

# How has Prevalence of Diabetes changed over time and what interventions have reduced the prevalence?

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BY KADY LAZARTE

# What is Diabetes

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Also called diabetes mellitus (DM)

-a disease that affects the way your body uses glucose from the bloodstream. This results in having too much glucose in the bloodstream <sup>1</sup>.

-Insulin- a hormone produced by the pancreas which takes glucose from bloodstream into the cell

-There's two types of diabetes:

Type I- The pancreas can't produce insulin or makes very little of it <sup>2</sup>.

Type II- Insulin is not used properly and causes insulin resistance <sup>3</sup>.

-Prediabetes- is when a person have high blood sugar levels above normal but not too high to be consider diabetes <sup>4</sup>.

-In general diabetes is a condition that causes high blood sugar levels

# Prevalence in California

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-The dataset I chose talks about the prevalence of diabetes among adults diagnosed with diabetes per 100 based on five categories:

- Age
- Race
- Education
- Income
- Gender

-Data was conducted from 2012 to 2018

-The total of population of adults with diabetes for each year is included also

# What makes a person more at risk than total population?

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Based on the data I found, these type of adults have a higher relative risk of having diabetes:

- Adults that are 65 years and above
- Adults that have less than a high school education
- Adults that are African American or Hispanic
- Adults that have less than a \$15,000 income

Calculation of relative risk of having diabetes for each group within each category for every year

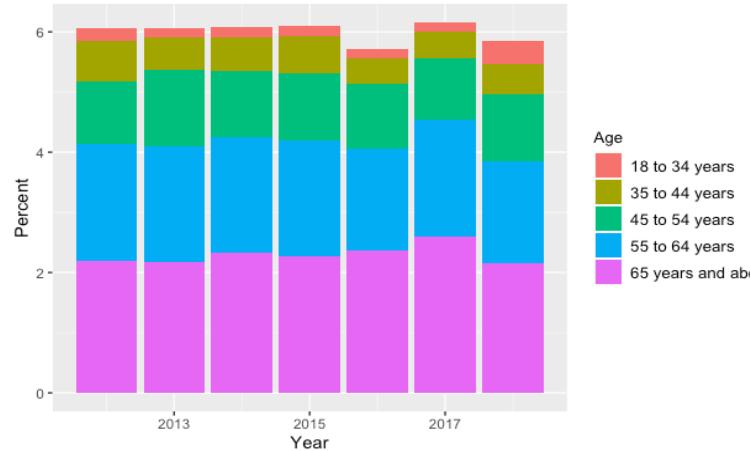
$$\frac{\text{Percent of specific factor prevalence}}{\text{Percent of total population prevalence}} = \text{e.g. } \frac{\text{Percent for <high school}}{\text{overall rate of total population}}$$

# Materials and Method

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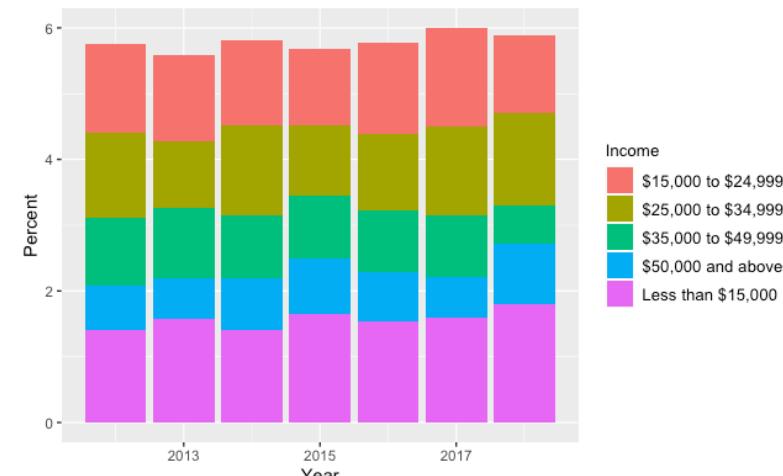
- Data was collected by asking the question “Have you ever been told by a doctor that you have diabetes” from the Behavioral Risk Factor Surveillance System (BRFSS), a nationally coordinated, state-based, telephone-administered survey of adults. <sup>5</sup>.
- Used R code to create my graphs

The Relative Risk of Diabetes based on different age groups



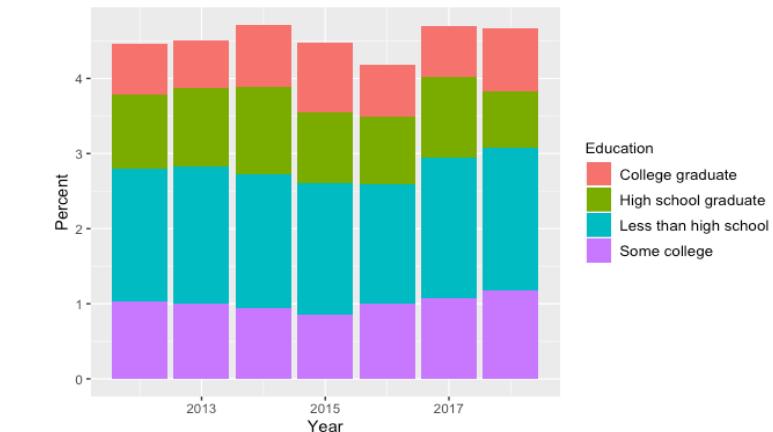
**Figure 1.** This bar graph is demonstrating the relative risk of diabetes based on the five age groups. The graph is showing the percent of relative risk of each age category of that year over the mean of relative risk of that year. The data is from 2012 to 2018.

The Relative Risk of Diabetes based on the level of income an adult has



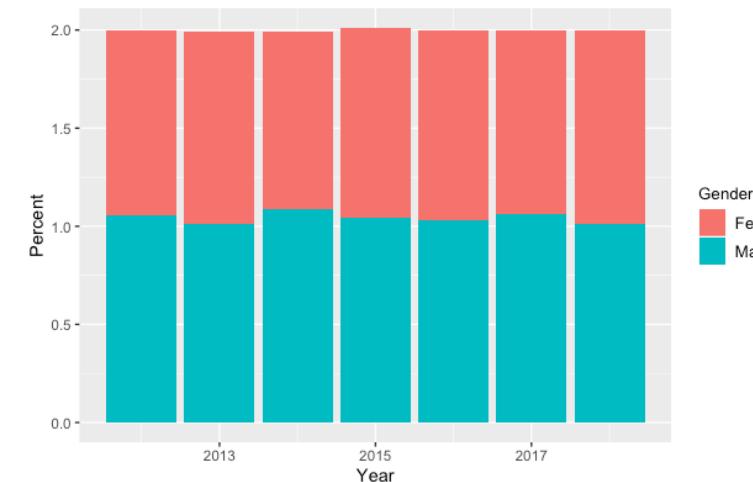
**Figure 3.** This bar graph is demonstrating the relative risk of diabetes based on the level of income an adult has. The graph is showing the mean percent of each level of income of that year over the percent of total population of that year. The data is from 2012 to 2018.

The Relative Risk of Diabetes based on the level of education an adult has



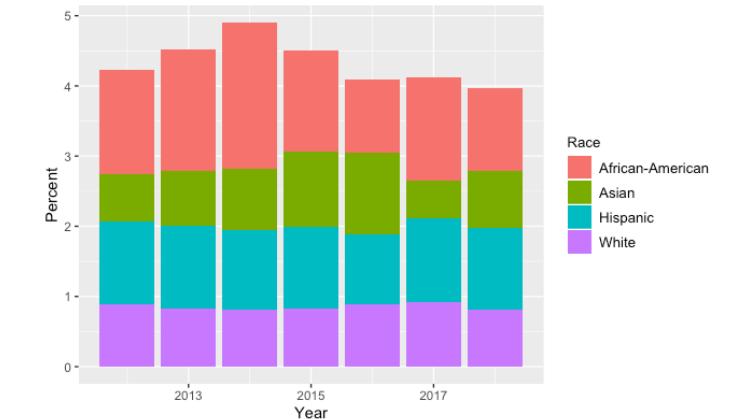
**Figure 2.** This bar graph is demonstrating the relative risk of diabetes based on the level of education an adult has. The graph is showing the percent of relative risk of each level of education of that year over the mean of relative risk of that year. The data is from 2012 to 2018.

The Relative Risk of Diabetes based on gender

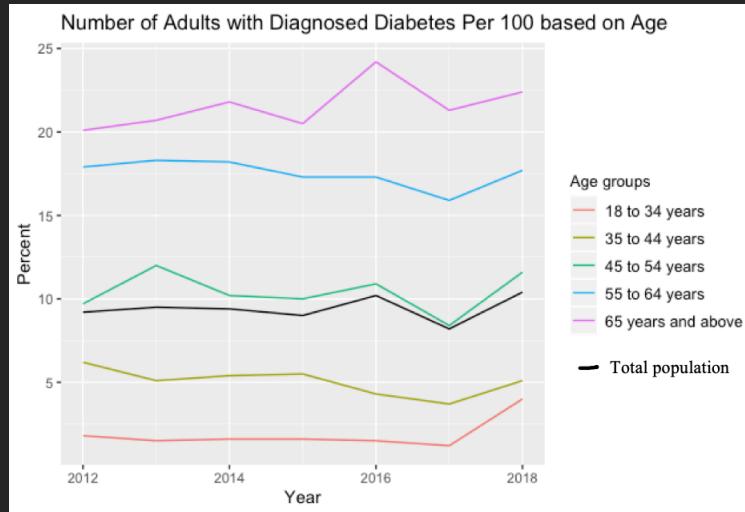


**Figure 5.** This bar graph is demonstrating the relative risk of diabetes based on each gender. The graph is showing the percent of relative risk of each gender of that year over the mean of relative risk of that year. The data is from 2012 to 2018.

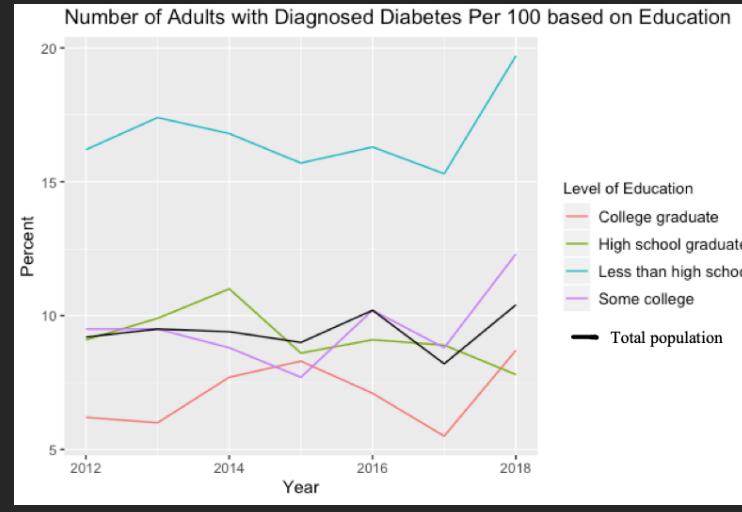
The Relative Risk of Diabetes based on each ethnicity



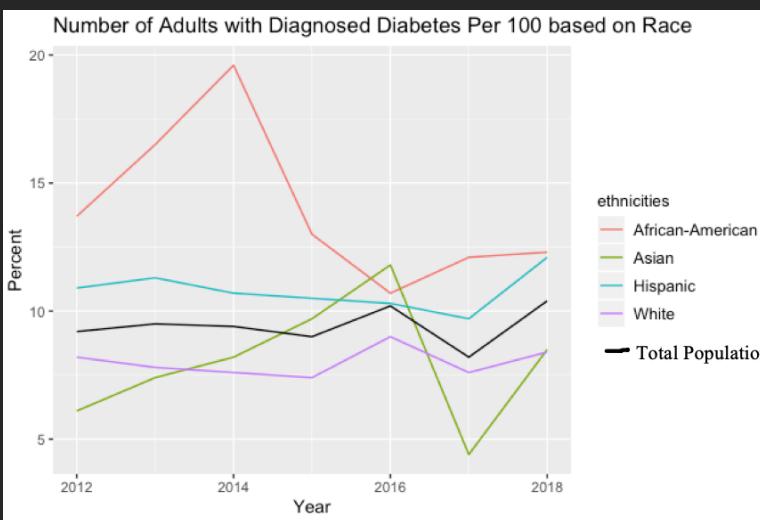
**Figure 4.** This bar graph is demonstrating the relative risk of diabetes based on ethnicities. The graph is showing the percent of relative risk of each ethnicity of that year over the mean of relative risk of that year. The data is from 2012 to 2018.



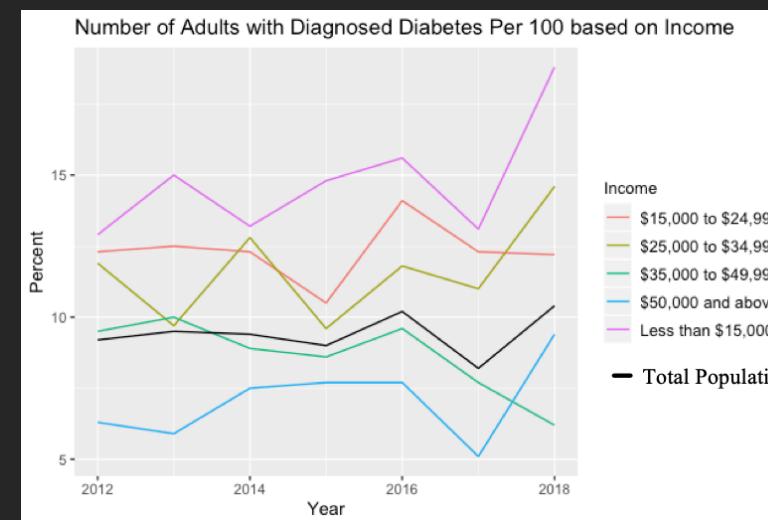
**Figure 6.** In this graph, it displays the prevalence of diabetes among adults per 100 based on age through 2012 to 2018. The prevalence of diabetes is categorized by different age groups. The total population of adults with diabetes is shown through each year in that period of time.



**Figure 8.** In this graph, it shows the prevalence of diabetes among adults per 100 based on education through 2012 to 2018. The prevalence of diabetes is categorized by level of education the adult had. The total population of adults with diabetes is shown through each year in that period of time.



**Figure 7.** In this graph, it shows the prevalence of diabetes among adults per 100 based on race through 2012 to 2018. The prevalence of diabetes is categorized by different ethnicities. The total population of adults with diabetes is shown through each year in that period of time.



**Figure 9.** In this graph, it shows the prevalence of diabetes among adults per 100 based on income through 2012 to 2018. The prevalence of diabetes is categorized by the amount of income the adult had. The total population of adults with diabetes is shown through each year in that period of time.

# Interventions

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-Lifestyle change programs like for Kaiser Permanente Northern California members

-Obamacare: helps improve affordability, access, and quality to medical care <sup>6</sup>.

-National Diabetes Prevention Program

# Conclusion

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Key points from this...

- The prevalence of diabetes was seen highest in adults that are African American or Hispanic, adults that have low income, adults with low level of education, and adults that are older
- Some interventions have helped reduce the prevalence in some years through 2012-2018
- Diabetes is still as relevant and ongoing problem around the world not only in California

# Citations

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1. Diabetes. (2018, August 8). Retrieved from <https://www.mayoclinic.org/diseases-conditions/diabetes/symptoms-causes/syc-20371444>.
2. Type 1 Diabetes. (2019, May 30). Retrieved from <https://www.cdc.gov/diabetes/basics/type1.html>.
3. Type 2 Diabetes. (2019, May 30). Retrieved from <https://www.cdc.gov/diabetes/basics/type2.html>.
4. Diabetes Overview. (n.d.). Retrieved from <https://www.diabetes.org/diabetes>.
5. Decreasing Diabetes Prevalence. (2019, November 20). Retrieved from <https://letsgethealthy.ca.gov/goals/living-well/decreasing-diabetes-prevalence/>.
- 6.. Sarah S. Casagrande, Laura N. McEwen, William H. Herman. Changes in Health Insurance Coverage Under the Affordable Care Act: A National Sample of U.S. Adults With Diabetes, 2009 and 2016. *Diabetes Care* May 2018, 41 (5) 956-962; DOI: 10.2337/dc17-2524