QUANTIFICATION OF CASUAL CARPOOLING IN HOUSTON

Mark Ojah and Mark Burris
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INTRODUCTION

Casual carpooling refers to the practice of single drivers or two-person vehicles sharing their ride with others on an informal basis to satisfy high occupancy vehicle (HOV) lane occupancy requirements. By forming casual carpools at park-and-ride facilities and other locations, drivers and passengers destined for the same general area are able to circumvent congestion on freeway main lanes and arrive at their destination more quickly. Because this activity is based on the mutual dependence of drivers and passengers, money is usually not exchanged for rides offered or accepted.

BACKGROUND

Houston, Washington D.C. and San Francisco are among the few metropolitan areas in the United States where casual carpooling has become established. HOV-lane regulations on Houston's Katy (I-10) and Northwest (US 290) Freeways require vehicles using these lanes for free to have a minimum of three occupants between 6:45 AM and 8:00 AM and two occupants during the rest of the morning period. To speed up their commute and reduce costs, travelers began forming casual carpools on the Katy Freeway in the early 1990s. Commuters on the Northwest Freeway subsequently adopted the practice. The number of people traveling this way has slowly increased in both corridors. Despite the persistence of casual carpooling for over 10 years on these routes, no previous attempts to formally examine or quantify the practice were identified.

PURPOSE

The purpose of studying casual carpooling on the Katy and Northwest Freeways was to develop a clearer profile of HOV-lane users in these corridors. Understanding how and by whom the HOV lanes are used enables more accurate predictions about potential user reactions to various operational and tolling scenarios.

DATA COLLECTION

Two data collection efforts have thus far been undertaken to examine casual carpooling on the Katy and Northwest Freeways. The first sought to determine where, when and to what extent casual carpooling was occurring. The objective of the second effort was to ascertain information about the behavior and demographics of individuals engaged in the activity. This report focuses on the quantification of casual carpooling.

Researchers consulted local transportation professionals; news media reports; and operations, enforcement and administrative personnel from the Metropolitan Transit Authority of Harris County, Texas, (METRO) to obtain preliminary information regarding casual carpooling on the Katy and Northwest Freeways. These sources indicated that queues of casual carpool passengers (also known as "slugs") and casual carpool drivers (also known as "body snatchers") consistently formed at three METRO Park & Ride facilities during peak traffic periods on weekday mornings. An additional two Park & Ride lots were identified as possible sites for casual carpooling during the AM period.[1] Houston METRO Park & Ride facilities are convenient meeting points for casual carpoolers because they draw commuters traveling to similar parts of the city, offer free parking and direct access to the HOV and main lanes, and provide an express public transportation option in the event that a suitable casual carpool is unavailable.

On Thursday, June 19, 2003, one data collector was sent to each of five Park & Ride facilities (Kingsland and Addicks on the Katy Freeway; and Northwest Station, West Little York and Pinemont on the Northwest Freeway) to record the level of casual carpooling activity (see Figure 1). Data collectors positioned themselves where casual carpools were forming and counted individuals as they accepted rides from drivers. Counts were tallied in 15-minute segments from 5:30 AM to 9:30 AM.

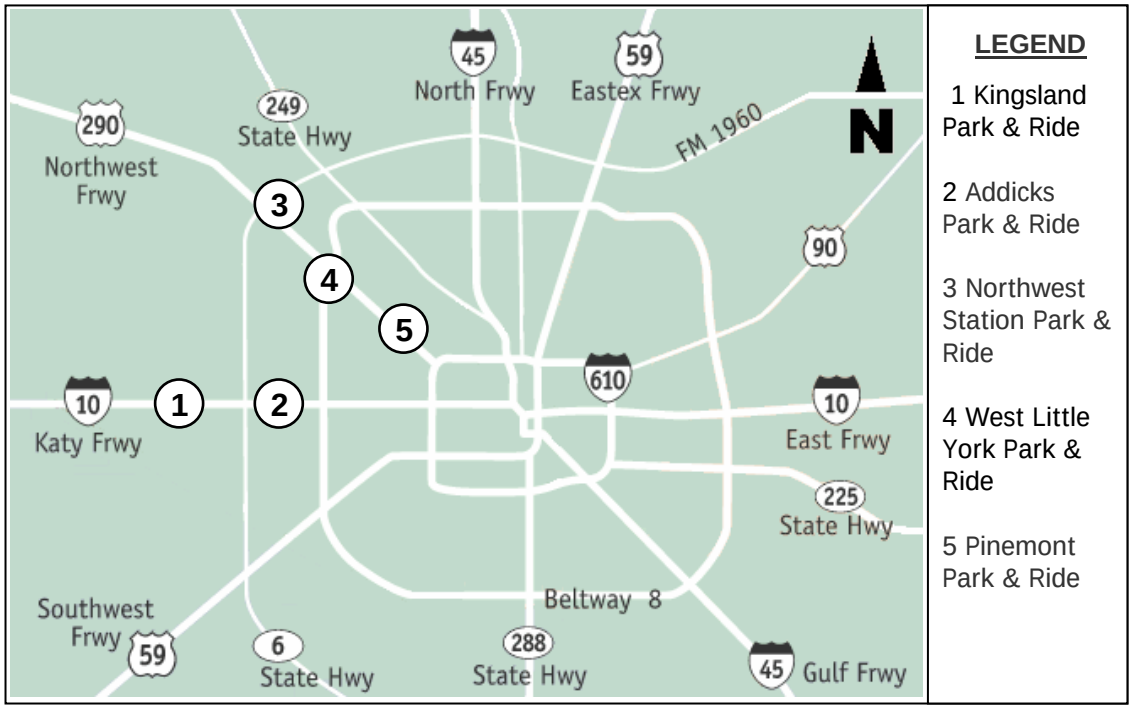

Figure 1: Houston Park and Ride Lots Monitored for Casual Carpooling Activity

[1] Afternoon casual carpooling in Houston is much less pronounced and was not examined in this study.

On Thursday, November 20, 2003, a second casual carpooling data collection effort was conducted. Four researchers were sent to the three Park & Ride lots where regular casual carpooling had previously been recorded (one each at the Kingsland and Addicks facilities, and two at the Northwest Station location). Passengers joining casual carpools at the casual carpool queue were handed a numbered survey and asked to complete and return it within two weeks. Due to the lack of casual carpooling at the Little York and Pinemont Park & Ride facilities in June 2003, these locations were excluded from the second data collection effort. One surveyor was assigned to the Kingsland Park & Ride due to the smaller size of the lot. The rationale for dispatching two researchers to the Northwest Station Park & Ride site was based on the existence of two distinct parking areas at that facility. When the primary lot at that facility approached capacity, casual carpooling reportedly spread to an isolated secondary lot located across the street. Personnel distributing surveys at the Northwest Station Park & Ride were able to work separately and improve the probability of capturing a greater proportion of the casual carpooling occurring at that facility. One surveyor was assigned to the Addicks Park & Ride although the lot is larger and also has two parking areas. Therefore, the number of casual carpoolers surveyed at the Addicks Park & Ride may not be as large a proportion as the other lots.

Approximately 7 percent of casual carpoolers who were offered a survey declined. In addition, surveyors observed carpoolers accepting a ride in locations other than the casual carpool queue. There is no count of these additional casual carpoolers, and it was not known if they were participating in casual or formal carpools. Although quantification of casual carpooling was not the primary objective of the second data collection effort, the volume of passengers engaged in this activity can be estimated from the number of surveys accepted and refused. Survey distribution began upon arrival of the first casual carpoolers shortly after 6:00 AM and continued until approximately 8:50 AM when activity ceased or became sporadic[2]. The number of casual carpoolers per time increment was not recorded in November 2003.

RESULTS

June 19, 2003, Data Collection

A total of 484 passengers were observed joining casual carpools during the first data collection effort. Of these, 219 (45 percent) were at the Addicks Park & Ride, 130 (27 percent) were at the Kingsland Park & Ride, and 135 (28 percent) were at the Northwest Station Park & Ride. A marked increase in casual carpooling was noted during the peak traffic period at all three of these locations. Of the casual carpool passengers recorded, 345 (71 percent) accepted rides between 6:45 AM and 8:00 AM. No casual carpooling activity was observed prior to 6:00 AM, and only 4 (1 percent) of the casual

[2] In November 2003, researchers at the Northwest Station Park & Ride and the Kingsland Park & Ride ran out of surveys near the end of casual carpooling activity.

carpool passengers tallied by data collectors accepted rides after 9:00 AM. Personnel at the Little York and Pinemont Park & Rides did not observe any casual carpooling activity. Table 1 shows the distribution of casual carpool passengers by time and location.

Table 1. Volume of Casual Carpool Passengers: Thursday, June 19, 2003

Start Time	Kingsland Park & Ride	Addicks Park & Ride	NW Station Park & Ride	Little York Park & Ride	Pinemont Park & Ride	Total
5:30 AM	0	0	0	0	0	0
5:45 AM	0	0	0	0	0	0
6:00 AM	0	1	2	0	0	3
6:15 AM	2	2	5	0	0	9
6:30 AM	6	16	6	0	0	28
6:45 AM	13	16	19	0	0	48
7:00 AM	23	39	17	0	0	79
7:15 AM	38	35	21	0	0	94
7:30 AM	13	26	32	0	0	71
7:45 AM	10	29	14	0	0	53
8:00 AM	15	21	8	0	0	44
8:15 AM	4	19	6	0	0	29
8:30 AM	3	7	3	0	0	13
8:45 AM	2	5	2	0	0	9
9:00 AM	1	0	0	0	0	1
9:15 AM	0	3	0	0	0	3
Total	**130**	**219**	**135**	**0**	**0**	**484**

November 20, 2003, Data Collection

Researchers in the second data collection effort observed approximately 578 passengers joining casual carpools. Table 2 indicates the number of surveys distributed and the estimated number of surveys refused by passengers at the locations monitored.

Of the casual carpool passengers that were observed by data collectors, 203 (35 percent) accepted rides at the Addicks Park & Ride lot, 161 (28 percent) were picked up at the Kingsland Park & Ride, and 214 (37 percent) joined carpools at the Northwest Station Park & Ride.

Table 2. Volume of Casual Carpool Passengers: Thursday, November 20, 2003

Information	Kingsland Park & Ride	Addicks Park & Ride	NW Station Park & Ride	Total
Start Time	6:00 AM	6:00 AM	6:00 AM	-
End Time	8:50 AM	8:45 AM	8:50 AM	-
Surveys Distributed	150	189	199	538
Surveys Refused	Approximately 7%			
Total	**161**	**203**	**214**	**578**

CONCLUSIONS AND FUTURE RESEARCH

The data collection efforts undertaken to date indicate that significant casual carpooling activity occurs on the Katy and Northwest Freeway corridors in Houston. This activity is concentrated at the Kingsland, Addicks and Northwest Station Park & Rides during the morning peak traffic period. Two factors probably contributed to the recorded increase in casual carpooling at the Northwest Station and Kingsland locations between June 2003 and November 2003. First, an additional data collector was dispatched to the Northwest Station Park & Ride facility in November.[3] By sharing survey distribution responsibilities at different parts of this facility, data collectors were able to capture a greater number of casual carpoolers. The second factor that might have contributed to a higher overall volume of casual carpool passengers in November was the time of year. Casual carpooling appears to be less prevalent during the summer school holiday season when fewer vehicles use these corridors (data from "Houston High Occupancy Vehicle Lane Operation Summary" published quarterly along with QuickRide usage statistics) and speeds are generally higher on the main lanes (data from "Monitoring Urban Roadways in 2002: Examining Reliability and Mobility Issues with Archived Data," available at http://mobility.tamu.edu/mmp.)

More in-depth analysis of information and observations from the data collection efforts is underway to determine the:

- socio-economic characteristics of casual carpool passengers,
- commute characteristics of casual carpool passengers and
- factors influencing choice of mode among casual carpoolers.

[3] One surveyor was dispatched to the Addicks Park & Ride although the facility has similar physical characteristics to the Northwest Station Park & Ride. More casual carpoolers may have been surveyed if an additional surveyor had been available to monitor the Addicks Park & Ride .