Presentation of the team

ACTUARIAL & INSURANCE SOLUTIONS

April 2018

Prague

Deloitte.

ACTUARIAL & INSURANCE SOLUTIONS
WHO ARE WE?

- **Deloitte consulting**

- Team of 20 **mostly** fun people and some **nerds**

- **Age** is **around 30** but we have **partner and director** in **age of my father**

- **Trainings** across Europe

- **Project work** – **I** like it ;)

- **Benefits** – we have a lot of point in to buy e.g. perfumes for girlfriend or boyfriend, iphone, ets.…

- Every fist Thursday in month **dinner for freeee!!!**

- **….**

WE DO INSURANCE CONSULTANCY

- **Math and statistics – building the models, analyzing the data,…**

- **Process improvements – better data, automation, work-flow…**

- **Business impact that matters – data and processes, sale support, insurance products**

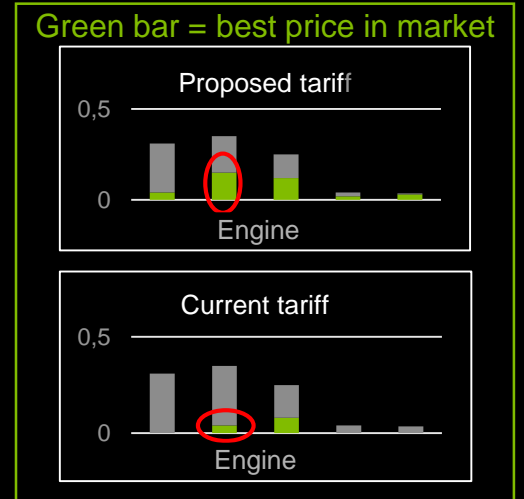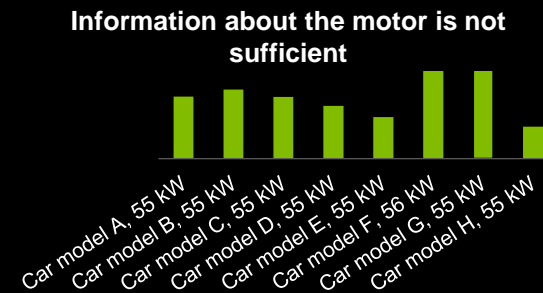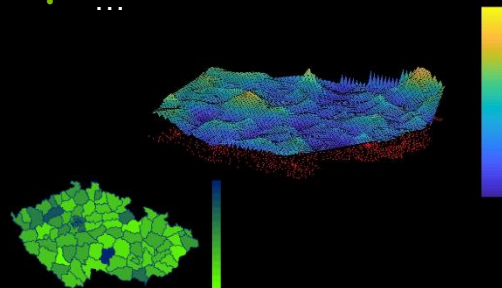- **Regulatory – Solvency II, IFRS 17, IDD, PRIIPS, GDPR**

BIG DATA AND INSURANCE
TODAY

BIG DATA	USAGE	TOOLS	RESULTS

BIG DATA
- Underwriting data
- Inhouse data about claim history
- Public and market data
- …

USAGE
- Visualization
  - Analysis
  - Reporting
  - …
- Advanced analytics
  - Predictive modeling
  - Pricing
  - Customer life time value
  - Scoring models
  - …

TOOLS
- Purple people
  - Analytics
  - Business
- Software
  - R, Qlik, Tableau, Power BI, Prophet, MoSes, Igloo, ReMetrica, SQL, VBA …

RESULTS
- Customer experience
- Higher profitability
- Innovative brand
- To be one step ahead
- …

	Beth	Tom	Sarah
Traditional data	• Female age 45 • Employed • No significant claims	• Male age 46 • Employed • Knee surgery	• Female age 46 • Unemployed • No significant claims
Lifestyle-based data set	• Renter / Owner • Commutes 45 miles • Bankruptcy indicator • Diet/weight loss purchases • Fast food purchaser • Self help books • High TV consumption	• Manager level position • Owns home • Has lived in hometown all his life • Married with two children • "Suburban Striver" Psychographic Cluster • Avid golfer	• New to town • Reading: foreign travel-related magazines • Good credit • Healthy food choices • Little to no TV consumption • Running and yoga
Risk analysis	Cost index: 1.3 Diabetes Prob: 2.5	Average Cost Expectation	Cost Index: 0.75 Diabetes Prob: 0.30

Information about the motor is not sufficient

Car model A, 55 kW
Car model B, 55 kW
Car model C, 55 kW
Car model D, 55 kW
Car model E, 55 kW
Car model F, 56 kW
Car model G, 55 kW
Car model H, 55 kW

Green bar = best price in market

Proposed tariff
0,5
0
Engine

Current tariff
0,5
0
Engine

BIG DATA AND INSURANCE

VISION OF THE FUTURE

CUSTOMIZATION INDIVIDUAL DATA

- Smart cars and telematics
- Smart watches
- Smart homes
- …

New data with new possibilities and purposes

- Prediction and prevention strategies

- …

PUBLIC DATA

- Facebook
- LinkedIn
- Public info about dodgers
- …

Often more valuable than data held by insurance company

BEHAVIORAL DATA

- Length of customer stay on website
- Number of customer clicks
- Most attractive section of a website
- …

Offer behavioral information about the client as well as his/her needs

BLOCKCHAIN

Transformation of:

- Products
- Systems
- Payments
- …

Disruption of the whole financial market

ACTUARY VS DATA SCIENTIST

IS IT THE SAME?

I AM AN ACTUARY!

WHO IS A DATA SCIENTIST?

A Data Scientist is a statistician who lives in San Francisco

Josh Wills
@josh_wills

@drewconway

Drew Conway
@drewconway

Hacking Skills

Machine Learning

Math & Statistics Knowledge

Data Science

Danger Zone!
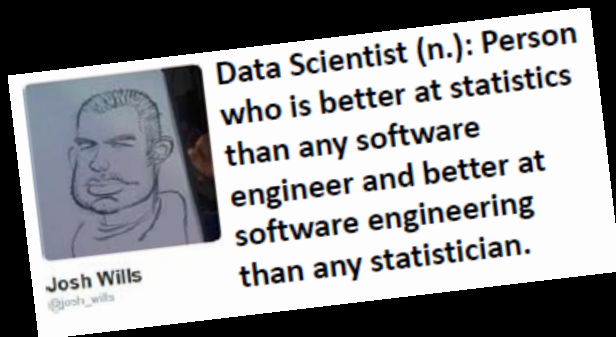
Traditional Research

Substantive Expertise

Data Science is Statistics on a Mac.

Big Data Borat
@BigDataBorat

Data Scientist (n.): Person who is better at statistics than any software engineer and better at software engineering than any statistician.

Josh Wills
@josh_wills

A Data Scientist is a device for turning coffee and data into better decisions

Likelihood T. Prior
@Cjbeyston
Corey Chivers, Penn Medicine

ACTUARY VS DATA SCIENTIST
WHICH JOB IS A BETTER ONE???

2015

(1.)

Actuary

Overall Rating: 1/200   Median Salary: $94,209

Interprets statistics to determine probabilities of accidents, sickness, and death, and loss of property from theft and natural disasters.

Work Environment	Stress	Projected Growth
Very Good	**Low**	**Very Good**
4/200	55/200	16/200

(6.)

Data Scientist

Overall Rating: 6/200   Median Salary: $124,149

Combines information technology, statistical analysis and other disciplines to interpret trends from data.

Work Environment	Stress	Projected Growth
Very Good	**Very Low**	**Good**
27/200	28/200	58/200

2016

(10.)

Actuary

Overall Rating: 10/199   Median Salary: $97,362

Analyzes the financial costs of risk and uncertainty.

Work Environment	Stress	Projected Growth
Very Good	**Low**	**Very Good**
23/199	72/199	16/199

(1.)

Data Scientist

Overall Rating: 1/199   Median Salary: $128,240

Combines information technology, statistical analysis and other disciplines to interpret trends from data.

Work Environment	Stress	Projected Growth
Very Good	**Very Low**	**Very Good**
21/199	30/199	29/199

2018

(11.)

Actuary

Overall Rating: 11/199   Median Salary: $97,312

Work Environment	Stress	Projected Growth
Very Good	**Low**	**Very Good**
15/199	67/199	24/199

(5.)

Data Scientist

Overall Rating: 5/199   Median Salary: $111,267

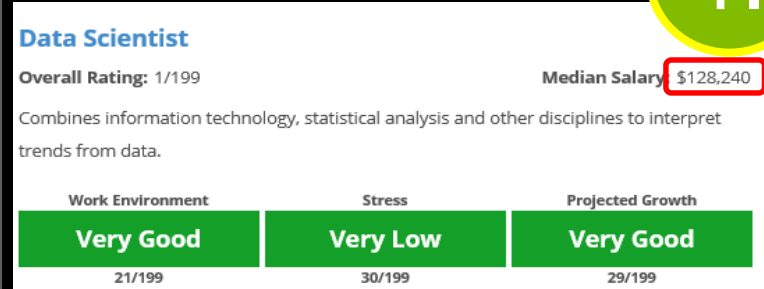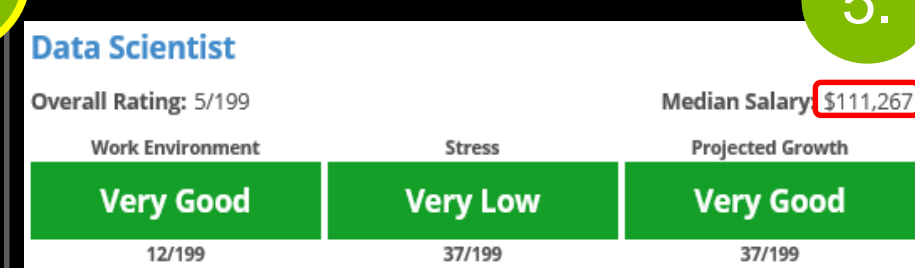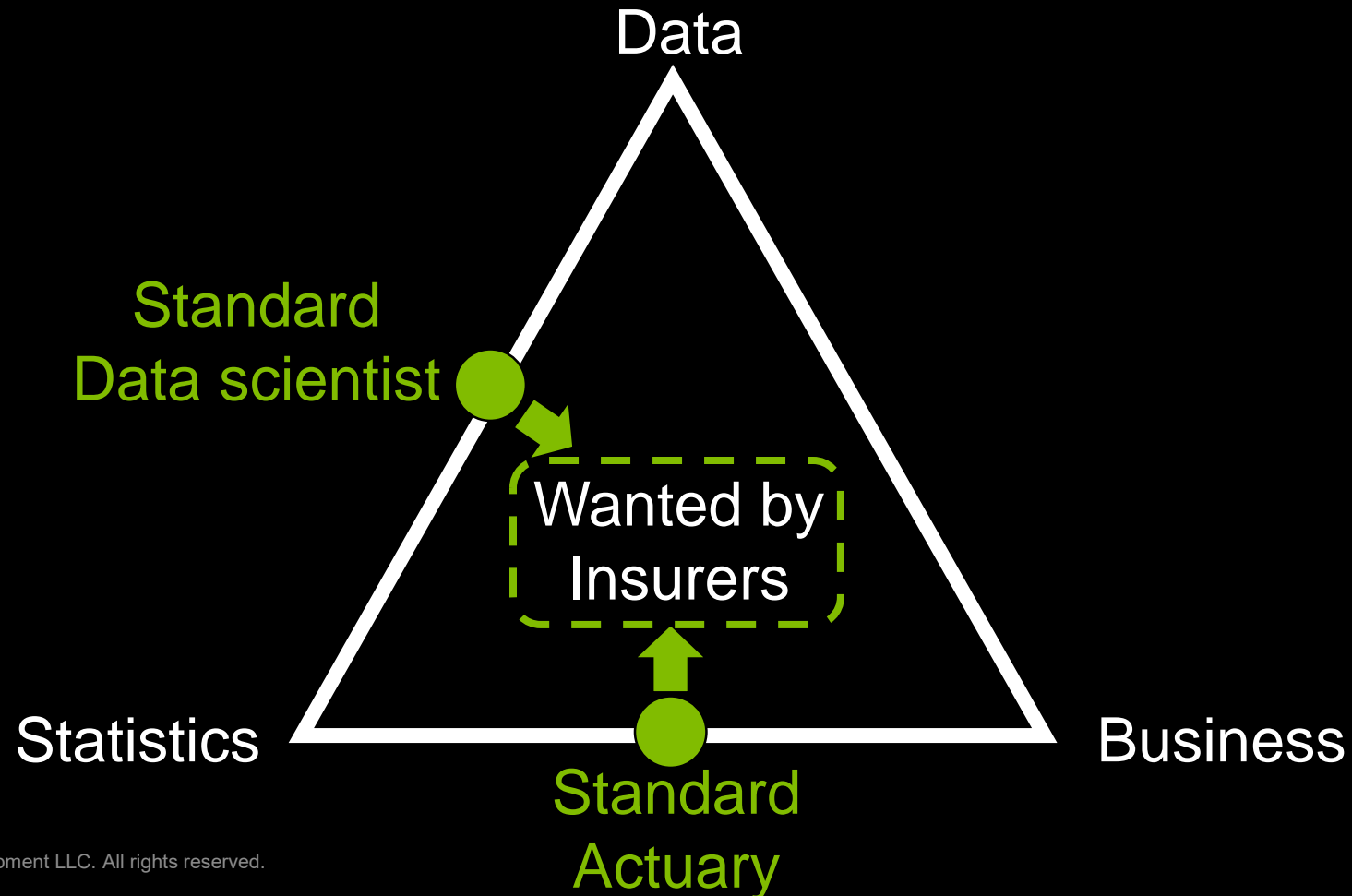| Work Environment	Stress	Projected Growth
Very Good	**Very Low**	**Very Good**
12/199	37/199	37/199

ACTUARY VS DATA SCIENTIST

ACTUARY: DATA SCIENTIST WITH DEEP KNOWLEDGE ABOUT INSURANCE BUSINESS

ACTUARY VS DATA SCIENTIST

ACTUARY: DATA SCIENTIST WITH DEEP KNOWLEDGE ABOUT INSURANCE BUSINESS

Data

Standard
Data scientist

UNICORN HARD TO FIND!

Business

Standard
Actuary
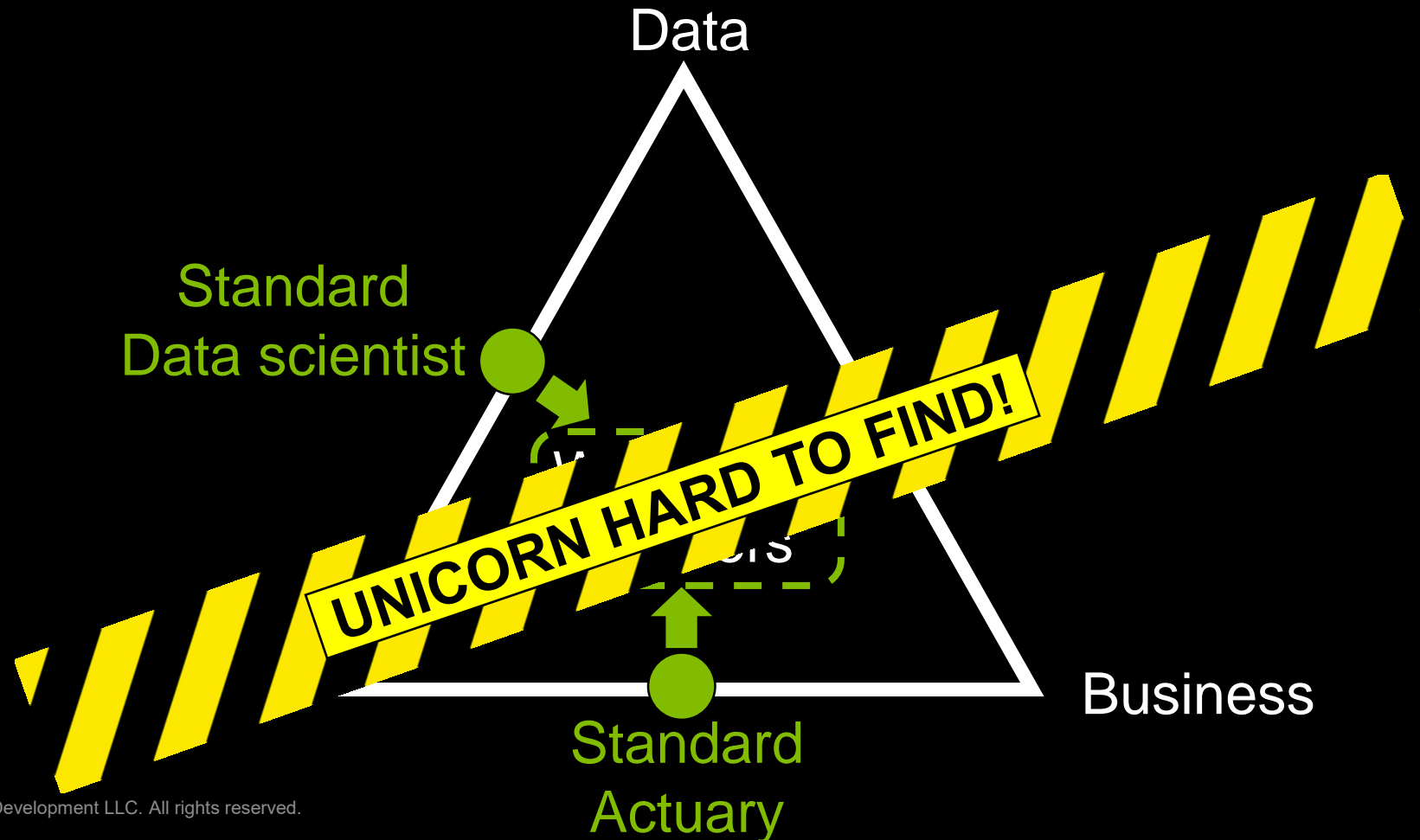
DATA SCIENCE FOR ACTUARIES
SKILLS REQUIRED

TRADITIONAL ACTUARIAL SKILLS

- Basic (non-)life reserving
- Pricing methods
- Accounting
- Calculus
- Statistics
- Basics of several softwares (R, Mathematica, Excel, etc.)
- Prophet, MoSes, ReMetrica, Igloo,…

DATA SCIENCE METHODS

- Decision trees (forest)
- Logistic regression
- Time series
- Segmentation algorithms (K-means, Self-organising maps etc.)
- Optimization algorithms
- Artificial neural networks
- Extensions of GLM models (hurdle models, etc.)

DATAMINING SOFTWARE

- Database
  - SQL Server, Oracle Database, MySQL
- Programing
  - Python, JAVA, C#
- Statistics
  - R (advanced), SAS, SPSS,…
- Visualization
  - Power BI ,Tableau, Qlik, SAS VA…

CASE STUDY 1 (ČR)

ÚSPĚŠNÁ CENOVÁ STRATEGIE (PRICING) PRO NEŽIVOTNÍ POJIŠTĚNÍ

Ceny napříč trhem a kanály + reakce klienta

Riziko silně závisí na regionu

Jen motor nestačí pro zachycení rizika ani strategie konkurence

Car model A, 55 kW · Car model B, 55 kW · Car model C, 55 kW · Car model D, 55 kW · Car model E, 55 kW · Car model F, 56 kW · Car model G, 55 kW · Car model H, 55 kW

Green bar = best price in the market

Proposed tariff

Current Tariff

Engine power
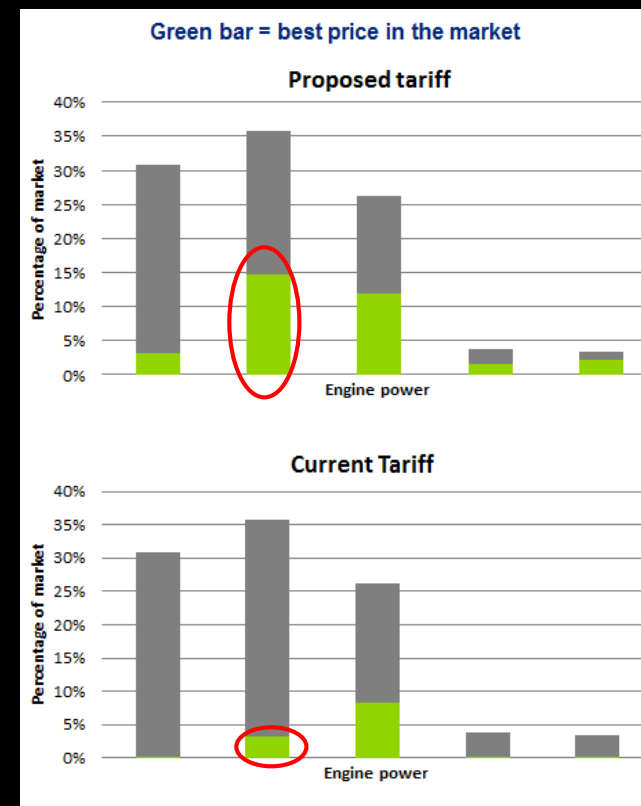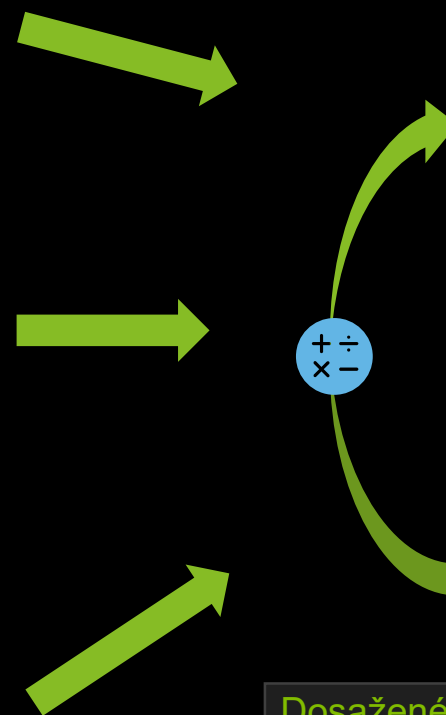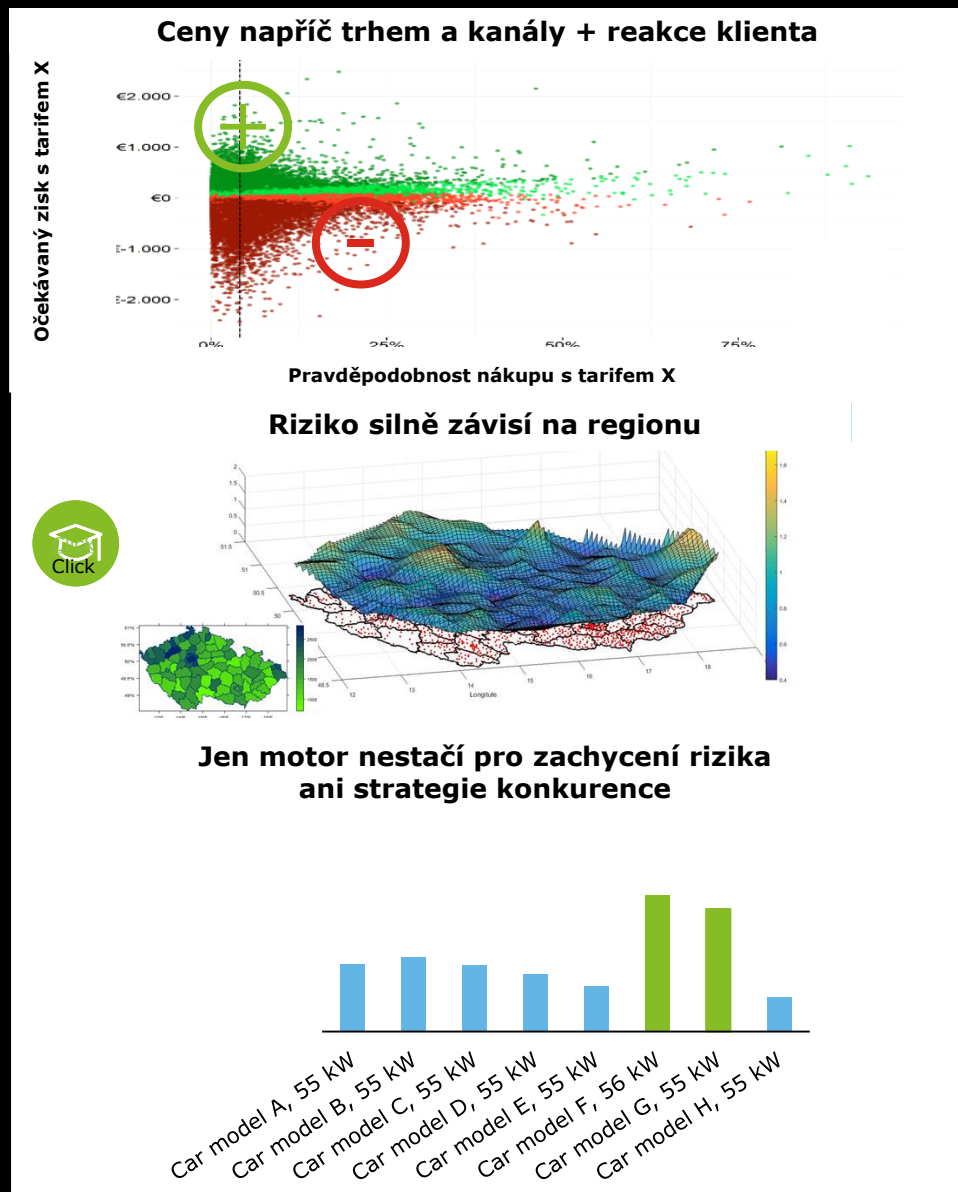
Dosažené cíle

- Zvýšení konkurenceschopnosti lepší segmentací
- Zdvojnásobení objemu při poklesu škodního procenta
- Snížení režijních nákladů jako důsledek zvýšení objemu
- Větší flexibilita a řízení cenové strategie

CASE STUDY 2 (ČR)

ZVÝŠENÍ RETENCE V ŽIVOTNÍM POJIŠTĚNÍ

Cíl

Podpora úspěšného vybudování retenčního call centra v životním pojištění a zvýšení retence zákazníků v ŽP.

Použité analytické modely

Model CLV (customer life-time value) společně s individualizovanými prediktivními modely storen a pojistných událostí identifikují cílové klienty.

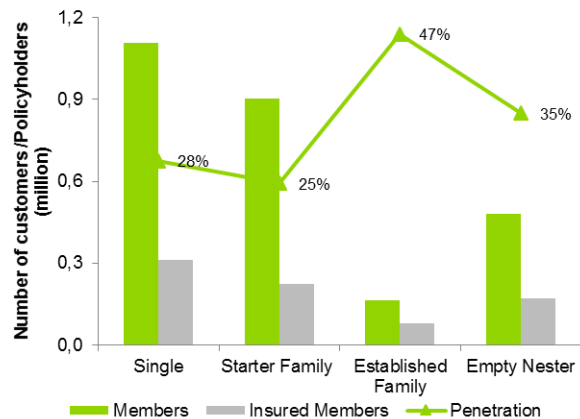Prediktivní model šance udržení klienta identifikuje osoby s vyšší pravděpodobností pozitivní reakce na retenční nabídku.

CLV

Predikovaná storna
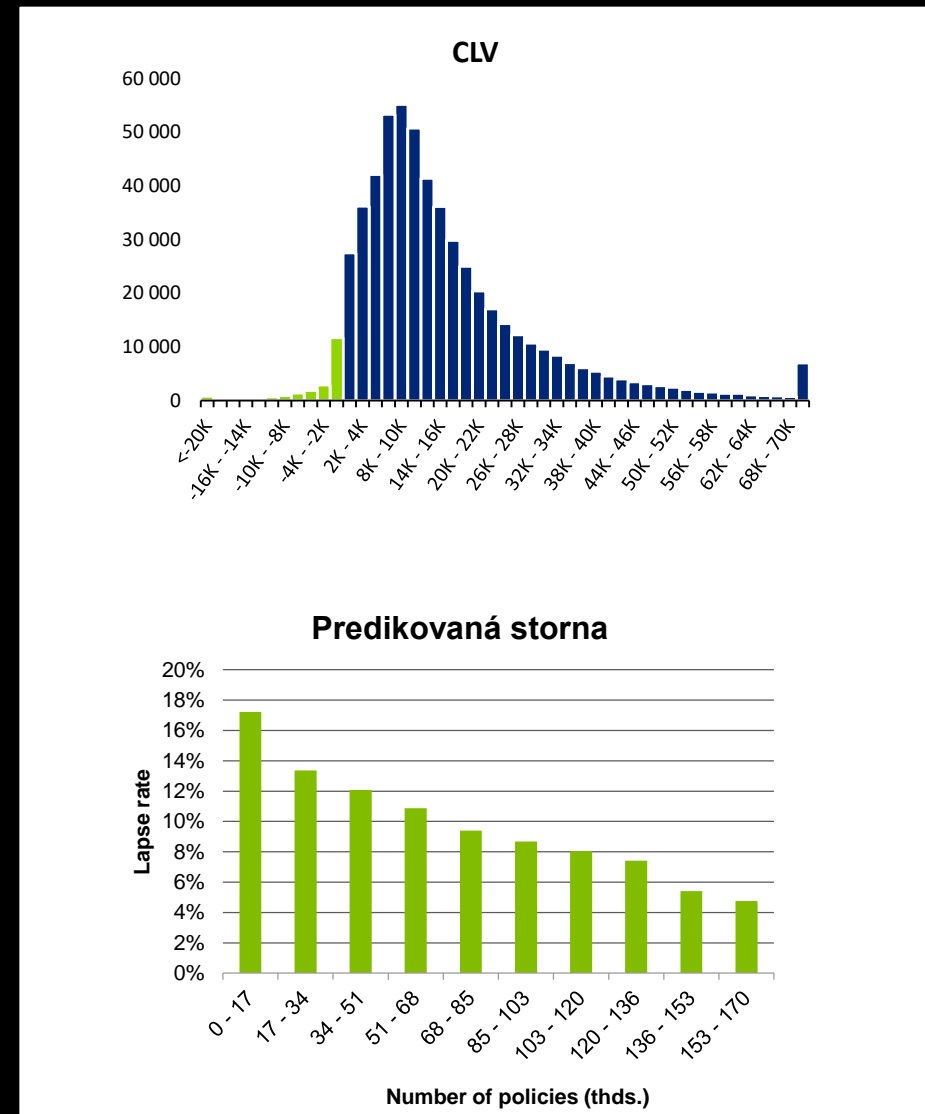
CASE STUDY 3 (ČR)
POUŽITÍ BANKOVNÍCH DAT V NABÍDCE ŽIVOTNÍHO I NEŽIVOTNÍHO POJIŠTĚNÍ

Foreign Benchmark Segment Size and Penetration

Kde jsme cenově konkurenceschopní (příklad: 1 z dimenzí segmentace pojistných tarifů)
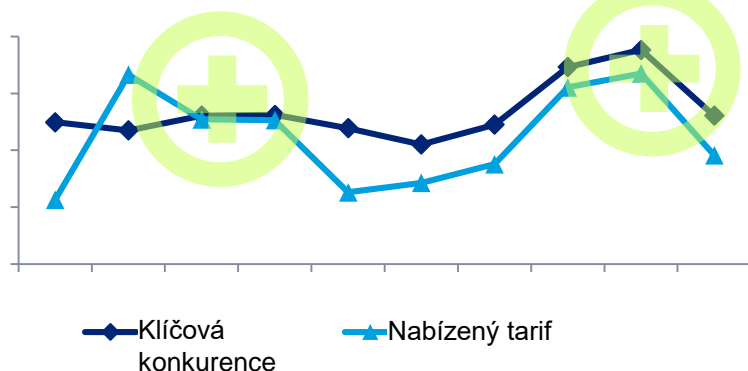
Životní pojištění

Využití informací o důležitých momentech v životě klienta

Načasování nabídky pojištění
(svatba, narození dítěte, …)

Neživotní pojištění

Pouze z dat banky jsme predikovali:

Relevance nabídky

Má auto? Platí si pojištění? Blíží se obnova?

Šance na úspěch nabídky

Budeme levnější? Příklon k naší bance, reakce na nabídky po telefonu?

Rizikovost klienta

Pojistný segment, zkušenost banky s klientem

REGULATORY AND BIG DATA
IFRS

Impact analysis in Power BI

IFRS

Non mathematical projects:

GDPR

PRIIPS

Business projects

THANK YOU.

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