



2023 ACTS Annual Report

*Statistical Quality Assurance applied to
IQVIA's Information Offerings*

Global Data Science and Advanced Analytics



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About this report

ACTS is a unique statistical quality assurance program, measuring data accuracy and timeliness of IQVIA's Information Offerings hosted on MIDAS

What ACTS is



- ACTS stands for Accuracy and Timeliness Statistics, a globally implemented, standardized and evidence-based quality assurance program that has been in operation for more than 30 years. It validates IQVIA's information offerings of sales data for each product pack registered in a market with the help of pharmaceutical companies.
- The manufacturers participating in the survey supply the ex-factory quantity sold in the validated calendar year for each registered product pack. These are compared with IQVIA's audits. Accuracy and timeliness indicators are derived from the analysis and reported in ACTS.
- It provides cross-national comparability of quality measurements. The validation results are published individually for each country and on the IQVIA Customer Portal and IQVIA Homepage.
- Timeliness of MIDAS data offerings is measured against target values (days after period) in a standardized way and published.
- As a special feature, ACTS reports the validity of IQVIA Market Prognosis and its forecasting accuracy.
- The ACTS report is the only quality assurance program in our industry to document the audits' quality and timeliness transparently across countries.

*number of distinct countries

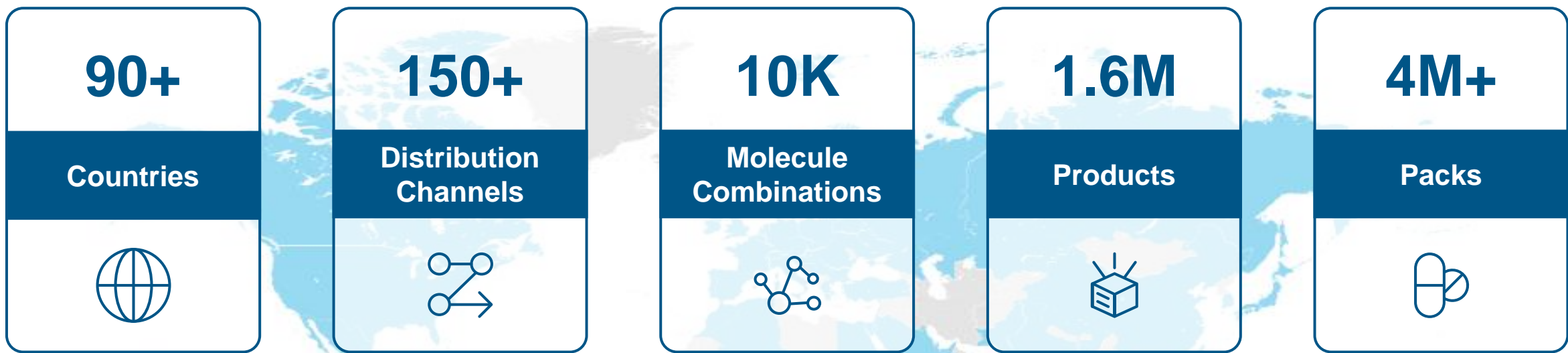
ACTS Data Basis



	Accuracy				Timeliness
	Countries*	Distribution Channels	Companies	Packs	Deliverables
Region					
North America	2	4	600+	11K	180+
Latin America	12	15	350+	16K	260+
Europe	22	44	3,100+	39K	1,100+
Africa, M. East, S. Asia	11	11	400+	8K	300+
Asia Pacific	10	12	500+	12K	280+
Total	57	86	5,000+	88K	2,000+
Channel					
Retail (Sell-in)	32	32	1,200+	35K	1,000+
Hospital (Sell-in)	3	3	150+	1K	300+
Combined (Sell-in)	19	19	1,100+	22K	250+
Retail (Sell-out)	15	15	1600+	20K	100+
Hospital(Sell-out)	3	3	400+	1K	300+
Retail OTC	14	14	450+	5K	-
Total	57	86	5,000+	88K	2,000+

MIDAS

The trusted industry gold standard in global market measurement



- 40+ years of local and global experience
- 120+ production heads in 7 countries
- Ongoing updates as new/changed products and packs appear:

	Products (per year)	Packs (per year)
NEW	82,000	267,000
CHANGED	46,000	236,000

Accuracy: Global & Regional Results

Content covered in this section

Global & Regional



Global and regional accuracy results and 5-years trend

Data Type



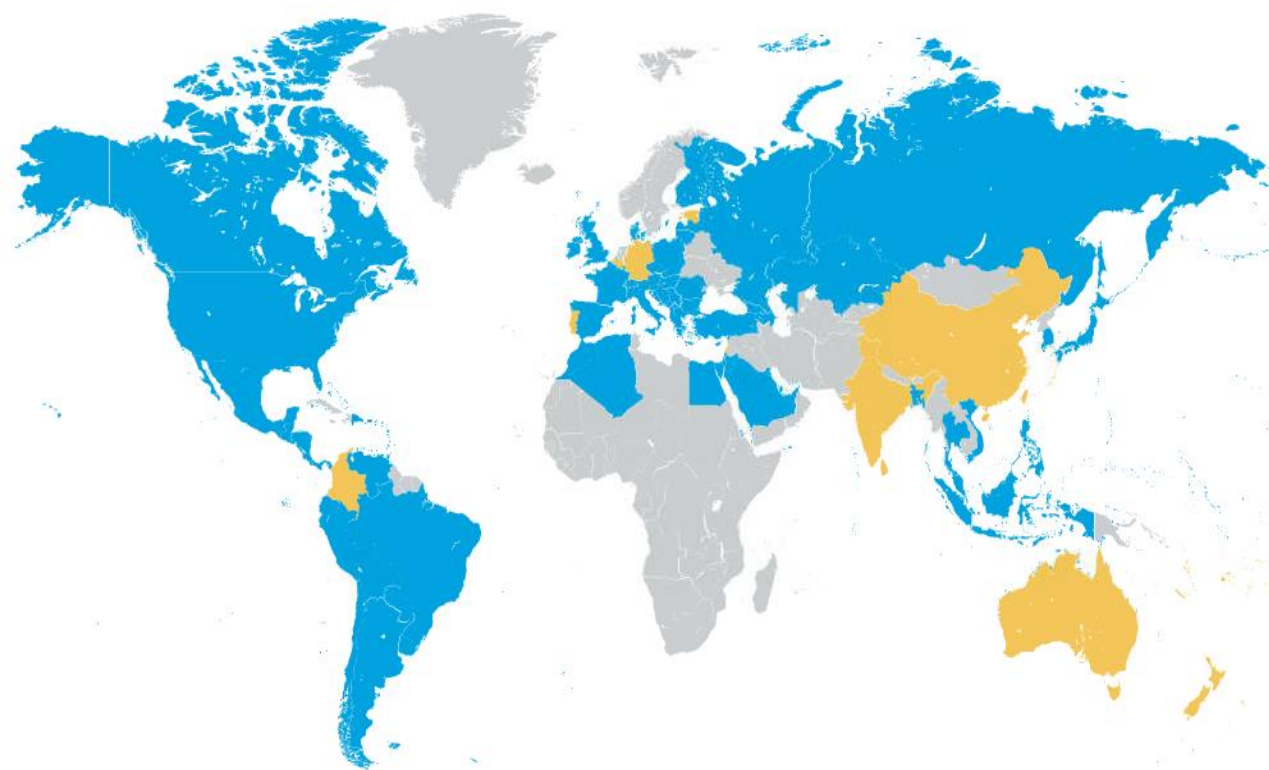
Results by data type (Retail, Hospital, PharmaTrend/Sell-out, OTC)

Countries Impacted



List of countries with improved or deteriorated results

Regions and countries validated



Geographical Coverage

Regions covered



- North America
 - United States
 - Canada
- Latin America
- Europe
- Africa, Middle East, South Asia (AMESA)
- Asia Pacific (APAC)

Countries not covered



- Australia
- Belgium
- China
- Colombia
- Estonia
- Fr. West Africa
- Germany
- India
- Lebanon
- New Zealand
- Portugal
- Sri Lanka

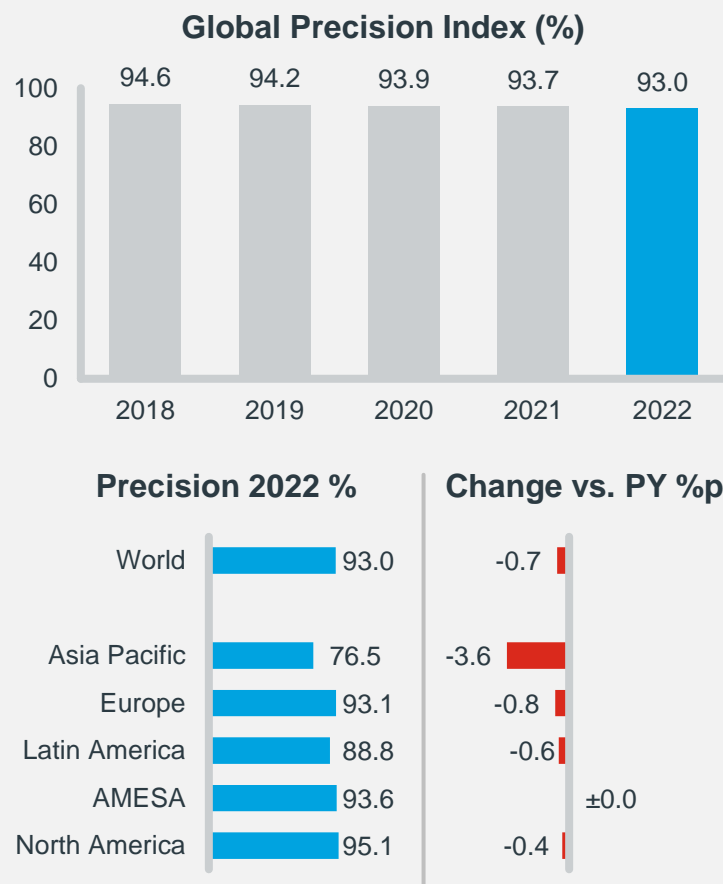
Global and Regional Results

Coverage



- IQVIA could not secure enough participating companies, yet the validation was conducted but not published as the validated market share fell below a minimum threshold: e.g. **Australia, Belgium, Colombia, China, Estonia, Fr. West Africa, Lebanon, New Zealand, Portugal, Spain Hospital, Sri Lanka.**
- IQVIA audit for **India** could not be validated, since the local validation has been conducted.
- Countries paused validation of the most recent calendar year as information offerings were undergoing upgrade of data sources or statistical methodologies or both: e.g. **Germany.**

Results



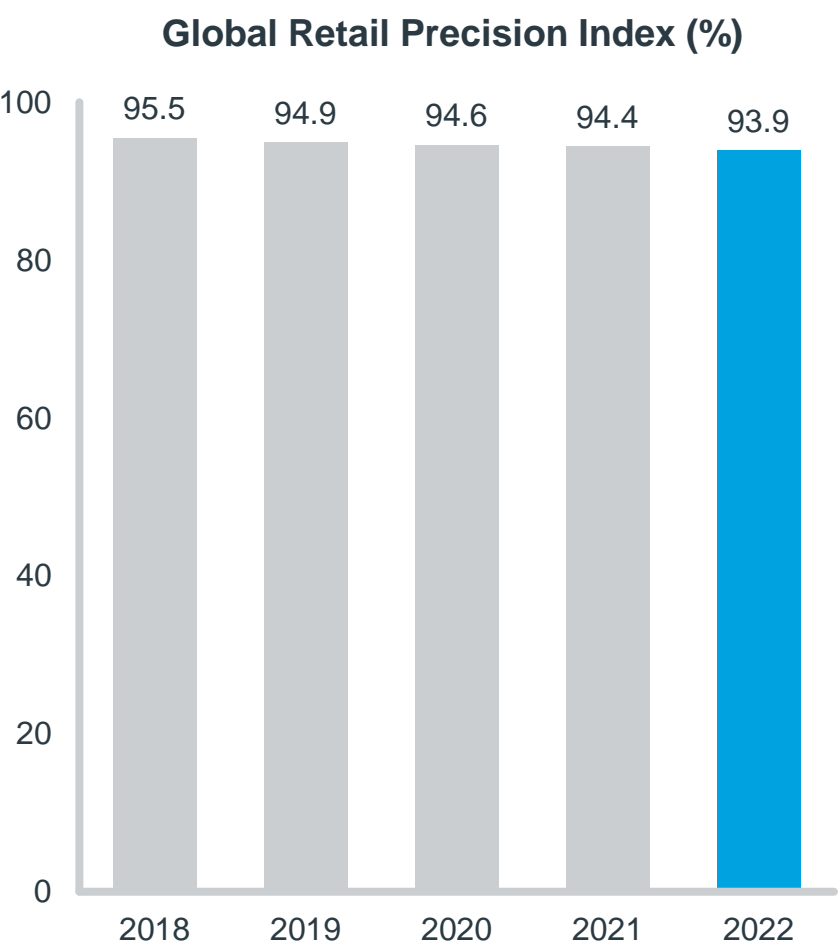
Summary



- Global precision index in 2022 is 93.0%. It dropped slightly by 0.7% comparing with previous year.
- The global precision decreased slightly in multiple regions, precision in AMESA region remained unchanged.
- Asia Pacific region dropped by 3.6% with precision 76.5%. The decrease is mainly driven by the drop in South Korea.

Countries with improved and deteriorated precision

Retail Validation Results

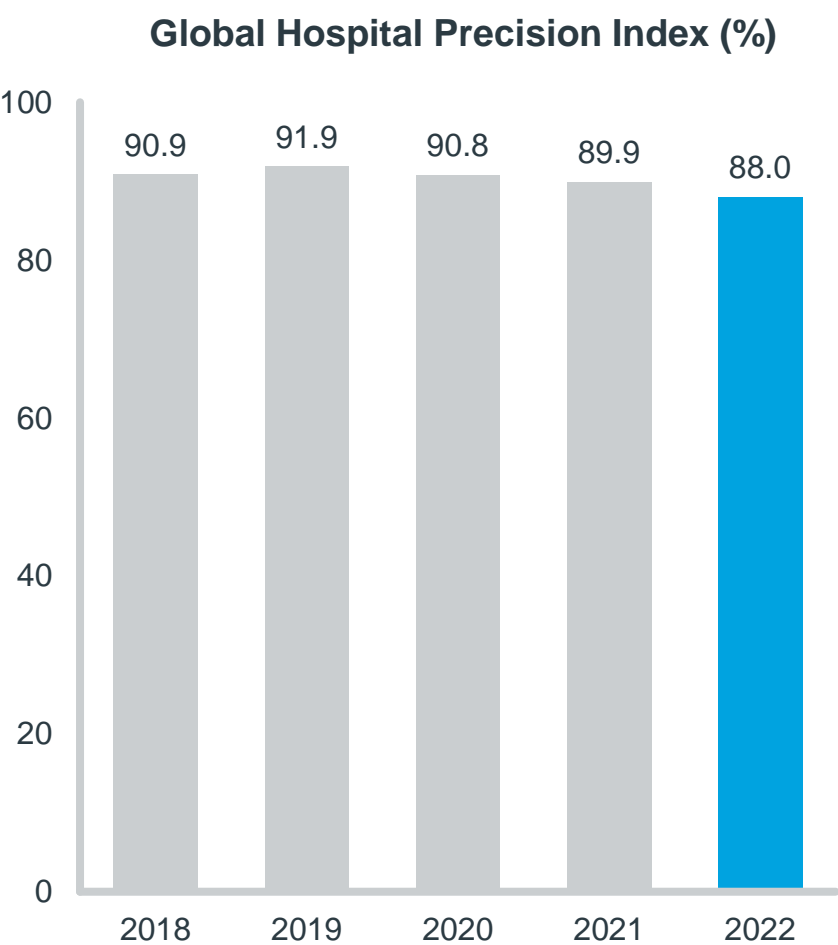



Improvement		
Country	Precision 2022 %	Change vs. 2021 %p
Mexico	91.9	+6.7
Jordan	98.3	+4.9
Algeria	81.7	+4.5
Egypt	96.9	+4.3
Uruguay	93.3	+3.9
Ecuador	92.5	+3.4


Deterioration		
Country	Precision 2022 %	Change vs. 2021 %p
Paraguay	46.7	-19.1
Peru	76.5	-12.8
Bangladesh	71.6	-11.0
Latvia	86.5	-8.2
South Korea	77.0	-5.5
Tunisia	94.9	-4.8
Bolivia	70.0	-3.2

Countries with improved and deteriorated precision

Hospital Validation Results

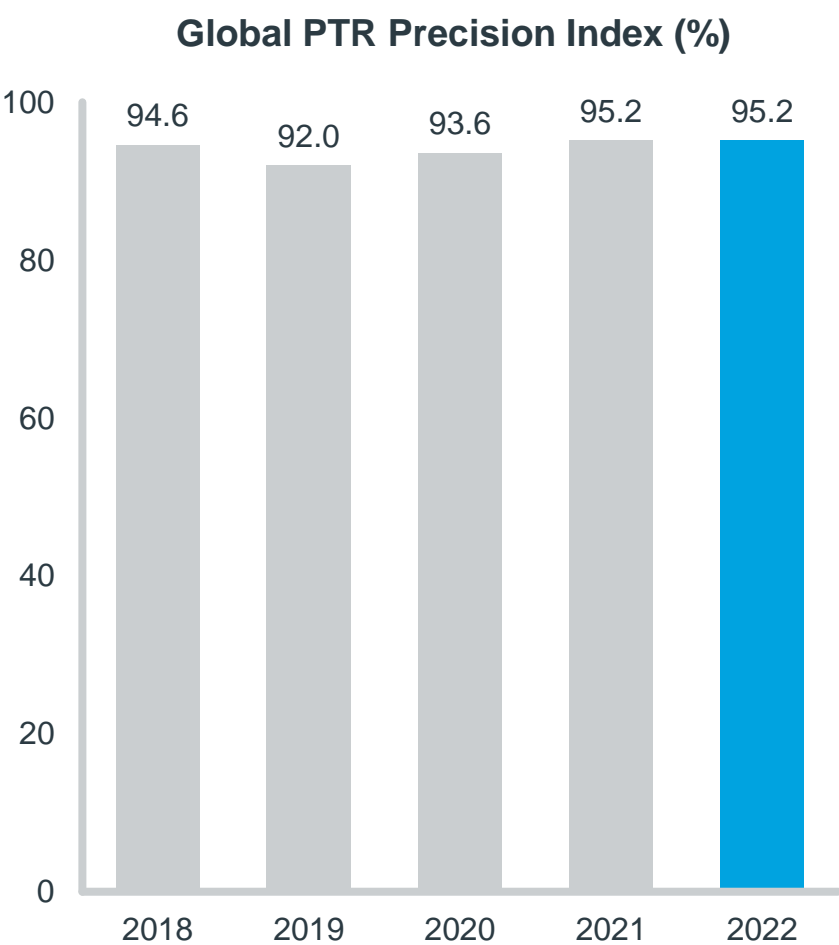


Improvement 		
Country	Precision 2022 %	Change vs. 2021 %p
Austria	96.4	+3.2
Serbia	99.7	+1.2

Deterioration 		
Country	Precision 2022 %	Change vs. 2021 %p
South Korea	55.6	-7.2
Italy	72.3	-6.0

Countries with improved and deteriorated precision

Pharmacy Sell-out (PharmaTrend PTR) Validation Results

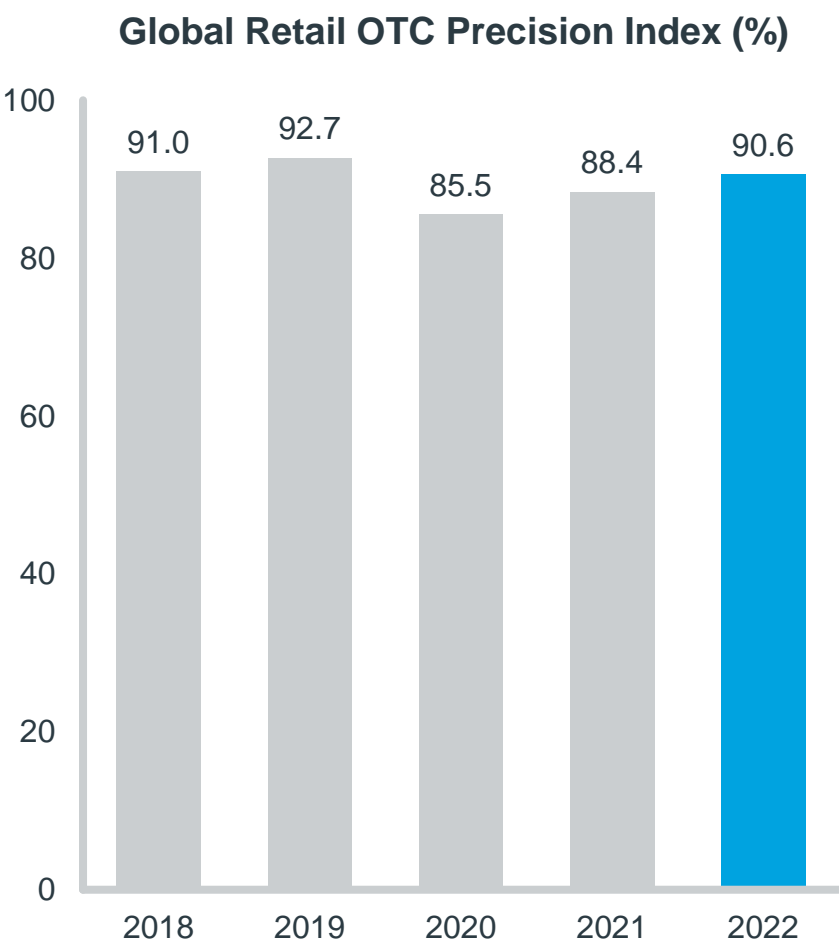


Improvement		
Country	Precision 2022 %	Change vs. 2021 %p
Switzerland	96.3	+1.7
Italy	96.5	+1.0

Deterioration		
Country	Precision 2022 %	Change vs. 2021 %p
Croatia	91.6	-2.3
Poland	92.0	-2.2
Czech Republic	94.6	-2.0

Countries with improved and deteriorated precision

Retail OTC Validation Results



Improvement		
Country	Precision 2022 %	Change vs. 2021 %p
Mexico	92.0	+15.2
Greece	83.5	+11.8
Austria	98.0	+9.7
Brazil	90.4	+3.3

Deterioration		
Country	Precision 2022 %	Change vs. 2021 %p
Poland	80.6	-7.6
South Korea	74.2	-6.4

Timeliness

Content covered in this section

Timeliness



Statistics featured in this section pertain to number of days, after the end of the reporting period until time of delivery on MIDAS.

Metrics



“Elapsed days after period” and “Percent On-Target” are the two key performance indicators that express Timeliness/speed of delivery on MIDAS.

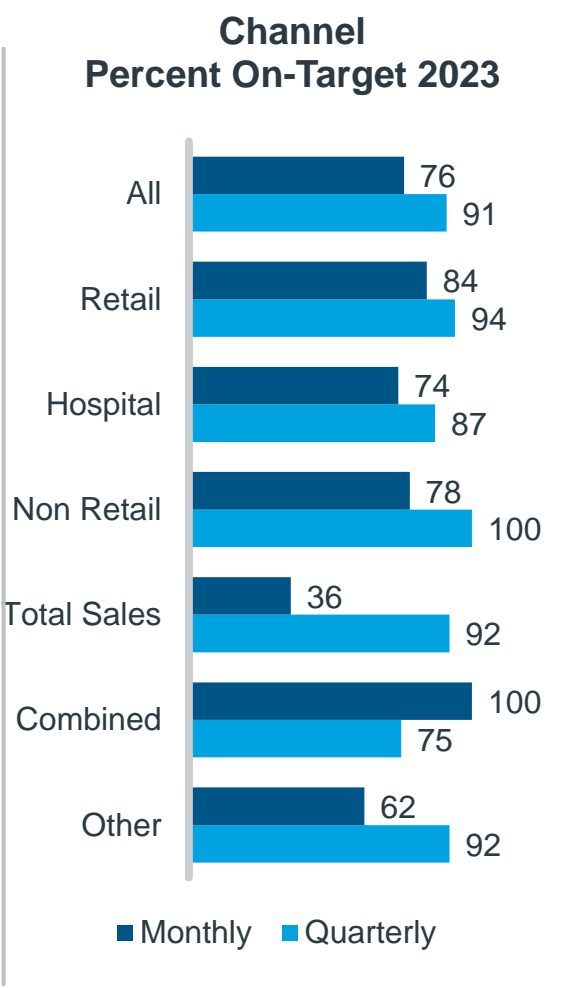
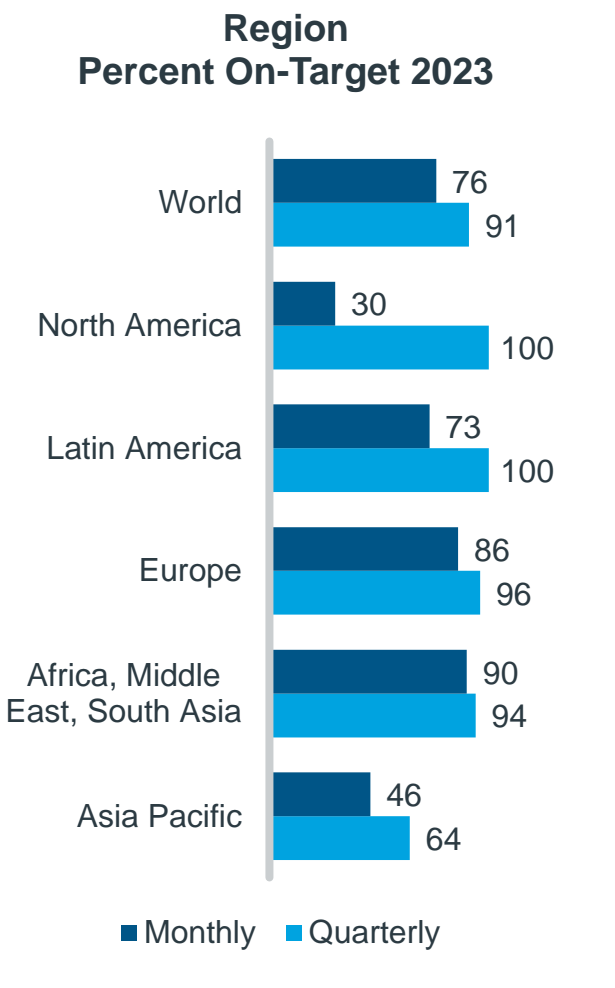
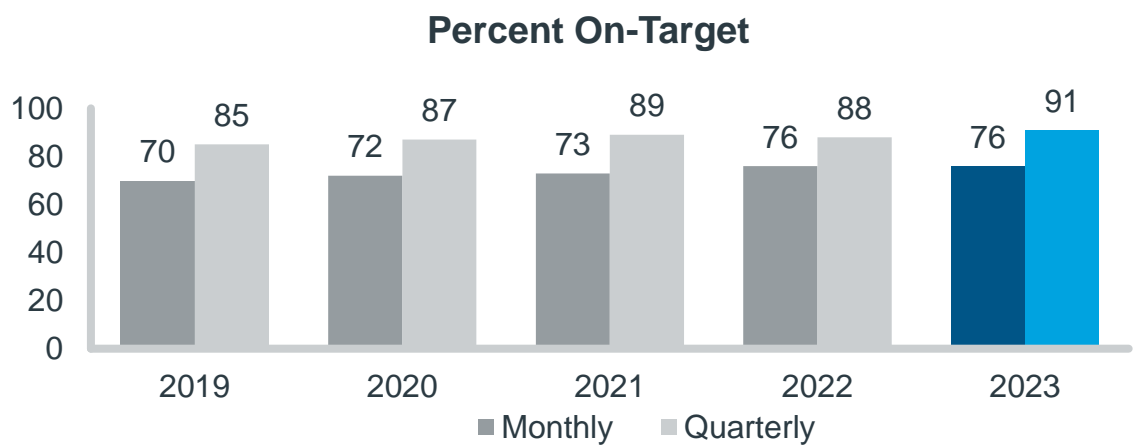
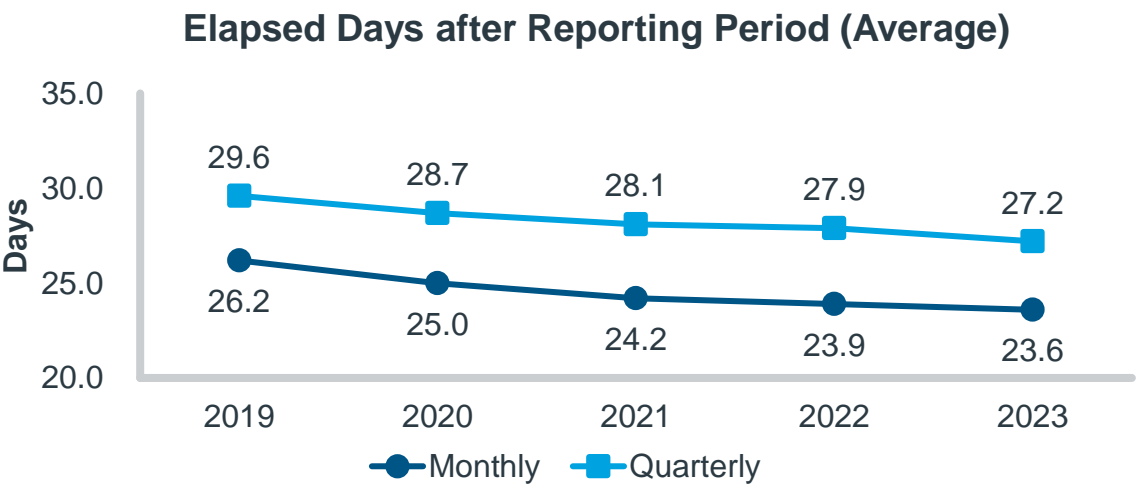
DAP Data



Number of deliverables used for measuring Timeliness: Also reported on IQVIA Customer Portal “MIDAS Delivery Performance”.

Timeliness being measured against delivery targets of 30 days for Monthly MIDAS and 45 days for Quarterly MIDAS DAP data being used is also published on MIDAS Delivery Performance:
<https://www.customerportal.iqvia.com/sites/portal/product-support/midas-products-psa/iqvia-midas/psa/database-update-schedules>

DAP continued improving on both monthly and quarterly deliverables



Timeliness being measured against delivery targets of 30 days for Monthly MIDAS and 45 days for Quarterly MIDAS DAP data being used is also published on MIDAS Delivery Performance: <https://www.customerportal.iqvia.com/sites/portal/product-support/midas-products-psa/iqvia-midas/psa/database-update-schedules>

Number of deliverables used for measuring Timeliness

	2019		2020		2021		2022		2023	
	Month	Quarter	Month	Quarter	Month	Quarter	Month	Quarter	Month	Quarter
Channel										
Combined	60	32	60	32	60	32	60	32	60	29
Hospital	456	180	456	180	456	180	456	180	450	168
Non-Retail	36	12	36	12	36	12	36	12	36	12
Other	108	48	108	48	108	48	108	48	106	45
Retail	766	288	768	288	768	288	768	288	761	275
Total Sales	132	52	132	52	132	52	132	52	132	51
Total	1,558	612	1,560	612	1,560	612	1,560	612	1,545	580
Region										
North America	132	48	132	48	132	48	132	48	132	48
Latin America	190	68	192	68	192	68	192	68	189	64
Europe	852	288	852	288	852	288	852	288	847	282
Africa, M. East, S. Asia	216	92	216	92	216	92	216	92	216	89
Asia Pacific	168	116	168	116	168	116	168	116	161	97
Total	1,558	612	1,560	612	1,560	612	1,560	612	1,545	580

Timeliness being measured against delivery targets of 30 days for Monthly MIDAS and 45 days for Quarterly MIDAS DAP data being used is also published on MIDAS Delivery Performance:

<https://www.customerportal.iqvia.com/sites/portal/product-support/midas-products-psa/iqvia-midas/psa/database-update-schedules>

Specialty Markets

Content covered in this section

Definitions



- MIDAS Specialty Definition
- ATC 4th level definition of Specialty products

Global Growth



- Specialty vs. Non-Specialty: Market size and market share

Accuracy Results











- Bias and Precision by Specialty markets (Anti-TNF, Hep-B & HIV, Oncology and Others)
- Data basis used: Countries and Specialty products surveyed

MIDAS Specialty Definition

Starting point – US specialty definition

- The starting point for the MIDAS specialty definition is the IQVIA USA detailed definition of a specialty product, which includes concepts such as price, involvement of a specialist, form of administration, etc.
- First, the approved indication must be considered to be specialty (chronic and/or complex and/or rare and/or genetic) for a pack to be classified as specialty.
- The pack **must then also meet 4 out of 7 other criteria** to be classified as specialty.
- These US products have formed the starting point to identify similar products in other countries to assess if they are specialty using the MIDAS definition.

Researched Attributes (US)	
 <p>Approved indication is (and/or) chronic, complex, rare, genetic - REQUIRED -</p>	 <p>Special handling required (refrigeration, frozen, other biohazard)</p>
 <p>High annual cost</p>	 <p>Reimbursement assistance required</p>
 <p>Drug treatment specialist initiated and maintained</p>	 <p>Distribution is limited</p>
 <p>Practitioner administered</p>	 <p>In-depth monitoring or extensive patient counselling required</p>

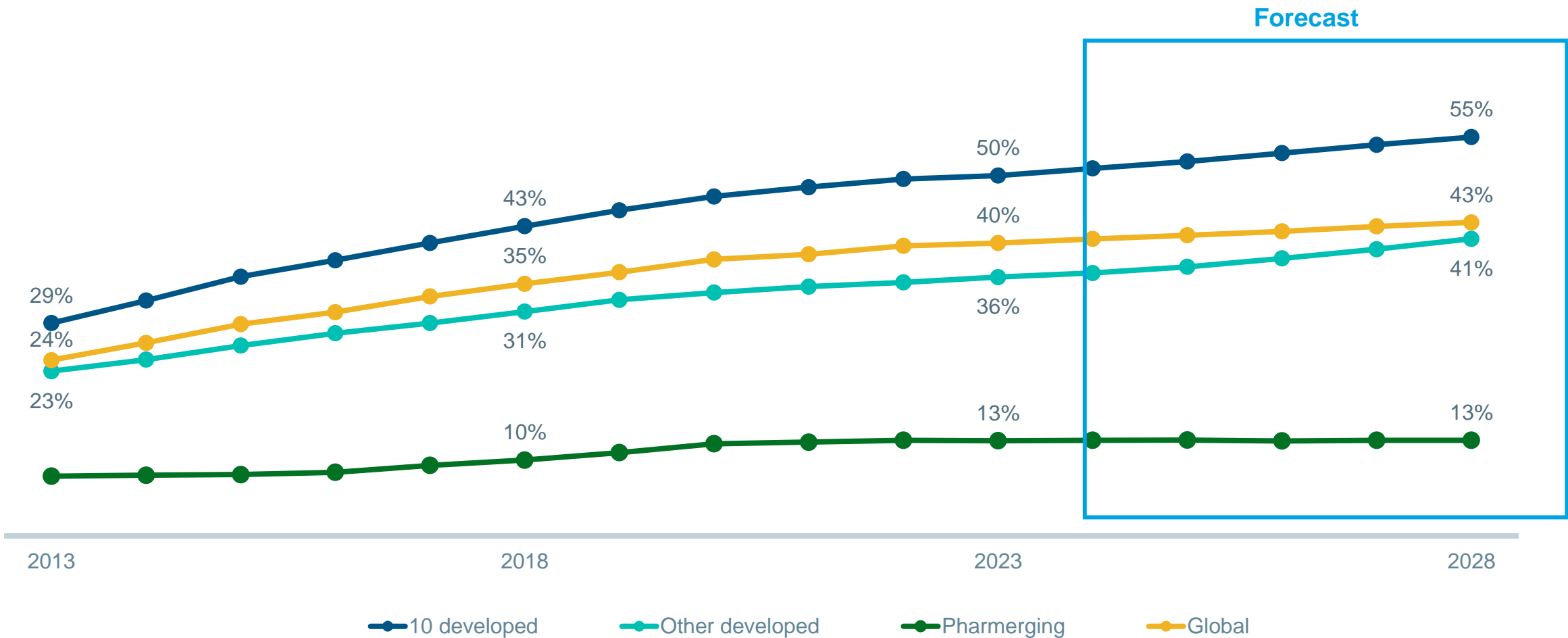
ATC 4th level definition of Specialty

Anti-TNF & more*	Hepatitis B & HIV		Oncology					Crohn's Disease **	Others***		
L04B0	J05C1	J05D9	L01A0	L01G1	L01H4	L01X4	L02B2	A07E0	A16A0	G03G0	J06H9
L04C0	J05C2		L01B0	L01G2	L01H5	L01X5	L02B3	A07E1	B02C1	H01C1	J06J0
L04X0	J05C3		L01C1	L01G3	L01H6	L01X6	L02B9	A07E2	B02C2	H01C2	L03B1
M01C0	J05C4		L01C2	L01G4	L01H9	L01X8	L03A1	A07E9	B02C3	H01C3	L03B2
	J05C5		L01C3	L01G5	L01J0	L01X9	L03A9		B02C9	H02A1	L03B3
	J05C8		L01C4	L01G9	L01K0	L02A1	M05B4		B02D1	H04C0	L03B9
	J05C9		L01C9	L01H0	L01L0	L02A2	V03C0		B02D2	H04E0	M05B3
	J05D1		L01D0	L01H1	L01X1	L02A3	V03D0		B02D3	J06C0	M05B9
	J05D2		L01F0	L01H2	L01X2	L02A9			B03C0	J06E0	
	J05D3		L01G0	L01H3	L01X3	L02B1			G02X9	J06H4	

*Anti-TNF, specific anti-rheumatic agents and immunosuppressants; ** not represented in this report; *** Acromegaly, Erythropoietins (Anemia), Gaucher's (Metabolic Disease), Growth hormones, Hemophilia, Immunoglobulins, Infertility, INJ CORTICOSTEROIDS PLN, Interferons (Hepatitis C, MS);, Osteoporosis, Other Anticoagulants, Other Gynaecologicals, Parathyroid hormones

Specialty medicines will represent about 43% of global spending in 2028 and 55% of total spending in leading developed markets

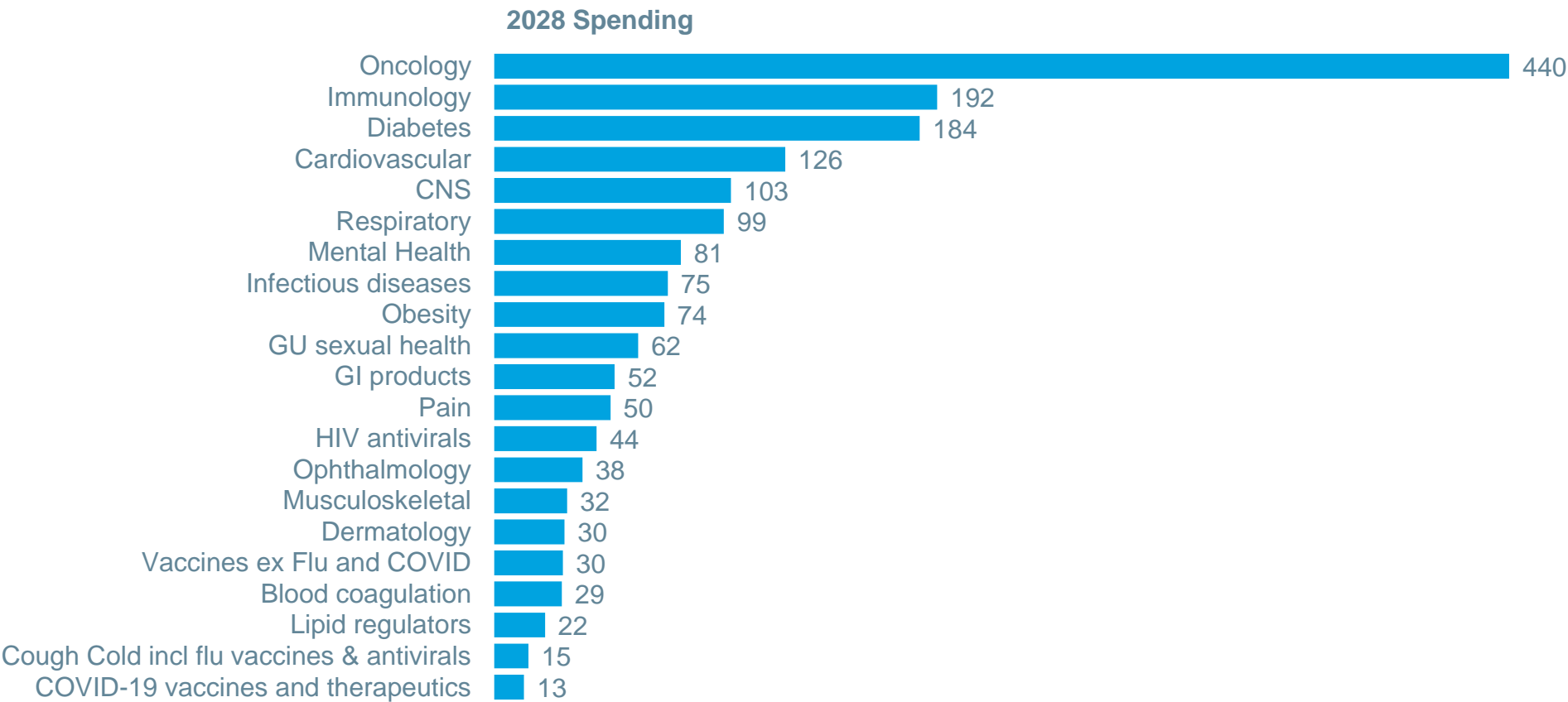
Specialty medicines share of spending



Source: IQVIA Institute, Dec 2023.

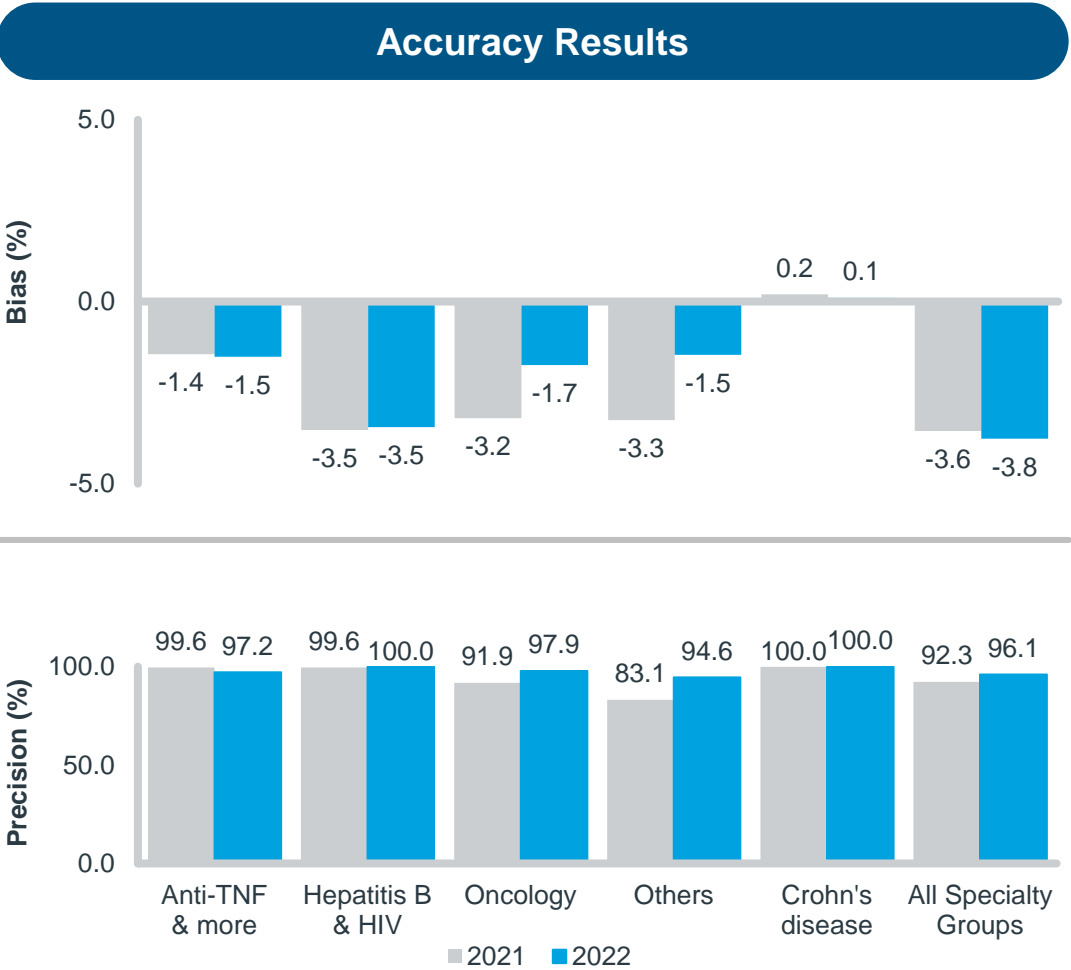
Oncology and obesity lead growth while immunology slows due to biosimilars, many other classes growing in mid-single digits

Top 20 therapy areas in 2028 in terms of global spending with forecast 5-year CAGRs, const \$US



Source: IQVIA Forecast Link, IQVIA Institute, Dec 2023

Specialty market “Others” show largest improvement*



Survey Basis							
	Anti-TNF	Hep B & HIV	Oncology	Others	Crohn's	All Specialty Groups	
Countries surveyed	Austria Canada Czech R. France Switzerland Turkey UAE USA	Czech R. France Turkey USA	Austria Canada Croatia Czech R. Ecuador France Hungary Italy Japan Mexico Pakistan Russia Serbia Slovakia Slovenia Switzerland Turkey UAE USA	Argentina Brazil Canada Czech R. Ecuador France Hungary Japan Pakistan Russia Switzerland Turkey USA	Czech R.	Argentina Austria Bangladesh Bosnia Brazil Bulgaria Canada Central America Croatia Czech R. Ecuador France Greece Hungary Italy Japan Kazakhstan	Lithuania Mexico Morocco Pakistan Poland Russia Saudi Arabia Serbia Slovakia Slovenia South Korea Spain Switzerland Turkey UAE Uruguay USA
Specialty products surveyed	515	140	1,835	908	22	4,643	

*Due to low number of countries and products surveyed, the Accuracy results presented on this page require careful interpretation. A larger Specialty data base is planned for in the future.

IQVIA Market Prognosis

Content covered in this section

IQVIA Market Prognosis



What it is and what it is used for

Validity of Annual Forecast



Results by IQVIA's regional BU and leading 10 pharmaceutical markets

Commentary



Commentary on selected markets

IQVIA Market Prognosis

A strategic market forecasting publication that provides unparalleled country-level information on the pharmaceutical and healthcare industries



Capabilities

- Based on a rigorous evaluation of key events affecting the marketplace, IQVIA Market Prognosis provides a robust five-year forecast at country, regional, and global levels.
- Customers can gain insights into the economic and political issues affecting the local pharmaceutical and healthcare industries such as cost containment, prescribing and reimbursement, pricing trends, and the regulatory environment.
- Forecasts are supported with detailed evaluation of the key issues affecting the marketplace.
- In-depth reports are available for 49 countries across 7 regions.
- Market Prognosis Global extends coverage, providing top-line country forecasts across 220 countries in 11 regions.



Use Cases

Customers can use IQVIA Market Prognosis to:

- Validate their forecasts to establish annual targets
- Set and manage expectations from corporate headquarters to local subsidiaries
- Evaluate key economic and healthcare related issues in each country
- Identify macro events shaping the pharmaceutical country markets
- Understand key drivers in the hospital and retail markets over the next five years for each country market
- Apply unrivalled world perspective on established and emerging markets to determine future investments

Market Prognosis Validations: Key Findings

Despite the unforeseen impact of the COVID-19 pandemic, both 1-Year and 5-Year validations showed very strong results

Global



Average 5-year error across 46 Market Prognosis countries was -7.0%, a slight deterioration on the previous average error of -4.9%. The average error for year 5 of forecast was -12.6%. This can be attributed to COVID-19 pandemic-related impacts.

Regional



Four of the five Market Prognosis regions showed deteriorated 5-year errors compared to previous validation. Asia's 5-year error remains the same as previous validation, see slide 5-8 for explanation.

Leading 10 Countries

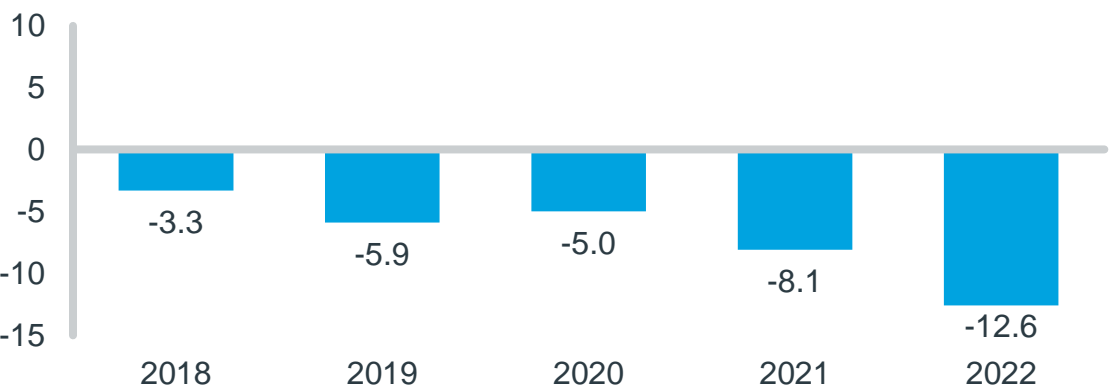


For the leading 10 countries, six of them showed 5-year average errors greater than $\pm 5\%$, and six countries showed a 1-year error greater than $\pm 3\%$, again attributed mostly to the unexpected impacts of the COVID-19 pandemic.

Market Prognosis

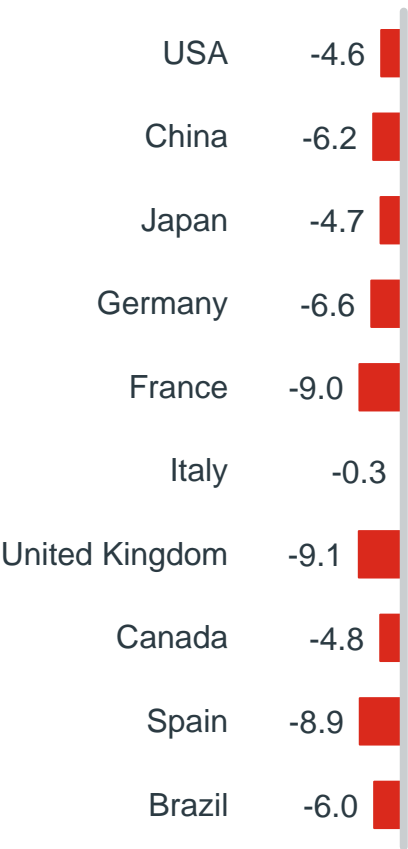
Validity of Annual Forecasts

Forecasting Bias (%) based on 45 Countries

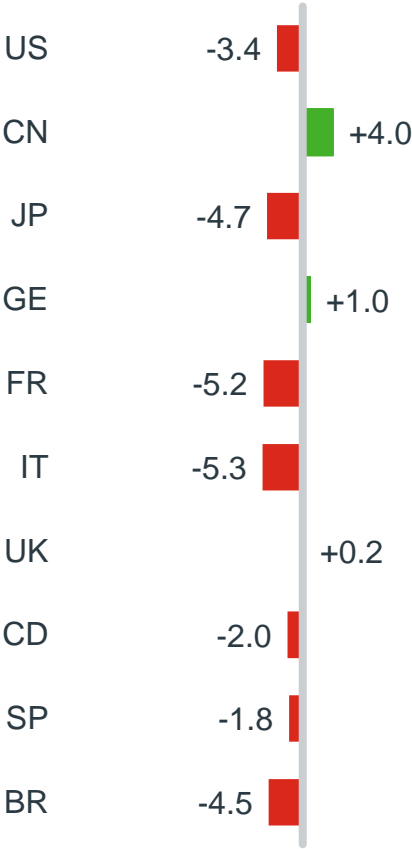


Region	Average Bias (%)	
	2017-2021	2018-2022
AMESA	-4.8	-8.8
Asia Pacific	-3.1	-3.1
Europe	-7.0	-9.0
Latin America	-1.9	-7.4
North America	-2.4	-4.7
All Regions	-4.9	-7.0

Leading 10 Markets
5 years (2018-2022)



Leading 10 Markets
1 year (2022)



Market Prognosis on selected Markets

Commentary



United States

- The underestimation of US total market prognosis over the 2018-2022 period was mainly due to the strong rebound in demand in 2021 and 2022 after the COVID-19 pandemic, especially in the retail and mail order sectors. Clinic patient visits and new prescriptions also rebounded in 2021, boosting sector sales growth that year. In the years prior the pandemic, 2018 and 2019, the robust market growth is associated with higher spending on new specialty medicines as a record high number of new drugs were approved in 2018 for which the impact continued to be realized in 2019.
- The 1-year forecast underestimation of total market growth in 2022 was again primarily due to a stronger-than-expected rebound in the second consecutive year following the deceleration in growth witnessed in 2020 due to the COVID-19 pandemic. The limited market erosion following LOE events in retail sector and a recovery in the uptake of some high-cost products in mail order sector also contributed to the stronger than expected sales.



China

- The underestimation of the 5-year forecast for total market growth in China over the 2018-2022 period is largely the result of changes to the CHPA hospital audit panel, implemented in 2020 and 2021. The changes led to trend breaks in 2019 and 2020, and increased sales growth at ex-manufacturer level.
- The overestimation of the 1-year forecast for China for 2022 is the result of the spread of the highly contagious Omicron variant in the spring of 2022, which led to the unexpected widespread implementation of strict lockdowns, including in some major cities (e.g., in Shanghai in April/May), under China's zero-COVID policy, still in force at the time. This impacted sales negatively.
- In addition, sales in Q4 2022 were impacted negatively again by the end of the zero-COVID policy, announced at the beginning of December 2022, which led to a massive wave of infections, overwhelming hospitals and reducing normal hospital activity.



Japan

- The underestimation of total market growth in Japan over the 2018-2022 period is a result of stronger-than-expected sales growth in the hospital sector. In 2019, this was driven by uptake of specialty biologics. In 2020, the COVID-19 pandemic caused a steep decline in hospital sales, which was subsequently followed by a strong rebound in 2021 and 2022 – exceeding the prognosis in a pre-COVID scenario.
- The 1-year forecast underestimation of total market growth in 2022 was largely due to a strong recovery following the prior slowdown caused by the COVID-19 pandemic. Both the retail and hospital sectors witnessed unprecedented growth as COVID-19 related restrictions were lifted, leading to resumption in patient flow and stable prescription usage.

Market Prognosis on selected Markets

Commentary



Germany

- The 5-year outlook for the German pharmaceutical market over the 2018-2022 period was underestimated because of the COVID-pandemic and due to the strong impact of new product launches, which in turn offset the expected impact of cost-control measures.
- The uptake of high-priced therapies, including monoclonal antibody antineoplastics and multiple sclerosis products in the hospital sector, buoyed sales during the pre-pandemic period. This was followed by the arrival of the premium priced gene therapy, Zolgensma and several other oncology products which lifted growth above expectations.
- The COVID-19 pandemic led to unexpected trends, namely a change in product mix in favor of expensive therapies due to a slowdown in demand for drugs for common ailments in hospitals. Patient stockpiling in the wake of the pandemic meant that in the subsequent months there was a drop in demand for certain lower-cost products, leading to higher-than-expected average price growth as a result of the change in product mix.
- The 1-year forecast for 2022 is within expectation, although marginally overestimated as the consumption of antiseptics and disinfectant products decelerated faster than expected in hospitals.



France

- The underestimation of the 5-year forecast for France is the result of a change in trend in the French market. As of early 2018, market growth in France had been subdued for a decade. The dominant retail sector had contracted every year from 2012-2017 at a CAGR of -1.2% due to intensifying cost-containment measures under the annual social security financing law to reduce the social security deficit. As such, the baseline projection for the retail sector was for a continuing contraction over 2018-2022, with low growth also expected in the hospital sector.
- However, from 2018 onwards, retail sector growth turned positive, as a steadily growing number of high-cost innovative new drugs began to be shifted from hospitals to retail pharmacies, leading to the underestimation in the CAGR for 2018-2022.
- The 1-year forecast for 2022 underestimated growth. Under the impact of the Omicron wave in early 2022, stronger-than-expected retail sector demand was driven by cough & cold related products, while price growth was sustained by certain innovative new drugs. The higher-than-expected hospital sector growth was driven largely by strong sales certain oncology drugs.



Italy

- Italy's pharmaceutical market growth over the 2018-2022 period was in line with forecast.
- The 1-year forecast for Italy was underestimated. This was in part due the combined effect of the easing of social distancing measures and the highly infective Omicron wave, which boosted demand for respiratory and analgesic drugs in the retail sector.
- A sharp increase in volume was also observed in distribution-on-behalf channel (DPC) primarily driven by antidiabetic and cardiovascular drugs.
- Double-digit price growth in the hospital sector was driven by strong rebound in hospital activities and patient backlog clearance as well as a change in the product mix in favor of expensive therapies (primarily antineoplastic drugs).
- MIDAS back-data changes, particularly in the hospital and DPC sectors, also increased the variation in the forecast and actual market values for 2022.

Market Prognosis on selected Markets

Commentary



United Kingdom

- The underestimation of total market growth in the UK over the 2018-2022 period was largely due to the launch and strong uptake of new innovative medicines. Sales in the dominant hospital sector experienced strong double-digit growth over the 5-year period (except for the COVID-induced slowdown in 2020), fuelled by the use of premium-priced drugs, notably antineoplastic agents and orphan drugs. While sales growth in 2022 achieved double digits, this is primarily attributed to the ongoing recovery in consumption following the slowdown during COVID-19 pandemic.
- In the retail sector, the high growth in 2019 was due to unexpected price per standard unit increases registered for several unbranded drugs. In 2020, the use of high-priced medicines for blood/blood-forming organs, anti-diabetic agents, and significant price hikes of certain products, notably the antidepressant sertraline, contributed to stronger than expected average price growth. A similar trend was observed for 2021. Conversely, the high sales growth in 2022 is due to a rebound in consumption certain low-priced drugs following the dip in demand during the COVID-19 pandemic impact.
- The 1-year forecast for UK was in line with expectation.



Spain

- The underestimation of total market growth in Spain between 2018-2022 can be attributed mostly to the unexpected impacts of the COVID-19 pandemic.
- Following a sharp contraction in hospital activities in 2020, as non-urgent treatments were cancelled and postponed, hospital sales rose higher than expected in 2021 and 2022 driving pharmaceutical market growth. The recovery of hospital activity also had a major impact on the product mix. Equally, retail pharmacy consumption declined in 2020 followed by its recovery in 2021. Both hospital and retail sales growth was much higher than expected during this period. The OTC market also performed stronger than projected as the population placed increased importance on prevention boosting overall retail sales. This trend has lasted longer than anticipated.
- The underestimation of the 1-year forecast was also due to the unexpected rise in seasonal and contagious infections, such as cough and cold, flu and influenza, that followed the lifting of social mobility restrictions in 2021.
- Finally, a major redesign of the hospital panel led to significant back data changes to the MIDAS data, resulting in the underestimation of the market size in 2020-2021.



Canada

- The 5-year outlook for the Canadian pharmaceutical market over the 2018-2022 period was underestimated largely due to the change in product mix towards more expensive therapies in 2020-2021 (during COVID-19 pandemic) in retail sector, and significant growth in volume in H2 2022 in both the retail and hospital sectors due to influenza and the emergence of respiratory syncytial virus (RSV) in children. |
- Additionally, increased utilization of high-cost specialty drugs led to double-digit growth in average price per SU, especially in 2019 in the hospital sector. In the retail sector too, strong price growth was observed, driven by anti-cancer drugs including anti-TNFs and protein kinase, among others.
- The 1-year forecast underestimation of total market growth in 2022 was again primarily due to stronger market recovery in the latter half of 2022 when all the COVID-19 related restrictions were lifted and the surge in seasonal infections led to an increase in pharmaceutical demand. Emergence of RSV as well as high demand for pain medications led to strong consumption trends.

Market Prognosis on selected Markets

Commentary



Brazil

- The 2018-2022 forecast underestimation can be attributed to various factors. Firstly, MIDAS retail panel data changes in April 2022 resulted in significant downward adjustments to 2018-2021 price trends, as well as the future outlook.
- Secondly, the unexpected impacts of the COVID-19 pandemic resulted in unprecedented market trends. Between 2020-2022, the Brazilian pharmaceutical market reached double-digit growth amidst the pandemic, driven by the retail sector, as pharmacies became key providers of care. Brazil's lax lockdowns also contributed to strong sales. Following an initial decline in hospital activity in 2020, the rescheduling of cancelled non-emergency treatments boosted sales in 2021 and 2022. The underestimation of growth in 2021-2022 was also due in part to deteriorated patient health profiles intensifying demand for drugs, as well as the population placing increased importance on health and wellness.
- Higher-than-expected price adjustments were permitted by the regulator in 2021 and 2022 to compensate for high inflation. In 2022, the regulator authorized a provisional suspension of maximum prices for drugs in short supply.
- The underestimation of the 1-year forecast for 2022 was due to exceptionally high post-COVID19 demand, especially for respiratory and cough and cold treatments. This was coupled with higher-than-expected price adjustments that year.

Appendix

Accuracy: Country/Channel Results

Validated Countries/Regions by Channel

(please use hyperlinks for navigation)

Retail (Sell-in)

- + [Algeria](#)
- + [Argentina](#)
- + [Austria](#)
- + [Bangladesh](#)
- + [Bolivia](#)
- + [Brazil](#)
- + [Bulgaria](#)
- + [Canada](#)
- + [Central America](#)
- + [Chile](#)
- + [Dominican Republic](#)
- + [Ecuador](#)
- + [Egypt](#)
- + [Italy](#)
- + [Jordan](#)
- + [Kuwait](#)
- + [Latvia](#)

Retail (Sell-in)

- + [Lithuania](#)
- + [Mexico](#)
- + [Morocco](#)
- + [Pakistan](#)
- + [Paraguay](#)
- + [Peru](#)
- + [Philippines](#)
- + [Saudi Arabia](#)
- + [South Africa](#)
- + [South Korea](#)
- + [Spain](#)
- + [Thailand](#)
- + [Tunisia](#)
- + [Turkey](#)
- + [United A. Emirates](#)
- + [Venezuela](#)

Hospital (Sell-in)

- + [Canada](#)
- + [Philippines](#)
- + [South Korea](#)

Combined (Sell-in)

- + [Bosnia and Herzegovina](#)
- + [Croatia](#)
- + [Czech Republic](#)
- + [Hong Kong](#)
- + [Hungary](#)
- + [Indonesia](#)
- + [Japan](#)
- + [Kazakhstan](#)
- + [Malaysia](#)
- + [Poland](#)
- + [Romania](#)
- + [Russia](#)
- + [Serbia](#)
- + [Singapore](#)
- + [Slovakia](#)
- + [Slovenia](#)
- + [Switzerland](#)
- + [Uruguay](#)
- + [USA](#)
- + [Vietnam](#)

Retail OTC (Sell-in)

- + [Argentina](#)
- + [Brazil](#)
- + [Bulgaria](#)
- + [Canada](#)
- + [Ecuador](#)
- + [Mexico](#)
- + [South Africa](#)
- + [South Korea](#)

Retail OTC (Sell-out)

- + [Austria](#)
- + [Croatia](#)
- + [Greece](#)
- + [Hungary](#)
- + [Italy](#)
- + [Poland](#)
- + [Serbia](#)
- + [Slovakia](#)
- + [Spain](#)
- + [Switzerland](#)

Other (Sell-out)

Retail

- + [France](#)
- + [Greece](#)
- + [United Kingdom](#)

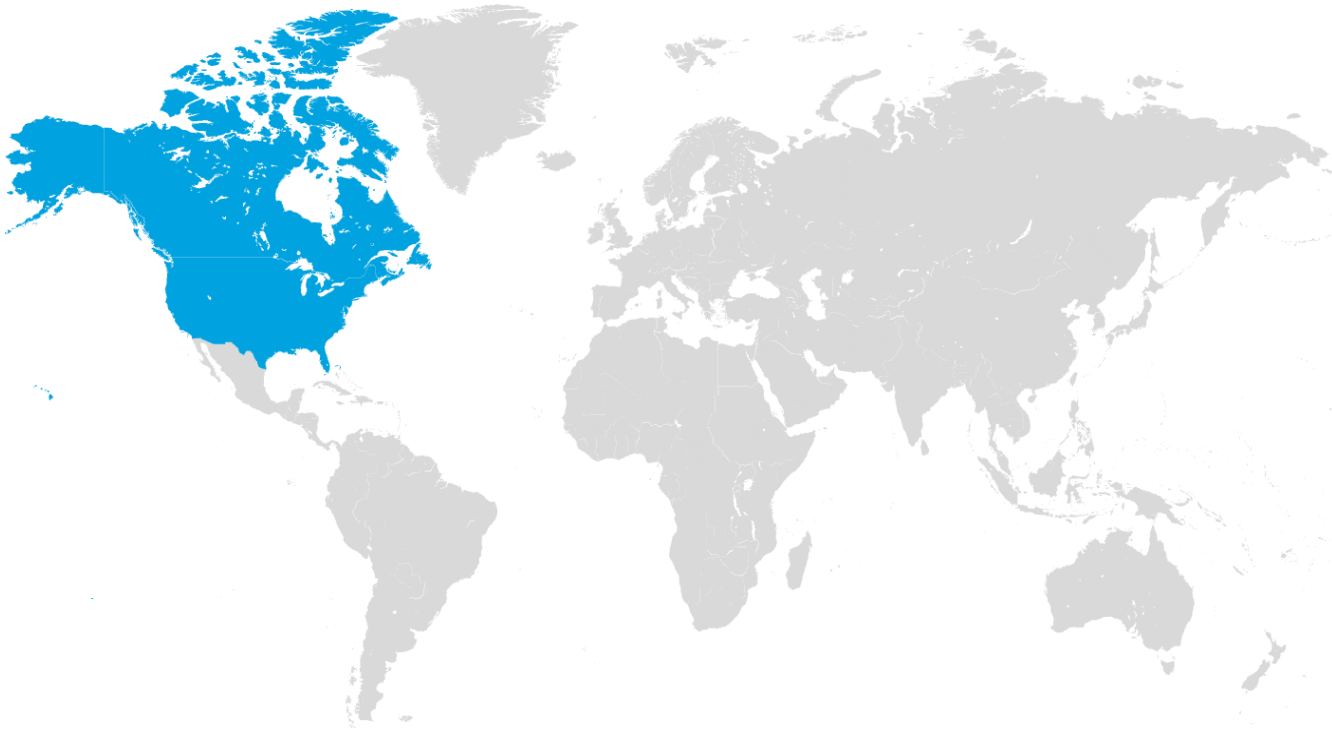
PharmaTrend

- + [Austria](#)
- + [Croatia](#)
- + [Czech Republic](#)
- + [Finland](#)
- + [Hungary](#)
- + [Ireland](#)
- + [Italy](#)
- + [Poland](#)
- + [Serbia](#)
- + [Slovakia](#)
- + [Spain](#)
- + [Switzerland](#)

Hospital

- + [Austria](#)
- + [Italy](#)
- + [United Kingdom](#)

United States of America + Canada



Countries

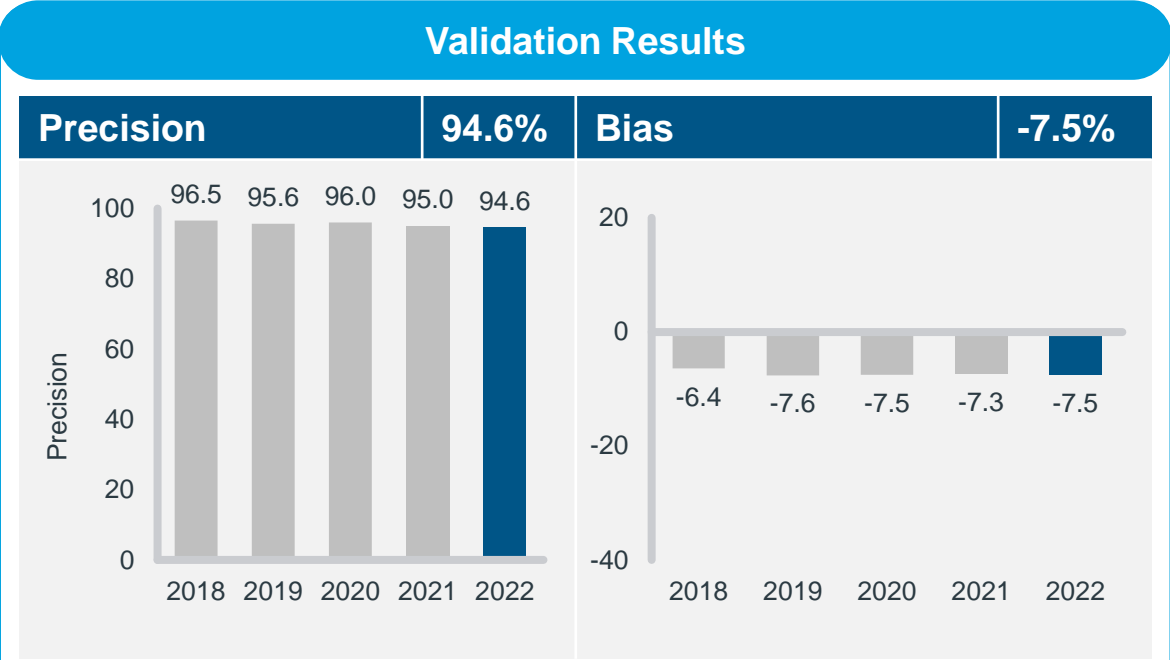
United States of America

Canada



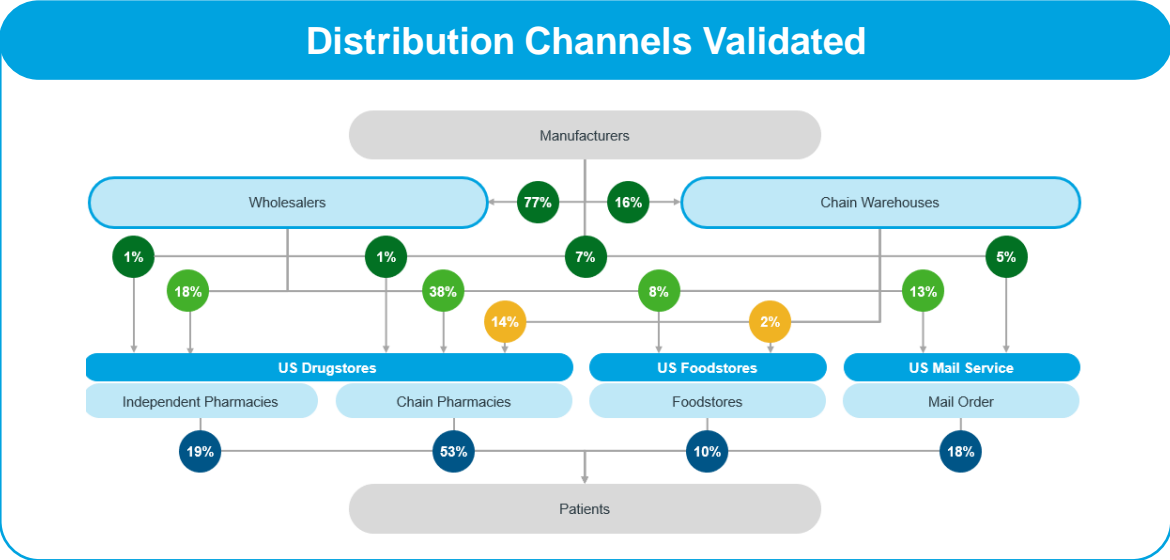
USA Retail + Non-Retail Validation Study

2022 Validation Study



Outcomes

- Overall precision index slightly declined by 0.4 percentage points in 2022
- Overall underestimation slightly increased by 0.2 percentage points in 2022
- Lower precision and negative bias is expected for companies with blocked product sales



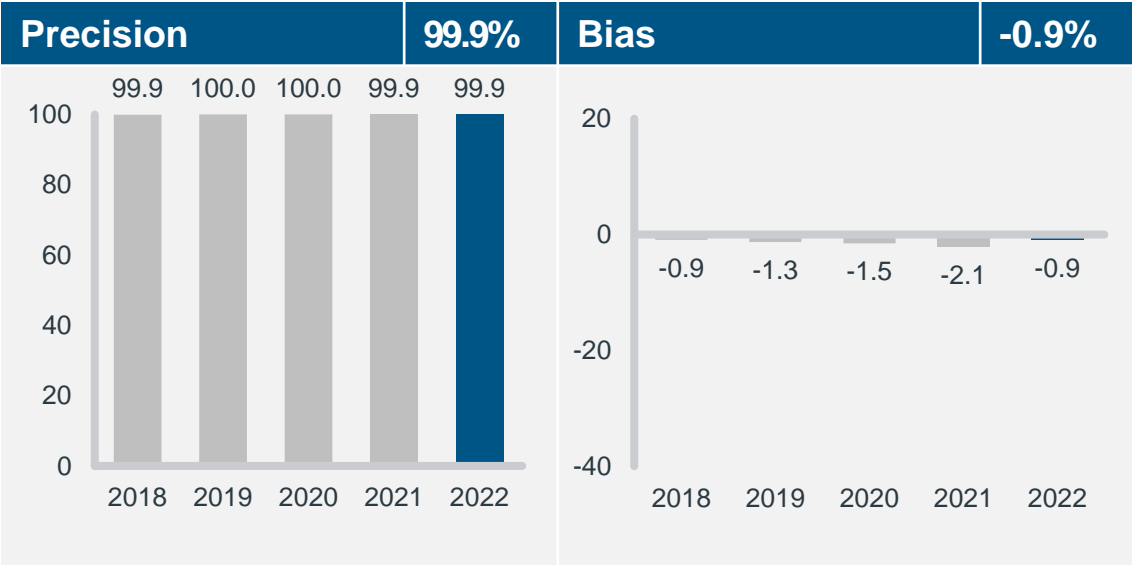
Participation		
# Participating Companies	# Forms Validated	% Market Validated
77 (+3 vPY)	1,303 (+40 vPY)	84% (+4% vPY)



Canada Retail Validation Study

2022 Validation Study

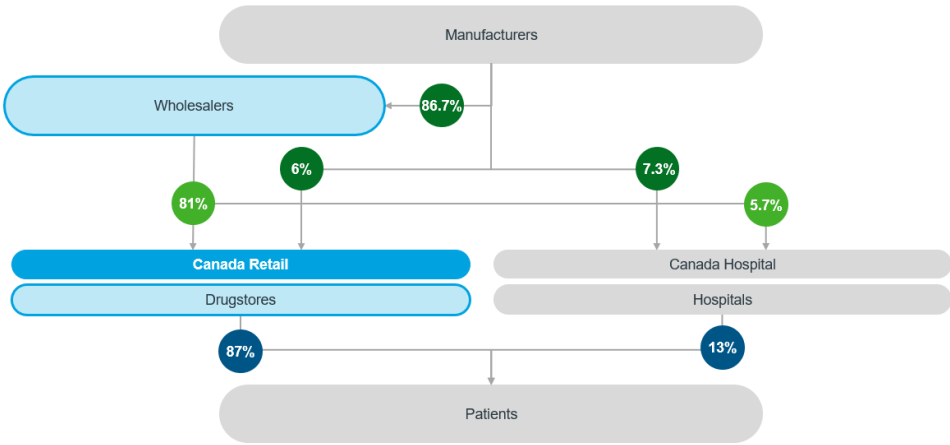
Validation Results



Outcomes

- Overall precision index remained unchanged in in 2022
- Overall underestimation improved by 1.2 percentage points in 2022
- No action required from the statistical point of view

Distribution Channels Validated



Participation

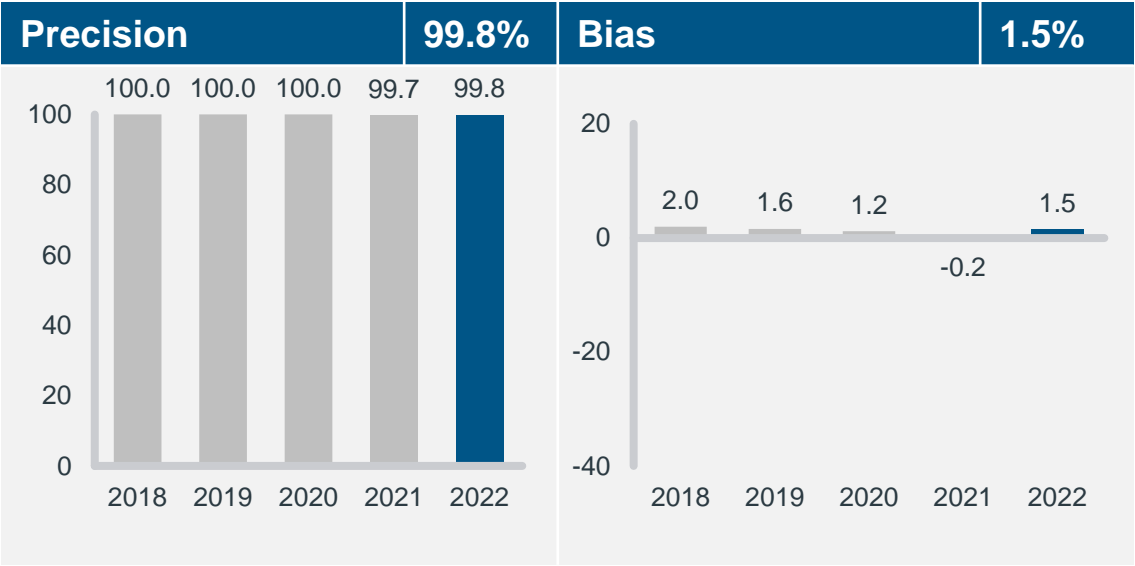
# Participating Companies	# Forms Validated	% Market Validated
272 (+2 vPY)	6,047 (+54 vPY)	95% (no change vPY)



Canada OTC Validation Study

2022 Validation Study

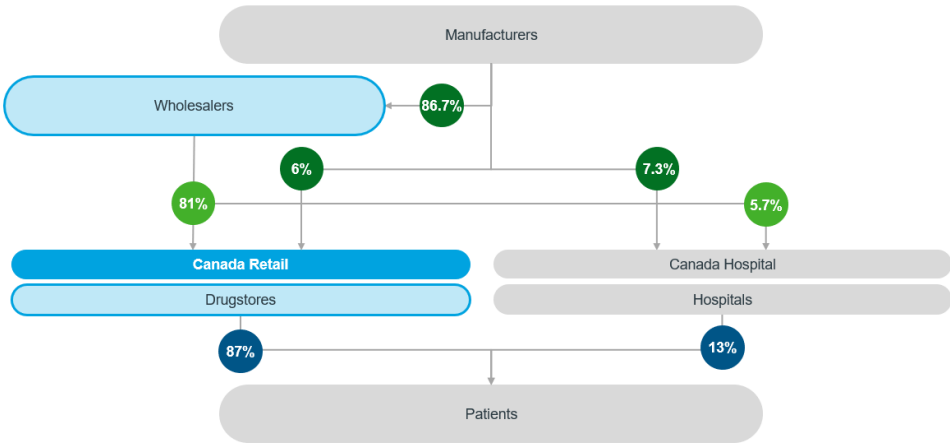
Validation Results



Outcomes

- Overall precision index improved by 0.1 percentage points in 2022
- Overall bias turned from 0.2% underestimation to 1.5% overestimation in 2022
- No action required from the statistical point of view

Distribution Channels Validated



Participation

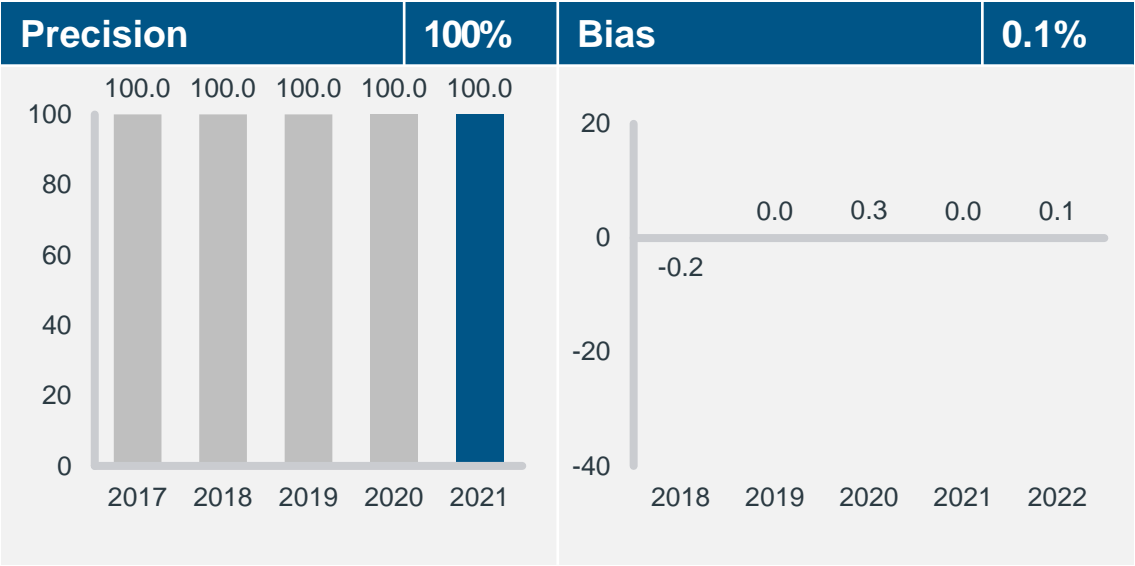
# Participating Companies	# Forms Validated	% Market Validated
169 (+1 vPY)	2,843 (+148 vPY)	100% (no change vPY)



Canada Hospital Validation Study

2022 Validation Study

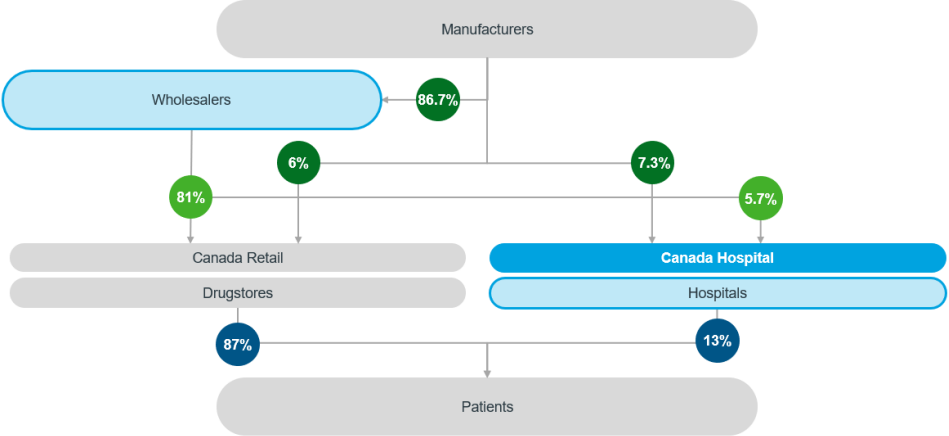
Validation Results



Outcomes

- Overall precision index remained 100% unchanged in 2022
- Overall bias index turned from no bias to 0.1 percentage points in 2022
- No action required from the statistical point of view

Distribution Channels Validated



Participation

# Participating Companies	# Forms Validated	% Market Validated
137 (+14 vPY)	1,202 (+37 vPY)	95% (no change vPY)

Latin America



Countries

Argentina

Chile

Bolivia

Dominican Republic

Brazil

Ecuador

Central America

Mexico

- Guatemala

Paraguay

- El Salvador

Peru

- Honduras

Uruguay

- Nicaragua

Venezuela

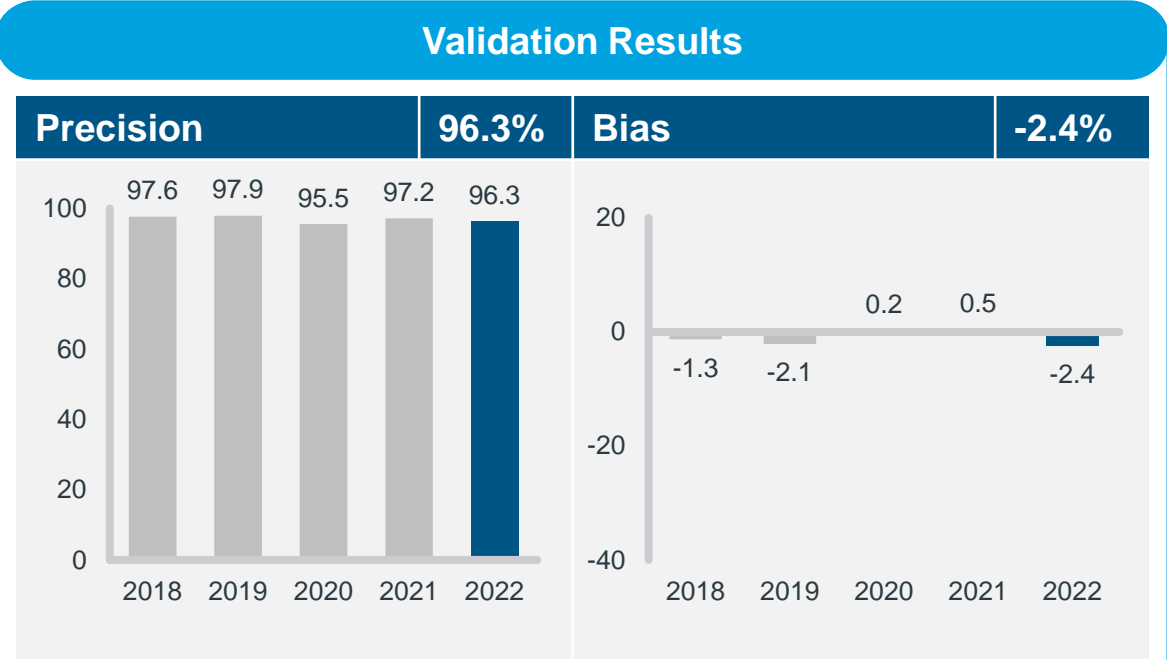
- Costa Rica

- Panama



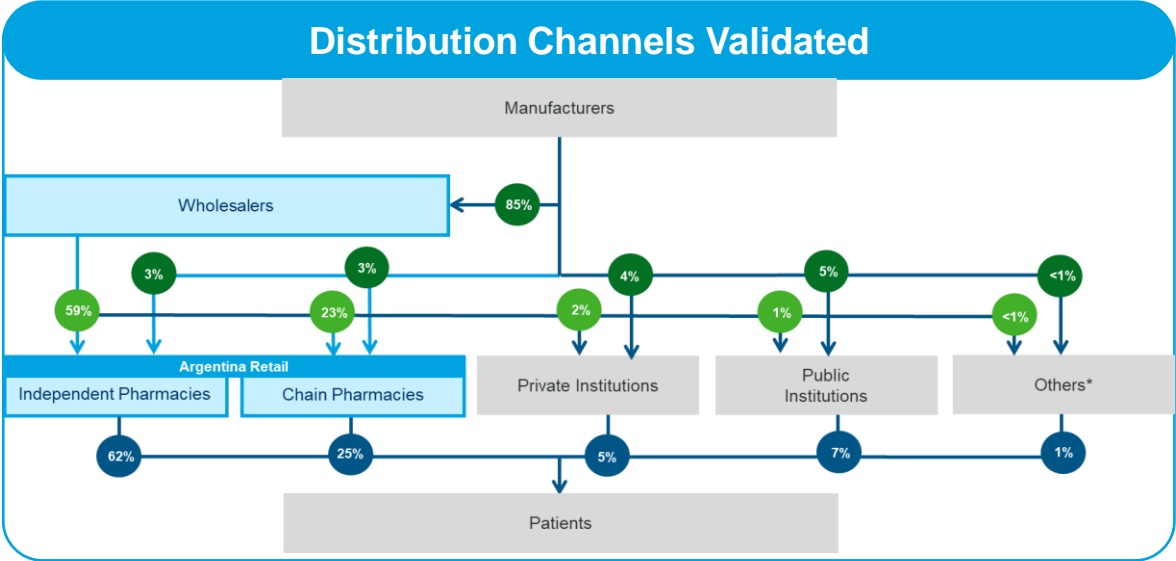
Argentina Retail Validation Study

2022 Validation Study



Outcomes

- Overall precision index declined slightly by 0.9 percentage points in 2022
- Overall bias turned from 0.5% overestimation to 2.4% underestimation in 2022
- No action required from the statistical point of view



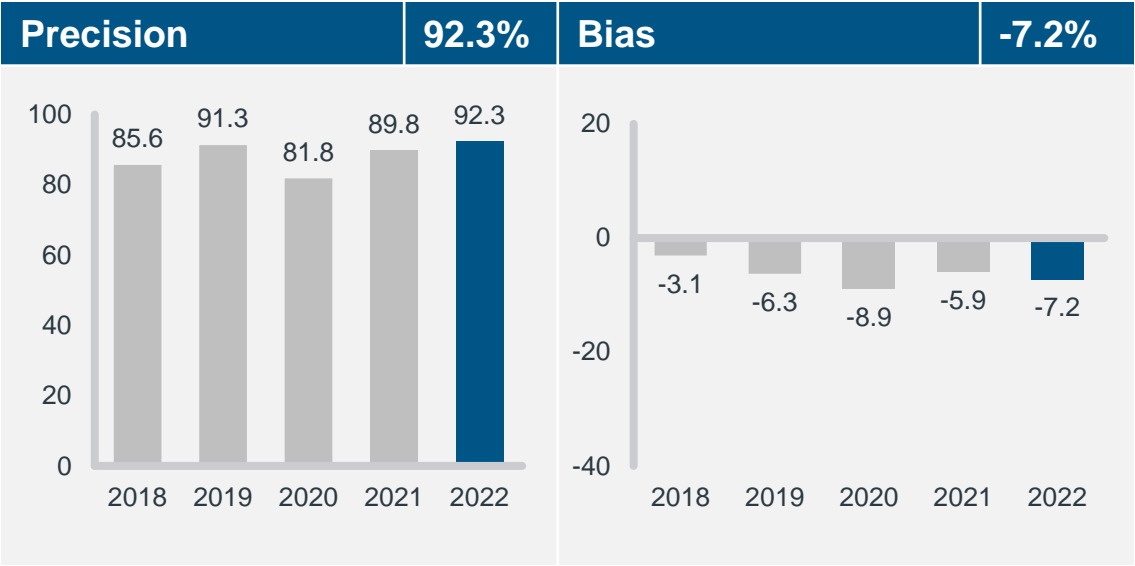
Participation

# Participating Companies	# Forms Validated	% Market Validated
32 (-5 vPY)	1,958 (-112 vPY)	47% (-4% vPY)

Argentina OTC Validation Study

2022 Validation Study

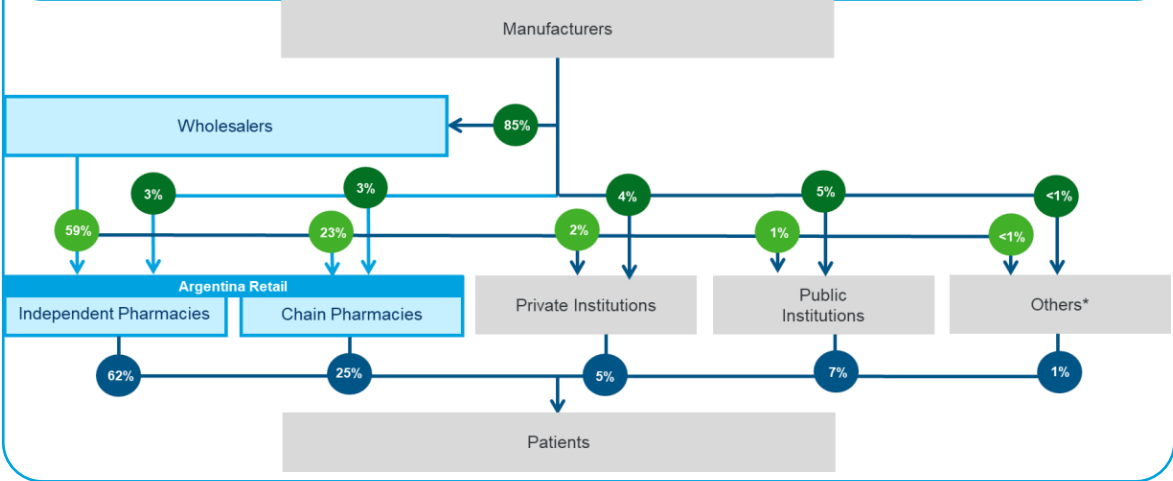
Validation Results



Outcomes

- Overall precision index improved by 2.5 percentage points in 2022
- Overall underestimation increased by 1.3 percentage points in 2022
- No action required from the statistical point of view

Distribution Channels Validated



Participation

# Participating Companies	# Forms Validated	% Market Validated
23 (no change vPY)	253 (+10 vPY)	36% (no change vPY)

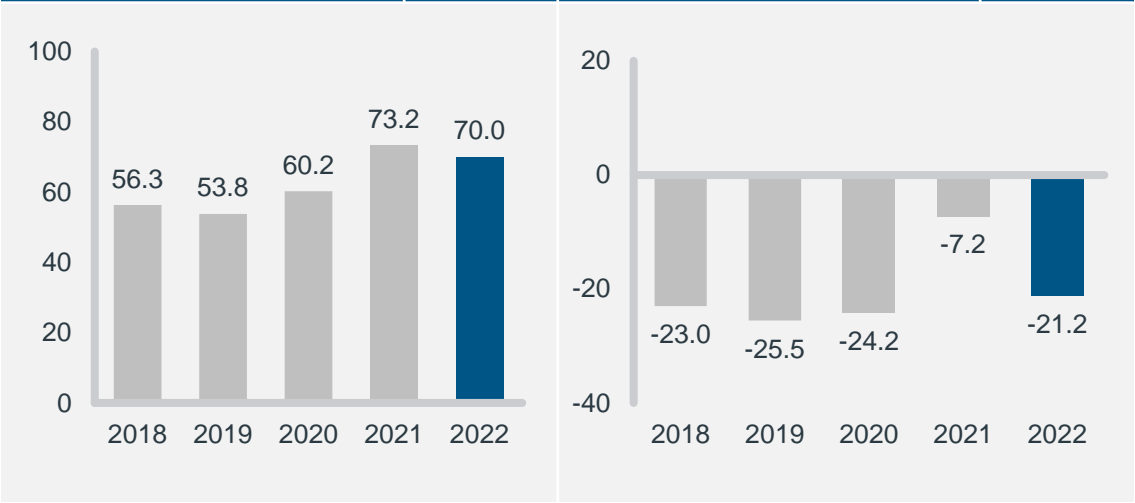


Bolivia Retail Validation Study

2022 Validation Study

Validation Results

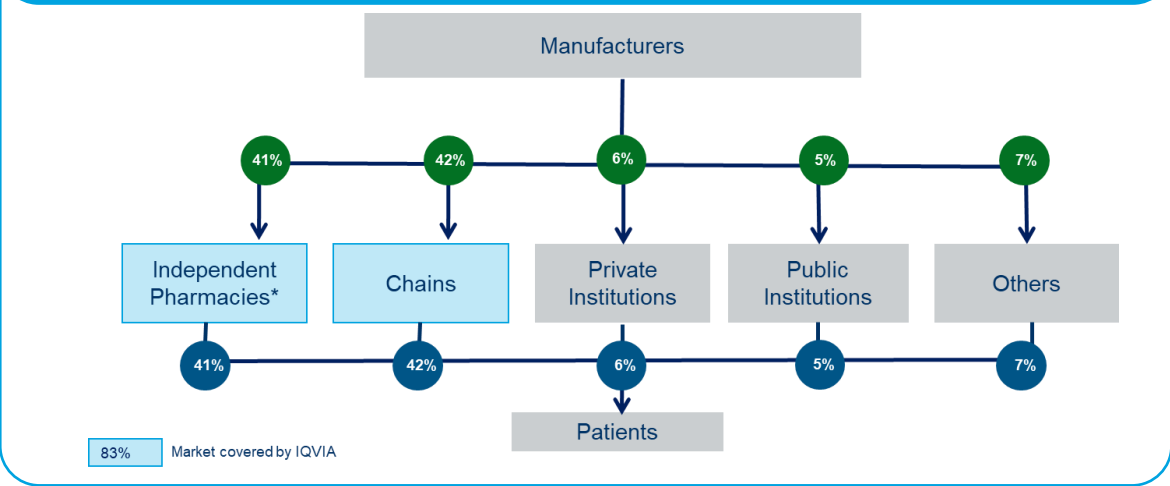
Precision	70.0%	Bias	-21.2%
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Outcomes

- Overall precision index declined by 3.2 percentage points in 2022
- Overall underestimation increased by 14 percentage points in 2022
- Fulfil sample design according to the new PM territorial upgrade; update universe and projection level

Distribution Channels Validated



Participation

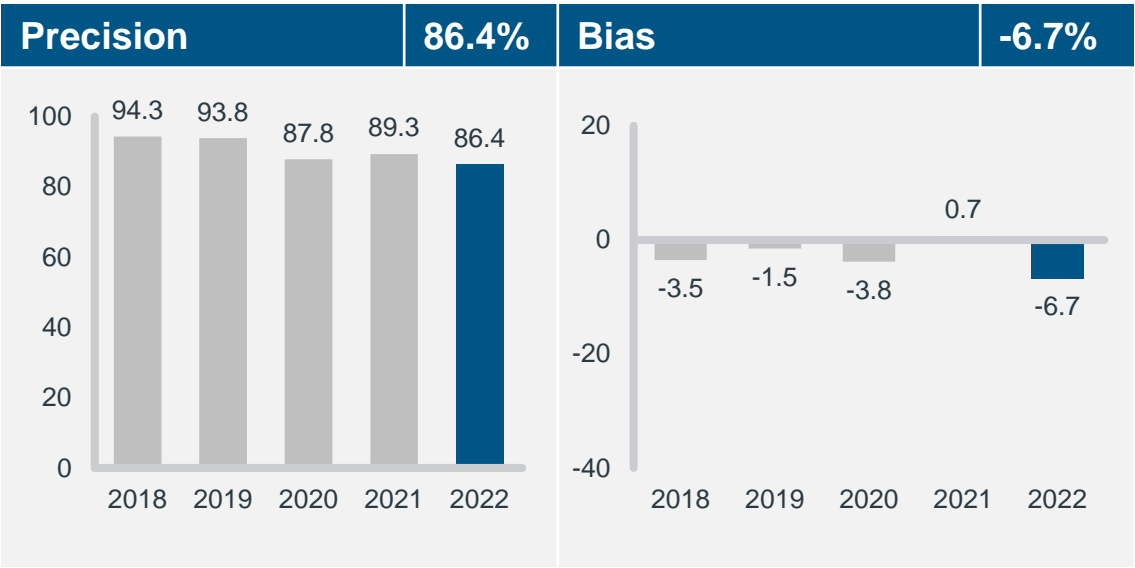
# Participating Companies	# Forms Validated	% Market Validated
24 (+21 vPY)	1,100 (+712 vPY)	45% (+29% vPY)



Brazil Retail Validation Study

2022 Validation Study

Validation Results

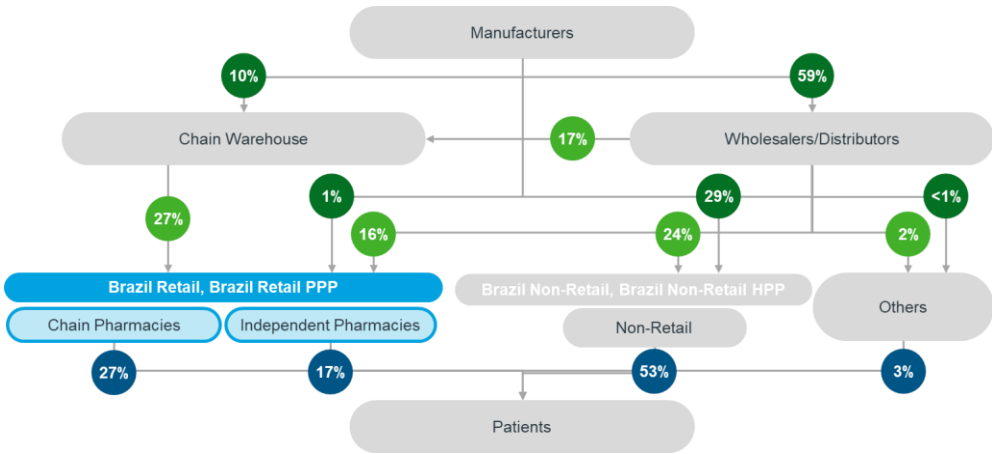


Outcomes



- Overall precision index declined by 2.9 percentage points in 2022
- Overall bias turned from 0.7% overestimation to 6.7% underestimation in 2022
- No actions required from a statistical point of view, the precision remains stable with only a slight drop on 2.6% for PMB total (same product Basket). Validated mkt share increased in 36% when compared to LY.

Distribution Channels Validated



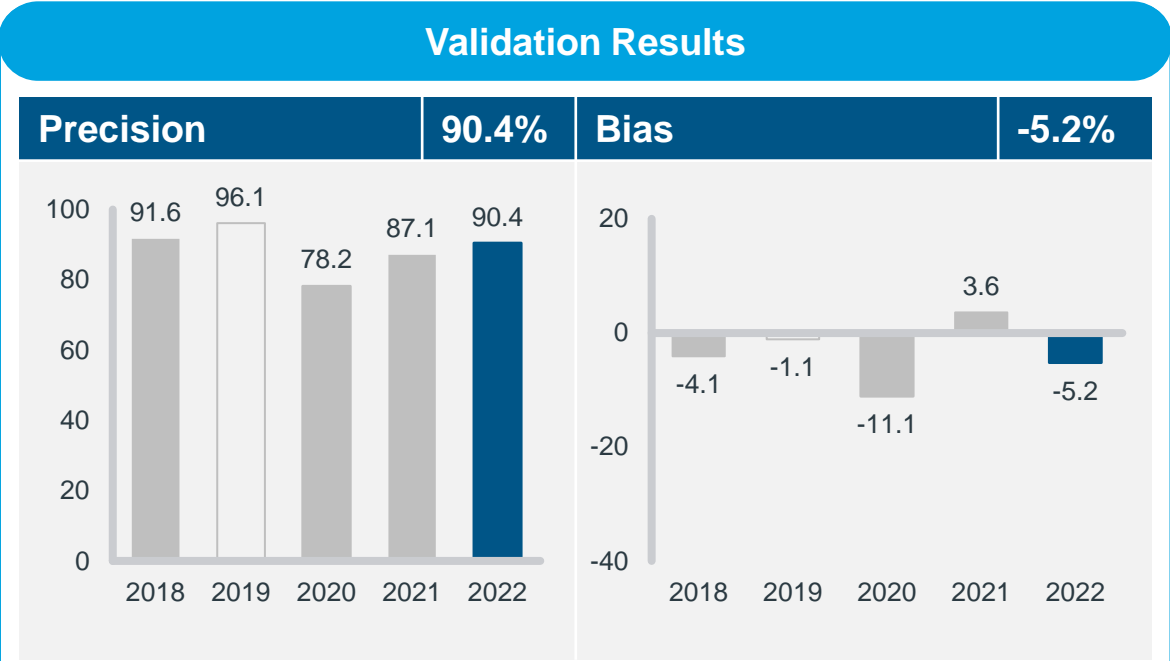
Participation

# Participating Companies	# Forms Validated	% Market Validated
70 (+41 vPY)	3,942 (+1,334 vPY)	52% (+14% vPY)



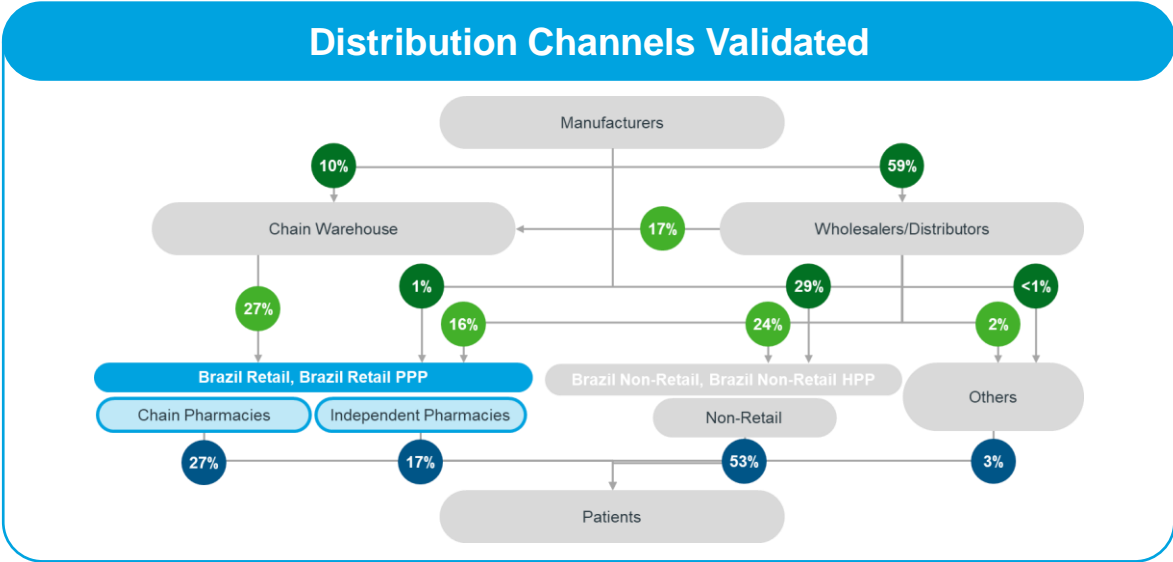
Brazil OTC Validation Study

2022 Validation Study



Outcomes

- Overall precision index improved by 3.3 percentage points in 2022
- Overall bias turned from 3.6% overestimation to 5.2% underestimation in 2022
- No actions required from a statistical point of view, the precision remains stable with only a slight drop on 2.6% for PMB total (same product Basket). Validated mkt share increased in 36% when compared to LY.



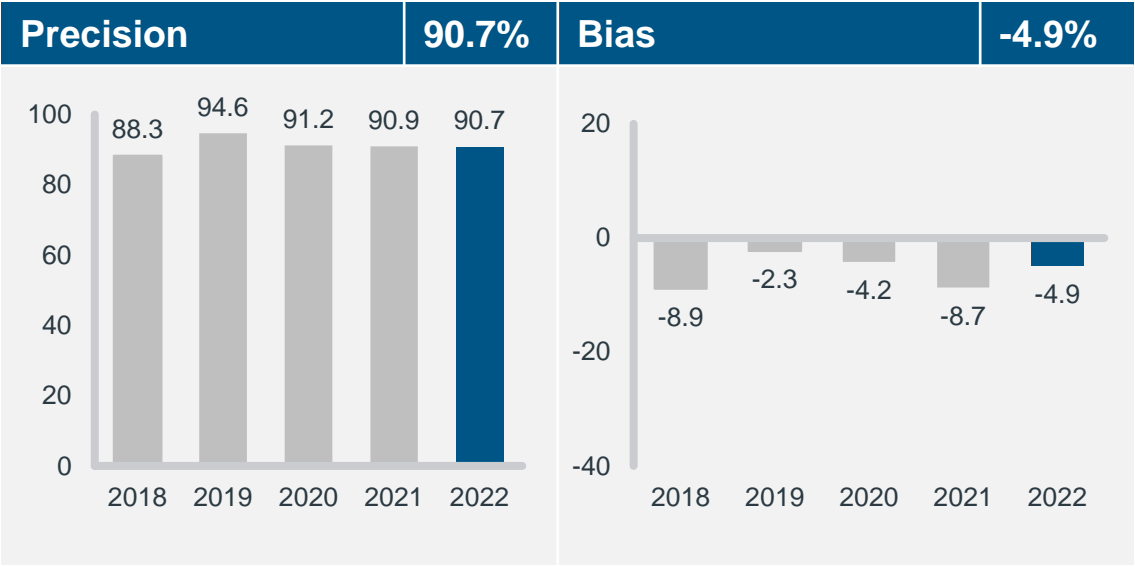
Participation		
# Participating Companies	# Forms Validated	% Market Validated
42 (+19 vPY)	916 (+342 vPY)	36% (+10% vPY)



Central America Retail Validation Study

2022 Validation Study

Validation Results

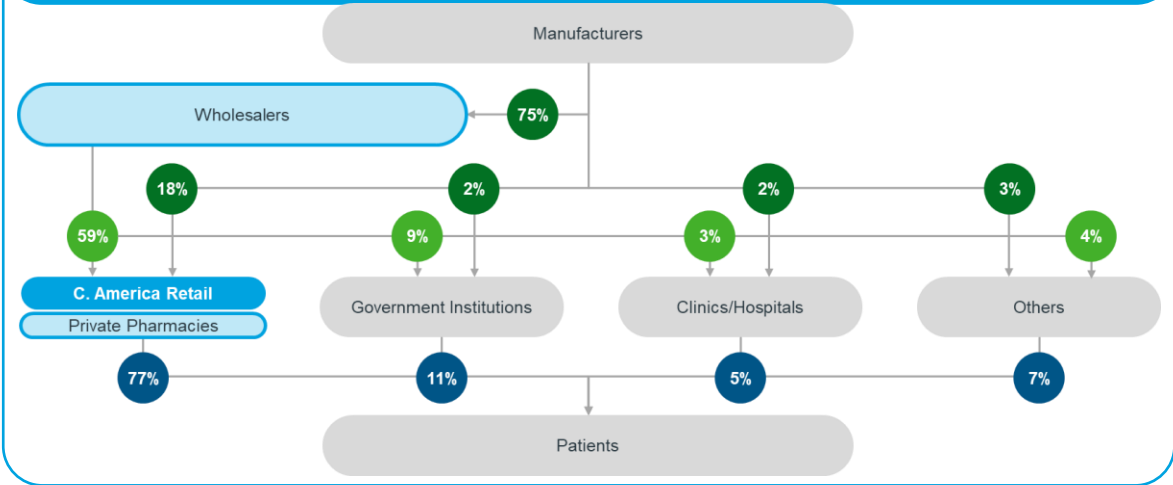


Outcomes



- Overall precision index declined by 0.2 percentage points in 2022
- Overall underestimation improved by 3.8 percentage points in 2022
- No action required from the statistical point of view

Distribution Channels Validated



Participation

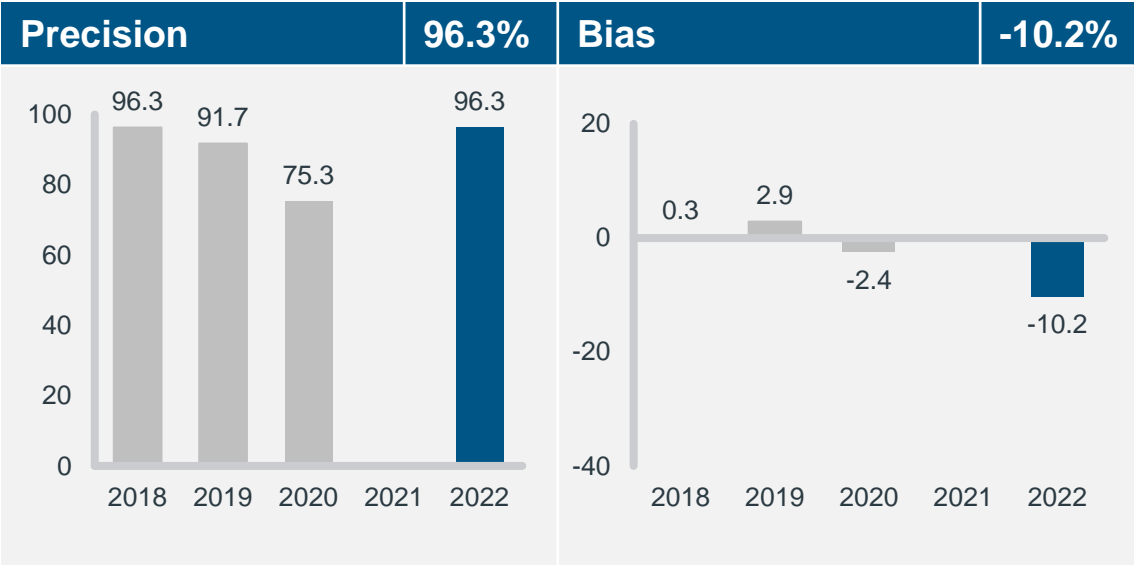
# Participating Companies	# Forms Validated	% Market Validated
19 (-4 vPY)	1,033 (-47 vPY)	15% (-2% vPY)



Chile Retail Validation Study

2022 Validation Study

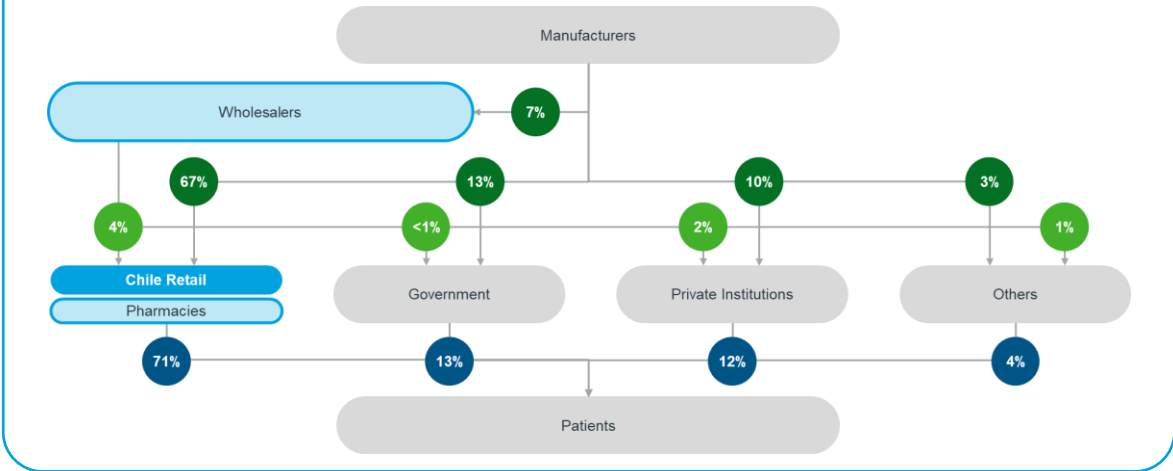
Validation Results



Outcomes

- Overall precision index improved by 21 percentage points in 2022
- Overall underestimation increased by 7.8 percentage points in 2022
- No action required from the statistical point of view

Distribution Channels Validated



Participation

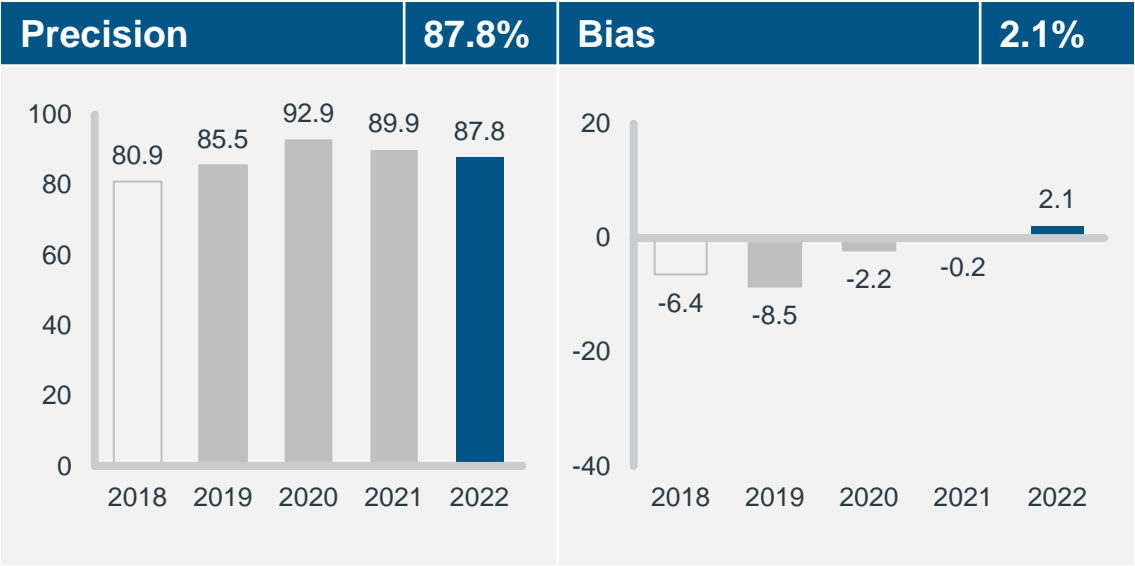
# Participating Companies	# Forms Validated	% Market Validated
9 (no change v2020)	484 (-71 v2020)	12% (+1% v2020)



Dominican Republic Retail Validation Study

2022 Validation Study

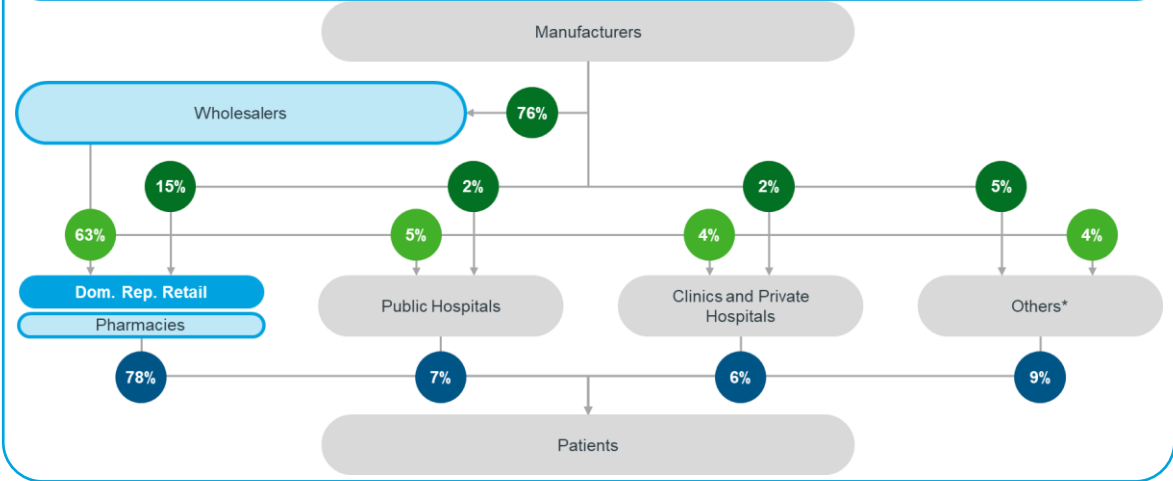
Validation Results



Outcomes

- Overall precision index declined by 2.1 percentage points in 2022
- Overall bias turned from 0.2% underestimation to 2.1% overestimation in 2022
- No action required from the statistical point of view

Distribution Channels Validated



Participation

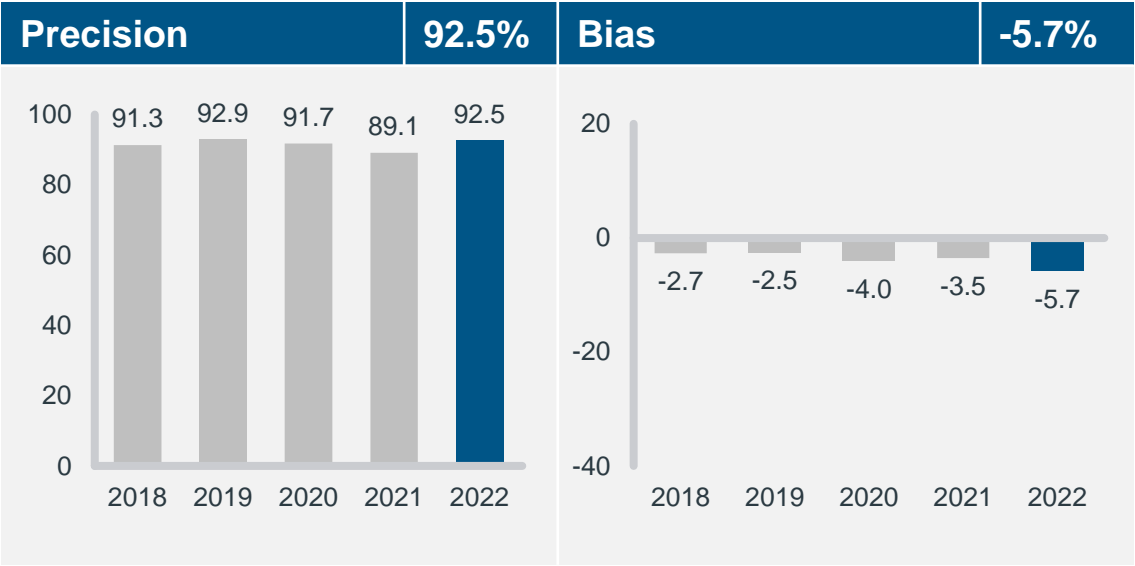
# Participating Companies	# Forms Validated	% Market Validated
23 (+7 vPY)	1,209 (+167 vPY)	21% (+1% vPY)



Ecuador Retail Validation Study

2022 Validation Study

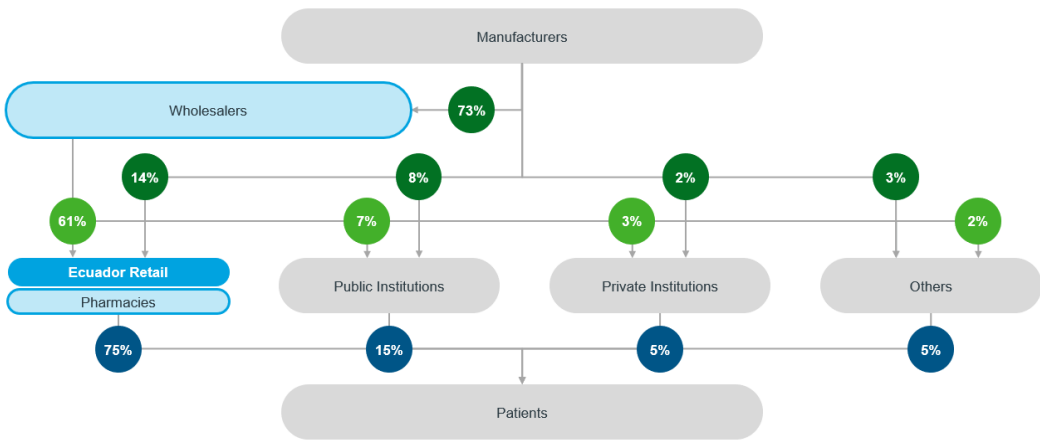
Validation Results



Outcomes

- Overall precision index improved by 3.4 percentage points in 2022;
- Overall underestimation increased by 2.2 percentage points in 2022;
- No action required from the statistical point of view.

Distribution Channels Validated



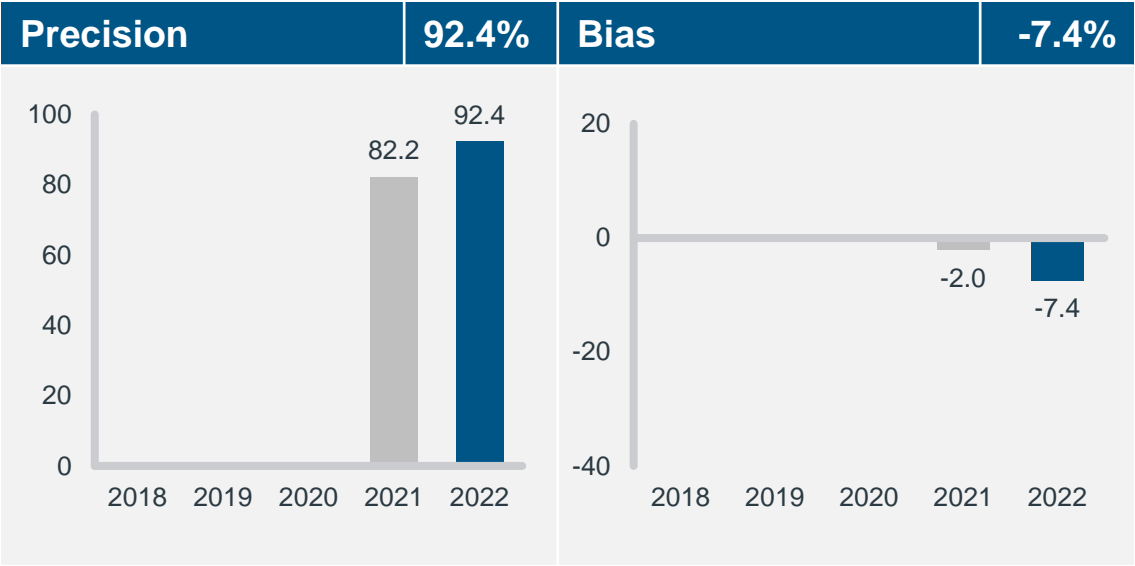
Participation

# Participating Companies	# Forms Validated	% Market Validated
89 (+23 vPY)	2,408 (+556 vPY)	67% (+14% vPY)

Ecuador OTC Validation Study

2022 Validation Study

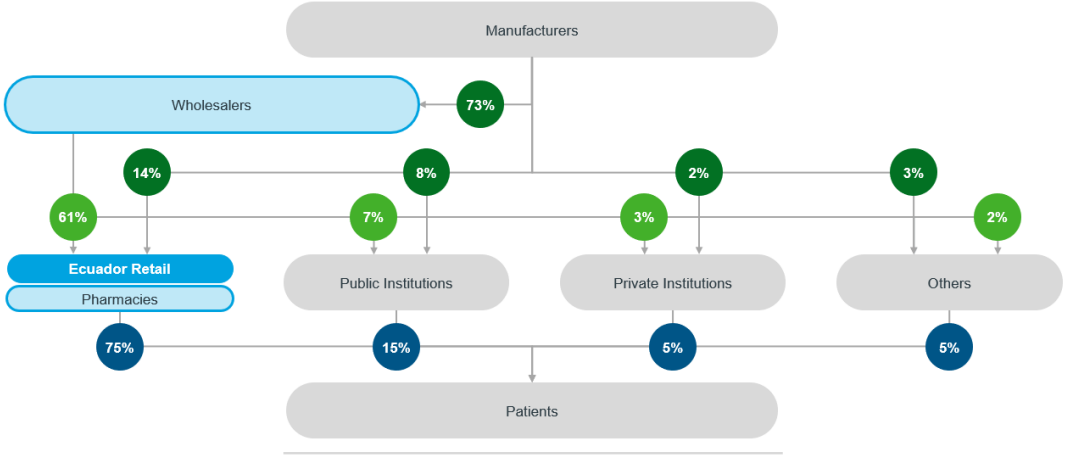
Validation Results



Outcomes

- Overall precision index improved by 10.2 percentage points in 2022;
- Overall underestimation increased by 5.4 percentage points in 2022;
- No action required from the statistical point of view.

Distribution Channels Validated



Participation

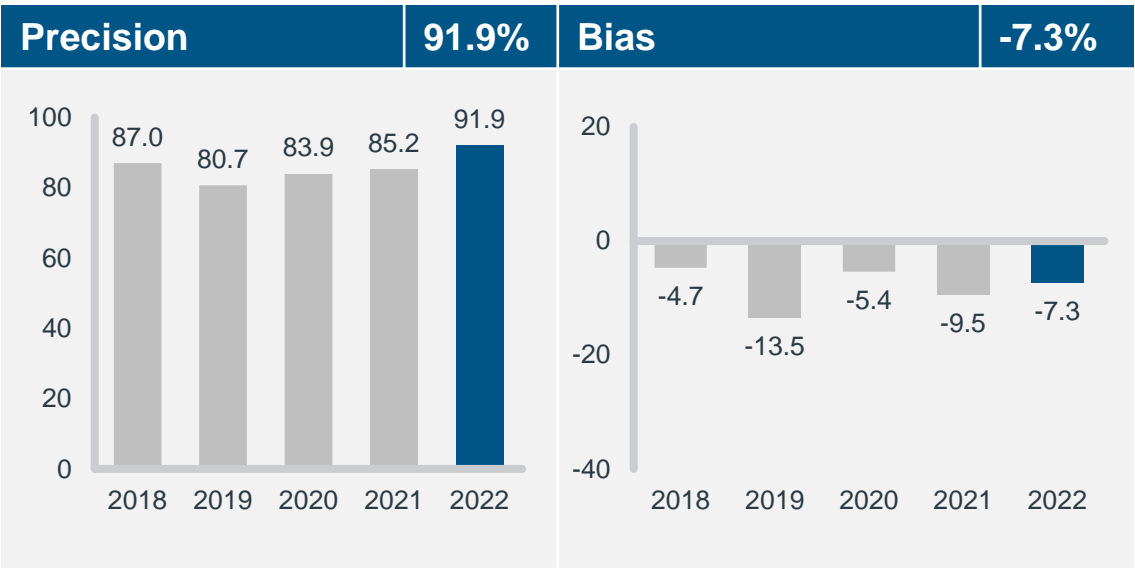
# Participating Companies	# Forms Validated	% Market Validated
51 (+19 vPY)	347 (+99 vPY)	12% (+3% vPY)



Mexico Retail Validation Study

2022 Validation Study

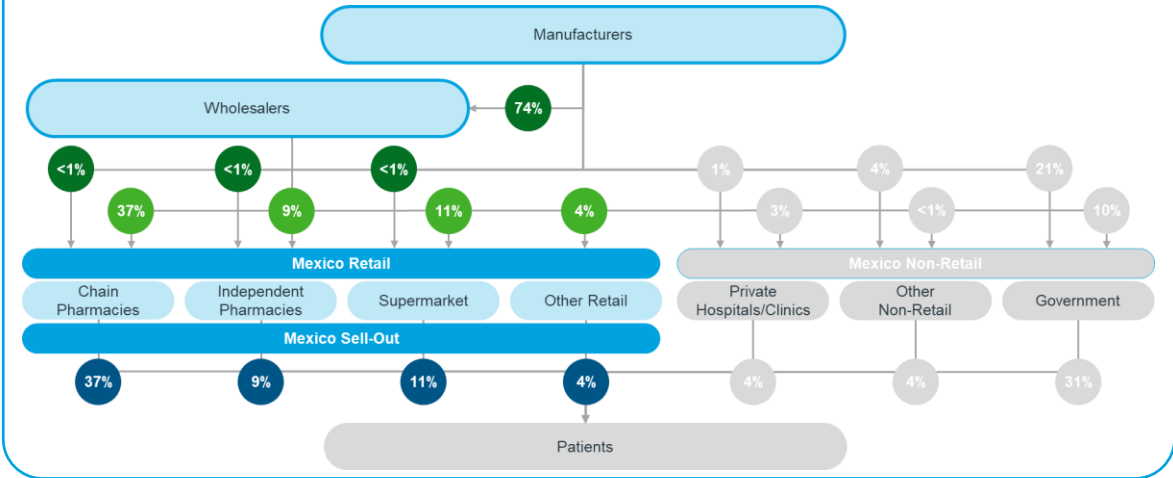
Validation Results



Outcomes

- Overall precision index improved by 6.7 percentage points in 2022
- Overall underestimation improved by 2.2 percentage points in 2022
- No action required from the statistical point of view

Distribution Channels Validated



Participation

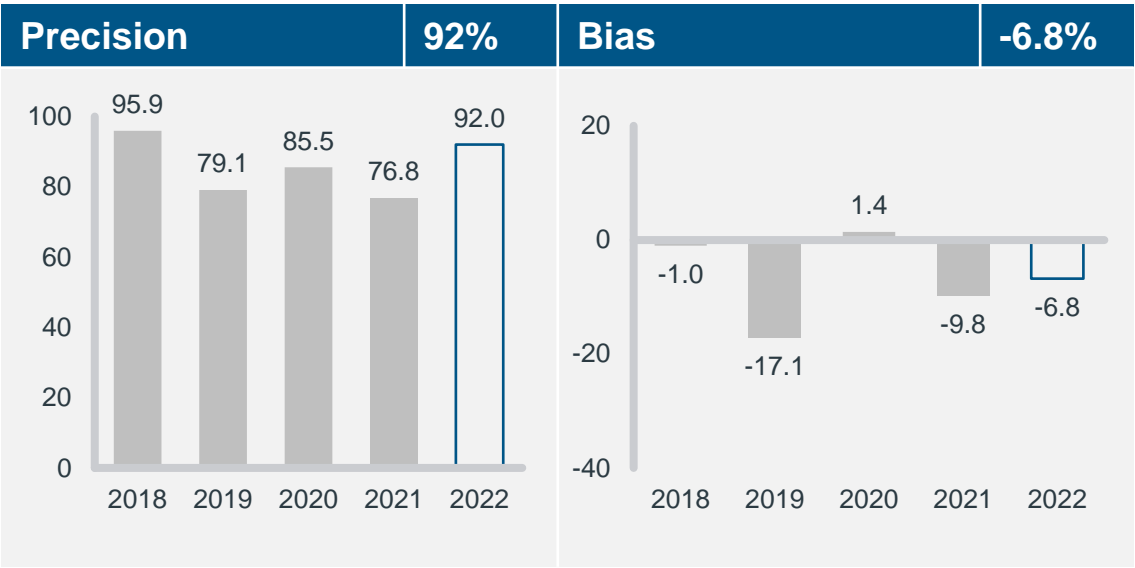
# Participating Companies	# Forms Validated	% Market Validated
33 (+1 vPY)	991 (+27 vPY)	19% (+3% vPY)



Mexico OTC Validation Study

2022 Validation Study

Validation Results

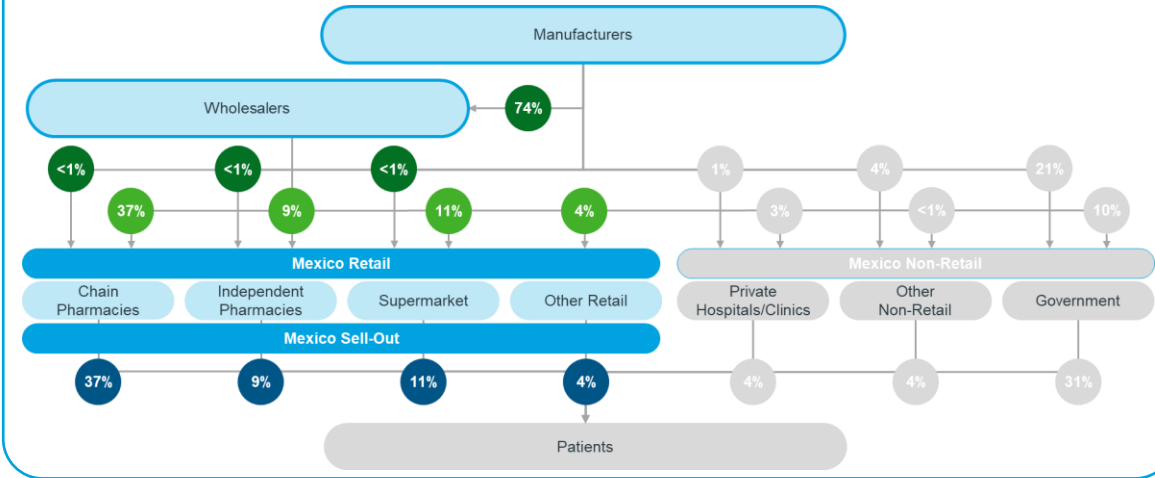


Outcomes



- Overall precision index declined by 15.2 percentage points in 2022
- Overall underestimation improved by 3 percentage points in 2022
- No action required from the statistical point of view

Distribution Channels Validated



Participation

# Participating Companies	# Forms Validated	% Market Validated
12 <i>(no change vPY)</i>	247 <i>(+104 vPY)</i>	20% <i>(+10% vPY)</i>

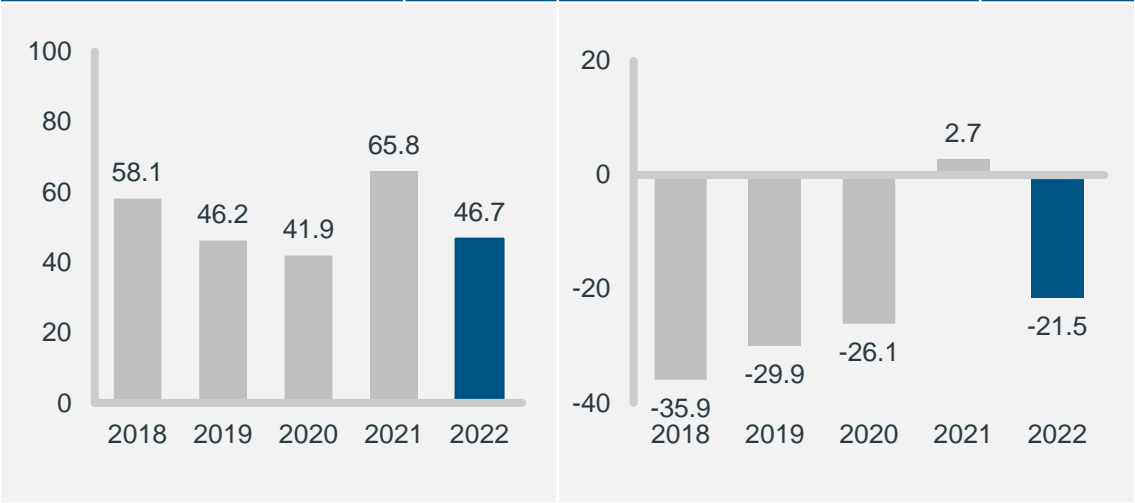


Paraguay Retail Validation Study

2022 Validation Study

Validation Results

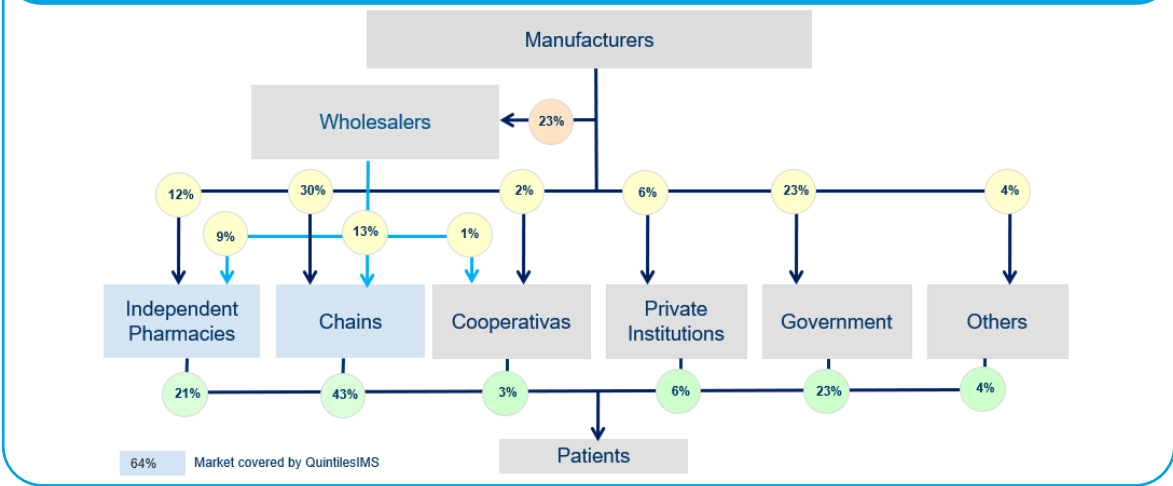
Precision	46.7%	Bias	-21.5%
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Outcomes

- Overall precision index declined by 19.1 percentage points in 2022
- Overall bias turned from 2.7% overestimation to 21.5% underestimation in 2022
- Fulfill sample design; Increase chain and independent pharmacy panels and/or incorporate more census data.

Distribution Channels Validated



Participation

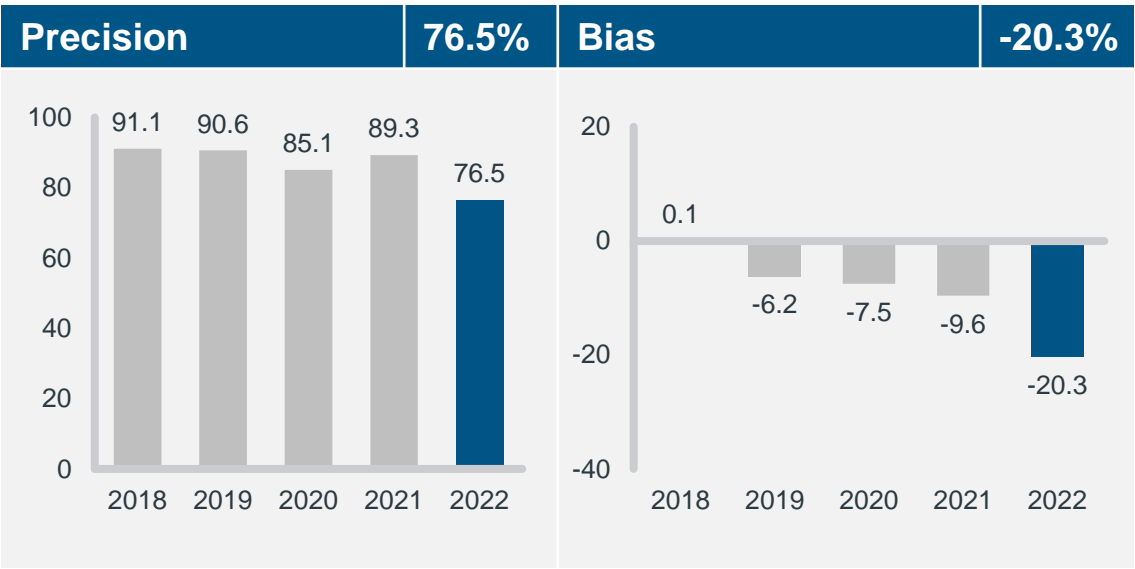
# Participating Companies	# Forms Validated	% Market Validated
41 (+10 vPY)	1,160 (+336 vPY)	41% (+16% vPY)



Peru Retail Validation Study

2022 Validation Study

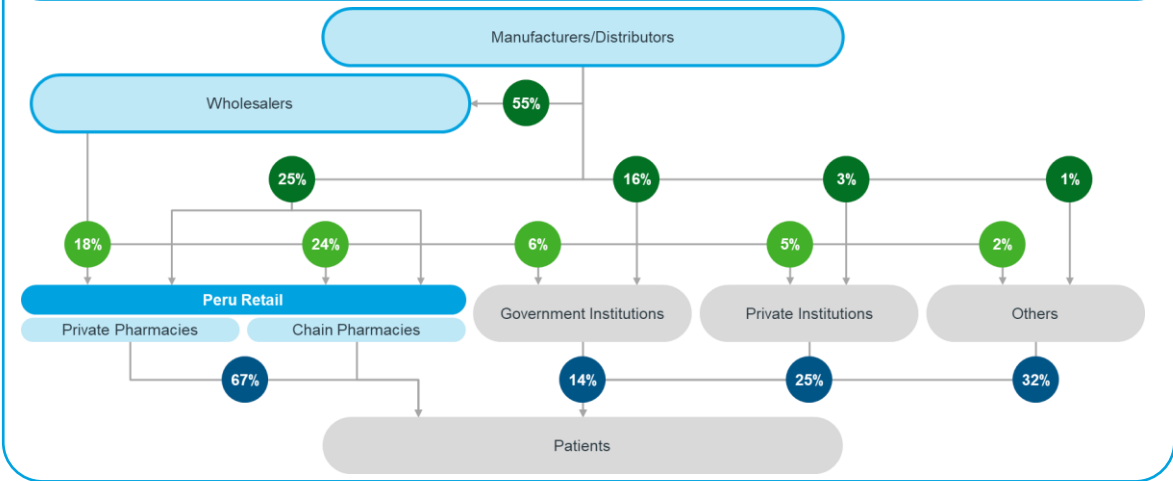
Validation Results



Outcomes

- Overall precision index declined by 12.8 percentage points in 2022
- Overall underestimation increased by 10.7 percentage points in 2022
- No action required from the statistical point of view

Distribution Channels Validated



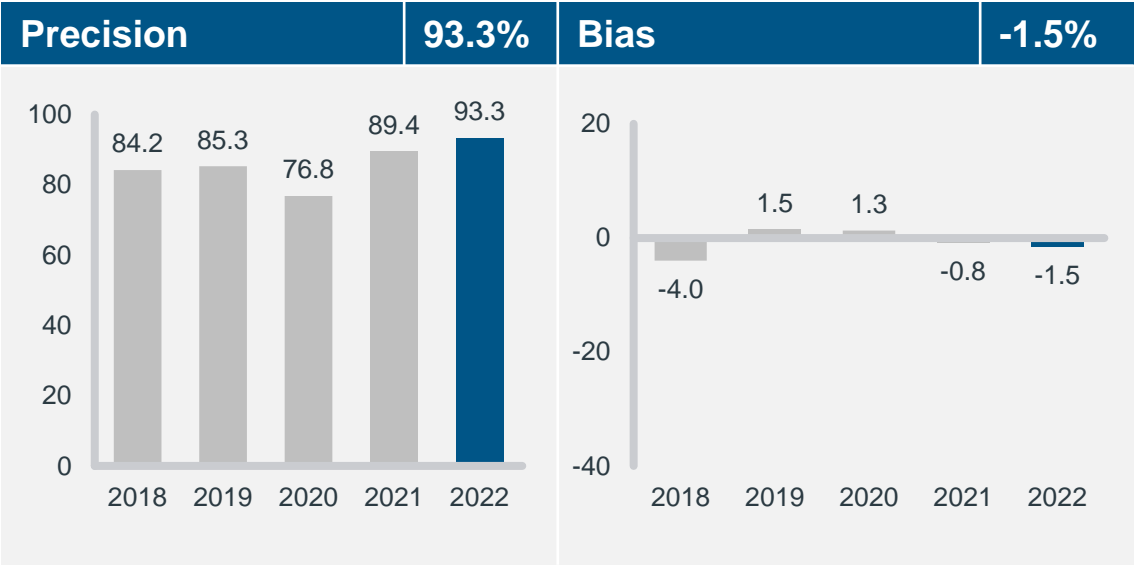
Participation

# Participating Companies	# Forms Validated	% Market Validated
10 (-21 vPY)	461 (-960 vPY)	18% (-34% vPY)

Uruguay Retail+Mutuales Validation Study

2022 Validation Study

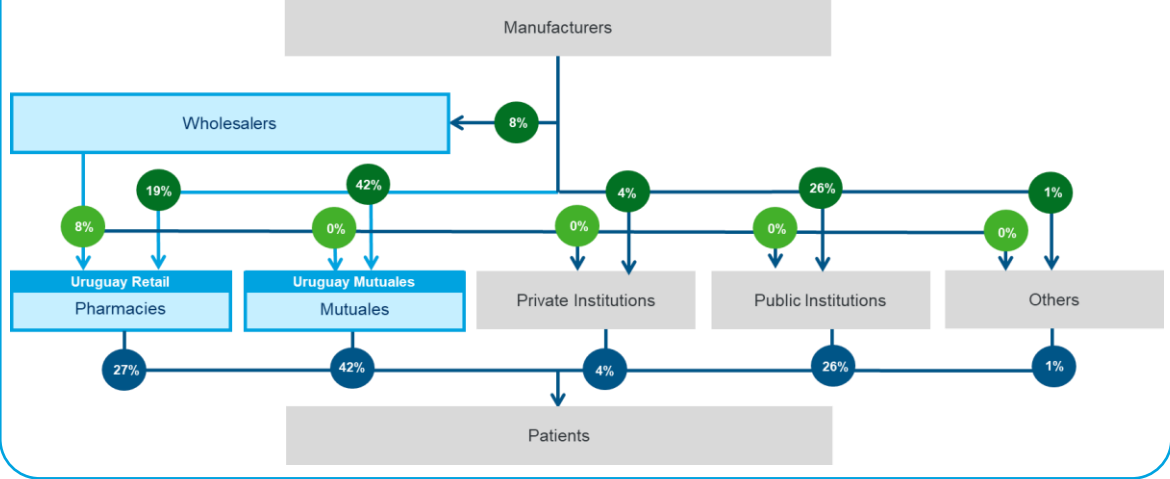
Validation Results



Outcomes

- Overall precision index improved by 3.9 percentage points in 2022
- Overall underestimation increased slightly by 0.7 percentage points in 2022
- No action required from the statistical point of view

Distribution Channels Validated



Participation

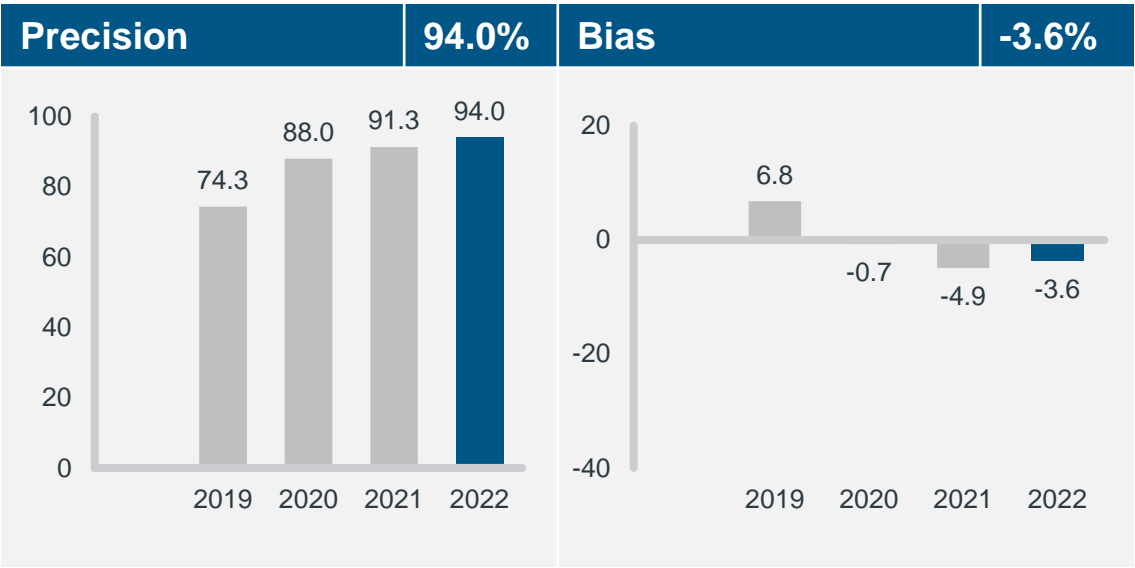
# Participating Companies	# Forms Validated	% Market Validated
22 (+7 vPY)	861 (-44 vPY)	53% (+2% vPY)



Venezuela Retail Validation Study

2022 Validation Study

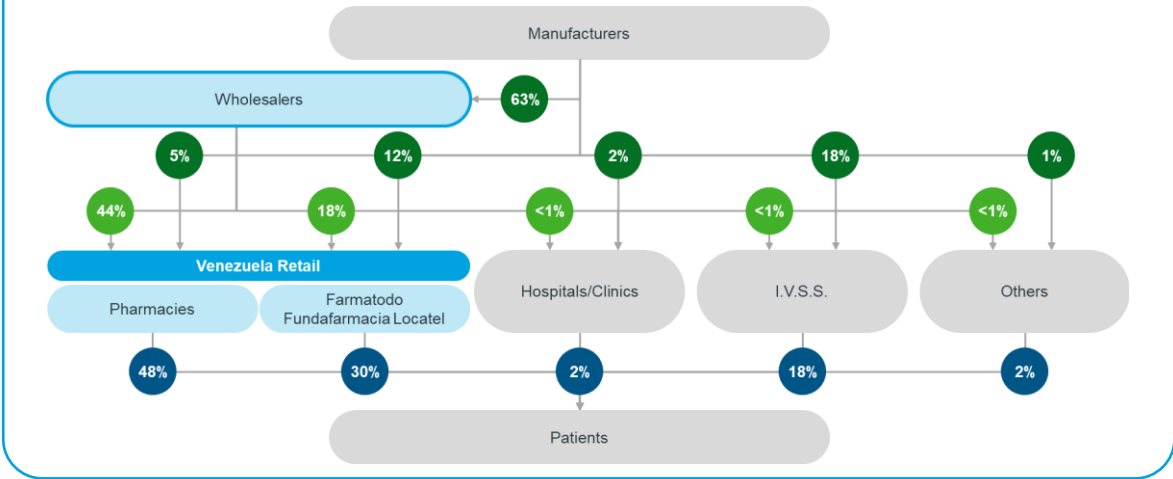
Validation Results



Outcomes

- Overall precision index improved by 2.7 percentage points in 2022
- Overall underestimation improved by 1.3 percentage points in 2022
- No action required from the statistical point of view

Distribution Channels Validated



Participation

# Participating Companies	# Forms Validated	% Market Validated
18 (-8 vPY)	687 (-234 vPY)	27% (-27% vPY)

Europe



Countries

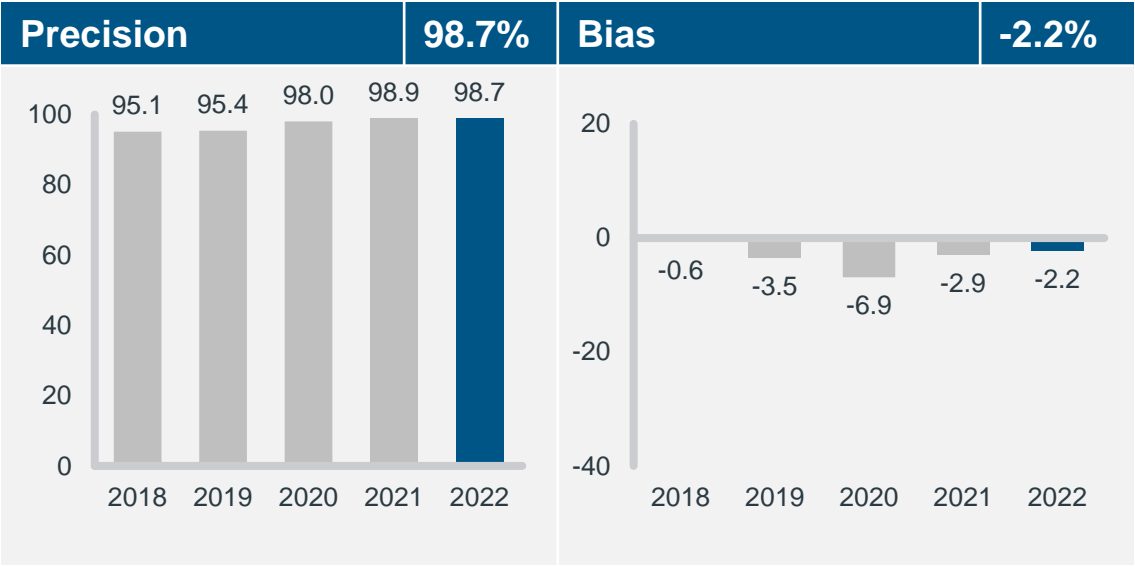
Austria	Latvia
Bosnia	Lithuania
Bulgaria	Poland
Croatia	Romania
Czech Republic	Russia
Finland	Serbia
France	Slovakia
Greece	Slovenia
Hungary	Spain
Ireland	Switzerland
Italy	United Kingdom
Kazakhstan	



Austria Retail Validation Study

2022 Validation Study

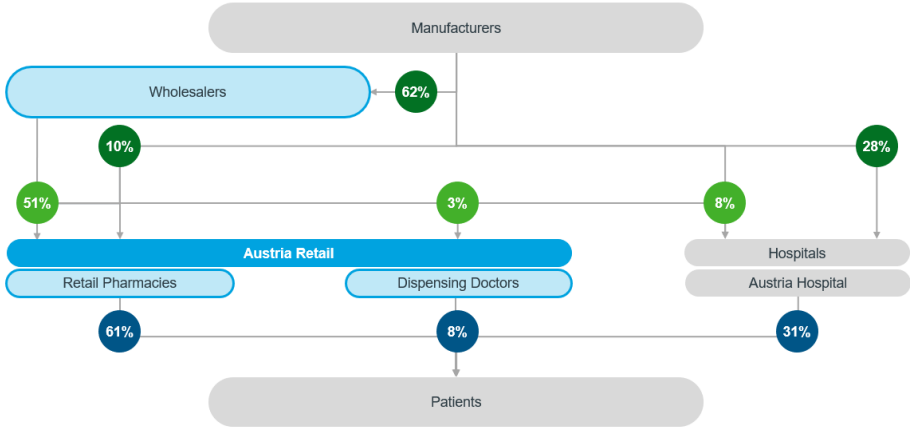
Validation Results



Outcomes

- Overall precision index declined by 0.2 percentage points in 2022
- Overall underestimation improved by 0.7 percentage points in 2022
- Increase number of validation participants

Distribution Channels Validated



Participation

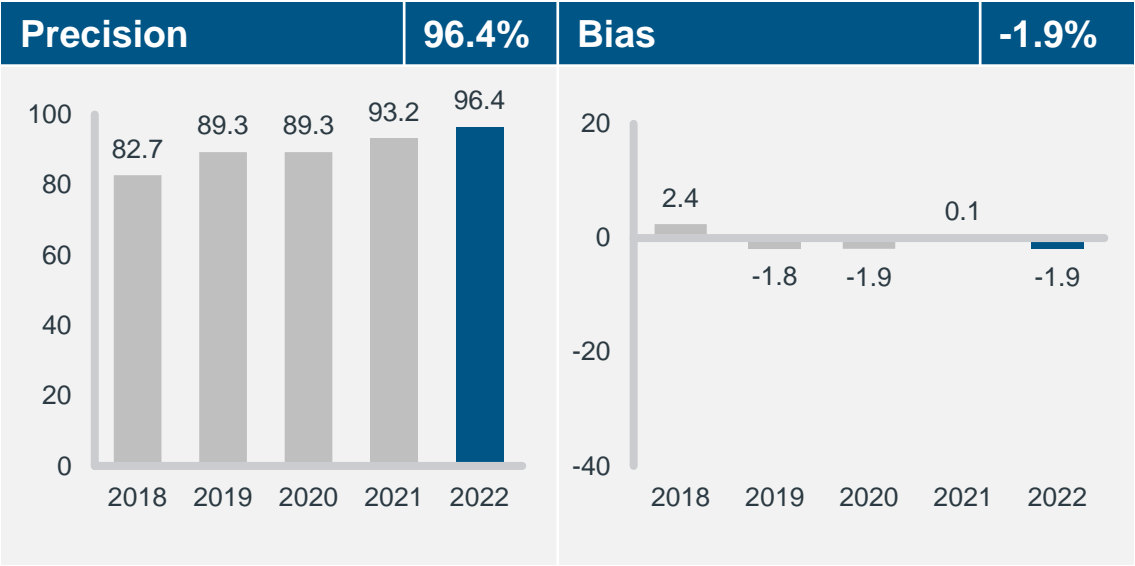
# Participating Companies	# Forms Validated	% Market Validated
13 (-4 vPY)	388 (-98 vPY)	13% (-2% vPY)



Austria Hospital Validation Study

2022 Validation Study

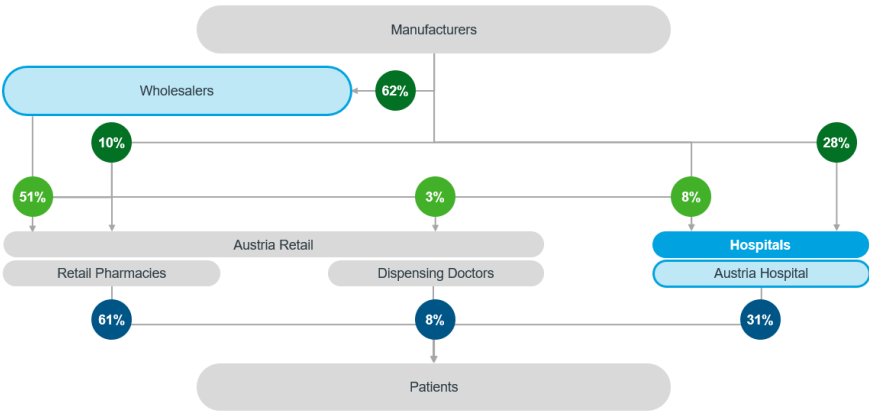
Validation Results



Outcomes

- Overall precision index improved by 3.2 percentage points in 2022
- Overall bias turned from 0.1% overestimation to 1.9% underestimation in 2022
- No action required from the statistical point of view

Distribution Channels Validated



Participation

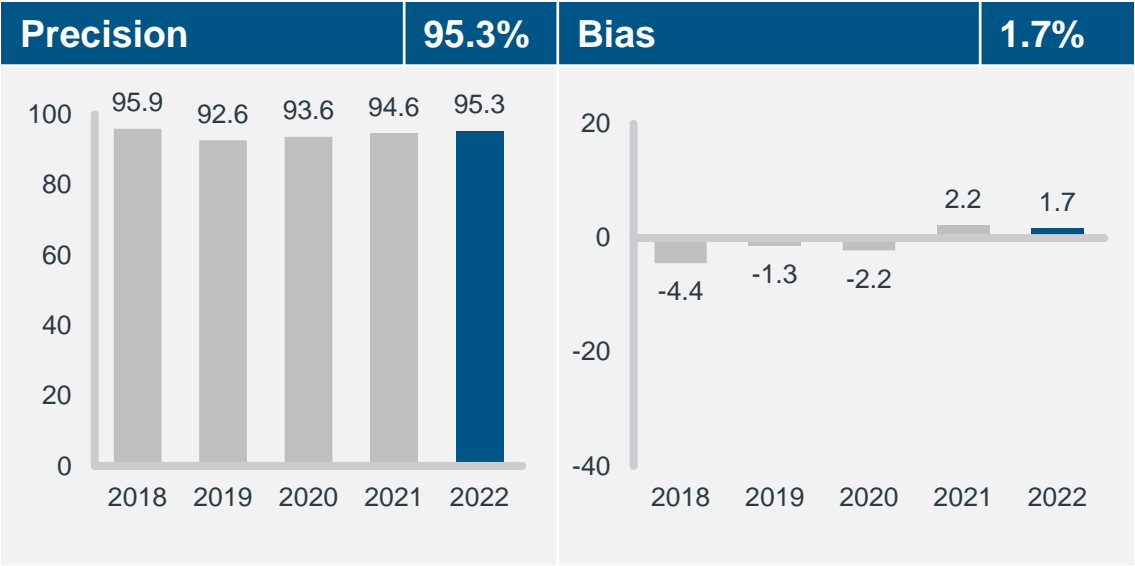
# Participating Companies	# Forms Validated	% Market Validated
14 (+2 vPY)	259 (-8 vPY)	14% (-1% vPY)



Austria PharmaTrend Validation Study

2022 Validation Study

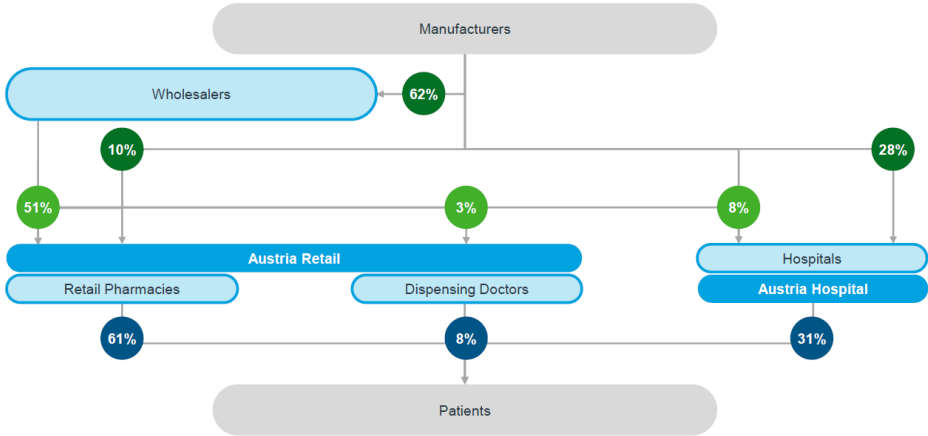
Validation Results



Outcomes

- Overall precision index improved by 0.7 percentage point in 2022
- Overall overestimation improved by 0.5 percentage point in 2022
- Increase number of validation participants; Analyze root-cause for slight overestimation.

Distribution Channels Validated



Participation

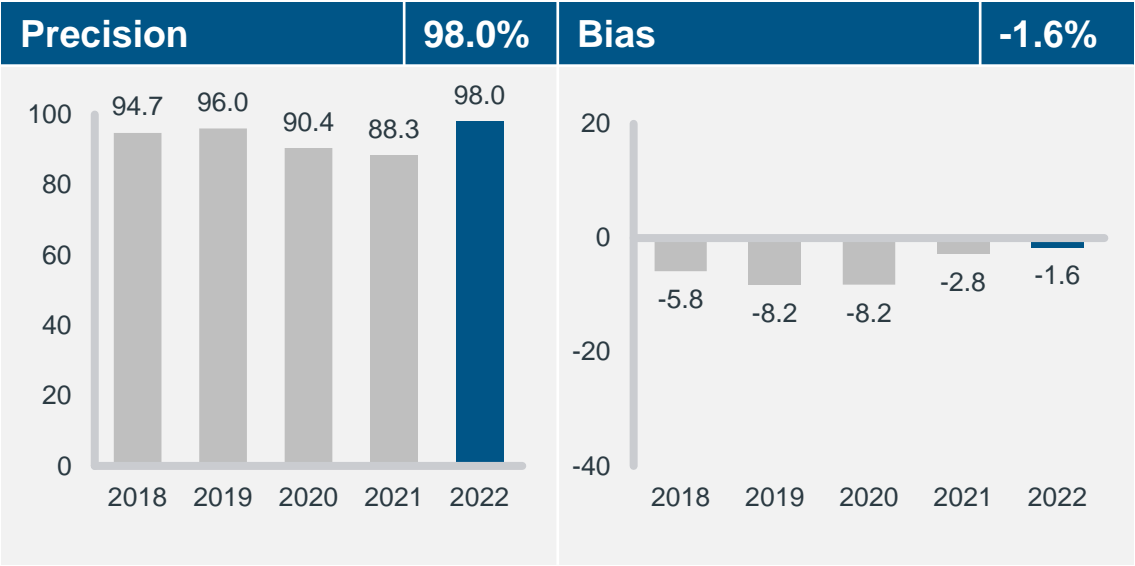
# Participating Companies	# Forms Validated	% Market Validated
13 (-4 vPY)	351 (-121 vPY)	13% (-2% vPY)



Austria OTC Validation Study

2022 Validation Study

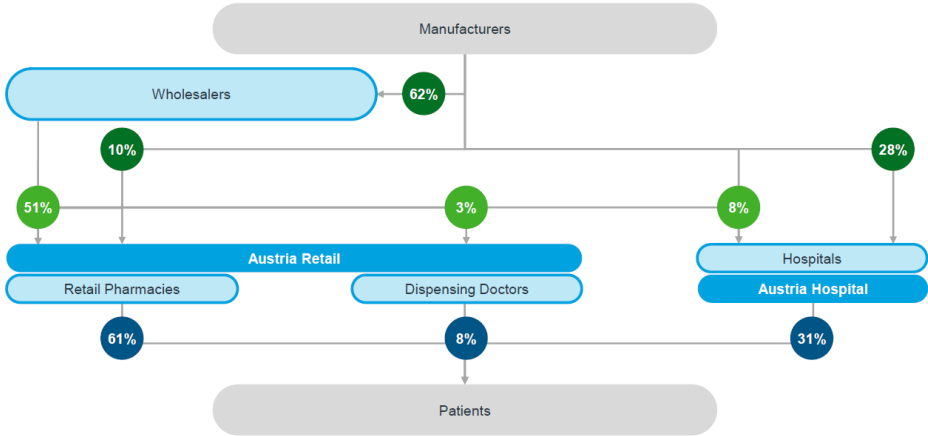
Validation Results



Outcomes

- Overall precision index improved by 9.7 percentage points in 2022
- Overall underestimation improved by 1.2 percentage points in 2022
- Increase number of validation participants

Distribution Channels Validated



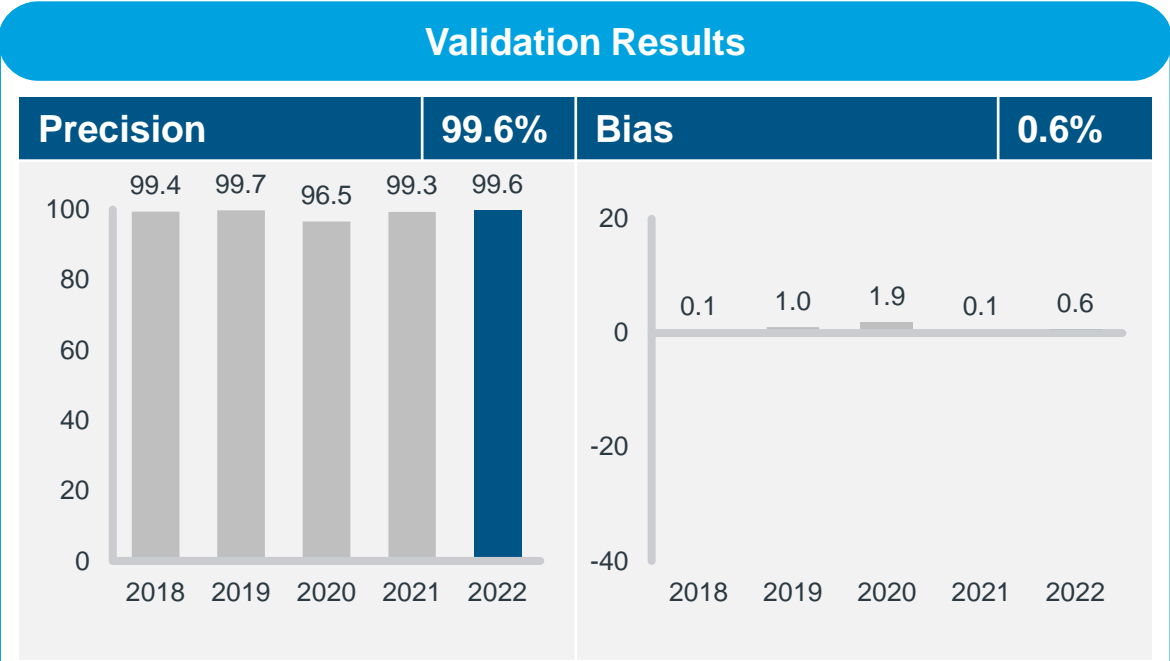
Participation

# Participating Companies	# Forms Validated	% Market Validated
4 (-2 vPY)	50 (-27 vPY)	13% (-2% vPY)



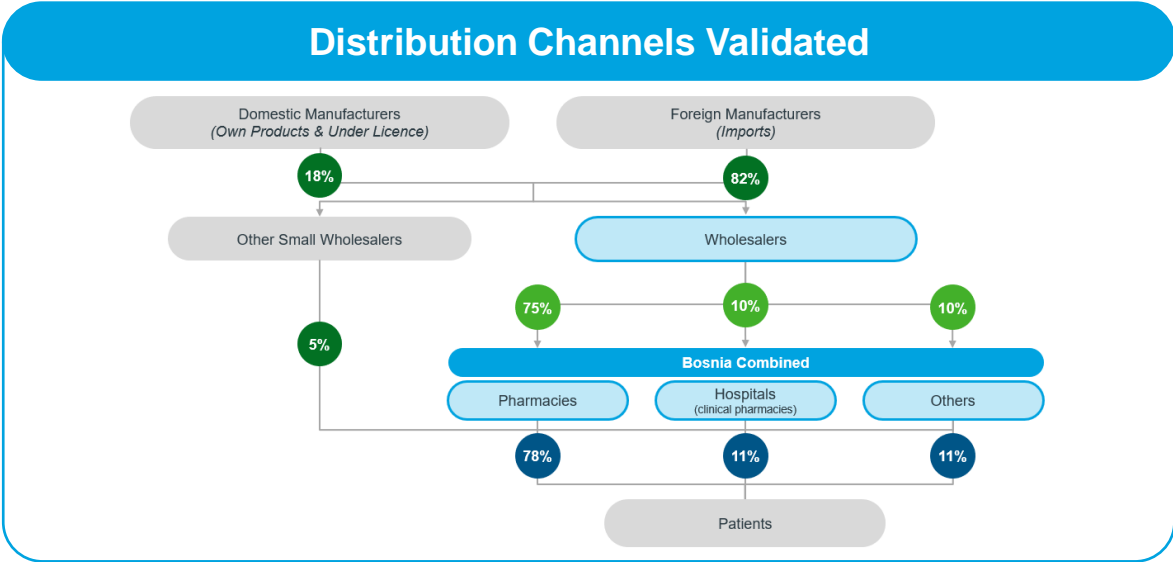
Bosnia and Herzegovina Retail+Hospital Validation Study

2022 Validation Study



Outcomes

- Overall precision index improved slightly by 0.3 percentage points in 2022
- Overall overestimation increased slightly by 0.5 percentage points in 2022
- No action required from the statistical point of view



Participation

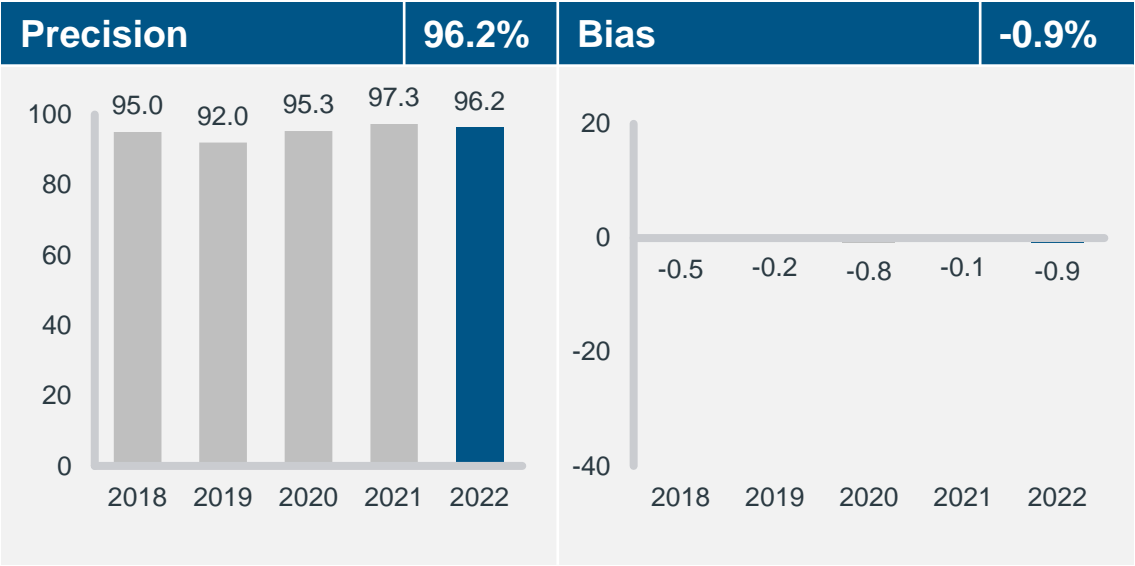
# Participating Companies	# Forms Validated	% Market Validated
13 (-1 vPY)	440 (+38 vPY)	34% (no change vPY)



Bulgaria Retail Validation Study

2022 Validation Study

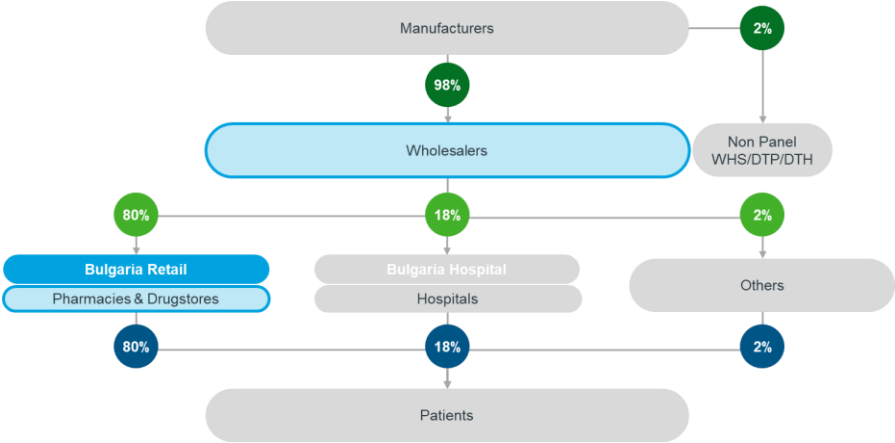
Validation Results



Outcomes

- Overall precision index declined by 1.1 percentage points in 2022
- Overall underestimation increased slightly by 0.8 percentage points in 2022
- No action required from the statistical point of view

Distribution Channels Validated



Participation

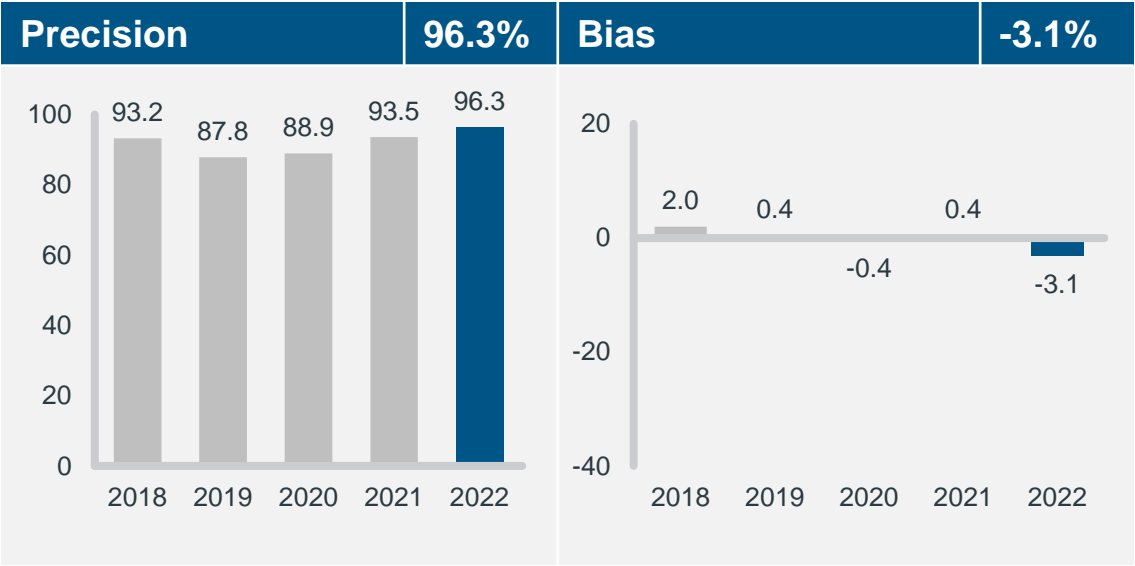
# Participating Companies	# Forms Validated	% Market Validated
55 (+2 vPY)	756 (+130 vPY)	38% (+5% vPY)



Bulgaria OTC Validation Study

2022 Validation Study

Validation Results

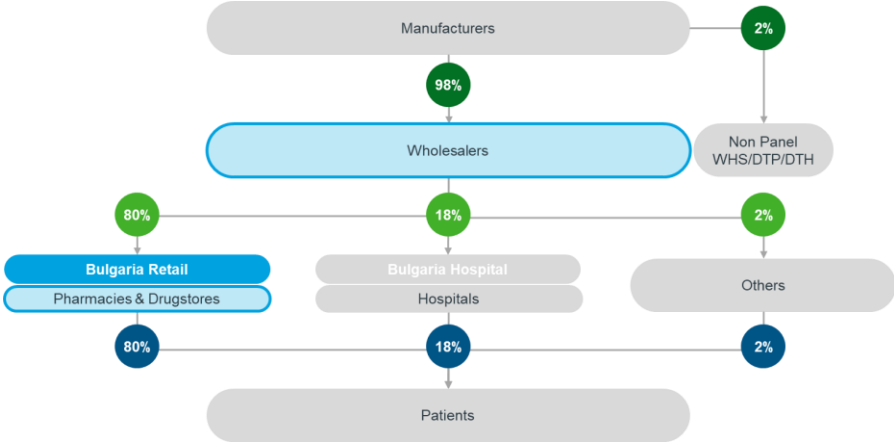


Outcomes



- Overall precision index improved by 2.8 percentage points in 2022
- Overall bias turned from 0.4% overestimation to 3.1% underestimation in 2022
- No action required from the statistical point of view

Distribution Channels Validated

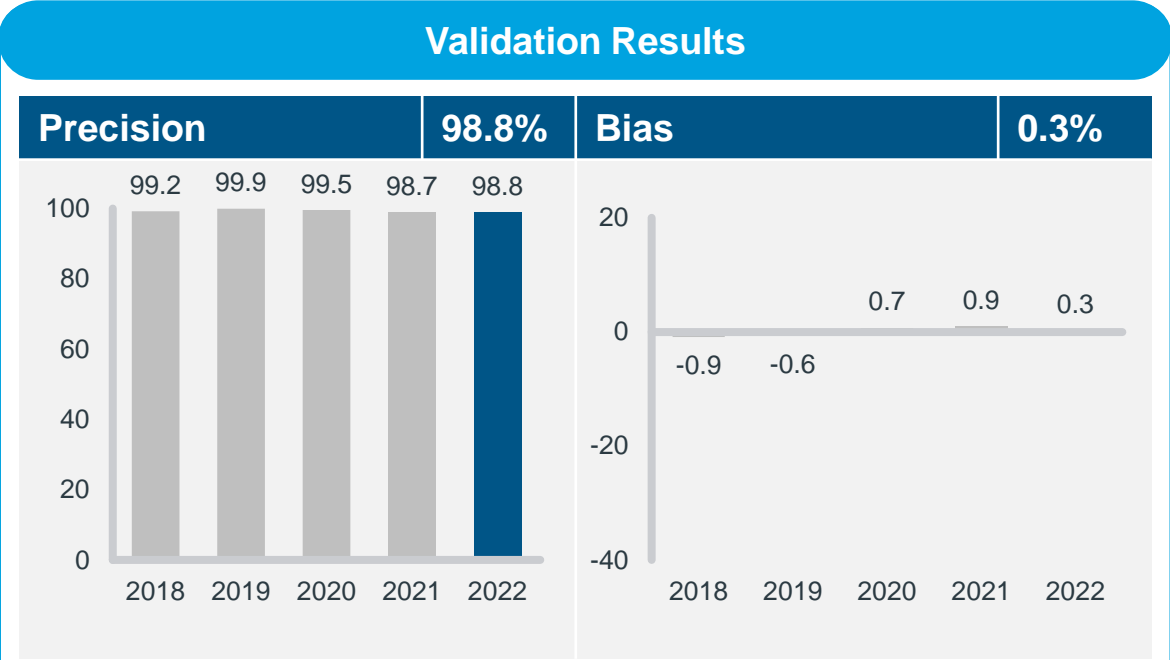


Participation

# Participating Companies	# Forms Validated	% Market Validated
29 (+2 vPY)	138 (+30 vPY)	28% (+4% vPY)

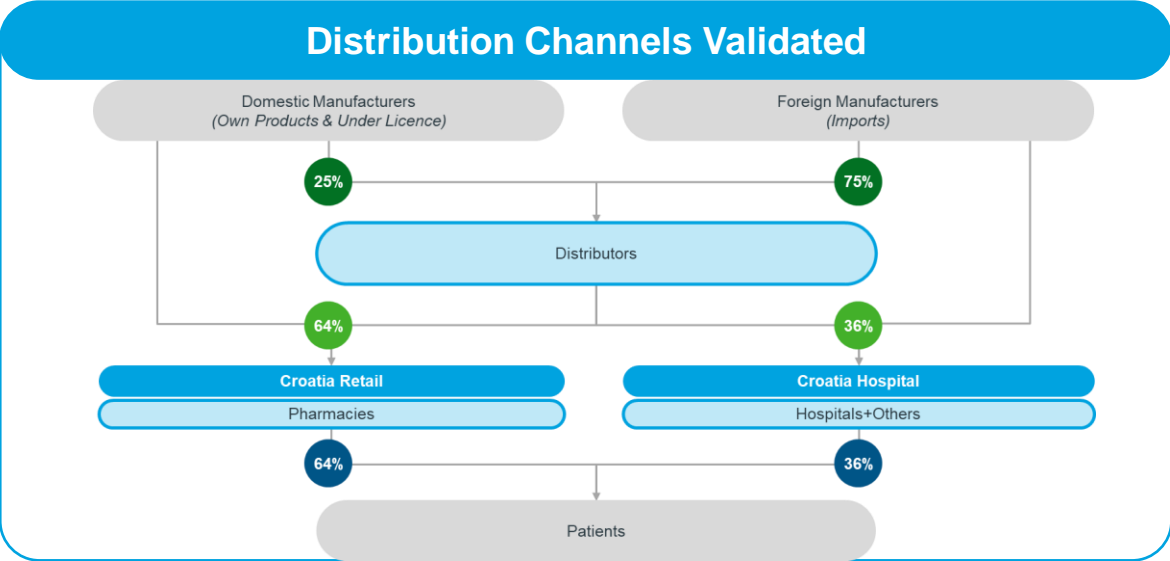
Croatia Retail+Hospital Validation Study

2022 Validation Study



Outcomes

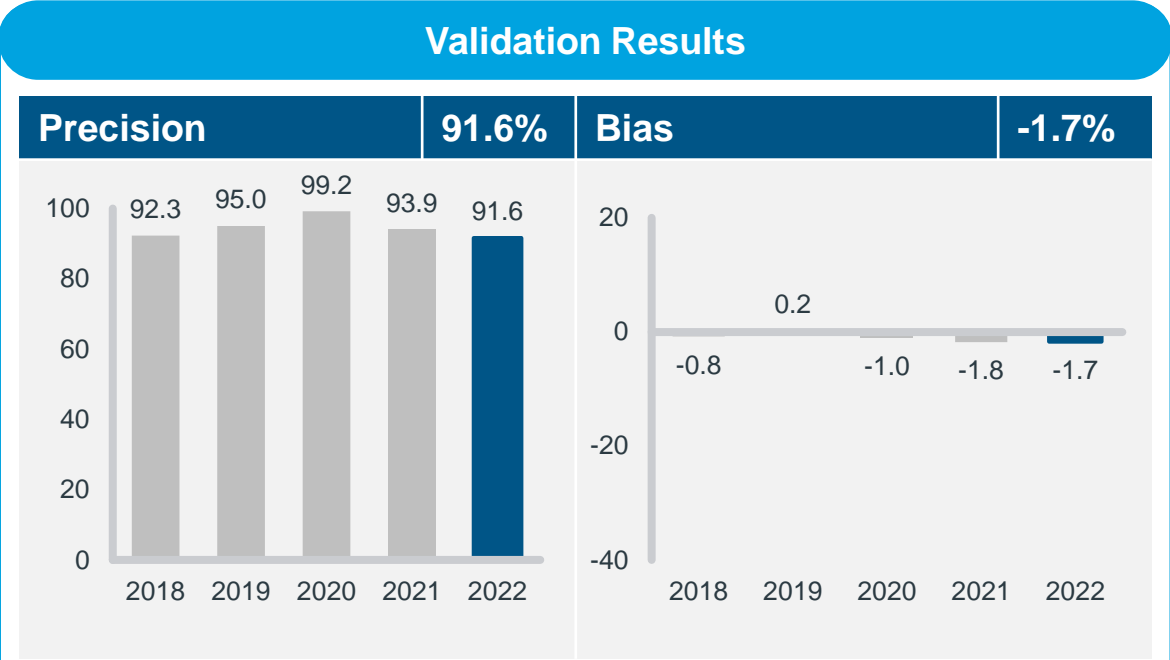
- Overall precision index improved slightly by 0.1 percentage points in 2022
- Overall overestimation improved slightly by 0.6 percentage points in 2022
- Increase number of validation participants



Participation		
# Participating Companies	# Forms Validated	% Market Validated
14 (+3 vPY)	343 (+75 vPY)	17% (+7% vPY)

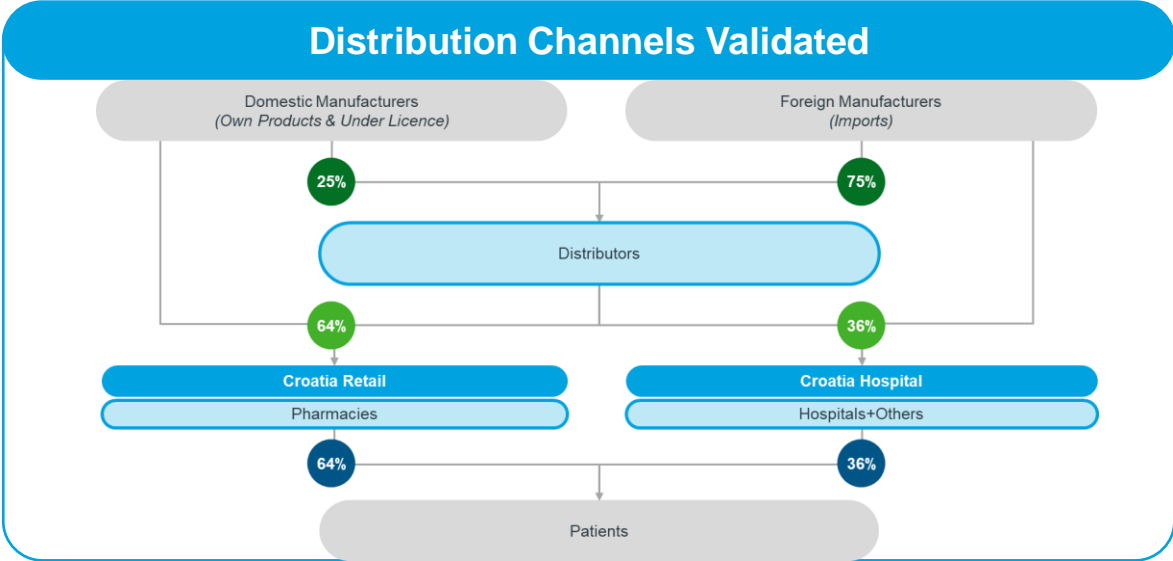
Croatia PharmaTrend Validation Study

2022 Validation Study



Outcomes

- Overall precision index declined by 2.3 percentage points in 2022
- Overall underestimation improved slightly by 0.1 percentage points in 2022
- Increase number of validation participants



Participation

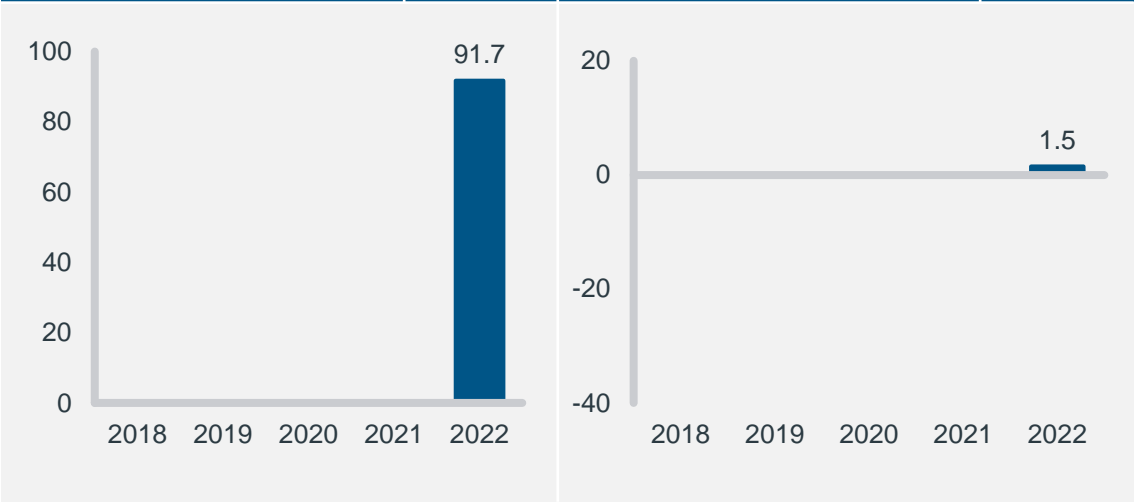
# Participating Companies	# Forms Validated	% Market Validated
14 (+3 vPY)	234 (+84 vPY)	16% (+7% vPY)

Croatia OTC Validation Study

2022 Validation Study

Validation Results

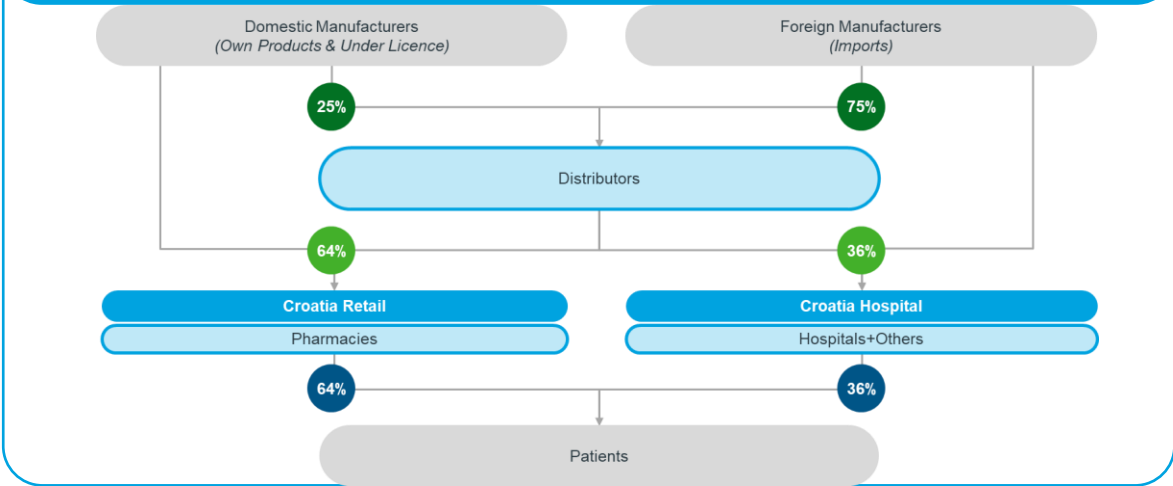
Precision	91.7%	Bias	1.5%
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Outcomes

- Overall precision index at 91.7 percentage points in 2022
- Overall overestimation at 1.5 percentage points in 2022
- Increase clients' coverage

Distribution Channels Validated



Participation

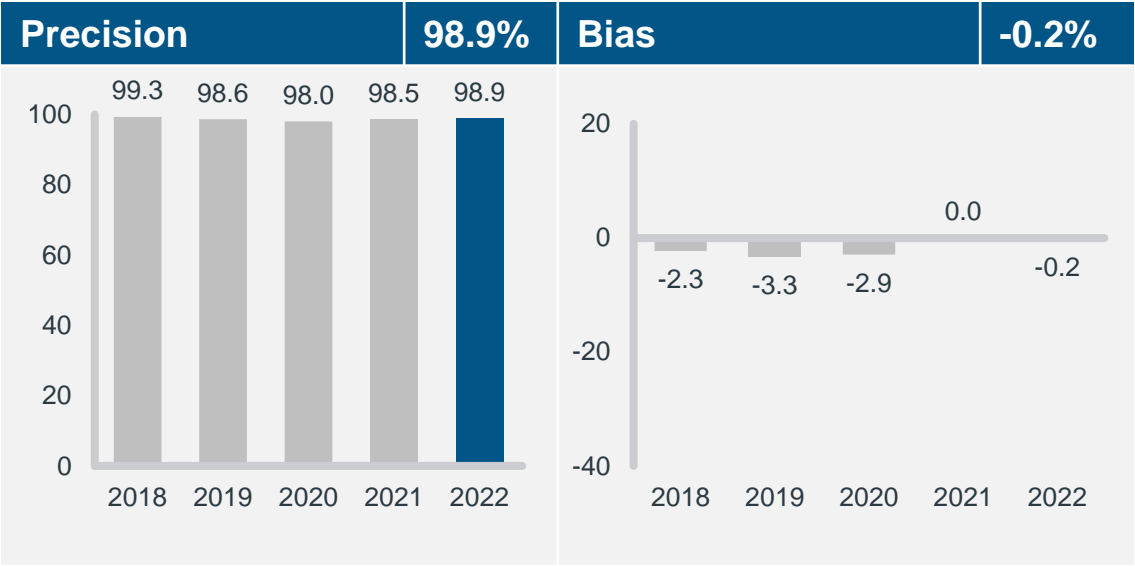
# Participating Companies	# Forms Validated	% Market Validated
5 (vPY)	24 (vPY)	16% (vPY)



Czech Republic Retail+Hospital Validation Study

2022 Validation Study

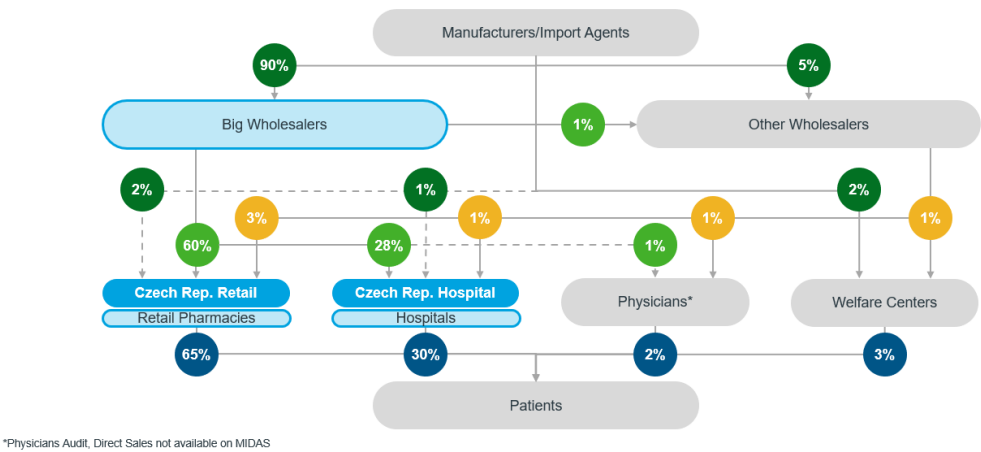
Validation Results



Outcomes

- Overall precision index improved by 0.4 percentage points in 2022
- Overall bias turned from no bias to 0.2% underestimation in 2022
- No action required from the statistical point of view

Distribution Channels Validated



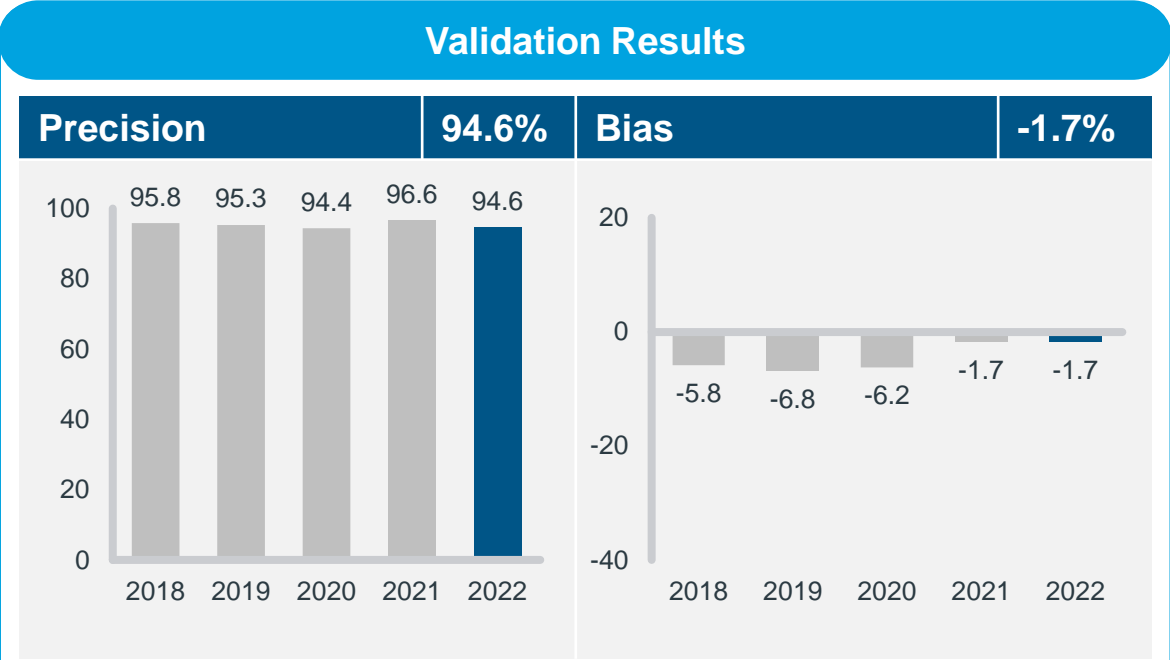
Participation

# Participating Companies	# Forms Validated	% Market Validated
266 (+12 vPY)	3,076 (+19 vPY)	83% (-2% vPY)



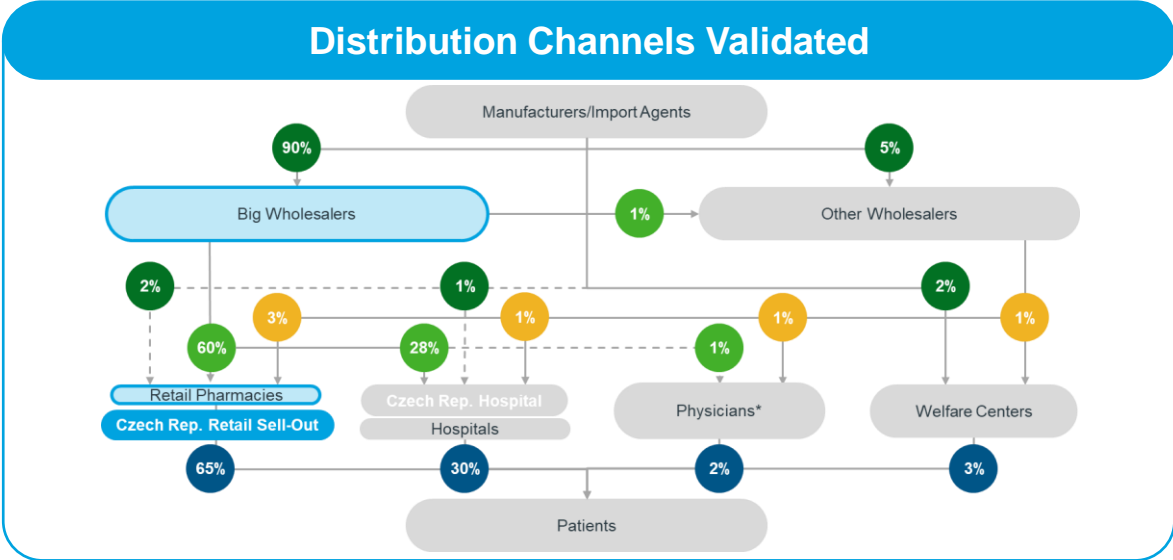
Czech Republic PharmaTrend Validation Study

2022 Validation Study



Outcomes

- Overall precision index declined by 2.0 percentage points in 2022
- Overall underestimation remained unchanged in 2022
- No action required from the statistical point of view



Participation

# Participating Companies	# Forms Validated	% Market Validated
181 (+31 vPY)	1,968 (+353 vPY)	58% (+3% vPY)

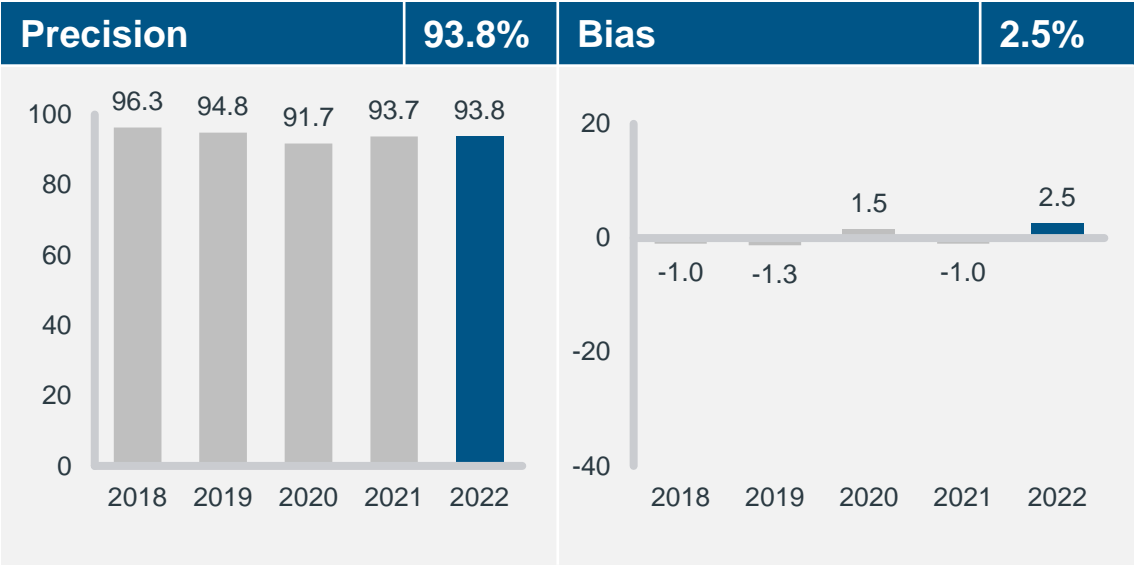
* Government e-prescription sales data used in validation since 2021



Finland PharmaTrend Validation Study

2022 Validation Study

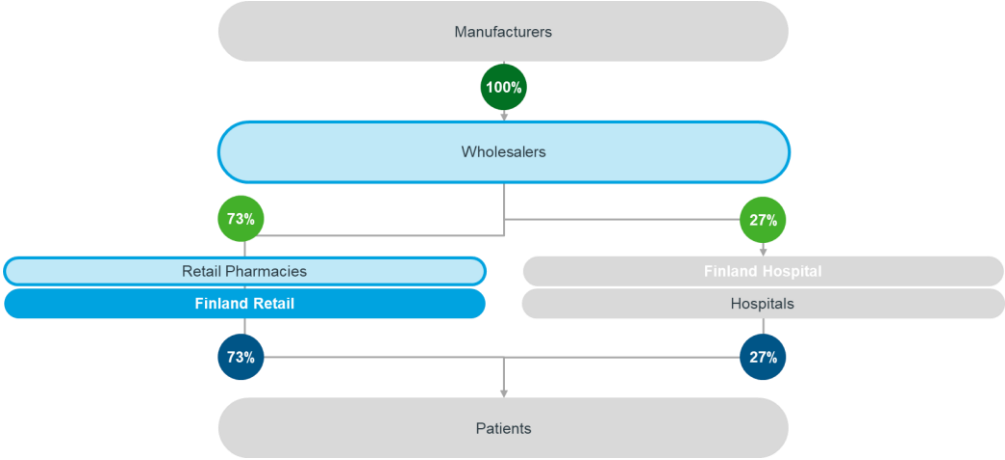
Validation Results



Outcomes

- Overall precision index improved by 0.1 percentage points in 2022
- Overall bias turned from 1.0% underestimation in 2021 to 2.5% overestimation in 2022
- Investigate input data

Distribution Channels Validated



Participation

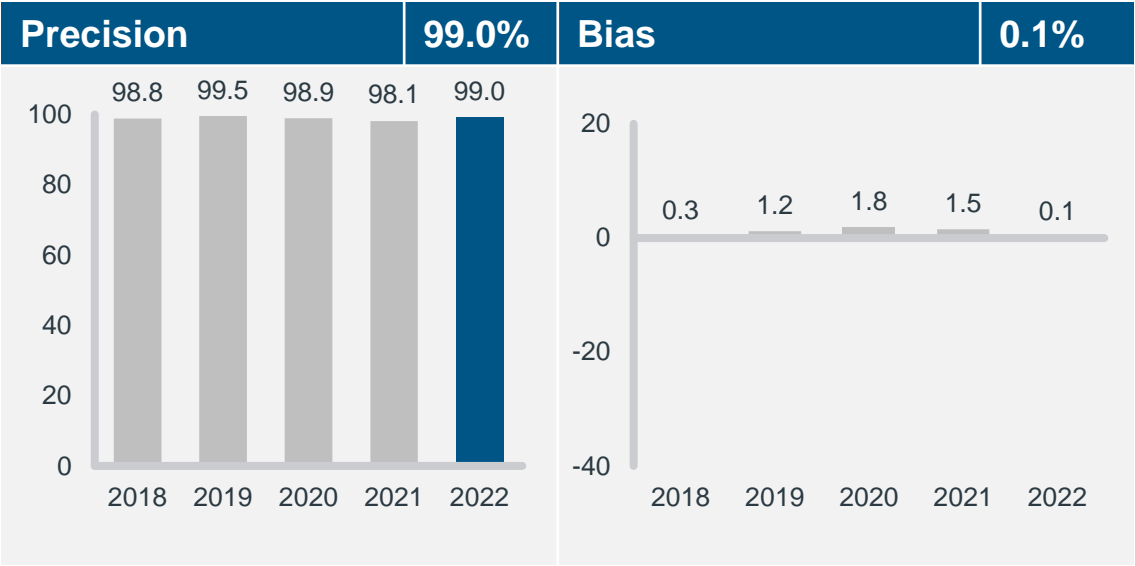
# Participating Companies	# Forms Validated	% Market Validated
156 (+8 vPY)	1,865 (-57 vPY)	88% (-1% vPY)



France Retail Validation Study

2022 Validation Study

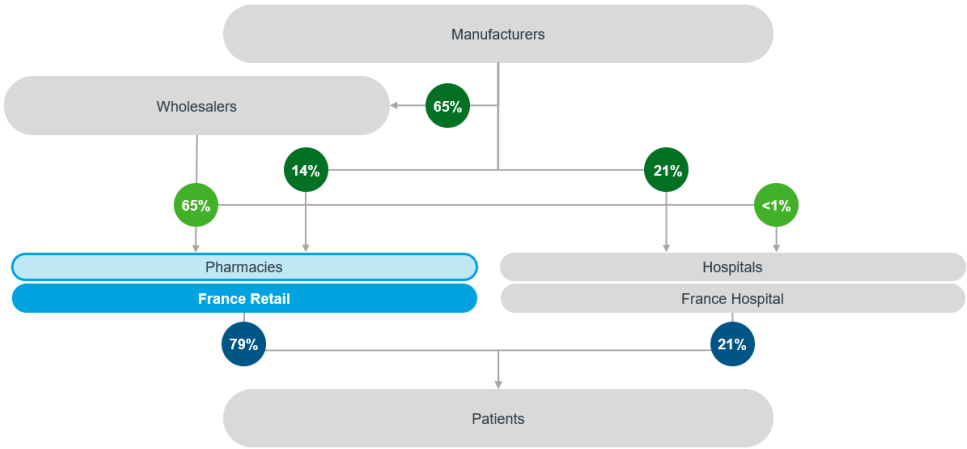
Validation Results



Outcomes

- Overall precision index improved slightly by 0.9 percentage points in 2022
- Overall overestimation improved by 1.4 percentage points in 2022
- No action required from the statistical point of view

Distribution Channels Validated



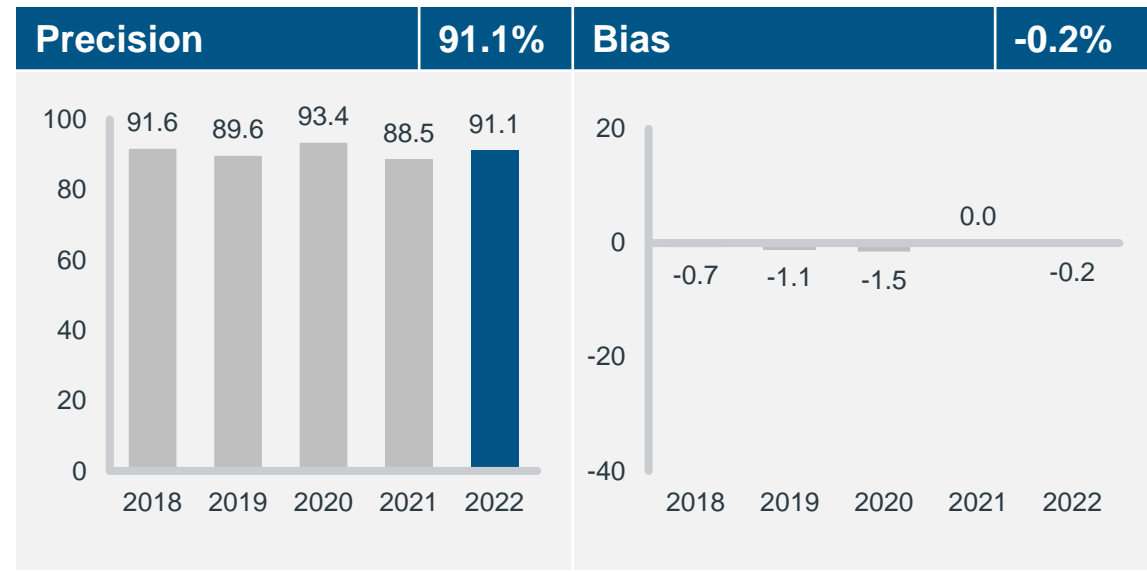
Participation

# Participating Companies	# Forms Validated	% Market Validated
163 (+1 vPY)	3,554 (-19 vPY)	90% (no change vPY)

Greece Retail Validation Study

2022 Validation Study

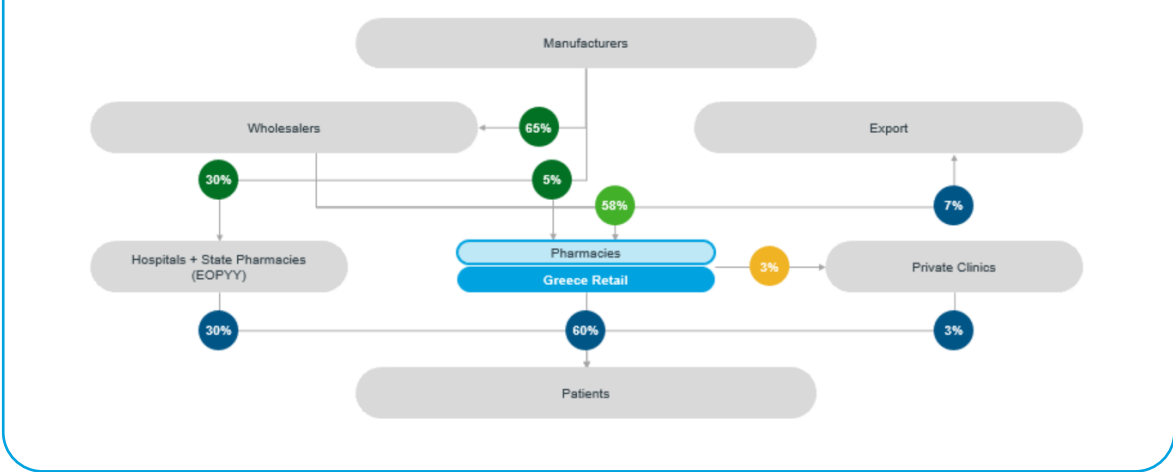
Validation Results



Outcomes

- Overall precision index improved by 2.6 percentage points in 2022
- Overall bias turned from no bias to 0.2% underestimation in 2022
- No action required from the statistical point of view

Distribution Channels Validated



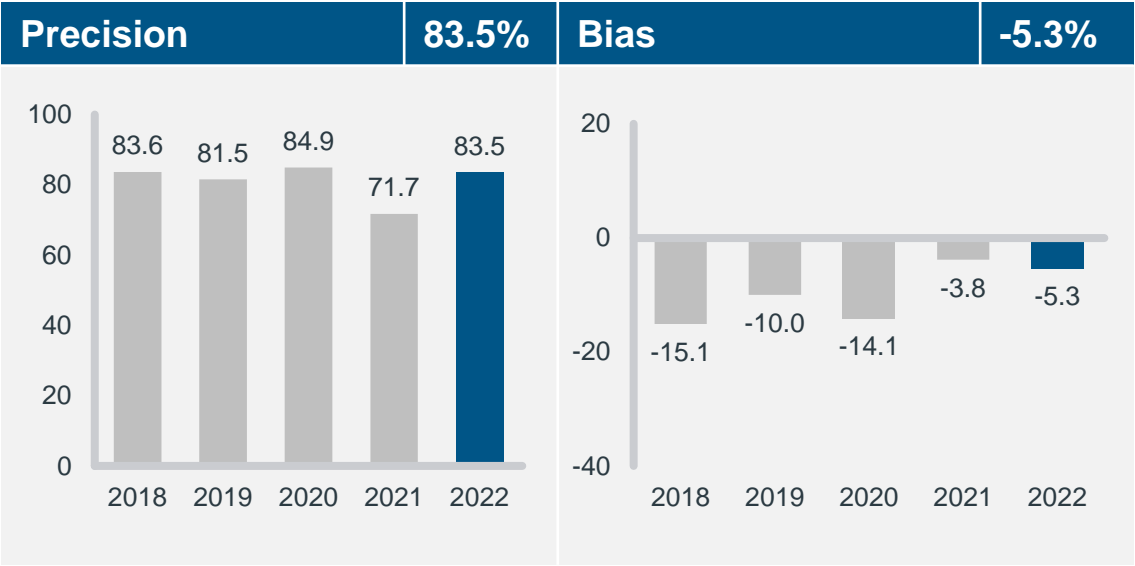
Participation

# Participating Companies	# Forms Validated	% Market Validated
73 (+29 vPY)	924 (-9 vPY)	49% (no change vPY)

Greece OTC Validation Study

2022 Validation Study

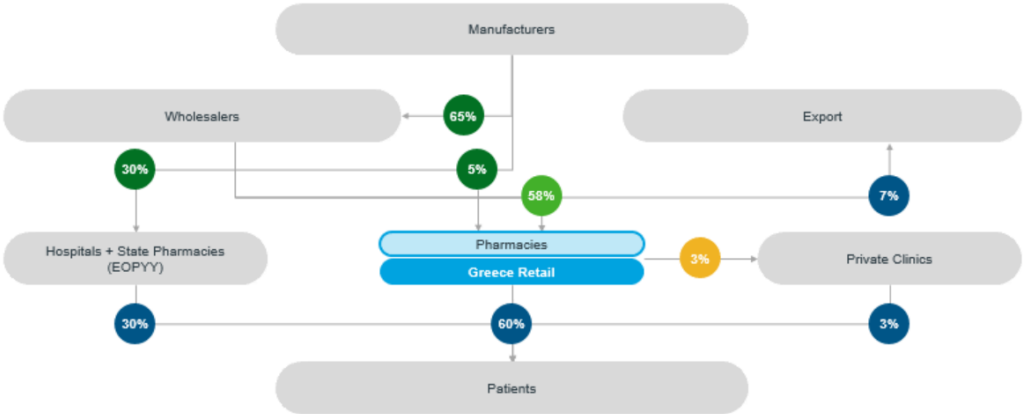
Validation Results



Outcomes

- Overall precision index improved by 11.8 percentage points in 2022
- Overall underestimation increased by 1.5 percentage points in 2022
- Explore channels distribution

Distribution Channels Validated



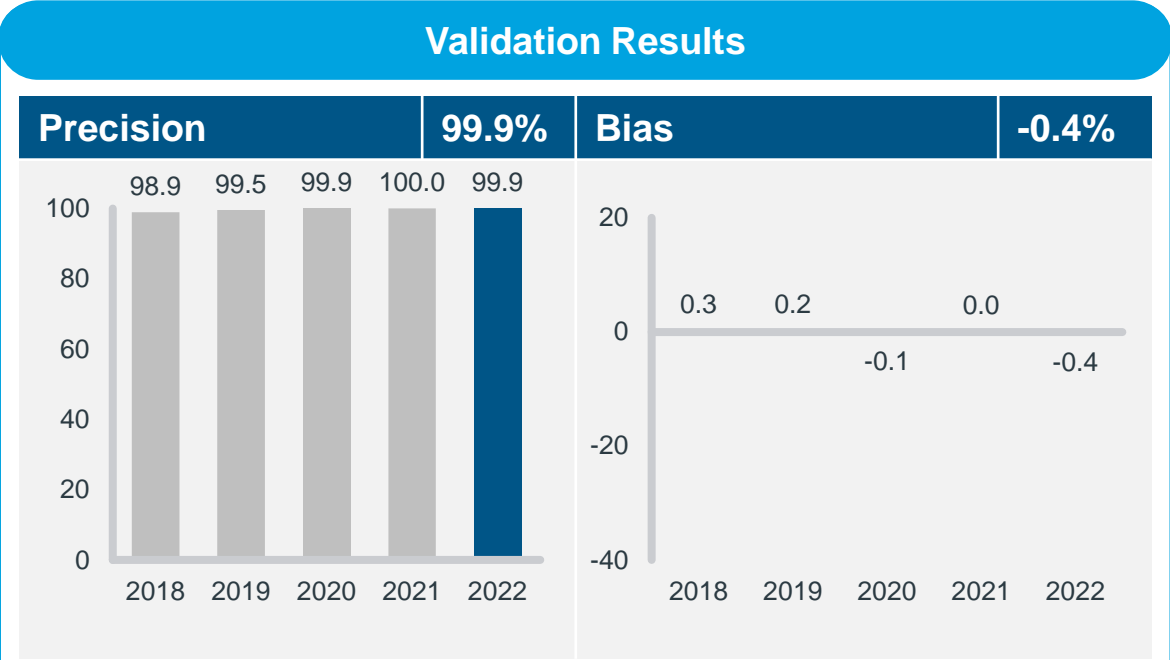
Participation

# Participating Companies	# Forms Validated	% Market Validated
23 (+7 vPY)	110 (+18 vPY)	40% (+2% vPY)



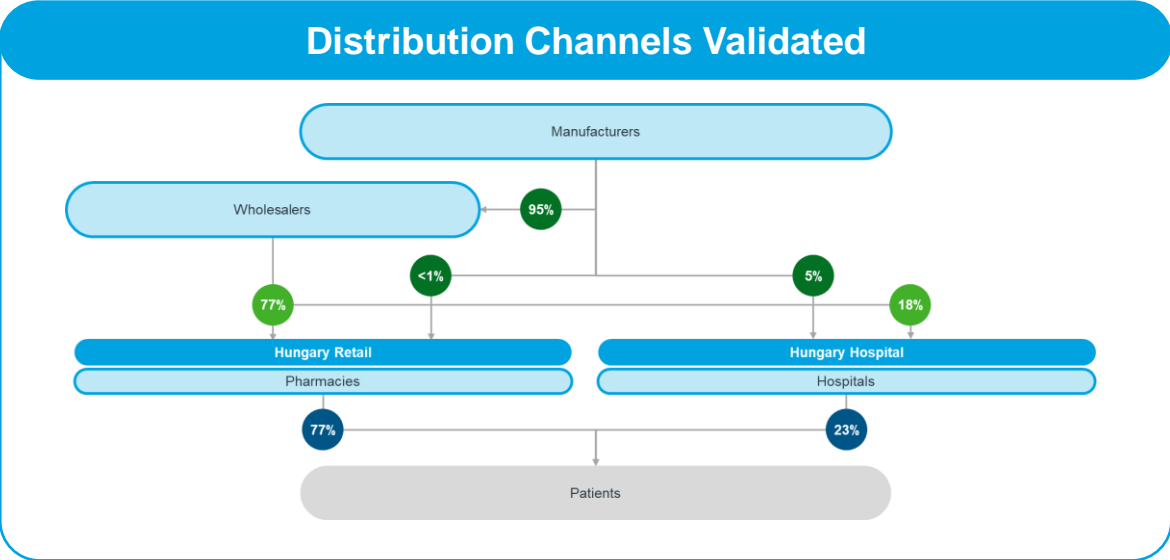
Hungary Retail+Hospital Validation Study

2022 Validation Study



Outcomes

- Overall precision index declined slightly by 0.1 percentage points in 2022
- Overall bias turned from no bias to 0.4% underestimation in 2022
- No action required from the statistical point of view



Participation

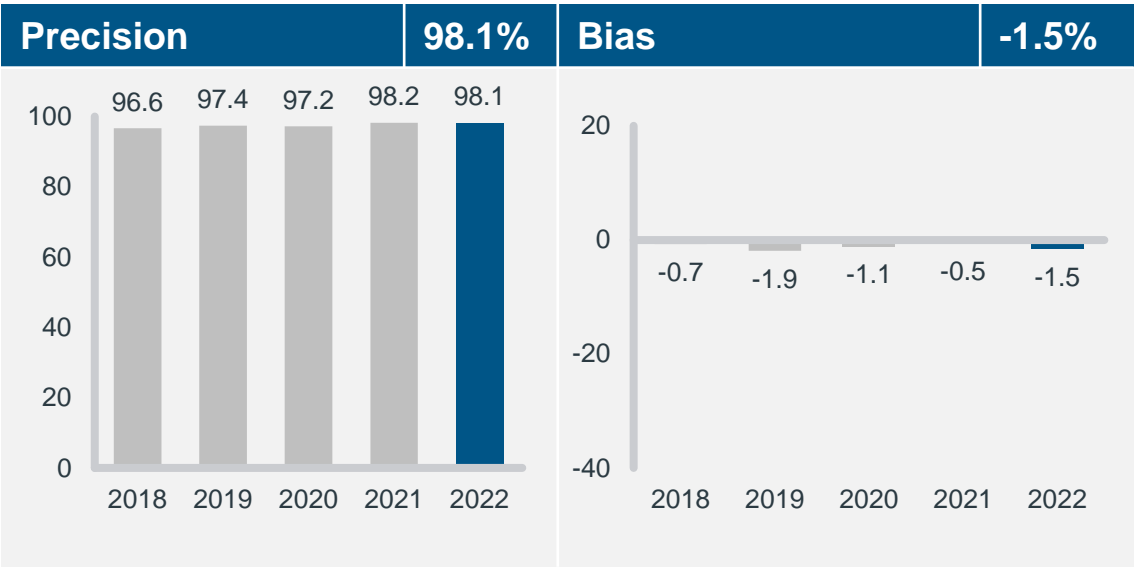
# Participating Companies	# Forms Validated	% Market Validated
74 (+3 vPY)	1,510 (+64 vPY)	73% (+7% vPY)



Hungary PharmaTrend Validation Study

2022 Validation Study

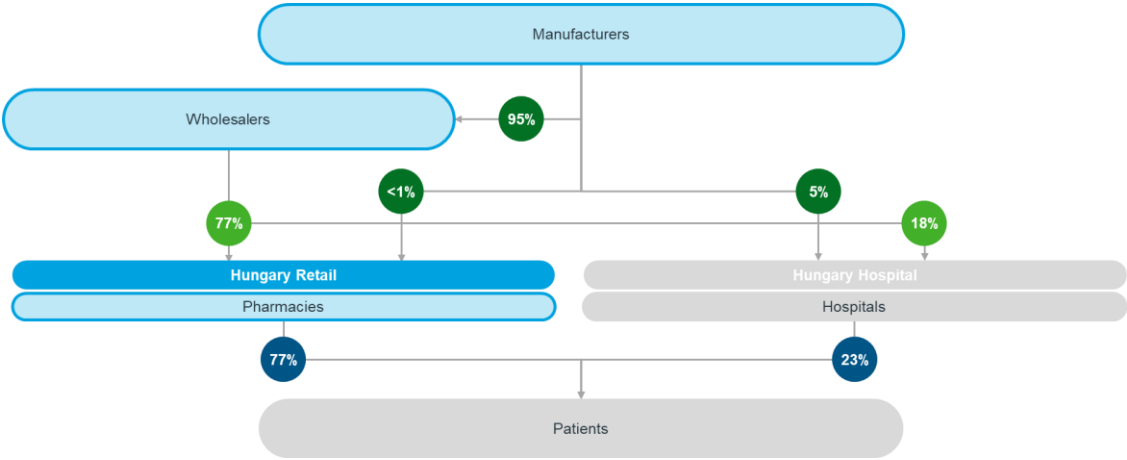
Validation Results



Outcomes

- Overall precision index declined slightly by 0.1 percentage points in 2022
- Overall underestimation increased slightly by 1 percentage point in 2022
- No action required from the statistical point of view

Distribution Channels Validated



Participation

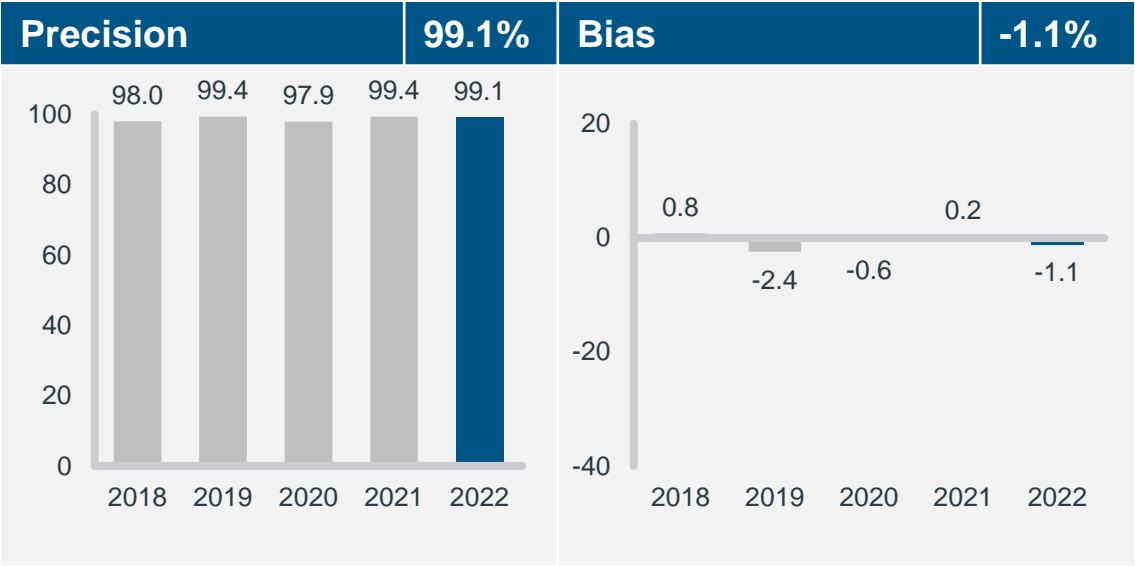
# Participating Companies	# Forms Validated	% Market Validated
68 (+3 vPY)	1,307 (+74 vPY)	72% (+6% vPY)



Hungary OTC Validation Study

2022 Validation Study

Validation Results

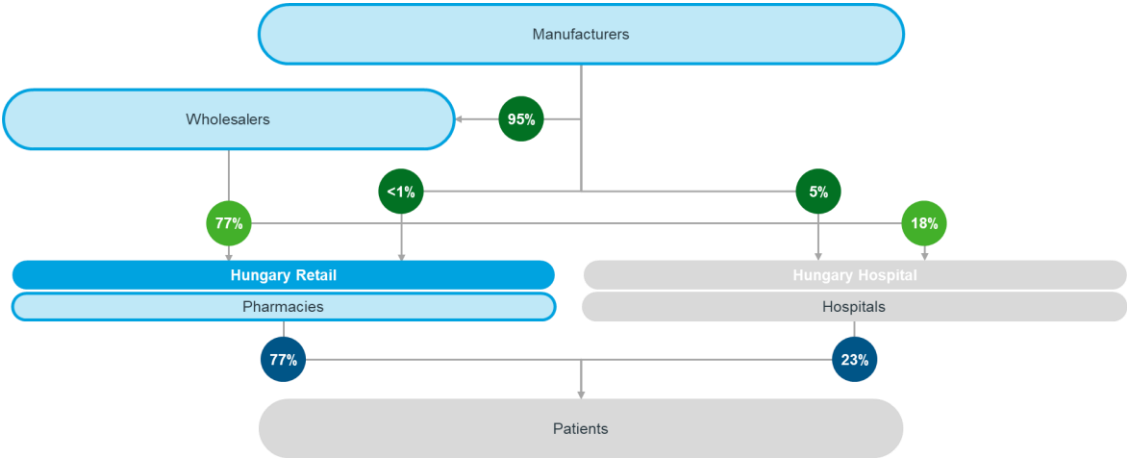


Outcomes



- Overall precision index declined slightly by 0.3 percentage points in 2022
- Overall bias turned from 0.2% overestimation to 1.1% underestimation in 2022
- No action required from the statistical point of view

Distribution Channels Validated



Participation

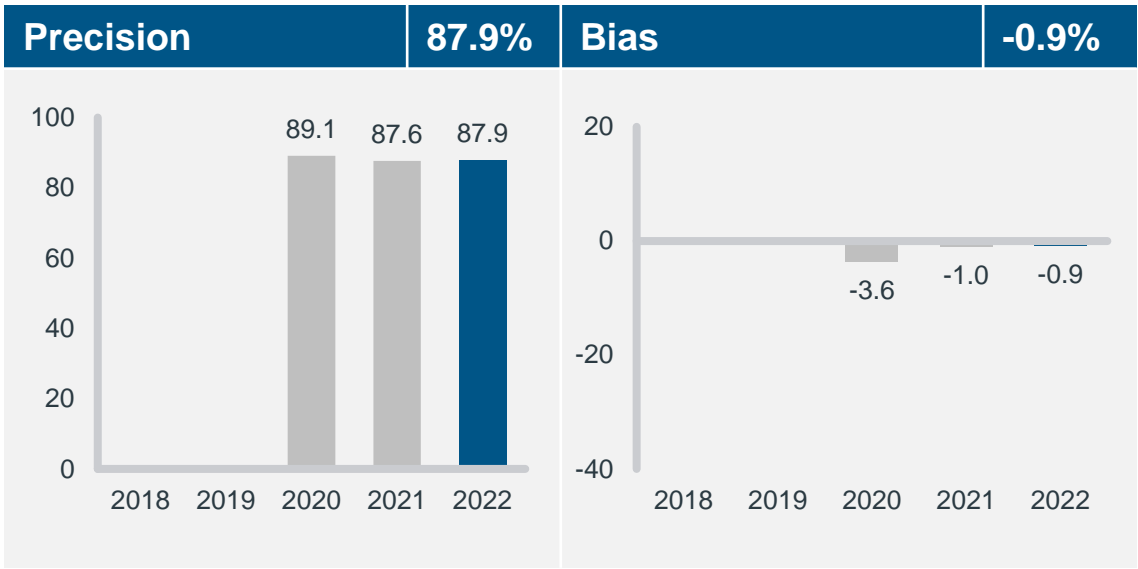
# Participating Companies	# Forms Validated	% Market Validated
44 (+7 vPY)	402 (+83 vPY)	77% (+17% vPY)



Ireland PharmaTrend Validation Study

2022 Validation Study

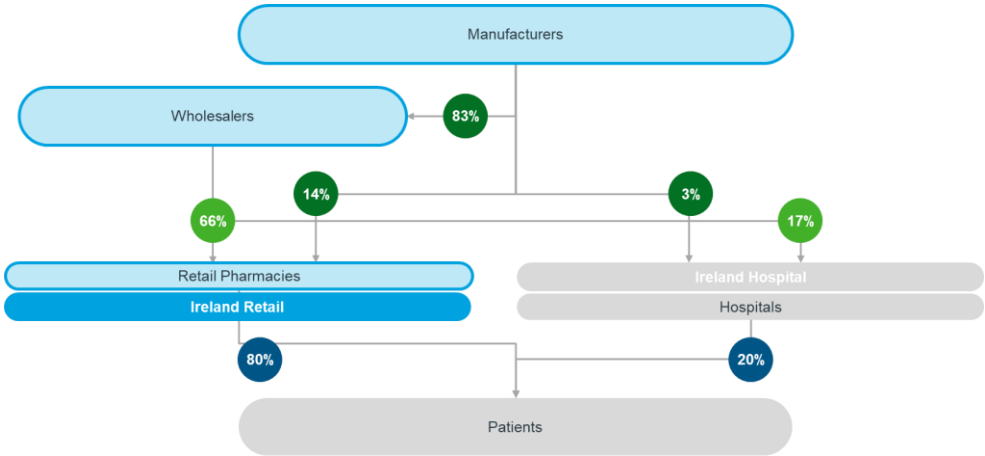
Validation Results



Outcomes

- Overall precision index improved by 0.3 percentage points in 2022
- Overall underestimation improved by 0.1 percentage Points in 2022
- No action required from the statistical point of view

Distribution Channels Validated



Participation

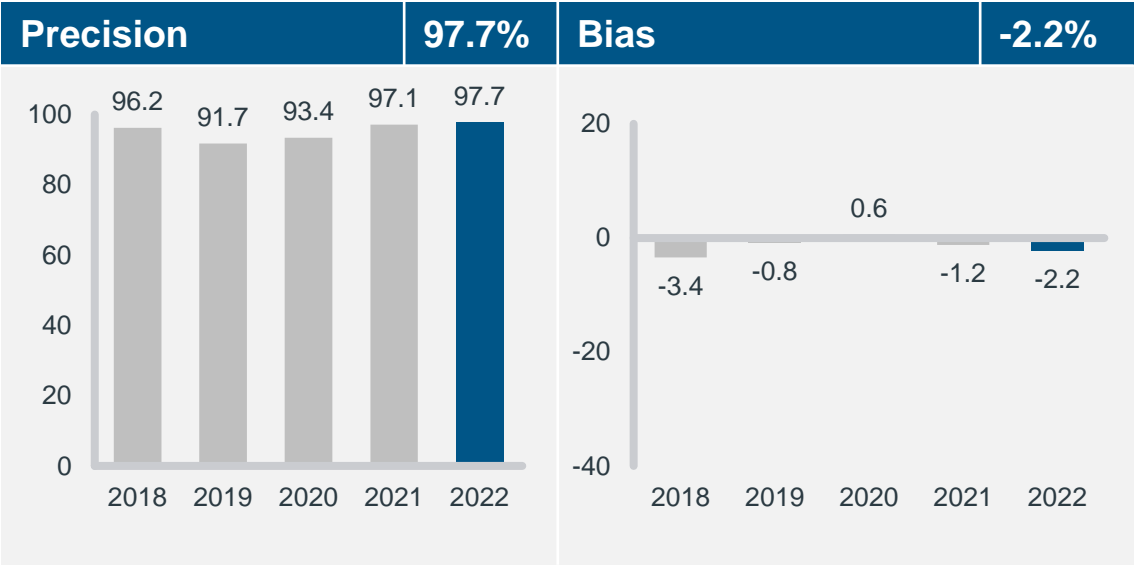
# Participating Companies	# Forms Validated	% Market Validated
122 (+9 vPY)	1,503 (-29 vPY)	90% (+1% vPY)



Italy Retail Validation Study

2022 Validation Study

Validation Results

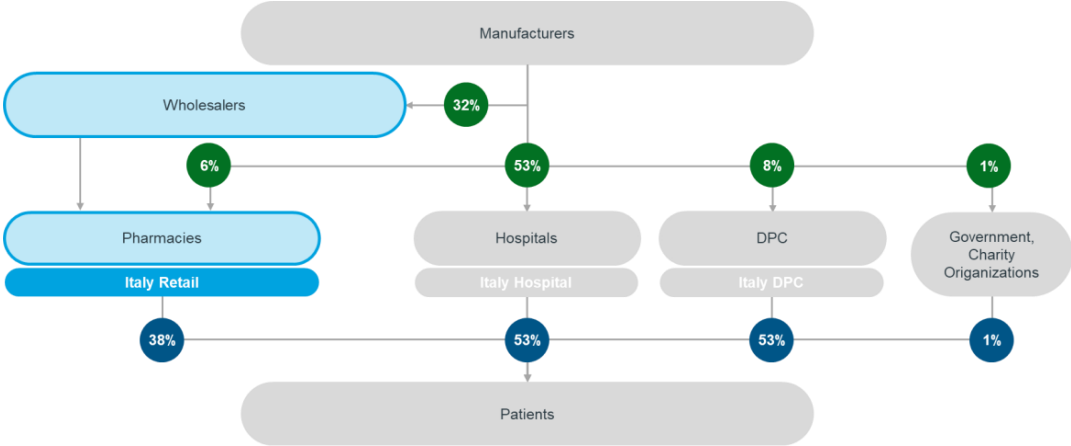


Outcomes



- Overall precision index improved slightly by 0.6 percentage points in 2022
- Overall underestimation increased slightly by 1 percentage point in 2022
- Slight increase in bias but improved precision. No actions required from the statistical standpoint.

Distribution Channels Validated



Participation

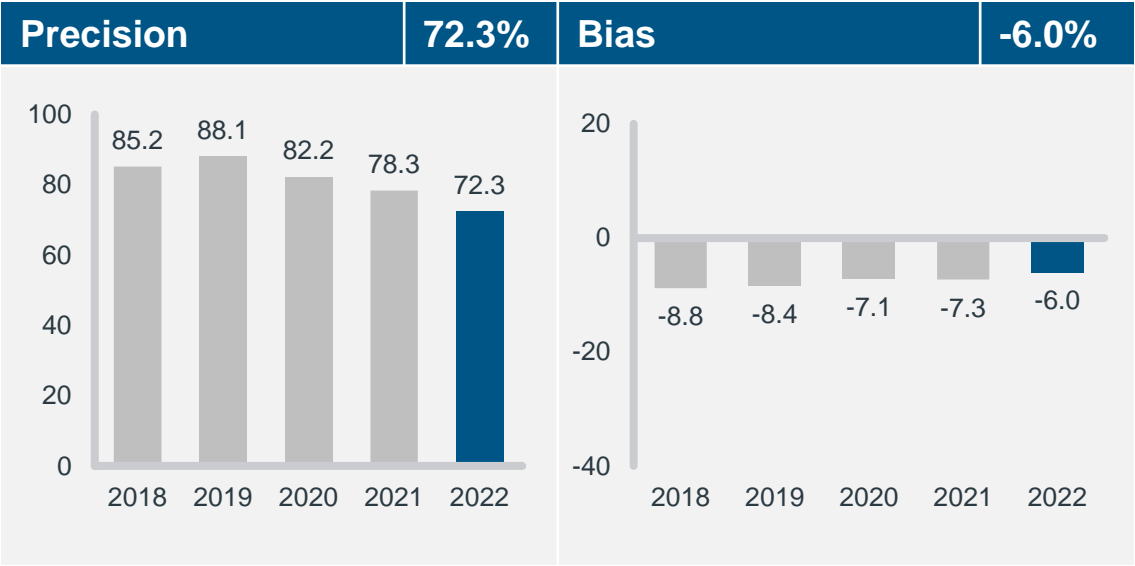
# Participating Companies	# Forms Validated	% Market Validated
16 (-9 vPY)	1,296 (+103 vPY)	27% (no change vPY)



Italy Hospital Validation Study

2022 Validation Study

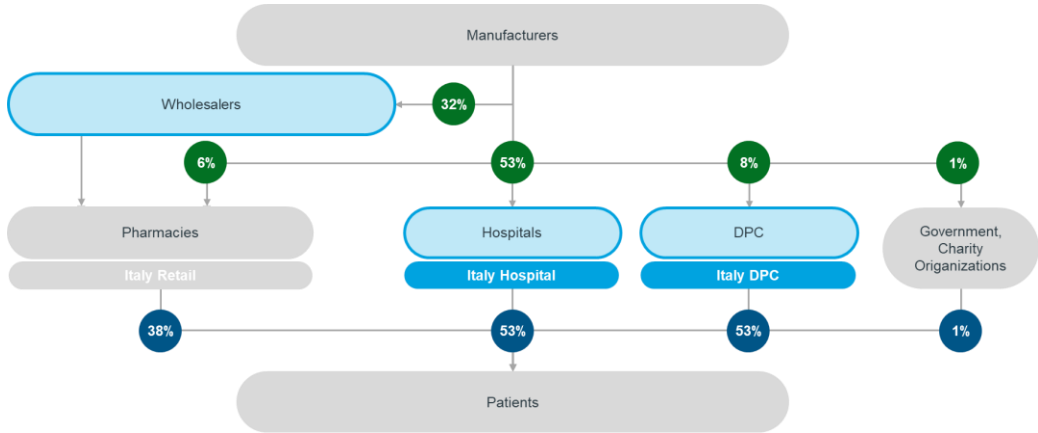
Validation Results



Outcomes

- Overall precision index declined by 6 percentage points in 2022
- Overall underestimation improved by 1.3 percentage points in 2022
- Bias improved while increased variability might be explained by undergoing changes in the non-retail distribution patterns.

Distribution Channels Validated



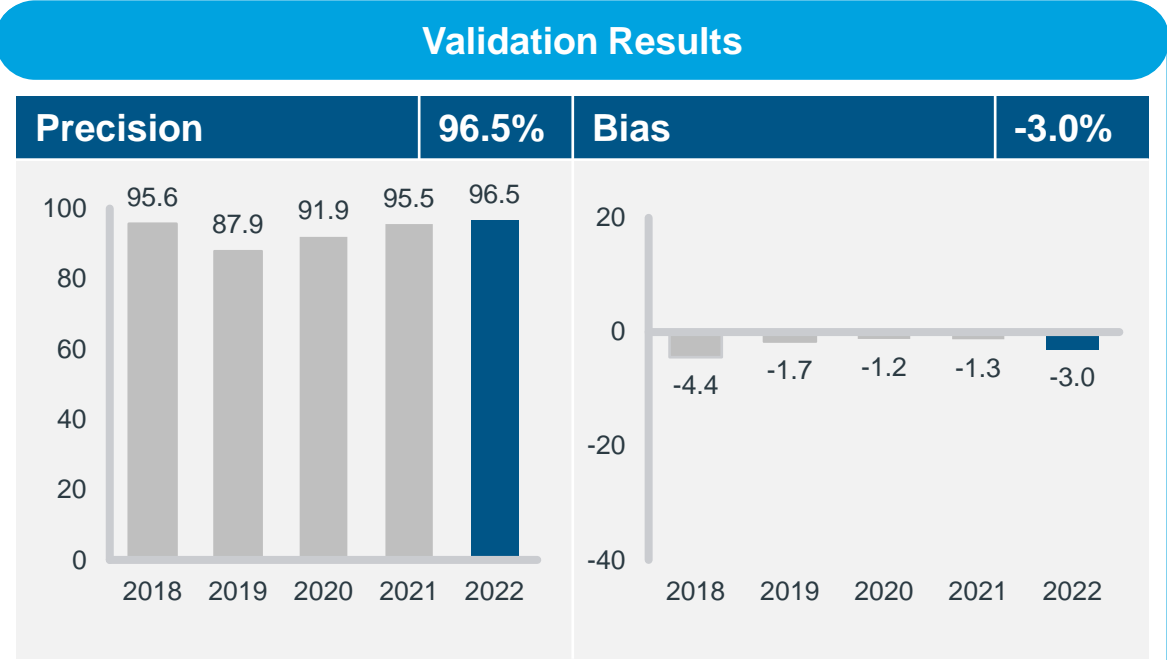
Participation

# Participating Companies	# Forms Validated	% Market Validated
14 (+2 vPY)	284 (+12 vPY)	26% (-2% vPY)



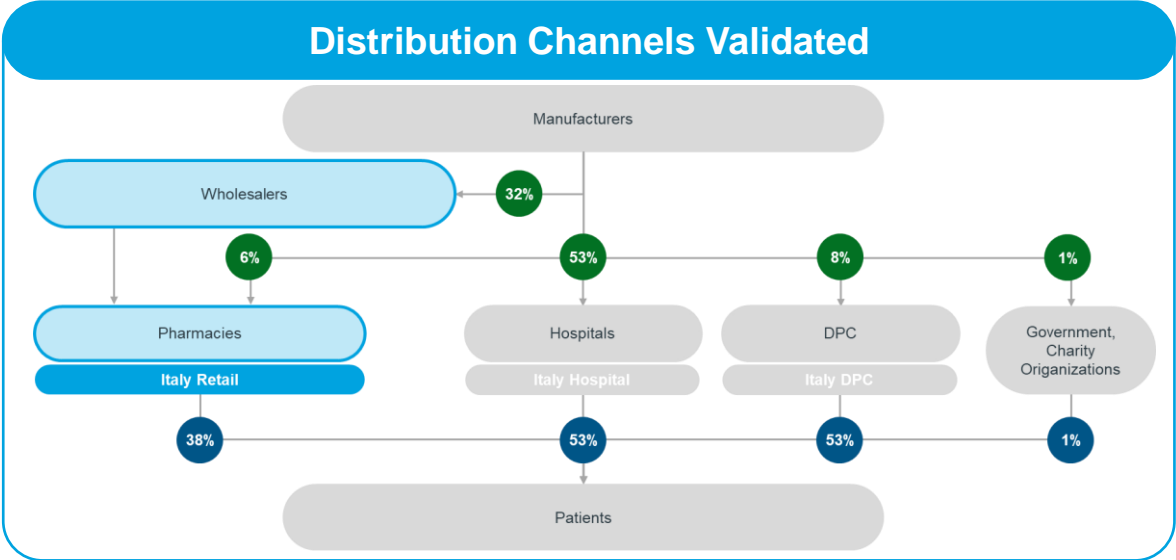
Italy PharmaTrend Validation Study

2022 Validation Study



Outcomes

- Overall precision index improved slightly by 1 percentage point in 2022
- Overall underestimation increased by 1.7 percentage points in 2022
- No action required from the statistical point of view



Participation

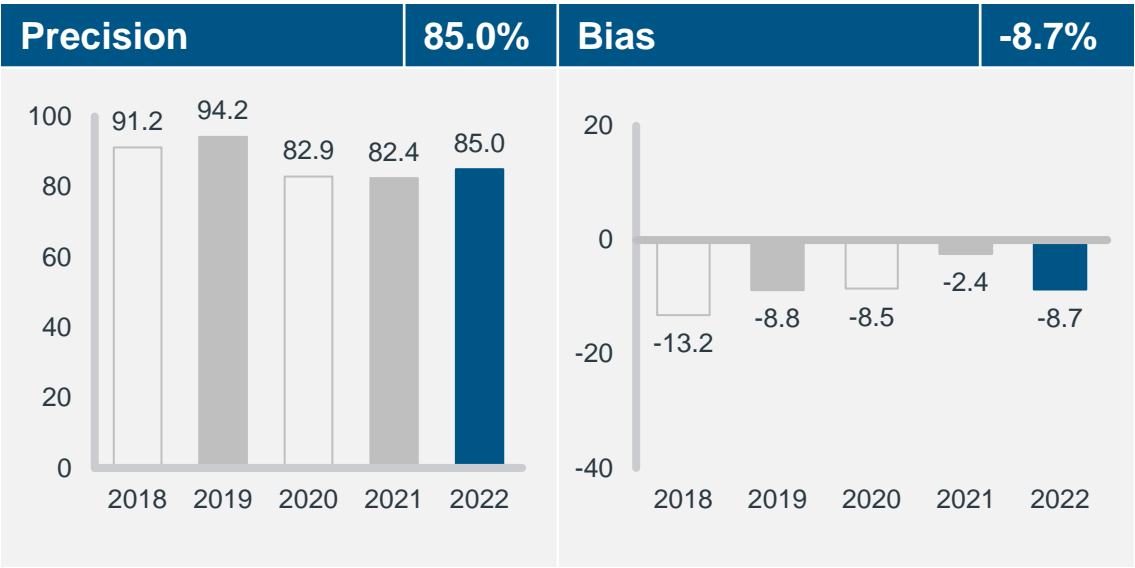
# Participating Companies	# Forms Validated	% Market Validated
15 (-9 vPY)	1,231 (+90 vPY)	28% (+1% vPY)



Italy OTC Validation Study

2022 Validation Study

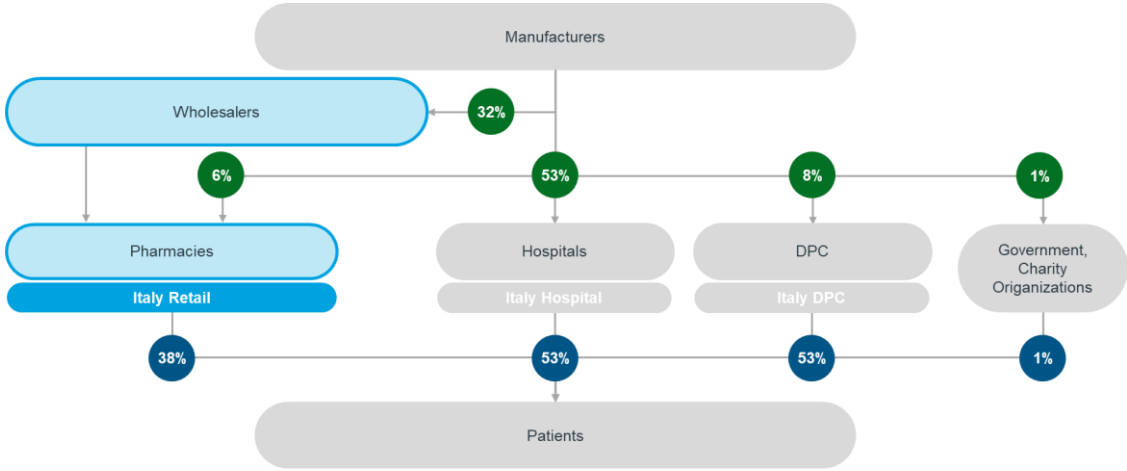
Validation Results



Outcomes

- Overall precision index improved by 2.6 percentage points in 2022
- Overall underestimation increased by 6.3 percentage points in 2022
- No action required from the statistical point of view

Distribution Channels Validated



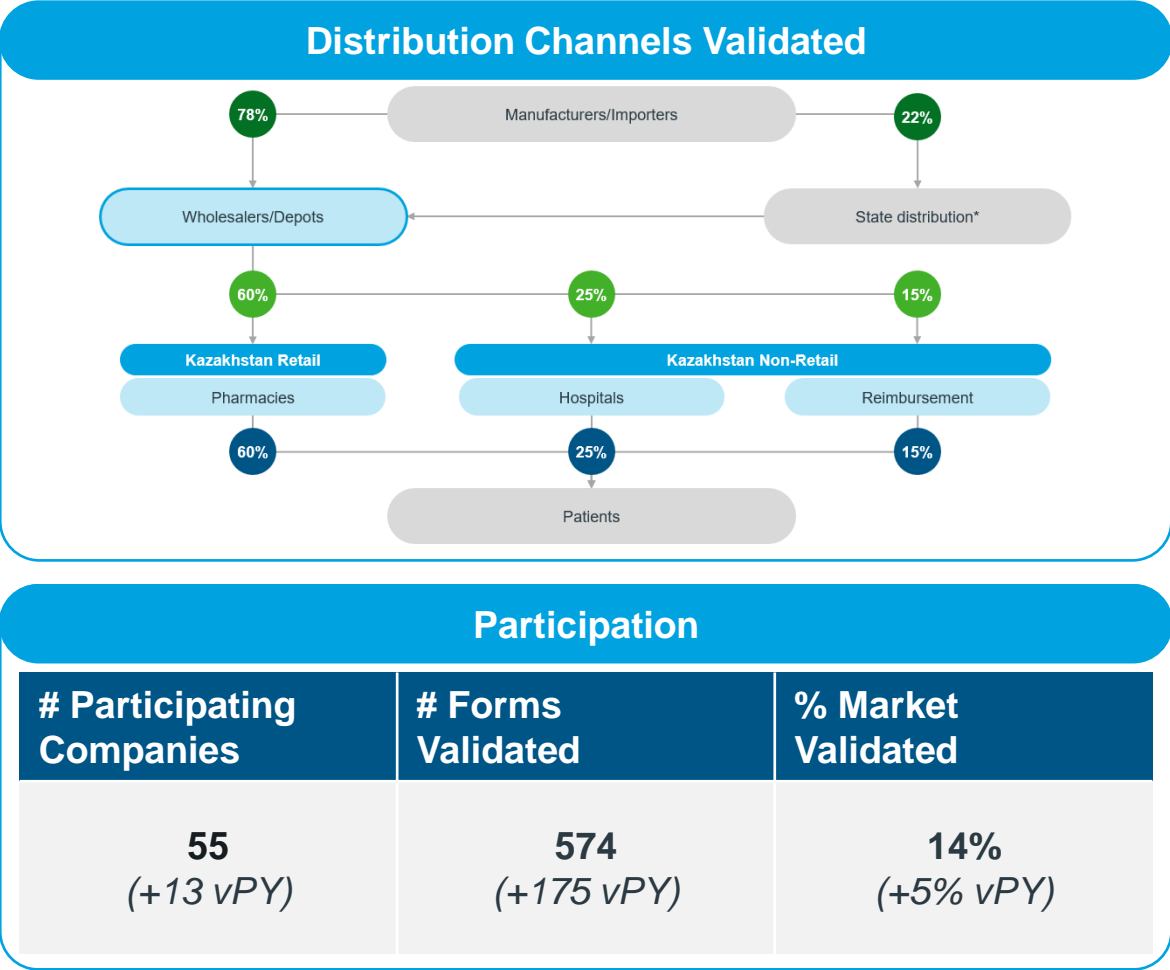
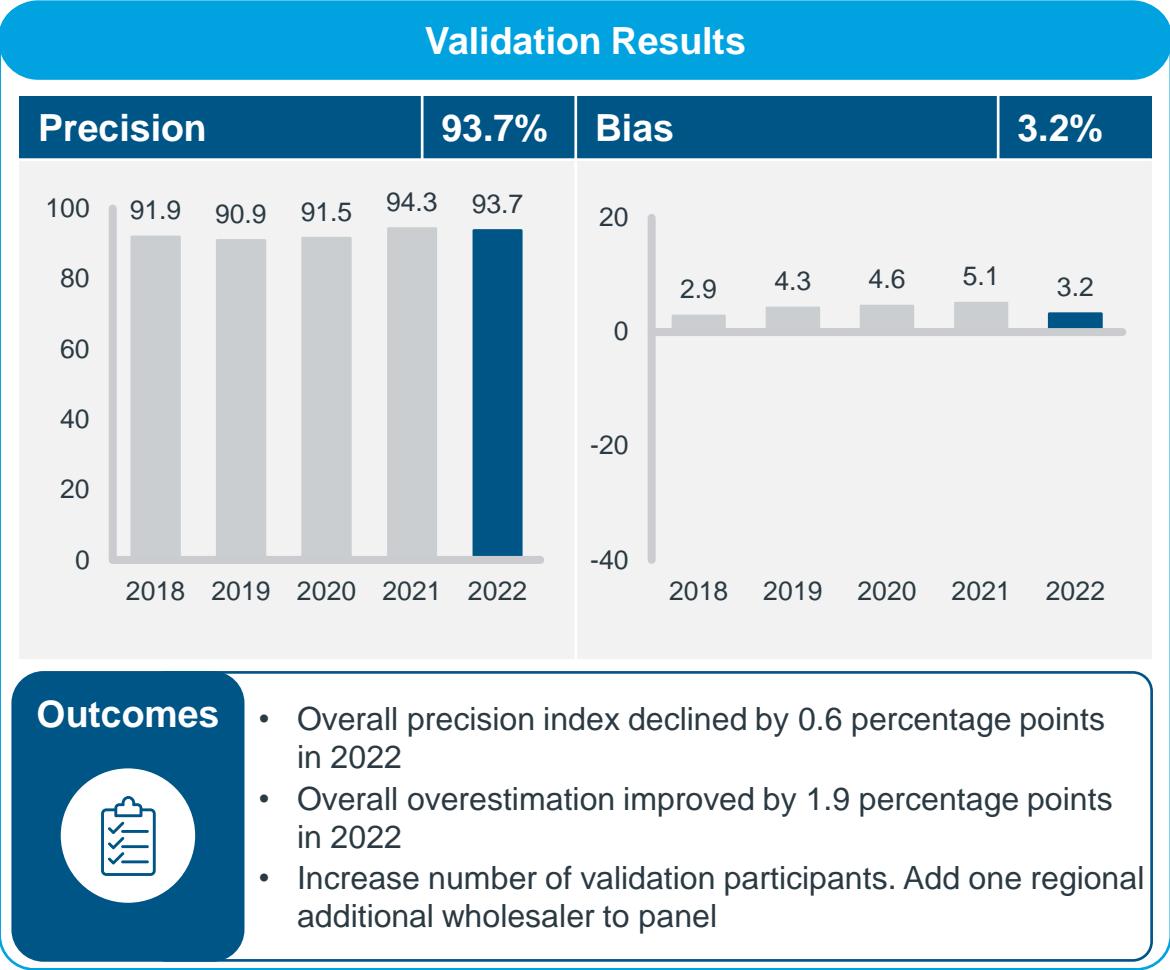
Participation

# Participating Companies	# Forms Validated	% Market Validated
9 (-5 vPY)	71 (-15 vPY)	10% (-2% vPY)



Kazakhstan Retail+Hospital Validation Study

2022 Validation Study

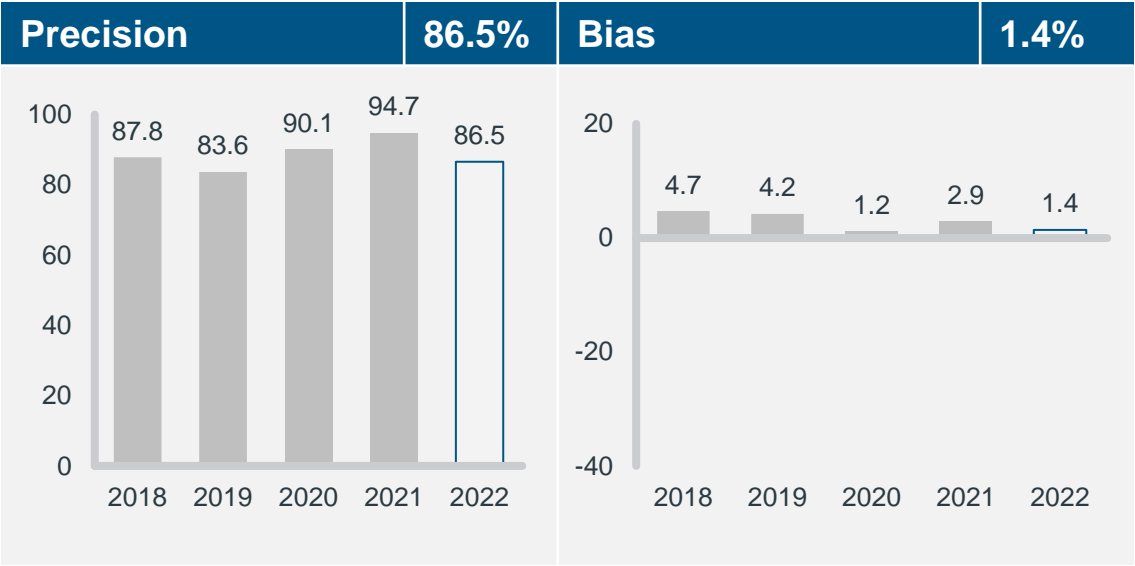




Latvia Retail Validation Study

2022 Validation Study

Validation Results

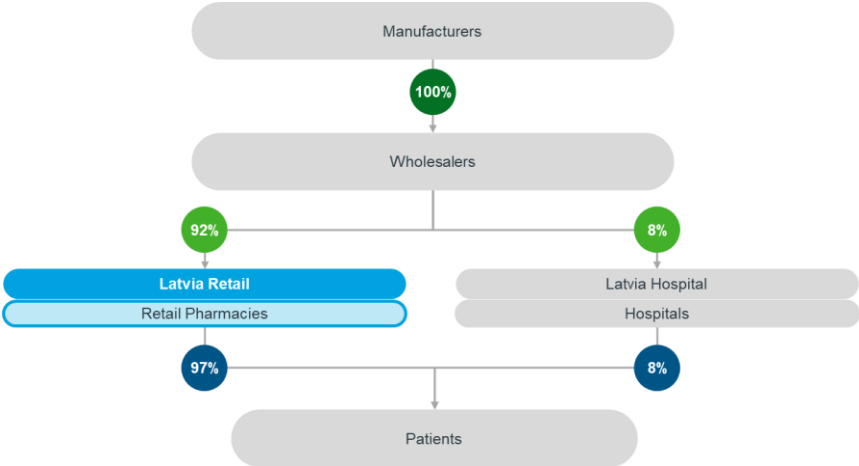


Outcomes



- Overall precision index declined by 8.2 percentage points in 2022
- Overall overestimation improved by 1.5 percentage points in 2022
- Increase number of validation participants

Distribution Channels Validated



Participation

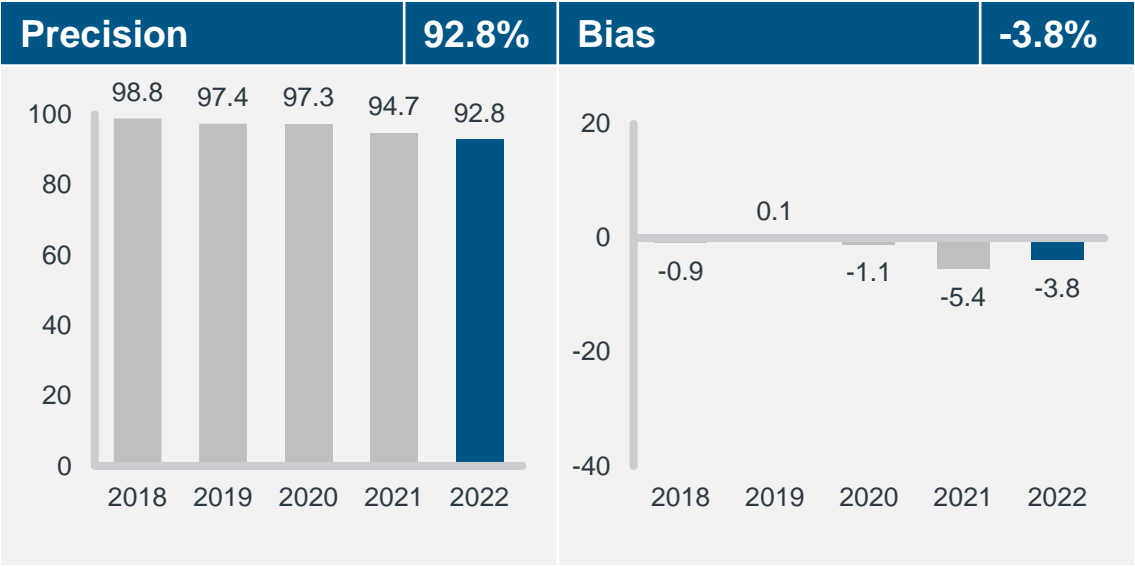
# Participating Companies	# Forms Validated	% Market Validated
9 (-5 vPY)	215 (-38 vPY)	7% (-3% vPY)



Lithuania Retail Validation Study

2022 Validation Study

Validation Results

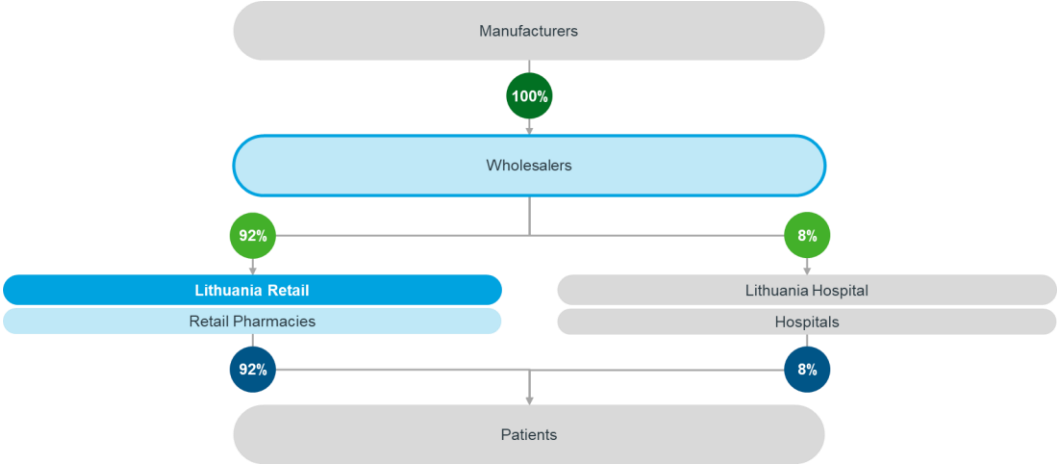


Outcomes



- Overall precision index declined by 1.9 percentage points in 2022
- Overall underestimation improved by 1.6 percentage points in 2022
- Review projection levels

Distribution Channels Validated



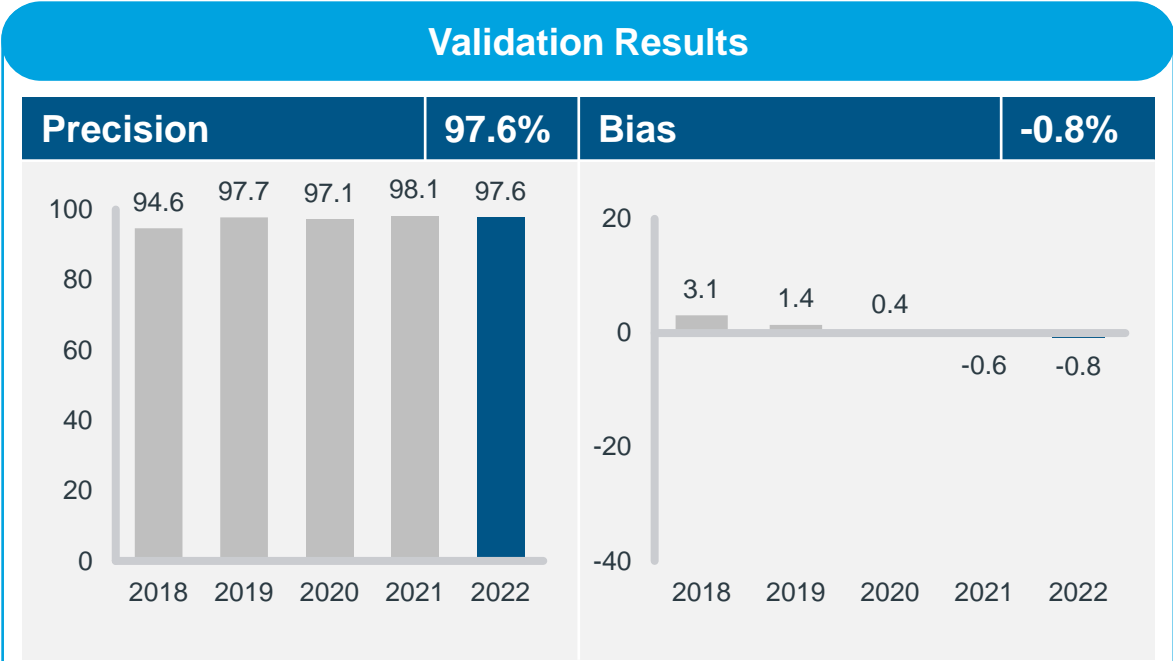
Participation

# Participating Companies	# Forms Validated	% Market Validated
11 (-8 vPY)	357 (-71 vPY)	19% (-3% vPY)



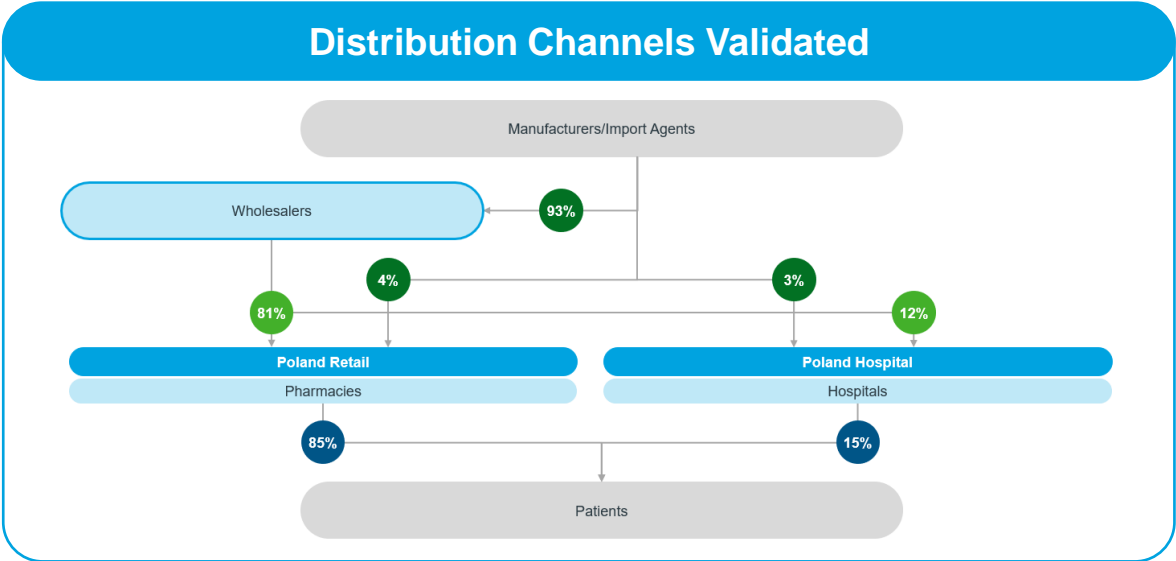
Poland Retail+Hospital Validation Study

2022 Validation Study



Outcomes

- Overall precision index declined slightly by 0.5 percentage points in 2022
- Overall underestimation increased slightly by 0.2 percentage points in 2022
- Increase number of validation participants



Participation

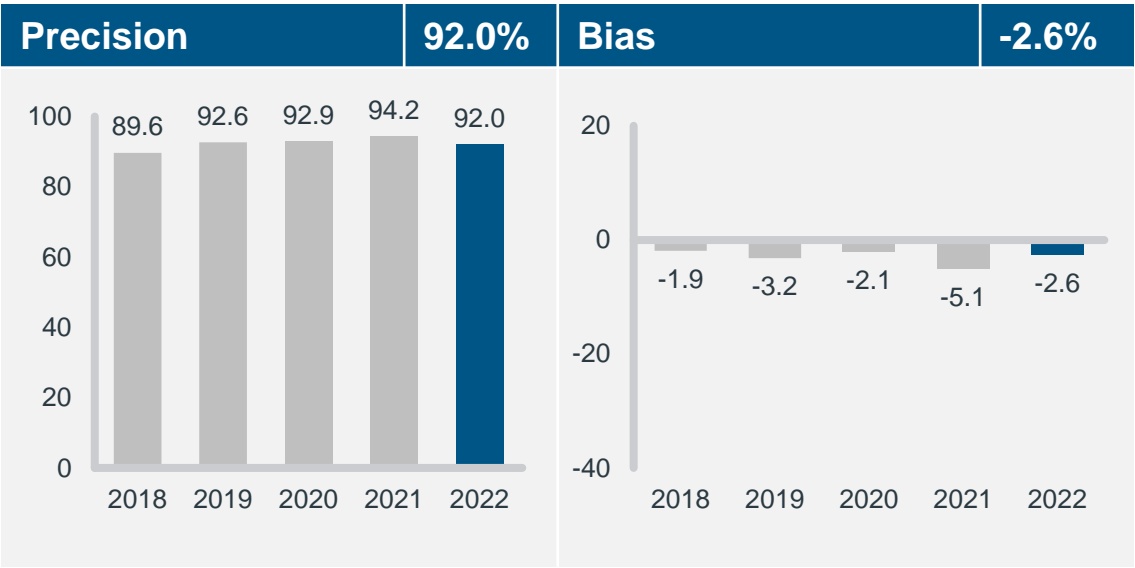
# Participating Companies	# Forms Validated	% Market Validated
38 (-2 vPY)	722 (-64 vPY)	16% (no change vPY)



Poland PharmaTrend Validation Study

2022 Validation Study

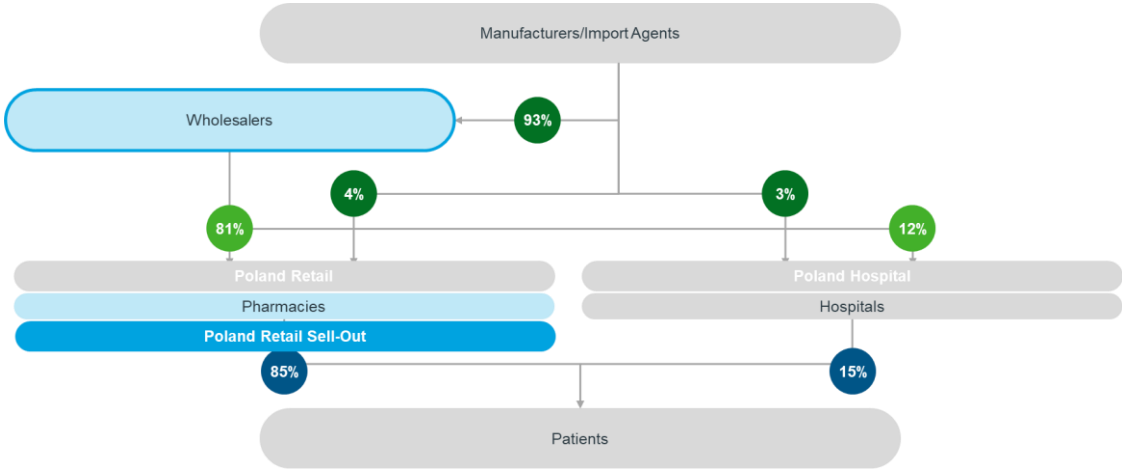
Validation Results



Outcomes

- Overall precision index declined by 2.2 percentage points in 2022
- Overall underestimation improved by 2.5 percentage points in 2022
- Increase number of validation participants

Distribution Channels Validated



Participation

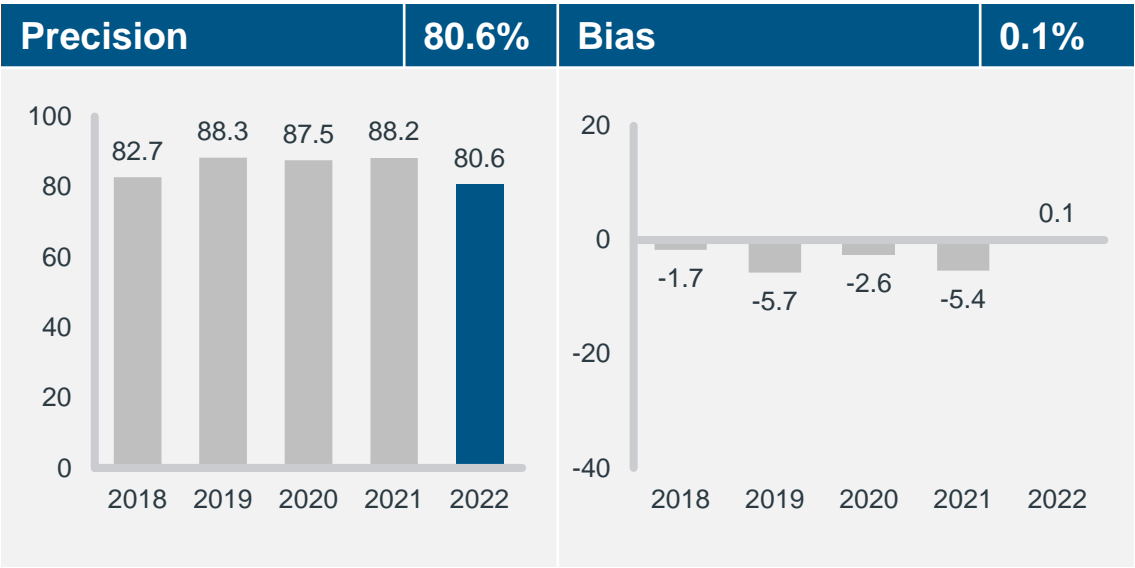
# Participating Companies	# Forms Validated	% Market Validated
36 (+2 vPY)	638 (-55 vPY)	16% (no change vPY)



Poland OTC Validation Study

2022 Validation Study

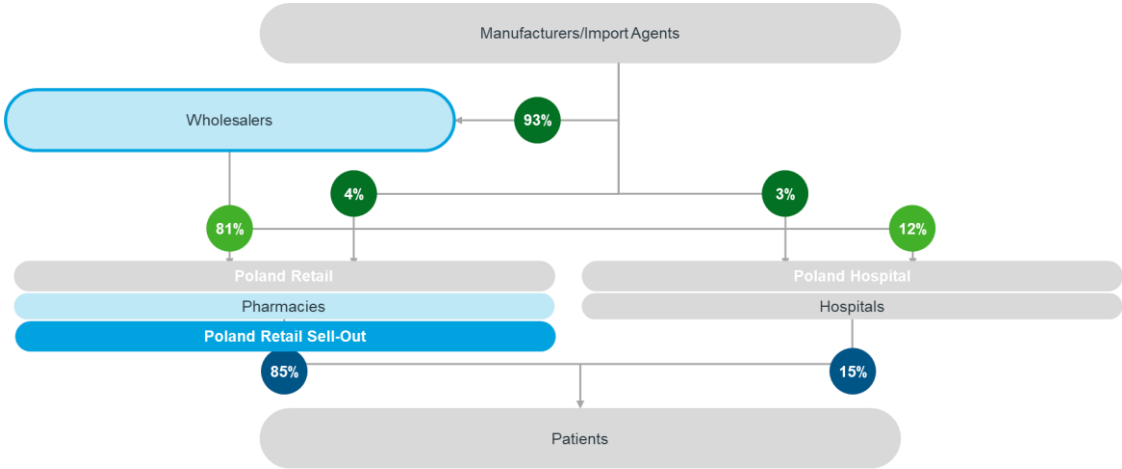
Validation Results



Outcomes

- Overall precision index declined by 7.6 percentage points in 2022
- Overall bias turned from 5.4% underestimation to 0.1% overestimation in 2022
- Increase number of validation participants

Distribution Channels Validated



Participation

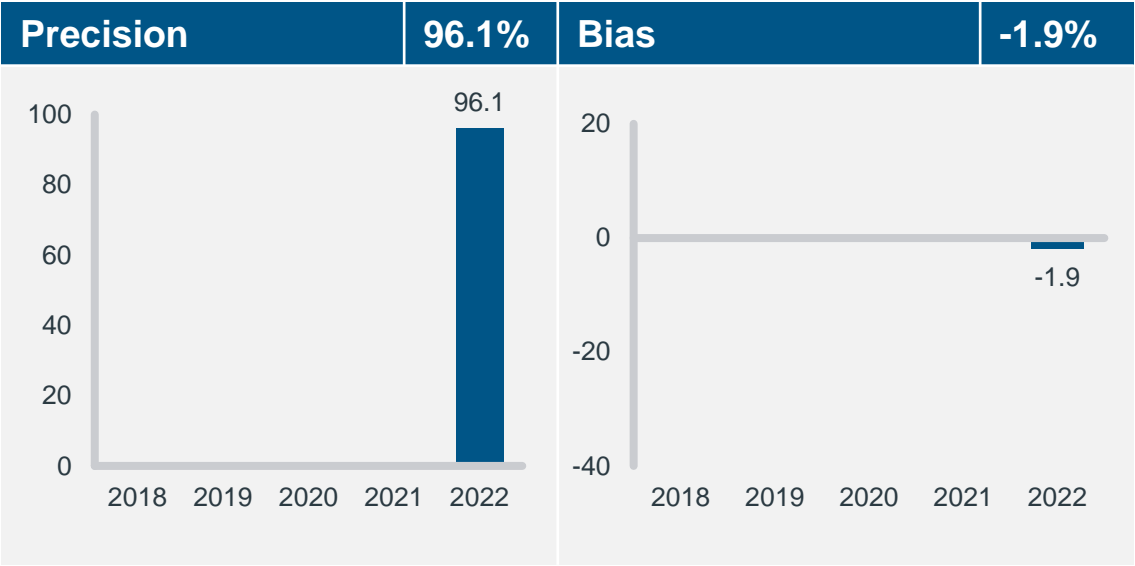
# Participating Companies	# Forms Validated	% Market Validated
19 (-2 vPY)	135 (-89 vPY)	11% (-4% vPY)



Romania Retail+Hospital Validation Study

2022 Validation Study

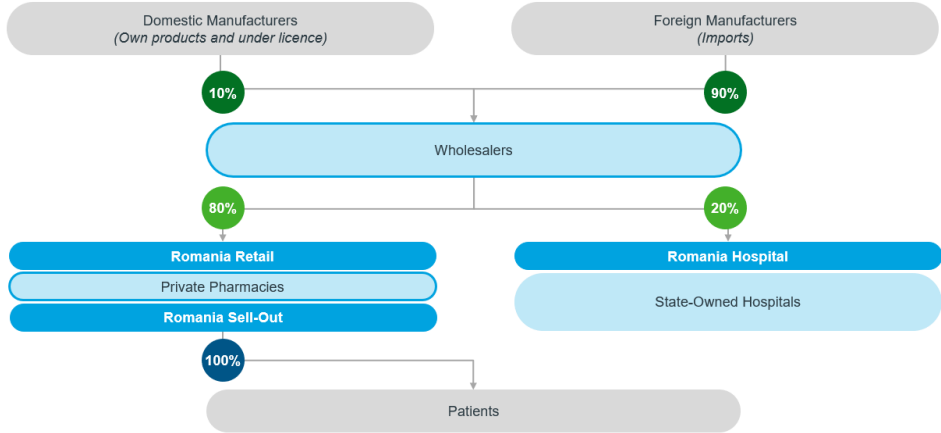
Validation Results



Outcomes

- Overall precision index at 96.1 percentage points in 2022
- Overall underestimation at 1.9 percentage points in 2022
- No action required from the statistical point of view

Distribution Channels Validated



Participation

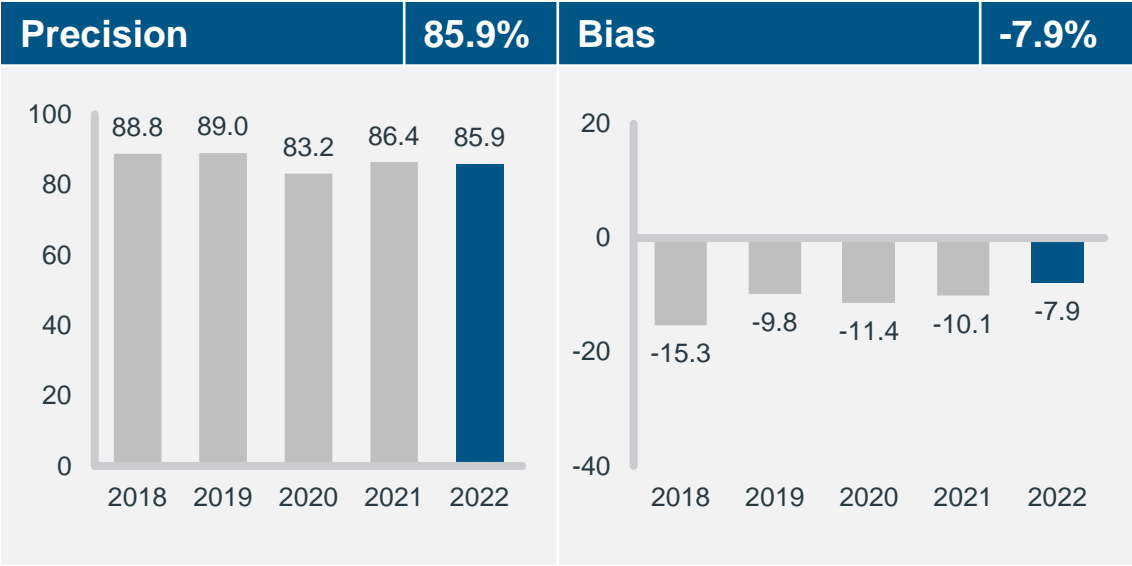
# Participating Companies	# Forms Validated	% Market Validated
23 (vPY)	558 (vPY)	33% (vPY)



Russia Retail+Hospital Validation Study

2022 Validation Study

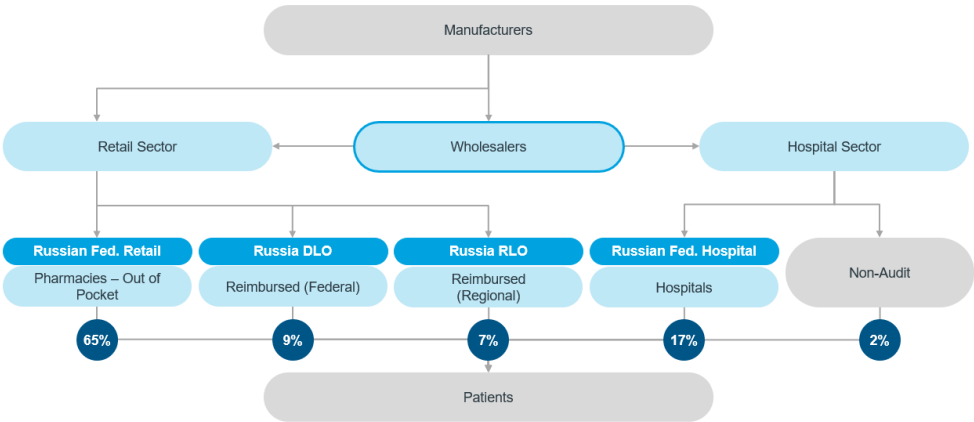
Validation Results



Outcomes

- Overall precision index declined by 0.5 percentage points in 2022
- Overall underestimation improved by 2.2 percentage points in 2022
- Increase number of pharmacies in panel for one fast growing pharmacy chain, add some new regional chains. Improve the quality checks by optimizing final data sign-off procedures

Distribution Channels Validated

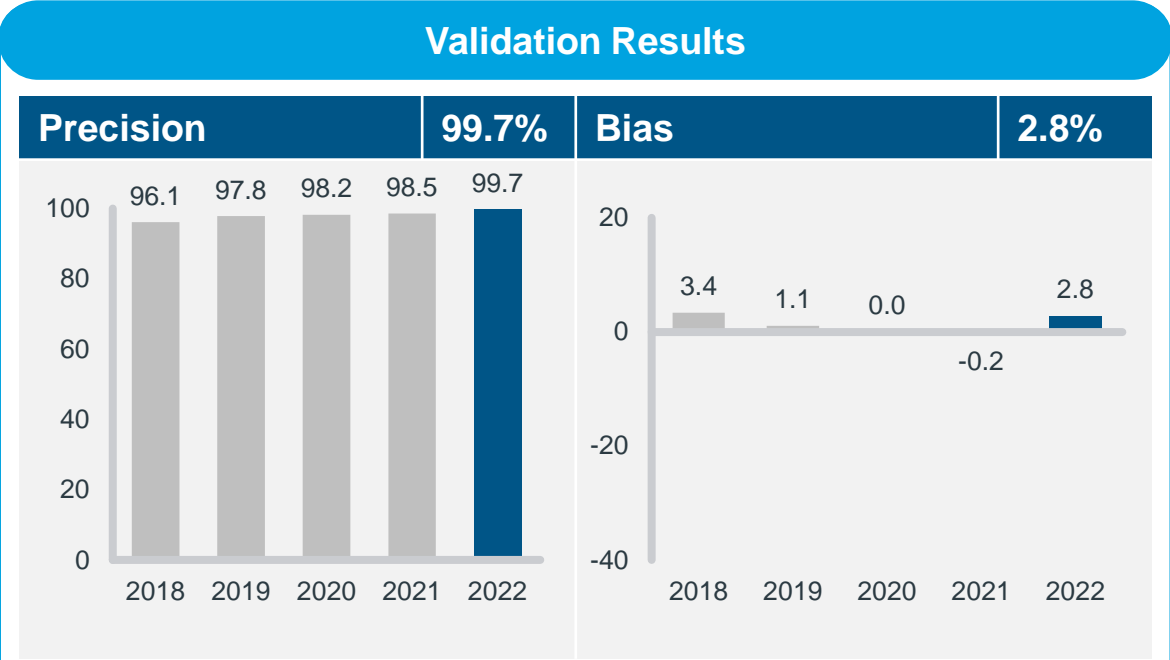


Participation

# Participating Companies	# Forms Validated	% Market Validated
131 (-11 vPY)	2,232 (-51 vPY)	41% (-4% vPY)

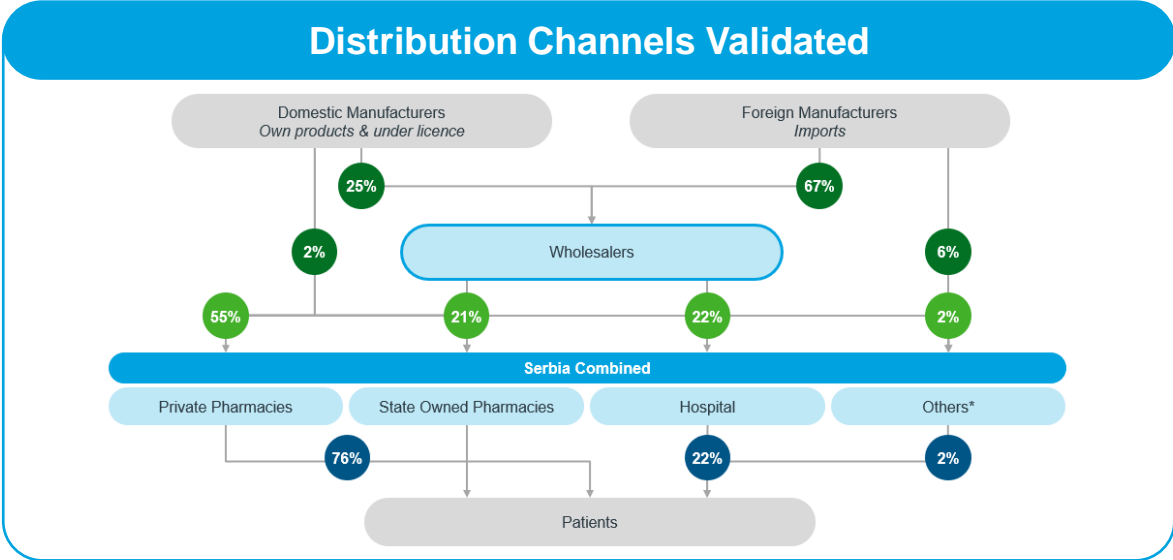
Serbia Retail+Hospital Validation Study

2022 Validation Study



Outcomes

- Overall precision index improved by 1.2 percentage points in 2022
- Overall bias turned from 0.2% underestimation to 2.8% overestimation in 2022
- No action required from the statistical point of view

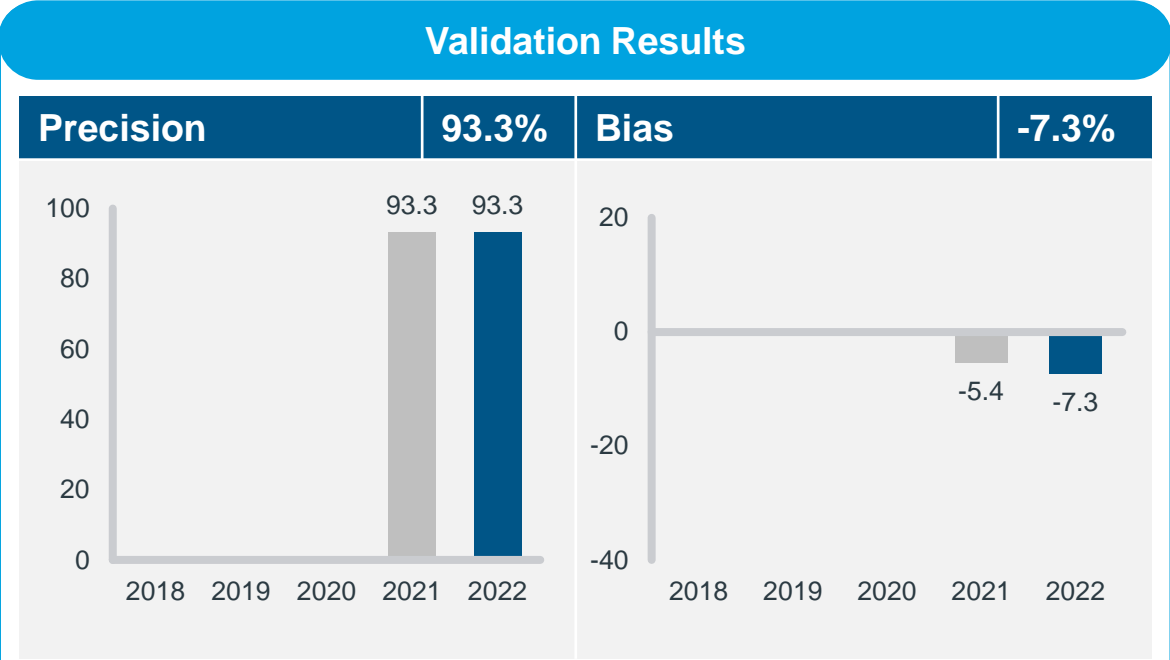


Participation

# Participating Companies	# Forms Validated	% Market Validated
25 (+3 vPY)	536 (+95 vPY)	47% (+8% vPY)

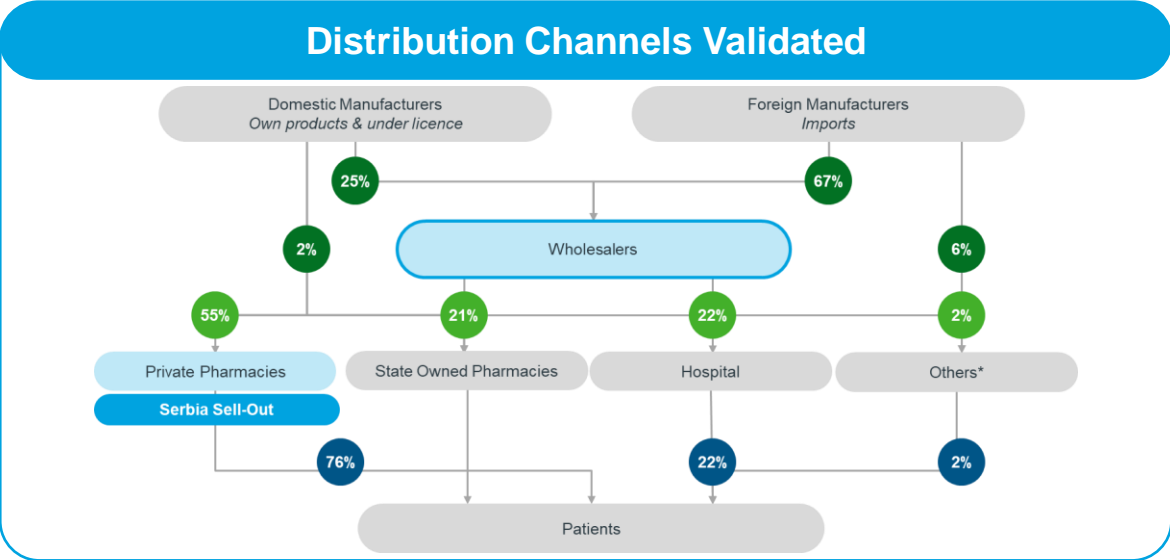
Serbia PharmaTrend Validation Study

2022 Validation Study



Outcomes

- Overall precision index remained unchanged in 2022
- Overall underestimation increased by 1.9 percentage points in 2022
- Review of projection panel



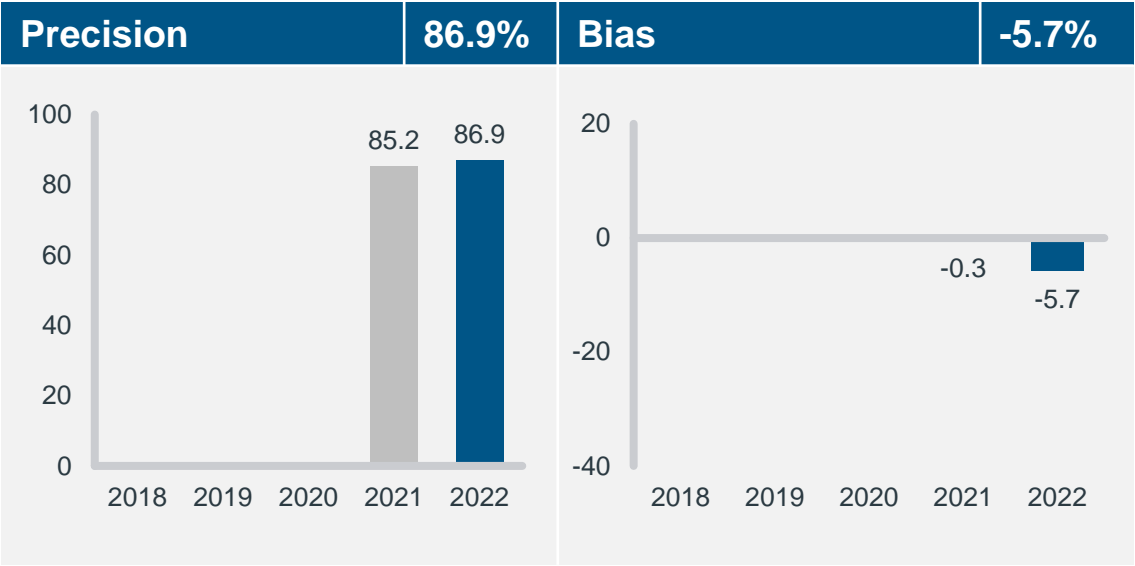
Participation

# Participating Companies	# Forms Validated	% Market Validated
23 (+2 vPY)	397 (+110 vPY)	42% (+7% vPY)

Serbia OTC Validation Study

2022 Validation Study

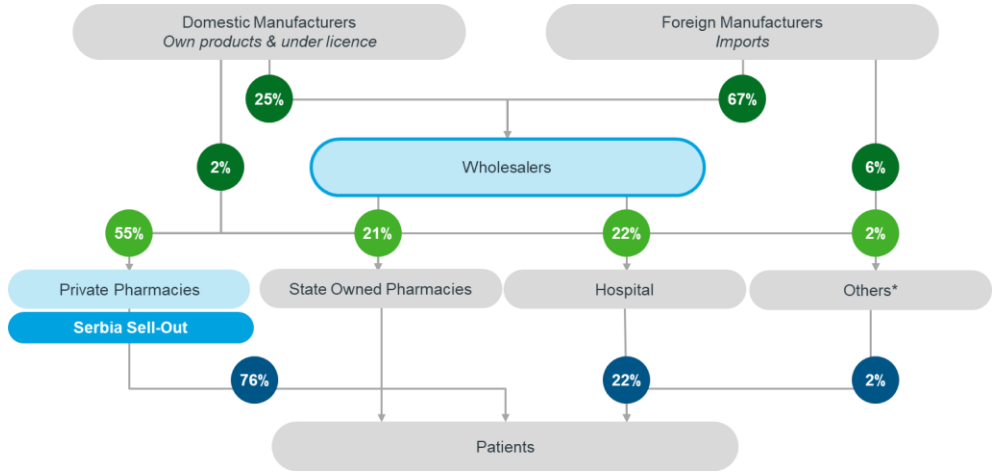
Validation Results



Outcomes

- Overall precision index improved by 1.7 percentage points in 2022
- Overall underestimation increased by 5.4 percentage points in 2022
- Review of projection panel

Distribution Channels Validated

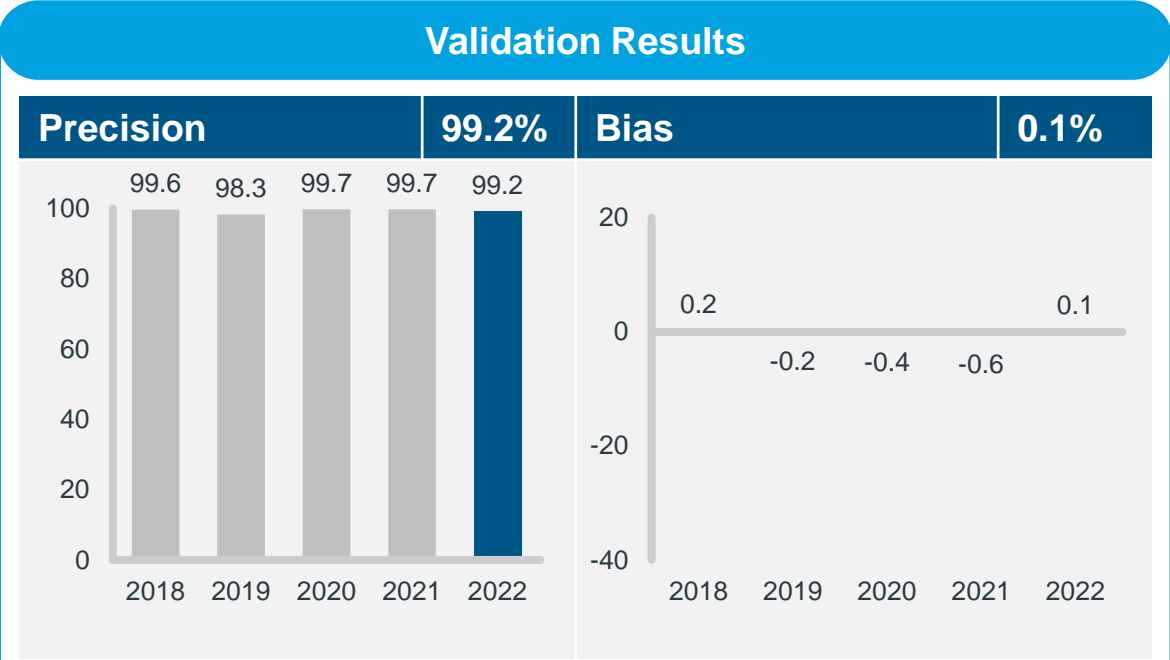


Participation

# Participating Companies	# Forms Validated	% Market Validated
17 (+3 vPY)	102 (+27 vPY)	43% (+11% vPY)

Slovakia Retail+Hospital Validation Study

2022 Validation Study



Outcomes

✓

✓

✓

Overall precision index declined by 0.5 percentage points in 2022

Overall bias turned from 0.6 underestimation to 0.1% overestimation in 2022

No action required from the statistical point of view

Distribution Channels Validated

*Others: Special distribution channels, deliveries to the army

Participation

# Participating Companies	# Forms Validated	% Market Validated
14 (+2 vPY)	700 (+192 vPY)	28% (+10% vPY)

Back

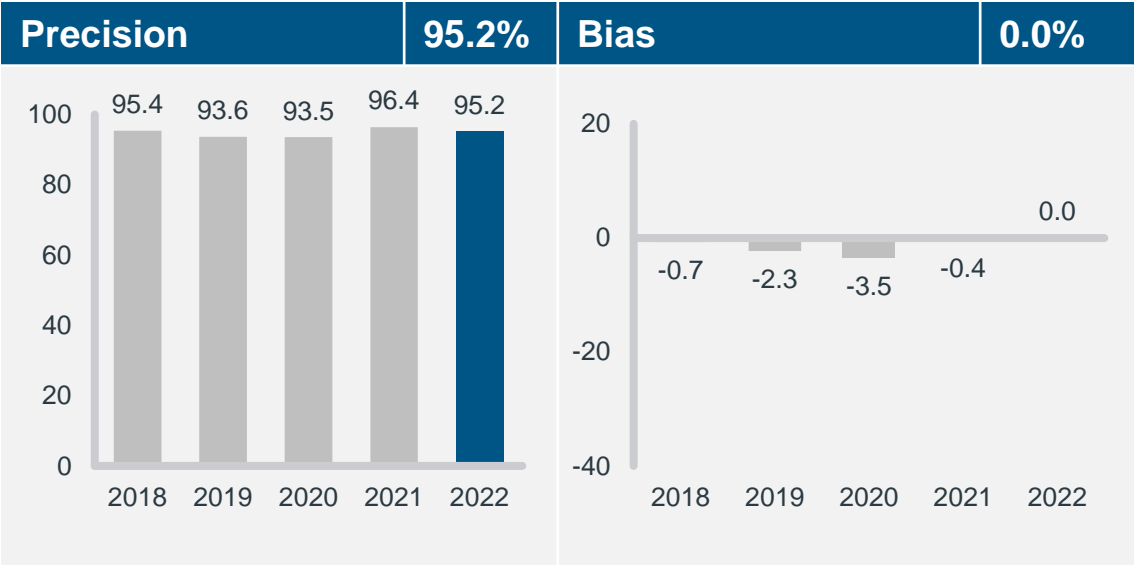
IQVIA

94

Slovakia PharmaTrend Validation Study

2022 Validation Study

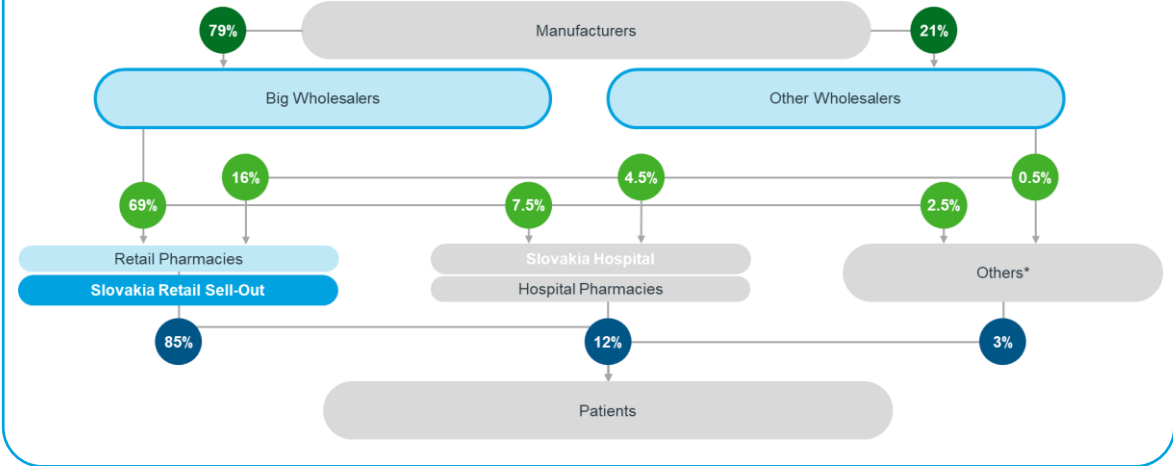
Validation Results



Outcomes

- Overall precision index declined by 1.2 percentage points in 2022
- Overall bias turned from 0.4% underestimation to no bias in 2022
- No action required from the statistical point of view

Distribution Channels Validated



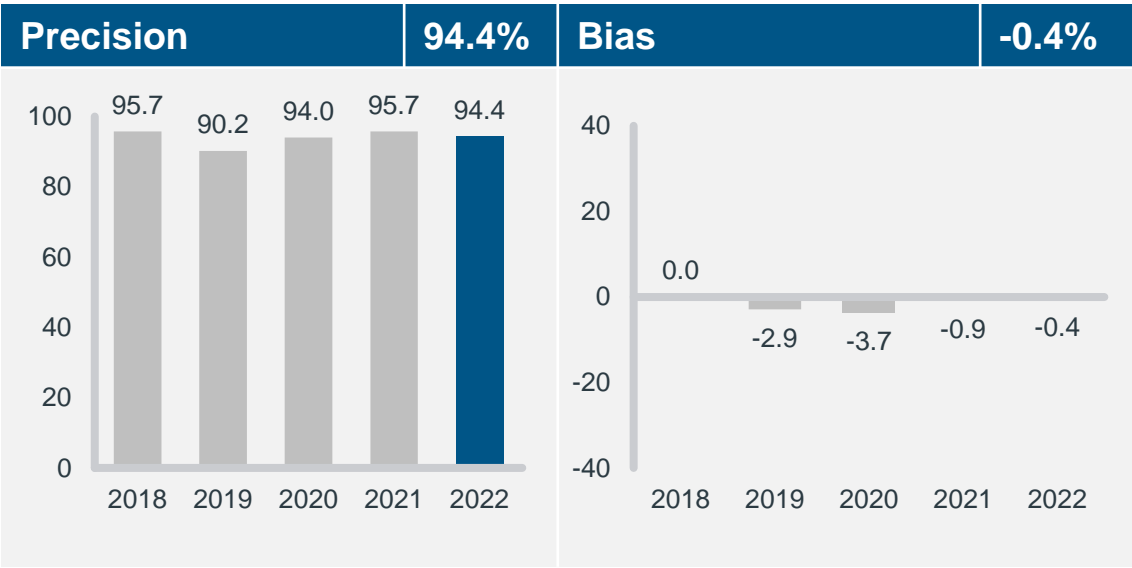
Participation

# Participating Companies	# Forms Validated	% Market Validated
14 (+2 vPY)	513 (+78 vPY)	23% (+5% vPY)

Slovakia OTC Validation Study

2022 Validation Study

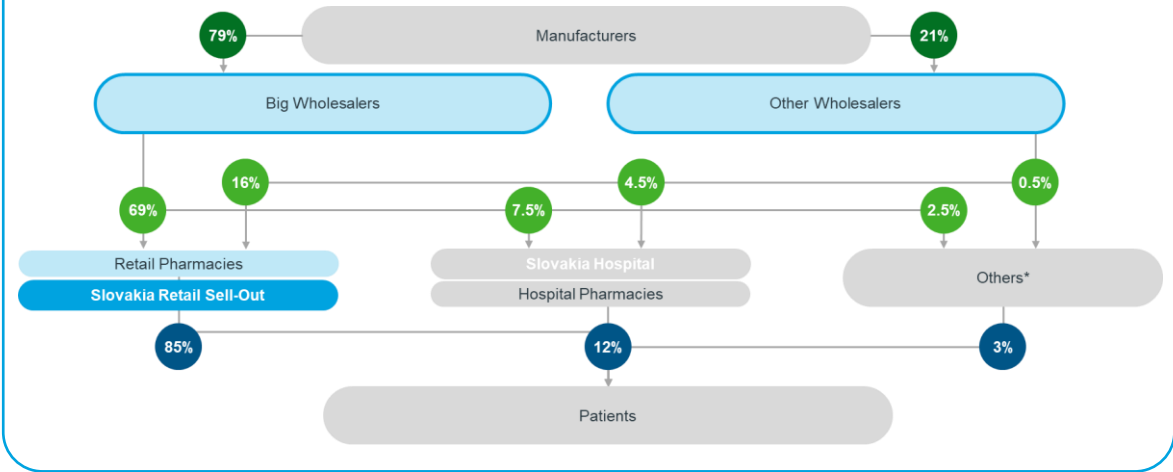
Validation Results



Outcomes

- Overall precision index declined by 1.3 percentage points in 2022
- Overall underestimation improved by 0.5 percentage points in 2022
- No action required from the statistical point of view

Distribution Channels Validated

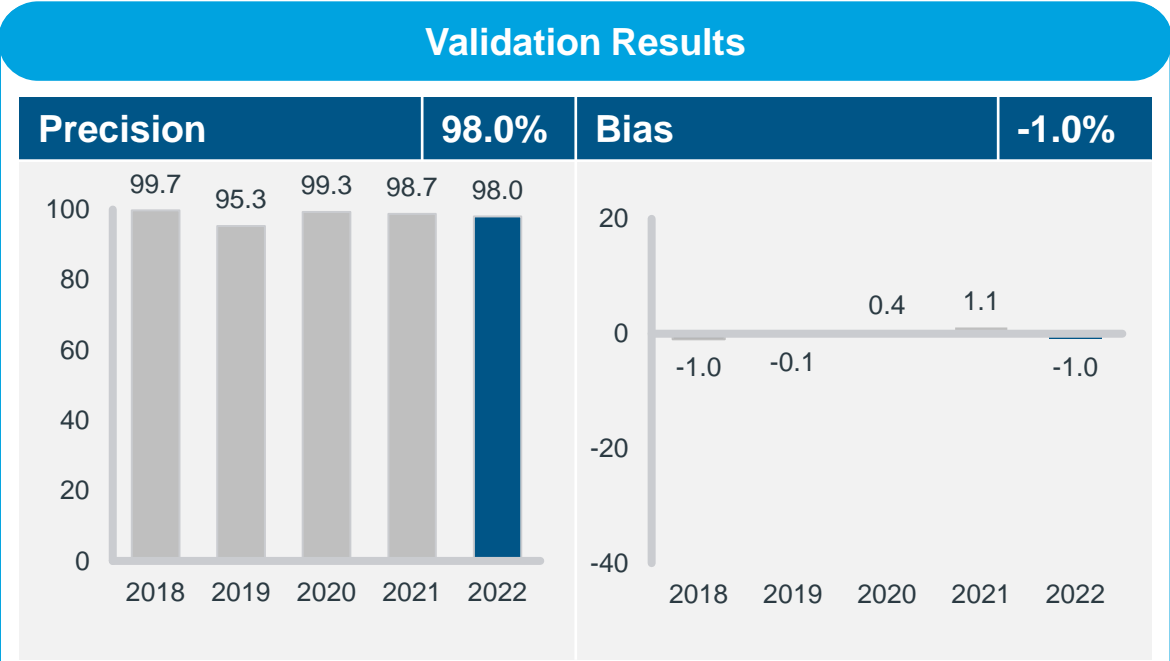


Participation

# Participating Companies	# Forms Validated	% Market Validated
9 <i>(no change vPY)</i>	76 <i>(+1 vPY)</i>	14% <i>(+1% vPY)</i>

Slovenia Retail+Hospital Validation Study

2022 Validation Study

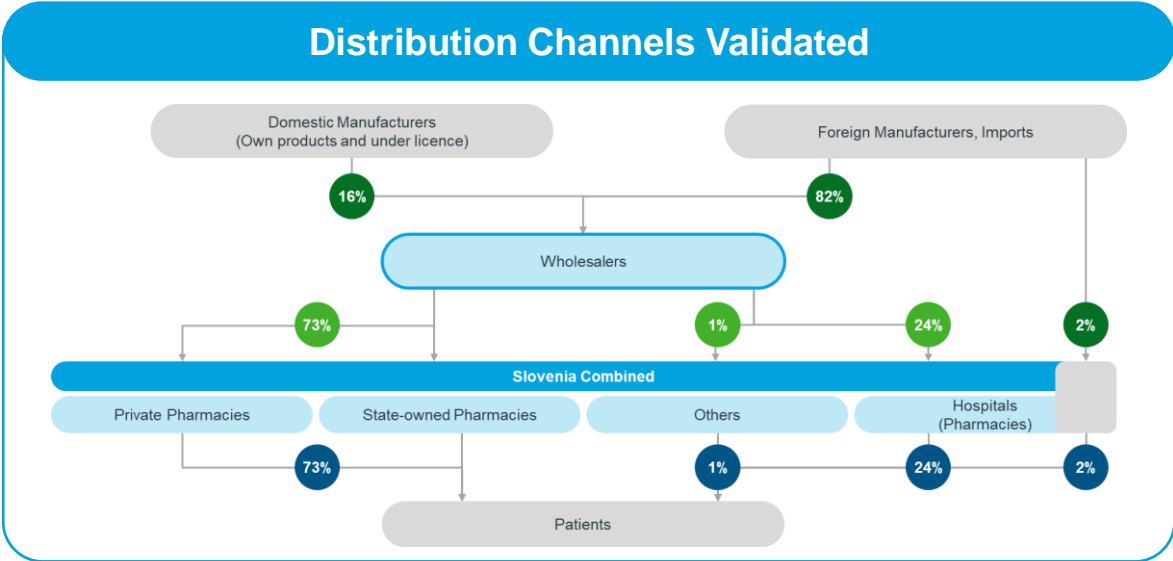


Outcomes

Overall precision index declined slightly by 0.7 percentage points in 2022

Overall bias turned from 1.1% overestimation to 1% underestimation in 2022

No action required from the statistical point of view



Participation

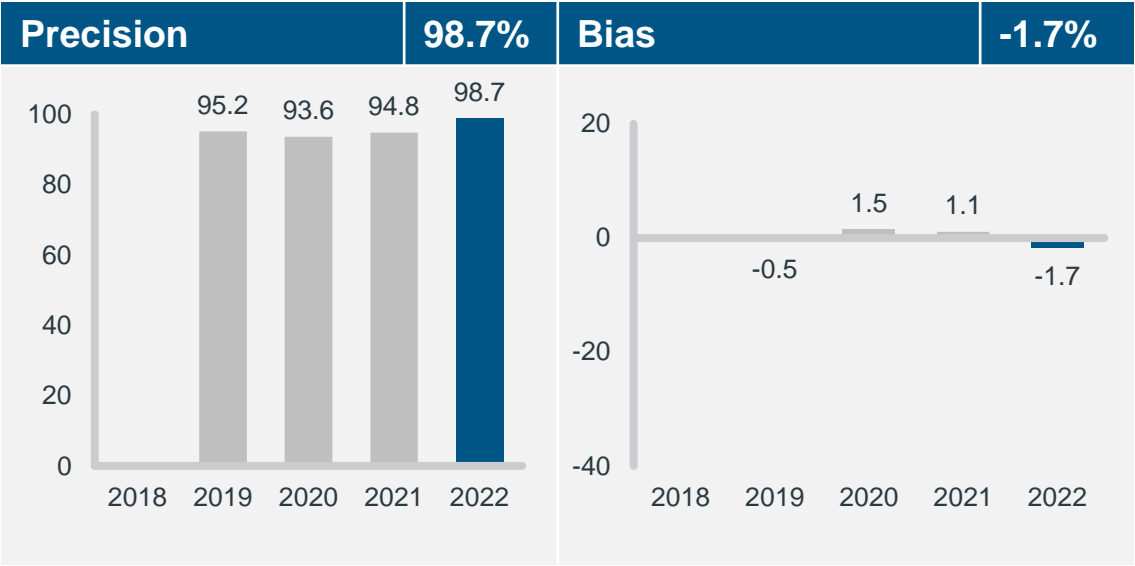
# Participating Companies	# Forms Validated	% Market Validated
10 (-3 vPY)	213 (-55 vPY)	10% (-1% vPY)



Spain Retail Validation Study

2022 Validation Study

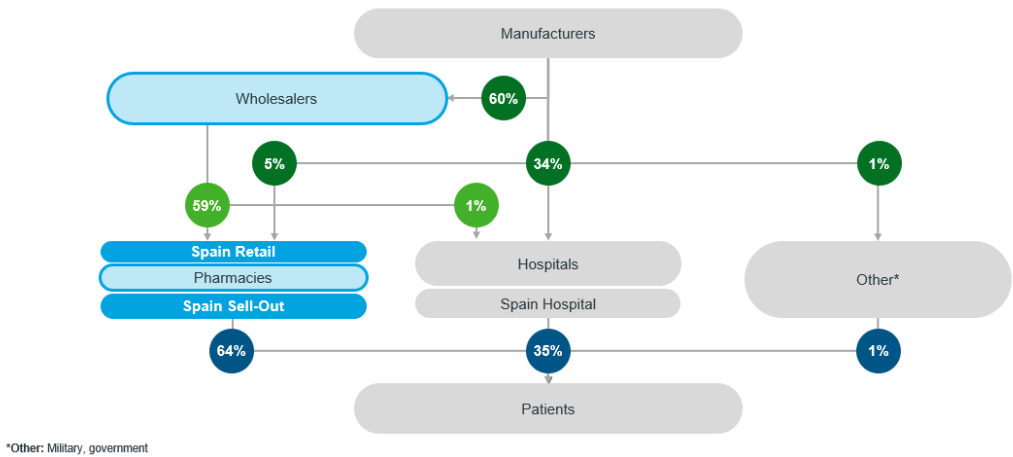
Validation Results



Outcomes

- Overall precision index improved by 3.9 percentage points in 2022
- Overall bias turned from 1.1% overestimation to 1.7% underestimation in 2022
- No action required from the statistical point of view

Distribution Channels Validated



Participation

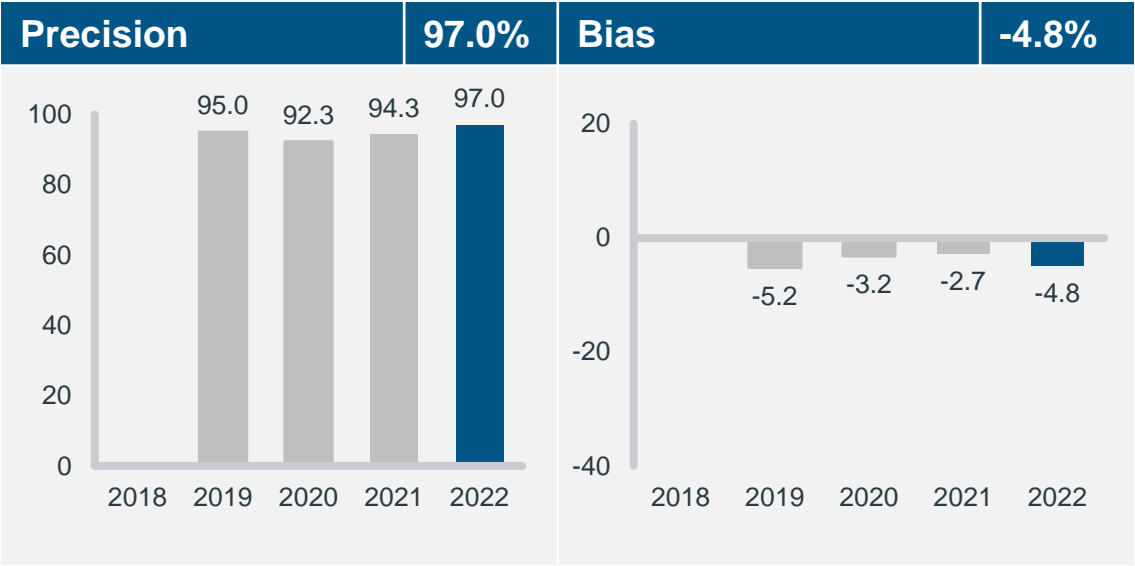
# Participating Companies	# Forms Validated	% Market Validated
24 (-2 vPY)	845 (-152 vPY)	14% (-6% vPY)



Spain PharmaTrend Validation Study

2022 Validation Study

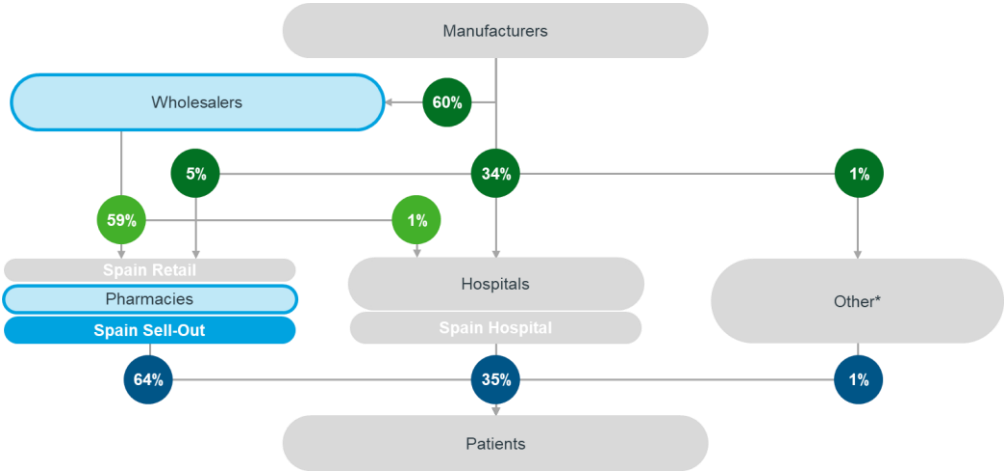
Validation Results



Outcomes

- Overall precision index improved by 2.7 percentage points in 2022
- Overall underestimation increased by 2.1 percentage points in 2022
- Increase number of validation participants; Review projection levels

Distribution Channels Validated



Participation

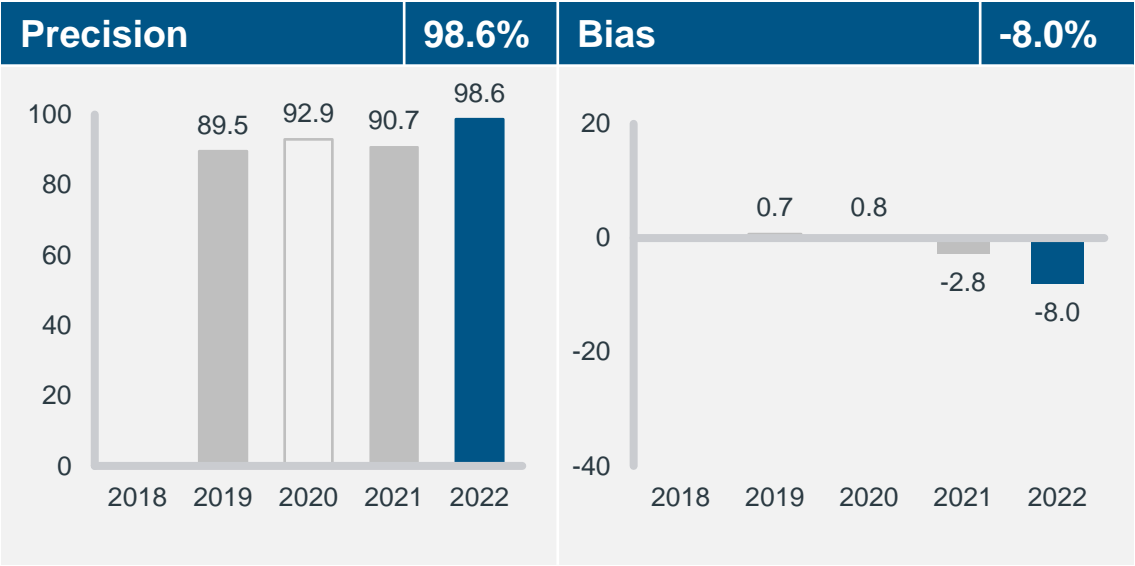
# Participating Companies	# Forms Validated	% Market Validated
24 (-2 vPY)	819 (-145 vPY)	13% (-3% vPY)



Spain OTC Validation Study

2022 Validation Study

Validation Results

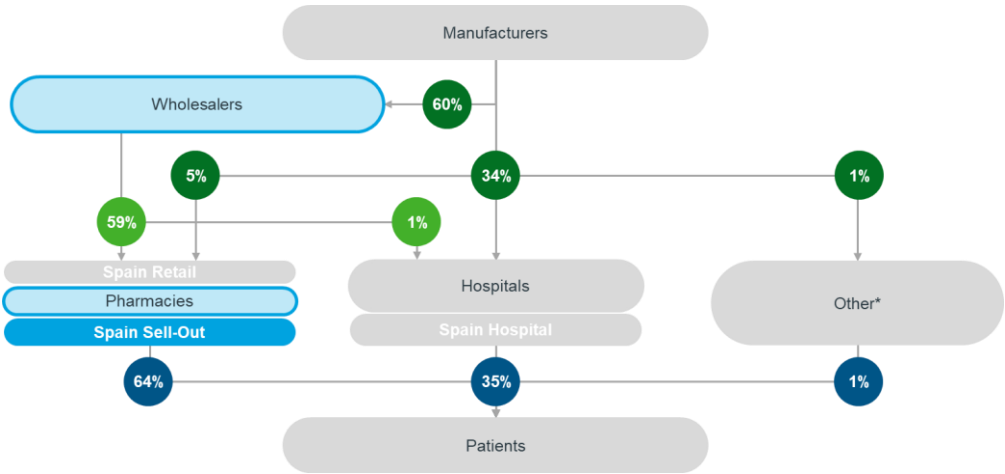


Outcomes



- Overall precision index improved by 7.9 percentage points in 2022
- Overall underestimation increased by 5.2 percentage points in 2022
- Increase number of validation participants; Review projection levels

Distribution Channels Validated



Participation

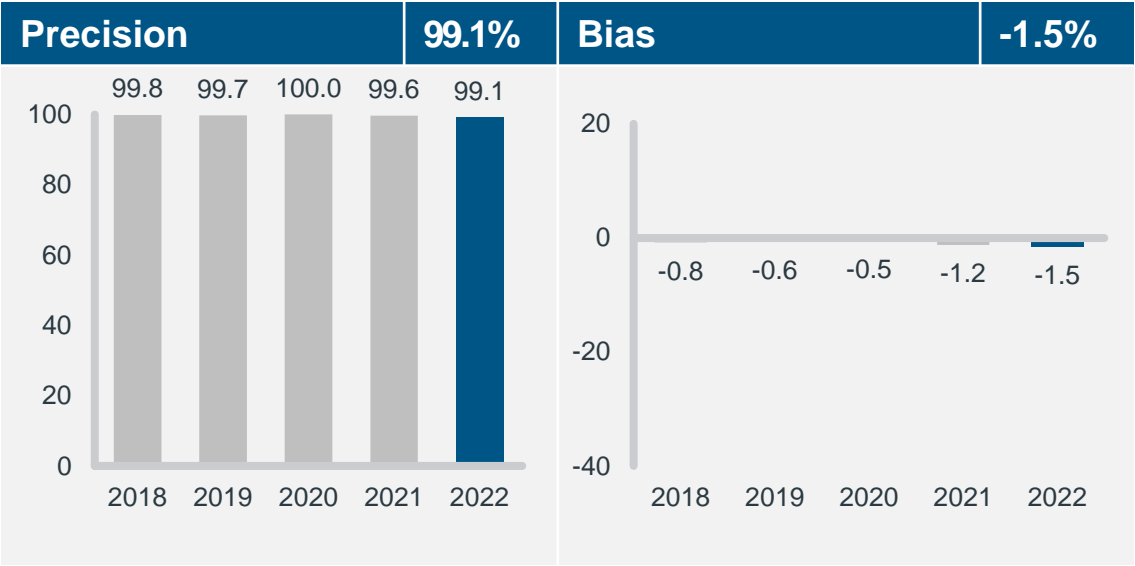
# Participating Companies	# Forms Validated	% Market Validated
9 (-1 vPY)	72 (+18 vPY)	15% (+2% vPY)



Switzerland Retail+Hospital Validation Study

2022 Validation Study

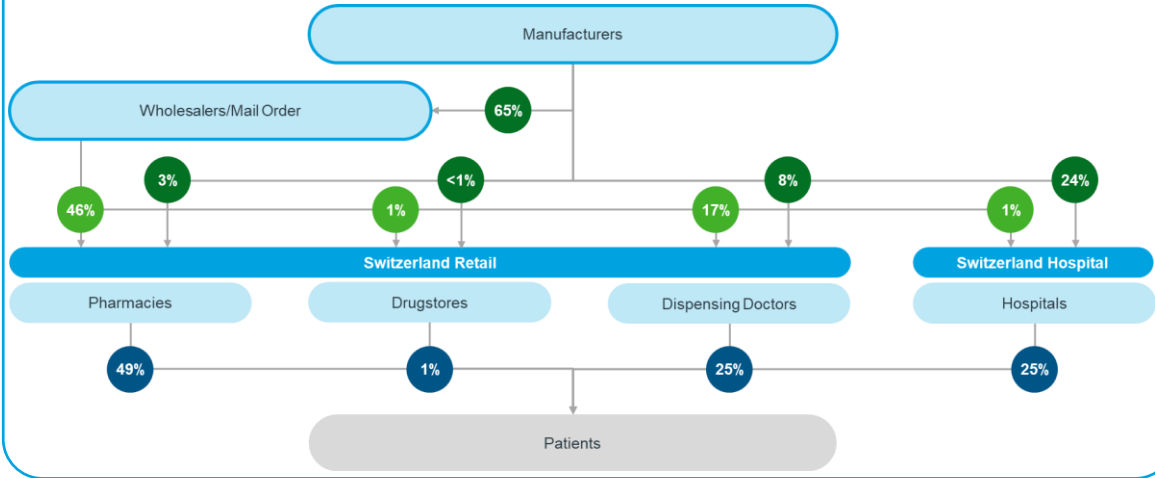
Validation Results



Outcomes

- Overall precision index declined by 0.5 percentage points in 2022
- Overall underestimation increased by 0.3 percentage points in 2022
- No action required from the statistical point of view

Distribution Channels Validated



Participation

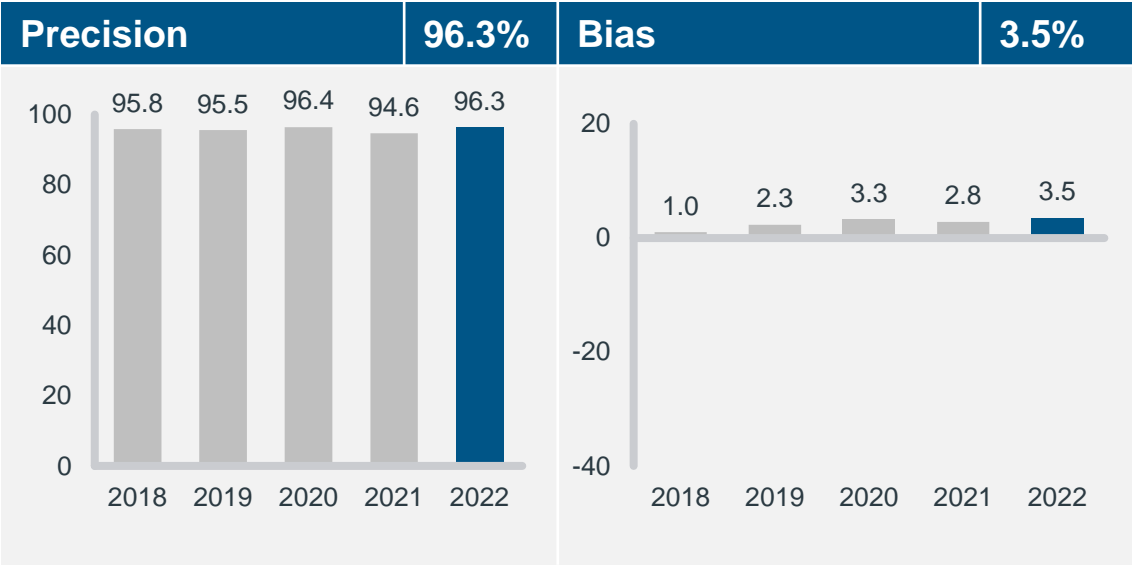
# Participating Companies	# Forms Validated	% Market Validated
35 (-15 vPY)	1,482 (-379 vPY)	33% (-8% vPY)



Switzerland PharmaTrend Validation Study

2022 Validation Study

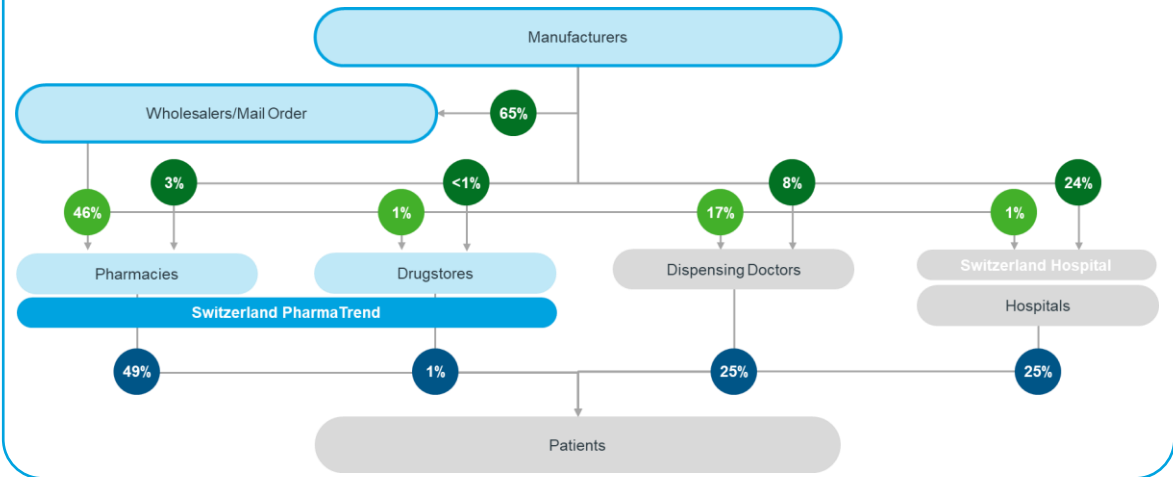
Validation Results



Outcomes

- Overall precision index improved by 1.7 percentage points in 2022
- Overall overestimation increased slightly by 0.7 percentage points in 2022
- Enhance quality control metrics; Review projection levels

Distribution Channels Validated



Participation

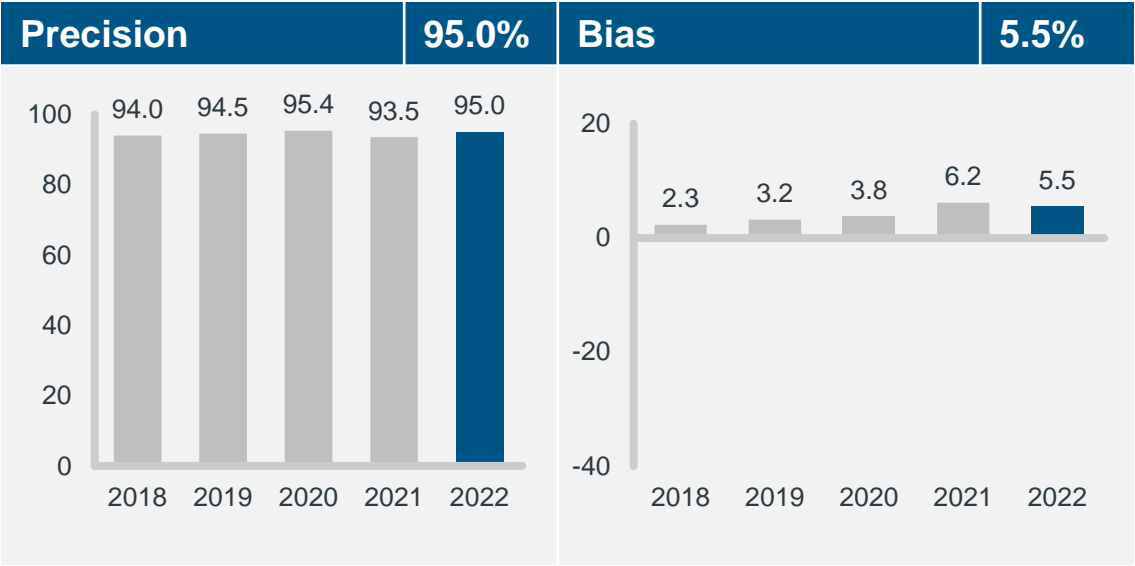
# Participating Companies	# Forms Validated	% Market Validated
175 (-4 vPY)	3,648 (-59 vPY)	92% (+1% vPY)



Switzerland OTC Validation Study

2022 Validation Study

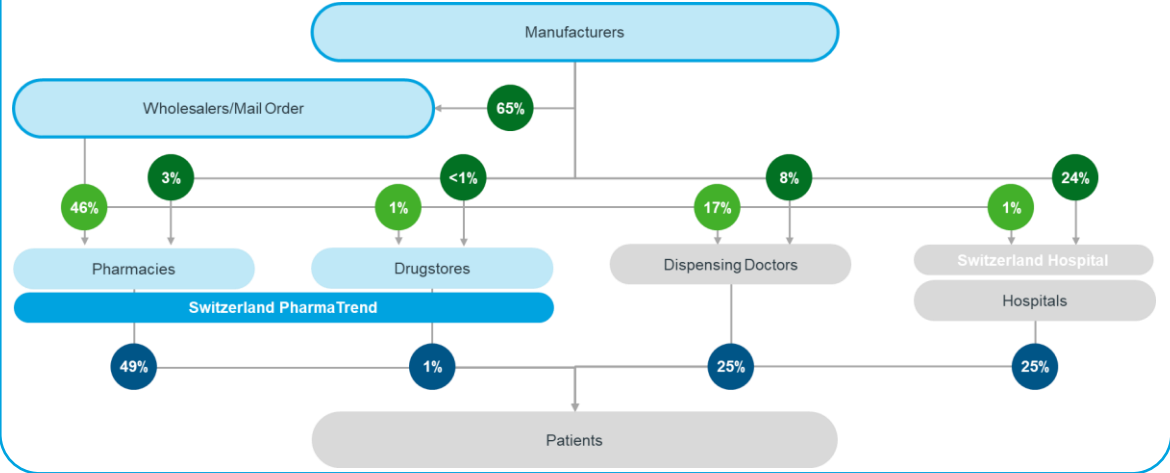
Validation Results



Outcomes

- Overall precision index improved by 1.5 percentage points in 2022
- Overall overestimation improved slightly by 0.7 percentage points in 2022
- Enhance quality control metrics; Review projection levels

Distribution Channels Validated



Participation

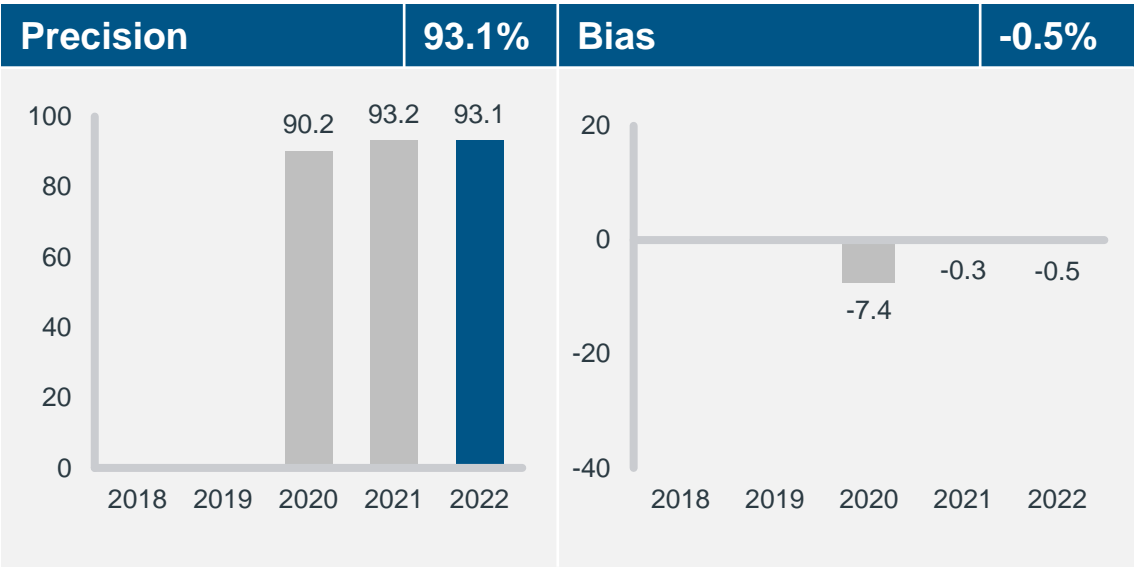
# Participating Companies	# Forms Validated	% Market Validated
99 (-4 vPY)	1,072 (-15 vPY)	96% (+3% vPY)



United Kingdom Retail Validation Study

2022 Validation Study

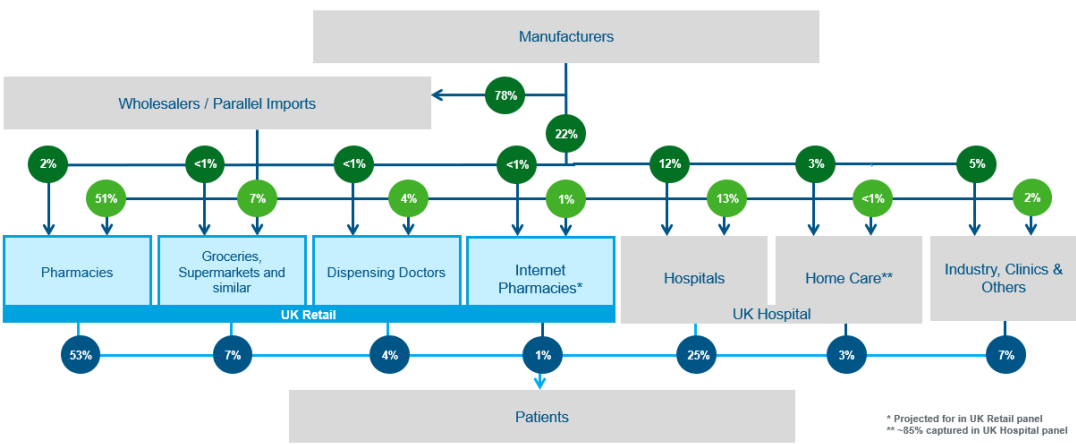
Validation Results



Outcomes

- Result are based on Rx count at Molecule/Form/Strength level
- Overall precision declined by 0.1 percentage points in 2022
- Overall underestimation increased by 0.2 percentage points in 2022
- No action required from the statistical point of view

Distribution Channels Validated



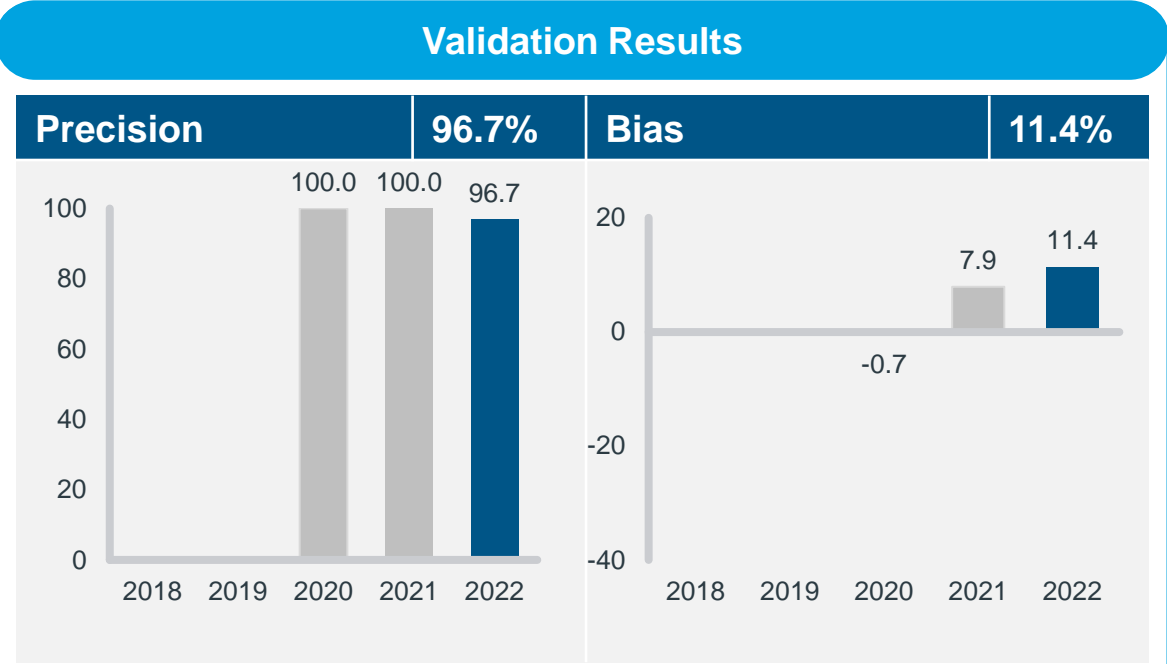
Participation

# Participating Molecules	# Molecule/Form/Strength Validated	% Market Validated
628 (+11 vPY)	2,142 (-2 vPY)	94% (no change vPY)



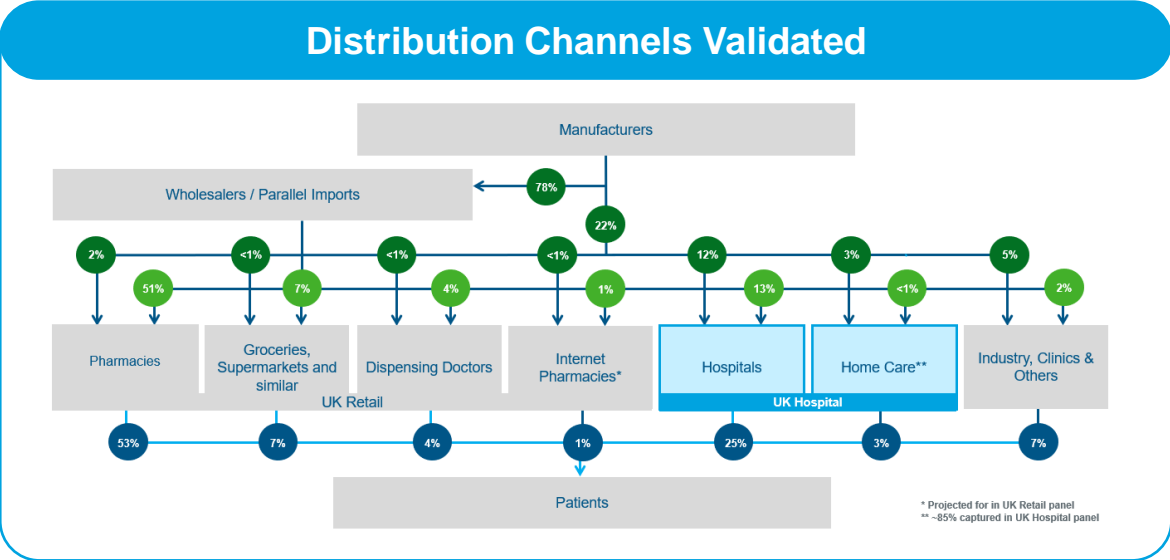
United Kingdom Hospital Validation Study

2022 Validation Study



Outcomes

- Result are based on Molecule/Form/Strength level
- Overall precision declined by 3.3 percentage points in 2022
- Overall overestimation increased by 3.5 percentage points in 2022
- Review product bridging



Participation

# Participating Molecules	# Molecule/Form/Strength Validated	% Market Validated
381 (-63 vPY)	666 (-131 vPY)	38% (-23% vPY)

Africa, Middle East, South Asia



Countries

Africa

- Algeria
- Morocco
- South Africa
- Tunisia

South Asia

- Bangladesh

Middle East

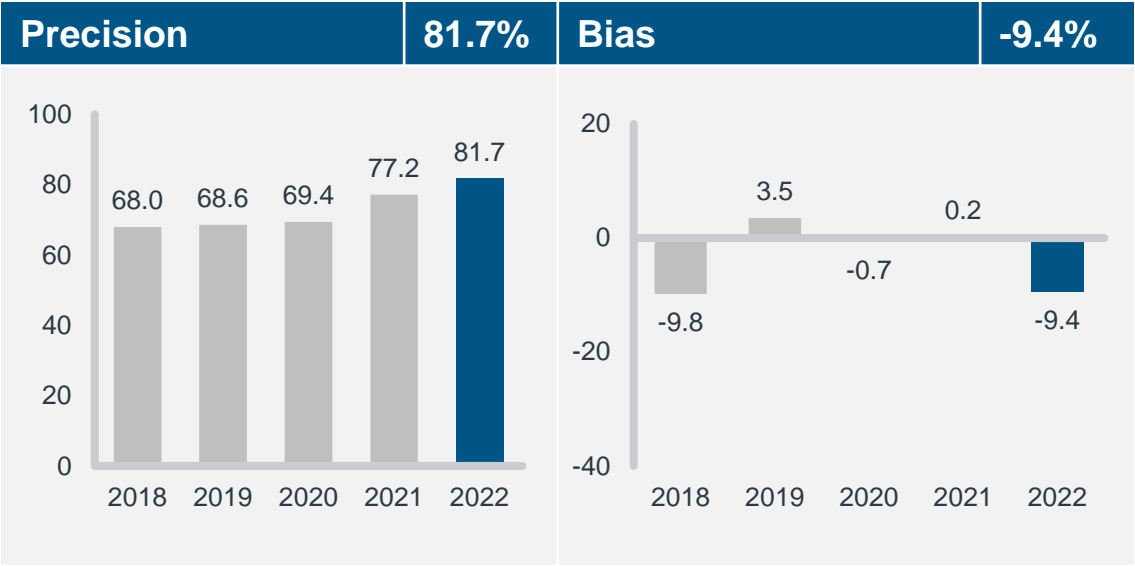
- Egypt
- Jordan
- Kuwait
- Saudi Arabia
- Turkey
- United Arab Emirates



Algeria Retail Validation Study

2022 Validation Study

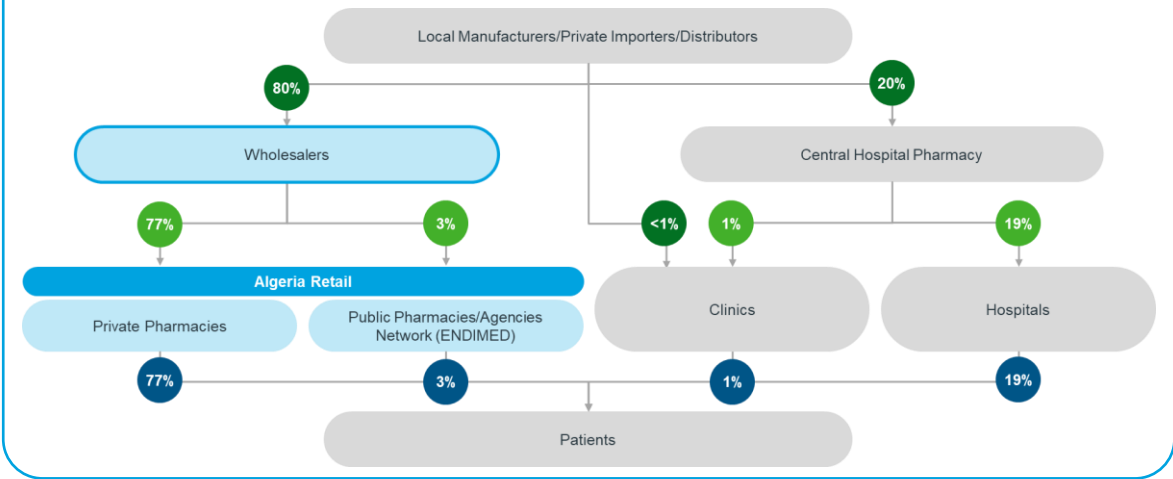
Validation Results



Outcomes

- Overall precision index improved by 4.5 percentage points in 2022
- Overall bias turned from 0.2% overestimation to 9.4% underestimation in 2022
- Review projection levels; Increase number of validation participants.

Distribution Channels Validated



Participation

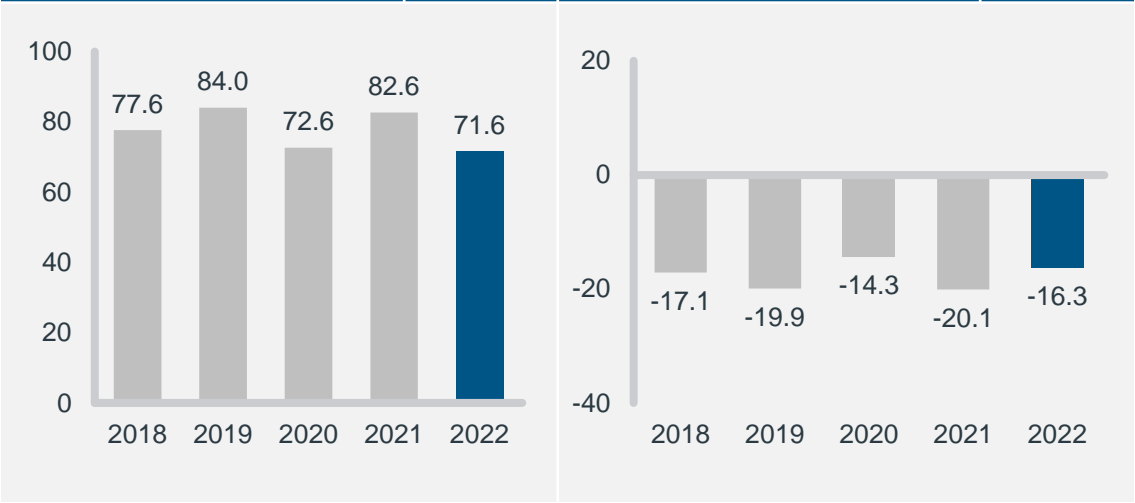
# Participating Companies	# Forms Validated	% Market Validated
16 (-2 vPY)	320 (-118 vPY)	30% (-11% vPY)

Bangladesh Retail Validation Study

2022 Validation Study

Validation Results

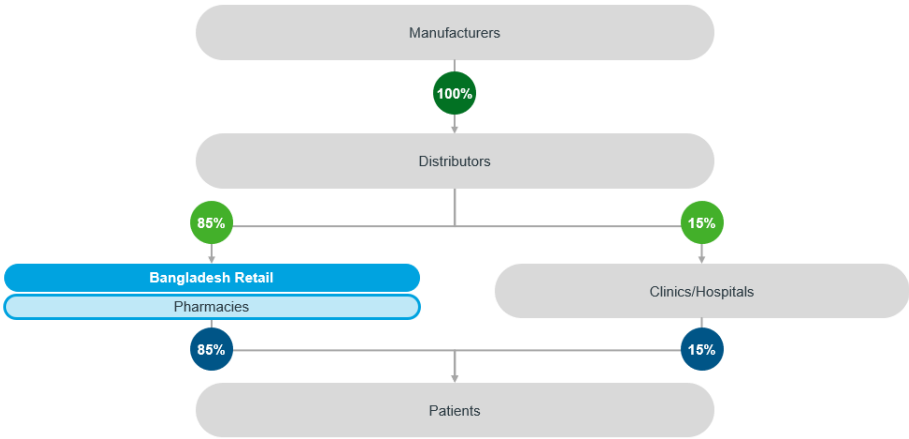
Precision	71.6%	Bias	-16.3%
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Outcomes

- Overall precision index declined by 11 percentage points in 2022
- Overall underestimation improved by 3.8 percentage points in 2022
- Update and implement new universe; Increase number of validation participants.

Distribution Channels Validated



Participation

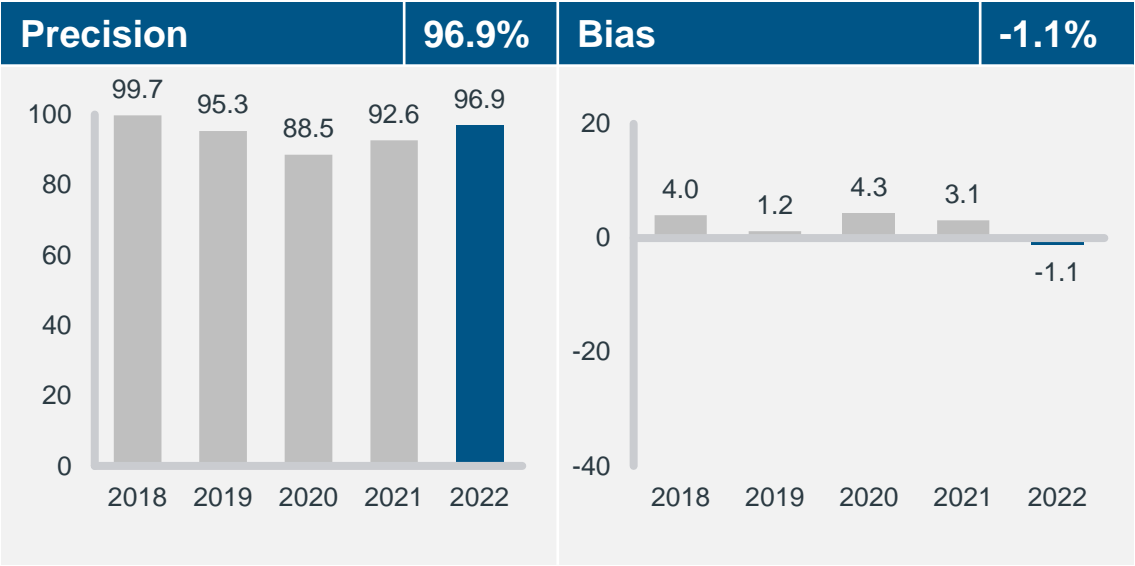
# Participating Companies	# Forms Validated	% Market Validated
24 (+1 vPY)	1,891 (-236 vPY)	42% (-4% vPY)



Egypt Retail Validation Study

2022 Validation Study

Validation Results

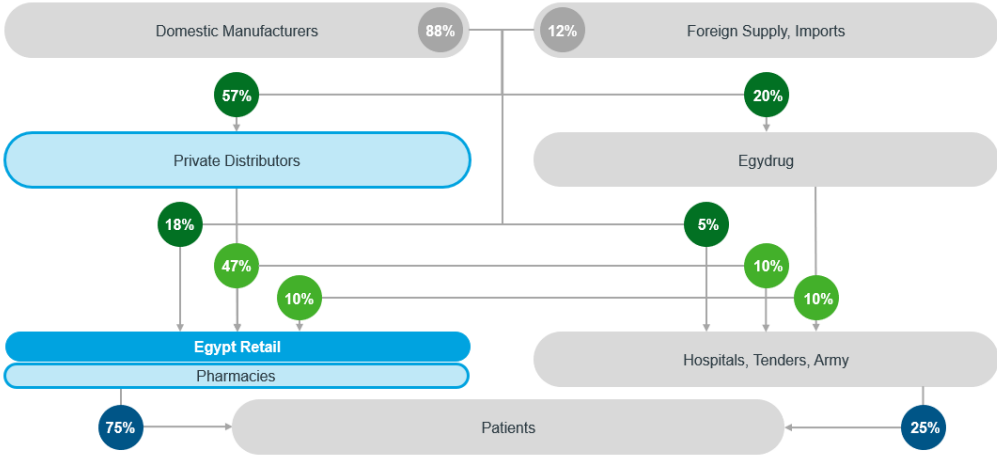


Outcomes



- Overall precision index improved by 4.3 percentage points in 2022
- Overall bias turned from 3.1% overestimation to 1.1% underestimation in 2022
- No action required from the statistical point of view

Distribution Channels Validated



Participation

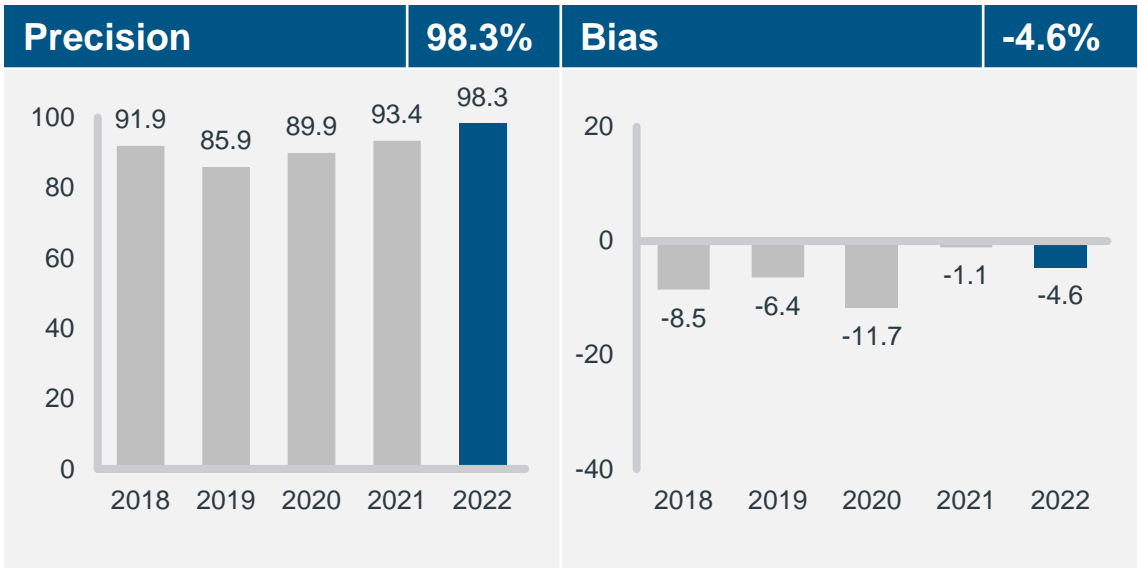
# Participating Companies	# Forms Validated	% Market Validated
36 (-14 vPY)	508 (-12 vPY)	21% (-3% vPY)



Jordan Retail Validation Study

2022 Validation Study

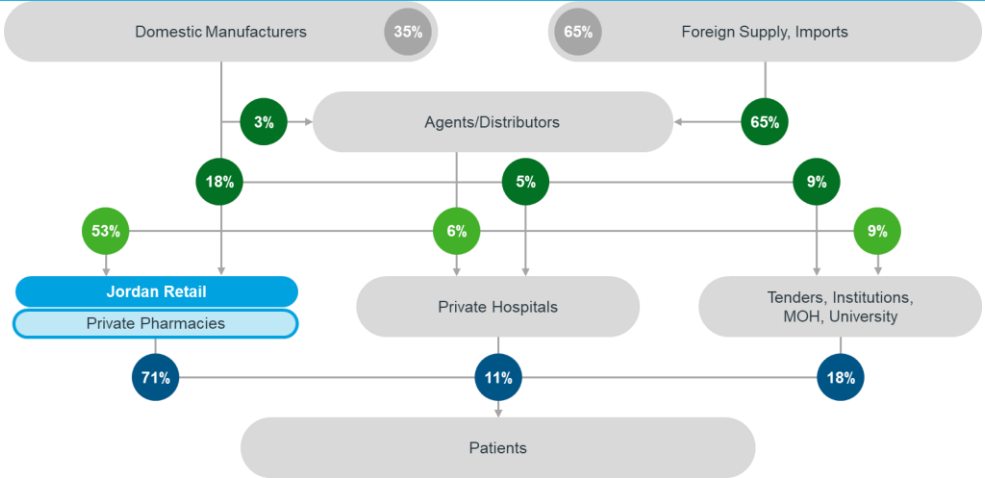
Validation Results



Outcomes

- Overall precision index improved by 4.9 percentage points in 2022
- Overall underestimation increased by 3.5 percentage points in 2022
- Increase number of validation participants

Distribution Channels Validated



Participation

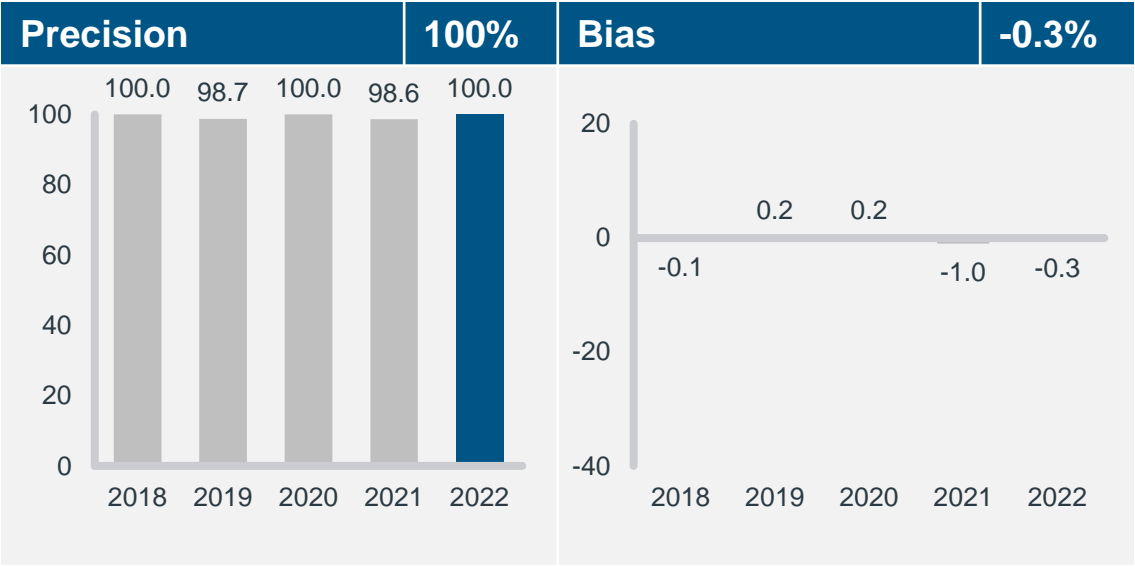
# Participating Companies	# Forms Validated	% Market Validated
14 (-13 vPY)	536 (-222 vPY)	28% (-19% vPY)



Kuwait Retail Validation Study

2022 Validation Study

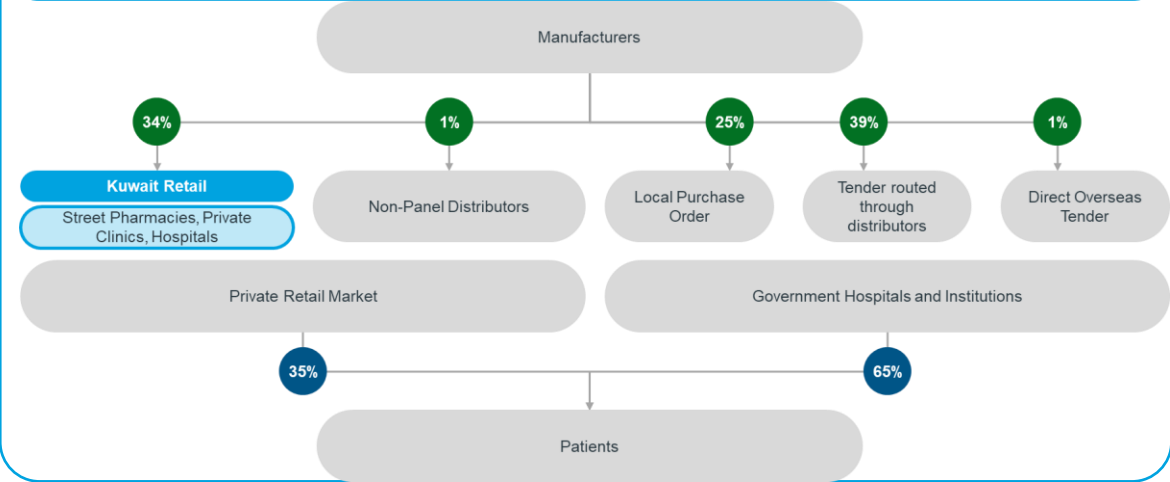
Validation Results



Outcomes

- Overall precision index improved by 1.4 percentage points in 2022
- Overall underestimation improved slightly by 0.7 percentage points in 2022
- No action required from the statistical point of view

Distribution Channels Validated



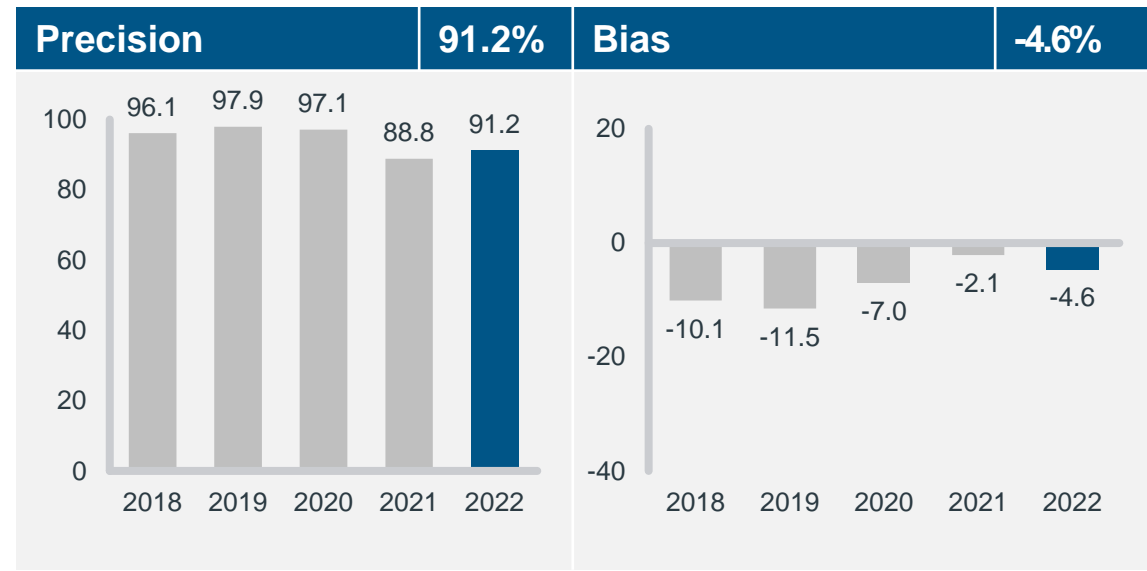
Participation

# Participating Companies	# Forms Validated	% Market Validated
16 (-2 vPY)	339 (-13 vPY)	30% (no change vPY)

Morocco Retail Validation Study

2022 Validation Study

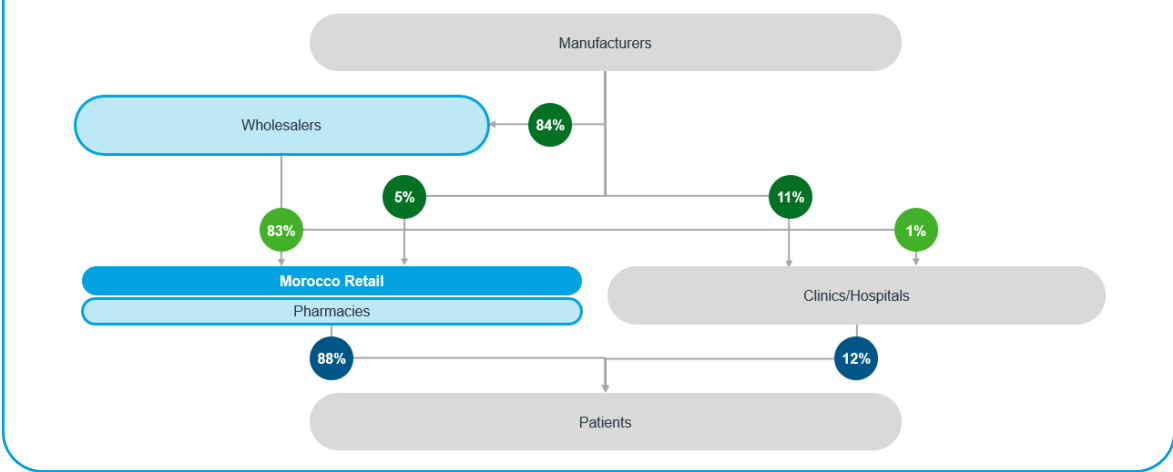
Validation Results



Outcomes

- Overall precision index improved by 2.4 percentage points in 2022
- Overall underestimation increased by 2.5 percentage points in 2022
- Increase number of validation participants

Distribution Channels Validated

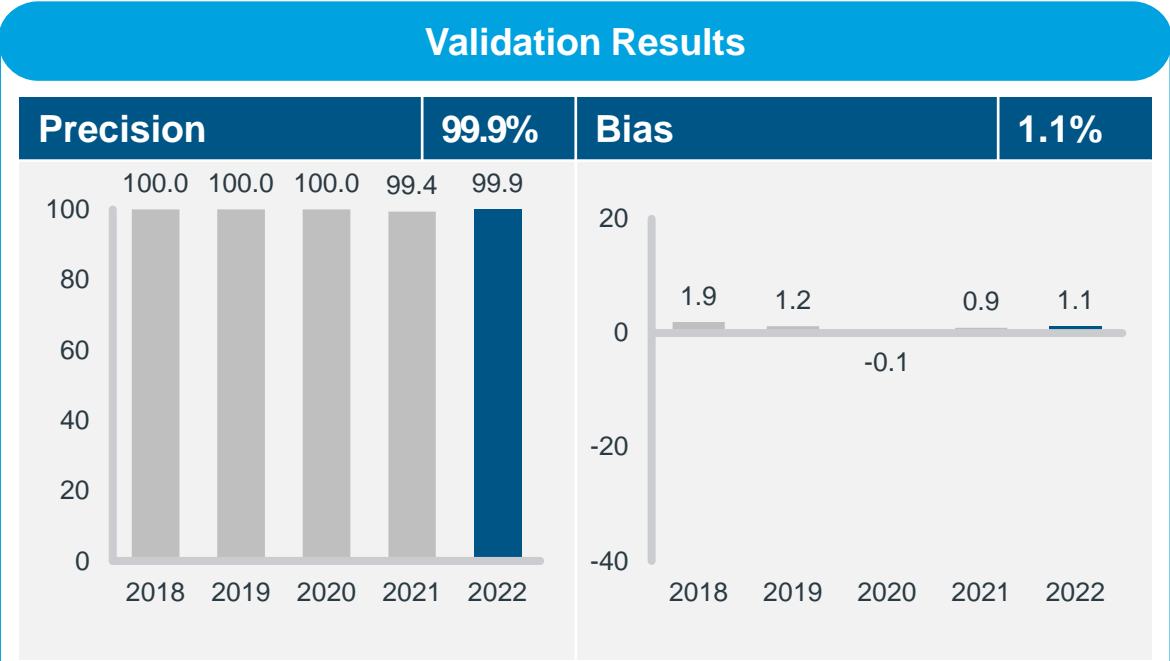


Participation

# Participating Companies	# Forms Validated	% Market Validated
52 (-21 vPY)	460 (-89 vPY)	26% (-4% vPY)

Saudi Arabia Retail Validation Study

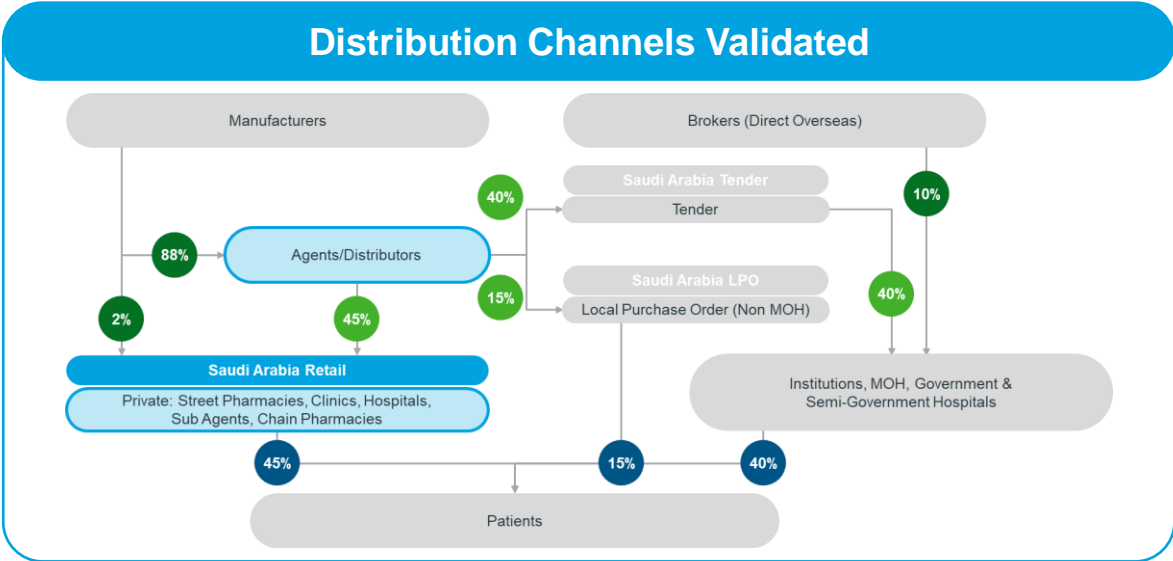
2022 Validation Study



Outcomes

Clipboard icon

- Overall precision index improved slightly by 0.5 percentage points in 2022
- Overall overestimation increased slightly by 0.2 percentage points in 2022
- No action required from the statistical point of view



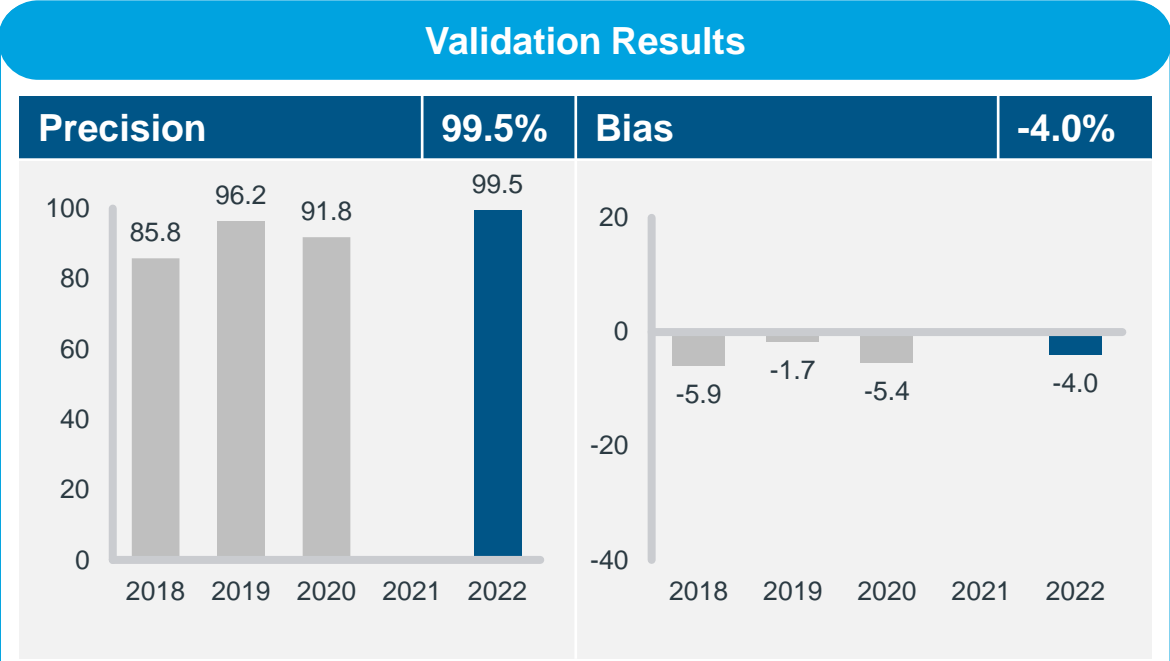
Participation

# Participating Companies	# Forms Validated	% Market Validated
43 (+3 vPY)	454 (-64 vPY)	26% (-2% vPY)



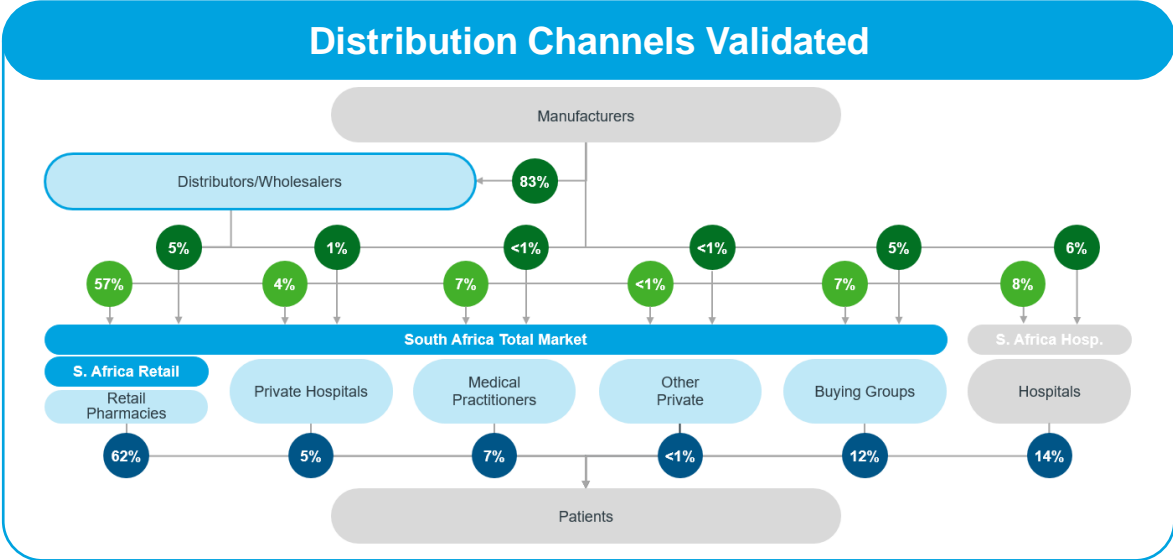
South Africa Total Private Market Validation Study

2022 Validation Study



Outcomes

- Overall precision index improved by 7.7 percentage points in 2022;
- Overall underestimation improved by 1.4 percentage points in 2022;
- Motivate more clients to participate in the validation study; Maintain corrective measures taken for audit reflection improvement



Participation

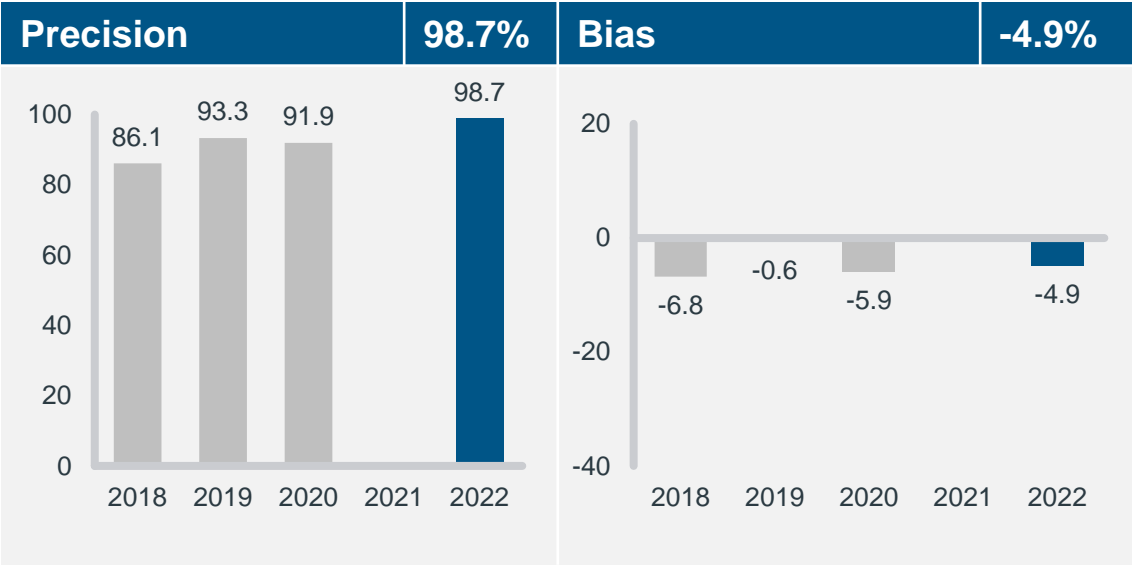
# Participating Companies	# Forms Validated	% Market Validated
20 (-11 v2020)	572 (-800 v2020)	19% (-31% v2020)



South Africa OTC Validation Study

2022 Validation Study

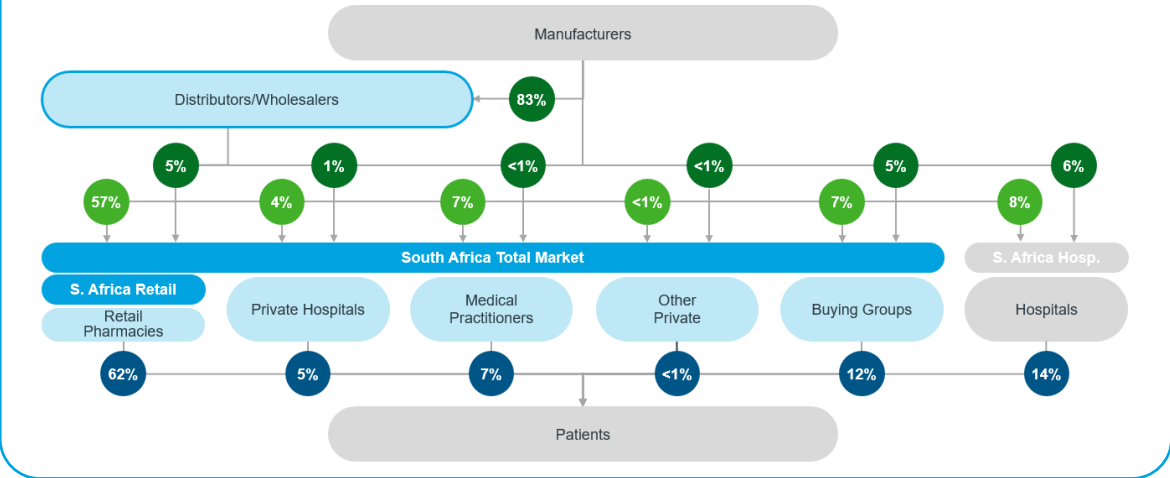
Validation Results



Outcomes

- Overall precision index improved by 6.8 percentage points in 2022
- Overall underestimation improved by 1.0 percentage point in 2022
- No action required from the statistical point of view

Distribution Channels Validated



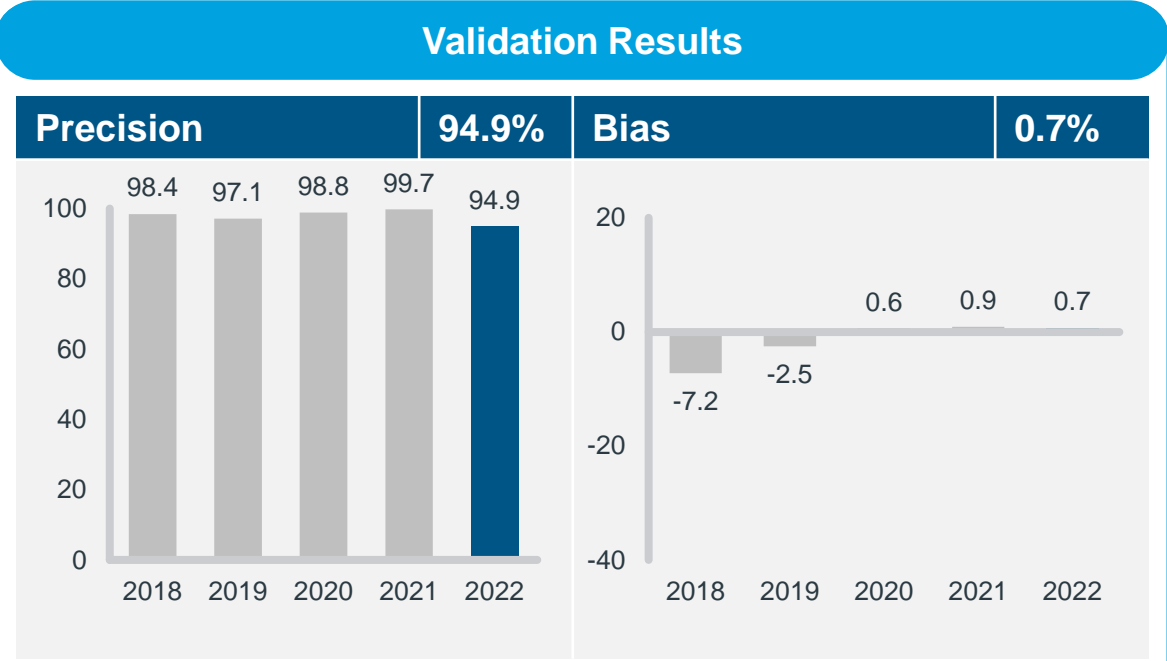
Participation

# Participating Companies	# Forms Validated	% Market Validated
16 (-7 v2020)	178 (-122 v2020)	18% (-27% v2020)



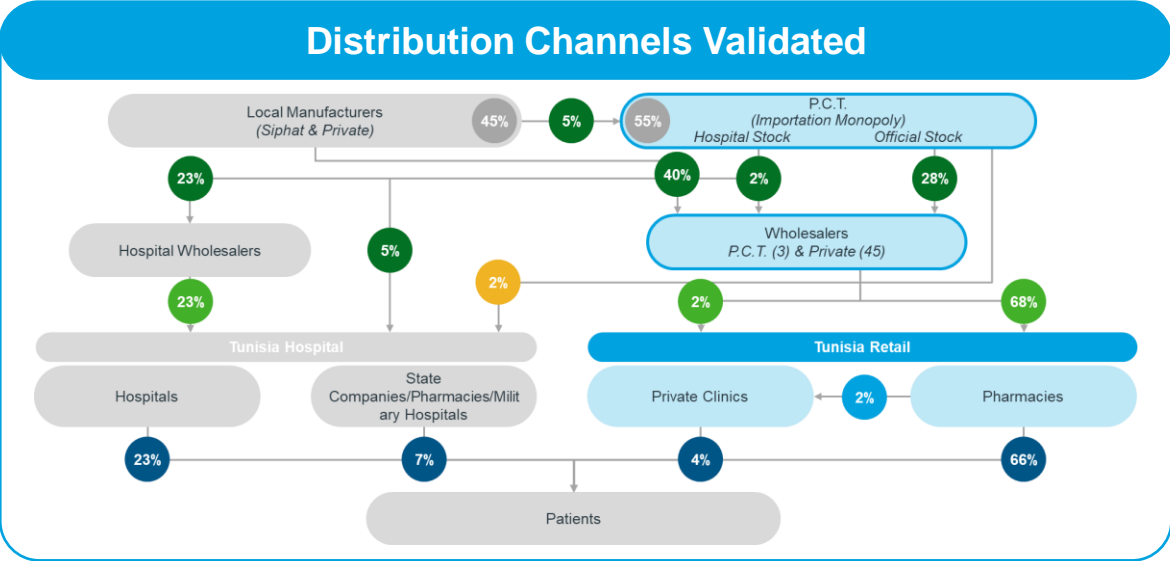
Tunisia Retail Validation Study

2022 Validation Study



Outcomes

- Overall precision index declined by 4.8 percentage points in 2022
- Overall overestimation improved slightly by 0.2 percentage points in 2022
- Tunisia market suffered huge shortages especially for imported products during 2022-2023. No action required from the statistical point of view

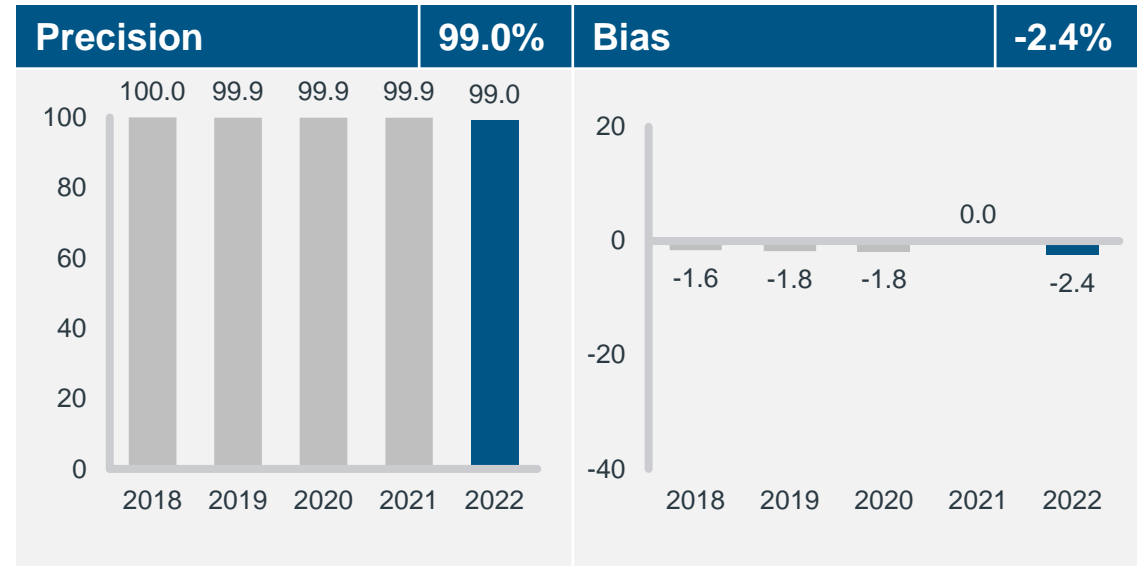


Participation

# Participating Companies	# Forms Validated	% Market Validated
27 (no change vPY)	837 (+105 vPY)	49% (+5% vPY)

2022 Validation Study

Validation Results

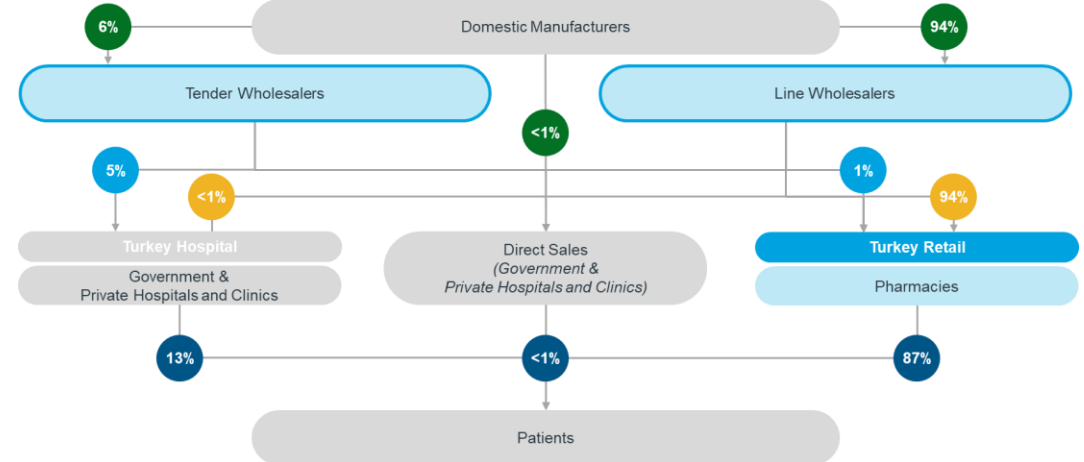


Outcomes



- Overall precision index declined slightly by 0.9 percentage points in 2022
- Overall bias turned from no bias to 2.4% underestimation in 2022
- No action required from the statistical point of view

Distribution Channels Validated



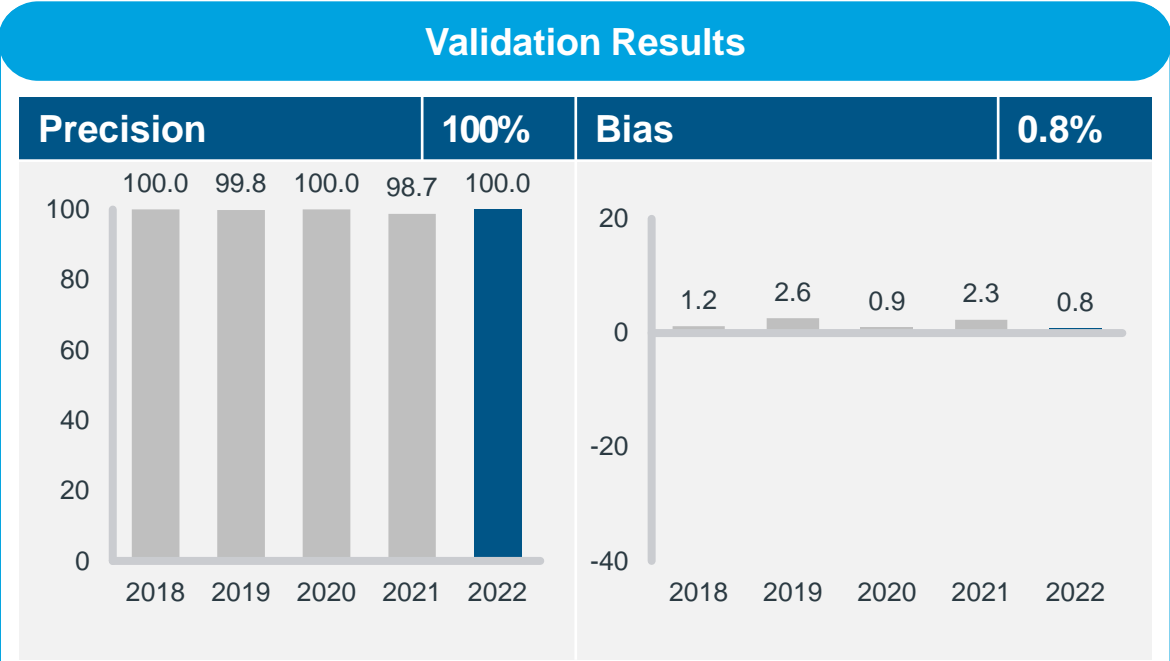
Participation

# Participating Companies	# Forms Validated	% Market Validated
70 (-5 vPY)	1,416 (+166 vPY)	56% (+4% vPY)



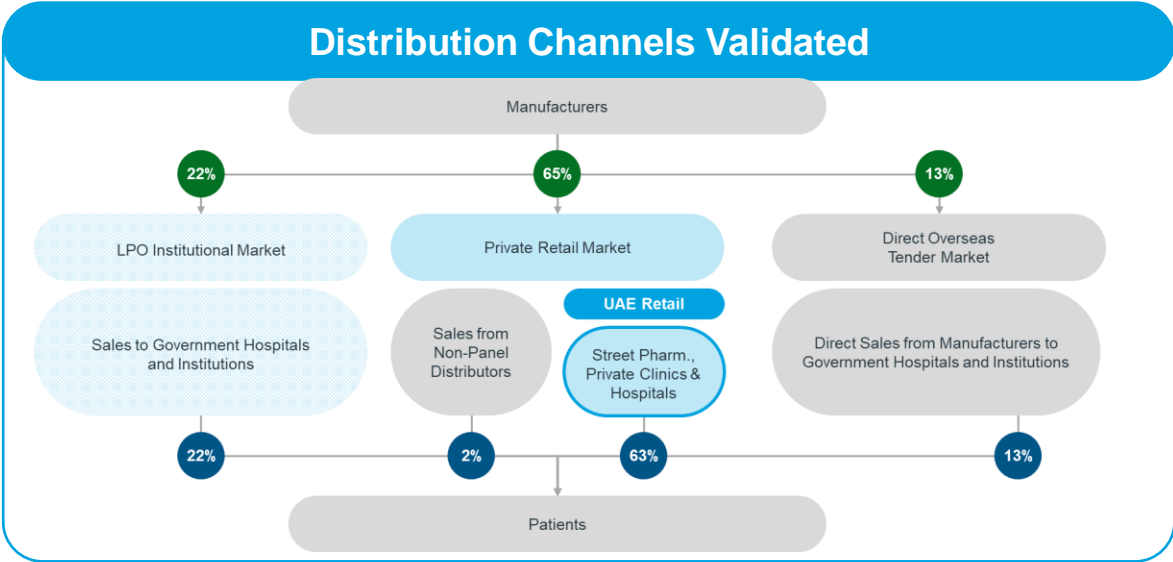
United Arab Emirates Retail Validation Study

2022 Validation Study



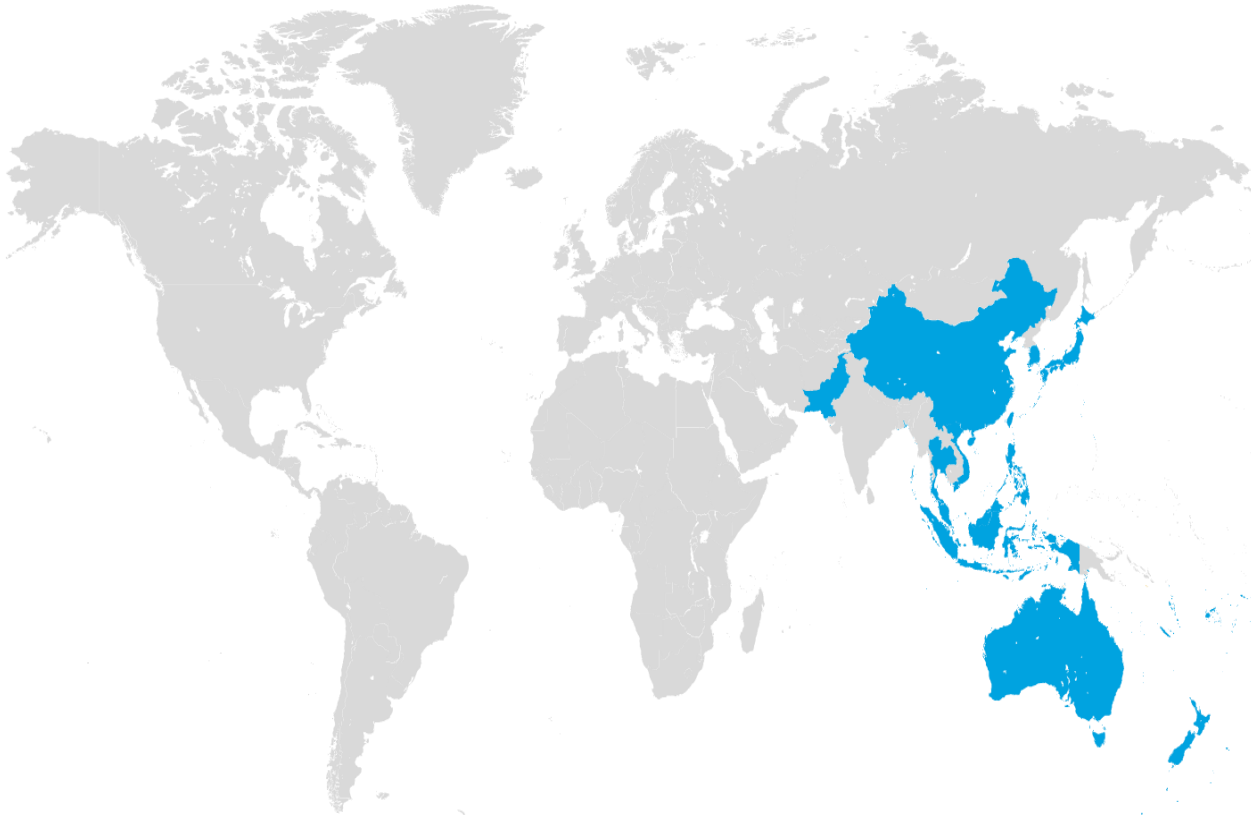
Outcomes

- Overall precision index improved by 1.3 percentage points in 2022
- Overall overestimation improved by 1.5 percentage points in 2022
- No action required from the statistical point of view



Participation		
# Participating Companies	# Forms Validated	% Market Validated
27 (-3 vPY)	666 (-164 vPY)	31% (-16% vPY)

Asia Pacific



Regions/Countries

Greater China

- Hong Kong

Pacific Asia

- Japan
- South Korea

Southeast Asia

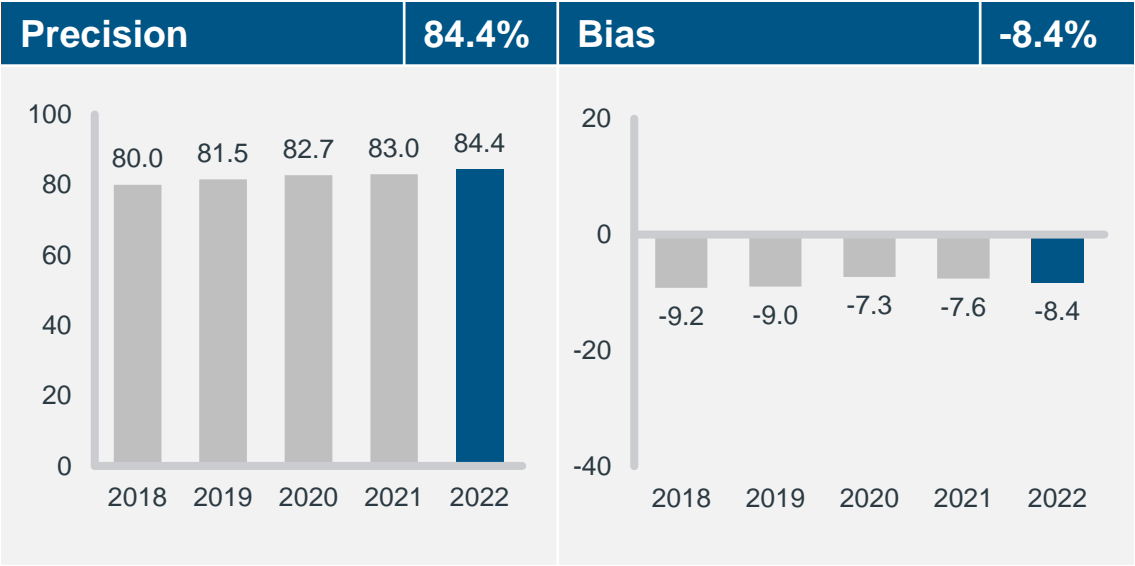
- Indonesia
- Malaysia
- Pakistan
- Philippines
- Singapore
- Thailand
- Vietnam



Hong Kong Retail Validation Study

2022 Validation Study

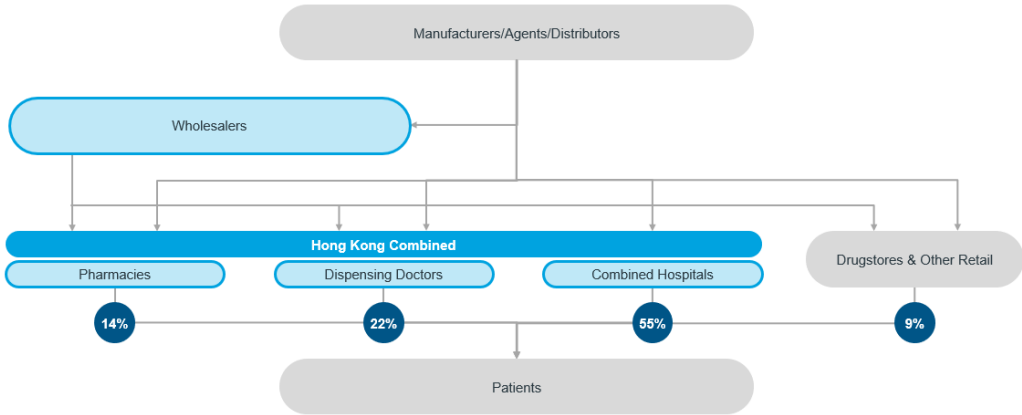
Validation Results



Outcomes

- Overall precision index improved by 1.4 percentage points in 2022
- Overall underestimation increased by 0.8 percentage points in 2022
- No action required from the statistical point of view

Distribution Channels Validated

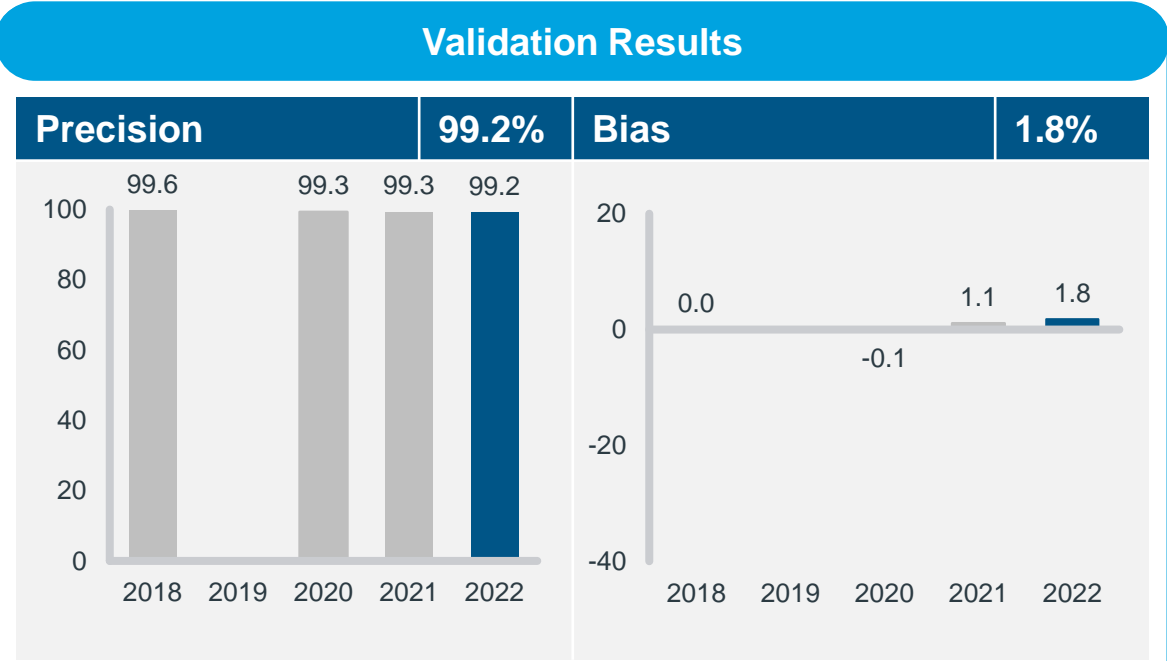


Participation

# Participating Companies	# Forms Validated	% Market Validated
67 (+20 vPY)	875 (+72 vPY)	28% (+2% vPY)

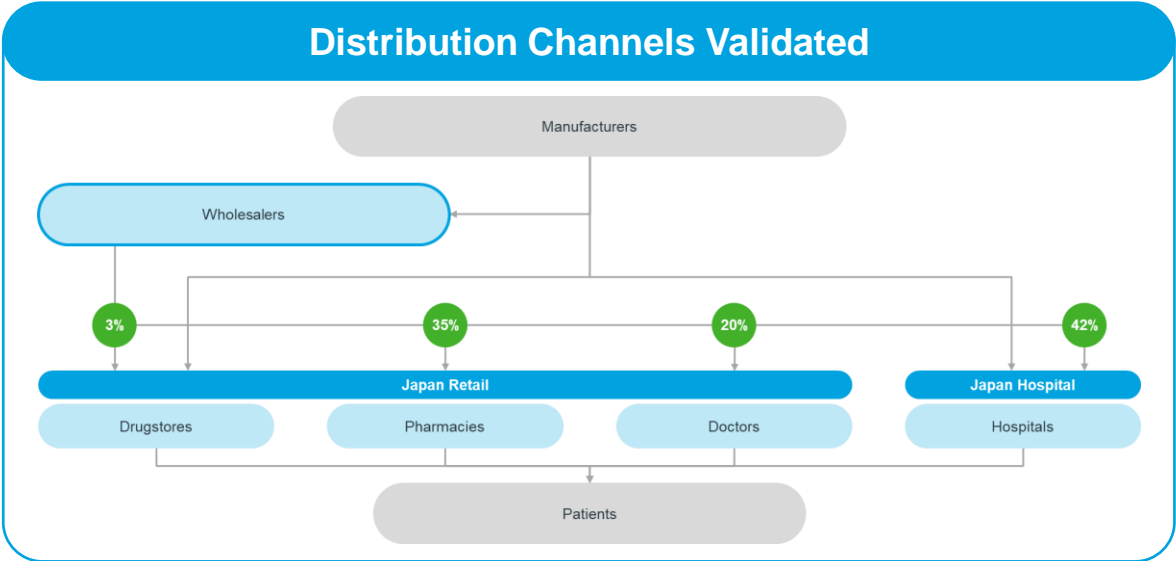
Japan Retail+Hospital Validation Study

2022 Validation Study



Outcomes

- Overall precision index declined slightly by 0.1 percentage points in 2022
- Overall overestimation increased slightly by 0.7 percentage points in 2022
- No action required from the statistical point of view



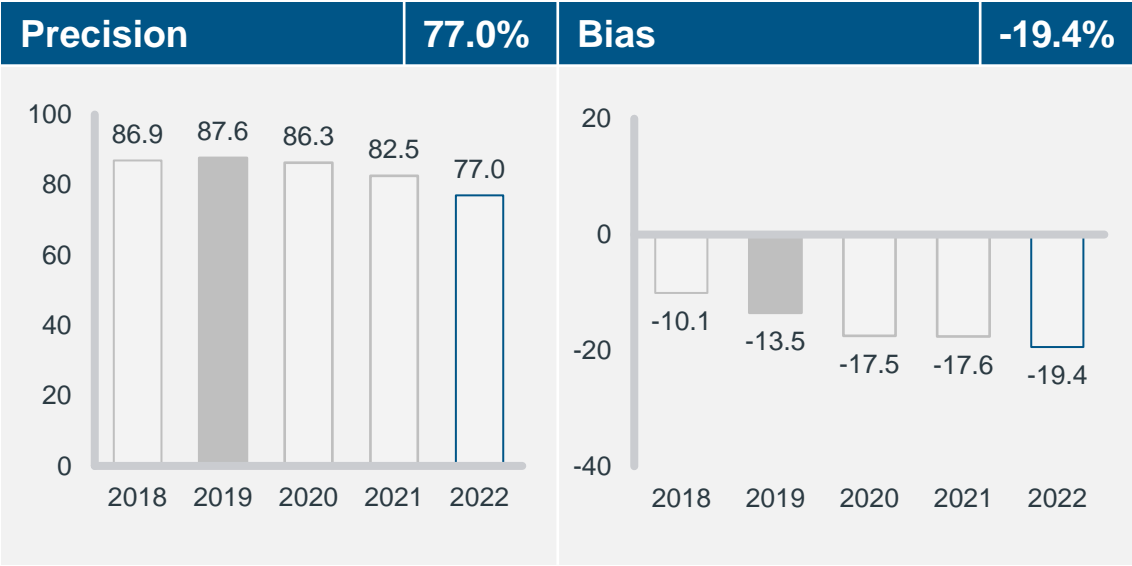
Participation

# Participating Companies	# Forms Validated	% Market Validated
19 (-11 vPY)	1,086 (-642 vPY)	16% (-11% vPY)

South Korea Retail Validation Study

2022 Validation Study

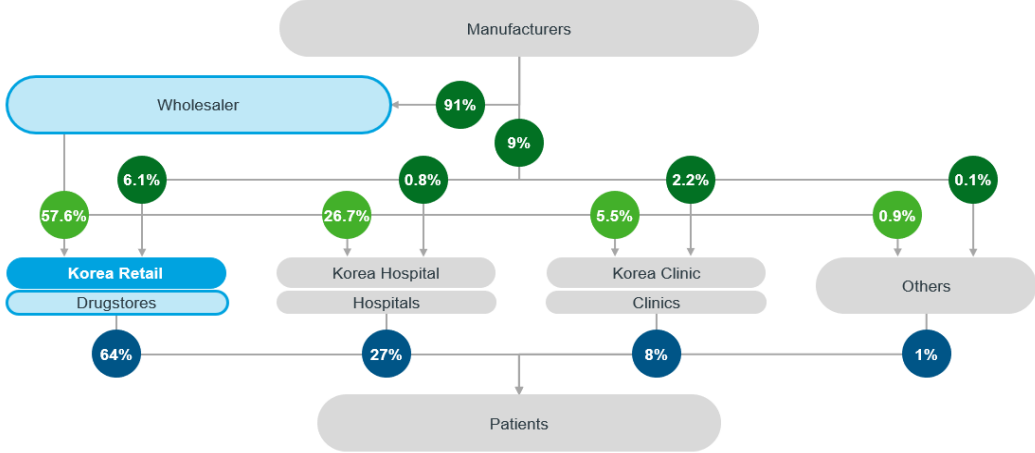
Validation Results



Outcomes

- Overall precision index declined by 5.5 percentage points in 2022
- Overall underestimation increased by 1.8 percentage points in 2022
- Review projection level and panel composition. Check completeness and replace inadequate panel

Distribution Channels Validated



Participation

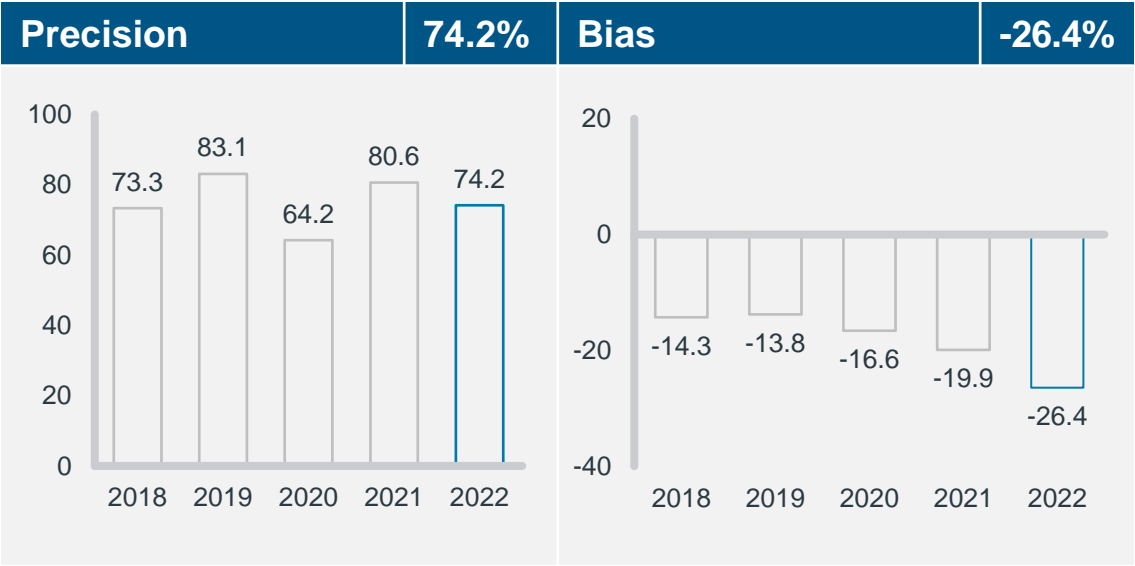
# Participating Companies	# Forms Validated	% Market Validated
10 (-1 vPY)	460 (-13 vPY)	7% (no change vPY)



South Korea OTC Validation Study

2022 Validation Study

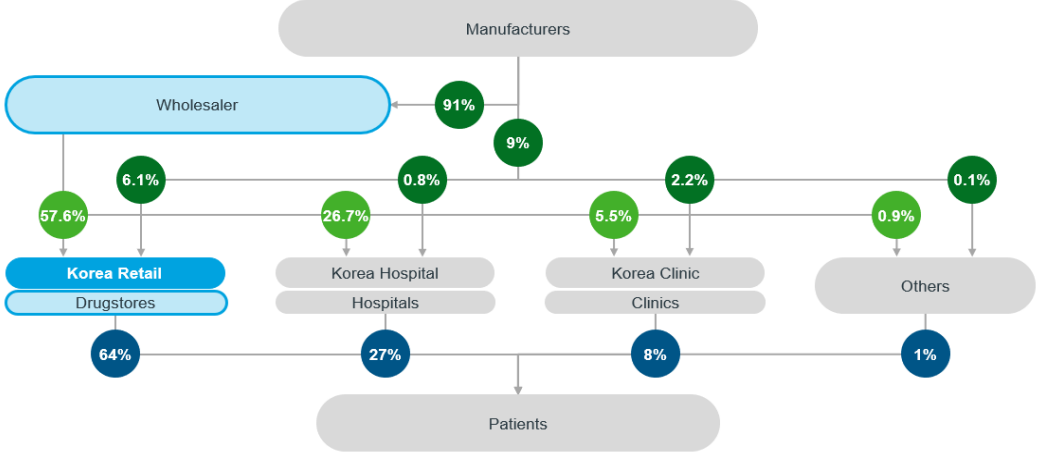
Validation Results



Outcomes

- Overall precision index declined by 6.4 percentage points in 2022
- Overall underestimation increased by 6.5 percentage points in 2022
- Review projection level and panel composition. Check completeness and replace inadequate panel

Distribution Channels Validated



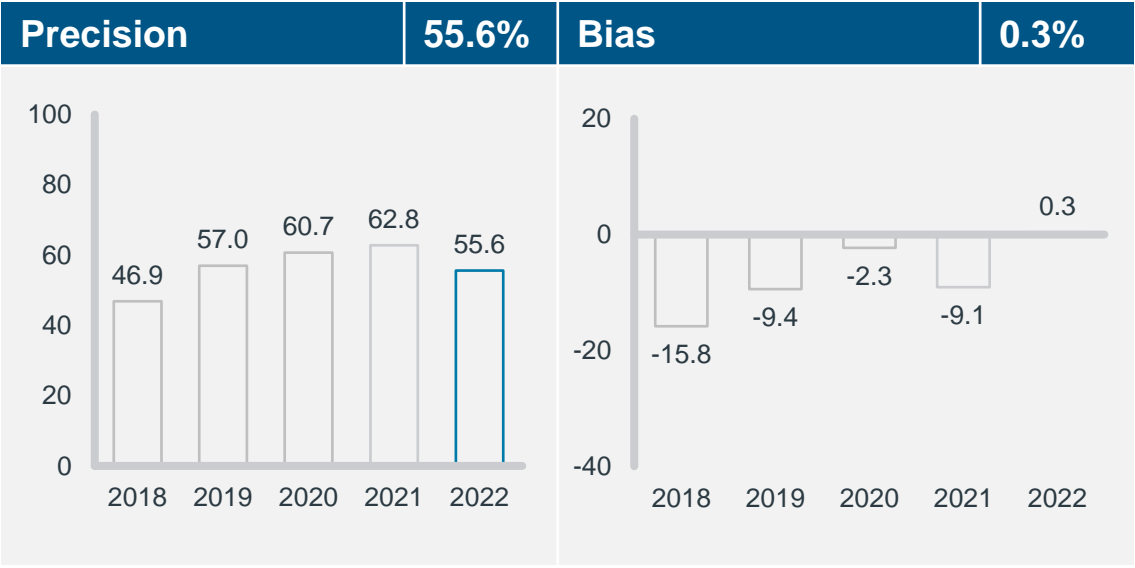
Participation

# Participating Companies	# Forms Validated	% Market Validated
7 (+1 vPY)	89 (-10 vPY)	2% (no change vPY)

South Korea Hospital Validation Study

2022 Validation Study

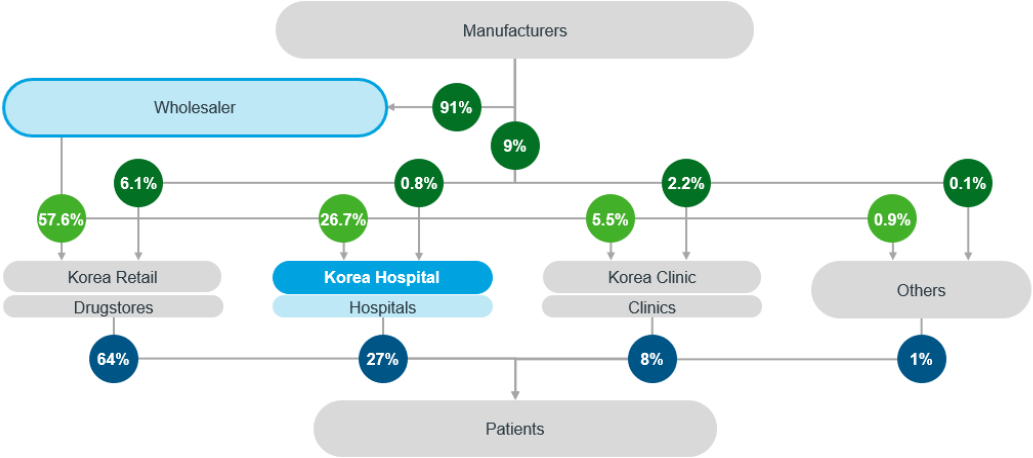
Validation Results



Outcomes

- Overall precision index declined by 7.2 percentage points in 2022
- Overall bias turned from 9.1% underestimation to 0.3% overestimation in 2022
- Review projection level panel composition. Improve QC process

Distribution Channels Validated



Participation

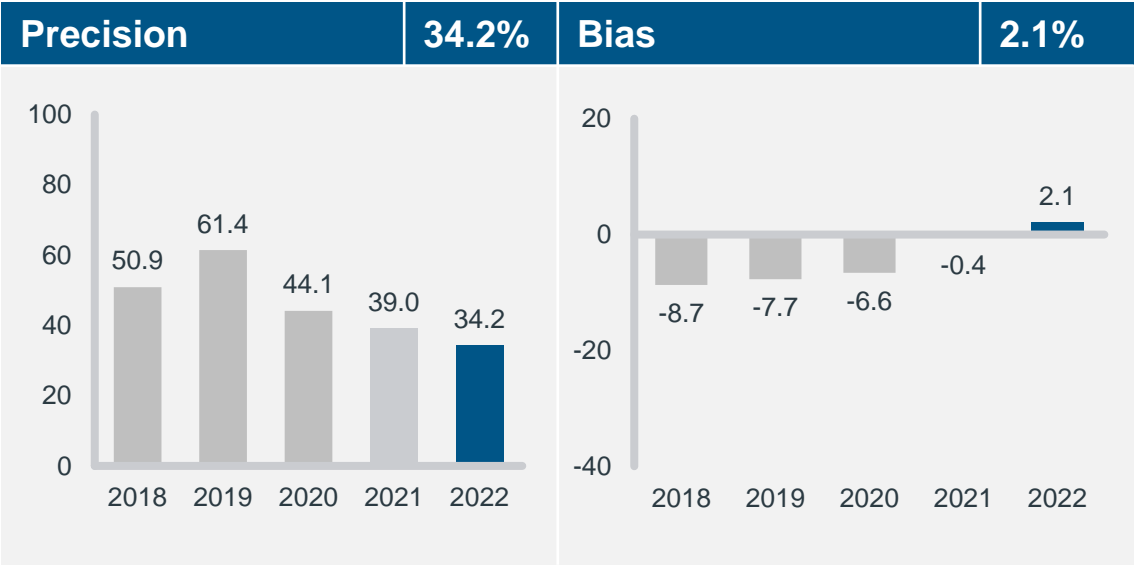
# Participating Companies	# Forms Validated	% Market Validated
8 (-3 vPY)	63 (-65 vPY)	2% (-2% vPY)



Indonesia Total Market Validation Study

2022 Validation Study

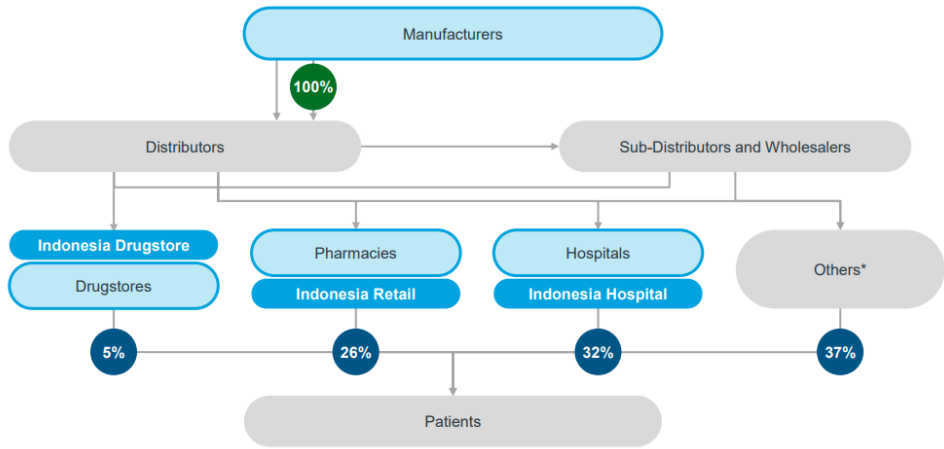
Validation Results



Outcomes

- Overall precision index declined by 4.8 percentage points in 2022
- Overall bias turned from 0.4% underestimation to 2.1% overestimation in 2022
- Enhance panel coverage on granular levels, meanwhile, IQVIA continues to expand the number of contributors and improve data coverage with more partners

Distribution Channels Validated



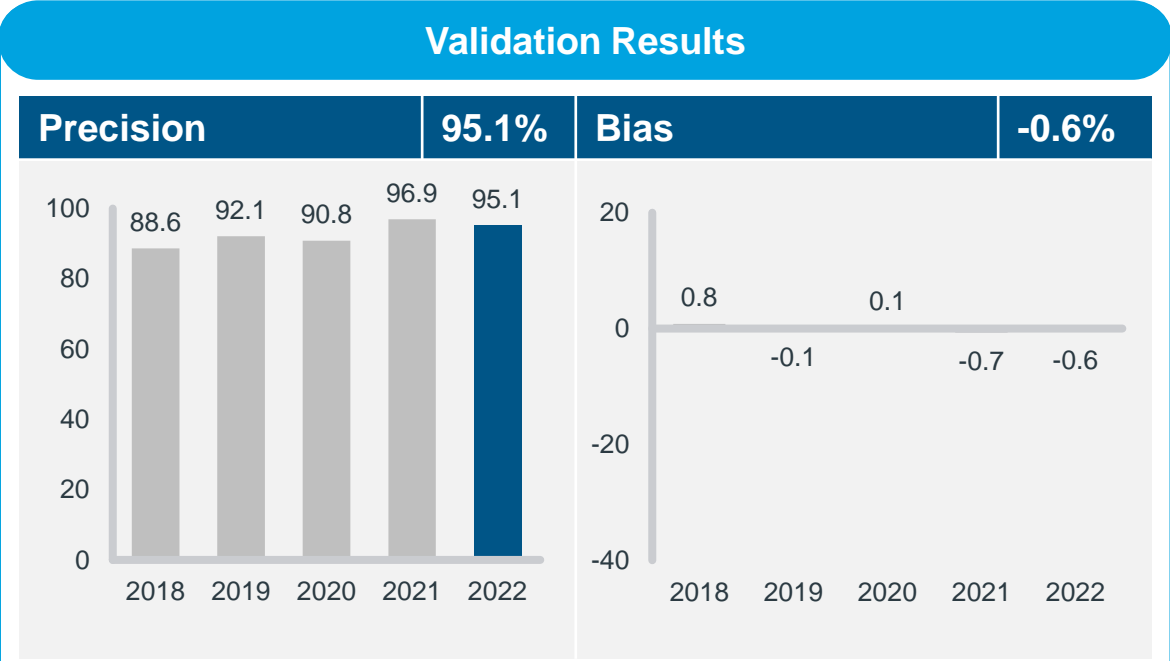
Participation

# Participating Companies	# Forms Validated	% Market Validated
45 (-1 vPY)	1,281 (-41 vPY)	15% (no change vPY)

*% Market Validated is calculated based on units, in terms of values, % Market can be validated has reached at 50%

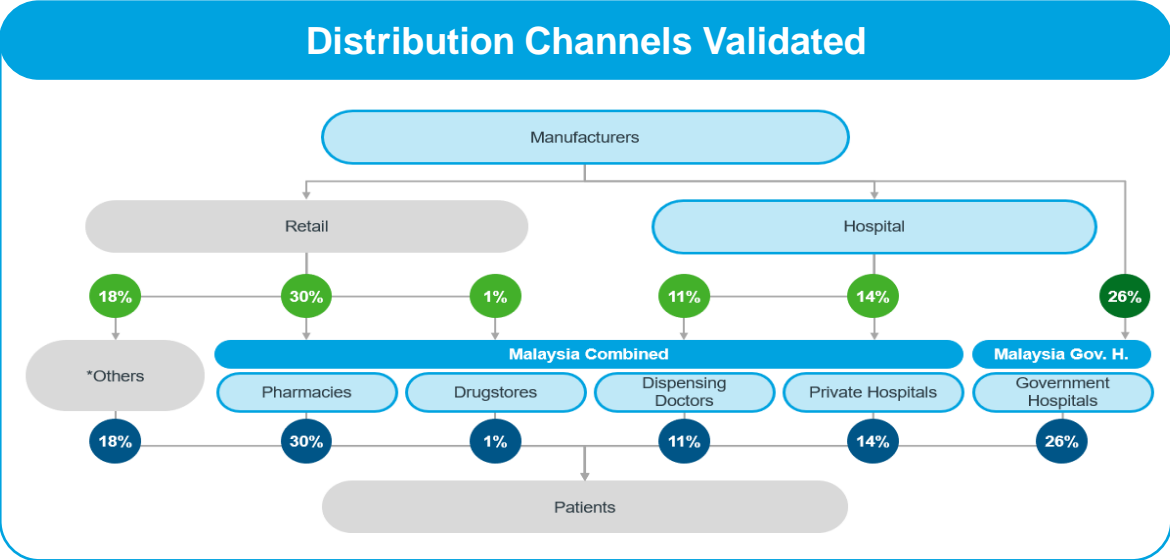
Malaysia Combined Validation Study

2022 Validation Study



Outcomes

- Overall precision index declined by 1.8 percentage points in 2022;
- Overall underestimation improved by 0.1 percentage points in 2022;
- AIML powered methodology has been leveraged; Continue to secure additional direct data and panels



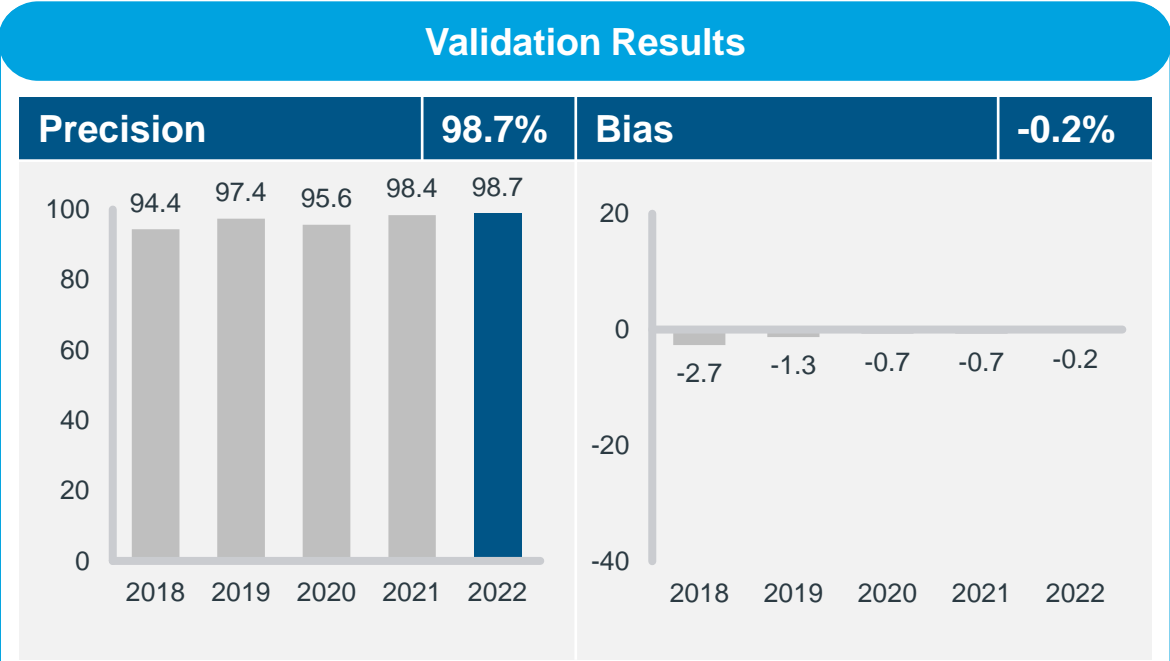
Participation

# Participating Companies	# Forms Validated	% Market Validated
117 <i>(no change vPY)</i>	1,974 <i>(+8 vPY)</i>	62% <i>(-4% vPY)</i>



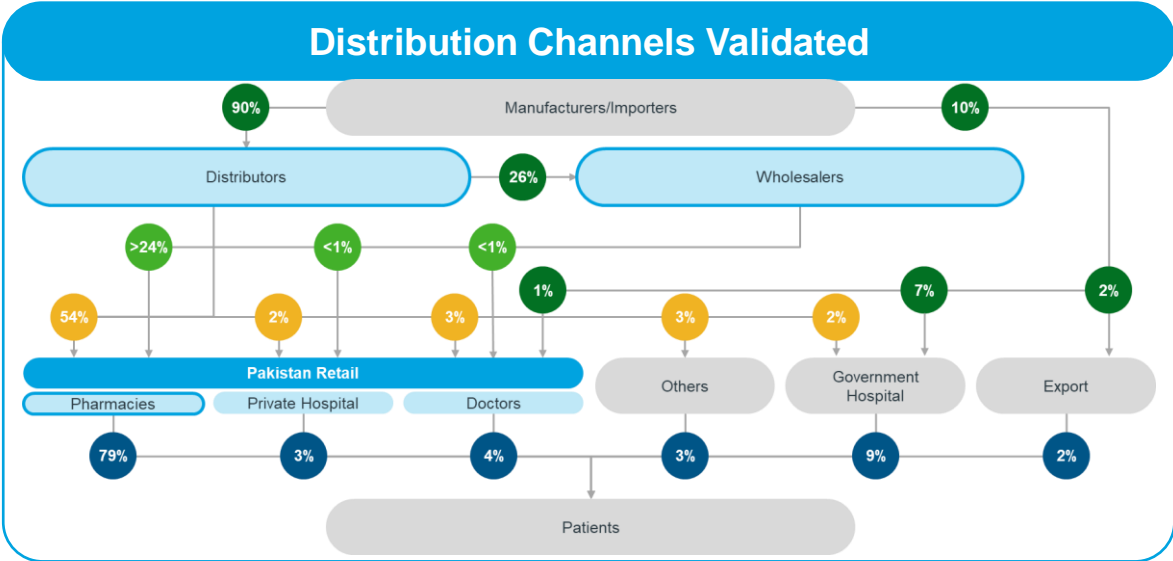
Pakistan Retail Validation Study

2022 Validation Study



Outcomes

- Overall precision index improved slightly by 0.3 percentage points in 2022
- Overall underestimation improved slightly by 0.5 percentage points in 2022
- Maintain the participation level of the validation study; Increase number of validation participants

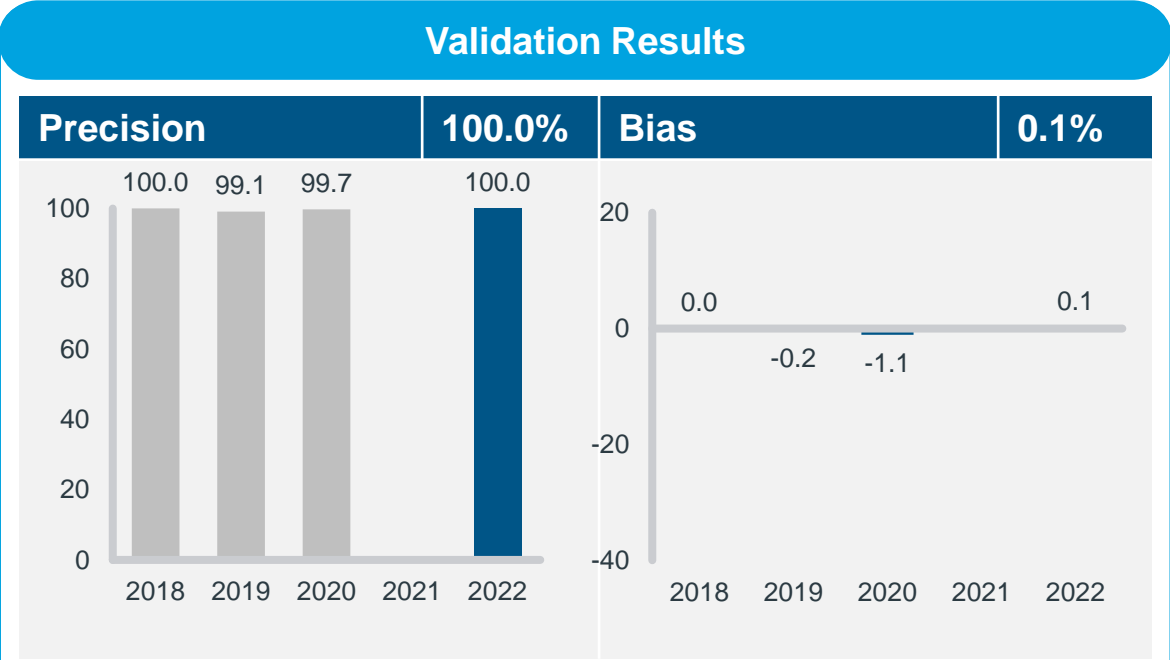


Participation		
# Participating Companies	# Forms Validated	% Market Validated
75 (+25 vPY)	2,487 (+653 vPY)	60% (+8% vPY)



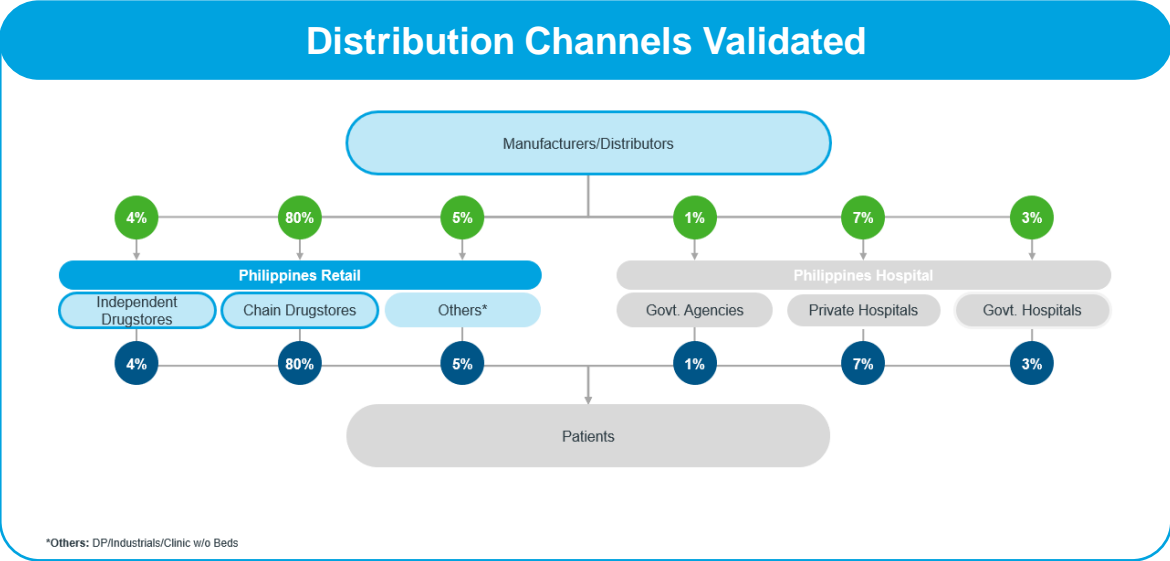
Philippines Retail Validation Study

2022 Validation Study



Outcomes

- Overall precision index improved slightly by 0.3 percentage points in 2022
- Overall underestimation turned from 1.1% underestimation to 0.1% overestimation in 2022
- Continue to strengthen panel data in long term



Participation

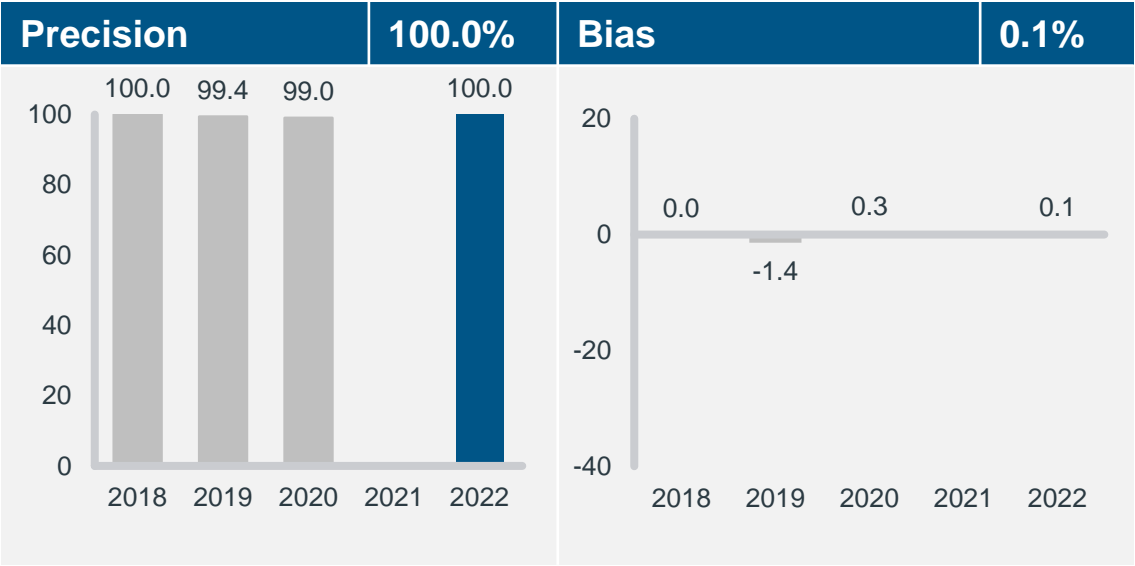
# Participating Companies	# Forms Validated	% Market Validated
29 (+3 v2020)	860 (+168 v2020)	31% (+2% v2020)



Philippines Hospital Validation Study

2022 Validation Study

Validation Results

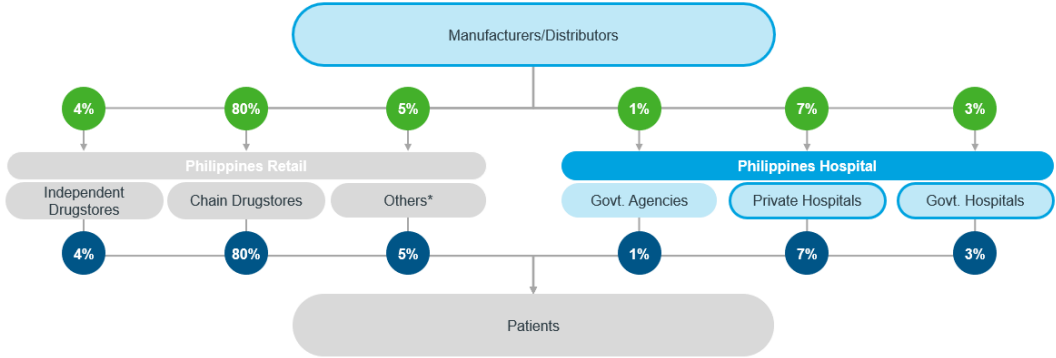


Outcomes



- Overall precision index improved by 1 percentage point in 2022
- Overall overestimation improved by 0.2 percentage points in 2022
- Continue to strengthen panel data in long term

Distribution Channels Validated



*Others: DP/Industrials/Clinic w/o Beds

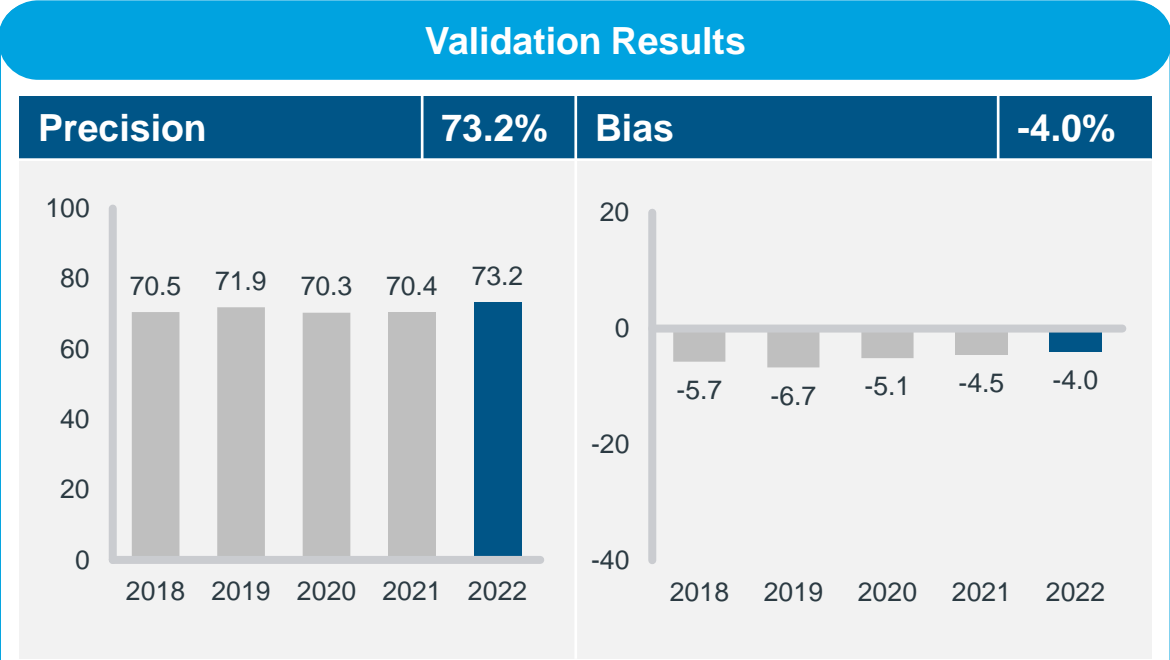
Participation

# Participating Companies	# Forms Validated	% Market Validated
21 (no change v2020)	232 (-13 v2020)	12% (-3% v2020)



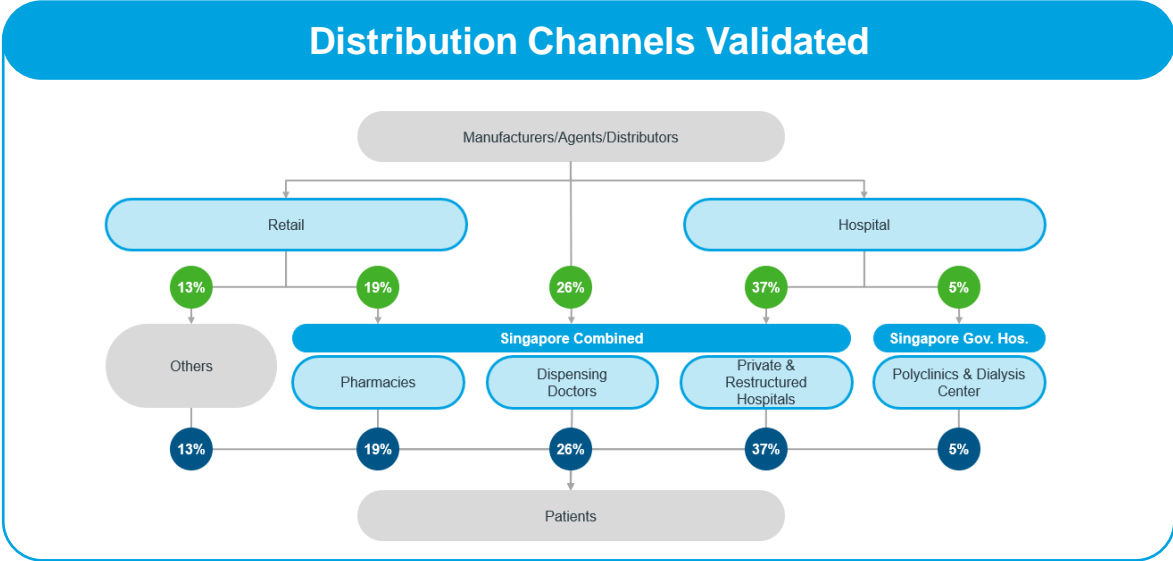
Singapore Combined Market Validation Study

2022 Validation Study



Outcomes

- Overall precision index improved by 2.8 percentage points in 2022
- Overall underestimation improved slightly by 0.5 percentage points in 2022
- Continue to secure additional direct data and panels



Participation

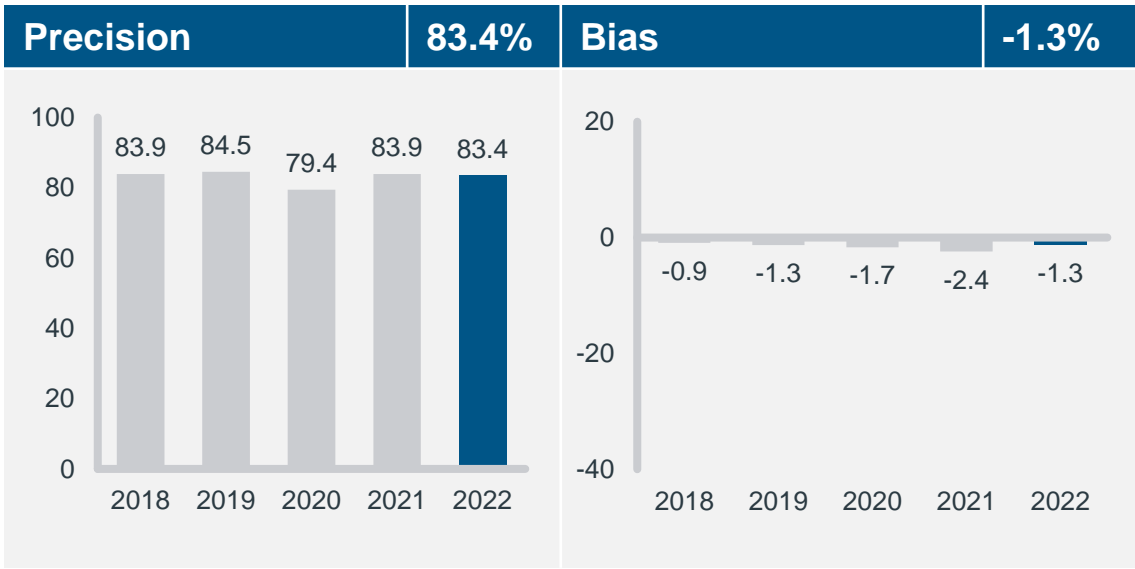
# Participating Companies	# Forms Validated	% Market Validated
91 (+8 vPY)	1,166 (-32 vPY)	37% (-2% vPY)



Thailand Retail Validation Study

2022 Validation Study

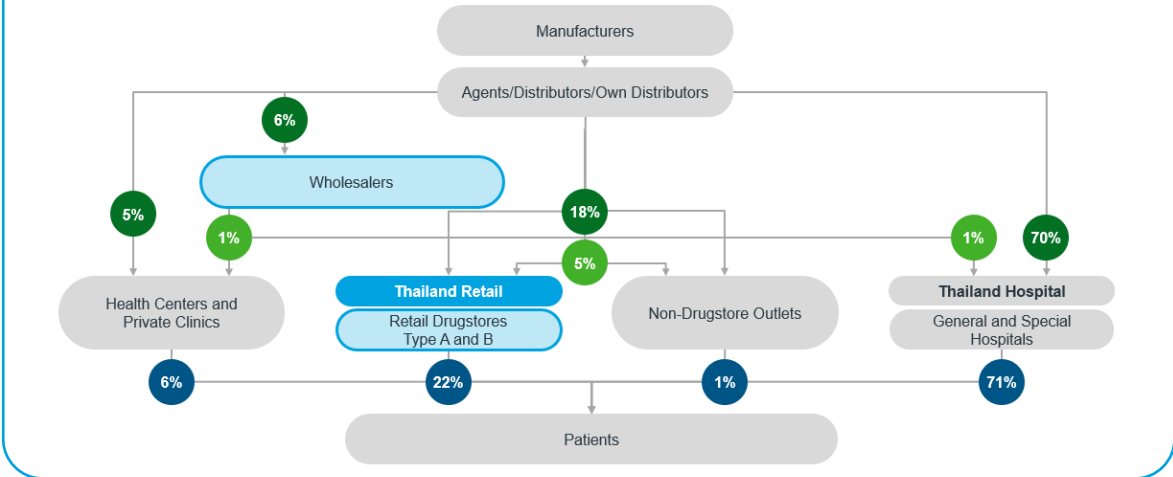
Validation Results



Outcomes

- Overall precision index declined slightly by 0.5 percentage points in 2022
- Overall underestimation improved by 1.1 percentage points in 2022
- Continue to maintain data consistency in long term

Distribution Channels Validated



Participation

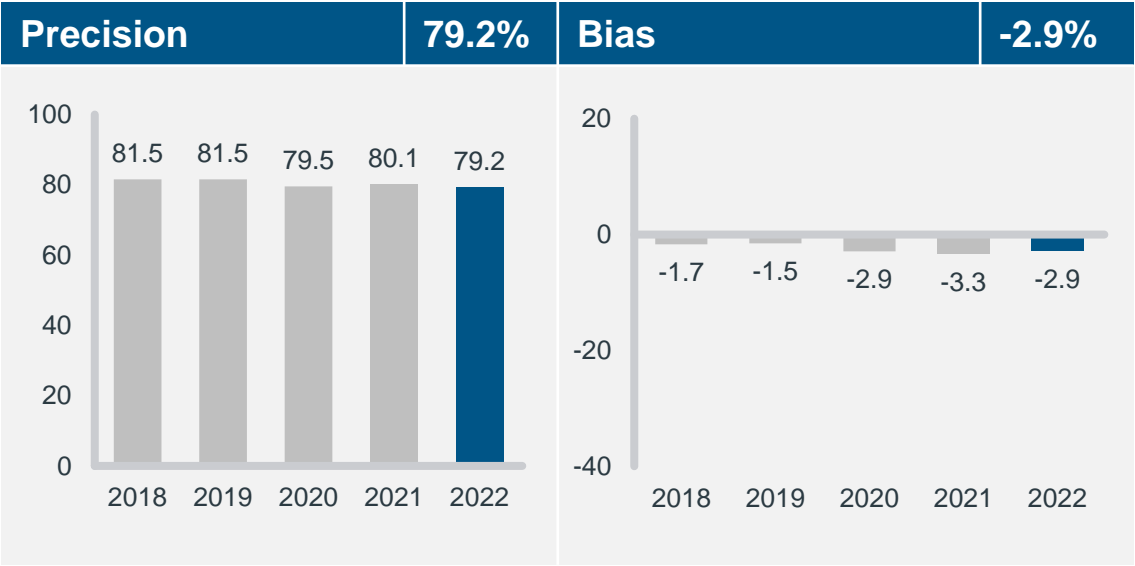
# Participating Companies	# Forms Validated	% Market Validated
87 (+6 vPY)	958 (+45 vPY)	18% (no change vPY)



Vietnam Total Market Validation Study

2022 Validation Study

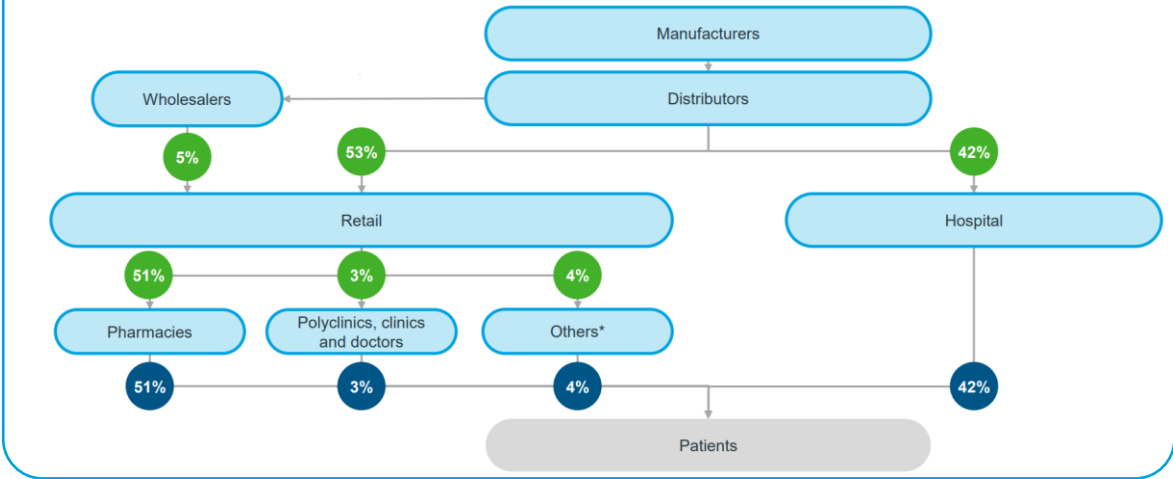
Validation Results



Outcomes

- Overall precision declined by 0.9 percentage points in 2022
- Overall underestimation improved by 0.4 percentage points in 2022
- Continue to secure additional benchmark data and panels to improve further

Distribution Channels Validated



Participation

# Participating Companies	# Forms Validated	% Market Validated
104 (+6 vPY)	1,475 (-24 vPY)	22% (-1% vPY)

Methodology

Content covered in this section

Validation Studies

1

- Distribution Channels validated
- Decile Inclusion/Exclusion Schema
- How IQVIA measures Accuracy

Accuracy

2

- Bias (interpretation – calculus – limitations)
- Overestimation (illustration)
- Underestimation (illustration)
- Precision (interpretation – calculus – illustration)

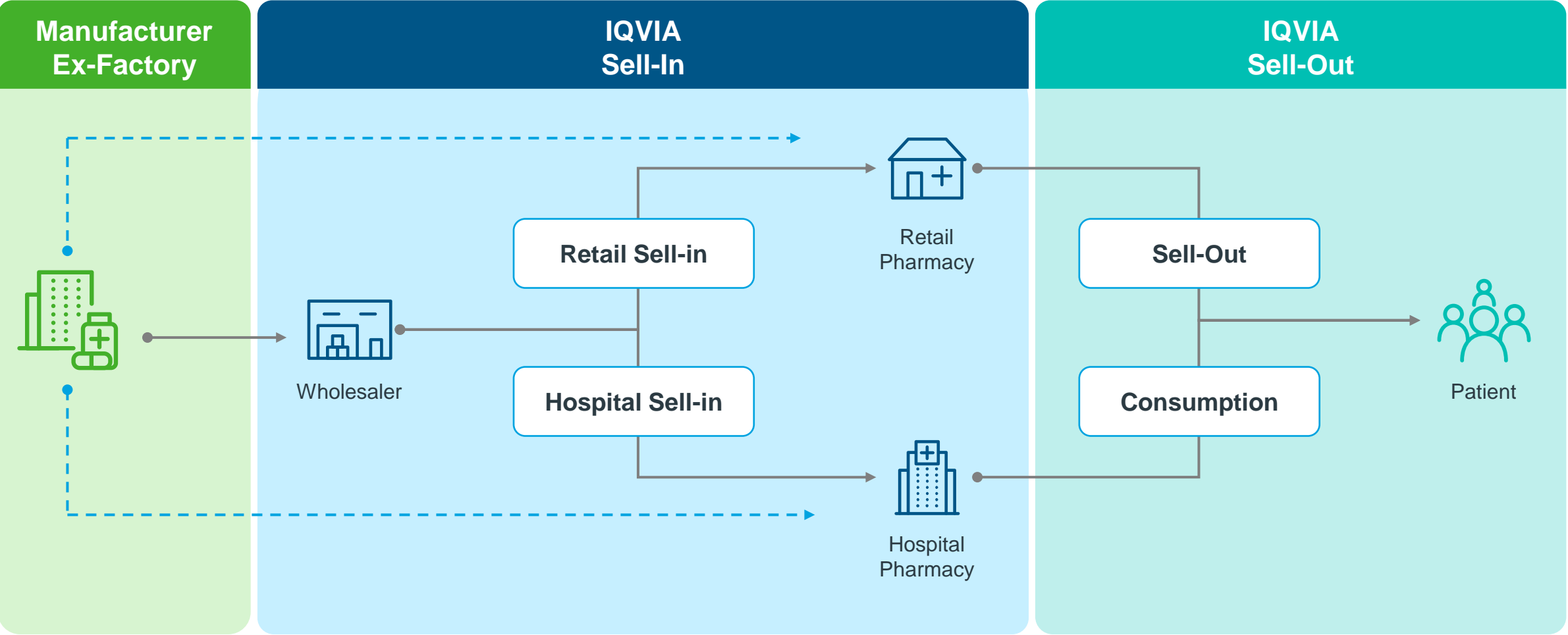
Timeliness

3

- Elapsed days after reporting period (definition)
- On-target % (definition)
- On-target % vs. On-time % (how both compare)

Distribution Channels validated

ACTS compares the Manufacturer's ex-factory sales with IQVIA's audited channels



ACTS surveys 95% of the units market in the audited channel

Small 5% of product forms get excluded

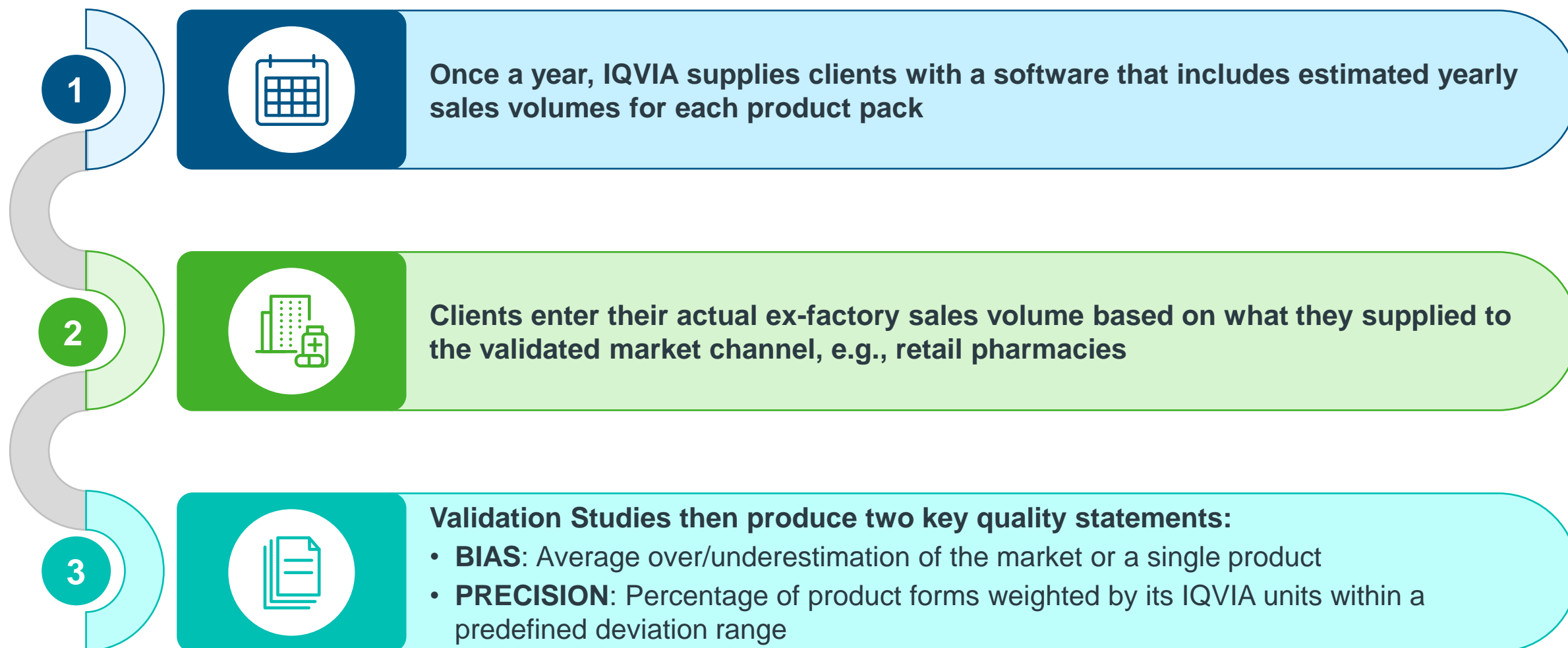
Decile Inclusion/Exclusion Schema

Total Market					Decile 1 breakdown					ACTS breakdown				
Decile	#Forms	Upper Limit (FY Units)	Total (FY Units)	Segment	Decile	#Forms	Upper Limit (FY Units)	Total (FY Units)	Segment	Decile	#Forms	Upper Limit (FY Units)	Total (FY Units)	Segment
1	16,746	288,316	421,249,733	Small 10%	1.01	12,546	20,349	42,128,674	Low 5% excluded	1.01-1.05	15,623	210,803,990	210,803,990	Small 5% excluded
2	874	795,338	421,315,079	Next 10% included	1.02	1,386	44,263	42,143,302		1.06-2	1,997	631,760,822	631,760,822	Small 15% included
3	385	1,541,503	421,089,812	Medium 30% Included	1.03	771	67,192	42,167,630		3-5	709	1,263,890,256	1,263,890,256	Medium 30% included
4	206	2,782,743	421,471,438		1.04	530	93,364	42,200,606		6-10	132	2,103,828,718	2,103,828,718	Large 50% included
5	118	4,572,060	421,329,006		1.05	390	122,163	42,163,778						
6	66	9,143,464	427,161,847	Large 50% included	1.06	313	148,246	42,209,105	Next 5% included					
7	36	15,617,602	424,827,107		1.07	258	181,048	42,244,392						
8	20	34,458,310	444,648,076		1.08	215	214,823	42,284,130						
9	8	89,798,547	507,434,006		1.09	183	248,645	42,301,336						
10	2	206,855,970	299,757,682		1.10	154	288,316	41,406,780						
Total	18,461		4,210,283,786			16,746		421,249,733			18,461	4,210,283,786	4,210,283,786	
ACTS	1,715		3,789,034,053			1,123		210,445,743			2,838	3,999,479,796	3,999,479,796	

FY = Full Year; This page only serves as a simplified illustration!

Validation Studies

How IQVIA measures Accuracy



Validation Metrics

Bias: % of Over- or Underestimation

Interpretation



- The objective of Bias is to provide a robust estimation of average deviation between IQVIA data and Real data.
- Bias measures the level of deviation caused by systematic errors, e.g.
 - Projecting to a too small universe may result in a negative bias (=underestimation) or
 - Systematically collecting incomplete data from panels may lead to underestimated projected results or
 - Not capturing 100% of the market, say because of unaudited channels (like private clinics) is another reason for Bias (here underestimation).
- Extreme R-Values distort robustness. Therefore, R-Values outside $\pm 52.5\%$ interval are excluded.

Calculus



Pack	Audit Units	Real Units	R-Values
A	1,000	900	1.111
B	1,200	1,500	0.800
C	4,000	3,800	1.053
D	6,500	7,000	0.929
E	7,200	7,400	0.973
Sum	19,900	20,600	0.966

Bias = -3.4%

Average over/underestimation (Bias) in %

$$= \left(\frac{\text{Total Audit units of all validated product forms}}{\text{Total REAL units of all validated product forms}} - 1 \right) * 100$$

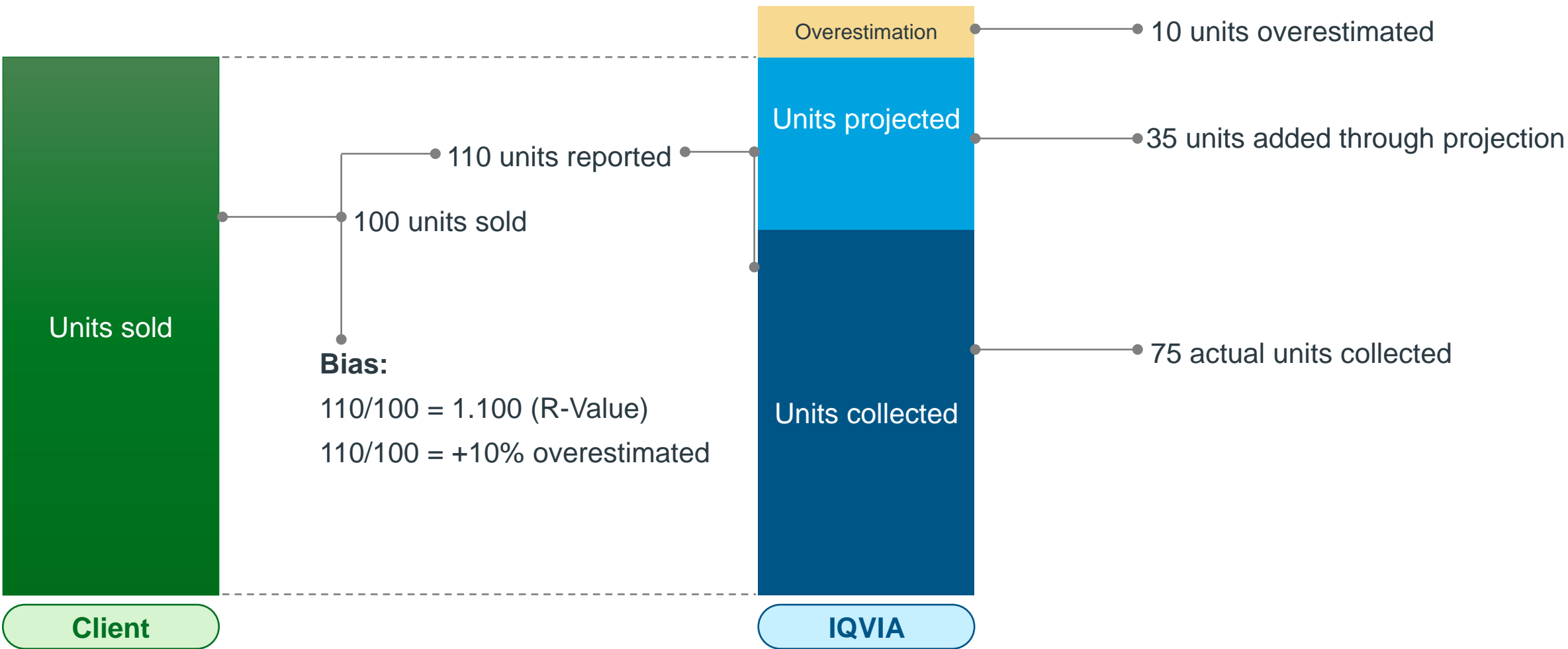
Limitations



- Inclusion of unaudited market channels (e.g., private clinics/ dispensing doctors or tender) into real sales data affects bias measurement. Participants are not always able to segregate their sales to the validated segment.
- Low validation coverage may lead to an inaccurate bias measure. The higher the number of participants the better.
- Purposive selection of therapeutic classes or products into the validation data set provides an unrepresentative bias measure.

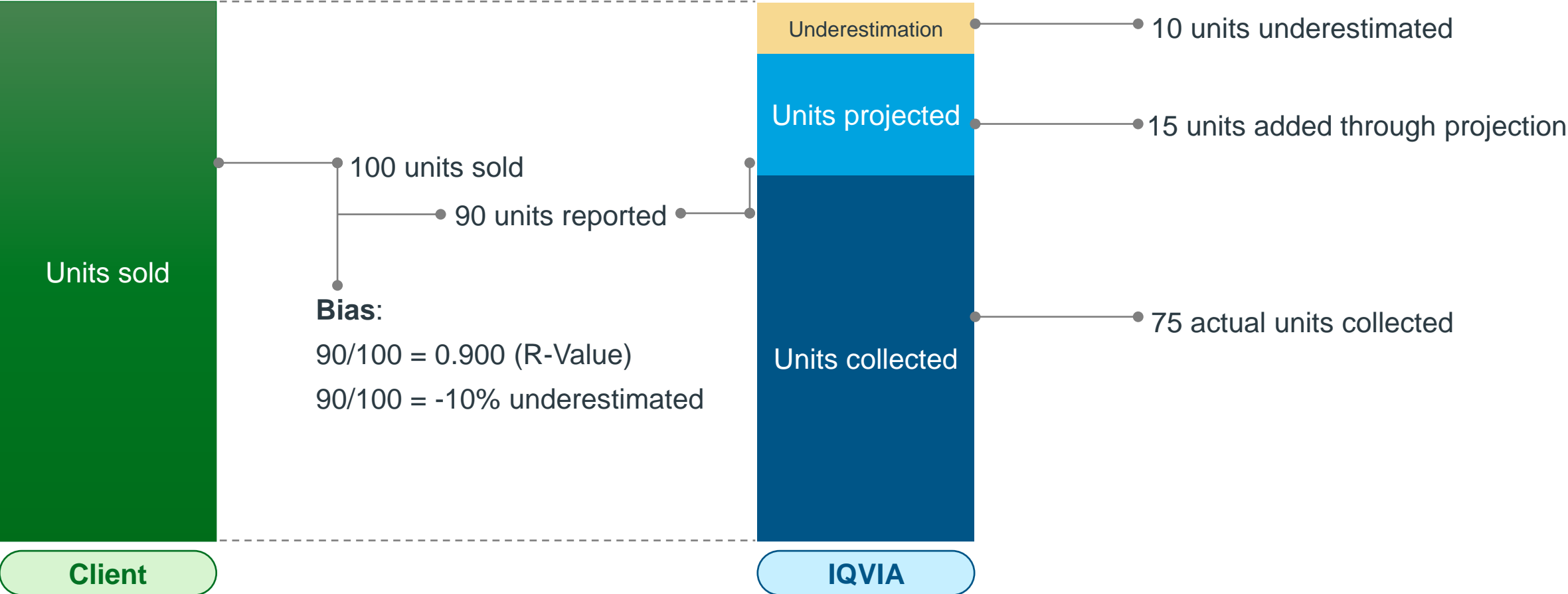
Clients Ex-Factory data vs. IQVIA's audited channel data

Example 1: Overestimation



Clients Ex-Factory data vs. IQVIA's audited channel data

Example 2: Underestimation



Validation Metrics

Precision: % of products in a fixed range of deviation

Interpretation



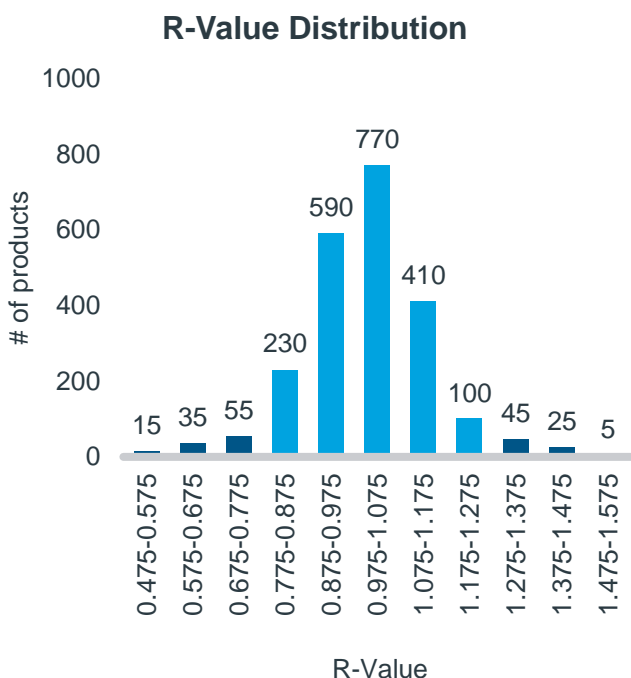
- Precision index measures the R-Value dispersion, i.e., it measures how many R-Values (weighted by its IQVIA units) lay inside a $\pm 22.5\%$ interval around the overall Bias.
- Different to Bias which measures systematic effects, the Precision Index measures the random effect of a sample.
- A low precision index usually indicates that the underlying sample size is too small/not representative and also causes wrong market shares and rankings.
- A high precision index indicates a representative sample size and is a result of consistent projected numbers. This is being measured around the average Bias which either can be negative or positives.

Calculus



R-Value Distribution		
From	To	# Forms
0.475	0.575	15
0.575	0.675	35
0.675	0.775	55
0.775	0.875	230
0.875	0.975	590
0.975	1.075	770
1.075	1.175	410
1.175	1.275	100
1.275	1.375	45
1.375	1.475	25
1.475	1.575	5
Total		2,280

$\Sigma = 2,100$ R-Values
inside the $\pm 22.5\%$
interval



$$\text{Precision} = \frac{2,100}{2,280} \times 100 = 92.1\%$$

Timeliness

Speed of Delivery

Definition



- “Elapsed days after reporting period” measures the number of days, after the end of the reporting period until time of delivery on MIDAS.
- “On-Target %” measures how many data deliverables were shipped on MIDAS within a certain number of days.
- Thresholds:
 - Monthly: Actual \leq 30 days
 - Quarterly: Actual \leq 45 days
- Databases in scope:
 - Monthly MIDAS
 - Quarterly MIDAS

On-Target % vs. On-Time %



	On-Target %	On-Time %
Transaction	Country/Region*Audit*Period (<i>period = data month!</i>)	Country*Audit*Period*Client (<i>period = calendar month!</i>)
Measure	Days after Period (DAP)	Actual vs. Schedule
Threshold	Monthly: Actual < 30 days Quarterly: Actual < 45 days	Actual < Schedule (agreed)
Handling	Threshold is applied consistently to any country and audit.	Threshold is individual by country and considers local agreements with clients.
Interpretation	Metric measures if deliverable is within threshold (DAP), hence the time it took after period to build databases.	Metric measures if deliverable is as per the plan. It considers agreed delivery dates with clients.
Real world	“I received August data with delay”	“I got a late delivery in August”
Publication	ACTS Annual Report	n/a

DAP data being used is also published on MIDAS Delivery Performance: <https://customerportal.imshealth.com/sites/imsportal/product-support/midas-products-psa/iqvia-midas/psa/database-update-schedules>

ACTS content now available on IQVIA Customer Portal

How to access?

Access



If you are new to the customer portal, please self-register [here](#). Once you got your account set up, please access ACTS country results here: [ACTS Country Reports](#).

Home > IQVIA MIDAS > Country Coverage > ACTS Country Reports

IQVIA MIDAS

- Country Coverage
- ACTS Country Reports**
- CAD Sheets
- Data Elements
- Database Update Schedules
- MIDAS Alerts Library
- IQVIA Access Indicator

Countries/Regions available



Algeria	Finland	Mexico	Switzerland
Argentina	France	Morocco	Thailand
Austria	Greece	Pakistan	Tunisia
Bangladesh	Hong Kong	Paraguay	Turkey
Bolivia	Hungary	Peru	UAE
Bosnia	Indonesia	Philippines	UK
Brazil	Ireland	Poland	Uruguay
Bulgaria	Italy	Romania	USA
Canada	Japan	Russia	Venezuela
Cen. America	Jordan	Saudi Arabia	Vietnam
Chile	Kazakhstan	Serbia	
Croatia	South Korea	Singapore	
Czech R.	Kuwait	Slovakia	
Dominican R.	Latvia	Slovenia	
Ecuador	Lithuania	South Africa	
Egypt	Malaysia	Spain	

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“IQVIA MIDAS”

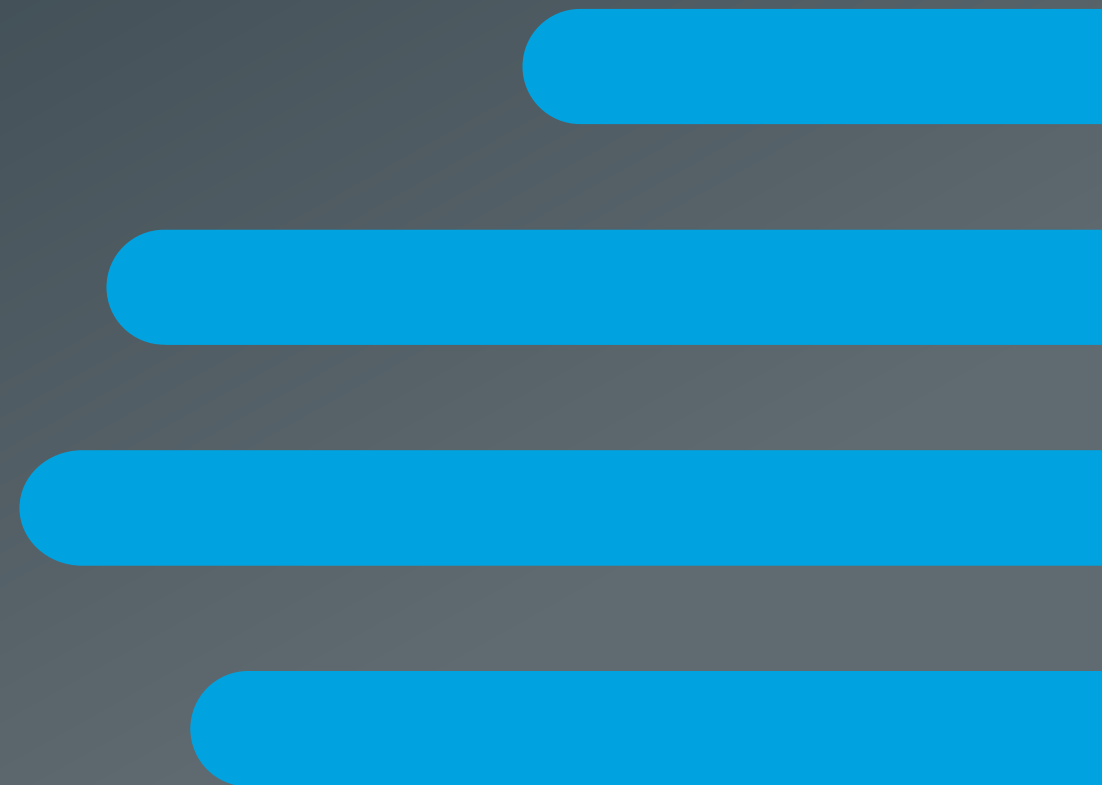
and your individual frequency and notification type:

Manage IQVIA Alerts Subscriptions		Frequency Type	Notification Type
<input type="checkbox"/>	Subscription Name Description		
<input type="checkbox"/>	IQVIA MIDAS Updates on supporting documentation which will assist your interpretation of the data you extract from IQVIA MIDAS.	Daily	Email



2023 ACTS Annual Report

Presented to you by IQVIA's Global Data Science and Advanced Analytics Team with offices in Plymouth Meeting (United States), Frankfurt (Germany) and Beijing (China)





Thank You

