**README - Neighborhood Mapping by Estimated Rent**

May 3, 2019

Over the past two weeks, I created a set of maps that show current estimated apartment rents at the neighborhood level in Los Angeles, as well as change in rent by neighborhood since 2011. I also [graphed monthly rents at the neighborhood level](https://docs.google.com/spreadsheets/d/1qiB3ObPAMcYeE2XQs3N2whDm3q1HoCGXoDm9-O9cEI4/edit#gid=1624583649), allowing us to visualize rent trends over the past eight years.

My main conclusions:

* In 2019, the highest rents were generally observed on the Westside
* Since 2011, the largest % increase in rents were observed in South LA. However, South LA generally has the lowest rents in the city.
* Rents were generally flat between 2011-13, started rising sharply in summer 2014, leveled off or fell in late 2017/early 2018. Since then:
  + South LA, Eastside, and Valley rents have dipped slightly or flattened out
  + Westside rents have continued to rise slowly

I’ve uploaded all my files to [Anthony D’s folder - SHARED](https://drive.google.com/open?id=10xNSoWQjUteWwmEwk1nwZqCtsygmrRfV) in the market value rental analysis folder on Google Drive, as well as to the Github folder.

**Data**

This analysis relies on a Zillow dataset that estimates monthly rent for apartments at the neighborhood level, [ZRI Time Series: Multifamily ($)](https://www.zillow.com/research/data/).

* It has data for 92 LA neighborhoods, and goes back to November 2010.
* This is a dataset of **rental values**, not **rental listings.** The Zillow Rent Index (ZRI) is a smoothed measure of the median estimated market rate rent across a given region and housing type. It is unaffected by the mix of homes for rent at any particular time, which makes temporal comparisons of rents more valid since the index is tracking the rents for a consistent stock of inventory. [Here’s more info](https://www.zillow.com/research/zillow-rent-index-methodology-2393/) on the methodology.
* Granted, there are probably some shortcomings in the ZRI methodology:
  + No way to draw distinction between studios, 1BR, 2BR prices, they’re all bucketed in “multifamily”
  + I’m not sure if/how the dataset accounts for rent control (e.g. are renters actually paying the estimated prices?)
  + Some neighborhoods (e.g. Beverly Glen, Bel Air) probably have very few apartments, so the estimate might be less grounded in hard data.
* Having said that, I would think that this dataset is adequate for visualizing neighborhood-level trends and is “directionally correct”.

[I also downloaded a shapefile](http://geohub.lacity.org/datasets/d6c55385a0e749519f238b77135eafac_0?page=9) of Los Angeles neighborhood geographic boundaries from LA Geo Hub (the city’s data library). This uses the [LA Times](http://maps.latimes.com/neighborhoods/)’ definition of neighborhoods, making it possible for us to draw neighborhood boundaries on maps in R.

* As you’d imagine, Zillow and the LA Times define some neighborhoods differently. As best I could, I compared maps of the LA Times definition of neighborhoods to maps of how Zillow defines neighborhoods ([here’s an example](https://www.zillow.com/south-los-angeles-los-angeles-ca/)) to align Zillow prices to LA Times neighborhoods. (See “[Neighborhood Matching.xlsx](https://drive.google.com/open?id=10xNSoWQjUteWwmEwk1nwZqCtsygmrRfV)”).

**Code Details**

First, download [zri.R](https://drive.google.com/open?id=1_sKHFiIHJmN_5FoDn6w2584JpaqAECe7) and run it in R. Install all packages and change line 41 to match your working drive. Put [zri\_mfr\_rent.csv](https://drive.google.com/open?id=1FO9xcOJqhWhGvu1EfQZnV2xzRWq3bzq3), [name\_match.csv](https://drive.google.com/open?id=1Z5EVMW-0KQcfxs4hYkQnEngscdJ9u38F), and the [LA\_Times\_Neighborhoods](https://drive.google.com/open?id=1SddQv7lr2wGm2pPAUct2Ou2xPyR66hg3) folder in the working drive (you’ll need them).

* Rows 42-48: I drop all Zillow neighborhood rows that aren’t in Los Angeles, and I review the dataset.
* Rows 49-154: I create a column called “id”, which I use to add the LA Times definition of neighborhoods to the Zillow dataset (which uses “RegionName” to define neighborhood”.) I do this so that Zillow neighborhood prices can be matched to LA Times-defined neighborhoods.
* Rows 157-163: I upload name\_match.csv, a file that I created which aggregates neighborhoods at the “major\_area” (e.g. Eastside, Valley) and “minor\_area” level (e.g. East LA, Antelope Valley). I didn’t do anything with it in the code, but it could be a useful way to subset the data later.
* Rows 166-180: I create a smaller dataset, limited to March rents only, and compute changes in rent from 2011-13, 2013-15, 2015-17, 2017-19, and 2011-19.
* Rows 184-192: I import neighborhood boundaries (essentially a huge series of lat-longs) and bind them to the price dataframe
* Rows 196-224: I create maps showing March 2019 rents across LA by neighborhood
* Rows 232-304: I create maps showing March 2019 rents across the Eastside, Westside, Valley, and South LA by neighborhood
* Rows 308-474: I create maps showing changes in rent from 2011-13, 2013-15, 2015-17, 2017-19, and 2011-19 across the Eastside, Westside, Valley, and South LA by neighborhood
* Rows 477-506: I export the maps as .png files.