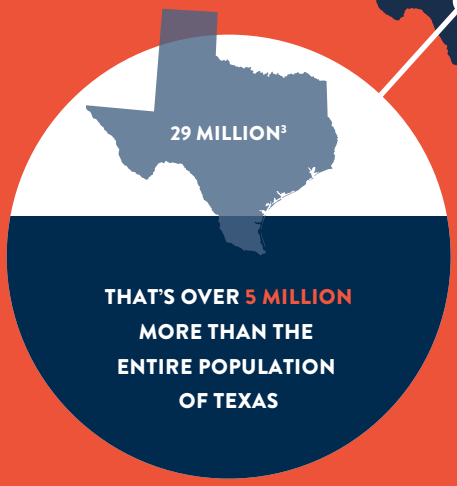
WHY IS DIABETES A PROBLEM?

★ *90–95% of diabetes cases are type 2 diabetes*[1]

1 IN 7.7 US ADULTS HAS DIABETES[2]

1 IN 3.45 US ADULTS HAS PREDIABETES[2]

1 IN 2 US SENIORS HAVE DIABETES OR PREDIABETES[2]



> "People need to be enlightened on how difficult it is to live with [diabetes] each day."[4]

DIABETES COMPLICATIONS IN THE US

188,000

ANNUAL HOSPITAL DISCHARGES DUE TO DIABETIC KETOACIDOSIS EACH YEAR[2]

235,000

ANNUAL ER VISITS DUE TO HYPOGLYCEMIA EACH YEAR[2]

ADULTS WITH DIABETES ARE 2–4 TIMES MORE LIKELY TO HAVE A HEART ATTACK OR STROKE[5]

DIABETES CAUSES A LOWER LIMB AMPUTATION IN THE US EVERY 4 MINUTES[2]

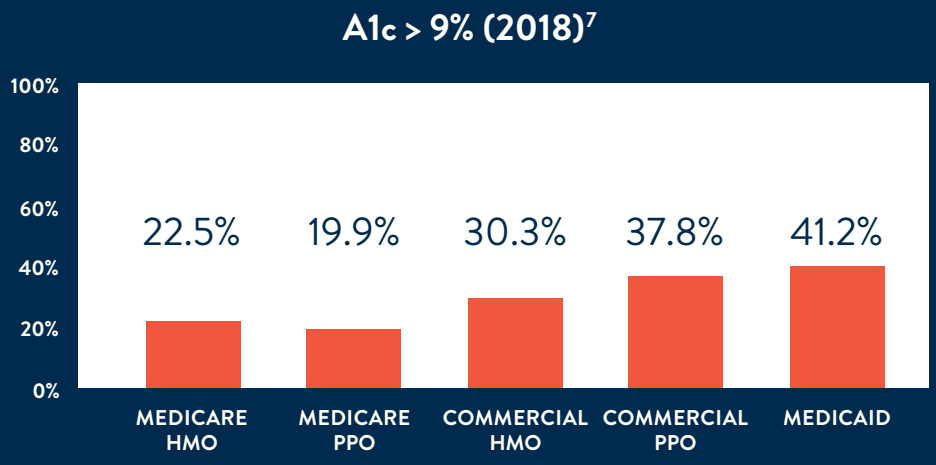
DIABETES IS THE LEADING CAUSE OF BLINDNESS ADULTS AGED 18–64[2]

SOMEONE WITH DIABETES BEGINS TREATMENT FOR END-STAGE KIDNEY DISEASE EVERY 1.8 MINUTES[2]

ONE IN TWO PEOPLE WITH DIABETES EXPERIENCE PERIPHERAL NEUROPATHY[6]

While much of the national diabetes data does not distinguish between type 1 and type 2 diabetes, for the purposes of d20 this document focuses primarily on type 2 diabetes and obesity.

DESPITE ADVANCES IN TREATMENT, 1 IN 6.85 PATIENTS HAS AN A1C THAT IS SIGNIFICANTLY ABOVE TARGET (> 9%)[2]. THIS APPLIES TO MORE THAN 41% OF PEOPLE WITH DIABETES ON MEDICAID.[7]



Each percentage point reduction in A1C correlates with a 35% reduction in microvascular complications (blindness, kidney disease, nerve damage) and a 14% reduction in cardiovascular disease.[8]

COST OF DIABETES ON SOCIETY

Diabetes imposes huge economic burdens on the United States. We spend **$327 BILLION** a year on direct ($237 billion) and indirect ($90 billion) costs. More than half of the direct costs are due to inpatient hospitalizations and prescription medications for diabetes complications. Per capita costs have increased since 2012, and overall costs are projected to grow as more people continue to get diabetes, and as type 2 patients live longer than ever before, more people are at higher risk of costly long-term complications.[9]

Globally, the economic burden of diabetes is estimated at $1.3 trillion per year and is expected to increase to at least $2 trillion per year by 2030.[11] One in 11 adults worldwide has diabetes, with projections suggesting that one in nine will have it by 2045.

> "Diabetes can be depressing—to feel like you have done everything right and still get a 225 mg/dl on the meter."[4]

1 IN 4 US HEALTHCARE DOLLARS IS SPENT ON PEOPLE WITH DIABETES[9]

1 IN 7 HEALTHCARE DOLLARS IS SPENT ON DIABETES ITSELF[9]

$327 BILLION (2017)[9]

26% INCREASE FROM 2012[9]

"As it relates to our health, our zip code may be more important than our genetic code." —Dr. James S. Marks, Executive Vice President, Robert Wood Johnson Foundation

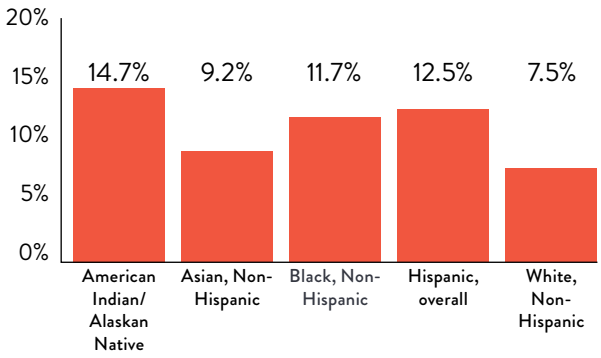
What Factors Contribute to Type 2 Diabetes Risk?

Type 2 diabetes is influenced by a host of complex factors. While genetics and certain lifestyle factors (including diet and exercise) are certainly major contributors, it is also impacted by a multi-factorial set of cultural, societal, and environmental factors that are less understood and often harder to address. According to Novo Nordisk's Cities Changing Diabetes Program, the four greatest social contributors to type 2 diabetes risk include time constraints, financial constraints, geographic barriers, and resource constraints (e.g., lack of access to healthcare, medications, nutritious foods and exercise, etc.).[12] Other challenges that many people with diabetes face are the cultural, societal, and internalized stigma which can lead to individuals feeling alone, helpless, and scared to seek help for fear of being judged. These factors are critical to addressing and contextualizing diabetes, and they help explain why pharmaceutical therapies alone are not enough to fight this growing pandemic.

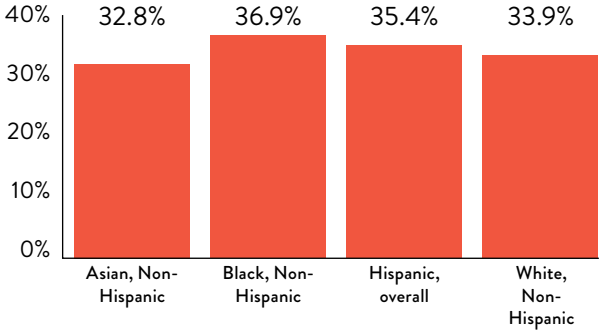
What Causes Diabetes?

At its core, diabetes is a metabolic dysfunction in which the body cannot properly process glucose. In type 1 diabetes, the body's own immune system attacks and kills the beta cells in the pancreas that produce insulin. Type 2 diabetes, on the other hand, is caused by insulin resistance, which occurs when the body's cells have trouble responding to insulin. Over time, the beta cells in the pancreas will fatigue and stop producing insulin at the levels the body normally needs, leading to "beta burnout." While the exact cause of type 1 diabetes is unknown, type 2 diabetes is likely caused by several factors, including social, economic, structural, and lifestyle factors. Moreover, different people are at various levels of predisposed genetic risk for developing type 2 diabetes, which is why some overweight or obese individuals never develop type 2 diabetes, while others do.

Rates of Diagnosed Diabetes, 2020 (from 2017–2018)[2]



Prevalence of Prediabetes, 2020 (from 2013–2016 estimates)[2]

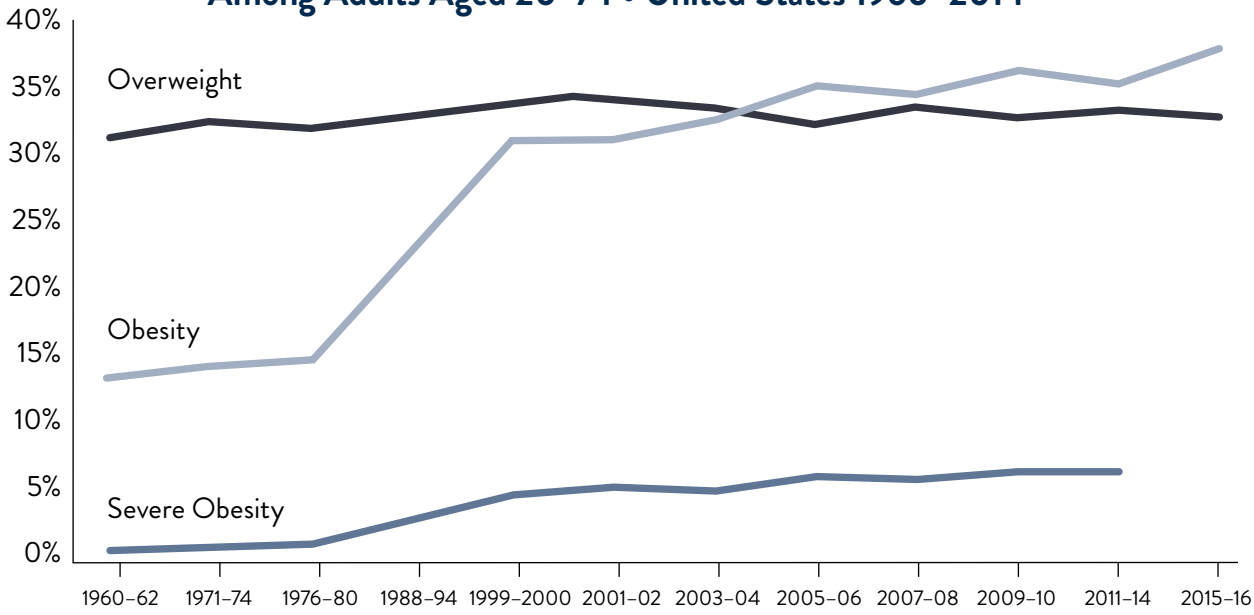


Diabetes Prevalence by Income, 2020 (from 2011–2014)[13]

"I hate that I'm categorized as type 2, because people assume I did this to myself and are so judgmental, even fellow diabetics. For a long time it prevented me from taking proper care of myself, so I wouldn't be judged."[14]

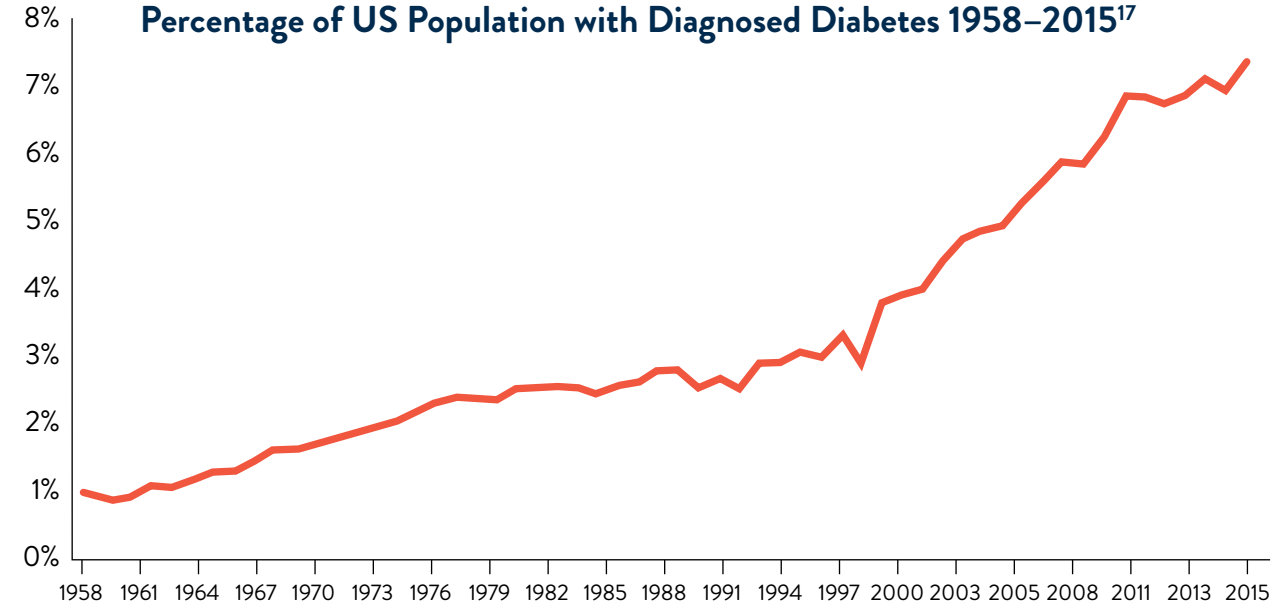
Obesity and Type 2 Diabetes Trends Over Time

Trends in Overweight, Obesity, and Severe Obesity Among Adults Aged 20–74 • United States 1960–2014[15]



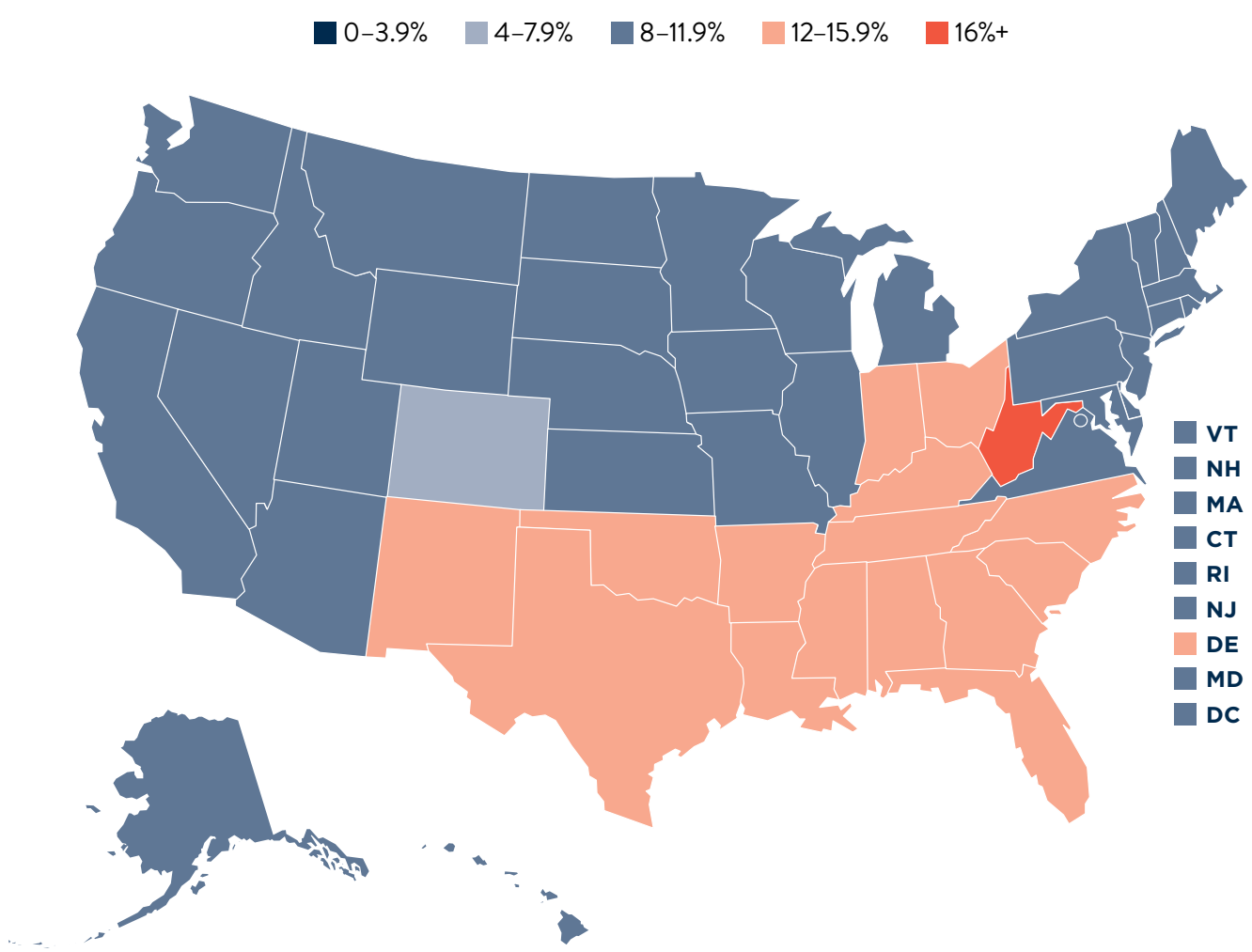
Over the past 26 years, diabetes has gone from being the twelfth to the eighth leading cause of premature death in the US, and from being the eighth to the third leading cause of disability and injury.[16]

Percentage of US Population with Diagnosed Diabetes 1958–2015[17]



"I have been fired for having diabetes. People act like diabetes is contagious... I have had boyfriends break up with me...People act like I have the plague..."[4]

Diabetes Prevalence in Adults, 2018[18]



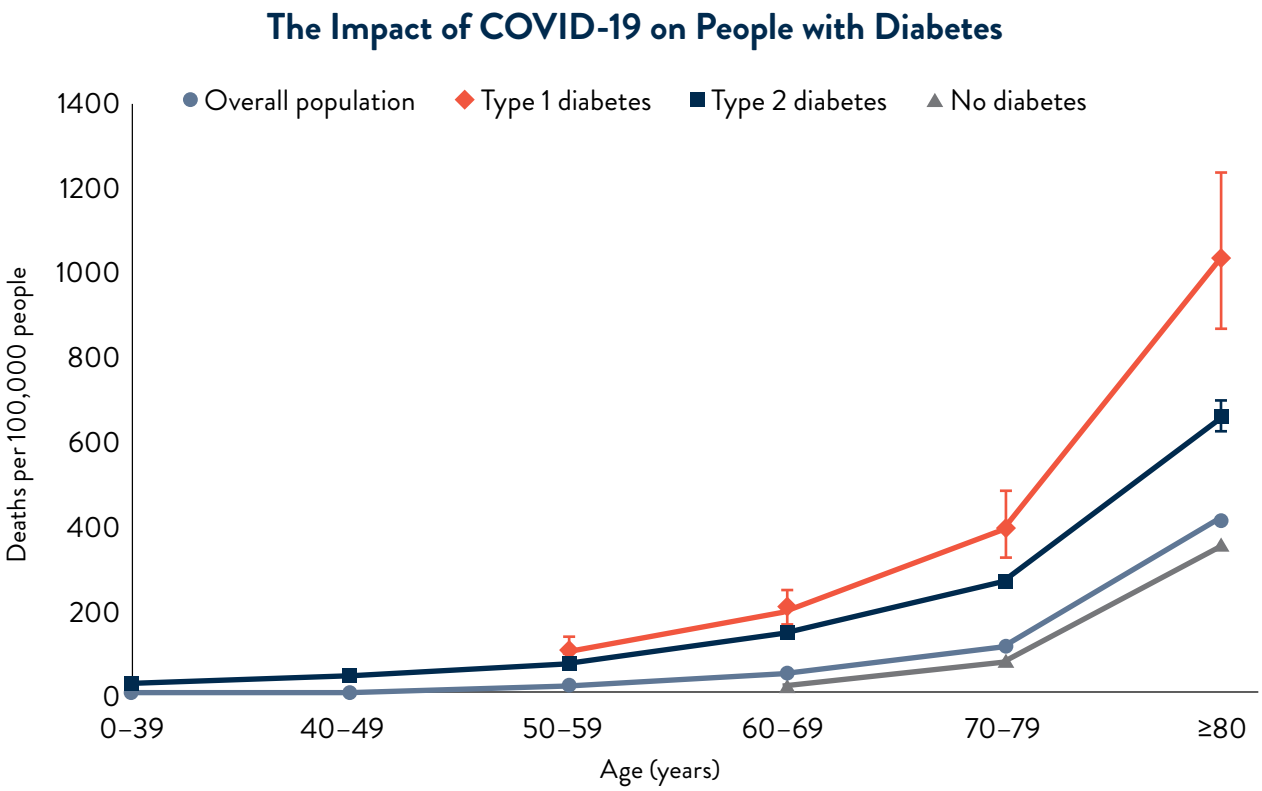


Figure 1: Unadjusted in-hospital COVID-19 mortality rates, March 1 to May 11, 2020, by diabetes status. Error bars show 95% CIs. Data for age groups 0–39 years and 40–49 years for type 1 diabetes and 0–39 years and 50–59 years for no diabetes have been excluded because of small numbers of events (one to four), to comply with data protection regulations.

Graph adapted from "Associations of type 1 and type 2 diabetes with COVID-19-related mortality in England: a whole-population study" by Barron, et. al.[19]

Experts have warned that people with diabetes are at an increased risk of developing more severe forms of COVID-19, and are at a greater risk of death from the disease.[19] Unfortunately, these negative clinical outcomes are not the only negative outcomes associated with diabetes. In a 2020 study done by dQ&A and the American Diabetes Association, it was found that:

- A quarter of people with diabetes have turned to self-rationing supplies to cut the cost of their diabetes care.[20]
- 650,000 insulin patients are skipping injections or taking less insulin than prescribed.[20]
- 3 million people are skipping blood glucose tests.[20]
- In June, in the United States, the unemployment rate among people with diabetes was higher than the national rate of 12% at 18%.[20]
- 33% of people with diabetes who were working before COVID-19 have lost some or all income.[20]

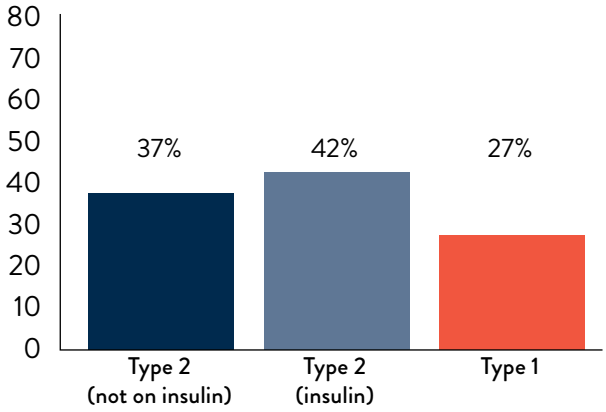
"For all the bravado that I put up when it comes to fighting diabetes stigma amongst people, insisting that neither type 1 diabetes or type 2 diabetes is our fault, it still doesn't shake my own internal judgement that I'm a flawed human being."[25]

The Impact of Stigma: What Messages Do People with Type 2 Diabetes Hear from Society

Stigma plays a very large role in how people with diabetes manage their diabetes and seek care. In a 2013 study by market research company dQ&A of people with diabetes, respondents were asked about their experiences with stigma.[26]

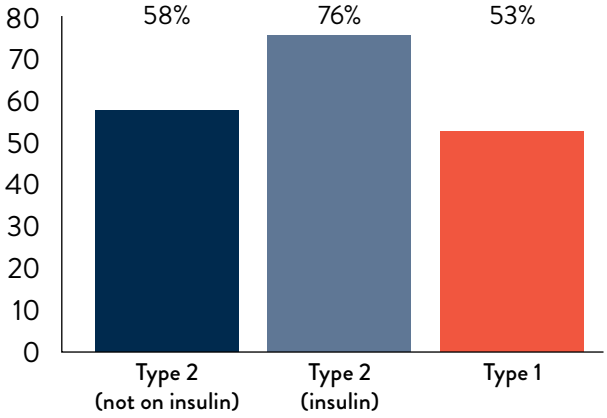
Percentage of Respondents Who Strongly Agree that "Other People's Perception of Diabetes has Made it More Difficult for Me to..."

- "manage my diabetes successfully"
- "take my medication at the right time"
- "make good food choices"

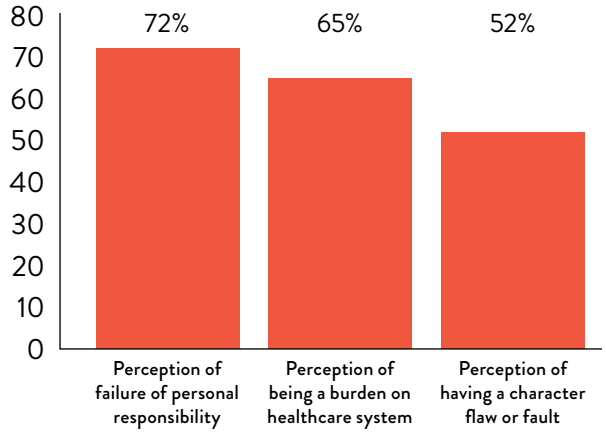


Percentage of Respondents Who Strongly Agree that "Other People's Perception of Diabetes has Made it More Difficult for Me to..."

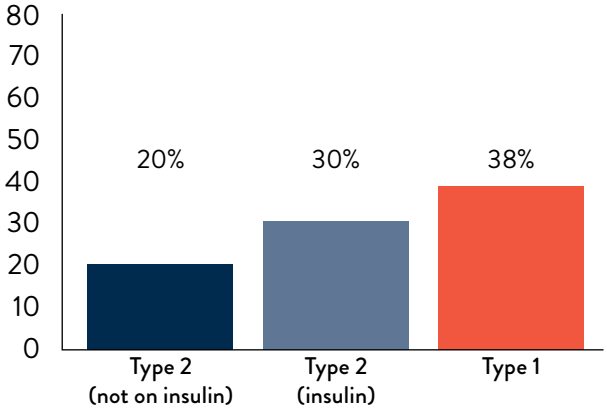
- "be open about my diabetes with friends and family"
- "find a community to help me manage my diabetes"
- "make friends and enjoy a full social life"
- "succeed at work"
- "find support or share ideas about diabetes"



Percentage of Respondents Who Believe People with Diabetes Face the Following Forms of Stigma? (n = 3,154)



Percentage of Respondents Who Strongly Agree that They Have Felt One of the Following: Guilt, Shame, Embarrassment, Isolation, or Blame



What Causes the Diabetogenic Environment?

On a broad scale, economic growth in the US coupled with our increasingly Westernized, modern lifestyle have led to a significant increase in type 2 diabetes over recent decades. While the problem is complex and the list below is by no means exhaustive, certain key areas of influence include:

Food Culture On a national scale, calorie-dense foods with low-nutritional value are often the cheapest, most readily available option. Foods of all kinds come in larger portion sizes than ever before. And not only that, but food deserts, which are areas without access to fresh, healthy, and affordable food, are becoming common, fostering poor dietary habits.

Urban Planning and Physical Activity The built environment can encourage or deter physical activity. Neighborhood-specific factors, such as a lack of green space, a lack of gyms, or increased violence, especially in low-income areas, can create barriers to exercise.

Healthcare Coverage Healthcare coverage is associated with type 2 diabetes diagnosis rates and glycemic control. Even with the Affordable Care Act, 12 states have not expanded Medicaid, leaving some of the most vulnerable individuals uninsured.[21]

Geographical Barriers Distance from healthcare can influence how often patients seek healthcare. Patients often have to travel long distances and face other transportation barriers in order to receive care—especially those in rural areas. A 2014 report estimates that there was a shortage of around 1,500 adult endocrinologists, and that this shortage would continue to grow over time as the rates of diabetes increases in the US.[22]

Time Constraints Type 2 diabetes prevention and management is time consuming, often requiring more time than people have in their daily lives. One study found that if people with type 2 diabetes followed every recommendation by the American Diabetes Association, it would add two hours to their daily routines.[23] When conflicted between jobs, caring for children and family, and other life priorities, diabetes prevention and management can fall to the side.

Lack of Community People with type 2 diabetes often find that locating peer support is a major challenge. Because of the stigma associated with type 2 diabetes and the idea that people brought the disease on themselves, we often see people hesitate to embrace their identity as a person with diabetes. This can lead to social isolation, as people often feel that they are unable to find or create a community around type 2 diabetes.

Stigmatization Diabetes stigma refers to the experiences of negative feelings such as exclusion, rejection, and blame that are associated with the perceived stigmatization of having diabetes. This stigma can lead to fears of isolation, embarrassment, rejection, guilt, and being treated differently which makes it harder for people with diabetes to seek out and receive the care they need.

Cultural Attitudes How people perceive diabetes can play a significant role in our ability to prevent and treat it. Since type 2 diabetes has been shown to be preventable, public perception of what causes diabetes focuses only on poor lifestyle and dietary choices. This has led to an overwhelming cultural attitude that the people who have diabetes brought this upon themselves, ignoring the many other uncontrollable factors that impact diabetes status. In turn, such attitudes can influence behavior, health outcomes, healthcare policy, and access to treatment.

Limited Health Literacy In the US, only 12% of US adults have proficient health literacy, and over one third have issues with common medical tasks such as following prescription directions. Moreover, health literacy disproportionately affects different groups of people: 28% of white adults have "basic or below basic" health literacy, compared to 65% of Hispanic adults.[24]

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