

Parking Data Draft

INTRODUCTION

To develop a General Transit Feed Specification(GTFS) to integrate parking information with third party platforms like Google and resonate with the common format for public transportation schedules and associated geographic information. Our purpose is to facilitate public platforms to alleviate the problem of parking and improve the user-experience of the Park and Ride facilities. This will support real-time parking information across a broad range of parking lots. The below information defines the format of parking data needed to support the focus of our project.

File Name	State	Defines
Park&Ride.txt	Added	Provides general information about Park and Ride. It contains the static information.
Parking.txt	Added	Provides information associated with parking and space availability
Permit.txt	Added	Defines information associated with cost
Calendar.txt	Extended	Uniquely identifies a set of dates when service is available for one or more routes.
Calendar_dates.txt	Extended	Identifies a set of dates when a service exception occurs for one or more routes.

Proposal

Park&Ride.txt			
Field Name	Type	Required	Details
Park&Ride_id	ID	Required	Park and Ride Id
Name	Text	Required	Park and Ride name
City	Text	Required	Park and Ride city
Location	Text	Required	Park and Ride location
Total_Space	Non-negative integer	Required	Total number of spaces in Park and Ride
Transit	Text	Optional	Park and Ride transit
Notes	Text	Optional	Notes about the parking lot

Amenities	Text	Optional	Amenities at Park and Ride <ul style="list-style-type: none"> - Things to include for example data - For amenities - Elevator information - Escalator information - Handicap ramps - Bike locks - Ticket vending machine - Phone chargers - Payphone
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Parking.txt			
Park&Ride_id	ID	Required	Park and Ride Id
Start_time	Time	Optional	The time the lot opens
End_time	Time	Optional	The time the lot closes
Week_day	Text	Optional	Days when Park and Ride is available
Lot_space_available	Non-negative Integer	Required	The number of parking spaces the lot has available
Accessibility_space	Non-negative Integer	Optional	The number of parking spaces the lot has to support ADA(Americans with Disabilities Act)
Last_updated	Time	Required	A general timestamp of when information was received (when information was last updated)
Charging_station_available	Non-negative Integer	Optional	The number of charging stations available
Type_of_space	Enum	Required	The type of parking space available 0 or empty - Unknown 1 - Car 2 - Bike 3 - Motorbike

calendar.txt

File: **Conditionally required**

Field Name	Type	Required	Description
service_id	ID	Required	Uniquely identifies a set of dates when service is available for one or more routes. Each service_id value can appear at most once in a calendar.txt file.
monday	Enum	Required	Indicates whether the service operates on all Mondays in the date range specified by the start_date and end_date fields. Note that exceptions for particular dates may be listed in calendar_dates.txt . Valid options are: 1 - Service is available for all Mondays in the date range. 0 - Service is not available for Mondays in the date range.
tuesday	Enum	Required	Functions in the same way as monday except applies to Tuesdays
wednesday	Enum	Required	Functions in the same way as monday except applies to Wednesdays
thursday	Enum	Required	Functions in the same way as monday except applies to Thursdays
friday	Enum	Required	Functions in the same way as monday except applies to Fridays
saturday	Enum	Required	Functions in the same way as monday except applies to Saturdays.
sunday	Enum	Required	Functions in the same way as monday except applies to Sundays.
start_date	Date	Required	Start service day for the service interval.
end_date	Date	Required	End service day for the service interval. This service day is included in the interval.

calendar_dates.txt

File: **Conditionally required**

The [calendar_dates.txt](#) table can explicitly activate or disable service by date. It can be used in two ways.

- Recommended: Use [calendar_dates.txt](#) in conjunction with [calendar.txt](#) to define exceptions to the default service patterns defined in [calendar.txt](#). If service is generally regular, with a few changes on explicit dates (for instance, to accommodate special event services, or a school schedule), this is a good approach. In this case `calendar_dates.service_id` is an ID referencing `calendar.service_id`.
- Alternate: Omit [calendar.txt](#), and specify each date of service in [calendar_dates.txt](#). This allows for considerable service variation and accommodates service without normal weekly schedules. In this case `service_id` is an ID.

Field Name	Type	Required	Description
service_id	ID referencing calendar.service_id or ID	Required	Identifies a set of dates when a service exception occurs for one or more routes. Each (service_id, date) pair can only appear once in calendar_dates.txt if using calendar.txt and calendar_dates.txt in conjunction. If a service_id value appears in both calendar.txt and calendar_dates.txt , the information in calendar_dates.txt modifies the service information specified in calendar.txt .
date	Date	Required	Date when service exception occurs.
exception_type	Enum	Required	Indicates whether service is available on the date specified in the date field. Valid options are: 1 - Service has been added for the specified date. 2 - Service has been removed for the specified date.

Permit.txt			
Permit_id	ID	Required	Permit Id
Park&Ride_id	ID	Required	Park and Ride Id
Permit_cost	Non-negative float	Required	Cost of permit parking if there are any (time, calendar, date, length, type, id)
Payment_type	text	Required	Type of payment options (debit, credit, paypal.)
Currency_type	Currency code	Conditionally required	Currency used to pay the fare

Future Work

1. Measurements of Parking Entrance
 - As suggested by Metro, it will be valuable to include the information about height and width of the Park and Ride entrance so that people are aware about the restrictions on the entrance.
 - Example information could be used for freight or large trucks
2. Private Spots (shopping spaces, hospitals, churches)
 - After integrating the first proposal, the park and ride data has the ability to expand from just Park and Rides to private parking stations.
3. Floor Level Restrictions
 - Similar to school parking spaces, some floors are restricted to types of space and people with permits.
4. Multiple Stops
 - Since there can be multiple stops near a particular Park and Ride, it might be useful to include all the stops in the data..
5. Information about Discounted Transit Pass
 - Sometimes users can have the option of getting a discount on Sound Transit and other regional agencies' services by availing a permit at Park and Ride.
6. Crowded Busses
 - As a part of a future work by Metro, it will be useful to show the traffic inside the bus or information about the probability of getting a seat in the bus after parking at Park and Ride.
7. Additional Fare Information

- From our research we found a GTFS fare file(fare_attributes.txt) that shows multiple fields that can be used in a permit data.

References:

<https://developers.google.com/transit/gtfs/reference#calendartxt>

<https://www.wsdot.wa.gov/travel/highways-bridges/park-and-ride#King>

<https://kingcounty.gov/depts/transportation/metro/travel-options/parking.aspx>

https://developers.google.com/transit/gtfs/examples/gtfs-feed#fare_attributestxt

https://developers.google.com/transit/gtfs/reference#fare_attributestxt