



# Medical reasons of permanent disqualified professional commercial pilots in Thailand

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# **Disclaimer**

“No conflict of interest exists in this study”

# Introduction

- ✦ The rapid growth of low cost airline in recent years demands increasing number of pilots.
- ✦ There are approximate 3,000 pilots in Thailand, however, still insufficient to meet the increasing demand.
- ✦ The regulations limit that the duty time must not exceed 34 hours in a week, 110 hours in 4 weeks and 1,000 hours in a year.

# Introduction

- ✦ Working in high altitude environment in the aircraft for a long time actually does not affect the physical health.<sup>1</sup>
- ✦ However, the increasing workload of the pilots because of the growth of airline business may cause adverse health problems.
- ✦ This study investigates the causes of permanent disqualification of Thai commercial pilots because of medical problems.

1. Hammer GP, et al. *Mortality from cancer and other causes in commercial airline crews: a joint analysis of cohorts from 10 countries*. *Occup Environ Med* 2014;0:1–10. doi:10.1136/oemed-2013-101395

# Material and Methods

- Retrospective study, from 2010 to 2017
- Two aeromedical centers (AeMC)
- All licenses have been issued by Civil Aviation Authority of Thailand



Institute of Aviation Medicine RTAF



Bangkok Civil Aeromedical Center

# Material and Methods

- ✦ Inclusion criteria
  - ✦ Permanent disqualification that cause by any medical problems, which does not meet the requirement that states in the regulation of medical standards for issuing medical certificates from the CAAT

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# Material and Methods

- ✦ Exclusion criteria
  - ✦ Temporary suspension from a recoverable illness or aircraft accident
  - ✦ Rehabilitation
  - ✦ During pregnancy in female pilot
  - ✦ Private Pilot License (PPL)



# Material and Methods

- ✦ Statistics
  - ✦ Pearson's Chi-squared test
  - ✦ Compared with the study data from foreign countries
  - ✦  $P$ -value  $< 0.05$  for statistical significance

# Results



Total numbers of pilots

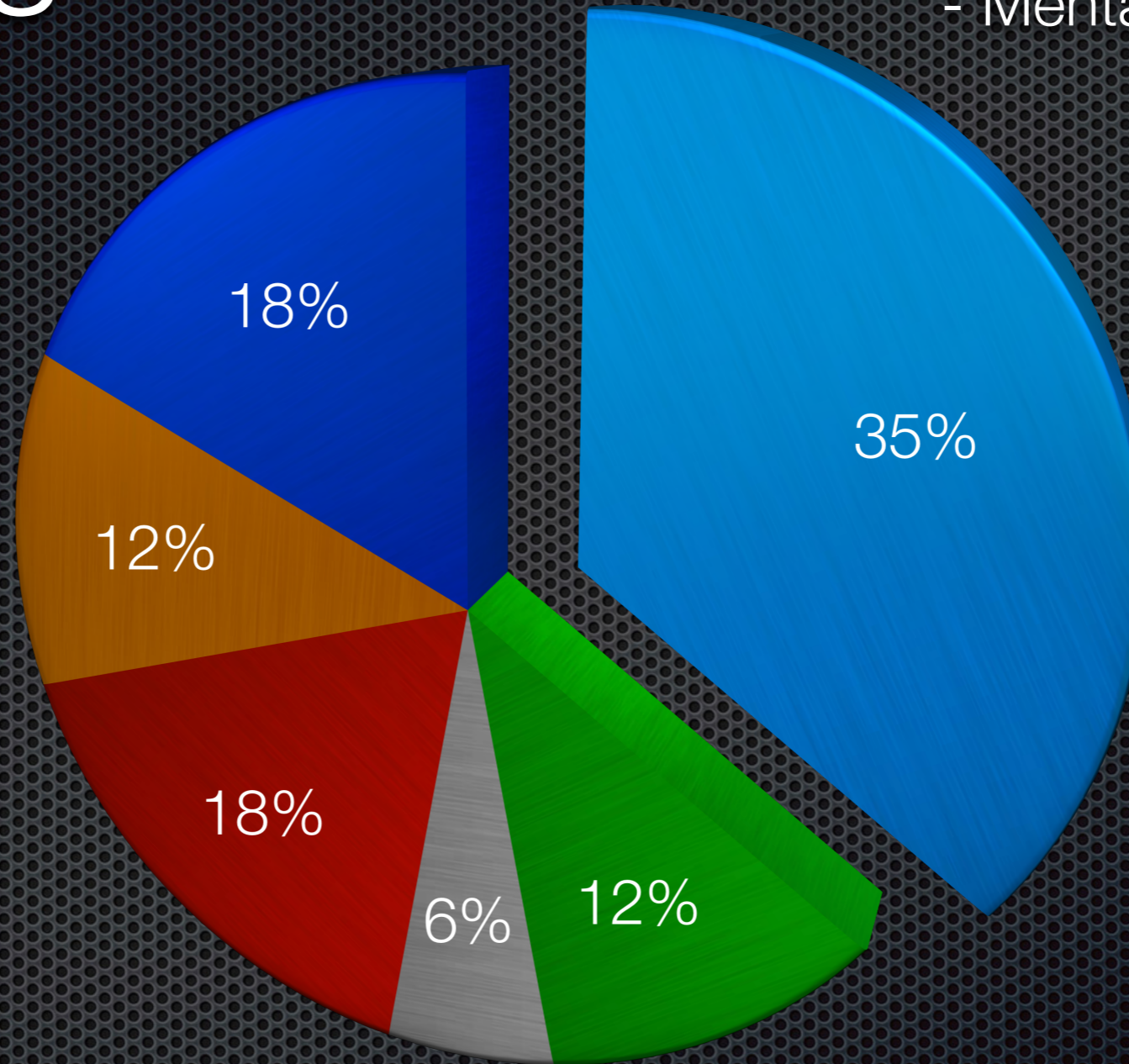
# Results



Permanent disqualification due to medical problems

# Results

Total 17 cases  
- Physical 11 cases  
- Mental 6 cases



# Results

Total 25,806 pilot-years

Disease	Cases	Percent	Rate per 1,000 pilot-years
Cancer	2	11.76	0.078
Cardiovascular	1	5.88	0.039
Cerebrovascular	3	17.65	0.078
Trauma	2	11.76	0.116
Vision	3	17.65	0.116
Mental Illness	6	35.29	0.233
Total	17	100	0.659

# Permanent disqualification

- ✦ Cerebrovascular disorders (3)
  - ✦ Ischemic stroke with left hemiplegia
  - ✦ Transient ischemic attack (TIA)
  - ✦ Parkinson's disease and prostate tumors
- ✦ Cardiovascular disorder (1)
  - ✦ Cardiac arrhythmia with mitral valve stenosis

# Permanent disqualification

- ✦ Trauma (2)
  - ✦ Cervical spines dislocation with spinal cord injury (both cases)
- ✦ Vision (3)
  - ✦ Central retinal arterial occlusion
  - ✦ Retinal vein occlusion with retinal tear
  - ✦ Strabismus, from thyroid ophthalmopathy

# Permanent disqualification

- ✦ Cancer (2)
  - ✦ Diffuse large B-cell lymphoma stage IIb (Non-Hodgkin lymphoma)
  - ✦ Metastatic soft tissue sarcoma
- ✦ Mental, mood and personality disorders (6)
  - ✦ Stress and fear of flying after the aircraft accident
  - ✦ Depressive disorder (3 cases)
  - ✦ Mood disorder (2 cases)



# Comparative data for permanent disqualification rate of Thai, Norway and Sweden

- Total number of pilot-years is higher when compare with Norwegian pilots (25,806 vs. 12,552 pilot-years) but the permanent disqualification rate by medical problems is significantly much lesser.

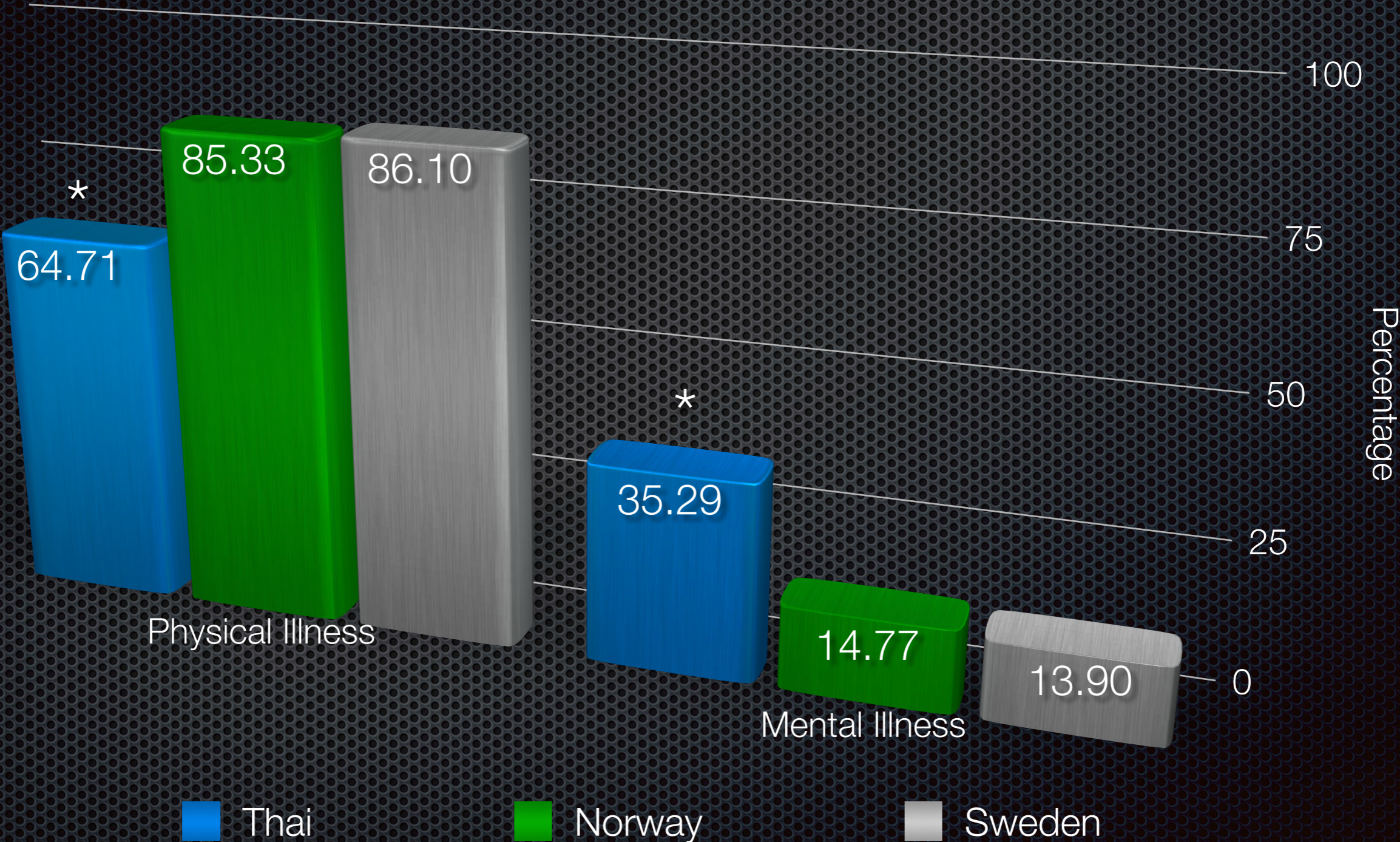
	Thai (2010-2017)	Norway <sup>2</sup> (2006-2010)	Sweden <sup>3</sup> (2010-2013)
Disqualification rate (per 1,000 pilot-yers)	0.659	6.77	4.89

2. Høva JK, Thorheim L, Wagstaff AS. *Medical reasons for loss of license in Norwegian professional pilots.* *Aerosp Med Hum Perform.* 2017; 88(2):146-149.

3. Transportstyrelsen. *Luffart 2013 statistik (Aviation statistics 2013).* Swedish Transport Agency. Sweden: 2014.

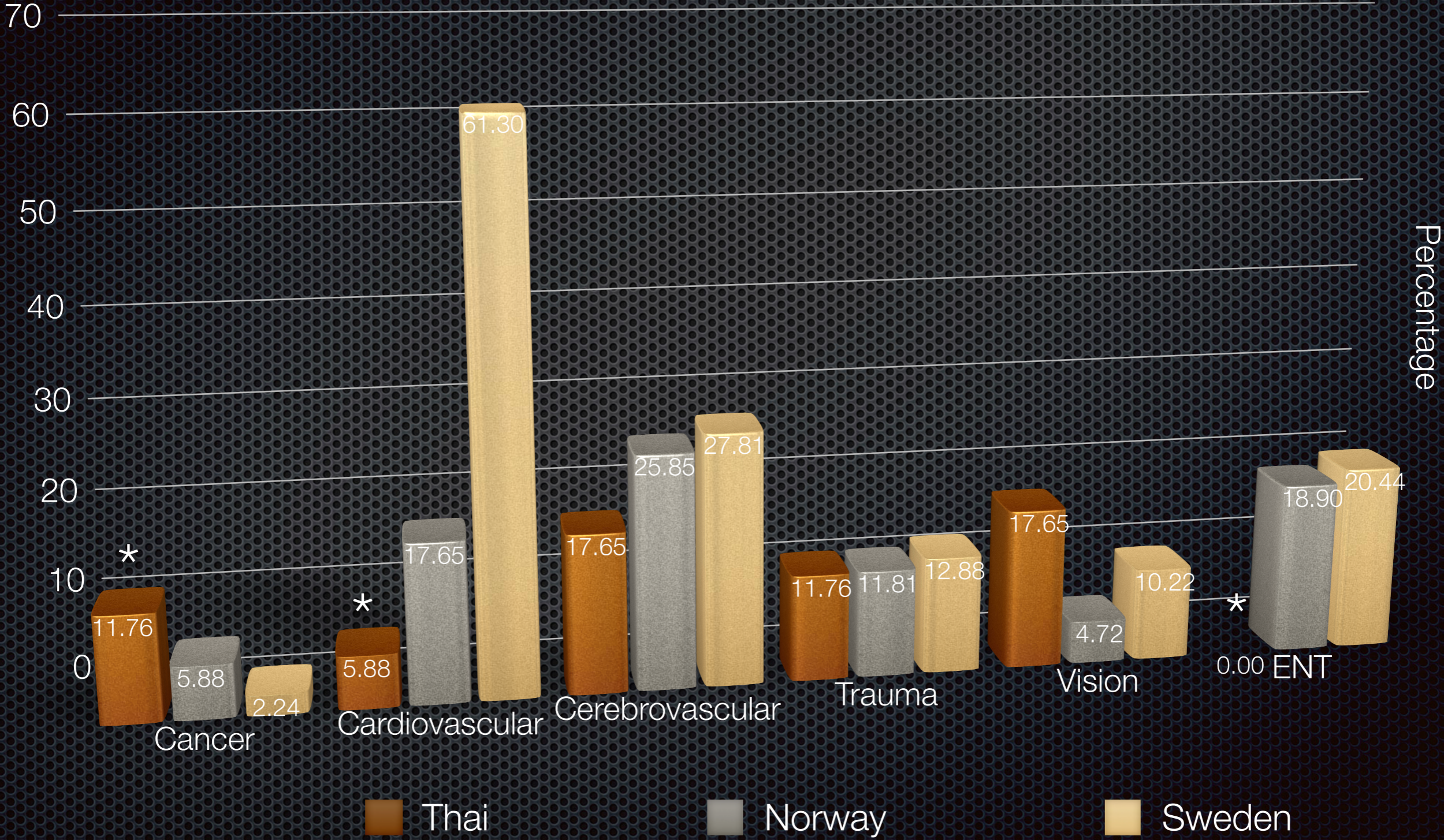
# Comparative data by disease categories

\*P-value < 0.001



# Comparative data of physical illness

\*P-value < 0.05



# Discussion

- ✦ This is the first study of permanent disqualification in Thai commercial pilots due to medical problems.
- ✦ For physical illness, the permanent disqualification by visual disorders and cancer in Thai commercial pilots is higher than international data.
- ✦ In the cancer group, this type of cancer is not the common type in Thailand, also not relate to long term working in the low pressure, high altitude environment.<sup>4</sup>

# Discussion

- Eventhough there are psychological and personality testing in the selection process, the rate and ratio of mental illness, emotional and personality disorder in Thai pilots that lead to permanent disqualification is higher than other international study.
- The very low number of physical illness also made the proportion of mental illness relatively increased.

# Discussion

- ✦ In the last decade, the production of qualified pilots can not keep up with the rapid growth of airline industry and increasing number of aircraft production.
- ✦ In Asia, there is a higher demand than other continent. Thailand is one of the country with the highest demand for pilots.
- ✦ However, aviation training institute in Thailand could produce only 200-300 students annually.

# Discussion

- ✦ A commercial pilot has a lot stress, such as any unpredictable situation in flight, separation from family.
- ✦ In addition, the more strict security standard, policy of the airline in cost reduction, also tough competition in airline industry could increase these stress.<sup>5</sup>
- ✦ There is a tendency that flight hours will be higher and shorter rest period due to inadequate numbers of pilots, although not exceed duty time regulations.<sup>6</sup>

5. Bennett S.A. *How Pilots Live: An Examination of the Lifestyle of Commercial Pilots*. 2014  
Oxford: Peter Lang International Academic Publishers.

6. Rodionov ON. *Evaluation of the impact of an increased flight duty period on flight safety*.  
Gig Sanit. 2008 Jul-Aug;(4):41-5

# Discussion

- ✦ Less common physical illness may come from better selection of student pilots, and most of them have high self-discipline, healthy lifestyle.
- ✦ Compare the unemployment rate of Thai pilots with other occupational groups as a result of health problems is much higher.
- ✦ The results of this study could monitor and improve Thai pilot health status for the better safety and better pilot selection in the future.



# Conclusion

- ✦ Compare with international data, the rate of permanent disqualification due to health problems in Thailand is rather very low but the ratio of mental problems to physical illness is higher.
- ✦ For physical illness, the disqualification rate caused by cancer and visual problems are higher than international data, but the disqualification rate caused by cardiovascular diseases is lower.

# Conclusion

- ✦ This is the first study regarding permanent disqualification of Thai commercial pilots due to health problems.
- ✦ This should bring us awareness and alertness to seek specific target prevention and health promotion for Thai commercial pilots.
- ✦ Further investigations regarding the causes of disqualification are needed.



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