On Board Survey Results Report
Honolulu High-Capacity Transit Corridor Project

Product 10.2

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and
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Chapter 1 Introduction

The City and County of Honolulu Department of Transportation Services (DTS), in coordination with the U.S. Department of Transportation Federal Transit Administration (FTA), will be preparing an Alternatives Analysis (AA) and an Environmental Impact Statement (EIS) to evaluate alternatives that would provide high-capacity transit service on O‘ahu. The primary project study area is the travel corridor between Kapolei and the University of Hawai‘i at Mānoa (Figure 1-1). This corridor includes the majority of housing and employment on O‘ahu. The east-west length of the corridor is approximately 23 miles. The north-south width of the corridor is at most four miles, as much of the corridor is bounded by the Ko‘olau and Wai‘anae Mountain Ranges to the north and the Pacific Ocean to the south.

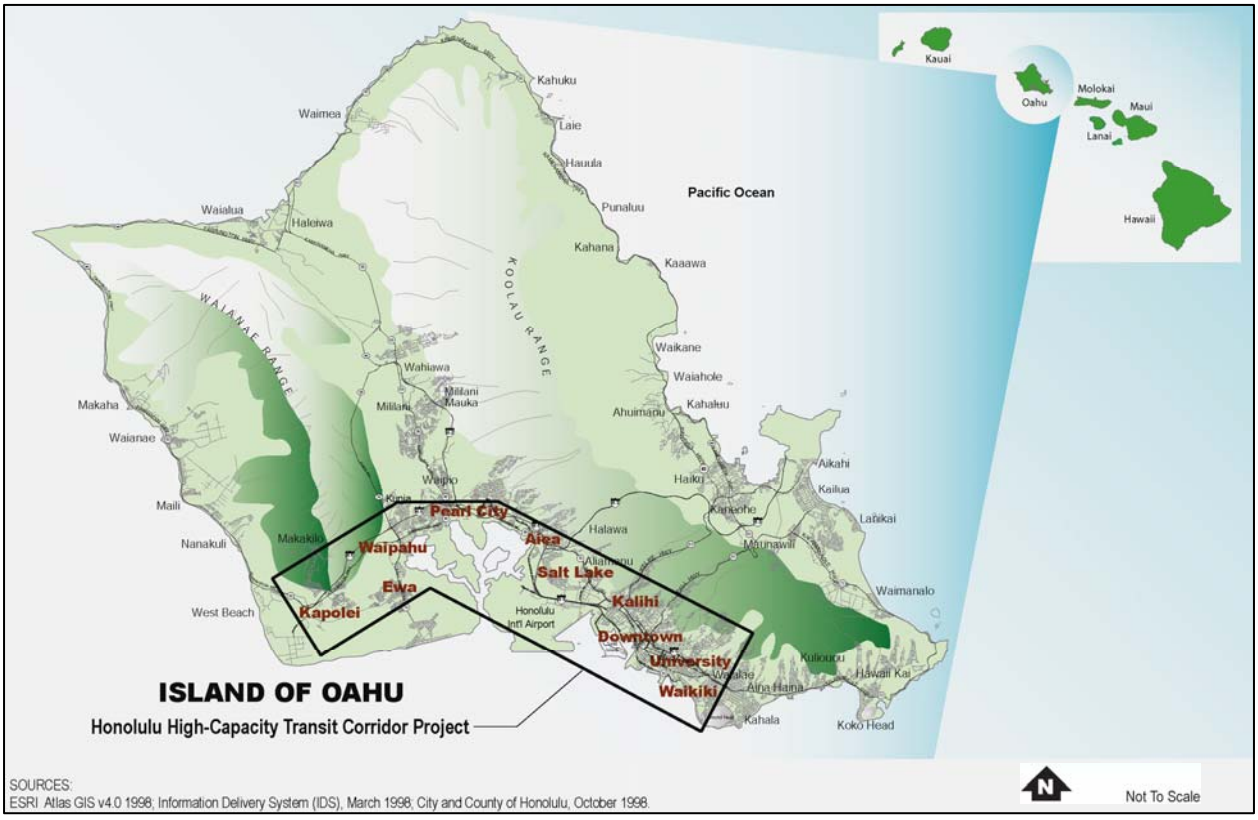


Figure 1-1: Project Vicinity

Project Description

Description of the Study Corridor

The study corridor extends from Kapolei in the west (Wai‘anae or ‘Ewa direction) to the University of Hawai‘i at Mānoa in the east (Koko Head direction), and is confined by the Wai‘anae and Ko‘olau mountain ranges to the north (mauka direction) and the ocean to the south (makai direction).

The corridor is constrained geographically to a narrow band between the mountains and ocean. In the Pearl City, Waimalu, and ʻAiea area, the corridor's width is less than one mile between the Pacific Ocean and the base of the Koʻolau Mountains.

The General Plan for the City and County of Honolulu directs future population and employment growth to the ʻEwa, Central Oʻahu, and Primary Urban Center development plan areas, with the highest rate of growth in the ʻEwa area. The largest increases in population and employment are projected in the ʻEwa, Waipahu, Downtown, and Kakaʻako districts, which are all located in the corridor.

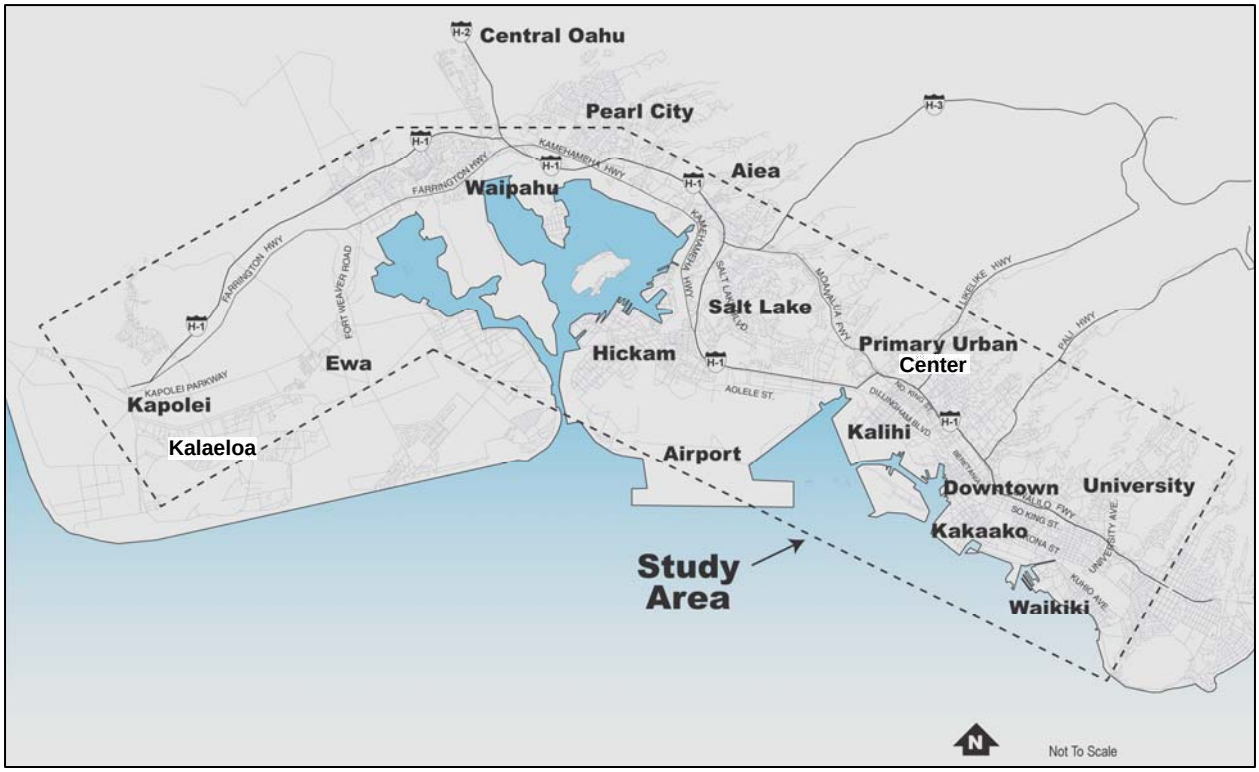


Figure 1-2: Areas and Districts in the Study Corridor

Kapolei is the center of the ʻEwa development area. It is located in a plain of former sugar cane fields and is rapidly developing. To date, residential development has outpaced commercial development, placing additional commuter pressure on the constrained roadway system serving the area. Kapolei has been designated Oʻahu's "second city," and City and State government offices have opened there. The Kalaeloa Community Development District (formerly known as Barbers Point Naval Air Station) consists of several hundred acres adjacent to Kapolei. Several alternatives exist for the redevelopment of this area, including the possibility of developing some of the area for the onshore support of an aircraft carrier with a homeport at Pearl Harbor. The University of Hawaiʻi is developing a master plan for a new West Oʻahu campus in Kapolei. The Department of Hawaiian Homelands is also a major landowner in the area,

and has plans for shopping center development. Also, developers have several proposals to continue the construction of residential subdivisions.

Continuing Koko Head, the corridor follows Farrington and Kamehameha Highways through a mixture of low-density commercial and residential development. This part of the corridor passes through the makai portion of the Central Oʻahu Development Plan area, which lies at the bottom of the valley between the Waiʻanae and Koʻolau Mountain Ranges. Farrington Highway and the H-1 Freeway are the principal ʻEwa-Koko Head routes through this part of the corridor.

Moving further Koko Head, the corridor enters the Primary Urban Center Development Plan area. Commercial and residential densities begin to increase in the vicinity of Aloha Stadium. H-1 Freeway, Kamehameha Highway, Salt Lake Boulevard and Moanalua Freeway are the principal ʻEwa-Koko Head roadways in the western portion of the Primary Urban Center development plan area. The Pearl Harbor Naval Reserve, Hickam Air Force Base, and the Honolulu International Airport border the corridor on the makai side. Military and civilian housing are the dominant land uses mauka of the H-1 Freeway, with a concentration of high-density housing along Salt Lake Boulevard.

As the corridor continues Koko Head across Moanalua Stream, the land use continues to urbanize with increasing density. There are four principal transportation links through this portion of the corridor: Nimitz Highway, Dillingham Boulevard, North King Street, and the H-1 Freeway. Industrial and port land uses dominate along the harbor, shifting to primarily commercial uses along Dillingham Boulevard, changing to a mixture of residential and commercial uses along North King Street, with primarily residential use mauka of the H-1 Freeway.

Koko Head of Nuʻuanu Stream, the corridor continues through Chinatown and downtown. The Chinatown and downtown areas have the highest employment density in the corridor. Streets in this area form an urban grid pattern, with traffic spread over several arterials. The Kakaʻako and Ala Moana neighborhoods, comprised historically of low-rise industrial and commercial uses, are revitalizing with several high-rise residential towers currently under construction. Ala Moana Center is both a major transit hub and shopping destination.

The corridor continues to Waikīkī and through the McCully neighborhood to the University of Hawaiʻi. Today, Waikīkī is one of the densest tourist areas in the world, serving approximately 72,000 visitors daily (DBEDT, 2003). The University of Hawaiʻi at Mānoa is the other major destination at the Koko Head end of the corridor. It has an enrollment of over 20,000 students and approximately 6,000 staff (UH, 2005). Approximately 60 percent of the students do not live within walking distance of the campus (UH, 2002) and must travel to attend classes.

Currently, morning travel patterns in the corridor are heavily directional. Morning town-bound traffic volumes through the Waipahu and ʻAiea areas (Koko Head direction) are more than twice the volume in the ʻEwa direction. Afternoon flows are less directional

with ‘Ewa bound traffic volumes about 50 percent greater than town-bound (Koko Head bound) traffic.

Description of Report

This report documents the methods used and describes the results of the on-board survey of weekday passengers of TheBus system, which operates throughout the Island of O‘ahu.[1] This survey was conducted to collect accurate and reliable travel patterns and socio-economic characteristics of weekday bus passengers. These data will be used to refine travel demand models so as to create forecasts of future transit ridership for the Honolulu High-Capacity Transit Corridor Project.

Data collection for TheBus on-board survey occurred in December 2005 and January 2006. Data were collected using an innovative methodology that included the distribution of questionnaires to boarding passengers while simultaneously recording the boarding and alighting counts using GPS-enhanced palm devices. The Palm devices with GPS recorded the location and time (arrival and departure) at each bus stop. By entering questionnaire numbers into the units prior to arrival at a bus stop, this process also tied a sequence of questionnaires directly to a bus stop. Survey data were entered, corrected, and geocoded simultaneous with collection. Data processing and quality assurance activities continued through February 2006. This report is based on analysis of the final survey database that contains 14,609 records.

This report has been organized into chapters that follow the sequence of activities required to implement the survey. The next chapter (Chapter 2) contains a description of the sampling approach. Scientific sampling was important to the success of the survey because this was a sample survey in which not every rider of every bus trip in service was surveyed. Chapter 3 presents the procedures used to conduct the survey. Chapter 4 summarizes the steps taken to create the final database. Finally, the last chapters (5 and 6) include tables, graphs, and explanatory text that present the survey results. The Appendices contain the survey instrument as well as unweighted survey data frequencies.

[1] O‘ahu Transit Services, Inc., a private management company is responsible for scheduling and operating bus lines.

Chapter 2 Sampling Approach

TheBus system is comprised of 89 routes, organized as seven types of service: (1) Urban Trunk, Suburban Trunk, Rapid Bus (or City and Country Express), Urban Feeder, Suburban Feeder, Community Circulator, and Peak Express Routes. Some routes are paired so that one bus may serve two or more separate routes (e.g., routes 57/58). A sampling plan was designed to provide a sample size adequate for analysis of all service types and to be statistically significant at the route level (or paired route level). The sampling plan was expected to result in 14,128 questionnaires. As discussed in the next chapter, the survey data collection actually resulted in 14,609 questionnaires.

Approach to Sampling

TheBus on-board survey used a standard two-stage sampling approach for transit on-board surveys that consisted of sampling passengers and sampling bus trips. Selecting the sample of passengers was straightforward. For this survey, 100% of the passengers over the age of six, who boarded sampled bus trips, received a questionnaire.[2] Parents were expected to complete the questionnaire for young children over the age of six. The age of a rider was visually estimated by the surveyor on the bus. If the surveyor was not sure whether the rider was over or under the age of six they were instructed to ask the boarding passenger. Selecting the sample of bus trips by service type and route was a more complex statistical operation, and it is described in the following sections.

TheBus provided ridership by route and service type.[3] TheBus provided information for the entire month of August 2005 as well as an average daily weekday ridership estimate. This information was used to design the sample, including the number of routes and trips to be surveyed as well as the number of questionnaires per route required to meet a minimum standard error level.

The following four tables provide both an overview as well as detailed information about the sampling plan. NuStats sampled all Urban Trunk, Suburban Trunk, and Rapid Bus routes (see Table 2-1). The statistical accuracy of the sample of bus trips was tiered to allow for a lower standard error level of the most productive lines (i.e., high average daily boardings), a mid-level standard error level for mid-ridership level lines, and the highest standard error level for lines that do not carry enough daily riders to obtain a larger sample size. Based on information from TheBus, these three service types comprised nearly 90% of all boarding passengers but only 38% of all bus routes surveyed.

[2] The age of six was selected as the cutoff age because age six was the threshold used in the previous on-board survey, 1991.
[3] Trailing Twelve Month GFI Route Cost-Effectiveness Report for the month of August 2005.

Table 2-1: Estimated Sample Goals for Urban Trunk, Suburban Trunk and Rapid Bus Routes

Average Daily Boardings	Significance Level	Minimum Sample Size Per Route	Number Of Routes Affected	Sample Goal
5,000+	95% ± 4.3	510	14	7,140
2,000 – 4,999	95% ± 5.0%	384	7	2,688
1,999 or fewer	95% ± 6.0%	270	5	1,350
Overall	95% ± 0.9%	--	26	11,178

Urban Feeder, Suburban Feeder, Community Circulator, and Express routes comprised about 10% of total boardings and 62% of all routes surveyed. Not all routes representing these service types were surveyed.

The small percent of boardings would suggest small percent of the total sample, but because the feeder, circulator, and express route riders are important to the goals of this study, the routes were "over-sampled" so that they comprised 21% of total sample (see Table 2-2).

Table 2-2: Estimated Sample Goals for Urban Feeder, Suburban Feeder, Community Circulator and Express Routes

Average Daily Boardings	Significance Level	Minimum Sample Size Per Route	Number Of Routes Affected	Sample Goal
2,000+	95% ± 5%	384	1	384
1,000 – 1,999	95% ± 8%	150	5	750
500 - 999	95% ± 10%	96	6	576
300 - 499	95% ± 12%	60	12	720
200 - 299	95% ± 15.5%	40	7	280
199 or fewer	95% ± 21.9%	20	12 (of 26)	240
Overall	95% ± 1.8%	--	43	2,950

Table 2-3 summarizes the proposed data collection goals for each type of service. As Table 2-3 indicates, the results of this sample plan were designed to yield 14,128 questionnaires from weekday service, resulting in an overall standard error rate of ± 0.8 percentage points at the 95% confidence interval.

Table 2-3: Estimated Sample Goals by Service Type

Service type	Weekday daily ridership	Sample goal	Standard Error
Rapid Bus	23,219	1,404	2.6%
Urban Trunk	104,919	4,350	1.3%
Suburban Trunk	55,196	5,424	1.3%
Urban Feeder	8,122	1,076	3.0%
Suburban Feeder	1,034	160	7.7%
Community Circulator	5,458	618	3.9%
Peak Express	7,482	1,096	3.0%
Overall	205,430	14,128	0.8%

Table 2-4 presents disaggregate information about the sample goals by providing the sample by route.[4] In total, NuStats surveyed 83 of the 89 routes operated by TheBus. The ridership estimate for these routes was 205,430.

[4] Note that partnered routes (such as the 8/19/20) are shown in the same row with one aggregate quota. This is because TheBus was not been able to provide mutually exclusive ridership numbers for the subroutes.

Table 2-4: Sampling Plan by Route

Route Number	Route Type	Daily Ridership	Sample Goal	Standard Error
A	Rapid Bus	11,139	510	4.3%
B	Rapid Bus	7,383	510	4.3%
C	Rapid Bus	4,697	384	5.0%
1	Urban Trunk	24,178	510	4.3%
2	Urban Trunk	16,575	510	4.3%
3	Urban Trunk	11,412	510	4.3%
4	Urban Trunk	7,904	510	4.3%
5	Urban Trunk	1,220	270	6.0%
6	Urban Trunk	5,883	510	4.3%
9	Urban Trunk	6,158	510	4.3%
13	Urban Trunk	13,092	510	4.3%
8/19/20	Urban Trunk	18,497	510	4.3%
11	Suburban Trunk	1,425	270	6.0%
22	Suburban Trunk	1,023	270	6.0%
40	Suburban Trunk	9,121	510	4.3%
41/411	Suburban Trunk / Community Circulator	1,158	270	6.0%
42	Suburban Trunk	9,466	510	4.3%
43	Suburban Trunk	2,596	384	5.0%
52	Suburban Trunk	5,556	510	4.3%
53	Suburban Trunk	2,928	384	5.0%
54	Suburban Trunk	3,465	384	5.0%
55	Suburban Trunk	2,436	384	5.0%
56	Suburban Trunk	2,826	384	5.0%
62	Suburban Trunk	4,751	384	5.0%
65	Suburban Trunk	1,696	270	6.0%
57/58	Suburban Trunk	7,043	510	4.3%
7	Urban Feeder	2,789	384	5.0%
10	Urban Feeder	425	60	12.7%
14	Urban Feeder	788	96	10.0%
15	Urban Feeder	443	60	12.7%
17	Urban Feeder	1,331	150	8.0%
18	Urban Feeder	488	60	12.7%
21	Urban Feeder	121	20	21.9%
31	Urban Feeder	578	96	10.0%
32	Urban Feeder	1,159	150	8.0%
70	Suburban Feeder	106	20	21.9%
72	Suburban Feeder	359	60	12.7%
73	Suburban Feeder	160	20	21.9%
76	Suburban Feeder	229	40	15.5%
77	Suburban Feeder	180	20	21.9%
401/402/403	Community Circulator	890	96	10.0%
412	Community Circulator	454	60	12.7%

Route Number	Route Type	Daily Ridership	Sample Goal	Standard Error
413	Community Circulator	136	20	21.9%
421	Community Circulator	223	40	15.5%
431	Community Circulator	336	60	12.7%
432	Community Circulator	1,333	150	8.0%
433	Community Circulator	846	96	10.0%
434	Community Circulator	946	96	10.0%
80	Peak Express	235	40	15.5%
81	Peak Express	1,094	150	8.0%
83	Peak Express	459	60	12.7%
84	Peak Express	317	60	12.7%
84A	Peak Express	304	60	12.7%
85	Peak Express	448	60	12.7%
85A	Peak Express	236	40	15.5%
88	Peak Express	135	20	21.9%
88A	Peak Express	196	20	21.9%
90	Peak Express	131	20	21.9%
91	Peak Express	1,008	150	8.0%
92	Peak Express	250	40	15.5%
93	Peak Express	902	96	10.0%
96	Peak Express	251	40	15.5%
97	Peak Express	135	20	21.9%
98	Peak Express	121	20	21.9%
101	Peak Express	309	60	12.7%
102	Peak Express	115	20	21.9%
201	Peak Express	433	60	12.7%
202	Peak Express	223	40	15.5%
203	Peak Express	180	20	21.9%
Overall		205,430	14,128	0.8%

There were two other important design features of the sampling plan that should be mentioned. First, the plan ensured the collection of adequate samples at the various day-parts, defined as the AM Peak period (6:00 a.m. to 7:59 a.m.), AM Peak Shoulder period (5:00 a.m. – 5:59 a.m. and 8:00 a.m. – 8:59 a.m.), Mid-day (9:00 a.m. to 1:59 p.m.), PM Peak (3:00 p.m. to 4:59 p.m.), PM Peak Shoulder (2:00 p.m. – 2:59 p.m. and 5:00 p.m. – 5:59 p.m.) and Night (6:00 p.m. to 4:59 a.m.). Second, the sample was also stratified by direction (inbound, outbound, N, S, E, W, loop, etc.).

Trip Selection

The number of trips to be sampled was calculated by assuming an average response rate of 30% of typical weekday rider loads by trip. Because the number of boardings per trip was not known, an equal number of boardings were assumed for each trip on the route. Thus, a route that had an average weekday rider load of 500 riders and made 10 trips per day was determined to have an average rider load of 50 riders per trip. Assuming the

route had a sample goal of 50 completed questionnaires, it was determined that 3.4 trips would need to be sampled to meet quota requirements (500/10 = 50 x .30 = 15 x 3.4 = 51). The number of trips to be sampled was rounded to the nearest higher whole number for trip selection purposes. Once the number of trips on each route was determined, the specific bus trips to be sampled were identified using the transit system's headway information. Trips to be sampled were randomly selected from the entire universe of trips and stratified by route, direction, and service period. Each trip had an equal chance of being included in the sample, but the sample was balanced to reflect loads by service period and direction.

Sampled trips were clustered by block (i.e., consecutive trips a specific vehicle makes for a specified duration) for the purpose of efficient use of surveyor labor. This strategy reduced the amount of time a surveyor spent finding, boarding and setting up on individually sampled trips because the surveyor boarded the vehicle at the start of its trip and stayed on that vehicle to survey all of the sampled trips in the cluster. This minimized surveyor "down time". The use of clusters had the further advantage of de facto stratification by direction (i.e., most runs consist of bus trips alternately traveling inbound, outbound, inbound, etc.) as well as stratification by route and time of day.

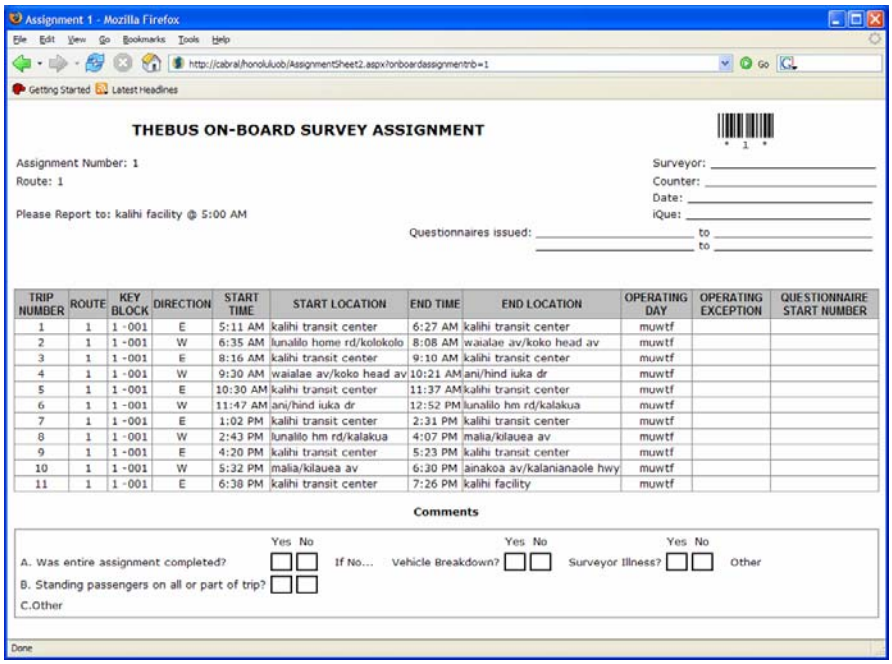
Surveyor Assignments

The final task was uploading the sampled trips to a web-based field management system and creating surveyor assignment sheets. Automated assignment production was accomplished via a program that was housed within the field management system. This assignment program randomly selected clusters of trips based on the following parameters to produce surveyor assignments:

- Trips were consecutive and within the same block/run,
- The cluster of trips started and ended at the same location,
- Trips within the cluster were unique to the cluster.

Through an iterative process, the assignment program generated several lists of optimum, randomly selected consecutive trips. The program also generated a report that provided a comparison of desired trips and generated trips. The report was reviewed for shortfalls and, a few "missing" clusters of trips were manually created. Surveyor assignment sheets were printed from the web-based management system and included the organized bus trips to be sampled, along with necessary information for getting to and from the assignment. The assignment sheets were also bar-coded to link them to the field management system. A sample assignment sheet is presented in Figure 2-1.

Figure 2-1: Screen Grab for Assignment Sheet



Assignment 1 - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://cabral/honoluluob/AssignmentSheet2.aspx?onboardassignmentnb=1

Getting Started Latest Headlines

THEBUS ON-BOARD SURVEY ASSIGNMENT

* 1 *

Assignment Number: 1
Route: 1

Please Report to: kalihi facility @ 5:00 AM

Surveyor: _____
Counter: _____
Date: _____
iQue: _____
Questionnaires issued: _____ to _____
_____ to _____

TRIP NUMBER	ROUTE	KEY BLOCK	DIRECTION	START TIME	START LOCATION	END TIME	END LOCATION	OPERATING DAY	OPERATING EXCEPTION	QUESTIONNAIRE START NUMBER
1	1	1 -001	E	5:11 AM	kalihi transit center	6:27 AM	kalihi transit center	muwtf		
2	1	1 -001	W	6:35 AM	lunalilo home rd/kolokolo	8:08 AM	waialae av/koko head av	muwtf		
3	1	1 -001	E	8:16 AM	kalihi transit center	9:10 AM	kalihi transit center	muwtf		
4	1	1 -001	W	9:30 AM	waialae av/koko head av	10:21 AM	ani/hind iuka dr	muwtf		
5	1	1 -001	E	10:30 AM	kalihi transit center	11:37 AM	kalihi transit center	muwtf		
6	1	1 -001	W	11:47 AM	ani/hind iuka dr	12:52 PM	lunalilo hm rd/kalakua	muwtf		
7	1	1 -001	E	1:02 PM	kalihi transit center	2:31 PM	kalihi transit center	muwtf		
8	1	1 -001	W	2:43 PM	lunalilo hm rd/kalakua	4:07 PM	malia/kilauea av	muwtf		
9	1	1 -001	E	4:20 PM	kalihi transit center	5:23 PM	kalihi transit center	muwtf		
10	1	1 -001	W	5:32 PM	malia/kilauea av	6:30 PM	ainakoa av/kalanianaole hwy	muwtf		
11	1	1 -001	E	6:38 PM	kalihi transit center	7:26 PM	kalihi facility	muwtf		

Comments

	Yes	No	If No...		Yes	No		Yes	No	
A. Was entire assignment completed?	☐	☐		Vehicle Breakdown?	☐	☐	Surveyor Illness?	☐	☐	Other
B. Standing passengers on all or part of trip?	☐	☐								
C.Other										

Done

Chapter 3 Survey Instrument and Procedures

The Survey Instrument

The survey instrument was designed as a self-completion questionnaire with 15 primarily self-coded questions. The set of data items is presented in Table 3-1. Prior to data collection, the respondent-provided data items that defined a "complete" and "usable" questionnaire were identified. These items were: origin, destination, trip purpose, access mode, egress mode, and vehicle available to the household (see sample questionnaire in Appendix A.)

Questionnaires were attractively designed in a two-sided legal-size format with z-fold[5], printed on heavy card stock for easy distribution and completion. It was printed with a business reply mail permit for off-bus completion and mail-back.[6] The form was pre-printed with a unique serial number and bar code, which linked each questionnaire to distribution on a specific trip. Text on the questionnaire invited passengers to register to win a monetary prize by providing their name, telephone number, home address, or hotel name in the case of visitors to O'ahu.[7] This technique captured accurate information for home address, which for a majority of trips was either the trip origin or the trip destination. The questionnaire was designed to obtain information in three major categories: origin/destination travel patterns, access and egress modes, and rider demographics. It included space for passengers to write comments. Unweighted data frequencies for non-locational data elements are presented in Appendix B. As noted in Table 3-1, some of the required data elements were captured by means other than by a question on the questionnaire. This approach had multiple benefits: (1) the questionnaire was shorter to enhance response, and (2) data quality was improved by circumventing respondent-provided information.

[5] This is a bindery term for two or more parallel folds that open like an accordion
[6] A total of 1,127 questionnaires were completed off the bus and mailed back to the Study Team.
[7] 25 passengers were randomly selected to receive the monetary prizes.

Table 3-1: Data Elements and Capture Method

Data Element	Capture Method
Day of Travel	GPS-enhanced Palm device
Time of Travel	GPS-enhanced Palm device
Route	GPS-enhanced Palm device
Questionnaire Language	Field Code by editor
Home Address	Questionnaire
Origin	Respondent reported on questionnaire with qualifying language that this is unnecessary if respondent started trip at home and has registered to win drawing
Destination	Same as origin
Bus Stop On	GPS-enhanced Palm device
Bus Stop Off	Imputed using information from other sources: Destination, Egress Mode, Distance, and GPS data on bus stops for the sampled trip.
Trip Purpose	Questionnaire
Access Mode	Questionnaire
Egress Mode	Questionnaire
Fare	Questionnaire
Number of buses for trip	Questionnaire
Vehicles Available	Questionnaire
Household Size	Questionnaire
Household Workers	Questionnaire
Household Income	Questionnaire
Passenger Age	Questionnaire

The questionnaire was developed to accommodate three languages, i.e., English, Japanese, and Ilocano. This was done in an efficient format that included the use of a piggy-back label for the serial number and bar code. This label could taken off an English-language questionnaire and placed on a distributed Japanese or Ilocano questionnaire to ensure that the bar-coding and numbering sequence was consistent across the surveyed bus trips for quality control purposes.[8]

Survey Procedures

Overview

Survey questionnaires were distributed to all boarding passengers over the age of six. All boarding and alighting passengers above age 6 were also counted by a different on-board

[8] Most (14,465) of the "usable" questionnaires were completed in English, 143 were completed in Japanese, and 1 in Ilocano. Information was not available on volumes of non-English speaking Japanese passengers to assess whether non-English, Japanese speakers were under-represented in the sample.

surveyor than the one passing out questionnaires. The "counters" used a GPS-enhanced palm device (see Figure 3-1).

Figure 3-1: GPS-Enhanced Palm Device for On-Board Counts

The Palm device recorded the location and time (arrival and departure) at each bus stop, and counters entered the number of passengers boarding and the number of passengers alighting. By entering the questionnaire number into the unit prior to arrival at a bus stop, this process also tied a sequence of questionnaires directly to a bus stop (i.e., using TheBus digitized bus stop list). These data were uploaded daily into a web-based field management system that was used to manage surveyor assignments, provide progress reports and data summary tables, and monitor field staff performance.

Labor Recruitment and Training

Surveyors were required to have lived in the service area a minimum of two years and were screened to ensure they had good work habits, were personable, honest, and mature, had reliable personal transportation, and paid attention to details. Surveyors were trained in the use of assignment sheets, and were taught basic survey procedures, etiquette, and how to approach riders. The training included two hours of role-playing and intensive tutoring. Counters were trained in the use of the hand-held palm devices, the ride count program, and on-board etiquette. Directly following training, supervisors provided assignments ranging from one to three hours in length to each surveyor/counter team for a practice run. Following completion of the initial assignments, surveyor teams were required to return to the survey command center where supervisors checked-in and verified the accuracy of the surveyor's work. Assignments were then handed out for the next day.

Pilot Test

A pilot test was conducted in early October 2005. The purpose of the pilot test was to hold a "dry-run" of the procedures (from surveyor training to data processing to data file delivery). Surveyor and counter training took place on Saturday, October 8. Four counters and three surveyors were trained. A fourth bilingual (English/Japanese) person was trained with the surveyors, but his role was pilot test specific – to conduct debrief interviews about the questionnaire with respondents on-board the bus. No operational

difficulties or challenges were evidenced on these pilot runs. Response and participation rates were somewhat lower than expected, particularly on the articulated buses. To prevent this outcome for the full survey, two surveyor teams (i.e., four surveyors) were placed on each articulated bus. Major modifications to the questionnaire were also made and the in-field data editing process improved.

Key elements of the revisions to the questionnaire were:

- *Single-language questionnaire.* The base questionnaire was in English to reduce the perception of burden by respondents. The English-language questionnaire was sequentially numbered and bar coded using a "peel-off" label. Japanese and Ilocano versions were printed as well. When the surveyors passed out one of these other language versions, they peeled off the label from the "next" English language questionnaire and stuck it on the other language version. Surveyor training emphasized not only the importance of this process but allowed practice in the physical dexterity required in its execution.
- *Size and format of the questionnaire.* The z-fold was introduced so the questionnaire appeared shorter and also so that most questions were visible in a single view.
- *Renamed the questionnaire (TheBus Resident and Visitor Survey).* In the pilot, some visitors did not want to take a questionnaire because they thought they were outside the survey population. The questionnaire was renamed so that visitors easily understood that they were target respondents.
- *Made the incentive offer ($100 raffle) more prominent on the questionnaire.* With two languages on the pilot questionnaire, the incentive was hard to see among all the text. In the revised version, it was quick and easy to spot. And, we numbered the item to make it appear as a required element.
- *Included an example of a one-way bus trip.* As always, there were many home-home trips on the returned pilot questionnaires. The graphic example clarified the definition of a "trip."
- *Added Hotel (guest only) to the trip purposes to accommodate visitors.* Surveyors and counters reported that visitors did not know how to answer the coming from or going to questions if these pertained to their hotel – was it home? Or recreational? We clarified it by adding the category Home / Hotel (guest only).
- *Simplified the bus transfer question*. We took the two pilot questions that captured transfer information and combined these into one question.
- *Generally simplified questionnaire wording.* We testing and retested question wording among staff that are unfamiliar with on-board surveys to get to a point where no clarifying questions were being asked and no mistakes were made in completing the questionnaire.

A summary of the changes made to the field work procedures after the pilot were:

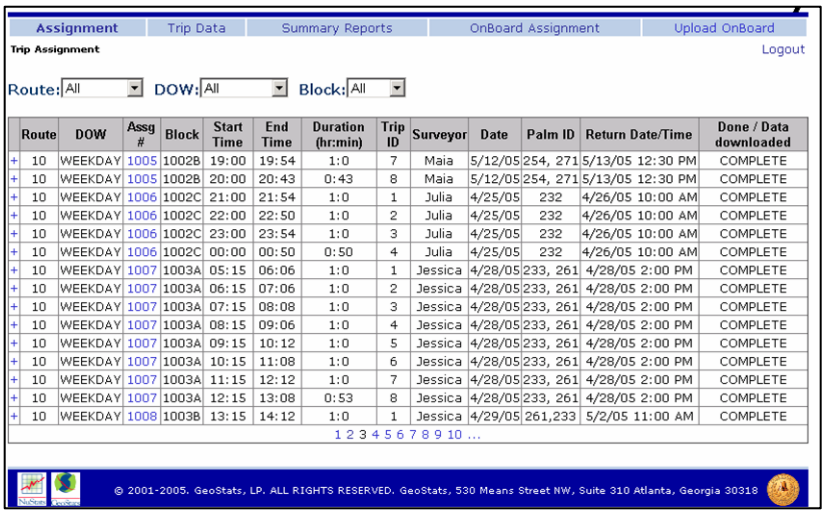
- Surveyors and counters were trained in small groups and training for all included an "on bus" practicum.
- Surveyor and counter training emphasized the importance of roaming the bus to urge and assist passengers in completing questionnaires.
- Two survey teams (surveyor and counter) were assigned to articulated buses during peak periods.
- Editor training focused on enhanced research address strategies to salvage as many returned questionnaires as possible.
- RideCount program included a check that prohibited questionnaire numbers from being entered out of sequence and prohibited a 0 (zero) from being a valid questionnaire number.
- Explicit performance goals were established for Refusal Rates, Participation Rates, and Response Rates. These rates were monitored during field data collection and quickly communicated to all involved via the web-based field management system so that issues could be dealt with promptly.

The Full Survey

The full survey was managed by an in-field survey team comprised of (1) a surveyor manager and supervisor to manage surveyor and counter assignments and (2) a data manager to manage the in-field editor staff and provide quality assurance for uploads/downloads to the web-based field management system. The pilot test was conducted in October, but the full survey was not implemented until December 2005 because of planned changes in TheBus schedule that started December 5. Training was held December 1-5, prior to the start of data collection. Subsequent to this, the surveyor manager was on-site for the entire field period (i.e., 28 days between December 6, 2005 and February 3, 2006, with a 3-week break for end-of-year holidays). The data manager was on-site for the start of surveying in early December and again in early January. After this initial period, the data manager operated the web-based field management system remotely from Austin, Texas (see sample Figure 3-2).

On-board data collection was done by teams of two people: a surveyor and a counter. The surveyor handed out questionnaires, persuaded passengers to complete the questionnaires, helped passengers complete the questionnaire, and collected questionnaires. The counter entered the questionnaire numbers into the hand-held units to tie questionnaires to a bus stop, counted the passengers boarding and alighting, ensured the unit had picked up accurate GPS location coordinates, helped/persuaded passengers to complete questionnaires, collected questionnaires, and validated passenger loads after each stop. Daily surveyor assignments were distributed by the surveyor manager or supervisor.

Figure 3-2: Screen Grab for Assignment Management



Assignment | Trip Data | Summary Reports | OnBoard Assignment | Upload OnBoard

Trip Assignment — Logout

Route: All DOW: All Block: All

	Route	DOW	Assg #	Block	Start Time	End Time	Duration (hr:min)	Trip ID	Surveyor	Date	Palm ID	Return Date/Time	Done / Data downloaded
+	10	WEEKDAY	1005	1002B	19:00	19:54	1:0	7	Maia	5/12/05	254, 271	5/13/05 12:30 PM	COMPLETE
+	10	WEEKDAY	1005	1002B	20:00	20:43	0:43	8	Maia	5/12/05	254, 271	5/13/05 12:30 PM	COMPLETE
+	10	WEEKDAY	1006	1002C	21:00	21:54	1:0	1	Julia	4/25/05	232	4/26/05 10:00 AM	COMPLETE
+	10	WEEKDAY	1006	1002C	22:00	22:50	1:0	2	Julia	4/25/05	232	4/26/05 10:00 AM	COMPLETE
+	10	WEEKDAY	1006	1002C	23:00	23:54	1:0	3	Julia	4/25/05	232	4/26/05 10:00 AM	COMPLETE
+	10	WEEKDAY	1006	1002C	00:00	00:50	0:50	4	Julia	4/25/05	232	4/26/05 10:00 AM	COMPLETE
+	10	WEEKDAY	1007	1003A	05:15	06:06	1:0	1	Jessica	4/28/05	233, 261	4/28/05 2:00 PM	COMPLETE
+	10	WEEKDAY	1007	1003A	06:15	07:06	1:0	2	Jessica	4/28/05	233, 261	4/28/05 2:00 PM	COMPLETE
+	10	WEEKDAY	1007	1003A	07:15	08:08	1:0	3	Jessica	4/28/05	233, 261	4/28/05 2:00 PM	COMPLETE
+	10	WEEKDAY	1007	1003A	08:15	09:06	1:0	4	Jessica	4/28/05	233, 261	4/28/05 2:00 PM	COMPLETE
+	10	WEEKDAY	1007	1003A	09:15	10:12	1:0	5	Jessica	4/28/05	233, 261	4/28/05 2:00 PM	COMPLETE
+	10	WEEKDAY	1007	1003A	10:15	11:08	1:0	6	Jessica	4/28/05	233, 261	4/28/05 2:00 PM	COMPLETE
+	10	WEEKDAY	1007	1003A	11:15	12:12	1:0	7	Jessica	4/28/05	233, 261	4/28/05 2:00 PM	COMPLETE
+	10	WEEKDAY	1007	1003A	12:15	13:08	0:53	8	Jessica	4/28/05	233, 261	4/28/05 2:00 PM	COMPLETE
+	10	WEEKDAY	1008	1003B	13:15	14:12	1:0	1	Jessica	4/29/05	261,233	5/2/05 11:00 AM	COMPLETE

1 2 3 4 5 6 7 8 9 10 ...

As assignments were handed out, information was updated in the web-based field management system. When surveyors and counters returned from an assignment, the surveyor manager or supervisor checked the assignment results (i.e., quickly reviewed the questionnaires to spot any glaring performance issues) and downloaded the passenger count data from the Palm devices. The surveyor manager updated the assignment status in the web-based field management system. Then, the surveyor manager handed out the next assignment. Once the completed assignments were reviewed, the questionnaires were sent to the in-field editing team for inspection and coding prior to being sent to Austin for scanning and verification.

Table 3-2 presents the results of the on-board activities. It documents the count of boarding passengers and the number of distributed questionnaire by route. The difference between the two numbers reflects either refusals to accept a questionnaire or the inability of surveyors to hand questionnaires to boarding passengers due to crowding or other on-board conditions. Overall, surveyor teams counted 73,461 boarding passengers and distributed questionnaires to 54,090 passengers, covering 75% of the boarding passengers.

Table 3-2: Boarding Counts and Distributed Questionnaires by Route

Route Number	Route Type	Boarding Counts	Distributed Questionnaires
A	Rapid Bus	2,699	2,061
B	Rapid Bus	2,851	2,241
C	Rapid Bus	1,447	1,075
1	Urban Trunk	2,951	2,529
2	Urban Trunk	3,601	2,264
3	Urban Trunk	3,127	2,290
4	Urban Trunk	2,816	2,246
5	Urban Trunk	1,112	614
6	Urban Trunk	2,888	1,890
9	Urban Trunk	2,911	2,191
13	Urban Trunk	3,641	2,557
8/19/20	Urban Trunk	3,085	2,193
11	Suburban Trunk	1,222	1,026
22	Suburban Trunk	1,156	690
40	Suburban Trunk	3,368	2,612
41/411	Suburban Trunk / Community Circulator	1,880	1,493
42	Suburban Trunk	2,413	1,772
43	Suburban Trunk	2,465	2,047
52	Suburban Trunk	2,088	1,612
53	Suburban Trunk	1,544	1,023
54	Suburban Trunk	1,889	1,351
55	Suburban Trunk	1,464	1,120
56	Suburban Trunk	2,042	1,656
62	Suburban Trunk	2,013	1,283
65	Suburban Trunk	620	504
57/58	Suburban Trunk	2,103	1,740
7	Urban Feeder	2,253	1,697
10	Urban Feeder	384	264
14	Urban Feeder	684	442
15	Urban Feeder	468	184
17	Urban Feeder	1,001	445
18	Urban Feeder	299	288
21	Urban Feeder	53	44
31	Urban Feeder	439	299

Route Number	Route Type	Boarding Counts	Distributed Questionnaires
32	Urban Feeder	848	430
70	Suburban Feeder	90	68
72	Suburban Feeder	341	280
73	Suburban Feeder	120	50
76	Suburban Feeder	310	172
77	Suburban Feeder	80	62
401/402/403	Community Circulator	515	415
412	Community Circulator	324	106
413	Community Circulator	123	98
421	Community Circulator	277	200
431	Community Circulator	461	347
432	Community Circulator	913	597
433	Community Circulator	333	325
434	Community Circulator	691	525
80	Peak Express	58	50
81	Peak Express	566	402
83	Peak Express	217	199
84	Peak Express	115	98
84A	Peak Express	101	100
85	Peak Express	58	54
85A	Peak Express	120	108
88	Peak Express	44	40
88A	Peak Express	113	111
90	Peak Express	57	57
91	Peak Express	377	334
92	Peak Express	112	141
93	Peak Express	370	324
96	Peak Express	78	75
97	Peak Express	102	74
98	Peak Express	70	46
101	Peak Express	81	81
102	Peak Express	60	49
201	Peak Express	181	168
202	Peak Express	86	70
203	Peak Express	92	91

Route Number	Route Type	Boarding Counts	Distributed Questionnaires
Overall		73,461	54,090

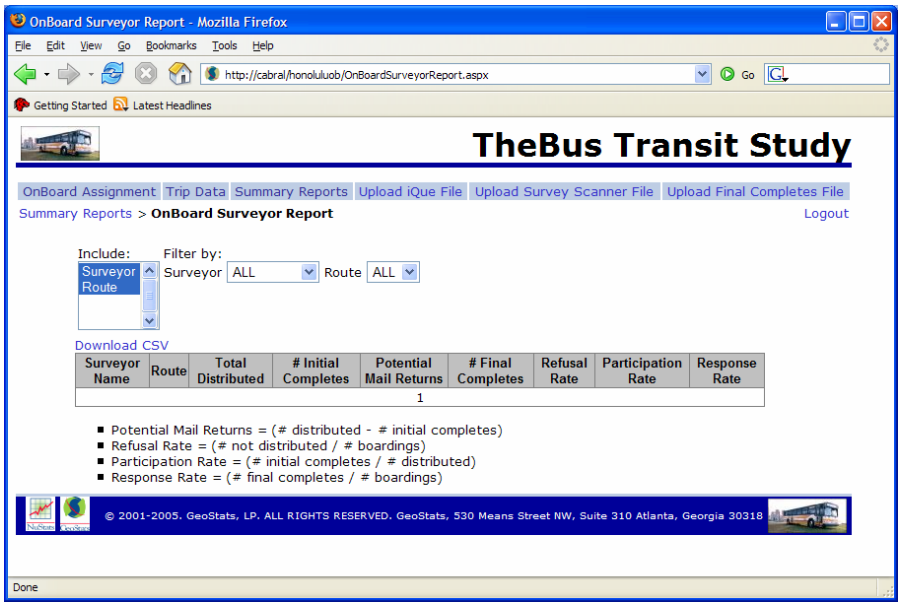
In-Field Questionnaire Editing

Following the surveyor check-in, completed questionnaires were presented to on-site data editors for editing and correction. These data editors were six local residents who were familiar with the geography of the transit service area. Data editors reviewed each completed questionnaire and used geographic resources to complete or correct address information. This process provided a means to "save" questionnaires with a few address research steps in the field. It is important to note here that a significant responsibility of the data editors was to code origin and destination locations, using a comprehensive and exhaustive list of pre-geocoded locations. The questionnaire contained "for office use only" boxes for the placement of these geographic codes (i.e., G-816 for "Pearl Country Club"). The codes were linked via an electronic spreadsheet to necessary technical information for geographic coding (e.g., X / Y coordinate). So upon scanning and verification, the location would already be geocoded. After each questionnaire had been reviewed, data editors scanned the bar code on the questionnaire using a procedure that identified the questionnaire as a "complete" or "not complete", according to the criteria listed on page 7. This information was uploaded to the field management system as one data input for the status reports. Only "complete" questionnaires were sent to Austin for scanning and verification.

Status Reporting

The data manager was responsible for preparing daily status reports from the web-based field management system. This automated application conducted consistency checks, flagged problem records, and cleaned and purged flagged records. The data manager reviewed this information for accuracy before posting daily status, response, and performance reports to the web-based field management system. A sample report is shown in Figure 3-3.

Figure 3-3: Sample Refusal, Participation and Response Rates Report



Chapter 4 Database Creation

Data Processing

Data processing was done simultaneously with field data collection. Data entry was conducted using scanning technology in order to minimize human error resulting from traditional data entry methods. The scanning process involved scanning batches of approximately 100 questionnaires to produce an image file of the documents. Data results derived from the image files were individually reviewed and verified by comparing the scanned image to the data contained in the data file. After questionnaires had been scanned and verified, these data were merged with the assignment information (route, time of day, boarding count, alighting count, etc.) to create a master database. This database was reviewed, edited, and corrected using both manual and automated edit checks. The results of the data processing were linked to the field management system so that an accurate accounting of survey progress and status was maintained.

Geocoding

The survey location data consisted of four location types: trip origin, bus-on, bus-off, and trip destination. Each of these data had a slightly different strategy for geocoding processes.

Trip Origin and Trip Destination

Geocoding of trip origin and trip destination addresses consisted of two-stages. An automated batch run was first attempted in order to successfully geocode origin/destination addresses that were not coded during the in-field editing process. The batch run attempted to match exact addresses or cross-streets obtained from respondents to a street coverage file. Addresses or cross-streets matching the coverage file were assigned an X/Y coordinate and a value of "M" for matched, and placed in the "AV_STATUS" field. Addresses or cross-streets not matched during the batch run were flagged with an "AV_STATUS" value of "U" for unmatched, and passed to the next stage of geocoding.

During the next stage, addresses were researched using a series of resources, including Switchboard.com, Google.com (Internet search engines), and DeLorme Street Atlas USA (mapping software). Addresses that were matched to an exact address or cross-streets during this stage were assigned an X/Y coordinate and an "AV_STATUS" of "M". Addresses that fell outside the defined study area have an "AV_STATUS" of "O". Addresses not geocoded were not assigned an X/Y coordinate, and were given the "AV_STATUS" of "U". All addresses matching to some level of geography were then spatially joined to a TAZ coverage, and the appropriate TAZ number placed in the field "TAZ".

The remaining Unmatched addresses were then separated into two different categories. All O'ahu resident addresses were isolated to evaluate the uniqueness of the respondent's name, and were then researched case by case in Lexis Nexis to find their correct address. If the respondent's name was too commonplace for certainty, such as Daniel Smith, then

their address remained Unmatched. Resident address corrections were geocoded and given a "M" in the "AV_STATUS" field. For the remaining Unmatched addresses, in cases that were not null (or void), the address was compared to the actual scanned image of the questionnaire (and in many cases, the questionnaire itself was consulted) to check for possible misspellings or verification and scanning errors. An example would be the similarities between a lower-case "u" and a lower-case "a". It is the type of error that is easily corrected, unless the verifier is unfamiliar with the streets that are not in English, as was typically the case with Honolulu. Corrections were made, and the addresses were given a "M" in the "AV_STATUS" field. The addresses for which no corrections could be made remained as Unmatched.

Bus Stop Imputation

A bus-on and bus-off or transfer imputation technique was developed that used information collected with Palm devices together with the transit system database to impute the boarding and alighting information for survey participants. The procedure examined the survey file records sequentially and analyzed the survey coordinates in conjunction with transit system GIS datasets. The bus-on location was obtained directly from the passenger count data file using the questionnaire number and the ranges captured at each boarding/alighting activity event. Depending on the availability of GPS, one of the following two paths was taken:

- If a GPS record was available, then it was used to select the nearest bus stop along the current sequence of stops (determined by route/direction/pattern).
- If the record did not have GPS but the counter had selected a stop from the list, then this value was used to impute location.[9]

This procedure populated the output file using information from the system schedule and GIS database in the following way:

- ROUTE - Route name
- BLOCK - Block identifier
- DIR - Direction label
- STARTT - Bus trip start time
- STARTLOC - Bus trip start location name
- ENDT - Bus trip end time
- ENDLOC - Bus trip end location name
- BUS_ONG - The geoid[10] of the stop according to the stop database.
- FAV_STAT – Set to G if only GPS was used to select a stop, P if the stop was picked from a list, GP if GPS was available and the stop was also picked from a list, or FAIL if the sample could not be located in the passenger count data.

[9] There were few circumstances under which the counter would have entered the bus stop identifier as opposed to obtaining that data from the GPS fix. This happened rarely in the urban canyon in Waikīkī and also at the airport under the entrance canopy.
[10] The physical id of the stop according to TheBus internal management system.

- BAV_ADD – The stop name according to the stop.
- B_XCORD, B_YCORD – The coordinates of the bus stop according to the stop.
- Bus-Off and Transfer Imputation

The bus-off imputation selected the location where the participant most likely exited the bus. If someone transferred, the bus-off location would be the location where the person transferred. The procedure used survey variables in conjunction with the imputed bus-on information to determine if the participant was surveyed in the final leg of the trip or if a transfer was performed at the end of the surveyed trip. The bus-off stop was the closest bus stop in the current route/direction/pattern that was after the boarding stop and closest to the final destination. If the final destination was not geocoded then this process "failed" and no bus-off information was generated. If the respondent entered the current route (the one selected in the bus-on imputation process) multiple times in the sequence of routes taken, then the last instance was used as the current one. The following logic was applied to determine transfer locations: (1) select the set of stop-patterns to which the participant could transfer based on the reported sequence of routes and the current route (selected in the bus-on determination step) and the geocoded destination, and (2) select the transfer location based on a half-mile buffer that included stops where the two routes cross and that were closest to the destination, preference was given to points identified by the client as preferred transfer locations. This procedure populated the output file in the following way:

- BUS_OFFG – The geoid[10] of the stop according to the stop database.
- FAV_STAT – Set to TP for transferred at preferred location, TB for transfer based on a buffer, A for end of trip (based on destination geocode), and FAIL where no bus stops that meet the conditions are found.

Due to the criteria that were established that defined a usable record, all location data in the final data set were 100% geocoded (See Table 4-1).

Table 4-1: Geocoding Match Rates

LOCATION TYPE	MATCHED	UNMATCHED	TOTAL	MATCHED %
Home	14,104	505	14,609	97%
Origin	14,609	0	14,609	100%
Destination	14,609	0	14,609	100%
Bus-on	14,609	0	14,609	100%
Bus-off	14,609	0	14,609	100%

Geocoding Quality Control

Once geocoded, records were subjected to a series of strict quality control checks. The checks included:

- All unmatched locations were run through the geocoding process for a final attempt to be geocoded.
- A random selection of 5% of the geocoded address file was reviewed in detail to ensure proper placement of the overall latitude/longitude points. This entailed using ArcView and displaying the points on the street layer and comparing the points with DeLorme.
- Since a cross-street geocode does not reference a zone (zip code or city) in ArcView, all cross-street geocodes were queried and analyzed to ensure proper placement of the geocodes. (The ArcView default placement of a geocoded cross street places the point in the Southeast quadrant of that intersection).
- Geocoding was verified for locational accuracy by route and by analyzing the boarding and alighting locations relative to each route. A visual check was done by querying off boarding/alighting geocodes according to each route. For example, all of the boarding/alighting matches for Route 5 were selected and displayed in the map view of ArcView. A visual check was done to verify that most of the points were on or near the route. Points that were not on or near the route were verified to be respondent error.
- Geocoding was verified by querying of geocoding matches related to each city. Then these points were displayed in the map view of ArcView and visually confirmed; outlying locations were selected and confirmed to be correct.
- Global changes, such as correcting misspelled place names, misspelled city names, and any other global address problems were made prior to each data delivery as well as one final pass on the complete location file.

Performance Against Sample Goals

The final database was created after the imputation and geocoding quality control activities. This database was used for the weighting and expansion task that is described in the next section. Table 4-2 presents the contents of this final database by indicating the sample goals by service type and the number of usable records delivered (i.e., the performance against sample goals). This table is followed by Table 4-3, which presents sample goals and usable records by route.

Table 4-2: Sample Goals and Usable Records by Service Type

Service Type	Daily Ridership	Sample Goal	Usable Records
Rapid Bus	23,219	1,404	1,402
Urban Trunk	104,919	4,350	4,207
Suburban Trunk	55,196	5,424	5,861
Urban Feeder	8,122	1,076	1,244
Suburban Feeder	1,034	160	189
Community Circulator	5,458	618	533
Peak Express	7,482	1,096	1,173
Overall	205,430	14,128	14,609

Table 4-3: Sample Goals and Usable Records by Route

Route Number	Route Type	Daily Ridership	Sample Goal	Usable Records
A	Rapid Bus	11,139	510	548
B	Rapid Bus	7,383	510	484
C	Rapid Bus	4,697	384	370
1	Urban Trunk	24,178	510	403
2	Urban Trunk	16,575	510	386
3	Urban Trunk	11,412	510	528
4	Urban Trunk	7,904	510	614
5	Urban Trunk	1,220	270	304
6	Urban Trunk	5,883	510	517
9	Urban Trunk	6,158	510	479
13	Urban Trunk	13,092	510	454
8/19/20	Urban Trunk	18,497	510	522
11	Suburban Trunk	1,425	270	211
22	Suburban Trunk	1,023	270	278
40	Suburban Trunk	9,121	510	554
41/411	Suburban Trunk/Community Circulator	1,158	270	321
42	Suburban Trunk	9,466	510	570
43	Suburban Trunk	2,596	384	313
52	Suburban Trunk	5,556	510	486
53	Suburban Trunk	2,928	384	499
54	Suburban Trunk	3,465	384	591

Route Number	Route Type	Daily Ridership	Sample Goal	Usable Records
55	Suburban Trunk	2,436	384	351
56	Suburban Trunk	2,826	384	449
62	Suburban Trunk	4,751	384	420
65	Suburban Trunk	1,696	270	254
57/58	Suburban Trunk	7,043	510	564
7	Urban Feeder	2,789	384	329
10	Urban Feeder	425	60	59
14	Urban Feeder	788	96	157
15	Urban Feeder	443	60	64
17	Urban Feeder	1,331	150	152
18	Urban Feeder	488	60	128
21	Urban Feeder	121	20	20
31	Urban Feeder	578	96	121
32	Urban Feeder	1,159	150	214
70	Suburban Feeder	106	20	29
72	Suburban Feeder	359	60	65
73	Suburban Feeder	160	20	18
76	Suburban Feeder	229	40	33
77	Suburban Feeder	180	20	44
401/402/403	Community Circulator	890	96	77
412	Community Circulator	454	60	59
413	Community Circulator	136	20	43
421	Community Circulator	223	40	41
431	Community Circulator	336	60	45
432	Community Circulator	1,333	150	88
433	Community Circulator	846	96	59
434	Community Circulator	946	96	121
80	Peak Express	235	40	41
81	Peak Express	1,094	150	155
83	Peak Express	459	60	99
84	Peak Express	317	60	45
84A	Peak Express	304	60	54
85	Peak Express	448	60	29
85A	Peak Express	236	40	63
88	Peak Express	135	20	30
88A	Peak Express	196	20	42

Route Number	Route Type	Daily Ridership	Sample Goal	Usable Records
90	Peak Express	131	20	23
91	Peak Express	1,008	150	151
92	Peak Express	250	40	76
93	Peak Express	902	96	121
96	Peak Express	251	40	41
97	Peak Express	135	20	28
98	Peak Express	121	20	23
101	Peak Express	309	60	50
102	Peak Express	115	20	26
201	Peak Express	433	60	40
202	Peak Express	223	40	28
203	Peak Express	180	20	8
Overall		205,430	14,128	14,609

Table 4-4 presents the final participation and response rates by route. The participation rate was defined as the percent of distributed questionnaires that passed the in-field editing process and were sent for scanning, processing, and geocoding. The response rate was defined as the percent of passenger boardings for which there was a usable record in the database (i.e., a questionnaire that passed all quality assurance checks as discussed previously in this report). The overall participation rate was 31%, and the final response rate was 20%.[11]

[11] The resulting participation and response rates are comparable to those experienced in other large metropolitan on-board surveys.

Table 4-4: Refusal, Participation and Response Rates by Route

Route Number	Route Type	Participation Rate (%)	Response Rate (%)
A	Rapid Bus	29	30
B	Rapid Bus	24	17
C	Rapid Bus	39	26
1	Urban Trunk	18	14
2	Urban Trunk	24	11
3	Urban Trunk	25	17
4	Urban Trunk	29	22
5	Urban Trunk	56	27
6	Urban Trunk	30	18
9	Urban Trunk	25	17
13	Urban Trunk	21	13
8/19/20	Urban Trunk	29	17
11	Suburban Trunk	22	17
22	Suburban Trunk	47	24
40	Suburban Trunk	25	16
41/411	Suburban Trunk/Community Circulator	24	18
42	Suburban Trunk	36	24
43	Suburban Trunk	21	13
52	Suburban Trunk	36	23
53	Suburban Trunk	54	32
54	Suburban Trunk	48	31
55	Suburban Trunk	38	24
56	Suburban Trunk	29	22
62	Suburban Trunk	37	21
65	Suburban Trunk	55	41
57/58	Suburban Trunk	37	27
7	Urban Feeder	22	15
10	Urban Feeder	26	16
14	Urban Feeder	39	23
15	Urban Feeder	39	17
17	Urban Feeder	36	16
18	Urban Feeder	46	43
21	Urban Feeder	46	39
31	Urban Feeder	42	28
32	Urban Feeder	52	26
70	Suburban Feeder	46	33

Route Number	Route Type	Participation Rate (%)	Response Rate (%)
72	Suburban Feeder	31	19
73	Suburban Feeder	36	15
76	Suburban Feeder	23	13
77	Suburban Feeder	89	55
401/402/403	Community Circulator	23	14
412	Community Circulator	62	24
413	Community Circulator	48	36
421	Community Circulator	23	15
431	Community Circulator	14	11
432	Community Circulator	17	10
433	Community Circulator	21	18
434	Community Circulator	25	18
80	Peak Express	86	71
81	Peak Express	58	27
83	Peak Express	52	46
84	Peak Express	52	39
84A	Peak Express	65	54
85	Peak Express	59	50
85A	Peak Express	62	53
88	Peak Express	83	68
88A	Peak Express	49	37
90	Peak Express	46	40
91	Peak Express	56	40
92	Peak Express	63	68
93	Peak Express	39	36
96	Peak Express	61	53
97	Peak Express	45	28
98	Peak Express	63	33
101	Peak Express	55	43
102	Peak Express	22	17
201	Peak Express	29	22
202	Peak Express	41	33
203	Peak Express	10	9
Overall		31	20

Sample Weighting and Expansion

There were a total of 14,609 survey records in the final database. These survey records represent the passengers who boarded sampled bus trips and who participated in the survey by completing a questionnaire. Not all trips operated by TheBus were sampled and not all passengers who boarded sampled trips completed a questionnaire. *Sample weighting* on the route level is a technical necessity to account and correct for biases in the survey data resulting from these factors. On the other hand, *Sample expansion* on the route level, is the process used to factor up survey records to represent aggregate ridership for the universe of all bus trips. These two processes allow for proportional analysis of all questionnaire variables across all routes.

Because not all passengers return usable questionnaires, a Response Weight is needed to account for non-responding passengers. The Response Weight is assigned to all records in the survey database. It uses information collected during the survey: (1) the number of completed questionnaires and (2) the number of boarding passengers for each sampled trip. Each record in the final database was assigned a weight based on their individual one-way trip response rate. The Response Weight for a one-way trip was calculated as: Total Boardings / Total Usable Questionnaires. For example, if Route 43 had 20 passengers on-board for a sampled one-way trip and only 10 of these passengers returned a usable questionnaire, then each of these passengers on that one-way trip would be assigned a weight of 2 (20 divided by 10). If on a one-way trip zero (0) completed questionnaires were returned, the Response Weight for the trip was zero, and that trip did not contribute any questionnaires to the final data set.

This survey was a sample survey, and not all bus trips in the universe were surveyed. A Vehicle Weight accounts for the non-surveyed trips for each route, time of the day, and direction (hereafter referred to as RTD). The times of day used in the weighting process were: AM Peak period (6:00 a.m. to 7:59 a.m.), AM Peak Shoulder period (5:00 a.m. – 5:59 a.m. and 8:00 a.m. – 8:59 a.m.), Mid-day (9:00 a.m. to 1:59 p.m.), PM Peak (3:00 p.m. to 4:59 p.m.), PM Peak Shoulder (2:00 p.m. – 2:59 p.m. and 5:00 p.m. – 5:59 p.m.), and Night (6:00 p.m. to 4:59 a.m.). The directions used were either Eastbound or Westbound trips. The Vehicle Weight was based on the run cut file provided by TheBus, covering all 4,000 weekday system bus trips and the 1,268 trips sampled in this survey. The total one-way trips and total sampled trips were calculated for each RTD based on this population run cut file. The Vehicle Weight was calculated as: Total Trips per RTD / Sampled Trips per RTD. For example, route A has a total of 20 trips in Mid-day / Eastbound and was only sampled five times, its Vehicle Weight is 4 (20 divided by 5). There were instances when no trips within an RTD were sampled. In these cases, the RTD stratum was collapsed into a stratum with the most similar rider / trip characteristics. This collapsing strategy was consistent across all routes. For example, when there were no trips sampled in the AM Peak / Eastbound stratum for a route, the number of trips in the AM Peak / Eastbound stratum were combined with the number of trips in the PM Peak / Westbound stratum, the stratum with the most similar rider / trip characteristics, assuming a trip was sampled in this stratum. Because of this collapse, when the Vehicle Weight was calculated for PM Peak / Westbound stratum, it contained trips in the numerator representing the trips in the AM Peak / Eastbound stratum where

none were surveyed. This created a higher Vehicle Weight for PM Peak / Westbound stratum to compensate for the trips made in the AM Peak / Eastbound stratum. Separate documentation is provided that includes spreadsheets of the population of trips and the sampled number of trips for each RTD as well as the vehicle factors after the collapsing.

In the last step of sample weighting, these two weights, Response and Vehicle, were multiplied together to calculate a Boarding Weight, referred to as the Final Weight in the database, for each sampled record.

As the final step, each survey record was multiplied by the Boarding Weight resulting in a database that totaled 236,558 riders. These records represent "unlinked trips." The following tables (Table 4-5 and Table 4-6) present the results of the weighting and expansion exercise by service type and by route. These tables report unlinked trips. The system wide estimate for linked trips was a total of 178,076 linked trips.

Table 4-5: Expanded Records by Service Type

Service Type	Usable Records	Expanded Data
Rapid Bus	1,402	29,187
Urban Trunk	4,207	112,111
Suburban Trunk	5,861	62,159
Urban Feeder	1,244	12,943
Suburban Feeder	189	2,312
Community Circulator	533	9,573
Peak Express	1,173	8,273
Overall	14,609	236,558

Table 4-6: Expanded Records by Route

Route Number	Route Type	Usable Records	Expanded Data
A	Rapid Bus	548	15,432
B	Rapid Bus	484	7,445
C	Rapid Bus	370	6,311
1	Urban Trunk	403	21,096
2	Urban Trunk	386	19,863
3	Urban Trunk	528	12,435
4	Urban Trunk	614	9,827
5	Urban Trunk	304	1,557
6	Urban Trunk	517	6,635
9	Urban Trunk	479	10,121
13	Urban Trunk	454	13,423
8/19/20	Urban Trunk	522	17,154
11	Suburban Trunk	211	1,382
22	Suburban Trunk	278	2,513
40	Suburban Trunk	554	8,083
41/411	Suburban Trunk / Community Circulator	321	3,174
42	Suburban Trunk	570	10,824
43	Suburban Trunk	313	2,806
52	Suburban Trunk	486	4,826
53	Suburban Trunk	499	3,701
54	Suburban Trunk	591	4,542
55	Suburban Trunk	351	3,835
56	Suburban Trunk	449	3,198
62	Suburban Trunk	420	5,099
65	Suburban Trunk	254	1,987
57/58	Suburban Trunk	564	6,995
7	Urban Feeder	329	3,929
10	Urban Feeder	59	692
14	Urban Feeder	157	1,823
15	Urban Feeder	64	928
17	Urban Feeder	152	1,482
18	Urban Feeder	128	735
21	Urban Feeder	20	66
31	Urban Feeder	121	642
32	Urban Feeder	214	2,647
70	Suburban Feeder	29	253

Route Number	Route Type	Usable Records	Expanded Data
72	Suburban Feeder	65	494
73	Suburban Feeder	18	870
76	Suburban Feeder	33	469
77	Suburban Feeder	44	225
401/402/403	Community Circulator	77	1,053
412	Community Circulator	59	456
413	Community Circulator	43	190
421	Community Circulator	41	484
431	Community Circulator	45	521
432	Community Circulator	88	3,145
433	Community Circulator	59	1,043
434	Community Circulator	121	1,876
80	Peak Express	41	317
81	Peak Express	155	1,312
83	Peak Express	99	593
84	Peak Express	45	199
84A	Peak Express	54	286
85	Peak Express	29	246
85A	Peak Express	63	215
88	Peak Express	30	110
88A	Peak Express	42	226
90	Peak Express	23	114
91	Peak Express	151	975
92	Peak Express	76	240
93	Peak Express	121	1,153
96	Peak Express	41	156
97	Peak Express	28	408
98	Peak Express	23	210
101	Peak Express	50	405
102	Peak Express	26	180
201	Peak Express	40	543
202	Peak Express	28	258
203	Peak Express	8	129
Overall		14,609	236,558

Chapter 5 Survey Results – Rider Characteristics

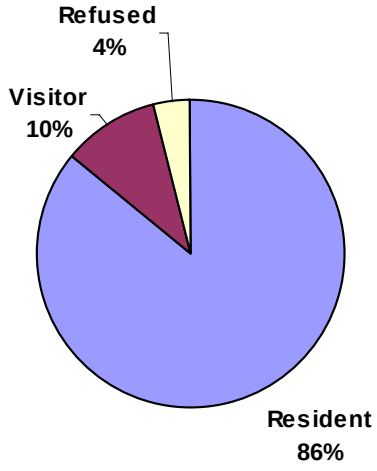
This report section provides detailed information on rider characteristics. These results are weighted and expanded to TheBus system. Subgroup analyses are included as warranted.

Overall Rider Characteristics

The majority of TheBus surveyed passengers (86%) lived on the Island of O'ahu; 10% were visitors; and 4% refused to answer that question (see Figure 5-1). Residents were asked to provide their home locations. The most commonly provided locations were (in rank order): Honolulu, Waipahu, Wai'anae, 'Ewa Beach, Kāne'ohe, Kapolei, Pearl City, 'Aiea, Wahiawā, and Kailua. Visitors were not asked for their place of origin (i.e., home city, state or country), but were asked to provide the name of the hotel / place they were staying. The most frequently mentioned hotels were: 'Ilikai Hotel, Waikīkī Banyan, Royal Kūhiō, Island Colony, Hale Koa Resort, Ohana West, Ohana East, Outrigger Reef, Pacific Monarch, and Fairway Villa Condos.

Figure 5-1: Which Describes You... Resident or Visitor?

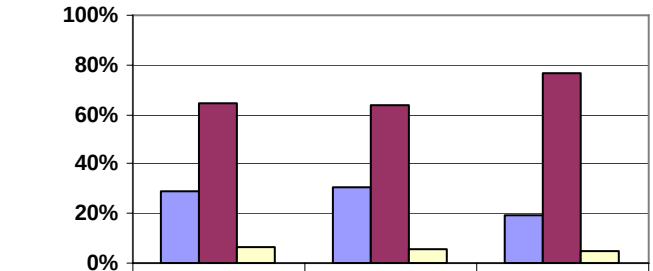
(N = 178,076)



Most of the surveyed passengers were transit dependent – 65% could not have used a personal vehicle to make the bus trip on which they were surveyed; 29% could have used a personal vehicle; and 6% refused to answer that question. As indicated in Figure 5-2, residents were more likely than visitors to have had a personal vehicle available; still 19% of visitors could have used a personal vehicle but chose not to for the one-way trip on which they were surveyed. Almost two-thirds of visitors had a rental car (see Figure 5-3).

Figure 5-2: Could You Have Used a Personal Vehicle to Make This One-Way Trip?

(N = 178,076)

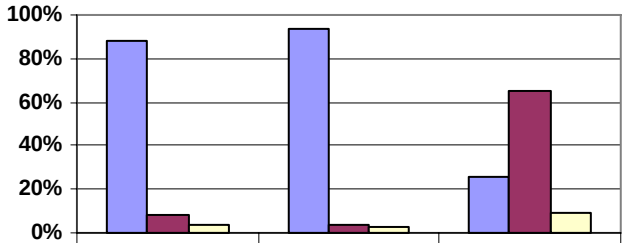


	Overall	Resident	Visitor
Yes	29%	31%	19%
No	65%	64%	76%
Refused	6%	5%	4%

Note: Totals may not sum to 100% due to rounding.

Figure 5-3: Was That Vehicle Rented, Owned or Leased By Your Household?

(N = 51,864)



	Overall	Resident	Visitor
Owned/Leased	88%	94%	26%
Rented	8%	4%	65%
Refused	3%	2%	9%

Note: Totals may not sum to 100% due to rounding.

Figure 5-4 indicates that more than half of the passengers surveyed (64%) had one or fewer vehicles available in their households. About 15% had three of more vehicles available. Half of the passengers (50%) over the age of 12[12] did have a valid driver's license (see Figure 5-5).

Figure 5-4: How Many Working Vehicles Are Available In Your Household?

(N = 178,076)

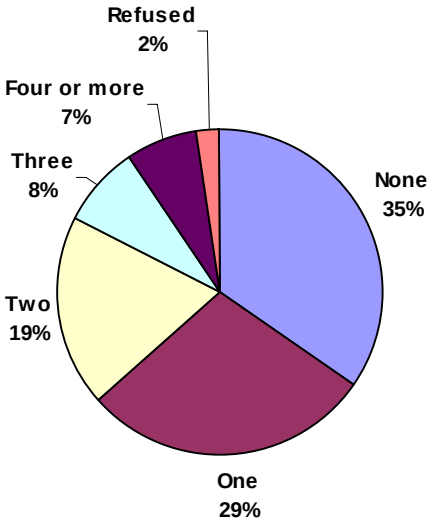
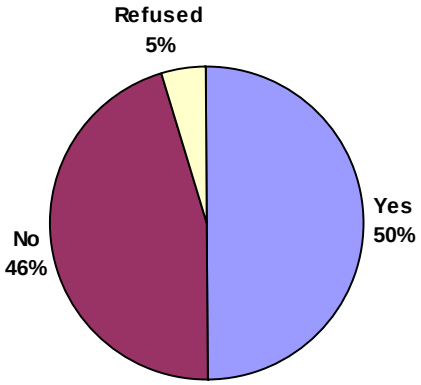


Figure 5-5: Do You Have A Valid Drivers License?

(N = 176,988)



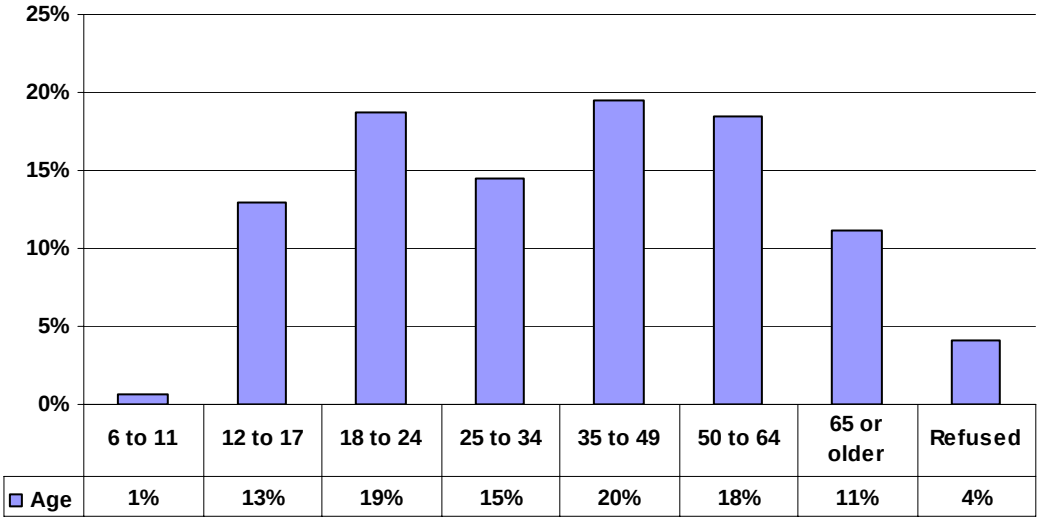
Note: Totals may not sum to 100% due to rounding.

[12] Age was collected as a categorical variable on the questionnaire so the only persons who could have been "cleaned out" of this variable were those under age 12. The next age category was age 12 to 17.

The most common age categories for surveyed passengers was 35 to 49 (20%), 18 to 24 (19%), and 50 to 64 (18%), according to Figure 5-6. Visitors tended to be older (aged 50 and older).

Figure 5-6: How Old Are You?

(N = 178,076)

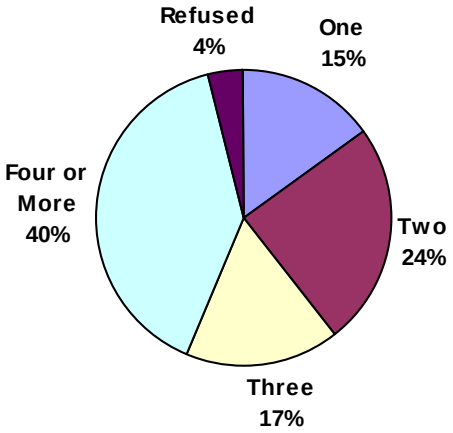


Note: Totals may not sum to 100% due to rounding.

Residents were asked about the size of their household. Figure 5-7 shows that most surveyed passengers resided in four or more person (40%) or two person (24%) households.

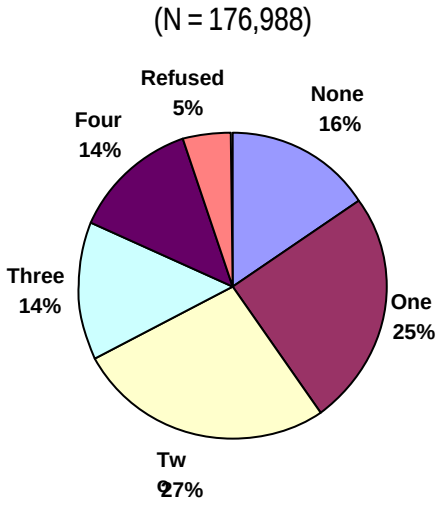
Figure 5-7: Including Yourself How Many People Live In Your Household?

(N = 176,988)



Residents were also asked about the number of workers in their household (see Figure 5-8). While just over one in six (16%) reported no workers in their household, most surveyed passengers reported one (25%) or two (27%) workers in their households.

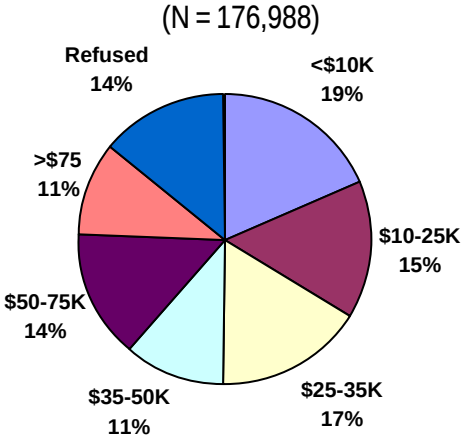
Figure 5-8: Including Yourself, How Many People In Your Household Work Outside The House?



Note: Totals may not sum to 100% due to rounding.

Surveyed passengers reported a wide variance in the household incomes (at least within the categories measured). (See Figure 5-9) While 19% reported an annual household income of less than $10,000, 11% reported an annual household income of more than $75,000. Most had incomes of $35,000 or less.

Figure 5-9: What Was Your Estimated Household Income (In 2004) Before Taxes?



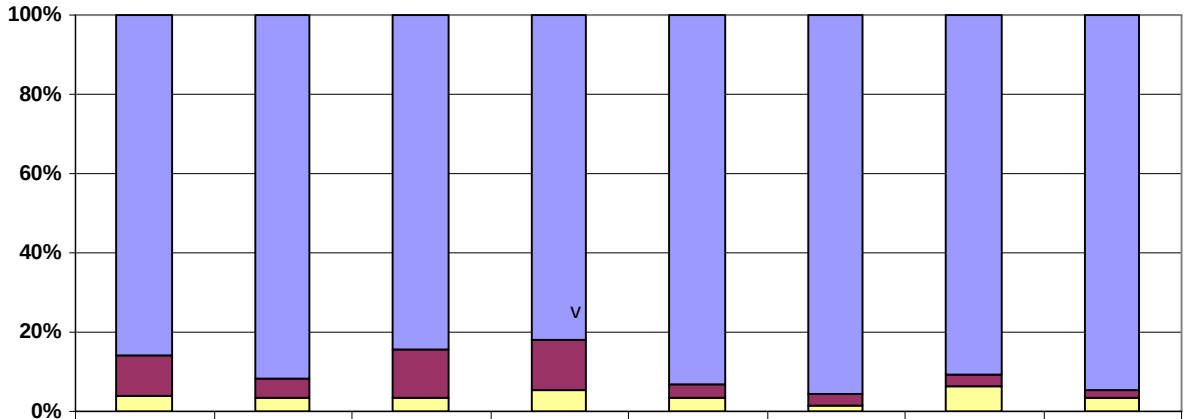
Note: Totals may not sum to 100% due to rounding.

Rider Characteristics by Service Type

Residents comprised 86% and visitors 10% of all surveyed passengers. However, there were differences in percent of residents versus visitors by service type as noted in Figure 5-10. Visitors were more likely to be sampled on Urban Trunk and Suburban Trunk than other service types. Residents comprised a highest proportion of passengers on Peak Express and Suburban Feeder routes.

Figure 5-10: Resident/Visitor Status By Service Type

(N = 178,076)



	Total	Rapid Bus	Urban Trunk	Suburban Trunk	Urban Feeder	Suburban Feeder	Community Circulator	Peak Express
Resident	86%	92%	85%	82%	93%	96%	91%	95%
Visitor	10%	5%	12%	12%	3%	3%	3%	2%
Refused	4%	3%	3%	5%	4%	2%	6%	3%

Note: Totals may not sum to 100% due to rounding.

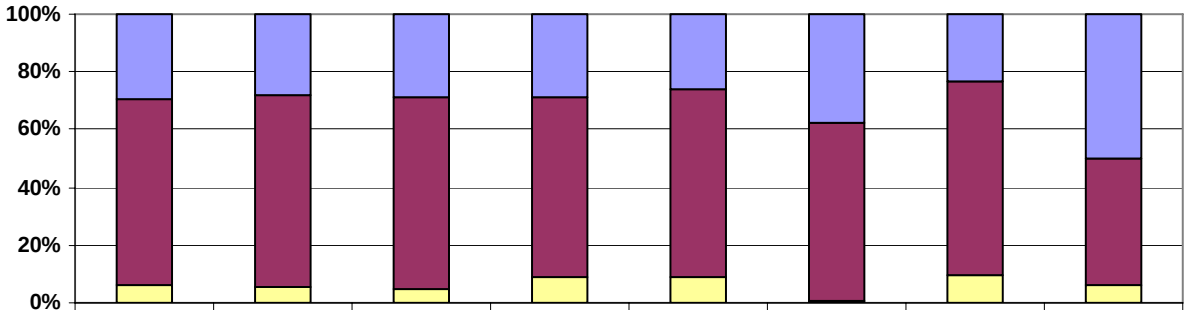
Figure 5-11 presents passenger's level of transit dependence by service type. Peak Express passengers were significantly different than riders of other types of service in their lack of dependency. Nearly half (50%) reported that they could have used a personal vehicle to make the one-way trip on which they were surveyed instead of riding the bus, whereas only one-fourth to two-fifth of passengers on all other types of service could have used a personal vehicle. The data also revealed significant differences in vehicles available to the household by service type. Whereas 91% of Peak Express riders reported that they had one or more working vehicles available to their households, about 70% of Suburban Trunk and Community Circulator passengers reported having vehicles available. Even fewer riders of Rapid Bus, Urban Trunk, Urban Feeder and Suburban Feeder reported having vehicles available. Approximately 60% of riders of these latter types of service reported having vehicles available to make the sampled one-way trip.[13]

[13] The percentages noted regarding vehicle availability were comparable whether reporting on all passengers (residents and visitors) or only passengers who were residents.

Over two-thirds (71%) of Peak Express riders 18 years of age or older reported having a valid driver's license, and slightly more than one-half of Urban Trunk riders (61%) reported having a license. Half of Suburban Trunk (52%), Rapid Bus (51%), and Suburban Feeder (46%) riders had a valid license. Fewer riders of Urban Feeder (42%) and Community Circulator Service (33%) had a valid driver's license.

Figure 5-11: Could You Have Used A Personal Vehicle To Make This One-Way Trip By Service Type

(N = 178,076)



	Total	Rapid Bus	Urban Trunk	Suburban Trunk	Urban Feeder	Suburban Feeder	Community Circulator	Peak Express
Yes	29%	28%	29%	29%	26%	38%	23%	50%
No	65%	66%	67%	63%	65%	62%	67%	44%
Refused	6%	5%	5%	9%	9%	1%	9%	6%

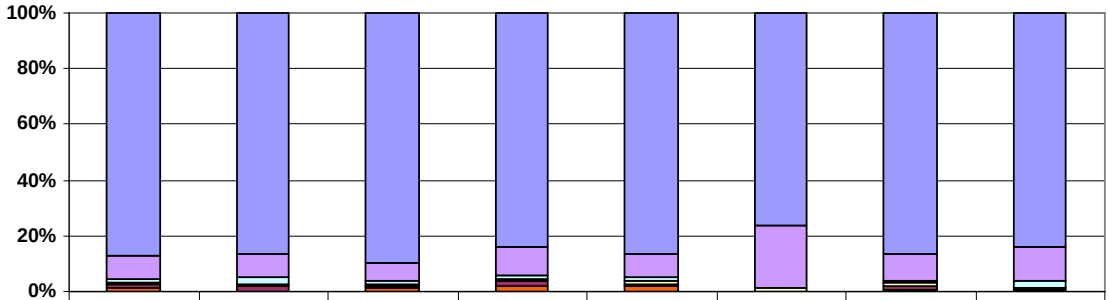
Note: Totals may not sum to 100% due to rounding.

Figure 5-11 indicates the access mode to the first bus used on the trip by service type. "Walk" was the most prevalent access mode regardless of service type; following as a distance second was "drop off." Vehicle usage (being dropped off, driving and parking one's own vehicle, or carpooling with someone who parked) was highest for riders of Suburban Feeder and Peak Express routes.[14] In terms of egress modes, the "walk" portion increased for all service types (see Figure 5-13). More than half of those passengers who said they were "dropped off" as an access mode walked to their final destination after alighting from the last bus, rather than being "picked up."

[14] In Figure 5-12: How Did You Get To The First Bus Used On This Trip By Service Type, these latter access modes have been given the same color to present aggregated information on vehicle usage.

Figure 5-12: How Did You Get To The First Bus Used On This Trip By Service Type

(N = 178,076)

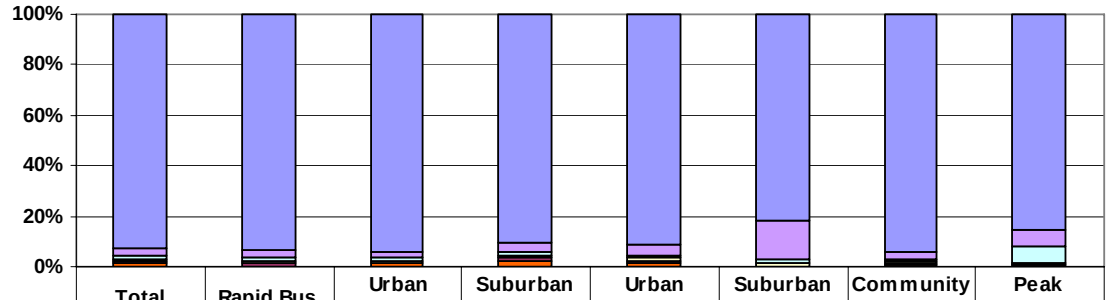


	Total	Rapid Bus	Urban Trunk	Suburban Trunk	Urban Feeder	Suburban Feeder	Community Circulator	Peak Express
Walk	87%	86%	90%	84%	87%	76%	86%	84%
Drop Off	8%	9%	7%	10%	8%	23%	10%	12%
Drive & Park Car	1%	2%	1%	1%	1%	0%	1%	3%
Ride w/ Someone	1%	1%	1%	1%	2%	1%	1%	0%
Bicycle	1%	2%	0%	2%	1%	0%	1%	1%
Refused	1%	0%	1%	2%	2%	0%	1%	0%

Note: Totals may not sum to 100% due to rounding.

Figure 5-13: After The Last Bus, How Will You Get To Your Destination By Service Type

(N = 178,076)



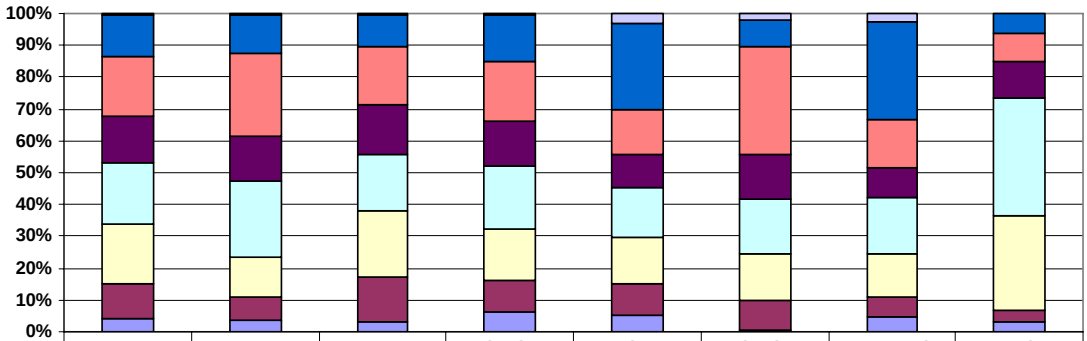
	Total	Rapid Bus	Urban Trunk	Suburban Trunk	Urban Feeder	Suburban Feeder	Community Circulator	Peak Express
Walk	93%	93%	95%	90%	91%	81%	94%	85%
Pick Up	3%	3%	2%	4%	5%	15%	3%	7%
Drive my car	1%	1%	1%	1%	0%	1%	0%	7%
Ride w/ Someone	1%	0%	1%	1%	1%	1%	1%	1%
Bicycle	1%	1%	0%	2%	1%	0%	1%	1%
Refused	1%	0%	1%	2%	2%	0%	1%	0%

Note: Totals may not sum to 100% due to rounding.

The age of sampled riders varied significantly by service type as shown in Figure 5-14 Urban Feeder and Community Circulator routes attracted more teen riders (age 12 to 17) than other service types (comprising 27% and 31% of the riders on these service types, respectively). Rapid Bus and Suburban Feeder routes attracted more young adults (age 18 to 24) than other services (26% and 34% of riders of these service types, respectively). Mature riders (age 35 to 64) were sampled on the Peak Express routes more frequently than other types of service (67% of riders of this service type).

Figure 5-14: How Old Are You By Service Type

(N = 178,076)



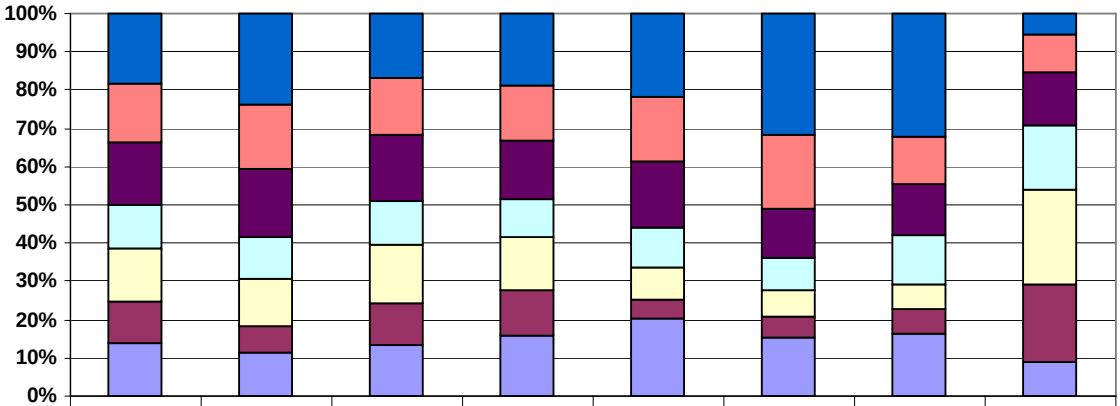
	Total	Rapid Bus	Urban Trunk	Suburban Trunk	Urban Feeder	Suburban Feeder	Community Circulator	Peak Express
6 to 11	1%	0%	0%	1%	3%	2%	3%	0%
12 to 17	13%	12%	10%	15%	27%	9%	31%	6%
18 to 24	19%	26%	18%	18%	14%	34%	15%	9%
25 to 34	15%	14%	16%	14%	10%	14%	9%	11%
35 to 49	20%	24%	17%	20%	16%	17%	18%	37%
50 to 64	18%	13%	21%	16%	15%	15%	14%	30%
65 and older	11%	7%	14%	10%	10%	9%	6%	4%
Refused	4%	4%	3%	6%	5%	1%	5%	3%

Note: Totals may not sum to 100% due to rounding.

Surveyed passengers reported a wide variance in household income by service type. (See Figure 5-15) The highest household incomes were reported by riders of Peak Express. And the lowest household incomes were reported by riders of Rapid Bus, Urban Feeder, Suburban Feeder and Commuter Circulator Routes.

Figure 5-15: What Was Your Estimated Household Income (In 2004) Before Taxes By Service Type

(N = 176,988)



	Total	Rapid Bus	Urban Trunk	Suburban Trunk	Urban Feeder	Suburban Feeder	Community Circulator	Peak Express
Less than $10K	19%	24%	17%	19%	22%	32%	32%	5%
$10-25K	15%	17%	15%	14%	17%	20%	12%	10%
$25-35K	17%	18%	17%	15%	17%	13%	14%	14%
$35-50K	11%	11%	11%	10%	10%	9%	12%	17%
$50-75K	14%	12%	15%	14%	8%	7%	7%	25%
$75K or More	11%	7%	11%	12%	5%	5%	6%	20%
Refused	14%	12%	13%	16%	20%	15%	16%	9%

Note: Totals may not sum to 100% due to rounding.

Chapter 6 Survey Results – Travel Characteristics

This section provides information on the travel characteristics for bus users. Summary information regarding transit trip productions and attractions by Transportation Analysis Areas (TAA) is presented first. Subsequently, data results related to direct responses to questions asked of travelers during the survey are presented.

Trip Production and Attraction Summary

The data generated from the survey regarding transit trip productions and attractions are used to identify the major areas from which trips are generated (production areas) and to which trips are attracted (attractions). Together, the production and attraction data illustrate the current transit trip patterns on the island. Graphic illustrations of the heaviest production and attraction areas are presented on the maps in Figure 6-2 and Figure 6-3.

Productions and Attractions – Daily Trips of All Trip Purposes

For the purpose of this study, 762 traffic analysis zones were defined on O'ahu, and these zones are further aggregated into 25 Transportation Analysis Areas (TAA). Figure 6-1 shows the locations of the 25 TAAs. The distributions of weekday productions and attractions for all the trip purposes and for peak-period home-based work trips are summarized in Table 6-1, where the major generators and attractors of transit trips are identified. More detailed TAA-to-TAA trip tables showing the distribution of TheBus riders' trips between TAAs are shown in Table 6-2 and Table 6-3 for total daily transit trips and peak-period home-based work transit trips respectively.

From Table 6-1, the major attractors of weekday bus riders are seen to be the Downtown area (TAA 1) and the Punchbowl-Sheridan-Date area (TAA 3), each accounting for 20 and 18 percent of island wide transit trip attractions respectively. The majority of riders attracted to Downtown are from Waikīkī (TAA 4 – 20 percent) and the Punchbowl-Sheridan-Date area (12 percent). For the trips attracted to the Punchbowl-Sheridan-Date area, the major generators are Waikīkī (24 percent) and the Kāhala- Pālolo area (TAA 5 – 10 percent). These areas are densely populated, with high concentrations of transit dependent persons.

Waikīkī is the largest trip generator of TheBus riders' trips, accounting for 16 percent. The major attractions of the trips generated in Waikīkī are Downtown and the Punchbowl-Sheridan-Date area, each accounting for 24 and 27 percent respectively. In addition to Waikīkī, the Punchbowl-Sheridan-Date area (nine percent), the Kāhala-Pālolo area (eight percent) and the Pauoa-Kalihi (TAA 6 - nine percent) are the second largest trip generators. Similar to Waikīkī, Downtown and the Punchbowl-Sheridan-Date area are also the areas attracting most of the trips generated from these three TAAs.

Productions and Attractions – Home-Based Work Trips in Peak Period

The TAAs, as shown in Table 6-1, that each account for seven percent or more of the production of peak-period home-based work trips are Waikīkī, the Punchbowl-Sheridan-Date area, the Pauoa-Kalihi area (TAA 6), the Waipahu-Waikele-Kunia area (TAA 14) and the

Kāhala- Pālolo area. Altogether, these five TAAs account for about 50 percent of the current home-based transit work trips generated during the peak period.

The Downtown area attracts nearly 34 percent of all peak period home-based work trips, while the Punchbowl-Sheridan-Date area and Waikīkī each attract about 12.5 percent of trips. Together these three areas account for approximately 60 percent of peak-period home-based work trips. Over half of the home-based work trips attracted to Downtown during peak commute hours are generated from the following areas combined: Waikīkī (21 percent), the Punchbowl-Sheridan-Date area (12 percent), the Pauoa-Kalihi area (seven percent), the Waipahu-Waikele-Kunia area (seven percent), and the ʻAiea-Pearl City area (TAA 10 – six percent). Approximately 13 percent of home-based work trips attracted to the Punchbowl-Sheridan-Date area during the peak period are generated from the Kāhala-Pālolo area, while about 12 percent of the home-based work trips are generated internally within the area. The Pauoa-Kalihi area generates the largest percentage of home-based work transit trips to Waikīkī (19 percent).

Table 6-1: Distribution of Productions and Attractions by Transportation Analysis Area

Transportation Analysis Area		All Trips Purposes, Daily				Home Based Work Trips, Peak Period			
		Production		Attraction		Production		Attraction	
		Trips	% of Total	Trips	% of Total	Trips	% of Total	Trips	% of Total
1*	Downtown	8,607	4.8	35,664	20.0	818	1.9	14,617	34.0
2*	Kakaʻako	2,113	1.2	8,518	4.8	275	0.6	2,146	5.0
3*	Punchbowl-Sheridan-Date	16,066	9.0	32,192	18.1	4,529	10.5	5,368	12.5
4*	Waikīkī	29,352	16.5	14,632	8.2	5,598	13.0	5,388	12.5
5*	Kāhala-Pālolo	14,225	8.0	12,500	7.0	3,240	7.5	1,467	3.4
6*	Pauoa-Kalihi	15,994	9.0	5,473	3.1	4,418	10.3	1,380	3.2
7*	Iwilei-Māpunapuna-Airport	9,435	5.3	9,812	5.5	1,689	3.9	2,275	5.3
8*	Hickam-Pearl Harbor	1,960	1.1	5,636	3.2	48	0.1	2,040	4.7
9*	Moanalua-Hālawa	6,490	3.6	4,201	2.4	1,797	4.2	1,373	3.2
10*	ʻAiea-Pearl City	8,414	4.7	8,071	4.5	2,572	6.0	1,448	3.4
11*	Honouliuli-ʻEwa Beach	6,281	3.5	1,642	0.9	2,584	6.0	68	0.2
12*	Kapolei-Ko ʻOlina-Kalaeloa	1,738	1.0	2,708	1.5	481	1.1	493	1.2
13*	Makakilo-Makaīwa	1,635	0.9	179	0.1	429	1.0	59	0.1
14*	Waipahu-Waikele-Kunia	11,635	6.5	7,427	4.2	3,530	8.2	1,090	2.5
15*	Waiawa-Koa Ridge	878	0.5	326	0.2	294	0.7	55	0.1
16	Mililani-Melemanu-Kīpapa	2,388	1.3	783	0.4	1,044	2.4	189	0.4
17	Wahiawā-Whitmore-Schofield	3,017	1.7	1,226	0.7	1,117	2.6	231	0.5
18	East Honolulu	5,470	3.1	4,229	2.4	714	1.7	463	1.1
19	Kāneʻohe-Kahaluʻu-Kualoa	3,804	2.1	2,995	1.7	1,133	2.6	409	1.0
20	Kailua-Mokapu-Waimānalo	4,233	2.4	2,878	1.6	965	2.2	837	1.9
21	Koʻolauloa	1,665	0.9	962	0.5	270	0.6	146	0.3
22	North Shore	1,145	0.6	2,049	1.2	300	0.7	166	0.4
23	Waiʻanae Coast	8,034	4.5	3,236	1.8	1,943	4.5	251	0.6
24*	Mānoa-Tantalus	9,245	5.2	2,200	1.2	2,881	6.7	224	0.5
25*	University	4,254	2.4	8,539	4.8	356	0.8	844	2.0
Total		178,076	100.0	178,076	100.0	43,026	100.0	43,026	100.0

* = TAA within Project Corridor

Figure 6-1: O'ahu Transportation Analysis Areas

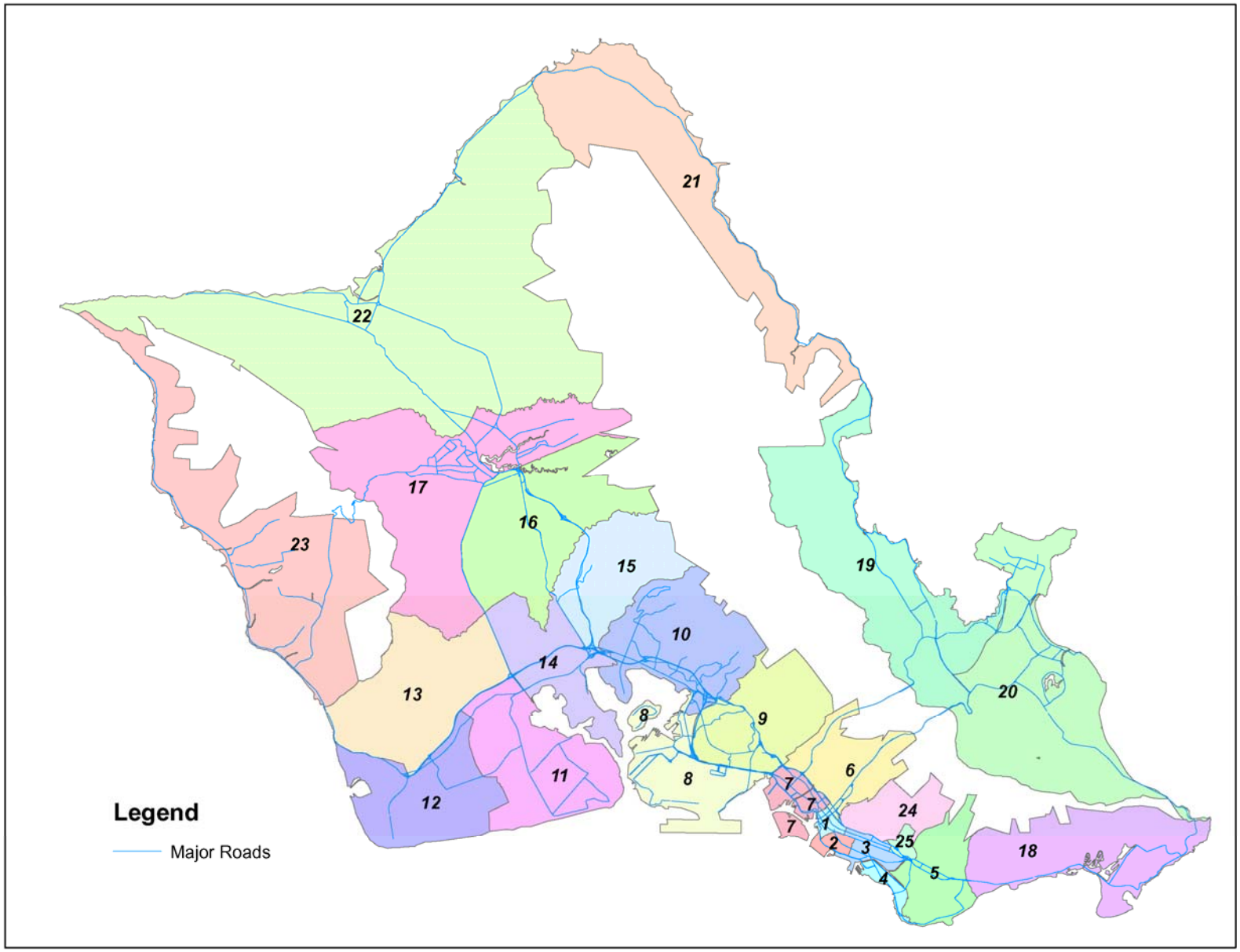


Figure 6-2: Transportation Analysis Area (TAA) Productions with greater than 5% of total Production Trips

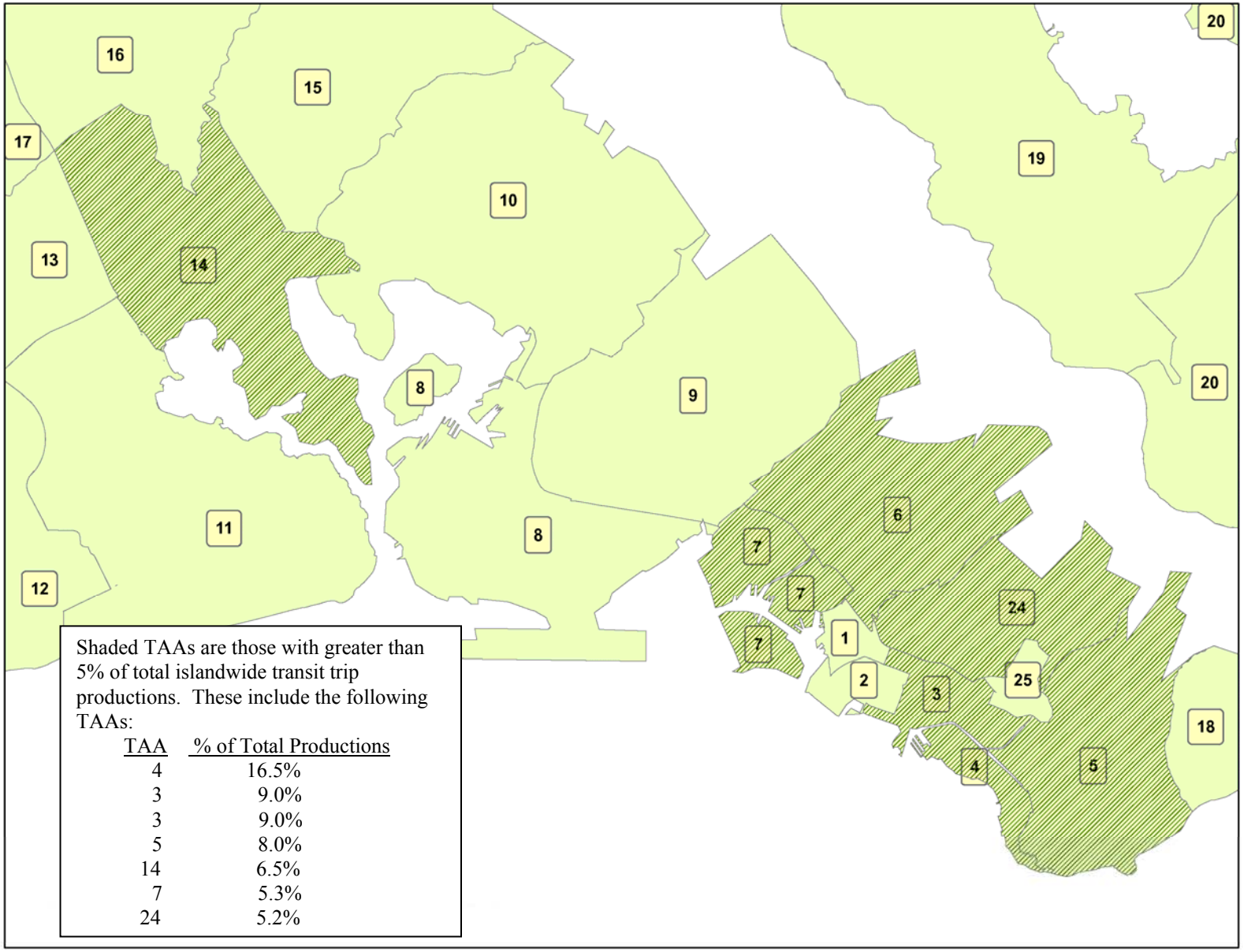


Figure 6-3: Transportation Analysis Area (TAA) Attractions with greater than 5% of total Attraction Trips

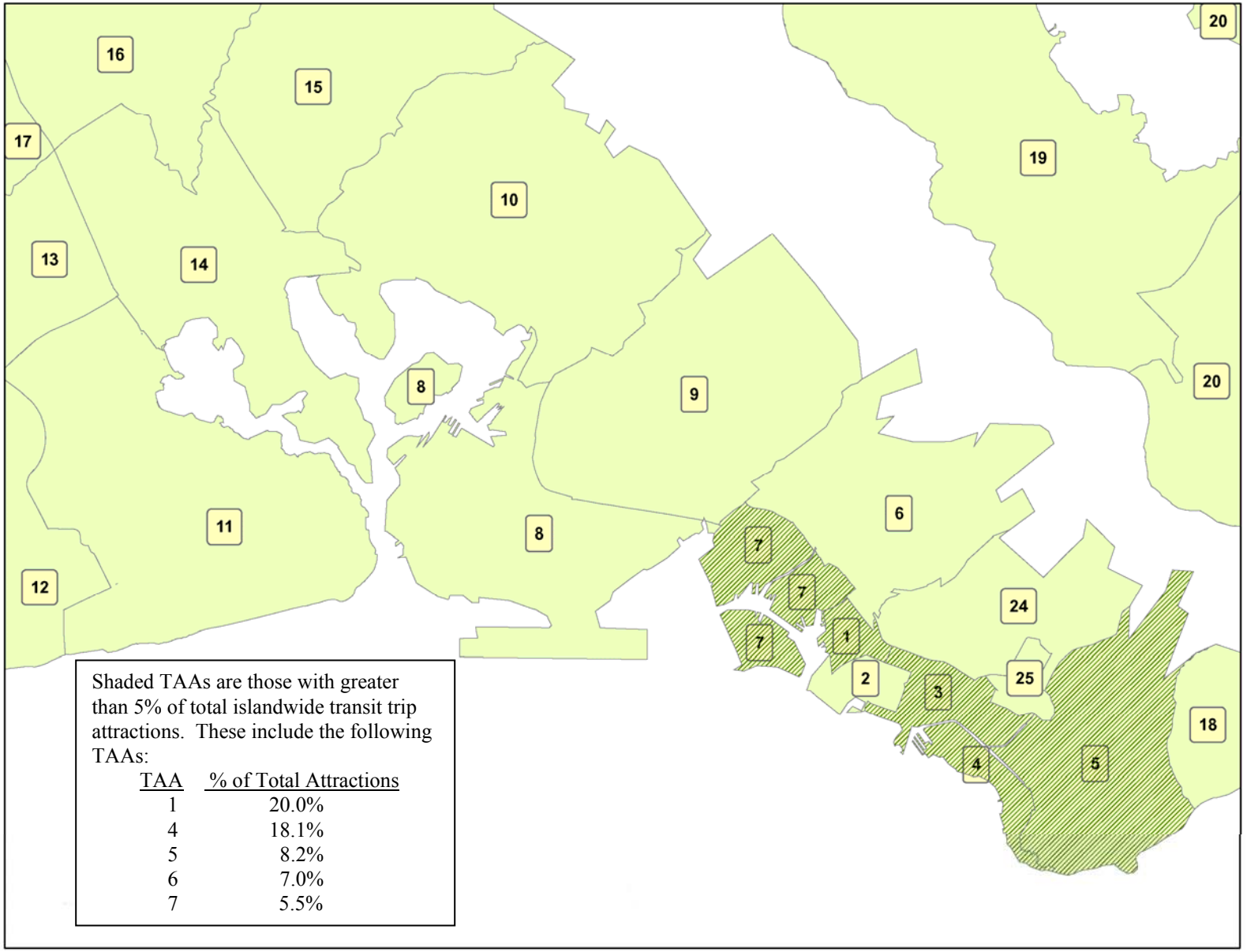


Table 6-2: Total Daily Transit Trips between Transportation Analysis Areas (TAAs)

	Attraction																								
	1. Downtown	2. Kaka'ako	3. Punchbowl-Sheridan-Date	4. Waikīkī	5. Kāhala- Pālolo	6. Pauoa-Kalihi	7. Iwilei-Māpunapuna-Airport	8. Hickam-Pearl Harbor	9. Moanalua-Hālawa	10. 'Aiea-Pearl City	11. Honouliuli - 'Ewa Beach	12. Kapolei-Ko 'Olina - Kalaeloa	13. Makakilo - Makaiwa	14. Waipahu - Waikele - Kunia	15. Waiawa-Koa Ridge	16. Mililani - Melemanu-Kīpapa	17. Wahiawā-Whitmore-Schofield	18. East Honolulu	19. Kāne'ohe - Kahalu'u - Kualoa	20. Kailua - Mokapu-Waimānalo	21. Ko'olauloa	22. North Shore	23. Wai'anae Coast	24. Mānoa - Tantalus	25. University	Total
1. Downtown	1,238	708	2,105	981	1,215	157	354	317	132	312	35	17	8	123	25	35	32	51	48	90	0	3	38	145	440	8,607
2. Kaka 'ako	343	22	571	216	236	143	279	27	40	35	0	0	0	9	2	0	7	3	0	13	0	11	11	38	109	2,113
3. Punchbowl-Sheridan-Date	4,336	941	2,314	1,764	1,090	563	999	373	213	677	5	54	2	169	13	6	14	501	133	211	55	125	61	236	1,212	16,066
4. Waikīkī	7,013	1,424	7,873	2,229	2,024	745	748	1,674	178	270	10	21	0	435	0	78	129	1,297	204	496	134	259	88	158	1,864	29,352
5. Kāhala- Pālolo	3,065	916	3,205	1,040	2,843	196	689	254	69	80	39	9	5	61	0	18	0	544	66	155	2	6	4	66	893	14,225
6. Pauoa-Kalihi	3,166	1,314	2,557	1,868	987	1,204	1,877	390	362	340	62	102	14	177	10	22	16	41	141	196	4	26	16	419	683	15,994
7. Iwilei-Māpunapuna-Airport	1,379	850	2,060	1,287	193	522	734	194	585	647	10	94	10	69	19	12	61	152	108	54	0	39	31	113	210	9,435
8. Hickam-Pearl Harbor	402	56	329	223	133	114	32	218	27	55	0	5	0	285	8	8	5	20	4	8	0	0	0	2	28	1,960
9. Moanalua-Hālawa	1,277	368	866	716	184	216	604	174	725	814	46	19	0	114	1	8	4	67	7	10	0	11	0	47	213	6,490
10. 'Aiea-Pearl City	1,810	226	1,239	439	435	196	417	346	443	1,348	6	129	2	481	18	57	37	49	142	46	0	40	176	30	302	8,414
11. Honouliuli - 'Ewa Beach	807	117	548	536	216	362	187	269	93	523	909	298	15	882	42	47	47	14	27	43	7	59	93	61	76	6,281
12. Kapolei-Ko 'Olina - Kalaeloa	335	64	314	78	21	20	97	25	48	96	42	273	21	157	0	0	38	2	14	9	2	7	54	5	15	1,738
13. Makakilo - Makaiwa	186	41	119	1	7	36	63	23	108	77	71	685	30	81	0	2	0	0	1	3	0	4	40	2	57	1,635
14. Waipahu - Waikele - Kunia	1,712	149	1,099	948	59	219	499	328	406	1,221	283	240	10	2,902	106	14	30	5	7	12	24	777	147	76	363	11,635
15. Waiawa-Koa Ridge	259	27	122	21	14	18	49	24	28	85	0	14	0	126	0	21	0	5	0	0	0	39	8	6	11	878
16. Mililani - Melemanu-Kīpapa	810	117	264	67	37	15	215	78	36	150	6	11	0	99	48	79	127	0	18	13	49	40	0	27	80	2,388
17. Wahiawā-Whitmore-Schofield	544	21	455	45	10	34	269	63	85	258	9	20	10	118	15	213	509	47	10	60	10	129	37	11	34	3,017
18. East Honolulu	898	115	827	275	1,193	140	178	34	56	12	0	0	0	42	0	0	0	871	0	112	0	10	0	140	568	5,470
19. Kāne'ohe - Kahalu'u - Kualoa	776	189	594	226	49	75	120	18	42	40	0	16	0	3	2	46	6	20	1,009	226	97	22	101	23	105	3,804
20. Kailua - Mokapu-Waimānalo	807	106	421	173	357	94	152	109	90	38	0	14	15	3	0	3	0	179	531	887	8	5	20	81	139	4,233
21. Ko'olauloa	205	24	182	6	29	35	8	25	15	21	0	0	0	3	0	21	19	0	416	65	443	123	0	0	24	1,665
22. North Shore	94	9	84	37	52	14	21	20	0	43	4	18	0	115	11	78	109	37	35	0	115	234	5	0	10	1,145
23. Wai'anae Coast	1,205	235	567	261	140	109	390	431	219	677	99	626	21	524	5	12	11	0	6	27	11	51	2,300	54	50	8,034
24. Mānoa - Tantalus	2,299	215	2,162	864	523	136	497	202	196	95	6	39	6	199	0	3	16	291	43	109	0	28	6	327	982	9,245
25. University	698	264	1,316	331	453	109	336	21	6	156	0	3	11	251	0	0	6	34	23	32	0	4	0	132	69	4,254
Total	35,664	8,518	32,192	14,632	12,500	5,473	9,812	5,636	4,201	8,071	1,642	2,708	179	7,427	326	783	1,226	4,229	2,995	2,878	962	2,049	3,236	2,200	8,539	178,076

Table 6-3: Peak Period Trips for Home-Based Work Trips between Transportation Analysis Areas (TAA)

Production TAA	Attraction																								Total
	1. Downtown	2. Kaka 'ako	3. Punchbowl-Sheridan-Date	4. Waikīkī	5. Kāhala- Pālolo	6. Pauoa-Kalihi	7. Iwilei-Māpunapuna-Airport	8. Hickam-Pearl Harbor	9. Moanalua-Hālawa	10. ʻAiea-Pearl City	11. Honouliuli - ʻEwa Beach	12. Kapolei-Ko ʻOlina - Kalaeloa	13. Makakilo - Makaiwa	14. Waipahu - Waikele - Kunia	15. Waiawa-Koa Ridge	16. Mililani - Meleman-Kīpapa	17. Wahiawā-Whitmore-Schofield	18. East Honolulu	19. Kāneʻohe - Kahaluʻu - Kualoa	20. Kailua - Mokapu-Waimānalo	21. Koʻolauloa	22. North Shore	23. Waiʻanae Coast	24. Mānoa - Tantalus	25. University	
1. Downtown	120	30	129	38	224	0	6	160	1	17	0	0	0	36	0	6	11	8	2	8	0	0	0	16	7	818
2. Kaka 'ako	102	9	11	68	0	0	70	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0	3	0	275
3. Punchbowl-Sheridan-Date	1,801	171	660	450	154	183	289	223	67	164	0	29	0	16	0	0	12	48	52	97	0	0	0	42	72	4,529
4. Waikīkī	3,084	213	404	499	297	56	191	154	76	13	0	0	0	21	0	0	21	132	9	24	1	0	0	12	392	5,598
5. Kāhala- Pālolo	714	457	675	563	107	73	229	139	17	34	0	3	0	0	0	3	0	49	3	97	0	0	4	27	45	3,240
6. Pauoa-Kalihi	981	189	478	1,024	331	370	302	185	98	88	0	27	4	13	7	0	0	9	29	118	0	14	16	38	96	4,418
7. Iwilei-Māpunapuna-Airport	289	86	273	501	17	74	21	128	118	31	0	17	8	0	0	0	21	31	19	33	0	0	0	7	16	1,689
8. Hickam-Pearl Harbor	0	0	3	17	0	0	10	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	48
9. Moanalua-Hālawa	581	287	194	293	24	77	81	8	87	117	0	11	0	0	0	0	4	0	0	9	0	0	0	3	22	1,797
10. ʻAiea-Pearl City	836	53	442	164	52	57	183	101	227	171	0	14	0	42	0	57	11	37	83	15	0	0	6	0	21	2,572
11. Honouliuli - ʻEwa Beach	612	58	229	299	26	256	112	135	44	146	50	86	6	430	1	6	19	14	15	13	0	0	4	21	0	2,584
12. Kapolei-Ko ʻOlina - Kalaeloa	151	30	193	21	11	0	0	10	18	4	0	12	0	13	0	0	3	0	0	0	0	0	15	0	0	481
13. Makakilo - Makaiwa	135	9	52	0	0	24	21	14	65	23	0	41	25	0	0	2	0	0	1	3	0	4	10	2	0	429
14. Waipahu - Waikele - Kunia	983	108	351	663	6	92	177	209	213	196	5	68	10	373	20	6	4	0	7	3	24	4	0	7	0	3,530
15. Waiawa-Koa Ridge	170	0	27	6	2	0	19	24	8	20	0	0	0	17	0	0	0	0	0	0	0	0	0	0	0	294
16. Mililani - Melemanu-Kīpapa	522	65	62	29	13	7	84	74	17	61	6	0	0	22	12	12	10	0	0	13	20	16	0	0	0	1,044
17. Wahiawā-Whitmore-Schofield	266	19	197	14	10	5	152	39	42	96	7	2	0	22	8	43	79	24	0	11	0	54	22	3	3	1,117
18. East Honolulu	376	24	80	40	51	0	54	5	15	12	0	0	0	0	0	0	0	29	0	0	0	0	0	0	28	714
19. Kāneʻohe - Kahaluʻu - Kualoa	518	76	128	88	3	26	27	12	33	14	0	15	0	0	0	0	0	0	86	37	10	0	50	4	7	1,133
20. Kailua - Mokapu-Waimānalo	292	41	61	7	44	9	42	47	44	7	0	0	0	0	0	0	0	46	35	248	0	0	0	3	40	965
21. Koʻolauloa	126	4	0	4	0	0	4	13	0	7	0	0	0	0	0	0	0	0	17	14	69	14	0	0	0	270
22. North Shore	59	0	19	18	0	0	0	0	0	0	0	0	0	0	7	46	18	26	21	0	22	61	0	0	4	300
23. Waiʻanae Coast	536	154	115	139	31	26	64	206	112	191	0	146	5	62	0	4	9	0	1	6	0	0	125	13	0	1,943
24. Mānoa - Tantalus	1,334	53	349	433	65	24	124	154	51	20	0	20	0	23	0	3	11	8	25	75	0	0	0	15	92	2,881
25. University	30	12	235	10	0	23	15	0	2	15	0	3	0	0	0	0	0	0	4	0	0	0	0	7	0	356
Total	14,617	2,146	5,368	5,388	1,467	1,380	2,275	2,040	1,373	1,448	68	493	59	1,090	55	189	231	463	409	837	146	166	251	224	844	43,026

Survey Questionnaire Direct Responses

The following section describes the direct responses received to questions asked in the on board survey.

The bulleted items below represent responses to questionnaire items 4a (Where are you coming from Now?) and 7a (Where are you going to Now?). The number in parentheses for each bullet represents the total number of responses upon which the subsequent percentages have been computed. This number also relates to the "frequency" identified in Table 6-4 or Table 6-5.

- ***Traveling From Home.*** When traveling from home (n = 81,013), the most popular destinations included: work/volunteer (40%), shopping/restaurant (15%), college/university/tech school (students only) (10%), and school (K-12 students only) (9%).
- ***Traveling To Home.*** When traveling to home (n = 64,185), the most popular origins included: work/volunteer (41%), school (K-12 students only) (15%), shopping/restaurant (14%), and college/university/tech school (students only) (7%).
- ***Traveling From Work.*** When traveling from work (n = 34,825), the most popular destinations included: home/hotel[15] (76%) and work/volunteer (8%).
- ***Traveling To Work.*** When traveling to work (n = 38,829), the most popular origins were: home/hotel (84%) and work/volunteer (7%).
- ***Traveling From Shopping.*** When traveling from shopping (n = 13,417), the most popular destinations were home/hotel (67%) and shopping/restaurant (15%).
- ***Traveling To Shopping.*** When traveling to shopping (n = 21,333), the most popular origins were home/hotel (57%), and shopping/restaurant (9%).
- ***Traveling From Social/Church/Personal.*** When traveling from social/church/personal (n = 4,695), the most popular destinations included: home/hotel (69%), social/church/personal (11%), shopping/restaurant (5%) and work/volunteer (5%).
- ***Traveling To Social/Church/Personal.*** When traveling to social/church/personal (n = 6,182), the most popular origins included: home/hotel (64%), and work/volunteer (9%), and social/church/ personal (9%).
- ***Traveling From Recreation/Sightseeing.*** When traveling from recreation/sightseeing (n = 6,527), the most popular destinations included: home/hotel (55%), shopping/restaurant (17%) and recreation/sightseeing (15%).
- ***Traveling To Recreation/Sightseeing.*** When traveling to recreation/sightseeing (n = 9,030), the most popular origins included: home/hotel (62%) and recreation/sightseeing (11%).
- ***Traveling From Airport.*** When traveling from the airport (n = 581), the popular destinations were: home/hotel (47%) and recreation/sightseeing (19%).
- ***Traveling To Airport.*** When traveling from the airport (n = 732), the most popular origin was home/hotel (79%).

[15] The questionnaire represented home and hotel as similar origin / destination categories (see questionnaire in Appendix A).

- ***Traveling From School (K-12).*** When traveling from school or college (n=14,758), the most popular destinations included: home/hotel (67%), and shopping/restaurant (10%).
- ***Traveling To School (K-12).*** When traveling to school or college (n=8,000), the most popular origin was home/hotel (88%).
  - ***Traveling From College/University/Tech School.*** When traveling from College/University/Tech School (n = 8,246), the most popular destinations included: home/hotel (57%), shopping/restaurant (14%) and work/volunteer (10%).
  - ***Traveling To College/University/Tech School.*** When traveling to College/University/Tech School (n = 9,506), the most popular origin was home/hotel (84%).
  - ***Traveling From Medical/Hospital.*** For traveling from medical/hospital (n = 3,860), the popular destinations included: home/hotel (67%), work/volunteer (8%) and shopping/restaurant (7%).
  - ***Traveling To Medical/Hospital.*** For traveling to medical/hospital (n = 5,601), the most common origins included: home/hotel (71%) and work/volunteer (12%).

Table 6-4 indicates that 45% of trips were from home or from the hotel, whereas 20% were trips from work or volunteer activities. Eight percent were from school (K-12), and the same percent of trip were shopping/restaurant related. Five percent of trips were from College/University/Tech School, and 4% were from recreation/sightseeing. Social/Church/Personal activities accounted for 3%. The final 8% of trips were from Medical Appointment/Hospital Visit (2%), Airport (0%), Other (5%) or Refused (1%).

Table 6-4: Trip Origin - Where Are You Coming From Now?

TRIP PURPOSE	FREQUENCY	PERCENT
Home /Hotel	81,013	45%
Work/Volunteer	34,825	20%
School (K-12) (Students Only)	14,758	8%
Shopping / Restaurant	13,417	8%
College/University/Tech School (Students Only)	8,246	5%
Recreation / Sightseeing	6,527	4%
Social/Church/Personal	4,695	3%
Medical Appointment/Hospital Visit	3,860	2%
Airport (Passengers Only)	581	<1%
Other, Specify	8,476	5%
Refused	1,678	1%
Total	178,076	100%

Table 6-5 indicates that 36% of trips were destined home or to the hotel, whereas 22% were trips to work or volunteer activities. Twelve percent were to shopping/restaurant, and 5% were to recreation/sightseeing. Nine percent of trips were to school (either K-12 (4%) or College/University/Tech School (5%)), and 3% were to Medical Appointment/Hospital Visit.

The final 11% of trips were to Social/Church/Personal activities (3%), Airport (0%), Other (7%) or Refused (1%).

Table 6-5: Trip Purpose - Where Are You Going Now?

TRIP PURPOSE	FREQUENCY	PERCENT
Home /Hotel	64,185	36%
Work/Volunteer	38,829	22%
Shopping / Restaurant	21,333	12%
College/University/Tech School (Students Only)	9,506	5%
Recreation / Sightseeing	9,030	5%
School (K-12) (Students Only)	8,000	4%
Medical Appointment/Hospital Visit	5,601	3%
Social/Church/Personal	6,182	3%
Airport (Passengers Only)	732	<1%
Other, Specify	12,834	7%
Refused	1,843	1%
Total	178,076	100%

Table 6-6 below suggests that of reported trips, nearly one-third (33%) were home-based work trips, while 10% were visitor trips. Seventeen percent were home-based school trips, while 16% were home-based other. Sixteen percent were non home-based trips, and 9% were home-based shopping trips.

Table 6-6: Trip Type

TRIP TYPE	FREQUENCY	PERCENT
Home-based Work	58,179	33%
Home-based School	29,127	16%
Non Home-based	28,962	16%
Home-based Other	28,528	16%
Visitor	17,899	10%
Home-based Shopping	15,382	9%
Total	178,076	100%

Note: The trip types are determined based on the origin and destination purposes, except for the trips identified as visitor trips.

Table 6-7 provides a summary of trip origin purpose by trip destination purpose. The most common origin and destination was Home or a Hotel (nearly half of all origins and more than one-third of all destinations). The least common was the airport (less than 1%, origins and destinations).

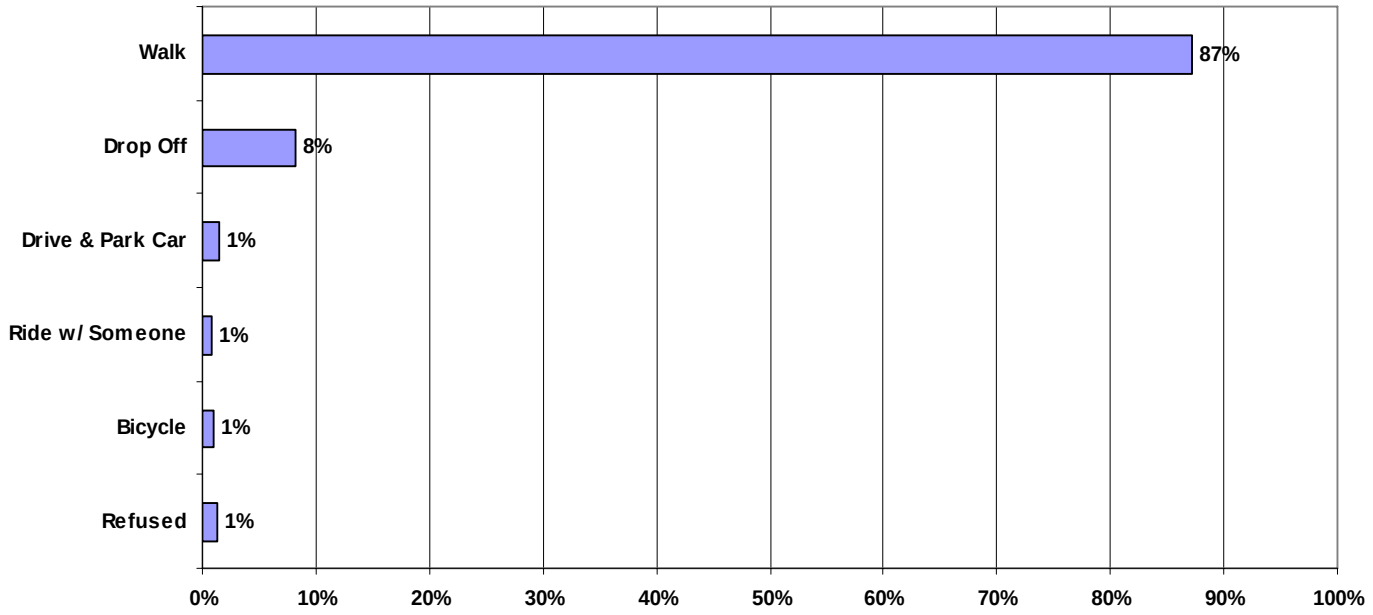
Table 6-7: Origin Trip Purpose VS. Destination Trip Purpose

DESTINATION PURPOSE		ORIGIN PURPOSE												TOTAL
		Work / Volunteer	Shopping / Restaurant	Social / Church / Personal	Recreation/ Sightseeing	Airport (Passenger Only)	Home / Hotel	School K-12 (Students Only)	College/ University	Medical Appt/ Hospital	Other, Specify	Refused	
Work / Volunteer	Count	2,660	720	232	123	69	32,587	433	803	310	835	58	38,829
	Percent%	1.49%	0.40%	0.13%	0.07%	0.04%	18.30%	0.24%	0.45%	0.17%	0.47%	0.03%	21.8%
Shopping / Restaurant	Count	1,703	2,001	239	1,118	13	12,214	1,463	1,172	268	1,046	96	21,333
	Percent %	0.96%	1.12%	0.13%	0.63%	0.01%	6.86%	0.82%	0.66%	0.15%	0.59%	0.05%	12.0%
Social / Church / Personal	Count	587	293	526	20	2	3,932	218	231	116	219	38	6,182
	Percent %	0.33%	0.16%	0.30%	0.01%	0.00%	2.21%	0.12%	0.13%	0.06%	0.12%	0.02%	3.5%
Recreation/ Sightseeing	Count	717	518	195	966	108	5,599	347	300	12	178	91	9,030
	Percent %	0.40%	0.29%	0.11%	0.54%	0.06%	3.14%	0.19%	0.17%	0.01%	0.10%	0.05%	5.1%
Airport (Passenger Only)	Count	12	2	0	0	74	576	0	9	0	48	11	732
	Percent %	0.01%	0.00%	0.00%	0.00%	0.04%	0.32%	0.00%	0.00%	0.00%	0.03%	0.01%	0.4%
Home / Hotel	Count	26,539	8,997	3,218	3,571	275	21	9,852	4,692	2,602	4,106	311	64,185
	Percent %	14.90%	5.05%	1.81%	2.01%	0.15%	0.01%	5.53%	2.63%	1.46%	2.31%	0.17%	36.0%
School K-12 (Students Only)	Count	49	93	19	22	0	7,005	585	55	7	156	9	8,000
	Percent %	0.03%	0.05%	0.01%	0.01%	0.00%	3.93%	0.33%	0.03%	0.00%	0.09%	0.00%	4.5%
College/ University	Count	439	192	50	188	0	7,969	27	234	31	344	32	9,506
	Percent %	0.25%	0.11%	0.03%	0.11%	0.00%	4.47%	0.02%	0.13%	0.02%	0.19%	0.02%	5.3%
Medical Appt/ Hospital	Count	653	300	66	58	3	3,966	103	101	271	71	7	5,601
	Percent %	0.37%	0.17%	0.04%	0.03%	0.00%	2.23%	0.06%	0.06%	0.15%	0.04%	0.00%	3.1%
Other, Specify	Count	1,416	182	108	415	30	6,567	1,639	627	231	1,409	212	12,834
	Percent %	0.80%	0.10%	0.06%	0.23%	0.02%	3.69%	0.92%	0.35%	0.13%	0.79%	0.12%	7.2%
Refused	Count	51	117	42	46	8	578	90	24	12	63	812	1,843
	Percent %	0.03%	0.07%	0.02%	0.03%	0.00%	0.32%	0.05%	0.01%	0.01%	0.04%	0.46%	1.0%
TOTAL	Count	34,825	13,417	4,695	6,527	581	81,013	14,758	8,246	3,860	8,476	1,678	178,076
	Percent %	19.56%	7.53%	2.64%	3.67%	0.33%	45.49%	8.29%	4.63%	2.17%	4.76%	0.94%	100%

The access mode is the way in which riders travel to the departing bus. Access mode is important because it supports the planning of service improvements that increase the ease of access, and potentially ridership levels. As shown in Figure 6-4, 87% of riders walked to the bus stop. Sixty-three percent of the riders walked 1-2 blocks to the bus stop. About 8% of riders had someone else drive them to the bus stop.

Figure 6-4: Access Mode: How Did You Get To The First Bus Used For This One-Way Trip?

(N = 178,076)



Note: Totals may not sum to 100% due to rounding.

Table 6-8 provides a summary of trip purpose by access mode. The data suggests that the most popular mode of access is walking, regardless of trip purpose.

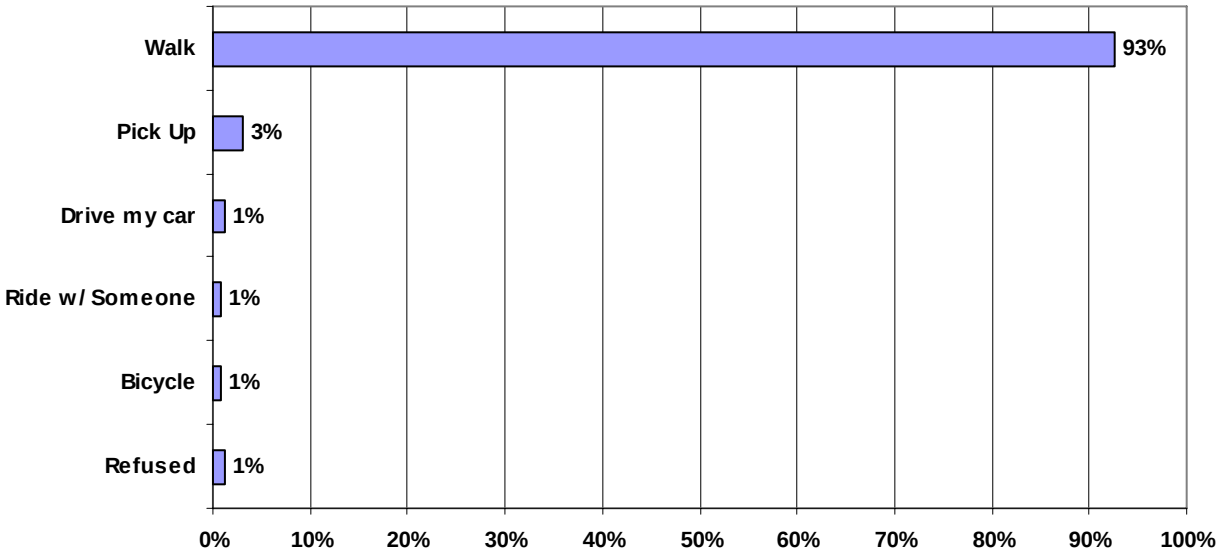
Table 6-8: Trip Purpose By Access Mode

ACCESS MODE			TRIP PURPOSE											TOTAL
			Work / Volunteer	Shopping / Restaurant	Social / Church / Personal	Recreation/ Sightseeing	Airport (Passenger Only)	Home / Hotel	School K-12 (Students Only)	College/ University	Medical Appt/ Hospital	Other, Specify	Refused	
	Drive and Park my Car	Count	913	484	62	28	11	668	18	181	74	119	10	2,569
		Column%	2.4%	2.3%	1.0%	0.3%	1.5%	1.0%	0.2%	1.9%	1.3%	0.9%	0.6%	1.4%
	Drop off	Count	3,889	1,391	355	376	60	6,186	733	624	308	804	34	14,758
		Column%	10.0%	6.5%	5.7%	4.2%	8.2%	9.6%	9.2%	6.6%	5.5%	6.3%	1.8%	8.3%
	Ride with someone who park	Count	162	197	101	10	0	686	34	48	81	124	0	1,444
		Column%	0.4%	0.9%	1.6%	0.1%	0.0%	1.1%	0.4%	0.5%	1.5%	1.0%	0.0%	0.8%
	Walk	Count	33,249	18,928	5,589	8,321	661	55,184	7,053	8,553	5,109	11,518	1,142	155,306
		Column%	85.6%	88.7%	90.4%	92.2%	90.3%	86.0%	88.2%	90.0%	91.2%	89.7%	62.0%	87.2%
	Bicycle	Count	355	166	36	280	0	492	63	96	25	211	7	1,731
		Column%	0.9%	0.8%	0.6%	3.1%	0.0%	0.8%	0.8%	1.0%	0.4%	1.6%	0.4%	1.0%
	Refused	Count	260	168	39	15	0	969	99	5	3	59	650	2,268
		Column%	0.7%	0.8%	0.6%	0.2%	0.0%	1.5%	1.2%	0.0%	0.1%	0.5%	35.3%	1.3%
TOTAL		Count	38,829	21,333	6,182	9,030	732	64,185	8,000	9,506	5,601	12,834	1,843	178,076
		Column%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

As with the access mode, the vast majority (93%) of riders walked from the bus stop to the final destination (see Figure 6-5). Of those who walked, 61% walked 1-2 blocks. Three percent of riders were picked up from the bus stop by someone else and driven to their final destination.

Figure 6-5: Egress Mode: After You Get Off The Last Bus, How Will You Get To The Place You Are Going Now?

(N = 178,076)



Note: Totals may not sum to 100% due to rounding.

Table 6-9 provides a summary of trip purpose by egress mode. The data suggests that the most popular mode of egress is walking, regardless of trip purpose.

Table 6-9: Trip Purpose By Egress Mode

			Trip Purpose											Total
			Work / Volunteer	Shopping / Restaurant	Social / Church / Personal	Recreation/ Sightseeing	Airport (Passenger Only)	Home / Hotel	School K-12 (Students Only)	College/ University	Medical Appt/ Hospital	Other, Specify	Refused	
Egress Mode	Drive my Car	Count	253	447	26	1	0	1,128	13	99	5	248	22	2,242
		Column%	0.7%	2.1%	0.4%	0.0%	0.0%	1.8%	0.2%	1.0%	0.1%	1.9%	1.2%	1.3%
	Ride with someone	Count	309	137	195	73	0	573	24	57	4	167	4	1,541
		Column%	0.8%	0.6%	3.2%	0.8%	0.0%	0.9%	0.3%	0.6%	0.1%	1.3%	0.2%	0.9%
	Walk	Count	36,953	19,633	5,698	8,546	689	58,806	7,521	9,026	5,313	11,599	1,130	164,914
		Column%	95.2%	92.0%	92.2%	94.6%	94.1%	91.6%	94.0%	94.9%	94.9%	90.4%	61.3%	92.6%
	Pick up	Count	686	800	188	284	43	2,084	298	242	260	566	31	5,484
		Column%	1.8%	3.8%	3.0%	3.1%	5.9%	3.2%	3.7%	2.5%	4.6%	4.4%	1.7%	3.1%
	Bicycle	Count	368	149	36	112	0	624	45	79	14	195	7	1,628
		Column%	0.9%	0.7%	0.6%	1.2%	0.0%	1.0%	0.6%	0.8%	0.3%	1.5%	0.4%	0.9%
	Refused	Count	260	168	39	15	0	969	99	5	3	59	650	2,268
		Column%	0.7%	0.8%	0.6%	0.2%	0.0%	1.5%	1.2%	0.0%	0.1%	0.5%	35.3%	1.3%
Total		Count	38,829	21,333	6,182	9,030	732	64,185	8,000	9,506	5,601	12,834	1,843	178,076
		Column%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 6-10 shows that about three quarters (74%) of TheBus riders did not make a transfer during their trip. Twenty-one percent of the riders transferred from one bus to a second bus. Four percent had two transfers, and 1% had three or more transfers.

Table 6-10: Transfers (Number of Buses Used)

Number Of Transfers	Frequency	Percent
0	131,186	74%
1	37,612	21%
2	6,964	4%
3 or More	2,314	1%
Total	178,076	100%

Table 6-11 suggests that the most popular fare used during the survey period was the Adult Monthly Pass (38% of recorded fares) followed by the Adult Cash Fare (19% of recorded fares). The least mentioned were the Youth Annual Pass and the Football Express (both less than 1% of recorded fares).

Table 6-11: How Did You Pay Your Fare On This Bus?

Fare	Frequency	Percent
Adult Monthly Pass ($40)	67,381	38%
Adult Cash Fare ($2)	33,032	19%
Senior Annual Pass ($30)	13,572	8%
Youth Monthly Pass ($20)	13,055	7%
People with Disabilities Annual Pass ($30)	10,369	6%
Youth Cash Fare ($1)	10,776	6%
U-Pass ($100)	9,487	5%
Transfer Slip	3,582	2%
Senior Monthly Pass ($5)	3,009	2%
Adult Annual Pass ($440)	2,088	1%
Senior Cash Fare ($1)	1,568	1%
Visitors Pass ($20)	995	1%
People with Disabilities Monthly Pass ($5)	987	1%
Youth Annual Pass ($220)	207	<1%
Football Express ($3)	14	<1%
Refused	7,954	4%
Total	178,076	100%

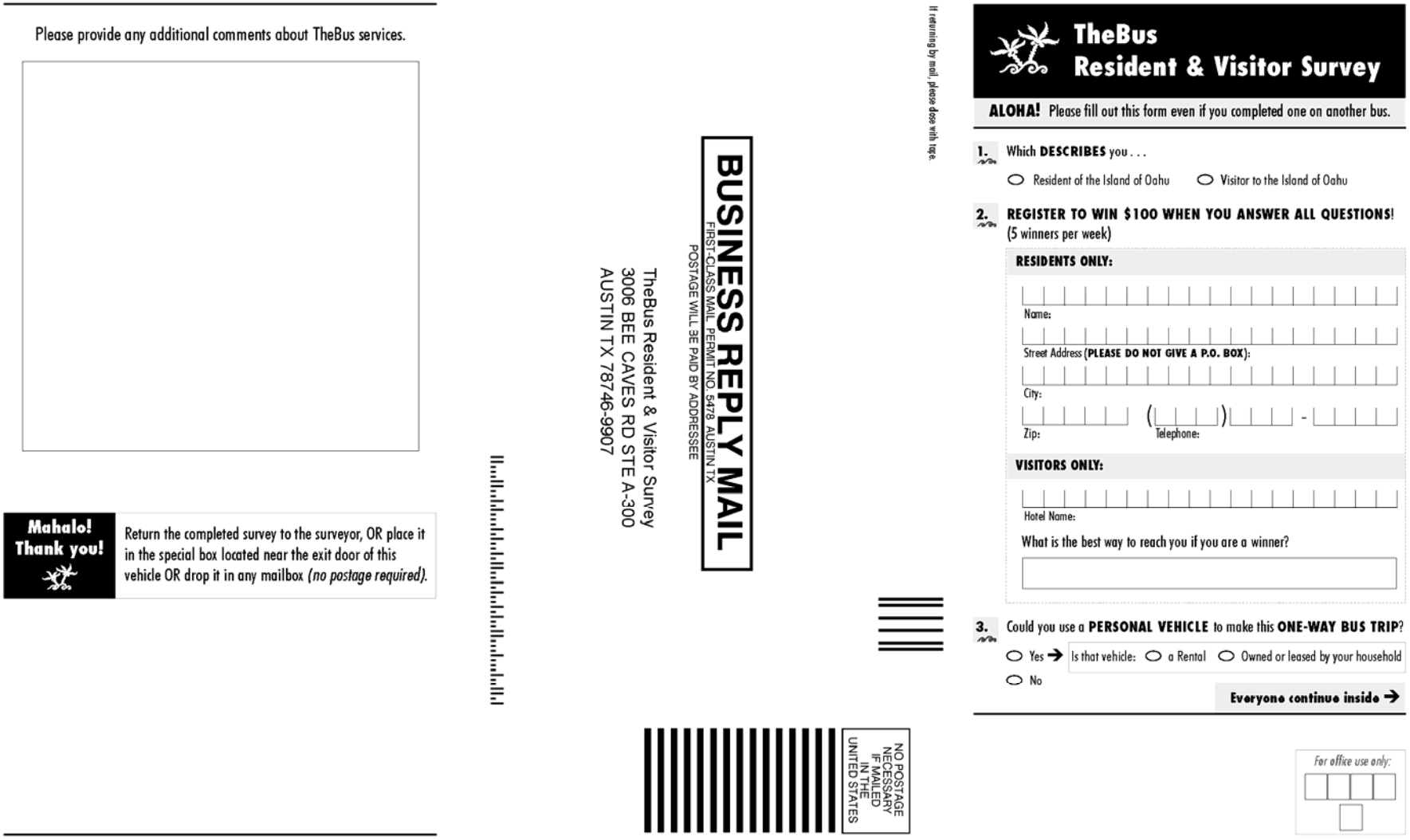
Table 6-12 below provides a summary of trip purpose by fare. The data helps to identify that, overall, the two most popular fare types are the Adult Cash Fare and the Adult Monthly Pass, with over half of all fare types mentioned being one of these. When examined by trip purpose, the only noticeable deviations from these two fare types are seen in School (K-12) trips where the Youth Monthly Pass is by far the most often used fare type (mentioned 54% of the time) and Social / Church / Personal trips where there is a near equal distribution among the Adult Cash Fare (25%), the Adult Monthly Pass (26%) and the People with Disabilities Annual Pass (20%).

Table 6-12: Trip Purpose By Fare

FARE			TRIP PURPOSE											TOTAL
			Work/ Volunteer	Shopping/ Restaurant	Social/ Church/ Personal	Recreation/ Sightseeing	Airport (Passenger Only)	Home/Hotel	School K-12 (Students Only)	College/ University	Medical Appt/ Hospital	Other, Specify	Refused	
	Adult Cash Fare ($2)	Count	7,247	4,457	1,536	3,499	242	10,163	331	2,106	882	2,298	271	33,032
		Column%	18.66%	20.89%	24.85%	38.75%	33.01%	15.83%	4.14%	22.16%	15.75%	17.90%	14.69%	18.55%
	Transfer Slip	Count	285	405	213	300	158	1,527	189	126	52	328	0	3,582
		Column%	0.73%	1.90%	3.45%	3.32%	21.62%	2.38%	2.36%	1.33%	0.92%	2.55%	0.00%	2.01%
	Adult Monthly Pass ($40)	Count	23,819	5,496	1,590	1,837	92	26,139	586	2,324	1,861	3,555	82	67,381
		Column%	61.34%	25.76%	25.72%	20.34%	12.54%	40.72%	7.32%	24.45%	33.22%	27.70%	4.48%	37.84%
	Adult Annual Pass ($440)	Count	506	292	58	194	0	510	7	226	80	213	2	2,088
		Column%	1.30%	1.37%	0.94%	2.14%	0.00%	0.79%	0.09%	2.37%	1.44%	1.66%	0.09%	1.17%
	Youth Cash Fare ($1)	Count	332	1,943	273	371	27	4,681	1,901	90	50	1,004	104	10,776
		Column%	0.86%	9.11%	4.42%	4.11%	3.64%	7.29%	23.76%	0.95%	0.89%	7.82%	5.62%	6.05%
	Youth Monthly Pass ($20)	Count	550	595	241	113	0	5,566	4,324	109	100	1,420	35	13,055
		Column%	1.42%	2.79%	3.90%	1.25%	0.00%	8.67%	54.05%	1.15%	1.79%	11.07%	1.93%	7.33%
	Youth Annual Pass ($220)	Count	15	29	0	0	0	40	67	21	0	20	15	207
		Column%	0.04%	0.14%	0.00%	0.00%	0.00%	0.06%	0.84%	0.22%	0.00%	0.16%	0.79%	0.12%
	Senior Cash Fare ($1)	Count	40	529	39	145	39	554	16	24	24	145	15	1,568
		Column%	0.10%	2.48%	0.62%	1.60%	5.28%	0.86%	0.19%	0.25%	0.43%	1.13%	0.79%	0.88%
	Senior Monthly Pass ($5)	Count	69	1,403	129	282	0	721	4	6	41	308	45	3,009
		Column%	0.18%	6.58%	2.09%	3.12%	0.00%	1.12%	0.05%	0.07%	0.73%	2.40%	2.45%	1.69%
	Senior Annual Pass ($30)	Count	1,881	3,192	420	1,232	84	4,269	0	42	1,167	1,238	46	13,572
		Column%	4.84%	14.96%	6.80%	13.64%	11.48%	6.65%	0.00%	0.45%	20.83%	9.65%	2.52%	7.62%
	People with Disabilities Monthly Pass ($5)	Count	220	152	45	35	0	228	0	19	128	139	22	987
		Column%	0.57%	0.71%	0.73%	0.39%	0.00%	0.35%	0.00%	0.20%	2.29%	1.09%	1.19%	0.55%

		TRIP PURPOSE											TOTAL
		Work/ Volunteer	Shopping/ Restaurant	Social/ Church/ Personal	Recreation/ Sightseeing	Airport (Passenger Only)	Home/Hotel	School K-12 (Students Only)	College/ University	Medical Appt/ Hospital	Other, Specify	Refused	
People with Disabilities Annual Pass ($30)	Count	1,187	1,066	1,245	435	2	3,640	58	161	937	1,619	20	10,369
	Column%	3.06%	5.00%	20.14%	4.82%	0.29%	5.67%	0.72%	1.69%	16.72%	12.61%	1.09%	5.82%
Visitors Pass ($20)	Count	38	176	26	351	15	322	9	3	4	35	16	995
	Column%	0.10%	0.83%	0.41%	3.89%	2.03%	0.50%	0.11%	0.03%	0.07%	0.28%	0.86%	0.56%
Football Express ($3)	Count	0	0	0	0	0	0	0	0	0	0	14	14
	Column%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.76%	0.01%
U-Pass ($100)	Count	1,241	856	134	126	39	2,447	210	4,136	67	227	5	9,487
	Column%	3.20%	4.01%	2.16%	1.39%	5.38%	3.81%	2.62%	43.50%	1.20%	1.77%	0.25%	5.33%
Refused	Count	1,399	741	233	111	35	3,377	300	113	208	284	1,152	7,954
	Column%	3.60%	3.48%	3.76%	1.23%	4.73%	5.26%	3.75%	1.19%	3.72%	2.22%	62.50%	4.47%
TOTAL	Count	38,829	21,333	6,182	9,030	732	64,185	8,000	9,506	5,601	12,834	1,843	178,076
	Column%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Appendix A Survey Instrument



Please provide any additional comments about TheBus services.

Mahalo! Thank you!

Return the completed survey to the surveyor, OR place it in the special box located near the exit door of this vehicle OR drop it in any mailbox *(no postage required)*.

If returning by mail, please close with tape.

BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO. 5478 AUSTIN TX
POSTAGE WILL BE PAID BY ADDRESSEE

TheBus Resident & Visitor Survey
3006 BEE CAVES RD STE A-300
AUSTIN TX 78746-9907

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

TheBus Resident & Visitor Survey

ALOHA! Please fill out this form even if you completed one on another bus.

1. Which **DESCRIBES** you . . .

○ Resident of the Island of Oahu ○ Visitor to the Island of Oahu

2. **REGISTER TO WIN $100 WHEN YOU ANSWER ALL QUESTIONS!** (5 winners per week)

RESIDENTS ONLY:

Name:

Street Address (**PLEASE DO NOT GIVE A P.O. BOX**):

City:

Zip: Telephone: ( ) -

VISITORS ONLY:

Hotel Name:

What is the best way to reach you if you are a winner?

3. Could you use a **PERSONAL VEHICLE** to make this **ONE-WAY BUS TRIP**?

○ Yes → Is that vehicle: ○ a Rental ○ Owned or leased by your household

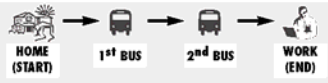
○ No

Everyone continue inside →

For office use only:

Questions 4-9 are about the ONE-WAY bus trip you are making NOW!

Example One-way Bus Trip:



4a. Where are you **COMING FROM NOW**? *(starting place of this one-way bus trip)*

- ○ Work
- ○ Shopping
- ○ Social visit/Church/Personal
- ○ Recreation/Sightseeing/Restaurant
- ○ Airport *(passenger only)*
- ○ Home / Hotel *(guest only)* → If you gave your Home or Hotel information in Question 2 → **Go to Question 5**
- ○ School (K-12) *(student only)*
- ○ College/University/Tech school *(student only)*
- ○ Medical appointment/Hospital visit
- ○ Other

4b. What is the name of the **PLACE** you are **COMING FROM NOW**?

Place Name or Nearest Landmark **PLEASE BE SPECIFIC (EXAMPLE: ALA MOANA CENTER)**

4c. What is the **ADDRESS**?

Address

Cross Street

City

For office use only:

5. How did you **GET TO** the **FIRST** bus you used for this **ONE-WAY** bus trip? *(mark one only)*

- ○ Drove and parked my car
- ○ Dropped off
- ○ Rode w/ someone who parked in a park & ride lot
- ○ Walk: → *# blocks*
- ○ Bicycle

6. **LIST ALL BUS ROUTES** you used or will use to get from where you are **COMING FROM** to where you are **GOING TO NOW**:

1st Bus Route# → 2nd Bus Route# → 3rd Bus Route# → 4th Bus Route#

7a. Where are you **GOING NOW**? *(ending place of this one-way bus trip)*

- ○ Work
- ○ Shopping
- ○ Social visit/Church/Personal
- ○ Recreation/Sightseeing/Restaurant
- ○ Airport *(passenger only)*
- ○ Home / Hotel *(guest only)* → If you gave your Home or Hotel information in Question 2 → **Go to Question 8**
- ○ School (K-12) *(student only)*
- ○ College/University/Tech school *(student only)*
- ○ Medical appointment/Hospital visit
- ○ Other

7b. What is the name of the **PLACE** you are **GOING NOW**?

Place Name or Nearest Landmark **PLEASE BE SPECIFIC (EXAMPLE: ALA MOANA CENTER)**

7c. What is the **ADDRESS**?

Address

Cross Street

City

For office use only:

8. After you **GET OFF** the **LAST** bus, how will you get to the place you are **GOING NOW**? *(mark one only)*

- ○ Drive my car
- ○ Ride w/ someone who parked in a park & ride lot
- ○ Walk: → *# blocks*
- ○ Picked-up
- ○ Bicycle

9. How did you pay your **FARE** on **THIS BUS**? *(mark only one)*

- ○ Adult cash fare ($2)
- ○ Transfer Slip
- ○ Adult Monthly Pass ($40)
- ○ Adult Annual Pass ($440)
- ○ Youth cash fare ($1)
- ○ Youth Monthly Pass ($20)
- ○ Youth Annual Pass ($220)
- ○ Senior cash fare ($1)
- ○ Senior Monthly Pass ($5)
- ○ Senior Annual Pass ($30)
- ○ Persons w/ Disabilities Monthly Pass ($5)
- ○ Persons w/ Disabilities Annual Pass ($30)
- ○ Visitor Pass ($20)
- ○ Football Express ($3)
- ○ U-Pass ($100)

All personal information is confidential and WILL NOT be shared or sold.

10. How many **CARS**, **TRUCKS**, or **MOTORCYCLES** does your household have?

○ None ○ 1 ○ 2 ○ 3 ○ 4 or more

11. How **OLD** are you?

○ 6 - 11 → **That's all our questions, mahalo/thank you!**

○ 12 - 17 ○ 18 - 24 ○ 25 - 34 ○ 35 - 49 ○ 50 - 64 ○ 65 or older → **Continue with Question 12**

12. Do you have a **VALID DRIVER'S LICENSE**? ○ Yes ○ No

13. Including yourself, how many **PEOPLE** live in your household?

○ 1 ○ 2 ○ 3 ○ 4 or more

14. Including yourself, how many people in your household have a **JOB OUTSIDE** the home?

○ None ○ 1 ○ 2 ○ 3 ○ 4 or more

15. What was your estimated **HOUSEHOLD INCOME** in 2004?

○ Less than $10,000 ○ $10,000 - $24,999 ○ $25,000 - $34,999 ○ $35,000 - $49,999 ○ $50,000 - $74,999 ○ $75,000 or more

Mahalo! Thank you!

Return the completed survey to the surveyor, OR place it in the special box located near the exit door of this vehicle OR drop it in any mailbox *(no postage required)*.

Please provide any additional comments about TheBus on the back →

Appendix B Descriptive Statistics: Frequencies (Unweighted Data)

TABLE B-1: BUS ROUTE ON WHICH QUESTIONNAIRE WAS DISTRIBUTED

BUS ROUTE WHERE QUESTIONNAIRE DISTRIBUTED	FREQUENCY	PERCENT	VALID PERCENT	CUMULATIVE PERCENT
1	403	2.8	2.8	2.8
2	386	2.6	2.6	5.4
3	528	3.6	3.6	9.0
4	614	4.2	4.2	13.2
5	304	2.1	2.1	15.3
6	517	3.5	3.5	18.8
7	329	2.3	2.3	21.1
8	134	0.9	0.9	22.0
9	479	3.3	3.3	25.3
10	59	0.4	0.4	25.7
11	211	1.4	1.4	27.1
13	454	3.1	3.1	30.2
14	157	1.1	1.1	31.3
15	64	0.4	0.4	31.7
17	152	1	1	32.7
18	128	0.9	0.9	33.6
19	247	1.7	1.7	35.3
20	141	1	1	36.3
21	20	0.1	0.1	36.4
22	278	1.9	1.9	38.3
31	121	0.8	0.8	39.1
32	214	1.5	1.5	40.6
40	554	3.8	3.8	44.4
41	237	1.6	1.6	46.0
42	570	3.9	3.9	49.9
43	313	2.1	2.1	52.0
52	486	3.3	3.3	55.3
53	499	3.4	3.4	58.7
54	591	4	4	62.7
55	351	2.4	2.4	65.1
56	449	3.1	3.1	68.2
57	265	1.8	1.8	70.0
58	299	2	2	72.0
62	420	2.9	2.9	74.9
65	254	1.7	1.7	76.6

Bus Route Where Questionnaire Distributed	Frequency	Percent	Valid Percent	Cumulative Percent
70	29	0.2	0.2	76.8
72	65	0.4	0.4	77.2
73	18	0.1	0.1	77.3
76	33	0.2	0.2	77.5
77	44	0.3	0.3	77.8
80	41	0.3	0.3	78.1
81	155	1.1	1.1	79.2
83	99	0.7	0.7	79.9
84	45	0.3	0.3	80.2
84A	54	0.4	0.4	80.6
85	29	0.2	0.2	80.8
85A	63	0.4	0.4	81.2
88	30	0.2	0.2	81.4
88A	42	0.3	0.3	81.7
90	23	0.2	0.2	81.9
91	151	1	1	82.9
92	76	0.5	0.5	83.4
93	121	0.8	0.8	84.2
96	41	0.3	0.3	84.5
97	28	0.2	0.2	84.7
98	23	0.2	0.2	84.9
101	50	0.3	0.3	85.2
102	26	0.2	0.2	85.4
201	40	0.3	0.3	85.7
202	28	0.2	0.2	85.9
203	8	0.1	0.1	86.0
401	18	0.1	0.1	86.1
402	16	0.1	0.1	86.2
403	43	0.3	0.3	86.5
411	84	0.6	0.6	87.1
412	59	0.4	0.4	87.5
413	43	0.3	0.3	87.8
421	41	0.3	0.3	88.1
431	45	0.3	0.3	88.4
432	88	0.6	0.6	89.0
433	59	0.4	0.4	89.4
434	121	0.8	0.8	90.2
A	548	3.8	3.8	94.0
B	484	3.3	3.3	97.3
C	370	2.5	2.5	99.8
Total	14,609	100	100	

TABLE B-2: LANGUAGE OF COMPLETED QUESTIONNAIRE

LANGUAGE OF COMPLETED QUESTIONNAIRE	FREQUENCY	PERCENT	VALID PERCENT	CUMULATIVE PERCENT
English	14,465	99.0	99.0	99.0
Japanese	143	1.0	1.0	100.0
Ilocano	1	.0	.0	100.0
Total	14,609	100.0	100.0	

TABLE B-3: RESIDENT STATUS (Q. 1)

WHICH DESCRIBES YOU . . .

RESIDENT STATUS (Q.1)	FREQUENCY	PERCENT	VALID PERCENT	CUMULATIVE PERCENT
I live on the Island of O'ahu	12,631	86.5	86.5	86.5
I am visiting the Island of O'ahu	1,279	8.8	8.8	95.2
Refused	699	4.8	4.8	100.0
Total	14,609	100.0	100.0	

TABLE B-4: HOME CITY[16]

	FREQUENCY	PERCENT	VALID PERCENT	CUMULATIVE PERCENT
	157	1.2	1.2	1.2
AIEA	406	3.2	3.2	4.5
BARBERS POINT N A	1	.0	.0	4.5
EWA BEACH	712	5.6	5.6	10.1
HALEIWA	63	.5	.5	10.6
HAUULA	69	.5	.5	11.2
HAWAII KAI	1	.0	.0	11.2
HONOLULU	6,449	51.1	51.1	62.3
KAAAWA	31	.2	.2	62.5
KAHALUU	4	.0	.0	62.5
KAHUKU	22	.2	.2	62.7
KAILUA	357	2.8	2.8	65.5
KAIMUKI	1	.0	.0	65.5
KALIHI	10	.1	.1	65.6
KANEOHE	563	4.5	4.5	70.1
KAPOLEI	481	3.8	3.8	73.9
KUALOA	1	.0	.0	73.9
LAIE	46	.4	.4	74.3
MAILI	2	.0	.0	74.3
MAKAHA	2	.0	.0	74.3
MAKAKILO	14	.1	.1	74.4
MAKIKI	2	.0	.0	74.4
MILILANI	330	2.6	2.6	77.0

[16] Home City is just provided for Residents of the Island of O‘ahu. Visitors were not asked to provide their home city; only their hotel.

	Frequency	Percent	Valid Percent	Cumulative Percent
NANAKULI	20	.2	.2	77.2
PALOLO VALLEY	1	.0	.0	77.2
PAUOA	1	.0	.0	77.2
PEARL CITY	433	3.4	3.4	80.6
PEARL HARBOR	2	.0	.0	80.7
PEARL RIDGE	1	.0	.0	80.7
SCHOFIELD BARRACKS	3	.0	.0	80.7
WAHIAWA	405	3.2	3.2	83.9
WAIALUA	47	.4	.4	84.3
WAIANAE	770	6.1	6.1	90.4
WAIMANALO	180	1.4	1.4	91.8
WAIPAHU	1,030	8.2	8.2	100.0
Total	12,617	100.0	100.0	

TABLE B-5: AVAILABILITY OF A PERSONAL VEHICLE (Q. 3)

COULD YOU USE A PERSONAL VEHICLE TO MAKE THIS ONE-WAY BUS TRIP?

Availability of a Personal Vehicle (Q. 3)	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	4,364	29.9	29.9	29.9
No	9,190	62.9	62.9	92.8
Refused	1,055	7.2	7.2	100.0
Total	14,609	100.0	100.0	

TABLE B-6: OWNERSHIP STATUS OF PERSONAL VEHICLE (Q. 3A)

IS THAT VEHICLE A RENTAL OR OWNED OR LEASED BY YOUR HOUSEHOLD?

OWNERSHIP STATUS OF PERSONAL VEHICLE (Q3A.)		FREQUENCY	PERCENT	VALID PERCENT	CUMULATIVE PERCENT
	Rented	355	2.4	8.1	8.1
	Owned / leased by household	3,844	26.3	88.1	96.2
	Refused	165	1.1	3.8	100.0
	Total	4,364	29.9	100.0	
Missing	System	10,245	70.1		
Total		14,609	100.0		

TABLE B-7: ORIGIN LOCATION (Q. 4A)

WHERE ARE YOU COMING FROM NOW? (STARTING PLACE OF THIS ONE-WAY BUS TRIP)

ORIGIN LOCATION (Q4A.)	FREQUENCY	PERCENT	VALID PERCENT	CUMULATIVE PERCENT
Home/Hotel (guest only)	6,538	44.8	44.8	44.8
Work	2,917	20.0	20.0	64.8
School (K-12) (students only)	1,184	8.1	8.1	72.9
Shopping	1,144	7.8	7.8	80.7
Other	722	4.9	4.9	85.6
College/University/Tech School (student only)	696	4.8	4.8	90.4
Recreation/Sightseeing/ Restaurant	481	3.3	3.3	93.7
Medical appt /Hospital visit	367	2.5	2.5	96.2
Social visit/Church/Personal	299	2.0	2.0	98.2
Refused	220	1.5	1.5	99.7
Airport (passenger only)	41	.3	.3	100.0
Total	14,609	100.0	100.0	

TABLE B-8: ACCESS MODE (Q. 5)

HOW DID YOU GET TO THE FIRST BUS YOU USED FOR THIS ONE-WAY BUS TRIP?

ACCESS MODE (Q. 5)	FREQUENCY	PERCENT	VALID PERCENT	CUMULATIVE PERCENT
Walk	12,401	84.9	84.9	84.9
Dropped off	1,411	9.7	9.7	94.6
Refused	248	1.7	1.7	96.3
Drove and parked my car	240	1.6	1.6	97.9
Bicycle	165	1.1	1.1	99.0
Rode w/ someone who parked in a park & Ride lot	144	1.0	1.0	100.0
Total	14,609	100.0	100.0	

TABLE B-9: NUMBER OF BLOCKS WALKED TO GET TO BUS STOP (Q. 5A)

WALK: # BLOCKS

NUMBER OF BLOCKS WALKED TO GET TO BUS STOP (Q. 5A)	FREQUENCY	PERCENT	VALID PERCENT	CUMULATIVE PERCENT
0	759	5.2	6.1	6.1
1	4,916	33.7	39.6	45.8
2	2,553	17.5	20.6	66.3
3	1,124	7.7	9.1	75.4
4	567	3.9	4.6	80.0
5	336	2.3	2.7	82.7
6	159	1.1	1.3	84.0
7	70	.5	.6	84.5
8	45	.3	.4	84.9
9	15	.1	.1	85.0
10	86	.6	.7	85.7
11	3	.0	.0	85.7
12	17	.1	.1	85.9
13	1	.0	.0	85.9
14	6	.0	.0	85.9
15	9	.1	.1	86.0
16	3	.0	.0	86.0
17	2	.0	.0	86.0
18	2	.0	.0	86.1
20	12	.1	.1	86.2
21	2	.0	.0	86.2
23	2	.0	.0	86.2
24	2	.0	.0	86.2
25	3	.0	.0	86.2

Number of Blocks Walked To Get To Bus Stop (Q. 5a)		Frequency	Percent	Valid Percent	Cumulative Percent
	26	1	.0	.0	86.2
	30	3	.0	.0	86.3
	34	1	.0	.0	86.3
	40	1	.0	.0	86.3
	42	1	.0	.0	86.3
	50	1	.0	.0	86.3
	59	1	.0	.0	86.3
	80	1	.0	.0	86.3
	Refused	1,697	11.6	13.7	100.0
	Total	12,401	84.9	100.0	
Missing	System	2,208	15.1		
Total		14,609	100.0		

Table B-10: Number of Transfers (Q. 6)

LIST ALL BUS ROUTES YOU USED OR WILL USE TO GET FROM WHERE YOU ARE COMING FROM TO WHERE YOU ARE GOING TO NOW.

Number of Transfers (Q. 6)	Frequency	Percent	Valid Percent	Cumulative Percent
None	8,100	55.4	55.4	55.4
One	4,676	32.0	32.0	87.5
Two	1,295	8.9	8.9	96.3
3 or More	538	3.7	3.7	100.0
Total	14,609	100.0	100.0	

TABLE B-11: DESTINATION LOCATION (Q. 7A)

WHERE ARE YOU GOING NOW? (ENDING PLACE OF THIS ONE-WAY BUS TRIP)

DESTINATION LOCATION (Q7A)	FREQUENCY	PERCENT	VALID PERCENT	CUMULATIVE PERCENT
Home/Hotel (guest only)	5,383	36.8	36.8	36.8
Work	3,163	21.7	21.7	58.5
Shopping	1,648	11.3	11.3	69.8
Other	1,060	7.3	7.3	77.1
College/University/Tech School (student only)	772	5.3	5.3	82.4
Recreation/Sightseeing/ Restaurant	713	4.9	4.9	87.3
School (K-12) (students only)	664	4.5	4.5	91.8
Social visit/Church/Personal	470	3.2	3.2	95.0
Medical appt /Hospital visit	450	3.1	3.1	98.1
Refused	243	1.7	1.7	99.8
Airport (passenger only)	43	.3	.2	100.0
Total	14,609	100.0	100.0	

TABLE B-12: EGRESS MODE (Q. 8)

AFTER YOU GET OFF THE LAST BUS, HOW WILL YOU GET TO THE PLACE YOU ARE GOING NOW?

EGRESS MODE (Q. 8)	FREQUENCY	PERCENT	VALID PERCENT	CUMULATIVE PERCENT
Walk	13,312	91.1	91.1	91.1
Picked up	529	3.6	3.6	94.7
Refused	248	1.7	1.7	96.4
Drive my car	235	1.6	1.6	98.0
Bicycle	155	1.1	1.1	99.1
Ride w/ someone who parked in park & ride lot	130	.9	.9	100.0
Total	14,609	100.0	100.0	

TABLE B-13: NUMBER OF BLOCKS WALKED TO GET TO FINAL DESTINATION (Q. 8A)

WALK: # BLOCKS

NUMBER OF BLOCKS WALKED TO GET TO FINAL DESTINATION (Q. 8A)	FREQUENCY	PERCENT	VALID PERCENT	CUMULATIVE PERCENT
0	1,219	8.3	9.2	9.2
1	5,336	36.5	40.1	49.2
2	2,465	16.9	18.5	67.8
3	1,055	7.2	7.9	75.7
4	531	3.6	4.0	79.7
5	287	2.0	2.2	81.8
6	111	.8	.8	82.7
7	71	.5	.5	83.2
8	59	.4	.4	83.6
9	10	.1	.1	83.7
10	65	.4	.5	84.2
11	3	.0	.0	84.2
12	16	.1	.1	84.3
13	1	.0	.0	84.4
14	4	.0	.0	84.4
15	11	.1	.1	84.5
16	2	.0	.0	84.5
18	1	.0	.0	84.5
20	14	.1	.1	84.6
21	1	.0	.0	84.6
23	1	.0	.0	84.6
24	1	.0	.0	84.6
25	2	.0	.0	84.6
27	1	.0	.0	84.6

Number of Blocks Walked To Get To Final Destination (Q. 8A)		Frequency	Percent	Valid Percent	Cumulative Percent
	30	4	.0	.0	84.7
	34	1	.0	.0	84.7
	42	2	.0	.0	84.7
	45	1	.0	.0	84.7
	50	1	.0	.0	84.7
	54	2	.0	.0	84.7
	55	1	.0	.0	84.7
	69	1	.0	.0	84.7
	81	1	.0	.0	84.7
	Refused	2,031	13.9	15.3	100.0
	Total	13,312	91.1	100.0	
Missing	System	1,297	8.9		
Total		14,609	100.0		

TABLE B-14: FARE PAID ON THIS BUS (Q. 9)

HOW DID YOU PAY YOUR FARE ON THIS BUS?

Fare Paid on This Bus (Q. 9)	Frequency	Percent	Valid Percent	Cumulative Percent
Adult cash fare ($2)	2,758	18.9	18.9	18.9
Transfer Slip	392	2.7	2.7	21.6
Adult Monthly Pass ($40)	5,452	37.3	37.3	58.9
Adult Annual Pass ($440)	190	1.3	1.3	60.2
Youth cash fare ($1)	833	5.7	5.7	65.9
Youth Monthly Pass ($20)	1,102	7.5	7.5	73.4
Youth Annual Pass ($220)	21	.1	.1	73.6
Senior cash fare ($1)	128	.9	.9	74.4
Senior Monthly Pass ($5)	176	1.2	1.2	75.7

Fare Paid on This Bus (Q. 9)	Frequency	Percent	Valid Percent	Cumulative Percent
Senior Annual Pass ($30)	1,110	7.6	7.6	83.3
Persons w/ disabilities Monthly Pass ($5)	93	.6	.6	83.9
Persons w/ Disabilities Annual Pass ($30)	892	6.1	6.1	90.0
Visitor Pass ($20)	104	.7	.7	90.7
Football Express ($3)	1	.0	.0	90.7
U-Pass ($100)	715	4.9	4.9	95.6
Refused	642	4.4	4.4	100.0
Total	14,609	100.0	100.0	

Table B-15: Household Vehicles (Q. 10)

HOW MANY CARS, TRUCKS, OR MOTORCYCLES DOES YOUR HOUSEHOLD HAVE?

Household Vehicles (Q. 10)	Frequency	Percent	Valid Percent	Cumulative Percent
None	4,600	31.5	31.5	31.5
1	3,939	27.0	27.0	58.5
2	3,086	21.1	21.1	79.6
3	1,412	9.7	9.7	89.2
4 or More	1,141	7.8	7.8	97.0
Refused	431	3.0	3.0	100.0
Total	14,609	100.0	100.0	

TABLE B-16: AGE (Q. 11)

HOW OLD ARE YOU?

AGE (Q. 11)	FREQUENCY	PERCENT	VALID PERCENT	CUMULATIVE PERCENT
6 to 11	109	.7	.7	.7
12 to 17	1,902	13.0	13.0	13.8
18 to 24	2,731	18.7	18.7	32.5
25 to 34	2,032	13.9	13.9	46.4
35 to 49	2,974	20.4	20.4	66.7
50 to 64	2,630	18.0	18.0	84.7
65 or older	1,551	10.6	10.6	95.3
Refused	680	4.7	4.7	100.0
Total	14,609	100.0	100.0	

TABLE B-17: LICENSED DRIVER STATUS (Q. 12)

DO YOU HAVE A VALID DRIVER'S LICENSE?

LICENSED DRIVER STATUS (Q. 12)		FREQUENCY	PERCENT	VALID PERCENT	CUMULATIVE PERCENT
	Yes	6,941	47.5	47.9	47.9
	No	6,768	46.3	46.7	94.5
	Refused	791	5.4	5.5	100.0
	Total	14,500	99.3	100.0	
Missing	System	109	.7		
Total		14,609	100.0		

TABLE B-18: HOUSEHOLD SIZE (Q. 13)

INCLUDING YOURSELF, HOW MANY PEOPLE LIVE IN YOUR HOUSEHOLD?

HOUSEHOLD SIZE (Q. 13)		FREQUENCY	PERCENT	VALID PERCENT	CUMULATIVE PERCENT
	1	1,897	13.0	13.1	13.1
	2	3,225	22.1	22.2	35.3
	3	2,334	16.0	16.1	51.4
	4 or More	6,372	43.6	43.9	95.4
	Refused	672	4.6	4.6	100.0
	Total	14,500	99.3	100.0	
Missing	System	109	.7		
Total		14,609	100.0		

TABLE B-19: NUMBER OF EMPLOYED HOUSEHOLD MEMBERS (Q. 14)

INCLUDING YOURSELF, HOW MANY PEOPLE IN YOUR HOUSEHOLD HAVE A JOB OUTSIDE THE HOME?

NUMBER OF EMPLOYED HOUSEHOLD MEMBERS (Q. 14)		FREQUENCY	PERCENT	VALID PERCENT	CUMULATIVE PERCENT
	None	2,010	13.8	13.9	13.9
	1	3,193	21.9	22.0	35.9
	2	4,044	27.7	27.9	63.8
	3	2,222	15.2	15.3	79.1
	4 or More	2,235	15.3	15.4	94.5
	Refused	796	5.4	5.5	100.0
	Total	14,500	99.3	100.0	
Missing	System	109	.7		
Total		14,609	100.0		

TABLE B-20: HOUSEHOLD INCOME IN 2004 (Q. 15)

WHAT WAS YOUR ESTIMATED HOUSEHOLD INCOME IN 2004?

HOUSEHOLD INCOME IN 2004 (Q. 15)		FREQUENCY	PERCENT	VALID PERCENT	CUMULATIVE PERCENT
	Less than $10,000	2,701	18.5	18.6	18.6
	$10,000 - $24,999	2,241	15.3	15.5	34.1
	$25,000 - $34,999	2,400	16.4	16.6	50.6
	$35,000 - $49,999	1,592	10.9	11.0	61.6
	$50,000 - $74,999	1,919	13.1	13.2	74.8
	$75,000 or more	1,556	10.7	10.7	85.6
	Refused	2,091	14.3	14.4	100.0
	Total	14,500	99.3	100.0	
Missing	System	109	.7		
Total		14,609	100.0		