

SAFECLEAR PERFORMANC REPORT 2014

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Introduction

In January 2005, the City of Houston launched its *SafeClear* traffic incident management program. The program aimed to combat many of the problems that arose from the ‘free-for-all’ that occurred as tow operators raced towards disabled vehicles on Houston freeways. By dividing Houston freeways into segments with assigned operators responsible for their own segments policy makers believed that they could reduce collisions.

Previous reports issued in 2006 and 2008 examined the first years of the program’s operation and concluded that the program was successful – i.e. *SafeClear* was having the desired effect of reducing collisions, congestion, and crash clearance times. The *SafeClear* Performance Report for 2014 takes another look at the *SafeClear* program’s performance.

This report covers the period between 2008 and 2013. Our analysis focuses on several desired outcomes and measures including, response time, clearance time, duration time and the relationship between response time and incidence of collisions on Houston freeways. In 2010 the City of Houston made several changes to the *SafeClear* program. These included:

- *SafeClear* tows previously funded by the City and free to the public are now charged to the vehicle owner directly at a rate of \$50.00 for a tow and \$30.00 for On-freeway Roadside Services.
- For vehicle owners who are unable to pay the charge at the point of service, vehicles are towed and placed in a city-approved storage facility for up to 48 hours at no charge to the owner. Storage fees are applied after the first 48 hours in addition to the \$50 towing charge.
- Houston Police Department dispatchers located at *Transtar* were replaced in 2010 with civilian dispatchers. These individuals, hired by the tow operators who have contracts with the City’s *SafeClear* program, assumed major/total responsibility for dispatching tow operators to the scene of a disabled vehicle.

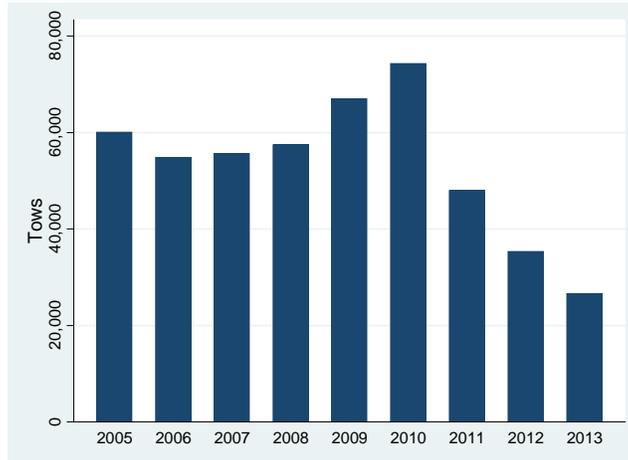
Our analysis attempts to address the effect, if any, these changes in the operation of the *SafeClear* program have had on program performance and its impact on collisions on Houston freeways.

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Basic trends:2005-2013

Between 2005 and 2010 *SafeClear* tows grew steadily, peaking at nearly 75,000 tows in 2010. With the adoption in 2010 of a \$50 fee the number of tows performed by the program has steadily decreased to a low of 26,000 in 2013. It is uncertain the cause of this decline, but clearly the adoption of a \$50 tow fee may have provided an incentive for vehicle operators to remove their disabled vehicles from the freeway rather than wait for *SafeClear* assistance.

SafeClear vehicle tows by year

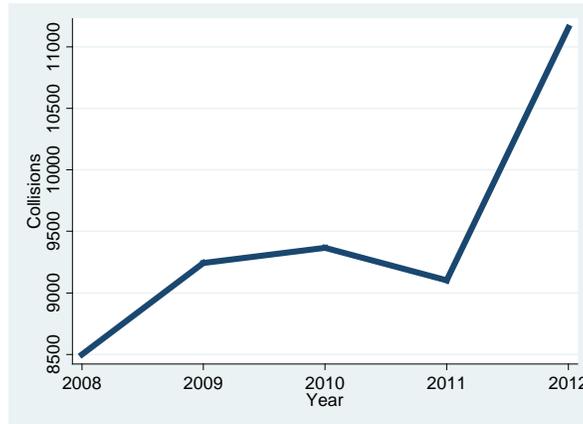


Between 2008 and 2012¹, the years for which comparable collision data are able, there was an increase in the total number of collisions reported by the Texas Department of Transportation on City of Houston freeways. The biggest increase in collisions occurred between 2011 and 2012. Again, there are many factors that influence collision rates, including the actions of the vehicle's operator. During the period of 2011-2012 the Houston metropolitan area experienced a significant increase in population as a result of an economic recovery in the region. We suspect the growth in population accounted for an increased total number of vehicle miles driven on Houston roadways and an accompanying increase in area collisions.

¹ Collision data is from the Texas Department of Transportation's *Crash Data Reports* provided to the authors of this report by Houston-Galveston Area Council's Jeff Kaufman. Due to changes in TxDot's reporting system in 2008 collision data before 2008 is not comparable for comparative analysis with data reported in 2008 and after.

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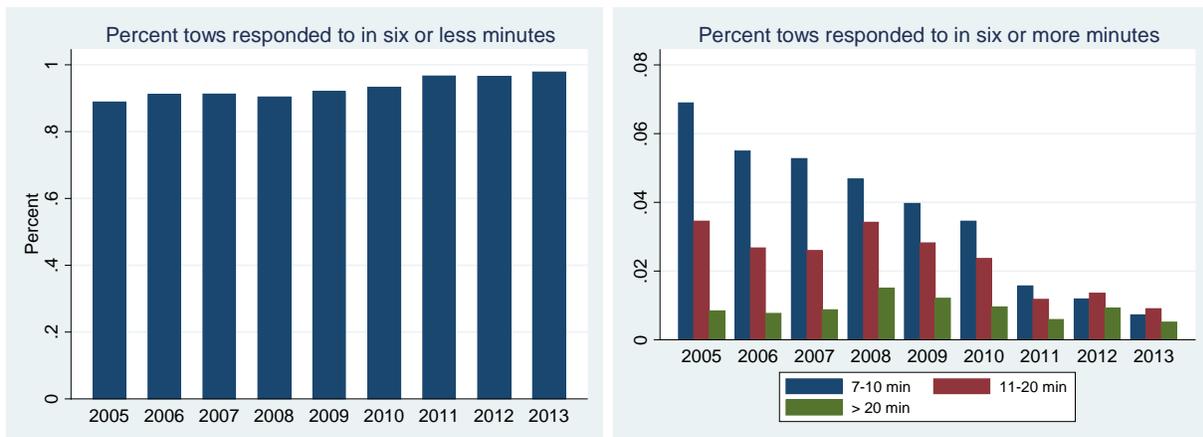
Collisions on Houston Freeways by year



With this information as background, we can ask how *SafeClear's* operations and its impact on collisions fared since 2008.

Response Times

Response time is the amount of time between notification of the tow operator and arrival at the disabled vehicle. The goal for the program from its inception was to have 90% of all response times at or below six minutes. This goal was achieved in program's first years of operation. The goal of a 90% response time under six minutes continues to be achieved and has been exceeded since 2009. In 2013 nearly 98% of all tows were responded to within six minutes.



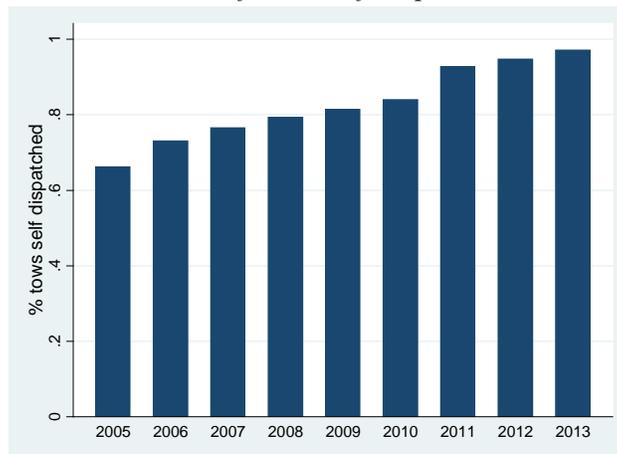
We believe the improvement in response time is attributable to the effectiveness of tow operators at patrolling their own and each other's freeway segments for disabled vehicles. This was one of the intended consequences of the program. Another factor that may have contributed to the recent (i.e., 2011-2013) increase in the proportion of response times at or below six minutes is the substitution of civilian dispatchers for HPD dispatchers. These civilian dispatchers work for contracted tow operators. Their familiarity with their own and colleagues' tow operators as well

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as their mutual incentive to meet program performance goals is likely to have contributed to the overall improvement in response times.

The most important determinant of response time and its steady improvement over time is how a tow is dispatched. Tows can be dispatched several ways. A dispatcher at *Transtar* can spot/identify a disabled vehicle on one of several cameras located along Houston freeways. Once identified, the dispatcher will contact the wrecker operator with responsibility for that segment of the freeway. The operator of a disabled vehicle can contact *Transtar* or HPD who then contact the responsible wrecker operator. Finally, tow truck operators who patrol their own segments can ‘self-dispatch’ themselves to a disabled vehicle on their segment. They can also alert operators with responsibility for adjacent segments about disabled vehicles they have observed on these neighboring segments. Of course self-dispatched tows are expected to significantly reduce response times, an intended goal of the *SafeClear* program. Between 2005 and 2013 the proportion of tows self-dispatched has increased steadily, from 70% in 2005 to 97% in 2013. This increase in self-dispatched tows contributes to the reduction in response times observed over time.

Percent of tows self-dispatched



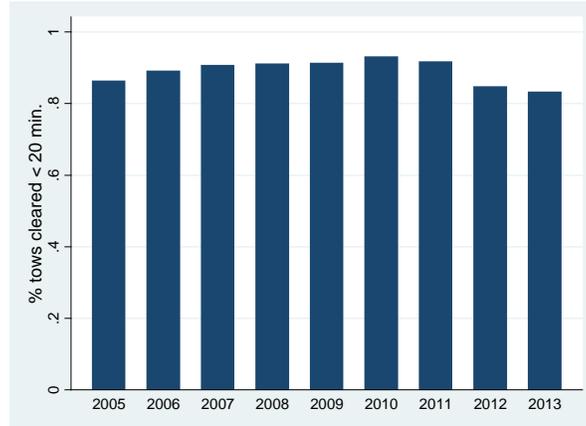
Clearance Times

Clearance time is the amount of time between the arrival of the tow operator at the site of a disabled vehicle and removal of the vehicle from the roadway. In the case of vehicles that are not involved in a collision, clearance time is largely, if not exclusively, a function of the nature of the vehicle’s and driver’s disability. Flat tires, some engines problems and related vehicle operations e.g., lack of gasoline, each require different amounts of time to render assistance, assuming a tow is not required. Vehicle collisions require a sworn police officer at the scene who is responsible for directing activity at the scene (e.g., issuing citations, seeking and

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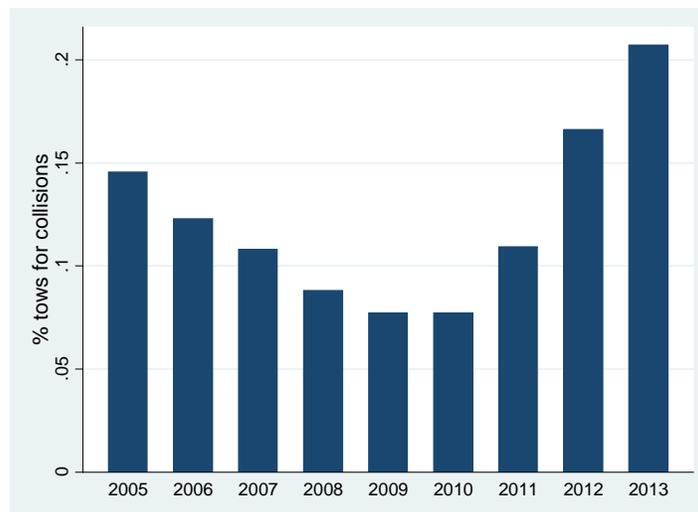
rendering medical assistance, etc.). Most importantly vehicles involved in a collision cannot be towed from the scene until released by the attending police officer. The *SafeClear* program identified a clearance time of 20 or fewer minutes for 75% percent of all tows as a goal for the program.

Percent of tows cleared within 20 minutes



Between 2005 and 2010 the proportion of tows cleared within the 20 minute goal exceeded 86%, peaking at 93% in 2010. Between 2011 and 2012 the proportion of tows within the 20 minute goal declined to 83%, still well within the goal of 75%. One possible explanation for this slight increase in clearance and duration time maybe the changing composition of *SafeClear* tows during this period. Specifically, tows involving vehicles in a collision may require more time to clear, in part to the need for a police officer to release vehicles for towing that are involved in some collisions. An increase in collisions on Houston freeways as reported above should have increased the proportion of tows resulting from accidents as opposed to other causes e.g., flats, mechanical, etc.

Percent of tows for collisions



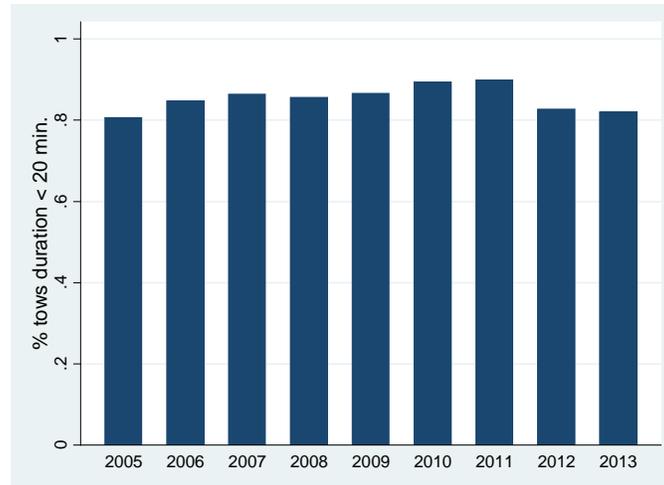
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The percent of tows that were for collisions declined steadily between 2005 and 2010, dropping from 14.5% of all tows to 8%. Between 2010 and 2013 the percent of tows for collisions increased to 20%. The increase in tows for collisions may have contributed to a slower clearance and duration time since these tows require police clearance. The average clearance time for all tows between 2005 and 2013 was 11 minutes. The average clearance time for all tows involving collisions for the same period was 23 minutes.

Duration Times

Duration time is the amount of time elapsed between the notification of the tow operator and removal of the disabled vehicle. The goal for the program was 70% of removal times below 20 minutes, an allowance that permitted compliance with the program's goal for response and clearance time. Not surprisingly duration times for *SafeClear* tows closely follow the trend reported for clearance times.

Percent of tows' duration time within 20 minutes



We suspect that the increase in collisions has contributed to the increase in both clearance and duration times for *SafeClear* tows. Recall that tows for collisions require a police officer at the scene who must manage the scene and collect information from those involved in the collision. All of these activities are likely to increase clearance and duration time.

SafeClear's impact on freeway collisions

One of the goals of the *SafeClear* program was to facilitate a reduction in 'secondary' collisions that occur during bottlenecks. In 2008 we reported that the *SafeClear* program had a significant and negative effect on the incidence of collisions on Houston freeways. We observed nearly 119 fewer collisions per month after *SafeClear* was initiated in 2005 through 2008 compared to the year before the program was begun. Similarly we found that *SafeClear*

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response times contributed to the reduction in collisions. A one minute reduction in the average monthly response time reduced the number freeway collisions by 4 collisions per month.

The tables below report separate regression models for the total number of collisions on Houston freeways per month for the years 2008-2012. The dependent variable is the number of collisions per month in both models. The independent variables in the first model are the proportion of *SafeClear* tows per month responded to within six minutes and the month/year². In the second model of total collisions per month the proportion of tows responded to within six minutes is replaced with the mean monthly response time in minutes for *SafeClear* tows.

*Regression estimate of total collisions
per month: 2008-2012*

VARIABLES	Collisions
Month-Year	2.127* (1.110)
% tows responded to within < 6 min.	-407.1** (177.0)
Constant	930.0*** (116.0)
Observations	60
R-squared	0.329

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

A one percent increase in the proportion of *SafeClear* tows responded to within six minutes reduced the average number of total collisions per month by 407, a statistically significant effect for the program. Moreover, the control for month-year suggests that other potential correlates (population growth, rain, bad weather, etc.) of collisions associated with each month during this period have a positive but non-significant impact.

² The month-year variable accounts for the variation in collisions that is associated with other factors that might be related to conditions that prevailed during each month of our 60 month time-series e.g., vehicle miles traveled, weather, etc. As noted the number of total collisions increased during this period producing the expected positive sign for the month-year coefficient.

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*Regression estimate of total collisions per month:
2008-2012*

VARIABLES	Collisions
Month-Year	2.115* (1.105)
Response time	24.90** (10.67)
Constant	491.2*** (82.26)
Observations	60
R-squared	0.331

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Response time is positively related to the incidence of collisions on Houston freeways for the period 2008-2012. A one minute increase in response time increases the average number of collisions per month by nearly 25. Again the month-year coefficient is positively signed but not significant at conventional levels of statistical significance ($P < .05$) suggesting other potential correlates (rain, bad weather, etc.) of collisions associated with the each month during this period have a positive but modest impact on the incidence of collisions.

Response time performance by wrecker operator

Average monthly response, clearance and duration times in 2013 on each of the 29 segments of Houston freeways under the *SafeClear* program met or exceeded program goals. Moreover, the variation in response, clearance and duration times in 2013 by segment is not statistically significant.

Conclusion

The *SafeClear* program continues to meet its primary and secondary goals. There is strong evidence to support the conclusion that *SafeClear* tows have had a significant effect on reducing collisions on the Houston freeways. This effect is largely attributable to the response time of tow truck operators. Since the inception of the program in 2005 average response on all freeway segments has be at or below six minutes, contributing to the reduction in freeway collisions.

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2013 SafeClear Performance Measures by Freeway Segment

Segment	N	Response time	ClearanceTime	DurationTime	% Six Min. or less	% Self-dispatched
Unassigned	207	0.33	11.62	11.95	0.99	0.99
1	569	0.63	12.65	13.32	0.96	0.95
2	401	0.57	13.74	14.37	0.97	0.96
3	241	0.72	13.46	14.25	0.96	0.95
4	391	0.43	13.37	13.84	0.97	0.96
5	502	0.11	12.75	12.94	0.99	0.99
6	338	0.14	18.32	18.53	0.99	0.99
7	765	0.11	12.52	12.67	0.99	0.99
8	889	0.55	14.33	14.97	0.97	0.96
9	622	0.01	14.28	14.36	1.00	1.00
10	601	0.11	14.35	14.51	0.99	0.99
11	1,875	0.46	14.74	15.25	0.97	0.97
12	398	0.19	14.88	15.14	0.99	0.98
13	178	0.65	15.48	16.17	0.97	0.97
14	16	0.00	14.88	14.94	1.00	1.00
15	1,127	0.41	13.57	14.06	0.98	0.97
16	492	0.26	13.90	14.23	0.99	0.98
17	298	0.13	15.68	15.88	0.99	0.99
18	2,736	0.31	12.42	12.79	0.98	0.97
19	1,494	0.07	12.36	12.49	1.00	0.99
20	1,131	0.27	13.70	14.04	0.98	0.98
21	707	0.47	15.30	15.82	0.97	0.96
22	1,553	0.82	13.56	14.47	0.95	0.94
23	191	0.96	12.72	13.73	0.95	0.94
24	47	0.51	11.17	11.79	0.98	0.96
25	1,747	0.10	15.26	15.42	0.99	0.99
26	1,653	1.16	15.67	16.92	0.94	0.93
27	993	0.11	16.60	16.77	0.99	0.99
28	1,397	0.23	13.78	14.08	0.99	0.98
29	123	0.23	15.54	15.81	0.98	0.98

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