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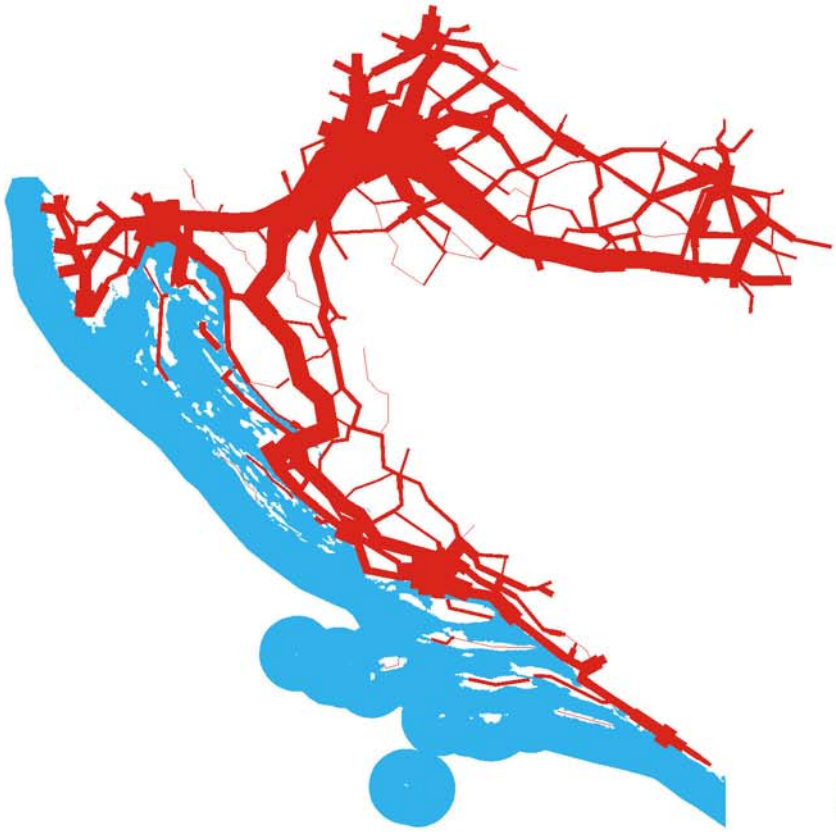

digest

TRAFFIC COUNTING ON THE ROADWAYS OF CROATIA IN 2009

ZAGREB, 2010

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TRAFFIC COUNTING ON THE ROADWAYS OF CROATIA IN 2009 – digest

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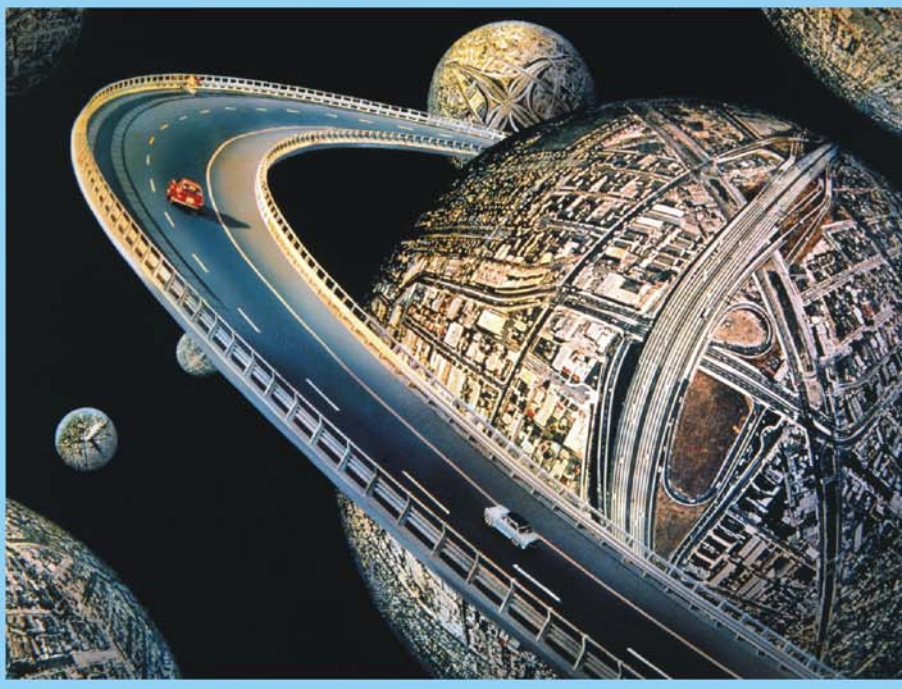
C O N T E N T S

T A B L E S

TRAFFIC COUNTING
ON THE ROADWAYS
OF CROATIA
IN 2009

1



INTRODUCTION

1. INTRODUCTION

“Traffic Counting on the Roadways of Croatia in 2009” contains selected results of traffic counting on Croatian roads during the year 2009. Systematic traffic monitoring and data collection on the roadways of the Republic of Croatia began in 1971. A traffic counting program that was in the year 2009 implemented for the thirty-ninth time in succession, served to collect essential data about the traffic flow characteristics. This created a basis for publishing "Traffic Counting on the Roadways of Croatia in 2009", where basic, and selected information obtained through this program, as well as the results of a subsequent data analysis, were comprehensively brought out.

The importance of continuous creation of a traffic information database is manifold. Analysis of the data collected through the counts, and afterwards thoroughly processed, enables grasping the basics of roadway traffic. These concepts are indispensable for conceiving and carrying out an efficient traffic policy, and knowledge acquired this way is absolutely necessary for putting in place a sensible road management program. A rational and efficacious management, comprising research, planning, design, construction, rebuilding, and maintenance of the roads would be, otherwise, nowadays virtually impossible.

The objectives of traffic counting are recognized as systematic collection of data on traffic volume and patterns, together with temporal, i.e. daily, monthly, and yearly, variations cross the whole roadway network. A special emphasis is put on the roads of international significance, since the indicated targets conform to the Recommendations of the Interior traffic Committee of the Economic Commission for Europe of the UN. Therefore, certain results of the traffic counts performed in Croatia during 2009 will be, besides domestic users, delivered to the users outside the country.

The determined objectives of traffic counting necessitated the contents of the publication and its digest. With respect to the objectives, data has been presented related to the State roads, motorways, county roads, as well as to the vehicle transportation at the Croatian domestic ferry lines. Chosen results of the traffic counting analysis for the year 2009 have been given both analytically and graphically. Likewise, the publication and its

digest encompass descriptions and central points of the data acquisition and the subsequent analysis.

Ever since the start of a systematic traffic counting process in Croatia, in 1971, its continuous development has been under way. The research portion of that work has been contributing on its own, particularly regarding the methodological, technical, and technological components. The traffic counting system was gradually being enhanced and enriched according to a plan. Presentation of the results of a respective data analysis accompanied that development as well.

A regular annual publication containing traffic data, as well as its companion digest, ensures continuity regarding the data presentation, considering its comparability with data discussed in a number of previous publications. Regarding the periodicity of the publication and its digest, and in order to make it simple for a reader to work through it, the fore-mentioned comparability with the earlier published data has been retained. Therefore, this digest has preserved its obvious contents and looks, this time consisting of six chapters.

Following *the first chapter* **"Introduction"**, *the second chapter* goes on to present historical review of traffic counting and describe the basic characteristics of the methodology of data collection, processing and presentation, under the title of **"Traffic Counting System on the Roadways of Croatia"**. That description is given according to the methods of counting currently in use inside the country. These methods include automatic counts, continuous and periodical, together with toll-paid vehicle counts. Moreover, similar to the past publications, this chapter contains the basic facts on the roadway infrastructure (length of classified roads), the road vehicles (number of registered vehicles by categories), and the state of security of the road traffic (number of dead and injured persons, along with the count of accidents). A short, generalized, analysis of the traffic counting results for the year 2009 is given at the end of the chapter.

The third chapter bears the title **"AADT and ASDT with General Data on Count Sites and Sections"**. The calculated AADT and ASDT values at particular counting sites represent its basic contents, and the values of AADT and ASDT are given separately for State roads, motorways and county roads. Moreover, for each of the count locations other usual data is given. Data for the specific count sections is presented as well, with the method of counting expressly denoted.

The fourth chapter **"State Roads and Motorways: Toll-paid Traffic Counting"** includes choice results obtained through data processing, where the numbers have been collected at locations indicated therein. This method of counting is applied at toll bars - all of them located on the motorways, except for toll station "Krk Bridge" which is located on the State Road 102.

The fifth chapter is named **"Ferry Lines Vehicle Transportation"** and it deals with quantity of road vehicles transported by sea ferry lines between mainland and islands**.**

The final, *sixth chapter* is named **"Appendix"**. Apart from giving a clue as to the acronyms and terms used in this digest, they enclose two cartographic displays. The first shows the count locations topography in 2009, while the second of them reveals the traffic volume at chosen road directions over the year.

To alleviate the understanding of methodological peculiarities and the like, the opening parts of each chapter hold appropriate explanations.

TRAFFIC COUNTING
ON THE ROADWAYS
OF CROATIA
IN 2009

2

TRAFFIC COUNTING SYSTEM ON THE ROADWAYS OF CROATIA

2. TRAFFIC COUNTING SYSTEM ON THE ROADWAYS OF CROATIA

2.1. HISTORICAL REVIEW

Systematic examination of the traffic characteristics at Croatian roads began in 1971, with introduction of a road traffic counting program. From that year on, the findings about roadway traffic were augmenting by continuously increasing the quality and quantity of data collection. We emphasize that all the way from 1971 until now the counting has been performed in compliance with the methodology of data collection and processing, brought forth in Recommendations of the Committee for Interior Traffic of the Economic Commission for Europe.

It should be emphasized here that in the beginning of the systematic traffic counting mostly international E-roads were included. As needs and possibilities were mounting, the scope of the counts was accordingly expanding. Today the count locations are set predominantly at the State roadways, to a much lesser extent at the county roads.

The oldest way of counting, the so-called “manual” traffic counting, used to be the only method of counting in early days of systematic traffic counting. During the year of 1973, after the first Croatian four-lane motorway Lučko - Karlovac was opened, toll-paid vehicle counting was introduced in our country. A more substantial expansion of the traffic counting system was accomplished in 1978 with launching of the stationary automatic traffic counters, and so inaugurating *automatic* traffic counting. By introducing these automatic counters a continuous counting program was (had in view) to be realized. Upon acquisition, in 1997, of the portable automatic counters, designed for periodic counting, they started to be used as well. This way periodical automatic traffic counting has been introduced inside our country, too. Replacement of the manual traffic counting program by periodical automatic counts was started according to a plan in 1998.

One of the more important novelties in the traffic counting system development here in Croatia emerged in 1997, when portable automatic counters intended for periodical counts were included. A more recent generation of automatic traffic recorders

destined for automatic traffic counts was initiated in 1998, when 15 such counters were installed. These counters are capable of classifying the counted vehicles according to their lengths. Three stationary automatic counters of the most recent generation were installed at the State roadways in the first half of 1999. Among others features, those counters can order the counted vehicles by classes and subclasses, while simultaneously enabling wireless remote connectivity. Therefore, after the counters were installed, remote two-way GSM communication between the counters and the computers in the company *Prometis* was experimentally tested.

The first annual publication with systematically collected and processed data about the traffic volume counts, with the data for traffic counted through 1971, was published in 1972. Numerous and different improvements in the traffic counting system contributed to successive additions to the contents of regular annual issues. Both quantity and quality of the published data improved all along. Similar to the equivalent, regular or periodic, publications containing data, diverse analytical needs called for comparability of data in the series over the years. Paying attention to some well-founded user recommendations, which are always welcome, also bears importance for the overall contents.

Besides the data published here, numerous data and reports on the counted traffic are delivered to other users. In that fashion certain, by special data processing obtained, results and special reports (e.g. about traffic on E-roads, also about road traffic at all roads State-wide) are passed to the Croatian Bureau of Statistics. Starting with 1997, certain data regarding E-roads is handed over to the TEM (**T**rans-**E**uropean **M**otorway North-South) PCO (**P**roject **C**entral **O**ffice), and likewise the wanted Croatian traffic data is being delivered to the ECMT.

We are proceeding here with describing the basic setups of the methodology of collection, processing, analysis and presentation of results of the traffic counted at the Croatian roadways, with emphasis on the setups for traffic counting performed during the last year.

2.2. METHODOLOGY OF DATA COLLECTION

A traffic counting plan is brought before the start of a calendar year by the "Hrvatske ceste d.o.o." (Croatian Roads Ltd.). Therefore, in the Republic of Croatia traffic counting was performed at:

- *State roads;*
- *tollgates at toll roads;*
- *county roads;*
- *ferry terminals.*

The methods of traffic counting (collecting data on quantity and structure at given count locations), used during the year 2009, were as follows:

- ***automatic counts by stationary counters***
  installed at the State roads, motorways and county roads - permanent (continuous) counting;

- ***automatic counts by portable counters***
  at the State roads – periodical counting at representative time intervals;

- ***toll counts***
  at tollways, the Krk Bridge, the Učka Tunnel and at ferry terminals

A precondition to obtain statistically worth results is rational use of recorders assigned for periodical automatic counting, in representative time samples and with a special, for this purpose developed, data analysis. Periodical counts are, because of their advantages, invaluable if insight into traffic volumes at road sections left out of the automatic counts is wanted. To that end it is used in many countries.

The publication "Traffic counting on the roadways of Croatia in 2009", contains processed data from **458** count locations. Additionally there are traffic data for **57** motorway sections which is derived from data collected on stations of closed toll systems. Count locations taken into consideration, with respect to their distribution by road status and count method, were:

- *on State roads and motorways, **418**, of which **154** refer to traffic counted by continuous automatic counting, **189** through periodical automatic counting and **75** by way of tolls;*

- *derived traffic data for **57** sections on toll-paid road structures from data collected on counting sites – toll stations belonging to closed toll systems;*

- *on county roads, **15**; of which **four** refer to traffic counted by continuous automatic counting and **11** through periodical automatic counting;*
- *toll-paid counting at ferry lines was carried through at **25** locations (ferry terminals).*

2.2.1. Periodical automatic traffic counting

In 1997, it was the first time the notion of 'periodical traffic counting' was introduced in Croatia (the study "Installation of a new traffic counting system in the Republic of Croatia", *Prometis d.o.o.*). Two methods of periodical counting are comprehended under that notion: the first is called manual, the second is known as periodical automatic traffic counting. The latter emerged as entirely new in our traffic counting system, as much for the yearly schedule, as for the way of realization. It is performed with portable, automatic counters, at several occasions, every time through seven days. Of utmost importance is determination of the timetable, scheduling which weeks of the year, i.e. what combination of the weeks, should be used in counting. This is determinable only via simulations done on a relatively large sample, consisting of the files acquired by continuous automatic counting, through a period at our disposal, usually in consecutive three or more years. When it comes to choosing the weeks of the year, it is compulsory to set certain criteria. They are set up so that the relative estimation error of average daily traffic over a year (acronym AADT), and average daily traffic over a summer (acronym ASDT), do not leap above 10% of its absolute value, at the given level of significance. Besides that, the timetable is constrained by the requirement that this way of counting should be utilized in that part of the year when weather conditions bear a relatively marginal influence, in order to reduce down to the least possible extent the exposure of recorders to a possible damage, making the best use of available equipment and work force. Memory limitations of these recorders are also taken into account, their restrictions regarding energy supplies as well.

A simulation done on the sample compiled from the files of continuous automatic traffic counting data, originating from different selected periods, and with distinct possibilities of combining weeks and weekdays of the week of a suitable part of the year, has revealed how to set up a schedule (telling which weeks could be combined) for periodical traffic counting. Several requirements were acknowledged there, as: (a) in what part of the year the counts should be taken in order to avoid inconveniencies resulting

from the weather conditions; (b) what is the least interruption period ensured between successive counts, to execute all the necessary steps for transfer of data from the counter, and preparing and setting the same counters at a new task; (c) which precision of estimates to impose, etc. At *Prometis d.o.o.*, some special methods and techniques for processing data collected with these counters have been examined and developed.

For periodical automatic counts the portable automatic counters of the American company Nu-metrics have been used. The counters were programmed for seven-day unbroken operation (from Sunday 00:00 until next Saturday at 24:00 hours). They were also programmed to assort the vehicles into five categories with respect to length: (1) vehicles not longer than 5.5 m, (2) over 5.5 m up to 9.1 m, (3) over 9.1 m up to 12.2 m, (4) over 12.2 m up to 16.5, and (5) above 16.5 m. Furthermore, such counters record temperatures and the state of the pavement (dry or wet), also being programmable for classifying vehicles by categories of speed at the counter. Moreover, the counters were memorizing the required information hour by hour, according to the set conditions, for seven consecutive weekdays.

2.2.2. Continuous automatic traffic counting

In continuous automatic traffic counting programs stationary automatic traffic recorders, installed at roadways, are in use. Various generations and varieties of these counters are used. The essential point at all of them is the ability to record traffic volumes at preset time intervals (cumulatively by hours), and by the road tracks (vehicle headways), continually during 24 hours a day, all through the year. In order to collect as much data as possible, a continuous maintenance is required.

Continuous automatic traffic counting in Croatia is conducted with the pavement-based, inductance loop counters, which react to the passage of metallic mass across. Nowadays generations of counters discriminate between the given classes and subclasses of vehicles.

Owing to the modes of operation and added features of the utilized counters, periodic field inspections of the counters are performed. Immediately after the new recorders were introduced in 1998, the problem of autonomous solar energy supply was solved for the first time. At the most recent counters a two-way GSM communication

through modems and appropriate computer programs, emulating remote data transfer, has been set and tested. This enables an instantaneous insight into intensity and structure of traffic at a data collection site, and a control of the correct operation and status of the instrument. The SMS delivery from a count location has also been solved in some cases, should these situations arise (for instance, delivering a message about the loop breakdown, or the case opening, and similar).

Automatic recorders destined for continuous automatic traffic counting are relatively high-priced, limited in number. Therefore, they are deployed to include the once selected most important sections, at former "major roads" ("magistralne ceste"). Stationary counters of a newer generation were installed in the beginning of 1998 (15 counters), and positioned in agreement with the adopted distribution of data collection sites of continuous automatic traffic counting, alongside the road network.

2.2.3. Toll-paid traffic counting

Building and maintenance of contemporary roadways (motorways, bridges and tunnels) ask for substantial financial investments. Accordingly, a toll payment is demanded for their use.

There is a peculiarity of traffic counting at the motorways, the *Učka Tunnel*, and the *Krk Bridge*, lying in the fact that a vehicle passage is recorded on a data card, where the time, the vehicle class by the toll category, and the points of entry and/or exit from the toll roadway are included. Therefore, this type of traffic counting at toll-paid roadways represents a special method of traffic counting. Vehicles using these toll-paid roadways are divided in five groups that do not conform to the UN/ECE Recommendations.

Ferry traffic takes place at domestic and international ferry lines. In this publication only the transportation data from the domestic ferry lines are presented. The counts of the vehicles transported at those lines render a particular kind of toll-paid counting. Data on the transported vehicles are carried for each line through a certain period, by vehicle classes. At domestic ferry lines, traffic counts are taken by the servicing companies.

2.2.4. Sources of collected data in 2009

As in the previously issued publications, traffic data collected at the roadways and ferry lines inside the Republic of Croatia was obtained from a few different sources. These were, for data collection in 2009, by type:

- *traffic data obtained with stationary counters belonging to "Croatian Roads Ltd." - by "Prometis Ltd.";*
- *traffic data obtained with portable automatic counters - by "Prometis";*
- *traffic data on the motorways: A3, A4, part of A1 (intersection Bosiljevo 2 – Ravča), A5 and A11 – by "Croatian Motorways Ltd.";*
- *traffic data on the motorway A1 (Zagreb – Bosiljevo 2), motorway A6, TS "Rupa" and the Krk Bridge) – by "Rijeka - Zagreb Motorway Ltd.";*
- *traffic data on the motorway A2 – by "Zagreb – Macelj Motorway Ltd.";*
- *essential traffic data for the Učka Tunnel and the Mirna Bridge – by "BINA - Istra";*
- *essential vehicle transportation data at domestic ferry lines - by the companies "Jadrolinija", "Rapska plovidba", "Mediteranska plovidba" and "Linijska nacionalna plovidba"*

Within 2009 the collected fund of disposable data collected through continuous automatic counts amounted to around 94%.

Starting with 1998, periodical automatic counting through portable recorders has systematically been introduced. With the year 2000 inclusive, this counting method fully replaced manual counts, in compliance with a three-year plan. Since in each of those years about one third of manual traffic count locations was replaced, in 2001 a new cycle was started. At all count sites periodical traffic counting was performed according to one of the predetermined schedules (single, double, and triple counts). Upon programming the portable Nu-metrics NC-90A automatic counters, the counted traffic, expressed in vehicle numbers, is structured in the same fashion as with continuous automatic counts taken with the more recent traffic recorders. Unfortunately, during the years 2006 and 2007 periodical automatic counting was not performed according to established plan and methodology.

2.3. METHODOLOGY OF DATA PROCESSING AND PRESENTATION OF RESULTS

Data processing, and presentation of results of the analysis, is based on a specially developed methodology, by which the procedures involved in working on and applying the supporting software have been included. It incorporates all other procedures as well, which account for input procedures, reliability checks, corrections and preparations for data analysis, file creations, data processing and analyses, and textual, tabular and graphical production and presentation of the results in the form of a yearly publication and its digest, accompanied with a study containing previous ASDT data.

A constant development of the information technology brings on along a continuous upgrade of methodology. That development is accompanied by the staff training, conforming to the user requirements. That way, in this respect, high standards have been reached at the present time. At this juncture it is particularly important to emphasize how in this manner a rich databank for the period longer than twenty five years has been created, in particular from the automatic counters, which provides opportunity for variety of investigations, as much in the area of methodology itself, as in working on predictive models, traffic trends, and similar.

2.3.1. Data processing

Collected traffic data is processed in several phases. The methods used for data collection influence the way it is processed. Basically, data processing starts with controlling and verifying the source data.

A strong influence on the method and procedures used in data processing, as well as in development of methodology, is exerted by the information technology. In the span from the start of processing data collected by traffic counting until 1987, after a multiple “purification”, the collected data were stored on paper and magnetic tapes. After 1987, the data is stored on convenient electronic media. At this, the source data is kept in two versions, “impure” and “purified”, as the result of multiple checkouts and corrections of the original, raw data.

All data, be it raw or pure, is organized by files. So, for example, a periodical traffic count file contains the files of all the sites of periodical counting. Moreover, a file for a

single counting site contains sub-files, if every count is considered as a file on its own, etc. In similar fashion, other files of periodical traffic counting are organized. In continuous automatic traffic counting, a complete file consists of the component files of all automatic counting sites in a year. The files and certain results of data processing concerning the toll-paid vehicle counts, at roadways and ferry lines, are similarly organized.

For each data processing method, corresponding to a procedure for computing AADT and ASDT, there is a characteristic, counterpart traffic counting method.

The procedure of processing continuous automatic traffic counts data is based on the assumption that the counting encompasses all days or all hours of a year, respectively, which renders the deviations minute. On the grounds of the analyses of temporal series applied onto those counts, in cases when data for one direction was missing, it has been found the data can be replaced on the basis of relationships between the directions, established in a former period.

Accordingly, when a complete coverage is reached through the counting, the AADT and ASDT are computed as the arithmetic mean of traffic, counted in the respective period. However, such an approach, if data is partly missing, which actually often happens, becomes downright questionable.

When data is missing for a certain site of automatic traffic counting, which can cast ambiguity upon the computed AADT and ASDT (as arithmetic means for the corresponding counted traffic), the estimate is obtained using the intricate statistical methods.

Data processing for tollways is based on a special procedure adapted for that method of collection and arrangement of data, as well as on a particular method of presentation of the results.

2.3.2. Presentation of the results of data processing

The method of presentation of the results, and its organizing, was in the past all the time readjusted to the user's needs, while ensuring continuity of the basic principles in order to provide an easier orientation for the user.

This publication was prepared heedfully to preserve the comparability of data in the yearly series.

Besides the tabular and graphical presentation of the AADT and ASDT structure in different matrix varieties, and cartographic variations, there are also geographical presentations of the traffic count locations and volumes across the roadway network. In particular, a graphical survey of the daily traffic changes, by count locations, is to be noted.

All the data processing results are not brought out in the annual publication, because of an assumption that all users would not be interested. Instead, they are delivered in the form of tables, graphs, or as a separate brochure with selected results, by request, most often of the “Croatian Roads Ltd.”.

Unpublished data collected by periodical automatic counts are:

- *traffic by day, for each count location, with traffic of the real vehicles by hours and directions*
- *structure of daily, nightly and average annual, 24-hour traffic for each count location with the corresponding means, by certain vehicle groups;*
- *ADT (24-hour) by count days, by count locations and directions;*
- *composition of vehicles by length, by count hours, by count locations and directions;*
- *average temperatures of the pavement, by count hours*.

Unpublished data collected by continuous automatic counts can, if the occasion requires, be presented as:

- *average hourly traffic for certain periods of year, and peek hour traffic, by count locations and directions;*
- *ADT (24-hour) by count weekdays, by count locations and directions;*
- *ADT (24-hour) for working days, Saturdays, Sundays and holidays, by count locations and directions;*
- *traffic distribution, at selected hours with heaviest hourly traffic, by count hours;*

- *traffic per each count hour, and maximum hourly traffic per each count day, by count locations and directions;*
- *structure of daily and nightly traffic.*

2.4. OTHER ROAD TRAFFIC DATA

On the grounds of the analyses of data obtained by traffic counts, it can be noticed there is a long-term tendency of continuous growth, when considering the development of road traffic inside the Republic of Croatia. This long-time trend happened to be temporarily disturbed by the war conditions. One can conclude the road traffic continues to gain in significance, especially when it comes to the passenger transport.

Road traffic has numerous characteristics. The basic are, among various other features, the state of the road network, the vehicles taking part in traffic, the level of serviceability and safety, and environmental pollution. For the sake of generalized analyses, in this publication only basic data are shown about the road network, the number of registered motor and trailer vehicles, the number of drivers, and the safety of roadway traffic.

The density of the classified road network, together with motorways, in 2009 amounts to around 51,5 km of roads per 100 km2 of the ground surface in the Republic of Croatia. The structure of the road network is given in Table 2.1.:

Table 2.1. Structure of the Croatian road network in 2009

Classified Roads and Motorways (km)				
Classified Roads				Motorways
Total	State Roads	County Roads	Local Roads	
27.909,9	6.810,6	10.819,7	10.279,6	1.562,6*

Source : "Narodne novine" 122/2008,104/2009 and 123/2009

* This number includes planned, not constructed motorways. By the end of the year 2009, Croatia had close to 1.100 km of constructed motorways, Prometis

Decisions on classifying roadways in our country are brought by the Ministry of the Sea, Transport and Infrastructure of the Republic of Croatia. The most recent "Decision on classifying public roads into State roads, county roads, and local roads" was published in “Narodne novine” No. 122/2008. "Decision on classifying public roads into motorways"

was published in "Narodne Novine" No 77/2007. There are also subsequent changes and amendments to these decisions, published in Narodne Novine No. 13/2009, 104/2009 and 123/2009.

In Table 2.2. the structure of the registered road vehicles, motorized and articulated, in Croatia for the period from the year 2004 to 2009 is presented.

Table 2.2. Structure of the registered road motor vehicles and articulated vehicles in Croatia in the period from 2004 to 2009

Vehicle Class	Year					
	2004	2005	2006	2007	2008	2009
Mopeds	73.630	83.733	93.698	106.415	120.457	120.792
Motorcycles	39.352	44.196	49.788	56.401	63.357	63.691
Passenger Cars	1.340.078	1.384.699	1.435.781	1.491.127	1.535.280	1.526.507
Vans and Minivans	10.200	10.244	10.551	10.961	9.597	6.042
Buses	4.875	4.851	4.914	5.043	5.009	5.071
Freight Vehicles	144.922	152.663	159.147	165.742	170.704	164.761
Tractors	101.831	104.582	105.771	106.177	108.369	108.825
Work Vehicles and Machines	8.310	6.003	6.579	7.016	7.473	7.605
Articulated Vehicles	31.909	32.999	33.714	34.986	36.227	35.257
Quadricycles			512	1.054	1.600	1.916
Total, Without Articulated Veh.	**1.723.198**	**1.790.971**	**1.866.741**	**1.949.936**	**2.021.846**	**2.005.210**

Source: Ministry of Internal Affairs of the Republic of Croatia, Central Bureau of Statistics

For the first time, number of registered passenger cars has fallen with respect to the year 2008.

The most conspicuous negative consequences of road traffic are accidents. The road traffic danger in our country is high. Selected data, showing more precisely the state of domestic road traffic safety in the period from 2001 to 2009, is displayed in Table 2.3:

Table 2.3. Selected road traffic safety data in the period from 2001 to 2009

Year	Drivers Total	Traffic Accidents Total	Traffic Accidents with Casualties			Death Toll	Injured Persons
			Total	With Injured	With Killed		
2001	1.857.292	81.911	15.656	15.079	577	647	22.093
2002	1.920.321	86.611	17.071	16.500	571	627	23.923
2003	1.964.406	92.102	18.592	17.959	633	701	26.153
2004	2.011.950	76.540	17.140	16.600	540	608	24.271
2005	2.052.056	58.132	15.679	15.149	530	597	21.773
2006	2.085.336	58.283	16.706	16.155	551	614	23.136
2007	2.131.678	61.020	18.029	17.481	548	619	25.092
2008	2.179.514	53.495	16.290	15.705	585	664	22.405
2009	2.208.621	50.388	15.730	15.237	493	548	21.923

Source: Ministry of Internal Affairs of the Republic of Croatia

Considering the increase in traffic volumes, level of traffic safety in Croatia is visibly becoming higher but it is still far from what is planned and needed.

2.5. GENERALIZED ANALYSIS OF THE TRAFFIC COUNTING RESULTS IN 2009

In the course of the past 2009, traffic data were, as in previous years, in large part regularly collected from the planned counting sites. Therefore, this publication consists of processed data from **458** counting locations, which is the most since the beginning of systematic traffic counting in Croatia. Besides that, derived traffic data from **57** counting sections on motorways with closed toll system are published.

Through 2009, there were data collected and processed from **158** continuous automatic traffic counting sites, **200** periodical automatic counting sites, **75** toll-paid traffic counting locations at toll roads, and **25** ferry lines.

Periodical automatic traffic counting, conducted with automatic recorders, replaces the people who recorded traffic at all previous permanent locations of manual traffic counting.

The “Hrvatske ceste d.o.o.” company, being in charge of the State roadways, organizes traffic counting at the roads of the Republic of Croatia. For that reason, a major part of the State public road network is still included in the counting program. With a small number of count sites, a part of the county roads has been included as well. As it was emphasized already many times, despite the needs for international statistical research, the funding and other factors caused a situation where the other roads in Croatia, together with a still large number of the sections of the State and county roads, are not covered by a systematic traffic counting program. Because the existing distribution of the count sites on the State and county road network contains mostly the count sections in outer regions, a big part of the road network, situated in urban and outlying districts, was not until now systematically encompassed by traffic counting programs. For this reason, a quality complete insight into the traffic flow characteristics at the urban and outlying districts cannot be achieved, and for the fore-mentioned facts it is very hard to give precise estimates of AADT and ASDT, be it for the total road network or some of its parts.

The traffic counting results in 2009 show that the total traffic volume has remained roughly on the same level as the year before. ASDT increased comparing to the previous year.

By the size, the amounts recorded at certain count locations set up near major Croatian cities are worthy of notice. The same as in the year 2008, the last year saw the traffic counting results influenced by decisions on redirecting heavy freight vehicles onto the alternative road directions in summer months, as well as redirecting them toward the high service level roadways.

In order to compare the traffic volumes in 2008 and 2009, the same count sites used to collect data during both years were selected. The described approach, in the comparing analyses, avoids difficulties with comparisons involving traffic volumes and the structure, regarding the change of active count sites number, as well as the change of count section lengths. These difficulties will possibly turn avoidable by introducing new count locations at the representatively determined count sections.

In Table 2.4 the count sites distribution at the State roads, motorways and county roads in 2009, with respect to the traffic volume levels, has been given.

Table 2.4. Count sites distribution by traffic volumes in 2009

AADT	Count Sites with Determined AADT			
	State Roads	Motorways	County Roads	Total
0-500	14	0	2	16
501-1000	20	0	3	23
1001-2000	83	1	3	87
2001-3000	51	4	0	55
3001-6000	101	9	4	114
6001-9000	41	16	1	58
9001-12000	16	22	0	38
>12000	10	28	2	40
Sites Total	**336**	**80**	**15**	**431**

The count sites with the highest recorded AADT and ASDT on the State road network in the year 2009 are given in the Table 2.5:

Table 2.5. Count sites with highest AADT and ASDT in 2009

State Road	CS Label	Count Site	AADT	ASDT
D8	5422	Stobreč	49.990	56.833
D8	5423	Solin	42.951	47.133
D30	2014	Velika Mlaka	40.994	40.965
A1	1916	Lučko - south	32.146	52.568
A1	1920	Jastrebarsko - south	29.914	51.692
A3	2013	Ivanja Reka - east	26.404	33.925

In the Table 2.6. is given data on AADT and ASDT for selected State roads calculated using the method of vehicle kilometres for the years 2008 and 2009.

Similarly, table 2.7. comprises data for selected motorways.

Table 2.6. Selected State Roads Traffic in the Years 2008 and 2009

State Road	AADT			ASDT		
	2008	2009	Annual Change (%)	2008	2009	Annual Change (%)
1	4.917	4.623	-6,0	9.079	8.212	-9,6
2	6.383	6.251	-2,1	6.676	6.685	0,1
5	1.995	1.856	-7,0	2.241	2.111	-5,8
7	5.197	4.742	-8,8	5.793	5.193	-10,4
8	5.493	5.369	-2,2	9.617	9.291	-3,4
Total	**3.511**	**3.440**	**-2,0**	**5.122**	**5.002**	**-2,4**

Table 2.7. Motorways Traffic in the Years 2008 and 2009

Motorway	AADT			ASDT		
	2008	2009	Annual Change (%)	2008	2009	Annual Change (%)
A1	12.814	13.088	2,1	26.876	28.774	7,1
A2	11.048	11.133	0,4	18.191	19.637	7,9
A3	14.719	14.611	-0,7	20.847	21.248	1,9
A4	7.820	7.560	-3,3	13.263	13.340	0,6
A5	2.735	2.943	7,6	3.098	3.427	10,6
A6	11.645	11.678	0,3	19.061	19.332	1,4
A7	6.781	6.653	-1,9	14.405	14.634	1,6
Total	**12.102**	**12.155**	**0,4**	**21.656**	**22.702**	**4,8**

A1: Zagreb – Ravča; A2: Macelj – Zagreb; A3: Zagreb (Ivanja Reka) – Lipovac;
A4: Goričan – Zagreb; A5: Osijek – Sredanci; A6: Bosiljevo 2 – Rijeka; A7: Rupa - Sv. Kuzam
Total: comparable sample of 979 km of motorways for AADT, and 966 km for ASDT.

Tables 2.6. and 2.7. are documenting an overall growth of motorway traffic and decrease in traffic on the State roads.

On Pictures 1 (certain State roads) and 2 (motorways), AADT and ASDT comparison is additionally graphically displayed for the years 2008 and 2009. The absolute amounts of AADT and ASDT are compared. The graphs display traffic volumes at 5 selected State roads (continuous automatic traffic counting) and 7 motorways (toll counting).

Combined AADT of State roads and motorways together in the year 2009, based on equivalent count sections sample, which is comparable to the traffic in the year 2008, was almost on the same level. ASDT increased close to 3%.

AADT in the year 2009 was 7.117 vehicles and ASDT was 12.467 vehicles.

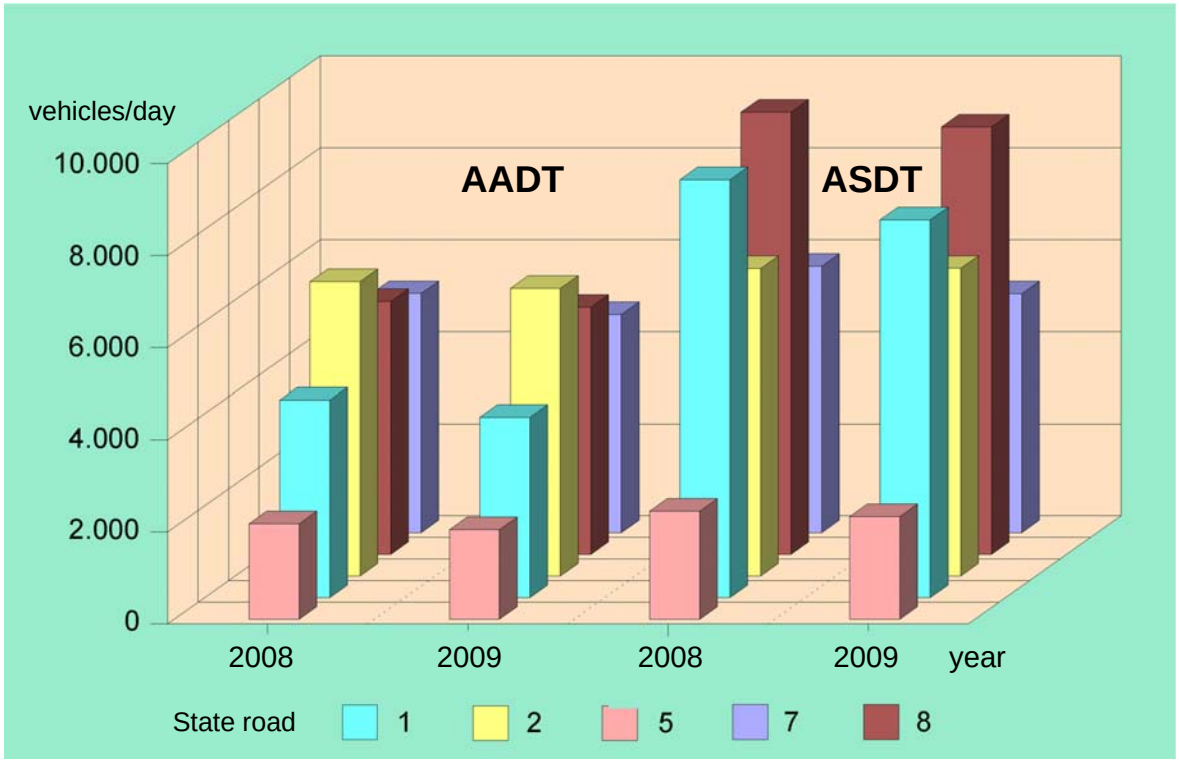


Illustration 1 AADT and ASDT of Selected State Roads in 2009

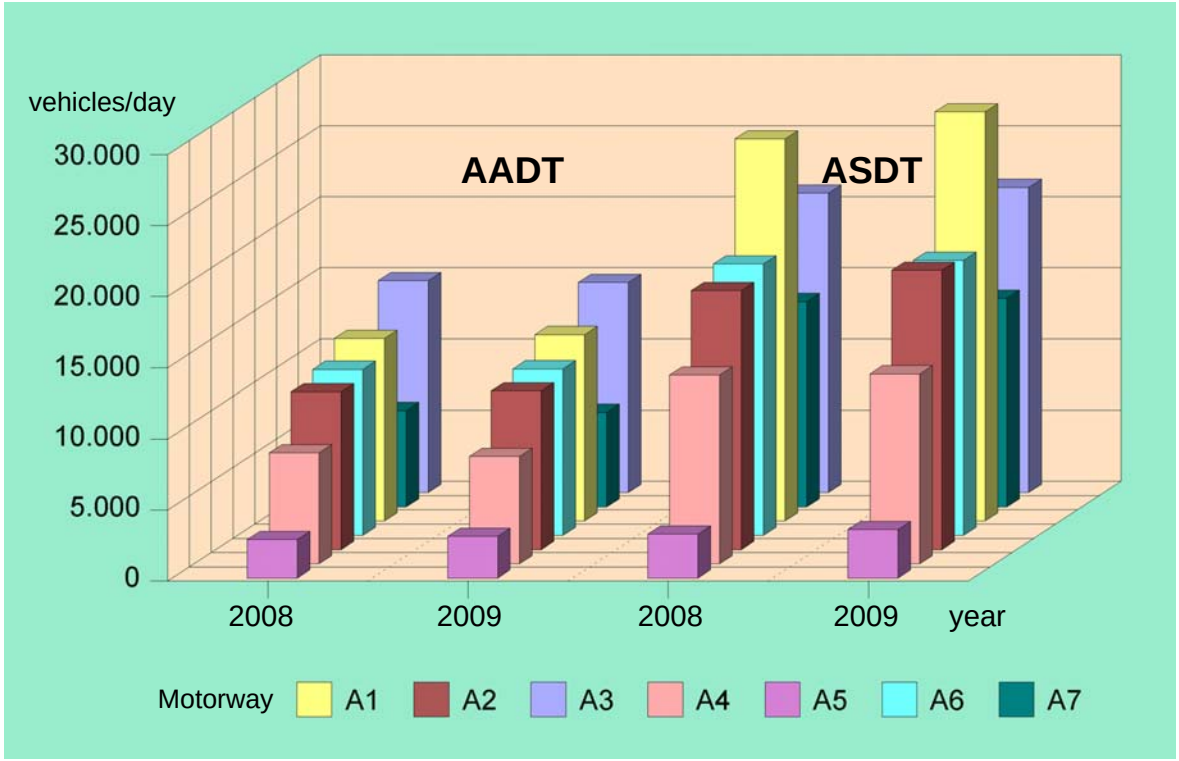


Illustration 2 AADT and ASDT of Selected Motorways in 2009

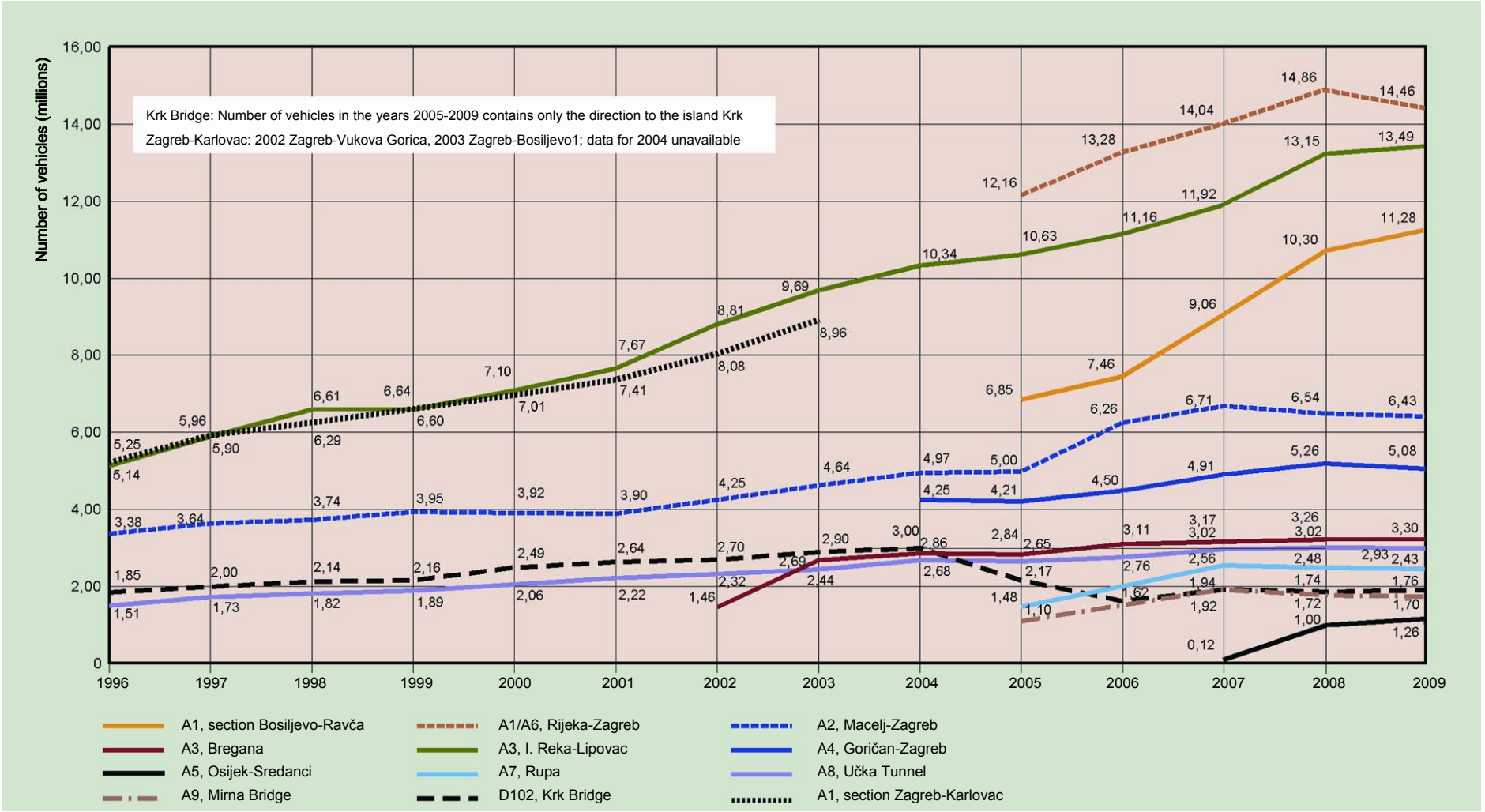


Illustration 3. Number of Vehicles Using Toll-payed Traffic Structures

TRAFFIC COUNTING
ON THE ROADWAYS
OF CROATIA
IN 2009

3

AADT AND ASDT WITH GENERAL DATA ON COUNT SITES AND SECTIONS

3. AADT AND ASDT WITH GENERAL DATA ON COUNT SITES AND SECTIONS

The data collection sites, whereon the last year traffic counts were taken, were determined, just as in the past, by the plan and program of traffic counting. The existing distribution of count sites and count sections was influenced by the traffic development, along with the historical traffic counting development on the whole. The classified roadways, divided into State, county, and local roads, are subdivided into sections. At selected sections the count sites are set up, according to the previous decisions, and in major part at the State roads. From the outset of systematic traffic counting up to now, an influence on gradual rearrangement of new count locations has been exerted, besides the development of traffic and counting, by the new created circumstances.

As can be seen from the geographical map (the scale is 1:900,000) "Traffic Volumes on Selected Road Directions in 2009", to each count section the volume determined at the corresponding count site has been attached. On that map, a count section comes with its counted, or evidential, traffic volume appended.

The count locations are labelled by four-digit numbers and names. In this manner recognition of the data source has been made easier. In a four-digit number, the label of the count location, the first two digit denote the area of the map where respective site can be found. The next two digits in the count site label designate the ordinal number of the count location considering only responding map area. For each count site the name was determined consistent with the geographical location where the recorder had been placed, i.e. of the settlement it was closest to, and so on. For each count section the name was determined by the names of the end points, together with expressing the entire section length in kilometres. This designation system is applied to the map with a scale of 1:900,000 "Traffic Count Sites Distribution" (an appendix).

For each count location and its associated count section, the **AADT** (**a**verage **a**nnual **d**aily **t**raffic) and **ASDT** (**a**verage **s**ummer **d**aily **t**raffic) results are shown in Table 3.1., for State roads, Table 3.2. for motorways and in Table 3.3., for county roads.

These tables also contain the data about counting methods, the count section names, and their lengths.

In all the tables within this chapter, the data is sorted by road number in ascending order, and by the count site location on the respective road, conforming to the road specification, or its entry.

As it was the case with all the previous publications under the title “Traffic Counting on the Roadways of the Republic of Croatia”, all count sites and pertaining count sections are classified as belonging to particular roads, themselves classified according to the holding decision on roadways and its changes and amendments.

Table 3.1. AVARAGE ANNUAL AND AVARAGE SUMMER DAILY TRAFFIC WITH GENERAL COUNT SITES DATA **SR 2009**

ROAD LABEL	COUNT SITE					COUNT SECTION		Length (km)
	Label	Name	AADT	ASDT	Count Method	Begin.	End	
1	1104	Đurmanec	**2908****	**-**	ACC	D207	Ž2098	3,3
1	1122	Čveki	**3813**	**3876**	ACC	D35	Ž2158	2,3
1	1927	Veliko Trgovišće	**10035**	**10491**	ACC	D307	Ž2217	4,5
1	1928	Izimje	**7187***	**8387**	ACC	Ž3102	L31136	2,6
1	3101	Tušilović	**8968**	**12457**	ACC	Ž3188	L34082	3,6
1	3105	Blagaj	**5087**	**8797**	ACC	L34120	L34140	11,4
1	3106	Slunj	**5842**	**9790**	ACC	L34140	Ž3258	4,7
1	3107	Slušnica	**5428**	**10433**	ACP	L34152	L34155	12,0
1	4302	Prijeboj	**5283**	**9210**	ACP	D504	L59044	7,9
1	4304	Jošan	**3639**	**7954**	ACC	L59064	Ž5195	12,3
1	4901	Mutilić (Udbina)	**2200***	**4350***	ACC	L59101	L59117	7,9
1	4907	Gračac	**1986**	**3130**	ACC	D27	L63033	3,4
1	5002	Pađene	**1714**	**2799**	ACC	L65008	D59	3,2
1	5418	Kijevo	**1513****	**. . .**	ACC	Ž6058	Ž6083	18,4
1	5504	Brnaze	**9316**	**10787**	ACC	D60	L67041	1,7
2	1203	Dubrava Križovljanska	**2337**	**2695**	ACC	GP	L25001	0,7
2	1208	Majerje	**8013**	**8388**	ACC	Ž2046	Ž2037	2,5
2	1235	Hraščica	**3091**	**3352**	ACC	Ž2252	D35	4,3
2	1210	Varaždin - south	**14310**	**15360**	ACC	Ž2068	D3	3,0
2	1209	Šemovec	**4784**	**4885**	ACP	Ž2054	L25084	2,6
2	1307	Ludbreg - west	**6221****	**. . .**	ACC	L25094	Ž2075	1,9
2	1308	Ludbreg - east	**5227**	**5696**	ACP	D24	L25104	1,5
2	1312	Plavšinac	**5487**	**5430**	ACC	L26034	L26100	1,6
2	1403	Đurđevac	**6918**	**7040**	ACC	Ž2247	L26112	3,3
2	2201	Kloštar	**5564**	**5786**	ACP	Ž2185	L40001	3,6
2	2203	Virovitica	**8051**	**8214**	ACC	L40020	Ž4024	9,0
2	2302	Cabuna	**4695**	**4976**	ACC	L40034	L40036	2,9
2	2305	Čačinci - south	**3494**	**3748**	ACC	Ž4063	D314	4,4
2	2408	Feričanci - east	**3962**	**4120**	ACP	Ž4058	Ž4075	2,4
2	2407	Našice	**4994**	**5460**	ACC	L44044	L44045	1,7
2	2406	Bizovac - west	**3832**	**4371**	ACP	Ž4067	Ž4060	0,4
2	2508	Osijek bypass	**18009**	**17427**	ACP	D2	D2	2,4
2	3701	Klisa airport - north	**4017**	**4659**	ACC	L44115	D418	1,3
2	3801	Sotin	**4448**	**5120**	ACC	Ž4152	L46013	2,7
2	3803	Ilok - west	**2084**	**3552**	ACP	Ž4198	Ž4200	7,3
3	1302	Goričan	**1267**	**2542**	ACC	GP	Ž2032	1,8
3	1234	Čakovec	**9156**	**9438**	ACC	D20	Ž2031	1,9
3	1205	Pušćine	**11465**	**11662**	ACC	D208	L20048	3,4
3	1221	Novi Marof	**7706**	**7956**	ACC	L25131	Ž2136	1,1
3	2003	Blažev Dol	**8099**	**7939**	ACC	L31036	Ž3016	1,2
3	3003	Duga Resa	**11327**	**12188**	ACC	Ž3181	D23	3,7
3	3005	Vrbovsko	**1469**	**2143**	ACC	L58032	L58037	8,3
3	2905	Delnice	**5708****	**. . .**	ACC	D203	D32	1,8
3	2935	Gornje Jelenje	**3200***	**4400***	ACC	Ž5032	D501	0,5

Table 3.1. AVARAGE ANNUAL AND AVARAGE SUMMER DAILY TRAFFIC WITH GENERAL COUNT SITES DATA /cont./ **SR 2009**

ROAD LABEL	COUNT SITE					COUNT SECTION		Length (km)
	Label	Name	AADT	ASDT	Count Method	Begin.	End	
5	2202	Terezino Polje	**913**	**1271**	ACC	L40009	Ž4004	3,6
5	2214	Virovitica bypass north	**1071**	**1362**	ACC	Ž4249	D2	3,7
5	2215	Virovitica bypass south	**1349**	**1781**	ACC	D2	Ž4251	4,4
5	2205	Grubišno Polje	**3185**	**3412**	ACP	Ž3094	Ž3139	2,7
5	2206	Končanica - west	**2450**	**2624**	ACP	D45	L37118	4,2
5	2210	Kip	**1799**	**1906**	ACP	Ž3171	L37151	4,4
5	2213	Badljevina	**2350***	**2469**	ACC	Ž3272	L41002	0,4
5	3406	Cage	**1506**	**1859**	ACP	L42001	Ž3252	7,5
5	3410	Stara Gradiška	**4033**	**4980**	ACC	Ž4226	Ž4227	1,0
6	1801	Jurovski Brod	**2777**	**3259**	ACC	GP	Ž3098	0,2
6	1802	Ribnik	**1665**	**2426**	ACP	L34023	L34025	2,1
6	3108	Okić - west	**2202**	**2953**	ACP	L34094	L34093	2,6
6	3102	Gvozd - west	**1579**	**2257**	ACC	L33075	Ž3186	0,8
6	3206	Maja	**466**	**552**	ACP	L33094	Ž3237	6,6
6	3210	Trgovi	**382**	**390**	ACP	Ž3234	L33167	1,4
7	2501	Duboševica	**1125**	**1426**	ACC	GP	Ž4011	1,0
7	2503	Karanac (Beli Manastir)	**6441**	**6694**	ACC	D517	D212	3,7
7	2505	Čeminac - north	**5008**	**5458**	ACP	L44010	Ž4054	3,9
7	2513	Osijek bypass	**7486**	**7656**	ACC	Ž4257	Ž4068	10,4
7	2512	Čepin	**6700***	**6508**	ACC	D2	D4247	3,5
7	3705	Vuka	**4467**	**5452**	ACP	Ž4120	Ž4108	3,7
7	3606	Vrpolje	**3987**	**4394**	ACC	L44138	Ž4202	2,9
7	3615	Sikirevci - south	**3032**	**3781**	ACC	Ž4220	L42049	4,3
8	2801	Pasjak	**4939**	**8574**	ACC	L58011	A7	3,9
8	2816	Permani - north	**6836**	**5486**	ACP	Ž5017	Ž5012	7,7
8	2804	Mučići	**5273**	**5977**	ACC	Ž5016	L58015	0,9
8	2809	Pavlovac	**8739**	**11228**	ACP	D66	Ž5051	2,3
8	2917	Kostrena	**8970**	**12307**	ACC	L58054	D40	2,2
8	2923	Crikvenica	**8326**	**14752**	ACC	Ž5091	Ž5091	3,1
8	2928	N. Vinodolski - north	**6100**	**13838**	ACP	Ž5062	Ž5064	5,6
8	2929	Senj - north	**5196**	**12145**	ACP	Ž5109	L59001	13,3
8	4102	Sveti Juraj	**3370**	**8372**	ACP	D23	Ž5126	8,1
8	4105	Vlaka	**2737**	**6997**	ACC	L59028	D405	19,0
8	4207	Karlobag	**1093**	**2320**	ACC	D25	L63025	35,6
8	4802	Starigrad (Paklenica)	**3793**	**7750**	ACC	L63153	Ž6008	1,5
8	4803	Seline - south	**2300**	**5224**	ACP	Ž6008	D54	12,2
8	4810	Murvica	**12307**	**17102**	ACC	Ž6011	L63167	3,4
8	4814	Sukošan	**6971**	**12055**	ACP	Ž6040	Ž6045	7,2
8	5305	Pirovac	**4887**	**9723**	ACC	Ž6068	D59	2,9
8	5308	Šibenik	**14417**	**22056**	ACC	Ž6088	L65037	3,0
8	5309	Grebaštica	**5191**	**9273**	ACP	Ž6108	L65065	4,7
8	5407	Marina	**4301**	**8374**	ACC	L65078	Ž6130	3,6
8	5423	Solin	**42951**	**47133**	ACC	Ž6137	Ž6139	0,2
8	5422	Stobreč	**49990**	**56833**	ACC	D410	Ž6143	3,1

Table 3.1. AVARAGE ANNUAL AND AVARAGE SUMMER DAILY TRAFFIC WITH GENERAL COUNT SITES DATA /cont./ **SR 2009**

ROAD LABEL	COUNT SITE					COUNT SECTION		Length (km)
	Label	Name	AADT	ASDT	Count Method	Begin.	End	
8	5902	Jesenice	**11419**	**16805**	ACC	Ž6162	L67112	2,7
8	5909	Mimice - east	**5856**	**9933**	ACP	L67135	Ž6167	1,8
8	5910	Brela	**7280**	**15275**	ACC	D39	L67144	4,0
8	6004	Živogošće	**3456**	**7546**	ACC	L67197	D412	9,1
8	6005	Gradac	**4704**	**8811**	ACP	L67205	L67204	3,3
8	6010	Rogotin	**7807**	**13738**	ACC	D413	L69004	3,1
8	6501	Klek	**5776**	**10833**	ACP	L69029	GP	8,8
8	6503	Zaton Doli	**5191**	**9712**	ACP	Ž6227	D414	6,1
8	6601	Zaton	**7669**	**13085**	ACC	L69047	Ž6254	9,1
8	6602	Kupari	**12010**	**16827**	ACC	L69050	Ž6243	0,6
8	6603	Gruda - northwest	**3573**	**5197**	ACP	L69054	L69055	4,7
8	6604	Gruda - southeast	**2743**	**5102**	ACC	L69055	Ž6241	1,6
9	6103	Metković	**5500**	**7842**	ACC	GP	D62	1,0
9	6104	Kula Norinska	**9082**	**12851**	ACP	L69013	L69012	2,2
20	1305	Prelog	**4190**	**4185**	ACP	Ž2038	Ž2033	5,7
21	2702	Kaštel	**1807**	**2805**	ACC	GP	L50012	3,2
21	2707	Sveti Ivan	**2420**	**3264**	ACC	L50015	Ž5008	6,0
21	2719	Vižinada - north	**1644**	**2847**	ACP	D44	Ž5041	6,0
21	2721	Baderna - north	**2015**	**3009**	ACP	L50095	D48	2,7
21	2717	Bale	**2320**	**2783**	ACC	Ž5098	Ž5096	2,9
21	3905	Pula - north	**7136**	**9464**	ACP	Ž5117	Ž5115	4,0
22	1233	Možđenec	**3088**	**3259**	ACC	D3	D24	2,3
22	1228	Vukovec	**1429**	**1486**	ACP	L26003	L26047	2,6
22	2101	Križevci	**3242**	**3187**	ACP	L26069	L26125	2,0
23	3008	Belavići	**2029**	**2285**	ACP	L34062	Ž3176	6,4
23	3013	Skradnik	**1843**	**2258**	ACP	Ž3256	Ž3255	2,8
23	3014	Munjava (Josipdol)	**1398**	**1697**	ACC	D42	L34137	0,4
23	4201	Brinje	**1493**	**1186**	ACP	L59015	Ž5110	5,2
23	4101	Senj	**3772**	**7851**	ACC	L59009	D8	11,0
24	1111	Bedekovčina	**9098**	**9100**	ACP	Ž2197	Ž2166	5,5
24	1230	Konjščina - west	**3445**	**3929**	ACP	Ž2170	L22022	0,6
24	1226	Donja Konjščina	**3556**	**3231**	ACP	Ž2204	Ž2171	6,5
24	1222	Novi Marof - west	**2003**	**2822**	ACP	L25134	L25132	0,9
24	1309	Leskovec Topličk	**1406**	**1506**	ACP	Ž2111	L25154	3,6
25	4303	Bunić	**942**	**514**	ACP	L59064	Ž5156	2,7
25	4206	Budak	**3593**	**3022**	ACP	Ž5171	L59088	1,6
25	4209	Novoselo Trnovačko	**1250**	**2168**	ACC	Ž5162	Ž5163	1,2
25	4208	Baške Oštarije	**621**	**1421**	ACP	L59128	L59123	18,5
26	2107	Dubrava	**2161**	**2161**	ACP	L31122	Ž2211	2,8
26	2111	Čazma - east	**1580**	**1614**	ACP	L37097	L37056	0,1
26	2112	Trnovitički Popovac	**1386**	**1441**	ACP	L37105	Ž3090	3,0
26	2211	Hrastovac	**1593**	**1773**	ACP	L37142	Ž3168	3,3
27	4912	Zaton Obrovački	**1795**	**2898**	ACC	Ž6027	Ž6028	6,7
27	4914	Kruševo	**1825**	**3213**	ACP	Ž6025	L63069	3,7

Table 3.1. AVARAGE ANNUAL AND AVARAGE SUMMER DAILY TRAFFIC WITH GENERAL COUNT SITES DATA /cont./ **SR 2009**

ROAD LABEL	COUNT SITE					COUNT SECTION		Length (km)
	Label	Name	AADT	ASDT	Count Method	Begin.	End	
27	4915	Benkovac	**1588**	**2784**	ACC	Ž6048	L63123	10,6
27	5317	Gornje Ceranje	**1699**	**2183**	ACP	Ž6064	Ž6066	7,4
27	5303	Gaćelezi	**2177**	**3675**	ACC	D59	Ž6071	5,4
28	2030	Vrbovec bypass	**7008**	**7272**	ACC	D41	Ž3079	4,8
28	2103	Sveti Ivan Žabno	**7789**	**8031**	ACC	Ž3041	Ž2229	4,1
28	2102	Predavac	**9227**	**9219**	ACC	Ž3022	D524	0,3
28	2106	Prespa	**5314**	**4769**	ACC	Ž3048	Ž3087	0,7
28	2110	Bulinac	**2399**	**2495**	ACP	Ž3090	Ž3280	2,3
29	1232	Mače - east	**3578**	**3654**	ACP	Ž2168	Ž2128	2,3
29	1231	Zlatar Bistrica	**2545**	**2697**	ACP	D24	Ž2202	3,4
29	2004	Kašina	**3467**	**4050**	ACP	L10004	Ž1001	1,0
30	2014	Velika Mlaka	**40994**	**40965**	ACC	Ž3109	D408	2,0
30	2018	Buševec	**11240**	**11475**	ACP	Ž3115	Ž3116	2,7
30	2019	Lekenik	**9604**	**9669**	ACC	L33006	Ž3230	2,2
30	2020	Žažina	**9963**	**10196**	ACC	D36	Ž3156	0,3
30	3208	Petrinja - north	**4193**	**4540**	ACP	Ž3242	D37	1,8
30	3205	Budičina	**1869**	**2283**	ACP	Ž3201	L33053	0,7
31	2016	Kurilovec	**5104**	**4874**	ACP	L31157	Ž3111	3,2
31	3209	Gornje Taborište	**100**	**130**	ACP	Ž3194	L33029	3,2
32	1701	Prezid	**561**	**755**	ACP	GP	D305	8,7
32	2925	Crni Lug - north	**778**	**1035**	ACP	L58114	Ž5032	9,7
32	2903	Crni Lug	**699**	**942**	ACP	Ž5032	D203	10,7
33	5001	Knin - north	**1352**	**1692**	ACC	L65009	Ž6080	6,0
33	5003	Knin - south	**3327**	**4121**	ACC	D1	Ž6056	4,0
33	5004	Vrbnik - south	**2187**	**2460**	ACP	Ž6056	Ž6079	4,6
33	5412	Pakovo Selo	**2100**	**2850**	ACP	Ž6094	Ž6078	6,1
33	5307	Bilice	**2515****	**. . .**	ACC	D533	L65040	5,2
34	2208	Đulovac	**622**	**692**	ACP	L37129	L37128	2,7
34	2303	Slatina	**3750**	**4087**	ACP	D2	L40056	5,4
34	2301	Podravska Moslavina	**2083**	**2458**	ACP	Ž4030	Ž4031	8,1
34	2402	Donji Miholjac - east	**4365**	**4757**	ACP	D53	L44016	9,2
34	2405	Šag	**5960**	**5969**	ACC	Ž4051	L44028	2,8
35	1213	Greda	**6350**	**6312**	ACC	L25042	Ž2063	1,8
35	1216	Kaniža - west	**5162**	**5272**	ACP	Ž2084	Ž2102	2,0
35	1123	Gornja Šemnica	**2145**	**2254**	ACC	Ž2122	L22014	2,5
36	1921	Orlovac	**1368**	**1714**	ACP	L34043	L34045	7,3
36	1923	Pisarovina - south	**1269**	**1537**	ACP	Ž3106	L31187	1,0
36	2022	Letovanić	**1169**	**1379**	ACP	L33008	D30	4,1
36	2021	Stupno	**6476**	**6317**	ACP	L33009	Ž3203	3,0
36	3201	Novo Selo Palanječko	**3351**	**3342**	ACC	Ž3206	L33055	1,2
36	2117	Stružec	**3696**	**4127**	ACP	Ž3161	L33017	0,8
37	3203	Petrinja	**8741**	**8673**	ACP	D224	L33051	3,3
37	3202	Novo Selište	**5081**	**5896**	ACC	D30	Ž3198	3,2
37	3204	Gora	**3076**	**3379**	ACP	L33042	Ž3197	1,4

Table 3.1. AVARAGE ANNUAL AND AVARAGE SUMMER DAILY TRAFFIC WITH GENERAL COUNT SITES DATA /cont./ **SR 2009**

ROAD LABEL	COUNT SITE					COUNT SECTION		Length (km)
	Label	Name	AADT	ASDT	Count Method	Begin.	End	
38	3401	Pakrac - east	**1056**	**1098**	ACP	D5	L41017	10,5
38	3504	Pasikovci	**1884**	**2325**	ACP	Ž4113	L41018	1,3
38	3505	Kuzmica	**6390**	**6362**	ACC	L41054	Ž4116	3,0
38	3507	Pleternica - east	**1276**	**1367**	ACP	Ž4030	L41063	7,7
38	3605	Levanjska Varoš	**839**	**901**	ACP	Ž4144	L44120	4,0
39	5511	Cista Provo	**991**	**2277**	ACP	L67098	D60	6,1
39	5908	Cista Provo - south	**2838**	**5628**	ACP	L67137	Ž6171	1,9
39	5903	Gornja Brela	**3883**	**10027**	ACC	Ž6166	L67134	7,3
40	2911	Mavrinci	**11015**	**16248**	ACP	A6	L58110	4,8
41	1401	Gola	**813**	**846**	ACP	Ž2116	Ž2115	3,9
41	1310	Petranec	**2314**	**2406**	ACP	Ž2114	Ž2113	1,3
41	1311	Sokolovac	**3834****	**. . .**	ACC	L26006	L26073	3,0
41	2006	Vrbovečki Pavlovac	**5642**	**5879**	ACP	L31054	Ž3052	2,4
42	3010	Sveti Petar	**1626**	**1737**	ACP	L34099	Ž3254	3,9
42	4306	Saborsko - east	**189**	**562**	ACP	L59135	D1	3,0
43	1314	Hampovica	**4496**	**5001**	ACP	L26103	Ž3049	5,1
43	2105	Markovac	**2863**	**2924**	ACP	D524	L37035	2,0
43	2108	Narta - north	**3984**	**3903**	ACC	L37071	Ž3084	1,8
43	2015	Caginec	**7586**	**7745**	ACP	Ž3124	Ž3074	1,9
44	2706	Fontana	**2942**	**3311**	ACP	L50029	Ž5013	2,9
44	2806	Lupoglav - north	**3928**	**5320**	ACC	L50080	Ž5014	3,4
45	2207	Veliki Zdenci	**1694**	**1922**	ACC	Ž3136	Ž3133	5,0
45	2209	Hercegovac	**1926**	**2273**	ACP	Ž3133	Ž3135	2,0
45	2115	Kapelica	**3381**	**3759**	ACC	D26	L37138	4,0
46	3708	Stari Mikanovci	**3907**	**4100**	ACC	Ž4133	Ž4166	4,7
46	3709	Vođinci	**3979**	**4376**	ACP	Ž4166	Ž4167	6,1
46	3722	Vinkovci bypass	**2398**	**2548**	ACC	Ž4290	Ž4170	4,5
46	3711	Srijemske Laze	**3491**	**3492**	ACC	Ž4150	L46027	2,8
46	3712	Orolik	**2645**	**3122**	ACP	D46	D46	3,6
46	3804	Ilača - west	**1525**	**2326**	ACP	Ž4197	L46033	2,3
47	3402	Dobrovac	**877**	**912**	ACP	Ž4236	Ž4112	2,0
47	3306	Bročice	**1685**	**2330**	ACC	Ž3250	Ž3253	2,0
47	3308	Slabinja	**437**	**545**	ACP	L33177	Ž3264	13,6
47	3207	Hrvatska Kostajnica	**851**	**981**	ACP	D30	L33165	6,6
48	2712	Tinjan	**3235**	**5088**	ACP	L50096	L50099	1,1
49	3509	Batrina - north	**1275**	**1574**	ACP	Ž4185	Ž4158	4,9
50	4202	Brlog	**1368**	**2823**	ACP	L59016	Ž5127	2,9
50	4203	Otočac (Brlog)	**2800***	**4150***	ACC	L59019	Ž5140	4,2
50	4205	Ličko Lešće	**1717**	**1951**	ACC	Ž5144	Ž5147	2,3
50	4905	Sveti Rok	**1412**	**1481**	ACC	L59110	L59116	10,0
50	4906	Ličko Cerje	**1135**	**1640**	ACP	L59120	L59113	1,3
51	3502	Bektež	**1473**	**1739**	ACP	L41036	L41036	2,4
51	3403	Gajevi	**1798**	**1870**	ACP	L42007	Ž4126	3,6
52	4204	Vrhovine	**1462**	**2573**	ACP	Ž5130	L59140	7,1

Table 3.1. AVARAGE ANNUAL AND AVARAGE SUMMER DAILY TRAFFIC WITH GENERAL COUNT SITES DATA /cont./ **SR 2009**

ROAD LABEL	COUNT SITE					COUNT SECTION		Length (km)
	Label	Name	AADT	ASDT	Count Method	Begin.	End	
53	2401	Donji Miholjac	**1012**	**1179**	ACC	GP	D34	3,9
53	2404	Beničanci	**1505**	**1717**	ACP	Ž4046	Ž4031	4,8
53	2409	Velimirovac	**4992**	**4978**	ACC	Ž4075	D2	3,2
53	3603	Gradac Našički	**1816****	**. . .**	ACC	L44094	D51	10,3
53	3503	Čaglin	**1629**	**1812**	ACP	L41046	Ž4124	2,7
53	3607	Rastušje	**3266**	**3410**	ACC	L42038	L42039	2,8
54	4911	Jasenice	**1775**	**2531**	ACP	L63067	L63029	2,7
55	3706	Nuštar	**8739**	**8738**	ACC	Ž4134	L46007	2,2
55	3710	Kunjevci	**6199****	**-**	ACC	Ž4192	Ž4193	0,6
55	3719	Županja	**5495**	**6781**	ACC	L46045	GP	0,8
56	4916	Raštević	**3109**	**3493**	ACP	L63149	Ž6003	5,1
56	5318	Lišane Oštrovičke	**742**	**1200**	ACP	L63177	L63147	2,1
56	5306	Skradin	**1930**	**3058**	ACP	L65041	Ž6090	1,8
56	5413	Kljake	**1362**	**1568**	ACP	Ž6098	Ž6099	4,6
56	5503	Progon - south	**2732**	**3267**	ACP	D219	Ž6116	2,1
57	3802	Negoslavci - south	**1154**	**1362**	ACP	L46013	Ž4195	3,3
57	3805	Lipovac - north	**310**	**476**	ACP	L46052	L46061	0,8
58	5320	Vrpolje - west	**4290**	**4725**	ACP	L65064	Ž6108	1,3
58	5406	Donji Seget	**3173**	**4567**	ACC	Ž6129	D8	8,9
59	5006	Radučić - east	**1184**	**1839**	ACP	L65008	Ž6054	6,0
59	5302	Kistanje	**1177**	**1904**	ACP	L65023	Ž6074	7,6
59	5319	Čista Mala - south	**1921**	**3892**	ACP	Ž6071	D27	6,0
60	5505	Trilj	**6096**	**8041**	ACP	Ž6124	L67083	1,6
60	5510	Cista Velika	**2640**	**3161**	ACC	L67093	Ž6153	3,5
60	5901	Lovreć	**2870**	**3580**	ACC	L67101	Ž6173	0,9
60	6001	Grubine	**4664**	**5753**	ACC	L67159	Ž6186	2,6
60	6012	Vinjani Donji	**3498**	**4321**	ACP	L67170	GP	1,3
62	6014	Zagvozd	**2509****	**-**	ACC	L67149	Ž6179	2,5
62	6002	Ravča - west	**1467**	**1613**	ACP	L67199	D512	1,0
62	6013	Vrgorac - west	**3173**	**4382**	ACP	D512	Ž6208	6,3
62	6101	Nova Sela	**726**	**628**	ACP	D513	L69008	9,2
64	2713	Katarina	**2304**	**2559**	ACP	L50108	L50109	1,1
66	3904	Loborika	**6229**	**8345**	ACP	D401	L50170	2,1
66	2817	Raša	**2965**	**4612**	ACP	D421	Ž5103	8,4
66	2815	Stepčići	**5700***	**7800***	ACC	L50185	D64	5,5
66	2814	Medveja	**4705**	**8145**	ACC	Ž5082	Ž5050	7,7
66	2819	Opatija	**13539**	**17253**	ACC	Ž5053	D8	2,6
100	4001	Predošćica	**978**	**3122**	ACP	L58084	D101	10,1
100	4003	Čunski	**2166**	**4383**	ACC	L58115	Ž5157	6,3
102	2919	TS Krk Bridge	**9660***	**19060***	NB	Ž5189	D103	3,8
102	2922	Omišalj	**8326**	**14804**	ACC	Ž5083	L58065	2,3
102	2924	Sveti Vid	**8976**	**19387**	ACP	Ž5084	Ž5086	3,1
102	2934	Krk	**3762**	**8335**	ACC	Ž5131	Ž5131	2,3
102	2930	Kornić	**5691**	**14885**	ACP	Ž5131	L58091	2,4

Table 3.1. AVARAGE ANNUAL AND AVARAGE SUMMER DAILY TRAFFIC WITH GENERAL COUNT SITES DATA /cont./ **SR 2009**

ROAD LABEL	COUNT SITE					COUNT SECTION		Length (km)
	Label	Name	AADT	ASDT	Count Method	Begin.	End	
105	4104	Rab	**4005**	**9996**	ACP	L58104	Ž5139	5,3
106	4801	Pag Bridge	**2931**	**5497**	ACP	Ž6005	Ž6007	17,6
109	4813	Brbinj	**316**	**656**	ACP	D124	L63095	1,9
110	4815	Kukljica	**1340**	**2682**	ACP	L63171	L63109	5,7
113	5907	Supetar - south	**2190**	**3491**	ACC	D114	L67172	4,2
116	6006	Gdinj	**381**	**954**	ACP	L67196	Sućuraj	26,7
117	5801	Vis	**344**	**987**	ACP	L67212	L67212	4,5
118	6301	Korčula - west	**1766**	**3427**	ACP	Ž6244	L69073	0,8
120	6504	Babino Polje	**308**	**646**	ACC	L69037	D123	15,5
121	5304	Murter	**2489**	**4920**	ACP	Ž6250	Ž6250	2,8
200	2701	Plovanija	**6267**	**14798**	ACP	GP	D510	2,2
201	2704	Štrped	**3487**	**5129**	ACP	L50026	D44	3,5
203	2902	Brod na Kupi	**1120**	**2292**	ACP	Ž5033	L58022	1,6
204	3001	Pribanjci	**862**	**1600**	ACP	L34055	D3	1,4
205	1109	Tuheljske Toplice	**4633**	**5885**	ACP	Ž2248	Ž2155	1,5
206	1112	Hum na Sutli	**2908**	**2908**	ACP	GP	Ž2092	2,1
206	1105	Petrovsko	**1371**	**1508**	ACP	L22011	Ž2121	6,8
207	1124	Hromec	**2308**	**2666**	ACC	GP	Ž2096	5,3
208	1202	Trnovec	**988**	**1159**	ACC	GP	Ž2009	2,6
209	1001	Mursko Središće	**4450**	**5265**	ACC	Ž2003	L20003	0,9
209	1201	Šenkovec	**10758**	**11384**	ACC	Ž2016	Ž2001	2,9
210	1402	Virje	**758**	**989**	ACP	Ž2114	L26102	3,2
212	2502	Suza	**2195**	**2440**	ACC	Ž4037	L44011	4,9
213	2511	Bijelo Brdo	**3500***	**4246**	ACC	L44084	L44085	3,9
213	2601	Erdut	**1647**	**1911**	ACP	D519	Ž4093	6,6
214	4501	Posavski Podgajci	**1882**	**2222**	ACP	Ž4230	L46054	7,6
216	3103	Kupljensko	**1737**	**2217**	ACP	Ž3290	Ž3224	6,0
217	4307	Vaganac	**2424**	**4143**	ACP	L59026	L59024	1,8
217	4301	Ličko Petrovo Selo	**1659**	**2737**	ACC	D504	GP	3,0
218	4305	Donji Lapac	**408**	**572**	ACP	Ž5167	Ž5168	5,2
218	5005	Dobroselo - southeast	**157**	**260**	ACP	D506	L59106	5,3
219	5501	Obrovac Sinjski	**452**	**520**	ACP	Ž6122	L67016	1,6
219	5502	Progon - east	**575**	**775**	ACP	D56	L67031	2,0
220	5520	Čaporice	**3564**	**4430**	ACC	Ž6260	D60	4,5
220	5506	Kamensko	**1864**	**2951**	ACC	Ž6125	L67104	4,5
224	3303	Komarevo	**2151**	**2381**	ACP	L33066	Ž3244	3,2
224	3304	Sunja	**2541**	**2834**	ACC	Ž3244	Ž3211	1,9
224	3309	Gornji Hrastovac	**824**	**922**	ACP	L33119	L33126	1,5
225	1924	Šenkovec - east	**4285**	**6903**	ACP	Ž3033	Ž3035	1,2
225	1925	Zaprešić - east	**24180**	**23510**	ACP	Ž2186	D1	4,1
300	2705	Grando	**5284**	**6636**	ACP	L50006	L50008	2,8
300	2718	Buje - west	**6335**	**8571**	ACP	Ž5070	D21	2,5
301	2720	Bužinija - south	**5316**	**9140**	ACP	Ž5002	Ž5070	3,7
302	2711	Žbandaj	**8811**	**12745**	ACP	L50089	Ž5072	3,6

Table 3.1. AVARAGE ANNUAL AND AVARAGE SUMMER DAILY TRAFFIC WITH GENERAL COUNT SITES DATA /cont./ **SR 2009**

ROAD LABEL	COUNT SITE					COUNT SECTION		Length (km)
	Label	Name	AADT	ASDT	Count Method	Begin.	End	
303	2716	Sošići	**6741**	**13187**	ACP	Ž5096	L50128	7,4
306	4808	Kožino	**7811**	**16057**	ACP	L63049	L63052	2,3
307	1901	Stubičke Toplice	**8047**	**8216**	ACP	L22071	Ž2200	1,7
408	2023	Pleso - south	**9439**	**9835**	ACP	L31155	D30	1,7
414	6401	Golubnica	**1970**	**3827**	ACP	Ž69025	D415	6,7
414	6502	Putniković	**1819**	**3902**	ACC	Ž6226	L69030	6,0
424	4820	Gaženica	**5445**	**7571**	ACC	D8	D422	3,9
500	2811	Vranja	**1850**	**2634**	ACC	L50084	L50087	5,3
501	2926	Čv. Oštrovica - south	**5017**	**7686**	ACP	D3	Ž5059	7,4
501	2918	Križišće	**5869**	**11730**	ACC	Ž5063	D523	3,7
502	4924	Smilčić - east	**2205**	**3191**	ACP	Ž6023	Ž6019	6,6
503	4917	Kakma	**3299**	**5807**	ACP	L63126	L63119	1,5
504	4308	Prijeboj - northeast	**1616**	**2523**	ACC	L59027	D1	9,3
506	4923	Mazin - south	**191**	**328**	ACP	L59118	D1	21,6
507	1110	Gubaševo	**1397**	**1427**	ACP	L22040	D205	7,9
508	1102	Pleš (Bednja)	**1259**	**1662**	ACP	L25012	Ž2099	0,9
512	6003	Ravča - south	**1541**	**2712**	ACP	L67201	D62	1,6
513	6008	Zavala	**1471**	**2201**	ACP	Ž6211	Ž6208	9,9
513	6009	Baćina	**2741**	**4238**	ACC	L69003	D8	1,4
515	3602	Podgorač	**1528**	**2101**	ACP	Ž4105	L44100	3,8
517	2504	Majiške Međe	**1551**	**1770**	ACP	Ž4041	L44030	1,2
517	2403	Belišće - north	**1503**	**1855**	ACP	L44026	Ž4050	4,5
518	2509	Brijest	**5192**	**5165**	ACC	D2	Ž4086	3,4
519	3704	Borovo - north	**1539**	**1954**	ACP	L44116	L46003	4,8
522	4918	Lovinac	**1600***	**3935**	ACC	L59112	Ž5165	7,8
524	2104	Bjelovar bypass	**4155**	**4623**	ACP	D28	Ž3022	1,8
525	3508	Krajačići	**2038**	**2325**	ACP	Ž4162	Ž4244	8,5
533	5322	Dubrava Šibenska	**7532**	**12011**	ACC	Ž6091	D8	1,8

* Estimate
** ADT
. . . No data
\- No traffic

Table 3.2. AVARAGE ANNUAL AND AVARAGE SUMMER DAILY TRAFFIC WITH GENERAL COUNT SITES DATA

MW 2009

Road label	COUNT SITE Label	Name	AADT	ASDT	Count Meth.	COUNT SECTION	Length (km)
A1	1916	Lučko - south	**31432**	**53216**	TCTS čv. Lučko - čv. Jastrebarsko		22,1
A1	1920	Jastrebarsko - south	**29165**	**51873**	TCTS čv. Jastrebarsko - čv. Karlovac		18,2
A1	1804	Karlovac - south	**21699**	**43188**	TCTS čv. Karlovac - čv. Bosiljevo 1		24,3
A1	3021	Bosiljevo 1 - west	**22288**	**44995**	TCTS čv. Bosiljevo 1 - čv. Bosiljevo 2		3,9
A1	3009	Bosiljevo 2 - south	**13495**	**32098**	TCTS čv. Bosiljevo 2 - čv. Ogulin		21,1
A1	3025	Ogulin - south	**12640**	**31166**	TCTS čv. Ogulin - čv. Brinje		28,3
A1	4214	Brinje - south	**12523**	**31039**	TCTS čv. Brinje - čv. Žuta Lokva		11,1
A1	4215	Žuta Lokva - south	**12189**	**29425**	TCTS čv. Žuta Lokva - čv. Otočac		11,6
A1	4216	Otočac - south	**11856**	**28953**	TCTS čv. Otočac - čv. Perušić		32,1
A1	4217	Perušić - south	**11745**	**28836**	TCTS čv. Perušić - čv. Gospić		11,3
A1	4919	Gospić - south	**11552**	**28609**	TCTS čv. Gospić - čv. Gornja Ploča		23,0
A1	4903	Gornja Ploča - south	**12806**	**32125**	TCTS čv. Gornja Ploča - čv. Sveti Rok		5,6
A1	4909	Sveti Rok - south	**12353**	**32125**	TCTS čv. Sveti Rok - čv. Maslenica		32,7
A1	4805	Maslenica - south	**12677**	**32411**	TCTS čv. Maslenica - čv. Posedarje		7,2
A1	4806	Posedarje - south	**12036**	**30367**	TCTS čv. Posedarje - čv. Zadar 1		3,7
A1	4809	Zadar 1 - south	**9659**	**24522**	TCTS čv. Zadar 1 - čv. Zadar 2		9,1
A1	4921	Zadar 2 - south	**10179**	**24637**	TCTS čv. Zadar 2 - čv. Benkovac		16,5
A1	5313	Benkovac - south	**9146**	**21851**	TCTS čv. Benkovac - čv. Pirovac		21,5
A1	5314	Pirovac - south	**8452**	**19426**	TCTS čv. Pirovac - čv. Skradin		9,8
A1	5315	Skradin - south	**8811**	**19707**	TCTS čv. Skradin - čv. Šibenik		9,2
A1	5316	Šibenik - south	**7923**	**17450**	TCTS čv. Šibenik - čv. Vrpolje		14,6
A1	5410	Vrpolje - south	**8042**	**17565**	TCTS čv. Vrpolje - čv. Prgomet		17,5
A1	5411	Prgomet - south	**7491**	**16045**	TCTS čv. Prgomet - čv. Vučevica		14,3
A1	5417	Vučevica - south	**7583**	**16139**	TCTS čv. Vučevica - čv. Dugopolje		14,1
A1	5517	Dugopolje - south	**8380**	**15147**	TCTS čv. Dugopolje - čv. Bisko		10,4
A1	5911	Bisko - south	**5830**	**12236**	TCTS čv. Bisko - čv. Blato na Cetini		18,1
A1	5912	Blato na Cetini - south	**5925**	**12238**	TCTS čv. Blato na Cetini - čv. Šestanovac		6,9
A1	6015	Šestanovac - south	**4801**	**8816**	TCTS čv. Šestanovac - čv. Zagvozd		13,4
A1	6017	Zagvozd - south	**3008**	**6014**	TCTS čv. Zagvozd - čv. Ravča		27,0
A2	1114	Đurmanec - north	**6827**	**14911**	TCTS čv. Đurmanec - čv. Trakošćan		7,5
A2	1113	Krapina - north	**7795**	**16538**	TCTS čv. Krapina - čv. Đurmanec		10,3
A2	1116	Začretje - north	**10616**	**19247**	TCTS čv. Začretje - čv. Krapina		4,8
A2	1115	Mokrice - north	**11918**	**20575**	TCTS čv. Mokrice - čv. Začretje		12,8
A2	1904	Zaprešić - north	**14716**	**23106**	TCTS čv. Zaprešić - čv. Mokrice		16,5
A3	1910	Bobovica - west	**9046**	**14065**	TCTS gr. Slovenije - čv. Bobovica		2,5
A3	1909	Bregana	**9444***	**14786***	ACC TS Bregana - čv. Bobovica		1,5
A3	2013	Ivanja Reka - east	**27046**	**34543**	TCTS čv. Ivanja Reka - čv. Rugvica		8,7
A3	2027	Rugvica - east	**24508**	**32159**	TCTS čv. Rugvica - čv. Ivanić Grad		16,3
A3	2114	Ivanić Grad - east	**21055**	**28861**	TCTS čv. Ivanić Grad - čv. Križ		9,5
A3	2121	Križ - east	**20215**	**28061**	TCTS čv. Križ - čv. Popovača		13,4
A3	2118	Popovača - east	**19973**	**28090**	TCTS čv. Popovača - čv. Kutina		17,7
A3	3302	Kutina - east	**17286**	**25113**	TCTS čv. Kutina - čv. Novska		21,2

Table 3.2. AVARAGE ANNUAL AND AVARAGE SUMMER DAILY TRAFFIC WITH GENERAL COUNT SITES DATA /cont./

MW 2009

COUNT SITE					COUNT SECTION	
Road label	Label	Name	AADT	ASDT	Count Meth.	Length (km)
A3	3405	Novska - east	**16187**	**23710**	TCTS čv. Novska - čv. Okučani	24,8
A3	3404	Novska	**16216***	**23546***	ACC čv. Novska - čv. Okučani	24,8
A3	3407	Okučani - east	**14924**	**21911**	TCTS čv. Okučani - čv. Nova Gradiška	15,4
A3	3510	Nova Gradiška - east	**13888**	**20667**	TCTS čv. Nova Gradiška - čv. Lužani	22,5
A3	3514	Lužani - east	**13770**	**20515**	TCTS čv. Lužani - čv. Slavonski Brod (west)	20,3
A3	3511	Slavonski Brod (west) - east	**10581**	**16464**	TCTS čv. Slavonski Brod (west) - čv. Slavonski Brod (east)	11,5
A3	3609	Slavonski Brod (east) - east	**11888**	**17742**	TCTS čv. Slavonski Brod (east) - čv. Sredanci	20,1
A3	3617	Sredanci - east	**9571**	**15183**	TCTS čv. Sredanci - čv. Velika Kopanica	7,5
A3	3613	Velika Kopanica - east	**8675**	**14049**	TCTS čv. Velika Kopanica - čv. Babina Greda	12,6
A3	3714	Babina Greda - east	**8772**	**14190**	TCTS čv. Babina Greda - čv. Županja	12,2
A3	3716	Županja - east	**5925**	**10350**	TCTS čv. Županja - čv. Spačva	17,2
A3	3807	Spačva - east	**5865**	**10266**	TCTS čv. Spačva - čv. Lipovac	12,8
A4	1303	Čakovec - north	**2288**	**7203**	TCTS čv. Goričan - čv. Čakovec	14,0
A4	1306	Ludbreg - north	**4099**	**9368**	TCTS čv. Čakovec - čv. Ludbreg	8,2
A4	1212	Varaždin - north	**5001**	**10346**	TCTS čv. Ludbreg - čv. Varaždin	7,2
A4	1215	Varaždinske Toplice - north	**10236**	**16385**	TCTS čv. Varaždin - čv. Varaždinske Toplice	6,3
A4	1220	Novi Marof - north	**9624**	**15821**	TCTS čv. Varaždinske Toplice - čv. Novi Marof	8,3
A4	1225	Breznički Hum - north	**9761**	**15935**	TCTS čv. Novi Marof - čv. Breznički Hum	9,7
A4	1229	Komin - north	**10275**	**16499**	TCTS čv. Breznički Hum - čv. Komin	12,3
A4	2002	Sveta Helena - north	**10564**	**16759**	TCTS čv. Komin - čv. Sveta Helena	10,6
A5	2515	Osijek - south	**2080****	**2328**	TCTS čv. Osijek - čv. Čepin	8,8
A5	3620	Čepin - south	**2925****	**3383**	TCTS čv. Čepin - čv. Đakovo	23,8
A5	3616	Đakovo - south	**2943**	**3427**	TCTS čv. Đakovo - čv. Sredanci	21,0
A6	3022	Bosiljevo 2 - west	**11448**	**19401**	TCTS čv. Bosiljevo 2 - čv. Vrbovsko	13,8
A6	3006	Vrbovsko - west	**11979**	**20091**	TCTS čv. Vrbovsko - čv. Ravna Gora	15,3
A6	2906	Ravna Gora - west	**11900**	**20004**	TCTS čv. Ravna Gora - čv. Delnice	11,0
A6	2910	Delnice - west	**12600**	**21150**	TCTS čv. Delnice - čv. Vrata	8,9
A6	2915	Vrata - west	**12413**	**20891**	TCTS čv. Vrata - čv. Oštrovica	12,4
A6	2933	Oštrovica - west	**9324**	**13168**	TCTS čv. Oštrovica - čv. Kikovica (Rijeka)	9,0
A7	2818	TS Rupa	**6653**	**14634**	TCTS čv. Rupa - čv. Jurdani	9,5
A7	2807	Rijeka bypass	**20100**	**31700**	ACP A8 - D304	3,2
A7	2810	Katarina Tunnel	**15700***	**17211**	ACC D403 - A6	4,7
A8	2808	Lupoglav - south	**7100***	**. . .**	ACC D44 - Ž5046	12,8
A8	2812	TS Učka Tunnel	**8019**	**11511**	TCTS Ž5048 - D500	9,3
A9	2722	TS Mirna	**4659**	**10821**	TCTS čv. Nova Vas - čv. Višnjan	14,3
A9	2715	Limska Draga	**6665**	**12546**	ACC čv. Medaki - čv. Kanfanar	7,1
A9	3901	Vodnjan - north	**6388**	**12139**	ACC čv. Kanfanar - čv. Vodnjan	19,8
A11	2031	Velika Gorica	**1460****	**1438**	ACC Velika Gorica - Buševec	9,0

* Estimate
** ADT
. . . No data
\- No traffic

Table 3.3. AVARAGE ANNUAL AND AVARAGE SUMMER DAILY TRAFFIC WITH GENERAL COUNT SITES DATA **CR 2009**

ROAD LABEL	COUNT SITE					COUNT SECTION		Length (km)
	Label	Name	AADT	ASDT	Count Method	Begin.	End	
3034	2009	Greda	**3787**	**3898**	ACP	Ž3075	Ž3076	2,4
3034	2011	Dugo Selo	**15097**	**14718**	ACC	L31108	L10161	3,7
3051	1911	Sveta Nedjelja	**16887**	**15881**	ACP	Ž3051	Ž3061	4,0
3294	3310	Živaja	**627**	**767**	ACP	Ž3264	L33177	9,1
3297	1917	Krašić	**1895**	**2544**	ACP	L31132	L31132	2,1
3297	1803	Mali Erjavec	**3163**	**3213**	ACP	Ž3098	L34030	4,3
4257	2506	Podravlje	**8971**	**9020**	ACC	Ž4042	Ž4083	5,0
5191	2913	Bukovac	**780**	**923**	ACP	Ž5068	L58060	5,1
5191	2927	Mrkopalj - east	**250**	**361**	ACP	Ž5069	Ž3254	26,4
5191	3015	Jezerane	**110**	**138**	ACP	L34131	D23	14,5
6040	4812	Zemunik Donji - north	**4367**	**5467**	ACC	Ž6011	L63065	0,9
6253	5508	Klis	**5942**	**6411**	ACC	L67075	L67074	3,9
6258	4817	Islam Latinski	**1011**	**1311**	ACP	L63062	L63064	5,0
6260	5515	Bisko - east	**947**	**1462**	ACP	Ž6148	L67085	2,4
6264	6011	Vinjani Gornji	**1717**	**2349**	ACP	L67169	L67168	1,5

TRAFFIC COUNTING
ON THE ROADWAYS
OF CROATIA
IN 2009

4

STATE ROADS AND MOTORWAYS: TOLL-PAID TRAFFIC COUNTING

4. STATE ROADS AND MOTORWAYS: TOLL-PAID TRAFFIC COUNTING

In the fourth chapter of this Digest the basic data about traffic volumes collected through “toll-paid” counts on toll roadways can be found. This chapter deals only with data collected on so called closed toll-collecting systems. In our country, the described method of counting is used at the following motorway sections: Lučko – Kikovica (partly A1 up to intersection Bosiljevo 2 and A6 after that), Bosiljevo 2 – Ravča (A1), Macelj – Zaprešić (A2), Ivanja Reka – Lipovac (A3), Goričan – Sv. Helena (A4) and Osijek – Sredanci (A5). We note that the given data is obtained through processing the data acquired off the tollbooths.

All data collected through toll counts have been processed using an adopted methodology of processing for collected data. The results of processing data collected at toll roadways and processed that way enable their representation in various forms. For mentioned motorways, the results are graphically displayed on illustrations 4 to 8. They clearly exhibit traffic volumes (intensities) at each of the tollgates and cross sections of those motorways.

Among all toll roads the prominent sections, by traffic volumes, continue to be those between Lučko and Karlovac. On the count sections of this motorway already for years the highest AADT and, especially, ASDT values have been recorded, with respect to the other such roadways in Croatia.

At all toll roads in Croatia ASDT is significantly higher than AADT, which demonstrates seasonal variations in their use.

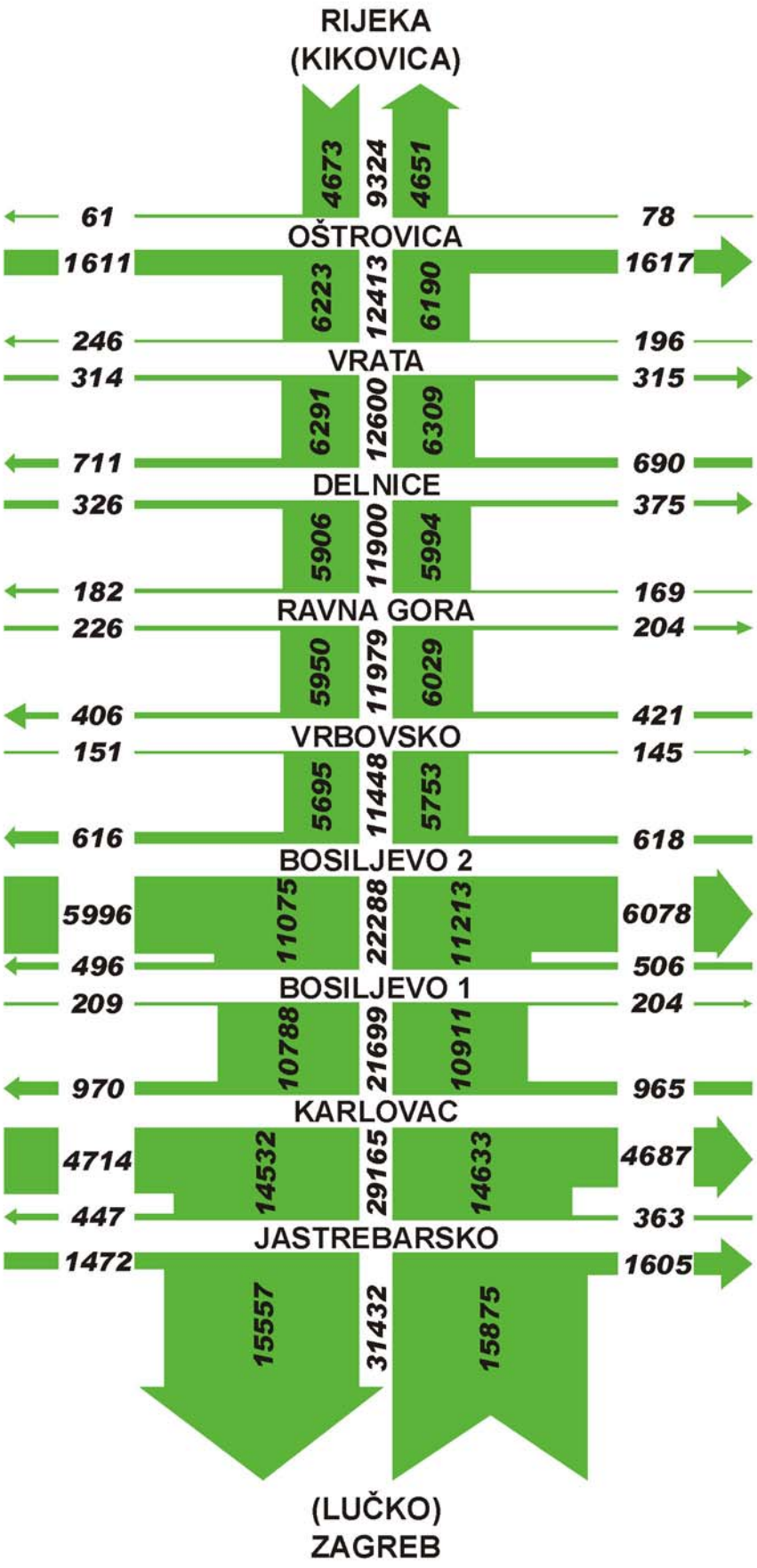


Illustration 4. MOTORWAY TRAFFIC; ZAGREB - RIJEKA

MW - 2009

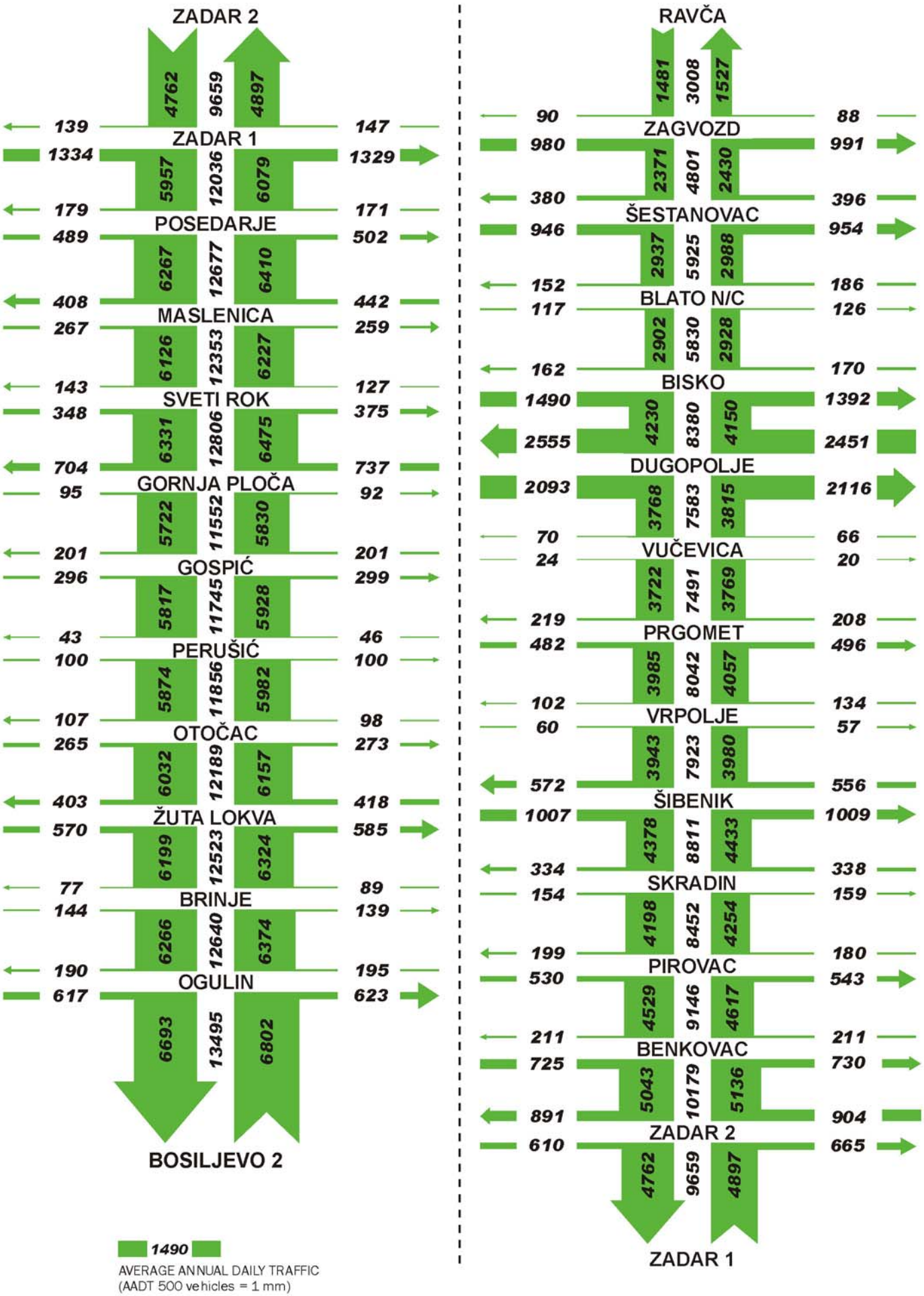
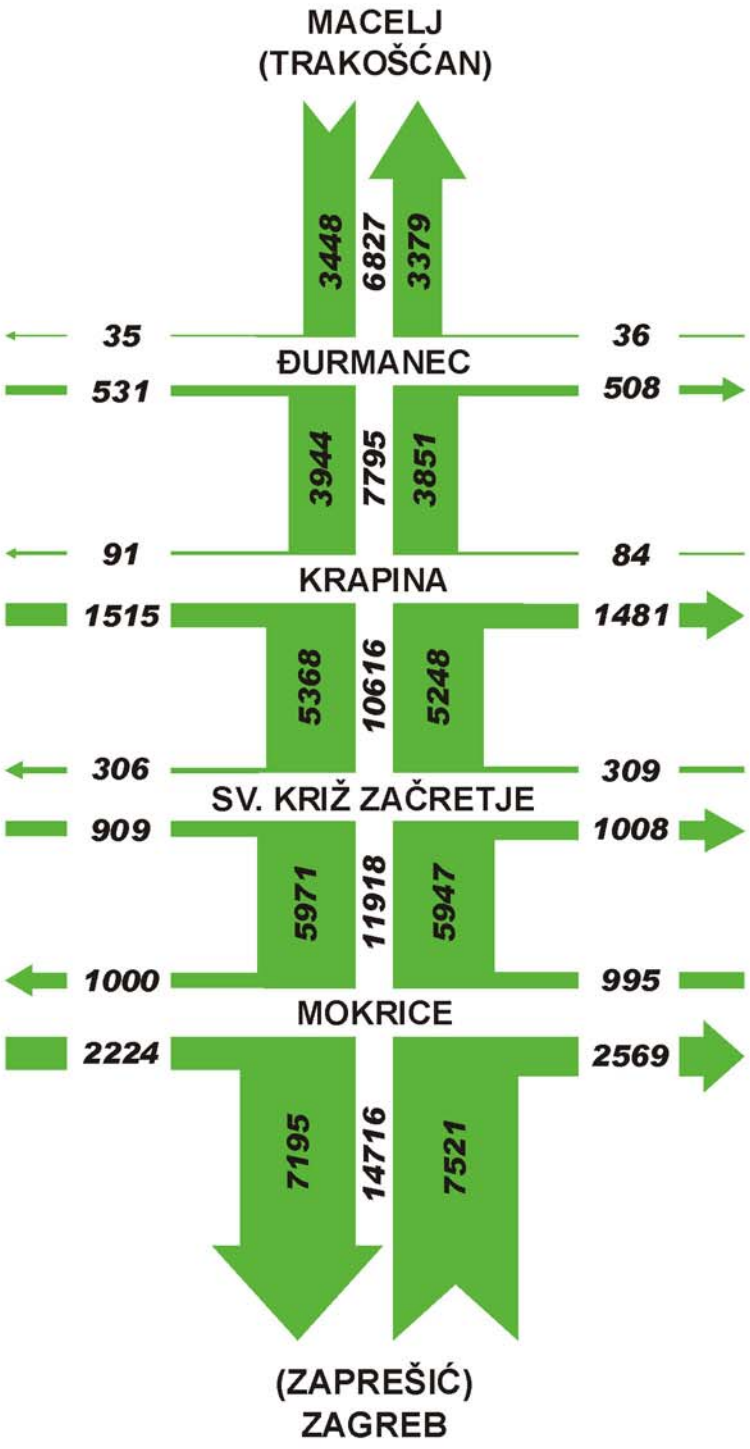


Illustration 5. MOTORWAY A1 TRAFFIC; SECTION BOSILJEVO 2 - RAVČA MW - 2009



2569

AVERAGE ANNUAL DAILY TRAFFIC
(AADT 500 vehicles = 1 mm)

Illustration 6. MOTORWAY A2 TRAFFIC

MW - 2009

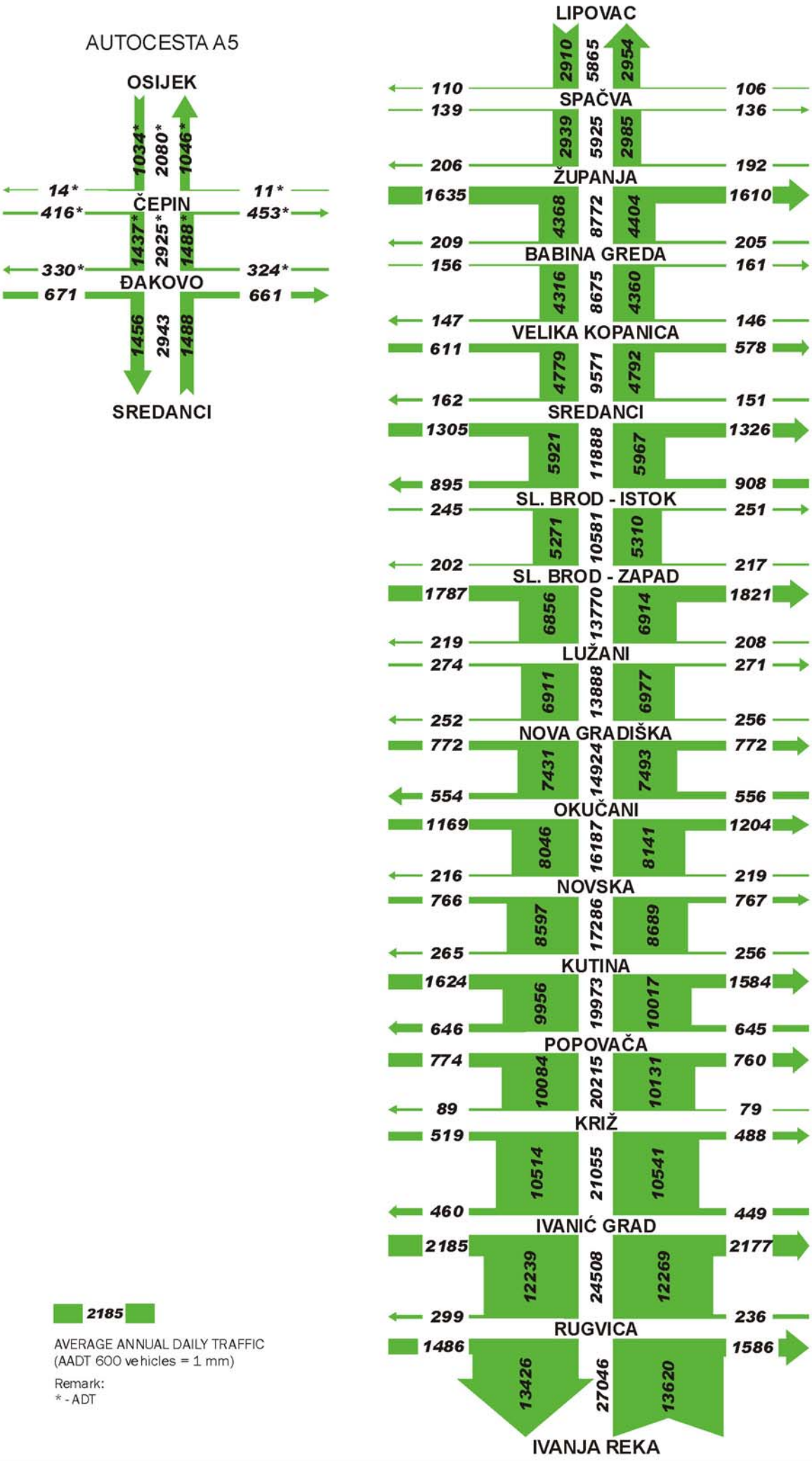


Illustration 7. MOTORWAY A3 TRAFFIC; SECTION IVANJA REKA - LIPOVAC
MOTORWAY A5 TRAFFIC; SECTION OSIJEK - SREDANCI

MW - 2009

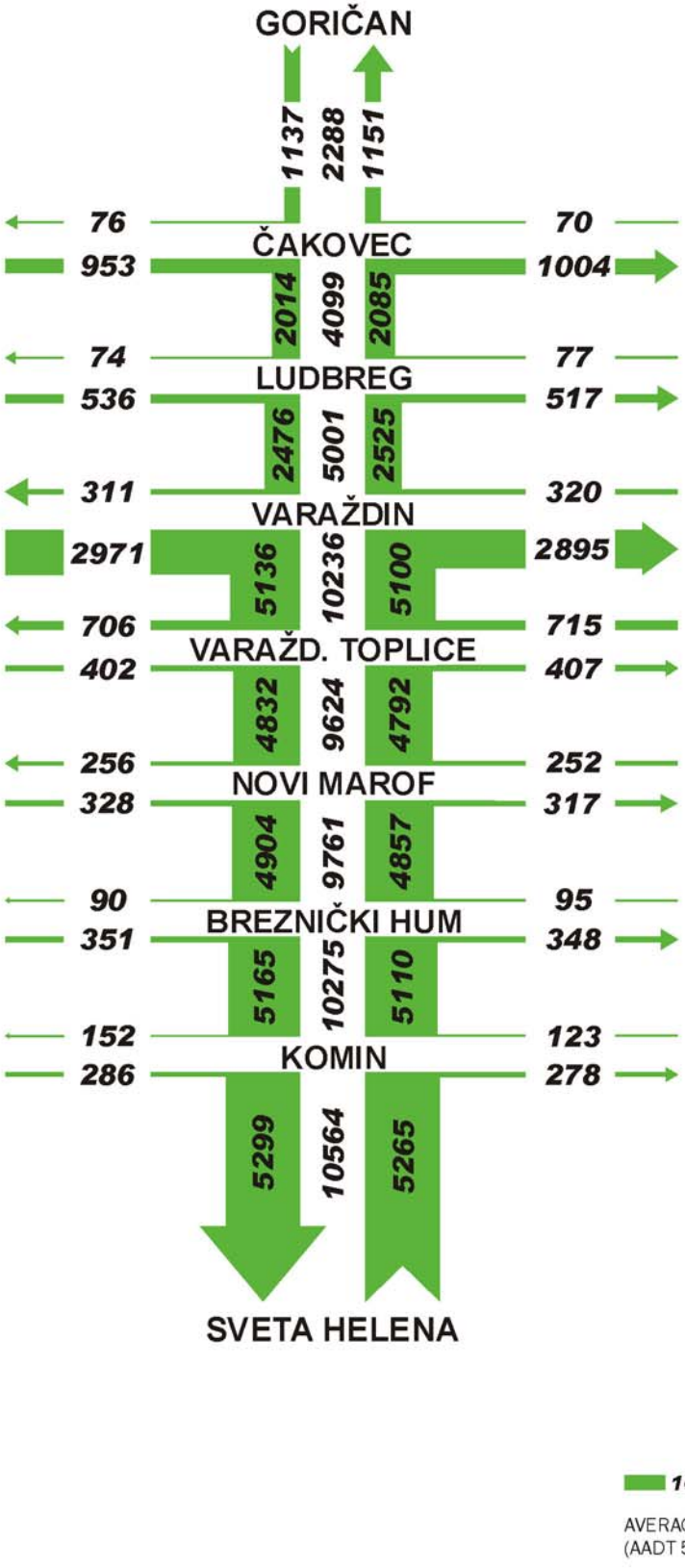


Illustration 8. MOTORWAY A4 TRAFFIC; SECTION GORIČAN - SVETA HELENA MW - 2009

TRAFFIC COUNTING
ON THE ROADWAYS
OF CROATIA
IN 2009

5

FERRY LINES
VEHICLE TRANSPORTATION

5. FERRY LINES VEHICLE TRANSPORTATION

The chosen data about road vehicle transportation on domestic ferry lines in 2009 is presented in Table 5. Data was collected for 25 ferry lines, and the international lines were omitted.

Just as before, some lines excel: Brestova – Porozina, Valbiska – Merag, Jablanac – Mišnjak, Prizna – Žigljen, Zadar – Preko and Split – Supetar. In July and August of 2009 all numbers are significantly higher showing strong seasonal dependency.

Table 5 AADT AND ASDT: STRUCTURE BY VEHICLE TYPES **FL 2009**
FERRY LINES

FERRY LINE		Total AADT 100% ASDT 100%	VEHICLE TYPES			
LABEL	NAME		Passenger Cars	Buses	Freight Vehicles	Other Vehicles
334	BRESTOVA POROZINA	**264.464**	**217.865**	**2.052**	**11.720**	**32.827**
		725	**597**	**6**	**32**	**90**
		100%	82,38	0,78	4,43	12,41
		2052	**1731**	**8**	**45**	**268**
		100%	84,36	0,38	2,20	13,06
332	VALBISKA MERAG	**349.517**	**274.140**	**5.203**	**44.320**	**25.854**
		958	**752**	**14**	**121**	**71**
		100%	78,43	1,49	12,68	7,40
		1976	**1606**	**18**	**156**	**196**
		100%	81,24	0,91	7,91	9,94
338	VALBISKA LOPAR	**30.540**	**24.201**	**10**	**3.499**	**2.830**
		84	**66**	**0**	**10**	**8**
		100%	79,24	0,03	11,46	9,27
		230	**185**	**0**	**23**	**22**
		100%	80,13	0,01	10,11	9,75
337	JABLANAC MIŠNJAK	**357.361**	**336.961**	**4.755**	**15.645**	**. . .**
		979	**923**	**13**	**43**	**. . .**
		100%	94,29	1,33	4,38	. . .
		2876	**2802**	**18**	**56**	**. . .**
		100%	97,42	0,64	1,94	. . .
401	ZADAR SILBA MALI LOŠINJ	**6.612**	**3.760**	**0**	**1.940**	**912**
		18	**11**	**0**	**5**	**2**
		100%	56,87	0,00	29,34	13,79
		51	**37**	**0**	**5**	**9**
		100%	71,69	0,00	10,40	17,91
335	PRIZNA ŽIGLJEN	**297.746**	**255.235**	**2.663**	**15.272**	**24.576**
		816	**700**	**7**	**42**	**67**
		100%	85,73	0,89	5,13	8,25
		2601	**2305**	**14**	**58**	**224**
		100%	88,62	0,55	2,23	8,60
433	ZADAR SESTRUNJ MOLAT	**4.757**	**2.930**	**0**	**1.657**	**170**
		13	**8**	**0**	**5**	**0**
		100%	61,60	0,00	34,83	3,57
		26	**20**	**0**	**5**	**1**
		100%	76,92	0,00	18,11	4,97
434	ZADAR BRBINJ	**49.434**	**37.173**	**93**	**9.806**	**2.362**
		135	**102**	**0**	**27**	**6**
		100%	75,19	0,19	19,84	4,78
		317	**257**	**0**	**38**	**22**
		100%	80,93	0,09	11,96	7,02
431	ZADAR PREKO	**260.154**	**203.197**	**338**	**45.560**	**11.059**
		713	**557**	**1**	**125**	**30**
		100%	78,11	0,13	17,51	4,25
		1314	**1087**	**2**	**140**	**85**
		100%	82,75	0,12	10,67	6,46

Table 5 AADT AND ASDT: STRUCTURE BY VEHICLE TYPES **FL 2009**
FERRY LINES /cont./

FERRY LINE		Total AADT 100% ASDT 100%	VEHICLE TYPES			
LABEL	NAME		Passenger Cars	Buses	Freight Vehicles	Other Vehicles
435	ZADAR IŽ RAVA	**10.092** **28** 100% **58** 100%	**6.343** **18** 62,85 **47** 80,48	**15** **0** 0,15 **0** 0,11	**3.283** **9** 32,53 **8** 13,81	**451** **1** 4,47 **3** 5,60
432	BIOGRAD TKON	**130.970** **359** 100% **745** 100%	**107.310** **294** 81,94 **652** 87,44	**268** **1** 0,20 **2** 0,25	**18.272** **50** 13,95 **49** 6,62	**5.120** **14** 3,91 **42** 5,69
532	ŠIBENIK KAPRIJE ŽIRJE	**6.194** **17** 100% **28** 100%	**2.886** **8** 46,59 **17** 62,25	**0** **0** 0,00 **0** 0,00	**2.988** **8** 48,24 **9** 30,84	**320** **1** 5,17 **2** 6,91
606	SPLIT TROGIR DRVENIK VELI DRVENIK MALI	**7.175** **20** 100% **27** 100%	**3.236** **9** 45,10 **18** 65,38	**0** **0** 0,00 **0** 0,00	**3.636** **10** 50,68 **8** 29,91	**303** **1** 4,22 **1** 4,71
636	SPLIT ROGAČ	**53.901** **148** 100% **306** 100%	**39.009** **107** 72,37 **239** 78,14	**60** **0** 0,11 **0** 0,04	**11.958** **33** 22,19 **44** 14,40	**2.874** **8** 5,33 **23** 7,42
602	SPLIT VIS	**41.825** **115** 100% **280** 100%	**26.419** **73** 63,17 **211** 75,29	**98** **0** 0,23 **0** 0,10	**12.731** **35** 30,44 **46** 16,30	**2.577** **7** 6,16 **23** 8,31
631	SPLIT SUPETAR	**333.511** **914** 100% **1989** 100%	**248.724** **682** 74,57 **1610** 80,93	**888** **2** 0,27 **3** 0,16	**69.234** **190** 20,76 **246** 12,36	**14.665** **40** 4,40 **130** 6,55
638	MAKARSKA SUMARTIN	**27.137** **74** 100% **220** 100%	**20.766** **56** 76,53 **181** 81,96	**63** **0** 0,23 **0** 0,05	**3.148** **9** 11,60 **8** 3,86	**3.160** **9** 11,64 **31** 14,13
635	SPLIT STARI GRAD	**138.793** **380** 100% **932** 100%	**93.848** **257** 67,62 **707** 75,80	**654** **2** 0,47 **2** 0,21	**34.727** **95** 25,02 **141** 15,14	**9.564** **26** 6,89 **82** 8,85

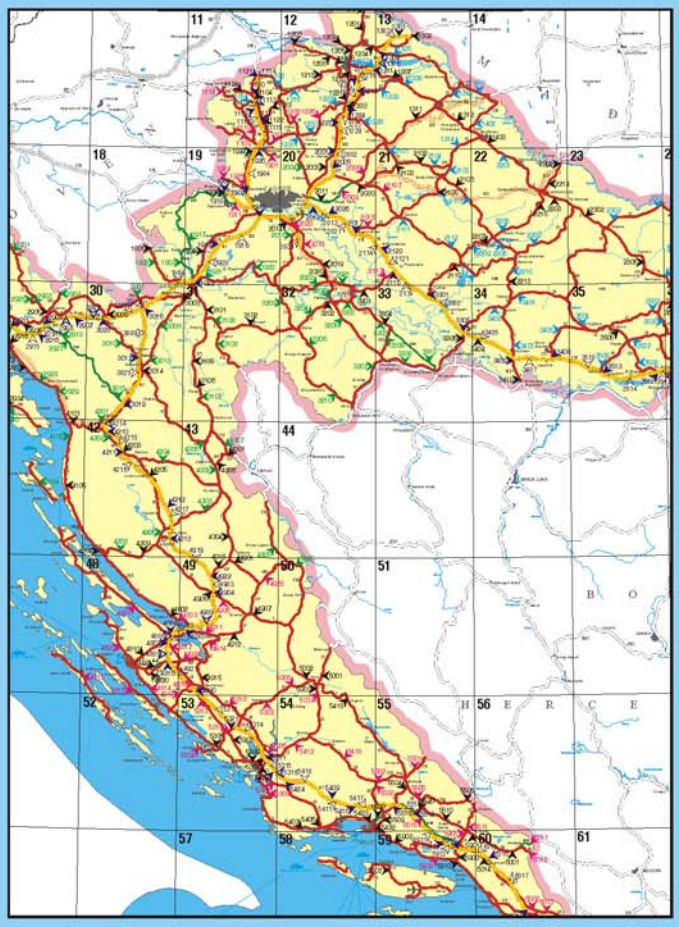
Table 5 AADT AND ASDT: STRUCTURE BY VEHICLE TYPES **FL 2009**
FERRY LINES /cont./

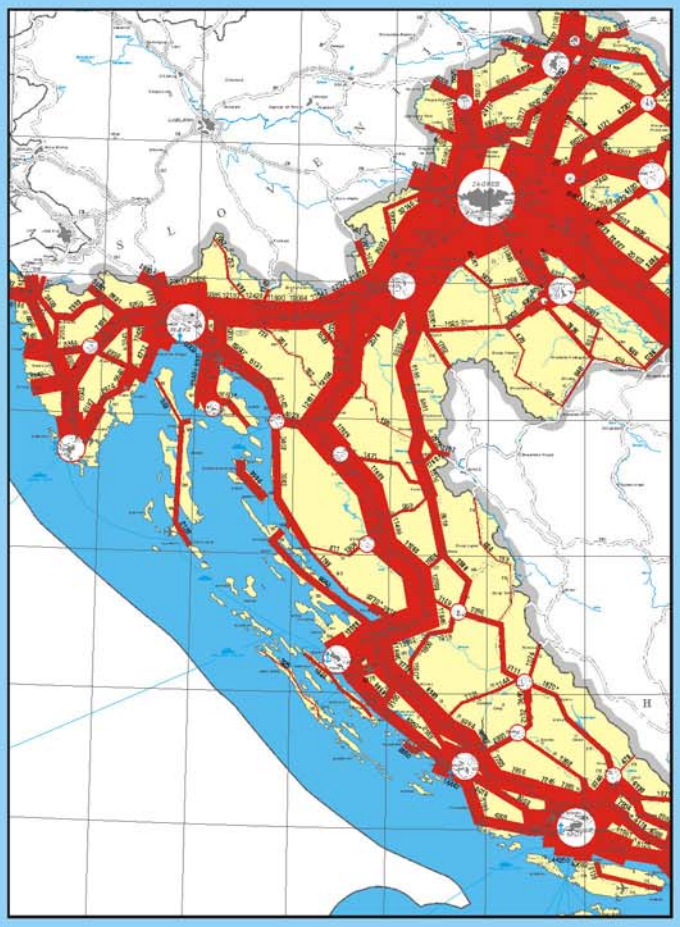
FERRY LINE		Total AADT 100% ASDT 100%	VEHICLE TYPES			
LABEL	NAME		Passenger Cars	Buses	Freight Vehicles	Other Vehicles
604	SPLIT HVAR VELA LUKA LASTOVO	**44.257**	**27.992**	**128**	**13.322**	**2.815**
		121	**77**	**0**	**36**	**8**
		100%	63,25	0,29	30,10	6,36
		278	**209**	**0**	**46**	**23**
		100%	75,02	0,16	16,49	8,33
632	DRVENIK SUĆURAJ	**92.253**	**76.058**	**608**	**8.874**	**6.713**
		253	**209**	**2**	**24**	**18**
		100%	82,44	0,66	9,62	7,28
		686	**590**	**2**	**34**	**60**
		100%	86,07	0,29	4,91	8,73
634	OREBIĆ DOMINČE	**173.869**	**134.372**	**2.602**	**27.148**	**9.747**
		476	**368**	**7**	**74**	**27**
		100%	77,28	1,50	15,61	5,61
		868	**707**	**8**	**90**	**63**
		100%	81,49	0,92	10,36	7,23
641	DRVENIK DOMINČE	**6.564**	**5.607**	**17**	**235**	**705**
		53**	**45**	**0**	**2**	**6**
		100%	85,42	0,26	3,58	10,74
		85	**74**	**0**	**2**	**9**
		100%	86,54	0,10	2,82	10,54
633	PLOČE TRPANJ	**52.169**	**40.998**	**99**	**7.519**	**3.553**
		143	**112**	**0**	**21**	**10**
		100%	78,59	0,19	14,41	6,81
		383	**320**	**0**	**32**	**31**
		100%	83,48	0,08	8,23	8,21
8311	PRAPRATNO SOBRA	**34.913**	**28.619**	**83**	**4.716**	**1.495**
		96	**79**	**0**	**13**	**4**
		100%	81,97	0,24	13,51	4,28
		237	**204**	**0**	**18**	**15**
		100%	86,01	0,03	7,53	6,43
831	DUBROVNIK SOBRA From Oct 1st DUBROVNIK SUĐURAĐ	**5.584**	**2.824**	**26**	**2.168**	**566**
		15	**7**	**0**	**6**	**2**
		100%	50,56	0,47	38,83	10,14
		30	**17**	**0**	**9**	**4**
		100%	59,65	0,43	28,24	11,68

** ADT
· · · No data

TRAFFIC COUNTING
ON THE ROADWAYS
OF CROATIA
IN 2009

6





APPENDIX

Common Abbreviations and Terms

**State Roadway Network,
Traffic Count Sites Distribution
(as on 31. 12. 2009.)**

**State Roadway Network,
Traffic Volumes
on Selected Roads Directions
in 2009**

Appendix 6.1. Abbreviations and Terms

Kratica	Značenje	Abbreviation	Meaning
PGDP	prosječni godišnji dnevni promet	**AADT**	Average Annual Daily Traffic
PLDP	prosječni ljetni dnevni promet	**ASDT**	Average Summer Daily Traffic
PDP	prosječni dnevni promet	**ADT**	Average Daily Traffic
DC	državna cesta	**SH**	State Highway
ŽC	županijska cesta	**CR**	County Road
AC	autocesta	**M**	Motorway
PAC	poluautocesta	**SM**	Semi – Motorway
NAB	neprekidno automatsko brojenje prometa	**ACC**	Automatic Count (continuous)
PAB	povremeno automatsko brojenje prometa	**ACP**	Automatic Count (periodical)
NB	naplatno brojenje	**TCTS**	Traffic Census at Toll Stations
po, ut, sr	ponedjeljak, utorak, srijeda		monday, tuesday, wednesday
če, pe, su, ne	četvrtak, petak, subota, nedjelja		thursday, friday, saturday, sunday
RB	ručno brojenje prometa		manual count
NP	naplatna postaja		toll station
	broj / oznaka ceste		road reference number / designation
	brojačko mjesto		counting site
	način brojanja		method of count
	duljina odsječka		section length
	ukupno		total
	sveukupno		overall total
	udjel		share
	dan		day
	tjedan		week
	mjesec		month
	godina		year
	ulazna naplatna postaja		entrance toll station
	izlazna naplatna postaja		exit toll station
	vrsta vozila		vehicle type
	skupina vozila		vehicle class
	bicikli		bycicles
	mopedi		mopeds
	motocikli		motorcycles
	osobna vozila		passenger cars
	teretna vozila		goods vehicles
	autobusi		buses
	teretna vozila s prikolicom		combination trucks
	tegljači (s prikolicom)		truck-tractors (with trailers)
	traktori i radna vozila		tractors and industrial vehicles
	zaprežna vozila		horse-drawn vehicles
	ostala vozila		other vehicles

REPUBLIC OF CROATIA
STATE ROADWAY NETWORK

TRAFFIC COUNT SITES DISTRIBUTION
(as on 31.12.2009.)

LEGEND:

- MOTORWAY (A3)
- OTHER STATE ROADS (408)
- ROADS PLANNED / UNDER CONSTRUCTION (A1)
- COUNTY ROADS (3034)

Editor: HRVATSKE CESTE d.o.o., Zagreb, 2010.
Production: PROMETIS d.o.o., Zagreb, 2010.

COUNT SITE DESIGNATION METHOD

COUNTING SITE LABEL: 60 01

- QUADRANT NUMBER ON MAP
- COUNTING SITE LABEL IN QUADRANT

- 5901 continuous automatic counting
- 1301 toll counting - toll station
- 2013 toll counting - counting site (virtual)
- 3602 periodical automatic counting, 2009
- 2018 periodical automatic counting, 2008
- 2712 periodical automatic counting, 2007

REPUBLIC OF CROATIA

STATE ROADWAY NETWORK

TRAFFIC VOLUMES ON SELECTED ROAD DIRECTIONS IN 2009

LEGEND:

3698 — AVERAGE ANNUAL DAILY TRAFFIC (AADT, 1000 vehicles = 1 mm)

Remark:
** AADT (estimate), ** ADT*

Editor: HRVATSKE CESTE d.o.o., Zagreb, 2010.
Production: PROMETIS d.o.o., Zagreb, 2010.