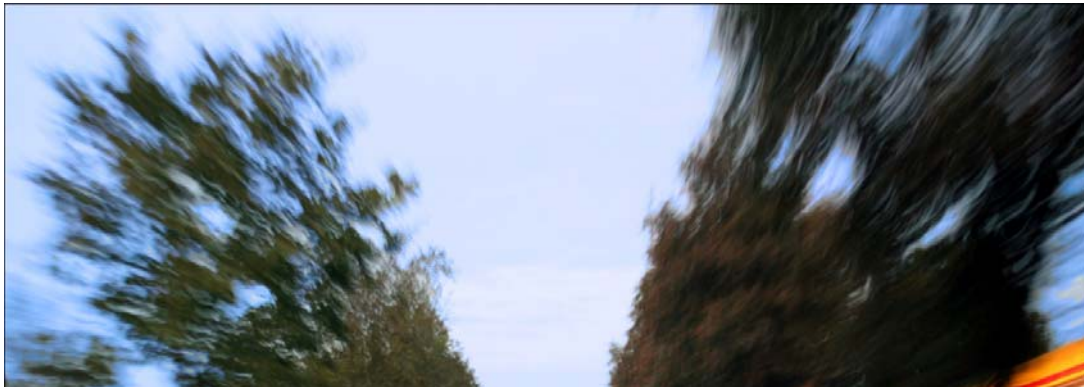


2010-01-15



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POSTEN - SHLOW PROJECT FINAL REPORT



. | Katarina Hedman Madelein Johansson Petter Naef



Abstract

The objectives of this project is to make the truck drivers at Posten Logistik in Malmö Sweden aware of how even small increases of speed markedly affect the breaking distance and increase the risks of accidents, so that they will keep the speed limits. An education was held for totally 200 truck drivers spread over a time period of four weeks, once per week to introduce speed management to them. This report is presenting measurable data of speed measures, done with radar before and after the education, in order to be able to see if it was possible to affect their driving with education and to bring awareness to the subject of speed reduction. During the education, brochures were handed out with data from European Traffic Police Network organisation (TISPOL). The data from the first measure with radar was also presented to the drivers. The data from the measure showed that they were driving too fast and an open discussion was held with the drivers in order to try to find out why they were driving too fast. After the education there was a second speed measure with radar conducted. It showed decreased speeds. A Chi-square test showed that the result was improved. Since all conditions are similar, the only significant change for the drivers is the education. Our education in speed management increases the awareness of safety in traffic and contributes to a better and safer traffic.



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Special thanks to:

Gabriel Simcic, Project Officer

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Annika Persson, Sveriges Åkeriförening

Mats Karlsson, Area Manager, Posten Logistik

Mats Jannér, Master of Transport Systems Analysis



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1 Background

ShLOW is an EU-project initiated by ETSC¹ (European Transport Safety Council). ETSC is a non-governmental organization on the European level, advocating for transport safety in Europe. Fifty students from 25 Universities located all over Europe participate in the project that is a challenge in creating the best traffic safety effects aiming at reducing speeding. Malmö University is one of them.

Sweden is well known for its traffic regulations and a comparatively low rate of accidents with fatal outcome. The road infrastructure is of good standards. Maintenance of infrastructure and road surfaces is excellent compared to European average. The cities are filled up with speed bumps and mini roundabouts.

The problem is though, that the better and safer the roads are, drivers tend to speed up feeling safe. That means the extra safety margins are consumed and the traffic safety is back to square one.

Since we, three students of Malmö University² study Bachelor of social science in Transport Management³, decided to aim the road transport market as it is related to our education. We visited several road transport companies and after some discussions we decided that the Swedish Post⁴ named Posten Logistik was the most suitable company as a cooperative partner as they are a very large company, with a large fleet of vehicles, so possibility for impact from our ShLOW⁵ project seemed good. The department in Malmö has approximately 200 trucks and vans with as many drivers. The trucks do deliveries in urban areas and city centre.

The mission of our project is to reduce speed at Posten Logistik and the main activity is to educate their truck drivers. To get there we will assess speed in an area where the current speed limit is 20 km/h, measure speed, educate drivers, remeasure speed and evaluate results.

1.1 About Posten

Posten is one of the Nordic region's largest messaging and logistics operators and is a worldwide leader in service quality and delivery performance. Through its network of operating companies and strategic partners, Posten provides Nordic and global letter and parcel delivery services.

¹ <http://www.etsc.eu/home.php> (2009-12-20)

² <http://www.mah.se/> (2009-12-20)

³ <http://www.mah.se/transport> (2009-12-20)

⁴ <http://www.posten.se/> (2009-12-20)

⁵ <http://www.shlow.eu> (2009-12-20)



Posten has more than 30,000 employees and revenue in excess of SEK 25 billion, Posten is also one of Sweden's largest corporations.

Postens' logistics solutions span basic services such as palletized logistics, parcels and express delivery. In-night transportation they fulfill stringent requirements regarding time precision and service. Within third-party solutions, Posten is a full-service supplier, responsible for the customers' logistics and distribution functions.⁶

2 Problem

One problem at Posten Logistik Malmö is that their truck drivers speed. Since they do their deliveries in urban areas risk for human accidents are high. Drivers are not aware how much breaking distances affects from even small speed changes. Drivers often feel stressed, thinking that speeding helps them save time. The speeding itself creates stress, so it is kind of a descending spiral that creates more stress and speeding.

“Safety first” is a well known concept in the construction business. The workers are well familiar with the concept, accepting orange colored safety vest, hard hat, protective boots and harness.

In the transportation business it is a bit different. Driving the distance in as short a period of time as possible or with excessive speed is still impressing to other drivers. This is a behavior we want to change. We want the “Safety first” concept to be adapted as a natural part at the transport companies.

Since the ShLOW project is all about speed, our primary target is to make the drivers aware of risks with speeding. The synergy effects of drivers of a large company driving at legal speeds are that they create a calmer rhythm since the vehicles driving behind the company trucks has to slow down to the same speed as the trucks.

3 Objectives

The main objectives for this project is to make the employees of Posten Logistik aware that even small increases of speed has a striking impact on stopping distances for vehicles.

They should respect and follow current speed limits after an information meeting, that includes everywhere in traffic, not just at a certain area. We also want the staff to apply their awareness outside their professionals and continue to be a good driver in general and become a role model to other road users.

⁶ http://www.posten.se/c/eng_about_us (2010-01-10)



4 Target group

After doing some research we found a major gap between the policies of the hauling companies and how they approach issues such as traffic safety. This is in fact an issue that hardly ever takes its standards. For several generations a behavior where drivers think it is cool to drive fast has been built up. As the environmental problem has been discussed people in general have become more aware of traffic jams, speeds and environmental friendly alternatives. The hauling companies though are under a process that needs to be drawn attention to, be speeded up and approved.

Since we study Transport Management it felt very natural for us to attract attention to this specific area. The gap we have seen is between the transportation of cargo on the road and safety standards. When building, the construction workers have signs everywhere saying “safety first” and nobody thinks that it is cool to challenge the risks, but in road transport business there is no such signs.

It is a big issue and a problem that involves everyone, the truck drivers and the management team as well as customers and general traffic behavior in the society. If the drivers drive too fast that will affect the company brand in a negative way. People that are moving on the streets, especially in the city center will take notice of it and that will create a bad reputation that can harm the company and its customers. The most important thing is that it increases risks for terrible accidents to happen. So with our project we want to fill the gap or at least start the process of it. This is a problem that cannot be solved in one day, and not even in one project. This is about attitudes, behavior and culture. It means that things need its process to achieve high performance. It is not very cool or very professional to drive fast.

5 Activities carried out

After the contact with Posten Logistik we started to plan how, where and when to measure their truck drivers. We followed the procedure with measure, education, remeasure and evaluation.

5.1 Main activities

The most important thing about the project is the education. Since we also wanted to know the impact of the education we did physical radar speed measurements.



5.1.1 Before measure

We have chosen to work with a department of Posten in Malmö called Posten Logistik. At a meeting at their premises we decided to measure their drivers and present the outcome and inform about risks and give an education to their 200 drivers.

5.1.2 First measure

Together with the managers at Posten Logistik we decided a location where the trucks were easy to measure. The speed limit was similar to the speed limits school areas. Since we did not want our presence to affect the drivers to slow down, we used a location well hidden during the radar measurements. We decided that a period of one and a half hour, during the densest time of the day, would be ok if we got an amount of vehicles that we were satisfied with. We measured the speed of 67 vehicles owned by Posten Logistik on an area with the speed limit 20 km/h.

5.1.3 Educational phase

After the first speed measurements we compiled the results and made a brochure to hand out to all drivers. The content of our brochure included results, information, risks and differences in distance to stop while increasing the speed.

During four mornings we participated on Posten Logistik's meetings with the employees. We compiled the results and handed out the brochures we made and held a mini education based on the content of our brochure (enclosed as ShLOW Swedish post.doc). We wanted to get all the drivers aware of the risks of speeding. A discussion about why drivers are speeding came up and about other drivers' bad behavior in traffic. Some drivers experienced that their work are stressful and that is one of the factors why drivers speed. We asked why their job can be stressful since they have a schedule to follow but they could not really answer that question. Probably they did not see that stress was not related to the schedule planning. Some drivers experienced that the traffic itself forces them to keep the rhythms so they does not start a jam.

In one of the groups a driver told us that another cause of speeding was the change while getting of the motorway and slows down when they hit another road with decreased speed. He meant that drivers fail to adjust to a slower speed when change from motorway to road. We think that professional drivers should not have any problems to adapt speed changes on different road types.



Over all, the four morning meetings turned out to be a success. As a professional driver it is even more important to really act professional in the traffic, make sure to be advised about risks and predictable about eventually accidents. All drivers agreed with that and we told them that next time we measure their speed – it will be far better than first time.

5.1.4 Evaluation of the effects of our campaign: The second measure

The second measurement we did see an improvement from the first. Figure Nr 3. *Outcome of measures*, for results. The result of our campaign shows that drivers who keep a speed over 40 km/h have not been influenced by our education. It takes more effort to get those drivers keep speed limits.

5.2 Future

Our material has been handed over to Posten Logistik. They also have equipment to measure again and if they want to continue they can educate their employees and set guidelines for future values. If Posten Logistik wants our service, continuing measurements and education, we are open for suggestions. Area manager Mats Karlsson, has during this project, added some of the significant things from our brochure to the introduction of new drivers. He has also plans to write an article about this project and the outcomes on Posten Logistik's intranet. That may cause a domino effect to other regions in Sweden and they may implement these actions at a national level. If so, we will have to consider a future cooperation.

5.3 Contact list of key persons

AkkaFRAKT, Olle Linde, Transport Safety Manager.
Gatukontoret, Malmö city, Maria Makri Brodde.
Gatukontoret, Malmö city, Mikael Wendel.
Malmö citys' traffic planner, Ingrid Peterman.
Malmö Lastbilscentral, Peter Newman, Managing Director.
Nordanå Transport, Anders Clarén, Managing Director.
Posten Logistik, Mats Karlsson, Area Manager.
Sveriges Åkeriförening, Annika Persson, Traffic Safety Educator.
Toyota Motor Europe, Ena Okada, Sr Specialist CSR.



5.4 Dates of activities

April 21. Our project started already before we went to Brussels and took the course in speed management. We made contact with different key persons at transport companies that showed interest to cooperate with us regarding this project. (See contact list of key persons).

May 4. In Brussels we had a meeting with Ena Okada at Toyota Motor Europe to arrange some kind of cooperation with one of their managers that works in Malmö a couple of days per month.

May 12-13. During spring we took part in a guest lecture with Susan Hanson about gender and mobility. A person from the local transport company, Skånetrafiken, attended. Skånetrafiken was not that interested in speed reductions. Instead their representative said they wanted to increase the speed of the local transports in Malmö city.

May 28. In May we represented our university and program at a logistics exhibition in Gothenburg and met a traffic safety educator at Sveriges Åkeriföretag, Annika Persson. We explained ShLOW briefly to her and she got interested and kept the contact with us. A few weeks later she presented us in a forum about traffic safety. She also introduced us to Posten Logistik in Malmö and they wanted us to measure their drivers speed.

June 23. A first personal meeting was held with Professor András Varhelyi after the education in Brussels. The meeting resulted in more ideas for the project and we got information about earlier researches and a film about heavy trucks and fatalities. We also had renewed contact with key persons at transport companies to start the project about speeding. A poll was made to investigate drivers' behavior. This poll has not been used since we did not find it relevant to our project.

September 8. When the autumn semester started at the university we were in contact with road administration at the municipality and they wanted us to participate in a campaign at the university. The campaign was concentrated to hand out free bicycle helmets to students. Mikael Wendel, our contact, did the work himself and wanted to meet us for another partnership. But unfortunately he missed our appointment and after a few weeks his project employment at the municipality ended.

October 2. The first meeting with area manager Mats Karlsson, division manager Jonas Andersson and division manager Johan Björklund at Posten Logistik.

October 14. A first measure at Posten Logistik.

October 23. Making the information brochure and compilation of the first measure.



November 2. First education and presentation of the results to the drivers at Posten Logistik.

November 9. Second education and presentation of the results to the drivers at Posten Logistik.

November 16. Third education and presentation of the results to the drivers at Posten Logistik.

November 23. Fourth education and presentation of the results to the drivers at Posten Logistik.

December 8. Second measure at Posten Logistik.

December 9. Compilation of the second measure and comparisons between first and second measure.

December 10 – January 15. Writing the final report.

6 Results and impact

In this section we will describe how the practical speed measurements were performed and explain the data from our analysis. Finally we will present a summary.

6.1 Scientific aspects of the project

We decided to make a project based on qualitative and quantitative methods with well performed tests and measureable results. It means we decided to educate all drivers and employees at the department of the Post in Malmö, Posten Logistik. For the quantitative part of the project we decided to measure the speed of 50-70 vehicles. This sample is enough for securing statistical significance.

6.2 Choosing location for radar speed measures

We had a meeting with the managers of Posten Logistik where we discussed the best location for the speed measurements. It had to be a road with dense traffic of vehicles from Posten Logistik since it was their drivers we were going to educate. The difference in speeds between first and second measure is the result and impact of our education to the drivers. We decided for a location with speed limit equivalent to the limits that are common on roads passing



schools and kindergartens. The speed limit is 20 km/h on the road where we performed the measures, compared to the legal 30km/h outside schools. We thought it would be a good choice since speeding in low speed areas is common. It is also in this speed that even small increases of speed makes a great impact on the stopping distances. The zones with a limitation of 30 km/h are built because of the high risk of accident between unprotected bicyclists and pedestrians, often of low age.

6.3 Performance of radar speed test

We used a controlled and certified radar gun similar to the ones the Police used to have. (Nowadays the Police use laser guns). The radar gun we used belongs to the University of Lund, Professor András Varhiely. He taught us the handling of it so we were well prepared.

The weather conditions were observed and noticed on our protocol. Temperatures were between two and four degrees, it was light rain and daylight; similar during both radar speed measures. Since the conditions were so alike, we assess they do not impact the outcome of differences in speed.

The test started at 8.30 am in both cases. That is the time when the vehicles departure from the terminal for their daily deliveries. Duration of the test was about 80 minutes in both cases. We decided however that the most important factors were not the duration in time, but in number of vehicles. Jonas Lundsten, PhD in work- and organizational psychology and quantitative analysis at Malmö University confirmed that an amount of 60-70 vehicles would give us a value of cases that is statistically secured. In average we had a little less than 1 vehicle per minute passing us letting us write down the measured speed accurately.

6.4 Educational appointments for employees

After the first test was performed and analyzed, we made an informative document, (enclosed as ShLOW Swedish post.doc) where we presented the goal for the project, the risks of speeding and also the facts from the first test.

6.5 Second radar measurement

We performed the second radar measure under conditions similar to alike the conditions in the first one. The number of vehicles is exactly the same as in first radar measure. Since we wanted the outcome to be unbiased, we were careful not to tell the employees or drivers we were there to perform the radar measures.



6.6 Scientific analysis of data

We used Microsoft Excel to put together all the raw data numbers into models and figures. First of all we sorted out the vehicles in groups depending on speed (figure 3). Then we made a graphic table (figure 4).

The mean speed was 30km/h during first measure and decreased to 25km/h in second measure.

Since the standards deviation in both measures are almost the same ($m_1=6,63$ $m_2=6,89$) we assume the normal distribution in both groups are acceptable.

According to a t-test the difference is also statistical significant. ($p<0,05$). The conditions of weather, road surface and time of day are similar. The significant change for the drivers is the education, so we can assume that is the reason for the decrease of speed.

To test our hypothesis Chi-square tests were made. The results are shown in table below.

In the first test the number of speeders was compared to “legal” drivers. Conclusion is a statistical significant change.

In the second test we compared the drivers speeding more- or less than 10km/h above speed limit. Conclusion is a statistical significant change.

In the third test we compared the drivers speeding more- or less than 20km/h above speed limit. Conclusion in this case is a non statistical significant change. It means that the education did not have the wanted effects on this group of drivers. It probably takes other actions to make them adapt speed limits. These actions could be bills, speed restrictive equipment installed in vehicles or speed cameras. In our test only few drivers belong to this group, approximately 7%.

Overall conclusion is that education makes impact.



Chi-square	Before	After
No of speeders	62	47
“Legal”	5	20
	p=	0,0000
Chi-square	Before	After
No of speeders	93,00%	70,00%
“Legal”	7,00%	30,00%
Number speeding considering limit 10km/h above legal (30 km/h)		
	Before	After
Number speeding more than 10km/h	38	16
Number speeding less than 10km/h	29	51
	p=	0,0000
Number speeding considering limit 20km/h above legal (40 km/h)		
	Before	After
Number speeding more than 20km/h	4	2
Number speeding less than 20km/h	63	65
	p=	0,3024

7 Final result / Summary

Our final result is that an active traffic safety policy and active education in a company can create a more secure environment both for the employees and the external road-users in traffic. Delicate awareness in traffic means not only a higher rate of safety, but also lower emissions from the vehicles. The goodwill of the company will increase since the on-road vehicles are the company’s face towards the customers.

Another conclusion is that education is always good to freshen up the knowledge of the employees. In the same time the managers get important feedback from the drivers how they experience their situation. The drivers feel they are listened to and their opinions are important for the company.

The company cannot alone create policies if the drivers do not feel they can apply to them or that the company does not perform follow-ups. On the other hand if the drivers feel that they are part of the evolution of the policies, they are shown results and also understand the reasons for the policies, a company would easily get synergy effects like we did.



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Another aspect is that the marketing of companies is evolving from transaction marketing to relations marketing⁷ meaning a deeper relation between the businesses with exchange of information, IT and integration of policies like “Code of conduct”⁸.

We suggest that Posten Logistik continue the education of drivers. Even if our results are significant good, they are not yet fully acceptable. The Post should not accept speeding at all, meaning the Safety First thinking should not only be in the goods terminals but follow the employees all the way out on the roads. It will create a more relaxed situation, since the drivers do not stress as much in a calmer traffic rhythm. Relaxed drivers mean healthy and happy drivers that give happy customers.

⁷ Baines, Fill, Page, *Marketing*, Oxford University Press 2008

⁸ <http://www.swedfreight.se/Documents/071204CodeofConduct.pdf> (2010-01-03)



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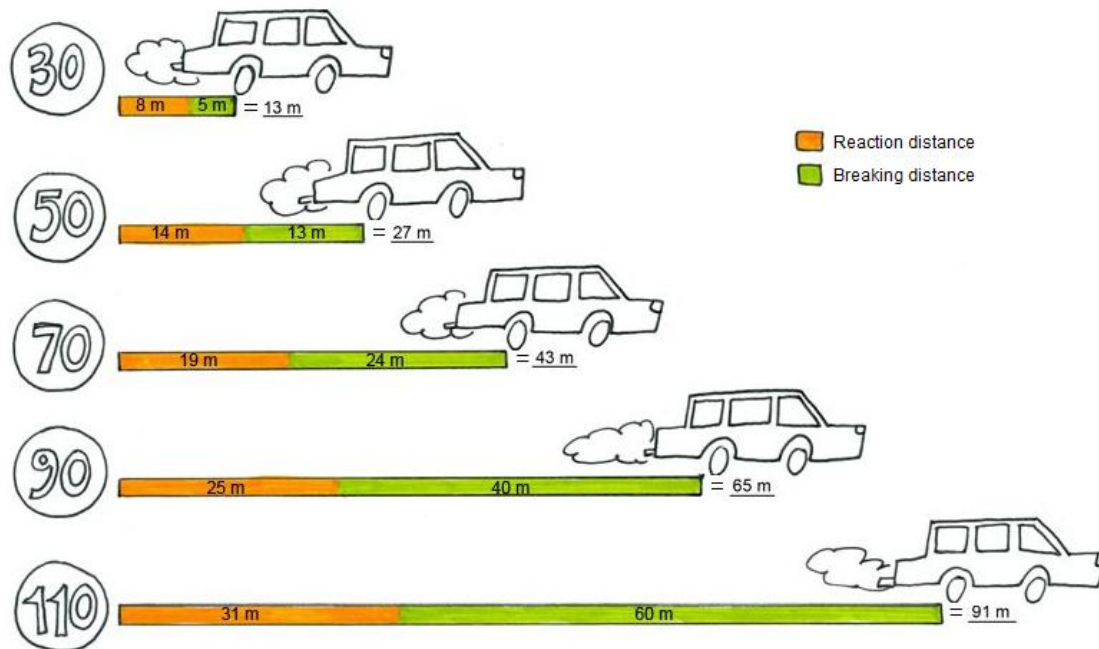
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9 Appendix

Stopping distances at different speeds



The stopping distances illustrated above are only valid on dry surfaces. In case of rain or ice conditions stopping distances increases.

Figure Nr 1. *Stopping distances*, Source: ETSC



The table below shows how the stopping distances are increasing with speed increments of 10km/h. Last column shows the speed of vehicle as they pass the initial stopping point.

Legal speed (km/h)	Stop distance (m)	Speed increase (+10 km/h)	Stop distance (m)	Impact speed (km/h)
30	13	40	19	36
40	19	50	26	38
50	26	60	34	41
60	34	70	43	43
70	43	80	53	46
80	53	90	64	48
90	64	100	76	50
100	76	110	89	52
110	89	120	103	54
120	103	130	118	55
130	118	140	133	57

Figure Nr 2. *Stopping distances*, Source: *TISPOL (European Traffic Police Network)*



No of vehicles	Measurement:			
	No 1	No 2	No 1	No 2
Number ≤ 20 km/h	5	20	7%	30%
21-25	13	21	19%	31%
26-30	18	12	27%	18%
31-35	16	8	24%	12%
36-40	12	4	18%	6%
41-45	2	2	3%	3%
46-50	1	0	1%	0%

Figure Nr 3. *Outcome of measures*, Source: Own radar measurement

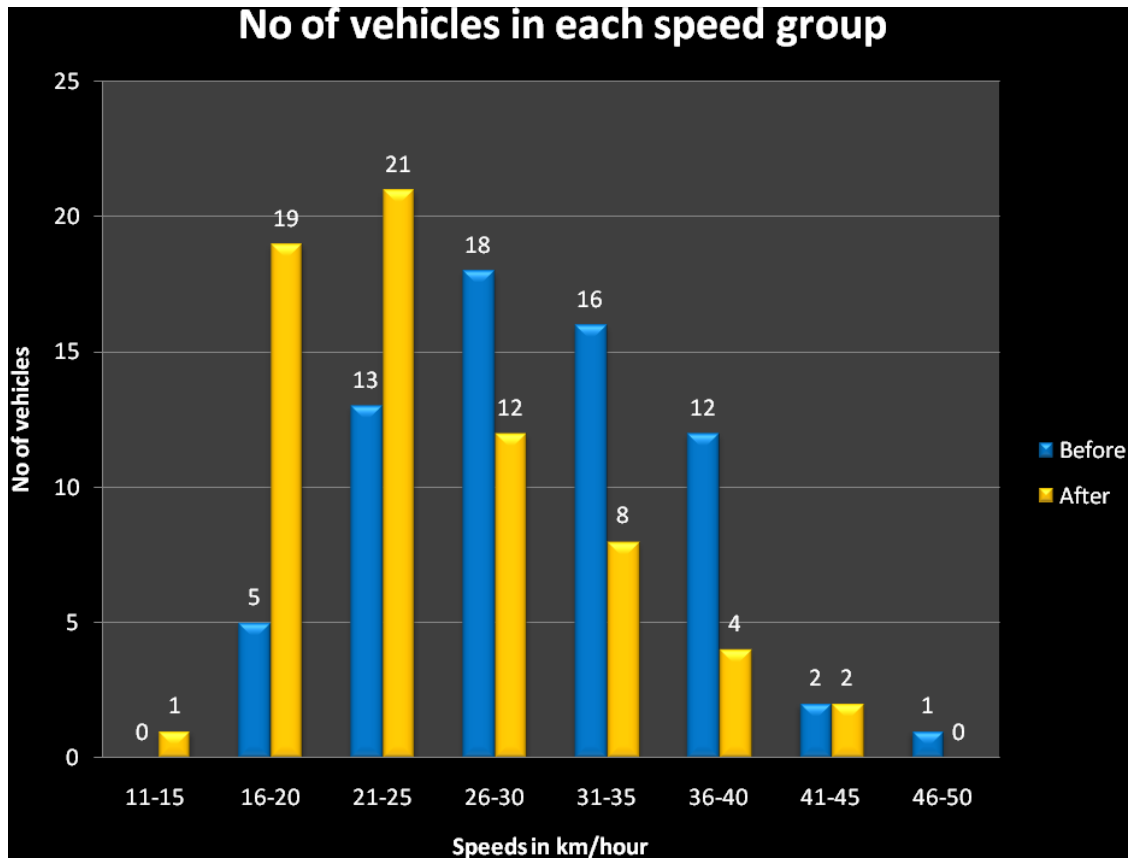


Figure Nr 4. *Graphic outcome of measure*, Source: Own radar measurement.



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