

ITARDA INFORMATION

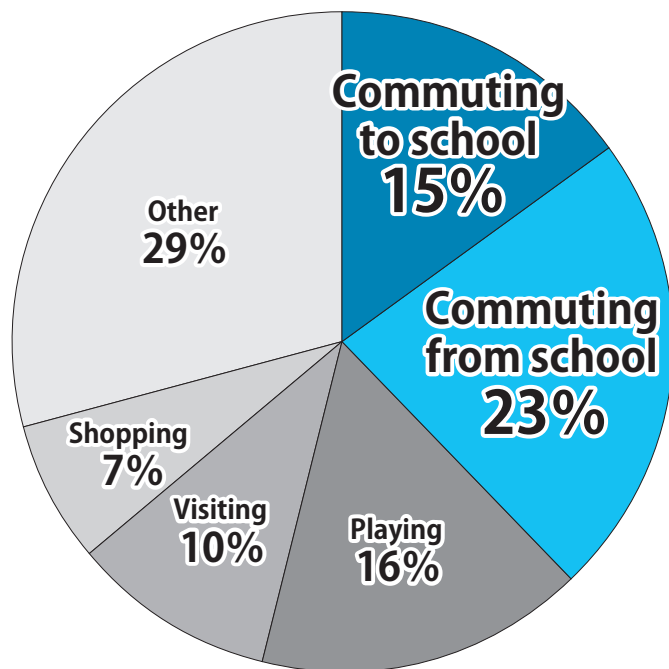
交通事故分析レポート

No.121

Special feature

Casualty accidents experienced by first graders while commuting to and from school

~ Aiming for zero traffic accidents while commuting to and from school ~



Composition of trip purposes when casualty accidents involving first graders while walking occurred (2015)

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1 Introduction

As shown in Fig. 1, the largest number of casualties from traffic accidents while walking is found among seven-year-old children, with this number coming to 1,462 casualties in 2015. Moreover, Fig. 2 graphs the number of casualties from traffic accidents while walking over five year increments between 1995 and 2015. For easier comparison against Fig. 1, the accidents from 2015 alone are represented in a bar graph, while the other years using broken line graphs. Apparently, the number of casualties among seven-year-old children has been gradually decreasing, yet seven-year-old children still account for the highest numbers of casualties in each year. When we checked to confirm the data from 1990 onward, which is the year that the Institute for Traffic Accident Research and Data Analysis (ITARDA) began keeping statistics on traffic accident data, we found that seven-year-old children have accounted for the greatest number of casualties from traffic accidents while walking since 1994. In the 22-year period lasting through 2015, which constitutes the latest data at this point in time, there has been no change in this trend whereby the number of casualties among seven-year-old children noticeably stands out (between 1990 and 1993 six-year-old children accounted for the most casualties, while seven-year-old children were in second place).

Given the situation, for ITARDA Information No. 116, published in June 2016, we compiled a special feature on traffic accidents involving children while walking, organizing their characteristics by time period, day, trip purpose, and gender. In this issue of ITARDA Information No. 121, we will further advance this analysis by focusing our attention on traffic accidents involving first graders while commuting to and from school in an effort to organize their characteristics primarily around the time periods and locations of such accidents.

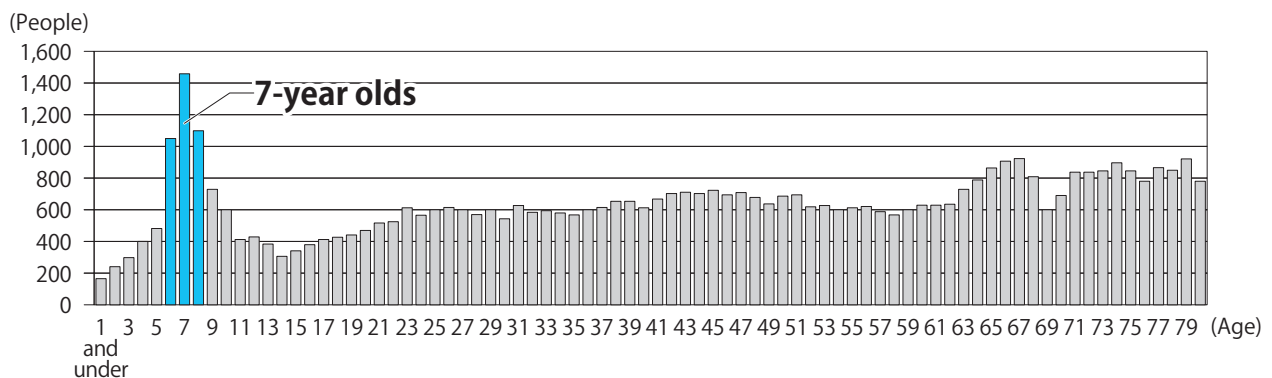


Fig. 1. Number of casualties from traffic accidents while walking (2015)

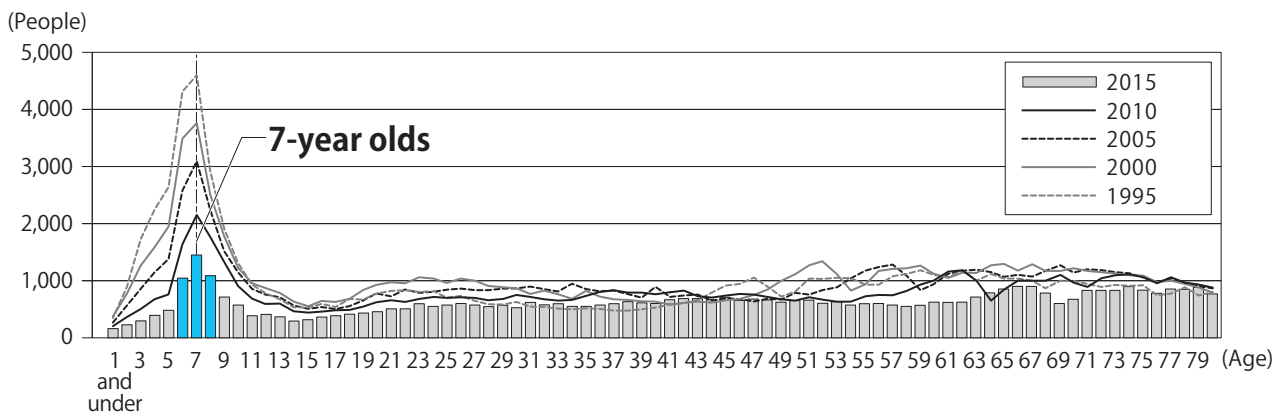


Fig. 2. Number of casualties from traffic accidents while walking (1995 - 2015)

2 Changes in traffic accidents involving first graders while walking over the past 20 years

Fig. 3 graphs the composition of trip purposes for first graders (Axis 1) and trends in the number of casualties (Axis 2) with regard to casualty accidents involving first graders while walking that occurred between 1996 and 2015. Looking back over the past 20 years reveals that the greatest number of casualties from traffic accidents involving first graders while walking was 5,128 back in 1996. A downward trajectory has continued since then, with the number falling down to 1,553 casualties by 2015. However, virtually no changes have been seen in the composition of trip purposes for first graders, with the share of accidents that occur while commuting to and from school holding largely steady at around 35%.

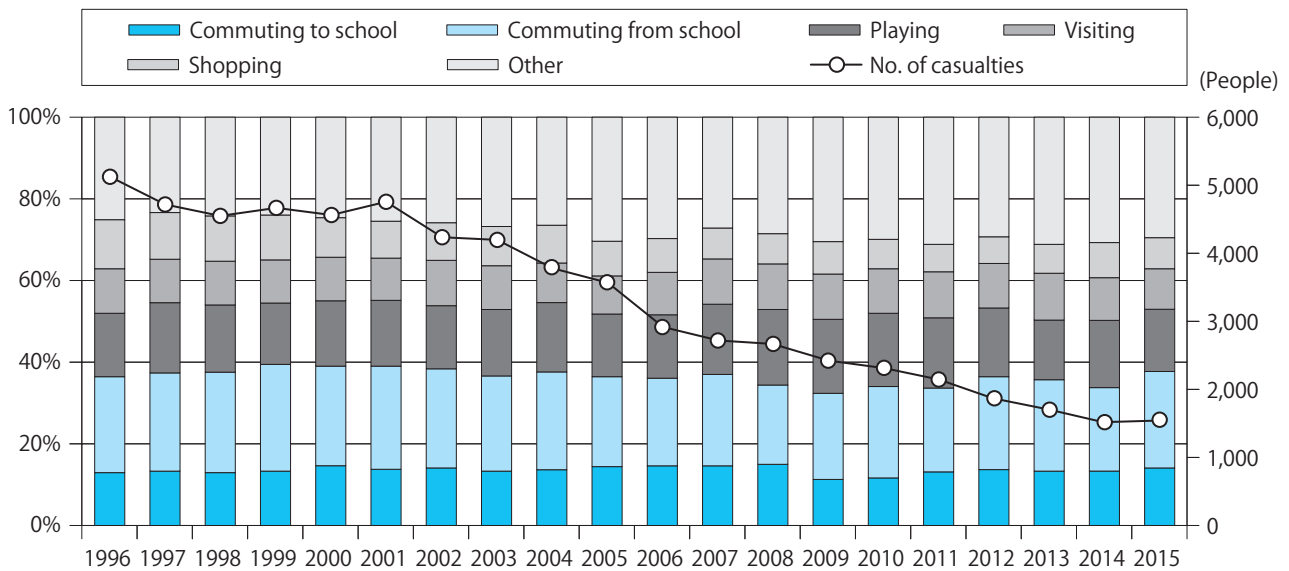
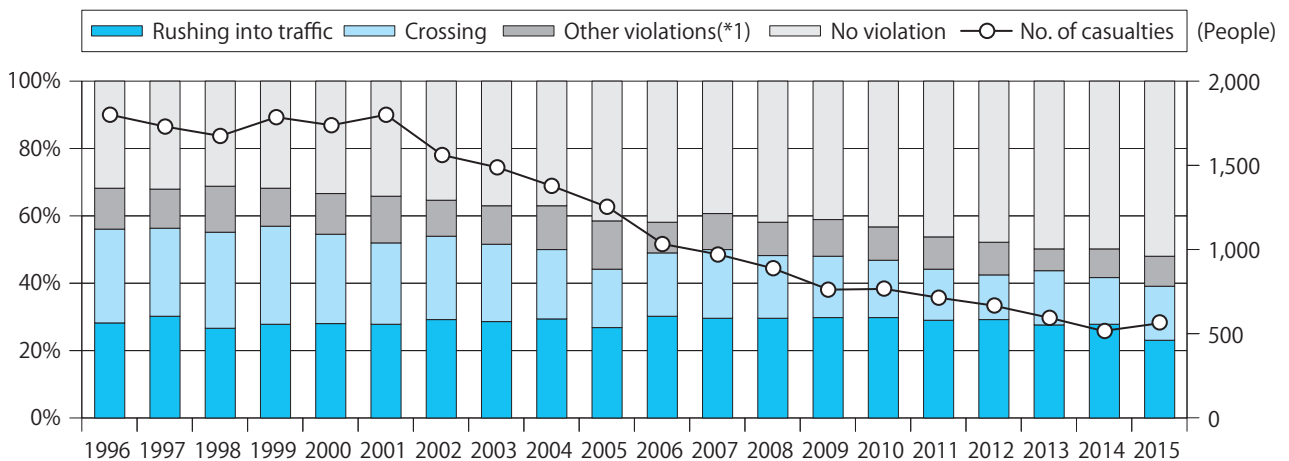


Fig. 3. Composition of trip purposes when casualty accidents occurred involving first graders while walking

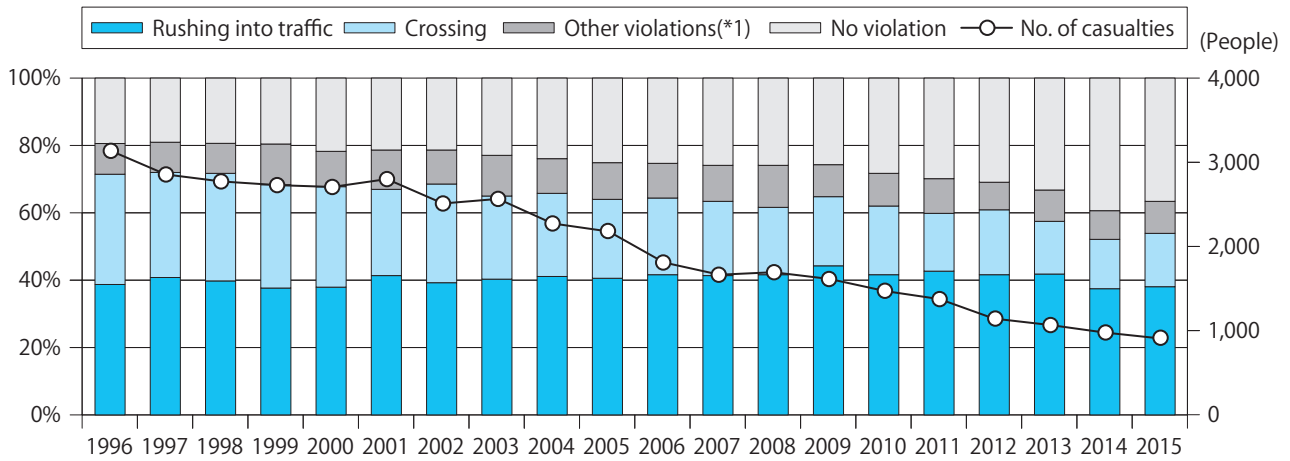
Next, Fig. 4 graphs the composition of legal violations committed by the pedestrian with regard to casualty accidents involving first graders while walking that occurred while commuting to or from school. Just like with Fig. 3, it displays trends in conjunction with the number of casualties. Moreover, Fig. 5 shows a graph in the same manner regarding casualty accidents while the child was out walking for purposes other than commuting to or from school. Regardless of whether the accident occurred while commuting to or from school or at some other time, in the composition of traffic accidents on the part of the first graders the percentage of cases where no violation occurred has been growing larger year-by-year. To that extent, the percentage of violations related to crossings, such as crossing the street outside of pedestrian crossings or crossing at an angle, has been decreasing. Yet virtually no change has been seen with the percentage of accidents where someone rushes out into traffic. The percentage of accidents where the child rushes out into traffic tends to be on the high side for traffic accidents involving children while walking, and is not limited to first graders alone. Therefore, in order to reduce the number of traffic accidents involving children while walking, we feel that it is crucial to respond to accidents in which the child rushes out into traffic.

Furthermore, comparing accidents that occurred while commuting to or from school and those at other times reveals that there is a large percentage of cases in which the person involved in an accident that occurred while commuting to or from school did not commit any violation. From the accidents that occurred in 2015, the pedestrian did not commit any sort of legal violation in roughly half of the casualty accidents involving first graders commuting to or from school. In regards to this point, accidents while commuting to or from school cannot be eliminated solely through responses on the part of the pedestrian (first grader). As such, we decided to once again analyze responses on the driver's side, and here we would like to pull together what can be done in terms of responses on the pedestrian's side.



(*1) Other violations include cases where a legal violation has occurred, but it is unclear how the content of the violation should be classified

Fig. 4. Composition of legal violations with regard to casualty accidents while first graders are walking on their commute to or from school (primary / secondary parties)



(*1) Other violations include cases where a legal violation has occurred, but it is unclear how the content of the violation should be classified

Fig. 5. Composition of legal violations with regard to casualty accidents while first graders are walking for purposes other than commuting to or from school (primary / secondary parties)

3 Characteristics of the locations where traffic accidents occur while walking on the commute to or from school or for other purposes

In what sorts of locations do casualty accidents involving first graders commuting to or from school occur? In the analysis hereafter, we would like to take a look at the characteristics of the accident locations by comparing those accidents that occurred while commuting to or from school with those that occurred at other times by focusing on those accidents that occurred in 2015.

For Fig. 6, we classified the road configurations for the locations where casualty accidents involving first graders while walking occurred into the following categories: Intersections, near intersections, non-intersections (both straight and curved roads), and other (railroad crossings, etc.). We then displayed the composition for these in circle graphs. Compared with accidents that occurred while not commuting, the percentage of accidents while commuting to or from school is slightly higher at intersections. Furthermore, accidents while commuting to or from school are similar to the composition for road configurations for accidents while walking among all age groups. Even in the aforementioned composition of legal violations, the percentage of cases in which there was no legal violation was larger with accidents while commuting to or from school than with those at other times. Therefore, the thinking is that children travel by following the rules to a comparatively greater degree while commuting to or from school compared with other times.

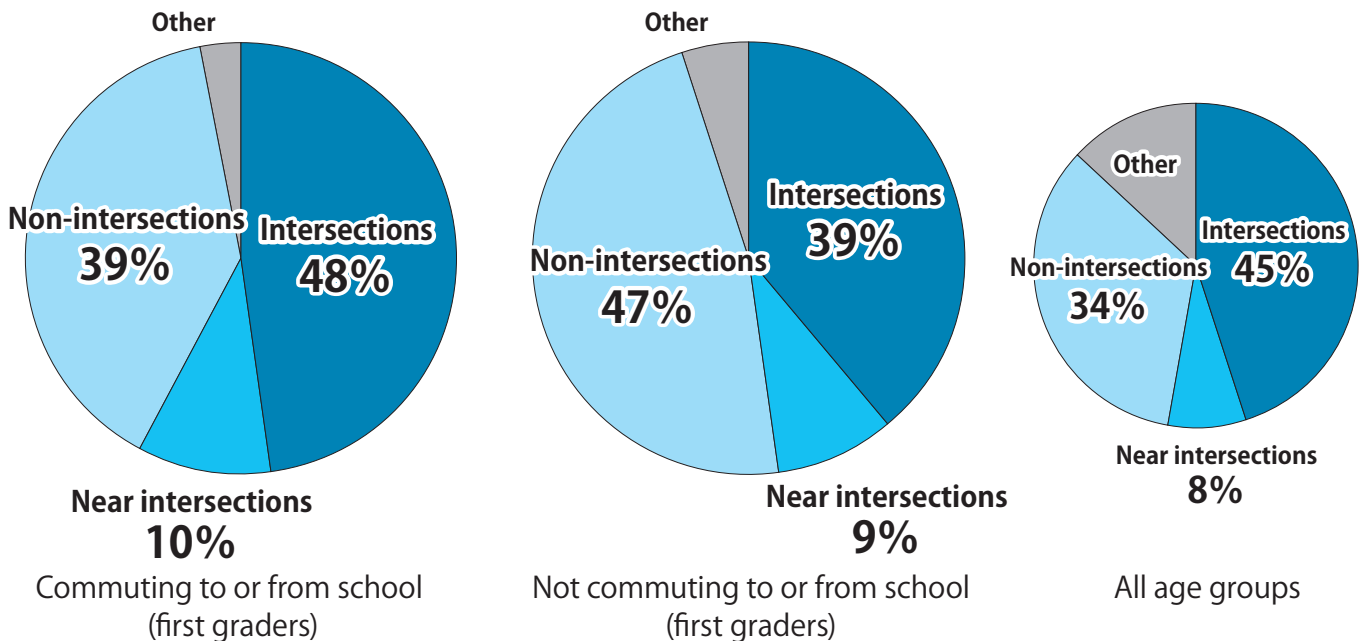


Fig. 6. Composition of road configurations where casualty accidents while walking occurred (2015)

We would like to advance the analysis further. Fig. 7 graphs the composition of pedestrian movements when casualty accidents while walking occurred at intersections or near intersections. Similarly, Fig. 8 shows the movement of pedestrians in accidents that occurred at non-intersections.

In every case, 80% or more of the casualty accidents while walking that occurred in intersections or near intersections that are shown in Fig. 7 consisted of accidents while crossing in pedestrian crossings or elsewhere. With accidents involving first graders that occurred when not commuting to or from school, a somewhat higher share of accidents occurred while crossing somewhere other than a pedestrian crossing. But the composition of accidents involving first graders featured a composition rate that was virtually identical to that for all age groups, which is similar to the trend for the composition of the aforementioned road configurations (Fig. 6).

On the other hand, differences were seen in the composition between first graders and all age groups with regard to the casualty accidents while walking at non-intersections as shown in Fig. 8. For accidents involving first graders, the percentage of accidents while crossing exceeded 50%, even for accidents that occurred at non-intersections. Moreover, with accidents while commuting to or from school, the percentage of accidents that occurred while crossing at a pedestrian crossing is somewhat on the high side. This is thought to be because there are lots of opportunities to cross streets by properly using pedestrian crossings while commuting to and from school as opposed to at other times, and so pedestrian crossings make up a larger percentage of the locations where accidents occur.

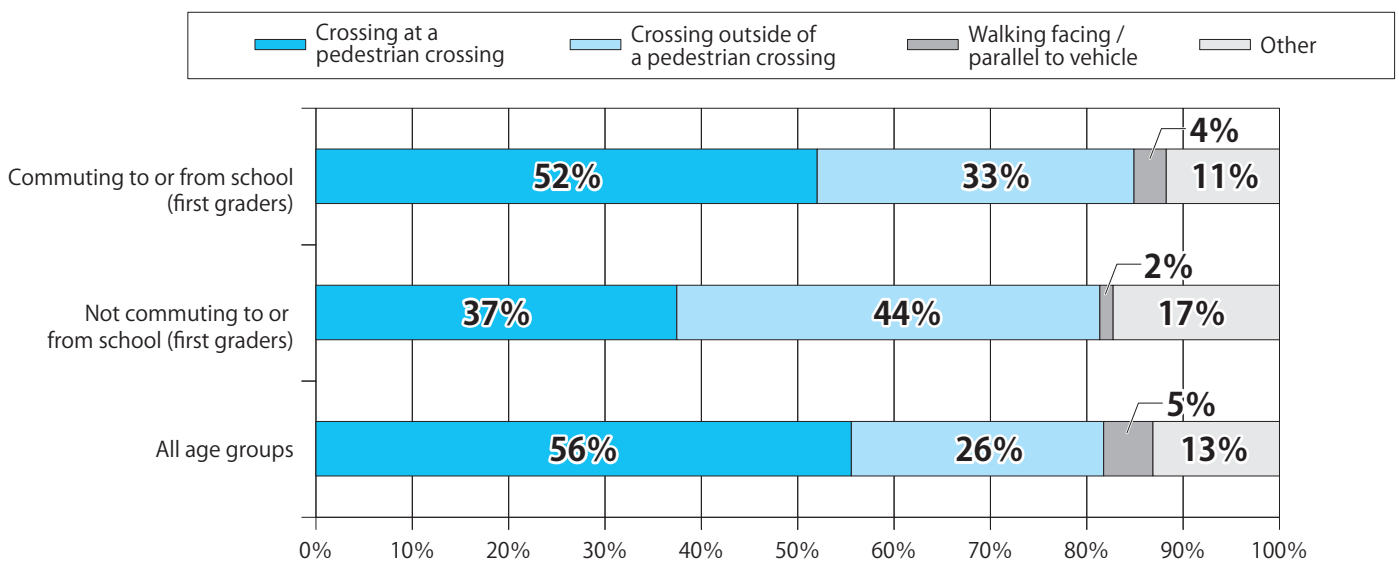


Fig. 7. Composition of pedestrian movement when casualty accidents occurred while walking at intersections and near intersections (2015)

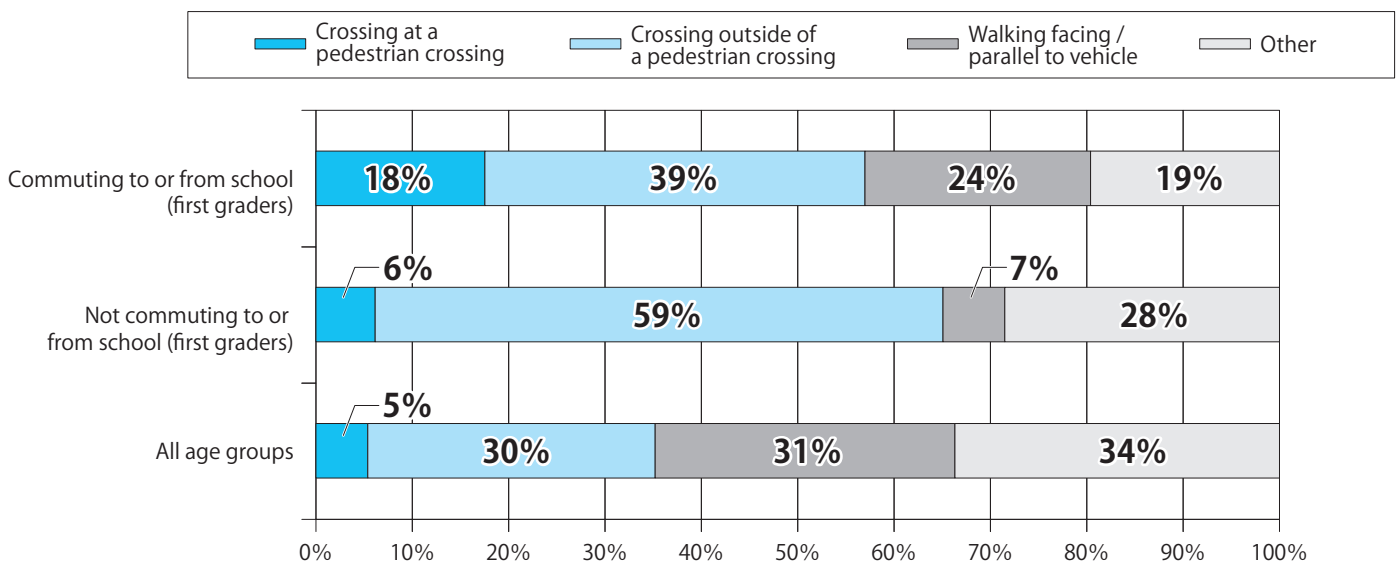


Fig. 8. Composition of pedestrian movement when casualty accidents occurred while walking at non-intersections (2015)

4 Characteristics of the number of casualties by month from preschoolers through second graders

Next, we would like to take a look at the time periods in which the accidents occur. The number of casualties from traffic accidents involving children in the highest classes of kindergarten or preschool through second graders (April 2012 - March 2015) while walking, with a focus on children that entered elementary school in 2013, have been tallied and graphed into Fig. 9. Similarly, Fig. 10 shows the number of casualties by month among children in the highest classes of kindergarten or preschool through second graders (April 2011 - March 2014) for those children that entered elementary school in 2012, which corresponds to the year before that from Fig. 9. Both Fig. 9 and Fig. 10 show a very similar distribution, which indicates that the changes in the number of casualties by month shown here does not seem to exhibit any sort of unique trend in individual years. We would like to take a look at characteristics regarding the trends in the number of casualties by month using these two graphs.

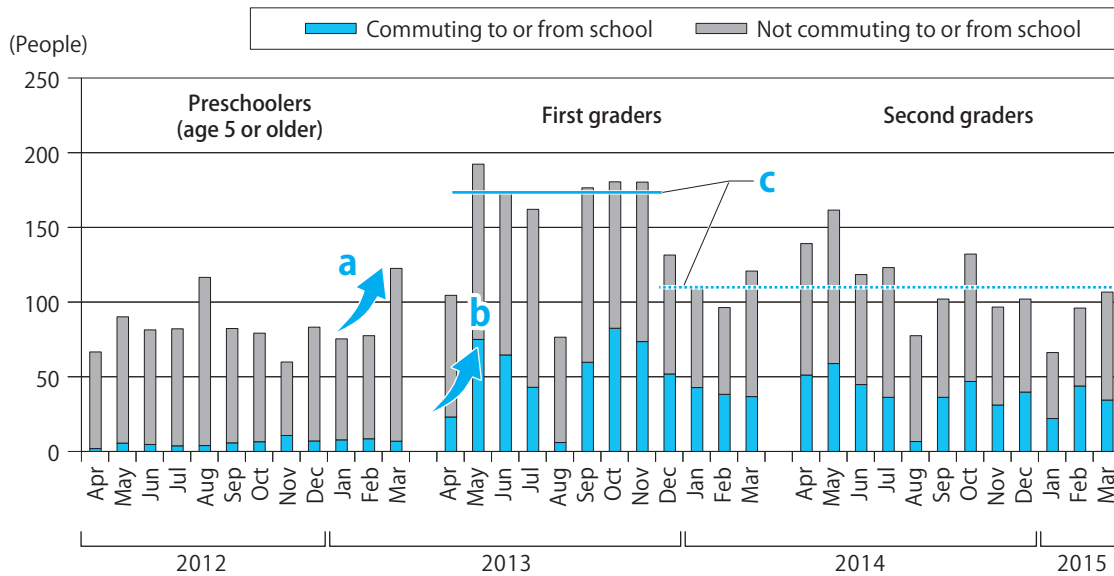


Fig. 9. Number of casualties by month from casualty accidents involving preschoolers through second graders while walking (April 2012 - March 2015)

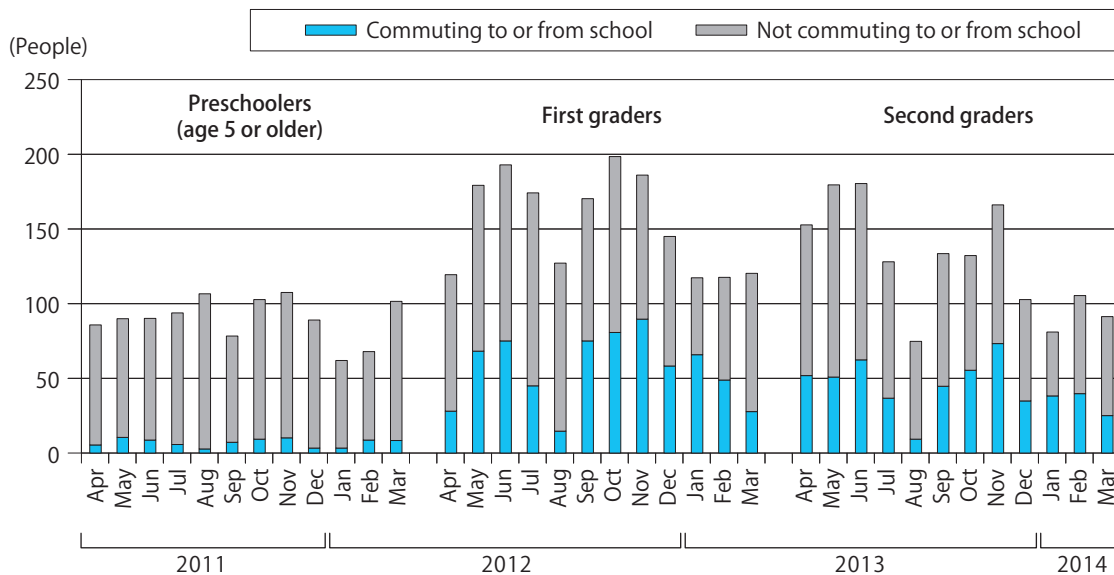


Fig. 10. Number of casualties by month from casualty accidents involving preschoolers through second graders while walking (April 2011 - March 2014)

Here we would like to take a look at the three characteristics represented by a, b, and c in Fig. 9. The first characteristic relates to changes in the number of casualties among preschoolers. Prior to entering elementary school, children do not get into many accidents while commuting to or from school (preschool or kindergarten). But if you look at the total number of casualties, including when they are not commuting to or from school, you will see that the number gradually increases starting from around the January prior to when the children enter elementary school (a in Fig. 9). After entering elementary school, the children's opportunities to go out alone without being accompanied by a parent increase, and as they draw closer to the point of entering elementary school their opportunities to go out alone or to travel apart from their parents gradually increase. For this reason, it is perhaps possible that the increase in the number of casualties starts slightly before the time when they enter elementary school.

The second characteristic relates to the change that takes place immediately after they enter elementary school. The number of accidents while commuting to or from school increases after the children enter elementary school, with a higher number of casualties while commuting to or from school occurring in May, the month right after April when they enter elementary school (b in Fig. 9). Fig. 11 and Fig. 12 graph the number of casualties involving first graders between the weeks of April 8 and July 7 from 2012 and 2013 respectively. Even the weekly trends in the number of casualties show that this number does not immediately increase after the students enter elementary school, but that this number increases on an upward trajectory that lasts through early June. This is thought to be impacted by the fact that the students' conscientiousness when it comes to traveling safely diminishes, as the special activities for commuting to and from school, such as commuting in groups, that are held when the students first enter school gradually give way to a more normal state of affairs. It is also due to the fact that while the children themselves are initially nervous about commuting to school, they gradually get used to this and their nervousness diminishes.

If we go back to the number of casualties by month from Fig. 9 and Fig. 10 and look at the changes from June onwards, we see that the number of casualties from traffic accidents while commuting to or from school between July and August declines substantially, which is believed to be due to the influence from summer vacation. The third and final characteristic is in relation to the difference between the number of casualties between the first and second graders. A broad look at the changes in the number of casualties among first graders shows that there is a comparatively large number between May and November (excluding the effects from summer vacation), before these decline from December onwards. As a result, the number of casualties from first graders from December onwards appears to be not all that different from the level for the number of casualties among second graders (c in Fig. 9). This is believed to be impacted by seasonal factors, like the fact that temperatures are low and there are fewer hours of sunshine between December and March. However, the number of casualties from accidents while commuting to or from school, which are believed to be minimally impacted by seasonal factors, also decline. Therefore, even though there are individual differences, on the whole it is possible that around this time they finally begin to conduct themselves in a manner similar to that of the second graders.

Given the aforementioned characteristics, providing safety instruction to children who are on the verge of entering elementary school would be more effective if provided at least before they enter elementary school. After they enter school, there appears to be a need to continuously pay attention until the end of the year to ensure that they do not let their guard down as a result of growing accustomed to commuting to and from school.

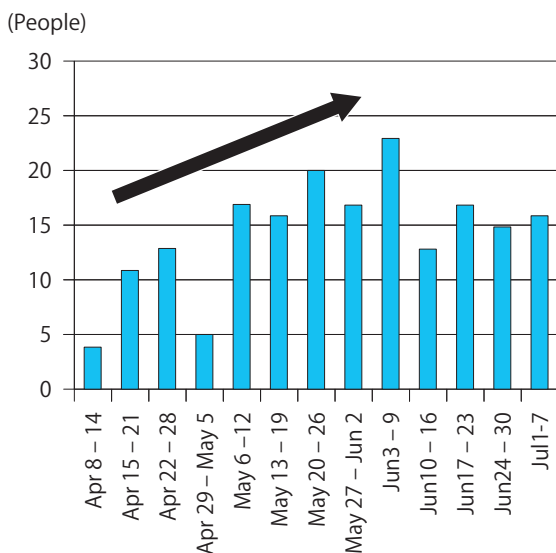


Fig. 11. Number of casualties per week from casualty accidents involving first graders while walking on their commute to or from school (2012)

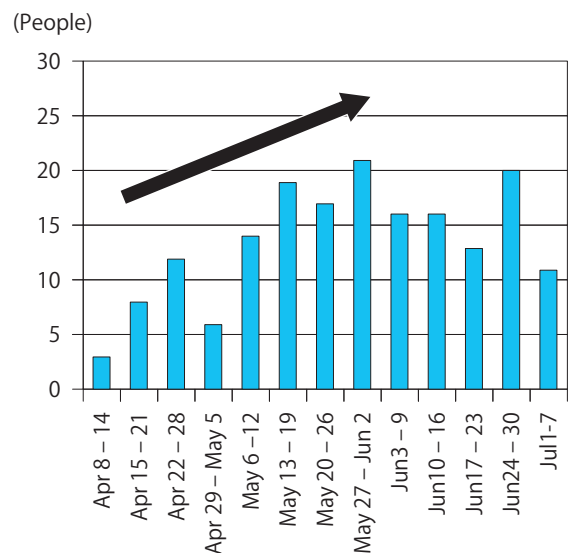


Fig. 12. Number of casualties per week from casualty accidents involving first graders while walking on their commute to or from school (2013)

5 Conclusion

This issue of ITARDA Information focused mainly on casualty accidents experienced by first graders while commuting to or from school. The characteristics of these accidents can be summarized as follows:

- The composition of legal violations for casualty accidents involving first graders while walking shows that the percentage of accidents where the pedestrian (first grader) did not commit any violation is gradually increasing.
- While the percentage of legal violations related to crossing is on the decline, no changes are seen with the percentage of accidents involving children rushing into traffic.
- The compositions of legal violations for accidents involving first graders while commuting to or from school and the locations where said accidents occur differ from those for accidents that occur when not commuting to or from school. Since this is close to the composition for all age groups, it can be conjectured that children commute to and from school by following the rules to a comparatively large degree.
- Looking at the changes in the number of casualties by month reveals that these gradually increase starting from January prior to when the children enter elementary school.
- The number of accidents while commuting to and from school increase after the children enter elementary school, with the number of casualties higher in May and June than it is in April.
- The number of casualties among first graders is high until about November, then from December onwards the difference in the number of casualties between them and second graders diminishes.
- Based on this change in the number of casualties by month, it will be necessary to provide children with safety instructions sometime before December prior to when they enter elementary school, and to continue encouraging children to stay safe up through November after they have entered school.

While the number of casualties from traffic accidents involving children while walking has been decreasing year-by-year, the number of casualties from traffic accidents while walking when children enter elementary school remains on an upward trajectory. Regarding the characteristics of traffic accidents involving first graders described here, these demonstrate largely identical characteristics regardless of which year's accidents are analyzed.

Naturally of course, all of the first graders are replaced with new ones every year. At the same time, it stands to reason that every year a large number of people become parents of first graders, with the thinking being that the vast majority of these parents are unaware of the situation surrounding traffic accidents involving first graders while walking.

In order to correct the conduct that small children have a natural tendency to engage in, it will be necessary to take a certain amount of time to provide them with instructions over and over again. We feel that the parents, who are the closest people to the child, must play a major role in this. In order to prepare new first-year students to be able to safely commute to and from elementary school by following the traffic rules starting from the first day they commute to and from elementary school, it will be effective to have the parents walk together with the children along the routes they will actually use to commute to school to provide them with specific instructions. This can be thought of as part of the preparations for the children to enter elementary school. We hope to inform as many people as possible of the situation and provide reference for when parents should start providing safety instructions and for the contents of said instruction.

(Akira Yamaguchi)

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