RESOLUTION NO. 45 ON MEASURES TO IMPROVE EMERGENCY ASSISTANCE IN ROAD TRAFFIC

[CM(83)20]

The Council of Ministers, meeting in Paris on 24th November 1983,

HAVING REGARD to the Report on Emergency Assistance in road traffic [CM(83)17];

CONVINCED that qualitative and quantitative improvements in emergency assistance in road traffic would help to increase the chances of survival of casualties and make the effects of their injuries less severe;

NOTING:

- That the majority of Member countries have established in recent years an extensive and efficient emergency assistance system which however needs to be continuously improved in the light of new knowledge and technical advances.

- That more thorough training of all road users would increase the effectiveness of emergency assistance.

- However, that training received in a short period is quickly forgotten, and that therefore refresher courses should be given at regular intervals;

- That professional drivers in both the private and public sectors, police officers and members of the fire service should receive more comprehensive training in emergency assistance owing to the nature of their work.

- That it is not really possible to assist casualties without having the necessary equipment for this purpose.

- That the numbers of paramedical personnel assigned to first-aid duties is deemed insufficient by a number of countries and that the training of such personnel often differs according to the region or local authority.

- That emergency assistance in rural regions is often less well organised and efficient than in conurbations.

- That the production of standard documentation within countries would promote the co-ordination of emergency assistance measures and would make it possible to detect any shortcomings.

RECOMMENDS the Governments of ECMT Member countries:

1. To support and promote the implementation of measures to improve emergency assistance in road traffic.

2. To encourage the acquisition of knowledge of prompt assistance or first-aid among all road users and to ensure that this knowledge is regularly kept up to date.

3. To encourage professional drivers, police officers and members of the fire service to take more advanced courses in emergency assistance and, where necessary, to give them the opportunity of following such courses.

4. To encourage all motor vehicles, with the exception of two-wheelers, to be equipped with a first-aid kit with a specified minimum content that should be duly supplemented in the case of the drivers referred to under point 3 above.

5. Where necessary, to increase the numbers of paramedical personnel and standardise relevant occupational training.

6. Where necessary, to improve the effectiveness of emergency assistance, primarily by improving the organisation of the system in rural areas and reserving a single telephone number for all types of emergency call.

7. To adopt standard documentation on the provision of emergency assistance throughout the country.

INSTRUCTS the Committee of Deputies to pursue its efforts to improve emergency assistance, to make use of the knowledge obtained by other international organisations competent in this sphere and, if necessary, to encourage co-operation among Member countries in this connection.

EMERGENCY ASSISTANCE IN ROAD TRAFFIC

[CM(83)17 REVISED]

1. Introduction

1.1. Introduction

In 1963, the Council of Ministers adopted a general programme of measures to improve road safety CM(63)6(2nd Revision). Item G 4 of this document deals amongst other things, with ways of improving first aid given to victims of road accidents. In 1968, The Road Safety Committee drew up a questionnaire on this matter, which was sent to Member countries. The German Delegation subsequently prepared a report on this subject in 1969 [for the Committee of Deputies. This study was submitted to the Ministers of Transport at their meeting in Stockholm in 1969.

In 1981, a further questionnaire was considered by the Member countries and, following the decision of the Committee of Deputies, an inquiry was carried out in order to provide information about the present situation with respect to first-aid efforts.

The German Delegation again accepted to act as rapporteur. The Federal Ministry of Transport commissioned the Bundesanstalt für Strassenwesen (Federal Highway Research Institute), Cologne, to carry out an analysis of the data supplied. The report below is based on the replies received from the following 18 countries (fig. 1[*]): *Austria (A), Belgium (B), Denmark (DK), Finland (SF), France (F), Federal Republic of Germany (D), Ireland (IRL), Italy (I), Japan (J), Luxembourg (L), the Netherlands (NL), Norway (N), Portugal (P), Spain (E), Sweden (5), Switzerland (CH), the United Kingdom (GB) and the United States of America (USA).*

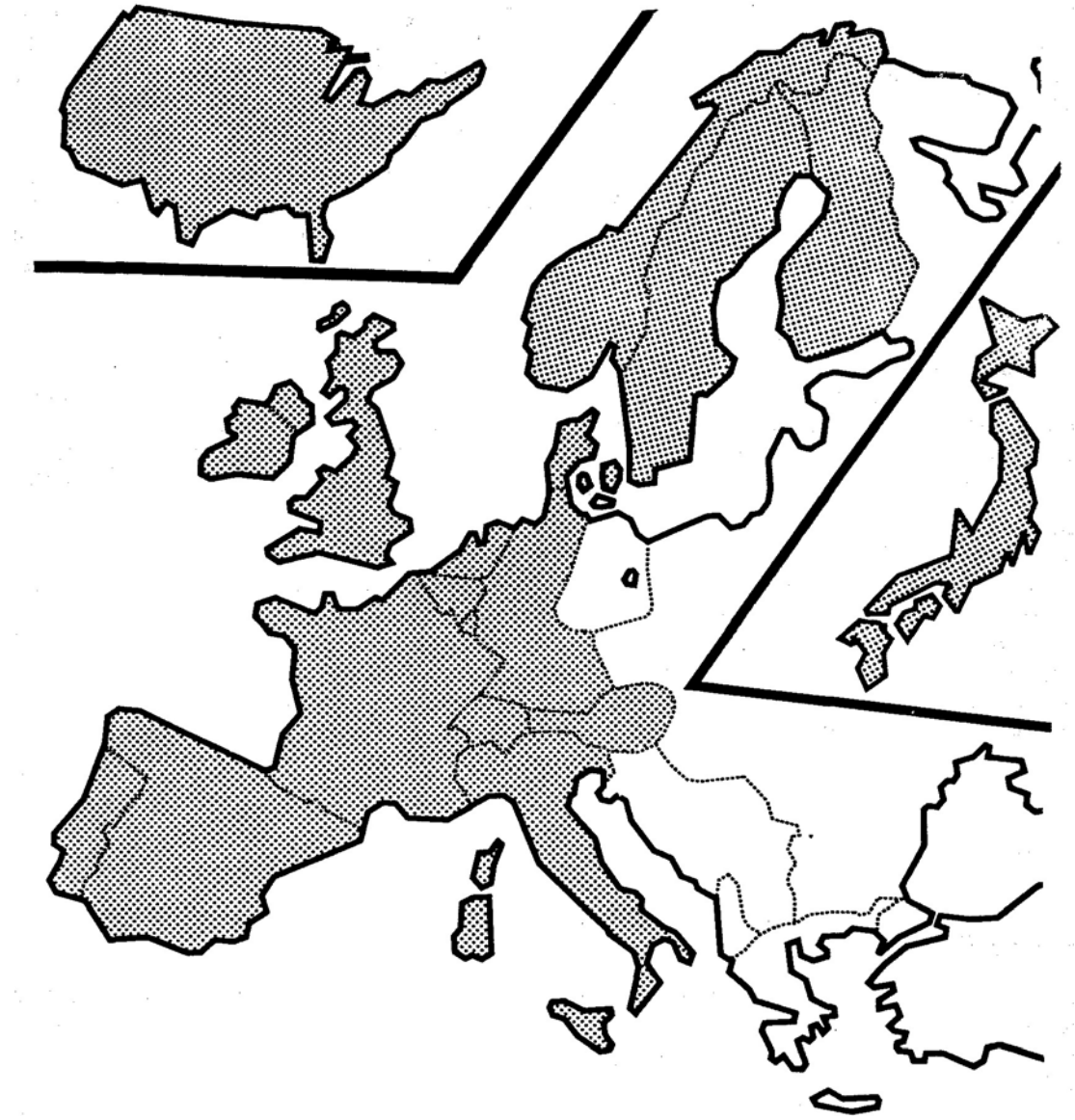
1.2. The problem of first aid for victims of road accidents

The 1969 Report of the European Conference of Ministers of Transport [CEMT CS (69)6] already pointed out that the problem of first aid clearly does not come within the jurisdiction of the Ministers of Transport. Nevertheless, one aspect of road safety policy was to limit as far as possible the consequences of road accidents. Consequently, the Ministers of Transport (irrespective of the jurisdiction of other ministries) felt called upon to co-operate actively in finding solutions to the problems under consideration.

[*] Canada transmitted a study with a similar topic (Pilot Study in Improving Emergency Medical Services, CCMS-Report No. 117 1980). This study could not, however, be utilised in the present report due to the questions being formulated in a different manner.

The very diverse experience acquired in the meantime in the different countries has left no doubt about the decisive role is first aid in mitigating the consequences of road accidents. As was implied in the conclusions of the 1969 study, the importance of certain basic organisational concepts at national or even international level for attaining this aim also became clear. Organisational models have been set up for this purpose in various countries and, in 1981, the World Health Organisation (EURO Report and Studies 35, Copenhagen 1981) also engaged in the planning and organisation of emergency aid measures.

Figure 1. **Participating Countries**



Reply

No reply

Since then, a number of different studies have, in particular, demonstrated the importance of the following two factors for the effectiveness of emergency assistance. One is the quality of aid available.

The standard of the aid administered is of the utmost importance, from the immediate assistance available from laymen on the scene of an accident to the first-aid administered by non-medical personnel and, eventually, the medical care available from physicians.

The second factor is equally as important in that qualified medical assistance in the case of an emergency needs to be made available as fast as possible. It is precisely this time factor which can be most affected by the organisation and equipment of emergency medical services. This applies not only to a swift and reliable emergency reporting system but also the rapid availability of rescue vehicles and the proximity of suitable hospitals.

None of these various emergency medical aid measures — whether directed at improving the quality of first aid or its rapid availability — can be viewed or dealt with separately. These measures are always so closely interrelated that they may be referred to as a chain of rescue operations. In addition, rescue measures benefit not only the victims of road accidents but other emergency cases as well. A study of the state of emergency services should therefore be carried out on the broadest possible basis in order to include all the aspects involved, as will be attempted in the present study.

International surveys invariably involve special problems which cannot be entirely avoided in this case either. The different language versions of the questionnaire are not identical in all points, the questions could not be adapted to certain specific aspects and, despite the efforts made, it was difficult to compare ratings of the national rescue services on the basis of the countries' replies. The results should, therefore, be interpreted with a certain amount of care. Nevertheless, an attempt has been made to reproduce in full detail the information given by Member countries, in order that the respective positions of Member countries can be seen in better perspective than would have been possible in a global presentation.

2. Result of the 1981 inquiry and comparison with the 1969 inquiry

2.1. Summary of the 1981 inquiry

From the replies to the questionnaire, there is no doubt about the necessity for emergency medical aid in all participating countries. Such aid is felt to be an important task of the state and appropriate measures have proved to be highly effective.

In principle, problems surrounding emergency medical aid seem to be well known; it therefore follows that the basic pattern for solutions is largely the same in all countries. Nevertheless, on the basis of widely differing legal procedures countries have developed very different approaches and the development stages can be seen to be very different.

Rescue systems in Austria, Belgium, Denmark, Finland, the Federal Republic of Germany, Ireland, Japan, Luxembourg, Sweden, Switzerland and in the United Kingdom have reached a relatively high level of performance and require therefore little improvement. Similarly high performance levels are to be found in urban agglomerations. But, in rural areas, the systems are still lagging behind. Rescue services are still in the development stage in Italy, Portugal and Spain, although they have reached the standard existing in other countries in many respects.

In general, however, it can be said of all countries that the standard rescue services in urban agglomerations is better than in rural areas. This stems from the existing structural set-up.

Whilst urban areas are given priority, improving the situation in rural areas ranks second. Here, developing the infrastructure has priority over the provision of rescue means and personnel. Ranking

next in importance are the qualifications of the personnel. It seems that the problem of assistance by laymen is the last to be tackled, and similarly — only in reverse order — come under consideration with the remaining unsolved problems, which will be dealt with in detail later.

Approximately half of the Member countries have created uniform organisational and financial frameworks which apply to the whole country; the remaining Member countries have established widely differing systems for organising and financing rescue services. These differences do not, however, appear to have any influence on efficiency.

In spite of the fundamental similarity between the systems, it is of more importance here to consider the different ways in which:

- Doctors are sent to the scene of an accident.
- Medical care is given in hospitals.
- Decisions are taken concerning the dispatching of rescue vehicles and helicopters.
- Equipment is selected.
- Detailed financing is carried out.

As the expediency of sending a doctor to the scene of an accident is questionable, according to the basic decision, this leads to varying rescue systems in the different countries. As a rule, doctors are not automatically sent to the scene of accidents in Finland, Luxembourg, Portugal and in the United States. The United States, in particular, is a strong supporter of this strategy, whereas the other three countries felt that the presence of a doctor was desirable or even necessary and in particular cases a doctor is sent to the scene of the accident. With respect to the other countries, the basic idea behind this strategy is not to provide inferior medical care, but, on the contrary, to ensure better medical care in the emergency departments of hospitals.

In Belgium, Ireland, the Netherlands, Sweden, Switzerland and in the United Kingdom an emergency doctor is sent to the scene of the accident on the basis of special criteria — even though only occasionally. Provided that a doctor is available, he should be dispatched in practically all serious accident cases in Austria, Denmark, the Federal Republic of Germany, France and Italy. This strategy can even involve the use of mobile operating theatres (“clinomobiles”) in some countries’ but these vehicles are often considered to be more or less superfluous or unheard of (as in France).

Likewise, the problem concerning the strategy to be followed in respect of emergency medical care is questioned in the same way as is the expediency of sending a doctor to the scene of an accident. Sick or injured persons are, in the majority of cases, taken to the nearest (appropriate) hospital in the Federal Republic of Germany, Italy, the Netherlands, Norway and in Switzerland. In the other countries, priority is given to hospitals having a special emergency department. Although the distances involved can be greater in this instance, the number of transfers after first-aid treatment is reduced, because the patient can be taken immediately to the special medical department required.

Although the decision concerning the dispatch of rescue vehicles and helicopters is in all countries passed on through control centres, this decision is based on different criteria. In Denmark, the Federal Republic of Germany, Luxembourg, the Netherlands and in the United States the decision is exclusively taken by a control centre which is established for this particular purpose. In Finland, France, Ireland, Italy, Norway, Spain, Sweden and in the United Kingdom the necessary instructions may be given by different authorities. In Belgium and Japan this decision is taken by the fire brigade, in Austria by the competent rescue organisation, in Portugal by the telephone exchange and in Switzerland by the police.

The different strategies concerning the expediency of sending a doctor to the scene of an emergency, provision of medical care and decisions concerning the dispatch of rescue services naturally have a bearing on the equipment strategy. The necessity of having vehicles available that are equipped with special medical equipment and for transporting patients is undisputed. This applies not only to rescue vehicles but also to helicopters. Most countries consider additional equipment for emergency treatment by a doctor to be necessary. Vehicles with medical equipment beyond this level are considered to be more or less superfluous.

Opinions hardly seem to differ as far as other technical equipment is concerned. Accordingly, uniform emergency call numbers, control centres, radio intercommunication and special reporting systems supplying continuous information on the location and availability of the rescue vehicle, were stated to be necessary, and alert systems (e.g. Eurosignal) are often considered desirable. In practice, this equipment is sufficiently available in the individual countries, apart from a few exceptions.

The financial means for equipping control centres, for communication equipment and their running costs are mainly provided for by state authorities, while the rescue services are, in the main, financed and operated by different authorities. There seems to be a tendency for the maintenance of the rescue system and its financing to be ensured by public authorities, whereas its operation and costs are being transferred to other bodies. In this way, an external economic instrument of control is becoming established.

On the whole, the results of the inquiry clearly show that organisational concepts have been fully developed, that the technical equipment is of a very high standard and that there is wide agreement on the need for a well organised emergency service. This system is considered on the whole to be highly efficient by all countries, but opinions apparently differ as far as individual strategies are concerned. There are very diversified ways of financing in all countries. In this respect, one finds mostly pragmatic solutions.

The main problems remaining at present are practically the same in almost countries. These are, in order of decreasing importance,

1. Problem: Help given by other road users

The standard reached in this respect has received a comparatively negative rating by all countries. It seems to be especially difficult to provide for the individual citizen or even the individual driver of a motor vehicle to be better qualified to give first-aid assistance. The results of the inquiry show that those responsible at political level doubt whether they would be empowered to instigate such measures, as the results of the enquiry show.

It is not at all compulsory, in four countries, to carry out first aid and in three other countries this obligation exists only to a very limited extent. In ten countries there is no obligation for warning systems to be enforced on the site of an accident and in two countries this obligation applies only to certain groups of persons. In eight countries there is no obligation to give immediate first-aid and in five countries there is even no obligation to report an accident.

The requirements for qualified assistance by persons with no qualified medical qualifications are likewise insufficient. Only three countries have legal provisions requiring first-aid kits to be available on all motor vehicles (except two-wheeled motorised vehicles). In the remaining countries — there are, even here, some exceptions — such provisions are applicable only to certain vehicles used for public passenger transport or for vehicles carrying dangerous goods. Standardized first-aid kits are in use in six countries only. In contrast, carrying fire extinguishers on motor vehicles has become a far more common practice.

The situation concerning training ordinary road users is similarly unsatisfactory. In eight countries, attending first-aid courses is neither compulsory nor recommended; in four countries this is at least recommended. Attendance at first-aid courses (albeit simplified) is compulsory for all learner-driver in only four countries, in five other countries this is required of certain road traffic users.

Many countries therefore consider emergency aid by ordinary road users to be an aspect which requires much attention in the future.

2. Problem: Availability of personnel other than physicians

The comparatively rapid development of the rescue service in recent years, especially in the technical sphere, could quite evidently not be matched by the staffing of this service.

This is certainly the case in the first instance with respect to the number of staff in rural areas in particular. Only two countries described the situation in this respect as being excellent. It seems, however, that this is partly due to the problem of obtaining qualified personnel, as the training facilities obviously cannot keep pace with demand. Standardized training programmes for ambulancemen exist in nine countries, the same number of countries offer training facilities for drivers or technical personnel, for example. In four countries a similar system is in preparation, and five countries stressed the need for improved training of medical technicians working in the rescue services.

3. Further problems in rural areas

Specific problems concerning hospitals and the availability of rescue vehicles with medico-technical equipment in rural areas are considered by many countries to warrant improvement.

These problems, however, are largely due to general structural problems characteristic of rural areas. For economic reasons, the low population density and great distances involved hardly ever justify a density of hospitals and means of rescue corresponding to those available in urban areas. To some extent, a helicopter service offers a reasonable alternative as an improvement in the level of assistance. In this context, it is stated that the above mentioned structural problems are of less relevance in small, densely populated countries.

4. Further problems in urban areas

In many instances, here, medico-technical equipment and the availability of medical personnel are not considered quite satisfactory. In this connection, the relatively high standard of organised first-aid in urban areas should be taken into consideration, however. It is all the more natural that, as rescue services develop, the problems are shifting increasingly towards highly sophisticated equipment and qualifications.

2.2. The 1981 situation as compared with that of 1969

Compared with 1969, the situation with respect to first-aid training has improved considerably. While at that time notions of first-aid were expected only of learner drivers in Norway, this requirement has since been established in Austria, the Federal Republic of Germany, Spain and Switzerland, and corresponding recommendations have been issued in France and Sweden.

The situation as it exists elsewhere — concerning special provisions for drivers of vehicles carrying dangerous goods, as well as for drivers of police vehicles, fire engines, ambulances and military vehicles — hardly seems to have changed.

In 1969, first-aid kits were compulsory on all vehicles in only Yugoslavia and Turkey; in the meantime, this regulation has also been introduced in Austria, Belgium and the Federal Republic of Germany. Apart from these countries, there has been an increase in the number of countries prescribing first-aid kits for certain categories of vehicles (those handling passenger transport or dangerous goods, police and fire brigade vehicles and military vehicles). The situation seems to have remained unchanged compared with 1969, with respect to standardizing first-aid kits.

In the meantime it has also become a more common practice to carry fire extinguishers on motor vehicles. Belgium is the only country where such equipment is prescribed for all vehicles. There seems to have been an increase in the number of countries having introduced such regulations for vehicles handling public passenger transport and for those carrying dangerous goods.

The most outstanding progress made has been in the field of first-aid posts and emergency reporting equipment. In 1969, first-aid posts were an essential part of the strategy in developing the rescue system, whereby voluntary helpers — provided with auxiliary equipment — were to bridge the gap between the assistance rendered by ordinary road users and the medical aid given by doctors. Although these emergency aid posts are still available in some countries, they are no longer regarded as the main basis of the emergency aid system. They are gradually being replaced by an appropriate emergency reporting system and by rescue and especially equipped vehicles.

Thus, in 1969, central control stations for rescue services were unheard of; at that time, emergency calls were centralised by the police or the fire brigade. Control centres are thus a new element in organised emergency services. Their structure is similar in almost all countries and they have rapidly proved highly suitable in practice.

The emergency call equipment mentioned in 1969 has proved to be successful and has been considerably developed in the meantime. A uniform emergency call number has been introduced nationwide or partially in 12 countries, in four other countries (Austria, France, The Netherlands, United States), it is at the experimental or initial phase.

The emergency call facilities have been considerably extended compared with 1969. At that time it was stated that inmost countries call boxes along motorways were installed at regular intervals and were planned along other main roads in some countries. Motorways. in almost every European country, with the exception of Finland (rarely equipped) and Ireland (no motorways at all), were equipped with these call boxes in 1981; in Sweden and Norway, however, they were equipped with a few regional exceptions. In addition, this equipment is also available along other roads (7 countries: frequently to nationwide; 4 countries: rarely). The possibility of making emergency calls free of charge, which had not been mentioned in 1969, now exists on a nationwide basis in seven countries, frequently in three other countries and on a trial basis or in the phase of realisation in a further three countries.

The types of rescue vehicles available today were basically known already in 1969. Ambulance and rescue vehicles were and still are available in sufficient number, although their number has certainly increased in the meantime. In 1969, these vehicles had standard designs and equipment in six countries (Austria, Denmark, Federal Republic of Germany, France, Turkey, Yugoslavia). Regulations or recommendations have now been introduced in all countries, with the exception of Italy, Luxembourg and Portugal (no information was submitted by Spain).

It is more difficult to report on the development of vehicles designated as “hospital-type ambulances” in 1969. The characteristic feature of these vehicles was sufficient height to provide standing room for medical staff to attend patients. This has now become the norm for rescue vehicles in many countries. Today, hospital-type ambulances have first-rate medico-technical equipment for very

comprehensive medical treatment and in extreme cases are designated uniformly as "clinomobiles". In many countries an intermediate type is frequently available, which affords treatment by a doctor without, however, reaching hospital standards (Ambulance de reanimation, Special ambulance, Notarztwágén, emergency ambulance, ambulance médicalisée, veîculo de emergência, Katastrofambulans, Lege ambulanse, Doctor ambulance).

In urgent cases, these vehicles have priority in traffic (priority vehicle lights and signal horn) in all countries, which had already been extensively the case in 1969. Considerable progress has also been made in the field of helicopter rescue. In 1969, the first tests using helicopters were reported; according to the 1981 inquiry, helicopters are used nationwide in four countries, and, in nine further countries, their use ranges from frequently to rarely. In Spain, helicopters are being used on a trial basis.

In 1969, the use of doctors in emergency medical services had only been briefly discussed. Special kits for the treatment of emergency patients are now either standard equipment, or they have been replaced by specially equipped vehicles nowadays available to doctors should they be sent to the scene of an emergency. In Belgium, each ambulance is equipped with an emergency bag for the sole use of a doctor.

Moreover, concepts related to training and specialisation have been perfected. In all countries where doctors are sent to the scene of accidents, adequate training is available or corresponding schemes exist, but always on a voluntary basis.

In the sphere of medical care, accident or emergency departments in hospitals or hospitals for accident cases, which had only rarely been available in 1969, have, to a large extent, become standard facilities.

In 1969, *blood plasma banks* existed only in four of the countries which also sent in replies in 1981; today, such facilities are available (either via independent institutions or in hospitals) in all countries except Portugal.

The organisation and financing of the rescue service m 1969 depended largely on private initiatives and — with but few exceptions — its structure was generally decentralised. In the meantime, responsibility has shifted to public authorities. In almost all countries, organisation and operation is subject to legal provisions or official guidelines, in the field of financing, public authorities seem more reserved.

3. Present situation with regard to medical aid in emergencies

3.1. General legal basis for dealing with road accidents

3.1.1. General rules applicable following an accident

Codified rules of behaviour of a more general nature exist in very few countries only. Whereas in there are no such regulations in the United States, codified rules of general behaviour have been developed in the Netherlands (as part of its constitution), in France, the Federal Republic of Germany and Spain (as part of the general criminal law), in Austria, Denmark, Finland, Ireland, Japan, Luxembourg, (as part of the national highway code) and in Italy (in the form of legal regulations).

Special legal regulations are to be found in the highway codes of most countries, with the exception of Denmark, Italy, the United Kingdom and the United States.

In most Member countries, there is a general obligation to give assistance. However, in Sweden and Finland, this applies only to the parties involved in an accident, and, in the United Kingdom, only to ambulances. There is no general obligation to give assistance in Ireland, Italy and the United States. But in Italy, Spain and the United Kingdom, to *stop and check* is also part of the road user's obligations.

In Denmark, Ireland, Japan, Luxembourg, the Netherlands, Norway, Portugal, the United Kingdom and the United States, there is no obligation for safety measures to be put into effect at the scene of the accident. In Finland, France and Sweden, these safety measures are only compulsory for the parties involved in an accident; in all other countries this obligation rests on all road users.

In Denmark, Ireland, Japan, the Netherlands, Norway, Portugal and the United States, it is not compulsory for first-aid measures to be given. In Sweden and Finland, this is compulsory for the parties involved in. an accident and, in the United Kingdom, only for ambulance service. In all other countries, any person present is required to render first-aid, within reason.

It is not compulsory to report an accident immediately in Luxembourg, the Netherlands, Norway and the United States. In France and Sweden, only the parties involved in an accident are required to comply and in Denmark, Finland and the Federal Republic of Germany this obligation is subject to certain conditions.

In Japan, Portugal and the United Kingdom, it is also compulsory to transport the injured where necessary. In Finland this is the case in emergencies only.

3.1.2. Vehicle equipment

In Austria, Belgium, and the Federal Republic of Germany it is compulsory to carry first-aid kits on board all motor vehicles (with the exception of motorised two-wheelers). No such provision applies in Luxembourg. No information was available from Japan, Norway, Spain, Portugal and the United States. In all other countries, such provisions apply to certain kinds of vehicles only (see figure 2):

- Motor vehicles designed for passenger transport or public transport vehicles in Denmark, Finland, France, Ireland, Sweden, Switzerland and the United Kingdom.
- Commercial vehicles in France.
- All vehicles carrying dangerous goods in Denmark, Finland, Ireland, Italy and the Netherlands.

In addition, there are special provisions in some countries applying to police cars and fire engines, ambulances, military vehicles and driving school vehicles.

In Belgium, Finland, Ireland, Sweden, Switzerland and the Federal Republic of Germany there is a standardized version of the first-aid kit carried in vehicles. In the United Kingdom, standardized first-aid equipment is being envisaged.

It is compulsory only in Belgium to carry fire extinguishers on all motor vehicles (with the exception of motorised two-wheelers). In all other countries, such obligation applies only to certain types of motor vehicle:

- Motor vehicles designed for passenger transport (as a rule, buses, but also passenger cars) in Denmark, Finland, France, the Federal Republic of Germany, Ireland, Japan, Portugal, Sweden, Switzerland and the United Kingdom.

- Motor vehicles carrying dangerous goods in Finland, Ireland, Italy, Japan, Luxembourg, the Netherlands, Sweden, Switzerland and the United Kingdom.

- Tankers in Austria and Denmark.

- All commercial buses and lorries in the United States.

- All ambulances in the Federal Republic of Germany, Ireland, in the United Kingdom and the United States.

- All vehicles with the exception of passenger cars, motorised two-wheelers and military vehicles in Spain.

- Military vehicles in France.

As regards other safety equipment, only the warning triangle is worth mentioning. It must be carried on all vehicles in Belgium, Denmark, the Federal Republic of Germany, the Netherlands, Portugal, Sweden and Switzerland, on all commercial vehicles exceeding 1.5 tonnes unladen weight in Ireland and on all vehicles, with the exception of passenger cars, in Spain. In various Member countries, emergency flasher lamps, seat belts, wheel chocks, certain lights and/or signals are obligatory. However, from the replies to this question, it is not possible to provide detailed information.

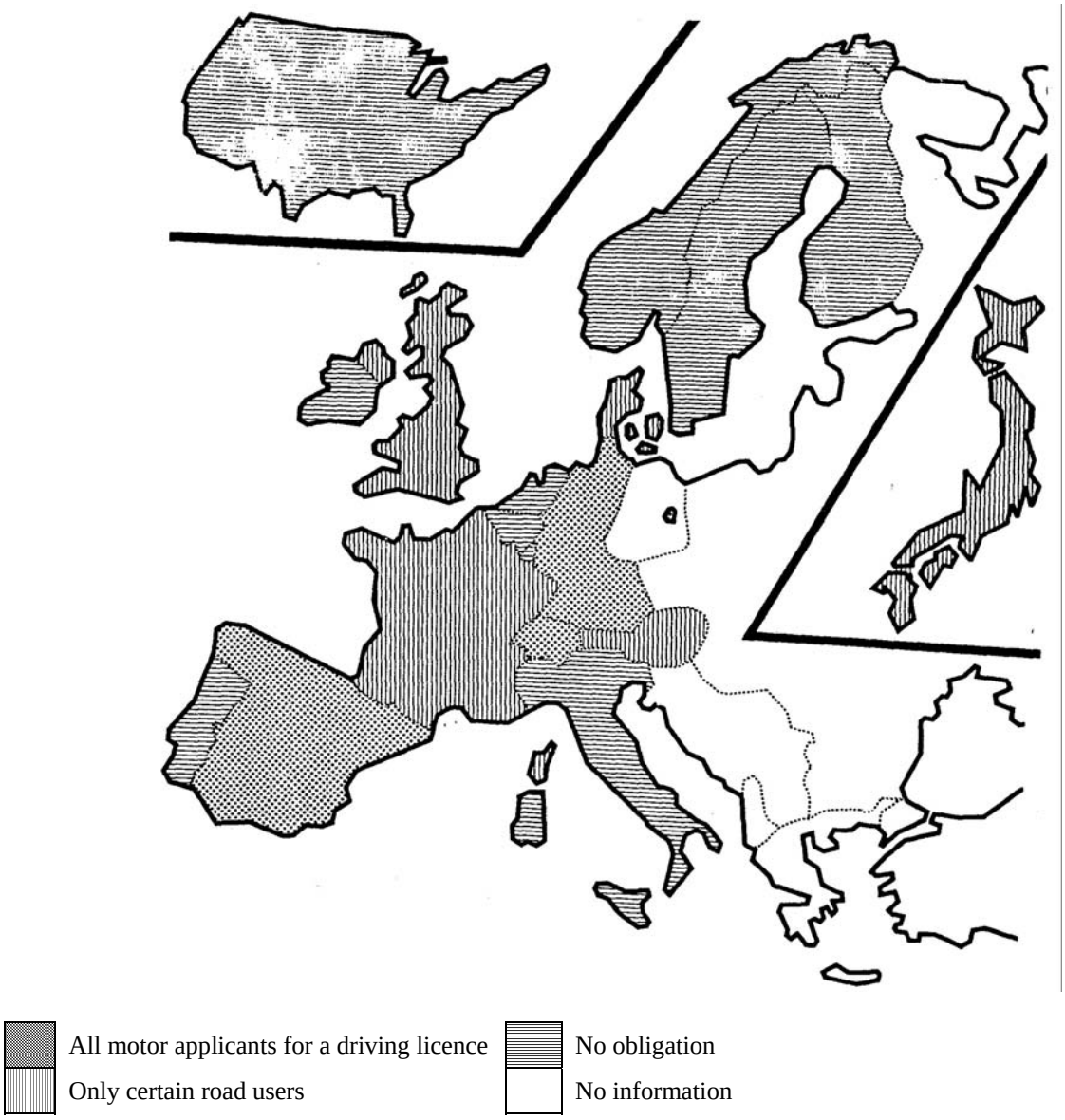
3.1.3. Participation in first-aid courses

There is no legal obligation or recommendation for road users to take part in first-aid courses in Belgium, Finland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal and the United States. In Belgium, France, the Federal Republic of Germany and Sweden participation in such courses is recommended. In Austria, the Federal Republic of Germany, Spain (elementary type of training) and in Switzerland, it is compulsory for learner drivers to participate in first-aid courses (Figure 3).

Such training is compulsory for certain road users only in Austria (driving licence D only), in Denmark (certain bus and lorry drivers), in France (constabulary, police, fire service), and in Japan and the United Kingdom (ambulance staff).

Figure 2. **Obligation to carry first aid equipment**

Figure 3. **Participation in first aid courses**



3.2. Basic elements of organised first-aid

3.2.1. Legal basis

There are nationwide uniform legal provisions for the organisation of emergency medical services in Belgium, Denmark, Finland, France, Japan, Luxembourg, the Netherlands, Norway and Portugal. Within certain limitations, such provisions also apply in Ireland, Spain, Sweden (to some extent only a skeleton legislation) and the United States (skeleton legislation).

Legal provisions on a decentralised basis are applied in the cantons of Switzerland and the states of the Federal Republic of Germany.

In Ireland and in the United Kingdom, recommendations or guidelines have been issued. The situation in Italy is not quite clear in this respect. There are no such provisions in Austria.

In detail (the information below does not apply to Austria and Italy), legal regulations or recommendations are aimed at ensuring that:

- An emergency call or request for help is always accepted (in all countries except Norway).
- A physician is always available (in Belgium, Denmark, Finland, France, Ireland, Spain, Sweden, Switzerland, United Kingdom, United States and the Federal Republic of Germany).
- A patient can be transported at all times (in all countries, with the exception of Japan and Norway).
- There is always ambulance staff available to be sent to the scene of the accident (in all countries, with the exception of Norway and Portugal).
- There is always a physician available to go to the scene of the accident (only in France, the United Kingdom, and almost everywhere in the Federal Republic of Germany).
- There is at all times a suitable hospital available ready to accept emergency patients (in all countries with the exception of Japan).

3.2.2. Responsibility for ambulance services

Organised first-aid in medical emergencies is considered exclusively a task of the state in France (regional corporation), Denmark, Japan, Portugal, Sweden (local authorities) and the United Kingdom.

In other countries, organised first-aid is seen as the joint task of the state, relief organisations, and also private institutions. France, Luxembourg and Spain have not gone into details on this point. Comments from other countries:

Austria:	Responsibility lies with local authorities, implementation is delegated to relief organisations.
Belgium:	The organisation of emergency medical services is under the responsibility of the state, which has authorised subordinated authorities to provide the service.
Federal Republic of Germany:	Responsibility lies with the Federal states; the responsibility for the implementation of skeleton legislation is with local authorities; those providing the service may be fire services and/or relief organisations and, to a lesser extent, private institutions.
Finland:	The responsibility is delegated according to the “Public Health Law” to local authorities, who may empower the Red Cross or private enterprises to provide the service.
Ireland:	The responsibility lies with the state; in the case of serious accidents relief organisations and private institutions are called in.
Italy:	Responsibility for organised first-aid in medical emergencies lies with the states, but private agencies may co-operate.
The Netherlands:	Organised first-aid comes under the “ambulance act”.
United States:	Responsibility lies with the state. The service may be provided by individuals, private institutions, the fire service, and separate ambulance and rescue services operated on a volunteer basis.

*3.3. Technical installations for organised aid**

3.3.1. Installation of emergency call facilities

Call boxes on motorways on a nationwide basis are part of the standard equipment in all countries except Ireland (no motorways), Sweden and Norway (frequently available) and Finland (rarely available). No information is available from Japan and United States.

Call boxes on other roads are available to a varying degree (Japan and United States: no information): on an areawide basis in the United Kingdom, frequently in Belgium, France, the Federal Republic of Germany, Portugal and Sweden, in certain places only in Denmark, the Netherlands, Norway, Spain and Switzerland, and not available at all in Austria, Finland, Ireland, Italy and Luxembourg.

A uniform emergency telephone number is not available in Spain. In all the other countries, this number has either been introduced (Norway: infrequent in use) or is being set up (France, United States), in some instances on an experimental basis (Austria, the Netherlands) (figure 4).

Free emergency calls in public telephone booths are available on an area-wide basis in Belgium, Denmark, Ireland, Luxembourg, Portugal, Sweden and the United Kingdom. They are frequently available in Finland, the Federal Republic of Germany and in Italy. In France, the Netherlands and the United States, this system is available only in certain cases or on an experimental basis or is in the process of being introduced. This system is not available at all in Austria, Norway, Spain and Switzerland. (Japan: no information).

A 24-hour service for answering emergency calls is available on a nationwide basis in Austria, Belgium, Denmark, Finland, the Federal Republic of Germany, Ireland, Luxembourg, Portugal, Switzerland and the United Kingdom. In France, Norway and Spain, such service is frequently available. In the Netherlands it is run on a trial basis. A service of this kind is not available in Italy (Japan: no information).

3.3.2. Installation of centralised control posts

Control centres for *fire and police services* are available nationwide in nearly all countries. From the different information supplied, it was to be seen that control centres for fire services are in use in cities only in Ireland, police and fire service control centres are frequently available in Italy, no information on police control centres was available for Japan and that control centres for fire services are frequently available in Norway.

Control centres dealing with the *transport* of sick and injured persons are also available on a nationwide basis in most countries. In Finland, Norway and the United States, such control centres do exist, but infrequently, whereas in Italy and Switzerland they are rarely available and, in Spain, they do not exist at all. In many countries, control centres co-ordinating rescue missions where no doctor is in attendance are also used on a nationwide basis. Exceptions are Finland and Norway (frequently in use), France, Italy, the Netherlands and Switzerland, where they are available on an individual basis only, and Spain, where such centres are being run on a trial basis. In Japan, fire service control centres are responsible nationwide for co-ordinating both rescue missions and the transport of sick and injured persons (Figure 5).

* See table 1.

Control centres for *rescue missions where a doctor is in attendance* are in nationwide use in the United Kingdom and in frequent use in Austria, the Federal Republic of Germany and Sweden. Such centres are rarely available in Denmark, Finland, France, Ireland, Italy, the Netherlands, Norway and Switzerland and, in Portugal and Spain, they have been introduced on an experimental basis only. There are no control centres of this kind in Luxembourg and the United States (no information was available for Belgium and Japan).

Control centres *for helicopter missions* are available throughout Denmark, the Federal Republic of Germany, Sweden, Switzerland and the United Kingdom. They are frequently available in France and Portugal and more rarely in Austria, Finland, Ireland, Italy, Norway and the United States. In Luxembourg, the Netherlands and Spain control centres of this kind do not exist (no information was available for Belgium and Japan).

3.3.3. Rescue Vehicles and Helicopters as means of transport

There are no special vehicles in Sweden and the United States for transporting persons in cases where the injury is not serious. In all other countries, these are available on a nationwide basis. (Japan, Norway: no information). Special ambulances for medical emergencies (with medical personnel) are in areawide use in many countries. In France, Italy, Norway, Switzerland and the United States, their availability is described as “frequent” In Portugal, such vehicles are not available (no information from Denmark).

Specially equipped vehicles for medical emergencies (staffed by a doctor, for pre-hospital care) are in frequent use m Austria, France, the Federal Republic of Germany, Spain, Sweden and the United Kingdom[*]. They are seldom available in Belgium, Finland, Ireland, Italy, the Netherlands and Switzerland. In Portugal, such vehicles are being used on an experimental basis. In Denmark and in the United States there are no vehicles of this kind (Japan no information).

Special vehicles for medical emergencies (with a doctor, quasi-clinical care) are in frequent use in Austria, France, the Federal Republic of Germany and the United Kingdom[*]; they are rarely used in Belgium, the Netherlands, Spain and Switzerland[**]. Such vehicles are not available in Denmark, Ireland, Italy, Luxembourg, Portugal, Sweden and in the United States.

Civil rescue helicopters are not used in Denmark, Luxembourg, the Netherlands and Portugal. In Belgium, Finland, France, Italy, Norway, Spain and in the United States their use is limited or they are used on an experimental basis only. Whereas in France and Sweden, where they are frequently available, use may be made of helicopters depending on the region in question, they are used on a nationwide basis in the Federal Republic of Germany, in Switzerland and in the United Kingdom.

It is not always possible to make a clear differentiation between “civil” and “military purposes“. In Denmark, helicopters belonging to the Danish airforce are also used for civil purposes, in the United Kingdom, the Ministry of Defence provides helicopters for civil rescue missions. In the Federal Republic of Germany, civil rescue missions may call upon helicopters provided by the services responsible for Disaster Control, the Ministry of Defence, the police and private agencies; the military SAR (Search and Rescue) service also provides helicopters for civil rescue purposes, where necessary. In France, both police and civil helicopters are available to transport emergency accident cases. In the United States,

[*] S+ by a doctor where necessary.

[**] These vehicles are being used in Finland on an experimental basis.

rescue helicopters owned by private agencies, hospitals and the army can be called upon. Civil and Military helicopters are available in Ireland for serious emergencies.

Radio communication equipment is frequently installed in vehicles of the organised emergency services in Belgium, Finland, Italy, Norway, Spain, the United Kingdom and in the United States. In all other countries, ambulance vehicles are generally equipped nationwide with radio communication systems.

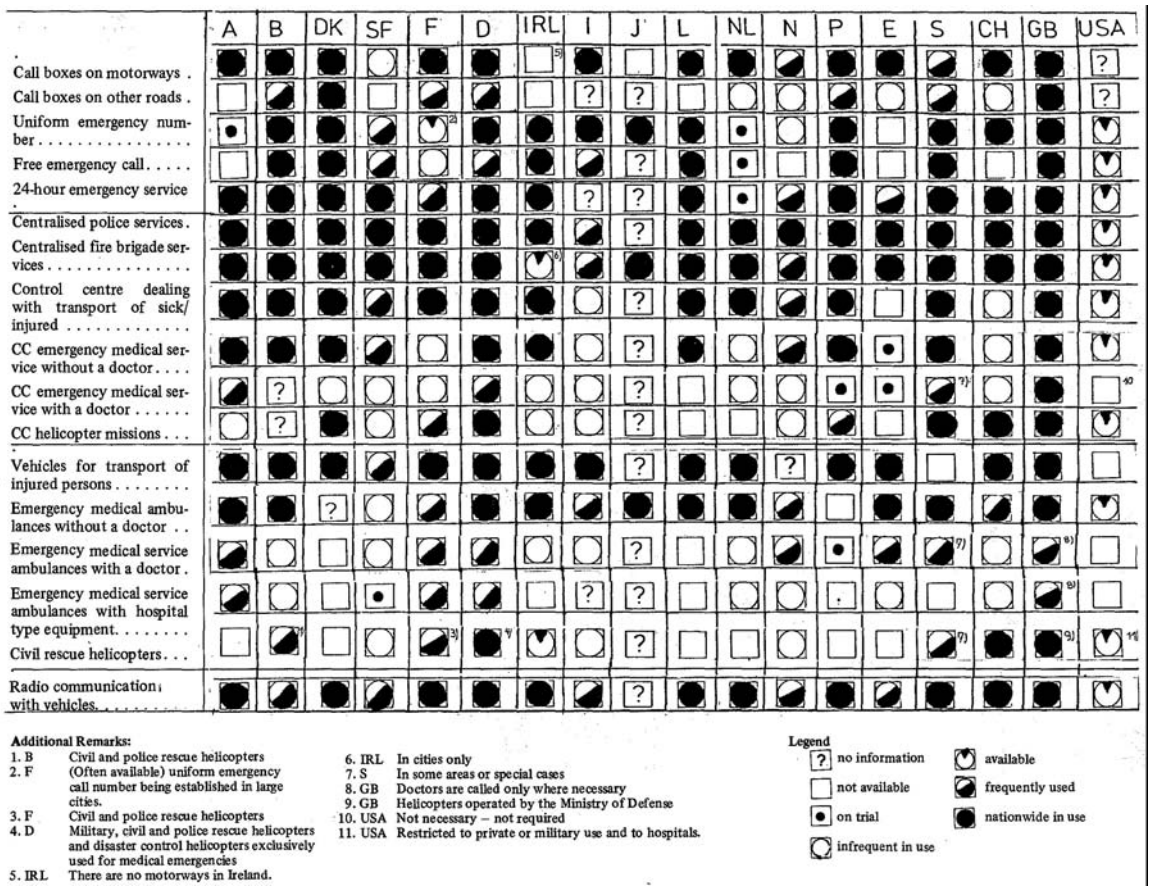
3.4. Organisation of emergency medical services

The location where rescue vehicles and helicopters are based differ according to country and seem to depend largely on certain organisations whose main consideration is not wholly related to emergency aid alone:

Austria:	Decentralised, in the hands of relief organisations.
Belgium:	Centralised with the fire brigade.
Denmark:	Decentralised, in the hands of relief organisations.
Finland:	Decentralised, in the hands of individuals or private agencies, but concentrated at fire brigade stations and public health care centres.
France:	Emergency vehicles are located with fire brigade stations, only in exceptional cases with private organisations (authorised ambulance men or Red Cross).
Federal Republic of Germany:	Organisation varies according to the Federal state concerned. Rescue vehicles are: stationed with the fire brigade, relief organisations or special rescue organisations, decentralised.
Ireland:	Decentralised, based at hospitals.
Italy:	Decentralised, based at hospitals or grouped with the police or fire brigade.
Japan:	Centralised at fire brigade stations.
Luxembourg:	Decentralised, with rescue organisations or grouped with the police/fire brigade; the Netherlands: Stationed with local or regional health authorities or decentralised in the hands of individuals or private agencies.
Norway:	Decentralised, based at hospitals.
Portugal	Grouped and centralised with the police/fire brigade.
Spain:	Decentralised, stationed with rescue organisations, with certain hospitals and, in exceptional cases with individuals or private organisations.
Sweden:	Organisation varies in the different parts of the country. Decentralised, with vehicles stationed at hospitals and with rescue organisations or grouped with the police/fire brigade. The organisation of future rescue service is at the planning stage.
Switzerland:	Decentralised, based at hospitals and with private agencies and grouped with the police.
United Kingdom:	Decentralised, in the hands of rescue organisations. Centralised with regional health authorities and at the police/fire brigade.
United States:	Stationed at hospitals with the police/fire services.

Control centres for rescue missions are operated almost exclusively by public authorities: in Belgium, Finland and Norway, they are operated by local authorities, in Denmark and the Federal Republic of Germany, this is often in conjunction with relief organisations; regional authorities are responsible in Ireland, the Netherlands, Switzerland and the United Kingdom; they are run in Austria in joint co-operation between regional authorities and relief organisations; in Japan, the fire brigade has sole responsibility; responsibility in Luxembourg and Portugal is at state level. It is only in France that the control centre is operated by the local rescue organisation (no information available concerning the United States).

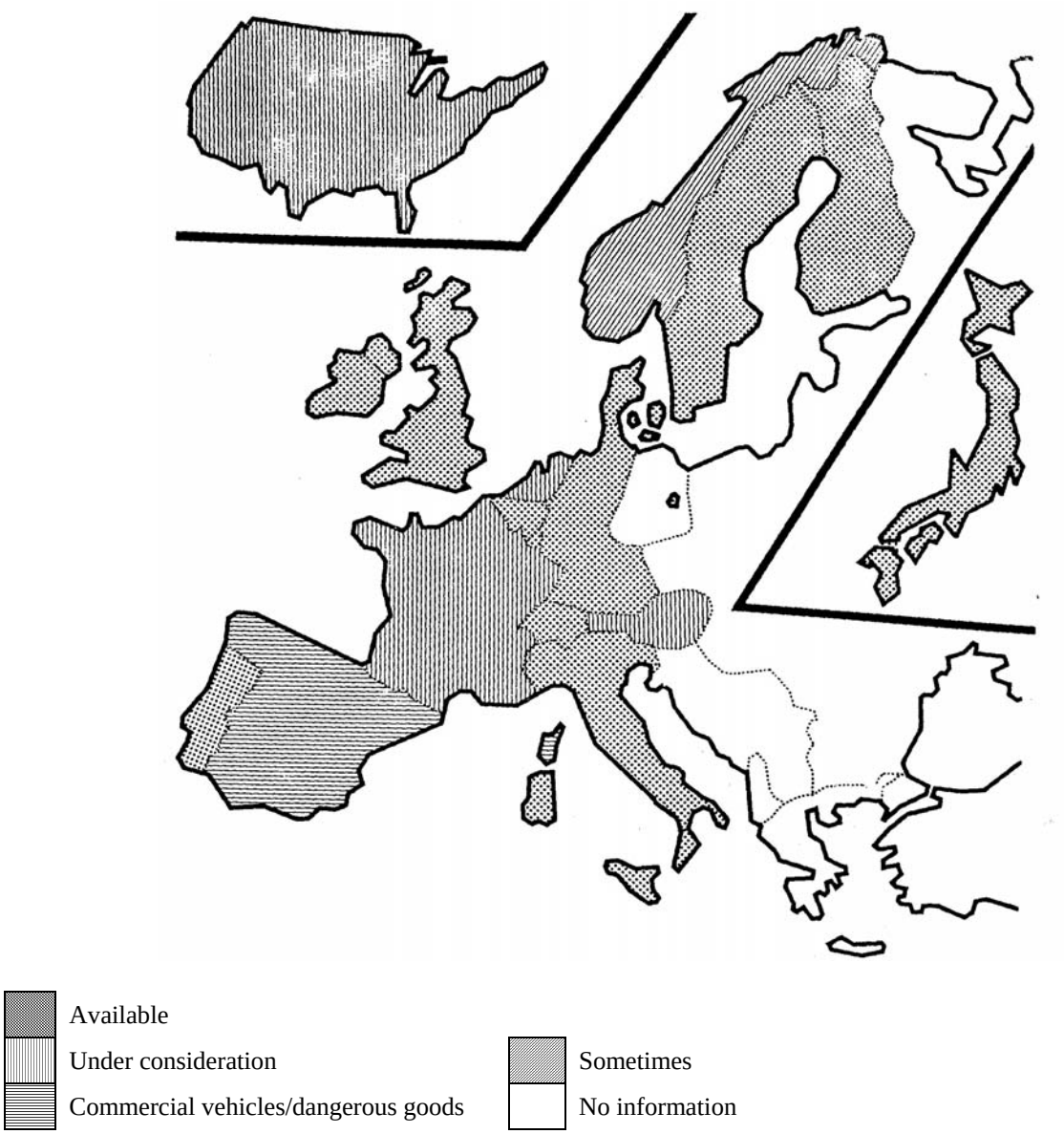
Table 1. **Equipment available via emergency services**



The decision to dispatch rescue vehicles and helicopters is taken by this special control centre in Denmark (police and rescue organisations) and the Federal Republic of Germany (control centre), by the health authority in the Netherlands and by the dispatch centre in the United States. In Austria, the decision is taken by relief organisations; in Belgium (emergency call number: 900) and Japan responsibility lies with the fire brigade; in Portugal, it lies with the operators of emergency call centres and in Switzerland, with the police (in large cities with the rescue organisation concerned). In Finland, France, Ireland, Italy, Norway, Spain, Sweden and the United Kingdom the decision depends on the situation and may be taken by the police/fire brigade, relief organisation, hospitals, or any other similar authority.

Two entirely different strategies have developed in the various countries (Figure 6), with respect to the *decision to dispatch/doctors to the scene of heavy accidents*. Whereas in Finland, Luxembourg, Portugal and the United States circumstances never seem to warrant this, a doctor is always dispatched to the scene of serious accidents in France, Italy and the Federal Republic of Germany, provided one is available (this is the case on a regional basis, but is not in effect nationwide).

Figure 4. **Uniform Emergency Number**



Doctors are often dispatched to the scene of accidents in Austria and Denmark, occasionally, in Belgium (the decision lies with the doctor), Ireland, Japan, the Netherlands, Norway, Spain, Sweden, Switzerland and the United Kingdom.

In all countries, however, organised rescue services operate on a 14-hour basis with no difference between *day and night-time services*.

3.5. Financing

Public authorities in Belgium, Denmark, Finland, the Federal Republic of Germany, Ireland, Japan, Luxembourg, Norway, Portugal, Sweden and the United Kingdom are mainly responsible for the cost of equipping control centres. In France, the different regional authorities carry responsibility for financing. In Austria and Switzerland these costs are borne by public authorities and relief organisations. In the United States (no settlement with social security), Italy and Spain (settlement of part of the costs with social security) the financing is shared by different bodies. In the Netherlands, the costs are paid by means of settlement with social security.

Figure 5. **Emergency Medical Control Centres**

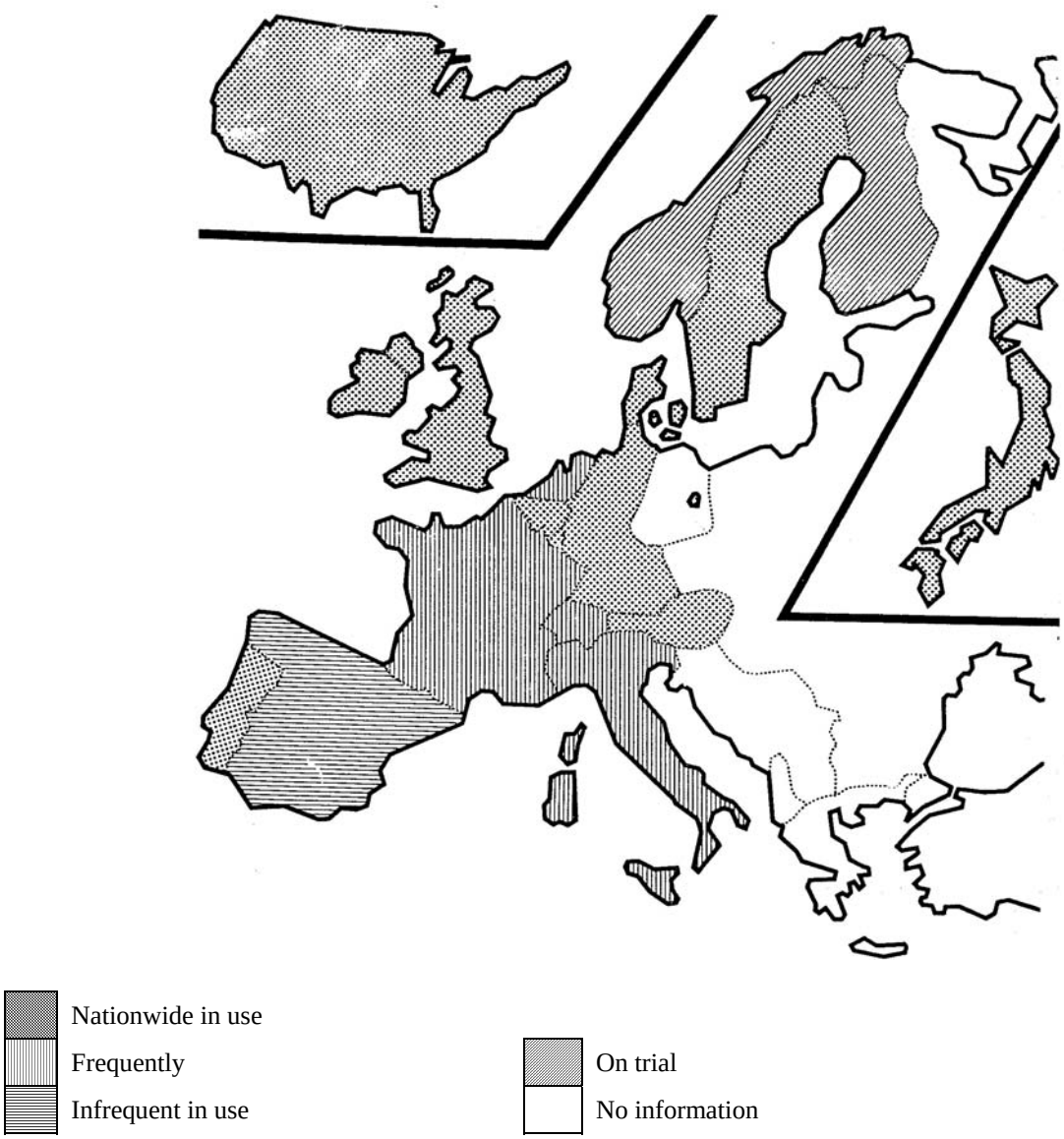


Figure 6. **The dispatch of doctors to the scene of heavy accidents**

Rescue missions in Belgium (state and authorities), Denmark, Ireland, Japan, Luxembourg Norway, Sweden and the United Kingdom are exclusively financed by public authorities. In Austria, Finland, Italy, Portugal and Switzerland relief organisation or private bodies, participate in the financing. In the United States, where there exists no settlement with social security, France, the Federal Republic of Germany and Spain (settlement of part of the costs with social security) different bodies share the costs of rescue missions. In the Netherlands, the costs are exclusively borne by social security.

Radio and telephone equipment is mainly financed by public authorities in Belgium, Denmark, the Federal Republic of Germany, Ireland, Japan, Luxembourg, Norway, Sweden and the United Kingdom, Public authorities and relief organisations or private bodies finance these expenses in Austria, Finland,

France, Italy, Portugal and Switzerland. Various bodies jointly finance these costs in the United States, where no arrangements for settlement with social security exist, and in Spain (settlement of part of the costs with social security). In the Netherlands they are financed exclusively by social security.

Operating costs with respect to control centres are mainly borne by public authorities in Belgium, Denmark, France, Ireland, Luxembourg, Portugal, Sweden, the United Kingdom and the United States. Public authorities and relief organisations or private bodies finance them in Austria, Italy and Switzerland. In the Federal Republic of Germany and in Spain, different bodies, including social security, jointly finance operating costs and, in the Netherlands, social security alone finances them.

On the other land, public authorities finance *operating costs of rescue missions* in Denmark, Finland, France, Ireland, Japan, Luxembourg, Norway, Sweden and the United Kingdom. Relief organisations or private bodies jointly finance these costs in Italy, Portugal and Switzerland. The costs are financed on a mixed basis (private and public sector), including settlement with social security or private systems, in Austria, Belgium, Spain and the United States. In the Federal Republic of Germany and the Netherlands, these funds are mainly provided by social security or private users.

Staffing costs for rescue personnel is mainly financed by public authorities in Belgium, Denmark, Ireland, Japan, Luxembourg, Norway, Sweden, the United Kingdom and the United States. In Italy, Portugal and Switzerland rescue organisations or private bodies share in the financing. In Austria, Finland, France and Spain, the costs are borne by different bodies (inducing settlement with social security). In the Federal Republic of Germany and the Netherlands the costs are exclusively borne by social security.

In Denmark, Ireland, Norway, Sweden, Portugal and the United Kingdom staffing costs with respect to doctors are borne by public authorities. In Italy and Switzerland, relief organisations or private bodies jointly finance these costs. There are different financing bodies (including social security) in Austria, Finland, France and Spain. In the Netherlands, all staffing costs with respect to doctors are financed by social security. In Belgium, the Federal Republic of Germany, Luxembourg and the United States these costs are settled by the social security. In Japan, medical expenses are entirely assumed by individual users.

To *sum up*, it can be said that on the whole, there are uniform financing arrangements in Denmark and Ireland (local authorities), Japan (local authorities, with. the exclusion of medical services), in Luxembourg, Norway and Sweden (state and local authorities), in the Netherlands (social security) in Switzerland (local authorities jointly with relief organisations, in part by settlement according to a fixed scale) and in the United Kingdom (National Health Service).

Two different bodies jointly share financing in Austria, Belgium, Finland, the Federal Republic of Germany and the United States: whereas the control centres, equipment and their operational costs are financed mainly by public authorities, relief organisations or private bodies, the remaining operating costs and staffing expenses are predominantly settled by the social security.

In France, with the exception of those costs concerning radio and telephone equipment and the operating costs of control centres, all expenses are financed by settlement with social security. In Italy and Portugal, the costs are financed on a mixed basis.

4. Minimum requirements to be met by the system (see Table 2)

4.1. Reporting facilities and control centres

Reporting facilities and control centres are regarded as a necessity in the majority of countries. All countries consider a uniform emergency number and radio communication possibilities to be vital. This also applies to control centres, with the exception of Italy where the latter are considered "desirable".

Special reporting systems to supply continuous information on the location and the type of rescue vehicles are considered to be more or less superfluous in France, desirable in Portugal, Spain, Switzerland and the United Kingdom, and necessary in the remaining countries (no information from Finland or Ireland).

Portable alert systems for doctors (e.g. Eurosignal) are considered to be more or less superfluous in Denmark. France, the Federal Republic of Germany and the Netherlands consider them necessary and all other countries believe them to be desirable (no information from Austria and Belgium).

4.2. Rescue vehicles and helicopters

As shown in Annex I to this report, there is no uniform terminology for the various types of rescue vehicles. Neither is there any clear definition as to their function and equipment.

Technical standards or regulations relating to the design and equipment of rescue vehicles have been set up in Austria and Belgium (with respect to equipment), in Denmark, Finland, France, the Federal Republic of Germany (DIN Standards), Ireland, Japan, the Netherlands (with respect to the medical equipment in ambulances), Norway, Sweden (for ambulances), the United Kingdom (for ambulances), and the United States. Although there are no official standards or regulations in Switzerland, the IAS recommendations relating to design and equipment are applied. There are no standards or regulations in Italy, Luxembourg and Portugal. Spain did not supply any information on this point.

There were very diverging views as to the necessity of using passenger cars (with or without special equipment) as rescue vehicles. In Denmark, Italy, the Netherlands and Portugal passenger cars without special equipment are considered necessary, in Finland and Ireland, desirable. In the remaining countries, they are regarded as more or less superfluous (Federal Republic of Germany, Norway, Spain, United Kingdom) or completely superfluous, (France, Luxembourg, United States). Passenger cars with additional equipment to transport the injured or with special medical equipment are considered necessary in Denmark, Finland, Italy, Luxembourg and Switzerland, desirable in the Federal Republic of Germany, Ireland, Portugal and Spain, more or less superfluous in Norway, Sweden and the United Kingdom, and completely superfluous in France and the United States.

Vehicles with special equipment for emergency treatment by medical personnel are considered necessary in Denmark, Finland, Italy, Japan, Luxembourg, Norway, the United Kingdom and the United States. They are regarded as desirable in France, Spain and Sweden, and as more or less superfluous in the Federal Republic of Germany, Ireland and Portugal.

Table 2. **The need for emergency vehicles and helicopters**

	necessary	desirable	more or less superfluous	completely superfluous
Passenger car without additional equipment	DK I NL P	SF IRL	D E GB S N	F L US
Passenger car with additional equipment	DK CH I L A SF	D E P IRL	GB S N	F US
Vehicle with additional equipment for emergency treatment	DK GB I L US N SF J	E F S	D P IRL	
Vehicle with additional equipment and for transport	B CH D DK E F GB I L NL P S	N A SF J IRL		
Vehicle with additional equipment for emergency treatment by doctors	B D F GB I NL P S A IRL	CH DK E L N SF		US
Vehicle with equipment for minor operations	B D E	I S	CH DK F GB L NL N IRL	P US
Vehicle with equipment for quasi-clinical treatment		B I P	CH D DK E E GB L NL S IRL	US N
Mobile operating room	E I		CH D DK F GB L NL P S	US N IRL
Helicopter without additional equipment	I IRL	NL P S N	D DK E F GB US	L
Helicopter with equipment for emergency treatment by doctors	E F I P S	DK GB L NL A IRL N	D	
Helicopter with additional equipment and for transportation	CH D F GB I NL S IRL	B DK E L US N		

The usefulness of the necessity for vehicles with additional equipment for emergency treatment and for transport is undisputed. With the exception of Norway (desirable), all countries consider them necessary.

Vehicles with additional equipment for emergency medical treatment by doctors are regarded as completely superfluous in the United States. Denmark, Finland, Luxembourg, Norway, Spain and Switzerland regard them as desirable and the remaining countries as necessary.

Vehicles additionally equipped for minor operations appear to be a more controversial issue (figure 7). In Belgium, the Federal Republic of Germany and Spain their necessity is undisputed. Italy and Switzerland consider them desirable. In Denmark, Finland, France, Luxembourg, Norway, the Netherlands, Switzerland and the United Kingdom they are regarded as more or less superfluous and in Portugal and the United States as completely superfluous.

In most countries, views on the hospital-type vehicles range from more or less superfluous to completely superfluous. Only Belgium, Italy and Portugal consider them desirable.

The *mobile operating room* is considered necessary by Italy and Spain, while it is viewed as superfluous in all other countries.

Helicopters without additional equipment for rescue missions are considered necessary in Ireland and Italy. The Netherlands, Norway, Portugal and Sweden assess them as desirable, while they are regarded as more or less superfluous in all other countries and in Luxembourg as entirely superfluous.

Helicopters with additional equipment for emergency treatment by doctors are regarded as superfluous only by the Federal Republic of Germany. In Denmark, Ireland, Luxembourg, the Netherlands, Norway and the United Kingdom they are considered desirable and France, Italy, Portugal, Spain and Sweden are of the opinion that they are necessary.

Helicopters with additional equipment and transportation facilities are described as necessary by France, the Federal Republic of Germany, Ireland, Italy, the Netherlands, Sweden, Switzerland and the United Kingdom. In Belgium, Denmark, Luxembourg, Norway, Spain and the United States they are considered desirable. Belgium points out, however, that due to population density and the number of emergencies region by region, ambulances can reach the scene of the accident quicker than helicopters.

4.3. Medical equipment

There are no standardized regulations or guidelines concerning medical equipment in Austria (with the exception of first-aid kits) and Spain.

Standardized *first-aid kits* are being established in Spain and have been introduced in Austria, Denmark, France, the Federal Republic of Germany, Italy, Luxembourg, Sweden and the United Kingdom.

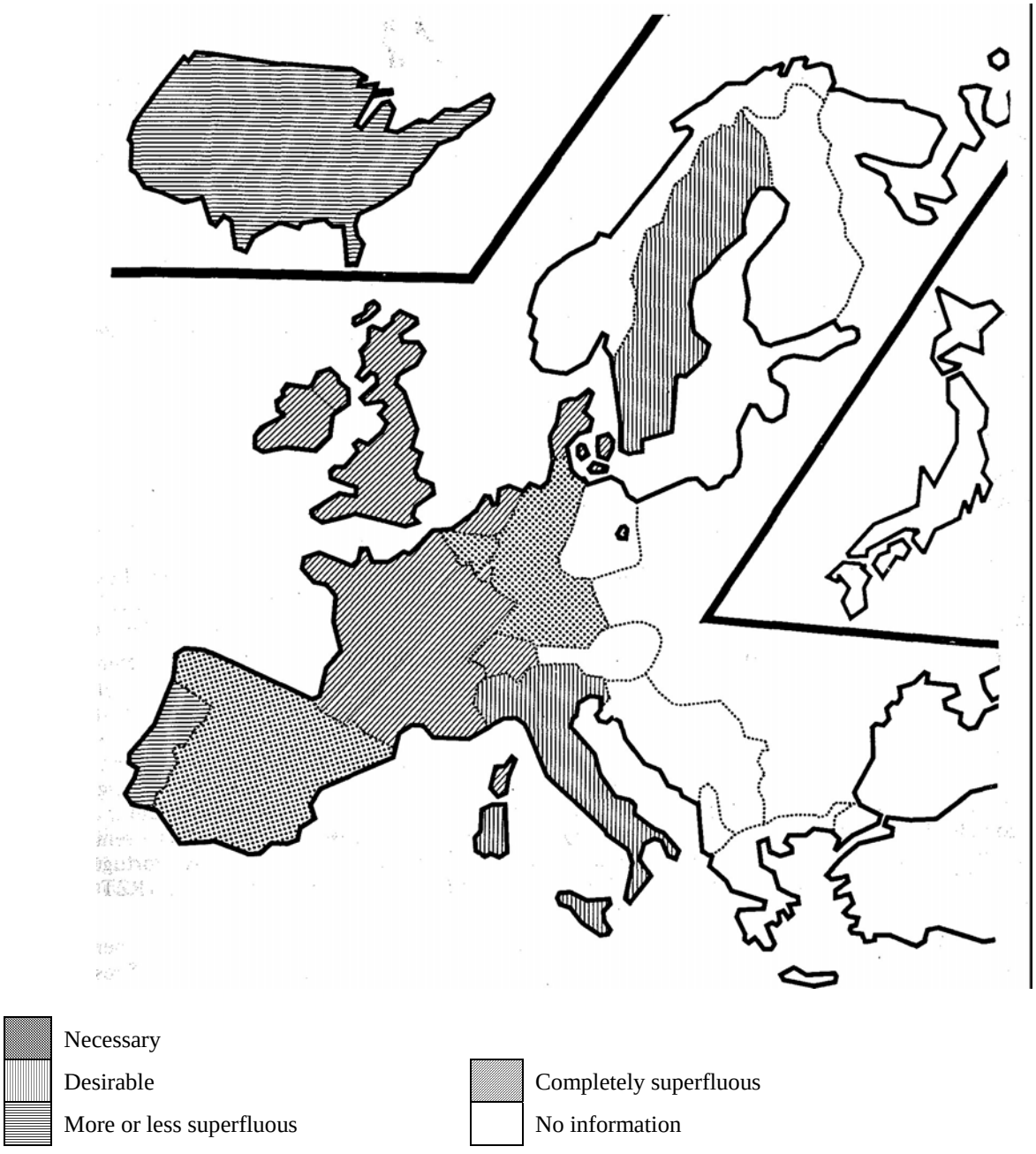
Special standardized equipment for ambulances is being established in Spain and is already the case in Belgium, France, the Federal Republic of Germany, Ireland, Italy, Luxembourg, the Netherlands, Sweden, Switzerland, the United Kingdom and the United States.

Standards regarding *special equipment of emergency vehicles* are applied in the Federal Republic of Germany, Italy, Luxembourg, Sweden, Switzerland and the United States.

Standards concerning *special equipment for emergency ambulances* (staffed with doctors) are applied in Belgium, France, the Federal Republic of Germany, Ireland, Italy and Portugal. In Spain these provisions are in preparation.

Provisions concerning the standardization of *special equipment for helicopters* exist in Belgium, Denmark, France, the Federal Republic of Germany, Switzerland and the United States. In Spain, these provisions are in preparation.

Figure 7. **Necessity of emergency ambulances with equipment for minor operations**



4.4. Identification of rescue vehicles

Rescue vehicles are of different *colours* in Member countries. Although white appears to be the basic colour used in most cases, ivory is the basic colour used in Austria and the Federal Republic of Germany. Light red and red fire brigade vehicles are also in use in France and the Federal Republic of Germany. Fluorescent red and white vehicles are used in Denmark and the Federal Republic of Germany.

Vehicles are *marked* in various ways in addition to the name of the organisation, to make them more conspicuous:

Belgium:	Uniform colour in white with red stripe, emergency call number: 900, occasionally the "Star of Life" symbol (blue cross with six arms).
France:	White or cream-coloured with the "Star of Life" symbol (except for fire engines).
Federal Republic of Germany:	Ivory with red stripes or red with white stripes or white areas.
The Netherlands:	Fluorescent red stripe.
Norway:	Red/white marked with "ambulance".
Sweden:	White with black hood, red cross on the side panel or on the roof of cars.
United States:	Orange stripe, blue "Star of Life" symbol.

Rescue vehicles are of the same colour in Belgium, Denmark, France, Ireland, Japan, Luxembourg, Norway, Portugal and the United Kingdom. Rescue vehicles in Spain vary in colour and, in all other countries the main emphasis is on certain uniform features relating to the exterior of these cars.

Provisions for the use of uniform wording on rescue vehicles exist in Belgium, Denmark, France, Ireland, Luxembourg, the Netherlands, Norway, Portugal, Sweden and the United Kingdom. The wording used on rescue vehicles in Austria, Finland, the Federal Republic of Germany, Italy, Spain, the United States and Switzerland is mainly uniform. The use of the word "AMBULANCE" to identify rescue vehicles is in practice in Luxembourg, the Netherlands, Norway, Spain and the United Kingdom. The "Star of Life" symbol is applied in France, the United States and in Belgium (in isolated cases only). Emergency phone numbers are visible on rescue vehicles in Belgium and, occasionally, in the Federal Republic of Germany. The use of a red cross to identify rescue vehicles is common practice in Sweden and in frequent use in the Federal Republic of Germany. Portuguese rescue vehicles are generally identified by the word "AMBULANCE", whereas "NOTARZT" is found on German vehicles.

The same applies to the equipment mounted on the roof of rescue vehicles (lights). There is different wording in the Federal Republic of Germany and Italy according to the type of rescue vehicle concerned (ambulances, rescue and emergency vehicles of the hospital type).

Priority vehicle warning lights are in use on most vehicles in Denmark and on all rescue vehicles in the remaining countries. In most cases, these lights are blue, in Japan they are red, in Spain, yellow, and in the United States red and white. Green priority vehicle lights (without warning horn) are used by many doctors in the United Kingdom. In Switzerland, doctors on emergency missions occasionally use cars with orange priority vehicle lights (no priority in traffic). In France, all vehicles, with the exception of

those belonging to the fire service and hospitals, are equipped with blue hazard warning flashers instead of priority lights.

Doctors in the United Kingdom often use cars equipped with a green priority vehicle light on the roof (no signal horn), but this is rarely the case in Belgium and Switzerland (orange priority vehicle light in conjunction with the wording "Doctor/Emergency"), or in Portugal and Spain (cross). In the Federal Republic of Germany, a placard (black in colour on a yellow background with orange flashing light) may be displayed on doctors' vehicles when they are called upon to give emergency aid (wording: "Doctor — Emergency").

All rescue vehicles (the majority in Denmark) are also equipped with a special warning horn. This applies only to emergency ambulances in the United Kingdom. In France, vehicles belonging to private authorised bodies and duty emergency doctors may be equipped with a special warning horn in exceptional circumstances.

There is no fixed noise limit for warning horns in the United States; in Belgium, the limit is 110 dB; in Finland the sound level exceeds 104 dB; in the Netherlands, it is between 93 and 104 dB, in Denmark it ranges from 102-109 dB, in Switzerland 100-115 dB(A) and in Sweden 112-124 dB.

5. Personnel involved in emergency services

5.1. Requisite qualifications for personnel employed in rescue services (other than Doctors)

There are no uniform qualifications or training schemes for drivers and technical personnel in Spain; these are being established in the Federal Republic of Germany, the Netherlands, Portugal and Switzerland. There are uniform qualifications in all other countries.

A similar situation exists with respect to staff in the control centres. There are no uniform requisites or training schemes in Spain. Such provisions are being made in Belgium, the Federal Republic of Germany and the Netherlands. They are available in all other countries. (No information from Finland and Switzerland).

Uniform qualifications and training schemes for emergency ambulance personnel are available in Austria, Belgium, Denmark, Finland, France, Italy, Luxembourg, Norway, Sweden and the United States; in the Federal Republic of Germany, the Netherlands, Switzerland and Portugal such provisions are being made. No such provisions of this kind exist in Spain (no information from Ireland, Japan and the United Kingdom) (figure 8).

5.2. Contractual status of personnel other than doctors

Drivers and technical staff are usually state municipal employees in France, Ireland, Japan, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom. In Denmark they are mainly employees of private bodies. In Belgium, Luxembourg, Portugal (in country areas) and the United States, this type of work is carried out on a volunteer basis. The situation varies according to circumstances in Austria, Finland, the Federal Republic of Germany, Italy and the Netherlands.

Staff in the Danish control centres are hired on a private basis. In Austria, the Federal Republic of Germany and Italy various forms of contractual status exist again according to circumstances. In all other countries, the personnel is state-employed.

Emergency ambulance staff in Ireland, Japan, Norway, Spain, Sweden, Switzerland and the United Kingdom are for the most part state-employed; they are hired on a private basis in Denmark. In Austria, Finland, France, the Federal Republic of Germany, Italy and the Netherlands various forms of contractual status are in operation.

5.3. Doctors

In Belgium, the Federal Republic of Germany and Italy *hospital doctors* are the ones mainly to be found operating emergency missions. In Austria and Norway this is frequently the case, in Ireland occasionally. In the United Kingdom hospital doctors are called as and when necessary to the scene of an accident. In all other countries, hospitals doctors are rarely, if ever, called upon for rescue missions.

Doctors specially engaged to deal with emergency medical services is common practice in France and Spain, frequently the case in Austria, seldom, in Finland and the Federal Republic of Germany. No such doctors are available in Ireland, Italy, Luxembourg, Norway, Portugal and Sweden.

There are frequent cases only in Spain of doctors in private practice dealing exclusively with emergency medical services.

In France, Italy, Switzerland and the United Kingdom it is common practice for doctors in private practice to work for rescue services if required. In the Federal Republic of Germany this is frequently the case, rarely so in Austria, Ireland and Spain. This is not the case in Denmark, Luxembourg, Portugal and Sweden.

The medical profession in Belgium is subject to an organisational structure which differs from all other countries. In Luxembourg, Portugal and in the United States, doctors are not sent on rescue missions. According to the country concerned, doctors sent on rescue missions can come from one of a number of specialised medical backgrounds.

In Belgium, the Federal Republic of Germany, Italy and Luxembourg surgeons may be called upon; anaesthetists may be required in Belgium, Finland, the Federal Republic of Germany, Italy, Luxembourg, Sweden and Switzerland. Doctors specially trained in emergencies may be sent to accidents in France and Spain. Doctors trained in other specialities or general practitioners may be used in emergency rescue services in France, Luxembourg, Portugal, Spain, Switzerland and in the United Kingdom. In Ireland and Norway, doctors with any medical speciality may be called upon.

There is no compulsory special training available in any country for doctors working on emergency rescue missions. However, emergency first-aid is part of the curriculum for medical students in Belgium, the Federal Republic of Germany, Ireland, Italy, Spain and Switzerland. Certain new concepts in first-aid training for doctors are being put into effect in Belgium, Denmark, France, the Federal Republic of Germany, Norway, Portugal, Spain and the United States. In Finland, Luxembourg and the United Kingdom no special training for doctors is envisaged.

Doctors on missions to give emergency first-aid have certain priorities in Portugal (sign on the roof of car and special warning horn), Switzerland, (sign on the roof of car and orange hazard warning flasher, but no priorities in traffic) and in the United Kingdom (green hazard warning flasher provided on request). Certain priorities exist but only reserved for doctors employed by organised emergency services in Austria, Belgium, France, the Federal Republic of Germany, Ireland, Italy and Spain. In Norway, similar regulations are in preparation. In Denmark, Finland, the Netherlands, Luxembourg, Sweden and the United States there is no such priority, nor is one foreseen.

6. Provision of medical care

In the various countries, certain strategies for rescue operations have been worked out to decide on the arrangements for transporting the injured for treatment. In Belgium, the Federal Republic of Germany, Italy, the Netherlands, Norway and Switzerland, the injured are, for the most part, taken to the nearest (appropriate) hospital. In all other countries, the injured are usually taken to a hospital equipped with a special emergency department.

Figure 8. **Uniform conditions of qualification for the paramedical personnel on ambulances**

In almost all, countries, the injured are frequently taken to the most suitable hospital from the medical point of view, usually following a transfer, after having received first-aid treatment.

Blood plasma banks are available in the form of regional transfusion and supply centres in Belgium, Finland, Ireland and in the United Kingdom. Blood supplies are maintained chiefly by hospitals in all other countries, with the exception of France (half the stock is to be found in hospitals and the other half with private bodies), Luxembourg (with the Red Cross Organisation) and Portugal (no organised supplies available or envisaged).

7. General assessment by the operators of rescue services

The Member countries participating in this inquiry had been requested to provide ratings (excellent, good, insufficient, urgently requiring improvement) concerning the different sectors of their respective emergency medical services, which are shown in detail in the lists in Tables 3 and 4. With respect to the services existing in urban areas or conurbations, the following sectors received a negative rating and were assessed as urgently requiring improvement in the following countries (Table 3):

• Availability of emergency call facilities:	Italy, Spain
• Availability of control centres and communication facilities:	Italy, Spain
• Availability of ambulances and helicopters	Italy, Portugal, Spain
• Medico-technical equipment:	France, Italy, Luxembourg, Portugal
• Availability of non-medical personnel:	France, Italy, the Netherlands, Portugal, Spain
• Availability of doctors:	Finland, the Netherlands, United States
• Availability of suitable hospitals:	France, Italy, Portugal

The rating for the following sectors with respect to services existing in rural areas, are assessed as being negative or urgently requiring improvement in the following countries (Table 4):

• Availability of emergency call facilities:	France, Italy, the Netherlands, Spain, United States, Norway
• Availability of control centres and communication facilities:	France, Italy, the Netherlands, Spain, , Norway
• Availability of ambulances and helicopters	France, Italy, the Netherlands, Portugal, Spain
• Medico-technical equipment:	France, Luxembourg, the Netherlands, United States
• Availability of non-medical personnel:	France, Italy, the Netherlands, Spain, United States, Norway
• Availability of doctors:	Austria, Finland, the Netherlands, United States
• Availability of suitable hospitals:	France, Italy, the Netherlands, Portugal, Spain, United States

The quality of first-aid given by ordinary road users received negative ratings in all countries both in urban and rural areas: negative or urgently requiring improvement was the rating given by Belgium, Finland, France, the Federal Republic of Germany, Japan, Portugal, Spain. Italy gave a rating only to first-aid in urban areas (urgently requiring improvement — no comment on aid in rural areas), and no information was at hand from Denmark, Ireland, the Netherlands, Norway and the United States. In all other countries assessments were rather more positive.

On the whole, the overall effectiveness of organised emergency services in urban agglomerations (Figure 9) (excellent in eight countries) is considered to be better than in rural areas (excellent in four countries) (Figure 10). In Italy, Portugal and Spain, it is felt that the situation in urban areas urgently requires improvement. With respect to rural areas, the same feeling exists in France, the Netherlands, Portugal and Spain.

Table 3. **Efficiency and equipment of organised emergency services (Urban Areas)**

In urban areas/ urban agglomerations	excellent	positive	negative	urgently requiring improvement	no judgment
Emergency call facilities Equipement en possibilités d'appels Meldemöglichkeiten	A B CH D DK GB L NL S US IRL	F P N SF J		E I	
control centres and communication facilities Installations de communication et de commande Leit- und Kommunikations-einrichtungen	A B DK GB L	CH D F NL P S US N SF J IRL		E I	
Ambulance vehicles and helicopters Moyens de sauvetage et de secours Rettungsmittel	B CH L S US IRL GB	A D DK F NL N SF J		E I P	
Medico-technical equipment Equipement médico-technique Med.-technische Ausstattung	CH GB US IRL	A B D E NL S N SF J	P	F I L	DK
Personnel except doctors Personnel non-médical Zahl nichtärztliches Personal	CH GB S US IRL	A B D DK L N SF J	E	F I NL P	
Doctors Personnel médical Zahl ärztliches Personal	CH GB I IRL	A B D N E F S	SF	NL US	P L DK J
Availability of suitable hospitals Equipement en installations d'assistance Versorgungseinrichtungen	A CH D GB NL S IRL SF	B E L N DK	P	F I	J US
Quality of first aid Qualité de l'aide ... Qualität Laienhilfe		A CH GB L S	D E F SF J	B I P	NL US IRL N DK
Efficiency of organized emergency services Efficacité de l'assistance immédiate organisée Wirksamkeit der organisierten Notfallhilfe insgesamt	B CH D GB L NL US IRL	A F S N SF DK		E I P	J

Table 4. **Efficiency and equipment of organised emergency services (rural areas)**

	excellent	positive	negative	urgently requiring improvement	no judgment
Emergency call facilities Equipement en possibilités d'appels Meldemöglichkeiten	B GB L S IRL	A CH D DK P SF J	E I US	F NL N	
control centres and communication facilities Installations de communication et de commande Leit- und Kommunikations-einrichtungen	A B GB L	CH D DK P S SF J IRL	E US	F I NL N	
Ambulance vehicles and helicopters Moyens de sauvetage et de secours Rettungsmittel	B GB L IRL	A CH D DK S US SF J		E F I NL P	N
Medico-technical equipment Equipement médico-technique Med.-technische Ausstattung	GB IRL	A B CH D I S US SF	P	E F L NL	DK N J
Personnel except doctors Personnel non-médical Zahl nichtärztliches Personal	GB IRL	A B CH D DK L S SF J	US	E F I NL P N	
Doctors Personnel médical Zahl ärztliches Personal	GB IRL	B CH D F I S N	A US SF	NL	DK E L P J
Availability of suitable hospitals Equipement en installations d'assistance Versorgungseinrichtungen	GB IRL	A B CH D DK L S N SF	P	E F I NL US	J
Quality of first aid Qualité de l'aide ... Qualität Laienhilfe		A CH GB L S	D E SF J	B F P	DK I NL US IRL N
Efficiency of organized emergency services Efficacité de l'assistance immédiate organisée Wirksamkeit der organisierten Notfallhilfe insgesamt	B GB L IRL	A CH D DK I S US SF		E F NL P	J N

Figure 9. **Efficiency of organised emergency services in urban areas**

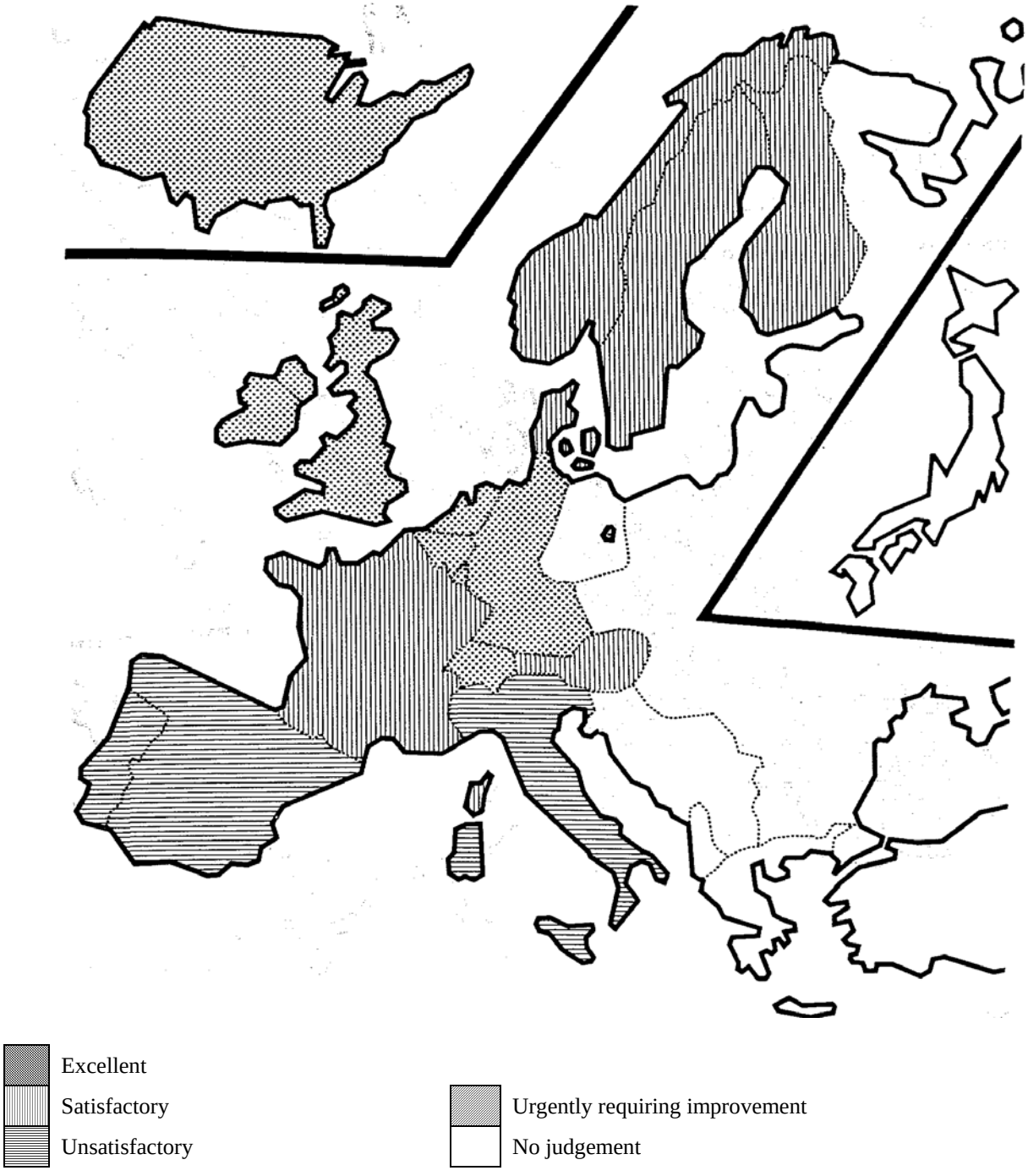


Figure 10. **Efficiency of organised emergency services in rural areas**

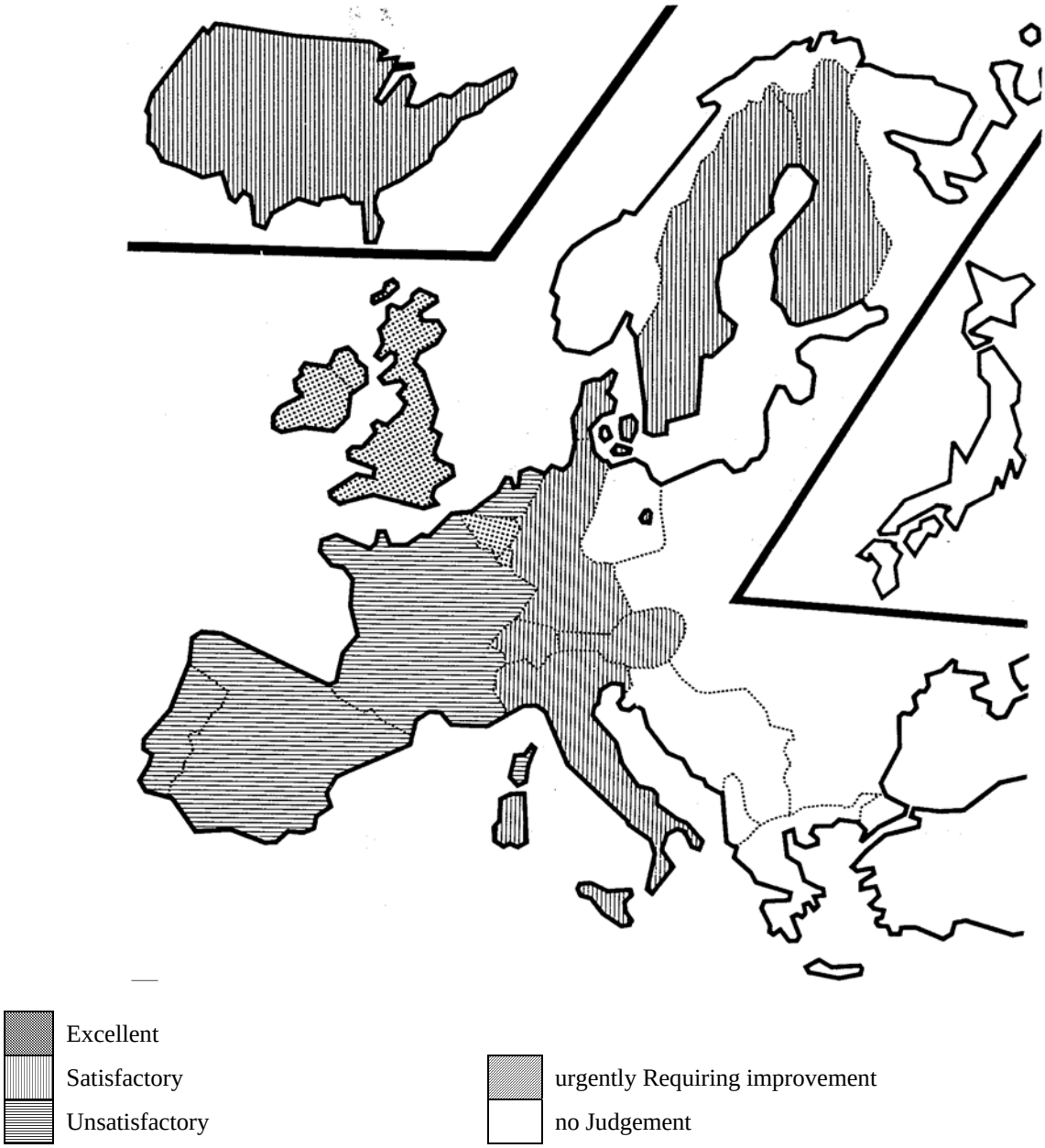
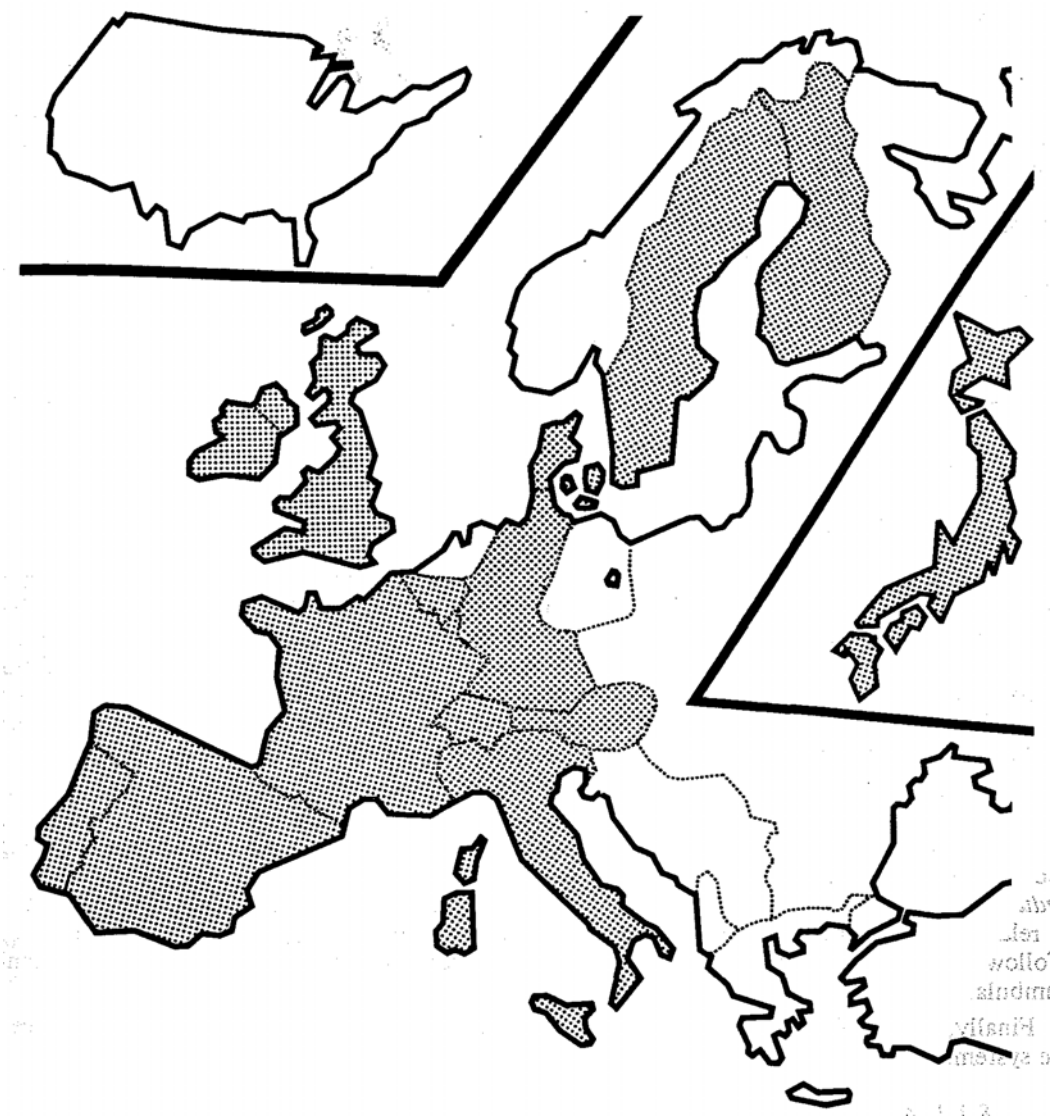


Figure 11. **Countries with description of a selected region**



Country with a selected region.

No information.

8. Practical operation of ambulance and rescue services in selected regions

In order to get a general idea of the workings of the ambulance and rescue services in the ECMT Member countries, another survey was carried out at regional level, in respect to the practical organisation of these services. The questions were to be answered by the local operators or those responsible for the organised emergency service of an area with approximately 300 000 inhabitants (a city with rural outskirts). The results of this survey are presented below.

Replies were received for selected regions of Austria (A), Denmark (DK), Finland (SF), France (F): the Federal Republic of Germany (D), Portugal (P), Spain (E), Sweden (S), the United Kingdom (GB) and Ireland (IRL). The information supplied by Belgium (B), Italy (I), Luxembourg (L) and Switzerland

(CH) is not related to a selected region, but to the entire country. No information is at hand with respect to the Netherlands, Norway and the United States of America (fig. 11). The results are presented separately country by country, followed by a comparison of results, as far as this was possible.

8.1. Present situation country by country

For each selected region, replies were requested for a total of nine topics. A description of the region was given, i.e. its area, number of inhabitants, sex and age of the population, number of gainfully employed persons, together with the type of employment. Furthermore, data was requested concerning the traffic structure, such as the total length of the road network, the length of motor-ways, roads within and outside built-up areas, the number of motor vehicles, the occurrence of road traffic accidents and the number of persons injured or killed in these accidents. The third category of questions concerned the structure of medical emergencies in the selected region.

After outlining the basic structure of the selected region, information on the emergency reporting system was to be given, i.e. data on the existing equipment for placing emergency calls and how it was put to use. The fifth topic concerned the control system used in the selected region for co-ordinating rescue missions. This was follow by questions concerning the structural and procedural organisation of the rescue system, as well as the rescue methods employed. The seventh topic related to the existing medical care system, that is number and type of available hospitals. This was followed by a request for information concerning financial settlement and the ways of financing the ambulance and rescue service.

Finally, the local operators were asked to make an assessment of their own ambulance and rescue system.

8.1.1. Austria

The region selected in Austria covers an area of 127.5 square kilometres with a total of 247 460 inhabitants, 55 278 of whom are under 18 years of age and 54 895 are over 60 years of age. 43.6% of the 130 882 gainfully employed persons are working in the services sector, 29.2% in trade and commerce, 17.2% in industry, 0.4% in the agricultural sector and 9.6% in other sectors.

The length of the road network is 812 km, including 9 km of motorway. Out of a total of 101 551 motor vehicles indicated for the selected region, 77 435 are passenger cars.

In 1980, 2 347 accidents involving personal injury were recorded 25 of which were fatal accidents. The number persons killed or injured in these accidents amounted to 3 035.

Out of a total of 82 025 missions carried out by the organised emergency service, 26 160 of these were as a rest of serious illness, 1 216 due to traffic accidents, 854 accidents at home and in leisure time, 684 industrial accidents and 141 due to suicide or crime.

The equipment available for reporting emergencies in the selected region consists of private and public telephone both of which are adequately distributed over the entire area, although there are no free emergency calls; both these systems are frequently used. Fire brigade and emergency call boxes along motorways have been installed in sufficient number, but they are rarely used. Emergency call boxes along roads outside built-up areas are available only in isolated cases. In the entire area there are uniform emergency call numbers for the police (tel. 133), the fire brigade (tel. 122) and the ambulance and rescue service (tel. 144).

All requests for emergency medical assistance are handled by the regional control centre of the Austrian Red Cross. This control centre can contact all vehicles via radio-telephone. Moreover, the centre is equipped with permanent telephone lines to the police, the fire brigade and hospitals. Data processing equipment and video map displays are not available, but the control centre is in CC possession of all necessary wall maps.

In the selected region, the mayor or the departmental head of the Provincial government is responsible for organised emergency assistance. The Austrian Red Cross operates the mission control centre and the 32 rescue vehicles. The system is operational on a 24-hour basis. Out of a total of 481 persons employed in the rescue service, 390 are volunteers, 51 full-time employees and 40 are as qualified doctors.

Missions requiring an emergency doctor are generally carried out in the form of the so-called "rendez-vous" system meaning that the doctor and the appropriate rescue vehicle drive separately to the accident scene.

Local operators rate both equipment and efficiency of the rescue service in the selected region as excellent. The number of rescue vehicles as well as the medical staff both received a positive rating.

8.1.2. Belgium

Belgium has not submitted a completed questionnaire, but forwarded documents containing information on some of the topics in question.

Belgium has a population of 9 920 000, living in an area of 30 513 square kilometres. In 1978, 87 274 people were injured and 2 589 persons killed in road accidents.

In the same year, the organised emergency service dealt with a total of 179 442 urgent emergency missions, approximately 5-20% of which concerned people in a critical condition.

There is an emergency call number (tel. 900) for the rescue service throughout the country. Emergency calls are dealt with by 16 regional control centres. These control centres are based at fire stations and are within the jurisdiction of the Health Ministry and the Ministry of the Interior. There are direct telephone lines to the police, the fire brigade and rescue stations, most of which are set up in hospitals.

The control centres and the rescue vehicles are equipped with radio communication material. Two hundred and sixty-nine of the total 476 rescue vehicles are run by the fire brigade, 45 by the Red Cross, 33 by private hospitals and 58 by private bodies. Forty-two special ambulance vehicles are available for the treatment of seriously injured persons.

One hundred and one of the total 202 hospitals have a 24-hour emergency service.

8.1.3. Denmark

The region selected by Denmark covers 10 139 square kilometres with a population of 231 005. The main locality comprises 161.6 sq km. There are 45 173 registered motor vehicles, 82 836 of which are passenger cars. In 1980, a total of 565 road accidents involving personal injury occurred in this region, 33 of which were fatal. Seven hundred and twenty persons were killed or injured.

The operators stated that 16 968 urgent emergency missions and 113 000 non-urgent ones were carried out in 1980.

Emergencies are mainly reported via private telephones, which are available in adequate numbers throughout the area. There is also an adequate number of public telephone booths offering free emergency call facilities, but they are used only rarely. There are no police and fire brigade call boxes nor any emergency call boxes along roads in and outside built-up areas. All motorways are equipped with emergency call boxes, which are frequently put to use. There is a uniform emergency number all (tel.000) for the police, fire brigade and rescue services.

All requests for assistance in emergency cases are handled by the police control centre. There is radio communication to all vehicles and permanent telephone lines to the fire brigade and rescue stations. Rescue missions are. carried out by an ambulance and rescue organisation operating nation wide on instructions from the competent authorities. Emergency medical services are run jointly by hospitals and general practitioners.

The operators rated as excellent reporting facilities and outside built-up areas, communication facilities as well as the staffing of the control centre, the number, quality, equipment and staffing of the means of rescue, as well as their operational readiness. The same was stated for the availability of medical personnel and the time the control centre took to handle and carry out missions. The technical equipment of the control centre as well as the operational readiness of the doctor have been given a positive rating. The quality and effectiveness of the overall rescue service is rated as excellent.

8.1.4. Finland

The description of the Emergency Medical Service (EMS) in Finland is based on the example of a comparatively densely populated region (population density of 1 325 inhabitants/km. Its area extends over 365.15 km^2 the town centre occupying 128.78 km^2.The total population is of 483 675 inhabitants, 169 086 of which live in the main locality (35%). The working population comprises 48% of the total population, 32% of which are employed in the services sector, 21.6% in trade and commerce, and 29.5% in other fields.

There are no statistics available concerning the length of the road network. The total number of vehicles in 1979 was 126 605 (109 323 private cars).

In 1979, the recorded number of road accidents involving injuries was 3 502. In 1982, the EMS handled 25 237 emergency operations and a further 8 724 missions of other kinds.

In the region selected, emergency calls can normally be made free of charge through private telephone or police and fire brigade emergency call boxes. Roadside emergency call boxes (within built-up areas) are also in frequent use. Emergency call boxes on motorways are scare and thus are rarely used. Emergency call boxes are not available on other roads outside built-up areas.

There are uniform emergency telephone numbers throughout the region for direct emergency calls to the police (000/002) as well as for direct emergency calls to the fire brigade and EMS (000). A central control system is in the planning stage and will serve seven municipalities. For the time being, the fire brigade control centre is responsible for co-ordinating the use of rescue vehicles. All vehicles are equipped with radio communication and remain in permanent contact with the control centre during missions. Direct telephone lines to the police and to hospitals are available at the fire brigade control centre, but data processing equipment and a video map display are not available.

The EMS personnel is employed by the Fire Department and specially trained for its task. Most firemen have had extensive medical training. The "doctor ambulance" vehicles are staffed with a doctor, a nurse and employees of the Fire Department.

Emergency calls are handled by the fire brigade control centre, from where the most suitable fire station in each individual case is alerted in accordance with a scheduled rescue operation procedure. It generally takes one minute for the rescue unit and ambulance vehicles to be ready for departure. Throughout the mission, the responsibility for the operation lies with the fire officer in command.

Several hospitals are available for casualty treatment; among them there are some clinics specialised in the care of accident victims.

Under Finnish law, the fire and rescue services are financed by the municipalities. However, it is envisaged that the state will pay 15% of these costs in the future. The quality of the installations and performance level of the rescue services are rated as "excellent".

8.1.5. France

In France the area under consideration is of 551.6 sq km, with a population of 295 000 inhabitants. The main locality comprises 145 000 inhabitants living in an area of 34.4 sq km. One hundred and eighteen thousand three hundred residents in the selected region are over 60 years of age 64.3% of all gainfully employed persons are working in trade and commerce, 33.1% in industry and 2.6% in the agricultural sector.

The length of the road network in the selected region is 701 kilometres, including 12 kilometres of motorway. The total number of motor vehicles is estimated at 200 000, including approximately 180 000 passenger cars.

In 1981, 1 501 accidents involving personal injury were reported, 39 of which were fatal. One thousand six hundred and forty-five persons were injured or killed in these accidents, 1 262 in built up areas and 283 outside.

In the selected region, emergency calls are usually made via private telephones, which are frequently available, or from public telephone booths, but there are no free emergency call facilities. Telephone booths where emergency calls can be made free of charge do not exist. Emergency call boxes along roads outside built-up areas are scare and are, therefore, rarely used. Emergency call boxes throughout motorways are used very frequently.

In the region under consideration, there are uniform emergency telephone numbers for the police (tel. 17), the fire brigade (tel. 18) and the rescue service (tel. 28 15 15). The control centre of the rescue service is based at the main regional hospital. A control centre to handle all emergency calls is being up at present. All vehicles are equipped with radio telephone. Direct telephone lines are available between police, fire service and rescue service. In rural areas of the region, the rescue service is handled by the fire brigade, in urban areas by the SMUR (Service Mobile Urgence Réanimation). They rescue vehicles used by the SMUR and staffed with doctors (anaesthetists) are on stand-by at four hospitals. They are ready for action twenty-four hours a day, as are the fire brigade vehicles. In addition to these facilities, a police helicopter is also available. In the event of a serious emergency, a light vehicle normally goes to the scene of the accident in order to give medical treatment as quickly as possible and to relieve the doctor for other tasks as soon as possible.

The expenses of the rescue service are reimbursed according to the social insurance agency concerned. Rescue missions are recorded on special forms by the SAMU (Service d'Assistance Médicale d'Urgence) and the fire brigade.

Reporting facilities both outside and within built-up areas, the technical equipment of the control centre, the quality and equipment of the rescue vehicles, the availability of personnel other than doctors, as well as the quality of the entire rescue service, have, on the whole, been given a positive rating. The number of rescue vehicles, the handling time taken by the control centres, the operational readiness of rescue vehicles and of the emergency doctor are described by operators as being excellent, whereas much improvement is required in respect of the availability of personnel at the control centre and the number of doctors. Those responsible for the rescue service also feel that the technical equipment of the mission control centre calls for improvement, but, as pointed out above, improvement can be expected in this respect with the setting up of a new control centre.

8.1.6. Federal Republic of Germany

In order to illustrate rescue services in the Federal Republic of Germany, a region predominantly rural in structure was chosen, it extends over an area of 3 091 sq km with 458 671 inhabitants, 115 714 of which are living in the main locality which covers 73.9 sq km 40% of the 192 443 gainfully employed persons are working m the service sector and 20% each in the agricultural sector, in industry and trade and commerce.

The length of the road network in this region is 4 333.6 km, 119.8 km of which are motor ways. 177 873 of the total of 212 295 motor vehicles are passenger cars. In 1980, 3 161 accidents involving personal injury occurred, 142 of which were fatal. 2 386 persons were injured or killed in accidents within built-up areas and 2 050 in accidents outside built-up areas. The rescue service carried out 8 972 emergency missions and 43 253 less serious cases were handled.

Emergencies are, in most cases, reported via private telephones which are sufficiently available in the selected region. Public telephone booths with or without free call facilities, are frequently available and are often used. Police or fire brigade call boxes are only rarely installed and, consequently, infrequently used. Frequent use is made of emergency call boxes which are rarely to be found along roads within built-up areas, but which are frequently installed along roads outside built-up areas. On motorways, emergency call boxes have been installed in sufficient number and these are used frequently. There are uniform emergency call numbers in the selected region for the police (tel. 110), the fire brigade (tel. 112) and the rescue service (tel. 22222).

All emergency requests for medical assistance are handled by a central agency: the rescue control centre of the Bavarian Red Cross. This centre also co-ordinates the dispatch of rescue vehicles. All vehicles have radio communication link with the control centre. In addition, there are direct telephone lines to the police, the fire brigade, to the places where rescue vehicles are stationed and to some hospitals. Video map displays are available and data processing plant is planned.

Responsibility for carrying out rescue missions lies with the relied organisations (Bavarian Red Cross and others), who have been authorised to do so by local municipalities. Depending on the time of the day, up to 40 rescue vehicles are available at ten locations in the selected region. At each station, at least one vehicle is ready for operation around the clock. 40% of the rescue vehicles available consist of reanimation ambulances and rescue vehicles and 60% are standard ambulances for transporting the sick and injured; in addition, a rescue helicopter is available in the day time. Every vehicle is manned by a staff of two, including at least one emergency medical technician and one emergency assistant, who may

be volunteers or members of the civilian service. The emergency control centre itself has 14 staff members.

In emergency cases, the most suitable rescue vehicle available in the vicinity of the accident is sent to the scene of the accident. If a less suitable vehicle (for example, a standard ambulance) is nearby and available, it will be sent to give first-aid in the first instance. The decision concerning the kind of rescue vehicle to be used is always taken by the person handling the call, if necessary after having conferred with the head of the control centre. The vehicles are alerted either via telephone or by radio communication and to some extent via special radio receivers (Eurosignal). The chronological procedure of the mission will be recorded on tape and in writing. The destination where the patient is transported is determined by the patient himself, his relatives, the doctor-in-charge or the emergency doctor, depending on the injuries sustained and in co-ordination with the control centre. The control centre keeps detailed records on the situation concerning the handling capacity of hospitals or specialised departments. The "rendez-vous" system (i.e. the emergency doctor and the rescue vehicle travel separately to the scene of the accident) is used for missions where a special request is made for an emergency doctor. There are six emergency medical units and one helicopter available for this purpose in the selected region.

There are eight hospitals, including one university hospital, offering all the usual specialised departments. In addition, there are five hospitals which can take patients after initial treatment; these are not, however, in a position to take emergency patients.

The financial settlement of the missions is effected via the social insurance agencies. It is effected through the clearing office of the Bavarian Red Cross by means of computers. This office also maintains a listing of missions, indicating date, time, type of mission and type of rescue means required.

In the selected region, the possibilities available for requesting emergency aid have been rated by the operators as excellent within built-up areas and positive outside built-up areas. A positive rating has been given to the communication facilities and technical equipment of the rescue control centre, the quality of the rescue vehicles and their staff other than doctors, the operational readiness of the rescue vehicles and of the doctor and, finally, the quality of the entire rescue service. The availability of medical personnel was rated as negative. The number of rescue vehicles and the handling time taken by the control centre is described as excellent.

8.1.7. Ireland

The region selected for Ireland extends over an area of 7 460 sq km with 396.000 inhabitants. The main locality covers 37.3 sq km and has 138 000 residents. 157 404 (81 056 male, 76 348 female) are under 18 years of age. 238 714 (118 090 male, 120 624 female) are over 60 years of age. 9 735 of the total of 129 442 gainfully employed persons are male, 32 407 are female. 25% are employed in the agricultural sector, 39% in industry, 18% in trade and commerce, 15% in the service sector, and 3% in other sectors.

The road network in the selected area has a length of 12 215 km, including 426 km of roads the within built-up areas; there are no motorways. Of the total of 111 021 vehicles 88 423 are registered as passenger cars. In 1980, there were 747 traffic accidents involving personal injury, 57 of which were fatal. In these accidents, 487 persons were injured or killed on roads within built-up areas and 661 persons on roads outside built-up areas.

In 1981, 2 577 persons were injured in industrial accidents and 2 486 in traffic accidents. Another 10 186 were injured in accidents at home or in leisure time. Three thousand seven hundred and twenty-seven persons were taken to hospital owing to serious illness and 9 174 because of other reasons. These

figures refer to persons treated in the regional general hospital. In 1981, the organised emergency service carried out approximately 8 000 urgent missions and approximately 16 000 less urgent missions.

In the selected region, emergencies are reported via private telephones which are available in sufficient number. Public telephone booths have been installed over the whole area with free emergency call facilities and are used very frequently. Police or fire brigade call boxes and emergency call boxes along roads outside built-up areas, if available at all, are not used very often. There is a uniform emergency number (tel. 999) throughout the area for the police, the fire brigade and the rescue service.

All missions of the rescue service are co-ordinated by a control centre. This control centre is located in the regional general hospital; there is radio communication to all rescue vehicles. In addition, the control centre has direct telephone lines to the police, the fire brigade, rescue stations and to the hospitals in the vicinity. A data processing plant is not available; the purchase of video map displays is planned.

In the selected region, there is a total of 15 rescue stations equipped with 22 rescue vehicles; 4 stations with 10 vehicles are located in the central zone. All rescue stations are located in hospitals.

If emergency medical aid is requested via the number 999, the operator immediately puts the call through to the control centre. The control centre then alerts the nearest vehicles by radio. Once at the scene of the accident, the rescue team decides whether a doctor is to be called in, which is only rarely the case. The patient is taken to the nearest suitable hospital. There are six hospitals in the selected area which are equipped to handle emergency patients.

Reporting facilities within built-up areas and control centre communication facilities are rated by the operators as excellent. Reporting facilities outside built-up areas, the technical equipment of the control centre and its staff, the number of rescue vehicles, their quality and equipment, as well as staffing is stated to be positive; the same applies to the time the control centres requires for is handling emergencies and to the operational readiness of rescue vehicles. The availability of medical personnel as well as the time required for a doctor to be made available have been given a negative rating. The quality of the entire rescue service was stated to be positive.

8.1.8. Italy

There is only partial data available for Italy. Information concerning the overall structure was submitted for the whole country rather than for a selected region, as requested. For the sake of completeness, this data is reproduced below.

Italy covers 301 863 sq km with 56 999 047 inhabitants (situation as of 1971). Out of a total of 16 351 539 persons under 18 years of age, 8 389 227 are male and 7 962 312 are female. There are 9 290 240 persons over 60 years of age (3 932 094 male and 5 358 146 female). 14 011 000 of the 22 075 000 gainfully employed persons are men, 7 064 000 are women. 14.8% are employed in the agricultural sector, 37.5% in the industry and 47.7% in other sectors.

The road network is 294 462 km in length, including 5 900 km of motorway (situation in 1980). 22 937 157 motor vehicles are registered in Italy. In a total of 271 894 accidents involving personal injury, 222 873 persons were injured and 8 537 persons were killed. 157 827 were injured or killed in accidents occurring within built-up areas and 73 583 in accidents outside built-up areas.

Public telephone booths with or without free emergency call facilities are frequently available in Italy, and these are often used to report emergencies. Police call boxes are only rarely installed and are

not used very often. The few emergency call boxes installed along roads outside built-up areas are only rarely used.

The entire motorway network is equipped with emergency call boxes and these are used in the majority of cases. Throughout the country there are uniform emergency telephone numbers for the police (tel. 113) and emergency service (tel. 116). The central agency handling all emergency calls requesting medical emergency assistance and directing rescue vehicle operations is stated to be the civil defence service.

8.1.9. Japan

The region selected to describe the rescue service in Japan is a large city with a population of 664.868 over an area of 237.5 km (population density: 2 805 inhabitants/km This densely populated area has a central zone with a population density of 4 950 inhabitants/km An analysis of the population structure shows a high percentage of inhabitants under the age of 18 (28.5%) and a proportion of about 10.5% over the age of 60. More than 45% of the population are gainfully employed or self-employed, most of them working in trade in commerce (32.4%). This is followed by the service sector (24.3%), industry (22.0%), agriculture (2.4%) and others (18.9%). The road network in the selected region encompasses 1 382 km, 10.2 km of which are motorways. The total number of motor vehicles registered in 1981 was 192 872 (128 977 private cars).

In 1981, 3.171 road accidents involving injuries were recorded 26 of which were fatal. Accidents occurred mainly in the urban area, only 10.7% happened outside built-up areas.

An analysis of the nature of rescue operations reveals that 24% of all operations (out of a total 8 620) were caused by road accidents. Serious illnesses account for about 42% of the cases. Industrial accidents (about 2%), accidents in the home and leisure time accidents (9.6%), and suicides and crimes (3.4%) make up the remainder.

Emergencies are, on the whole, reported via police and fire brigade emergency call boxes. Private and public phones with emergency call facilities are also available on an area-wide basis, but are rarely used. Only motorways are equipped with roadside emergency call boxes, which are in frequent use. Uniform emergency telephone numbers are available for the police (110), the fire brigade and ambulance service (119).

The control centre of the fire brigade has been co-ordinating all rescue operations since 1961. Ambulance staff administers first-aid treatment on the spot, whilst more specific medical care is given once patients are taken into hospital. All rescue vehicles are equipped with radio communication and remain in constant contact with the control centre. The control centre in turn is equipped with permanent telephone lines to the police, hospitals and rescue stations. A moving map display indicator is available and a data-processing plant at the planning stage. In addition, an emergency medical information system is at the disposal of the fire brigade.

Rescue missions in the selected region have seven ambulances at their disposal. They are in constant contact with the control centre. When an emergency arises, the most suitable hospitals for the treatment of emergency patients (ten hospitals) are alerted by the control centre via permanent telephone lines. Staff at the control centre (working hours: 47 hours/week), as well as that of the ambulances have to complete a 135-hour training course, a standard requirement under Fire Service Law. There is always at least one officer on the staff of the control centre who is trained in radio communication.

An emergency call coming into the control centre via the emergency number 119 may lead to further information being required. Ambulances are alerted and dispatched (staff: three officers, one of whom is in command). On the scene, the ambulance staff assess the situation and administer first aid treatment in line with the "Criteria for emergency treatment conducted by emergency crewmen" set up by the Government.

The ambulance staff also decide on the choice of the most suitable medical institution to handle emergency cases. If necessary, treatment of patients is continued during transport to the hospital. There is an emergency hospital system operating in accordance with the criteria set up by the Ministry of Health and Welfare.

An "Ambulance service plan for special disasters" has been set up, in order to co-ordinate ambulance and rescue services in the event of disasters.

The cost of the ambulance services are borne by the community. Records on emergency missions are prepared by the doctor on duty at the hospital emergency department. The condition of the patient is described on a special form and a note is made when this condition warrants hospitalisation.

The equipment and performance of the rescue service in the selected region is rated as "excellent". The only exception is the rating given to "number of rescue vehicles available", in which case the need for urgent improvement is clearly expressed. This point is readily understandable, if the number of rescue vehicles is compared with the population to be served (ratio of seven vehicles to he 664.868 inhabitants).

8.1.10. Luxembourg

The data submitted for Luxembourg concerns the whole country. 364 606 people are living in an area of 2 586 km. The capital, Luxembourg, covers 51.5 km and has 78 924 inhabitants. 56% of the 159 800 gainfully employed are working in the service sector, 38.3% in industry and 5.7% in the agricultural sector. The length of the road network in Luxembourg is 5 094 km, including 44 km of motorway. The total number of registered motor vehicles (situation in 1981) includes 166 156 passenger cars. In 1981, 1 487 accidents involving personal injury occurred, 85 of which were fatal. In all, 2 165 persons were injured or killed in these accidents. In 1980, the number of urgent medical rescue missions amounted to 7 100 and another 14 700 less serious cases were handled.

Private telephone connections are available in sufficient number throughout the country and are mainly used for reporting emergencies. Public telephone booths with free emergency call facilities have also been installed in sufficient number, but they are only rarely used. Police call boxes and call boxes along roads within and outside built-up areas do not exist. Motorways are generally equipped with emergency call boxes and are used in the majority of cases. Police, fire brigade and rescue service have an emergency telephone number (012).

A control centre is in operation for the whole country and handles all requests for emergency assistance and supervises missions in their entirety. This control centre forms part of the national civil defence service, a direct subordinate body of the Ministry of the Interior. This control centre is responsible for organising missions concerning vehicles belonging to the civil defence service (means of rescue, rescue vehicles, etc.) and to the country's voluntary brigade. There are direct telephone lines between the professional fire service of the City of Luxembourg, the police, hospitals and the control centre. In addition, there is radio communication to all vehicles. A data processing plant and video map displays are not available.

The staff of the control centre is composed of civil servants. Rescue vehicles include 28 ambulances and 16 technical rescue vehicles. The vehicles are staffed with medical technicians and voluntary helpers, who are trained at the National school for civil defence and in first aid centres. In the City of Luxembourg five ambulances and one rescue vehicle belonging to the professional fire brigade are available.

In normal cases, the official on duty sends the nearest rescue vehicle to the scene of the accident, once an emergency has been reported to the control centre. During transport to the nearest hospital, the staff of this vehicle inform the control centre about the condition of the patient. The control centre keeps the hospital informed. Upon completion of their rescue mission, the vehicles return to their original location.

The communication facilities, staffing and the technical equipment of the control centre are rated as excellent. The same applies to the quality and equipment of the means of rescue. Reporting facilities on roads within and outside built-up areas, the number of rescue vehicles, the availability of personnel other than doctor the time required by the control centre to handle emergencies, as well as the operational readiness of the means of rescue have been given a positive rating. The same is stated in respect of the quality of the entire rescue service.

8.1.11. Portugal

The region selected for Portugal comprises an area of 2 708 sq km with a population of 608 000. The central locality of this region covers 208 sq km with 52 000 inhabitants. The road network is 2 134 km long.

In 1980 the number of persons injured or killed in traffic accidents amounted to 3 116; 1 048 in accidents within built-up areas and 2 068 outside built-up areas. Furthermore, 421 industrial accidents, 1 023 accidents at home or during leisure time, 2 182 cases of serious illness, 436 emergencies following suicide or crime and 962 other emergencies were reported. The organised emergency aid services carried out a total of 8 092 missions in 1980.

Public telephone booths with free emergency call facilities are installed in sufficient number in the selected region and are mainly used for reporting emergencies. There is only a small number of police and fire brigade call boxes, and these are used very infrequently. Call boxes along motorways are frequently available and are used often for the purpose of reporting an emergency. In the selected region, there is a uniform emergency telephone number (tel. 115) for the rescue service.

Although the rescue system is a national institution, rescue missions are alerted and controlled on a regional basis. The whole country is divided into 52 emergency regions, each of which has a control centre, which can be reached on a 24-hour basis. The control centre has permanent telephone lines to rescue stations and hospitals. 126 emergency ambulances are available throughout the country.

In urban areas, the control centres are operated by the police, in rural areas, by the fire brigade. Equipment of all available rescue vehicles is very good, but staff training still needs improvement. Medical care is provided by regional and central hospitals. The regional hospitals have up-to-date equipment, but there is a lack of specialists. There is no special training for emergency doctors. Central hospitals have a permanent emergency department, but they are not equipped to cope with the enormous amount of emergencies.

Once an emergency is reported, the official on duty in the control centre usually alerts the ambulance located nearest to the scene of the accident. The injured person is taken to the nearest hospital

by the rescue vehicle. Treatment of the patient on the scene of the accident and during transport is in most cases only superficial and does not seem to meet requirements. This is perhaps due to the inadequate training of rescue personnel.

The local operators gave a positive rating to reporting facilities along roads within built-up areas, communication facilities as well as the control centre's technical equipment, the number of rescue vehicles and their operational readiness are rated as quite good, whereas the rating concerning the time required for a doctor to be on the scene of an accident is "insufficient".

Reporting facilities along roads outside built-up areas are rated as urgently requiring improvement. The same applies to the quality rescue vehicles, the availability of non-medical and medical personnel, as well as to the time required by the control centre to handle an emergency. Accordingly, the quality of the entire rescue service is rated as urgently requiring improvement.

8.1.12. Spain

In 1981, the region selected for Spain extends over an area of 5 288 sq km with 513 115 inhabitants, 179 694 of whom are living in the central locality, which covers 34 sq km. 158 035 in habitants are under the age of 18 (80 814 male and 77 221 female), 67 149 are over 60 years (26 954 male, 40 195 female). Of the total 187 600 gainfully employed, 130 600 are male and 57 000 female. 26.2% are employed in the agricultural sector, 26.9% in industry, 10% in trade and commerce, 30.5% in the services sector and 6.4% in other sectors.

The road network is 2 400 km long, including 337 km of roads within built-up areas; there are no motorways in this area. The total of 138 817 motor vehicles includes 102 241 passenger cars. In 1981, 1 255 traffic accidents involving personal injury occurred, 66 of which were fatal. In these accidents, 436 persons were injured or killed within built-up areas and another 618 persons outside built-up areas. Furthermore, 1 285 industrial accidents, 315 accidents in the home or during leisure time, 9 267 cases of serious illness and six emergencies following suicide or crime were reported. Moreover, 53 577 other accidents (apparently not requiring medical aid) were indicated. In 1981, organised emergency services carried out a total of 10 492 rescue missions.

Private telephone connections are available in sufficient number and are mainly used for reporting emergencies. Public telephone booths without free emergency call facilities are frequently available and are often used. Public telephone booths, where emergency calls can be made free of charge do not exist. Police or fire brigade call boxes on roads within built-up areas do not exist, either. Emergency call boxes along roads outside built-up areas, if available, are used in the majority of cases. An additional possibility of reporting emergencies is offered by 49 vehicles, equipped with radio communication which patrol on public holidays and in the holiday season. A uniform emergency telephone number exists for the police (tel. 091) but not for the rescue service.

There is no rescue service control centre in the selected region at the moment, but there are plans to establish such a centre. Only very few rescue vehicles are equipped with radio communication. Permanent telephone lines between police, fire brigade, rescue stations and hospitals are not yet available, but are planned.

The rescue service is carried out by the Red Cross, which has 12 first-aid stations in the selected region. Calls come in via telephone or radio communication. Decisions as to the rescue means to be used are made by the head of the rescue station concerned. In the selected region, medical treatment is given through a state hospital, a hospital belonging to the Red Cross as well as by seven private hospitals. Four of the latter are located in the central zone of the region.

Communication equipment, the quality and equipment of rescue vehicles, the personnel staffing rescue stations and rescue vehicles as well as the time required by control centres to handle emergencies and the operational availability of rescue vehicles are rated by the local operators as being positive. Reporting facilities within and outside urban areas, the technical equipment of the control centre, the number of rescue vehicles, availability of medical personnel and the rapid availability of doctors are rated as urgently requiring improvement. It is also felt that the quality of emergency assistance requires improving.

8.1.13. Sweden

The region selected by Sweden extends over an area of 587.8 sq km with 303 394 inhabitants. 218 316 persons are living in the central locality, which covers 68.1 sq km. 64 910 inhabitants are under 18 years of age (33 215 male and 31 695 female); 69 695 are over 60 years of age (29 002 male and 40 685 female). Out of a total of 140 570 gainfully employed, 81 218 are male and 59.35 female. 2.1% are employed in the agricultural sector, 33.8% in industry, 19.1%ent in trade and commerce and 45.0% in the services sector. The road network in the selected area is 501 km long, including 42 km of motorway.

In 1981, 865 persons were injured and 13 killed in 747 accidents involving personal injury. 676 of these persons were injured or killed within built-up areas and 202 outside built-up areas. In 1981 approximately 1 500 further accidents occurred. On the whole, 6 800 urgent emergency missions and 16 150 less urgent missions were carried out.

Emergencies are mainly reported through private telephones, which are available in sufficient number throughout the area. Public telephone booths without free emergency call facilities do not exist. Public telephone booths, where emergency calls can be made free of charge, are frequently available and are often made use of. There are no emergency call boxes within or outside built-up areas. Police or fire brigade call boxes, which are installed only rarely, are hardly ever used. There are only a few call boxes along motorways, but those available are used very often. There is a uniform telephone number for the police, the fire brigade and the rescue service (tel. 90000).

In the selected region — as throughout the whole country — there is a control centre handling all kinds of emergency calls. This public control centre has the task of co-ordinating the missions of the police, fire brigade and rescue services. All vehicles can be reached by the control centre via radio communication. The control centre has permanent telephone lines to the police, the fire brigade, rescue stations and hospitals. The organisation of missions is effected by means of data processing plants. In the daytime, the control centre is staffed with eight and at night with four persons; this staff is responsible for an area in which 1.02 million people are living. Up to eleven fully equipped ambulances are ready for operation at three hospitals and five emergency departments. In addition, there are 12 fire stations, five of which are staffed by professional fire brigades and seven by volunteers, also equipped with rescue means.

On receiving an emergency call, the control centre alerts the fire and rescue station concerned and rescue vehicles are dispatched. Sometimes, the “rendez-vous” system is practiced. In this case, a police vehicle collects the doctor or a team of doctors and drives to the scene of the emergency. This procedure is initiated by the rescue vehicle already at the scene of the accident, but it is not applied very often. In general, the transport decision is made by the control centre. Two university hospitals are available for medical treatment of patients.

Emergency reporting facilities within built-up areas: the communication facilities, the technical equipment, the handling time required, as well as the staffing of the control centre are rated by the

operators as excellent. The same applies to the number, quality and equipment of the rescue means and to their crews and operational availability. Reporting facilities outside built-up areas, the availability of medical personnel the rapid availability of a doctor and the overall quality of the rescue service have been given a positive rating.

8.1.14. Switzerland

The competent authorities in Switzerland were not in a position to answer the questions, as requested, for a certain selected region. The data given below therefore concern Switzerland as a whole.

In Switzerland, 6 373 000 inhabitants are living in an area extending over 41 293 sq km. The length of the entire road network is 64 967 km, including 1 171 km of motorway. The total number of motor vehicles is 2 702 266, with 2 246 752 being passenger cars. In 1980, 32 326 persons were injured and 1 246 killed in a total of 25 649 traffic accidents involving personal injury. 20 229 persons were injured and 528 killed on roads within built-up areas, 12 097 were injured and 718 killed on roads outside built-up areas.

Private telephones and public telephones without free emergency call facilities, both of which are available in sufficient number throughout the country, are frequently used to report emergencies. There are no public telephones with free emergency call facilities. Police and fire-brigade call boxes are frequently installed and often used. Emergency call boxes on roads within built-up areas are available only in isolated cases. Outside built-up areas, call boxes are installed on mountain roads, in most cases on mountain passes and these are used frequently. Along motorways, emergency call boxes are installed at regular intervals and are used in the majority of cases. In Switzerland, there are uniform telephone numbers for the police (tel. 117), the fire brigade (tel. 118) and for the rescue service (tel. 144).

The central agencies of the rescue service may differ in their functions and degree of development from region to region. At present, they rarely carry out the function of a control centre. Emergency aid is the responsibility of the individual hospitals. The rescue service is operated by non profit making or commercial private organisations, or by hospitals and organisations from the different cantons. The offices concerned can be reached around the clock; they have telephone connections to the police, the fire brigade and rescue stations and are equipped with video map displays. Staff numbers and technical equipment vary according to the population density and certain risk factors specific to each region. There are plans to harmonize training and advanced training of personnel.

Once an emergency is reported, the decision concerning the measures to be taken is made by the central office. It informs the competent rescue station by telephone or by radio communication. The crew of the rescue vehicle, who generally maintain radio contact with the hospital, decides on the procedure to be followed and on the mode of transport.

Emergency doctors usually only take part in helicopter rescue missions. A helicopter can also be requested directly by those involved in an accident or by witnesses.

Medical care for emergency patients is provided by three types of hospital, namely regional hospitals for basic treatment, canton hospitals and university hospitals.

The financial settlement of the missions is effected via the social insurance agencies according to applicable tariffs.

All facilities and the effectiveness of the rescue service in Switzerland are rated by the responsible agencies as positive.

8.1.15. United Kingdom

In order to give as precise a description as possible of the organisation of emergency aid, the United Kingdom had to select a larger region in terms of population figures than originally planned. The selected area has a size of 2 163.6 sq km, with 974 000 inhabitants, 276 000 persons of whom are living in the town centre, which has a size of 74.3 sq km. 253 855 inhabitants are under 18 years of age (129 685 male, 124 170 female) and 189 305 are over 60 years of age (79 919 male, 109 386 female). 280 600 of the total of 453 650 gainfully employed are male and 173 050 are female. 44.25% are working in industry, 27.26% in trade and commerce, 26.35% in the services sector, 1.63% in the agricultural sector and 0.5% in other sectors.

The road network is 4 558 km long, including 15 km of motorway and 2 676 km of roads within built-up areas. The total of 347 742 motor vehicles includes 267 996 passenger cars. In 1980, 4 651 traffic accidents involving personal injury were recorded, 110 of which were fatal. 6 126 people were injured or killed in these accidents. A total of 8 400 urgent missions were carried out by the ambulance emergency service (with or without the police and fire service in attendance). The number of missions involving transport of the less seriously ill is not known for the selected region. According to nationwide estimates, however, approximately 90% of all missions carried out by the rescue service were non-urgent missions of this kind.

Emergencies are reported in the majority of cases via private telephones which are available in sufficient number in this region. Public telephones where emergency calls can be made free of charge as well as police or fire-brigade call boxes, are installed in the entire region and are used very frequently. Emergency call boxes installed along roads within built-up areas are not used very often. More frequent use is made of call boxes installed along roads outside built-up areas. Motorways are provided with call boxes at regular intervals and these are mainly used for reporting emergencies. There is a uniform emergency number (tel. 999) to report any type of emergency in order to alert the police, fire brigade or rescue service. The telephone operator puts the call through to the competent rescue service, as and when necessary.

Rescue of persons trapped or injured at the scene of road accidents is normally undertaken by the fire brigade, with evacuation to hospital by the ambulance service. Police officers co-ordinate action at the scene, including setting up diversions and cordons as necessary, and prepare reports required in respect of the incident. There is close liaison between the three emergency services. Direct telephone lines exist between their respective headquarters, and co-ordinated plans for implementation during major incidents are mutually prepared and rehearsed. Training of personnel from each of the services is comprehensive with frequent refresher courses, to update knowledge and procedure.

An emergency mission served by an ambulance is generally carried out by the rescue vehicle located nearest to the scene of the accident, if this vehicle is already committed to another emergency, the mission will be carried out by the unit with the nearest location. In the selected area, medical care for patients is provided by 22 hospitals, three of which are large general hospitals.

The costs of the rescue service are partly borne by the central government and partly by local government.

The reporting facilities outside built-up areas, as well as the communication equipment of the rescue departments (police, fire service and ambulance), their personnel, the number of rescue vehicles, their quality, equipment and crew have been assessed as being excellent by the operators. The organisation time required by the means to rescue, is also considered to be excellent. The technical equipment of the

rescue departments, the availability of medical personnel, the rapid availability of the doctor, as well as the quality of the entire rescue service, were rated as good.

8.2. Comparative analysis

After presenting the inquiry results country by country, these results will now be compared as far as possible. In view of the widely differing way in which the questionnaires were answered, a comparison can only be made for some of the countries concerned.

Details listed include the number of inhabitants per square kilometre, the number of motor vehicles per 1 000 inhabitants, the density of the road network, the number of persons injured or killed per year in road traffic accidents per 1 000 vehicles and the number of emergency missions made per year per 1 000 inhabitants. In addition to the data relating to the regional and traffic structure and accident situation, a comparative analysis will be made of the emergency reporting facilities existing in the selected regions and their utilisation. In this connection, comparisons will be made of the various types of equipment available in the regions to report an emergency and the uniform telephone numbers that exist.

In the third section, existing central control systems and communication facilities in the individual selected regions will be compared with each other, inasfar as such information has been submitted. This will be followed by a comparison of the structural and procedural organisation of the rescue systems. In this connection, the capacity of the rescue means available in the individual regions will also be discussed. The last section contains an assessment of the existing rescue services by the operators and a comparison country by country.

8.2.1. Regional and traffic structures and accidents situation

A comparison of the number of inhabitants per square kilometre shows that there were considerable differences in the regions selected by the individual countries. The most densely populated region with 2 805 inhabitants per square kilometre was that described by Japan, the most sparsely populated, with 22.7 inhabitants per square kilometre, was that selected by Denmark. The regions selected by Austria, Finland, France, Sweden and the United Kingdom are also densely populated, having 1.940; 1 324; 535; 516 and 450 inhabitants per square kilometre, respectively. The different data are represented in figure 12.

Differences can similarly be noted when a comparison is made of registered vehicles per 1 000 inhabitants. While France indicated 678 motor vehicles par 1 000 inhabitants for the selected region, this figure is 262 motor vehicles per 1 000 inhabitants in the comparable region in Finland. In most of the selected regions, the ratio is about 400 motor vehicles per 1 000 inhabitants. Thus, the figure indicated for Austria is 410, for Denmark 412, for the Federal Republic of Germany 463, for Italy 402, for Switzerland 424 and for the United Kingdom 357 motor vehicles per 1 000 inhabitants (Figure 13).

Figure 14 shows the density of the road network, expressed in road kilometres per square kilometre of the selected region. In the case of Italy, Luxembourg and Switzerland, the figures refer to the entire territory. The region selected by Austria has the largest road density with 6.4 km of road per square kilometre. Japan, Luxembourg and the United Kingdom follow with 3.78, 2.0 and 2.1 km of road/km respectively. The lowest density indicated was that of the selected region of Spain, amounting to 0.5 km of road/km.

Figure 15 shows the annual number of persons killed or injured in traffic accidents per 1 000 motor vehicles. For the densely populated region of Austria, there results a ratio of 29.8 accident

victims/1 000 motor vehicles. In the sparsely populated selected regions of Denmark, Spain and Ireland, the ratios range between 7.5 and 9.4 injured or killed persons/1 000 motor vehicles. When considering these figures, it must be taken into account that there are varying percentages of unreported accident victims in the individual countries. The comparatively low level of personal injury in the densely populated regions of Finland and Japan is worthy of note.

Figure 12. **Inhabitants per square kilometre**

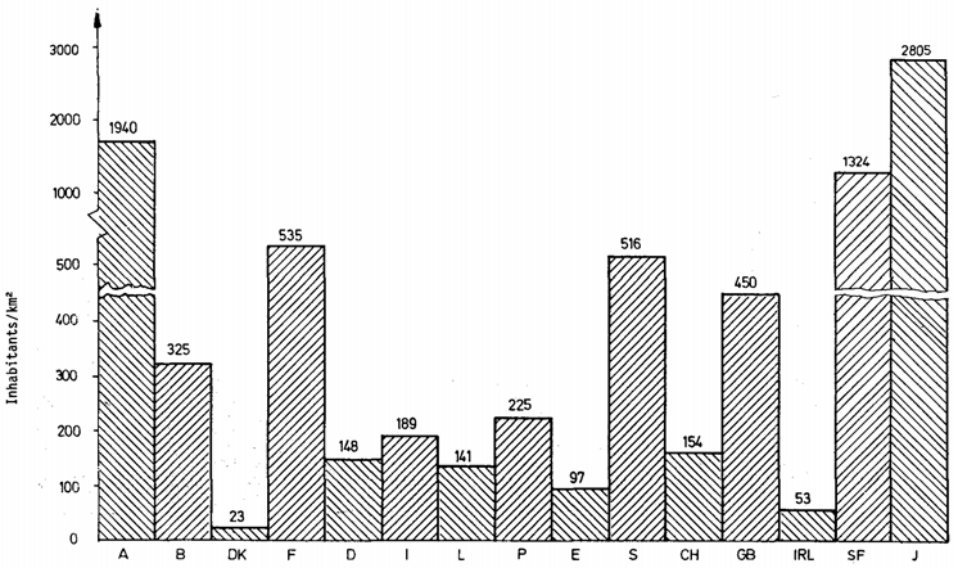


Figure 13. **Motor vehicles per 1 000 inhabitants**

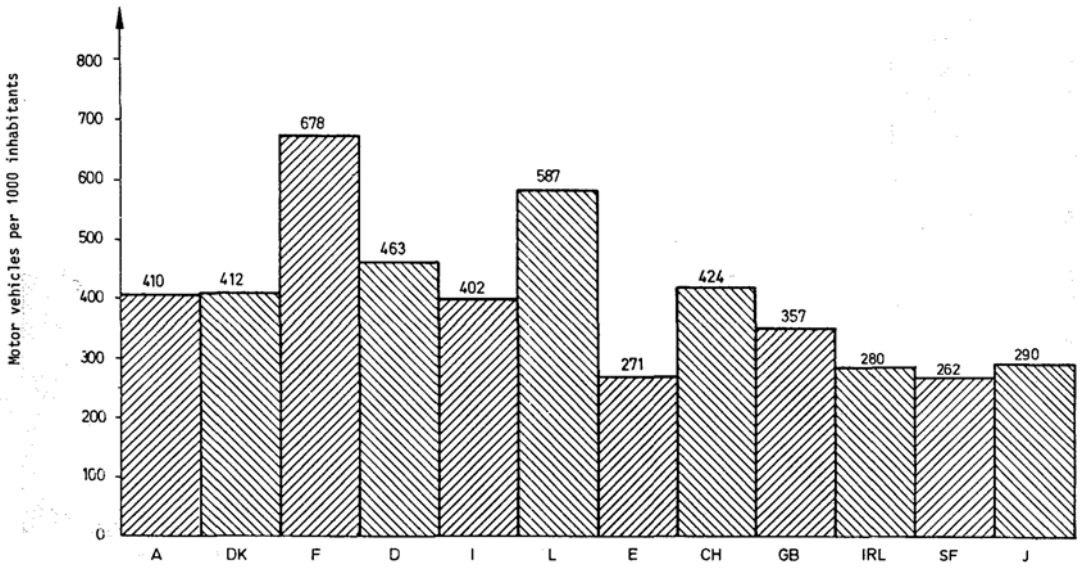


Figure 14. **Length: Road network per square kilometre**

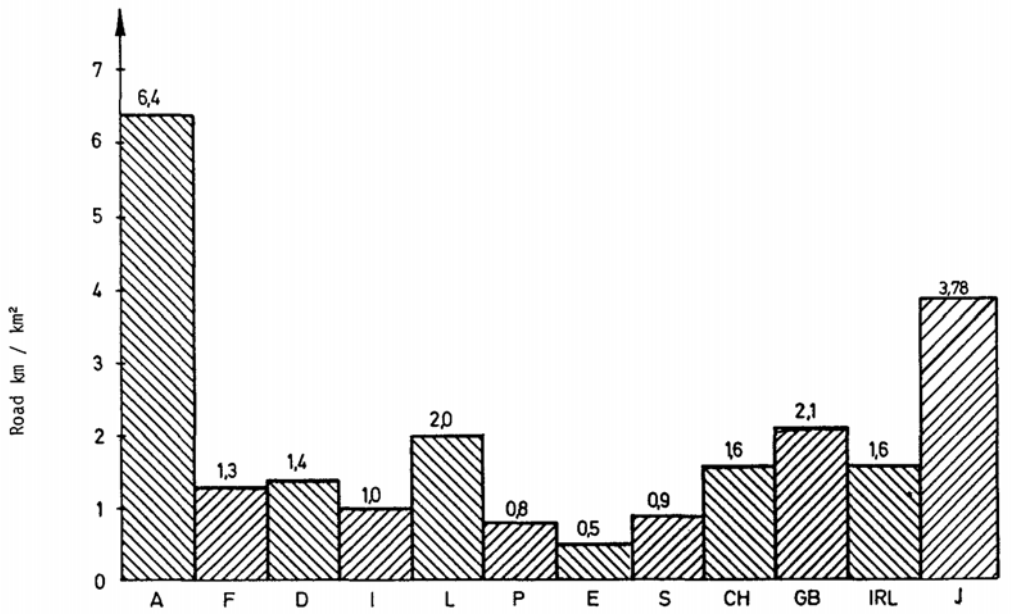


Figure 15. **Injured or killed persons per 1 000 motor vehicles**

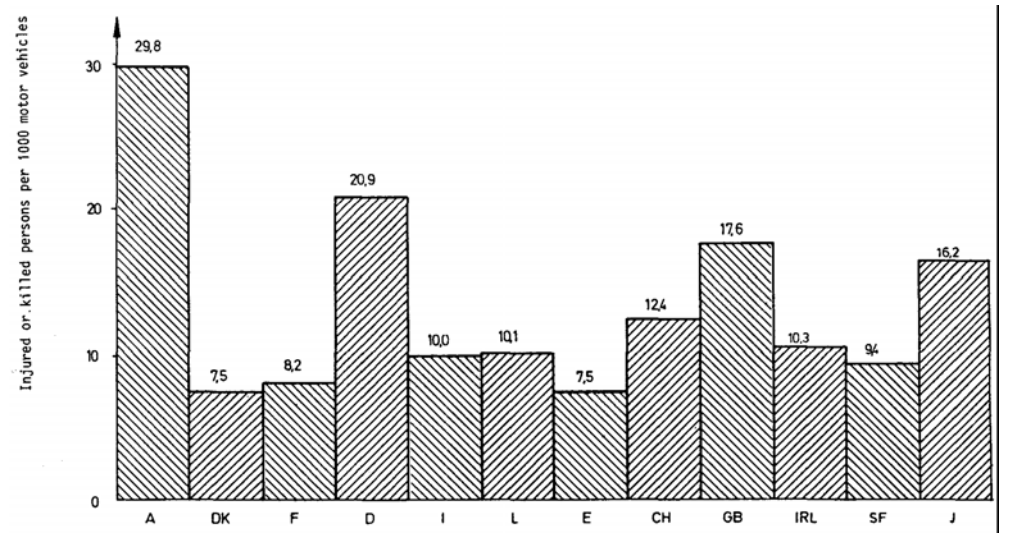


Figure 16 shows the number of emergency missions per 1 000 inhabitants carried out each year by an organised emergency service. In this connection the term emergency missions refers to urgent journeys serving the sole purpose of pre-clinical medical care and, where necessary, transport of the patient. Emergency patients may be both seriously ill and persons injured in an accident. In the region selected by Finland, annual emergency missions amount to 52.2 journeys per 1 000 in habitants, whereas the corresponding figure for the United Kingdom is 8.6. Apart from Japan and Portugal, where a value of l 1.6 and 13.3 is obtained, the values for the other six countries, which had submitted data, are about 20 emergency missions per 1 000 inhabitants.

8.2.2. Emergency reporting facilities and their utilisation

Figure 17 shows the extent to which facilities for the reporting of emergencies are available in the individual selected areas and to what extent these facilities are made use of according to the estimates of the operators of the organised emergency service. In almost all regions, private telephones are available in sufficient number and are frequently or even mainly used for reporting emergencies. In the selected regions of France and Spain as well as in Switzerland, public telephone booths with free emergency call facilities are not available, whereas in Belgium and Luxembourg and in the selected regions of Finland, Ireland, Japan, Sweden and the United Kingdom, emergency calls can be made free of charge in public telephone booths. In Portugal and in the United Kingdom these facilities are very frequently used, and are frequently used in Finland, the Federal Republic of Germany, Ireland, Italy and Spain.

Police and fire brigade call boxes are available in sufficient number and are mainly used only in the selected region of Japan, the United Kingdom and in Belgium. Austria, Finland, and Switzerland stated that this type of reporting system is adequately available but is used only seldom (Finland: frequently).

Figure 16. **Number emergency operations per 1 000 habitants**

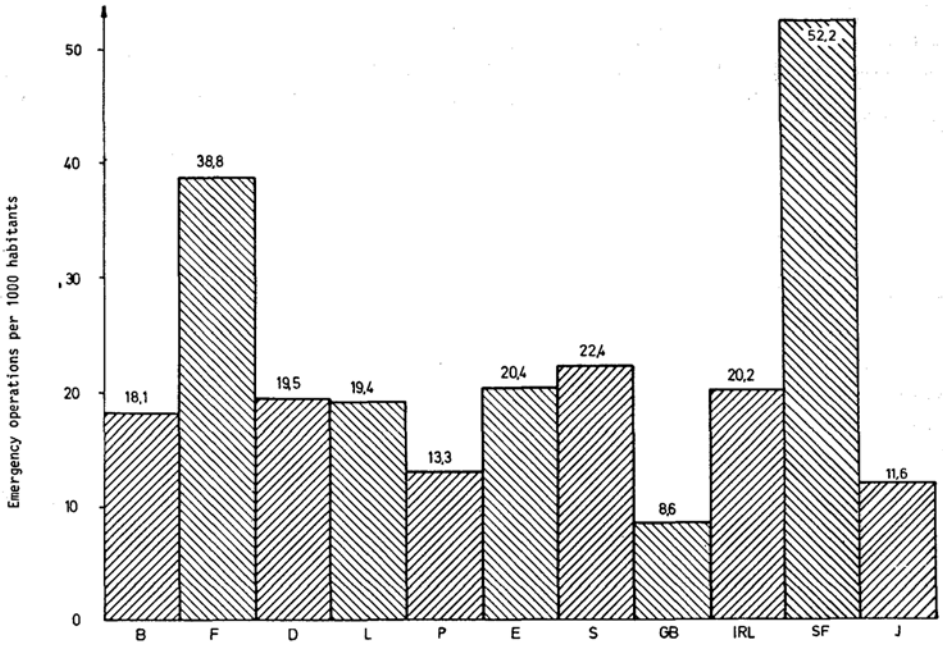
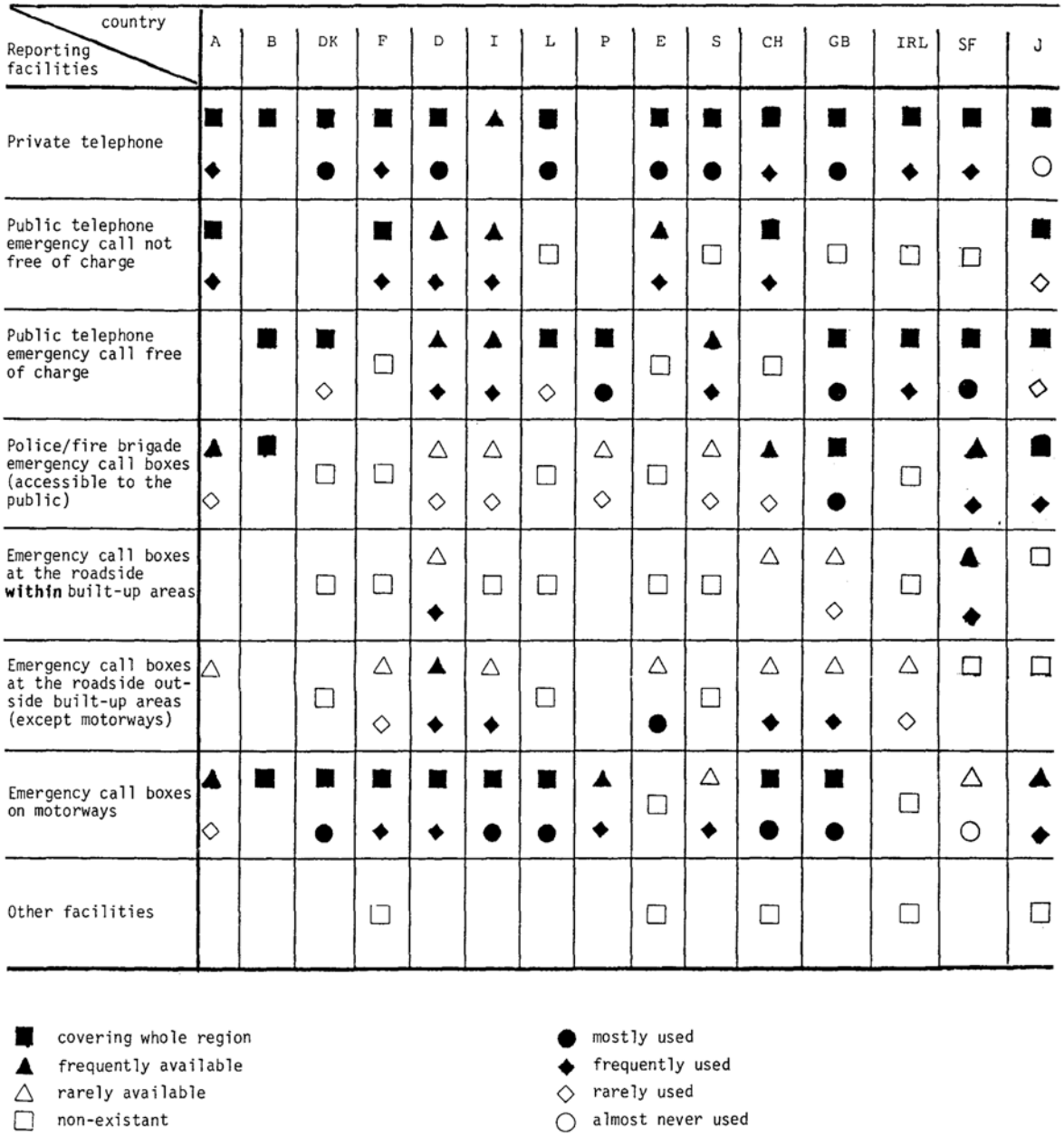


Figure 17. **Emergency call facilities**



Call boxes along roads within built-up areas do not exist in the selected regions of Denmark, France, Ireland, Italy, Japan, Luxembourg, Spain and Sweden. Such call boxes are infrequently in stalled in the regions under consideration in the Federal Republic of Germany, the United Kingdom and in Switzerland, whereas in Finland frequently. Frequent utilisation has been stated only for the selected region of the Federal Republic of Germany and Finland. Emergency call boxes along roads outside built-up areas are not available in Denmark, Finland, Luxembourg, Japan and Sweden. In the selected region of Spain, where such call boxes are installed only in isolated cases, this equipment is predominantly used for making emergency calls. A high utilisation frequency for call boxes along roads outside built-up areas is reported for the selected regions of the Federal Republic of Germany and the United Kingdom, as well as for Italy and Switzerland.

Motorways throughout Belgium, Denmark, France, the Federal Republic of Germany, Italy, Luxembourg, Switzerland and the United Kingdom are adequately equipped with emergency call boxes. They are mostly used for emergency calls in Denmark, Italy, Luxembourg, Switzerland and the United Kingdom. On the whole, it may be said that the private telephone plays a major part in the reporting of emergencies. The same can be said of call boxes installed along motorways.

Figure 18 shows the uniform emergency call numbers existing in the selected areas of each country. A special emergency call number does exist in the selected region of Austria, Belgium, France, the Federal Republic of Germany, Italy, Portugal and Switzerland. A uniform emergency call number, which at the same time serves for alerting the police and fire brigade, exists in Denmark, Finland, Ireland, Luxembourg, Sweden and the United Kingdom. In Japan, the uniform emergency call number 112, serves for alerting both fire brigade and emergency medical services. In Spain, a uniform emergency call number is available for the police only.

8.2.3. Central control system and communication facilities

Nearly all regions under consideration have a control centre dealing with all emergency calls requesting emergency medical aid. A control centre system in the selected region of France, Spain and Switzerland is either planned or being set up. In Belgium, Denmark, Finland, Ireland, Italy, Japan, Luxembourg, Portugal, Sweden and the United Kingdom, these control centres are financed by public institutions. In the selected region of Austria and the Federal Republic of Germany, these control centres are operated by the Red Cross.

Figure 18. **Uniform emergency call numbers in the selected region**

Country / Emergency Call	A	B	DK	F	D	I	L	P	E	S	CH	GB	IRL	SF	J
Emergency Calls to the police	133	901-906		17	110	113			091		117				110
Emergency Calls to the fire brigade	122	900		18	112						118				112
Direct calls to the emergency rescue services	144	900		281515	22222	116		115			144				112
Combined emergency call number			000				012			90000		999	999	000	

Figure 19 gives an overall presentation of the communication facilities available in control centres of the selected regions. There are permanent telephone lines to the police or fire brigade and the centres where rescue vehicles are located in almost all regions. Frequently, there are also permanent telephone lines to hospitals. A computerised centre is available only in Sweden. Video map displays are available in the Federal Republic of Germany, Japan and in Switzerland. Additional equipment mentioned included wall maps, recording of telephone calls, list of localities in Germany according to the UTM grid, radio communication equipment, standardised map systems and teleprinters.

8.2.4. Structural and procedural organisation of the rescue system

The structural organisation of the rescue systems existing in the selected regions of the individual countries differs widely. As it has already been mentioned in paragraph 8.2.2., requests for emergency medical aid are received partly by special control centres and partly by combined dispatch centres (Denmark, Finland, Ireland, Japan, Luxembourg, Sweden and United Kingdom). In the United Kingdom

and Ireland, however, these centres are only telephone exchanges which connect the person placing an emergency call with a local rescue station.

There is insufficient information as to the procedure followed once an emergency call has been received by the control centre. In some cases, the necessary arrangements for missions (alerting the means of rescue, co-ordination of vehicles, etc.) are made directly by the control centre; in some cases, calls are immediately passed on to rescue stations. Despite insufficient information, attempts have been made in diagram form of the structural organisation of the rescue system for each selected region.

In addition to the various agencies involved in the operational procedure, figure 20 also indicates the communication links existing between these different services.

Information on the number of rescue vehicles available were submitted by Austria, Belgium, the Federal Republic of Germany, Ireland, Japan and Luxembourg. It does not appear possible to give a comparative figure of rescue vehicles per inhabitants served. Definitions relating to "rescue vehicles" vary so widely (see Annex I), that coefficients like "inhabitants per rescue vehicle" are not very meaningful. For example, the information from Austria relates to "vehicles and/or trailers" (one vehicle per 7 700 inhabitants), the Federal Republic of Germany quotes "Ambulances, emergency ambulances and doctor ambulances" (one vehicle per 11 500 inhabitants) and Japan mentions only "Ambulances" (one vehicle per 95 000 inhabitants).

8.2.5. Assessment of the rescue service

Table 5 illustrates the assessment of equipment and efficiency of the rescue service from the point of view of the operators themselves. Belgium and Italy did not submit any information on this point, but an evaluation can be made from the first part of the report (see Tables 3 and 4, as well as figures 9 and 10).

Reporting facilities within built-up areas in the selected region of Austria, Denmark, Finland, The Federal Republic of Germany, Japan, Ireland, Sweden and the United Kingdom have been given an excellent rating in France, Luxembourg, Portugal and Switzerland they were rated as being positive. In Spain, reporting facilities within built-up areas are considered to require improvement. Reporting facilities outside built-up areas are considered to be excellent only in Austria, Denmark, Finland and Japan.

Communication facilities in control centres are considered to require improvement in France; in Finland, the Federal Republic of Germany, Portugal, Spain and Switzerland, they have been given a positive rating, and in the remaining countries they are considered as excellent. The technical equipment of control centres has been stated to the excellent in Austria, Japan, Luxembourg and Sweden; this equipment seems to require improvement in Spain. Both the number as well as the quality and equipment of rescue vehicles received an excellent rating in the Federal Republic of Germany, Sweden and in the United Kingdom, while in Switzerland and Ireland the rating was positive.

Figure 19. **Equipment of control centres**

Equipment \ Country	A	SF	DK	F	D	J	L	P	E	S	CH	GB	IRL
Permanent telephone lines to the police/fire brigade. .	●	●	●	●	●	●	●	●	•	●	●	●	●
Permanent telephone lines to the centres where rescue vehicles are located. . .	○	●	●	○	●	●	●	●	•	●	●		●
Permanent telephone lines to hospitals	●	●		●	◒	●	●	●	•	●	●		●
Computerised centre	○	○	○	○	•	•	○		•	●		⊙	
Moving map display indicator.	○	○	⊙	⊙	●	●	○			○	●		•
Other facilities	1)			2)	3)	8)			4)	5)		7)	

○ not available
• planned
◒ partly available
● available

1. Wall maps
2. Recording of telephone calls
3. List of localities
4. Radio communication
5. Uniform map system
6. Radio telephone
7. Teleprinter
8. EMS – Information-System wireless Communication-system

In Japan and Spain, the number of rescue vehicles is considered to require improvement; in Portugal, this comment applies to their quality and equipment.

Staffing of control centres and rescue vehicles (personnel other than medical) is considered to be excellent in Austria, Denmark, Sweden and the United Kingdom, while, in the Federal Republic of Germany, Ireland, Spain and Switzerland, it has been given a positive rating. In Portugal, both sectors are considered to require improvement; in France, improvement was felt to be necessary only in the area of "Availability of personnel (Control Centre)". The availability of medical personnel is considered to be excellent only in Denmark and Japan: it was stated to be negative in the Federal Republic of Germany and Ireland and to require improvement in France, Portugal and Spain.

The organisation time the control centres required to handle an emergency has been stated to be positive in Luxembourg, Spain, Switzerland and Ireland, and to require improvement in Portugal. The other countries consider their organisation time to be excellent. The rapid availability of the rescue vehicles is considered to be positive in most of the selected regions and to be excellent in Austria, Denmark, Finland, France, the Federal Republic of Germany, Japan, Sweden and the United Kingdom.

The rapid availability of a doctor has been given an excellent rating only in Austria, Finland, France and Japan; in Ireland and Portugal, it was given a negative rating and could be improved in Spain.

The effectiveness of the entire rescue service was felt to be excellent by Austria, Denmark, Finland, Japan and the United Kingdom. In France, the Federal Republic of Germany, Ireland, Luxembourg, Sweden and Switzerland, the overall system has been given a positive rating. The effectiveness of the entire rescue service is considered to require improvement in the selected regions of Portugal and Spain.

Figure 20. **Organisation of emergency medical service**

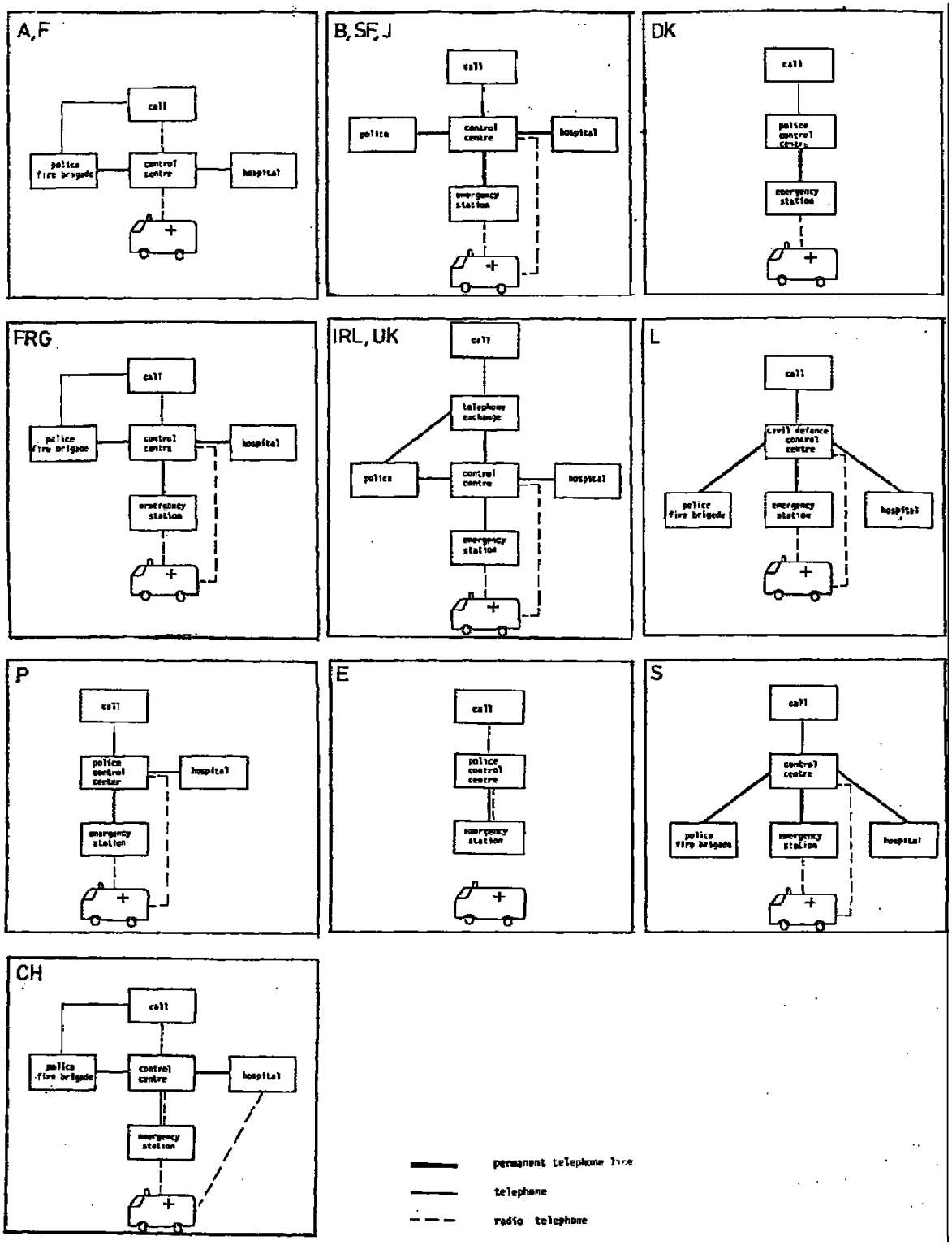
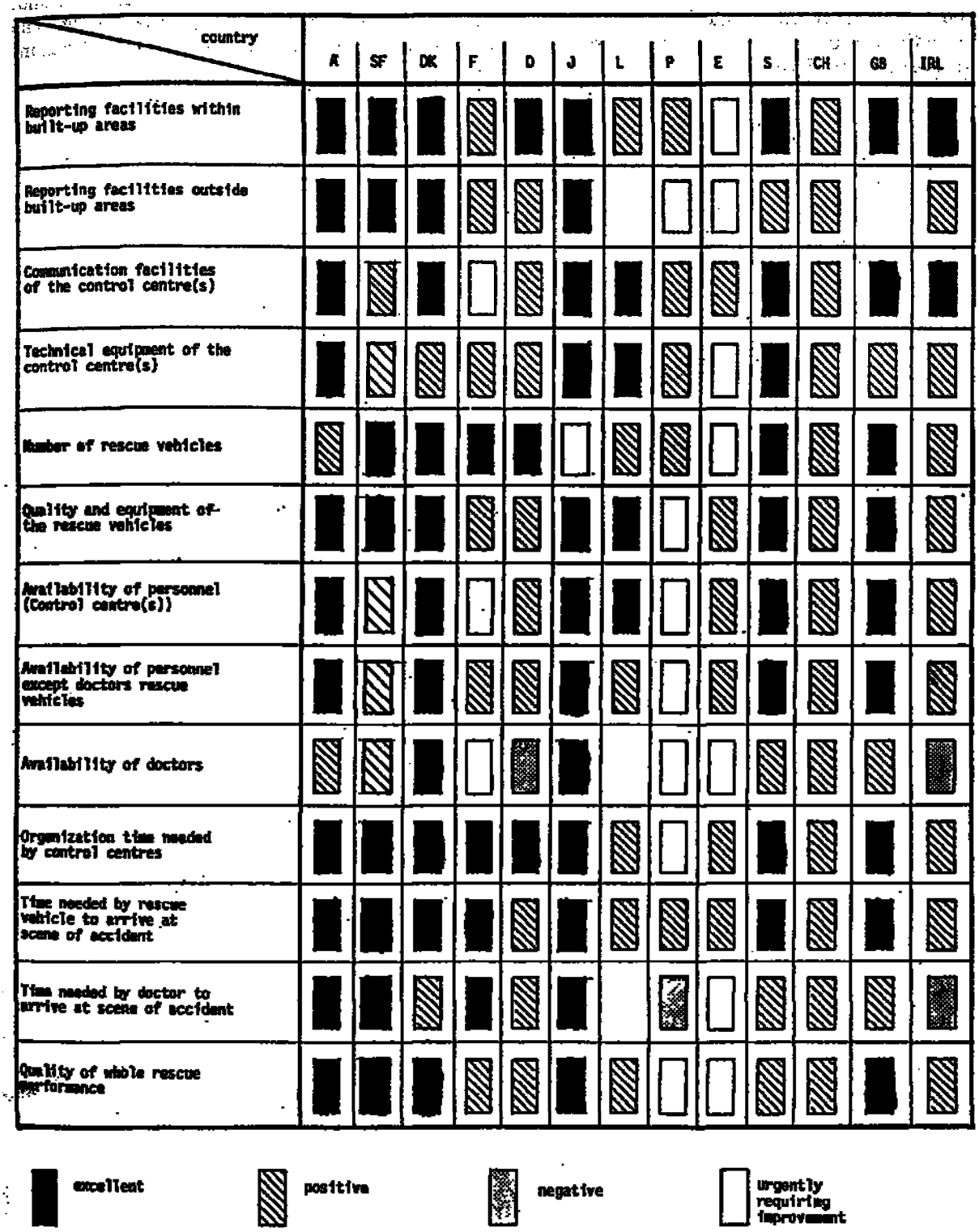


Table 5. **Assessment of available equipment and the efficiency of the rescue service**



ANNEX 1. DESCRIPTION OF RESCUE VEHICLES

	A	B (fr.)	CH (fr.)	D	DK
Passenger car without additional equipment				Notarztelamts-fahrzeug (3)	Personbil
Passenger car with additional equipment	Krankentransporter	Ambulance	Ambulance	Krankentransport-wagen (KTW)	Syge Transportvogn
Vehicle with additional equipment for emergency treatment	Rettungswagen	Véhicule d'intervention médicale (avec personnel : GUM 1)	Véhicule de secours		
Vehicle with additional equipment for emergency treatment a. for transport	Notarztwagen	Ambulance A.M.U. (2) ou 900		Rettungswagen (RTW)	Ambulance
Vehicle with additional equipment for emergency treatment by doctors	Notarztwagen	Ambulance de réanimation		Notarztwagen (NAW) (4)	Specialambulance
Vehicles with equipment for minor operations	–	id.		Notarztwagen (NAW) (4)	–
Vehicle with equipment for clinical treatment	–	id.	Clinomobile Cardiomobile	Clinomobil	–
Mobile operating room	–	–		Clinomobil	–
Others facilities					

1) Groupe d'urgence mobile.
2) Aide médicale urgente.
3) If transporting an emergency doctor.
4) If a doctor is on board.

DESCRIPTION OF RESCUE VEHICLES (Cont'd)

	SF	F	GB	IRL	N
Passenger car without additional equipment	Car for transport	Voitures particulières pour transport d'une équipe médicale avec petit matériel de bord (5)	Sitting Case Vehicle	–	Bil
Passenger car with additional equipment	Ambulance		Sitting Case Vehicle		Bilsjuk
Vehicle with additional equipment for emergency treatment	Ambulance		Emergency Ambulance		Utryckningsbil
Vehicle with additional equipment for emergency treatment a. for transport	Ambulance	Voitures de Secours aux Asphyxiés et blessés (V.S.A.B.)	Emergency Ambulance	Ambulance	Ambulance
Vehicle with additional equipment for emergency treatment by doctors	Doctor Ambulance	Voitures Radio-Médicalisées (V.R.M.)	Emergency Ambulance	Ambulance	Lege Ambulance
Vehicle with equipment for minor operations			–	–	
Vehicle with equipment for quasi-clinical treatment			–	–	
Mobile operating room			–	–	
Others facilities			–	Mobile control and equipment caravan (6)	

5) No stretcher.
6) First aid, medical and light rescue equipment; to provide radio communication between the site and the main hospitals to convey the site medical officer to the scene (major accidents).

DESCRIPTION OF RESCUE VEHICLES (Cont'd)

	L (fr)	NL	P	S	USA
Passenger car without additional equipment			Automaca	Bil	
Passenger car with additional equipment	Ambulance			Sjuktransportbil	
Vehicle with additional equipment for emergency treatment	id.	Ambulance			
Vehicle with additional equipment for emergency treatment a. for transport	id.	Ambulance	Ambulância	Ambulans	Ambulance
Vehicle with additional equipment for emergency treatment by doctors	Ambulance médicalisée	Ambulance	Veiculo de emergência	id.	
Vehicle with equipment for minor operations				Katastrofambulans	
Vehicle with equipment for quasi-clinical treatment				id.	
Mobile operating room		Klinomobil			
Others facilities					

ANNEX 2. PLANS FOR IMPROVING ORGANISED EMERGENCY SERVICES

Austria	Further development of emergency aid.
Belgium	Reorganisation of the professional training system for emergency medial technicians. Introduction of a basic course in schools. Information campaign in mass media.
France	Further development of the SAMU emergency service in the (10) "departments" where this service has not yet been established. Improvement of operational readiness on a 24-hour –basis (doctors, ambulances, helicopters). Extension of the field of duties (not only confined to traffic accidents).
R.F.A.	Improvement in training of emergency medical technicians. Improvement in advanced training of emergency doctors. Development of the emergency reporting system (stationary and mobile emergency reporting equipment). Improvements with respect to the first-aid situation.
Ireland	The possibility of improving the Major Accident Plan is at present under examination.
Luxembourg	An emergency assistance scheme to cope with large numbers of persons injured in accidents is about to be completed. The civil defence service is carrying out preliminary studies with a view to converting the entire operational organization to computer control.
The Netherlands	Training of full-time/professional emergency personnel. Utilisation of rescue helicopters. Use of teams in cases of severe injuries (trauma teams). Reorganisation of the emergency aid system so that every patient can be reached within 15 minutes. Introduction of a uniform emergency telephone number.
Spain	A national scheme for medical emergencies and for the standardization of the ambulance service is in preparation. National scheme for road traffic safety.
Sweden	A committee is examining competences and responsibilities (changes are not envisaged).
Switzerland	Improvement in the quality of emergency call centres. Improvement in the equipment and training of personnel of relief organizations.
USA	A scheme is in preparation.

ANNEX 3. DOCUMENTATION

IS THERE ANY OBLIGATION TO HAVE REPORT ACCIDENT FILLED IN?

	B	D	F	GB	IRL	NL	CH	P
Police	X	X	X	X	X	X	X[8])	X
Personnel control centre	X[5])	X	–	–[3])	X	X		X
Medical personnel of rescue vehicles	X[6])	X	–	–[3])	–	x		X
Doctors accompanying rescue vehicles	X[6])	X	–	–[3])	–	–		–
Doctors working in hospitals	X[7])	X	X	–[4])	X	–		X
Others	–	X[1])	–	–	X[2])	–		–

1. Insurance companies (industrial accidents, accidents on the way to work),
   Relief organisations/fire brigade (accidents occurring during missions)
   Military personnel/Postal service/Railways/Police (if involved).
2. By drivers of military vehicles involved in a accident.
3. The UK Central Government has commended to ambulance authorities the use of patient report forms as an efficient way of informing hospital medical and nursing staff of the condition of an emergency patient.
4. The fact that a patient has been admitted to hospital as a result of a road accident would be noted appropriately on the relevant hospital medical record form.
5. Compilation of statistics according to the type of emergency call.
6. Under study.
7. Reports intended for internal use in hospitals.
8. In co-operation with medical personnel.

ANNEX 4. RESEARCH INSTITUTES

Belgium	Commission Nationale pour l'étude des Problèmes relatifs à l'aide médicale urgent (COMAMU) Secrétaire. Professor Dr. R. Beckers Ministère de la santé Publique 411 Quartier Vésale CAE, 1010 Bruxelles Tel : 02/564.14.76 Telex : 22.768
Denmark	Redningsteknisk Institut Age Rømark Rygards Allé 10, 2900 Hellerup Tel: 01-62 52 09
France	ONSER (Organisme Nationale de Sécurité Routière Arcueil, 2, avenue de Général Malleret-Joinville Tel : 580.12.12
	Institut Nationale de la Santé et de Recherche Médicale 101, rue de Tolbiac, 75640 Paris Cedex 13 Tel : 584.14.41
Federal Republic of Germany	Bundesanstalt fûr Strassenweses Brûderstrasse 53, 5060 Bergisch Gladbach 1 Tel: 02204-430-1 Telex: 088 78 483 bas d
	Institut fûr Rettungsdienst und Krankentransport Friedrich-Ebert-Allee 71, 5300 Bonn 1 Tel: 0228-54-11 Telex: 0886619
Italy	Ministère de la Santé Publique et Ministére pour la protection civile
The Netherlands	Ministry of Public Health Dr. Reyersstraat 10, 2265 BA Leidschendam Tel: 070-209260 Telex: 32362/32347
Portugal	Institut des Urgences Médicales R. Infante D. Pedro No. 8, 1799 Lisboa Codex Tel: 730503 Telex: 13304-SNAL/P
Spain	Comision National de Seguridad Vial Direccion General De Trafico Josefa Valcarcel, 28, Madrid 27 Tel : 742 31 12 ext. 243
Switzerland	Interassociation de sauvetage (IAS) Ochsengässli 9, 500 Aarau Tel: 064/22 66 22
	Alliance suisse des Samaritains Postfach, Martin-Disteli-Strass 27 4600 Olten