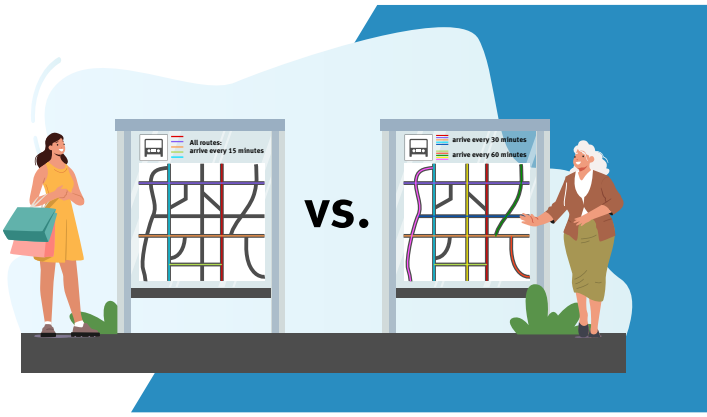
Transit Service Design Principles

Effective transit service design balances clarity, connectivity, and consistency across the network. While routes may serve different functions—such as high-frequency corridors or coverage-focused areas—all should be easy to understand and seamlessly integrated into the broader system. This section outlines key principles and best practices to guide the development of a logical, coordinated, and rider-friendly transit network.

Route Purpose – Maximize Ridership vs. Increase Coverage



Public transit operates with limited resources- funding, vehicles, and driver time. Agencies strive to balance the use of these resources as efficiently as possible while maintaining access to underserved communities and essential locations. Each transit route serves one of two primary goals: to maximize ridership or to expand coverage.

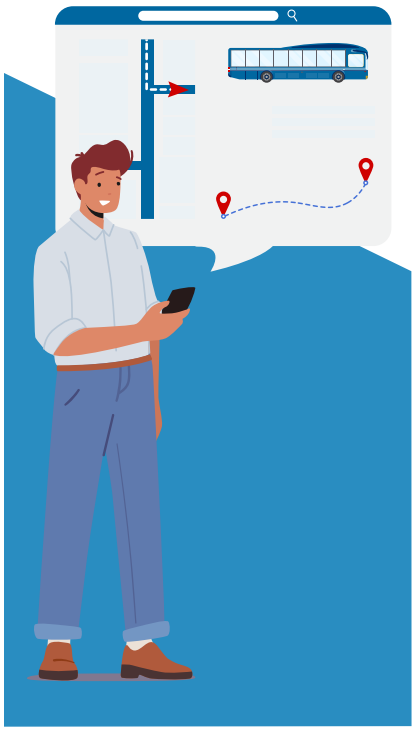
Ridership-focused routes operate in high-demand areas, where service can attract the most riders. These routes are frequent, direct, and designed for speed and efficiency.

In practice, this involves operating high-frequency fixed-route services in high-demand, high-density corridors where transit can move the most people for the investment. The most efficient routes serve areas with strong ridership potential—places where many people travel and key destinations are logically connected.

Coverage-focused routes provide essential access to lower-density areas with fewer riders but greater need, such as neighborhoods near hospitals, senior centers, or underserved communities. Though less frequent, they ensure mobility and promote equity for those who depend on transit most. Both types of routes are vital to a balanced and inclusive transit network.

Service Should Be Straightforward

A simple transit route design and simple schedules will attract more riders than a complex transit system. For people to use transit they must be able to understand it; and simpler, straightforward services are easier for riders to rely on them.



Routes Should Operate Along a Direct Path.

Routes should be designed to operate as directly as possible to keep travel time lower while maintaining access to key destinations.

The fewer turns a route makes, the easier it is for riders to understand. Conversely, circuitous paths are disorienting and difficult to remember, which can impact the reliability of the route. Direct routes also maximize average speed for the bus and minimize travel time for passengers while maintaining access to service.

Route Deviations & Variants Should Be Minimized

Transit service should be as direct as possible to minimize travel time and improve reliability. Route deviations—where a vehicle travels off its main path—should be limited, as they can slow service and inconvenience existing passengers.

However, deviations may be appropriate in specific cases, such as avoiding congestion or providing access to major destinations like shopping centers, job sites, medical facilities, or schools.

In these situations, the benefits must outweigh the costs. Deviations should only be considered if all of the following criteria are met:

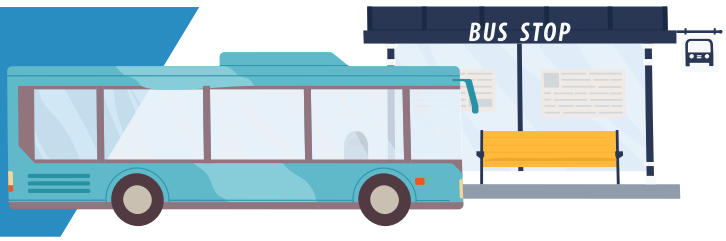
- The deviation improves the route's overall productivity.
- The deviation does not disrupt scheduled frequencies or coordination with other routes.
- Pedestrian access to the destination is unsafe or impractical.

Where deviations are implemented, they should generally run throughout the service day, unless the destination lacks activity during certain times (e.g., shopping centers before opening hours).

Routes Should Be Symmetrical

Symmetrical routes are easier for riders to understand and navigate. Whenever possible, routes should operate along the same alignment in both directions. Exceptions can be made in cases where such operation is not possible due to one-way streets or turn restrictions. In those cases, routes should be designed so that the opposite direction alignments run parallel as closely as possible. Exceptions can be made on coverage routes in areas such as where the geography of a road network makes parallel service impractical. Large one-way loops are to be avoided.

Symmetry simplifies scheduling, balances travel times in both directions, and makes driver shifts and layovers more predictable. For riders, it provides confidence and convenience—knowing that the return trip will follow the same, familiar path.



Routes Should be Planned Within Network Context

Every transit route is part of a larger, coordinated network—not planned in isolation. Together, routes create a system that offers riders seamless access across the region.

Good network design ensures routes:

- Fill coverage gaps without unnecessary overlap
- Support key transfer points and transit hubs like the Blake and Ypsilanti Transit Centers
- Complement one another, such as offsetting schedules on shared corridors to increase frequency

Coordination also means aligning service hours, transfers, and geographic coverage so that isolated neighborhoods gain access to frequent corridors, while overlapping services only occur where demand justifies it and roles are clearly defined (e.g., express vs. local).

Services Should Be Well Coordinated

When multiple routes share a corridor but serve different destinations, schedules should be coordinated to maximize efficiency and reduce redundancy. Major routes of the same type should operate at similar frequencies with evenly spaced trips to avoid bus bunching and balance passenger loads.

At key transfer points—such as transit centers and major intersections—schedules should be aligned as much as possible to minimize wait times for common transfers.

Service Should Be Consistent

Routes should follow consistent paths and run at regular intervals (headways) that are easy to remember. For example, a route with four trips per hour should have buses every 15 minutes. Occasional exceptions are allowed during short demand spikes to help reduce crowding on specific trips.

Service Should Be Predictable and Connected

Routes that run on consistent, easy-to-remember schedules—such as every 15 or 30 minutes—make transit more predictable and convenient. When routes follow these "clockface" headways, buses are timed to meet at the same points each hour, allowing riders to transfer easily without long waits. Aligning frequencies across routes helps create a more connected network and a smoother travel experience for passengers. Exceptions can be made for routes operating less than every 15 minutes.

Services Should Be Designed with Adequate Running Time

Transit schedules must be based on realistic and data-driven running times to ensure reliability and rider confidence. Accurately allocating sufficient travel time for each trip accounts for variations in traffic, passenger boarding, and other operational factors throughout the day. Without adequate running time, buses risk running late, causing delays and missed connections that degrade overall service quality. Incorporating buffer time at key points allows vehicles to recover from minor disruptions and maintain on-time performance. Regular analysis of real-time data enables planners to fine-tune runtimes, balancing the need for timely service with efficient use of limited resources. Ultimately, designing schedules with proper running time supports a dependable transit system that riders can trust and depend upon.
Service Levels Should be Set Based on Service Standards and Guidelines

Transit service levels—including frequency, span, and capacity—should be determined by established service standards and guidelines that reflect rider demand, equity goals, and operational efficiency. Using clear, measurable standards ensures that resources are allocated fairly and effectively across the network. Service standards and guidelines help balance the needs of high-demand corridors with coverage in lower-demand areas, guiding planners to provide consistent, reliable, and equitable transit options. By setting service levels based on these criteria, agencies can optimize system performance, improve rider satisfaction, and promote sustainable transit growth.

Service Types Classification

The Design Guidelines and Service Standards define service categories to clarify what riders can expect from each type and set appropriate standards (like frequency, stop spacing, or span of service). For purposes of this document, TheRide classifies current fixed-routes into the classifications as detailed in Table 1:

Table 1: Route Classification

Type	Description	Routes
Frequent Routes	Routes with frequencies of 15 minutes or less during peak periods. Run along busier corridors and are broadly spread throughout service area.	4, 23, 62
Local Routes	Routes with frequencies of 15 minutes or greater during peak periods. Provide access across neighborhoods and corridors that include a mix of higher- and lower-ridership segments to provide consistent daily coverage.	3, 5, 6, 22, 25, 26, 27, 28, 30, 31, 32, 33, 42, 43, 44, 45, 46, 47, 61, 65, 66, 67, 68
Limited-Service Routes	Routes with atypical purposes such as those intended to move people during peak travel periods only or express routes intended to move customers more quickly over longer distances.	29, 34, 63, 64, 104