RESTRAIL

REduction of Suicides and Trespasses on RAILway property

Collaborative project

Evaluation of measures, recommendations and guidelines for further implementation

Pilot test #8

Gatekeeper Programme – HMGU

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RESTRAIL Consortium

	List of Beneficiaries		
No	**Beneficiary organisation name**	**Beneficiary short name**	**Country**
1	Union Internationale des chemins de fer	**UIC**	**FR**
2	Teknologian Tutkimuskeskus VTT	VTT	FI
3	Trafikverket - TRV	TrV	SE
4	Institut français des sciences et technologies des transports, de l'aménagement et des réseaux	IFSTTAR	FR
5	MTRS3 Solutions and Services LTD	MTR	IL
6	Fundación CIDAUT, Fundación para la investigación y Desarrollo en Transporte y Energia	CIDAUT	ES
7	Helmholtz Zentrum München Deutsches Forschungszentrum für Gesundheit und Umwelt (GmbH)	HMGU	DE
8	Karlstad University	KAU	SE
9	Fundación de los Ferrocarriles Españoles	FFE	ES
10	Turkish State Railway Administration	TCDD	TK
11	Deutsche Bahn AG	DB	DE
12	Instytut Kolejnictwa	IK	PL
13	ProRail B.V	PR	NL
14	Nice Systems Ltd	NICE	IL
15	Ansaldo STS	ASTS	IT
16	University of Nottingham	UNOTT	UK
17	INFRABEL	INFRABEL	BE

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Acronym	Meaning
ADIF	ADministrador de Infraestructuras Ferroviarias
ERA	European Rail Agency
BTP	British Transport Police
CAEX	CAPital Expenditure
CBT	Computer Based Training
CCTV	Close-Circuit TeleVision
CN	Canadian National
DOW	Description Of Work
FFCCTV	Forward Facing Closed-Circuit TeleVision
GDL	German Drivers Leasing
HMTreasury	Her Majesty's Treasury
IM	Infrastructure Manager
IP	Important Point
IT	Information Technology
NPV	Net Present Value
OPEX	OPeration Expenditures
OTDR	On Train Data Recorder
PIER	Program in Interdisciplinary Education Research
2RProtect	Rail and Road Protect
RAILPOL	European Network of RAILway POLice Forces
RSSB	Rail Safety and Standards Board
RU	Railway Undertaking
SMIS	Safety Management Information System
SPSS	Statistical Package for the Social Sciences
STS	SysTemS
SWOV	Institute for Road Safety Research
TCRP	Transit Cooperative Research Programme
VAS	Visual Analogue Scale
VPC	Values of Preventing a Casualty
VT	Value of Time
CBA	Cost Benefit Analysis
CEA	Cost Effectiveness Analysis

1.1 Gatekeeper Programme – HMGU

1.1.1 Overview of the piloted measure

Previous research (*Lukaschek K, Baumert J, Ladwig KH. Behavioural patterns preceding a railway suicide: Explorative study of German Federal Police officers' experiences. BMC Public Health (2011) 11: 620; Gaylord MS, Lester D: Suicide in the Hong Kong subway. Soc Sci Med1994, 38:427-430;; O'Donnell I, Farmer R, Tranah T: Suicide on railways. Soc Sci Med 1994,39:399-400*) has shown that subjects willing to commit railway suicide display distinctive behavioural patterns prior to the suicide. Additionally, high risk time windows for railway suicide have been identified (*Karoline Lukaschek, Jens Baumert, Natalia Erazo, Karl-Heinz Ladwig (2014). Stable time patterns of railway suicides in Germany: comparative analysis of 7,187 cases across two observation periods (1995–1998; 2005–2008). BMC Public Health 2014, 14:124; Erazo N, Baumert J, Ladwig KH. Factors associated with failed and completed railway suicides. J Affect Disord (2005) 88, 137-43;; Erazo NS, Baumert J, Ladwig KH. Sex specific time patterns of suicidal acts on the German railway system. An analysis of 4003 cases. J Affect Disord (2004) 83: 1-9); van Houwelingen CA, Beersma DG: Seasonal changes in 24-h patterns of suicide rates: a study on train suicides in The Netherlands. J Affect Disord 2001, 66:215-223*). Gatekeepers are frontline staff, whose contact with potentially vulnerable subjects provides an opportunity to identify at-risk individuals. Gatekeepers possess 1) knowledge about high risk time windows for railway suicide, 2) awareness of deviant behaviour preceding railway suicide, 3) the courage to show initiative, and 4) the ability to handle people in despair. Gatekeeper training is one of the most effective approaches to prevent suicide (*Mann JJ, Apter A, Bertolote J, Beautrais A, Currier D, Haas A, et al: Suicideprevention strategies: a systematic review. JAMA 2005, 294:2064-2074.*), but up to now, there is only one gatekeeper training programme (run by The Samaritans and British Rail) for individuals working in a railway environment

The Gatekeeper Programme developed by HMGU within the RESTRAIL framework addresses railway frontline staff and individuals working in a railway environment (e.g. Police Officers, train drivers, security personnel, aid organisations, Samaritans). Its objectives were a) the prevention of railway suicides by intervention of staff working in a railway environment when being confronted with apparently suspicious behaviour during their daily routine work, b) the enhancement of staff's intervention skills when being confronted with apparently suspicious behaviour during their daily routine work.

The HMGU Gatekeeper Programme was designed as a 4 h taught course with different modules (see Kallberg, Plaza, Silla, García et al, 2014) for a maximum of 12-15 participants.

1.1.2 Methodology to evaluate the piloted measures

The measure is targeted to prevent railway suicides by intervention of staff working in a railway environment when being confronted with apparently suspicious behaviour during their daily routine work. The evaluated effects concern the knowledge about and attitudes towards (railway) suicides of those working in a railway environment.

The evaluation consists of the change in knowledge about, and attitudes towards, railway suicide among two time points:

- Time point 1 (t1): baseline assessment shortly before the gatekeeper course.

- Time point 2 (t2): Post-intervention assessment shortly after the gatekeeper course

- Time point 3 (t3): Post-intervention assessment three months after the gatekeeper course. Note: Information at t_3 was obtained from 10 participants only (N=10).

Knowledge about railway suicide (warning signs, prevention, facts, handling of suicidal subjects, referral) was assessed using a VAS (Visual Analogue Scale) ranging from 0 (no knowledge) to 10 (very good knowledge). There were six knowledge items; thus, a minimum of 0 and a maximum of 60 were possible.

Attitudes towards railway suicides (communication with and support of suicidal subjects) was assessed using a Likert-scale with three ordered response levels to every item ("not very likely", "somewhat likely", or "highly likely") which were coded as "1", "2", or "3". There were five attitudes items; thus, a minimum of 5 and a maximum of 15 were possible.

For each participant and time point, a sum score was built out of all knowledge items (=knowledge score) and out of all attitude items (=attitude score). It was then checked whether knowledge and attitude changed after the training course. It was then tested by Wilcoxon signed-rank test for paired samples (Randles and Wolfe, 1979) whether the difference to the Null Hypothesis (=No change in knowledge or attitudes), was statistically significant.

1.1.3 Reported costs for measure

The reported costs for the measure implemented in this test, are collected in **Table 1.1-1**.

Table 1.1-1: Reported Costs for German gatekeeper programme

Cost component	Nature	value
Instructor	Depending on TVöB Position;**rough estimate**: minimum of 450 € per instructor	
office space rental costs	Depending on size	~125 €
Overheads	Depends on participants' organisation	
Travel expenses	Depending on distance and catchment area	

1.1.4 Evaluation results

The boxplots in **Figure 1.1-1** show the knowledge distribution at baseline (t_1), shortly after the intervention (t_2) and three months after the intervention (t_3). The length of the box represents the interquartile range (the distance between the 25th and the 75th percentiles), the diamond in the box interior represents the mean, the horizontal line in the box interior represents the median, and the vertical lines issuing from the box extend to the minimum and maximum values of the analysis variable. Outliers are indicated as dots.
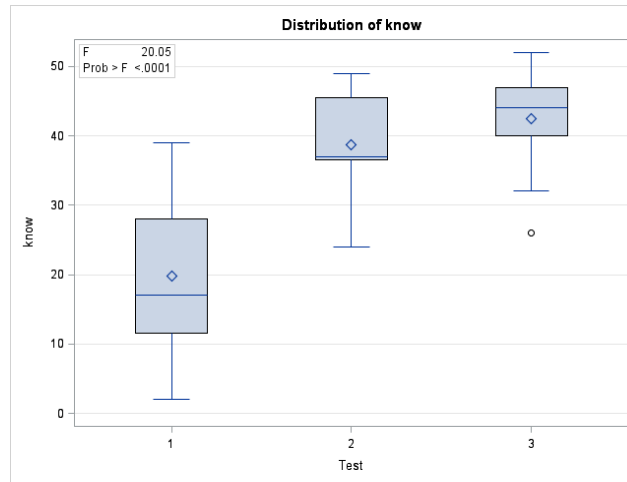
Figure 1.1-1: Data on knowledge before a Gatekeeper trainings course for staff working in a railway environment (=baseline, t_1), shortly after the course (t_2) and three months after the course (t_3).

The **Figure 1.1-1** shows the distribution of the knowledge about railway suicides (facts, warning signs, prevention, behaviour) and the median of the knowledge score at t_1 was 17.00, compared to a Median of 37.00 at t_2 and of 44.00 at t_3. There was a significant increase in knowledge from t_1 to t_2, but no change from t_2 to t_3 (p=0.221).

The Figure 1.1-2 shows data on attitudes toward railway suicides (communication with and support of suicidal subjects) was collected shortly before a Gatekeeper trainings course for staff working in a railway environment (=baseline, t1), shortly after the course (t2) and three months after the course (t3). The boxplots in this figure show the attitudes at baseline (t1), shortly after the intervention (t2), and three months after the intervention (t3). The length of the box represents the interquartile range (the distance between the 25th and the 75th percentiles), the diamond in the box interior represents the mean, the horizontal line in the box interior represents the median, and the vertical lines issuing from the box extend to the minimum and maximum values of the analysis variable.
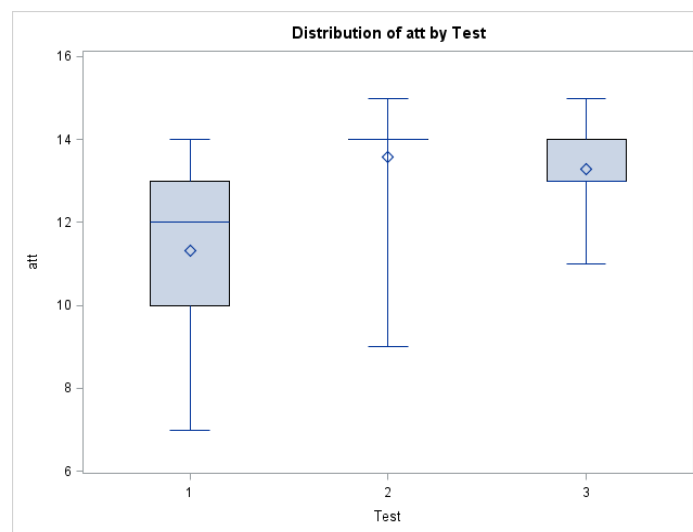

Figure 1.1-2: Data on attitudes toward railway suicides (communication with and support of suicidal subjects

Table 1.1-2 shows the distribution of the attitude score at all three time points (1=baseline, 2=shortly after the test, 3=three months after). The Median of the attitude score at t_1 was 12.00, compared to a Median of 14.00 at t_2 and a Median of 13.00 at t_3. There was a significant improvement in attitudes from t_1 to t_2 (p=0.0010). The three months after the test did not reveal any significant changes in attitudes compared to t_2. It is of note that the dense distribution of the attitude score at t_2 was more dispersed at t_3.

Table 1.1-2 Summary of results of data collection

Variable	Period	Results	P-value
Knowledge	Baseline	Median of 17.00	t1 to t2: 0.001
	Shortly after	Median of 37.00	t2 to t3: 0.221
	3 months after	Median of 44.00	t1 to t3: < 0.001
Attitudes	Before	Median of 12.00	t1 to t2: 0.001
	Shortly after	Median of 14.00	t2 to t3: 0.271
	3 months after	Median of 13.00	t1 to t3: 0.017

1.1.5 Applicability of results to different circumstances

As a huge advantage, gatekeeper training courses can easily be adjusted to different circumstances and settings. Prior knowledge on part of the participants is not required. Currently, this particular concept exists in the German language only. Assistance for translating the course to other languages can be offered. Cultural gaps are unlikely. In summary, the course is easy to implement and applicable to different circumstances.

1.1.6 Discussion

For the number of participants (10-15), a 4 h course was an optimal time frame, enabling personal trainer/trainee interaction with each participant. The gatekeeper training course as an educational tool can be easily combined with other measures. In summary, skills were enhanced: knowledge about railway suicides (warning signs, prevention, facts, handling of suicidal subjects, referral) was increased and attitudes toward railway suicides (communication with and support of suicidal subjects) were improved. Our results are comparable to those reported in the literature (Berlim, 2007; Cross, 2010). In depth analysis did not reveal a significant decrease in knowledge/attitude from t2 to t3; thus, refresher courses are not necessary in a regular quarterly cycle, which contributes to the cost-effectiveness of the course.

As a further strength of the HMGU gatekeeper course, participants benefitted greatly of the interdisciplinary approach including three organisations working in different areas of a railway environment.

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