

PLASMA-DERIVED MEDICINAL PRODUCTS DEMAND

THE SUPPLY OF PLASMA-DERIVED MEDICINAL PRODUCTS IN THE FUTURE OF EUROPE

CENTRO NAZIONALE DE SANGUE

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Patrick Robert
Marketing Research Bureau



METHODOLOGY AND DISCLAIMER

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1. HISTORICAL DEVELOPMENT OF THE GLOBAL PDMPs MARKET
2. 2020 CONSUMPTION OF SELECTED PLASMA PROTEINS:
IMMUNOGLOBULIN, ALBUMIN AND FACTOR VIII
3. CURRENT ISSUES & CONCLUSION



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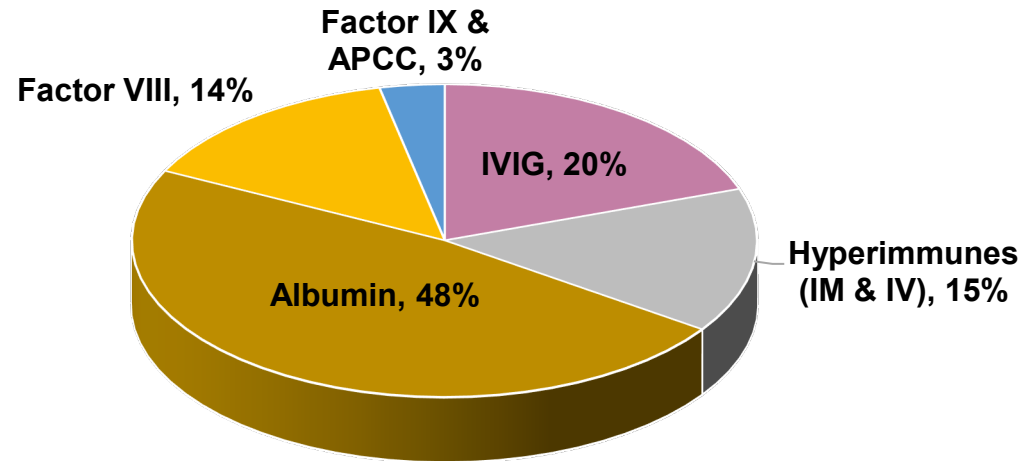
1. HISTORICAL DEVELOPMENT OF THE GLOBAL PDMPs MARKET AND PRODUCT MIX
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THE WORLDWIDE PLASMA PROTEINS MARKET BY PRODUCT

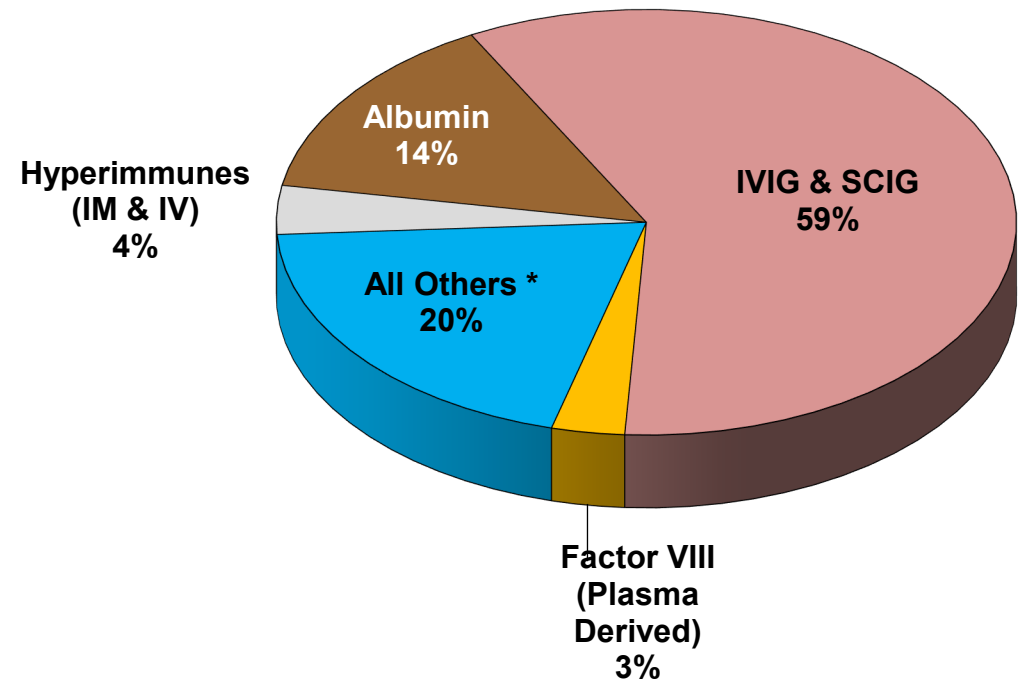
1984

Total Market: \$1.6 Billion



2020

Total Market \$26.6 Billion



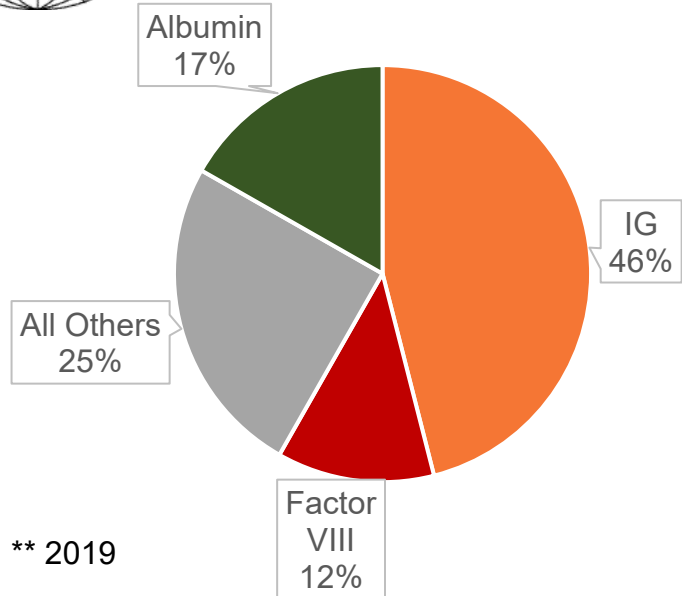
CAGR: 7.9% in constant dollars

* All others: Factor IX, APCC, Alpha-1 Antitrypsin, C-1 Inhibitor, AT III, Fibrinogen, fibrin glue, etc.



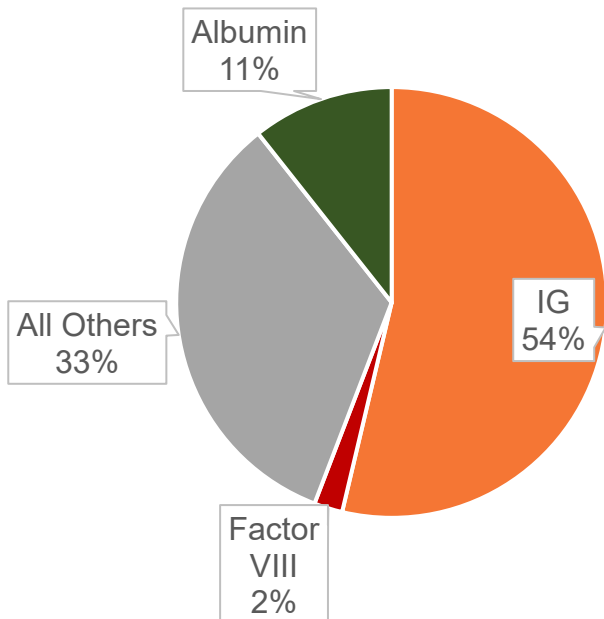


LATIN AMERICA **



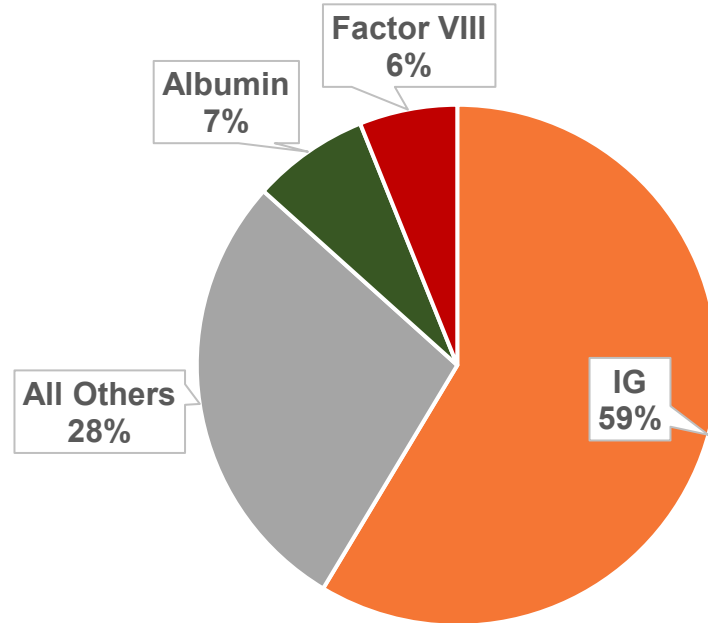
** 2019

ITALY



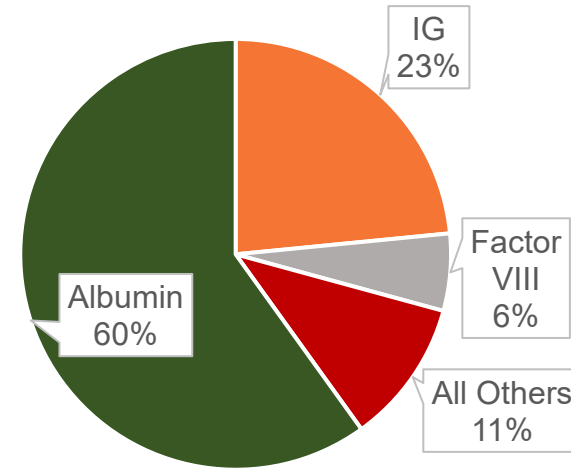
PRODUCT MIX IN SELECTED COUNTRIES AND REGIONS 2020

EUROPE



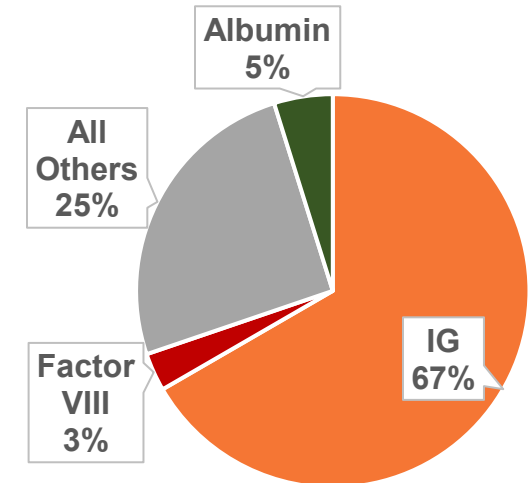
Significant differences characterize the individual country markets in Europe and the rest of the world

CHINA *



* 2018

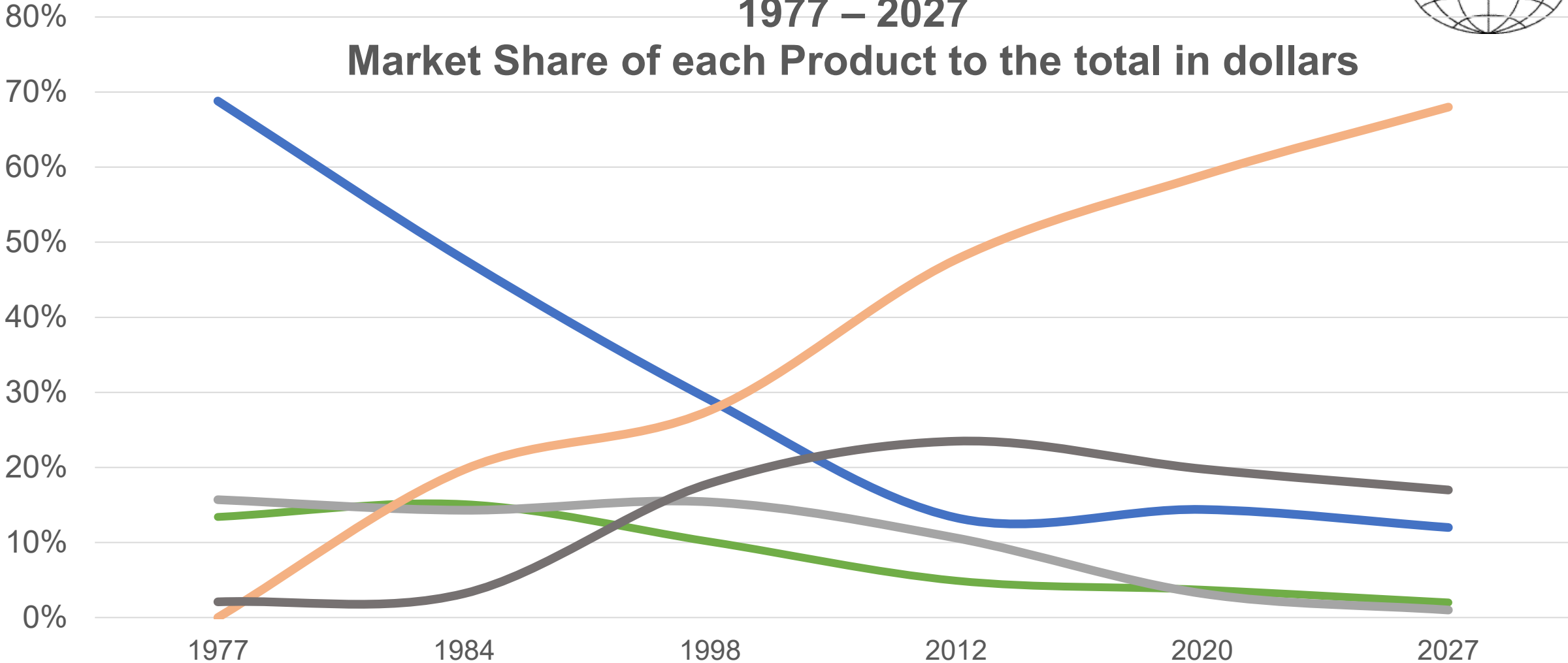
FRANCE



PRODUCT MIX OVER FIVE DECADES 1977 – 2027



Market Share of each Product to the total in dollars



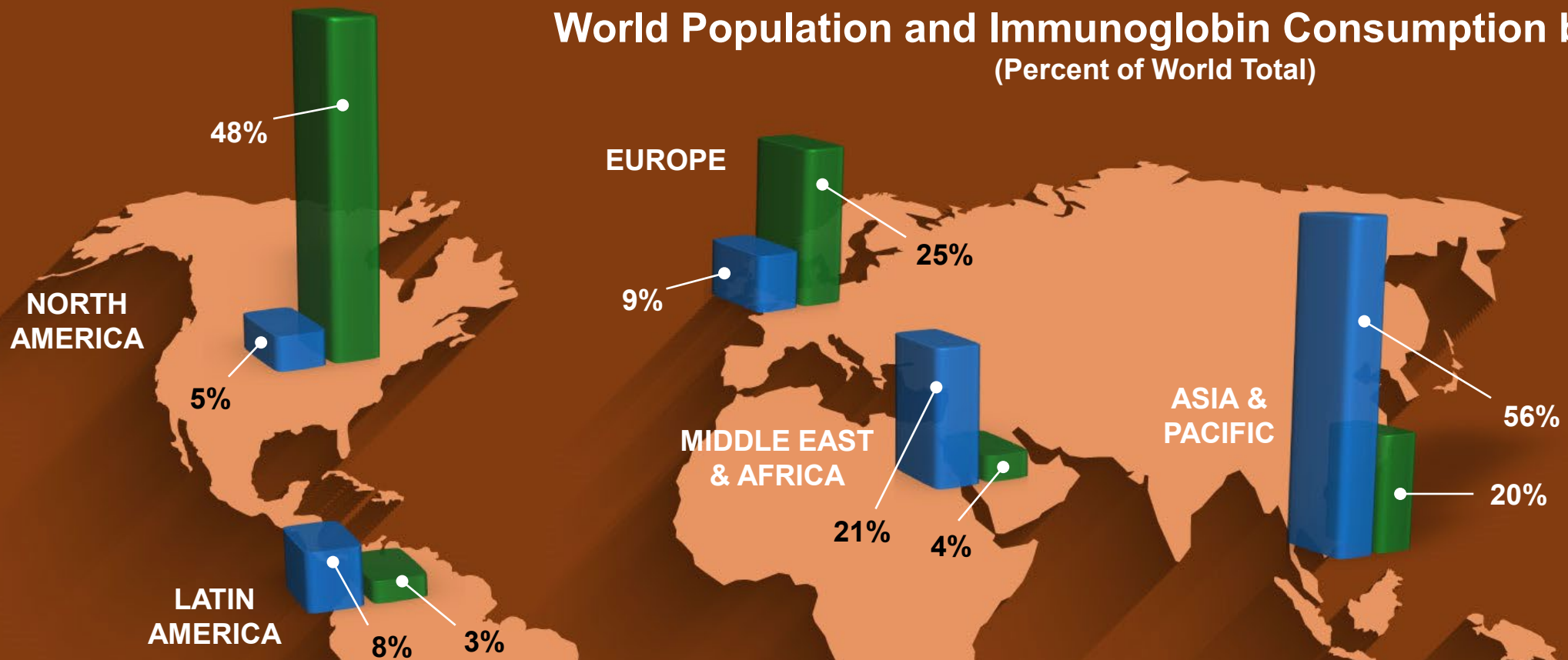
— Albumin — Hyperimmune globulin — Factor VIII — IVIG — All Others

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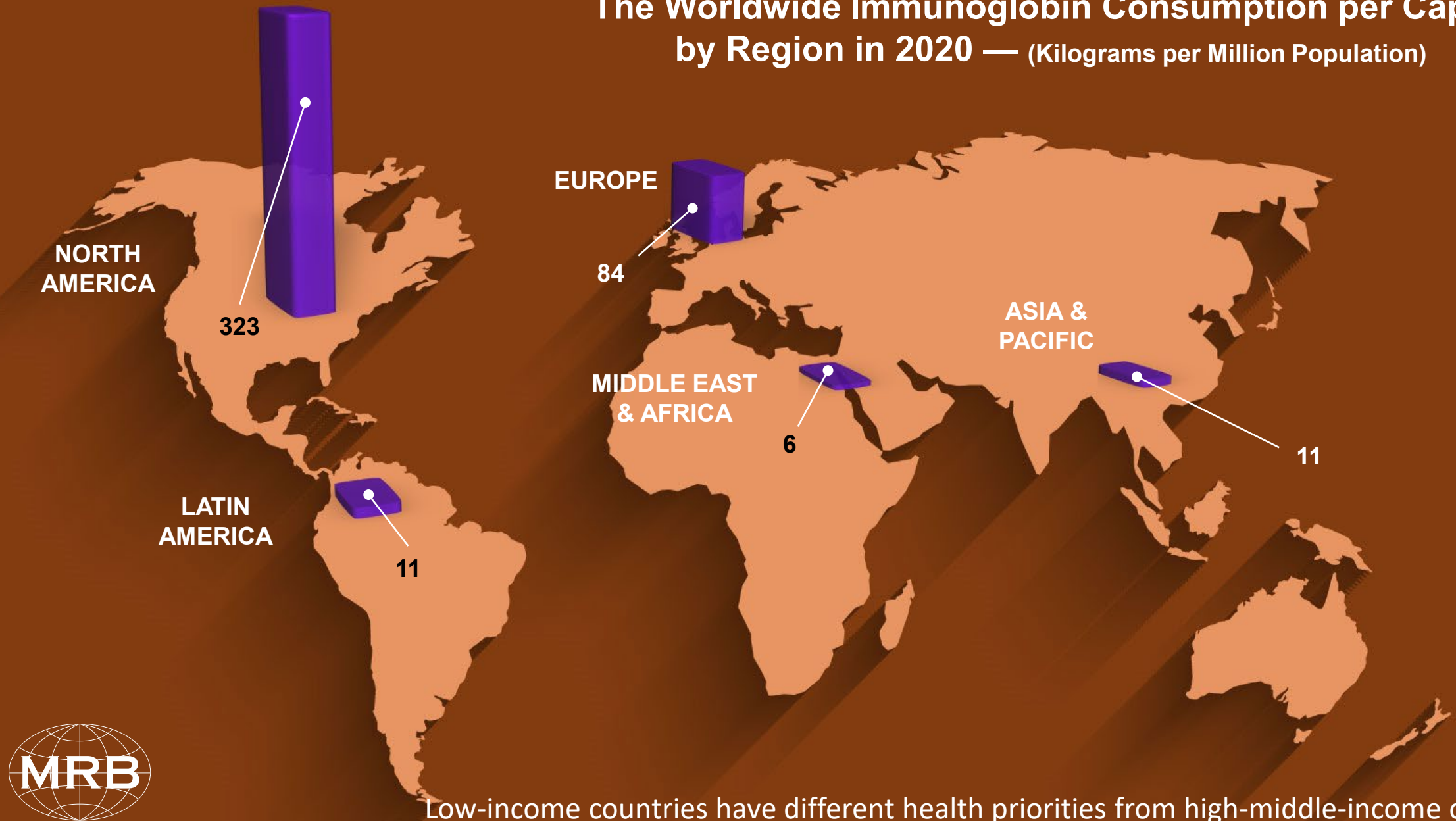


World Population and Immunoglobulin Consumption by Region (Percent of World Total)



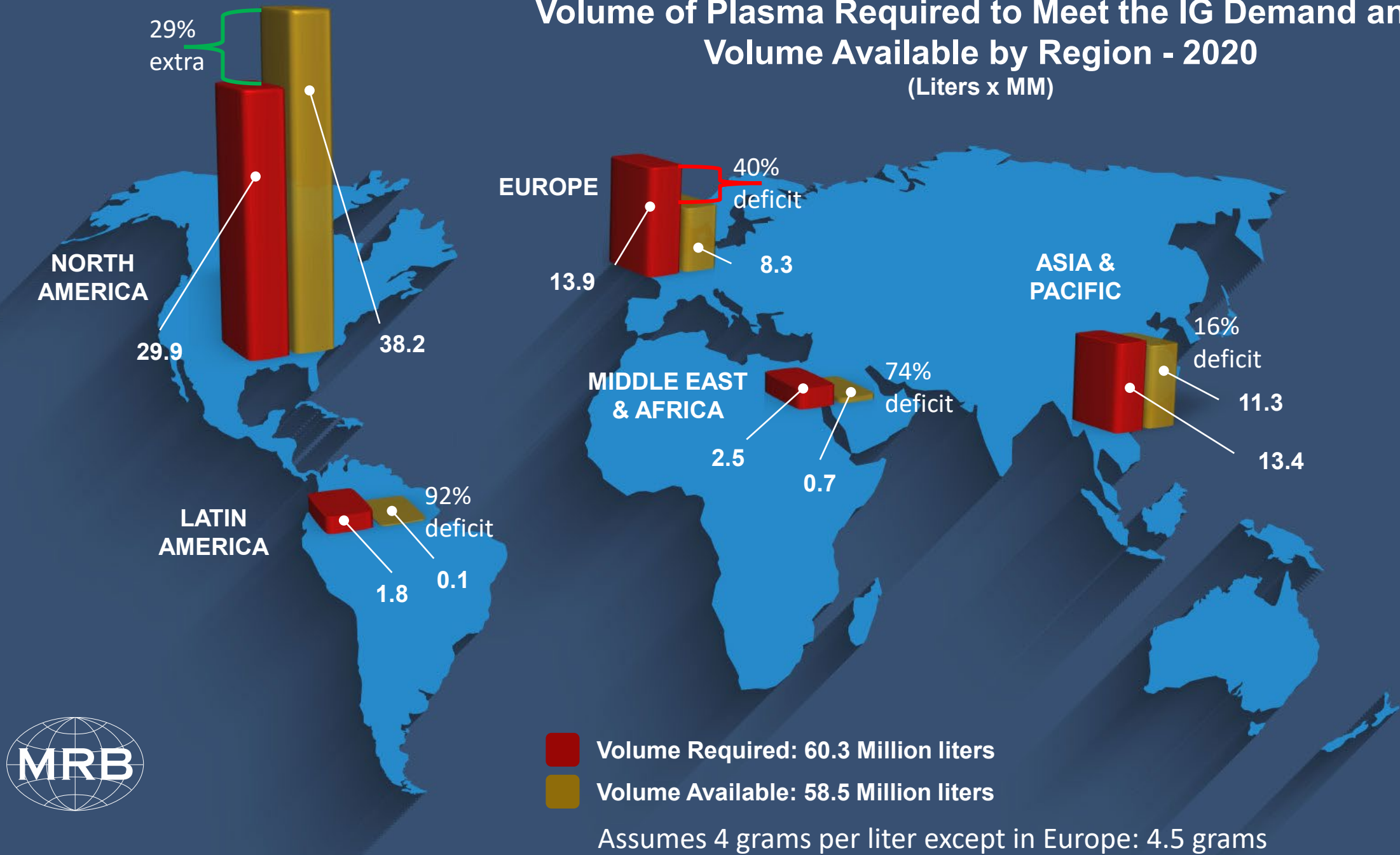
■ IG Consumption
■ World Population

The Worldwide Immunoglobulin Consumption per Capita by Region in 2020 — (Kilograms per Million Population)



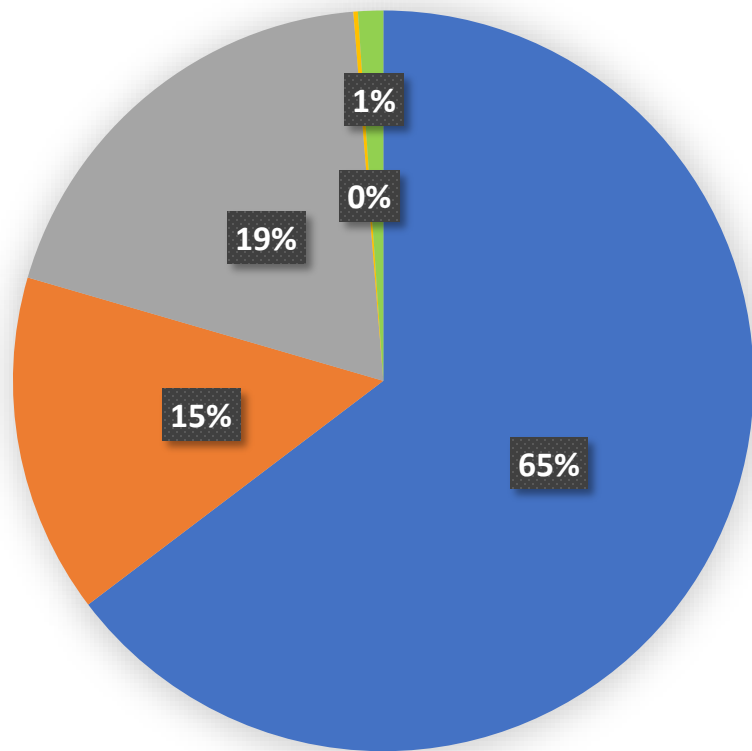
Low-income countries have different health priorities from high-middle-income countries. Rare diseases are under-funded and under-diagnosed, thus under-treated

Volume of Plasma Required to Meet the IG Demand and Volume Available by Region - 2020 (Liters x MM)

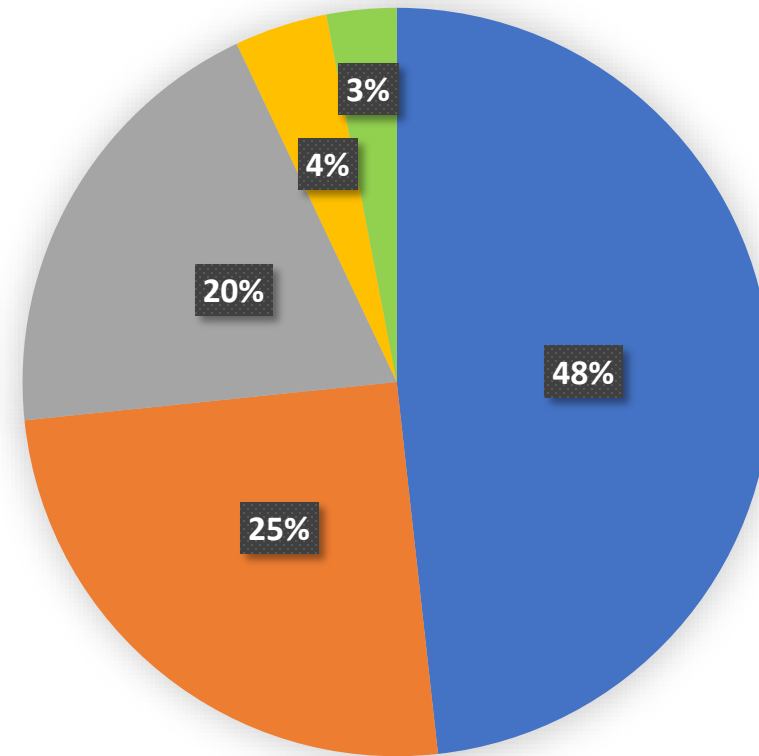


North America and Asia-Pacific produce enough plasma for their own region's IG use, but others must import IG made from US plasma

Origin of Plasma for Fractionation - 2020



2020 IG Usage by Region (~250 tons)



- North America *
- Europe
- Asia & Pacific **
- Latin America
- Middle East & Africa

25%

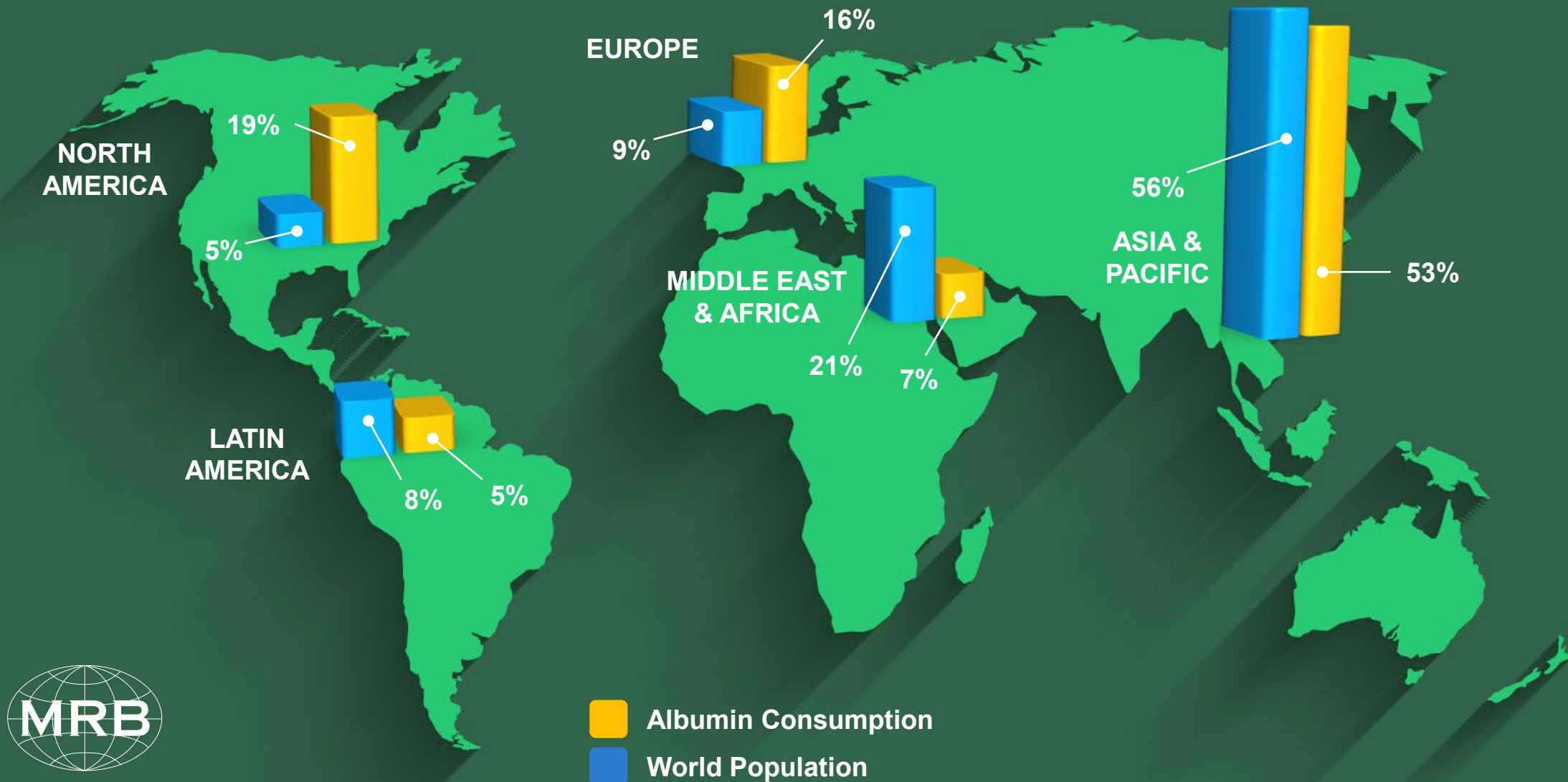
Since Europe consumes 25% of the worldwide IG supply but collects only 15% of the global plasma for fractionation, there is an imbalance that requires Europe to import IG produced from US plasma.

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World Population and Albumin Consumption by Region (Percent of World Total)



The Worldwide Albumin Consumption per Capita by Region in 2020 — (Kilograms per Million Population)

NORTH AMERICA

575.2

LATIN AMERICA

88.6

EUROPE

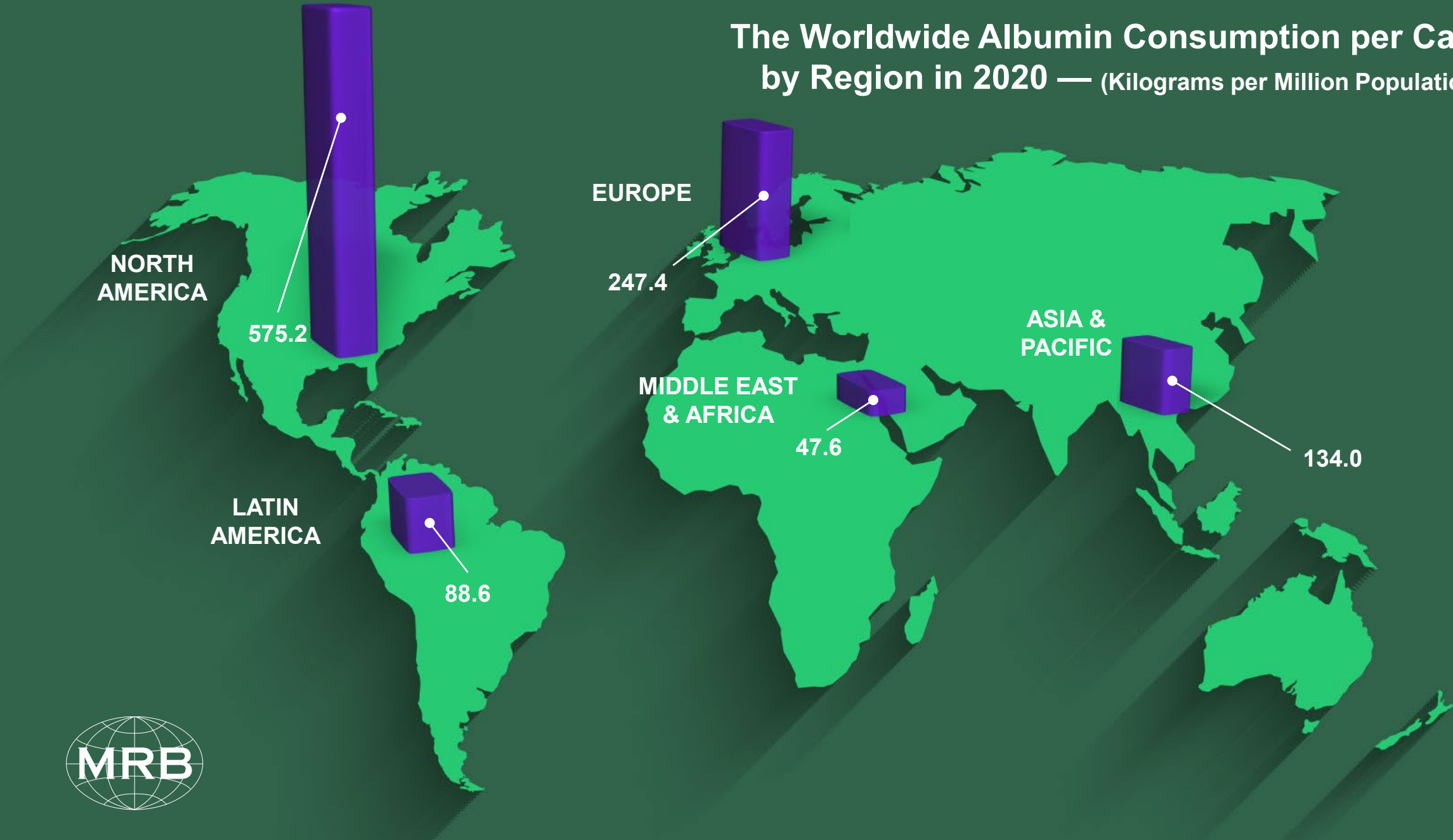
247.4

MIDDLE EAST & AFRICA

47.6

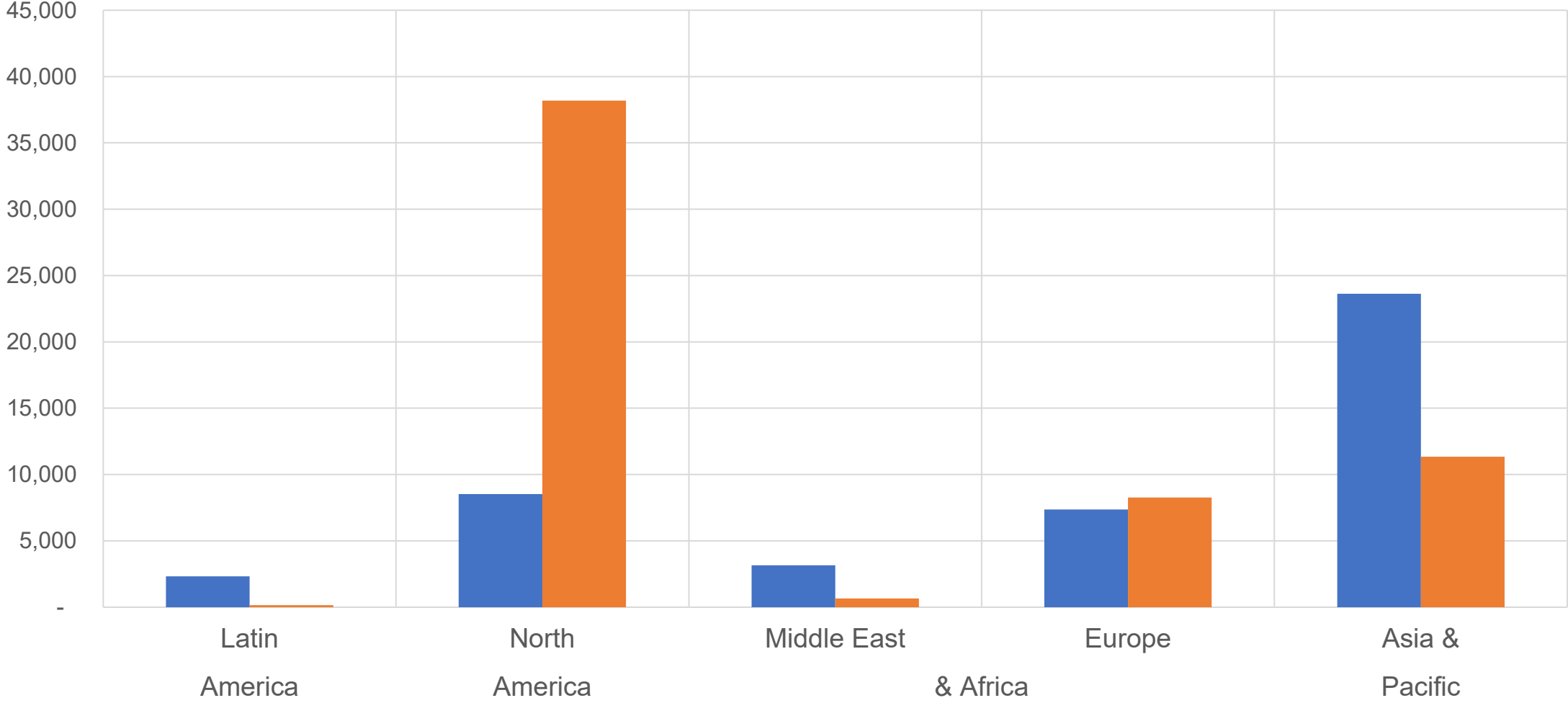
ASIA & PACIFIC

134.0



Region	Consumption (Kilograms per Million Population)
North America	575.2
Latin America	88.6
Europe	247.4
Middle East & Africa	47.6
Asia & Pacific	134.0

Volume of Plasma required and available by Region for Albumin Production - 2020 (Liters x 000)



■ Volume Required: 45.0 Million Liters

■ Volume Available: 58.6 Million Liters

Assumption: 25 grams per liter of plasma

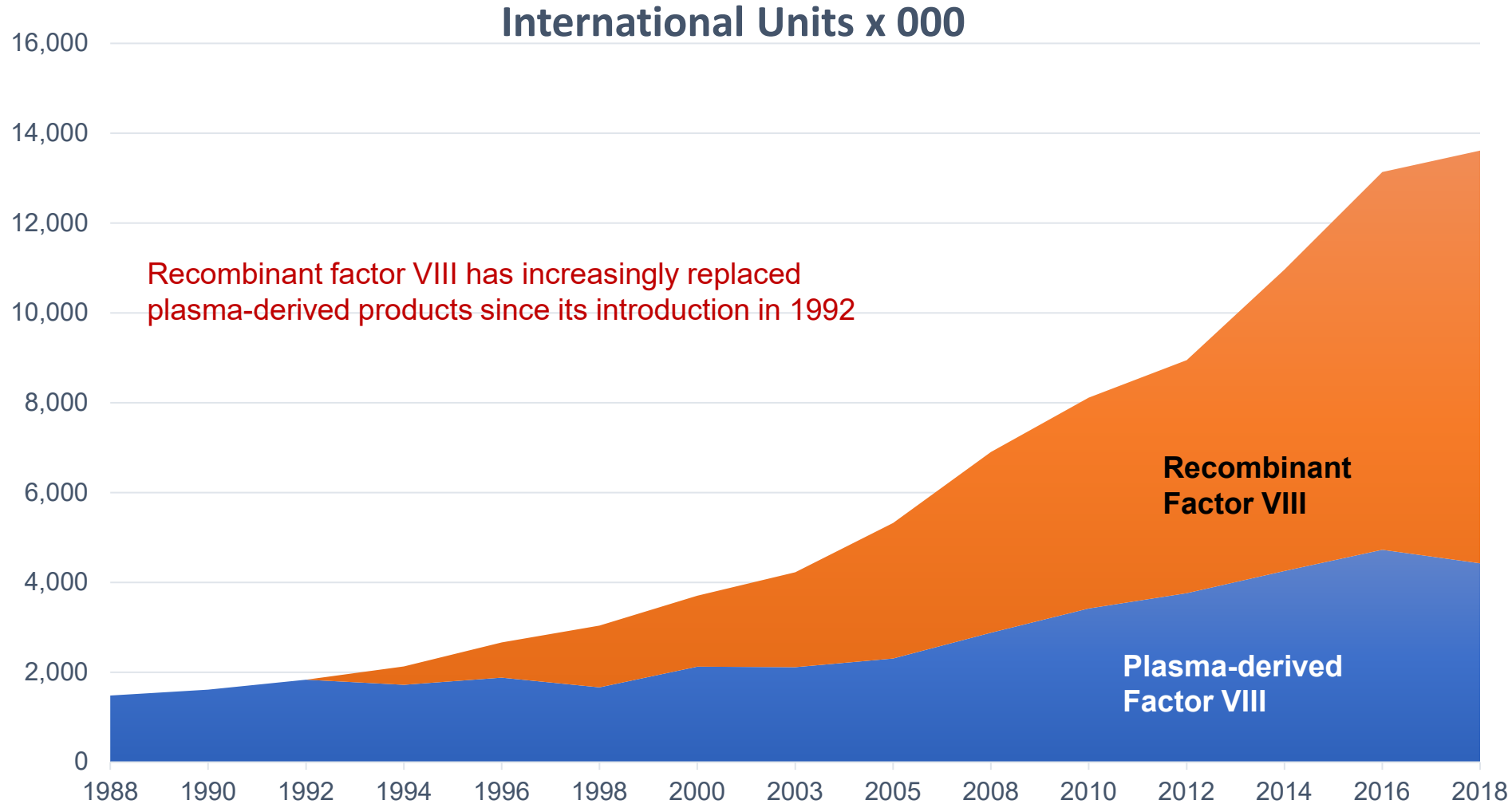


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Global Factor VIII Usage over the past 30 years



2000-2018 CAGR

rFVIII: 10.3%

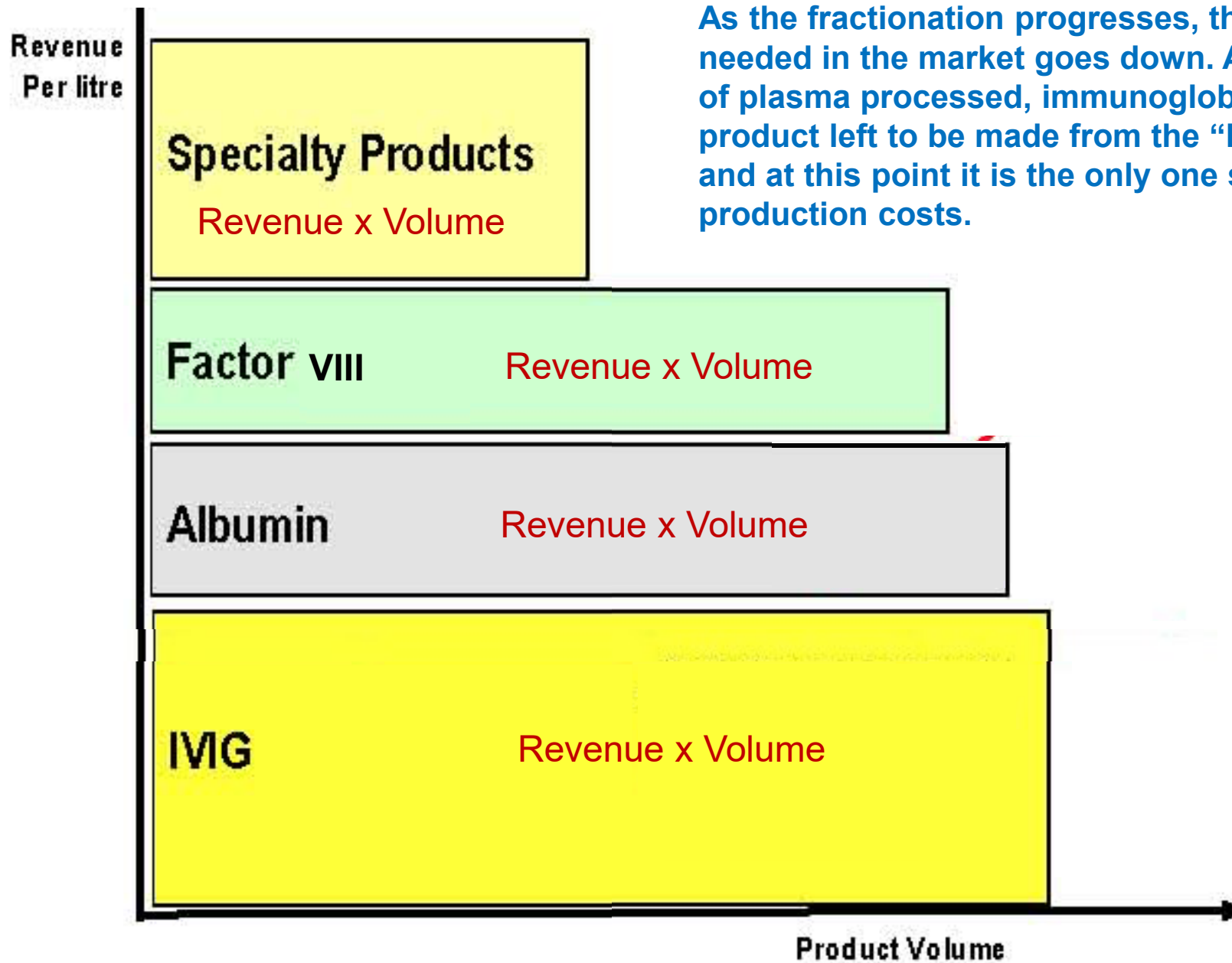
pdFVIII: 4.2%

Total FVIII: 7.5%

Volume of plasma required to meet the global needs for plasma-derived factor VIII in 2020: approx. 19 million liters



Plasma Economic S



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CURRENT ISSUES

- **Will the U.S. continue supplying plasma to the world? Is there a limit to the US plasma supply?**
- **Will other countries/regions generate more plasma for fractionation?**
- **Will the IG market dominance be compromised by new therapies currently in development?**
- **Will self-sufficiency for the procurement of PDMPs become a reality?**

Thank you!



MARKETING RESEARCH BUREAU

Phone: +1-425-643-8123 or +1-858-775-6565 (Whatsapp/mobile)

**Email: info@marketingresearchbureau.com
probert@marketingresearchbureau.com
mhotchko@marketingresearchbureau.com**

www.marketingresearchbureau.com