

TWO-BLOCK SPAN ANALYSIS

Introduction

TEG was tasked with determining if any of the uncontrolled stretches of road spanning two blocks were enabling drivers to speed along the routes due to the lack of traffic control. There were also complaints by residents that drivers were using these streets with less traffic control in an attempt to avoid heavy traffic on the main routes.

Traffic naturally begins to use smaller residential streets as backups occur on the mainline routes. As long as volumes are reasonable, and drivers are not engaging in unsafe behavior it is generally accepted that some percentage of drivers will change routes using residential roads. There is a limit to how many of these additional vehicles can be tolerated and at times changes may need to be made along the affected roads to make them less appealing to a driver looking to avoid traffic on the main route.

This report will analyze whether existing two-block spans are experiencing reduced safety, elevated volumes, or high speeds along corridors with uncontrolled two-block spans. The representative corridor used for analysis is Ashland Ave from Madison St to Washington Blvd. In the center of Madison St and Washington Blvd the minor stop intersection with Vine St results in the uncontrolled two-block span.

Selection

TEG began the selection process by identifying all uncontrolled two-block spans in the Village. An analysis of survey data was performed using address/block information that residents provided in their survey response to create a basic heatmap of where residents had the most perceived issues with driver speeding. The survey identified specific perceived issues where drivers use small residential roads to speed between Madison Ave and Washington Blvd. During the Washington Blvd Corridor Study, TEG identified several two-block spans south of Washington Blvd and decided to focus the study at these southern locations to make efficient use of the limited volume count locations available. The southern two-block span locations were at Vine St along Gale Ave, Forest Ave, Park Ave, and Ashland Ave (denoted in the table below). In all cases, the north-south movement was the uncontrolled direction. Since Washington Blvd has an ADT that is roughly half that of Madison St (5,700 vs. 12,200) it can be theorized that traffic backs up along Madison St at the signalized intersection at 1st Ave (for westbound traffic) or at Des Plaines Ave (for eastbound traffic) and, as a result, drivers turn northbound to get to Washington Blvd before continuing east/west to their destination.

Speed Complaints	Thatcher Avenue	Gale Avenue	Keystone Avenue	Forest Avenue	Park Avenue	Franklin Avenue	Ashland Avenue	Lathrop Avenue
North Avenue	1	0	0	0	1	0	0	0
Le Moyne Parkway	0	0	0	1	5	4	6	1
Greenfield Street	2	0	2	6	9	3	0	4
Berkshire Street	0	0	0	0	2	2	2	9
Division Street	0	0	0	1	0	1	9	2
Thomas Street	4	0	4	3	1	2	0	1
Augusta Street	8	0	4	4	6	7	1	3
Iowa Street	10	0	4	4	6	1	2	4
Chicago Avenue	1	0	7	6	3	2	5	1
Oak Avenue	1	0	4	2	2	3	8	2
Quick Avenue	9	0	1	5	3	4	4	3
Holly Court	0	0	0	0	0	0	0	0
Lake Street	12	0	4	3	3	6	4	7
Central Avenue	0	0	0	0	1	2	4	4
Hawthorne Avenue	0	0	0	0	0	0	0	0
Linden Street	3	6	5	5	1	9	5	4
Washington Boulevard	5	1	2	1	7	2	4	17
Vine Street	2	3	8	4	10	11	9	1
Madison Street	4	7	7	2	8	14	5	3

Table 1. Heat map showing speed complaints based on nearest intersection. Numbers represent the number of survey responses to question 3 of the survey: "Do you feel speed is an issue on the street you live on?"

Based on the number of speed complaints, the selection was narrowed down to two locations – Vine St at Park Ave and Vine St at Ashland Ave. Once we incorporated crash data and realized Keystone Ave had two crashes in the corridor, Park Ave had only one crash, and Ashland Ave had four crashes within the corridor. It became apparent that the uncontrolled section of Ashland Ave would be the best candidate for study. Out of all the segments initially considered, Ashland Ave had the highest crash rate.

Based on survey and crash data we determined that the study should be conducted along Ashland Ave between Madison Ave and Washington Blvd. As such, data collection (speed and volume) was planned at the uncontrolled intersection of Vine St at Ashland Ave.

Analysis

As long as, speed, safety, and level of service (LOS) were retained in the existing conditions, TEG did not feel any countermeasures were necessary. Some amount of cut-through traffic is expected under normal operating conditions and is not possible to quantify without following drivers through the Village to determine their destinations. Keeping this in mind TEG did not see volumes that would cause deficiencies along the corridor, and we assume cut-through drivers are not causing capacity-related issues.

Volume

TEG collected speed and volume information over a 24-hour period on all four legs of the intersection of Ashland Ave and Vine St. Volume information was compiled and used to run a multi-way stop warrant to determine if new traffic control was required based on volumes alone. The warrant was not met (See Appendix E.03: All-Way Stop Warrant), which means that a 4-way stop is not recommended. Average Daily Traffic (ADT) on Ashland Ave is 1,200 vehicles with an even directional split. Slightly more drivers were heading north than south (52%), but after breaking the volumes down by hour it was noted southbound traffic volumes were higher in 12 out of the 24 hours analyzed. The primary difference was that northbound traffic volumes were slightly higher around rush hour times. If cut through was an issue, it would likely be in the northbound direction resulting in a greater directional split in drivers diverting northbound from Madison St to Washington Blvd, the data collected does not support this hypothesis.

It was viewed as possible that drivers are cutting-through in the southbound direction as well, making the volumes more even in both directions, however, this was seen as unlikely and dismissed after repeated field visits around rush hour revealed that Madison St was heavily congested in both directions while delays along Washington Blvd were far more minimal.

TEG noted that the hourly volumes were well within the range of what a residential road is capable of handling without negative impacts to level of service (LOS).

Crash History

The next step was to analyze crash data in the area to determine if drivers were behaving recklessly or in any way that could compromise resident safety over the course of the 6 years of data reviewed (2016-2021). TEG found that there was one crash in the segment from Madison St to Vine St, four crashes at the intersection of Ashland Ave and Vine St, and no crashes between Vine St and Washington Blvd. The termini intersections had their crashes analyzed as well (21 at Ashland Ave/Washington Blvd and 8 at Ashland Ave/Madison St) but analysis was limited to focus primarily on crashes involving Ashland Ave.

Ashland Ave: From Madison St to Vine St: 1 Crash

1 Sideswipe, Same Direction Crash

This single crash along Ashland Ave does not indicate any unsafe conditions. The incident occurred in 2018 and did not result in any injuries. A sideswipe, same direction crash indicates that a driver was either passing a moving vehicle or going around a stopped vehicle prior to the collision. Currently, there is no reason to believe that this segment of the corridor is unsafe for residents or drivers.

There were four total crashes in the Ashland Ave corridor with one C-injury over the six years studied.

Ashland Ave @ Vine St: 4 Crashes 1 C-injury

3 Angle: 1 C-injury

1 Other Object

The primary crash type being angle is indicative that drivers on Ashland Ave may be approaching at a higher rate of speed than the waiting drivers are expecting. With only three total angle crashes over the 6 years studied, TEG believes that there is not a crash problem caused by chronic speeding. The crash frequency is low enough that modifications are not warranted as the majority of drivers will not experience this issue.

Ashland Ave @ Washington Blvd: 21 Crashes: 4 B-injuries, 1 C-injury

13 Angle: 3 B-injuries, 1 C-injury

4 Rear End: 1 B-injury

2 Other Object

1 Fixed Object

1 Turning Left

Out of 21 total crashes 10 of them involved cars on the south leg of the intersection. Of those 10 crashes nine of them are angle crashes with three B-injuries. The tenth crash on the south leg of the intersection was a rear end due to a driver backing up. Based on the high rate of angle crashes and injuries associated with them there appears to be an issue with drivers turning onto or crossing Washington Blvd from Ashland Ave. Additionally, the existing crashes seem to be more related to the intersection conditions than drivers speeding. As a result, this intersection is being addressed as part of the Washington Blvd Corridor Study and a more detailed review can be found in that section of this report.

Ashland Ave @ Madison St: 8 Crashes: 1 C-injury

2 Other Object

2 Rear End

1 Angle: 1 C-injury

1 Sideswipe Opposite Direction

1 Sideswipe Same Direction

1 Turning Right

Of the eight crashes only three involved drivers on Ashland Ave:

- A right turning crash where a driver was struck while turning right onto Madison St
- An angle crash which involved a driver who was struck turning left onto eastbound Madison St
- An other object crash that appears to have been a parked car based on review

These three crashes are isolated events and do not indicate recurring issues involving the intersection with Ashland Ave.

Speed

TEG gathered speed data in the northbound and southbound directions on Ashland Ave at Vine St. Data was analyzed in using multiple methods to fully understand the area; the first method is finding an overall 85th percentile for both directions, the second method is taking the 85th percentile speed for each hour and comparing those values to the speed limit, and the third method is looking at individual speeds to see if outliers are impacting the analysis. When conducting a speed study or traffic analysis, the 85th percentile speed is often used as a measure of central tendency for the speed distribution of vehicles on a particular road segment or highway. The 85th percentile speed represents the speed at or below which 85% of drivers are traveling. TEG found that the overall 85th percentile was 22 mph for northbound drivers and 25 mph for southbound drivers along Ashland Ave. This indicates that most drivers using Ashland Ave are traveling at or below the posted speed limit. Northbound drivers, who are assumed to include the cut-through movement on this route are traveling below the speed limit in most cases.

Speeds and volumes were taken in the east-west direction as well but are not analyzed here due to those drivers slowing/stopping at the intersection before continuing.

Starting hour	NB Ashland 85th	SB Ashland 85th
Wednesday, June 7, 2023 12:00AM	19	18
Wednesday, June 7, 2023 1:00AM	19	23
Wednesday, June 7, 2023 2:00AM	18	0
Wednesday, June 7, 2023 3:00AM	24	23
Wednesday, June 7, 2023 4:00AM	0	0
Wednesday, June 7, 2023 5:00AM	19	0
Wednesday, June 7, 2023 6:00AM	19	26
Wednesday, June 7, 2023 7:00AM	25	24
Wednesday, June 7, 2023 8:00AM	19	23
Wednesday, June 7, 2023 9:00AM	21	24
Wednesday, June 7, 2023 10:00AM	20	25
Wednesday, June 7, 2023 11:00AM	22	21
Tuesday, June 6, 2023 12:00PM	22	31
Tuesday, June 6, 2023 1:00PM	26	28
Tuesday, June 6, 2023 2:00PM	20	24
Tuesday, June 6, 2023 3:00PM	20	32
Tuesday, June 6, 2023 4:00PM	26	24
Tuesday, June 6, 2023 5:00PM	27	23
Tuesday, June 6, 2023 6:00PM	22	23
Tuesday, June 6, 2023 7:00PM	21	28
Tuesday, June 6, 2023 8:00PM	21	22
Tuesday, June 6, 2023 9:00PM	22	24
Tuesday, June 6, 2023 10:00PM	19	29
Tuesday, June 6, 2023 11:00PM	19	22

Table 2. Northbound and Southbound 85th percentile speeds from 6/6 to 6/7

Looking at an hourly breakdown of 85th percentile speeds for northbound drivers showed that speeds surpassed the posted speed limit in three of the 24 hours recorded. In each case, the 85th percentile was 1-2 mph over the posted speed limit. Vehicles headed southbound on Ashland Ave were found to be speeding more often and had a higher 85th percentile compared to the northbound vehicles during same time periods.

Six hours show 85th percentile speeds in the southbound direction greater than the speed limit and half of those hours had an 85th percentile speed at 4 mph or more over the speed limit. This was unexpected based on the hypothesis that cut-through traffic would primarily be coming from Madison St. It is possible that road conditions have caused more drivers to go south on Ashland to avoid traffic on other north-south routes. It is also possible that elevated speeds are coming primarily from residents within the Village instead of non-residents cutting-through.

Southbound traffic seems to have the highest 85th percentile values between the lunch rush hour and the evening rush hour. Traffic during rush hour may force drivers to drive more slowly on average during those time periods. Since southbound speeding seems to primarily occur during the off-peak hours, it is less likely that these drivers are cutting through on their way out of the Village, but rather locals completing trips in and around the Village. The highest 85th percentile speed was 32 mph at 3 PM; 7 mph over the posted limit.

The final part of TEG's speed review was determining how large of an impact outliers had on the 85th percentile speeds. Since most of the hourly 85th percentile speeds were only a few miles per hour over the posted speed limit, TEG decided to check the individual speeds recorded by the counters for any outliers. In

this case outliers were deemed to be any drivers going 40 mph or more (15 mph over the posted limit). For southbound traffic only 4% of all drivers, or 22 total, recorded speeds over 40 mph. Northbound traffic had 16 outliers or 2% of the total volume with recorded speeds over 40 mph. Outliers may cause the 85th percentile to jump up several mph for the hours in which they occurred, but will have minimal impact to the overall speed study. For both northbound and southbound drivers, outliers are infrequent and unlikely to have skewed the results of the overall 85th percentile in any significant manner.

Recommendations

TEG used the Traffic Calming Toolbox developed as part of this project to score the corridor on Ashland Ave between Madison Ave and Washington Blvd. Scoring was conducted as detailed in the Traffic Calming Toolbox explanation – in this case scoring utilized both segments north and south of Vine St including the intersections between Ashland Ave and Madison St and Washington Blvd. The segment had a total score of 34 points which was enough to put the location in level 1 of the improvement tiers. Please refer to Appendix E.04: Traffic Calming Toolbox Scoring Sheets. Based on the findings at the intersection, TEG believes that minimal action would be sufficient in addressing the minor speed problems present along the route.

Available Traffic Calming Measures	Primary Issue Addressed		
	Speed	Volume	Pedestrian Safety
Level 1 - No Traffic Flow Changes (25-40 points)			
Targeted Speed Enforcement	X		
Speed Radar Trailer	X		
Speed Feedback Sign	X		
Centerline/Edgeline Markings	X		
Updated Signage	X		X
Speed Limit Signage	✓		
Flashing Stop Signs			X
Pavement Legend	X		X
High Visibility Crosswalks			X
Education/Community Outreach	X		X

Table 3. Level 1 improvement types

Looking at the available improvement types gives guidance for the Village. TEG generally suggests making as few changes as possible to resolve the issue while impacting other road users as little as possible. In this location with moderate speeding during select time periods and low crash rates there is no apparent need to make changes to operation or geometry. For any future improvements, TEG recommends taking a stepped approach where incremental action is taken while the area continues to be monitored. The existing conditions do not appear to be dangerous to residents so a ‘wait and see approach’ is advisable to prevent causing new problems by installing overly restrictive countermeasures.

Pedestrian safety is always a top priority, however since there are no pedestrian crash issues through the corridor, TEG is recommending improvements to primarily target speeding issues. Beginning with targeted

speed enforcement and a speed radar trailer or Speed Feedback Sign is the first step to see if that resolves the existing outlier speeders. Since most speeding is focused around late afternoon to early rush hour, the Police Department can choose the best times for selective enforcement. If the speed issues persist, TEG would suggest installing updated signing and pavement markings. Looking at the speed breakdown of all drivers throughout the full day, 90% of northbound drivers are at or under the speed limit and 74% of southbound drivers are at or under the speed limit. Northbound drivers are more than 5 mph over the speed limit in 4% of the recorded speeds, and in southbound traffic 9% of drivers are more than 5 mph over the speed limit. While the outlier drivers who were speeding did not significantly change the 85th percentile eliminating these few high-speed drivers using selective enforcement will help improve safety through the corridor and will address the minor amount of speeding that is existing.

Since this location was analyzed as a representative intersection it can be assumed that other nearby two-block span locations will have similar conditions. Once again due to the relatively small number of drivers speeding, it seems that those outliers need to be curtailed to bring speeds along the road back in line.

TEG suggests beginning with targeted enforcement at nearby two-block span locations of either Keystone Ave or Gale Ave, to determine if those roads experience the same or different traffic patterns.

If these nearby two-block spans are found to have similar speed/traffic patterns, we recommend the Police Department and Village staff assess the state of the other roads with two-block spans and whether they follow a similar pattern to Ashland Ave.

The traffic calming toolbox should be used for any future changes along these routes to ensure the Village does not create an overly-restrictive road system that causes drivers not to respect roadway signs due to the overabundance. It is unlikely that an all-way stop warrant will be met on any of the other two-block span locations, but if it is seen that they have significantly higher volumes than Ashland Ave and Vine St, TEG would recommend running a stop sign warrant prior to any changes.

From a resident perspective, it is possible that the few drivers excessively speeding give the impression that all drivers are moderately speeding or that the road is unsafe because of the unpredictability. By addressing the drivers speeding along the corridor through enforcement, the overall feel of the road should hopefully return to what residents expect.