THE LOS ANGELES BUS MAP

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ABSTRACT

We present a map created to show the Los Angeles Bus Network, harnessing data publicly available via the NextBus application-programming interface (API). One full day's worth of data is shown, with every point representing a time stamped GPS location of a Metro Bus. The map automatically connects each point and calculates the speed of the bus between both points, with faster buses represented by green lines and slower buses represented by red lines. This map is currently in an online format (at www.labusmap.com), but could easily be adapted to print format to meet required specifications.

INTRODUCTION

There has been a growing interest in urban systems, especially public transportation, and transit enthusiasts may take it upon themselves to "redesign" transit maps using considerable artistic license. Remarkably, however, this creativity is devoted almost exclusively to rail service, with comparatively less focus on the artistic portrayal of bus maps.

Los Angeles is a perfect example of this phenomenon. Despite having one the most extensive bus networks in the United States, and the second largest number of bus passenger trips in the nation (*1*), the improvement and expansion of the skeletal rail network receives most of the public's attention. There have been numerous "dream maps" about the possibilities of future transit in Los Angeles (*2*), and nearly all of these maps feature a built-out rail network while ignoring the current bus system.

This unparalleled ability of rail to spark the public's imagination may be one reason that rail expansion receives the lion's share of public capital expansion funds. The 2008 Measure R in Los Angeles County, for example, allocated public capital funding in favor of rail projects. From the 13,790 millions for transit capital projects identified in Measure R's expenditure plan (*3*), about 90% of the fund are dedicated to rail (excluding the yet undecided Sepulveda I-405 Corridor Project).

Bus networks are rarely thought of as systems in the same framework as rail. The purpose of this map is to reveal the simple beauty of existing bus networks and hopefully persuade the public to look beyond whether it is rail or rubber that hits the pavement--rather, people should think of networks in terms of coverage, frequency, and speed.

THE LOS ANGELES BUS MAP

The current medium through which the map is accessible is an online website, which can be viewed at www.labusmap.com. The website is actually made up of two different maps, one for the Metro Local service and one for the Metro Rapid service. The Local network, with stops every ¼ mile or more frequently, makes up most of the service for Los Angeles. The Metro Rapid service, introduced only in June 2000, runs faster service by reducing the number of stops and employing transit signal priority strategies. Users may toggle between the two maps to explore differences in route coverage and speed.

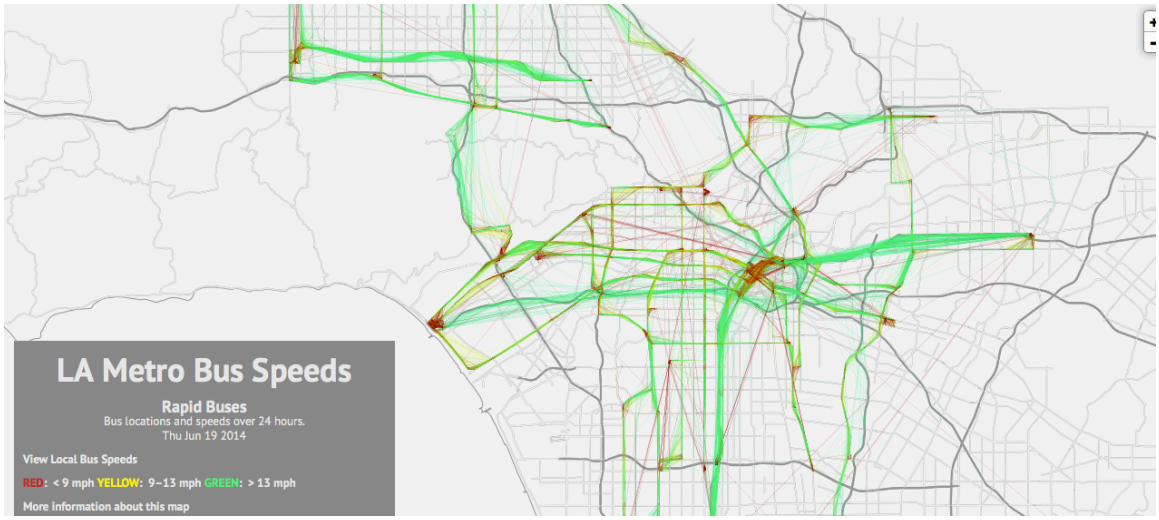

Figure 1. Los Angeles Metro Rapid System

Figure 2. Los Angeles Metro Local System

Data Collection

Recent advancements in information technology have made vast amounts of data available to the general public, often through application programming interfaces (APIs). This map harnesses data from the Nextbus API, which publishes real-time information about the position of each Metro Bus, and compiles one day's worth of service for all Metro buses in Los Angeles County. Each point on the map is a GPS coordinate with an associated timestamp, with lines automatically drawn between each of the points to represent the path traveled. The geographical information on the map, including roads and city labels, is taken from crowd-sourced data at www.openstreetmaps.org.

Design

The background of the map is white, while the local roads colored light gray. The freeways are colored a bit darker since they often serve as an orienting tool in Los Angeles. However, bright colors are used to draw attention to the bus service, which color-coded by the speed of the bus between each set of points. Slow buses less than 9 mph are red, medium-speed buses are yellow with travel speeds between 9 mph and 13 mph, and fast buses traveling 13 mph or greater are green. When the map is viewed online, there are three zoom levels so users can focus on specific areas. Upon zooming in, the map reveals the location of cities within Los Angeles County for additional aid in navigation.

Although the map is currently in a web-only format, it could easily be adapted for print and fit established parameters.

Takeaway

Beyond aesthetic pleasure, this map is useful for broadly looking at the entire system and finding areas where performance is above average, satisfactory, or of concern. Planners and operators can locate specific arteries and areas of Los Angeles County where the bus performance might suffer. The method for creating this map could easily be adopted in any other city with a bus system that publishes real-time data on the location of it's buses, either through NextBus or an API created by the agency.

1 **REFERENCES**

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