Cost Models in Data Services:

The Brazilian Experience

Summary

Historical Context

General aspects of the cost models adopted

Results achieved

TIMELINE

2003	2005	2011	2012	2018	2020/21	2023
Presidential Decree Nº 4.733/2003	Resolution n° 396/2005-RSAC	Cost Model project	Resolution n° 600/2012-PGMC	Resolution n° 694/2018-PGMC revision	Cost Model project	Current Scenario
Mandated the adoption of a long run cost model	Established the fundamentals principles and guidelines for the regulatory cost model	RSAC revision and Bottom-Up model development	Primary tool for promoting competition	Relevant markets update and new asymmetric measures adoption	Development of a new Bottom-Up model	Reference values are transitioning from Top-Down to Bottom-Up

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TIMELINE

2003

Presidential Decree Nº 4.733/2003

Mandated the adoption of a long run cost model

2005

Resolution n° 396/2005-RSAC

Established the fundamentals principles and guidelines for the regulatory cost model

Top-Down Model

FAC-HCA and LRIC

Separation and Allocation of Accounts Regulation (RSAC)

2011

Cost Model project

RSAC revision and Bottom-Up model development

2012

Resolution n° 600/2012-PGMC

Primary tool for promoting competition

2018

Resolution n° 694/2018-PGMC revision

Relevant markets update and new asymmetric measures adoption

2020/21

Cost Model project

Development of a new Bottom-Up model

2023

Current Scenario

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2023
Current Scenario
Reference values are transitioning from Top-Down to Bottom-Up

New allocation parameters

Additional documents

Bottom-Up Model – Theorical approach

TIMELINE

Main tool to promote competition

Identify relevant markets

Identify the groups with significant market powers

2012

Resolution n° 600/2012-PGMC

Primary tool for promoting competition

Establishes the asymmetric measures to be adopted in each of the relevant markets

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revision

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2020/21

Cost Model

a new Bottom-Up model

2023

Current Scenario

are transitioning from Top-Down to Bottom-Up

Relevant Markets – Product Dimension – Asymmetric Measure

National Roaming	Passive Infrastructure	Fixed Access Network	Local/Long Distance Data Links
Voice, Data and SMS Roaming	Ducts	Copper and Cable Local Loops Unbundling	Leased Lines; Peering; IP Transit
Wholesale Reference Offers	Wholesale Reference Offers	Wholesale Reference Offers	Wholesale Reference Offers

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TIMELINE

New transport product

Price control based on top-down results

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Relevant Markets – Product Dimension – Asymmetric Measure

National Roaming

- Voice, Data and SMS Roaming
- Wholesale Reference Offers
- Cost Oriented Reference Values

Passive Infrastructure

- Ducts
- Wholesale Reference Offers
- Cost Oriented Reference Values

Fixed Access Network

- Copper and Cable Local Loops Unbundling
- Wholesale Reference Offers
- Cost Oriented Reference Values

Local/Long Distance Data Links

- Leased Lines
- High-Capacity Data Transport
- Peering
- IP Transit
- Wholesale Reference Offers
- Cost Oriented Reference Values

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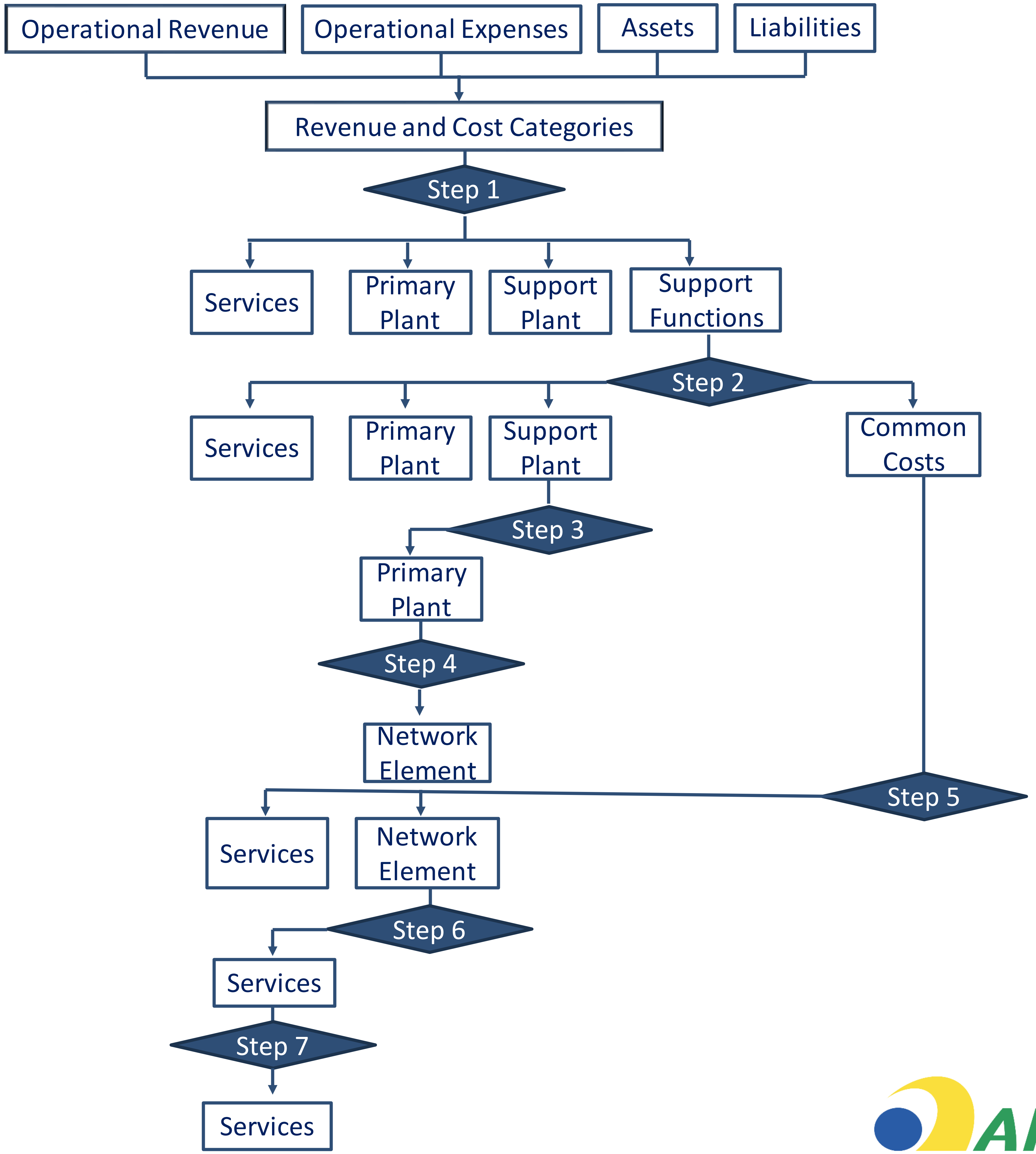
Top-Down Model: Main Aspects

Principal aspects	
Cost Allocation Standard	Fully Allocated Costs (FAC)
Assets Valuation	Historic Cost Accounting (HCA)
Cost Allocation Methodology	Activity Based Costing (ABC)

Responsibility Areas (Cost Centers)	
Support Function	Not directly linked to the provision, but necessary for the operation (e.g. Comer. and Adm.)
Support Plant	Infrastructure components that supports the primary plant (e.g. ducts, buildings, energy)
Primary Plant	Elements that provide essential network functions for the provision of the service. (e.g. Access, transmission)
Common Costs	Values that have no causal relationship with the product offering, but are necessary for the operation of the provider

Top-Down Model



Top-Down Model

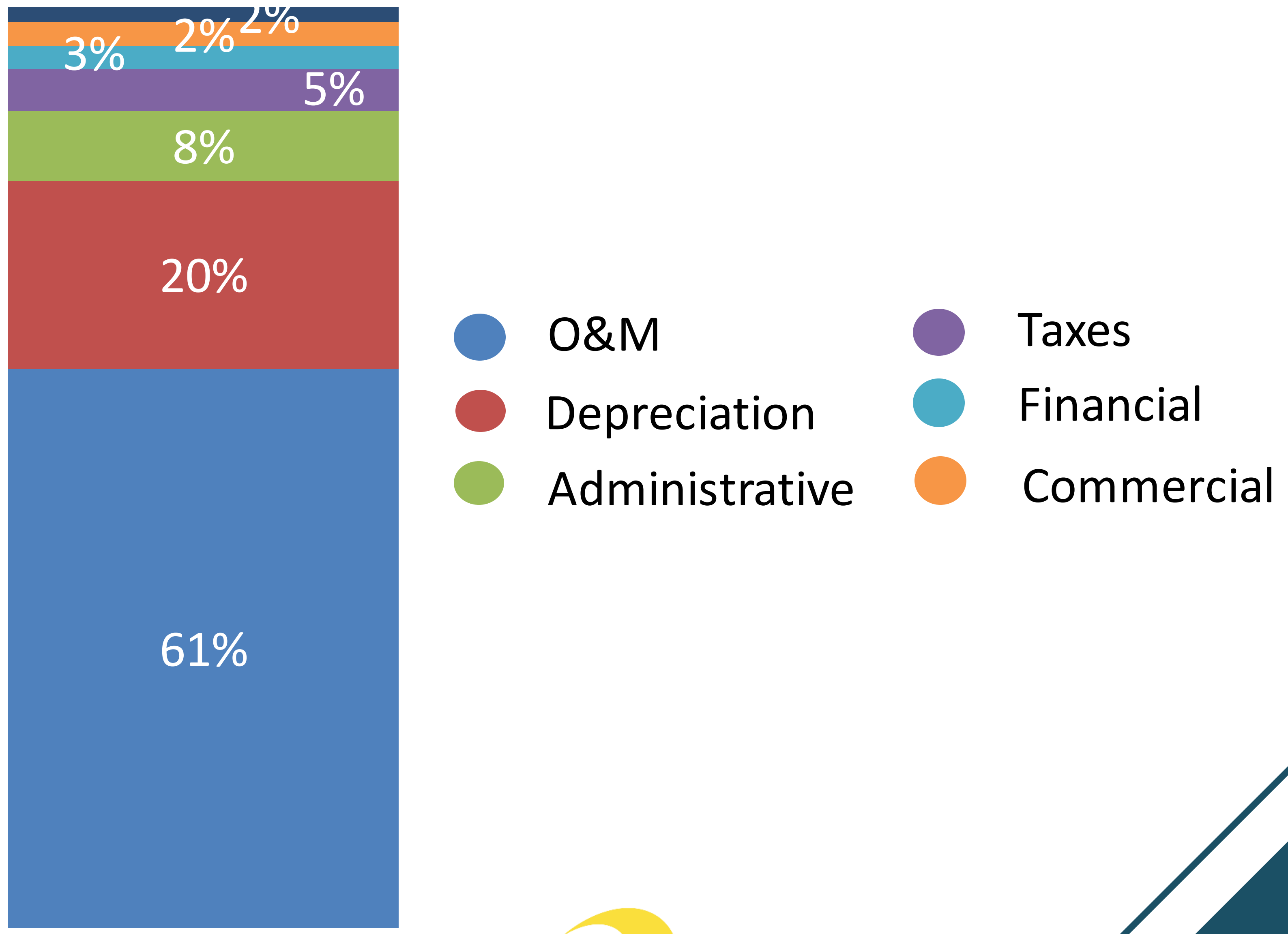
Allocation Matrix

Contas de destino

Contas de origem

	D.1	D.2	...	D.n	TOTAL
O.1	a_1 %	a_2 %	...	a_n %	100 %
O.2	b_1 %	b_2 %	...	b_n %	100 %
O.3	c_1 %	c_2 %	...	c_n %	100 %
O.4	d_1 %	d_2 %	...	d_n %	100 %
...	...	...	...	...	100 %
O.x	x_1 %	...	...	x_n %	100 %

Cost Composition - Wholesale Roaming - Data



Reference Values Definition

National Roaming

Retail product costs minus avoidable selling costs

Ducts

Accumulated costs divided by the length of the provider's ducts.

High Capacity Data Transportation

Ratio based on the speed and distance of leased lines

Local Loops Unbundling

Full Unbundling: Results of an operator's cost model

Bitstream: calculated considering a relationship with full unbundling and the prices of existing bitstream reference offers.

Reference Values – Prior and After to Cost Orientation

Telecom services	Prior	After	Decrease
Full unbundling (BRL/access)	38.58	15.40	60%
Bitstream (BRL/access)	42.52	17.23	59%
Wholesale voice roaming (BRL/min)	0.67	0.07	90%
Wholesale data roaming (BRL/min)	2.30	0.02	99%
Wholesale SMS roaming (BRL/SMS)	0.07	0.04	37%
Duct rental (BRL/m)	32.49	0.18	99%
High-speed leased lines (BRL/Mbit/s)	N/A	3.84	N/A

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Bottom-Up Aspects

Common aspects for both models (fixed and mobile networks)

Cost Allocation Methodology	LRIC+	Modeled provider	Efficient hypothetical provider with characteristics of PMS identified by Anatel
Assets Valuation	Current Cost Accounting (CCA) for all assets, except civil infrastructure and copper cabling (HCA)	Modeled time period	2020 - 2036
Depreciation Methodology	Economic depreciation	Geographic Granularity	Geotype level to ensure a good compromise between complexity and accuracy

Specific aspects for fixed networks

Access Technology	Copper, fiber and wireless
Considered Services	– Access – Voice – Broadband – Leased Lines – Others

Specific aspects for mobile networks

Access Technology	2G, 3G, 4G e 5G
Considered Services	– Voice – SMS – Data – Nacional Roaming Intern. Roaming Outros

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National Roaming

High-Capacity Data Transport

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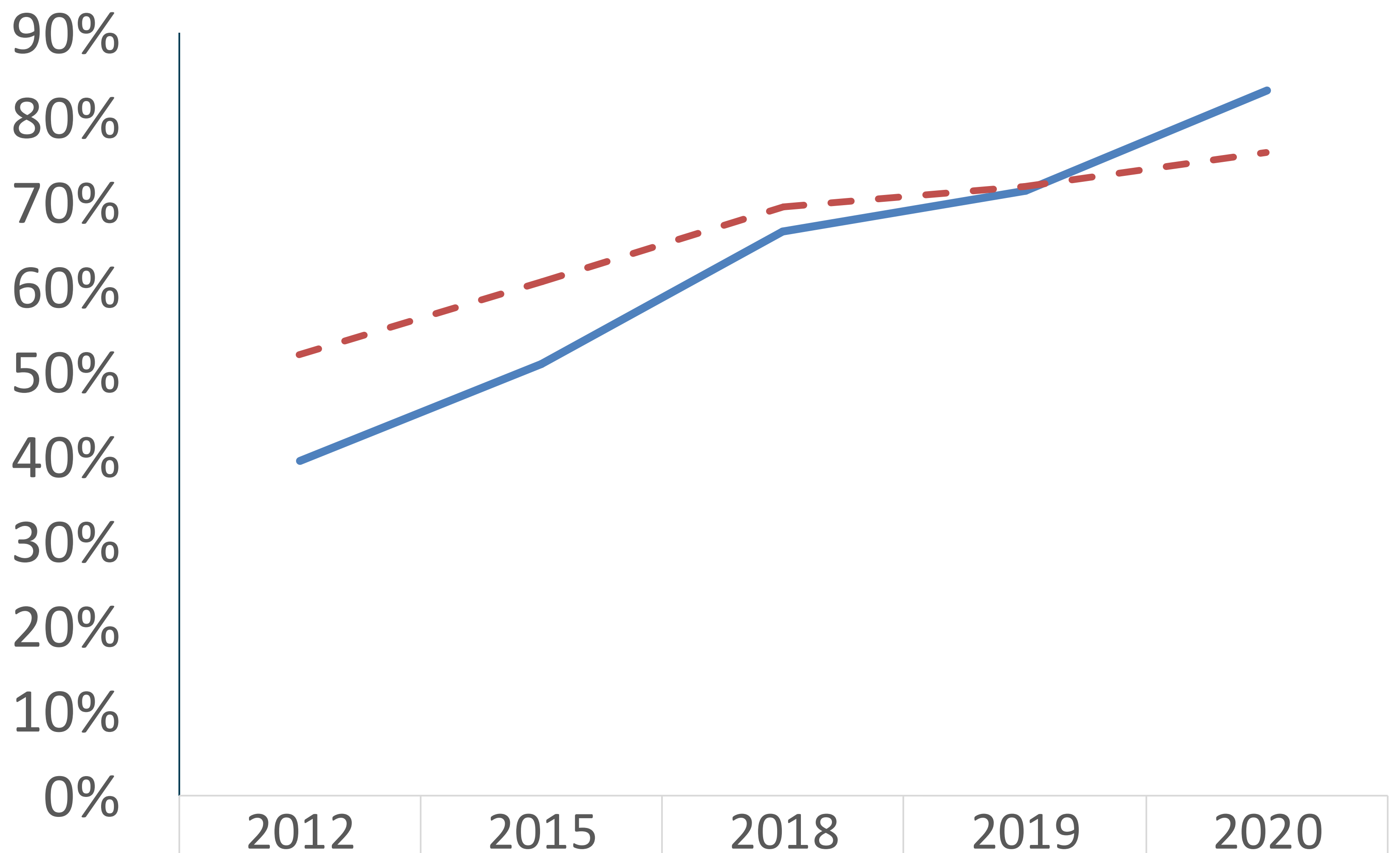
Main Results Achieved

Broadband Expansion

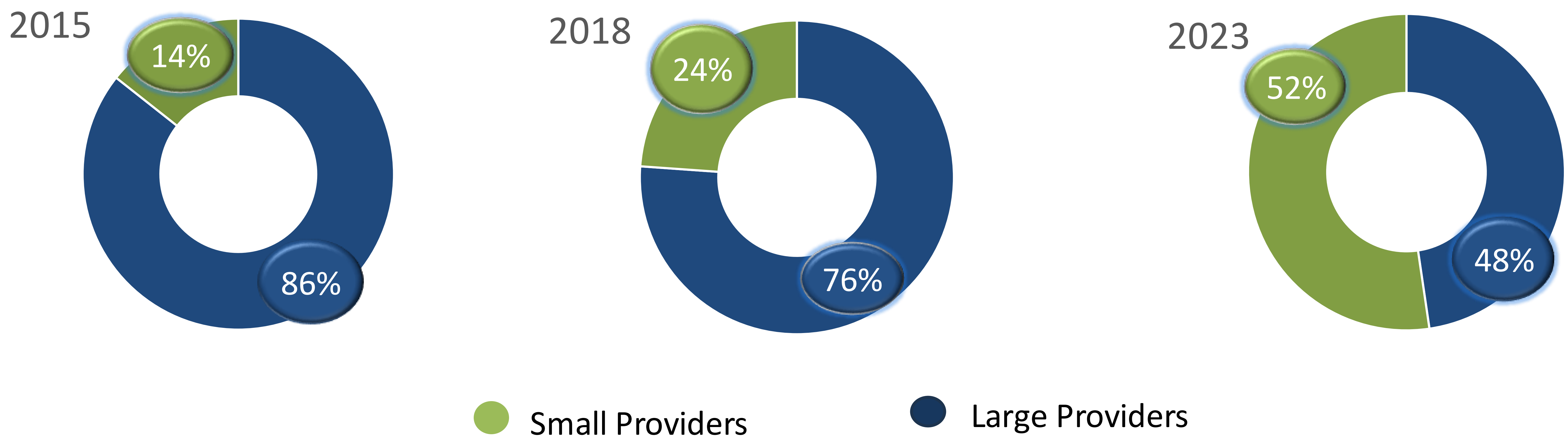
Households (%) with Internet access at home



	2012	2015	2018	2019	2020
Brazil	40%	51%	67%	71%	83%
America	52%	61%	70%	72%	76%

Market Share Increase of Small Providers

Total broadband access



<u>Small Providers</u>
Increase by 8.5 times

<u>Larger Providers:</u>
Increase by 1.2 times

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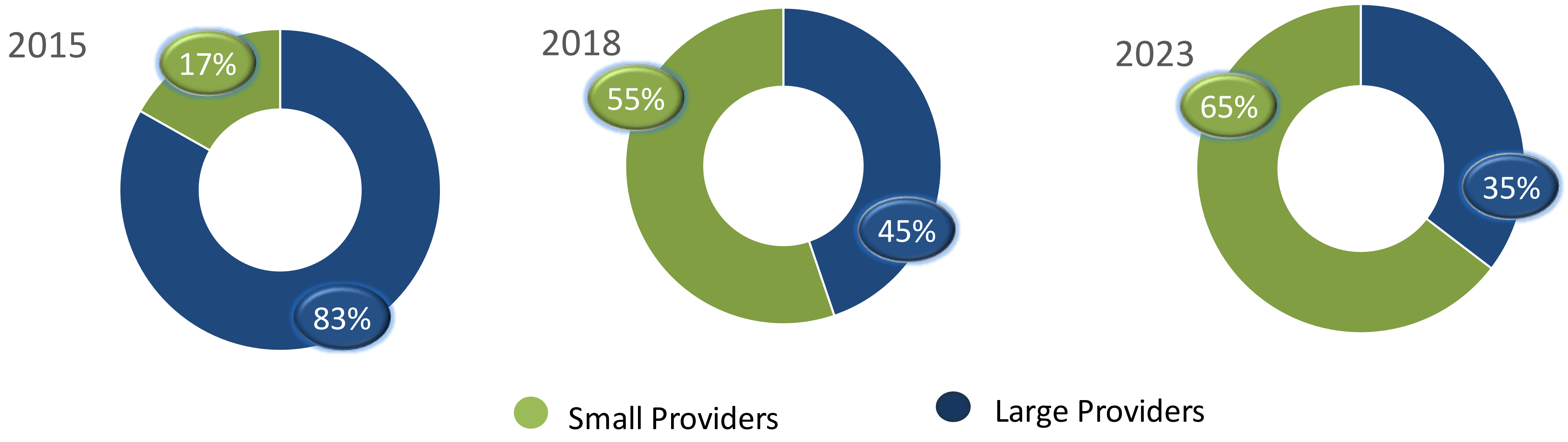
Market Share Increase of Small Providers

Total fiber broadband access



Small Providers
Increase by 127 times

Larger Providers:
Increase by 11 times

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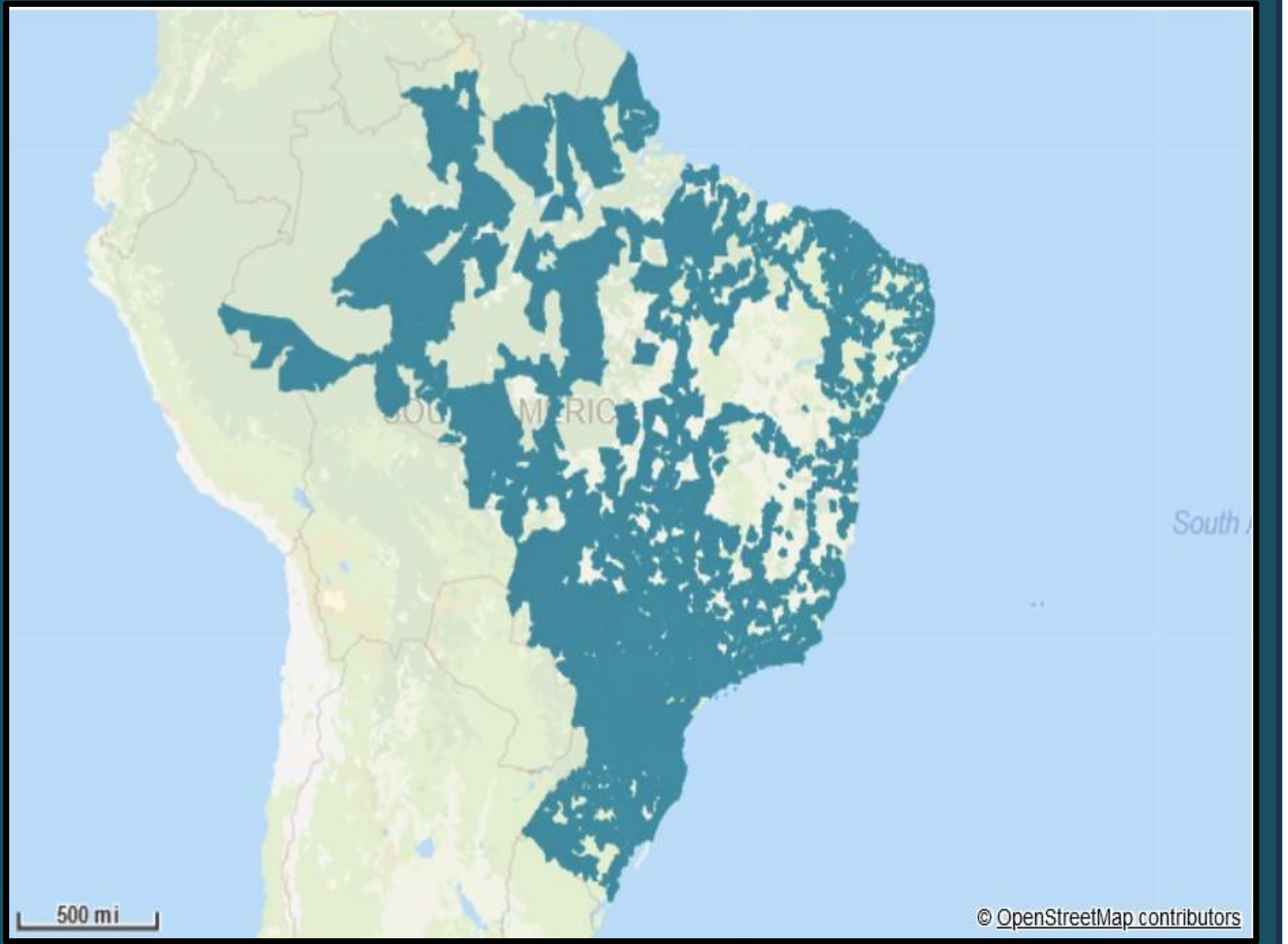
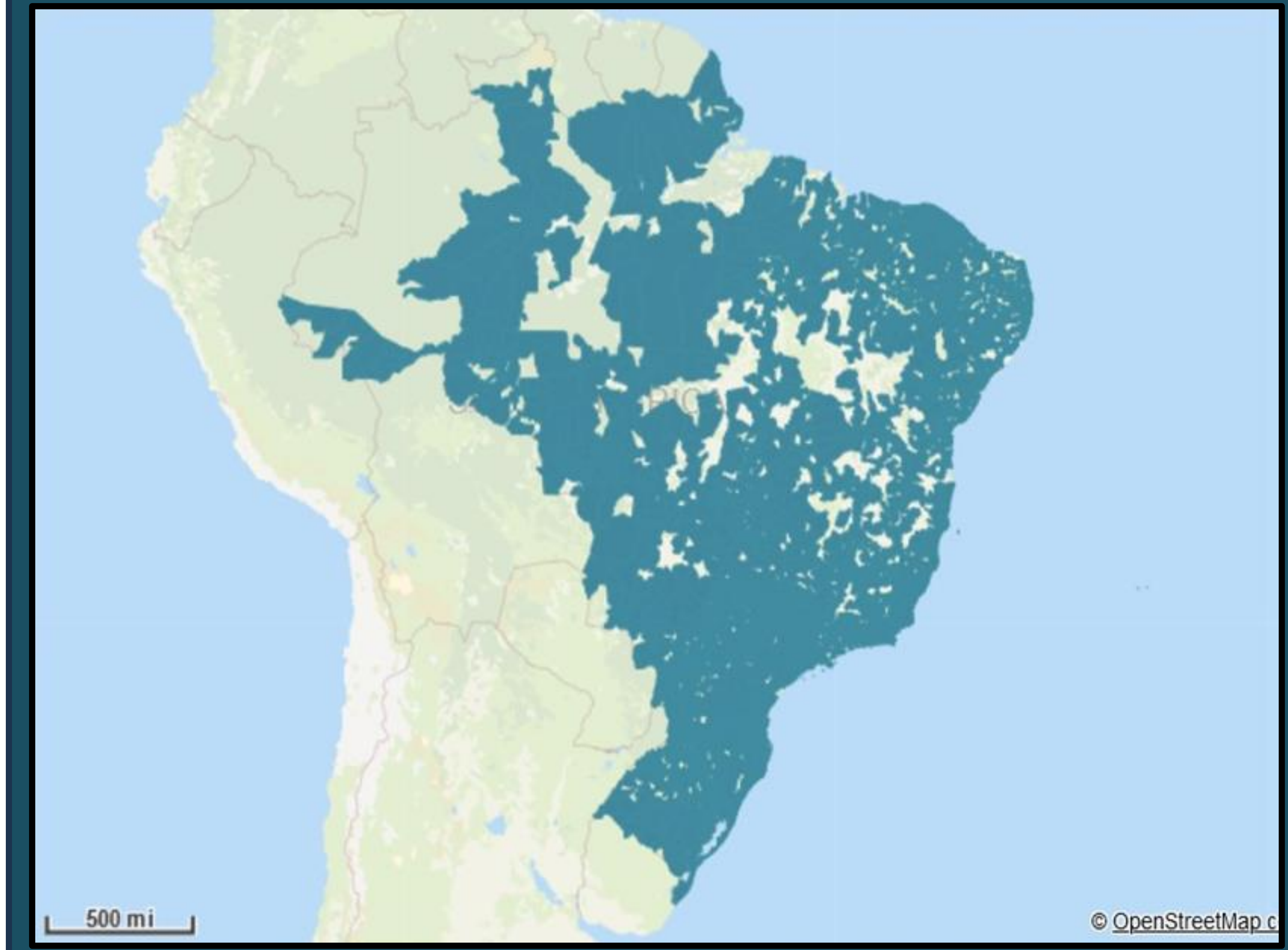
Fiber Network Coverage Expansion

2016



2022



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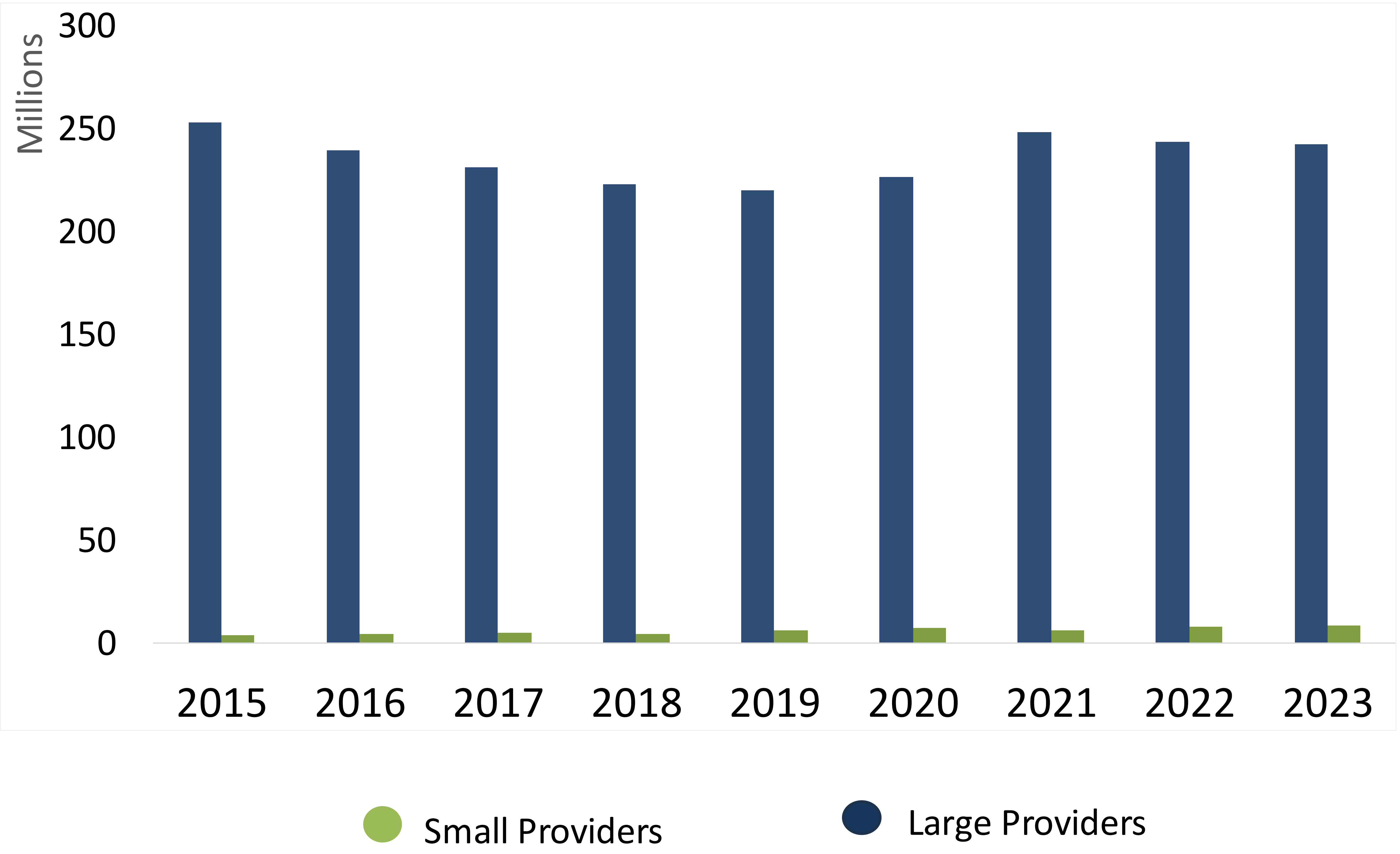
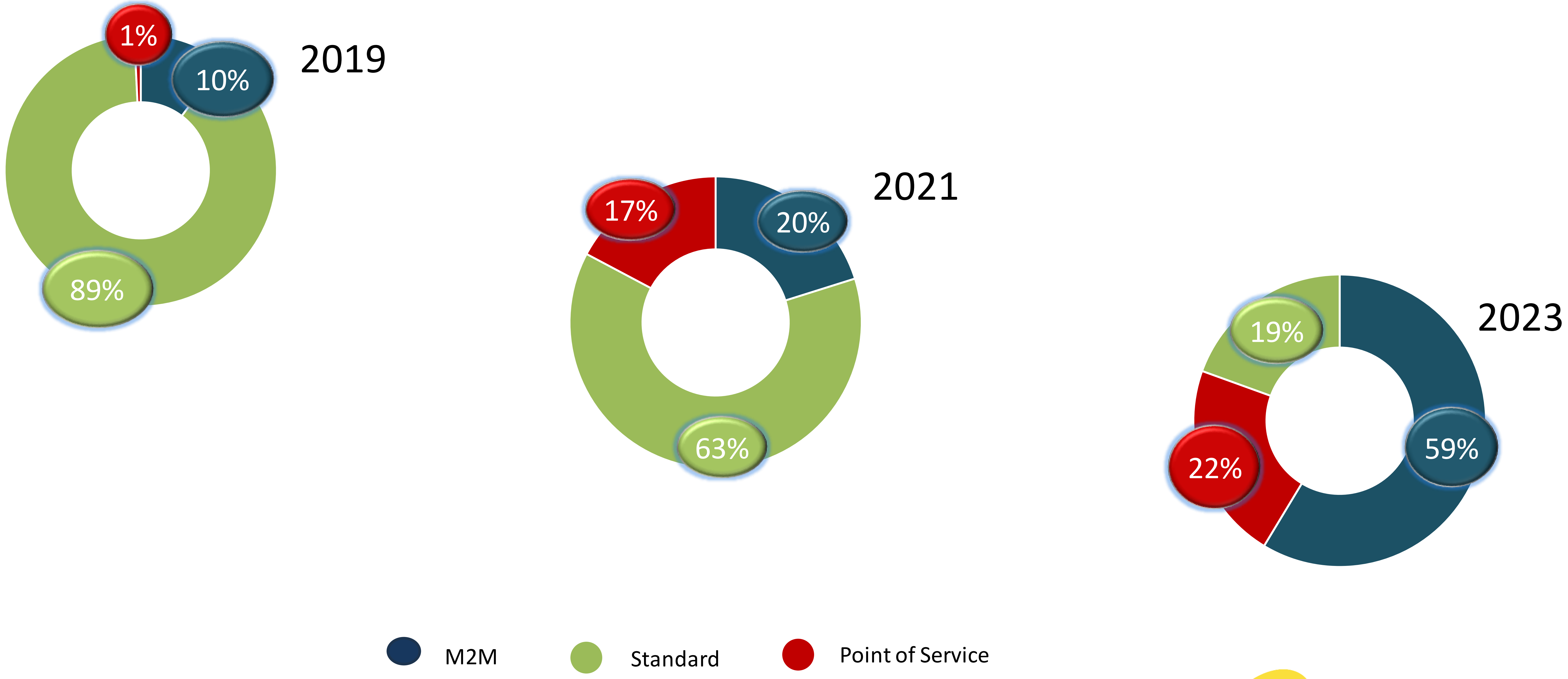
Evolution of Mobile Access by Provider Size



Small Providers
Increase of 4.7 million subscriptions.

Large Providers
Decrease of 10 million subscriptions

Type of Services – Small Providers



Thank You All

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