Evaluation of a road safety education intervention (ALFA Project) by assessing road crossing behaviour in students

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ANNEXES

Acronyms

ALFA	: Aro Loza @ Fifamoivoizana An-tsekoly	Road Safety at School
CISCO	: Circonscription Scolaire	School District
CUA	: Commune Urbaine d'Antananarivo	Urban Commune of Antananarivo
EPP	: Ecole Primaire Publique	Public Primary School
MEN	: Ministère de l'Education Nationale	Ministry of National Education
NGO	: -	Non-governmental organisation
OEMC	: Office de l'Education de Masse et de Civisme	Office for Mass Education and Civism

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1. PROJECT SUMMARY

Project title:	ALFA Project evaluation: a comparative study of primary school student's road crossing behaviour
Intervention areas:	Urban Commune of Antananarivo, Antananarivo Atsimondrano (Analamanga Region) and the National Road 7 (RN7) axis Antananarivo to Antsirabe (Vakinankaratra Region)
Project duration:	4 months
Project objectives:	*Project goal :* Evaluate the impact of the ALFA Project in pedestrian behaviour and use evaluation data to improve road safety education and awareness techniques. *Specific objectives :* • Map the declared gaze of the students before crossing the road • Compare the behaviour of students from project participant and non-participant schools • Identify strategies for improving road safety education and awareness-raising techniques
Target groups:	• Teachers from 6 ALFA Project participant schools (Écoles Primaires Publiques – EPPs). • A sample of students from the 6 ALFA Project participant schools. • A sample of students from 18 ALFA Project non-participant schools.
Final Beneficiaries:	Primary school students.
Expected results:	• The data needed to conduct the behavioural study is available • The main patterns of road crossing behaviour of sensitised and non-sensitised students are mapped and compared • Strategies to improve awareness-raising techniques are proposed

Expected results:	• Preparatory activities:
	  – Request letters of introduction from the Ministry of National Education
	  – Preparation of research materials
	  – Define sample size and distribution
	• Field work
	  – Courtesy visits to schools
	  – Survey planning
	  – Data collection
	• Data processing
	  – Entering data collected in Excel/SPSS
	  – Data cleaning and analysis
	  – Data interpretation and reporting.

2. INTRODUCTION AND CONTEXT

Road safety: a global public health emergency for children and young adults

Road safety is a global public health problem. The World Health Organization (WHO) estimates that road fatalities are now the 8th cause of death for all ages worldwide and the leading cause of death for children and young adults aged 5-29 (WHO 2018). Recent WHO figures estimate that 47% of deaths on Malagasy roads are pedestrians (WHO 2018). In a very young country, where 40% of the population is aged between 0 and 14 years old, school children who walk to school are particularly vulnerable road users.

According to the results of the survey presented in this report, 95% of primary school students in Malagasy public primary schools (EPP) walk to and from school. This data echoes the results of another study conducted in Tanzania in 2016, where 87% of children reportedly walked to school (Draisin and Mills-Tettey 2016).

Our data also show that 20% of surveyed students have already experienced a road accident as a pedestrian. In most cases, these students are responsible for their younger siblings during their journeys to school. A number of factors increase the risk of road safety incidents during the student journey to school, namely: the intensification of traffic in cities, the absence of traffic signs and road markings, and inattention or ignorance of these students of the risks they are exposed to as pedestrians. Moreover, traffic congestion and sidewalks occupied by cars contribute to a riskier environment, especially in the capital of Madagascar, Antananarivo.

The ALFA Project

It was in this context that Lalana implemented, during the 2017-2018 school year, the ALFA Project or *Aro Loza amin'ny Fifamoivoizana An-tsekoly* (Road Safety at School). Funded by international non-governmental organisation (NGO) Transaid, the ALFA Project is a road safety education and awareness-raising project which aims to contribute to the prevention and reduction of traffic incidents that may affect young schoolchildren in public primary schools (EPPs) during the childrens' journeys to school.

Research on the behaviour of children as road users (particularly as pedestrians), including the children's ability to learn, has demonstrated the importance of education in road safety:

> "Most of the abilities involved in pedestrian mobility can be educated and are not subject to psychological development: the choice of the crossing site, observation, visual research, filtering of relevant information, division of attention, the estimate of the intervals between cars allowing the crossing, these are all capacities susceptible of learning and developing the capacity to fight against 'the impulsivity'" (Granié 2004, p. 40).

The direct target groups of the ALFA Project are 9th and 8th grade students (aged between 9 and 12 years old) of beneficiary EPPs located at the edge of a main road of the Urban Commune of Antananarivo (CUA). The final beneficiaries are the whole population of the capital, by mass awareness through radio spot broadcasts.

During the implementation of the ALFA Project:
- 25 School directors and teachers were trained in road safety awareness techniques;
- 6 schools were equipped with materials to conduct awareness-raising activities;
- 764 students were sensitised, and 42 students awarded;
- An awareness guide booklet was developed in French and Malagasy;
- A radio spot was produced and broadcasted 578 times;
- 13 traffic signs and 8 zebra crossings were put in place.

Evaluating project impact: a behavioural approach

The immediate outputs of the ALFA project were largely positive and respected the initial work plan calendar and activities. But as part of its follow-up work, Lalana decided to go further in its monitoring and evaluation activities, this time with an impact assessment perspective. However, assessing the impact of a road safety

project is not straightforward. Road safety as a whole can be improved only through a systemic approach which takes into account all components of the system: the capacity of national road safety management structures, road conditions and transportation networks, the state of vehicles, the behaviour of road users and the existing capacity of post-crash response. The impact of a project like the ALFA Project must therefore be evaluated in the context of its key specific objective: change the behaviour of pedestrians, in this case children in primary education (from 6 to 12 years old).

More than reporting the immediate results of the project, it is therefore important to assess whether the project contributed to change children's behaviour, that is: are students of beneficiary schools able to correctly apply the rules in a road crossing situation? It is also a question of understanding the successes and the limits of the project awareness-raising and training approach, particularly with a view to continuity: did the teachers who were involved in the project develop the skills to continue raising awareness on road safety issues in their schools?

The difficulties in conducting this type of assessment are further aggravated due of the lack of evaluation tools in this field. In this context, NGO Lalana established a collaboration with the Unit of Research in Traffic Psychology of Università Cattolica del Sacro Cuore in Milan, Italy (UCSC Milan) to develop impact assessment tools and conduct an evaluation of the project after one year of closure of project activities. Transaid, Lalana's partner and funder of the ALFA Project, also provided the funding for this evaluation exercise.

In addition, and in order to benefit from the methodological tools developed, the partners decided to use this opportunity to administer the same survey in the second largest city of Madagascar, Antsirabe, and in schools located on the axis of the National Road 7 (RN7), in order to gain a wider understanding of road crossing behaviour among primary school students in Madagascar. A total of 1,150 students from a total of 23 schools participated in the survey. This report focuses on the results of the ALFA project evaluation, but it includes a preliminary analysis of the overall survey results.

3. METHODOLOGY

3.1. Student's road crossing behaviour

For this part of the evaluation, the research methodology was based on another study conducted in Tanzania, Arusha Region (Perego et al. 2019) and other European studies on children's behaviour as road users (Biassoni et al., 2018).

The surveyed students answered a questionnaire divided into two parts:

- Part 1: Demographic information and context. Age, gender, how the subject travels to and from school, if she/he travels to school alone or accompanied, and if the subject was already involved in a crash as a pedestrian.

- Part 2: Areas of interest of the subject when crossing a road. Nine Malagasy road crossing scenarios photos were shown to students in random order. These scenarios represent situations of diverse complexity and are divided into three groups: scenarios with a road intersection, scenarios showing a straight road (without zebra crossing) and scenarios with zebra crossing[1]. Students should consider that they are in the perspective of the person who took the picture and want to cross the road. They must therefore indicate to the researcher the areas of the photo where they would look at in the three moments before crossing road: first look, second look and third look (see Photo 1 as an example of a scenario divided into areas of interest).

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[1] See Annex 1 for all photos used in this research, regrouped according to the type of scenario.

Figure 1 : One of the photos used in the second part of the questionnaire, with frame dividing the areas of interest.

For the ALFA project evaluation, two samples (students from EPPs who participated in the ALFA project and students from other EPPs in Antananarivo that have not participated in the project) were analysed. Two hypotheses were tested:

- **Hypothesis 1**: Students belonging to ALFA Project participant EPPs show a better ability to apply the correct road crossing rules (look first left, second right and left again before crossing), compared to students from other EPPs in the capital.

- **Hypothesis 2**: Students belonging to ALFA Project participant EPPs show a better ability to move their gaze within each photo scenario in order to identify potential risks.

In a later phase, data for all surveyed subjects will be analysed to better understand children's behaviour, taking into account other relevant variables (for example age, gender and crash experience).

3.2. Teachers awareness-raising capacity

Evaluation form

To evaluate teachers, one of the project's key target groups, on their continuous capacity to conduct awareness-raising sessions, an evaluation form was developed. The form includes 35 scoring items: 18 regarding the theoretical part and 17 concerning the practical part. The scoring system ranges from 1 to 5 per item. These items encompass all aspects of road safety awareness-raising techniques: organisation and management of students during activities, as well as the in-depth understanding of road safety themes.

Evaluation

The evaluation consisted in an observation of real awareness-raising sessions conducted by teachers of the ALFA participant EPPs. The teachers were asked to conduct the sessions following the planning established

at each school. Each session is divided into two parts: the theoretical part takes place in the classroom and the practical part takes place in the school playground. As defined during the ALFA Project, the awareness-raising session is conducted by a team of two teachers.

The team of evaluators was formed by two employees of the OEMC (Office for Mass Education and Civism) and two Lalana employees. One evaluation sheet was used for each pair of teachers.

4. DATA COLLECTION

24 EPP were chosen to participate in this study. Their geographical distribution is as follows:

- ALFA Project participant EPPs:

  - EPP Ampasanimalo

  - EPP Ambohimiandra

  - EPP Ambanidia

  - EPP Manakambahiny

  - EPP Ankadifotsy

  - EPP Antsahabe
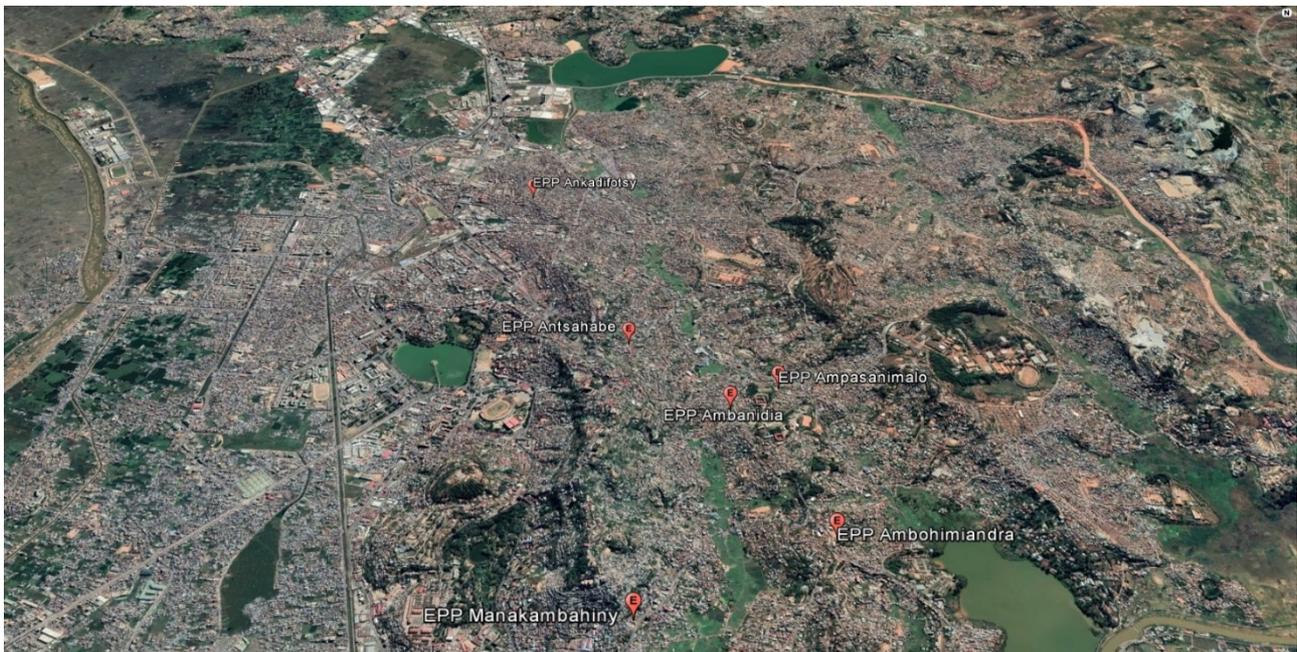
Figure 2 : Location of ALFA Project participant EPPs, City of Antananarivo

- Other EPPs in the city of Antananarivo:

  - EPP Ambohitsoa

  - EPP Mandroseza

  - EPP Ampamantanana

  - EPP Ambodirano

  - EPP Ilanivato

  - EPP Anosipatrana
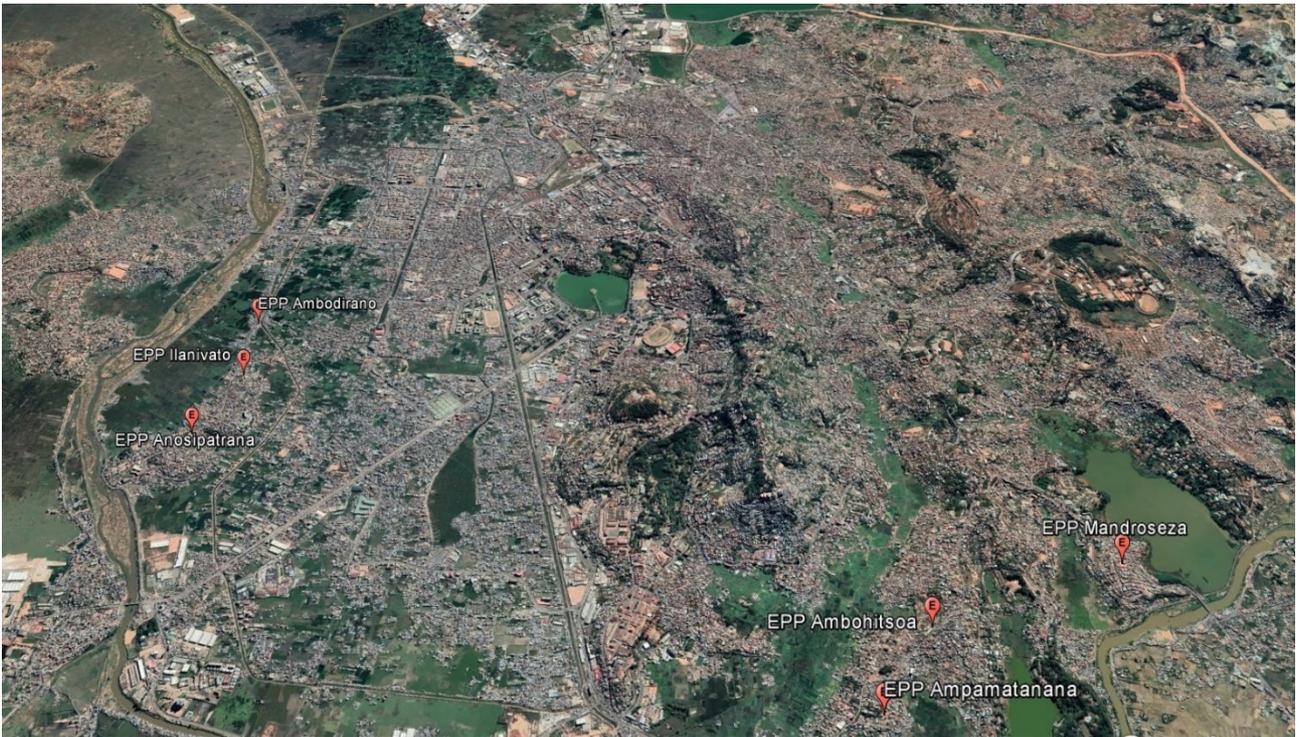
Figure 3 : Location of ALFA Project non-participant EPPs, city of Antananarivo

- Geographical area along National Road 7 (RN7) from Antananarivo to Antsirabe:

    - EPP Ambalavao

    - EPP Amboniriana

    - EPP Ambanimaso (Ambatolampy village)

    - EPP Andafiatsimo (Ambatolampy surroundings)

    - EPP Ambilona

    - EPP Ambohimanarivo (Antsirabe ring road on the RN 7 road leaving towards Fianarantsoa)

Figure 4 : Location of ALFA Project non-participant EPPs, RN7

- Geographic area in the city of Antsirabe:
    - EPP Mahazoarivo I
    - EPP Mahazoarivo II
    - EPP Garbit
    - EPP Tomboarivo
    - EPP Ambohimena
    - EPP Mandaniresaka
    - Ecole privée La Sauterelle
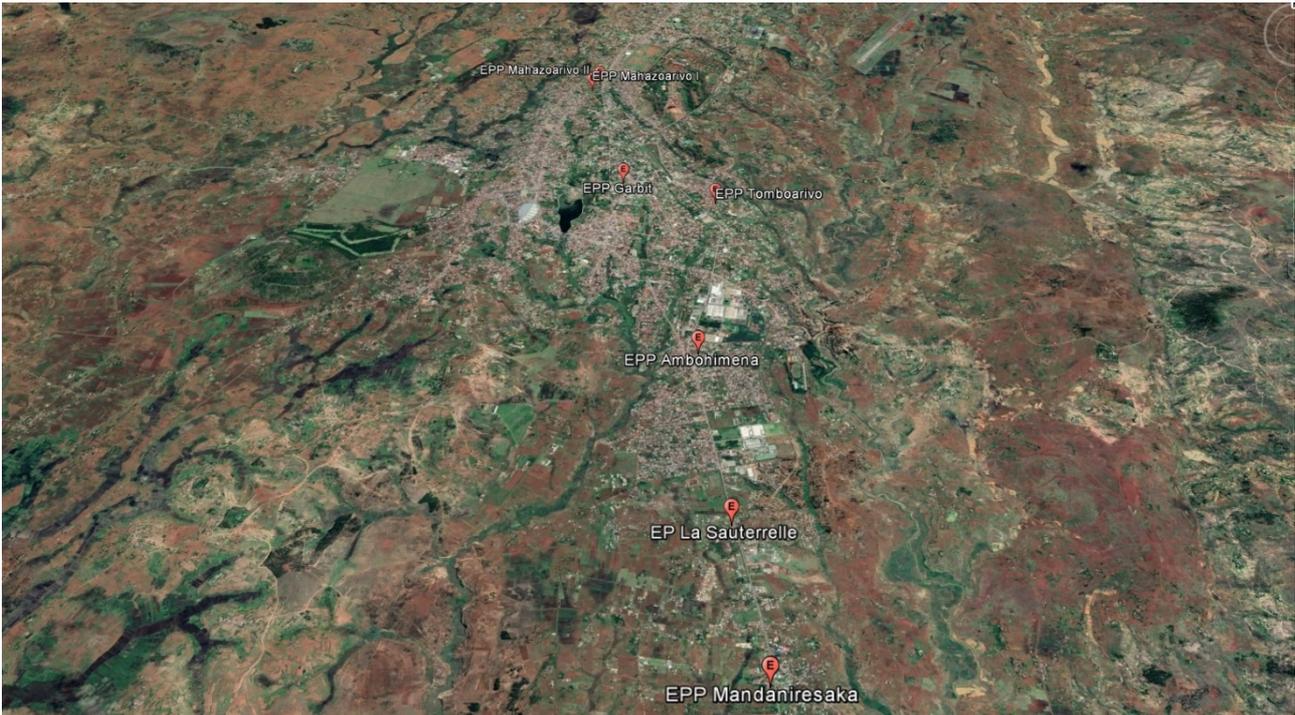
Figure 5 : Location of ALFA Project non-participant EPPs, city of Antsirabe

The geographical distribution (schools in the capital, in the second largest city, and along a main road) and sample size (minimum 200 students per school, evenly divided per grade, age, and gender) decisions were made by Ana Luisa Silva and Jessé Randrianarisoa (Lalana NGO) in agreement with Federica Biassoni and Paolo Perego (UCSC Milan). The 18 EPPs which were outside the ALFA Project were selected by the NGO Lalana, following the advice of CISCO (School Districts).

Ana Luisa Silva gave two researchers and Jessé Randrianarisoa (one of the research coordinators) a training on how to collect the data on 25 July 2019 at 11:00 GMT via Skype. Then it was the turn of these trained researchers to train the other members of the Lalana team who would be part of the research team.

Jessé Randrianarisoa and Frédin Rasolohajamanana respectively provided the supervision and the head of mission to ensure data collection was carried out as planned and with the required quality.

Given the time available to complete the research, as the school holidays were scheduled for the 23rd of August, 2019 and the exam period between the 5th and 16th of August, 2019, NGO Lalana made the decision to start the data collection activities on the 29th of July 2019, depending on the availability of each school.

4.1. Pre-test

To complete the training of the researchers and pre-empt any problems that might arise during the actual data collection, a pre-test was conducted on the 29th July 2019 at EPP Ambalavao, on the RN 7.

Jessé Randrianarisoa showed the team the procedures to follow and the 7th grade students (7th or final year of the EPP) were chosen as subjects. Ten students were surveyed, five boys and five girls.

After observing this first survey administration, the other researchers carried out their own data collection in other rooms, under the supervision of Jessé Randrianarisoa.

During this pre-test, the team experienced some difficulty handling the Excel file pre-prepared for data collection, which slowed down data collection considerably and was prone to errors. Thus, a decision was made: the research must note the answer on a written form before entering it in the computer.

4.2. Courtesy visit to CISCO offices

In order to inform government officials of the activities being carried out, courtesy visits were made to the following concerned parties:

- Heads of CISCO offices in Antsirabe Antanifotsy and Ambatolampy.

- Directors of the 24 selected EPPs.

4.3. Observations during data collection

The team found that most of the students, in all schools, seemed to have received instructions from their parents or teachers about how to cross the road, because they often repeated the sentences « ***Look left then right before crossing*** » or « ***Look South then North before crossing*** » or « ***Look North then South before crossing*** » at the moment of answering, even if they were told to simple their answer by pointing to a location in the picture.

Other students seemed to lose their bearings once some of the pictures were presented. They hesitated or looked at the researcher and tried to understand if their answer was good or not.

Other students apply what their parents or teachers have taught them: without being able to look closely at the photo that is presented to them, they indicate directly in the photo "on the left, on the right and in the middle" or "on the right, at left and in the middle", without waiting for the researcher to ask the last two questions.

The students from the EPPs that participated in the ALFA Project insisted on the instructions their teachers had recommended before proceeding to cross the road: « ***Look left then right, and left again once before crossing*** », even if the actual answers regarding the pictures do not entirely reflect these teachings (see section 5.2.

In order to reduce the chances of influencing the students' answers, the researchers met after each data collection round and agreed on the following points:

- The researcher must be patient and attentive with the children: ask the questions clearly (explain again if necessary) each time one presents a photo;
- Make sure the children understand that they are not being evaluated and that there are no right and wrong answers;
- Allow a little time (5 to 10 seconds) for the student to look at the picture;
- Do not get upset if the children are a little distracted;
- Do not guide the children in their answers;
- Do not interpret their answers, simply ask students to clearly indicate the area they are looking at first, second and last.

4.4. Data collection period

In total, 23 EPPs were surveyed among the 24 planned, because 1 EPP was already on holidays since the beginning of August - EPP Ankadifotsy, also an ALFA Project participant. The team was able to survey 1,150 students. The final check of the data collection files was completed the week of the 26th August, 2019.

It should be noted that surveying the 1,150 students took time, because each interviewer had to be very careful to listen and understand the answers. Other supporting information was collected during the research. The team took a total of five weeks to complete the data collection.

5. RESULTS

5.1. Demographic information and context

A. Age of subjects

	4 yrs old	5 yrs old	6 yrs old	7 yrs old	8 yrs old	9 yrs old	10 yrs old	11 yrs old	12 yrs old	13 yrs old	14 yrs old	15 yrs old	Total
ANTSIRABE EPP		2	14	41	36	55	55	35	40	11	8	3	**300**
RN7 TANA-ANTSIRABE	2	5	31	39	41	44	54	43	27	8	6		**300**
TANA		2	16	31	35	53	50	44	43	17	7	2	**300**
TANA ALFA		3	13	31	27	30	39	39	33	23	11	1	**250**
Nr of students	2	12	74	142	139	182	198	161	143	59	32	6	**1150**
%	0,2%	1,0%	6,4%	12,3%	12,1%	15,8%	17,2%	14,0%	12,4%	5,1%	2,8%	0,5%	**100,0%**

Table 1 : Age distribution of all students surveyed.

B. Number of male and female students surveyed

a. Male students

	4 yrs old	5 yrs old	6 yrs old	7 yrs old	8 yrs old	9 yrs old	10 yrs old	11 yrs old	12 yrs old	13 yrs old	14 yrs old	15 yrs old	Total
ANTSIRABE EPP		2	4	19	15	28	30	19	22	5	5	2	**151**
RN7 TANA-ANTSIRABE	1	1	11	21	17	23	26	18	21	6	3		**148**
TANA		1	5	18	17	23	25	20	23	8	5	2	**147**
TANA ALFA		2	8	16	12	14	19	19	18	14	8		**130**
Nr of male students	1	6	28	74	61	88	100	76	84	33	21	4	**576**
%	0,2%	1,0%	4,9%	12,8%	10,6%	15,3%	17,4%	13,2%	14,6%	5,7%	3,6%	0,7%	**100,0%**

Table 2 : Age distribution of all male students surveyed.

b. Female students

	4 yrs old	5 yrs old	6 yrs old	7 yrs old	8 yrs old	9 yrs old	10 yrs old	11 yrs old	12 yrs old	13 yrs old	14 yrs old	15 yrs old	Total
ANTSIRABE EPP			10	22	21	27	25	16	18	6	3	1	**149**
RN7 TANA-ANTSIRABE	1	4	20	18	24	21	28	25	6	2	3		**152**
TANA		1	11	13	18	30	25	24	20	9	2		**153**
TANA ALFA		1	5	15	15	16	20	20	15	9	3	1	**120**
Nr of female students	1	6	46	68	78	94	98	85	59	26	11	2	**574**
%	0,2%	1,0%	8,0%	11,8%	13,6%	16,4%	17,1%	14,8%	10,3%	4,5%	1,9%	0,3%	**100,0%**

Table 3 : Age distribution of all female students surveyed.

C. How do you arrive to school on most days?

	On foot	By bicycle	By motorcycle	By car	By public transport	Other	Total
ANTSIRABE EPP	274	9			11	6	**300**
RN7 TANA-ANTSIRABE	286	5	1	1	5	2	**300**
TANA	286	1			13		**300**
TANA ALFA	237			1	12		**250**
Means of transport	1083	15	1	2	41	8	**1150**
%	94,2%	1,3%	0,1%	0,2%	3,6%	0,7%	**100,0%**

Table 4 : How do you arrive to school on most days?

D. With whom do you usually come to school?

	Alone	With parents	With sister/brother	With friends	Other	Total
ANTSIRABE EPP	85	39	135	39	2	**300**
RN7 TANA-ANTSIRABE	29	30	145	86	10	**300**
TANA	83	37	127	51	2	**300**
TANA ALFA	71	40	112	25	2	**250**
Number of students	268	146	519	201	16	**1150**
%	23,3%	12,7%	45,1%	17,5%	1,4%	**100,0%**

Table 5 : With whom do you usually come to school?

E. How do you go back home from school on most days?

	On foot	By bicycle	By motorcycle	By car	By public transport	Other	Total
ANTSIRABE EPP	279	7			9	5	**300**
RN7 TANA-ANTSIRABE	283	7	3	1	4	2	**300**
TANA	288	1	2		9		**300**
TANA ALFA	238				12		**250**
Means of transport	1088	15	5	1	34	7	**1150**
%	94,6%	1,3%	0,4%	0,1%	3,0%	0,6%	**100,0%**

Table 6 : How do you go back home from school on most days?

F. With whom do you go back home from school on most days?

	Alone	With parents	With sister/brother	With friends	Other	Total
ANTSIRABE EPP	67	30	127	74	2	**300**
RN7 TANA-ANTSIRABE	34	32	129	97	8	**300**
TANA	71	29	116	80	4	**300**
TANA ALFA	56	25	111	56	2	**250**
Number of students	228	116	483	307	16	**1150**
%	19,8%	10,1%	42,0%	26,7%	1,4%	**100,0%**

Table 7 : With whom do you go back home from school on most days?

G. As a pedestrian, did you ever experience a crash involving:

	A car	A motorcycle	A bicycle	Other	Never experienced a crash	Total
ANTSIRABE EPP	3	6	77	12	202	**300**
RN7 TANA-ANTSIRABE	3	5	18	1	273	**300**
TANA	7	6	33	3	251	**300**
TANA ALFA	10	17	13	2	208	**250**
Number of students	23	34	141	18	934	**1150**
%	2,0%	3,0%	12,3%	1,6%	81,2%	**100,0%**

Table 8 : As a pedestrian, did you ever experience a crash?

5.2. Discussion of the results

The overall analysis of the choices of the 1,150 students surveyed presented below in Chart 1 allows us to identify some important points before discussing the pre-defined ALFA Project evaluation hypotheses:

- A large percentage of the surveyed students first look to their *right* before crossing the road (39% in all surveyed EPPs) when presented with a picture scenario, instead of looking to their *left*, as per the rules of the road in a country where cars drive in the right lane (as is the case in Madagascar). This percentage is slightly lower in ALFA schools (32%), where the figure represents one third of the pupils surveyed.

- The majority of subjects (59%) crosses the road after checking only two areas of interest, that is, their third gaze goes to the middle of the photo, which effectively represents the act of crossing the road. The only group of schools that represents an exception is the group of ALFA participant EPPs, with a

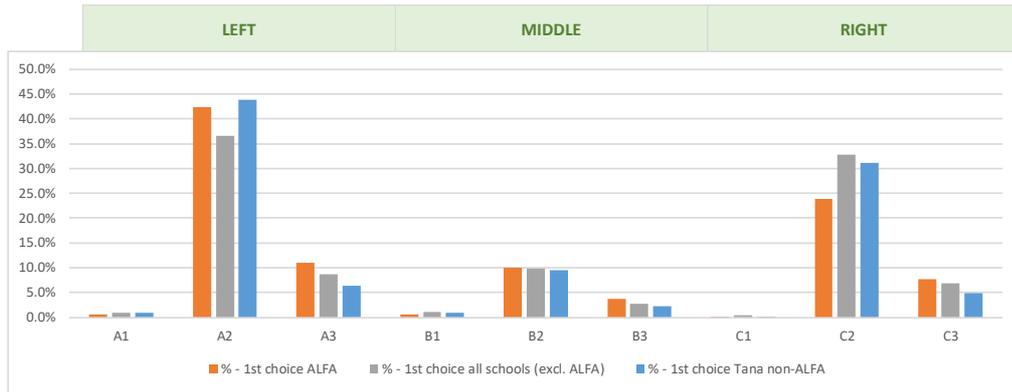smaller percentage (32%) of students identifying the middle of the photo as their third area of interest.

- The differences between male and female student answers are minimal (Graphs 2 and 3). Differences by age are also minimal, except for ALFA EPP students, where 8th and 9th grade students seem to be able to better follow the correct road crossing rules (see discussion of Hypothesis 1).
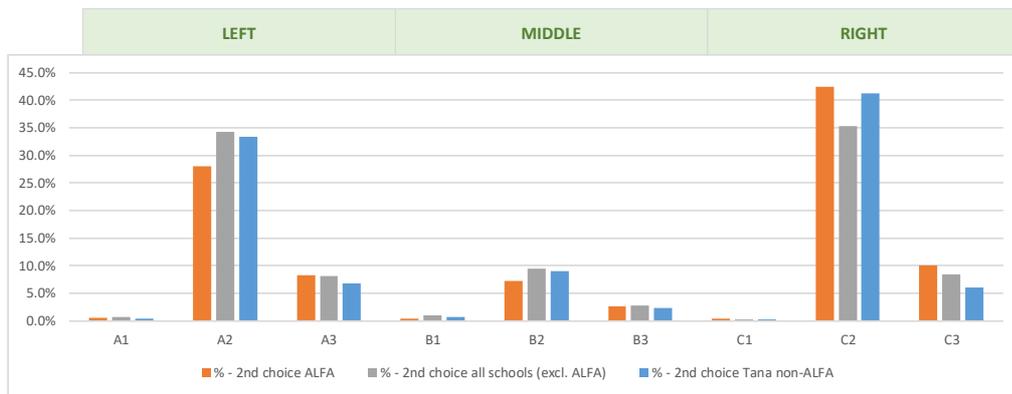

Chart 1 : Gaze distribution averaged for all pictures and all students surveyed
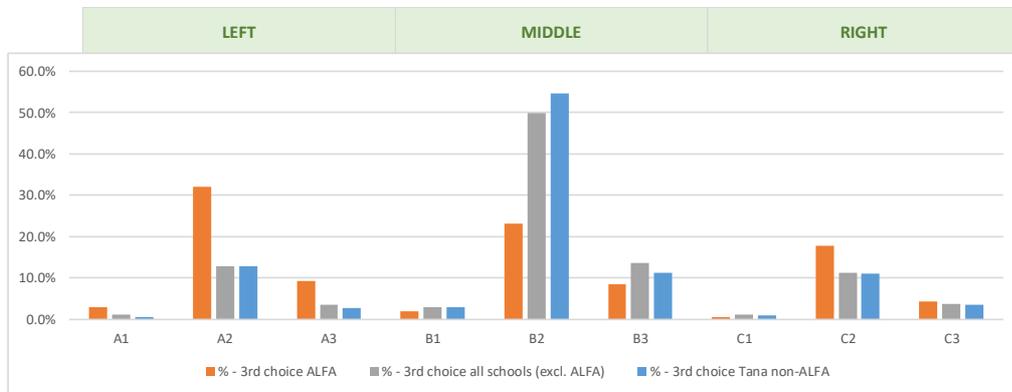
Chart 2 : Gaze distribution averaged for all pictures for all MALE students surveyed

Chart 3 : Gaze distribution averaged for all pictures for all FEMALE students surveyed

Hypothesis 1: Students belonging to ALFA Project participant EPPs show a better ability to apply the correct road crossing rules (look first left, second right and left again before crossing), compared to students from other EPPs in the capital.

This hypothesis was confirmed. The comparison of the number of correct answers[2] given by the students of the two samples (EPP ALFA and non-ALFA EPP in Antananarivo) shows that the number of students able to

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[2] To calculate the number of correct answers, we first identified the correct zones of interest (left and right) in each scenario, presented in Annex 2. We then identified the students in each of the samples who we were able to provide a correct answer within the several possibilities.

apply the correct rules for different road crossing scenarios is on average 20% higher in the EPPs that participated in the ALFA Project. This difference is statistically significant[3].

Photo	EPP ALFA		EPP ALFA (≥ 9 years old)		EPP non-ALFA	
	N = 250	%	N = 176	%	N = 300	%
1	79	32%	75	43%	19	6%
2	79	32%	73	41%	22	7%
3	69	28%	65	37%	21	7%
4	77	31%	74	42%	23	8%
5	86	34%	82	47%	28	9%
6	80	32%	76	43%	25	8%
7	77	31%	73	41%	25	8%
8	71	28%	68	39%	16	5%
9	85	34%	80	45%	22	7%
Average %		31%		42%		7%

Table 9 : Comparison of the total number of correct answers between the two samples (ALFA / Non-ALFA Antananarivo).

It should be noted that almost all students who have correctly applied the road crossing rules in the ALFA EPP are children aged 9 or older, which makes it likely that they benefited directly from the awareness-raising activities by Lalana facilitators. However, even among this group of students, only 42% used the rules correctly for all pictures.

Hypothesis 2: Students belonging to ALFA Project participant EPPs show a better ability to move their gaze within each photo scenario in order to identify potential risks.

This hypothesis was not confirmed. To test this hypothesis, we counted the total number of gazes in each area of the photo, without taking into account the road crossing rules. For this analysis, the pictures were divided into three groups, depending on the type of road crossing scenario:

- Group 1: intersection scenario (Photos 1, 2 and 3)

- Group 2: straight road without zebra crossing scenario (Photos 4, 5 and 6)

- Group 3: scenario with zebra crossing (Photos 7, 8 and 9)

The results of this exercise show that, in the two samples considered (EPP ALFA and EPP Tana non-ALFA), children's gazes are concentrated in zones A2, B2 and C2, with little distribution in other areas (Graphs 4, 5 and 6). The exception is the ALFA sample in Scenarios Group 2 (straight road without zebra crossing), where the gaze is distributed between A2, A3, B2, C2 and C3. Finally, ALFA EPP students look less at the centre of the images, which is explained by the higher number of students who correctly apply the rules of the road before crossing (as we have observed in Hypothesis 1).

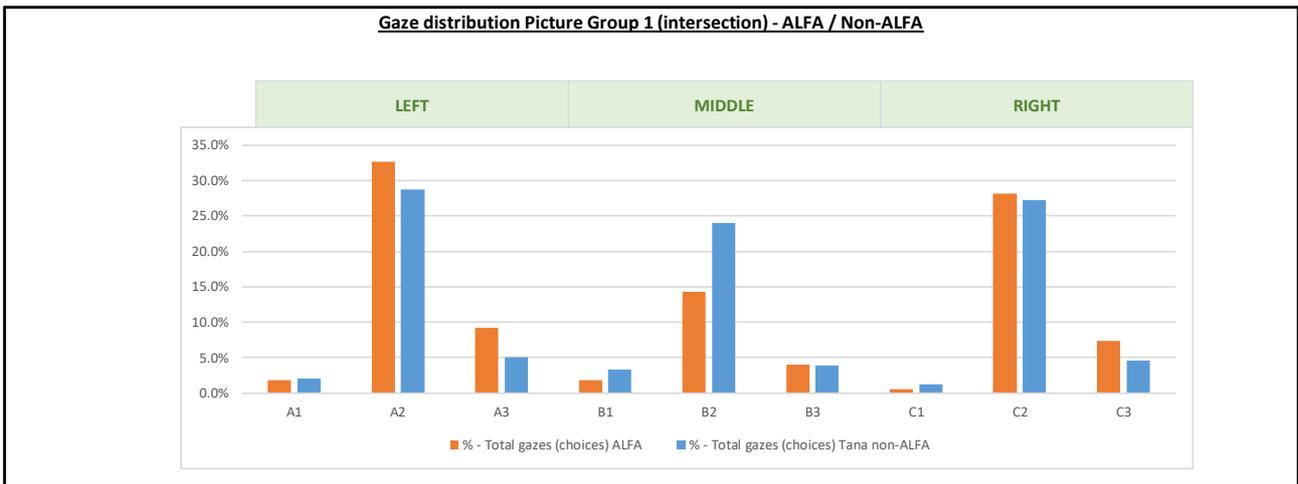[3] The t Test results are reproduced in Annex 3.

Chart 4 : Gaze distribution Picture Group 1 (intersection) - ALFA / Non-ALFA
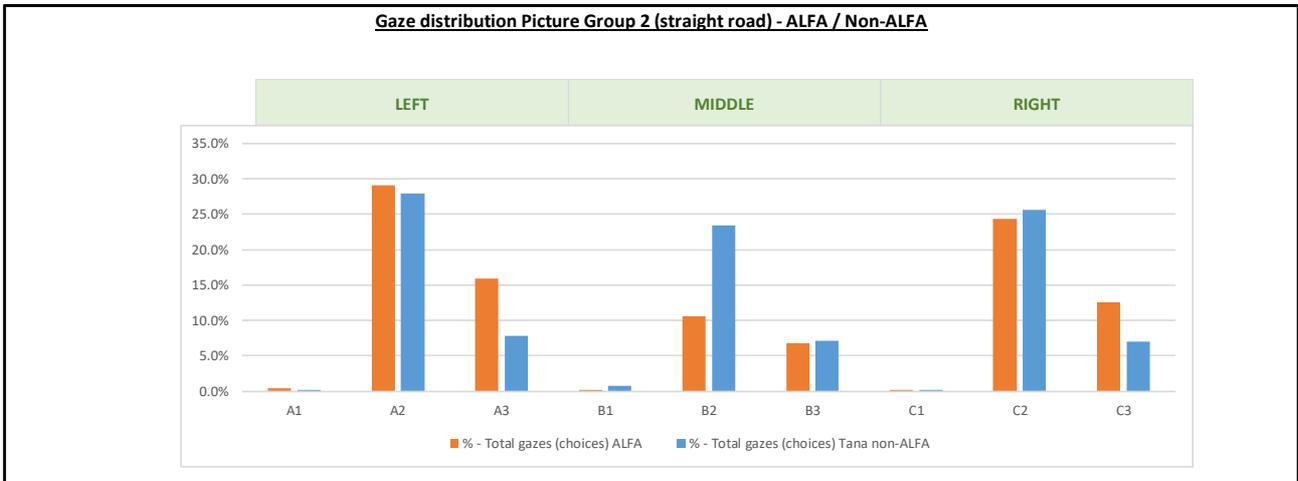

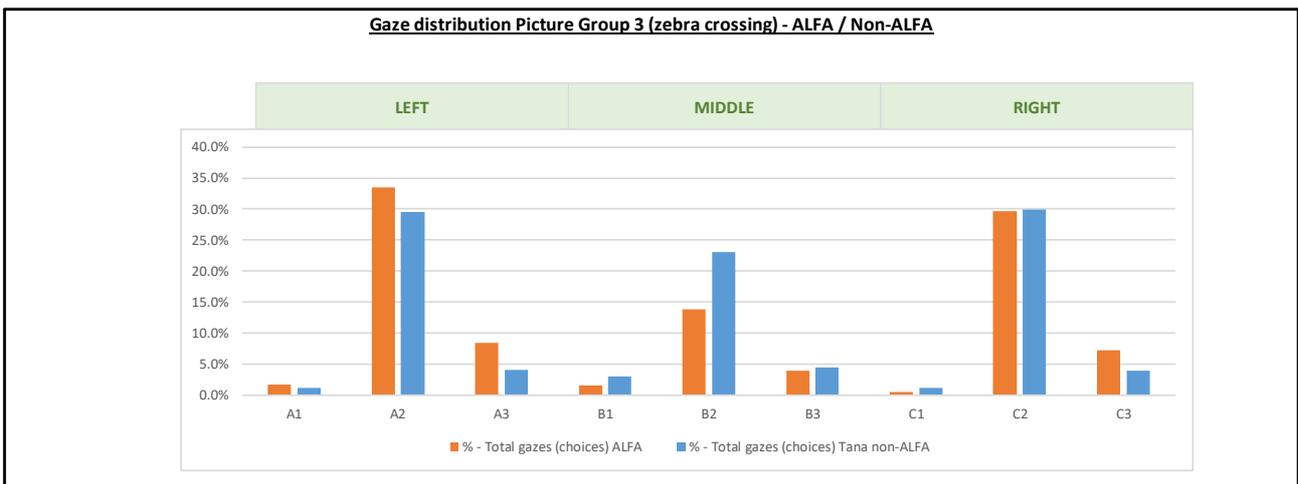**Chart 5 : Gaze distribution Picture Group 2 (straight road) - ALFA / Non-ALFA**

Chart 6 : Gaze distribution Picture Group 3 (zebra crossing) - ALFA / Non-ALFA

5.3. Teacher evaluation results

Overall, the teacher evaluation results for awareness-raising capacity are good. The average score, for the 6 schools included in the evaluation, is 6.74 / 10, with a higher score of 8.47 / 10 and a lower score of 5.42 / 10. Several factors have determined these variations, but the strongest determinant was the replacement of

teachers trained by Lalana by new teachers. Clearly, teachers who had previously been trained twice by Lalana facilitators are much better able to master both theory and practice of awareness-raising sessions. It was also been observed, in the group of teachers evaluated, that women conduct the awareness-raising sessions more clearly and eloquently than men. The detailed teacher evaluation report can be consulted separate to this report.

6. THE IMPACT OF THE ALFA PROJECT

- From the analysis of the survey data collected, it is clear that the ALFA Project has had a positive impact on the school children's ability to correctly apply the road crossing rules. ALFA EPPs students show a higher ability to apply the correct road crossing rules when presented with a real scenario, when compared with students from a sample of other EPPs in Antananarivo (31% vs. 7%), a statistically significant difference.

- However, the impact of the project beyond the children who participated in the activities directly managed by the Lalana technicians (8th and 9th graders) is not significant - almost all the children in the ALFA EPP who have applied the rules correctly are children aged 9 and over. This result might be related to teachers' reduced ability to carry out the activities independently (without Lalana's support and supervision) and to train their colleagues (which is important in a context where teacher rotation is high).

- The ability of children to move their gaze within the pictures, across the different areas of interest inside, shows no significant difference between the two groups (ALFA/non-ALFA).

- The impact of the project has only been analysed regarding one component of the act of crossing the road (respect of the rules before crossing). The survey has also allowed Lalana to collect wider data about the reality of pedestrian behaviour among young school children in Madagascar, which will be used to improve Lalana's road safety education approach and integrate other important components of child-pedestrian behaviour, including: site selection before crossing, identifying risks and reinforcing attention.

- The capacity of the teachers trained during the ALFA Project in road safety awareness-raising techniques has shown to be good upon evaluation, although the schools must address the challenge of teacher rotation to ensure continuing capacity.

7. CONCLUSION

One year after ALFA Project concluded its activities, NGO Lalana, with the support of Transaid and the collaboration of the Unit of Research in Traffic Psychology (UCSC Milan), decided to conduct this impact assessment with a learning perspective. The goal was to gain a better understanding of the strengths and weaknesses of the ALFA Project approach in educating children in road safety themes. The evaluation methodologies used in this evaluation are innovative in the context of road safety education and have also allowed for wider data collection to better understand the overall context of children's behaviour as pedestrians in Madagascar.

As previously noted in this report, many factors contribute to safer roads with a lower rate of crashes which can affect schoolchildren, thus it cannot be said that the awareness-raising activities conducted by NGO Lalana's team alone will lead to a decrease in the number of road crashes. Nevertheless, the sensitised students in ALFA participant schools show an improved ability to apply the knowledge needed to cross the roads, which contributes to their ability to move safely in the streets, despite the aggravating traffic circumstances in the Malagasy capital.

Schools that have participated in the ALFA project have expressed their willingness to continue raising awareness for future generations. Despite the teachers' ability to retain the awareness-raising capacity a year after the initial training, schools would benefit from continuing support, since a number of teachers are either assigned to a different school or retire each school year.

The results of this impact assessment will contribute to a revision of the techniques used by Lalana build teacher capacity in road safety education and to teach students not to memorize rules, but to correctly apply them when facing a real situation.

8. BIBLIOGRAPHY

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Annex 1 : Scenarios (photos) with framing of the areas of interest.

Group 1: scenarios with intersections

Photo 1

Photo 2

Photo 3

Group 2: straight road, no zebra crossing

Photo 4

Photo 5

Photo 6

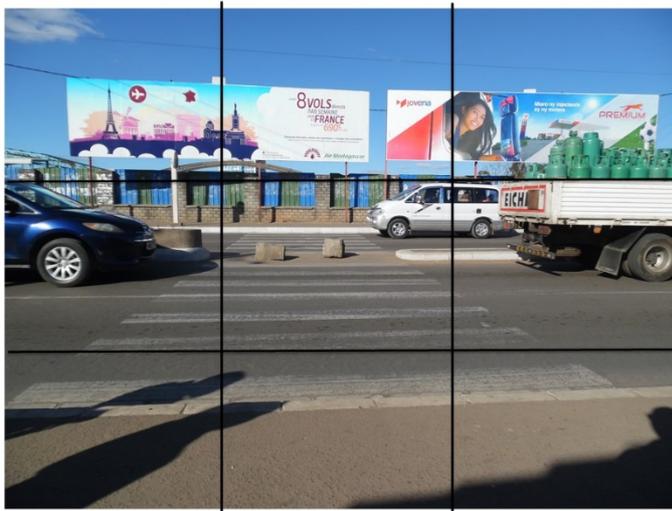Photo 7

Photo   8
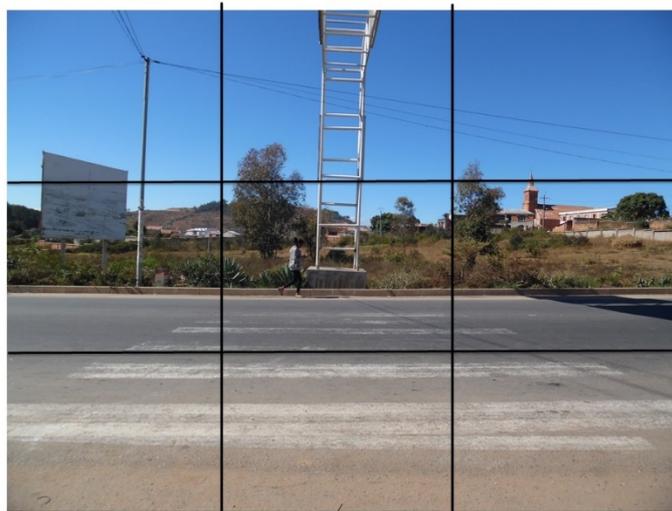

Photo 9

Annex 2 : Results of the analysis _ t Test (SPSS)

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Pic1	Equal variances assumed	351.870	.000	-8.149	548	.000	-.253	.031	-.314	-.192
	Equal variances not assumed			-7.737	360.163	.000	-.253	.033	-.317	-.188
Pic2	Equal variances assumed	296.170	.000	-7.689	548	.000	-.243	.032	-.305	-.181
	Equal variances not assumed			-7.332	375.047	.000	-.243	.033	-.308	-.178
Pic3	Equal variances assumed	221.708	.000	-6.756	548	.000	-.206	.030	-.266	-.146
	Equal variances not assumed			-6.449	379.195	.000	-.206	.032	-.269	-.143
Pic4	Equal variances assumed	262.417	.000	-7.326	548	.000	-.231	.032	-.293	-.169
	Equal variances not assumed			-6.998	381.487	.000	-.231	.033	-.296	-.166
Pic5	Equal variances assumed	266.818	.000	-7.576	548	.000	-.251	.033	-.316	-.186
	Equal variances not assumed			-7.269	396.592	.000	-.251	.034	-.318	-.183
Pic6	Equal variances assumed	259.548	.000	-7.358	548	.000	-.237	.032	-.300	-.173
	Equal variances not assumed			-7.042	388.238	.000	-.237	.034	-.303	-.171
Pic7	Equal variances assumed	235.137	.000	-7.036	548	.000	-.225	.032	-.287	-.162
	Equal variances not assumed			-6.739	390.826	.000	-.225	.033	-.290	-.159
Pic8	Equal variances assumed	323.705	.000	-7.763	548	.000	-.231	.030	-.289	-.172
	Equal variances not assumed			-7.348	350.151	.000	-.231	.031	-.292	-.169
Pic9	Equal variances assumed	355.311	.000	-8.335	548	.000	-.267	.032	-.330	-.204
	Equal variances not assumed			-7.938	370.789	.000	-.267	.034	-.333	-.201

Annex 3 : Photos with correct areas of interest according to road crossing rules (left-right-left)