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The IDF Diabetes Atlas: Looking underneath the bonnet (hood)

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The IDF Diabetes Atlas

- **Past**
  - Editions 1 – 8 – estimates, projections, & trends
- **Present**
  - Challenges
    - Data gaps –proportion of countries with no “in-country” study of sufficient quality, extrapolation, advocacy for new studies
    - Heterogeneity in methods – OGTT, FPG, HbA1c, etc.
    - Projections – with or without BMI?
    - Theory of change exercise – quotes from interviews
  - What’s new in edition 9?
- **Future**
  - Using the Atlas data to improve the lives of people with diabetes - advocacy, advocacy, advocacy
  - Topics for the 10th edition – indigenous populations, DM and TB, others?

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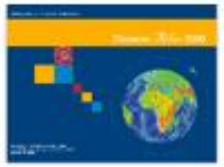
The IDF Diabetes Atlas - Past

Editions 1 – 8 - estimates and projections



2000, 1st edition

2003, 2nd edition

2006, 3rd edition

2009, 4th edition

2011, 5th edition

2013, 6th edition

2015, 7th edition

2017, 8th edition

COMING SOON

2019, 9TH edition

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Editions 1-8 - estimates and projections

Source	Estimates (millions)		Projections					
			2000	2025	2030	2035	2040	2045
WHO	1995	135 m	150 m					
Atlas 1	2000	151 m	None					
Atlas 2	2003	194 m		333 m				
Atlas 3	2007	246 m		380 m				
Atlas 4	2010	285 m		438 m				
Atlas 5	2011	366 m			552 m			
Atlas 6	2013	382 m				592 m		
Atlas 7	2015	*415 m*					*642 m*	
Atlas 8	2017	*425 m*						*629 m*
Atlas 9	*2019*	*?*			*?*			*?*

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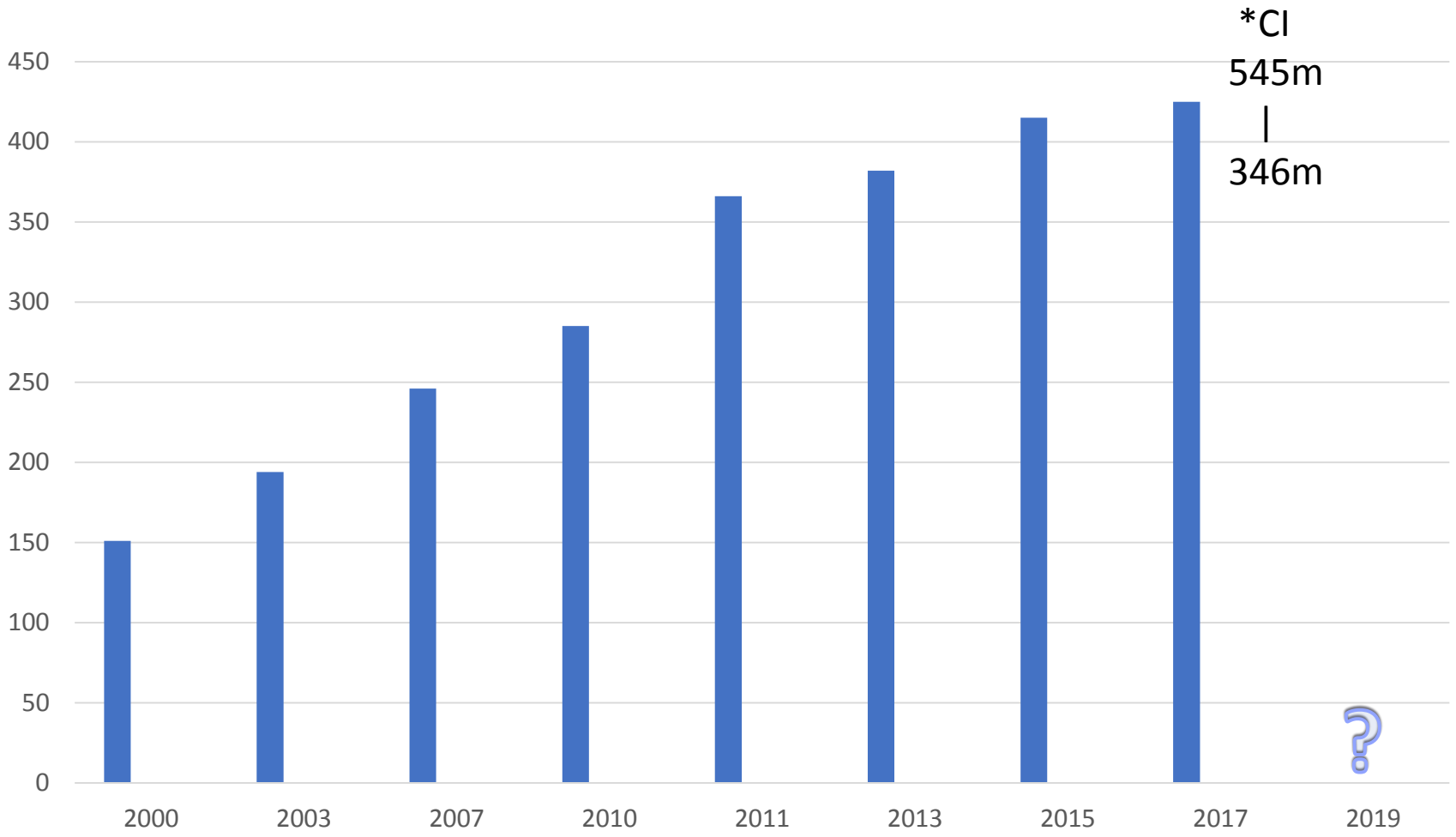
IDF Atlas prevalence estimates



*Confidence Interval

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Gathering data sources

- Peer-reviewed publication
- National health surveys
- Ministries of health
- Other official sources such as reports

Selecting data sources (*AHP scoring)

Method of Diagnostic
- Oral glucose tolerance test
- Fasting blood glucose
- Self-reported
- Medical records or clinical diagnosis
- HbA1c

Sample size
- > 5000
- Between 4999 to 1500
- Between 1499 to 700
- < 700

Representation
- National
- Regional
- Local
- Ethnic group / Other specific groups

Age of the data sources
- < 5 y
- Between 5-9 y
- Between 10-19 y
- >= 20 y

Type of publication
- Peer-reviewed
- National Health survey
- WHO STEPS study
- Other official report
- Personal communication

*Analytical Hierarchy Process

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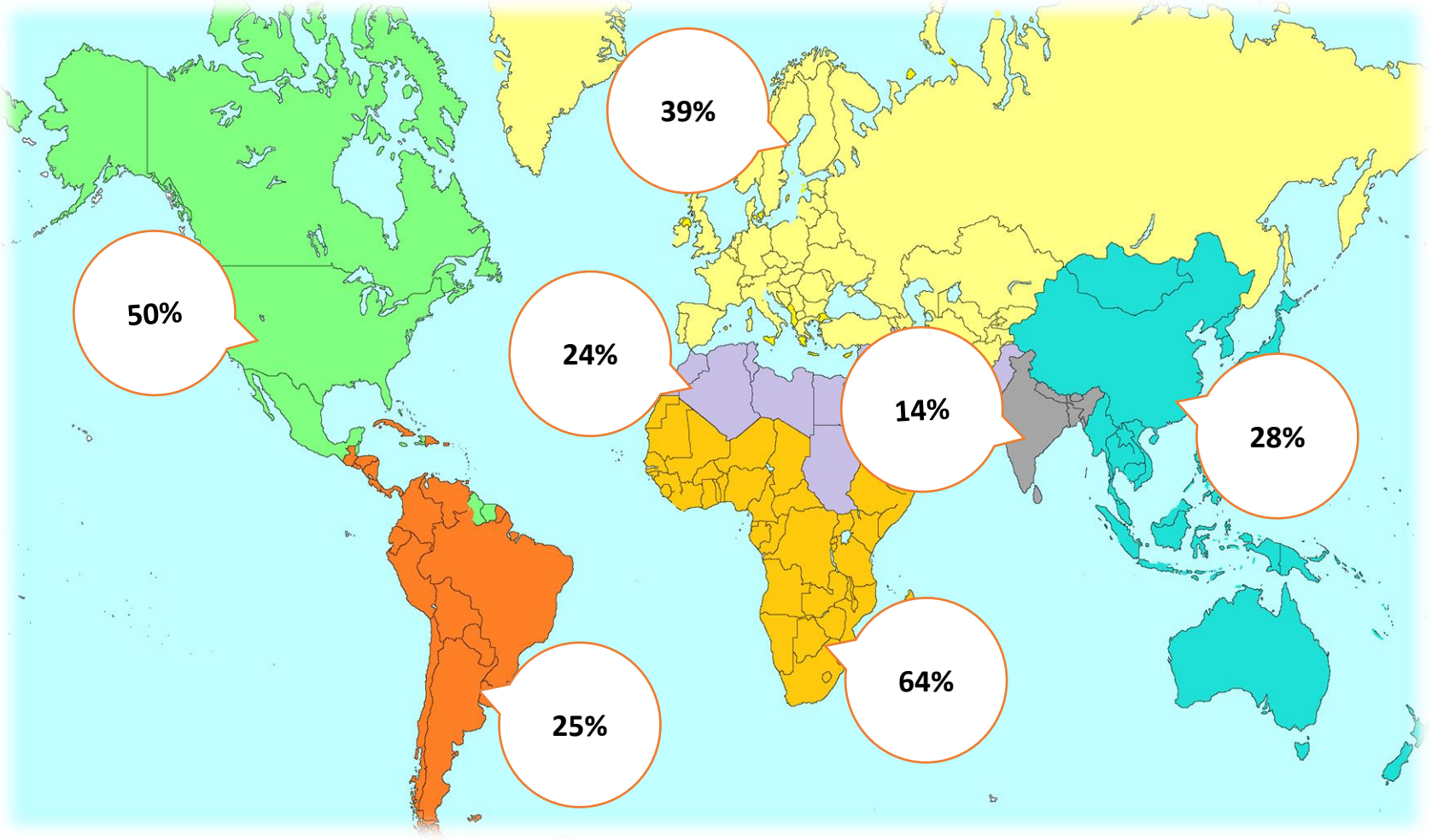
Data gaps in IDF regions

- **NAC** • IDF North America and Caribbean region
- **SACA** • IDF South and Central America region
- **EUR** • IDF Europe region
- **MENA** • IDF Middle east and North Africa region
- **AFR** • IDF Africa region
- **SEA** • IDF South East Asia region
- **WP** • IDF Western Pacific region



Red countries

30 countries:

Angola
Burkina Faso
Burundi
Cape Verde
Central African Republic
Chad
Democratic Republic of the Congo
Republic of Congo
Côte d'Ivoire
Djibouti
Equatorial Guinea
Eritrea
Gabon
Guinea
Guinea-Bissau
Lesotho
Liberia
Madagascar
Malawi
Mali
Mauritania
Namibia
Niger
Nigeria
Sao Tome and Principe
Senegal
South Sudan
Swaziland
Western Sahara
Zambia

Yellow countries

2 countries:

Ethiopia
South Africa

Green countries

15 countries:

Benin
Botswana
Cameroon
Comoros
Gambia
Ghana
Kenya
Mozambique
Reunion
Rwanda
Seychelles
United Republic of Tanzania
Togo
Uganda
Zimbabwe

IDF Africa region

Red countries	**Without data**
Yellow countries	**With low quality data**
Green countries	**With high quality data**

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IDF Diabetes Atlas: Extrapolation Strategy

Using diabetes prevalence data from similar countries i.e., matched by **ethnicity, language, World Bank income level, and geographical proximity**

IDF regions	Extrapolated from countries with "in-country" data in similar groups	Countries with "in-country" data
Africa	Nigeria	Benin, Gambia, Ghana, Togo
Europe	Georgia	Russian Federation, Uzbekistan
Middle East and North Africa	Afghanistan	Islamic Republic of Iran
North America and Caribbean	Aruba	Grenada, Jamaica, Suriname
South and Central America	Uruguay	Argentina, Chile, Ecuador, Peru
South east Asia	Bhutan	Bangladesh, India, Sri Lanka
Western Pacific	Vanuatu	Kiribati, Papua New Guinea, Samoa, Solomon Islands, Tonga

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Heterogeneity in diagnostic methods

- Oral Glucose Tolerance Test (OGTT)
- Fating Plasma Glucose (FBG)
- Hemoglobin A1c (HbA1c)

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Projections – with or without BMI?

We have chosen without – reasons are:

- Consistency with previous Atlas editions
- We already have urbanization as a surrogate for overweight and obesity
- What about other risk indicators? Why just BMI?
- Can we trust the BMI data – there would be even more “data gaps”
- The more complex we make the model the more likely we are to be incorrect!

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What's new in edition 9?

Data Collection

- Data collected in other languages than English; **Spanish, Russian, German, Portuguese, Arabic, Danish, Chinese**
- National Health Surveys

Result Section

- Incidence of diabetes; total diabetes or type 2 diabetes in adults
- T2DM in children and adolescents
- Economic impact: Indirect costs of diabetes/Cost-effectiveness of interventions
- Diabetes projection for 2030 and 2045

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What's new in edition 9?

Diabetes Complications

- Acute complications
- Diabetes co-morbidities: diabetes and cancer

Action on Diabetes

- Diabetes prevention (obesity, physical health)
- Diabetes management/Delivery of care
- Access to medicines and other aspects of health care
- Separate executive summary (advocacy tool) in **6** languages
- Use of the power of Atlas (Theory of Change)

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IDF Diabetes Atlas theory of change exercise

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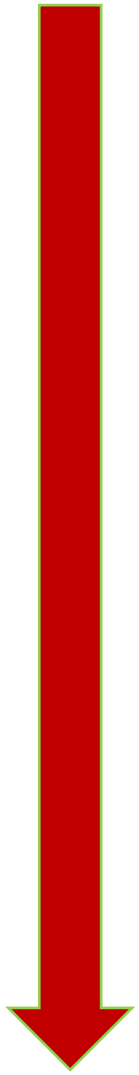
Sustainable, vibrant, healthy communities free from diabetes
Atlas role
Advocacy
Supporting research
Implementation
Outcome



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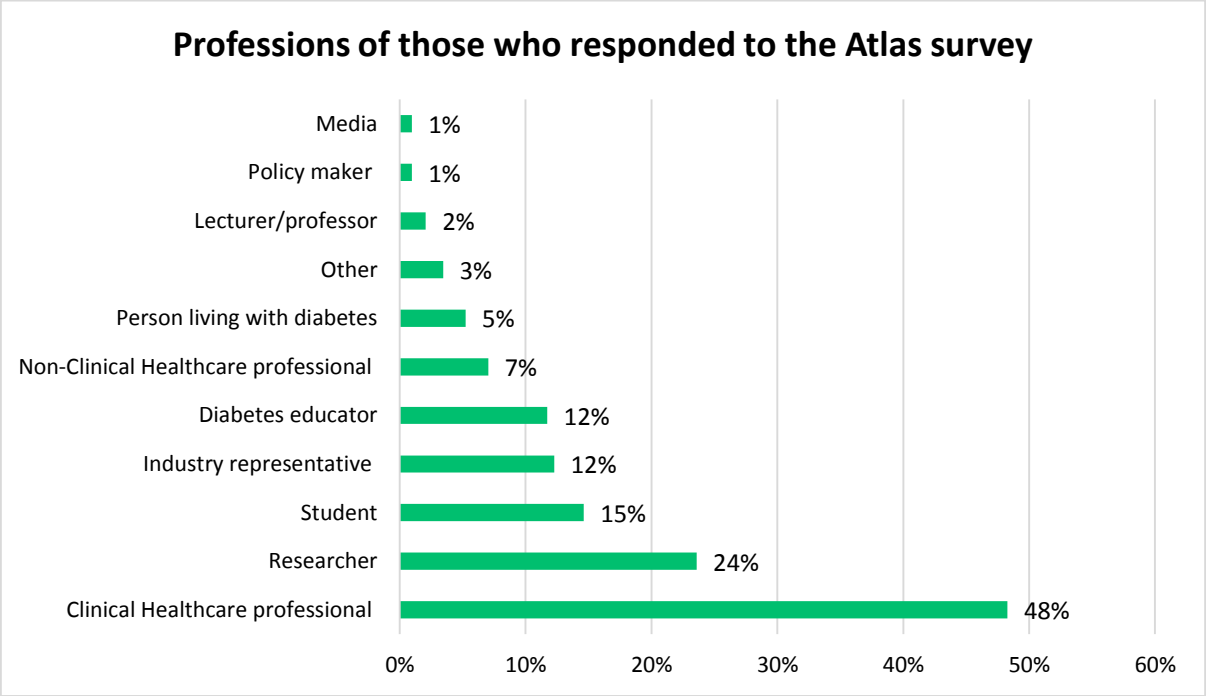
Two pronged approach

Atlas stakeholders were approached to complete a short interview:

Interviews with Atlas Stakeholders	Number
Healthcare professional (HCP)	3
Researcher/Atlas committee member	2
Honorary president	2
People with DM/BCV/YLD*/DM educator	5
IDF Diabetes Atlas Partner	1
Private sector	1
Total	14

The 20,000 people who had downloaded Atlas material were approached to complete an online survey, 725 users responded



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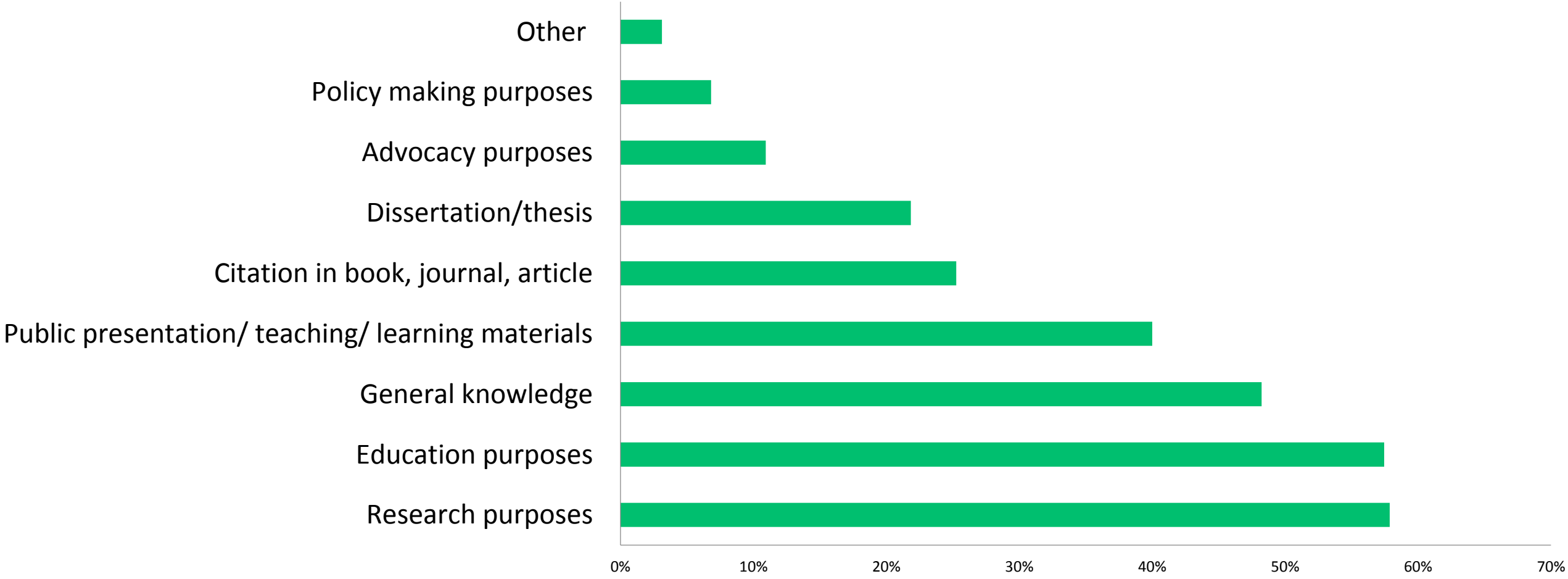
Atlas stakeholder Interview results

- Bruno Carrattini, YLD from Uruguay, described how he used the IDF Atlas data **to influence policy makers' decision to subsidize insulin pumps** in the public health system.
- *"I believe the data from the Atlas is critical in **awaking and informing policy makers** in a given country but also **to stimulate and prioritise global initiatives**" Anders Dejgaard, Medical Director, WDF*
- *Firstly, it allows **diabetes care companies to find the main market for their products or services**; Secondly, associations and governments **will pay more attention to diabetes, and take actions to control prevalence**; and lastly, it **makes people pay more attention to their own health**" Mr Berapin Wu, Marketing manager at Acon Laboratories.*
- *"IDF atlas is a very useful tool for our **teaching programs**" Dr Marguerite de Clerck, IDF Centre in Congo*

Reasons for downloading IDF materials



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Conclusions

- The IDF Diabetes Atlas is accessed and quoted by a wide range of individuals from across the Globe.
- The Atlas potentially has a strong role in supporting advocacy initiatives among policy makers.
- The Atlas is widely used in the academic community as a starting point for research and for training and educational activities.
- There is scope to improve and expand the content and reach of Atlas material for different audiences.

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Challenges

- Data gaps – countries with no “in-country” study of sufficient quality, extrapolation from other countries. How valid is this?
- Advocacy for new studies – epidemiological guidelines
- Heterogeneity in methods – OGTT, FPG, HbA1c
- Projections – with or without BMI?

If any further thoughts strike you on the way home, please get in touch ….

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Sustainable, vibrant, healthy communities free from diabetes				
Atlas role	Where data gaps exist	Where poor quality data exists	Where good quality data exists	Atlas recommendations created
Advocacy	Engaging communities, lobbying the funders & empowering researchers	Scale up fundraising	Multi-stakeholder collaboration	Sensitisation meetings with governments & urgency to act on recommendations
Mobilising research funds	Income generation for diabetes epidemiology research	Increased awareness & economic support for research	Business model ownership from stakeholders	Enough resources available to form a comprehensive surveillance system
Planning	Innovation for creation of data collection tools	Evaluation of existing tools & how to improve training	Cost-effective, high quality training for data collectors. Replication of ideal data collection models.	In-country diabetes surveillance systems created, adopted, translated & tested
Implementation	Regular data submission & monitoring	Revising the protocols & available tools	Empowering people with diabetes, creating agency. SOPs and protocols in place.	Diabetes surveillance integrated into health system
Outcome	Reliable diabetes estimates & projections	Wider coverage with screening, care & medicines	Target group continues to be interested in and willing to join data collection efforts. Active local national diabetes associations	Governmental policies exist. Community-driven, cost-effective strategies to prevent diabetes. IT systems are well maintained.