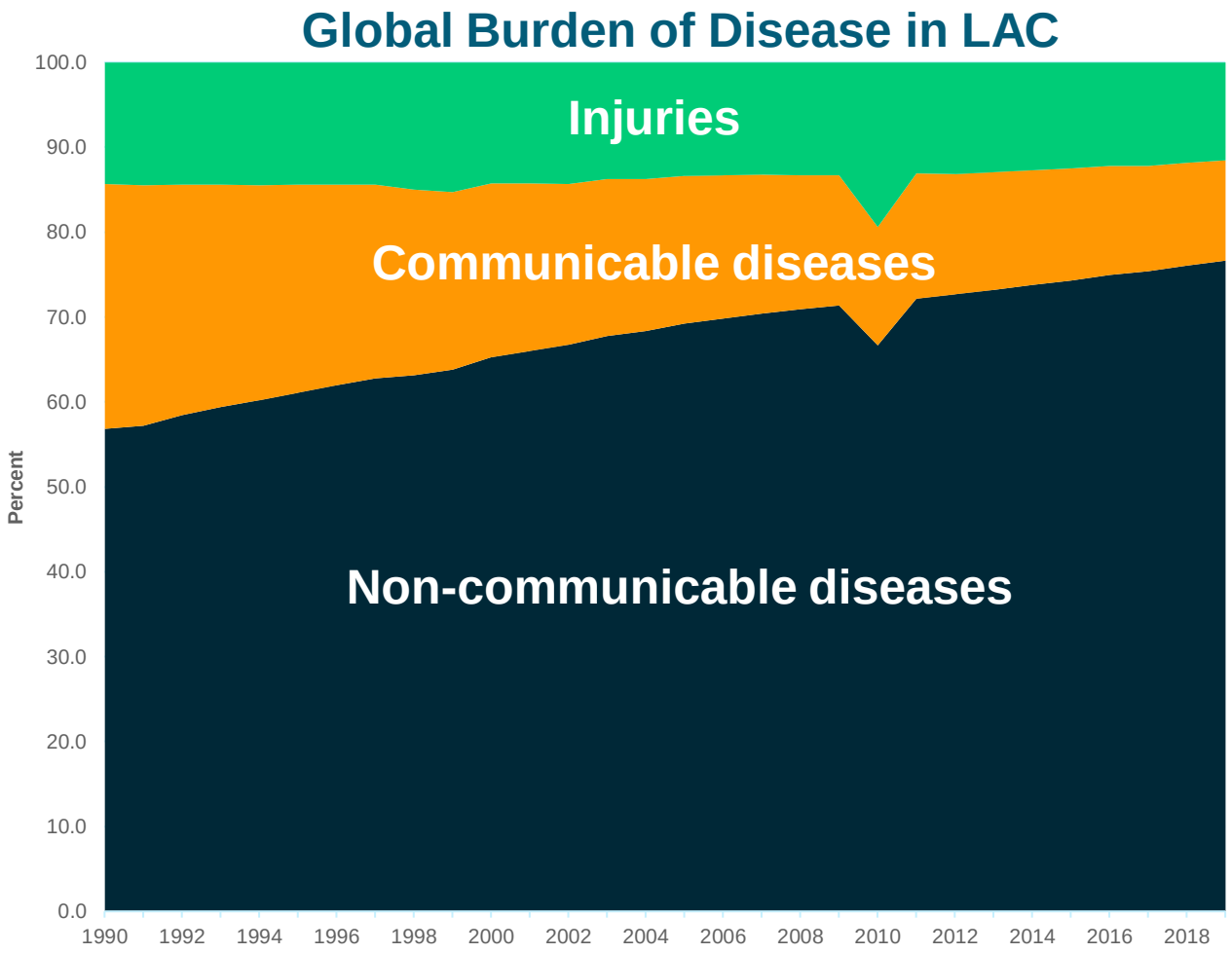
How can digital interventions help tackle diabetes, cardiovascular diseases, and depression in LAC?

Evidence & potential social returns

September 13th, 2022

IDB

The Challenge



Source: IHME's Global Burden of disease 2019

- **Increasing share of NCD's** in GBD in the region (77%).
- 35% of deaths in the region **– 2.5 million –** are potentially avoidable
- NCDs account for **4 of the 5** leading causes of death for potentially avoidable premature mortality in the Region

The Challenge

40 Million DALYS

Due to Cardiovascular Diseases

35% of hypertension cases are undiagnosed in LAC
Men are more affected than women

62 Million People

Have Diabetes in the Americas

30-40% of cases are undiagnosed & 50-70% are uncontrolled

70% Treatment Gap

Mental healthcare in LAC

Depression 2x more likely in women than men

Economic Burden of NCDs Globally

30 Trillion

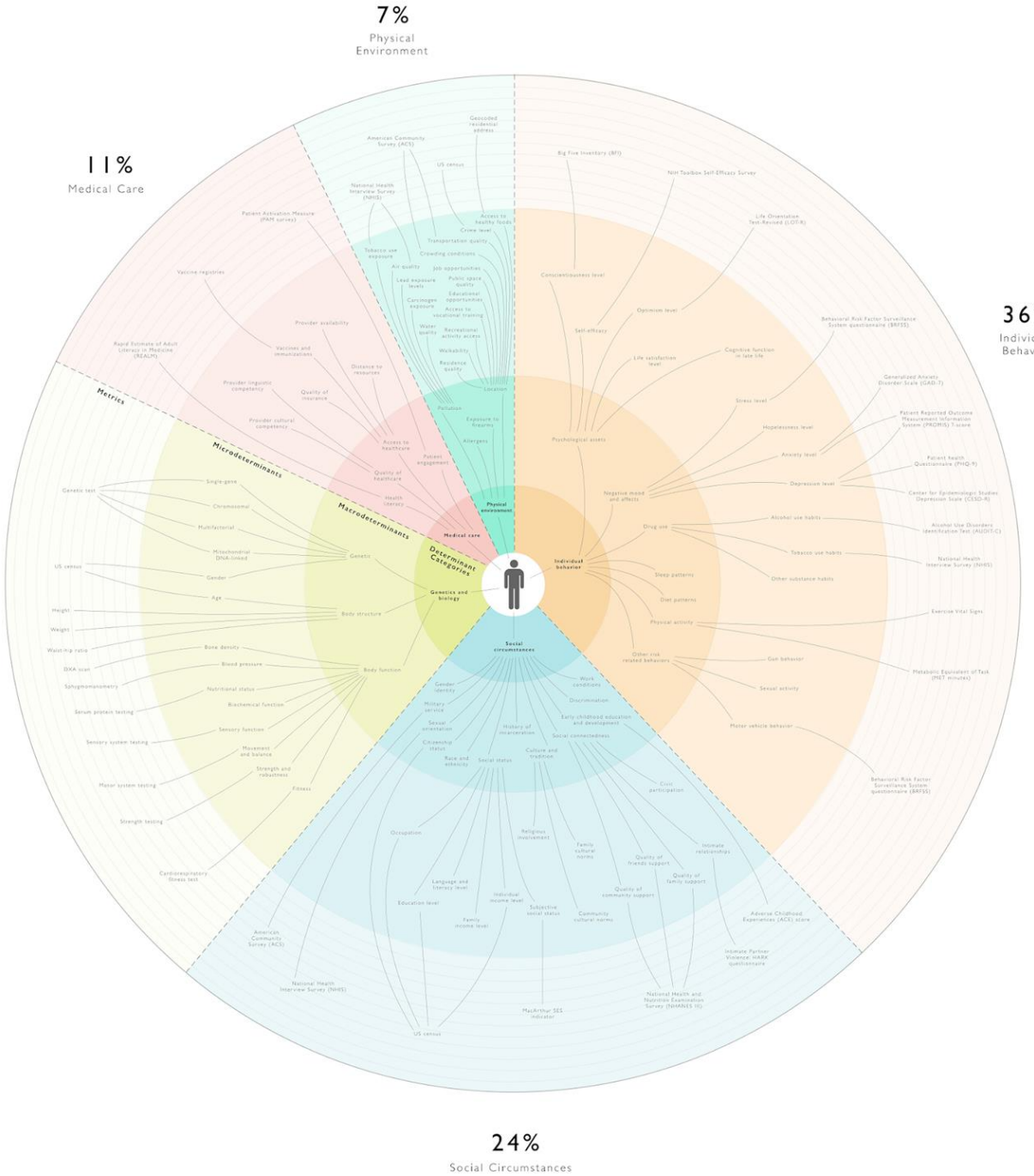
NCDs will cost the world economy US$30 trillion between 2011-2031, which is equivalent to almost **half (45%) of the global GDP**

Fuente: World Economic Forum & Harvard School of Public Health, 2011

15%

Diabetes consumes up to **15%** of national health care budgets

Zang, 2010



Almost
90% of health
is determined
outside of the health center

How can digital health help?

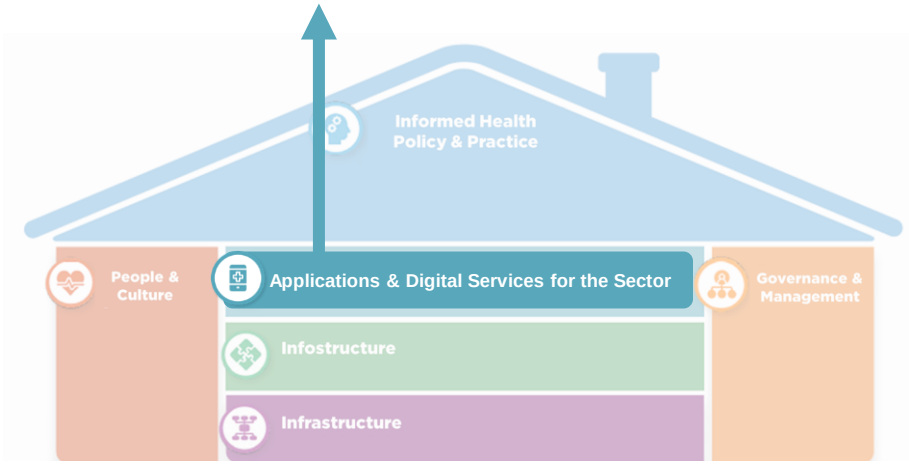
Challenge	Digital interventions
Early detection	Digital screening tools
Limited human resources	Digital task shifting Telehealth
Risk factor reduction	Apps for self-care & self-management
Coordination of care	Electronic health records, information exchange

How can digital health help?

Applications & Digital Services for the Sector

Health Content | Functionality | Channel

Digital Health Application (vertical or horizontal)



Digital Foundations

What are we doing?

1 Literature review

- Systematic reviews & meta-analysis
- 2015 to date
- Effect on health outcomes

2 Cost-benefit analysis

- Ex ante
- In 4 LAC countries

What is the cost-benefit analysis?

Costs

Implementation costs

- Personnel
- Software
- Training
- Administrative

Patient costs

- Time
- Travel expenses
- Communication expenses

Benefits

Health benefits

Savings to the health system

$$\$ \text{ Benefits} - \$ \text{ Costs} = \$ \text{ Net value}$$

$$\frac{\$ \text{ Benefits}}{\$ \text{ Costs}} = \text{Benefit-Cost Ratio}$$

Example 1

Digital interventions for depression treatment

Only

27% of major depression cases receive treatment

in LAC countries

(PAHO, 2014)

Challenges for treating depression in LAC

Situation in LAC

Limited supply of human resources

Only 2% of national health budgets spent on mental health

Stigma hampers demand for services

Gap of untreated cases likely to have grown

How can digital interventions help?

Evidence from the literature

Teletherapy

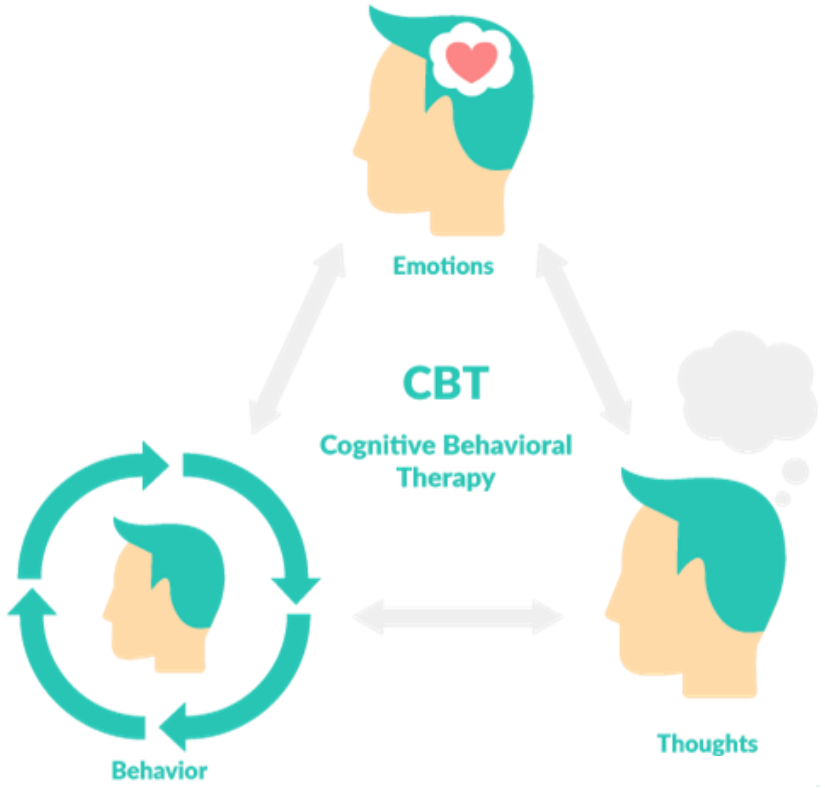
- Is as effective as in-person therapy for several mental health conditions
- Reduces barriers to access such as distance and stigma

Cognitive Behavioral therapy (CBT)

- Digital modalities of CBT can be as effective as traditional ones and improve worker productivity

What is cognitive behavioral therapy?

Cognitive behavioral therapy (CBT) definition



- Focuses on skill development to alter unproductive thoughts and modify behavior
- Time-bounded
- Large body of evidence on its effectiveness
- Recommended as a first line of treatment by WHO

Can depression therapy be delivered digitally?

Cognitive behavioral therapy (CBT) delivery methods

Face-to-face / Telephone

Prescribe CBT
Educate
Plan assignments
Guide & feedback
Accountability

6 hours
Therapist time

6 hours
Patient time

85%
Adherence

Guided Internet-based (iCBT)

Prescribe CBT
Guide & feedback
Accountability

Educate
Plan assignments

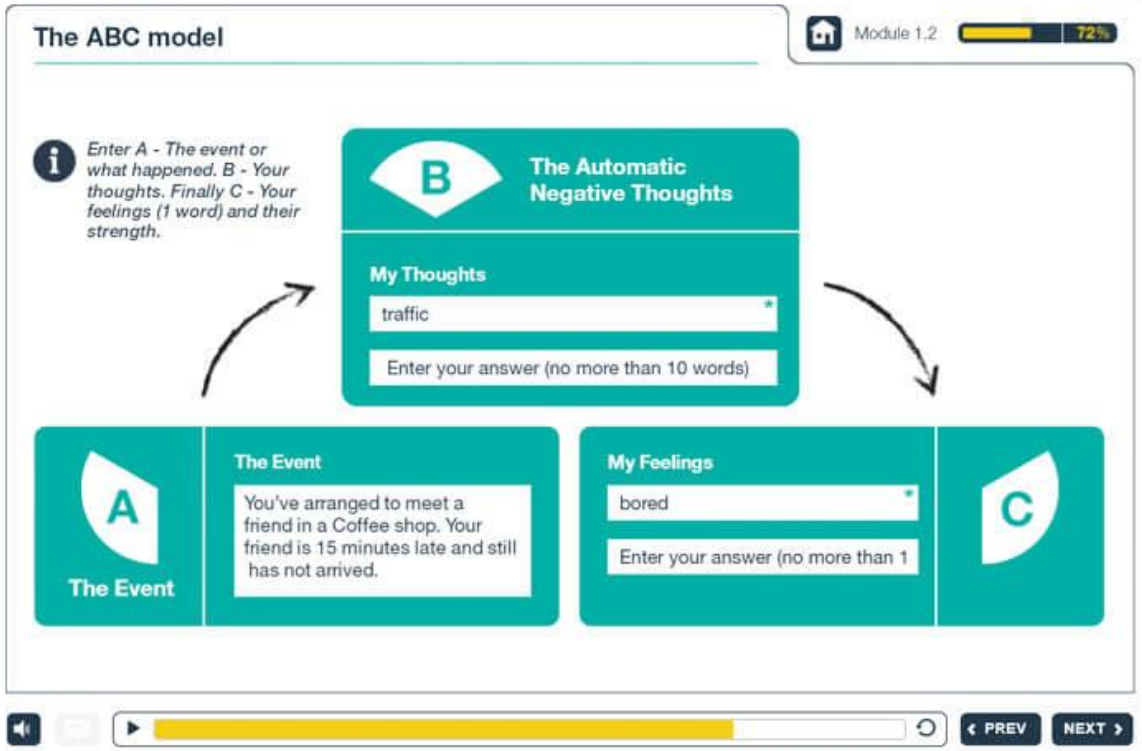
2 hours
Therapist time

8 hours
Patient time

65%
Adherence

How does guided iCBT work?

Cognitive behavioral therapy (CBT) delivery methods



- Similar to an online course
- Focuses on teaching techniques to alter thought process and behaviors
- Combines theory & practice
- 24 modules over 8-12 weeks
- Therapist provides guidance

What if 2% of psychologists
treat depression
using different modalities of CBT?

Potential social returns of digitally delivery therapy

CBA for CBT through different delivery methods in Peru

70

Therapists in Peru

Face-to-face / Telephone

13,281

6 hours

Therapist time

85%

Adherence

Guided Internet-based (iCBT)

30,623

2 hours

Therapist time

65%

Adherence

Potential social returns of digitally-delivered therapy

CBA for CBT through different delivery methods in Peru

70

Therapists in Peru

Face-to-face

13,281

5:1

BBBBB C

Benefit-cost ratio

$15 million

Net present value

Telephone

13,281

7:1

BB BBBBB C

Benefit-cost ratio

$16 million

Net present value

Guided Internet-based

30,623

15:1

BBBBB BBBBB BBBBB C

Benefit-cost ratio

$39 million

Net present value

IDB

Key takeaways

- All alternatives of **CBT provide value to society**
- A mix of **modalities could be useful** for access & equity considerations
- **iCBT for LAC will require adapting, testing, and regulation** on digital therapeutics

Example 2

Digital interventions for diabetes & cardiovascular diseases

Challenges for diabetes & cardiovascular diseases

Situation in LAC

Screening

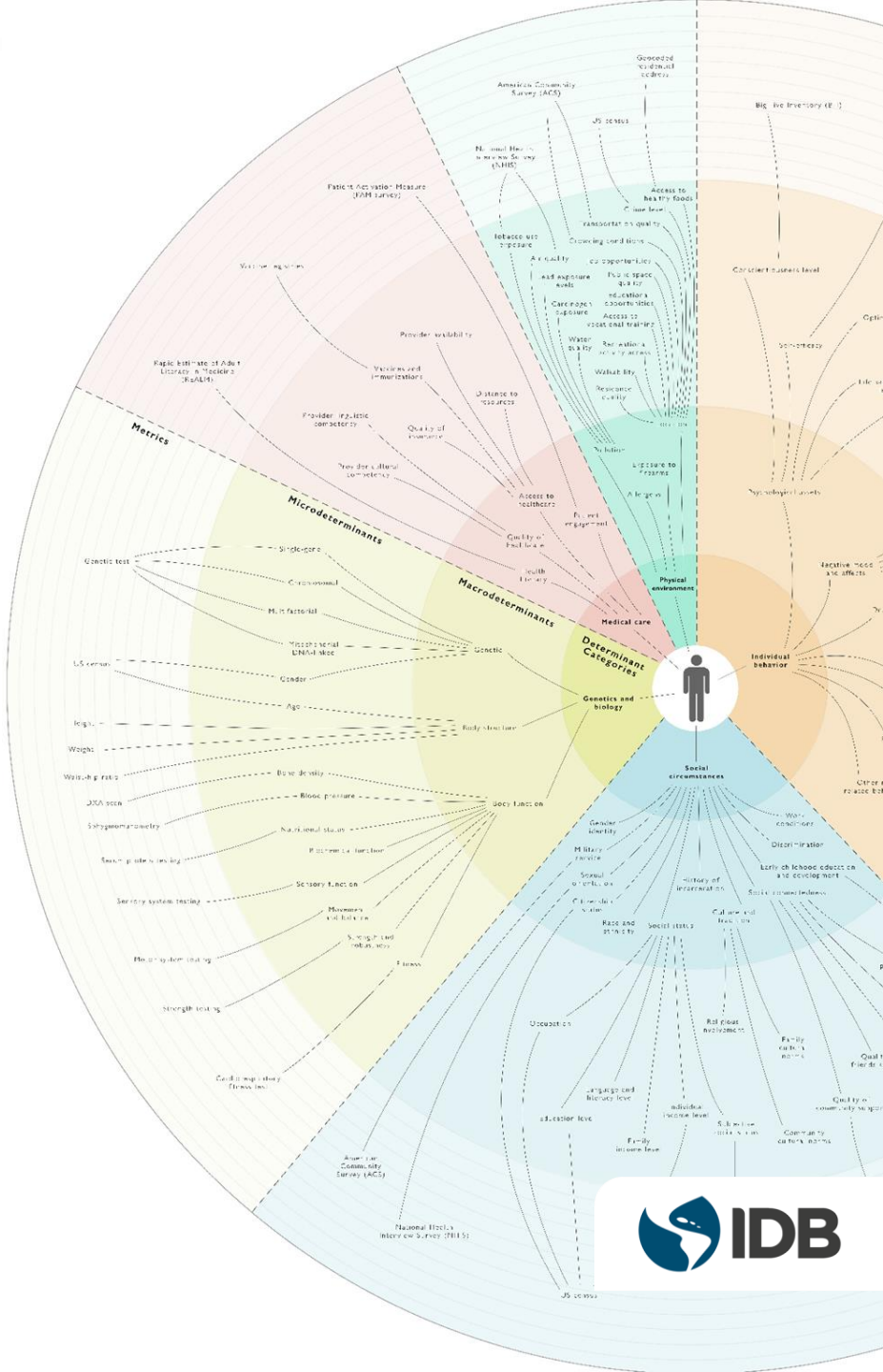
Limited screening capacity

Prevention

Lifestyle changes are key but complex

Management

Managing requires frequent follow-up



How can digital interventions help?

Evidence from the literature

Screening

- SMS can increase uptake of screening among patients at-risk
- Mobile-based tools can increase screening capacity for cardiovascular diseases

Prevention

- SMS can reduce the onset of diabetes among prediabetic patients
- Digital interventions can help reduce some risk factors

Management

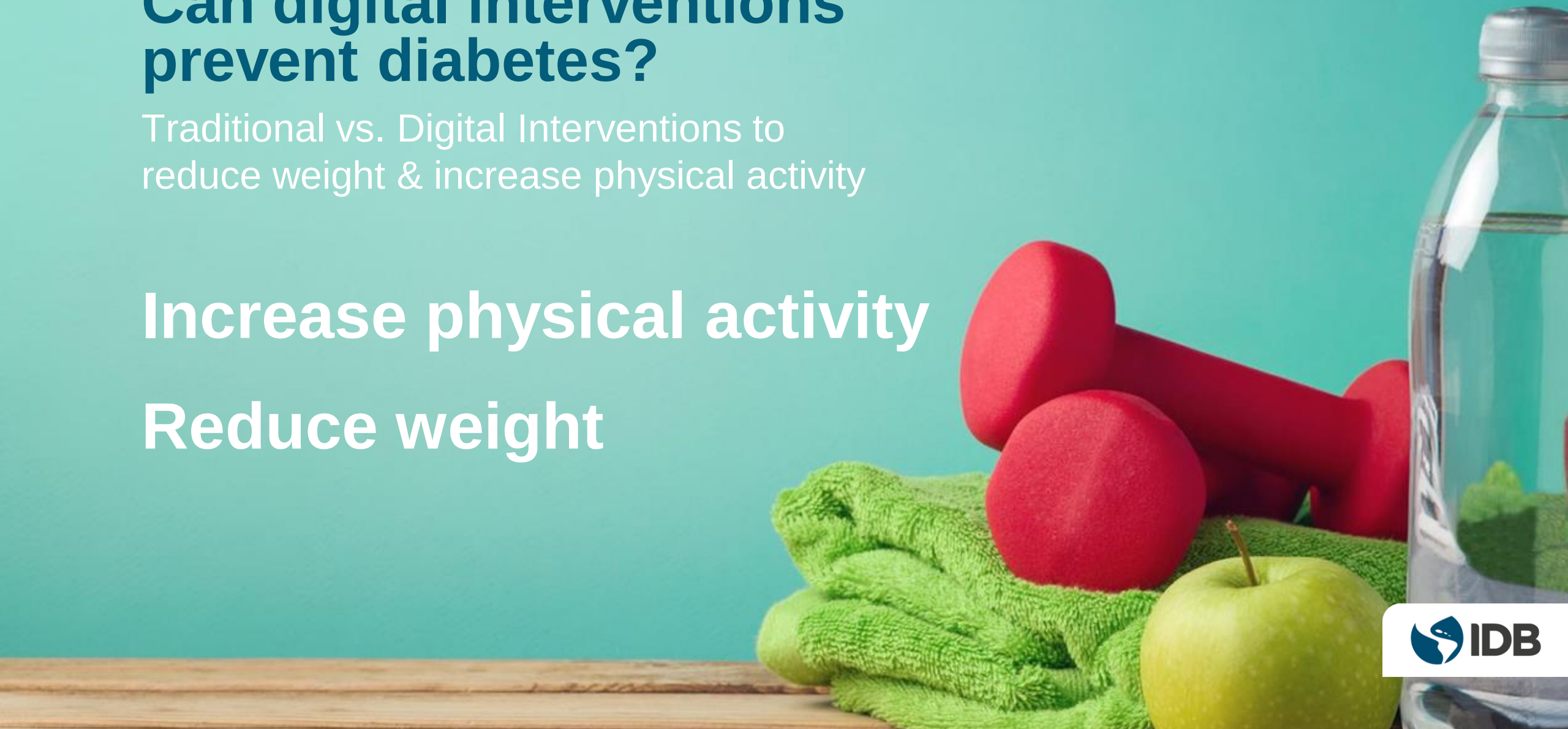
- Reminders can improve medication adherence
- Telemedicine can improve outcomes for patients with CVD

Can digital interventions prevent diabetes?

Traditional vs. Digital Interventions to reduce weight & increase physical activity

Increase physical activity

Reduce weight



Can digital interventions prevent diabetes?

Traditional vs. digital interventions to reduce weight & increase physical activity

< 100% Human — **100% Digital >**

Face-to-face

Educate
Coach
Motivate
Feedback
Track progress

9 hours
Health workers time

58%
Reduction in diabetes onset

In-between

Educate
Coach
Motivate
Feedback
Track progress

Varies
Health workers time

Varies
Reduction in diabetes onset

Text messages

Enroll

Educate
Motivate

0.2 hours
Health workers time

5-30%
Reduction in diabetes onset

IDB

How does the SMS intervention work?

SMS for diabetes prevention in practice

Motivation

Prevention of diabetes is possible.

Diet

Take fruits as a whole and not as juice.

Physical activity

Feeling bored? Go for a walk and enjoy it. It's good for your health.

18 text messages

per month

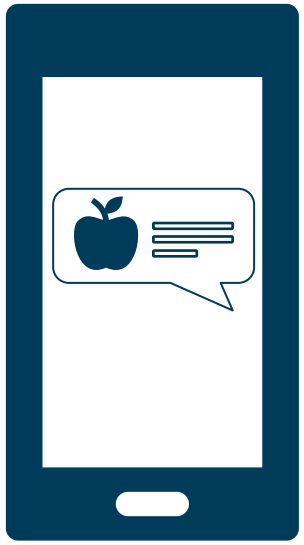
over 2 years

Why SMS and not app based?

SMS for diabetes prevention in practice

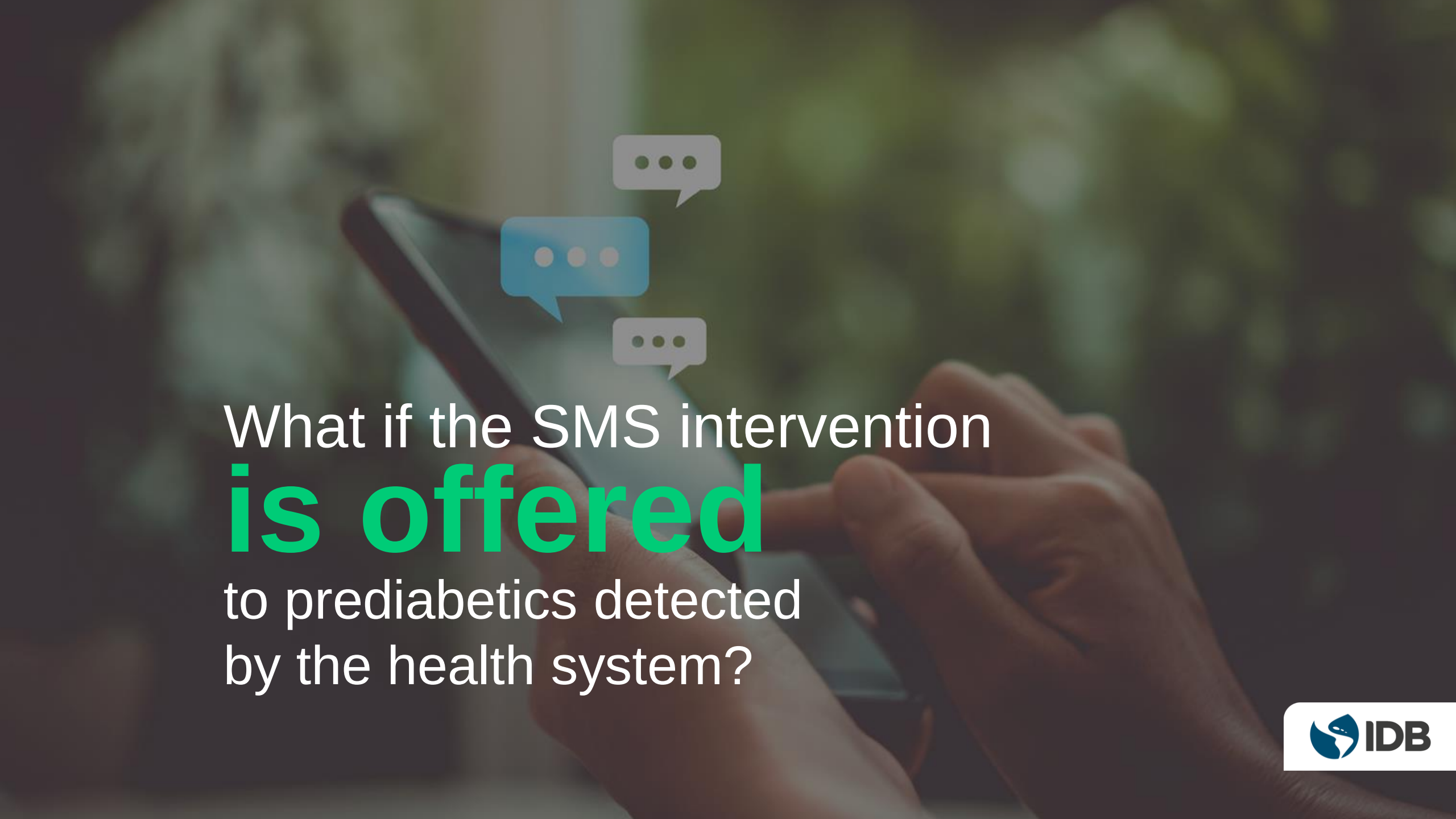
SMS

Vs.



App

Who do we reach and where?


What if the SMS intervention
is offered
to prediabetics detected
by the health system?
IDB

Potential social returns for SMS for diabetes prevention

CBA for SMS intervention to prevent diabetes among prediabetic patients

22,984

Eligible patients

717

Health Centers
In El Salvador

Take-up 25%

5,746

6:1

BBBBBBC

Benefit-cost ratio

$744,000

Net present value

Take-up 50%

11,492

9:1

BBBBBBC
BBB

Benefit-cost ratio

$1,575,000

Net present value

Take-up 75%

17,237

11:1

BBBBBBC
BBBBB

Benefit-cost ratio

$2,405,000

Net present value

IDB

Key takeaways

- **Tailored messages** for those at risk can be effective
- **High-quality content** is key
- Necessary to think **seriously about uptake**
- Interventions for risk reduction have **multiple commonalities with other NCDs**

Main conclusions

Conclusions

- Digital applications can help tackle **non-communicable diseases and mental health**
- Substantial **gains come from digital** task-shifting
- Not all apps/digital **interventions are created equal**
- Research for the **LAC context is necessary** to adapt and test
- **Digital foundations** are essential
- **No silver bullets**

Experiences
from the region