

Analyzing and Revisioning the Service Reduction Plan of Pierce Transit in Respect of Transit Equity



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Pierce Transit is an agency that provides public transportation service for citizens in Pierce County. Due to budget shortfall caused by economic recession the Pierce Transit Board of Commissioners directed staff to implement a 35% reduction in service by the October 2, 2011 service change to address the agency's budget shortfall.

Almost all routes will be impacted with reduced service hours, the number of trips that operate, or service being eliminated: 22 routes have service hour reductions, 21 routes have service hour reductions and route modifications, 7 routes have been eliminated, and only 3 routes have no changes. Please see: *Pierce Transit Reductions Notification*

Apparently, the Reduction Plan is operational oriented instead of people oriented. Thus, in respect of the concept of Transit Equity, the goal of this project is to analyze the reduction plan and revision it based on the evaluation of Pierce County's demographic information. The goal of revisioning suggestions is to eliminated the negative impact caused by service reductions as much as possible and help Pierce Transit to serve citizens in Pierce County in a social-equity way.

The reduction plan in general will impact those areas provided with existing transit service in Pierce County. However, some areas will not be served any more as 7 routes are being eliminated, which will impact a large areas of Pierce County. The negative impact of this elimination is massive. But the impact caused by 21 route modifications is limited. That is, these routes will continue serving the communities, but at some areas service will be cut off. Transit-dependants in service cutting off areas will might be able to continue to enjoy the transit service by taking buses running through nearby areas. But anyway, their original daily lives will be impacted probably significantly due to loss of transit service.

Analyzing the impact of route modification with Network Analyse technique, areas within 10 minutes walking distance to existing transit service (bus stops) that being cut off is mapped. Please see Figure 1.

Figure 1: Areas Impacted by Route Modifications: areas of service being cut off

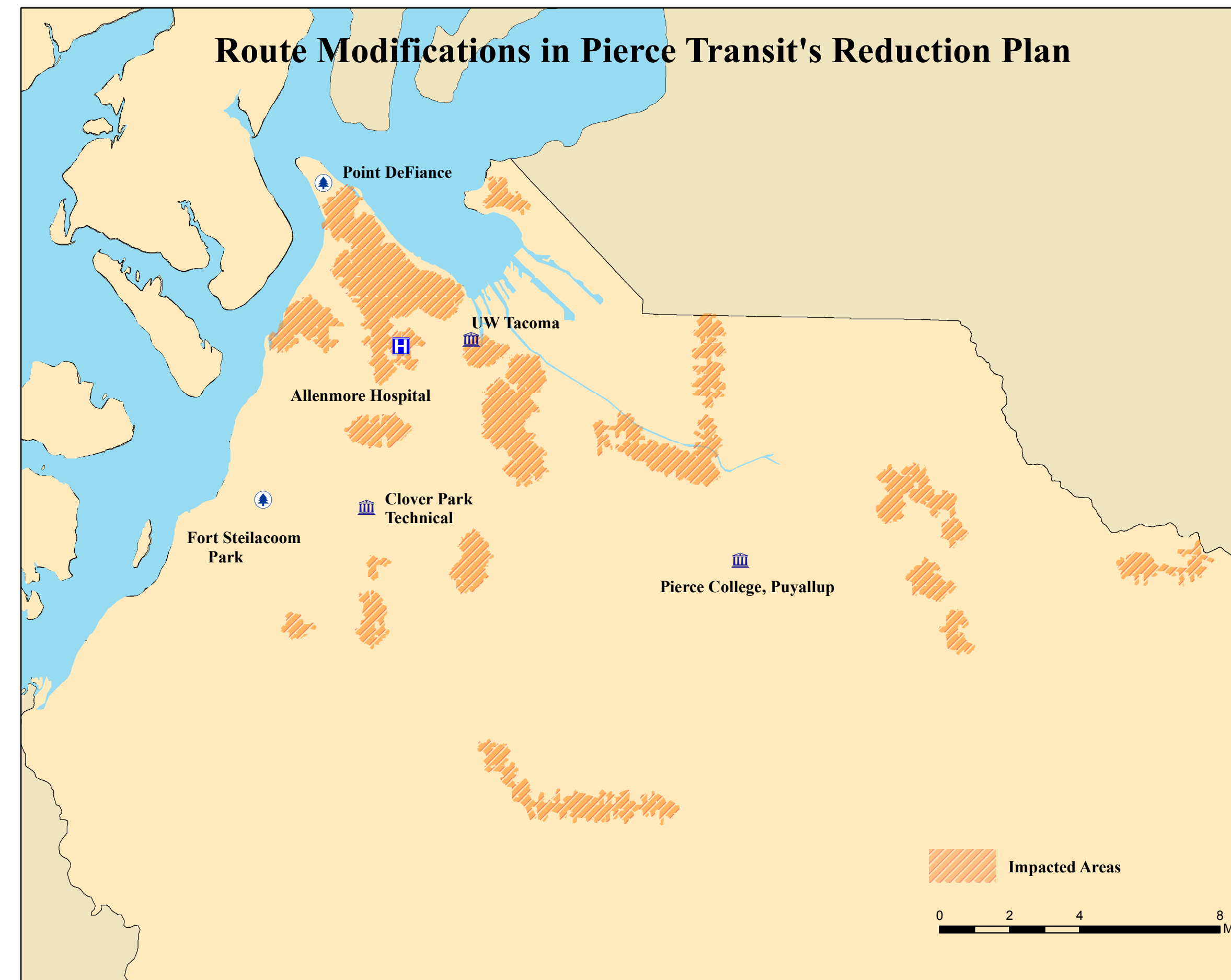
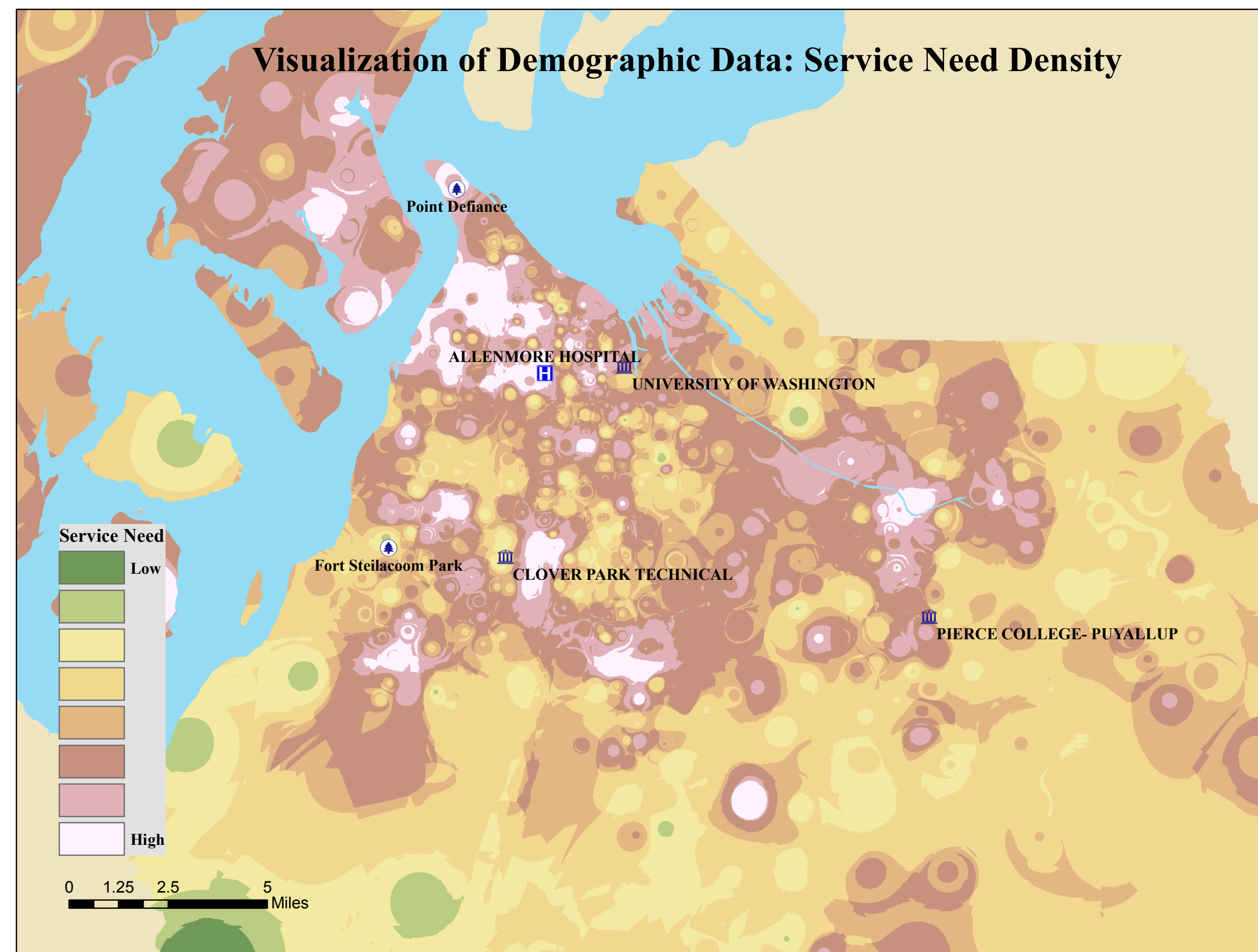


Figure 4: Transit Service Need Density of Pierce County



Increasingly, public transit is considered as a social equity issue. Many researchers have argued that urban transit agency, planner and government should pay more attention on the mobility of social disadvantaged people. Providing them with adequate transit service can connect them with employment opportunities and further enclose social and economic segregation. The idea of transit equity is practiced in this project and suggest that Pierce Transit should look at the citizens who really need transit service in their daily lives before implementing the reduction plan.

Citizens who really need transit service are identified. They are elderly aged over 65, school students, disable persons, and families do not own automobile. Using Interpolation technique, distribution of these service-needed citizens are seen in Figure 4.

33 block groups are selected in Figure 5. These block groups have the percentage of service-need citizen higher than the mean of that of Pierce County by 1.5 standard deviations or more. 101 being-cutoff bus stops are located in or just near by these block groups. These existing 101 bus stops are believe serving the transit-needed citizens in areas covered by red-hatches. Thus, it is here suggested that transit service in these areas should be preserved without cutting off in route modifications.

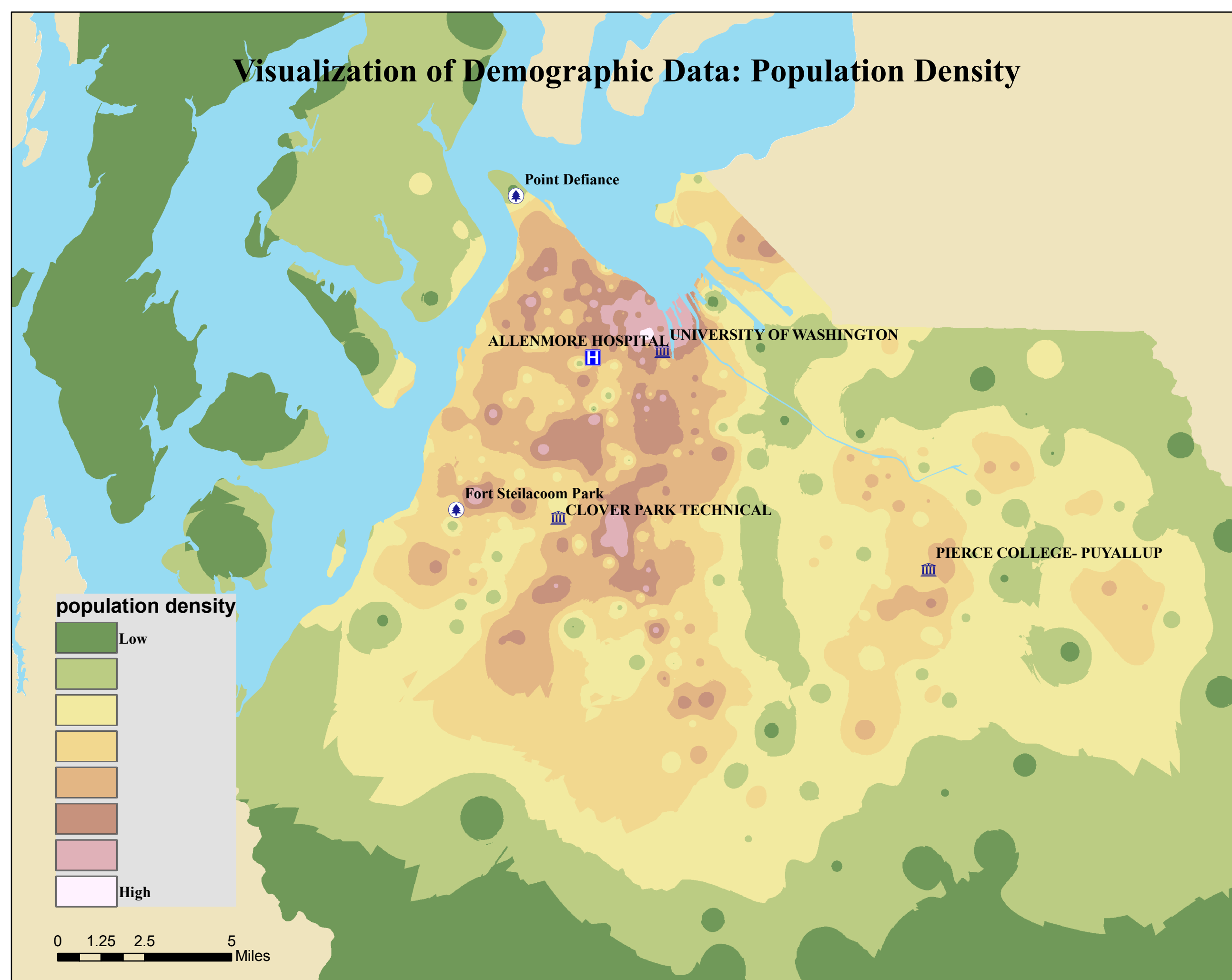


Figure 2: Population Density of Pierce County

Reflecting on the Figure 1, it is seen that most impacted areas of service being eliminated are in the City of Tacoma, in which communities in East, South, West Tacoma, Hilltop, 6th Avenue Business District, and Downtown are mostly affected. Some areas in the City of Puyallup and the City of Lackwood are impacted as well. However, these impacted areas are that of high population density, where citizens in Pierce County majorly reside, see Figure 2.

It has been argued that urban transit system should provide more transit service in city area with population is more concentrated, instead of dispersal, low population density suburbs. Based on this, in this project being-eliminated transit services in high population density areas are identified and suggested to be preserved.

In this project, high population areas are identified as areas that with population density higher than the mean of that of Pierce County by 1.5 standard deviation or more. 34 block groups are qualified for this selection. Also, 61 bus stops that being cut off are identified. Some of them are completely located within highly populated block groups. Some of them are located right outside the boundaries of those block groups.

These two groups of bus stops are believed serving the citizens who concentratedly reside in or near North Tacoma, Hilltop Tacoma, 6th Avenue Business District of Tacoma, and Parkland Transit Center. Transit dependants living in red polygons, 10-minutes walking distance to preserved bus stops. If these areas will be preserved with transit service, citizens living there will be able to continuously enjoy transit service.

Please see Figure 3.



Figure 3: Areas that Should be Preserved with Transit Service Based on Population Density

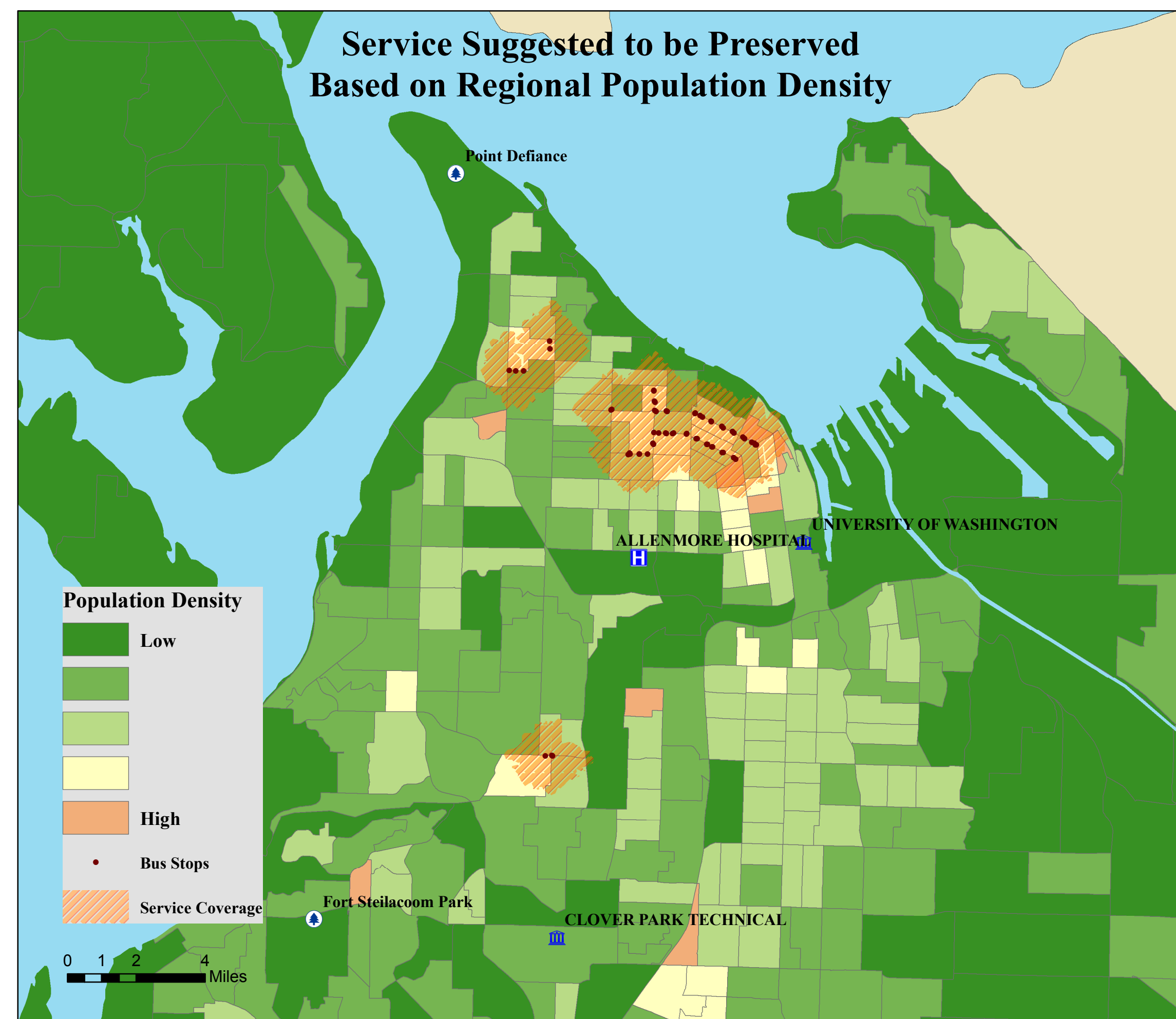
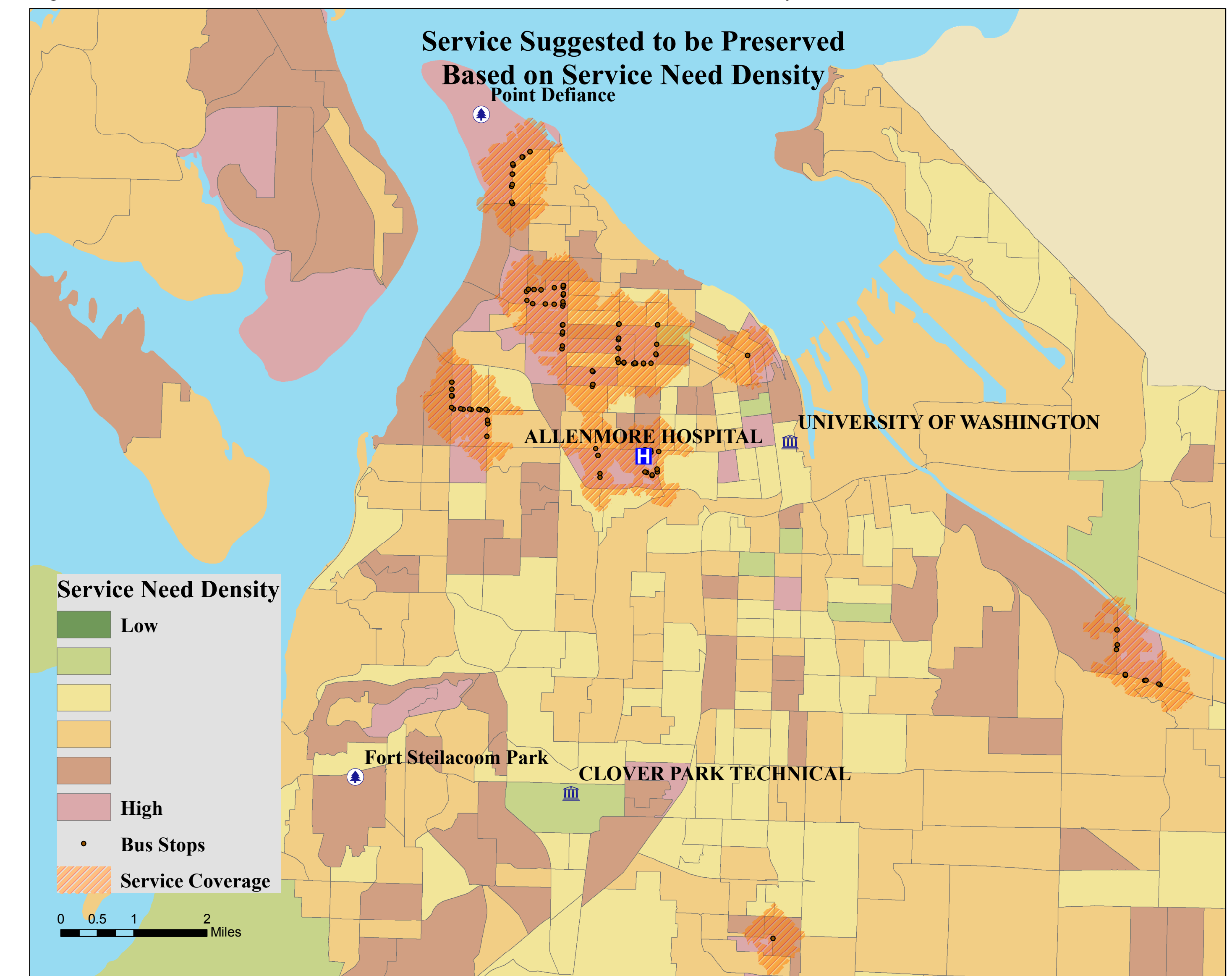


Figure 5: Areas that Should be Preserved with Transit Service Based on Service Need Density



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