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BETTER TRANSIT FOR A MORE CONNECTED REGION

Appendix C

Transit Route Design Principles

metro

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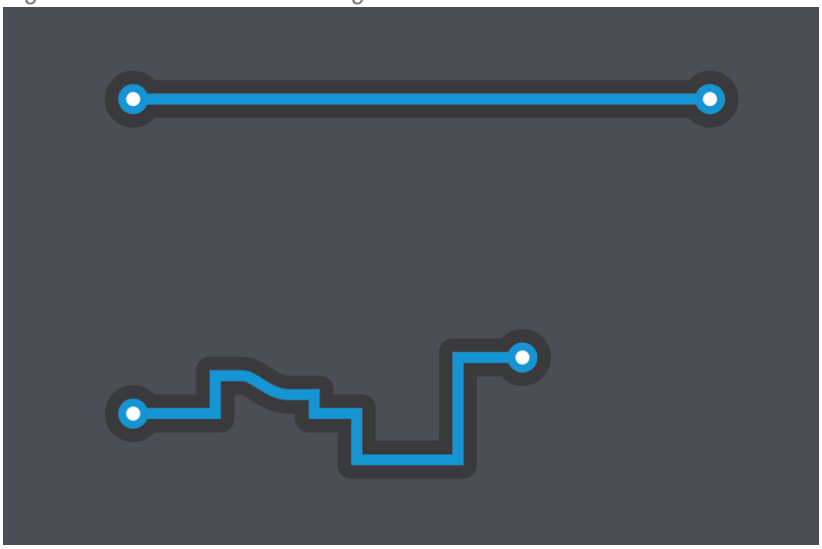
Transit Route Design Principles

April 2022

When planning bus routes, numerous factors are considered to determine the best routing and schedule to meet the needs of customers in the area.

To begin, streamlined and direct routing is preferred to the extent possible given the available street network and location of destinations in the area. Figure 1 depicts two bus routes of identical length (and therefore identical operating cost). While the top line provides a direct connection from A to B, the bottom line deviates to several out-of-direction areas, ultimately causing the route to cover a shorter distance from left to right.

Figure 1 – Streamlined Routing

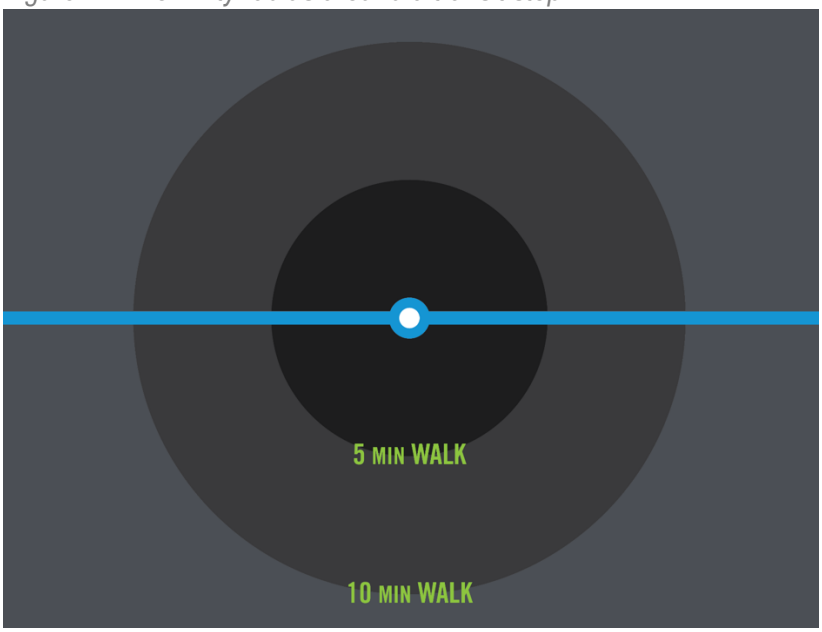


Prospective transit riders are much less likely to try the bus if the travel times are more than double the duration of their commute by car, meaning direct lines offer the best opportunity to attract new customers.

Additionally, straighter bus routes extend the reach of a transit agency's budget to cover a broader area, while also improving onboard travel time, helping riders travel faster over further distances.

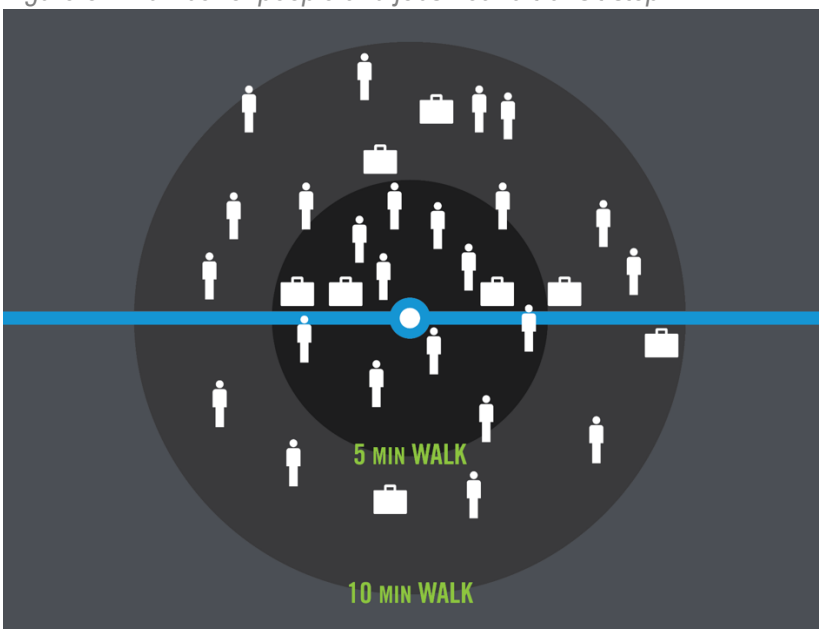
On a more localized level, the best way to predict ridership at a bus stop is the number of people and jobs within close proximity of the stop, generally a 5-to-10-minute walk, or about ¼ to ½ mile (see figure 2).

Figure 2 – Proximity radius around a transit stop



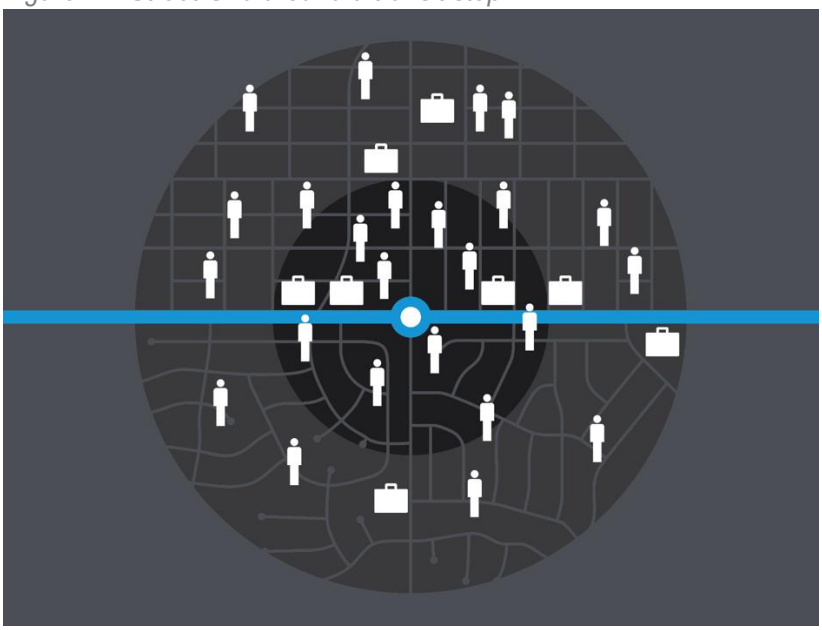
When studying the area surrounding the bus stop in figure 3, it is clear that more people and jobs are located in the area above the stop, compared to the area below.

Figure 3 – Number of people and jobs near a transit stop



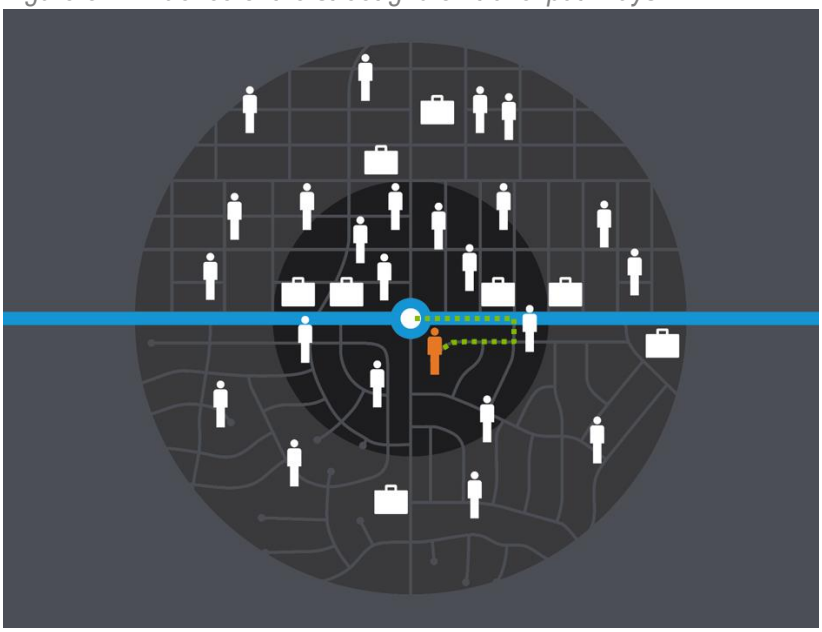
Another important factor to consider is the built environment. Figure 4 depicts how the street grid surrounding the bus stop can make it more difficult for bus riders to navigate the surrounding area.

Figure 4 – Street Grid around a transit stop



As shown in Figure 5, even though a person may live close to the bus stop, the available sidewalk network may cause them to travel out of the way, increasing the distance to the stop and effectively reducing the number of destinations reachable within a close travel time of the bus stop.

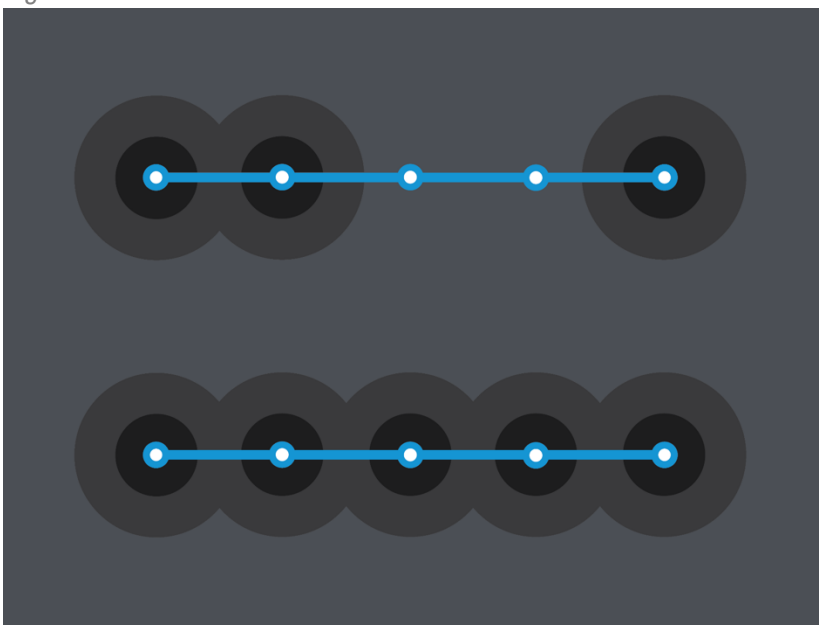
Figure 5 – Influence of the street grid on travel pathways



When reviewing ridership potential on a corridor level, it is important to consider not only the neighborhood characteristics surrounding individual bus stops, but the continuity of all stops along the corridor.

Figure 6 illustrates two different bus routes with five bus stops equally spaced along the line. The top route has three stops with a large number of people and jobs in the surrounding area. However, the route passes through two stops with minimal opportunity for ridership. The bottom route displays consistent levels of opportunity for ridership, making the route more likely to operate productive service. It should also be noted that stops are not placed so close that the walk radius around each stop significantly overlaps the adjacent stops, which would slow down the route and reduce the ridership per stop, since stops in close range service the same potential riders.

Figure 6 – Consistent Corridor Demand



These principles should be applied when designing new bus routes or modifying existing routes to ensure optimal route effectiveness, helping to maximize the impact of transit resources and ensure a streamlined experience for riders onboard.