Transit-Oriented Development Guidelines

Valdosta-Lowndes Metropolitan Planning Organization

June 30, 2024

SOUTHERN GEORGIA REGIONAL COMMISSION

transport STUDIO

Contents

Table of Figures

Transit-Oriented Development Guidelines

Transit-Oriented Development (TOD) is a development approach characterized by higher density, mixed uses, a safe and attractive pedestrian environment, reduced surface parking, and direct and convenient access to the transit facility. The strategic design and location of a TOD should support pedestrians and their use of public transportation. (1)

The goal of the Valdosta-Lowndes MPO Transit-Oriented Development Guidelines study is to promote TOD in the area by:

1. Assessing the potential for future transit-oriented development
2. Assisting local engineers and planners on developing TOD in the VLMPO area
3. Identifying the potential need/opportunity for micro-mobility
4. Promoting policies that increase access to public transit

These are general guidelines for small urban, suburban, and rural communities which provide a framework for developing more specific TOD strategies within targeted planning areas. Small urban communities are classified as those having a population of less than 200,000 people and are typically high density with a mixture of various amenities that are located within half a mile of various neighborhoods. Suburban communities are classified as areas that are located just outside of the city, less densely populated and sometimes have strip malls spread out through the suburban area. Rural communities are the most removed from the urban area. Rural areas are predominately open land with few homes and very low density. The guidelines provide TOD strategies and recommendations that may be tailored based on the context of each area.

The guidelines are consistent with the Common Community Vision and Joint Comprehensive Plan community vision, goals, needs and opportunities, policies, and strategies. The TOD guidelines also support recommendations from the SGRC Bicycle and Pedestrian Master Plan, which encourages the implementation of bicycle and pedestrian facilities to support economic development, tourism, and active lifestyles, as well as connecting bicycle and pedestrian facilities to other travel modes.

Existing Conditions

The Valdosta-Lowndes MPO region is currently served by an urban microtransit on-demand system within the city of Valdosta as well as rural on-demand service provided by the Southern Georgia Regional Commission. Valdosta On-Demand is operated by Via. It is an app-based service that offers curb-to-curb rides from 5:30am to 9:00pm, Monday through Friday. The fare is $2 per ride, plus $1 for each additional passenger up to two. Ridership in 2023 was 97,236 completed rides.

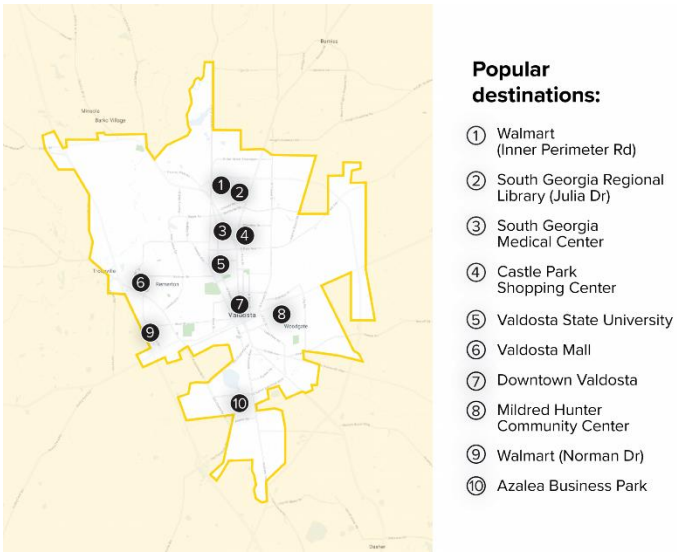


Figure 1 Popular Destination for the Urban On-Demand System

The regional rural on-demand service is also app-based. It requires advanced

scheduling with 24 hours' notice. The service is curb-to-curb from 7:30 am to 5:30pm, Monday through Friday. The fare is $3 per trip up to 10 miles plus $0.50 per additional mile. Ridership in 2023 was 18,127 trips.

Both systems offer door-to-door service for wheelchair users and accommodate riders 13 years and older, and younger if accompanied by a parent or guardian. Figure 2 and Figure 3below show origins and destinations for each system. As shown, the rural system carries many passengers to and from the city of Valdosta.

Existing concerns about the current systems include poor public awareness of the available services as well as employer engagement for potential partnerships. The federal funding structure that limits urban and rural services from operating within overlapping service areas creates inefficiencies in trips. The Georgia Department of Human Services does fund trips for aging and behavioral health populations in the urban area via the SGRC system. Service hours on the rural system limit the ability of passengers to get to and from work.

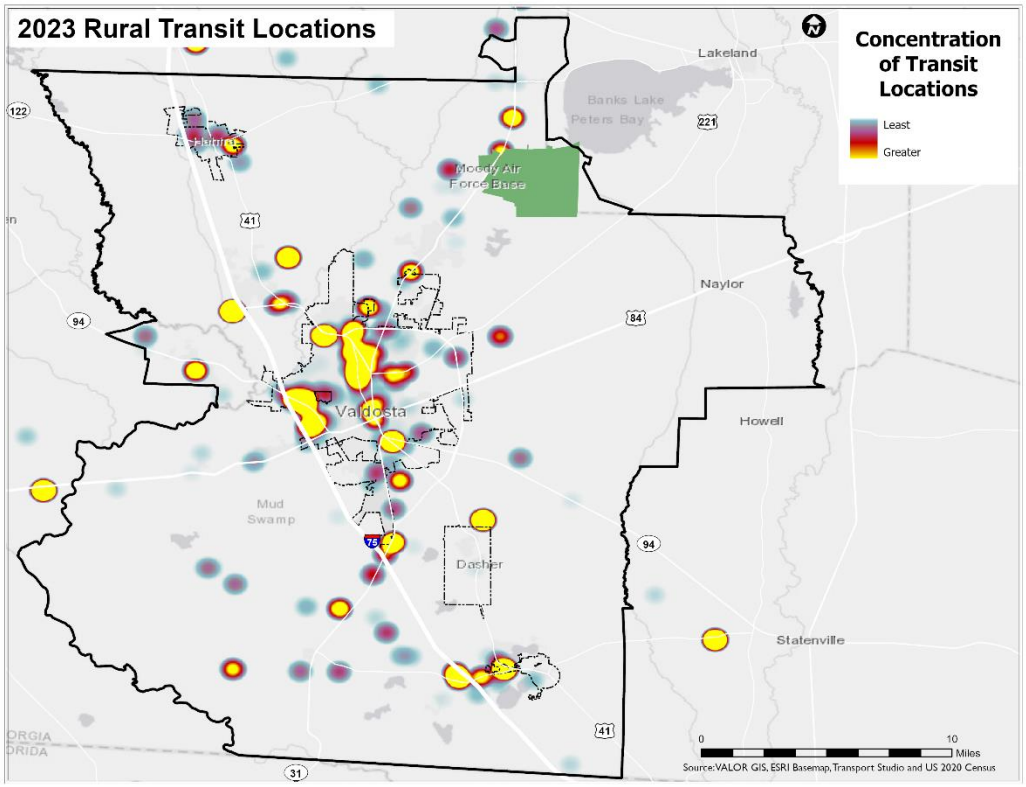


Figure 2 Rural Transit Service Origins and Destinations

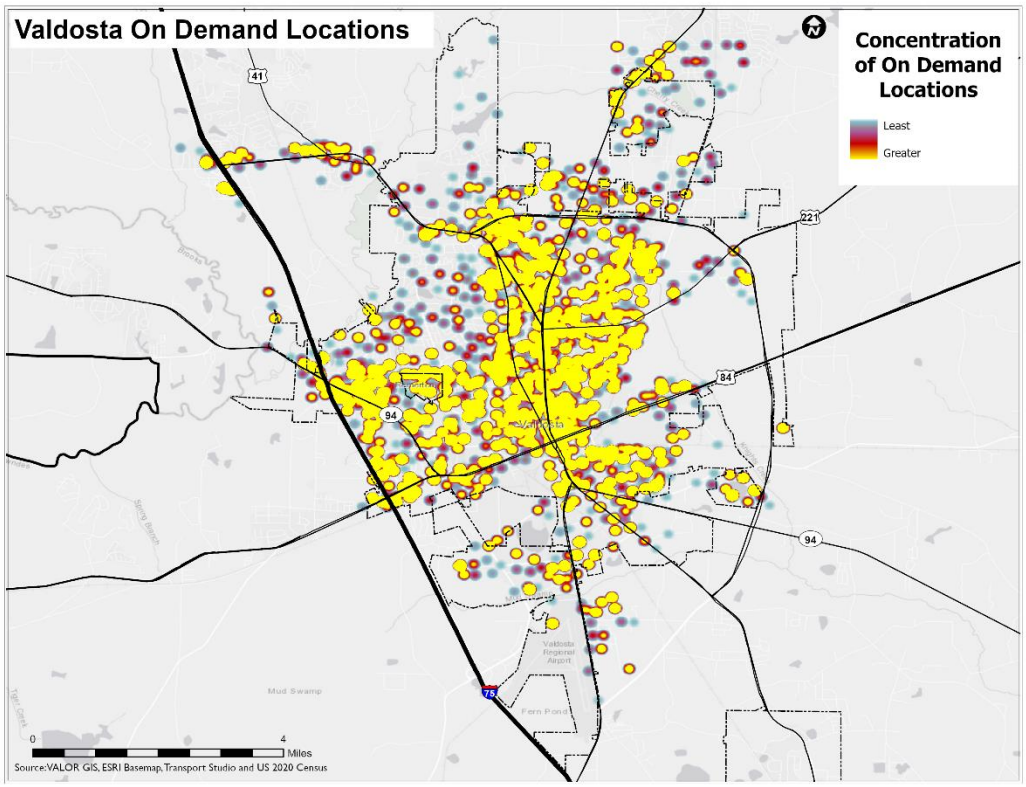


Figure 3 Urban On-Demand System Origins and Destinations

The study team mapped existing demographics, including characteristics of traditional transit users such as disability, vehicle ownership, low income, elderly and youth, and race. We also mapped population and household density as well as job locations to understand the density and intensity of activity centers with the potential to emerge as TOD in the future. The appendix contains a map series.

Community Goals

The stakeholder committee established for this study identified several goals for future transit-oriented development in the VLMPO region.

- Provide mobility for human service needs (for the elderly, disabled, and youth)
- Enhance job access/work transportation
- Promote economic development – via shopping trips, revitalization of historic downtowns/crossroads, job access, support for commercial activity in mixed-use centers, etc.
- Reduce congestion
- Manage parking demand

An additional regional goal is to promote rural and small urban TOD policies to facilitate securing federal funding to address mobility and access needs, and to administer those resources effectively. In the near term, TOD policies should support more efficient micro transit service through increased shared trips to hubs with multiple destinations. In the long term, TOD will promote the evolution of the current micro transit service into a more cost effective service through flex-routes or point deviation, with fixed time points at mobility hubs surrounded by thriving, walkable, areas. TOD provides the critical mass of activity needed for a viable transit system.

Benefits of TOD

TOD can support diverse community benefits including walkable communities; placemaking and marketability; attractive streetscapes with amenities such as lighting, landscaping, and furniture; reduced traffic congestion; reduced air pollution; economic development from sufficient density to support neighborhood services such as cafes and pharmacies; public health; equity; environmental justice; and job access.

Defining Transit-Oriented Development

Definitions of TOD vary slightly, but all references include basic components: a development approach characterized by higher density, mixed uses, a safe and attractive pedestrian environment, reduced surface parking, and direct and convenient access to the transit facility. For example, the American Planning Association defines TOD as dense mixed use development; pedestrian friendly design; compact neighborhood character; well-designed (and reduced) parking. (2) The strategic design and location of a TOD should support pedestrians and their use of public transportation. (1)

"Density, diversity, and design influence TOD in much the same way that they impact non-TOD land development. Higher densities, greater diversity of land uses, and better design are associated with more transit use and walking and fewer automobile trips per resident and per worker." TOD offers a range of daily activities within the development itself, accessible on foot or via transit, thereby reducing the demand for automobile travel. Suburban TOD can cut the demand for auto travel by half or more when compared to similar non TOD suburban development but this is dependent on transit level of service. (3)

Essential characteristics of TOD include:

- Centrally located transit with walking distances no more than 1/4 to 1/2 mile.
- Superior walkability with small blocks and pedestrian traffic management priority.
- Extended hours of highly-reliable transit service at 5- to 15-minute intervals.
- Land use mix to meet daily needs paired with good transit connectivity to other activities.
- Density sufficient to support cost-effective transit, retail services, and infrastructure.
- Managed parking with reduced supply relative to standard development. (3)

Density

Although the experience with TOD suggests that density alone will not be sufficient to develop a successful TOD, it can be an important catalyst for leading to such success. The literature indicates a range of target densities for TOD. Density should be sufficient to support a mix of retail and planned transit service. These housing densities must exceed existing levels in order to support neighborhood services and amenities with a viable market.

Walkability is central to TOD in order to reduce traffic congestion and time spent in their cars. Walkability requires a compact development pattern to ensure that destinations are within walking distance. In residential areas, this translates to density and design for the human scale.

TOD areas will need to accommodate 9-12 DUA *gross* density to achieve a minimum market for walkable mixed use developments. Successful activity centers rely on a walkshed of 18 DUA minimum to support commercial uses such as food retailers, pharmacies, and cafes. Guidance to promote walkable neighborhoods suggests that 22 DUA is the minimum net density for truly walkable

neighborhoods. Of course, optimum residential density depends upon context, and there is a range of options available to the various TOD areas, from small urban to suburban to rural.

Several key recommendations for density are highlighted below from guidance documents:

Eight dwelling units per acre (8 DUA) supports minimal bus service (4) and promotes smart growth with a 5,000 sf maximum lot size (1).

Guidance suggests 22 DUA as a minimum density to promote walkability (5) and 20 DUA to support a transit station (4).

In their model land development regulations for smart growth, the American Planning Association recommends densities ranging from 8 – 15 DUA (2,904 to 5,445 square feet per unit maximum lot size) to promote the walkability goals of this study. They suggest a maximum lot size of 5,000 square feet. (1) APA's model ordinances for mixed use developments suggest that the minimum lot area per dwelling unit shall be 1,000 square feet for mixed use buildings and 1,500 square feet for all other buildings (equivalent to 43 DUA and 29 DUA, respectively). (1)

Traditional neighborhoods should have a minimum single family density of 5- 8 DUA *or more,* and multifamily 15-40 DUA for model mixed use developments. (6)

A small supermarket requires a minimum of 18 units per acre (or 2,420 square feet maximum lot size per unit). A density of 7 DUA or higher is needed to support a small corner store (eq. 6,222 square feet per unit lot size maximum). (7)

Residents in areas with *net* densities of 21.7 units per acre or more are more likely to walk to destinations in their neighborhood. (5)

Higher densities, hand in hand with more diverse housing types, ensure that more residents live close to future transit centers (whether super stops, mobility hubs, or flex route time points as the system evolves) requiring shorter – walking distance - trips home, and supporting commercial activity at the hubs.

Diversity of Uses

TODs include a wide range of land uses and development character with different mixes of office, retail, residential, and public space. TOD that enables people to meet their daily needs within a walkable area may result in fewer automobile trips and lower automobile ownership rates than less diverse TOD. (3) Suburban mixed-use centers and traditional neighborhood development are types of TOD that are applicable to the VLMPO region's small urban and suburban character.

Mixed use development also provides an opportunity for reduced and shared parking, where, for example, residents who park mostly at night can share spaces with daytime intensive uses like offices and retail.

Walkability and Network Connectivity

Road network connectivity is a basic component both to promote safe and comfortable pedestrian paths, but also to establish appropriate block sizes as a framework for walkable activity centers. Connectivity also benefits walkability by providing alternate routes with lower traffic volumes and speeds. Pedestrian traffic management priority should also be provided via cross-walks, signal timing and phases, shortened crossing distances at intersections, and other best management practices (BMPs) discussed in more detail below.

With a well-connected street network, blocks are shorter and people are encouraged to walk. Compact block sizes result in:

- shorter distances between pedestrian crossings at intersections;
- more direct, and alternate, routes for transit, pedestrians, and personal vehicles;
- efficient incident management and response; and
- a dense street network that disperses traffic so that each street carries lower vehicular volumes and is more comfortable for people on foot. (8)

A well-connected street network promotes overall mobility for all road users by increasing the capacity of the network, as shown on the right. Everyone benefits from alternate routes, more direct routes, and more dispersed traffic. An efficient, connected road network, improves mobility as TOD areas grow and/or redevelop.

In rural areas, the road network should create multiple connections between major destinations like schools, commercial crossroads, employers, and historic downtowns – and not only rely on arterials for those trips. Suburban areas should enforce smaller block sizes, but also retrofit direct connections between established residential areas and emerging activity centers. And small urban areas should expand their street networks, add sidewalks where there are gaps, and infill walkable destinations as much as possible.

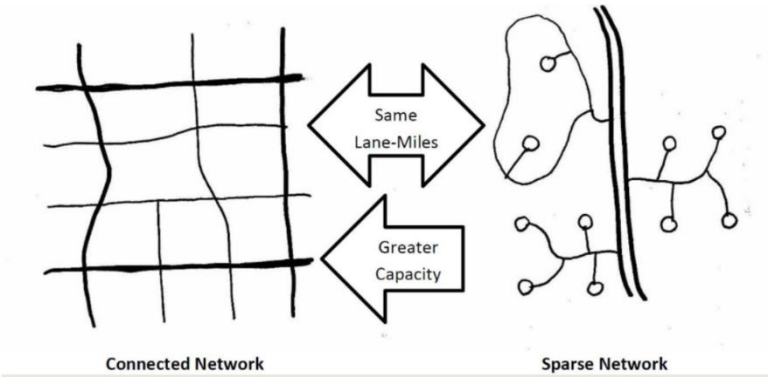


Figure 4 Road network connectivity determines network capacity; adapted from Iowa DOT

Site Design and Parking

Transit-oriented development provides safe multimodal mobility and access; this includes sensible parking requirements so that destinations are closer to the street and are therefore more walkable and bikeable. Reduced and priced parking are also key features to encourage walking and transit.

Access Management

Access management promotes safe and efficient travel for people in cars, on foot, on bike, and on transit. TOD areas should include access management on major thoroughfares, including transit routes.

Emerging Placemaking/Activity Centers

Successful TOD creates a sense of place connected to transportation choices. For areas like southern Georgia, emerging small urban and suburban TOD includes mobility hubs with available micromobility like bikeshare, scooters, bike parking, lockers, and additional services like EV charging. Co-locating these mobility options can support transition to TOD. Gathering places including plazas, parks, cafes, retail, and even human services providers should be included in activity centers where passengers can help support commercial activity and services benefit from increased access.




TOD in Small Urban, Suburban, and Rural Contexts

TOD in Southern Georgia will not reflect the highest densities, mixed-use intensity, or premium transit service. However, smart growth strategies discussed above are still relevant in small urban, suburban, and rural areas that are seeking to improve access and mobility while emphasizing neighborhood centers with walkable, safe, and attractive design.

Small Urban TOD features mixed-use clusters with diverse street level uses, medium to high density residential (multi-family and missing middle housing with multiple stories) and commercial as well as an intentional pedestrian realm with well-connected sidewalks and wayfinding. Mixed-use buildings, with commercial storefronts on the ground level and upper story residential fits within the small urban context. Wayfinding within one or two miles of TOD areas directs users from major roads to mobility hubs and transit stops. Public space is featured within walking distance of mobility hubs and transit stops.

Suburban TOD features mixed-use clusters in station/stop areas of medium density residential, mostly low rise multifamily or missing middle housing, a complete sidewalk system, and wayfinding. Public space is featured within walking distance of mobility hubs and transit stops.

Rural TOD features limited mixed-use clusters on the primary paths to transit stops or mobility hubs, low density residential,

mostly single story missing middle or single family in small lots. The pedestrian realm features sidewalks, trails, and shared use paths on the roadside or off-road. Wayfinding three to five miles from transit stops or mobility hubs and mixed-use areas is still key. Open spaces are more community-oriented or regional but are still within walking disctance of mobilty hubs and transit stops.

Community Concerns

Addressing both community and elected and appointed officials' concerns in the TOD planning process is also critical. In some neighborhoods, proposed TOD projects may differ substantially from the existing density and character. The VLMPO region is largely car dependent, with increasing road congestion, rail delays, truck bottlenecks, and safety driving the need for smart growth strategies. In established downtowns and suburban activity centers, commercial buildings and some higher density residential development may already exist. In such communities, converting a parking lot or other underutilized parcels into a multistory mixed use project would be less controversial than in a suburb with primarily single-family detached homes. It is important to support the bedroom communities that are evolving as Valdosta grows and the market conditions in unincorporated Lowndes and smaller cities are ripe to attract town centers that can benefit from TOD principles.

Displacement and gentrification may be an area of community concern in underserved areas, particularly in Valdosta. In areas with strong redevelopment potential and socially and economically diverse populations, TOD planning must ensure all residents benefit from new investment. Tools such as density bonuses tied to affordable housing requirements, community benefits agreements, and incentives to attract employment-generating uses can be particularly valuable.

In the VLMPO region, where there is no current fixed route transit, TOD is part of a long term vision. The livable, mixed use activity centers established in the Comprehensive Plan are a step toward TOD. Planning for mobility hubs or super stops that may evolve into full-fledged TOD relies on policies and regulations to ensure thriving activity centers over a 10- to 20-year period. Educating the public and officials about the long term benefits of TOD strategies (whether or not there is a future investment in fixed route transit) is key to promoting smart growth in the region. Residents benefit from TOD through include less time spent in traffic, increased productivity, lower transportation costs, improved safety, greater workforce access, improved quality of life, and increased marketability of the region's activity centers.

TOD Guide

The sections below provide guidance on how to incrementally transition to TOD in small urban, suburban, and rural areas. While TOD is typically associated with more urban areas and higher levels of transit service, the smart growth best practices recommended here will promote community goals whether or not a significant investment in transit is made in the near future.

Development Character

Density

To promote transit supportive densities, zoning needs to increase both allowable densities and housing types. In general, standards should not rely on variable lot sizes by type of dwelling unit, but state a lot size standard that will maintain community character while allowing increased density through townhomes, duplexes, triplexes and fourplexes, as well as accessory dwelling units (ADUs) on lot sizes that fit within established areas. Today, Valdosta is the only jurisdiction that permits ADUs by right in residential districts. Triplexes and fourplexes are permitted in multifamily districts by right, but not in single family districts. This missing middle housing can be permitted by right within blocks, at the end of blocks, or between residential and commercial areas to achieve a gentle density that is more walkable but also preserves the look and feel of single family neighborhoods, as shown in the figure to the right.

Figure 5 TOD-compatible residential development includes ADUs (top photo) and a mix of single family and missing middle housing (bottom photo)

The established minimum lot size of 6,000 square feet prevails in the region. This is a suburban approach which promotes sprawl and auto-oriented development. While this is appropriate in outlying areas, it will not facilitate the stated goals of the comprehensive plan and other studies. Best practice for smart growth is to set a maximum lot size to ensure appropriate densities are established.

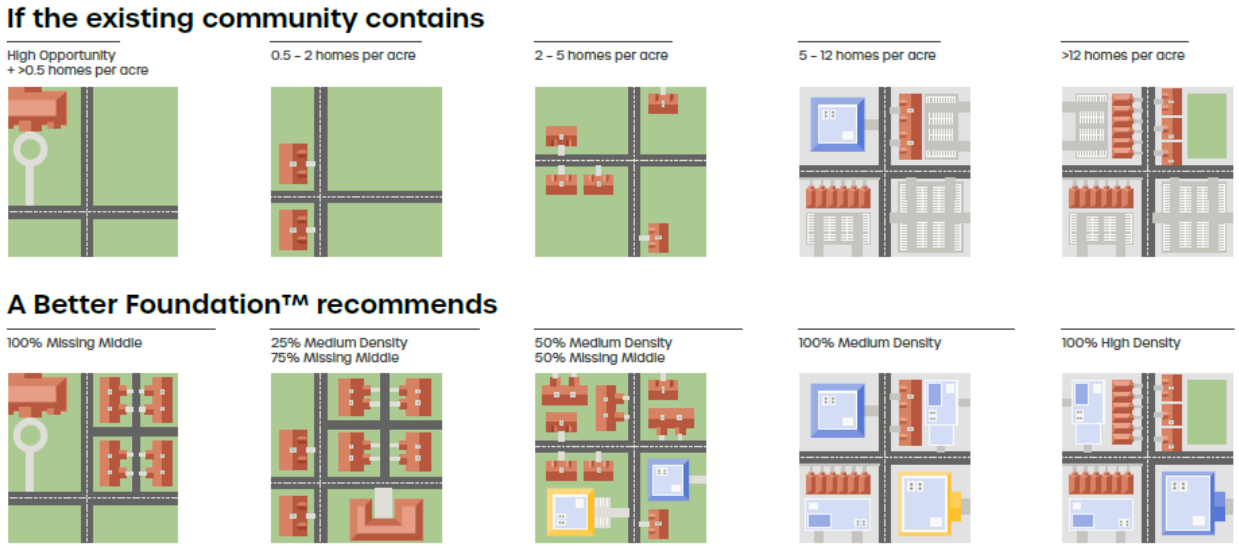


Figure 6 Density should be incrementally stepped up based on existing context

In Lowndes County, 10,000 sq feet is the smallest lot size permitted by right in its R-10 district. Increasing allowable densities to 8 DUA at a bare minimum (in R-10 districts and in potential TOD areas) in the county will support a broader array of small businesses and transit-oriented development patterns. This corresponds to a maximum lot size of 5,445 sq feet. Valdosta permits densities up to

18 DUA in multifamily zones with the highest density single family zone at 6,000 sf lot size (7.2 DUA). Lake Park multifamily allows 14 DUA in the R-C district. Each of these permitted densities should be increased to the next increment to achieve best practice noted above in Figure 6. Figure 7 shows residential zoning and densities in the study area.

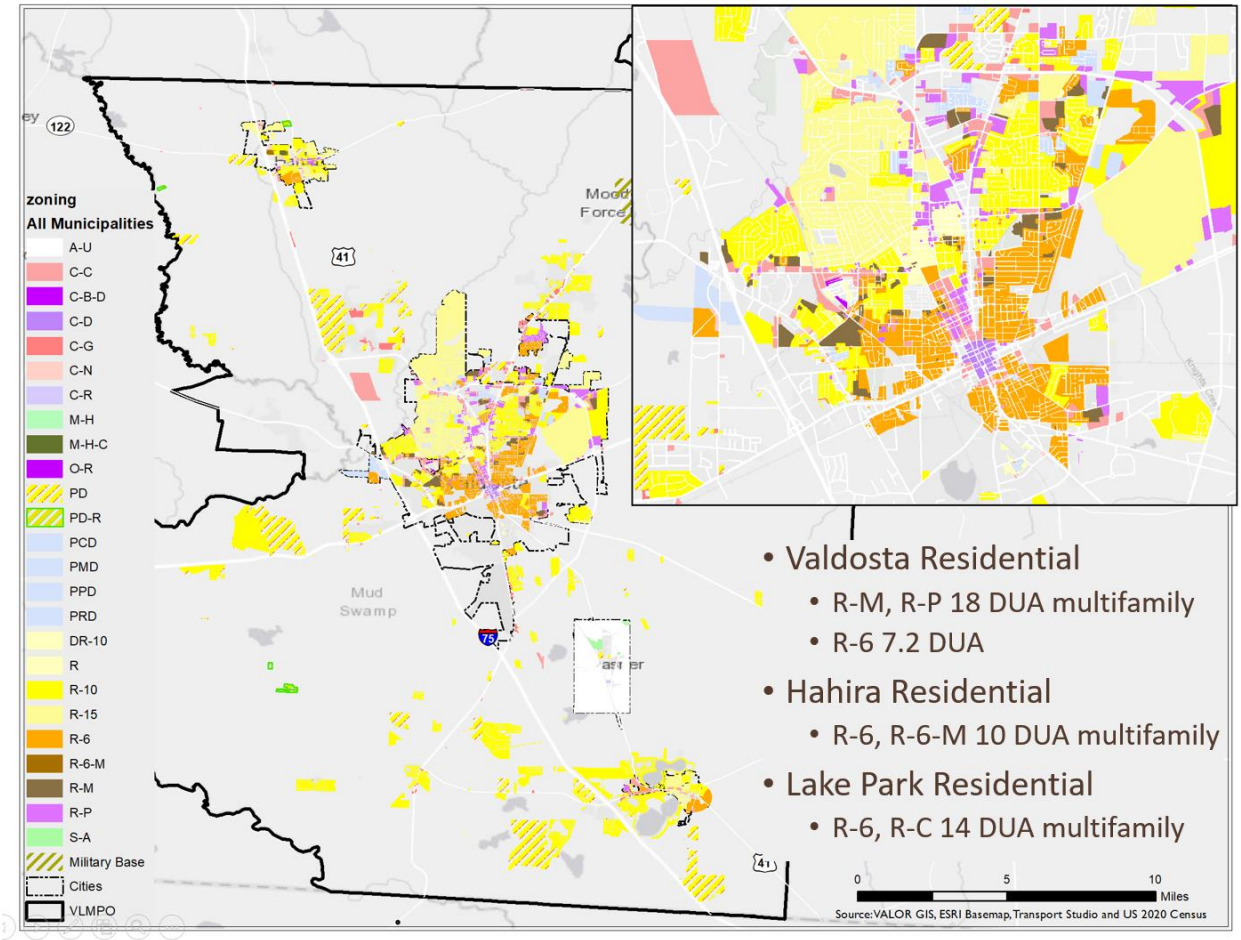


Figure 7 Existing residential zoning in the study area

Overall, best practice supports the following standards:

5,445 sq feet maximum lot size suburban centers/traditional neighborhood development (8 DUA target)

2,420 sq feet maximum lot size neighborhood activity centers (18 DUA target), applicable to Neighborhood Activity Centers where missing middle housing, as shown in Figure 8, is appropriate.

1,980 sq feet maximum lot size per unit mixed-use activity centers (22 DUA target), applicable to Community Activity Centers and Regional Activity Centers, where a mix of multifamily and missing middle housing is appropriate.

Accessory dwelling units allowed by right in residential districts, with no additional parking space requirement. This is a smart growth best practice recognized across the literature. (9)

Focusing growth in mixed use activity centers and neighborhoods promotes TOD while maintaining the rural and small town character surrounding the activity centers.

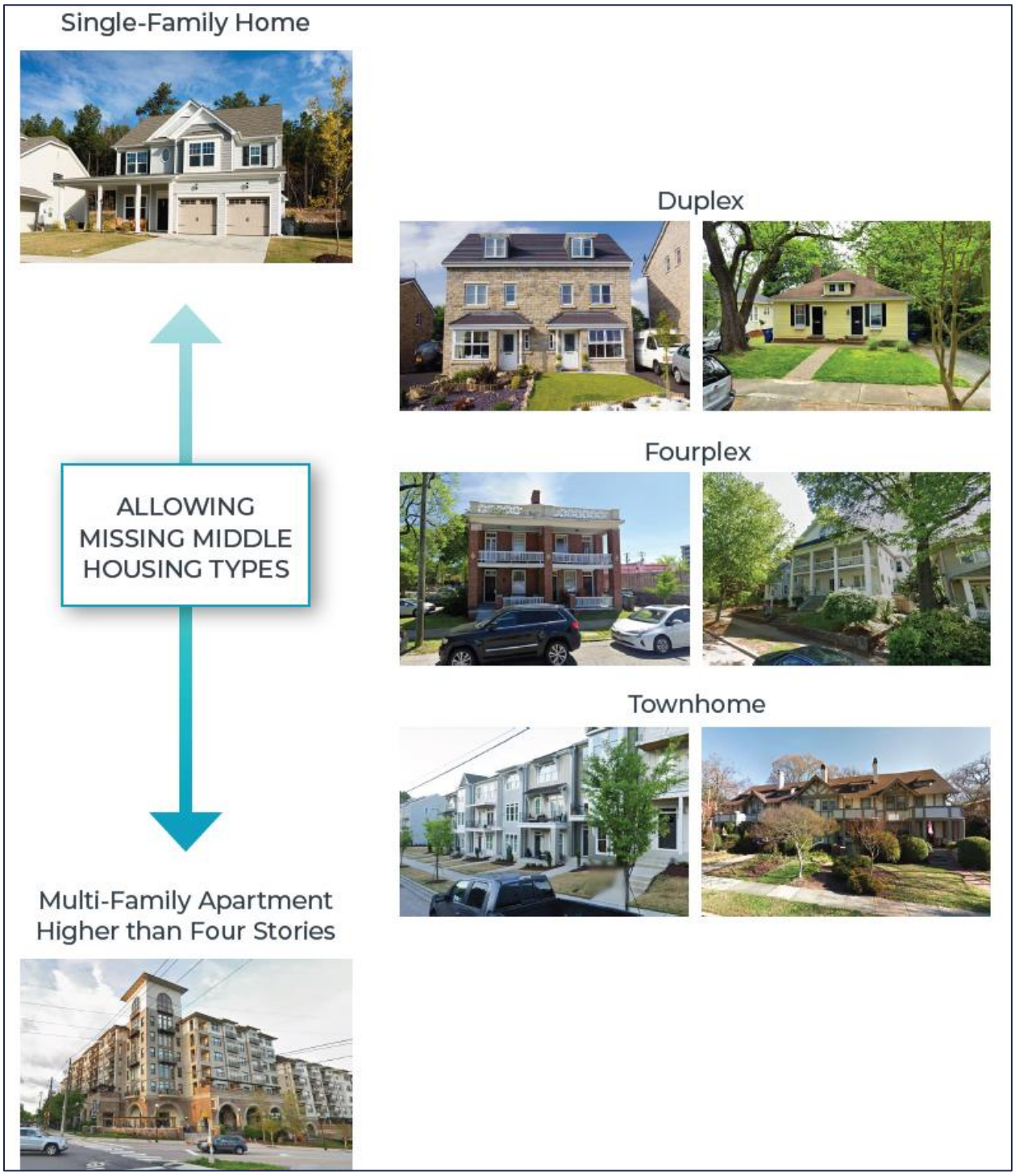


Figure 8 Missing Middle Housing for TOD (10)

Vehicle Ownership and Income

Transit service provides basic mobility to low income residents and those without a vehicle or who are unable to drive. When identifying potential TOD areas, the team assessed vehicle ownership rates and income. At its most impactful, TOD supports reduced vehicle ownership overall.

As density is encouraged to promote the success of TOD, a diversity of housing types should also be permitted to accommodate residents of different income levels. Inclusion of below-market-rate housing can support higher levels of transit ridership as lower income residents may choose transit over the cost of vehicle ownership.

Mix of Uses

Residential and commercial uses should be mixed at the building, parcel, and block level, depending on context. At a minimum, zoning codes should allow neighborhood scale commercial in the majority of residential districts. The scale of these uses could be limited to a relatively small portion of the development in suburban and rural areas, but even these areas benefit from services that are accessible nearby where the market can support them.

The Joint Comprehensive Plan recognizes that even in Suburban Character Areas, mixed-use is appropriate to achieve regional goals:

> *Moderate density should be promoted in these areas with a greater focus on Traditional Neighborhood Development (TND) style residential subdivisions; where possible, existing development should be retrofitted to better conform to traditional neighborhood development principles. These principles include creating neighborhood focal points by locating schools, community centers, or well-designed small commercial activity centers at suitable locations within walking distance of residences. New development should be master-planned with mixed-uses; blending residential development with schools, parks, recreation, retail businesses and services.*

Zoning in the region allows mixed-use in Planned Development districts. Residential-Professional (RP) districts in Valdosta, Hahira, and Lake Park permits ground floor commercial and upper story residential, for a vertically mixed-use. Loft dwelling units are permitted in most commercial (C-) districts in Valdosta. Expanding the number of zones that permit mixed-use (both vertically integrated and horizontal) will support TOD. Allowing commercial uses by-right allows the market to drive business investment and economic development. Codes should expand the allowed combination of residential and commercial use within a single building, or on a single parcel, beyond the R-P districts in Valdosta and Hahira. Lowndes County, in particular, has an opportunity to plan for suburban crossroads that allow for mixed-use and support stated goals within the county Comprehensive Plan for activity centers.

Appropriate neighborhood commercial uses include:

- post office
- child care
- educational
- studio/multimedia production
- convenience store
- fresh food retail
- pharmacy

- laundromat

Standards should also permit compatible multifamily uses in all commercial and business districts. These uses include:

- Three-family / Four-family
- Townhouses
- Apartments

TOD provides an alternative to low-density sprawl (above), creating compact communities of character with a mix of commercial and residential uses (below). Compared to typical sprawl development, TOD provides greater opportunities for biking and walking and can reduce dependence on auto trips.

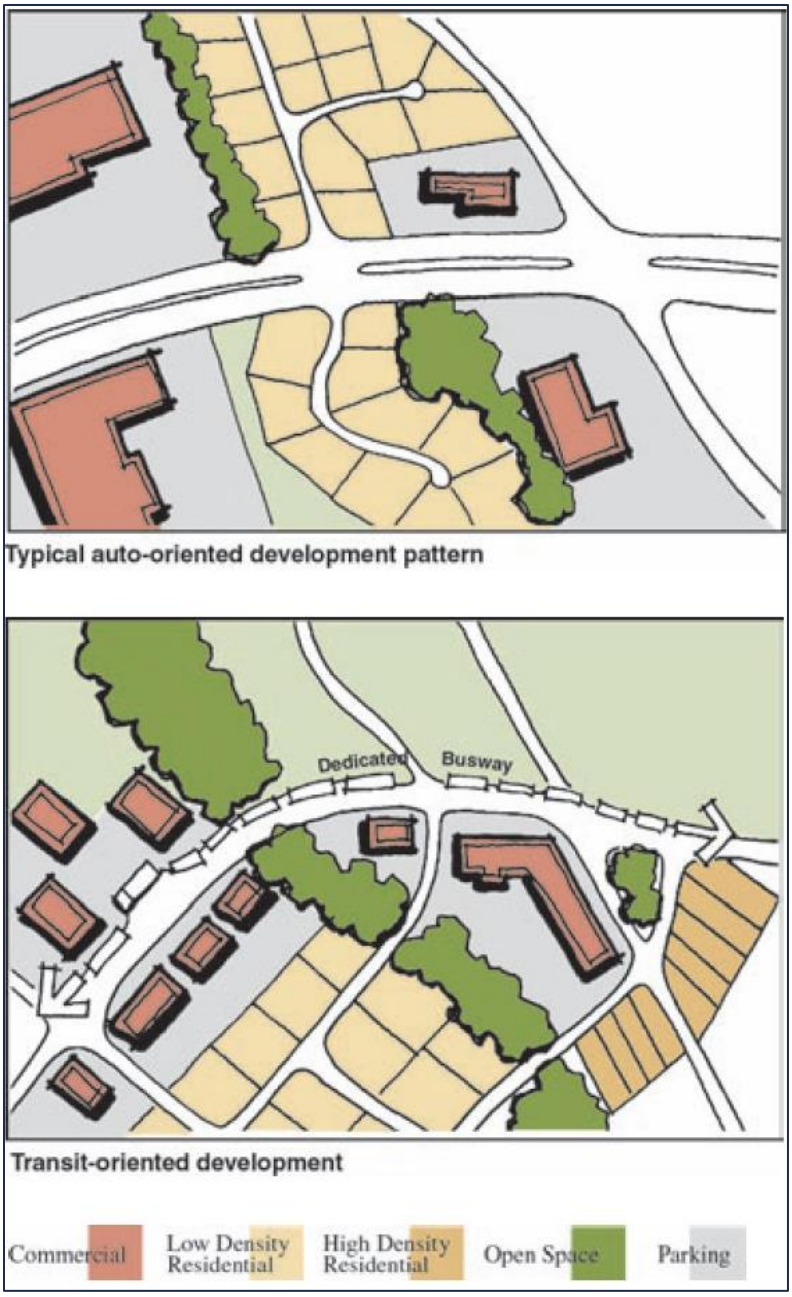


Figure 9 Transit-Oriented Development pattern with commercial uses facing the street, well-connected roads, and shared public space (Source: APPS, Inc.)

Design

Walkability does not solely rely on infrastructure. Pedestrians should be safe and comfortable while traveling, but also have a chance to sit, linger, and recreate in TOD areas. Streetscape designs should promote active use of the roadway as a public space.

Intersections and crosswalks should feature small curb radii, bulb outs, pedestrian refuge islands, raised crosswalks, and decorative crossings as appropriate, to increase the visibility of pedestrians, reduce crossing distance, and improve accessibility for all users. Figure 10 shows two examples of bulb outs, one at an intersection, and one mid-block to accommodate street trees and bike racks.

Figure 10 Features like bulb outs can be raised or painted on the road surface

Street trees and planting strips should be incorporated into TOD areas in all roadway types. Planting strips should be designed to promote stormwater management via native plants and drainage materials. Planting strips and street trees should be located between sidewalks and on-street parking to buffer pedestrians and calm traffic.

Street lighting and furniture should be pedestrian-scaled. Lighting should illuminate sidewalks and public spaces, including crosswalks. Furniture should include seating, trash and recycling receptacles, street light banners, informational and wayfinding kiosks, transit and micromobility information (where applicable), crosswalk signals and signage, charging stations, and bicycle parking. Outdoor dining should be encouraged in urban and suburban areas.

Gateways and wayfinding should highlight key transitions into TOD areas and include consistent signage and branding, coordinated with transit service providers.

Gathering places like public plazas, parklets, outdoor dining should be featured at mobility hubs. Seating, decorative paving, wayfinding, furniture, and landscaping should be included. See Figure 12 for a local example.

Screening and buffers should mask waste receptacles, loading docks, parking, and mechanical equipment from the pedestrian zone.

Figure 11 Lighting, furniture, planting, and banners downtown help create a pedestrian scale

Figure 12 The Train Depot Plaza is a gathering place for events like to Hahira Honey Bee Festival
Source: WALB

Infrastructure

Roadway Connectivity

To promote safe and efficient mobility across modes within TOD areas, the overall block size and connectivity should be maintained and improved as areas (re)develop. Transportation Research Board (TRB) recommends maximum block length of 660 ft to promote mobility. (11) At most, blocks should be spaced at 500-600 feet. This spacing follows minimum guidance for block lengths in less dense areas to provide for walkability as well as efficient access for drivers. (12) Maximum block lengths of 300 to 500 ft are promoted as best practice for walkable neighborhood commercial. (13) (8) (14) (15) In more urban areas, local roads should be spaced at 300 feet to promote walkable access per Institute of Transportation Engineers (ITE), TRB, and American Planning Association (APA) best practices. (8) Other metrics such as connectivity indices may also be included to provide clarification of this requirement.

The recently completed Hahira Area Traffic Studies developed a master plan concept showing how connectivity can be established in newly developing areas. As shown in Figure 13, the master plan extends the established street network downtown into developing areas. This is a model for any TOD areas that are redeveloping or adding infill in the future.

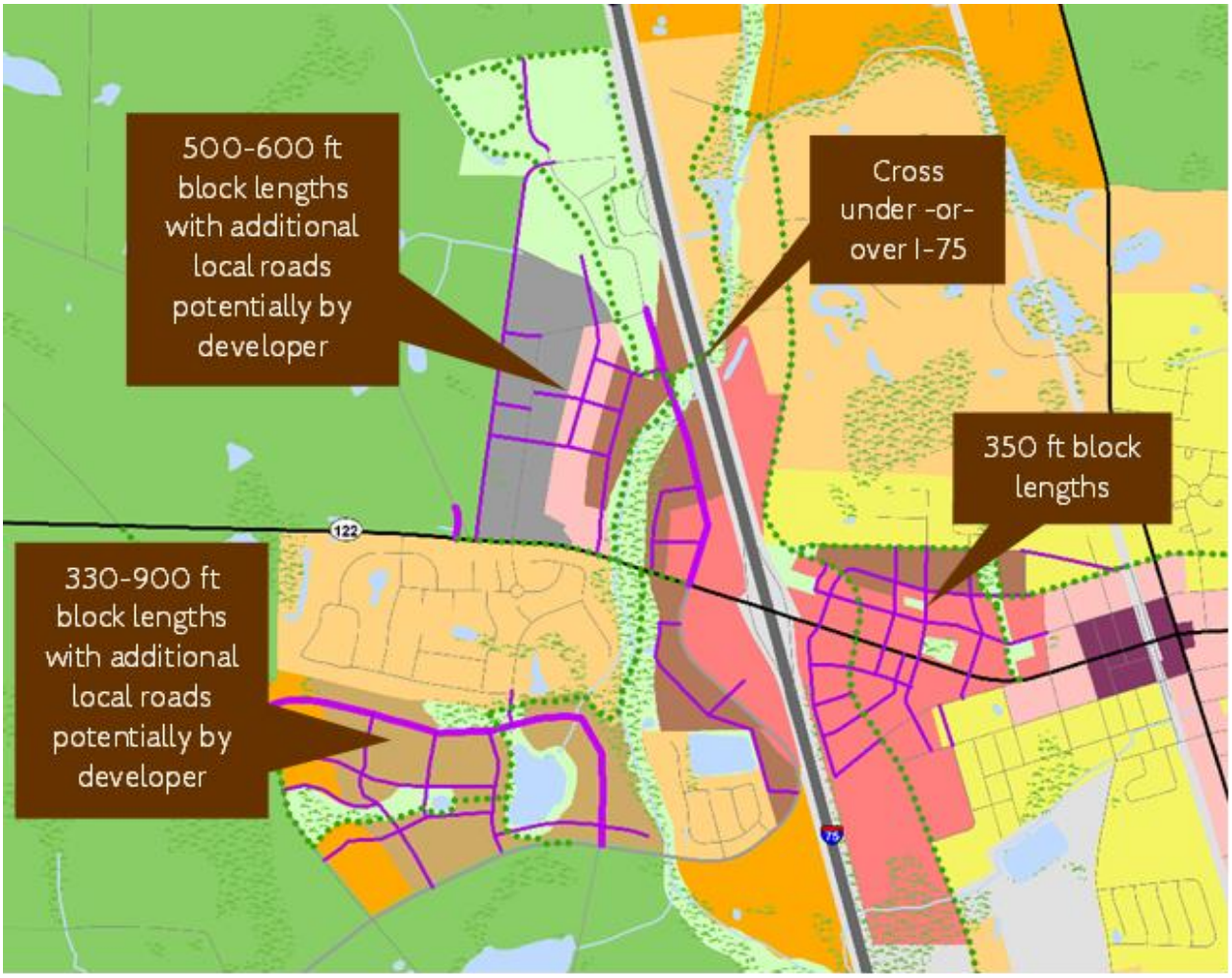


Figure 13 Hahira Area Traffic Studies Master Plan Concept for North Lowndes Park Area

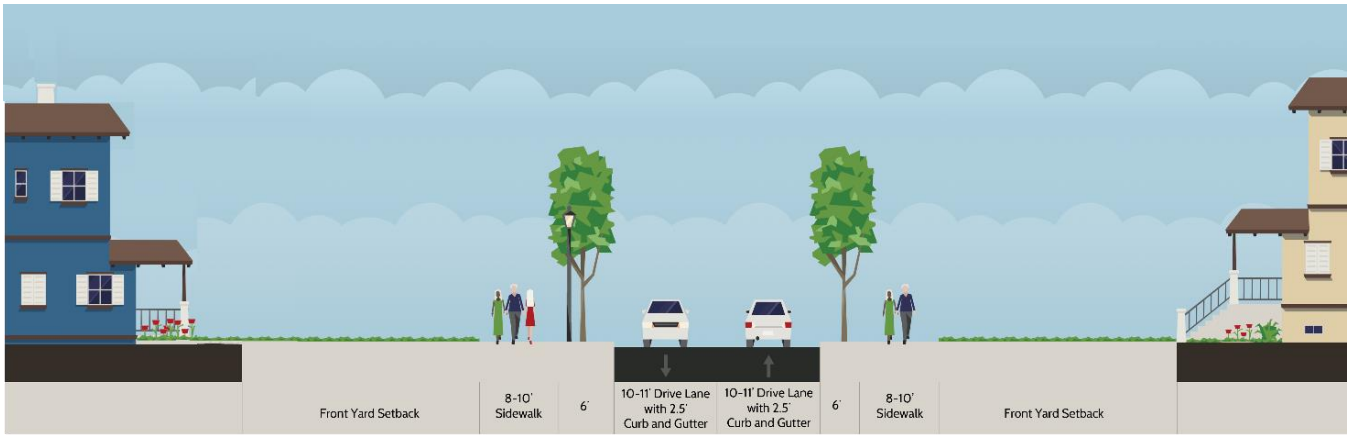
Complete Streets

TOD should accommodate all modes, including walking, cycling, micromobility, private automobiles, and transit. Transit supportive street standards include narrow street widths and intersections, short curb radii to reduce crossing distance and calm traffic, wide sidewalks, bike lanes, multi-use paths, and bus pullouts where fixed route service may be planned in the future. Amenities including lighting, street trees, benches, and wayfinding should be provided to create a comfortable walking environment. Intersections should include ADA curb ramps, tactile pads, high visibly crosswalks, and accessible pedestrian signals.

Development codes, standards, and guidelines should not only require sidewalks, but also specify minimum widths and ADA compliant walkable connections to adjacent commercial parcels and building entrances, The Hahira Area Traffic Studies developed typical sections for local and collector roads in traditional neighborhood developments and mixed-use activity centers.

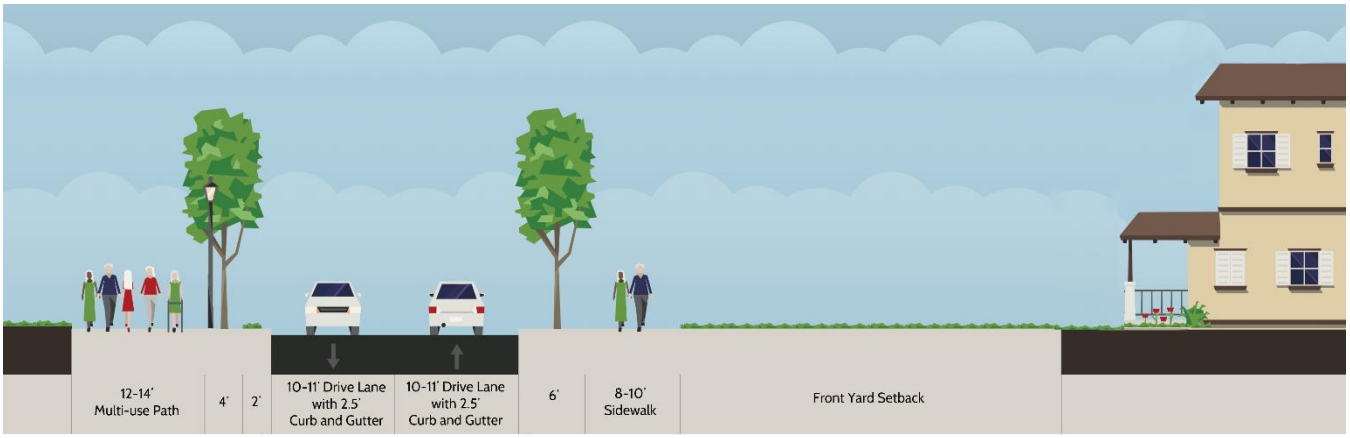
These standards should be adapted to individual TOD areas with sufficient public and stakeholder review. However, they are a model for a complete streets policy in TOD areas.

Complete streets are inherently essential to walkability. Lack of funding for sidewalks, especially as a retrofit to existing roads, is a documented barrier to suburban transit use. (16) Jurisdictions could offset the cost of pedestrian infrastructure by establishing a fund for developer payment in lieu fees. But prioritizing a complete sidewalk network in TOD areas through public investment should also be incorporated into the Metropolitan Transportation Planning process.



Note: Street trees and lamps to alternate along the one side of the roadway.

Figure 14 Typical Section for Local Street in Traditional Neighborhood



Note: Street trees and lamps to alternate along one side of the roadway.

Figure 15 Typical Section for Collector Road in Traditional Neighborhood with Multiuse Path

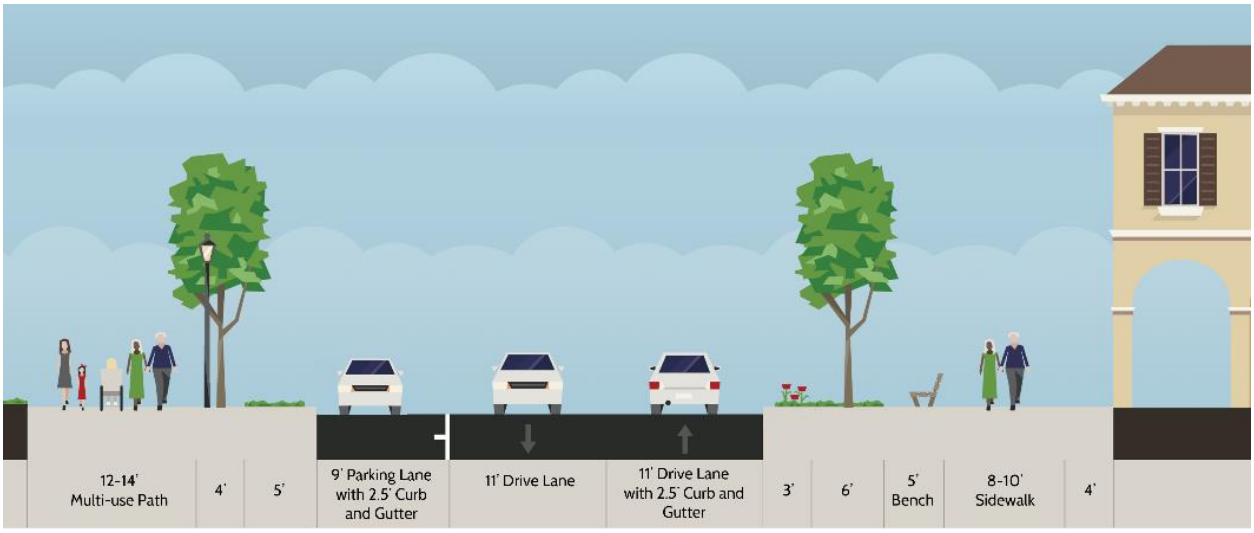


Figure 16 Typical Section for Collector Road in Activity Center with Multiuse Path

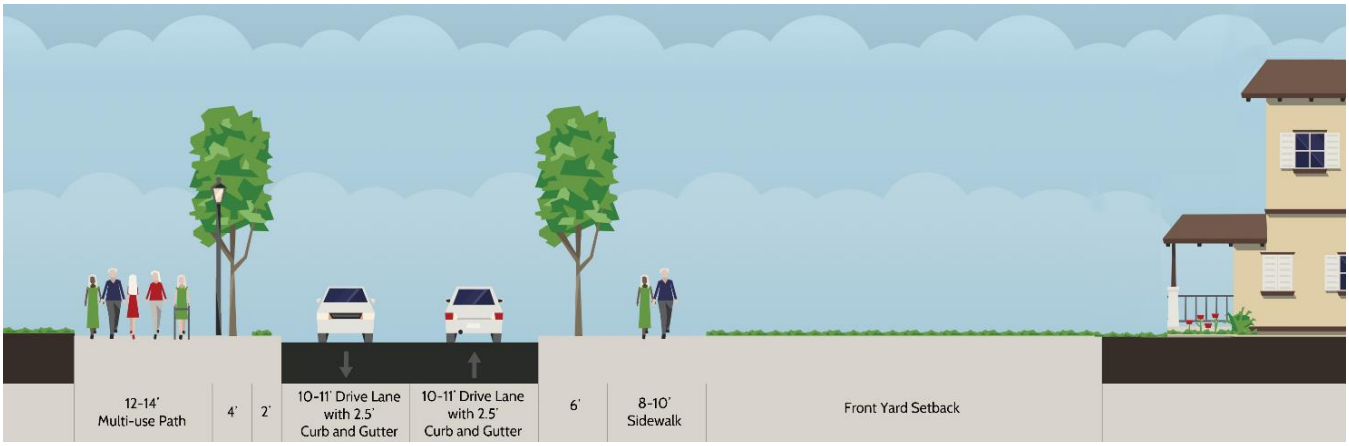


Figure 17 Typical Section for Collector Road in Residential Area with Multiuse Path

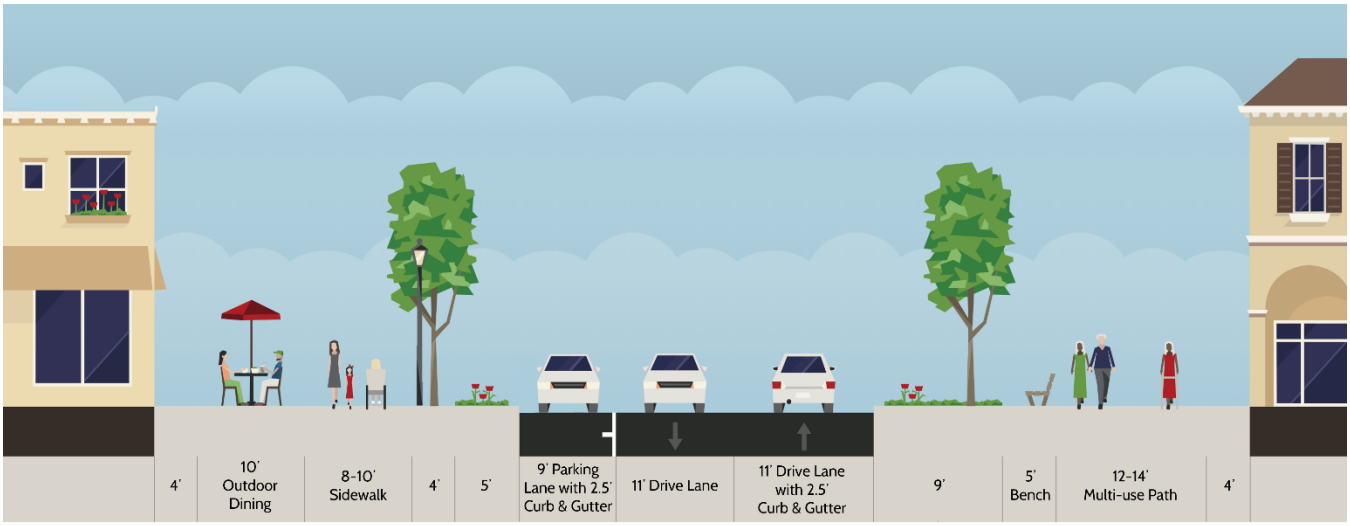


Figure 18 Typical Section for Local Street in Activity Center with Multiuse Path

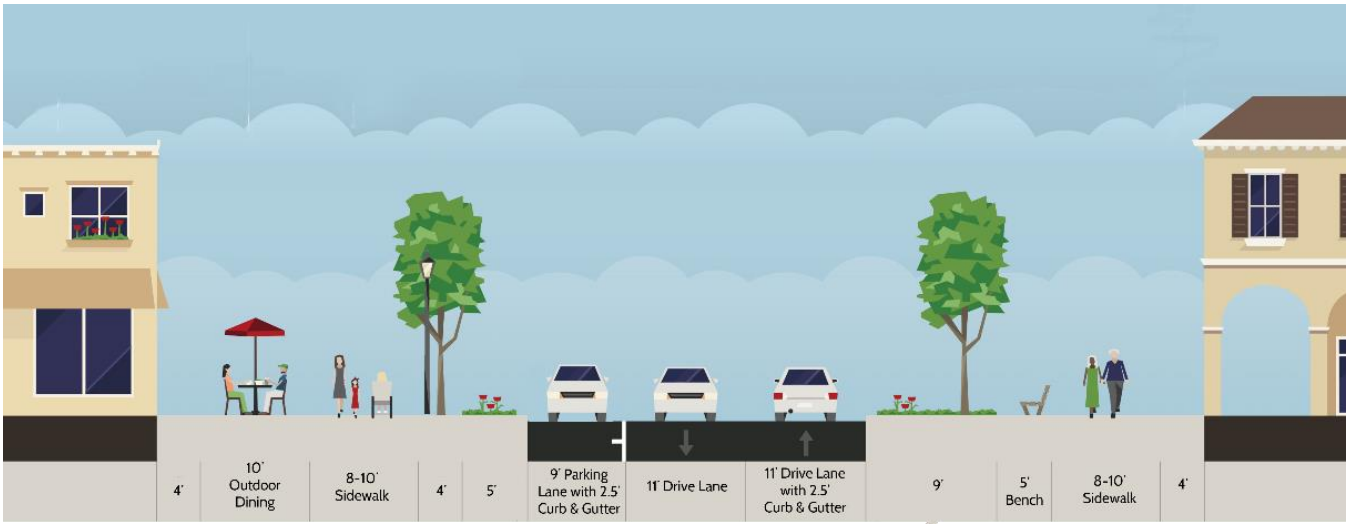


Figure 19 Typical Section for Local Street in Activity Center

Valdosta's Design Guidelines for Traditional Neighborhood Development (TND) are also an excellent model for complete streets in TOD areas, with the addition of on-street bike lanes in urban areas and consideration of multi-use paths in suburban and rural areas where warranted. The Neighborhood Street design guideline is shown below. Additional TND guidelines for Arterials, Collectors, and development layout are also relevant to TOD areas.

Regional transportation and TOD area plans should provide safe and accessible connections between sidewalks and multi-use paths, as well as on-street bike lanes with paths. Pedestrian connections to mobility hubs and commercial and public building entrances should also be prioritized, as discussed in the site design and parking section below.

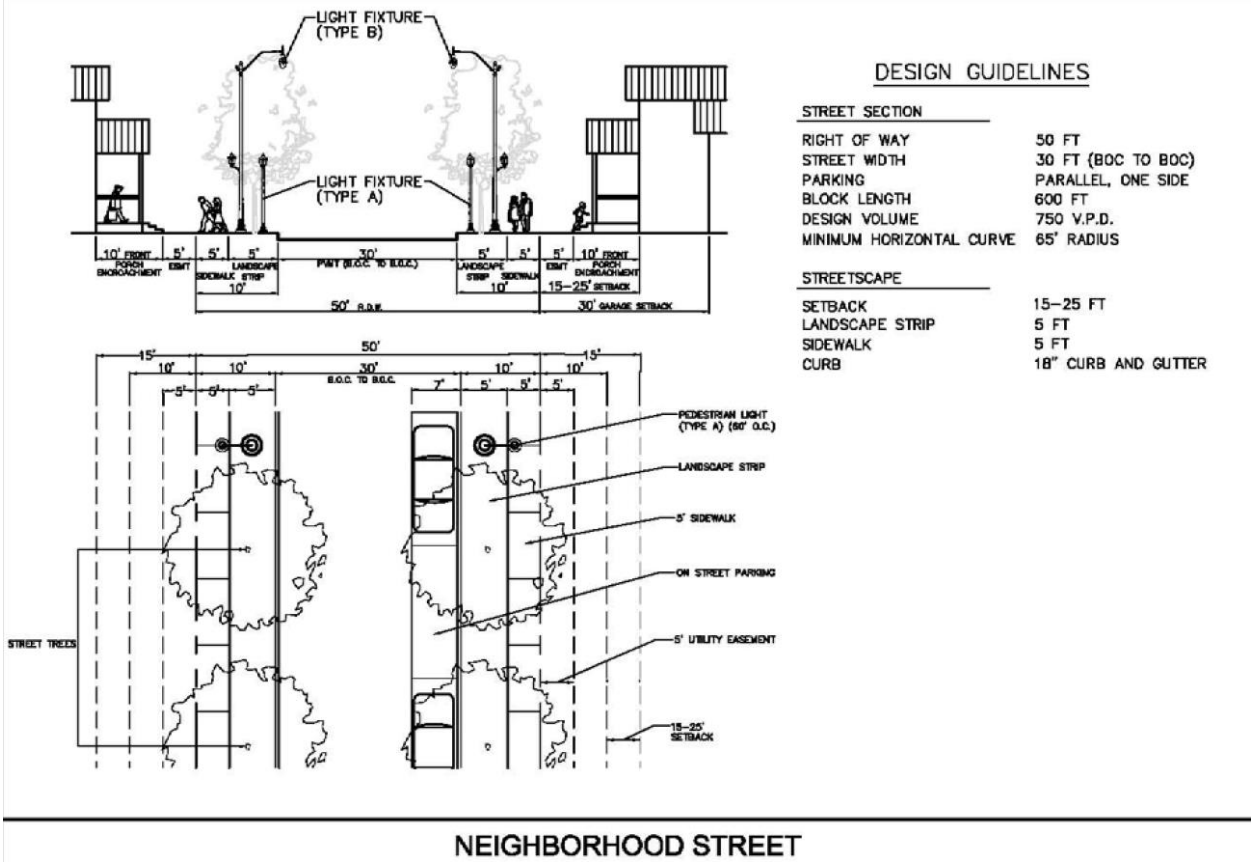


Figure 20 Design Guidelines for Traditional Neighborhood Development, City of Valdosta

Site Design and Parking

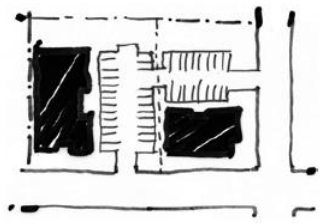
Overall, parking requirements should be reduced or eliminated in TOD areas. Residential uses should require 1 space per dwelling unit at most; this is a reduction from current requirements at 2 spaces per DU in Valdosta, Hahira, and Lowndes County. Additionally, the requirement for 1 space per bedroom for multi-family units with 1-or-more bedrooms should be reduced to 1 per unit. (This revision applies to Valdosta Chapter 222 – Off-street Parking Standards.) Parking requirements for Accessory Dwellings should be removed. (This revision applies to Valdosta Use Regulations Section 218-13.)

APA (1) recommends parking for model mixed-use and town center zones based on gross floor area. No off-street parking is required for nonresidential uses unless uses exceed 3,000 square feet (5,000 in town centers), in which case off-street parking must be provided for the floor area in excess of 3,000 (5,000) square feet. Exempting small businesses from off-street parking requirements promotes pedestrian-oriented character and use of storefront space.

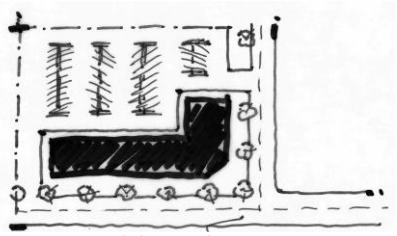
Beyond reduced parking requirements, parking maximums are encouraged, and parking costs should be charged to users. Shared parking opportunities should be maximized to take full advantage of the mix of uses. Structured parking, satellite parking, underground parking, and parking with street-facing office or retail uses are among other TOD strategies to avoid dead blocks and promote direct walking

access to buildings and transit stops. (3) Loading ones and parking aisles should not be located on street frontages.

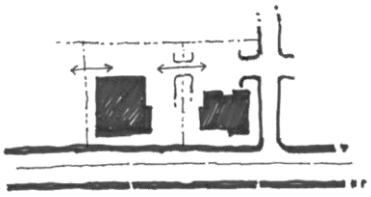
Site design for TOD should place building entrances near the street (with maximum setbacks for principal buildings); provide direct pedestrian access to building entrances; ensure connectivity between commercial parcels; set a minimum height of two storis for multifamily, mixed-use, commercial, and office buildings; allow a height bonus for development that meets TOD best practice; and place parking behind or on the side of buildings. On-street parking should also be provided. The figure below shows site layout strategies that reinforce walkability and, therefore, TOD.



Parking Placement



Building Placement



Interparcel Connection

Access Management

A range of access management techniques are available to promote safe and efficient travel. These strategies also promote walkability by reducing conflicts between pedestrians and drivers. Examples of access management include:

- Managing connection and intersection spacing to meet standards for safe operation
- Shared driveways
- Interparcel access
- Permitting right turns only (right-in, right-out access)
- Driveway design and throat length
- Raised medians

Adequately spaced access points result in separation between traffic maneuvers at each access point, thereby reducing conflicts as drivers, pedestrians, and other road users make decisions and move through the TOD area. Reducing conflicts promotes safe and efficient operations of all roads, but is essential to major arterials. Intersections and driveways should be spaced to allow drivers to slow down to stop or turn, and provide space for vehicles waiting to enter each access point. Inadequate access spacing also means that there is also limited curb protecting pedestrians and bus passengers from the heavy trucks and automobiles on a corridor.

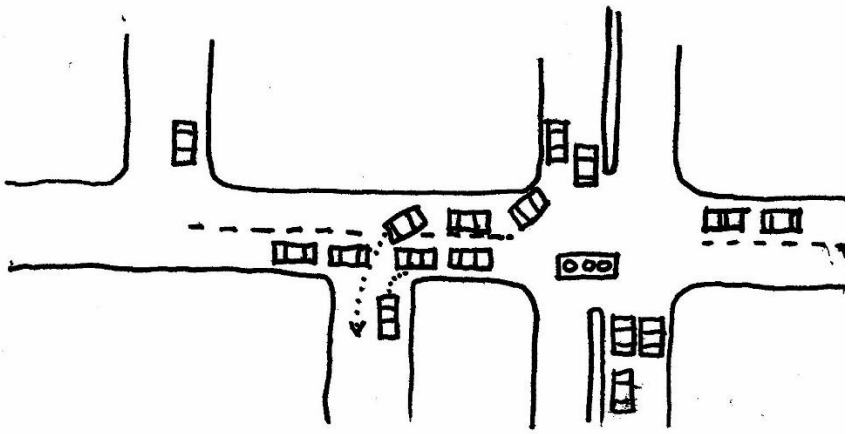


Figure 21 Prohibit driveways within intersection functional areas to reduce conflicts shown at the bottom of the diagram. Adapted from Iowa DOT (17)

The Georgia Department of Transportation (GDOT) issues guidance on access spacing (for driveways, public roads, and side streets) on state roads. GDOT states that "Spacing of driveways should be at least equal to the distance traveled, at the posted speed limit, during the normal perception and reaction time plus the distance traveled as the vehicle decelerates to a stop. Each driveway or intersection also requires storage space for vehicles waiting to enter. The distance between intersections should be great enough to provide this storage, allowing each intersection to have its functional boundary separated from those of the next intersection. Crash data also indicate that as the number of driveways along a roadway increases so do accident rates." GDOT's minimum driveway spacing for roads with a 45 mph posted speed is 230 feet without consideration of the distance needed to accommodate queuing distance for turning vehicles. This is therefore an absolute minimum. (18)

As documented in both GDOT and Transportation Research Board (TRB) federal standards in the *Access Management Manual*, driveway spacing should accommodate safe maneuvers including turning and stopping from travel lanes. Adequately spaced connections result in separation between functional areas at each connection, which is essential for safe and efficient operation of major arterials. (11)

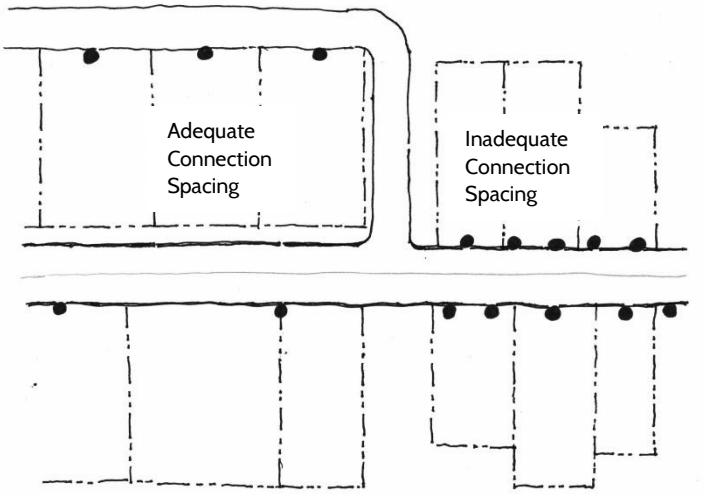


Figure 22 Adequate (with Service Road Placement Shown) and Inadequate Access Point Spacing. Adapted from Iowa DOT [9]

TRB recommends that strategic arterials restrict or deny direct property access, and permit right turns only to and from access connections. (11) (See Exhibit 13-2.) Arterials in the proposed TOD areas include SR 122 in Hahira, Gornto Rd, Baytree Rd, Melody Ln, SR 125/Bemiss Rd, N Ashely Street, E Park Ave, US 84/W Hill Ave, N Patterson St, and S Patterson St. Driveways accessing these roads

should be limited and access should be provided from the local roads. No access should be provided within the functional area of intersections. Table 1 shows access spacing standards from a range of national and state guidance, including GDOT.

Table 1 Access Spacing Recommendations

Source	Basis	Spacing
GDOT Table 3-1 [1]	Minimum Driveway Spacing with or without Right Turn Lane (RTL)	230 ft (45 mph posted speed)
GDOT Table 3-1 (Prior to 2016)	Minimum Driveway Spacing	369 ft (45 mph posted speed w/ RTL) 230 ft (45 mph posted speed w/o RTL)
GDOT Table 4-8	Minimum Right Turn Deceleration Lengths	200 ft (40 mph travel speed) 275 ft (45 mph travel speed) 325 ft (50 mph travel speed) 350 ft (55 mph travel speed)
TRB Exhibit 14-11	Ideal Downstream Functional Distance Based on Acceleration	740 ft (45 mph speed) 950 ft (50 mph speed) 1,200 ft (55 mph speed)
TRB Exhibit 14-12	Decision Sight Distance to Stop	800 ft (45 mph travel speed) 910 ft (50 mph) 1,030 ft (55 mph)
TRB Exhibit 15-13	Unsignalized Access Spacing Based on Adjacent and Independent Connections	1,045 ft (45 mph posted speed) Exclusive of queue spacing
TRB Exhibit 15-15	Unsignalized Access Spacing Based on Upstream Functional Intersection Distance	410 ft Impact Method 435 ft Deceleration method (45 mph posted speed)
TRB Exhibit 15-19	Stopping Sight Distance for Unsignalized Access Connection	360 ft (45 mph travel speed) 425 ft (50 mph) 495 (55 mph) *On level grade*
TRB Exhibit 15-20	Minimum Unsignalized Access Spacing Based on Intersection Sight Distance for Passenger Cars for Right Turns	430 ft (45 mph travel speed) 480 ft (50 mph travel speed) 530 ft (55mph travel speed)
TRB Exhibit 15-25	Minimum Distance based on Collision Avoidance	350 ft (45 mph travel speed)

1. Per GDOT, "Requirements for the length of right and left turn lanes will dictate driveway spacing as shown in Table 4-8 and Table 4-9, and may increase the minimum allowable spacing shown in Table 3-1." (18)

Driveway design and throat length promote safe circulation between and within developments. Proper throat lengths allow space for queuing and reduce conflicts at the roadside (and pedestrian crossing locations). Detailed design standards are beyond the scope of this study, but adequate sight distance, curb radii, and profiles must be provided at all access points. GDOT specifies that "The distance between the roadway traffic and the first internal movement shall be a minimum of 200 feet... Lots less than 500 feet deep should maintain a minimum distance of 100 feet. The distance required should be maintained or increased so as to avoid interference with the mainline traffic flow

for large sites with high volumes, heavy truck traffic, and on high volume roadways." [2] the figure below shows adequate driveway throat length on the left.

Figure 23 Adequate and Inadequate Driveway Length. Adapted from Iowa DOT (17)

Raised medians reduce conflicts at driveways and intersections, provide pedestrian refuge at crossings, and create an opportunity for streetscaping and landscaping improvements.

Mobility Hubs and Super Stops

As the VLMPO region grows, transit-oriented development should support an evolving transportation system, including transit service as well as other modes. Mobility hubs aim to reduce auto travel by making transit, shared-use mobility, and walking attractive, safe, and convenient. Mobility hubs provide transportation infrastructure for multiple modes along with amenities like shelter, wayfinding, lighting, and information. Hubs could be developed in the VLMPO region either as time points in a flex route bus system or as individual bus stops if a fixed route system is implemented. Co-locating micro-mobility (E-bikes, bikeshare, and scooters), and bicycle parking with transit stops will support last-mile connections to and from transit stops, helping passengers safely and efficiently transfer from one mode to another.

Several cities have incorporated mobility hubs into transportation plans and have developed typologies for hubs ranging from bus stops to entire mixed-use districts with large scale connectivity and multiple modes. The City of Boston GoHubs! Guidebook details elements and planning considerations for its mobility hub pilot program. (19) Figure 26 shows a sample mobility hub from the Boston guidebook. Mobility hubs in Valdosta might be transfer hubs between fixed-route and an on-demand shuttle or the urban and rural systems, park and ride lots with commuter service or vanpool staging, or single bus stops. Bike racks, rideshare space, and wayfinding components would be a

DESIRABLE AMENITIES FOR TRANSIT-FOCUSED MOBILITY HUBS

Amenities	Urban Large Intermodal	Urban Transit Station	Suburban Park and Ride	Individual Bus Stop
Lighting	Yes	Yes	Yes	Yes
Real time information	Interurban bus and rail arrivals and departures, transit arrivals	Transit arrivals	Transit arrivals, parking availability	Transit arrivals
Wi-Fi	Yes	Yes	Yes	Yes
Carshare space	Yes	Yes	Yes	Yes
Bikeshare docks or space	Yes	Yes	No	Yes
Parking	Maintenance vehicles, public safety vehicles, transit vehicles, bikes	Maintenance vehicles, public safety vehicles, transit vehicles, bikes	Automobiles, vanpool vehicles, bikes	Bikes
Vehicle charging	Public vehicles, transit	Public vehicles, transit	Automobiles, transit	No
Bus shelter	Yes	Yes	Yes	Yes
Package lockers	No	Yes	No	No
Retail	Yes	Yes	Yes	No
Pick-up and drop-off zone	Yes	Yes	Yes	Yes

Figure 24 Potential Amenities for Mobility Hubs (APA)

strong starting point for Valdosta to include at hubs.

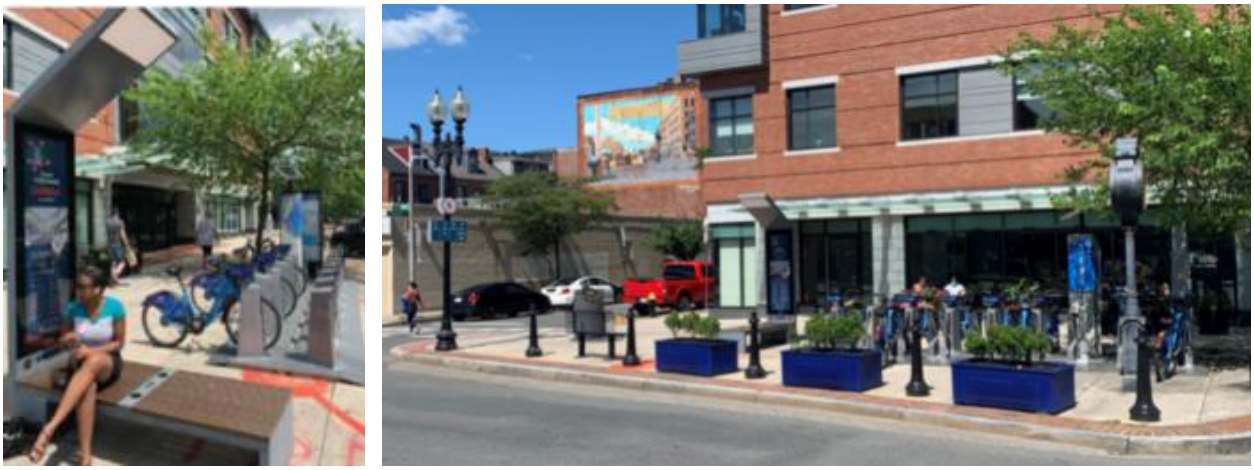


Figure 25 Mobility Hub renderings for Boston's GoHubs! Guidebook (19)

Other policies, including the zoning and complete streets recommendations in this report, promote the success of mobility hubs and transit stops that may evolve into larger scale TOD. Mobility hub area plans that create a synergy between transportation and land use strategies can help define specific implementation steps to promote TOD including land development regulation changes.

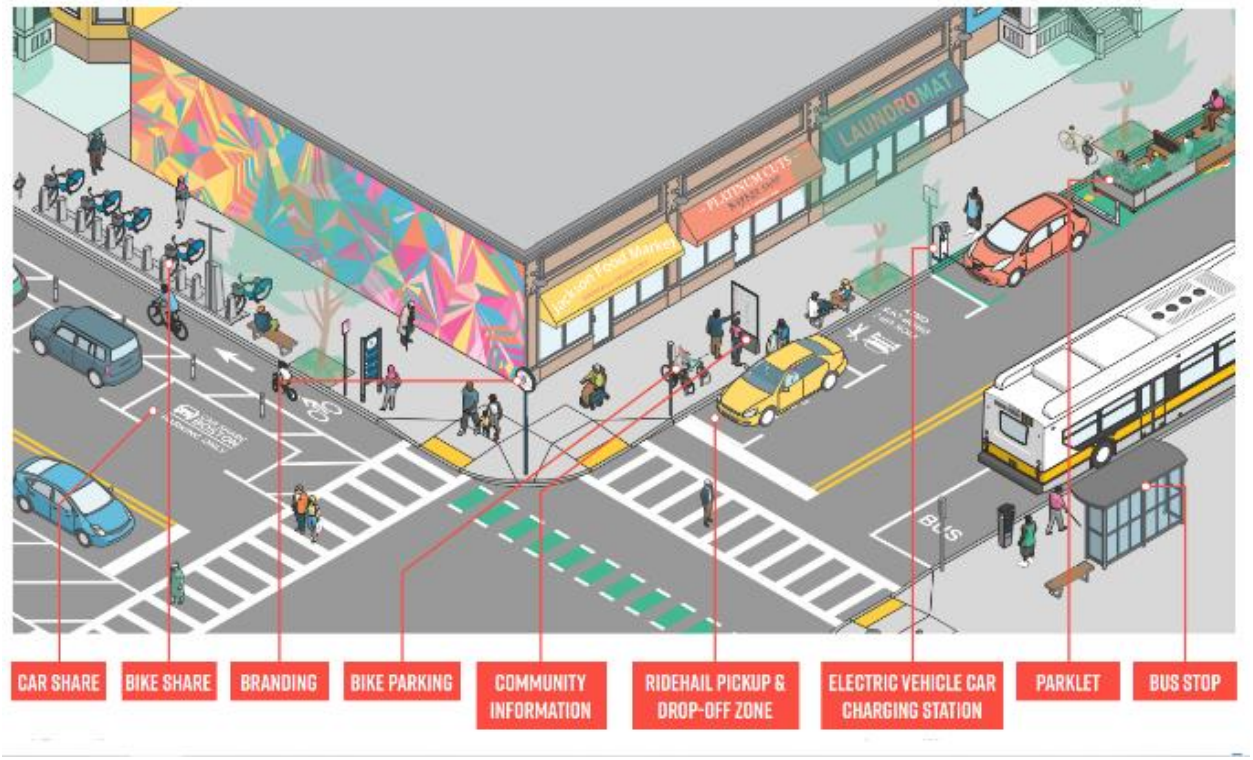


Figure 26 Sample Mobility Hub in Boston (19)

Curbside Management

Curbside management to effectively and safely balance the needs of all transportation modes and users is an essential component of planning for mobility hubs and super stops. This means allocating space for transit vehicles, ridesharing companies like Uber and Lyft, taxi stands, carshare services, bike and micromobility parking, wayfinding and other amenities as well as deliveries and on-street parking.

In urban areas, curb spaces should be managed through use restrictions and pricing. Safe distribution of curb space for pick-up/drop-off zones, transit stops, delivery vehicles, and micromobility and pedestrian access.

In suburban areas, curb space will likely prioritize residential usage, but should also include micromobility and transit stops. Where needed, space for deliveries and park and ride should be managed.

In rural areas, the curbside is in less demand. Needs will vary based on context, but should prioritize transit stop access for all users, as well as park and ride where needed.

Proposed TOD Areas

Transit-oriented development can include a wide range of housing, offices, retail, public space, and amenities. All TOD should have walkable, accessible development whether in large urban communities or small urban, suburban, and rural areas. The existing small urban areas in the VLMPO region are an opportunity to promote TOD-supportive infrastructure and development. Additionally, developing areas are a chance to create walkable mixed-use activity centers that can support transit and mobility choice in the future. The study team identified areas in the VLMPO region with the potential to support transit-oriented development based on several criteria, including:

- Existing demographics by Census block group
    - Population and housing density
    - Income and poverty
    - Vehicle ownership
    - Disability
- Employment Centers (Total Jobs and Low Income Jobs)
- Zoning
- Comprehensive Plan Character Areas
- Infrastructure Access and Connectivity
    - Intersections per Acre by traffic analysis zone
    - Intersection Density by Grid
    - Block Size
- Existing Transit Ridership by traffic analysis zone

The maps below show several of the criteria that the study team used to identify areas, including job locations, demographics, network connectivity, and zoning/land use.

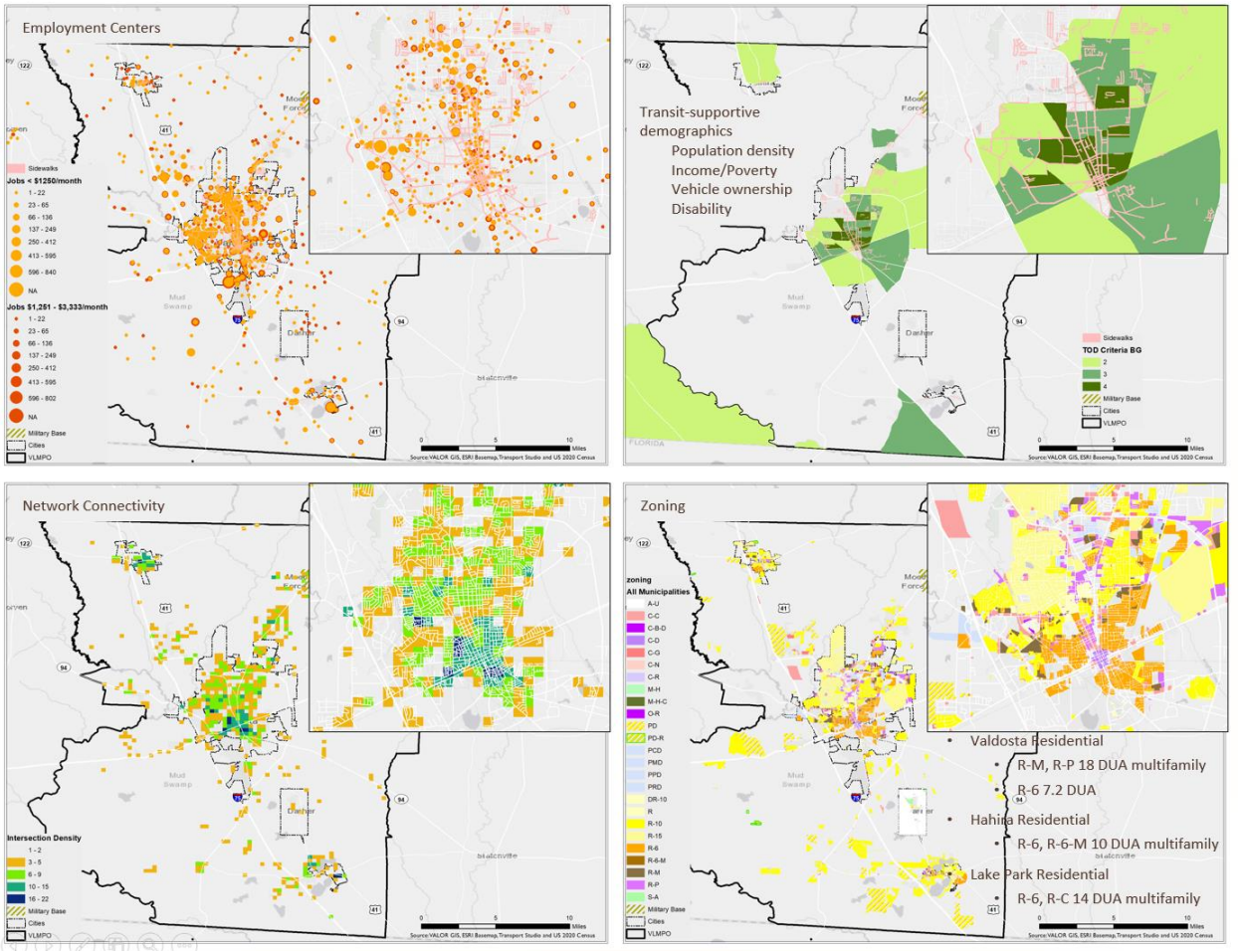


Figure 27 TOD Area Screening Criteria

Transit-supportive Comprehensive Plan character areas, shown below, include Community Activity Center, Neighborhood Activity Center, Regional Activity Center, Institutional Activity Center, Remerton Mill Town, Remerton Neighborhood Village, Transitional Neighborhood, and Village Center (as recommended in the Hahira Area Traffic Studies).

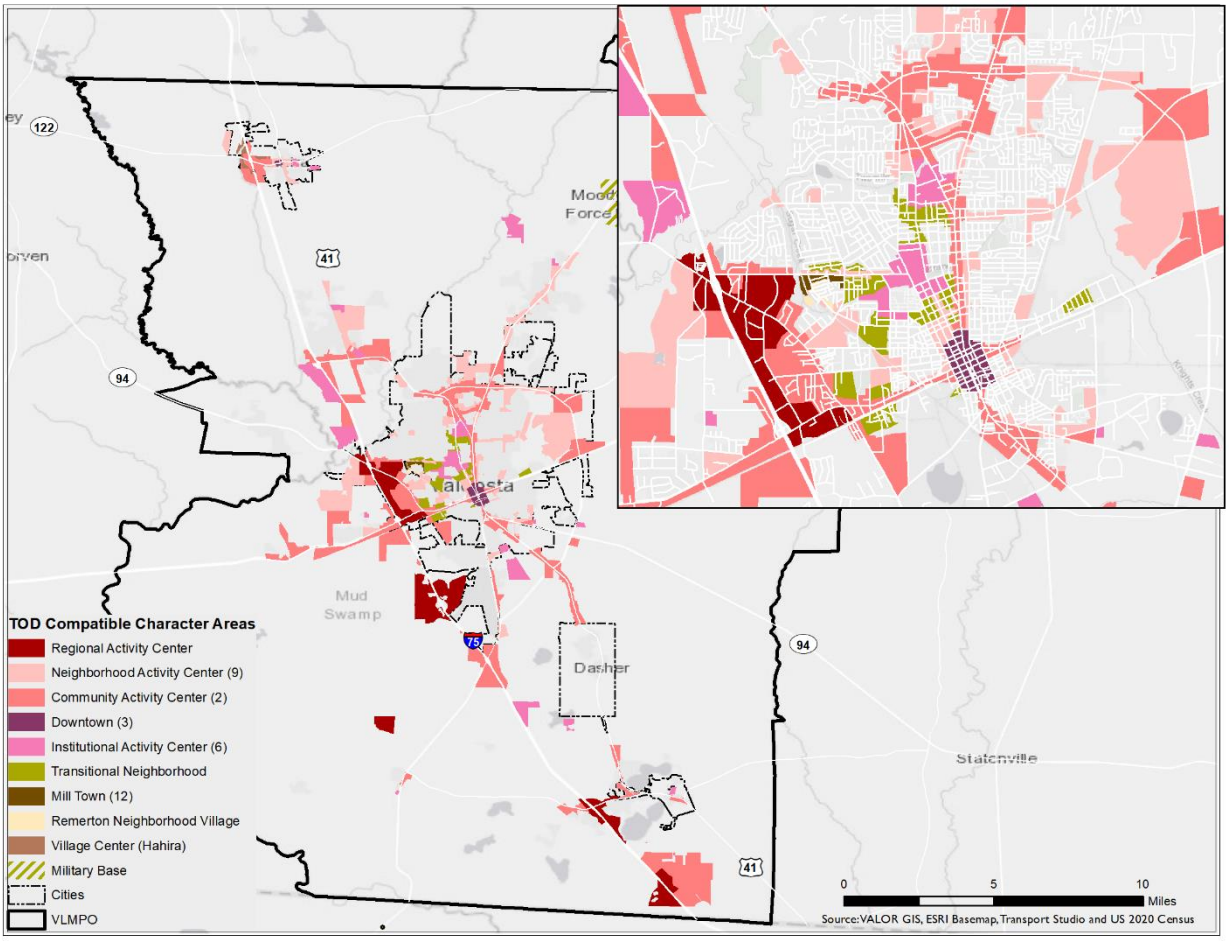


Figure 28 TOD Compatible Character Areas

The study team identified potential TOD hubs by mapping individual criteria and performing a screening analysis to identify areas with several characteristics indicating the potential to support TOD. The Stakeholder Committee also reviewed potential TOD hubs.

Figure 29 shows high frequency origin-destination pairs on the Valdosta on-demand transit system. These locations were considered in the analysis.

Figure 30 shows potential TOD areas, including:

- Downtown Hahira
- Willis L Library/Mixed-Use area along Bemiss Rd
- Medical/Shopping area at E Park Ave and Bemiss Rd

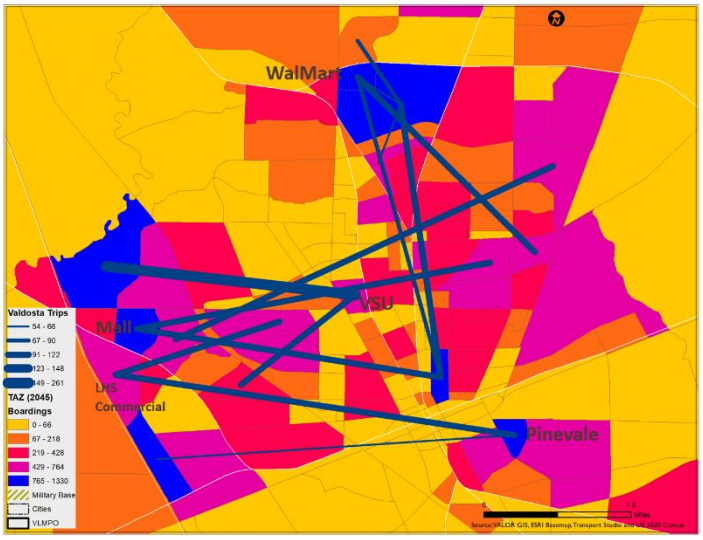


Figure 29 Valdosta On-Demand Transit Trips

- Valdosta Mall at Norman Dr and Baytree Rd
- Remerton
- Downtown Valdosta
- Pinevale

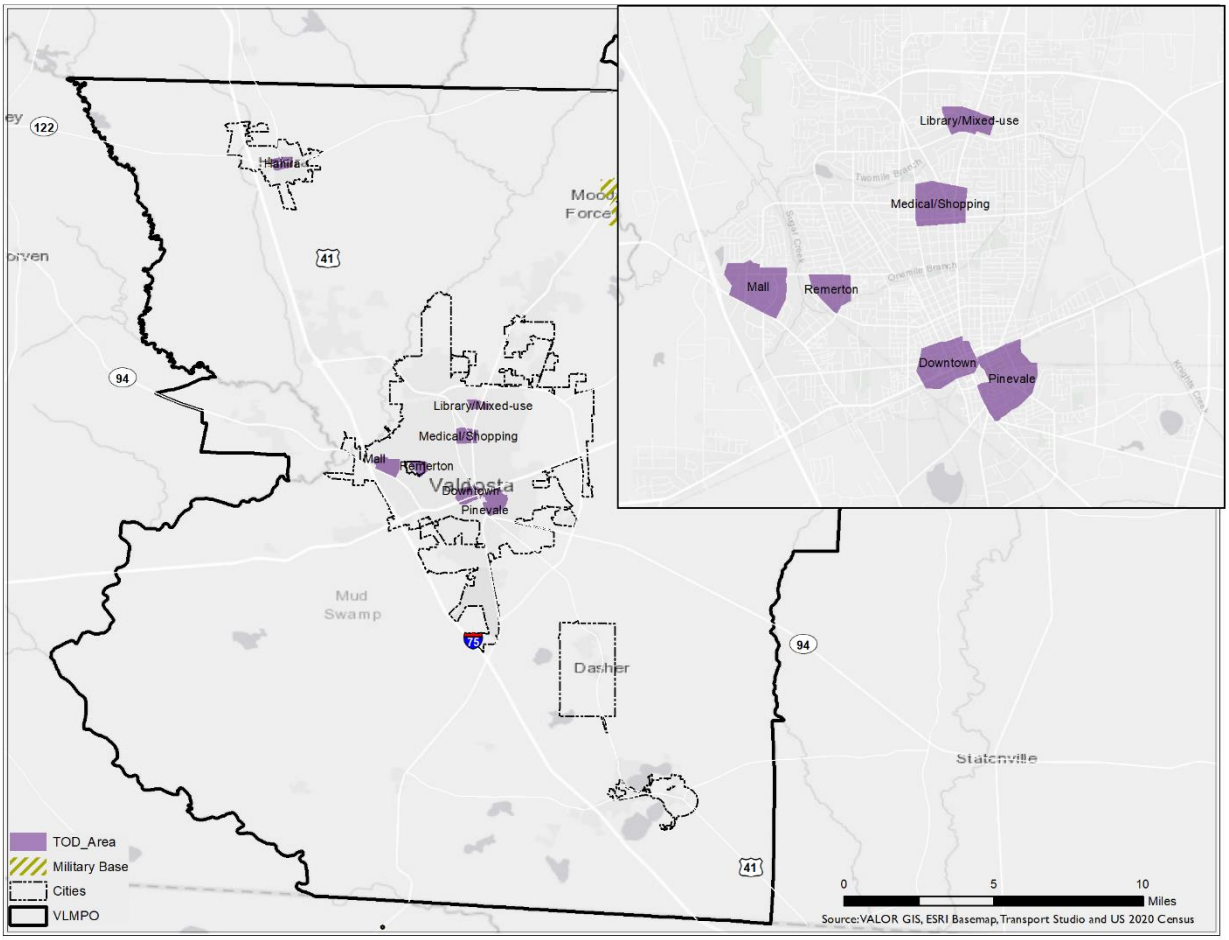


Figure 30 Potential TOD Areas

As the region grows, the strategies highlighted in this guide should be promoted to support TOD and its many benefits in these areas. Implementation should include the following:

- Step density up depending on existing context.
    - Single family districts should allow ADUs and missing middle housing (townhomes, duplexes, triplexes, and fourplexes) by right.
    - Multi-family districts should allow 22 DUA to achieve best practice for walkable communities.
- Promote mixed-use to complement existing uses.
    - Allow upper story residential and multifamily in commercial districts.
    - Allow neighborhood commercial in residential districts.
- Add road and sidewalk connections. Fill gaps in both networks.
- Adopt supportive policies.

- Increase permitted housing density (or offer density bonus) and diversify permitted housing types.
- Promote mixed-use.
- Promote infill where appropriate.
- Reduce or eliminate parking requirements; establish parking maximums where there is community support.
- Adopt design standards for walkability.
- Require connectivity (block size or intersection density).
- Require access management on thoroughfares.
- Establish curbside management for mobility hubs/super stops.
- Adopt Complete Streets standards.

- Implement TOD Overlay District(s) in priority areas.
- Via the Comprehensive Plan, zoning and development regulations, establish mixed-use Village Centers for suburban and rural areas.

While the proposed TOD areas are distinct activity centers with a walkable radius, plans should account for the potential to connect them via flex route or fixed route transit. A TOD overlay district could unify the areas along a route, as shown in the example below from Raleigh, NC.

Figure 15: ***TOD OVERLAY EXAMPLE***

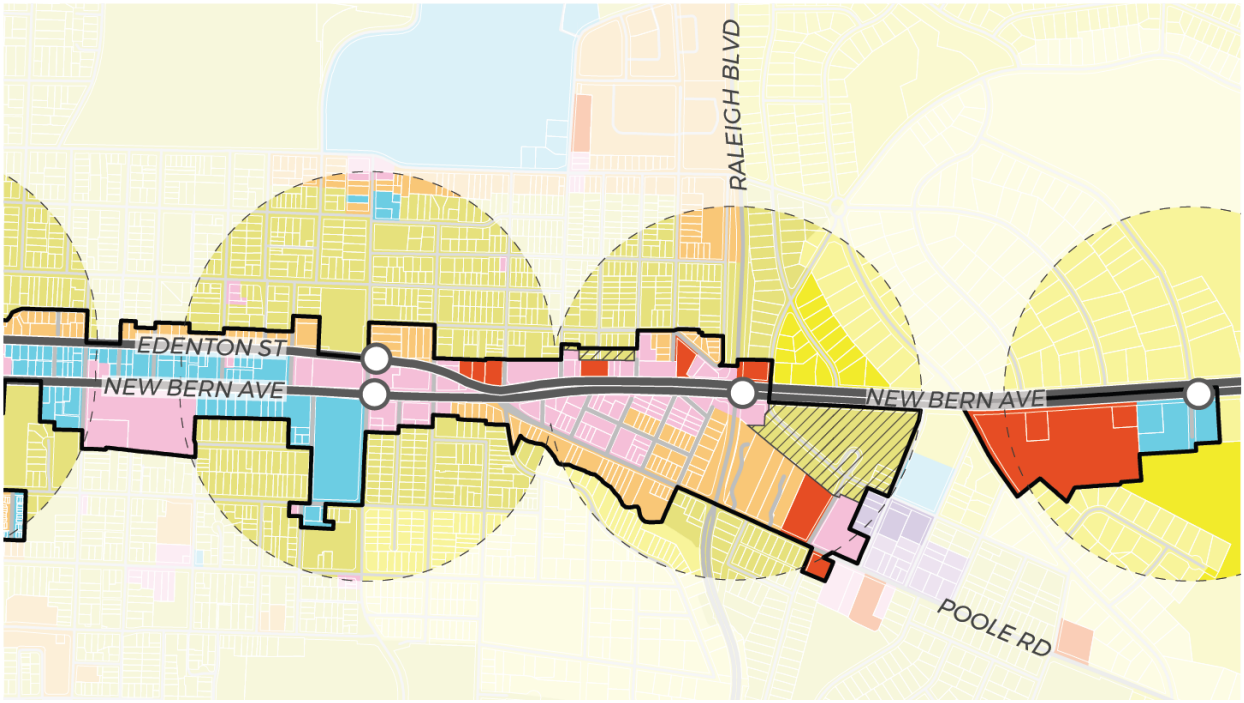


Figure 31 TOD Overlay District in Raleigh, NC

Strategies for Specific TOD Areas

Each TOD area has unique characteristics and potential to emerge as an anchor for a future mobility hub, either as a flex route time point or fixed route bus stop. Larger metro areas, like Raleigh, NC, establish TOD area types that range from neighborhood stops to central business districts. Tailored strategies for the TOD areas are described below.

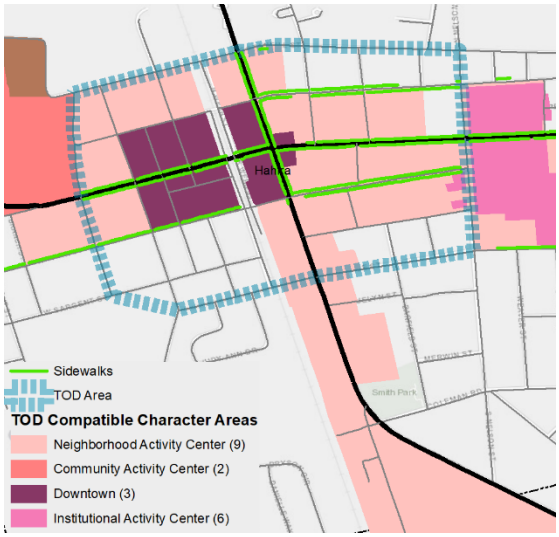


Figure 32 Downtown Hahira TOD Area

Hahira has an established road network with compatible block sizes. However, it lacks pedestrian connectivity in the proposed TOD area and should continue to seek state and local funds (including TIA) to construct sidewalks and amenities on arterials and collectors. TOD strategies could support local goals of downtown revitalization through residential infill to support local businesses and future mixed-use development to attract young workers and retirees alike, both of whom express strong preference for walkable, livable communities over typical suburban development patterns. Hahira should consider density bonuses for missing middle housing, mixed-use buildings, and planned developments that meet the TOD guidelines. Hahira also has an opportunity to take advantage of its well-connected street network and on-street parking to reduce or eliminate off-street parking requirements consistent with the best practice noted above. Furthermore, Hahira has a unique opportunity with the expansion of North Lowndes Park to expand the downtown street grid and establish a new regional mixed-use center surrounding the park. The North Lowndes Park activity center could become a TOD area, enabling visitors to use transit service to travel from tournaments to restaurants, retail, entertainment, and hotels.

The Valdosta Mall area presents a significant opportunity for infill development to include new complete street connections, mixed-use buildings fronting streets, multifamily residential infill, and new structured parking wrapped with active uses at the street level. Curbside management should be addressed as the area redevelops to ensure access for future transit and micromobility among other mobility hub features. An area plan for the mall and surrounding strip development should incorporate the design features described above. The figure to the right shows a walkable layout of a suburban shopping district.

Figure 33 A well-connected walkable suburban shopping area in Mecklenburg County, NC

The Remerton and Pinevale areas are established neighborhoods with the potential for new pedestrian

connections and amenities to promote safe, walkable, streets. The maps below show the lack of sidewalks in each area. With predominantly single family homes, the addition of infill missing middle housing will support the economic development of these areas by creating a viable market for small business. Mixed-use infill in the form of ground floor commercial with upper story residential will complement the small town feel of these areas. Promoting on-street parking and reducing or eliminating off-street parking requirements also makes sense here. Curbside management should be addressed as the area redevelops to ensure access for future transit and micromobility among other mobility hub features.

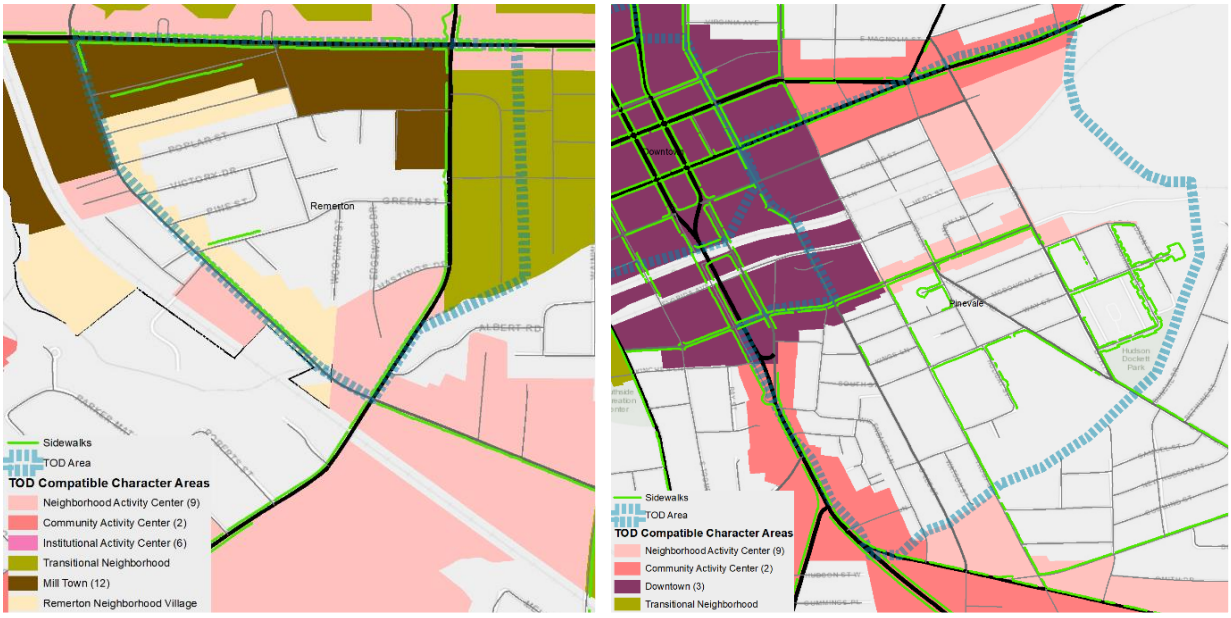


Figure 34 Remerton and Pinevale TOD Areas lack adequate sidewalk infrastructure

Downtown Valdosta has relatively well developed multimodal transportation infrastructure. Strategies for this area include multifamily residential infill, parking management. Valdosta should consider density bonuses for missing middle and multifamily housing and mixed-use buildings. Existing densities downtown barely meet best practice for TOD. Curbside management should be addressed as the area redevelops to ensure access for future transit and micromobility among other mobility hub features.

Next Steps

As a next step, regional planning partners should invest in robust stakeholder engagement, including visioning for proposed TOD areas - establishing targets for density, mixed use, and design standards. This should include detailed area planning for infill and redevelopment as well as new activity centers in areas like Hahira.

Stakeholders that should be included in a robust planning process for TOD include:

- Public agencies such as GDOT, VLMPO, SGRC, cities and counties, transit service providers and partners including DHS, the Area Agency on Aging, workforce development organizations, etc. Public representatives should include both officials and staff.

- Private partners such as developers, real estate agents, small business owners and major employers, property owners, neighborhood associations, and residents.
- Advocates including any bicycle or pedestrian groups, human service providers, etc.

Engagement should include virtual meetings and materials, open houses, and pop up events where the general public can be reached as well as targeted engagement via stakeholder interviews, focus groups, and rider surveys.

Once a vision has been established, the Comprehensive Plan(s) should be revised, in addition to the Metropolitan Transportation Plan. Zoning, either in the form of a TOD Overlay District, or as new districts that allow increased residential density and diverse housing types such as accessory dwelling units, duplexes, triplexes and fourplexes, townhouses, and cottage courts as fitting for different TOD areas should be adopted. Mixed-use zoning should also be adopted so that infill housing is permitted in commercial areas, neighborhood commercial is permitted in primarily residential TOD areas, and vertical mixed-use is permitted in additional zones. Area planning for super stops or mobility hubs should inform zoning code revisions.

Regional jurisdictions should consider adopting formal complete streets policies. Street standards and subdivision regulation should include sidewalks and bike lanes, where appropriate. Wider sidewalks at 8-10 feet should be specified in TOD areas.

The upcoming regional transit development plan is also a key next step in defining the need for additional transit service; service areas and schedules; transit types including microtransit, on-demand rural service, flex route or point deviation, fixed route; and complementary strategies like employer shuttles, vanpools, micromobility, and last-mile connectivity.

Overall, increased pedestrian connectivity should be implemented along with better-connected road networks with smaller, pedestrian-scaled, blocks. In TOD areas, staff and stakeholders should conduct a sidewalk assessment to prioritize sidewalk repairs, expansion, and amenities like seating and lighting as well as ADA crossing improvements. Jurisdictions should also consider traffic calming and curbside management to include pickup and drop-off zones for shared mobility, EV charging, deliveries, etc. jurisdictions may want to explore tactical urbanism in partnership with neighborhood leaders to implement pilot measures such as painted bulb outs, temporary bike lanes, parklets, and seating.

Figure 35 Parklets can be piloted via tactical urbanism, as shown here in New Jersey

VLMPO, in partnership with local jurisdictions, should pursue funding opportunities for complete streets, infill

sidewalk projects, multiuse paths, and mobility hub infrastructure like charging stations, bike racks, shelters, and amenities. Funding for placemaking strategies like public art, wayfinding, landscaping, and even tactical urbanism will also promote TOD.

The Future of Transit in the Region

As mobility needs and opportunities develop in the region, public on-demand service will become less efficient. Unlike shared ride transit, where each additional passenger reduces the cost of the trip, microtransit costs increase as the demand for the service goes up and the number of trips (including deadhead time) increase. Additional service models that could support more efficient service include point or route deviation, where fixed time points offer set stop times and locations where multiple passengers can board or alight without requesting an on-demand trip. Flex routes can deviate within a set distance to provide curb-to-curb service. Figure 36 shows point and route deviation graphics. Additional models that support TOD include employer shuttles from job centers to transfer hubs, vanpools, and feeder systems with timed transfers at mobility hubs (either between rural and urban systems or between on-demand and flex route systems).

The potential for a Transportation Management Association to coordinate across transit service providers, manage a mobility hub program, and raise private funds, should be considered to maximize the opportunity for public awareness and use of the service and amenities.

Useful approaches to expanding suburban transit are documented in the Transit Cooperative Research Program (TCRP) Report 55 *Guidelines for Enhancing Suburban Mobility Using Public Transportation* (20) and TCRP Synthesis 14 *Innovative Suburb-to-Suburb Transit Practices* (21). These approaches are reinforced by nearly all of the works found in the current literature.

- Choose the right market (exploit niche markets for circulators and shuttles)
- Serve traditional markets such as lower income neighborhoods
- Choose the proper vehicle and adapt fleets to customer demand
- Utilize demand-response or other flex-route services
- Utilize targeted marketing approaches geared to the business community
- Seek partnerships with the private sector that will provide funds
- Plan service with the community
- Concentrate on serving population and employment centers (people hubs), and transit transfer points (transit hubs or transfer hubs)
- Economize on expenses
- Link to larger transit services (commuter rail or express buses)
- Seek involvement in the development of land use and planning techniques and policies
- Craft service innovations or other programs and techniques designed to increase transit's market share in the suburbs

- Parking pricing to encourage transit use

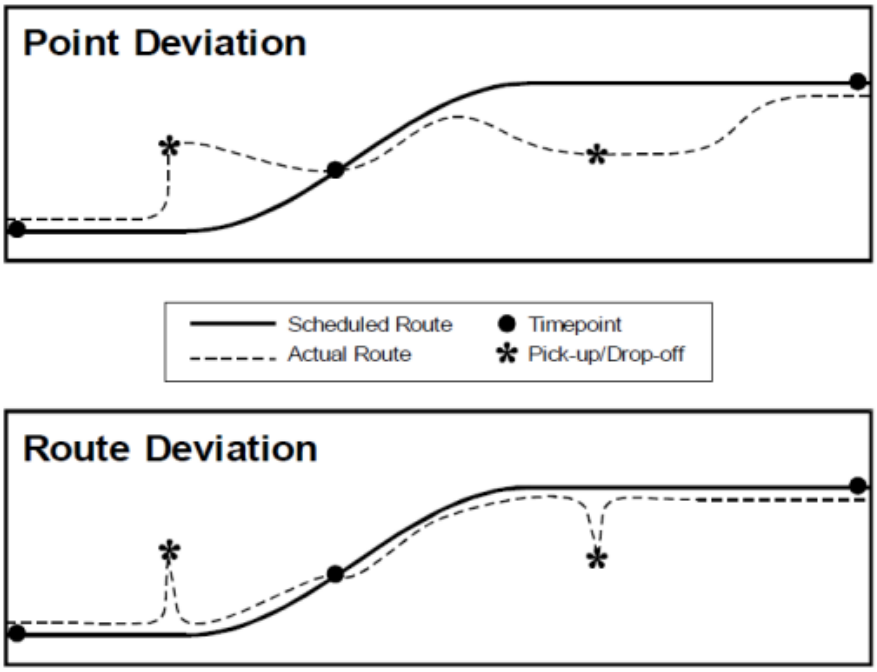


Figure 36 Point and Route Deviation Service

As the VLMPO region grows, the potential for TOD to support broad community goals as well as to maximize mobility options will continue to strengthen.

References

1. Morris, Marya. *Smart Codes: Model Land-Development Regulations.* Chicago : American Planning Association, 2009. Planning Advisory Service. Report Number 556.

2. *Planning for Transit-Oriented Development.* Thomas, John V. and Bertaina, Stephanie. 2009, PAS QuickNotes.

3. National Academies of Sciences, Engineering, and Medicine. *Traveler Response to Transportation System Changes Handbook, Third Edition: Chapter 17, Transit-Oriented Development.* Washington DC : The National Academies Press, 2007.

4. Holtzclaw, Dr. John. Sierra Club. *Designing Cities to Reduce Driving and Pollution: New Studies in Chicago, LA and San Francisco.* [Online] 1997. http://vault.sierraclub.org/sprawl/articles/designing.asp.

5. Hack, Gary. *Business Performance in Walkable Shopping Areas.* s.l. : Robert Wood Johnson Foundation, 2013.

6. Ohm, Brian W., LaGro, James A. and Strawser, Chuck. *A Model Ordinance for a Traditional Neighborhood Development.* Madison : University of Wisconsin, 2001.

7. Metropolitan Transit Development Board. *Designing for Transit.* Springfiels : US Department of Commerce, 1993.

8. Ewing, Reid. *Pedestrian and Transit-Friendly Design: A Primer for Smart Growth.* s.l. : American Planning Association, 1999.

9. Oregon Transportation and Growth Management Program. *Model Development Code & User's Guide for Small Cities, 2nd Edition.* Salem : State of Oregon, 2005.

10. WSP USA; HR&A Advisors. *Equitable Policy TOD Guidebook.* Raleigh : City of Raleigh, 2020.

11. Williams, Kristine, et al. *Access Management Manual.* Transportation Research Board. Washington, DC : National Academy of Sciences, 2014. 978-0-309-29541-3.

12. ITE. *Designing Walkable Urban Thoroughfares: A Context Sensitive Approach.* Washington DC : ITE, 2010.

13. Easton, Gregory and Owen, John. *Creating Walkable Neighborhood Business Districts: An exploration of the demographic and physical characteristics needed to support local retail services.* s.l. : Makers, 2009.

14. Duany, A, Plater-Zyberk, E and Speck, E. *Suburban Nation.* New York : North Point Press, 2000.

15. www.changelabsolutions.org/childhood-obesity. *Change Lab Solutions.* [Online] 2017. http://www.changelabsolutions.org/.

16. *Walking the Last Mile: Barriers and Solutions to Suburban Transit Access.* Braun, Lindsay M, et al. 2022, Transportation Research Record, Vol. 2676.

17. Center for Transportation Research and Education. *Access Management Handbook.* Ames : Iowa State University, 2000.

18. GDOT. *Regulations for Driveway & Encroachment Control Manual.* Atlanta : State of Georgia, 2023.

19. City of Boston Transportation. *GoHubs! Neighborhood Mobility Hubs Guidebook.* Boston : City of Boston.

20. Transportation Research Board. *TCRP Report 55 Guidelines for Enhancing Suburban Mobilty Using Public Transportation.* Washington DC : National Academies Press, 1999.

21. –. *TCRP Synthesis of Transit Practice 14: Innovative Suburn-to-Suburb Transit Practices.* Washington DC : The National Academies Press, 1995.

22. Santa Maria, Steven D. *Suburban Transit Opportunities Study.* Boston : Boston Region Metropolitan Planning Organization , 2014.

23. Abeles Phillips Preiss & Shapiro. *TOD Fact Sheet.* Bellevue : CRCOG, 2002.

24. Treasure Coast Regional Planning Council. *Florida TOD Guidebook.* Tallahassee : Florida Department of Transportation, 2012.

25. Indianapolis. *TOD Design Guidelines.* 2018.

26. Parich of Lafayette. Code of Ordinances. *SHARED MOBILITY DEVICES IN CITY AND PARISH OF LAFAYETTE.* [Online] 2020. [Cited:] https://library.municode.com/la/lafayette_city-parish_consolidated_government/codes/code_of_ordinances?nodeId=LACIRICOGOCOOR_CH98VEHI_ARTIVSHMODEPALA_DIV1GE.

27. City of Madison. *Memorandum: Transit-Oriented Development (TOD) Overlay District.* [Online] December 2022. https://www.cityofmadison.com/council/district11/blog/2022-12-14/memorandum-transit-oriented-development-tod-overlay-district.

28. Town of Morrisville. *Transit Oriented Development and Zoning Plan.* Morrisville : s.n., 2023.

29. NV5, Inc. *Transit Friendly Planning Guide.* s.l. : New Jersey Transit, 2022.

30. Antero Group, Shared Use Mobility Center, and Active Transportation Alliance. *Last Mile Mobilty Action Plan.* Village of Bedford Park : Cook County Government, 2022.

31. Transit Oriented Development District. *Morrisville Unified Development Ordinance.* [Online] [Cited: June 22, 2024.] https://user-cjghrlw.cld.bz/Morrisville-Unified-Development-Ordinance-January-2020/146/.

32. City of Madison. Comprehensive Plan. [Online] 2018. https://www.cityofmadison.com/dpced/planning/documents/Progress%20Update%202022_final.pdf..

33. *Planning and Zoning for Mobility Hubs.* Crozier, Andrew, and Lisa Nisenson. Chicago : American Planing Association, 2022.

34. AASHTO. *A Policy on Geometric Design of Highways and Streets.* Washington, DC : AASHTO, 2011. 6th ed.

35. Committee on Access Management. *Transportation Research Circular 456: Driveway and Street Intersection Spacing.* Washington, DC : TRB, National Research Council, 1996.

36. Georgia Department of Transportation. *Regulations for Driveway and Encroachment Control.* Atlanta : State of Georgia, 2016.

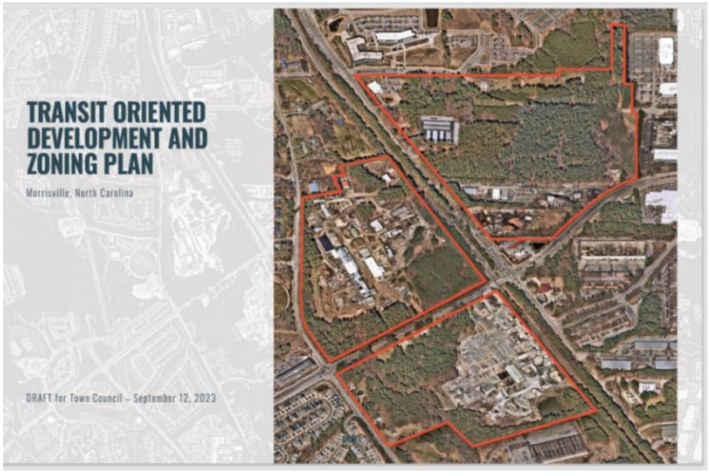
Appendix A: Case Studies

The study team reviewed several case studies including transit-oriented development guides, last mile connectivity studies, mobility hub plans, and microtransit plans.

Boston, MA GoHubs! Guidebook (19)
Boston Region Metropolitan Planning Organization Suburban Transit Opportunities Study (22)
CRCOG Transit-Oriented Development Fact Sheet (23)
FDOT Florida TOD Guidebook (24)
Indianapolis, IN Transit-Oriented Development Design Guidelines (25)
Lafayette, LA Shared Mobility Ordinance (26)
Madison, WI TOD Overlay District Ordinance (27)
Morrisville, NC Transit-Oriented Development and Zoning Plan (28)
New Jersey Transit Friendly Planning (29)
Raleigh, NC Equitable Transit-Oriented Development Guidebook (10)
Village of Bedford Park Last Mile Mobility Action Plan (30)

The three case studies of transit-oriented development (TOD) described below illustrate many of the concepts that lead to successful projects. Given that each TOD application is unique to a specific context, the case studies are not directly applicable to the Valdosta urbanized area. However, the case studies–Morrisville NC; Madison (WI), and Raleigh (NC)–describe TOD planning, policy, and application principles that would be very relevant to potential TOD application in Valdosta.

Morrisville, NC



City Description: The Town of Morrisville, a satellite town of Raleigh NC, has a population of approximately 32,000 people. Many of the residents work in Raleigh and thus much of the work travel is commute trips to and from Raleigh. Because of this trip pattern, the region is considering implementing bus rapid transit (BRT) serving the Morrisville market among others. Morrisville currently provides transit service via the Morrisville Smart Shuttle Service, which includes free service to residents, commuters, and visitors, providing connections among 16 shuttle stops. The service runs seven days a week.

TOD Concept: The idea for implementing a TOD policy in the town originated with the planning commission and a group of concerned citizens who wanted to create a new vision for mobility within the town and for those working in other parts of the region. In 2021, the Town Council approved changes in the Unified Development Ordinance to include TOD land uses. The Town Planning and Zoning Board then developed a Transit Oriented Development and Zoning Plan in 2023 with the underlying philosophy that "this style of development can create community benefits such as

increased transit ridership, walkable communities, attractive streetscapes, and additional pedestrian amenities." (28) The Plan also had the following general goals: transportation viability, economic value added, supporting workforce housing, and promoting urban design character.

The Plan incorporated a zoning overlay TOD district (about 180 acres) into the town's Land Use Plan. The Plan was approved by the Town Planning and Zoning Board and recommended to the Town Council; the proposed zoning to implement a TOD district was approved in 2021 by the Planning and Zoning Board; and a Town Council meeting to approve the TOD policy occurred in May, 2024.

Key TOD Characteristics: Some of the characteristics of a TOD development noted in the Plan included: (1) it being a vibrant activity center, (2) providing connections to high quality transit service, 3) linked by safe pedestrian connections to businesses and neighborhoods, (4) creating a sense of place, and (5) where residential density is added. Interestingly, the process of developing the Plan included a market study of residents and others in order to discover the "market characteristics" that are most desirable when choosing a location to live. The market study identified the following desired characteristics (that were then related to policies and strategies to create desirable TOD development characteristics).

- Creating a sense of location or place is desired: the location should be a recognized destination in the market
- Transit accessibility is a key part of a location's desirability, but it is not the only consideration
- Mixed land uses were considered a way to encourage a location "vitality"; this included both horizontal and vertical integration of land uses; in particular, participants noted the desirability of a mix of housing types (e.g., including apartments) as well as office, retail, and hotel uses
- Strong architectural and urban design characteristics were much desired; this included incorporating green space, parks, and plazas to create a sense of orientation to the layout of the development

Figure 37 shows the proposed layout of the TOD district. Note that the TOD zones are very well served by roads, and that a future BRT station is located in the plan (although the town is not waiting for the station to exist before implementing the TOD plan). The site also includes greenways and road treatments more conducive to bike and pedestrian movement.

Observations

The TOD experience in Morrisville exhibits many of the characteristics found elsewhere of how to develop and implement a TOD strategy. Three key observations stand out.

1. The mechanism for implementing a TOD development pattern was to use a zoning overlay district, a strategy found in many other locations. Thus, the underlying zoning requirements stay the same but additional incentives (such as density bonuses) and requirements (such as streetscapes and building facing characteristics) are part of the development approval process. Figure 38 shows how these types of requirements were put into the Morrisville Unified Development Ordinance. (31)

Figure 37 Footprint of Proposed TOD Sites, Morrisville, NC

2. Interestingly, the results of a market study of location preferences, that is, what do people want in terms of desired development characteristics, reflect closely the TOD plan and zoning recommendations to the Town Council. And importantly, these characteristics included more than simply access to good transit service. They included a range of "desirables" including mixed use development patterns, greenspace, emphasis on many forms of mobility, and strong architectural and urban design characteristics.
3. Even though TOD is mostly linked to development sites (e.g., station areas) surrounding high capacity transit service, the proposed Morrisville TOD is not dependent on such connection. As shown in Figure 37, the TOD parcel layout does include the location for a future BRT station, but the TOD strategy is not dependent on it. The town officials believe that TOD development patterns are desirable for other factors; a BRT station would only reinforce the desirability of the site. For example, there is a plan to link the TOD site with the town's current shuttle service.

3.4.6. Transit-Oriented Development (TOD) District

TRANSIT-ORIENTED DEVELOPMENT (TOD) DISTRICT

A. Purpose

The Transit-Oriented Development District provides for transit-supportive development types and intensities within convenient walking distance of a transit station. The district is intended to create a vibrant, well-designed center of activity, expand transportation choices, provide workforce housing, and promote economic development. The district is also intended to accommodate compact and pedestrian-friendly development that: Includes a well-integrated mix of complementary high-activity uses, including transit-supportive commercial, residential, civic, and employment uses; Provides multiple, direct, and safe vehicular, bicycle, and pedestrian connections between the transit station and the surrounding uses, with sufficient—but not excessive—parking to accommodate transit users and district visitors and residents; Includes distinctive, attractive, and engaging public spaces that help create a sense of place for the station area; Includes a range of housing choices for households of different incomes; and Is consistent with the McCrimmon Transit Small Area Plan.

B. Principal Intensity and Dimensional Standards

A, etc. are symbols used in the illustrations showing application of dimensional standards

		Single-Family Detached Dwellings	Single-Family Attached Dwellings	Multi-family Dwellings	Other Uses
Lot Standards					
Min. Net Lot Area (sf)		3,500	n/a	5,000	n/a
A Min. Lot Width (ft)		35	20	50	24
Min. Net Density (du/ac)		7.5	15	15	n/a
Max. Net Density (du/ac)		12	35	35	n/a
Min. Floor Area Ratio (FAR)		n/a	n/a	n/a	0.75
Max. Floor Area Ratio (FAR)		n/a	n/a	n/a	4.0
Min. Lot Coverage (%)		50	60	60	60
Max. Lot Coverage (%)		75	100	100	100
Setbacks					
B Min. Front (ft)		n/a – see Min. Build-to Line below			
C Min. Side (ft)		0 [1]	0 [1]	0 [1]	0 [1]
D Min. Corner Side (ft)		0	0	0	0
E1 Min. Rear (ft)	Alley-loaded	6	6	n/a	n/a
E2	Other	15 [1]	0 [1]	0 [1]	0 [1]
Build-to Zone					
H Min. Build-to Line (ft)		0	0	0	0
I Max. Building-to Line (ft)		15	15	15	15
Min. Build-to Zone Street Frontage Occupied by Buildings (%)		80 [2]	80 [2]	80 [2]	80 [2]
Building Standards					
F1 Max. Structure Height (ft)		35	45	75	75
F2 Min. Structure Height (stories)		no minimum	no minimum	3 [3][4]	no minimum
G Min. Building Separation (ft)		6	n/a	n/a	n/a

Cross References

Art. 2: Administration
Sec. 2.5.4
Art. 4: Use Standards
Art. 5: Development Standards
Sec. 5.2.2
Sec. 5.3.1
Sec. 5.3.2
Sec. 5.4.4.A
Sec. 5.5.1.C.2
Sec. 5.8.6.E.2.e
Sec. 5.8.8.C.2
Sec. 5.9.6
Sec. 5.9.7
Sec. 5.10.6
Sec. 5.10.9.G
Sec. 5.10.9.H
Sec. 5.13.3.B
Sec. 5.14.4
Sec. 5.14.7.F
Sec. 5.14.8.C
Sec. 5.15.7
Art. 6: Riparian Buffers
Art. 7: Stormwater Management

Notes: sf = square feet; ft = feet; du = dwelling unit; ac = acre; % = percent; n/a = not applicable
[1] 30 feet along lot lines shared with lots within a residential zoning district.
[2] The remaining build-to zone street frontage may be occupied by outdoor gathering spaces, driveways, or pedestrian walkways—and before rail transit is available, by surface parking located to the sides of buildings.
[3] Applied to multifamily developments. See additional standards in Section 5.9.8.C.1, Minimum Height.
[4] The minimum structure height for a carriage-style building with multifamily dwellings over garages is two stories.
Ord. No. 2016-001, 05/10/2016

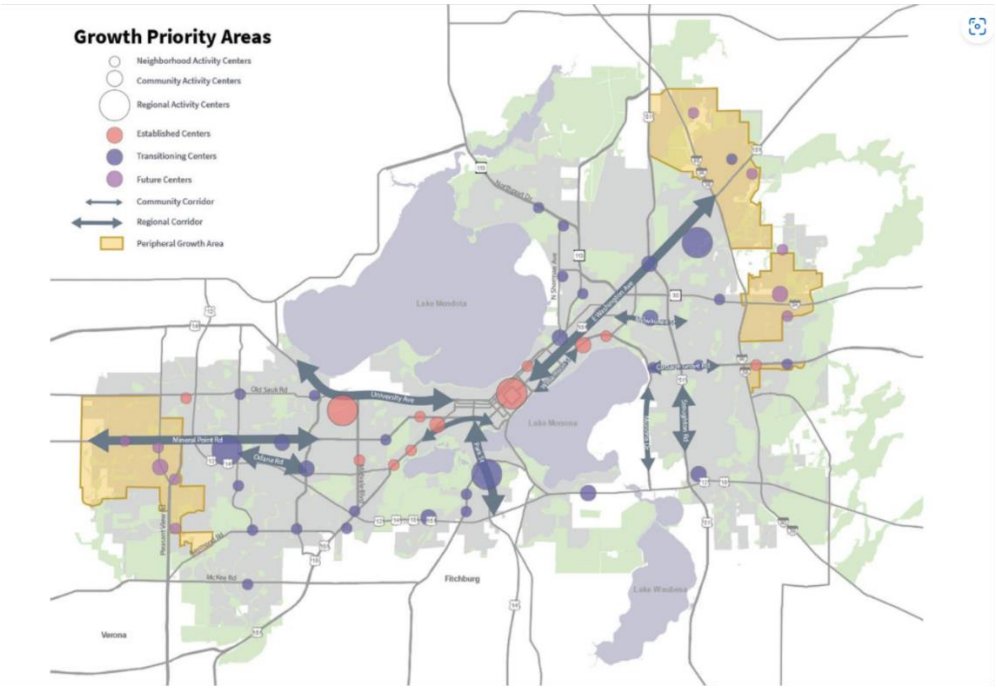
Figure 38 TOD Zoning Characteristics

Madison, WI

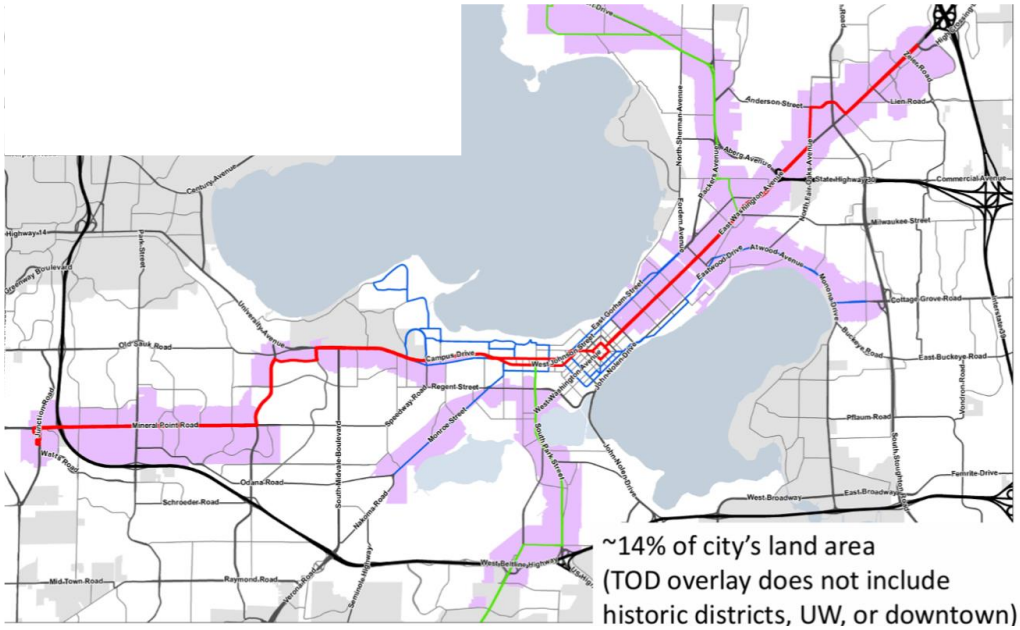
City Description: The City of Madison WI has a population of approximately 270,000 people (although the metropolitan area population is 680,000). As the state capital and location of a major university (45,000 students), the city has long been known as an incubator for new and innovative ideas in many areas of urban life. For example, in the 1970s, the city was one of the first to move parking garages to the periphery of the downtown and provide circulator services. Madison's Metro Transit Bus system has 210 buses that provide 47 fixed route bus services to the city and surrounding cities and towns. In 2024, Metro will open its first BRT service.

TOD Concept: The City has long desired to provide opportunities for higher densities along with high quality transit service. The first mention of such higher development densities occurred in the 2017 City's Transportation Plan, called Madison in Motion. Madison Metro was in the process of restructuring its route network and the plan called for this restructuring to consider areas of higher development densities. The City 2018 Comprehensive Plan recommended a TOD overlay zoning concept "along proposed BRT and other existing and planned high-frequency transit service corridors to create development intensity minimums, reduce parking requirements, and support transit use." (32) In 2023, the Madison Common Council adopted a TOD Overlay District Ordinance to accomplish the Comprehensive Plan TOD goals and in addition to "improve pedestrian connections, traffic and parking conditions and increase mobility choices in the overlay area to enhance the livability of station areas."

Key TOD Characteristics: Figure 39 illustrates the linkage between the TOD policy and comprehensive plan. As shown, the TOD locations support where the Comprehensive Plan is showing faster and higher density growth… covering about 14 percent of the city's land area.



a) Comprehensive Plan Proposed Growth Areas



b) TOD Overlay Zones

Figure 39 Linkage Between Comprehensive Plan and TOD Strategy

The TOD overlay district is based on the following important concepts:

- Residential dwelling unit bonuses
- Building height bonuses
- Site standards for buildings
- Site standards for automobile infrastructure
- Parking and loading standards

As an example,

For residential dwelling units, bonuses include:

- The next increment in residential intensity is allowed as a permitted use in residential and mixed-use zoning districts:
  - Duplex allowed as a permitted use in single family districts
  - Maximum number of DUs as a permitted use in SR-V2 zoning increases from 24 to 36
  - Maximum number of DUs as a permitted use in TSS zoning increases from 48 to 60

For employment districts:

- Up to 24 dwelling units in mixed-use buildings allowed as a permitted use in TE zoning

It is important to note that the City has some policy tools it can use to encourage or provide incentives in implementing the TOD strategy. For example, the City can use funds from an Affordable Housing

Fund to provide incentives to build affordable housing in TOD locations. It also has authority to land bank parcels to preserve future development sites. In addition, the City has used tax increment financing in the past to support infrastructure investment in support of development proposals.

Observations

The City of Madison's experience with TOD provides some important lessons on the factors for successful TOD implementation:

1. Even in a policy environment that is known to be willing to experiment and try new concepts, it took some time for TOD to be "institutionalized" in city plans, policies, and investments. The concepts were raised, debated, and ultimately included in the City's transportation plan, comprehensive plan, and finally in zoning ordinances. As shown in Error! Reference source not found., the linkage between the proposed growth areas in the comprehensive plan and the TOD zones is very close.
2. Although to a large extent motivated by the creation of a BRT system, the concept of TOD has evolved into a strategy that goes beyond such routes. Other bus services are also contemplated in conjunction with TOD.
3. There is a heavy emphasis on the "mobility environment" surrounding TOD sites. That is, TOD will only be successful if the environment created is one where people want to live, work, and socialize. Thus, the TOD policy places have emphasis on streetscapes, non-motorized mobility options, and on urban design concepts that create a sense of place.

Raleigh, NC

City Description: The City of Raleigh NC has a population of approximately 475,000 people in a metropolitan area of 1.5 million people. Similar to Madison, Raleigh is a state capital and is the home of North Carolina State University. Although a relatively large city, the development pattern is as shown in Error! Reference source not found. is very low density, with few clusters of high density outside of the downtown.

Figure 40 Raleigh, NC Development Pattern

Transit service is provided by the GoRaleigh Transit bus system, consisting of 27 fixed route services. In November of 2016, Wake County (where the city is located) voters approved a plan for focused investment in public transit, which implements a Wake County Transit Plan including approximately 20 miles of transit lanes in four BRT corridors to be fully operational by 2035,

TOD Concept: The City adopted a strategy of "Equitable Development Around Transit (EDAT), which is designed to provide development in selected TOD zones that "equitably share the benefits of transit and create transit-centered neighborhoods for residents of all income levels." This policy was laid out in an EDAT guidebook produced in 2020. The TOD vision described in this guidebook included six key themes:

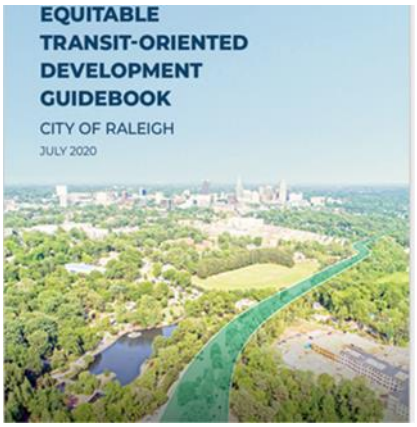
- Economic Prosperity and Equity
- Expanding Housing Choices
- Managing Our Growth
- Coordinating Land Use and Transportation
- Greenprint Raleigh - Sustainable Development
- Growing Successful Neighborhoods and Communities

Key TOD Characteristics: The types of strategies and characteristics in Raleigh's TOD plan are similar to those described in the other two case studies. Error! Reference source not found. shows the important design principles guiding the development at TOD sites. The key strategies for accomplishing these design principles varied by principle and by TOD site. For example, the key strategies for encouraging a mix of uses included:

- Allow a mix of complementary uses in order to create a diverse and active environment within station areas
- Create graceful transitions to lower-scale residential neighborhoods while creating commercial destinations near stations to reinforce the use of transit
- Improve flexibility by mixing uses both horizontally and vertically at different scales and providing opportunities for sharing spaces at different times
- Improve safety, walkability, and liveliness by promoting active uses on ground floors
- Encourage affordable housing options and include a mix of housing types, including senior housing

Figure 41 TOD Design Principles in Raleigh

Several key features of the transit overlay district include:



- Provides an "affordability bonus" that allows more height in exchange for affordable housing units
- Provides an "employment bonus" that allows more height for job-generating uses
- For residentially-zoned parcels, allows additional building types and density to provide more places to live near BRT
- Removes minimum parking requirements
- Requires that buildings front the street
- Requires wider sidewalks
- Requires bicycle parking and, for development near transit, rider amenities
- Prohibits auto-oriented uses, like fuel sales, self-service storage, towing yards, warehouses, distribution centers, etc.

One of the unique characteristics of the EDAT strategy was the emphasis on equity. As shown in Error! Reference source not found., this focus on equity took many forms, both from a transportation perspective and from a development characteristics perspective. Thus, equity concerns ranged from making sure those needing transit service would receive the type of mobility services meeting their needs, to providing affordable housing and local business opportunities. Except for some of the major U.S. cities, such as New York City, Washington D.C., and Chicago, this level of emphasis on equity is unusual.

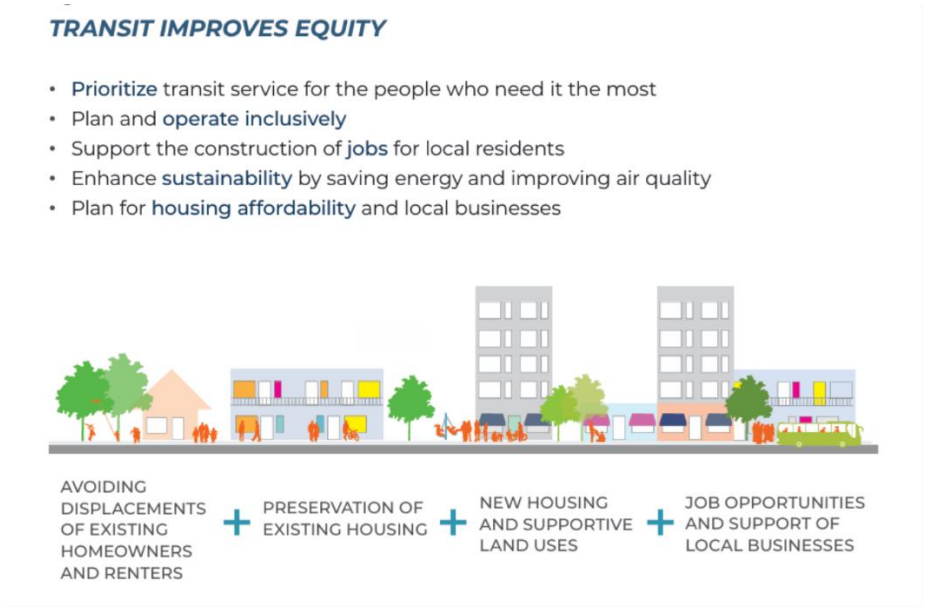


Figure 42 Emphasis on Equity in Raleigh's TOD Strategy

It is interesting to note that although the Planning Commission has adopted the TOD development guidelines, including density bonuses, the City Council is the ultimate decision-maker. Recent decisions (as of June 2024) suggest that it is a bit more cautious in terms of encouraging too much

density (at the suggestions of those neighboring the TOD). For example, the following summary records the June 2024 decisions of the City Council in a proposed BRT station area:

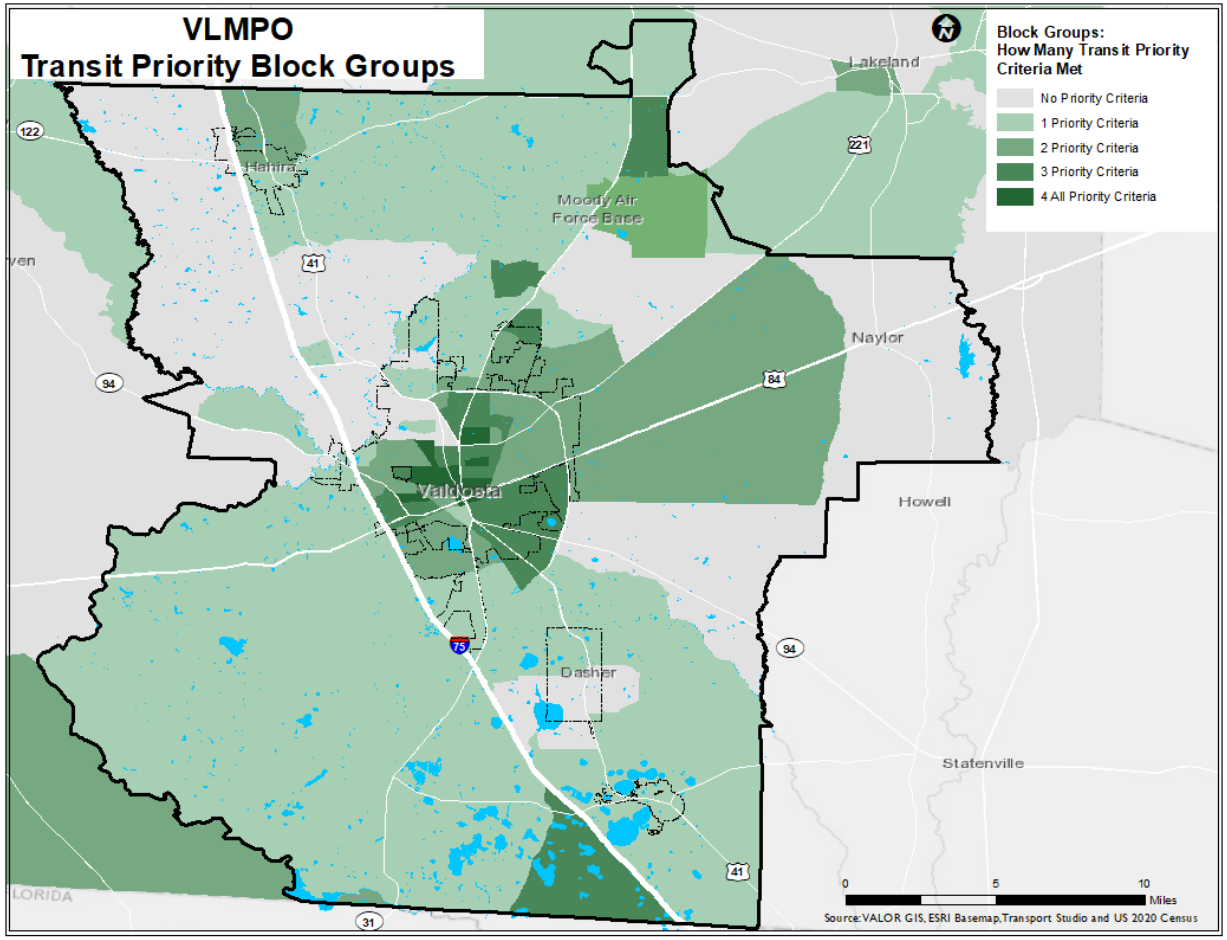
> "Applied the Transit Overlay District (TOD) as recommended by Planning Commission's Committee of the Whole, but excluded properties in the New-Bern Edenton Neighborhood Conservation Overlay District (NCOD).
>
> Rezoned properties in the Eastern Station Area as proposed, but limited the tallest building heights to 5 stories rather than 7 stories.
>
> Lake Haven (3700 Lake Woodard Drive) was rezoned to 7 stories.
>
> Rezoned properties in the Middle 1 Station Area as proposed, but reduced some of the proposed building heights to 5 stories rather than 7 stories…."

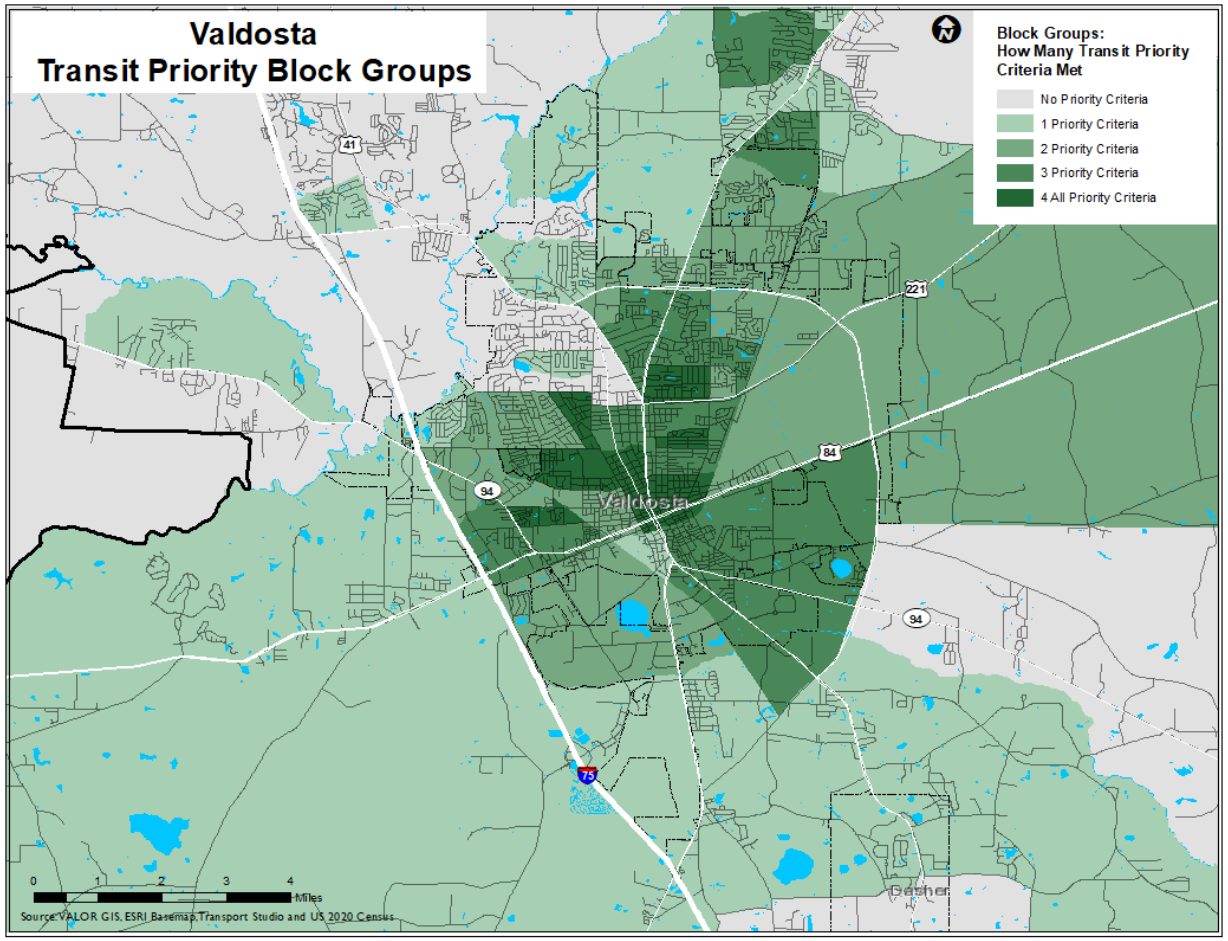
Observations

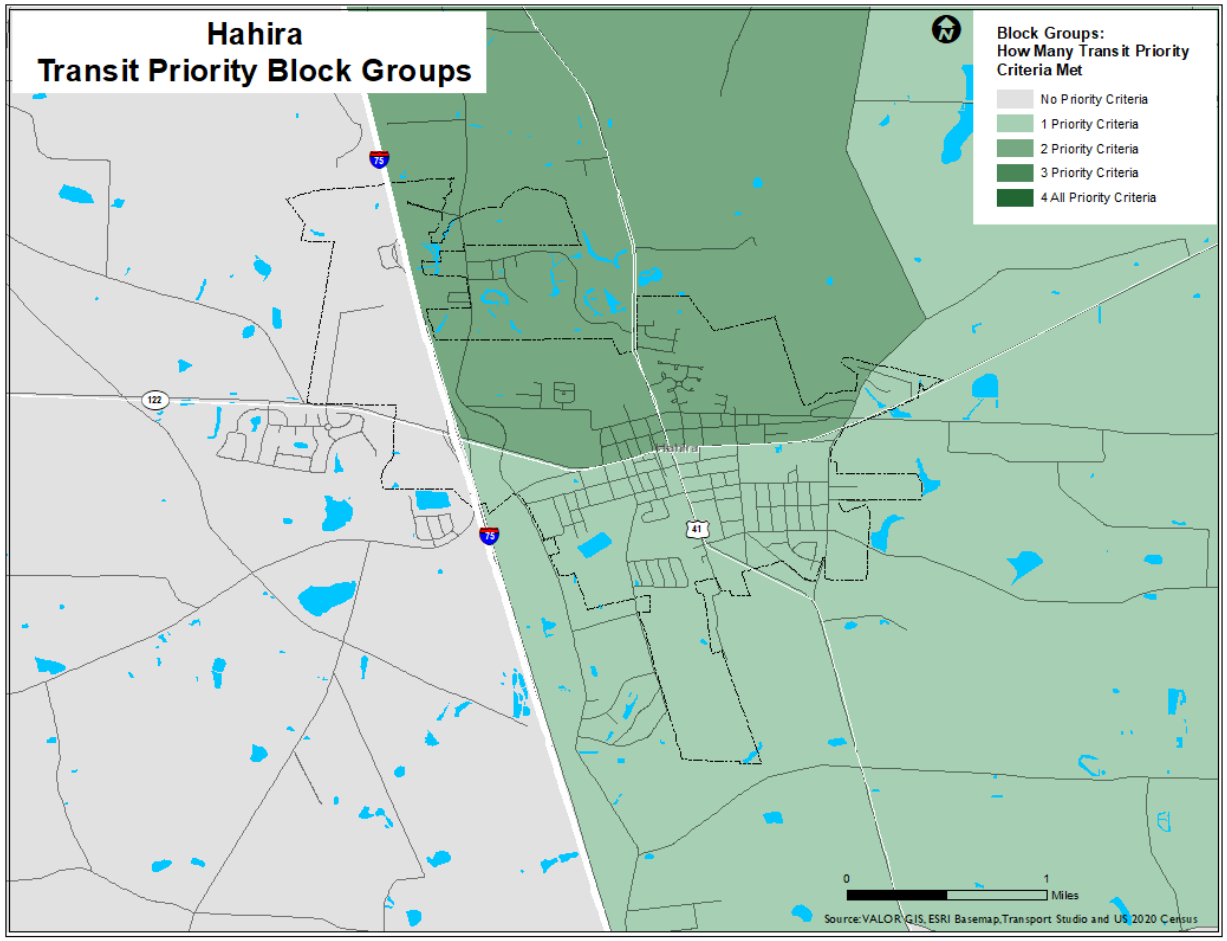
The City of Raleigh's TOD policy, plan, and strategy is being implemented in anticipation of new BRT services. As such, it exhibits some practical lessons in terms of the policy influence on decisions.

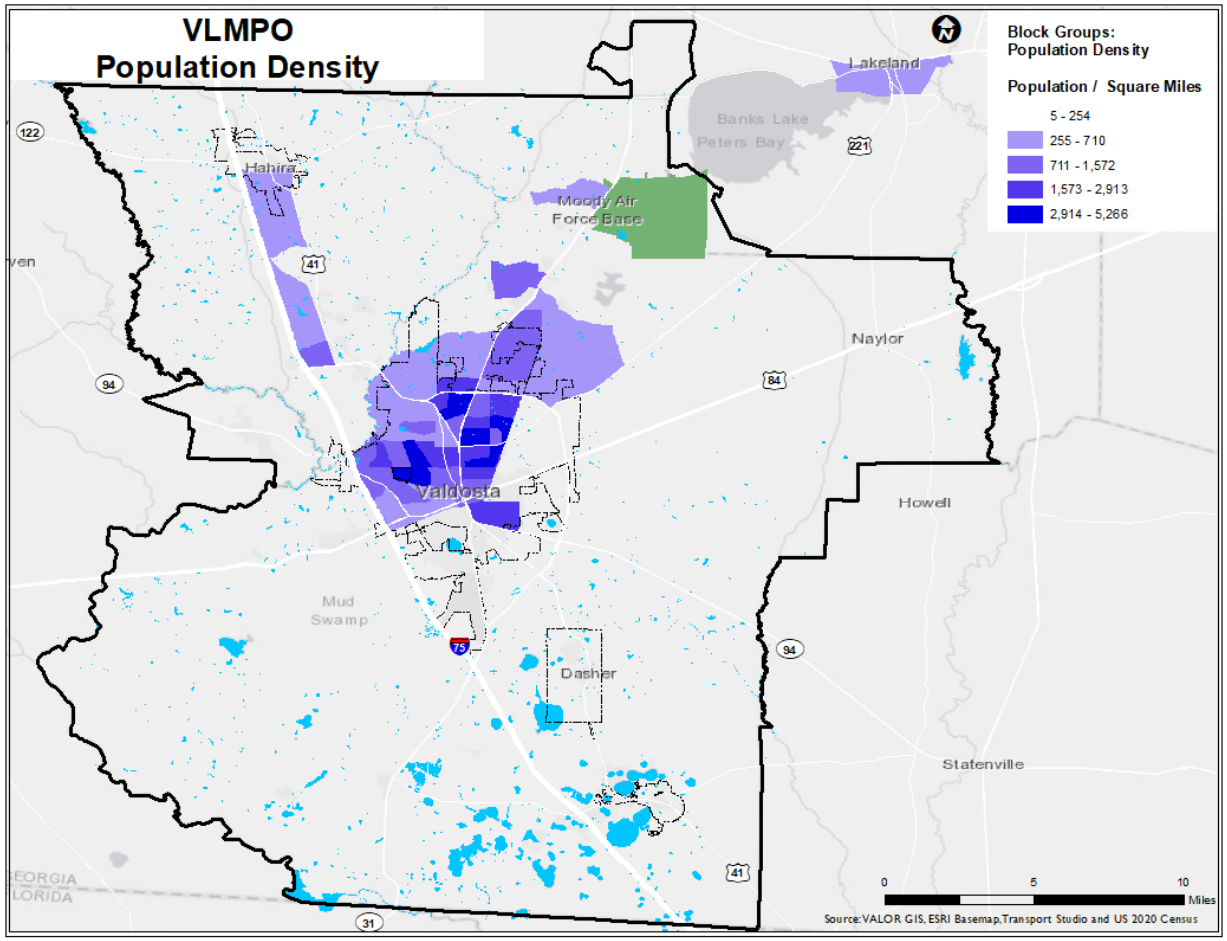
1. Raleigh's use of an overlay TOD zone, similar to the other case studies, seems to indicate that such overlays are the preferred choice of strategy implementation.
2. The emphasis on equitable application of TOD policies and strategies is one of the most noteworthy characteristics of Raleigh's TOD approach. While some other cities have incorporated some aspect of equity in their TOD approaches, such as encouraging or requiring affordable housing, Raleigh has thoughtfully examined a wide range of possible means of achieving equitable outcomes.
3. As in other TOD examples, Raleigh has adopted a broad range of transportation strategies to support TOD viability, including parking management, encouraging the accommodation of bicycling and walking, and even prohibiting land uses in the TOD zone that represent "auto-oriented uses."
4. The final observation reflects the political nature of the ultimate authority in a city or town. No evidence was found in Madison (Morrisville does not yet have development proposals that need to be reviewed) that the city elected officials would override or overrule recommended TOD development guides such as bonus densities. This is not the case in Raleigh where the city council, although accepting most of the planning recommendations, seems to be somewhat cautious of providing "too much" density.

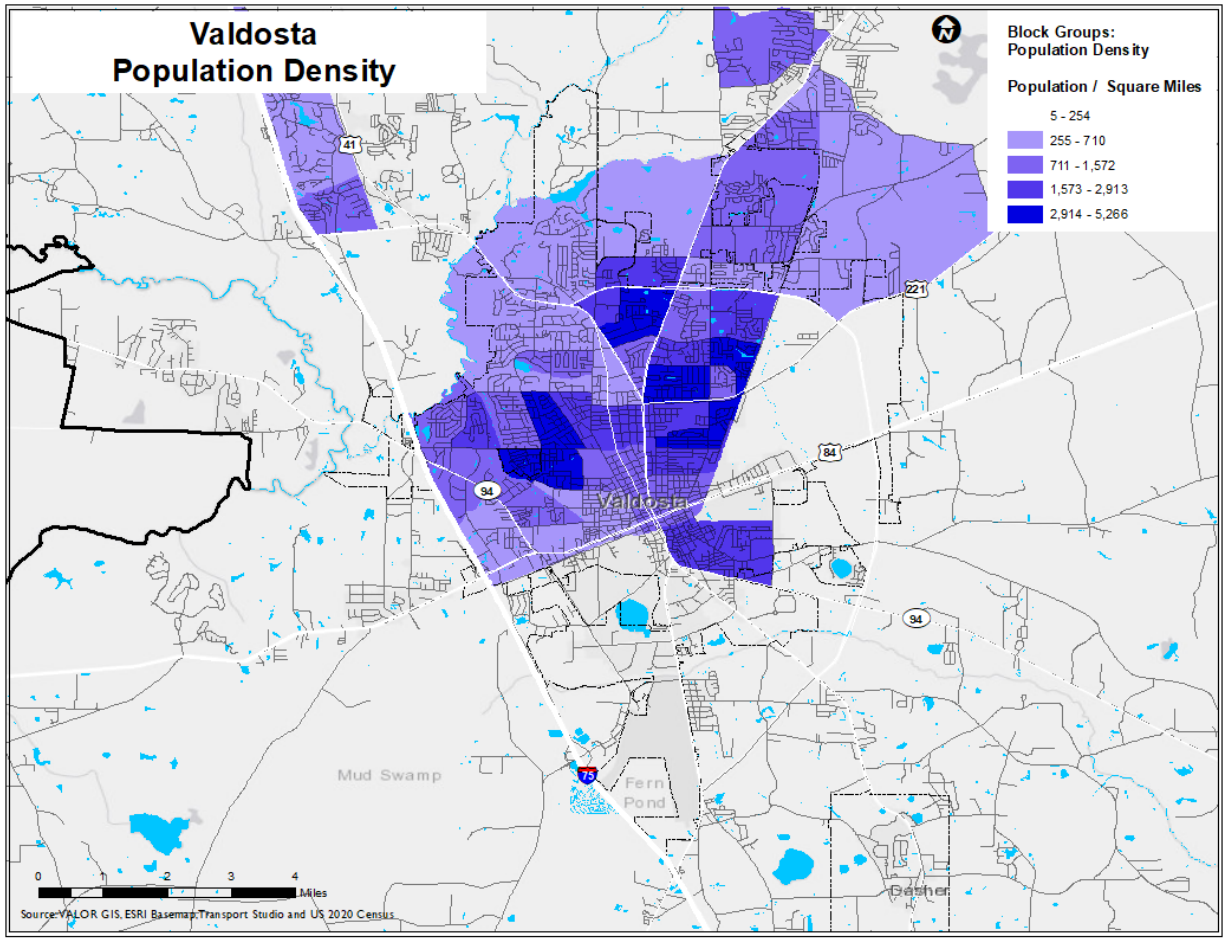
Appendix B: TOD Screening Mapbook

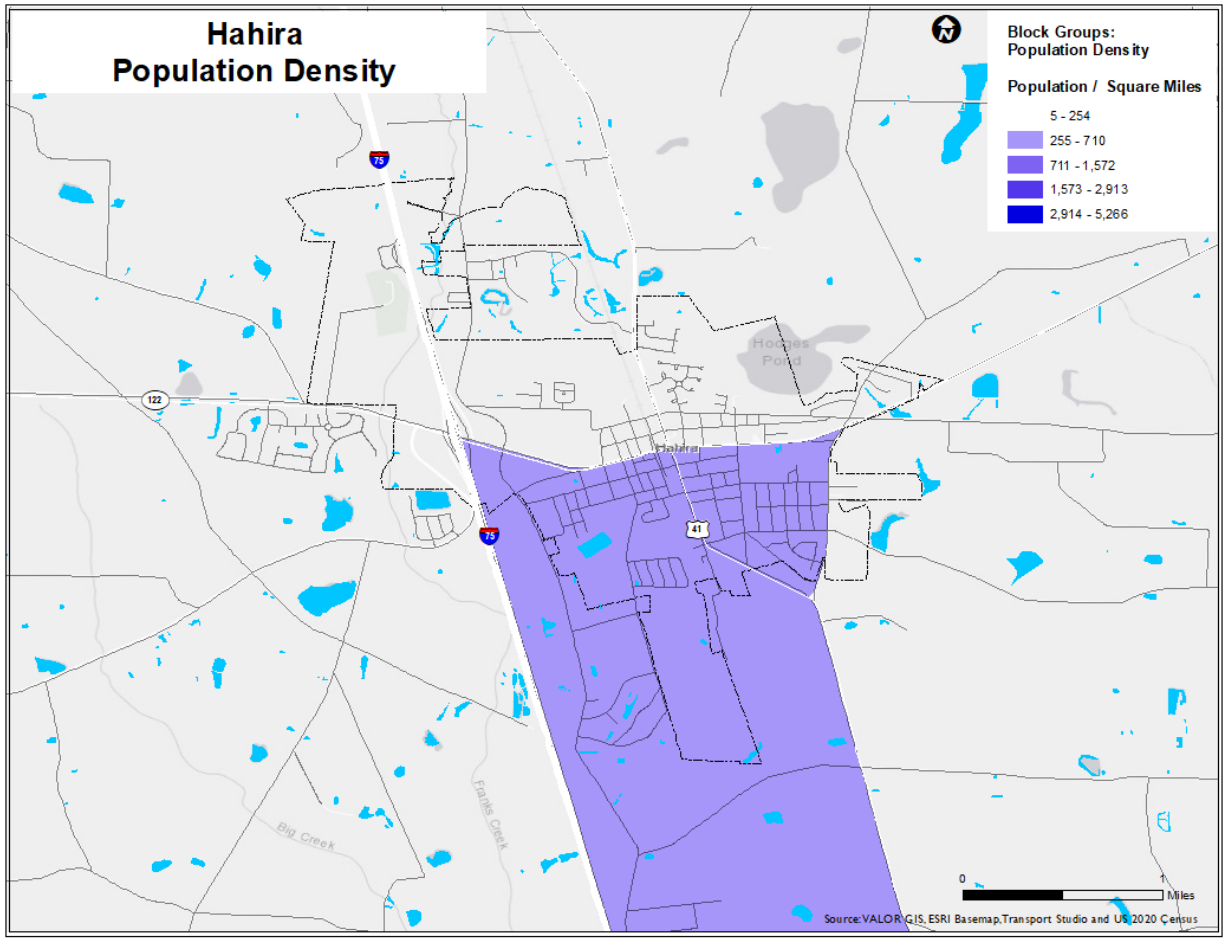


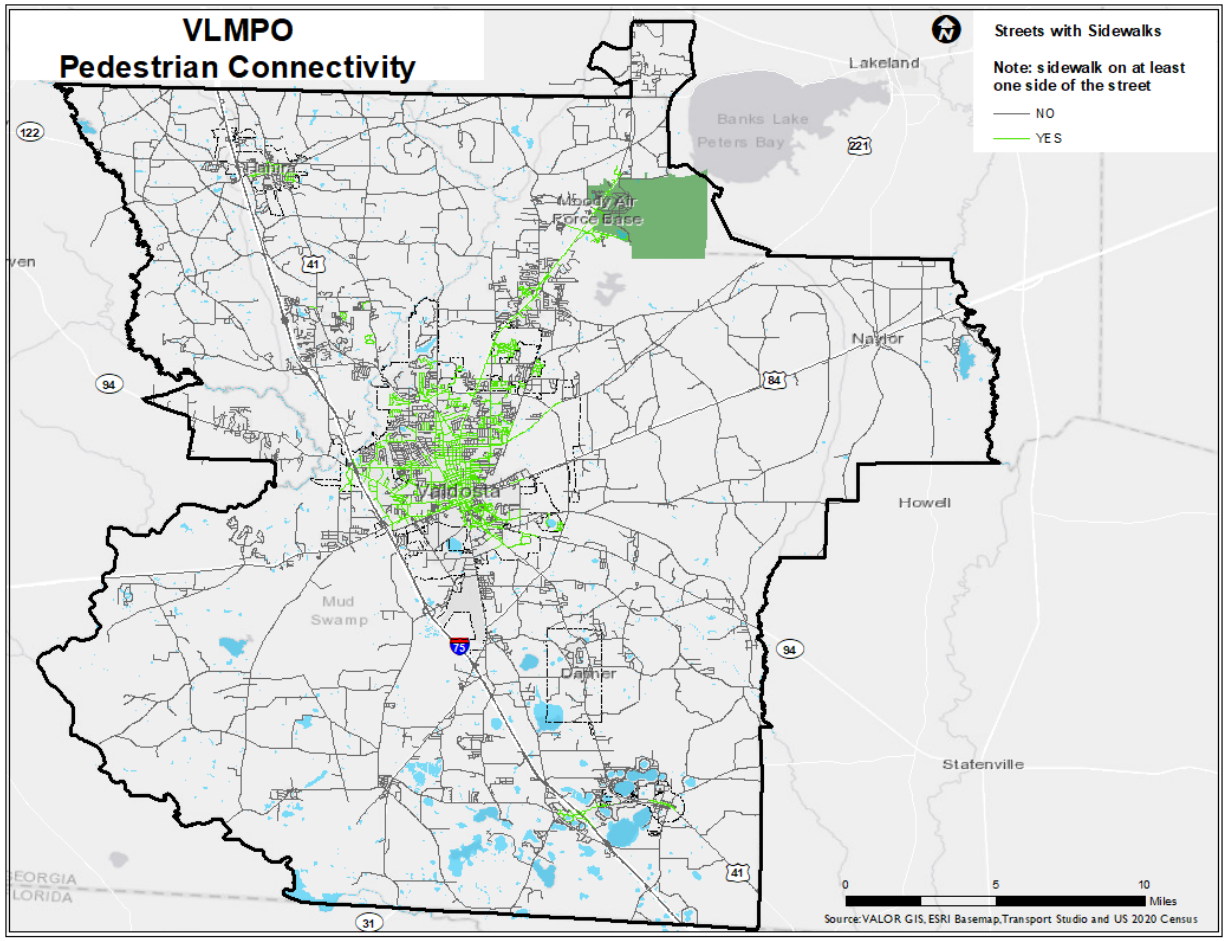

Valdosta
Transit Priority Block Groups
Block Groups:
How Many Transit Priority Criteria Met
No Priority Criteria
1 Priority Criteria
2 Priority Criteria
3 Priority Criteria
4 All Priority Criteria
41
221
84
94
75
Valdosta
Dasher
0 1 2 3 4
Miles
Source: VALOR GIS, ESRI Basemap, Transport Studio and US 2020 Census

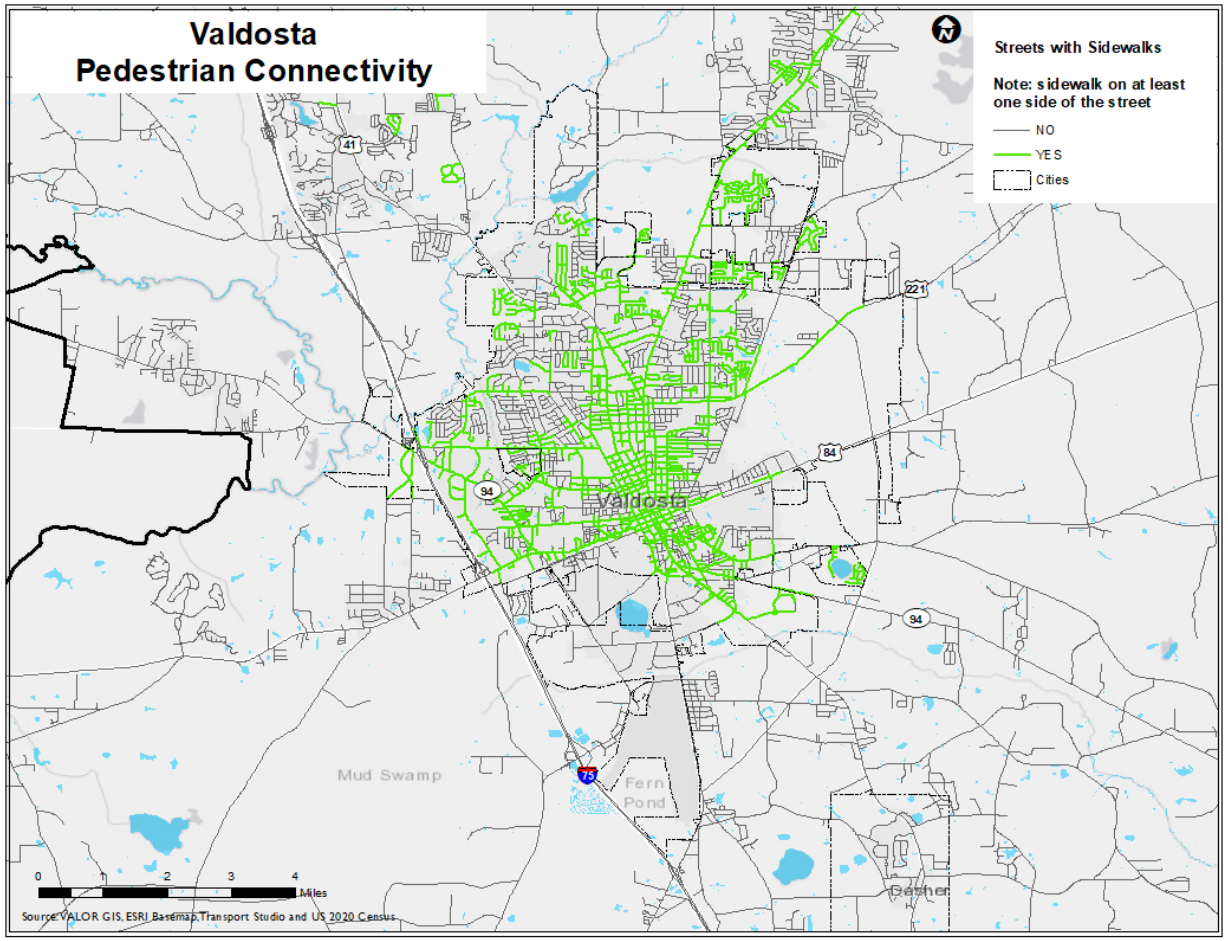

Hahira
Transit Priority Block Groups
Block Groups:
How Many Transit Priority Criteria Met
No Priority Criteria
1 Priority Criteria
2 Priority Criteria
3 Priority Criteria
4 All Priority Criteria
75
122
41
0
1
Miles
Source: VALOR GIS, ESRI Basemap, Transport Studio and US 2020 Census

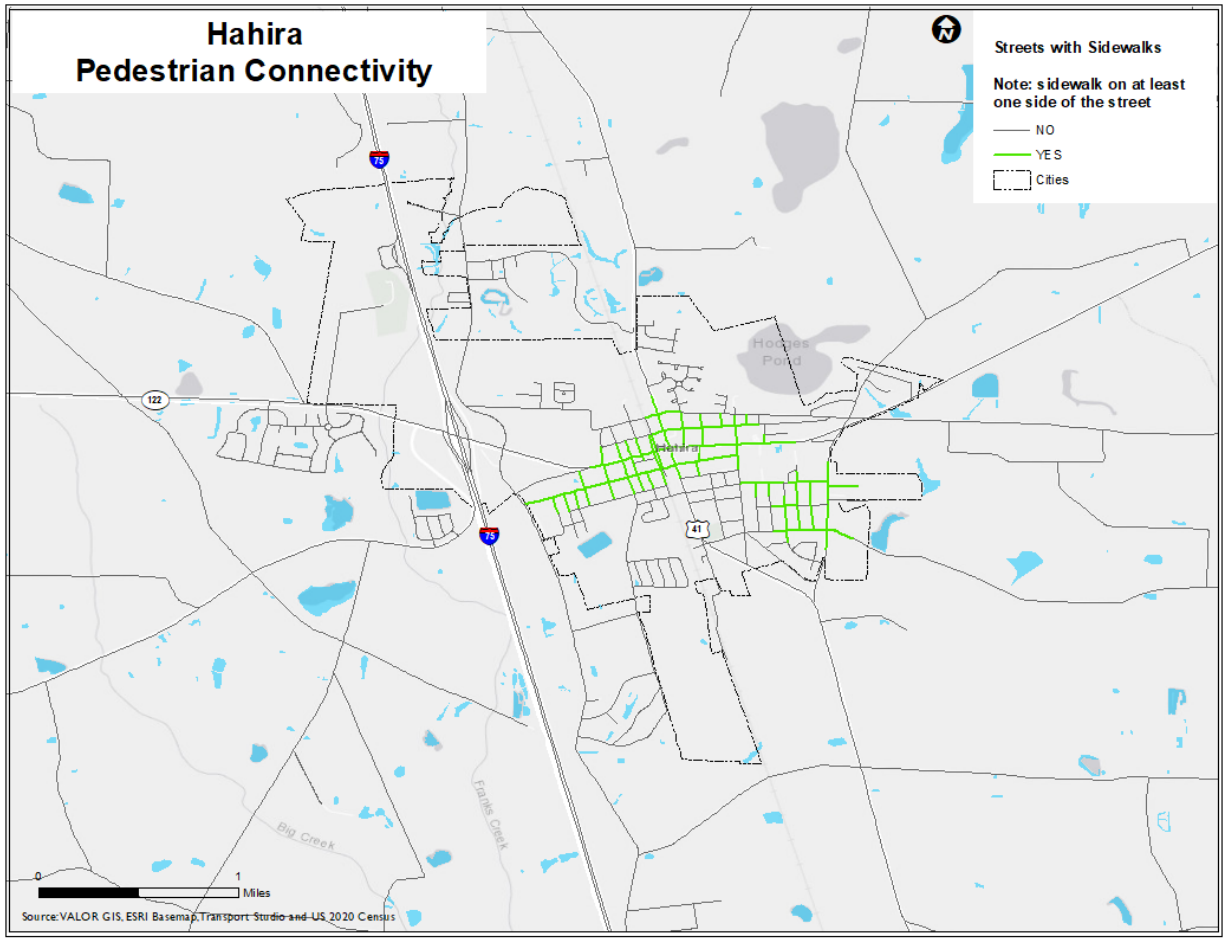

VLMPO
Population Density
Block Groups:
Population Density
Population / Square Miles
5 - 254
255 - 710
711 - 1,572
1,573 - 2,913
2,914 - 5,266
Lakeland
Banks Lake
Peters Bay
Hahira
Moody Air
Force Base
Naylor
Valdosta
Howell
Mud
Swamp
Dasher
Statenville
122
41
94
84
221
75
31
0
5
10
Miles
Source: VALOR GIS, ESRI Basemap, Transport Studio and US 2020 Census

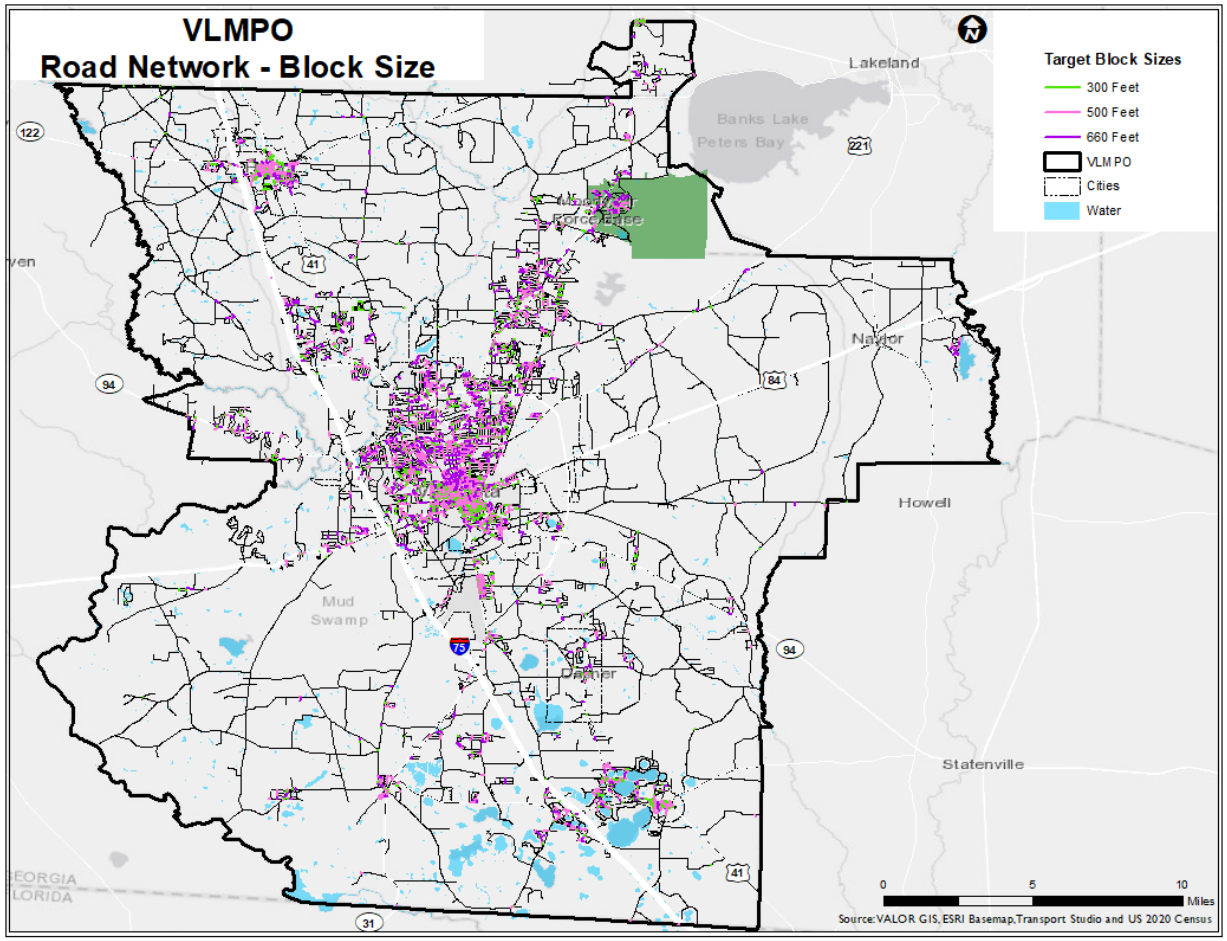

Valdosta
Population Density
Block Groups:
Population Density
Population / Square Miles
5 - 254
255 - 710
711 - 1,572
1,573 - 2,913
2,914 - 5,266
41
221
84
94
75
Valdosta
Mud Swamp
Fern
Pond
Gather
0 1 2 3 4
Miles
Source: VALOR GIS, ESRI Basemap, Transport Studio and US 2020 Census

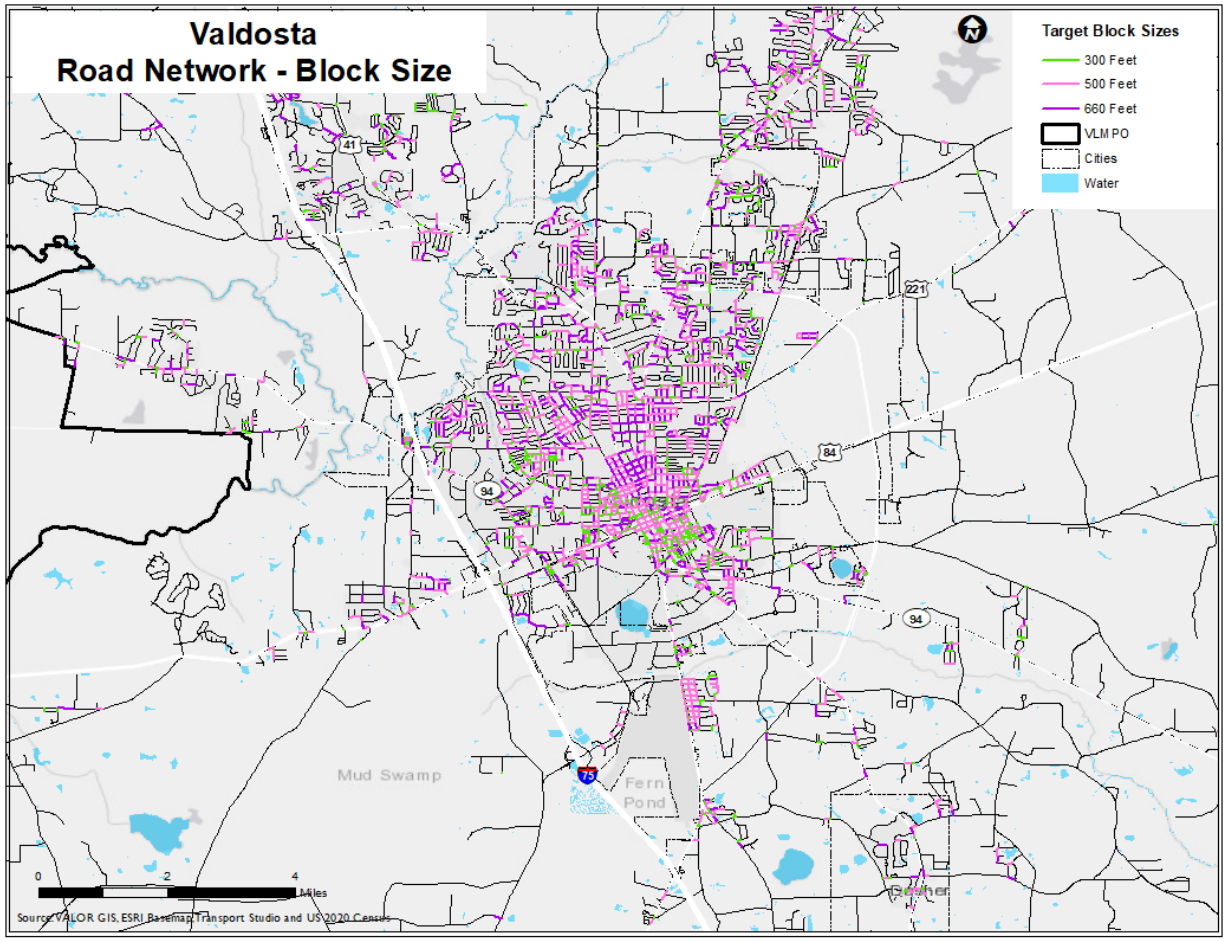

Hahira
Population Density
Block Groups:
Population Density
Population / Square Miles
5 - 254
255 - 710
711 - 1,572
1,573 - 2,913
2,914 - 5,266
75
122
41
Hahira
Hodges Pond
Big Creek
Franks Creek
0
1
Miles
Source: VALOR GIS, ESRI Basemap, Transport Studio and US 2020 Census

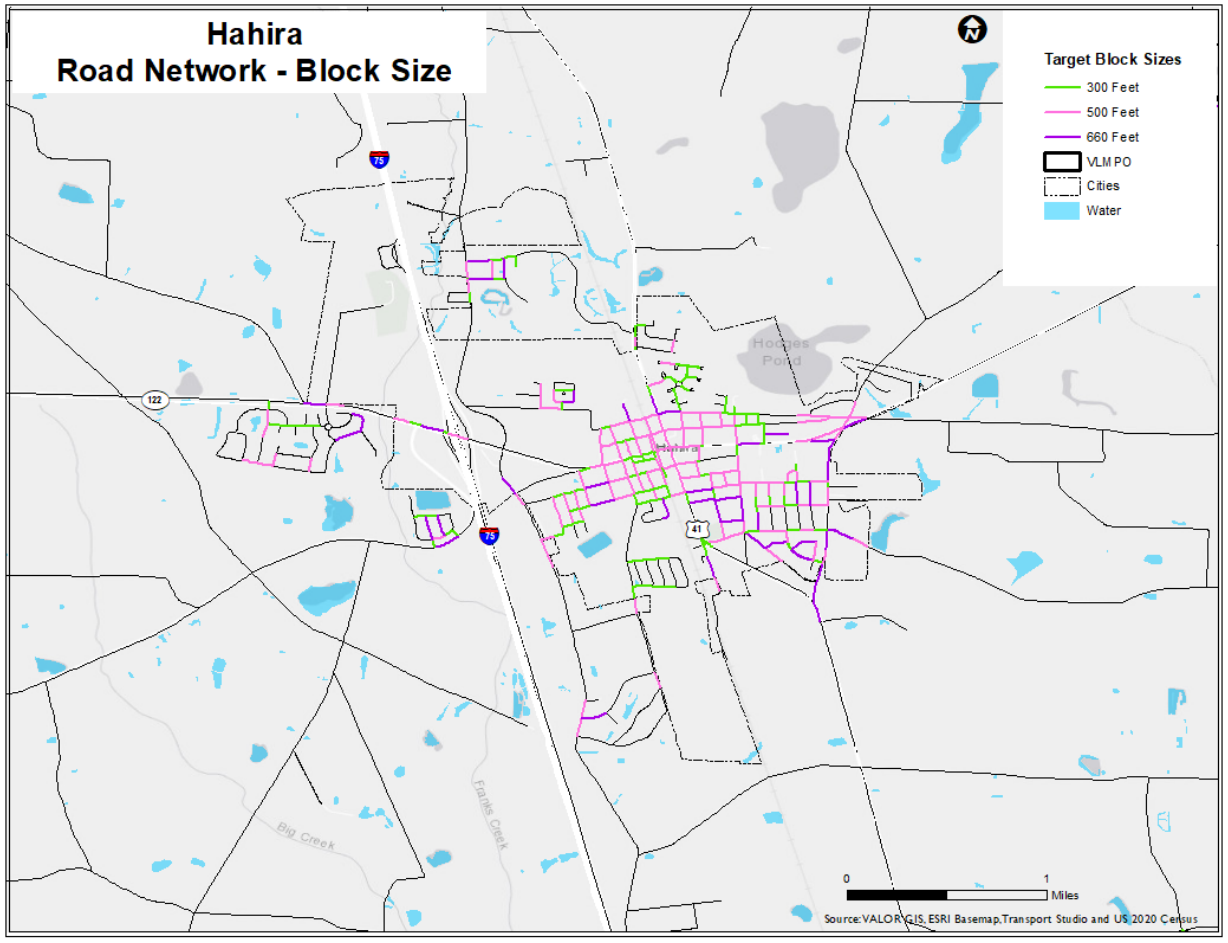

VLMPO
Pedestrian Connectivity
Streets with Sidewalks
Note: sidewalk on at least one side of the street
NO
YES
Lakeland
Banks Lake
Peters Bay
Moody Air Force Base
Naylor
Valdosta
Howell
Mud Swamp
Statenville
Dasher
122
221
41
94
84
75
31
0
5
10
Miles
Source:VALOR GIS, ESRI Basemap,Transport Studio and US 2020 Census

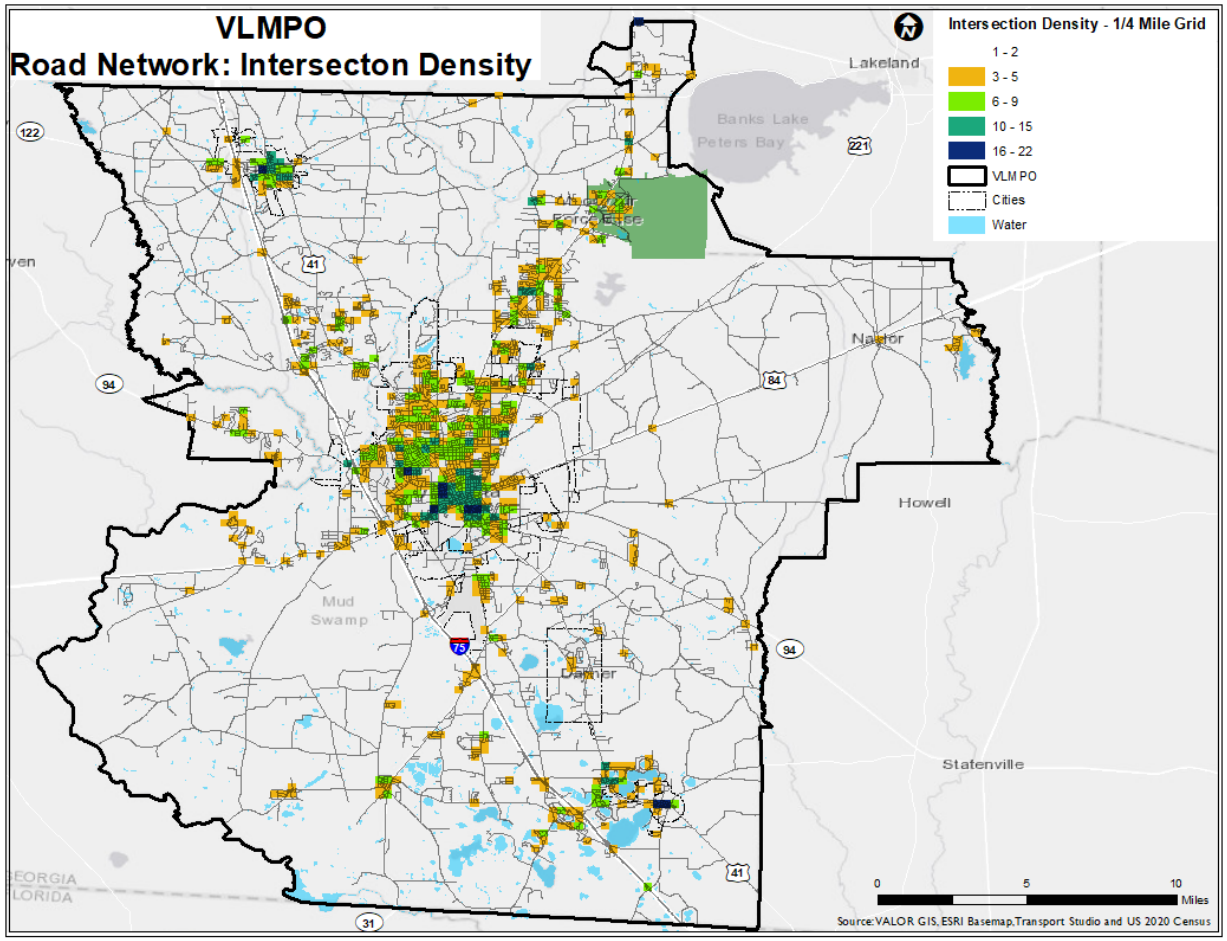

Valdosta
Pedestrian Connectivity
Streets with Sidewalks
Note: sidewalk on at least one side of the street
NO
YES
Cities
41
221
84
94
75
Valdosta
Mud Swamp
Fern Pond
Gafner
0 1 2 3 4
Miles
Source: VALOR GIS, ESRI Basemap,Transport Studio and US 2020 Census

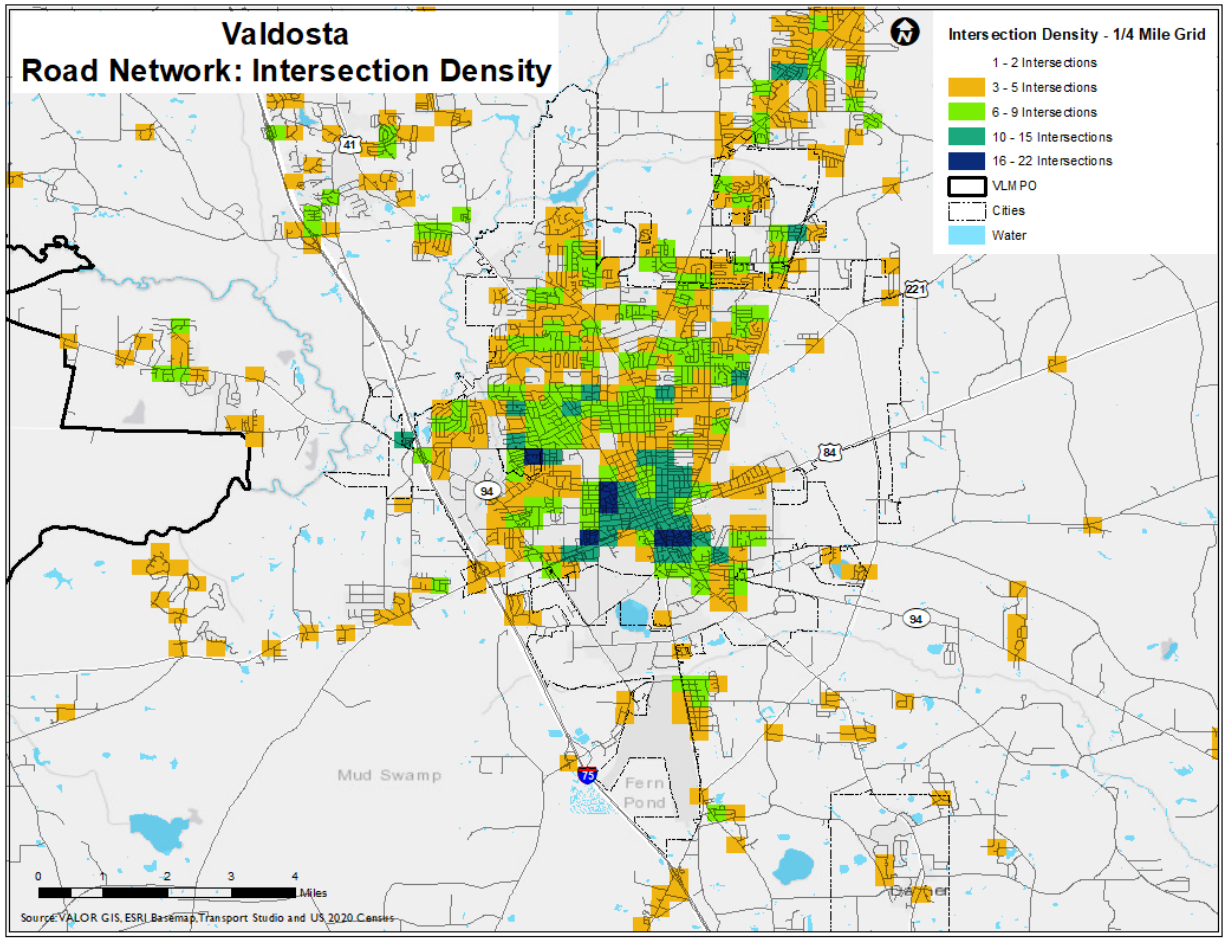

Hahira
Pedestrian Connectivity
Streets with Sidewalks
Note: sidewalk on at least one side of the street
NO
YES
Cities
75
122
41
Hodges Pond
Hahira
Big Creek
Franks Creek
0
1
Miles
Source: VALOR GIS, ESRI Basemap Transport Studio and US 2020 Census

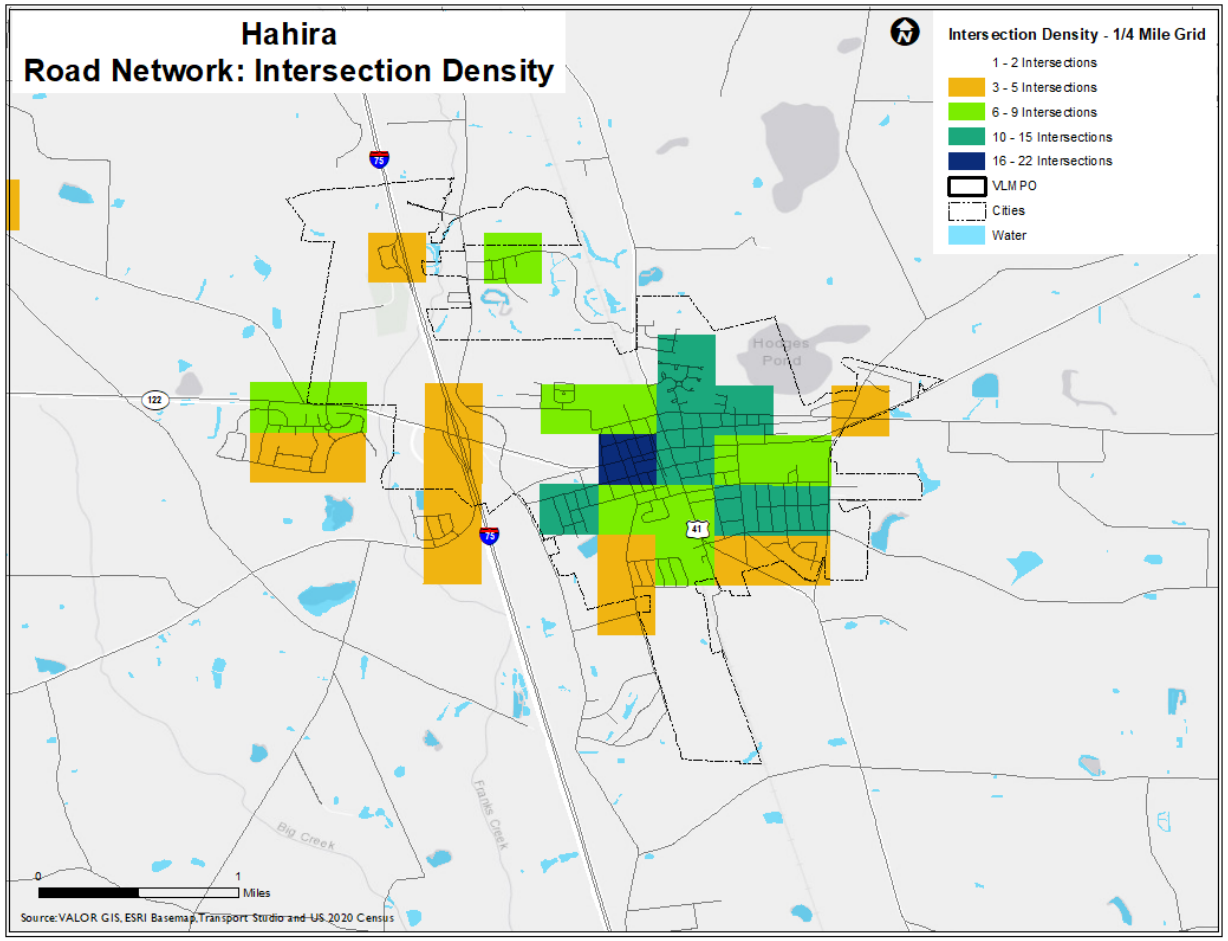

VLMPO
Road Network - Block Size
Target Block Sizes
300 Feet
500 Feet
660 Feet
VLMPO
Cities
Water
Lakeland
Banks Lake
Peters Bay
Naylor
Howell
Statenville
Mud
Swamp
0
5
10
Miles
Source:VALOR GIS,ESRI Basemap,Transport Studio and US 2020 Census

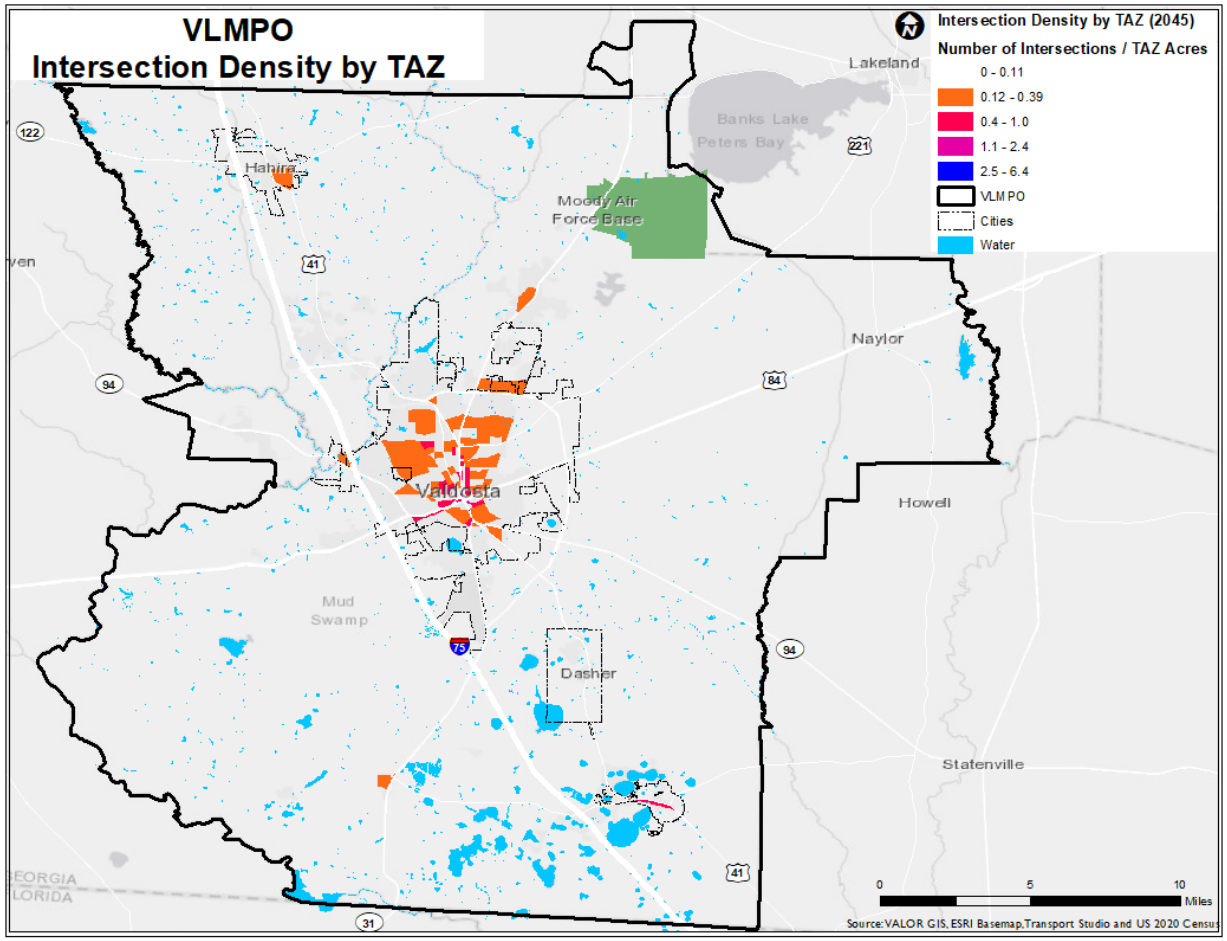

Valdosta
Road Network - Block Size
Target Block Sizes
300 Feet
500 Feet
660 Feet
VLMPO
Cities
Water
41
221
84
94
75
Mud Swamp
Fern Pond
0
2
4
Miles
Source: VALOR GIS, ESRI Basemap Transport Studio and US 2020 Census

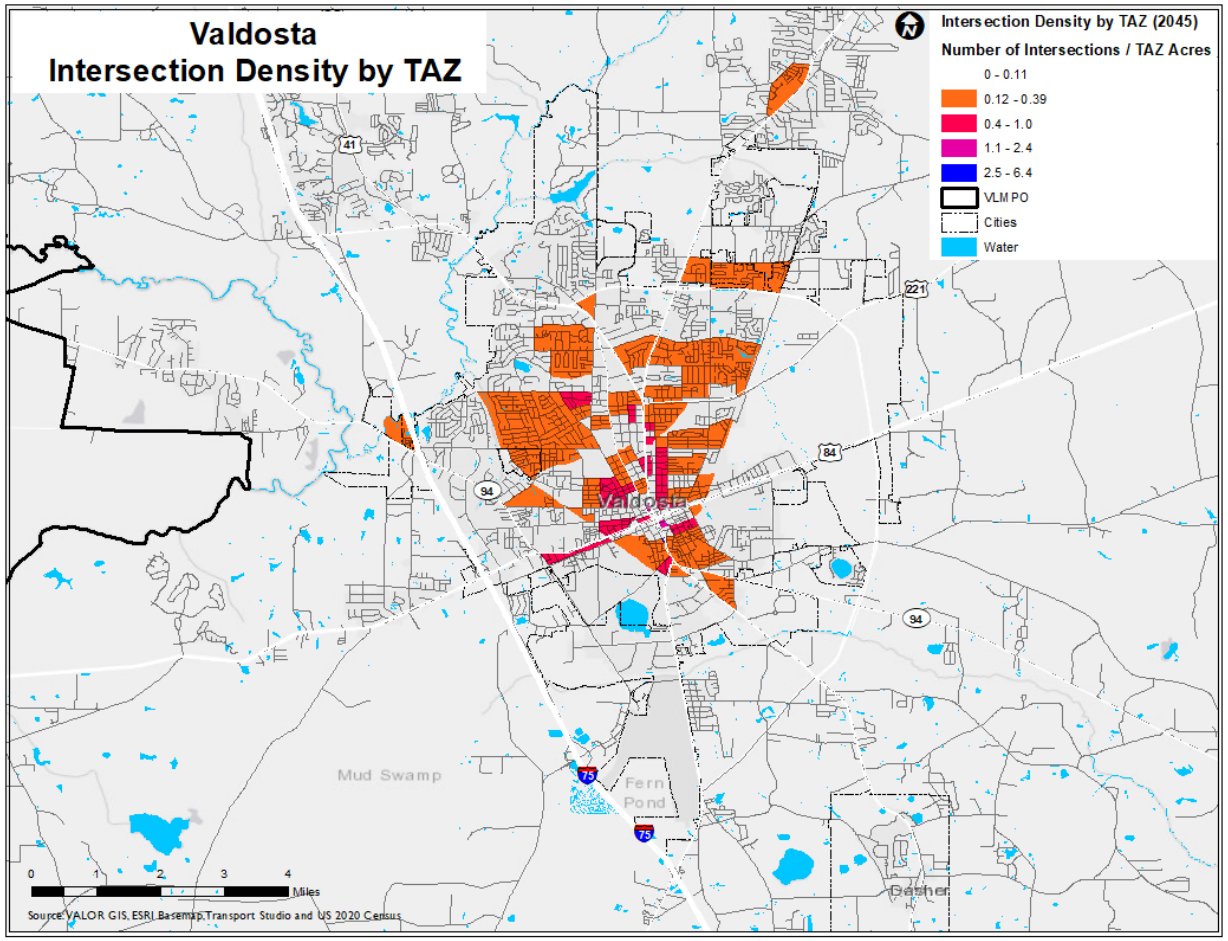

Hahira
Road Network - Block Size
Target Block Sizes
300 Feet
500 Feet
660 Feet
VLMPO
Cities
Water
Hodges Pond
Big Creek
Franks Creek
0
1
Miles
Source: VALOR GIS, ESRI Basemap, Transport Studio and US 2020 Census

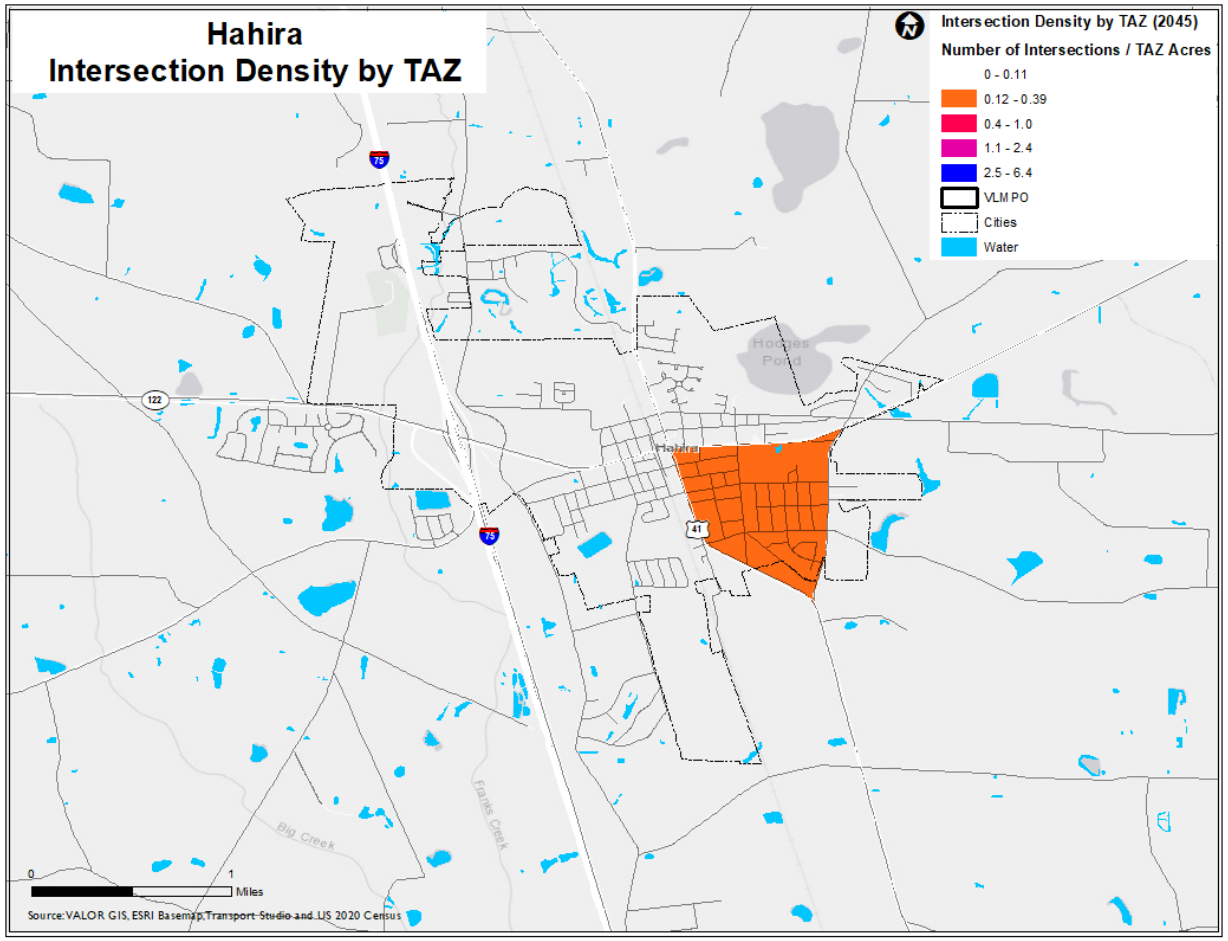

VLMPO
Road Network: Intersecton Density
Intersection Density - 1/4 Mile Grid
1 - 2
3 - 5
6 - 9
10 - 15
16 - 22
VLMPO
Cities
Water
Lakeland
Banks Lake
Peters Bay
Nashor
Howell
Statenville
Mud
Swamp
Dasher
122
41
94
84
221
75
31
0
5
10
Miles
Source:VALOR GIS, ESRI Basemap,Transport Studio and US 2020 Census

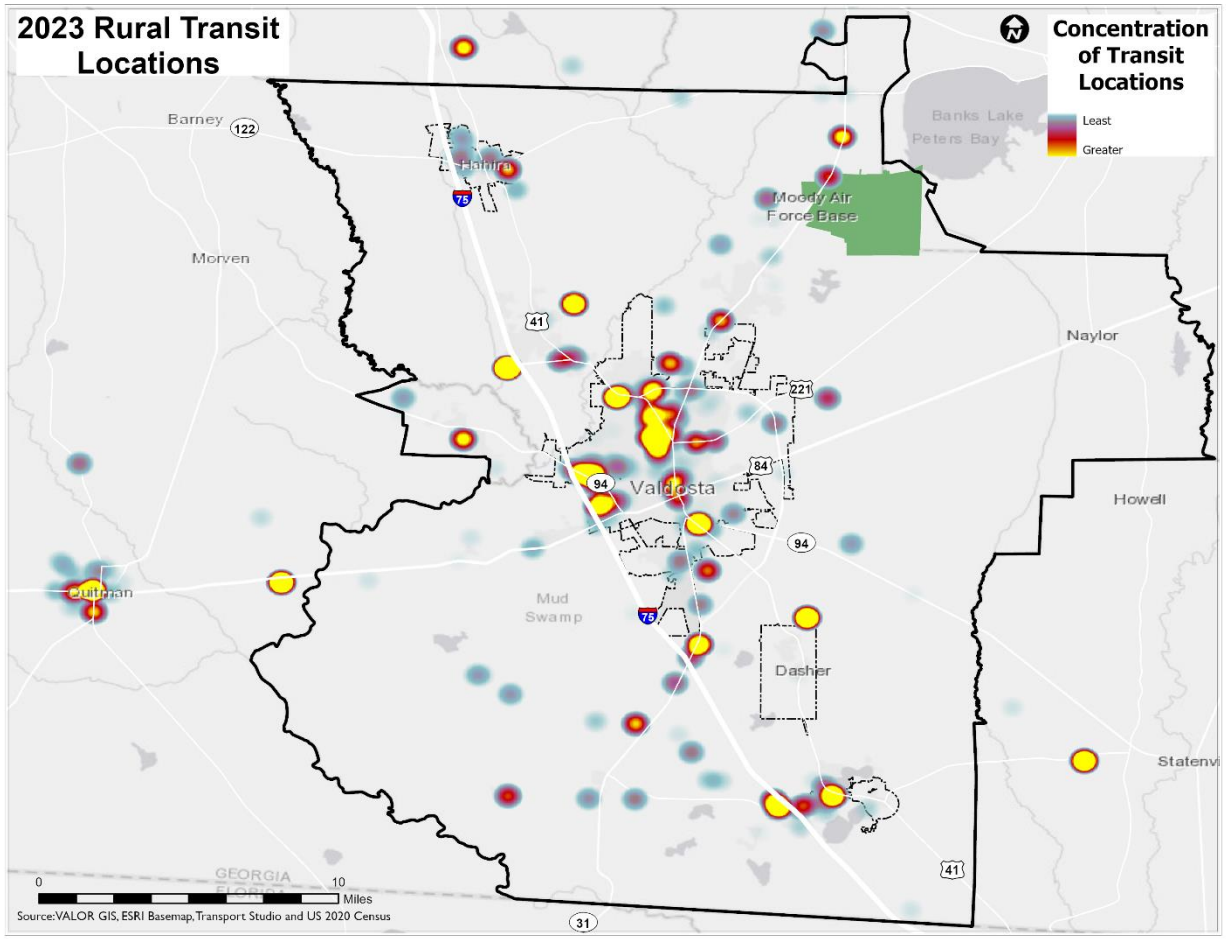

Valdosta
Road Network: Intersection Density
Intersection Density - 1/4 Mile Grid
1 - 2 Intersections
3 - 5 Intersections
6 - 9 Intersections
10 - 15 Intersections
16 - 22 Intersections
VLMPO
Cities
Water
41
221
84
94
94
75
Mud Swamp
Fern
Pond
0 1 2 3 4
Miles
Source: VALOR GIS, ESRI Basemap, Transport Studio and US 2020 Census

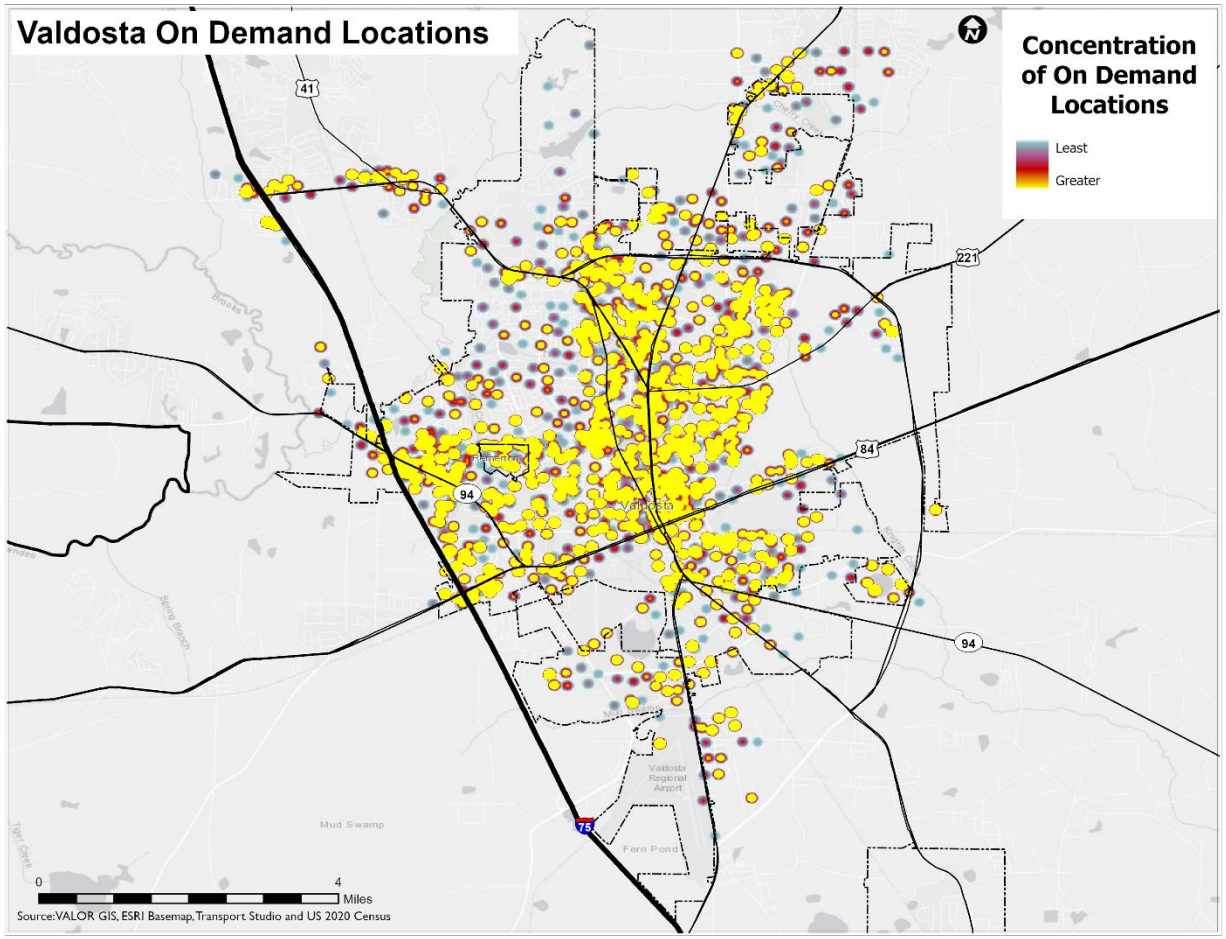

Hahira
Road Network: Intersection Density
Intersection Density - 1/4 Mile Grid
1 - 2 Intersections
3 - 5 Intersections
6 - 9 Intersections
10 - 15 Intersections
16 - 22 Intersections
VLMPO
Cities
Water
75
122
41
Hodges Pond
Big Creek
Franks Creek
0
1
Miles
Source: VALOR GIS, ESRI Basemap, Transport Studio and US 2020 Census

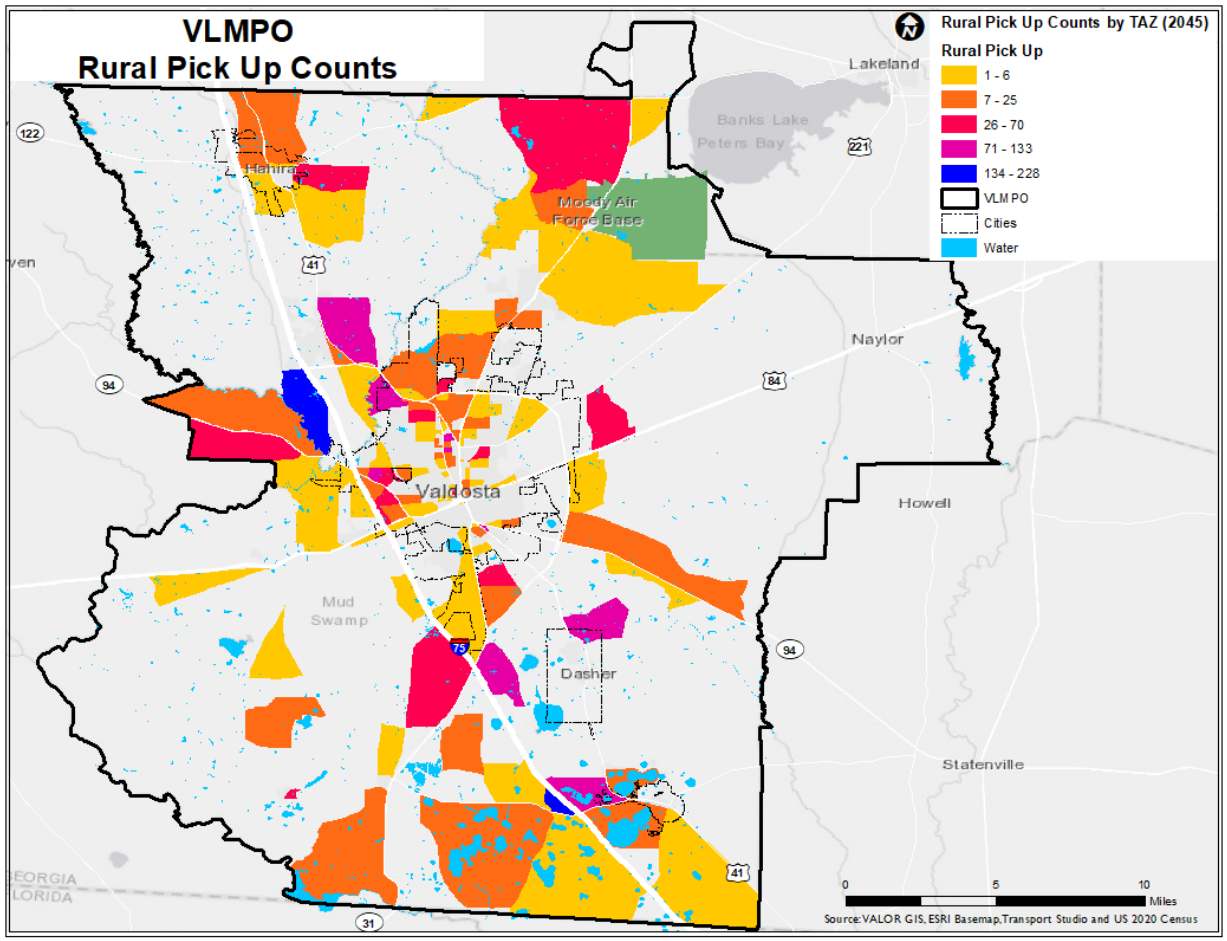

VLMPO
Intersection Density by TAZ
Intersection Density by TAZ (2045)
Number of Intersections / TAZ Acres
0 - 0.11
0.12 - 0.39
0.4 - 1.0
1.1 - 2.4
2.5 - 6.4
VLMPO
Cities
Water
Lakeland
Banks Lake
Peters Bay
Hahira
Moody Air Force Base
Naylor
Valdosta
Howell
Mud Swamp
Dasher
Statenville
122
221
41
94
84
75
31
0
5
10
Miles
Source:VALOR GIS, ESRI Basemap,Transport Studio and US 2020 Census

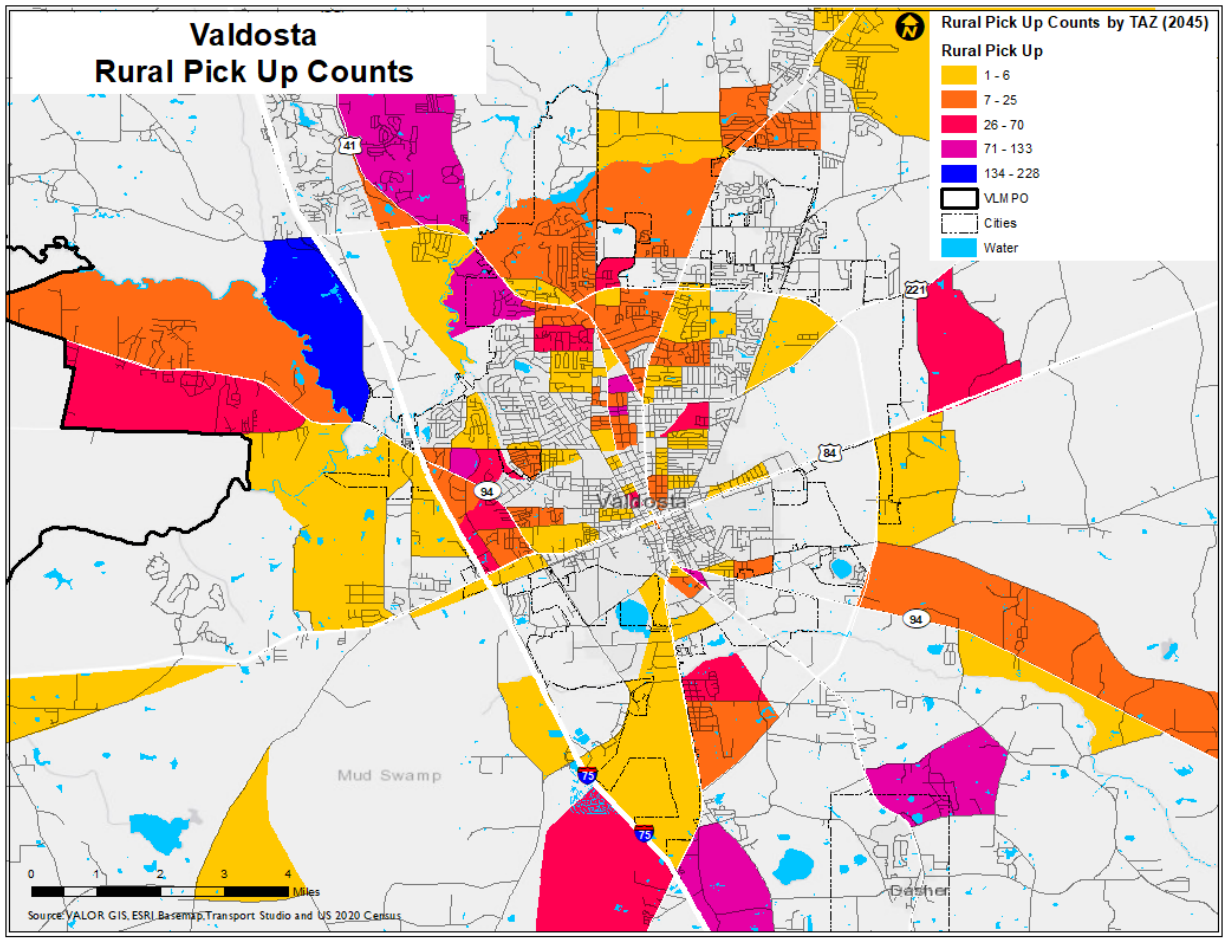

Valdosta
Intersection Density by TAZ
Intersection Density by TAZ (2045)
Number of Intersections / TAZ Acres
0 - 0.11
0.12 - 0.39
0.4 - 1.0
1.1 - 2.4
2.5 - 6.4
VLMPO
Cities
Water
41
221
84
94
75
Valdosta
Mud Swamp
Fern Pond
Dasher
0 1 2 3 4
Miles
Source: VALOR GIS, ESRI Basemap,Transport Studio and US 2020 Census

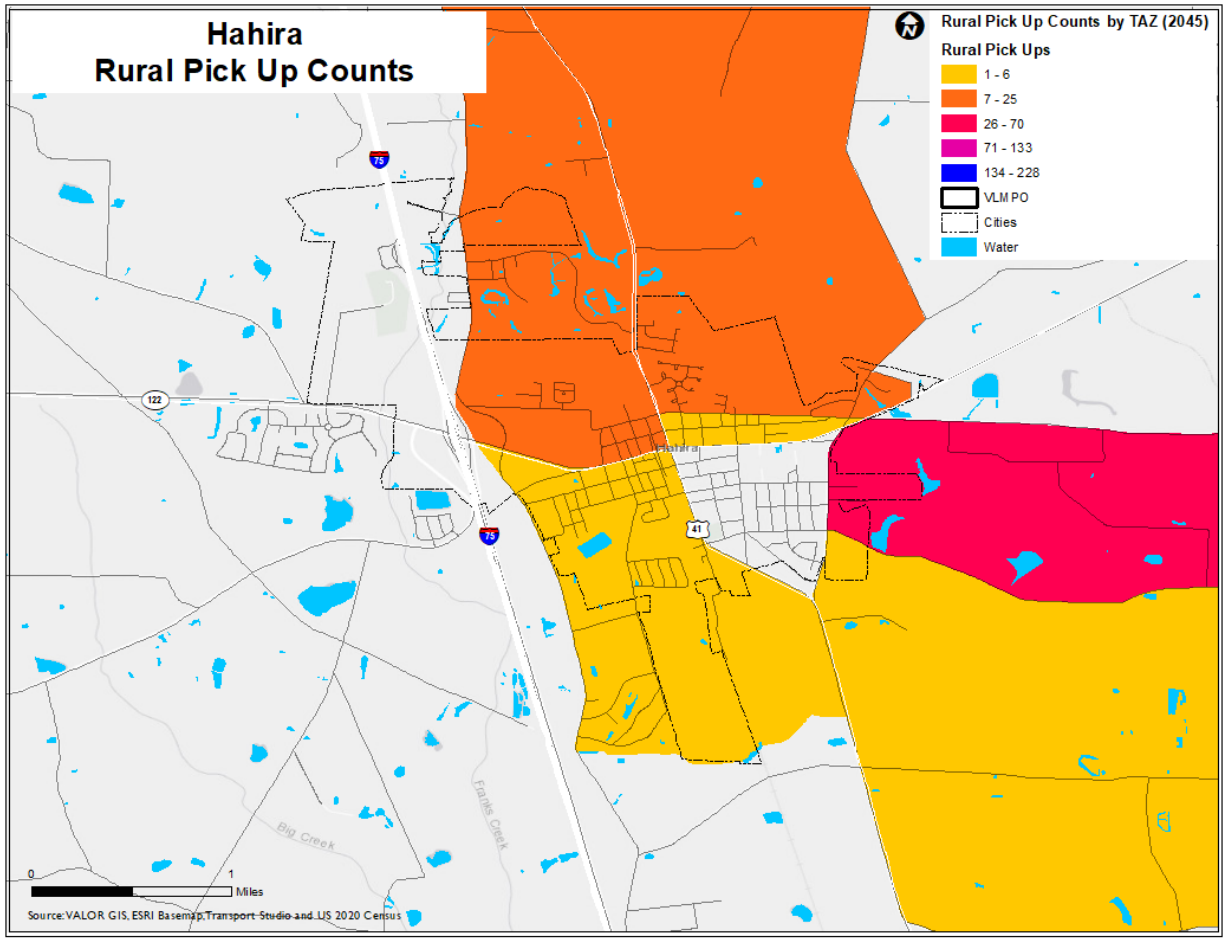

Hahira
Intersection Density by TAZ
Intersection Density by TAZ (2045)
Number of Intersections / TAZ Acres
0 - 0.11
0.12 - 0.39
0.4 - 1.0
1.1 - 2.4
2.5 - 6.4
VLMPO
Cities
Water
Hodges Pond
Hahira
Big Creek
Franks Creek
0
1
Miles
Source: VALOR GIS, ESRI Basemap, Transport Studio and US 2020 Census

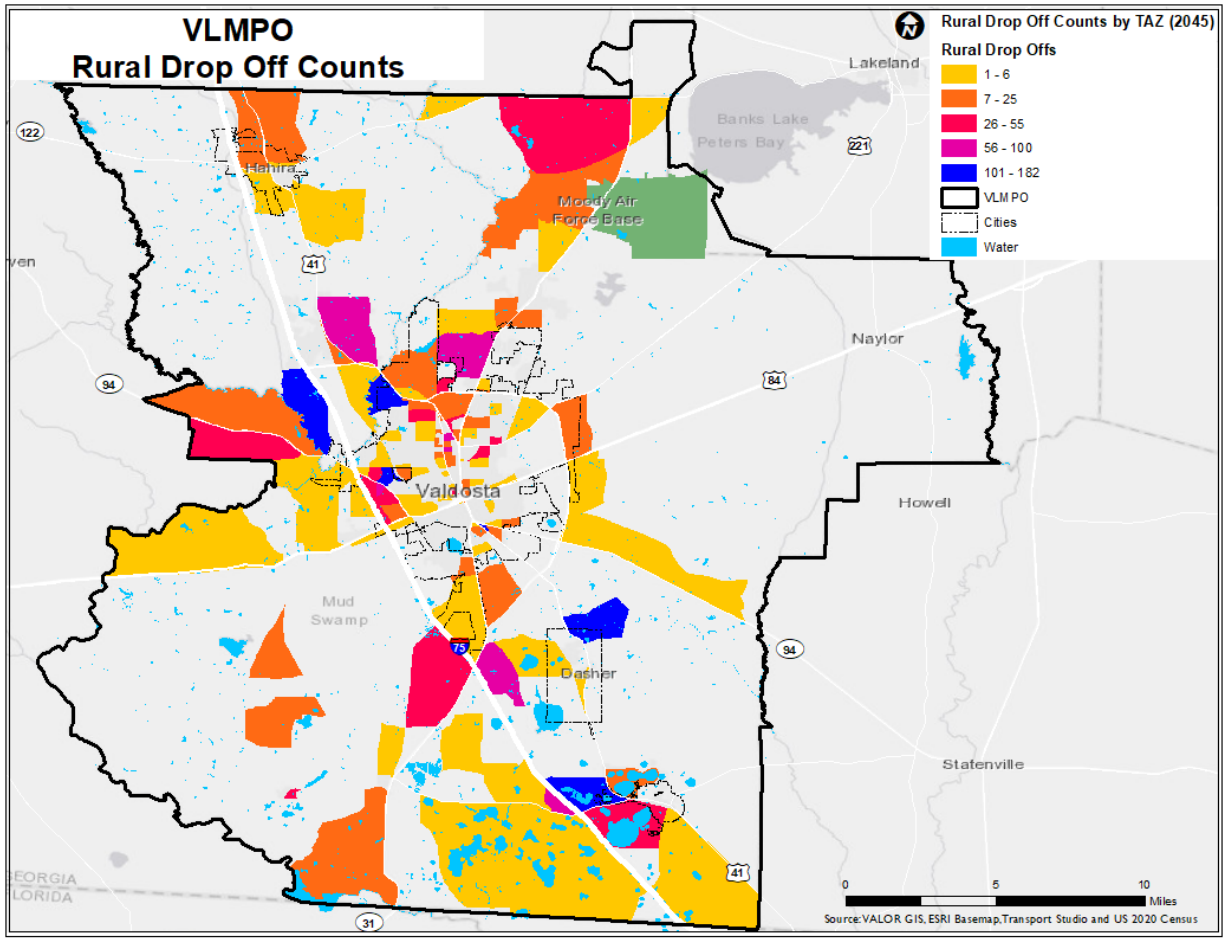

2023 Rural Transit Locations
Concentration of Transit Locations
Least
Greater
Barney
122
Hahira
75
Moody Air Force Base
Banks Lake
Peters Bay
Morven
41
Naylor
221
84
94
Valdosta
Howell
Quitman
Mud Swamp
Dasher
Statenv
GEORGIA
FLORIDA
0
10
Miles
Source:VALOR GIS, ESRI Basemap,Transport Studio and US 2020 Census
31

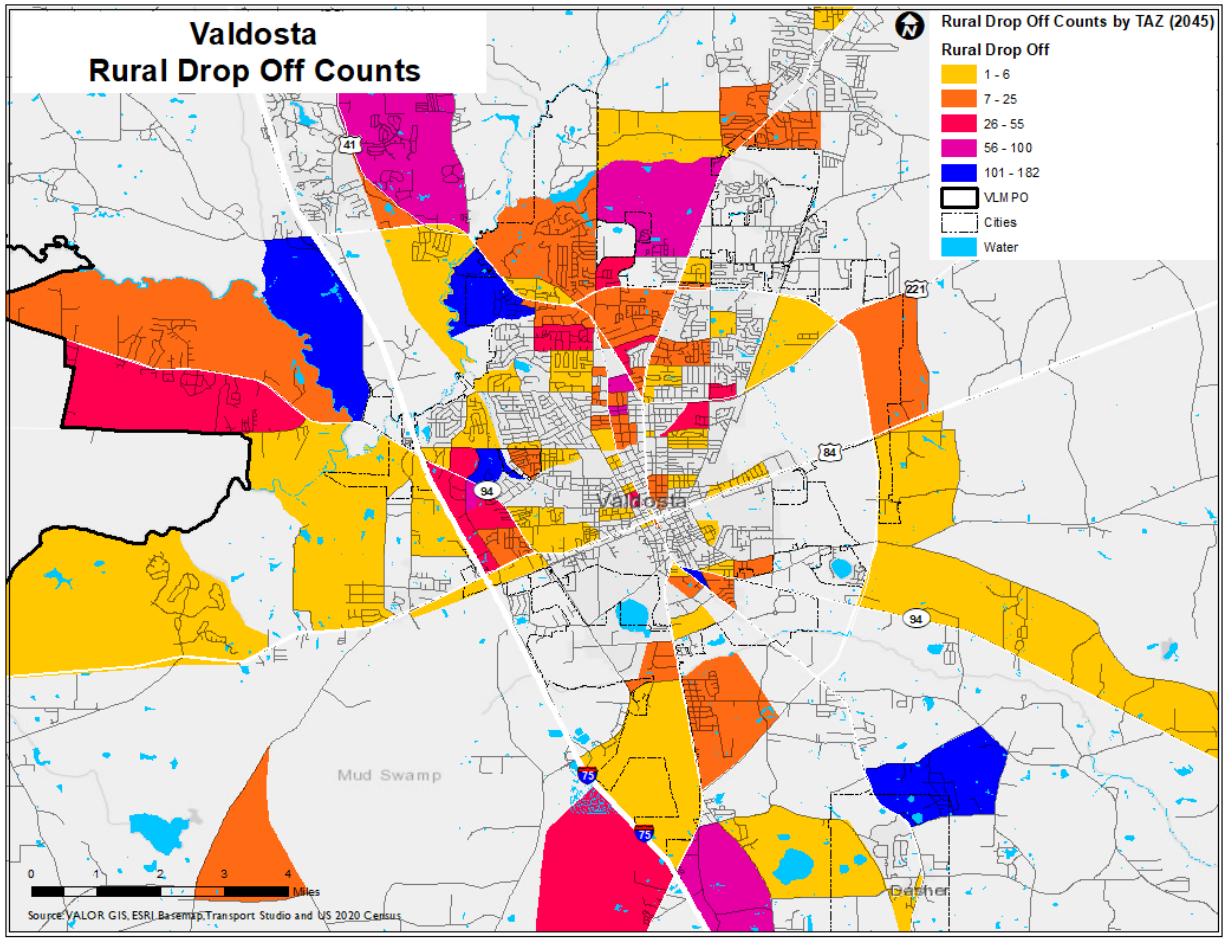

Valdosta On Demand Locations
Concentration of On Demand Locations
Least
Greater
41
221
84
94
75
Valdosta Regional Airport
Mud Swamp
Fern Pond
0
4
Miles
Source:VALOR GIS, ESRI Basemap,Transport Studio and US 2020 Census

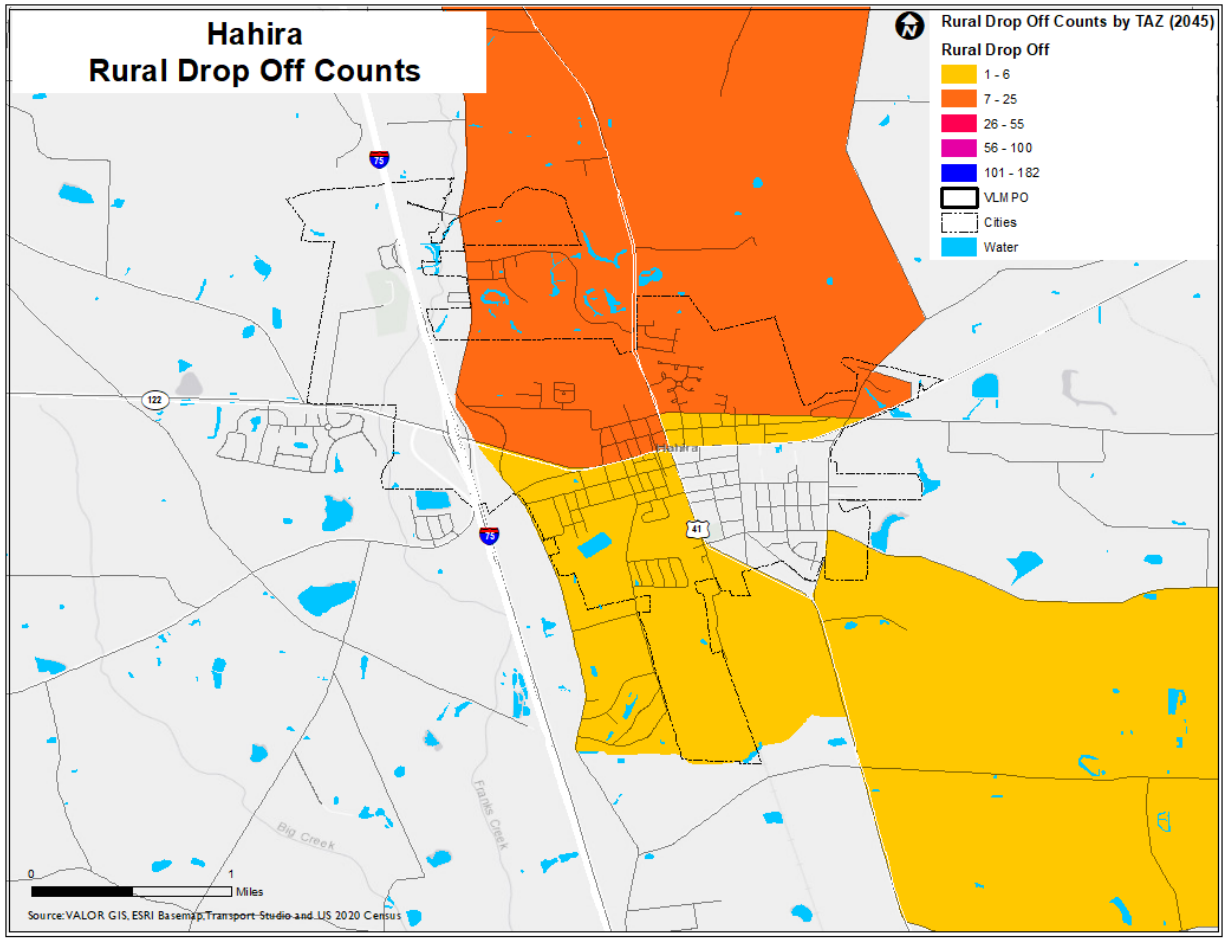

VLMPO
Rural Pick Up Counts
Rural Pick Up Counts by TAZ (2045)
Rural Pick Up
1 - 6
7 - 25
26 - 70
71 - 133
134 - 228
VLMPO
Cities
Water
Lakeland
Banks Lake
Peters Bay
Moody Air Force Base
Naylor
Valdosta
Howell
Mud Swamp
Dasher
Statenville
0
5
10
Miles
Source:VALOR GIS, ESRI Basemap,Transport Studio and US 2020 Census

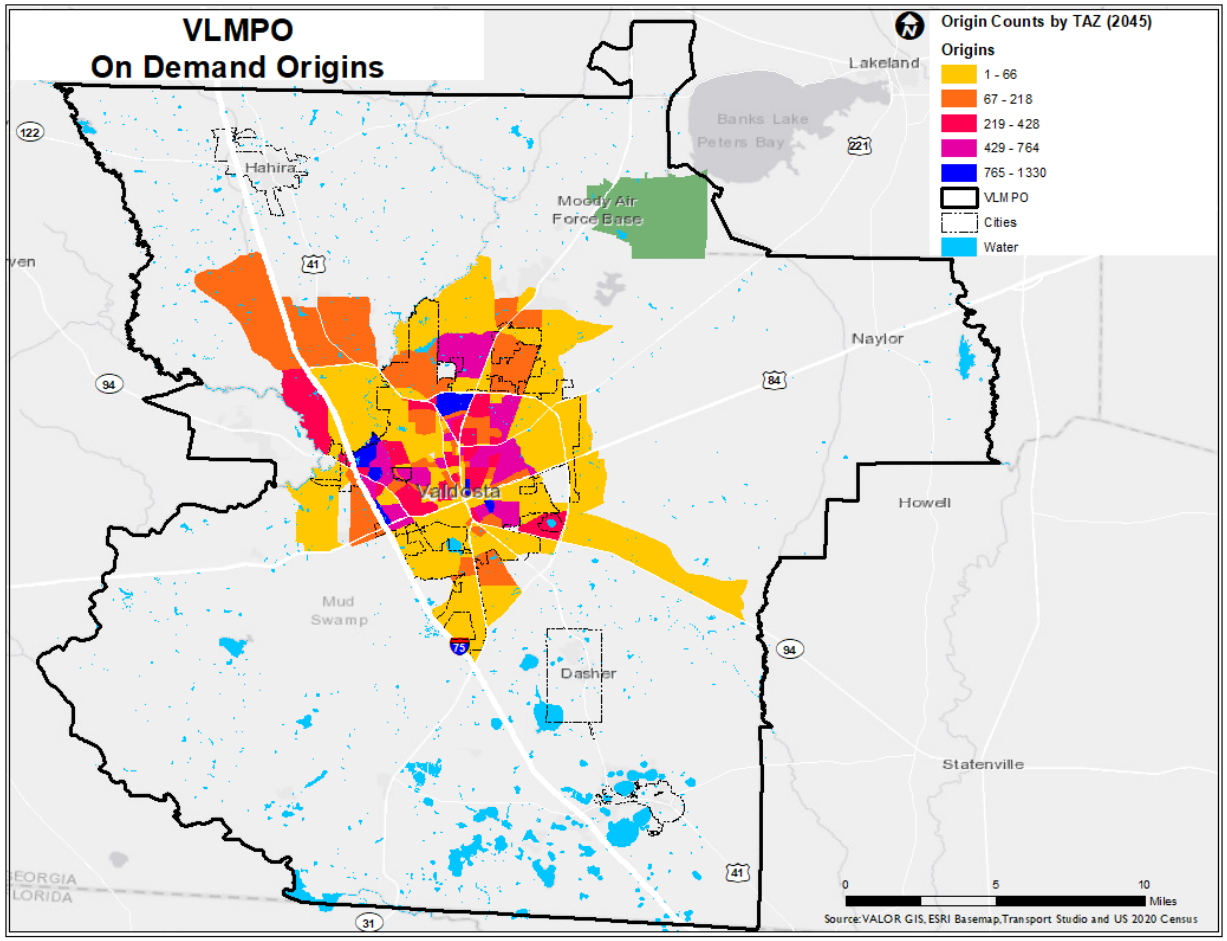

Valdosta
Rural Pick Up Counts
Rural Pick Up Counts by TAZ (2045)
Rural Pick Up
1 - 6
7 - 25
26 - 70
71 - 133
134 - 228
VLMPO
Cities
Water
Valdosta
Mud Swamp
Dasher
0 1 2 3 4
Miles
Source: VALOR GIS, ESRI Basemap,Transport Studio and US 2020 Census

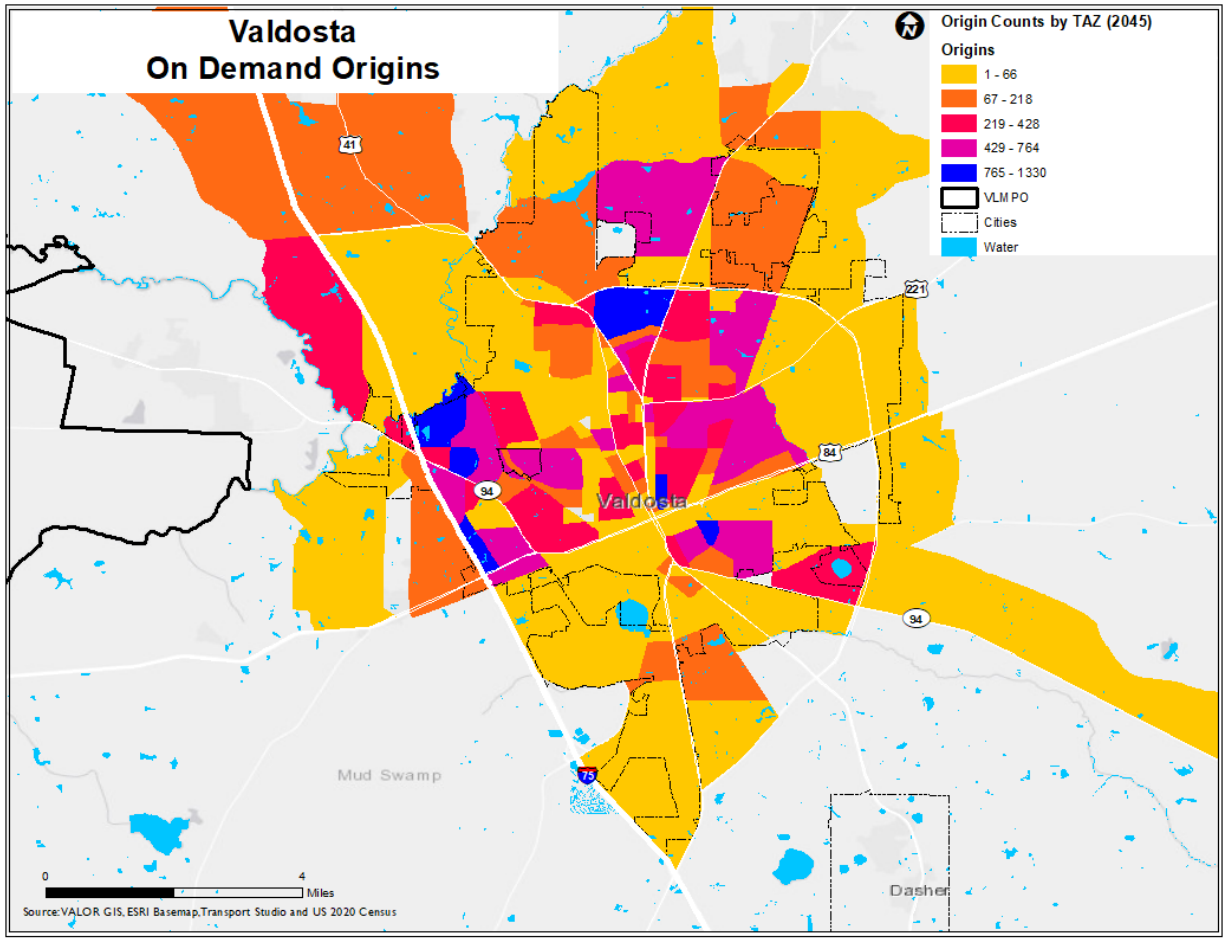

Hahira
Rural Pick Up Counts
Rural Pick Up Counts by TAZ (2045)
Rural Pick Ups
1 - 6
7 - 25
26 - 70
71 - 133
134 - 228
VLMPO
Cities
Water
75
122
41
Hahira
Big Creek
Franks Creek
0
1
Miles
Source: VALOR GIS, ESRI Basemap, Transport Studio and US 2020 Census

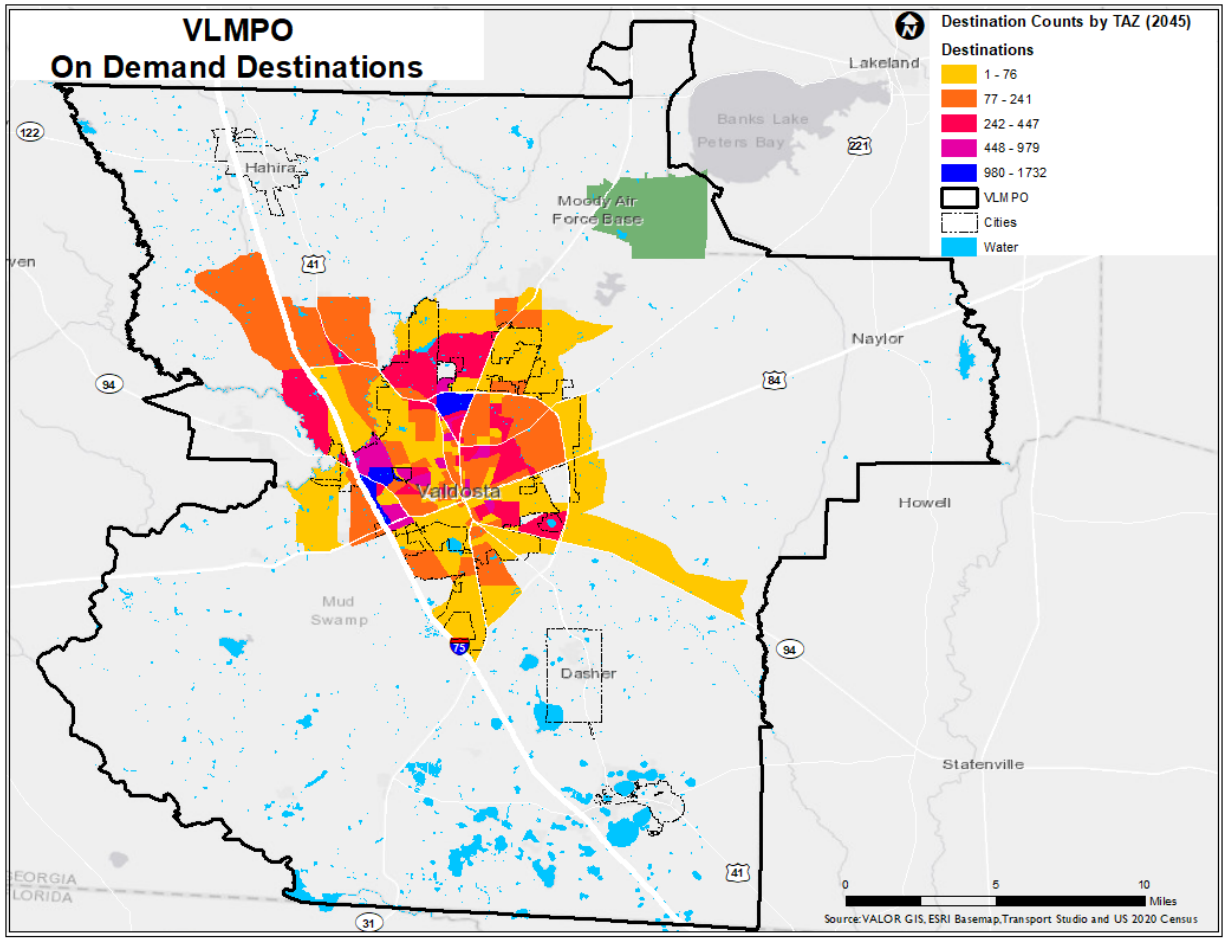

VLMPO
Rural Drop Off Counts
Rural Drop Off Counts by TAZ (2045)
Rural Drop Offs
1 - 6
7 - 25
26 - 55
56 - 100
101 - 182
VLMPO
Cities
Water
Lakeland
Banks Lake
Peters Bay
Moody Air Force Base
Naylor
Valdosta
Howell
Mud Swamp
Dasher
Statenville
122
221
41
94
84
75
31
0
5
10
Miles
Source:VALOR GIS, ESRI Basemap,Transport Studio and US 2020 Census

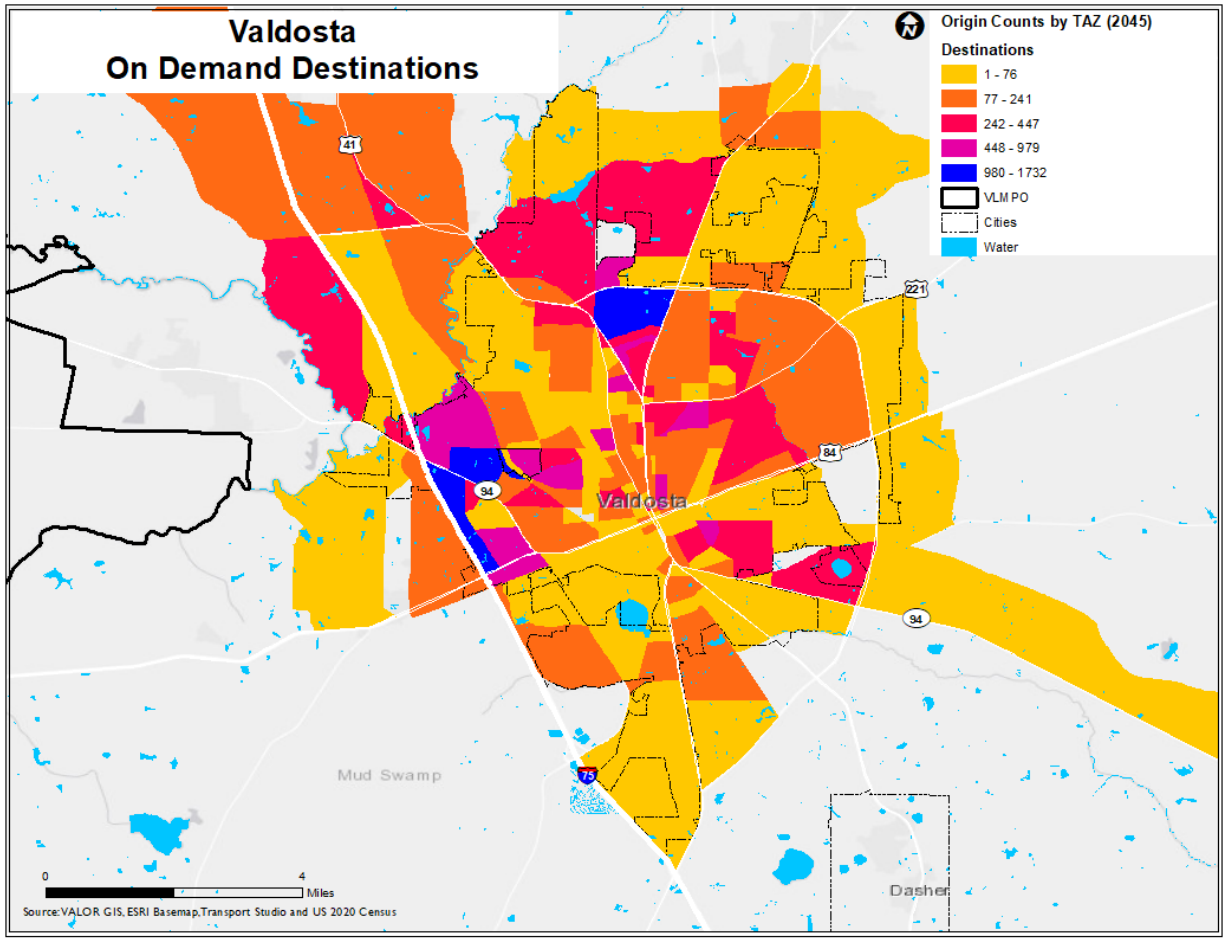

Valdosta
Rural Drop Off Counts
Rural Drop Off Counts by TAZ (2045)
Rural Drop Off
1 - 6
7 - 25
26 - 55
56 - 100
101 - 182
VLMPO
Cities
Water
Valdosta
Mud Swamp
Gafher
0 1 2 3 4
Miles
Source: VALOR GIS, ESRI Basemap,Transport Studio and US 2020 Census


Hahira
Rural Drop Off Counts
Rural Drop Off Counts by TAZ (2045)
Rural Drop Off
1 - 6
7 - 25
26 - 55
56 - 100
101 - 182
VLMPO
Cities
Water
75
122
41
Hahira
Big Creek
Franks Creek
0
1
Miles
Source: VALOR GIS, ESRI Basemap, Transport Studio and US 2020 Census

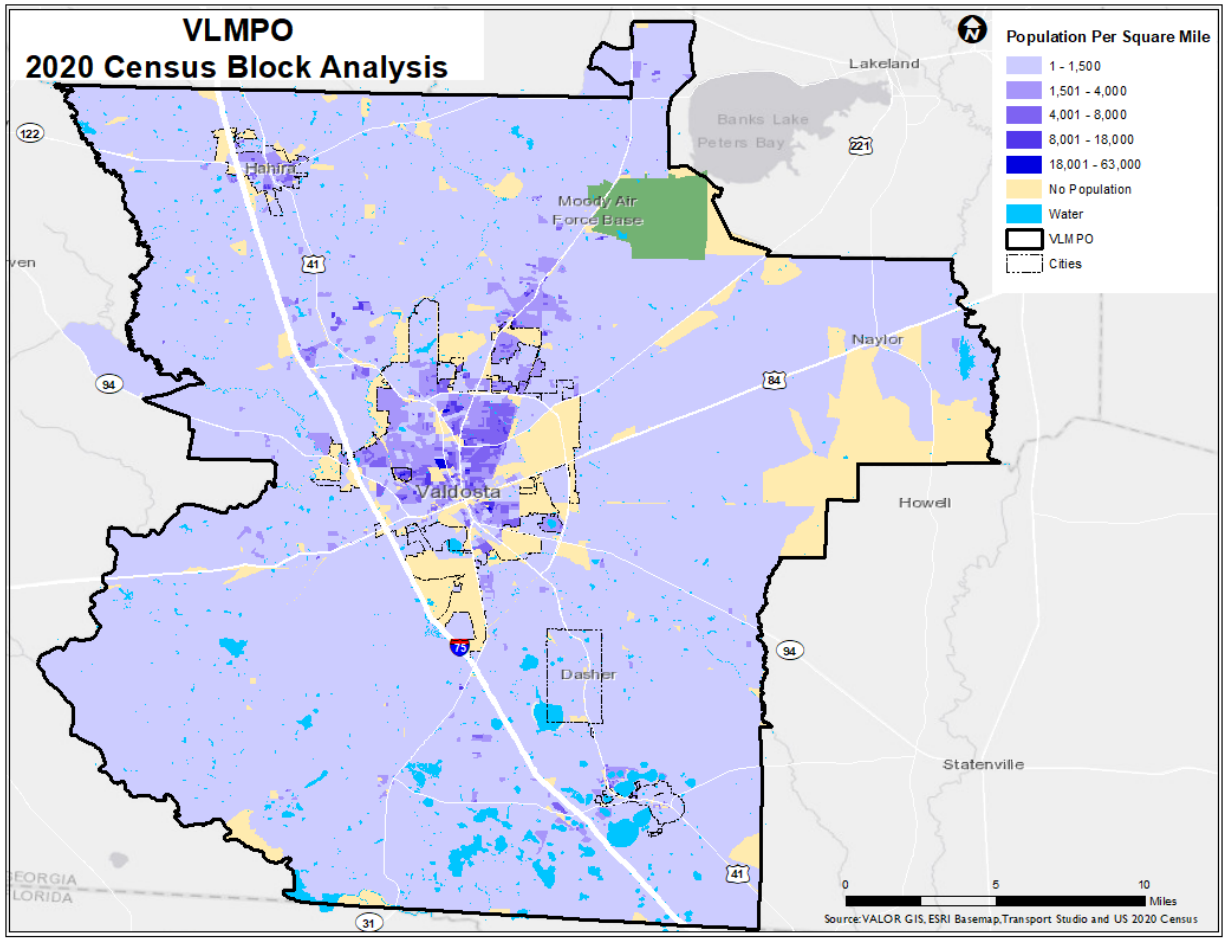

VLMPO
On Demand Origins
Origin Counts by TAZ (2045)
Origins
1 - 66
67 - 218
219 - 428
429 - 764
765 - 1330
VLMPO
Cities
Water
Lakeland
Banks Lake
Peters Bay
Hahira
Moody Air
Force Base
Naylor
Valdosta
Howell
Mud
Swamp
Dasher
Statenville
0
5
10
Miles
Source:VALOR GIS, ESRI Basemap,Transport Studio and US 2020 Census

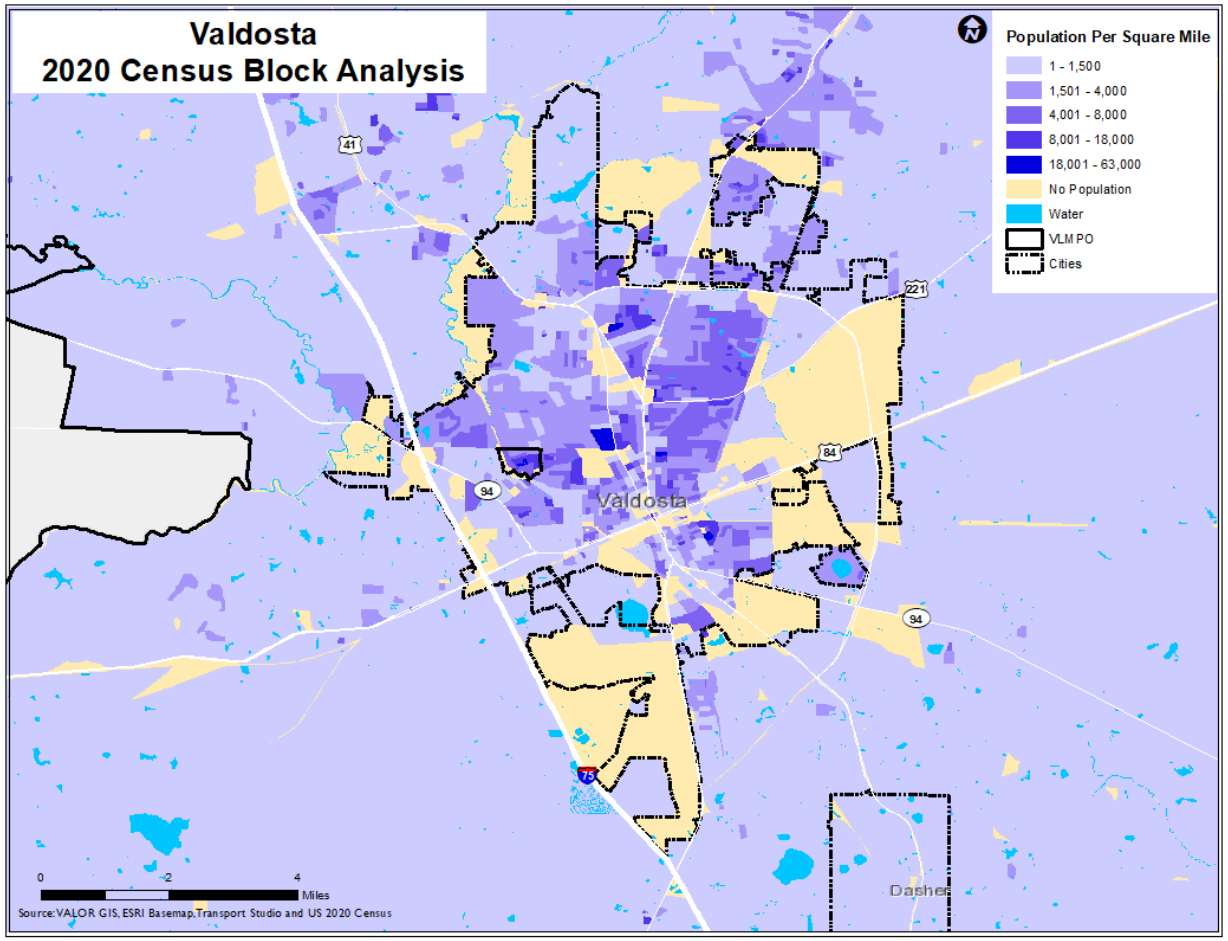

Valdosta
On Demand Origins
Origin Counts by TAZ (2045)
Origins
1 - 66
67 - 218
219 - 428
429 - 764
765 - 1330
VLMPO
Cities
Water
41
221
84
94
Valdosta
Mud Swamp
75
Dasher
0
4
Miles
Source: VALOR GIS, ESRI Basemap, Transport Studio and US 2020 Census

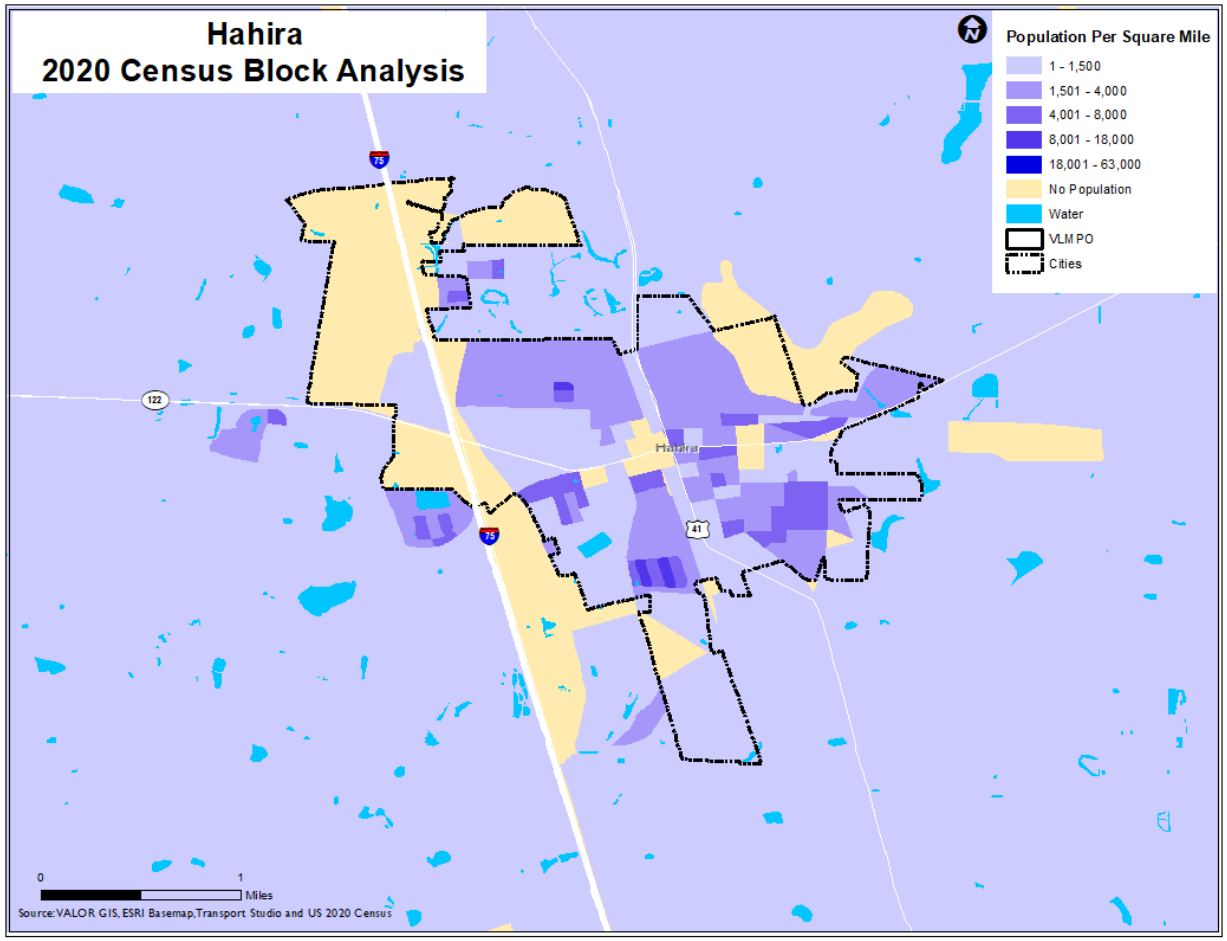

VLMPO
On Demand Destinations
Destination Counts by TAZ (2045)
Destinations
1 - 76
77 - 241
242 - 447
448 - 979
980 - 1732
VLMPO
Cities
Water
Lakeland
Banks Lake
Peters Bay
Hahira
Moody Air
Force Base
Naylor
Valdosta
Howell
Mud
Swamp
Dasher
Statenville
0
5
10
Miles
Source:VALOR GIS, ESRI Basemap,Transport Studio and US 2020 Census

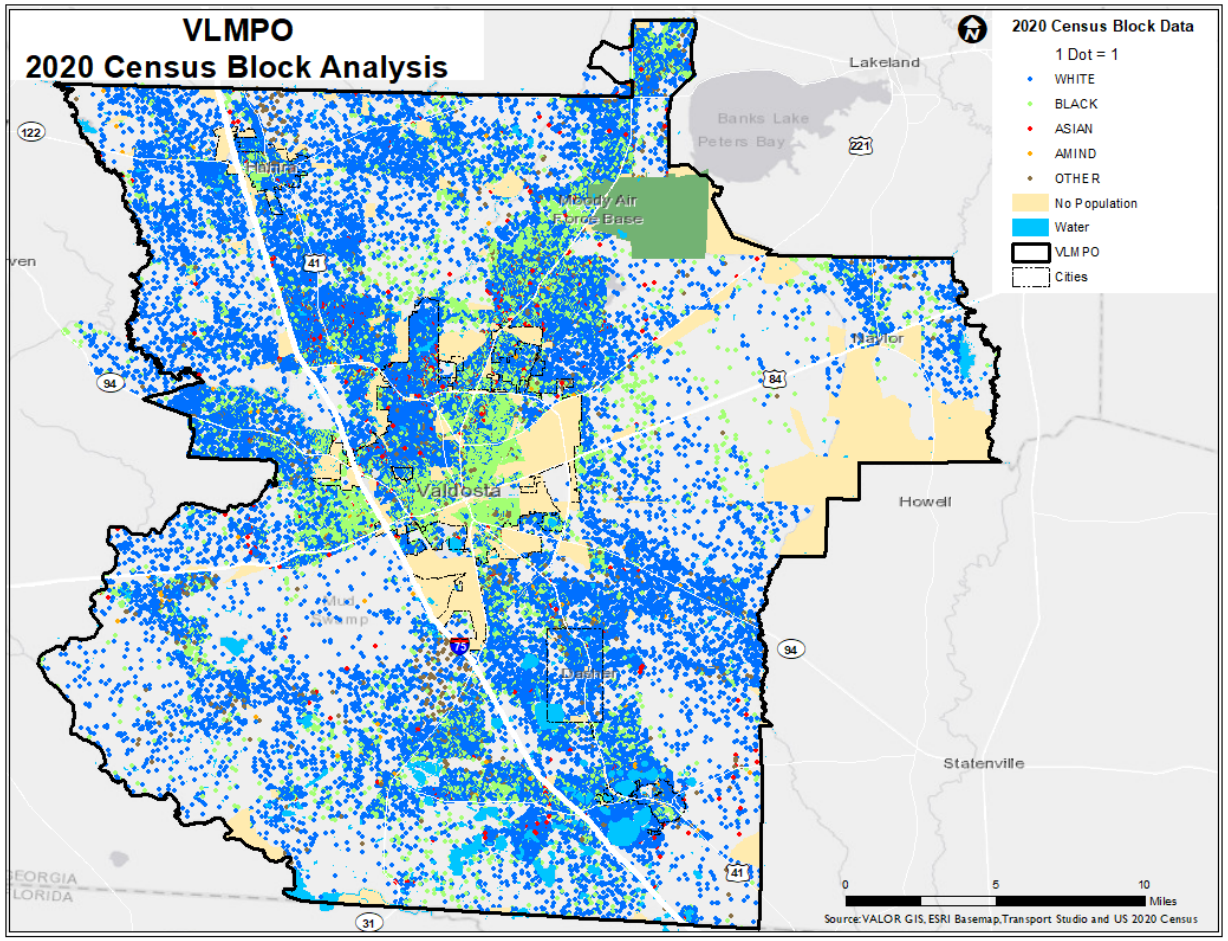

Valdosta
On Demand Destinations
Origin Counts by TAZ (2045)
Destinations
1 - 76
77 - 241
242 - 447
448 - 979
980 - 1732
VLMPO
Cities
Water
41
221
84
94
75
Valdosta
Mud Swamp
Dasher
0
4
Miles
Source:VALOR GIS, ESRI Basemap,Transport Studio and US 2020 Census

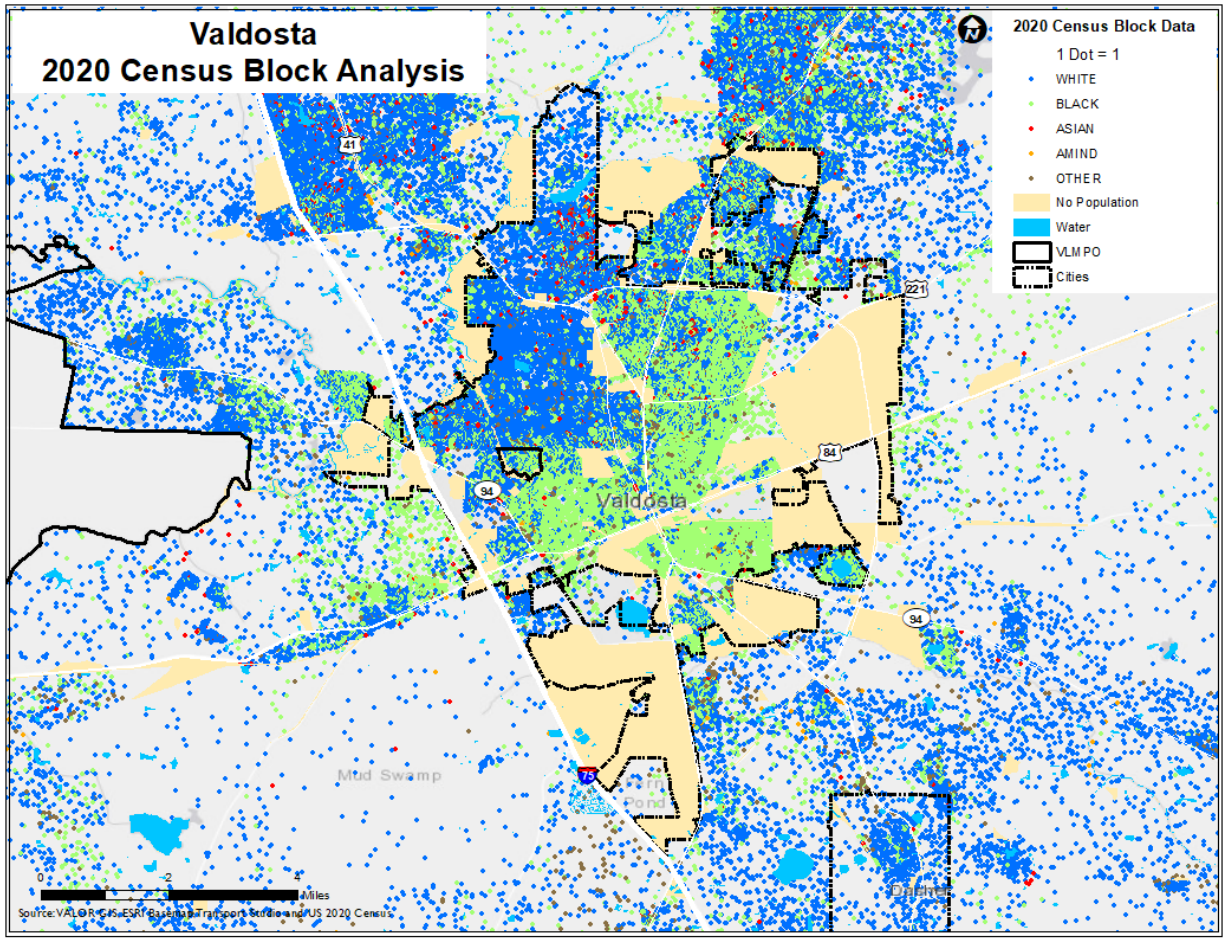
Appendix C: Demographics Mapbook

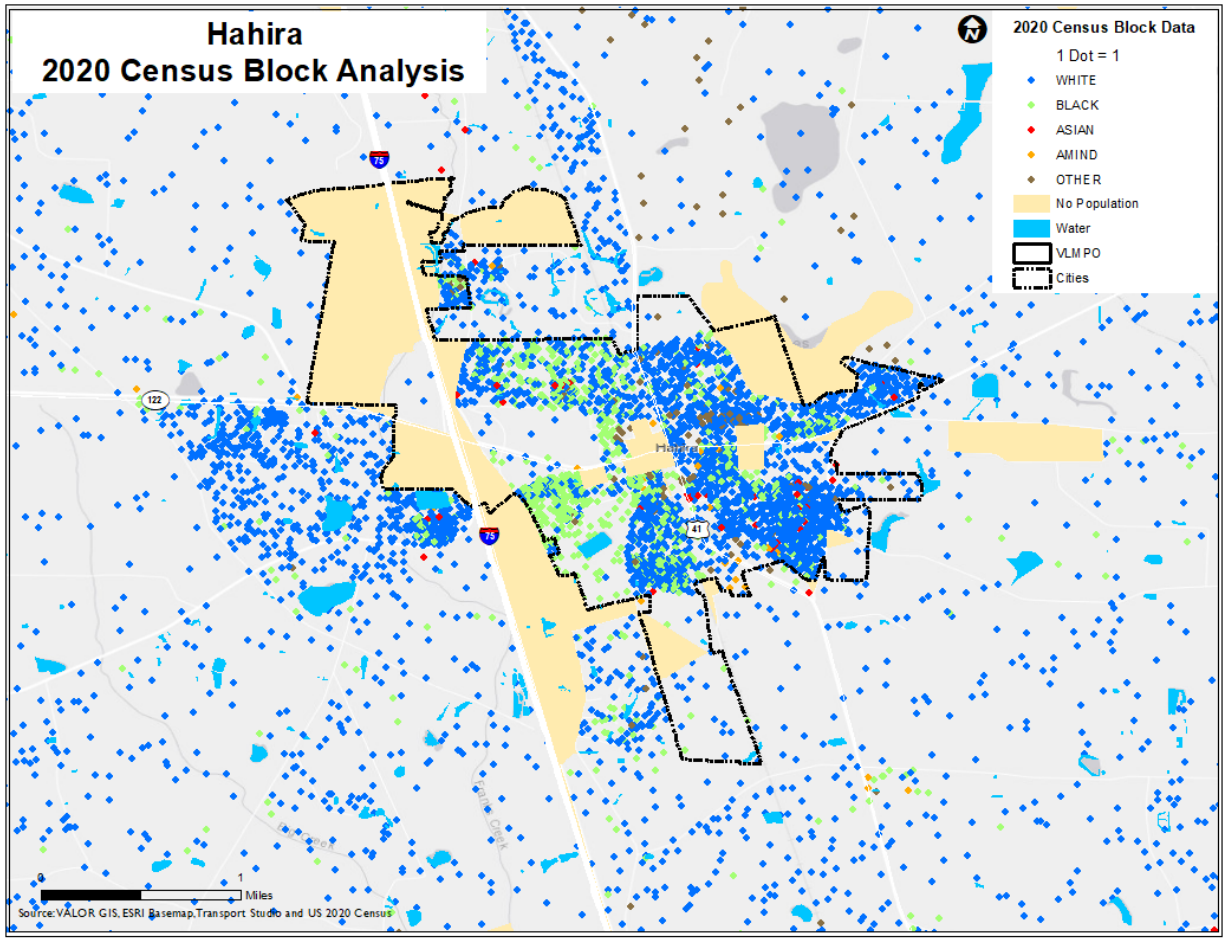


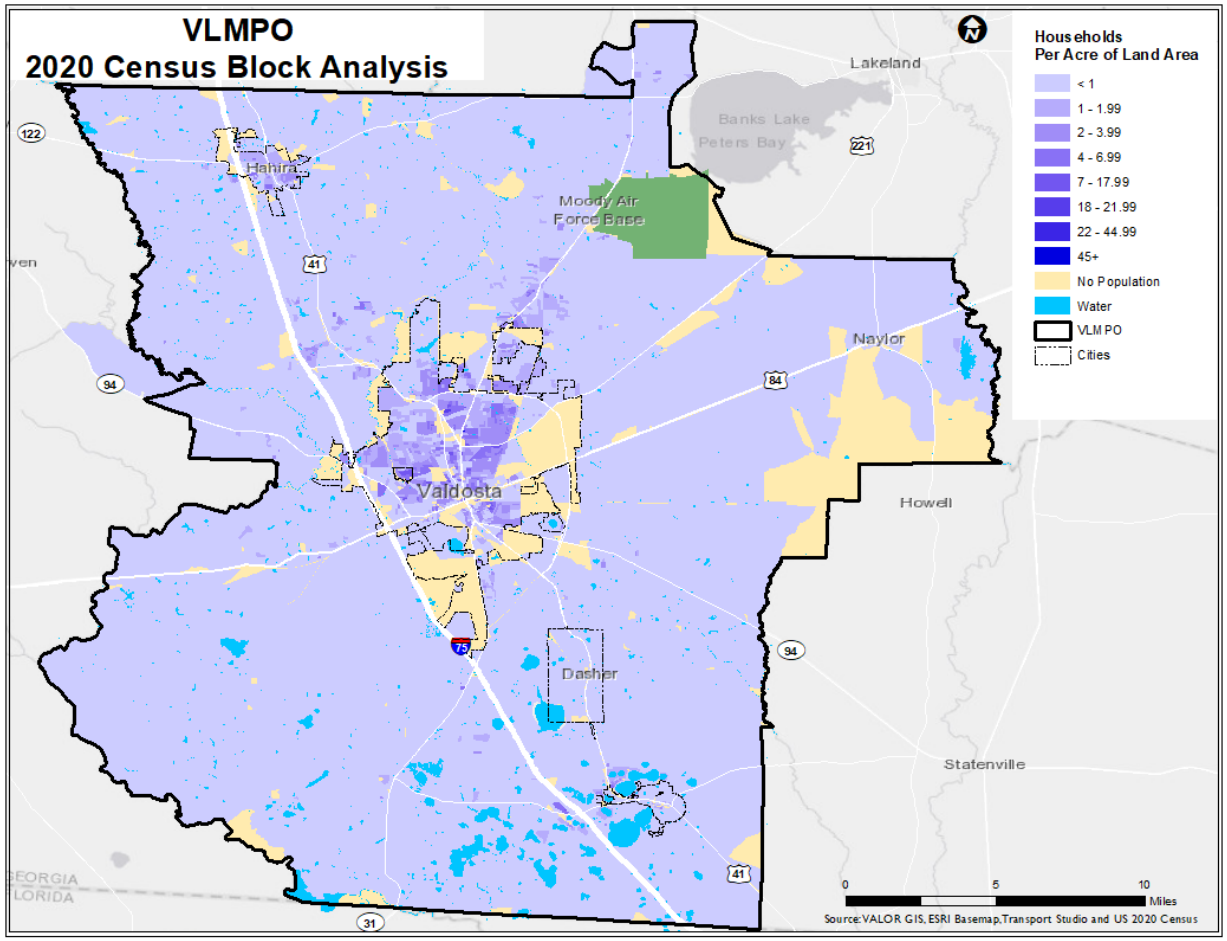

Valdosta
2020 Census Block Analysis
Population Per Square Mile
1 - 1,500
1,501 - 4,000
4,001 - 8,000
8,001 - 18,000
18,001 - 63,000
No Population
Water
VLMPO
Cities
41
221
84
94
75
Valdosta
Dasher
0
2
4
Miles
Source:VALOR GIS, ESRI Basemap,Transport Studio and US 2020 Census

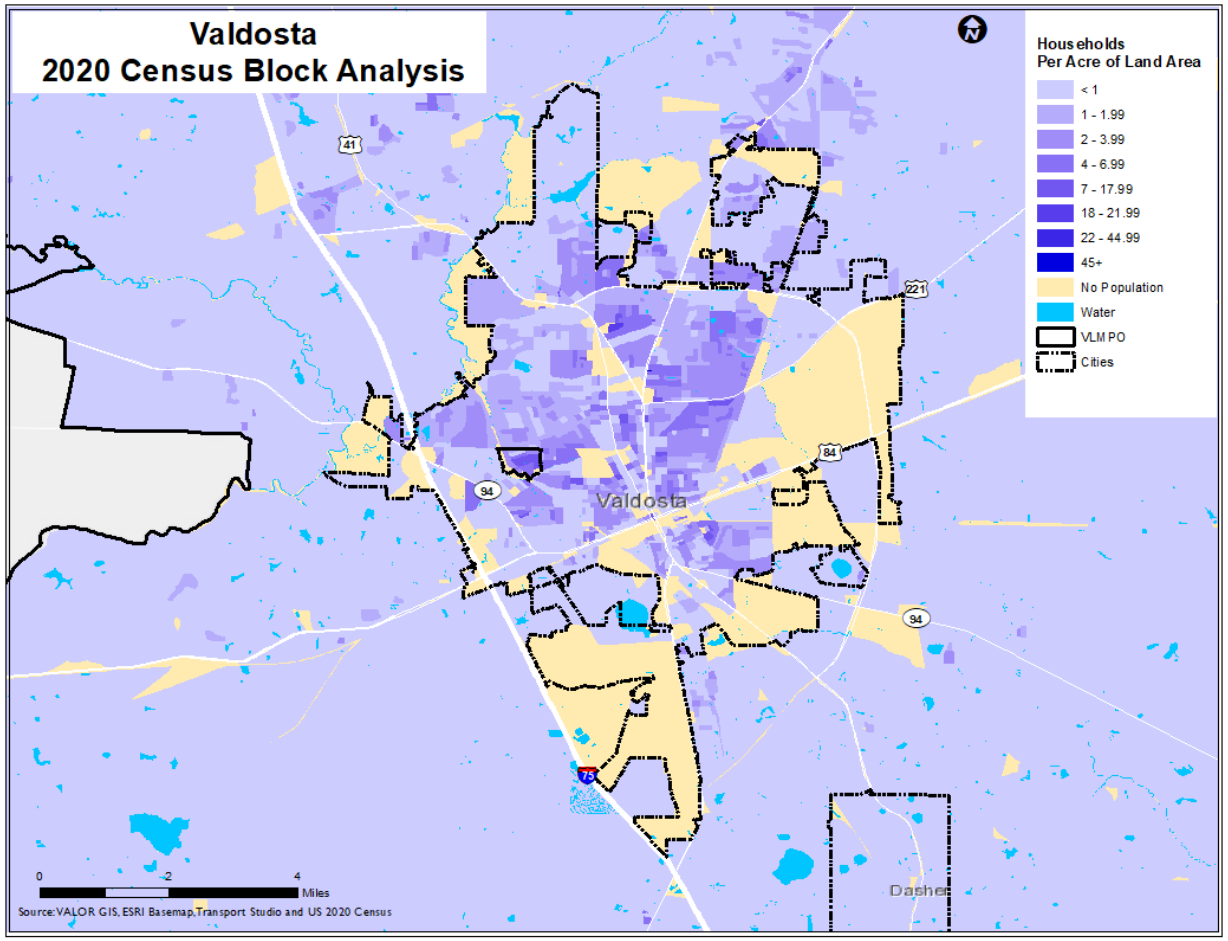

Hahira
2020 Census Block Analysis
Population Per Square Mile
1 - 1,500
1,501 - 4,000
4,001 - 8,000
8,001 - 18,000
18,001 - 63,000
No Population
Water
VLMPO
Cities
75
122
41
Hahira
0
1
Miles
Source:VALOR GIS, ESRI Basemap,Transport Studio and US 2020 Census

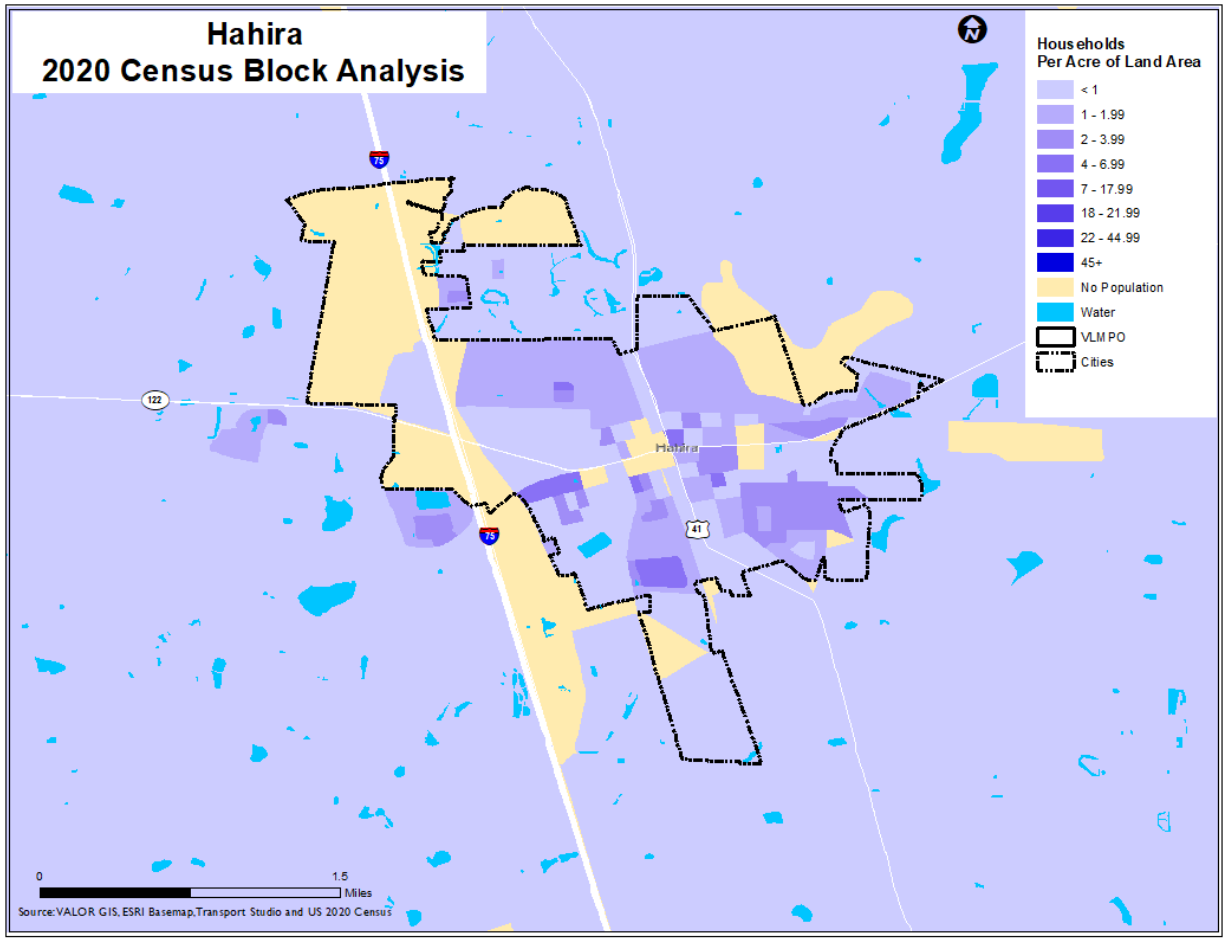

VLMPO
2020 Census Block Analysis
2020 Census Block Data
1 Dot = 1
WHITE
BLACK
ASIAN
AMIND
OTHER
No Population
Water
VLMPO
Cities
Lakeland
Banks Lake
Peters Bay
Moody Air Force Base
Valdosta
Howell
Statenville
Naylor
Hahira
0
5
10
Miles
Source: VALOR GIS, ESRI Basemap, Transport Studio and US 2020 Census

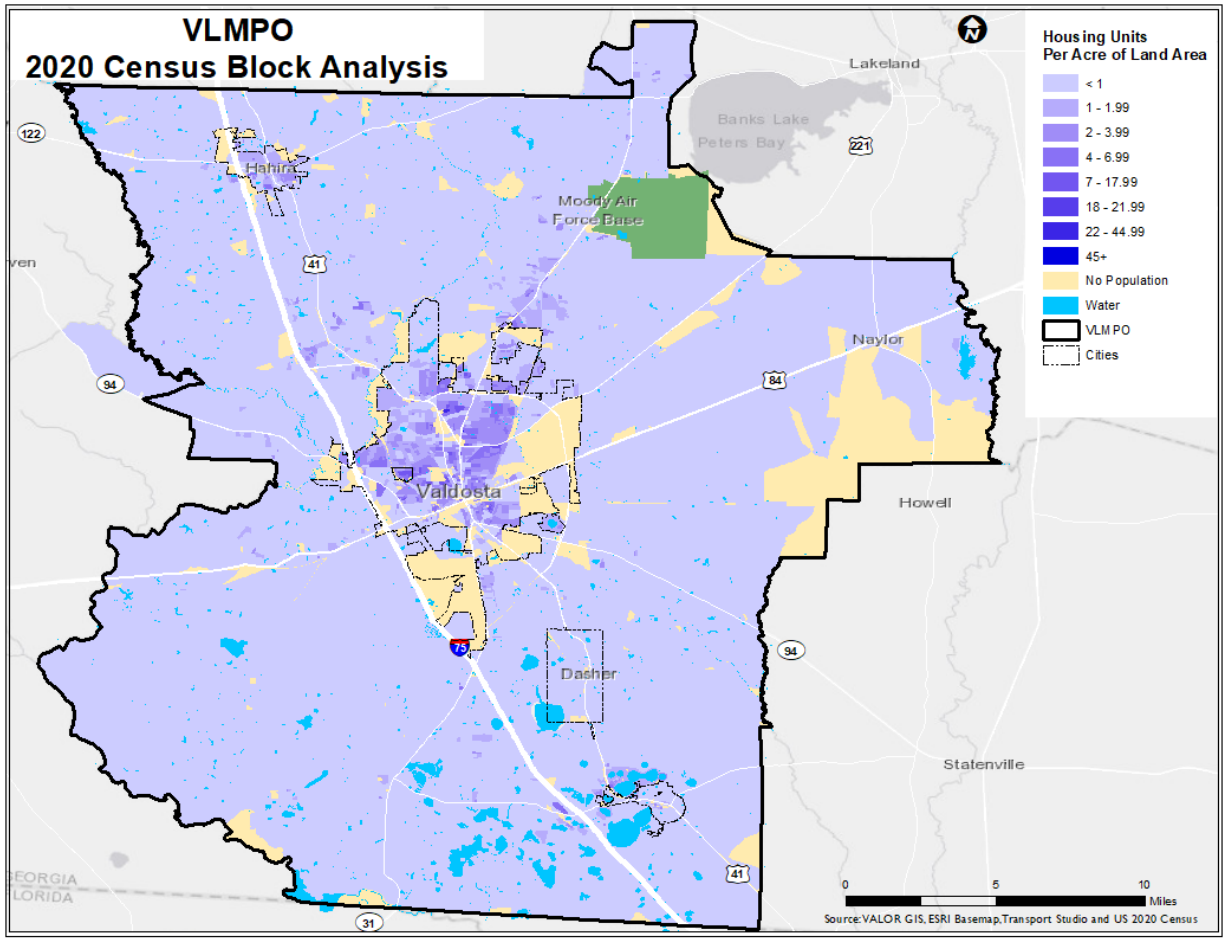

Valdosta
2020 Census Block Analysis
2020 Census Block Data
1 Dot = 1
WHITE
BLACK
ASIAN
AMIND
OTHER
No Population
Water
VLMPO
Cities
41
221
84
94
75
Valdosta
Mud Swamp
Dasher
0
2
4
Miles
Source: VALOR GIS, ESRI Basemap Transportation and US 2020 Census

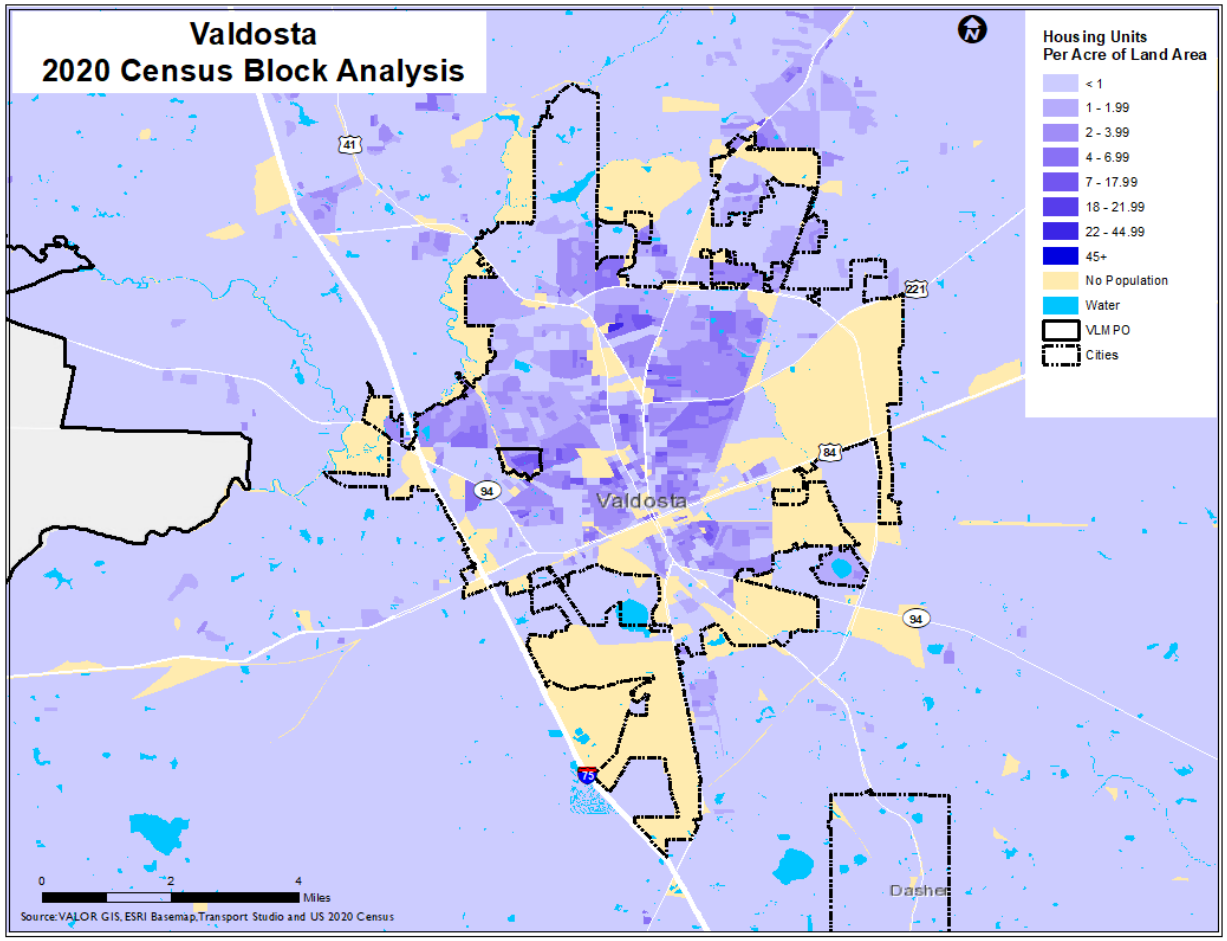

Hahira
2020 Census Block Analysis
2020 Census Block Data
1 Dot = 1
WHITE
BLACK
ASIAN
AMIND
OTHER
No Population
Water
VLMPO
Cities
122
75
41
0
1
Miles
Source: VALOR GIS, ESRI Basemap, Transport Studio and US 2020 Census

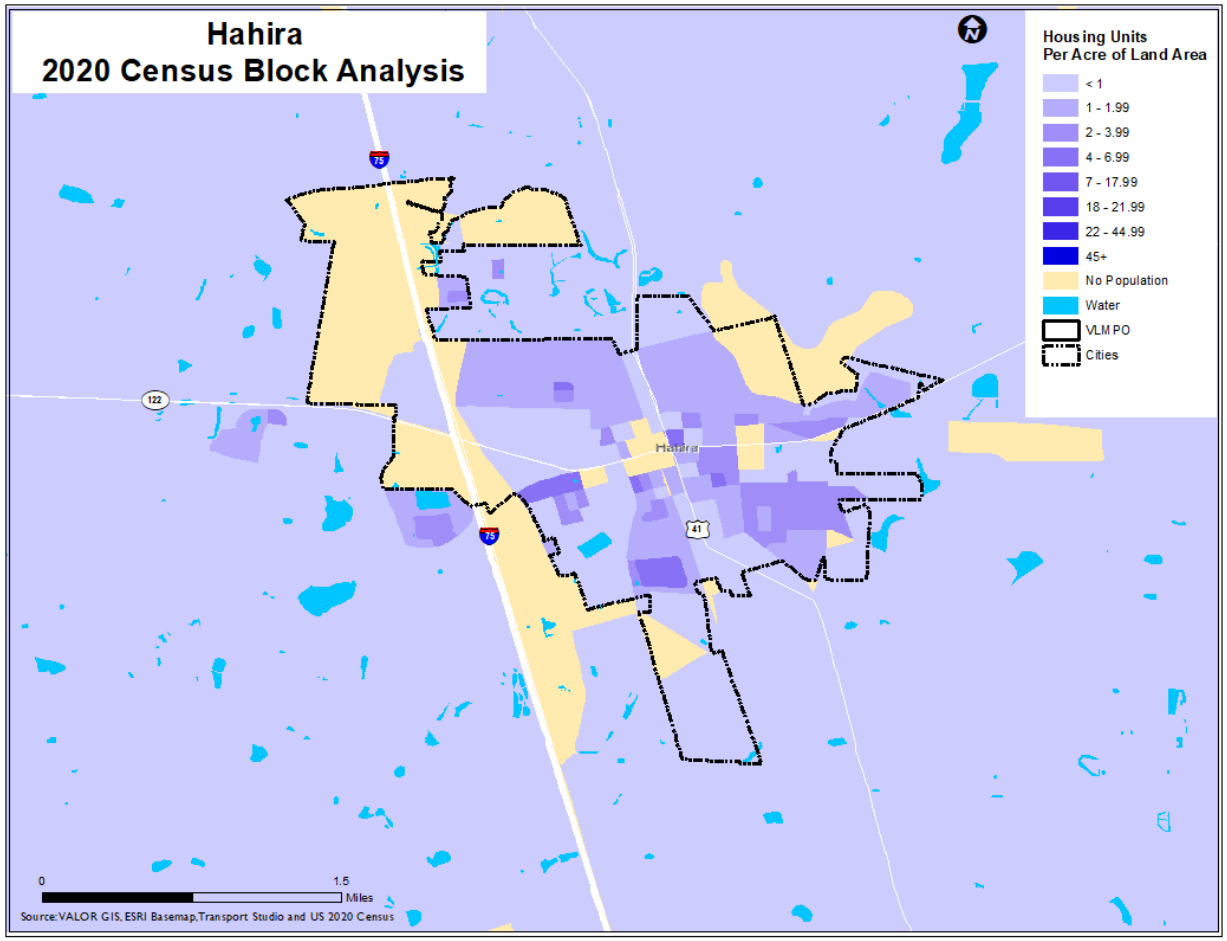

VLMPO
2020 Census Block Analysis
Households
Per Acre of Land Area
< 1
1 - 1.99
2 - 3.99
4 - 6.99
7 - 17.99
18 - 21.99
22 - 44.99
45+
No Population
Water
VLMPO
Cities
Lakeland
Banks Lake
Peters Bay
Hahira
Moody Air
Force Base
Naylor
Valdosta
Howell
Dasher
Statenville
0
5
10
Miles
Source: VALOR GIS, ESRI Basemap, Transport Studio and US 2020 Census

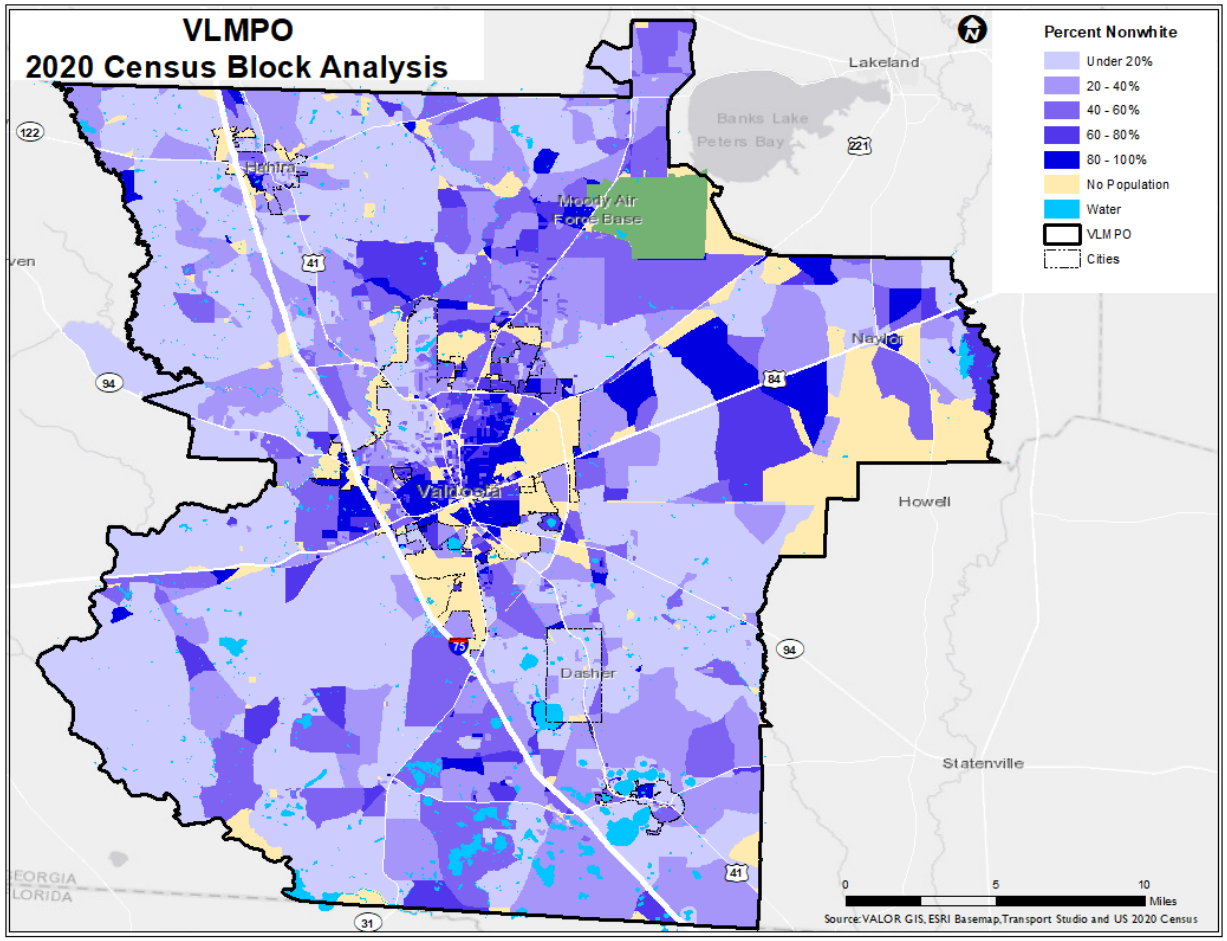

Valdosta
2020 Census Block Analysis
Households
Per Acre of Land Area
< 1
1 - 1.99
2 - 3.99
4 - 6.99
7 - 17.99
18 - 21.99
22 - 44.99
45+
No Population
Water
VLMPO
Cities
41
221
84
94
94
75
Valdosta
Dasher
0
2
4
Miles
Source:VALOR GIS, ESRI Basemap,Transport Studio and US 2020 Census

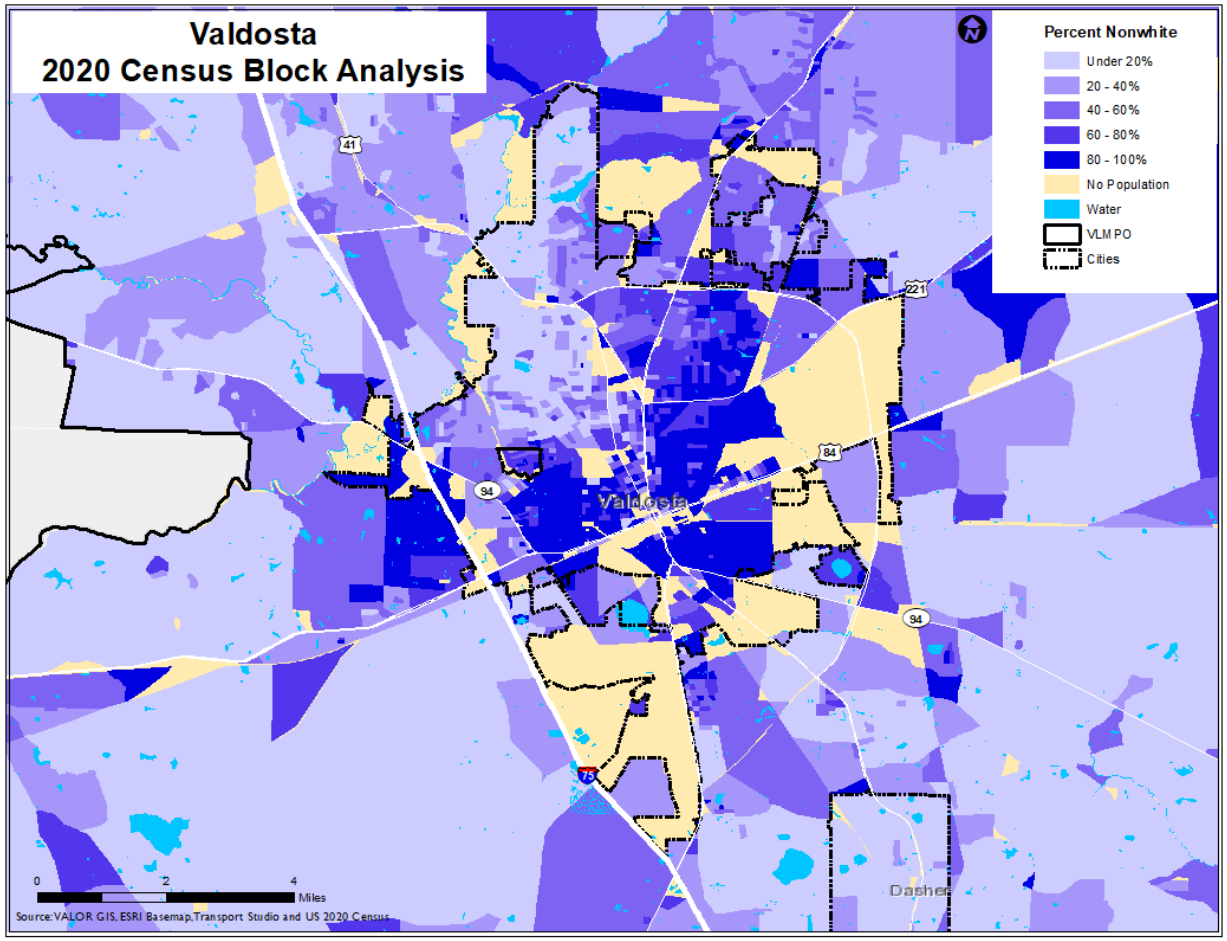

Hahira
2020 Census Block Analysis
Households
Per Acre of Land Area
< 1
1 - 1.99
2 - 3.99
4 - 6.99
7 - 17.99
18 - 21.99
22 - 44.99
45+
No Population
Water
VLMPO
Cities
75
122
41
Hahira
0
1.5
Miles
Source:VALOR GIS, ESRI Basemap,Transport Studio and US 2020 Census

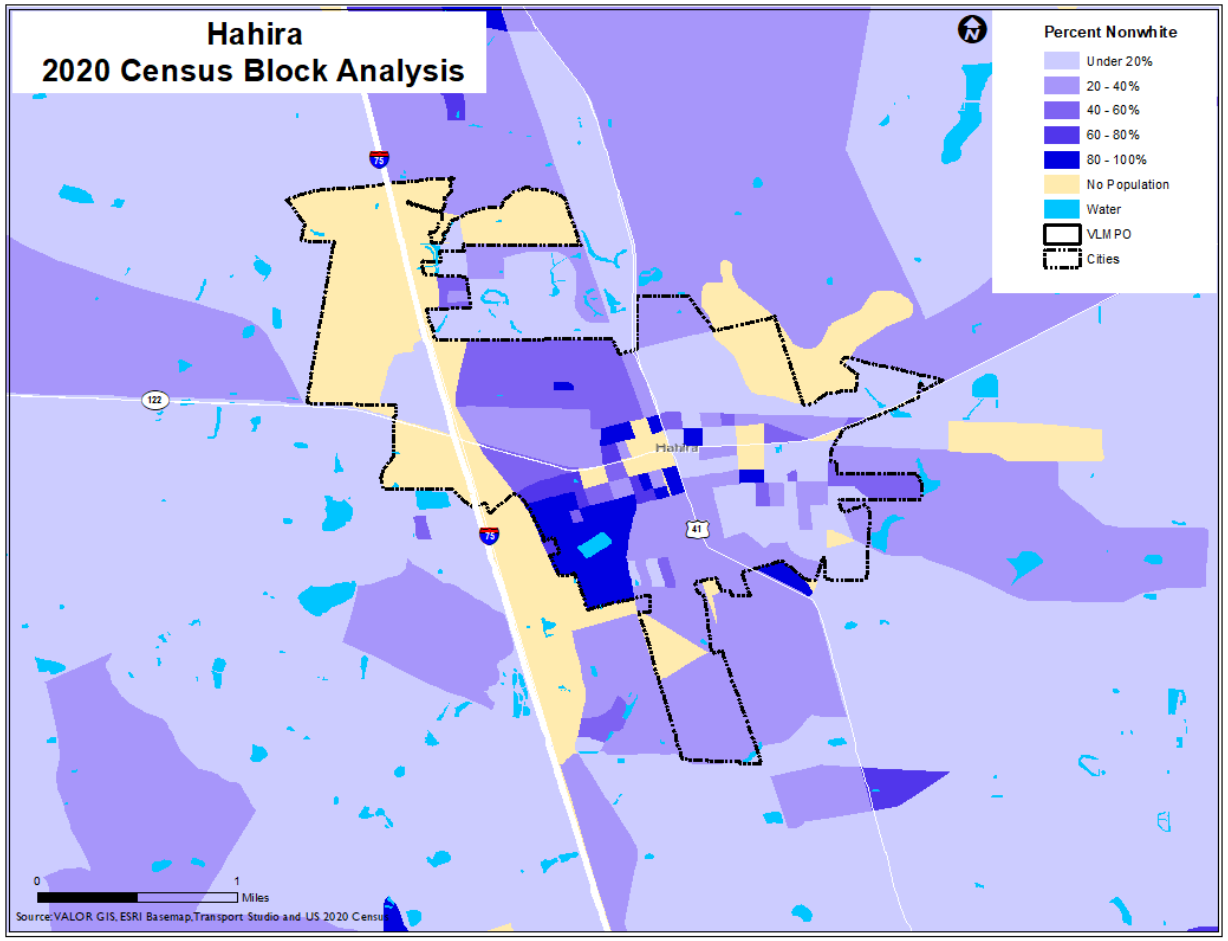

VLMPO
2020 Census Block Analysis
Housing Units
Per Acre of Land Area
< 1
1 - 1.99
2 - 3.99
4 - 6.99
7 - 17.99
18 - 21.99
22 - 44.99
45+
No Population
Water
VLMPO
Cities
Lakeland
Banks Lake
Peters Bay
Hahira
Moody Air
Force Base
Naylor
Valdosta
Howell
Dasher
Statenville
0
5
10
Miles
Source: VALOR GIS, ESRI Basemap, Transport Studio and US 2020 Census

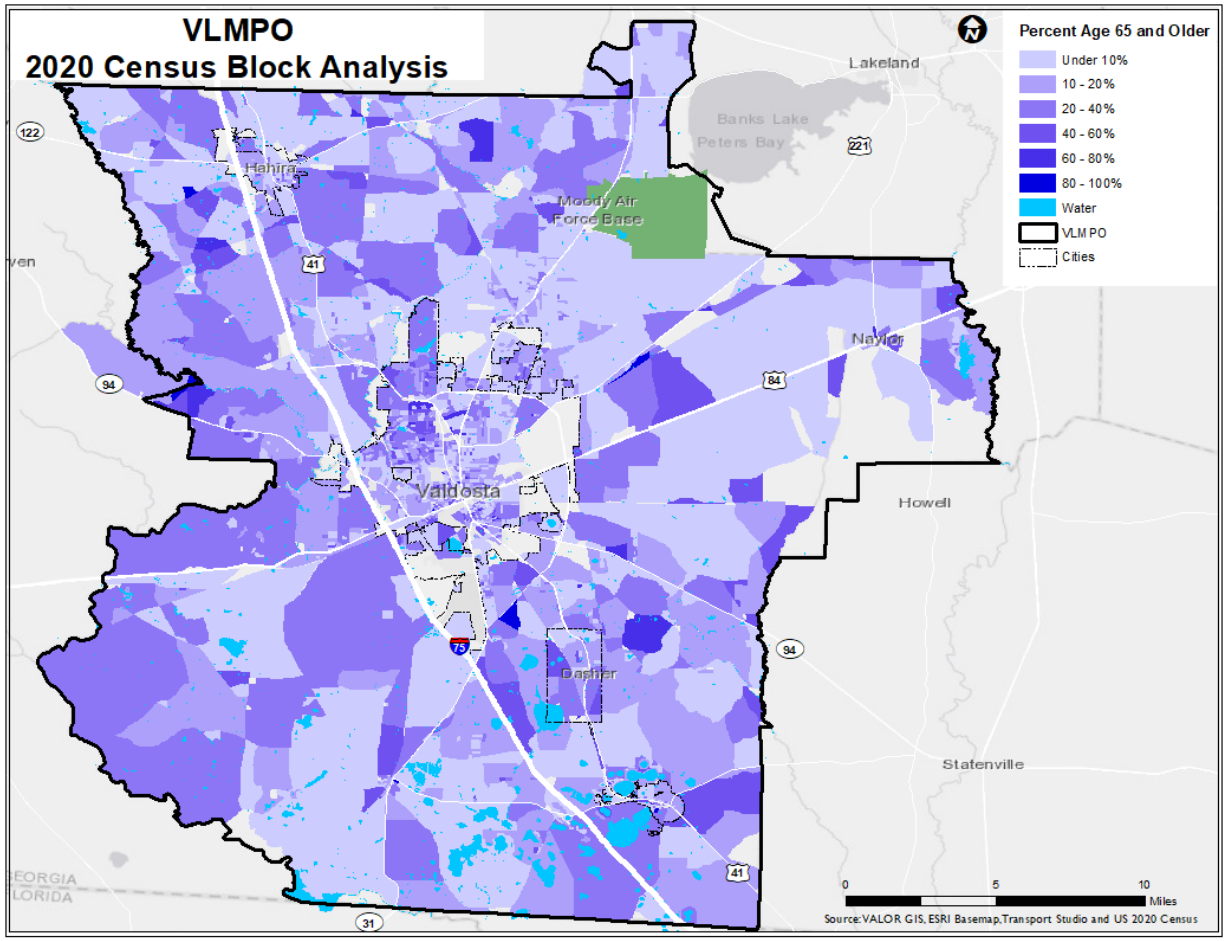

Valdosta
2020 Census Block Analysis
Housing Units
Per Acre of Land Area
< 1
1 - 1.99
2 - 3.99
4 - 6.99
7 - 17.99
18 - 21.99
22 - 44.99
45+
No Population
Water
VLMPO
Cities
41
221
84
94
75
Valdosta
Dasher
0
2
4
Miles
Source:VALOR GIS, ESRI Basemap,Transport Studio and US 2020 Census

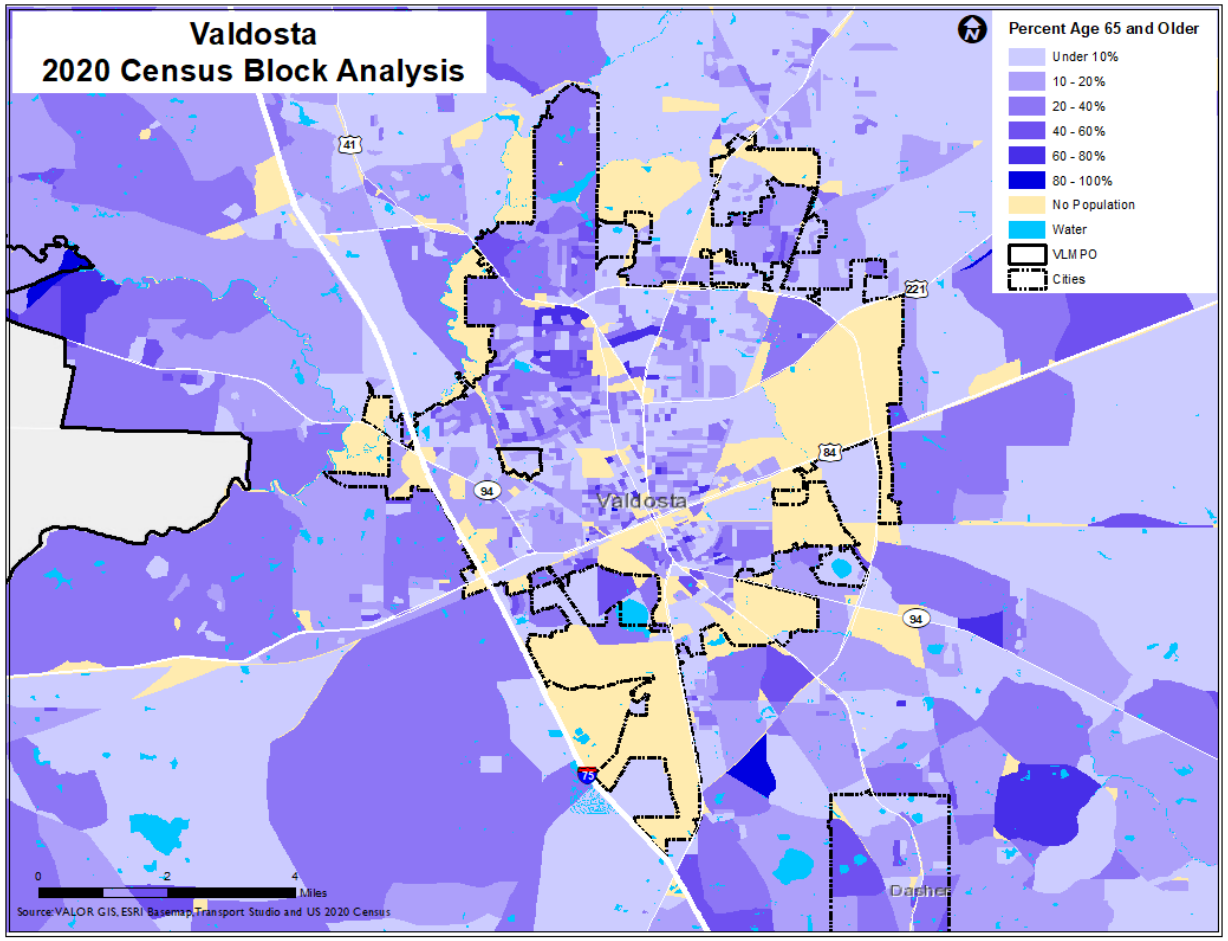

Hahira
2020 Census Block Analysis
Housing Units
Per Acre of Land Area
< 1
1 - 1.99
2 - 3.99
4 - 6.99
7 - 17.99
18 - 21.99
22 - 44.99
45+
No Population
Water
VLMPO
Cities
75
122
41
Hahira
0
1.5
Miles
Source:VALOR GIS, ESRI Basemap,Transport Studio and US 2020 Census

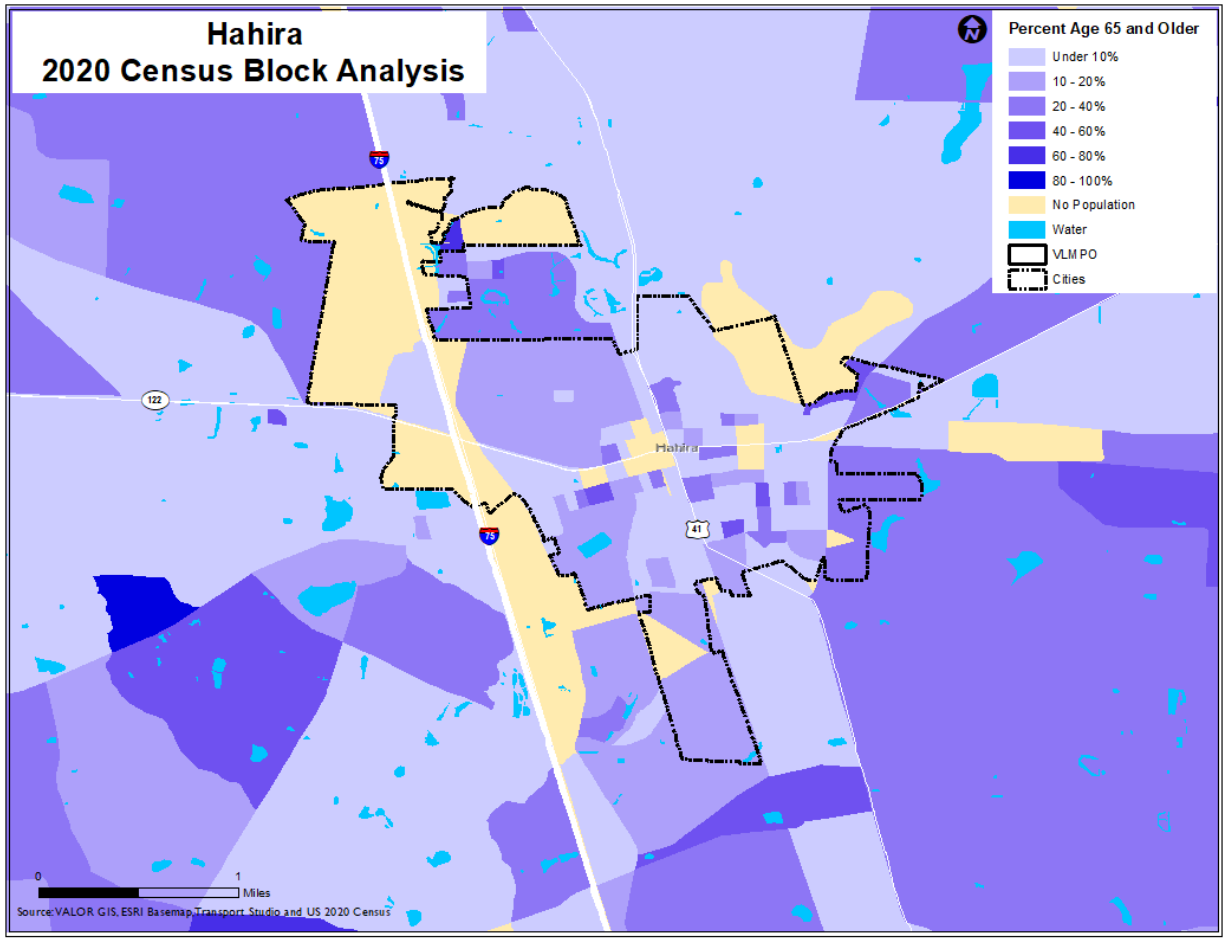

VLMPO
2020 Census Block Analysis
Percent Nonwhite
Under 20%
20 - 40%
40 - 60%
60 - 80%
80 - 100%
No Population
Water
VLMPO
Cities
Lakeland
Banks Lake
Peters Bay
Hahira
Moody Air Force Base
Naylor
Valdosta
Howell
Dasher
Statenville
0
5
10
Miles
Source: VALOR GIS, ESRI Basemap, Transport Studio and US 2020 Census

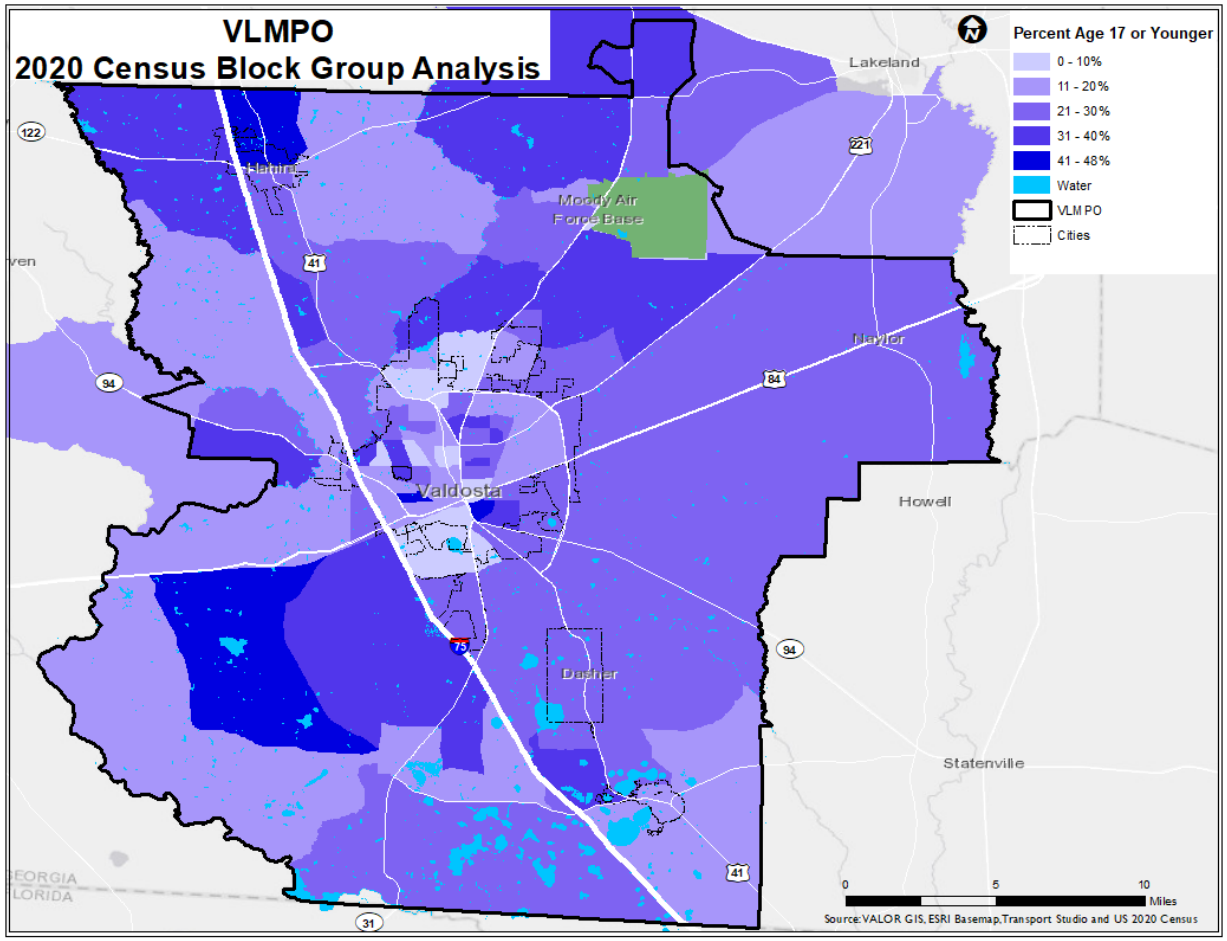

Valdosta
2020 Census Block Analysis
Percent Nonwhite
Under 20%
20 - 40%
40 - 60%
60 - 80%
80 - 100%
No Population
Water
VLMPO
Cities
41
221
84
94
75
Valdosta
Dasher
0
2
4
Miles
Source: VALOR GIS, ESRI Basemap, Transport Studio and US 2020 Census

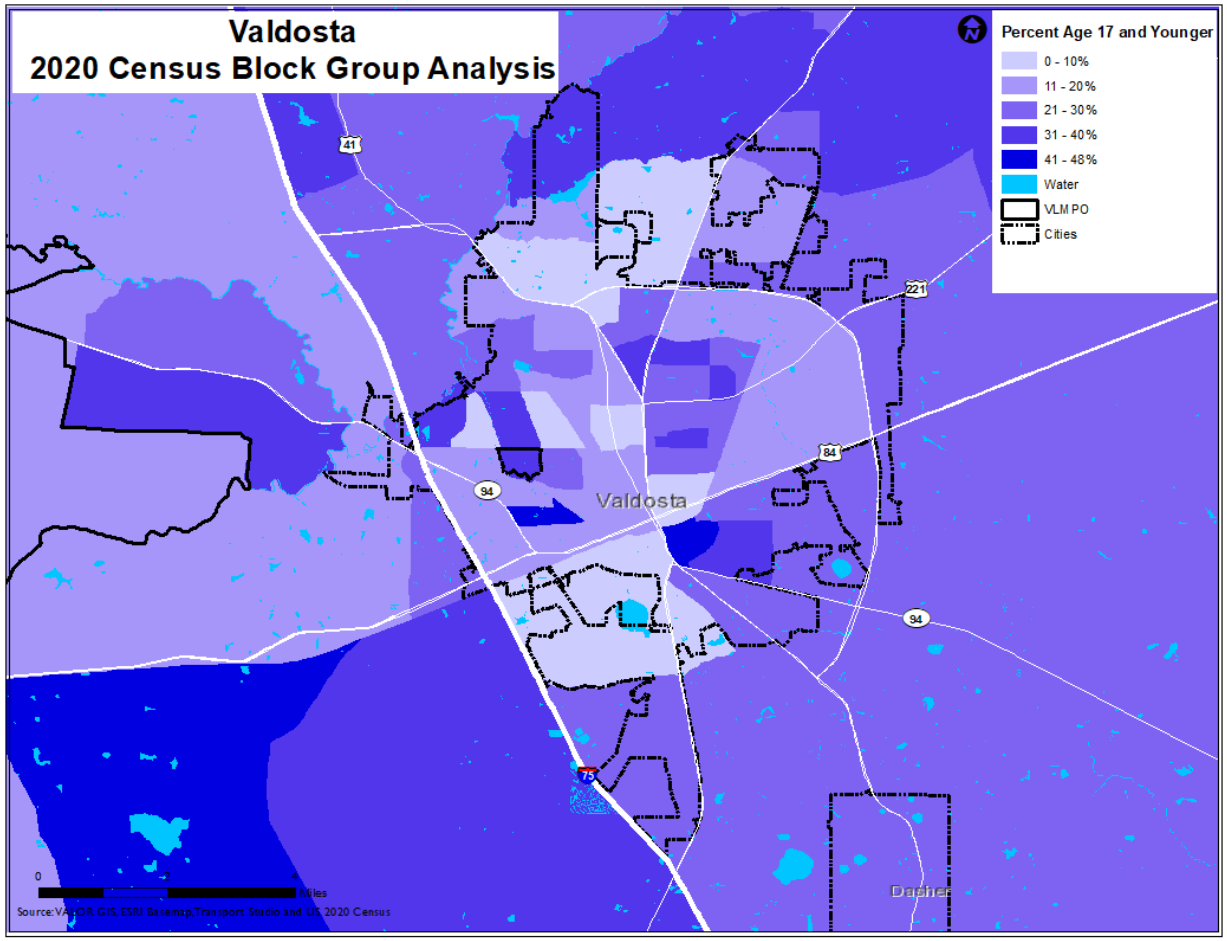

Hahira
2020 Census Block Analysis
Percent Nonwhite
Under 20%
20 - 40%
40 - 60%
60 - 80%
80 - 100%
No Population
Water
VLMPO
Cities
75
122
41
Hahira
0
1
Miles
Source:VALOR GIS, ESRI Basemap,Transport Studio and US 2020 Census

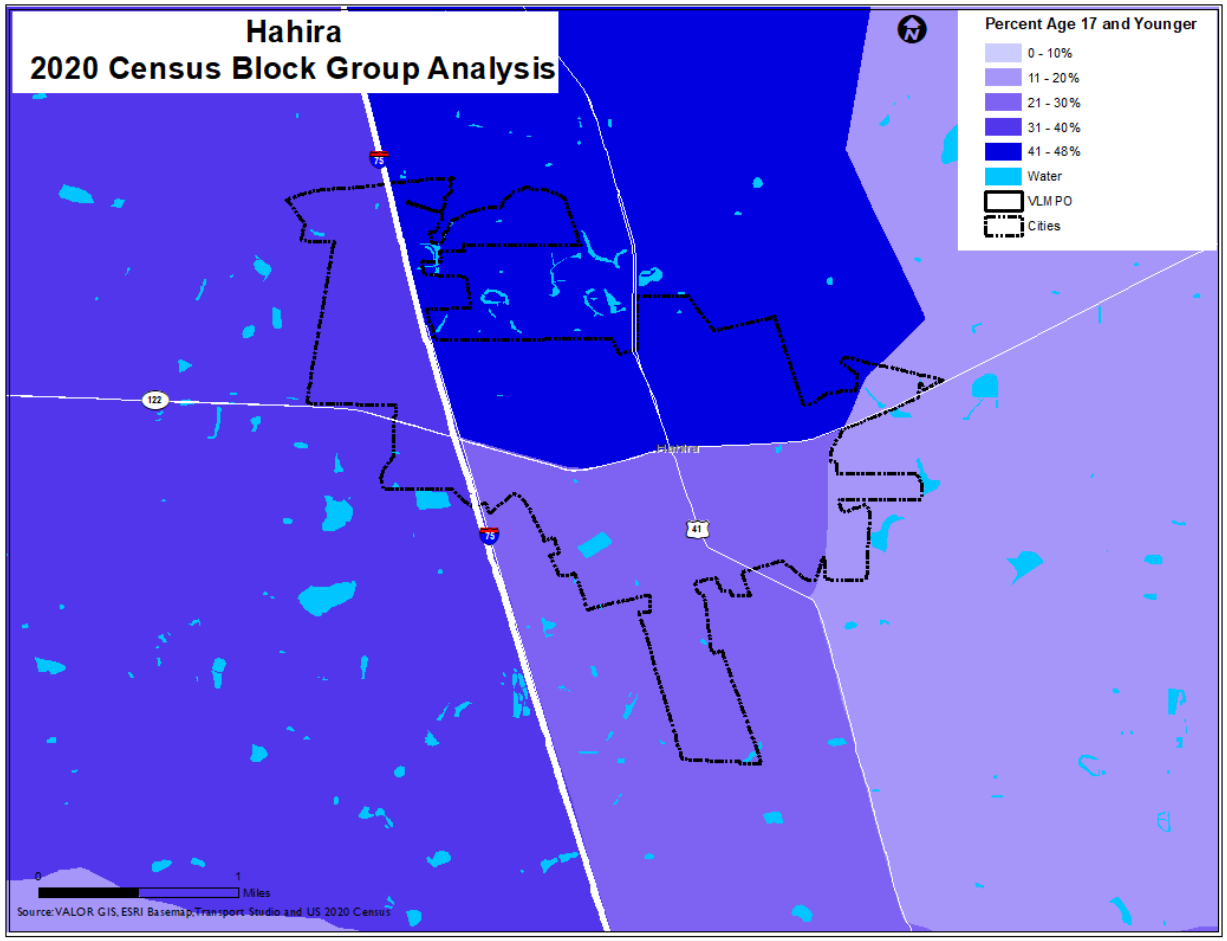

VLMPO
2020 Census Block Analysis
Percent Age 65 and Older
Under 10%
10 - 20%
20 - 40%
40 - 60%
60 - 80%
80 - 100%
Water
VLMPO
Cities
Lakeland
Banks Lake
Peters Bay
Hahira
Moody Air Force Base
Naylor
Valdosta
Howell
Bastier
Statenville
0
5
10
Miles
Source:VALOR GIS, ESRI Basemap,Transport Studio and US 2020 Census

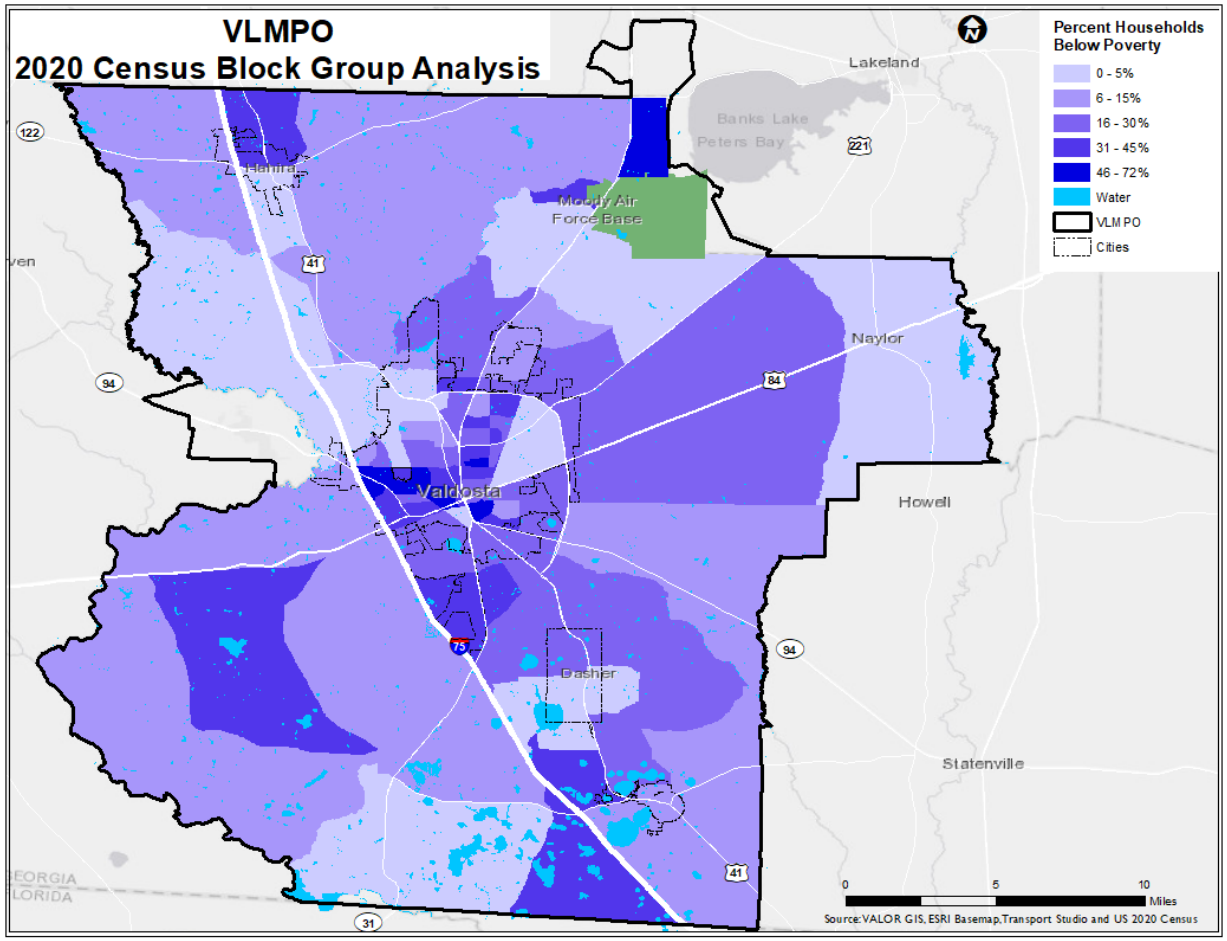

Valdosta
2020 Census Block Analysis
Percent Age 65 and Older
Under 10%
10 - 20%
20 - 40%
40 - 60%
60 - 80%
80 - 100%
No Population
Water
VLMPO
Cities
41
221
84
94
75
Valdosta
Dasher
0
2
4
Miles
Source: VALOR GIS, ESRI Basemap, Transport Studio and US 2020 Census

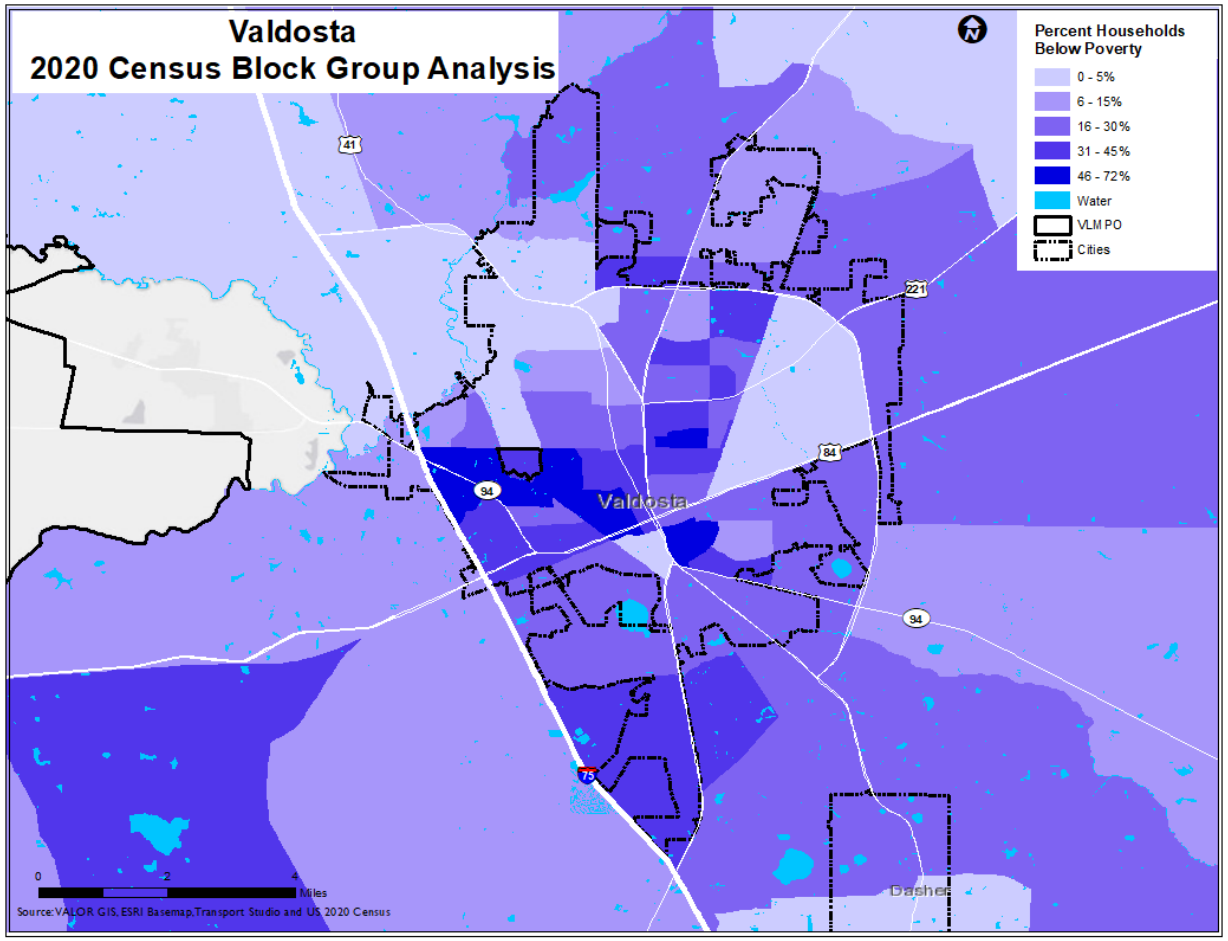

Hahira
2020 Census Block Analysis
Percent Age 65 and Older
Under 10%
10 - 20%
20 - 40%
40 - 60%
60 - 80%
80 - 100%
No Population
Water
VLMPO
Cities
75
122
41
Hahira
0
1
Miles
Source: VALOR GIS, ESRI Basemap Transport Studio and US 2020 Census

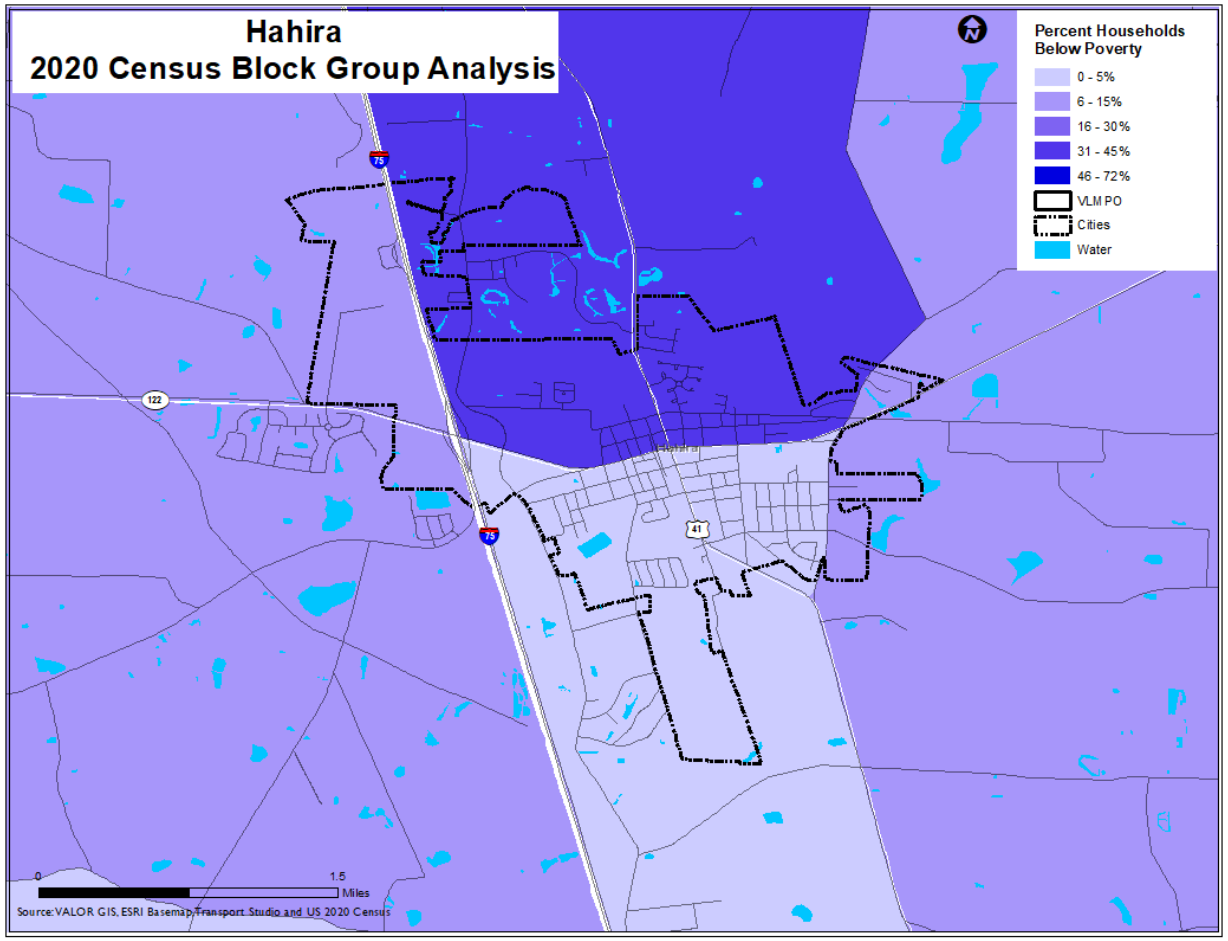

VLMPO
2020 Census Block Group Analysis
Percent Age 17 or Younger
0 - 10%
11 - 20%
21 - 30%
31 - 40%
41 - 48%
Water
VLMPO
Cities
Lakeland
Moody Air Force Base
Naylor
Valdosta
Howell
Dasher
Statenville
0
5
10
Miles
Source: VALOR GIS, ESRI Basemap, Transport Studio and US 2020 Census

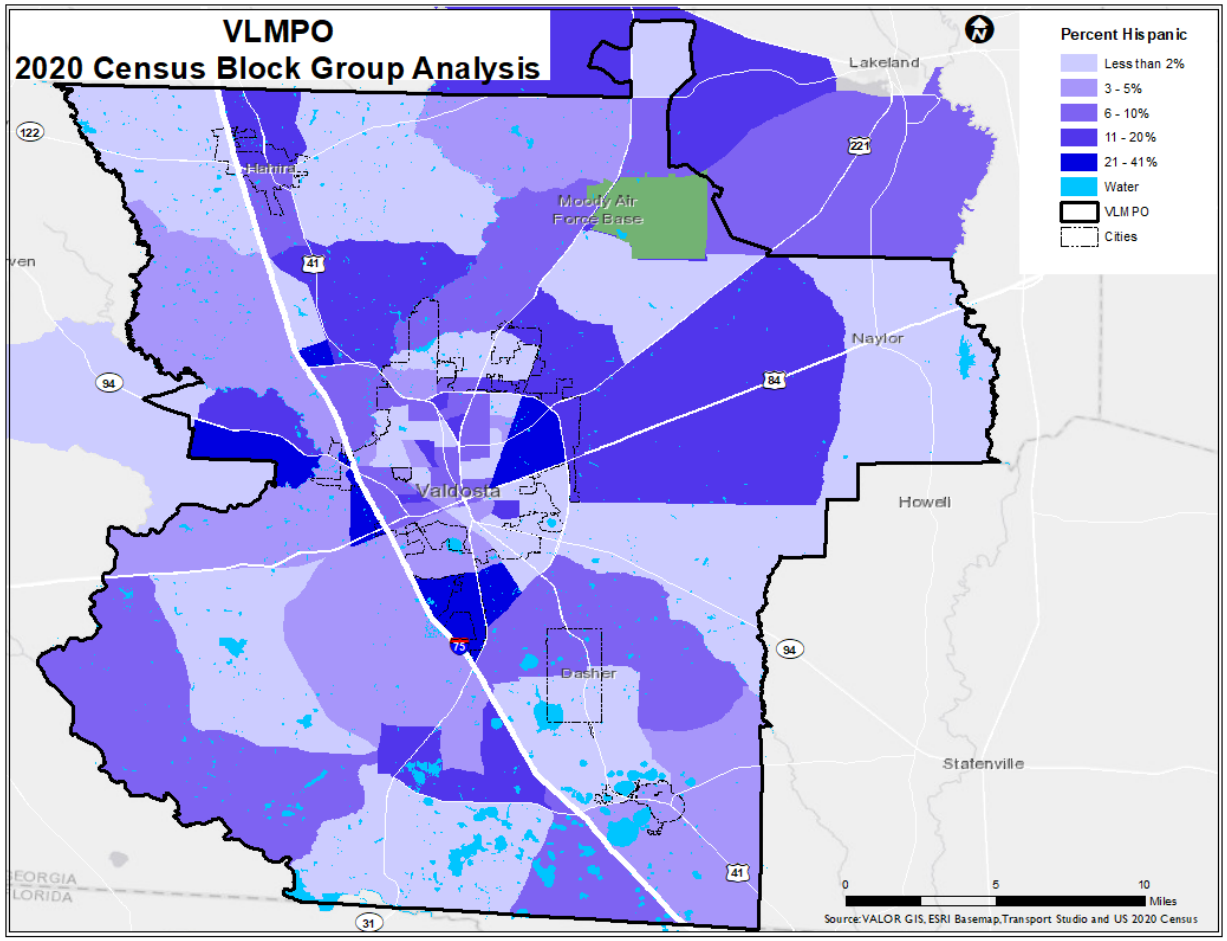

Valdosta
2020 Census Block Group Analysis
Percent Age 17 and Younger
0 - 10%
11 - 20%
21 - 30%
31 - 40%
41 - 48%
Water
VLMPO
Cities
41
221
84
94
75
Valdosta
Miles
Source: VLMPO, GIS, ESRI Basemap, Transport Studio and US 2020 Census

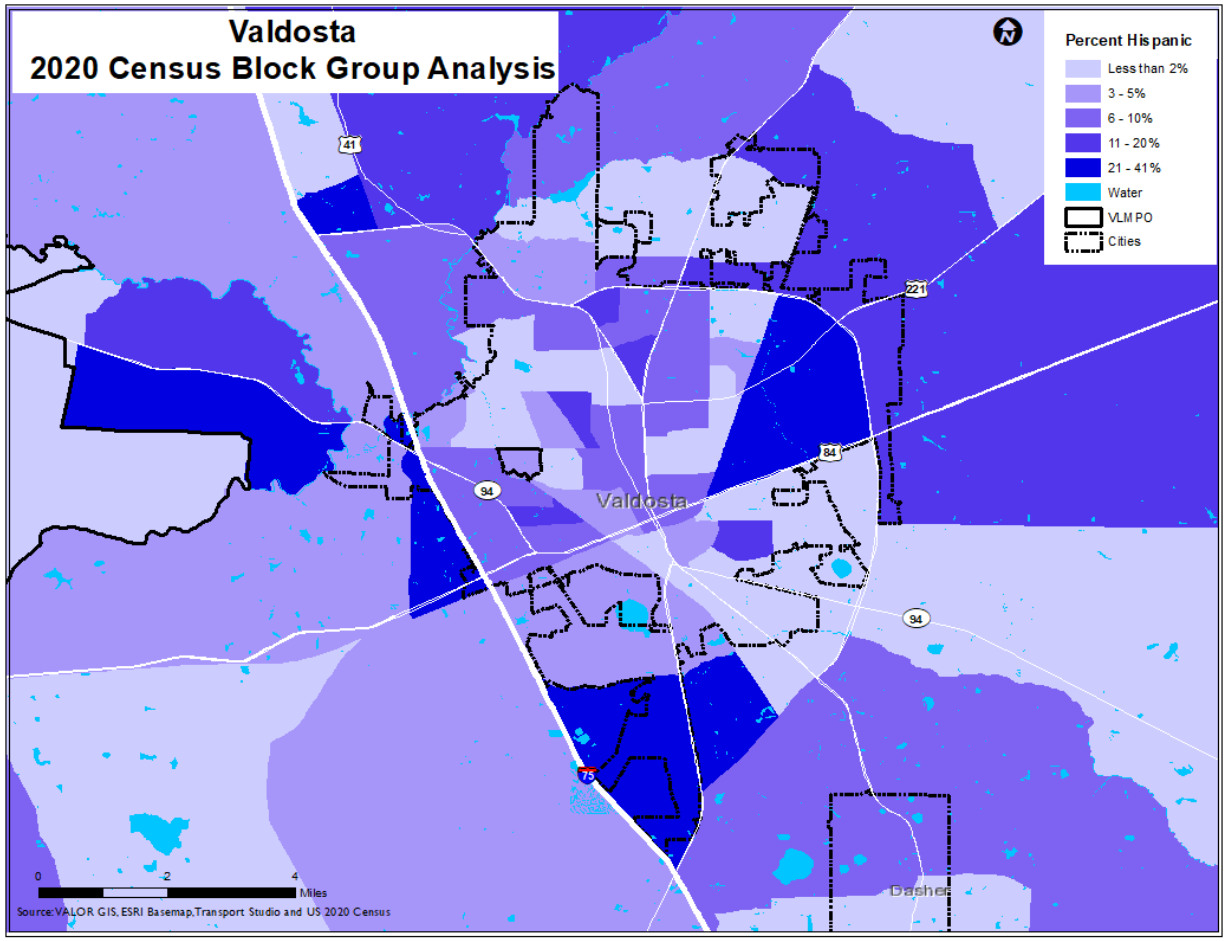

Hahira
2020 Census Block Group Analysis
Percent Age 17 and Younger
0 - 10%
11 - 20%
21 - 30%
31 - 40%
41 - 48%
Water
VLM PO
Cities
75
122
41
0
1
Miles
Source: VALOR GIS, ESRI Basemap, Transport Studio and US 2020 Census

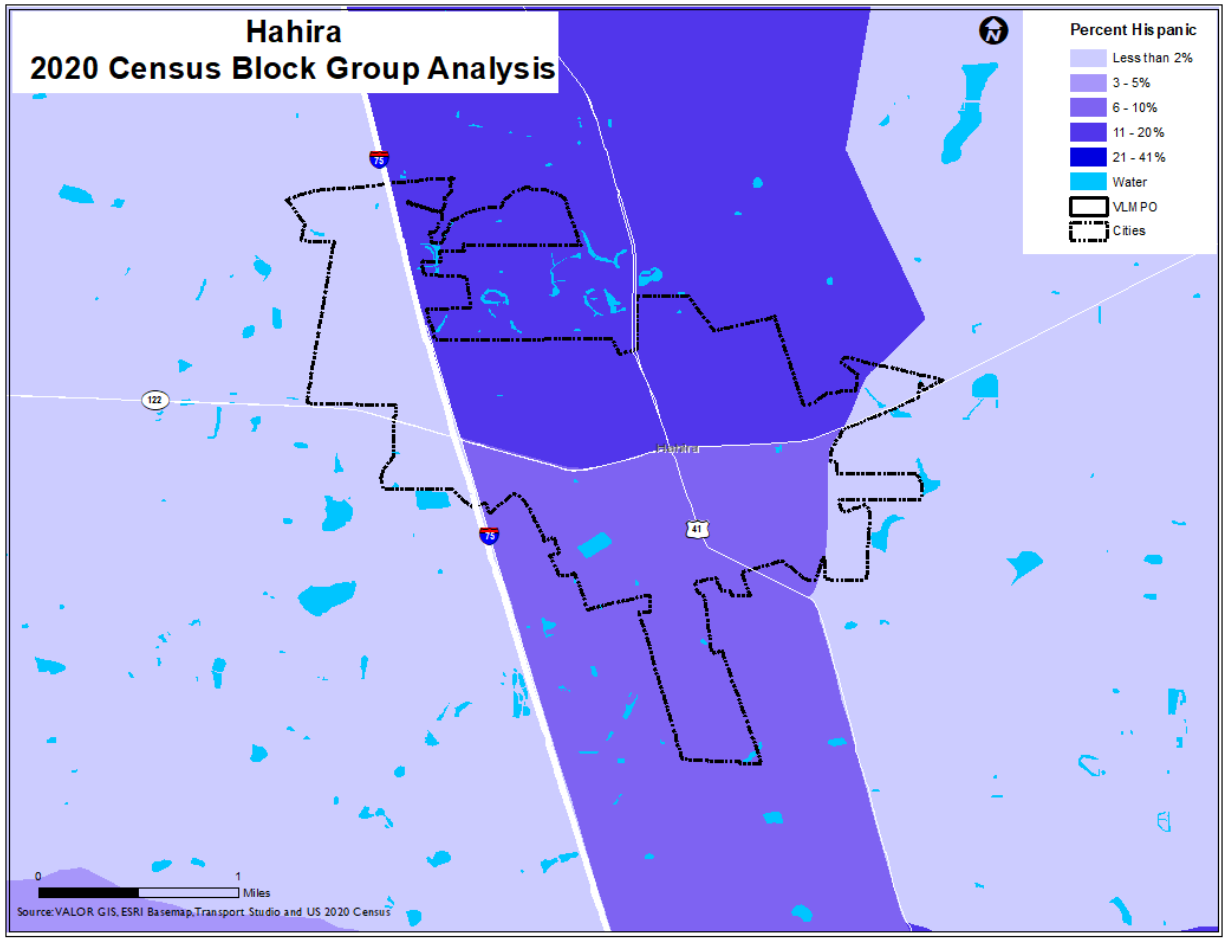

VLMPO
2020 Census Block Group Analysis
Percent Households Below Poverty
0 - 5%
6 - 15%
16 - 30%
31 - 45%
46 - 72%
Water
VLMPO
Cities
Lakeland
Banks Lake
Peters Bay
Moody Air Force Base
Naylor
Valdosta
Howell
Dasher
Statenville
122
41
94
84
221
75
31
0
5
10
Miles
Source:VALOR GIS, ESRI Basemap,Transport Studio and US 2020 Census

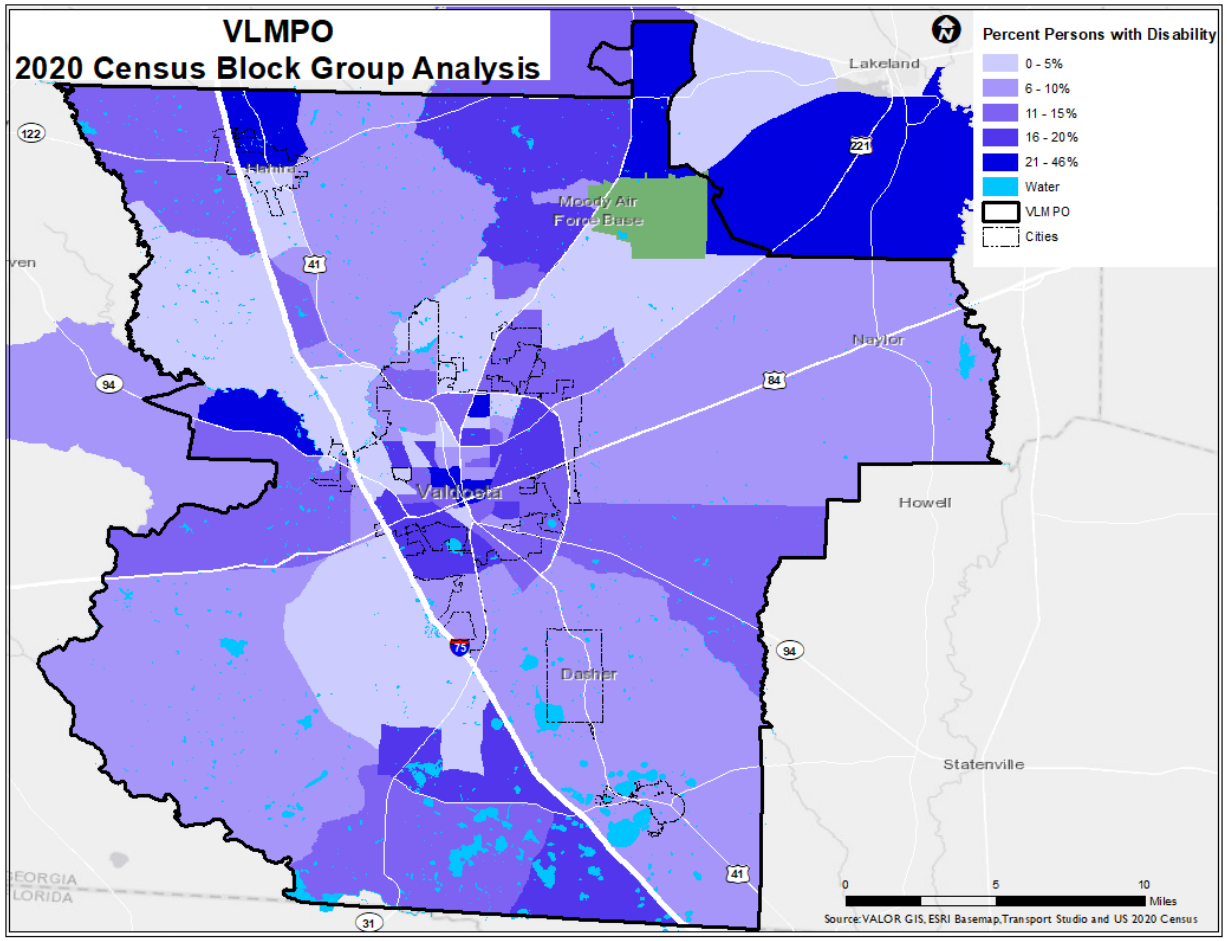

Valdosta
2020 Census Block Group Analysis
Percent Households Below Poverty
0 - 5%
6 - 15%
16 - 30%
31 - 45%
46 - 72%
Water
VLMPO
Cities
41
221
84
94
75
Valdosta
Dasher
0
2
4
Miles
Source: VALOR GIS, ESRI Basemap, Transport Studio and US 2020 Census

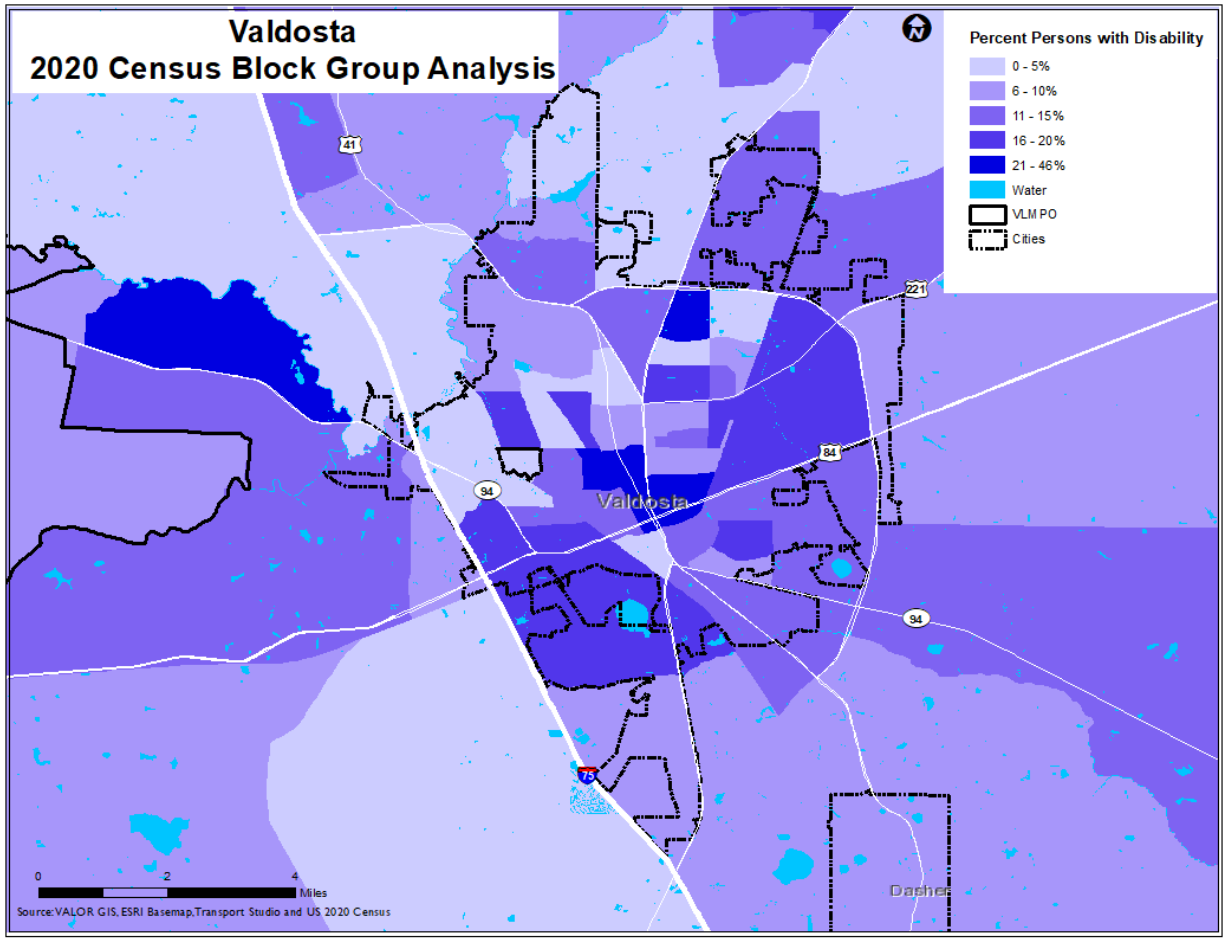

Hahira
2020 Census Block Group Analysis
Percent Households Below Poverty
0 - 5%
6 - 15%
16 - 30%
31 - 45%
46 - 72%
VLMPO
Cities
Water
75
122
41
0
1.5
Miles
Source: VALOR GIS, ESRI Basemap, Transport Studio and US 2020 Census

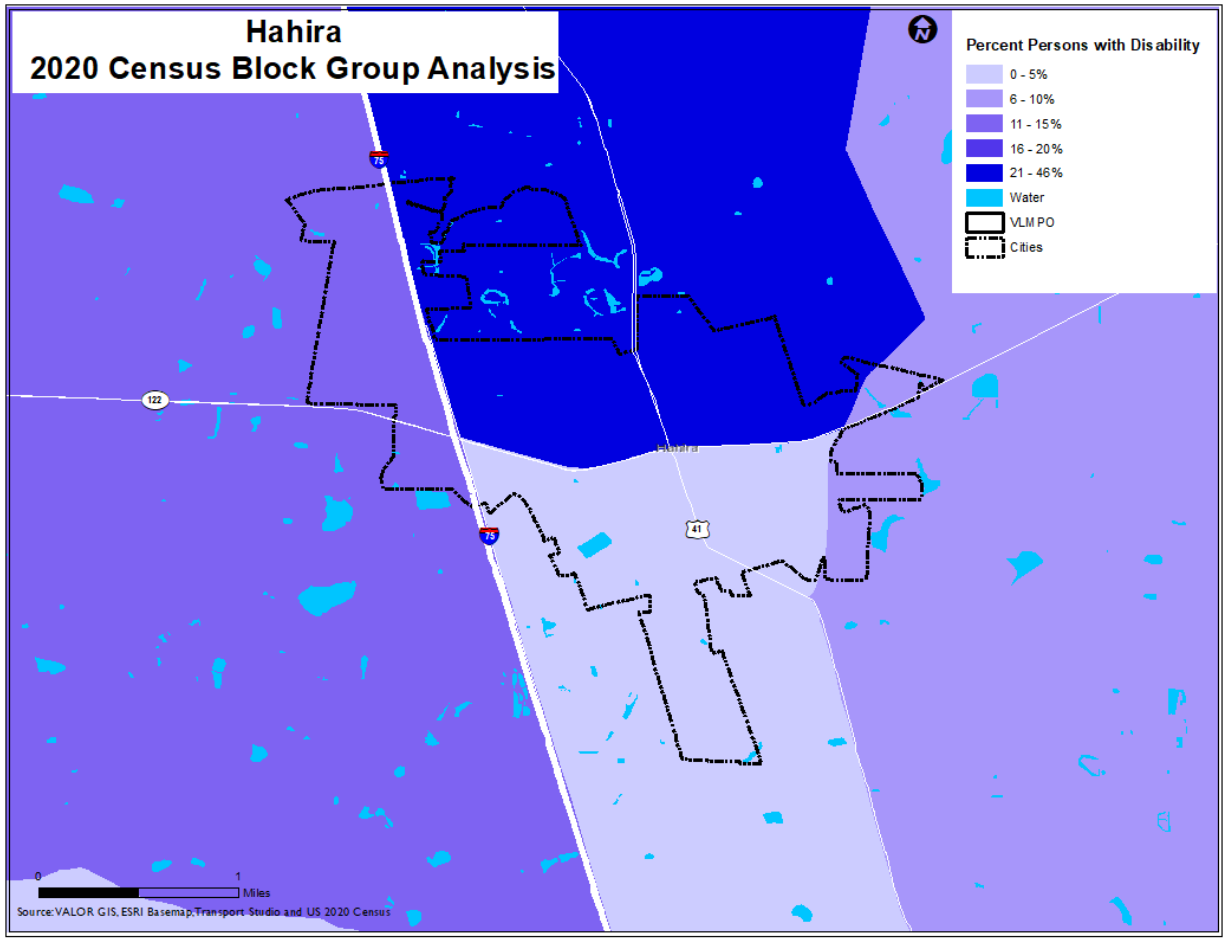

VLMPO
2020 Census Block Group Analysis
Percent Hispanic
Less than 2%
3 - 5%
6 - 10%
11 - 20%
21 - 41%
Water
VLMPO
Cities
Lakeland
Moody Air Force Base
Naylor
Valdosta
Howell
Dasher
Statenville
0
5
10
Miles
Source: VALOR GIS, ESRI Basemap, Transport Studio and US 2020 Census

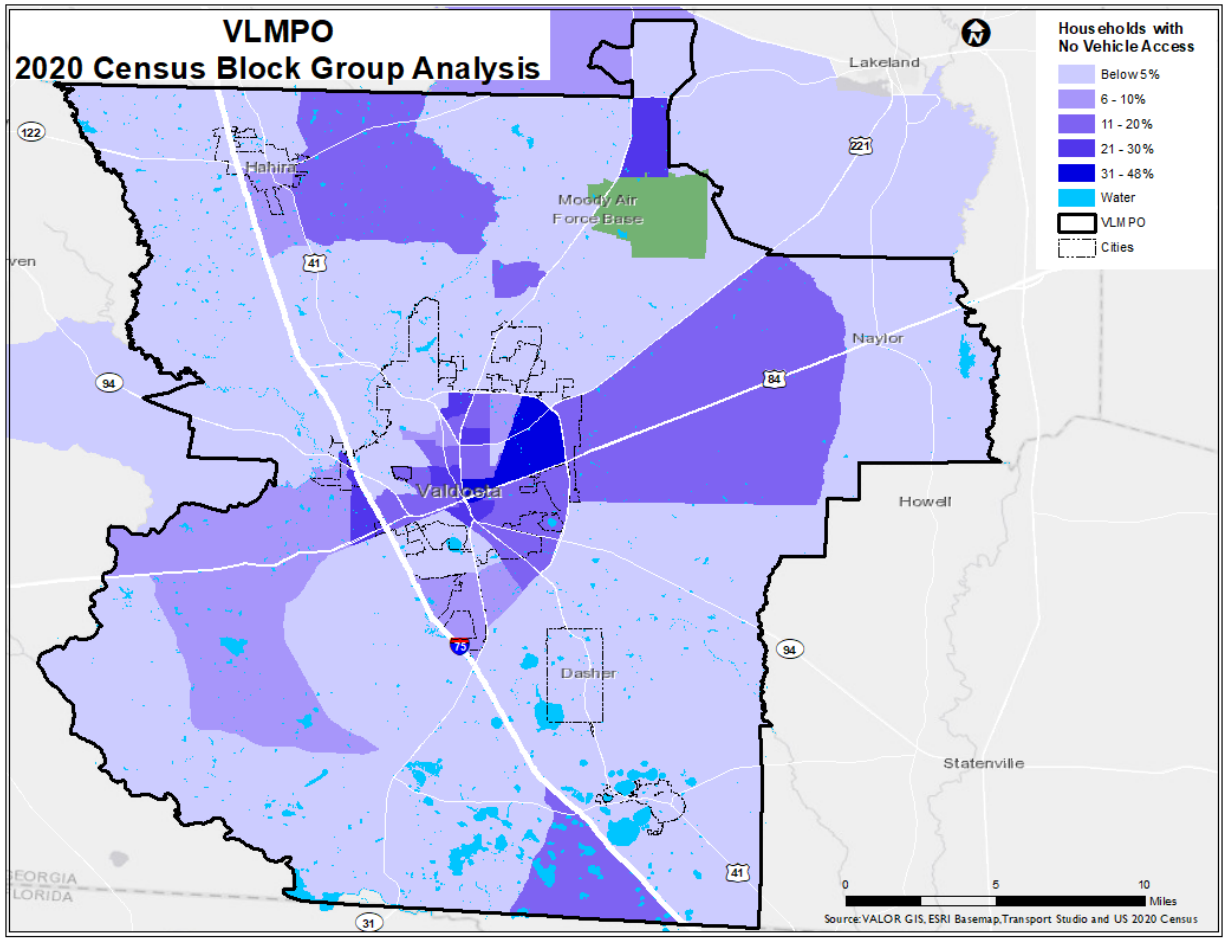

Valdosta
2020 Census Block Group Analysis
Percent Hispanic
Less than 2%
3 - 5%
6 - 10%
11 - 20%
21 - 41%
Water
VLMPO
Cities
41
221
84
94
75
Valdosta
Dasher
0
2
4
Miles
Source: VALOR GIS, ESRI Basemap, Transport Studio and US 2020 Census

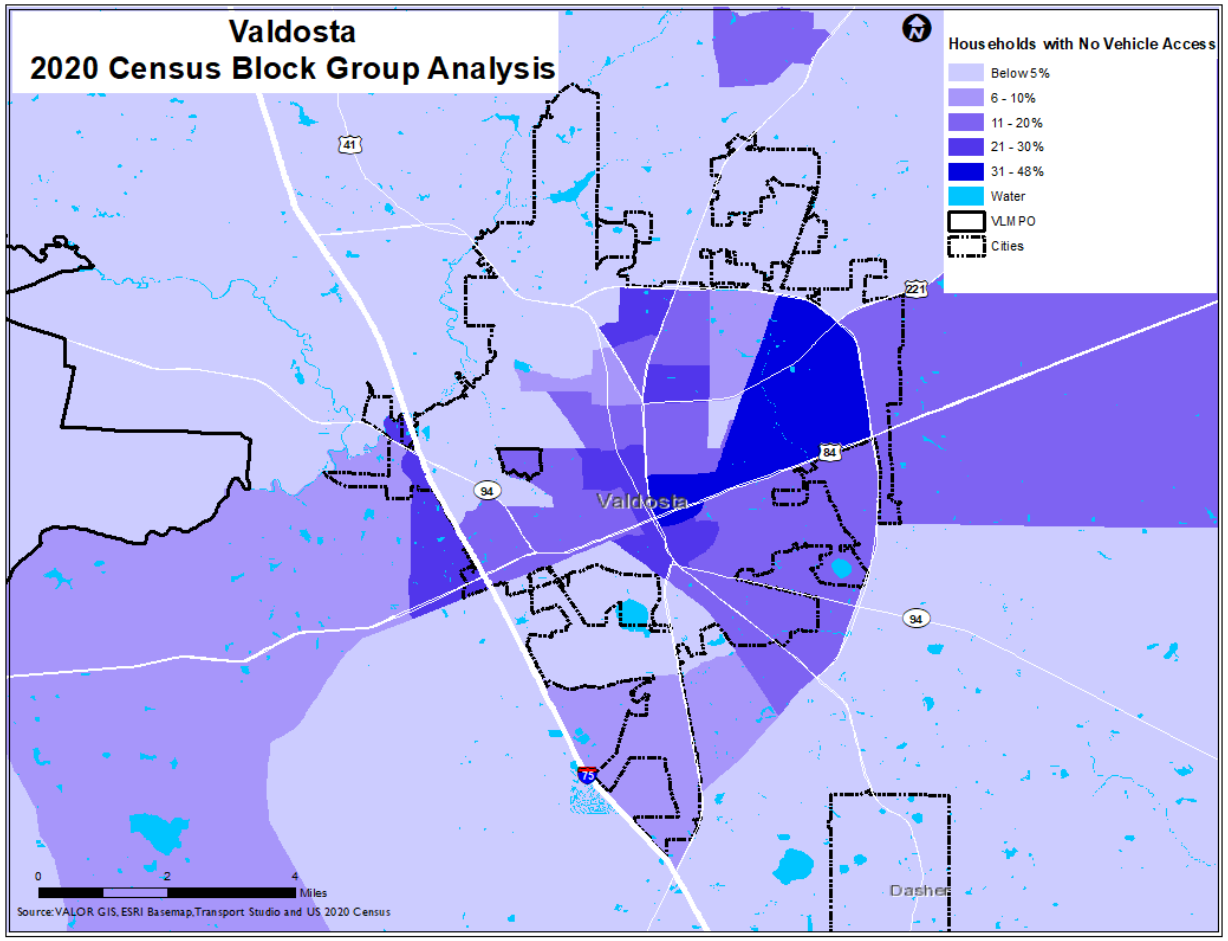

Hahira
2020 Census Block Group Analysis
Percent Hispanic
Less than 2%
3 - 5%
6 - 10%
11 - 20%
21 - 41%
Water
VLMPO
Cities
75
122
41
Hahira
0
1
Miles
Source: VALOR GIS, ESRI Basemap, Transport Studio and US 2020 Census

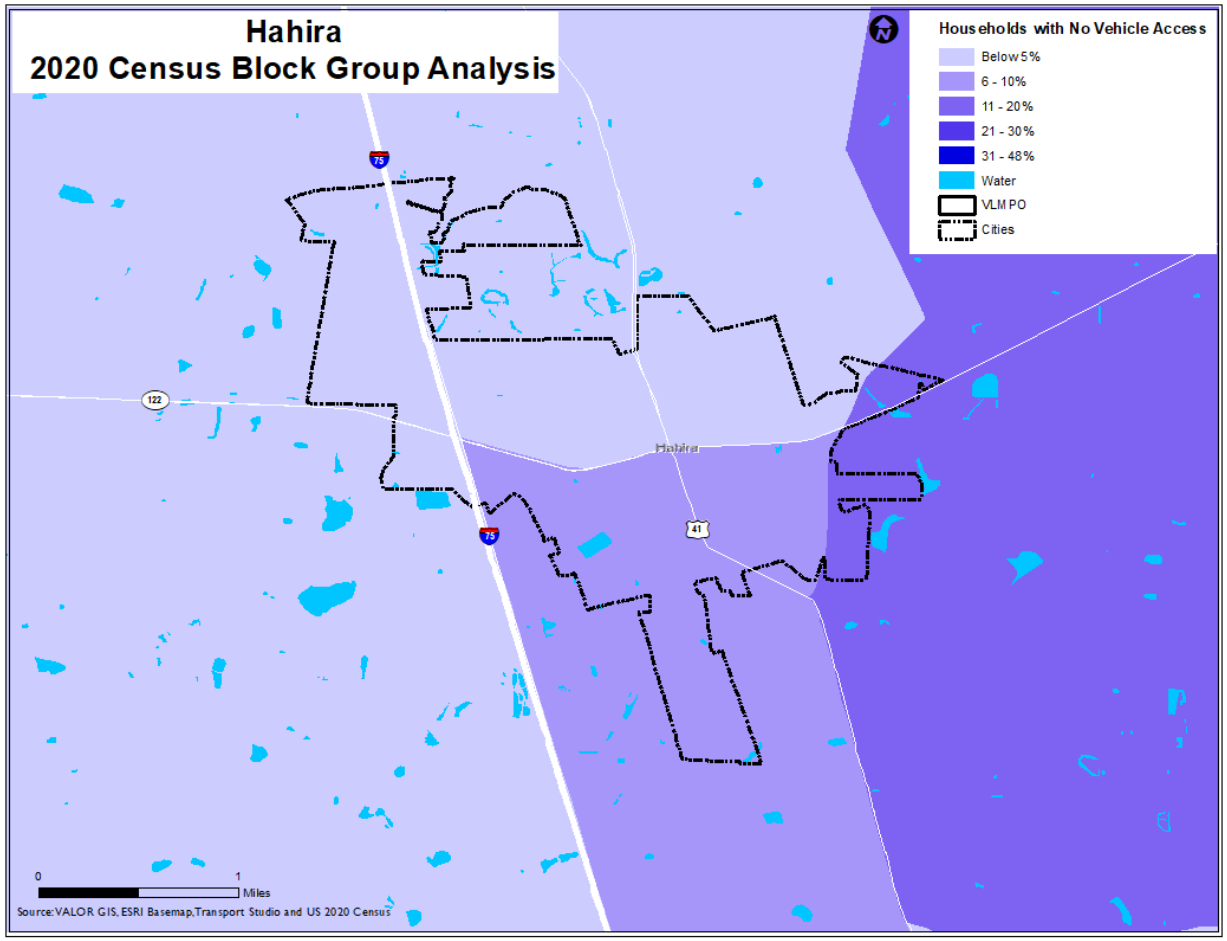

VLMPO
2020 Census Block Group Analysis
Percent Persons with Disability
0 - 5%
6 - 10%
11 - 15%
16 - 20%
21 - 46%
Water
VLMPO
Cities
Lakeland
Moody Air Force Base
Naylor
Valdosta
Howell
Dasher
Statenville
122
41
94
84
221
75
31
0
5
10
Miles
Source:VALOR GIS, ESRI Basemap,Transport Studio and US 2020 Census


Valdosta
2020 Census Block Group Analysis
Percent Persons with Disability
0 - 5%
6 - 10%
11 - 15%
16 - 20%
21 - 46%
Water
VLMPO
Cities
41
221
84
94
75
Valdosta
Dasher
0
2
4
Miles
Source: VALOR GIS, ESRI Basemap, Transport Studio and US 2020 Census


Hahira
2020 Census Block Group Analysis
Percent Persons with Disability
0 - 5%
6 - 10%
11 - 15%
16 - 20%
21 - 46%
Water
VLMPO
Cities
75
122
41
0
1
Miles
Source: VALOR GIS, ESRI Basemap, Transport Studio and US 2020 Census


VLMPO
2020 Census Block Group Analysis
Households with
No Vehicle Access
Below 5%
6 - 10%
11 - 20%
21 - 30%
31 - 48%
Water
VLMPO
Cities
Lakeland
Hahira
Moody Air
Force Base
Naylor
Valdosta
Howell
Dasher
Statenville
0
5
10
Miles
Source: VALOR GIS, ESRI Basemap, Transport Studio and US 2020 Census


Valdosta
2020 Census Block Group Analysis
Households with No Vehicle Access
Below 5%
6 - 10%
11 - 20%
21 - 30%
31 - 48%
Water
VLMPO
Cities
41
221
84
94
75
Valdosta
Dasher
0
2
4
Miles
Source: VALOR GIS, ESRI Basemap, Transport Studio and US 2020 Census


Hahira
2020 Census Block Group Analysis
Households with No Vehicle Access
Below 5%
6 - 10%
11 - 20%
21 - 30%
31 - 48%
Water
VLMPO
Cities
75
122
41
Hahira
0
1
Miles
Source: VALOR GIS, ESRI Basemap, Transport Studio and US 2020 Census