Brazilian RWD ecosystem is composed by a set of databases with distinct formats and availability

### Brazilian RWD Ecosystem

#### Drug Consumption
- Drug consumption data collected from wholesalers
- Institutional level data (CNPJ)
- **Source:** Tenders plus Hospital Consumption
- **Coverage:** Varies from 50~90% depending on market
- **Limitations:** Direct sales to wholesale

#### Medical Claims
- Transactions between payers and providers
- **Source:** DSUS
- **Coverage:** 75% of population
- **Limitation:** Outpatient/OOP

#### LPD Claims (RLK)
- Integration of multiple claims database
- **Source:** LPD DSUS
- **Coverage:** 75% of population
- **Limitation:** Outpatient/OOP

#### EHR
- Patient records information collected within HC providers
- **Source:** Public Hospitals
- **Coverage:** Varies
- **Limitation:** Availability of EMR
- **Need of EC approval**

#### Public Setting
- **Source:** Hospital Consumption
- **Coverage:** Varies from 50~90% depending on market
- **Limitations:** Direct sales

#### Private Setting
- **Source:** ANS and/or Outsourcing Co.s
- **Coverage:** 25% of population
- **Limitation:** ANS data is still underdevelopment
- Sample size depends on partner chosen

- **Source:** Outsourcing Co’s and HMOs
- **Coverage:** Depends on HMO sample
- **Limitation:** Institutional level data is not available
- Access to HMOs data needs previous negotiation.

- **Source:** Private Hospitals
- **Coverage:** Varies
- **Limitation:** Availability of EMR
- **Need of EC approval**
RWD availability in Brazil mainly rely on public setting claims information

Where we are

<table>
<thead>
<tr>
<th>1980’s to 1990’a</th>
<th>2000’s to 2010’s</th>
<th>2010’s</th>
</tr>
</thead>
<tbody>
<tr>
<td>DataSUS Creation</td>
<td>Increasing usage of claims</td>
<td>Data integration and CDM</td>
</tr>
</tbody>
</table>

**Main Events**

**1980’s to 1990’a**
- DataSUS is a medical claims information system
- It is the official admirative Brazilian MOH used to reimburse public setting providers within public setting (~70% population)
- It is a fragmented system of databases

**2000’s to 2010’s**
- DataSUS data started to become public available through transparency of information laws
- An increasing number of publications started to appear based on DataSUS information
- Fragmentation of data was still an issue

**2010’s**
- (2011) Integration of datasets using record linkage methods
- (2015) Longitudinal patient analysis and standardization of procedures
- (2018) Start of activities to convert DataSUS to CDM
- (2019) DSUS Ambulatory information system converted to CDM

**1980’s to 1990’a**

**2000’s to 2010’s**

**2010’s**
At this point main efforts is to convert ambulatory and hospital datasets to CDM

DataSUS Main Sources of Information

<table>
<thead>
<tr>
<th>Event</th>
<th>Data Collection</th>
<th>Usage</th>
</tr>
</thead>
</table>
| **SIM** | **Mortality info system**  
• Death cases | **Death Certificate** | • Mortality Studies  
• Death surveillance (infants, mothers, etc) |
| **SINASC** | **Live birth info system**  
• Birth cases | **Live birth certificate** | • Child health monitoring  
• At risk child surveillance |
| **SINAN** | **Infirmity under notification Info System**  
• Notification of cases (Dengue, HCV, Malaria and others) | **Notification formulary**  
**Investigative formulary** | • Tracking of infirmity under notification  
• Outbreaks, epidemics |
| **SIH** | **Hospital information system**  
• Admissions, inpatient information, surgeries | **Hospital admission authorization (AIH)** | • Hospital morbidity, cost management, in patient admission, surgeries and etc |
| **SIA** | **Ambulatory production info system**  
• Drug consumption | **High complexity procedure authorization (APAC)**  
**Ambulatory production bulletin (BPA)** | • Drug consumption,  
Oncology (CTx/RTx), Dialysis, Exams, psychiatry and others |
DSUS covers 75% of the Brazilian population having around 100 million patients within datasets.

**DSUS Fact Sheet**

<table>
<thead>
<tr>
<th>General Database Information</th>
<th>Data Collection:</th>
<th>Medical claims from the information system of the Brazilian MOH, which is the backbone of hospital and high complexity/cost management system of the government. IQVIA developed a set of integration and linking methodologies to put all assets together and create a longitudinal asset combining SIA (ambulatory) and SIH (hospital)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Patient Type:</strong></td>
<td></td>
<td><strong>Inpatient &amp; outpatient hospitalizations</strong></td>
</tr>
<tr>
<td><strong>Data Coverage:</strong></td>
<td></td>
<td>~70%-75% of the population (150M patients) is under this MOH hospital setting</td>
</tr>
<tr>
<td><strong>History / Update Frequency:</strong></td>
<td></td>
<td>2008-Present / Quarterly updates with a 3-5 month lag</td>
</tr>
<tr>
<td><strong>Lowest Level Reporting Granularity:</strong></td>
<td></td>
<td>Up to hospital-level</td>
</tr>
<tr>
<td><strong>Data Access (transaction-level or aggregated):</strong></td>
<td></td>
<td>Raw and/or aggregated data</td>
</tr>
<tr>
<td><strong>Key Applications</strong></td>
<td></td>
<td>Treatment pathway, patient journey, treatment effectiveness, incidence / prevalence, patient profile, pharmacovigilance studies, risk management studies (PASS), burden of illness, rare diseases, HTA submission, HEOR, predictive analytics, ...</td>
</tr>
<tr>
<td><strong>Key Information</strong></td>
<td><strong>Basic:</strong></td>
<td>Age, gender, ethnicity, location</td>
</tr>
<tr>
<td></td>
<td><strong>Diagnosis / Procedures / Lab:</strong></td>
<td>Diagnosis (ICD10-CM, mandatory for claims approval)</td>
</tr>
<tr>
<td></td>
<td><strong>Procedures:</strong></td>
<td>Costs, resource utilization and a couple of funding/administrative info</td>
</tr>
<tr>
<td></td>
<td><strong>Treatment facilities:</strong></td>
<td>Hospital / provider name, legal entity code, geolocalization on ZIP code level</td>
</tr>
<tr>
<td></td>
<td><strong>Hospital facilities:</strong></td>
<td>Equipment, physicians affiliation, #beds, ...</td>
</tr>
<tr>
<td></td>
<td><strong>Others:</strong></td>
<td>Mortality and new born data, oncology dataset (standard information plus chemo regimen details and a couple of tumor info (disease staging, histopathology, ...)), nephrology / dialysis, complex Dx / Exams, psychologic assistance, ...</td>
</tr>
</tbody>
</table>
|                             | **Possibility to request additional information:** | Possible to enrich DSUS with other data assets available in Brazil:  
- Hospital Info: type of hospital, number of beds, equipment availability and number (MRI, tomography, PCI, etc), number of physicians per specialty and names with formal labor affiliation with the institution  
- Statistics Bureau (IBGE) to support epidemiologic evaluations in a municipality / ZIP code level (depending on the availability)  
- Private Setting (HMOs)  
Currently integrating DSUS assets to the private setting information datasets and to testing linking methods to incorporate private claims sources in ad hoc basis |
Through CDM conversion a set of analysis will be possible to be performed using OHDSI methods.

Example of Analysis using LPD DSUS

Geographic Distribution of AIS/MI Patients

Based on patient residency ZIP code

An Assessment Of Correlation Between Mortality And Distance From Patient’s Residence To Interventional Center In Percutaneous Coronary Intervention In Brazil

YK Matumoto, DF Campos, RP Rosim, AS Dauya, WA Hirth, Balbino Ferreira, AF DM Braie

Open Archive · PlumX Metrics
DOI: https://doi.org/10.1016/j.ijcard.2017.08.2836

In-hospital mortality by time of displacement

Patient living in São Cristóvão (SE), and was treated in the municipal hospital of the north region of Aracaju

- 7.5%
- 6.2%

< 1 hour

-17.0%
P = 0.03
For additional information, do not hesitate to contact us

**André Ballalai**

*Associate Principal*

*Head of Market Access, HTA and RWD*

andre.ballalai@IQVIA.com

+55 11 99871-3798