

Does Health Plan Enrollment Data Support Long-term Follow-up of Patients with Chronic Disease? Assessment of the Healthcare Integrated Research Database (HIRD®)

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Objectives

- To evaluate follow-up enrollment duration for a population who had at least one outpatient office visit, stratified by age and race/ethnicity categories.
- To evaluate follow-up enrollment duration for individuals diagnosed with a chronic condition, including: type 2 diabetes mellitus (T2DM), breast cancer (BC), heart failure (HF), multiple sclerosis (MS), or Alzheimer’s disease (ALZD).

Background

Duration of health plan enrollment is an important consideration in the design of health economic and outcomes research, pharmacoepidemiologic studies, and other investigations using payer databases.

A prior study found members with chronic disease had a longer duration of enrollment compared with matched controls and were continuously enrolled for almost a year longer than members without a diagnosed chronic disease.¹

We conducted a descriptive analysis of enrollment duration among commercial and managed Medicare members of a large US health plan.

Methods

We conducted a retrospective analysis using payer claims from the Healthcare Integrated Research Database (HIRD®).²

For the full study population, individuals were included if they had an outpatient office visit for any reason between 10/01/2016 and 09/30/2020. Index date was date of first office visit claim.

For the population with chronic conditions, individuals were included if they had at least one inpatient or two outpatient visits with diagnoses of interest between 10/01/2016 and 09/30/2020 and were 18 years of age or older on index date. Index date was first claim date with diagnosis of interest. Conditions were identified using the following ICD-10-CM diagnosis codes (main code and all subcodes):

- T2DM – E11

MS – G35

HF – I11.0, I13.0, I13.2, I50
- BC – C50

ALZD – G30

We required medical and pharmacy enrollment for at least a year before index date. To ensure individuals were newly diagnosed with each of the chronic conditions, we excluded anyone with a diagnosis in the year before the index date. We calculated enrollment duration from index date through 09/30/2024. Enrollment duration was calculated in months and reported as median (interquartile range [IQR], i.e. 25th and 75th percentiles) months. For the full population, we also stratified enrollment duration by age categories (≤ 17, 18-44, 45-64, ≥65 years) and race/ethnicity.

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Results

A total of 11.7 million members had an office visit during the study period.

Table 1: Member Characteristics

- Mean age varied by condition, ranging from 49 years (MS) to 82 years (ALZD); overall mean age for those with an office visit was 39 years.
- Majority of individuals (66-79%) were White, not Hispanic or Latino.
- Insurance type was mostly commercial in the total population (95%) but varied widely by chronic conditions.

Figure 1: Duration of Enrollment by Age

- Median post-index enrollment duration was 38 months (IQR=14 – 80) among all members, with 36% enrolled for ≥ 5 years.
- Median enrollment duration varied by age, with the longest duration being among children and those 65 or older: ≤ 17 – 47 months (IQR=15-85), 18-44 – 31 months (12-68), 45-64 – 39 months (14-81) and ≥65 – 53 months (19-93).

Figure 2: Duration of Enrollment by Race/Ethnicity

- Median enrollment duration was longest for White non-Hispanics, 41 (15-83) and shortest for Asian non-Hispanics, 35 (13-74) months.

Figure 3: Duration of Enrollment by Condition

- Enrollment duration was similar for members with T2DM, BC, and MS, 44 (18-68), 48 (19-69) and 40 (15-67) months, respectively. Enrollment was shorter for those with HF, 28 (9-57) and ALZD, 24 (10-48) months.

Conclusions

- Results show that large payer databases can support studies requiring longer follow-up periods.
- Duration of enrollment varies by age, race/ethnicity, and by chronic condition.

Limitations

- Everyone was required to have at least one year of enrollment prior to their index date.
- We did not examine reasons for end of enrollment (e.g., death, loss or change of job, switching to public coverage such as traditional Medicare or Medicaid).

References

1. Chung H, Deshpande G, Zolotarjova J, Quimbo RA, Kern DM, Cochetti PT, Willey VJ. Health Plan Enrollment and Disenrollment of Individuals with and Without Established Chronic Disease in a U.S. Commercially Insured and Medicare Advantage Population. J Manag Care Spec Pharm. 2019 5;25(5):612-20. Available from: <https://www.jmcp.org/doi/pdf/10.18553/jmcp.2019.25.5.612>.

2. Barron JJ, Willey VJ, Doherty BT, Tunceli O, Waltz CR, Grabner M, Beachler DC, Lanes S, Cziraky MJ. The Healthcare Integrated Research Database (HIRD) as a Real-World Data Source for Pharmacoepidemiologic Research. Pharmacoepidemiol Drug Saf. 2025;34(2):e70110. Available from: <https://pubmed.ncbi.nlm.nih.gov/39909722/>.

Table 1: Member Characteristics

	Outpatient Office Visit	Type 2 Diabetes (T2DM)	Heart Failure (HF)	Breast Cancer (BC)	Alzheimer’s (ALZD)	Multiple Sclerosis (MS)
Total Sample	11,668,837	405,631	214,868	60,052	34,005	10,459
Age on Index Date						
Mean (standard deviation)	39.4 (26.3)	57.1 (13.7)	70.2 (14.7)	61.4 (13.0)	82.3 (8.9)	49.1 (14.6)
Median (interquartile range)	41.0 (22.0-56.0)	57.0 (48.0-65.0)	71.0 (60.0-82.0)	61.0 (52.0-70.0)	83.0 (77.0-88.0)	49.0 (38.0-59.0)
<18	2,259,059 (19.4%)					
18-44	4,230,747 (36.3%)	68,043 (16.8%)	10,009 (4.7%)	5,447 (9.1%)	57 (0.2%)	4,033 (38.6%)
45-64	3,987,189 (34.2%)	234,301 (57.8%)	67,945 (31.6%)	32,876 (54.7%)	1,428 (4.2%)	5,044 (48.2%)
65+	1,191,842 (10.2%)	103,287 (25.5%)	136,914 (63.7%)	21,729 (36.2%)	32,520 (95.6%)	1,382 (13.2%)
Sex						
Female	6,028,601 (51.7%)	184,816 (45.6%)	100,724 (46.9%)	59,478 (99.0%)	21,625 (63.6%)	7,500 (71.7%)
Male	5,639,240 (48.3%)	220,793 (54.4%)	114,137 (53.1%)	573 (1.0%)	12,380 (36.4%)	2,958 (28.3%)
Race Ethnicity						
White, Not Hispanic or Latino	8,464,774 (72.5%)	268,516 (66.2%)	152,710 (71.1%)	46,034 (76.7%)	22,446 (66.0%)	8,239 (78.8%)
Black or African American, Not Hispanic or Latino	884,171 (7.6%)	46,246 (11.4%)	19,709 (9.2%)	4,944 (8.2%)	1,987 (5.8%)	1,032 (9.9%)
Hispanic or Latino of any race	1,051,952 (9.0%)	52,240 (12.9%)	13,663 (6.4%)	3,540 (5.9%)	1,963 (5.8%)	676 (6.5%)
Asian, Not Hispanic or Latino	621,111 (5.3%)	24,258 (6.0%)	5,784 (2.7%)	2,635 (4.4%)	987 (2.9%)	177 (1.7%)
Other race, Not Hispanic or Latino	191,665 (1.6%)	6,248 (1.5%)	2,229 (1.0%)	645 (1.3%)	194 (0.5%)	152 (1.4%)
Unknown or Undisclosed	455,164 (3.9%)	8,123 (2.0%)	20,773 (9.7%)	2,085 (3.5%)	6,428 (18.9%)	183 (1.7%)
Insurance Type						
Commercial	11,048,674 (94.7%)	339,299 (83.6%)	124,192 (57.8%)	47,828 (79.6%)	12,088 (35.5%)	9,388 (89.8%)
Medicare Advantage	364,756 (3.1%)	49,055 (12.1%)	56,991 (26.5%)	7,125 (11.9%)	12,577 (37.0%)	742 (7.1%)
Medicare Supplemental	255,407 (2.2%)	17,277 (4.3%)	33,685 (15.7%)	5,099 (8.5%)	9,340 (27.5%)	329 (3.1%)
Region of Residence						
Midwest	2,659,838 (23.2%)	84,038 (21.5%)	61,018 (29.0%)	13,298 (22.8%)	10,702 (31.7%)	2,449 (24.6%)
Northeast	1,636,310 (14.3%)	54,321 (13.9%)	29,102 (13.8%)	9,020 (15.5%)	4,669 (13.8%)	1,611 (16.2%)
South	4,109,023 (35.8%)	139,255 (35.6%)	60,428 (28.7%)	18,918 (32.5%)	7,504 (22.2%)	3,367 (33.8%)
West	3,061,390 (26.7%)	113,336 (29.0%)	59,858 (28.4%)	17,026 (29.2%)	10,873 (32.2%)	2,543 (25.5%)

Figure 1: Duration of Enrollment by Age

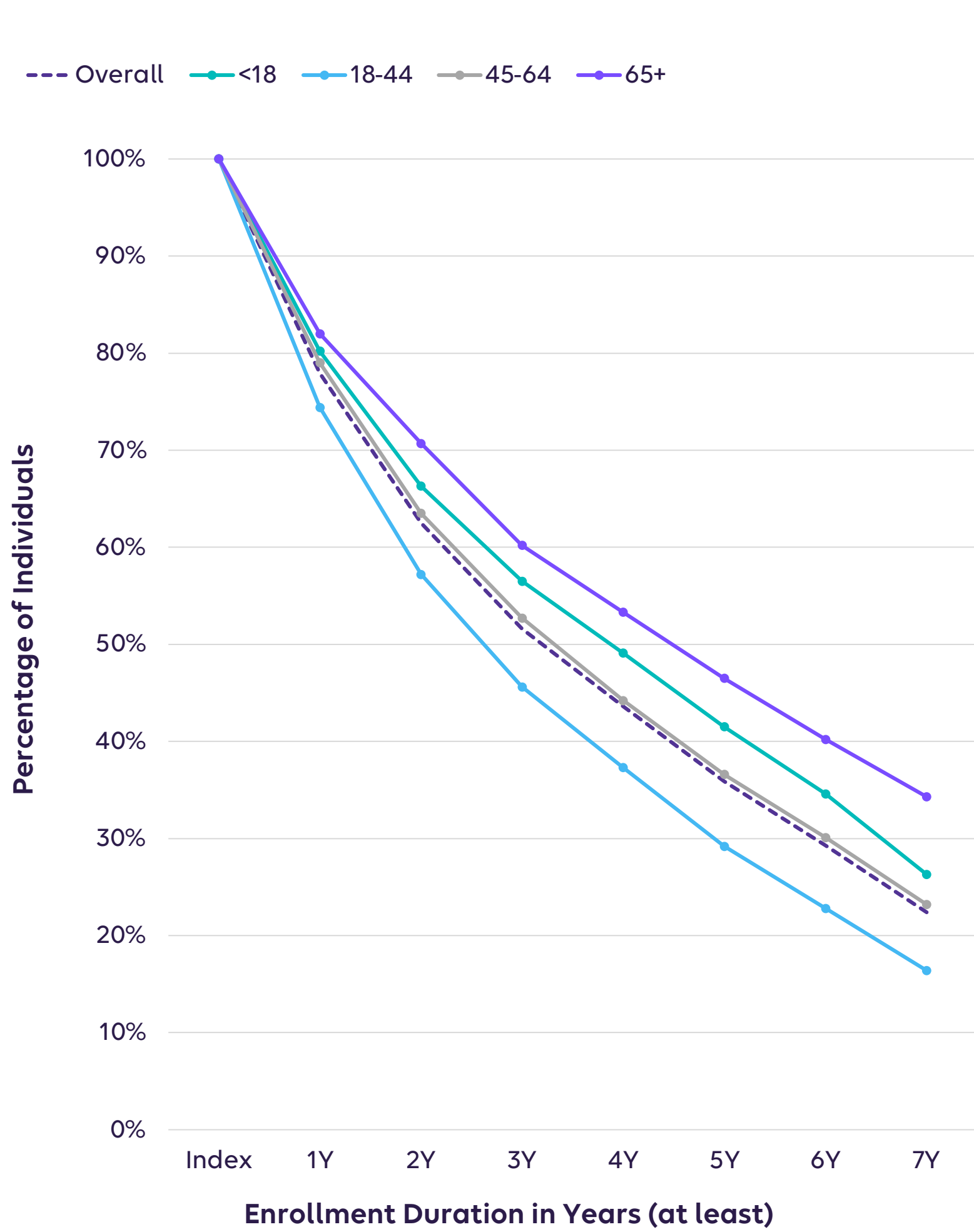


Figure 2: Duration of Enrollment by Race/Ethnicity

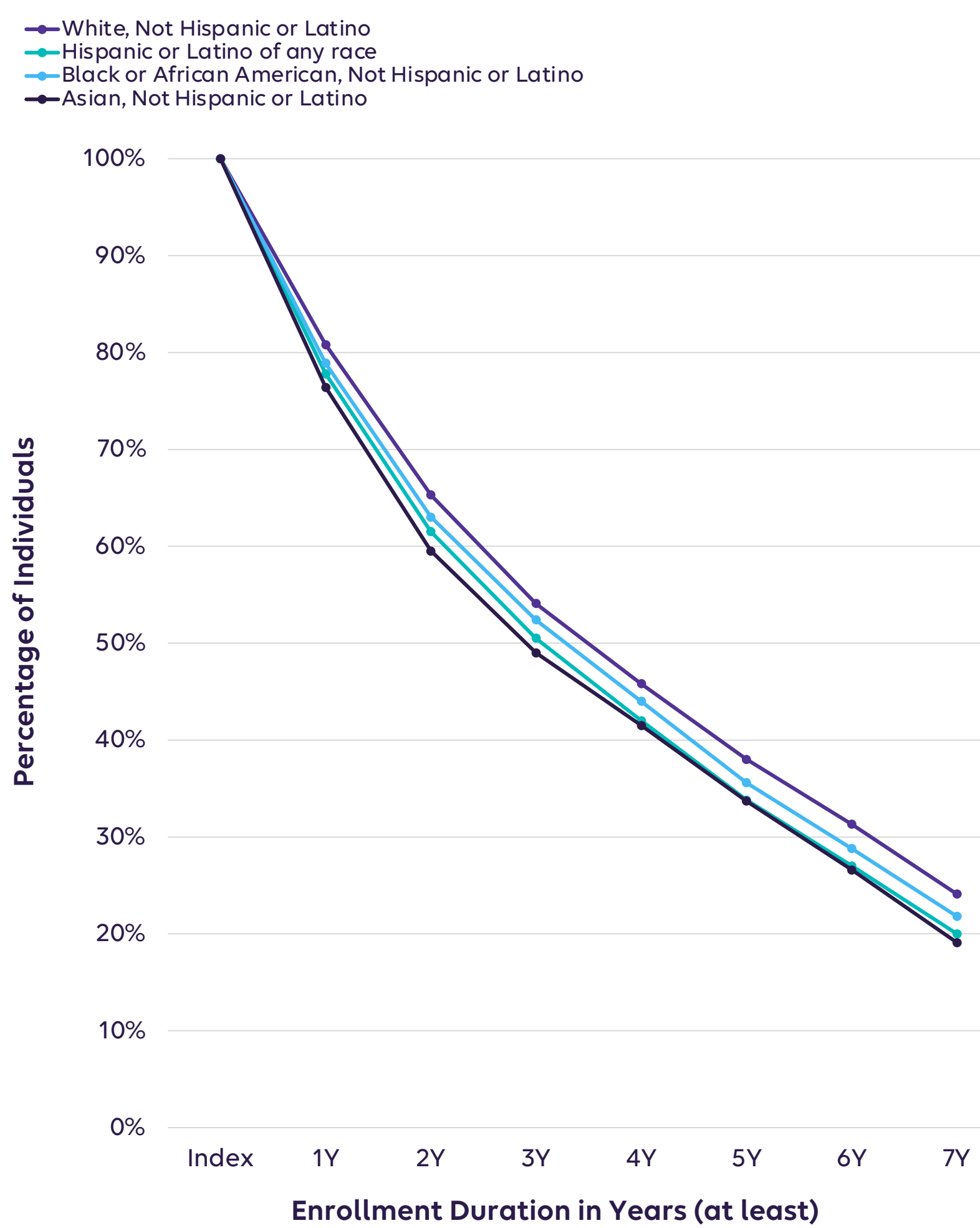


Figure 3: Duration of Enrollment by Condition

