CHRONIC DISEASE ~ DIABETES

Importance	Diabetes is the seventh leading cause of death in the United States.[1] It is a major cause of heart disease and stroke.[1] It is the leading cause of kidney failure, non-traumatic lower limb amputations, and adult-onset blindness.[1] The economic cost of diabetes in the U.S. in 2007 was estimated at $174 billion.[2]
Definitions	Diabetes: Diabetes is a group of diseases marked by high levels of blood glucose resulting from defects in insulin production, insulin action, or both. Type 1 diabetes: Type 1 diabetes is usually diagnosed after sudden onset among children or young adults. It was previously called juvenile diabetes or insulin-dependent diabetes. Type 1 diabetes stems from inability to produce enough insulin. About 5-10% of American diabetes cases are Type 1. Type 2 diabetes: Type 2 diabetes is usually diagnosed among adults. It tends to have gradual onset. It was previously called adult-onset diabetes or non-insulin-dependent diabetes mellitus (NIDDM). It usually begins as insulin resistance, a disorder in which the cells do not use insulin properly. As the insulin level rises, the pancreas gradually loses the ability to produce it.[2] Type 2 diabetes is associated with older age, obesity, family history of diabetes, history of gestational diabetes, impaired glucose metabolism, physical activity, and race/ethnicity.[2] In adults, type 2 diabetes accounts for about 90% to 95% of diagnosed cases.[2] Gestational diabetes: Diabetes occurs during about 2-5% of all pregnancies. This type usually resolves after delivery, but frequently precedes development of Type 2 diabetes.
Healthy People 2020 Objective	"Through prevention programs, reduce the disease and economic burden of diabetes, and improve the quality of life for persons who have or are at risk for diabetes."[5] ▪ Reduce the annual number of new cases of diagnosed diabetes in the population to 7.2 new cases per 1,000 population aged 18 to 84 years.[5] ▪ Reduce the diabetes death rate to 65.8 deaths per 100,000 population.[5] ▪ Increase the proportion of persons with diagnosed diabetes who receive formal diabetes education to 62.5 percent.[5]

It is estimated that 25.8 million people of all ages in the United States (8.3%) have diabetes, an increase of more than 3 million in two years.[1] In 2010, nearly 1.9 million new cases of diabetes were diagnosed in people ages 20 years or older.[1] It was estimated that in 2010 there were 79 million Americans aged 20 years or older with prediabetes.[1] If the diabetes trend continues unchanged, one out of three children born in 2000 will develop diabetes.[2] Type 2 diabetes used to be uncommon in children, but the frequency of diagnosis of type 2 diabetes in children and adolescents is increasing at an alarming rate. The incidence of type 2 diabetes in adolescents has increased 10-fold over the last decade.[2]

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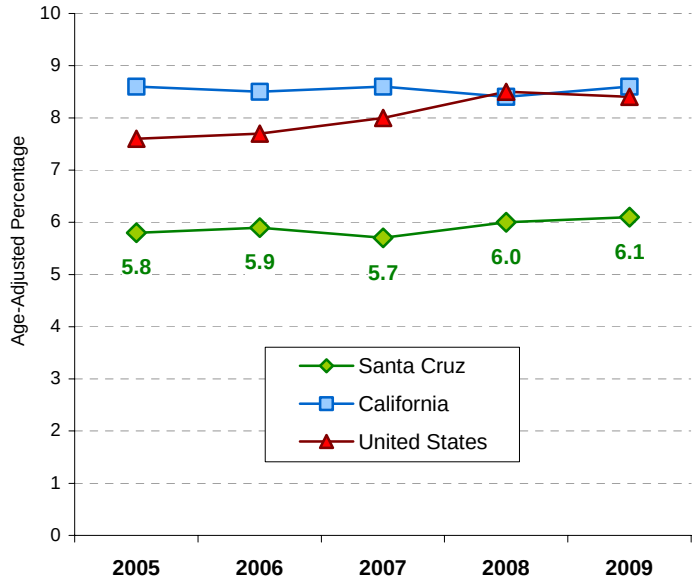
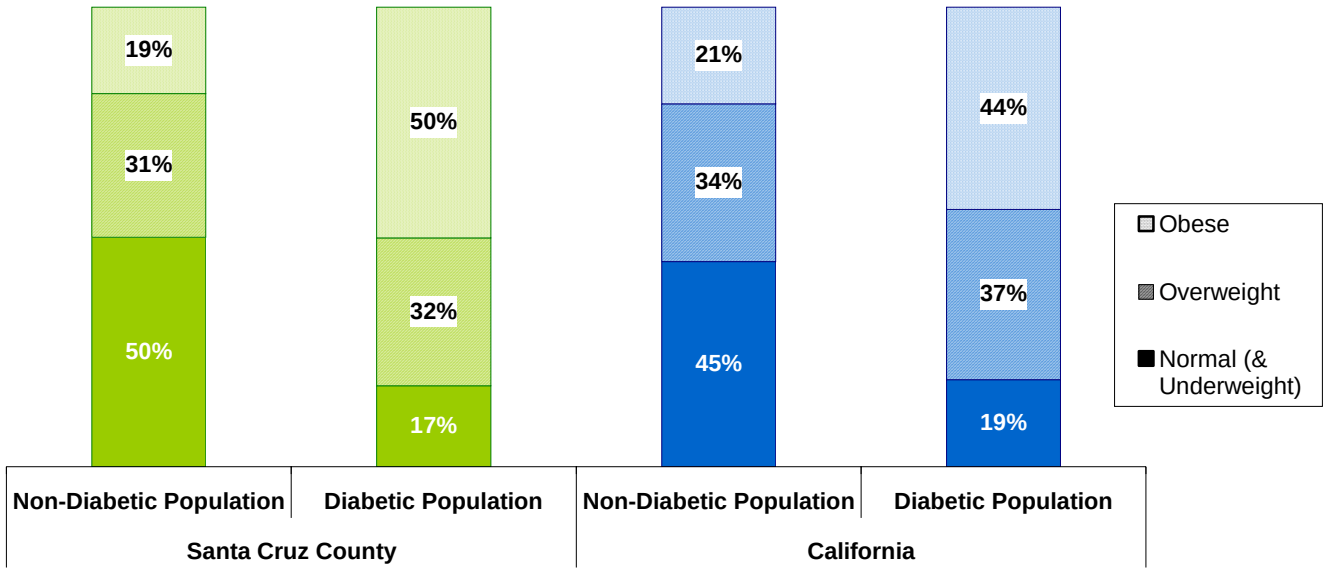
Figure 1 illustrates the trends in diabetes incidence rates among adults (≥20 years) from 2005 to 2009 on a national, state, and local level. Rates in Santa Cruz County have consistently been lower than state and national rates. The nation is in the midst of an unprecedented epidemic of diabetes. Far more adults and children have the disease than ever before.[6] The increase in diabetes among adults and the emergence of type 2 diabetes in children are associated with the dramatic rise in obesity and overweight in recent years.[6] From 1991 to 2001, obesity among adults rose 74% nationally; by 2001, 65% of adults in the U.S. were overweight or obese, including 59% of Californians.[8,9] The risk of developing diabetes increases with weight; a gain of 11 to 18 pounds doubles the risk of developing diabetes.[8,9] Of people diagnosed with type 2 diabetes, 80 to 90 percent are overweight or obese.[2] Figure 2 compares the percentages of overweight and obesity among diabetic populations versus non-diabetic populations.

Figure 1: Incidence of Diabetes, Santa Cruz County, California, and United States, 2005-2009



The prevalence of diabetes may be up to twice as high in low-income populations as in high-income populations.[7] In patients with diabetes, low income is associated with an increased rate of hospitalizations for acute diabetes-related complications.[7]

Figure 2: Percentages Obese, Overweight, and Normal, Comparing Diabetic and Non-Diabetic Populations, Santa Cruz County and California, 2009[1,3]



Source: CHIS 2009

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Figure 3 compares the health status among the diabetic population and the general population in Santa Cruz County. Data was obtained by the California Health Interview Survey (CHIS) 2005. Many diabetic complications (35-75%) can be attributed to hypertension.[10] The prevalence of hypertension among diabetics is twice as high as among non-diabetics.[10,11] Successful management of hypertension reduces the progression of diabetic renal disease and vascular disease.[10]

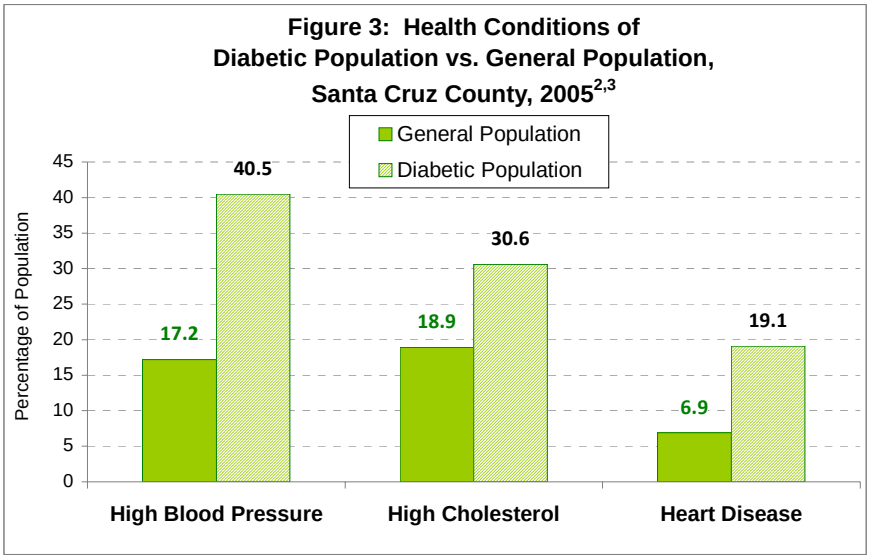

Figure 4 describes general risk factors for the development of diabetes. A recent study showed that as smoking increased, the rates of diabetes had also increased for both men and women.[13] Smoking more than two packs of cigarettes per day increased the diabetes rate by 45% for men and 74% for women.[13] Moreover, adults with less than a high school education had a higher rate (13.0%) of developing diabetes than any other educational level.[14] Overweight or obese adults were 7.37 times more likely to develop diabetes than adults with normal weight.[14] Obesity and diabetes among U.S. adults continue to rise in both sexes, all ages, all races, all educational levels, and all smoking levels.[14] Both obesity and type 2 diabetes are preventable. Changes in lifestyle are effective in preventing both diabetes and obesity. Increasing physical activity, improving diet, and sustaining these lifestyle changes can reduce both body weight and the risk of developing diabetes.[14]

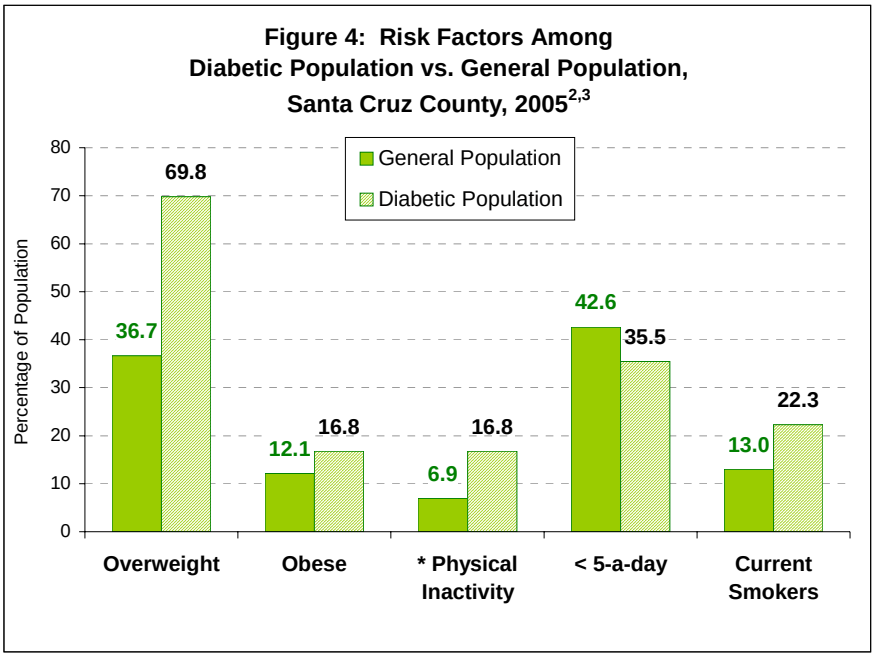

Figure 5 reflects quality of health care for diabetic patients, by race/ethnicity, showing the proportions of diabetic patients who receive the medical exams and tests they should under the proper standards of care.

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CHIS survey data from 2003-2009 show an average prevalence of lifetime diagnosed diabetes of 3.6% among non-Hispanic White Santa Cruz County adults (at least 20 years of age), compared to 8.6% among Hispanics.[3] Statewide rates were higher, averaging 6.3% for Whites and 9.5% for Hispanics. Nationwide, Hispanics are 1.7 times more likely to develop diabetes than non-Hispanic Whites.[16] Hispanics have a higher prevalence of diabetes, more complications, and worse outcomes than non-Hispanic Whites.[18] Diabetes is the seventh leading cause of death nationwide, but it's the fifth leading cause of death among Hispanics in the United States, with death rates 60% higher than among non-Hispanic Whites.[1,2] Appropriate health care for diabetes among the Hispanic population is essential, since they are disproportionately affected by diabetes and tend to have more serious complications with worse health outcomes. Moreover, Hispanic diabetics reported poorer health-related quality of life than non-Hispanic White diabetics.[18]

Figure 5: Diabetes Management Among Racial/Ethnic Populations, Santa Cruz County, 2005[2]

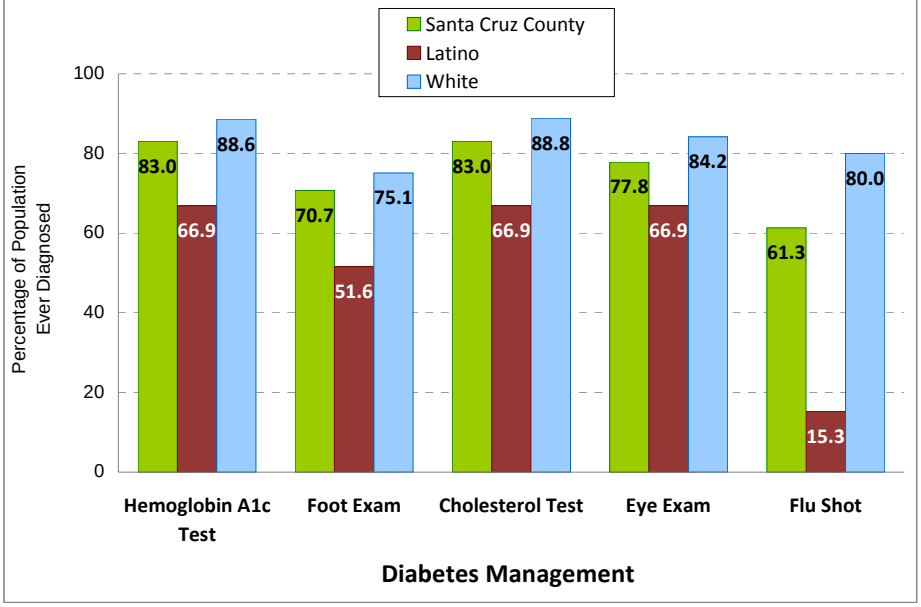
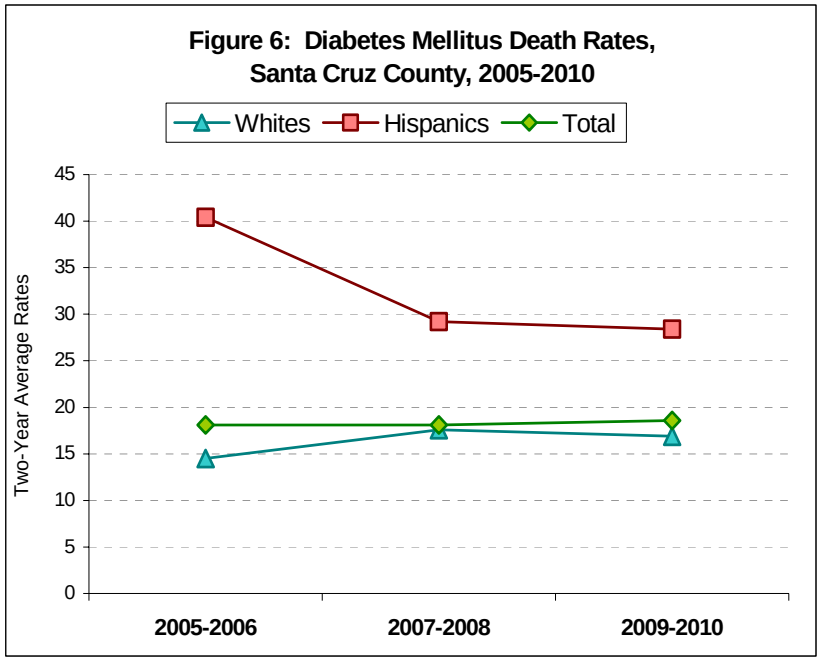


Figure 6: Diabetes Mellitus Death Rates, Santa Cruz County, 2005-2010



COMPLICATIONS OF DIABETES

Figure 6 illustrates death rates from diabetes. Diabetes can lead to blindness, kidney damage, cardiovascular disease, and lower-limb amputations.[3] Diabetes is the leading cause of new cases of blindness among adults.[1,3,22] Diabetes is the leading cause of kidney failure, accounting for 44% of all new cases in 2005.[1,3,22] More than 60% of non-traumatic lower-limb amputations occur in people with diabetes.[1,4,19] Persons with poorly controlled diabetes (A1c > 9%) were three times more likely to have severe periodontitis than those without diabetes.[1,3,22] Diabetics are more likely to die with pneumonia or influenza than people who do not have diabetes.[1,3] People with diabetes are three times as likely to die of cardiovascular diseases. Smoking and diabetes together make a person 11 times more likely to die of a heart attack or stroke.[12,22] Diabetes mellitus (DM) has been associated with increased rates of infection, which may be partially explained by a decreased T cell-mediated immune response.[20] People with diabetes can lower the occurrence of these and other diabetes complications by controlling blood glucose, blood pressure, and blood lipids.[2]

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Primary Prevention Activities	**Regional Diabetes Collaborative (RDC).** The mission of the RDC is to promote, support, and coordinate efforts to prevent and manage diabetes in Santa Cruz, San Benito, and Monterey Counties. The Regional Diabetes Collaborative was founded in 2002. For more information, please consult their website: www.pvhealthtrust.org.[20] **Go for Health!** is a broad-based collaborative in Santa Cruz County with over 150 members. The collaborative was first convened in August 2003 by the United Way of Santa Cruz County, the Children's Network, the Children's Food and Fitness Coalition, and the Pajaro Valley Health Trust to address the childhood obesity crisis in Santa Cruz County. Go for Health's goal is to increase healthy eating and regular physical activity among children and youth in Santa Cruz County.[21]
Sources	1. CDC's Division of Diabetes Translation. National Diabetes Surveillance System. http://www.cdc.gov/diabetes/statistics. 2. Centers for Disease Control and Prevention. "National diabetes fact sheet: national estimates and general information on diabetes and pre-diabetes in the United States, 2011." Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2011. 3. California Health Interview Survey (CHIS). http://ask.chis.ucla.edu/. 4. California Diabetes Program (a partnership between the California Department of Public Health and the University of California San Francisco). "Diabetes in California Counties." 2009. www.caldiabetes.org. 5. US Department of Health and Human Services. *Healthy People 2020: Understanding and Improving Health*. 2nd ed. Washington, DC, 2000. http://www.healthypeople.gov/document/html/objectives/19-02.htm. 6. California Center for Public Health Advocacy. http://www.publichealthadvocacy.org/resources_diabetes.html. 7. Rabi, D.M., Edwards, A.L., Southern, D.A., et al. "Association of socio-economic status with diabetes prevalence and utilization of diabetes care services." *BMC Health Services Research*. 2006; 6:124 8. CDC, *Physical Activity and Good Nutrition, 2003*. 9. CDC, *MMWR*. August 22, 2003; Vol 52:No. SS-8. 10. Saydah, S.H., Fradkin, J., Cowie, C.C. "Poor Control of Risk Factors for Vascular Disease Among Adults with Previously Diagnosed Diabetes." *JAMA* 2004; 291(3):35-342. 11. Epstein, M, Sowers, J.R. "Diabetes Mellitus and Hypertension." *Hypertension* 1992; 19:403-418. 12. American Diabetes Association. http://www.diabetes.org/diabetes-basics/diabetes-statistics/. 13. Will, J.C., Galuska, D.A., Ford, E.S. et al. "Cigarette Smoking and Diabetes Mellitus: Evidence of a Positive Association from a Large Prospective Cohort Study." *International Journal of Epidemiology*. 2001: 30; 540-546. 14. Mokdad, A.H., Ford, E.S., Bowman, B.A., et al. "Prevalence of Obesity, Diabetes, and Obesity-Related Health Risk Factors." 2001. *JAMA*; 2003; 289(1):76-79. 15. DATA2010 (May 2008), Behavioral Risk Factor Surveillance System (BRFSS), CDC, NCCDPHP. 16. National Institute of Diabetes and Digestive and Kidney Diseases. National Diabetes Statistics, 2007 fact sheet. Bethesda, MD: U.S. Department of Health and Human Services, National Institutes of Health, 2008. 17. US Department of Health and Human Services Office of Minority Health. http://minorityhealth.hhs.gov/templates/browse.aspx?lvl=3&lvlid=62. 18. Mainous, A.G., Diaz, V.A., Koopman, R.J., Everett, C.J. "Quality of care for Hispanic adults with diabetes." *Fam Med* 2007; 39(5):351-6. 19. Muller, L.M.A.J., Gorter, K.J., Hak, E. et al. "Increased Risk of Common Infections in Patients with Type 1 and Type 2 Diabetes Mellitus." *Clinical Infectious Diseases*, 2005;41:281-8. 20. Pajaro Valley Community Health Trust, Regional Diabetes Collaborative. 2002. http://www.pvhealthtrust.org/rdc.php. 21. Community Assessment Project of Santa Cruz County. 2003. http://www.santacruzcountycap.org/Health-ObesityGoal.html. 22. Diabetes Monitor. Information, education, support for people with diabetes. http://www.diabetesmonitor.com/b56.htm. 23. California Department of Public Health, Vital Statistics Query System. http://www.apps.cdph.ca.gov/vsq/default.asp.