Supplemental Online Content

This supplemental material has been provided by the authors to give readers additional information about their work.

eTable 1. Patient and HHA characteristics before and after the introduction of Home Health Compare Star Ratings by high quality facilities

	Year	Age	Male	Black	Hispanic	White	Other Race	Dual Eligible	ADRD	Post-Acute	Non-profit	For-profit	Government	Spell Length
High Quality (patient care)	2013	77.35	37.90	11.50	7.90	76.90	3.60	30.70	35.90	32.90	36.60	60.50	2.80	64.37
	2014	77.33	38.30	11.20	9.00	76.00	3.90	31.50	36.60	31.70	35.70	61.60	2.70	63.68
	2015	77.59	38.40	10.80	8.00	77.10	4.10	30.20	37.70	31.80	35.60	61.90	2.50	63.36
	2016	77.61	38.50	11.10	6.70	78.30	3.90	28.60	39.30	33.10	33.60	64.40	2.00	63.02
	2017	77.75	38.80	10.70	5.70	79.70	3.80	27.80	40.90	33.30	26.90	71.90	1.20	66.84
	2018	77.93	38.70	10.60	6.00	79.50	3.90	28.00	42.20	33.40	22.80	75.90	1.30	67.41
	2019	78.13	38.60	11.10	6.00	78.80	4.00	28.60	43.70	35.80	21.40	77.10	1.40	65.71
High quality (patient satisfaction)	2013	77.13	37.60	10.70	4.50	82.70	2.10	27.20	34.20	36.40	41.10	55.20	3.80	73.24
	2014	77.12	38.00	10.50	4.60	82.60	2.20	27.10	34.40	35.40	40.60	55.70	3.70	72.58
	2015	77.28	38.20	10.40	4.50	82.70	2.40	26.30	35.50	35.00	40.30	56.10	3.60	71.28
	2016	77.22	38.40	10.50	4.00	83.20	2.30	26.00	37.40	35.60	40.50	56.20	3.40	69.48
	2017	77.30	38.70	10.40	3.70	83.40	2.40	25.90	38.10	36.50	40.30	56.60	3.10	69.92
	2018	77.46	38.80	10.20	3.80	83.50	2.60	25.20	38.60	37.30	38.90	58.30	2.70	68.27
	2019	77.81	38.70	10.10	4.10	83.00	2.80	25.10	40.30	39.70	36.90	60.40	2.70	64.10
High Quality (both measures)	2013	77.42	38.00	9.30	4.90	83.60	2.20	26.20	33.80	36.30	43.00	53.40	3.60	63.38
	2014	77.44	38.40	9.20	5.20	83.30	2.30	26.30	34.30	35.40	42.30	54.20	3.50	63.04
	2015	77.62	38.50	9.00	4.90	83.70	2.40	25.40	35.30	35.10	41.90	54.80	3.30	62.59
	2016	77.42	38.60	9.90	4.00	83.70	2.40	25.10	36.70	36.00	40.40	56.80	2.80	63.61
	2017	77.45	38.80	10.20	3.40	84.10	2.30	25.30	38.30	35.90	32.70	65.60	1.80	68.67
	2018	77.60	38.90	10.10	3.60	83.90	2.40	24.80	39.30	36.10	27.70	70.80	1.50	68.96
	2019	77.90	38.60	10.60	4.00	82.90	2.60	25.30	41.40	38.10	24.70	73.60	1.70	67.48

Notes: Mean is reported for age. All other characteristics are reported as percentages (%). ADRD is Alzheimer's disease and related dementias.
Other race included Asian, American Indian, Alaska native, native Hawaiian, or Pacific Islander.

[First author last name and initials or group name] et al. [Journal name].

eTable 2. Trends in outcomes by race, dual-eligible status, and ADRD (2013-2019)

	Year	Hospitalization During Spell	Hospitalization Post-Discharge	Timely Initiation of Care	Ambulation	Bed transferring	Bathing
By Race							
Black	**2013**	13.88	7.78	64.46	58.38	53.07	65.40
	2014	13.90	8.05	63.64	60.95	54.84	66.67
	2015	13.84	8.15	62.41	64.65	59.42	69.47
	2016	14.02	8.41	61.51	69.59	65.17	73.22
	2017	14.45	8.67	60.91	72.95	70.89	76.03
	2018	15.02	8.79	58.64	75.60	74.85	78.56
	2019	15.88	9.47	57.47	77.56	78.44	80.85
Hispanic	**2013**	10.80	5.95	66.81	58.33	51.64	68.49
	2014	11.32	6.31	65.53	61.11	53.08	68.80
	2015	11.74	6.60	64.23	63.48	56.84	69.51
	2016	12.01	7.04	63.86	67.56	61.06	72.50
	2017	12.82	7.33	63.23	69.96	65.72	73.94
	2018	13.15	7.52	61.57	72.88	68.95	76.38
	2019	13.76	7.97	60.44	73.93	72.70	79.16
White	**2013**	12.99	7.55	68.66	63.34	58.57	68.73
	2014	12.96	7.90	67.94	65.47	60.51	69.84
	2015	12.84	7.84	67.20	69.30	65.32	72.62
	2016	12.90	7.91	67.46	74.27	71.30	76.52
	2017	13.20	7.95	66.71	77.58	76.81	79.22
	2018	13.59	7.95	64.96	80.00	80.17	81.50
	2019	14.34	8.26	63.48	81.48	83.16	83.65
Other	**2013**	10.68	6.15	66.91	61.54	54.80	67.11
	2014	10.55	6.32	66.95	63.13	56.02	68.10
	2015	10.40	6.37	65.79	65.92	59.60	70.43
	2016	10.51	6.40	65.77	70.13	64.48	73.92
	2017	10.89	6.53	65.33	73.75	69.29	76.33
	2018	11.11	6.57	63.43	75.64	71.91	78.13
	2019	11.69	6.89	61.63	77.00	75.37	81.10
By Dual-Eligible Status							
Dual	**2013**	14.00	7.86	65.99	57.73	51.98	64.97
	2014	14.07	8.19	64.94	60.22	53.55	65.90
	2015	14.02	8.26	63.81	63.72	58.02	68.44
	2016	14.10	8.48	63.44	68.48	63.20	72.14
	2017	14.50	8.57	62.33	71.65	68.39	74.67
	2018	14.81	8.63	60.53	74.12	71.30	76.91
	2019	15.49	9.09	59.22	75.36	74.84	79.29
By Alzheimer's Disease and Related Dementias							
ADRD	**2013**	15.11	9.34	65.53	54.21	49.42	57.01

2014	15.05	9.72	64.59	56.31	51.31	58.01
2015	14.94	9.71	63.29	60.36	56.50	61.45
2016	15.04	9.86	62.71	65.94	63.13	66.57
2017	15.33	9.84	61.46	69.54	69.05	69.83
2018	15.57	9.78	60.00	72.33	72.88	72.98
2019	16.23	9.99	59.16	74.08	76.46	76.08

Notes: ADRD is Alzheimer's disease and related dementias. Other race included Asian, American Indian, Alaska native, native Hawaiian, or Pacific Islander. All outcomes are reported as rates (%). Hospitalization rate variables included both in-patient hospitalizations, readmissions, and outpatient observational visits. Hospitalization rate post-discharge is measured within 30 days of HHA discharge. Timely initiation of care refers to home health spells which started within two days of an inpatient discharge. Ambulation, bed transferring, and ambulation are measures of functional improvement reported in OASIS.

eTable 3. Trends in patient outcomes among high quality HHAs by race (2013-2019)

	White							Black						
year	2013	2014	2015	2016	2017	2018	2019	2013	2014	2015	2016	2017	2018	2019
High Quality (patient care)														
Hospitalization during spell (%)	12.03	11.85	11.82	12.18	13.06	13.60	14.58	12.61	12.46	12.51	13.33	14.42	15.25	16.54
Hospitalization post-discharge (%)	7.27	7.50	7.50	7.64	7.78	7.79	8.09	7.31	7.64	7.66	8.09	8.44	8.58	9.27
Timely initiation (%)	70.70	70.51	69.73	69.28	67.97	66.34	64.70	65.96	66.40	64.13	62.86	62.45	60.29	59.07
Ambulation (%)	70.78	73.95	75.94	80.11	83.25	85.01	86.02	68.42	71.68	73.54	77.62	81.41	83.13	84.07
Bed transferring (%)	65.40	68.41	71.31	77.03	82.52	85.12	87.36	63.59	65.81	68.30	73.65	80.06	82.84	84.70
Bathing (%)	75.70	77.64	78.70	81.96	84.53	86.30	88.01	75.43	77.55	78.30	80.93	83.82	85.32	86.77
High Quality (patient satisfaction)														
Hospitalization during spell (%)	13.43	13.38	13.22	13.43	13.90	14.27	14.92	15.32	15.33	15.17	15.32	15.93	16.41	17.26
Hospitalization post-discharge (%)	7.58	7.92	7.86	7.94	8.01	8.03	8.22	8.16	8.50	8.58	8.65	8.77	8.93	9.53
Timely initiation (%)	69.18	68.52	67.92	68.54	67.76	66.06	64.30	65.93	65.42	64.41	63.83	63.16	61.12	59.86
Ambulation (%)	65.48	67.60	71.41	76.37	79.86	82.26	83.49	62.33	65.28	69.14	74.35	78.01	80.55	82.17
Bed transferring (%)	60.41	62.50	67.55	73.54	79.41	83.02	85.41	56.66	59.10	64.48	70.76	77.04	81.03	83.78
Bathing (%)	70.40	71.56	74.35	78.30	81.21	83.53	85.32	67.49	69.17	72.43	76.41	79.60	82.17	84.08
High Quality (both)														
Hospitalization during spell (%)	12.30	12.14	12.09	12.69	13.77	14.38	15.33	14.02	13.97	13.92	14.74	15.86	16.67	18.11
Hospitalization post-discharge (%)	7.30	7.57	7.52	7.64	7.81	7.79	8.01	7.82	8.27	8.19	8.39	8.50	8.46	9.16
Timely initiation (%)	71.17	71.08	70.33	70.01	69.03	67.43	65.52	67.26	67.95	65.92	64.61	64.11	62.59	61.13
Ambulation (%)	71.92	74.96	77.08	81.43	84.58	86.39	87.20	69.52	72.96	75.45	79.84	83.52	85.18	86.32
Bed transferring (%)	66.65	69.64	72.83	78.67	84.21	87.07	88.81	64.73	67.86	71.26	76.88	83.12	86.02	87.57
Bathing (%)	76.39	78.30	79.63	83.16	85.71	87.58	89.02	74.88	77.10	78.91	82.17	85.15	86.81	88.22

	Hispanic							Other Race						
year	2013	2014	2015	2016	2017	2018	2019	2013	2014	2015	2016	2017	2018	2019
High Quality (patient care)														
Hospitalization during spell (%)	9.43	8.39	8.75	9.79	11.35	11.74	12.80	9.51	9.24	9.06	9.20	10.18	10.58	11.32
Hospitalization post-discharge (%)	5.95	5.43	5.79	6.46	6.99	7.26	7.90	5.69	5.72	5.76	5.80	6.13	6.25	6.86
Timely initiation (%)	68.03	67.40	65.34	65.04	64.73	63.55	62.17	68.51	69.34	67.42	67.53	66.66	64.18	62.66
Ambulation (%)	68.60	73.80	74.83	77.50	79.22	81.64	81.14	69.85	72.05	72.15	76.12	80.93	82.67	83.74
Bed transferring (%)	59.67	63.38	67.07	70.64	74.91	76.93	80.20	62.06	63.48	64.99	69.89	76.77	78.12	82.20
Bathing (%)	77.45	82.02	80.94	81.76	82.74	84.72	86.54	75.10	77.20	77.37	80.19	83.12	84.60	87.46
High Quality (patient satisfaction)														
Hospitalization during spell (%)	13.93	13.74	13.77	13.81	14.57	14.55	14.90	12.27	12.23	12.06	12.34	12.87	12.80	13.19
Hospitalization post-discharge (%)	6.98	7.16	7.17	7.59	7.83	7.78	8.25	6.66	7.00	6.96	7.06	7.04	7.14	7.41
Timely initiation (%)	67.95	66.49	65.28	65.53	65.04	63.68	62.19	67.23	67.36	66.30	68.10	67.16	65.88	63.33
Ambulation (%)	60.46	63.46	66.82	71.88	74.77	78.09	79.98	65.73	68.24	71.70	76.34	79.28	81.22	81.75
Bed transferring (%)	53.72	56.37	62.01	68.26	73.77	77.36	80.66	59.69	62.41	66.95	72.18	77.19	80.56	82.75
Bathing (%)	66.25	68.82	70.82	74.62	77.58	80.17	82.81	69.89	71.57	74.11	77.84	80.57	83.00	84.31
High Quality (both)														
Hospitalization during spell (%)	10.91	10.41	10.53	11.73	12.92	13.23	14.11	10.73	10.66	10.59	10.89	12.06	12.33	13.05
Hospitalization post-discharge (%)	6.48	6.30	6.51	7.09	7.60	7.31	8.03	6.16	6.38	6.25	6.49	6.68	6.80	7.21
Timely initiation (%)	69.47	68.93	67.22	67.11	66.76	66.07	63.25	69.81	69.96	69.35	68.64	68.31	67.02	64.91
Ambulation (%)	70.71	74.68	75.99	80.23	81.71	84.31	85.38	72.21	75.77	77.87	81.20	84.33	85.82	86.95
Bed transferring (%)	62.93	66.18	71.26	77.38	82.29	83.99	85.73	65.01	68.30	71.40	76.08	82.20	84.31	86.75
Bathing (%)	77.14	80.99	80.41	82.02	84.38	86.41	88.13	76.38	79.16	80.78	82.67	85.94	87.65	89.40

Notes: HHA is home health agency. Other race included Asian, American Indian, Alaska native, native Hawaiian, or Pacific Islander.

eTable 4. Trends in patient outcomes among high quality HHAs by dual-eligible status (2013-2019)

year	Non Dual-Eligible							Dual-Eligible						
	2013	2014	2015	2016	2017	2018	2019	2013	2014	2015	2016	2017	2018	2019
High Quality (patient care)														
Hospitalization during spell (%)	12.37	12.19	12.18	12.49	13.36	13.97	14.97	10.01	9.46	9.49	10.41	11.67	12.07	13.10
Hospitalization post-discharge (%)	7.64	7.90	7.92	8.06	8.20	8.24	8.60	5.43	5.31	5.34	5.73	6.08	6.17	6.62
Timely initiation (%)	70.51	70.35	69.46	69.06	67.86	66.14	64.48	67.69	67.70	65.90	64.49	63.76	62.28	61.06
Ambulation (%)	71.01	74.06	76.02	80.16	83.35	85.08	86.07	68.13	72.32	73.62	77.29	80.55	82.54	83.12
Bed transferring (%)	65.93	68.99	71.93	77.55	83.13	85.81	87.76	60.53	62.99	65.50	70.48	76.16	78.13	81.67
Bathing (%)	75.89	77.79	78.76	81.97	84.57	86.34	87.98	75.48	78.66	78.85	81.06	83.32	84.94	87.04
High Quality (patient satisfaction)														
Hospitalization during spell (%)	13.68	13.64	13.51	13.70	14.19	14.50	15.19	13.47	13.32	13.06	13.28	13.78	14.30	14.72
Hospitalization post-discharge (%)	7.89	8.28	8.23	8.32	8.40	8.37	8.62	6.43	6.55	6.47	6.58	6.63	6.88	7.10
Timely initiation (%)	69.19	68.52	67.86	68.44	67.73	66.03	64.27	66.52	65.90	65.10	65.29	64.28	62.52	60.99
Ambulation (%)	65.91	68.03	71.77	76.62	80.04	82.52	83.68	61.10	63.84	67.80	73.35	77.15	79.30	80.93
Bed transferring (%)	60.84	62.94	67.94	73.87	79.68	83.36	85.62	55.28	57.63	63.03	69.47	75.70	79.07	82.21
Bathing (%)	70.77	71.93	74.62	78.49	81.35	83.73	85.46	66.53	68.27	71.44	75.71	79.04	81.23	83.35
High Quality (both)														
Hospitalization during spell (%)	12.59	12.43	12.38	12.94	14.00	14.60	15.61	11.46	11.20	11.15	12.27	13.51	14.14	15.13
Hospitalization post-discharge (%)	7.62	7.92	7.86	7.99	8.18	8.12	8.40	5.93	6.00	5.96	6.26	6.43	6.54	6.89
Timely initiation (%)	71.15	71.01	70.28	69.97	69.02	67.46	65.47	68.36	68.88	66.93	65.73	65.22	63.73	62.24
Ambulation (%)	72.28	75.27	77.42	81.63	84.66	86.51	87.26	69.13	72.85	74.75	79.51	83.15	84.78	86.08
Bed transferring (%)	67.27	70.34	73.61	79.21	84.59	87.48	88.98	62.24	65.03	68.32	74.88	81.49	83.81	86.44
Bathing (%)	76.65	78.53	79.86	83.30	85.75	87.66	89.02	74.89	77.66	78.71	81.81	85.04	86.62	88.48

Notes: HHA is home health agency.

eTable 5. Trends in patient outcomes among high quality HHAs by ADRD status (2013-2019)

year	Non Alzheimer's disease and related dementias							Alzheimer's disease and related dementias						
	2013	2014	2015	2016	2017	2018	2019	2013	2014	2015	2016	2017	2018	2019
High Quality (patient care)														
Hospitalization during spell (%)	10.65	10.41	10.36	10.72	11.59	12.18	13.21	13.86	13.42	13.48	14.05	15.03	15.43	16.30
Hospitalization post-discharge (%)	6.03	6.13	6.14	6.24	6.45	6.52	6.90	9.03	9.21	9.25	9.54	9.62	9.52	9.79
Timely initiation (%)	71.06	70.95	70.24	70.09	69.11	67.29	65.39	67.34	67.04	65.35	64.14	62.76	61.67	61.02
Ambulation (%)	74.44	77.63	79.51	83.50	86.59	88.31	89.13	62.50	66.19	68.24	72.83	76.65	78.88	80.19
Bed transferring (%)	68.99	71.67	74.47	79.71	85.08	87.41	89.42	56.49	59.82	63.24	69.73	76.13	79.22	82.23
Bathing (%)	81.19	83.28	83.98	86.66	88.93	90.28	91.57	65.48	68.19	69.49	73.54	76.97	79.69	82.39
High Quality (patient satisfaction)														
Hospitalization during spell (%)	12.25	12.22	12.06	12.08	12.49	12.95	13.61	16.30	16.16	15.91	16.19	16.74	16.87	17.31
Hospitalization post-discharge (%)	6.49	6.77	6.66	6.62	6.72	6.78	7.11	9.72	10.13	10.10	10.25	10.24	10.18	10.15
Timely initiation (%)	69.76	69.09	68.68	69.59	69.09	67.26	65.42	66.04	65.30	64.00	63.77	62.46	61.22	60.16
Ambulation (%)	69.28	71.56	75.30	80.18	83.49	85.78	87.05	56.01	58.22	62.47	68.28	72.29	75.14	76.82
Bed transferring (%)	64.00	66.09	70.98	76.78	82.36	85.73	88.05	51.08	53.37	59.18	66.18	72.78	77.02	79.99
Bathing (%)	75.87	77.13	79.67	83.27	85.82	87.75	89.30	57.48	58.89	62.70	68.14	72.06	75.37	78.12
High Quality (both)														
Hospitalization during spell (%)	11.14	10.99	10.87	11.39	12.34	12.97	14.02	14.75	14.48	14.47	15.26	16.44	16.90	17.63
Hospitalization post-discharge (%)	6.20	6.37	6.27	6.34	6.53	6.57	6.90	9.40	9.79	9.76	9.94	9.97	9.75	9.83
Timely initiation (%)	71.57	71.53	70.93	70.89	70.18	68.49	66.37	68.31	68.20	66.58	65.27	64.04	63.14	62.03
Ambulation (%)	75.74	78.77	80.89	85.06	87.98	89.57	90.48	63.12	66.56	68.98	73.98	77.97	80.43	81.65
Bed transferring (%)	70.47	73.37	76.49	81.88	87.16	89.62	91.19	57.65	60.95	64.92	71.83	78.39	81.99	84.31
Bathing (%)	81.63	83.59	84.69	87.66	89.89	91.28	92.41	65.03	67.43	69.50	74.21	78.00	80.98	83.45

Notes: HHA is home health agency. ADRD is Alzheimer's disease and related dementias.

eTable 6. Rates and trends in claims-based and home health agency-reported outcome measures: Interrupted time series analysis with a post-period start date of July 2015 (2013-2019)

outcome	Parameter	interpretation	estimate	standard error	p-value
Hospitalization rate during spell	β_1	pre-trend	-0.0003	0.001	0.61
	β_2	post-level change	-0.004	0.002	0.07
	β_3	post-trend change	0.002	0.001	0.01
	$\beta_1 + \beta_3$	post-trend	0.002	0.0003	<.001
Hospitalization rate within 30 days of discharge	β_1	pre-trend	0.001	0.001	0.13
	β_2	post-level change	-0.001	0.002	0.48
	β_3	post-trend change	-0.001	0.001	0.31
	$\beta_1 + \beta_3$	post-trend	0.0003	0.0002	0.20
Timely initiation of care	β_1	pre-trend	-0.004	0.001	0.02
	β_2	post-level change	0.01	0.005	0.03
	β_3	post-trend change	-0.001	0.002	0.43
	$\beta_1 + \beta_3$	post-trend	-0.01	0.001	<.001
Improvement in ambulation	β_1	pre-trend	0.01	0.002	<.001
	β_2	post-level change	0.03	0.008	0.003
	β_3	post-trend change	0.001	0.003	0.62
	$\beta_1 + \beta_3$	post-trend	0.01	0.001	<.001
Improvement in bed transferring	β_1	pre-trend	0.01	0.003	0.001
	β_2	post-level change	0.04	0.010	0.01
	β_3	post-trend change	0.01	0.003	0.04
	$\beta_1 + \beta_3$	post-trend	0.02	0.001	<.001
Improvement in bathing	β_1	pre-trend	0.01	0.001	<.001
	β_2	post-level change	0.02	0.005	0.001
	β_3	post-trend change	0.005	0.001	0.01
	$\beta_1 + \beta_3$	post-trend	0.01	0.001	<.001

Notes: hospitalization rate variables included both in-patient hospitalizations, readmissions, and outpatient observational visits; timely initiation of care refers to home health spells which started within two days of an inpatient discharge. Parameters are estimated from an ITS regression model of $Y = \alpha + \beta_1 T + \beta_2 X + \beta_3 XT + \varepsilon$ where T = linear time and X = post-star ratings period. The pre-star ratings period was from January 2013 to July 2015 and the post-star ratings period was from August 2015 to December 2019. The unit of analysis is half-years (6 months).
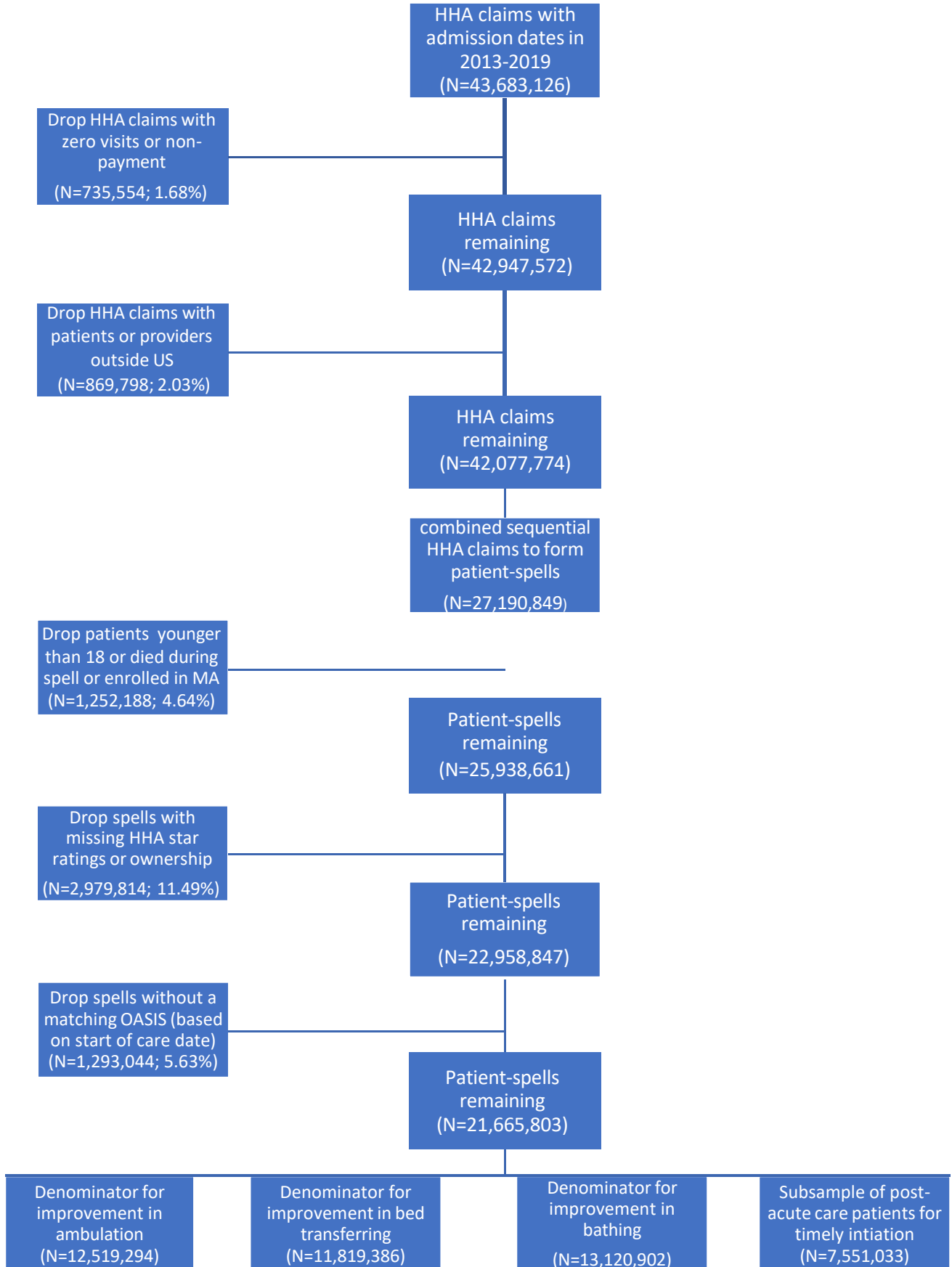
outcome	Parameter	interpretation	Dual		ADRD		Black		Hispanic		Other race		White	
			estimate	p-value	estimate	p-value	estimate	p-value	estimate	p-value	estimate	p-value	estimate	p-value
Hospitalization rate during spell	β_1	pre-trend	-0.10	0.45	-0.10	0.45	-0.05	0.76	-0.17	0.41	-0.11	0.59	-0.06	0.52
	β_2	post-level change	0.15	0.57	0.16	0.57	-0.43	0.25	0.56	0.25	-0.17	0.70	-0.23	0.26
	β_3	post-trend change	1.10	0.004	0.86	0.01	1.15	0.01	0.94	0.02	0.79	0.04	0.91	0.002
	$\beta_1 + \beta_3$	post-trend	1.00	<.001	0.75	<.001	1.11	<.001	0.77	<.001	0.68	<.001	0.85	<.001
Hospitalization rate within 30 days of discharge	β_1	pre-trend	0.14	0.25	0.17	0.17	0.14	0.49	0.01	0.95	0.04	0.65	0.10	0.24
	β_2	post-level change	0.10	0.67	0.21	0.38	-0.19	0.66	0.33	0.48	-0.16	0.43	-0.02	0.90
	β_3	post-trend change	0.03	0.79	-0.24	0.12	0.07	0.76	0.26	0.32	0.19	0.15	0.00	0.99
	$\beta_1 + \beta_3$	post-trend	0.17	0.005	-0.07	0.26	0.22	0.06	0.27	0.02	0.23	<.001	0.10	0.02
Timely initiation of care	β_1	pre-trend	-0.66	0.22	-0.84	0.05	-0.61	0.33	-1.19	0.13	-0.11	0.84	-0.42	0.17
	β_2	post-level change	-0.31	0.76	-0.57	0.39	-0.27	0.83	1.63	0.28	0.83	0.49	1.38	0.07
	β_3	post-trend change	-0.55	0.36	-0.23	0.52	-0.62	0.39	-0.07	0.92	-1.07	0.16	-1.08	0.03
	$\beta_1 + \beta_3$	post-trend	-1.22	<.001	-1.06	<.001	-1.23	<.001	-1.26	0.001	-1.18	<.001	-1.50	<.001
Improvement in ambulation	β_1	pre-trend	2.89	0.02	2.96	0.02	3.07	0.01	2.74	0.01	2.97	0.01	2.59	0.01
	β_2	post-level change	2.84	0.12	3.02	0.10	2.79	0.12	1.92	0.18	1.57	0.20	2.89	0.08
	β_3	post-trend change	-0.78	0.36	-0.43	0.59	-0.96	0.27	-0.97	0.21	-1.09	0.13	-0.68	0.34
	$\beta_1 + \beta_3$	post-trend	2.11	<.001	2.53	<.001	2.11	<.001	1.78	<.001	1.88	<.001	1.91	<.001
Improvement in bed transferring	β_1	pre-trend	3.17	0.04	3.69	0.03	3.33	0.04	4.26	0.01	3.27	0.03	3.12	0.03
	β_2	post-level change	3.71	0.17	4.02	0.13	3.39	0.20	4.39	0.08	2.29	0.29	3.54	0.13
	β_3	post-trend change	0.52	0.67	0.42	0.72	0.18	0.88	-1.54	0.19	0.12	0.91	0.21	0.83
	$\beta_1 + \beta_3$	post-trend	3.69	<.001	4.10	<.001	3.51	<.001	2.72	<.001	3.38	<.001	3.33	<.001

Improvement in bathing	β_1	pre-trend	1.91	0.02	2.24	0.004	2.07	0.01	1.72	0.10	2.17	0.01	1.62	0.01
	β_2	post-level change	1.10	0.31	2.00	0.05	1.62	0.12	-1.10	0.54	0.07	0.94	1.79	0.04
	β_3	post-trend change	0.24	0.66	0.82	0.09	-0.08	0.85	0.31	0.74	0.02	0.97	0.32	0.35
	$\beta_1 + \beta_3$	post-trend	2.15	<.001	3.06	<.001	1.99	<.001	2.03	<.001	2.19	<.001	1.94	<.001

Notes: HHA is home health agency. Dual is dually eligible for Medicare and Medicaid. ADRD is Alzheimer's disease and related dementias. Hospitalization rate variables included both in-patient hospitalizations, readmissions, and outpatient observational visits. Timely initiation of care refers to home health spells which started within two days of an inpatient discharge. Other race included Asian, American Indian, Alaska native, native Hawaiian, or Pacific Islander. Parameters are estimated from an ITS regression model of $Y = \alpha + \beta_1 T + \beta_2 X + \beta_3 XT + \varepsilon$ where T = linear time and X = post-star ratings period. The pre-star ratings period was from January 2013 to December 2015 and the post-star ratings period was from January 2016 to December 2019. The unit is year.

eFigure 1. Study Flowchart

```
                              ┌─────────────────────────┐
                              │   HHA claims with       │
                              │   admission dates in    │
                              │   2013-2019             │
                              │   (N=43,683,126)        │
                              └─────────────────────────┘
                                          │
┌──────────────────────────┐             │
│ Drop HHA claims with      │             │
│ zero visits or non-       │─────────────┤
│ payment                   │             │
│ (N=735,554; 1.68%)        │   ┌─────────────────────────┐
└──────────────────────────┘   │   HHA claims            │
                               │   remaining             │
                               │   (N=42,947,572)        │
                               └─────────────────────────┘
                                          │
┌──────────────────────────┐             │
│ Drop HHA claims with      │             │
│ patients or providers     │─────────────┤
│ outside US                │             │
│ (N=869,798; 2.03%)        │   ┌─────────────────────────┐
└──────────────────────────┘   │   HHA claims            │
                               │   remaining             │
                               │   (N=42,077,774)        │
                               └─────────────────────────┘
                                          │
                               ┌─────────────────────────┐
                               │ combined sequential     │
                               │ HHA claims to form      │
                               │ patient-spells          │
                               │ (N=27,190,849)          │
                               └─────────────────────────┘
                                          │
┌──────────────────────────┐             │
│ Drop patients younger     │             │
│ than 18 or died during    │─────────────┤
│ spell or enrolled in MA   │             │
│ (N=1,252,188; 4.64%)      │   ┌─────────────────────────┐
└──────────────────────────┘   │   Patient-spells        │
                               │   remaining             │
                               │   (N=25,938,661)        │
                               └─────────────────────────┘
                                          │
┌──────────────────────────┐             │
│ Drop spells with          │             │
│ missing HHA star          │─────────────┤
│ ratings or ownership      │             │
│ (N=2,979,814; 11.49%)     │   ┌─────────────────────────┐
└──────────────────────────┘   │   Patient-spells        │
                               │   remaining             │
                               │   (N=22,958,847)        │
                               └─────────────────────────┘
                                          │
┌──────────────────────────┐             │
│ Drop spells without a     │             │
│ matching OASIS (based     │─────────────┤
│ on start of care date)    │             │
│ (N=1,293,044; 5.63%)      │   ┌─────────────────────────┐
└──────────────────────────┘   │   Patient-spells        │
                               │   remaining             │
                               │   (N=21,665,803)        │
                               └─────────────────────────┘
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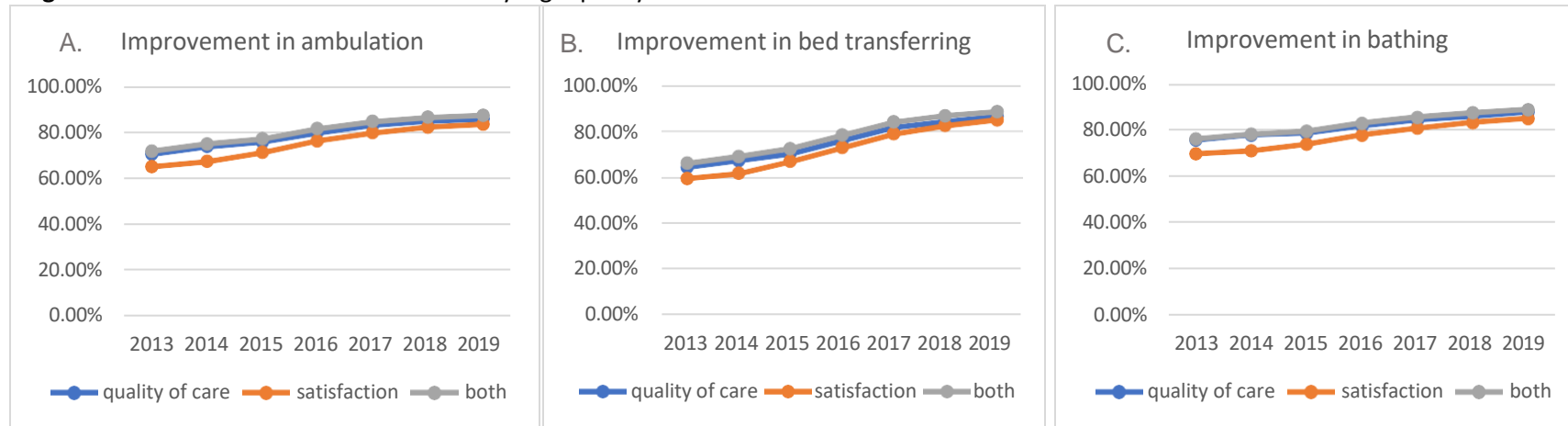| Denominator for improvement in ambulation (N=12,519,294) | Denominator for improvement in bed transferring (N=11,819,386) | Denominator for improvement in bathing (N=13,120,902) | Subsample of post-acute care patients for timely intiation (N=7,551,033) |

Notes: We started with all claims identified in the Medicare HHA FFS claims data (this included both HHA users who came from the community, hospital, and other post-acute care settings). We then excluded HHA claims with zero visits or non-payment and claims for patients who were under 18, had Medicare Advantage, resided outside of the U.S., or died during the spell. We also excluded HHA claims for patients with providers that were missing information about their quality of patient care star rating, patient satisfaction rating, or HHA ownership type. The denominator for each of the outcomes in the Interrupted Time Series analysis varied. The sample for the claims-based outcomes (e.g., hospitalization measures) was 21,655,803. The sample for the improvement in functional status measures varied based on the number of patient-spells which met the OASIS-based criteria for calculating an improvement in function measure (based on the OASIS start of care and discharge assessments). The sample for the timely initiation of care outcome was based on a subsample of HHA patients who were post-acute care HHA users (e.g., patient-spells that started within 14 days of inpatient discharge).

eFigure 2. Trends in claims-based outcomes by high quality HHA status
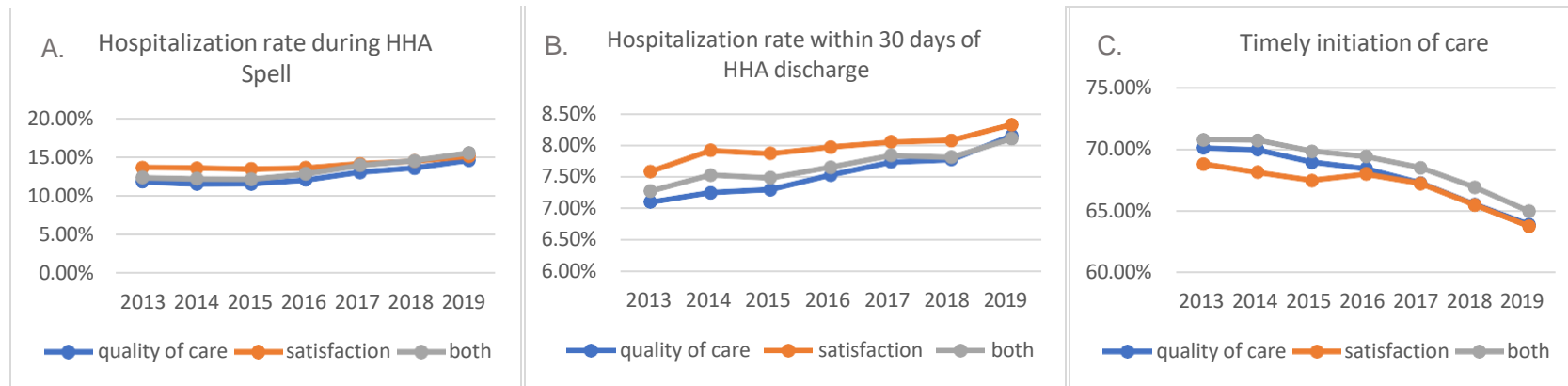
Notes: HHA is home health agency. Y-axis is the rate and x-axis is the year.

eFigure 3. Trends in OASIS-based outcomes by high quality HHA status

Notes: HHA is home health agency. Y-axis is the rate and x-axis is the year.