EXECUTIVE SUMMARY

Background

NuStats Research and Consulting, of Austin, Texas, conducted a comprehensive on-board survey of fixed route passengers riding weekday, Saturday and Sunday service. Data was collected over a three-week period from September 21 to October 7, 2001. The study resulted in the collection of 10,835 questionnaires from adult passengers (age 16 or older) and equated to a 51% response rate. By service day, a total of 6,385 questionnaires were collected from weekday passengers, 2,842 from Saturday riders and 1,608 from Sunday riders.

The study was designed to result in a system-wide confidence level of 95% with a margin of error of ± 10% using the following sampling guidelines:

- Routes with 1,000+ daily riders were sampled at the 95% confidence level, ± 6% margin of error (resulting in 271 complete and usable questionnaires per route per service day).

- Routes with 500 – 999 daily riders were sampled at the 95% confidence level, ± 10% margin of error (resulting in 96 complete and usable questionnaires per route per service day).

- Routes with less than 500 riders were sampled at the 90% confidence level, ± 6% margin of error (resulting in 68 complete and usable questionnaires per route per service day). Some routes within this ridership classification were unable to meet this confidence level due to the low volume of riders and the sample size was adjusted to be proportionate to ridership.

Once sample data was collected, all cases were weighted to represent the entire universe of ridership by weekday, Saturday and Sunday service periods. Additionally, all origin and destination information (bus stop on, bus stop off, origin and destination) address information was geo-coded to its XY coordinates.

The questionnaire, produced in English and Spanish, contained 18 pre-coded questions designed to assess rider trip patterns (origin/destination), frequency of use, satisfaction with services, desired improvements and passenger demographics.

Data findings demonstrated that IndyGo's typical weekday passenger is a Black/African American female, age 35 to 49, who uses the bus to travel five days a week, to and from home and work. Although she is likely to be employed full-time or part-time in a service or production position, the rider has a modest annual household income of under $10,000 and is transit dependent – meaning she has no operating vehicles available in her household and does not have a personal vehicle for her use.

The average rider has been using bus service for one year or more and rides two buses to complete her travel. If bus service were not available, she would probably walk to and from her destination, although arranging a ride with a friend is a secondary option. Most often, she accesses her stop by walking.

In general, the average rider is satisfied with the services that the transit system provides, but feels more frequent service and extended service hours would be beneficial.

CHAPTER 1: INTRODUCTION

Background

The Indianapolis Public Transportation Corporation (IndyGo), responsible for providing public transportation services in the Indianapolis metropolitan area and Marion County, contracted with NuStats Research and Consulting to conduct an on-board survey of its entire fixed-route bus system. The transit system operates 36 fixed-routes, carrying 11,000,000 unlinked passenger trips operated on more than 5.7 million revenue miles of service annually.

The on-board survey was the first such study conducted for the transit authority in more than 10 years. The results of the on-board survey are being used to implement the goals of the Five-Year Plan, adopted by IndyGo's Board and Transit Advisory Council in January 2001. The results of the study are being used to answer key issues facing the transit system:

- What system changes need to be implemented to lessen the effects of urban growth on transportation congestion?
- Who are IndyGo's current passengers and how can IndyGo use this information to attract additional riders?
- What role can IndyGo play in improving downtown access?
- How can transferring become more efficient for passengers?

The Survey

The 2001 On-Board Survey was designed to provide an overview of rider trip patterns (origin/destination), frequency of use, satisfaction with services, desired improvements and passenger demographics. The survey findings serve as an important tool for service planning, service delivery and the development of marketing policies that meet customer needs.

Report Format

The report has been organized into four comprehensive chapters and an Executive Summary. Chapter 2 describes survey methodology, Chapter 3 details data collection results, and Chapter 4 depicts survey findings of weekday, Saturday and Sunday patrons. Questionnaire forms, surveyor logs and tally sheets are included in the Appendices.

CHAPTER 2: SURVEY METHODOLOGY

Sampling Plan and Issues

The sampling plan developed for the 2001 On-Board Passenger Survey was required to achieve a system-wide confidence level of 95% with a ± 10 percent margin of error. The sampling of passengers was conducted for weekday, Saturday and Sunday service. The sample frame was designed under the following guidelines:

- Routes with 1,000+ daily riders were sampled at the 95% confidence level, ± 6% margin of error (resulting in 271 complete and usable questionnaires per route per service day).

- Routes with 500 – 999 daily riders were sampled at the 95% confidence level, ± 10% margin of error (resulting in 96 complete and usable questionnaires per route per service day).

- Routes with less than 500 riders were sampled at the 90% confidence level, ± 6% margin of error (resulting in 68 complete and usable questionnaires per route per service day). Some routes within this ridership classification were unable to meet this confidence level due to the low volume of riders and the sample size was adjusted to be proportionate to ridership.

Based on the above criteria, the sample plan called for a total of 9,014 complete and usable questionnaires with 4,604 captured for weekday service, 2,937 captured for Saturday service and 1,473 captured for Sunday service as shown in Table 2-1 below. The sample plan design exceeded the required system-wide confidence level goal and produced a final system-wide confidence level of 95%, with a ± 1% margin of error.

Table 2-1
Sample Plan and Confidence Level Goals by Route

ROUTE	Weekday Sample Goal	Saturday Sample Goal	Sunday Sample Goal	Total Expected	Confidence Level
2/East 34th Street	271	96	68	435	± 4.7%
3/Michigan Street	271	96	68	435	± 4.7%
4/Fort Harrison	271	96	68	435	± 4.7%
5/E. 25th/North Harding	271	96	68	435	± 4.6%
8/Washington Street	271	271	271	813	± 3.4%
9/Airport Zone	68	N/A	N/A	68	± 11.9%
10/10th Street	271	271	96	638	± 3.9%
11/East 16th Street	68	33	N/A	101	± 9.8%
12/Beechcrest	68	68	48	184	± 7.2%
14/Prospect	68	68	51	187	± 7.2%
15/Riverside	96	96	68	260	± 6.1%
16/Beech Grove	68	49	N/A	117	± 9.1%
17/College	271	271	96	638	± 3.9%
18/Nora	96	68	66	230	± 6.5%

19/Castleton	271	96	96	463	± 4.6%
21/21st Street	68	75	N/A	143	± 8.2%
22/Shelby	68	N/A	N/A	68	± 11.9%
24/Mars Hill	68	27	N/A	95	± 10.1%
25/West 16th Street	96	68	N/A	164	± 7.7%
26/Keystone Crossing	68	45	45	158	± 7.8%
27/Butler	68	60	N/A	128	± 8.7%
28/St. Vincent	96	68	68	232	± 6.4%
30/30th Street Crossing	96	68	N/A	164	± 7.7%
31/Greenwood	96	68	53	217	± 6.7%
34/Michigan Road	68	54	N/A	122	± 8.9%
37/Park 100	271	96	23	390	± 5.0%
38/Layfayette Square	271	271	96	638	± 3.9%
39/East 38th Street	271	271	96	638	± 3.9%
40/Chapel Hill Express	12	N/A	N/A	12	± 28.3%
44/Castleton Express	21	N/A	N/A	21	± 21.4%
45/East 38th Street Express	60	N/A	N/A	60	± 12.7%
46/South Meridian Express	6	N/A	N/A	6	± 40.0%
48/Mitthoefer Express	31	N/A	N/A	31	± 17.6%
49/Ameriplex	5	N/A	N/A	5	± 43.8%
55/English	96	46	N/A	142	± 8.2%
70/Eastside Circular	68	45	N/A	113	± 9.2%
Total	***4,604***	***2,937***	***1,473***	***9,014***	± 1.0%

Trip Selection

The number of trips to be sampled was calculated by assuming an average response rate of 30% of typical rider loads by trip. Thus, a route that had an average daily rider load of 1,000 riders and made 10 trips a day, was determined to have an average rider load of 100 riders per trip. Assuming the line had a sample quota of 96 completed questionnaires, it was determined that 3.5 trips would need to be sampled to meet quota requirements (1,000/10 = 100 x .30 = 30 x 3.5 = 105). The number of trips to be sampled was rounded to the nearest higher whole number for trip selection purposes.

Upon IndyGo's approval of the sampling plan, trips to be sampled were randomly selected from the entire universe of trips and stratified by route, direction (inbound, outbound, N, S, E, W, loop, etc.) and service period (AM peak, Midday, PM peak and Evening). Trips were clustered by block for the purpose of efficient use of surveyor labor. The amount of time a surveyor spends in finding, boarding, and setting up on individually sampled trips is minimized if the surveyor boards the vehicle at the start of its trip and stays on board that vehicle surveying all of the sampled revenue trips in the sample cluster. The use of clustering consecutive vehicle trips representing the trips in all or part of the run had the further advantage of de facto stratification by direction (most runs consist of bus trips alternately traveling inbound, outbound, inbound, etc.) as well as stratification by route and time of day.

In addition, trip selection was further refined by service period to represent rider loads throughout the day. Trip selection by time period was based on the following:

- 30% of sampled trips were selected during AM peak periods (5:00am – 9:00am)
- 20% of sampled trips were selected during mid-day periods (9:01am – 3:00pm)
- 30% of sampled trips were selected during PM peak periods (3:01pm – 6:00pm)
- 20% of sampled trips were selected during evening periods (6:01pm – 2:00am)

Sampling Methodology

To provide a representative distribution of trips and to achieve the confidence level goals, the following steps were taken to create the sample structure for this project:

1. IndyGo provided a route-by-route listing of daily vehicle trips and average ridership for weekday, Saturday and Sunday boardings. Ridership reflects the number of individuals actually riding a specific route, and since many riders make multiple trips on the same route, ridership figures are normally less than the actual number of "unique" riders.
2. Based on an anticipated response rate of 30%, the number of trips required to be surveyed to meet the confidence level was calculated as previously described.
3. The sample was first allocated to the routes requiring a higher confidence level or special attention, and then to the remainder of the system based on descending ridership levels. For routes requiring sampling of eight or more trips, at least one round trip per service time period and service day is represented.[1]
4. Once the number of trips on each route was determined, the sample was developed using IndyGo's schedule information. Each trip had an equal chance of being included in the sample, but the sample was balanced to reflect rider loads by service time periods.
5. Only riders age 16 or older were asked to complete a questionnaire. Surveyors tallied boarding riders, which included the number of passengers under age 16.
6. The final task was creating surveyor assignment sheets, which provided the surveyor with all of the necessary information required to correctly identify and board each assigned trip.

Data Weighting and Expansion

Weight Factor Computation

To create a more accurate picture of the IndyGo system, the data are weighted. This was done in order for each route to be properly represented in the survey total. As a simple example, one route may have 1,000 adult riders per day and another, 100. If 50 questionnaires were collected on each route, the percentage collected would be 5% and 50% respectively. Without weighting, the data collected on the route with 100 adult riders would be over-represented in the results. Weighting

[1] Additional trips were added to the sample, as necessary, when response rates were lower than anticipated.

balances these differences so that the reported system-wide trip characteristics more accurately reflect the ridership.

The expansion process for this project was made at the Day-Route-Time-Direction (DRTD) level. That is, each one of the usable questionnaires gathered from participating adult passengers was assigned a weight based on the day of the week (i.e. Weekday, Saturday, or Sunday), route, time of the day (e.g. AM, PM Peak Periods), and direction (Inbound, Outbound, N, S, E, W, or Loop). In order to do so, the number of adult riders on board, the total number of trips, and the number of sampled trips were summarized by each DRTD, and used to compute the Response Factor (RF) and the Vehicle Factor (VF). The Boarding Factor (BF), or weight, is the product of the RF and the VF. The formulas are shown below:

- Response Factor = Total Boarding / Usable Questionnaires

Because not all adult riders return usable questionnaires, a RF is needed to account for these riders. The RF is then assigned to the riders who were successfully surveyed. For example, if there were 200 riders on board in a given DRTD, and only 100 returned a usable questionnaire, each of these riders was assigned a factor of 2 (200 divided by 100).

A tally count by gender (males and females) and age (16 or older and under 16) of riders on board was made for all the surveyed trips. This count was utilized to compute the Total Boarding by DRTD. To account for human error while tallying (especially on trips with standing room only loads), the number of questionnaires distributed on each trip was compared against the tally of adult riders (riders under 16 did not receive a questionnaire). In general, those two numbers were expected to be equal, but in cases of discrepancy, the number of distributed questionnaires prevailed. Riders, who had already filled in a questionnaire on a previous trip, as well as the number of children on board, were included in the tally counts.

- Vehicle Factor = Total Trips / Sampled Trips

Given that only a sample of trips was surveyed, a factor to account for the non-surveyed trips in each DRTD was assigned. For example, the DRTD Weekday - Route 2 – AM Peak (5 am to 9 am) - Inbound has a total of 11 trips, but only 2 were surveyed, thus its VF is 11 divided by 2, or 5.5.

- Boarding Factor = Response Factor * Vehicle Factor

Adjusting for Variances in Boarding Estimates

By applying the Boarding Factor (weight variable) to the questionnaires associated with the various DRTDs, it is expected that the resulting boarding estimate for adult passengers at the route level would be very close to the actual ridership figures provided by IndyGo for weekday, Saturday and Sunday service. The accuracy of the estimate is dependent, however, upon sample size, boarding rate, and randomness. To ensure the validity of the extrapolation, the estimated figures were compared to actual ridership numbers provided by IndyGo. Following their indications, weights for selected lines were adjusted accordingly.

Assignment of Boarding Figures

Since it was not possible to survey at least one trip from all DRTDs for lines requiring sampling of less than eight trips, it was necessary to estimate boardings for the missed time periods. The assignment was performed following two different methodologies, one for weekday and one for weekend DRTDs, as explained below.

- Weekday DRTDs. The most accurate way to assign a boarding estimate for any given DRTD not surveyed is to use the boarding figure from its "best opposite," that is, a DRTD in the same day and route but opposite direction and time of the day. (The assumption being that riders boarding a bus in the morning to go to work are likely to board the same bus on their way back to home in the afternoon.) For example, the boarding figure for Route 39 - Evening - Inbound direction (non-surveyed DLTD) was taken from Route 39 – Midday - Outbound direction.

  In few instances, however, there was not a clear "opposite" for a non-surveyed DRTD, so a figure from the one DRTD that most closely resembled it was chosen. For example, if sample was not collected on Route 9, which operates as a loop, during a certain time period, there is no opposite direction, so the number from the opposite time period was used.

- Weekend DRTDs. Since the number of runs decreases considerably during the weekends, in many instances it was not possible to find clear "opposites" for sampled DRTDs. Furthermore, public transportation usage on weekends does not allow for the assumption that people boarding a bus at a certain time period are likely to board it again in the opposite time period/direction. Therefore, the approach followed was to take average riders by route and trip for the purpose of imputing a boarding estimate to non-surveyed DRTDs.

  In addition, the calculated numbers for non-surveyed DRTDs have a relative impact on the BF (weight) assigned to the questionnaires. That is, the calculated boarding estimates are used to level up the boarding estimates at the route level, which in turn are used to adjust the BF for the covered DRTDs.

Assignment of Boarding Figures

Following the calculation of weighting factors, the number of questionnaires collected from adult boarding passengers, by service day was expanded to represent the ridership figures shown in Table 2-2 below.

Table 2-2

Sample Plan and Confidence Level Goals by Route

Route	Weekday Expansion	Saturday Expansion	Sunday Expansion
2/East 34th Street	928	226	54
3/Michigan Street	1,262	224	124
4/Fort Harrison	830	288	150
5/E. 25th/North Harding	1,588	210	432
8/Washington Street	4,027	2,105	801
9/Airport Zone	139		
10/10th Street	4,169	2,836	606

11/East 16th Street	210	18	N/A
12/Beechcrest	1,347	81	139
14/Prospect	65	21	199
15/Riverside	773	512	247
16/Beech Grove	317	174	N/A
17/College	1,929	741	714
18/Nora	1,005	172	53
19/Castleton	3,363	440	688
21/21st Street	739	229	N/A
22/Shelby	547		N/A
24/Mars Hill	383	35	N/A
25/West 16th Street	1,513	845	N/A
26/Keystone Crossing	350		707
27/Butler	212	102	N/A
28/St. Vincent	659	226	136
30/30th Street Crossing	704	52	N/A
31/Greenwood	595	93	618
34/Michigan Road	637	236	N/A
37/Park 100	2,079	212	114
38/Layfayette Square	1,656	577	1126
39/East 38th Street	3,131	1,201	1,000
40/Chapel Hill Express	26	N/A	N/A
44/Castleton Express	46	N/A	N/A
45/East 38th Street Express	151	N/A	N/A
46/South Meridian Express	20	N/A	N/A
48/Mitthoefer Express	67	N/A	N/A
49/Ameriplex	15	N/A	N/A
55/English	348	20	N/A
70/Eastside Circular	330		N/A
Total	***36,159***	***2,937***	***7,908***

Survey Questionnaire Design and Execution

The Survey Form

The bi-lingual (English and Spanish) survey instrument was designed to be self-completed and primarily self-coded. Each form was pre-printed with a unique serial number, which linked each questionnaire to distribution on a specific trip. The questionnaire was designed to obtain information in four major categories: travel patterns, frequency of use, attitudinal data, and demographic data.

Questionnaires were designed in a four-page legal-size format, and printed on heavy card stock for easy distribution and completion with pages one and two published in English and pages 3 and 4 published in Spanish. A copy of the questionnaire appears in Appendix A. To maximize response rates, multi-lingual surveyors were assigned to routes with a predominance of non-English speaking riders.

Survey Procedures

In order to track and monitor all of the trips required in the sampling plan, NuStats' staff developed a surveyor assignment sheet that included key information for each assignment, including trip number, trip direction, time period, block number, route number, start and end times and start and end locations. A sample assignment sheet is included in this report as Appendix B. All assignments for each day were recorded in an electronic master control file used by supervisors to track and monitor surveyors in the field, as well as document data collection efforts upon completion of an assignment. Trip completion and response rates were also monitored by the control file.

Surveyors were provided with slightly more questionnaires than the anticipated number of riders expected to board the trips comprising an assignment. The serial number range for the questionnaires given for an assignment was recorded in the electronic control file. These numbers ensured that returned surveys could be linked to the assignment (and trip) from which they were distributed.

In addition, each trip of each assignment was documented by an individual trip log that surveyors used to record the number of boarding riders and range of questionnaires distributed during each trip of the assignment. A sample trip log form can be found in Appendix C.

In order to ensure the highest quality results during data collection efforts, the following quality control measures were adhered to:

1. Careful screening, training and selection of survey staff. A heavy emphasis was placed on the professionalism of survey staff. Surveyors attended a four-hour training session, held at the IndyGo Transit Store conference room, prior to actual distribution of the survey instrument. Surveyors were required to practice distribution, collection and recording-keeping tasks prior to actually conducting survey efforts. All surveyors were provided with a comprehensive training manual detailing surveying techniques. A sample of the training manual is in Appendix D.
2. A High Level of Effective Field Supervision. Supervisors met with each surveyor at the end of every assignment and reviewed his/her work before making his/her next assignment. Quality control was an on-going process and surveyors were retrained or replaced when problems arose.
3. Advance Notification to Dispatchers and Drivers. NuStats conducted a series of three presentations to operators advising them of the study purpose, questionnaire contents and data collection time period prior to actual surveying. Additionally, operators unable to attend one of the presentations were provided with a memorandum detailing study activities.
4. Advance Notification to riders. Transit cards were displayed in all vehicles advising passengers of the purpose and date of the study. Additionally, surveyors posted signage to encourage riders to participate in the study when they were conducting survey activities.
5. Minimize bias for language or difficulties due to disabilities. A multi-lingual survey staff enabled us to match surveyors to routes where non-English speaking riders were more common. As time permitted, surveyors offered to interview riders who could not fill out a form due to disability, provided it would not interfere with other duties.

6. Completion incentive. Surveyors were provided one-ride tickets to distribute to passengers who fully completed the questionnaire on board the vehicle.

Labor Recruitment and Training

Surveyors were required to have lived in the IndyGo service area a minimum of two years. This ensured knowledge of both the area and of the transit system. Surveyors were also screened to ensure they had good work habits, were personable, honest, mature, and paid attention to details.

Supervisors were required to have supervisory experience. In addition, they were demanded to have very strong work ethics, the ability to record numbers accurately, the ability to work independently, and have reliable transportation.

An initial training session was held in at the IndyGo Transit Store's conference room. This site was chosen because of its convenient location, sufficient training space, and availability to later serve as the survey command center. A number of short bus trips started and ended within easy walking distance to this site, which made it useful for staff training.

Surveyors were trained in the use of assignment sheets, taught basic survey procedures, etiquette, and how to approach riders. The training included two hours of role-playing and intensive testing. Directly following training, supervisors assigned assignments ranging from one to three hours in length to each of the surveyors.

Following completion of the initial assignments, surveyors were required to return to the survey command center (IndyGo's Transit Store conference room) where NuStats supervisors checked-in and verified the accuracy of the surveyor's work. Assignments were then handed out for the next day.

Conducting the Survey

During the course of the data collection period (September 21 – October 7, 2001), surveyors were required to pick up one work assignment at a time from a supervisor each day. Assignments were matched to surveyors' unique skills or situation (i.e., ability to speak Spanish, proximity of start location to the surveyor's home, familiarity with route, etc.).

Surveyors were asked to board the bus and introduce themselves to the operator as well as confirm they were surveying the correct block according to the information provided on the assignment sheet. A *Questionnaire Return Box* was placed in the rear stairwell and a *Survey Today* sign was taped to the farebox facing the stairwell.

Surveyors were asked to station themselves by the seat directly behind the operator so they would have easy access to riders as they boarded the vehicle, while not impeding boarding. A Collection Envelope with attached Trip Log form was clipped to a clipboard. Information including the operator's name, vehicle number, surveyor's name, the date and the day of week was recorded on the Trip Log form. Additionally, surveyors recorded the serial number of the first questionnaire to be handed out on that trip.

Riders who did not speak English were shown that the instrument was available in Spanish. Questionnaires were given to every boarding adult rider (age 16 or older).

At the conclusion of each sampled trip, surveyors recorded the serial number of the next questionnaire that had not yet been distributed. All riders were tallied as they boarded the vehicle, whether or not they took a questionnaire. Tally counts were conducted by age category (adult or child/under age 16) and gender. At the end of each trip, surveyors collected all of the questionnaires from the *Return Box*, and checked the floor and all seats for questionnaires left on-board the vehicle.

Surveyors returned to the Survey Headquarters located at the Transit Store after each assignment to have their work checked and receive a work assignment for the next survey day.

Data Entry and Geocoding Processes

Data Entry

Data entry was conducted using ScanTron scanning technology in order to minimize human error resulting from traditional data entry methods. The scanning process involved scanning batches of approximately 100 questionnaires to produce an image file of the documents. Data results derived from the image files were individually reviewed and varified by comparing the scanned image to the data contained in the data file. Text data (primarily origin and destination address information) was reviewed for the purpose of correcting misspellings and varifing that numeric data was correctly read by the scanner.

As the database was created, data were checked for integrity. Various edit routines were programmed to check the consistency of data and to identify reporting, scanning or entry errors. Data in the Control Register was matched against survey data to ensure that all information was consistent between the two files. Routine edit checks were conducted to examine questionnaire responses for reasonableness and consistency across items. Routine checks included such items as:

- Response code range checks,
- Checks for proper data skips and patterns of answering questions consistent with prior answers,
- Checks for realistic responses (e.g., number of one-way rides possible in 7 days), and
- Checks for high frequency of item non-response (missing data).

Geocoding

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

Trip Origin/ Destination

Geocoding of origin / destination addresses consisted of two-stages. An automated batch run was first attempted in order to successfully geocode origin/ destination addresses. The batch run attempted to match exact addresses or cross-streets obtained from respondents to a street coverage

file provided by the transportation authority. 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" and passed to the next stage of geocoding.

During the next stage, addresses were researched using a series of resources, including Zip2 (internet search engine), DeLorme Street Atlas USA (mapping software), and any additional databases provided by IndyGo (major employers, schools, etc.). Addresses that are matched to an exact address or cross-streets during this stage were assigned an X/Y coordinate and an "AV_STATUS" of "C". Those matching only by zip code were assigned the X/Y coordinate of the associated zip code's center and an "AV_STATUS" of "Z". Addresses matched only by city were assigned the X/Y coordinate of the associated city's center and an "AV_STATUS" of "Y". Addresses not geocoded were assigned an X/Y coordinate, and were given the "AV_STATUS" of "U". All addresses matching to some level of geography were then spatially joined to a TAZ coverage, and the appropriate TAZ number placed in the field "TAZ".

Bus On / Off

Bus-on and Bus-off locations were geocoded using the same two-stage process as origin / destination geocoding, and contained the same flag values in "AV_STATUS". However, the on and off locations, given respondents provided the information, a higher probability of geocoding. Using a bus-stop list provided by IndyGo, NuStats was able to accurately match respondent-provided on and off locations provided by the respondent to the proper cross-street or exact address. In addition, bus-on locations that are left blank could often times be determined by looking at the bus-on response of the questionnaires with serial numbers immediately before and after. If the two questionnaires had the same bus-on location, NuStats assigned that location to the questionnaire missing the information.

Prior to the start of the study, NuStats and IndyGo reached mutual agreement that 90% to 95% of addresses for trips with valid address information would be geocoded to a zip code or TAZ centroid using the procedures above. A trip was defined as some "pair" of start and end points, with each trip having either an origin or bus-on and either a bus-off or destination.

Geocoding Quality Control

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

- ***Resolution of Duplicate Street Names.*** Inevitably, multiple streets with the same name are replicated in several of the counties comprising the study area. For example, the cross streets Main and First are common streets found in every city. If not careful, this intersection could receive a "false hit". A geocode would be attached, but it would be to the wrong city.
- ***Visual Quality Control Check.*** Geocodes were verified for their locational accuracy. This type of City/Address location check was done in a two-step process. First, a visual check was to be done by querying off geocodes according to the city name. For example, all of the Indianapolis matches were selected and displayed in the map view in ArcView. A visual check ensured that all those points were within the study area. Points that were not in the area were selected, researched, and re-geocoded.

- ***Zip Code Comparison***. Using the zip code coverage, a shape-to-shape join on the address data file and the zip code coverage was performed. This "join" attached the geocoded zip code number to the data file, allowing a comparison to the zip code given by the respondent. Those two zip codes were compared and differences were selected and researched to ensure the highest accuracy of geocoding.

CHAPTER 3: DATA COLLECTION RESULTS

Response Rate

The system-wide response rate for the 2001 On-Board Passenger Survey was 51%. The response rate was calculated based on the number of questionnaires distributed to eligible respondents (sample universe) who actually completed a questionnaire. The formula for calculating response rate is as follows.

$$\text{Response Rate (\%)} = \frac{\text{Completed Questionnaires}}{\text{Questionnaires Distributed to Eligible Respondents}}$$

- For the purposes of this study, an eligible respondent was defined as an adult male or female, age 16 or older.

A total of 21,201 questionnaires were distributed to all eligible respondents meeting the criteria described above. Of these, 11,995 were distributed to weekday adult passengers, 5,803 were distributed to Saturday adult passengers and 3,403 were distributed to Sunday adult passengers. The 10,835 collected questionnaires comprising the final data file (and exceeding the sample plan goal of 9,014) equates to a 51% response rate. By service day, a total of 6,385 questionnaires were collected from weekday passengers, 2,842 from Saturday riders and 1,608 from Sunday riders.

Confidence Level System-wide

The total of 10,835 valid questionnaires were collected from adult passengers system-wide, exceeded the system-wide confidence level goal of 95% with a margin of error of ±10% as shown below:

- Weekday 95% confidence level ± 1.2% margin of error
- Saturday 95% confidence level ± 1.8% margin of error
- Sunday 95% confidence level ± 2.4% margin of error
- System-wide 95% confidence level ± 0.9% margin of error

Confidence Level by Route

Table 3-1 identifies the margin of error achieved at a 95% confidence level by route for each service day and system-wide.

Table 3-1
Achieved Margin of Error at 95% Confidence Level by Route

ROUTE	Weekday Q's Collected	Weekday Margin of Error	Saturday Q's Collected	Saturday Margin of Error	Sunday Q's Collected	Saturday Margin of Error	System-wide Margin of Error

2/East 34th Street	398	4.9%	88	10.4%	58	12.9%	4.2%
3/Michigan Street	376	5.1%	99	9.8%	62	12.4%	4.2%
4/Fort Harrison	312	5.5%	88	10.4%	96	10.0%	4.4%
5/E. 25th/North Harding	397	4.9%	94	10.1%	103	9.7%	4.0%
8/Washington Street	461	4.6%	286	5.8%	305	5.6%	3.0%
9/Airport Zone	96	10.0%	N/A	N/A	N/A	N/A	10.0%
10/10th Street	456	4.6%	283	5.8%	121	8.9%	3.3%
11/East 16th Street	98	9.9%	23	20.4%	N/A	N/A	8.9%
12/Beechcrest	62	12.4%	52	13,6%	83	10.8%	7.0%
14/Prospect	80	11.0%	13	27.2%	N/A	N/A	10.2%
15/Riverside	189	7.1%	88	10.4%	32	17.3%	5.6%
16/Beech Grove	95	10.1%	45	14.6%	72	11.5%	6.7%
17/College	319	5.5%	282	5.8%	N/A	N/A	4.0%
18/Nora	143	8.2%	62	12.4%	125	8.8%	5.4%
19/Castleton	394	4.9%	65	12.2%	48	14.1%	4.4%
21/21st Street	95	10.1%	96	10.0%	85	10.6%	5.9%
22/Shelby	122	8.9%	N/A	N/A	N/A	N/A	8.9%
24/Mars Hill	105	9.6%	23	20.4%	N/A	N/A	8.7%
25/West 16th Street	139	8.3%	62	12.4%	N/A	N/A	6.9%
26/Keystone Crossing	127	8.7%	44	14.8%	59	12.8%	6.5%
27/Butler	51	13.7%	44	14.8%	N/A	N/A	10.1%
28/St. Vincent	91	10.3%	112	9,3%	N/A	N/A	6.9%
30/30th Street Crossing	118	9.0%	31	17.6%	69	11.8%	6.6%
31/Greenwood	116	9.1%	34	13.5%	52	13.6%	6.9%
34/Michigan Road	83	10.8%	76	11.2%	N/A	N/A	7.8%
37/Park 100	311	5.6%	112	9.3%	30	17.9%	4.6%
38/Layfayette Square	388	5.0%	296	5.7%	58	12.9%	3.5%
39/East 38th Street	386	5.0%	254	6.1%	150	8.0%	3.5%
40/Chapel Hill Express	13	27.2%	N/A	N/A	N/A	N/A	27.2%
44/Castleton Express	18	23.1%	N/A	N/A	N/A	N/A	23.1%
45/East 38th Street	93	10.2%	N/A	N/A	N/A	N/A	10.2%
46/South Meridian	10	31.0%	N/A	N/A	N/A	N/A	31.0%
48/Mitthoefer Express	36	16.3%	N/A	N/A	N/A	N/A	16.3%
49/Ameriplex	10	31.0%	N/A	N/A	N/A	N/A	31.0%
55/English	114	9.2%	5	43.8%	N/A	N/A	9.0%
70/Eastside Circular	83	10.8%	66	12.1%	N/A	N/A	8.0%
Total	6,385	1.2%	2,842	1.8%	1,608	2.4%	0.9%

Non-English Surveys

A total of 86 (.8% of total questionnaires collected) questionnaires were completed in Spanish. Table 3-2 identifies response rate by language.

Table 3-2
Completed Questionnaires by Language

LANGUAGE	Questionnaires collected	Percentage
English	10,749	99.2
Spanish	86	.8

Total	***10,835***	***100***

Questionnaires Collected by Time Period

Questionnaires collected by time period for routes sampled on weekdays, Saturdays and Sundays are summarized in Table 3-4 below.

Table 3-4
Completed Questionnaires by Time Period

TIME PERIOD	Questionnaires Collection/Weekday	Questionnaires Collection/Saturday	Questionnaires Collection/Sunday	Percent
5:00am–9:00am	1,514	632	182	21.5%
9:01am–3:00pm	2,837	1,408	548	44.2%
3:01pm–6:00pm	1469	527	499	23.0%
6:01pm–2:00am	565	275	379	11.3%
Total	***6,385***	2,842	1,608	***100%***

CHAPTER 4: DATA FINDINGS

Key Findings

IndyGo's typical weekday passenger is a Black/African American female, age 35 to 49, who uses the bus to travel five days a week, to and from home and work. Although she is likely to be employed full-time or part-time in a service or production position, the rider has a modest annual household income of under $10,000 and is transit dependent – meaning she has no operating vehicles available in her household and does not have a personal vehicle for her use.

The average rider has been using bus service for one year or more and rides two buses to complete her travel. If bus service were not available, she would probably walk to and from her destination, although arranging a ride with a friend is a secondary option. Most often, she accesses her stop by walking.

In general, the average rider is satisfied with the services that the transit system provides, but feels more frequent service and extended service hours would be beneficial.

Data Analysis

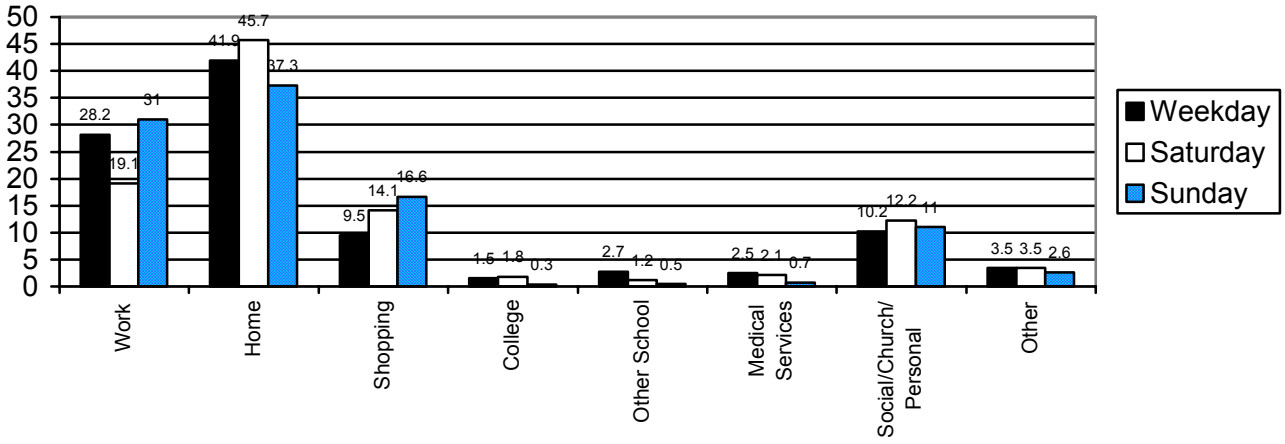
The following tables depict data results for all questions contained in the study. Results described primarily represent weekday adult passengers unless otherwise noted.

Frequency tables and cross-tabs of all questions by age, ethnicity, car availability and satisfaction of services are contained in a separate report.

Table 4-1

Origin

N= 28,617 (Weekday weighted)
N= 7,193 (Saturday weighted)
N=6,234 (Sunday weighted)



Origin

The greatest majority of trips originate from home, according to weekday, Saturday and Sunday adult respondents -- with the second most common origin cited as a work location. As expected, trips starting at shopping locations usually occurred more frequently on Saturday and Sunday than during the week.

Not surprisingly, weekday passengers age 19 to 24 more frequently start their trip from a college campus than any other age group (46.4%), and weekday passengers age 16 to 19 are more likely to begin travel from another school locations (37.9%) than other age categories. Forty-six percent of weekday travelers beginning their trip from work are age 35 to 49.

Black/African Americans are the largest group of weekday travelers to begin their trip from any of the specified locations. For example, 66.2% of weekday travelers who began their trip from work are Black/African Americans, while only 27.6% of other employees identify themselves as White. For those traveling from home, 69.6% were Black/African Americans and 23.8% are White. Slightly more than 80% of weekday passengers beginning their trip from school are Black/African Americans with 14.1% reporting their ethnicity as White.

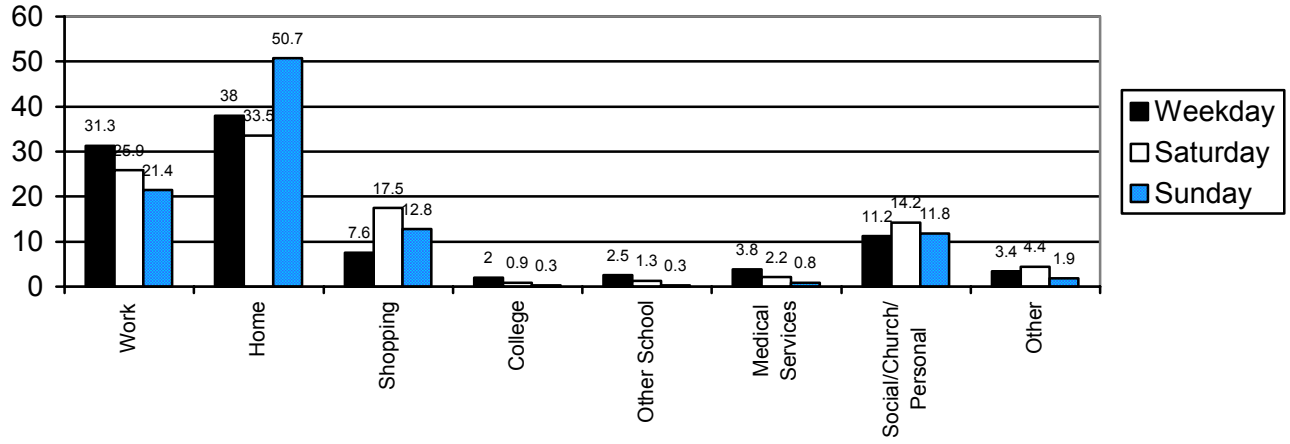
Of those weekday passengers beginning their trip from work, 75.2% did not have a car available for their use. Eight of every ten weekday passengers (80.7%) beginning their trip from a shopping location did not have access to a vehicle as well. On Sunday, 77.6% of the passengers who traveled from a shopping location were transit dependent.

Of weekday passengers beginning their trip from a medical location, 25.9% are very satisfied with the bus service. Slightly less than one-fourth of weekday passengers beginning their trip from work or home share this rating assessment.

Table 4-2

Destination

N= 28,944 (Weekday weighted)
N= 7,199 (Saturday weighted)
N=6,523 (Sunday weighted)



Destination

Similar to the results seen for trip origin data, the majority of IndyGo's passengers are traveling home (38.0% weekday, 33.5% Saturday, 50.7% Sunday) or to work (31.3% weekday, 25.9% Saturday, 21.4% Sunday). Trips for shopping purposes and social/church/personal business are more common on the weekend than during the week.

Passengers, age 19 to 24, take one-half (49.4%) of all weekday bus trips to college campuses. Of those traveling for a weekday medical appointment, 52.5% are age 35 to 49. Senior adults (age 65 or older) use weekday bus service most often to go shopping or see a doctor.

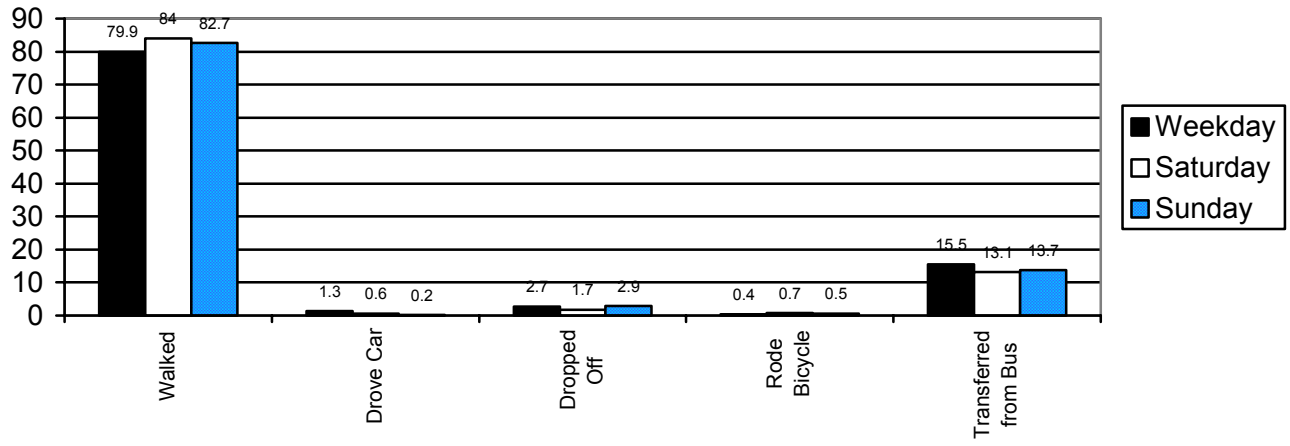
Black/African American passengers going to work comprise 72.2% of all weekday passengers traveling to their job. One-third (66.1%) of weekday passengers going home are also Black/African Americans. Eight of every ten (83.3%) weekday trips to school are taken by Black/African American riders.

Nearly three-fourths (72.8%) of weekday passengers going to work are transit dependent – with no car available for their use. Bus service is especially important for those going for a medical appointment since 81.3% of weekday passengers traveling to a medical facility do not have a car.

More passengers riding the bus to go to social/church/personal business locations rank transit service as very satisfactory than passengers going to all other destinations. Nearly one-fourth (23.4%) of weekday passengers using bus service for social/church/personal business purposes rank bus service as very satisfactory. Passengers going to a college campus are less likely to rank bus service as very satisfactory with only 9.2% of weekday passengers selecting this top ranking.

Table 4-3
Mode to Bus Stop

N= 30,091 (Weekday weighted)
N= 7,983 (Saturday weighted)
N=7,114 (Sunday weighted)



Mode to Bus Stop

Bus stops along routes are conveniently located, as evidenced by the fact that 80% or more of weekday, Saturday and Sunday passengers walk to the stop. Riders on Route 9 are the most likely group of passengers to transfer from another bus with 44.3% of these weekday riders stating they transferred from another bus.

Of all weekday passengers who walk to a bus stop, the greatest percentage (39.2%) are age 35 to 49. This age group is also more likely than any other age category to have transferred from another bus (39.1%).

The largest category (by ethnic group) of weekday passengers who walk to a bus stop, is Black/African Americans (67.6%). Weekday passengers who drove their car to the stop are nearly evenly split between Black/African American passengers (48.1%) and White passengers (46.3%).

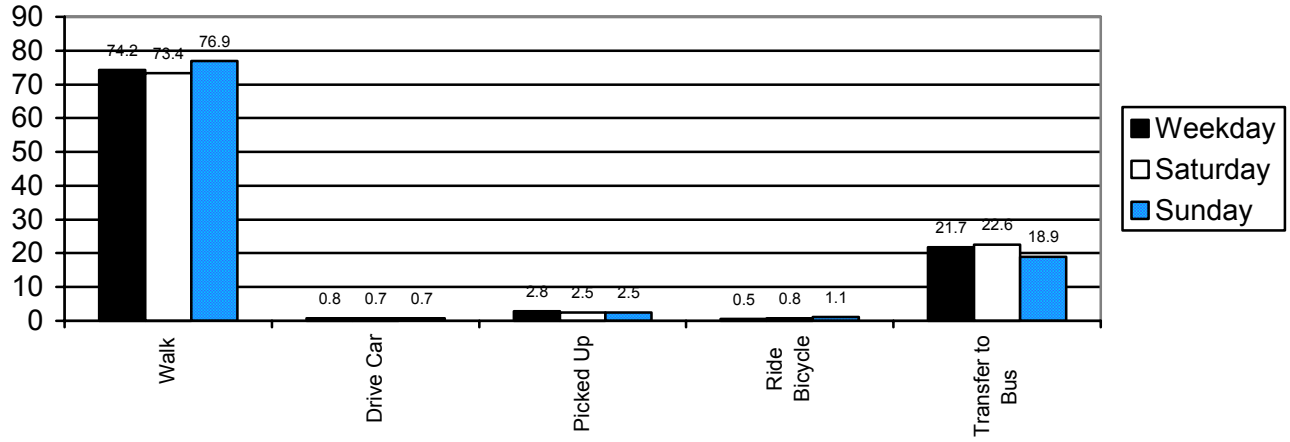
As expected, most weekday passengers (79.9%) who drove to a bus stop were choice riders, having access to a car. Of those weekday passengers who transferred from a bus, 81.8% stated they did not have access to a vehicle. More than three-fourths (78.1%) of weekday passengers walking to their bus stop are transit dependent.

Interestingly, weekday passengers who ride a bicycle to a bus stop more frequently rank bus service as very satisfactory than passengers who access a stop by other modes. Of weekday

passengers who ride a bicycle, 25.9% grade service as very satisfactory while only 18.1% of weekday passengers who transfer from another bus share this opinion.

Table 4-4
Mode from Bus Stop

N= 31,713 (Weekday weighted)
N= 7,968 (Saturday weighted)
N=6,944 (Sunday weighted)



Mode from Bus Stop

Nearly three of every four adult passengers walk to their final destination after exiting the bus they rode. As with accessing the bus, passengers on Route 9 are the most likely to transfer to another bus with 48.7% of weekday riders stating they need to transfer to complete travel for the trip.

Of weekday passengers who walk to their final destination, those ages 35 to 49 are the most likely group of passengers to use this travel mode (39.7%.) This group is also more likely to transfer to another bus than passengers of any other age categories (37.4%). Passengers using a bicycle to reach their final destination are most likely to be age 25 to 34 (29.4%) or age 16 to 18 (21.4%).

Three of every four passengers (74.6%) who transfer to another bus to complete their trip are Black/African Americans. Slightly more than two-thirds (66.7%) of those walking to their final destination are also Black/African Americans.

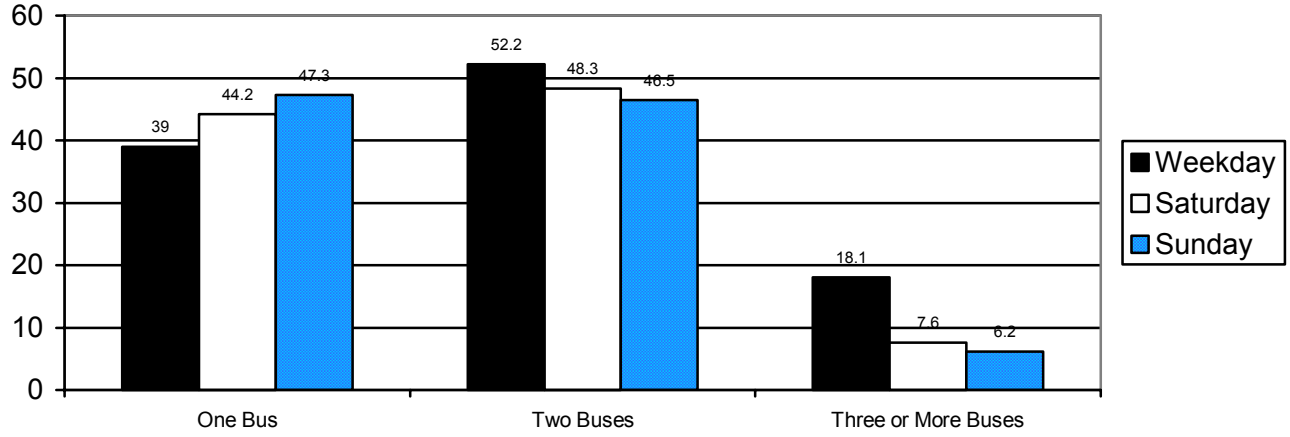
The majority of weekday (77.7%), Saturday (81.1%) and Sunday (82.8%) passengers walking to their final destination when they exit the bus do not have a car available for them to use. This same premise holds true for passengers who have to transfer to another bus to complete their trip with 80.9% of weekday, 78.2% of Saturday and 70.6% of Sunday passengers stating they are transit dependent.

Weekday passengers who drive to their final destination are more likely to rank service as very satisfactory than passengers who complete their travel by other transportation methods. Of those who drive, 35.1% are very satisfied with bus service. This compares to 22.2% who transfer to another bus.

Table 4-5

Buses Necessary to Make One-way Trip

N= 30,572 (Weekday weighted)
N= 7,779 (Saturday weighted)
N=6,826 (Sunday weighted)



Total Number of Buses Necessary to Make One-way Trip

One-half or more of adult passengers riding weekdays, Saturdays or Sundays, must transfer at least once to complete their travel to or from their final destination suggesting the need for convenient transferring facilities and examination of route alignments. Approximately 70% or more of weekday riders using Routes 40, 44, 46, and 48, however, can complete their travel riding one bus only.

Of those passengers who ride two buses to make their one-way weekday trip, 40.7% are age 35 to 49. In contrast, only 1.9% of those who ride two buses to make their weekday trip are age 65 or older.

In general, passengers who use multiple buses to make their trip are more likely to be Black/African Americans than any other ethnicity. Study results show that 72.7% of weekday passengers riding two buses and 73.5% riding three or more buses describe themselves as Black/African Americans. While the majority of riders who only use one bus to complete a weekday trip are also Black/African Americans, the percentage drops to 61.3%.

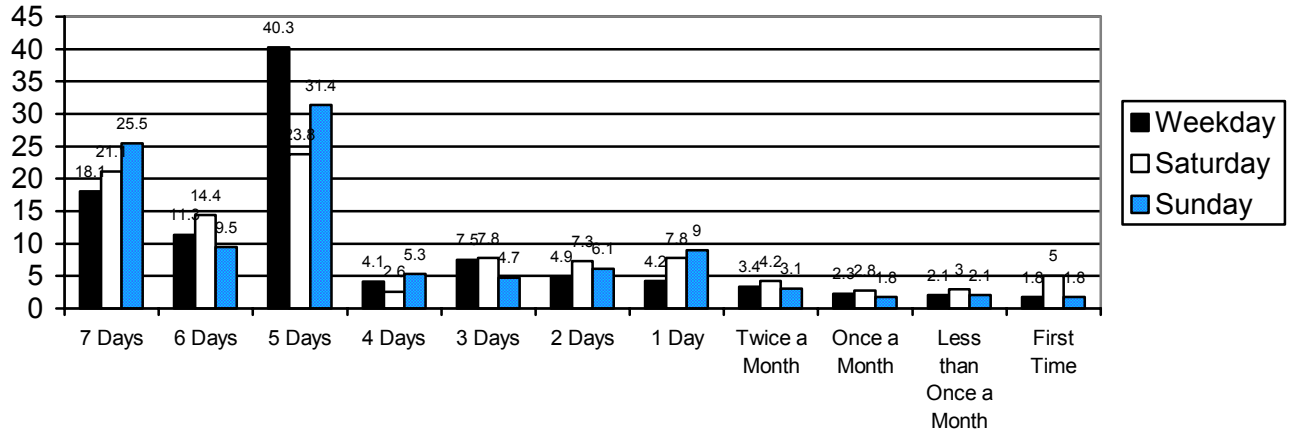
The more buses a passenger must use to make a trip, the more likely it is that the passenger is transit dependent. For example, 74.7% of weekday passengers who can complete their trip riding only one bus do not have a car available for their use, while 80.0% of weekday passengers who ride three or more buses are transit dependent.

Passengers who ride multiple buses to make their trip are more likely to rank service as unsatisfactory than those who only ride one bus. Of weekday passengers who ride three of more buses to complete their travel, 7.6% rank service as very unsatisfactory. Only 2.4% of weekday passengers riding one bus said service is very unsatisfactory.

Table 4-6

Frequency of Use

N= 31,271 (Weekday weighted)
N= 7,887 (Saturday weighted)
N=6,906 (Sunday weighted)



Number of Days a Week Trip is Made

The largest percentage of passengers (40.3%) surveyed during weekday service ride the bus five days a week. As expected, passengers surveyed on Saturday and Sunday are more likely to ride six or seven days a week than weekday passengers. Five percent or less of all weekday, Saturday and Sunday passengers are using IndyGo's services for the first time.

The majority of weekday passengers (42.0%) who ride five days a week are age 35 to 49. This same group of riders also captures the highest percentage (40.7%) of passengers using IndyGo's service seven days a week. Surprisingly, only 21.1% of weekday riders who use the bus five days a week or more are age 16 to 18 despite limited vehicle availability.

Nearly three of every four (73.7%) weekday passengers who use IndyGo's service seven days a week are Black/African Americans. Of weekday passengers who ride five times a week, 69.3% are Black/African Americans and 25.6% are White.

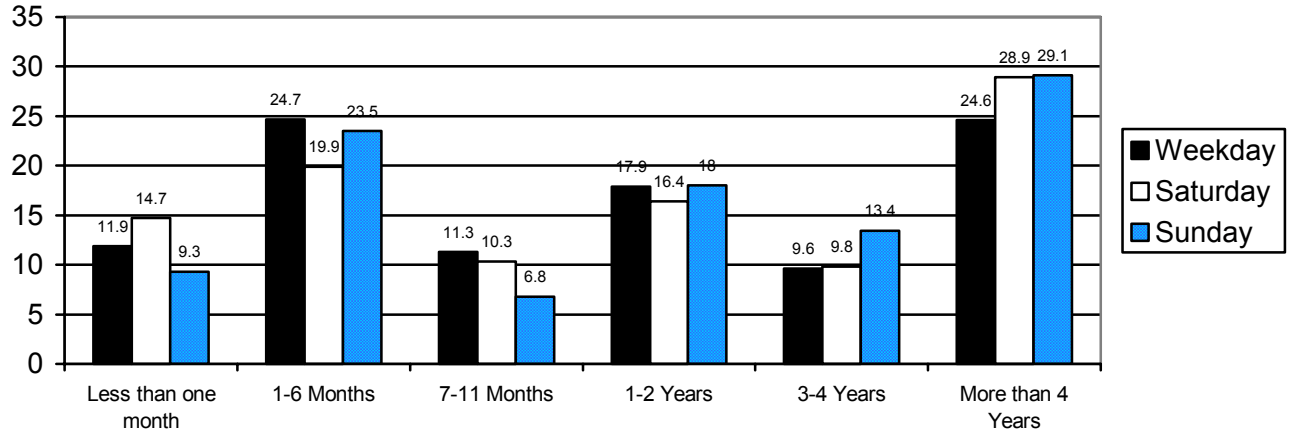
Not surprisingly, passengers who use bus service seven days a week are more likely to be transit dependent than passengers who ride less often. Of those passengers surveyed on a weekday, 81.7% who ride seven days a week state that they do not have a car available for their use. This compares to 75.2% of weekday riders who ride IndyGo twice a month who are transit dependent.

The more frequently a passenger rides the bus, the more likely it is that he or she is very satisfied with service. For example, 17.7% of weekday passengers riding five days a week, feel service is very satisfactory compared to 25.8% who ride every day of the week.

Table 4-7

Length of Time Using Bus Service

N= 30,765 (Weekday weighted)
N= 7,597 (Saturday weighted)
N=6,516 (Sunday weighted)



Length of Time Using Bus to Make Trip

More than one-half of IndyGo's adult passengers are long time users of the transit authority's services, having used mass transit for one or more years. Passengers riding weekday Routes 40, 44, 45, 46, 48 and 49, however, are relatively new to IndyGo's services, with the majority of riders on these routes only using the transit service for one-year or less.

Two-fifths (42.8%) of passengers who have ridden the bus for more than four years are age 35 to 49. One-third of riders (33.6%) who have just begun using IndyGo's services within the past month are also within this same age category. Only 3.9% of those who have ridden more than four years are age 65 or older.

The study reveals that 70.6% of weekday riders who have used bus service for four or more years are Black/African Americans. An additional 24.5% of those weekday riders are White. Of weekday passengers who have just recently begun using bus service within the past month, 64.5% are Black/African Americans and 28.2% are White.

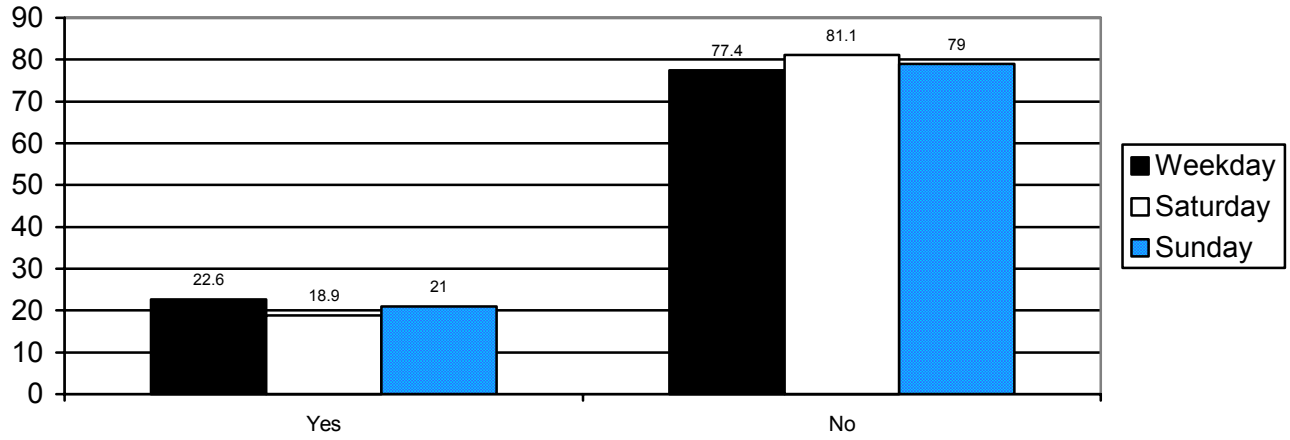
The length of time a passenger has been using IndyGo's service seems to have little impact on if the passenger is transit dependent or not. For example, of weekday passengers who have ridden the bus for less than one month, 78.7% report they do not have a car available for them to use. Analysis of weekday passengers who are long-time users of the bus system for four or more years show a marginal increase of 79.8% without vehicle access.

The longer a passenger uses bus service, the less likely it is that he or she feels very satisfied about transit service. For example, 24.9% of weekday riders using bus service for less than a month ranked service as very satisfactory compared to 18.1% of weekday riders who have ridden for three to four years who also share this opinion.

Table 4-8

Car Availability

N= 28,672 (Weekday weighted)
N= 7,052 (Saturday weighted)
N=6,209 (Sunday weighted)



Car Available to Make Trip

Approximately three-fourths of IndyGo's weekday, Saturday and Sunday passengers are transit dependent stating that they had no car available to them to make their trip. The preponderance of weekday passengers riding Route 46, however, are riders by choice with 77.8% reporting that they did have a car they could have used to make the trip.

Although most passengers are transit dependent, those weekday passengers who do have a car available for their use are typically between the age of 35 to 49 (35.5%). In comparison, only 2.5% of weekday riders with a car available to use are age 65 or older.

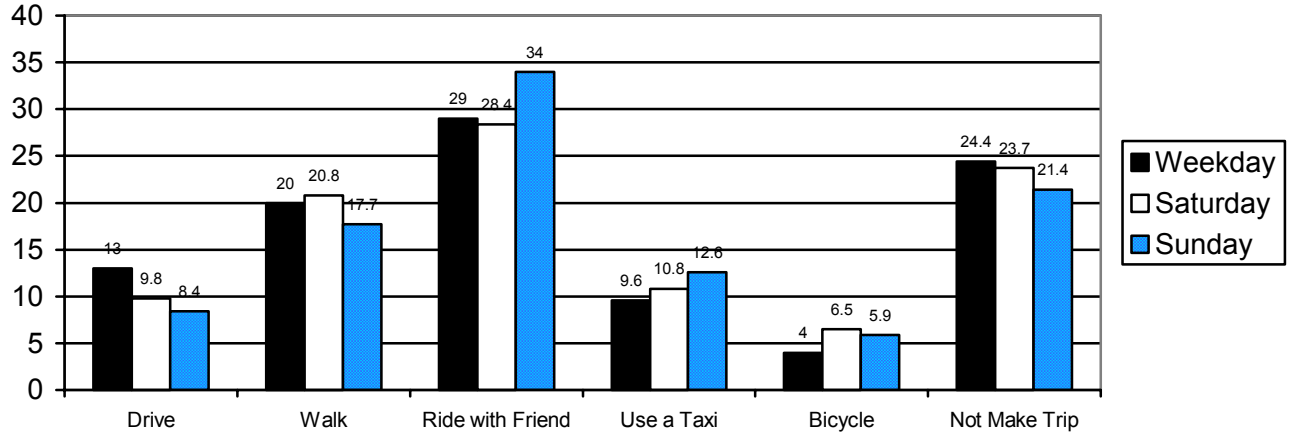
Of all Black/African American weekday passengers, 77.3% do not have a car available for them to use. The percentage increases to 83.7% for White weekday survey participants who also are transit dependent.

Having access to a car has some direct influence on a rider's level of satisfaction with IndyGo's services. For example, 84.6% of weekday passengers who are very unsatisfied with bus service do not have a car available for their use. Of those weekday riders who are very satisfied, the percentage of passengers without an available car drops to 73.6%.

Table 4-9

Alternative Travel Mode

N= 28,889 (Weekday weighted)
N= 7,256 (Saturday weighted)
N=6,310 (Sunday weighted)



Travel Mode if Bus Service Was Not Available

Nearly one-fourth of IndyGo's adult passengers participating in the study would be unable to make their trip if bus service was not available (24.4% weekday, 23.7% Saturday and 21.4% Sunday.) Weekday passengers on Route 28 would be especially inconvenienced since 38.2% would not be able to travel to or from their destination without mass transit. Of those who could make alternative travel arrangements, more than one-fourth would call upon a family member or friend to give them a ride.

For weekday passengers who would walk if bus service was not available, nearly one-half (45.9%) are age 35 to 49. Of those who would not make the trip, 39.6% are within this same age category.

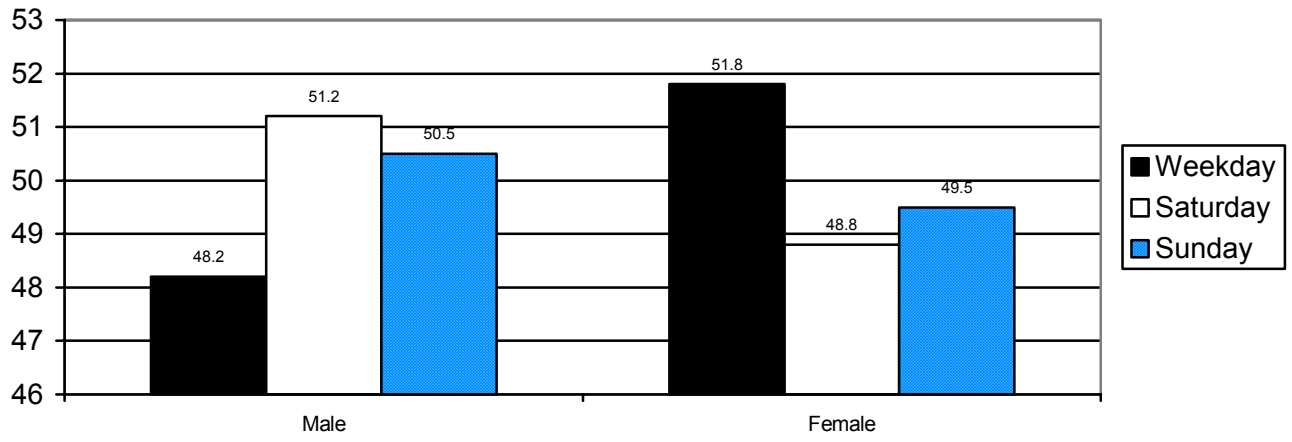
The majority of weekday passengers who would not make their trip if bus service was not available are Black/African Americans (62.4%), followed by Whites (31.6%). Of those who would ask a friend to help them with their weekday transportation needs, 75.5% are Black/African Americans while only 18.7% are White.

Of no surprise, the majority of weekday passengers (71.2%) who have a car available for their use would drive to their destination if bus service was not available. Of weekday passengers who would walk if bus service was discontinued, 11.1% stated they would walk even though they have a car available for their use.

Not surprisingly, weekday passengers who would drive if bus service was not available are more satisfied with transit service than those who would not make the trip. Data shows that 23.5% of weekday passengers who would drive are very satisfied with transit service compared to 18.4% who would not be able to make the trip.

Table 4-10
Gender

N= 16,020 (Weekday weighted)
N= 8,142 (Saturday weighted)
N=6,776 (Sunday weighted)



Gender

A greater percentage of females ride weekday service, while a greater percentage of males ride IndyGo's service on Sunday. On Saturday, the proportion of males and females are nearly evenly split. On Route 9, however, more than two-thirds of weekday riders (67.8%) are male. Female passengers exceed normal averages for weekday service on Route 40, with women comprising 84.6% of the ridership population on this route.

By age category, 40.6% of all male weekday riders are age 35 to 49. The greatest percentage of female weekday riders (36.7%) are also within this age group.

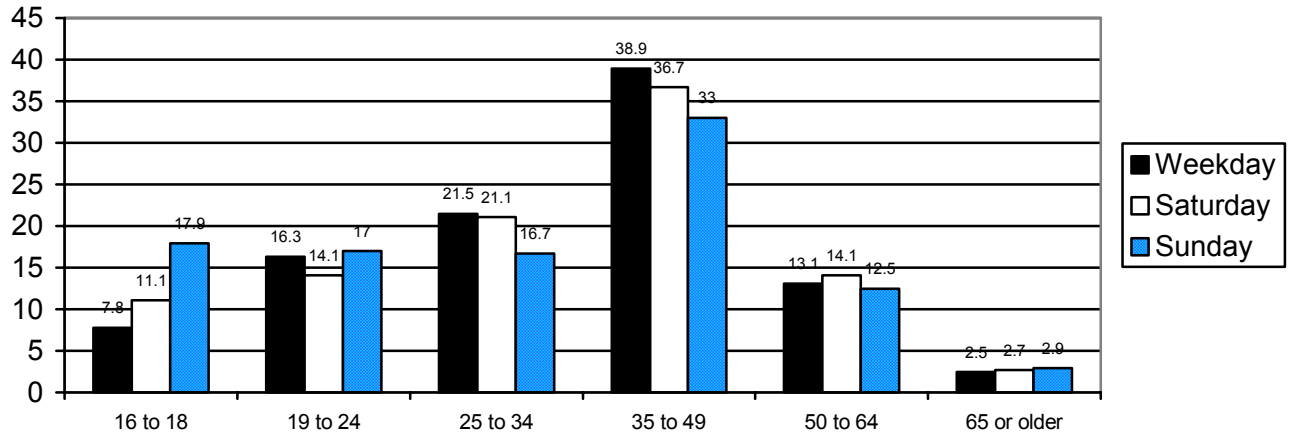
Of male weekday passengers, one-third (66.4%) are Black/African Americans, 27.4% are White and 2.5% are Hispanic. Of female weekday passengers, 70.8% are Black/African Americans, 23.9% are White and 1.9% are Hispanic.

Gender seems to have no impact on if a passenger has a vehicle available to use. Of males surveyed during weekdays, 77.1% reported they were transit dependent, with 77.2% of females also without a car or other form of personal transportation.

Men and women are nearly evenly matched in their opinion about the services they receive. For example, 42.3% of men, riding weekday routes, are satisfied with IndyGo's services and 44.1% of women share this assessment.

Table 4-11
Age

N= 29.004 (Weekday weighted)
N= 7,110 (Saturday weighted)
N=6,190 (Sunday weighted)



Age

More than one-third of passengers surveyed riding Weekday, Saturday and Sunday service are age 35 to 49 with passengers age 65 or older comprising less than 3% of IndyGo's total passenger loads. Passengers age 35 to 49 comprise more than 50% of weekday passengers riding Routes 9, 30, 40, 44, and 48. By route, the greatest percentage of weekday riders, age 65 or older, are carried on Route 5 (4.8%), while Route 15 carries the greatest proportion of weekday passengers (15.5%) age 16 to 18.

By age group, Black/African Americans account for 70.2% and Whites account for 25.3% of all weekday riders age 35 to 49. The percentage of weekday Black/African Americans and Whites is nearly equal for those who are 65 or older (48.1% and 48.7% respectively). However, Black/African American passengers age 16 to 18 comprise 79.2% of the weekday ridership population in this age group, while White riders in this age category drop to 11.7%.

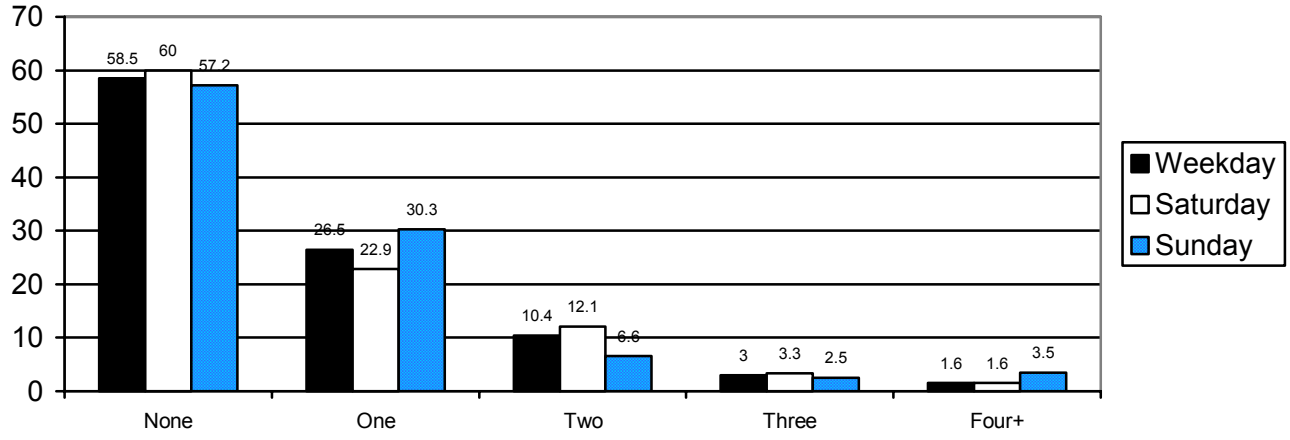
Age has minimal effect on transit dependency. For example, 71.8% of weekday passengers age 16 to 18, 78.4% age 19 to 24, 77.4% age 25 to 34, 79.2% age 35 to 49, 74.5% age 50 to 64 and 75.6% age 65 or older report that they do not have a car available for their use.

Age seems to have no impact on a passenger's level of satisfaction with bus service. One-quarter (24.5%) of weekday passengers who are age 65 or older are very satisfied with the service they received from IndyGo while 23.2% of riders 16 to 18 share this same opinion.

Table 4-12

Available and Operable Vehicles

N= 27,996 (Weekday weighted)
N= 6,915 (Saturday weighted)
N=6,000 (Sunday weighted)



Number of Available and Operable Vehicles

More than one-half of IndyGo's adult weekday, Saturday and Sunday passengers report that they do not have any operable cars in their household. Weekday riders on Routes 40, 44, 45, and 46, however, are more likely to have at least one operable vehicle in their household than riders of all other routes run by the transit authority.

Of those weekday riders who do not have any working vehicles in their household, the greatest percentages are between the ages of 35 to 49 (42.1% weekday). Conversely, this same age group is also the largest group of weekday passengers, by age categories, to report that their household owns one to three working vehicles. Weekday passengers, age 19 to 24, report that they are the largest group to have four or more vehicles.

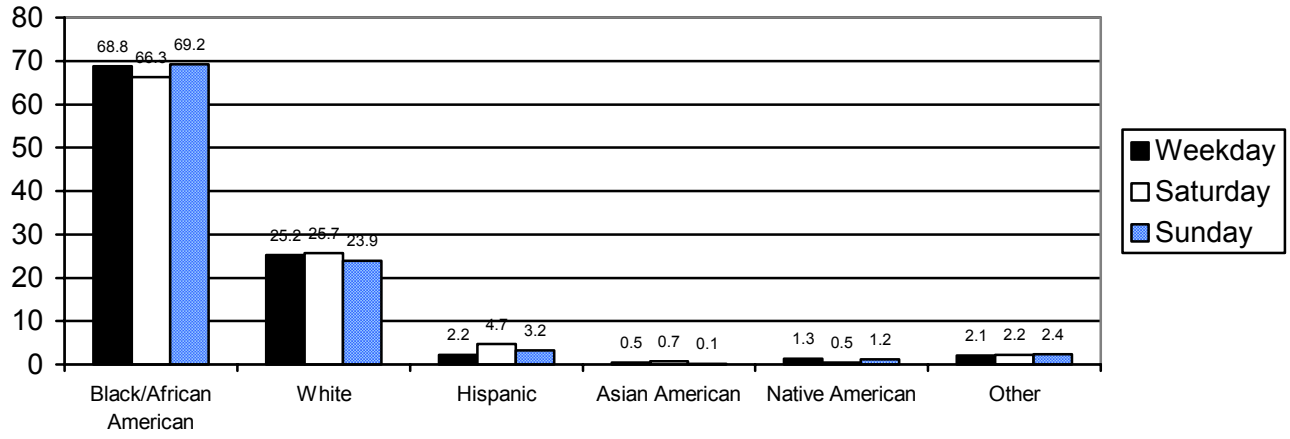
Two-thirds (66.0 %) of weekday riders who do not have a vehicle in running condition available at their household are Black/African Americans. Of the weekday passengers who have one operable vehicle, 72.4% are Black/African Americans and 22.4% are White.

As expected, nearly all (91.5%) weekday passengers who reported that did not have a vehicle in running condition at their household also had no car was available for their trip. Of weekday passengers residing in households with one vehicle in operating condition, 62.0% said that a car was available for them to use.

A greater percentage of weekday passengers with four or more vehicles in their household rank service as very unsatisfactory than passengers with no vehicles in their household. Of those with four or more vehicles, 14.6% ranked service as very unsatisfactory compared to only 4.6% of riders without any vehicles.

Table 4-13
Ethnicity

N= 28,696 (Weekday weighted)
N= 6,994 (Saturday weighted)
N=5,915 (Sunday weighted)



Ethnicity

More than two-thirds of IndyGo's weekday, Saturday and Sunday passengers are Black/African American. Black/African American passengers on Route 5 exceed this average with 92.6% riders on weekdays, 95.7% riders on Saturday and 97.7% riders on Sunday stating they are of this ethnicity. The second largest group of riders, by ethnicity, is White, comprising approximately one-fourth of the system's ridership on all service days. On weekdays, typically all riders on Route 46 are White.

The majority of weekday passengers who identify themselves as Black/African American or White are age 35 to 49 (40.7% and 38.9% respectively).

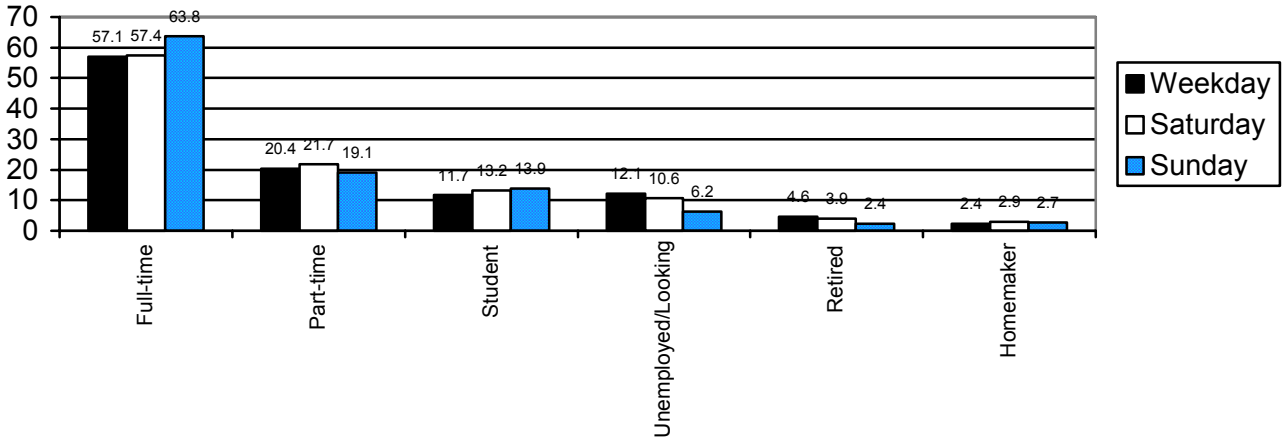
Approximately three-fourths (75.2%) of Black/African American weekday passengers do not have a car available for their use. Of White riders who report they do not have their own personal car, the percentage rises to 81.2%.

Hispanic weekday passengers are the largest group, by ethnicity, to be very satisfied with bus service, with 40.1% of this ethnic group selecting this rating. This compares to 21.5% of Black/African Americans riding weekday routes, who ranks service as very satisfactory and 21.7% of Whites.

Table 4-14

Employment Status

N= 28,406 (Weekday weighted)
N= 7,065 (Saturday weighted)
N=6,019 (Sunday weighted)



Employment Status

More than three-fourths of IndyGo's adult passengers are employed, with the majority of those employed holding full-time jobs. Not surprisingly, nearly all passengers riding Routes 40, 44, 45, 46, 48, and 49 operating on weekdays hold full-time jobs since these routes primarily serve major employment centers. The greatest percentage of students (21.7%) ride Route 15 on weekdays.

Slightly less than two-thirds (64.9%) of all weekday passengers employed full-time are between the ages of 25 to 64. One-half (49.3%) of weekday passengers identifying themselves as students are age 16 to 18.

Black/African American weekday passengers comprise the greatest percentage of passengers who are employed full-time at 68.9% with an additional 25.6% of White passengers also reporting they hold full-time jobs. Black/African American weekday passengers are the largest group, by ethnicity, to hold part-time jobs with 70.5% of those weekday passengers who work less than 40 hours per week indicating they are Black or African American.

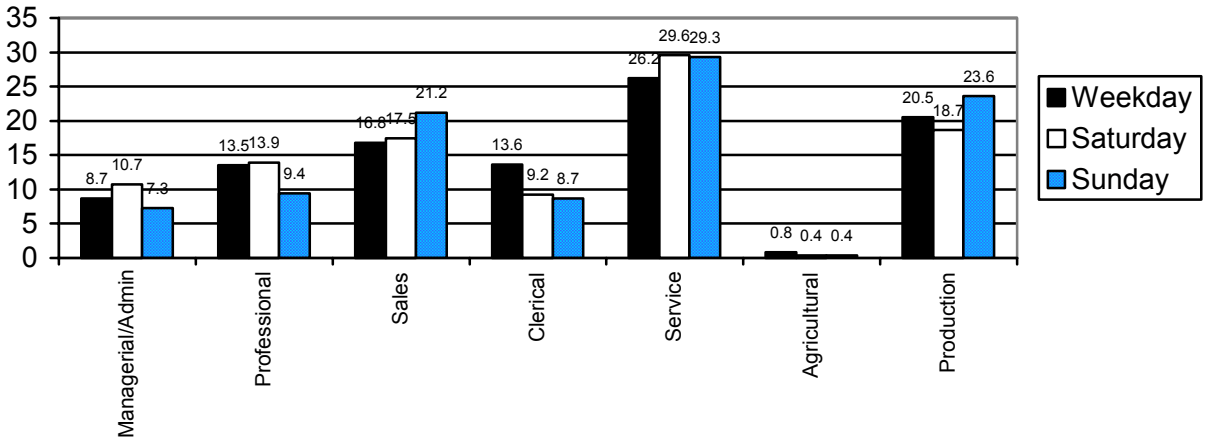
Employment status affects a rider's transit dependency. For example, of those weekday passengers who are employed full-time, 25.7% had a car available for their use. Of weekday passengers who are unemployed or looking for a job, only 14.8% had a vehicle available as an alternative travel mode.

Employment status, however, has little influence on a passenger's assessment of satisfaction with mass transit service. Of weekday passengers who are employed full time, 21.3% are very satisfied with the service they receive. Of passengers who are unemployed or looking for a job, 24.2% are also very satisfied with bus service.

Table 4-15

Employment Classification

N= 21,021 (Weekday weighted)
N= 5,159 (Saturday weighted)
N=4,932 (Sunday weighted)



Employment Classification

As household income level data tend to suggest, the majority of IndyGo's passengers who work full-time or part-time work in traditionally low-paying positions such as the service industry and production.

Weekday riders who hold managerial or administrative positions are most likely to be age 35 to 49 (44.4%). More than one-half (54.6%) of weekday riders in production/operating/ maintenance/material handling positions are also within this same age category. Of all passengers who work in the service industry, 40.4% are 35 to 49 years of age.

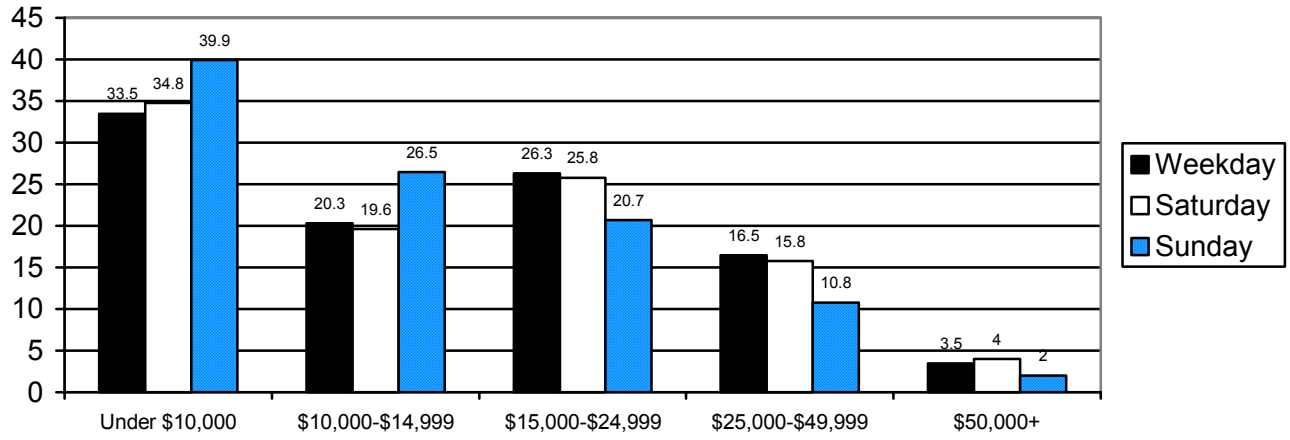
By ethnicity, the percentage of passengers who are White is greater in professional/ paraprofessional/technical positions than all other job categories. For example, 31.7% of riders who hold professional positions are White compared to 19.9% of passengers who are White and work in production positions. Of riders who identify themselves as Black/African Americans, this ethnic group holds 70.6% of managerial/administrative positions held by weekday riders and 73.7% of production/operating/maintenance/material handling jobs. The ethnic breakdown of passengers working in the service industry is comprised of 69.0% Black/African American weekday riders, 25.7% White weekday riders and 2.2% Hispanic weekday riders.

Not surprisingly, the largest group of passengers, by job classification, to have access to a personal vehicle, are those in managerial/administrative positions. Of weekday riders holding this type of job, 32.8% have a vehicle they could use to make their trip. This compares to only 20.2% of weekday riders who have access to a car and work in production/ operating/maintenance/material handling positions.

Table 4-16

Household Income

N= 24,943 (Weekday weighted)
N= 6,273 (Saturday weighted)
N=5,424 (Sunday weighted)



Household Income

Despite the fact that the majority of riders hold full or part-time jobs, annual household incomes tend to be low for over one-third of IndyGo's riders with 33.5% of weekday, 34.8% of Saturday, and 39.9% of Sunday passengers reporting incomes of $10,000 or less. Household incomes tend to be higher for passengers who use Routes 40, 44, 45, 46, 48, and 49 for weekday transportation.

The majority of weekday passengers, who have household earnings of under $10,000 annually, are age 35 to 49 (34.4%). Of those weekday riders earning $50,000 or more, most (32.5%) are age 50 to 64.

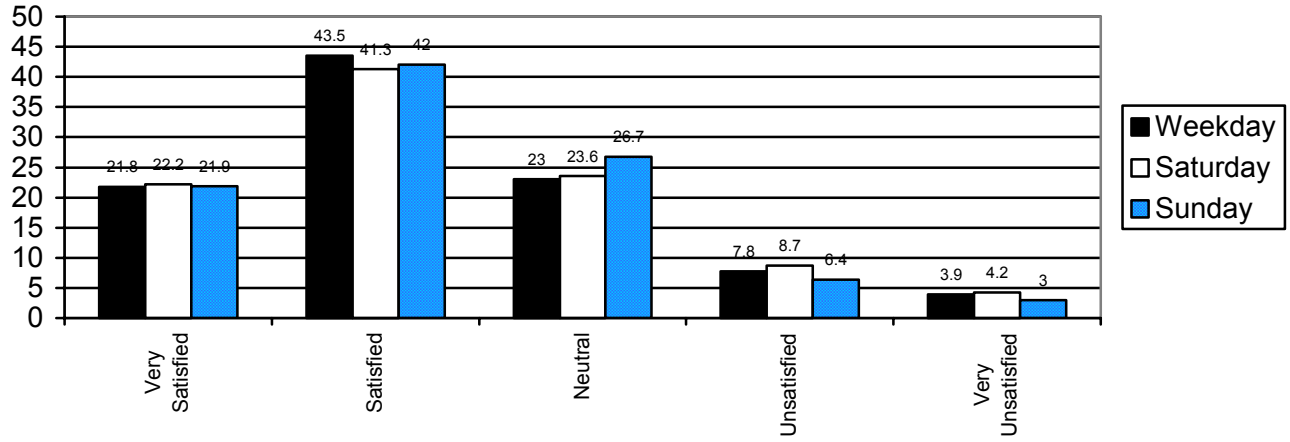
Most passengers (70.3%), riding weekday service and earning less than $10,000 annually are Black/African Americans. When examining household incomes of weekday passengers earning $50,000 or more annually, the percentage of Black/African Americans and Whites are nearly identical (47.0% and 45.3% respectively).

Not surprisingly, passengers with household earning of $50,000 or more are more likely to be riders of choice. Of weekday passengers, 52.3% of those in the highest household earnings category had access to a vehicle to make their trip compared to only 15.6% of weekday passenger earning less than $10,000.

Passengers with higher annual household income levels are less inclined to be satisfied with IndyGo's services than passengers in lower income brackets. For example, 28.1% of weekday riders with incomes of under $10,000 are very satisfied with transit service while only 14.4% of those earning $50,000 or more rate service as very satisfactory.

Table 4-17
Satisfaction with Services
Weekday and Saturday data includes missing

N= 27,428 (Weekday weighted)
N= 6,835 (Saturday weighted)
N=6,063 (Sunday weighted)



Satisfaction with Services

More than two of every three passengers are satisfied with the level of transit services they receive overall with 65.3% of weekday, 63.5% of Saturday and 63.9% of Sunday passengers holding a satisfied or very satisfied opinion about IndyGo's overall operations. The greatest percentage of unsatisfied passengers can be found riding weekday service on Route 40, with 30.8% stating they were very unsatisfied and an additional 14.3% affirming an unsatisfied opinion.

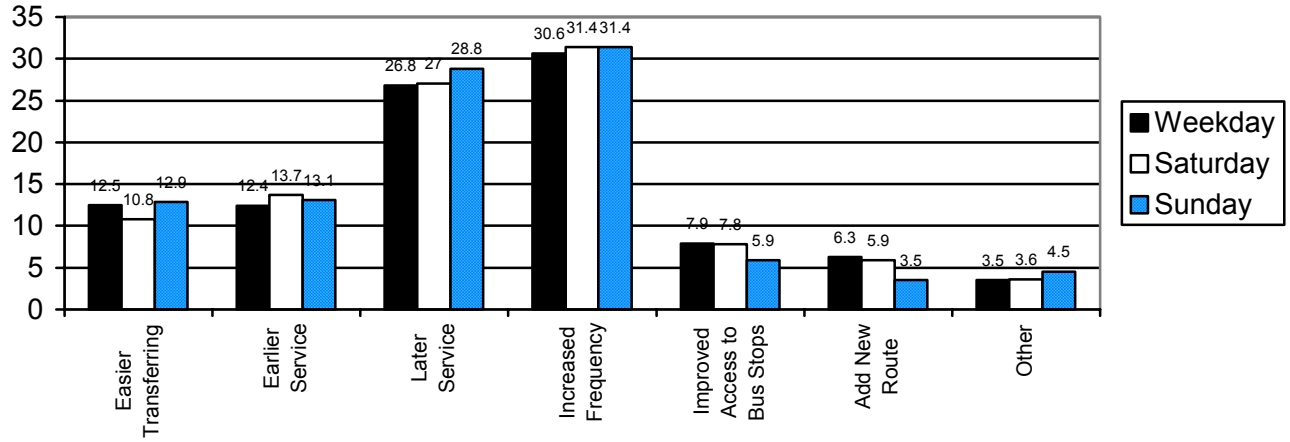
Weekday riders who report that they are very satisfied with IndyGo's service are most likely to be between the ages of 35 to 49 (42.5%). This same group of riders is also the largest percentage, by age classification, to feel very unsatisfied about IndyGo's service at 42.2%.

Two-thirds (67.2%) of weekday passengers who report that they are very satisfied with the transit system's service are Black/African Americans. Of those who are neutral in their opinion on service delivery, 72.8% are also Black/African Americans who were surveyed on weekdays.

Transit dependency has some correlation to a passenger's satisfaction rating for the services that IndyGo provides. Of those weekday passengers who are very satisfied with services, 73.6% reported that they did not have a vehicle available to them to make their trip. However, of those weekday passengers who are very unsatisfied with the public transportation system's service, 84.6% were transit dependent.

Table 4-18
Service Area Needing Most Improvement

N= 25,142 (Weekday weighted)
N= 6,230 (Saturday weighted)
N=5,475 (Sunday weighted)



Service Area Needing Most Improvement

Later evening service and increased frequency of service are the two top areas to improve, according to IndyGo passengers participating in the study. Later service was particularly viewed as a potential area to improve for weekday passengers riding Route 49, with 53.3% selecting this as their choice for top improvement to the system.

Weekday passengers who feel that service should run later in the evening are typically age 35 to 49 (40.1%). This same group of passengers are also the largest group (37.3%), by age category, to feel service frequency should be increased.

Although only 12.5% of weekday passengers stated the top improvement for service should be to make transferring easier, 76.4% of those who identified this as the most important improvement IndyGo could make are Black/African Americans. Black/African Americans accounted for 66.7% of weekday passengers who felt service should run later in the evening and 66.1% of weekday passengers who felt frequency of service should be increased.

Nearly eight of every ten (79.6%) weekday passengers who feel later service is the most important area for IndyGo to improve are transit dependent. Of weekday passengers who feel service should run more frequently, 77.9% did not have a car available for their use.

While later service was cited by a majority of passengers as one of the most frequently named areas of improvement, 46% of weekday riders who requested this improvement still feel satisfied

with service in general. Of the weekday passengers who felt service should run more frequently, 41.1% feel satisfied with the service they receive.