

Demographic and Clinical Characteristics of Patients Who Delayed, Skipped, or Continued Care During the First Year of the COVID-19 Pandemic and the Study Design Implications

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Introduction

- Early in the COVID-19 pandemic there were significant disruptions in healthcare delivery in the United States.^{1,2}
- Studies that leverage real-world data rely on patterns of healthcare use to identify cases and controls.³
- Events which disrupt healthcare delivery may impact patient selection and introduce unaccounted for bias into study design.

Objective

- To conduct a cross-sectional study describing three populations of healthcare users (continuers, delayers, and skippers) and exploring the implications on the design of outcomes research studies.

Methods

Data Source

- The Veradigm Network EHR linked to healthcare claims data spanning March 1, 2019–February 28, 2022

Time Periods

- This study used 3 time periods to identify patients
 - Y2019: March 1, 2019–February 29, 2020
 - Y2020: March 1, 2020–February 28, 2021
 - Y2021: March 1, 2021–February 28, 2022

Figure 1: Patient Selection

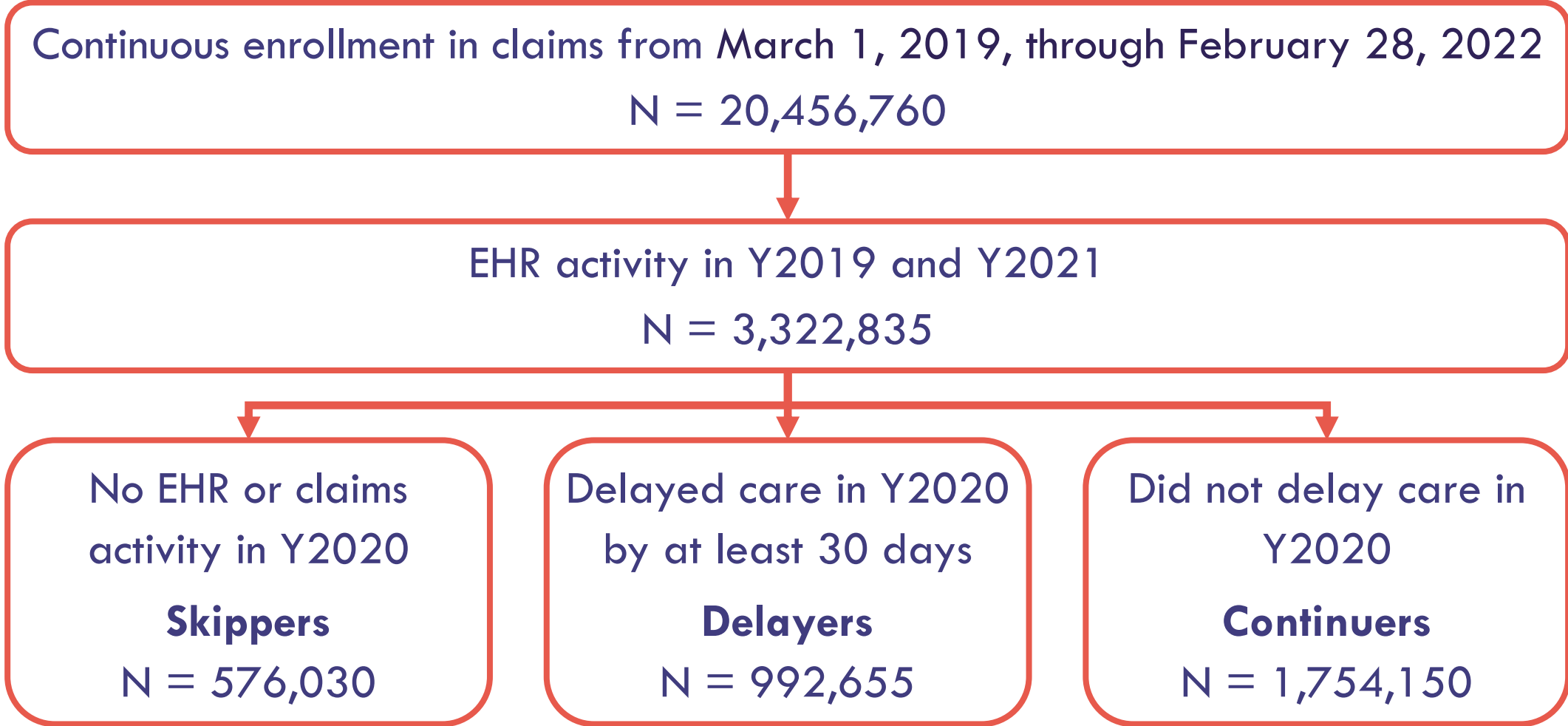
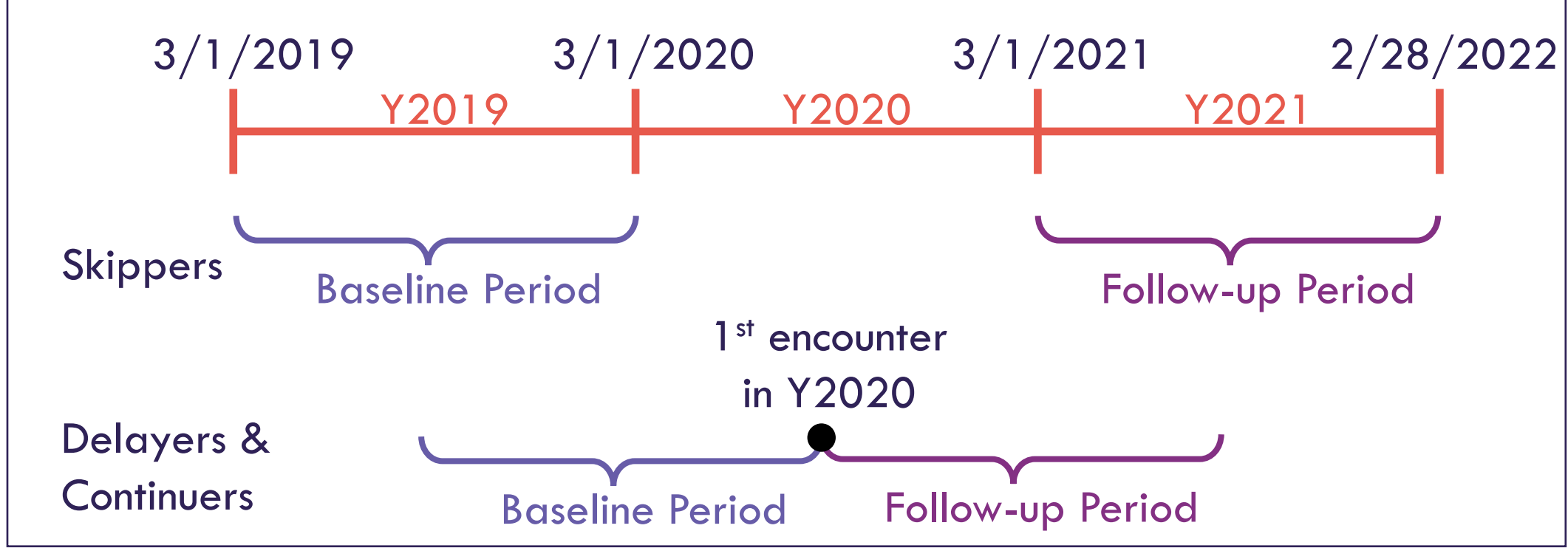


Figure 2: Study Design



Study Measures

- Demographic characteristics
 - Age, sex, race, ethnicity, and geographic region
 - Age was measured on 3/1/2020 for skippers and at 1st encounter for delayers and continuers
- Clinical characteristics
 - Charlson comorbidity index (CCI) score and individual contributing comorbidities
 - Measured in the baseline and follow-up periods
- Healthcare utilization
 - Number of days with activity
 - Measured in the baseline and follow-up periods

Table 1: Patient Demographics

	Skippers N = 576,030	Delayers N = 992,655	Continuers N = 1,754,150
Age, (Mean, SD)	35.5 (22.5)	38.1 (24.0)	42.2 (23.3)
Sex (N,%)			
Female	334,566 (58.1%)	593,421 (59.8%)	1,058,668 (60.4%)
Male	241,428 (41.9%)	399,140 (40.2%)	695,361 (39.6%)
Unknown/Not Reported	36 (0.0%)	94 (0.0%)	121 (0.0%)
Known Race (N,%)	489,328 (84.9%)	870,753 (87.7%)	1,579,111 (90.0%)
Race* (N,%)			
White	282,442 (57.7%)	524,249 (60.2%)	965,823 (61.2%)
Black	72,691 (14.9%)	117,535 (13.5%)	212,483 (13.5%)
Asian	32,726 (6.7%)	58,722 (6.7%)	94,952 (6.0%)
Other	101,469 (20.7%)	170,247 (19.6%)	305,853 (19.4%)
Ethnicity (N,%)			
Hispanic	49,868 (8.7%)	92,337 (9.3%)	155,077 (8.8%)
Non-Hispanic/Not Reported	526,162 (91.3%)	900,318 (90.7%)	1,599,073 (91.2%)
Geographic Region (N,%)			
Northeast	78,813 (13.7%)	147,784 (14.9%)	248,607 (14.2%)
Midwest	134,223 (23.3%)	213,009 (21.5%)	359,312 (20.5%)
South	164,504 (28.6%)	300,535 (30.3%)	541,350 (30.9%)
West	181,024 (31.4%)	303,285 (30.6%)	557,418 (31.8%)
Other/Unknown	17,466 (3.0%)	28,042 (2.8%)	47,463 (2.7%)

* Percentages calculated among those with known race

Results

- We identified 3,322,835 individuals with sufficient data for study inclusion.
 - 17.3% skipped care in 2020, 29.9% delayed care in 2020, and 52.8% continued care as normal in 2020 (Figure 1).
- Compared to delayers and continuers, skippers tended to be younger (mean [SD]: 35.5 [22.5] vs 38.1 [24.0] or 42.2 [23.3] years) and non-White (42.3% vs 39.8%, or 38.8%) (Table 1).
- The shift in cohort age distribution occurred predominately at either extreme (Figure 3)
 - Percentage 0-34 years old: 51.1% of skippers, 45.9% of delayers, and 37.6% of continuers
 - Percentage ≥55 years old: 25.5% of skippers, 31.6% of delayers, and 37.4% of continuers
- Mean (SD) CCI was <1 in all cohorts but was lowest among skippers and highest among continuers (Figure 4)
 - Between baseline and follow-up mean CCI increased 0.09 among delayers, 0.04 among skippers, and 0.01 among continuers.
 - This suggests that those who delayed care saw the greatest decrease in overall health status.
- The most common CCI comorbidities in all cohorts were chronic pulmonary disease, diabetes with chronic complications, and diabetes without chronic complications (Figure 5).
- Consistent with health status measures, healthcare utilization was lowest among skippers and highest among continuers (Figure 6)
 - However, visit count between baseline and follow-up decreased most for continuers (-1.2) and least for skippers (-0.1)
- Face-to-face visits made up ~64% of visits among skippers, ~59% among delayers, and ~51% among continuers

Figure 3: Age Distribution by Cohort

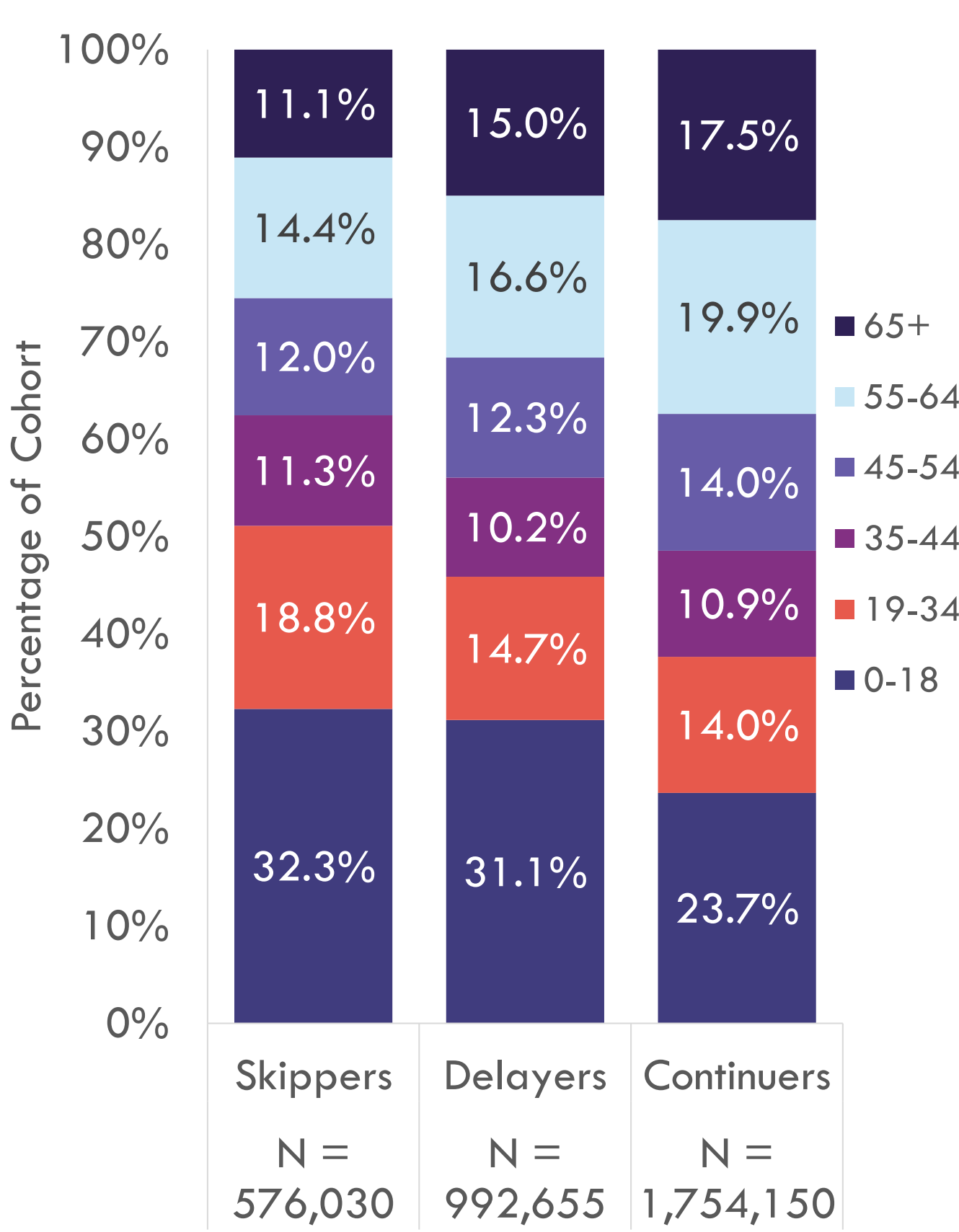


Figure 4: CCI Score by Cohort

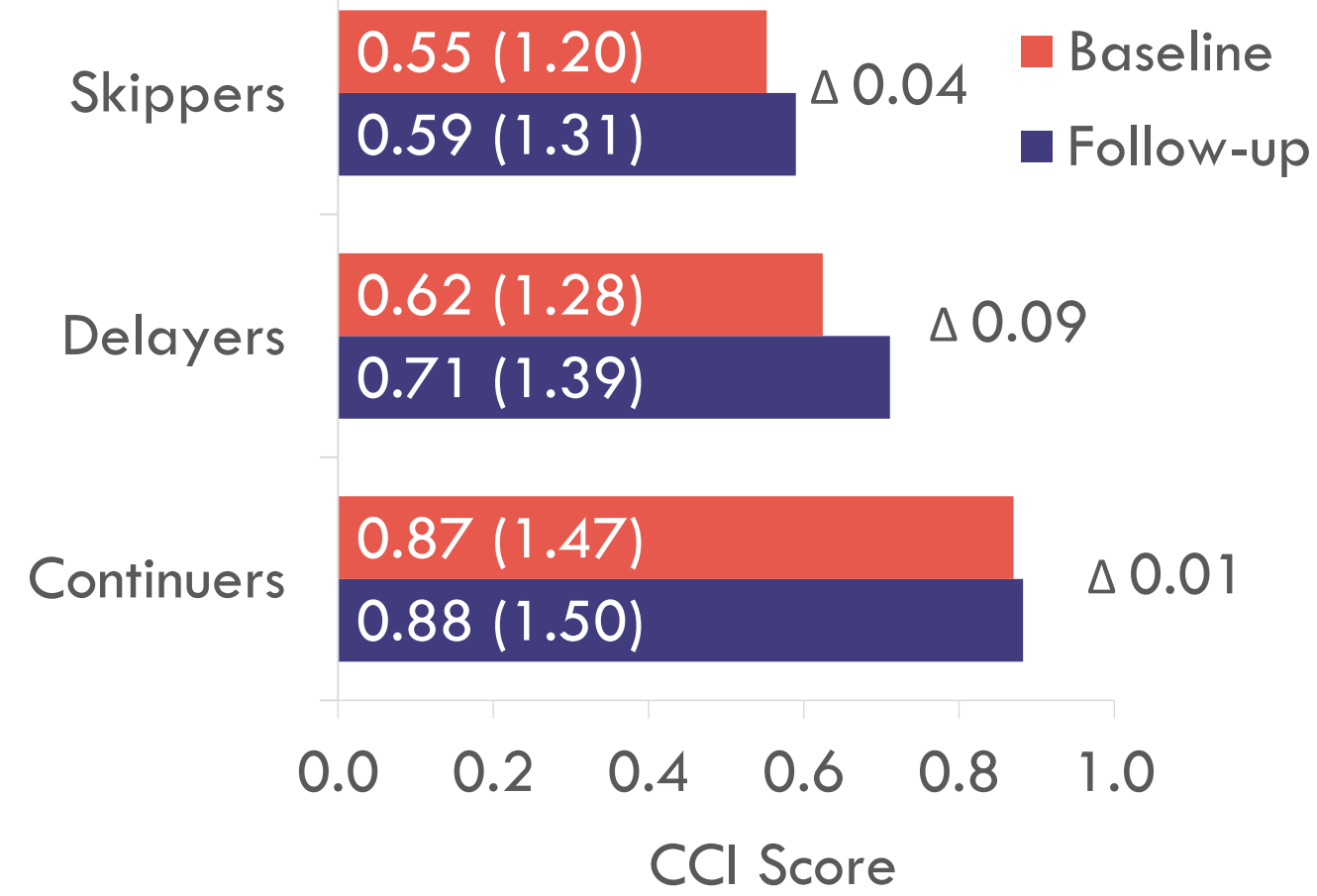
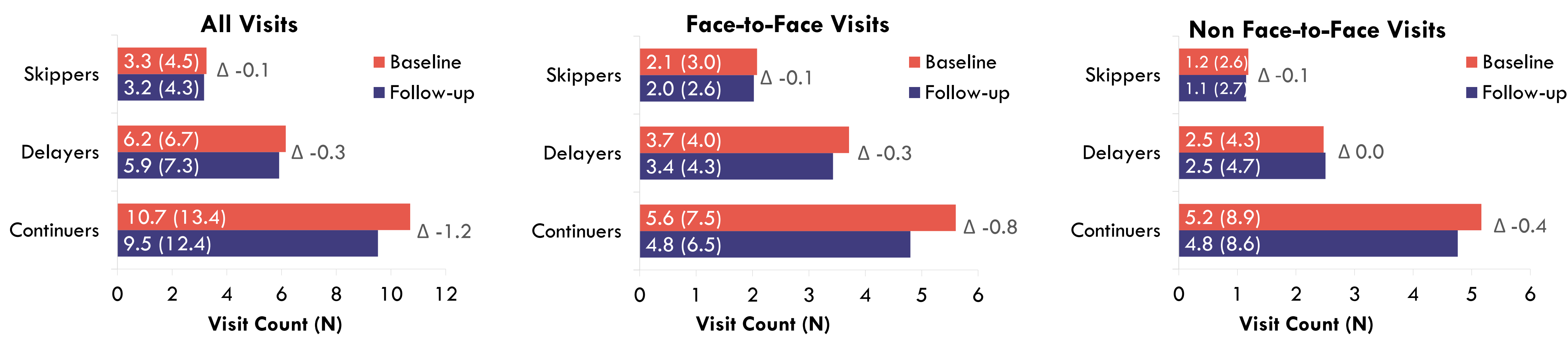


Figure 6: Healthcare Utilization by Cohort



Conclusions

- People who skipped care in 2020 appeared to be younger and healthier than those who sought care in 2020
- People who delayed care in 2020 had the largest increase in comorbidity burden compared to other cohorts
- Studies which require clinical activity during 2020 may under sample the healthy population and bias towards a sicker control group

References

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Disclosures

This study was funded by Veradigm.
All authors are employees of Veradigm which provided the data used in the execution of this study