

GIS Division

Geographic Information Systems (GIS) are computer systems able to manipulate spatial data in terms of storing, mapping, measuring and analyzing (Pick, 2005). The simplest way to think about it is to imagine it as an electronic map. GIS has been used in governments since the 1980s and businesses now are starting to realize the power of it (Pick, 2005). GIS was used mainly by planning and urban development departments then made its way to logistics, marketing and information technology (Keenan, 2005).

In 1985, Rancho Cucamonga started developing some base-maps for the entire city primarily for planning of vacant lands (most of the city was not built out yet at that time). There was no GIS division at that time so the city contracted an outside vendor to do that. In 1986, Ingrid Bruce (the head of the GIS division) came to the city of Rancho Cucamonga to start the GIS division in the city. The division started with Jack Lam, who was the director of community development (planning, building safety and engineering) then later became the second city manager. The GIS division moved with the city manager when he was promoted the city manager to his office. It was a very strategic move on his part. The division has no allegiance with any given department and serves all the city's departments. With this structure, the GIS division can look at the big picture of the city and isn't buried under any division (the IT for example) and devoted to the daily operations of that department alone. The GIS division at Rancho Cucamonga did not limit itself to the initial planning of vacant lands; it