Executive Summary

Painpoint: Vision of the Issue

Context

Ambition & Added value

Analysis Framework

Drug coverage constitutes a significant part of expenditure for French Social Security which records a deficit of €9.7bn in 2014

The Healthcare ecosystem is complex, involves Stakeholders at all levels, requires understanding the specifics of drug reimbursement in France, and potential fallouts on health

We aim at reducing the overall reimbursement burden by tackling 3 main issues: over-prescription, waste and the suboptimal coverage criteria

Our methods rely on a thorough analysis of the publicly available datasets we have, and a set of indicators that will evaluate our impact at different levels

1   Datasets overview

2   Key Success Factors & KPIs

3   First analysis of data and limits

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High performance. Delivered.

Drug coverage is a significant item of expenditure for the French Social Security, which records a deficit of €9.7Bn in 2014

Drugs in France can be over-prescribed, wasted and the coverage criteria are suboptimal

French Social Security
(4 branches)

Healthcare

Retirement

Family

Occupational injuries & illness

€6.5Bn deficit in 2014*

+6% p.a. over 2012-14 period*

€20Bn drugs costs in 2014*

Objective

- **0** economic & social assessment for coverage criteria
- **1.5 kg** of unused medicine are stored in each French Household*
- **90%** of medical consultations result in drug prescriptions in France vs. 43% in the Netherlands*

Improve government spending of the Healthcare branch

*Sources: Social Security Annual Report, Open Medic dataset, HAS, Vie-publique.fr (site officiel), Agence Nationale de Sécurité du Médicament

Pain Point

This could be optimized by leveraging different channels such as drug waste and coverage criteria

How to improve drug coverage of Social Security's Healthcare branch?

Reimbursement

Health-focused criteria

1 SMR

Five criteria solely focused on health value, not economic value

2 ASMR (5 levels)

Improvement comparing to existing treatments ?

Inertia of evaluation

Rates re-evaluated every 5 years

Drug waste

Drug packaging

Mismatch with treatment dose
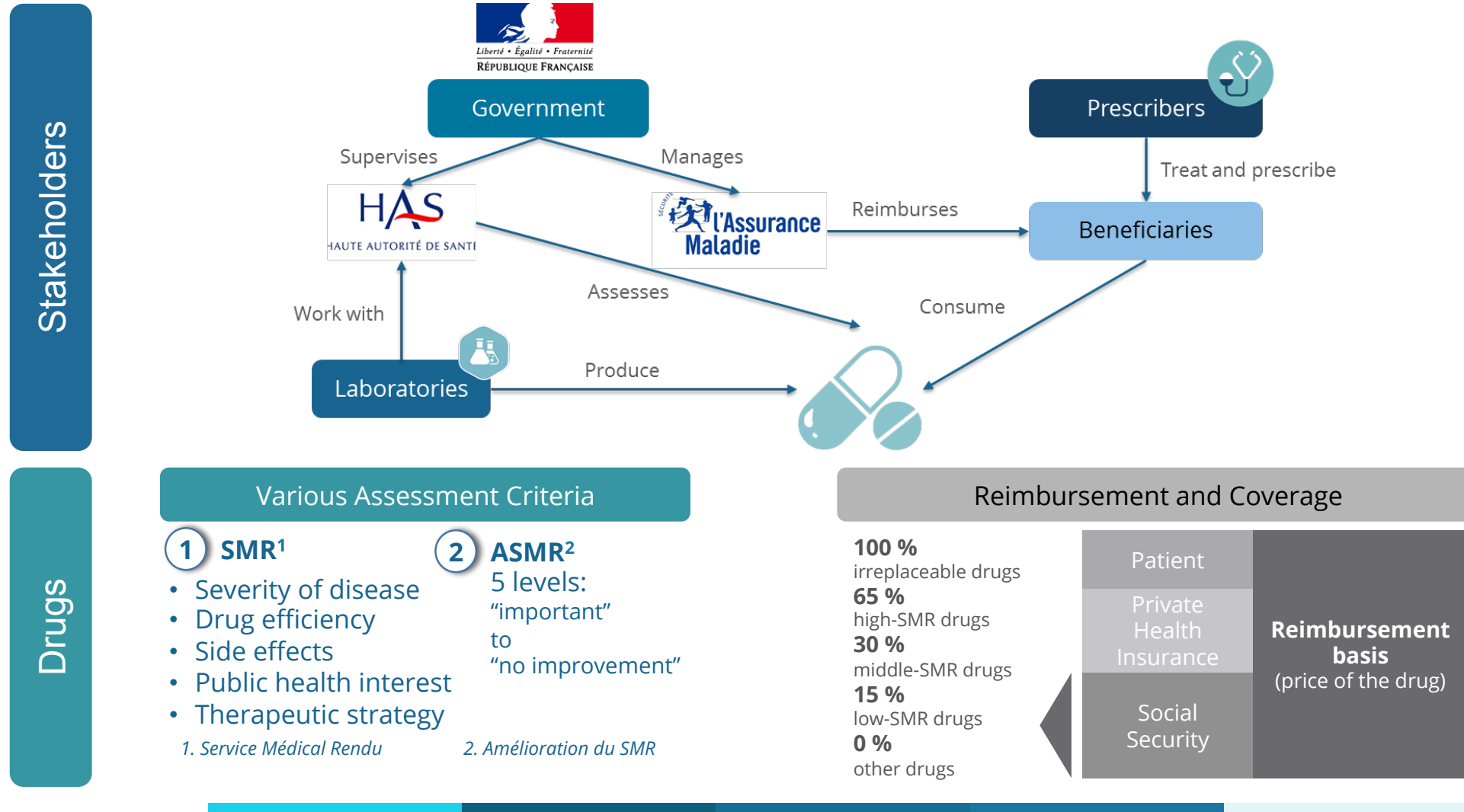
Over prescription

1 Patients

- Premature discontinuation of treatment
- Easiness to obtain drugs

2 Doctors (& Lab firms)

- Lobbying
- Laxity
- Lack of information

The Health Ecosystem involves various stakeholders and requires to understand some specifics about drug reimbursement in France
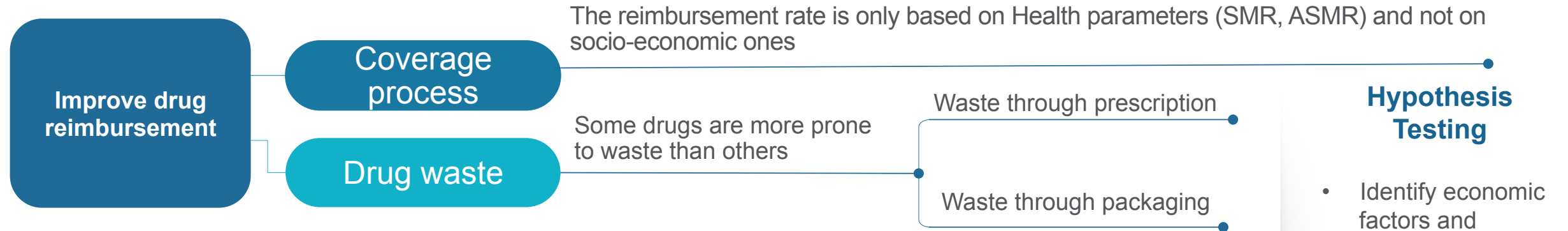
Stakeholders

RÉPUBLIQUE FRANÇAISE
Liberté • Égalité • Fraternité

Government

Supervises → **HAS** HAUTE AUTORITÉ DE SANTÉ

Manages → **l'Assurance Maladie**

Work with

Laboratories

Produce →

Assesses

Prescribers

Treat and prescribe

Reimburses → **Beneficiaries**

Consume

Drugs

Various Assessment Criteria

(1) SMR¹
- Severity of disease
- Drug efficiency
- Side effects
- Public health interest
- Therapeutic strategy

(2) ASMR²
5 levels:
"important"
to
"no improvement"

1. Service Médical Rendu   *2. Amélioration du SMR*

Reimbursement and Coverage

100 % irreplaceable drugs
65 % high-SMR drugs
30 % middle-SMR drugs
15 % low-SMR drugs
0 % other drugs

Patient

Private Health Insurance

Social Security

Reimbursement basis (price of the drug)

Context

An ambitious project that adds economic and healthcare value to all stakeholders in the system

Stakeholder	Added Value	Expected impact
Government	• Curb the deficit of the Health Insurance branch • Improve the Government's transparency and responsiveness	●●●◑
Patient	• Ensure the sustainability of the Public Health Insurance system • Incentivize reasonable drug consumption	●●●○
Health professionals	• Enhance public image of drug prescribers and laboratories	●●○○

Global Ambition → **Adding an economic standpoint to the coverage analysis while capitalizing on the Government's Health expertise**

Ambition & Added Value

Reimbursement rate can be optimized and we identified patterns in wasted drugs

Improve drug reimbursement

Coverage process

The reimbursement rate is only based on Health parameters (SMR, ASMR) and not on socio-economic ones

Drug waste

Some drugs are more prone to waste than others

Waste through prescription

Waste through packaging

Hypothesis Testing

- Identify economic factors and compare them to Beneficiary Data to adjust the reimbursement rates
- Look for the 10 most wasted drugs in the past 3 years and look for the patterns presented above or additional ones

→ Hypothesis 1

The reimbursement rate could be **optimized** by taking into account **economic factors** in addition to health criteria:
- Generic substitution
- Spread among population
- Waste

→ Hypothesis 2

Some drugs are more prone to waste than others:
- Easily available
- High number per box
- High reimbursement rate

→ Hypothesis 3

These highly wasted drugs share common **patterns**:
- The 10 most wasted drugs account for a high percentage in the Health Insurance Deficit
- Drugs considered as wasted in the past should still be wasted in the future

Hypothesis

A broad and mostly categorical dataset, with complex terminologies…

USAGE

OpenMedic (2014)

CIP13
ATC1
ATC2
ATC3
ATC4
ATC5
Generic Drug Group
Generic Group

Age
Sex
Region
Prescriber
Amount covered (€)
Basis for reimbursement (€)
# of boxes delivered

AGGREGATES BY REFERENCES

ATC*X*
ATC*X*
ATC*X*

ATC*X* class
Region
Amnt covered (€)
Basis (€)
boxes
consumers

CIP13
CIP13
CIP13

CIP13
Region
Amnt covered (€)
Basis (€)
boxes
consumers

For each ATC (*1 → 5*) & each CIP13: all indicators are aggregated by Beneficiary variables (Age, Sex or Region) and/or by Prescriber

Scale of our main dataset
- 1.8Mn+ rows
- 12,224 CIP13 references
- 1,138 ATC5 classes

REPAYMENT BY PRESCRIBER
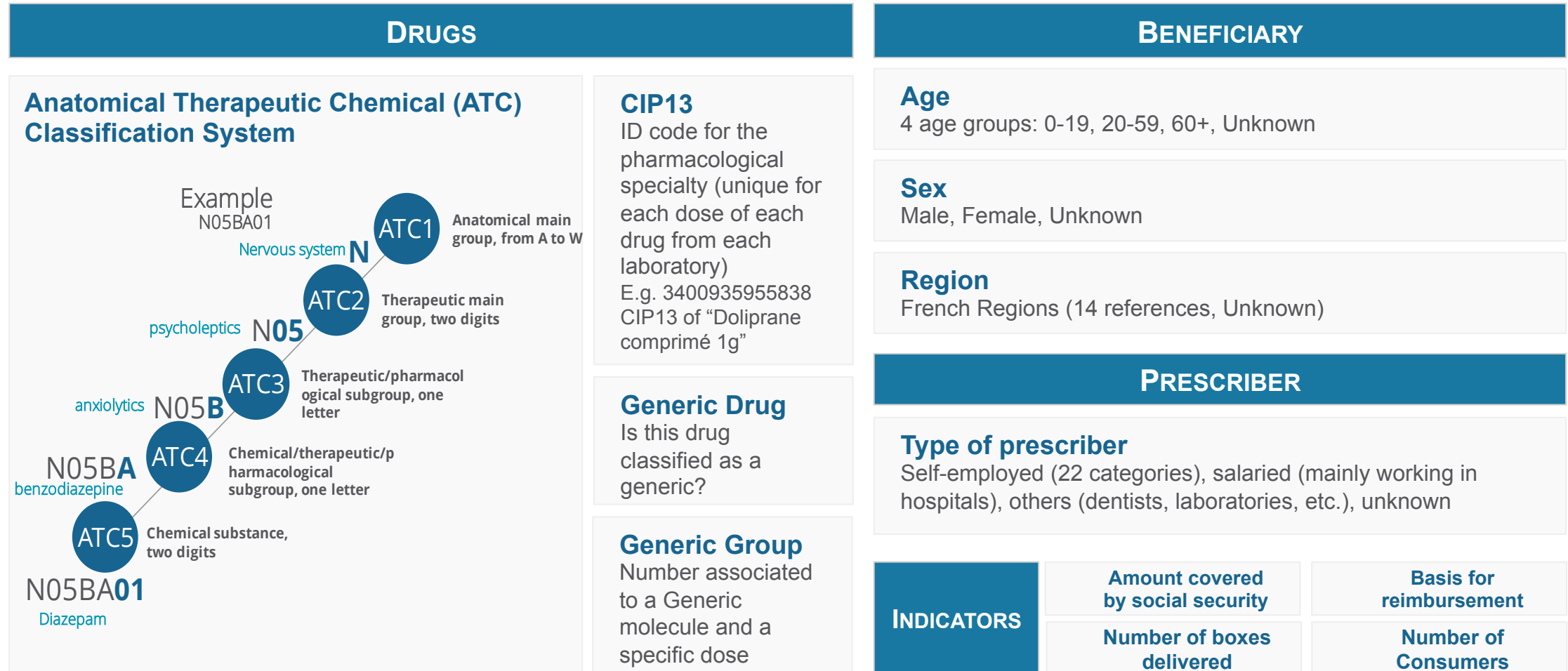**(self-employed or salaried)**

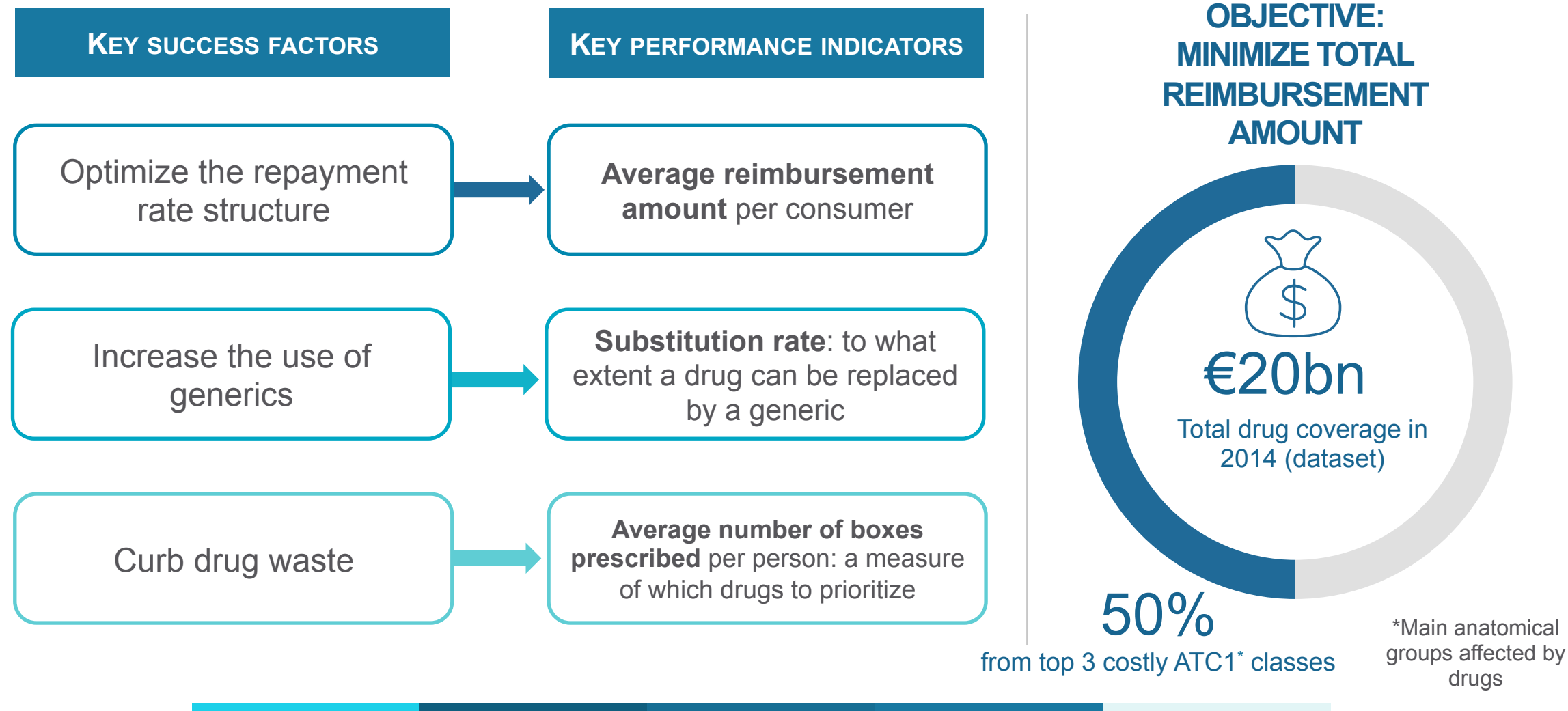### Medic'AM (2012-2014 and 1st semester 2015)

CIP7
Name
Product
EphMRA code

ATC class
Basis (each year)
boxes (each year)
Amount covered (each year)

… containing information about drugs, beneficiaries and prescribers

DRUGS

Anatomical Therapeutic Chemical (ATC) Classification System

Example
N05BA01

Nervous system **N**

psycholeptics **N05**

anxiolytics **N05B**

benzodiazepine N05B**A**

Diazepam N05BA**01**

ATC1 — Anatomical main group, from A to W

ATC2 — Therapeutic main group, two digits

ATC3 — Therapeutic/pharmacological subgroup, one letter

ATC4 — Chemical/therapeutic/pharmacological subgroup, one letter

ATC5 — Chemical substance, two digits

CIP13
ID code for the pharmacological specialty (unique for each dose of each drug from each laboratory)
E.g. 3400935955838
CIP13 of "Doliprane comprimé 1g"

Generic Drug
Is this drug classified as a generic?

Generic Group
Number associated to a Generic molecule and a specific dose

BENEFICIARY

Age
4 age groups: 0-19, 20-59, 60+, Unknown

Sex
Male, Female, Unknown

Region
French Regions (14 references, Unknown)

PRESCRIBER

Type of prescriber
Self-employed (22 categories), salaried (mainly working in hospitals), others (dentists, laboratories, etc.), unknown

INDICATORS

Amount covered by social security	**Basis for reimbursement**
Number of boxes delivered	**Number of Consumers**

Success is defined by 3 key factors that are measurable

KEY SUCCESS FACTORS	KEY PERFORMANCE INDICATORS
Optimize the repayment rate structure	**Average reimbursement amount** per consumer
Increase the use of generics	**Substitution rate**: to what extent a drug can be replaced by a generic
Curb drug waste	**Average number of boxes prescribed** per person: a measure of which drugs to prioritize

OBJECTIVE: MINIMIZE TOTAL REIMBURSEMENT AMOUNT

€20bn

Total drug coverage in 2014 (dataset)

50%

from top 3 costly ATC1* classes

*Main anatomical groups affected by drugs

Big trends emerge from first analysis of Data…
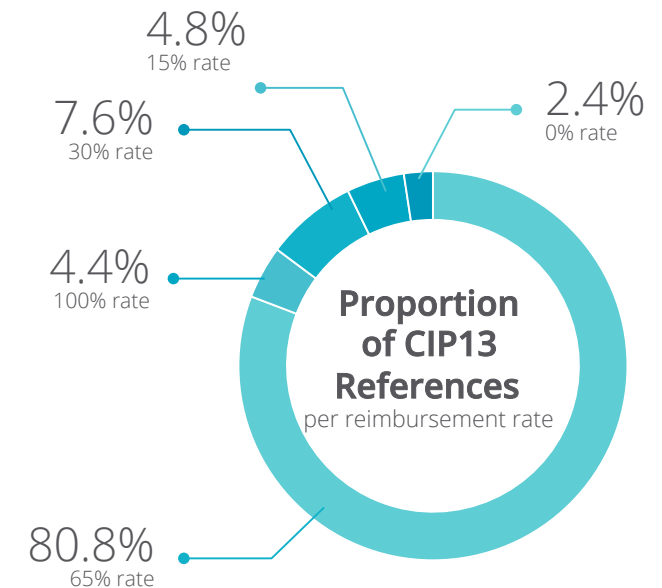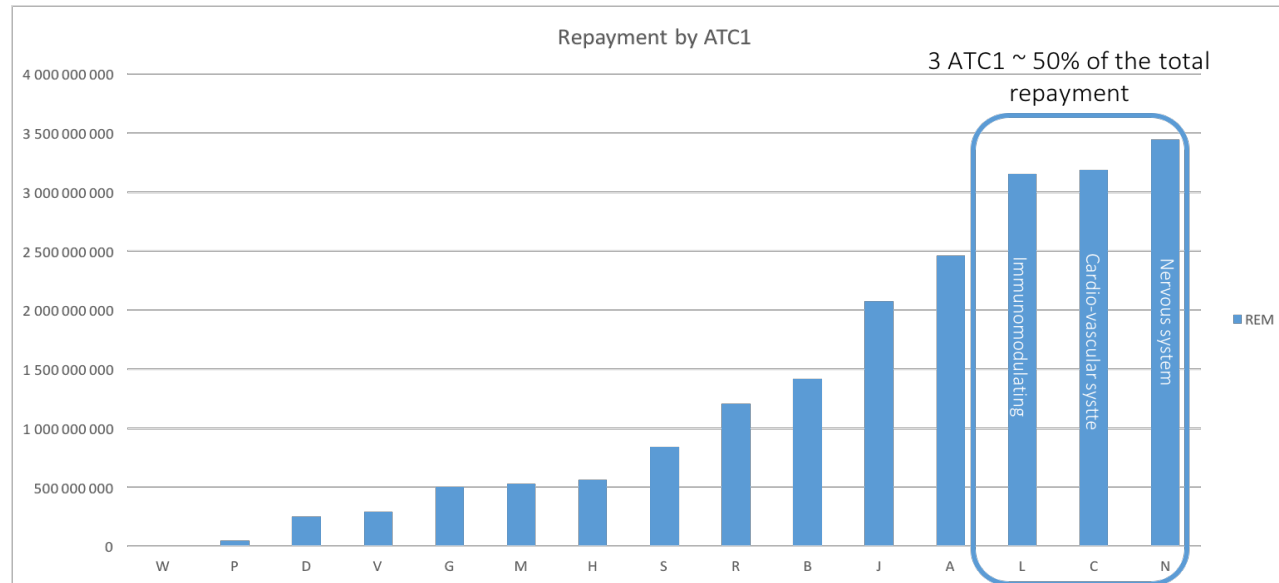
Trends & Insights:

3 On average, over **5 boxes per prescription**

2 An average **32% substitution rate** to generics across the board, 18% among top 3 costly ATC1* Classes

1 Average reimbursement per consumer of €58 **excluding** top 5% of beneficiaries, €4490 **among** top 5%

Repayment by ATC1

3 ATC1 ~ 50% of the total repayment

Immunomodulating | Cardio-vascular systte | Nervous system

REM

W P D V G M H S R B J A L C N

4.8%
15% rate

7.6%
30% rate

2.4%
0% rate

4.4%
100% rate

Proportion of CIP13 References per reimbursement rate

80.8%
65% rate

...even though some limits exist at different levels and can be partly addressed by documentation and meetings with industry experts

Limits

Data

- Need to use other data sources to complete the initial datasets
- Predominantly categorical data, hard to analyze

Knowledge

- Challenging topic with many technical aspects
- A lot of unknowns in the drug reimbursement evaluation and process
- Diseases and treatments specificity

Scope

- Inability to measure our full impact on health issues

How we are addressing these limits

- Desk research
- Exploratory data analysis on other sources
- Interviews done (1 general practitioner, 1 junior hospital doctor, 1 pharmaceutical laboratory manager and 2 pharmacists so far)