Brazilian Ministry of Health (MoH): Generating major savings pharmaceutical stock control with mobility
• Federal Constitution – 1988

• Unified Health System – SUS (Sistema Único de Saúde)

• 207 million of Brazilians

• >190 million covered

• >155 million dependent
NonCommunicable Diseases
(Chronic Diseases)
World Health Organization

• Cardiovascular diseases
• Cancers
• Respiratory diseases
• Diabetes
• etc
• 40 million deaths
# Pharmaceutical care components

<table>
<thead>
<tr>
<th>BASIC</th>
<th>SPECIALIZED</th>
<th>STRATEGIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Essential medicines and</td>
<td>Medicines and comprehensive care</td>
<td>Medicines for epidemic and endemic diseases</td>
</tr>
<tr>
<td>supplies</td>
<td></td>
<td></td>
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<tr>
<td>Target</td>
<td>Target</td>
<td>Target</td>
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<tr>
<td>Assistance to the most</td>
<td>Treatment of diseases affecting a limited</td>
<td>Treatment for epidemic and endemic diseases,</td>
</tr>
<tr>
<td>prevalent diseases</td>
<td>number of users</td>
<td>for example, HIV/AIDS, tuberculosis,</td>
</tr>
<tr>
<td></td>
<td>Drugs used in later stages of treatment</td>
<td>Hanseniasis, malaria, leishmaniasis, Chagas</td>
</tr>
<tr>
<td></td>
<td></td>
<td>disease</td>
</tr>
<tr>
<td>Scope</td>
<td>Scope</td>
<td>Scope</td>
</tr>
<tr>
<td>Primary health care in the</td>
<td>Treatment of diseases according to National</td>
<td>Control strategy focuses on treating the</td>
</tr>
<tr>
<td>outpatient setting</td>
<td>Guidelines</td>
<td>patients</td>
</tr>
<tr>
<td>Primary healthcare units.</td>
<td>Patients must comply with Inclusion Criteria</td>
<td></td>
</tr>
<tr>
<td>Family Health Program</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: http://www.ccates.org.br/content/cont.php?id=21&l=en
National Pharmaceutical Assistance Management System - Hórus

[Diagram showing the system's flow from State to Counties to Outputs and User SUS Patient]
Problem

• Inventory management
• Specific situation
• Lack of confidence
Problems with medicine manual programming

Divergences between lists, for example average monthly consumption differ from the number of authorized dispensations.

Uncertainties and information gaps.

Time spent analyzing lists for quantitative authorized.

Employees involved, who could be engaged in other management or assistance actions.

Low quality of information. Need to complement inventory and additional logistics costs and time consuming flow.
Our Questions

- Spreadsheets analysis
- Trusted data
- Reality x Shady Interests
Our Proposal

- Statistician
- Historical data analysis
- Choose the best algorithm
The solution

- Data cleansing
- Data organization
- Compilation
- Pilot Study
- R algorithms
Why so much time and so many calculations?

- 8,515,790,090 km²
- 26 states + 1 Federal District
- Locations not near and difficult to reach
- Life in danger
- Transportation and logistics costs
The results so far

- 7 states (2017)
- -2,2 million units of drugs (-17%)
- 26% $ economy
Expansion of economy

- $9 million
- 2 quarters
- 62,000 tuberculosis patients
- One year!

$9 million
(R$28 million)
Monitoring

- Tactical
- Operational
Using collaboration feature

• New feature
• Negotiation over the Internet
• Improve Analisys
New methodology for medicine automated programming

Dispensing in the Horus system

Historical series of dispensations

Predictive statistical analysis

Reports from automated programming
What’s next?

- Strategic level
- 20 States missing
- Increase savings
Benefits

Characterization of the different consumptions in the states / regions of the country;

Control of the risk of shortages of centrally-acquired drugs;

Use of a robust statistical method to perform quarterly programming;

Quantitative data of medicines to be sent more reliable with the needs of the states.
Projections of economy

$ 400 million annually

20% budget

(R$1.2 billion)
Thank you!