

Pilots' age limits workshop

# **Review of Medical Assessments Of Commercial Air Transport Pilots over age 60 in China**

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# Disclosure Information



## Guo Weilong

- Master of Public Health
- 2013-2017 CDC of China Assistant researcher
- 2017- CAAC Principal Staff Member
- I have no financial relationships to disclose.
- I will not discuss off-label use and/or investigational use in my presentation

- Rules, regulations and sarps
- Medical exams and Psychological tests
- Age & Limits
- Opportunities and Challenges

## ICAO

November 23, 2006

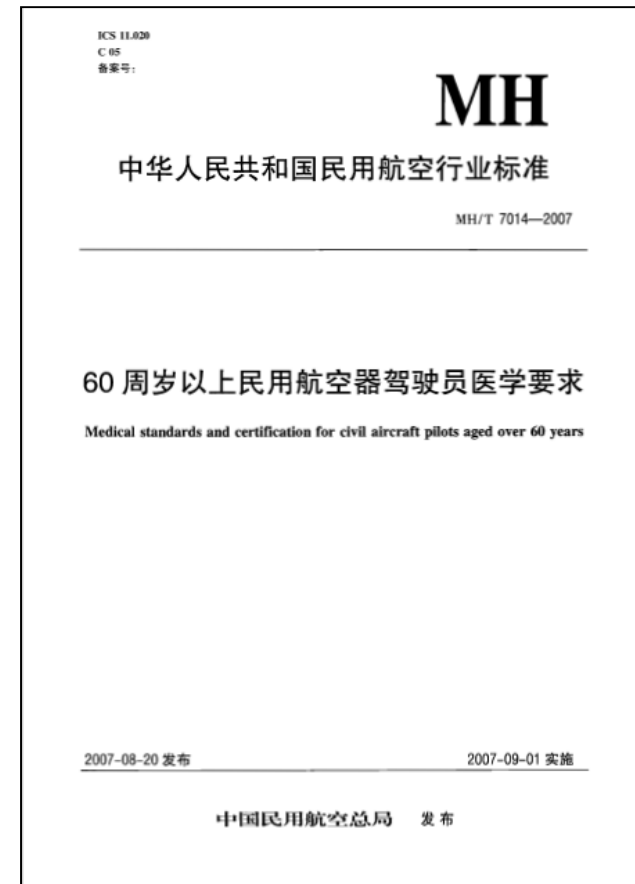
- Amendment 167 to Annex 1
- Retirement age for commercial pilots from 60 to 65 yrs
- Limitation: multicrew operations & the operating copilot must be younger than 60.

# Rules & Regulations



## CAAC

- 2007.8, medical standards published
- 2008.8, Advisory program published, initiating the over ages operation application



# Application requirement



## Flying skills requirement

- Working as a captain continuously for a CCAR-121 operator at least for the last 5 years
- No human-factor-related flight accidents or severe flight in the last 3 years
- More than 400 hours flight experience in the last 3 years
- Passed All the trainings, tests in the last 3 years

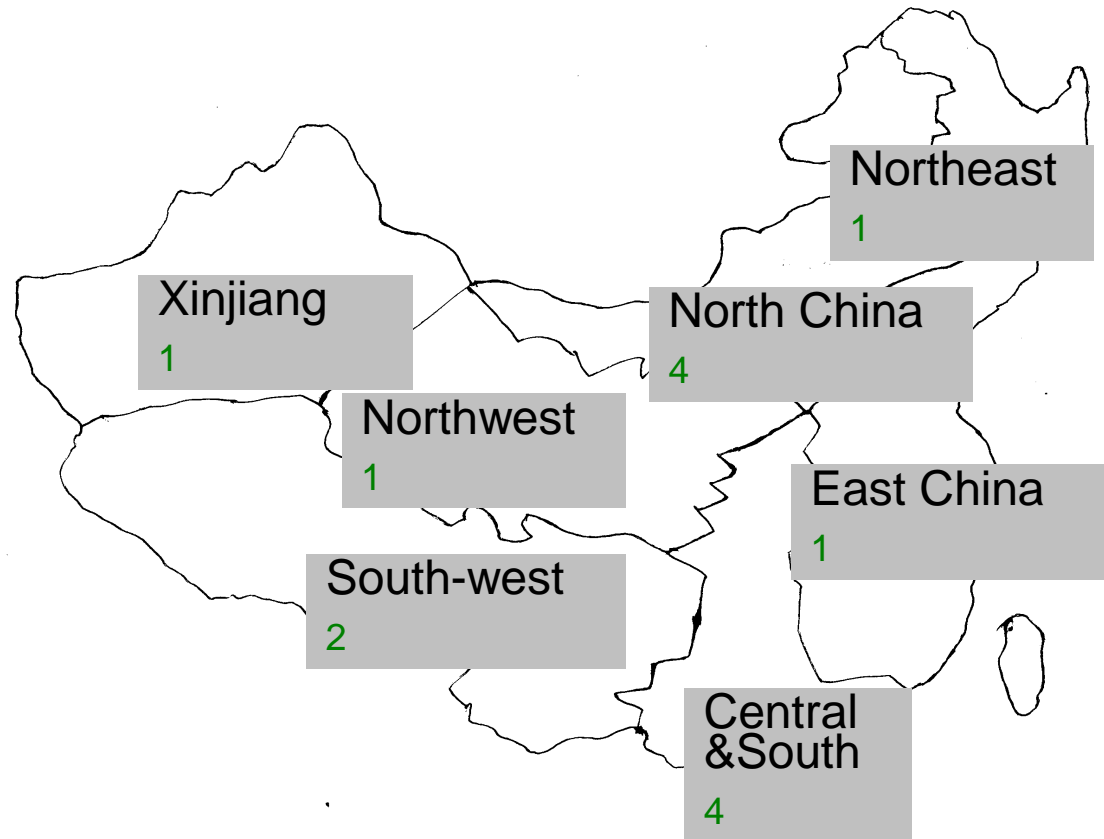
# Medical Assessment



CAAC



- ✓ Individual application
- ✓ Operator's recommendation
- ✓ Only one medical center authorized, of 14 Medical examine centers(AeMC).
- ✓ Certificated by regional administration, with some operations limits.



# Medical Assessment

## Physical assessment

- Cardiovascular risks evaluation

## Mental assessment

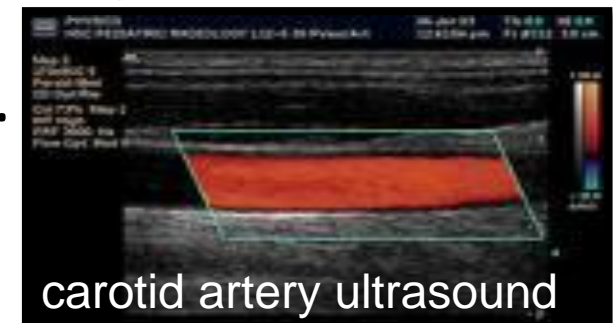
- Cognitive function evaluation





## Cardiovascular risks evaluation

- Routine test: blood tests(lipids ,glucose & glycosylated hemoglobin, stress ECG, echocardiography, carotid artery ultrasound, etc.
- Cardiovascular risks evaluation: mainly about screening CHD(coronary heart disease, CHD).



## Cardiovascular risks evaluation

- Cardiovascular risk factors :
  - ✓ Hypertension
  - ✓ Hyperlipemia
  - ✓ Impaired fasting glucose or Impaired glucose tolerance, or diabetes mellitus
  - ✓ Obesity
  - ✓ Carotid artery plaque

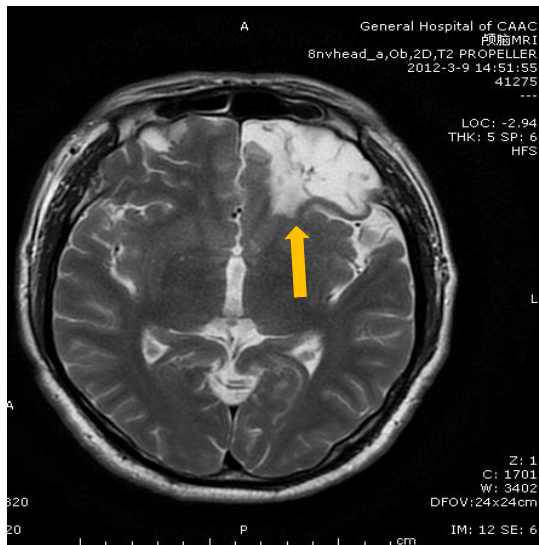
## Cardiovascular risks evaluation

- For the applicants with over 1 Cardiovascular risk factors
- Coronary artery CT scan would be required.



## Physical assessment

- 2012.6, Cranial magnetic resonance imaging and angiography (Non-enhancement) are required at the first application.



# Medical Assessment

## Mental assessment

### ■ Cognitive function evaluation



- Basic Cognitive Ability
  - Processing Speed
  - Working memory



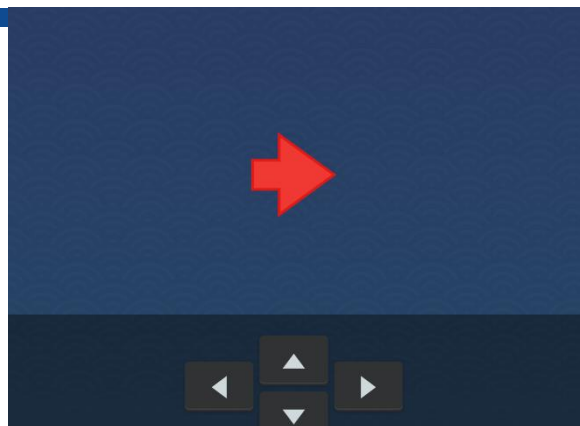
- Special Cognitive Ability
  - Psychomotor
  - Dual-Task



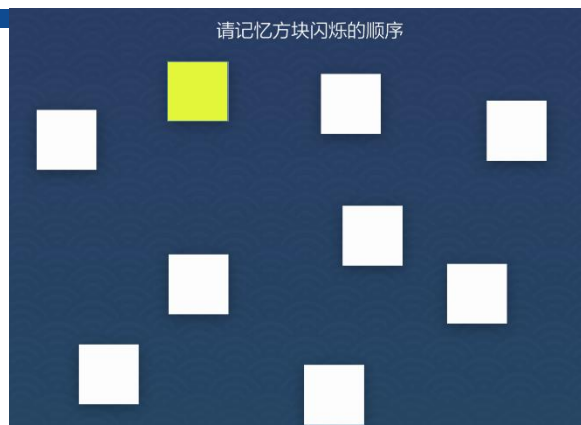
CAAC



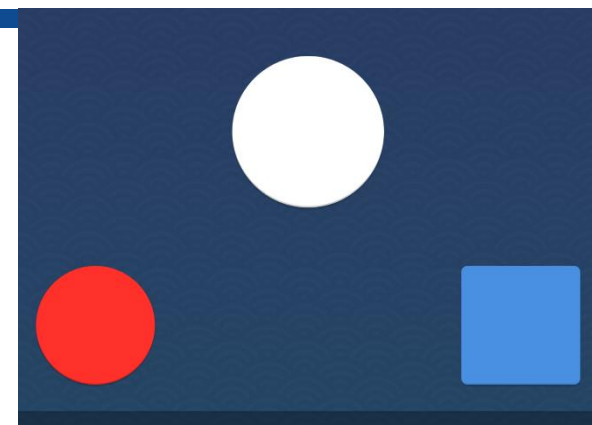
# Cognitive Function Tests



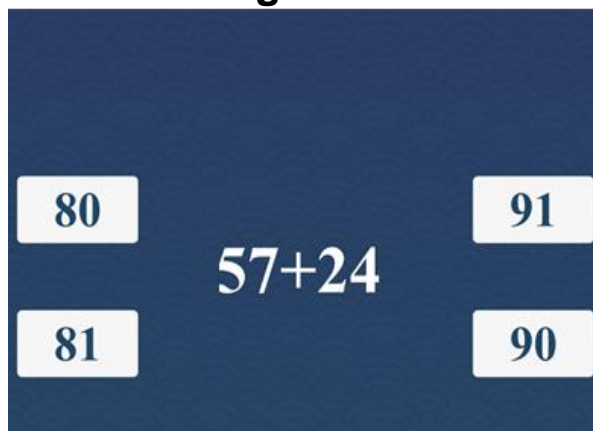
**Processing Speed**  
Choosing reaction time



**Memory**  
Space Short term memory span



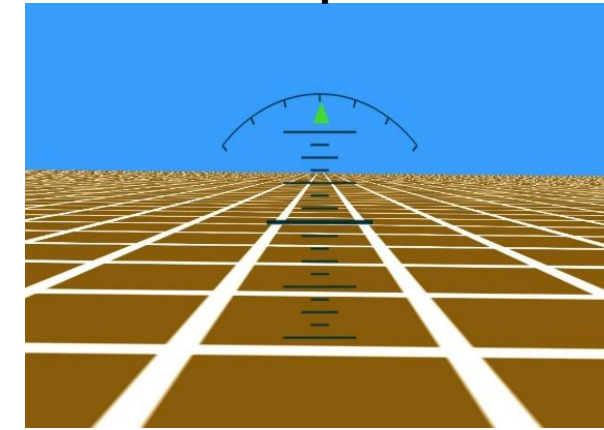
**Attention**  
Stroop test



**Reasoning and Computing**  
Math Test



**Spatial Cognition**  
Distance and Speed perception



**Psychomotor**  
Flight control test

## Results

- There were 781 person-time applications since 2008 to 2018.
- In the last 5 years, there were 30 to 50 applicants every year.
- Of all the applications, about 3.58% is denied, about 6.79% is uncompleted, and about 89.63% is medically fit to fly.
- Among the denied applications, CHD is the major cause(53.57%).  
And it's the same in the quitting scenario, the percentage is(62.26%)

## Results of Cognitive function evaluation

- Criterion: the applicant who fails to pass any 2 test s of the 6, would not pass.
- There was one quitter and every applicants passed the tests.

|           | 60~65 岁组<br>(n=157) | 50~59 岁组<br>(n=36) | 40~49 岁组<br>(n=33) | 30~39 岁组<br>(n=36) |
|-----------|---------------------|--------------------|--------------------|--------------------|
| 加工速度 (秒)  | $1.03 \pm 0.14$     | $1.03 \pm 0.18$    | $0.95 \pm 0.16$    | $0.82 \pm 0.14$    |
| 工作记忆 (长度) | $6.79 \pm 1.68$     | $6.12 \pm 1.99$    | $7.73 \pm 3.96$    | $9.06 \pm 3.46$    |
| 心理运动 (成绩) | $22.40 \pm 8.76$    | $15.46 \pm 5.74$   | $18.39 \pm 7.23$   | $26.05 \pm 8.66$   |
| 双重任务 (成绩) | $23.99 \pm 20.45$   | $14.89 \pm 11.79$  | $23.54 \pm 18.14$  | $46.12 \pm 21.35$  |



## Results of Cognitive function evaluation

|           | 60~65 岁飞行员<br>(n=157) | 60~69 岁常模<br>(n=142) | 50~59 岁常模<br>(n=111) |
|-----------|-----------------------|----------------------|----------------------|
| 加工速度 (秒)  | $1.03 \pm 0.14^{ab}$  | $1.50 \pm 0.44$      | $1.29 \pm 0.32$      |
| 工作记忆 (长度) | $6.79 \pm 1.68^{ab}$  | $4.30 \pm 1.80$      | $5.00 \pm 1.70$      |

## Age is not an independent risk factor

- Elder are not necessarily weak, even sometimes they looks like that way.



## Age is not an independent risk factor

- Younger are necessarily more advanced, but not necessarily safer, even sometimes they looks like that way.



**Boeing 737 Classic**  
**First flight : 1984**



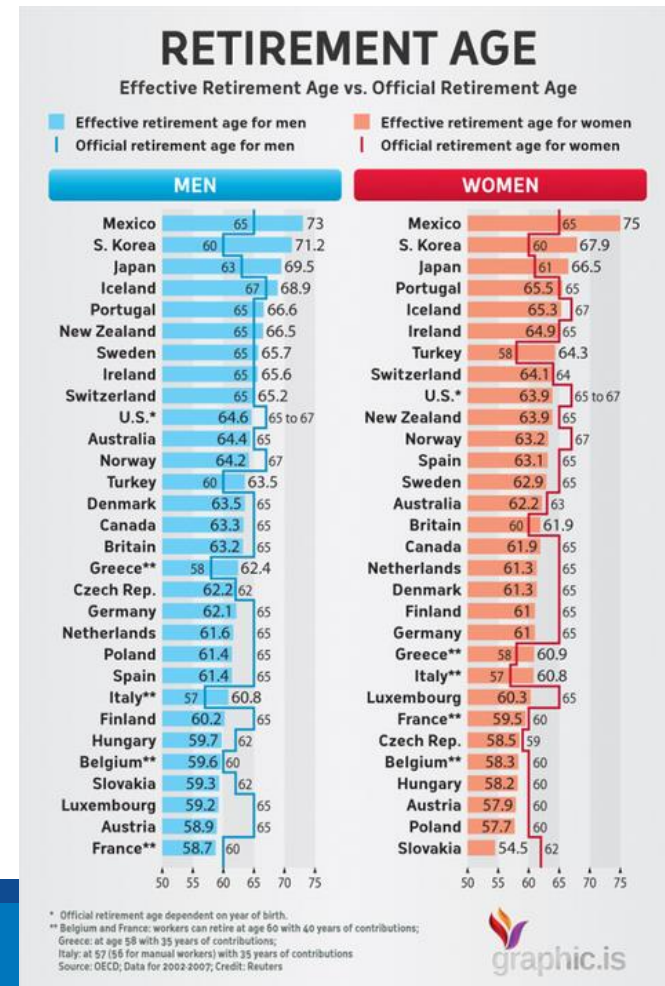
**Boeing 737 NG**  
**First flight : 1997**



**Boeing 737 MAX**  
**First flight : 2016**

## Retirement age is not base on medical science

- Official retirement age
- Effective retirement age
- It's complicated and should be individualized in the best scenario.



## From pure medical consideration

- Cardiovascular risks
- Brain function
- ...
- What are the right indicators ?
- Where is the key test?

# Conclusion

## 60 should not be the limit

- You might too young to be a commercial pilot.
- You will never be judged as too old to be a commercial pilot.





# Conclusion

## Our elders are a treasure house

- Let's help the industries to keep our treasure house live long and prosper along with the career which they indicated their whole life to.



Listen To Your Elders  
Advice Not Because There  
Always Right.. But Becase  
They Have More  
Experiences Of Being  
Wrong.

[www.EnlighteningQuotes.com](http://www.EnlighteningQuotes.com)

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***Thank you!***

