Fairbanks Household Travel Survey: Lookup Table

Transportation Secure Data Center

Revised: 2016-12-05

Summary Statistics

Travel Diary	Households	
	Persons	
Vehicle GPS	Households	
	Vehicles	
	Days of Travel	
	GPS Frequency (Hz)	
Vehicle OBD	Households	173
	Vehicles	282
	Days of Travel	1,794
	GPS Frequency (Hz)	1
Wearable GPS	Households	
	Persons	
	Days of Travel	
	GPS Frequency (Hz)	

Blank fields indicate data is not present for this study.

Vehicle Tables

v_obd_points

The "v_obd_points" table contains all valid GPS points (associated with GPS trips) collected by the sampled vehicle GPS households during the assigned travel day. This table was provided by AKDOT with OBD collected data joined on time_local to to the GPS data. The OBD data loggers used in the study had a time drift that grew as the travel survey went on. In post-processing, the data provider attempted to realign data but states that they can only be confident of all points being within 5 mins eachother. The OBD data provided in this table is incomplete since some data could have been lost in joining to the GPS data by time_local. For public download, the "v_obd_points" data is segregated by vehicle and available in the sorted_by_vehicle.zip file. Thus, the "v_obd_points" table is not available in the full_survey.zip download. This decision was made to better organize the data and manage file sizes.

Name	Data Type	Comment
sampno	integer	Unique household identifier
vehno	integer	Vehicle identifier
gpstripid	integer	Trip number within file
obdtripid	double precision	Trip number within OBD file
localid	integer	Point index within original file
time_local	timestamp without time zone	Local date and time

longitude*	double precision	Longitude (dd WGS84) of point
latitude*	double precision	Latitude (dd WGS84) of point
gpsspeed	double precision	GPS point speed in MPH
obd_speed	double precision	OBD point speed in MPH
obd_iatemp	double precision	OBD intake air temperature (5-sec freq)
obd_engload	double precision	OBD engine load (5-sec freq)
obd_engspeed	double precision	OBD engine speed / RPM (5-sec freq)
obd_coolanttemp	double precision	OBD coolant temperature (5-sec freq)
geom*	geometry	Geometric point data

v_obd_gpstripends

The "v_obd_gpstripends" table contains trip start/endpoints as well as additional trip statistics such as max speed and location types.

Name	Data Type	Comment
sampno	integer	Unique household identifier
vehno	integer	Vehicle identifier
gpstripid	integer	Trip number within file
gpstravdayid	integer	Travel day within travel week (n = 1 to 7)
gpstravdaytripid	integer	GPS trip number within travel day (restarts at 1 each day)
starttime	timestamp without time zone	Local date and time of trip start
endtime	timestamp without time zone	Local date and time of trip end
duration	double precision	Duration of trip in minutes
distance	double precision	Distance covered during trip in miles
avg_speed	double precision	Average speed
max_speed	double precision	Maximum speed
origin_lon*	double precision	Starting longitude (dd WGS84) of trip
origin_lat*	double precision	Starting latitude (dd WGS84) of trip
dest_lon*	double precision	Ending longitude (dd WGS84) of trip
dest_lat*	double precision	Ending latitude (dd WGS84) of trip
gapdist	double precision	Distance between previous trip dest and current trip origin (feet). Null if distance greater than 500 meters
gaptime	double precision	Time between previous trip/stage dest and current trip/stage origin (minutes)
tripareatype	integer	1=Internal Origin, Internal Destination; 2=Internal Origin, External Destination; 3=External Origin, Internal Destination; 4=External Origin, External Destination
workrelated	integer	1=Trip suspected to be work related, 0 otherwise
nontransport	integer	1=trip suspected to be a non-transportation trip, 0 otherwise
onsite	integer	1= trip appears to be within boundaries of a single location, 0 otherwise
looptrip	integer	1= trip starts and ends at same location, 0 otherwise
originloctype	character varying	Home, Work, School, Other (based on matched trip end or proximity to geocoded habitual location)

		Home, Work, School, Other (based on matched trip end or proximity to geocoded habitual location)
destloctype	character varying	Home, Work, School, Other (based on matched trip end or proximity to geocoded habitual location)
origin_geom*	geometry	Geometric point of trip origin
dest_geom*	geometry	Geometric point of trip destination

v_obd_vehicles

The v_obd_vehicles table provides characteristics for the vehicles outfitted with onboard GPS devices.

Name	Data Type	Comment
sampno	integer	Unique household identifier
vehno	integer	Vehicle identifier
fuel_type	character varying	Fuel type from OBD sensor (OBD sample only) if available
vin*	character varying	VIN from OBD sensor at the beginning of the deployment (OBD sample only) if available
start_odom	text	Starting odometer value if reported on participation sheet
sample_status	double precision	0 = sampled both fall/winter, 1 = sampled only fall, 2 = sampled only winter
gpstrips_day1	integer	Number GPS vehicle trips collected on day 1 of deployment period
obdtrips_day1	integer	Number OBD vehicle trips collected on day 1 of deployment period
gpstrips_day2	integer	Number GPS vehicle trips collected on day 2 of deployment period
obdtrips_day2	integer	Number OBD vehicle trips collected on day 2 of deployment period
gpstrips_day3	integer	Number GPS vehicle trips collected on day 3 of deployment period
obdtrips_day3	integer	Number OBD vehicle trips collected on day 3 of deployment period
gpstrips_day4	integer	Number GPS vehicle trips collected on day 4 of deployment period
obdtrips_day4	integer	Number OBD vehicle trips collected on day 4 of deployment period
gpstrips_day5	integer	Number GPS vehicle trips collected on day 5 of deployment period
obdtrips_day5	integer	Number OBD vehicle trips collected on day 5 of deployment period
gpstrips_day6	integer	Number GPS vehicle trips collected on day 6 of deployment period
obdtrips_day6	integer	Number OBD vehicle trips collected on day 6 of deployment period
gpstrips_day7	integer	Number GPS vehicle trips collected on day 7 of deployment period
obdtrips_day7	integer	Number OBD vehicle trips collected on day 7 of deployment period
gpstrips_total	integer	Number of GPS vehicle trips collected during 7-day deployment period
obdtrips_total	integer	Number of OBD vehicle trips collected during 7-day deployment period

v_obd_households

The v_obd_households table includes additional data from the households who participated in the vehicle GPS part of the study.

Name	Data Type	Comment
sampno	integer	Household Identifier
tot_veh	integer	Total number of vehicles reported by household
tot_gps_veh	integer	Number of vehicles deployed with GPS devices
trav_day	timestamp without time zone	Assigned travel date for log completion
tot_gpstrips_td	integer	Number of GPS trips on assigned travel date
tot_gpstrips_27	integer	Number of GPS trips on days 2-7
tot_obdtrips_td	integer	Number of OBD trips on assigned travel date
tot_obdtrips_27	integer	Number of OBD trips on days 2-7
tot_logtrips_td	integer	Total of all unique log-reported vehicle trips for instrumented vehicles on assigned travel date
gps_complete	integer	GPS data exists for all instrumented vehicles (or for at least 2 vehicles from 3 vehicle households) or log data confirms no travel on assigned travel date
obd_complete	integer	OBD data exists for all instrumented vehicles (or for at least 2 vehicles from 3 vehicle households) or log data confirms no travel on assigned travel date
gps_obd_complete	integer	GPS and OBD data exists for all instrumented vehicles (or for at least 2 vehicles from 3 vehicle households) or log data confirms no travel on assigned travel date

obd_tripsampdata

The "obd_tripsampdata" data provides sample data for OBD trips.

Name	Data Type	Comment
sampno	integer	Unique household identifier
vehno	integer	Vehicle identifier
trip_sampledata_id	integer	Record identifier within database
obd_file_id	integer	OBD file ID
trip_order	integer	Trip number within file
trip_sampledata_para_id	integer	Parameter number by record (1-5)
trip_sampledata_order	integer	Record number within trip
data_type	integer	Parameter data type
time_interval	double precision	Time record collected
data	double precision	Data value for record
trip_sampledata_datetime	timestamp without time zone	Date and time record collected in local time
trip_sampledata_datetime_utc	timestamp without time zone	Date and time record collected in UTC
study_phase	integer	1=Fall 2013, 2=Winter 2014

obd_points

The "obd_points" table contains all valid GPS points (associated with GPS trips) collected by the sampled vehicle GPS/OBD households during the assigned travel day. All higher level tables (households, persons, trips, etc.) are derived from point tables. For public download, the "obd_points" data is segregated by vehicle and available in the sorted_by_vehicle.zip file. Thus, the obd_points table is not available in the full_survey.zip download. This decision was made to better organize the data and manage file sizes.

Name	Data Type	Comment
sampno	integer	Unique household identifier
vehno	integer	Vehicle identifier
obdtripid	integer	Trip number within file
time_local	timestamp without time zone	Local date and time
time_utc	timestamp without time zone	UTC date and time
obd_speed	double precision	OBD point speed in MPH
obd_iatemp	double precision	OBD intake air temperature (5-sec freq)
obd_engload	double precision	OBD engine load (5-sec freq)
obd_engspeed	double precision	OBD engine speed / RPM (5-sec freq)
obd_coolanttemp	double precision	OBD coolant temperature (5-sec freq)
study_phase	integer	1=Fall 2013, 2=Winter 2014

obd_trips

The "obd_trips" table contains vehicle trip records from vehicles equipped with OBD instruments.

Name	Data Type	Comment
sampno	integer	Unique household identifier
vehno	integer	Vehicle identifier
vin*	text	VIN reported from OBD device, if available.
obdtripid	integer	Trip number within file
travdayid	integer	Travel day within travel week (n = 1 to 7)
travdayobdtripid	integer	OBD trip number within travel day (restarts at 1 each day)
obd_starttime	timestamp without time zone	Local date and time of trip start
obd_endtime	timestamp without time zone	Local date and time of trip end
obd_duration	double precision	Duration of trip in minutes
obd_distance	double precision	Distance covered during trip in miles
avg_speed	double precision	Average speed
max_speed	double precision	Maximum speed
num_hard_acc	double precision	Number of hard accelerations
num_ext_acc	double precision	Number of extreme accelerations
num_hard_dec	double precision	Number of hard decelerations
num_ext_dec	double precision	Number of extreme decelerations
obd_speed_failed	integer	0=passed, 1=failed parameter error or failed to log

obd_iat_failed	integer	0=passed, 1=failed parameter error or failed to log
obd_engload_failed	integer	0=passed, 1=failed parameter error or failed to log
obd_engspeed_failed	integer	0=passed, 1=failed parameter error or failed to log
obd_coolanttemp_failed	integer	0=passed, 1=failed parameter error or failed to log
study_phase	integer	1=Fall 2013, 2=Winter 2014

obd_rawtrips

The "obd_rawtrips" table contains raw trip-level information for each trip identified by the OBD engine sensor during the study period. This table is available for vehicle GPS/OBD households only.

Name	Data Type	Comment
sampno	integer	Unique household identifier
vehno	integer	Vehicle identifier
trip_id	integer	Trip number within all trips in the database
trip_order	integer	Trip number within the deployment period
start_time	timestamp without time zone	Local time of trip start
end_time	timestamp without time zone	Local time of trip end
start_time_utc	timestamp without time zone	UTC time of trip start
end_time_utc	timestamp without time zone	UTC time of trip end
trip_duration_min	double precision	Duration of trip in minutes
vin*	text	Vehicle Identification Number (not required in all vehicles until 2005, therefore not always supported. Reported where available)
vehicle_protocol	integer	-1 if unknown, 0 if PWM, 1 if VPW, 2 if ISO, 3 if KWP, 4 if CAN
max_speed	double precision	Maximum speed collected during trip (kph)
avg_speed	double precision	Average speed of trip
distance	double precision	Distance covered during trip in Miles
hard_brake_count	double precision	Number of hard brake events during trip
ext_brake_count	double precision	Number of extreme brake events during trip
hard_accel_count	double precision	Number of hard accelevents during trip
ext_accel_count	double precision	Number of extreme accel events during trip
parameter1	integer	1 = Speed
parameter2	integer	8 = Intake Air Temperature
parameter3	integer	5 = Engine Load
parameter4	integer	2 = Engine Speed
parameter5	integer	4=Coolant Temperature
sampling_interval1	integer	1 second
sampling_interval2	integer	6 seconds
sampling_interval3	integer	6 seconds
sampling_interval4	integer	6 seconds
sampling_interval5	integer	6 seconds
parameter_supported1	integer	1 if yes, 0 otherwise
parameter_supported2	integer	1 if yes, 0 otherwise

parameter_supported3	integer	1 if yes, 0 otherwise
parameter_supported4	integer	1 if yes, 0 otherwise
parameter_supported5	integer	1 if yes, 0 otherwise
speed_threshold1	double precision	72.42048 kph
speed_threshold2	double precision	96.56064 kph
speed_threshold3	double precision	112.65064 kph
hard_brake_threshold	double precision	0.368230855
ext_brake_threshold	double precision	0.509858106
hard_accel_threshold	double precision	0.283254504
ext_accel_threshold	double precision	0.424881755
disconnected_during_trip	text	1 if yes, 0 otherwise
orphan_trip	text	1 if yes, 0 otherwise
corruption_type	integer	1 if yes, 0 otherwise
study_phase	integer	1=Fall 2013, 2=Winter 2014

Sorted by Vehicle Tables

gps_obd_vehicles

The v_obd_vehicles table provides characteristics for the vehicles outfitted with onboard GPS devices.

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sampno	integer	Unique household identifier
vehno	integer	Vehicle identifier
fuel_type	character varying	Fuel type from OBD sensor (OBD sample only) if available
start_odom	text	Starting odometer value if reported on participation sheet
sample_status	double precision	0 = sampled both fall/winter, 1 = sampled only fall, 2 = sampled only winter
gpstrips_day1	integer	Number GPS vehicle trips collected on day 1 of deployment period
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obdtrips_day3	integer	Number OBD vehicle trips collected on day 3 of deployment period
gpstrips_day4	integer	Number GPS vehicle trips collected on day 4 of deployment period
obdtrips_day4	integer	Number OBD vehicle trips collected on day 4 of deployment period

gpstrips_day5	integer	Number GPS vehicle trips collected on day 5 of deployment period
obdtrips_day5	integer	Number OBD vehicle trips collected on day 5 of deployment period
gpstrips_day6	integer	Number GPS vehicle trips collected on day 6 of deployment period
obdtrips_day6	integer	Number OBD vehicle trips collected on day 6 of deployment period
gpstrips_day7	integer	Number GPS vehicle trips collected on day 7 of deployment period
obdtrips_day7	integer	Number OBD vehicle trips collected on day 7 of deployment period
gpstrips_total	integer	Number of GPS vehicle trips collected during 7-day deployment period
obdtrips_total	integer	Number of OBD vehicle trips collected during 7-day deployment period

obd_points

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by time_local. For public download, the "v_obd_points" data is segregated by vehicle and available in the sorted_by_vehicle.zip file. Thus, the "v_obd_points" table is not available in the full_survey.zip download. This decision was made to better organize the data and manage file sizes.

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vehno	integer	Vehicle identifier
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obdtripid	double precision	Trip number within OBD file
localid	integer	Point index within original file
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obd_engload	double precision	OBD engine load (5-sec freq)
obd_engspeed	double precision	OBD engine speed / RPM (5-sec freq)
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gps_obd_households

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obd_trips

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num_hard_dec	double precision	Number of hard decelerations
num_ext_dec	double precision	Number of extreme decelerations
obd_speed_failed	integer	0=passed, 1=failed parameter error or failed to log
obd_iat_failed	integer	0=passed, 1=failed parameter error or failed to log
obd_engload_failed	integer	0=passed, 1=failed parameter error or failed to log
obd_engspeed_failed	integer	0=passed, 1=failed parameter error or failed to log
obd_coolanttemp_failed	integer	0=passed, 1=failed parameter error or failed to log
study_phase	integer	1=Fall 2013, 2=Winter 2014

* Indicates that the column has been redacted from cleansed data sets available at www.nrel.gov/tsdc. It has been determined that the column contains sensitive data that must be viewed within the TSDC's secure portal environment.

Note: When necessary, a series of lookup tables was provided in the database to identify the meanings of certain integer-represented responses to survey questions.

How to Cite the TSDC:

If you use TSDC data in a publication, please send a notification to **tsdc@nrel.gov** and include a citation that is consistent with the following format in your publication:

"Transportation Secure Data Center" (2016). National Renewable Energy Laboratory. |*Date TSDC data was accessed*|. www.nrel.gov/tsdc.