Roanoke Valley Transportation
PLANNING ORGANIZATION
Staffed by the REGIONAL commission

313 Luck Avenue, SW
Roanoke, Virginia 24016
P: 540.343.4417 / F: 540.343.4416
rvtpo.org

Elm Avenue

February 20, 2020

The Virginia Department of Transportation launched a statewide bike/ped count program in the fall of 2020 and has provided Eco-Vision MultiModal EcoCounters, some accessories, training, and data management to RVARC. The City of Roanoke requested several sites to be counted and RVARC staff identified Elm Avenue and 5th Street as a logical inaugural count location because of its proximity to the RVARC office. Elm Avenue has an average annual daily traffic of 11,000. When it was repaved in 2018 it received new bike lanes. It is an important connector and primarily residential.

City staff and RVARC staff installed the counters on lampposts in the 500 block of Elm Avenue, one on the north side and one on the south side of the street. Pedestrian counts were collected for October 30 – February 3. Bicycle counts were obtained for October 30 – December 10. The pneumatic tubes for bicycle counts are not designed for long term use, so the bicycle counts were discontinued after five weeks when one tube was damaged.

Ideally, permanent counters collect data for a full year so that day-of-year factors can be applied to the raw data to calculate Average Annual Daily Traffic. In 2018, Virginia Tech professor Dr. Steve Hankey partnered with RVARC to install four pedestrian counters on 10th Street and on Campbell Avenue[1]. In 2015, the Virginia Department of Transportation installed permanent bicycle counters in the bike lanes on Memorial Avenue[2].

Day-of-year factors calculated from the 10th Street and Campbell Avenue pedestrian counters were applied to the Elm Avenue pedestrian counts. Day-of-year factors calculated from the Memorial Avenue bike lanes were applied to Elm Avenue bicycle counts.

Pedestrian traffic is much higher than bicycle traffic (preliminary mode split data from the Greenways suggests bicycle traffic volume is 25-30% of pedestrian traffic volume). Pedestrian traffic was higher on the south side of the street than the north side. Bicycle traffic was the opposite, higher on the north side than the south side.

[1] Although a full year of data is not yet available, day-of-year factors were calculated using six months of data. When a full year is available, day-of-year factors will be recalculated.

[2] Comparison to a 3-month count of bicycle traffic on 10th Street bike lanes, on Memorial Avenue bike lanes, and on the Roanoke River Greenway adjacent to Memorial Avenue showed that the bike lanes on Memorial Avenue are influenced by the proximity to the Greenway in that traffic patterns are similar with peaks on weekends (something not seen on 10th Street). Ideally, day-of-year factors should be calculated from a site more similar to Elm Avenue and less heavily influenced by the Greenway. However, this is the best available reference site.

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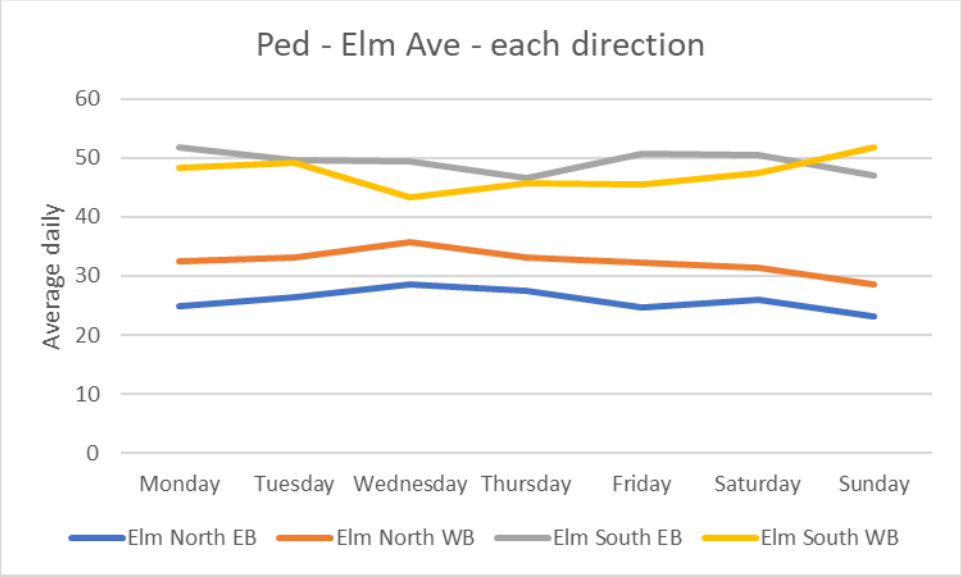
Table 1. Average Annual Daily Traffic on Elm Avenue near 5th Street. EB=Eastbound, WB=Westbound

	Elm North EB	Elm North WB	Elm South EB	Elm South WB	Elm North (both directions)	Elm South (both directions)	Elm (both sides, both directions)
Pedestrian	23	29	44	42	52	85	137
Bicycle	4.2	3.4	3.1	1.0	7.6	4.0	11.6

Weekly and daily traffic patterns were analyzed. Pedestrian traffic was higher on the south side of the street than the north side. The south side of Elm Avenue has destinations including a bus stop that has moderately high activity and a convenience store. There was not a discernable day-of-week pattern.

Hourly pedestrian traffic rises steadily from 6 am to 4 pm and then declines until midnight. The exception was westbound pedestrian traffic on the north side which had an extra spike at 8 am.



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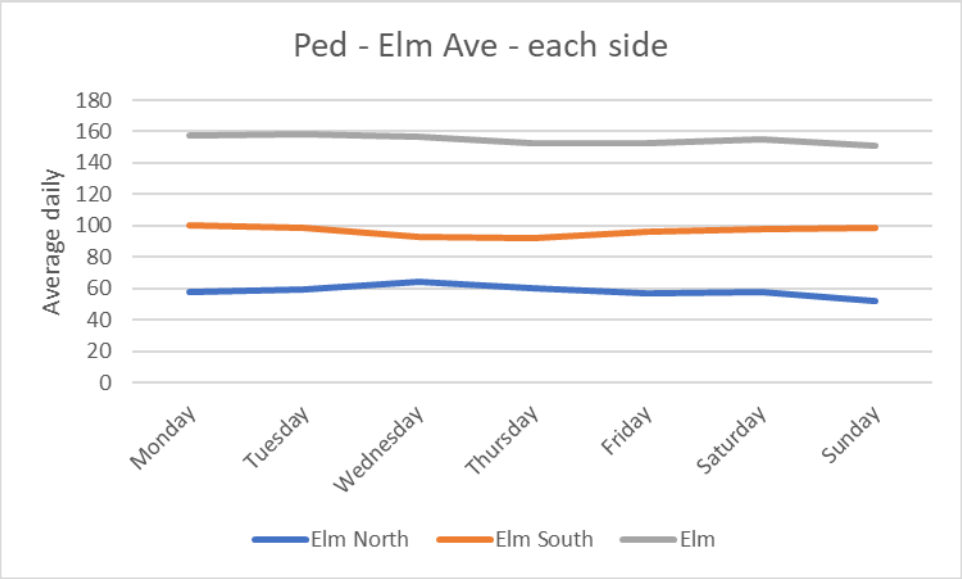

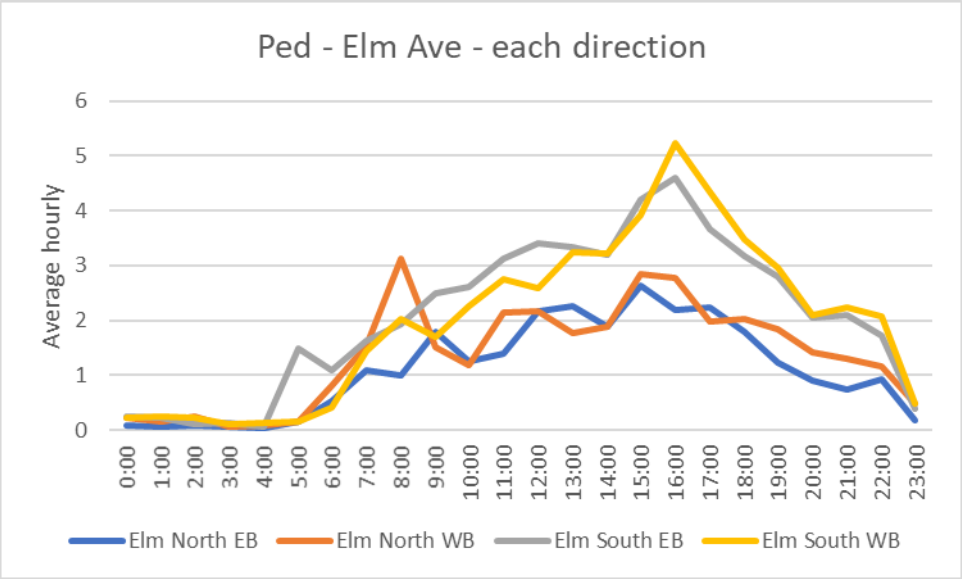

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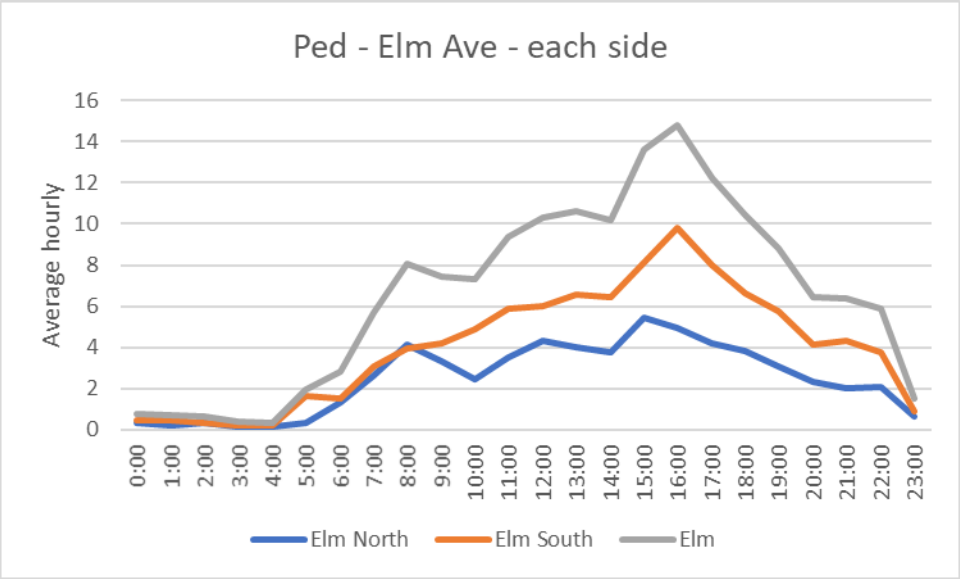
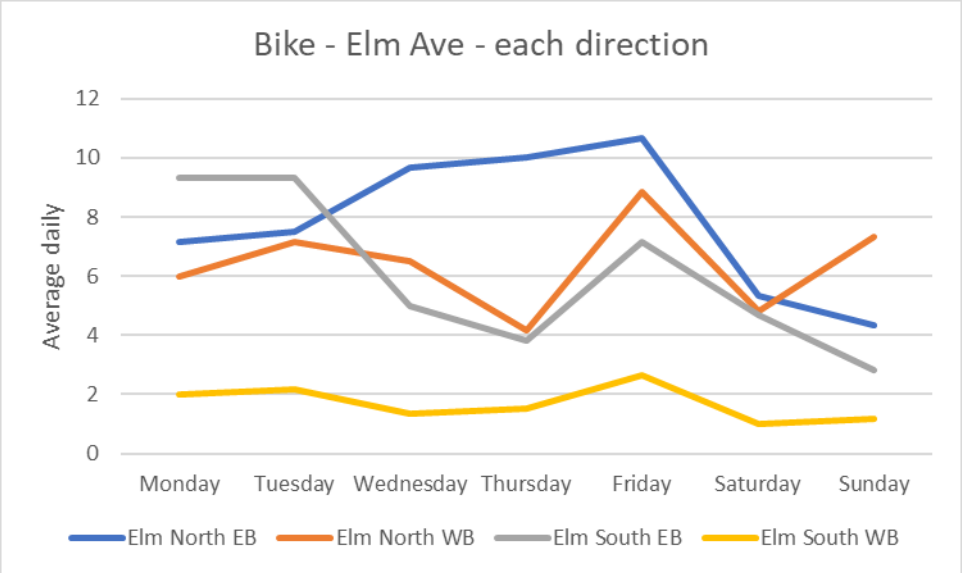


Bicycle traffic was lowest on weekends, about 2/3 of typical weekday volume. Almost as many bicyclists travel opposite the direction of traffic (westbound) in the bike lane on the north side of the street as in the direction of traffic (eastbound). On the south side of the street most bicyclists travel in the direction of traffic (eastbound).

Hourly bicycle traffic rises from 6 am and is highest from 12 pm to 5 pm with a peak at 2 pm.



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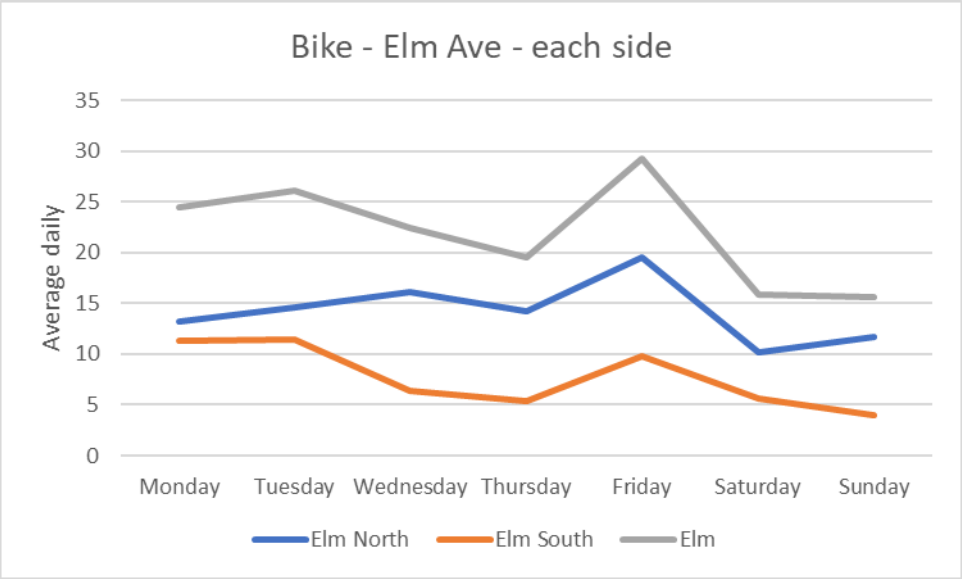

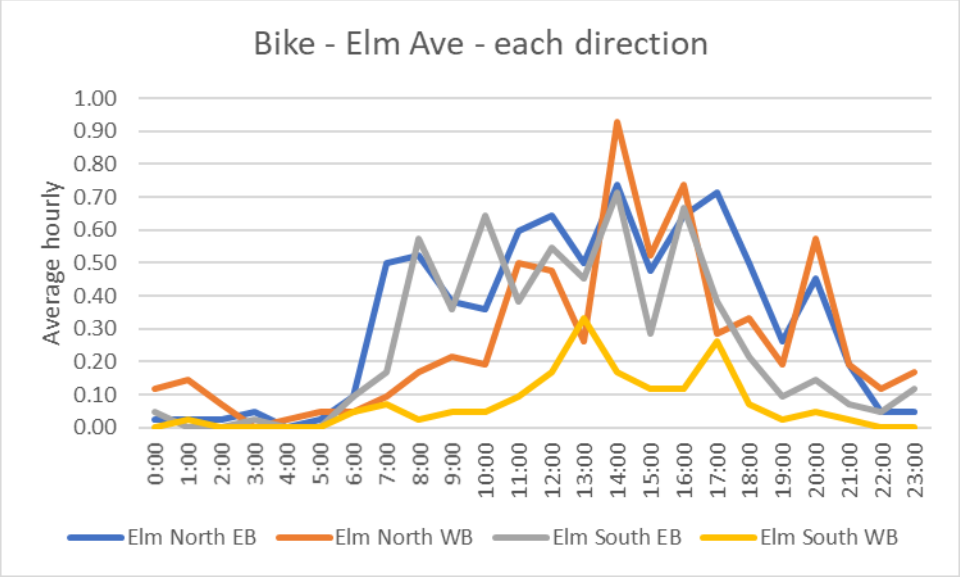

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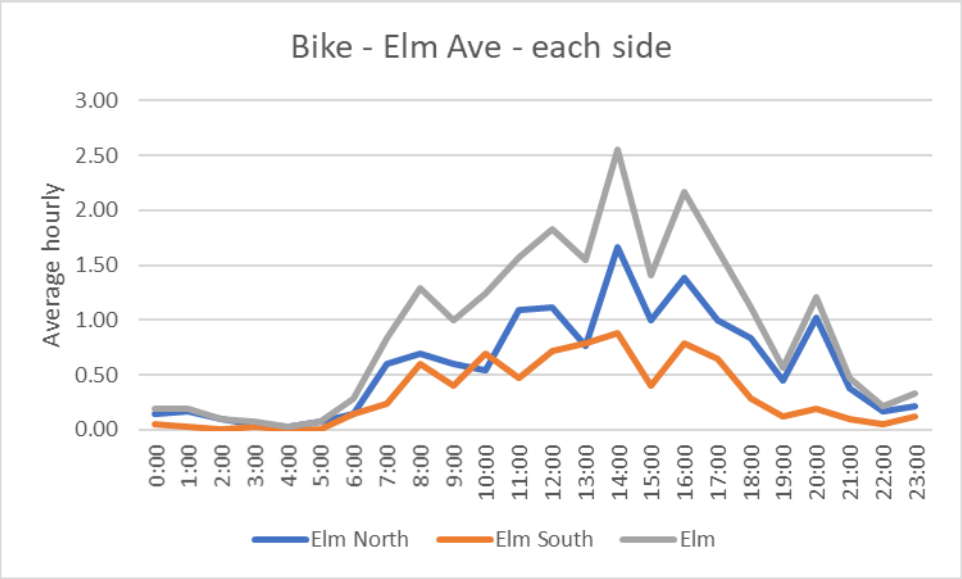

Elm Avenue was of interest because of its new bike lanes. It provides an important connection from Downtown Roanoke to Wasena and the Roanoke River Greenway. Main Street in Wasena was also recently restriped with bike lanes. As more data is collected, this will contribute to an understanding of pedestrian and bicycle traffic in the region. Correcting the data with day-of-year factors allows meaningful comparison with other count locations performed at different times and with future counts at the same location to assess trends over time.

Lessons learned from counting Elm Avenue and data analysis will facilitate our ongoing bike/ped count program.