



**Institute of Actuaries of India**

# **Careers in Actuarial Profession**

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**Date: 20<sup>th</sup> August 2014**

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*Indian Actuarial Profession*  
*Serving the Cause of Public Interest*



# Agenda

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- Opportunities for Actuaries
- Available Actuarial Talent-Location wise
- Exam Preparation
- Good Exam Techniques
- CT-5: Sample questions
- CT-5 Exams: Examiners Observations

**It's never about studying more**

**It's always about studying**

**better**



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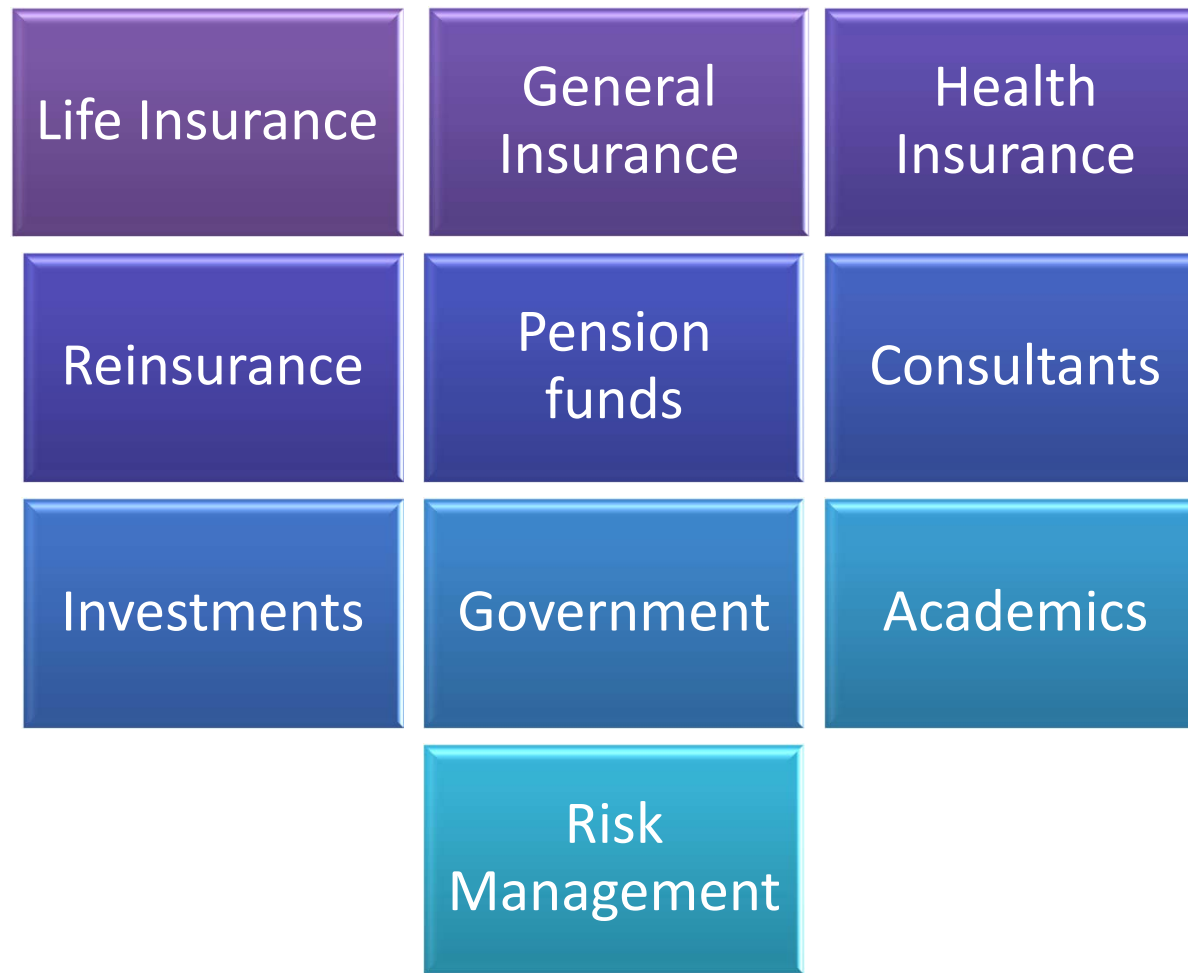
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# Opportunities for Actuaries



- Professional Actuaries find work opportunities in following sectors:



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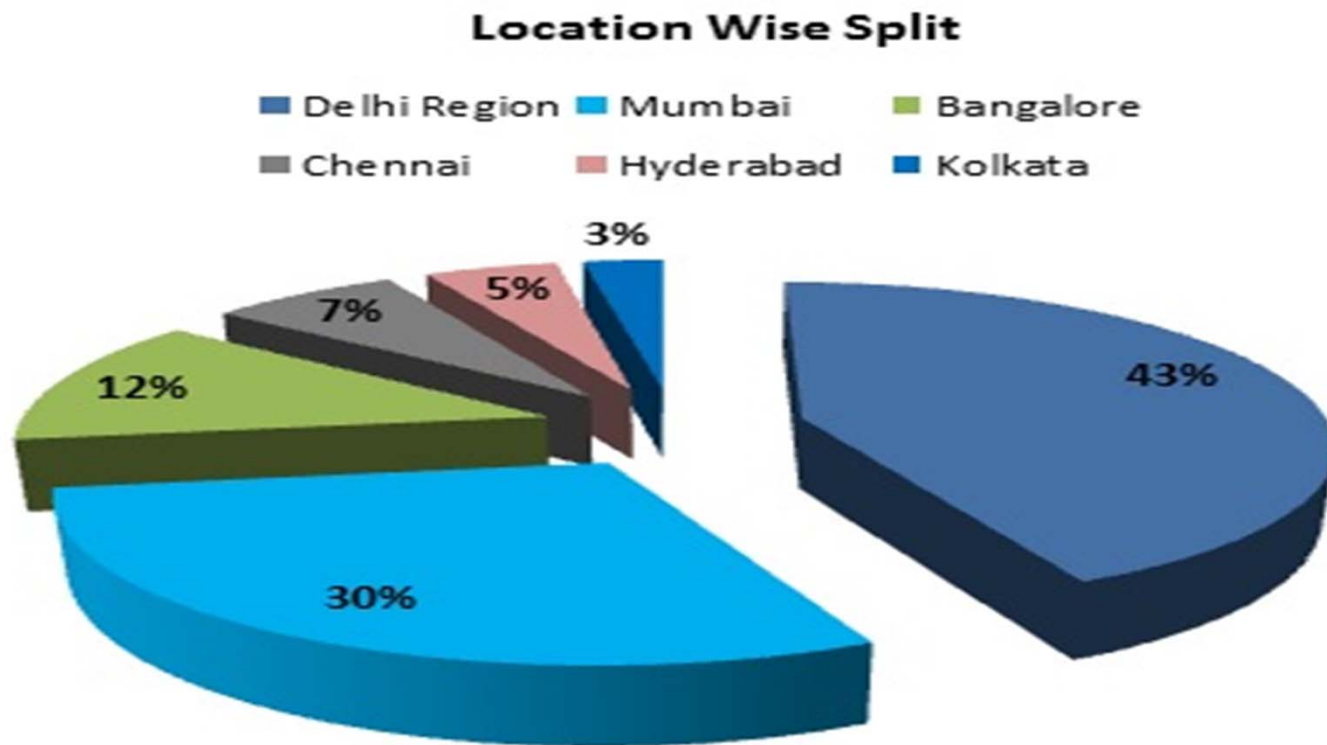
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# Actuarial Talent



Most of the Actuarial talent in India is found in the North Indian Region.

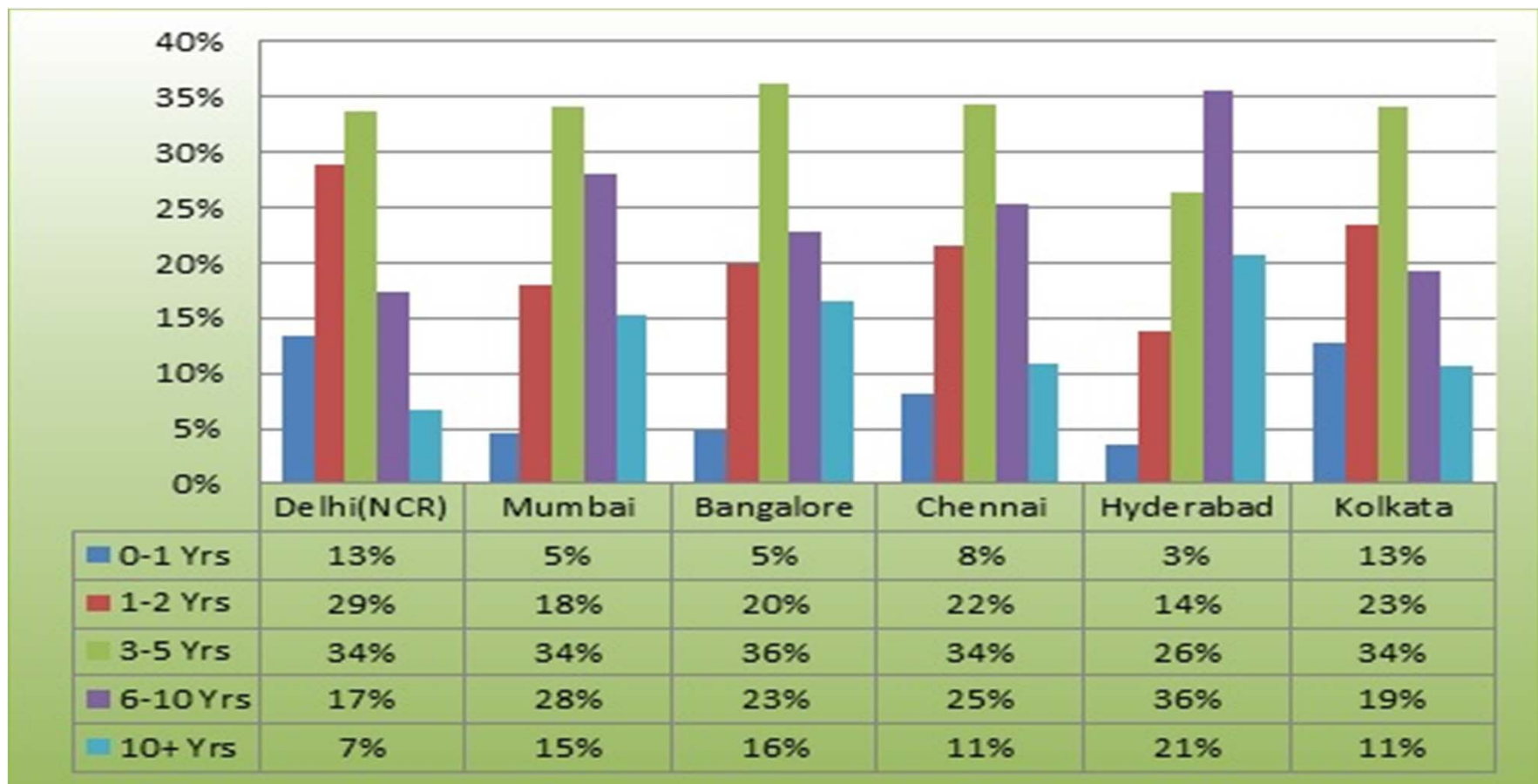
Delhi has a good number of professionals into Actuarial Sciences followed by Mumbai & Bangalore



# Actuarial Talent-Continue...



- Given Below is an Experience wise split up of Actuarial professionals in India





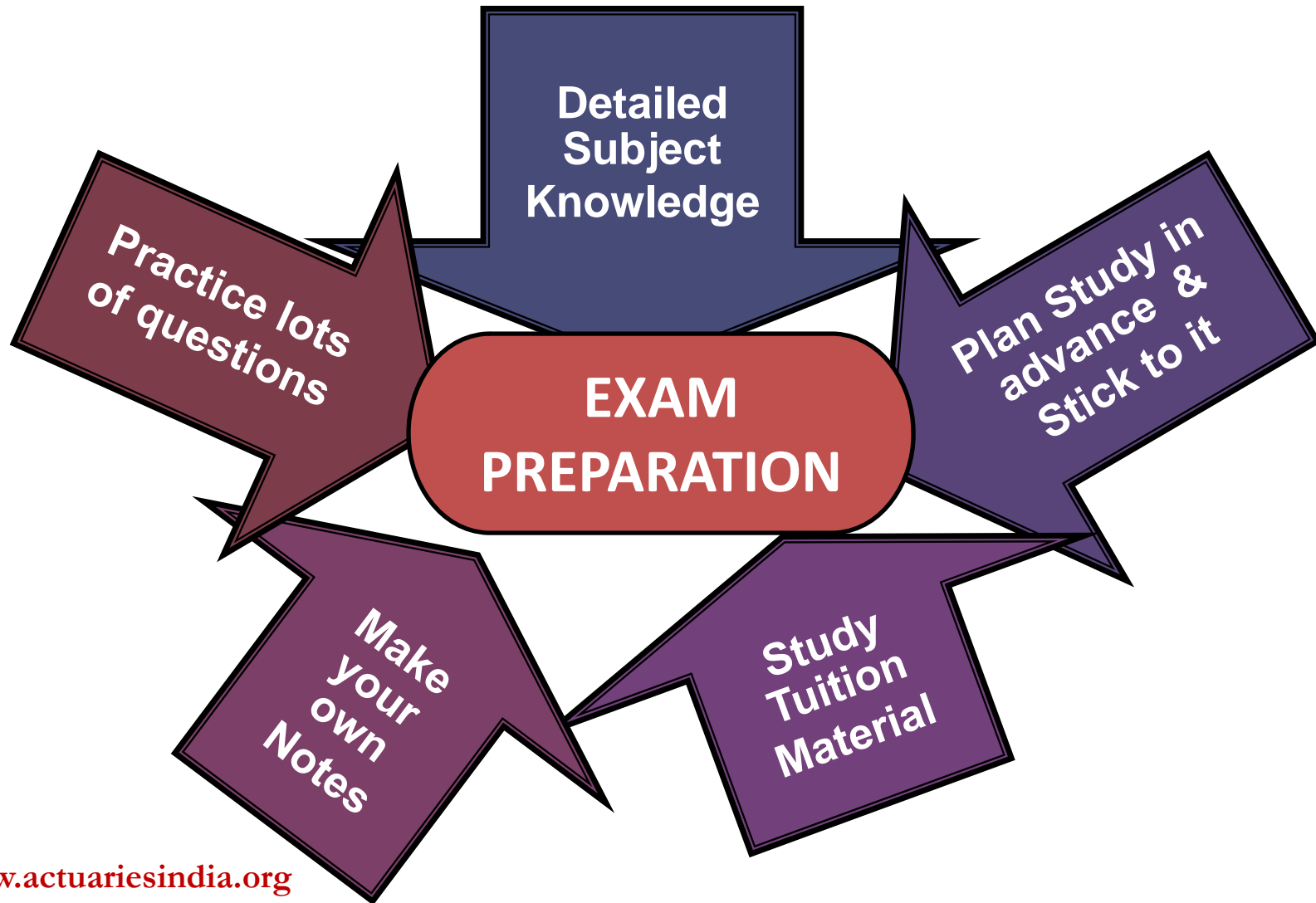


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# Exam Preparation



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# Good Exam Techniques

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Plan your answer

Pace yourself, and move on if you get stuck

Do not Panic

Attempt every single question

Read the whole question carefully

Legible Handwriting



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# Example-1 (Time management)

April 2014 IOA Exam



For a particular species of animal the mortality and rate of interest are shown according to the Basis below.

This question was poorly done.

Calculate  $A_{3:\overline{5}|}$ .

Basis: Mortality:  $l_x = l_0 e^{-0.15x}$   
 Interest: 5% per annum

From the solution, it will be seen that the answer is very straightforward if premium conversion is used.

$${}_tP_x = \frac{l_0 e^{-0.15(x+t)}}{l_0 e^{-0.15x}} = e^{-0.15t}$$

Therefore:

failed to realise this and  
 attempted the question the longer direct way

$$\ddot{a}_{3:\overline{5}|} = \frac{1 - ((1.05)^{-1} e^{-0.15})^5}{1 - ((1.05)^{-1} e^{-0.15})} = \frac{1 - 0.37011}{1 - 0.81972}$$

Hence:

which involves a much more arduous calculation

$$A_{3:\overline{5}|} = 1 - \left( \frac{.05}{1.05} \times 3.4940 \right)$$

(full credit was given if this produced the correct answer)

# Example-2 (Not Reading Question Carefully) April 2011 IOA Exam



Calculate  $(\bar{Ia})_x$

*This question was not done well. The majority of students failed to realise that the increasing function  $I$  was not continuous, although the payment  $\bar{a}$  is continuous. Instead most attempted*

*to compute  $(\bar{Ia})_x = \int_0^{\infty} tv^t {}_tP_x dt$ . Only minimal credit was given for this.*

$$\begin{aligned}(\bar{Ia})_x &= (1 + 2e^{-0.06} + 3(e^{-0.06})^2 + 4(e^{-0.06})^3 + \dots) \bar{a}| \text{ at force of interest } 6\% \\ &= (1/(1 - e^{-0.06}))^2 \times ((1 - e^{-0.06}) / .06) \\ &= 294.8662 \times 0.970591 \\ &= 286.19\end{aligned}$$

## Example-3 (Careful writing of Actuarial Notations)

Oct-2012 IOA Exam



A life insurance company issues a with profit whole life assurance policy to a life aged 40 exact, under which the sum assured  $S$  and any attaching bonuses, are payable immediately on death. Compound bonuses are added annually in advance. Premiums are payable annually in advance ceasing at exact age 85 or on earlier death.

*Generally not done well. It is often the case that candidates have difficulties in setting out the random variable expressions.*

The net future loss random variable is given by:

$$S(1+b)^{K_{40}+1} v^{T_{40}} - P \ddot{a}_{\overline{\min(K_{40}+1, 45)}|}$$

$b$  = annual rate of future bonus

$P$  = annual net premium

$K_{40}$  = curtate future lifetime of a life aged 40 exact

$T_{40}$  = complete future lifetime of a life aged 40 exact



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# CT5 Exams–Examiners Observations



## Careful Reading

- Read question carefully
- whether question is asking to list / describe / explain & answer accordingly

## Careful Writing

- Carefully write Actuarial Notations as these are crucial for CT-5

## Jumping into Answers

- Marks lost because of missing steps & directly jumping to answers without sufficient explanation and/or intermediate calculations

# CT5 Exams–Examiners Observations –Continue



## Missing Details

- Missing small but important details & lose marks( e.g. not writing boundary conditions with equations)
- Any assumptions should also be stated explicitly

## Writing Too Much

- Writing too much for a small questions and lose precious time

## Logical Structure

- Answers should be structured logically - this demonstrates clear thinking and understanding

