

# Brief Explanation of Methodology

---

## IAF Model for Diabetes 2025 Forecasts

This is a brief overview of the data sources and methodology used in developing the 2010 baseline and 2015 and 2025 diabetes forecasts for the U.S., states, and metro areas. A detailed paper of the methodology is being submitted for publication.

The prevalence of diagnosed and undiagnosed diabetes for the U.S. in 2010, 2015, and 2025 are based on the latest diabetes forecasting model created by the Centers for Disease Control and Prevention (CDC) – and published by Boyle and colleagues in October 2010 – for projecting diabetes prevalence to 2050.<sup>1</sup> Prevalence rate trend lines for non-Hispanic whites, Hispanics, and blacks are from a previous version of the CDC 2050 projections by Narayan<sup>2</sup> and adjusted to fit the latest projections by Boyle. These are important for minority diabetes forecasts. Population projections out to 2025 for the U.S., states and metropolitan areas, including minority subgroups, come from the U.S. Census Bureau.<sup>3, 4, 5, 6, 7, 8, 9</sup> The future risks of pre-diabetes, major complications, and deaths are projected from current CDC trends as reported in several source documents.<sup>10, 11, 12, 13, 14</sup> Minority specific data comes from the Department of Health and Human Services.<sup>15, 16, 17, 18, 19</sup> The future estimates of medical and non-medical (societal) costs of diabetes are based on research by the American Diabetes Association and by the Lewin group.<sup>20, 21, 22, 23</sup> Prevalence rates for seniors are based on the recent CDC National Diabetes Fact Sheet, 2011.<sup>6</sup>

The prevalence of diagnosed and undiagnosed diabetes estimated for 2010 are higher than those presented in the recently released 2011 CDC National Diabetes Fact Sheet. This is because the Boyle study is based on another CDC methodology designed to make forecasts from 2010 to 2050. The National Diabetes Data Sheet does not go beyond 2010. Basing estimates for all three reported time periods – 2010, 2015, and 2025 – on the Boyle study methodology provides for consistency and easy comparisons. The 2000 diabetes statistics are from historical records.

The forecasts factor in progressive, but modest, improvements in early diagnosis and treatment between 2010 and 2025 based on the trends of the last 10 years.

---

<sup>1</sup> Boyle JP, et al. Projection of the Year 2050 Burden of Diabetes in the US Adult Population: Dynamic Modeling of Incidence, Mortality and Pre-Diabetes Prevalence. *Population Health Metrics* 2010, 8:29. <http://www.pophealthmetrics.com/content/8/1/29> (Accessed 1/15/2011).

<sup>2</sup> Narayan, et al. Impact of Recent Increase in Incidence on Future Diabetes Burden: U.S., 2005-2050, *Diabetes Care* 2006; 29:2114-2116.

<sup>3</sup> Table 2. Projections of the Population by Selected Age Groups and Sex for the United States 2010 to 2050. <http://www.census.gov/population/www/projections/summarytables.html> (Accessed 1/27/11).

<sup>4</sup> U.S. Census Bureau, Population Division, Interim State Population Projections, 2005. Available from <http://www.census.gov/population/projections/SummaryTabA1.pdf>. (Accessed 1/17/2011) - gives US and state total population for 2000-2030.

- 
- <sup>5</sup> Bizjournals: Projected population of 250 U.S. metros. <http://www.bizjournals.com/specials/pages/257.html>. (Accessed 7/30/2010) - provided population projections to 2025 based on census bureau projections, but this reference is no longer available at the web site.
- <sup>6</sup> Table 1a. Projected Population of the United States by Race and Hispanic Origin: 2000-2050, US Census Bureau, March 18, 2004. <http://www.census.gov/population/www/projections/usinterimproj/natprojtab01a.pdf> (Accessed 1/17/2010) - total U.S. minority projections to 2050.
- <sup>7</sup> U.S. Census Bureau, Population Projections for States by Age, Sex, Race and Hispanic Origin: 1995 to 2025. <http://www.census.gov/population/www/projections/stproj1996.html>. (Accessed 1/17/2011) - gives state race and Hispanic origin population estimates from 1995 to 2025 based on 1990 census.
- <sup>8</sup> Table 4: Estimates of the Resident Population by Race and Hispanic Origin for the United States and States: July 1, 2008 (SC-EST2008-04). Available from [www.census.gov/popest/states/asrh/tables/SC-EST2008-04.xls](http://www.census.gov/popest/states/asrh/tables/SC-EST2008-04.xls). (Accessed 1/17/11) – gives race and Hispanic origin population for states for 2008.
- <sup>9</sup> Profiles by Metro Area based on U.S. Census Bureau Annual Estimates of the Resident Population by Age, Sex, Race, and Hispanic Origin for Counties: April 1, 2000 to July 1, 2009. Available from <http://diversitydata.sph.harvard.edu>. (Accessed 1/17/2011) – provides minority group population for metropolitan areas for 2000 and 2009.
- <sup>10</sup> CDC's Diabetes Program – Data and Trends. Crude and Age-adjusted Percentage of Adults with Diabetes Reporting Visual Impairment, United States, 1997-2008. <http://www.cdc.gov/diabetes/statistics/visual/fig5.htm>. (Accessed 1/17/2011).
- <sup>11</sup> CDC's Diabetes Program – Data and Trends. Incidence rates and Initiation of Treatment for End-Stage Renal Disease Related to Diabetes per 100,000 Diabetes Population Among Whites, Blacks and Hispanics, by Age, United States, 1980-2006. <http://www.cdc.gov/diabetes/statistics/visual/fig5.htm>. (Accessed 1/17/ 2011).
- <sup>12</sup> Diabetes Surveillance System. Crude and Age Adjusted Hospital Discharge Rates for Nontraumatic Lower Extremity Amputation per 1,000 Diabetic Population, United States 1980-2005. <http://www.cdc.gov/diabetes/statistics/lea/fig6.htm>. (Accessed 1/17/2011).
- <sup>13</sup> Centers for Disease Control and Prevention. National Diabetes Fact Sheet, 2011. [http://www.cdc.gov/diabetes/pubs/pdf/ndfs\\_2011.pdf](http://www.cdc.gov/diabetes/pubs/pdf/ndfs_2011.pdf) (Accessed 1/26/2011).
- <sup>14</sup> Prevalence of Diabetes among Hispanics—Selected Areas, 1998-2002. *MMWR Weekly*, 10/15/04/53(40);941-44 <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5340a3.htm> (Accessed 1/15/2011).
- <sup>15</sup> US Department of Health and Human Services Office of Minority Health, Diabetes and African Americans. <http://minorityhealth.hhs.gov/templates/content.aspx?vl=3&vlID=5&ID=3017> (Accessed 1/15/2011).
- <sup>16</sup> US Department of Health and Human Services Office of Minority Health, Diabetes and Hispanic Americans. <http://minorityhealth.hhs.gov/templates/content.aspx?vl=3&vlID=5&ID=3324> (Accessed 1/15/2011).
- <sup>17</sup> Department of Health and Human Services Office of Minority Health, Diabetes and American Indians/Alaska Natives. <http://minorityhealth.hhs.gov/templates/content.aspx?vl=3&vlID=5&ID=3024> (Accessed 1/15/2011).
- <sup>18</sup> Department of Health and Human Services Office of Minority Health, Native Hawaiians/Other Pacific Islanders Profile. <http://minorityhealth.hhs.gov/templates/browse.aspx?vl=2&vlID=71> (Accessed 1/15/2011).
- <sup>19</sup> US Department of Health and Human Services Office of Minority Health, Diabetes and Asians and Pacific Islanders. <http://minorityhealth.hhs.gov/templates/content.aspx?vl=3&vlID=5&ID=3057> (Accessed 1/15/2011).
- <sup>20</sup> American Diabetes Association, Economic Costs of Diabetes in the U.S. in 2007, *Diabetes Care* 2008; 32:596-615.
- <sup>21</sup> Dall TM, et al. Distinguishing the Economic Costs Associated with Type 1 and Type 2 Diabetes. *Population Health Management*. 2009; 12(2):103-110. <http://www.liebertonline.com/doi/abs/10.1089/pop.2009.12203> (Accessed 1/16/2011).
- <sup>22</sup> Zhang Y, et al. Economic Costs of Undiagnosed Diabetes. *Population Health Management*. 2009; 12(2):95-101. <http://www.liebertonline.com/doi/abs/10.1089/pop.2009.12202> (Accessed 1/16/2011).
- <sup>23</sup> Zhang Y, et al. Medical Costs Associated with Prediabetes. *Population Health Management*. 2009; 12(2):157-163. <http://www.liebertonline.com/doi/abs/10.1089/pop.2009.12302> (Accessed 1/16/2011).