Controlling the health and financial impact of diabetes

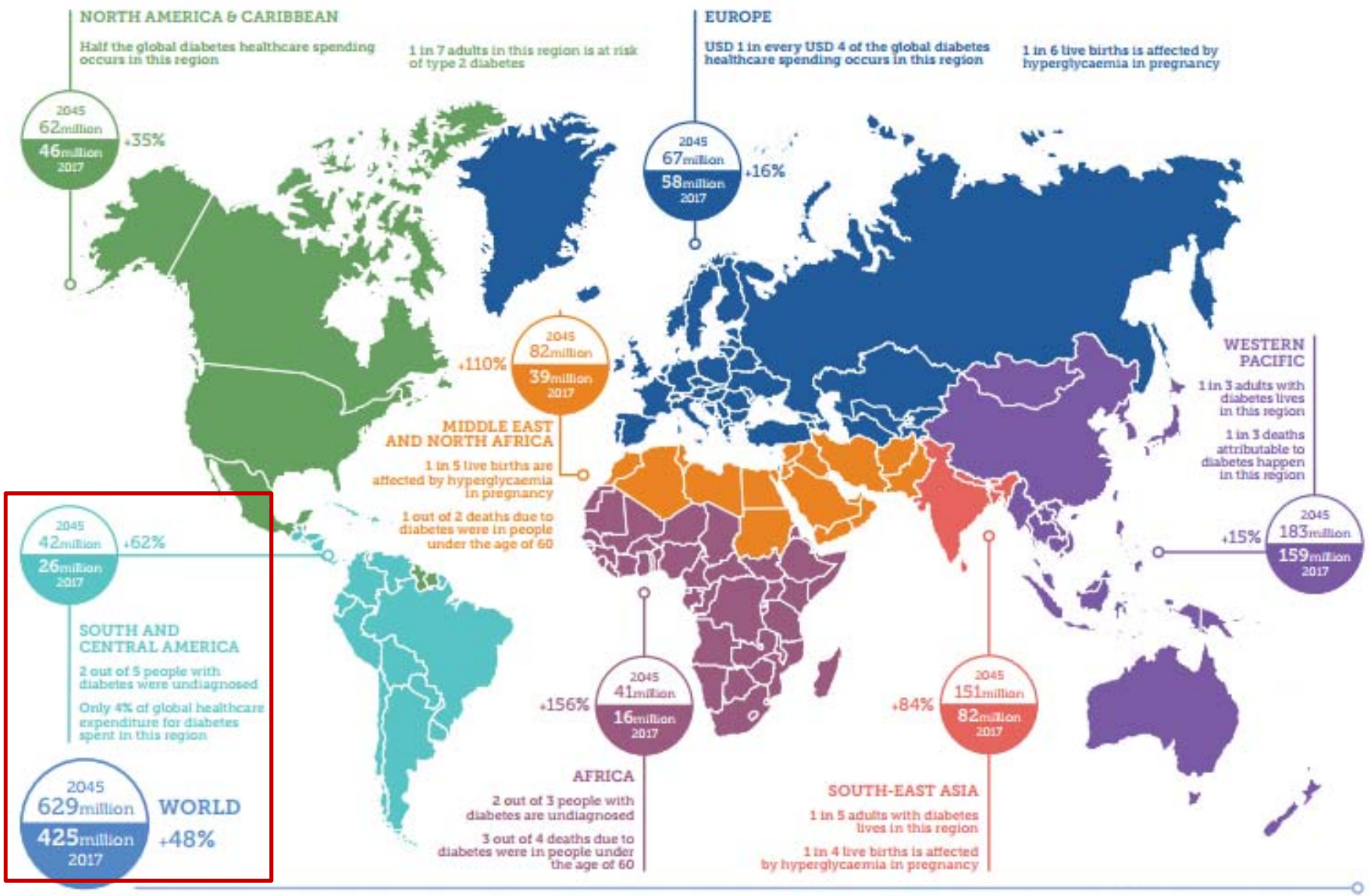
Henk Bilo, Isala, Zwolle; and University
Medical Center, Groningen
the Netherlands

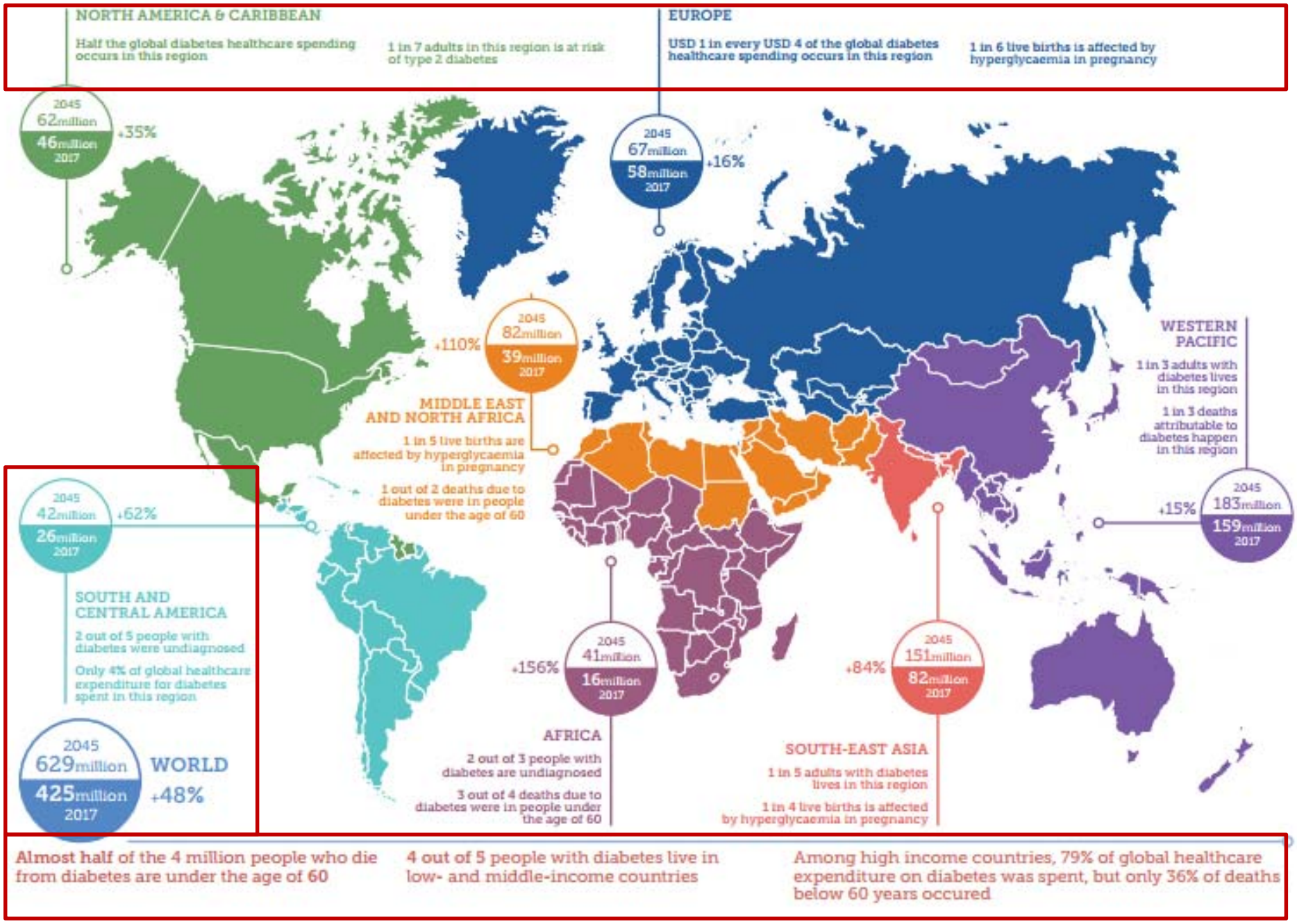
THE UNIVERSITY OF THE WEST INDIES
AT ST. AUGUSTINE, TRINIDAD AND TOBAGO

Stichting Staatsziekenfonds
State Health Foundation

Conflicts of interest

- None, except:


NORTH AMERICA & CARIBBEAN
Half the global diabetes healthcare spending occurs in this region
1 in 7 adults in this region is at risk of type 2 diabetes
2045
62million
46million
2017
+35%
EUROPE
USD 1 in every USD 4 of the global diabetes healthcare spending occurs in this region
1 in 6 live births is affected by hyperglycaemia in pregnancy
2045
67million
58million
2017
+16%
+110%
2045
82million
39million
2017
MIDDLE EAST AND NORTH AFRICA
1 in 5 live births are affected by hyperglycaemia in pregnancy
1 out of 2 deaths due to diabetes were in people under the age of 60
WESTERN PACIFIC
1 in 3 adults with diabetes lives in this region
1 in 3 deaths attributable to diabetes happen in this region
+15%
2045
183million
159million
2017
2045
42million
26million
2017
+62%
SOUTH AND CENTRAL AMERICA
2 out of 5 people with diabetes were undiagnosed
Only 4% of global healthcare expenditure for diabetes spent in this region
+156%
2045
41million
16million
2017
AFRICA
2 out of 3 people with diabetes are undiagnosed
3 out of 4 deaths due to diabetes were in people under the age of 60
+84%
2045
151million
82million
2017
SOUTH-EAST ASIA
1 in 5 adults with diabetes lives in this region
1 in 4 live births is affected by hyperglycaemia in pregnancy
2045
629million
425million
2017
WORLD
+48%
Almost half of the 4 million people who die from diabetes are under the age of 60
4 out of 5 people with diabetes live in low- and middle-income countries
Among high income countries, 79% of global healthcare expenditure on diabetes was spent, but only 36% of deaths below 60 years occured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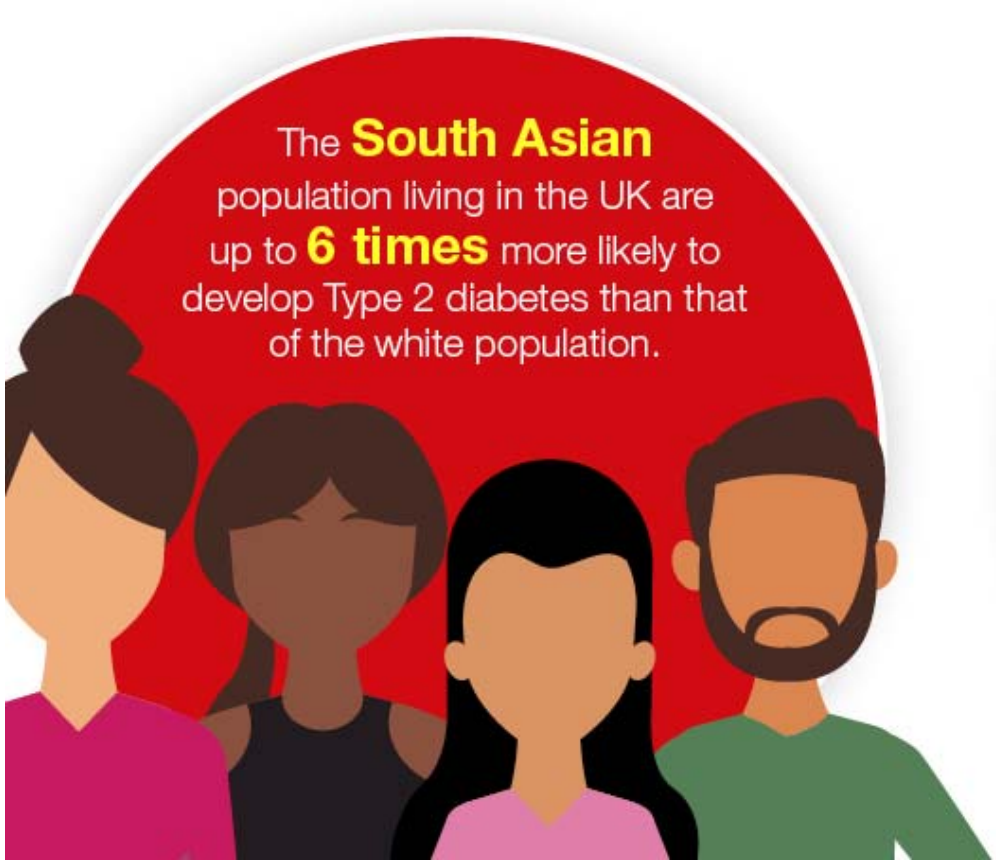
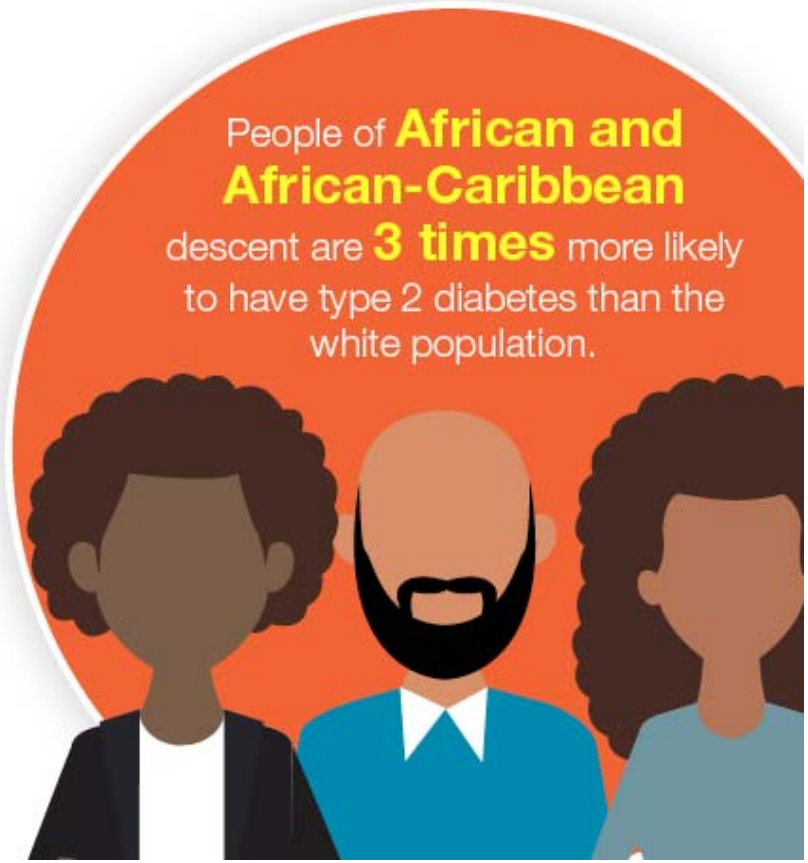
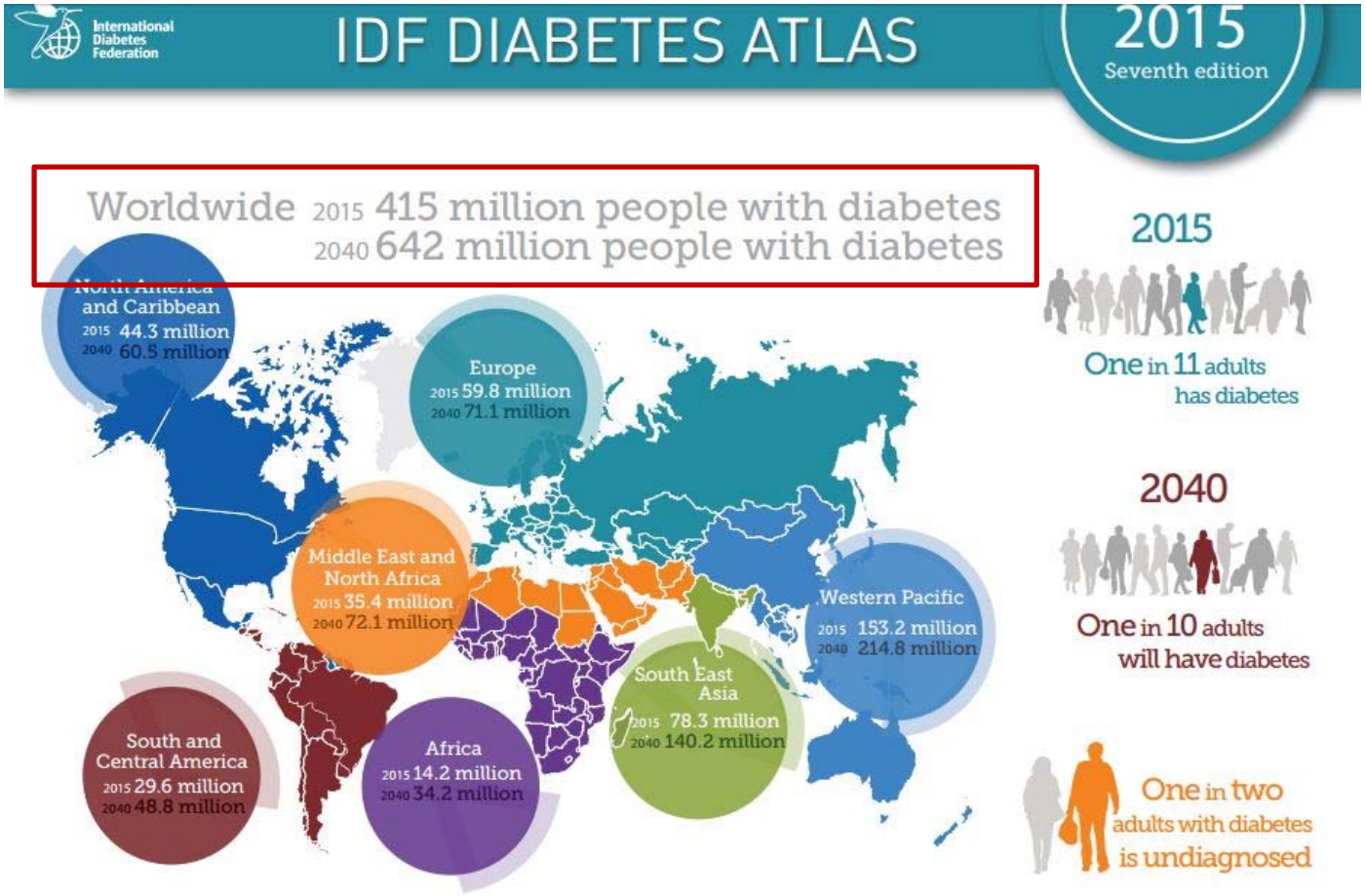
Ethnicity and Type 2 diabetes risk






International Diabetes Federation
IDF DIABETES ATLAS
2015
Seventh edition
Worldwide 2015 415 million people with diabetes
2040 642 million people with diabetes
North America and Caribbean
2015 44.3 million
2040 60.5 million
Europe
2015 59.8 million
2040 71.1 million
Middle East and North Africa
2015 35.4 million
2040 72.1 million
Western Pacific
2015 153.2 million
2040 214.8 million
South East Asia
2015 78.3 million
2040 140.2 million
South and Central America
2015 29.6 million
2040 48.8 million
Africa
2015 14.2 million
2040 34.2 million
2015
One in 11 adults has diabetes
2040
One in 10 adults will have diabetes
One in two adults with diabetes is undiagnosed
Number of men with diabetes
2015 215.2 million
2040 328.4 million
Number of women with diabetes
2015 199.5 million
2040 313.3 million
Diabetes in urban areas
2015 269.7 million
2040 477.9 million
Diabetes in rural areas
2015 145.1 million
2040 163.9 million

International Diabetes Federation

IDF DIABETES ATLAS

2015
Seventh edition

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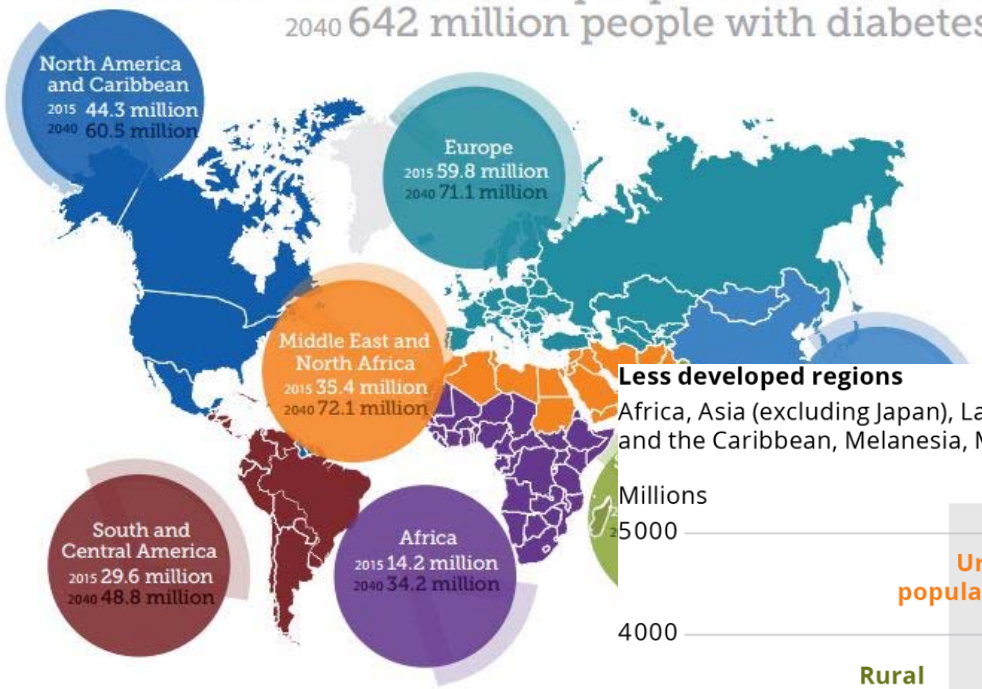
2040 642 million people with diabetes



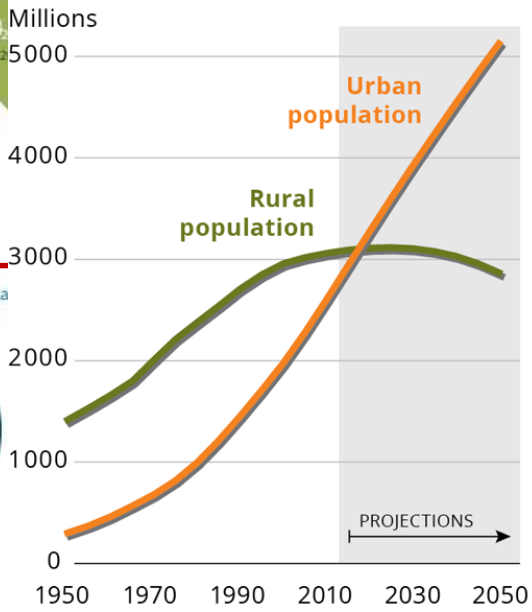
2015

One in 11 adults has diabetes

2040

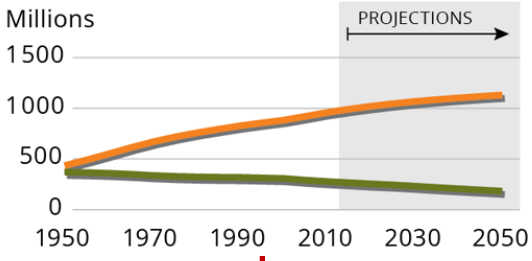
Less developed regions

Africa, Asia (excluding Japan), Latin America and the Caribbean, Melanesia, Micronesia and Polynesia.



More developed regions

Europe, Northern America, Australia, New Zealand and Japan.



Number of men with diabetes

2015 215.2 million
2040 328.4 million

Number of women with dia

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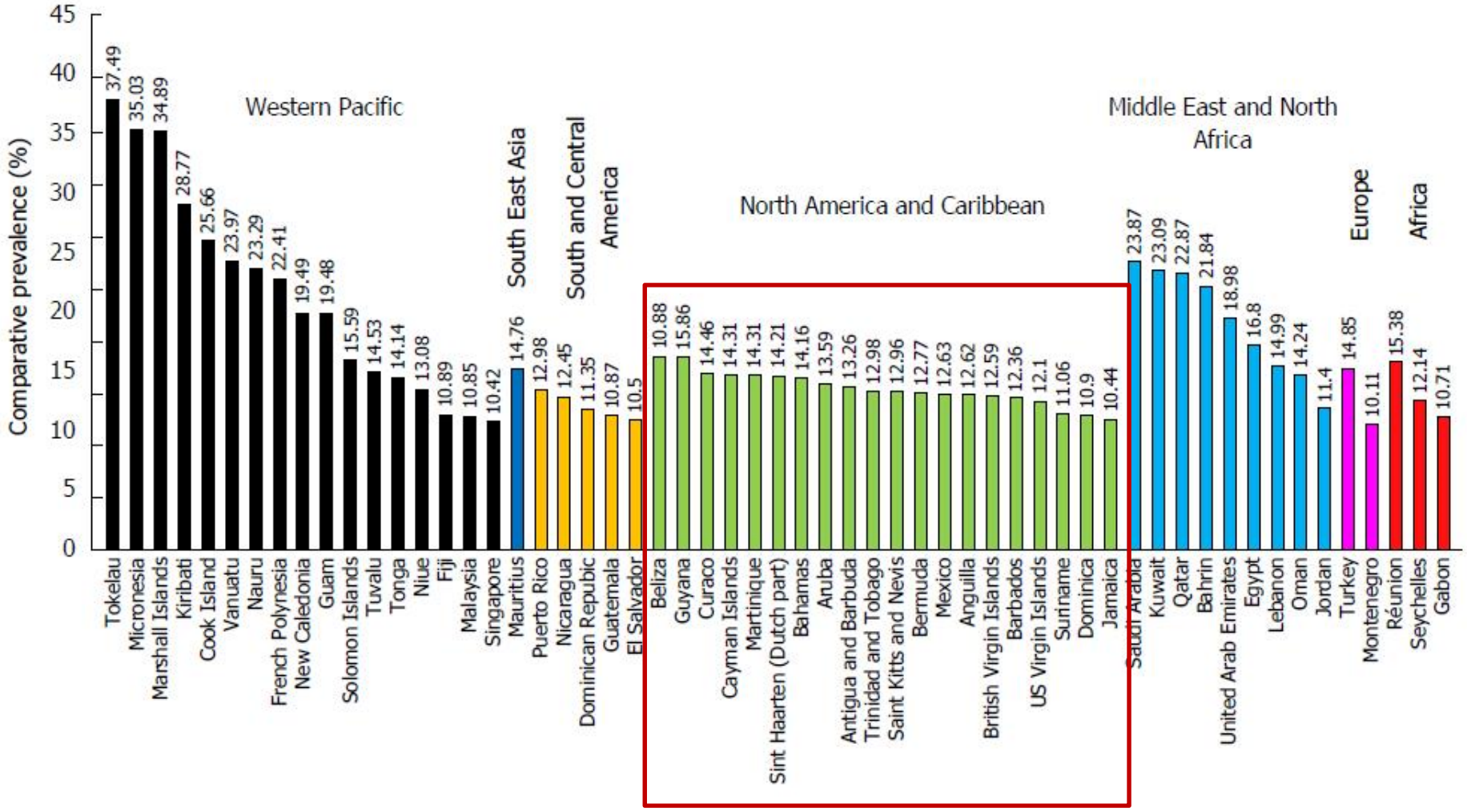
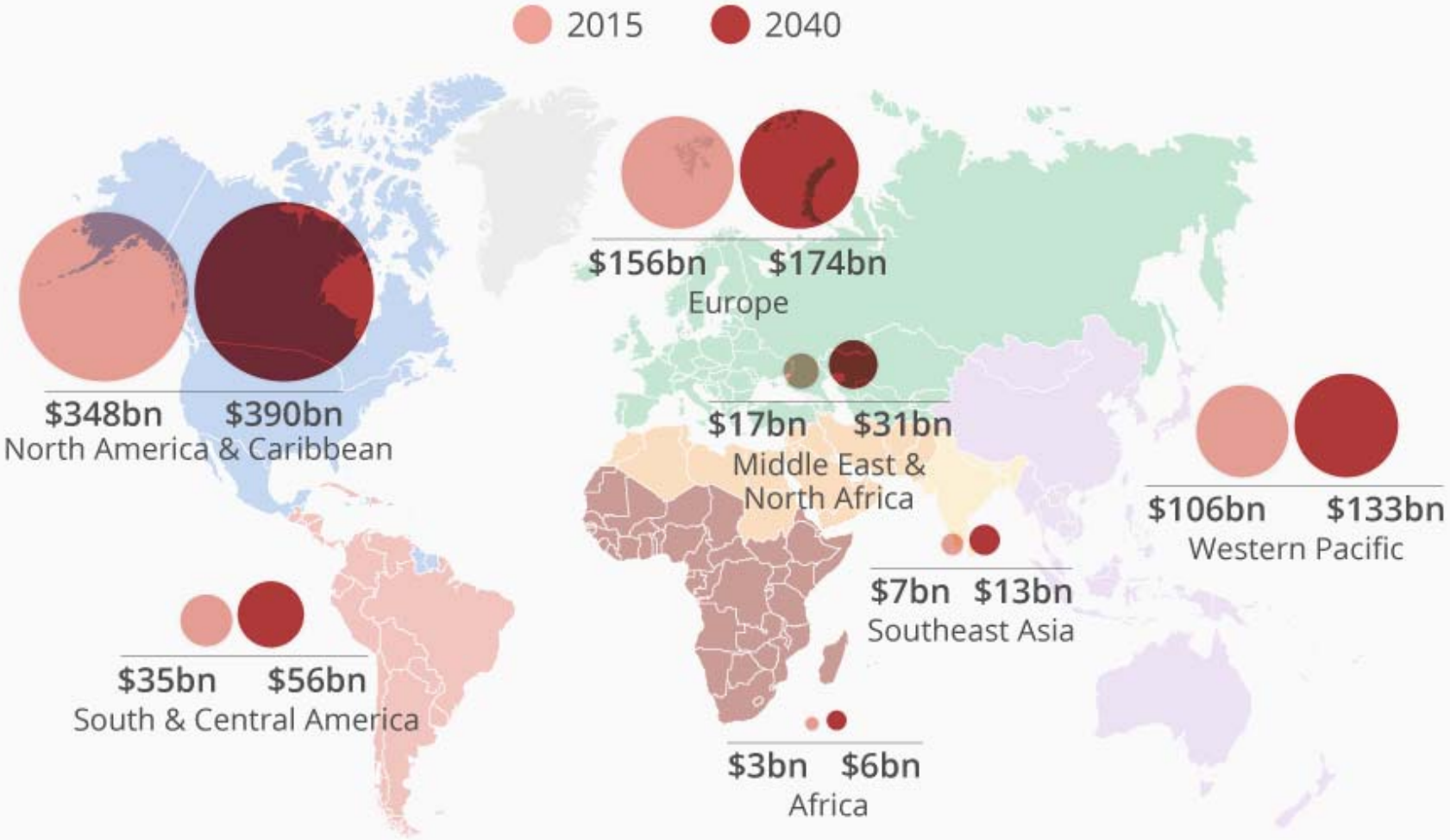
World J Diabetes. Jun 25, 2015; 6(6): 850-867



The Global Cost Of Diabetes

Worldwide healthcare expenditure due to diabetes in 2015 and 2040, by region*

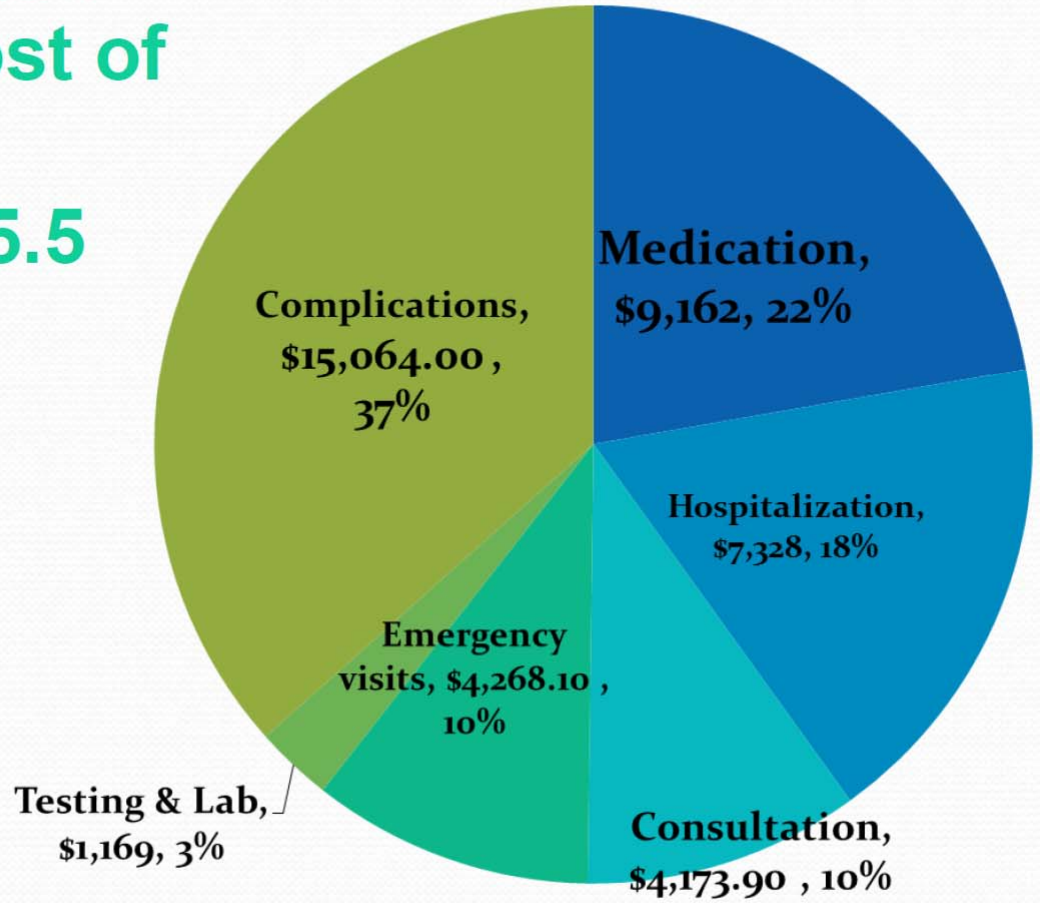


* 2040 figures are forecasts

Source: International Diabetes Federation

Direct Cost (US$X10^6) of Diabetes in Latin America & the Caribbean, 2014

Estimated Direct Cost of DM $41,165.5



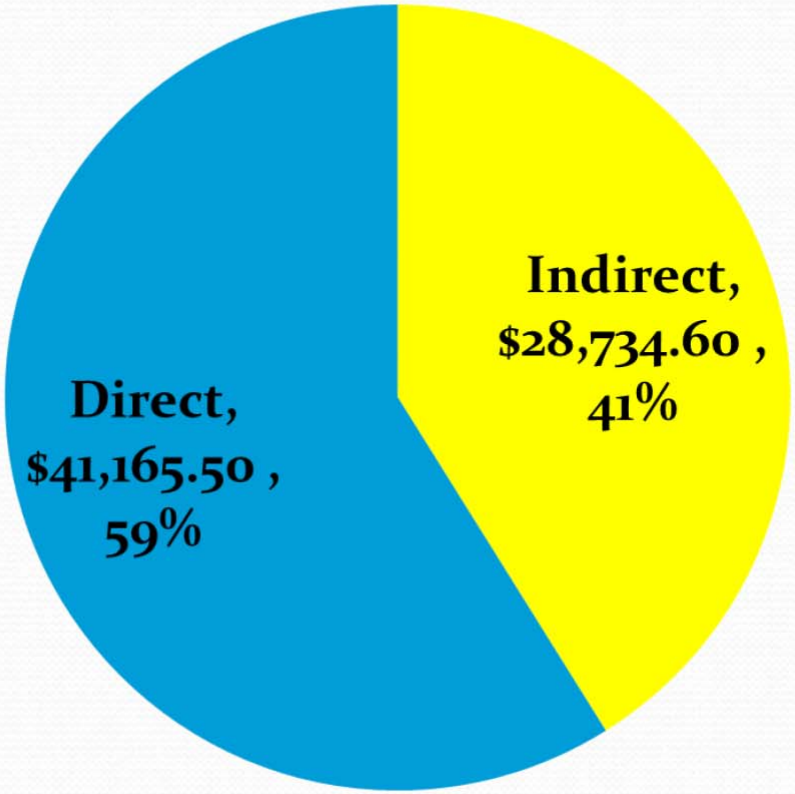
Pan American Health Organization
World Health Organization
Americas

The Cost of Diabetes in Latin America & the Caribbean in 2014

Barcelo A, Gordillo A (World Bank), Arredondo A (Instituto Nacional de Salud, Mexico), Anthony Qian (McGill University, Canada)

The Cost (US$X106) of Diabetes in Latin America & the Caribbean 2014

Total estimated cost of DM $69,900.1



Pan American Health Organization

World Health Organization Americas

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The Costs and Consequences of Noncommunicable Diseases, Tobacco Use and Alcohol Abuse

Diabetes

- Cost of treating diabetes varies between 2.5% and 15% of health expenditures in different countries
- Latin America and the Caribbean have highest expenditures, sub-Saharan Africa has the lowest
- Indirect costs are probably high because many people do not receive proper treatment

HEALTH SYSTEM FINANCING

Netherlands spent

96 billion US$

on health care:

- $5,694 per capita

- 5% spent by households

HEALTH SYSTEM FINANCING

Suriname spent

317 million US$

on health care:

- $589 per capita

- 11% spent by households

Key indicators for health

- Do not define health as a state of absence of disease
- A healthy and caring environment
- Socioeconomic background
- Health literacy
- Education
- Lifestyle
  - Food habits
  - Alcohol
  - Smoking

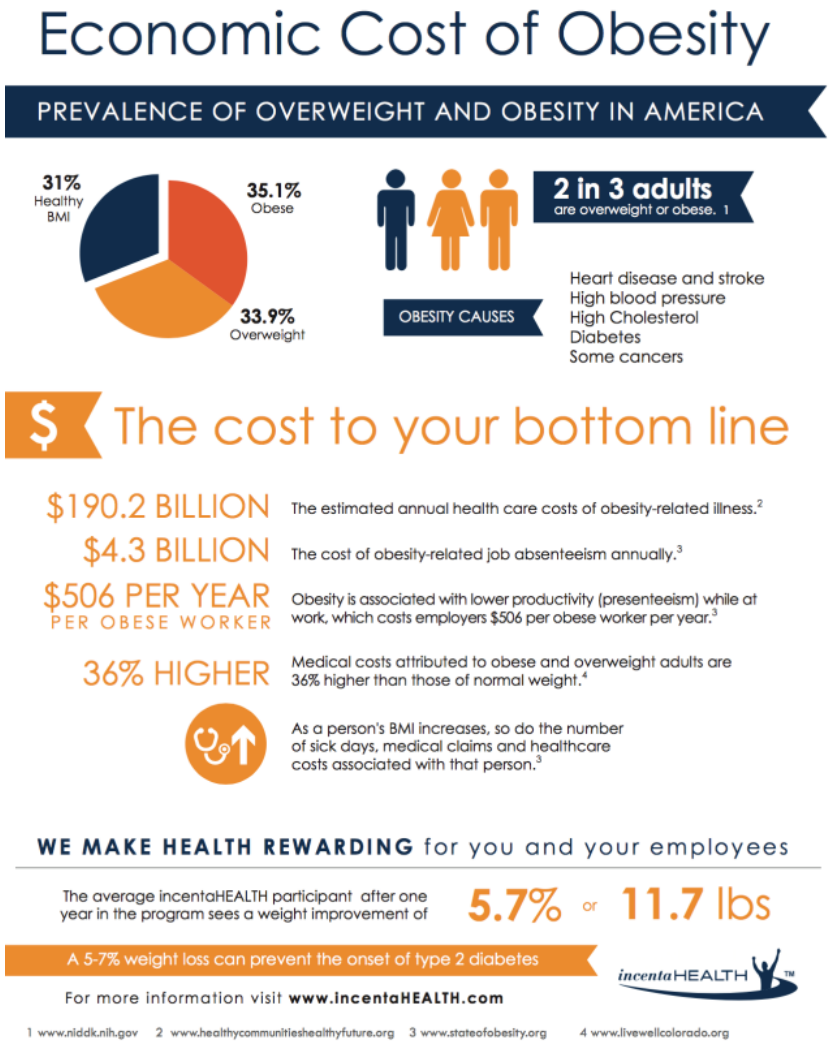
Key indicators of the financial burden: both direct and indirect costs

Before diabetes is diagnosed:

- Financial burden associated with unemployment and absenteism
- Health care costs associated with the metabolic syndrome

After the diagnosis:

- Use of health care services
- Medication
- Complications (dialysis, amputation, blindness)
- Indirect costs



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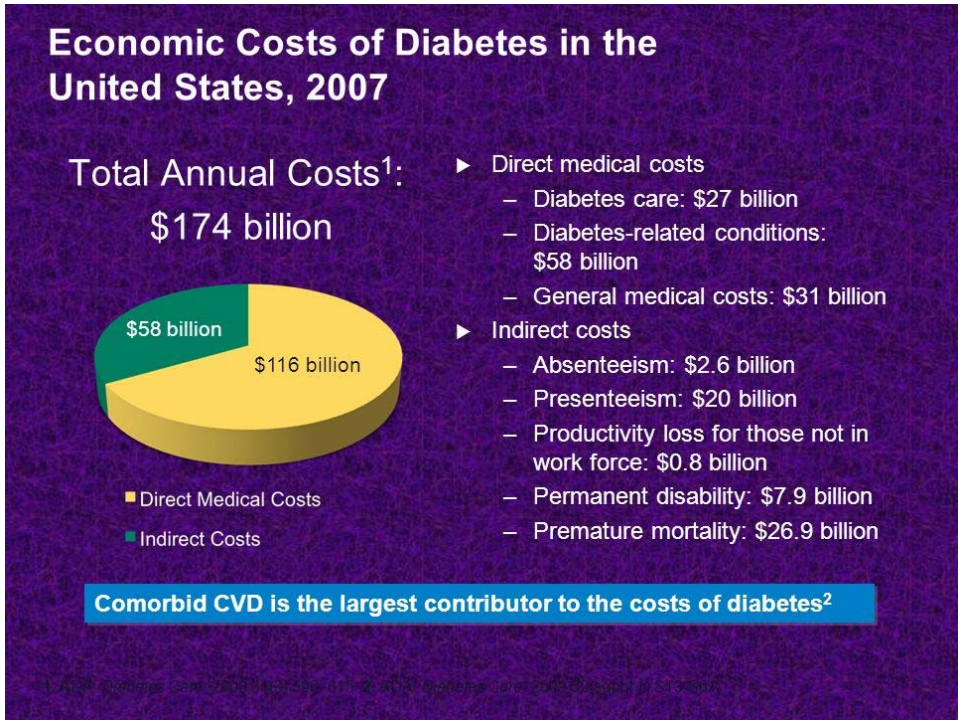
- Complications (dialysis, amputation, blindness)
- Indirect costs



Estimated Cost (US$X10^6) of Diabetes Complications in Latin America & the Caribbean

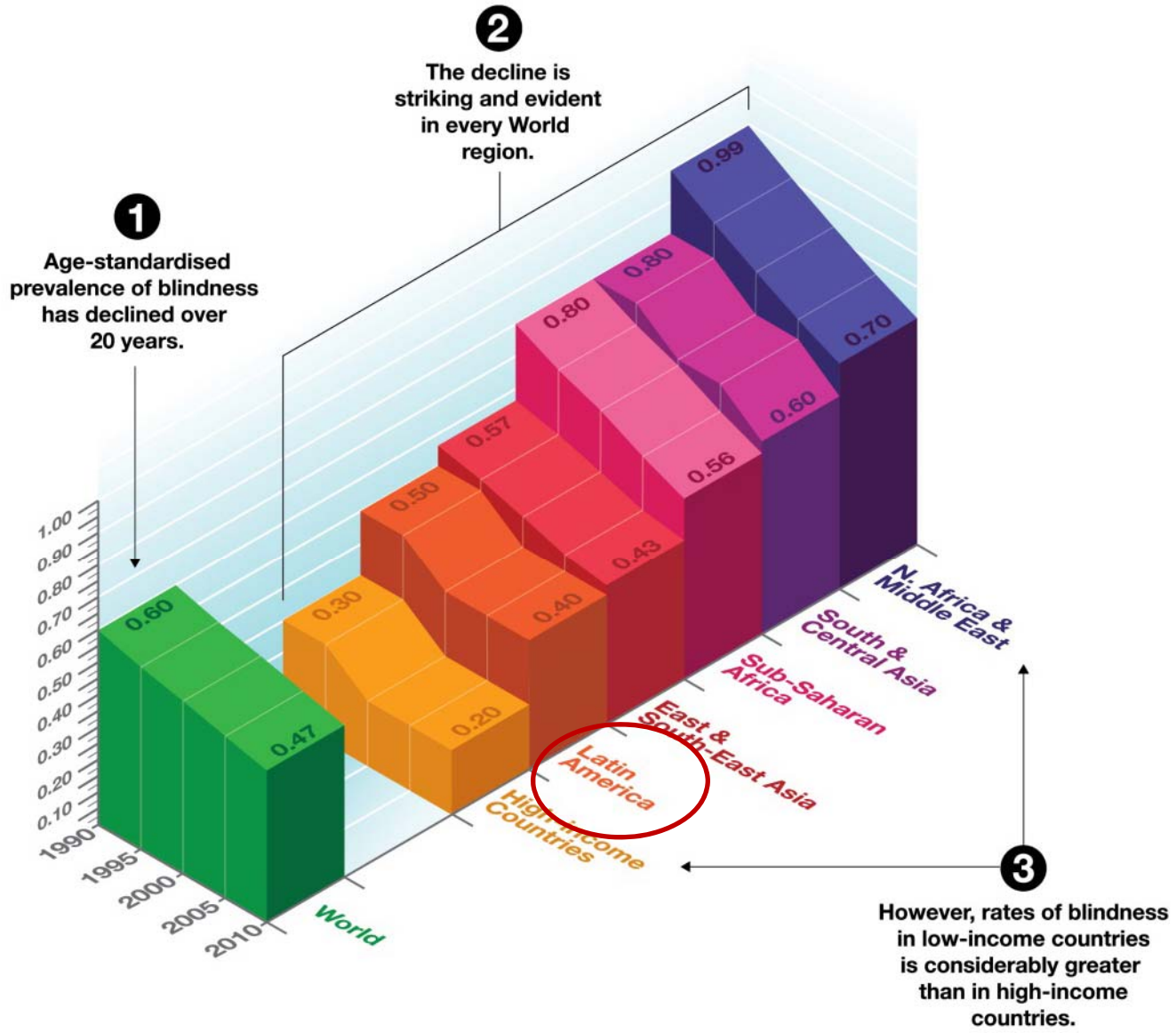
Cost of Complications $15,064

Pan American Health Organization

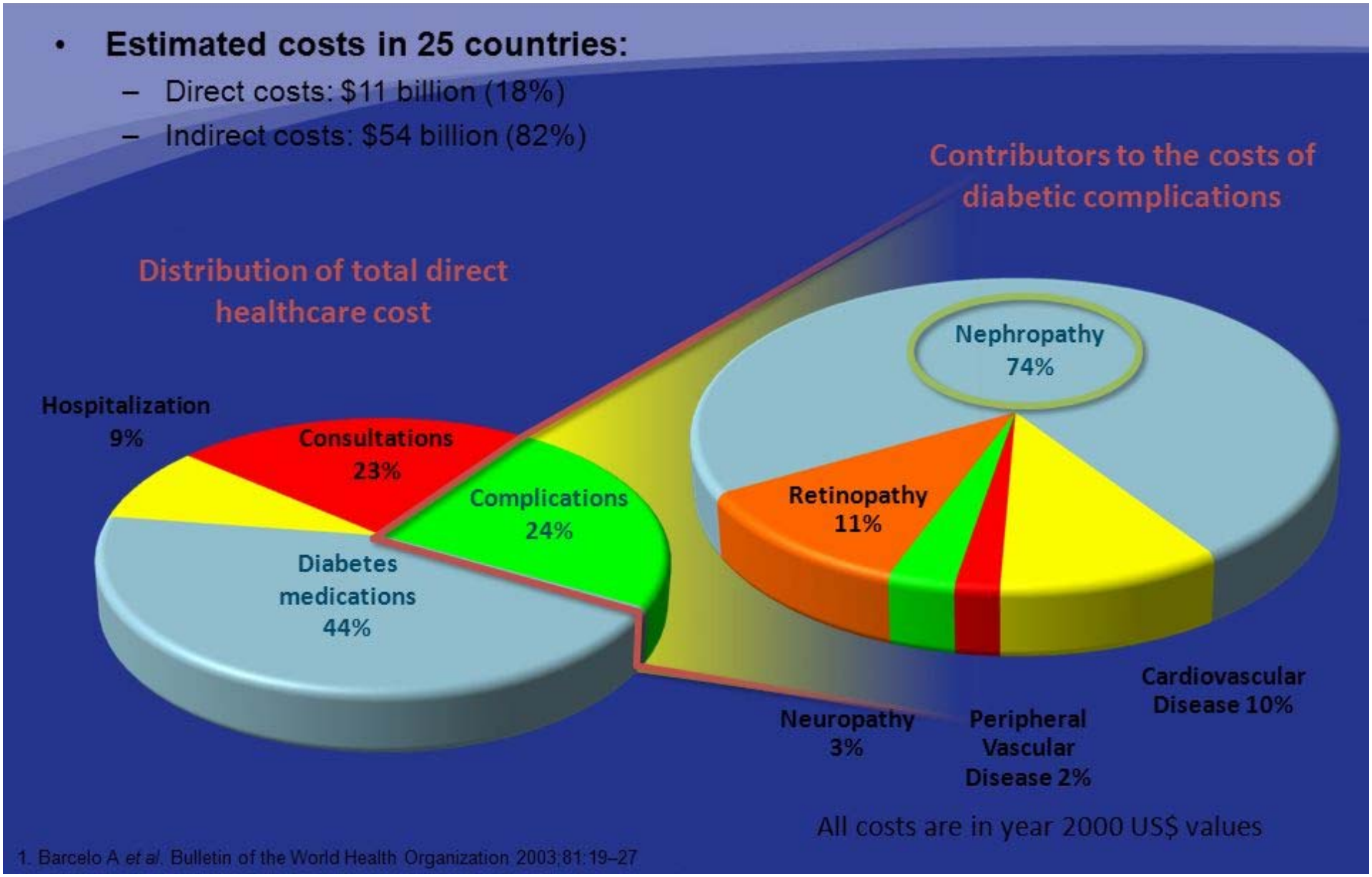
World Health Organization Americas

The Cost of Diabetes in Latin America & the Caribbean in 2014

Barcelo A, Gordillo A (World Bank), Arredondo A (Instituto Nacional de Salud, Mexico), Anthony Qian (McGill University, Canada)



High direct and indirect costs of diabetes in Latin America and the Caribbean in the year 2000



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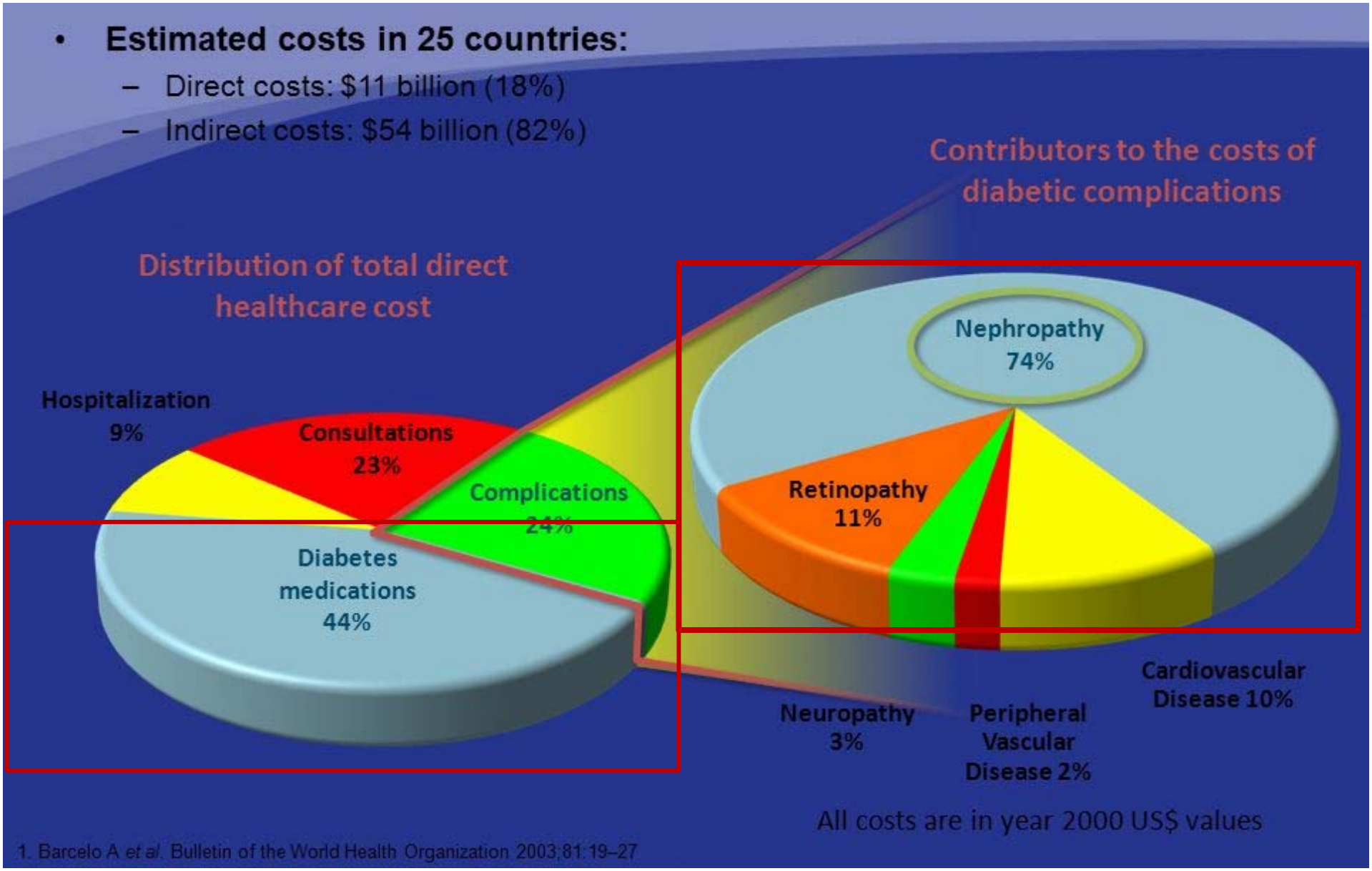
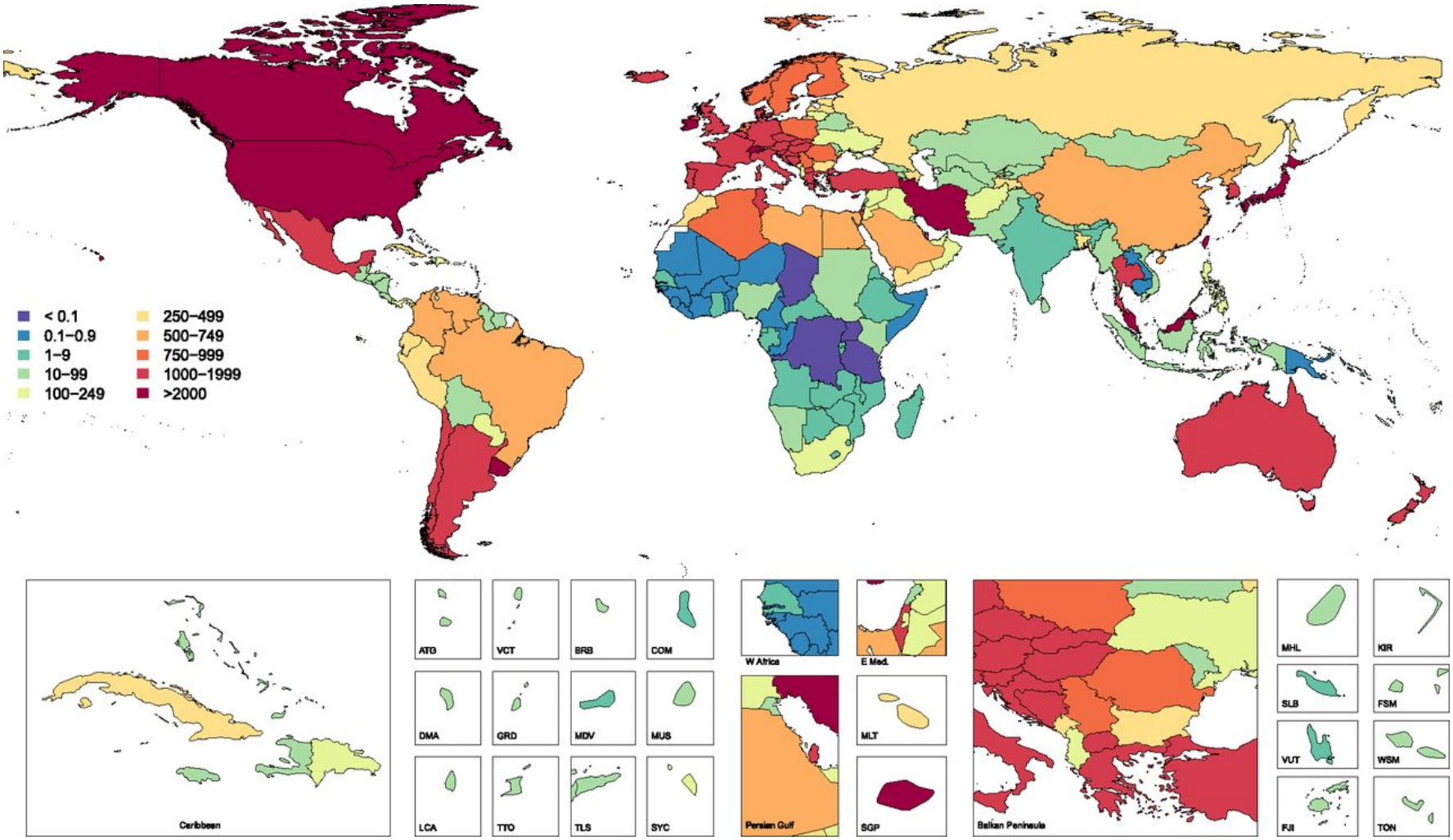


Maintenance dialysis throughout the world



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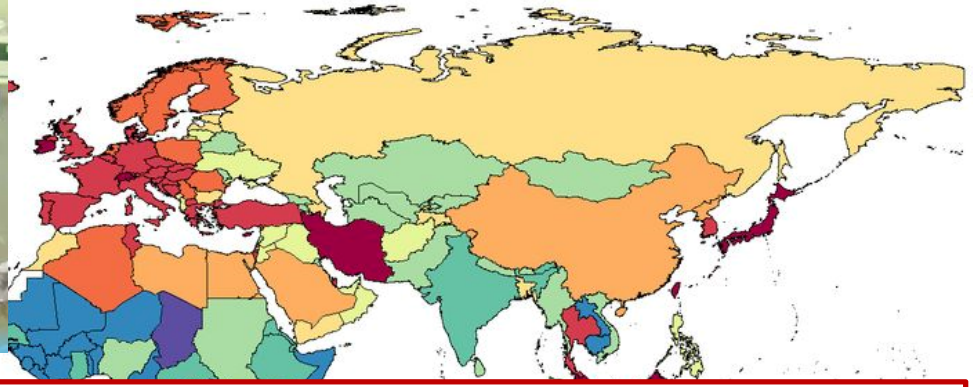
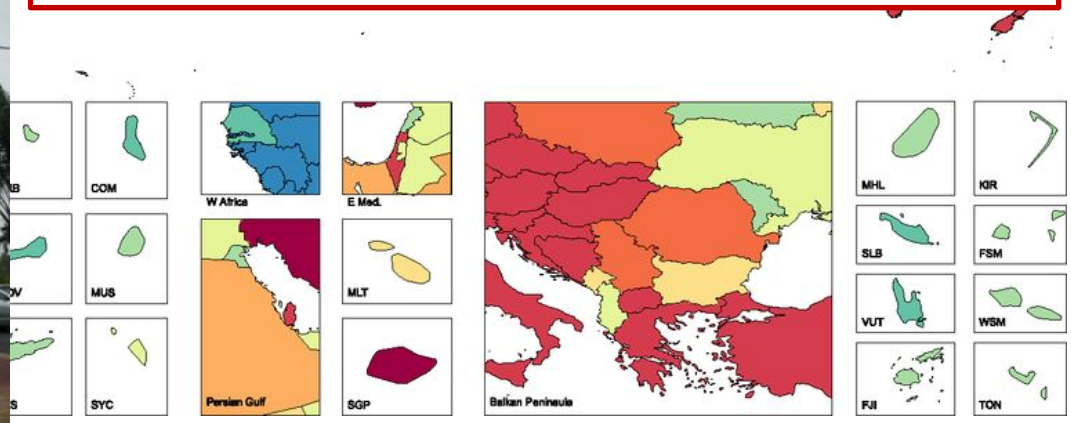
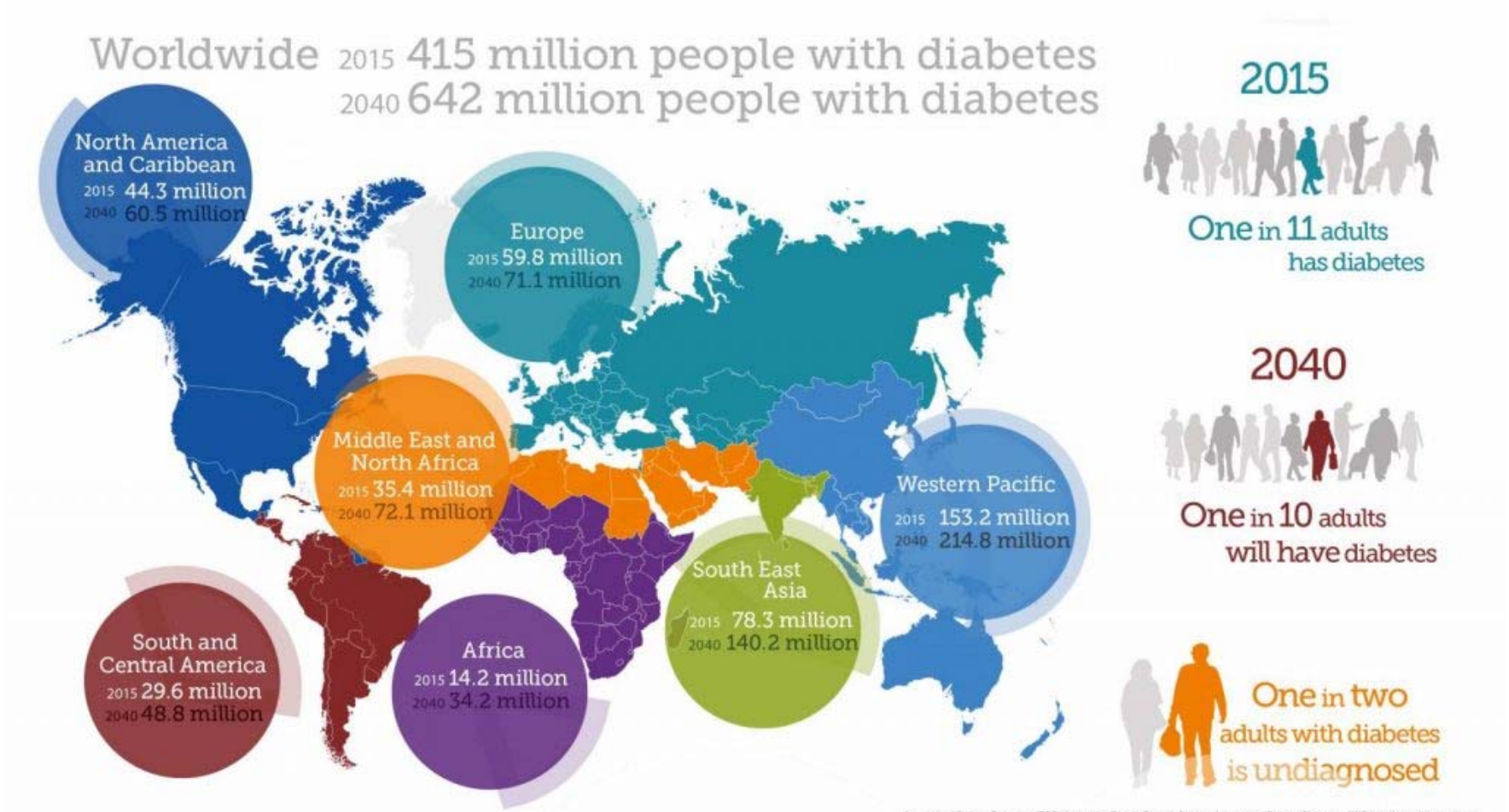


With over 800 people dialyzing in 2018, in Suriname more than twice as many persons are dialyzing / 100.000 population than in the Netherlands





International Diabetes Federation. IDF Diabetes Atlas, 7th edn. Brussels, Belgium: International Diabetes Federation, 2015. http://www.diabetesatlas.org

Diabetic Foot Prevalence

Developed Countries

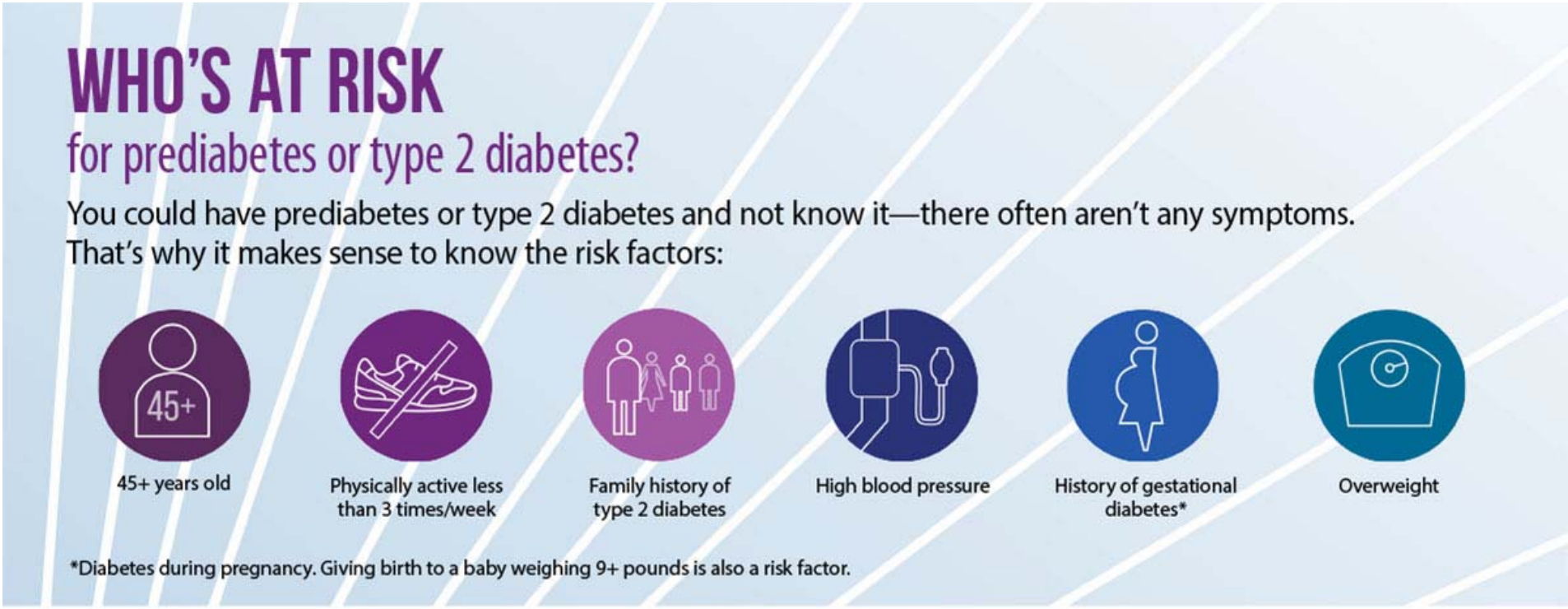
one in every **six** people with diabetes will have an ulcer during their lifetime

Developing Countries

Foot problems estimated to account for **40%** of available resources

https://www.idf.org/webdata/docs/background_info_AFR.pdf

Strategies to reduce the epidemic in the Caribbean – primary prevention



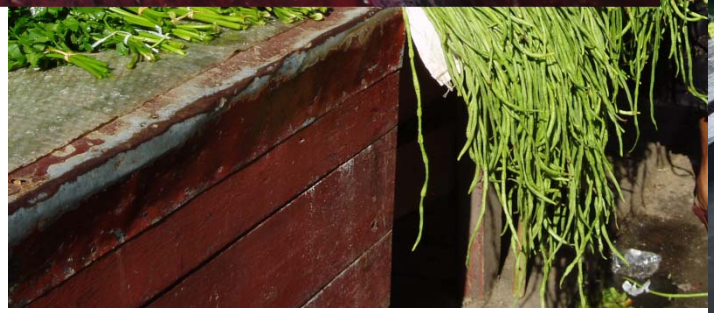
Strate in the

Ca n

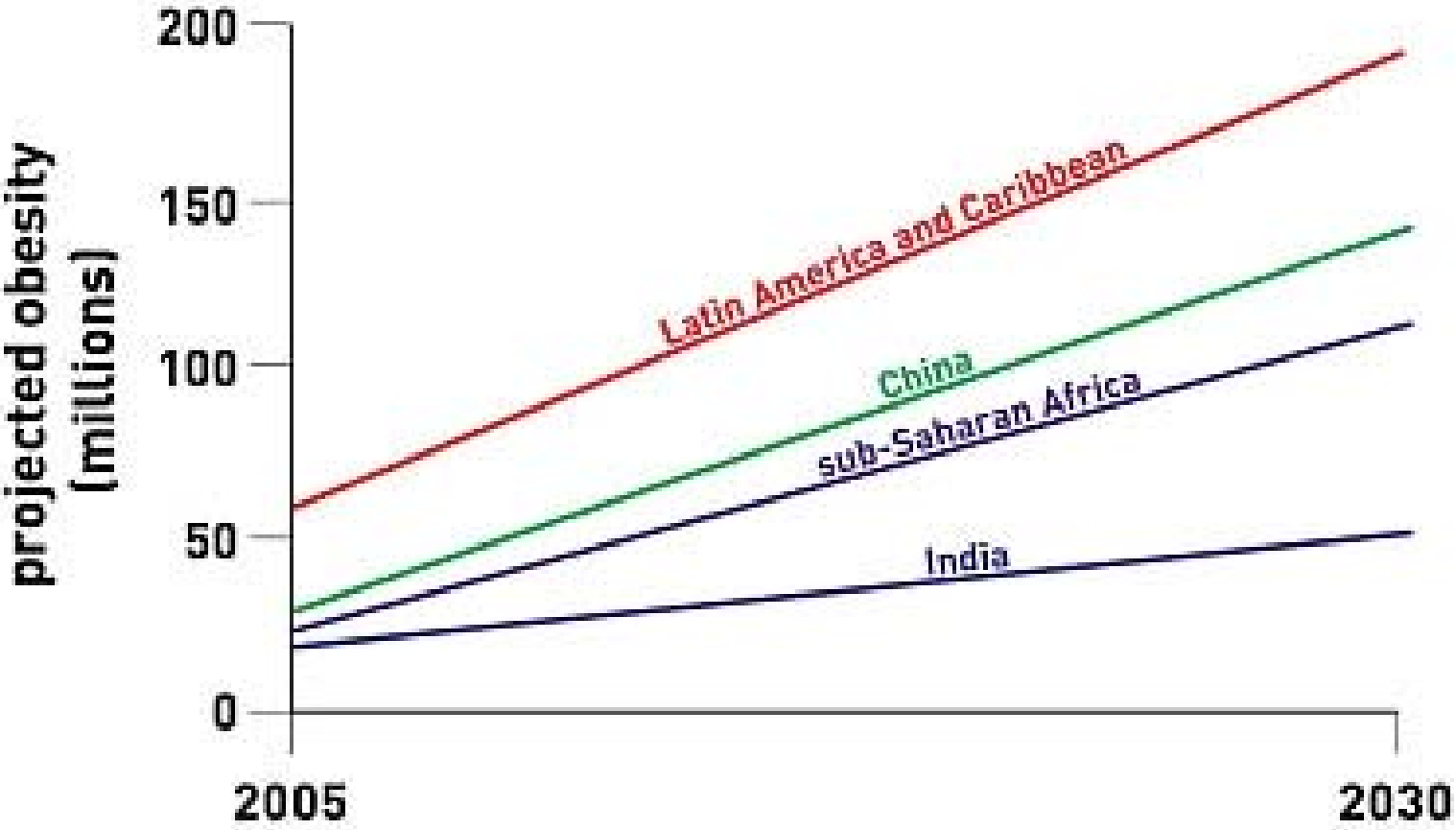

PREMIUM
MIN. 13.3 % PROTEINE
2.000





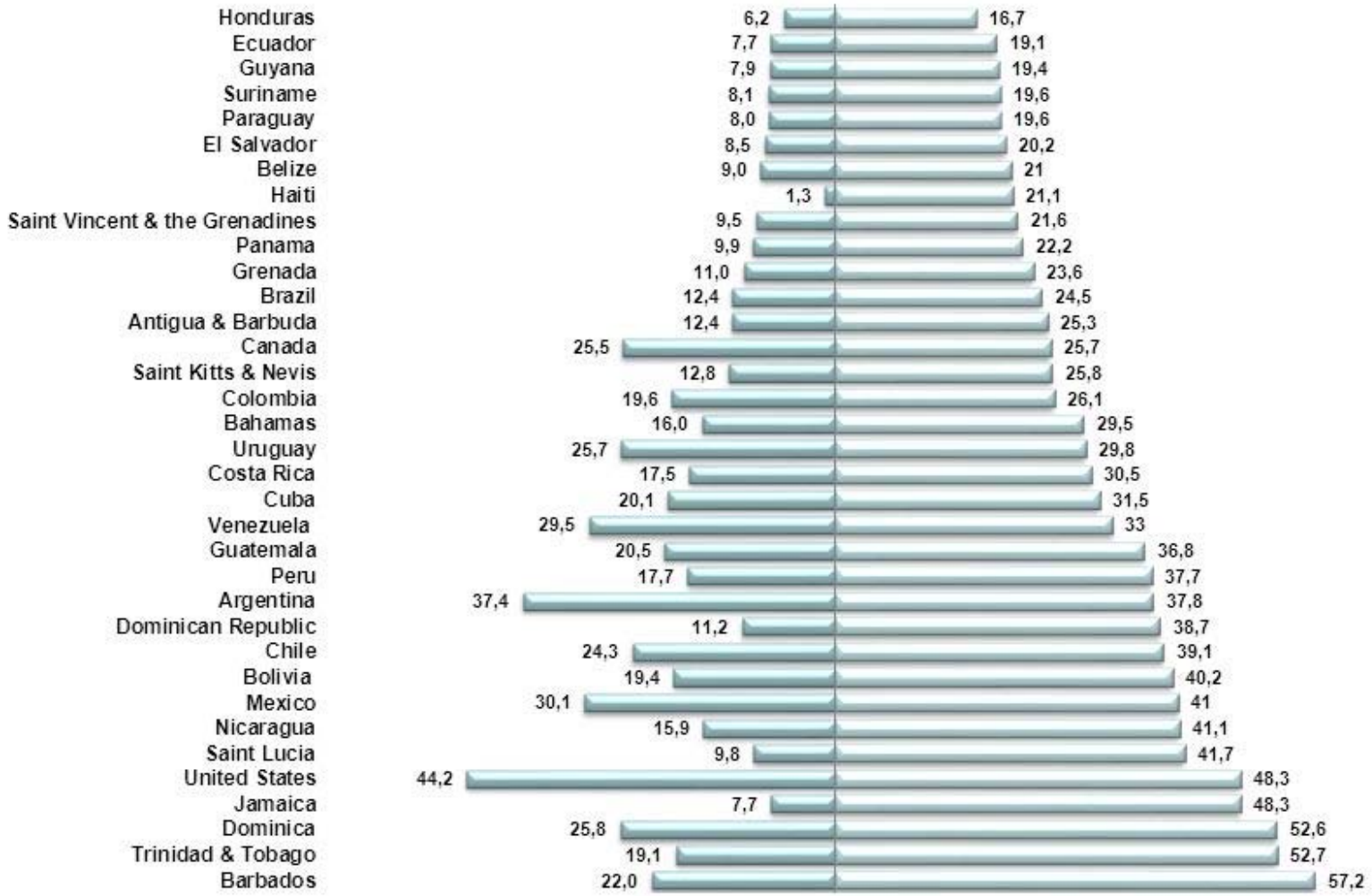



LATIN AMERICA HAS THE WORST SCENARIOS OF OBESITY FOR COUNTRIES IN EMERGING REGIONS BY 2030.



Source: The World Bank, Food Price Watch, March 2013.

FACING THE FACTS IN THE AMERICAS: Estimated Obesity (BMI >30) prevalence, 2010



Source: Ono T, Guthold R, Straong K, WHO Global Comparable Estimates, 2005

West Indian Med J. vol.60 no.4 Mona June 2011

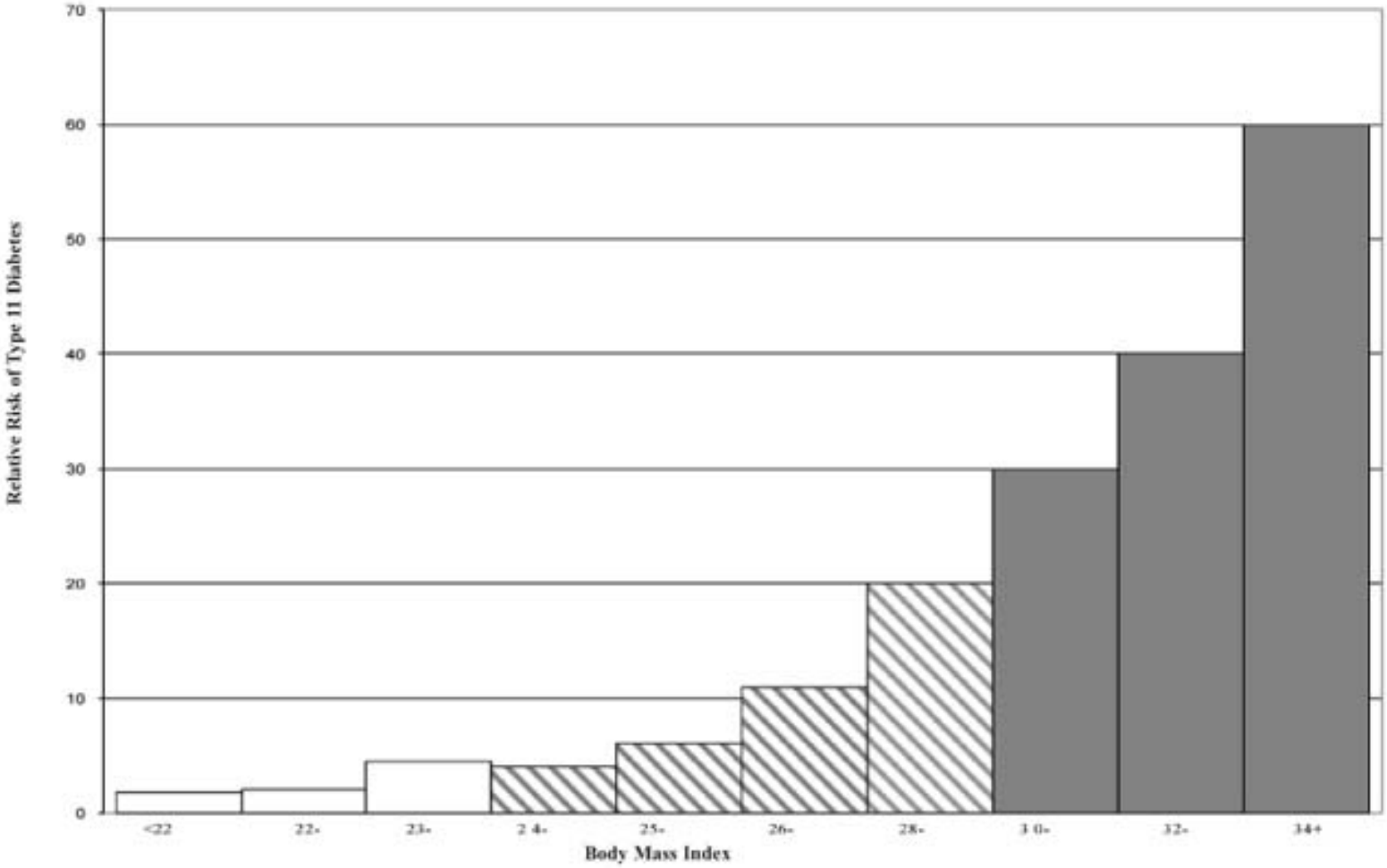


Fig. 1: The relationship between obesity and diabetes (10, 11).

Risk of diabetes-related mortality by education level

Education level	Model 1: RH (95% CI)	Model 2: RH (95% CI)	Model 3: RH (95% CI)	% explained (model 3 compared to 1)
< HS	2.46 (2.15, 2.82)	2.27 (1.98, 2.61)	2.05 (1.78, 2.35)	28%
HS grad	1.60 (1.39, 1.83)	1.65 (1.44, 1.90)	1.57 (1.37, 1.80)	5%
Some college	1.48 (1.27, 1.74)	1.52 (1.30, 1.70)	1.46 (1.25, 1.71)	4%
College grad	1.00 (reference)	1.00 (reference)	1.00 (reference)	

Relative hazards (RH) based on proportional hazards model with age as the time scale.
Model 1: adjusted for socioeconomic status indicator only
Model 2: model 1 additionally adjusted for demographic characteristics
Model 3: model 2 additionally adjusted for BMI

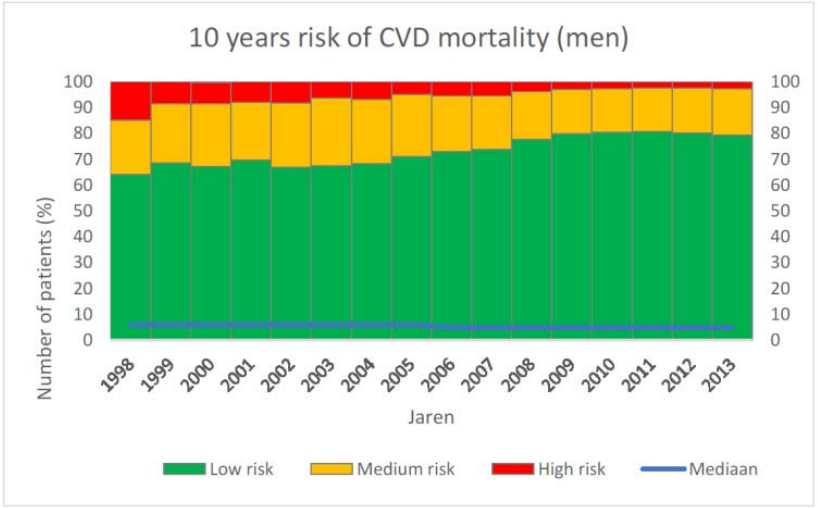
TRIAD
Translating Research Into Action for Diabetes

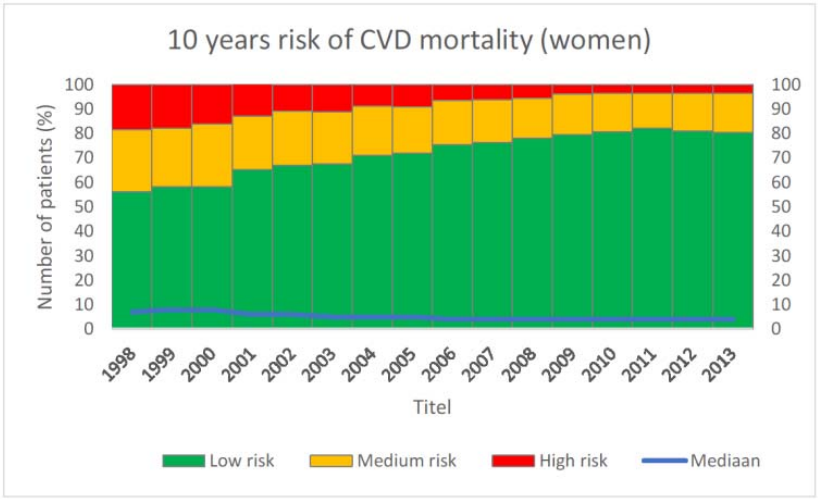
Diabetes Disparities

- Type 2 diabetes disproportionately affects socially disadvantaged groups
- Some racial/ethnic minority patients and those of low SES:
  - High diabetes prevalence
  - Higher rates of complications
- Evidence-based therapies underused
- Racial/ethnic minorities clustered in health plans that have fewer resources and receive lower quality ratings (and are less likely to have EHRs)
- Interventions to reduce racial, ethnic and socioeconomic disparities may have a profound impact on the morbidity and mortality associated with diabetes

Strategies to reduce the epidemic in the Caribbean – secondary prevention

- Organize chronic care
- Choose proven and affordable medication
- Type 2 diabetes mellitus can be treated very well in a primary care setting
- In con-complicated cases, strengthen the role of nurse practitioners
- In type 2 diabetes, treatment with lifestyle and of hypertension and lipid profile disorders is at least as important as glucose regulation
- Educate, educate, educate





Lessons of experience in confronting diabetes in the Caribbean

- NCDs have become more threatening than NTDs
- Education is essential for all (citizens, patients, health care professionals, government AND politicians)
- In the Caribbean (as in the rest of the world), countries cannot afford delaying essential political, policy and health care decisions
- More education translates into better and longer lasting health

V.l.n.r: Mildred Li Hon Fong (SZF); Jennifer Pronk (SZF); Rick Kromodihardjo (Directeur SZF); Mirha Esajas (Bestuur OSS); Lucien Kloof (MT OSS); Dennis Caffe (MT OSS); Muriel Gemerts (Bestuur OSS); Carlos Durham (Vz. Bestuur OSS); Marelva Strijdhaftig (MT OSS)

Stichting Staatsziekenfonds

SZF PROJECT KETENZORG FASE 1

STICHTING ONESTOPSHOP
voor chronische ziekten

HIEP HIEP HOERA!!

STICHTING ONESTOPSHOP
voor chronische ziekten

22 februari 2013 - 22 februari 2018

5 jaar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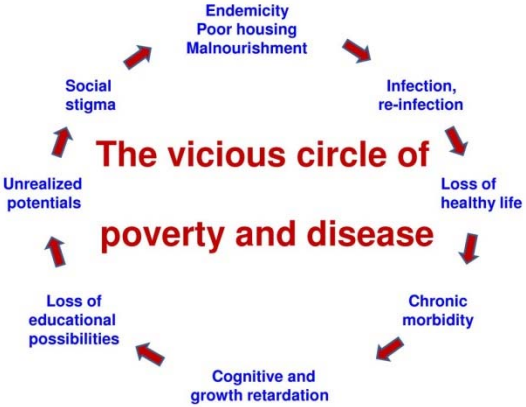
Facebook en Instagram: CleviaParkSuriname
OPEN

NEGLECTED TROPICAL DISEASE NGO NETWORK

A global forum for nongovernmental organizations working together on NTDs



GLOBAL NETWORK

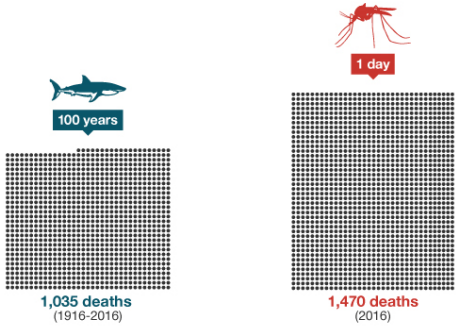
NEGLECTED TROPICAL DISEASES

A Social Issue

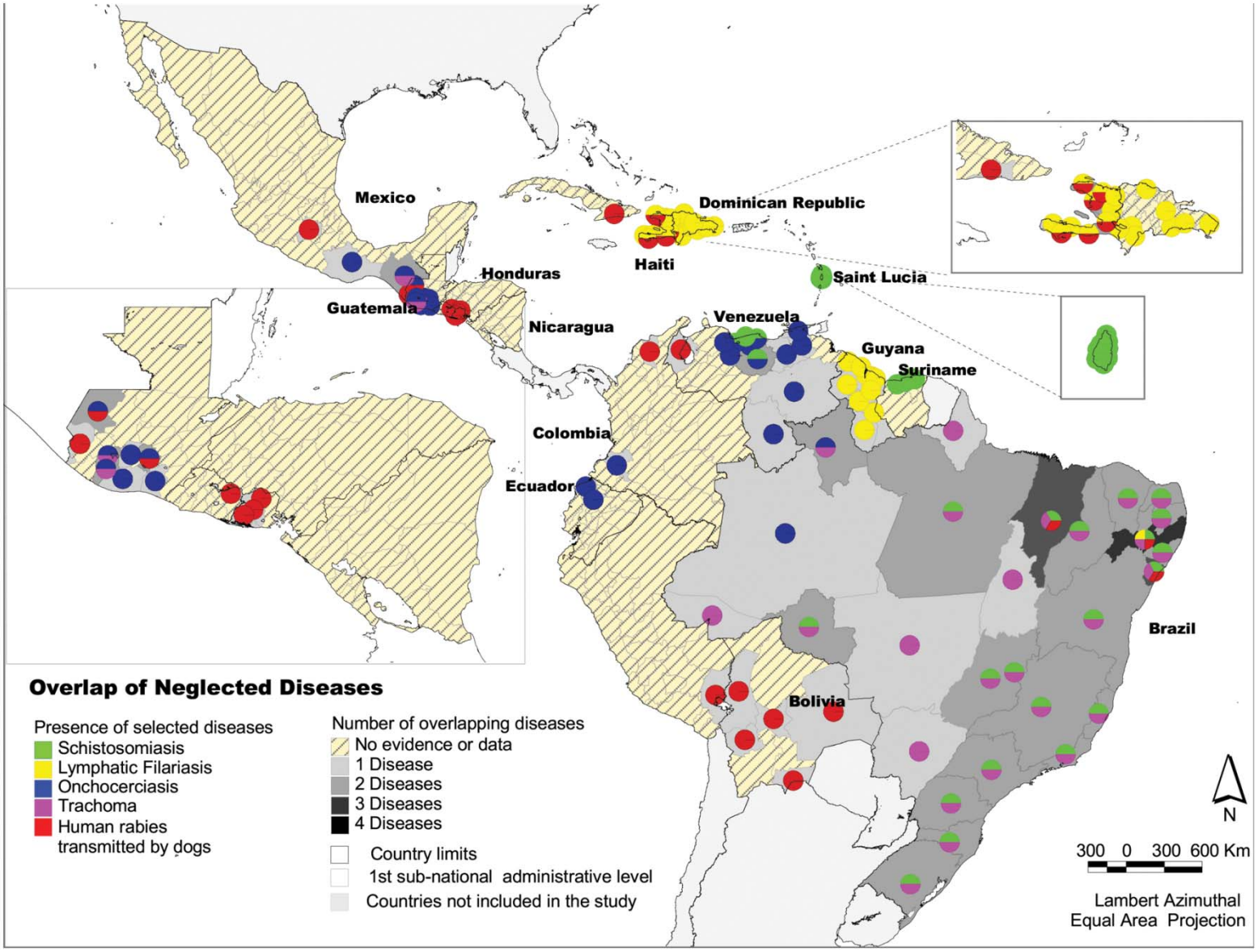
Neglected Tropical Diseases and Three Major Infectious Diseases

Mosquitoes kill more people in one day than sharks killed over the last 100 years.

gates notes



Source: WHO, Global Shark Attack File (GSAF)

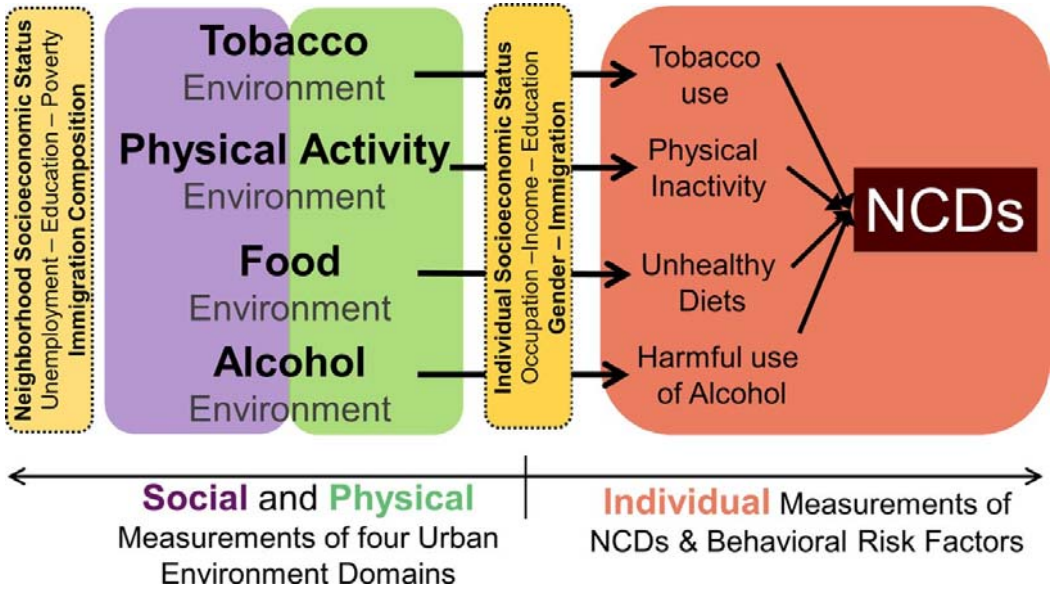

Mexico
Dominican Republic
Haiti
Saint Lucia
Honduras
Guatemala
Nicaragua
Venezuela
Guyana
Suriname
Colombia
Ecuador
Brazil
Bolivia
Overlap of Neglected Diseases
Presence of selected diseases
Schistosomiasis
Lymphatic Filariasis
Onchocerciasis
Trachoma
Human rabies transmitted by dogs
Number of overlapping diseases
No evidence or data
1 Disease
2 Diseases
3 Diseases
4 Diseases
Country limits
1st sub-national administrative level
Countries not included in the study
N
300 0 300 600 Km
Lambert Azimuthal Equal Area Projection

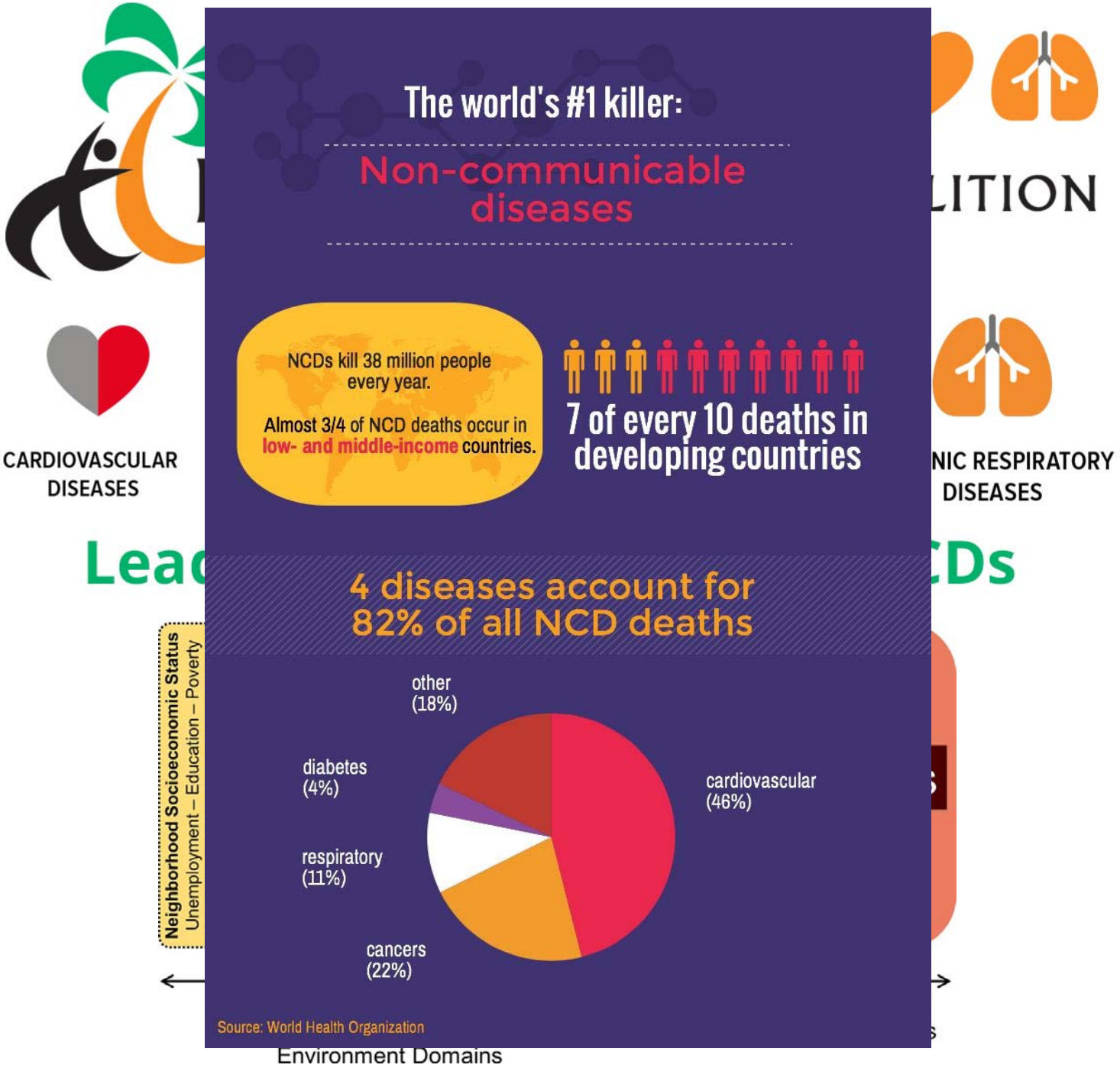

10 YEARS OF ACHIEVEMENTS
2006
launches
rogram
$15 million,
ge W. Bush
Neglected
ol Program
2007
A Turning Point: First Global Partners Meeting on NTDs held at WHO headquarters in Geneva, April 2007
2008
President George W. Bush affirms commitment to combat NTDs around the world.
The United Kingdom Department for International Development (DFID) commits £50 million pounds to fight NTDs.
USAID supports first 5 countries:
• Burkina Faso
• Ghana
• Mali
• Niger
• Uganda
2009
President Barack Obama affirms, "We will fight neglected tropical diseases"
2010
2011
DFID commits £195 million pounds to NTDs.
The World Health Organization releases the Roadmap, setting targets for 2020
2012
The 2012 London Declaration on NTDs united a broad range of partners committed to eliminating NTDs.
Ground breaking Global Trachoma Mapping Project (GTMP) launched
USAID and DFID partnership begins in Nigeria
2013
50 million people no longer require treatment for lymphatic filariasis in USAID-supported countries
Countries sign the Addis Ababa Commitment on domestic financing for NTDs
Colombia becomes first country in the world to eliminate onchocerciasis
1 billionth treatment delivered
2014
45 million people no longer require treatment for trachoma in USAID-supported countries
USAID joined the Coalition for Operational Research on NTDs (COR-NTD)
USAID begins to invest in high-quality treatment and care to address the morbidity, disability and disfigurement associated with lymphatic filariasis and trachoma.
2015
UN General Assembly adopts the Sustainable Development Goals, a global framework that includes NTDs as a priority global health goal.
The World Health Organization releases the 3rd report: Investing to overcome the global impact of neglected tropical diseases
2016
140 million no longer at risk for lymphatic filariasis
Over 13,000 eyelid surgeries were carried out in Burkina Faso, Cameroon and Ethiopia, preventing further suffering and vision loss from blinding trachoma.
65 million no longer at risk for trachoma
USAID supports launch of ESPEN Trust.
$404 million
$911 million
$1.5 billion
$2.2 billion
$3.1 billion
$4.2 billion
$6.7 billion
$8.8 billion
$11.1 billion
$15
$15
$15
$25
$65
$77
$89
$98
$100
$100
$100
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
36.8 million treatments
94.9 million
235.5 million
386.2 million
594.4 million
838.7 million
1.1 billion treatments
1.3 billion
1.6 billion treatments
5
8
12
17
25
26
31
31
31

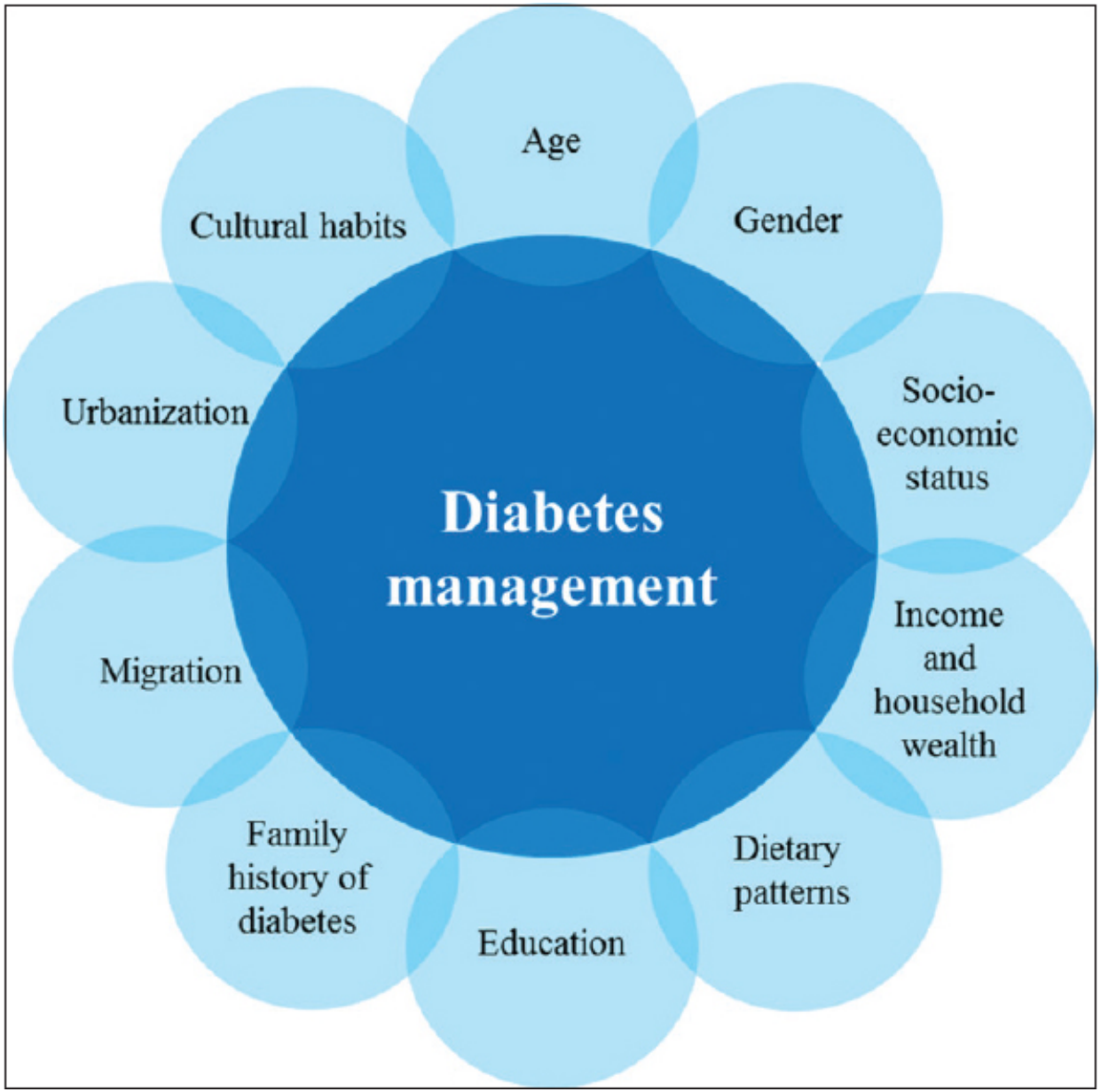
HEALTHY CARIBBEAN COALITION

CARDIOVASCULAR DISEASES | DIABETES | CANCER | CHRONIC RESPIRATORY DISEASES

Leading the Fight Against NCDs




The world's #1 killer:
Non-communicable diseases
NCDs kill 38 million people every year.
Almost 3/4 of NCD deaths occur in low- and middle-income countries.
7 of every 10 deaths in developing countries
4 diseases account for 82% of all NCD deaths
other (18%)
diabetes (4%)
cardiovascular (46%)
respiratory (11%)
cancers (22%)
Source: World Health Organization
CARDIOVASCULAR DISEASES
NIC RESPIRATORY DISEASES
Lead
CDs
Neighborhood Socioeconomic Status
Unemployment – Education – Poverty
Environment Domains


Age
Gender
Socio-economic status
Income and household wealth
Dietary patterns
Education
Family history of diabetes
Migration
Urbanization
Cultural habits
Diabetes management

Thank you for your time!