

# FATALITY RATES IN RECREATIONAL SCUBA DIVING: A SUMMARY OF STATISTICS PRESENTED AT DAN FATALITY WORKSHOP 2010

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# BACKGROUND

- Scuba diving entails known hazards which may result in injury and death.
- Indeed, 70-90 scuba fatalities occur every year in United States and Canada.
- To facilitate efforts on risk reduction, in 2010, DAN held Recreational Diving Fatality Workshop.

# Methods

- ❖ Data were presented by:
  - ❖ DAN America, DAN Europe, DAN Asia-Pacific, the British Sub-Aqua Club (BSAC), and the Professional Association of Diving Instructors (PADI).
- ❖ Annual Fatality Rate (AFR) = number of deaths in one year per 100,000 participants.
  - Membership organizations
  - US Census
  - Sporting Goods Marketing Association (SGMA).
- ❖ Fatality rate per 100,000 dives
  - Recorded number of dives
    - dive training courses
    - diving in locations with controlled access
    - survey established number of dives

# Denominators and exposures

Source	Denominator (n divers )	Exposure (n dives/year)
BSAC*	38,717	32
DAN insured*	144,400	23
US Census 1998	2,558,000	4
SGMA 2010	2,732,000	1 +
	1,847,000	< 8
	386,000	8 - 14
	490,000	15 +

\* Annual average for period 2000-2006

# Annual Fatality Rate

Source	Period	Number of participant-years	Rate per 100,000 participants/year
USA Census 2000	1998	2,500,000	3.6
SGMA data for USA	2000-2006	30,444,000	1.97
BSAC	1970-2009	271,034	14.4 (10.5-19.7)
DAN America	2000-2008	1,300,000	16.4 (14.2-19.0)
DAN Europe	1998-2009	199,238	70 (60-80)

# Fatality Rates per 100,000 Dives

Group	Denominator	Time period	Rate per 100,000 dives (95%CI)
Orkney, Scotland	Counted visitors and estimated dives	1999-2000	4
Australia	Estimated visitors and dives	1989	1.7 to 3.4
Japan	Tank fill count		1.0 to 2.4
Victoria, Australia	Tank fill count	1992-1996	2.5
BC, Canada	Tank fill count	1999-2000	2.04
DAN Europe, insured members	Registered members	2000 - 2006	1.4
BSAC, non-members British divers	Estimated number of divers	2000 - 2006	1.03
DAN, insured members	Registered members	2000 - 2006	0.7
BSAC, members	Registered members, survey number of dives	2000 - 2006	0.54
PADI, training course participants	Registered trainees, recorded dives		0.49

# Discussion

- ❖ Scuba fatality rates vary with the diving group and type of activity.
- ❖ Annual Fatality Rates for various groups are affected by frequency of diving in the respective group.
- ❖ Fatality rate per number of dives is better measure for between group comparisons.
- ❖ In supervised scuba training courses and club diving, rates appear lower than overall rates for population.
- ❖ Rates appear higher in challenging diving environments.