

MARKET STREET STUDY TECHNICAL REPORT



TRANSIT LANE VIOLATIONS



This technical report is one of over a dozen reports prepared to support the Market Street Study. The purpose of the technical reports was to identify key issues and evaluate potential solutions. The technical reports were developed in consultation with the Market Street Study Technical Working Group, which consisted of representatives from the San Francisco Department of Parking and Traffic, Municipal Railway, Planning Department, and Redevelopment Agency.

Supplemental assessments may be required prior to the implementation of some specific recommendations contain in the Market Street Study Action Plan.





Market Street Study

Transit Lane Violations Technical Report

Purpose

Transit-only lanes run on Market Street from 5th Street to Van Ness Avenue in the inbound direction, 8th Street to 12th Street in the outbound direction. The transit lanes are the center lanes. In San Francisco, only transit vehicles and other buses, taxis, and emergency vehicles are allowed to use the transit lanes. Other vehicles are prohibited. The conventional wisdom is that transit lane violation is a frequent occurrence on Market Street, and the survey's null hypothesis was that motor vehicles illegally using the transit lanes are a major cause of transit delay on Market Street. This study was designed to measure the extent of transit lane violation and the delay caused by violating vehicles, as well as to attempt to identify other causes of the delays that transit vehicles in the transit lane experience.

Methodology

Transit patrons board and alight from center-lane transit vehicles via boarding islands. The boarding islands are located between the center lane and the curbside lane, on the nearside of intersections. Each boarding island is eight feet wide and long enough to serve two standard 45-foot coaches.

The transit lane system is meant to operate in this way: transit vehicles reach the intersection just as the traffic light changes to red. Transit patrons board and alight during the red phase. As the traffic light turns green, the transit vehicle then proceeds smartly to the next boarding island.

The premise of this survey was that transit lane violation--the illegal presence of private and commercial vehicles in the transit lane--delays transit vehicles in one of two ways:

1. By preventing them from approaching the boarding island in time to let them board during the red phase (and consequently forcing them to board during the green phase), or;
2. By preventing them from immediately leaving the boarding island at the initiation of the green phase (and consequently causing them to arrive late at the next boarding island).

Since under ideal operations a transit vehicle is meant to sit through only one red phase at each boarding island, an easy way to measure delay is to note each time a transit vehicle sat through two or more red lights at any boarding island. Since signal timings on Market Street are known, it would be an easy matter to turn the incidence of transit delay into a quantity of delay.

Temporary workers ("temps") were hired to collect the data. Since the temps would be relatively unskilled, the data collection method was designed to be as simple and objective as possible. Each temp was positioned at the locations described below. During each red light, the temp recorded the queue of vehicles in the transit lane, effectively producing a "snapshot" of the queue at that time. The symbolization used in data collection is shown in Table 1.

Table 1: Data Collection Symbolization

LEGAL VEHICLES:	SYMBOLIZATION:
Transit vehicles	Transit route number/letter
Articulated bus	Transit route number/letter followed by "-2"
Other legal vehicles with less than 6 wheels	T
Other legal vehicles with 6 or more wheels	T6
ILLEGAL VEHICLES:	
fewer than 6 wheels	C
6 or more wheels	C6
OTHER:	O

Additionally, the temps recorded when the same transit vehicle was present at multiple consecutive lights by connecting the symbols corresponding to the delayed vehicle. When there were no vehicles at a light, the temps were to write "N/A".

Data analysis will reveal the frequency of transit delay (i.e., a transit vehicle sitting through two or more consecutive red lights), as well as the composition of the queue during the delay. If a transit vehicle is delayed, and a private vehicle is in front of it in the red light queue, it will be concluded that transit lane violation is the source of the delay. If a transit vehicle is delayed and there are no private vehicles in front of it, it will be concluded that the transit delay has another cause. Similarly, if the transit vehicle is not delayed and there are private cars in front of it, it will be concluded that transit lane violation, while present, is not a cause of delay.

Survey Area

Surveyors were posted at the boarding island shown in Table 2, during the time periods of 7-9am, 11am-1pm, and 4-6pm on Thursday, March 27th.

Table 2: Survey Locations

INTERSECTION	SIDE OF STREET
Van Ness	IB
9th	IB
8th	IB
5th	IB
Van Ness	OB
9th	OB

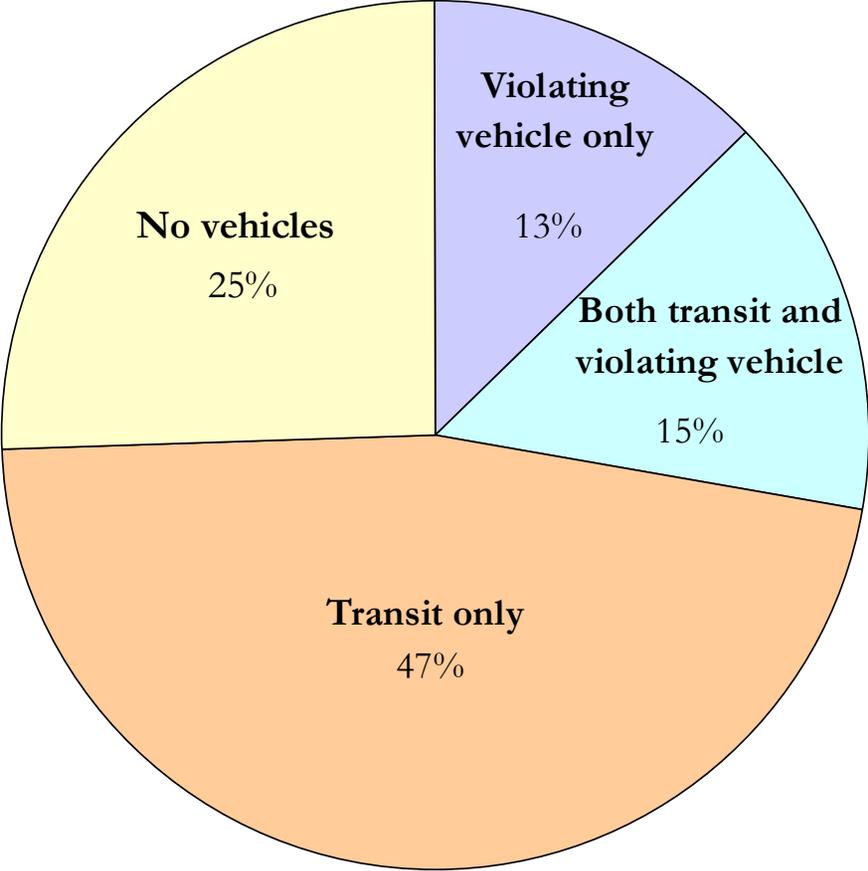
Data Collection Notes

It should be noted that significant anti-war protests took place on Market Street the week before the temps performed their portion of the survey. However, no disruptive protests took place the week of the survey. Since the survey took place on a Thursday, several days after the protests and we did not

witness any significant change in traffic patterns, we assumed that the protests had no significant impact on transit lane use.

Three of the temps notated the 71L bus line as 71. However, since the hours of operation of the 71L and 71 are mutually exclusive (the 71L limited service replaces the 71 regular service during rush hours), it can be inferred which buses recorded as 71 are actually a 71L. This correction was not performed on the raw data.

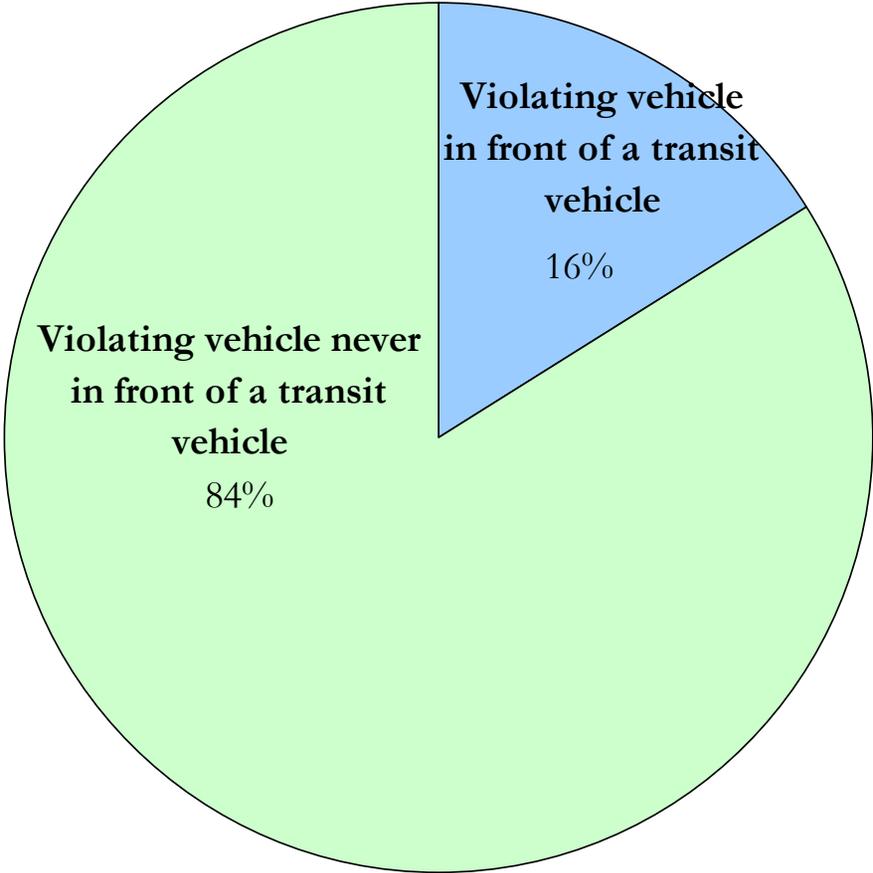
Figure 1: Incidence of Transit Lane Violation



1,663 observations

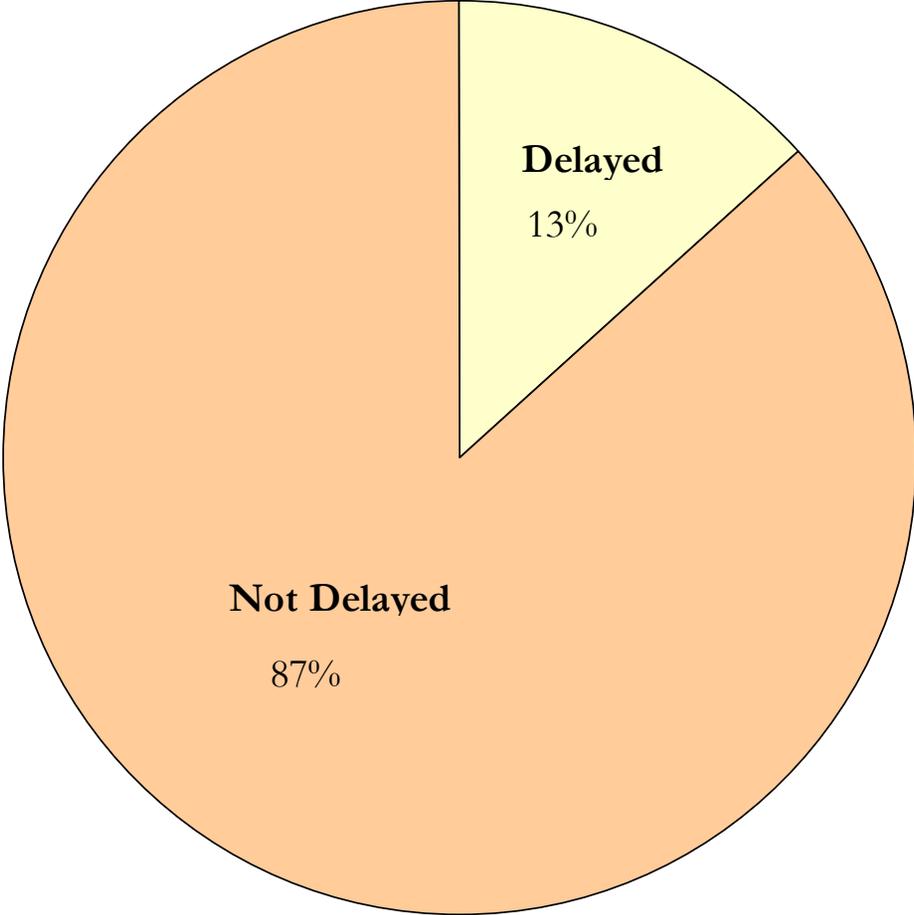
Source: SFCTA, 2003

Figure 2: Position of Violating Vehicle Relative to Transit Vehicle



1,663 observations

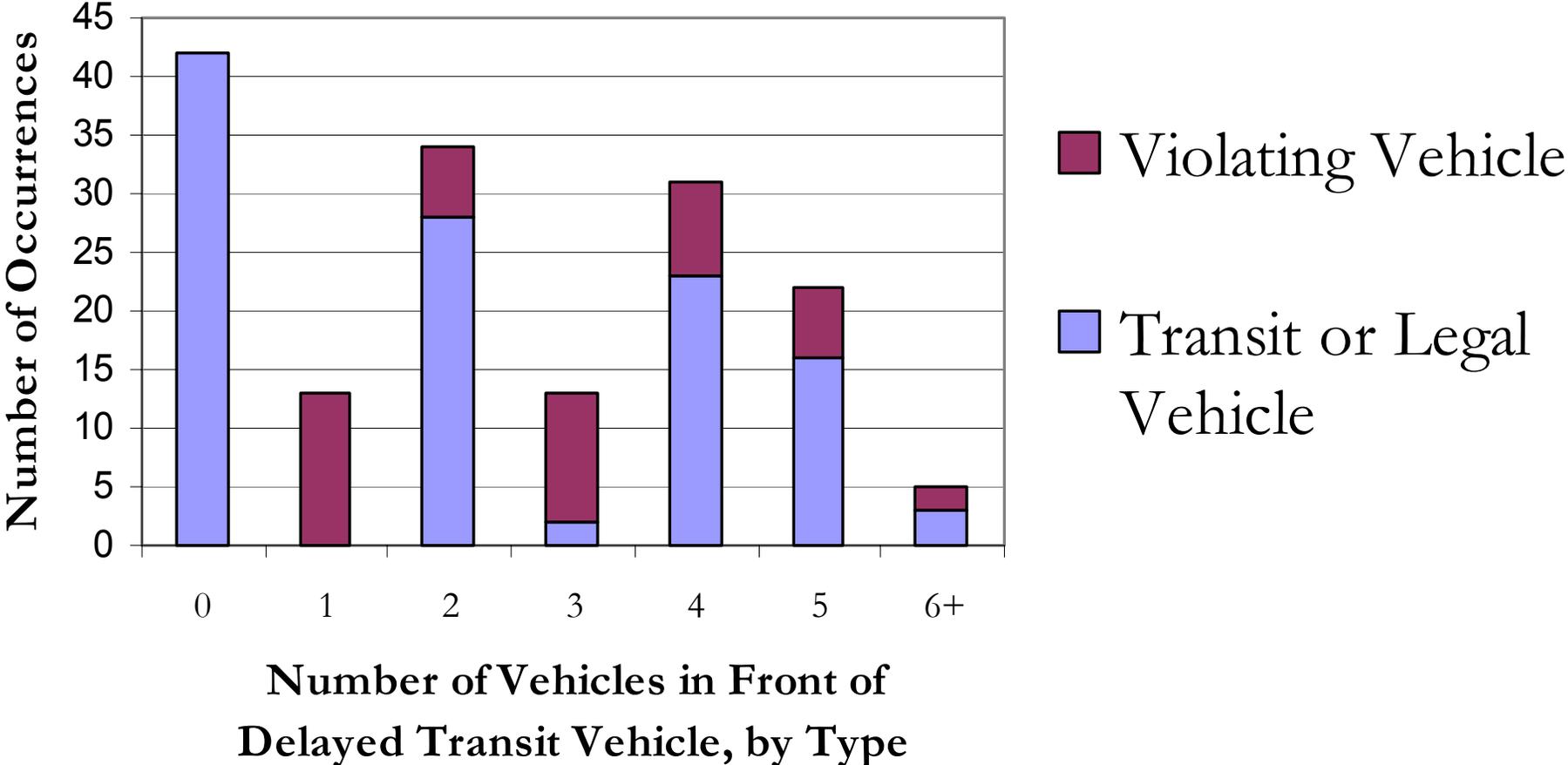
Figure 3: Incidence of Delayed Transit Vehicles



1,199 observations

Source: SFCTA, 2003

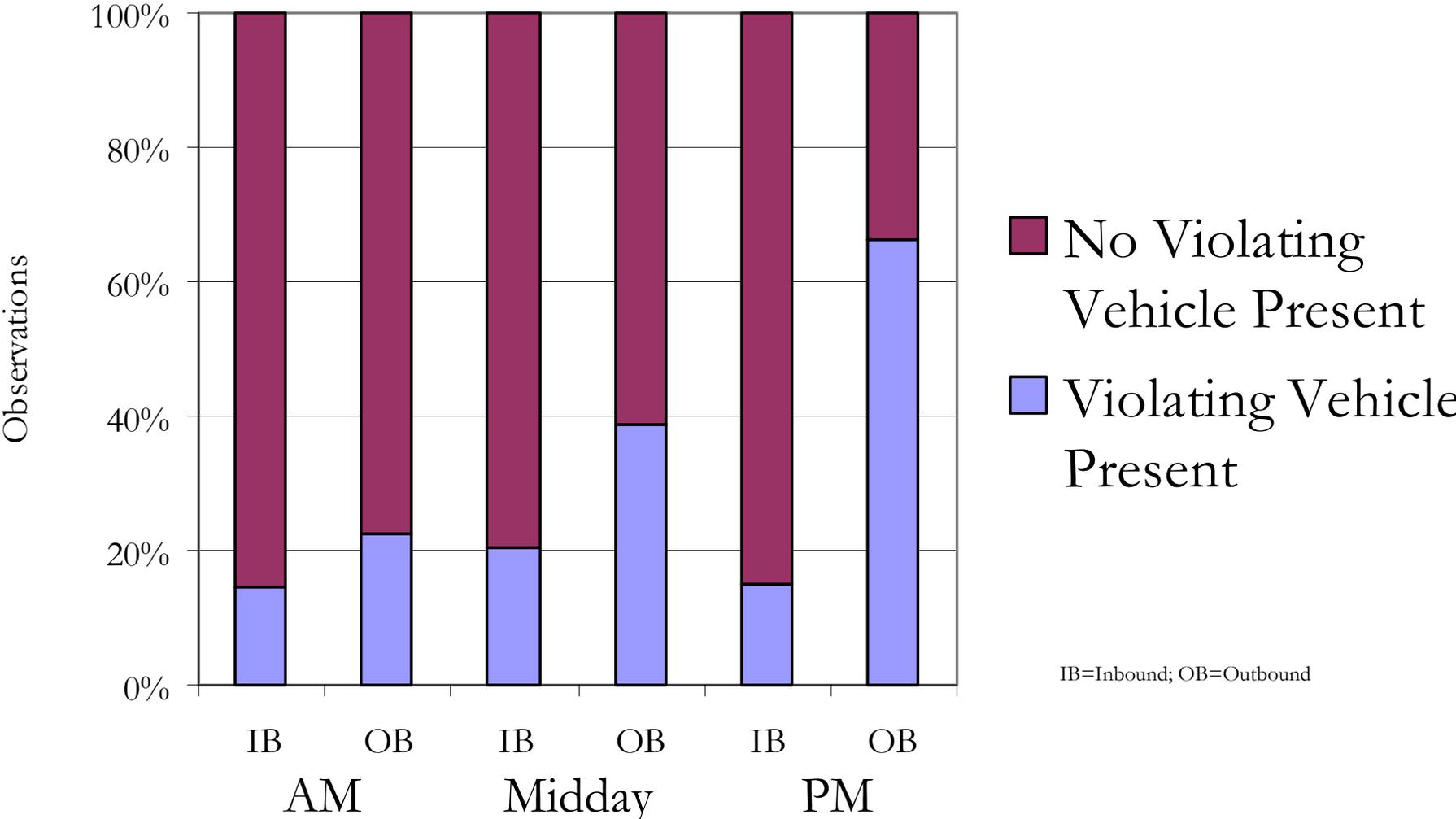
Figure 4: Position of Delayed Transit Vehicle in Queue



160 observations

Source: SFCTA, 2003

Figure 5: Incidence of Transit Lane Violation by Time, Direction



IB=Inbound; OB=Outbound

1,663 observations

Source: SFCTA, 2003