

# Hackathon : iptiQ EMEA Experience Analysis

iptiQ EMEA Pricing team  
November 6th

now life is easier for everyone

# Why is experience analysis important ?

- iptiQ is a **start-up**, our portfolio is growing and now reaching the stage where we can conduct experience studies with credibility
- By conducting this in an **accurate, consistent and timely** manner we can:
  - ✓ Closely monitor our portfolio and **identify risks**
  - ✓ Use this **insight to drive changes in** underwriting, product feature or pricing to **protect profitability**
  - ✓ Understanding the future expected mortality and morbidity to accurately reflect any change to our best estimate assumptions and **achieve costing accuracy**
  - ✓ **Detect rapidly** any unexpected pattern in the mortality/morbidity/persistency to investigate further
  - ✓ Share insights with our clients to **enhance our partnerships and drive growth**

# Before / After

	BEFORE (early 2020)	NOW
Data	<b>Inconsistent sources</b> , limited quality checks	<b>Single source of data</b> in the iptiQ data warehouse, recorded catalogue of checks speeds up first stage of EA and improves knowledge of portfolio
Process	<p><b>Ad-hoc exercise</b> for each client using excel, SAS or outsourcing drawing on reinsurance/CUO</p> <p>Limited documentation and understanding leading to <b>errors</b></p> <p>Limited communication</p> <p><b>Limited consistency</b> of approach</p>	<p>Experience analysis process <b>embedded</b> into the pricing processes and guidelines</p> <p>The R package is <b>available to everyone</b> in the team, versioned in git and <b>documented</b></p> <p>The same “language” used for each experience analysis exercise in all countries creating <b>consistency and better accuracy</b></p> <p><b>Learnings</b> shared within the team</p>
Resources	<p><b>Costly</b> SAS access \$3000 per person per year</p> <p>Silo operating leading to <b>Limited expertise</b> in team</p> <p>Requirement to draw on <b>other departments</b></p>	<p>iptiQ pricing team can run new experience analysis in a <b>limited timeframe</b></p> <p><b>Upskilling</b> of actuarial analysts to grow their role and responsibility</p>
Timeframe	Up to <b>3 months</b> including data cleaning and preparation, lack of clarity meant it took <b>many months to fix</b> missing mortality improvements in TAF	<p>Latest experience analysis work was run in <b>1 week</b> without large effort for the team</p> <p><b>Future – 2 or 3 days</b></p>

# Before / After

## BEFORE (early 2020)

**Time consuming** word documentation, created from scratch each time

Different styles/content/**lack of consistency**

Excel / PowerPivot table produced **manually**

**Difficulty to spot** the main risk factors explain the experience

**Hard to drill down** into details

## NOW

Easily **reproducible documentation** using R markdown

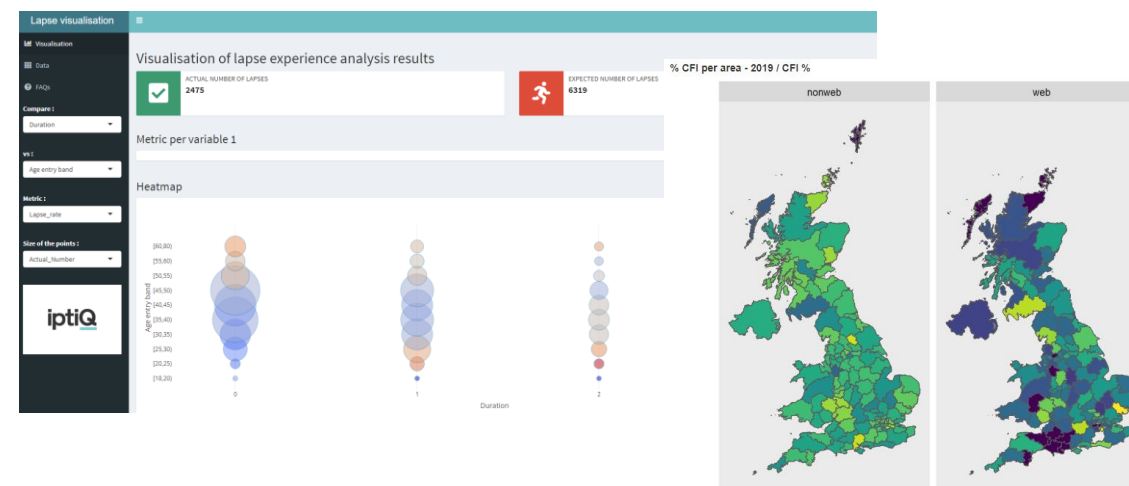
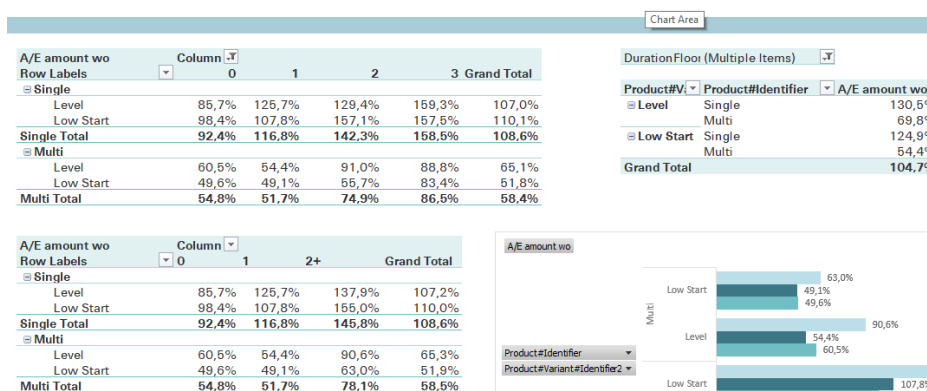
**Visualization** of the results using heatmaps and all risk factors available to better investigate the results, **detect patterns and trends**

**Accessible** to all stakeholders without running code

Easily **sharable with clients** to develop deeper relationships and align interests

**More improvements in pipeline for the future**

## OUTPUT



# Engagement

- ✓ Weekly team '**code-a-longs**' sharing learnings and challenges on real tasks
- ✓ **Team commitment to 'use R first'** for data analysis/cleaning tasks (sorry Excel!)
- ✓ Data camp **trainings diarized and prioritized**
- ✓ Production of all Experience Analysis for our annual Open Business Reviews to be completed by the team, **each and every team member will have exposure** to these tasks
- ✓ Reaching out to other Atelier teams to **share and discuss** our experience and ES code
- ✓ **Next project planned:** Business Mix dashboard, **2 new 'champions'** for this



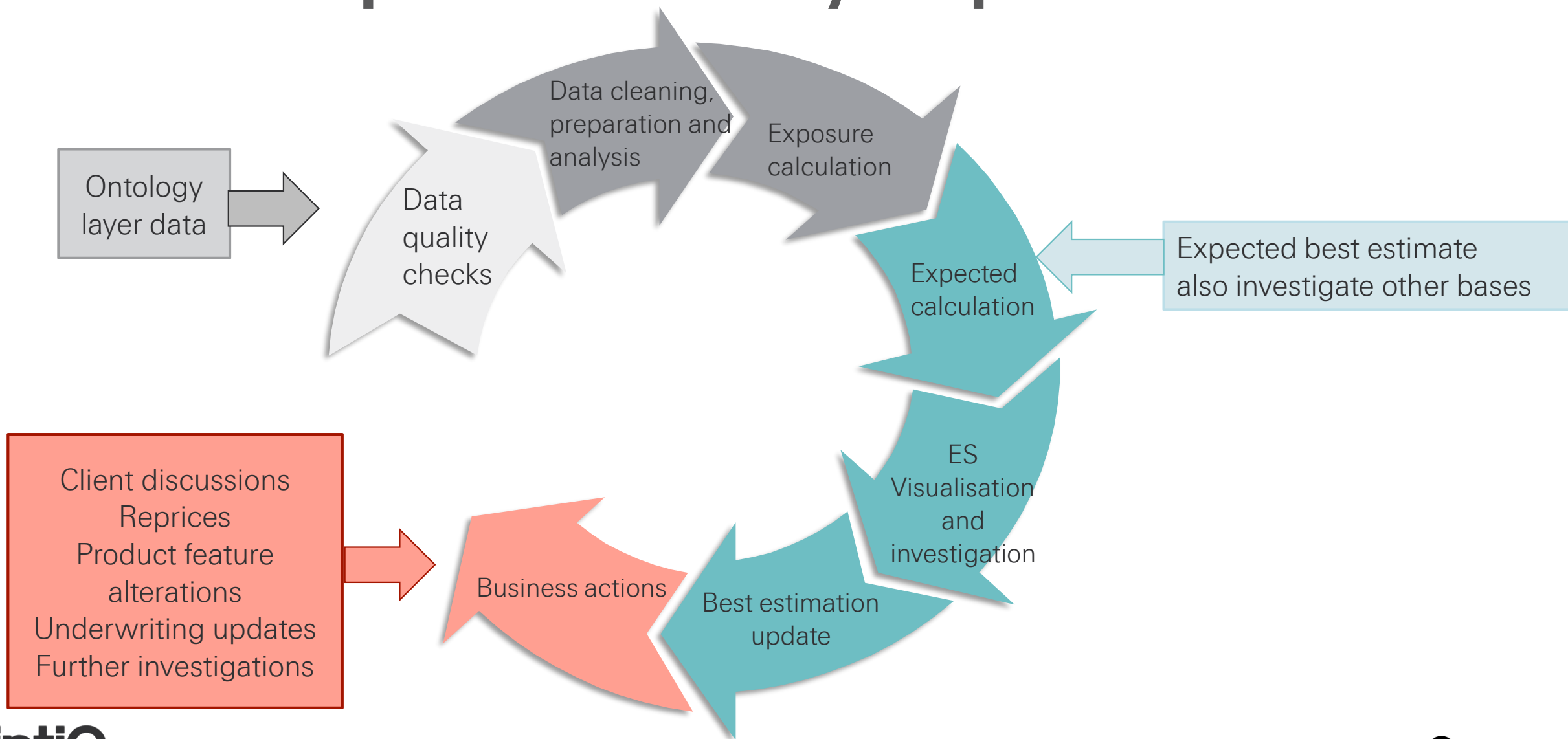


# Appendix



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# Experience analysis process



# iptiQ ES R Package

- Why a R package ?
  - templates with relevant code / data checks included
  - control versioning : everyone has the same function
  - Efficiency / Simplification
  - Documentation of the function and transparent code



- **Functions :**
  - Exposure calculation function
  - Result function (to come)
- **Rmd Templates (producing html) :**
  - Data quality & analysis
  - Starting point for all experience analysis

calc\_exposure (iptiQESpackage) R Documentation

### Exposure function

**Description**

The function is splitting each policy into calendar year, age last birthday, duration bands and calculate the corresponding exposure.

**Usage**

```
calc_exposure(dataset, inv_start, inv_end, endstatus)
```

**Arguments**

Argument	Description
dataset	Dataset used to apply the function
inv_start	Start observation date of the analysis
inv_end	End observation date of the analysis
endstatus	name of the column flagging with a 0 or 1

**Details**

The function requires the following columns in the data

- doi : starting date of the policy
- doe : date of exit of the policy - if n/a, this is replaced by the date of birth
- dob : date of birth

**1 Import Data**

**2 Policy Status**

status	n
Active	5919
Cancel	21
CFI	4947
Expiry	1261
Lapse	577

**3 Check duplicates of policy number**

line_of_bussines	duplicates
1	1
2	1
3	1
4	1
5	1
6	1
7	1
8	1
9	1
10	1
11	1
12	1



# Visualisation dashboard

- Dashboard produced with R Shiny and available to all stakeholders online on R Studio Connect without running any code

<https://rstudioconnect.atelier.swissre.com/connect/#/apps/389/access>

- Available for lapse for now – to be extended to claim experience results