Departamento
de Controle do Espaço Aéreo
Department of Airspace Control

ATM047 Course – ATM Performance Indicators

Unit 1.3 – DATA ANALYSIS

Subunit 1.3.2 – INDICATORS RESULTS

October – 2024

DATA ANALYSIS

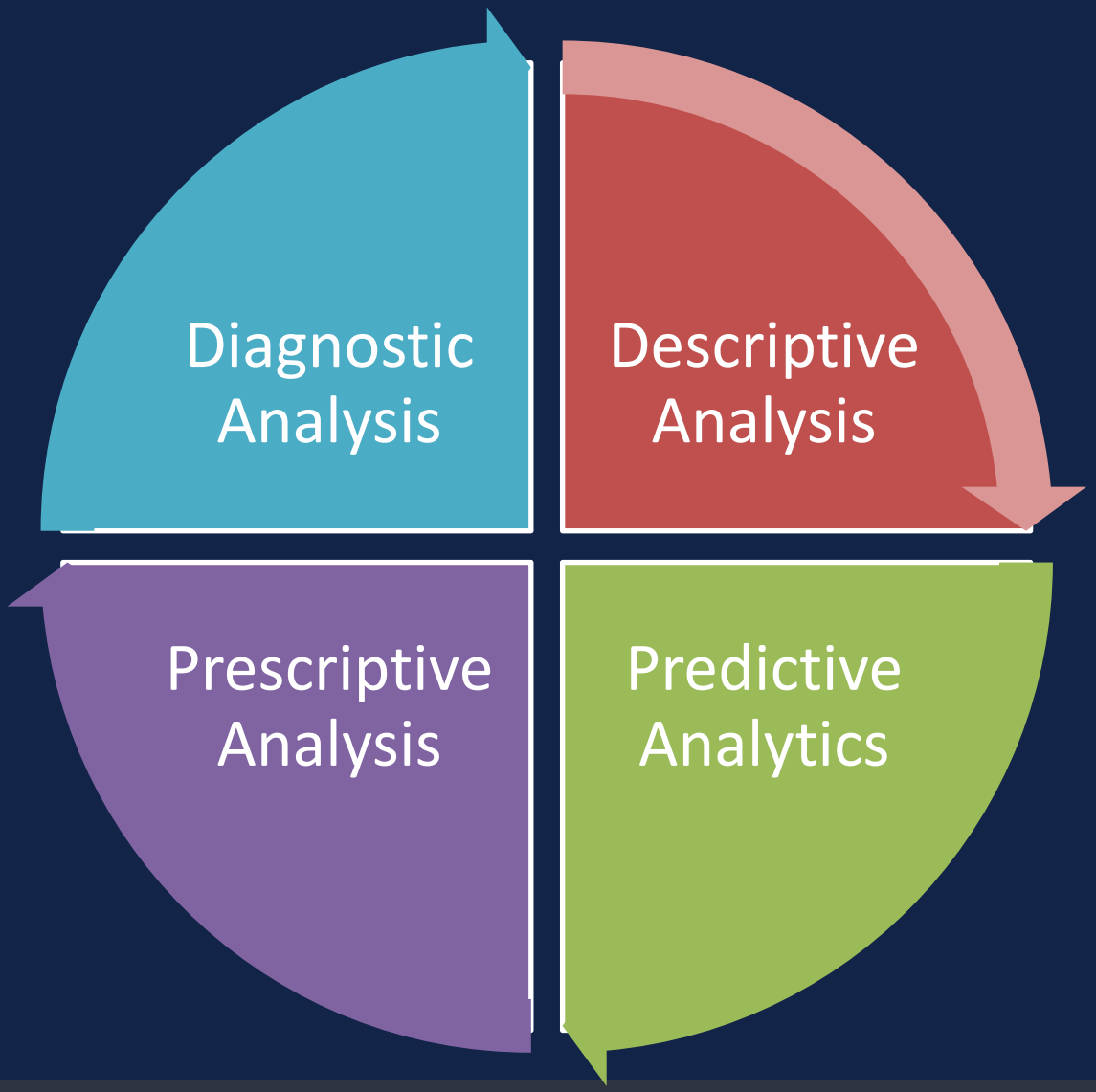
The Need for Managers with Data Analysis Skills

Consulting firm McKinsey and Company estimates that "there will be a shortage of talent needed for companies to gain an advantage in big data. By 2018, the United States alone could face a shortage of 140,000 to 190,000 people with deep analytics skills, as well as 1.5 million managers and analysts with the knowledge to use big data analytics to make effective decisions." (Manyika 2011). Why would the number of managers and analysts needed be 10 times greater than those with deep analytics skills? Surely data scientists are not so difficult to manage that they need 10 managers! The reason is that a company can leverage a data science team to make better decisions across many areas of the business. However, as McKinsey points out, managers in these areas need to understand the principles of data science to achieve this use effectively.

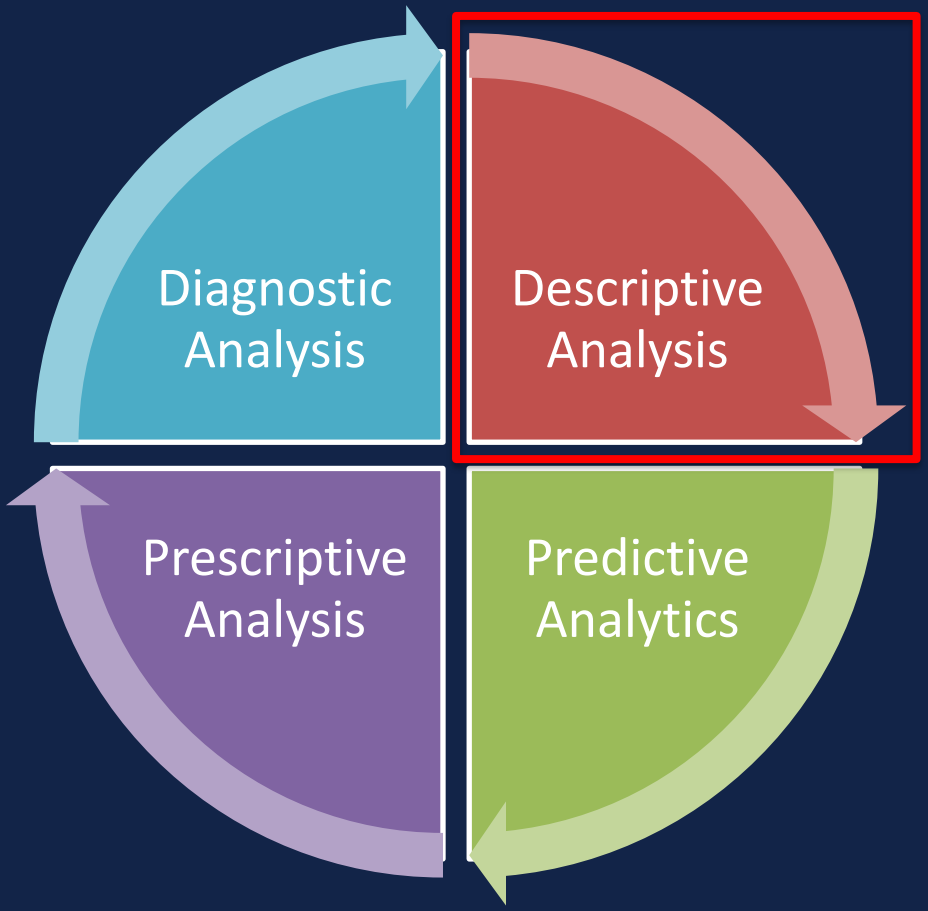
DATA ANALYSIS

- It is not enough to maintain a giant warehouse of information;
- It is necessary to extract knowledge that provides a basis for decision making.

DATA ANALYSIS



DATA ANALYSIS



- Understanding events;
- Help to make immediate decisions (in real time) with calm and security;
- Data is summarized, organized, and described through statistical metrics.

DATA ANALYSIS

Visão Geral Semanal - Horários Recomendados para Inspeção em Voo

Weekly Overview - Recommended Flight Inspection Schedule

	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	1:00	2:00
02/11/2020	A/D	A/D	A/D	A/D	A/D	A/D	A/D	D	A	A/D	A/D	A/D	D	A	A/D	A/D	D	A	A/D	A/D	D	D	A	A/D
03/11/2020	A/D	A/D	A/D	A/D	A/D	D	A/D	D	A	A	A/D	A/D	D	A	A/D	A/D	D	A	A/D	A/D	D	D	A	A
04/11/2020	A/D	A/D	A/D	A/D	A/D	A/D	A/D	D	A	A/D	A/D	A/D	D	A	A/D	A/D	D	A	A/D	A/D	D	D	A/D	A/D
05/11/2020	A/D	A/D	A/D	A/D	A/D	A/D	A/D	D	A	A	A/D	A/D	D	A/D	A/D	A/D	D	A	A/D	A/D	A/D	D	A	A/D
06/11/2020	A/D	A/D	A/D	A/D	A/D	A/D	A/D	D	A	A	A/D	A/D	D	A	A/D	A/D	D	A	A/D	A/D	D	A/D	A	A/D
07/11/2020	A/D	A/D	A/D	A/D	A/D	A/D	A/D	D	A	A/D	A/D	A/D	D	A/D	A/D	A/D	D	A/D	A/D	A/D	A/D	A/D	A/D	A/D
08/11/2020	A/D	A/D	A/D	A/D	A/D	A/D	A/D	A/D	A/D	A/D	A/D	A/D	A/D	A	A/D	A/D	D	A	A/D	A/D	D	A/D	A	A/D

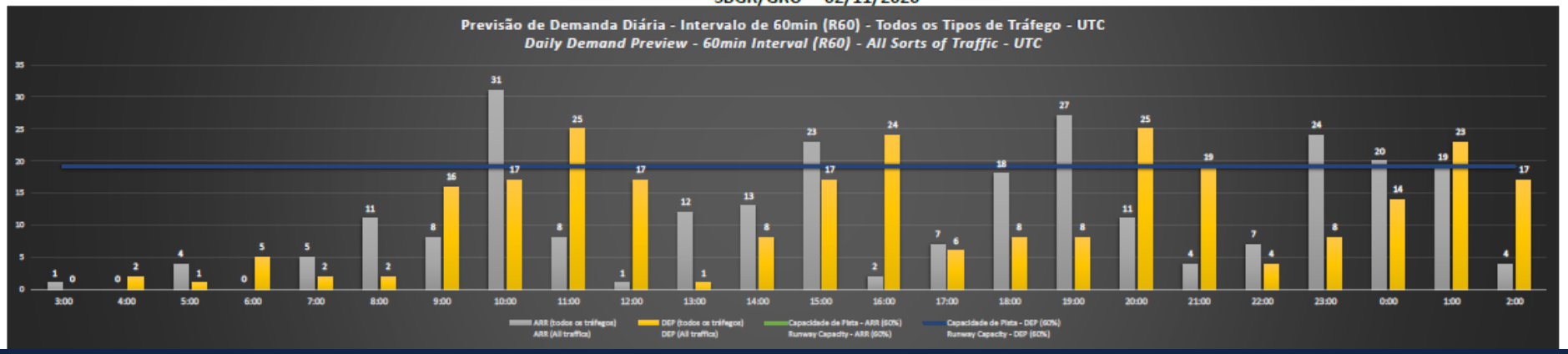
A/D - Horário Recomendado para Inspeção em Voo (aproximação e decolagem) *Recommended Flight Inspection Schedule (approach and departure)*

A - Horário Recomendado para Inspeção em Voo (aproximação somente) *Recommended Flight Inspection Schedule (approach only)*

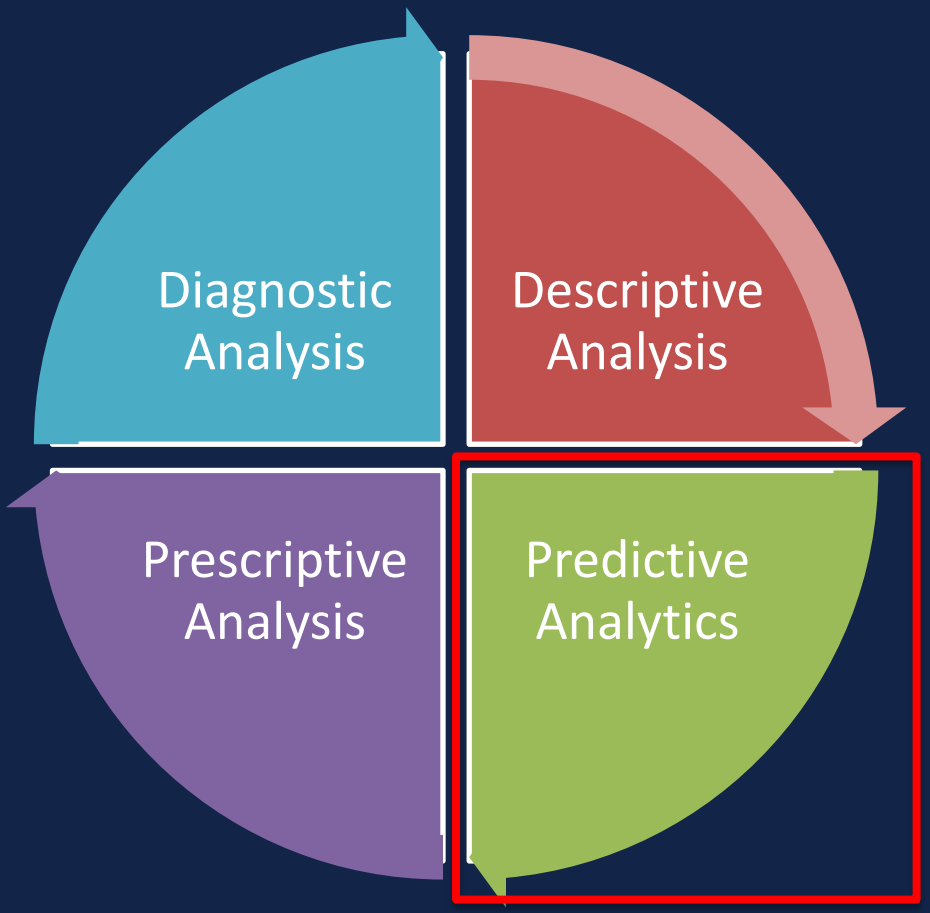
NR - Horário Não Recomendado para Inspeção em Voo *Not Recommended Flight Inspection Schedule*

D - Horário Recomendado para Inspeção em Voo (decolagem somente) *Recommended Flight Inspection Schedule (departure only)*

SBGR/GRU - 02/11/2020

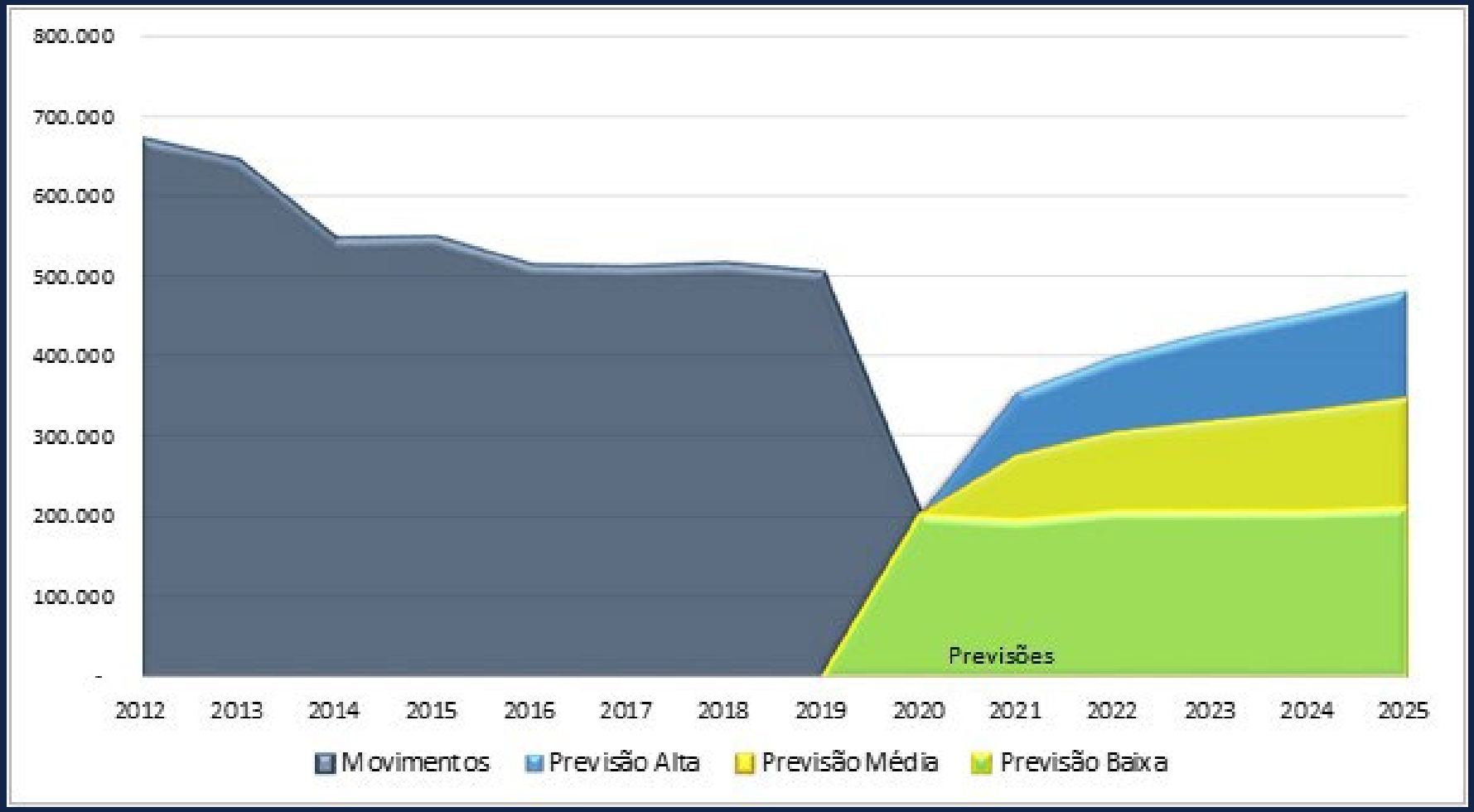


DATA ANALYSIS

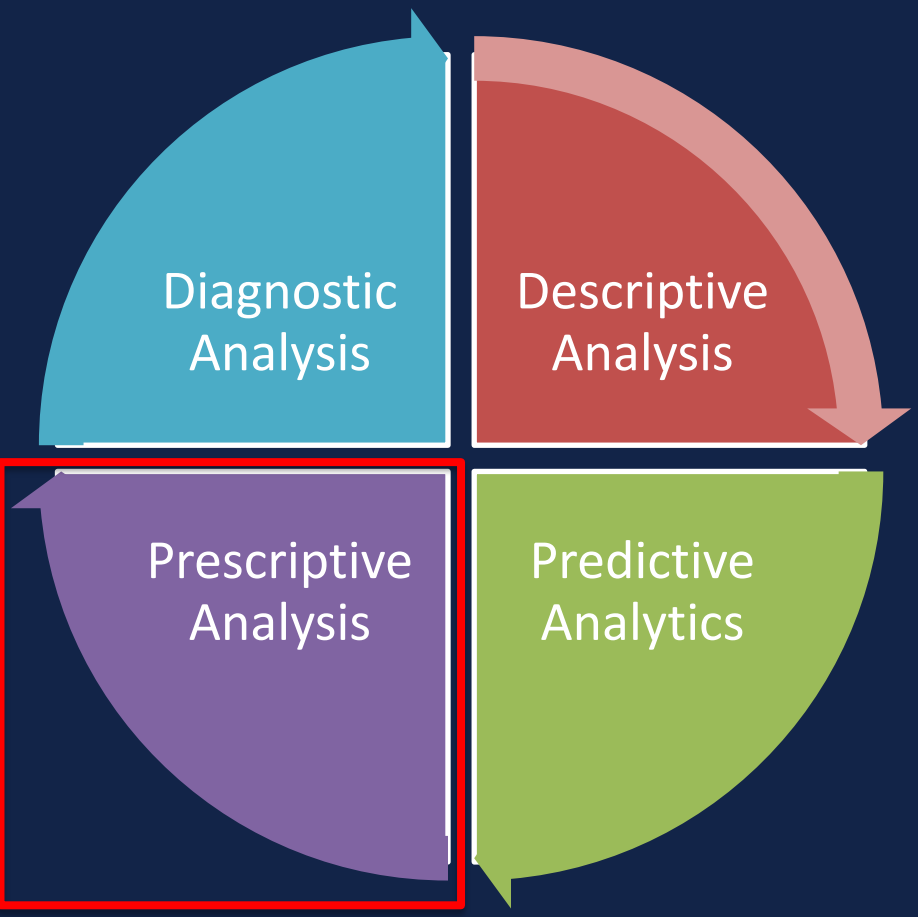


- Predict future scenarios based on database pattern analysis;
- uses statistical and historical data, as well as data mining and artificial intelligence;
- Methodology indicated to project future air traffic demand behaviors.

DATA ANALYSIS

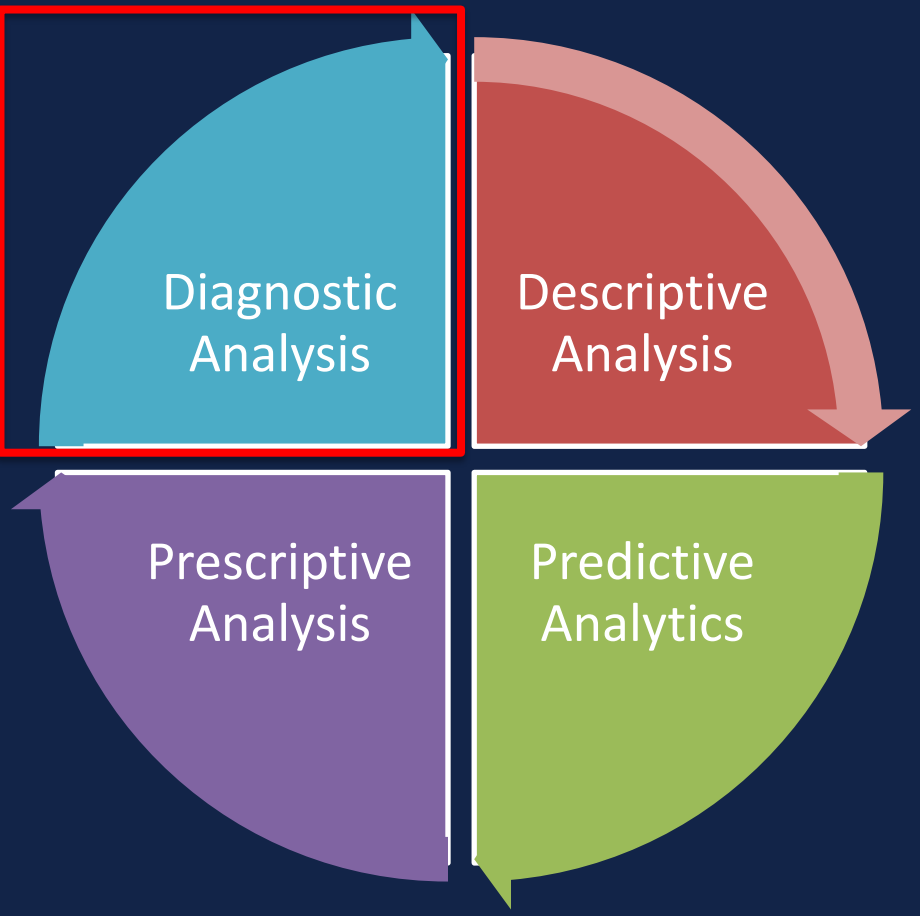


DATA ANALYSIS



- Verify the consequences of actions taken;
- it allows to know what should happen when certain decisions are made;
- it is very valuable because it needs the human element to become a reality;
- It defines the path to be taken so that the action occurs as expected;
- Are there any relevant events that may interfere with the indicators?

DATA ANALYSIS



- Understanding the causes of an event.
- Who? When? Where? How? Why?
- Analyze the impact and scope of an action taken.
- Develop strategies to improve results

ANALYSIS PROCESS

- **Exploratory Phase**
  - Search for data
  - Understand de problem
  - Check for deviations
  - Not necessarily automated
- **Data Modeling**
  - Automate
  - Choose the best approach
  - Define the type of analysis
  - Rules for analysis
- **Generate Reports**
  - Presentation of the results
  - Summaries with data used and accuracy of analysis
  - Documenting the results

Data source

Construction of indicators
Data analysis
Data visualization
Dashboards

Results
communications

COMMUNICATION

Understand the context

Proper visual presentation

Remove saturation

FOCUS ATTENTION

Think like a designer

Create a narrative

COMMUNICATION

Media for communication:

- Event with the participation of senior management;
- Senior management meeting with top managers;
- sectoral meetings;
- institutional website;
- disclosure Tables; and
- Institutional Reports.

COMMUNICATION

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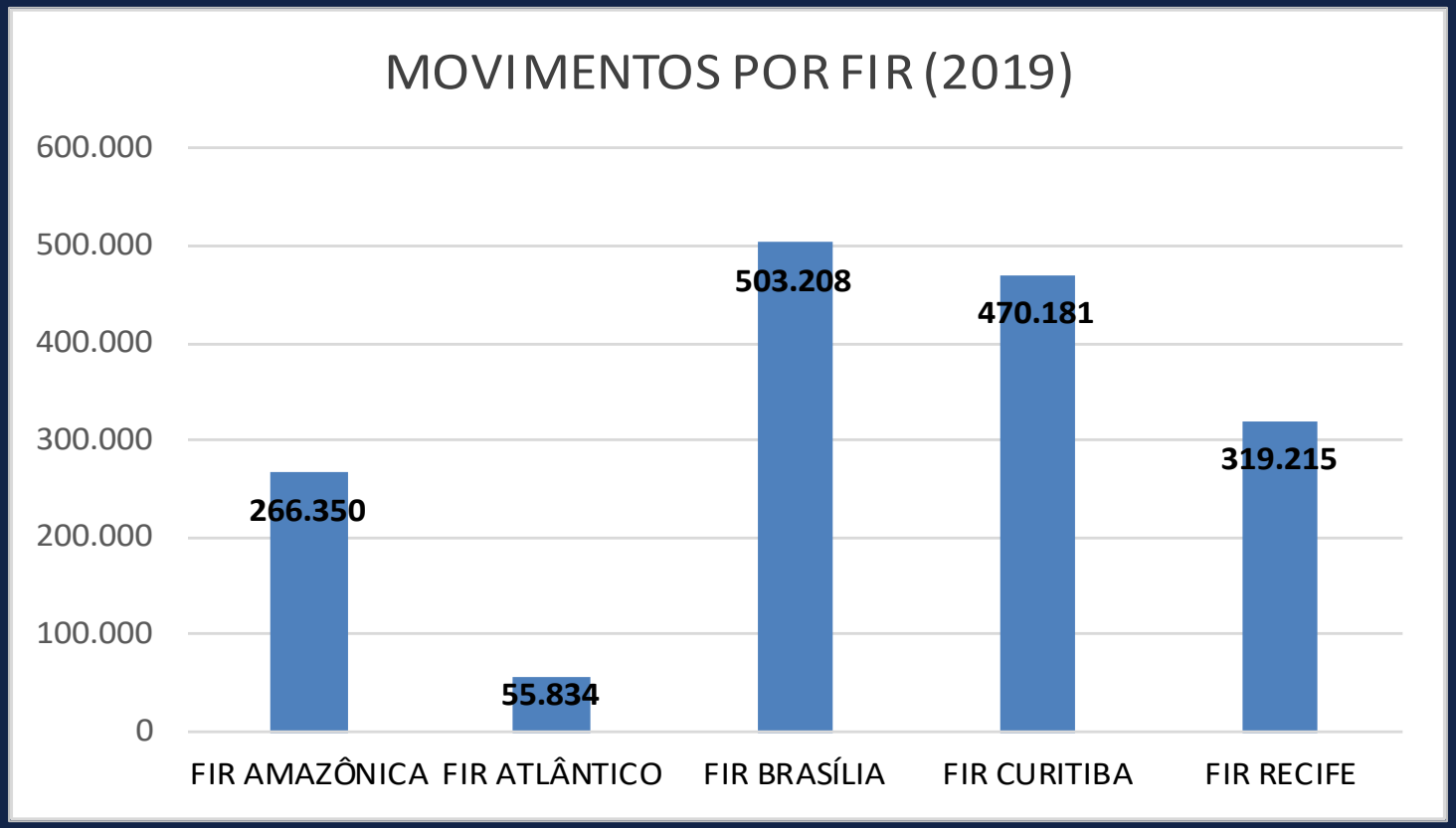

COMMUNICATION

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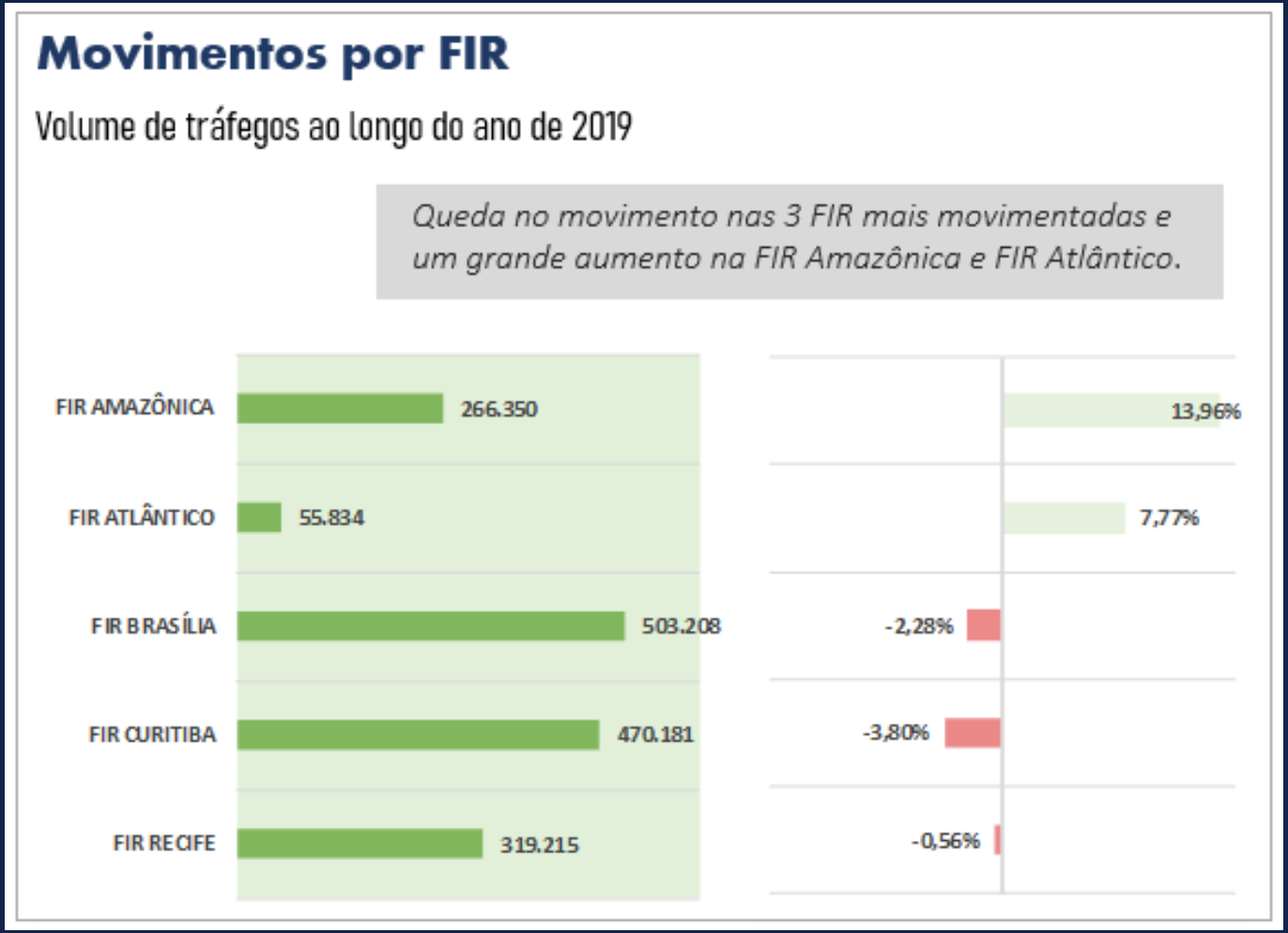

COMUNICACIÓN

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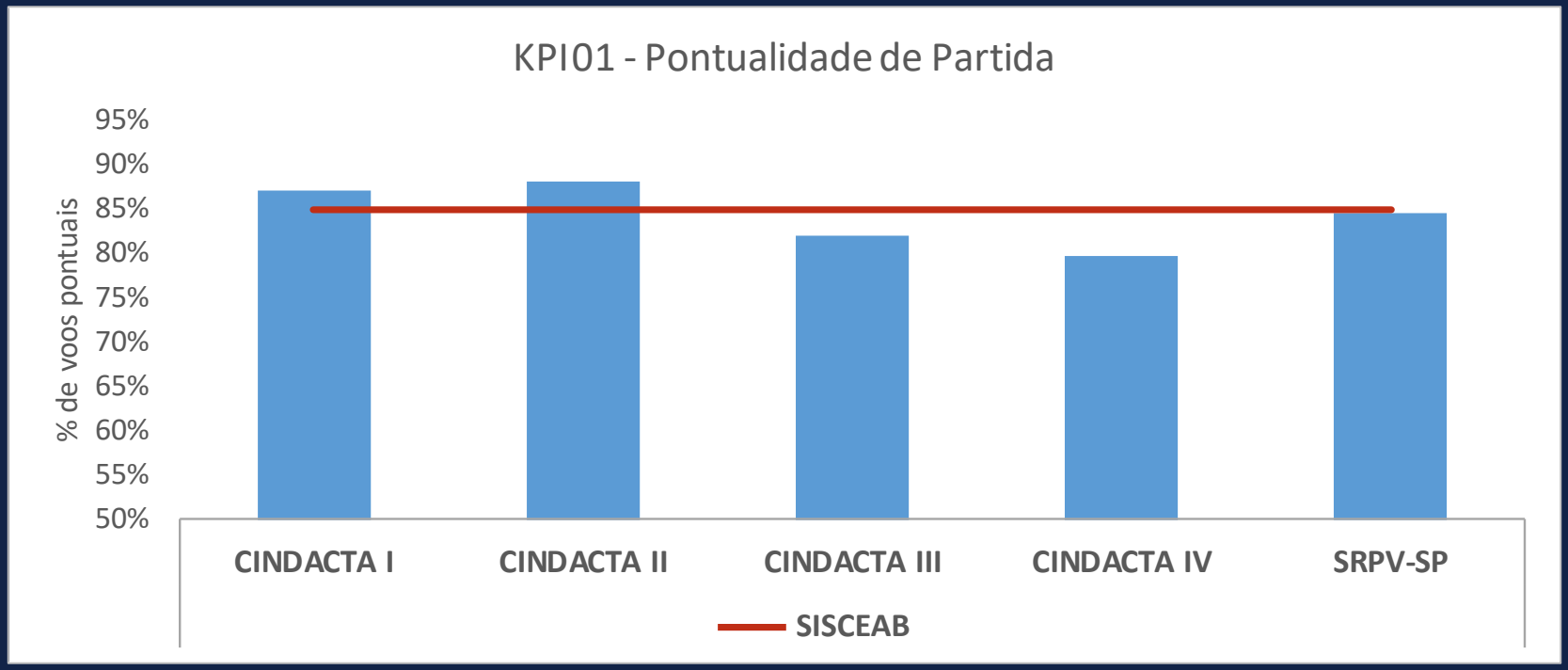

COMMUNICATION

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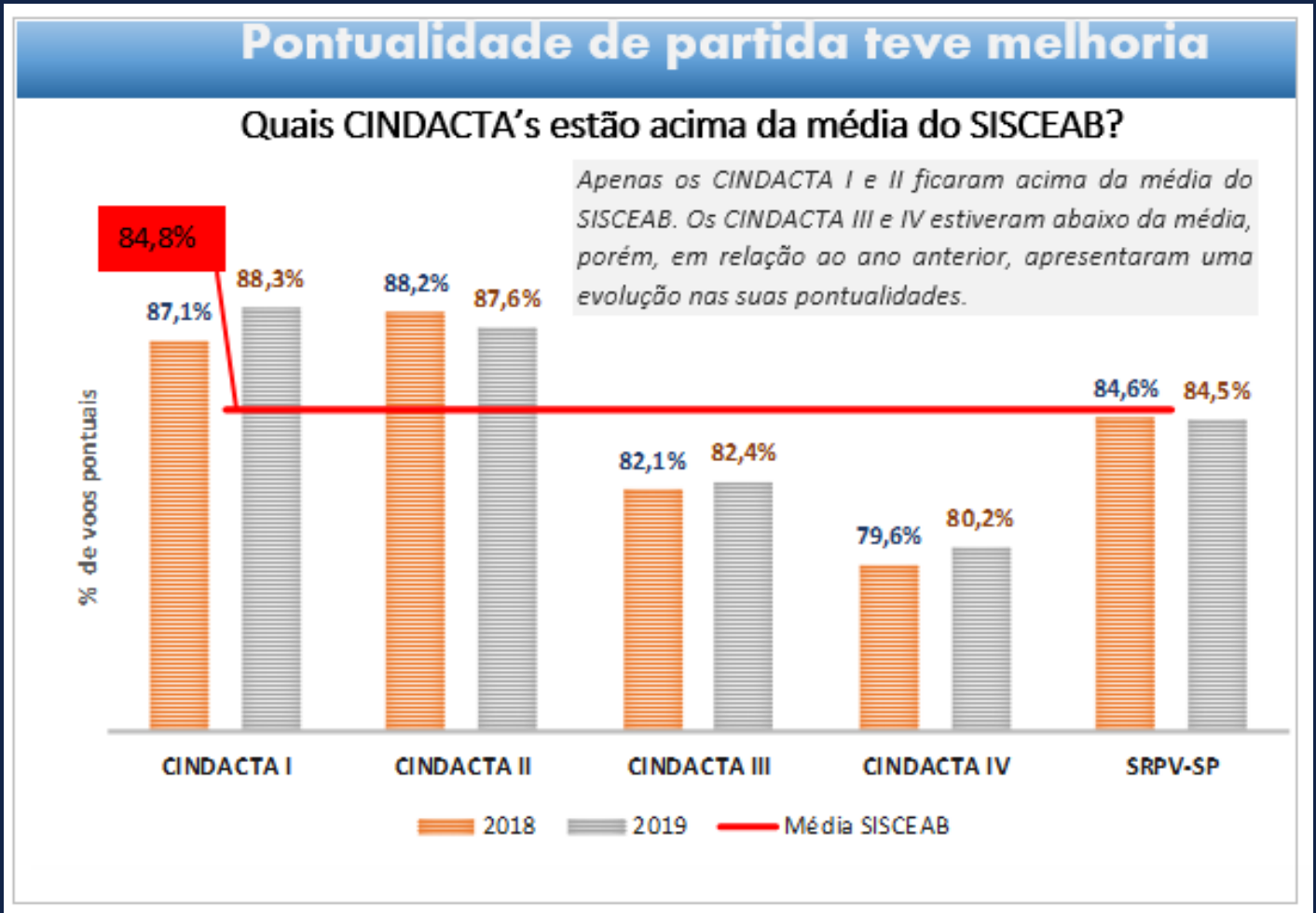

HOW TO DEVELOP A PERFORMANCE REPORT

STEP 1: INTRODUCTION: It is necessary to present a summary of the objectives of the study and the methodology that was applied.

The following topics can be included :

- About the report
- Scope of the report
- Data sources
- KPA and KPI
- Meteorology
- Conceptualizations of ATM indicators

HOW TO DEVELOP A PERFORMANCE REPORT

STEP 2: DEVELOPMENT: In this step you will find the content of the study carried out and the data obtained. The following topics may be included:

- TMA / ACC Overview
- Study Airport(s)
- Basic information
- ATCO personnel characteristics
- Traffic evolution
- Traffic variability
- Meteorology
- ATM Indicators

HOW TO DEVELOP A PERFORMANCE REPORT

STEP 3: CONCLUSIONS: The main ideas developed during the study should be closed, without presenting new facts.

STEP 4: REFERENCES: It must contain everything that was consulted during the preparation of the report.

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FORÇA AÉREA BRASILEIRA
Asas que protegem o País