



Fuel Cell Electric Vehicle (FCEV) Performance Composite Data Products Spring 2017

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May 2017

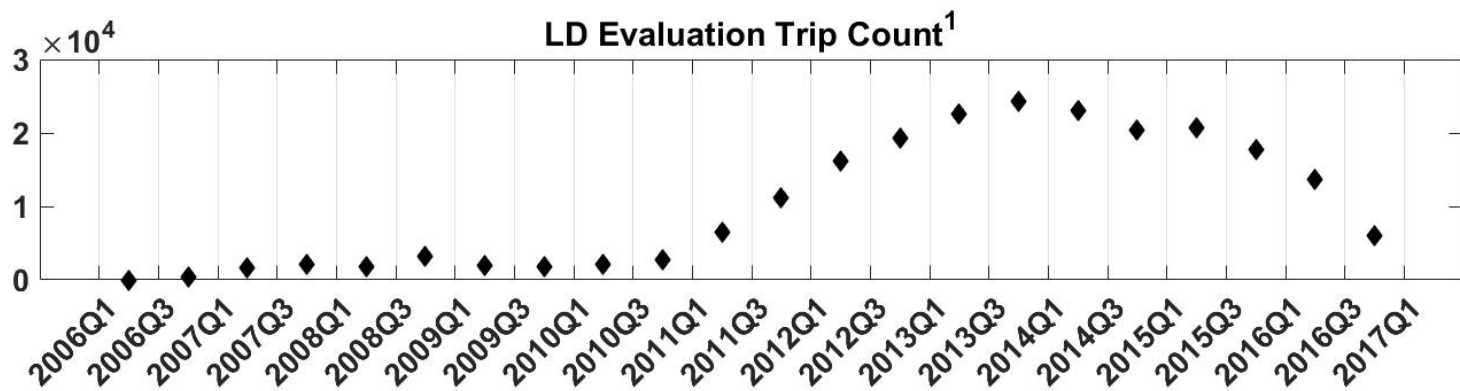
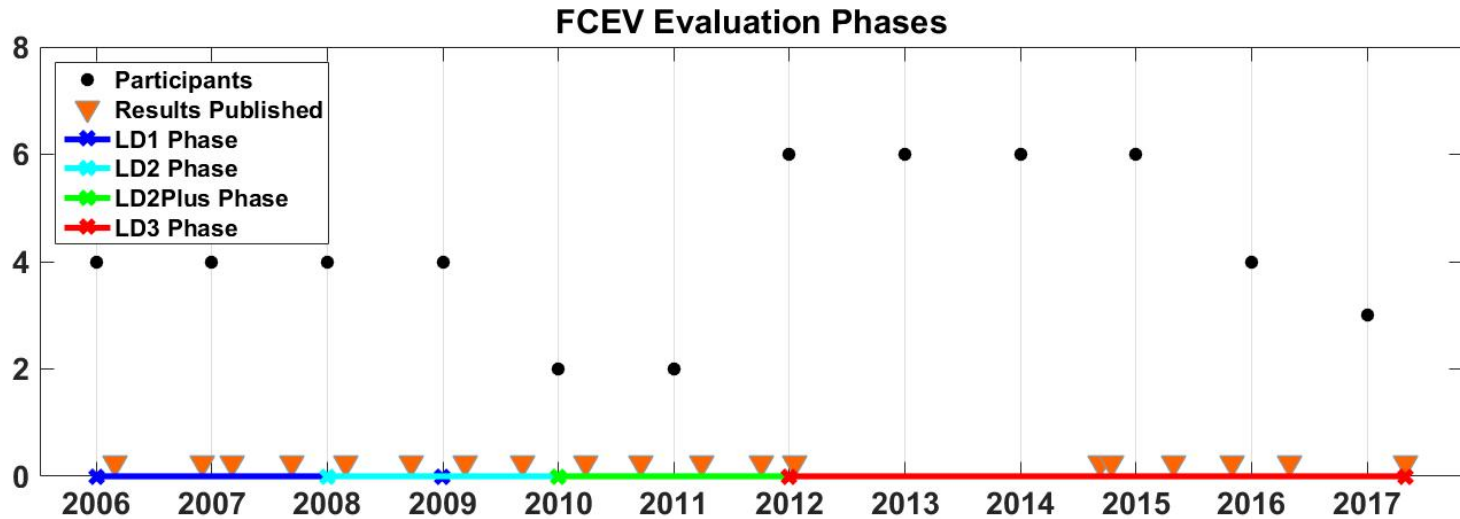
NREL/PR-5400-68647

Analysis Categories



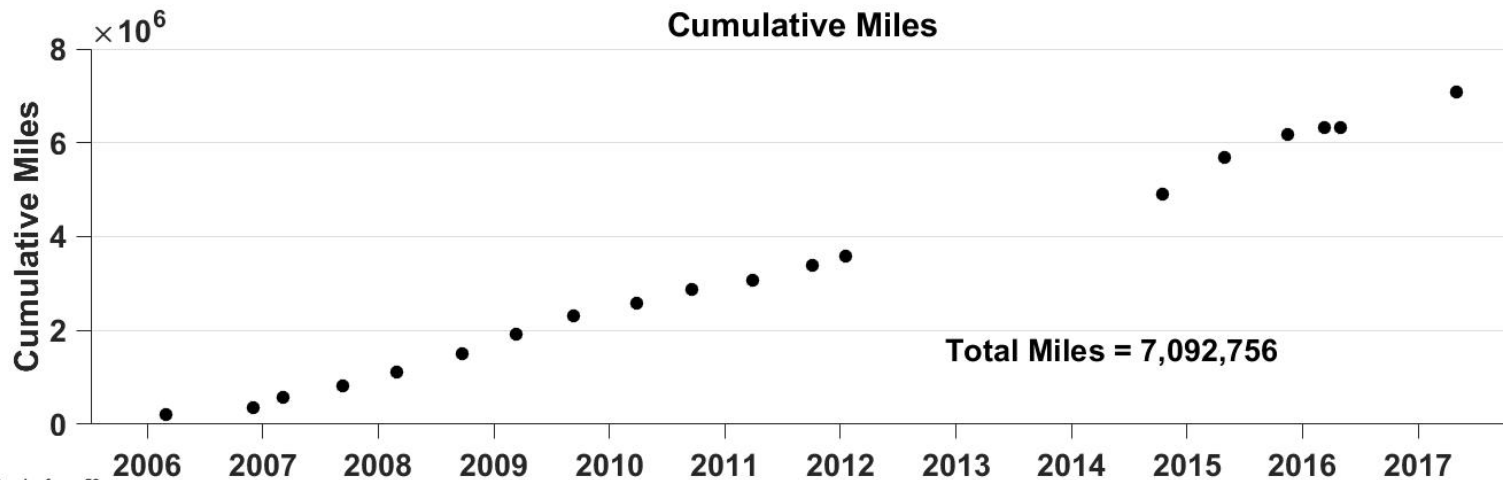
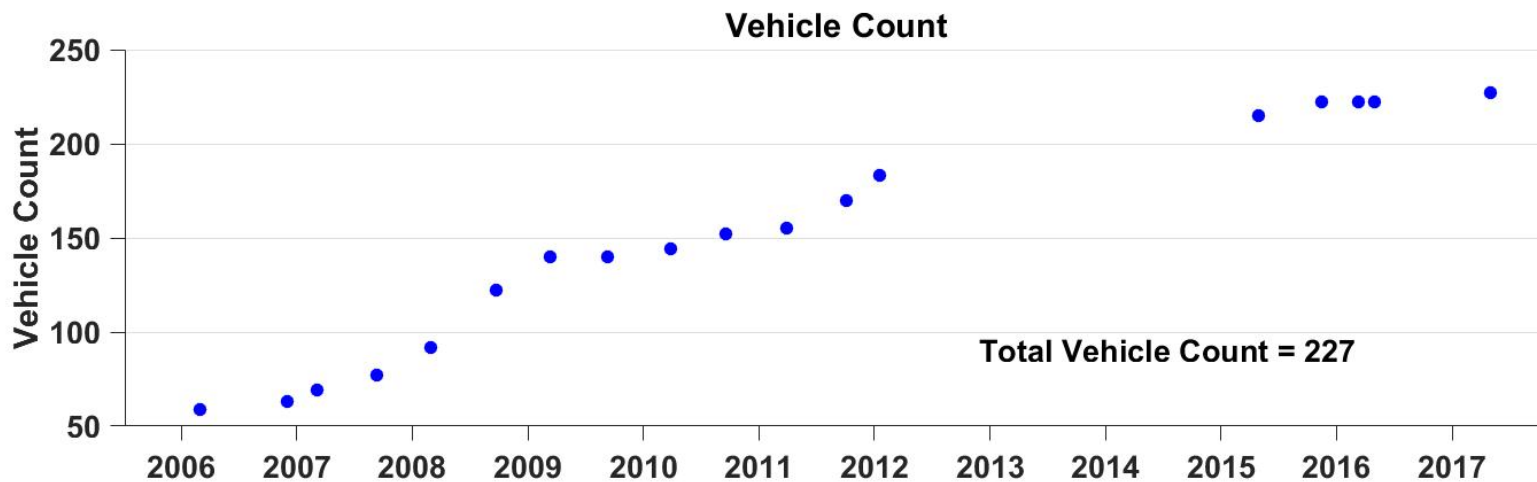
Deployment

CDP-FCEV-33: FCEV Evaluation Phases, Participants, Publications, and Trip Counts



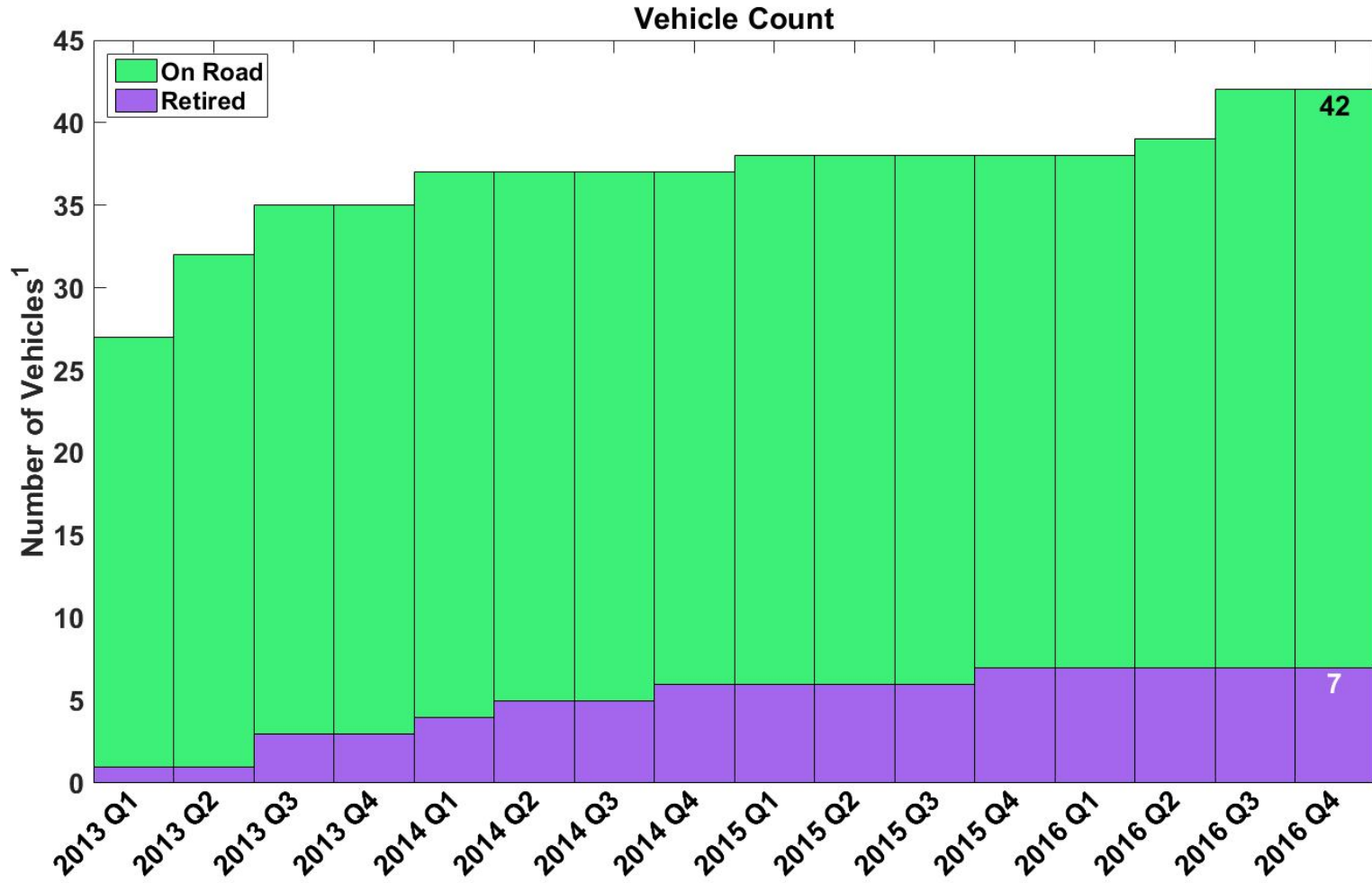
1) Not all fleets in operation in 2015; chart includes trips through December 2016.

CDP-FCEV-53: Vehicle Count and Cumulative Miles



NREL cdp_fcev_53
Created: Apr-18-17 11:25 AM | Data Through: 2016Q4
Included Vehicles: Partial

CDP-FCEV-101: Vehicle Count



NREL cdp_fcev_101

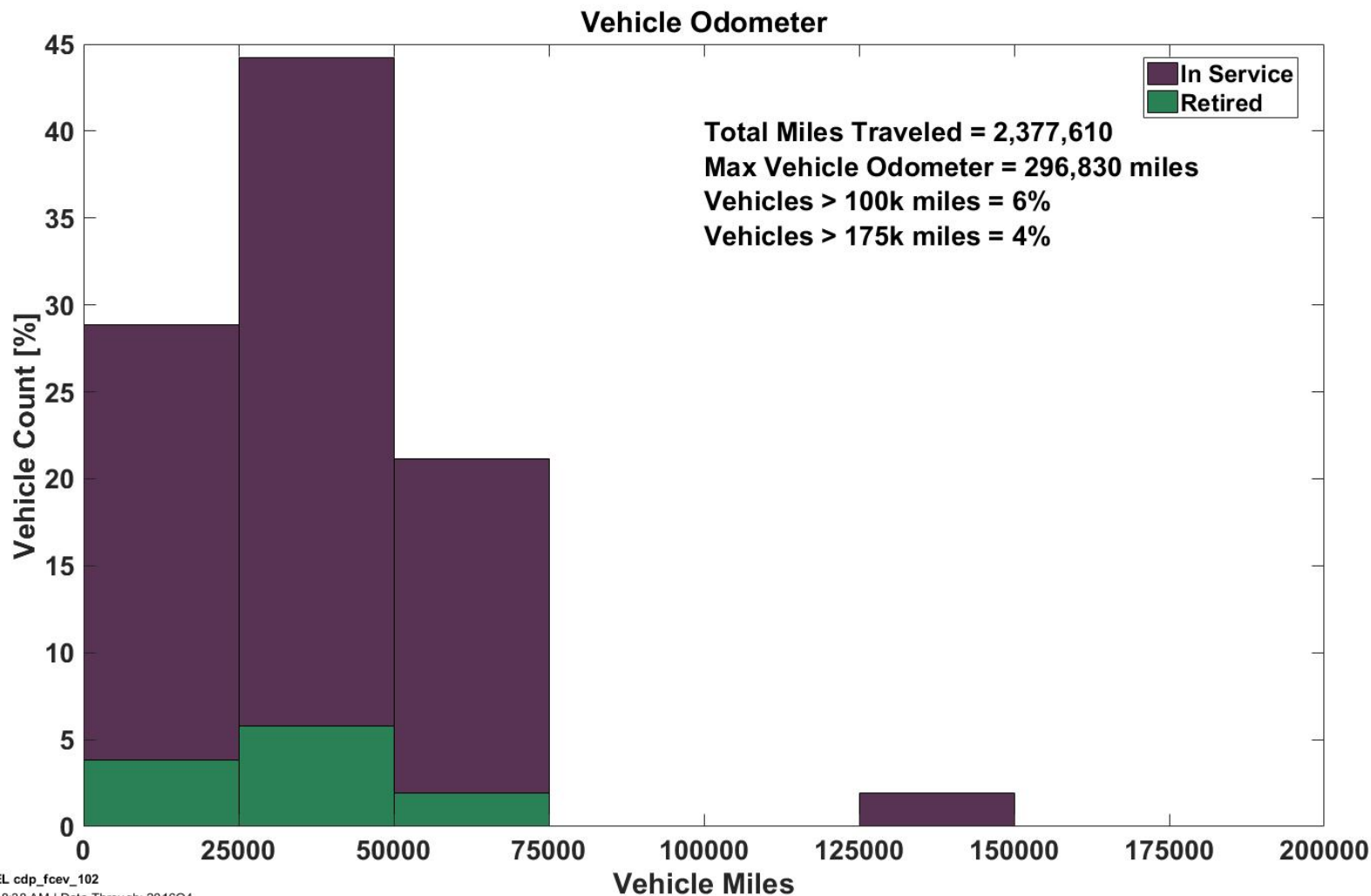
Created: Apr-18-17 11:18 AM | Data Through: 2016Q4

Included Vehicles: All

1. Vehicle reporting data to NFCTEC for the DOE fuel cell vehicle evaluation project. Some vehicles were in operation prior to 2013.

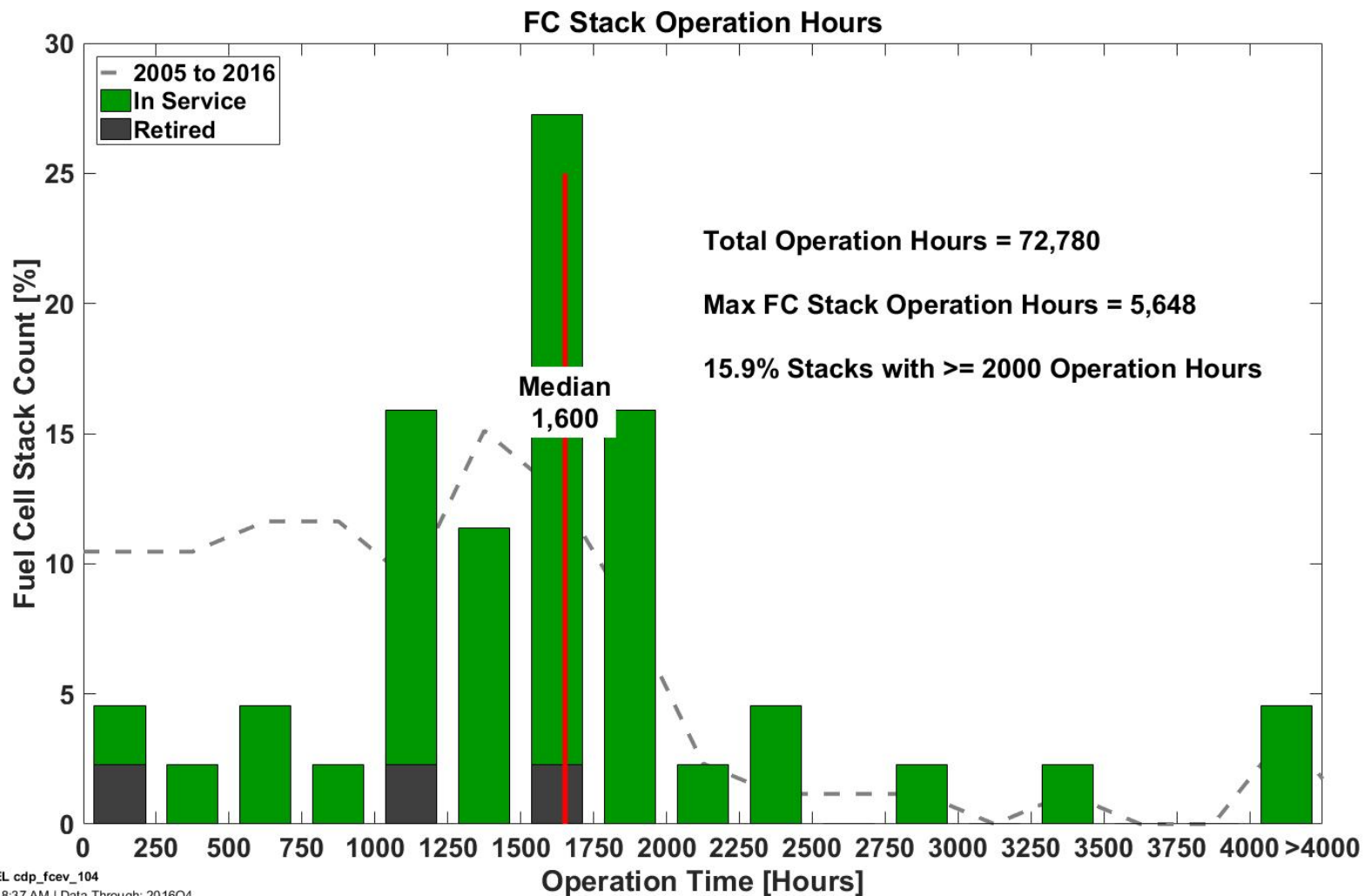
Driving Behavior

CDP-FCEV-102: Vehicle Miles

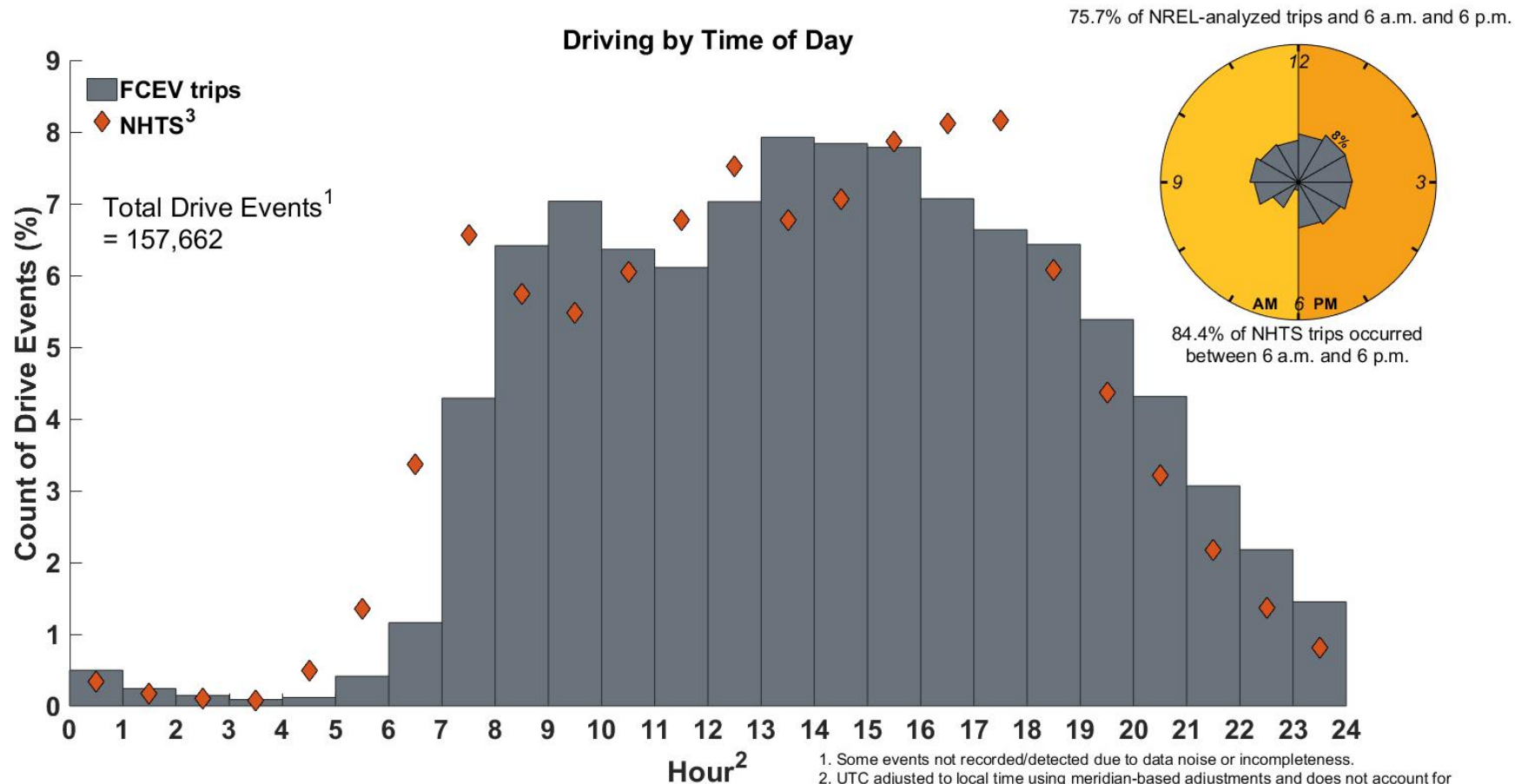



NREL cdp_fcev_102
Created: Apr-13-17 8:38 AM | Data Through: 2016Q4
Included Vehicles: All

CDP-FCEV-104: Fuel Cell Stack Operation Hours



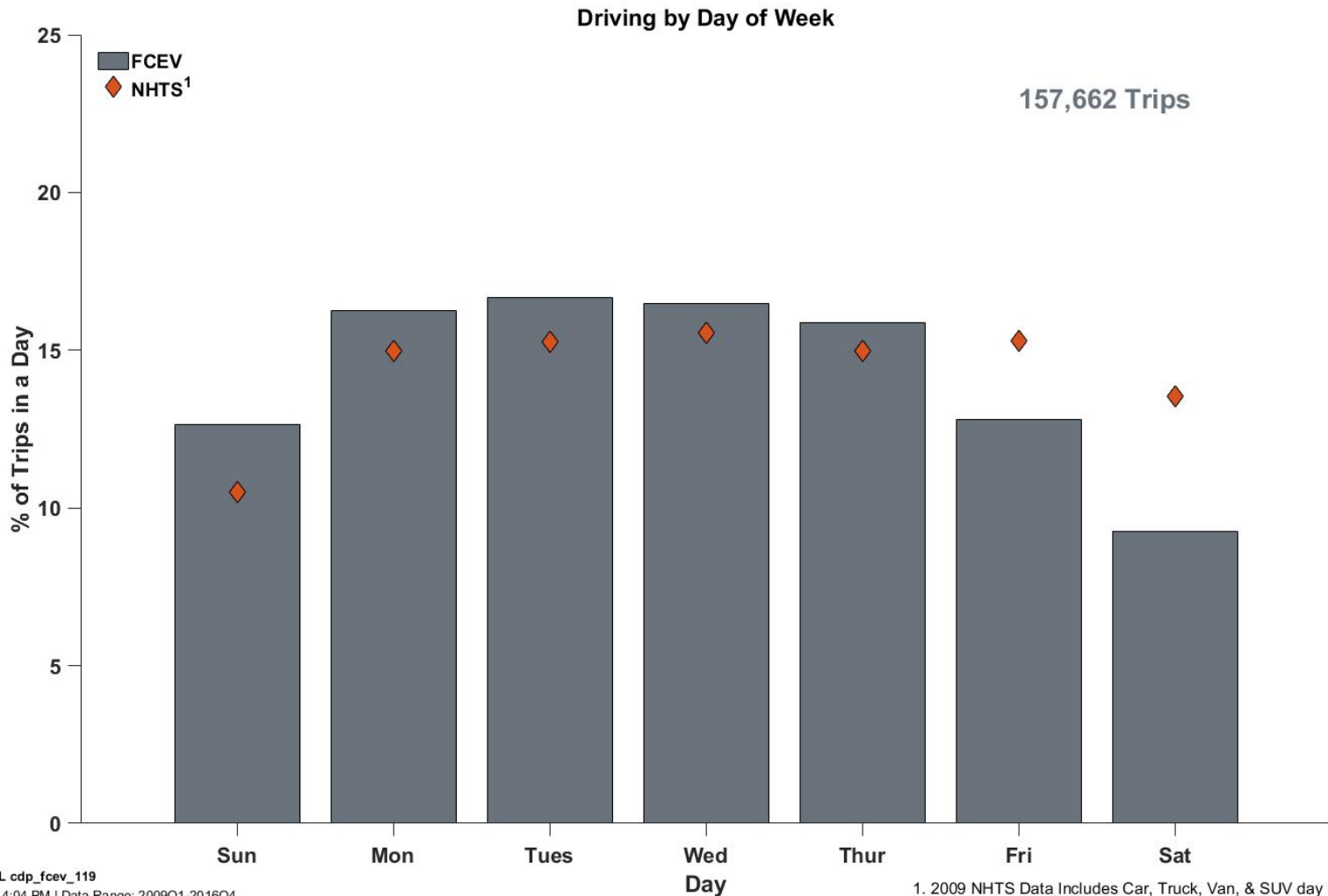
CDP-FCEV-118: Driving Start Time by Time of Day



 NREL cdp_fcev_118
 Created: May-03-17 3:52 PM | Data Range: 2009Q1-2016Q4
 Included Vehicles: All

1. Some events not recorded/detected due to data noise or incompleteness.
2. UTC adjusted to local time using meridian-based adjustments and does not account for statutory deviations from the meridian-based system.
3. 2009 NHTS Data Includes Car, Truck, Van, & SUV day trips
 ASCII.csv Source: <http://nhts.omni.gov/download.shtml#2009>

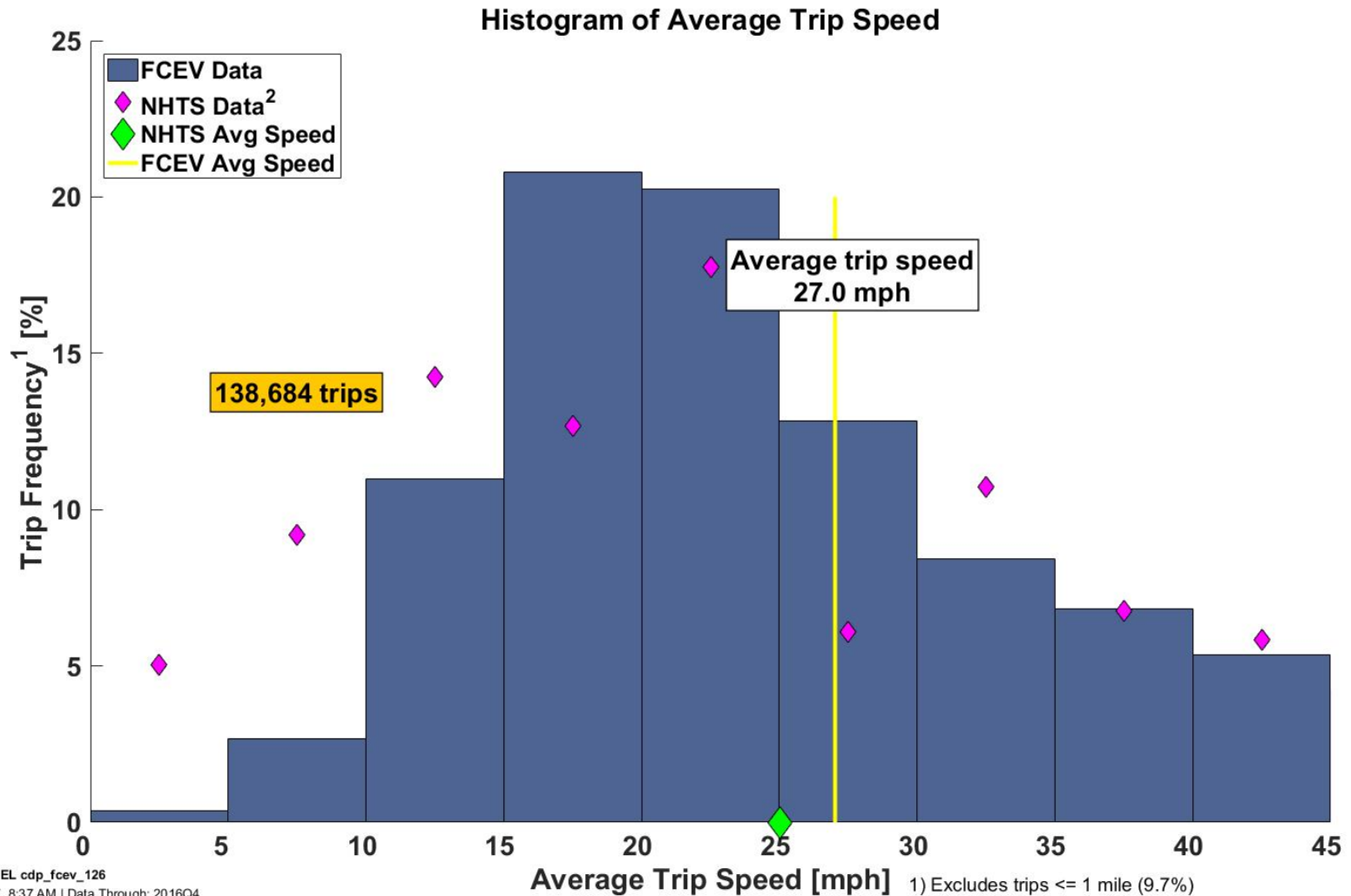
CDP-FCEV-119: Driving by Day of Week



NREL cdp_fcev_119
Created: May-04-17 4:04 PM | Data Range: 2009Q1-2016Q4
Included Vehicles: All

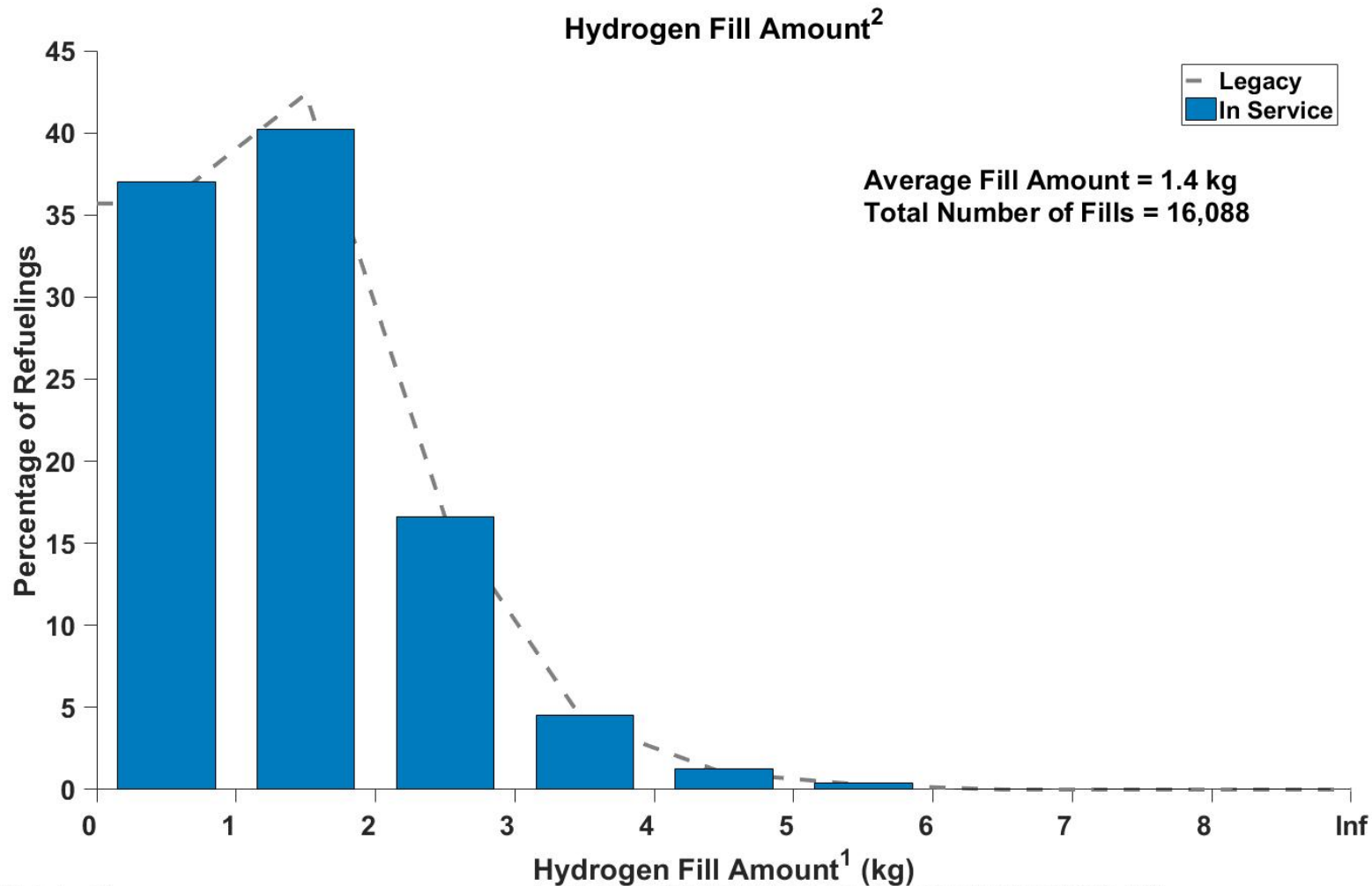
1. 2009 NHTS Data Includes Car, Truck, Van, & SUV day trips
ASCII.csv Source: <http://nhts.ornl.gov/download.shtml#2009>

CDP-FCEV-126: Average Trip Speed



Fuel Economy

CDP-FCEV-108: Vehicle Fill Amounts

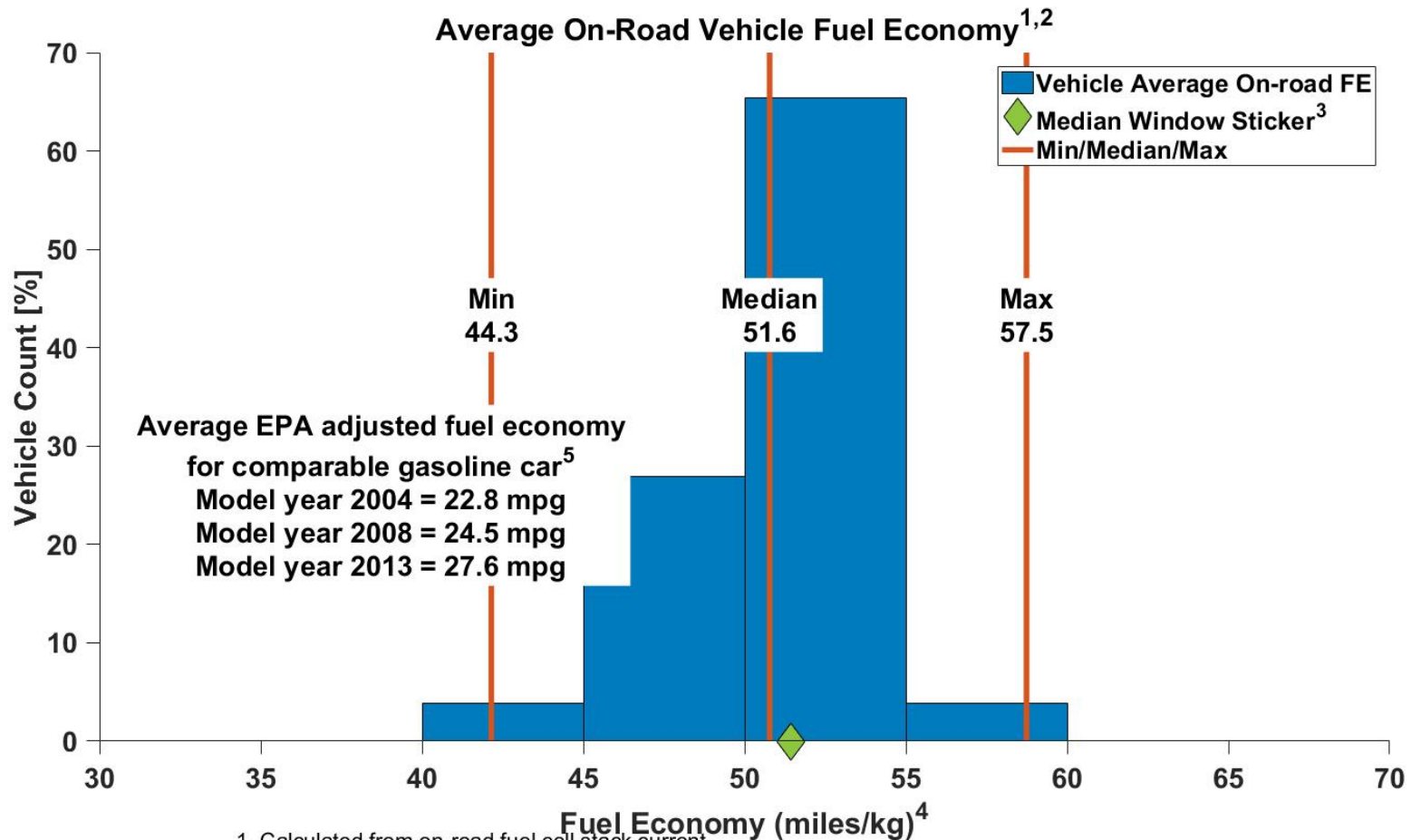


NREL cdp_fcev_108
Created: Apr-13-17 8:38 AM | Data Through: 2016Q4
Included Vehicles: All

Hydrogen Fill Amount¹ (kg)

1. Data comes from fcev onboard sensors, includes fills from 2012 to 2014
2. Tanks range from 3.8 to 6.3 kg

CDP-FCEV-114: Average Vehicle Fuel Economy



1. Calculated from on-road fuel cell stack current.

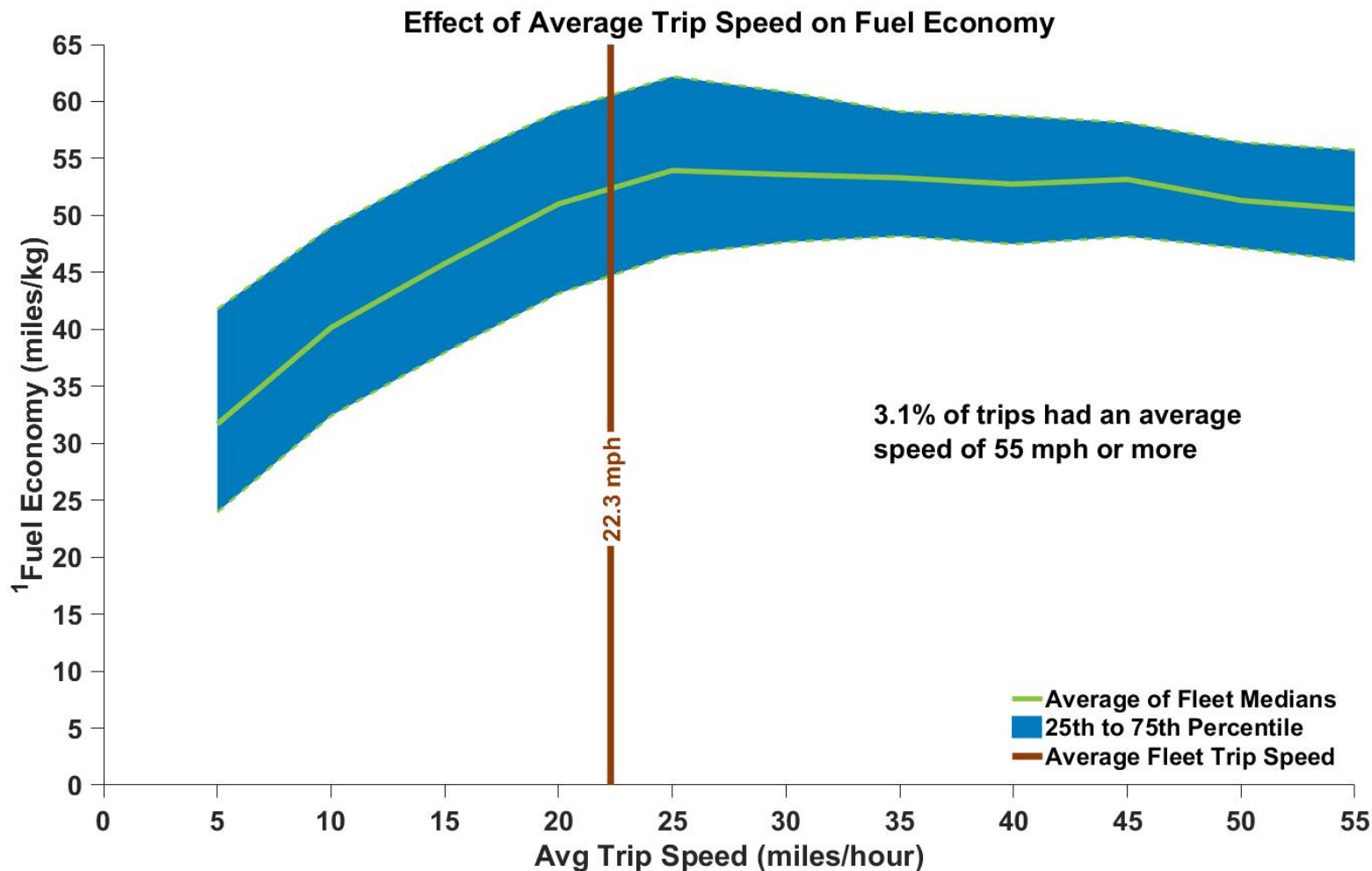
2. Excludes trips < 1 mile.

3. EPA Combined Rating.

4. 1 kg of hydrogen has the same energy content as 1 gallon (3.2 kg) of gasoline.

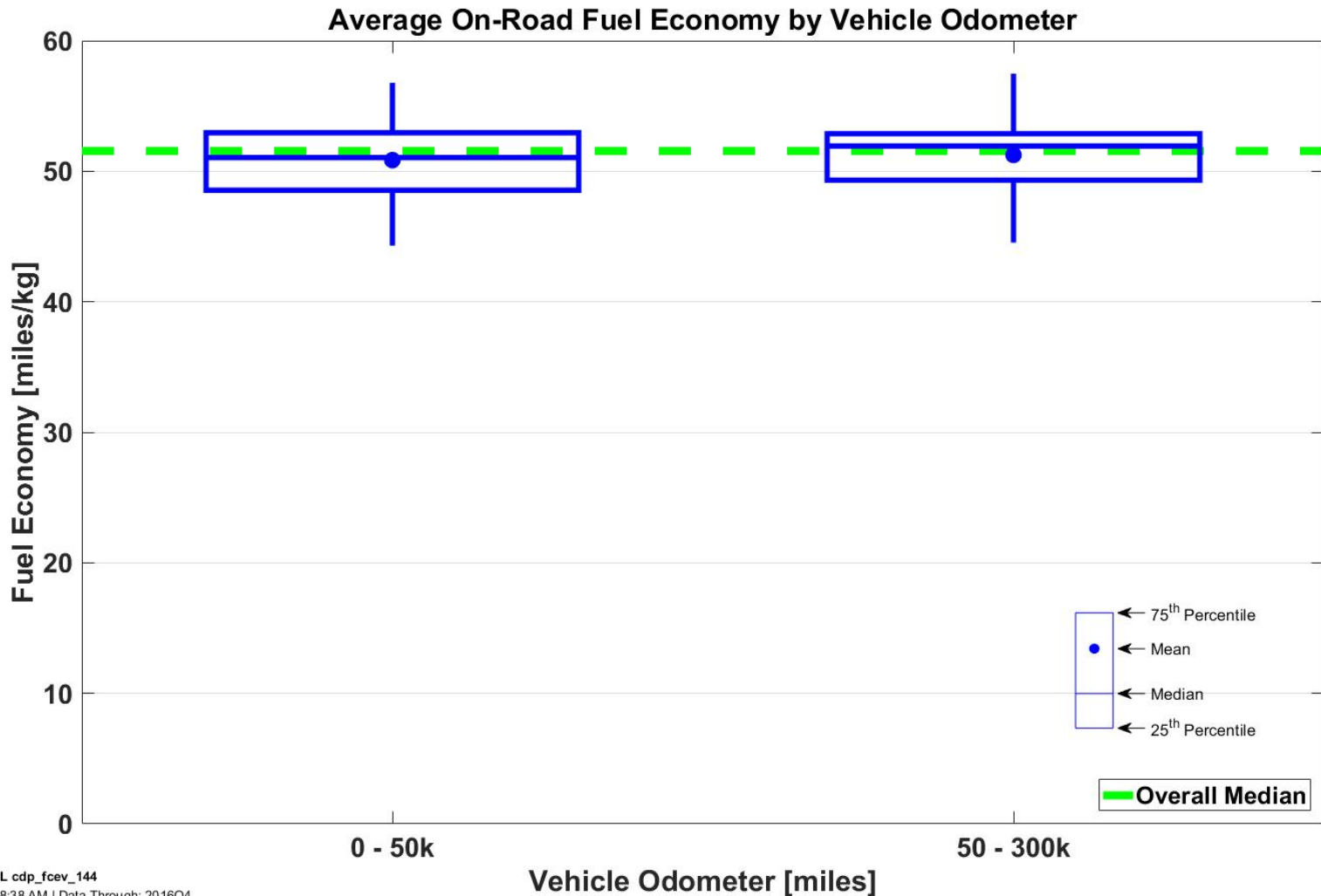
5. Source: EPA Light-Duty Automotive Technology, Carbon Dioxide Emissions, and Fuel Economy Trends: 1975 - 2014.

CDP-FCEV-141: Effect of Average Trip Speed on Fuel Economy



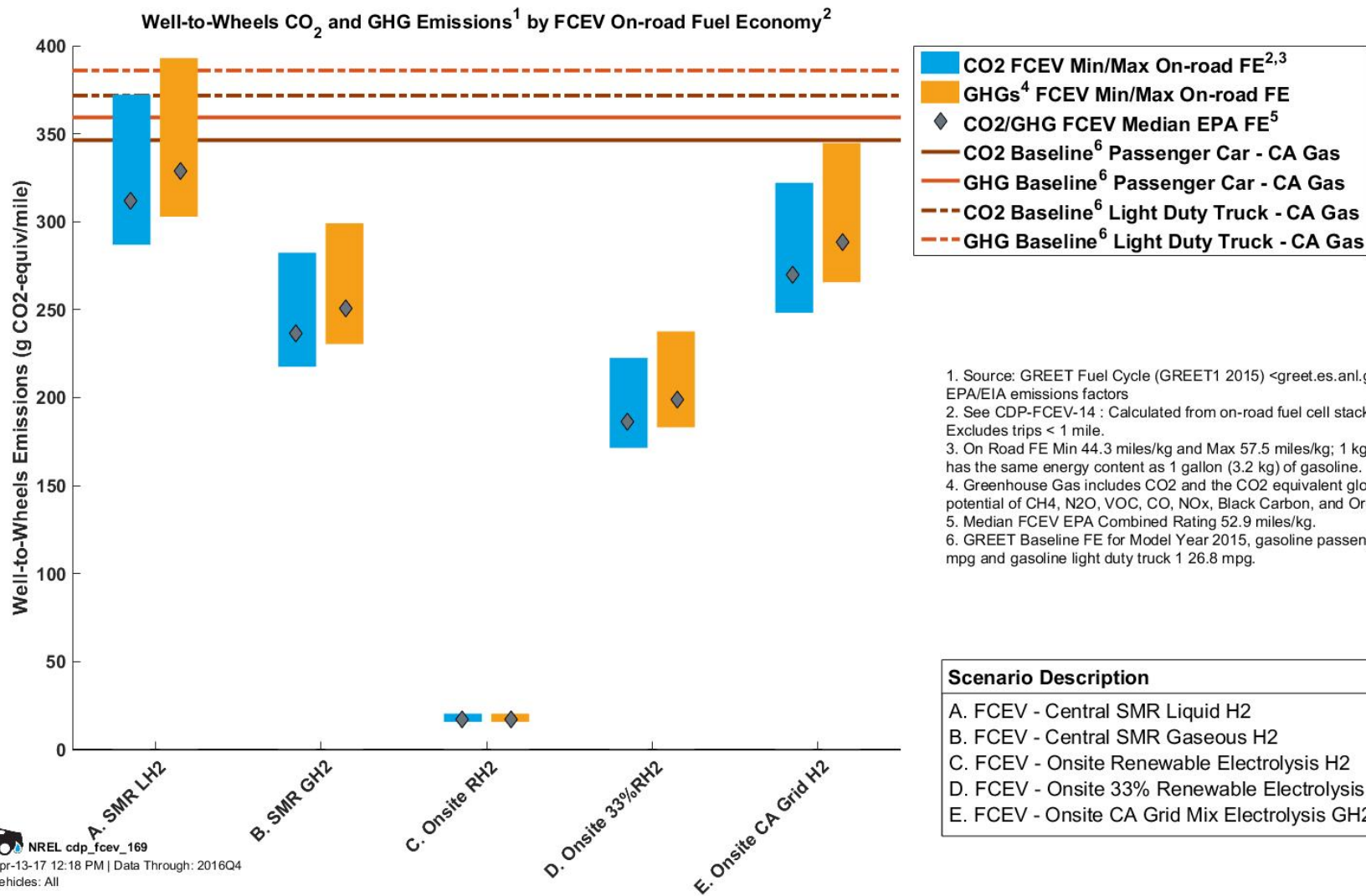
1. Data binned every 5 mph for calculating median and percentiles.

CDP-FCEV-144: Average On-Road Fuel Economy by Vehicle Odometer



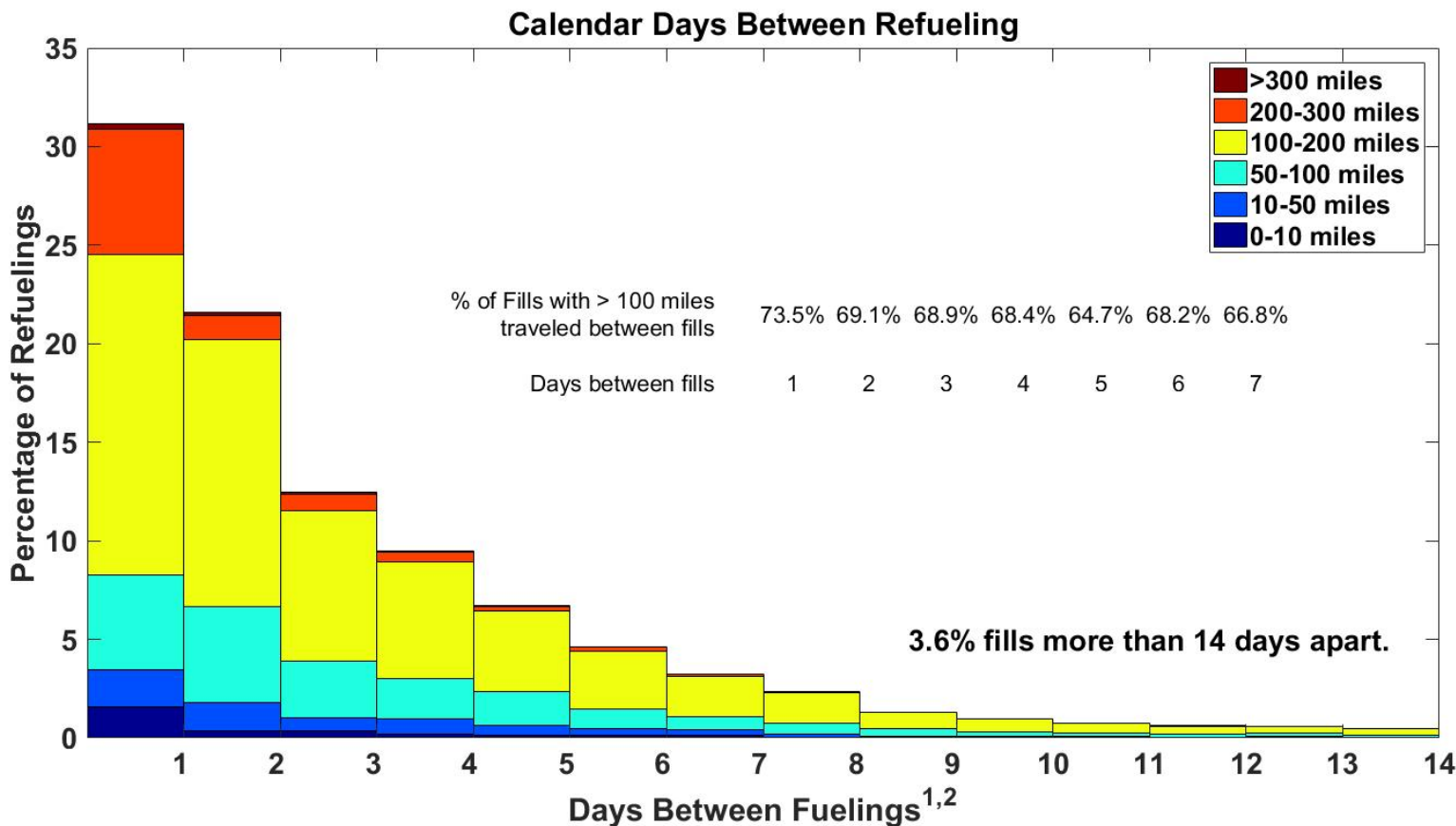
NREL cdp_fcev_144
Created: Apr-13-17 8:38 AM | Data Through: 2016Q4
Included Vehicles: All

CDP-FCEV-169: GHG Emissions by Fuel Economy



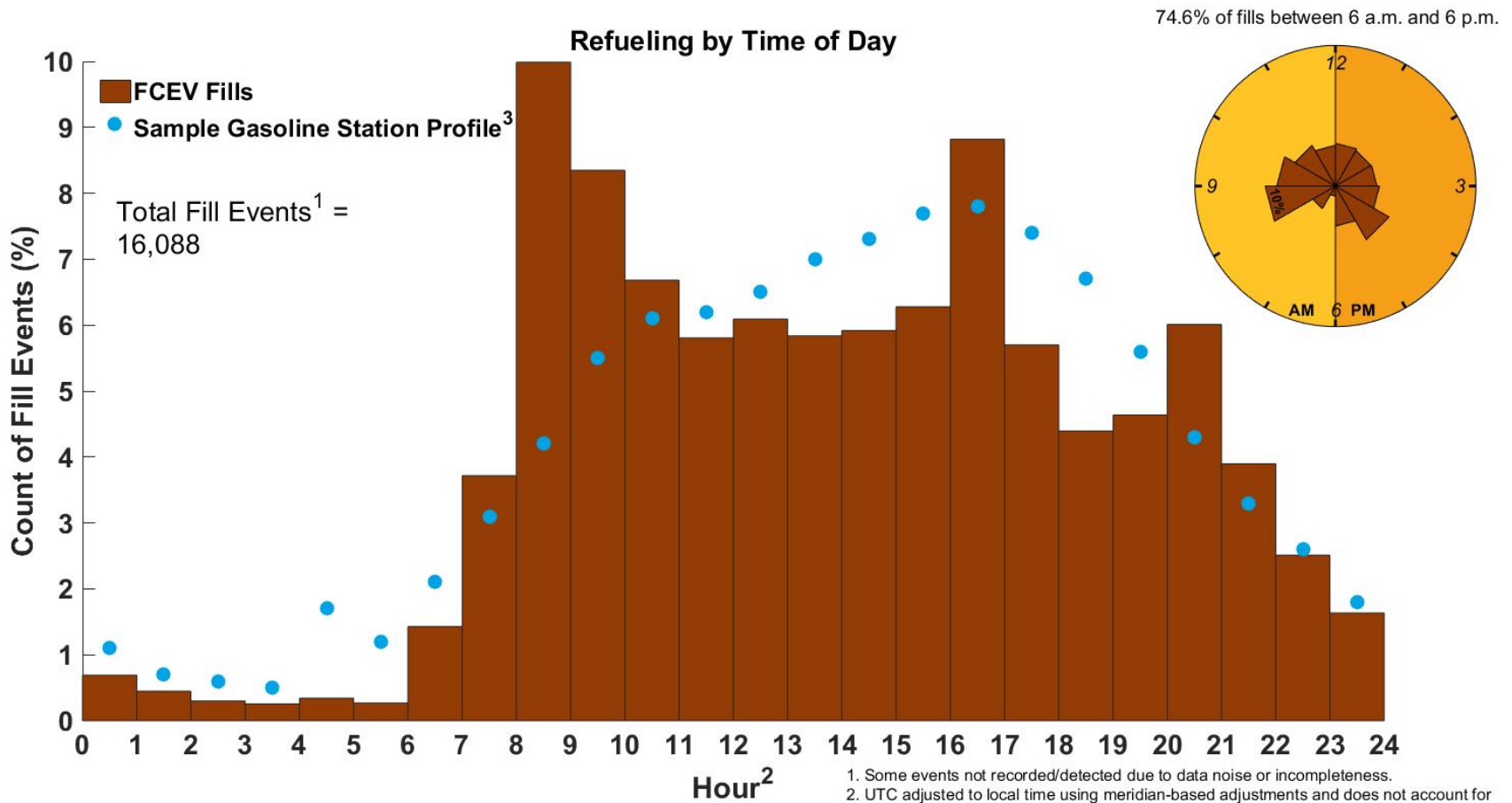
Fueling Behavior

CDP-FCEV-106: Average Calendar Days Between Refueling per Vehicle



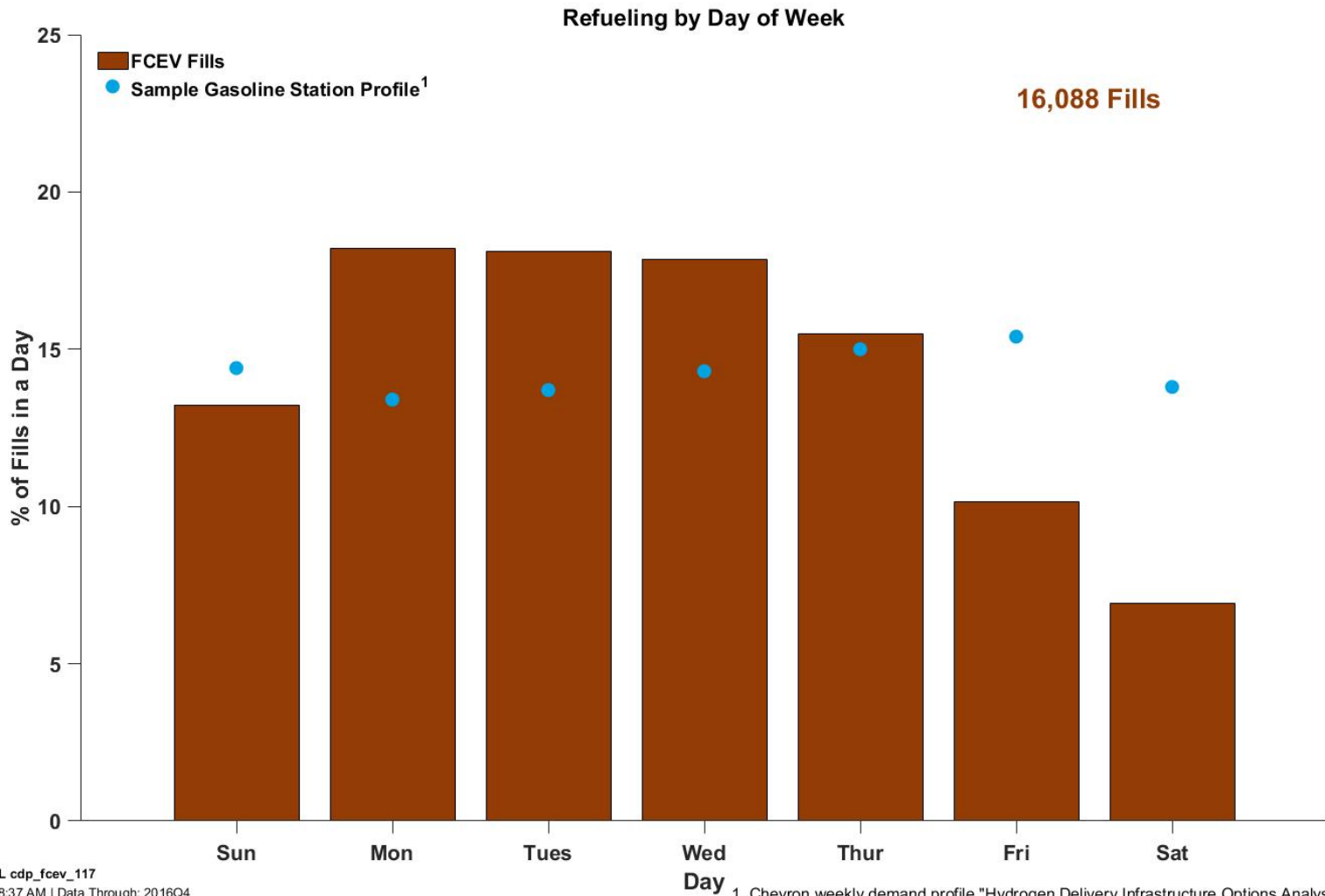
1. Data includes fills from 2012 - 2015. Fills < 1 hour apart are excluded.
2. Some vehicles included in the data have scheduled driving aimed at accumulating high miles and operation time over a variety of conditions. These vehicles typically fill at least once a day. These vehicles are operated on public roads and driving is typical for the region.

CDP-FCEV-116: Refueling by Time of Day

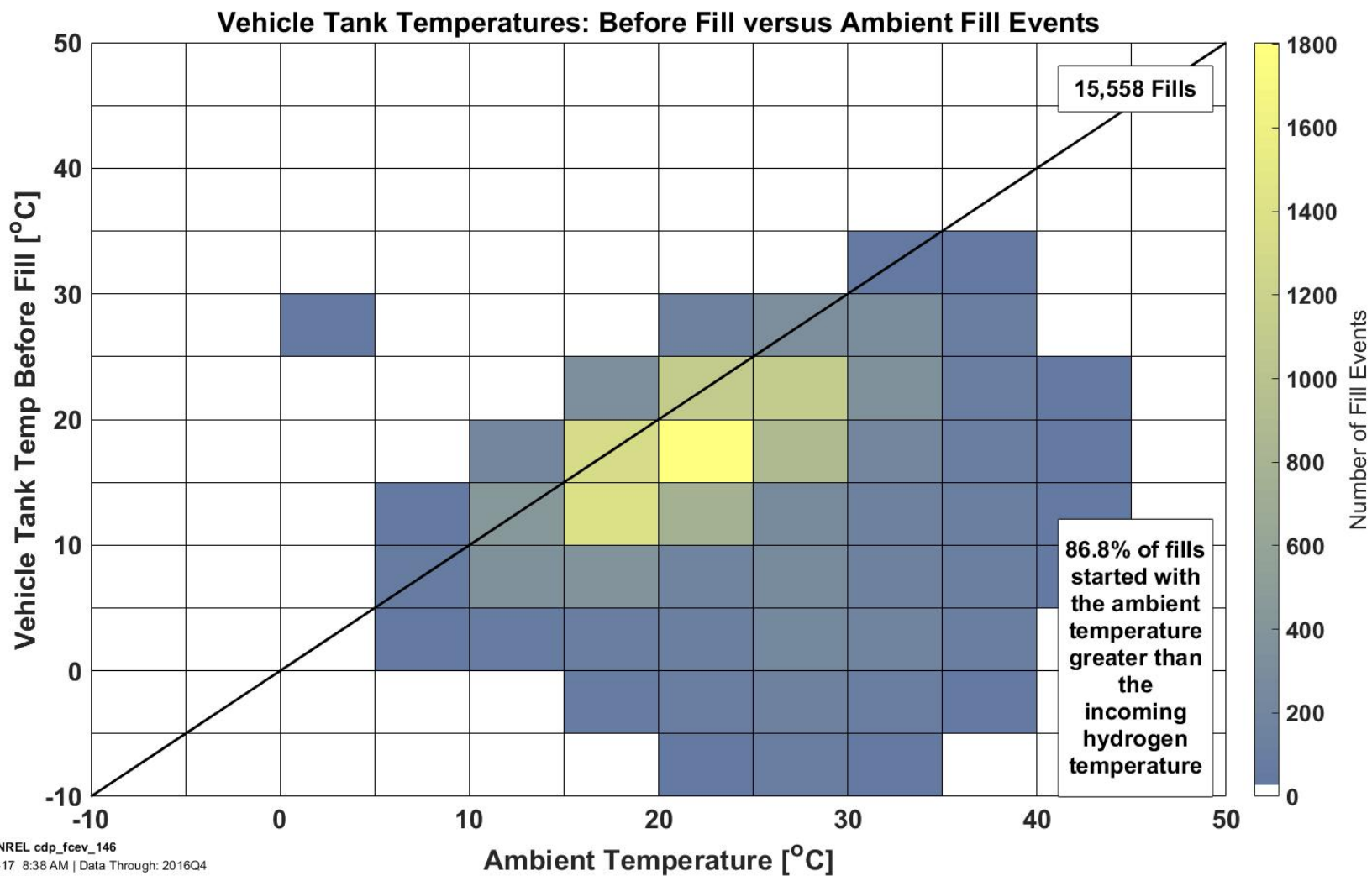


1. Some events not recorded/detected due to data noise or incompleteness.
 2. UTC adjusted to local time using meridian-based adjustments and does not account for statutory deviations from the meridian-based system.
 3. Friday Chevron profile "Hydrogen Delivery Infrastructure Options Analysis", T. Chen, 2008.

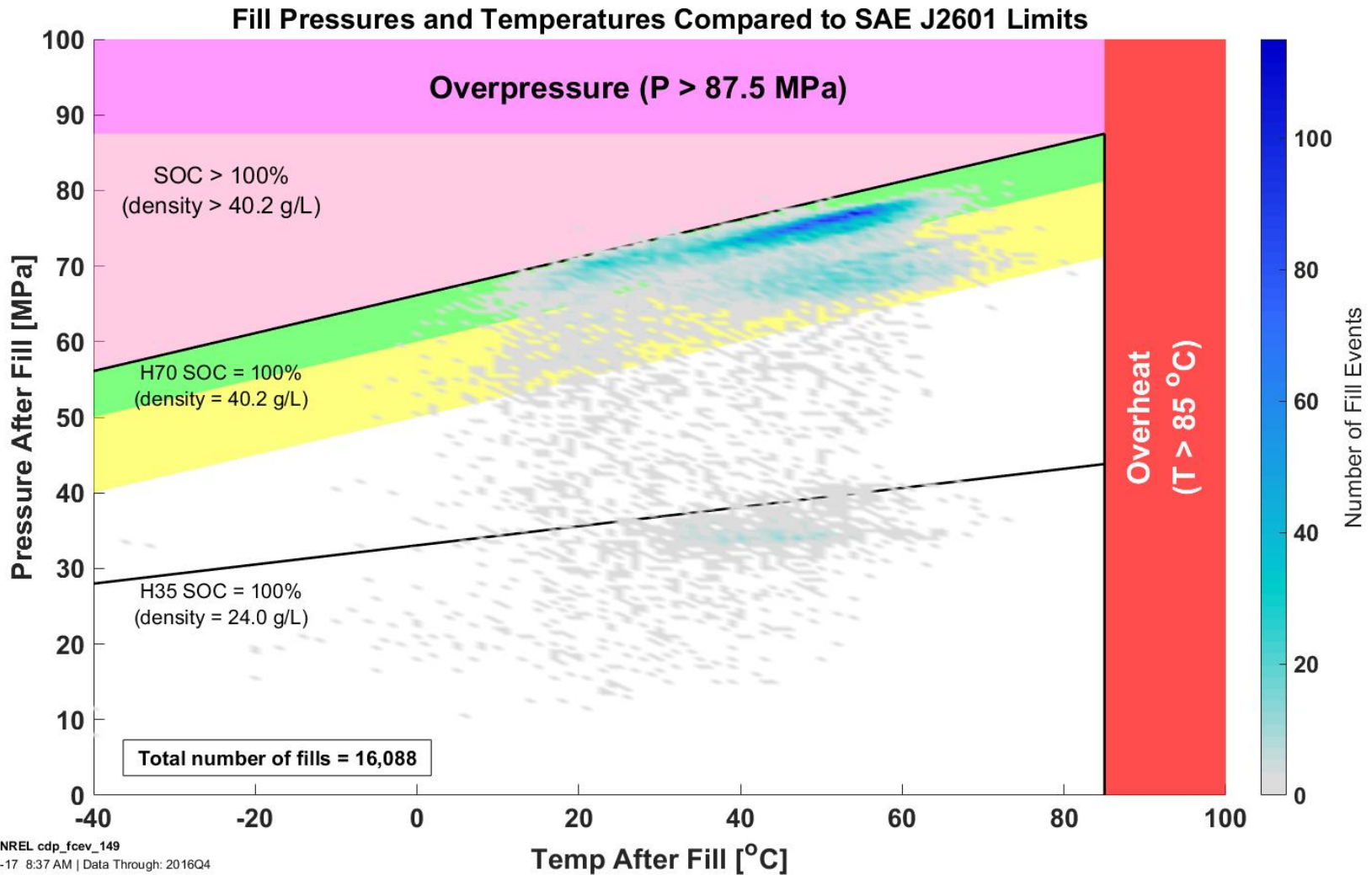
CDP-FCEV-117: Refueling by Day of Week



CDP-FCEV-146: Vehicle Tank Temperatures versus Ambient Temperatures

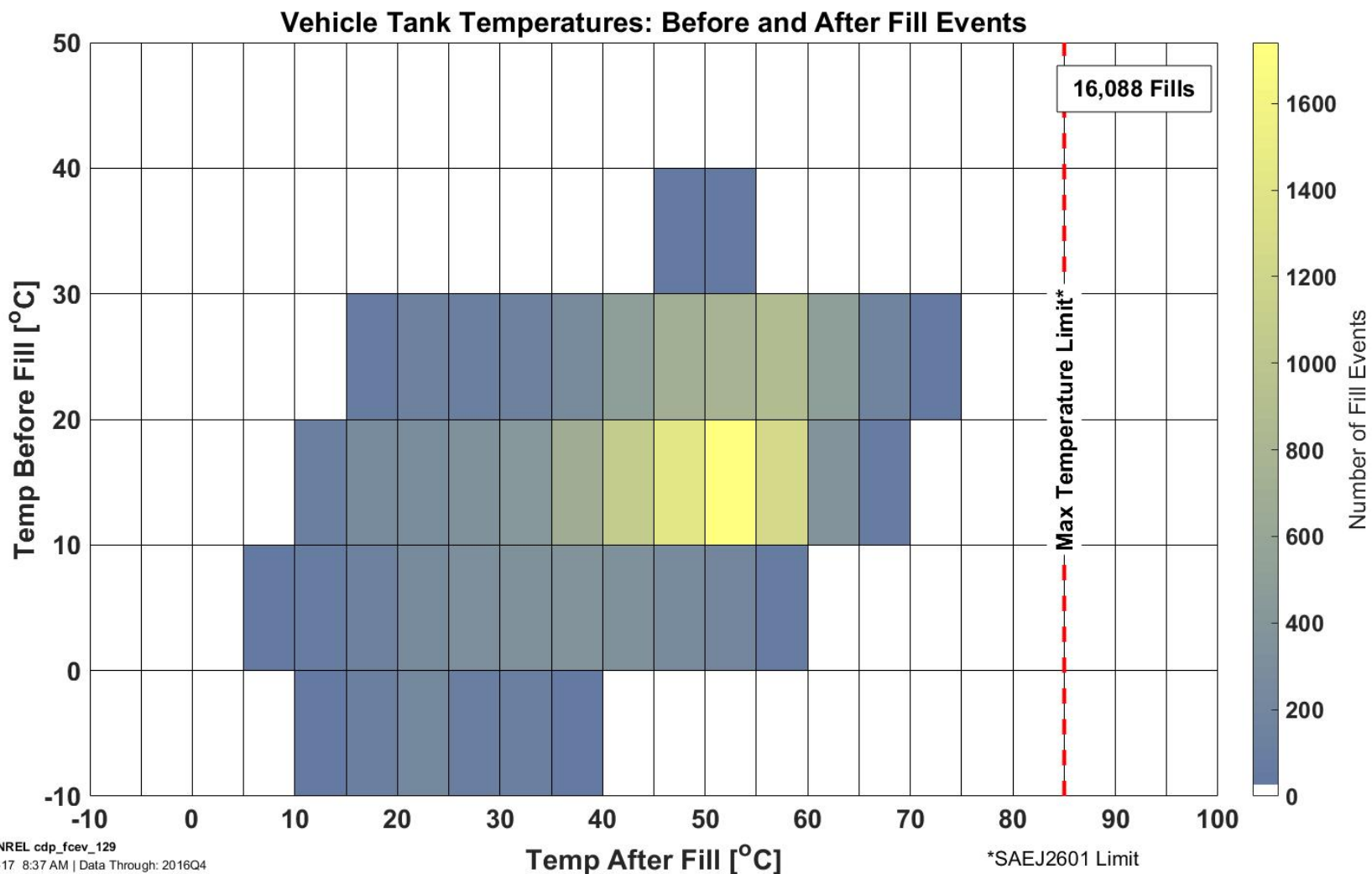


CDP-FCEV-149: Fill Pressures and Temperatures Compared with SAE J2601 Limits



Hydrogen Performance

CDP-FCEV-129: Vehicle Tank Temperatures: Before and After a Fill



CDP-FCEV-130: Vehicle Tank Temperatures and Pressures After Fill Events

