



## SAN JOSÉ STATE UNIVERSITY

**Problem:** TOD residential projects in Santa Clara County are believed to be “over-parked.” Local data demonstrating this effect previously did not exist.

**Purpose:** The collaborative research project between SJSU and VTA was intended to determine whether or not actual parking utilization is significantly lower than parking supply. This in turn would provide local evidence that parking requirements for TOD residential projects could be reduced.

**Methods:** Parking utilization surveys were conducted at 12 TOD residential properties throughout Santa Clara County during peak parking periods.

**Results and conclusions:** All 12 sites exhibit an over-supply of parking facilities, on average by 26 percent. While on average 1.7 parking spaces per dwelling unit were provided, only 1.3 were needed.

**Takeaway for practice:** Local parking requirements can be reduced at TOD residential properties without fear of causing spillover effects on neighboring properties.



## New Research Indicates that Transit-Oriented Development Residential Properties In Santa Clara County are “Over-Parked”

In the Spring of 2010, a graduate class at San José State University in Urban and Regional Planning teamed up with the Santa Clara Valley Transportation Authority (VTA) to study parking at transit-oriented development (TOD) residential projects in the southern portion of the San Francisco Bay Area. By observing the parking utilization rates at 12 housing developments near VTA light rail and Caltrain stations, this collaborative research effort produced valuable, local evidence that the parking supply at projects of this type exceeds actual demand. And in corroborating recent research which demonstrated that other TOD residential properties in the Bay Area are also “over-parked” (Cervero 2009), the study provides useful evidence to help inform decision makers that *less* parking can and ought to be required for housing projects that are located near rail transit service.

This article presents a summary of the objective, methodology, key findings, and policy implications of this collaborative research project. A full description of the project methodology, local background, survey data, research findings, and policy implications is presented in the Technical Report dated November 2010, available online (see below for web address).

### PROJECT OBJECTIVE AND METHODOLOGY

The intent of this research project is to corroborate the findings of other research on the topic and provide evidence that reduced parking requirements may be feasible in Santa Clara County. If the surveys demonstrate lower actual parking utilization than current parking supply, it would indicate that local jurisdictions with land-use control surrounding rail transit stations could reduce their parking requirement standards. This reduction in parking requirements could have the effect of reducing TOD construction costs and reducing the footprint of TOD development projects to make land available for other and better uses.

An initial literature review was conducted to collate existing research related to parking utilization and demand. The results from the literature review were used to determine best practices in estimating parking demand, identify local parking requirements in the study area, and develop a parking survey work plan. Parking literature often refers to a critical threshold being

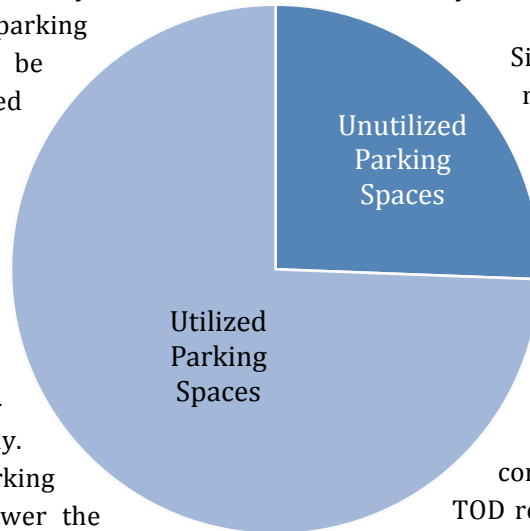
reached around 85 percent utilization—above this point, parking supply is perceived to be full by users, and spillover or illegal parking may occur. From a methodological perspective, if the observed parking utilization rates at TOD residential properties in the County were found to be significantly lower than 85 percent, then the parking demand at these sites could be estimated from the observed rates without additional surveys. However, if the observed utilization rates were found to be significantly higher than 85 percent, then more extensive surveys would be needed to estimate the total parking demand because parking overflow is likely. In either case, the use of parking utilization surveys would answer the key research question of whether TOD residential projects in Santa Clara County are “over-parked,” because they would determine whether the usage rates are above or below 85 percent. Therefore, the Research Team proceeded with on-the-ground parking surveys, collecting a range of parking-related data from 12 TOD residential properties that met the selection criteria listed in **Box 1**. The data collected by the Research Team were analyzed in a variety of ways, and the key findings are presented in this article.

## KEY RESEARCH FINDINGS

All 12 TOD residential properties offer more parking than residents need and actually use. Each of the survey sites has significant unused parking, by as little as 17 percent and as much as 39 percent; overall, out of the total parking spaces (9,751 supplied) about 26 percent of them were not utilized (2,496 unused) at the time of the on-the-ground surveys. **Table 1** shows that on average only about 1.3 spaces<sup>1</sup> are needed per dwelling unit in a TOD residential site in Santa Clara County, while the average parking supply rate was 1.7 for the survey

1. This result for Santa Clara County TOD sites is comparable to the average parking demand rate of 1.2 space per dwelling unit for other San Francisco Bay Area TOD sites studied by Robert Cervero in 2009 (see Table 2.1 in the Technical Report).

sites (calculated from 9,751 total supplied spaces for 5,801 total dwelling units). The fact that the parking supply rate is found higher than the parking demand rate for all 12 sites (22 percent higher on average) indicates that more parking is provided than is actually needed.



Since parking requirements for residential developments are set by local zoning requirements, local parking requirements have clearly contributed to the large amount of parking supplied at the residential development sites surveyed. The 2,496 unused parking spaces in 12 residential sites lead the Research Team to conclude that parking facilities at TOD residential projects in Santa Clara

County may be underutilized. This finding suggests that local parking code requirements for TOD residential properties in Santa Clara County, and other similar locations, could be reduced by as much as 26 percent.

Based on the observed peak parking utilization, the parking demand rates for the 12 TOD survey sites are near the bottom of the range of required parking supply levels for municipalities across Santa Clara County (see **Figure 1**), which in some cases may exceed 2.5 parking spaces per dwelling unit under current local zoning requirements. This research project shows that parking demand at residences within one-half mile of a rail station is less than what current zoning codes require. As such, many Santa Clara County municipalities could reduce their residential parking requirements significantly without the risk of “underparking” a TOD residential site.

### BOX 1 TOD Residential Project Survey Criteria

- Within ½ mile of a rail transit station
- Minimum residential occupancy of 85 percent
- Over one year old
- Free parking
- Restricted/designated parking
- Open surface parking or podium garage
- At least 80 units or 100 parking spaces

## POLICY IMPLICATIONS

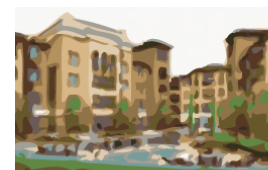
### Reduce Costs of Unused Parking

Since unused parking supply consumes land, money, and other resources in its construction and maintenance, reduction in parking requirements for TOD residential projects could benefit both local municipalities and developers alike. Constructing parking facilities increases costs for developers and proves inefficient for the municipality when a large proportion of a development site is unused. There are potential cost savings that could be garnered if parking requirements are reduced to levels suggested by the utilization data presented in this study. The savings in development costs could then be used to support other enhancements to projects, which may be desired by the local agency and the community.

### Simplify Local Parking Requirements

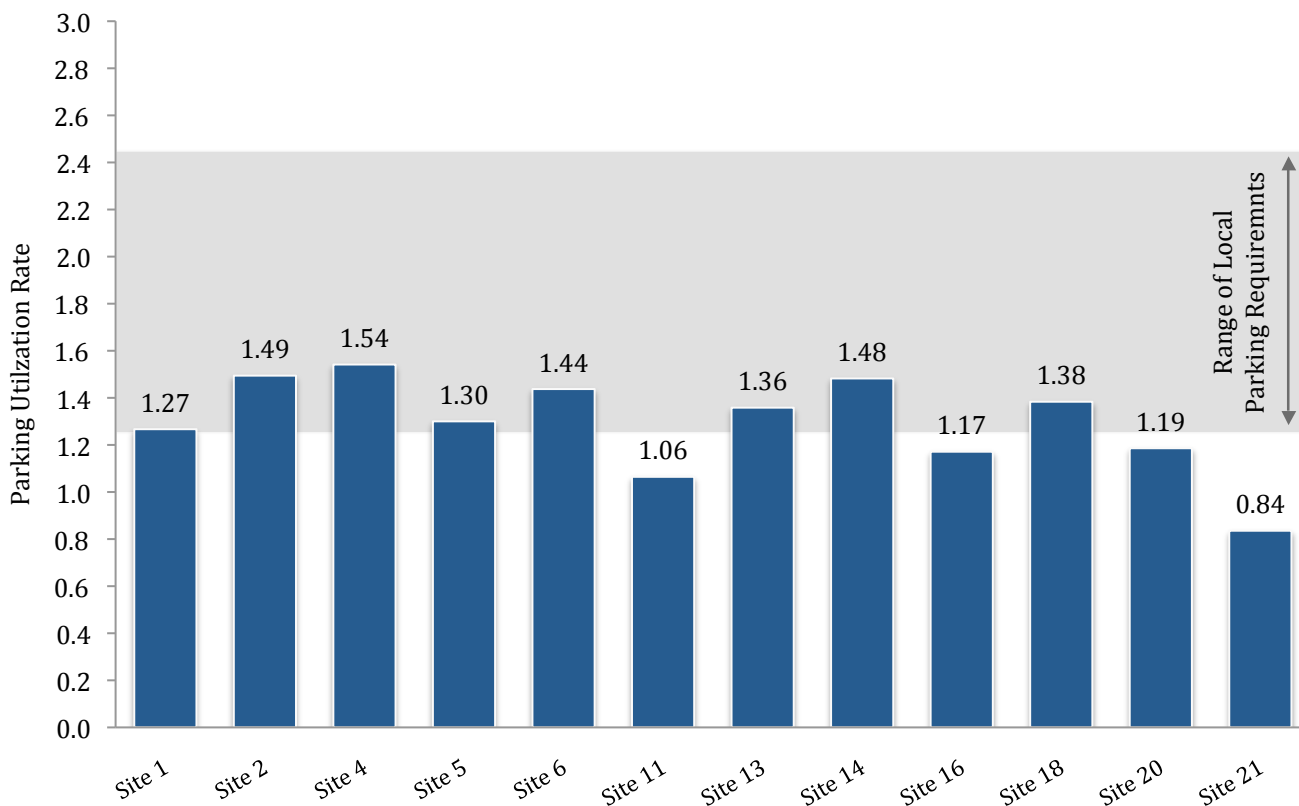
Many municipalities in Santa Clara County have their own unique way of granting reduced parking

requirements for residences near transit stations. In the majority of cases, the process requires case-by-case decision making (such as conditional use permits) or a previously completed planning effort (such as a Specific Plan). In several jurisdictions, reductions can only be granted through issuance of a variance or in conjunction with the site developer's participation in and promotion of transportation demand management (TDM) programs.



Providing reduced parking requirements for TOD residential sites directly into the zoning code would save municipalities the staff time and resources required for additional permitting efforts. Additionally, this form of regulation would likely be seen as beneficial in the development community, as it would allow for a greater measure of predictability and simplicity in determining the costs associated with developing a residential site. Such a benefit may even result in an increased number of TOD residential projects in municipalities that simplify the parking requirements in such a manner.

**FIGURE 1** Parking Utilization Rates for Surveyed Sites Compared to Local Zoning Requirements



## Future Transit Expansion

Several new transit projects are planned for Santa Clara County in the coming years, notably several Bus Rapid Transit (BRT) lines and the BART extension to San José. The new transit lines will provide better transit service to many areas throughout Santa Clara County, including important destinations such as central business districts, hence providing residents the option to access these areas without driving. As more areas in Santa Clara County are connected by frequent, convenient transit service, there will be new opportunities for residents to take advantage of the accessibility and convenience that TOD residential projects offer, and more developments should be able to reduce their parking supply.

This research has shown that TOD residential sites, which meet the criteria in **Box 1** and are near rail stations in Santa Clara County, are over-parked. This

reasoning could be further expanded to suggest that TOD residential projects near new BRT transit stations could also have similarly reduced parking demand. If the quality of BRT service in terms of convenience and comfort is comparable to rail service, then there is the potential to reduce parking requirements for TOD residential sites near BRT stations as well.



## Better Land Use and Urban Form

Municipalities could expect positive impacts from decreasing parking ratios for TOD residential projects. Land would be more efficiently used by making it available for additional housing or enhanced community amenities. Decreasing parking ratios from 2.2 to 1.1—while holding other

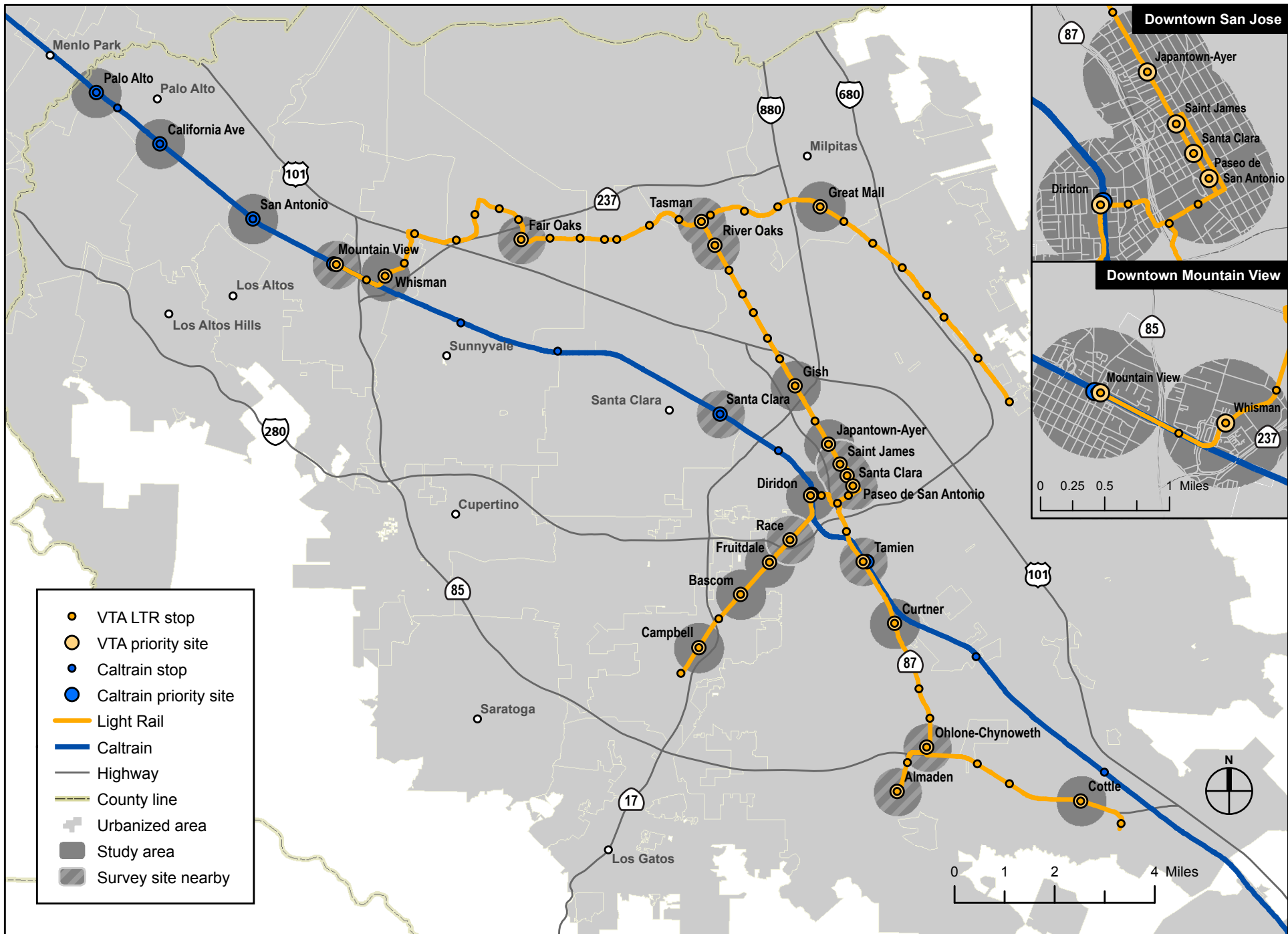
**TABLE 1** Parking Survey Data

Site	City	Housing		Parking			Parking Utilization Ratio	Parking Demand Rate	Parking Supply Rate	Over Supply (%)
		Total Units	Occupied Units	Total Spaces	Utilized Spaces	Unused Spaces	(Utilized Spaces / Total Spaces)	(Utilized Spaces / Occupied Units)	(Total Spaces / Total Units)	(Supply - Demand) / Supply
1. Avalon at Creekside	MV	294	288	438	365	73	0.83	1.27	1.49	15
2. Domicilio	SC	306	294	568	439	129	0.77	1.49	1.86	19
4. Mansion Grove	SC	924	832	1,654	1,282	372	0.78	1.54	1.79	14
5. North Park	SJ	2,760	2,622	4,605	3,409	1,196	0.74	1.30	1.67	22
6. Kensington Place	SU	186	182	317	262	55	0.83	1.44	1.70	16
11. City Heights*	SJ	93	93	122	99	23	0.81	1.06	1.31	19
13. Paseo Plaza	SJ	210	200	373	271	102	0.73	1.36	1.78	24
14. Paseo Villas	SJ	104	100	240	148	92	0.62	1.48	2.31	36
16. Skyline at Tamien	SJ	115	113	186	132	54	0.71	1.17	1.62	28
18. Ohlone Chynoweth Commons	SJ	176	174	338	241	97	0.71	1.38	1.92	28
20. Almaden Lake Village	SJ	250	242	387	287	100	0.74	1.19	1.55	23
21. Monte Vista	SJ	383	383	523	320	203	0.61	0.84	1.37	39
Total		5,801	5,522	9,751	7,255	2,496				
Average		483	460	813	605	208	0.74	1.31	1.68	22
Std. Dev.		751	709	1,258	936	324	0.07			

### Notes

MV = Mountain View | SC = Santa Clara | SJ = San José | SU = Sunnyvale

\* Site 11 has an occupancy rate of 75% (it was the only survey site with an occupancy rate less than 90%). The total number of housing units and parking spaces were adjusted for Site 11 to reflect an occupancy rate of 100%.



**FIGURE 2** Study Area



factors constant—increases the potential for building more units by 20 to 33 percent (Arrington & Cervero 2008). Reducing parking ratios should result in lower construction costs, greater housing production, higher transit ridership, and improved overall physical form and performance of residential developments (Arrington & Cervero 2008, 48-51).

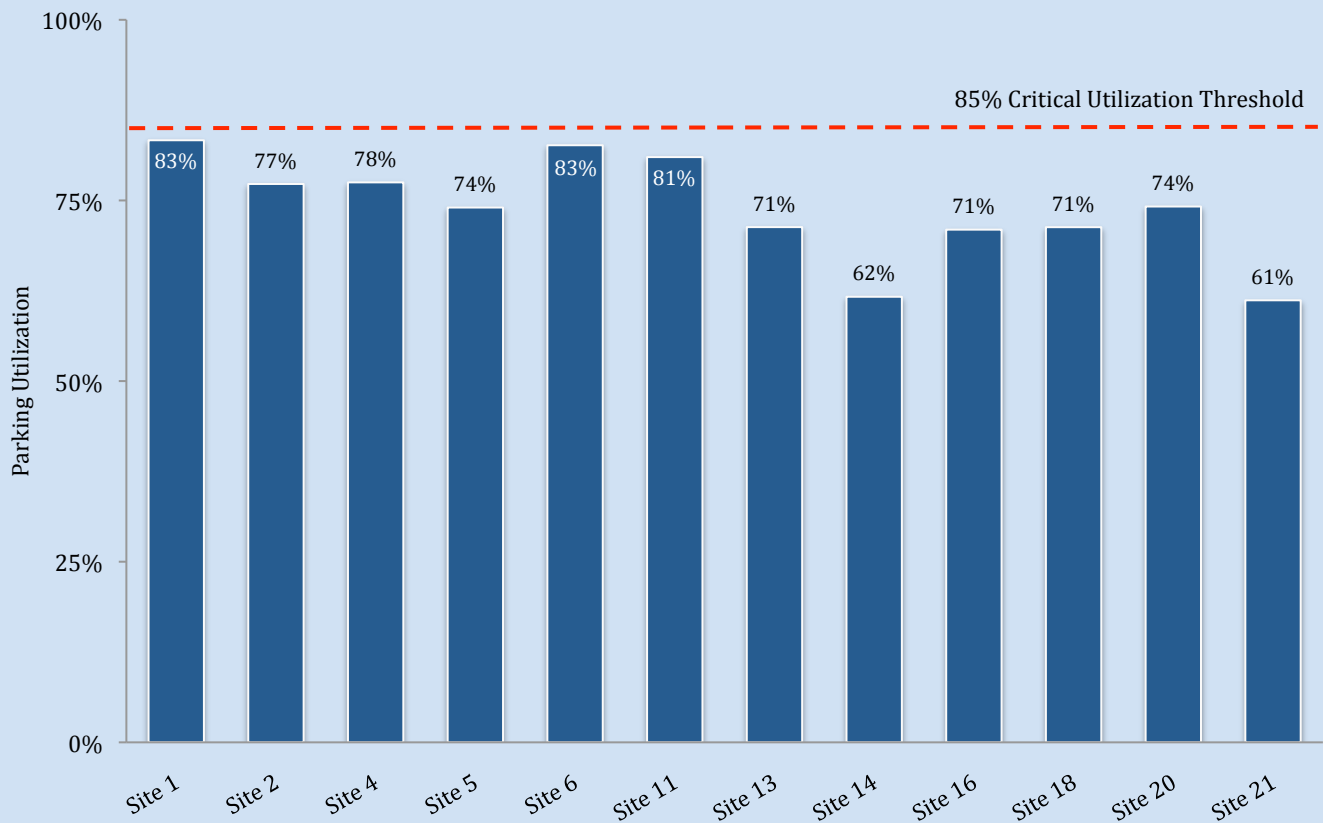
Another implication of lowered parking ratios relates to urban form. By reducing the amount of parking (especially surface parking) required at a site, the overall physical form on residential properties can be improved to make them more inviting and pedestrian friendly, and thus more “livable.” Putting lots of surface parking between housing units and the adjacent roads and walking paths typically creates barriers to walkability.

## AREAS OF FURTHER RESEARCH

Mixed-use developments and TOD projects present an excellent opportunity for shared-parking situations, which could increase the efficiency of parking facilities that serve these types of developments. Depending on the time of day, shared parking between residents and commercial business patrons enables the use of spaces that might otherwise be unused. If a mixed-use development is located within one-half mile of a transit station, then overall parking could be reduced and shared across all land uses. By integrating commercial and residential parking, the overall parking supply will be more efficiently used. Future research on shared parking in TOD projects in Santa Clara would be useful in planning and permitting TOD projects.

### BOX 2 Parking Utilization Ratios for Survey Sites

As noted earlier in this article, parking literature often refers to a critical threshold around 85 percent utilization, above which point parking supply is perceived to be full by users and spillover or illegal parking may occur. This figure shows that the parking utilization rates for all survey sites were below this critical threshold of 85 percent. Therefore, the observed parking utilization can be considered to represent the total parking demand for the surveyed sites.



TOD residential properties with reduced parking ratios should result in higher transit ridership. Municipalities could then offer an incentive to private developers in the form of reduced traffic-related impact fees. The rationale would be that since these TOD residential projects generate fewer vehicle trips, their associated fair-share contribution to roadway traffic impacts could be lowered. Future research studies could be conducted to verify that people in Santa Clara County who choose to live in TOD residential properties drive less often and have fewer cars, thereby reducing their demand for parking.

The Research Team developed a research work plan for estimating parking demand using stated-preference user surveys. For reference in future research, a methodology for conducting a user survey is included in Appendix C of the final research report for parties who may wish to estimate the total residential parking demand at TOD sites, particularly for those TOD residential projects that exhibit very high parking utilization.

## FURTHER READING

- Arrington, G. B. and Robert Cervero. 2008. *Effects of TOD on Housing, Parking, and Travel*. Washington, D.C.: Transportation Research Board.
- Cervero, Robert, Arlie Adkins, and Cathleen Sullivan. 2009. *Are TOD sites Over-Parked?* UCTC Research Paper No. 882. Berkeley, CA: University of California Transportation Center.
- Lee, Richard, Robert Rees, and Mackenzie Watten. 2010. Smart Growth Parking Requirements Review. *ITE Journal* 80, no. 12: 36-40.
- Litman, Todd. 2006. *Parking Management Best Practices*. Washington, D.C.: American Planning Association.
- Smith, Mary. 2005. *Shared Parking, 2nd ed.* Washington, D.C.: Urban Land Institute and the International Council of Shopping Centers.
- Willson, Richard. 2005. Parking Policy for Transit-Oriented Development: Lessons for Cities, Transit Agencies, and Developers. *Journal of Public Transportation* 8, no. 5: 79-94.

## POLICY IMPLICATIONS SUMMARY

- Lowered construction costs associated with reduced required parking could incentivize more TOD residential projects and support other enhancements to projects desired by the local agency and the community. The cost of constructing parking facilities often exceeds \$30,000 per space in a garage and about \$5,000 per space for surface lots. Further savings could be achieved by avoiding the cost of maintaining parking spaces that are not fully utilized.
- Simplifying local parking requirements would save municipalities staff time and resources. And by providing greater predictability, developers might pursue TOD residential projects in cities that simplify parking requirements.
- As more areas in Santa Clara County are connected by frequent, convenient transit service, there will be new opportunities for residents to take advantage of the accessibility and convenience that TOD residential projects offer, and more developments should be able to reduce their parking supply. TOD residential projects near new BRT transit stations could also have similarly reduced parking demand.
- By reducing the amount of parking (especially surface parking) required at a site, the overall physical form on residential properties can be improved to make them more inviting and pedestrian friendly, and thus more “livable.”



### About the primary authors:

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**Justin M. Meek**, MUP (justin.meek@gmail.com) is a recent graduate of SJSU and is currently providing contract planning services for the City of Pacific Grove. He also acts as Research Assistant for the Mineta Transportation Institute, serves as the Administrative Director on the American Planning Association California-Northern Section board, and sits on the Policy Committee for APA's Healthy Communities Interest Group.

### About the collaborating authors:

**Robert W. Swierk**, AICP (robert.swierk@vta.org) is a Senior Transportation Planner at VTA. He has more than 10 years of experience in the planning field, including transit service planning, station area planning, and Transit-Oriented Development. Before joining VTA, Mr. Swierk worked as a transportation planner in the private sector in the Toronto and Boston areas. He holds Masters degrees in City Planning and Transportation Engineering from UC-Berkeley, and a BS in Geological & Environmental Sciences from Stanford University.

**Ying C. Smith**, AICP (ying.smith@vta.org) has close to 15 years of experience in transportation planning. In her current position as a Transportation Planning Manager for VTA, Ms. Smith leads a team of professional planners to complete progressive transportation planning initiatives, such as land use and transportation planning integration, guidelines for multimodal designs, and bicycle/pedestrian programs. Ms. Smith also has extensive experience in transit planning, regional transportation planning, city planning and private consulting, and is a graduate of the master's planning program at University of Nebraska – Lincoln.

### About the research sponsors:

At San José State University (SJSU), the Department of Urban and Regional Planning offers graduate study leading to the degree of Master of Urban Planning. This program, accredited by the Planning Accreditation Board, is designed to prepare skilled professionals who are well grounded in the theories, methods, and techniques of planning in local, regional, and state government for the purpose of improving the quality of urban regions. In addition, it provides students with an opportunity for developing a significant background in a particular area of specialization, which includes:

- Community Design and Development
- Environmental Planning
- Transportation and Land Use Planning
- Applications of Technology in Planning

A special mission of the department is to promote planning education opportunities for a diverse student population, including working students who prefer to attend the program on a part-time basis.

The department engages faculty and students in public service projects designed to assist local communities in addressing topical planning issues, while complementing the academic curriculum with real-world professional experiences.

The VTA began as a County department created by the Santa Clara County Board of Supervisors on June 6, 1972 to oversee the region's transportation system. Until 1995, VTA's primary responsibility was the development, operation and maintenance of the county's bus and light rail system. VTA separated from the County of Santa Clara and merged with the region's Congestion Management Agency in January 1995, thus undertaking another responsibility: managing the county's blueprint to reduce congestion and improve air quality.

Working under the direction of a 12-member Board of Directors, VTA has a \$363 million annual operating budget (FY'08). VTA's low-floor bus fleet serves a 326 square mile urbanized area. The 42.2 mile light rail system is operated with a fleet of 100 low-floor light rail vehicles.

As the multimodal transportation agency for Santa Clara County, VTA has a strong interest in seeing transit-supportive land use and transportation policies implemented by local agencies in the county.