

# UC Office of the President

## Policy Briefs

### Title

The General Transit Feed Specification Makes Trip-Planning Easier — Especially During a Pandemic — Yet its Use by California Agencies is Uneven

### Permalink

<https://escholarship.org/uc/item/9j94q60f>

### Authors

Frick, Karen Trapenberg, PhD  
Kumar, Tanu, PhD  
Li, Ruyin  
et al.

### Publication Date

2020-07-09

### DOI

10.7922/G26W98CS

# The General Transit Feed Specification Makes Trip-Planning Easier—Especially During a Pandemic— Yet its Use by California Agencies is Uneven

Karen Trapenberg Frick, Tanu Kumar, Ruyin Li, Atharva Patil, and Alison Post  
Institute of Transportation Studies, University of California, Berkeley

July 2020

## Issue

Developed in 2005, the General Transit Feed Specification (GTFS) is making transit trip planning easier by allowing public transportation agencies to share transit schedules in an electronic format that can be used by a variety of trip-planning applications, such as Google Maps. The GTFS can be used to share *static* transit schedules (GTFS-s) or provide real-time information on transit vehicle arrivals and departures (GTFS-r). Providing real-time updates has proven to be exceptionally valuable during the COVID-19 pandemic. For example, between January 13th and April 25th of this year Apple estimates that transit use in the United States decreased by 75%<sup>1</sup>, which caused many public transit providers to modify their services. The California Integrated Travel Project (CITP) recently called for widespread adoption of GTFS-s and GTFS-r<sup>2</sup>; however, little is known about GTFS use across agencies and, in turn, the barriers to widespread adoption.

## Key Research Findings

To better understand GTFS use patterns, researchers at UC Berkeley merged several datasets, including GTFS-s data webscraped from OpenMobility Data ([www.transitfeeds.com](http://www.transitfeeds.com)), GTFS-r data provided by the CITP, and geographic data from the National Transit Database (NTD) and the Census Bureau<sup>3</sup>. Researchers also randomly selected 30 transit agencies representing different levels of GTFS adoption (i.e., use GTFS-r, use GTFS-s, do no use GTFS) to determine how agencies were communicating service changes in response to COVID-19. Key research findings are summarized here:

**GTFS-s (static) feeds are frequently published, but the prevalence of GTFS-r (real-time) feeds remains low.** Of the 172 agencies included in the dataset used in the study, 83 (54%) had published GTFS-s feeds. Only 32 agencies in California (19%) had published real-time GTFS-r feeds.

**Small and rural agencies are less likely to publish either type of GTFS feeds.** Of the 97 small and rural agencies included in the NTD dataset, 36 of them (37%) publish GTFS-s feeds, and 7 (7%) publish GTFS-r feeds. In comparison, of the 75 large or urban agencies, in the dataset, 57 (76%) publish GTFS-s feeds and 25 (33%) publish GTFS-r feeds.

**Independent public transportation agencies are more likely to publish real-time GTFS feeds than transit agencies managed by a city or county.** The NTD groups transit agencies by type: a) independent public agencies/authorities (i.e., a public transit agency/authority with a governance structure separate from the city, county and/or region the agency serves); b) city, county or local government units (which is the majority of transit agencies in California); and c) other types (e.g., universities, tribes, private corporations, regional councils of government). Independent public agencies/authorities publish GTFS-r at higher rates than city, county, or local government units (Figure 1). This result holds when controlling for whether or not the agency is based in a rural area, service area size, service area population, local tax rates or area mean household income.

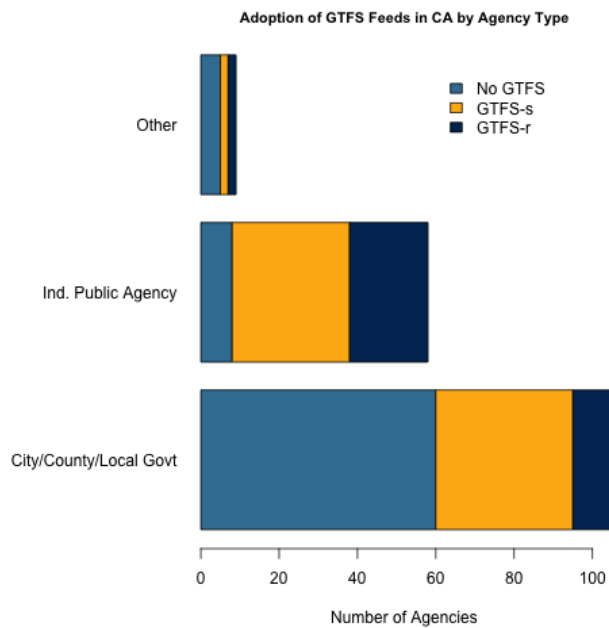


Figure 1. Adoption of GTFS Feeds in California by Agency Type.

**A small portion of transit service modifications in response to COVID-19 were published in Google Maps.** Of the 30 agencies surveyed, 23 (77%) modified service in response to the COVID-19 pandemic; however, only a small subset of these changes was reflected in Google Maps. Of the 10 agencies using GTFS-r during normal operations, 8 continued to use GTFS-r during the pandemic. In contrast, while 8 of the 10 agencies using GTFS-s during normal

operations made some type of service modification or cancellation, these changes were only reflected in the public GTFS-s displayed through Google Maps for 3 of the 8 agencies.

This finding is critical from a social equity standpoint. A recent survey of over 20,000 transit riders performed by the company behind the Transit mobile app found that current transit riders are more likely to be women, in lower-income brackets, and African American, Latino, or Native American as compared to transit riders prior to the pandemic<sup>4</sup>. These trends are in line with recent research finding that workers in sectors characterized by low rates of working from home or close physical contact with others are more economically vulnerable, and rely more on public transit<sup>5</sup>. This data from the COVID-19 pandemic shows that wider adoption of GTFS-r in particular would make it easier for vulnerable populations to learn of and cope with service modifications.

### More Information

Additional information and details about the research highlighted in this brief can be found in a background paper available at: [www.ucits.org/research-project/2020-31](http://www.ucits.org/research-project/2020-31). For questions and/or comments concerning the information provided in this brief, please contact Karen Trapenberg Frick at [kfrick@berkeley.edu](mailto:kfrick@berkeley.edu).

<sup>1</sup>Apple has made this data public beginning January 13, 2020. The data for this brief was collected on April 25, 2020. Find more information here: [www.apple.com/covid10/mobility](http://www.apple.com/covid10/mobility).

<sup>2</sup>Analysis of Proposed Cal-ITP Initiatives: A Feasibility Study. California Integrated Travel Project. Sacramento, 24 April 2020 <https://dot.ca.gov/cal-itp>.

<sup>3</sup>The NTD contains all California agencies that receive funding from the Federal Transit Administration. The database excludes 16 other agencies that account for only one percent of ridership in the state.

<sup>4</sup>More information available at <https://transitapp.com/coronavirus>

<sup>5</sup>See Mongey, Simon and Pilosoph, Laura and Weinberg, Alex, Which Workers Bear the Burden of Social Distancing Policies? (April 26, 2020). University of Chicago, Becker Friedman Institute for Economics Working Paper No. 2020-51. <http://dx.doi.org/10.2139/ssrn.3586077>

Research presented in this policy brief was made possible through funding received by the University of California Institute of Transportation Studies (UC ITS) from the State of California through the Public Transportation Account and the Road Repair and Accountability Act of 2017 (Senate Bill 1). The UC ITS is a network of faculty, research and administrative staff, and students dedicated to advancing the state of the art in transportation engineering, planning, and policy for the people of California. Established by the Legislature in 1947, the UC ITS has branches at UC Berkeley, UC Davis, UC Irvine, and UCLA.

Project ID UC-ITS-2020-31 | DOI: 10.7922/G26W98CS