Departamento
de Controle do Espaço Aéreo
Department of Airspace Control

ATM047 – ATM Performance Indicators

Unit 1.2 – ATM PERFORMANCE INDICATORS

Subunit 1.2.1 – GANP Indicators

October - 2024

GANP INDICATORS

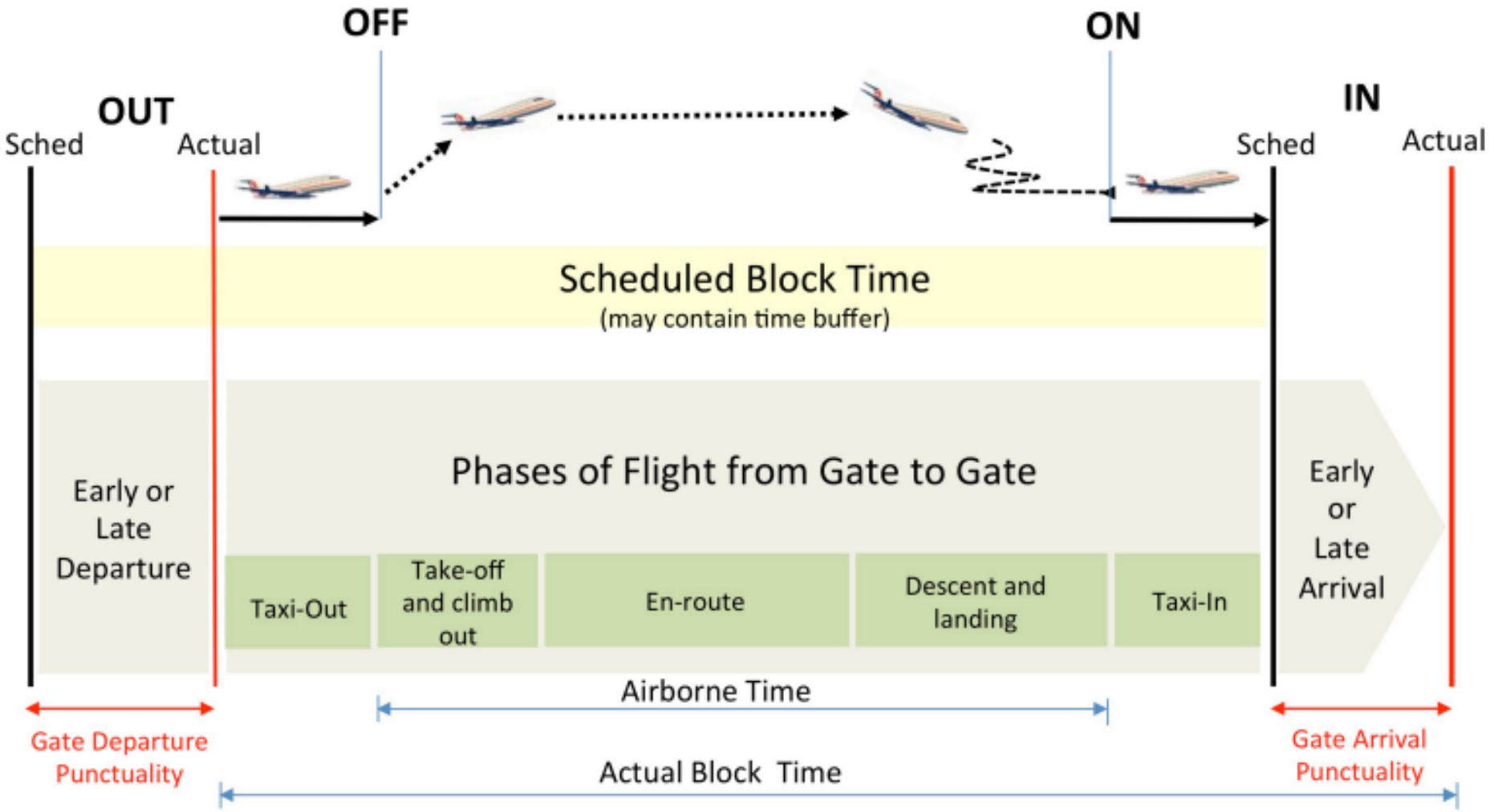
OBJECTIVE

Have knowledge on the ATM Performance Indicators recommended by ICAO in the Global Air Navigation Plan (GANP)

KPI – GANP INDICATORS

MCA 100-22
SISCEAB ATM Indicators Methodology
(2020)

KPI – GANP INDICATORS



KPI – GANP INDICATORS

Título do Indicador	VARIABILIDADE DO TEMPO DE VOO (KPI15)
Área do Negócio	Previsibilidade
Descrição do Indicador	Distribuição da duração do tempo de voo em torno de um valor médio.
Objetivo	Medir a previsibilidade do voo por par de cidades ou de forma agregada. Essa previsibilidade impacta o planejamento dos planos de voo.
Identificação das Variáveis	AOBT AIBT Indicativo de voo
Fórmula (Métrica)	$KPI\ 15 = \frac{\sum(n_f \cdot v_f)}{\sum n_f}$

KPI – GANP INDICATORS

FLIGHT TIME VARIABILITY

Definition – Distribution of the flight (phase) duration around the average value.
Measurement Units – Minutes/flight.
Operations Measured – Scheduled flights with the same flight ID on a given airport-pair (flight XYZ123 from A to B): the gate-to-gate duration, and at more detailed level the duration of the individual flight phases (taxi-out, airborne, taxi-in).

Variants – Different parameter values possible (see ‘Parameters’).

Objects Characterized The KPI is typically computed for the scheduled traffic flows interconnecting a given cluster of airports (two or more; selection/grouping based on size and/or geography).

KPI – GANP INDICATORS

FLIGHT TIME VARIABILITY

Utility of the KPI – The “variability” of operations determines the level of predictability for airspace users and hence has an impact on airline scheduling. It focuses on the variance (distribution widths) associated with the individual phases of flight as experienced by airspace users.

The higher the variability, the wider the distribution of actual travel times and the more costly time buffer is required in airline schedules to maintain a satisfactory level of punctuality. In addition, reducing the variability of actual block times can potentially reduce the amount of excess fuel that needs to be carried for each flight in order to allow for uncertainties.

KPI – GANP INDICATORS

FLIGHT TIME VARIABILITY

Parameters

Minimum monthly flight frequency filter: flights with a frequency less than 20 times per month are not included in the indicator.

Outlier filter::

- Variant 1: Only 70% of the (remaining) flights are considered in the indicator, i.e. the 15th percentile (percentile 1) is used to determine the shortest duration, the 85th percentile (percentile 2) is used to determine the longest duration.

- Variant 2: Only 60% of the (remaining) flights are considered in the indicator, i.e. the 20th percentile (percentile 1) is used to determine the shortest duration, the 80th percentile (percentile 2) is used to determine the longest duration.

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FLIGHT TIME VARIABILITY

Data Requirement

For each flight:

- OOOI data: gate “out” (AOBT), wheels “off,” wheels “on,” and gate “in” (AIBT) actual times.

Data Feed Providers – Airlines.

KPI – GANP INDICATORS

FLIGHT TIME VARIABILITY

Formula / Algorithm

At the level of flights with the same flight ID, at monthly or longer (e.g. annual) time aggregation level:

1. Exclude flight IDs not meeting the minimum monthly frequency requirement.

2. Sort flights in ascending order of flight (phase) duration.

3. Identify shortest (percentile 1) and longest (percentile 2) duration.

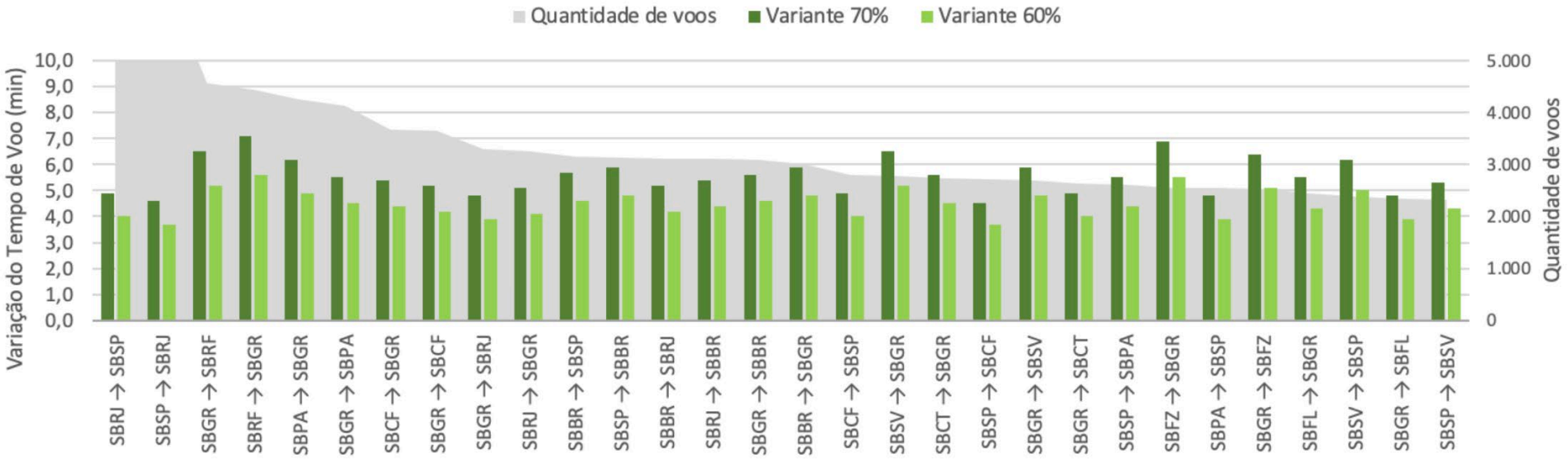
4. Compute variability: (longest – shortest) / 2.

At the more aggregated level:

5. Compute the KPI: weighted average of the individual flight ID variabilities.

KPI – GANP INDICATORS

Figura 45 - KPI15 com Variantes de 70% e 60%



Fonte: VRA

Source: *Relatório de Performance do SISCEAB 2021*

KPI – GANP INDICATORS

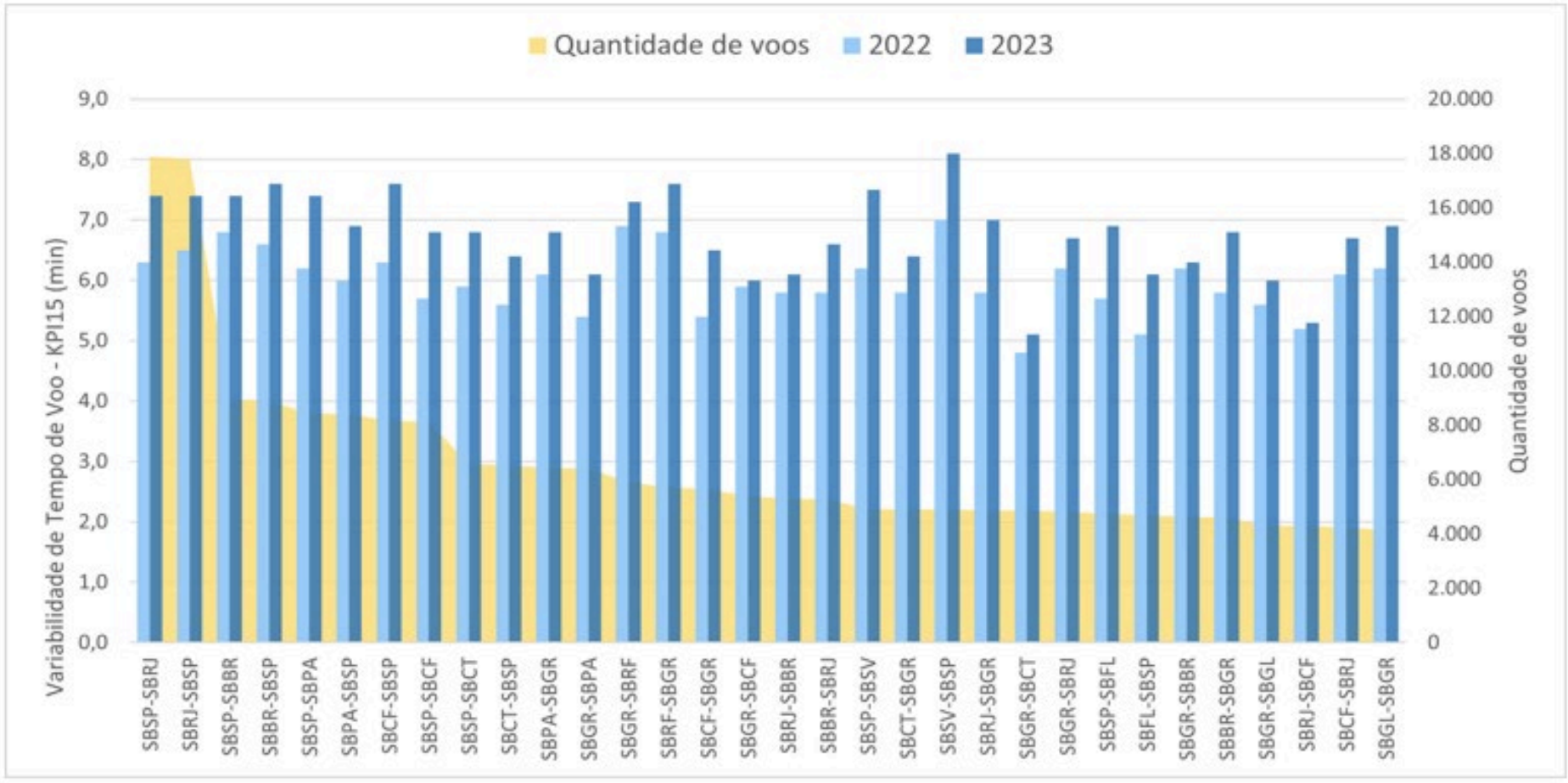


Figura 3.10: Variabilidade do Tempo de Voo (KPI15)

Source: *Relatório de Performance do SISCEAB 2023*

KPI – GANP INDICATORS

Quadro 8 – Rotas monitoradas no KPI15 em 2021

Rotas	Quantidade de Voos	Tempo Médio de Voo	V1 (70%)	V2 (60%)
SBRJ-SBSP	6.868	61,4	4,9	4,0
SBSP-SBRJ	6.763	54,1	4,6	3,7
SBGR-SBRF	4.570	178,1	6,1	5,2
SBRF-SBGR	4.447	194,2	7,1	5,6
SBPA-SBGR	4.251	101,1	6,2	4,9
SBGR-SBPA	4.127	102,8	5,5	4,5

Source: *Relatório de Performance do SISCEAB 2021*

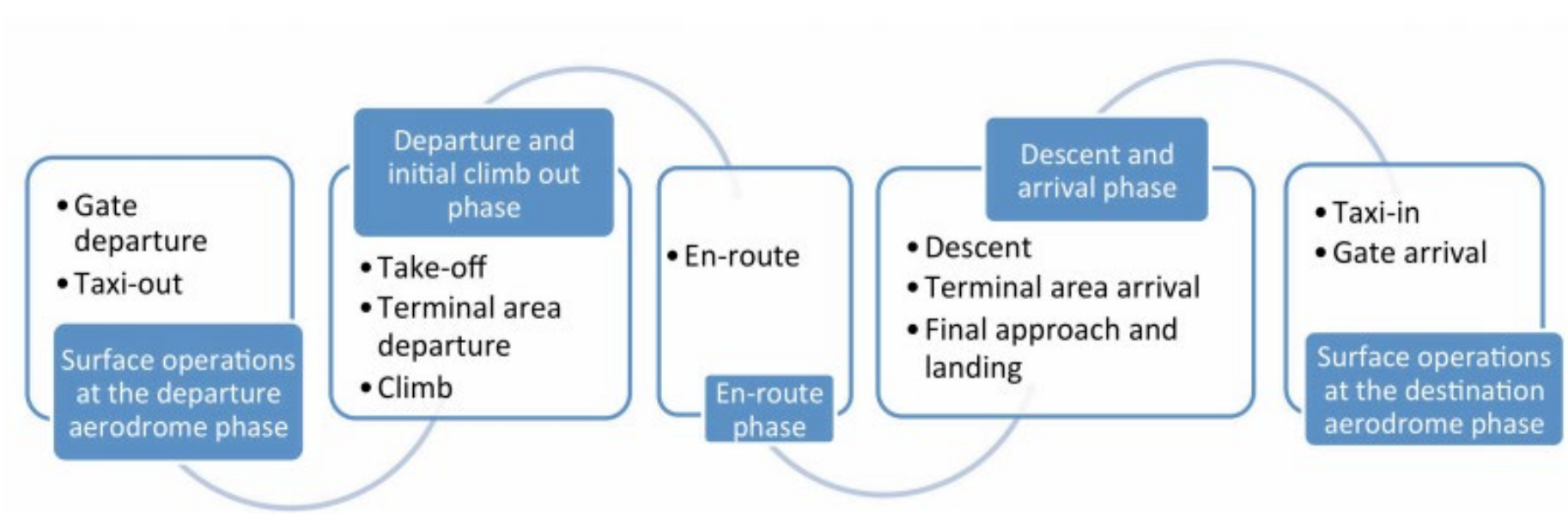
KPI – GANP INDICATORS

Tabela 3.1: Rotas Monitoradas no KPI 15 em 2023

Ranking	Rotas	Qtd. Voos 2022	Qtd. Voos 2023	Tempo Médio Voo (min) - 2022	Tempo Médio Voo (min) - 2023	KPI15 (min) - 2022	KPI15 (min) - 2023	VAR KPI15 (2022/2023)
1	SBSP-SBRJ	14.708	17.882	58,1	60,8	6,3	7,4	17,50%
2	SBRJ-SBSP	14.640	17.788	65,1	66,8	6,5	7,4	13,80%
3	SBSP-SBBR	6.164	8.956	102,9	104,7	6,8	7,4	8,80%
4	SBBR-SBSP	6.123	8.890	102,0	104,8	6,6	7,6	15,20%
5	SBSP-SBPA	6.349	8.438	97,3	100,1	6,2	7,4	19,40%
6	SBPA-SBSP	6.325	8.414	91,5	92,9	6,0	6,9	15,00%

Source: *Relatório de Performance do SISCEAB 2023*

KPI – GANP INDICATORS



Muito obrigado!

ATM047 COURSE – ATM PERFORMANCE INDICATORS

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