



Walkability and WIC: A Location Analysis of Tacoma's WIC Retailers



Introduction

The supplemental nutrition program for women, children and infants (WIC) aims to provide supplemental food and nutrition education for low income pregnant, breastfeeding or post-partum, non-breastfeeding women with children under age 5. In theory, the program helps bridge the nutrition gap between low- and high-income families, however, this program does not ensure that families will be able to easily access WIC accepted retailers.

According to a recent nationwide study by the American Commuter Survey, only 24% of low-income families have access to a personal vehicle. This disparity places barriers on low-income families with small children who cannot easily utilize public transit for necessary grocery trips, which makes walkability to a WIC accepted retailer extremely important. By analyzing the location of current WIC retailers and their walkability proximity, we can examine which areas of Tacoma are underserved and need closer WIC accepted retailers.

Methodology

Network Analysis:

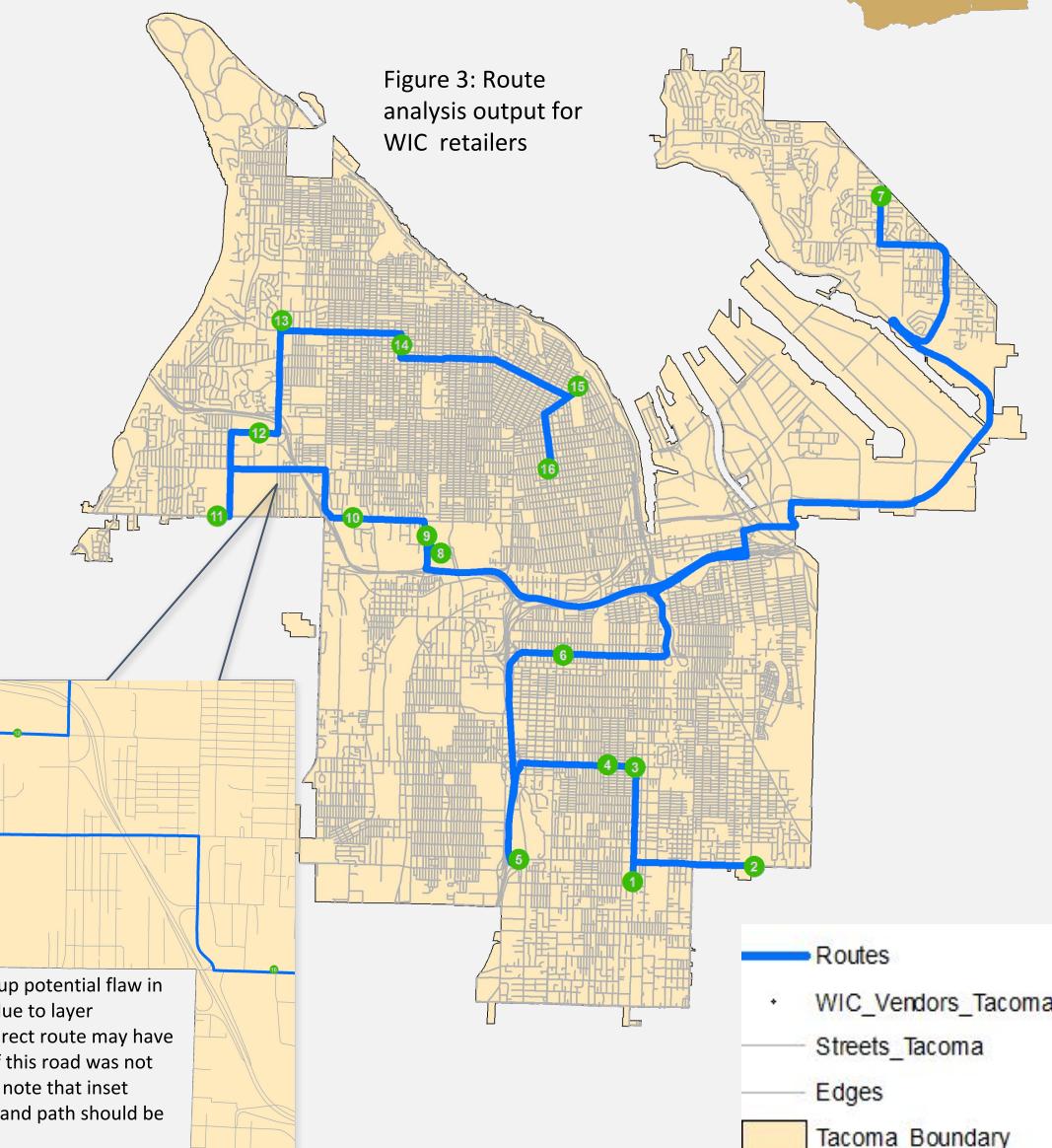
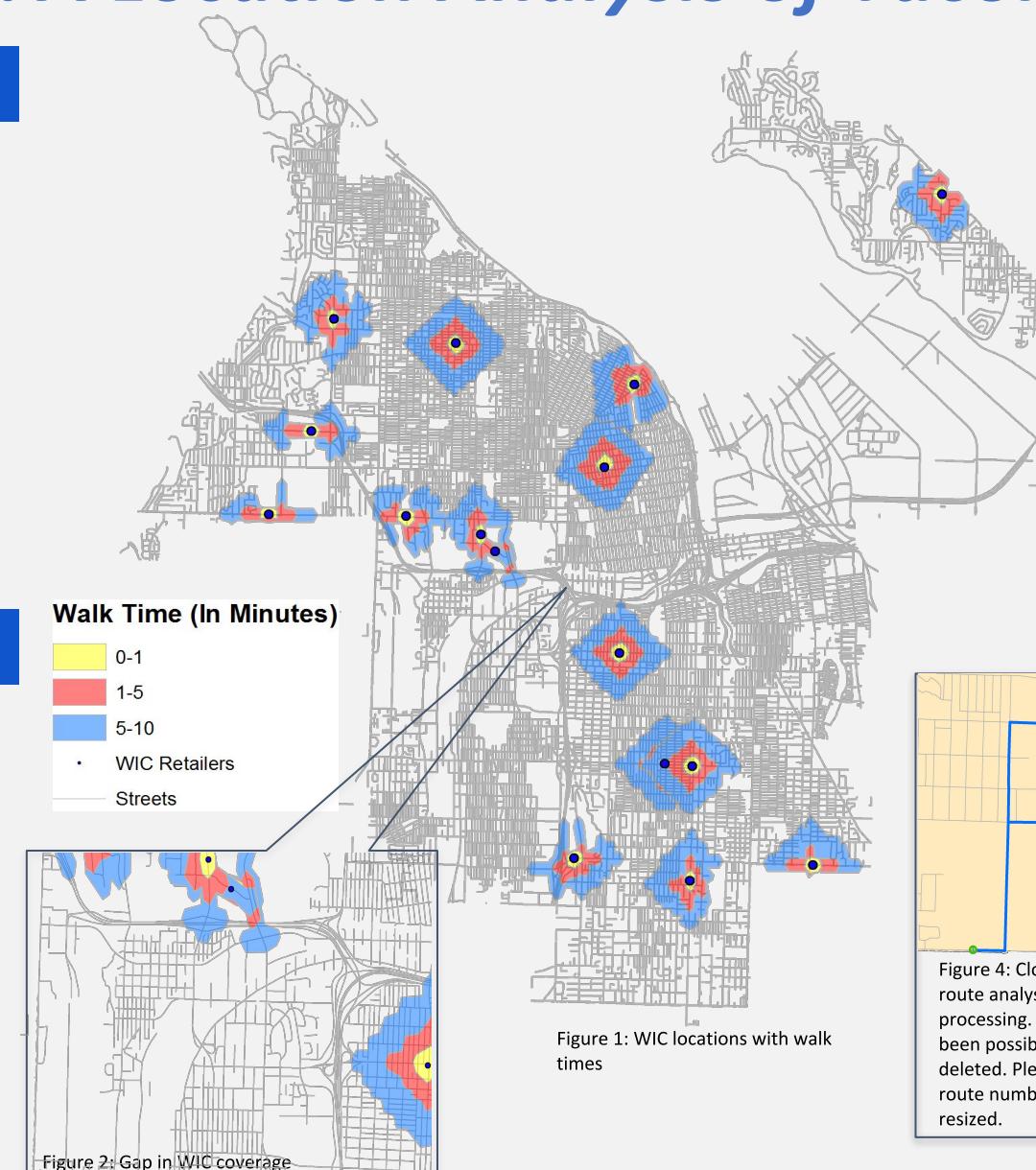
A Tacoma network dataset was created using Tacoma streets and then built to establish the complete network of the streets in Tacoma. A service area layer was then created using walk time and traveling to the facilities. Three breaks were created to show a 1, 5, and 10-minute walk to the WIC retailers. Next the WIC retailers were added as facilities to perform the analysis. Finally, the service area analysis was solved.

Route analysis:

Working with the Tacoma network dataset and the WIC locations a new route layer was created, this time using drive time. The stops, or WIC retailers, were ordered in a way that optimizes time between a starting point and end point. The WIC retailers had to be defined as stops in the analysis dataset. The analysis was solved and the shortest route through all the stops was displayed.

Table 1: WIC retailer route and time

Wic Retailer	Stop Order	Cumulative Distance (miles)	Cumulative Drive Time (min)
Fred Meyer #385	1	0	0
Safeway #1436	2	1.5	2.5
La Huerta	3	3.8	6.5
Safeway #1594	4	4.1	7
WinCo	5	6.1	10.5
Safeway #1437	6	8.9	14.2
QFC	7	20	32.4
Target	8	31.5	51.6
Walmart	9	31.8	52.2
Fred Meyer #390	10	32.6	53.7
Fred Meyer #605	11	35	57.8
Safeway #1246	12	36.3	60.1
Safeway #1978	13	37.7	62.6
Safeway #3424	14	39.2	65.6
Thriftway	15	41.4	70
Safeway #329	16	42.4	72.3



Network Analysis

Results

- Currently, there are 16 WIC retailers serving the Tacoma area (Figure 1)
- WIC service area coverage is evenly distributed through central Tacoma (Figure 1)
- Gaps in coverage appear in Southwestern and Eastern Tacoma (Figure 2)

Conclusions

Large gaps in WIC retail service areas are evident in South Tacoma, East Tacoma and parts of Central Tacoma. A large proportion of Tacoma's resident who live at or below the poverty level live in these same areas. A lack of access to services such as WIC, transportation or health care may compound the issue of poverty. Thus, rectifying the service gaps found in this analysis may increase equity for Tacoma residents. These results can be used to implement better public policy in the form of more inclusive public assistance programs or an increase in WIC accepted retailers.

Route Analysis

Results

- The most efficient route for delivery drivers servicing WIC retailers has a cumulative distance of 42.4 miles with a total drive time of 72.3 minutes (Table 1, Figure 3)
- Removal of roads outside of the Tacoma city limits may have resulted in reduced route efficiency (Figure 4)

Conclusions

The total distance of the WIC delivery route is less than 60 miles and takes less than an hour of total drive time, without accounting for unloading or other delays or impedances. Stop 7 decreases the efficiency of this route. Future analysis would verify that this route is serviced by a different delivery truck and if so, excluded. Similarly due to processing, some roads were removed from this analysis, which may further improve route efficiencies.