Financial Products Sales Forecast Model

State of The Art

1 MOTIVATION

From 1998 to the present, I have developed my professional life in a financial institution, mainly in retail banking. During these 23 years I have gone through all possible job categories within a commercial office open to the consumer. From cashier and desk salesman to assistant manager and office manager. In 2018, motivated by different factors among them, the search for new skills, job and personal recycling, adaptation to the new reality of digital transformation and the need to build an alternative plan due to the uncertain job prospects fleeing my comfort zone I decide to take a Master in Business Analytics with the intention of learning new ways of business analysis and being able to put them into practice. During the course I realize that even without any background in programming or computer science, statistics or mathematics, coming from a Bachelor of Arts degree, I had found a motivation, a new field of study and a new challenge. I decided to continue my training with the Master in Data Science at K-School, recommended by a former teacher and always warned of the technical difficulty of it. The result I can only define it, in one word. Enthusiastic.¡

2 PROLOGUE

Banks, understood as simple mediators or channelers of wealth between the different actors in society, have changed. They have undergone a transformation, they have evolved and adapted to all times, to economic circumstances and to the way customers think. Until 2008, financial institutions experienced moments of great growth as a result of the economic and social development in Spain. It is from this year when a period of recession never seen in our recent history began, concluding in 2014, according to the data of the national accounting, elaborated by the National Institute of Statistics. In the midst of the

recovery process, we find ourselves in 2020 with one of the worst health crises in the history of our modern age. As a consequence of the different crises we have experienced, the reduction of interest rates and therefore of the profits obtained by the pure traditional business of capturing and lending money is no longer at the top of an institution's profit and loss account. The sale of other financial products such as Investment Funds, Pension Plans and risk insurance, have managed to monopolize all the importance. The generation of commissions attached to the commercialization of these products has meant a turnaround in the commercial strategy, specializing and focusing on the sale of this type of products through specialized advice to their customers by branch employees.

3 OBJECTIVES.

The Risk Insurance marketed in bank branches, as well as their maintenance in the portfolio for 5 years on average, are of great importance in the profit and loss account of a branch and by extension of a bank. In this scenario and through a set of data pertaining to 450,000 customers, I wanted to develop a predictive model for the purchase of these financial products, specifically Home Insurance.

4 PURPOSE

To generate a predictive classification model that helps the entire commercial force of the branches to orient marketing, to optimize the times, methodologies and systems used. All this in search of greater sales success and customer satisfaction.

5 DATA

The data comes from the sum of different data sets obtained directly from the financial institution. ALL DATA HAS BEEN ANONYMIZED. THE NAMES AND NUMBER OF INTERNAL CUSTOMERS HAVE BEEN REMOVED, THE NUMBER AND SPECIFICATIONS OF AREA AND OFFICE ADDRESSES HAVE BEEN REMOVED, AND FINALLY THE NAMES OF SALES ADVISORS HAVE BEEN REMOVED. All these data have been assigned a fictitious identification number, leaving only the data on whether or not the customers have a product.

6 INTEREST

The interest of this research is focused on three levels; Business, Commercial, time optimization level of the sales representatives.

Business Interests: A financial institution, like any private company, has as its main objective to maximize the profit that its partners have invested, and for which they expect a return through the distribution of dividends. The generation of commissions from the sale of insurance is one of the most important ways of generating profits and, consequently, a higher income statement.

From the commercial point of view, the competition at the level of mediation and sale of insurance is enormous. Not only the insurance companies themselves, but all financial institutions nowadays sell insurance. The fact of advising, selling and attracting a new client in the medium term is an important milestone that must be promoted.

Finally, we need to talk about work optimization. It is not only necessary to work hard, but also to work effectively and efficiently. The working day of a bank employee can be summed up in one word. SELL. You have to sell and you have to reach as many customers as possible. If we do all this by focusing the call, optimizing time, knowing who we are calling and why, we will improve in every way the efficiency and effectiveness we are looking for.

7 STATE OF THE ART

FRAMEWORK

Financial institutions and insurance are the mainstay of our financial and insurance system. The economy of any country is based on these two sectors. Both banking and insurance companies are in constant technological and organizational development. Both sectors will always play a major role in any present or future crisis, as they are responsible for approaches to recover solvency and liquidity in order to minimize the economic impact on companies and households.

Some data for 2020. In the first months, logically influenced by the great health crisis we are experiencing, the loss ratio was reduced in branches such as automobiles or travel, and increased in branches such as death, non-payment of rent, life and health. Currently, the volume of claims has stabilized.

Business closures have increased the cancellation rate in the most affected segments, such as SMEs and the self-employed.

The current uncertainty is exposing the weakness of point risk assessments and static underwriting models.

A sharp increase in Cybercrime has continued, which has affected Cyber Risk policies and their claims experience. Source: https://decidesoluciones.es/banca-seguros-highlights-2020-predicciones-2021

Premiums have risen for renewals, due to the reduction of capacity in lines such as Financial Lines, as well as the increase in the frequency of certain claims such as natural catastrophes, forest fires, accidents, the appearance of emerging risks - cyber, environmental, pandemic, etc. - or the increase in prices in Reinsurance renewals.

Insurance predictions for 2021. Price escalation in the global insurance market will be evident. Property & Casualty, Liability, D&O and Cyber risks will be the most affected lines of business. The burden of pandemic-related claims will be progressively reduced due to the exclusion of pandemic coverages in the agreements up for renewal.

2 INSURANCE IN SPAIN - FIGURES

Every year, the National Statistics Institute (INE) publishes the Household Budget Survey (HBS). This questionnaire collects information on the expenses incurred by families in their daily lives; expenses among which the main insurance policies are included, except for life insurance, which is not collected.

The HBS published in 2020 accumulates information on the expenditure made, during 2019, by 22,000 surveyed families residing in Spain. And among these expenses, insurance.

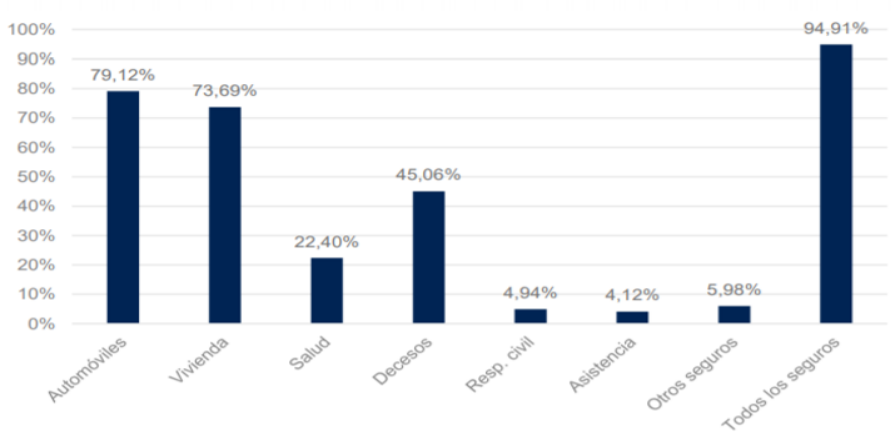
Types of Insurance contracted in Spain. Annual evolution.

	2015	2016	2017	2018
Vida – asegurados por fallecimiento o invalidez	19.098.701	19.650.180	20.170.771	20.466.207
Vida- ahorradores	9.510.371	9.904.511	9.511.544	9.449.896
Salud - prestación de servicios médicos	9.238.717	9.568.054	9.906.084	10.268.012
Salud - subsidios por enfermedad	1.512.863	1.576.477	1.603.951	1.805.347
Decesos	21.090.080	21.260.669	21.537.456	21.763.397
Responsabilidad civil	2.487.013	1.907.115	1.966.052	1.997.918
Automóviles	29.107.481	29.597.454	30.295.290	31.018.517
Viviendas	18.186.862	18.407.931	18.792.044	19.209.473
Comercios	1.270.051	1.291.342	1.312.171	1.324.124
Empresas	1.893.329	2.174.852	2.389.887	2.478.655

Level of insurance coverage by households.

There are currently 46,722,980 inhabitants in Spain, with an insurance stock of more than 119,000,000 insurances as of 2018. The number of Home-Home insurance policies amounts to more than 19,000,000. 15% of the total.

The insurance of Spanish homes has a continuous growth. More than 1MM of home insurances have been contracted in the period from 2015 to 2018. 73% of family insurances are home insurance. Fuente: https://www.unespa.es/que-hacemos/publicaciones/



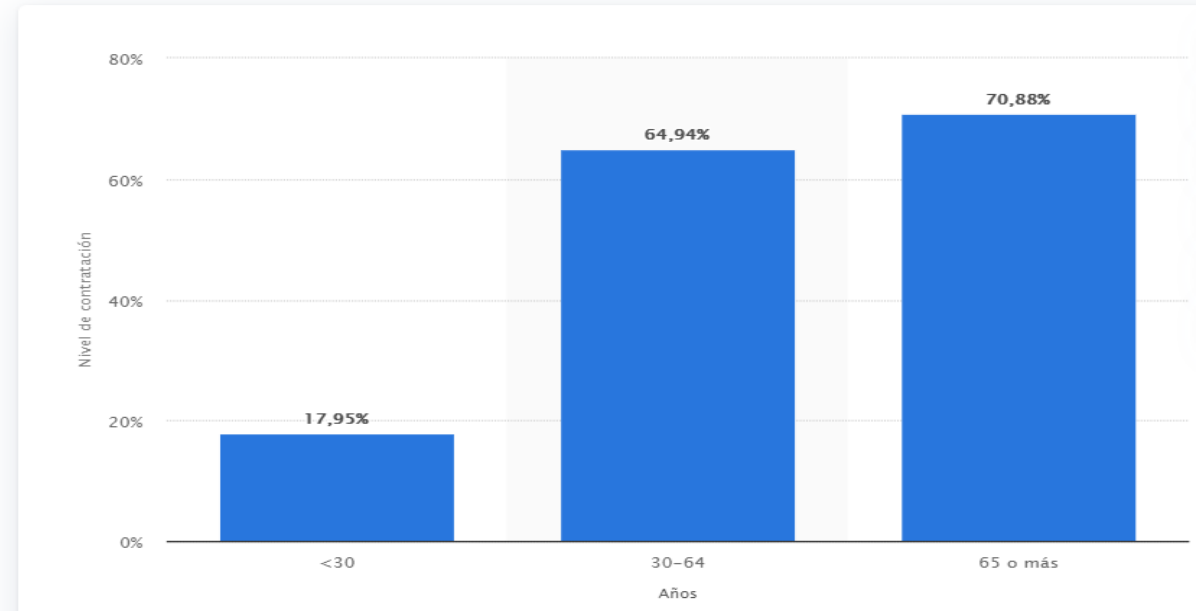
Spanish Insurance Service Types

Tipo de percance	Servicios
Percances en viviendas y comunidades	1.003
Percances en comercios	55
Percances del automóvil	1.263
De los cuales: vehículos reparados	487
De los cuales: asistencias en carretera	459
De los cuales: golpes de chapa	230
De los cuales: accidentes graves	60
De los cuales: víctimas en accidentes de tráfico	33
Actos medicos	12.246
De los cuales: visitas al especialista	5.860
Sepelios de decesos	28
Percances de responsabilidad civil	38
Otros percances de particulares	298
Percances de empresas	1.266

Fuente: https://www.unespa.es/que-hacemos/publicaciones/

Excluding medical services, it accounts for 10% of the demand for insurance services.

Level of insurance contracts by age



Fuente: https://es.statista.com/estadisticas/967761/nivel-de-contratacion-de-seguros-de-hogar-por-edad-espana/

This graph shows how home insurance is taken out from the age of 30 onwards. Clearly influenced by the lifestyle and the difficulty of access to housing for young people. This can be seen in our predictive model.

Contracting the different insurance policies for household income.

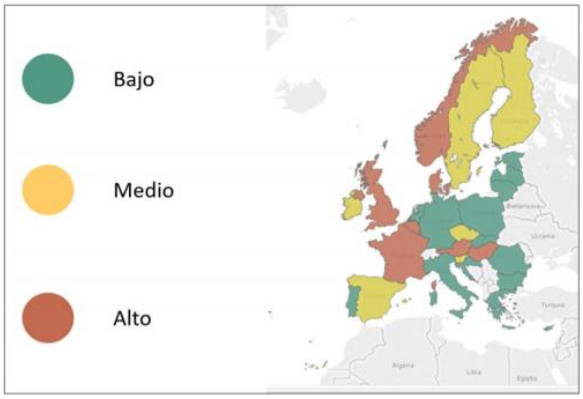
	Automóviles	Vivienda	Salud	Decesos	Resp. civil	Asistencia	Otros seguros	Todos los seguros
Menos de 500 €	54,85%	40,97%	8,92%	44,13%	4,74%	4,06%	4,85%	78,44%
De 500 a 1.000 €	58,74%	58,45%	9,72%	54,56%	3,62%	3,02%	4,22%	89,65%
De 1.000 a 1.500 €	82,20%	73,30%	18,77%	48,37%	4,86%	4,09%	5,91%	96,32%
De 1.500 a 2.000 €	89,16%	83,36%	26,36%	41,40%	4,70%	3,99%	6,56%	98,59%
De 2.000 a 2.500 €	91,58%	88,94%	34,39%	39,25%	5,40%	4,78%	6,70%	99,12%
De 2.500 a 3.000 €	90,83%	89,45%	42,00%	32,30%	6,40%	5,12%	7,36%	99,57%
3.000 € o más	92,18%	89,58%	51,36%	26,71%	8,90%	5,97%	8,69%	99,02%

Fuente: https://www.unespa.es/que-hacemos/publicaciones/

Household insurance contracts depend to a large extent on family income. A large cut-off is evident in households. Contracts take off with households with a minimum income of €1,000.

Finally, we can visualize the differences in household insurance expenditure at the European level.

Geography of the differences in home insurance contracts.



Fuente: https://www.unespa.es/que-hacemos/publicaciones/

CONCLUSIONS

Household insurance is deeply rooted in Spanish society. The amount of the household budget allocated to insurance, as in the case of any other component of such expenditure, depends on structural and contextual factors of each household, such as the place of residence, the family's employment situation, the salary scale of its members, etc.

Model. With the available data and variables we will try to train a commercial solution that will facilitate the sale of this product to the advisors of the financial institutions.