



AIR TRANSPORTATION IN BRAZIL: SÃO PAULO CONGONHAS AIRPORT

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Abstract

On April 12th, 1936, the São Paulo state government inaugurated the São Paulo Airport, later named São Paulo-Congonhas Airport (CGH), the second busiest Brazilian airport, to date. Despite its popularity, CGH faced the worst and deadliest aviation accident in Brazilian territory: on July 17th, 2007: the Airbus A320- TAM airline flight 3054, operating from Porto Alegre to São Paulo–Congonhas overran the runway while landing at Congonhas, and crashed against a TAM Express warehouse. In total, N= 187 passengers and crew and 12 on the ground people died. In this article, the ten principal airports in Brazil were investigated, highlighting CGH activity. Key findings pointed to the need for improving the quality of services within the Brazilian airports. Analysis and discussion comprise the present study.

Keywords: Aviation, Civil transportation, Brazilian, Congonhas Airport.

1.Introduction

This study investigated the civil aviation in Brazil, throwing more light on São Paulo Congonhas Airport in São Paulo state, southeastern Brazil, as the unit of analysis (Yin, 1988). CGH¹ is the second busiest Brazilian airport in Brazil - out of the N=10 investigated in the present research.

The present investigation has been primarily motivated by previous studies on civil aviation in Brazil: Guarulhos International Airport - GRU (Dias, M.O.; 2019); Brasilia International Airport - BSB (Dias, M.O.; 2019b); Rio de Janeiro International Airport Galeão/Tom Jobim - GIG (Dias, M.O. & Albergarias, 2019, 2019b); Santos Dumont Airport - SDU (Dias, M.O., 2019c, 2019d). Also, air passenger transportation in Latin America. Dias, M.O. & Pessanha, M. T., 2019).

¹ CGH is the IATA code (International Air Transportation Association), international civil aviation sector representative.

São Paulo-Congonhas Airport is the second busiest airport in Brazil, transporting near 21 million passengers in 2019, as illustrated in the following Figure 1:

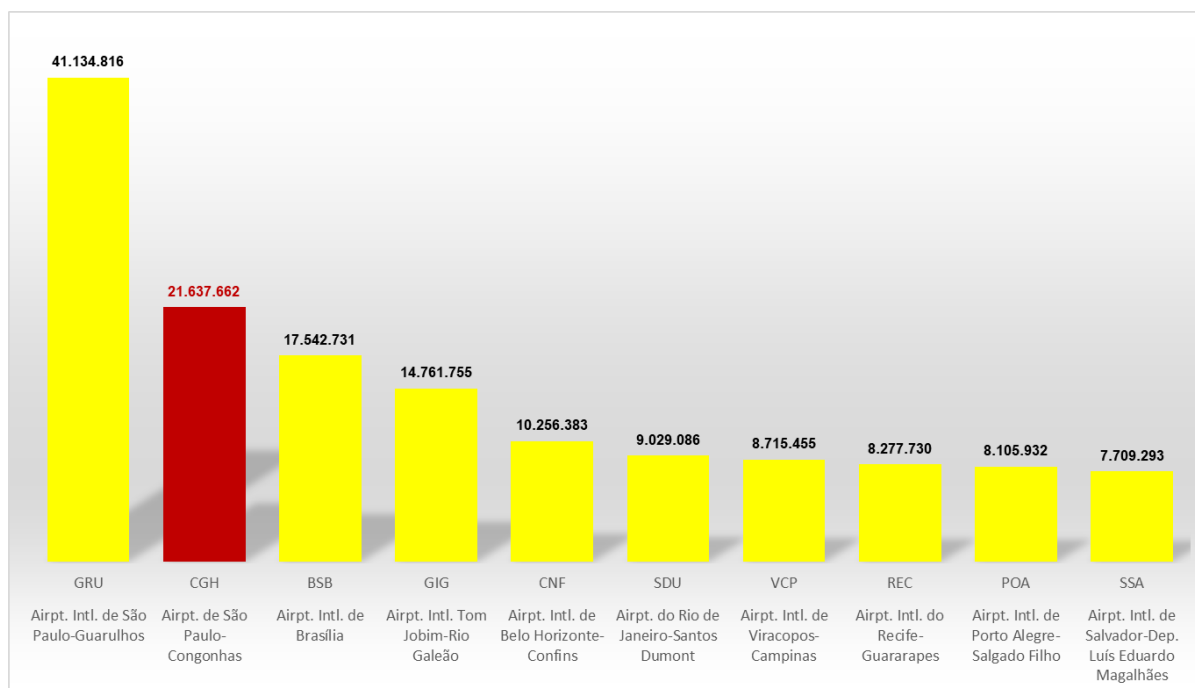


Figure 1 Ten busiest airports in Brazil. Source: Infraero, 2019

Observe in Figure 1 that São Paulo has three of the N=10 busiest airports in Brazil. The others are Guarulhos Airport (GRU), and *Viracopos*, at Campinas - São Paulo (VCP), the first and the seventieth busiest airports in Brazil, respectively.

In all 27 Brazilian states plus the Federal District (Brasilia - DF), there are currently 597 airports in Brazil, 75 in São Paulo (12.5 percent), in which São Paulo the Brazilian state with the more significant number of airports in Brazil, as depicted in Table 1, as follows:

Observe in Table 1 that São Paulo State, out of the 75 airports, (i) three are Federal; (ii) 21 are state, (iii) 30 are municipal, (iv) 8 are concession, (v) ten are private, (vi) three are from the Air Force, and (vii) one from the Army.

In São Paulo, 30 out of the 75 airports are municipal ones (40 percent). In total, 455 out of the 597 Brazilian airports are also municipal (76.2 percent). Also, 547 out of the 597 Brazilian airports (91.6 percent) belong to the Brazilian government, only 25 are concessions granted to the private initiative (4.1 percent), which implicates in expressive room for airport privatization in Brazil.

Table 1

Airport Network in Brazil, per state. Source: Infraero, 2019

State	Federal	State	Municipal	Concession	Private	FAB (Air Force)	Brazilian Army	Total
Acre	2	0	9	0	0	0	0	11
Alagoas	1	0	4	0	0	0	0	5
Amapá	1	0	4	0	0	0	0	5
Amazonas	3	0	6	0	0	0	0	9
Bahia	2	3	1	5	0	0	0	11
Ceará	1	0	24	1	0	0	0	26
DF (Capital)	0	0	0	1	0	0	0	1
Espírito Santo	1	0	6	0	0	0	0	7
Goiás	1	0	25	0	0	0	0	26
Maranhão	4	0	30	0	0	0	0	34
Mato Grosso	1	0	40	0	0	0	0	41
Mato Grosso do Sul	3	0	20	0	0	0	0	23
Minas Gerais	7	0	36	4	0	0	0	47
Pará	6	0	22	0	0	0	0	28
Paraíba	2	0	13	0	0	0	0	15
Paraná	4	0	39	0	4	0	0	47
Pernambuco	3	0	10	0	0	0	0	13
Piauí	2	0	8	0	0	0	0	10
Rio de Janeiro	4	0	10	2	2	3	0	21
Riop Grande do Norte	0	0	7	0	1	0	0	8
Rio Grande do Sul	4	0	65	0	0	0	0	69
Rondônia	1	3	5	0	0	0	0	9
Roraima	2	0	7	0	0	0	0	9
Santa Catarina	3	0	17	4	1	0	0	25
São Paulo	3	21	30	8	10	3	1	75
Sergipe	2	0	2	0	0	0	0	4
Tocantins	2	0	15	0	0	0	0	17
Total	65	27	455	25	18	6	1	597

2. Methods and Limitations

This article is a qualitative, multiple-methods, combining archival research with descriptive, single case study, which unit of analysis is the CGH in Brazil (Yin, 1988). This article also combined inductive reasoning and interpretive approach.

This research is limited to civil aviation regarding passenger transportation. Other airport activities such as military aviation or cargo transportation are not the scope of the present study, as well as activities such as parking lot administration, shopping center, food court administration, among others, are not investigated in the present research. Finally, this study is limited to IATA's international standards (IATA, 2019), and civil aviation Laws in Brazil.

In this research, N=10 busiest airports in Brazil out of the 597 Brazilian airports were investigated, in which CGH is the unit of analysis (Yin, 1988).

3. São Paulo-Congonhas Airport: Background

The name *Congonhas* comes from the neighborhood where it is located, formerly called *Vila Congonhas*, former property of the Viscount of Congonhas do Campo, first president of the Province of São Paulo after the independence of Brazil (1822). However, on June 19, 2017, CGH was officially named after Deputy Freitas Nobre. CGH is a municipal airport, owned by the City of São Paulo, and is operated by Infraero.

CGH has two runways, as follows: (i) 17L/35L of 1,940m, and (ii) 17L/35R of 1,435 m. Out of the N=10 busiest airports in Brazil, n=6 airports have two runways - including CGH (60 percent), as illustrated in Figure 2, as follows:

Runways (m)	GRU	CGH	BSB	GIG	CNF	SDU	VCP	REC	POA	SSA
#1	3.000	1.940	3.300	4.000	3.600	1.323	3.240	3.007	2.280	3.005
#2	3.700	1.935	3.200	3.180		1.260				1.520

Figure 2 - Brazilian airports' runways. Source: Infraero, 2020

Observe in Figure 2 that Tom Jobim International airport in Rio de Janeiro (GIG) has the longest runways in Brazil. Observe also that CGH and SDU (Santos Dumont Airport, in Rio de Janeiro), both have the shortest runways out of the N=10 busiest airports. Both represent the oldest civil airports in Brazil, built in places impossible to be expanded: CGH is surrounded by city constructions, buildings, in the heart of São Paulo downtown, while SDU was built in the middle of the Guanabara Bay, as illustrated in the Figures 3 and 4, respectively:



Figure 3: SDU Airport. Source: SDU, 2019



Figure 4: SDU Airport. Source: CGH, 2020

Observe in Figures 3, 4, and 5 that it is virtually impossible to expand the runways on SDU and CGH, respectively, due to their current location. In the case of CGH, in the 1940s, when CGH was inaugurated, the surrounding area had only a few constructions. To date, near 12 million inhabitants live in São Paulo city, where CGH is located. CGH is one of the most dreadful runways to operate in Brazil.

In 1977, CGH started to operate landing navigation ILS (Instrument Landing System) (CGH, 2020). In 1979 the passenger terminal (CGH has only one passenger terminal) was built. In 1981, Infraero started to control the airport operations at CGH (CGH, 2020).

In 1985, due to international flights ever-increasing restrictions, all the CGH's international flights were transferred to the Guarulhos International Airport (GRU), due to the new technology and safety requirements for international flights operation.



Figure 5 Gol flight landing at CGH. Source: CGH, 2020

To date, CGH occupies 1.647.000 m², with 78 check-in slots, with 57 self-service check-in totems, with a capacity for 3,156 embarkments/h, and 3,375 disembarkations/h (CGH, 2020).

The aircraft yard has an area of 77,321 m²; the aircraft parking for commercial aviation capacity lies on 12 finger allocation positions (boarding bridges), plus 17 remote allocation positions (totaling 29 slots), in which 22 positions for fixed-wing, and two positions for rotary-wing (totaling 24 slots) (CGH, 2020). In 2018, 21,968,834 passenger arrivals and departures, 59,244,691 kg of cargo handled, and 217,252 aircraft operated by Azul, Gol, and Latam, the major airlines operating in Brazil (CGH, 2020).

4. Major accidents:

The worst accident of the Brazilian civil aviation history occurred in CGH on July 17, 2007, when the aircraft Airbus A320, TAM flight 3054, coming from Porto Alegre, overtook the end of runway 35L at high speed, tried as a final approach, to abort landing through a go-around unsuccessful maneuver, and crashed against a building of TAM, on Avenida Washington Luiz. In total, 199 people died, 187 passengers and crew members plus 12 ground people. As a result of this accident, several flights were transferred to Guarulhos and other airports, reducing the number of landings and take-offs of CGH airport. Until 2007, CGH was the busiest airport in Brazil.

4. Discussion

Figure 5 depicts the evolution of passenger transportation in CGH:

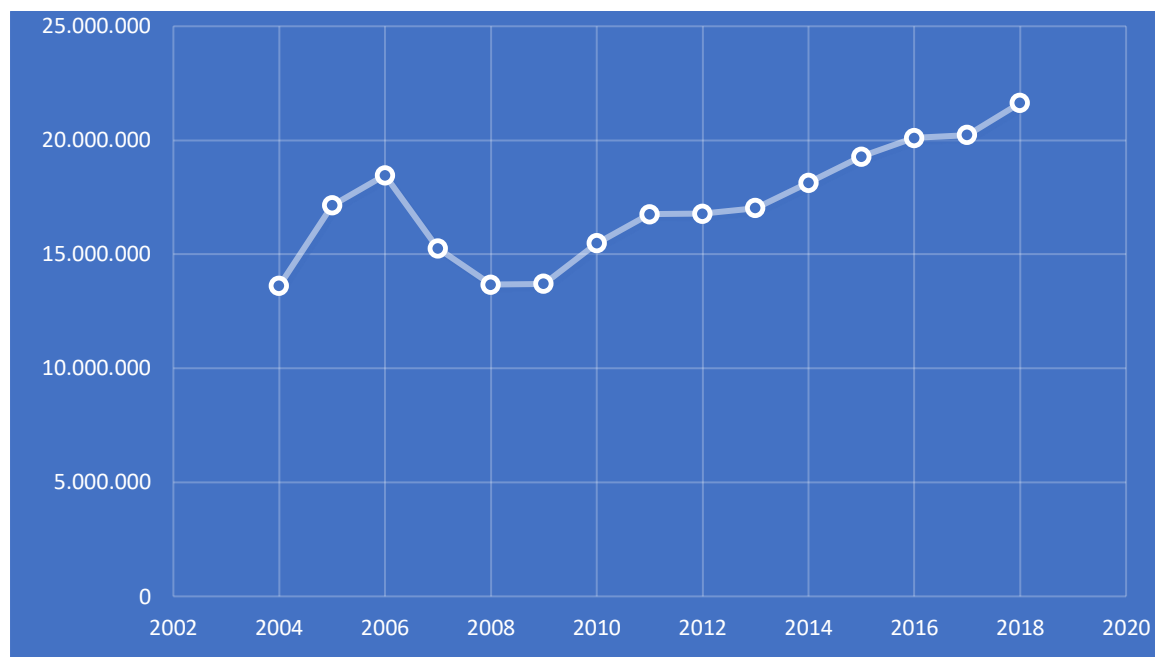


Figure 5: Passenger transportation in CGH (2002-2019). Source: CGH, 2020

Observe in Figure 5 that after the major accident involving the flight TAM 3054, the number of passenger transportation decreased dramatically, recovering slowly, throughout the next decade.

One of the major implications of the accident was the passenger movement shifting to GRU, the busiest airport in Brazil, to date. Regardless of the accident, the air bridge Rio-São Paulo (SDU-CGH), transported in 2019, near four million passengers in Brazil. According to Dias, M.O. (2020, 2019, 2019b), the Brazilian aviation network still has a large room for expansion of activities and quality improvement of services.

Hence, implications are observed also in other fields of research, such as (i) aircraft manufacturer industry (Cruz, B.S. & Dias, M.O., 2020; Dias, M.O., Teles, and Duzert, 2018; Dias, M.O. and Duzert, 2018), (ii) mining industry (Dias, M.O., & Davila, 2018); (iii) e-business negotiation (Dias, M.O. & Duzert, 2017); (iv) automobile industry (Dias, M.O., Navarro and Valle, 2013, Dias, M.O., et al., 2014; Dias, M.O., et al., 2013); (v) non-market forces (Dias, M.O. & Navarro, 2018); craft beer industry (Dias, M.O. & Falconi, 2018; Dias, M.O., 2018); (vi) public administration (Dias, M.O., 2018); (vii) Non-governmental organizations (Paradela, Dias, M.O.; Assis, O., J.; Fonseca, R. (2019); (viii) governmental negotiations (Dias, M.O. & Navarro, 2017); (ix) copier manufacturer industry (Dias, M.O., 2012); (x) streaming film industry (Dias, M. O., & Navarro, 2018), (x) craft beer industry (Dias, M.O., 2020; Dias, M.O. & Falconi, 2018), among others.

Finally, this research, in comparison to others, has the advantage of compiling sparse data into a single up-to-date, comprehensive study, which investigated the second busiest civil airport in Brazil, with increased relevance in the Brazilian economic civil aviation scenario.

5. Future Research

Future research is encouraged regarding the investigation of the impact of CGH operation in the network expansion in Brazil, comparing the investments made in infrastructure combined with the privatization of the CGH airport in the near future.

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