

MEMORANDUM TO: Ryan Gillingham, P.E.
Director of Public Works
Village of La Grange

FROM: Eric D. Russell, PTP, TSOS
Kelly K. Conolly, PE

DATE: December 24, 2010

SUBJECT: 47th Street Origin-Destination Study

This memorandum summarizes the results of an Origin-Destination (O-D) Study of traffic utilizing 47th Street in the Village of La Grange. The study area for 47th Street extends a distance of 1.5 miles from the east Village limits at East Avenue to the west Village limits at Gilbert Avenue.

The intent of this study is to identify the primary users of 47th Street and to quantify the volume of non-local through traffic on 47th Street in an effort to determine the most appropriate cross section for 47th Street that best benefits the La Grange community. Through traffic is defined as traffic that enters and exits the Village without stopping.

License plate survey was the method of data collection and analysis utilized in this study. License plate surveys are very beneficial and cost-effective for small-scale, limited O-D studies where many destinations are known. They are particularly adaptable to studies of single routes where traffic is too heavy to be stopped for driver interviews. The following summarizes the data collection efforts conducted for the study, procedures and finding from the data analysis, and general conclusions.

Data Collection Efforts

KLOA, Inc. organized a license plate survey of vehicles entering and exiting the Village on 47th Street at East Avenue and Gilbert Avenue. Surveys were also conducted at the major north-south gateways to the Village on La Grange Road at Ogden Avenue and Plainfield Road, respectively, as well as at major destination points within the Village, including Adventist La Grange Memorial Hospital, Lyons Township High School (north and south campuses), La Grange Road Metra station and Stone Avenue Metra station. The survey locations are shown in Figure 1.

The surveys were performed on Wednesday, September 29, 2010 from 6:30-8:30 A.M. and from 3:00-5:00 P.M. The time periods were selected to coincide with the peak street traffic and Metra commuting times, as well as the start/dismissal times at Lyons Township High School and the first work shift change at the Hospital. At each survey location on 47th Street and La Grange Road, personnel were stationed at the side of the roadway to record the license plates of vehicles passing the survey point.

While it was not possible to collect license data on every vehicle passing the survey point due to the volume and speed of the traffic, a generous sample size was collected for analysis, ranging from 28-40 percent of the peak period traffic on 47th Street and La Grange Road. At each of the major destination locations, personnel circulated through the parking lots to record the license plates of the parked cars. Because these vehicles were parked, all vehicle plates were obtained for the matching exercise.

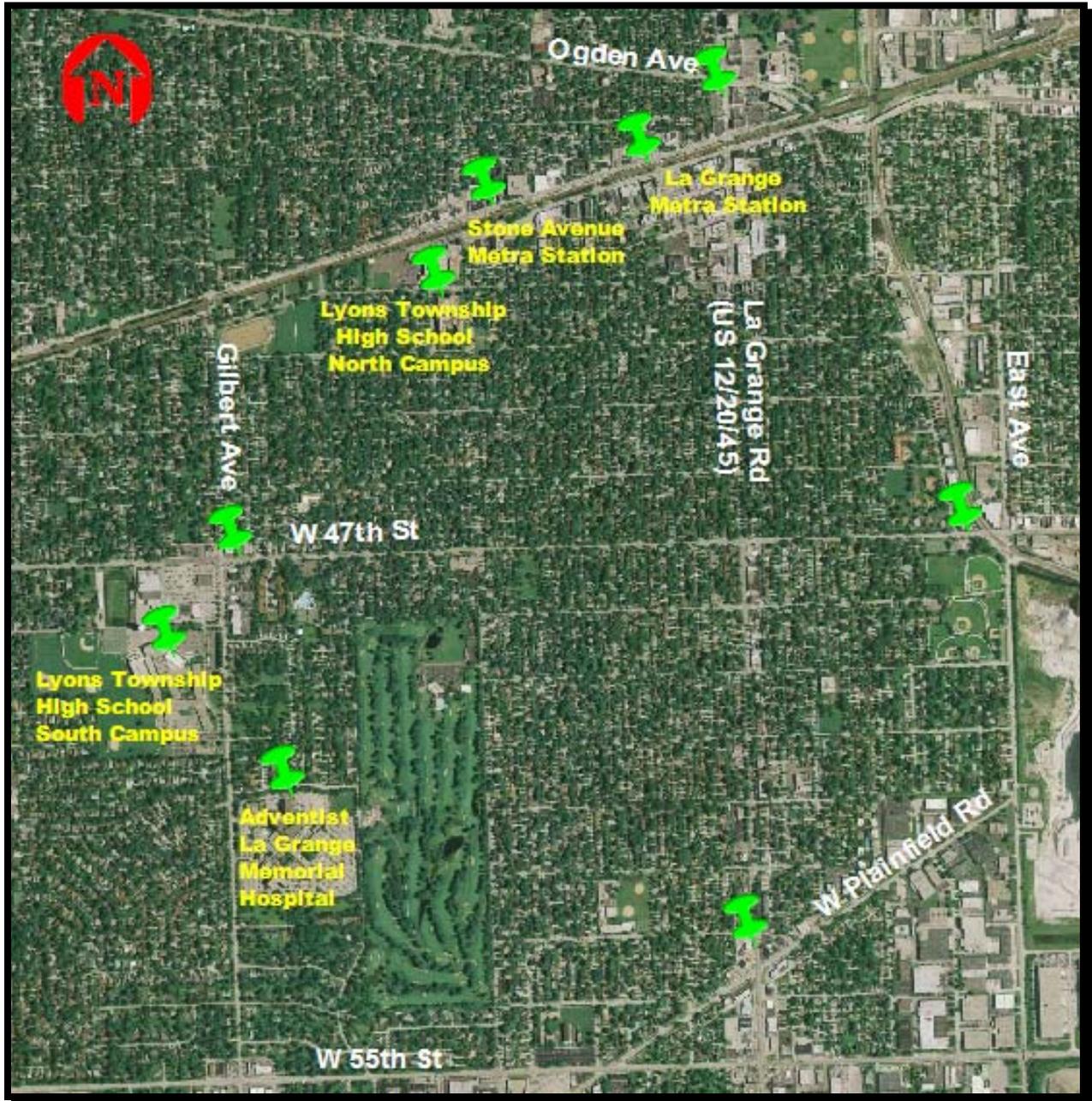


Figure 1
License Plate Data Collection Locations

Data Analysis

For the purpose of this study, the origin is the place that the vehicle was first observed and the destination is where it was last observed. The license plate data collected were input into a matching program that cross-matched similar license plates between origins and destinations. The matched data was beneficial in estimating the percentage of vehicles that entered the Village in the morning on 47th Street from either the east end of the Village (at East Avenue) or the west end of the Village (at Gilbert Avenue) and proceeded to (1) exit the Village from either the opposite end of 47th Street or from La Grange Road (at Ogden Avenue or Plainfield Road), or (2) remain in the Village and park at the major destination points noted above. Similarly, the program was used to estimate the percentage of vehicles that exited the Village in the evening on 47th Street at either the east end of the Village (at East Avenue) or the west end of the Village (at Gilbert Avenue) that originated from (1) outside of the Village from either the opposite end of 47th Street or from La Grange Road (at Ogden Avenue or Plainfield Road), or (2) the major destination points noted above.

Often with license plate surveys only a portion of the vehicles can be traced through the study. License plate sampling rates vary by survey location based on the vantage point of the observers, weather conditions and lighting levels, volume and speed of traffic, and quickness of data recording. License plate observations must also be matched at a minimum of two locations. If, for example, 50 percent of the license plates were recorded at one location and 50 percent were recorded at another location, it could generally be expected that only 25 percent of all license plates were observed at both locations. Consequently, a considerable amount of license plate data collected was not matched in this study. Since the origins and destinations of these vehicles are unknown, these vehicles are categorized in this study as “other local or non-local trips”.

While the overall accuracy of the analysis is affected by the fact that the quantity of unmatched data exceeds the quantity of matched data, there remains a sufficient sample of matched data to provide meaningful conclusions on the origins and destinations of the users of 47th Street.

Table 1 and Figure 2 show the destination of the vehicles that entered the Village on 47th Street at Gilbert Avenue (i.e., eastbound traffic) during the morning peak period. Of this traffic, approximately 11 percent was determined to be through traffic while 12 percent was oriented to the major destination points and 77 percent was oriented to other local or non-local destinations.

Table 1 and Figure 3 show the destination of the vehicles that entered the Village on 47th Street at East Avenue (i.e., westbound traffic) during the morning peak period. Approximately 8 percent of this traffic was determined to be through traffic while 11 percent was oriented to the major destination points and 81 percent was oriented to other local or non-local destinations.

Table 2 and Figure 4 show the origin of the vehicles that exited the Village on 47th Street at Gilbert Avenue (i.e., westbound traffic) during the evening peak period. Approximately 8 percent of this traffic was determined to be through traffic while 15 percent originated from the major destination points and 77 percent originated from other local or non-local destinations.

Table 2 and Figure 5 show the origin of the vehicles that exited the Village on 47th Street at East Avenue (i.e., eastbound traffic) during the evening peak period. Of this traffic, approximately 18 percent was determined to be through traffic while 19 percent originated from the major destination points and 63 percent originated from other local or non-local destinations.

Table 1
Distribution of Morning Trip Destinations

Destination	Traffic Entering the Village on 47th St	
	Eastbound at Gilbert Ave	Westbound at East Ave
Adventist La Grange Memorial Hospital	4%	4%
La Grange Rd & Stone Ave Metra Stations	3%	3%
Lyons Township High School – North	2%	2%
Lyons Township High School – South	3%	2%
Other local or non-local destinations	77%	81%
Through traffic	11%	8%
Total	100%	100%

Table 2
Distribution of Evening Trip Origins

Origin	Traffic Exiting the Village on 47th St	
	Westbound at Gilbert Ave	Eastbound at East Ave
Adventist La Grange Memorial Hospital	5%	7%
La Grange Rd & Stone Ave Metra Stations	4%	6%
Lyons Township High School – North	3%	3%
Lyons Township High School – South	3%	3%
Other local or non-local origins	77%	63%
Through traffic	8%	18%
Total	100%	100%

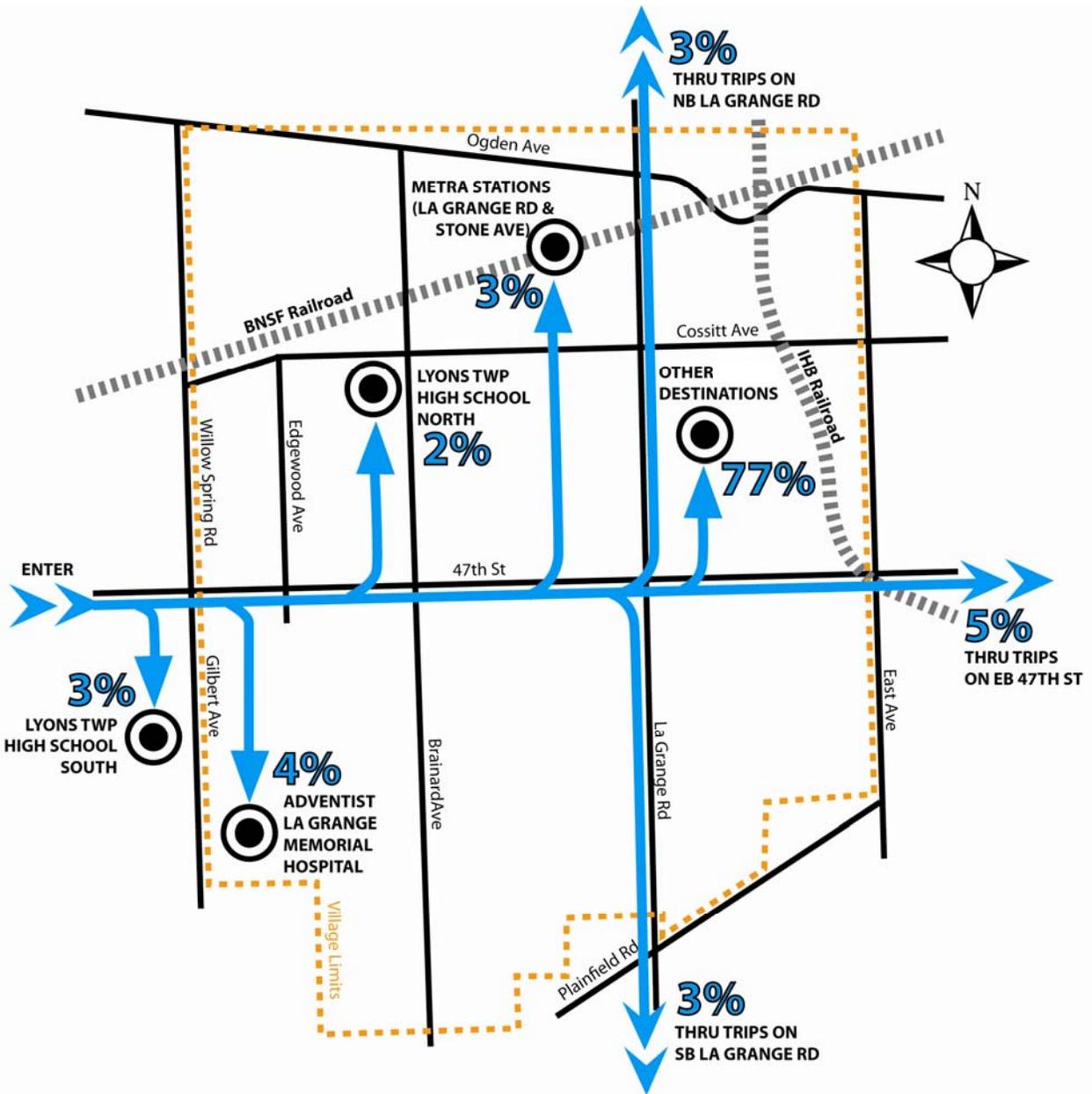


Figure 2
Distribution of Morning Trip Destinations
Eastbound Traffic Movements on 47th Street

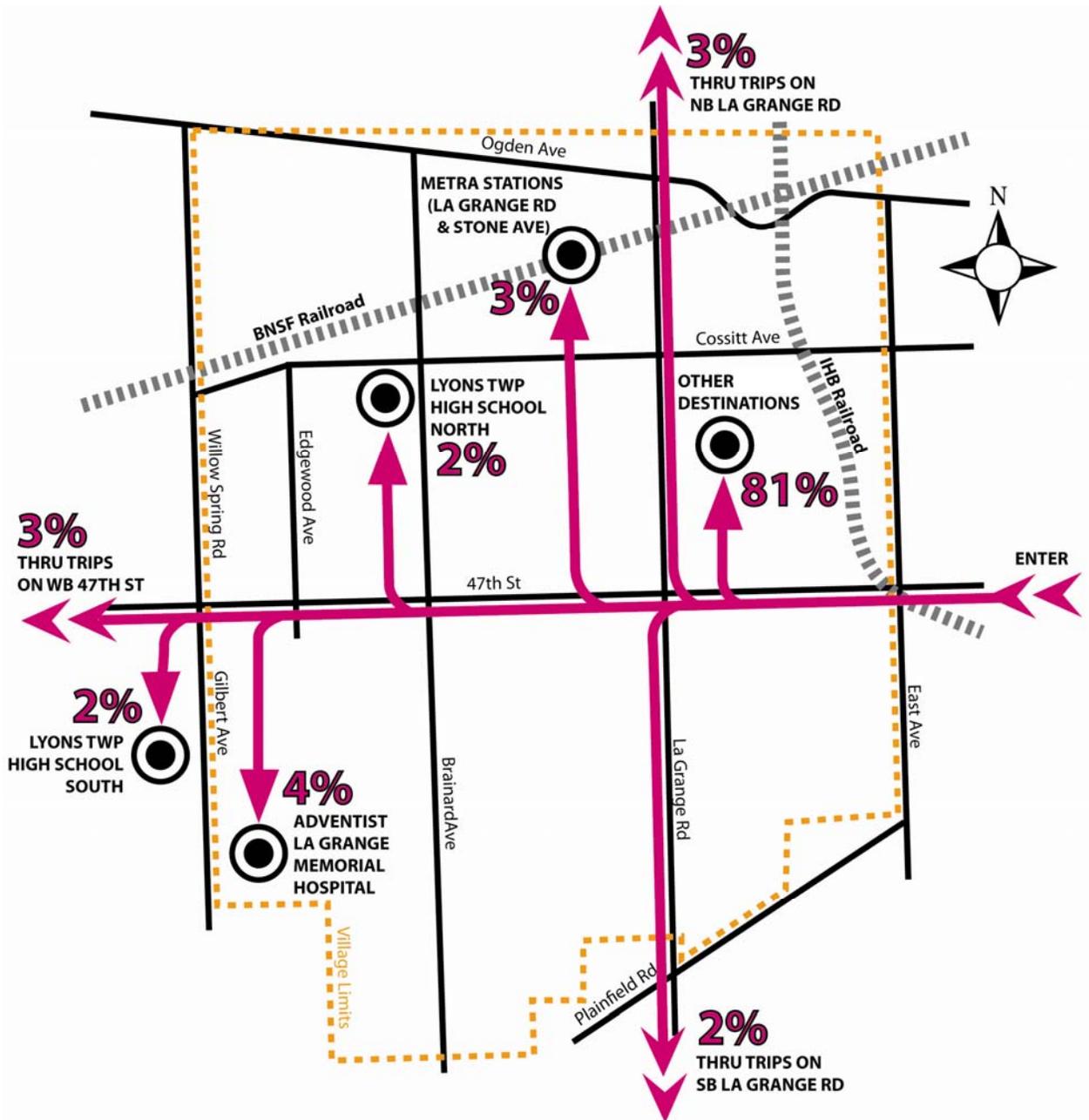


Figure 3
Distribution of Morning Trip Destinations
Westbound Traffic Movements on 47th Street

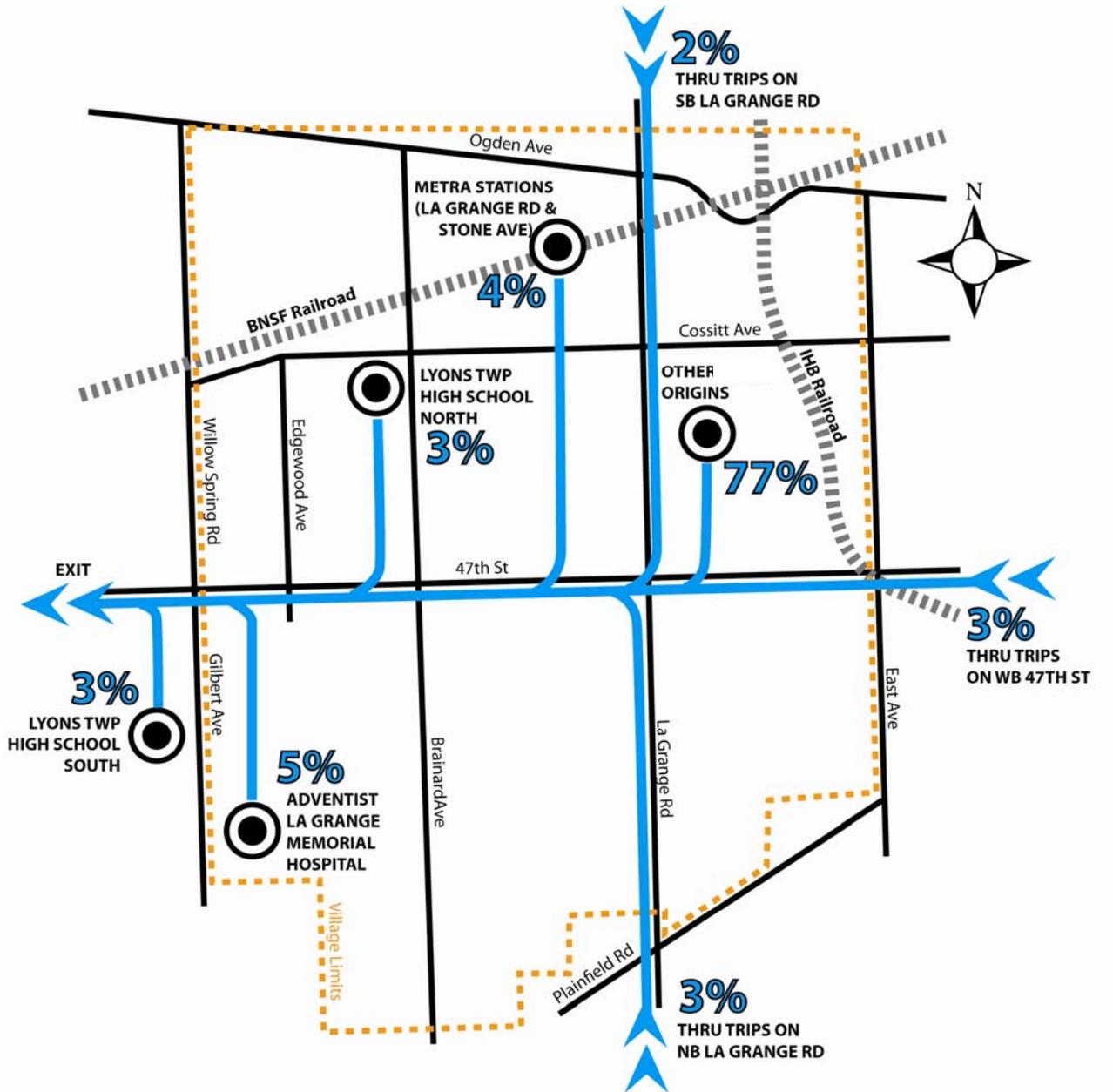


Figure 4
Distribution of Evening Trip Origins
Westbound Traffic Movements on 47th Street

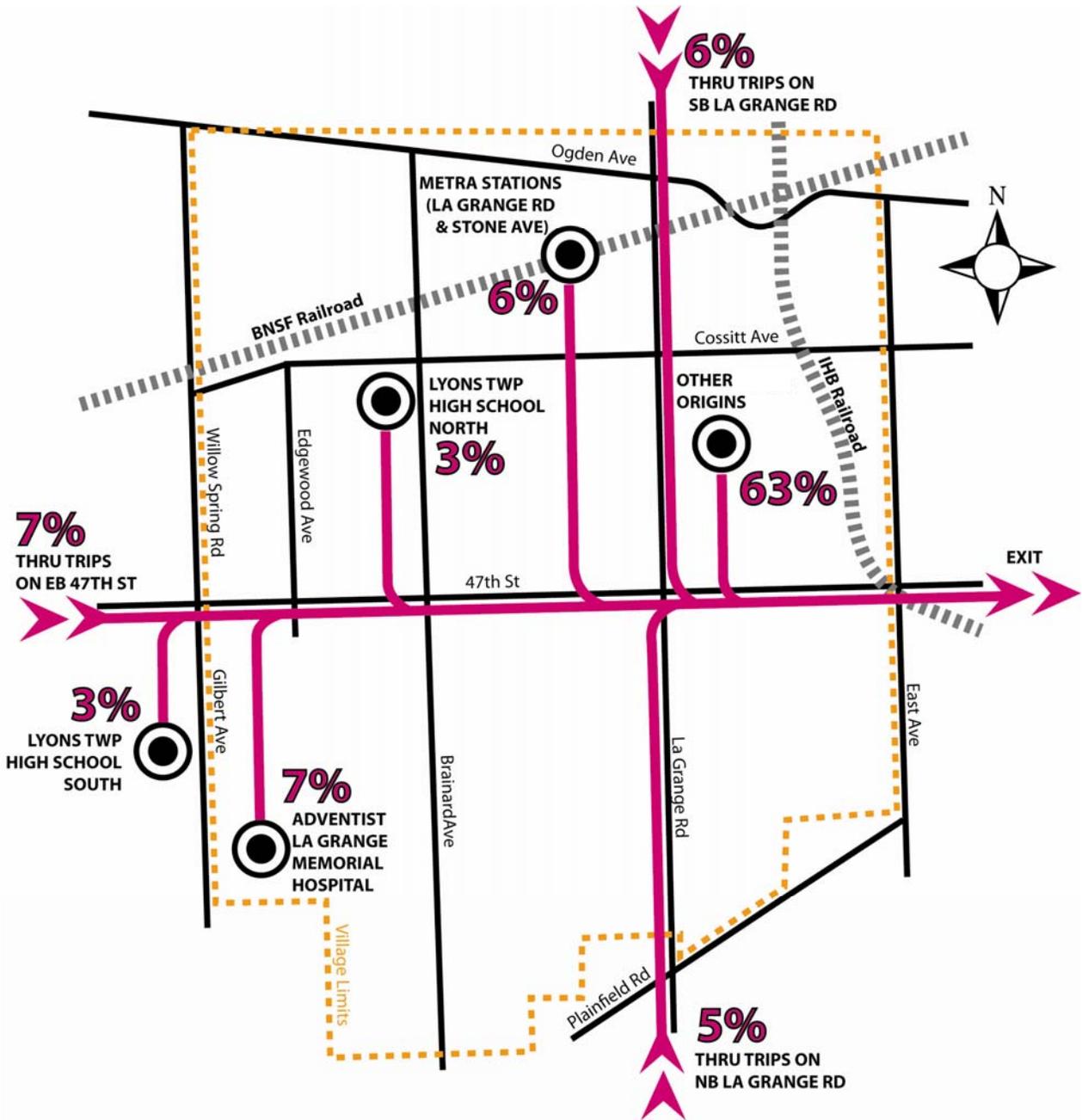


Figure 5
Distribution of Evening Trip Origins
Eastbound Traffic Movements on 47th Street

Conclusions

As noted in the 47th Street Speed Study prepared by KLOA, Inc. on January 6, 2010, 47th Street presently carries approximately 13,700-16,000 vehicles per day between East Avenue and Gilbert Avenue.

Based on the findings from this origin-destination study, approximately 11 - 19 percent of the traffic using 47th Street during the weekday peak periods was proven to be traffic originating from outside of the Village and destined to locations inside the Village or traffic originating from major locations inside the Village and destined to locations outside of the Village. Applying this same proportional relationship to the daily (24 hour) traffic count on 47th Street would indicate that at least 1,500-3,040 of the daily vehicles on 47th Street have their origins or destinations within the Village.

The findings from this origin-destination study also indicate that approximately 8 - 18 percent of the traffic using 47th Street during the weekday peak periods was proven to be through traffic originating from outside of the Village and destined to locations outside of the Village. Applying this same proportional relationship to the daily (24 hour) traffic count on 47th Street would indicate that at least 1,100-2,900 of the daily vehicles on 47th Street could be characterized as through traffic.

The origins and destinations of the remaining 63-81 percent of the traffic using 47th Street is unknown as the license plate data was not matched and could be traffic with local origins and/or destinations or could be through traffic.

Since the proportion of matched data with local origins or destinations is comparable if not slightly higher than the proportion of matched data reflecting through traffic, it is clear that any proposed changes to the design of 47th Street will likely have more of an affect on those that reside within the Village, are employed within the Village, utilize the Village's train stations, or have other business within the Village than those the are simply cutting through the Village en route to other destinations.