

Examining Potential Safety Risks Associated with the Introduction of Urban Light Rail Transit

Although transit is widely considered to be safer than other forms of surface transportation, there remains a lack of knowledge regarding the short and longer-term safety impacts of introducing transit for other forms of travel. This study conducted a before-after analysis of two systems—the Orlando, Florida SunRail commuter rail system and the Charlotte, North Carolina Lynx light rail system—in order to understand how the introduction of service influences the incidence of total roadway crashes, as well as fatal and injurious crashes (also called KAB crashes), near stations and along affected intersections and corridors where light rail operates.

The study examined changes in total and KAB crashes within 0.1 miles and 0.25 miles of each station, as well as changes in crashes occurring within 250 feet of an at-grade intersection. Within 0.1 miles of a SunRail station, total crashes increased by 133% and KAB crashes increased by 67% (see table). For the Lynx system, total crashes within 0.1 miles of a station decreased by 31% in the after period, while KAB crashes decreased by 21%.

Station Area (0.1 Mile)	KAB*			Total*		
	Before	After	% Change	Before	After	% Change
Altamonte Springs	0	6	600.00%	9	32	255.56%
Church Street	5	5	0.00%	25	57	128.00%
DeBary	0	3	300.00%	0	4	400.00%
Advent Health	1	4	300.00%	2	14	600.00%
Lake Mary	1	0	-100.00%	2	4	100.00%
Longwood	2	5	150.00%	7	22	214.29%
Lynx Central	6	0	-100.00%	28	38	35.71%
Maitland	0	0	0.00%	1	0	-100.00%
Orlando Health	0	0	0.00%	3	1	-66.67%
Sand Lake Road	0	1	100.00%	1	4	300.00%
Sanford	0	0	0.00%	0	0	0.00%
Winter Park	0	1	100.00%	6	20	233.33%
Total	15	25	66.67%	84	196	133.33%
	Wilcoxon z=1.330; p(z)=0.1848			Wilcoxon z=2.592; p(z)=0.0095		

*Where there are 0 values, the percent change is reported as 100% of absolute crash count.

Crash Types within 0.25 Miles of a SunRail Station.



High-crash Intersections along the Lynx System.

This study concludes that safety issues pertaining to urban transit extend beyond crashes involving rail vehicles. Changes in the use of station areas, and the design and operation of affected intersections, can have a profound influence on multiple-vehicle and vehicle-pedestrian crashes as well. The study identifies fruitful areas of future research and makes suggestions regarding how guidance, such as that in the *Manual for Uniform Traffic Control Devices*, may be enhanced to address these needs.

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