

Supplemental Online Content

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eAppendix 1. Overview of SNF Reimbursement in Medicare

eFigure 1. Flowchart of Analyzed SNF Episodes

eTable 1. SNF Episode Characteristics for Patients With and Without COVID-19 During PHE in March 2020 to September 2021

eTable 2. Most Frequent Diagnoses in SNF Care Episodes Before and During PHE Among Long-term Care Residents and Other Beneficiaries

eTable 3. Number of SNF Episodes With a Qualifying Hospitalization, Other Acute Care Use, and No Acute Care Among Long-term Care Residents and Other Medicare Beneficiaries

eTable 4. Characteristics of SNF Episodes With and Without COVID-19 Diagnosis During PHE in March 2020 to September 2021, by Long-term Care Status and Episode Type

eAppendix 2. Study Results of Restricting the Analysis to a Single SNF Episode per Beneficiary per Year

eFigure 2. Distribution of SNFs by the Proportion of Waiver Skilled Care Episodes Among All Episodes Provided in March 2020 to September 2021

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

Appendix 1 . Overview of SNF Reimbursement in Medicare

To qualify for the Medicare Part A reimbursement of SNF care, a new clinical need as well as a three-day hospitalization is normally required. SNF benefit period, which can include several SNF stays, provides a beneficiary with up to 100 days of Medicare covered SNF care. They do not have to be consecutive: breaks of up to 30 days outside SNF are allowed. If a break is between 30 and 60 days, another qualifying hospitalization is required to resume the benefit period. Once a benefit period is exhausted, the next one can only start after a 60-day break in spell-of-illness without inpatient or SNF care. Until a new benefit period is restarted with such a break, SNF stays are not covered by Medicare. Individuals who need ongoing care beyond their benefit period typically convert to “long-term care” status, which is not reimbursed by Medicare and therefore must be paid by the beneficiary directly, or through Medicaid or supplemental private coverage.

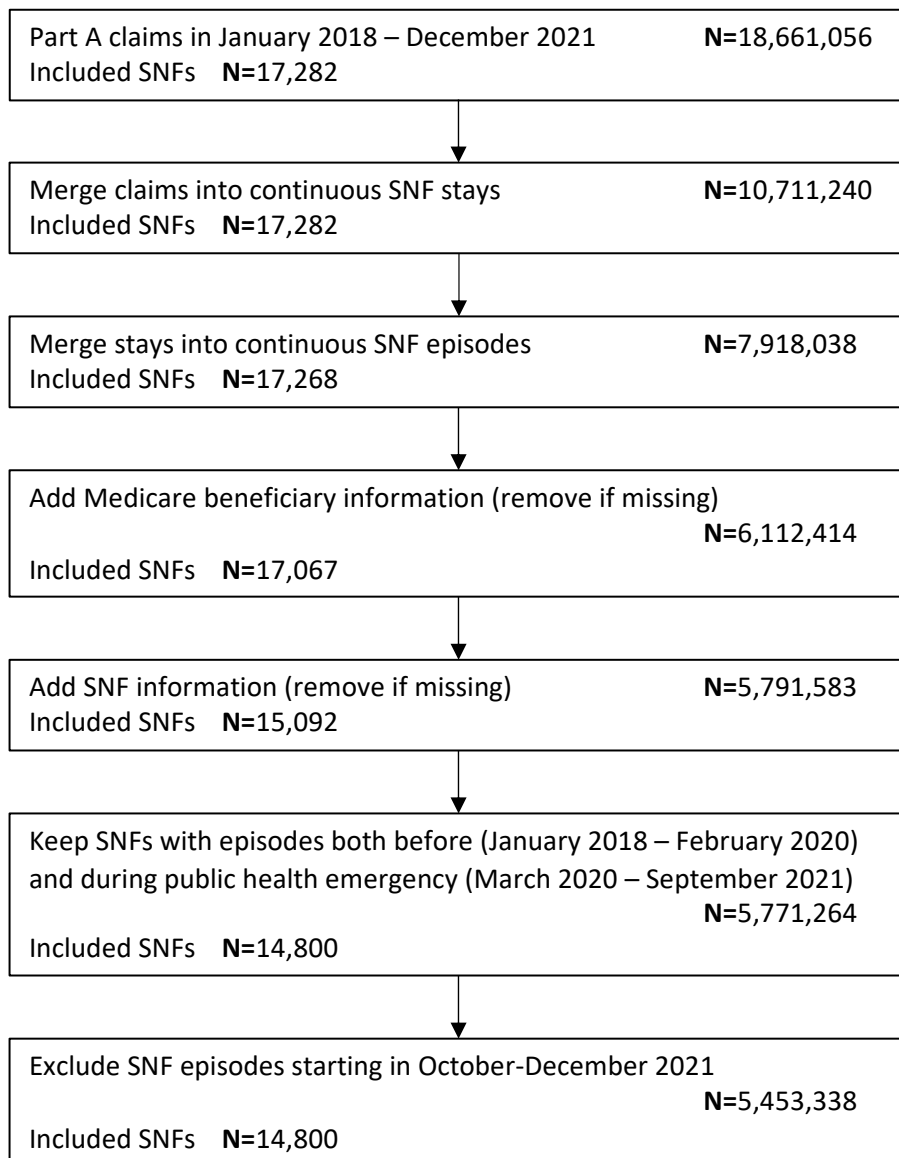
The qualifying hospitalization rule does not apply to Medicare Advantage beneficiaries and can be waived for some providers (e.g., under certain accountable care organization programs) or during a local disaster (e.g., hurricane). In addition, a shorter, two-day hospitalization is qualifying at Critical Access Hospitals.

The PHE waiver introduced two main changes for the reimbursement of SNF care: a qualifying hospitalization was no longer needed to initiate or resume a benefit period, and 60-day care gap outside the SNF was not necessary to initiate a subsequent benefit period (the latter applied only once per beneficiary).¹

References

1. American Health Care Association, National Center for Assisted Living. *3-Day Stay and Benefit-Period Waivers for Medicare Part A SNF PPS.*; 2021. <https://www.ahcancal.org/Survey-Regulatory-Legal/Emergency-Preparedness/Documents/COVID19/3-Day Waiver FAQ.pdf>. Accessed May 17, 2022

eFigure 1. Flowchart of Analyzed SNF Episodes



eTable 1. SNF Episode Characteristics for Patients With and Without COVID-19 During PHE in March 2020 to September 2021

	With COVID-19	Without COVID-19
SNF episodes		
No. total	386785 (19%)	1676147 (81%)
No. (%) of average monthly	20357	88218
Standard – with qualifying hospitalization	8632 (42%)	65855 (75%)
Waiver – with other acute care use	2363 (12%)	12477 (14%)
Waiver – without acute care	9363 (46%)	9886 (11%)
N of skilled care days per episode (median, IQR)	30 (15-59)	27 (15-48)
SNF episodes' beneficiaries^a		
Age (mean, SD)	79.5 (11.4)	78.9 (11.0)
Number of comorbidities (mean, SD)	8.1 (4.2)	7.5 (4.4)
No. (%) within average monthly episodes:		
Female	12452 (61%)	52038 (59%)
Race		
White	15645 (77%)	70886 (80%)
Black	2617 (13%)	9524 (11%)
Other	2095 (10%)	7808 (9%)
Dual eligible for Medicaid	13507 (66%)	34986 (40%)
With dementia	9618 (47%)	23467 (27%)
With long-term care in SNFs	11913 (59%)	15623 (18%)

SNF – skilled nursing facility, PHE – public health emergency, ED – emergency department, IQR – interquartile range.

a – In case of multiple episodes per beneficiary, their characteristics are counted multiple times.

We used Pearson's chi-square test for comparing categorical variables and t-test to compare means of continuous variables. All p-values <0.001.

eTable 2. Most Frequent Diagnoses in SNF Care Episodes Before and During PHE Among Long-term Care Residents and Other Beneficiaries

January 2018 - February 2020		March 2020 - September 2021	
Diagnosis	N (%)	Diagnosis	N (%)
Long-term care residents			
1	Pneumonia, unspecified organism 19547 (4.8%)	COVID-19 122819 (23.5%)	
2	Urinary tract infection, site not specified 18520 (4.6%)	Urinary tract infection, site not specified 18044 (3.4%)	
3	Sepsis, unspecified organism 12897 (3.2%)	Chronic obstructive pulmonary disease, unspecified 13905 (2.7%)	
4	Chronic obstructive pulmonary disease, unspecified 9482 (2.3%)	Pneumonia, unspecified organism 12449 (2.4%)	
5	Muscle weakness (generalized) 8228 (2.0%)	Unspecified dementia, unspecified severity, without behavioral disturbance 12152 (2.3%)	
6	Chronic obstructive pulmonary disease with (acute) exacerbation 7198 (1.8%)	Metabolic encephalopathy 10487 (2.0%)	
7	Essential (primary) hypertension 7015 (1.7%)	Sepsis, unspecified organism 10128 (1.9%)	
8	Heart failure, unspecified 5657 (1.4%)	Parkinson's disease 9693 (1.9%)	
9	Unspecified dementia, unspecified severity, without behavioral disturbance 5560 (1.4%)	Cerebral infarction, unspecified 7595 (1.5%)	
10	Metabolic encephalopathy 4951 (1.2%)	Alzheimer's disease, unspecified 7559 (1.4%)	
Other beneficiaries			
1	Aftercare following joint replacement surgery 99761 (3.3%)	COVID-19 81341 (5.3%)	
2	Urinary tract infection, site not specified 84164 (2.8%)	Urinary tract infection, site not specified 54708 (3.6%)	
3	Pneumonia, unspecified organism 83517 (2.8%)	Aftercare following joint replacement surgery 49621 (3.2%)	
4	Muscle weakness (generalized) 70007 (2.3%)	Metabolic encephalopathy 45087 (2.9%)	
5	Encounter for other orthopedic aftercare 55829 (1.9%)	Encounter for other orthopedic aftercare 41053 (2.7%)	
6	Sepsis, unspecified organism 48770 (1.6%)	Pneumonia, unspecified organism 33718 (2.2%)	
7	Encounter for other specified aftercare 47174 (1.6%)	Sepsis, unspecified organism 31377 (2.0%)	
8	Chronic obstructive pulmonary disease with (acute) exacerbation 42420 (1.4%)	Acute respiratory failure with hypoxia 27970 (1.8%)	
9	Cerebral infarction, unspecified 41947 (1.4%)	Encephalopathy, unspecified 26407 (1.7%)	
10	Heart failure, unspecified 32158 (1.1%)	Cerebral infarction, unspecified 26143 (1.7%)	

Highlighted are diagnoses that appear in the top 10 list only before or during the public health emergency in 2020-2021.

eTable 3. Number of SNF Episodes With a Qualifying Hospitalization, Other Acute Care Use, and No Acute Care Among Long-term Care Residents and Other Medicare Beneficiaries

	Standard – qualifying hospitalization		Waiver – with other acute care use		Waiver – without acute care	
	Non-LTC	LTC	Non-LTC	LTC	Non-LTC	LTC
2018						
January	133006	17929	4054	515	3395	652
February	112288	14395	3618	441	3118	532
March	118516	14635	3594	426	3223	566
April	108726	13966	3447	399	3179	565
May	109832	14032	3537	409	3273	528
June	106466	13509	3474	401	3380	576
July	105845	13835	3323	418	3100	566
August	110112	14449	3686	417	3604	576
September	99895	13367	3153	423	3102	544
October	112185	14689	3517	396	3184	570
November	107452	13960	3611	355	3073	559
December	106334	14312	3481	399	2895	525
2019						
January	118206	15930	4205	398	3070	623
February	105267	14222	3669	325	2815	612
March	112564	15197	3845	360	3109	621
April	108424	14692	3747	386	3082	593
May	108419	14461	3888	390	3101	613
June	99045	13568	3568	380	2917	559
July	104533	14523	3847	441	2969	687
August	103750	14180	3828	393	3216	607
September	96465	13348	3635	373	2961	583
October	106455	15010	4174	411	3117	731
November	99116	14087	3859	385	2837	548
December	103695	14899	4180	416	2761	580
2020						
January	112243	16148	2949	519	5038	721
February	98712	14469	2746	458	4717	701
March	78462	13791	6857	3273	4617	7570
April	43699	12275	7675	6040	4644	29715
May	49737	12921	8755	4588	4339	20706
June	59933	11201	9930	3653	4660	11613
July	62296	11601	10419	4297	4921	17663
August	60941	11335	10530	3591	4836	13314
September	63986	10698	10825	3460	5169	11780
October	66180	11303	11666	4018	5517	17064
November	58813	10679	10475	5050	5645	30546
December	66412	11906	11805	5661	7021	36996
2021						
January	65965	10288	11693	3452	7003	20414
February	61587	8089	11800	1961	5672	4615

March	69720	8978	13848	2254	6738	3774
April	67985	8963	13718	2247	6504	3954
May	66048	9138	13480	2099	6173	3252
June	71220	9758	13964	2116	6582	2861
July	70942	9947	13332	2384	6417	4561
August	65791	9682	12834	2822	6649	8201
September	63637	9346	12764	2628	6905	7104

Non-LTC – Medicare beneficiaries not in long-term care at a nursing home; LTC – long-term care residents. Red line in the Table separates the time periods before and during the public health emergency.

eTable 4. Characteristics of SNF Episodes With and Without COVID-19 Diagnosis During PHE in March 2020 to September 2021, by Long-term Care Status and Episode Type

	Without COVID-19 diagnosis			With COVID-19 diagnosis		
	Standard – with qualifying hospitalization	Waiver – with other acute care use	Waiver – without acute care	Standard – with qualifying hospitalization	Waiver – with other acute care use	Waiver – without acute care
Episodes among long-term care residents (N=523,196)						
No. (%) of episodes	159906 (31%)	40847 (8%)	96092 (18%)	41993 (8%)	24747 (5%)	159611 (31%)
No. of skilled care days (median, IQR)	35 (19-67)	40 (21-76)	30 (14-61)	42 (21-78)	51 (26-87)	24 (14-47)
Beneficiary age (mean, SD)	76.5 (12.2)	77.9 (12.0)	78.9 (11.9)	76.6 (11.6)	78.2 (11.6)	80.2 (11.9)
Beneficiary race/ethnicity No. (%)						
White	115154 (72%)	29776 (73%)	64398 (67%)	28354 (68%)	17924 (72%)	125598 (79%)
Black	27851 (17%)	6289 (15%)	15822 (16%)	8616 (21%)	3953 (16%)	18903 (12%)
Other	16901 (11%)	4782 (12%)	15872 (17%)	5023 (12%)	2870 (12%)	15110 (9%)
No. (%) for dual eligible patients	139246 (87%)	36130 (88%)	87509 (91%)	38195 (91%)	22489 (91%)	141418 (89%)
No. (%) for patients with dementia ^a	89124 (56%)	23817 (58%)	56854 (59%)	24850 (59%)	15150 (61%)	101196 (63%)
No. of comorbidities (mean, SD) ^a	10.0 (4.2)	9.7 (4.2)	8.5 (4.4)	9.9 (4.1)	9.5 (4.2)	8.4 (3.9)
90-day mortality (%)	29008 (18%)	4852 (12%)	10143 (11%)	7266 (17%)	3087 (12%)	22988 (14%)
Episodes among beneficiaries not in long-term care (N=1,539,736)						
No. (%) of episodes	1091344 (71%)	196225 (13%)	91733 (6%)	122010 (8%)	20145 (1%)	18279 (1%)
No. of skilled care days (median, IQR)	25 (15-44)	25 (15-44)	25 (14-48)	33 (17-62)	37 (18-68)	20 (12-43)
Beneficiary age (mean, SD)	79.0 (10.8)	81.2 (10.3)	77.5 (10.5)	79.2 (10.6)	81.2 (10.5)	81.3 (10.8)
Beneficiary race/ethnicity No. (%)						
White	903057 (83%)	168132 (86%)	66324 (72%)	94550 (77%)	16486 (82%)	14338 (78%)
Black	102125 (9%)	14378 (7%)	14486 (16%)	14468 (12%)	1786 (9%)	1995 (11%)
Other	86162 (8%)	13715 (7%)	10923 (12%)	12992 (11%)	1873 (9%)	1946 (11%)
No. (%) for dual eligible patients	308911 (28%)	55135 (28%)	37805 (41%)	40585 (33%)	7177 (36%)	6773 (37%)
No. (%) for patients with dementia ^a	218548 (20%)	45402 (23%)	12132 (13%)	29250 (24%)	6124 (30%)	6168 (34%)
No. of comorbidities (mean, SD) ^a	7.3 (4.2)	7.1 (4.1)	3.8 (4.4)	7.4 (4.2)	6.9 (4.3)	5.1 (4.5)
90-day mortality (%)	190376 (17%)	21082 (11%)	13266 (14%)	20240 (17%)	2997 (15%)	3076 (17%)

We used Pearson’s chi-square test for comparing categorical variables and t-test to compare means of continuous variables. P-values for all comparisons were <0.001.

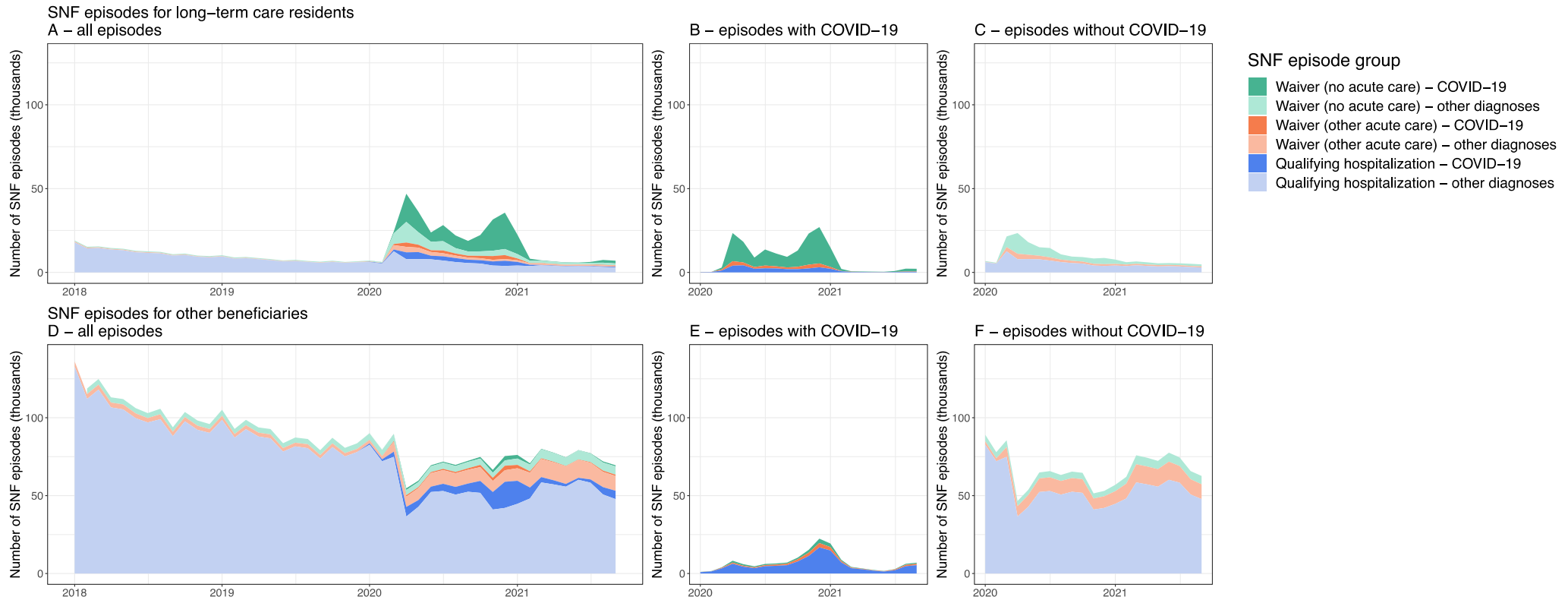
SNF – skilled nursing facility, PHE – public health emergency, IQR – interquartile range, SD – standard deviation.

eAppendix 2. Study Results of Restricting the Analysis to a Single SNF Episode per Beneficiary per Year

Number of SNF episodes with a qualifying hospitalization, other preceding acute care use, and no prior acute care

A, B, C – episodes for residents in long-term care; D, E, F – episodes for other beneficiaries.

A, D – all episodes. B, E – episodes with COVID-19. C, F – episodes without COVID-19.



SNF Episode Characteristics Before and During PHE

	January 2018 – February 2020	March 2020 – September 2021
SNF episodes		
Total N	2820399	1748059
Average monthly N	108477	92003
Standard – with qualifying hospitalization	101614 (94%)	64304 (70%)
Waiver – with other acute care use	2918 (3%)	12341 (13%)
Waiver – without acute care	3944 (4%)	15359 (17%)
N of skilled care days (median, IQR)	25 (14-45)	27 (15-49)
SNF episodes' beneficiaries		
Age (mean, SD)	79.0 (11.0)	79.2 (11.0)
N of CCW comorbidities (mean, SD)	7.0 (4.1)	7.2 (4.3)
Within average monthly episodes:		
N (%) female	64325 (59%)	54561 (59%)
N (%) race		
White	87738 (81%)	73685 (80%)
Black	11397 (11%)	10036 (11%)
Other	9342 (9%)	8282 (9%)
N (%) dual eligible for Medicaid	36640 (34%)	38430 (42%)
N (%) with dementia	23310 (21%)	25515 (28%)
N (%) with long-term care in SNFs	10163 (9%)	19313 (21%)

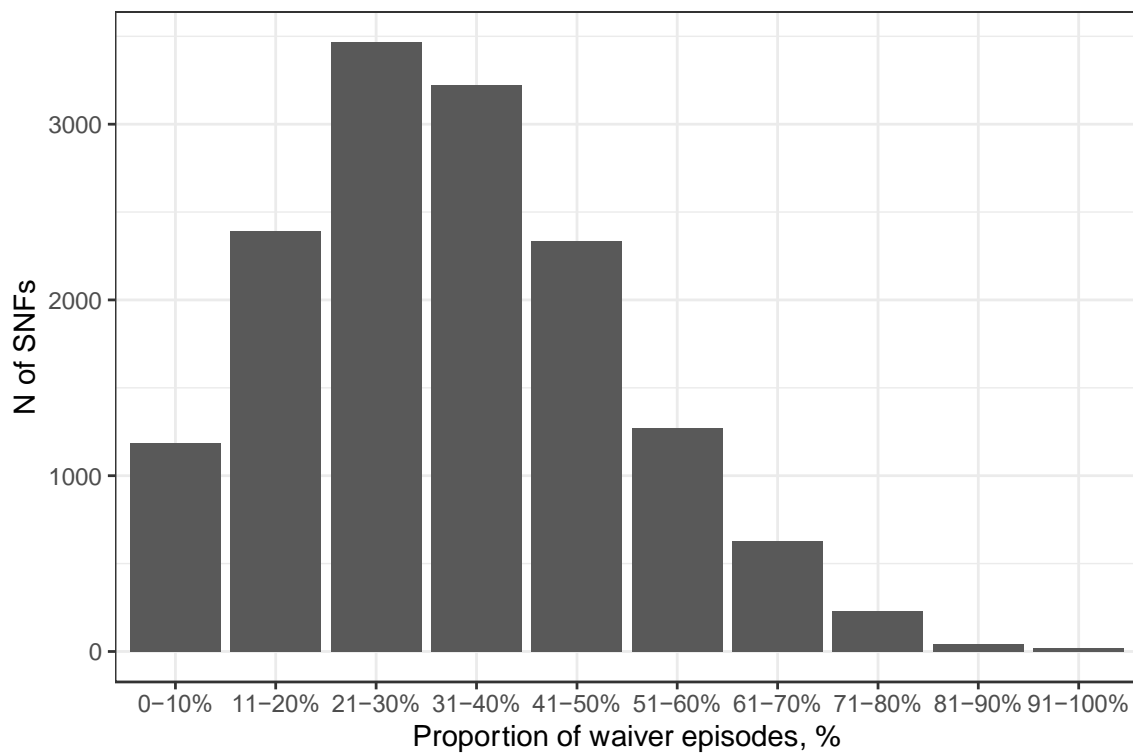
SNF – skilled nursing facility, PHE – public health emergency, ED – emergency department, IQR – interquartile range, CCW – Chronic Conditions Data Warehouse.

Characteristics of Standard and Waiver SNF Episodes During PHE in March 2020 to September 2021, by Long-term Care Status

	Standard – with qualifying hospitalization	Waiver – with other acute care use	Waiver – without acute care
Episodes among long-term care residents (N=366,942)			
N of episodes (%)	132165 (36%)	43879 (12%)	190898 (52%)
N of skilled care days (median, IQR)	37 (19-71)	46 (23-83)	27 (14-52)
Beneficiary age (mean, SD)	76.8 (12.1)	78.2 (11.9)	79.9 (12)
Beneficiary race/ethnicity (%)			
White	93954 (71%)	31848 (73%)	142985 (75%)
Black	24199 (18%)	7023 (16%)	26017 (14%)
Other	14012 (11%)	5008 (11%)	21896 (11%)
N (%) for dual eligible patients	115721 (88%)	39296 (90%)	171163 (90%)
N (%) with COVID-19 diagnosis	30608 (23%)	18137 (41%)	126625 (66%)
N (%) for patients with dementia	74259 (56%)	26228 (60%)	119523 (63%)
N of CCW comorbidities (mean, SD)	9.6 (4.3)	9.3 (4.3)	8.3 (4.1)
90-day mortality (%)	25090 (19%)	5676 (13%)	27242 (14%)
Episodes among beneficiaries not in long-term care (N=1,381,117)			
N of episodes (%)	1089610 (79%)	190592 (14%)	100915 (7%)
N of skilled care days (median, IQR)	26 (15-46)	25 (15-46)	24 (14-47)
Beneficiary age (mean, SD)	79.1 (10.8)	81.2 (10.4)	78 (10.7)
Beneficiary race/ethnicity (%)			
White	895351 (82%)	162450 (85%)	73424 (73%)
Black	103926 (10%)	14149 (7%)	15372 (15%)
Other	90333 (8%)	13993 (7%)	12119 (12%)
N (%) for dual eligible patients	308680 (28%)	54160 (28%)	41153 (41%)
N (%) with COVID-19 diagnosis	110722 (10%)	17950 (9%)	16556 (16%)
N (%) for patients with dementia	207169 (19%)	42249 (22%)	15352 (15%)
N of CCW comorbidities (mean, SD)	7 (4.1)	6.7 (4)	3.7 (4.3)
90-day mortality (%)	190429 (17%)	21568 (11%)	15136 (15%)

SNF – skilled nursing facility, PHE – public health emergency, IQR – interquartile range, SD – standard deviation, CCW – Chronic Conditions Data Warehouse.

eFigure 2. Distribution of SNFs by the Proportion of Waiver Skilled Care Episodes Among All Episodes Provided in March 2020 to September 2021



SNF – skilled nursing facility.