# IndyGo

## On-Board Transit Survey

April 8, 2010


Bernardin, Lochmueller & Associates, Inc.

# 2009 IndyGo On-Board Transit Survey

## final report


Prepared for

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# CHAPTER 1 | EXECUTIVE SUMMARY

## 1.1 BACKGROUND

Bernardin Lochmueller and Associates (BLA) and NuStats conducted a system-wide on-board survey on behalf of Indianapolis Public Transportation Corporation (IndyGo). The survey was conducted on all IndyGo routes, including its fixed and express routes. A pilot survey (whose results were appropriate for inclusion in the final database of usable surveys) occurred between September 22nd and September 24th, 2009. Full-scale data collection occurred between September 28 and October 16, 2009. These efforts provided a total of 3,990 completed and usable surveys. Study tasks included designing the survey instrument; developing the sampling plan; collecting, processing, and geocoding the data; weighting and expanding the data; analyzing the data; and reporting the results. This report documents these tasks.

The objective of the survey was to analyze travel patterns, transit use, and other aspects of transportation information for IndyGo. This data will also assist in future New Starts project submittals and IndyGo's 2009 Bus Plan.

## 1.2 KEY FINDINGS

The analysis conducted was two-fold: (1) examine the travel behavior characteristics of IndyGo riders, and (2) examine the demographic characteristics of IndyGo riders. The survey data used for this analysis were appropriately weighted and expanded to be representative of the IndyGo ridership. Key findings of the survey include:

- Seventy-three percent of IndyGo riders are from households that have an annual income of less than $35,000, while 5 percent come from households earning at least $75,000.
- Fifty-two percent of riders are transit-dependent riders (i.e., they are from households that do not own a vehicle).
- Sixty-five percent of IndyGo riders are employed, with forty-four percent employed full-time.
- Home and work are the most prevalent rider trip origins and destinations.
    - Forty-eight percent of trips originate from home, while forty percent of trips end at home.
    - Twenty-six percent of trips originate from work, while thirty percent of trips end at work.
    - Forty-six percent of trips are home-based work trips, while twenty percent of trips are home-based non-work trips.
- Walking is the dominant access and egress mode for all riders. Ninety-two percent of riders access a bus stop "by foot". Ninety-three percent access their final destination by walking.
    - Eighty-nine percent of riders walk to access transit.
    - Ninety-one percent of riders walk after leaving transit.
- In the absence of transit service to complete their one-way trip, twenty-six percent of riders would not make the trip; seventeen percent of riders would have made the trip by driving.

## 1.3 TYPICAL INDYGO RIDER IN 2009

IndyGo's typical weekday passenger is a Black/African American female, age 35 to 49 who uses the bus 3 to 5 days a per week to get to and from home and work. She is likely to be employed full-time or part time, but earns less than $ 15,000 per year. She is transit dependent - meaning that there are no working vehicles in her household. Access to a vehicle through a friend or relative is also limited. If bus service was unavailable, she would either ride with a friend or not make the trip.

The average rider has to make at least one transfer before he/she can complete a one-way trip. Most riders access the bus by walking one to two blocks to get to the nearest bus stop. The same travel patterns hold true for riders to arrive at their destination. Most will walk one to two blocks to arrive at their final destination.

Most IndyGo riders feel that service hours should be extended and that service frequency should be increased.

## 1.4 TYPICAL INDYGO RIDER IN 2001

NuStats conducted an on-board study of IndyGo ridership in 2001. A typical IndyGo rider in 2001 was a Black/African American female, age 35 to 49 who used the bus to travel to and from home and work five days a week. The average rider tended to be employed full-time or part-time and work in a service or production position. Although the average rider was employed, the rider typically had a household income under $10,000 a year. In general, the average rider was transit dependent and had been using the bus service for one year or more. On average, the rider would have to make at least one transfer before completing a one-way trip.

## 1.5 INDIANAPOLIS DEMOGRAPHICS

According to the 2008 American Community Survey Estimates, Indianapolis has 798,594 residents within its city limits. Sixty-six percent of the population is Caucasian, while 26 percent is African American. Nearly 52 percent of the population is female. Twenty-seven percent of the population is under the age of 21, while 28 percent of the population is over the age of 50.

The 2008 American Community Survey found that the City of Indianapolis has 324,635 households. The median household income is $43,652. Approximately 33 percent of households earned less than $30,000 a year. Just over ten percent of households report making between $60,000 to $75,000 a year. There are 185,571 families (homes with two or more related individuals) within the city limits. The median family income is $56,855. Twenty-three percent of families earn less than $30,000 per year. Nearly 35 percent of families earn $50,000 to $100,000 a year in Indianapolis.

IndyGo has a higher percentage of Black/African American riders than the overall population of the City of Indianapolis. Sixty-five percent of IndyGo riders are Black/African American. Thirty-one percent are White/Caucasian. This is nearly the reverse of the ethnic composition of Indianapolis. Sixty-six percent of Indianapolis residents are White/Caucasian. Only twenty-six percent are Black/African American.

IndyGo also has a disproportionately higher number of low-income riders compared with median household income of Indianapolis residents. Nearly 70 percent of IndyGo rides earn less than $ 25,000 per year. Conversely, only thirty-three percent of Indianapolis households earn less than $ 30,000 per year.

## 1.6 INDYGO OPPORTUNITIES

### a. Transit-Oriented Development

Transit-oriented development (TOD) combines residential and commercial development in areas close to public transit. Typically, TOD is higher-density development proximate to a rail station or major bus route. The activity-based responses revealed that 19.4 percent of IndyGo riders need to make a shopping stop on their tour[1]. With the survey showing that a high degree of riders are transit dependent and that the riders typically walk only 1-2 blocks to access the bus, transit-oriented development in the form of commercial activity around major bus stops could serve a major need. This development could include grocery stores, pharmacies, or convenience stores. For example, such development close to a bus stop could be very beneficial for riders who need to pick items up on the way home from work. In major cities with a history of extensive transit operations, such businesses are common. IndyGo may need to consider working with the Indianapolis planning department or private developers to encourage such land use development around existing stops and potential future stops.

1 A tour is a one-way trip made by a transit user

## 1.7 CHALLENGES

During the data collection effort, the BLA / NuStats team encountered two noteworthy challenges: 1) the logistics of distributing passes to each rider who completed a questionnaire, and 2) the lack of participation by Spanish-speaking individuals.

Riders who completed a survey and returned it on the bus were given an IndyGo one-day bus pass. Some surveyors ran out of passes, and were not able to provide one on the bus to each passenger who completed a survey. For this reason, as the survey progressed NuStats/BLA increased the number of passes given to the surveying teams by closely tracking the average daily ridership for the routes surveyed. Surveyors were instructed to document surveys that were completed, but for which a pass was not issued. This allowed a pass to be mailed to respondents for their participation.

The IndyGo Customer Service office received phone calls from three riders who participated in the survey but did not receive a bus pass. IndyGo documented respondents who called the customer service line so that NuStats could confirm that respondent's survey was complete. If the survey was complete and usable, a pass was mailed to the respondent.

Gathering Spanish-language surveys for the project was challenging. Only 29 Spanish-language surveys were collected. Twelve of those surveys were rejected in the QA/QC process. In total, only 17 Spanish-language surveys were considered complete and incorporated into the final data set.

During the data collection effort, the project team recognized that meeting our sample goal for Spanish-speaking surveys would be challenging. In order to increase participation among these riders, Spanish-language surveyors were assigned to Route 8 to aid in distributing surveys to Spanish-speaking-only riders. NuStats trained five Spanish-speaking surveyors. In addition, BLA / NuStats provided Spanish informational cards to the non-Spanish-speaking surveyors. This was done to obtain additional surveys from Spanish-speaking riders. These cards explained the purpose of the survey and provided tips for completing the survey.

# CHAPTER 2 | SAMPLING PLAN

A total of 33 IndyGo routes were sampled. The routes sampled included all Fixed, Express, and Circulator Routes. A sampling plan was designed to be statistically significant at the route level, and to provide a sample size adequate for analysis for weekday bus service. The sampling plan goal was 3,206 questionnaires. As discussed later, the survey data collection resulted in 3,990 usable questionnaires.

The IndyGo On-Board Survey used a standard two-stage sampling approach that consisted of sampling passengers and sampling bus trips. Every passenger over the age of 15 (determined by visual estimation) who boarded sampled bus trips received a questionnaire. If the surveyor was not readily able to determine whether a rider's age was over 15, the surveyor was instructed to ask the boarding passenger. The exception to this was if a minor, 15 and under, was traveling with a guardian; then they would be eligible for the survey if they desired to participate.

## 2.1 APPROACH TO SAMPLING BUS TRIPS

NuStats prepared a plan to sample weekday bus trips that was statistically significant at the system and route level. In addition, the statistical accuracy level was tiered to allow for a lower standard error level for the most productive lines, a mid-level standard error for mid-ridership lines, and the highest standard error level for lines that do not carry enough daily riders to obtain a larger sample size and therefore a lower standard error level. The proposed sample plan was based on three main factors:

1. First, the plan ensured that the sample adequately met data needs at the route level.
2. Second, the plan ensured the collection of adequate samples at the various parts of day. Times of the day, TOD, are defined as AM Peak (6:00 a.m.–9:00 a.m.), Mid-day (9:01 a.m.–3:00 p.m.), PM Peak (3:01 p.m.–6:00 p.m.), and Evening (6:01 p.m. –2:00 a.m.).
3. Third, the plan ensured that the sample was segmented by direction.

Specifically, NuStats sampled all major bus routes as directed by IndyGo at the 95 percent percent confidence level; these routes are detailed in Table 2-1.

**Table 2-1: Sample Goals by Route**

| Service Type | Route | Route Name | Average Daily Ridership | Estimated Goal |
|---|---|---|---|---|
| Fixed Route | 2 | E. 34th St. | 924 | 92 |
| Fixed Route | 3 | Michigan St. | 1,131 | 113 |
| Fixed Route | 4 | Fort Harrison | 636 | 64 |
| Fixed Route | 5 | E. 25th St./N. Harding | 1,367 | 137 |
| Fixed Route | 8 | Washington | 3,948 | 395 |
| Fixed Route | 10 | 10th St. | 3,526 | 353 |
| Fixed Route | 11 | E. 16th St. | 259 | 26 |
| Fixed Route | 12 | Beechcrest | 334 | 33 |
| Fixed Route | 14 | Prospect | 361 | 36 |
| Fixed Route | 15 | Riverside | 850 | 85 |
| Fixed Route | 16 | Beech Grove | 471 | 47 |
| Fixed Route | 17 | College | 1,336 | 134 |
| Fixed Route | 18 | Nora | 719 | 72 |
| Fixed Route | 19 | Castleton | 1,182 | 118 |
| Fixed Route | 21 | E. 21st Street | 496 | 50 |
| Fixed Route | 22 | Shelby | 332 | 33 |
| Fixed Route | 24 | Mars Hill | 550 | 55 |
| Fixed Route | 25 | W. 16th St. | 631 | 63 |
| Fixed Route | 26 | Keystone | 557 | 56 |
| Fixed Route | 28 | St. Vincent | 741 | 74 |
| Fixed Route | 30 | 30th Street | 324 | 32 |
| Fixed Route | 31 | Greenwood | 1107 | 111 |
| Fixed Route | 34 | Michigan Road | 866 | 87 |
| Fixed Route | 37 | Park 100 | 1,606 | 161 |
| Fixed Route | 38 | Lafayette Square | 1,628 | 163 |
| Fixed Route | 39 | E. 38th St. | 3,939 | 394 |
| Circulator | 50 | Red Line | 451 | 45 |
| Fixed Route | 55 | English | 157 | 16 |
| Circulator | 87 | Eastside Circulator | 235 | 23 |
| Express | 200 | Carmel Express | 217 | 43 |
| Express | 204 | Greenwood Express | 46 | 9 |
| Express | 205 | Airport Express | 91 | 18 |
| Express | 210 | Fishers Express | 339 | 68 |
| | | IPTC Unknowns | 46 | 9 |
| | | ***Total*** | **31,402** | **3,214** |



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# CHAPTER 3 | SURVEY INSTRUMENT

NuStats designed the survey instrument as a self-completion questionnaire with 22 self-coded questions on a two-sided, double letter-size format. Surveys were printed on heavy card stock for easy distribution and completion, and were available in two languages (English and Spanish). Each survey instrument contained a Business Reply Mail permit for off-vehicle completion and mail-back and a pre-printed unique serial number and bar code, which linked each survey instrument to distribution on a specific trip.

Prior to data collection, IndyGo and BLA staff defined the minimum data collection requirements for a returned survey instrument. The minimum data collection requirements established a returned survey instrument as complete and useable if the respondent completed the survey instrument up to the egress question (i.e., Question 8). The one exception for the minimum requirements was the alighting location (i.e., Question 7) which was not included in the definition of a completed survey. The following represents the elements established as minimum data collection requirements for a "completed survey": origin, destination, trip purpose, access mode, egress mode, transfers, and route sequence. This encapsulates questions 1-7 in the survey instrument. A sample survey instrument is provided in Appendix B.

The survey design obtained three major categories of information: origin and destination travel patterns, access and egress modes, and rider demographics. In addition to the survey instrument, technology (i.e., GPS-Enhanced Palm Device) supplemented the data collection process, allowing for a reduced survey instrument length. The device collected on-off counts on a per stop basis. Shortening the survey instrument length reduced respondent burden and improved data quality by minimizing the information each respondent provided. Table 3-1 presents the key data elements and capture methods.

**Table 3-1: Sample Assignment**

| Key Data Elements | Capture Method |
|---|---|
| Day of Travel | GPS-Enhanced Palm Device |
| Time of Travel | GPS-Enhanced Palm Device |
| Route | GPS-Enhanced Palm Device |
| Survey Instrument Language | Field Code by Editor |
| Boarding | GPS-Enhanced Palm Device |
| Alighting | Imputed Using Information from Other Sources: Destination, Egress Mode, Distance, and GPS Data on Stops for the Sampled trip |
| Respondent Name | Survey Instrument |
| Telephone Number | Survey Instrument |
| Sequence List of Routes Used for One-Way Trip | Survey Instrument |
| Access Mode | Survey Instrument |
| Trip Purpose | Survey Instrument |
| Origin | Survey Instrument |
| Destination | Survey Instrument |
| Alighting Location | Survey Instrument |
| Egress Mode | Survey Instrument |
| Passenger Age | Survey Instrument |
| Valid Driver's License | Survey Instrument |
| Household Size | Survey Instrument |
| Household Employment Status | Survey Instrument |
| Passenger Employment Status | Survey Instrument |
| Number of Vehicles in Household | Survey Instrument |
| Ethnicity | Survey Instrument |
| Car Availability | Survey Instrument |
| Gender | Survey Instrument |
| Days a Week Trip Is Made | Survey Instrument |
| Alternative Transportation | Survey Instrument |
| Service Improvement | Survey Instrument |
| Round Trip Information | Survey Instrument |
| Household Income | Survey Instrument |

# CHAPTER 4 | DATA COLLECTION

## 4.1 TRIP SELECTION

The sampling plan provided the basis for calculating the number of sampled trips needed to meet the route sample goal. The calculation assumed an average response rate of 25 percent of the typical total riders per trip. The response rate assumption (based on industry standards) varies by service type and service period. For example, the expected response rate for express routes is 40 percent; by comparison, the expected response rate for local routes is 25 percent. The following is an example calculation used to determine the number of sampled trips necessary to meet a route sample goal:

> If route 'x' carries an average of 500 riders per day and makes 10 trips a day, the average trip ridership is 50 riders. Assuming the route 'x' sample goal requires 50 complete survey instruments, at an estimated response rate of 25 percent, the trip selection calculation yields four trips, which would need to be sampled to achieve the estimated survey response (500/10 = 50 x .25 = 12.5; 50/12.5 = 4). It should be noted that if the calculation yields a decimal, the value is rounded up to the nearest whole number.

Following the calculation for trip selection, the sampling plan clustered trips by block for the most efficient use of surveyor labor. Trip clustering also provided an additional advantage of de facto stratification by route direction (i.e., most runs consist of trips alternately traveling inbound, outbound, inbound, etc.), by time of day, and by route (based on the block, if multiple routes were contained in a block).

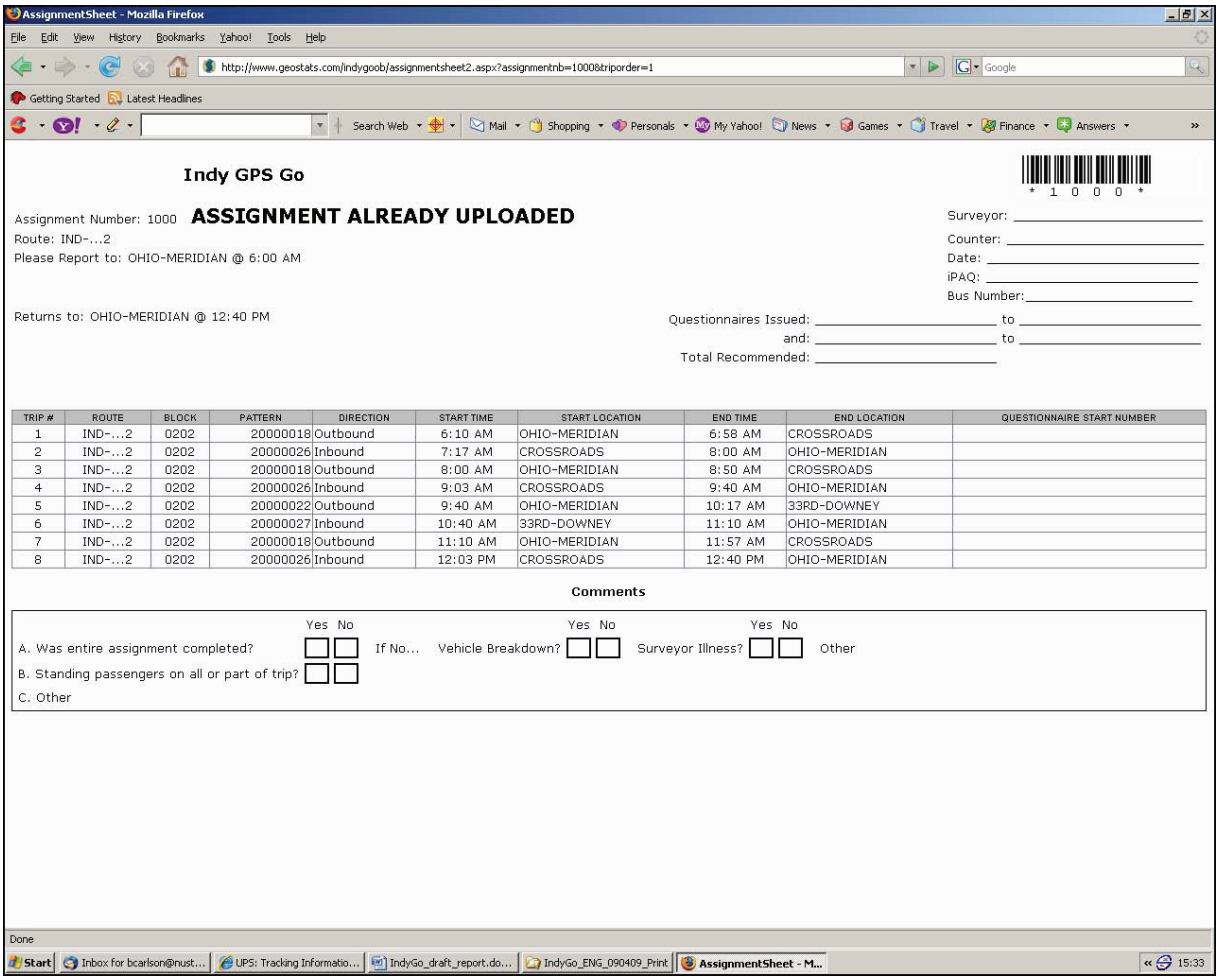
## 4.2 SURVEYOR ASSIGNMENTS

NuStats developed surveyor assignments by uploading the trip selection requirements to a Web-based field management system. The Web-based field management system incorporated the following parameters to create surveyor assignments:

- Consecutive trips within the same block/run;
- Clusters of trips starting and ending at the same location; and,
- Trips within the cluster, unique to the cluster.

Field managers printed the surveyor assignment sheets from the Web-based management system for the surveyor teams and included the assignment sheets with directions to/from the assignment starting/ending point. The assignment sheets additionally contained a bar code to link the assignment back to the field management system. A sample assignment sheet is presented in Figure 4-1.

**Figure 4-1: Sample Assignment**



AssignmentSheet - Mozilla Firefox

Indy GPS Go

Assignment Number: 1000 **ASSIGNMENT ALREADY UPLOADED**

Route: IND-...2

Please Report to: OHIO-MERIDIAN @ 6:00 AM

Returns to: OHIO-MERIDIAN @ 12:40 PM

Surveyor: _____

Counter: _____

Date: _____

iPAQ: _____

Bus Number: _____

Questionnaires Issued: _____ to _____

and: _____ to _____

Total Recommended: _____

| TRIP # | ROUTE | BLOCK | PATTERN | DIRECTION | START TIME | START LOCATION | END TIME | END LOCATION | QUESTIONNAIRE START NUMBER |
|---|---|---|---|---|---|---|---|---|---|
| 1 | IND-...2 | 0202 | 20000018 | Outbound | 6:10 AM | OHIO-MERIDIAN | 6:58 AM | CROSSROADS | |
| 2 | IND-...2 | 0202 | 20000026 | Inbound | 7:17 AM | CROSSROADS | 8:00 AM | OHIO-MERIDIAN | |
| 3 | IND-...2 | 0202 | 20000018 | Outbound | 8:00 AM | OHIO-MERIDIAN | 8:50 AM | CROSSROADS | |
| 4 | IND-...2 | 0202 | 20000026 | Inbound | 9:03 AM | CROSSROADS | 9:40 AM | OHIO-MERIDIAN | |
| 5 | IND-...2 | 0202 | 20000022 | Outbound | 9:40 AM | OHIO-MERIDIAN | 10:17 AM | 33RD-DOWNEY | |
| 6 | IND-...2 | 0202 | 20000027 | Inbound | 10:40 AM | 33RD-DOWNEY | 11:10 AM | OHIO-MERIDIAN | |
| 7 | IND-...2 | 0202 | 20000018 | Outbound | 11:10 AM | OHIO-MERIDIAN | 11:57 AM | CROSSROADS | |
| 8 | IND-...2 | 0202 | 20000026 | Inbound | 12:03 PM | CROSSROADS | 12:40 PM | OHIO-MERIDIAN | |

Comments

Yes No

A. Was entire assignment completed? ☐☐ If No... Vehicle Breakdown? ☐☐ Surveyor Illness? ☐☐ Other

B. Standing passengers on all or part of trip? ☐☐

C. Other

## 4.3 LABOR RECRUITMENT AND TRAINING

NuStats sub-contracted the survey labor (i.e., surveyors and counters) to a local employment agency, Todays Office Professionals. Employment criteria required the demonstration of: current or past residence in the service area, good work habits, personableness, honesty, maturity, possession of reliable personal transportation, and attention to details.

NuStats and Bernardin, Lochmueller & Associates (BLA) staff conducted three training sessions to prepare survey staff for data collection activities. The training provided a background of the survey project and IndyGo transit system, safety and security training, and survey instruction, which included one hour of role-playing and intensive tutoring. Surveyors received specific training in reading and interpreting surveyor assignment sheets, basic survey procedures and etiquette, and techniques for approaching survey subjects. Specific instructions for counters included training in the use of the hand-held Palm computer devices and the Ride Count software program, counting techniques for the boarding and alighting passengers, as well as general on-board vehicle etiquette.

Training for the pilot survey occurred on September 21, 2009, and 16 staff participated. NuStats and BLA staff administered two additional trainings for the full study. The first full study training occurred on September 28, 2009, with 22 staff participating; the second full study training occurred on September 29, 2009, with 14 staff participating.

Following the completion of the initial data collection assignments, NuStats required the survey teams to return to the survey command center, where supervisors verified the accuracy of each survey team's work. Survey command center staff provided coaching and additional training when deemed necessary. Staff then distributed survey assignments for the next day. The Staffing and Training Materials are contained in Appendix C.

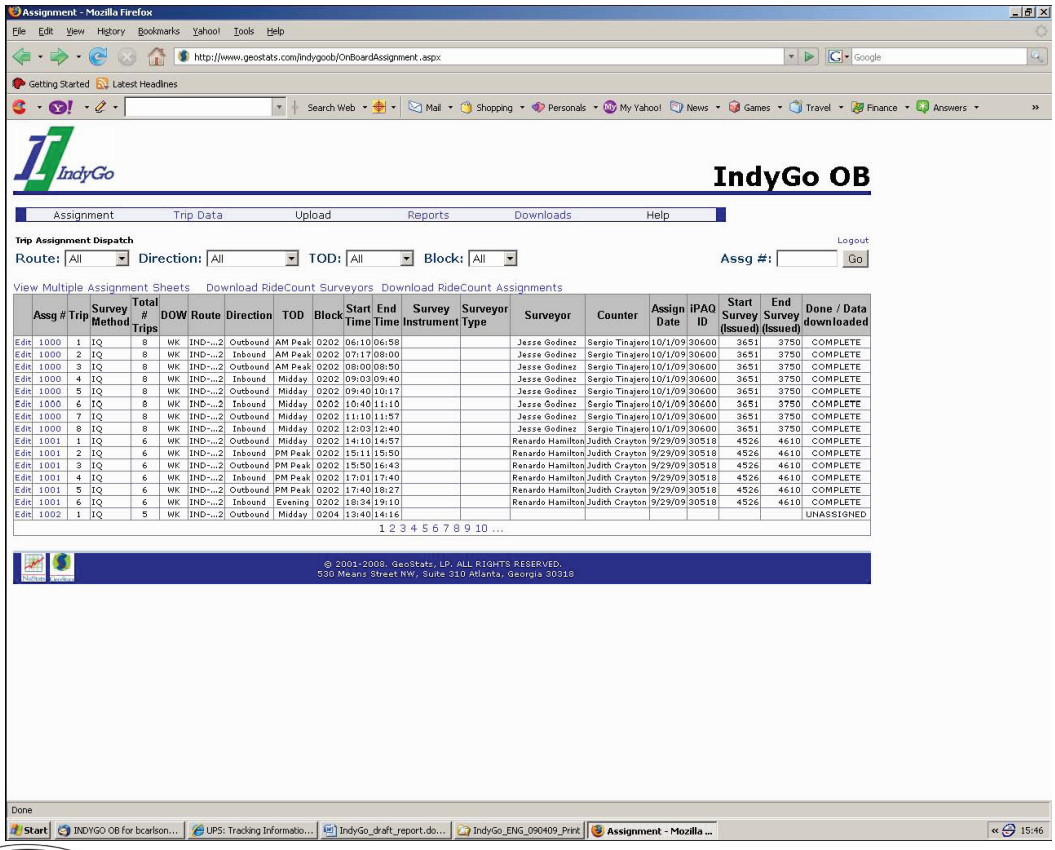
## 4.4 SURVEY ADMINISTRATION

Throughout the course of data collection, an in-field survey team managed the administration of the on-board survey. The in-field management team consisted of a surveyor manager and surveyor assistants, who managed the surveyor and counter assignments, and in-field editing staff, who provided quality assurance for uploads and downloads to the Web-based field management system. Additionally, a NuStats field manager remained on site throughout the duration of the in-field data collection period.

Data collection for the full study commenced September 28 and concluded October 16, 2009. Survey teams consisted of a surveyor and a counter for the on-board data collection. The surveyor distributed survey instruments, persuaded passengers to complete the survey instruments, assisted survey passengers with questions, collected survey instruments, and distributed the incentive passes (i.e., a one-day pass) to passengers who completed the survey instrument. The counter entered the survey instrument bar code numbers into the hand-held Palm device to link survey instruments to a stop, counted the passengers boarding and alighting, ensured the Palm device registered the GPS location coordinates, collected survey instruments, and validated the passenger loads after each stop.

The surveyor manger managed the survey assignments using a Web-based management system. The surveyor manager or field management assistants distributed the survey assignments daily. Figure 4-2 is a sample screen of the Web-based management system.

**Figure 4-2: Sample Assignment Management Screen**



The field management team updated the Web-based field management system daily with the distribution of assignments. When surveyors and counters returned from an assignment, the surveyor manager or assistant checked the assignment results (i.e., quickly reviewed the survey instruments to spot any glaring performance issues) and downloaded the passenger count data from the Palm devices. If the surveyor managers or assistants noticed errors with the assignment results (i.e., incomplete data on the surveys), the management staff withdrew these specific surveys for additional in-field survey instrument editing, and the survey teams received coaching to promote improved quality assurance review in the field.

The surveyor manager then updated the assignment status in the Web-based field management system and handed out the next survey assignment. Once the surveyor manager reviewed the completed assignments, an in-field editing team reviewed the survey instruments for inspection and coding, prior to sending the results to NuStats Headquarters in Austin, Texas for final scanning and verification.

## 4.5 IN-FIELD SURVEY INSTRUMENT EDITING

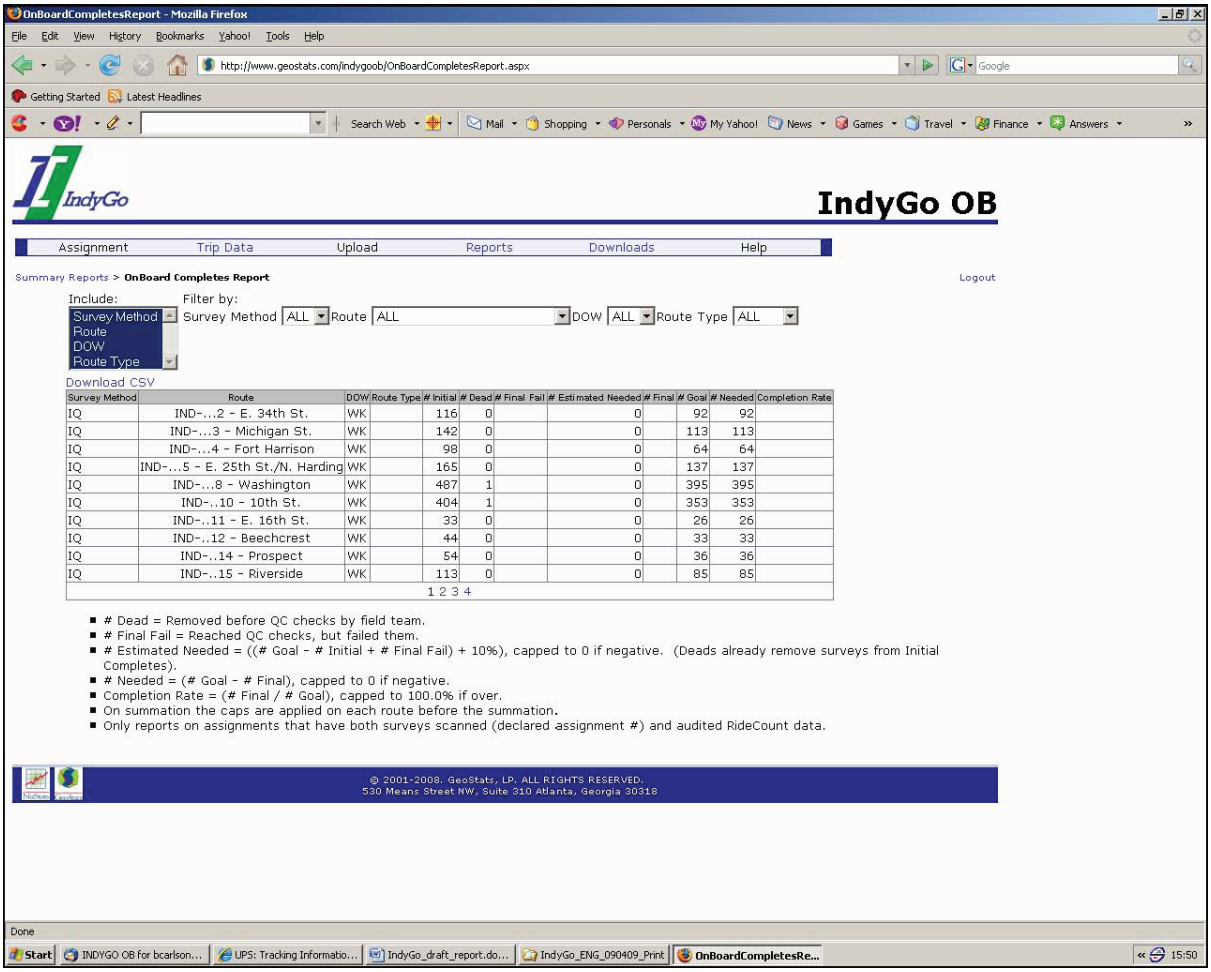
Following surveyor check-in, the surveyor manager presented the completed survey instruments to the on-site data editors for editing and correction. Bernardin, Lochmueller and Associates (BLA) provided staff to serve as the in-field editors. The data editors, local residents familiar with the geography of the transit service area, reviewed each survey instrument and used geographic resources to verify respondent-provided address information. Data editors also contacted riders using the respondent-provided phone number from the survey instrument. The callback process allowed additional partial records to be converted to usable and complete records.

After reviewing each survey instrument, the data editors scanned the bar codes on the survey instrument to identify the record as complete. Scanning the records simultaneously uploaded the data to the field management system as one data input for Web-based management status reports. The field manager then sent the complete survey instruments to NuStats Headquarters for scanning and verification. Partial and Complete surveys will continue to be held a NuStats for the near future. In the near future, scanned images of the surveys will be copied to a CD and sent to IndyGo. Original surveys will be shredded to ensure survey respondent information remains confidential.

## 4.6 STATUS REPORTING

The Web-management system allowed the surveyor manager to review surveyor assignments, provide progress reports and data summary tables, and monitor field staff performance. The surveyor manager prepared status reports from the Web-based field management system. This automated Web application also provided the ability for the survey manager to conduct consistency checks, flag problem records, and clean and purge flagged records. The surveyor manager reviewed the information for accuracy in the status, response, and performance reports to the Web-based field management system. Figure 4-3 is a sample of an on-board “completes report.”

**Figure 4-3: Sample On-Board Completes Report**



OnBoardCompletesReport - Mozilla Firefox

IndyGo OB

Assignment | Trip Data | Upload | Reports | Downloads | Help

Summary Reports > **OnBoard Completes Report** Logout

Include: Survey Method, Route, DOW, Route Type

Filter by: Survey Method ALL | Route ALL | DOW ALL | Route Type ALL

Download CSV

| Survey Method | Route | DOW | Route Type | # Initial | # Dead | # Final Fail | # Estimated Needed | # Final | # Goal | # Needed | Completion Rate |
|---|---|---|---|---|---|---|---|---|---|---|---|
| IQ | IND-...2 - E. 34th St. | WK | | 116 | 0 | | 0 | | 92 | 92 | |
| IQ | IND-...3 - Michigan St. | WK | | 142 | 0 | | 0 | | 113 | 113 | |
| IQ | IND-...4 - Fort Harrison | WK | | 98 | 0 | | 0 | | 64 | 64 | |
| IQ | IND-...5 - E. 25th St./N. Harding | WK | | 165 | 0 | | 0 | | 137 | 137 | |
| IQ | IND-...8 - Washington | WK | | 487 | 1 | | 0 | | 395 | 395 | |
| IQ | IND-..10 - 10th St. | WK | | 404 | 1 | | 0 | | 353 | 353 | |
| IQ | IND-..11 - E. 16th St. | WK | | 33 | 0 | | 0 | | 26 | 26 | |
| IQ | IND-..12 - Beechcrest | WK | | 44 | 0 | | 0 | | 33 | 33 | |
| IQ | IND-..14 - Prospect | WK | | 54 | 0 | | 0 | | 36 | 36 | |
| IQ | IND-..15 - Riverside | WK | | 113 | 0 | | 0 | | 85 | 85 | |

1 2 3 4

- # Dead = Removed before QC checks by field team.
- # Final Fail = Reached QC checks, but failed them.
- # Estimated Needed = ((# Goal - # Initial + # Final Fail) + 10%), capped to 0 if negative. (Deads already remove surveys from Initial Completes).
- # Needed = (# Goal - # Final), capped to 0 if negative.
- Completion Rate = (# Final / # Goal), capped to 100.0% if over.
- On summation the caps are applied on each route before the summation.
- Only reports on assignments that have both surveys scanned (declared assignment #) and audited RideCount data.



## 4.7 IPAQ DEVICE

Surveyors distributed survey instruments to all boarding passengers over the age of 15, and counters tallied the number of passengers boarding and alighting the vehicle. The counters used a GPS-enhanced Palm device. Figure 4-4 is a photograph of the device used for counting passengers.

The GPS-enhanced Palm device recorded the location and time (arrival and departure) at each stop, while counters entered the number of passengers boarding and alighting. Counters also entered the number at the top of the surveyor instrument bundle prior to arrival at each stop. This process linked the sequence and range of survey instruments directly to a stop using the provided IndyGo digitized stop list file. The surveyor manager uploaded the count data files to the Web-based field management system.

**Figure 4-4: GPS-Enhanced Palm Device for On-Board Counts**

## 4.8 PILOT TEST OF SURVEY INSTRUMENT

NuStats conducted a rolling pilot study to test the survey instruments and survey methodology. A rolling pilot allowed the project team to proceed from a week-long "test run" straight into data collection efforts. A traditional study would require more data analysis before administering the full survey project. NuStats/BLA administered a pilot survey for routes listed in Table 4-1. These routes were selected by IndyGo and surveyed from September 21 through September 25, 2009. The pilot surveys was conducted prior to the implementation of the full data collection effort.

**Table 4-1: IndyGo Routes Surveyed for the Pilot Survey**

| Routes | Trips Sampled |
|---|---|
| 8 | 8 |
| 19 | 14 |
| 28 | 16 |
| 34 | 14 |
| 37 | 28 |
| 38 | 6 |
| Red Line | 26 |
| Carmel | 4 |
| 205 | 2 |
| Fishers | 4 |

IndyGo was satisfied with the rolling pilot test, and the full study started the following week. The results of the rolling pilot are contained in Appendix D.

# CHAPTER 5 | DATA PROCESSING

NuStats used ScanTron scanning technology to assist in data entry and minimize human error resulting from traditional data entry methods. The scanning process involved electronically scanning batches of approximately 20 survey instruments to produce an image file of the documents. After scanning, the 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. Text data (primarily origin and destination address information) were reviewed to correct misspellings and verify that the scanner correctly read numeric data. The raw data file output from scanned documents was maintained unaltered for comparison purposes, if necessary.

A data items matrix and data dictionary were developed based on the survey instruments and scanning programs using the following process:

- The data items matrix identified variable names, variable descriptions, data types, field widths, code sets, skips, and exact question wording as it appeared in the survey instruments.
- The data dictionary was based on variables listed in the data items matrix. The data dictionary consisted of variable names, data types, field widths, variable labels, and response labels. The labels were abbreviated as necessary to accommodate database field width restrictions.
- The data dictionary was checked to ensure agreement with the hard-copy survey instruments.
- The data structure was checked to ensure consistency for all data files created for the study.

Following the duplication of the original database, the data contained in the database copy were checked for data integrity. Various edit routines were programmed to check the consistency of data and to identify reporting, scanning, or entry errors. Data in the control file were then matched against survey data to ensure that all information was consistent between the two files. Routine edit checks were conducted to examine survey instrument responses for reasonableness and consistency across items. Routine checks included:

- Response Checks
    - Checking for proper data skips and patterns of answering questions consistent with prior answers.
    - Checking for realistic responses (e.g., number of valid driver's license holders is equal to or less than the number of household members).
    - Checking for high frequency of item non-response (missing data).
- Range Checks
    - All categorical values were verified within the expected range.
    - Outliers in continuous variables (variables that represent a continuum of values and do not have a code set) were reviewed and flagged.
- Skip Checks
    - Skip patterns were verified to be programmed correctly.
- Open-Ends Preparation (non-categorical, text variables)
    - Text variables associated with an "other" type category were reviewed. Text responses that belonged to one of the categories in the response list/code set were re-coded and flagged.
    - All text responses were corrected for any spelling or typographical errors.
    - All responses marked "other" and including a respondent-provided description were flagged.
- Logic Checks
    - The logical consistency of responses was verified. Data cleaning included consistency checks that were not possible to include in the scanning program.

- Other Standard Checks
  - The total number of records in the data file was checked to determine if the amount was equal to the total number of scanned survey instruments.
  - If duplicate records were identified, all duplicated data were checked against the original record. If all data were not identical, data were flagged for review. Otherwise, duplicates were corrected or removed (duplicate unique identifier).
  - Multiple-response variables (if any) were prepared by splitting them into the variables specified by the matrix.
  - Ten percent of data entries were re-verified.

# CHAPTER 6 | GEOCODING

NuStats sub-contracted the geocoding task to GeoStats of Atlanta, Georgia. The geocoding task included reviewing, cleaning, and geocoding the location data collected in the survey instrument and recorded in the iPAQ technology or imputed from the survey instrument. The survey location data consisted of four location types: trip origin, boarding location, alighting location, and trip destination. The trip origin, destination, and alighting questions were explicitly asked on the survey instrument, while the boarding and alighting location data were automatically collected and recorded via the iPAQ technology or imputed, respectively.

## 6.1 TRIP ORIGIN AND TRIP DESTINATION

Geocoding of respondent-provided trip origin and trip destination addresses consisted of two stages. First, an automated batch run was first attempted to successfully geocode origin and destination addresses. The batch run attempted to match exact addresses or cross-streets obtained from respondents to a street coverage file provided by IndyGo. 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 of the GIS coverage files have an "AV_STATUS" of "O". Those remaining unmatched addresses were not assigned an X/Y coordinate and were given the "AV_STATUS" of "U". Because origin and destination are required elements, unmatched records were removed from the final data file.

## 6.2 BOARDING LOCATION ASSIGNMENT

GeoStats developed a technique to assign the boarding location of survey passengers using both the boarding information collected with the iPAQ devices along with the transit system route database. The boarding location was obtained directly from the passenger count data file using the survey instrument number and the ranges captured at each boarding location. Depending on the availability of GPS, one of the following two paths determined the location:

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

## 6.3 ALIGHTING AND TRANSFER IMPUTATION

The alighting imputation calculated the location where the passenger most likely exited the vehicle. The alighting imputation procedure used the survey instrument variables in conjunction with the assigned boarding information to determine if the passenger was surveyed during the final leg of the trip or if the passenger transferred to another bus at the end of the surveyed trip. The alighting stop selected in the imputation process when the passenger did not transfer was the closest stop in the route/direction/pattern list after the boarding stop and closest to the final destination.

If it was determined that the passenger transferred to another bus, the following imputation logic was applied to determine the transfer location and, therefore, the alighting location:

- The set of possible stop locations that the passenger could transfer to/from based on the reported sequence of routes and the current route was identified in order to determine the transfer location.

- The transfer location was then selected using a half-mile buffer, which included the stops closest to the destination where the two routes cross. This procedure populated an output file as follows:
    - BUS_OFFG – is the field that represents the geographic identification number (geoid) of the bus stop according to the bus stop database.
    - FAV_STAT – is the field that represents the method that was used to populate the transfer location (i.e., if the transfer location was populated using the nearest high activity location; if the location was determined based on the applied half-mile buffer; if the location was determined based on the last stop of trip; or if the location could not be geocoded based on the available logic).
- "TP" = The transfer location was determined based on the high transfer activity location,
- "TB" = The transfer location was determined based on the half-mile buffer,
- "A" = The transfer location was determined based on the destination geocode and end location of the trip,
- "FAIL" = The transfer location was not able to be determined based on the aforementioned logic.

Table 6-1 summarizes the results from the geocoding match rates by address type.

**Table 6-1: Geocoding Match Rates**

| Location Type | Matched | Unmatched (Out of Area) | Total | Matched Percent |
|---|---|---|---|---|
| Origin | 3,990 | 0 | 3,990 | 100.0% |
| Destination | 3,989 | 1 | 3,990 | 99.9% |
| Boarding | 3,990 | 0 | 3,990 | 100.0% |
| Alighting | 3,990 | 0 | 3,990 | 100.0% |

## 6.4 GEOCODING QUALITY CONTROL

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

- Running the unmatched locations through the geocoding process for a final geocoding attempt.
- Randomly selecting five percent of the geocoded address file to review in detail to ensure proper placement of the overall latitude/longitude points. The review process entailed mapping the geocoded points in ArcView and comparing the points with DeLorme street file.
- All cross-street points were queried and analyzed to ensure proper placement of the points (since a cross-street geocode does not reference a zone for zip code or city in ArcView; and the default placement of a geocoded cross-street in ArcView places the point in the Southeast quadrant of that intersection.)
- A visual quality control check was first performed on each route. This check reviewed the geocoding and verified the accuracy of the location by route, and additionally analyzed the boarding and alighting locations relative to the each route. The visual check was conducted by querying boarding/alighting points according to each route. For example, all of the boarding/alighting matches for Route 5 were selected and displayed in the map view in ArcView. A visual check was conducted to make sure that most of these points were displayed on or within proximity of the route. Points that were not displayed on or near the route were identified a respondent error.
- A visual quality control check was then performed by municipality (city or town). The geocoding was verified by querying the geocoded matches related to each location. These points were then displayed in the map view in ArcView and visually confirmed, and outlying locations were selected and confirmed to be correct.
- Global changes, including the correction of misspelled place names, misspelled city names, and other global address problems were corrected prior to each data delivery and again during one final pass on the complete location file.

# CHAPTER 7 | DATA WEIGHING AND EXPANDING

From a finite population sampling theory perspective, analytic weights are needed to develop estimates of population parameters and, more generally, to draw inferences about the population that was sampled. Without the use of analytic weights, population estimates are subject to biases of unknown (and possibly large) magnitude.
In on-board surveys, it is not cost-effective to sample the universe of trips on all transit routes. At the same time, all the riders who board the sampled routes cannot be surveyed due to non-response. All these factors lead to biases in the survey data. Consequently, sample weighting and expansion is critical to account and correct for these biases. In particular, sample weighting adjusts for non-response at the bus stop level and accounts for sampling trips at the route, time, and direction level (RTD). Sample expansion expands the weighted sample to reflect the population ridership at the system-wide level. The next section describes the sample weighting procedure followed by the sample expansion procedure, calculation of the final analytic weights, and calculation of linked trip factor that translates boardings (i.e., unlinked trips) to linked trips.

## 7.1 SAMPLE WEIGHTING

Sample weighting is a critical consideration to account and correct for biases in the survey data. As a simple example, one route may have 1,000 passengers per day and another, 100 passengers. If 50 surveys were collected on each route, the percentage collected would be 5 and 50 percent, respectively. Without weighting, the data collected on the route with 100 passengers would be over-represented in the results. Thus, weighting balances these differences and aligns the weighted sample to the known distribution of population ridership.
The sample weighting process includes calculation of two weights: (1) Response factor that corrects for non-response at the bus stop level, and (2) Vehicle factor that corrects for sampling trips at the route, time of day, and direction (RTD) level. The Boarding factor, or weight, is the product of the Response factor and Vehicle factor. Each of these factors is discussed below in detail.

### a. Response Factor

Response factor adjusts for non-response due to the fact that not all boarding passengers return usable surveys. In order to capture all the non-responding boarding passengers, the Response factor is calculated at the bus stop level.

Ideally, you would expect to receive completed surveys from every bus stop where one or more adult passengers boarded the bus. However, because of the complexity of the data collection process and non-response issues, the Consultant was faced with two scenarios that had implications on the calculation of the bus stop response factor for weighting. These include (1) no completed surveys at bus stops where at least one adult boarded the bus (response issue), and (2) fewer adult boardings than the number of completed surveys collected at the bus stop (counter error).

### b. Bus Stops with Non-Zero Boardings and Zero Completes

Of all bus stops along surveyed routes (i.e., sampled trips in which a passenger boarded at a stop), some bus stops have non-zero boardings and zero completes. A bus stop grouping method is applied to the unique trips that include these bus stops of interest. Specifically, based on the sequence of the bus stops in the unique trip and the distance between bus stops, the bus stops of interest (with non-zero boardings and zero completes) are grouped with either the subsequent or the previous stop. Specifically, the bus stop of interest is grouped with the closest bus stop. However, if the previous and the subsequent stops have zero boardings and zero completes, the bus stop of interest is grouped with the second previous and subsequent stop, and so on.

**c. Bus Stops with Fewer Boardings than Completes**

The bus stops with zero boardings and non-zero completes are addressed in the following way. Based on the sequence of the bus stops in the unique trip that includes these bus stops of interest, the bus stop of interest (with boardings less than completes) is grouped with the subsequent stops (i.e., bus stops in the direction of the trip). If a resolution is not reached by grouping with subsequent bus stops in the direction of the unique trip (i.e., total boardings are not equal or greater than the completed surveys at the group level), the bus stop of interest is grouped with previous ungrouped bus stops (i.e., bus stops in the opposite direction of the trip). The regrouping is carried out until a resolution is reached (i.e., the boardings are at least equal to the total number of completed surveys at the group level). Following the application of this method (i.e., after grouping the bus stop of interest with all other bus stops in the unique trip), if the total boardings are less than the total completed surveys at the group level, a response factor of 1 is assigned to all the bus stops in the unique trip.

Following the grouping of the bus stops of interest using the aforementioned methodology, the bus stop response factor is calculated (see formula below for Bus Stop Response factor).

**Response Factor = Total Adult Boardings by Bus Stop / Usable Surveys by Bus Stop**

**d. Vehicle Factor**

Vehicle factor accounts for the non-surveyed trips at the Route, Time of Day, and Direction (RTD) level. The times of days used in the weighting process are: AM Peak, Mid-day, PM Peak, and Evening.

The total one-way trips and total sampled trips will be calculated for each RTD based on this population run cut file. For example, if Route 1 has a total of 11 trips in the AM Peak that are northbound, but only two are surveyed, its Vehicle factor is 11 divided by 2, or 5.5.

**Vehicle Factor = Total Trips per RTD / Sampled Trips per RTD**

**e. Boarding Factor**

Following the calculation of the three weighting factors, the Boarding factor is calculated by multiplying the Response and Vehicle factors.

**Boarding Factor = Response Factor * Vehicle Factor**

## 7.2 SAMPLE EXPANSION

Sample expansion factors increase the weighted sample to the total boardings at the system-wide level. In particular, the survey data is expanded to the average daily ridership data in the sample plan that was based on January-July 2009 weekday ridership. The calculation of the Expansion factor is described below.

**a. Expansion Factor**

The Expansion factor is calculated at the route level using the formula below. As an example, assume that the weighted sample ridership for Route 1 is 7,270, and the population average daily weekday ridership for this route is 7,742. This produces an expansion factor of 1.06 (7,742 divided by 7,270).

**Expansion Factor = Population Average Daily Ridership / Ridership Weighted by Boarding Factors**

**b. Expansion Weight**

The final sample 'weighing and expansion' weight is referred to as the Expansion weight. In particular, the

Expansion weight is calculated by multiplying the Boarding factor (i.e., weighting factor) by the Expansion factor. Following the application of the Expansion weight, the weighted data represent the population boardings (i.e., unlinked trips).

**Expansion Weight = Boarding Factor * Expansion Factor**

### c. Linked Trip Factor

Linked Trip factor translates boardings (i.e., unlinked trips) to linked trips. This factor accounts for the rider's transfer before or after the surveyed bus. A rider who did not transfer during the completion of a one-way transit trip would carry a linked trip factor of 1.0. A rider who transferred from another route before boarding the surveyed bus, but did not intend to transfer again, would have a weight of 0.5, as would a rider who did not transfer before boarding the surveyed bus, but who intended to transfer in order to get to the ultimate destination. A rider who transferred to and from the surveyed bus would have a weight of 0.333. The Linked Trip factor is calculated for every rider who completed the survey. This weight will be provided as a stand-alone weight. Following the application of this factor to the weighted data (i.e., data weighted by the Expansion weight), the information can be expressed as 'linked' trips instead of individual boardings.

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## 8.1 QUALITY ASSURANCE/QUALITY CONTROL

### a. Survey Data QA/QC

In order to assure the quality of data, all scanned surveys were thoroughly checked in the EditCheck. This program performs a series of queries customized to each project. These queries check for logic errors in the survey answers. It creates a table of possible issues that can then be reviewed by the data team. The details of the checks performed in the EditCheck are presented below.

Basic Response Checks:

- Data falls within established variable range.
- The route sequence was recorded in the readable format by the imputation program and TrueRoute. This program recreates a passenger's route sequence based on its origin and destination points. Its purpose is to verify that survey respondents submit a logical trip.
- The termination value was not chosen on the variable validating a complete.
- Proper data skips and patterns of answering questions are consistent with prior answers.

Open-Ends Preparation:

- All text responses were corrected for any spelling or typographical errors.
- Text variables associated with an "Other" type category were reviewed. Text responses that belonged to one of the categories in the response list/code set were recoded and flagged (uniformity of open ends).

Route Sequence Checks

- EditCheck flagged the records for which more stringent checks were required. Missing surveyed route in the responded route sequence, possible round trips (repeated bus numbers in the route sequence), were flagged by EditCheck.
- The survey records with implausible route sequence by TrueRoute were also subject to more stringent route sequence checks.
- Imputation process of alighting stops creates the maps that display origin, destination, boarding, and alighting stops for the survey route and other routes listed in the route sequence. These maps were used as a tool to verify the route sequence flagged by EditCheck or TrueRoute.

Geocoding Checks

- The X/Y coordinates in proper format was confirmed.
- All unmatched locations were run through the geocoding process for a final attempt to be geocoded. All other location information from the data was used as a reference to obtain a correct geocoded location.
- Check instances where geocoded origin and geocoded destination are identical. This identifies cases where a respondent gave the same location information for both their origin and destination. These are flagged as fail.

Logic Checks

- Consistency checks that were not possible to include in the Scanning program were performed in EditCheck. All illogical responses among the demographic questions were flagged in the delivered data set. For example, a respondent who reported zero household vehicles but reported to drive himself/herself to get to the first bus stop was flagged under VEH_FLAG1.

# CHAPTER 9 | DATA ANALYSIS

## 9.1 TYPICAL INDYGO RIDER

IndyGo's typical weekday passenger is a Black/African American female, age 35 to 49 who uses the bus 3 to 5 days a per week to get to and from home and work. She is likely to be employed full-time or part time, but earns less than $ 15,000 per year. She is transit dependent - meaning that there are no working vehicles in her household. Access to a vehicle through a friend or relative is also limited. If bus service was unavailable, she would either ride with a friend or not make the trip.

The average rider has to make at least one transfer before he/she can complete a one-way trip. Most riders access the bus by walking one to two blocks to get to the nearest bus stop. The same travel patterns hold true for riders to arrive at their destination. Most will walk one to two blocks to arrive at the trip terminus.

Most IndyGo riders feel that service hours should be extended and that service frequency should be increased.

## 9.2 DATA ANALYSIS

The following tables depict data results for all questions asked in the survey instrument. Results for each survey question are subdivided into four categories - Travel Characteristics, Demographics, Activity-Based Question and Service Improvements. An analysis of the data is included for each category. The letter N represents the number of survey respondents for each survey question. Percentages have been rounded to the nearest whole number.

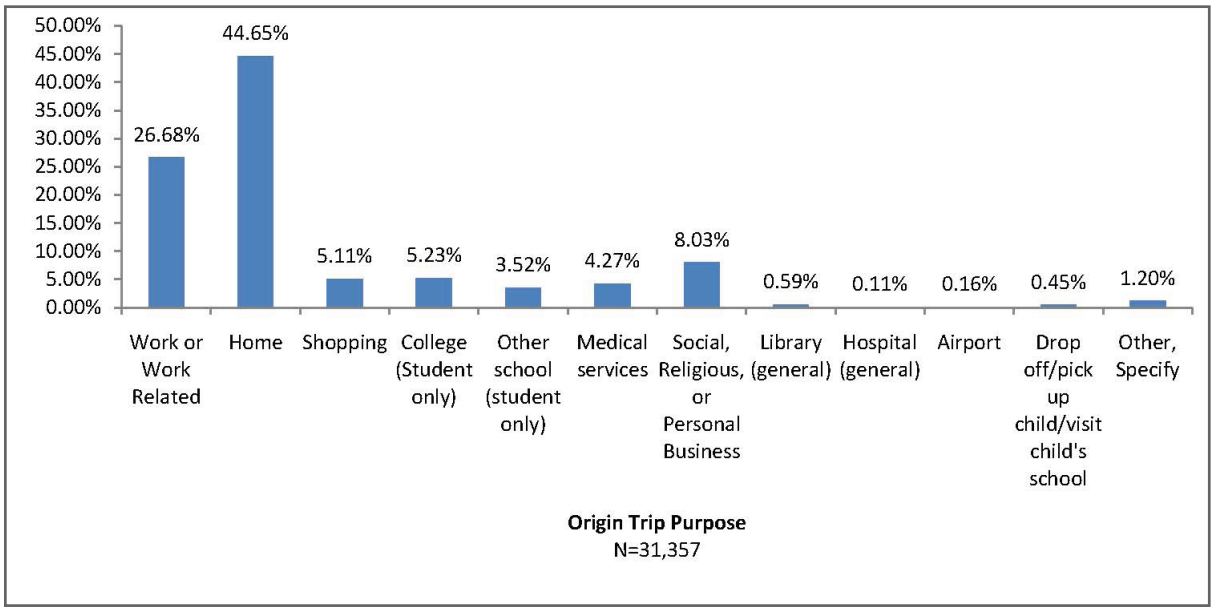
Most survey questions have been cross-tabulated with age, ethnicity and vehicle availability. Some demographic data are also cross-tabulated with data sets that are in addition to those identified above. All cross-tabulated tables are located in Appendix E.

## 9.3 TRAVEL CHARACTERISTICS

### a. Origin

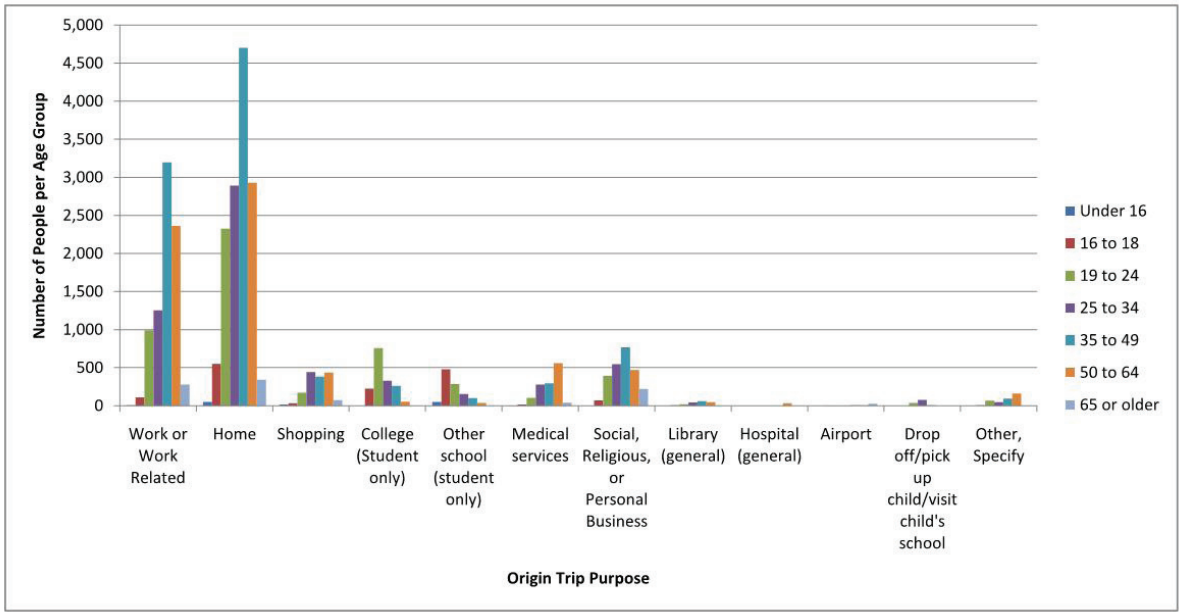
Approximately 45 percent of riders begin their trips from home. Nearly 27 percent of riders begin their trips from work or a work-related location. A little over 70 percent of IndyGo riders begin their trips from either work or home. This indicates that most IndyGo riders bus trips are to and from home or work.

**Figure 9-1: Origin Trip Purpose**




Nearly half (47 percent) of riders between the ages of 35-49 begin their trips from home. Forty-one percent of riders between the ages of 50-64 begin their trips from home. The second most popular origin response is beginning a trip from work. Of those riders who begin their trips from work, 32 percent are between the ages of 35 – 49 and 33 percent are between the ages of 50-64.

**Figure 9-2: Age and Origin Trip Purpose**



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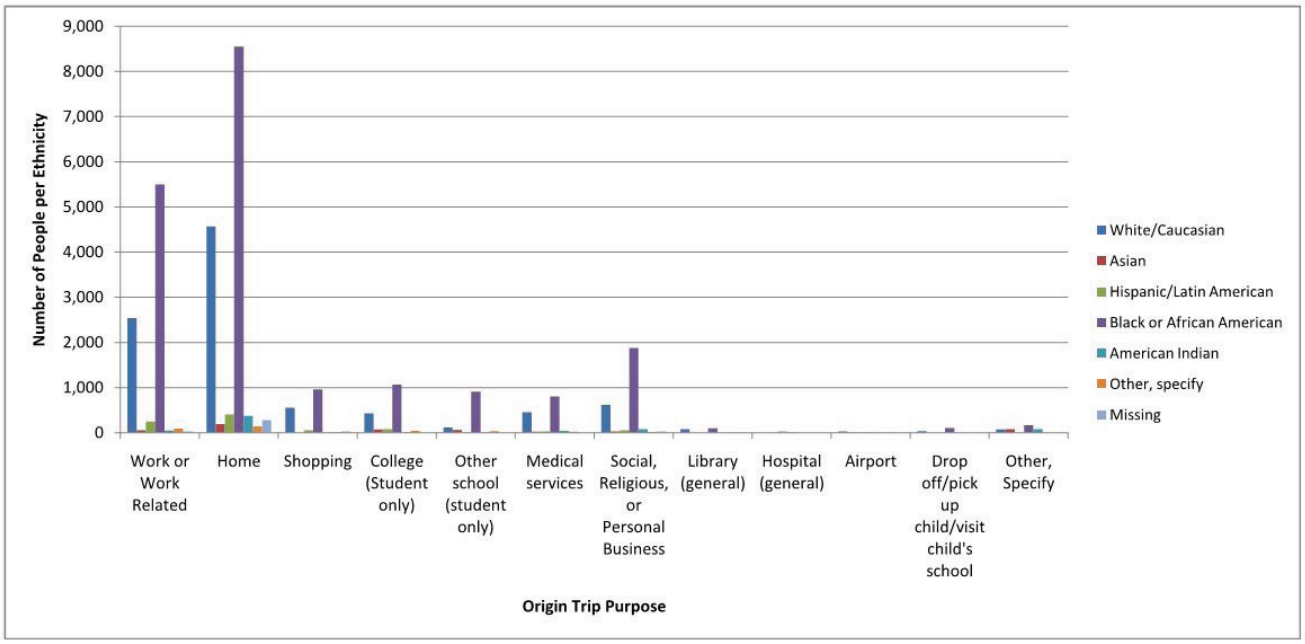
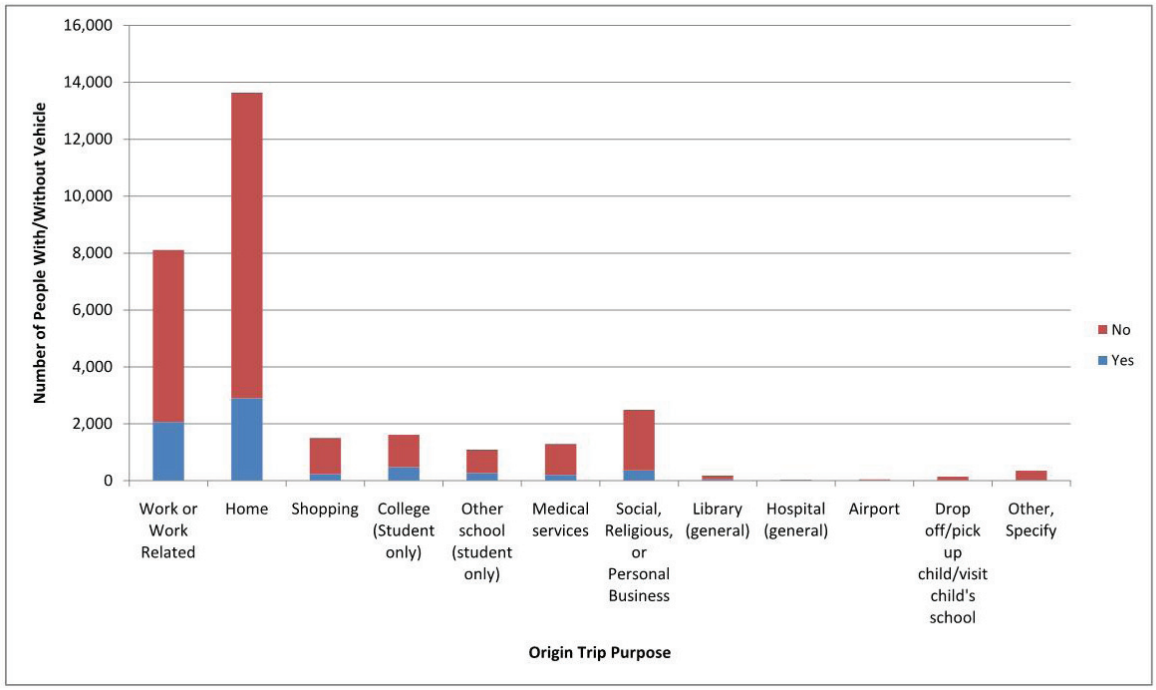
Of those riders who are Black/African American, 42 percent begin their trips from home and 27 percent begin their trips from work. White/Caucasians compose the second largest ethnic group of IndyGo riders. Nearly half (48 percent) begin their trips from home while 26 percent begin their trips from work.

**Figure 9-3: Ethnicity and Origin Trip Purpose**




Of those IndyGo riders who do not have a vehicle available to them, 44 percent begin their trips from home and 25 percent begin their trips from work. It is important to note that this question asks if riders have a vehicle available to them – not if a working vehicle is available in their household.

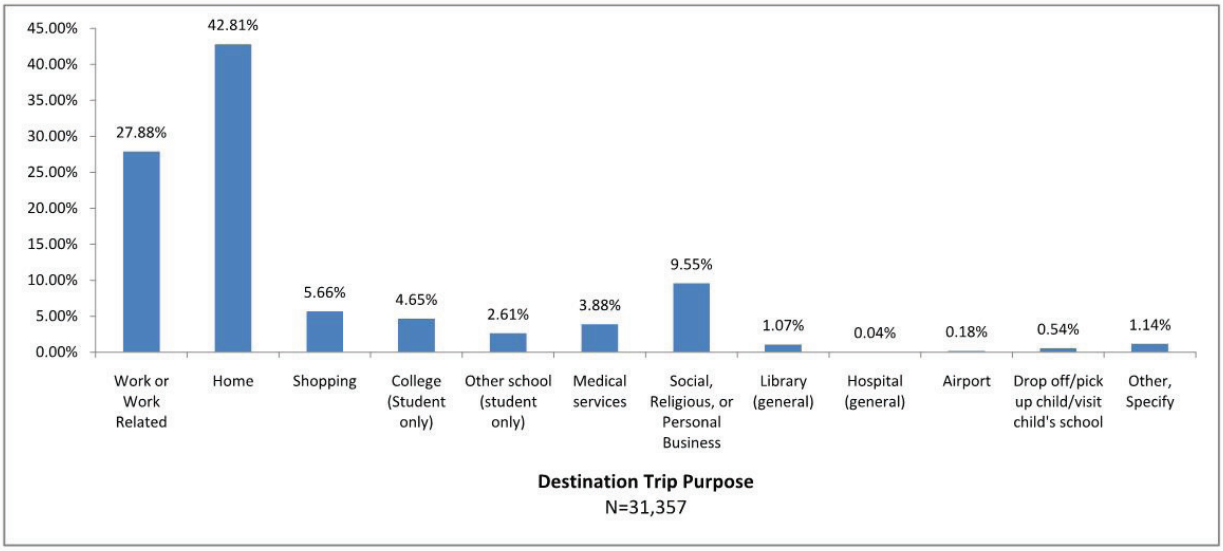
**Figure 9-4: Vehicle Availability and Origin Trip Purpose**



### b. Destination

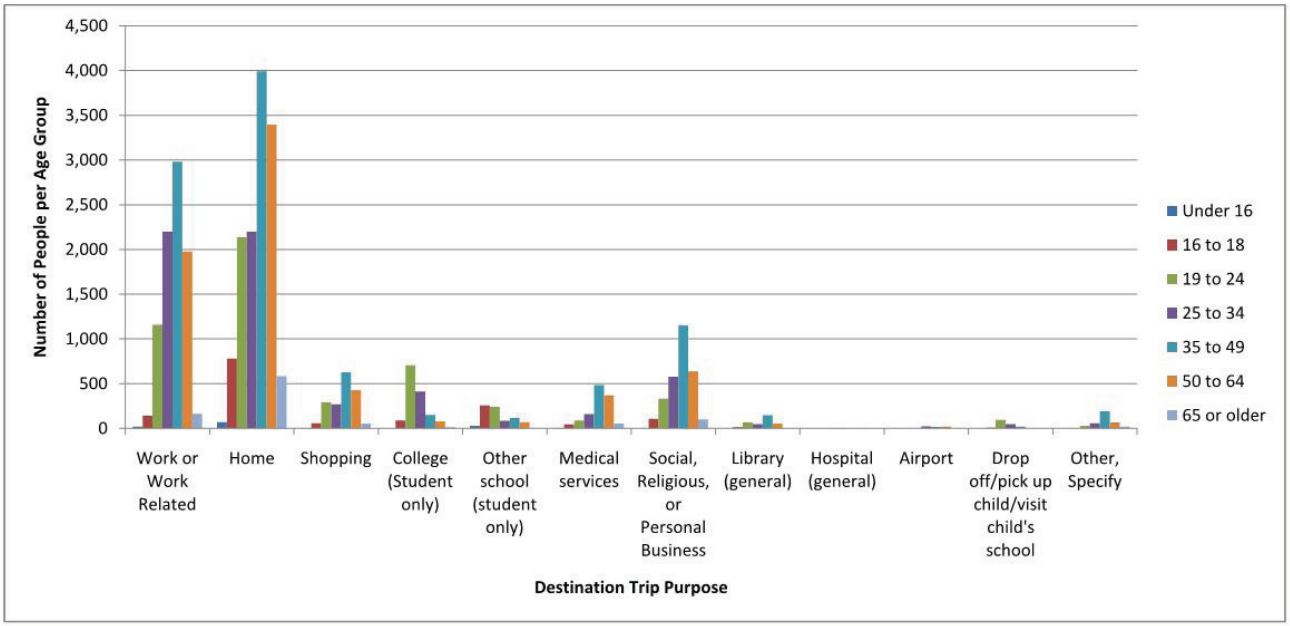
Approximately 43 percent of IndyGo riders ended their trips at home. This is nearly identical to the percentage of riders that began their trips at home (45 percent). Approximately 28 percent of riders ended their trips at work. Similar to the origin of riders, 70 percent of rider destinations are either work or home. For both the origin and destination of the trip, the hospital was the least popular destination at less than .04 percent.

**Figure 9-5: Destination Trip Purpose**




Of those riders who end their trips at home, 40 percent are between the ages of 35 – 49. Forty-seven percent are between the ages of 50 - 64. The second most popular destination response is work. Thirty percent of riders between the ages of 35 – 49 ended their trips at work. Thirty-six percent of riders between the ages of 25 – 34 ended their trips at work.

**Figure 9-6: Age and Destination Trip Purpose**



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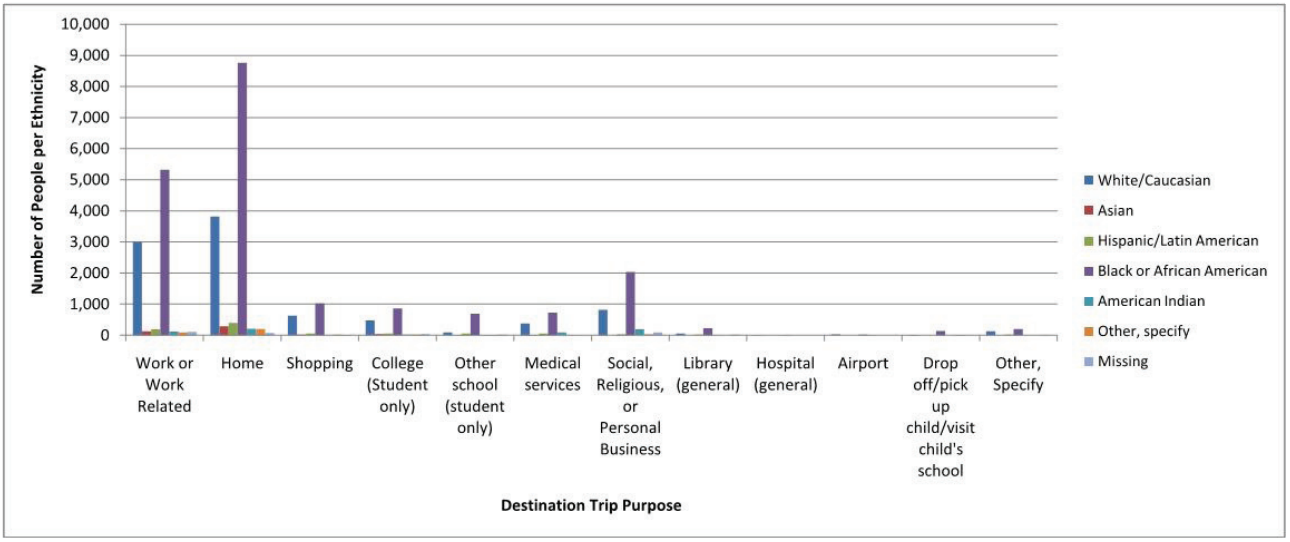
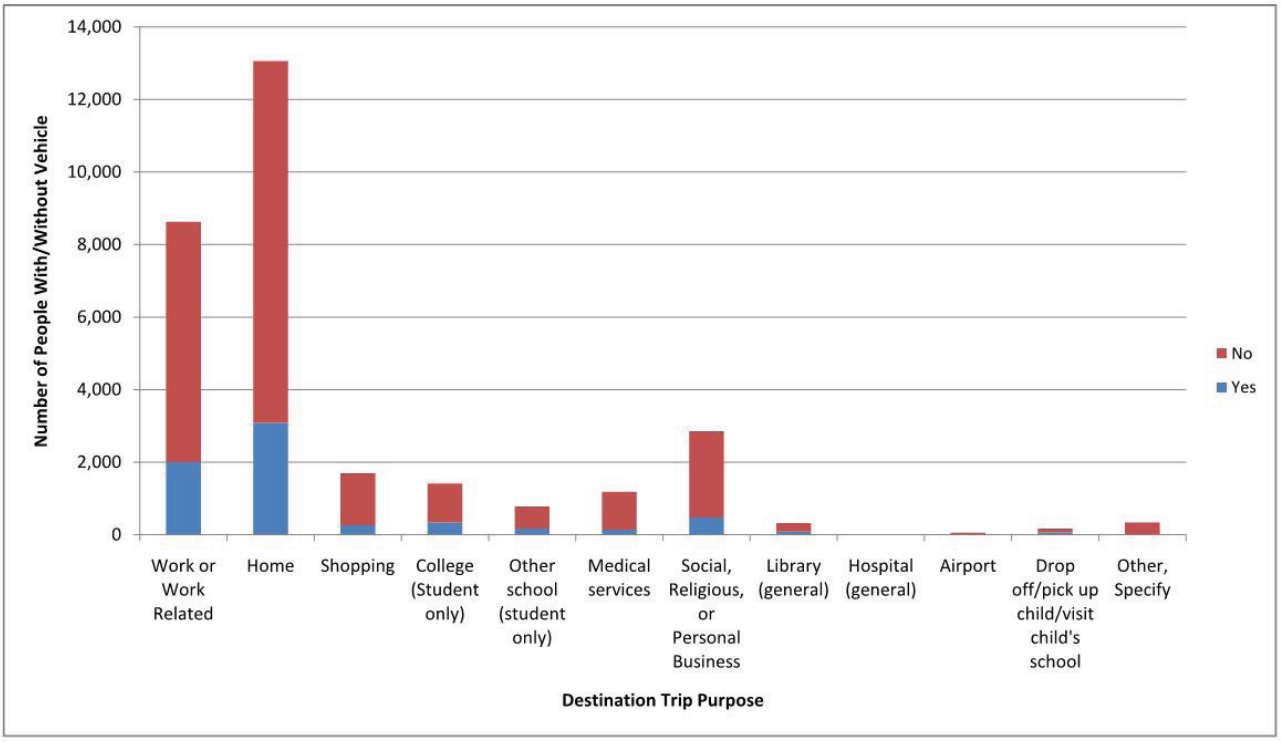
Black/African American riders ended the majority of their trips at either home or work, (44 percent and 27 percent, respectively). A similar trend exists with White/Caucasian riders. Forty percent of them ended their trips at home, and 32 percent of them ended their trips at work.

**Figure 9-7: Ethnicity and Destination Trip Purpose**




Of those IndyGo riders who do not have a vehicle available to them, 42 percent of them ended their trips at home. Twenty-eight percent of them ended their trips at work. These percentages are very similar to those given in the trip origin section.

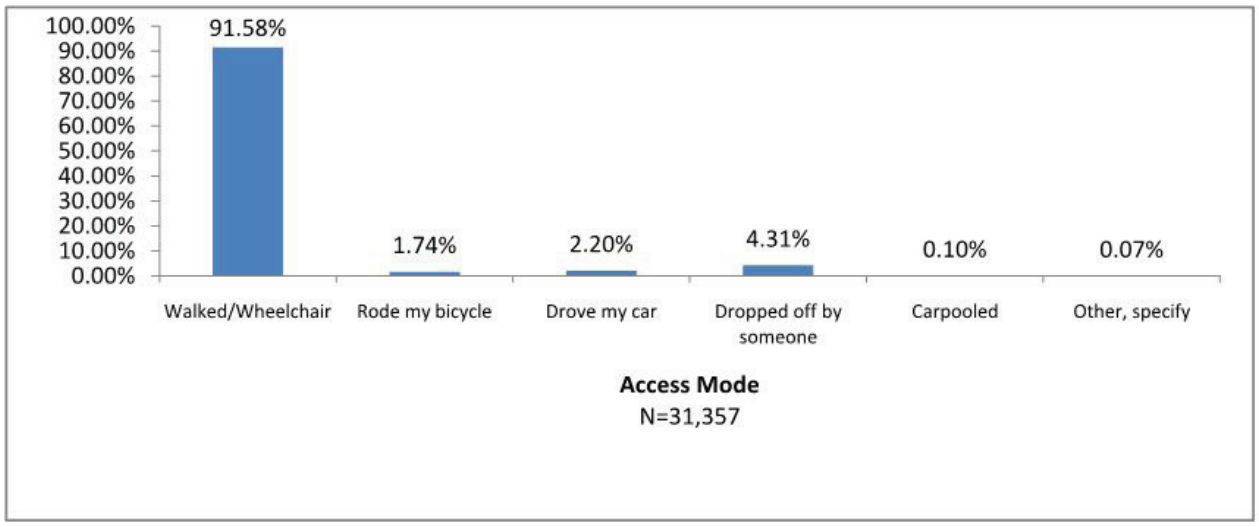
**Figure 9-8: Vehicle Availability and Destination Trip Purpose**



### c. Access Mode

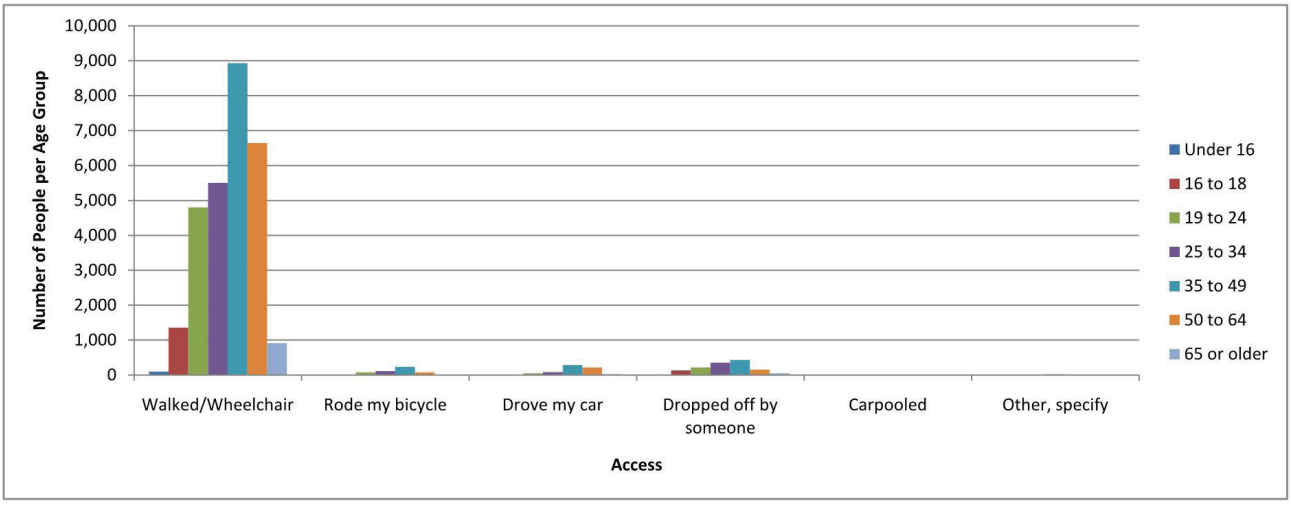
A little over 90 percent of IndyGo riders walk or use a mobility device to access a bus stop. A little over two percent drove their cars to the bus stop.

**Figure 9-9: Access Mode**




Approximately 90 percent of riders between the ages of 35 – 49 accessed the bus by walking. Nearly 94 percent of riders between the ages of 50 – 64 access the bus by walking.

**Figure 9-10: Age and Access Mode**



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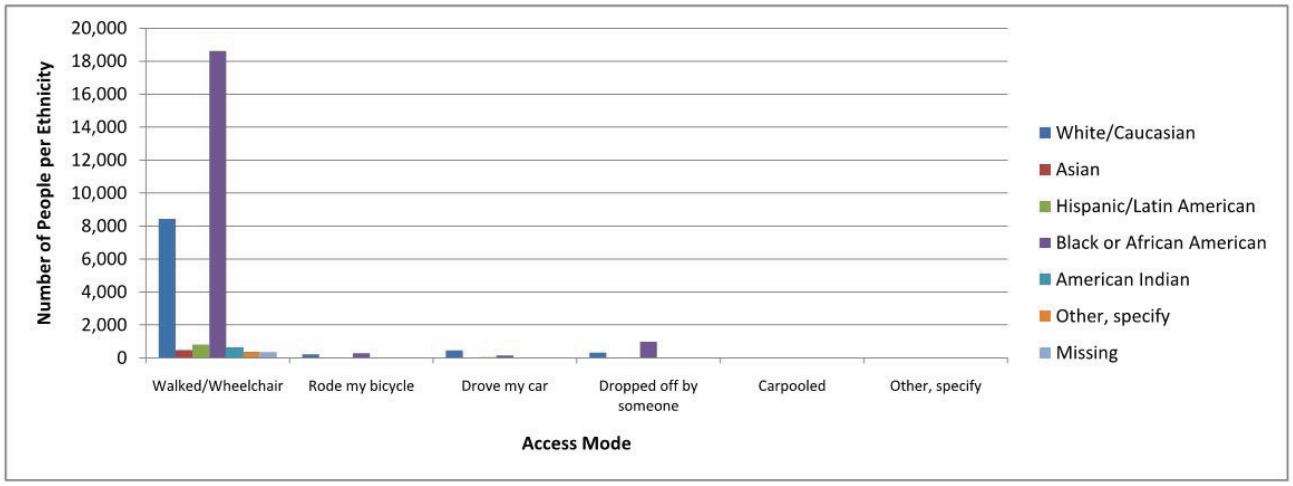
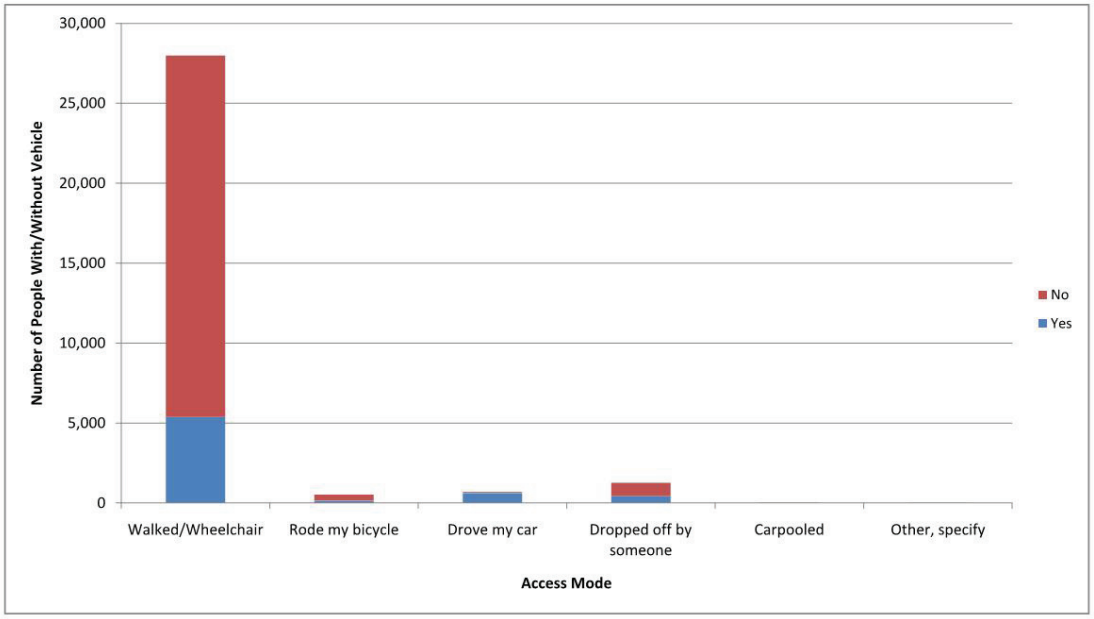
Ninety-three percent of Black/African Americans accessed the bus by walking. Nearly 89 percent of White/Caucasian riders accessed the bus by walking.

**Figure 9-11: Ethnicity and Access Mode**




Ninety-five percent of riders without access to a vehicle accessed the bus by walking. Of those riders with vehicles available to them, 81 percent of them still accessed the bus by walking.

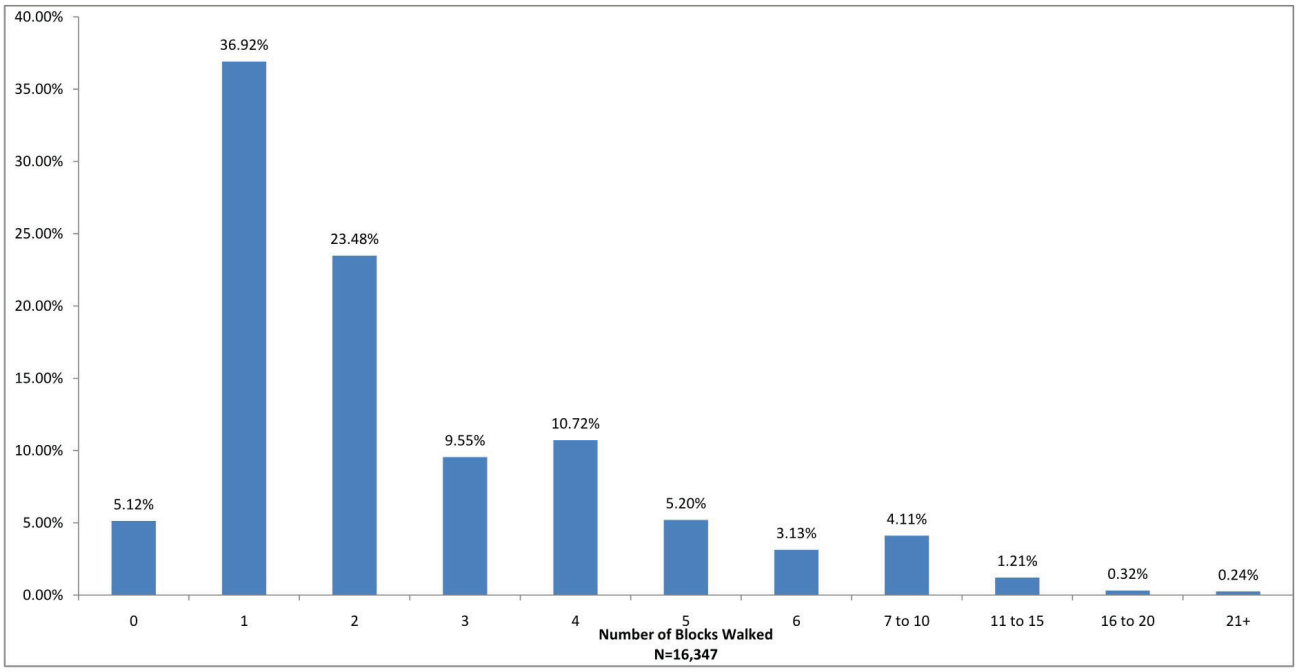
**Figure 9-12: Vehicle Availability and Access Mode**



### d. Number of Blocks Walked to a Bus Stop

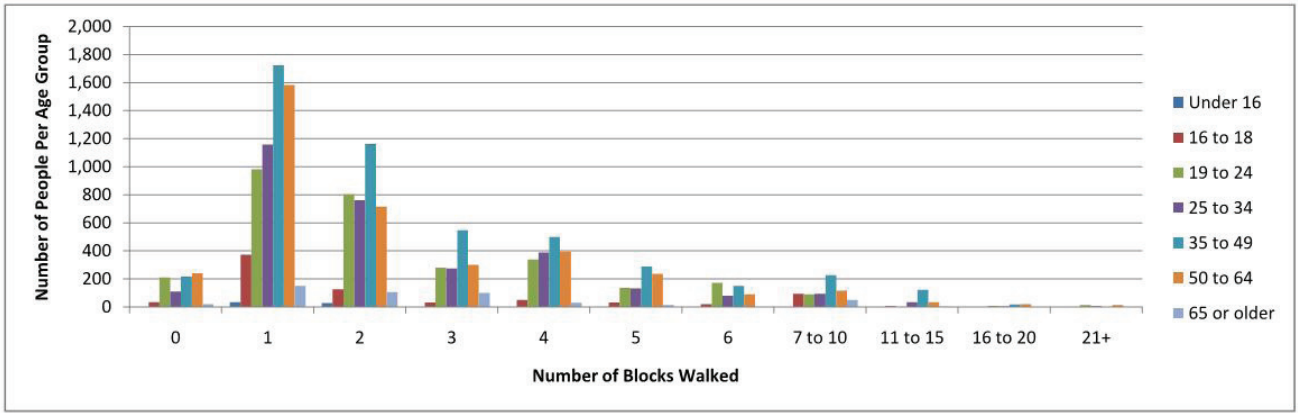
The number of blocks walked were not provided by respondents. Instead, they were computed from information the respondent provided. The number of blocks walked to a trip origin and the number of blocks walked from a bus stop to a final location were combined. Nearly 37 percent of riders only have to walk one block to get to a bus stop. Five percent reported that they did not have to walk a full block. Ninety-one percent of riders walk five blocks or less. A small percentage of riders did report that they walked a large number of blocks to access a bus.

**Figure 9-13: Number of Blocks Walked to Stop**




Of riders between the ages of 35 – 49, 57 percent of them either walk one or two blocks to access a bus stop. Thirty-four percent of all riders who walk to the bus walk one block. Twenty-three percent walk two blocks. Sixty-one percent of riders between the ages of 50 – 64 walk one or two blocks to a bus stop. Forty-two percent walk one bock. Nineteen percent walk two blocks.

**Figure 9-14: Age and Number of Blocks Walked**



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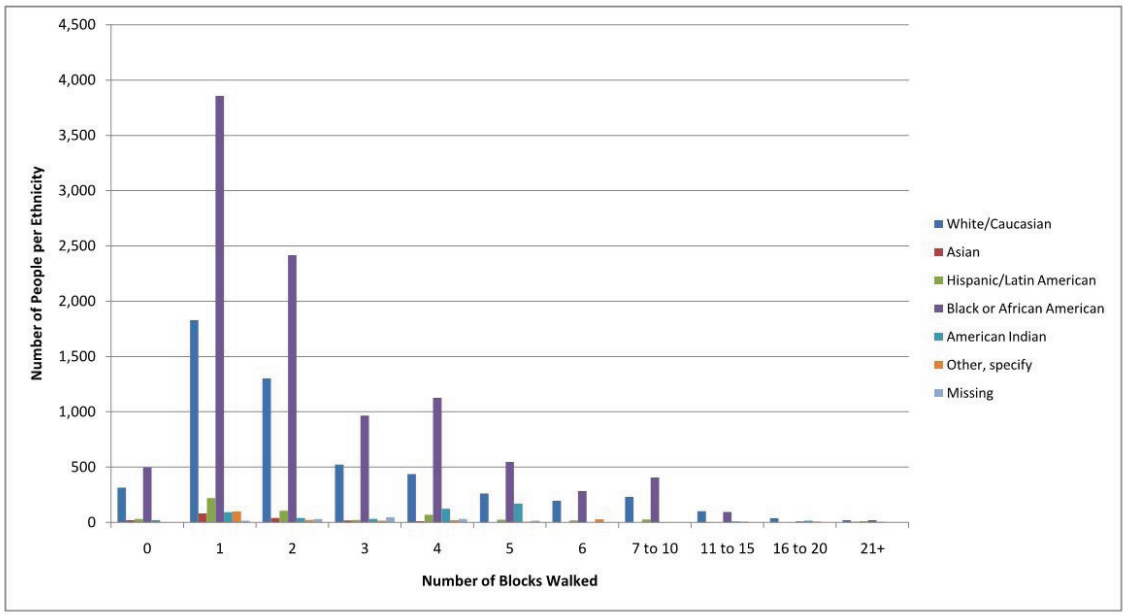
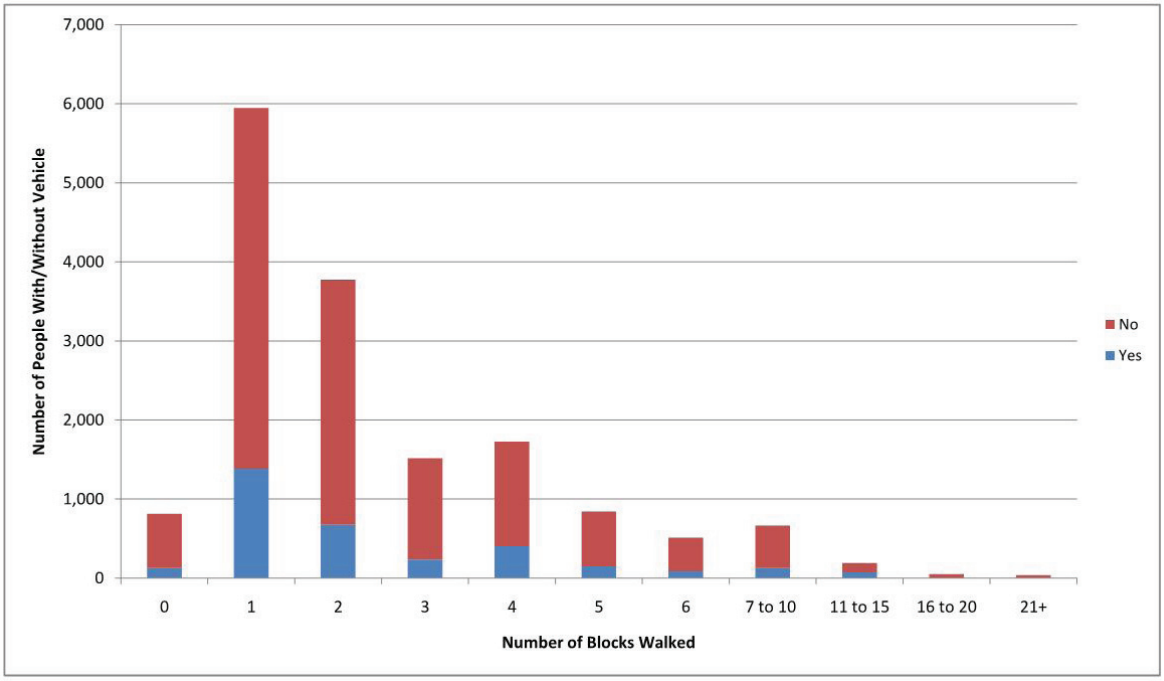
Approximately 62 percent of Black/African American riders walked one to two blocks to access the bus. Thirty-eight percent walked one block. Twenty-four percent walked two blocks. Approximately 60 percent of White/Caucasian riders walked one or two blocks to access a bus stop. Thirty-five percent walked one block. Twenty-four percent walked two blocks. The survey questionnaire did not ask if access to a bus stop is easily accessible.

**Figure 9-15: Ethnicity and Number of Blocks Walked**




Approximately 63 percent of riders with access to a vehicle walked one or two blocks. Forty-two percent walked one block. Twenty-one percent walked two blocks. Approximately 60 percent of riders without access to a vehicle walked one or two blocks to a bus stop. Thirty-six percent walked one block. Twenty-four percent walked two blocks.

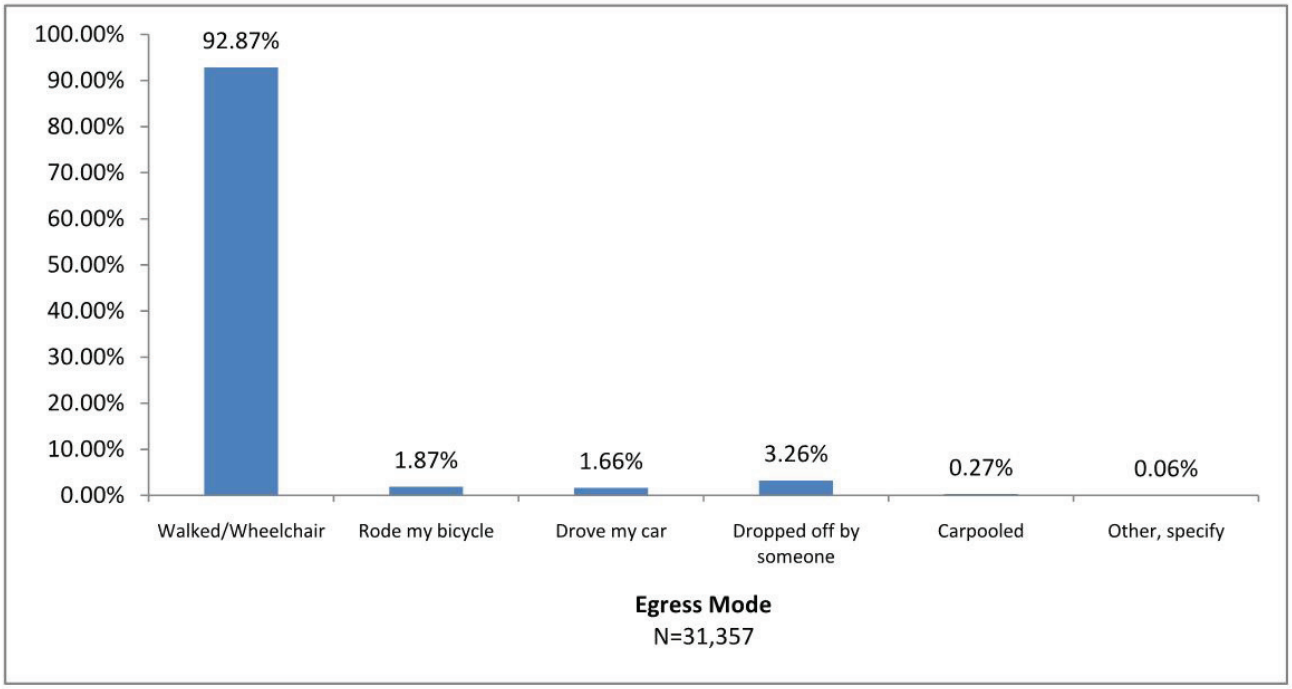
**Figure 9-16: Vehicle Availability and Number of Blocks Walked**



### e. Egress Mode

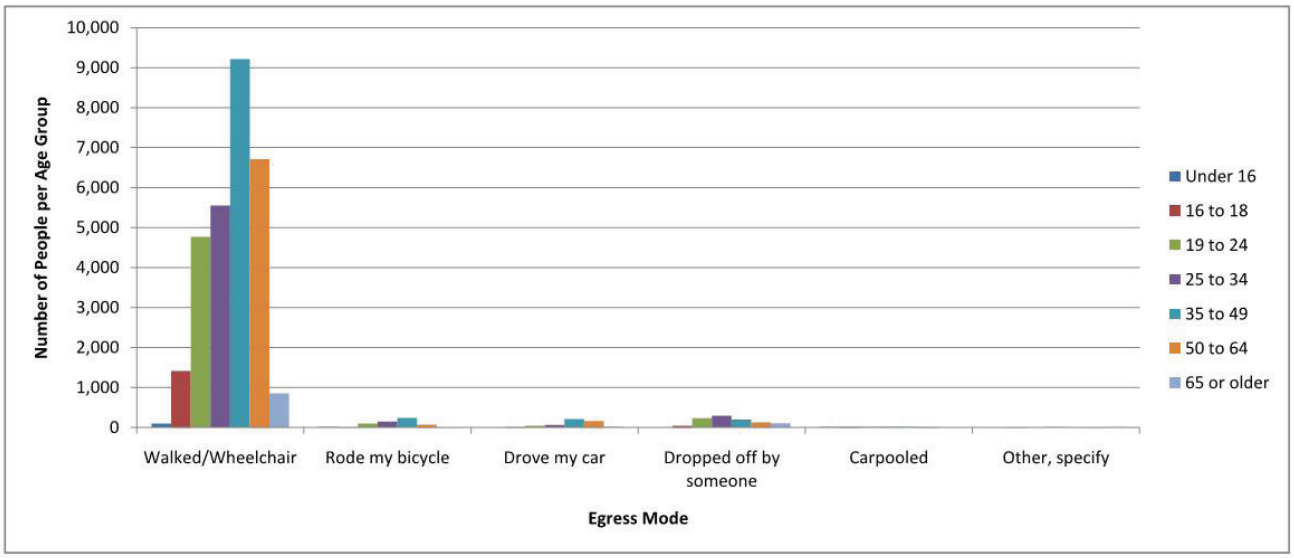
Nearly 93 percent of IndyGo riders arrive at their final location after using IndyGo service by walking or using a wheelchair. This is virtually identical to the percentage of riders who walk or use a wheelchair to access a bus stop. Most IndyGo riders can access their origins and destination by foot or wheelchair after riding the bus.

**Figure 9-17: Egress Mode**




Approximately 93 percent of riders between the ages of 35 – 49 arrive at their final destination by walking after using the bus. The next largest age group of riders arrives at their final destination by being dropped off by someone. However, only five percent of riders between the ages of 25-34 arrive by being dropped off by someone.

**Figure 9-18: Age and Egress Mode**



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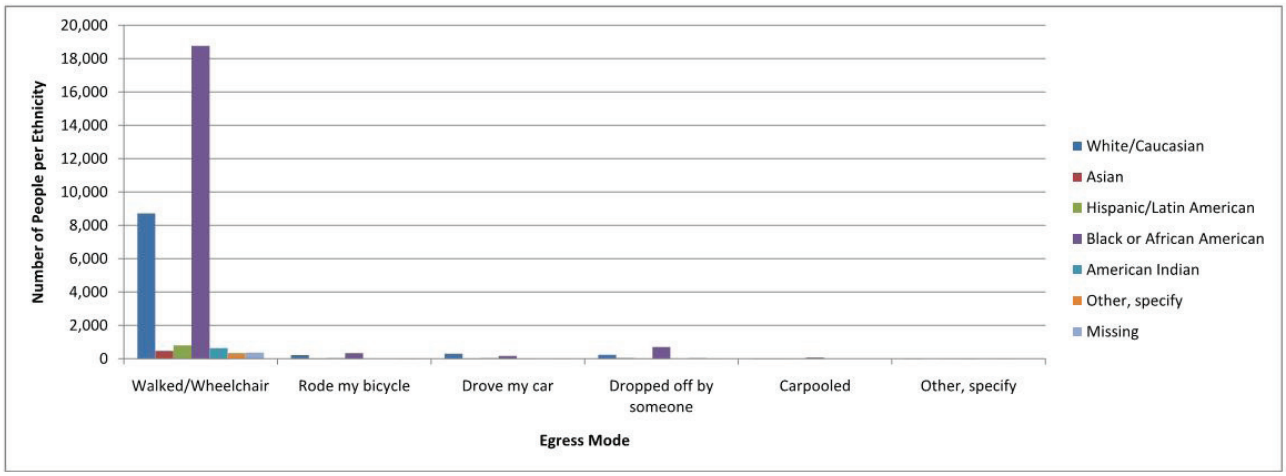
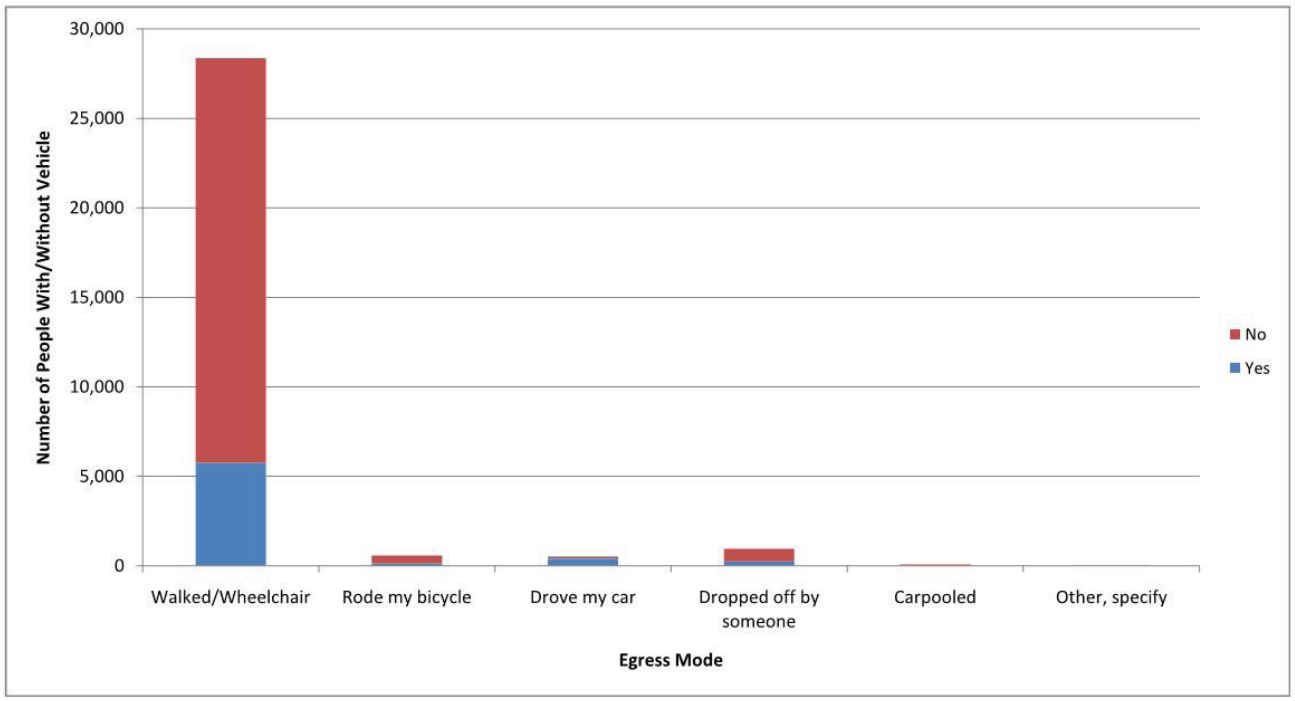
Of Black/African American riders, 95 percent walk to their final destinations after a bus ride. For White/Caucasian riders, 87 percent walk to their final destinations. These are the two largest ethnic groups of IndyGo riders. Their travel is typical of how most riders access their final destination.

**Figure 9-19: Ethnicity and Egress Mode**




Ninety-five percent of riders without access to a vehicle arrived at their final destination by walking. Of those riders with access to a vehicle, 87 percent also access the bus by walking.

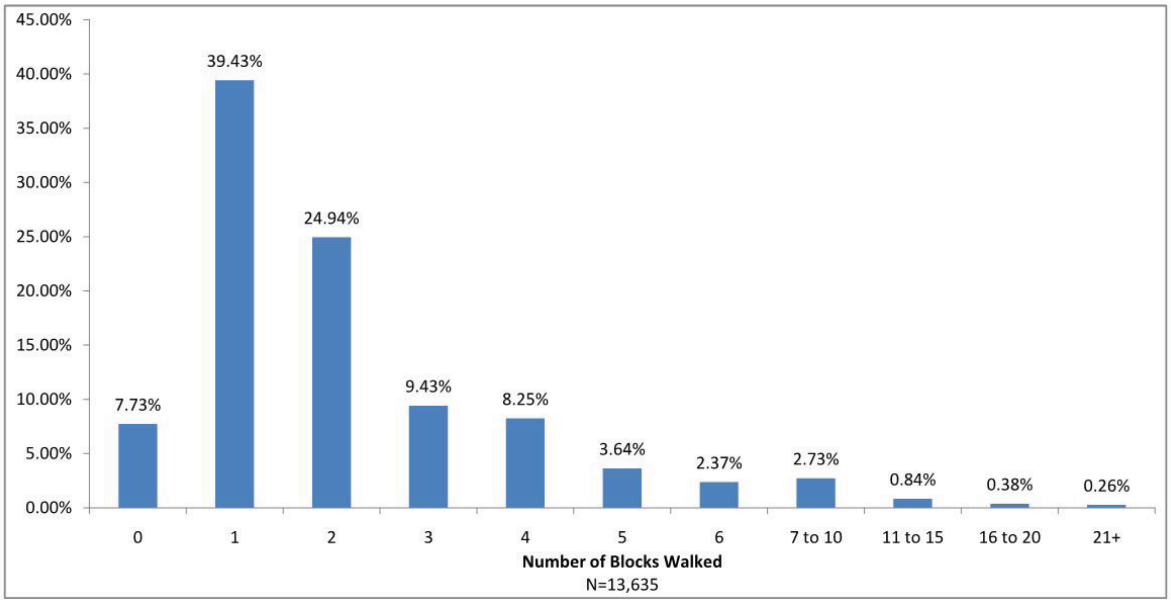
**Figure 9-20: Vehicle Availability and Egress Mode**



### f. Number of Blocks Walked to Destination

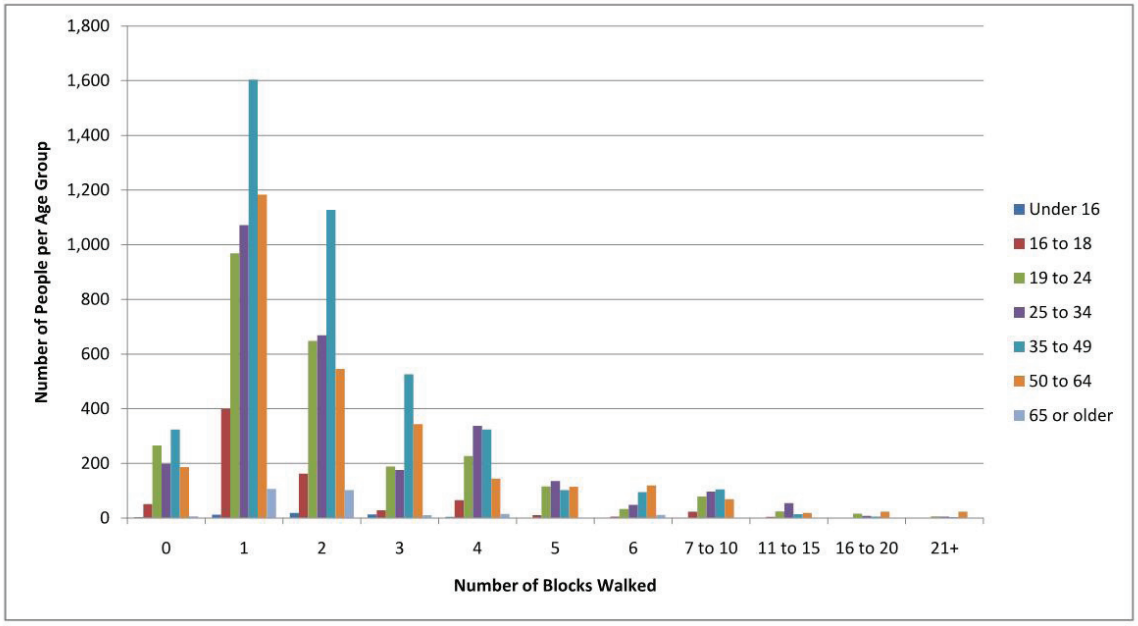
Forty percent of riders had to walk one block after they got off of the bus to reach their destination. Twenty-five percent of riders walk two blocks. About 93 percent of riders have to walk five blocks or less. This data might be slightly skewed due to respondent error. This could be caused by erroneous information provided by multiple responses. It is highly unlikely that individuals walk upwards of 70 blocks to arrive that their final destination.

**Figure 9-21: Number of Blocks Walked**




Sixty-five percent of riders between the ages of 35 – 49 walk one or two blocks to arrive at their final destination. Thirty-eight percent of riders walked one block while 27 percent walked two blocks. Sixty-two percent of riders between the ages of 25-34 walked between one and two blocks to arrive at their final destination. Thirty-eight percent walked one block while 24 percent walked two blocks.

**Figure 9-22: Age and Number of Blocks Walked**



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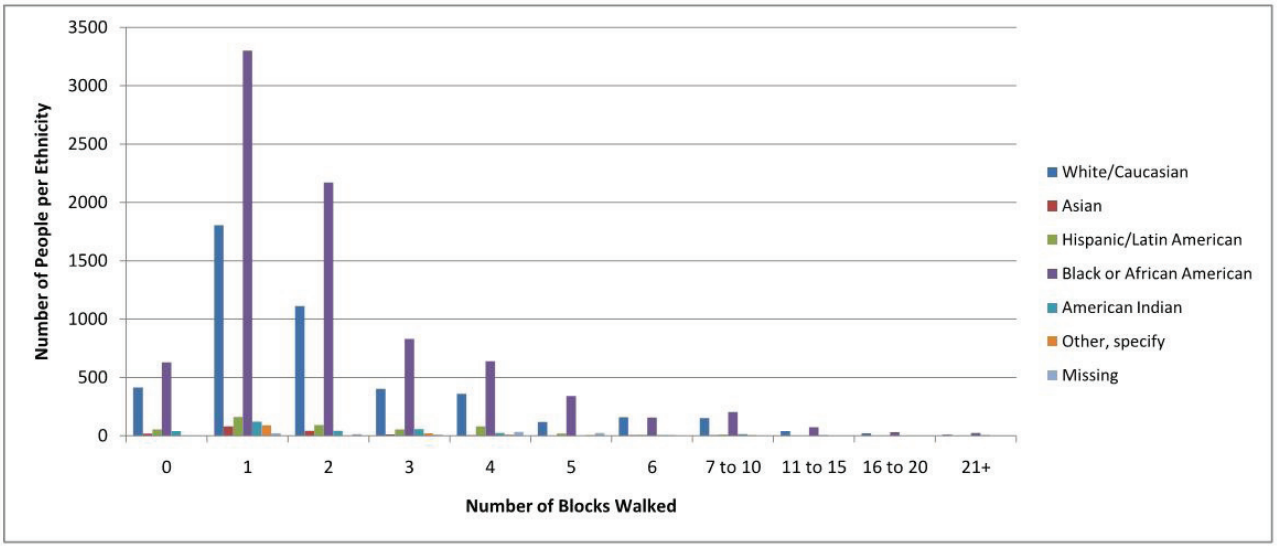
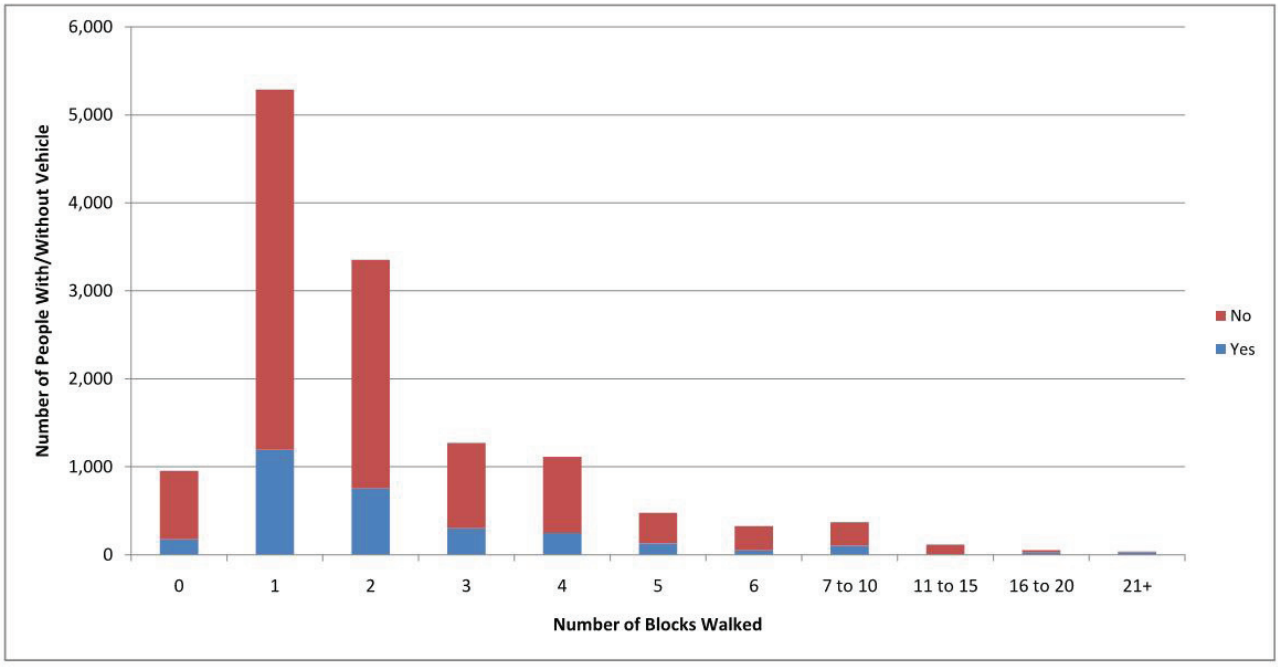
Sixty-five percent of Black/African American riders walked one to two blocks to access their final destination. Thirty-nine percent walked one block, while 26 percent waked two blocks. Sixty-three percent of White/Caucasian riders walked one or two blocks to access a bus stop. Thirty-nine percent walked one block, while 24 percent walked two blocks. The two largest ethnic groups are typical of IndyGo riders, for whom the final destination typically is accessible on foot.

**Figure 9-23: Ethnicity and Number of Blocks Walked**




Sixty-five percent of riders without access to a vehicle walked one or two blocks. Forty-percent walked one block, while 25 percent walked two blocks. Sixty-five percent of riders with access to a vehicle walked one or two blocks. Forty percent walked one block while twenty-five percent walked two blocks.

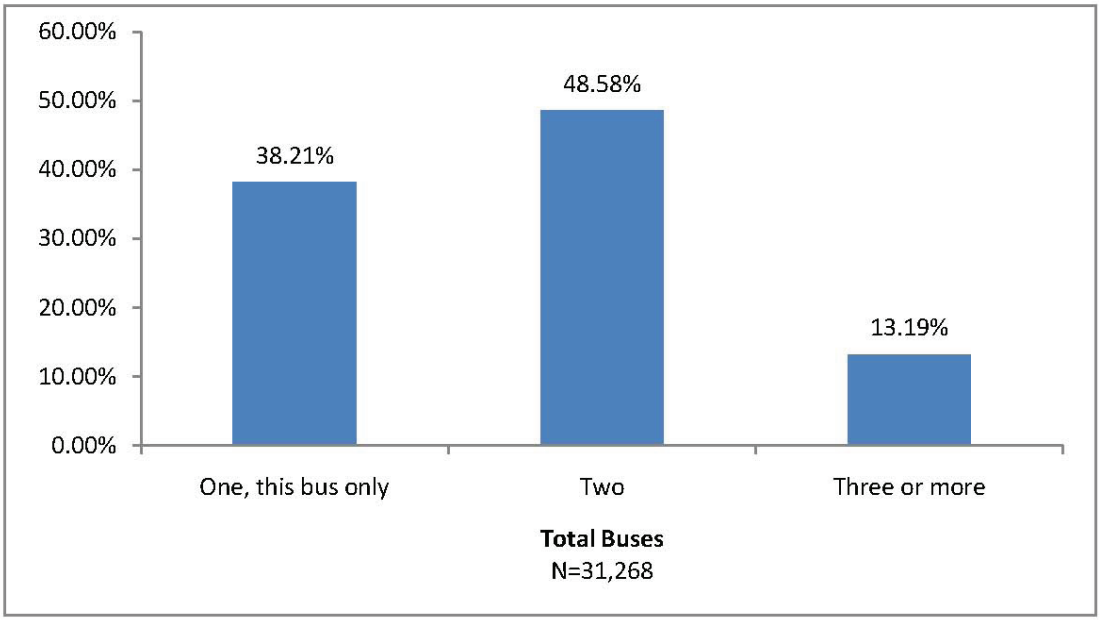
**Figure 9-24: Vehicle Availability and Number of Blocks Walked**



### g. Total Buses used to make a One-Way Trip

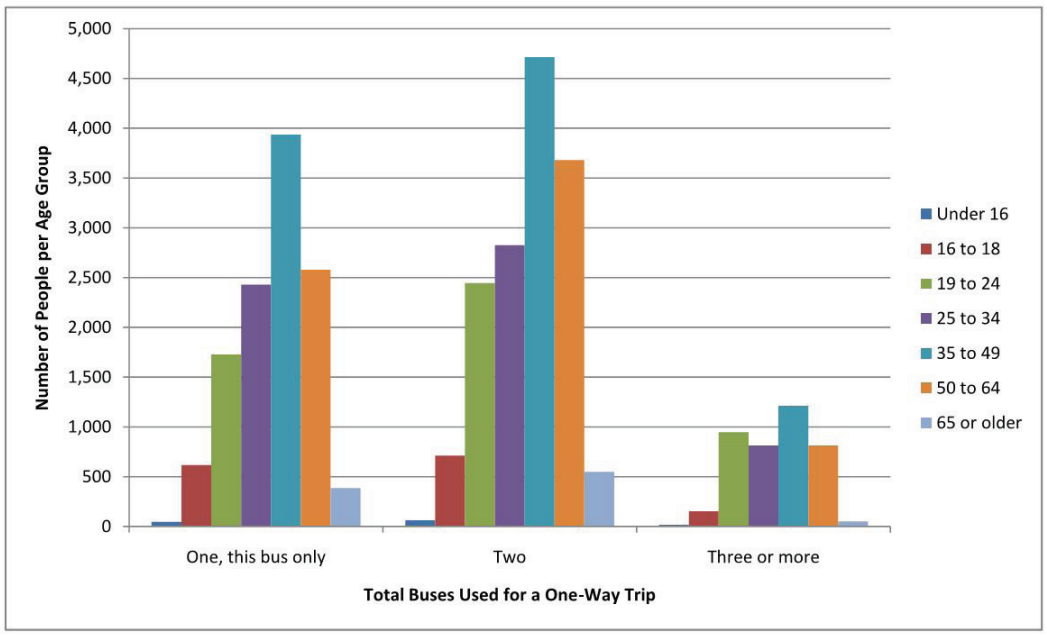
Nearly two-thirds of the passengers (62 percent) made at least one transfer to complete their one-way trips. Thirteen percent of the total passengers had to transfer three or more times.

**Figure 9-25: Total Buses Used to Make One-Way Trip**




Of riders between the ages of 35 – 49, 48 percent use two buses to make a trip. Fifty-two percent of riders between the ages of 50-64 use two buses to make a trip. This is consistent with the number of buses all riders use to make a trip.

**Figure 9-26: Age and Total Buses Used for One-Way Trip**



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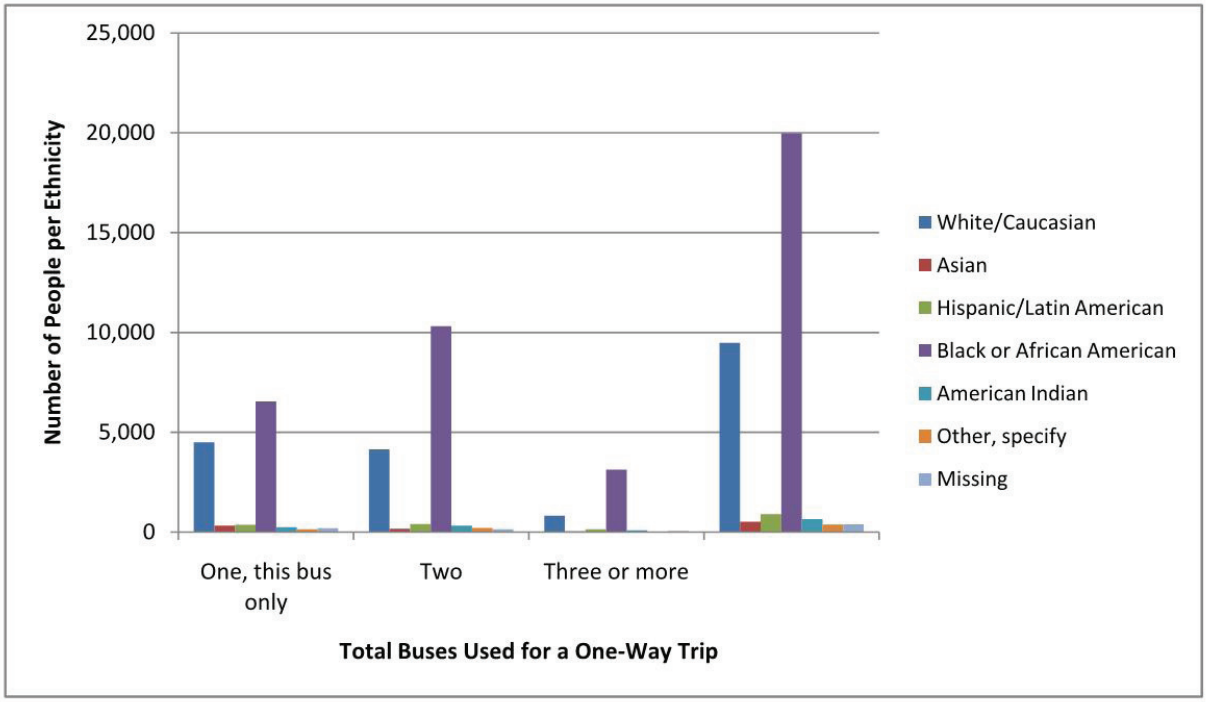
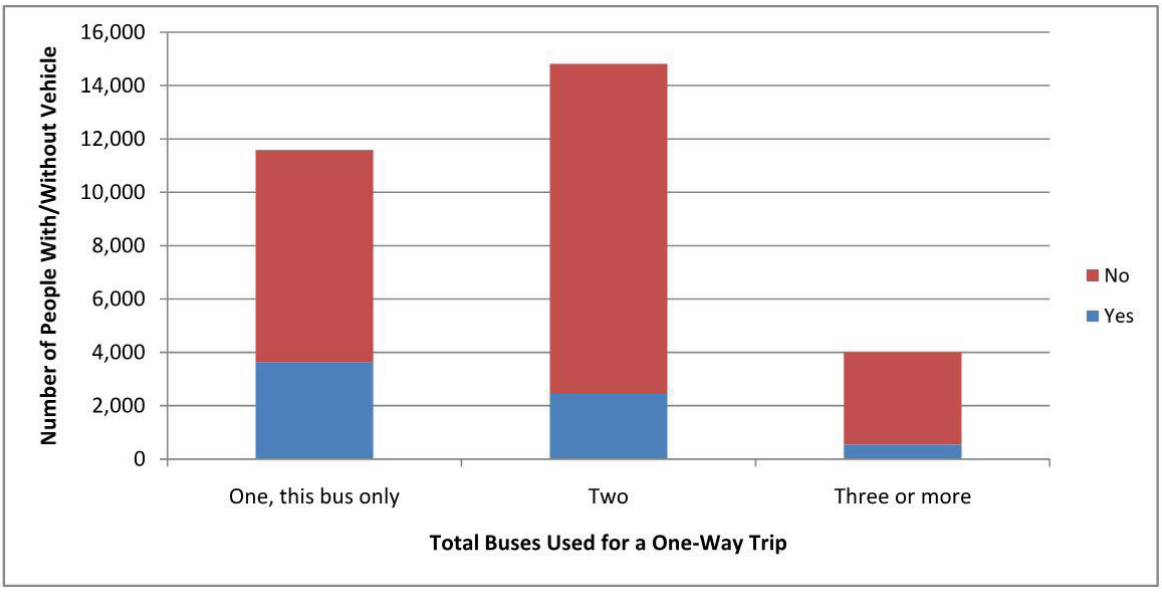
Black/African Americans compose the largest demographic of IndyGo ridership. Sixty-six percent of riders who use two buses to make a trip are Black/African American. Seventy-three percent of riders who make three or more transfers on this trip are Black/African American. White/Caucasian riders are the second largest demographic group of riders. Twenty-six percent of riders that use two buses are in this demographic group, while 19 percent use three or more buses.

**Figure 9-27: Ethnicity and Total Buses Used for One-Way Trip**




This chart illustrates that IndyGo can be quite competitive in attracting the choice rider when it can offer a one-seat ride. About one-third of riders (30 percent) who can make a trip without transferring had a vehicle available for this trip. By comparison, only about 15 percent of those who had to transfer once had a vehicle available; for those transferring twice or more, only about 10 percent had a vehicle available.

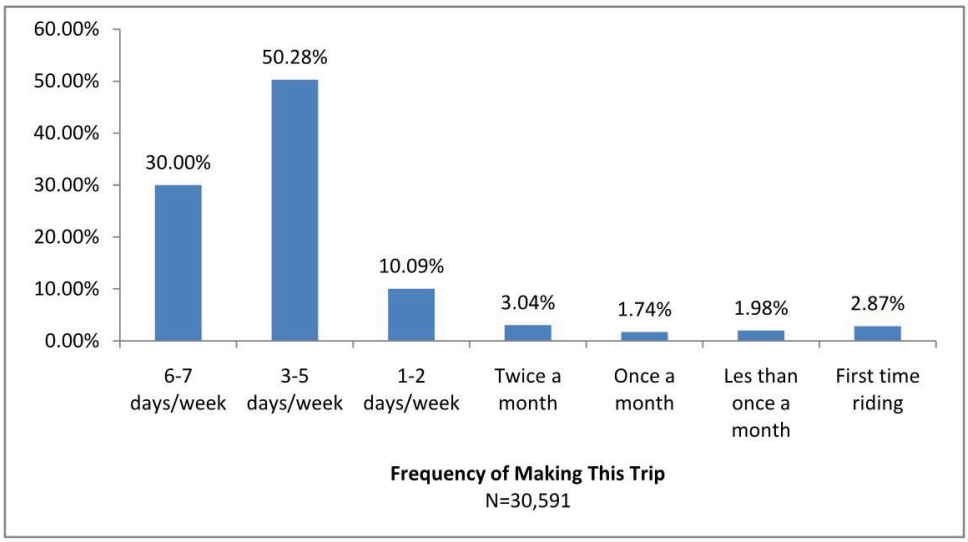
**Figure 9-28: Vehicle Availability and Total Buses Used for One-Way Trip**



### h. Frequency of Making This Trip

Half of the surveyed riders make their trip three to five days a week. Most of these riders probably use IndyGo service to commute to and from work and school. Thirty percent of the riders make the trip six to seven days a week. Together, these two groups comprise 80 percent of IndyGo's riders.

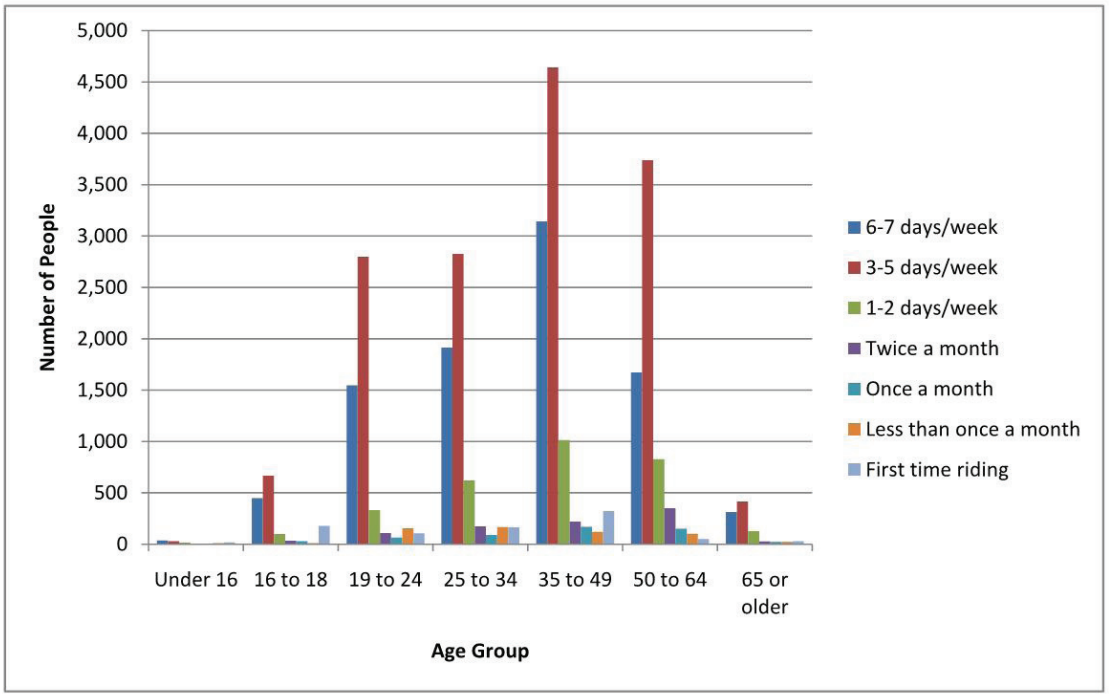
**Figure 9-29: Frequency of Making This Trip**




Almost three percent responded that this was their first time making this particular trip. This is significant. It shows that among the survey sample, almost 900 riders reported that they were surveyed making a trip which they never had made before on IndyGo.

Thirty-one percent of riders between the ages of 35-49 make their trips between 3-5 days per week. Twenty-five percent of riders between the ages of 50 – 64 make their trips 3-5 days per week. Nineteen percent of riders between the ages of 25-34 make their trips 3-5 days per week. Finally, only 18 percent of riders between the ages of 19-24 make their trips 3-5 days per week. Most frequent riders are among the 35 to 49 age group.

**Figure 9-30: Age and Frequency of Making This Trip**



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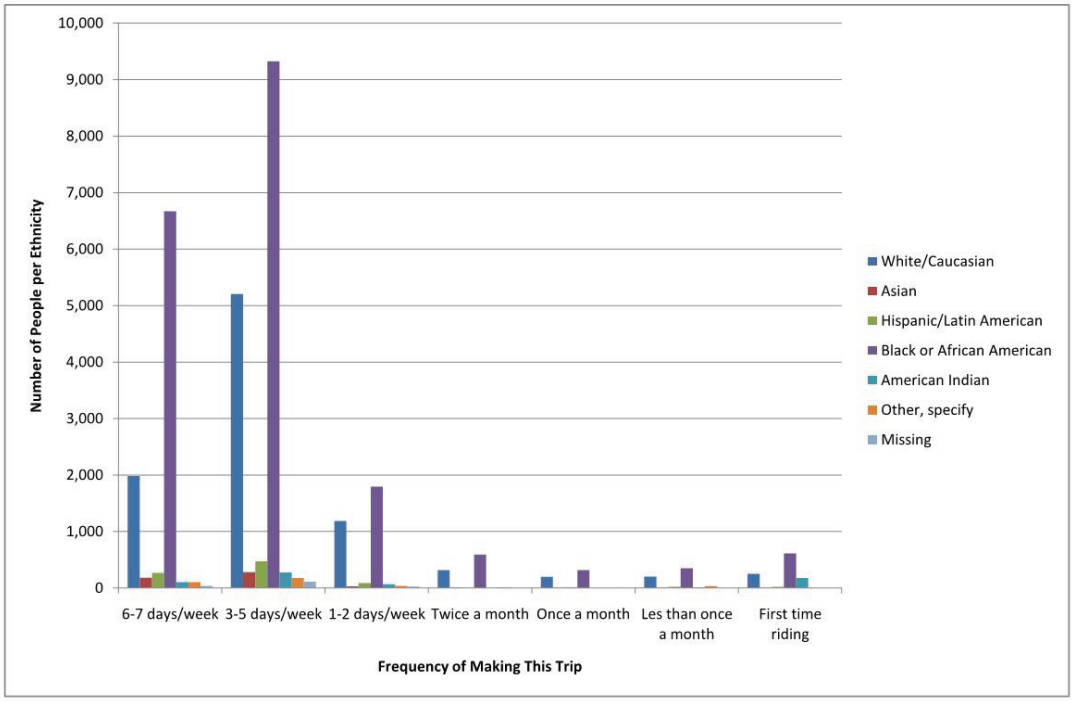
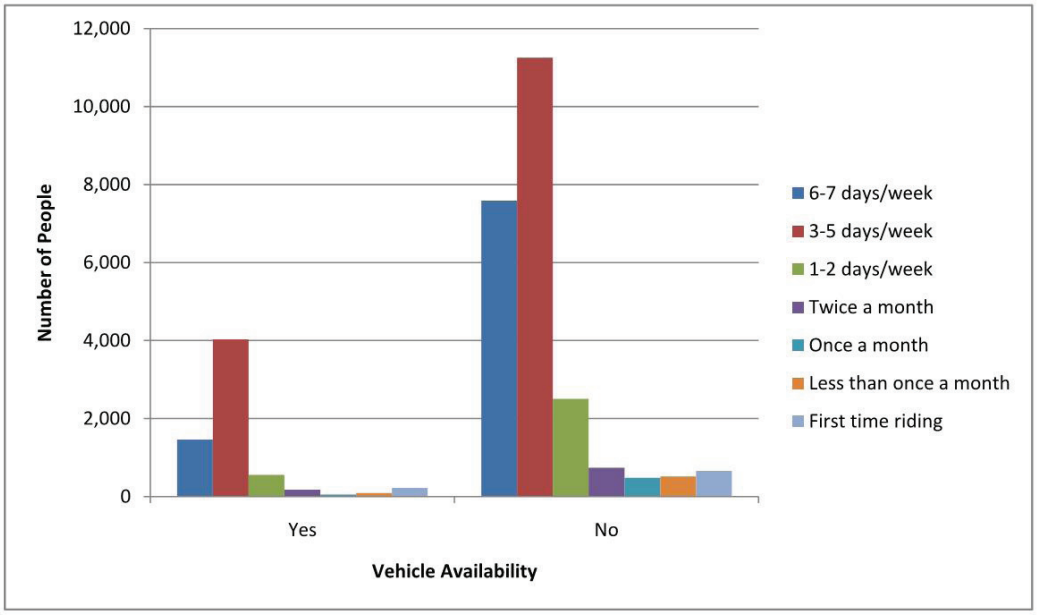
Black/African Americans compose the largest demographic of IndyGo ridership. Of those riders, 81 percent make their trips either 3-5 days per week or 6-7 days per week. Forty-seven percent make their trips 3-5 days per week. Thirty-four percent make their trips 6-7 days per week. White/Caucasians are the second largest demographic group with 77 percent of riders making this one-way trip 3-5 days per week or 6-7 days per week.

**Figure 9-31: Ethnicity and Frequency of Making This Trip**




The majority of IndyGo riders make their trips between 3-5 days per week. Of those riders, 74 percent do not have access to a vehicle. Twenty-six percent do have access to a vehicle. The second largest group of riders makes trips 6-7 days per week. Of those riders, 84 percent do not have access to a vehicle. Only 16 percent have access to a vehicle and still make their trips 6-7 days per week.

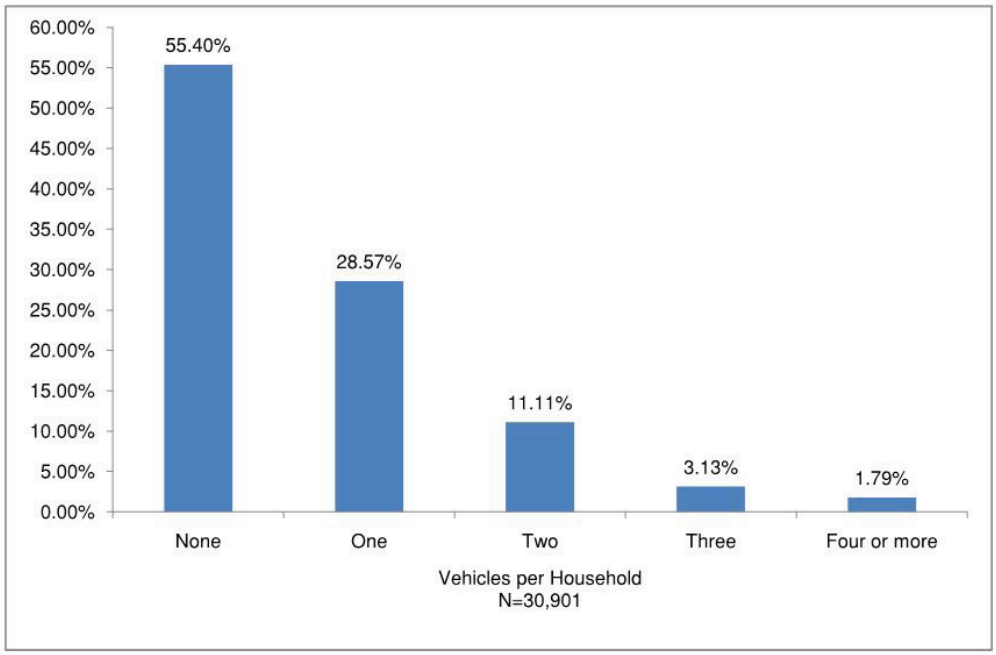
**Figure 9-32: Vehicle Availability and Frequency of Making This Trip**



### i. Household Vehicle Availability

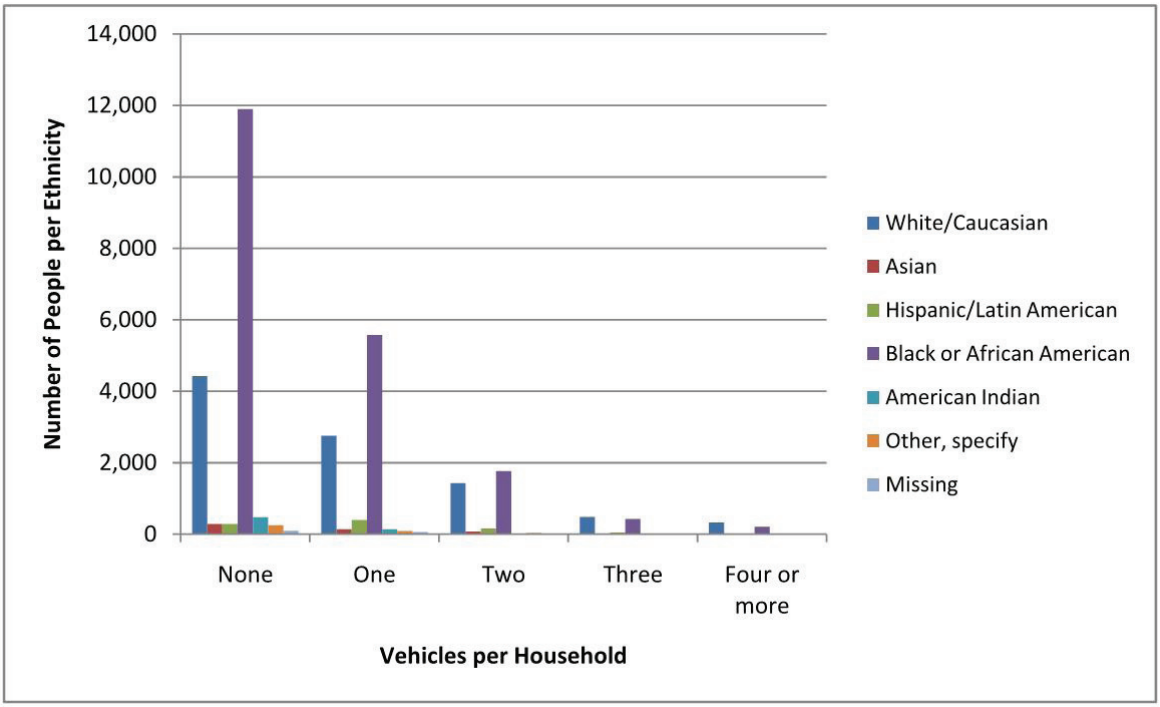
Over half of the IndyGo riders (55 percent) reported that their household does not have an operating vehicle. Only seventeen percent of riders had two or more vehicles in their household. There is a strong relationship between lack of household vehicle availability and use of IndyGo service.

**Figure 9-33: Vehicle per Household**




Sixty percent of IndyGo riders without a vehicle are Black/African American. Only 28 percent of these riders have a vehicle in their household. Black/African Americans are more likely to be transit dependent than other IndyGo riders.

**Figure 9-34: Ethnicity and Vehicles per Household**



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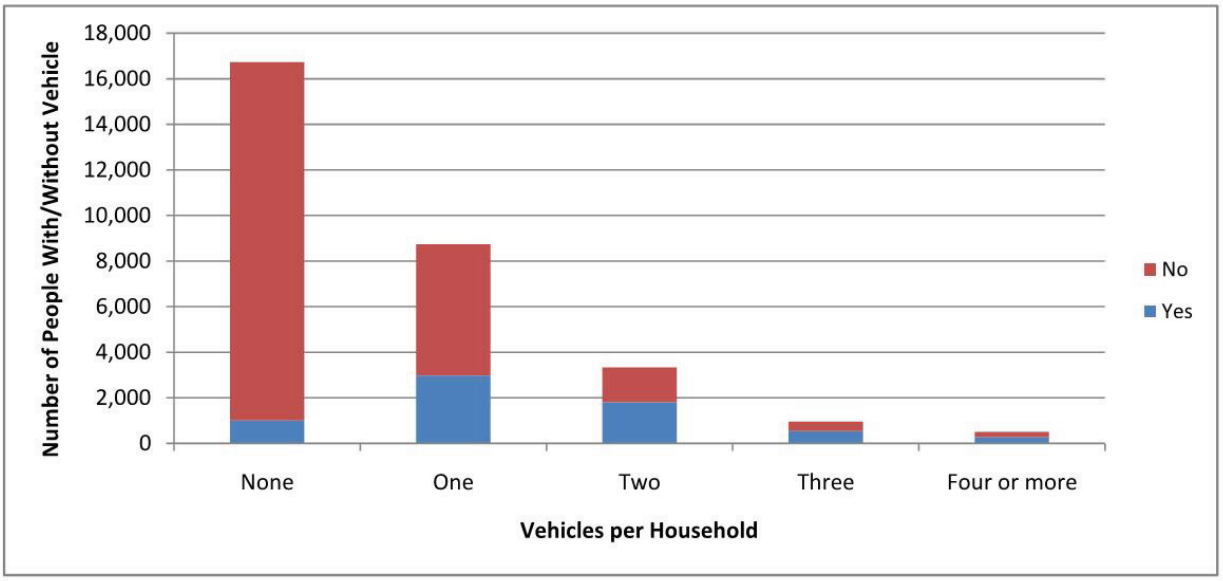
Ninety-four percent of riders without a household vehicle also reported that a vehicle is not available to them. This indicates that IndyGo riders without a household vehicle do not have others from whom they may borrow a vehicle.

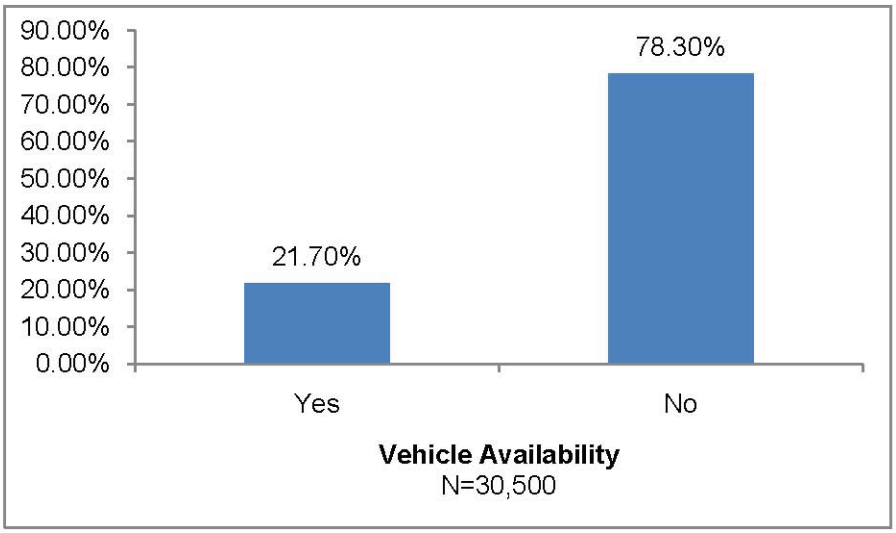
**Figure 9-35: Vehicle Availability and Vehicles per Household**




## j. Vehicle Availability

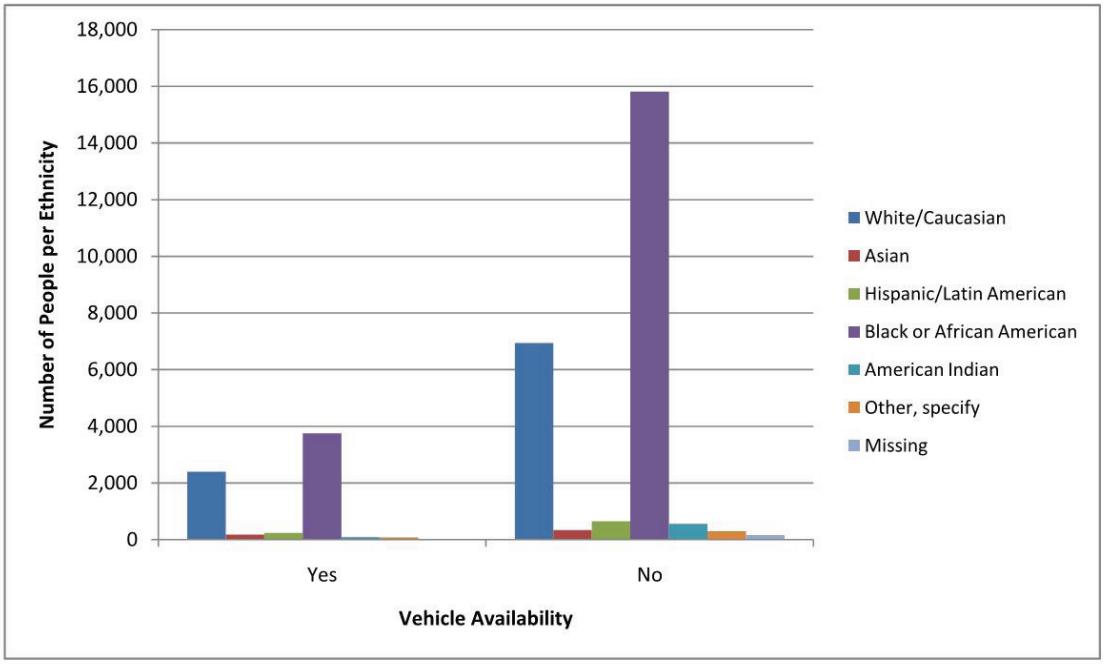
Since over half of IndyGo riders do not have a vehicle in their household, it is not surprising that a large number of riders (78 percent) did not have a vehicle available to them. Only 21 percent report that a vehicle is available to them.

**Figure 9-36: Vehicle Availability**



Black/African Americans compose the largest ethnic demographic of IndyGo riders. Eighty-one percent of them do not have access to a vehicle. The second largest demographic of riders is composed of White/Caucasians. Seventy-four percent of them do not have access to a vehicle. Among those riders with a vehicle available to them, Black/African Americans are the most likely to use IndyGo services. They should be characterized as "choice riders".

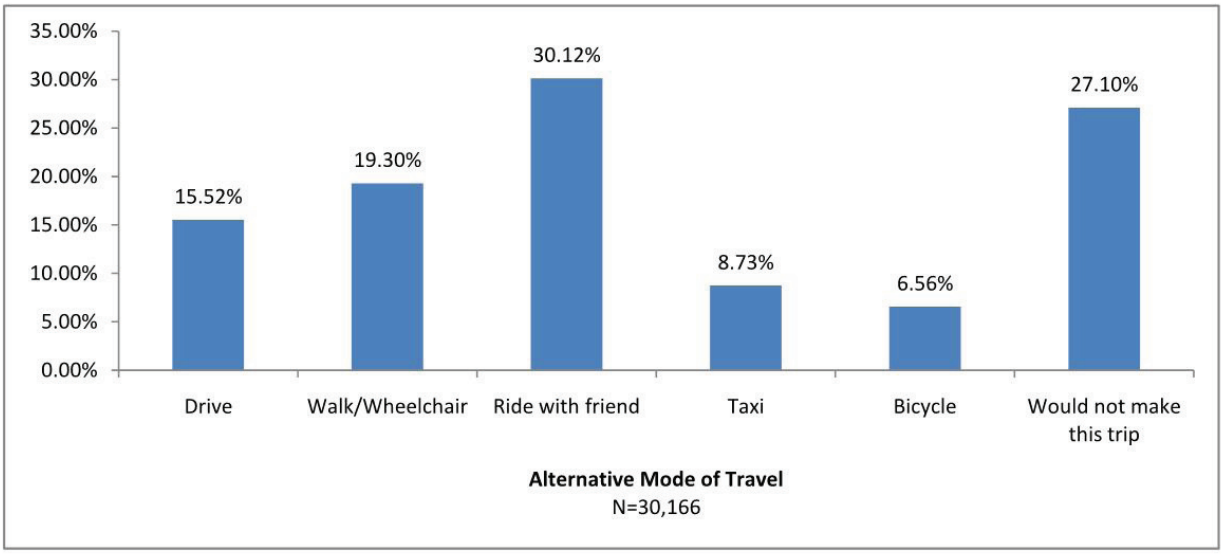
**Figure 9-37: Vehicle Availability and Ethnicity**




### k. Alternative Mode of Travel

If IndyGo service was not available, 30 percent of riders would ride to their destination with a friend. Nearly the same percentage of people (27 percent) would not make the trip. Sixty percent of riders surveyed make work trips. Note that more than one answer is accepted for this question. Percentages total more than 100 percent.

**Figure 9-38: Alternative Mode of Travel**



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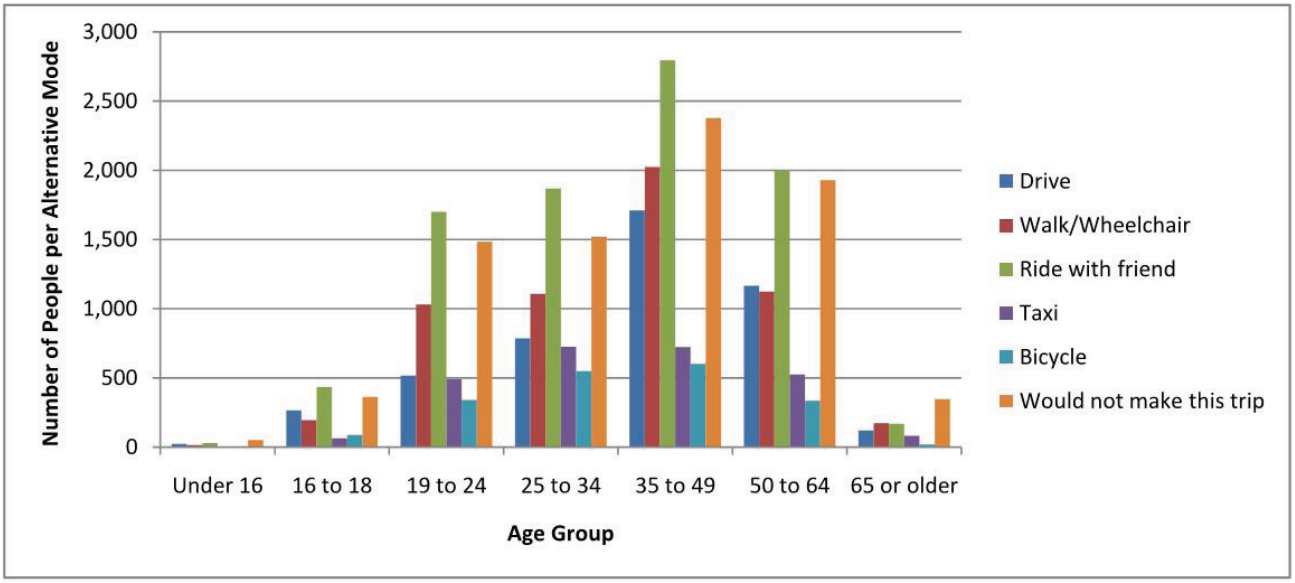
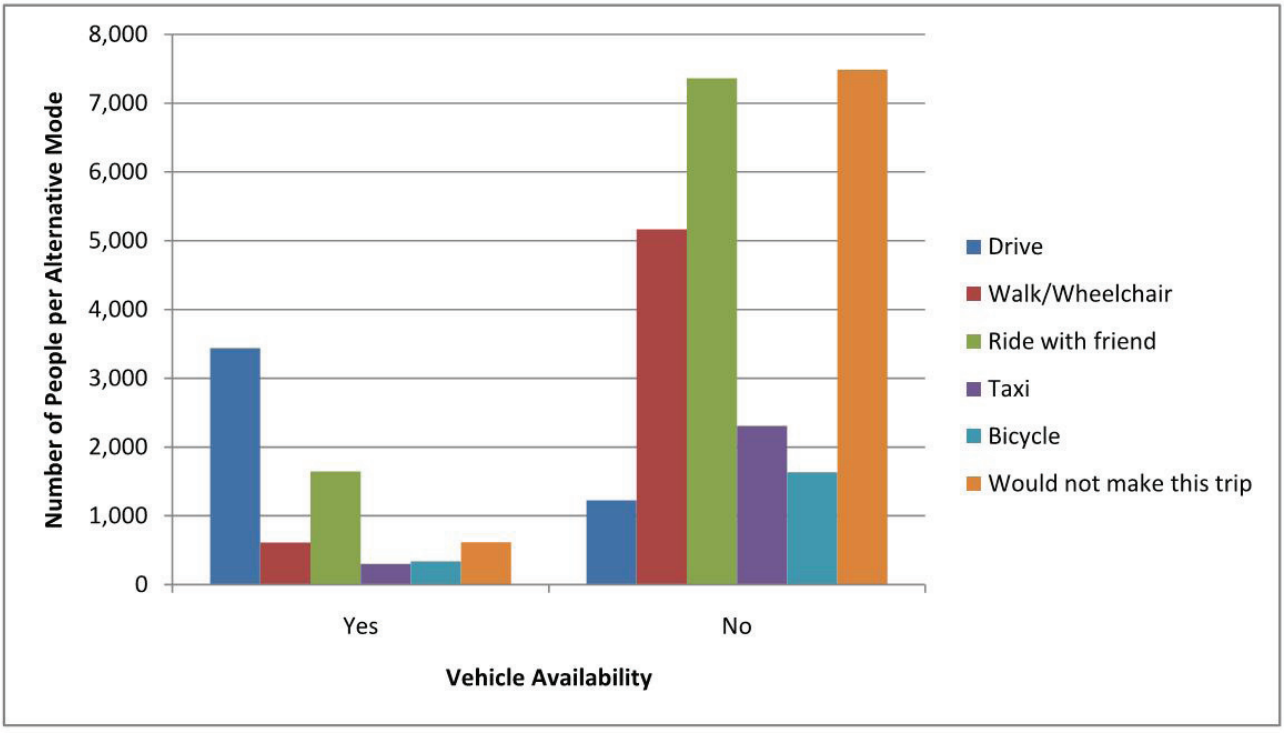
In all age groups, except 65 or older, riding with a friend is the top alternative mode of travel. Not making the trip was second highest. The 65 or older age group reported that they would not make the trip if IndyGo service is not available. Taxi and bike alternatives were the least attractive for all age groups.

**Figure 9-39: Age and Alternative Mode of Travel**




For riders without access to a vehicle, 30 percent of them indicate they simply would not make the trip. Twenty-nine percent would ride with a friend if bus service isn't available. Twenty-one percent would walk to their final destination. Biking and driving were the least popular responses. Only six percent would bike if bus service was not available.

**Figure 9-40: Vehicle Availability and Alternative Mode of Travel**

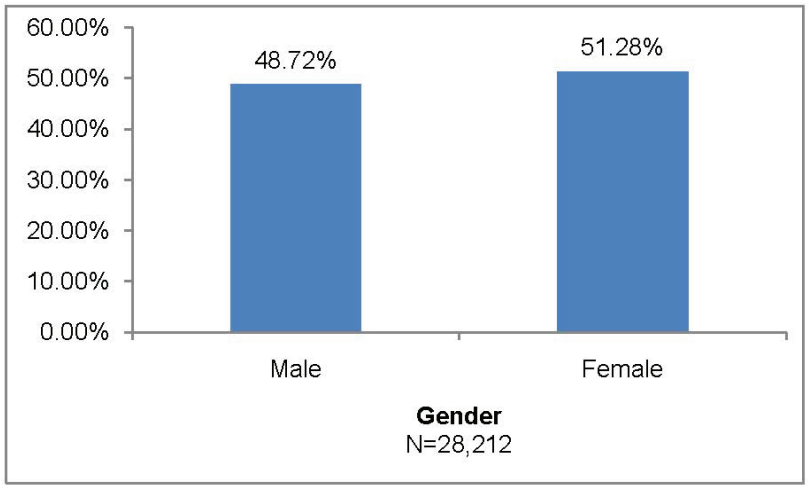


## 9.4 DEMOGRAPHICS

### a. Gender

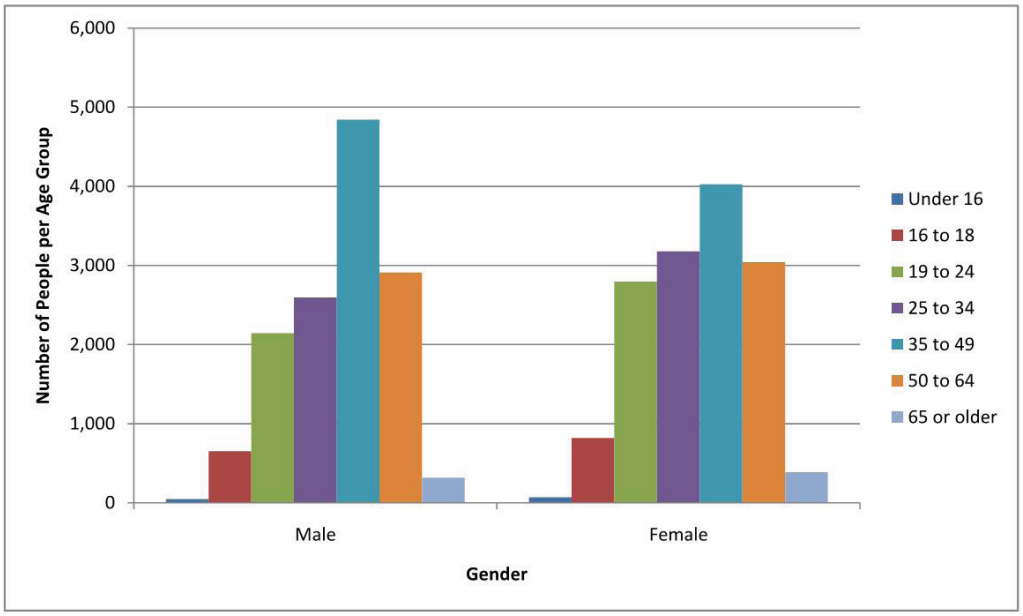
While male and female ridership is almost equal; slightly more women ride the buses than men. This was also the case in the 2001 IndyGo survey.

**Figure 9-41: Gender**




Female riders tended to be younger than male riders, on average. Approximately 48 percent of female riders were under the age of 34, compared to only 40 percent of male riders. Although the 35 to 49 year old age group was the largest for both genders, it accounted for 36 percent of male riders as compared with 28 percent of female riders.

**Figure 9-42: Age and Gender**



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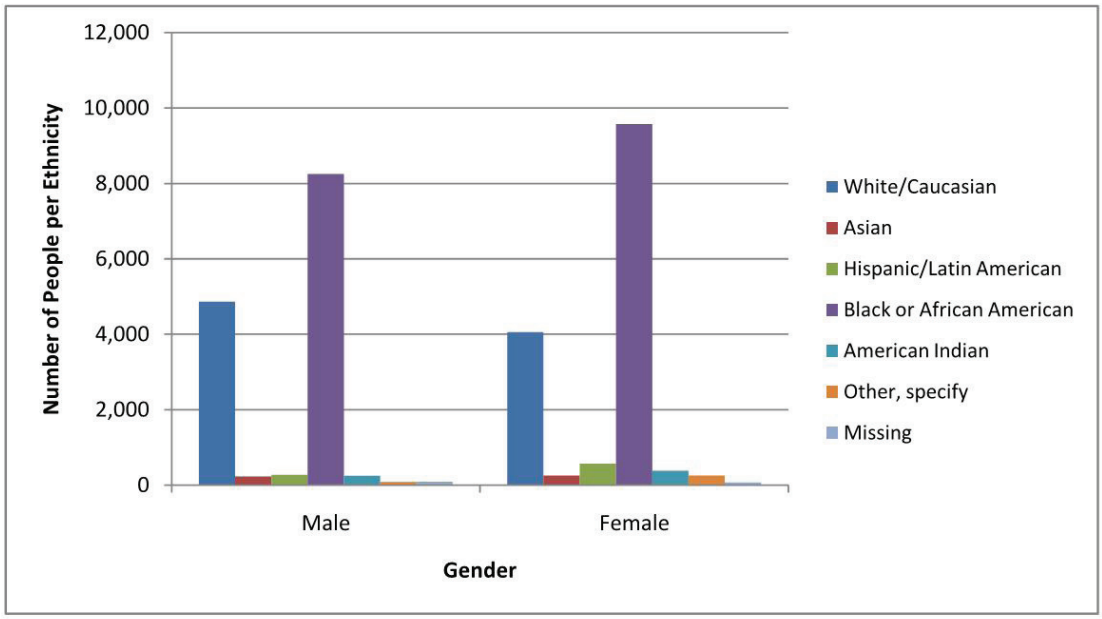
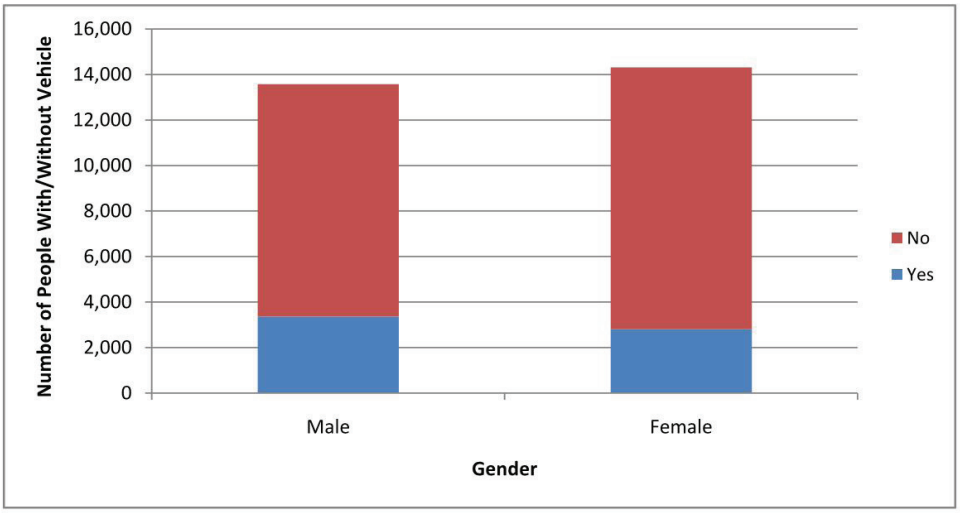
The majority of both male and female riders identified themselves as Black/African American, followed by White/Caucasian. However, the distribution of ethnic groups did differ between the genders. Male riders were more likely to be White/Caucasian (35 percent versus 27 percent of women) and less likely to be Black/African American (59 percent male versus 63 percent female). Women riders represented 68 percent of Hispanic/Latin American riders and 60 percent of American Indian riders. Men were underrepresented in these categories.

**Figure 9-43: Ethnicity and Gender**



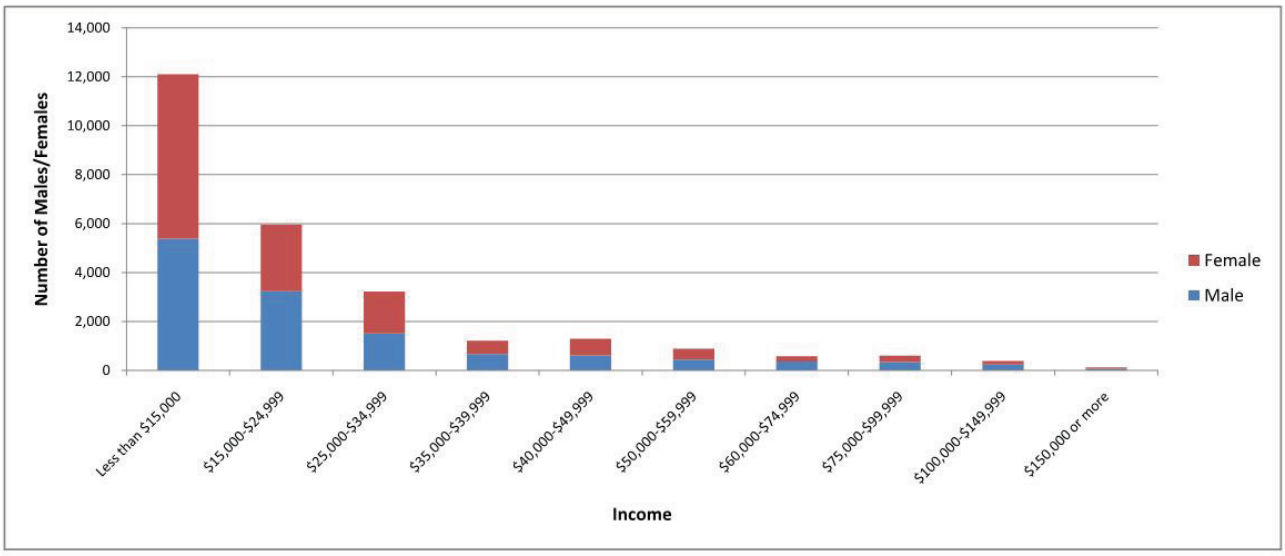

Slightly more men (24 percent) than women (20 percent) had a vehicle available to them. However, the majority of both genders did not.

**Figure 9-44: Vehicle Availability and Gender**



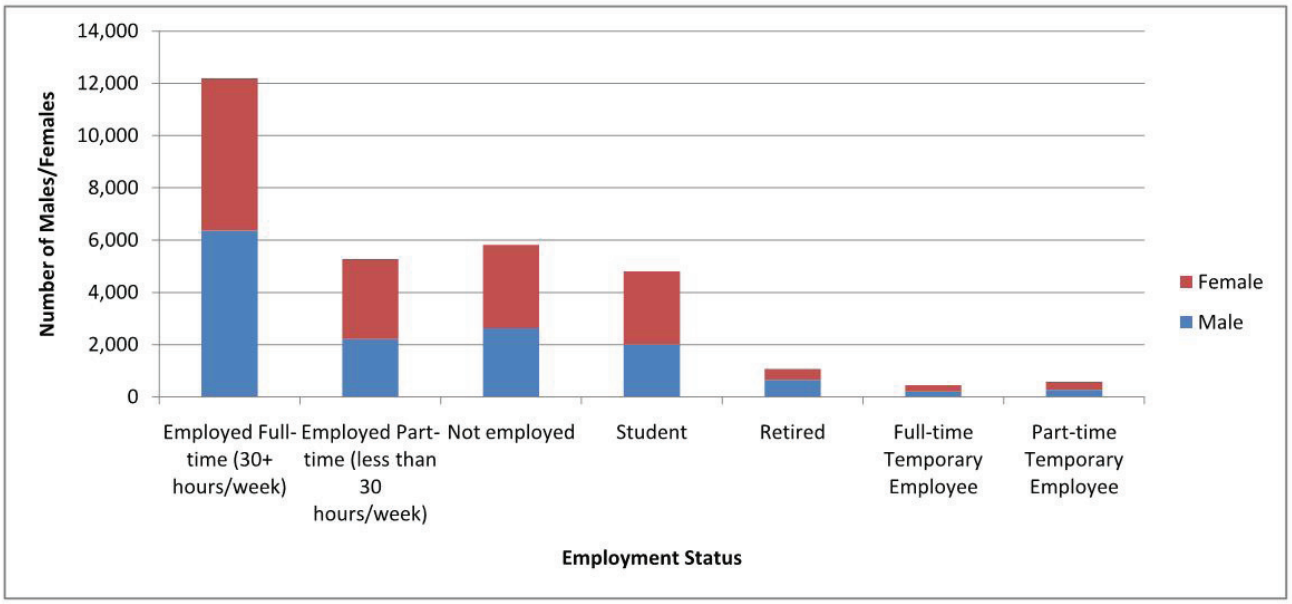
The distribution of income was generally similar for both genders, although women accounted for over 55 percent of riders with less than $15,000 annual household income. Men accounted for nearly 60 percent of riders with more than $60,000 annual household income.

**Figure 9-45: Gender and Income**




Gender had a marginal relationship with employment status. More males (44 percent) reported being employed full-time than female riders (37 percent). Female riders were more likely to be part-time employees (19 percent versus 15 percent). Twenty percent of females also reported not being employed verses 18 percent of males. Finally, more females reported being students than males (18 percent versus 14 percent). There is no significant difference between genders among temporary employees.

**Figure 9-46: Gender and Employment Status**



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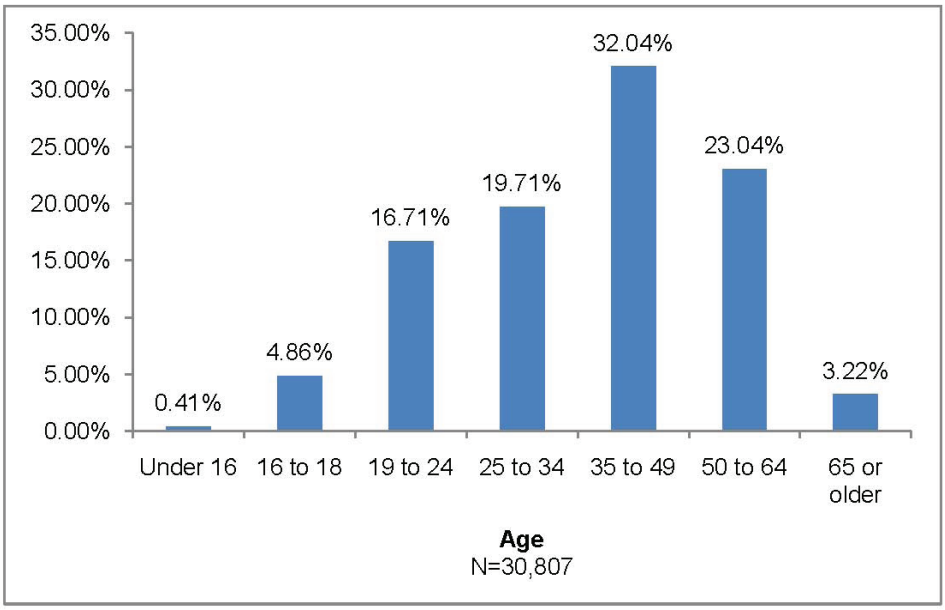
**b. Age**

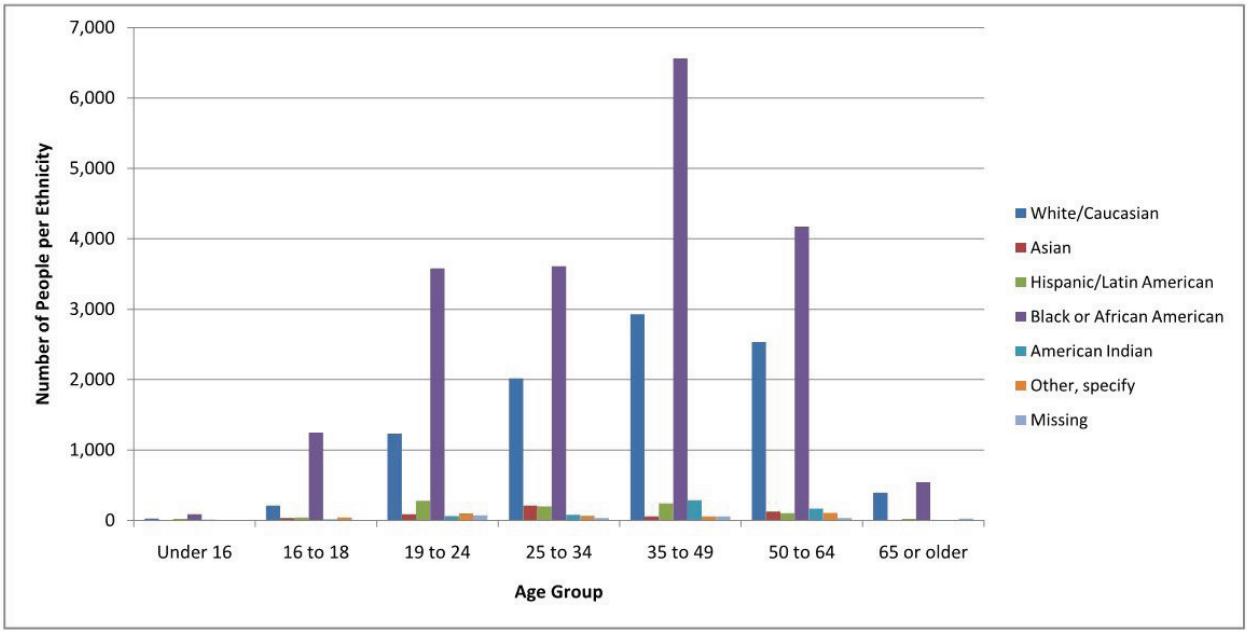
Over 91 percent of IndyGo riders are adults between the ages of 18 and 65. Youths (18 and under) account for just over 5 percent of ridership. Seniors (65 and older) account for just over three percent of riders. This closely corresponds to the five percent of riders who report being retired. Seventeen percent of riders report being student. However, a significant number of students are over the age 18.

**Figure 9-47: Age**



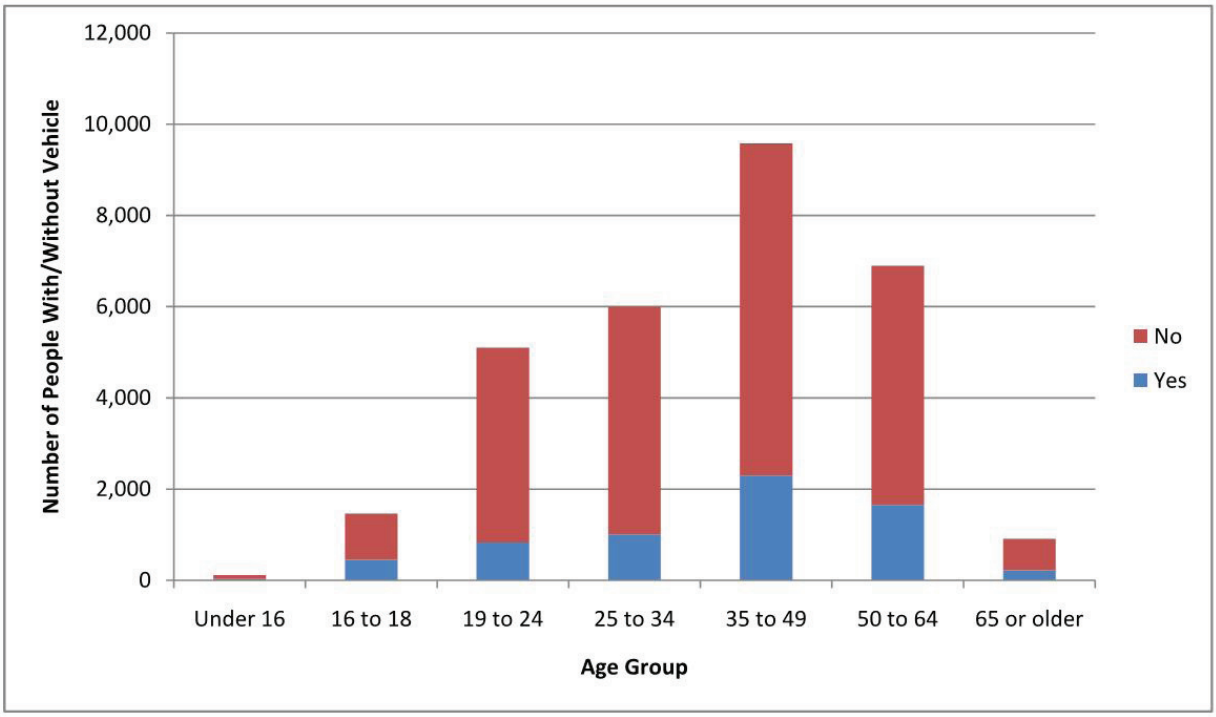

The distribution of ages were generally similar for all ethnic groups, with some small variations. White/Caucasian riders were generally older than other ethnic groups while Hispanic/Latin American riders were generally younger. Overall, 23 percent of riders were under age 25. Only 37 percent of White/Caucasians were under 35. Conversely, nearly 60 percent of Hispanic/Latin American riders were under the age of 35.

**Figure 9-48: Age and Ethnicity**



The majority of IndyGo riders are transit dependent. Seventy-eight percent do not have a vehicle available to them. Vehicle availability is greatest among riders aged 35-49 (35 percent).

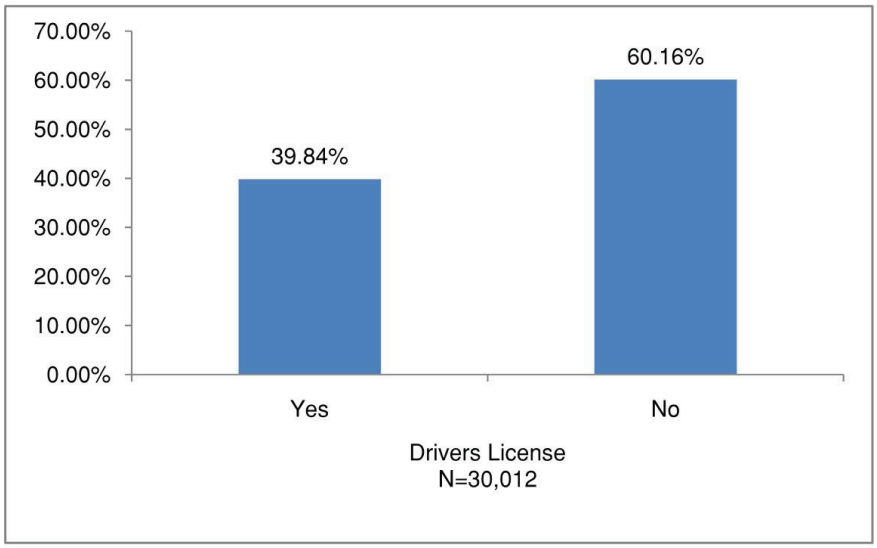
**Figure 9-49: Age and Vehicle Availability**




### c. Drivers License

Over half of the IndyGo riders do not have a license. This correlates with the high number of riders that do not have a vehicle available in their household. Less than one percent (0.5 percent) of riders is under the age of 16; nearly all IndyGo riders are old enough to obtain a driver's license.

**Figure 9-50: Drivers License**



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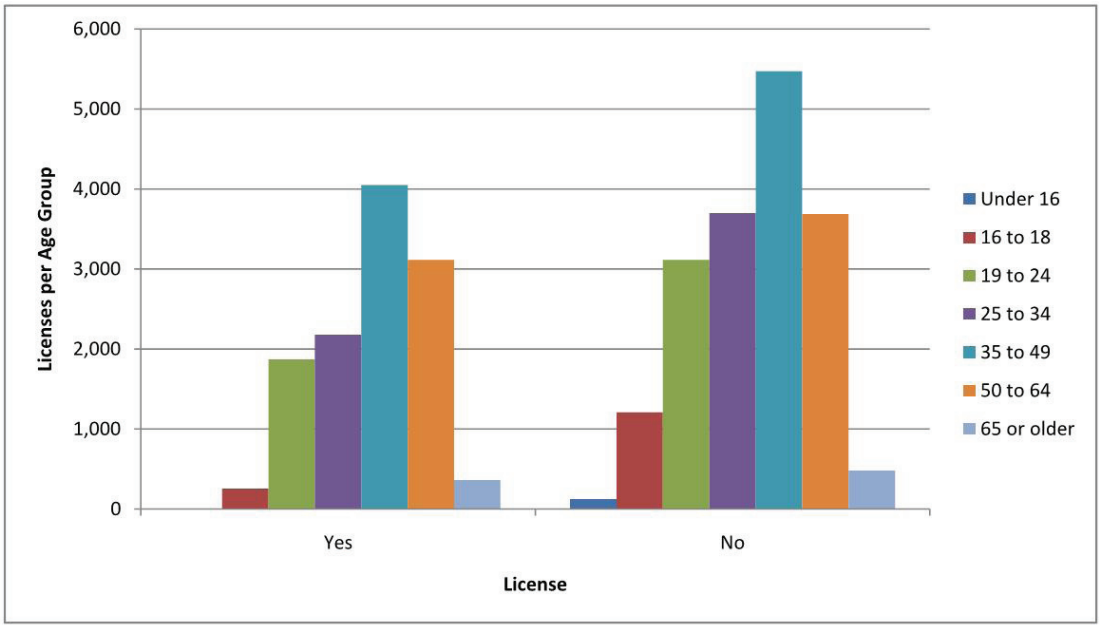
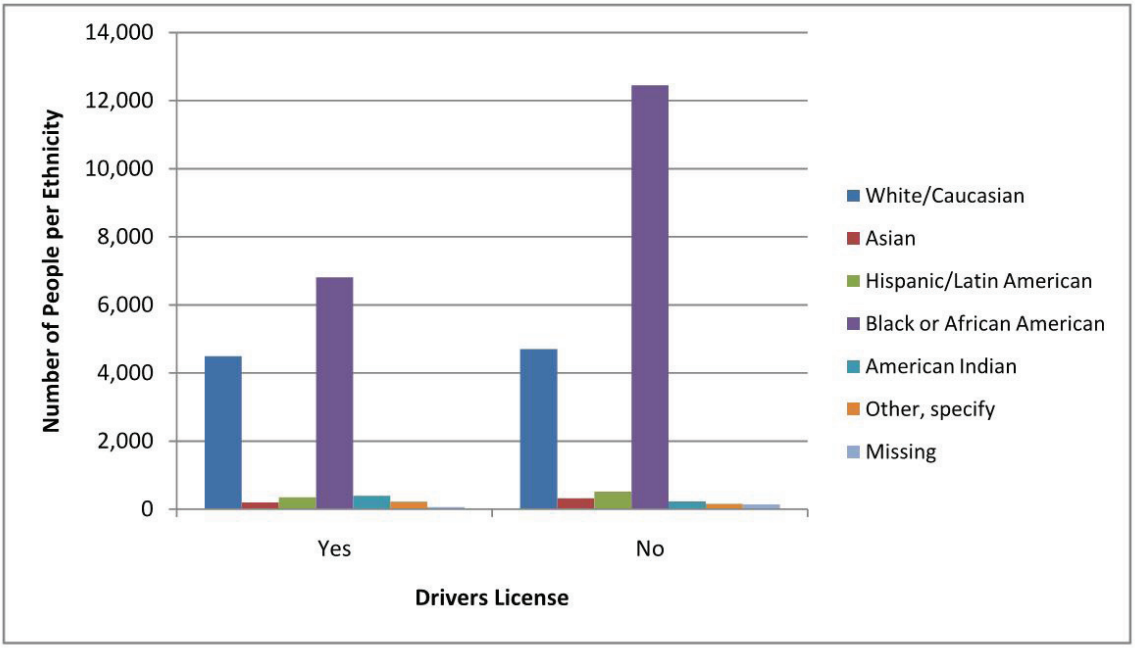
Nearly 83 percent of the 16 to 18 age group does not have a driver's license. This is higher than any other group which is permitted to obtain a license. All other age groups range from 54 - 63 percent without a license. IndyGo riders between the ages of 50 to 64 have the highest percentage of individuals with a license (46 percent).

**Figure 9-51: Drivers License and Age**



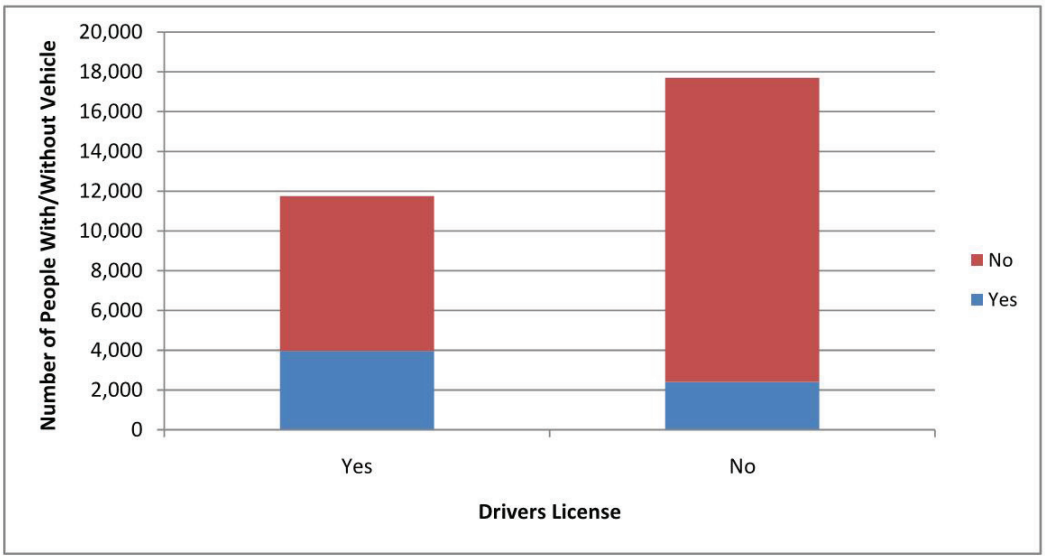

Almost two-thirds of Black/ African American riders surveyed did not have a driver's license. The Asian and Hispanic/Latin American ethnicity groups included 62 and 60 percent respectively without a license. The White/ Caucasian category is only slightly over 50 percent for those without a license. More riders in the American Indian and Other categories have a license than those that do not.

**Figure 9-52: Ethnicity and Drivers License**



Only 34 percent of the riders surveyed who have a driver's license also have a vehicle available to them. Surprisingly, 14 percent of the riders surveyed who do not have a license do have a vehicle available to them. Overall, 78 percent of the riders surveyed do not have a vehicle available.

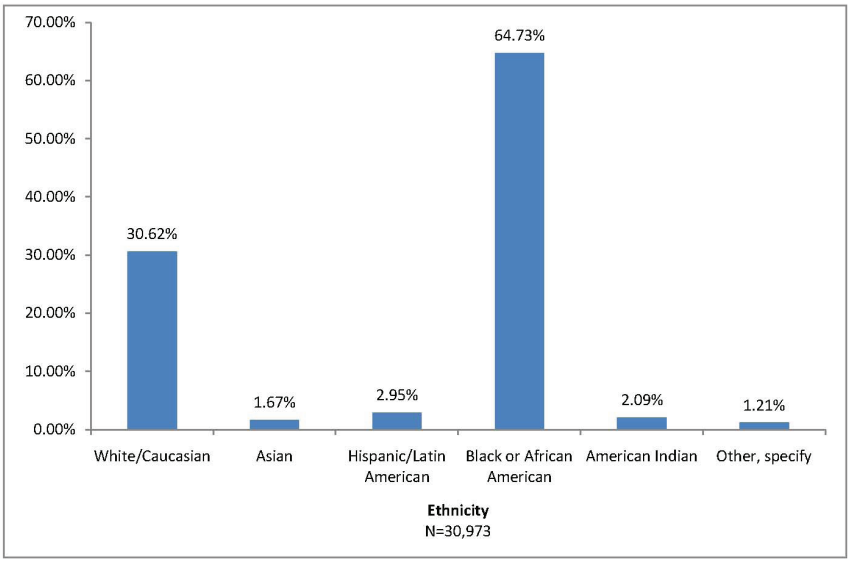
**Figure 9-53: Vehicle Availability and Drivers License**




### d. Ethnicity

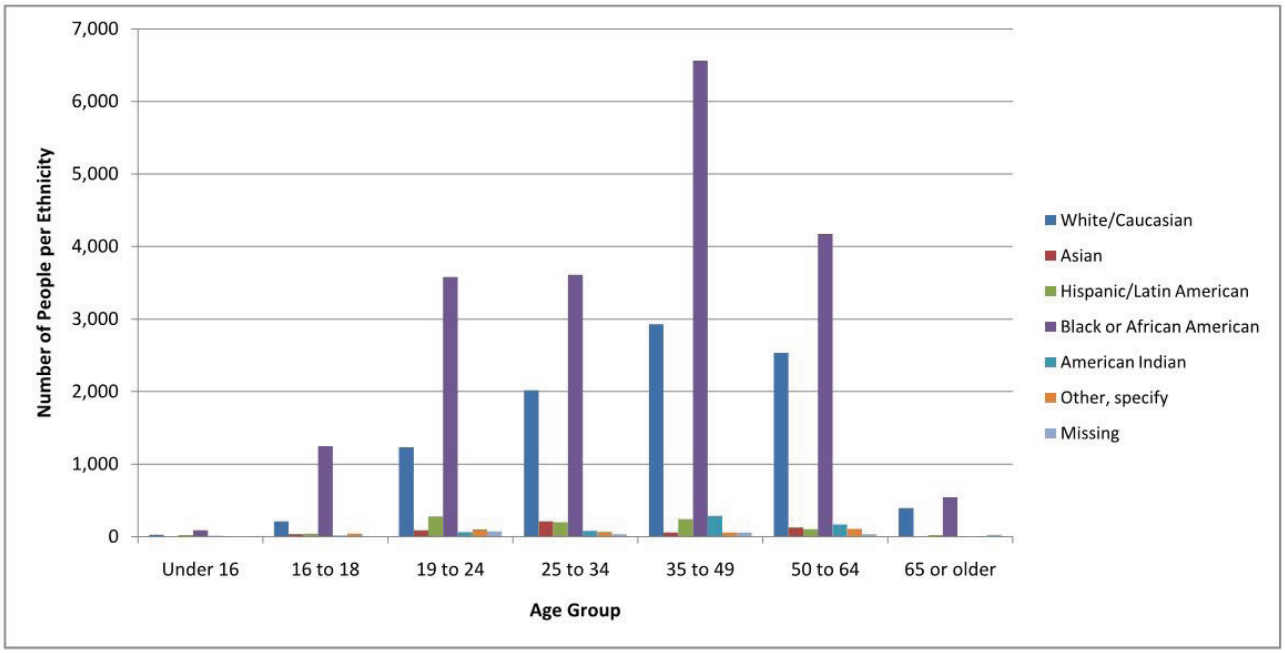
Over half of IndyGo passengers are Black/African American. Approximately one third of the overall passengers are white. A Spanish survey was distributed to those who only speak Spanish. However, it is possible that the Hispanic/Latin American population has more riders than portrayed. The return rate for Spanish-speaking surveys was under-represented in comparison with the number of surveys distributed. These totals do not equal 100 percent because riders could pick more than one ethnic group.

**Figure 9-54: Ethnicity**



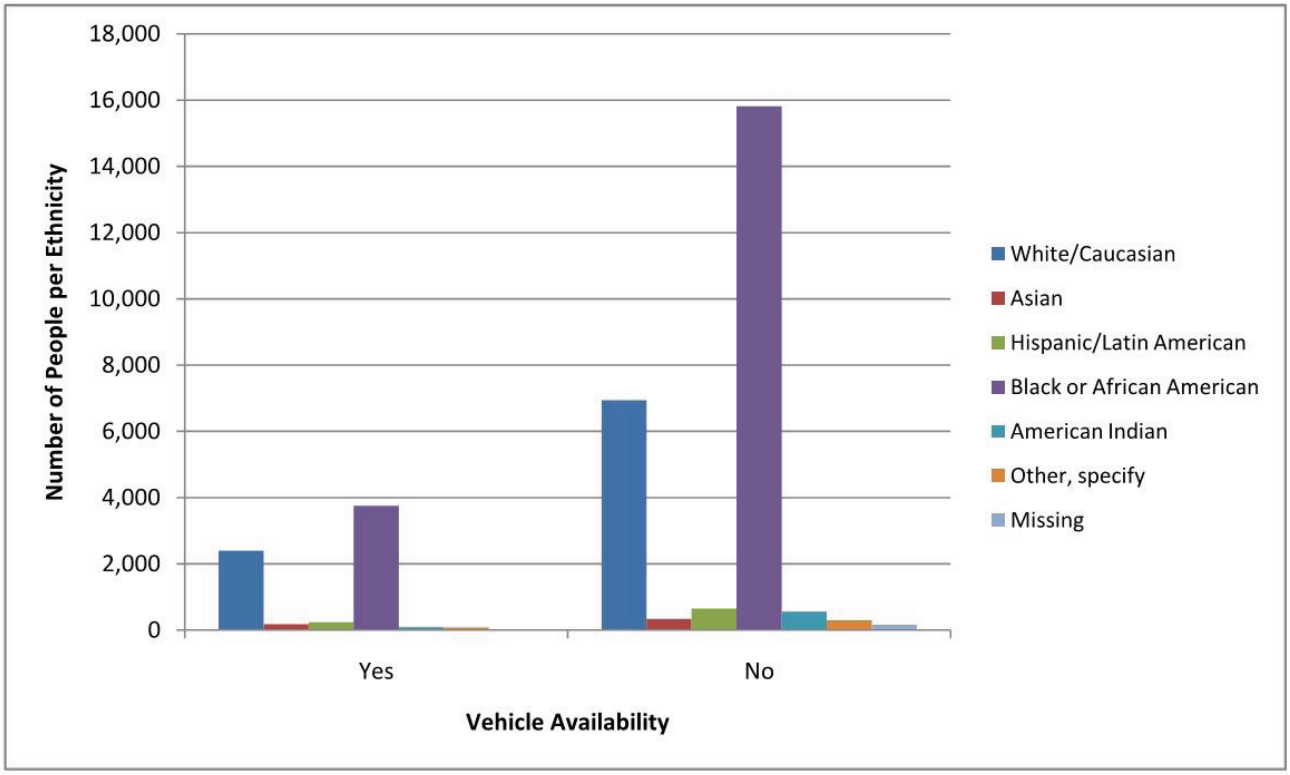
Please see page 54 for discussions regarding the relationship of ethnicity to age.

**Figure 9-55: Age and Ethnicity**




Please see page 54 for discussions regarding the relationship of vehicle availability to ethnicity.

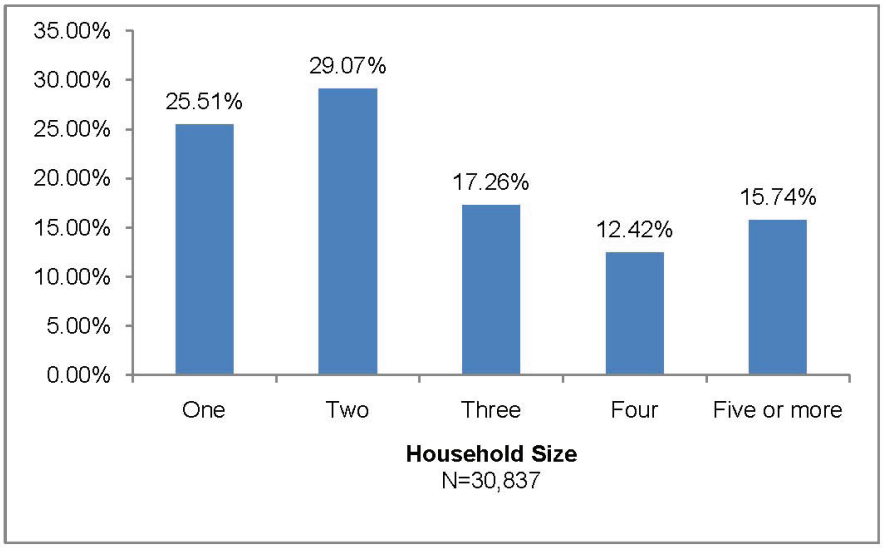
**Figure 9-56: Vehicle Availability and Ethnicity**



### e. Household Size

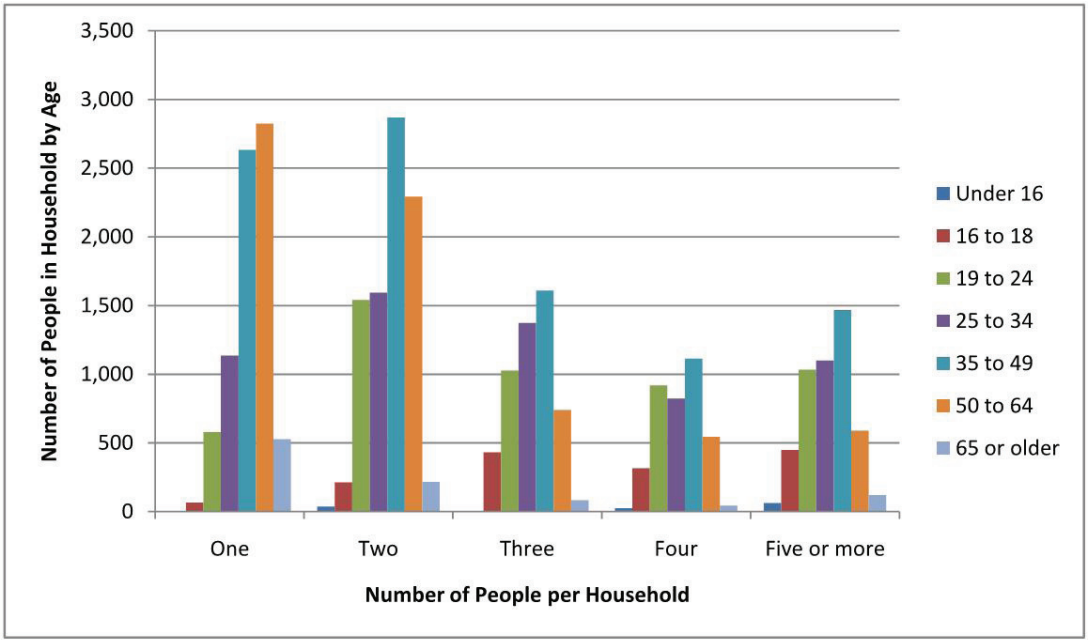
Two-person households are the most common household size among IndyGo riders – representing 29 percent of riders. Four-person households are the smallest at 12 percent. One-fourth of the riders surveyed live in a one-person household.

**Figure 9-57: Household Size**




Comparing age and household size, older ages correlated with smaller household sizes. In the 50 to 64 age group and 65 or older age group, there are more one person households than there are in any other household size category. However, in the under 16 and 16 to 18 age groups, there are more five or more person households than there are in the other household size categories. For the age groups between 19 and 49, the two person household category has the highest percentage of riders.

**Figure 9-58: Household Size and Age**



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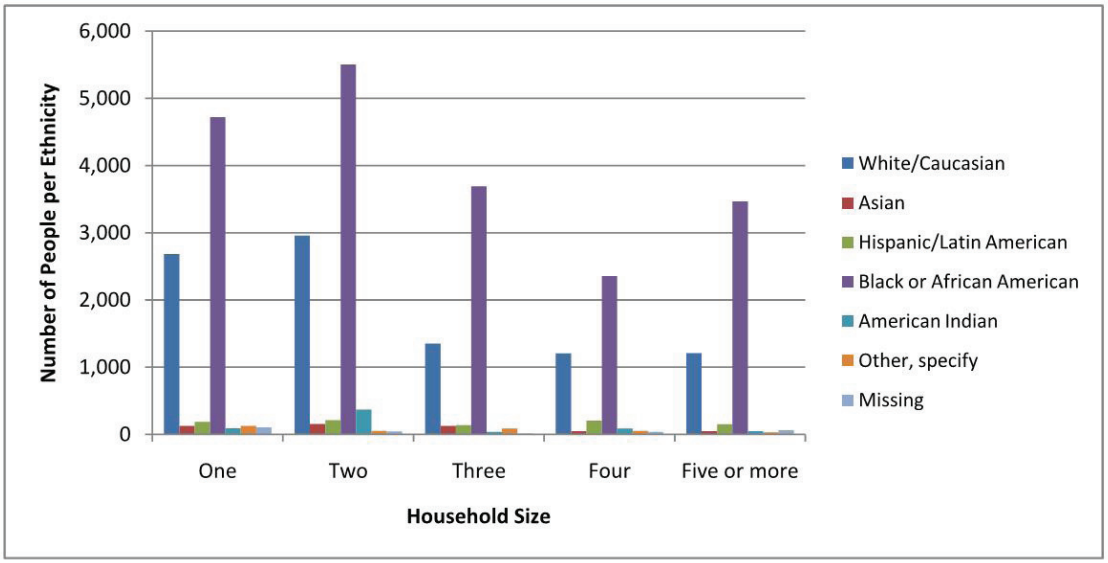
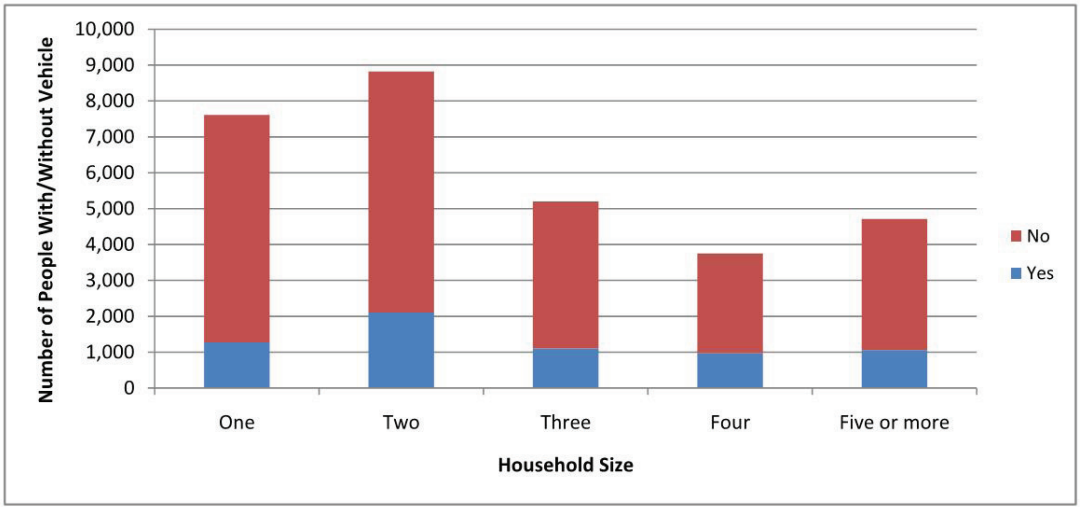
As mentioned previously, among IndyGo riders, there are more two person households than any other household category. More than 50 percent of riders in each ethnicity category are in one or two person households, except for the Hispanic/Latin American category. This ethnic group has 45 percent in one or two person households; the majority of riders live in households with three or more people.

**Figure 9-59: Household Size and Ethnicity**




There is little correlation between household size and vehicle availability. A one person household is the least likely to have a vehicle available. The survey results show that 83 percent of one person rider households do not have a vehicle. All other household sizes are between 74 and 80 percent likely to not have a vehicle available to them.

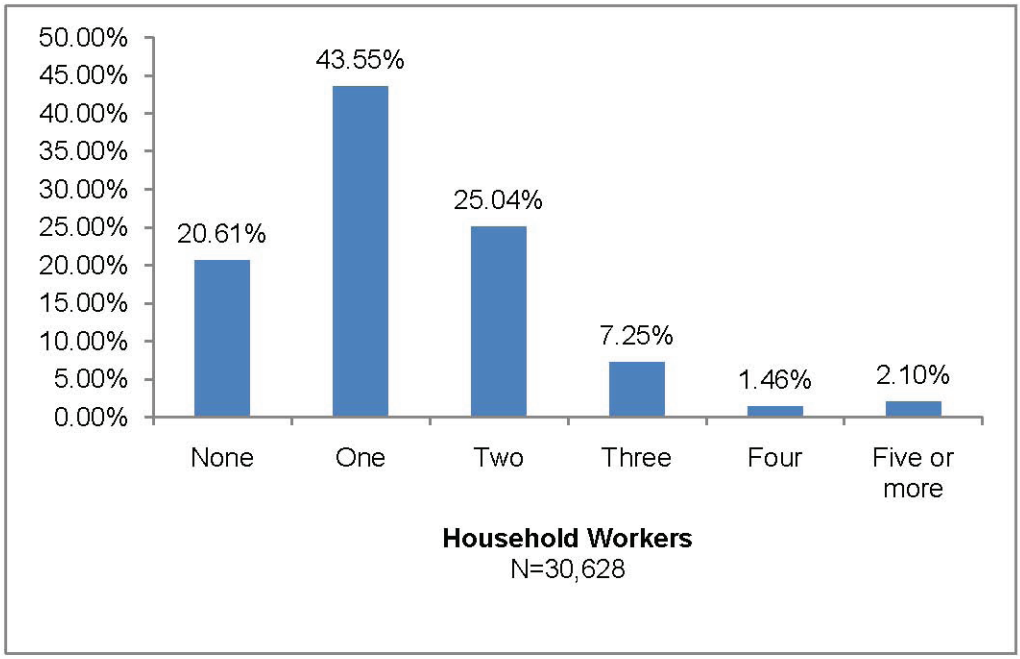
**Figure 9-60: Household Size of IndyGo Riders and Vehicle Availability**



### f. Household Workers

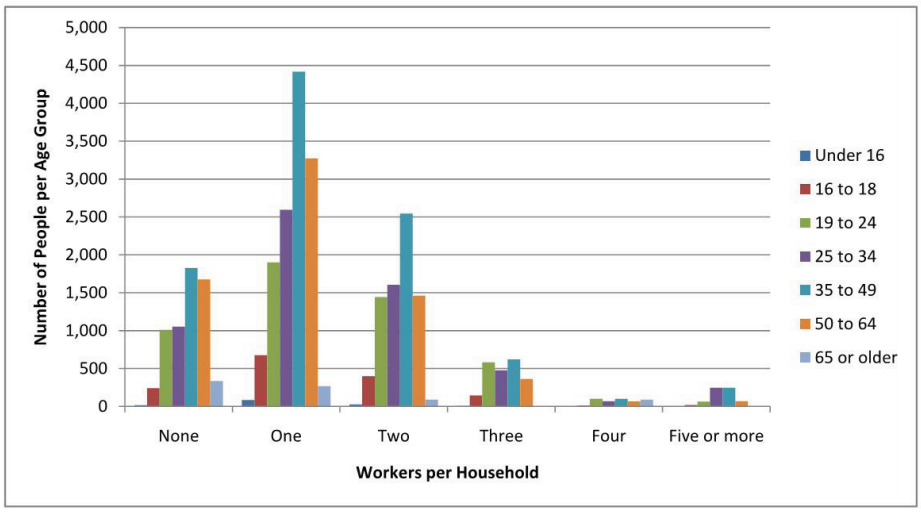
The figure below illustrates the breakdown of household workers among IndyGo riders. Almost half of the IndyGo riders (44 percent) have one person in their household with a job. One-fourth of the riders have two people in their households with jobs. Twenty-one percent have no workers in their household.

**Figure 9-61: Household Workers**



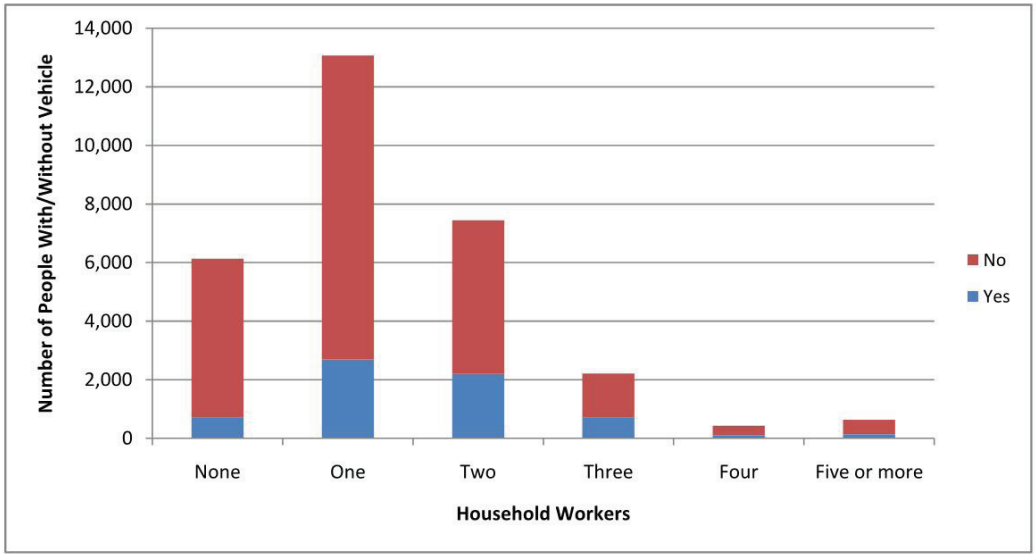

The largest number of riders belong to households with one worker. Of those from one worker households, 33 percent are between the ages of 35 to 49. Likewise, 33 percent of passengers who belong to households with two workers are between the ages of 35 to 49.

**Figure 9-62: Household Workers and Age**



Households that do not have any workers were less likely to have a vehicle available for use. Only 11 percent of households without someone working had access to a vehicle. Seventy nine percent of passengers that belong to a one worker household did not have a vehicle available to them.

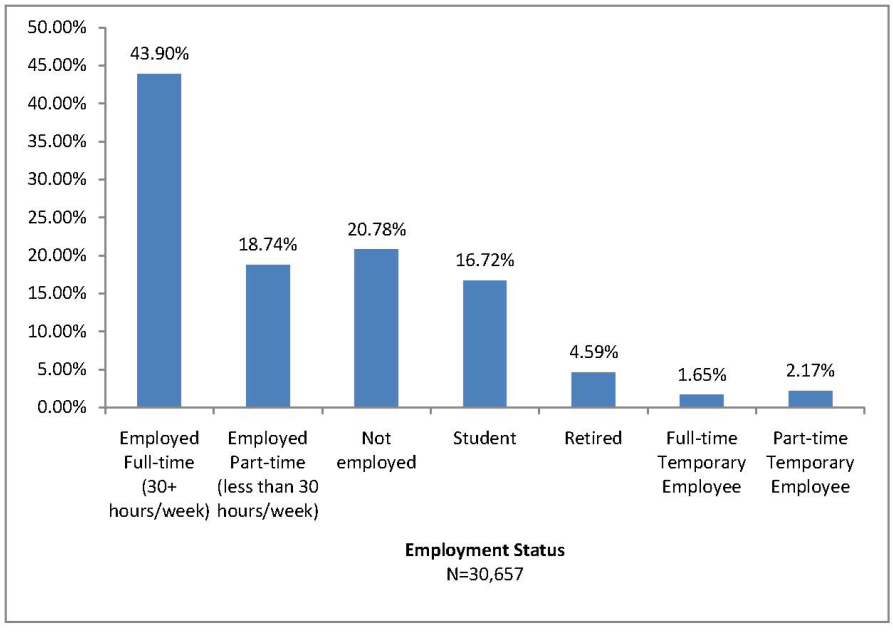
**Figure 9-63: Household Workers and Vehicle Availability**




## g. Employment Status

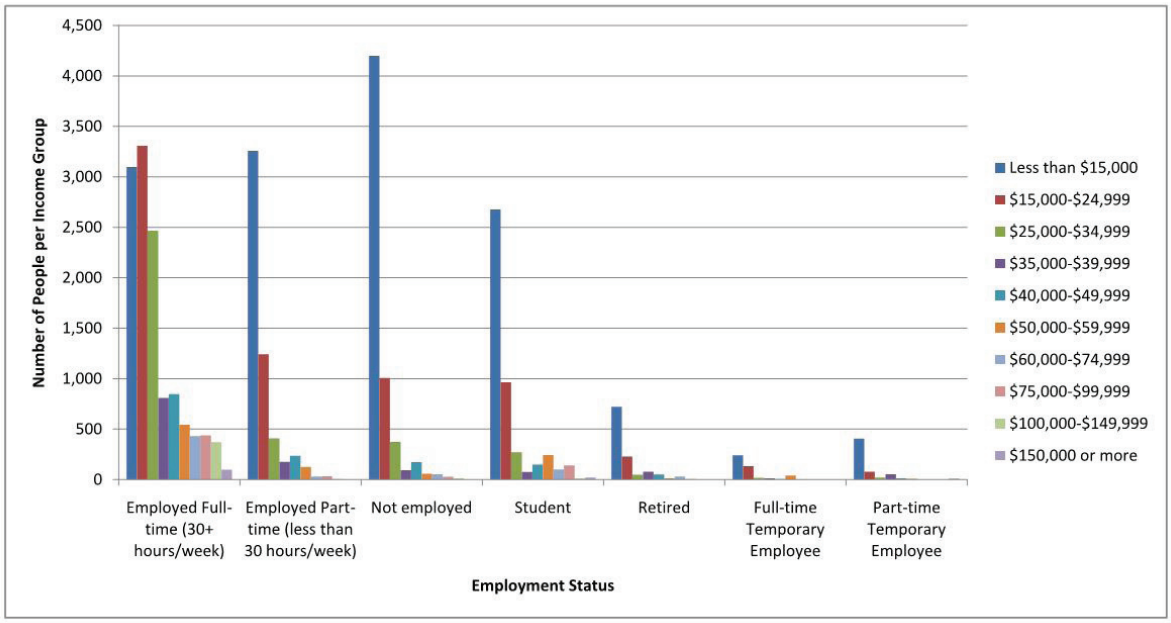
Nearly two-thirds (63 percent) of IndyGo's passengers are employed, with 44 percent of those employed full-time. While most passengers are employed (full and part time), many riders still have a low household income. Riders who need to get to a job comprises a large portion of households that do not have vehicles available to them. It is important to note that the percentages do not equal 100 percent because multiple responses to this question were permitted.

**Figure 9-64: Employment Status**



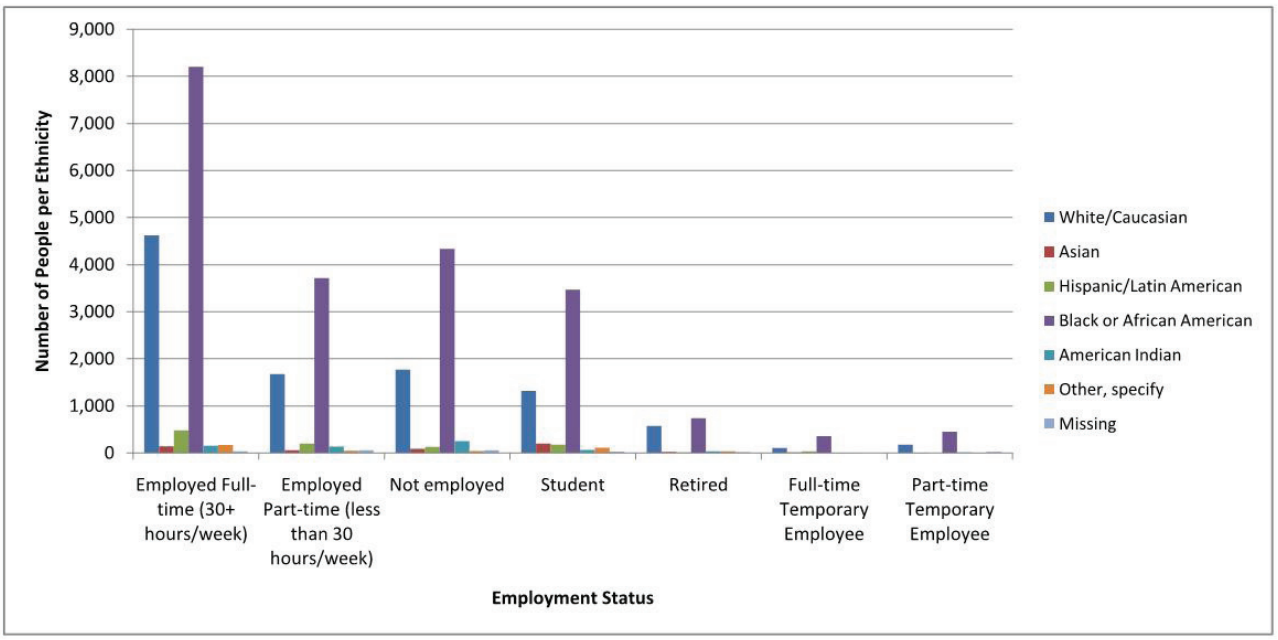
Of the 40 percent of riders that had full-time employment, 72 percent had income less than $34,999 a year. Fifty-nine percent of riders that had part-time jobs earned less than $15,000. Similarly, 57 percent of student riders earn less than $15,000.

**Figure 9-65: Income and Employment Status**



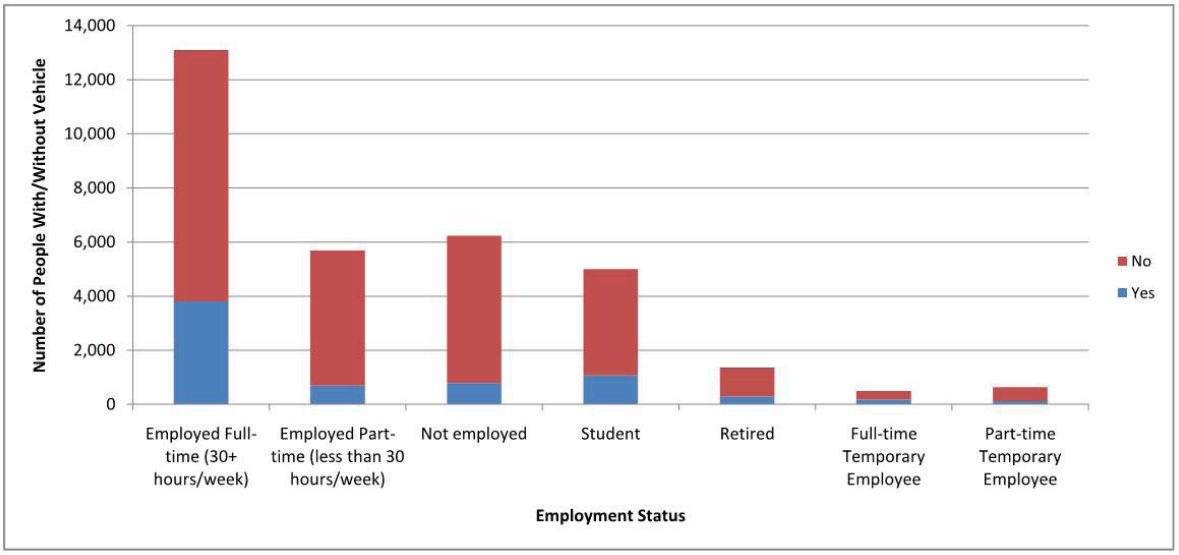

Forty percent of IndyGo riders are considered to be full-time employees. Black/African American riders comprise 59 percent of passengers who are employed full-time, while 34 percent of full-time employees are white/caucasian. Nineteen percent of IndyGo riders are unemployed. Sixty-five percent of unemployed passengers are Black/African American, while 26 percent are white/caucasian riders.

**Figure 9-66: Ethnicity and Employment Status**



The majority of passengers with full-time or part-time employment did not have access to a vehicle. Approximately 71 percent of riders with full-time employment did not have a vehicle available for use. Only 12 percent of passengers with part-time employment had access to a vehicle.

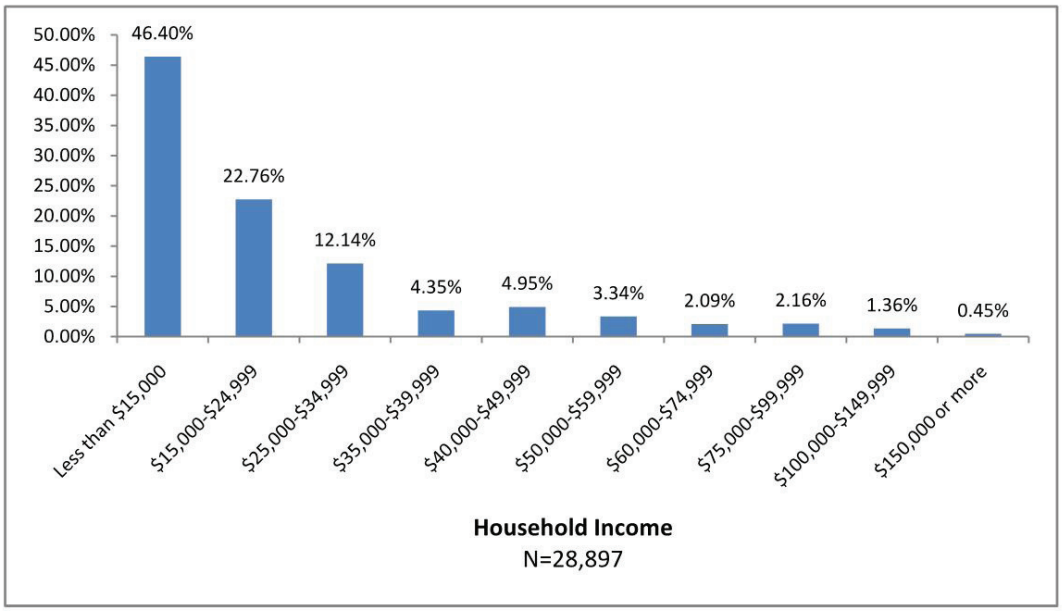
**Figure 9-67: Vehicle Availability and Employment Status**




## h. Household Income

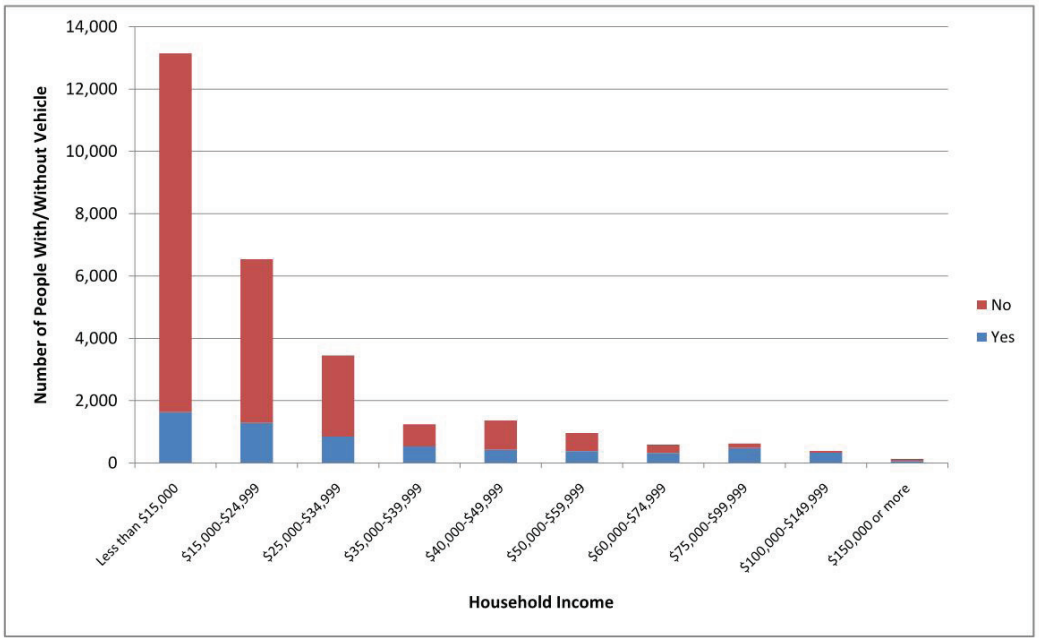
Households with lower incomes constitute a larger share of IndyGo's ridership. While almost half of the riders are employed full-time (44 percent), annual household incomes tend to be low, with almost 70 percent of riders from households earning less than $25,000 a year. Less than 10 percent of riders (9 percent) earn more than $50,000 per year.

**Figure 9-68: Household Income**



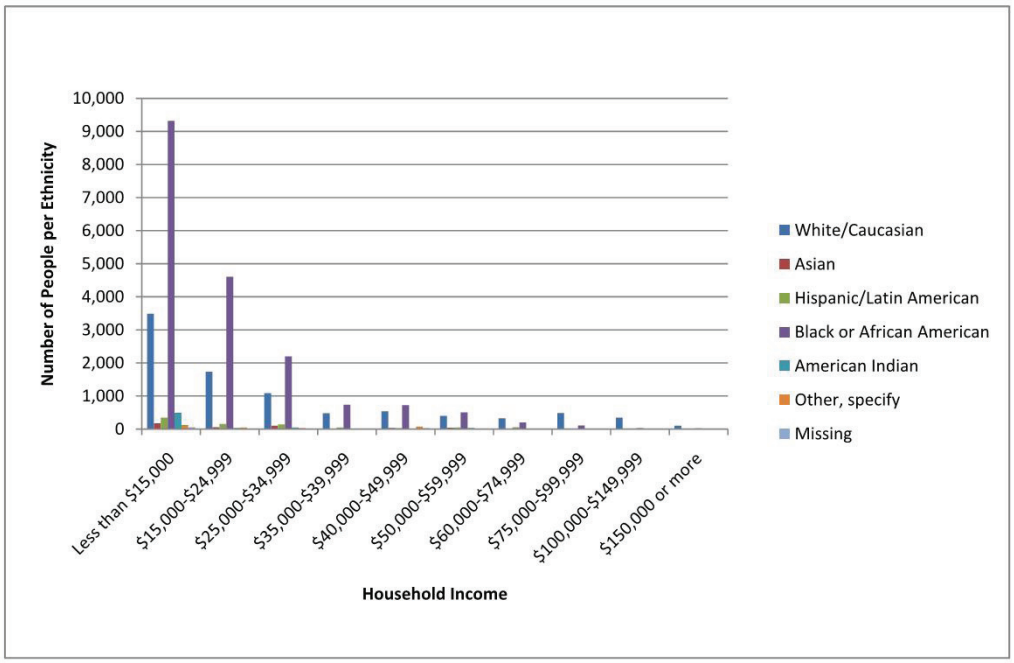
Passengers with lower household earnings are more likely to ride the bus than use other modes of transportation. Of the rider households that earn less than $15,000 a year, a little over 70 percent of them do not have a car available to them. Twenty percent of rider households with the same income have one car. A little over half of the riders that earn between $15,000 and $24,999 do not own a car.

**Figure 9-70: Vehicle Availability and Household Income**



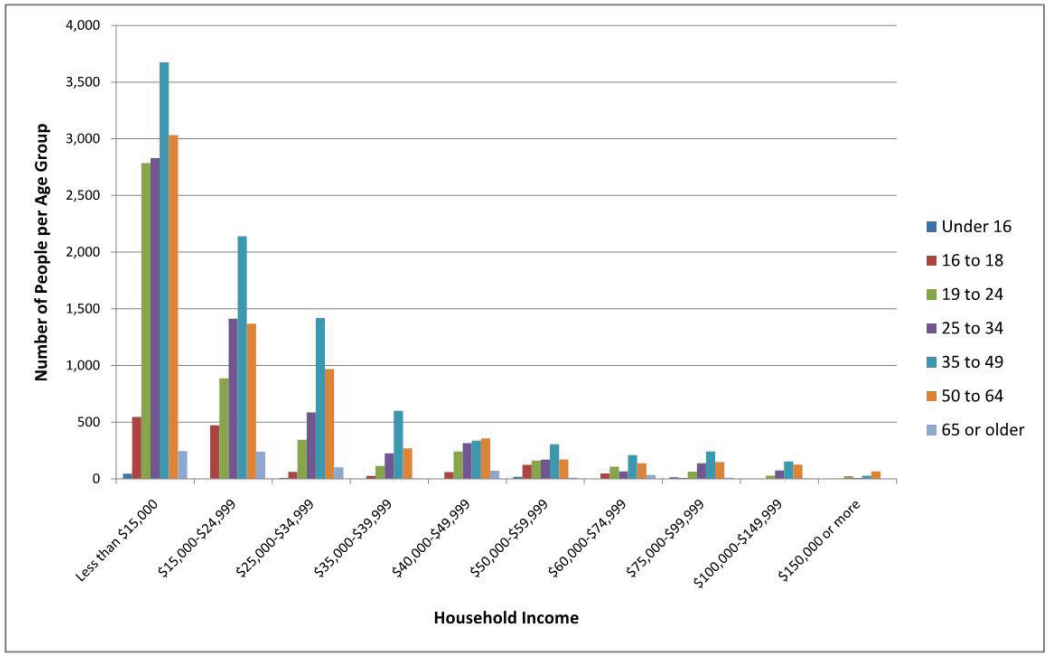

The majority of weekday passengers (65 percent) who earned less than $15,000 annually were Black/African American. As income level increases, the percentage of Black/African American passengers and White/Caucasian passengers became more equal.

**Figure 9-69: Household Income and Ethnicity**



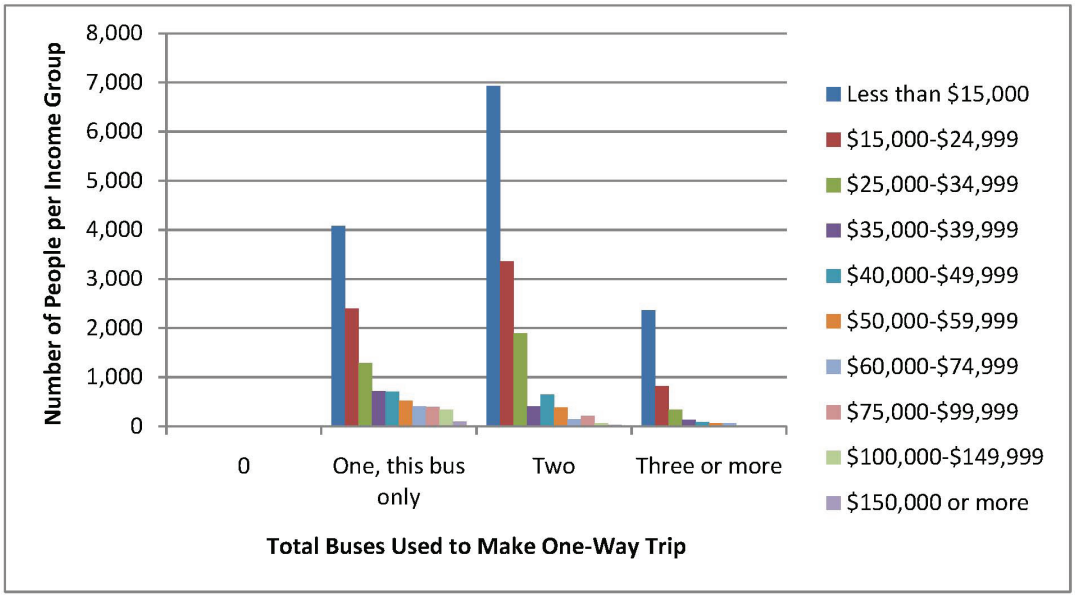
Passengers that had a household income less than $40,000 tend to be within the 35 to 49 age demographic. Twenty-eight percent of passengers that made less than $15,000 per year were between the ages of 35 and 49. Less than five percent of passengers that made less than $15,000 per year were under the age of 18.

**Figure 9-71: Household Income and Age**




The chart below shows that the less an IndyGo rider earns, the more bus transfers they are willing to make. IndyGo riders who earn less than $ 25,000 or less should be characterized as heavily transit-dependent.

**Figure 9-72: Income and Number of Buses Used for One-Way Trip**

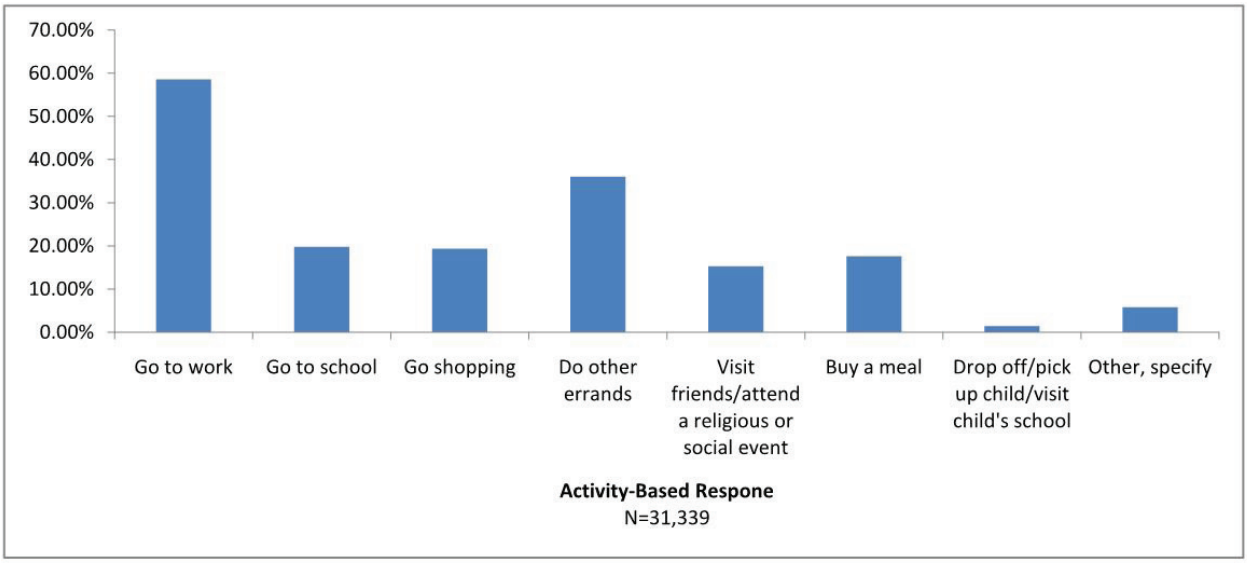


## 9.5 ACTIVITY-BASED RESPONSE

The advent of tour - or activity-based forecasting methods has created the need to be able to identify the tour purpose as well as the trip purpose of transit riders' travel. However, traditional on-board ridership surveys have only asked riders to identify their trip purpose, or activities at their origin and destination. NuStats used a series of additional questions on a survey for San Francisco, California, and a mail-back insert in a survey in Columbus, Ohio, to attempt to gather tour related information from transit riders; this introduced considerable length to the surveys and resulted in relatively low response rates. The activity-based question (question 21) on the IndyGo survey was designed to gather information on riders' tours while minimizing respondent burden. The approach was very successful, yielding considerable information on riders broader travel patterns, with very low item non-response and negligible impact on overall survey response.

The activity-based question allows the identification of not only the purpose of the trip observed in the survey, but the traveler's broader purpose for their tour from and to home. Comparing the riders responses to the activity-based question to their responses regarding the origin and destination purposes, there are both similarities and differences. While work was the most common out-of-home activity according to either question, only 48.5 percent of the observed trips had an origin or destination at work, while the activity-based question revealed that 58.6 percent of riders actually went to work while on their tour. Similarly, only 14.2 percent of the observed non-home origins and destinations were at school, but the activity-based question revealed that 19.8 percent of riders went to school while on their tour. Further, while only 9.6 percent of non-home origins and destinations were visited for shopping, the activity-based question reveals that 19.4 percent of IndyGo riders went shopping while on their tour.

**Figure 9-73: Activity-Based Response**




From the information contained in the responses to the origin and destination purpose questions alone, it would be easy to underestimate the amount of activities being served by IndyGo's service. For example, as the previous paragraph states, the activity-based question reveals that 19 percent of IndyGo riders need to make a shopping stop on their tour, even though less than nine percent of riders use "shopping" to describe the origin or destination of the trip on which they received the survey.

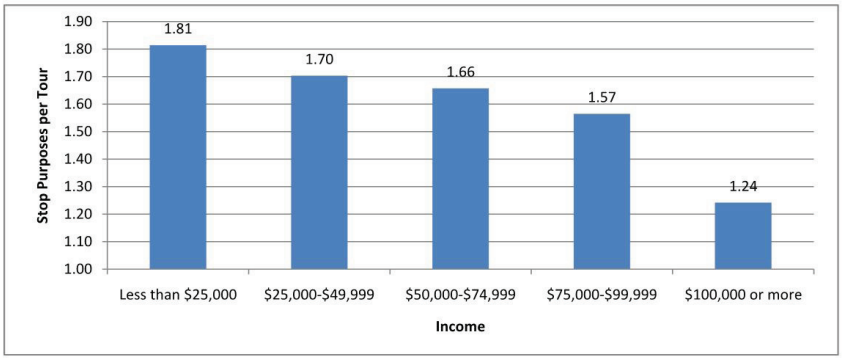
In general, it has sometimes been hypothesized that transit riders may make fewer out-of-home stops on their tours than travelers in general. However, the information from IndyGo's survey calls this assumption into question. The activity-based question reveals that IndyGo riders make at least 1.74 stops on average between leaving

home and returning. (Note: this estimate of stops per tour represents a lower bound, since multiple stops with the same purpose, such as shopping, would only be reported once, given the question's wording.) When the Central Indiana Travel Survey is complete soon, it will be able to compare this with the average for all travelers in the region, but this number is roughly typical for non-transit tours, suggesting that transit use is not correlated with lower activity-participation rates. IndyGo riders use the service to engage in many activities and typically make more than one stop per outing.

The common assumption that transit tours involve fewer stops may have arisen from the fact that there are fewer non-home-based transit trips than non-home-based auto trips. The results of the IndyGo survey continue to support this fact. If the number of non-home stops on tour were calculated based simply on the number of non-home-based trips (trips with neither origin nor destination at home) observed in the survey, the result would be 1.34 stops per tour. However, from the activity-based question, it is clear that there are more non-home-based trips on transit riders' tours. The implication is that some non-home-based trips on transit tours are likely to be non-transit trips, probably walk trips. It is also possible that non-home-based trips, which tend to shorter, may have lower response rates since the respondent burden is larger relative to the trip's duration and riders may simply not have time to complete the survey during a brief trip. Ultimately, the activity-based question suggests that at least 55 percent of non-home-based trips on transit tours were not otherwise captured in the on-board survey, either because these were walk (or other non-transit) trips or due to the short trip bias.

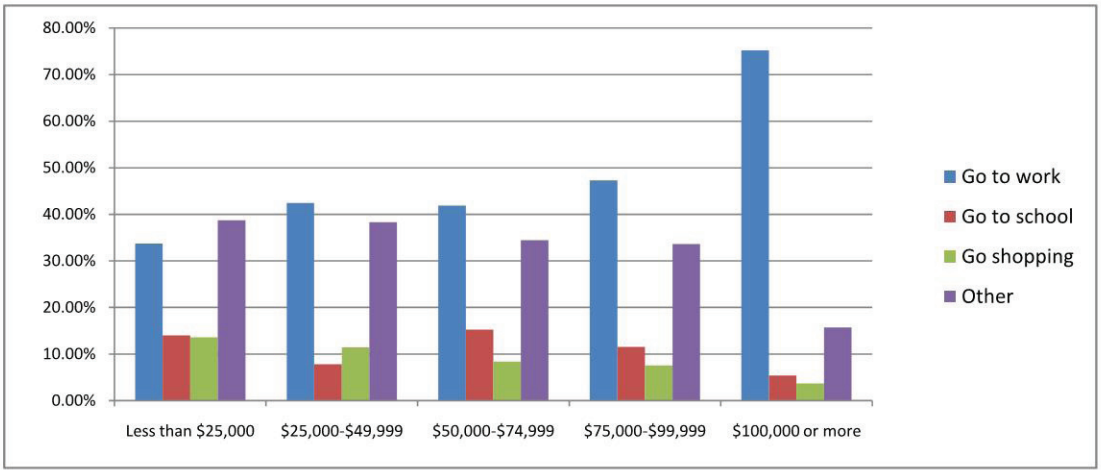
The figure below represents the relationship between the number of activity purposes per transit tour and the household income of riders. Interestingly, higher income correlated with participation in fewer activity purposes per transit tour. While higher income is typically associated with greater activity participation in general, it appears that higher income riders conduct relatively fewer activities on transit tours.

**Figure 9-74: Household Income and Stop Purposes per Tour**



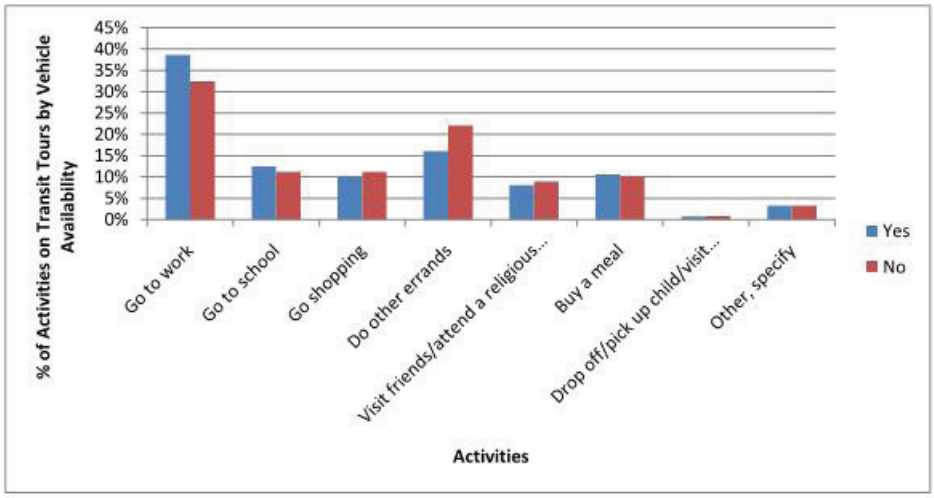
The figure below represents the relationship between household income and trip purpose. In particular, as income increases, there is a trend for commuting to become a greater percentage of trip purposes. While work activities account for only a third of the activities serviced by transit for riders with less than $25,000 a year income, work accounts for three quarters of the activities served by transit for riders with income over $100,000 a year.

**Figure 9-75: Household Income and Trip Purpose**




Vehicle availability also shows a tendency for transit riders with an available vehicle to be somewhat more inclined to commute by bus and less likely to do other errands on their transit tours. Interestingly, however, the phenomenon seems better explained by income than vehicle availability.

**Figure 9-76: Vehicle Availability and Other Activities**



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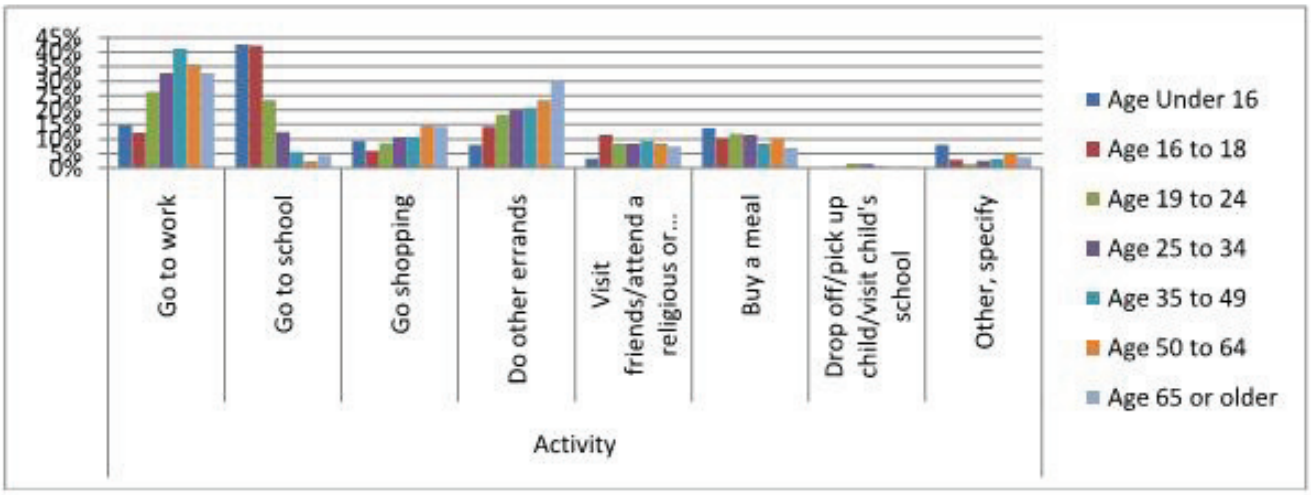
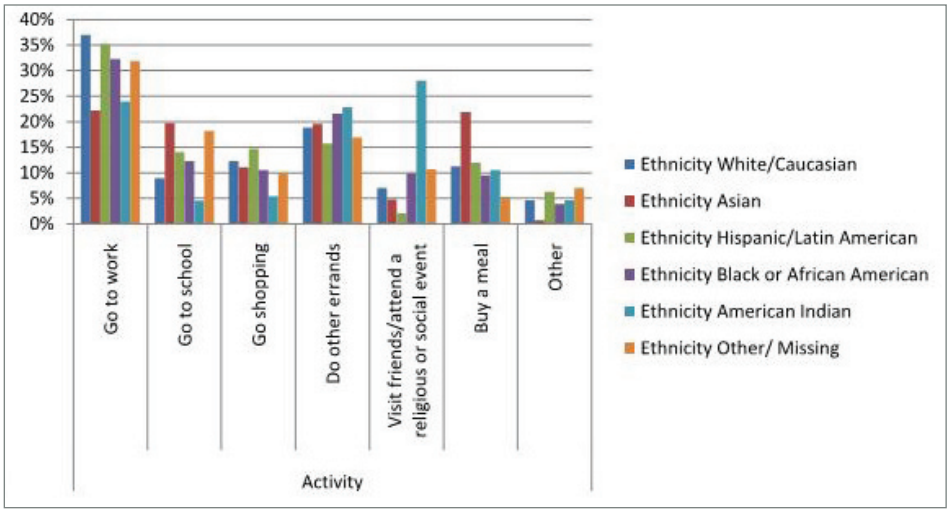
Activities served by IndyGo also vary with age of the riders. Riders age 18 and under are most likely to use the bus to go to school; riders from 19 to 24 are split between school and work, while riders from 25 and older are most likely to go to work. However, both shopping and doing other errands increase with age to the point that riders age 65 and older are almost as likely to be doing errands as going to work. Stops per tour varied little by age.

**Figure 9-77: Age and Activities**



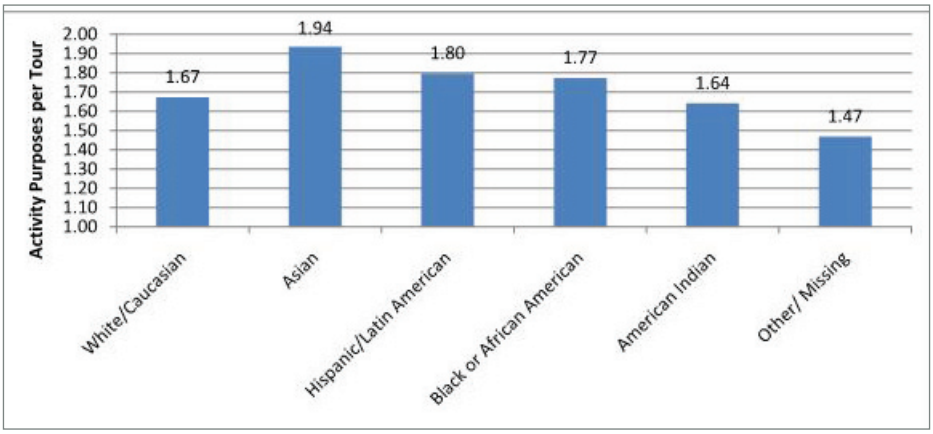

There was relatively little variation in activity patterns by ethnicity. The most notable exception was that visiting friends or attending a religious or social event accounted for an unusually large proportion of American Indian riders' activities. There were also some differences in the activities served for Asian riders. Asian riders were less likely to take the bus to work and more likely to take the bus to school or to buy a meal. White/Caucasian riders were slightly less likely than other ethnicities to go to school using IndyGo service and slightly more likely to use the bus for commuting than other activities, but for the most part, overall, all ethnic groups used IndyGo service for a similar mix of activities.

**Figure 9-78: Ethnicity and Activity**



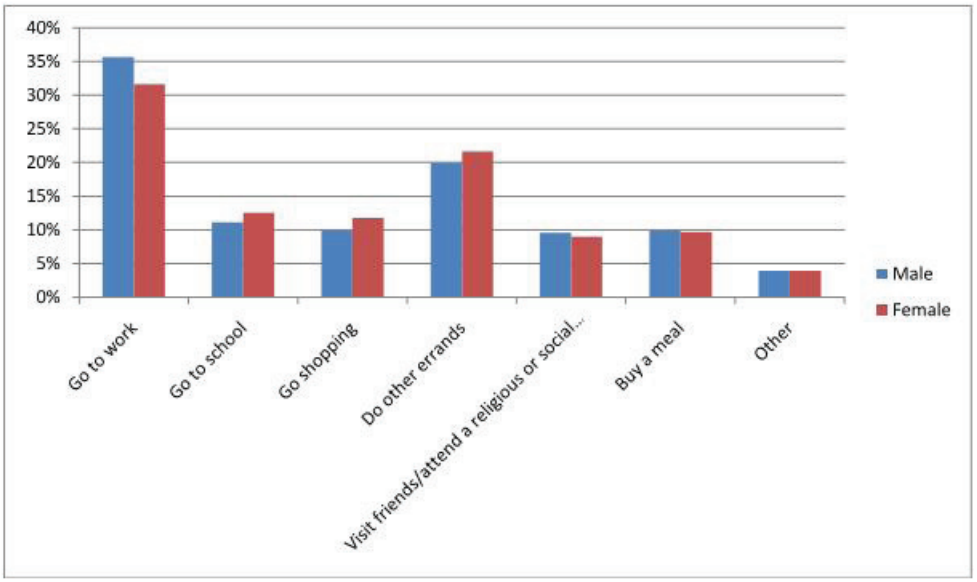
Although the mix of purposes was fairly consistent across ethnic groups, the number of activity purposes per tour did vary somewhat. White/Caucasian riders tended to participate in fewer types of activities per transit tour as compared to Asian, Hispanic/Latin American and Black or African American riders. Asian riders, in on the other hand, tended to participate in the most types of activities. Riders who did not identify their race or specified another race reported fewer types of activities, as well, but this may simply be due to a general unresponsiveness or privacy concerns among this group of riders. The differences in activity levels on transit tours by ethnic groups were generally less significant than the variation associated with income.

**Figure 9-79: Number of Activities and Ethnicity**



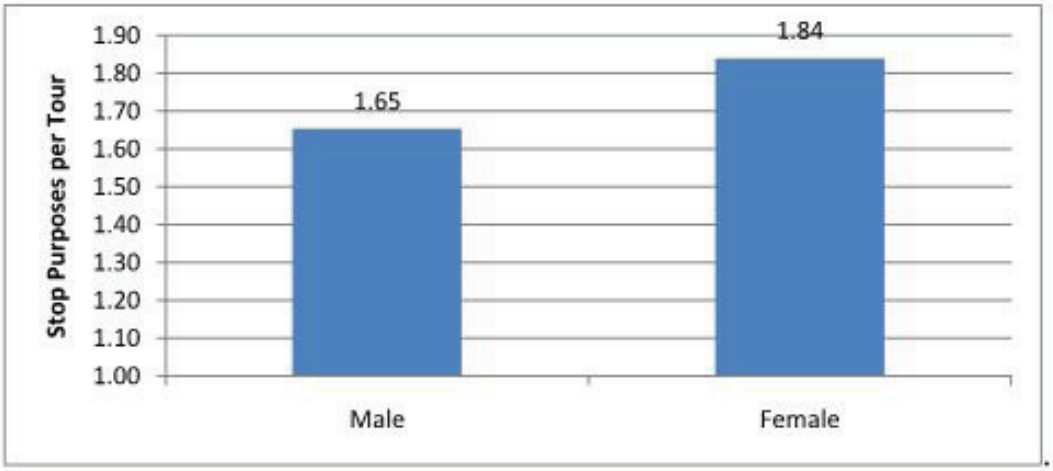

The overall diversity of activities and number of stop purposes per tour was greater for women than for men, although the mix of activities was similar. There were some small differences in the mix of activities. Men were slightly more likely to use the bus to go to work, while women were slightly more likely to use IndyGo's services to go to school, shop or do other errands. The main gender difference, however, was simply that on average women made 0.2 more stops (based on stop types) per tour as compared to men.

**Figure 9-80: Activity and Gender**



The figure below illustrates that women tend to engage in slightly more activities than men per transit stop.

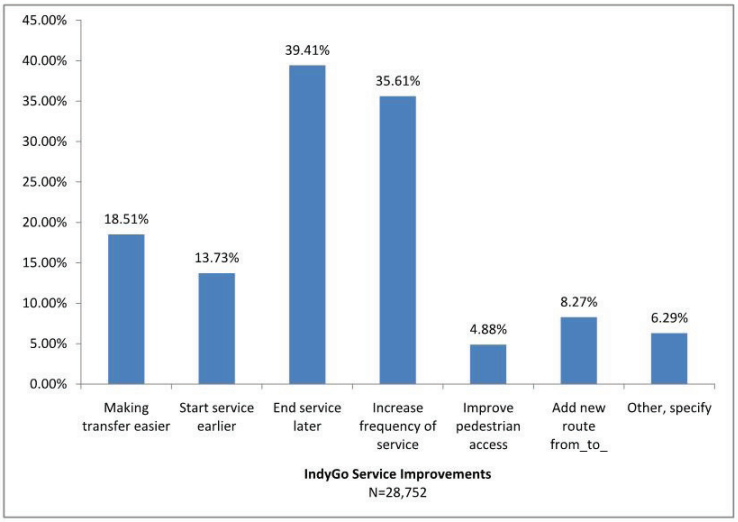
**Figure 9-81: Number of Activities and Gender**




## 9.6 INDYGO SERVICE IMPROVEMENTS

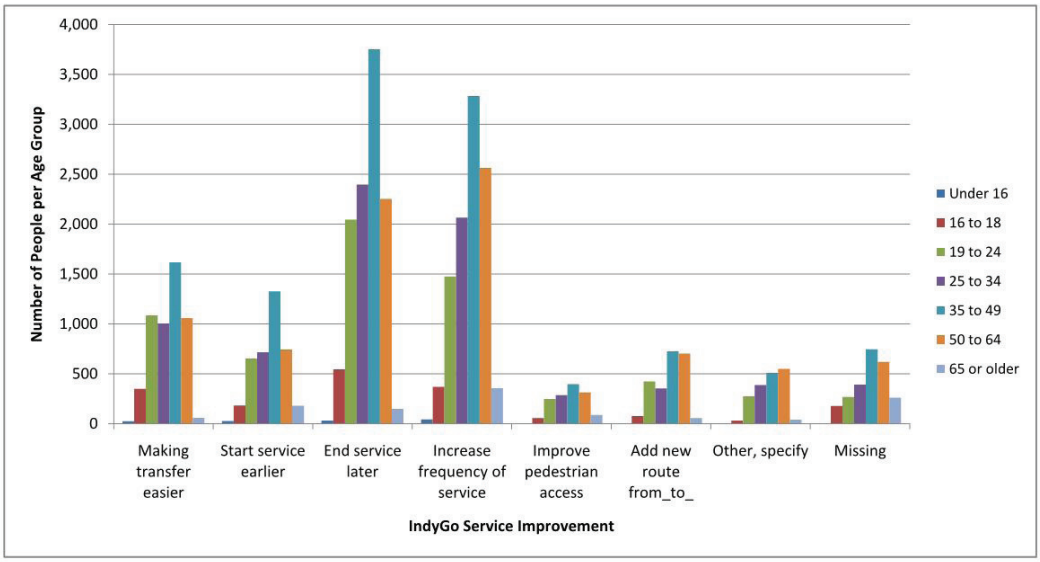
In an open-ended question, nearly 40 percent of IndyGo riders reported that they would benefit from extended hours of service. Considering almost 45 percent of the riders have full time jobs, and another 20 percent have part time jobs, later services could help accommodate workers who have second shift jobs. Only five percent of riders reported that they think pedestrian access to bus stops should be improved. This number is consistent with the 90 percent of riders who report that they travel only one to two blocks to access a bus. It is important to note that the percentages do not equal 100. More than one response to the question was accepted.

**Figure 9-82: IndyGo Service Improvements**



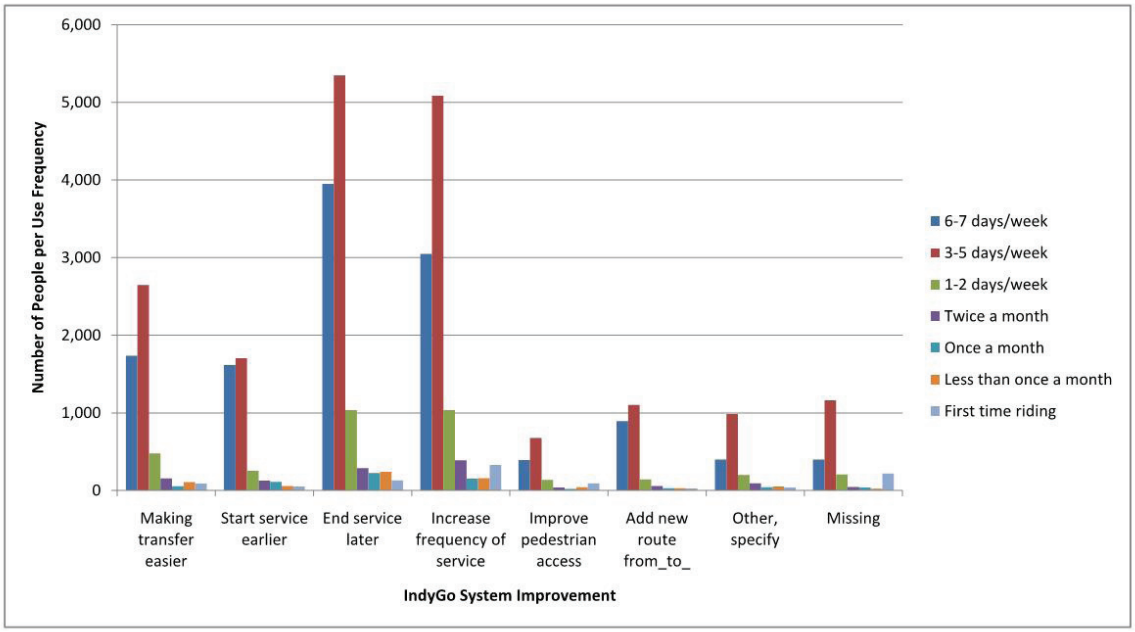
The majority of riders who answered the open-ended question about improvement potential for IndyGo indicated that they would like bus service to end later. Thirty-four percent of 35-49 year olds feel this service should be improved. Twenty percent of 50-64 year olds also would like service hours extended. The second most popular response for service improvements is increasing the overall frequency in service. Thirty-two percent of riders between the ages of 35-49 feel frequency should be increased. Twenty-five percent of 50-64 year olds also would like to see frequency increased.

**Figure 9-83: Age and Service Improvements**




The majority of respondents (49 percent) use bus service 3-5 days per week. Of those riders, 29 percent believe service hours should be extended to later in the evening. Twenty-one percent believe frequency of service should be increased. Finally, 14 percent feel that transfers should be made easier.

**Figure 9-84: Frequency of Making this Trip and Service Improvements**



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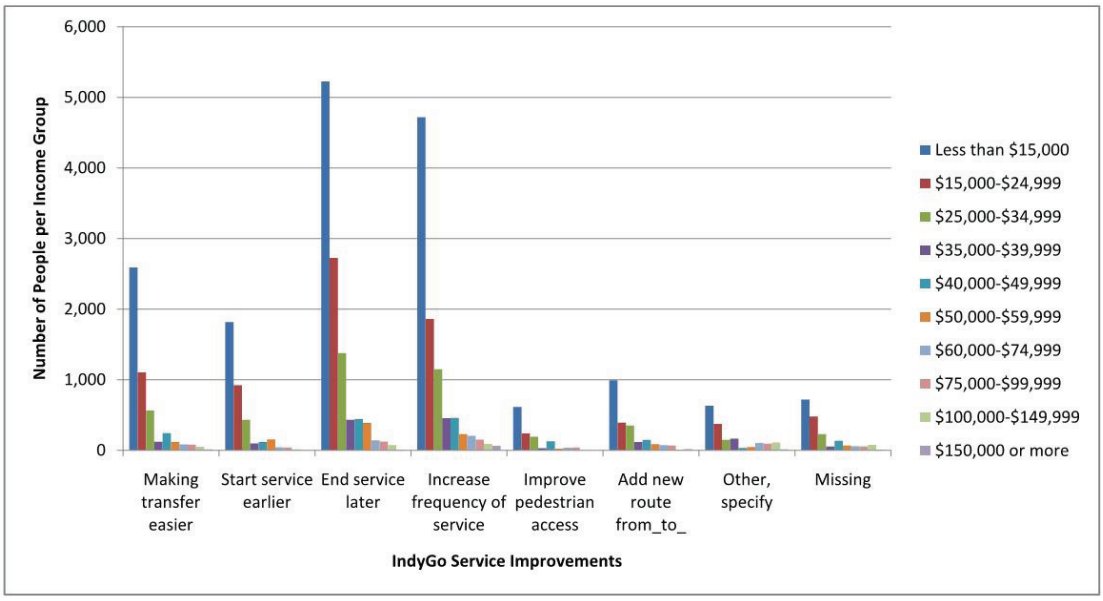
The majority of IndyGo riders earn less than $15,000 per year. Of those riders who earn less than $15,000, 30 percent feel that service should end later. Twenty-seven percent feel that service frequency should be increased. Fifteen percent indicate that bus transfers could be made easier.

**Figure 9-85: Income and Service Improvements**



# appendix a | sample plan

**Project:** IndyGo On-Board Survey
**Subject:** Draft Sample Plan
**Prepared by:** Ryan McCutchan
**Submitted to:** IndyGo and Indianapolis MPO
**Submitted on:** September 1, 2009

---

NuStats has prepared a sample plan for the 2009 IndyGo On-Board Survey that is statistically significant at the route level and provides a sample size adequate for analysis of weekday services. A comparison between 2008 ridership data and January-July 2009 ridership data was made and there was an overall decrease in ridership by 15 percent. If the trend continues, then the expectation is that spring 2009 data approximates best what will occur in fall 2009. Therefore, the draft sample plan is based on January-July 2009 weekday ridership.

The IndyGo on-board survey uses a standard two-stage sampling approach that consists of sampling passengers and sampling bus trips. Every passenger over the age of 15 (determined by visual estimation), who boards the sampled bus trips, receives a questionnaire. If the surveyor is not readily able to determine whether a rider's age was over 15, the surveyor is instructed to ask the boarding passenger.

Assuming the ridership data provided holds true during fall 2009, this sampling plan, when fielded, will yield approximately 3,214 complete and usable questionnaires among IndyGo routes. Broken down by service type, 2,998 (93 percent) completed questionnaires will be collected from Fixed Routes, 139 (four percent) from Express Routes, 68 (two percent) from Circulator Routes, and 0.2 percent from IPTC Unknown Routes.

In developing this sample plan, three main factors were taken into consideration. First, we wanted to ensure that the sample adequately meets data needs at the global level (i.e., system-wide). Second, the plan should ensure collecting adequate samples at the various day-parts (i.e., a.m. peak, mid-day, p.m. peak, and evening). Third, we want to ensure that IndyGo staff would have the ability to segment the sample on key variables, such as route, day of the week, time of day, and direction.

This sampling plan assumes that samples will be collected to simulate average weekday boarding distributions by time period. The preliminary time of day definitions are as follows: AM Peak (6:00 a.m. – 9:00 a.m.), Midday (9:01 a.m. – 3:00 p.m.), PM Peak (3:01 p.m. – 6:00 p.m.) and Evening (6:01 p.m. - 2:00 a.m.). The actual number of surveys collected may or may not mirror these distributions depending on the actual ridership by time period and/or the actual number of trips by time period as observed during data collection. Close monitoring of sampled trips by time-of-day definitions will occur. NuStats will communicate any deviations from the sample plan along with a suggested plan of action.

Sample goals were developed for each route based on estimated passenger volumes and a projected response rate of 20 percent among fixed local bus riders and 40 percent among express bus riders. If any route is not performing up to the projected response rate after additional efforts in surveyor re-training (i.e., emphasizing techniques for maximizing response rates) and replacement of under performing staff (as applicable), then an adjustment of the sample goal for that route might be appropriate after a careful analysis of the actual/observed ridership volumes compared to the estimates and percent of total trips sampled for the route in question. Any sample adjustment modification recommendations will be communicated to IndyGo. This is a critical data collection procedure to ensure project funds are efficiently and effectively allocated to meet the project objectives and schedule.

For a questionnaire to be considered a complete and usable for the purposes of this study, specific questions must be answered. The required data elements are the origin address, destination address, mode of access, mode of egress, trip purposes, and route sequence. Boarding and alighting information is also required for a survey to meet the definition of a complete. The boarding information will be collected via the PDA technology, and the alighting information will be imputed through the GeoStats Imputation Process.

**TABLE 1**
**SAMPLE GOALS BY ROUTE**

| Service Type | Route | Route Name | Average Daily Ridership | Estimated Goal |
|---|---|---|---|---|
| Fixed Route | 2 | E. 34th St. | 924 | 92 |
| Fixed Route | 3 | Michigan St. | 1,131 | 113 |
| Fixed Route | 4 | Fort Harrison | 636 | 64 |
| Fixed Route | 5 | E. 25th St./N. Harding | 1,367 | 137 |
| Fixed Route | 8 | Washington | 3,948 | 395 |
| Fixed Route | 10 | 10th St. | 3,526 | 353 |
| Fixed Route | 11 | E. 16th St. | 259 | 26 |
| Fixed Route | 12 | Beechcrest | 334 | 33 |
| Fixed Route | 14 | Prospect | 361 | 36 |
| Fixed Route | 15 | Riverside | 850 | 85 |
| Fixed Route | 16 | Beech Grove | 471 | 47 |
| Fixed Route | 17 | College | 1,336 | 134 |
| Fixed Route | 18 | Nora | 719 | 72 |
| Fixed Route | 19 | Castleton | 1,182 | 118 |
| Fixed Route | 21 | E. 21st Street | 496 | 50 |
| Fixed Route | 22 | Shelby | 332 | 33 |
| Fixed Route | 24 | Mars Hill | 550 | 55 |
| Fixed Route | 25 | W. 16th St. | 631 | 63 |
| Fixed Route | 26 | Keystone | 557 | 56 |
| Fixed Route | 28 | St. Vincent | 741 | 74 |
| Fixed Route | 30 | 30th Street | 324 | 32 |
| Fixed Route | 31 | Greenwood | 1107 | 111 |
| Fixed Route | 34 | Michigan Road | 866 | 87 |
| Fixed Route | 37 | Park 100 | 1,606 | 161 |
| Fixed Route | 38 | Lafayette Square | 1,628 | 163 |
| Fixed Route | 39 | E. 38th St. | 3,939 | 394 |
| Circulator | 50 | Red Line | 451 | 45 |
| Fixed Route | 55 | English | 157 | 16 |
| Circulator | 87 | Eastside Circulator | 235 | 23 |
| Express | 200 | Carmel Express | 217 | 43 |
| Express | 204 | Greenwood Express | 46 | 9 |
| Express | 205 | Airport Express | 91 | 18 |
| Express | 210 | Fishers Express | 339 | 68 |
| | | IPTC Unknowns | 46 | 9 |
| | **Total** | | **31,402** | **3,214** |

# appendix b | survey instrument

If returning by mail, please close with tape.

# Transit Survey

IndyGo

**1. Register to win one of five $100 cash prizes when you answer all questions!**

Print letters and numbers clearly in upper case: A B C 1 2 3

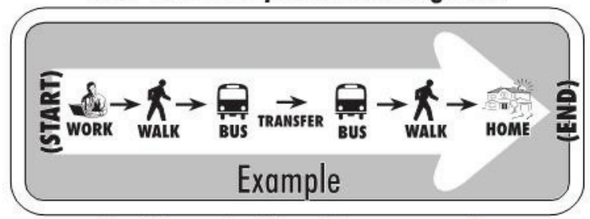
Name

( ) - 

Phone Number

All information is confidential and will not be shared or sold.

## The following questions are about this ONE-WAY TRIP you are making now!




*Your trip may be different from our example.*

**2. Including this bus, how many total buses will you ride to make this one-way trip?**

○ One, this bus only ○ Two ○ Three or more

**3. Which bus or buses?**

| Example: | 1st: Bus | 2nd: Bus | 3rd: Bus | 4th: Bus |
|---|---|---|---|---|
| | ROUTE 4 | RED LINE | | |

| 1st: Bus | 2nd: Bus | 3rd: Bus | 4th: Bus |
|---|---|---|---|
| | | | |

**4. How did you get to the first bus on this one-way trip?**

○ Walked/Wheelchair → ___ # blocks
○ Rode my bicycle
○ Drove my car
○ Dropped off by someone
○ Carpooled
○ Other, specify: _____

**Continue inside →**

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

**NUSTATS**
**206 WILD BASIN RD STE A300**
**AUSTIN TX 78746-9907**

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

**Comments:**

**Please return the completed survey to the surveyor, or drop it in any mailbox *(no postage required)*. Thank You!**

If you have additional customer comments or questions about IndyGo and its services, visit www.IndyGo.net or call 635.3344

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## Where are you coming from now?

**5. What kind of place?**

- ○ Work or Work Related
- ○ Other School (Student only)
- ○ Home
- ○ Medical Services
- ○ Shopping
- ○ Social, Religious, or Personal Business
- ○ College (Student only)
- ○ Other, specify:_____

**5a. What is the name of this place/building?**

**5b. What is the exact street address? (Provide the nearest cross streets if you don't know the exact address)**

Address

Cross Street #1 &

Cross Street #2

City Zip

## Where are you going to now?

**6. What kind of place?**

- ○ Work or Work Related
- ○ Other School (Student only)
- ○ Home
- ○ Medical Services
- ○ Shopping
- ○ Social, Religious, or Personal Business
- ○ College (Student only)
- ○ Other, specify:_____

**6a. What is the name of this place/building?**

**6b. What is the exact street address? (Provide the nearest cross streets if you don't know the exact address)**

Address

Cross Street #1 &

Cross Street #2

City Zip

**7. Where will you get off this bus?**

Name of Place *(including Park & Ride or other lots)*

Cross Street #1 &

Cross Street #2

**8. How will you get from the last bus to your final destination on this one-way trip?**

- ○ Walk/Wheelchair (# blocks)
- ○ Get picked up by someone
- ○ Ride my bicycle
- ○ Carpool
- ○ Drive my car
- ○ Other, specify: _____

**9. What is your age?**

- ○ Under 16
- ○ 16 to 18
- ○ 19 to 24
- ○ 25 to 34
- ○ 35 to 49
- ○ 50 to 64
- ○ 65 or older

**10. Do you have a valid driver's license?** ○ Yes ○ No

**11. Including yourself, how many people live in your House/ Apartment?** ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 or more

**12. Including yourself, how many of the people in your household are employed full-time or part-time?**

○ None ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 or more

**13. Are you...**

- ○ Employed Full-time (more than 30 hrs/week)
- ○ Employed Part-time (less than 30 hrs/week)
- ○ Not employed
- ○ Student
- ○ Retired
- ○ Full-time Temporary Employee
- ○ Part-time Temporary Employee

**14. How many working vehicles are available to your household?**

○ None ○ 1 ○ 2 ○ 3 ○ 4 or more

**15. What is your ethnicity?** ***(check all that apply)***

- ○ White/Caucasian
- ○ Black/African American
- ○ Asian
- ○ American Indian
- ○ Hispanic/Latin American
- ○ Other, specify: _____

**16. Was a car (or other personal vehicle) available to make this trip?** ○ Yes ○ No

**17. Are you...** ○ Male ○ Female

**18. How many days a week do you usually make this trip?**

- ○ 6-7 days/week
- ○ Twice a month
- ○ First time riding
- ○ 3-5 days/week
- ○ Once a month
- ○ 1-2 days/week
- ○ Less than once a month

**19. If bus service was not available, how would you make this trip?**

- ○ Drive
- ○ Taxi
- ○ Walk/Wheelchair
- ○ Bicycle
- ○ Ride with friend
- ○ Would not make this trip

**20. What one service do you feel needs the most improvement?**

- ○ Making transfers easier
- ○ Improve pedestrian access
- ○ Start service earlier
- ○ Add new route from _____ to _____
- ○ End service later
- ○ Increase frequency of service
- ○ Other, specify on back ➔

**21. On this ROUND TRIP (between the time you left home and will return home) will you...** ***(check all that apply)***

- ○ Go to work
- ○ Go to school
- ○ Go shopping
- ○ Do other errands
- ○ Visit friends/attend a religious or social event
- ○ Buy a meal
- ○ Other, specify: _____

**22. What was your estimated total household income in 2008 before taxes?**

- ○ Less than $15,000
- ○ $40,000 - $49,999
- ○ $100,000 - $149,999
- ○ $15,000 - $24,999
- ○ $50,000 - $59,999
- ○ $150,000 or more
- ○ $25,000 - $34,999
- ○ $60,000 - $74,999
- ○ $35,000 - $39,999
- ○ $75,000 - $99,999

**All information is confidential and will not be shared or sold. Thank you!**



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Si lo regresa por correo por favor dóblelo con cinta.

# Encuesta de Tránsito

IndyGo

Solo para el uso de la oficina

**1. ¡Regístrese para ganar uno de cinco permios en efectivo de $100 cuando conteste todas las preguntas!**

Escriba las letras y números claramente usando letras mayúsculas: A B C 1 2 3

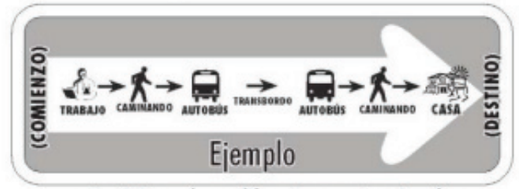
Nombre

( ) - 

Número de teléfono

Toda la información es confidencial y no será compartida ni vendida.

**¡Las siguientes preguntas se refieren a este VIAJE SENCILLO que está haciendo en este momento!**




*Su viaje puede ser diferente a nuestro ejemplo.*

**2. Incluyendo este autobús, ¿en total cuántos autobuses va a usar para hacer este viaje sencillo?**

○ Uno, sólo este autobús ○ Dos ○ Tres o más

**3. ¿Qué autobús o autobuses?**

| | 1°: Autobús → | 2°: Autobús → | 3°: Autobús → | 4°: Autobús |
|---|---|---|---|---|
| *Ejemplo:* | ROUTE 4 | RED LINE | | |
| | 1°: Autobús → | 2°: Autobús → | 3°: Autobús → | 4°: Autobús |
| | | | | |

**4. ¿Cómo llegó al lugar donde tomó el primer autobús de este viaja sencillo?**

○ Caminando/En silla de ruedas → # cuadras
○ En bicicleta
○ Conduje me carro
○ Alguien me dejó
○ Compartiendo el auto con otros
○ Otro, especifique: _____

**Continúe adentro →**

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

NUSTATS
206 WILD BASIN RD STE A300
AUSTIN TX 78746-9907

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

**Comentarios:**

**Una vez completada, favor de entregar la encuesta al encuestador o ponerla en cualquier buzón *(sin gastos de envío)*. ¡Gracias!**

IndyGo

Si tiene comentarios adicionales o preguntas sobre IndyGo y los servicios, visite www.IndyGo.net o llame 635.3344

## ¿De dónde viene en este momento?

**5.** ¿Qué tipo de lugar?

- ○ Trabajo o relacionado con el trabajo
- ○ Otra Escuela (solo Estudiantes)
- ○ Casa
- ○ Servicios Médicos
- ○ Compras
- ○ Asunto Social, Religioso, o Personal
- ○ Universidad (solo Estudiantes)
- ○ Otro, especifique:_____

**5a.** ¿Cuál es el nombre de este lugar/edificio?

**5b.** ¿Cuál es la dirección exacta? **(Indique el cruce de calles más cercano si no sabe la dirección exacta)**

Dirección

Cruce de calles #1 &

Cruce de calles #2

Ciudad Código Postal

## ¿Adónde se dirige en este momento?

**6.** ¿Qué tipo de lugar?

- ○ Trabajo o relacionado con el trabajo
- ○ Otra Escuela (solo Estudiantes)
- ○ Casa
- ○ Servicios Médicos
- ○ Compras
- ○ Asunto Social, Religioso, o Personal
- ○ Universidad (solo Estudiantes)
- ○ Otro, especifique:_____

**6a.** ¿Cuál es el nombre de este lugar/edificio?

**6b.** ¿Cuál es la dirección exacta? **(Indique el cruce de calles más cercano si no sabe la dirección exacta)**

Dirección

Cruce de calles #1 &

Cruce de calles #2

Ciudad Código Postal

**7.** ¿Dónde se va a bajar de este autobús?

Nombre del lugar *(incluya el lote de Park & Ride u otros lotes)*

Cruce de calles #1 &

Cruce de calles #2

**8.** ¿Cómo llegará desde el último autobús a su destino final en este viaje sencillo?

- ○ Caminando/En silla de ruedas ___ # cuadras
- ○ Alguien me va a recoger
- ○ En bicicleta
- ○ Compartiendo el auto con otros
- ○ Conduciendo mi carro
- ○ Otro, especifique:_____

**9.** ¿Cuál es su edad?

- ○ Menor de 16
- ○ 16 a 18
- ○ 19 a 24
- ○ 25 a 34
- ○ 35 a 49
- ○ 50 a 64
- ○ 65 años de edad o más

**10.** ¿Tiene usted una licencia de conductor válida? ○ Sí ○ No

**11.** Incluyendo usted, ¿cuántas personas viven en su Casa/Apartmento?

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 o más

**12.** Incluyendo usted, ¿cuántos miembros de su hogar tienen un trabajo de tiempo completo o medio tiempo?

○ Ninguno ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 o más

**13.** ¿Es usted...

- ○ Empleado tiempo completo (más de 30 Horas/Semana)
- ○ Empleado medio tiempo (menos de 30 Horas/Semana)
- ○ Desempleado
- ○ Estudiante
- ○ Jubilado
- ○ Empleado temporal de tiempo completo
- ○ Empleado temporal de medio tiempo

**14.** ¿Cuántos vehículos que funcionan tienen disponibles en su hogar?

○ Ninguno ○ 1 ○ 2 ○ 3 ○ 4 o más

**15.** ¿Cuál es su origen étnico? *(marque todo lo que corresponda)*

- ○ Blanco/Caucásico
- ○ Negro/Afro-americano
- ○ Asiático
- ○ Nativo Americano
- ○ Hispano/Latinoamericano
- ○ Otro, especifique:_____

**16.** ¿Había algún carro (u otro vehículo personal) disponible que pudo haber usado para hacer este viaje? ○ Sí ○ No

**17.** ¿Es usted... ○ Masculino ○ Femenino

**18.** Generalmente, ¿cuántos días a la semana hace este viaje?

- ○ 6-7 días/semana
- ○ Dos veces al mes
- ○ Primera vez en el autobús
- ○ 3-5 días/semana
- ○ Una vez al mes
- ○ 1-2 días/semana
- ○ Menos de una vez al mes

**19.** Si este servicio de autobús no estuviera disponible, ¿cómo hubiera hecho este viaje?

- ○ Conduciendo
- ○ Taxi
- ○ Caminando/En silla de ruedas
- ○ Bicicleta
- ○ Con un amigo en su carro
- ○ No lo hubiera hecho

**20.** ¿Cuál servicio piensa usted que necesita más mejoras?

- ○ Hacer los transbordos más fáciles
- ○ Mejorar el acceso peatonal
- ○ Empezar los servicios más temprano
- ○ Añadir una nueva ruta yendo
- ○ Terminar los servicios más tarde de_____ para _____
- ○ Aumentar la frequencia del servicio
- ○ Otro, especifique detrás →

**21.** En este VIAJE REDONDO (entre la hora que salió de su casa a cuando regrese) ¿usted... *(marque todo lo que corresponda)*

- ○ Irá al trabajo
- ○ Irá a la escuela
- ○ Irá de compras
- ○ Hará otros recados
- ○ Visitará a amigos/Asistirá a un evento religioso o social
- ○ Comprará una comida
- ○ Otro, especifique: _____

**22.** ¿Aproximadamente cuál fue el ingreso total de su hogar en 2008 antes de impuestos?

- ○ Menos de $15,000
- ○ $40,000 - $49,999
- ○ $100,000 - $149,999
- ○ $15,000 - $24,999
- ○ $50,000 - $59,999
- ○ $150,000 o más
- ○ $25,000 - $34,999
- ○ $60,000 - $74,999
- ○ $35,000 - $39,999
- ○ $75,000 - $99,999

Toda la información es confidencial y no será compartida ni vendida. ¡Gracias!

# appendix c | training materials

## Survey/Counter PowerPoint Presentation

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## Introductions

- Brad Carlson (NuStats)
- Ryan McCutchan (NuStats)
- Jeremy Wilhelm (GeoStats)
- All non-NuStats staff



## Survey Purpose

- Estimating future transportation demand
- Importance of their contribution to own community
- Improve bus service
  - Where do people travel from and to?
  - How do they get there?
  - When do they travel?
  - Why are they traveling?



## Administrative Issues

- Discuss specific admin info (survey badges, boarding process, report times, etc.)
- Payment structure and method



## Questionnaire Review

- Question by question review
- Address information
- Sufficient info regarding place name and cross streets
- Concept of one-way trip

## Assignment Sheet

- Report time/location
- Assignment number
- Number of trips
- System/Route
- Block
- Trip start location/start time
- Trip end location/end time
- Direction of bus
- Questionnaire start number for each trip



## Survey Command Center

- Address: 602 North Capitol Avenue
- Phone: (317) 514-6823
- Office hours: 9AM – 5PM
- Supervisors Available: By cell phone from 6AM – 8PM



## YOU Are The Key to Success!

- Appearance
- Attitude and Motivation
- Interaction with Passengers



## Work Requirements

- Be on time and on correct bus (route / block)
- Be polite and helpful
- Dress neatly – comfortable shoes
- Observe rules on the bus
- Silence cell phones
- Communicate with riders and partner
- Notify partner if unavailable for scheduled shift





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## Work Schedule

- Daily shifts (varying)
- Mon – Fri from 6AM – 10PM
- Weekdays only



## Team Structure

- Two-person teams:
  - 1 Counter
  - 1 Surveyor



## Reporting to Assignment

- Familiarize yourself with each assignment PRIOR to going out on assignment
  - Make sure surveyor/counter is present at the correct location
  - Confirm info on bus (Route / Block)
  - Introduce yourself to the driver
  - Verify you are on the correct assignment (Route / Block Number)
  - Record information, as required



## Team Responsibilities

Surveyor:

- Distribute a survey to all boarding customers (age 15+)
- Encourage passengers to participate
  - Make announcements
  - Walk up and down aisles
  - Quickly review returned surveys
  - Offer assistance
  - Distribute incentives
- Announce next survey number to counter

## Team Responsibilities

Counter:

- Records number of passengers by type of who board and depart at each stop
- Records serial number of next survey to be distributed after each stop
- Assist surveyor as able in answering questions and collecting questionnaires
- Do not switch positions in during an assignment!!!!



## INCENTIVES

Discuss bus passes:

- Surveyors get a weekly bus pass. Do not lose pass, you will not get another one.
- Survey needs to be completely filled out in order for the respondent to receive a day pass.
- We will be monitoring the number of day passes given out and turned back in!!!!!



## Supplies

- Questionnaires
- Pens
- Collection envelope(s)
- Route maps
- "Survey Today" sign
- Rubber Bands
- Double stick tape



## Distributing Surveys

- Position yourself behind driver
- Do not impede boarding, but distribute Qs immediately once passengers move beyond farebox
- Communicate to Counter first/next survey serial number at each stop
- Use surveys in sequential order, by pack and within pack





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## Distributing Surveys

- "INDYGO is conducting a survey on bus routes, we really appreciate your help"
- Stress incentives
  - $100 drawing
  - Daily bus pass
  - Community / Civic minded approach



## When to encourage mail backs

- Standing room only
- Short trippers – always encourage passengers to take incomplete Qs with them
- Unwilling to participate immediately
- Physically unable
  - Language issue (discuss Spanish language process)
  - Handicap or otherwise unable – assistance



## Survey Distribution Process Example

- Numeric range distribution by bus stop and implications of incorrect distribution
- Numeric range integrity
  - Pulling surveys out of order in a pack
  - Pulling packs out of order



## Survey Process (Continued)

- Walk around vehicle; encourage passengers to complete questionnaire
- Offer help
- Review questionnaires
  - No "home" to "home"
  - Check for origin, destination and make sure the same address is NOT listed for both addresses
- Remind passengers they can enter a drawing to win $100 cash and get a day bus pass if they complete the survey

## 5 Summary points

- Hand out surveys in sequential order to every boarding passenger (15 + years old)
- Short and direct – encourage participation
- Present survey serial numbers at each stop
- At the end of each trip, make sure you walk up and down the aisle and collect any surveys on the seats and floor
- At the end of the assignment, remove "Survey Today" sign

Title of Presentation 21

## Have fun!

Thank you AND HAVE FUN!

Title of Presentation 22

## iPAQ Counter PowerPoint Presentation

### Counter Training

### Overview of Counter Position

- Counters responsible for counting passengers getting ON and OFF the bus at each stop. Counters will sit in the middle of the bus so that you can count people getting on and off at both doors.
- Counters will use a handheld PDA (HP iPAQ) with built in GPS functionality.
- Counters will check in with survey supervisor at the specific designated area to obtain new assignments and check completed assignments.

3

### Presentation Overview

- Overview of Counter Position
- Equipment
- Battery Maintenance
- Overnight Charging
- RideCount Instructions

2

### Instructions

- Review your assignment with supervisor to make sure you understand the report time, location, etc…
- Arrive at the assignment "report location" 10 minutes early.
- Wear your ID badge and INDYGO shirt
- Dress in comfortable pants and shoes, yet professional attire. Bring your bag which will hold your equipment (iPAQ, battery adaptor with "fresh" batteries).
- Use the restroom and have something to eat before boarding the bus or train.
- Count people boarding the bus that are 15 years and older

4

## Assignment Sheet Elements

- Assignment #
- Trip #
- Route
- Key Block
- Pattern
- Direction
- Start Time / End Time
- Start Location / End Location
- Vehicle #
- Space for Comments

5

## Equipment

- HP iPAQ with RideCount software
- Built-in GPS functionality
- Stylus
- AC adaptor
- Energizer Energi To Go charger
- Batteries (4 AA's)
- Carry Bag

6

## HP iPAQ

7

## Turning On The iPAQ

**The iPAQ has a rust colored button on the top of the case that is used for turning it on and off. If the iPAQ is not used for 5 minutes, it will shut itself off automatically. If it shuts itself off, simply turn it back on by pressing on the power button and it will return to the screen where you left off.**

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## Keeping The iPAQ Powered

The iPAQ has a battery indicator at the very top of the screen. When you turn the iPAQ on, check the battery level. When the Battery is solid, it is full. When the iPAQ is charging, it will have a power plug icon instead of a battery icon.

The iPAQ battery should be full after each evening of re-charging. During the day the iPAQ can be charged by the battery pack if the Power indicator is low (below 25%).


9

## Overnight Charging

- Plug in the iPAQ using the AC adaptor.
- Plug AC adaptor into the wall.
- Make sure the iPAQ is not ON.
- The power button will shine red when it's charging - make sure it's charging.

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## Power Management Guidelines

- At the beginning of the study, you will be provided with one fully charged iPAQ, AC charger, one Energizer Energi To Go charger, and 4 AA batteries.
- Always ensure that your iPAQ has a full charge at the beginning of the day!!!!!!
- The Energizer Energi To Go should be used to charge the iPAQ during the trip if the power is 25% or less.

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## Power Management Part 2

- If the IPAQ has less than 25% power, at the end of each trip you should power down the iPAQ and use the Energizer Energi To Go
- Perform the following steps:
  - Make sure the Energizer has two "fresh" AA batteries in it
  - Power down the iPAQ
  - Attach the Energizer charger to the iPAQ
  - press the power button again if the iPAQ tries to power up – it will only receive a charge if it is powered off
  - The power button will shine red when it's charging - make sure it's charging.

12

## Additional notes

- **When disconnecting the EnergiToGo, do not pull on the wire. Please pull on the connector.**

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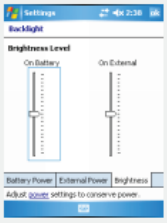
## Adjusting the Screen

If lighting conditions make it difficult to see the information on the iPAQ, you can change the contrast of the screen.

To adjust the screen contrast, click **Start** then select **Settings**. On the **System** tab select **Backlight**. Select the **Brightness** tab and then adjust the 'On Battery' brightness slider. Tap OK when done.


15

## Entering Data with the Stylus

**Using the stylus**

The stylus looks like a little pen that is used to tap and "write" on the iPAQ screen. The stylus is the only instrument you should use for this task. **Never use a real pen or pencil** as this may permanently damage the iPAQ sreen.

The stylus is housed on the iPAQ on the lower right side in a slot, where it snaps in securely. It should be kept there when not in use.



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## How To Use The HP iPAQ and RideCount with OnBoard Software

16



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## Using RideCount

To start the **RideCount** application, simply tap on the **RideCount** icon on the **Start** menu.


17

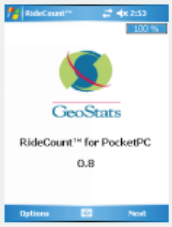
## Enter Surveyor ID and Name

You will be prompted to enter your name in the drop down list. Select **Other** and then enter your name. Once your name and ID is correct, tap **Next**.


19

## Title Screen

This is the first screen you will see in the **RideCount** application. Tap **Next** with your stylus to continue. When in ride count you will see a battery percentage.

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## GPS Initialization Screen

When you reach this screen the iPAQ will attempt to find its position using the GPS receiver. Once the position is known, the signal strength indicators will turn green to show the relative strength of the signal at the current location. Always give the gps a couple of minutes to try to get a signal. This is one of the reasons for showing up early to your assignment.


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## Main Screen

This is the screen where you can either begin a new trip in RideCount or you can exit the application.

After completing each trip, you will return to this screen.

To exit the **RideCount** application, select **Exit** application on this screen. Do not exit ridecount unless the complete assignment is done.


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## Trip Information

At the start of each trip, you will need to enter the current trip information. After the first trip of the day, all values except the trip # will default to the last trip. The trip # increases by 1 each time you enter the Trip Information screen after your first trip. Be sure to change the route, direction, and pattern (if applicable) before you start a new trip. You must enter all information before beginning your counts. If you do not change any values, you will be asked to confirm that nothing has changed since the last trip. If you entered the wrong information and accidentally hit next, on the next screen enter 100 for the starting survey. Go through and end trip and start over.


23

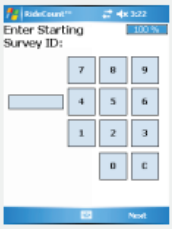
On this screen select the Assignment Number from the list. If the assignment is not in the list, select [Other] and enter the Assignment Number in the box below the drop down using the on-screen keyboard (accessible via the keyboard icon in the center bottom portion of the screen).


22

## Starting Survey ID

At the start of each trip, you will be prompted to enter the starting Survey ID from the stack of paper surveys that will be distributed to passengers as they board the bus.

Tap on the numeric keypad to record the starting Survey ID number. Tap on **Next** to enter the boarding count at the origin stop.





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## Trip Origin Boarding Count

When you arrive at the origin location (or when you are ready to depart from the origin location after a driver layover or break), you should tap on **Arrive**.

At the start of each trip, you will enter the number of passengers who board at the origin location **and** the number of passengers who remained on from the previous trip, by their specific group. The total number of passengers will calculate as you add passengers in each of the group subcategories.

Tap on **Depart** as the bus pulls away from the stop.


25

## Trip Origin Stop Name

As you depart the origin stop, you should select the stop name from the list of stops for the route and direction you specified for this assignment. Simply tap on the stop name and then tap **Next**. If you select the wrong stop name, use **Clear** (bottom left of iPAQ window) to unselect the stop name.

The list of stops may be long so be sure that you scroll down by tapping on the small arrow or by using the stylus to drag the scroll bar up or down. ***Sometimes the stop is not on the iPAQ, if the stop is not in the iPAQ select the previous stop that was selected.*******


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## Subsequent Survey IDs

As you approach the next stop, you will be prompted to enter the starting (or next) Survey ID from the stack of paper surveys that will be distributed to passengers as they board the bus.

Tap on the numeric keypad to record the starting Survey ID number. Tap on **Next** to record your arrival and to begin entering rider boarding and alighting counts.


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## Boarding and Alighting Counts


Tap on **Depart** as the bus pulls away from the stop. Often there may be last second boardings or alightings, and you cannot make a change once you leave this screen.

If you do not enter any boardings or alightings you will be asked to confirm that no passengers entered or exited the bus at this stop.

When you arrive at a stop (where the bus will pick up and/or drop off passengers) you should tap on **Arrive**. Do not tap on Arrive until you are physically located at the stop.

This screen is designed to capture the number of passengers getting off the bus first (#OFF) and then the number of passengers getting on the bus (#ON). The total will recalculate as you add passengers in each of the age group subcategories.


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## Confirm Passenger Counts

If something unusual happens at a stop, after the bus departs record the event by writing it on your Assignment page. Do not enter in comments in your iPAQ!!

After departing from a stop you will be asked to confirm the number of people on the bus and enter this number.

If this is the last stop on the current trip, your passenger count be zero Then tap **End of Trip** to end the trip.


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## Selecting Stop Names

When selecting mid-trip stop names, apply the following rules:

1. You need to know for sure where you are and the name appears on the list, select it.
2. If you must select a stop name and do not know where you are, make your best guess.


31

## Subsequent Survey IDs

As you approach the next stop, you will be prompted to enter the starting (or next) Survey ID from the stack of paper surveys that will be distributed to passengers as they board the bus.

Tap on the numeric keypad to record the starting Survey ID number. Tap on **Next** to record your arrival and to begin entering rider boarding and alighting counts.


30

## Subsequent Survey IDs

As you approach the next stop, you will be prompted to enter the starting (or next) Survey ID from the stack of paper surveys that will be distributed to passengers as they board the bus.

Tap on the numeric keypad to record the starting Survey ID number. Tap on **Next** to record your arrival and to begin entering rider boarding and alighting counts.


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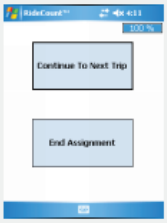
## End of Trip

After entering the starting survey ID for the remaining paper surveys.
You are then prompted to continue to the next trip, or end the assignment.




If you select **Continue to Next Trip** you will be sent to the Trip Information screen.

If you select **End Assignment** you will return to the Start Assignment / Exit application prompt.

Do not select **End Assignment until your assignment is completed!!**

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## Summary

- When you get to the bus stop, make sure to get a GPS fix reading before getting on the bus and that you have at least two "bars".
- Always use the Energizer with "Fresh" batteries at the end of each trip if the power is below 25% make sure that the iPAQ is powered off when using it.
- At night charge iPAQ fully using the AC adaptor.
- Monitor battery power gauge.
- Always verify that the correct Survey ID number has been entered.
- Our Number 317-514-6823

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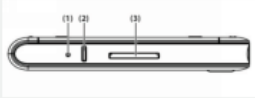
## Resetting the Handheld

- There may be times when the iPAQ screen seems to 'freeze' or 'lock up.' If the handheld does not respond to keyboard buttons or tapping the screen, you will need to reset the iPAQ to get the handheld running again. Try the soft reset first (see instructions below). If this does not work, you will need to take the iPAQ to the project supervisor.
  - A soft reset is similar to rebooting your PC. If the handheld locks up or crashes in the middle of the survey, you can reset the iPAQ operating system and return to the Today screen.
  - To reset your iPAQ, use the tip of the stylus and gently press the reset button inside the round hole (1) on the side of the handheld to the left of the SD card slot (3). Use the tip of your stylus to gently press into it.
  - You will know when the reset works when the screen flashes, restarts the iPAQ operating system, and then displays the Quick Launch screen.
  - To exit this screen, tap on the X icon to return to the Today screen.

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# appendix d | pilot memorandum

# IndyGo 2009 On-Board Transit Survey
# Pilot Assessment
# September 25th, 2009

## Background

A rolling pilot was conducted September 21st through September 25th prior to the implementation of the full data collection effort to begin in September/October. The purpose of the pilot was to assess the training procedures and response to the survey (both from data item response and respondent participation).

Surveyor and Counter training occurred on Monday September 21st with sixteen team members. Each attendee was trained on both the surveying and counting tasks to allow for optimal and efficient resource allocation for the data collection effort.

The training included:

- ✓ An introduction to the purpose of the project (travel demand modeling, transit planning and the COA)
- ✓ Objectives of the survey (data items that will be collected, sample size, schedule)
- ✓ In-depth review of the survey instrument so that surveyors can assist respondents as needed
- ✓ Survey process and expectations of the surveyors
- ✓ Discussion on the impacts of bias and professionalism
- ✓ Tips on maximizing response rates (both unit – respondent participation and item response – specific variable response rates)
- ✓ Counter process and expectations of the counters
- ✓ Counter testing of the equipment

The following is an assessment of the actual surveying process and of the returned questionnaires.

Assignments were generated to cover various times of the day. The following table summarizes the number of trips sampled by the time-of-day definitions.

**Table 1 – Number of Trips Sampled by Time-of-Day**

| Time-of-Day | Definition | Trips Sampled |
|---|---|---|
| AM Peak | 6 a.m. – 9 a.m. | 31 |
| Mid-day | 9:01 a.m. – 3:00 p.m. | 55 |
| PM Peak | 3:01 p.m. – 6:00 p.m. | 26 |
| Evening | 6:01 p.m. – 2:00 a.m. | 10 |
| Total | | 122 |

- Routes surveyed: [8, 19, 28, 34, 37, 38, Red Line, 205, Carmel ICE, & Fishers ICE]. These routes were specifically selected to provide a range of route characteristics (heavy ridership, heavily Spanish-speaking only, and University routes).

**Table 2 – Number of Trips Sampled by Route**

| Routes | Trips Sampled |
|---|---|
| 8 | 8 |
| 19 | 14 |
| 28 | 16 |
| 34 | 14 |
| 37 | 28 |
| 38 | 6 |
| Red Line | 26 |
| Carmel | 4 |
| 205 | 2 |
| Fishers | 4 |

### Qualitative Assessment:

Overall, the data completeness and quality appear within expectations for a self-administered on-board survey. Of the surveys identified as incomplete and will not be counted towards the overall sample goals, the following are the most common problems found, which are not different from what NuStats has experienced elsewhere in the U.S.:

- Origin and Destination address information given by the respondent is the same, usually home to home but there were other incidences of the same address listed for both Origin and Destination, indicating a round trip.

- Either the Origin or the Destination not provided at all (i.e., insufficient data to geocode).

- Route Sequence information was not consistent.

### Survey Quantitative Results

Overall, the IndyGo OB survey has proven to have a high participation rate amongst the ridership. This is a direct result of the day pass. As the survey continues, NuStats anticipates the participation rate to decrease due to "respondent" fatigue. NuStats will monitor this to ensure our participation rate achieves our target of 50 percent.

**Table 3 – Participation Rates**

| Route | Eligible Boardings | Distributed Surveys | Participation % |
|---|---|---|---|
| 8 | 351 | 275 | 78.3% |
| 19 | 413 | 329 | 79.7% |
| 28 | 141 | 105 | 74.5% |
| 34 | 150 | 107 | 71.3% |
| 37 | 709 | 471 | 66.4% |
| 38 | 154 | 128 | 83.1% |
| 200 | 61 | 55 | 90.2% |
| 210 | 32 | 17 | 53.1% |
| Green Line | 2 | 2 | 100.0% |
| Red Line | 265 | 159 | 60.0% |
| **Totals** | **2278** | **1648** | **72.3%** |

The response rates, at the route level, are exceeding 30 percent, and in many instances much higher. This can be attributed to the day pass and the surveyor training. The rolling pilot has resulted in meeting the route level goals on routes 34, the Red Line, and the Carmel Express.

**Table 4 – Completes and Response Rates**

| Route | Complete | Goal | % Complete | Response |
|---|---|---|---|---|
| 8 | 97 | 395 | 24.6% | 38% |
| 28 | 55 | 74 | 74.3% | 37% |
| 34 | 124 | 87 | 142.5% | 48% |
| 37 | 140 | 161 | 87.0% | 40% |
| 38 | 62 | 163 | 38.0% | 40% |
| Red Line | 91 | 45 | 202.2% | 34% |
| Carmel Express | 46 | 43 | 107.0% | 75% |
| Fishers Express | 40 | 68 | 58.8% | 66% |
| Total | 655 | | | |

## Activity Based Question

The Activity based question was monitored during the rolling pilot to see how it performed. Table 5 is an illustration of how 953 questionnaires were answered. The questionnaires that were apart of this sample were completes, partials, and fails. Further analysis will be conducted after the questionnaires are scanned into the dataset.

**Table 5 – Activity Responses**

| Go To Work | Go To School | Go Shopping | Do Other Errands | Visit Friends/Attend Event | Buy a Meal | Other, Specify |
|---|---|---|---|---|---|---|
| 446 | 244 | 114 | 296 | 92 | 182 | 76 |

## Count Data Quantitative Results

Of the 27 assignments issued, 27 corresponding boarding/alighting count files were downloaded and found to be correct or correctable with minor edits. In addition to the RideCount files, GPS was present for 74 percent of all stops to date.

## Challenges

### The distribution of passes

While not all surveys have been edited, a total of 1,887 passes have been issued. Approximately 300 passes have been issued for surveys that did not meet the definition of a complete. During the pilot, NuStats reviewed the partial and failed questionnaires with individual staff to identify issues, and how to approach respondents in obtaining the correct information. Call-backs will be preformed next week to rectify questionnaires that do not meet the definition of a complete, and minimize the number of passes that were issued incorrectly. NuStats will continue to monitor the distribution of passes in an effort to maximize the number of passes distributed vs. the number of surveys collected.

### Spanish surveys

A total of five Spanish questionnaires have been completed to date. The pilot utilized two Spanish speaking surveyors. NuStats will train additional Spanish speaking surveyors in subsequent trainings. Going forward, surveyors will distribute a document to the linguistically isolated passengers in an effort to explain the survey more thoroughly, and aid surveyors who do not speak Spanish.

## Conclusion

Overall, the rolling pilot was successful with regards to the surveyor and counter training, passenger participation, and data completeness and quality. However, we do recommend a few enhancements that will be beneficial during the full study:

- Continue monitoring the pass distribution
- Provide a Spanish recruitment document to increase participation
- Over-sample the ICE routes

# appendix e | cross tabulated tables

## Table E-1: Age and Origin Trip Purpose

Count

| | Origin Trip Purpose | | | | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Work or Work Related | Home | Shopping | College (Student only) | Other school (student only) | Medical services | Social, Religious, or Personal Business | Library (general) | Hospital (general) | Airport | Drop off/pick up child/visit child's school | Other, Specify | |
| Age Under 16 | 5 | 50 | 16 | 0 | 52 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 126 |
| 16 to 18 | 109 | 550 | 34 | 225 | 479 | 15 | 69 | 7 | 0 | 4 | 0 | 5 | 1,497 |
| 19 to 24 | 990 | 2,327 | 172 | 757 | 284 | 104 | 391 | 18 | 0 | 2 | 38 | 65 | 5,148 |
| 25 to 34 | 1,255 | 2,893 | 442 | 331 | 154 | 278 | 546 | 44 | 0 | 4 | 79 | 48 | 6,074 |
| 35 to 49 | 3,195 | 4,703 | 383 | 261 | 98 | 295 | 766 | 63 | 0 | 6 | 7 | 95 | 9,872 |
| 50 to 64 | 2,362 | 2,930 | 436 | 53 | 37 | 561 | 469 | 49 | 34 | 9 | 0 | 160 | 7,100 |
| 65 or older | 280 | 344 | 75 | 0 | 0 | 39 | 223 | 4 | 0 | 26 | 0 | 0 | 991 |
| Total | 8,196 | 13,797 | 1,558 | 1,627 | 1,104 | 1,295 | 2,464 | 185 | 34 | 51 | 124 | 373 | 30,808 |

## Table E-2: Ethnicity and Origin Trip Purpose

Count

| | | Origin Trip Purpose | | | | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Work or Work Related | Home | Shopping | College (Student only) | Other school (student only) | Medical services | Social, Religious, or Personal Business | Library (general) | Hospital (general) | Airport | Drop off/pick up child/visit child's school | Other, Specify | |
| Ethnicity | White/Caucasian | 2,538 | 4,567 | 551 | 427 | 116 | 455 | 617 | 77 | 0 | 32 | 36 | 70 | 9,486 |
| | Asian | 55 | 191 | 8 | 71 | 63 | 22 | 28 | 0 | 0 | 2 | 0 | 78 | 518 |
| | Hispanic/Latin American | 246 | 409 | 54 | 80 | 4 | 28 | 56 | 9 | 26 | 2 | 0 | 0 | 914 |
| | Black or African American | 5,495 | 8,557 | 960 | 1,063 | 907 | 805 | 1,876 | 94 | 8 | 10 | 107 | 165 | 20,047 |
| | American Indian | 50 | 374 | 5 | 8 | 3 | 43 | 83 | 0 | 0 | 0 | 0 | 82 | 648 |
| | Other, specify | 94 | 140 | 17 | 43 | 37 | 20 | 15 | 2 | 0 | 4 | 0 | 0 | 372 |
| | Missing | 27 | 281 | 31 | 0 | 6 | 8 | 31 | 2 | 0 | 0 | 0 | 0 | 386 |
| Total | | 8,505 | 14,519 | 1,626 | 1,692 | 1,136 | 1,381 | 2,706 | 184 | 34 | 50 | 143 | 395 | 32,371 |

## Table E-3: Vehicle Availability and Origin Trip Purpose

Count

| | | Origin Trip Purpose | | | | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Work or Work Related | Home | Shopping | College (Student only) | Other school (student only) | Medical services | Social, Religious, or Personal Business | Library (general) | Hospital (general) | Airport | Drop off/pick up child/visit child's school | Other, Specify | |
| Vehicle Availability | Yes | 2,062 | 2,897 | 232 | 478 | 265 | 204 | 367 | 49 | 26 | 11 | 13 | 15 | 6,619 |
| | No | 6,047 | 10,738 | 1,269 | 1,137 | 828 | 1,085 | 2,126 | 136 | 8 | 40 | 129 | 340 | 23,883 |
| Total | | 8,109 | 13,635 | 1,501 | 1,615 | 1,093 | 1,289 | 2,493 | 185 | 34 | 51 | 142 | 355 | 30,502 |

## Table E-4: Age and Destination Trip Purpose

Count

| | | Destination Trip Purpose | | | | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Work or Work Related | Home | Shopping | College (Student only) | Other school (student only) | Medical services | Social, Religious, or Personal Business | Library (general) | Hospital (general) | Airport | Drop off/pick up child/visit child's school | Other, Specify | |
| Age | Under 16 | 19 | 70 | 3 | 0 | 29 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 126 |
| | 16 to 18 | 140 | 780 | 57 | 88 | 258 | 45 | 107 | 12 | 0 | 0 | 8 | 0 | 1,495 |
| | 19 to 24 | 1,157 | 2,137 | 291 | 705 | 243 | 88 | 333 | 67 | 3 | 0 | 96 | 27 | 5,147 |
| | 25 to 34 | 2,201 | 2,201 | 269 | 411 | 84 | 159 | 575 | 48 | 2 | 22 | 46 | 56 | 6,074 |
| | 35 to 49 | 2,981 | 3,992 | 629 | 150 | 116 | 484 | 1,149 | 146 | 0 | 14 | 19 | 190 | 9,870 |
| | 50 to 64 | 1,978 | 3,395 | 429 | 80 | 70 | 369 | 635 | 53 | 6 | 19 | 0 | 64 | 7,098 |
| | 65 or older | 163 | 584 | 55 | 12 | 0 | 56 | 99 | 0 | 0 | 0 | 0 | 21 | 990 |
| Total | | 8,639 | 13,159 | 1,733 | 1,446 | 800 | 1,206 | 2,898 | 326 | 11 | 55 | 169 | 358 | 30,800 |

## Table E-5: Ethnicity and Destination Trip Purpose

Count

| | | Destination Trip Purpose | | | | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Work or Work Related | Home | Shopping | College (Student only) | Other school (student only) | Medical services | Social, Religious, or Personal Business | Library (general) | Hospital (general) | Airport | Drop off/pick up child/visit child's school | Other, Specify | |
| Ethnicity | White/Caucasian | 3,006 | 3,825 | 637 | 481 | 91 | 378 | 820 | 65 | 6 | 34 | 14 | 129 | 9,486 |
| | Asian | 128 | 295 | 24 | 43 | 9 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 515 |
| | Hispanic/Latin American | 195 | 399 | 58 | 57 | 68 | 65 | 35 | 18 | 0 | 0 | 0 | 18 | 913 |
| | Black or African American | 5,325 | 8,763 | 1,033 | 869 | 693 | 732 | 2,036 | 227 | 6 | 22 | 144 | 202 | 20,052 |
| | American Indian | 114 | 208 | 13 | 22 | 10 | 86 | 187 | 5 | 0 | 2 | 0 | 0 | 647 |
| | Other, specify | 87 | 195 | 22 | 16 | 11 | 4 | 30 | 0 | 0 | 0 | 8 | 0 | 373 |
| | Missing | 109 | 77 | 14 | 37 | 16 | 7 | 90 | 20 | 0 | 0 | 4 | 10 | 384 |
| Total | | 8,964 | 13,762 | 1,801 | 1,525 | 898 | 1,288 | 3,198 | 335 | 12 | 58 | 170 | 359 | 32,370 |

## Table E-6: Vehicle Availability and Destination Trip Purpose

Count

| | | Destination Trip Purpose | | | | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Work or Work Related | Home | Shopping | College (Student only) | Other school (student only) | Medical services | Social, Religious, or Personal Business | Library (general) | Hospital (general) | Airport | Drop off/pick up child/visit child's school | Other, Specify | |
| Vehicle Availability | Yes | 1,998 | 3,083 | 265 | 335 | 165 | 134 | 469 | 86 | 0 | 10 | 58 | 14 | 6,617 |
| | No | 6,630 | 9,979 | 1,425 | 1,074 | 619 | 1,051 | 2,386 | 229 | 11 | 45 | 111 | 323 | 23,883 |
| Total | | 8,628 | 13,062 | 1,690 | 1,409 | 784 | 1,185 | 2,855 | 315 | 11 | 55 | 169 | 337 | 30,500 |

## Table E-7: Age and Access

Count

| | | Access | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Walked/W heelchair | Rode my bicycle | Drove my car | Dropped off by someone | Carpooled | Other, specify | Total |
| Age | Under 16 | 92 | 13 | 12 | 7 | 2 | 0 | 126 |
| | 16 to 18 | 1,354 | 5 | 5 | 130 | 3 | 0 | 1,497 |
| | 19 to 24 | 4,799 | 80 | 47 | 216 | 6 | 0 | 5,148 |
| | 25 to 34 | 5,501 | 110 | 84 | 351 | 13 | 14 | 6,073 |
| | 35 to 49 | 8,934 | 228 | 281 | 425 | 4 | 0 | 9,872 |
| | 50 to 64 | 6,642 | 79 | 213 | 158 | 5 | 2 | 7,099 |
| | 65 or older | 914 | 2 | 24 | 45 | 0 | 6 | 991 |
| Total | | 28,236 | 517 | 666 | 1,332 | 33 | 22 | 30,806 |

## Table E-8: Ethnicity and Access

Count

| | | Access | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Walked/W heelchair | Rode my bicycle | Drove my car | Dropped off by someone | Carpooled | Other, specify | Total |
| Ethnicity | White/Caucasian | 8,430 | 221 | 455 | 328 | 28 | 22 | 9,484 |
| | Asian | 480 | 4 | 14 | 19 | 0 | 0 | 517 |
| | Hispanic/Latin American | 815 | 22 | 61 | 16 | 0 | 0 | 914 |
| | Black or African American | 18,618 | 294 | 147 | 976 | 5 | 10 | 20,050 |
| | American Indian | 647 | 0 | 0 | 0 | 0 | 0 | 647 |
| | Other, specify | 366 | 0 | 0 | 7 | 0 | 0 | 373 |
| | Missing | 355 | 7 | 18 | 5 | 0 | 0 | 385 |
| Total | | 29,711 | 548 | 695 | 1,351 | 33 | 32 | 32,370 |

## Table E-9: Vehicle Availability and Access

Count

| | | Access | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Walked/W heelchair | Rode my bicycle | Drove my car | Dropped off by someone | Carpooled | Other, specify | Total |
| Vehicle Availability | Yes | 5,386 | 155 | 624 | 442 | 10 | 0 | 6,617 |
| | No | 22,599 | 362 | 65 | 816 | 18 | 22 | 23,882 |
| Total | | 27,985 | 517 | 689 | 1,258 | 28 | 22 | 30,499 |

## Table E-10: Age and Number of Blocks Walked (Access)

Count

| | | Number of Blocks Walked | | | | | | | | | | | | | | | | | | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 30 | 35 | |
| Age | Under 16 | 0 | 33 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 61 |
| | 16 to 18 | 34 | 371 | 127 | 32 | 49 | 32 | 21 | 59 | 20 | 3 | 13 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 767 |
| | 19 to 24 | 210 | 980 | 803 | 281 | 338 | 137 | 171 | 31 | 12 | 3 | 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 6 | 0 | 0 | 9 | 0 | 3,032 |
| | 25 to 34 | 111 | 1,158 | 761 | 274 | 388 | 132 | 80 | 24 | 35 | 9 | 26 | 0 | 5 | 29 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 3,044 |
| | 35 to 49 | 217 | 1,722 | 1,162 | 546 | 499 | 289 | 151 | 57 | 109 | 0 | 60 | 0 | 41 | 7 | 61 | 12 | 5 | 6 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4,951 |
| | 50 to 64 | 241 | 1,581 | 715 | 302 | 394 | 236 | 90 | 35 | 47 | 5 | 30 | 0 | 33 | 0 | 0 | 0 | 0 | 8 | 8 | 4 | 3 | 0 | 0 | 6 | 2 | 0 | 4 | 3,744 |
| | 65 or older | 19 | 151 | 106 | 100 | 31 | 15 | 0 | 0 | 0 | 0 | 50 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 474 |
| Total | | 832 | 5,996 | 3,702 | 1,535 | 1,699 | 841 | 513 | 206 | 223 | 20 | 222 | 2 | 79 | 36 | 67 | 12 | 10 | 14 | 8 | 19 | 3 | 7 | 6 | 6 | 2 | 9 | 4 | 16,073 |

## Table E-11: Ethnicity and Number of Blocks Walked (Access)

Count

| | | Number of Blocks Walked | | | | | | | | | | | | | | | | | | | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 30 | 35 | 55 | |
| Ethnicity | White/Caucasian | 315 | 1,829 | 1,302 | 524 | 437 | 262 | 196 | 39 | 57 | 14 | 120 | 0 | 29 | 7 | 61 | 5 | 10 | 15 | 8 | 4 | 3 | 0 | 0 | 6 | 0 | 9 | 0 | 2 | 5,254 |
| | Asian | 21 | 82 | 40 | 18 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 183 |
| | Hispanic/Latin American | 31 | 219 | 105 | 22 | 68 | 24 | 18 | 16 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 6 | 0 | 0 | 0 | 0 | 525 |
| | Black or African American | 498 | 3,856 | 2,416 | 966 | 1,126 | 546 | 284 | 148 | 156 | 3 | 101 | 4 | 55 | 29 | 6 | 0 | 0 | 0 | 0 | 8 | 0 | 7 | 0 | 6 | 2 | 0 | 4 | 0 | 10,221 |
| | American Indian | 21 | 93 | 40 | 31 | 123 | 171 | 0 | 0 | 0 | 0 | 2 | 0 | 8 | 0 | 0 | 0 | 0 | 8 | 8 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 511 |
| | Other, specify | 4 | 98 | 22 | 16 | 21 | 6 | 29 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 213 |
| | Missing | 0 | 15 | 32 | 45 | 32 | 16 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 142 |
| Total | | 890 | 6,192 | 3,957 | 1,622 | 1,820 | 1,025 | 527 | 205 | 223 | 20 | 223 | 4 | 95 | 36 | 67 | 12 | 10 | 23 | 16 | 19 | 3 | 7 | 6 | 30 | 2 | 9 | 4 | 2 | 17,049 |

## Table E-12: Vehicle Availability and Number of Blocks Walked (Access)

Count

| | | Number of Blocks Walked | | | | | | | | | | | | | | | | | | | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 30 | 35 | 55 | |
| Vehicle Availability | Yes | 127 | 1,384 | 674 | 234 | 405 | 147 | 87 | 39 | 50 | 0 | 38 | 0 | 3 | 7 | 61 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3,258 |
| | No | 688 | 4,562 | 3,100 | 1,283 | 1,320 | 694 | 425 | 166 | 173 | 20 | 179 | 4 | 76 | 29 | 0 | 12 | 10 | 15 | 8 | 19 | 3 | 7 | 6 | 6 | 2 | 9 | 4 | 0 | 12,820 |
| Total | | 815 | 5,946 | 3,774 | 1,517 | 1,725 | 841 | 512 | 205 | 223 | 20 | 217 | 4 | 79 | 36 | 61 | 12 | 10 | 15 | 8 | 19 | 3 | 7 | 6 | 6 | 2 | 9 | 4 | 2 | 16,078 |

## Table E-13: Age and Egress

Count

| | | Egress | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Walked/W heelchair | Rode my bicycle | Drove my car | Dropped off by someone | Carpooled | Other, specify | Total |
| Age | Under 16 | 102 | 13 | 0 | 0 | 12 | 0 | 127 |
| | 16 to 18 | 1,416 | 5 | 7 | 47 | 18 | 4 | 1,497 |
| | 19 to 24 | 4,772 | 94 | 40 | 227 | 14 | 0 | 5,147 |
| | 25 to 34 | 5,554 | 142 | 63 | 295 | 15 | 5 | 6,074 |
| | 35 to 49 | 9,213 | 235 | 211 | 198 | 16 | 0 | 9,873 |
| | 50 to 64 | 6,712 | 75 | 167 | 132 | 9 | 4 | 7,099 |
| | 65 or older | 851 | 2 | 23 | 109 | 0 | 6 | 991 |
| Total | | 28,620 | 566 | 511 | 1,008 | 84 | 19 | 30,808 |

## Table E-14: Ethnicity and Egress

Count

| | | Egress | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Walked/W heelchair | Rode my bicycle | Drove my car | Dropped off by someone | Carpooled | Other, specify | Total |
| Ethnicity | White/Caucasian | 8,728 | 217 | 301 | 230 | 2 | 6 | 9,484 |
| | Asian | 469 | 7 | 12 | 27 | 2 | 0 | 517 |
| | Hispanic/Latin American | 812 | 28 | 33 | 23 | 12 | 5 | 913 |
| | Black or African American | 18,756 | 343 | 178 | 699 | 69 | 4 | 20,049 |
| | American Indian | 640 | 0 | 6 | 0 | 0 | 0 | 646 |
| | Other, specify | 332 | 0 | 0 | 36 | 0 | 4 | 372 |
| | Missing | 364 | 12 | 1 | 8 | 0 | 0 | 385 |
| Total | | 30,101 | 607 | 531 | 1,023 | 85 | 19 | 32,366 |

## Table E-15: Vehicle Availability and Egress

**Vehicle Availability * Egress Crosstabulation**

Count

| | | Egress | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Walked/W heelchair | Rode my bicycle | Drove my car | Dropped off by someone | Carpooled | Other, specify | Total |
| Vehicle Availability | Yes | 5,766 | 149 | 421 | 255 | 23 | 4 | 6,618 |
| | No | 22,596 | 423 | 96 | 697 | 55 | 15 | 23,882 |
| Total | | 28,362 | 572 | 517 | 952 | 78 | 19 | 30,500 |

## Table E-16: Age and Number of Blocks Walked (Egress))

Count

| | | Number of Blocks Walked | | | | | | | | | | | | | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 20 | 27 | 30 | 38 | 70 | |
| Age | Under 16 | 3 | 12 | 18 | 13 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 50 |
| | 16 to 18 | 51 | 399 | 162 | 28 | 65 | 10 | 5 | 0 | 7 | 7 | 9 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 747 |
| | 19 to 24 | 265 | 968 | 648 | 188 | 227 | 116 | 33 | 7 | 10 | 13 | 48 | 0 | 19 | 5 | 0 | 0 | 0 | 16 | 0 | 6 | 0 | 0 | 2,569 |
| | 25 to 34 | 198 | 1,072 | 668 | 175 | 337 | 135 | 48 | 22 | 27 | 0 | 47 | 10 | 0 | 4 | 29 | 11 | 0 | 8 | 0 | 3 | 2 | 0 | 2,796 |
| | 35 to 49 | 324 | 1,603 | 1,127 | 526 | 324 | 102 | 95 | 23 | 23 | 23 | 36 | 0 | 8 | 0 | 0 | 6 | 5 | 0 | 0 | 0 | 0 | 3 | 4,228 |
| | 50 to 64 | 186 | 1,183 | 545 | 343 | 144 | 114 | 119 | 23 | 23 | 5 | 17 | 0 | 17 | 2 | 0 | 0 | 0 | 23 | 23 | 0 | 0 | 0 | 2,767 |
| | 65 or older | 6 | 106 | 102 | 10 | 15 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 250 |
| Total | | 1,033 | 5,343 | 3,270 | 1,283 | 1,116 | 477 | 311 | 75 | 90 | 48 | 157 | 10 | 44 | 11 | 33 | 17 | 5 | 47 | 23 | 9 | 2 | 3 | 13,407 |

## Table E-17: Ethnicity and Number of Blocks Walked (Egress)

Count

| | | Number of Blocks Walked | | | | | | | | | | | | | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 20 | 27 | 30 | 38 | 70 | |
| Ethnicity | White/Caucasian | 414 | 1,805 | 1,112 | 401 | 359 | 118 | 158 | 36 | 40 | 26 | 49 | 0 | 19 | 0 | 4 | 17 | 5 | 16 | 0 | 9 | 0 | 0 | 4,588 |
| | Asian | 18 | 82 | 41 | 11 | 5 | 0 | 5 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 168 |
| | Hispanic/Latin American | 55 | 160 | 93 | 54 | 79 | 18 | 7 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 475 |
| | Black or African American | 628 | 3,301 | 2,172 | 831 | 638 | 340 | 157 | 37 | 40 | 20 | 105 | 10 | 24 | 11 | 29 | 0 | 0 | 31 | 23 | 0 | 2 | 0 | 8,399 |
| | American Indian | 40 | 121 | 42 | 57 | 24 | 0 | 4 | 0 | 4 | 0 | 11 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 311 |
| | Other, specify | 0 | 90 | 0 | 20 | 9 | 6 | 4 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 135 |
| | Missing | 0 | 21 | 15 | 10 | 35 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 105 |
| Total | | 1,155 | 5,580 | 3,475 | 1,384 | 1,149 | 506 | 335 | 73 | 93 | 49 | 174 | 10 | 43 | 16 | 33 | 17 | 5 | 47 | 23 | 9 | 2 | 3 | 14,181 |

## Table E-18: Vehicle Availability and Number of Blocks Walked (Egress)

Count

| | | Number of Blocks Walked | | | | | | | | | | | | | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 20 | 27 | 30 | 38 | 70 | |
| Vehicle Availability | Yes | 176 | 1,192 | 754 | 300 | 245 | 127 | 47 | 26 | 25 | 10 | 41 | 0 | 0 | 0 | 0 | 6 | 0 | 26 | 23 | 0 | 2 | 3 | 3,003 |
| | No | 777 | 4,097 | 2,600 | 972 | 867 | 348 | 276 | 48 | 65 | 39 | 116 | 10 | 44 | 11 | 33 | 11 | 5 | 21 | 0 | 9 | 0 | 0 | 10,349 |
| Total | | 953 | 5,289 | 3,354 | 1,272 | 1,112 | 475 | 323 | 74 | 90 | 49 | 157 | 10 | 44 | 11 | 33 | 17 | 5 | 47 | 23 | 9 | 2 | 3 | 13,352 |

**Table E-19: Age and Total Buses Uses for One-Way Trip**

Count

| | | Total Buses - respondent provided | | | | |
|---|---|---|---|---|---|---|
| | | 0 | One, this bus only | Two | Three or more | Total |
| Age | Under 16 | 0 | 47 | 64 | 16 | 127 |
| | 16 to 18 | 0 | 617 | 712 | 152 | 1,481 |
| | 19 to 24 | 0 | 1,727 | 2,446 | 947 | 5,120 |
| | 25 to 34 | 4 | 2,429 | 2,825 | 815 | 6,073 |
| | 35 to 49 | 0 | 3,937 | 4,716 | 1,212 | 9,865 |
| | 50 to 64 | 0 | 2,580 | 3,681 | 815 | 7,076 |
| | 65 or older | 0 | 385 | 549 | 51 | 985 |
| Total | | 4 | 11,722 | 14,993 | 4,008 | 30,727 |

**Table E-20: Ethnicity and Total Buses Uses for One-Way Trip**

**Ethnicity * Total Buses - respondent provided Crosstabulation**

Count

| | | Total Buses - respondent provided | | | | |
|---|---|---|---|---|---|---|
| | | 0 | One, this bus only | Two | Three or more | Total |
| Ethnicity | White/Caucasian | 4 | 4,501 | 4,146 | 825 | 9,476 |
| | Asian | 0 | 322 | 167 | 28 | 517 |
| | Hispanic/Latin American | 0 | 363 | 407 | 131 | 901 |
| | Black or African American | 0 | 6,537 | 10,315 | 3,128 | 19,980 |
| | American Indian | 0 | 242 | 322 | 83 | 647 |
| | Other, specify | 0 | 142 | 210 | 21 | 373 |
| | Missing | 0 | 183 | 150 | 51 | 384 |
| Total | | 4 | 12,290 | 15,717 | 4,267 | 32,278 |

**Table E-21: Vehicle Availability and Total Buses Uses for One-Way Trip**

Count

| | | Total Buses - respondent provided | | | | |
|---|---|---|---|---|---|---|
| | | 0 | One, this bus only | Two | Three or more | Total |
| Vehicle Availability | Yes | 0 | 3,623 | 2,438 | 544 | 6,605 |
| | No | 4 | 7,959 | 12,379 | 3,465 | 23,807 |
| Total | | 4 | 11,582 | 14,817 | 4,009 | 30,412 |

## Table E-22: Age and Frequency of Use

Count

| | | Age | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Under 16 | 16 to 18 | 19 to 24 | 25 to 34 | 35 to 49 | 50 to 64 | 65 or older | Total |
| Days | 6-7 days/week | 37 | 448 | 1,547 | 1,914 | 3,144 | 1,672 | 313 | 9,075 |
| | 3-5 days/week | 29 | 669 | 2,797 | 2,825 | 4,641 | 3,739 | 415 | 15,115 |
| | 1-2 days/week | 14 | 100 | 331 | 622 | 1,015 | 829 | 129 | 3,040 |
| | Twice a month | 0 | 36 | 109 | 173 | 220 | 351 | 28 | 917 |
| | Once a month | 5 | 30 | 66 | 89 | 169 | 151 | 22 | 532 |
| | Less than once a month | 12 | 12 | 155 | 168 | 121 | 102 | 22 | 592 |
| | First time riding | 19 | 179 | 106 | 164 | 324 | 50 | 29 | 871 |
| Total | | 116 | 1,474 | 5,111 | 5,955 | 9,634 | 6,894 | 958 | 30,142 |

## Table E-23: Ethnicity and Frequency of Use

Count

| | | Days | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 6-7 days/week | 3-5 days/week | 1-2 days/week | Twice a month | Once a month | Les than once a month | First time riding | Total |
| Ethnicity | White/Caucasian | 1,984 | 5,203 | 1,189 | 320 | 196 | 204 | 253 | 9,349 |
| | Asian | 181 | 280 | 28 | 9 | 4 | 7 | 7 | 516 |
| | Hispanic/Latin American | 266 | 472 | 89 | 3 | 12 | 23 | 18 | 883 |
| | Black or African American | 6,671 | 9,323 | 1,794 | 590 | 314 | 350 | 611 | 19,653 |
| | American Indian | 104 | 276 | 66 | 6 | 0 | 11 | 178 | 641 |
| | Other, specify | 104 | 177 | 41 | 14 | 0 | 33 | 4 | 373 |
| | Missing | 39 | 110 | 27 | 0 | 6 | 0 | 0 | 182 |
| Total | | 9,349 | 15,841 | 3,234 | 942 | 532 | 628 | 1,071 | 31,597 |

## Table E-24: Vehicle Availability and Frequency of Use

Count

| | | Vehicle Availability | | |
|---|---|---|---|---|
| | | Yes | No | Total |
| Days | 6-7 days/week | 1,457 | 7,585 | 9,042 |
| | 3-5 days/week | 4,030 | 11,253 | 15,283 |
| | 1-2 days/week | 553 | 2,504 | 3,057 |
| | Twice a month | 179 | 738 | 917 |
| | Once a month | 51 | 481 | 532 |
| | Less than once a month | 92 | 514 | 606 |
| | First time riding | 220 | 659 | 879 |
| Total | | 6,582 | 23,734 | 30,316 |

## Table E-25: Age and Household Vehicles

Count

| | | Household Vehicle | | | | | |
|---|---|---|---|---|---|---|---|
| | | None | One | Two | Three | Four or more | Total |
| Age | Under 16 | 51 | 41 | 2 | 17 | 0 | 111 |
| | 16 to 18 | 462 | 666 | 236 | 71 | 43 | 1,478 |
| | 19 to 24 | 2,434 | 1,888 | 485 | 134 | 136 | 5,077 |
| | 25 to 34 | 3,507 | 1,679 | 598 | 147 | 113 | 6,044 |
| | 35 to 49 | 5,522 | 2,675 | 1,167 | 285 | 137 | 9,786 |
| | 50 to 64 | 4,263 | 1,651 | 781 | 244 | 55 | 6,994 |
| | 65 or older | 600 | 133 | 111 | 65 | 68 | 977 |
| Total | | 16,839 | 8,733 | 3,380 | 963 | 552 | 30,467 |

## Table E-26: Ethnicity and Household Vehicles

Count

| | | Household Vehicle | | | | | |
|---|---|---|---|---|---|---|---|
| | | None | One | Two | Three | Four or more | Total |
| Ethnicity | White/Caucasian | 4,426 | 2,755 | 1,431 | 490 | 329 | 9,431 |
| | Asian | 288 | 136 | 73 | 8 | 5 | 510 |
| | Hispanic/Latin American | 285 | 405 | 163 | 50 | 0 | 903 |
| | Black or African American | 11,897 | 5,575 | 1,765 | 427 | 215 | 19,879 |
| | American Indian | 476 | 143 | 22 | 0 | 0 | 641 |
| | Other, specify | 246 | 89 | 33 | 0 | 4 | 372 |
| | Missing | 99 | 67 | | 2 | 0 | 168 |
| Total | | 17,717 | 9,170 | 3,487 | 977 | 553 | 31,904 |

## Table E-27: Vehicle Availability and Household Vehicles

Count

| | | Household Vehicle | | | | | |
|---|---|---|---|---|---|---|---|
| | | None | One | Two | Three | Four or more | Total |
| Vehicle Availability | Yes | 1,005 | 2,974 | 1,797 | 538 | 268 | 6,582 |
| | No | 15,724 | 5,768 | 1,539 | 418 | 243 | 23,692 |
| Total | | 16,729 | 8,742 | 3,336 | 956 | 511 | 30,274 |

## Table E-28: Vehicle Availability and Age

Count

| | | Age | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Under 16 | 16 to 18 | 19 to 24 | 25 to 34 | 35 to 49 | 50 to 64 | 65 or older | Total |
| Vehicle Availability | Yes | 28 | 450 | 830 | 1,009 | 2,297 | 1,654 | 217 | 6,485 |
| | No | 86 | 1,010 | 4,268 | 4,987 | 7,284 | 5,242 | 693 | 23,570 |
| Total | | 114 | 1,460 | 5,098 | 5,996 | 9,581 | 6,896 | 910 | 30,055 |

## Table E-29: Ethnicity and Vehicle Availability

Count

| | | Vehicle Availability | | |
|---|---|---|---|---|
| | | Yes | No | Total |
| Ethnicity | White/Caucasian | 2,402 | 6,938 | 9,340 |
| | Asian | 175 | 337 | 512 |
| | Hispanic/Latin American | 238 | 652 | 890 |
| | Black or African American | 3,754 | 15,815 | 19,569 |
| | American Indian | 87 | 557 | 644 |
| | Other, specify | 77 | 295 | 372 |
| | Missing | 20 | 164 | 184 |
| Total | | 6,753 | 24,758 | 31,511 |

## Table E-30: Age and Alternative Mode of Travel

Count

| | | Age | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Under 16 | 16 to 18 | 19 to 24 | 25 to 34 | 35 to 49 | 50 to 64 | 65 or older | Total |
| Alternative Mode | Drive | 25 | 265 | 517 | 787 | 1,711 | 1,166 | 119 | 4,590 |
| | Walk/Wheelchair | 16 | 196 | 1,031 | 1,108 | 2,024 | 1,124 | 173 | 5,672 |
| | Ride with friend | 29 | 433 | 1,701 | 1,869 | 2,795 | 2,001 | 170 | 8,998 |
| | Taxi | 0 | 63 | 490 | 725 | 724 | 525 | 82 | 2,609 |
| | Bicycle | 5 | 89 | 341 | 548 | 602 | 335 | 19 | 1,939 |
| | Would not make this trip | 51 | 362 | 1,484 | 1,520 | 2,378 | 1,929 | 348 | 8,072 |
| Total | | 126 | 1,408 | 5,564 | 6,557 | 10,234 | 7,080 | 911 | 31,880 |

## Table E-31: Vehicle Availability and Alternative Mode of Travel

Count

| | | Vehicle Availability | | |
|---|---|---|---|---|
| | | Yes | No | Total |
| Alternative Mode | Drive | 3,439 | 1,224 | 4,663 |
| | Walk/Wheelchair | 609 | 5,163 | 5,772 |
| | Ride with friend | 1,648 | 7,364 | 9,012 |
| | Taxi | 300 | 2,306 | 2,606 |
| | Bicycle | 335 | 1,633 | 1,968 |
| | Would not make this trip | 617 | 7,485 | 8,102 |
| Total | | 6,948 | 25,175 | 32,123 |

### Table E-32: Age and Gender

Count

| | | Gender | | |
|---|---|---|---|---|
| | | Male | Female | Total |
| Age | Under 16 | 47 | 69 | 116 |
| | 16 to 18 | 652 | 818 | 1,470 |
| | 19 to 24 | 2,144 | 2,795 | 4,939 |
| | 25 to 34 | 2,597 | 3,178 | 5,775 |
| | 35 to 49 | 4,842 | 4,026 | 8,868 |
| | 50 to 64 | 2,911 | 3,040 | 5,951 |
| | 65 or older | 317 | 388 | 705 |
| Total | | 13,510 | 14,314 | 27,824 |

### Table E-33: Ethnicity and Gender

Count

| | | Gender | | |
|---|---|---|---|---|
| | | Male | Female | Total |
| Ethnicity | White/Caucasian | 4,862 | 4,054 | 8,916 |
| | Asian | 231 | 256 | 487 |
| | Hispanic/Latin American | 270 | 568 | 838 |
| | Black or African American | 8,251 | 9,574 | 17,825 |
| | American Indian | 254 | 381 | 635 |
| | Other, specify | 86 | 256 | 342 |
| | Missing | 92 | 74 | 166 |
| Total | | 14,046 | 15,163 | 29,209 |

### Table E-34: Vehicle Availability and Gender

Count

| | | Gender | | |
|---|---|---|---|---|
| | | Male | Female | Total |
| Vehicle Availability | Yes | 3,360 | 2,805 | 6,165 |
| | No | 10,219 | 11,506 | 21,725 |
| Total | | 13,579 | 14,311 | 27,890 |

## Table E-35: Gender and Employment Status

Count

| | | Employment Status | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Employed Full-time (30+ hours/week) | Employed Part-time (less than 30 hours/week) | Not employed | Student | Retired | Full-time Temporary Employee | Part-time Temporary Employee | Total |
| Gender | Male | 6,372 | 2,207 | 2,630 | 2,004 | 657 | 204 | 277 | 14,351 |
| | Female | 5,815 | 3,068 | 3,191 | 2,803 | 411 | 250 | 305 | 15,843 |
| Total | | 12,187 | 5,275 | 5,821 | 4,807 | 1,068 | 454 | 582 | 30,194 |

## Table E-36: Gender and Income

Count

| | | Income | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Less than $15,000 | $15,000-$24,999 | $25,000-$34,999 | $35,000-$39,999 | $40,000-$49,999 | $50,000-$59,999 | $60,000-$74,999 | $75,000-$99,999 | $100,000-$149,999 | $150,000 or more | Total |
| Gender | Male | 5,379 | 3,238 | 1,507 | 671 | 609 | 442 | 360 | 341 | 233 | 74 | 12,854 |
| | Female | 6,733 | 2,719 | 1,720 | 549 | 681 | 445 | 218 | 260 | 147 | 50 | 13,522 |
| Total | | 12,112 | 5,957 | 3,227 | 1,220 | 1,290 | 887 | 578 | 601 | 380 | 124 | 26,376 |

## Table E-37: Age and Ethnicity

Count

| | | Age | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Under 16 | 16 to 18 | 19 to 24 | 25 to 34 | 35 to 49 | 50 to 64 | 65 or older | Total |
| Ethnicity | White/Caucasian | 26 | 212 | 1,233 | 2,018 | 2,930 | 2,535 | 396 | 9,350 |
| | Asian | 2 | 31 | 88 | 208 | 58 | 125 | 0 | 512 |
| | Hispanic/Latin American | 20 | 43 | 279 | 198 | 241 | 105 | 21 | 907 |
| | Black or African American | 88 | 1,247 | 3,581 | 3,610 | 6,562 | 4,172 | 543 | 19,803 |
| | American Indian | 11 | 17 | 62 | 80 | 285 | 168 | 1 | 624 |
| | Other, specify | 0 | 42 | 98 | 64 | 55 | 107 | 0 | 366 |
| | Missing | 6 | 5 | 71 | 34 | 59 | 33 | 29 | 237 |
| Total | | 153 | 1,597 | 5,412 | 6,212 | 10,190 | 7,245 | 990 | 31,799 |

## Table E-38: Age and Vehicle Availability

Count

| | | Age | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Under 16 | 16 to 18 | 19 to 24 | 25 to 34 | 35 to 49 | 50 to 64 | 65 or older | Total |
| Vehicle Availability | Yes | 28 | 450 | 830 | 1,009 | 2,297 | 1,654 | 217 | 6,485 |
| | No | 86 | 1,010 | 4,268 | 4,987 | 7,284 | 5,242 | 693 | 23,570 |
| Total | | 114 | 1,460 | 5,098 | 5,996 | 9,581 | 6,896 | 910 | 30,055 |

**Table E-39: Age and Drivers License**

Count

| | | License | | |
|---|---|---|---|---|
| | | Yes | No | Total |
| Age | Under 16 | 0 | 127 | 127 |
| | 16 to 18 | 256 | 1,208 | 1,464 |
| | 19 to 24 | 1,872 | 3,113 | 4,985 |
| | 25 to 34 | 2,180 | 3,699 | 5,879 |
| | 35 to 49 | 4,050 | 5,473 | 9,523 |
| | 50 to 64 | 3,115 | 3,690 | 6,805 |
| | 65 or older | 363 | 482 | 845 |
| Total | | 11,836 | 17,792 | 29,628 |

**Table E-40: Ethnicity and Drivers License**

Count

| | | License | | |
|---|---|---|---|---|
| | | Yes | No | Total |
| Ethnicity | White/Caucasian | 4,489 | 4,696 | 9,185 |
| | Asian | 195 | 314 | 509 |
| | Hispanic/Latin American | 348 | 512 | 860 |
| | Black or African American | 6,808 | 12,451 | 19,259 |
| | American Indian | 391 | 225 | 616 |
| | Other, specify | 217 | 154 | 371 |
| | Missing | 59 | 141 | 200 |
| Total | | 12,507 | 18,493 | 31,000 |

**Table E-41: Vehicle Availability and Drivers License**

Count

| | | License | | |
|---|---|---|---|---|
| | | Yes | No | Total |
| Vehicle Availability | Yes | 3,973 | 2,409 | 6,382 |
| | No | 7,783 | 15,296 | 23,079 |
| Total | | 11,756 | 17,705 | 29,461 |

## Table E-42: Age and Household Size

Count

| | | Household Size | | | | | |
|---|---|---|---|---|---|---|---|
| | | One | Two | Three | Four | Five or more | Total |
| Age | Under 16 | 0 | 37 | 3 | 25 | 62 | 127 |
| | 16 to 18 | 65 | 213 | 431 | 314 | 449 | 1,472 |
| | 19 to 24 | 579 | 1,542 | 1,026 | 919 | 1,033 | 5,099 |
| | 25 to 34 | 1,136 | 1,594 | 1,373 | 824 | 1,100 | 6,027 |
| | 35 to 49 | 2,633 | 2,870 | 1,610 | 1,114 | 1,468 | 9,695 |
| | 50 to 64 | 2,824 | 2,293 | 740 | 545 | 588 | 6,990 |
| | 65 or older | 526 | 216 | 82 | 44 | 120 | 988 |
| Total | | 7,763 | 8,765 | 5,265 | 3,785 | 4,820 | 30,398 |

## Table E-43: Ethnicity and Household Size

Count

| | | Household Size | | | | | |
|---|---|---|---|---|---|---|---|
| | | One | Two | Three | Four | Five or more | Total |
| Ethnicity | White/Caucasian | 2,684 | 2,961 | 1,353 | 1,207 | 1,212 | 9,417 |
| | Asian | 128 | 156 | 129 | 51 | 49 | 513 |
| | Hispanic/Latin American | 188 | 215 | 140 | 207 | 153 | 903 |
| | Black or African American | 4,720 | 5,503 | 3,693 | 2,358 | 3,466 | 19,740 |
| | American Indian | 93 | 371 | 39 | 87 | 51 | 641 |
| | Other, specify | 129 | 55 | 88 | 55 | 30 | 357 |
| | Missing | 104 | 46 | 14 | 41 | 63 | 268 |
| Total | | 8,046 | 9,307 | 5,456 | 4,006 | 5,024 | 31,839 |

## Table E-44: Vehicle Availability and Household Size

Count

| | | Household Size | | | | | |
|---|---|---|---|---|---|---|---|
| | | One | Two | Three | Four | Five or more | Total |
| Vehicle Availability | Yes | 1,274 | 2,108 | 1,105 | 972 | 1,056 | 6,515 |
| | No | 6,338 | 6,716 | 4,095 | 2,778 | 3,658 | 23,585 |
| Total | | 7,612 | 8,824 | 5,200 | 3,750 | 4,714 | 30,100 |

## Table E-45: Age and Household Workers

Count

| | | Household Status | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | None | One | Two | Three | Four | Five or more | Total |
| Age | Under 16 | 14 | 83 | 25 | 5 | 0 | 0 | 127 |
| | 16 to 18 | 241 | 676 | 398 | 145 | 11 | 18 | 1,489 |
| | 19 to 24 | 1,011 | 1,902 | 1,444 | 583 | 101 | 63 | 5,104 |
| | 25 to 34 | 1,051 | 2,596 | 1,604 | 478 | 66 | 245 | 6,040 |
| | 35 to 49 | 1,824 | 4,417 | 2,546 | 621 | 100 | 246 | 9,754 |
| | 50 to 64 | 1,676 | 3,274 | 1,459 | 361 | 64 | 70 | 6,904 |
| | 65 or older | 335 | 268 | 91 | 0 | 87 | 0 | 781 |
| Total | | 6,152 | 13,216 | 7,567 | 2,193 | 429 | 642 | 30,199 |

## Table E-46: Ethnicity and Household Workers

Count

| | | Household Status | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | None | One | Two | Three | Four | Five or more | Total |
| Ethnicity | White/Caucasian | 1,920 | 3,563 | 2,536 | 725 | 212 | 346 | 9,302 |
| | Asian | 159 | 147 | 156 | 25 | 6 | 22 | 515 |
| | Hispanic/Latin American | 118 | 267 | 296 | 183 | 0 | 0 | 864 |
| | Black or African American | 4,093 | 9,124 | 4,654 | 1,387 | 182 | 262 | 19,702 |
| | American Indian | 292 | 233 | 71 | 22 | 6 | 19 | 643 |
| | Other, specify | 58 | 180 | 102 | 13 | 0 | 6 | 359 |
| | Missing | 35 | 137 | 29 | 7 | 5 | 0 | 213 |
| Total | | 6,675 | 13,651 | 7,844 | 2,362 | 411 | 655 | 31,598 |

## Table E-47: Vehicle Availability and Household Workers

Count

| | | Household Status | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | None | One | Two | Three | Four | Five or more | Total |
| Vehicle Availability | Yes | 699 | 2,695 | 2,194 | 702 | 105 | 136 | 6,531 |
| | No | 5,431 | 10,379 | 5,249 | 1,512 | 320 | 500 | 23,391 |
| Total | | 6,130 | 13,074 | 7,443 | 2,214 | 425 | 636 | 29,922 |

## Table E-48: Ethnicity and Employment Status

Count

| | | Employment Status | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Employed Full-time (30+ hours/week) | Employed Part-time (less than 30 hours/week) | Not employed | Student | Retired | Full-time Temporary Employee | Part-time Temporary Employee | Total |
| Ethnicity | White/Caucasian | 4,620 | 1,676 | 1,765 | 1,317 | 578 | 102 | 177 | 10,235 |
| | Asian | 140 | 57 | 90 | 200 | 22 | 16 | 5 | 530 |
| | Hispanic/Latin American | 479 | 203 | 126 | 180 | 11 | 32 | 0 | 1,031 |
| | Black or African American | 8,201 | 3,712 | 4,335 | 3,471 | 734 | 355 | 452 | 21,260 |
| | American Indian | 148 | 137 | 250 | 63 | 35 | 4 | 7 | 644 |
| | Other, specify | 168 | 44 | 42 | 110 | 30 | 4 | 4 | 402 |
| | Missing | 32 | 60 | 56 | 28 | 17 | 0 | 25 | 218 |
| Total | | 13,788 | 5,889 | 6,664 | 5,369 | 1,427 | 513 | 670 | 34,320 |

## Table E-49: Income and Employment Status

Count

| | | Employment Status | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Employed Full-time (30+ hours/week) | Employed Part-time (less than 30 hours/week) | Not employed | Student | Retired | Full-time Temporary Employee | Part-time Temporary Employee | Total |
| Income | Less than $15,000 | 3,097 | 3,257 | 4,197 | 2,676 | 720 | 241 | 406 | 14,594 |
| | $15,000-$24,999 | 3,309 | 1,241 | 1,008 | 965 | 229 | 132 | 78 | 6,962 |
| | $25,000-$34,999 | 2,466 | 408 | 375 | 271 | 48 | 19 | 21 | 3,608 |
| | $35,000-$39,999 | 809 | 177 | 92 | 76 | 79 | 12 | 54 | 1,299 |
| | $40,000-$49,999 | 847 | 236 | 172 | 148 | 50 | 7 | 12 | 1,472 |
| | $50,000-$59,999 | 542 | 127 | 58 | 242 | 13 | 41 | 8 | 1,031 |
| | $60,000-$74,999 | 430 | 31 | 52 | 100 | 31 | 4 | 0 | 648 |
| | $75,000-$99,999 | 438 | 32 | 28 | 141 | 6 | 0 | 0 | 645 |
| | $100,000-$149,999 | 370 | 6 | 14 | 12 | 0 | 0 | 0 | 402 |
| | $150,000 or more | 99 | 0 | 0 | 20 | 0 | 0 | 10 | 129 |
| Total | | 12,407 | 5,515 | 5,996 | 4,651 | 1,176 | 456 | 589 | 30,790 |

## Table E-50: Age and Total Buses (respondent provided)

Count

| | | Total Buses - respondent provided | | | | |
|---|---|---|---|---|---|---|
| | | 0 | One, this bus only | Two | Three or more | Total |
| Age | Under 16 | 0 | 47 | 64 | 16 | 127 |
| | 16 to 18 | 0 | 617 | 712 | 152 | 1,481 |
| | 19 to 24 | 0 | 1,727 | 2,446 | 947 | 5,120 |
| | 25 to 34 | 4 | 2,429 | 2,825 | 815 | 6,073 |
| | 35 to 49 | 0 | 3,937 | 4,716 | 1,212 | 9,865 |
| | 50 to 64 | 0 | 2,580 | 3,681 | 815 | 7,076 |
| | 65 or older | 0 | 385 | 549 | 51 | 985 |
| Total | | 4 | 11,722 | 14,993 | 4,008 | 30,727 |

## Table E-51: Ethnicity and Income

Count

| | | Income | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Less than $15,000 | $15,000-$24,999 | $25,000-$34,999 | $35,000-$39,999 | $40,000-$49,999 | $50,000-$59,999 | $60,000-$74,999 | $75,000-$99,999 | $100,000-$149,999 | $150,000 or more | Total |
| Ethnicity | White/Caucasian | 3,487 | 1,737 | 1,083 | 479 | 540 | 400 | 327 | 489 | 350 | 101 | 8,993 |
| | Asian | 175 | 62 | 101 | 5 | 42 | 44 | 17 | 11 | 15 | 4 | 476 |
| | Hispanic/Latin American | 348 | 153 | 144 | 47 | 31 | 47 | 59 | 15 | 2 | 3 | 849 |
| | Black or African American | 9,324 | 4,607 | 2,197 | 733 | 726 | 501 | 203 | 111 | 27 | 19 | 18,448 |
| | American Indian | 493 | 37 | 48 | 14 | 3 | 41 | 0 | 0 | 0 | 0 | 636 |
| | Other, specify | 128 | 50 | 32 | 6 | 76 | 12 | 20 | 0 | 0 | 6 | 330 |
| | Missing | 61 | | 0 | 0 | 37 | 0 | 0 | 0 | 7 | 1 | 106 |
| Total | | 14,016 | 6,646 | 3,605 | 1,284 | 1,455 | 1,045 | 626 | 626 | 401 | 134 | 29,838 |

## Table E-52: Vehicle Availability and Income

Count

| | | Income | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Less than $15,000 | $15,000-$24,999 | $25,000-$34,999 | $35,000-$39,999 | $40,000-$49,999 | $50,000-$59,999 | $60,000-$74,999 | $75,000-$99,999 | $100,000-$149,999 | $150,000 or more | Total |
| Vehicle Availability | Yes | 1,631 | 1,287 | 851 | 536 | 426 | 377 | 321 | 486 | 325 | 62 | 6,302 |
| | No | 11,515 | 5,252 | 2,599 | 704 | 937 | 582 | 270 | 140 | 69 | 67 | 22,135 |
| Total | | 13,146 | 6,539 | 3,450 | 1,240 | 1,363 | 959 | 591 | 626 | 394 | 129 | 28,437 |

## Table E-53: Age and Activity

Count

| | | Activity | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Go to work | Go to school | Go shopping | Do other errands | Visit friends/attend a religious or social event | Buy a meal | Drop off/pick up child/visit child's school | Other, specify | Missing | Total |
| Age | Under 16 | 35 | 100 | 22 | 19 | 8 | 32 | 0 | 19 | 0 | 235 |
| | 16 to 18 | 326 | 1,120 | 157 | 379 | 304 | 274 | 8 | 78 | 0 | 2,646 |
| | 19 to 24 | 2,586 | 2,306 | 852 | 1,824 | 816 | 1,162 | 150 | 142 | 5 | 9,843 |
| | 25 to 34 | 3,666 | 1,396 | 1,190 | 2,257 | 950 | 1,276 | 155 | 294 | 0 | 11,184 |
| | 35 to 49 | 6,411 | 868 | 1,686 | 3,233 | 1,471 | 1,313 | 77 | 484 | 13 | 15,556 |
| | 50 to 64 | 4,529 | 305 | 1,864 | 2,980 | 1,079 | 1,317 | 25 | 649 | 0 | 12,748 |
| | 65 or older | 472 | 63 | 207 | 437 | 107 | 99 | 6 | 52 | 0 | 1,443 |
| Total | | 18,025 | 6,158 | 5,978 | 11,129 | 4,735 | 5,473 | 421 | 1,718 | 18 | 53,655 |

## Table E-54: Ethnicity and Activity

Count

| | | Activity | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Go to work | Go to school | Go shopping | Do other errands | Visit friends/attend a religious or social event | Buy a meal | Other | Total |
| Ethnicity | White/Caucasian | 5,869 | 1,415 | 1,949 | 2,996 | 1,116 | 1,792 | 736 | 15,873 |
| | Asian | 222 | 197 | 111 | 196 | 48 | 219 | 7 | 1,000 |
| | Hispanic/Latin American | 578 | 231 | 242 | 258 | 34 | 196 | 103 | 1,642 |
| | Black or African American | 11,494 | 4,376 | 3,759 | 7,674 | 3,493 | 3,366 | 1,387 | 35,549 |
| | American Indian | 254 | 48 | 58 | 242 | 297 | 112 | 49 | 1,060 |
| | Other/ Missing | 355 | 203 | 111 | 189 | 119 | 58 | 78 | 1,113 |
| Total | | 18,772 | 6,470 | 6,230 | 11,555 | 5,107 | 5,743 | 2,360 | 56,237 |

## Table E-55: Ethnicity and Mean Activity

| | | Mean Activities |
|---|---|---|
| Ethnicity | White/Caucasian | 1.67 |
| | Asian | 1.94 |
| | Hispanic/Latin American | 1.80 |
| | Black or African American | 1.77 |
| | American Indian | 1.64 |
| | Other/ Missing | 1.47 |
| Total | | 1.72 |

## Table E-56: Gender and Activity

Count

| | | Activity | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Go to work | Go to school | Go shopping | Do other errands | Visit friends/attend a religious or social event | Buy a meal | Drop off/pick up child/visit child's school | Other, specify | Missing | Total |
| Gender | Male | 8,104 | 2,524 | 2,256 | 4,536 | 2,166 | 2,238 | 63 | 819 | 5 | 22,711 |
| | Female | 8,417 | 3,330 | 3,132 | 5,759 | 2,378 | 2,565 | 340 | 683 | 11 | 26,615 |
| Total | | 16,521 | 5,854 | 5,388 | 10,295 | 4,544 | 4,803 | 403 | 1,502 | 16 | 49,326 |

## Table E-57: Gender and Mean Activity

| | | Mean Activities |
|---|---|---|
| Gender | Male | 1.65 |
| | Female | 1.84 |
| Total | | 1.75 |

## Table E-58: Income and Activity

| | | Activity | | | | Total |
|---|---|---|---|---|---|---|
| | | Go to work | Go to school | Go shopping | Other | |
| Income | Less than $25,000 | 33.73% | 13.98% | 13.56% | 38.73% | 100.00% |
| | $25,000-$49,999 | 42.44% | 7.82% | 11.43% | 38.31% | 100.00% |
| | $50,000-$74,999 | 41.90% | 15.28% | 8.39% | 34.44% | 100.00% |
| | $75,000-$99,999 | 47.29% | 11.54% | 7.56% | 33.61% | 100.00% |
| | $100,000 or more | 75.19% | 5.39% | 3.70% | 15.72% | 100.00% |
| Total | | 37.08% | 12.46% | 12.51% | 37.95% | 100.00% |

## Table E-59: Income and Mean Activity

| | | Mean Activities |
|---|---|---|
| Income | Less than $25,000 | 1.81 |
| | $25,000-$49,999 | 1.70 |
| | $50,000-$74,999 | 1.66 |
| | $75,000-$99,999 | 1.57 |
| | $100,000 or more | 1.24 |
| Total | | 1.77 |

## Table E-60: Vehicle Availability and Activity

Count

| | | Activity | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Go to work | Go to school | Go shopping | Do other errands | Visit friends/attend a religious or social event | Buy a meal | Drop off/pick up child/visit child's school | Other, specify | Missing | Total |
| Vehicle Availability | Yes | 4,357 | 1,405 | 1,140 | 1,802 | 903 | 1,192 | 87 | 372 | 5 | 11,263 |
| | No | 13,598 | 4,671 | 4,690 | 9,292 | 3,718 | 4,258 | 355 | 1,368 | 4 | 41,954 |
| Total | | 17,955 | 6,076 | 5,830 | 11,094 | 4,621 | 5,450 | 442 | 1,740 | 9 | 53,217 |

## Table E-61: Age and System Improvements

Count

| | | Improvement | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Making transfer easier | Start service earlier | End service later | Increase frequency of service | Improve pedestrian access | Add new route from_to_ | Other, specify | Missing | Total |
| Age | Under 16 | 25 | 27 | 30 | 44 | 5 | 0 | 0 | 6 | 137 |
| | 16 to 18 | 350 | 182 | 545 | 369 | 56 | 78 | 30 | 179 | 1,789 |
| | 19 to 24 | 1,084 | 654 | 2,045 | 1,475 | 249 | 424 | 276 | 269 | 6,476 |
| | 25 to 34 | 1,004 | 717 | 2,397 | 2,064 | 287 | 353 | 388 | 392 | 7,602 |
| | 35 to 49 | 1,616 | 1,327 | 3,751 | 3,284 | 396 | 724 | 510 | 746 | 12,354 |
| | 50 to 64 | 1,060 | 745 | 2,252 | 2,562 | 314 | 703 | 549 | 619 | 8,804 |
| | 65 or older | 57 | 181 | 147 | 355 | 88 | 55 | 42 | 262 | 1,187 |
| Total | | 5,196 | 3,833 | 11,167 | 10,153 | 1,395 | 2,337 | 1,795 | 2,473 | 38,349 |

## Table E-62: Frequency of Use and System Improvements

Count

| | | Improvement | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Making transfer easier | Start service earlier | End service later | Increase frequency of service | Improve pedestrian access | Add new route from_to_ | Other, specify | Missing | Total |
| Days | 6-7 days/week | 1,736 | 1,614 | 3,951 | 3,047 | 391 | 894 | 399 | 398 | 12,430 |
| | 3-5 days/week | 2,647 | 1,705 | 5,347 | 5,086 | 676 | 1,103 | 986 | 1,163 | 18,713 |
| | 1-2 days/week | 477 | 253 | 1,036 | 1,037 | 136 | 144 | 199 | 208 | 3,490 |
| | Twice a month | 157 | 127 | 288 | 388 | 41 | 57 | 93 | 46 | 1,197 |
| | Once a month | 55 | 110 | 225 | 151 | 20 | 30 | 43 | 39 | 673 |
| | Less than once a month | 109 | 57 | 241 | 159 | 44 | 30 | 54 | 23 | 717 |
| | First time riding | 89 | 52 | 131 | 330 | 94 | 24 | 38 | 219 | 977 |
| Total | | 5,270 | 3,918 | 11,219 | 10,198 | 1,402 | 2,282 | 1,812 | 2,096 | 38,197 |

## Table E-63: Income and System Improvements

Count

| | | Improvement | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Making transfer easier | Start service earlier | End service later | Increase frequency of service | Improve pedestrian access | Add new route from_to_ | Other, specify | Missing | Total |
| Income | Less than $15,000 | 2,590 | 1,817 | 5,225 | 4,720 | 614 | 992 | 629 | 719 | 17,306 |
| | $15,000-$24,999 | 1,104 | 922 | 2,723 | 1,860 | 237 | 393 | 374 | 478 | 8,091 |
| | $25,000-$34,999 | 561 | 433 | 1,378 | 1,148 | 193 | 350 | 150 | 230 | 4,443 |
| | $35,000-$39,999 | 122 | 98 | 432 | 454 | 29 | 117 | 166 | 50 | 1,468 |
| | $40,000-$49,999 | 241 | 117 | 440 | 460 | 126 | 147 | 32 | 134 | 1,697 |
| | $50,000-$59,999 | 115 | 153 | 386 | 231 | 21 | 86 | 46 | 67 | 1,105 |
| | $60,000-$74,999 | 84 | 43 | 140 | 205 | 34 | 74 | 102 | 58 | 740 |
| | $75,000-$99,999 | 81 | 37 | 125 | 151 | 39 | 67 | 95 | 53 | 648 |
| | $100,000-$149,999 | 49 | 10 | 72 | 90 | 4 | 9 | 110 | 76 | 420 |
| | $150,000 or more | 12 | 3 | 6 | 64 | 2 | 19 | 13 | 10 | 129 |
| Total | | 4,959 | 3,633 | 10,927 | 9,383 | 1,299 | 2,254 | 1,717 | 1,875 | 36,047 |

## Table E-64: Income and Number of Buses Used for One-Way Trip

Count

| | | Total Buses in Route Sequence | | | |
|---|---|---|---|---|---|
| | | One, this bus only | Two | Three or more | Total |
| Income | Less than $15,000 | 4,369 | 7,100 | 1,940 | 13,409 |
| | $15,000-$24,999 | 2,336 | 3,396 | 846 | 6,578 |
| | $25,000-$34,999 | 1,310 | 1,924 | 274 | 3,508 |
| | $35,000-$39,999 | 717 | 425 | 114 | 1,256 |
| | $40,000-$49,999 | 730 | 648 | 50 | 1,428 |
| | $50,000-$59,999 | 505 | 382 | 77 | 964 |
| | $60,000-$74,999 | 390 | 154 | 60 | 604 |
| | $75,000-$99,999 | 405 | 201 | 19 | 625 |
| | $100,000-$149,999 | 337 | 57 | 0 | 394 |
| | $150,000 or more | 88 | 25 | 16 | 129 |
| Total | | 11,187 | 14,312 | 3,396 | 28,895 |

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