EU FireStat : The European fire statistics project

TASK 0 : DIAGNOSTIC OF TERMINOLOGY, DATA COLLECTION AND INTERPRETATION ISSUES

LUND UNIVERSITY | LTH FACULTY OF ENGINEERING

NFPA®

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DBI FIRE AND SECURITY

vfdb – Vereinigung zur Förderung des Deutschen Brandschutzes e. V.

EUROPEAN FIRE SAFETY ALLIANCE

THE UNIVERSITY of EDINBURGH

BAM

CTIF Center of Fire Statistics

SCOPE AND GOAL OF TASK 0

- The aim of this task is:
  - To assemble all the knowledge of the consortium members regarding fire statistics.
  - To provide an overview on issues related to fire statistical data.

- This includes identifying:
  - Terminology issues
  - Statistics collection issues
  - Statistics interpretation issues

- Method:
  - To gather information from researching in public datasets, literature review, and network of contacts.

- Covered countries:
  - EU27, Australia, Canada, New Zealand, Switzerland, Russia, UK and USA.

LITERATURE REVIEW

- Literature suggests that fire data are influenced by differences between data collection procedures and practices.

- Example when analyzing data reported by CTIF:
  - Some countries with fewer fires (per 100 000 inh.) have more fatalities (per 100 000 inh.). This raises a question about how fires and fire deaths are defined and counted
  - Some countries with comparable number of fire deaths and number of fires and population will have completely different number of fire injuries (Italy/France/UK).

- Countries have different approaches on how to consider the time elapsed after a fire to record a fire fatality.
  - Many of them do not fix any time limit for recording a fire death.
  - Some count fire fatality as a result of injuries leading to death within one year and one day after the fire incident.
  - In other countries, “death within 48 hours after fire” is regarded as a fire death.
  - Others only report fire fatalities at the location of the fire
  - Some countries do not include fire deaths resulting from arson or suicide.

DIAGNOSTIC SHEETS FILLED FOR EACH COUNTRY

1. TERMINOLOGY ISSUES

- Information from ISO 17755-1 & -2
- References of existing database/studies
- Existing definitions
- Are there differences within the same country?
- Are there differences and contradictions with other domains?
- Identification of missing information

2. STATISTICS COLLECTION ISSUES

- Fire department responsibilities
- Fire response organization
- Who collects data?
- Who issues the data?
- Are there different levels of collection?
- Identify disparities in data feedback
- Where is the data stored?

3. STATISTICS INTERPRETATION ISSUES

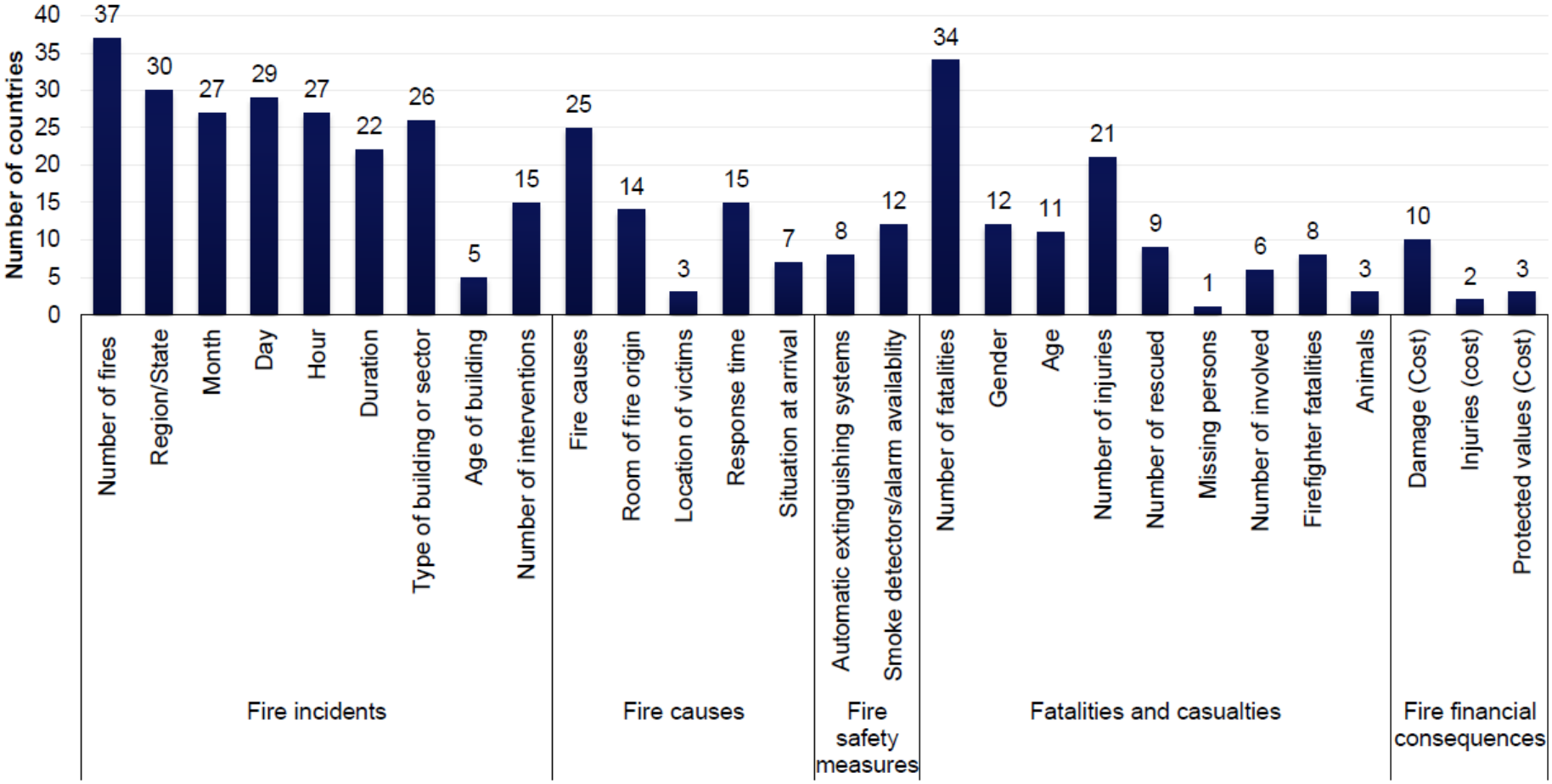
- Who is interpreting the statistics
- Purpose for which data is collected
- Is there follow up to data collected?
- Analyse potential cause and consequences in trends

4. ANALYSE EXISTING DATA

- Determining the level of confidence
- Pinpointing issues and limitations
- Examples

Completed for 18/27 EU MS + 6 other countries

OVERVIEW OF COLLECTED FIELDS



TERMINOLOGY ISSUES

- There are four main sources of fire databases in most countries, those are originated from
  - fire services,
  - medical field,
  - insurance,
  - and police departments.

- In some countries such as France, Germany and Norway, due to the current lack of official definitions of terms and expressions for fire statistics, it is most likely that differences and contradictions exist.

- While in most countries, it is clear that the fire service, police and insurers organize their data very differently, without much communication, hence an overall picture cannot be built.

- Particularly, classifications in fire statistics from insurance companies do not correspond to those used by the fire and rescue services.
  - For example, one fire incident according to the fire services could result in multiple fire claims from the insurance.

PARALLEL WITH THE MEDICAL FIELD

- the International Classification of Disease (ICD) is used by health care systems and coroners for medical records, billing, and death certificates

Code	Description
X00	Exposure to uncontrolled fire in building or structure
X01	Exposure to uncontrolled fire, not in building or structure
X02	Exposure to controlled fire in building or structure
X03	Exposure to controlled fire, not in building or structure
X04	Exposure to ignition of highly flammable material
X05	Exposure to ignition or melting of nightwear
X06	Exposure to ignition or melting of other clothing and apparel
X08	Exposure to other specified smoke, fire and flames
X09	Exposure to unspecified smoke, fire and flames

- There are discrepancies between fire service data and the ICD-10 coding of death certificates

- Except for X01 and X03, it is not easy to separate building fires from non-building fires, since X04-X09 do not distinguish if the exposure occurs indoors or outdoors.

- Database not always publically accessible

WHO IS RESPONSIBLE FOR COLLECTION OF FIRE STATISTICS?

- Fire departments are responsible for entering data with key details from the incidents for which they are dispatched.
- It is certain that the difference in **the level of training for data reporting** will result in different data quality.
- But in some countries their activity include not only fires, but also emergency medical services, severe weather and natural disasters, and other incidents.
- That does not mean that firefighters need more training, but that as the main goal of firefighters is to rescue, tackle fires and other activities, they will have less time to spend on filling sheets during their shifts.
- What about statistics from insurance companies?

PURPOSE OF HAVING FIRE STATISTICS

- The main purpose of collecting fire statistics is the same despite all the differences between countries (listed in no particular order):

  - Evaluate effectiveness of emergency responses
  - Define volume of personnel and equipment
  - Help with decision making for organizations of fire rescue services
  - Estimate budgets for policymakers
  - Support legislation related to fire issues
  - Fire prevention in general
  - Education to increase fire safety for civilians.
  - Identify trends relative to the severity of fire incidents
  - Assess fire risks
  - Identify the main causes of fire
  - Reduce the number of fires, victims, damage and costs.

MISSING DATA AND LIMITATIONS

- Missing data is a serious issue which compromises the quality and completeness of fire incident data.

- No country (except the USA) appears to employ a methodology for dealing with missing data.

- In the United States, the National Fire Protection Association (NFPA) employs a "national estimates approach" to correct for data that goes unreported in data collected by the National Fire Incident Reporting System (see task 3).

- None of the consulted reports included uncertainty estimations. However, it will be important to introduce uncertainty estimates to be able to analyze the relevance of the collected data and their trends.

- Questions on the sampling size of countries with small population and a reduced numbers of fires for which comparison with countries with larger datasets can create issues considering the difference in the statistical data populations examined.
  - A reflexion should take place on how to analyse data in these situations and how to properly use their outcome for decision making

TEN ISSUES MOST FOUND ACROSS EUROPE

1. lack of definitions for collected terms resulting in disparity between practices
2. The database does not take into account the fire casualties occurring at the hospital or during their transportation to the hospital by emergency medical services (EMS).
3. Lack of training for the firefighters on how to fill information in the fire response report.
4. No update of the database after fire investigation.
5. The lack of methodology to fill the gaps where information is missing.
6. No link between the different sources of data (e.g. insurance, medical, police or fire service)
7. Data is not publicly accessible
8. Lack of national statistics in some countries as data is collected differently in separate regions.
9. Only a limited number of incidents are extensively registered.
10. Limited fields recorded

KEY LEARNINGS (1)

- We identified significant issues with fire data from Australia, Austria, Bulgaria, Canada, Denmark, France, and Germany which complicate confidence in the data (e.g. lack of definitions, lack of training, dispersed data, missing information and low coverage).
- USA, Italy, and the Netherlands have different systems while having each advantages and drawbacks.
  - The USA has an existing terminology, includes a large number of data fields, and has vast experience in this field, but also has a significant problem with missing fire incident. However, because the EU is in a comparable situation to the USA, there are many lessons from the experience of the USA that can be directly applied to the EU.
  - Italy has adopted a quality control system to ensure the integrity of all data treated but is missing important fire data.
  - The approach of the Netherlands has been to reduce the problems posed by uncertainties by focusing data collection efforts on fatal residential fires.
- We estimate that Russia, Spain, Sweden and the UK provide data with high confidence level due to the existing definitions, important covered areas, collected terms and existing quality safeguards.

KEY LEARNINGS (2)

- Differences between fire data collection systems complicate the ability to make comparisons that could be useful in evidence-based planning and prevention efforts.
- Fire data collection systems in most countries are presumed to provide an accurate representation of their respective experiences with fire incidents. However, information gathered suggest that they may be unaware of important limitations of their data due to missing information, differences in the way terms are defined or interpreted, and other identified issues.
- The amount and quality of information in different data collection systems also appear to be influenced by whether they include information from sources outside the fire service, such as insurers or medical authorities.
- Data collection systems that collect too little may not produce data that are useful, while overly detailed data collection systems may overwhelm data collectors and compromise data quality.
- Factors such as funding, resources, personnel, and stakeholder acceptance are critical considerations in the design and sustainability of national fire data collection systems.

KEY LEARNINGS (3)

- Due to the lack of terminologies and precise collection methodologies and other issues identified, it is clear that current fire statistics cannot be compared from one country to another (with a few exceptions).
- They can only be useful to describe the global fire safety situation and trends to some extent for a group of countries, or the specific fire safety situation.
- To provide relevant information regarding the national fire safety situation (number of fires, fire fatalities, fire injuries, fire losses), fire statistics will have to be internationally improved through common terminology, common methodology, and common training and qualification of persons in charge of filling in the fire report, including uncertainty estimation methods.
- The findings of this task will be used as preliminary groundwork for all the discussions that will occur during this project and as an output for all the following tasks.

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Thank you for listening, please give us your feedback