

Comprehensive Operational Analysis

for the **IndyGo Transit System**

December 2010

Part 1



Notice:

The IndyGo Comprehensive Operational Analysis (COA) seeks to develop recommendations for improvements to better serve IndyGo's 1.8 million potential and existing customers in the 1,600 square mile nine-county area of Central Indiana.

This revision: December 2010

Prepared by  **TMD**
TRANSPORTATION MANAGEMENT & DESIGN, INC.

In conjunction with:



for the **Indianapolis Metropolitan Planning Organization and IndyGo.**

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Introduction

Purpose

In December 2009, the Indianapolis Metropolitan Planning Organization (IMPO) and IndyGo commissioned Transportation Management and Design Inc. (TMD) to conduct the IndyGo Comprehensive Operational Analysis (COA). The IndyGo COA was scoped to undertake a series of tasks aimed at providing a comprehensive understanding of the existing IndyGo transit system and the travel market it operates within, providing the basis for designing a new network plan.

The project was scoped to complete the following tasks:

- Evaluate IndyGo's current system and develop a network for the future.
- Address the current IndyGo financial situation and help it use resources more effectively.
- Complete a detailed market, ridership, service, financial and operational review.

Goals

The COA aimed to improve the efficiency, effectiveness, and performance of the current IndyGo system. This was to be achieved within the existing funding levels, which have declined during the current economic recession. The study aims to identify strategies to better use existing resources to grow system ridership pending more significant financial resources becoming available as part of the development of a Central Indiana Regional Transportation System.

Methodology

The study was comprised of the following major tasks:

- **Market Assessment:** Examined the IndyGo service area and regional characteristics including population, employment, land use, demographics, future developments, travel patterns, and profile of existing IndyGo riders to determine where transit is now or has the potential to be successful.
- **Service Evaluation:** Examined existing IndyGo service performance in terms of ridership, productivity, efficiency, reliability, speed, and quality.
- **Stakeholder Outreach:** Involved stakeholder and community outreach to share study findings and plans and receive feedback.
- **Financial Capacity Review:** Identified the financial capacity for transit operations and capital in the Indianapolis region in the 20-year planning horizon. In addition, the review identified potential funding sources for various transit-related programs.
- **Service Plan:** Developed a service plan for the next ten years, which is designed to maximize IndyGo ridership and efficiency under both existing and more generous funding levels. The plan should also be consistent with and lay the groundwork for introduction of the transit component into a Regional Transportation System.

Findings from each of these tasks are summarized in Section 2. These findings help to identify where IndyGo currently provides successful service, as well as highlight opportunities for improving the network.

From these inputs, the following items were developed:

- A framework of key issues for the plan to resolve, as well as guidelines for how to address them (Section 3).
- A phased 10 Year Network Evolution Plan for improving the IndyGo network (Section 4).

IndyGo Today

The Indianapolis Public Transportation Corporation, also known as IndyGo, operates bus transit services that primarily serves communities within Marion County.

As of January 2010, the IndyGo network consisted of the following transit services:

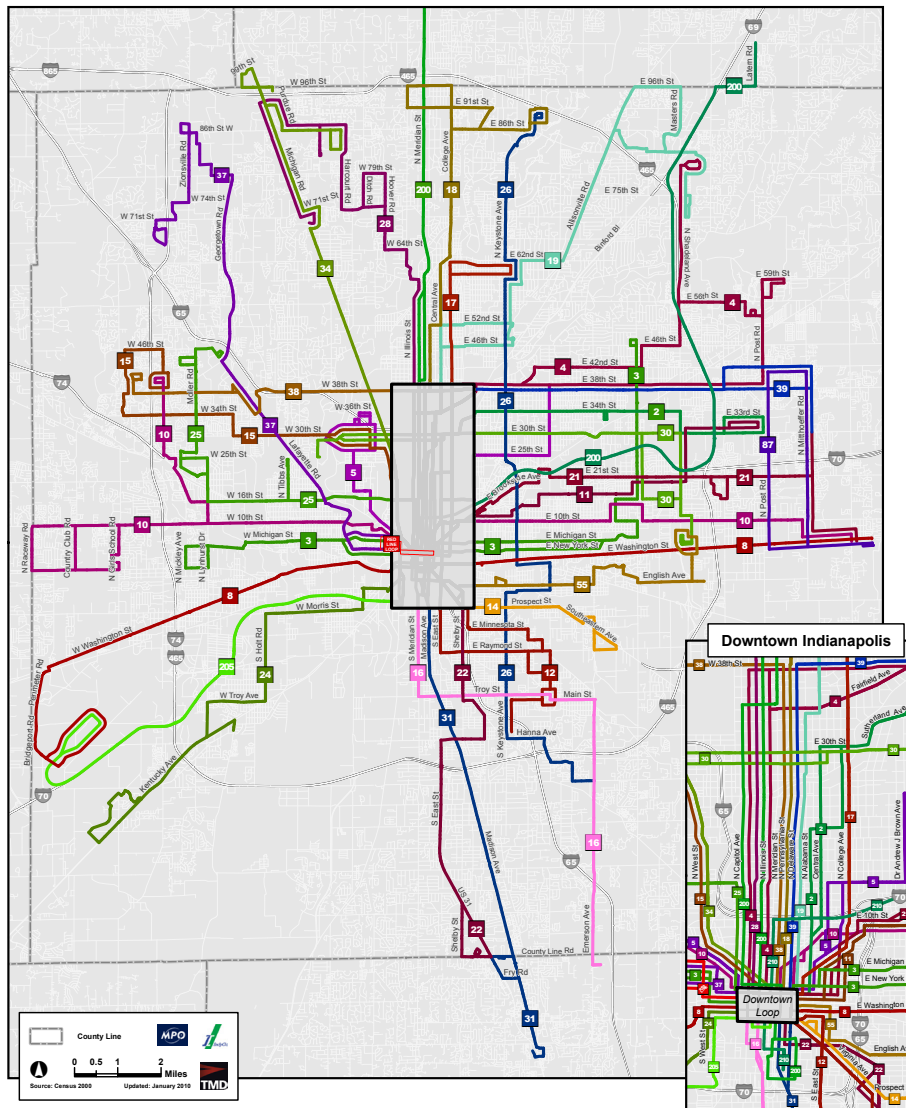
- 29 weekday, 25 Saturday, and 15 Sunday local bus routes, primarily radial routes focused on downtown Indianapolis, and directly operated by IndyGo.
- Two Hamilton County commuter express routes that operate during peak periods on weekdays (Carmel, Fishers), both with contracted operations.
- Shuttle routes between downtown and IUPUI (Red Line) and downtown to Indianapolis Airport (Green Line); the former is internally operated and the latter, contracted.

IndyGo currently owns and operates 160 fixed-route urban transit buses (a mix of 40ft, 35ft, and 29ft) and 80 small flexible services buses (for paratransit service). IndyGo operates almost 500,000 annual revenue hours, with around 9.6 million passenger trips recorded on IndyGo fixed-route services during the 2008 Fiscal Year.

Type	Daily Revenue Hours			Daily Revenue Miles		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
Local Bus	1,433	931	471	19,940	13,065	6,791
ICE Express Bus	55	-	-	2,169	-	-
Green Line Airport Express	44	44	44	1,255	1,255	1,255

Figure 1.1: Daily Revenue Hours

INDYGO EXISTING BUS NETWORK



Map 1.1: IndyGo System Map (Jan. 2010)

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Key Findings

A number of key findings emerged from the Market Assessment, Service Evaluation, Stakeholder Outreach, and Financial Review tasks. These findings helped to identify both opportunities for and challenges to improving transit in the Central Indiana region.

2.1 Market Assessment Purpose

The Market Assessment Task is a key component of the overall IndyGo Comprehensive Operational Analysis, which is intended to ensure IndyGo positions itself for maximum ridership growth from the available resources and funding, while being prepared for expanded service should new funding opportunities arise.

The Market Assessment is intended to answer important questions concerning:

- 1) **Regional Profile:** Where are the areas where IndyGo service could potentially thrive?
- 2) **Community Profile:** Where are the community population, demographics, and employment most favorable to supporting IndyGo service?
- 3) **Rider Profile:** Who rides IndyGo bus service and how do they use the system today?
- 4) **Travel Patterns:** What are the region's overall travel patterns, and how do IndyGo ridership patterns compare?
- 5) **Key Destinations:** What are the region's key generators of travel?
- 6) **Future Developments:** Where are future developments expected, and how can transit more effectively partner with them?

Regional Profile: Nine-County Region

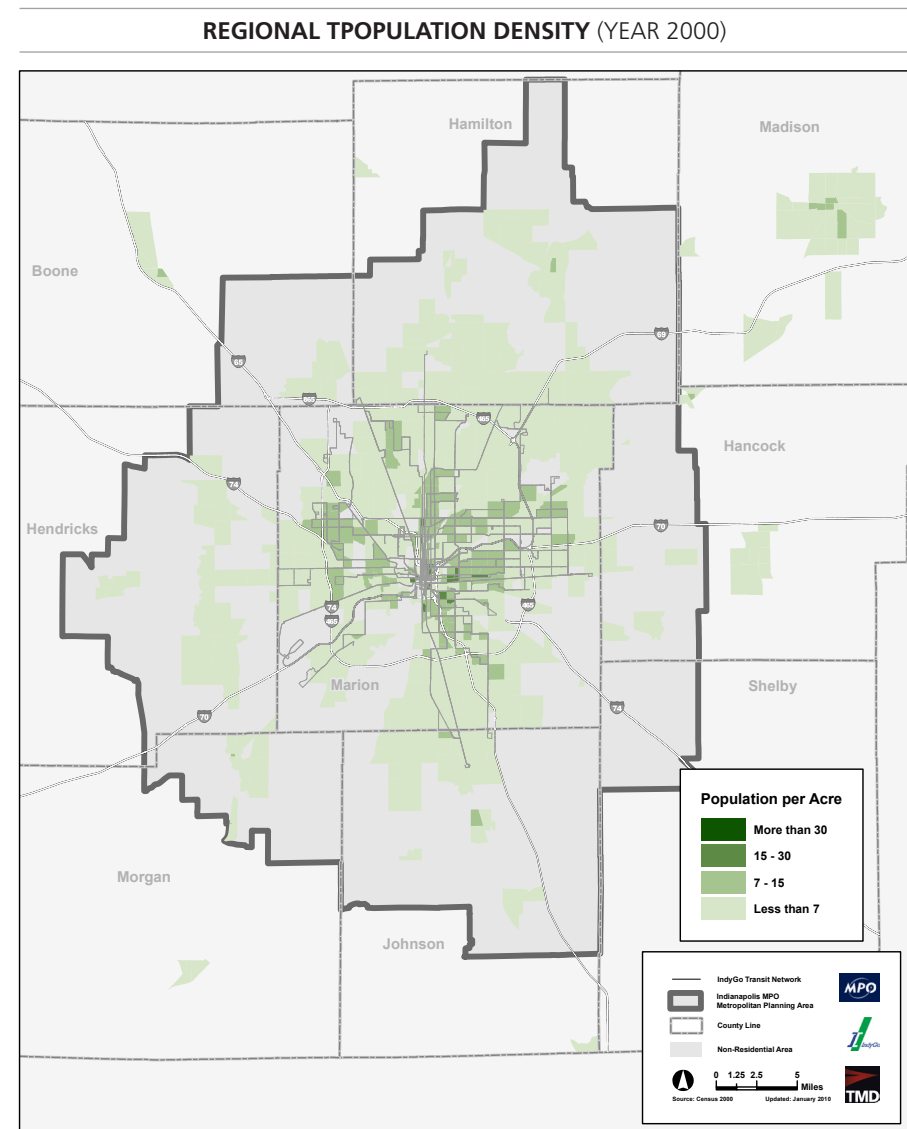
With support from the business community, the Indianapolis Metropolitan Planning Organization, IndyGo and the Central Indiana Regional Transportation Authority have recently partnered in establishing Indy Connect. This initiative is an update to the Long Range Transportation Plan and includes a significant focus on developing a regional transit system to make the region more competitive.

Given the efforts to establish a regional transit system, it is timely to review underlying market conditions for transit within and beyond the Marion County boundaries.

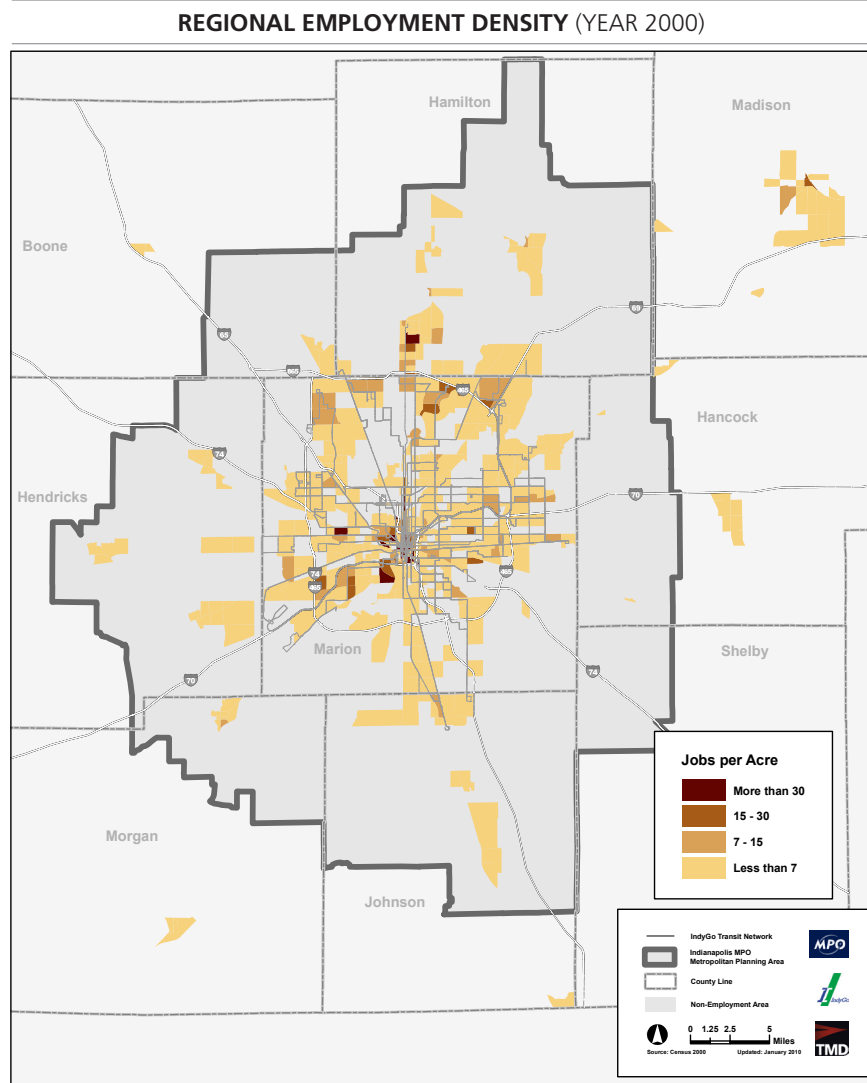
Population and Employment Density

2000 Population and Employment Density

According to the 2000 US Census, some moderate population densities (7 – 15 residents per acre) are observed outside of Marion County in Anderson, Noblesville, Greenwood, and Whiteland, (Map 2.1) with very occasional high employment sites in Anderson and Carmel (Map 2.2). The remaining developed areas displayed lower population and employment densities of fewer than 7 people per acre. The generally low densities in these outer areas may support more market driven services, such as commuter express routes to downtown Indianapolis.



Map 2.1: Regional Population Density Map



Map 2.2: Regional Employment Density Map

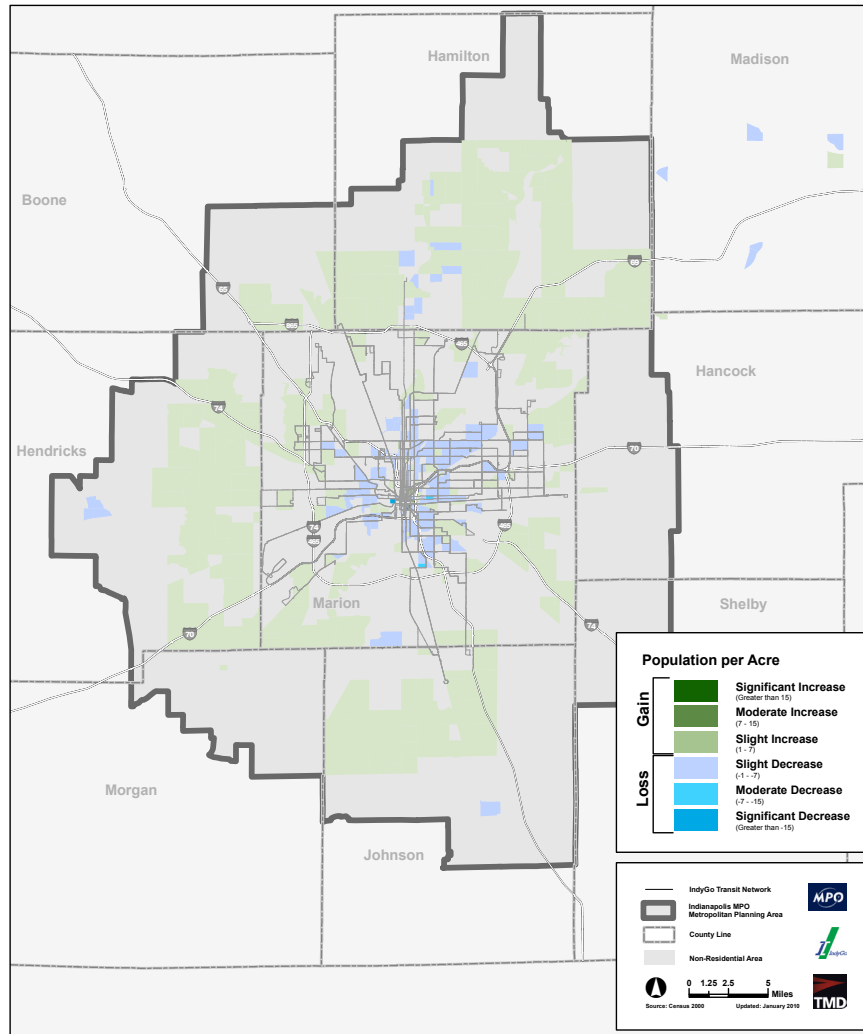
Population and Employment Change 2000 to 2035

Indianapolis MPO forecast data projects population growth in the Central Indiana region to become increasingly decentralized by 2035. Forecast data suggests population levels will slightly decrease in Marion County. Conversely, widespread population growth is expected to occur in suburban communities in southern Hamilton County, eastern Hendricks County, and northern Johnson County. The resulting distribution of population will see well over half (58%) of residents living outside of Marion County.

Region-wide employment projections follow similar growth patterns to forecast population growth, with most growth occurring in Hamilton, Hendricks, and Johnson Counties.

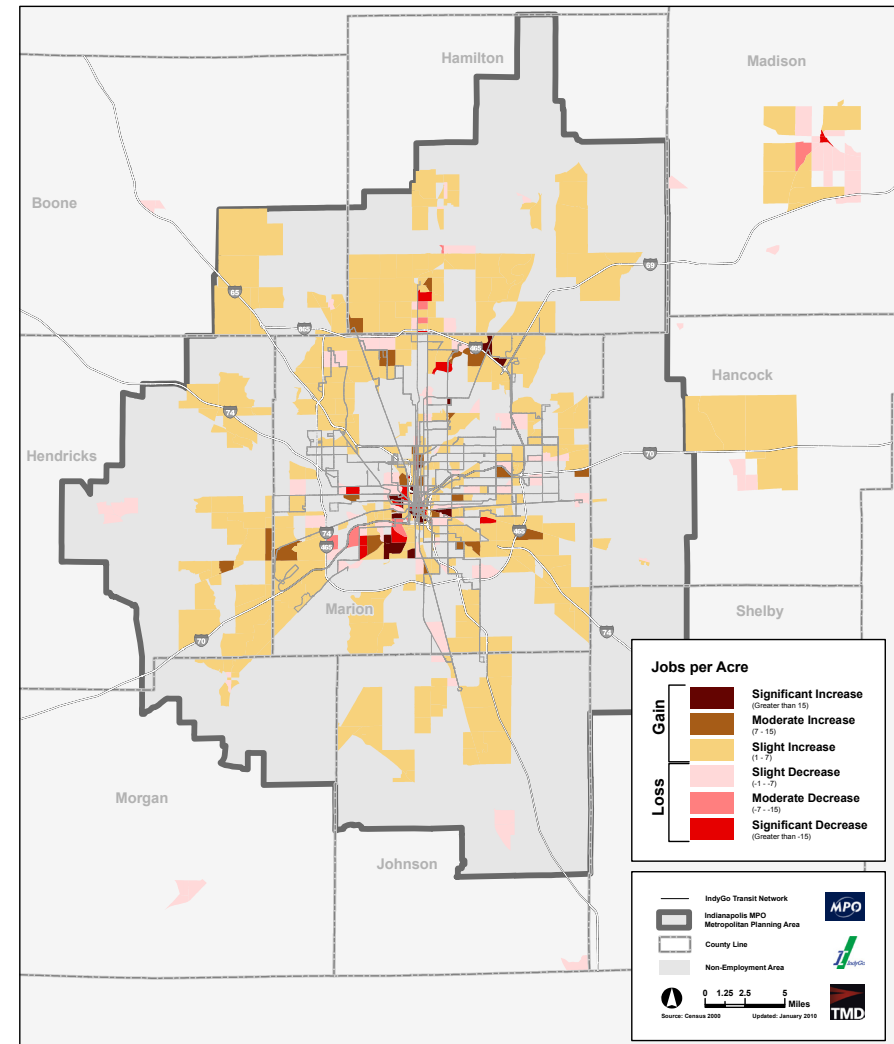
Both population and employment development patterns appear to become increasingly dispersed. Downtown Indianapolis presents a significantly dense employment node capable of sustaining a regional transit network, initially consisting of commuter express bus routes and some local community circulator services outside of Marion County, where demand warrants.

REGIONAL POPULATION DENSITY CHANGE (YEAR 2000-2035)



Map 2.3: Regional Population Density Change Map

REGIONAL EMPLOYMENT DENSITY CHANGE (YEAR 2000-2035)



Map 2.4: Regional Employment Density Change Map

Major Employment Destinations

Hamilton and Hendricks County communities such as Carmel, Fishers, Noblesville and Plainfield are major employment contributors, largely composed of financial, insurance, or medical based companies. While these numbers are significant, the sites are dispersed and employees are coming from multiple origin communities, making it more challenging for transit to serve efficiently and effectively. Similar employment clusters exist within the City of Indianapolis at Park 100, the I-465 retail belt, the airport area, and most notably downtown Indianapolis.

Travel Patterns

Private vehicle trips between non-Marion County townships and Marion County townships represent just a fraction of region-wide travel. Just a few non-Marion County townships display strong travel connections to districts within Indianapolis, let alone downtown Indianapolis. Even the highest trip volumes between Hamilton County (including Fishers, Carmel, and Noblesville) and Washington township in Marion County are less than 100,000 trips per day. These markets may grow as the population expands in the surrounding counties. Travel patterns to jobs concentrated in downtown Indianapolis from surrounding counties may be the easiest for transit to capture.

Community Profile: IndyGo Service Area

Higher population and employment densities are a key focus of this review, as well as demographic characteristics more supportive of transit usage studies, financially disadvantaged, and vehicle access deficient populations. These underlying conditions are often good indicators of where all day fixed route transit service will most likely be successful and sustainable.

Key data sources for profiling IndyGo's service area cities and unincorporated areas were from the 2000 US Census, as well as projections for population and employment provided by the Indianapolis MPO for various years from 2000 through 2035.



PHOTO © 2010 INDYGO

Population and Employment Density: Year 2000

Population

The highest population densities in the IndyGo service area are primarily found in or near the downtown Indianapolis core area.

Outside of the central Indianapolis area, population densities are generally lower, with few neighborhoods measuring over 15 residents per acre. The current IndyGo system provides the most service in areas closer to downtown where densities are at least in the range of 7 to 15 residents per acre. This density will support basic hourly transit service, as well as sustaining higher frequency (15 minute or better) transit lines on major corridors. Outer areas with densities below 7 residents per acre will sustain more basic hourly service.

Employment

High employment densities are concentrated in or near downtown Indianapolis, with pockets located along the North I-465 beltway, and west to Indianapolis International Airport area:

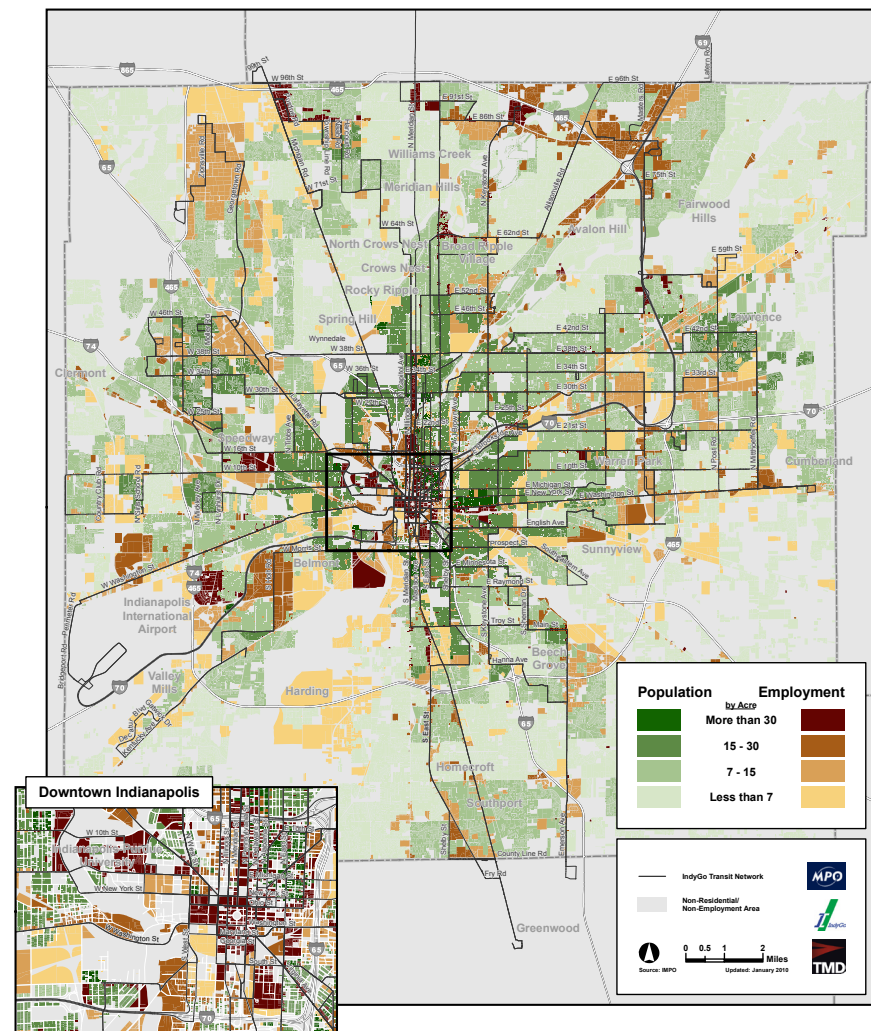
- **Downtown:** Most employment parcels in downtown Indianapolis achieve very high employment densities of over 45 employees per acre. Several major employers located downtown contribute to the observed high density levels, including Eli Lilly and Company, United Parcel Service (UPS), Clarian Health Partners Inc, AT&T, Indiana University Purdue University Indianapolis (IUPUI), WellPoint Inc., the City-County Building and the Indiana State Government.

- **North I-465 Beltway:** The northern portion of the I-465 beltway displays moderate to high employment densities. Employment centers in the area are typically distribution centers, shopping centers, or suburban office parks. Keystone at the Crossing and Castleton Square Malls, and St. Vincent Hospital are among the top employers contributing to the employment density in the area.
- **West Indianapolis:** Pockets of high employment density are observed throughout the western Indianapolis area towards Indianapolis International Airport. Employment in the area is typified by manufacturing and freight transport companies, including Rolls-Royce, FedEx, and Allison Transmission.

Current IndyGo transit service primarily focuses on all day radial transit service into downtown Indianapolis for workers and other trip purposes from all directions to the border of Marion County. Downtown will generally be a more successful destination for IndyGo due to the high employment density and cost of parking. By comparison, IndyGo operates few suburb-to-suburb services, making it difficult for riders to access peripheral employment centers from even the closest suburban residential communities.

The IndyGo network's focus on downtown Indianapolis is not surprising, as its best chance of attracting ridership is here, with the high employment density within a very walkable downtown with paid parking.

POPULATION & EMPLOYMENT DENSITY (YEAR 2000)



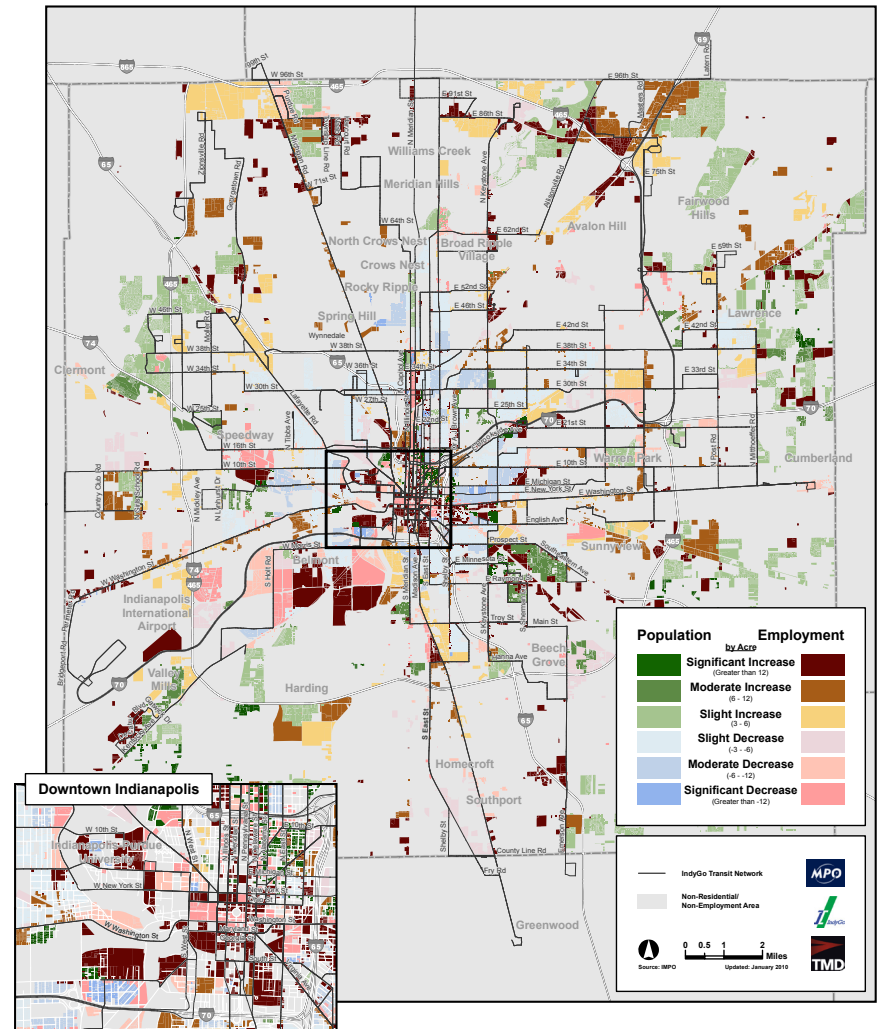
Map 2.5: 2000 Population and Employment Density

Population and Employment Change Years 2000 to 2035

Population density projections from the Indianapolis MPO generally indicate minor shifts in population from the inner Indianapolis neighborhoods to peripheral communities. These changes are unlikely to fundamentally improve transit's ability to compete in the area travel market. If anything, these changes will marginally reduce transit's competitive position by increasing population sprawl.

Employment growth is projected to primarily occur in portions of downtown Indianapolis, with other pockets of substantial growth located in West Indianapolis and along the northern portion of the I-465 beltway. Compared with predicted population changes, predicted changes in employment suggest downtown Indianapolis may support increases in transit system usage for work travel.

POPULATION & EMPLOYMENT CHANGE (YEARS 2000-2035)



Map 2.6: Population and Employment Change Forecast Map

Population Demographic Characteristics

A review of key US Census 2000 population characteristics helps identify densities of population segments more oriented towards transit use. These include:

- Youth
- Senior
- Physically Disabled
- College-Aged
- Financially Disadvantaged Population
- Vehicle Access-Deficient Population

Many of these population segments are protected by non-discrimination laws under Title VI of the Civil Rights Act of 1964. Title VI requires that no person be subjected to discrimination under any program or activity receiving federal financial assistance (e.g IndyGo).

A review of these segments indicates that there are no significant concentrations for youth, senior, or physically disabled populations in the IndyGo service area. Map 2.7 shows pockets of moderately dense college-aged populations exist near four of the universities in Indianapolis: IUPUI, Butler University, Marian University, and the University of Indianapolis.

Financially Disadvantaged Population

The US Census defines this group (Map 2.8) as a household with a total family income less than or equal to its poverty threshold. This threshold is calculated based on the size of the family, and how many children under the age of 18 live in the household. These families are more likely to need to use transit out of necessity, being less able to afford other forms of transport with some or all of the household using transit as their primary mobility mode.

Low income households are located mostly within the inner Indianapolis residential neighborhoods. These areas currently receive coverage from IndyGo transit routes.

Vehicle Access-Deficient Population

This group is defined as those households without access to a vehicle (zero vehicle households). Typically an area is seen to have a high vehicle access deficient population if there are one or more households per acre without access to a car.

Generally, the location of zero vehicle households follows similar, but less intense distribution patterns, as the high concentrations of low income households. Moderate pockets of vehicle deficient households are observed in downtown Indianapolis, Near Eastside, Southeast, and Mapleton-Fall Creek neighborhoods. Existing IndyGo transit services provide coverage to these areas. There is a less than expected correlation between vehicle deficient households and low income households.

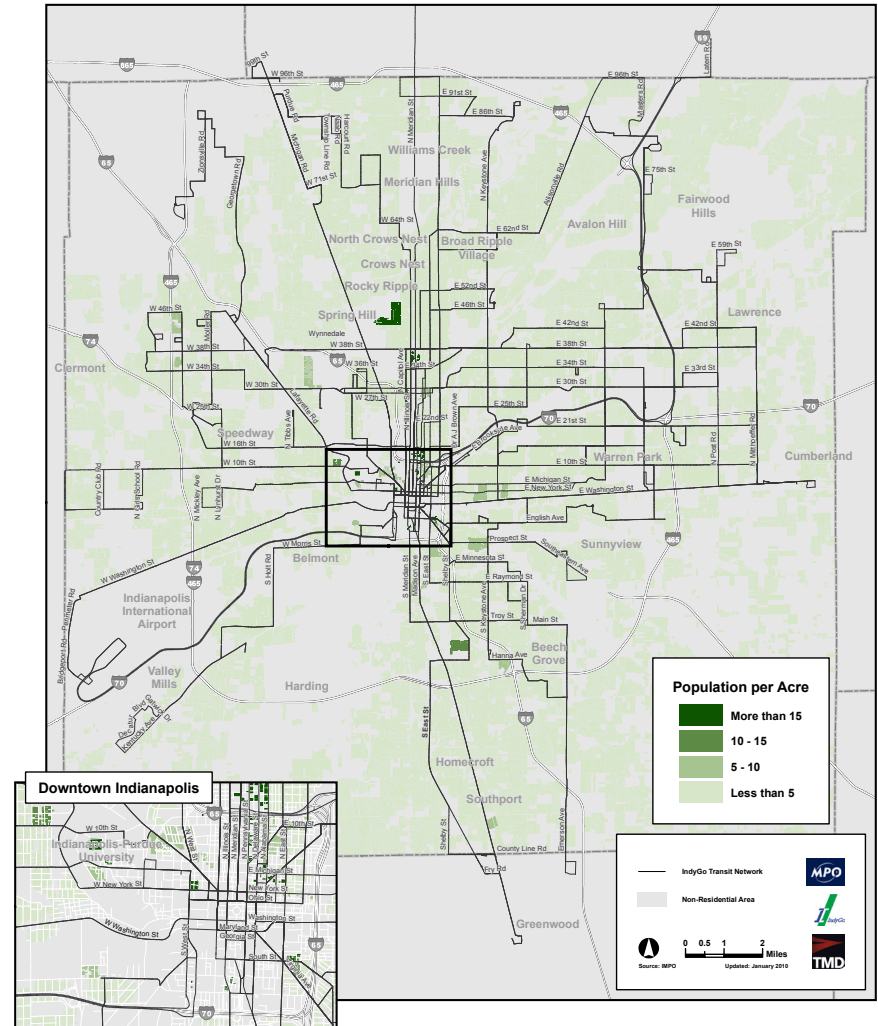


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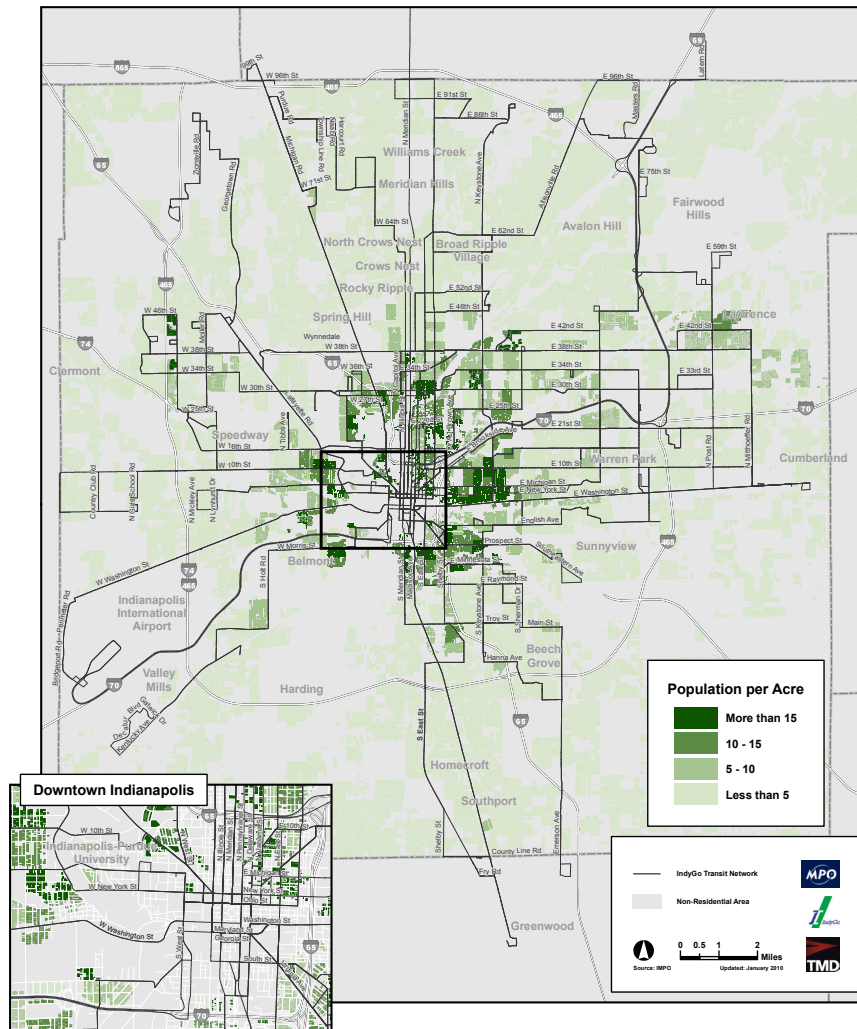
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COLLEGE AGE DENSITY (YEAR 2000)



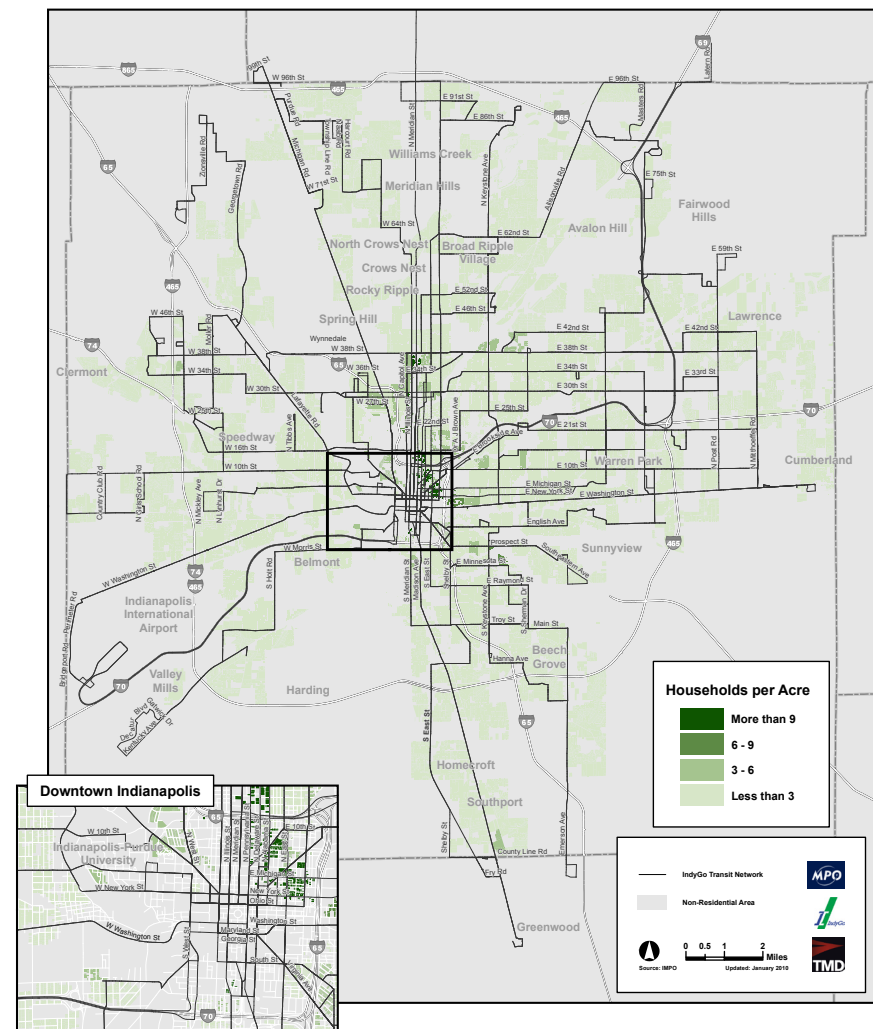
Map 2.7: College-Aged Population Density Map

ECONOMICALLY CHALLENGED (YEAR 2000)



Map 2.8: Financially Disadvantaged Population Density Map

ZERO VEHICLE HOUSEHOLD DENSITY (YEAR 2000)



Map 2.9: Zero Vehicle Household Map

Existing IndyGo Rider Profile

Background

IndyGo conducted a system-wide on-board survey in late 2009. The objective of the survey was to examine travel behavior and demographic characteristics of existing IndyGo riders. The survey was conducted on all fixed routes and ICE (Commuter Express) routes.

Rider Profile

The following key demographics were identified for IndyGo riders:

- Gender distribution of riders is almost equal. Only slightly more women (51 percent) use bus services than men (49 percent).
- Approximately 75 percent of IndyGo riders are between the ages 25-64, i.e. the working age population. This will continue to be the key market segment from which to grow ridership.
- Youth and senior populations account for a very low percentage of riders. About 5 percent of riders are under 18, which is not surprising given the availability of yellow school bus service. Senior use is also very low, comprising just 3 percent of IndyGo riders. These segments appear to offer limited potential for ridership growth.

Over 70% of IndyGo riders are low income and transit-dependent.

- 73 percent of IndyGo riders are from households that have an annual income of less than \$35,000. 5 percent of riders come from households earning at least \$75,000, and a majority of these passengers use the ICE Express services.
- 65 percent of IndyGo riders are employed, reinforcing the working-age population as the key growth potential demographic.
- 65 percent of IndyGo riders are Black/African American, nearly one-third of passengers are White/Caucasian, and less than 3 percent of riders are Hispanic/Latin American (this group possibly undersampled). By comparison, the overall population of Indianapolis is over 60 percent White/Caucasian, 25 percent Black/African American, and 7 percent Hispanic or Latino. This suggests IndyGo riders are disproportionately Black/African American when compared to the overall population.
- Most IndyGo riders are regular transit users. 80 percent of riders use IndyGo services more than 3 days per week, with 30 percent using IndyGo transit 6-7 days per week.
- Over 50 percent of riders reported being transit-dependent (i.e., they are from households that do not own a vehicle). 78 percent of riders do not have a vehicle available for travel even if their household has a vehicle. 60 percent of riders do not have a drivers license.

Overall, the existing ridership data suggests ridership of the core IndyGo system is heavily influenced by socio-economic and transit dependency factors. This indicates that IndyGo has great potential for increased market

penetration with only 22 percent of existing riders making discretionary transit trips.

Over 60% of IndyGo riders use transit to travel to destinations outside of the downtown core.

Service Access

The following section details how riders access IndyGo services:

- Walking is the dominant access mode for all riders. 89 percent of riders walk to access transit with 91 percent walking to their final destination after leaving transit.
- Only 6.5 percent of riders accessed transit by car (drove own car or dropped off), with less than 5 percent of riders using a car after leaving transit. Approximately one-third of these riders use the ICE Express service. This suggests more opportunities exist for Park and Ride focused transit services.
- A majority of passengers walk 1-2 blocks to access a bus stop with 91 percent of IndyGo riders walking 5 blocks or less to a bus stop.
- A majority of passengers use more than one bus to complete their one-way trip with only 38 percent of IndyGo riders having a "one seat" ride. Given that IndyGo routes focus mainly on travel into downtown, this suggests that many passengers are using transit to travel to destinations outside of the downtown core.

Purpose of Trips

- Travel behavior characteristics of the riders indicate that home and work are the most prevalent trip origins and destinations.
 - » More than 70 percent of riders begin their trip from work or home. Similarly, 70 percent of rider destinations are either work or home. Other common trip purposes are education, shopping, and social/religious/personal business.
- School trips account for a small portion of rider trip purpose. Less than 10 percent of riders indicated College or Other School as their origin/destination trip purpose.
- More than half of IndyGo riders use transit for only one activity during their round trip (the time between leaving home and returning home).
- In the absence of transit service to complete their trip, 30 percent of riders reported they would ride to their destination with a friend, 27 percent of riders would not make the trip, and nearly 20 percent of riders would walk. Only 15 percent of riders would drive in the absence of transit service. This correlates with the high percentage of transit-dependent riders using the existing system.

The IndyGo rider profile suggests ridership is dominated by people traveling to work who are dependent on transit due to low household income and low vehicle availability.

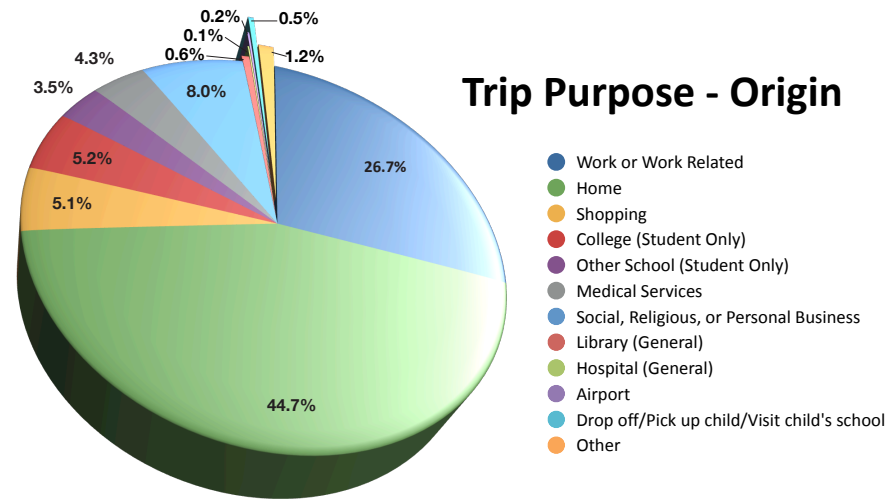


Figure 2.1: Trip Purpose (Origin)

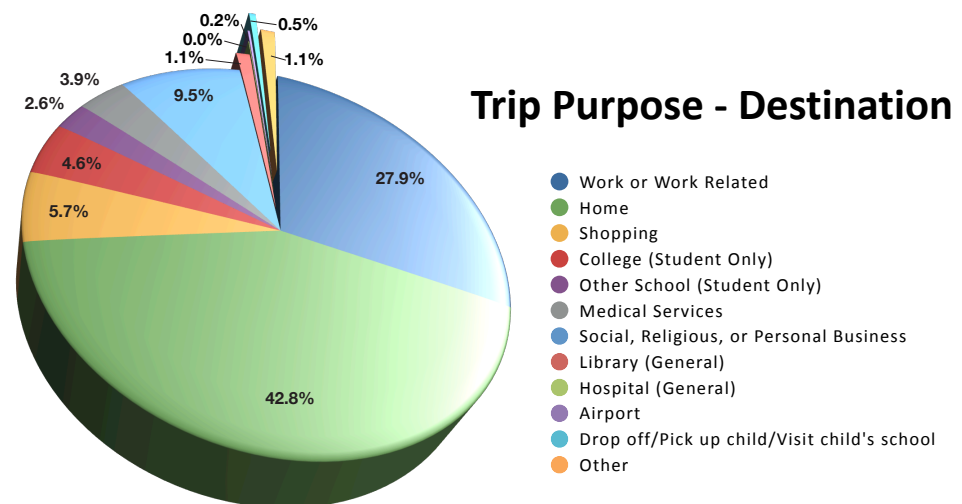


Figure 2.2: Trip Purpose (Destination)

Travel Patterns

Travel data provided by the Indianapolis MPO and the US Census "On the Map" database were utilized to create origin-destination maps of existing travel patterns within the Indianapolis metropolitan area. These data are particularly useful in comparing patterns for private automobile travel with those on the transit network. Such analysis may indicate areas where transit could increase its mode share of total travel demand.



PHOTO © 2010 INDYGO

Inter-District Trips (Between Districts)

Private Vehicle Trips

Overall, the majority of private vehicle trips throughout the region now occur within Marion County. The heaviest inter-district private vehicle travel occurs between the City of Indianapolis and its adjacent districts of Wayne, Washington, Warren, and Perry. These areas display strong east-west and north-south travel patterns along key corridors such as Washington Street, 10th Street, and Meridian Street. Each of these connections experiences over 100,000 average weekday private vehicle trips. These strong travel patterns reflect many work trips to downtown Indianapolis.

Other major travel patterns largely follow the I-465 beltway, particularly east-west movement between Lawrence and Pike. These outer regions, including Clay, are more strongly connected to each other than they are to downtown Indianapolis. Substantial employment centers in the area provide convenient work opportunities for residents of these peripheral communities.

Public Transit Trips

The highest volume of inter-district transit travel, as modeled by the information, appears between downtown Indianapolis and the adjacent townships of Washington, Wayne, and Warren. None of the peripheral suburban communities display significant inter-district transit travel volumes, likely due to the lack of crosstown suburban IndyGo transit services and the auto-centric nature of these areas. Many suburban trips require riders to transfer downtown, which often requires significant out-of-direction movement.

Intra-District Trips (Within District)

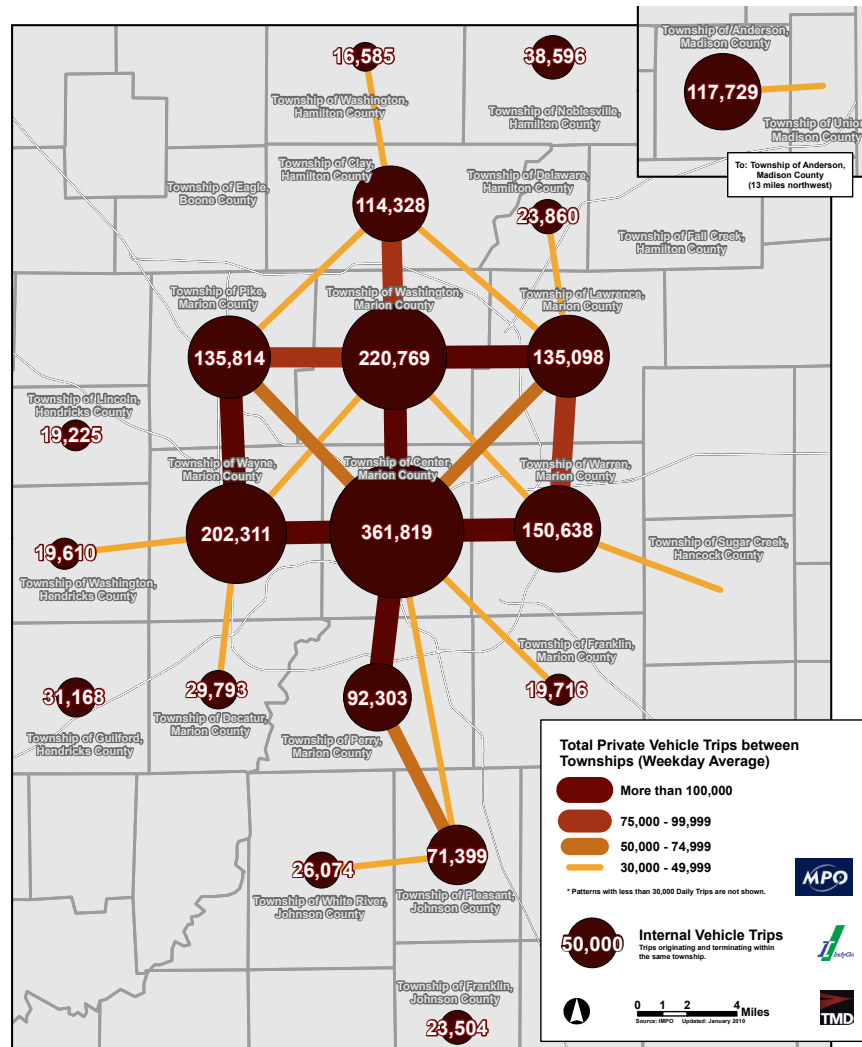
Private Vehicle Trip

The highest concentrations of intra-district private vehicle trips are located in the Center Township, Wayne, and Washington, each with over 200,000 average daily trips. Center, which includes downtown Indianapolis and the densest populated neighborhoods has over 360,000 average daily intra-county private vehicle trips. Moderate private vehicle trip activity is observed within the Clay township, where the growing suburban towns of Carmel, Fishers, and Westfield are located.

Public Transit Trips

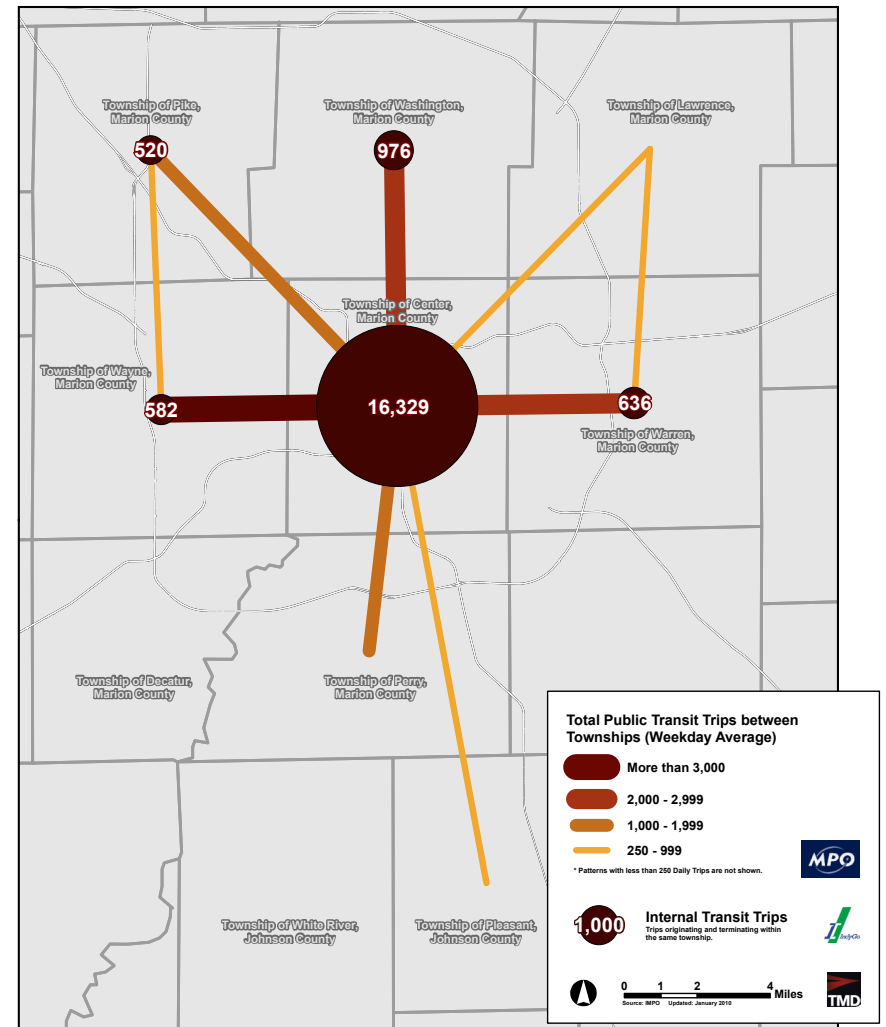
Most transit travel occurs within the core IndyGo network, with over 16,000 average weekday transit trips estimated to take place within the Center township. This area, as well as having the highest population and employment densities in the region, receives the highest IndyGo service levels. However, compared to intra-district private vehicle transit trips, public transit trips within the Center township comprise just 4-5 percent of average weekday travel.

PRIVATE VEHICLE TRIP VOLUME YEAR 2010



Map 2.10: 2010 Private Vehicle Travel Demand Map

PUBLIC TRANSIT TRIP VOLUMES YEAR 2010



Map 2.11: 2010 Transit Travel Demand Map

Journey to Work

The US Census Bureau and Labor Department together created a database (“On the Map”) that compiles payroll records to identify worker origins and destinations by block group. From this database for 2006, over 820,000 daily work trips (home to work) throughout the Central Indiana region were identified.

Origins

The top home origins from this database located in the Indianapolis region include the townships of Washington, Wayne, Lawrence, Center, Perry, Warren, and Pike, together producing nearly 40 percent of the trips captured in the data set. Overall, home trip origins are fairly evenly distributed throughout townships in Marion County.

Home Origin Township	Trip Count
Washington	55,268
Wayne	52,559
Lawrence	48,111
Center	47,252
Perry	42,949
Warren	38,660
Pike	34,258
Clay	30,920
Franklin	19,809
Noblesville	18,592

Figure 2.3: Home Trip Origins

Destinations

Downtown Indianapolis represents the highest portion of work trip destinations with about 13 percent of the total work trips in the region. Downtown Indianapolis, with a high number of office and educational jobs in a concentrated area, also displays the highest jobs per acre density of all work destination areas.

Work Destination Area	Trip Count	Jobs Per Acre
Downtown Indianapolis	109,882	40.1
Northwest Industrial/W. 86th St	63,780	5.1
Castleton/Fishers	44,818	5.6
N. Meridian St/Carmel	41,550	5.7
Airport Area	31,025	1.6
Lilly Technology Center/ Southwest Industrial	20,157	13.9
Keystone Crossing	19,339	7.7
Eastside Warehouse	17,606	4.1

Figure 2.4: Work Destination

Key Destinations: IndyGo Service Area

Major destinations for any region include locations for employment, education, and tourism/recreation. In Indianapolis, many key destinations are concentrated in the downtown core.

Key Employment Destinations

Approximately 38 major employment destinations are located within Marion County, each with at least 1,000 employees. These locations contribute to the nearly 534,000 employees working in Marion County.

The largest concentration of major employers is found in the Center township, typically within downtown Indianapolis. These employers mainly consist of medical, insurance, financial, and corporate employment.

Education Destinations

College/University Trips

College students are typically a transit dependent group, as students often have limited access to an automobile. Students most commonly utilize transit when traveling to and from school and also when making work, shopping, or entertainment related trips. Major colleges or universities within Indianapolis are shown in the table below. The majority of the higher education institutions are located along or near the IndyGo transit network.

Education Center	Corridor	Enrollment
IUPUI	Washington St	30,000
Ivy Tech Downtown	Meridian St	15,000
University of Indianapolis	Hanna Ave	5,000
Butler University	Meridian St	4,000
Marian University	30th St	2,000
Martin University	21st St	600

Figure 2.5: Major Colleges or Universities within Indianapolis

IUPUI, located just west of downtown Indianapolis and the IndyGo core network, presents the greatest potential for college transit trips, especially given its more commuter campus nature.

High School/Middle School Trips

High school and middle school destinations are spread out across the region with concentrations found in the townships of Warren, Center, Washington, and Wayne. Many high schools and middle schools in Marion County are located on IndyGo routes. However, unlike many transit systems, IndyGo is not responsible for providing student transportation. IndyGo lost significant ridership when a yellow school bus system was established in the mid 1980s. This segment is unlikely to grow significantly, unless school programs change their current transportation services (reduce, eliminate, etc).

College/University students do not comprise a significant portion of existing IndyGo ridership, suggesting that there are opportunities to grow this market, especially given IUPUI's commute nature and proximity to downtown with better matching of service with travel needs.

Tourist and Recreation Destinations

There are a variety of major tourist attractions located within the IndyGo service area, including:

- **Lucas Oil Stadium:** Multi-purpose stadium located in downtown Indianapolis, home of the Indianapolis Colts.
- **Conseco Fieldhouse:** Arena located in downtown Indianapolis, home of the Indiana Pacers, and hosts numerous entertainment events year-round.
- **Indianapolis Motor Speedway:** Located in Speedway, the "Brickyard" racetrack hosts numerous racing events including the Indianapolis 500.
- **Indiana State Fairground:** Located on 38th Street, hosts the Indiana State Fair every summer, and numerous other events throughout the year.
- **Indiana Convention Center:** Located in downtown Indianapolis, hosts year-round conventions. Currently undergoing expansion on the former site of the RCA Dome, expected completion date of December 2010.
- **Indianapolis Museum of Art:** Located on West 38th Street near Michigan Road. Hosts numerous art collections throughout the year.

Other tourist destinations in Indianapolis include the Indianapolis Children's Museum, the NCAA Hall of Champions, the Indianapolis Zoo, the Indiana State Museum, and the Eiteljorg Museum, many of which are located in White River State Park. All of these locations are currently served by the IndyGo transit network, suggesting that tourist/visitor ridership may be a market segment to be increased.

Planned Future Developments: IndyGo Service Area

This section examines planned new developments within the greater Indianapolis area that may significantly affect transit demand. Six communities are participating in a renewal approach to community development in addition to the Indianapolis Regional Center.

Great Indy Neighborhoods

Binford Redevelopment and Growth (BRAG)

Redevelopment is ongoing along the northwest and southeast corners of Binford Street and 71st Street.

Crooked Creek

There has been a newly completed retail development at the intersection of Kessler Boulevard and Michigan Road. Additionally 86th Street has been identified as a major corridor likely to experience the majority of the area's future retail and commercial development.

Near Eastside

Major residential development and several building/park renovations are planned within the community.

Near Westside

Overall, strong support exists for business and retail expansion along the main street corridors on the Near Westside.

Southeast

The Southeast neighborhood has a largely low income population, with one in four residents living below the poverty level. However, with recent local efforts to revitalize the community, numerous future developments are in the works.

West Indianapolis

Minimal new developments are planned for the neighborhood; however, the West Indianapolis Development Corporation has recommended that industry be concentrated in locations south of Minnesota Street and also north of Morris Street.

For both the Great Indy Neighborhoods and the Regional Center, future developments are largely mixed-use retail and housing developments.

Overall Market Assessment

Conclusions

From the Market Assessment, the highest transit demand potential exists in or near the downtown core of Indianapolis. This area displays the highest concentration of population and employment densities, numerous major employment destinations, and an aggressive plan for future development.

The current IndyGo network provides significant coverage to the core area surrounding downtown Indianapolis, linking population to downtown. The existing densities will support basic transit service, as well as a number of frequent transit corridors. Additional investment in a core network of services could generate additional ridership.

Other areas that would benefit from improved transit service include employment located near the airport and the I-465 beltway, particularly in the northern portion of Indianapolis. However, under IndyGo's current radial network, crosstown trips between these areas are difficult to complete. Improved service (especially faster service) could potentially tap the expanding employment and retail trips in this key and growing northern corridor of the city especially if the area becomes more friendly to transit: less nodal, more linear corridor orientation; stronger pedestrian orientation with more transit oriented design; and less automobile-centric with limits on free parking.

The future expansion of the regional transit system may still most actively focus on links to downtown Indianapolis. Efforts to significantly increase densities along a set of major linear suburban corridors would help develop transit ridership.

Given the profile of existing IndyGo ridership, the system is likely to require both improving existing key corridor services and significant rebranding with new service types capable of attracting significant numbers of discretionary riders. Alternative transportation solutions, including limited stop all-day service (or Rapid Bus/BRT) from selected areas to downtown, should be considered in order to reach a broader market for transit.



2.2 Service Evaluation Areas of Analysis

The Service Evaluation offers key findings both at a system and individual route level and included four specific sub-sections:

- 1) **Transit Network Overview:** describes the IndyGo system and the existing service levels.
- 2) **Service Ridership:** details the current use of the IndyGo system at the network, route, and geographic segment levels, including data results and customer profiles.
- 3) **Service Performance:** evaluates service productivity and financial effectiveness with regards to established service standards.
- 4) **Customer Experience:** reviews reliability, operating speed, and trip loads.

Transit Network Overview

Route Structure

As previously shown in Map 1.1, the IndyGo bus network provides predominantly radial services between downtown Indianapolis and outlying communities. Only 3 IndyGo routes are crosstown, operating entirely outside of downtown. The Red Line Circulator (Route 50), provides service between the IUPUI Campus and downtown. All of these local bus services are operated directly by IndyGo.

In addition to the 29 local bus services, IndyGo operates 3 express services. Two of these are IndyGo Commuter Express (or ICE) services, established as a trial in 2007, providing nonstop peak-only service from Fishers and Carmel into downtown Indianapolis using over-the-road coaches. IndyGo also offers the Green Line Airport Express, providing nonstop service between the Indianapolis International Airport and downtown, through a contract operator using small buses.

Other special IndyGo services include:

- Open Door, reservation-based ADA paratransit service.
- Late Night Flex Taxi Voucher Program.

Span of Service and Service Frequencies

IndyGo operates local bus services 7-days a week from 4:30 AM to 12:30 AM. Though many routes cease operation by 10 PM, weekend bus routes operate at reduced service spans and service levels, with 4 Local routes operating weekdays only. A further 9 routes operate weekdays and Saturdays, but omit Sundays. Consequently, Sunday service hours are less than a third of weekdays. ICE routes operate only during weekday peak periods.

Weekday Service Frequencies

IndyGo weekday service frequencies range from 15 minutes to 90 minutes. Peak period IndyGo routes most commonly operate every 30 minutes, while only 2 services (Routes 39 and 50), operate every 15 minutes during peak periods, and only Route 50 IUPUI shuttle operates this frequently off peak. During off peak and weekends, the most common frequency is 60 minutes, with a number of Sunday routes operating only every two hours (120 minute frequency).

Higher frequencies help attract higher ridership during all time periods in strong market areas for transit. Improving service frequencies on high performing core routes, particularly during peak period travel hours, but also during the weekday midday period, may help generate significant additional ridership by increased spontaneous use (“walk up and catch the next trip”) of the system.

Higher frequencies help to grow ridership, especially on a core network of routes, by encouraging spontaneous use of services and facilitating the use of the system as a network. IndyGo system ridership growth may be restricted significantly by the low frequency of many routes.

Conversely, IndyGo ridership is restricted significantly by the low and very low frequency of many routes. At the very least, these frequencies limit the routes ability to act together as a network by making for longer street corner transfer waits. Any revisions to the IndyGo network should give potential frequency improvements significant attention.

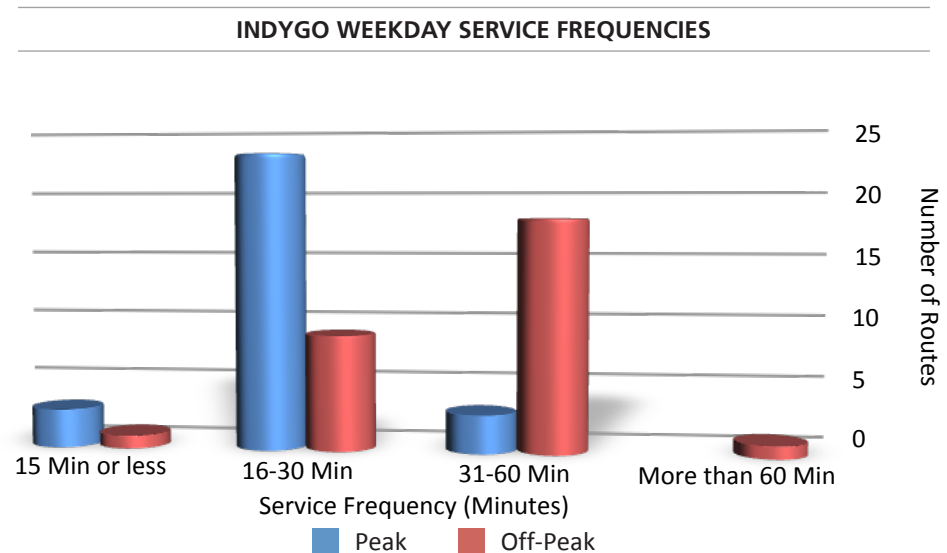


Figure 2.6: Weekday Service Frequencies

Ridership

The fixed-route transit system serving Marion County in fall of 2009 generated:

- 34,394 boardings per average weekday
- 17,633 boardings per average Saturday
- 8,503 boardings per average Sunday

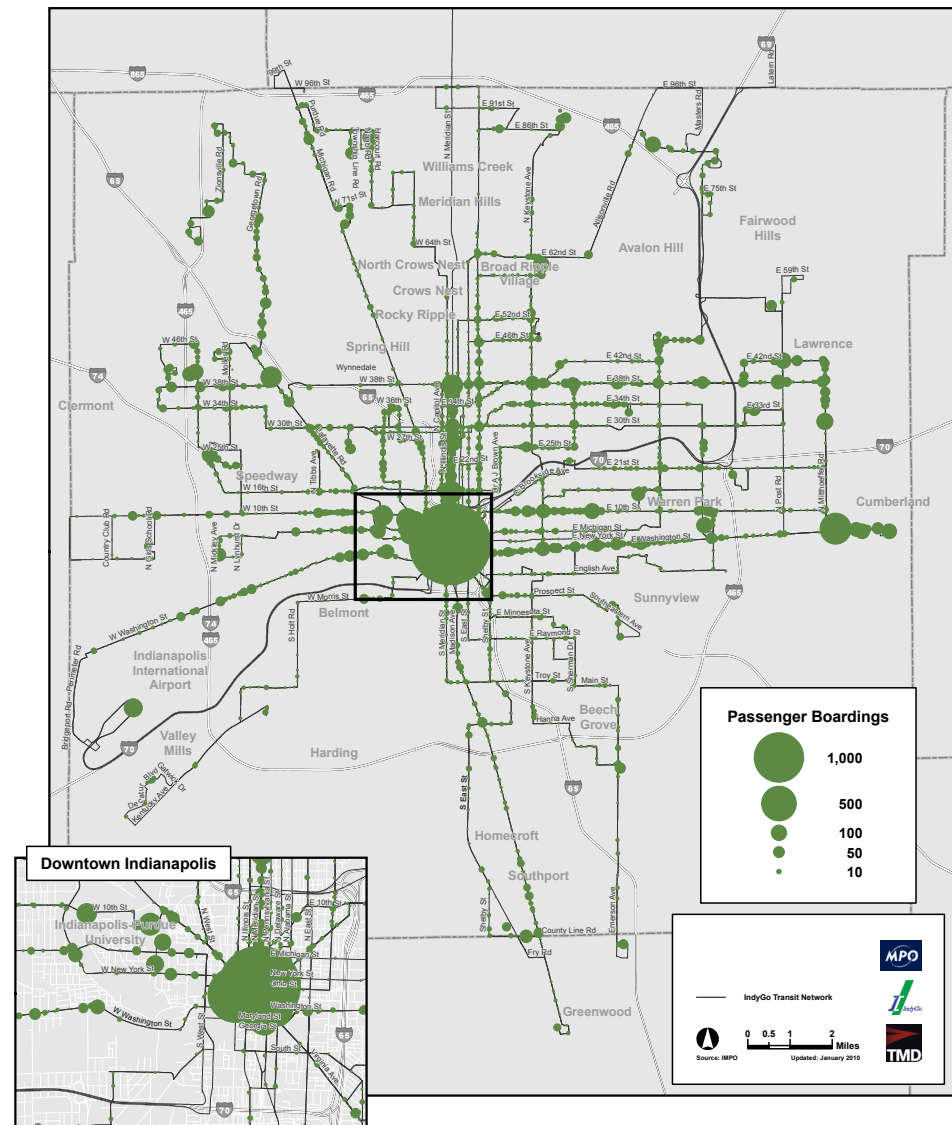
Ridership by Stop

Map 2.12, at right, illustrates average weekday system boardings by stop. Higher ridership is concentrated around the downtown loop, indicating high volumes of both trip origins and transfers. Outside of downtown Indianapolis, the most significant boarding activity exists along major corridors including North Meridian Street, East 10th Street, and East Washington Street.

Relatively higher levels of boarding activity outside of downtown Indianapolis are also observed at major destinations including Washington Square Mall, Lafayette Square Mall, and the Indianapolis International Airport. Aside from downtown and the key corridors and destinations, boarding activity is relatively low throughout the remaining service area in Marion County.

Downtown Indianapolis stops have the highest passenger boardings.

AVERAGE DAILY BOARDING (WEEKDAY)



Map 2.12: Weekday Systemwide Ridership
Source: IndyGo Fall 2009 APC Data

Key issues influencing the distribution of system boardings and alightings are the lower population and employment densities further from downtown, and the twin roles of downtown as both a destination and transfer hub.

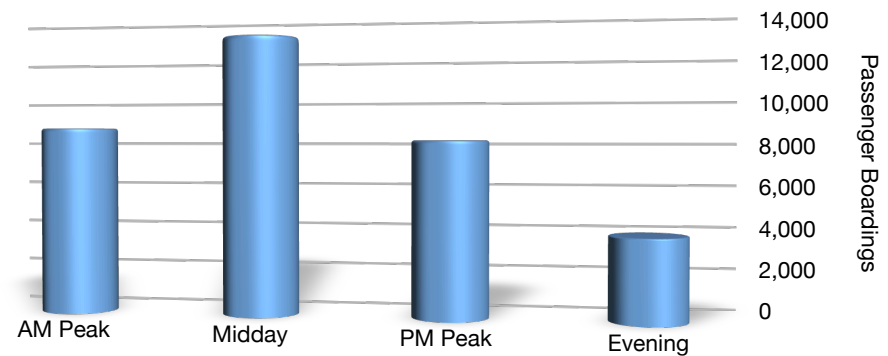
The boarding activity patterns are consistent with the Market Assessment findings suggesting that much of Indianapolis has low residential and job densities. Even in areas close to downtown and along the stronger transit corridors, densities are not particularly high for population, jobs, or population demographics more likely to need to use transit. Jobs are also clustered in the downtown, Westside and far north. Therefore, performance is both linked to a mix of low service levels, high service densities, and underlying transit market conditions.

Ridership by Time Period

Figure 2.7 below shows the distribution of weekday ridership by time of day. Ridership during the AM and PM Peak periods is fairly consistent, with approximately 8,000 boardings during each period. Ridership levels are sustained during the day, with approximately 13,000 midday boardings. Weekday evening ridership levels significantly drop to below 4,000 boardings. This suggests that for all the service level restrictions, the midday period ridership is still strong when compared to the peak periods consistent with a largely transit dependent existing market, and may hold more potential if higher service levels were provided.

Midday ridership is important, reaching levels close to the combined peak period boardings.

INDYGO WEEKDAY LOCAL BOARDINGS BY TIME PERIOD



*Figure 2.7: Ridership by Time Period
Source: IndyGo Fall 2009 APC Data*

Route Level Ridership

Routes 8 (Washington Street), 10 (10th Street), and 39 (East 38th Street) produce significantly higher weekday ridership than any other IndyGo transit routes, generating over 3,500 average weekday boardings. These routes serve major travel corridors and key destinations in Indianapolis, in areas where relatively higher population densities exist, all factors contributing to their higher ridership. Combined, these three routes account for nearly 36 percent of all weekday boardings on IndyGo services, and all should be candidates for improvement, both in peak and off-peak periods. The next best ridership per route is under 2,000 daily boardings.

The top 10 routes ranked by average weekday ridership account for 65 percent of the system weekday boardings.

The ICE Express Routes operate a limited number of trips as market-based commuter services, making total ridership alone a sufficient indicator of success. The Green Line airport express usage is low for an all day frequent service.

IndyGo ridership levels decrease significantly from weekdays to Saturdays, and again from Saturdays to Sundays. On Saturdays, only one route exceeds 2,500 daily boardings (Route 8). On Sundays, no route exceeds 2,000 daily boardings.

INDYGO RIDERSHIP BY DAY

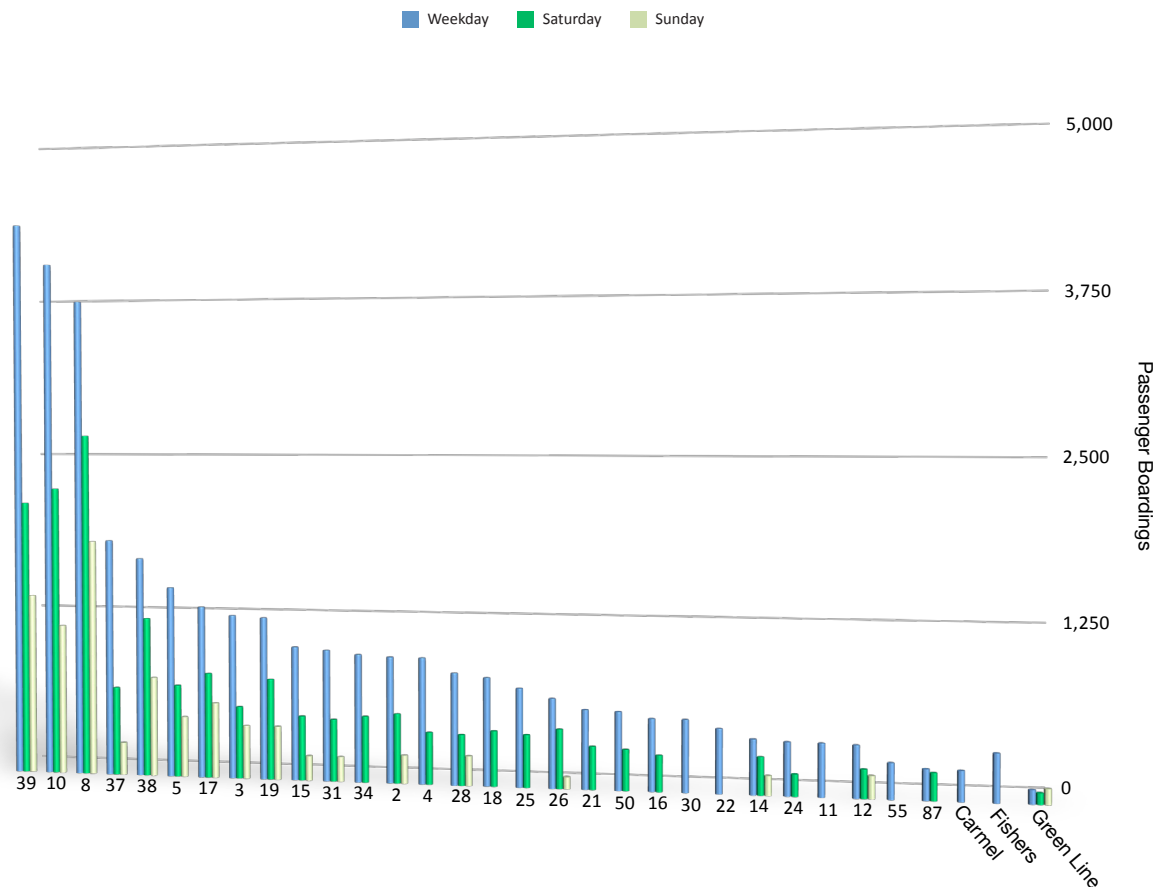


Figure 2.8: Ridership by Day
Source: IndyGo Fall 2009 APC Data

Systemwide ridership dropped drastically in the 1980s when yellow school bus service was introduced. Ridership has leveled off at around 10 million annual boardings.

Service Performance

A common industry metric for service productivity, or service effectiveness, is passengers per revenue hour. This measures the number of boardings generated per each hour of service provided.

per revenue hour (pph) during weekdays. A further seven local routes achieve around 25 passengers per revenue hour, about the system average for this measure. While not extraordinarily high by industry standards, these are reasonable results given the underlying service and market conditions.

Routes lacking a downtown focus perform significantly more poorly than the typical radial services. These include Routes 26 (Keystone Crosstown), 30 (30th Street Crosstown), and 87 (Eastside Circulator), which operate completely outside of downtown Indianapolis and generate fewer than 20 passengers per hour. Overall, four routes have productivity between 10-15 pph and a further six are between 15-20 pph according to this measure. These are priorities for detailed review regarding future roles and improvement strategies.

The ICE Express routes produce around 20 boardings per hour during weekday operations. Passenger activity primarily occurs on commute-direction trips, while reverse commute activity is practically nonexistent. These routes are penalized by lack of seat turnover but should perform better given their short travel times. Eliminating very underperforming reverse commute trips (that are not required for staging peak direction trips) would increase their performance based on this measure.

INDYGO WEEKDAY PASSENGERS PER REVENUE HOUR

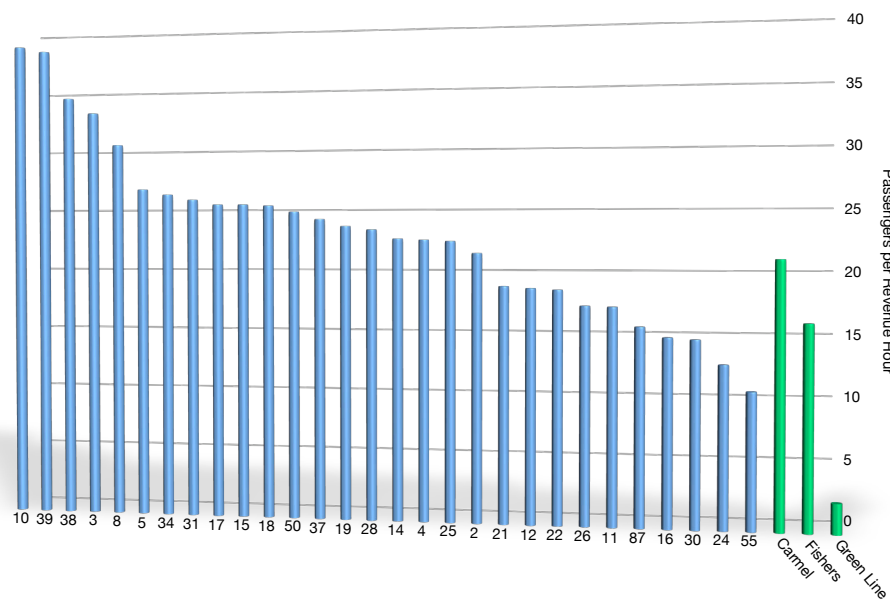


Figure 2.9: Weekday Passengers per Revenue Hour
Source: IndyGo Fall 2009 APC Data

Service Productivity

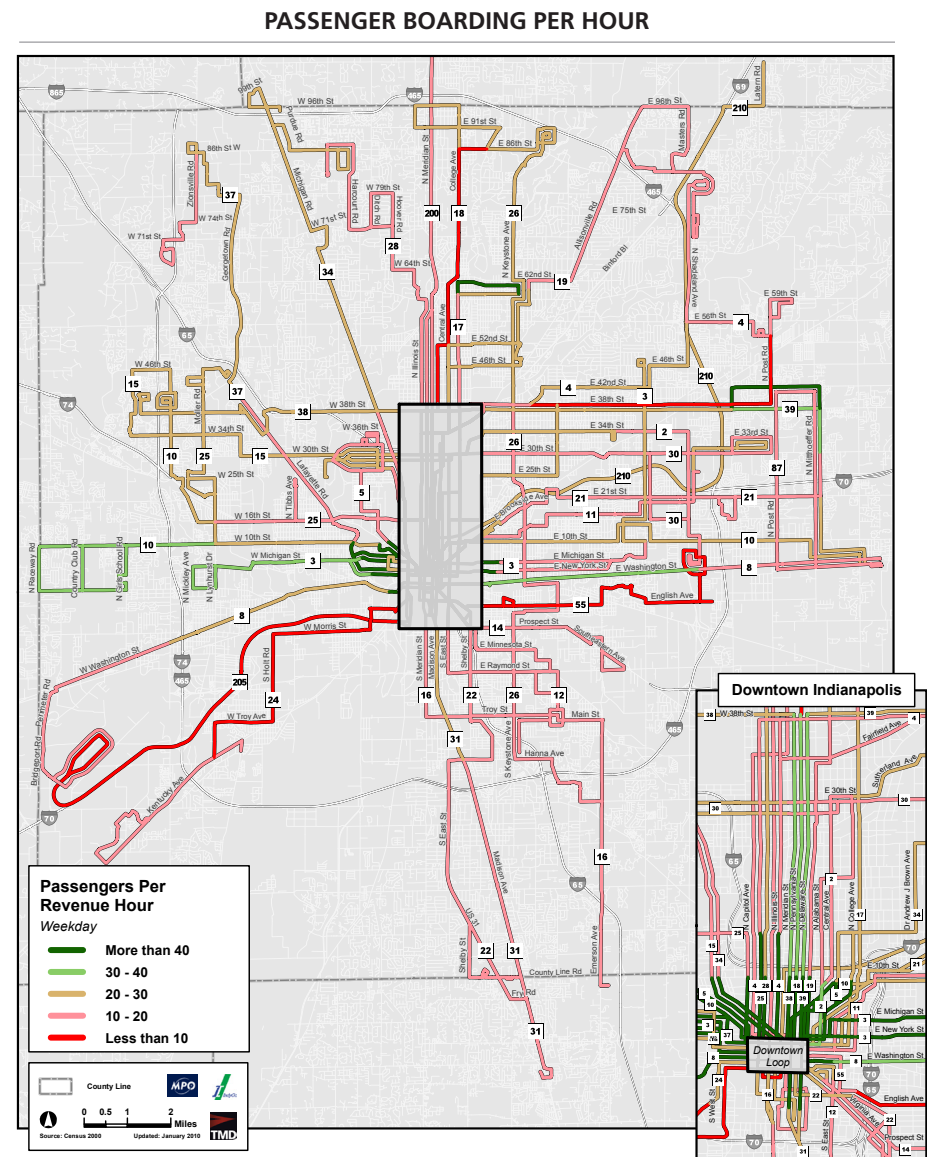
As shown in Figure 2.9, the most productive IndyGo routes provide downtown-based service along major corridors. These routes, including 10 (10th Street), 39 (East 38th Street), 38 (Lafayette Square), 3 (Michigan Street), and 8 (Washington Street) average well over 30 passengers

Map 2.13, at right, shows service productivity at a route segment level, as service performance varies over the full length of each route.

Strong performing route segments (over 40 passengers per hour) are found almost solely within downtown Indianapolis. Some segments to the immediate west of downtown near IUPUI, Wishard Hospital, and Veterans Hospital also experience high service productivity. The northeast loop of Route 39 near John Marshall Middle School experiences high passengers per hour as well.

Route productivity weakens on segments further away from downtown Indianapolis. Portions of Routes 4, 12, 21, 28, and 37 experience extremely low productivity with fewer than 10 passengers boarding per revenue hour. These segments warrant consideration of their future roles.

Highest performing route segments are located downtown. The lowest performing route segments operate on more minor streets between major corridor routes and in suburban communities.



Map 2.13: Weekday Passengers per Revenue Hour

Source: IndyGo Fall 2009 APC Data