Table S1. Formulas for Estimating the Prevalence and Incidence of AD Dementia in CHAP Study over 18 Years

	Prevalence of AD Dementia		Incidence of AD Dementia	
	Cases	Non-cases	Cases	Non-cases
1994-1997	N_1^{ADP}	$N_1^{\overline{AD}}$	Not applicable	Not applicable
1998-2000	$\sum_{t=1}^{2} N_t^{ADP} + N_2^{ADI}$	$N_2^{\overline{AD}}$	N_2^{ADI}	$N_2^{\overline{AD}}$
2001-2003	$\sum_{t=1}^{3} N_t^{ADP} + \sum_{t=2}^{3} N_t^{ADI}$	$N_3^{\overline{AD}}$	N_3^{ADI}	$N_3^{\overline{AD}}$
2004-2006	$\sum_{t=1}^{4} N_t^{ADP} + \sum_{t=2}^{4} N_t^{ADI}$	$N_4^{\overline{AD}}$	N_4^{ADI}	$N_4^{\overline{AD}}$
2007-2009	$\sum_{t=1}^{5} N_t^{ADP} + \sum_{t=2}^{5} N_t^{ADI}$	$N_5^{\overline{AD}}$	N_5^{ADI}	$N_5^{\overline{AD}}$
2010-2012	$\sum_{t=1}^{6} N_t^{ADP} + \sum_{t=2}^{6} N_t^{ADI}$	$N_6^{\overline{AD}}$	N_6^{ADI}	$N_6^{\overline{AD}}$

1. N_t^{ADP} = Number of participants diagnosed with prevalent AD dementia at time *t*, and needed to be part of the sampling frame to be included in prevalence estimates at time later than *t*.
2. N_t^{ADI} = Number of participants diagnosed with incident AD dementia at time *t,* and needed to be part of the sampling frame to be included in prevalence estimates at time later than *t*.
3. $N_t^{\overline{AD}}$ = Number of participants not diagnosed with incident or prevalent AD dementia at time *t*. Only eligible participants who are part of the sampling frame at any given time *t* are included in the denominator for prevalence of AD.
4. For crude estimates, prevalence can be estimated as the ratio of number of prevalent cases divided by the number of prevalent and incident cases and non-cases, and incidence as the ratio of number of incident cases divided by the number of incident cases and non-cases.

Design Features: Two reasons for this updated design feature – (1) Incident of AD dementia is an absorbing state and individuals who enter this absorbing state stay in this state until death, (2) Individuals with AD dementia were less likely to participate in clinical evaluations in subsequent study cycles, especially if they were near death. Therefore, participants who had prevalent or incident AD dementia at triennial data collection time, say, '*t*' were included as prevalent AD dementia at the next triennial data collection time, '*t+1*', so long as they remained alive, as shown in eTable 1. Sample weights were readjusted to account for this increased number of prevalent AD dementia cases in each stratum. Strata that had no cases added were carried forward without any adjustments.

Statistical Models: Three regression models adjusted for age (5 age-specific intervals), sex (coded as 1 for females), race (coded as 1 for AAs), and interaction of race with age groups were used to estimate age-specific and race-specific estimates. Two separate models, one for prevalence, and another for incidence were used. For time-specific prevalence estimates, the model also included five indicator variables for 1998–2000, 2001–2003, 2004–2006, 2007–2009, and 2010–2012, with 1994–1997 serving as the reference time interval. For time-specific annual incidence estimates, the regression model included four indicator variables for 2001–2003, 2004–2006, 2007–2009, and 2010–2012 with 1998–2000 as the reference time interval. All regression models adjusted for sampling weights to account for clinical evaluation sample selection.

US Population Standardization: The sample-weight adjusted quasi-binomial regression model based on stratified random sample and delete-one jackknife variance estimation provided the study specific estimates of the prevalence and incidence of AD dementia. Using each time-specific indicator and US census proportions for each age group (65-74, 70-74, 75–79, 80-84,

and over 85 years), female sex, and race/ethnicity (AAs vs. EAs and others) at 1996, 1999, 2002, 2005, 2008, and 2011, we created a vector of standardization estimates for age, sex, and race/ethnicity census data and performed a matrix multiplication of the vector with the parameter estimates for each triennial interval. For the confidence intervals, we used the variance-covariance matrix of the parameter estimates and performed a matrix multiplication of transpose of the vector of standardized estimates with inverse of the variance covariance matrix and the vector of the standardized estimates, and finally took the square root of the estimated value as the standard error of the mean. The confidence intervals were created as estimated values plus or minus 1.96 times the standard error of the estimated value.

Table S2. Time-Specific Demographic Characteristics Using Time-Specific US Census Data

	Age	Females	African Americans
	Mean (95% CI)	N, Weighted %	N, Weighted %
1994-1997	74.7 (6.1)	114630, 51%	62129, 8%
1998-2000	74.7 (6.1)	114848, 51%	62227, 8%
2001-2003	74.7 (6.1)	130738, 51%	71262, 8%
2004-2006	74.7 (6.1)	134741, 51%	73479, 9%
2007-2009	74.6 (6.1)	137683, 51%	74361, 9%
2010-2012	74.7 (6.1)	140245, 51%	76635, 9%

Table S3. Time-Specific Demographic Characteristics of Participants Selected for Clinical Diagnosis of AD Dementia in CHAP Study

	Age	Females	African Americans	Education
	Mean (95% CI)	N, Weighted %	N, Weighted %	Mean (95% CI)
1994-1997	75.9 (75.3, 76.5)	368, 59%	376, 54%	12.1 (11.9, 12.3)
1998-2000	77.1 (76.6, 77.6)	370, 68%	252, 49%	12.7 (12.6, 12.9)
2001-2003	76.3 (75.3, 77.4)	248, 62%	221, 63%	12.6 (12.5, 12.8)
2004-2006	77.3 (76.3, 78.2)	301, 69%	280, 66%	12.5 (12.3, 12.7)
2007-2009	77.9 (77.1, 78.9)	236, 67%	252, 68%	12.6 (12.3, 12.9)
2010-2012	79.9 (78.7, 81.1)	187, 71%	180, 65%	12.5 (12.0, 12.9)