**Insurance – The Application of Mathematical, Analytical and Computational Intelligence**

Evolution is one of the unending process ever going. It evolved Man and made him the most intelligent among all other beings. The same way mortality(death) is also a never-ending principle for beings. It seems Man did not realize the pain of it until he became social and member of a family. When he became the social animal and started bringing up a family, then he realized first time about the **‘risk’** in the form of **‘death’** which suffers the family when the family loses the bread winner. This risk impacts the family in all means and the survival of the family will be in question. Invention of currency, mathematics and analytical way of thinking made him to invent the consequences of death to the family and showed a path to measure and to calculate the risk that is being caused due to the death of the bread winner.

This can be one of the first analytical inventions and can be one among the foremost analytical models so far invented. The moment he assessed the risk due to the death with the mathematical capability, he tried to invent the mitigation plan. This is the basic form of a feature through which the financial loses of a family can be mitigated to some extent. This great feature is known as **‘Insurance’**. Though it can be understood as a group contribution to one family, the underlying base for this is Mathematics, Data Analysis for the risk assessment and forecasting.

This made him slowly collecting the data, and studying it, analyzing it and finally made him to understand the death risk pattern related to age. With the help of the data model he could come up with the price of mortality risk which became so called ‘**premium’**. As days passing, many factors he could find which are inter linked with mortality. This tuned the price of mortality risk further and today we have the best premium pricing models.

I would like to emphasize **‘Data’** as chief element for this evolution of insurance model and its pricing. Mortality rate is the basic element for the pricing of premium and lot of Mathematics is involved while assessing the death of an individual specifically probability, statistics and Actuarial Mathematics.

This basic form of mitigation of mortality risk formulated a life insurance plan which is known as ‘**Term Life Insurance**”. This is the pure mortality risk plan and the coverage and premium rate are directly linked with the gender, age and other few factors that impact the life span of an individual. The mortality rate is the chief source for the pricing of life insurance premiums.

Insurance is a boon to the human society and can be considered as a scientific and analytical civilization that is evolved with Data, Mathematics and Analytics. The data size and the techniques of using it for a pricing model were limited in the past. The modern Mathematics, Data management techniques are going to change the underwriting and pricing in a revolutionary manner in the next couple of years. This is possible with the modern power of **Big Data technologies and Data science pricing models**.

In the process of mitigating the financial risks he invented another risk mitigation element which is ‘**savings’** and invented one more element ‘**interest’**. This made another big change in the form of ‘**Banking’**. Man does not sleep in the search of new and feasible solutions sometimes with special interest and sometimes for the society. In this way financial models for business are invented and the savings element is linked to insurance premiums through which more hybrid insurance products are evolved, and the following are two main types that involve cash element.

**Whole life** – A product that provides the coverage till the death of an individual and it can have cash value element which is savings part of some portion of the premiums paid.

**Universal Life** – A product that has cash element which builds interest for some part of the cost of insurance paid. These products have the flexible premium options.

The following are few more well-known insurance products, and these differ by their features.

* Variable Universal Life
* Indexed Universal Life
* Point to Point Indexed Life
* Endowment Life Insurance

There are hundreds of life insurance products all over the globe and they are all dependent on the social, economic, and geographical factors.

**Annuity** is a financial model that makes a cumulative sum on the savings with the help of compound interest and this helps to meet financial calamities. There are hybrid models where Annuities are clubbed with insurance features. The most famous Annuities are SPDA (Single Premium Differed Annuity), FPDA (Flexible Premium Deferred Annuity), SPIA (Single Premium Immediate Annuity) etc.

In similar lines, the financial risks aroused due to ill health can be mitigated through **Health** insurance. The difference hear is with the **morbidity** rates that are involved in the health insurance premium pricing. This is also changing very rapidly with the help of **Data Analytics** that are becoming chief factors in reducing the premium rates and making more affordable to public.

With the **Data Analysis and Actuarial Techniques**, the risks for other living and non-living things have been calculated and different insurance products are available. It seems there are 100 of different types of insurance are available globally and all these are using the huge data for the analysis and pricing. The insurance for the non-living beings is another area **Property and Causality**.

The future of insurance sector is very bright, and people will be much benefitted with the help of **Artificial Intelligence** models through which fine predictions and pricing is possible. **AI** techniques are already available in the market and they are studying the data online and analyzing it fast and pricing with in no time. **Big Data Analytics** for the streaming data is a great contributor for all feasible life and general insurance models.

This is a short on insurance which is involved with risk and risk mitigation for the financial loses and for a better way of life for mankind. This is possible only due to the data and its analytical study and predictive analytical models. **Computers** made a big difference in the field of insurance with fast, accurate calculations and more **powerful computations** equipped with **AI** will provide the best insurance products from both life, property and casualty areas in near future.