Indicators for enhanced fire safety
Assignment

• Identify and suggest 8-10 indicators that can be used long-term and followed up
• Suggest a number of measurable goals related to the indicators
National strategy to enhance fire safety

Vision:
No one should be killed or seriously injured as a result of fire

Aims:
The number of deaths and serious injuries in domestic fires shall be reduced by at least a third by 2020
The individual's awareness of fire hazards and how to act in case of fire, shall increase
The proportion of working smoke alarms and fire fighting equipment in homes shall increase
An indicator

• Measures something small that can represent something big
• Performance indicators always measure only a limited part of a goal. They provide an answer to whether something has happened, but not why it has happened. Performance indicators should always be considered in relation to established goals.
• An effect chain should be defined before the work of creating and selecting indicators begin.
Program Theory

A program theory is a theoretical model that links cause and effect relationships. It is a set of hypotheses upon which people build their program plans. It is an explanation of the causal links that tie program inputs to expected program outcomes.
Program Theory
example: Technology and safety

Inputs
Staff time
Literature
Technologies
Equipment

Activities
Planning education
Producing education materials
Update programs and resources based on current research
Create media releases

Outputs
Internet safety education at Child Developments Days
Safety education at Safety Day Camp
Media releases

Immediate Outcome
Youth and adults increase ability to communicate about internet safety and practices
Youth increase knowledge about the principles and actions of online citizenship
Media increase their understanding of need for internet safety

Intermediate Outcome
Youth apply principles of citizenship in physical and cyber world
Media increases space and attention to internet safety

Long-term Outcomes
Youth are safe and responsible internet technology users
Generation gap associated with technology safety is bridged
National level
Inputs ➔ Activities ➔ Outputs

Municipal level
Inputs ➔ Activities ➔ Outputs

Individual level
Inputs ➔ Activities ➔ Outputs

Measures to reduce the threat/danger ➔ Threat/Danger
Measures to limit accident ➔ Accident Occation
Measures to mitigate the impact ➔ Consequence

OUTPUTS OUTCOME
Quality of an indicator

1. The indicator should have good validity. There should be a known correlation between development of the indicator and the number of people killed and/or seriously injured.
Quality of an indicator

2. The indicator should be **reliable**. It can be measured and monitored in the same way every year.

It is more important that the indicator is reliable - and is measured in a consistent manner - than that it is measured in a fully representative way for the entire country.
Quality of an indicator

3. The indicator should be easy to measure, so that the process of measurement will not be too extensive, costly and complicated.
Quality of an indicator

4. Indicators should be the same from year to year so that the development of selected indicators can be monitored continuously (unless for unexpected reasons it becomes apparent that the indicator should be replaced by a more appropriate alternative)
Description of an indicator

- Title of the indicator
- Relation to the strategy
- Measurement
- Definition
- Location in the program theory
- Motive

- Data Level
- Data Collection
- Data Quality
- Owner
- Strategy
- Goal
- Start of measurement
Method

• Review of national and international indicators, plus the working group's proposals
• Result: 87 indicators
• Delphi Method
1. Existence of a functioning smoke detector

*Relation to the strategy*

The proportion of working smoke alarms and fire fighting equipment in homes shall increase

*Measurement*

a. Percentage of households with working smoke alarms
b. Proportion of home fires attended by the fire brigade where smoke alarms were triggered by the fire
Definition

   "Do you have one or more smoke detectors in your home? If yes, "Does the smoke alarm function right now?" (In the survey that went out in 2014, the words "right now" were deleted)

b. In the current incident report under “Equipment intended for other than emergency services," “Was there a smoke alarm?” if yes “Did it work?". From 2016 the question will be replaced by “Was there a smoke alarm in connection to the fire starting space", with supplementary question “Was the smoke alarm triggered."
Location in the program theory
Input on the individual level. Measures to limit accidents.

Motive
Civil Protection Act, 2 Chapter, 2 § and advice/comments in relation to how this paragraph should be interpreted for domestic smoke detectors from Swedish Rescue Services Agency

According Jaldell (2011), it is economically viable to increase the proportion of smoke detectors in single and multi-family homes. Jaldell (2011) Cost-benefit analysis and evidence of fire in homes - smoke detectors and portable fire extinguishers; MSB 309-11. According to building regulations, new homes shall be fitted with equipment to rapidly detect a fire and to make inhabitants aware of the need to evacuate.
Data Level
a. Available at the national level and partly at the municipal level
b. Available at national and municipal level

Data Collection
a. Via surveys
b. Via incident report

Data Quality
Owner
a. MSB. UL-LÄR.
b. MSB. UL-LÄR.

Strategy
a. Through surveys every third or fourth year.
b. Through incident report

Goal
a. In 2022, 95 percent of households have working smoke alarms
b. Share of home fires where smoke alarms triggered should increase by 20 percentage units from 2016 to 2020
Start of measurement
a. 2010
b. 2016

Other information
According to the survey in 2010, 85 percent of households had smoke alarms, and 75 percent had functioning smoke alarms. Date for achieving goal a is set to 2022 because we conduct the survey every four years. One problem for goal a is that municipal ambitions vary and many municipalities are not prepared to pay for a local survey.
Indicators for enhanced fire safety

1. Existence of a functioning smoke detector
2. Existence of fire fighting equipment
3. Actions taken by home fire victims
4. Number of developed home fires
5. Number of fatalities in home fires
Indicators for enhanced fire safety

6. Number of severely injured in home fires
7. Cost of property damage in home fires
8. Percentage of homes with fireplaces with deficiencies in fire protection
9. Proportion of municipalities with developed cooperation for preventing home fires