飛行還是比較安全，信不信由你

飛安基金會 譯

印尼當局一月繼續搜尋於十二月墜入爪哇海的亞航A320班機

儘管MH370、MH17和十二月的亞航航班失事投下一道陰影，2014年是航空史上相當安全的一年。

根據Ascend全球飛航顧問公司說法，2014年是飛航安全最佳的一年。在大家對馬航損失兩架波音777客機及年底前失事的亞航空巴A320航機事故記憶猶新時，許多人對此結論可能頗為意外。

Ascend的空中安全暨保險組長Paul Hayes宣稱2014年全球空中事故死亡率為每238萬架次出一起死亡事故，根據此數據2014年勉強算是最安全的一年。

由於馬航的MH17是在烏克蘭東部被飛彈擊落，所以不算空難死亡而是戰爭死亡事故。而失蹤的馬航MH370目前狀況雖然未明（見圖表一），仍被算在死亡空難事故率中。但若最後這班飛機確認為機上人員蓄意導致失蹤(如許多馬國及他國專家所信)而被排除於空難事故，2014年的數據會更好，因為MH370是2014年單一事件臆測最多人死亡的事故。

改進

Hayes說在此之前飛安最好的是2012年，每237萬架次出一起死亡事故。2010年後，2013年是每191萬架次一起死亡事故，2011年是140萬架次一起死亡事故，2010年是每126架次一起死亡事故。過去五年平均為每175萬架次一起死亡事故。

2014年雖然是這麼安全，但馬航兩件飛安災難扭曲人們對飛安的看法。Ascend公司2014年飛安觀感調查報告一開始就引用實際媒體代表看法標題—「又一架飛機墜毀…飛行安全嗎?」研究報告知後總結為何有此種觀感：大家只會記得2014年有兩架馬航波音777客機失事，共510位乘客和27名組員喪生。

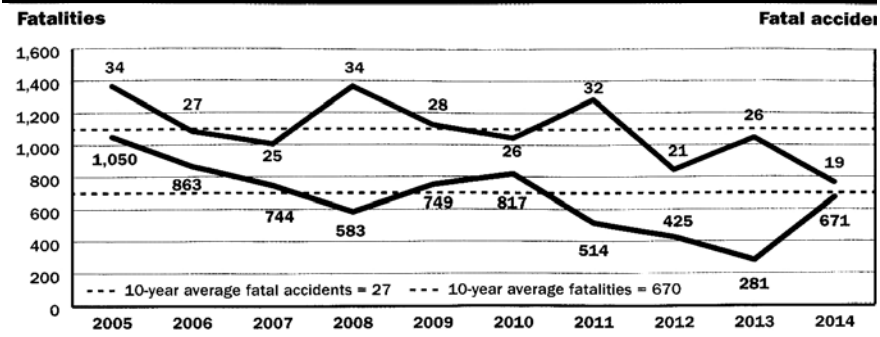
「第一架777飛機失蹤被許多人認為肇因於不法干擾的結果，第二架客機又被擊落(與飛安無關而是與保安有關)，詭異的狀況仍造成大眾對飛安產生陰影。」乘客在機上死亡的事實讓緊張的旅客無法辨別死亡的原因。

Ascend的死亡事故率數據涵括所有14人座(含)以上的商用噴射及渦輪螺旋槳飛機，Flight International雜誌每年公布的全球飛安回顧報告，仍罕見的將活塞發動機商用飛機意外事件包括在內，因此數據雖相似，分析結果大同小異，但數字會有些微差異。Flight International雜誌和

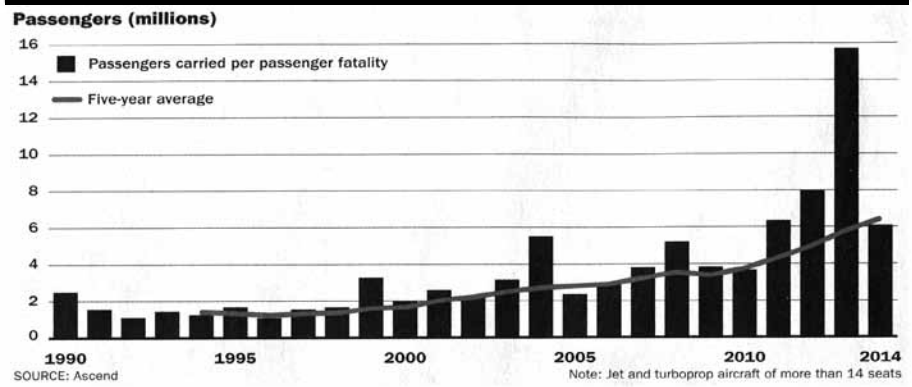
七月台灣復興航空一架ATR 72-500飛機試圖降落馬公時墜毀

七月時馬航MH17在烏克蘭東部墜毀被認為戰爭傷亡而非意外事件

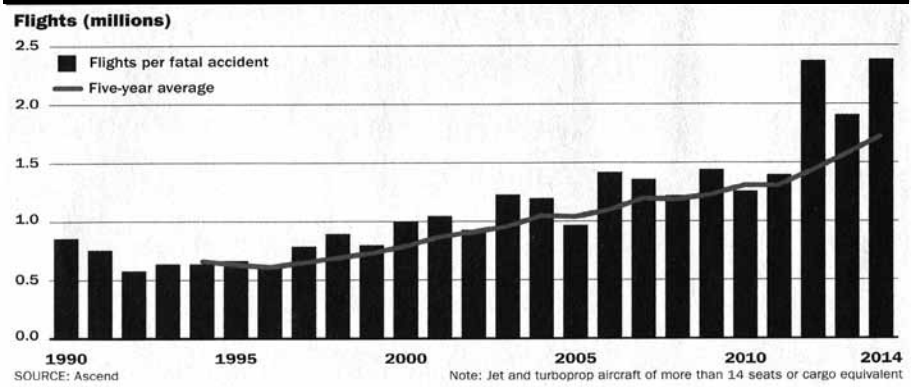
2005-2014年世界死亡事故與死亡人數



2014年每死亡事故搭載乘客數(不包括暴力滋擾行為)



2014年每死亡事故架數(不包括暴力滋擾行為)



Ascend一樣將MH17列為戰爭死亡而非失事，MH370列為飛安事件除非有證據證明有其他原因。

詮釋

根據Flight International雜誌參考資料顯示2014年有19起死亡事故(最低數字)，共671人喪生(見圖表一)。與2013年的26起死亡事故共281人喪生相比，死亡人數降至最低。之前最好的2012年僅21起死亡事故，但有425人喪生。選擇飛安“最佳”年是取最少起死亡事故而非死亡人數，這是因為死亡人數多寡多與失事飛機大小有關。所以2014年共671人喪生是因為大型噴射機和大型螺旋機失事。若最後MH370證實非意外，數字被剔除出意外事件總數，2014年數字將降為18起死亡事故共432人喪生。

死亡乘客人數影響每位乘客的生存數據多於死亡事故件數，因此2014年在這方面退步了，三起死亡事故造成機上所有人員死亡。Ascend的2014年數字顯示每600萬名被載乘客有一人因失事死亡；2013年死亡事故較多但死亡人數少了許多，約每1600萬名被載乘客有一人因失事死亡(見圖表二)。此測量法可決定商用航空作為大眾運輸系統有多安全，但對登機的旅客而言這數字有點不切實際，他當然希望整架飛機平安抵達，而不是高興知道個人生存率是600萬分之一。

2014年有兩架飛機情況類似—巡航時在熱帶緯度，組員在飛機失蹤前都呼叫告知需改為手動飛行避開壞天氣。第一架是七月飛往馬利的阿爾吉爾航空MD80客機，第二架是十二月飛越爪哇海上空的亞航A320客機(見圖表二)，兩架飛機的組員都因尚未發表的原因無法掌控飛機。

值得注意的是近年來有另外兩個案例有類似情形：一個是2009年6月1日墜毀的法航AF447班機，另一架是2005年8月16日墜毀的西加勒比海航空MD82客機。AF447在南大西洋熱帶輻合帶失蹤，當時駕駛員手動駕駛避開暴風雲層，飛機的飛行記錄器與駕艙錄音帶最後被修復，透露駕駛不到一分鐘時間被結冰相關失速訊息混淆，很快就失去控制。另一架MD82飛機從巴拿馬市飛往馬丁尼克，當駕駛互相討論如何處理機身和發動機結冰情況時飛機失去控制，飛機由航管引導降落因他們無法保持高度。當飛機從33000英呎在3分半鐘內墜毀在地時，已知失速警告器有發出警告。

或許2014年由MH370和MH17所帶出重要的訊息，就是要保命，保安和運行及機械安全一樣重要。ICAO一委員會正在觀察像MH17飛過或靠近衝突地區的風險，但要決定解決MH370謎團的方法較為困難。若如同臆測飛機的飛行航道經由機上某人蓄意報復地計畫執行，這人又如何通過認證?

2014年每死亡事故搭載乘客數(不包括暴力滋擾行為)

譯自Flight International 13-19 January 2015

BELIEVE IT OR NOT, IT'S SAFER TO FLY

Despite public perception, 2014 was an extraordinarily good year for aviation safety-but the gloom of MH370, MH17 and December's Air Asia disaster casts a long shadow over the positive figures

During January, Indonesian authorities have been trying to recover the Air Asia Airbus A320 that crashed into the Java Sea on 28 December

Calendar year 2014 has turned out to be the best 12 months ever for airline safety, according to Ascend, a Flightglobal advisory service. For many this may seem an unexpected result, given the perceptions created by the high-profile losses of two Malaysia Airlines Boeing 777s and the crash of an Air Asia Airbus A320 just before year-end.

Ascend's director or of air safety and insurance. Paul Hayes, reveals that the global airline fatal accident rate in 2014 was one fatal accident per 2.38 million flights. On this basis 2014 was, narrowly, the safest year ever.

The figures exclude the 17 July loss over eastern Ukraine of Malaysia flight MH17, on the grounds that it was shot down by a guided missile and is considered a war risk loss, not an accident. Although doubts exist about the status of missing Malaysia flight MH370 (see accident tables), that incident has been included in the fatal accident rates. If the disappearance were, however, eventually confirmed as the result of a deliberate act by someone on board – as many experts in Malaysia and elsewhere now believe – and if it were therefore excluded from the accident statistics, its absence would make the 2014 figures even more impressive. MH370 was the largest single loss of the year in terms of people presumed dead as a result of the incident.

IMPROVING

The previous best airline safety year was 2012, with a fatal accident rate of one per 2.37 million flights, says Hayes. In the other years since 2010, the fatal accident rate was one per 1.91 million flights in 2013, one per 1.4 million in 2011 and one per 1.26 million in 2010. The average for the last five years is now about one fatal accident per 1.75 million flights.

The 2014 Malaysian disasters, however, have twisted perceptions of airline safety, despite 2014 being such a safe year. Ascend's 2014 Safety Perception

Survey starts by quoting an actual newspaper headline fairly representative of media reaction: "As and another jet crashes…is it safe to fly?" The study later sums up why this appears to be the perception: "The year 2014 will be remembered for the loss of the two Malaysia Airlines Boeing 777s, resulting in 510 passenger and 27 crew deaths.

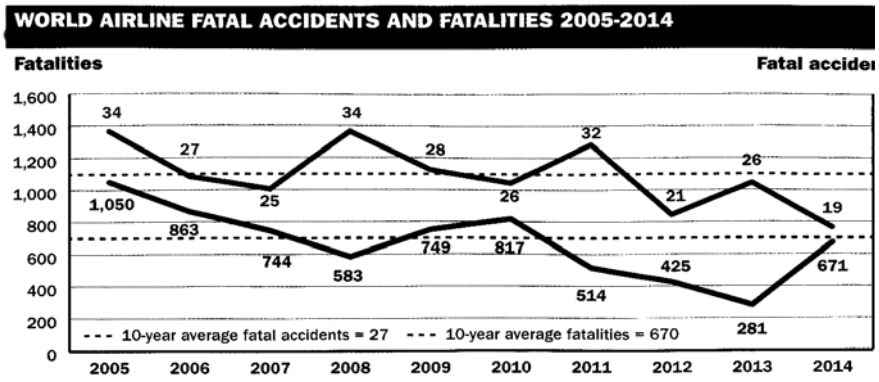
"Given the strange circumstances surrounding the disappearance of the first 777, which is considered likely due to some form of unlawful interference, and the shooting down of the second, these losses would seem to be more to do with security than safety. Nevertheless, they still would have had a significant impact on public perception of airline safety." Nervous travellers do not distinguish between the causes of death.

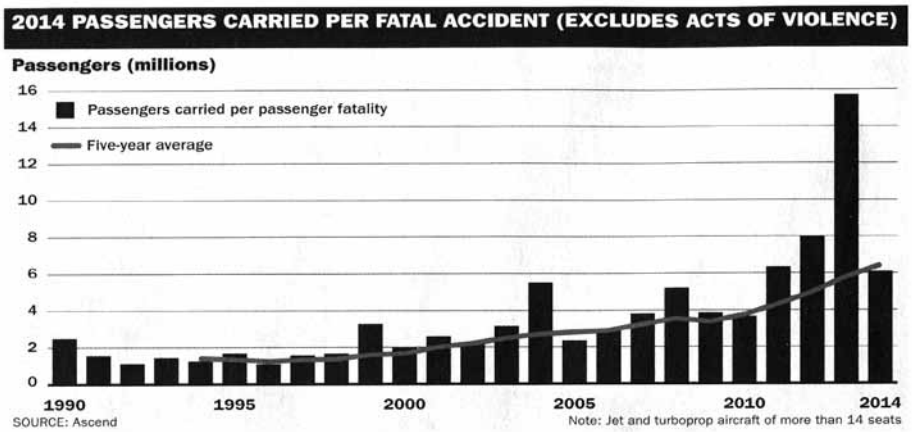
The fact is that passengers died in aircraft. Nervous travellers do not distinguish between the causes of death.

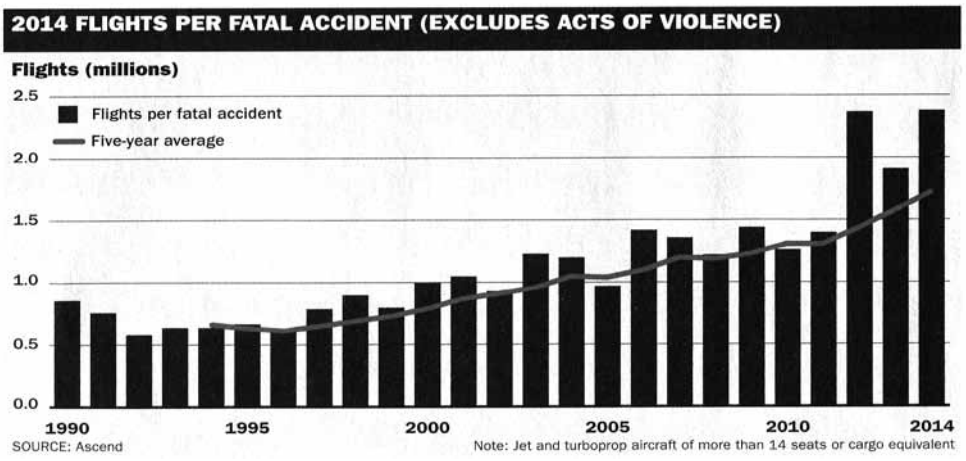
Ascend's fatal accident rate statistics include all commercial airline flights by jets and turboprops with a seat capacity of 14 and above. Each year Flight International publishes figures in its global airline safety

A Trans Asia Airways ATR 72-500 crashed as it trued to land in Magong, Taiwan, in July

The downing of Malaysia Airlines flight MH17 over eastern Ukraine in July is considered a war risk loss rather than accident







review which also include relatively rare—but still existing – accidents to commercial airline flights operated with piston-engined aircraft. As a result, although the figures are similar and tell the same broad story, the numbers differ slightly. *Flight International's* 2014 figures, like those of Ascend, do not inclued MH17 on the grounds that it was a war loss, but assume until evidence suggests otherwise that MH370 was an accident.

INTERPRETATION

According to the *Flight International* terms of reference, there were 19 fatal accidents – the lowest ever figure – and 671 fatalities in 2014 (see graph). This compares with 2013, in which the respective figures were 26 fatal accidents and 281 fatalities – the number of deaths an all-time low. In the previous best year – 2012 – there were only 21 fatal accidents, but 425 fatalities. The logic of choosing the "best" year as the one with the lowest number of fatal accidents rather than deaths is that the fatalities total depends mostly on the size of the aircraft that crashes. So 2014's total of 671 fatalities results from the fact that three of the accidents involved big jets, and one a large turboprop. If evidence emerges that MH370 was not an accident and its figures were removed from the accident tables, the 2014 numbers would fall to 18 fatal accidents and 432 fatalities.

The statistical risk to each individual passenger is affected more by the number of passengers that died than the number of fatal accidents. As a result 2014 took a backward step in this respect, as three big jets suffered fatal accidents with the subsequent loss of everyone on board. The Ascend 2014 figures show that 6 million passengers were carried for every one that was killed in a jet accident, whereas in 2013 – in which the number of fatal accidents was higher, but the resulting fatalities much lower – almost 16 million passengers were carried for every one that died (see graph). This measure is useful for determining how safe commercial aviation is as a mass pubic transport system, but it feels rather artificial to a passenger who, on boarding a flight, hopes the entire flight will be safe, rather than taking comfort in the fact that his personal chance of survival is 6 million-to-one in favour.

There were two accidents in 2014 that occurred in similar circumstances – both were in tropical latitudes at cruising level, and just before they disappeared their crews radioed that they ended to manoeuvre to avoid bad weather. The first was an Air Algerie/Swiftair Boeing MD-80 over Mali in July, the second an AirAsia Airbus A320 over the Java Sea in December (see accident list). For reasons yet to be established, neither crew managed to retain control of the aircraft.

It is worthy of note that in recent years the same circumstances have had a similar result in two other cases. One was the 1 June 2009 loss of Air France flight AF447, and the other the 16 August 2005 loss of a West Caribbean Airways McDonnell Douglas MD-82. AF447 was lost in the inter-tropical convergence zone over the

South Atlantic Ocean while the pilots were known to be manoeuvring to avoid storm clouds. The aircraft's flight data and cockpit voice recorders were eventually recovered, revealing that the pilots had been confused by an icing-related loss of airspeed information for less than a minute, but quickly lost control of the aircraft. The MD-82, flying from Panama City to Martinique, went out of control while the pilots were discussing how to deal with the airframe and engine icing the aircraft seemed to be suffering in the cruise. The crew were cleared by air traffic control to descend because they said they could not maintain altitude. The stall warning is known to have operated during the descent, which took 3.5 min from cruise at 33,000ft to impact with ground.

Perhaps the primary message from 2014 – delivered by the fate of flights MH370 and MH17 – is that security is as important as operational and engineering safety for preserving life. An ICAO commission is looking at the risks of flying over or close to conflict zones as MH17 did, but determining what to do about a mystery like MH370 is more difficult. If, as conjectured, the aircraft's flightpath was deliberately planned and executed by a person on board with some kind of revenge motive, how can such a person be recognized?

A de Havilland Canada DHC-6-300 Twin Otter operated by Nepal Airlines crashed in February

From Flight International 13-19 January 2015