

Danish Water Safety Network Meeting June, 20th 2018 in Copenhagen

National Statistics on Drowning in Germany



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Content

1. General Statements



Prevention of Drowning

The messages of the WWSC Porto 2007:

- **Drowning needs more attention.**
- **Prevention needs better and more information about the real reasons of drowning.**

Update of the Amsterdam Definition for Drowning after WCDP 2013 in Potsdam

Drowning is defined as “the process of experiencing respiratory impairment from submersion/immersion in liquid;

Outcomes are classified as

- | | | |
|------------------|---|-------------|
| - death, | } | (fatal) |
| - morbidity and | | (non-fatal) |
| - no morbidity.” | | |

Content

2. DLRG Statistics on Drowning in Germany



DLRG Statistics: Drowning in Germany 2017

**404 people
drowned in 2017 ***

- Incl. 23 cases of refugees
- 133 drownings less than 2016
- A reduction of 24,8 % compared to 2016

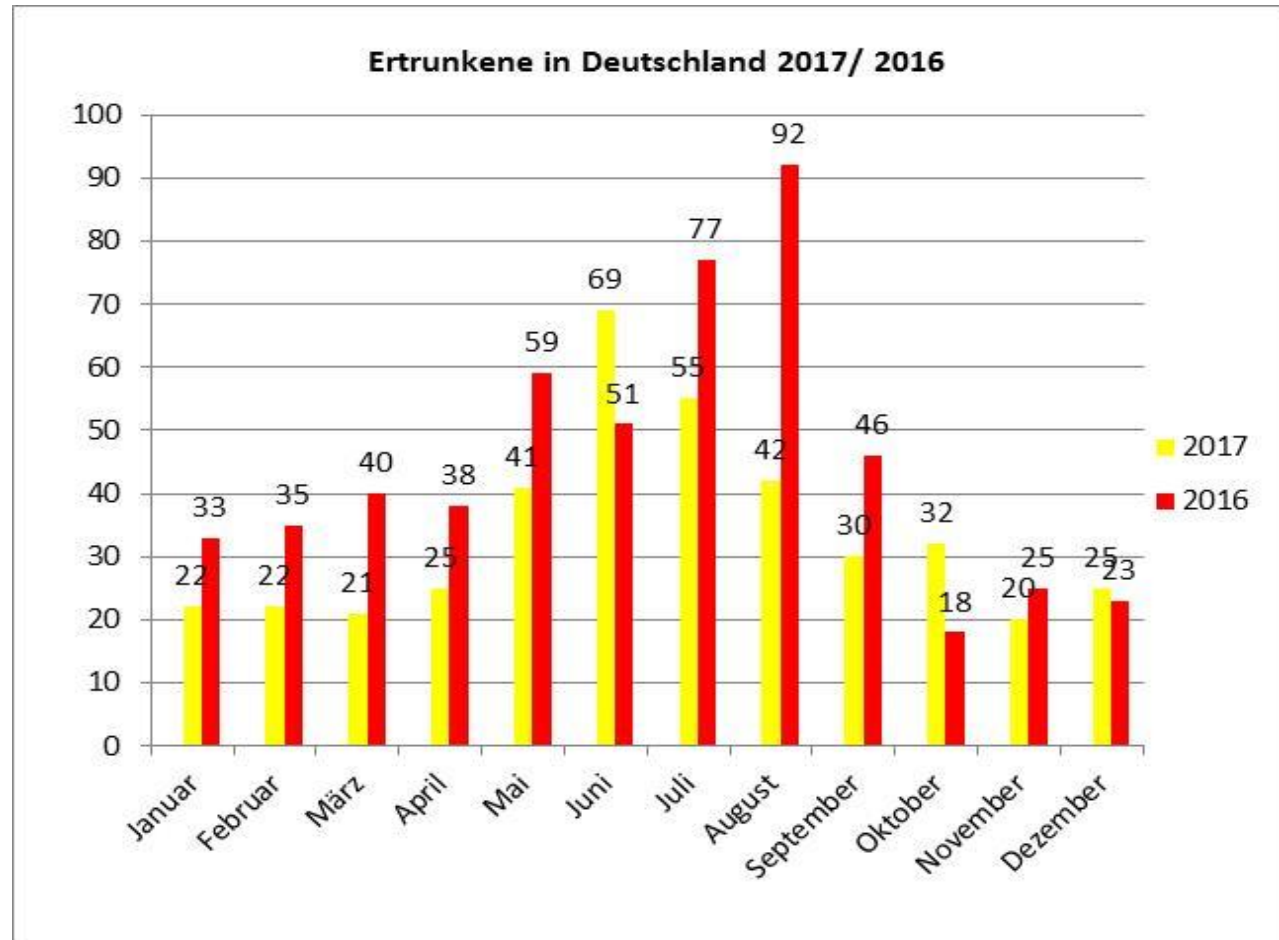
* Basis: press clipping



Drowning in Germany 2017 – by month

Monthly figures

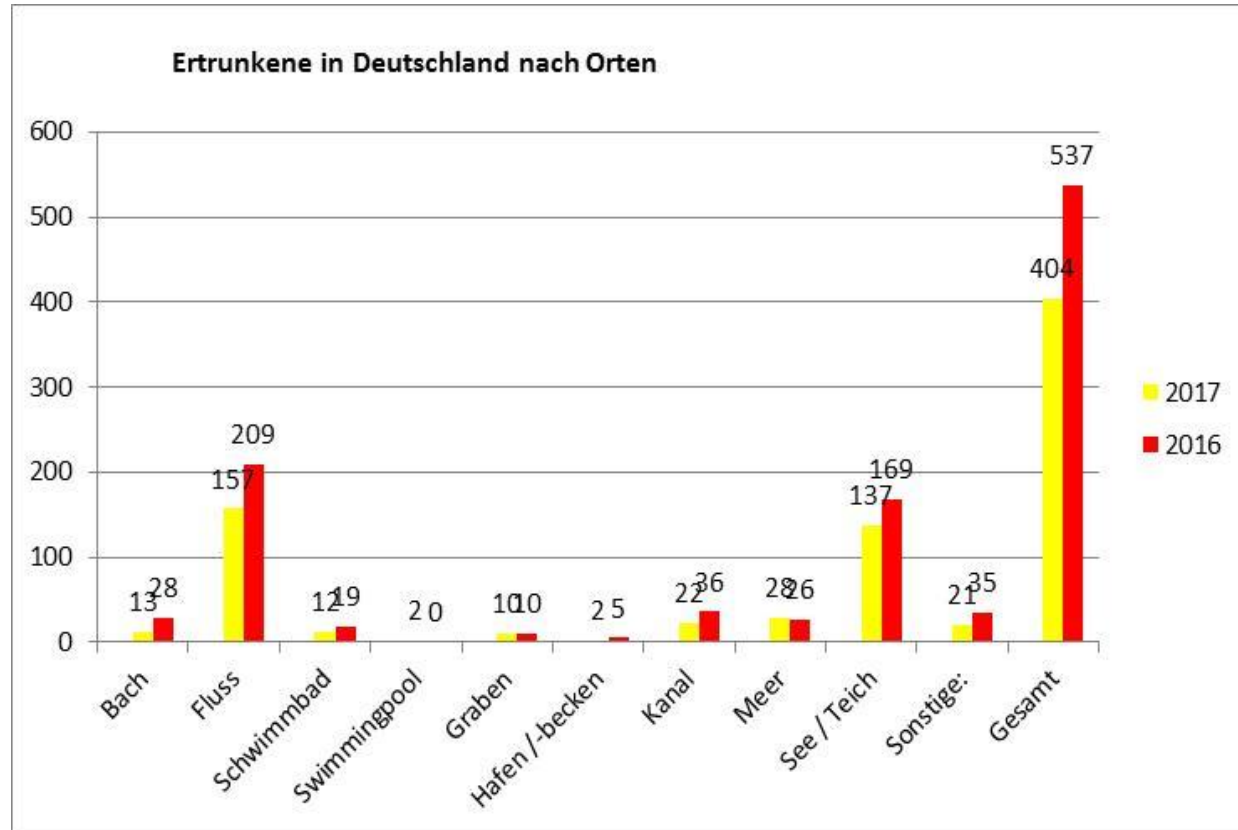
- 166 drownings in summer season June to August (54 less than 2016)
- Only 69 in June (previous year 2016: 51)
- But drownings in Germany happen around the year



Drowning in Germany 2017 – by locations

People drown inland

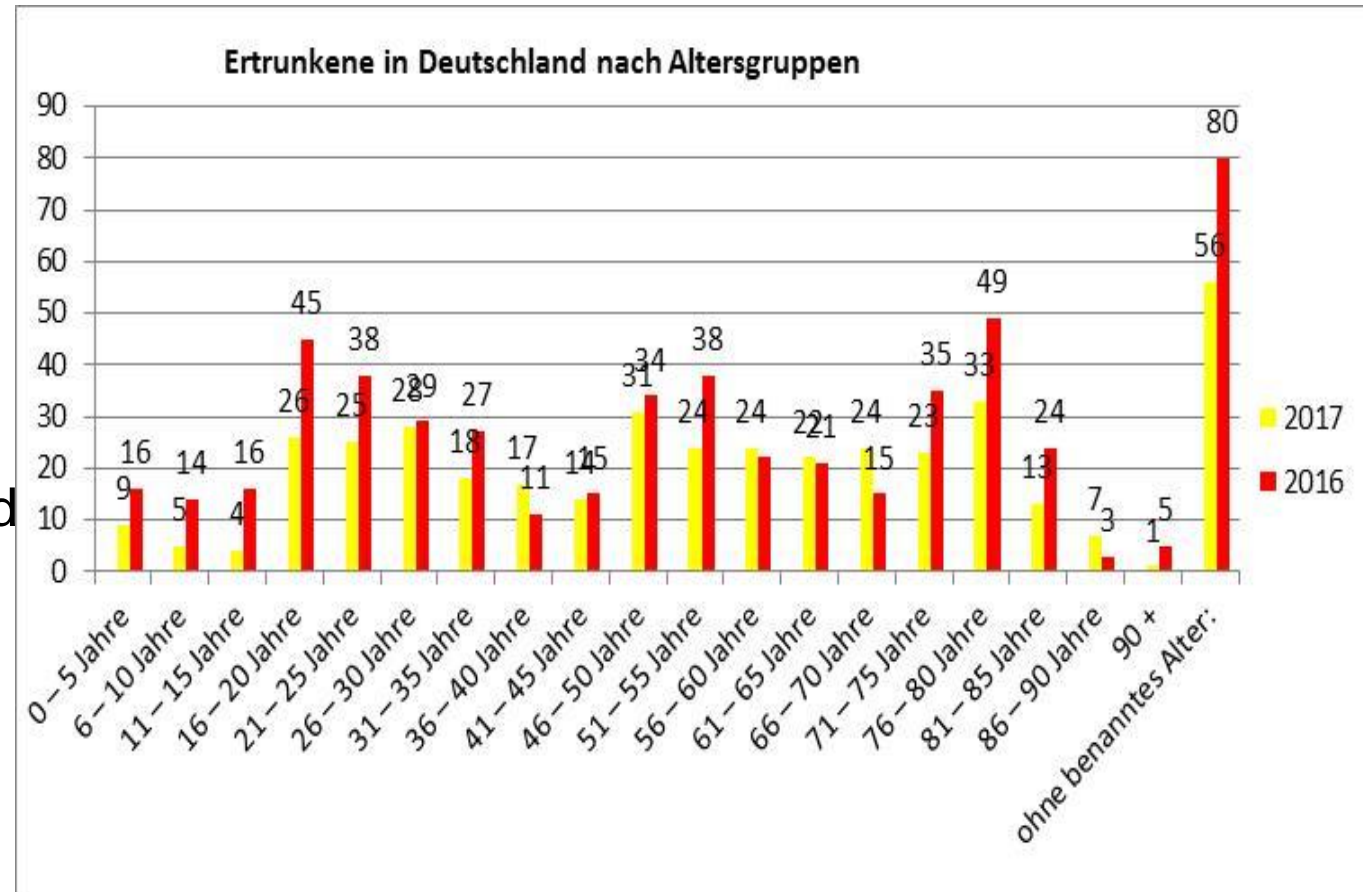
- 137 drowned in lakes and ponds
- 157 drowned in rivers, 22 in canals.
- Guarded pools and beaches are safe:
14 drowned in pools and 28 at coastal beaches.



Drowning in Germany 2017 – by age

High Age is a challenge

- At least 147 victims have been 55 years and older.
- 56 drowned in the age between 71 and 80
21 between 81 and 90.
- 18 girls and boys died younger than 16 years of age.



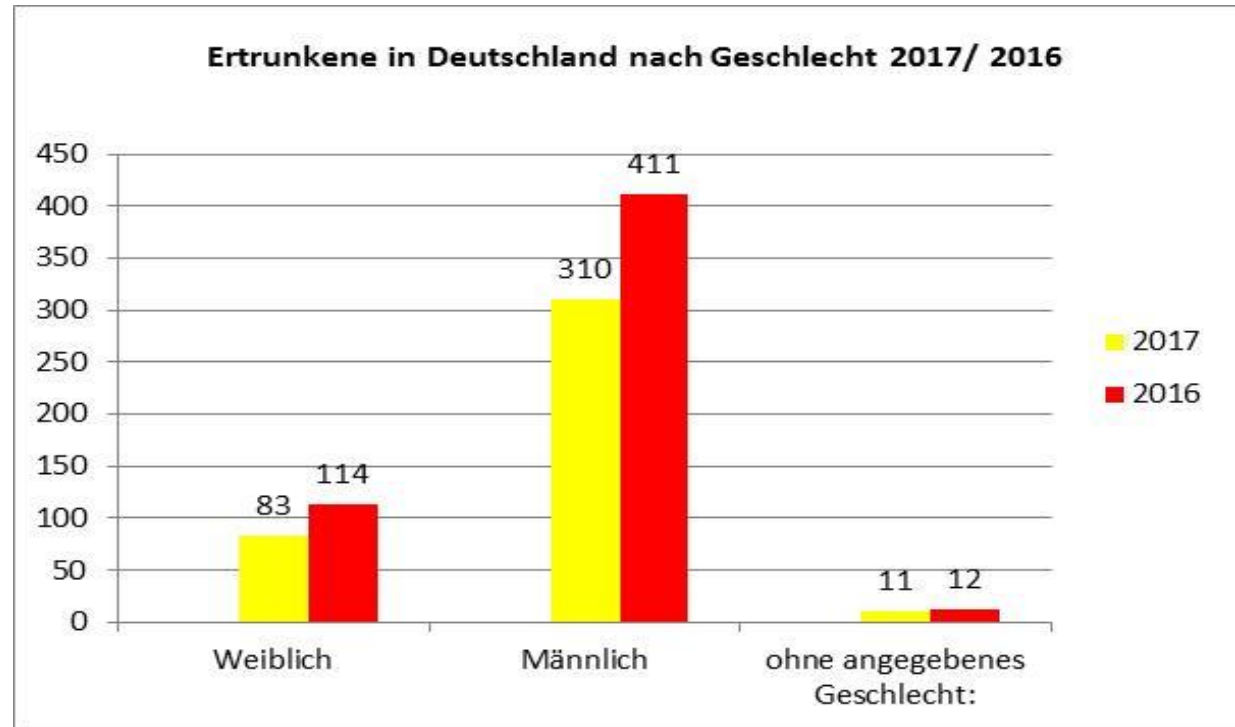
Drowning in Germany 2017 – by sex

drowning is male

Four out of five victims are male.

The relation m/f 2017: As usual 80 : 20.

The main reasons: carelessness, overestimation, alcohol and less risk awareness

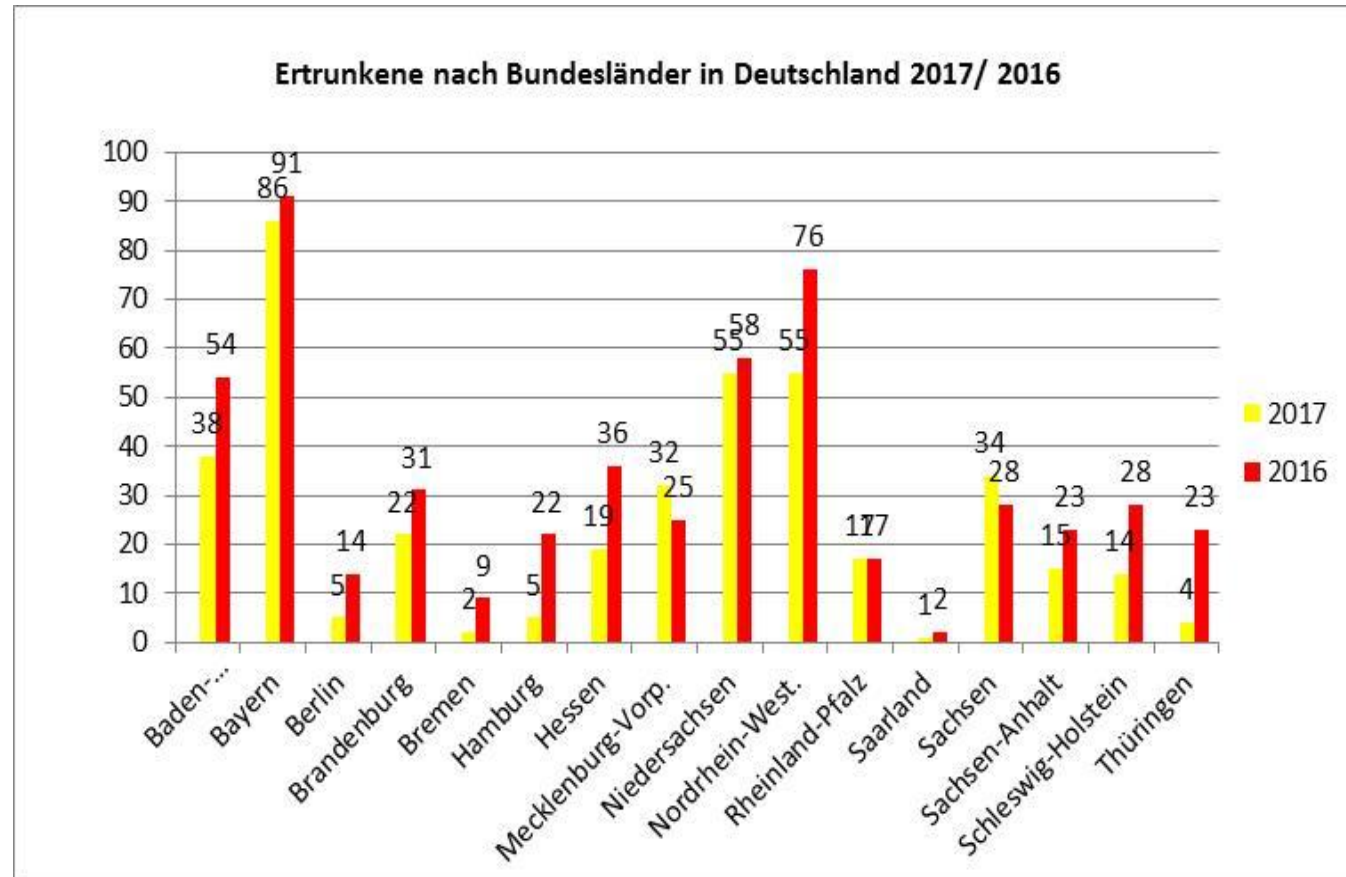


Drowning in Germany 2017 – by regions

**On top:
Bavaria**

Two states with
extending
numbers:
Mecklenburg +7
Saxonia +6.

The relation East-
West: 28 : 72.



Drowning in Germany 2017 – per 100.000

Todesfälle durch Ertrinken in Deutschland 2017 – je 100.000 Einwohner

Germany: 0.49
drownings per
100.000
inhabitants – a
worldwide top
score

Female 0.20 (to
41,40 Mio.)
Male 0.76 (to
40,78 Mio.)

Gebiet	Einwohner	Ertrunken	je 100.000Ew	
Bundesrepublik insgesamt	82.18 Millionen	404	0.49	
davon weiblich	41.40 Millionen	83	0.20	
davon männlich	40.78 Millionen	310	0.76	
Baden-Württemberg	10.88 Millionen	38	0.34	(08)
Bayern	12.84 Millionen	86	0.67	(04)
Berlin	3.52 Millionen	5	0.14	(14)
Brandenburg	2.48 Millionen	22	0.89	(01)
Bremen	0.67 Millionen	2	0.30	(10)
Hamburg	1.79 Millionen	5	0.28	(11)
Hessen	6.18 Millionen	19	0.31	(09)
Mecklenburg-Vorpommern	1.61 Millionen	32	0.20	(12)
Niedersachsen	7.93 Millionen	55	0.69	(03)
Nordrhein-Westfalen	17.87 Millionen	55	0.31	(09)
Rheinland-Pfalz	4.05 Millionen	17	0.42	(07)
Saarland	1.00 Millionen	1	0.01	(15)
Sachsen	4.08 Millionen	34	0.83	(02)
Sachsen-Anhalt	2.25 Millionen	15	0.66	(05)
Schleswig-Holstein	2.86 Millionen	14	0.49	(06)
Thüringen	2.17 Millionen	4	0.18	(13)
Alte Bundesländer	66.06 Millionen	292	0.44	
Neue Bundesländer	16.12 Millionen	112	0.69	
Flächenländer	76.20 Millionen	392	0.51	
Stadtstaaten	5.98 Millionen	12	0.20	

Content

3. The Problem of the official Statistics by „DESTATIS“ (national public statistics institute)



Drowning statistics by DESTATIS

International Basis: ICD - 10

The *International Statistical Classification of Diseases and Related Health Problems* (ICD) is the most important, worldwide accepted classification system for medical diagnosis.

Published by the World Health Organization (WHO), mostly named as International Classification of Diseases. The latest version is ICD-10 from 2016 (first version 1993). Since 2007 WHO works on a new version: ICD-11 shall come up this year.

Drowning Statistics by DESTATIS - Challenges

- *Publishing of statistics is two years late (2015 was published in January 2017).*
- The cases are only related to the place of residence of a victim.
- It is not sure what codes are count to find a final number of cases
- A heart attack in water may only come up as a fatal heard attack but not as a drowning because the water relation is not mentioned

ICD-10 Codes to Drowning

W65-W74 accidents with drowning and submersion

- W65** drowning and submersion in a bathtub
- W66** drowning and submersion after a fall into the bathtub
- W67** drowning and submersion in a swimming pool
- W68** drowning and submersion after a fall into a swimming pool
- W69** drowning and submersion in natural waters
- W70** drowning and submersion after a fall into natural waters
- W73** other specified drowning and submersion
- W74** not specified drowning and submersion

other water related death in the statistics:

- W16** wounded by under water sport and diving into the water without drowning and submersion
- V90** watersport accident with drowning and submersion
- V92** drowning and submersion in water traffic without an accident of a watercraft
- V93** accident on board of a watercraft without an accident of the watercraft and without drowning and submersion
- X71** suicide by drowning and submersion
- Y21** drowning and submersion, circumstances unknown

Statistics of Death on the Basis of ICD-10

Often called „Drowning“ in the statistics:

W65-W74 accidental non-transport drowning and submersion

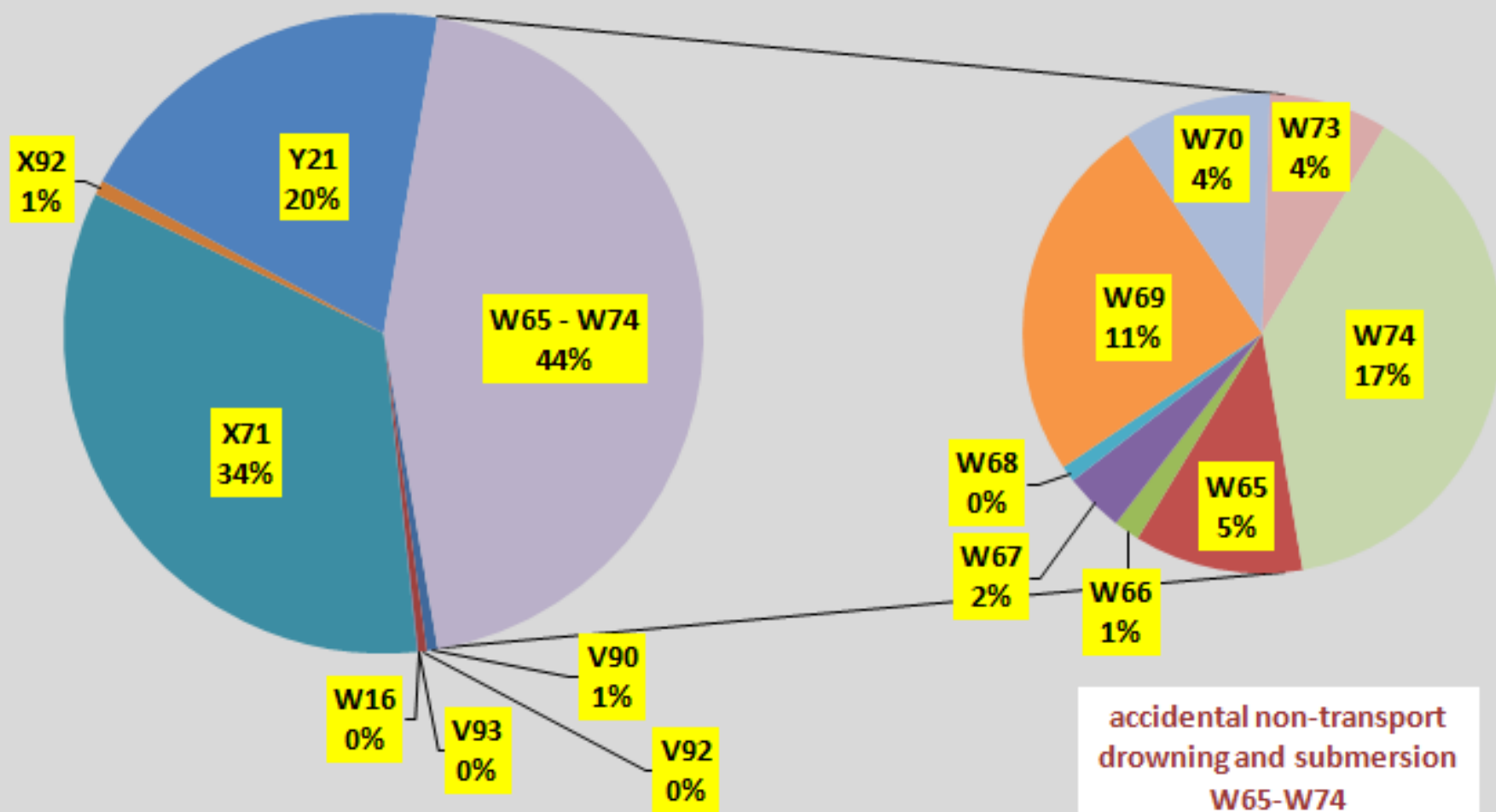
Other water related death in the statistics:

W16	wounded by under water sport and diving into the water without drowning and submersion
V90	watersport accident with drowning and submersion
V91	accident to watercraft causing other injury
V92	drowning and submersion in water traffic without an accident of a watercraft
V93	accident on board of a watercraft without an accident of the watercraft and without drowning and submersion
V94	other and unspecified water transport accidents
X71	suicide by drowning and submersion
Y21	drowning and submersion, circumstances unknown

in 2011:	W65...W74	364 cases
	V90, V92, V93, W16, X71, Y21	397 cases
	Total	761 cases

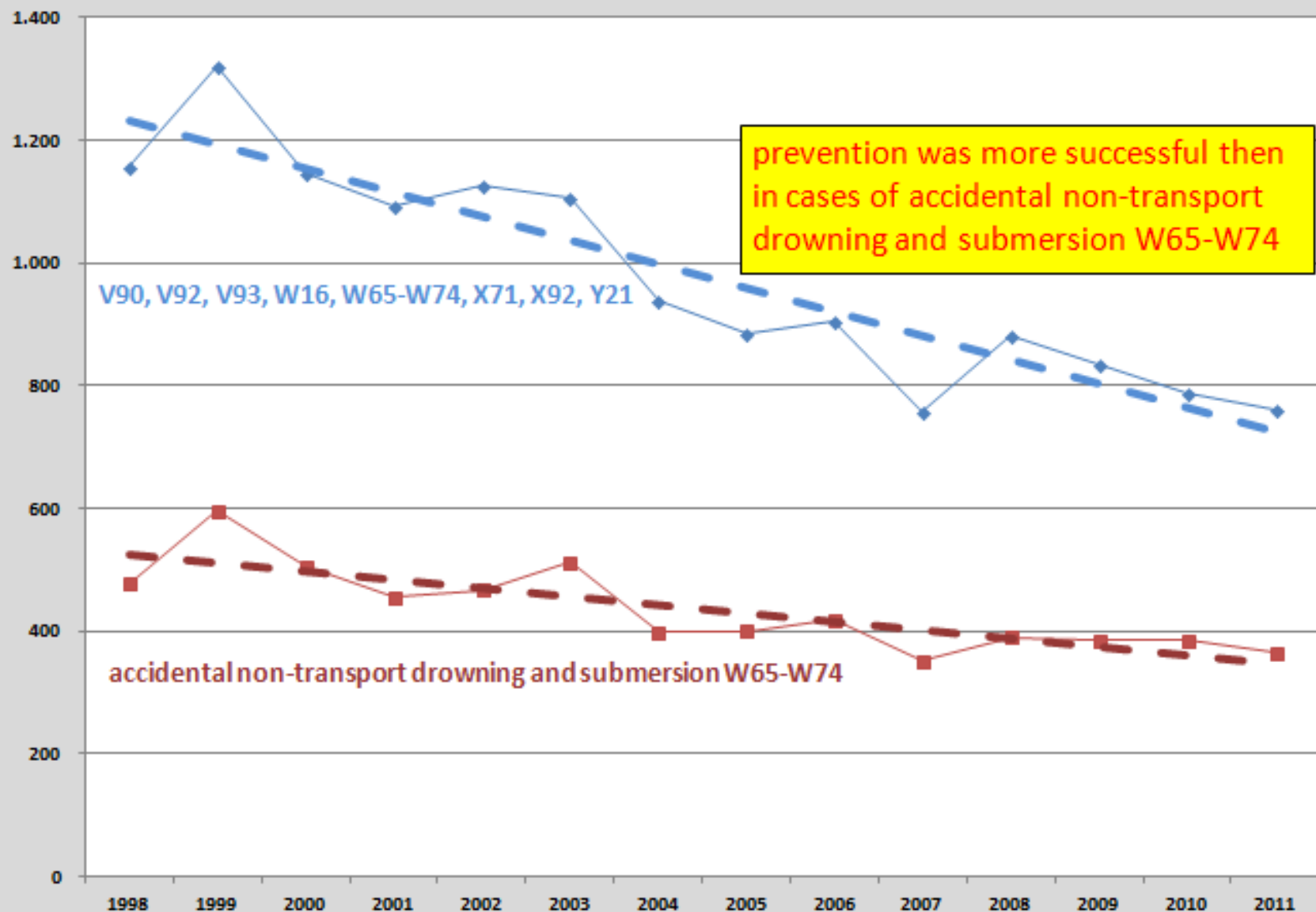
Cases of Death due to "Drowning and Nonfatal Submersion"(T75.1)

1998 - 2011



Cases of Death due to "Drowning and Nonfatal Submersion"(T75.1)

1998 - 2011



Drowning according to the „Definition of Amsterdam“

Example: Analysis of the Drowning Cases for 2011

Fatal Drowning:

W65...W74	364 cases
W16, V90, V92, V93, X71, Y21	397 cases
T75.1 (death in hospital)	75 cases
Total	836 cases

Non-Fatal Drowning:

T75.1 (no death in hospital)	422 cases
recorded rescues by DLRG	411 cases
recorded rescues by others	≈400 cases
Total	≈1.250 cases

≈2.100 cases

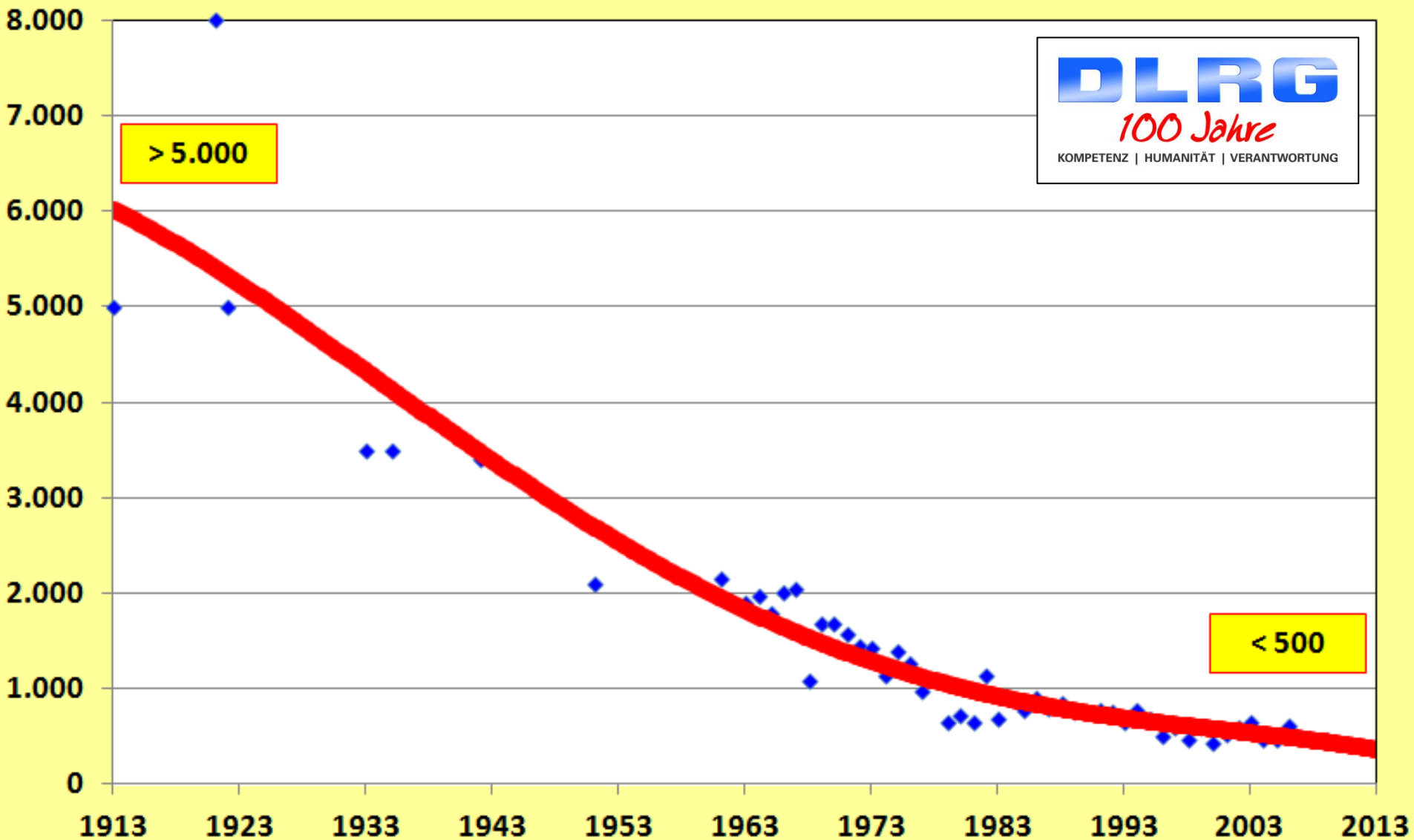
Result: ca. 2.100 cases of Drowning according to the Definition of Amsterdam occurred in 2011 (without dark figures)

Content

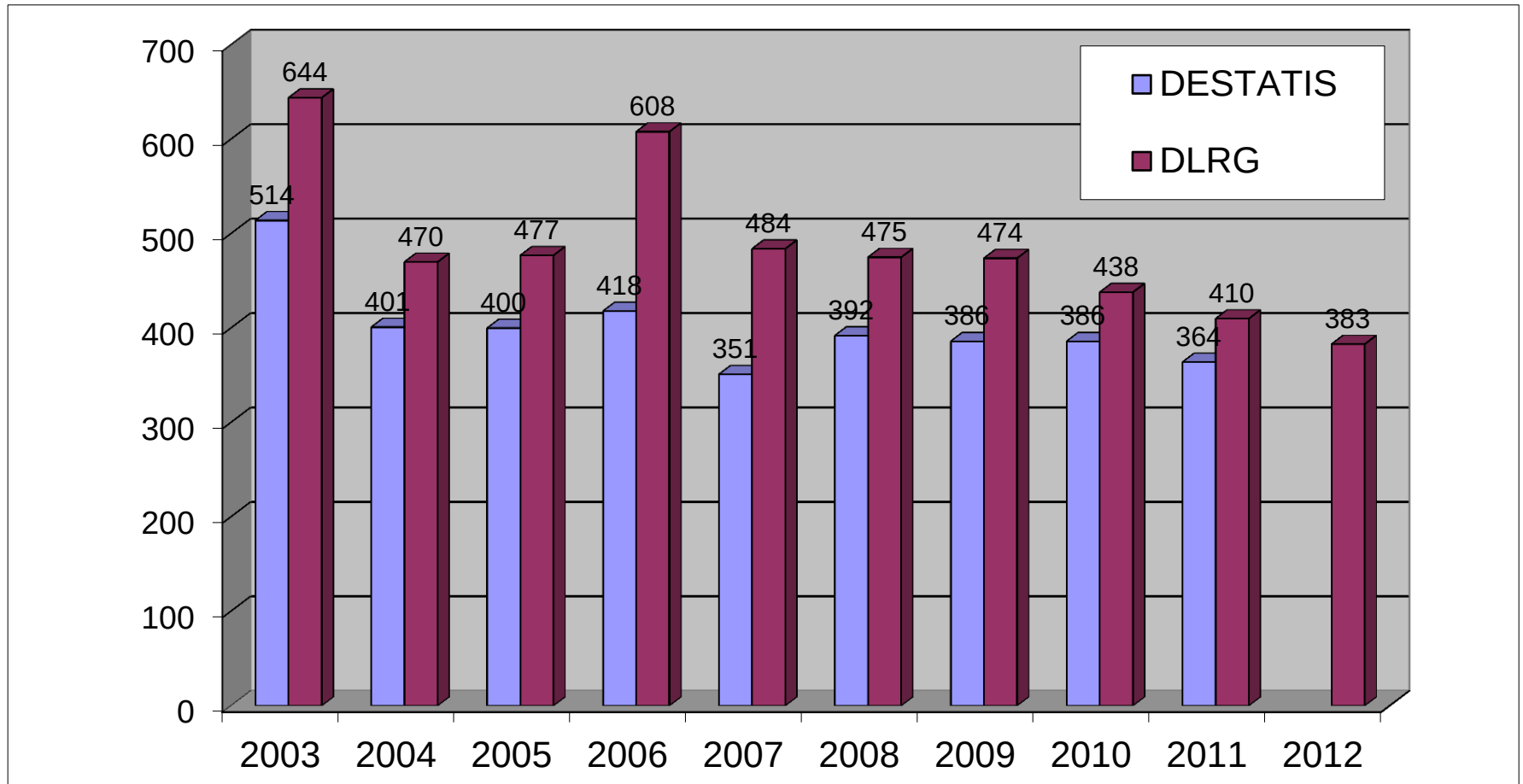
4. A comparing Research on the German Drowning Statistics



Deaths caused by Drowning in Germany



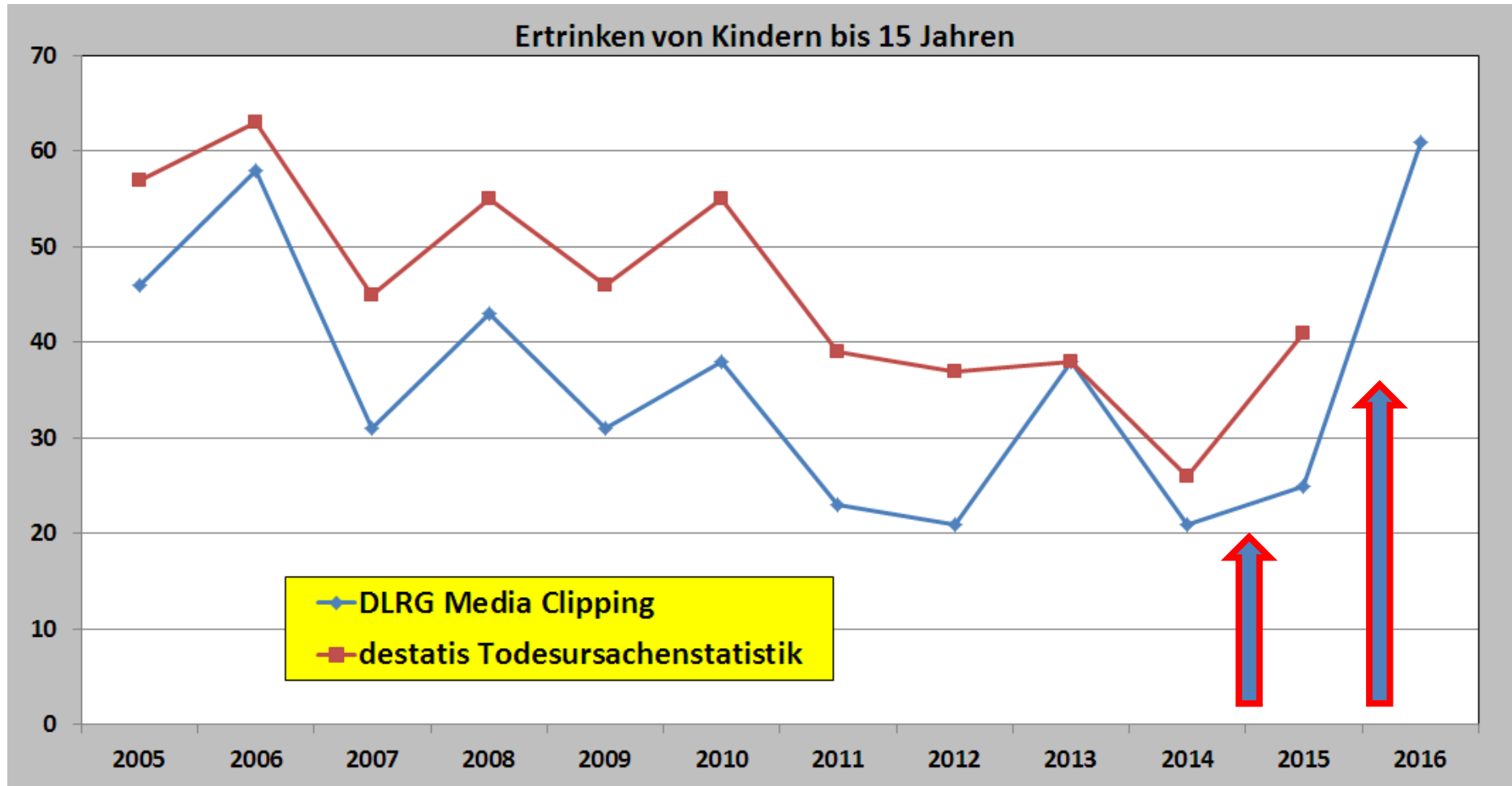
Comparison of the two Statistics for Drowning



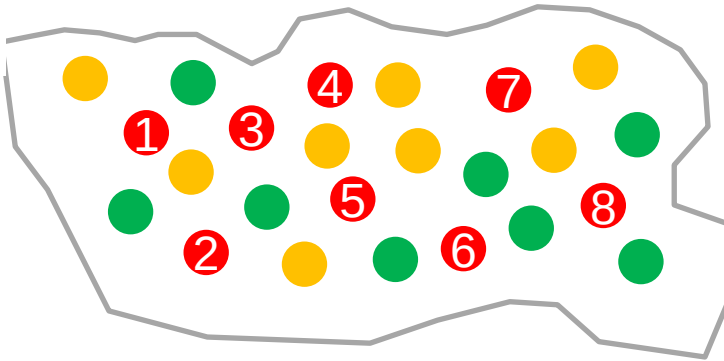
in 2011: DLRG: 474 drownings in Germany

DESTATIS: 364 drownings of German citizens (W65...W74)

Drowning Statistics of DLRG and DESTATIS



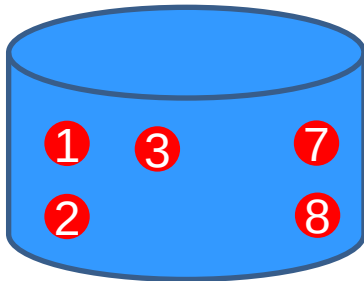
Comparison of the two Statistics (all codes)



What really happened

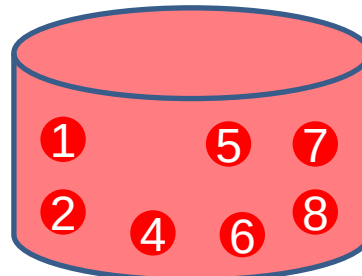
Analysis case by case

fatal



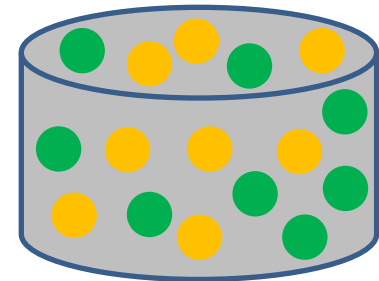
DLRG Media Clipping

fatal



DESTATIS Statistics

non-fatal



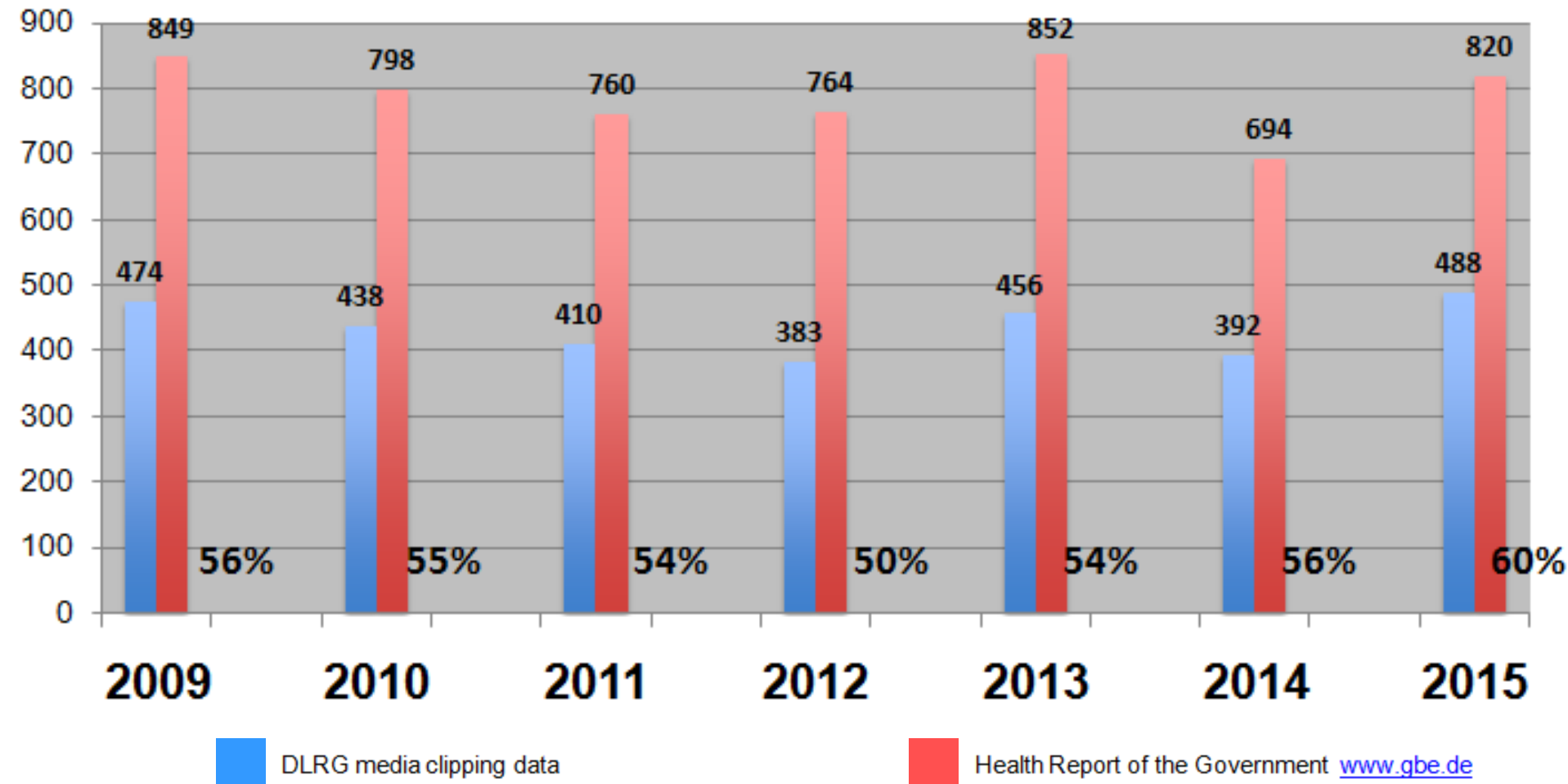
difficult to determine

Comparison of the two Drowning Statistics

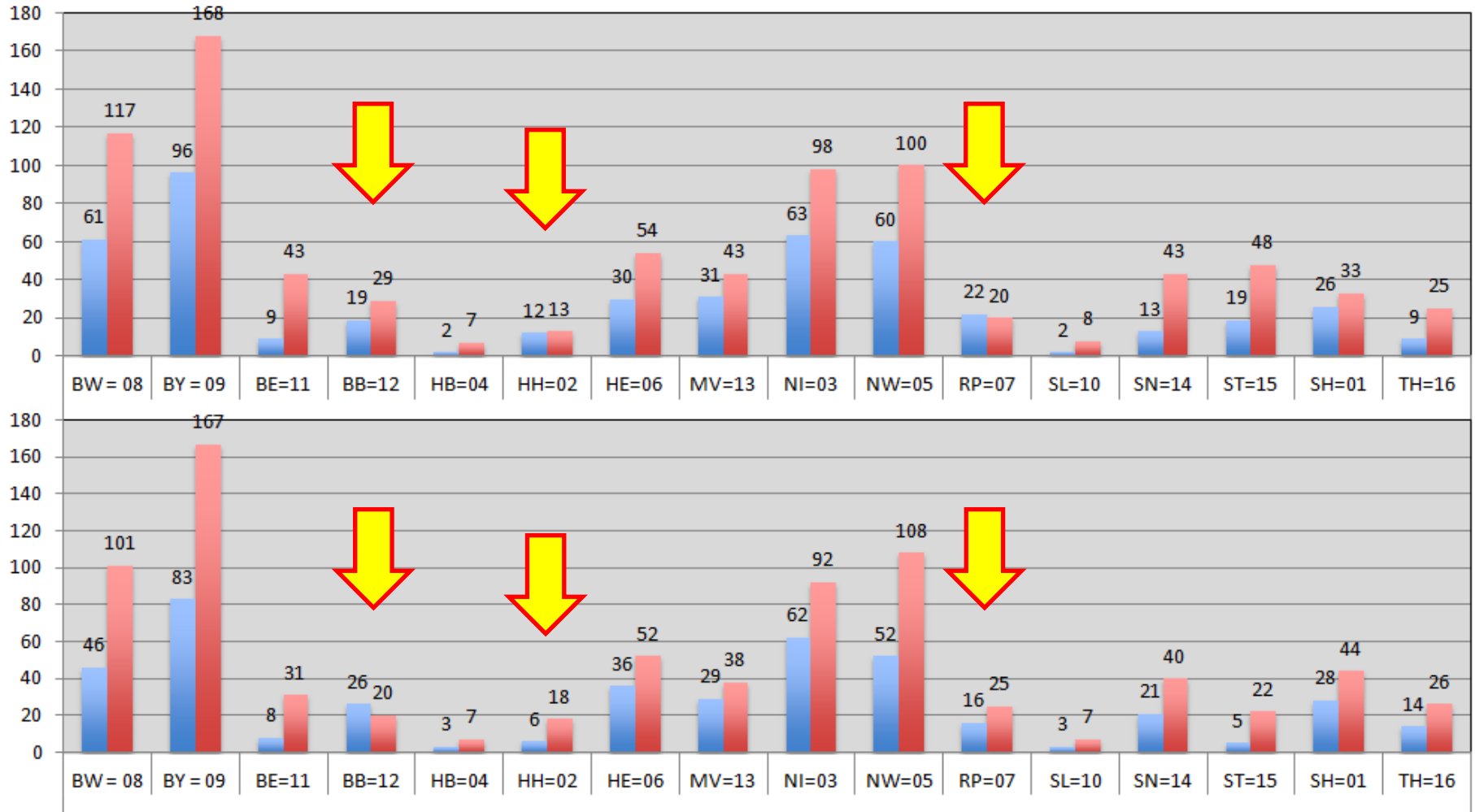
Year	Relation	All Agegroups	<1	1-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70	70-75	75-80	80-85	85-90	>=90
2011	DESTATIS	364	4	13	6	7	8	12	9	11	12	14	21	23	28	30	22	41	49	32	14	8
	DLRG	410		9	6	6	16	19	14	13	14	23	26	41	27	34	25	41	27	25	9	4
	DLRG/DESTATIS	113%		53%	100%	86%	200%	158%	156%	118%	117%	164%	124%	178%	96%	113%	114%	100%	55%	78%	64%	50%

Both Gender																					
Year	Relation	All Agegroups	0-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71-75	76-80	81-85	86-90	>90
2001	DLRG/DESTATIS	114%	90%	113%	129%	250%	119%	225%	125%	165%	100%	148%	119%	111%	89%	79%	74%	71%	79%	13%	25%
2002	DLRG/DESTATIS	128%	98%	95%	90%	180%	158%	207%	145%	158%	146%	153%	130%	150%	128%	98%	67%	92%	70%	64%	67%
2003	DLRG/DESTATIS	125%	94%	78%	85%	286%	209%	178%	238%	145%	134%	93%	153%	131%	90%	91%	100%	39%	83%	73%	50%
2004	DLRG/DESTATIS	118%	71%	83%	267%	164%	227%	171%	121%	144%	114%	104%	154%	91%	137%	128%	83%	33%	72%	33%	33%
2005	DLRG/DESTATIS	119%	76%	88%	113%	195%	200%	180%	200%	169%	171%	131%	121%	86%	162%	130%	62%	51%	90%	100%	30%
2006	DLRG/DESTATIS	145%	116%	78%	200%	486%	180%	225%	190%	142%	162%	178%	136%	143%	175%	119%	108%	68%	158%	42%	17%
2007	DLRG/DESTATIS	138%	82%	57%	100%	140%	236%	189%	320%	215%	233%	148%	89%	129%	162%	141%	86%	124%	125%	75%	43%
2008	DLRG/DESTATIS	121%	50%	100%	163%	83%	244%	140%	138%	186%	156%	171%	103%	168%	87%	169%	95%	83%	54%	65%	100%
2009	DLRG/DESTATIS	123%	80%	71%	150%	230%	154%	215%	160%	142%	143%	171%	118%	163%	130%	126%	84%	71%	45%	88%	200%
2010	DLRG/DESTATIS	113%	69%	89%	100%	111%	157%	200%	170%	229%	113%	131%	121%	145%	100%	103%	90%	56%	76%	29%	133%
2011	DLRG/DESTATIS	113%	53%	100%	86%	200%	158%	156%	118%	117%	164%	124%	178%	96%	113%	114%	100%	55%	78%	64%	50%

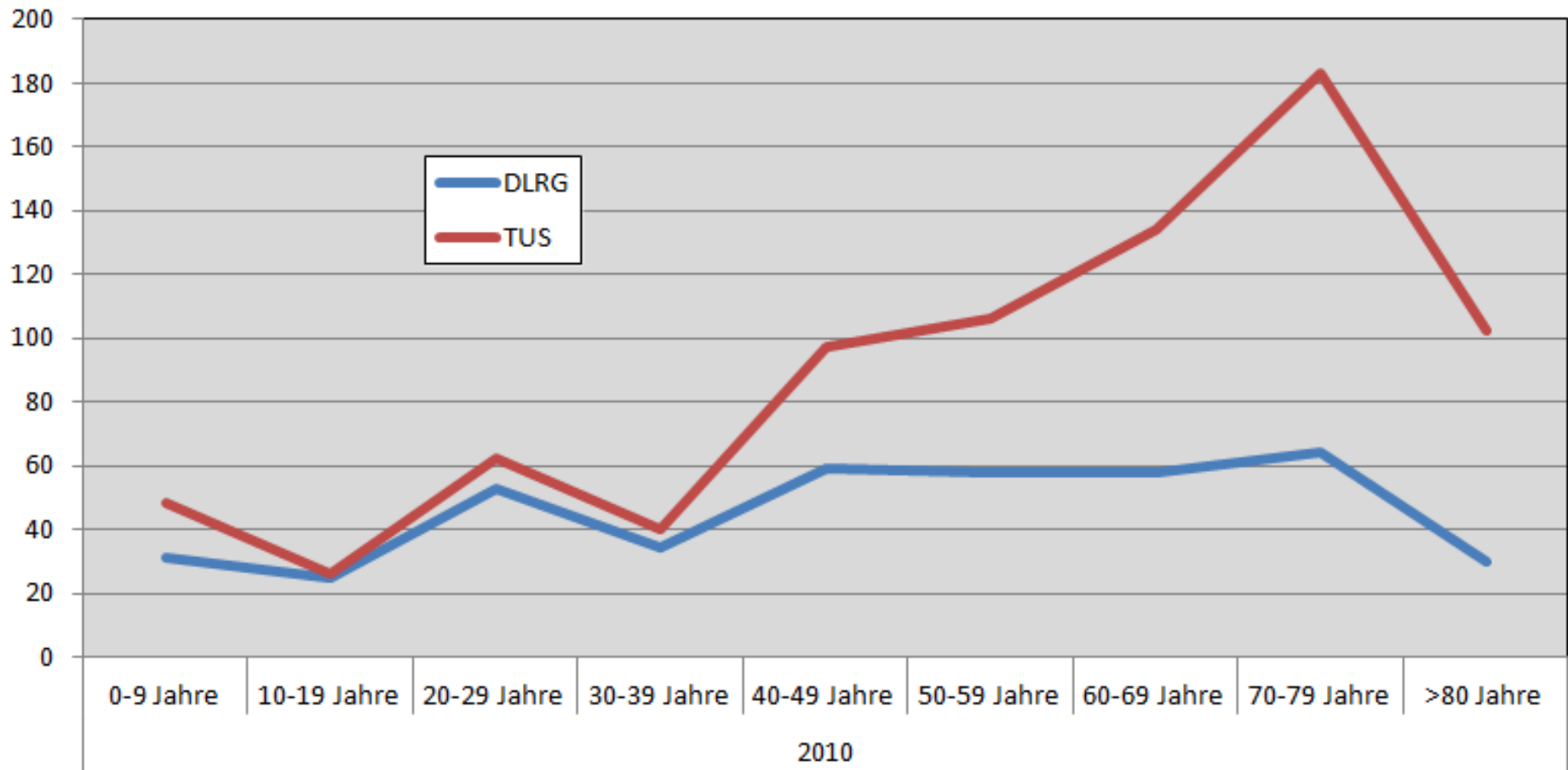
Comparison of the Statistics (all codes)



Drowning Figures by Region



Drowning Figures by Age Group



Characteristics of the DESTATIS Statistics

based on death certificates

■ **Pro**

- classification according to ICD-10
- sex
- age
- free of costs

■ **Con**

- two years later
- not all cases according to the definition of drowning
- causes of death are sometimes not correct
- not enough information for prevention
- based on the victim's place of residence

Characteristics of the DLRG Statistics

based on media clippings

■ Pro

- quick (just after accident, available at milestones)
- sex
- age
- location
- circumstances
- contributing factors
- better information for prevention
- based on the place of the accident

■ Con

- not all cases
- not free of costs

The Results of the Comparison

1. Both statistics deliver reliable data – but different.
2. Both statistics are barely comparable and display inconsistent figures. Each of them has its specific problems for interpretation.
3. The reported cause of death in the DESTATIS statistics may not necessarily be the real cause of death. Incorrect coding may arise especially in death certificates of patients who have been successfully resuscitated after drowning, brought into hospital and died later because of complications such as an Acute Respiratory Distress Syndrome (ARDS) or multiple organ dysfunction syndrome.

The Results of the Comparison

4. The case numbers of both statistics DLRG and DESTATIS up to the age group of 40 are nearly the same.
5. The case numbers of ICD X71 (drowning by suicide) rises up extremely with an age of 40 and older.
6. The DLRG media clipping statistics seems to be able to cover always the same kind of cases.
7. Drowning accidents in privacy at home and suicides are often not published in the media.
8. The analysis of 5.371 cases of DESTATIS and 3.041 cases of DLRG in 2009 -2015 enables us to forecast the number of fatal drownings out of the media clipping data.

Content

5. The Challenge of Near-Drowning and Information from Hospital Statistics



What the official statistics of drowning doesn't tell :

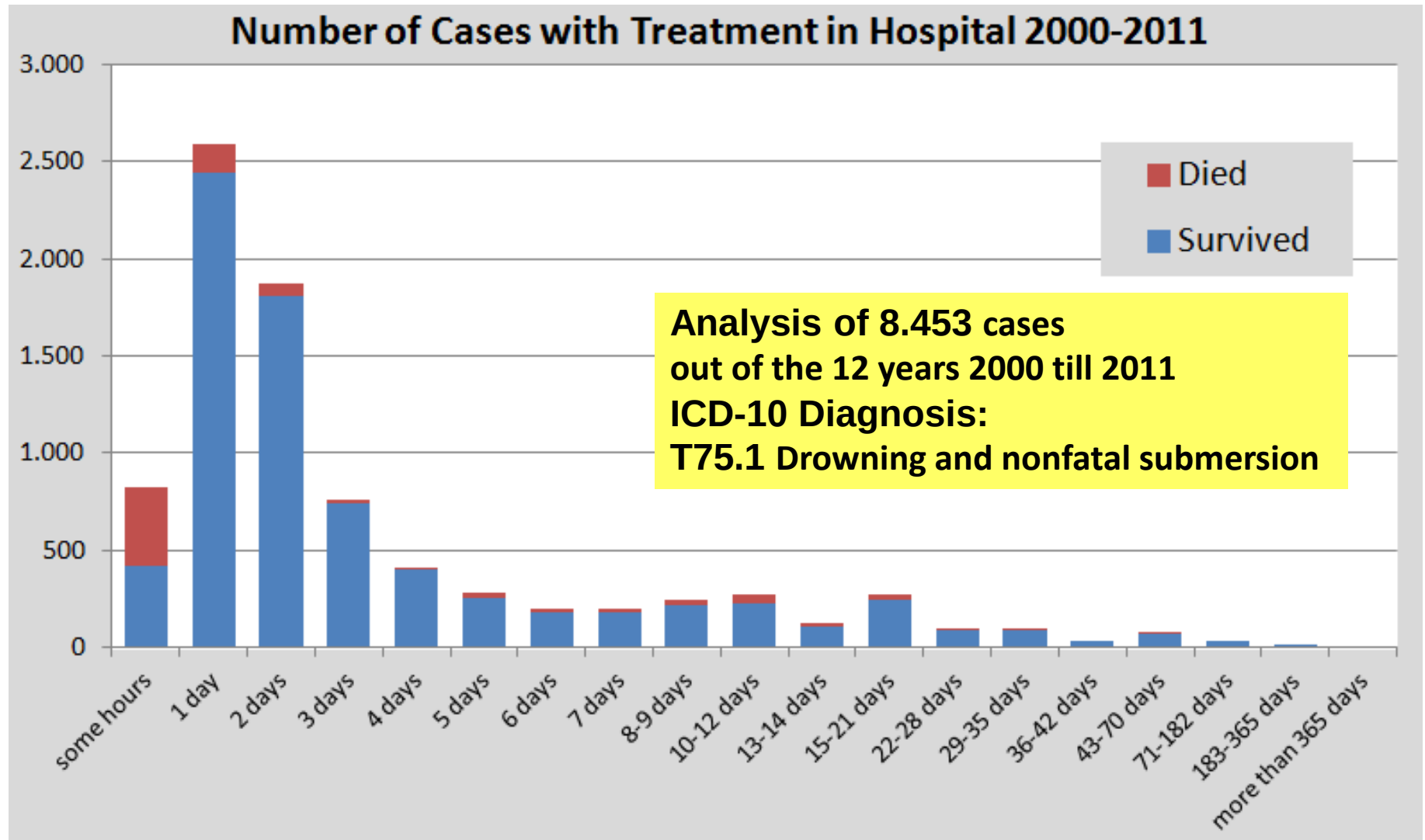
- Not all drownings per definition of Amsterdam are fatal drownings

Special results of a spot research by the Therapy Center Vogtareuth:

- every 4th drowned child, which was resuscitated, died within the 1st year after the accident,
- 18% haven't yet waken up after a years time,
- 37% kept heavy neurologic damages,
- 13% kept medium neurologic damages,
- just 7% of the cases kept no or less neurologic damages,
- every 2nd child suffers from epilepsy.

- cases of late death are often not registered as drownings
- cases of non-fatal submersions are not registered

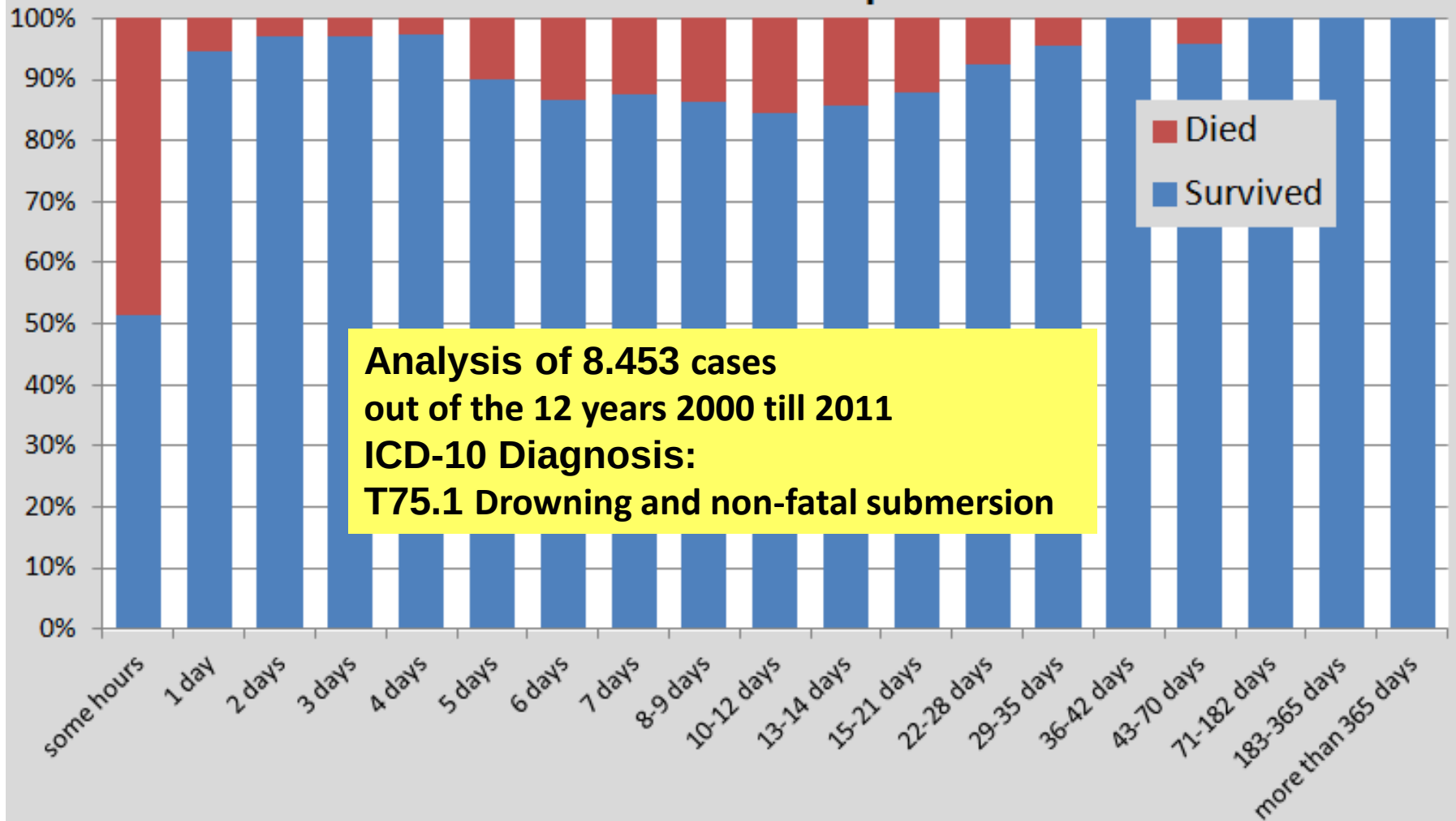
Hospital Statistics for Drowning and Non-Fatal Submersion



- not all cases of drowning come to hospital
- only the main cause of death is recorded
- based on the victim's place of residence

Hospital Statistics for Drowning and Non-Fatal Submersion

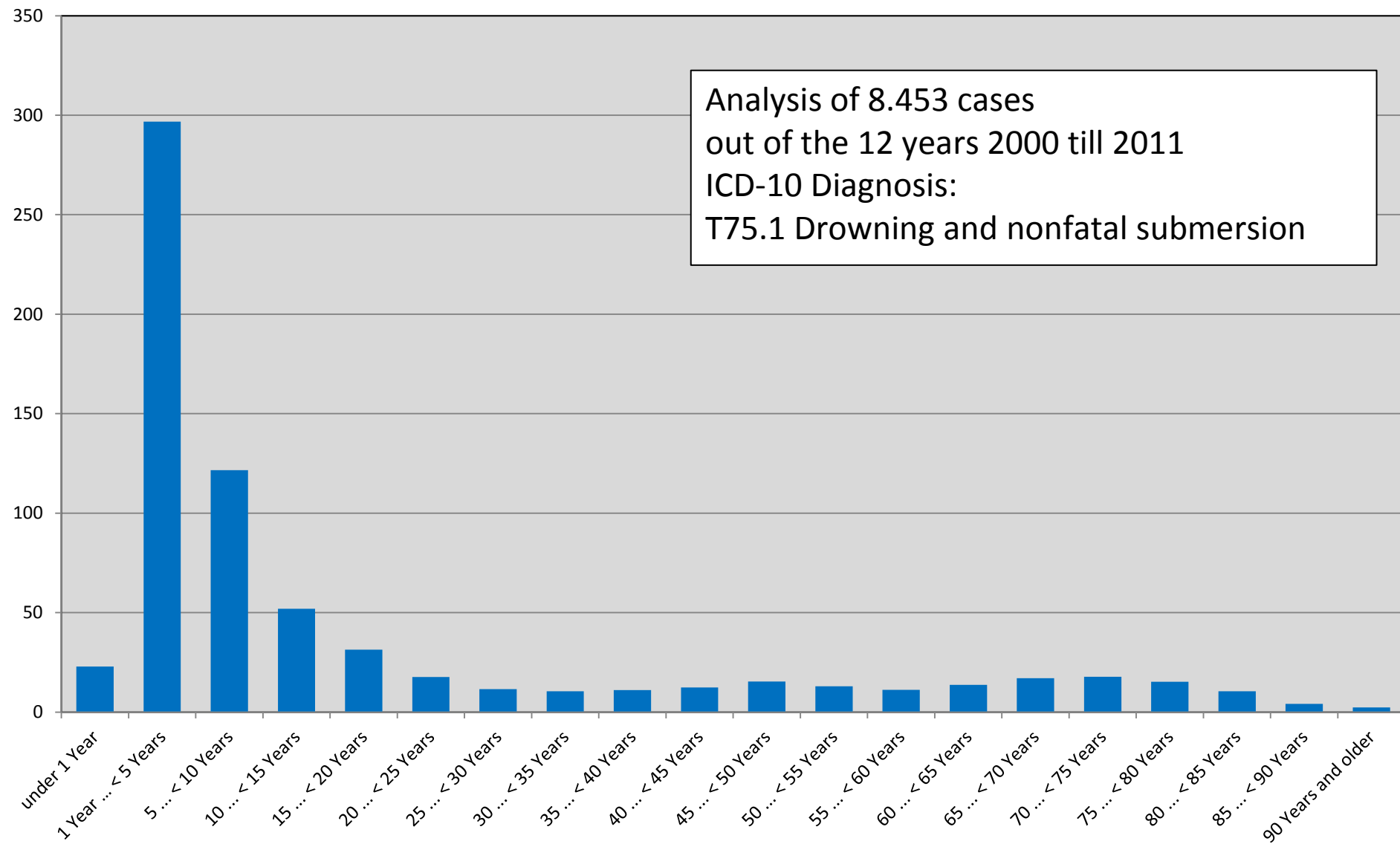
Part of cases who died in hospital 2000-2011



- not all cases of drowning come to hospital
- only the main cause of death is recorded
- based on the victim's place of residence

Number of Cases with Treatment in Hospital per Year

Analysis of 8.453 cases
out of the 12 years 2000 till 2011
ICD-10 Diagnosis:
T75.1 Drowning and nonfatal submersion



Characteristics of the Hospital Statistics

based on hospital records

■ Pro

- classification according to a reduced ICD-10 list
- sex
- age
- free of costs

■ Con

- two years later
- not all cases of drowning come to hospital
- not enough information for prevention
- only the main cause of death is recorded
- based on the victim's place of residence

Content

6. Conclusions



death statistics

- **Pro**
 - classification according to ICD-10
 - sex
 - age
 - free of costs
- **Con**
 - two years later
 - not all cases according to the definition of drowning
 - causes of death are sometimes not correct
 - not enough information for prevention
 - based on the victim's place of residence

fatal

hospital statistics

- **Pro**
 - classification according to a reduced ICD-10 list
 - sex
 - age
 - free of costs
- **Con**
 - two years later
 - not all cases of drowning come to hospital
 - not enough information for prevention
 - only the main cause of death is recorded
 - based on the victim's place of residence

fatal

nonfatal

press clipping

- **Pro**
 - quick (just after the accident, available at milestones)
 - sex
 - age
 - location
 - circumstances
 - contributing factors
 - better information for prevention
 - based on the place of the accident
- **Con**
 - not free of costs

fatal

background

Only the combination of all statistical reports allows a well qualified estimation of the real drowning figure and an effective prevention.

non-fatal

reasons

reports about successful rescues
after non-fatal submersion without
any stay in a hospital

Conclusions

(Dr. Detlev Mohr / Bernhard Abouid)

1. Media Clipping delivers data suitable for prevention – but only about 50% of all fatal drownings.
2. Drowning in official statistics often means only W69-W74, this means less than 50% of all fatal drownings.
3. Media Clipping doesn't cover adequately cases of drowning of persons <1 year of age (accidents in privacy) and >40 years of age (suicides).
4. It is difficult to determine all cases of non-fatal drowning.
5. It is estimated that the relation of fatal to non-fatal drownings in Germany amounts about 1:2.
6. Political discussion requires the Amsterdam Definition.

Thanks for your interest!

Any
questions?



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