



Impacts of Potential Minimum Wage Increases on Assisted Living and Continuing Care Retirement Communities

September 2017

Joshua M. Wiener, PhD
Wendi Elkins, BA
Michael Lepore, PhD
RTI International
701 13th Street, NW
Suite 750
Washington, DC 20005



delivering the promise of science
for global good



A joint project of RTI International and the Center for Excellence in Assisted Living (CEAL). We would like to acknowledge the helpful comments received from CEAL board members, Kezia Scales of PHI, and an anonymous reviewer on an earlier draft.

CONTENTS

Section	Page
Executive Summary	1
Introduction	1
Research Questions	2
National Employment and Hourly Wage	3
State Employment and Hourly Wages.....	4
Full-time Employment and Payroll Tax.....	4
Results	5
National Estimates.....	5
Key Labor Categories in ALs and CCRCs Nationally	5
National Hourly Wages, 2015.....	5
Staff in Key Labor Categories Requiring Wage Increases	6
Hourly Wage Increases	6
Average Annual Wage and Payroll Tax Increases per Full-time Worker	7
Aggregate Annual Wage and Payroll Tax Increases	7
Selected State Estimates	8
Key Labor Categories in ALs and CCRCs across States	8
State Hourly Wages, 2015.....	9
Staff in Key Labor Categories Requiring Wage Increases across States	10
Hourly Wage Increases for Selected States.....	11
Average Annual Wage and Payroll Tax Increases across States	12
Aggregate Annual Wage and Payroll Tax Increases across States	13
Study Limitations.....	15
Discussion	16
What We Found.....	16
Possible Behavioral Responses	17
Conclusion	19
References	R-1
Appendices	
A: State Minimum Wages in 2015	A-1
B: U.S. Bureau of Labor Statistics Occupational Group Definitions	B-1

TABLES

Number		Page
1.	Workers by Key AL and CCRC Labor Categories, 2015	5
2.	National Distribution of Hourly Wages for Key AL and CCRC Labor Categories, 2015	6
3.	Percentage of Staff in Key AL and CCRC Labor Categories Requiring Wage Increases, 2015	6
4.	Mean Hourly Wage Increase Required per Worker in Key AL and CCRC Job Categories by Minimum Hourly Wage Level, 2015	7
5.	Average Annual Wage and Payroll Tax Increase Required per Full-time Worker in Key AL and CCRC Job Categories by Minimum Wage Level, 2015	7
6.	Total Wages and Payroll Tax Increases across All Workers in Key AL and CCRC Job Categories per Year by Minimum Wage Levels, 2015.....	8
7.	Estimates of Number of AL and CCRC Workers in Key Labor Categories, Selected States, 2015.....	8
8.	Median Hourly Wage Estimates in Key AL and CCRC Labor Categories, Selected States, 2015.....	9
9.	Percentage of Staff in Key AL and CCRC Labor Categories Requiring Wage Increases, Selected States, 2015	10
10.	Mean Hourly Wage Increase Required per Worker in Key AL and CCRC Job Categories by Minimum Hourly Wage Level and State, 2015	11
11.	Average Annual Wage and Payroll Tax Increase Required per Full-time Worker in Key AL and CCRC Job Categories, Minimum Wage Level and State, 2015.....	13
12.	Total Wages and Payroll Tax Increases across All Workers in Key AL and CCRC Job Categories per Year, Minimum Wage Level and State, 2015	14
13.	Total Wages and Payroll Tax Increases across All Workers per Year by Minimum Wage Level and AL and CCRC Occupational Categories, Selected States, 2015.....	14

Executive Summary

Introduction and Background

Providers of long-term services and supports (LTSS), including assisted living and continuing care retirement communities (ALs and CCRCs, respectively), employ large numbers of low-wage workers,¹ such as personal care aides, housekeepers, and food service workers. This can make it challenging for providers to recruit and retain workers, which can contribute to worker turnover and may affect care quality.

Minimum wage increases have been proposed federally and enacted by many states. As of January 2017, 29 states and Washington, DC, had enacted hourly minimum wage requirements higher than the federal minimum of \$7.25 per hour. Minimum wage increases to \$10, \$12, and \$15 per hour are commonly proposed.

This report examines the financial effects of potential minimum wage increases on two prominent types of LTSS providers: ALs and CCRCs. The analysis calculates the impact of raising the hourly minimum wage to three levels (\$10, \$12, and \$15). Specifically, the number, proportion, and type of workers in these settings who would be affected by minimum wage increases to these three different levels and the related labor costs are estimated. Estimates at the national level and for selected states are provided.

Data and Methods

The May 2015 U.S. Bureau of Labor Statistics Occupational Employment Statistics is the primary data source for this study. Four key occupational categories in ALs and CCRCs comprise most of the workers in this industry who would most likely be affected by increases in the minimum wage: Healthcare Support-related Occupations, Food Preparation and Serving-related Occupations, Personal Care and Service-related Occupations, and Building and Grounds Cleaning and Maintenance-related Occupations. These four labor categories account for approximately 74% of all workers in ALs and CCRCs.

This study identifies the total number of employees in the AL and CCRC industry, the total number of employees within each key occupational group, the number of AL and CCRC employees by state, the number of workers who would be impacted by three possible increases of the federal minimum wage (i.e., to \$10, \$12, and \$15), the average per worker wage increase, and the total annual wage and payroll tax increase that would be required across these workers. Additionally, by examining six states with large numbers of AL and CCRC employees and widely varying state minimum wages—California, Florida, Georgia,

¹ Low-wage workers include people who earn the minimum wage, but also those earning more than that level. It includes people whose wages are in the bottom 20%-25% of the wage distribution.

New York, Michigan, and Texas—this study identifies the differences across states in the impact of possible federal minimum wage increases.

Results

Raising the minimum wage to \$10, \$12, or \$15 an hour would have a large impact on AL and CCRC workers and employers. Nationally, most employees (86% or more) in each key job category would be affected by a \$15 minimum wage, and many fewer employees would be affected by a \$12 minimum wage (58% or more) or a \$10 minimum wage (27% or more). Nationally, increasing the federal minimum wage would require average hourly wage increases of approximately \$0.70 if set to \$10, approximately \$1.60 if set to \$12, and approximately \$3.40 if set to \$15, not including the associated payroll tax. Overall, the wage increase required at each minimum wage level would be similar across job categories.

In addition to increasing wages for workers, raising the minimum wage would also increase payroll taxes for employers and employees. Including Social Security (6.2% of wages) and Medicare taxes (1.45% of wages) adds to employer costs. Nationally, increasing the federal minimum wage would require combined annual wage and payroll tax increases per AL and CCRC worker of roughly \$1,500 if set to \$10, roughly \$3,500 if set to \$12, and roughly \$7,500 if set to \$15. Similarly, the higher the level at which the minimum wage is set, the higher the total annual wage and payroll tax increase required across all workers will be. Nationally, increasing the federal minimum wage would require combined annual wage and payroll tax increases across all AL and CCRC workers of approximately \$350 million if set to \$10, approximately \$1.5 billion if set to \$12, and approximately \$4 billion if set to \$15. These increases represent approximately 1.2% of total AL and CCRC charges (i.e., the total amount that ALs and CCRCs charge residents for housing and services) for an increase to \$10 per hour, 4.9% for an increase to \$12 per hour, and 13.3% for \$15 per hour.

The annual wage and payroll tax increase required per worker differs by state and depends on current salaries: states with higher current salaries (e.g., New York) would require smaller increases than states with lower current salaries (e.g., Texas). The wage increase required at each minimum wage level also varies across job categories within states but to a lesser degree than across the states themselves. For example, in Michigan, the median hourly wage increases that would be required across the four job categories if the federal minimum wage was increased would have a relatively narrow range, whereas states in which the minimum wage is set at the federal minimum, such as Texas, have a much wider range across the four job categories. The total annual wage and payroll tax increase required across workers also differs by state depending on current salaries and workforce size: states with smaller workforces would generally require smaller increases than states with larger workforces.

Discussion

Although this report calculates the cost of minimum wage increases, it does not quantify potential benefits or drawbacks. However, the obvious benefit to workers would be increased income, resulting in less poverty and dependence on public welfare programs. However, a risk to workers is that employers would reduce their hours or not hire as many workers. Benefits to employers might include decreased worker turnover, improved worker recruitment and retention, and enhanced quality of care. Drawbacks to employers might include increased labor costs and reduced profits. Minimum wage increases might also spur ALs and CCRCs to increase prices for consumers, which could decrease access to these long-term care providers among individuals with lower incomes and reduce the provision of fringe benefits, such as paid time off for workers.

INTRODUCTION

Over the last several decades, the income of most Americans has stagnated, especially for less-educated workers, and inequality has increased. On an inflation-adjusted basis, the median income of all workers was \$38,972 in 1970 and \$41,615 in 2015. The bottom 20% of the income distribution received 3.1% of all income in 2015, whereas the top 20% of the income distribution received 51.1% (Proctor, Semega, & Kollar, 2016). The inflation-adjusted wages for the bottom 10% of the income distribution fell by 5% between 1979 and 2013 (Mishel, Gould, & Bivens, 2015).

One strategy to increase the income of low-wage workers² is to increase the minimum wage at the state and federal levels. The federal minimum wage has been set at \$7.25 per hour since 2009 without any increase for inflation (U.S. Department of Labor, 2017). In inflation-adjusted terms, the federal minimum wage declined 24% between 1968 and 2013 (Mishel et al., 2015). As of January 2017, 29 states and the District of Columbia had minimum wage floors above the federal level (U.S. Department of Labor, 2017).

Laws to increase the minimum wage as an anti-poverty strategy are being implemented in countries outside of the United States. For example, in 2015, the United Kingdom implemented a substantial increase to the National Minimum Wage with the creation of a National Living Wage (Low Pay Commission, 2013). The new rate—£7.20 (~\$10.35) per hour for adults over age 25—went into effect in April 2016 and is set to increase to over £9.00 (~\$12.94) per hour by 2020 (Ingham, Bamford, & Johnes, 2015).

Providers of long-term services and supports (LTSS), including nursing homes, home care agencies, and assisted living (ALs), and continuing care retirement communities (CCRCs), employ large numbers of workers who are paid the minimum wage or a few dollars more. These workers include personal care aides, certified nurse assistants, housekeepers, food service workers, and building maintenance staff. For example, in 2016, the national median hourly wage for personal care aides working in home health care services was \$10.03, and that for nursing assistants working in nursing homes was \$12.79 (U.S. Bureau of Labor Statistics [BLS], 2017a, b). Similar to the experience of fast food workers and retail employees, the median hourly wage of home care workers declined by 5% between 2003 and 2013 adjusted for inflation (PHI, 2015). Because their incomes are so low, many LTSS workers rely on public assistance to supplement their income. Indeed, approximately half of home care workers (51%) and 38% of nursing assistants rely on some form of public assistance, such as the Supplemental Nutrition Assistance Program, Medicaid, or Temporary Assistance for Needy Families (PHI, 2017).

² Low-wage workers include people who earn the minimum wage, but also those earning more than that level. It includes people whose wages are in the bottom 20%-25% of the wage distribution.

On the one hand, the low wages of LTSS workers have long been identified as problematic, making it challenging for LTSS providers to recruit and retain workers and contributing to high worker turnover, which can negatively affect the quality of care (Castle & Engberg, 2005; Stone & Wiener, 2001; Zuckerbraun et al., 2015). On the other hand, there are potential risks of increasing the minimum wage. For example, even if the minimum wage was increased, payers for LTSS, particularly Medicaid programs and managed care organizations, might not increase the reimbursement rates for LTSS, leaving LTSS employers with increased labor costs and no compensating increase in income (Bowers, 2016). Additionally, faced with higher costs, Medicaid might authorize fewer home care hours for consumers to avoid increasing aggregate program expenditures. A related risk is that a minimum wage increase might spur LTSS providers to increase prices, which could reduce access to LTSS (Liepelt, 2016). Additionally, to offset the increase in labor costs caused by a minimum wage increase, LTSS providers might reduce workers' fringe benefits.

This report examines the financial effects of potential minimum wage increases on two important types of LTSS providers: ALs and CCRCs. Both types of providers are community-based residential care settings that provide housing and services to individuals who cannot live independently; CCRCs typically include ALs, independent living arrangements, and nursing homes. This report quantifies the impact of proposed federal minimum wage increases on the labor costs of ALs and CCRCs. Although these wage increases are also likely to impact both workers in terms of improved quality of life, reduced poverty, turnover, recruitment, and retention and employers, who may reduce fringe benefits or increase prices, quantifying these important effects are beyond the scope of this study.

Research Questions

This study seeks to estimate the impact on ALs and CCRCs in 2015 of raising the hourly minimum wage to three levels—\$10, \$12, and \$15 per hour—that have been proposed or implemented at the federal or state level (**Appendix A** presents the state-established minimum wages in 2015). Specifically, the analyses sought to answer the following research questions:

- How many (i.e., what number and proportion of) AL and CCRC workers would be affected by a minimum wage increase?
- What would be the average wage increase per AL and CCRC worker, both nationally and in select states?
- What would be the average total increase in the direct labor cost (wages plus taxes) per AL and CCRC worker, both nationally and in select states?
- What would be the average total increase in the direct labor cost (wages plus taxes) across AL and CCRC workers, both nationally and in select states?

Data Sources and Methods

The BLS Occupational Employment Statistics (OES) program was the primary data source for this study. To determine the numbers of AL and CCRC workers nationally and their hourly wage amounts, May 2015 data from the BLS OES program were used. Data specific to “Continuing Care Retirement Communities and Assisted Living Facilities” (NAICS 623300) at the national level, including the total number of workers, mean hourly wages, and hourly wages at the 10th, 25th, 50th, 75th, and 90th percentiles, were used. Similarly, May 2015 data on AL and CCRC workers at the state level for six states, including the total number of workers, mean hourly wages, and hourly wages at the 10th, 25th, 75th, and 90th percentile, were used.

After examining the wage distributions of job categories in ALs and CCRCs, four key occupational groups were identified as the most likely to be affected by changes in the minimum wage: Healthcare Support-related Occupations, Food Preparation and Serving-related Occupations, Personal Care and Service-related Occupations, and Building and Grounds Cleaning and Maintenance-related Occupations. **Appendix B** lists the BLS definitions for the occupations that comprise each group. Importantly, while direct care workers are among the workers likely to be affected, food preparation and building maintenance workers will also likely be affected.

National Employment and Hourly Wage

At the national level, to calculate the effects of changes in the minimum wage, the number of workers at each wage level first had to be calculated. The total numbers of workers in each job category in ALs and CCRCs were acquired from BLS. Although BLS provided the wages at the 10th, 25th, 50th, 75th, and 90th percentiles, information on the wage levels for the in-between percentiles was not available. The number of employees at each wage percentile (i.e., the number of employees who fall at or below that percentage) was determined by converting the percentile of interest to a percentage and then multiplying the resulting value by the full sample. To estimate the hourly wages at the missing percentiles (e.g., the 11th percentile), the slope of the line between the two observed data points (e.g., the slope between the 10th and 25th percentiles) was calculated, where x is the number of employees at each percentile, and y is the observed hourly wage at each percentile. For example, the slope of the line for Personal Care and Service-related Occupations between the 10th and 25th percentiles can be found using the following equation:

$$\text{Slope: } \frac{X_2 - X_1}{Y_2 - Y_1} = \frac{40415 - 16166}{\$9.34 - \$8.48}$$

The minimum hourly wage for all occupational groups was set at \$7.25, the federal minimum wage in 2015, and the maximum parameter was determined by setting the maximum pay rate for each occupational group to an amount that minimized the difference between the estimated and observed average wage amounts. For example, the maximum

pay rate (i.e., 100th percentile) was set to \$15.45 for the national estimates of Healthcare Support-related Occupations to minimize the difference between the observed average (\$11.66) and the estimated average (\$11.61). Linear equations for each set of percentiles were created. More complicated equations were tried but produced results that were less consistent with the BLS data.

State Employment and Hourly Wages

Similar to the national level, BLS produces state-specific wage and employment data for the relevant labor categories (e.g., Personal Care and Service-related Occupations) for workers employed by ALs and CCRCs but only at the 10th, 25th, 50th, 75th, and 90th percentiles. Wage levels are not provided for the in-between percentiles.

To determine the values for the in-between percentiles, the same method that was used at the national level was applied to the state data. Linear estimation was used to estimate hourly wages for each set of percentiles in six states: California, Florida, Georgia, Michigan, New York, and Texas,. For example, the slope of the line for Food Preparation and Serving-related Occupations in New York between the 25th and 50th percentiles can be found using the following equation:

$$\text{Slope: } \frac{X_2 - X_1}{Y_2 - Y_1} = \frac{3215 - 1608}{\$10.49 - \$9.22}$$

The state-established state-level minimum wages of these states vary and were accounted for in the analyses. The selected states were chosen because they represent a large proportion of residential care beds according to data from the 2014 National Study of Long-Term Care Providers; together, these six states account for 38% of residential care beds and 32% of residential care personal care aides.

Full-time Employment and Payroll Tax

For all analyses, full-time employment was assumed and defined, as by BLS, as 2,080 hours annually. This use of full-time equivalents is a study limitation because a substantial proportion of long-term care employees work part-time or full-time for only part of the year, which reduces their overall earnings (PHI, 2015).

The total payroll tax amount was calculated by multiplying the 2015 tax rate for social security and Medicare—7.65%—with the total annual hourly wage for each corresponding labor category and minimum wage level and added to wages. Other taxes were not estimated.

RESULTS

This study provides two sets of estimates. The first set of findings, summarized in Tables 1-6, addresses the effects of potential federal minimum wage increases nationally. The second set of findings, summarized in Tables 7–12, addresses differences in the effects of potential federal minimum wage increases across states.

National Estimates

Key Labor Categories in ALs and CCRCs Nationally

According to the BLS, there were 862,700 employees in ALs and CCRCs in 2015. Most of these workers were included in one of the following four occupational categories: Personal Care and Service-related Occupations, Healthcare Support-related Occupations, Building and Grounds Cleaning and Maintenance-related Occupations, and Food Preparation and Serving-related Occupations (**Table 1**). These four labor categories account for approximately 74% of all workers in ALs and CCRCs.

Table 1. Workers by Key AL and CCRC Labor Categories, 2015

Occupational Category	Number	Percentage
Healthcare Support-related Occupations	264,330	30.6
Personal Care and Service-related Occupations	161,660	18.7
Food Preparation and Serving-related Occupations	152,580	17.7
Building and Ground Cleaning and Maintenance-related Occupations	56,980	6.6
Healthcare Practitioners and Technical-related Occupations	91,220	10.6
Management-related Occupations	26,570	3.1
Office and Administrative Support-related Occupations	46,310	5.4
Other	63,050	7.3
Total	862,700	100.0

Source: BLS (2015).

National Hourly Wages, 2015

The national median hourly wage for the key labor categories specific to CCRCs and ALs in 2015 ranged from \$10.12 (Food Preparation and Serving-related Occupations) to \$11.28 (Healthcare Support-related Occupations). **Table 2** reports the national distribution of hourly wages for key labor categories at the 10th, 25th, 50th, 75th, and 90th percentiles (i.e., the levels at which all employees get paid at or below a certain percentage). Each occupational group would be affected slightly differently by increasing the minimum wage to \$10, \$12, or \$15 per hour.

Table 2. National Distribution of Hourly Wages for Key AL and CCRC Labor Categories, 2015

Occupational Category	Hourly 10th Percentile	Hourly 25th Percentile	Hourly 50th Percentile (Median)	Hourly 75th Percentile	Hourly 90th Percentile
Personal Care and Service-related Occupations	\$8.48	\$9.34	\$10.64	\$12.26	\$14.92
Food Preparation and Serving-related Occupations	\$8.28	\$8.97	\$10.12	\$12.26	\$15.73
Building and Ground Cleaning and Maintenance-related Occupations	\$8.42	\$9.25	\$10.66	\$12.62	\$15.49
Healthcare Support-related Occupations	\$8.77	\$9.87	\$11.28	\$13.40	\$15.29

Source: BLS (2015).

Staff in Key Labor Categories Requiring Wage Increases

Based on 2015 data from BLS, a substantial proportion of staff would require wage increases in each of the key job categories if the minimum hourly wage level were increased to \$10, \$12, or \$15 (**Table 3**). For example, increasing the minimum wage to \$12 would require wage increases for 58%–71% of workers, depending on job category, with the greatest percentage of workers (71%) requiring increases being those in Food Preparation and Serving-related Occupations.

Table 3. Percentage of Staff in Key AL and CCRC Labor Categories Requiring Wage Increases, 2015

Job Category	\$10	\$12	\$15
Personal Care and Service-related Occupations (n=161,660)	37%	70%	90%
Food Preparation and Serving-related Occupations (n=152,580)	47%	71%	86%
Building and Ground Cleaning and Maintenance-related Occupations (n=56,980)	38%	67%	86%
Healthcare Support-related Occupations (n=264,300)	27%	58%	87%

RTI estimates based on BLS (2015).

Hourly Wage Increases

The estimated national mean hourly wage increases required per worker in key job categories if the minimum hourly wage level were \$10, \$12, or \$15 are shown in **Table 4**. Increasing the federal minimum wage would require hourly wage increases of approximately \$0.70 if set to \$10 per hour, approximately \$1.60 per hour if set to \$12, and approximately \$3.40 per hour if set to \$15. Overall, the wage increase required at each minimum wage level was similar across job categories but was lower for Healthcare Support-related Occupations than for the other job categories if the minimum hourly wage level were set to \$10 or \$15.

Table 4. Mean Hourly Wage Increase Required per Worker in Key AL and CCRC Job Categories by Minimum Hourly Wage Level, 2015

Job Category	\$10	\$12	\$15
Personal Care and Service-related Occupations	\$0.70	\$1.46	\$3.35
Food Preparation and Serving-related Occupations	\$0.73	\$1.76	\$3.79
Building and Ground Cleaning and Maintenance-related Occupations	\$0.72	\$1.53	\$3.43
Healthcare Support-related Occupations	\$0.65	\$1.64	\$2.80

RTI estimates based on BLS (2015).

Average Annual Wage and Payroll Tax Increases per Full-time Worker

The national average annual wage and payroll tax increases required per full-time worker in key job categories by minimum wage level (i.e., \$10, \$12, and \$15) are shown in **Table 5**. Nationally, increasing the federal minimum wage would require annual and wage payroll tax increases per worker of roughly \$1,500 if set to \$10, roughly \$3,500 if set to \$12, and roughly \$7,500 if set to \$15.

Table 5. Average Annual Wage and Payroll Tax Increase Required per Full-time Worker in Key AL and CCRC Job Categories by Minimum Wage Level, 2015

Job Category	\$10	\$12	\$15
Personal Care and Service-related Occupations	\$1,567	\$3,269	\$7,501
Food Preparation and Serving-related Occupations	\$1,635	\$3,941	\$8,486
Building and Ground Cleaning and Maintenance-related Occupations	\$1,612	\$3,426	\$7,680
Healthcare Support-related Occupations	\$1,455	\$3,672	\$6,270

RTI estimates based on BLS (2015).

Aggregate Annual Wage and Payroll Tax Increases

The total annual wage and payroll tax increases required for all AL and CCRC workers in key job categories by minimum wage levels (i.e., \$10, \$12, and \$15) in the United States are shown in **Table 6**. Nationally, increasing the federal minimum wage would require annual wage payroll tax increases of approximately \$350 million if set to \$10, approximately \$1.5 billion if set to \$12, and approximately \$4 billion if set to \$15. Additionally, across labor categories, the total annual wage and payroll tax increase required would also differ. For example, nationally, increasing the federal minimum wage to \$12 would require an annual wage and payroll tax increase of roughly \$130 million for building and grounds staff and nearly four times more—approximately \$563 million—for health care support workers.

Table 6. Total Wages and Payroll Tax Increases across All Workers in Key AL and CCRC Job Categories per Year by Minimum Wage Level, 2015

Job Category	\$10	\$12	\$15
Personal Care and Service-related Occupations	\$93,700,000	\$369,900,000	\$1,091,300,000
Food Preparation and Serving-related Occupations	\$117,200,000	\$426,900,000	\$1,113,500,000
Building and Ground Cleaning and Maintenance-related Occupations	\$34,900,000	\$130,700,000	\$376,300,000
Healthcare Support-related Occupations	\$103,800,000	\$562,900,000	\$1,441,600,000
Total	\$349,600,000	\$1,490,400,000	\$4,022,700,000

RTI estimates based on BLS (2015).

Selected State Estimates

Key Labor Categories in ALs and CCRCs Across States

Table 7 presents the number of staff in each key labor category specific to CCRCs and ALs for selected states. Across all labor categories, California has the largest number of workers. The number of workers in each labor category varies across states.

Table 7. Estimates of the Number of AL and CCRC Workers in Key Labor Categories, Selected States, 2015

Occupational Category	State	Number of AL and CCRC Workers
Healthcare Support-related Occupations	California	18,610
	Florida	16,590
	Georgia	3,620
	Michigan	13,140
	New York	6,050
	Texas	14,750
Food Preparation and Serving-related Occupations	California	14,940
	Florida	12,340
	Georgia	2,450
	Michigan	4,480
	New York	6,430
	Texas	7,880
Personal Care and Service-related Occupations	California	29,050
	Florida	8,400
	Georgia	6,250
	Michigan	5,080
	New York	5,460
	Texas	8,820

Occupational Category	State	Number of AL and CCRC Workers
Building and Ground Cleaning and Maintenance-related Occupations	California	5,610
	Florida	4,850
	Georgia	740
	Michigan	1,590
	New York	3,010
	Texas	3,150

Source: BLS (2015).

State Hourly Wages, 2015

The median hourly wages for each labor category in the selected states are presented in **Table 8**. Notably, the median hourly wage for each key labor category varied significantly between states. For example, in 2015, the median hourly wage for Personal Care Support-related Occupations was \$11.53 in New York and \$9.24 in Texas.

Table 8. Median Hourly Wage Estimates in Key AL and CCRC Labor Categories, Selected States, 2015

Occupational Category	State	Hourly Median Wage
Personal Care and Service-related Occupations	California	\$10.68
	Florida	\$10.49
	Georgia	\$9.30
	Michigan	\$9.94
	New York	\$11.53
	Texas	\$9.24
Food Preparation and Serving-related Occupations	California	\$11.28
	Florida	\$9.52
	Georgia	\$10.16
	Michigan	\$10.53
	New York	\$10.49
	Texas	\$9.62
Building and Ground Cleaning and Maintenance-related Occupations	California	\$11.55
	Florida	\$9.71
	Georgia	\$9.71
	Michigan	\$10.93
	New York	\$11.10
	Texas	\$9.43

Occupational Category	State	Hourly Median Wage
Healthcare Support-related Occupations	California	\$11.90
	Florida	\$10.91
	Georgia	\$10.50
	Michigan	\$11.51
	New York	\$11.42
	Texas	\$10.79

Source: BLS (2015).

Staff in Key Labor Categories Requiring Wage Increases Across States

Across the selected states, a substantial proportion of staff would require wage increases in each of the key job categories if the minimum hourly wage level were increased to \$10, \$12, or \$15 (**Table 9**). Minimum wage increases would have different impacts across states and occupational groups. For example, in Texas, a minimum wage increase to \$12 would require wage increases for over three-quarters of workers in Building and Ground Cleaning and Maintenance-related Occupations, Food Preparation and Serving-related Occupations, and Personal Care and Service-related Occupations and 71% of workers in Healthcare Support-related Occupations. In contrast, in New York, a minimum wage increase to \$12 would require wage increases for 63% of workers in Food Preparation and Serving-related Occupations, 55% of workers in Personal Care and Service-related Occupations, 56% of workers in Healthcare Support-related Occupations, and 58% of workers in Building and Ground Cleaning and Maintenance-related Occupations.

Table 9. Percentage of Staff in Key AL and CCRC Labor Categories Requiring Wage Increases, Selected States, 2015

Occupational Category	State	\$10 (%)	\$12 (%)	\$15 (%)
Healthcare Support-related Occupations	California	17	50	76
	Florida	32	65	100
	Georgia	37	80	100
	Michigan	30	55	85
	New York	21	56	83
	Texas	33	71	100
Food Preparation and Serving-related Occupations	California	30	56	78
	Florida	55	76	89
	Georgia	47	86	75
	Michigan	40	63	84
	New York	40	62	80
	Texas	54	76	89

Occupational Category	State	\$10 (%)	\$12 (%)	\$15 (%)
Personal Care and Service-related Occupations	California	35	75	100
	Florida	40	75	87
	Georgia	60	83	100
	Michigan	50	77	100
	New York	27	55	83
	Texas	60	79	100
Building and Ground Cleaning and Maintenance-related Occupations	California	23	53	77
	Florida	55	78	100
	Georgia	54	78	100
	Michigan	34	62	88
	New York	32	58	80
	Texas	58	80	100

RTI estimates based on BLS (2015).

Hourly Wage Increases for Selected States

The state-specific effects of changes in the federal minimum depend partly on the state-established minimum wage (i.e., states with minimum wages higher than the federal minimum will be less affected than other states by a federal minimum wage increase) and partly on the wage structure in the state (i.e., states with generally higher wages will be less affected than states with generally lower wages by a federal minimum wage increase), which are likely related. **Appendix A** presents the state-established minimum wages in 2015. The estimated mean hourly wage increases required per worker in key job categories by minimum hourly wage level (i.e., \$10, \$12, or \$15) for the selected states are shown in **Table 10**. The lower the wages in a state before a federal minimum wage increase, the higher the average wage increase required per worker in that state will be. For example, increasing the federal minimum wage to \$10 would require an hourly wage increase for Healthcare Support-related Occupations of approximately \$0.31 in California, where wages are higher, and approximately \$0.72—over twice as much—in Texas, where wages are lower.

Table 10. Mean Hourly Wage Increase Required per Worker in Key AL and CCRC Job Categories by Minimum Hourly Wage Level and State, 2015

Occupational Category	State	\$10	\$12	\$15
Healthcare Support-related Occupations	California	\$0.31	\$1.05	\$2.65
	Florida	\$0.43	\$1.28	\$2.60
	Georgia	\$0.66	\$1.37	\$3.58
	Michigan	\$0.65	\$1.45	\$2.77
	New York	\$0.36	\$1.17	\$2.82
	Texas	\$0.72	\$1.31	\$2.98

Occupational Category	State	\$10	\$12	\$15
Food Preparation and Serving-related Occupations	California	\$0.47	\$1.45	\$3.10
	Florida	\$0.83	\$2.95	\$4.01
	Georgia	\$0.93	\$1.72	\$3.93
	Michigan	\$0.75	\$1.77	\$3.41
	New York	\$0.64	\$1.76	\$3.58
	Texas	\$0.99	\$2.03	\$4.08
Personal Care and Service-related Occupations	California	\$0.43	\$1.25	\$2.87
	Florida	\$0.69	\$1.45	\$3.69
	Georgia	\$1.01	\$2.11	\$4.21
	Michigan	\$0.71	\$1.79	\$3.24
	New York	\$0.47	\$1.30	\$2.78
	Texas	\$1.04	\$2.25	\$3.87
Building and Ground Cleaning and Maintenance Related Occupations	California	\$0.35	\$1.25	\$2.85
	Florida	\$0.75	\$1.90	\$3.59
	Georgia	\$0.91	\$1.98	\$3.65
	Michigan	\$0.62	\$1.49	\$3.07
	New York	\$0.55	\$1.50	\$3.12
	Texas	\$0.99	\$2.10	\$3.94

RTI estimates based on BLS (2015).

The wage increase required at each minimum wage level also varies across job categories within states but to a lesser degree than they vary across states. For example, in Michigan, the mean hourly wage increases required across the four labor groups exhibit a relatively narrow range: from \$0.62 (for building and maintenance workers) to \$0.75 (for food preparation and service staff). In contrast, across states, the mean hourly wage increases required across the four labor groups range far more widely: from \$2.65 (for healthcare support workers in California) to \$1.09 (for personal care workers in Texas).

Average Annual Wage and Payroll Tax Increases Across States

The annual wage and payroll tax increase required per full-time worker differs by state, depending on current salaries, as shown in **Table 11**. For example, increasing the federal minimum wage to \$12 would require an annual wage and payroll tax increase of roughly \$2,799 per worker in California and roughly \$5,023 per worker in Texas among Personal Care and Service-related Occupations.

Table 11. Average Annual Wage and Payroll Tax Increase Required per Full-time Worker in Key AL and CCRC Job Categories, Minimum Wage Level and State, 2015

Occupational Category	State	\$10	\$12	\$15
Healthcare Support-related Occupations	California	\$694	\$2,351	\$5,934
	Florida	\$963	\$2,866	\$5,822
	Georgia	\$1,478	\$3,068	\$8,016
	Michigan	\$1,455	\$3,247	\$6,202
	New York	\$806	\$2,620	\$6,314
	Texas	\$1,612	\$2,933	\$6,673
Food Preparation and Serving-related Occupations	California	\$1,052	\$3,247	\$6,941
	Florida	\$1,858	\$6,605	\$8,979
	Georgia	\$2,082	\$3,851	\$8,800
	Michigan	\$1,679	\$3,963	\$7,635
	New York	\$1,433	\$3,941	\$8,016
	Texas	\$2,217	\$4,545	\$9,136
Personal Care and Service-related Occupations	California	\$963	\$2,799	\$6,426
	Florida	\$1,545	\$3,247	\$8,262
	Georgia	\$2,262	\$4,725	\$9,427
	Michigan	\$1,590	\$4,008	\$7,255
	New York	\$1,052	\$2,911	\$6,225
	Texas	\$2,329	\$5,023	\$8,665
Building and Ground Cleaning and Maintenance-related Occupations	California	\$784	\$2,799	\$6,381
	Florida	\$1,679	\$4,254	\$8,038
	Georgia	\$2,038	\$4,433	\$8,173
	Michigan	\$1,388	\$3,336	\$6,874
	New York	\$1,232	\$3,359	\$6,986
	Texas	\$2,217	\$4,702	\$8,822

RTI estimates based on BLS (2015).

Aggregate Annual Wage and Payroll Tax Increases Across States

The total annual wage and payroll tax increases required for all workers in key job categories by minimum wage level (i.e., \$10, \$12, and \$15) for selected states are shown in **Table 12**. Increasing the federal minimum wage to \$12 would require an annual wage and payroll tax increase of roughly \$39 million across the four worker categories in New York and roughly \$105 million across the four workers in Texas.

Table 12. Total Wages and Payroll Tax Increases Across All Workers in Key AL and CCRC Job Categories per Year, Minimum Wage Level and State, 2015

State	\$10	\$12	\$15
New York	\$7,400,000	\$39,200,000	\$118,000,000
Texas	\$33,700,000	\$105,000,000	\$266,700,000
California	\$17,700,000	\$118,300,000	\$379,100,000
Florida	\$27,400,000	\$129,400,000	\$294,600,000
Georgia	\$13,700,000	\$44,100,000	\$110,200,000
Michigan	\$13,500,000	\$53,600,000	\$144,500,000

Table note: All values are rounded to the nearest hundred thousand and assume full-time employment.

RTI estimates based on BLS (2015).

The total annual wage and payroll tax increases required for all workers by job category, minimum wage level (i.e., \$10, \$12, and \$15), and state are shown in **Table 13**. The total annual wage and payroll tax increase required for workers differs by both state and occupational category. For example, in New York, increasing the federal minimum wage to \$12 would require an annual wage and payroll tax increase of approximately \$9 million for workers in Personal Care and Service-related Occupations and Healthcare Support-related Occupations, whereas in Texas, increasing the federal minimum wage to \$12 would require an annual wage and payroll tax increase of roughly \$35 million for workers in Personal Care and Service-related Occupations and approximately \$30 million for workers in Healthcare Support-related Occupations.

Table 13. Total Wages and Payroll Tax Increases Across All Workers per Year by Minimum Wage Level and AL and CCRC Occupational Categories, Selected States, 2015

Occupational Category	State	\$10	\$12	\$15
Healthcare Support-related Occupations	California	\$2,200,000	\$21,900,000	\$83,900,000
	Florida	\$5,100,000	\$30,900,000	\$96,600,000
	Georgia	\$2,000,000	\$8,900,000	\$29,000,000
	Michigan	\$5,600,000	\$23,500,000	\$69,300,000
	New York	\$1,000,000	\$8,900,000	\$31,700,000
	Texas	\$7,800,000	\$30,700,000	\$98,400,000

Occupational Category	State	\$10	\$12	\$15
Food Preparation and Serving-related Occupations	California	\$4,700,000	\$27,200,000	\$80,900,000
	Florida	\$12,600,000	\$61,900,000	\$98,600,000
	Georgia	\$2,400,000	\$8,100,000	\$16,200,000
	Michigan	\$3,000,000	\$11,200,000	\$28,700,000
	New York	\$3,700,000	\$15,700,000	\$41,200,000
	Texas	\$9,400,000	\$27,200,000	\$64,100,000
Personal Care and Service-related Occupations	California	\$9,800,000	\$61,000,000	\$186,700,000
	Florida	\$5,200,000	\$20,500,000	\$60,400,000
	Georgia	\$8,500,000	\$24,500,000	\$58,900,000
	Michigan	\$4,000,000	\$15,700,000	\$36,900,000
	New York	\$1,600,000	\$8,700,000	\$28,200,000
	Texas	\$12,300,000	\$35,100,000	\$76,400,000
Building and Ground Cleaning and Maintenance-related Occupations	California	\$1,000,000	\$8,300,000	\$27,600,000
	Florida	\$4,500,000	\$16,100,000	\$39,000,000
	Georgia	\$800,000	\$2,600,000	\$6,000,000
	Michigan	\$800,000	\$3,300,000	\$9,600,000
	New York	\$1,200,000	\$5,900,000	\$16,800,000
	Texas	\$4,000,000	\$11,800,000	\$27,800,000

Table note: All values are rounded to the nearest hundred thousand and are based on an assumed full-time employment of 2,080 hours per year.

RTI estimates based on BLS (2015).

Study Limitations

To our knowledge, this study provides the only publicly available estimates of the financial impact of raising the minimum wage on ALs and CCRCs. However, our calculations of the total wage and payroll tax increases per worker depend on our estimates of wage distributions. We believe that our linear estimates are reasonable. However, employee wages may not, in fact, be linearly distributed; indeed, they may be clustered around specific wages (e.g., \$8.00 or \$8.50) rather than spread evenly between BLS-reported wage levels. Additionally, our analyses assume full-time employment and, thus, may over-estimate the financial impact of minimum wage increases. One limitation of the data used is that definitions of ALs and CCRCs differ greatly across states, and as a result, what entities are included also differs across states. In this study, we relied primarily on data from BLS; studies using other data sources might produce somewhat different results.

In addition, our analyses do not account for the strategies that ALs and CCRCs may adopt to reduce the potential financial effects of minimum wage increases, such as improving efficiency, reducing staffing, or diminishing fringe benefits. Further, our analyses may underestimate the full impact of a minimum wage increase, as the estimates only account for staff paid below the minimum wage. A minimum wage increase may result in staff who are currently paid above the minimum wage demanding a pay increase to maintain distance from the minimum wage that, if unmet, may result in increased turnover. Finally, this report only calculates the cost of a minimum wage increase; it does not quantify any potential benefits, such as reduced staff turnover and improved quality. The benefits of a minimum wage increase are important components of a comprehensive evaluation of proposed wage increases in LTSS.

DISCUSSION

This study estimated the impact of raising the minimum wage on ALs and CCRCs, focusing on the number and proportion of workers who would be affected and what the financial impacts on the facilities would be. Although the momentum of the movement to raise the national minimum wage slowed after the 2016 presidential campaign, several states are considering such raises.

What We Found

Because ALs and CCRCs depend heavily on workers who earn the minimum wage or a few dollars more, raising the minimum wage to \$10, \$12, or \$15 an hour would have a large impact on AL and CCRC workers and employers. Using data from BLS, the potential impacts of raising the minimum wage were estimated for Healthcare Support-related Occupations, Food Preparation and Serving-related Occupations, Personal Care and Service-related Occupations, and Building and Grounds Cleaning and Maintenance-related Occupations, which account for almost three quarters of AL and CCRC employees.

Nationally, a large majority of employees (86% or above) would be affected by a \$15 minimum wage, and many fewer employees would be affected by a \$12 minimum wage (58% or above) or a \$10 minimum wage (27% or above). Nationally, increasing the federal minimum wage would require average hourly wage increases of roughly \$0.70 if set to \$10, roughly \$1.60 if set to \$12, and roughly \$3.40 if set to \$15, not including associated payroll taxes. Overall, the wage increase required at each minimum wage level would be similar across job categories.

In addition to increasing wages for workers, raising the minimum wage would also increase payroll taxes for employers and employees. Including Social Security (6.2% of wages) and Medicare taxes (1.45% of wages) adds to the employer costs. Nationally, increasing the federal minimum wage would require combined annual wage and payroll tax increases per

CCRC and AL worker of, on average, approximately \$1,500 if set to \$10, approximately \$3,500 if set to \$12, and approximately \$7,500 if set to \$15. Similarly, as the level at which the minimum wage is set increases, the total annual wage and payroll tax increase required across all workers will also increase. Nationally, increasing the federal minimum wage would require combined annual wage and payroll tax increases across all AL and CCRC workers of roughly \$350 million if set to \$10, roughly \$1.5 billion if set to \$12, and roughly \$4 billion if set to \$15. A study by the National Employment Law Project (2015) that examined the impact of implementing a \$15 minimum wage on home care workers (i.e., a similar but much larger group with somewhat lower wages than the workers in our study) estimated that this wage would result in \$16.5 billion in additional yearly earnings for these workers.

Because overall wages and LTSS systems vary greatly across states, the impact of raising the minimum wage was also examined for selected states: California, Florida, Georgia, New York, Michigan, and Texas. Of the six states studied, Texas and Florida would experience the largest estimated impacts from an increase in the minimum wage to \$10 because many workers in these states earn less than \$10 per hour. In contrast, California would experience the largest estimated impact from an increase of the minimum wage to \$15 per hour because this state has the largest number of workers. The wage increase required at each minimum wage level also varies across job categories within states but to a lesser degree than it varies across states. States that have a minimum wage set at the federal level have a much wider range across the four job categories.

Possible Behavioral Responses

Raising the minimum wage would have a nontrivial aggregate financial impact on ALs and CCRCs, but the key issue for these LTSS providers is how large the aggregate financial impact would be compared to their total revenues. Although estimates of the *total revenues* of ALs and CCRCs are not available, an estimate of the *total charges* can be obtained from the National Center for Health Statistics' National Survey of Residential Care Facilities: \$28 billion in 2010 (Khatutsky et al., 2016). Inflating this estimate by the Consumer Price Index, the estimated total charges in 2015 were \$30.2 billion. Thus, the incremental costs for wages would be 1.2% of the total charges for an increase to \$10 per hour, 4.9% for an increase to \$12 per hour, and 13.3% for an increase to \$15 per hour.

The actual impact of a potential minimum wage increase on ALs and CCRCs would depend on several factors, including the responses of payers, such as Medicaid programs and managed care organizations, employers/operators, workers, and consumers. Medicaid fee-for-service and managed LTSS plans might or might not increase their reimbursement rates to compensate for higher costs. However, no Medicaid law or regulation requires them to do so. Recently, some state Medicaid programs did not increase their LTSS payment rates after a state increase in the minimum wage (Bowers, 2016; Stone, 2017). Low Medicaid

reimbursement rates are already a barrier to access to residential care in some states (Knowles, Lepore, Porter, Wiener, & O’Keeffe, 2016).

Owners and administrators of ALs and CCRCs might respond in several ways. They could pass on the increased costs to consumers through higher prices (Liepelt, 2016), but conventional economic theory would suggest that higher prices might reduce demand and result in lower occupancy rates. AL occupancy was approximately 88% in 2016 and is projected to stay flat over the near term (National Investment Center for Seniors Housing & Care, 2017). The 2010 National Survey of Residential Care Facilities found that 29% of residential care facilities had a waiting list, which suggests some excess demand that might absorb a rate increase, but also noted that 28% of residential care facilities had at least one resident who had moved out of the community because of price (Khatutsky et al., 2016). Conversely, ALs and CCRCs could offset the cost of a wage increase by reducing their operating margins. According to the National Investment Center for Seniors Housing & Care (2016), the 10-year average rate of return for seniors housing, a category broader than ALs and CCRCs, is slightly above 14%.

ALs and CCRCs could also implement a variety of initiatives involving nonlabor costs, such as providing lower-cost food and spending less on environmental amenities. Alternatively, they could reduce labor costs by finding more efficient methods of providing services, which would lead to lower staffing levels, or by reducing fringe benefits. Economic theory suggests that employers have target levels of employee total compensation and make tradeoffs between wages and fringe benefits. In the United Kingdom, an analysis by the Office for Budget Responsibility estimated that by 2020, the National Living Wage will result in 20,000–120,000 fewer jobs in the overall economy than there otherwise would have been (i.e., because employers may reduce the sizes of their workforces). However, the United Kingdom’s economy was still predicted to gain 1.1 million jobs overall (Low Pay Commission, 2013).

Although this study quantified the potential *costs* of raising the minimum wage, it was not possible to quantify the *benefits* of such an increase for employers, workers, and consumers. It is clear, however, that the existing low-wage system imposes costs on all three.

Studies showing the benefits of wage increases have been performed in other parts of the LTSS system, although they have not specifically addressed ALs and CCRCs. Low wages in LTSS have been associated with recruitment difficulties, high turnover, and quality of care problems (Seavey & Salter, 2006; Zuckerbraun et al., 2015). Several studies have found that low pay and meager benefits are associated with recruitment difficulties in long-term care (Howes, 2005, 2008). In a statewide study of assisted living in Georgia, low wages were identified by administrators across a wide range of ALs as a barrier to the recruitment of personal care aides (Ball, Hollingsworth, & Lepore, 2010). Low wages and benefits are

commonly cited by LTSS workers as a source of stress (Lapane & Hughes, 2007). Low wages have also been identified as a driver of high worker turnover in LTSS (Raynor, 2003; Stone & Bryant, 2012; U.S. Department of Health and Human Services, 2003). LTSS workers often leave jobs for similar positions that provide better wages (Banijamali, Jacoby, & Hagopian, 2014; Morris, 2009).

Increasing wages and fringe benefits for LTSS staff may reduce turnover (Butler, Brennan-Ing, Wardamasky, & Ashley, 2014; Hewko et al., 2015; Morgan, Dill, & Kalleberg, 2013; Morris, 2009; Powers & Powersy, 2010; Wiener, Squillace, Anderson, & Khatutsky, 2009). Among certified nursing assistants in U.S. nursing homes who are likely to leave their jobs in the next year, one in three cited low compensation as the reason that they would leave (Squillace, Bercovitz, Remsburg, & Rosenoff, 2008). In one of the few studies examining the effect of a large wage increase, a near doubling of the wages of home care workers in San Francisco led to a 17%–30% drop in annual workforce turnover (Howes, 2002). Furthermore, higher wages and better benefits were found to reduce turnover in several Better Jobs Better Care home care demonstration sites (Barry, Kemper, & Brannon, 2008). Because of recruitment and training costs, replacing a worker can be expensive for LTSS providers (Institute for the Future of Aging Services, 2004).

Retention is closely related to turnover. Several nursing home studies have found that increases in turnover among nursing aides are associated with decreases in the quality of care (Castle & Engberg, 2005, 2007; Hatton & Dresser, 2003). Several studies indicate that higher wages might positively affect the retention of LTSS staff (Butler et al., 2014; Fishman, Barnow, Glosser, & Gardiner, 2004; Head, Washington, & Myers, 2013; Morgan et al., 2013; Raphael, 2008). Advocates for minimum wage increases argue that increasing retention could improve the quality of care provided because workers who stay in their jobs longer get to know consumers better and can better address their individual needs.

Conclusion

Low wages in ALs and CCRCs can be challenging for workers and operators alike. Raising these wages by increasing the minimum wage is one strategy to address these problems. Doing so would likely positively affect workers and potentially improve recruitment and retention, reduce turnover, and enhance quality of care. However, raising the minimum wage would also impose costs on providers, which might respond by raising prices for services or reducing staffing and fringe benefits. These tradeoffs illustrate the issues that are inherent in raising the minimum wage in LTSS and the economy more generally.

References

- Ball, M. M., Hollingsworth, C., & Lepore, M. J. (2010). Hiring and training workers. In M. M. Ball, & M. M. Perkins (Eds.), *Frontline workers in assisted living*. Baltimore, MD: Johns Hopkins University Press, 223–254.
- Banijamali, S., Jacoby, D., & Hagopian, A. (2014). Characteristics of home care workers who leave their jobs: a cross-sectional study of job satisfaction and turnover in Washington State. *Home Health Care Services Quarterly*, 33(3), 137–158.
<http://dx.doi.org/10.1080/01621424.2014.929068>
- Barry, T. T., Kemper, P., & Brannon, S. D. (2008). Measuring worker turnover in long-term care: lessons from the Better Jobs Better Care demonstration. *The Gerontologist*, 48(3), 394–400. <http://dx.doi.org/10.1093/geront/48.3.394>
- BLS. (2015). *Occupational employment statistics, May 2015*. Retrieved from <https://www.bls.gov/oes/>
- BLS. (2017a). *Occupational employment and wages, May 2016: 39-9021 Personal care aides*. Retrieved from <https://www.bls.gov/OES/Current/oes399021.htm>
- BLS. (2017b). *Occupational employment and wages, May 2016: 31-1014 nursing assistants*. Retrieved from <https://www.bls.gov/oes/current/oes311014.htm>
- Bowers, L. A. (2016, March 29). California operator braces for planned \$15 minimum wage. *McKnight's Senior Living*. Retrieved from <http://www.mcknightsseniorliving.com/news/california-operator-braces-for-planned-15-minimum-wage/article/485966/>
- Butler, S. S., Brennan-Ing, M., Wardamasky, S., & Ashley, A. (2014). Determinants of longer job tenure among home care aides: What makes some stay on the job while others leave? *Journal of Applied Gerontology*, 33(2), 164–188.
<http://dx.doi.org/10.1177/0733464813495958>
- Castle, N. G., & Engberg, J. (2005). Staff turnover and quality of care in nursing homes. *Medical Care*, 43(6), 616–626.
<http://dx.doi.org/10.1097/01.mlr.0000163661.67170.b9>
- Castle, N. G., & Engberg, J. (2007). The influence of staffing characteristics on quality of care in nursing homes. *Health Services Research*, 42(5), 1822–1847.
<http://dx.doi.org/10.1111/j.1475-6773.2007.00704.x>
- Fishman, M. F., Barnow, B., Glosser, A., & Gardiner, K. (2004). Recruiting and retaining a quality paraprofessional long-term care workforce: building collaboratives with the nation's workforce investment system. Retrieved from <https://aspe.hhs.gov/system/files/pdf/73261/natwis.pdf>
- Hatton, E., & Dresser, L. (2003). *Caring about caregivers: reducing turnover of frontline health care workers in south central Wisconsin*. Retrieved from http://www.cows.org/_data/documents/1038.pdf

- Head, B. A., Washington, K. T., & Myers, J. (2013). Job satisfaction, intent to stay, and recommended job improvements: the palliative nursing assistant speaks. *Journal of Palliative Medicine*, 16(11), 1356–1361. <http://dx.doi.org/10.1089/jpm.2013.0160>
- Hewko, S. J., Cooper, S. L., Huynh, H., Spiwek, T. L., Carleton, H. L., Reid, S., & Cummings, G. G. (2015). Invisible no more: a scoping review of the health care aide workforce literature. *BMC Nursing*, 14(38), 1–17. <http://dx.doi.org/10.1186/s12912-015-0090-x>
- Howes, C. (2002). *The impact of a large wage increase on the workforce stability of IHSS home care workers in San Francisco County*. Retrieved from <http://laborcenter.berkeley.edu/pdf/2002/Howes.pdf>
- Howes, C. (2005). Living wages and retention of homecare workers in San Francisco. *Industrial Relations*, 44(1), 139–163. <http://dx.doi.org/10.1111/j.0019-8676.2004.00376.x>
- Howes, C. (2008). Love, money, or flexibility: what motivates people to work in consumer-directed home care? *The Gerontologist*, 48(Spec No 1), 46–60. http://dx.doi.org/10.1093/geront/48.Supplement_1.46
- Ingham, H., Bamford, S.-M., & Johnes, G. (2015). *The costs and benefits of paying all the lowest-paid care home workers in the UK the Living Wage*. Retrieved from <https://www.jrf.org.uk/report/costs-and-benefits-paying-all-lowest-paid-care-home-workers-uk-living-wage>
- Institute for the Future of Aging Services. (2004). *The cost of frontline turnover in long-term care*. Retrieved from <http://phinational.org/sites/phinational.org/files/clearinghouse/TOCostReport.pdf>
- Khatutsky, G., Ormond, C., Wiener, J. M., Greene, A. M., Johnson, R., Jessup, E. A., ... Harris-Kojetin, L. (2016). *Residential care communities and their residents in 2010: a national portrait*. Retrieved from https://www.cdc.gov/nchs/data/nsrcf/nsrcf_chartbook.pdf
- Knowles, M., Lepore, M., Porter, K., Wiener, J., & O’Keeffe, J. (2016). *Access to residential care settings for Medicaid beneficiaries*. Retrieved from https://www.eiseverywhere.com/file_uploads/e25d9f19e57b986ce1fa52c57a15052c_StatePolicyIssuesCombinedSlides.pdf
- Lapane, K. L., & Hughes, C. M. (2007). Considering the employee point of view: perceptions of job satisfaction and stress among nursing staff in nursing homes. *Journal of the American Medical Directors Association*, 8(1), 8–13. <http://dx.doi.org/10.1016/j.jamda.2006.05.010>
- Liepelt, K. (2016, April 18). Minimum wage hikes to have ripple effect in senior living. *Mcknight’s Senior Living*. Retrieved from <http://seniorhousingnews.com/2016/04/18/minimum-wage-hikes-ripple-effect-senior-living/>

- Low Pay Commission. (2013). *National minimum wage: Low Pay Commission report 2013*. Retrieved from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/226822/National_minimum_wage_Low_Pay_Commission_report_2013.pdf
- Mishel, L., Gould, E., & Bivens, J. (2015). *Wage stagnation in nine charts*. Retrieved from <http://www.epi.org/publication/charting-wage-stagnation/>
- Morgan, J. C., Dill, J., & Kalleberg, A. L. (2013). The quality of healthcare jobs: can intrinsic rewards compensate for low extrinsic rewards? *Work, Employment and Society*, 27(5), 802–822. <http://dx.doi.org/10.1177/0950017012474707>
- Morris, L. (2009). Quits and job changes among home care workers in Maine: the role of wages, hours, and benefits. *The Gerontologist*, 49(5), 635–650. <http://dx.doi.org/10.1093/geront/gnp071>
- National Employment Law Project. (2015). *Giving caregivers a raise: the impact of a \$15 wage floor in the home care industry*. Retrieved from <http://www.nelp.org/content/uploads/2015/03/Giving-Caregivers-A-Raise.pdf>
- National Investment Center for Seniors Housing & Care. (2016). *Why invest in seniors housing?* Retrieved from http://www.nic.org/analytics/financial_investor_briefings/.
- National Investment Center for Seniors Housing & Care. (2017). *Flat assisted living occupancy rate projected*. Retrieved from http://www.nic.org/analytics/supply_demand_trends. NSLTCP, 2014.
- Powers, E. T., & Powersy, N. J. (2010). Causes of caregiver turnover and the potential effectiveness of wage subsidies for solving the long-term care workforce 'crisis'. *Contributions to Economic Analysis & Policy*, 10(1), 5.
- PHI. (2015). *Paying the price: how poverty wages undermine home care in America*. Retrieved from <https://phinational.org/sites/phinational.org/files/research-report/paying-the-price.pdf>
- PHI. (2017). *Federal policy priorities: strengthening the direct care workforce*. Retrieved from https://phinational.org/sites/phinational.org/files/research-report/phi_federal_report_web_0.pdf
- Proctor, B. D., Semega, J. L., & Kollar, M. A. (2016). *Income and poverty in the United States: 2015, US Census Bureau, Current Population Reports*. Retrieved from <https://www.census.gov/content/dam/Census/library/publications/2016/demo/p60-256.pdf>
- Raphael, C. (2008). *Long-term care: preparing for the next generation*. Retrieved from <http://www.commonwealthfund.org/Publications/Commentaries/2008/Jul/Long-Term-Care--Preparing-for-the-Next-Generation.aspx>
- Raynor, C. R. (2003). *Federal workforce development programs: new opportunity for recruiting and retaining direct care workers in the long-term care field*. Retrieved from <https://aspe.hhs.gov/basic-report/federal-workforce-development-programs-new-opportunity-recruiting-and-retaining-direct-care-workers-long-term-care-field>

- Seavey, D., & Salter, V. (2006). *Paying for quality care: state and local strategies for improving wages and benefits for personal care assistants*. Retrieved from https://assets.aarp.org/rgcenter/il/2006_18_care.pdf
- Squillace, M. R., Bercovitz, A., Rosenoff, E., & Remsberg, R. (2008). *An exploratory study of certified nursing assistants' intent to leave*. Retrieved from <http://aspe.hhs.gov/daltcp/reports/2008/intent.pdf>
- Stone, R. I., & Bryant, N. (2012). The impact of health care reform on the workforce caring for older adults. *Journal of Aging & Social Policy*, 24(2), 188–205. <http://dx.doi.org/10.1080/08959420.2012.659144>
- Stone, R. I. & Wiener, J. M. (2001). *Who will care for us? Addressing the long-term care workforce crisis*. Retrieved from <http://www.urban.org/sites/default/files/publication/42696/310304-Who-Will-Care-For-Us-Addressing-the-Long-Term-Care-Workforce-Crisis.PDF>
- Stone, W. (2017, February 13). New Arizona minimum wage hits developmental-disability providers. *KJZZ*. Retrieved from <http://kjzz.org/content/434148/new-arizona-minimum-wage-hits-developmental-disability-providers>
- U.S. Department of Health and Human Services. (2003). *The future supply of long-term care workers in relation to the aging baby boom generation: report to Congress*. Retrieved from <https://aspe.hhs.gov/system/files/pdf/72961/ltcwork.pdf>
- U.S. Department of Labor. (2017). *Minimum wage laws in the states—January 1, 2017*. Retrieved from <https://www.dol.gov/whd/minwage/america.htm>
- Wiener, J. M., Squillace, M. R., Anderson, W. L., & Khatutsky, G. (2009). Why do they stay? Job tenure among certified nursing assistants in nursing homes. *The Gerontologist*, 49(2), 198–210. <http://dx.doi.org/10.1093/geront/gnp027>
- Zuckerbraun, S., Wiener, J. M., McGinn-Shapiro, M., Porter, K., Eicheldinger, C Dai, L, & Kruger, H. (2015). *Wages, fringe benefits, and turnover for direct care workers working for long-term care providers in Oregon. Final Report for the Oregon Department of Human Services*. Retrieved from <http://www.oregon.gov/dhs/aboutdhs/dhsbudget/20152017%20Budget/Oregon%20Final%20Direct%20Care%20Wage%20Report%20to%20DHS.pdf>

Appendix A: State Minimum Wages in 2015

State	2015 Minimum Wage	State	2015 Minimum Wage
Alabama	\$7.25	Montana	\$8.05
Alaska	\$8.75	Nebraska	\$8.00
Arizona	\$8.05	Nevada	\$7.25
Arkansas	\$7.50	New Hampshire	\$7.25
California	\$9.00	New Jersey	\$8.38
Colorado	\$8.23	New Mexico	\$7.50
Connecticut	\$9.15	New York	\$8.75
Delaware	\$8.25	North Carolina	\$7.25
District of Columbia	\$10.50	North Dakota	\$7.25
Florida	\$8.05	Ohio	\$7.25
Georgia	\$7.25	Oklahoma	\$7.25
Hawaii	\$7.75	Oregon	\$9.25
Idaho	\$7.25	Pennsylvania	\$7.25
Illinois	\$7.25	Rhode Island	\$9.00
Indiana	\$7.25	South Carolina	\$7.25
Iowa	\$7.25	South Dakota	\$8.50
Kansas	\$7.25	Tennessee	\$7.25
Kentucky	\$7.25	Texas	\$7.25
Louisiana	\$7.25	Utah	\$7.25
Maine	\$7.50	Vermont	\$9.15
Maryland	\$8.25	Virginia	\$7.25
Massachusetts	\$9.00	Washington	\$9.47
Michigan	\$8.15	West Virginia	\$8.00
Minnesota	\$7.25	Wisconsin	\$7.25
Mississippi	\$7.25	Wyoming	\$7.25
Missouri	\$7.65		

United States Department of Labor (2015).

NOTES: States that have minimum wages below the federally mandated minimum of \$7.25 automatically default to the federally mandated minimum. Half of all states in 2015 were at or below a minimum wage of \$7.25. In 2015, the District of Columbia had the highest minimum wage: \$10.50 per hour. The minimum wage levels in our illustrative states range from \$7.25 per hour (Georgia and Texas) to \$9.00 per hour (California).

Appendix B:
U.S. Bureau of Labor Statistics Occupational Group Definitions

Occupational Group	Occupations
Healthcare Support-related Occupations	Home Health Aides; Psychiatric Aides; Nursing Assistants; Orderlies; Occupational Therapy Assistants; Occupational Therapy Aides; Physical Therapist Assistants; Physical Therapist Aides; Massage Therapists; Dental Assistants; Medical Assistants; Medical Equipment Preparers; Medical Transcriptionists; Pharmacy Aides; Veterinary Assistants and Laboratory Animal Caretakers; Phlebotomists; Healthcare Support Workers
Food Preparation and Serving-related Occupations	Chefs and Head Cooks; First-Line Supervisors of Food Preparation and Serving Workers; Cooks, Fast Food; Cooks, Institution and Cafeteria; Cooks, Private Household; Cooks, Restaurant; Cooks, Short Order; Cooks, All Other; Food Preparation Workers; Bartenders; Combined Food Preparation and Serving Workers, Including Fast Food; Counter Attendants, Cafeteria, Food Concession, and Coffee Shop; Waiters and Waitresses; Food Servers, No Restaurant; Dining Room and Cafeteria Attendants and Bartender Helpers; Dishwashers; Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop; Food Preparation and Serving-related Workers
Personal Care and Service-related Occupations	Gaming Supervisors; Slot Supervisors; First-Line Supervisors of Personal Service Workers; Animal Trainers; Nonfarm Animal Caretakers; Gaming Dealers; Gaming and Sports Book Writers and Runners; Gaming Service Workers, All Other; Motion Picture Projectionists; Ushers, Lobby Attendants, and Ticket Takers; Amusement and Recreation Attendants; Costume Attendants; Locker Room, Coatroom, and Dressing Room Attendants; Entertainment Attendants and Related Workers, All Other; Embalmers; Funeral Attendants; Morticians, Undertakers, and Funeral Directors; Barbers; Hairdressers, Hairstylists, and Cosmetologists; Makeup Artists, Theatrical and Performance; Manicurists and Pedicurists; Shampooers; Skincare Specialists; Baggage Porters and Bellhops; Concierges; Tour Guides and Escorts; Travel Guides; Childcare Workers; Personal Care Aides; Fitness Trainers and Aerobics Instructors; Recreation Workers; Residential Advisors; Personal Care and Service Workers
Building and Grounds Cleaning and Maintenance-related Occupations	First-line Supervisors of Housekeeping and Janitorial Workers; First-line Supervisors of Landscaping, Lawn Service, and Grounds-keeping Workers; Janitors and Cleaners, Except Maids and Housekeeping Cleaners; Maids and Housekeeping Cleaners; Building Cleaning Workers, All Other; Pest Control Workers; Landscaping and Grounds keeping Workers; Pesticide Handlers, Sprayers, and Applicators, Vegetation; Tree Trimmers and Pruners; Grounds Maintenance Workers

