

## Session C1: 14.40 – 15.30

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# An Overview of Actuarial Assessment of Damages in Personal Injury Litigation in Asia

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# Agenda

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1. Personal Injury: Law, Insurance & Actuarial Science
2. Personal Injury Laws in Asia
3. Common Law Jurisdictions
  - 3.1 Hong Kong
  - 3.2 Singapore
  - 3.3 Malaysia
4. Civil Law Jurisdictions
  - 4.1 China
  - 4.2 Japan
  - 4.3 Taiwan
5. Concluding Remarks

# 1. Personal Injury: Law, Insurance & Actuarial Science

# What is Personal Injury?

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- Personal injury is the name given to the branch of tort law that covers any wrong or damage done to another (**bodily injury**).
- A personal injury can happen at work, in a traffic accident, because of a faulty product or a faulty repair, because of a mistake during medical treatment, or because you slipped and fell on a wet floor or pavement.
- The personal injury can be physical or psychological but, to be considered actionable, it must occur due to the negligence or unreasonably unsafe actions of your employer, a manufacturer, your doctor, your landlord, or some other person or organization who owes you a duty of ordinary care.

# Personal Injury and Liability Insurance

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- Motor Insurance
- General Liability Insurance
- Medical Malpractice Liability Insurance
- Product Liability Insurance
- Homeowner Liability Insurance

## Personal Injury and Liability Insurance

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- Recently statistics showed that the highest general insurance premium growth rates in 2013 were recorded in Emerging Asia (15 percent). Almost all of this growth was in motor insurance.
- A research conducted by IFoA identified high levels of personal injury claims as a key inflationary driver for the motor insurance industry in UK. In addition to the **whiplash** claims, large bodily injury claims ( $> \text{£}100\text{k}$ ) have experienced material annual inflation over the past number of years.

## Personal Injury and Liability Insurance

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- This Section presents recent developments in the determination of personal injury claims in various jurisdictions in Asia (Hong Kong, Singapore, China, Taiwan, Malaysia and Japan).
- We will explore how insurance companies in this region can react to such developments and how actuaries can contribute in this area over time.



## 2. Personal Injury Laws in Asia

# Personal Injury Laws in Asia

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## Common Law Jurisdictions

- Hong Kong: SAR of China, 1997
- Singapore: Independence, 1965
- Malaysia: Independence, 1957; Motor Tariff, Motor Act
- India: Independence, 1947; Motor Vehicles Act 1988

## Civil Law Jurisdictions

- China
- Japan
- Taiwan

## 3.1 Common Law Jurisdictions: Hong Kong

## Personal Injury Claims in Hong Kong

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- The basic principle underlying the assessment of the quantum of damages is *restitutio in integrum*, which implies that the amount of compensation awarded should put the successful plaintiff in the position he or she would have been had the tortious action not been committed.
- In Hong Kong personal injury litigations, successful claimants usually receive their compensations as a **lump sum**.
- The main advantage of a lump sum payment is that the proceedings can be concluded with a '**clean break**' between the parties.

# The Multiplicand/Multiplier Approach

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- When assessing future pecuniary loss in personal injury litigations in common law countries, courts often use the multiplicand/multiplier approach.

$$\textit{Lump Sum} = \textit{Multiplicand} \times \textit{Multiplier}$$

- The multiplicand (the future annual loss of income and the annual consequential expense, such as the cost of care) is established by evidence put before the judge, who then has to decide an appropriate multiplier.
- The multiplier is used to discount the future pecuniary values into a present lump sum, considering the time value of money, the plaintiff's mortality and contingencies other than mortality.

## Choosing Multiplier: The Conventional Approach

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- The conventional approach to selecting multipliers is based on the **applied wisdom** of the courts over many years (via comparisons with multipliers used in similar cases).
- The conventional approach does **not** take into account the mortality experience or the local economic environment.
- **Problems** → it is practically impossible to find any truly comparable cases that have similar factors in respect of age and gender of the victims, mortality experience of the general population, inflation, taxation, and investment return rates.

## Choosing Multiplier: The Conventional Approach

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- The Actuary and the Law, (July 2000), Lord Brennan QC:

*The conventional approach when I was first at the Bar was often encapsulated by the calculation of the multiplier by which you simply divided the expected life-span by 2 and added 1 up to a maximum 16 for loss of earnings and 18 for whole of life loss! Surely an active role of the actuary in the law would have produced more sophisticated techniques than that!*

## Choosing Multiplier: The Actuarial Approach

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- Under this approach, multipliers are computed on the basis of the **actuarial equivalence principle** → actuarial present value of a unit amount of annual future losses or expenses.
- The actuarial approach has been using in many common law jurisdictions, including the UK, Australia, Canada, and U.S.A..
- For example, in 1998 the House of Lords (now known as the UK Supreme Court) approved actuarial evidence (**Ogden Tables**, now in its 7th Edition) as the **primary** method of assessing future pecuniary loss, rather than viewing it as a mere check. (*Wells v Wells* [1999] 1 AC 345)



# A Summary of the English Ogden Tables

Table number	Multipliers	Formula
1, 2	Multipliers for pecuniary loss for life	$\bar{a}_x$
3, 4	Multipliers for loss of earnings to pension age 50	$\bar{a}_{x:\overline{50-x} }$
5, 6	Multipliers for loss of earnings to pension age 55	$\bar{a}_{x:\overline{55-x} }$
7, 8	Multipliers for loss of earnings to pension age 60	$\bar{a}_{x:\overline{60-x} }$
9, 10	Multipliers for loss of earnings to pension age 65	$\bar{a}_{x:\overline{65-x} }$
11, 12	Multipliers for loss of earnings to pension age 70	$\bar{a}_{x:\overline{70-x} }$
13, 14	Multipliers for loss of earnings to pension age 75	$\bar{a}_{x:\overline{75-x} }$
15, 16	Multipliers for loss of pension commencing age 50	$(50-x) \bar{a}_x$
17, 18	Multipliers for loss of pension commencing age 55	$(55-x) \bar{a}_x$
19, 20	Multipliers for loss of pension commencing age 60	$(60-x) \bar{a}_x$
21, 22	Multipliers for loss of pension commencing age 65	$(65-x) \bar{a}_x$
23, 24	Multipliers for loss of pension commencing age 70	$(70-x) \bar{a}_x$
25, 26	Multipliers for loss of pension commencing age 75	$(75-x) \bar{a}_x$
27	Discounting factors for term certain	$v^n$
28	Multipliers for pecuniary loss for term certain	$\bar{a}_{\overline{n} }$

## Choosing Multiplier: The Development in Hong Kong

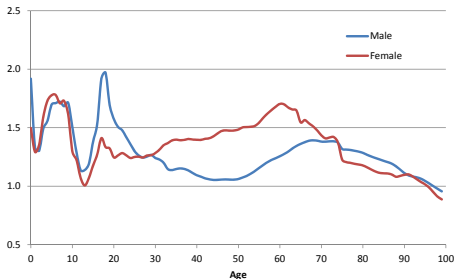
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- Before 1995, courts in Hong Kong use the conventional approach to choosing multipliers, without admitting any actuarial evidence.
- Chan Pui Ki (1995), HK Court of First Instance → decided to consider actuarial evidence (Multiplier=30); Chan Pui Ki (1996), HK Court of Appeal. However, Chan Pui Ki (1996), HK Court of Appeal → rejected using actuarial evidence (Multiplier=15)
- It should be noted that judicial decisions in the United Kingdom are no longer binding in the Hong Kong Courts after July 1997, the impact of the decision of the House of Lords in 1998 of using actuarial tables stirred a hot debate.
- Chan Pui Ki's case did not go to HK Court of Final Appeal after 1997; presumably settled outside the court.

# Constructing Hong Kong Multiplier Tables

- Even if the Hong Kong Court accepts actuarial evidence, we should not simply use the UK Odgen Tables in Hong Kong.

Ratios of death probabilities ( $q_x$ ):  
England and Wales to Hong Kong in 2000



## Constructing Hong Kong Multiplier Tables

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- Our research team constructed *Personal Injury Tables Hong Kong*
- Now in its 3rd Edition (2013). Previous editions (2005, 2003). Funded by three grants from the Hong Kong Research Grants Councils.
- Based on projected mortality rates by Hong Kong Census & Statistics Department.
- Adopted the same methodology as the UK Ogden Tables.
- The Hong Kong Personal Injury Tables were first published in 2003 and initially had no legal authority. However, they have been widely used by judges at first instance **informally**.

## Some Cases Between 2003 - 2012

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Case Name	Plaintiff's age at trial	Decided Multiplier	Actuarial Approach
Pang Ping Sum [2005] CFI	44	9	9.05
Wong Lai Chuen [2006] CFI	36	14	13.79
Yeung Wai Ming [2009] CFI	33	15	15.26
Ho Ho Min [2006] CFI	29	14 (??)	17.01
Mung Yee Ki [2005] CFI	26	15 (??)	18.16

## A Landmark Case

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- A join action case Chan Pak Ting/Yuen Yiu Tung/ Li Ka Wai (2013).
- Low interest rate environment; and involved two very young female victims.



# The “Chan Tables” in Hong Kong

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- On 18 September 2012, the Court of First Instance in Chan Pak Ting [1] HCPI 235/2011, has decided that
  - *Personal Injury Tables Hong Kong* will be referred as “Chan Tables”
  - Furthermore,  
*... the Chan Tables should be the starting point in assessing the proper multiplier and therefore, in the future, there should be less need to refer to previous case law of multiplier precedents.*



# Discount Rate

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- A crucial factor of the multiplier tables
- It is the real rate of return **after** inflation (deals with inflation risk and investment return risk)
- Time horizon: length of plaintiffs' future needs
- Real rate of return from a **prudent** investment



## Discount Rates in the UK

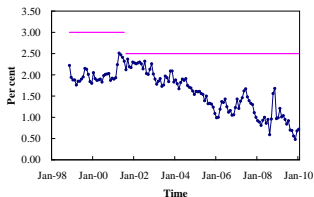
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- *Cookson v Knowles* [1979, HL] – 4.5%
- *Wells v Wells* [1998, HL] – 3% (based on ILGS)
- *Damages (Personal Injury) Order* 2001 – 2.5% (set by the Lord Chancellor under the statutory authority conferred to him in s.1 of the Damages Act 1996)
- The discount rate has remained unchanged since the Lord Chancellor made the Order in 2001. There has been tremendous pressure on the Lord Chancellor to re-consider the discount rate.

# Discount Rates in the UK

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- “Time to Review the Discount Rate in Personal Injury Claims,” Law Society Gazette (2010), JPIL (2010)



- Recent Developments:
  - Lord Chancellor, Rt Hon Ken Clarke, agreed to review the discount rate (Nov 2010)
  - Damages Act 1996: The discount rate - how should it be set? (Oct 2012)
  - Damages Act 1996: The Discount Rate: Review of the Legal Framework (May 2013)
  - Ministry of Justice (MoJ) decided to “further delay” the review of the discount rate (Sept 2014)

## Discount Rates in Hong Kong

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- *Cookson v Knowles* [1979, HL] – 4.5%
- *Chan Pui Ki* [1996, HKCA] – 4.5%
- The discount rate of 4.5% has remained unchanged from 1979 to 2012.
- In 2013, *Chan Pak Ting* [2] – Justice Bharwaney held that there should be three different discount rates to cater for plaintiffs with different periods of future needs:
  - -0.5% for plaintiffs with needs not exceeding 5 years.
  - 1% for plaintiffs with needs not exceeding 10 years.
  - 2.5% for plaintiffs with needs exceeding 10 years.

# Setting the Discount Rate: the Philosophy

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- The fundamental question:

*How much net investment risk should/can be taken by the plaintiff using the lump sum for his/her period of future needs?*

- Minimal? Conservative? Prudent?
- Single rate vs Stepped rates (depending on length of needs)?
- How to translate this philosophy to actual investment portfolio(s)?

## Situation after Chan Pak Ting [2013]

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- At first, the defendants filed appeals to the decisions. But later in 2013, all appeals were withdrawn.
- Around 97% personal injury cases were settled using actuarial tables without going through courts in Hong Kong after Chan Pak Ting [2013].
- The use of Actuarial Tables in Hong Kong was further affirmed at the Court of Appeal: Chan Wai Ming v Leung Shing Wah CACV 266/2013 .

## 3.2 Common Law Jurisdictions: Singapore

# Personal Injury Claims in Singapore

POH HUAT HENG CORP PTE LTD v HAFIZUL [2012]

LAI WAI KEONG EUGENE v LOO WEI YEN [2013]

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The Honourable Judge of Appeal Justice Chao Hick Tin:

*The approach that should be adopted in Singapore – In a sense, it may be more objective to use actuarial tables because they are based on projections of the mortality rate of the general population. They provide a more scientific basis for discounting a lump sum award to account for premature death.*

*Adjustments may also be made for contingencies by using actuarial data. However, such actuarial tables are not generally available in Singapore.*

# Personal Injury Claims in Singapore

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- The Singapore version of Chan Tables has been just published by Thomson Reuters Singapore early this year by our research team.





## 3.3 Common Law Jurisdictions: Malaysia

## Personal Injury Claims in Malaysia

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- In Malaysia, since the enactment of the Civil Law (Amendment) Act 1984 on 1 October 1984, a **fixed statutory formula** for calculating the multiplier has been in force.
- It is, in fact, a rather unique method of calculating loss of future earnings compared to other jurisdictions. The multiplier is obtained by the following rules:

Age of Plaintiff	Multiplier
30 or below	16
31-54	$(55 - \text{Age at Injury}) \div 2$
55 or above	0

- The obvious disadvantage of the Malaysian method is that there is little, if any, actuarial and economic evidence in support of the formula.

## 4.1 Civil Law Jurisdictions: China

# The Basic Principle

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- Civil Law regimes: China (Germany, Japan and many others)
- Still using the Multiplicand/Multiplier approach, but methods for choosing Multiplicands and Multipliers are fixed by laws in China:

**最高人民法院关于审理触电人身损害赔偿案件若干问题的解释【生效日期:2001-01】**

Judicial Interpretation of the PRC Supreme People's Court on Personal Injury Claims caused by Electric Shock

**最高人民法院关于审理人身损害赔偿案件适用法律若干问题的解释【生效日期:2004-05】**

Judicial Interpretation of the PRC Supreme People's Court on the Governing Laws of Personal Injury Claims

**最高人民法院关于审理铁路运输人身损害赔偿纠纷案件适用法律若干问题的解释【生效日期:2010-03】**

Judicial Interpretation of the PRC Supreme People's Court on Personal Injury Claims caused by Rail Accidents

## Multiplicand — China's approach

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- The multiplicand, the future annual loss of income, and annual consequential expense, such as cost of care, is established by evidence put before the judge in **common law countries**. It involves **subjective** judgment.
- In **China**, the multiplicand is fixed according to the province and area of residence (rural or city) of the plaintiff. See sections 25 and 28 of the Explanation by the High Court of China in May 2004. It is **objectively** determined by government census data.

## Multiplicand — China's Approach

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- For residents in **city and town areas**, the multiplicand is last year's average disposable income per person in that province published by the National Bureau of Statistics of China (NBSC).
- For residents in **farming and rural village areas**, the multiplicand is last year's average gross income per person in that province published by the National Bureau of Statistics of China (NBSC).

# Multiplicand — China's approach

## Average Gross Income Per Person by Province (Farming and Rural Village Areas)

6-25 分地区农村居民人均纯收入  
Per Capita Net Income of Rural Households by Region

单位: 元		(yuan)					
地 区	Region	2000	2005	2010	2011	2012	2013
全 国	National Average	2253.4	3254.9	5919.0	6977.3	7916.6	8895.9
北 京	Beijing	4604.6	7346.3	13262.3	14735.7	16475.7	18337.5
天 津	Tianjin	3622.4	5579.9	10074.9	12321.2	14025.5	15841.0
河 北	Hebei	2478.9	3481.6	5958.0	7119.7	8081.4	9101.9
山 西	Shanxi	1905.6	2190.7	4736.3	5601.4	6356.6	7153.5
内 蒙 古	Inner Mongolia	2038.2	2488.9	5529.6	6641.6	7611.3	8595.7

# Multiplicand — China's approach

## Average Disposal Income Per Person by Province (City and Town Areas)

6-21 分地区城镇居民人均可支配收入

Per Capita Disposable Income of Urban Households by Region

单位: 元

(yuan)

地 区	Region	2000	2005	2010	2011	2012	2013
全 国	National Average	6280.0	10493.0	19109.4	21809.8	24564.7	26955.1
北 京	Beijing	10349.7	17653.0	29072.9	32903.0	36468.8	40321.0
天 津	Tianjin	8140.5	12638.6	24292.6	26920.9	29626.4	32293.6
河 北	Hebei	5661.2	9107.1	16263.4	18292.2	20543.4	22580.3
山 西	Shanxi	4724.1	8913.9	15547.7	18123.9	20411.7	22455.6
内 蒙 古	Inner Mongolia	5129.1	9136.8	17698.2	20407.6	23150.3	25496.7



## Multiplicand — Issues in China's approach

- Very large differences among regions; even within a region, large city-rural differences

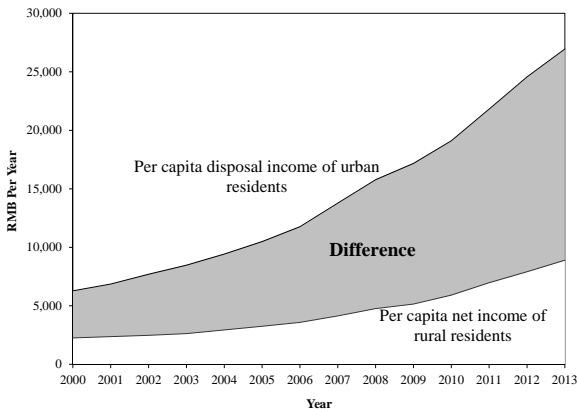
**Selected Multiplicands in 2013 (in RMB per year)**

Province	City	Rural	CR Ratio
上海 Shanghai	43,851	19,595	2.24
北京 Beijing	40,321	18,338	2.20
浙江 Zhejiang	37,851	16,106	2.35
黑龙江 Heilongjiang	19,597	9,634	2.03
青海 Qinghai	19,499	6,196	3.15
甘肃 Gansu	18,965	5,108	3.71
全国 National Total	26,955	8,896	3.03

- The maximum ratio is Shanghai-city vs Gansu-rural  
 $= (43,851/5,108) = 8.59$ .

## Multiplicand — Issues in China's approach

- The trend has been widening:



## Multiplicand — Issues in China's approach

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- In December 2005, three teenage girls died in the same motor accident in Chongqing.
- The court awarded the families of two 'city' victims more than **RMB 200,000** each in damages, while the family of the third 'rural' victim received only **RMB 58,000**.
- It stirred a heat debate in the society about the issue of 'same life, different price'  
同命不同价
- The family of the rural victim appealed to the higher court, but the original judgement was maintained.

## Multiplicand — Issues in China's approach

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- The implementation of Tort Law in 2010 has alleviated the issue of 'same life, different price'

中华人民共和国侵权责任法【生效日期:2010-07】

**Tort Law of the People's Republic of China**

第十七条规定：“因**同一**侵权行为造成**多人**死亡的，**可以**以相同数额确定死亡赔偿金。”

Article 17: Where the **same** tort causes the deaths of **several** persons, a uniform amount of death compensation **may be** determined.

- Some issues remain open:
  - Article 17: the meaning of 'Same', 'Several' and 'May be'
  - How to define a person's residence: *hukou*? normal living place? normal working place?

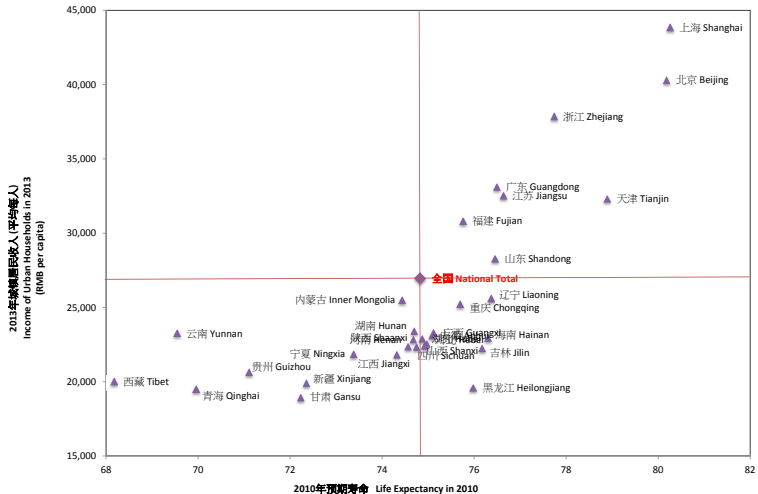
## Multiplier — China's approach

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- In this presentation we only focus on **Multipliers for pecuniary loss for life**. In China, they are **fixed** by law:

Age of Plaintiff	Multiplier
60 or below	20
61-74	Age 61 → multiplier 19 Age 62 → multiplier 18 ... etc Age 74 → multiplier 6
75 or above	5

- The multiplier only depends on the age of the victim and it does not relate to factors of gender and province (city-rural). It is well-known that population mortality rates are likely related to those factors.



# Discussions

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- Although the common law system (e.g. in Hong Kong) is remarkably different from the civil law system in China, the two legal systems share a similar ideological basis concerning assessment of damages in tort. When an innocent party is injured in a tort-based system of law as the result of the negligence of another party, the innocent party should be awarded **adequate** compensation.
- For many years, the multiplier figures were difficult to determine on any scientific basis in China due to insufficient interdisciplinary research in law, economics and actuarial mathematics.
- The authors of this project attempts to fill the gap by analyzing the relevant mortality data and developing the appropriate **Chinese actuarial multiplier tables**.

# Chinese Mortality Data

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- “Mortality modelling: living with unreliable data”



# Chinese Mortality Data

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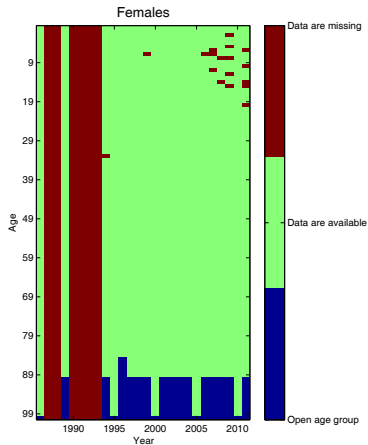
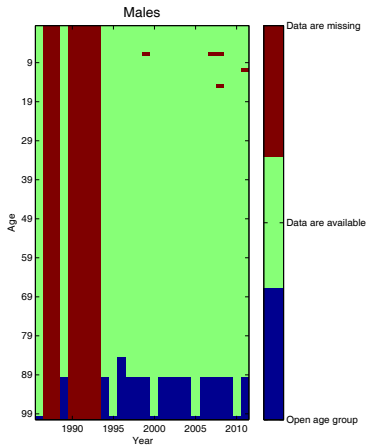
- “Mortality modelling: living with unreliable data”
  - Welcome to China!

# Chinese Mortality Data

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- “Mortality modelling: living with unreliable data”
  - Welcome to China!
- We have collected Chinese mortality and population data from various publications (of various years); for example:
  - *China Statistical Yearbook*
  - *China Population and Labor Yearbook*
  - *China Population and Employment Statistics Yearbook*
  - *China Population*
  - *China 1% Population Sample Survey*.
- The following lexis maps summarize the available mortality data for the Chinese population.

# Lexis Maps for Chinese National Population Data



## Provincial Population Data

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- We collected mortality data from 31 provincial level regions (22 provinces, 4 municipalities, 5 autonomous regions) in China
- These 31 regions are: Beijing, Tianjin, Hebei, Shanxi, Inner Mongolia, Liaoning, Jilin, Heilongjiang, Shanghai, Jiangsu, Zhejiang, Anhui, Fujian, Jiangxi, Shandong, Henan, Hubei, Hunan, Guangdong, Guangxi, Hainan, Chongqing, Sichuan, Guizhou, Yunnan, Tibet, Shaanxi, Gansu, Qinghai, Ningxia, and Xinjiang.
- **Only very limited data are available.** For example, we are not able to obtain age-specific mortality data by cities and provinces; however, we managed to get values of complete life expectancy at birth for selected provinces and major cities in years 1990, 2000 and 2010.

## Task 1: Estimating Provincial Historical Age-Specific Death Rates

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- One of the major challenges in constructing the Chinese provincial Personal Injury Actuarial Tables is that historical age-specific mortality data for different provinces are not available.
- To overcome this challenge, we hereby propose a method to derive age-specific death rates for different provinces and cities from the only demographic quantity (complete life expectancies at birth) that is available to us; and the aggregated national mortality data.
- Analogous to the contemporary data disaggregation problem in statistics.

## Task 1: Estimating Provincial Historical Age-Specific Death Rates

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- Notations

$m(x)$  : The central death rate at age  $x$ .

$q(x)$  : The probability that an individual dies during the age interval of  $[x, x + 1)$ .

$S(x)$  : The value of the survival function at age  $x$ .

$\omega$  : The assumed limiting age. In our calculations, we set  $\omega$  to 100.

$\pi(x)$  : The probability function for the age at death random variable. The values of  $\pi(x)$  can be computed by the following set of equations:

$$\pi(x) = S(x) - S(x + 1) \text{ for } x = 1, 2, \dots, \omega - 1.$$

- Same symbols with a superscript  $*$  are associated with the corresponding functions of a certain province of China.

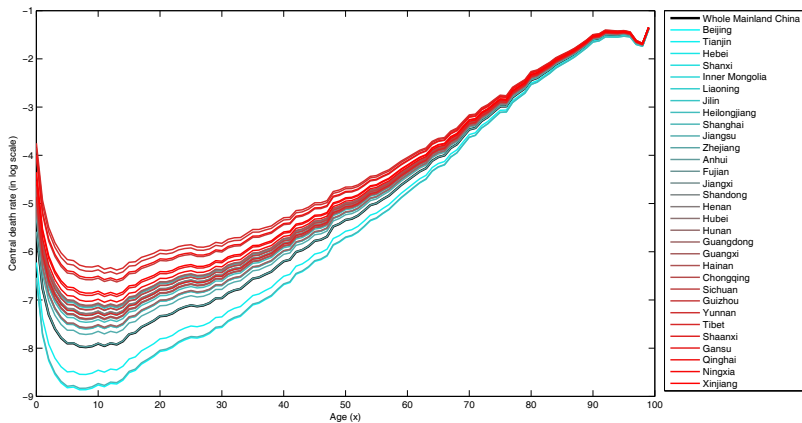
## Task 1: Estimating Provincial Historical Age-Specific Death Rates

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- Note that the **national** values of  $m(x)$ ,  $q(x)$ ,  $S(x)$ , and  $\pi(x)$  are known, while the **provincial** values of  $m^*(x)$ ,  $q^*(x)$ ,  $S^*(x)$ , and  $\pi^*(x)$  are not, but we do have  $e_0^*$ .
- Our goal is to derive  $\pi^*(x)$ , from which values of  $S^*(x)$ ,  $m^*(x)$  and  $q^*(x)$  can be calculated readily.
- The values of  $\pi^*(x)$  can be obtained by minimizing loss defined by the Kullback-Leibler information criterion – KLIC – (Kullback and Leibler, 1951), subject to the constraints

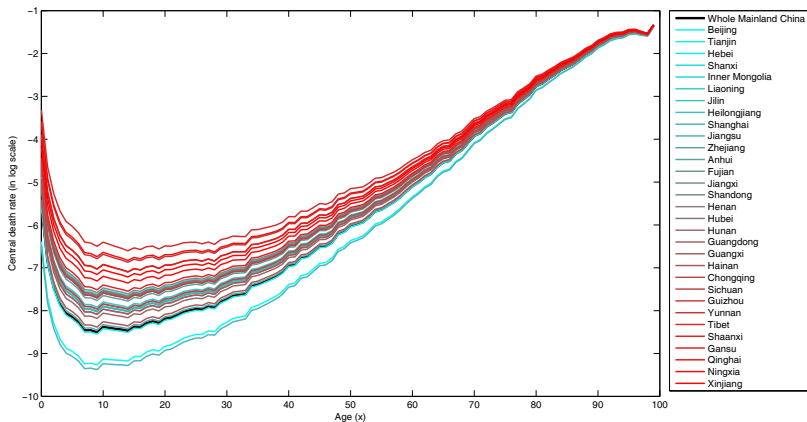
$$\sum_{x=0}^{\omega-1} \pi^*(x) = 1, \quad \text{and} \quad \sum_{x=0}^{\omega-1} x\pi^*(x) + 0.5 = e_0^*,$$

## Task 1 Results: Estimated central death rates for various provinces in China in 2010 — (Males)





## Task 1 Results: Estimated central death rates for various provinces in China in 2010 — (Females)



## Task 2: Constructing Multi-Population Stochastic Mortality Models

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- Given the results in Task 1 and the available data, the next step is to construct a multi-population stochastic mortality model.
- The objective of the Task 2 is to forecast future provincial life tables and compute the corresponding provincial personal injury multiplier tables for China.
- There are many families of stochastic mortality models that we can use. In this presentation, we only illustrate the results using [Model 1B1K](#). The technical details are provided in Li *et al.* (2013).

## Model 1B1K

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- Mathematically, **Model 1B1K** – also called the common factor model in Li and Lee (2005) – can be expressed as follows:

- The General Population

$$\ln m(x, t) = a(x) + b(x)k(t) + \epsilon(x, t), \quad (1)$$

- For Provinces

$$\ln m(x, t, i) = a(x, i) + b(x)k(t) + \epsilon(x, t, i), \quad (2)$$

for  $i = 1, 2, \dots, N$ .

## Results

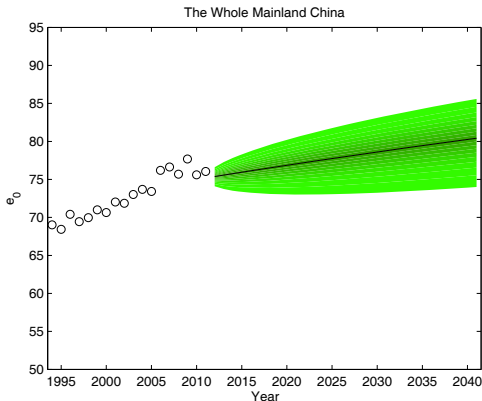
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- Assuming Poisson death counts, we derive the weighted log-likelihood of the model and it **can deal with the missing data problem** (see, e.g., Wilmoth, 1993; Renshaw and Haberman, 2003).
- The evolution of the time-varying parameter  $k(t)$  is modeled by a **simple** random walk with drift  $c$ .
- Estimates of the central death rates for sub-population  $i$  in a future year  $t > 2010$  can be calculated by the equation below:

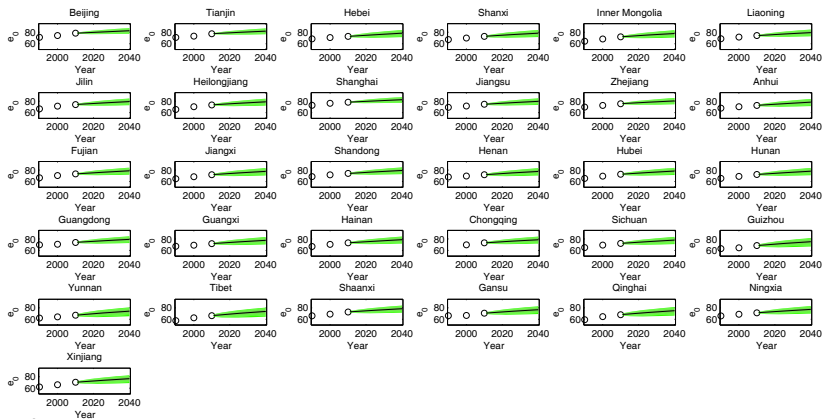
$$\hat{m}(x, t, i) = m(x, 2010, i)e^{\hat{b}(x)\hat{c}(t-2010)}.$$

## A forecast of the complete life expectancy at birth for the general population of China from 2012 to 2041 — (Males)

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# A forecast of the complete life expectancies at birth for various provinces in China from 2011 to 2040 — (Males)



## Chinese Personal Injury Multipliers

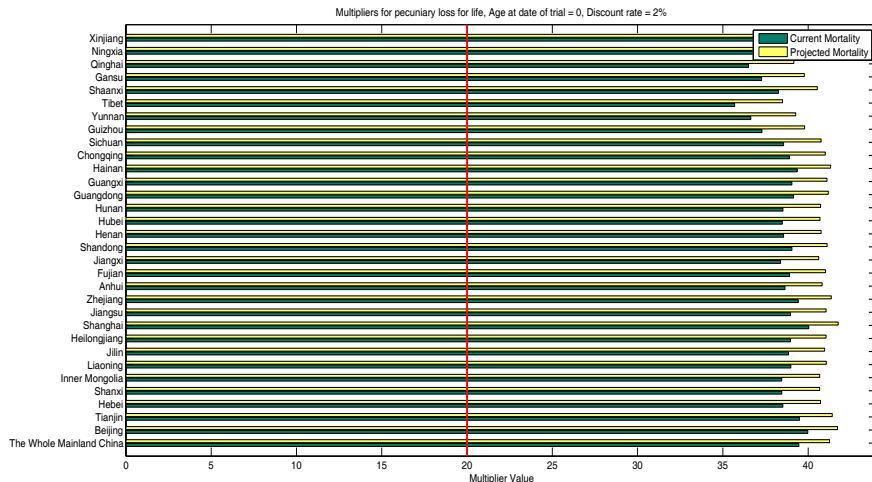
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- With all the results from Task 1 and Task 2, we are now able to compute the **actuarial multipliers** for each provincial level regions in China.
- Recall the current **statutory multipliers** fixed by the law in China:

Age of Plaintiff	Multiplier
60 or below	20
61-74	Age 61 → multiplier 19 Age 62 → multiplier 18 ... etc Age 74 → multiplier 6
75 or above	5

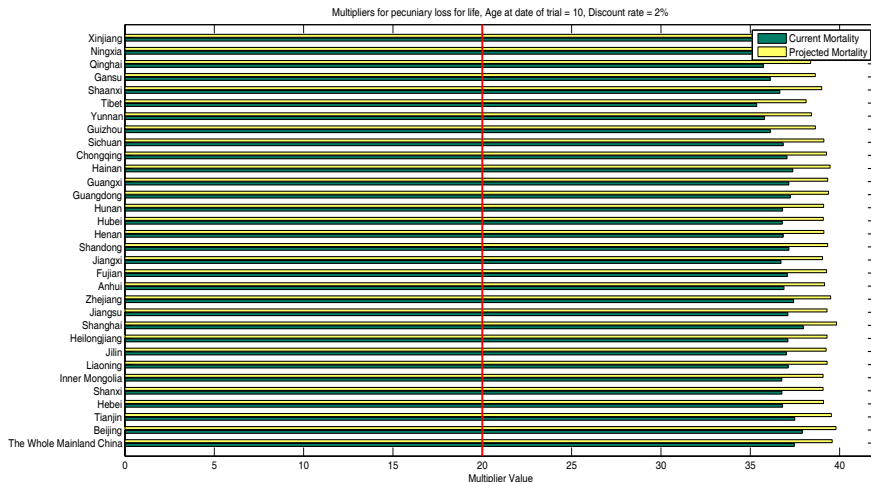
- The following graphs compare these two different values of multipliers for pecuniary loss for life, female victims at various ages at trial. A discount rate of 2% is assumed for the computation of actuarial multipliers.

# Female Victim at Age 0

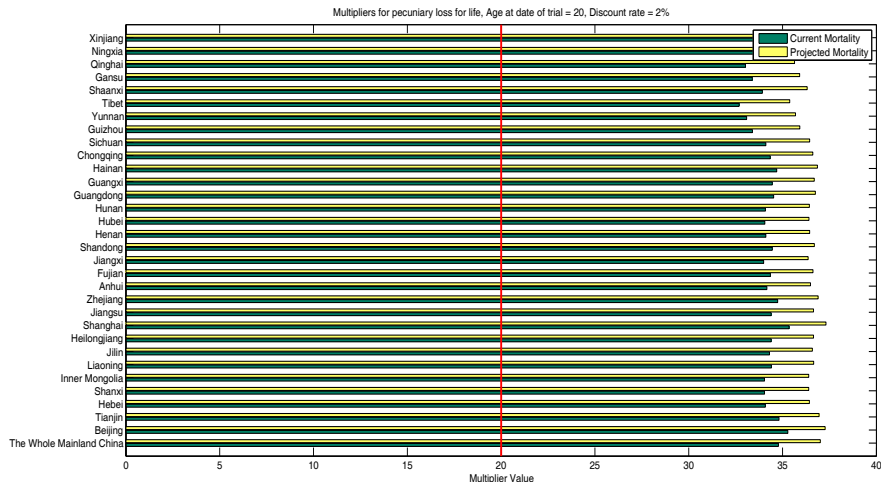




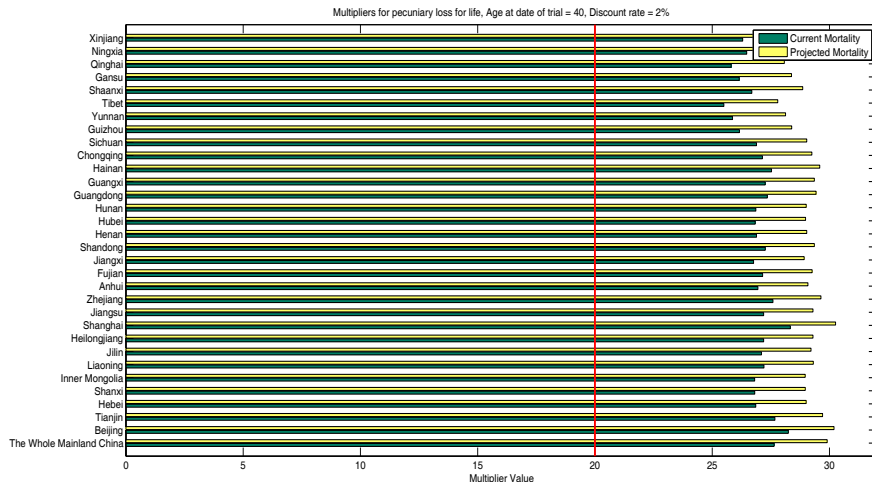
# Female Victim at Age 10



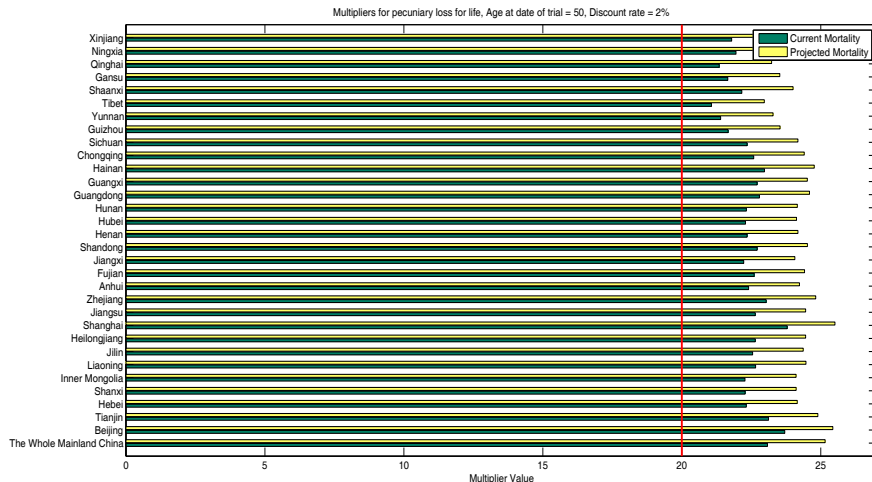
# Female Victim at Age 20



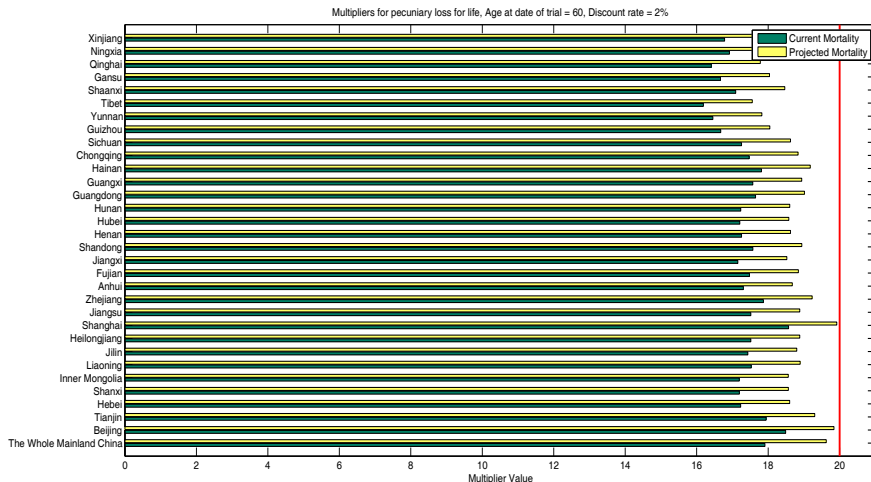
# Female Victim at Age 40



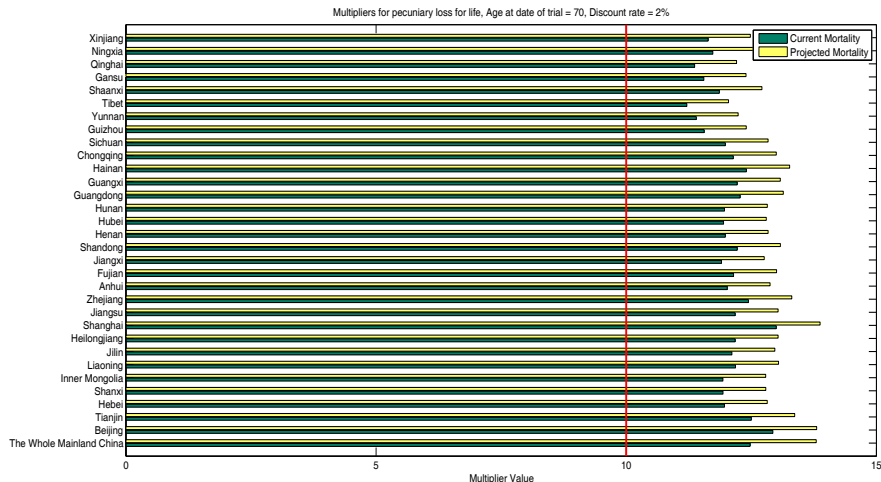
# Female Victim at Age 50



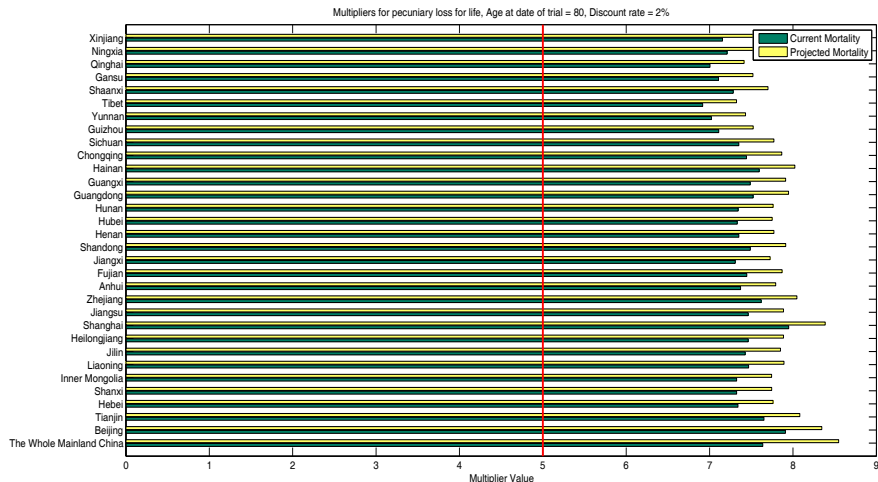
# Female Victim at Age 60



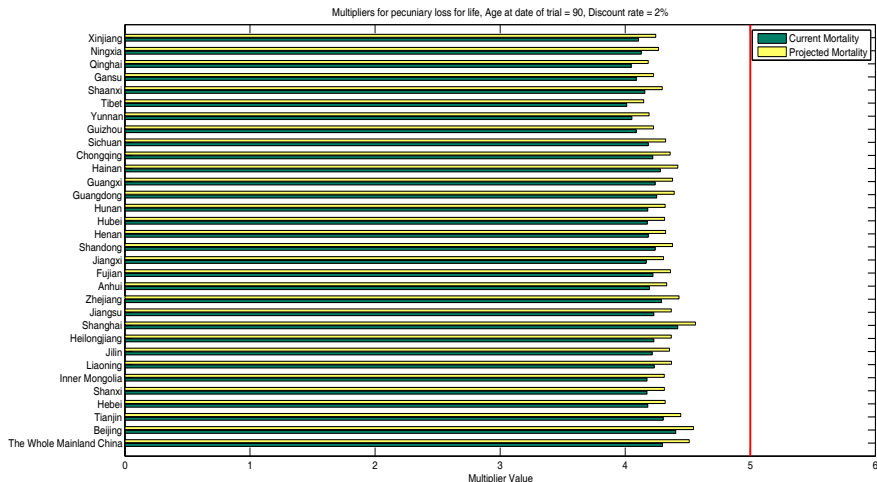
# Female Victim at Age 70



# Female Victim at Age 80



# Female Victim at Age 90





## 4.2 Civil Law Jurisdictions: Japan

## Personal Injury Claims in Japan

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- In Japan, under the Automobile Liability Security Law Enforcement Order (Cabinet Order No. 286, 1955), periodic payments may be capitalized using prescribed annuity factors.

自動車損害賠償保障法施行令（昭和 30 年政令第 286 号）

- These tables of factors are publicly available, for example, the webpage of Non-life Insurance Rating Organization of Japan ([www.nliro.or.jp](http://www.nliro.or.jp)).
- Analogous to the English Ogden Tables, the Japanese tables of annuity factors are constructed using sound actuarial and economic principles.

## 4.3 Civil Law Jurisdictions: Taiwan

# Personal Injury Claims in Taiwan

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## The Relevant Civil Law Codes in Taiwan

- **台湾民法第192条**：「不法侵害他人致死者，对于支出医疗及增加生活上需要之费用或殡葬费之人，亦应负损害赔偿责任。被害人对于第三人负有法定扶养义务者，加害人对于该第三人亦应负损害赔偿责任。」
- **台湾民法第193条**：「不法侵害他人之身体或健康者，对于被害人因此丧失或减少劳动能力或增加生活上之需要时，应负损害赔偿责任。」
- **台湾民法第 194 条**：「不法侵害他人致死者，被害人之父、母、子、女及配偶，虽非财产上之损害，亦得请求赔偿相当之金额。」

# Personal Injury Claims in Taiwan

- Use the multiplicand/multiplier approach.
- The **multiplicand** (e.g., the future annual loss of income) is established by evidence put before the judge.
- Use **Hoffmannschen Method** to determine the **multiplier**.
  - It has been using this method for at least 40 years in Taiwan
  - Tables of Hoffmannschen Coefficients:

霍夫曼係數表(年別單利5%複式) 凌坤源製表

年 期	係 數	年 期	係 數	年 期	係 數	年 期	係 數
1	0.95238095	26	16.37895178	51	24.98363215	76	30.98046981
2	1.86147186	27	16.80448369	52	25.26140993	77	31.18665538
3	2.73103708	28	17.22115036	53	25.53538253	78	31.39073701
4	3.56437041	29	17.62931362	54	25.80565280	79	31.59275721
5	4.36437041	30	18.02931362	55	26.07231947	80	31.79275721

- We found that the coefficients are simply certain annuity-due factors using **simple interest** of 5%.

# Personal Injury Claims in Taiwan

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- Issues of the **Hoffmannschen Method**:
  - It does not link to the population mortality experience in Taiwan
  - The use of simple interest for an extended period
  - The use of fixed 5% discount rate does not make any reference to the actual economic situations in Taiwan

## 5. Concluding Remarks

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### The Impact of Court Decisions on Future Insurance Premiums

- Most judges aware of the potential impact of their decisions on insurance premiums. Here are quotes from the judges:

*It is true that in these days most defendants are insured and heavy awards do not ruin them. But small insurance companies can be ruined. Some have been. And large companies have to cover the claims by their premiums. If awards reach figures which are 'daunting' in their immensity, premiums must be increased all the way round. The impact spreads through the body politic.*

## 5. Concluding Remarks

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### The Impact of Court Decisions on Future Insurance Premiums

*The consequence of the present judgments . . . . will be resultant increases in insurance premiums. But under the present principles of law governing the assessment of damages which provide that injured persons should receive full compensation plaintiffs are entitled to such increased awards. If the law is to be changed it can only be done by Parliament which, unlike the judges, is in a position to balance the many social, financial and economic factors which would have to be considered if such a change were contemplated.*





**Questions**

**Comments**

**Thank You!**

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