

# Compliance Levels for Current Operations

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## Description of data collection

Data collection efforts occurred during three days in February, April, and October 2003. The February effort took place from Wednesday, February 26, through Friday, February 28, 2003; April data collection occurred from Wednesday, April 23, through Friday, April 25, while October data collection occurred from Wednesday, October 15, through Friday, October 17. These efforts focused on recording passenger counts and identifying vehicles enrolled in the QuickRide program. For the Katy HOV lanes, teams observed vehicles for both the morning (6:45 AM – 8:00 AM) and evening (5:00 PM – 6:00 PM) QuickRide periods, while the US 290 HOV lanes were observed for the morning period only.

For the Katy Freeway HOV lanes, observers were placed at two locations: the Post Oak HOV entrance/exit ramp and Eastern Extension slip ramp. Two-person teams were situated in TTI vans at locations normally used by METRO enforcement officers; at the Post Oak location, the van would be located near the access gate on the closed side of the entrance/exit ramp, while the van at Eastern Extension was situated in a wide gore/shoulder off to the side of the HOV lanes.

The US 290 data collection team consisted of three people; one person collected data at the Dacoma off ramp in a TTI van, while two people observed from a personal vehicle parked beside METRO enforcement officers at the Northwest Transit Center exit ramp. This was done to more accurately capture bifurcating traffic flow at the Dacoma ramp.

Each two-person team had an observer and a recorder; while both could observe traffic, the recorder's primary responsibility was to accurately mark down passenger occupancy and HOV compliance. A video recorder was used to provide an audio log of the observations; video quality was generally too poor to provide an accurate visual record of vehicle occupancy. The primary characteristics collected for each observed vehicle included vehicle type, number of passengers, and the presence of toll transponders and QuickRide hang-tags. The specific classification regime for observed vehicles is discussed in detail in the next section.

## Vehicle Classifications

Vehicle classification encompassed six general categories, some of which were also sub-categorized. The general categories are summarized as follows:

- **HOV 3+:** Includes passenger vehicles (trucks and cars) in which at least three occupants could be identified, as well as any identifiable vanpool vehicles (vans with some sort of vanpool designation markings)
- **2-person Vehicles:** Passenger vehicles (trucks and cars) having two clearly identified occupants
- **SOV:** Single Occupancy vehicles (trucks and cars) having only one clearly identified occupant
- **BUS:** Metro or other public transportation vehicle, excluding vanpools.

- **MC:** Motorcycle

A valid 2-person QuickRide vehicle must display both a toll transponder (hereafter referred to as a “toll”) in the windshield area, as well as a small marquee labeled “QUICKRIDE” (referred to subsequently as a “pass”) which is hung off the rearview mirror. Hence the four subcategories of the 2-person vehicle classification comprise the possible permutations of the presence of absence of each of these two items:

- **PASS / TOLL:** A 2-person vehicle which displays both a toll transponder (TAG) and a QuickRide hang-tag (PASS). Such a vehicle is assumed to be abiding by all QuickRide regulations and is not considered a violator.
- **PASS / NO TOLL:** A 2-person vehicle displaying a QuickRide pass but no identifiable toll tag in the windshield or dashboard area. This type of vehicle is considered to be a violator.
- **NO PASS / TOLL:** A 2-person vehicle displaying an identifiable toll tag but not displaying a QuickRide pass. This type of vehicle is considered to be a violator.
- **NO PASS / NO TOLL:** A 2-person vehicle displaying neither a toll tag nor a QuickRide pass. Such a vehicle is considered to be a violator.

Single occupancy vehicles (SOV) were additionally classified into the following two categories:

- **POLICE:** A single occupancy vehicle displaying the characteristics of a marked police cruiser; i.e., emergency lights, spotlight, and agency insignia. This category also includes emergency vehicles such as ambulances, fire trucks, and tow trucks.
- **UNMARKED:** This category includes all law enforcement vehicles which are not marked police cruisers as well as the personal vehicles of law enforcement and security personnel. Such vehicles were identified either by vehicle configuration and/or by occupant behavior/appearance. For example, most law enforcement agents (police, FBI) would display their badges when driving by the data collectors. Security personnel and patrol officers could also be identified by their uniforms.
- **VIOLATOR:** All SOV’s which cannot be identified as containing law enforcement or security personnel.

## Data Analysis and Results

Results from the three data collection efforts have been summarized in Tables 1 through 3. The numbers in all tables represent the three-day totals for each vehicle category. The last three columns in each table give the aggregate number of violators and valid users, as well as the overall total of classifiable vehicles observed. All totals for the categories in the table are also expressed as row percentages; i.e., each entry for a given row in the table is expressed as a percent of the total number of classifiable vehicles observed for that row. Shaded columns in the table denote violation categories.

The total violator and total valid user columns of Table 1 show that violation rates were uniform across the Katy and Northwest HOV lanes for both AM and PM periods. Operating

under the definitions of violators explained previously, at least 61 percent of all HOT users could be classified as non-compliant. By far the most common class of violator was the 2-passenger vehicle lacking both a toll transponder and a QuickRide hang-tag. Along the Katy HOT lanes, over 40 percent of users fell into this category of violator for both AM and PM periods.

Table 1: February 26-28, 2003 Data Collection

QuickRide Period	HOV 3+	2 person				SOV			Bus	MC	Total Violator	Total Valid	Grand Total
		Pass Toll	No Pass Toll	Pass No Toll	No Pass No Toll	Police	Unmarked	Violator					
Katy AM	1033 26.2%	107 2.7%	147 3.7%	331 8.4%	1594 40.4%	48 1.2%	87 2.2%	361 9.1%	192 4.9%	50 1.3%	2520 63.8%	1430 36.2%	3950
Katy PM	772 25.9%	95 3.2%	129 4.3%	235 7.9%	1194 40.0%	29 1.0%	91 3.0%	227 7.6%	159 5.3%	53 1.8%	1876 62.9%	1108 37.1%	2984
Northwest AM	1227 28.5%	257 6.0%	203 4.7%	512 11.9%	1491 34.7%	66 1.5%	299 7.0%	129 3.0%	86 2.0%	31 0.7%	2634 61.2%	1667 38.8%	4301

For the April data collection, shown in Table 2, violation rates remained relatively constant from those seen in February. Again, all facilities showed at least a 56% non-compliance rate. While overall non-compliance for the Katy PM period fell slightly (from 62.9% to 56%), the Katy AM noncompliance rate increased by nearly 3 percentage points (from 63.8% to 66.8%).

Table 2: April 23-25, 2003 Data Collection

QuickRide Period	HOV 3+	2 person				SOV			Bus	MC	Total Violator	Total Valid	Grand Total
		Pass Toll	No Pass Toll	Pass No Toll	No Pass No Toll	Police	Unmarked	Violator					
Katy AM	927 22.7%	144 3.5%	192 4.7%	402 9.9%	1648 40.4%	39 1.0%	72 1.8%	389 9.5%	192 4.7%	74 1.8%	2703 66.3%	1376 33.7%	4079
Katy PM	910 31.1%	146 5.0%	122 4.2%	222 7.6%	1045 35.8%	18 0.6%	52 1.8%	194 6.6%	157 5.4%	56 1.9%	1635 56.0%	1287 44.0%	2922
Northwest AM	1250 27.9%	281 6.3%	175 3.9%	575 12.8%	1590 35.5%	49 1.1%	293 6.5%	111 2.5%	84 1.9%	72 1.6%	2744 61.3%	1736 38.8%	4480

The October data, shown in Table 3, indicates a significant reduction in noncompliance rates across all QuickRide facilities and periods. Most notable is the reduction in the Northwest violation rate, which decreased from 61.3% in April to a much lower 38% in October. Katy AM violation rates also decreased from 66.3% to 56.3%, while violation rates for Katy PM fell from 56% in April to 47.9% in October. Most of the reductions in overall violation rates may be attributed to the sharp decline in unauthorized 2-person vehicles, specifically the category “No Pass / No Toll.” Violation rates for this category declined sharply for Northwest, falling from 35.5% in April to only 16.9% in October. Katy AM and Katy PM experienced more modest drops in this violation category, declining from 40.4% and 35.8% to 33.7% and 30.4%, respectively. SOV violators also declined, in most cases dropping by nearly half.

The results from the October data collection are notable in that they serve to quantify the effect of a number of actions taken in mid-August, including increased level of enforcement, friendly reminder letters to enrollees and non-enrollees on the facility, and signs posting the \$200 fine. Overall violations decreased 53% for Northwest, 26% for Katy AM, and 18% for Katy PM. These reductions were large enough to increase capacity in the HOT lanes by approximately 360 vehicles during the Katy AM peak hour, 200 vehicles in the Katy PM peak hour, and 1000 vehicles in the Northwest AM peak hour. Perhaps most encouraging, the number of high occupancy vehicles using the HOT facilities increased from April to October by 9.1%, 12%, and 22.1% for Katy AM, Katy PM, and Northwest AM periods, respectively.

Table 3: October 15-17, 2003 Data Collection

QuickRide Period	HOV 3+	2 person				SOV			Bus	MC	Total Violator	Total Valid	Grand Total
		Pass Toll	No Pass Toll	Pass No Toll	No Pass No Toll	Police	Unmarked	Violator					
Katy AM	1012 (28.5%)	179 (5.0%)	153 4.3%	347 9.8%	1194 33.7%	34 1.0%	86 2.4%	216 6.1%	190 5.4%	137 3.9%	1996 56.3%	1552 43.7%	3548
Katy PM	1019 36.5%	141 5.1%	112 4.0%	172 6.2%	848 30.4%	26 0.9%	67 2.4%	138 4.9%	159 5.7%	110 3.9%	1337 47.9%	1455 52.1%	2792
Northwest AM	1527 45.1%	277 8.2%	126 3.7%	361 10.7%	574 16.9%	47 1.4%	173 5.1%	53 1.6%	94 2.8%	157 4.6%	1287 38.0%	2102 62.0%	3389