

Frailty Explains Variation in Emergency Department Use for Older Veterans During the COVID-19 Pandemic: Supplemental Content (Tables & Figures)

Table 1. Baseline Demographic and Clinical Characteristics (n=38,871)

Age, mean (SD)	80.3 (7.3)
Age, n (%)	
65-75	10,366 (26.7)
75-84	16,168 (41.6)
85 or higher	12,337 (31.7)
Male, n (%)	38,529 (99.1%)
Race, n (%)	
Black race	7,107 (18.3)
White race	31,353 (80.7)
Other ¹	411 (1.1)
Ethnicity, n (%)	
Hispanic	1,856 (4.8)
Non-Hispanic	37,015 (95.2)
Marital status, n (%)	
Married	24,205 (62.3)
Widowed/divorced/never married/separated	14,666 (37.7)
Geocoded location, n (%)	
Rural/highly rural	10,629 (27.3)
Urban	28,242 (72.7)
Area deprivation index rank, n (%)	
0-25% (least disadvantaged neighborhoods)	6,727 (17.3)
26-50%	12,226 (31.5)
51-75%	11,243 (28.9)
76-100% (most disadvantaged neighborhoods)	8,675 (22.3)
Any inpatient stay in prior year, n (%)	5,815 (15.0)
Number of inpatient stays prior year, mean (SD)	0.3 (0.8)
Priority level, n (%)	
High disability (groups 1 and 4)	12,216 (31.4)
Low/moderate disability (groups 2, 3, and 6)	7,194 (18.5)
Low income (group 5)	9,778 (25.2)
No disability (group 7 and 8)	9,683 (24.9)
Service connection ² , n (%)	
Not service connected	20,609 (53.2)
Service connected 0-49%	6,981 (18.0)
Service connected 50-99%	6,858 (17.7)
Service connected 100%	4,309 (11.1)
<i>Aid and Attendance benefit</i> ² , n (%)	1,022 (2.6)
Distance from nearest VA primary care clinic, mean (SD)	14.8 (14.4)
Care Assessment Need (CAN) score, admission risk at 1 year \geq 75 ^{2,3} , n (%)	17,177 (44.2)
Multiple chronic conditions (2 or more, of 19 below), n (%)	34,357 (88.4)
Anemia, n (%)	9,204 (23.7)
Asthma, n (%)	1,524 (3.9)
Prostatic hyperplasia, n (%)	12,910 (33.2)
Cerebral vascular accident, n (%)	4,155 (10.7)

Chronic renal failure, n (%)	8,526 (21.9)
Chronic obstructive pulmonary disease, n (%)	8,057 (20.7)
Congestive heart failure, n (%)	5,010 (12.9)
Dementia or cognitive impairment, n (%)	4,864 (12.5)
Depression, n (%)	6,336 (16.3)
Diabetes, n (%)	16,385 (42.2)
Gastro-esophageal reflux disease, n (%)	11,641 (29.9)
Hypertension, n (%)	32,405 (83.4)
Ischemic heart disease, n (%)	13,416 (34.5)
Obesity, n (%)	6,465 (16.6)
Osteoporosis, n (%)	1,394 (3.6)
Peripheral vascular disease, n (%)	4,174 (10.7)
Post-traumatic stress disorder, n (%)	4,661 (12.0)
Spinal cord injury, n (%)	68 (0.2)
Traumatic brain injury, n (%)	489 (1.3)
Jen Frailty Index (JFI) score, n (%)	
Low frailty (score 0–3)	18,648 (48.0)
Moderate frailty (4–5)	12,271 (31.6)
High frailty (6–7)	5,970 (15.4)
Very high frailty (≥ 8)	1,982 (5.1)

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¹ Includes Asian, American Indian or Alaskan Native, Native Hawaiian or Pacific Islander, or had more than one race identified.

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² Missing data: service connection (114), Aid and Attendance benefit (3), CAN score (31).

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³ CAN scores predict hospitalization and mortality, and range from 0-99 where patients with larger values are more likely to experience hospitalization or death within a year.

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Note: Veterans Integrated Services Networks (VISNs) of nearest primary care clinic results removed for conciseness.

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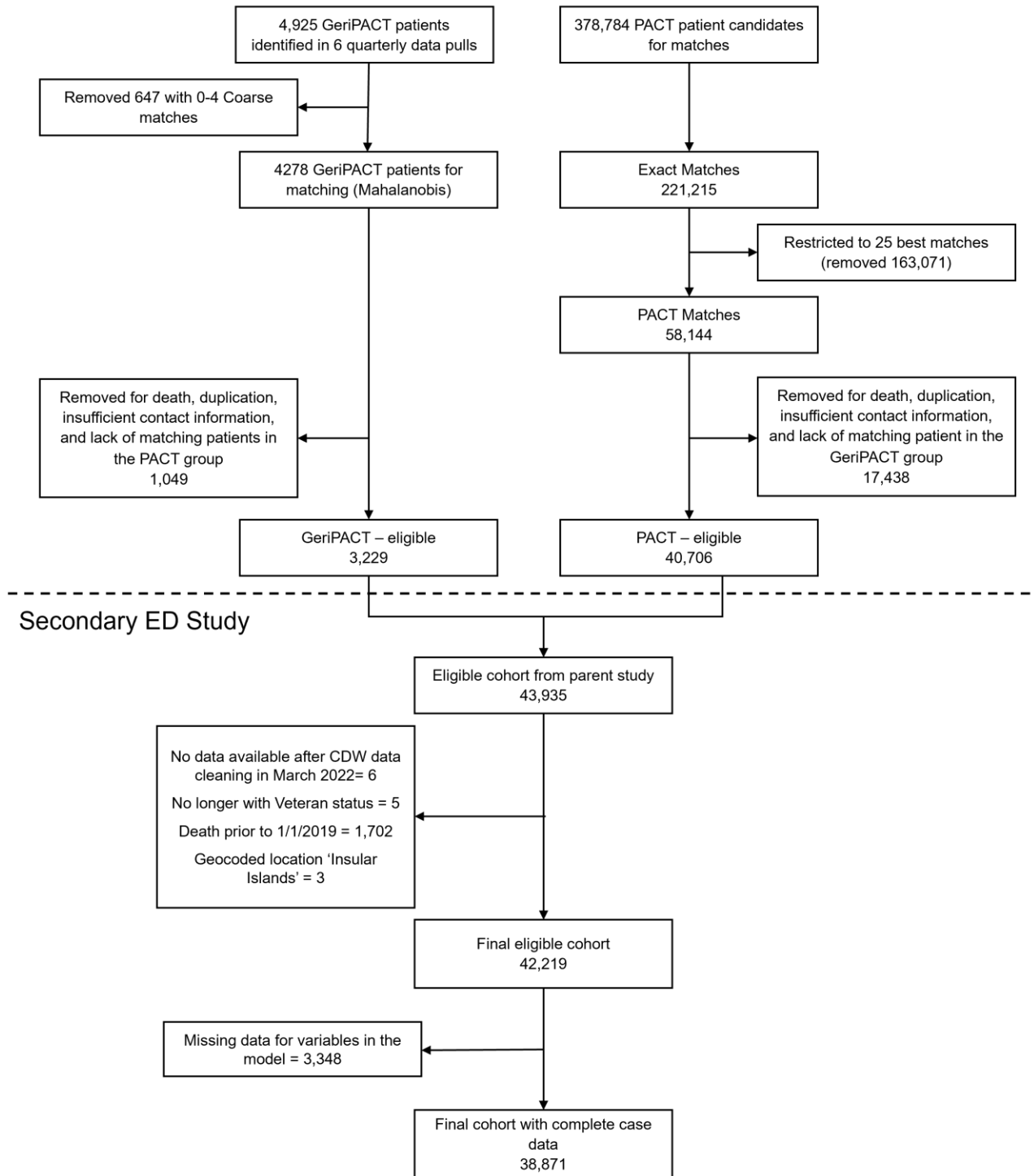
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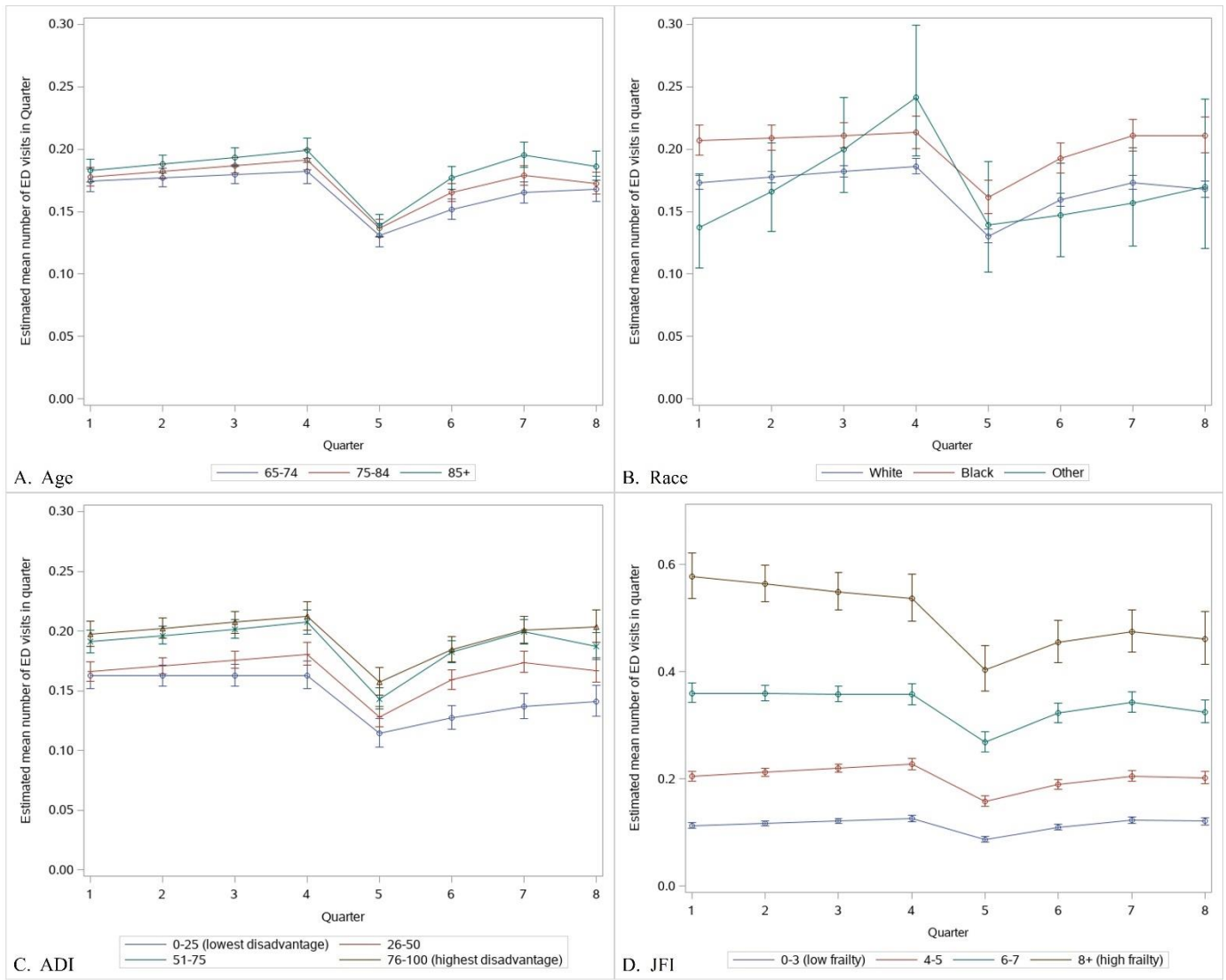
Figure 1. Study Flow diagram.

Ger iPACT Study



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43 **Figure 2.** Mean Estimate ED Visit Counts and 95% Confidence Intervals by Subgroups and Quarter,
 44 Adjusted Models¹
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 48 ED = emergency department, ADI = Area deprivation index, JFI = JEN Frailty Index
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50 ¹ Standardized to 91 days in a quarter

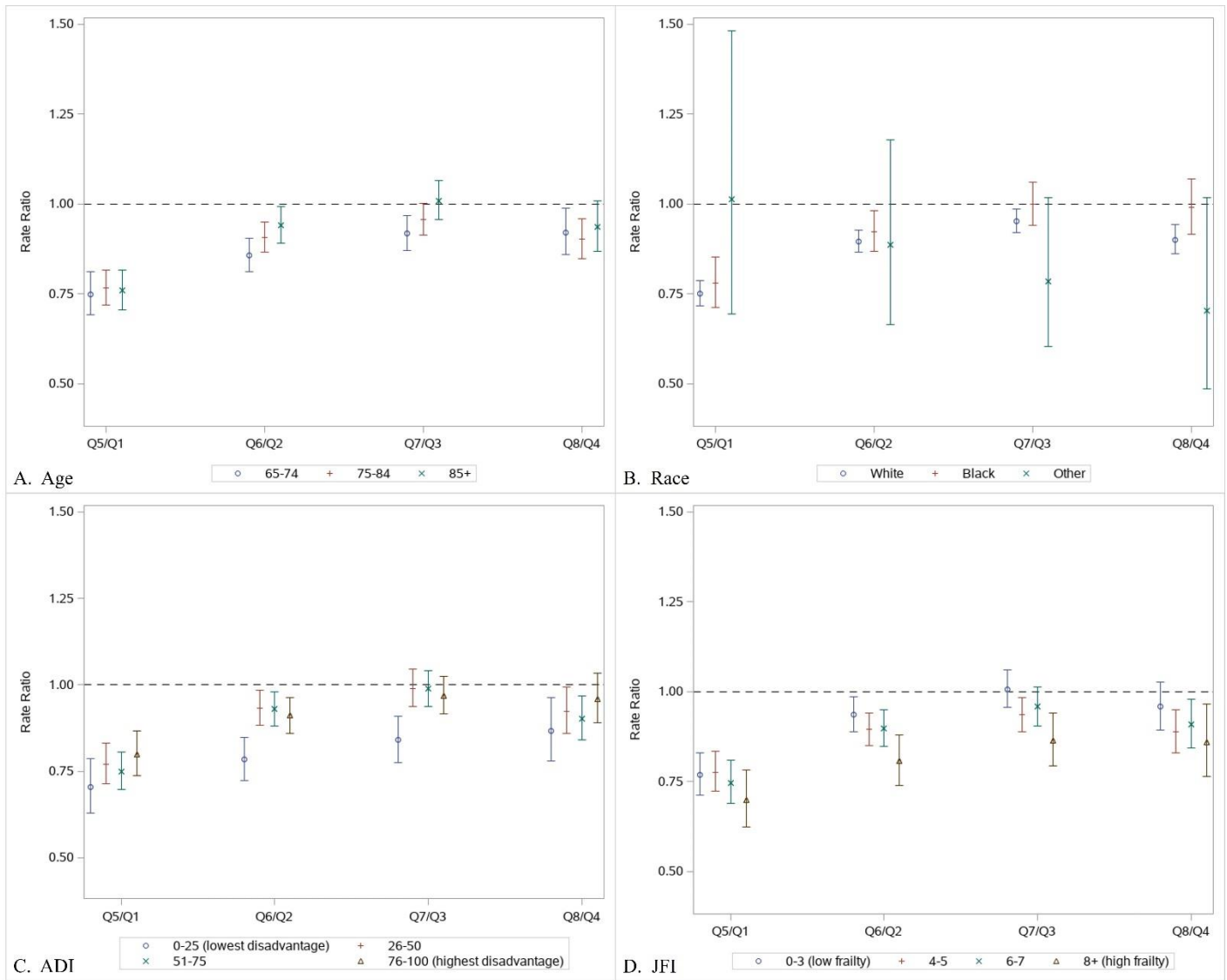
51 ² Other race includes Asian, American Indian or Alaskan Native, Native Hawaiian or Pacific Islander, or had
 52 more than one race identified

53 ³ JFI y-axis differs from other subgroups

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 55 Pre Covid-19: Q1=March-May 2019, Q2=June-August 2019, Q3=September-November 2019, Q4=December
 56 2019-February 2020; Post Covid-19: Q5=March-May 2020, Q6=June-August 2020, Q7=September-November
 57 2020, Q8=December 2020-February 2021

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Figure 3. Estimated Rate Ratios and 95% Confidence Intervals by Subgroups and Quarter, Adjusted Models.¹



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ED = emergency department, ADI = Area deprivation index, JFI = JEN Frailty Index

¹ Rate ratio = Mean estimate of number of ED visits in subgroup in Post Covid-19 quarter relative to the mean estimate of number of ED visits in the corresponding Pre Covid-19 quarter one year prior.

² Other race includes Asian, American Indian or Alaskan Native, Native Hawaiian or Pacific Islander, or had more than one race identified

Pre Covid-19: Q1=March-May 2019, Q2=June-August 2019, Q3=September-November 2019, Q4=December 2019-February 2020; Post Covid-19: Q5=March-May 2020, Q6=June-August 2020, Q7=September-November 2020, Q8=December 2020-February 2021

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82 **Legends:**

83 Figure 1. Study Flow diagram. 43,935 patients were identified as eligible for the parent
84 GeriPACT study. For this secondary analysis, a final eligible cohort of 38,871 was identified
85 after additional exclusion criteria and removing patients with missing data on variables in the
86 adjusted models.

87 Figure 2. Estimated mean ED Visit Counts and 95% Confidence Intervals by Subgroups and
88 Quarter, Adjusted Models. Models for subgroups of interest: (A) Age; (B) Race; (C) Area
89 Deprivation Index (ADI) quartile; (D) JEN Frailty Index (JFI). Quarters are defined as Q1:
90 March 2019–May 2019; Q2: June 2019–August 2019; Q3: September 2019– November
91 2019; Q4: December 2019–February 2020; Q5: March 2020–May 2020; Q6: June 2020–
92 August 2020; Q7: September 2020–November 2020; Q8: December 2020–February 2021).

93 Figure 3. Estimated Rate Ratios and 95% Confidence Intervals by Subgroups and Quarter,
94 Adjusted Models. Estimated mean rate of ED visits per person in each of the COVID-era
95 quarters (Q5-Q8) as compared with their seasonally equivalent pre-COVID quarter (Q1-Q4),
96 by each subgroup of interest. Rate ratios < 1.0 indicate fewer counts of ED visits in the
97 COVID quarter compared to the corresponding pre-COVID quarter. Models for subgroups
98 of interest: (A) Age; (B) Race; (C) Area Deprivation Index (ADI) quartile; (D) JEN Frailty
99 Index (JFI). Quarters are defined as Q1: March 2019–May 2019; Q2: June 2019–August
100 2019; Q3: September 2019– November 2019; Q4: December 2019–February 2020; Q5:
101 March 2020–May 2020; Q6: June 2020–August 2020; Q7: September 2020–November
102 2020; Q8: December 2020–February 2021).

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104 **Supplementary Materials**

105 Unadjusted and adjusted negative binomial regression models utilized for results below were fit with generalized
106 estimating equations (GEEs) with clustering by individual with an autoregressive structure, coupled with
107 empirical sandwich standard errors to account for repeated observations per person over time. Patients were
108 censored at the time of death via an offset in the quarter of their death, and then excluded from the analysis in any
109 quarter after that. Models included a continuous quarter variable, a Post-Covid indicator variable (0 if pre-Covid,
110 1 if post), number of quarters since Covid (prior quarters = 0, post quarters start with 1 and goes to 4), a squared
111 term for number of quarters since Covid, subgroup of interest, interaction terms between subgroup variables and
112 the continuous quarter variable, interaction terms between the post-Covid indicator variable and the subgroup
113 variables, interaction terms between the quarters since Covid variable and the subgroup variables, and interaction
114 terms between the squared term of quarters since Covid variable and the subgroup variables. The adjusted models
115 added the following variables centered at baseline, without duplication of the subgroup variable already entered
116 into the model: male, the 3-level race variable, Hispanic ethnicity, married, rural status, the 4-category area
117 deprivation index (ADI) variable, the 4-category JEN Frailty Index (JFI) variable, 4-category priority status
118 variable, drive distance to nearest VA primary care clinic, and VISN. The 3-category age variable was included in
119 the race and JFI subgroup models, while continuous age was used in the ADI model due to convergence issues.

120 In each table, quarters are represented as follows:

121 Pre-Covid quarters: Q1: March – May 2019; Q2: June – August 2019; Q3: September-November 2019; Q4:
122 December 2019 – February 2020

123 Post-Covid quarters: Q5: March – May 2020; Q6: June – August 2020; Q7: September-November 2020; Q8:
124 December 2020 – February 2021

125 Rate ratios < 1.0 indicate fewer counts of ED visits in the post-Covid quarter compared to the corresponding pre-
126 Covid quarter. Confidence intervals not including 1.0 indicate statistical significance difference in ED visits from
127 the post-Covid quarter compared to the corresponding pre-Covid quarter within the age subgroup.

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130 **Model: Age**

131 **Table S1.** Estimated mean number of ED visits (and 95% CI) by age subgroup and quarter, standardized to 91
 132 days in quarter.

Quarter: Age	Unadjusted Model Mean Estimate (95% Confidence Interval)	Adjusted Model Mean Estimate (95% Confidence Interval)
Q1: 65-74	0.247 (0.235, 0.260)	0.175 (0.166, 0.184)
Q1: 75-84	0.214 (0.206, 0.224)	0.178 (0.171, 0.186)
Q1: 85+	0.219 (0.209, 0.230)	0.183 (0.174, 0.192)
Q2: 65-74	0.247 (0.237, 0.258)	0.177 (0.170, 0.185)
Q2: 75-84	0.218 (0.211, 0.226)	0.182 (0.177, 0.188)
Q2: 85+	0.223 (0.215, 0.232)	0.188 (0.181, 0.195)
Q3: 65-74	0.248 (0.238, 0.258)	0.180 (0.172, 0.188)
Q3: 75-84	0.222 (0.215, 0.230)	0.187 (0.181, 0.193)
Q3: 85+	0.228 (0.219, 0.236)	0.193 (0.186, 0.201)
Q4: 65-74	0.248 (0.236, 0.262)	0.182 (0.173, 0.193)
Q4: 75-84	0.226 (0.217, 0.236)	0.191 (0.183, 0.200)
Q4: 85+	0.232 (0.221, 0.243)	0.199 (0.189, 0.209)
Q5: 65-74	0.183 (0.170, 0.196)	0.131 (0.122, 0.141)
Q5: 75-84	0.162 (0.153, 0.171)	0.137 (0.129, 0.144)
Q5: 85+	0.162 (0.152, 0.173)	0.139 (0.130, 0.148)
Q6: 65-74	0.208 (0.197, 0.219)	0.152 (0.144, 0.160)
Q6: 75-84	0.193 (0.185, 0.202)	0.165 (0.158, 0.173)
Q6: 85+	0.203 (0.193, 0.214)	0.177 (0.168, 0.186)
Q7: 65-74	0.223 (0.212, 0.234)	0.165 (0.157, 0.174)
Q7: 75-84	0.207 (0.199, 0.216)	0.179 (0.171, 0.187)
Q7: 85+	0.220 (0.209, 0.232)	0.195 (0.185, 0.206)
Q8: 65-74	0.226 (0.213, 0.240)	0.168 (0.158, 0.178)
Q8: 75-84	0.200 (0.190, 0.210)	0.173 (0.164, 0.182)
Q8: 85+	0.208 (0.196, 0.222)	0.186 (0.175, 0.199)

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134 **Table S2.** Rate Ratios Comparing Each Quarter to the Seasonally Equivalent Pre-COVID-19 Quarter by Age
 135 Group

Quarters in Rate Ratio: Age	Unadjusted Model Rate Ratio (95% Confidence Interval)	Adjusted Model Rate Ratio (95% Confidence Interval)
Q5/Q1: 65-74	0.739 (0.683, 0.801)	0.750 (0.693, 0.812)
Q5/Q1: 75-84	0.755 (0.710, 0.804)	0.767 (0.720, 0.817)
Q5/Q1: 85+	0.740 (0.689, 0.795)	0.759 (0.705, 0.817)
Q6/Q2: 65-74	0.839 (0.796, 0.885)	0.857 (0.813, 0.905)
Q6/Q2: 75-84	0.887 (0.847, 0.928)	0.907 (0.866, 0.950)
Q6/Q2: 85+	0.908 (0.861, 0.958)	0.942 (0.892, 0.994)
Q7/Q3: 65-74	0.900 (0.855, 0.947)	0.918 (0.872, 0.967)
Q7/Q3: 75-84	0.934 (0.893, 0.978)	0.957 (0.914, 1.002)
Q7/Q3: 85+	0.969 (0.918, 1.022)	1.010 (0.956, 1.067)
Q8/Q4: 65-74	0.911 (0.852, 0.975)	0.921 (0.859, 0.988)
Q8/Q4: 75-84	0.883 (0.832, 0.938)	0.902 (0.848, 0.959)
Q8/Q4: 85+	0.900 (0.836, 0.965)	0.937 (0.870, 1.009)

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 137 In joint tests assessing differential changes over time by age group, for both unadjusted and adjusted models, there
 138 were no statistically significant differences in the post-Covid/corresponding pre-Covid quarter rate ratios by age
 139 subgroups.

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141 **Model: Race**

142 **Table S3.** Estimated mean number of ED visits (and 95% CI) by race subgroup and quarter, standardized to 91
 143 days in quarter.

Quarter: Race	Unadjusted Model Mean Estimate (95% Confidence Interval)	Adjusted Model Mean Estimate (95% Confidence Interval)
Q1: White	0.212 (0.206, 0.219)	0.173 (0.168, 0.179)
Q1: Black	0.282 (0.267, 0.298)	0.207 (0.195, 0.219)
Q1: Other	0.167 (0.127, 0.220)	0.137 (0.105, 0.180)
Q2: White	0.215 (0.210, 0.221)	0.178 (0.173, 0.182)
Q2: Black	0.283 (0.270, 0.296)	0.209 (0.199, 0.219)
Q2: Other	0.199 (0.160, 0.249)	0.166 (0.134, 0.205)
Q3: White	0.218 (0.213, 0.224)	0.182 (0.178, 0.187)
Q3: Black	0.283 (0.271, 0.296)	0.211 (0.201, 0.222)
Q3: Other	0.237 (0.194, 0.291)	0.200 (0.166, 0.242)
Q4: White	0.222 (0.215, 0.229)	0.186 (0.180, 0.192)
Q4: Black	0.284 (0.268, 0.301)	0.213 (0.201, 0.227)
Q4: Other	0.282 (0.226, 0.354)	0.241 (0.195, 0.299)
Q5: White	0.156 (0.150, 0.163)	0.130 (0.125, 0.136)
Q5: Black	0.217 (0.200, 0.236)	0.161 (0.148, 0.175)
Q5: Other	0.164 (0.120, 0.223)	0.139 (0.102, 0.190)
Q6: White	0.188 (0.182, 0.194)	0.159 (0.154, 0.165)
Q6: Black	0.254 (0.240, 0.269)	0.193 (0.181, 0.205)
Q6: Other	0.171 (0.131, 0.222)	0.147 (0.114, 0.189)
Q7: White	0.202 (0.196, 0.209)	0.173 (0.168, 0.179)
Q7: Black	0.275 (0.260, 0.290)	0.211 (0.199, 0.224)
Q7: Other	0.183 (0.141, 0.236)	0.157 (0.122, 0.201)
Q8 -White	0.194 (0.187, 0.202)	0.168 (0.162, 0.175)
Q8: Black	0.275 (0.258, 0.294)	0.211 (0.197, 0.226)
Q8: Other	0.201 (0.143, 0.282)	0.170 (0.120, 0.240)

144 Other race includes Asian, American Indian or Alaskan Native, Native Hawaiian or Pacific Islander, or had more
 145 than one race identified

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148 **Table S4.** Rate Ratios Comparing Each Quarter to the Seasonally Equivalent Pre-COVID-19 Quarter by Race
 149 Group

Quarters in Rate Ratio: Race	Unadjusted Model Rate Ratio (95% Confidence Interval)	Adjusted Model Rate Ratio (95% Confidence Interval)
Q5/Q1: White	0.737 (0.704, 0.771)	0.752 (0.718, 0.788)
Q5/Q1: Black	0.769 (0.703, 0.842)	0.780 (0.712, 0.854)
Q5/Q1: Other	0.978 (0.690, 1.387)	1.014 (0.694, 1.482)
Q6/Q2: White	0.873 (0.844, 0.903)	0.897 (0.867, 0.927)
Q6/Q2: Black	0.897 (0.846, 0.952)	0.923 (0.869, 0.981)
Q6/Q2: Other	0.857 (0.647, 1.134)	0.886 (0.666, 1.180)
Q7/Q3: White	0.925 (0.895, 0.957)	0.952 (0.921, 0.985)
Q7/Q3: Black	0.969 (0.915, 1.027)	1.000 (0.942, 1.061)
Q7/Q3: Other	0.770 (0.592, 1.001)	0.784 (0.604, 1.019)
Q8/Q4: White	0.877 (0.839, 0.917)	0.901 (0.861, 0.943)
Q8/Q4: Black	0.970 (0.899, 1.046)	0.990 (0.915, 1.071)
Q8/Q4: Other	0.710 (0.498, 1.014)	0.704 (0.486, 1.019)

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 151 In joint tests assessing differential changes over time by race group, for both unadjusted and adjusted models there
 152 were statistically significant differences in the 4th post-Covid/corresponding pre-Covid quarter rate ratios by race
 153 subgroups (p=0.040, 0.049, respectively). In pairwise comparisons, patients of White race experienced a
 154 significantly greater decrease in ED visits compared to patients of Black race in the 4th quarter post-Covid
 155 compared to the 4th quarter pre-Covid (p=0.025 in unadjusted model, p=0.042 in adjusted model).

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158 **Model: Area Deprivation Index (ADI)**

159 **Table S5.** Estimated mean number of ED visits (and 95% CI) by ADI subgroup and quarter, standardized to 91
 160 days in quarter.

Quarter: ADI subgroups	Unadjusted Model Mean Estimate (95% Confidence Interval)	Adjusted Model Mean Estimate (95% Confidence Interval)
Q1: 0-25	0.191 (0.178, 0.205)	0.162 (0.152, 0.174)
Q1: 26-50	0.194 (0.184, 0.203)	0.166 (0.158, 0.174)
Q1: 51-75	0.240 (0.229, 0.253)	0.191 (0.182, 0.201)
Q1: 76-100	0.274 (0.260, 0.288)	0.197 (0.187, 0.208)
Q2: 0-25	0.189 (0.179, 0.200)	0.163 (0.154, 0.172)
Q2: 26-50	0.197 (0.190, 0.205)	0.171 (0.164, 0.177)
Q2: 51-75	0.245 (0.236, 0.255)	0.196 (0.189, 0.204)
Q2: 76-100	0.277 (0.266, 0.289)	0.202 (0.194, 0.211)
Q3: 0-25	0.188 (0.177, 0.199)	0.163 (0.154, 0.172)
Q3: 26-50	0.201 (0.193, 0.210)	0.176 (0.169, 0.183)
Q3: 51-75	0.250 (0.240, 0.260)	0.202 (0.194, 0.210)
Q3: 76-100	0.281 (0.269, 0.293)	0.207 (0.198, 0.216)
Q4: 0-25	0.186 (0.173, 0.200)	0.163 (0.152, 0.175)
Q4: 26-50	0.205 (0.195, 0.217)	0.181 (0.171, 0.190)
Q4: 51-75	0.255 (0.242, 0.267)	0.207 (0.197, 0.218)
Q4: 76-100	0.284 (0.270, 0.300)	0.212 (0.201, 0.224)
Q5: 0-25	0.133 (0.121, 0.148)	0.114 (0.103, 0.126)
Q5: 26-50	0.146 (0.137, 0.156)	0.128 (0.120, 0.137)
Q5: 51-75	0.176 (0.166, 0.187)	0.143 (0.135, 0.152)
Q5: 76-100	0.214 (0.199, 0.231)	0.158 (0.146, 0.169)
Q6: 0-25	0.146 (0.135, 0.157)	0.127 (0.118, 0.138)
Q6: 26-50	0.178 (0.169, 0.188)	0.159 (0.151, 0.167)
Q6: 51-75	0.220 (0.210, 0.231)	0.182 (0.173, 0.192)
Q6: 76-100	0.247 (0.234, 0.261)	0.184 (0.174, 0.195)
Q7: 0-25	0.154 (0.143, 0.166)	0.137 (0.127, 0.147)
Q7: 26-50	0.193 (0.184, 0.203)	0.174 (0.165, 0.183)
Q7: 51-75	0.238 (0.227, 0.250)	0.199 (0.190, 0.209)
Q7: 76-100	0.266 (0.252, 0.281)	0.201 (0.19, 0.212)
Q8: 0-25	0.157 (0.144, 0.172)	0.141 (0.129, 0.155)
Q8: 26-50	0.186 (0.175, 0.198)	0.167 (0.157, 0.177)
Q8: 51-75	0.223 (0.211, 0.237)	0.187 (0.176, 0.198)
Q8: 76-100	0.267 (0.250, 0.284)	0.204 (0.191, 0.217)

161 ADI is in quartiles of 0-25 (least disadvantage), 26-50, 51-75, 76-100 (most disadvantage)

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165 **Table S6.** Rate Ratios Comparing Each Quarter to the Seasonally Equivalent Pre-COVID-19 Quarter by ADI
 166 Group

Quarters in Rate Ratio: ADI	Unadjusted Model Rate Ratio (95% Confidence Interval)	Adjusted Model Rate Ratio (95% Confidence Interval)
Q5/Q1: 0-25	0.698 (0.625, 0.781)	0.703 (0.628, 0.787)
Q5/Q1: 26-50	0.754 (0.699, 0.813)	0.770 (0.714, 0.831)
Q5/Q1: 51-75	0.731 (0.682, 0.785)	0.749 (0.697, 0.806)
Q5/Q1: 76- 100	0.783 (0.722, 0.850)	0.798 (0.736, 0.866)
Q6/Q2: 0-25	0.769 (0.710, 0.832)	0.783 (0.723, 0.848)
Q6/Q2: 26-50	0.903 (0.856, 0.953)	0.932 (0.883, 0.984)
Q6/Q2: 51-75	0.898 (0.853, 0.946)	0.929 (0.881, 0.980)
Q6/Q2: 76- 100	0.891 (0.842, 0.943)	0.911 (0.860, 0.964)
Q7/Q3: 0-25	0.819 (0.757, 0.885)	0.840 (0.775, 0.910)
Q7/Q3: 26-50	0.960 (0.910, 1.014)	0.990 (0.937, 1.046)
Q7/Q3: 51-75	0.954 (0.907, 1.004)	0.988 (0.938, 1.041)
Q7/Q3: 76- 100	0.946 (0.895, 1.000)	0.968 (0.915, 1.024)
Q8/Q4: 0-25	0.844 (0.762, 0.935)	0.866 (0.779, 0.963)
Q8/Q4: 26-50	0.907 (0.844, 0.975)	0.924 (0.859, 0.994)
Q8/Q4: 51-75	0.877 (0.819, 0.940)	0.902 (0.840, 0.968)
Q8/Q4: 76- 100	0.938 (0.872, 1.008)	0.959 (0.890, 1.033)

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 168 In joint tests assessing differential changes over time by ADI group, for both unadjusted and adjusted models
 169 there were statistically significant differences in the 2nd and 3rd post-Covid/corresponding pre-Covid quarter rate
 170 ratios by ADI subgroups (p-values <0.01). In pairwise comparisons, patients in the least disadvantaged ADI
 171 subgroup (0-25) experienced a greater decrease in ED visits compared to patients in more disadvantaged ADI
 172 subgroups (26-50, 51-75, 76-100) in the 2nd and 3rd quarters post-Covid compared to the corresponding pre-Covid
 173 quarters (all p-values < 0.01 in unadjusted and adjusted models).

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177 **Model: JEN Frailty Index (JFI)**

178 **Table S7.** Mean number of estimated ED visits (and 95% CI) by frailty subgroup and quarter, standardized to 91
 179 days in quarter.

Quarter: JFI subgroups	Unadjusted Model Mean Estimate (95% Confidence Interval)	Adjusted Model Mean Estimate (95% Confidence Interval)
Q1: 0-3	0.116 (0.110, 0.122)	0.113 (0.107, 0.118)
Q1: 4-5	0.225 (0.215, 0.236)	0.204 (0.195, 0.214)
Q1: 6-7	0.416 (0.395, 0.437)	0.360 (0.342, 0.379)
Q1: 8+	0.681 (0.634, 0.731)	0.577 (0.536, 0.621)
Q2: 0-3	0.120 (0.116, 0.125)	0.117 (0.113, 0.121)
Q2: 4-5	0.233 (0.225, 0.241)	0.212 (0.204, 0.219)
Q2: 6-7	0.414 (0.399, 0.431)	0.359 (0.345, 0.374)
Q2: 8+	0.666 (0.629, 0.706)	0.563 (0.530, 0.598)
Q3: 0-3	0.125 (0.120, 0.129)	0.121 (0.117, 0.126)
Q3: 4-5	0.241 (0.233, 0.250)	0.219 (0.212, 0.228)
Q3: 6-7	0.413 (0.397, 0.430)	0.358 (0.343, 0.373)
Q3: 8+	0.652 (0.613, 0.693)	0.549 (0.515, 0.585)
Q4: 0-3	0.129 (0.123, 0.136)	0.126 (0.120, 0.132)
Q4: 4-5	0.250 (0.238, 0.262)	0.227 (0.217, 0.239)
Q4: 6-7	0.412 (0.391, 0.435)	0.357 (0.338, 0.377)
Q4: 8+	0.638 (0.590, 0.691)	0.536 (0.494, 0.581)
Q5: 0-3	0.090 (0.084, 0.096)	0.087 (0.081, 0.092)
Q5: 4-5	0.174 (0.163, 0.186)	0.158 (0.149, 0.169)
Q5: 6-7	0.313 (0.292, 0.336)	0.269 (0.251, 0.289)
Q5: 8+	0.486 (0.439, 0.538)	0.403 (0.363, 0.448)
Q6: 0-3	0.112 (0.107, 0.118)	0.109 (0.104, 0.115)
Q6: 4-5	0.208 (0.199, 0.219)	0.189 (0.181, 0.199)
Q6: 6-7	0.373 (0.353, 0.393)	0.322 (0.305, 0.341)
Q6: 8+	0.539 (0.495, 0.586)	0.454 (0.417, 0.495)
Q7: 0-3	0.125 (0.119, 0.131)	0.122 (0.117, 0.128)
Q7: 4-5	0.226 (0.215, 0.237)	0.205 (0.196, 0.215)
Q7: 6-7	0.397 (0.376, 0.418)	0.343 (0.325, 0.362)
Q7: 8+	0.559 (0.515, 0.605)	0.475 (0.437, 0.516)
Q8: 0-3	0.124 (0.117, 0.131)	0.121 (0.114, 0.128)
Q8: 4-5	0.222 (0.210, 0.235)	0.202 (0.191, 0.214)
Q8: 6-7	0.378 (0.355, 0.403)	0.325 (0.304, 0.346)
Q8: 8+	0.541 (0.488, 0.601)	0.460 (0.413, 0.513)

180 JFI: Low frailty 0-3, moderate frailty 4-5, high frailty 6-7, very high frailty ≥ 8 .

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Table S8. Rate Ratios Comparing Each Quarter to the Seasonally Equivalent Pre-COVID-19 Quarter by JFI Group

Quarters in Rate Ratio: JFI	Unadjusted Model Rate Ratio (95% Confidence Interval)	Adjusted Model Rate Ratio (95% Confidence Interval)
Q5/Q1: 0-3	0.774 (0.718, 0.835)	0.770 (0.713, 0.830)
Q5/Q1: 4-5	0.774 (0.720, 0.832)	0.777 (0.723, 0.834)
Q5/Q1: 6-7	0.754 (0.698, 0.815)	0.747 (0.690, 0.809)
Q5/Q1: 8+	0.714 (0.638, 0.798)	0.699 (0.624, 0.783)
Q6/Q2: 0-3	0.934 (0.886, 0.985)	0.936 (0.888, 0.987)
Q6/Q2: 4-5	0.894 (0.850, 0.940)	0.895 (0.851, 0.942)
Q6/Q2: 6-7	0.899 (0.850, 0.951)	0.898 (0.848, 0.950)
Q6/Q2: 8+	0.809 (0.741, 0.882)	0.807 (0.739, 0.881)
Q7/Q3: 0-3	1.003 (0.952, 1.057)	1.007 (0.956, 1.061)
Q7/Q3: 4-5	0.936 (0.890, 0.985)	0.936 (0.890, 0.985)
Q7/Q3: 6-7	0.959 (0.907, 1.014)	0.958 (0.906, 1.014)
Q7/Q3: 8+	0.857 (0.787, 0.932)	0.864 (0.794, 0.941)
Q8/Q4: 0-3	0.958 (0.894, 1.027)	0.959 (0.895, 1.028)
Q8/Q4: 4-5	0.888 (0.831, 0.949)	0.889 (0.831, 0.951)
Q8/Q4: 6-7	0.917 (0.851, 0.988)	0.909 (0.843, 0.980)
Q8/Q4: 8+	0.848 (0.756, 0.952)	0.859 (0.764, 0.965)

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In joint tests assessing differential changes over time by JFI group, there were statistically significant differences in the 2nd post-Covid/corresponding pre-Covid quarter rate ratios (adjusted model p=0.045) and in the 3rd post-Covid/corresponding pre-Covid quarter rate ratios (unadjusted model p=0.017, adjusted model p=0.022) by JFI subgroups. In pairwise comparisons for the adjusted model, patients in the highest frailty subgroup (8+) experienced a greater decrease in ED visits compared to patients in the lower frailty subgroups (0-3, p=0.004; 4-5, p=0.045; 6-7, p=0.045) in the 2nd quarter post-Covid compared to the corresponding pre-Covid quarter. In both unadjusted and adjusted models, patients in the highest frailty subgroup had a greater decrease in ED visits compared to patients in the 0-3 frailty subgroup (unadjusted model p=0.002, adjusted model p=0.003) and the 6-7 frailty subgroup (unadjusted model p=0.029, adjusted model p=0.048) in the 3rd quarter post-Covid compared to the corresponding pre-Covid quarter. Additionally, in the adjusted model patients in the 4-5 frailty subgroup had a greater decrease in ED visits compared to patients in the 0-3 frailty subgroup in the 3rd quarter post-Covid compared to the corresponding pre-Covid quarter (p=0.049).