Analyzing the Effect of a COVID-19 Road Closure on Pedestrian and Bicyclist Usage

Cities across the world have been creating Slow Streets, installing miles of bicycle lanes, and closing roads during COVID-19. How have Philadelphia’s residents responded?

As the COVID-19 pandemic swept across cities across the globe in March 2020, people began to look for ways to explore outdoors safely, and dense cities were tasked with finding innovative ways to facilitate outdoor exercise and exploration while accommodating social distancing. Paris reserved over 30 miles of roadway exclusively for bicyclists, and 30 streets were closed – open to pedestrian access only.1 More locally, the Bicycle Coalition of Greater Philadelphia petitioned the City of Philadelphia with over 1,000 signatures resulting in the closure of Martin Luther King, Jr. (MLK) Drive on March 20, 2020. The closure spans 4.3 miles from Falls Bridge to Eakins Oval and is open for active uses.2

MLK Drive parallels I-76, the Schuylkill River Expressway, on the south side of the Schuylkill River (the River). It is located entirely within Fairmount Park, mainly a 4-lane arterial, that generally operates as a popular alternate vehicular route to the frequently congested Schuylkill River Expressway. Suffice to say, while located within a park with scenic views of the River, it’s not a slow and bucolic ride on a normal day. Between the river and MLK Drive, there is a 9’ shared-use path, but due to deferred maintenance of the pavement, it’s a difficult run, ride, or roll. Prior to COVID-19, MLK Drive had already been closed entirely on weekends from April to October, with the section east of Sweet Briar Drive reopening to vehicular traffic at noon.

Across the River is the Schuylkill River Trail, a 30-mile multi-use trail from Philadelphia to Parker Ford. Voted Best Urban Trail in 2015 by USA Today’s "10 Best Readers’ Choice Poll"3, it is extremely popular and frequently over capacity. It was the city’s hope that the closure of MLK Drive would help alleviate the overcrowding on the Schuylkill River Trail and serve to be a popular alternative. Users can connect to the Schuylkill River Trail at the far southern and northern limits of MLK Drive.

1 Paris to Turn More Streets Over to Bicycles as Covid-19 Lockdown Lifts (France 24)
2 City Announces Closure of Martin Luther King Drive (City of Philadelphia)
3 USA Today's 10Best Readers' Choice Poll
Analyzing the Effect of a COVID-19 Road Closure on Pedestrian and Bicyclist Usage
Collecting Usage Data During COVID-19

The March 2020 vehicular closure of MLK Drive for seven days a week offered a new opportunity to analyze and understand the usage of a new major temporary shared use facility. With the assistance of the Bicycle Coalition of Philadelphia and Imperial Traffic & Data Collection, WSP decided to analyze the usage of MLK Drive and the Schuylkill River Trail to determine if it has facilitated safer outdoor recreation in Philadelphia. Based on an idea of the author and some colleagues, WSP and its partners arranged to provide pro-bono services to organize the collection of usage data on the MLK roadway on one weekend day and one weekday in August. Video processed counts were scheduled to encompass sunrise to sunset (5am to 9pm) at two locations along MLK Drive. The first was located at the southern extent of the roadway where it crosses the Schuylkill River in the shadow of the Philadelphia Museum of Art. The second, chosen to complement a permanent counter location along the Schuylkill River Trail on the other side of the river, was situated just north of the Strawberry Mansion Bridge. Counts were processed to count pedestrians and bicycles in both directions. While overall conclusions are reported using bicyclist and pedestrian counts, a representative sample of adult bicyclists, child bicyclists, inline skaters, pedestrians, and runners were used for the Shared-Use Path Level of Service Calculator.4

Comparison of Usage

In 2017 and 2018, the City of Philadelphia collected continuous data along the MLK shared-use path in various locations. Because this data was collected only along the path, and not along the roadway when it was closed on weekends, pre-pandemic comparisons on MLK Drive can only be made on weekdays. The most striking data is how many people began using MLK after it was closed on the weekdays. Usage increased up to nearly 1,300%, shown below.

![Users Along MLK - Weekdays](image)

**Figure 2**

During the weekends since the full-time closure of MLK Drive, the roadway is experiencing a significant volume of users, both in the northern and southern sections, throughout the day.

Since the data was gathered on days where the temperature approached and exceeded 90 degrees, an adjustment to typical weather conditions needed to be considered. The Delaware Valley Regional Planning Commission (DVPRC) maintains a network of permanent bicycle and pedestrian counters along trails throughout the region; several of those counters are located along the Schuylkill River Trail.5 Available data from the Schuylkill River Trail during the last three years was downloaded, filtered,

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4 Shared-Use Path Calculator (FHWA)

5 Delaware Valley Regional Planning Commission - Permanent Bicycle and Pedestrian Counters
and analyzed to determine the 95th percentile usage on temperate days with no precipitation. This data was then used to create an appropriate factor to apply to the raw count data along MLK Drive (Figure 3).

Moving to the other side of the River, the Schuylkill River Trail usage actually increased during the pandemic throughout the week. So, while the closure of MLK Drive to vehicular traffic did not specifically help to reduce the number of users on the Schuylkill River Trail, it provided an option for thousands of residents a day to exercise while safely socially distancing – and introduced scores of residents to the beauty that the trails along the Schuylkill River provide in a dense urban environment. Figures 4 and 5 show the usage of the Schuylkill River Trail on a weekday near the Walnut Street overpass (South) and during the weekend near the Strawberry Mansion Bridge (North).
Shared Use Path Level of Service Analysis

Determining the level of service (LOS) for vehicular traffic is a common metric used in engineering studies. It is an analytical method that helps the designer and public understand the amount of congestion and delay experienced along a road or at an intersection. Similar LOS methods can be applied to a shared use path using the methods in the Highway Capacity Manual Sixth Edition. As the City of Philadelphia will eventually move towards a decision of keeping MLK Drive closed, reopening it, or repurposing the lanes, an LOS analysis can be used to inform that decision.

Figure 6 shows the results of an LOS analysis pertaining to the operations of bicyclists and pedestrians on the 40’ MLK Drive roadway versus the nine-foot MLK Drive adjacent shared use path (scenario where the road is fully open to vehicles). Counts near the bridge over the Schuylkill River were used for the analysis.

While LOS for a shared-use path is not based upon space per user like it is when analyzing pedestrians on sidewalks, the graphics show that spreading out the users on the 40-foot roadway would lead to fairly uncongested and acceptable operations. Intuitively, this leads to an inference that users can maintain appropriate social distancing. If instead all the non-motorized users were to be relegated to the 9-foot adjacent shared use path upon opening of MLK Drive to vehicles, they would generally find an unacceptable experience for the majority of the day on weekends and during the evening on weekdays.
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**Figure 6**

**Future of MLK Drive**

The CDC encourages visits to parks and recreation areas to maintain physical and mental health, while maintaining social distancing. While the closure of MLK Drive did not lead to a reduction of users on the Schuylkill River Trail, the benefit of providing an alternative option—a full-time closure of MLK Drive—cannot be understated. For residents seeking a respite from the crowded Schuylkill River Trail, thousands were able to utilize the wide expanse of MLK Drive distant from others, joining those that already enjoy the beauty of the trail system. In addition to the findings of this engineering analysis, there are certainly many physical and mental health benefits that have been afforded to residents throughout the disruption to daily life that is approaching a year in duration. Only a fraction of the total data collected has been included in this analysis. As part of WSP’s ongoing commitment to our local clients, all the raw data has been made available to the City of Philadelphia to assist with their upcoming decision as to the future of MLK Drive—whether that be reopening it to vehicles at certain times, maintaining the full closure, or reallocating some space to non-motorized users. We encourage readers, practitioners, and advocates to conduct similar analyses across trails in the Philadelphia region using DVRPC’s permanent trail counter database and to reach out to their elected officials regarding the future of biking, walking, and rolling along the Schuylkill River.

Read other WSP articles that address how COVID-19 has impacted engineering.

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6 Visiting Parks and Recreational Facilities (CDC)  
7 DVRPC Permanent Trail Counter Database
Author
William Cowan, PE
Senior Traffic Engineer,
Philadelphia, Pennsylvania
william.cowan@wsp.com

Contributors
Christopher Blakeley, EIT
Civil/Highway Engineer,
Philadelphia, Pennsylvania
christopher.blakeley@wsp.com

Elizabeth Andrew, PE, PTOE
Senior Traffic Engineer,
Baltimore, Maryland
elizabeth.andrew@wsp.com

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