

## Health Insurance Coverage Among U.S. Workers: Differences by Work Arrangements in 2010 and 2015



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**Introduction:** For most Americans, health insurance is obtained through employers. Health insurance coverage can lead to better health outcomes, yet disparities in coverage exist among workers with different sociodemographic and job characteristics. This study compared uninsured rates among workers with different work arrangements.

**Methods:** Data from the 2010 and 2015 National Health Interview Survey—Occupational Health Supplements were used to capture a representative sample of the U.S. civilian, non-institutionalized population. Associations between work arrangement and lack of health insurance were analyzed, adjusting for covariates. Analyses were performed during 2016–2018.

**Results:** The percentage of workers aged 18–64 years without health insurance coverage decreased significantly by 6.8% among workers in all work arrangement categories between 2010 and 2015. However, workers in nonstandard work arrangements were still more likely than standard workers to have no health insurance coverage. In 2015, for workers to have no health insurance the ORs were 4.92 (95% CI=3.91, 6.17) in independent, 2.87 (95% CI=2.00, 4.12) in temporary or contract, and 2.79 (95% CI=0.34, 0.41) in other work arrangements. Standard full-time workers in small establishments and standard part-time workers were also more likely to have no health insurance coverage (OR=2.74, 95% CI=2.27, 3.31, and OR=1.65, 95% CI=1.25, 2.18, respectively).

**Conclusions:** Important disparities in health insurance coverage among workers with different work arrangements existed in 2010 and persisted in 2015. Further research is needed to monitor coverage trends among workers.

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### INTRODUCTION

In the U.S., employer-sponsored health insurance coverage of Americans aged less than 65 years peaked in 2000 at 67%,<sup>1</sup> and remained high at 57% in 2017,<sup>2</sup> indicating that the majority of working-age Americans obtain health insurance through their own or family members' employers. Historically, determinants and disparities in health insurance coverage among workers have been well documented, particularly among certain demographic groups, such as ethnic/racial minorities, older adults, unmarried workers, and immigrants.<sup>3–6</sup>

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Variability in health insurance benefits that are associated with specific job types and characteristics may contribute to occupational health disparities. For example, a study using data from the 2010 American Community Survey showed that part-time or temporary workers typically did not have equal access to comprehensive benefits compared to full-time, year-round workers.<sup>7</sup> Such workers may not be able to afford out-of-pocket health insurance coverage and therefore may go without coverage unless it is available through a spouse's employer or they qualify for government benefits.

The Patient Protection and Affordable Care Act (ACA) of 2010 aimed to expand health insurance coverage in the U.S. by (1) mandating that individuals obtain qualified health insurance (or pay a penalty if not otherwise exempt<sup>a</sup>); (2) creating state Health Insurance Marketplaces open to individuals (with premium credits and other subsidies available for qualifying individuals) and employers with 50 or fewer employees (or, at the state's option, employers with 100 or fewer employees)<sup>8</sup>; (3) penalizing employers with 50 or more full-time equivalent employees who either do not offer coverage or do not offer coverage that meets minimum value and affordability standards; and (4) expanding Medicaid eligibility.<sup>9,10</sup> Overall, the percentage of all Americans without health insurance coverage decreased from 16.0% in 2010 to 9.1% in 2015, which translates to 20 million fewer uninsured individuals. For working-aged adults (18–64 years), the uninsured rate declined from 22.3% in 2010 to 12.8% in 2015.<sup>11</sup> The decline was especially pronounced among racial and ethnic minorities.<sup>12</sup>

Although key sociodemographic characteristics have been examined, trends in health insurance coverage among workers across different work arrangements have not been as well documented,<sup>13–15</sup> especially in recent years with nationwide changes impacting both job characteristics and health insurance. A single multiple-choice question based on the relationship between a worker and his or her employer was used to assess the prevalence of nonstandard work arrangements in the 2010 and 2015 Occupational Health Supplements (OHS) to the National Health Interview Survey (NHIS).<sup>16</sup> More recently, Bushnell et al.<sup>17</sup> have defined a standard work arrangement more holistically as “secure, employee status, career job, with adequate, stable pay, health insurance and retirement benefits, and a regular, full-time schedule, with adequate flexibility and paid leave.” Conversely, they have defined a nonstandard work arrangement as “an arrangement that deviates in some way

from the standard arrangement.”<sup>17</sup> Although some high-skill workers may choose alternative work arrangements for personal reasons, many low-skill workers would prefer a more standard arrangement, but are unable to find a standard position because of organizational trends.<sup>18</sup> Some studies have suggested that nonstandard work arrangements are on the rise.<sup>19</sup>

The purpose of this study is to compare the percentage of uninsured workers across different work arrangements, as defined within the NHIS, between 2010 and 2015. Because of the differential requirements of ACA based on employer's number of employees and workers' number of work hours per week, workers with standard arrangements were stratified by establishment size (used as a proxy for employer size) and work hours. First, the distribution of workers with different work arrangements and sources of health insurance (private, public, or none) in each year is examined. Next, associations between type of work arrangement and lack of health insurance in each study year and both study years combined are analyzed after adjusting for covariates that are possibly predictive of uninsured status, including occupational category. The study hypothesis is that disparities in health insurance coverage among workers employed through nonstandard arrangements may have decreased since implementation of ACA because ACA expanded opportunities and incentives for obtaining health insurance both through employers and outside of the employment relationship.<sup>20</sup> Given changes in the availability and scope of health insurance coverage created by enactment of ACA, continued monitoring of changes in coverage and its possible impact among workers may be warranted.

## METHODS

Since 1957, the NHIS has been conducted annually by the National Center for Health Statistics (NCHS), in collaboration with the U.S. Census Bureau, to monitor the health of the U.S. civilian, non-institutionalized population using a multistage clustered sample design.<sup>11</sup> The NHIS produces nationally representative data on several health-related topics, including health insurance coverage. From 1997 through 2018, the NHIS questionnaires consisted of four core components: household, family, sample child, and sample adult. The household section provides basic demographic and relationship information about all people in the sampled housing unit. For each family within a household, the family section is completed by one family respondent who provides sociodemographic and health information, including health insurance coverage, on all members of the family. For each family in the NHIS, additional health information is collected from one randomly selected adult (sample adult) aged  $\geq 18$  years and one sample child, if applicable.

The annual NHIS core questionnaires include questions about the sample adult's employment status and several other factors

<sup>a</sup>The Tax Cuts and Jobs Act of 2017 eliminates the tax penalty linked to the individual mandate, effective as of December 31, 2018. Tax Cuts and Jobs Act of 2017, Pub L No. 115-97, § 11081 (December 22, 2017).

related to his or her current job, including industry and occupation. In 2010 and 2015, the National Institute for Occupational Safety and Health sponsored an NHIS-OHS. Both supplements had questions to collect more information on the prevalence of several work-related conditions and exposures in the U.S. working population, including several job characteristics hypothesized to be associated with health insurance coverage. The OHS questions were imbedded into the sample adult questionnaire. This study used data from the 2010 and 2015 NHIS-OHS and combined two types of data files that are publicly available on the NCHS website: Person Files (based on the family questionnaire) and Sample Adult Files.<sup>21</sup>

## Study Sample

This study included sample adult respondents aged 18–64 years who reported being employed during the week before the interview. Being employed was defined as either working for pay at a job or business or working for pay at a job or business but not currently at work (i.e., on leave). Respondents who were working without pay, employed in military-specific industries or occupations, or with missing health insurance coverage, education, or occupation information were excluded from the study sample. Respondents aged >64 years were excluded from this study because their eligibility for Medicare greatly affects their options for health insurance.

## Measures

A worker was defined as having no health insurance if, at the time of the interview, he or she did not have any private or public health insurance. Private health insurance coverage included workers who had any comprehensive private insurance plan, which could be obtained through an employer (either the respondent's own employer or that of a spouse/partner), union, Health Insurance Marketplace run by a state or federal government (e.g., Your Health Idaho, [healthcare.gov](http://healthcare.gov)), community program, or purchased directly from a health insurance company, outside the Health Insurance Marketplace. Public and private plans are not mutually exclusive in the questionnaire; but, for this study, workers covered by both public and private plans were classified as having public health insurance.

Work arrangements were measured by asking respondents to answer the following question with regard to their main job: *Which of the following best describes your work arrangement?* In 2010, the response options were (1) *independent contractor, independent consultant, or freelance worker*; (2) *on-call, and work only when called to work*; (3) *paid by a temporary agency*; (4) *work for a contractor who provides workers and services to others under contract*; (5) *a regular, permanent employee (standard work arrangement)*; and (6) *Other*. In 2015, response Option (2) was dropped and NCHS combined Options (3) and (4) in the public use dataset because of small numbers in each category. To compare the results over time, responses from both years were combined into four categories: (1) Standard (Option 5); (2) Independent (Option 1); (3) Temporary or contract (Options 3 and 4); and (4) Other (Options 2 and 6).

The workers with standard arrangements were then classified into three subcategories according to work hours and establishment size: (1) full-time employees in medium and large establishments; (2) full-time employees in small establishments; and (3) part-time employees in all size establishments. Classification as

full-time or part-time was based on two questions that were part of the family questionnaire. First, the family respondent was asked how many hours the person worked last week. Then, if the answer to the first question was <35 hours, the respondent was asked whether the person usually works  $\geq 35$  hours per week (in total at all their jobs or businesses). To follow the definition of full-time employment in ACA, an answer of  $\geq 30$  hours to the first question or yes to the second question was considered to represent full-time work. Classification of establishment size was based on the question, *How many people work at this location?* with regards to the person's main job. Responses of  $\geq 50$  people were considered to represent medium to large establishments and responses of <50 people were considered to represent small establishments.

Workers with nonstandard work arrangements were not stratified by work hours or establishment size because these variables were often unknown or missing for nonstandard workers and there were very small subsamples in many combinations of work arrangement, establishment size, and work hours. Therefore, the final work arrangement variable had six categories.

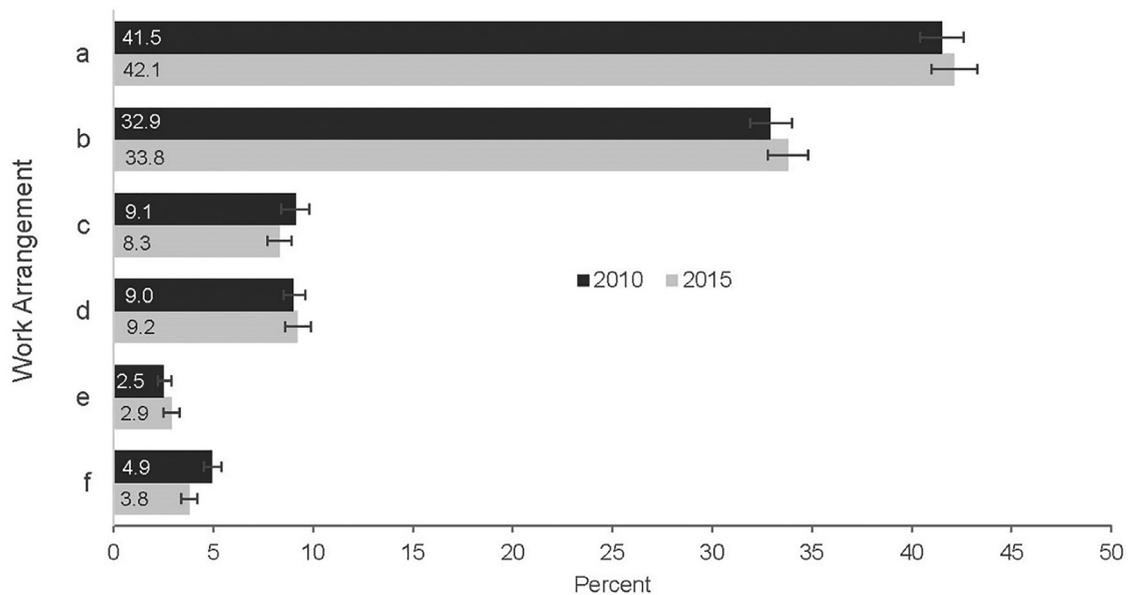
Several key sociodemographic and job characteristics were included as covariates. Age category, sex, race/ethnicity, education, region, and occupational category were treated as potential covariates. Each employed respondent was asked to provide his/her occupation (type of work) for the most recently held job. These narrative responses were reviewed by coding specialists to assign a 4-digit 2010 Census Occupation code ([www.census.gov/topics/employment/industry-occupation/guidance/code-lists.html](http://www.census.gov/topics/employment/industry-occupation/guidance/code-lists.html)), then recoded into simple and detailed categories for the NHIS public use dataset. For this study, occupations were further collapsed into four broad categories: (1) professional and technical; (2) service; (3) farming and production; and (4) sales and office and administrative support ([Appendix Table 2](#) [available online] provides details).

## Statistical Analysis

All analyses were weighted to be representative of the U.S. civilian non-institutionalized adult population. The sampling strata, clusters, and weights for all the analyses were provided by NCHS in the public use data files. Multivariable logistic regression modeling was used to generate ORs for no health insurance coverage by work arrangement in each study year and to look at the effect of year within each work arrangement category. Data analyses were conducted in 2016–2018, using Stata, version 14, *svy* commands to account for the sample design.

## RESULTS

The study sample included 14,344 workers interviewed in 2010 and 17,444 in 2015, representing around 128.1 million and 136.2 million workers nationally, respectively. Workers that were missing data needed to determine their work arrangement category (394 from 2010 and 399 from 2015) were excluded from analyses. The percentage of workers in each category of work arrangement was not significantly different in 2015 compared with 2010 except for the Other category ([Figure 1](#)). The percentage of all workers with no health insurance was 18% in 2010 and 11.2% in 2015, a decrease of 6.8 percentage points within 5 years ([Figure 2](#)). Approximately



**Figure 1.** Distribution of workers by type of work arrangement.

<sup>a</sup>Standard full-time employees (work ≥30 hours per week) in medium and large establishments (≥50 employees).

<sup>b</sup>Standard full-time employees (work ≥30 hours per week) in small establishments (<50 employees).

<sup>c</sup>Standard part-time employees (work <30 hours per week) in all size establishments.

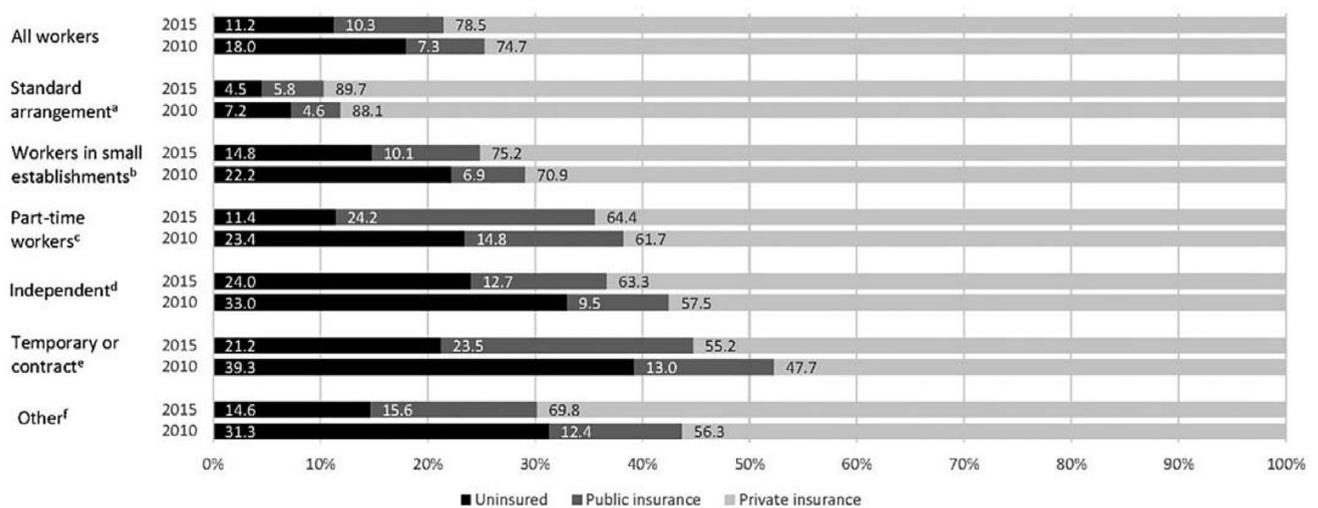
<sup>d</sup>Work as an independent contractor, independent consultant, or freelance worker.

<sup>e</sup>Paid by a temporary agency or work for a contractor who provides workers and services to others under contract.

<sup>f</sup>Some other work arrangement.

7.7 million fewer workers had no health insurance coverage in 2015 compared with in 2010. The percentage of workers with private health insurance coverage was 74.7% in 2010 and 78.5% in 2015. In 2015, 10.3% of

workers had public health plan coverage, an increase from 7.3% in 2010. The percentage of uninsured workers also declined in each demographic category ([Appendix Table 1](#), available online).



**Figure 2.** Distribution of workers with private health insurance, public health insurance, and no health insurance coverage.

<sup>a</sup>Standard full-time employees (work ≥30 hours per week) in medium and large establishments (≥50 employees).

<sup>b</sup>Standard full-time employees (work ≥30 hours per week) in small establishments (<50 employees).

<sup>c</sup>Standard part-time employees (work <30 hours per week) in all size establishments.

<sup>d</sup>Work as an independent contractor, independent consultant, or freelance worker.

<sup>e</sup>Paid by a temporary agency or work for a contractor who provides workers and services to others under contract.

<sup>f</sup>Some other work arrangement.

In 2010, the uninsured rate of workers in each type of nonstandard work arrangement (i.e., independent, temporary or contract, and other) was significantly higher than the uninsured rate of workers in each type of standard work arrangement (31.3%–39.3% compared with 7.2%–23.4%; Figure 2). Differences in the proportions with no coverage between workers in nonstandard arrangements and those with standard arrangements, but either employed by small establishments or working part-time, were less pronounced in 2015. Differences in the proportions of workers with no insurance appear to result from increases in both public and private insurance types. Among temporary or contract workers, the coverage rate increased by 10.5% for public insurance and 7.5% for private insurance during 2010–2015.

Even after controlling for covariates, all other types of work arrangements were associated with a higher odds of no health insurance coverage in both 2010 and 2015 when compared with full-time workers in medium to large establishments (Table 1). In 2015, the odds of workers in independent, temporary or contract, and other work arrangements to have no health insurance were 4.92 (95% CI=3.91, 6.17), 2.87 (95% CI=2.00, 4.12), and 2.79 (95% CI=0.34, 0.41), respectively, higher than the odds for the reference group. In addition, standard full-time workers in small establishments and standard part-time workers were also more likely to have no health insurance (OR=2.74, 95% CI=2.27, 3.31, and OR=1.65, 95% CI=1.25, 2.18). The OR for no health insurance in 2015 versus 2010 was significantly <1.0 for each of the six categories of work arrangement. The

effect of year was strongest for part-time workers, temporary or contract workers, and workers in other arrangements.

## DISCUSSION

The analysis of data from NHIS revealed a significant decrease in no health insurance coverage among workers between 2010 and 2015. The implementation of ACA could be the major driver of these changes. However, economic recovery from the 2008 financial crisis may have also played a role. Previous studies have reported that positive trends in self-reported health and access to primary care and medications accompany coverage gains.<sup>22–24</sup> Although the uninsured rate decreased within each category of work arrangements, substantial disparities persisted for workers with nonstandard work arrangements in 2015. Although studies based on other national surveys have reported health insurance coverage among workers with different job characteristics,<sup>25,26</sup> those surveys do not cover the broad array of nonstandard work arrangements considered here.

Nonstandard work arrangements may bring economic benefits and flexibility to both employers and employees. For example, a previous study showed that married women may choose nonstandard work because of higher earnings potential and demand for flexibility.<sup>27</sup> The increase in sources of insurance resulting from ACA may have increased opportunities for these sorts of arrangements. However, nonstandard work arrangements may also pose occupational safety and health risks

**Table 1.** Multivariable Analyses<sup>a</sup> of Relationship Between Different Work Arrangement Categories and Having No Health Insurance—National Health Interview Survey, U.S., 2010 and 2015

Variable	Comparisons between work arrangement categories		Comparisons within work arrangement categories over time (ref=2010), AOR (95% CI)
	2010, AOR (95% CI)	2015, AOR (95% CI)	
Work arrangement categories			
Standard arrangement <sup>b</sup>	1.00	1.00	0.61 (0.50, 0.74)
Workers in small establishments <sup>c</sup>	2.85 (2.43, 3.33)	2.74 (2.27, 3.31)	0.58 (0.57, 0.59)
Part-time workers <sup>d</sup>	2.50 (1.96, 3.20)	1.65 (1.25, 2.18)	0.36 (0.35, 0.36)
Independent <sup>e</sup>	6.06 (4.92, 7.60)	4.92 (3.91, 6.17)	0.52 (0.51, 0.54)
Temporary or contract <sup>f</sup>	5.56 (4.06, 7.62)	2.87 (2.00, 4.12)	0.31 (0.30, 0.33)
Other <sup>g</sup>	4.61 (3.52, 6.04)	2.79 (1.92, 4.06)	0.37 (0.34, 0.41)
Number of observations, <i>n</i>	13,950	17,045	

<sup>a</sup>Controlled for age, sex, race, education, occupational category, and region.

<sup>b</sup>Regular, permanent full-time employees (work ≥30 hours per week) in medium and large establishments (≥50 employees).

<sup>c</sup>Regular, permanent full-time employees (work ≥30 hours per week) in small establishments (<50 employees).

<sup>d</sup>Regular, permanent part-time employees (work <30 hours per week) in all size establishments.

<sup>e</sup>Work as an independent contractor, independent consultant, or freelance worker.

<sup>f</sup>Paid by a temporary agency or work for a contractor who provides workers and services to others under contract.

<sup>g</sup>Some other work arrangement.

for many workers. Nonstandard work arrangements have been linked to higher risks of work-related injury and illness because many workers in these arrangements are less experienced and receive less safety training while engaging in more hazardous activities compared with workers in standard arrangements.<sup>19,28</sup> These risks may be magnified by a lack of health insurance and other benefits. In addition, a previous study has indicated an association between temporary employment and psychological morbidity,<sup>29</sup> which could also benefit from health insurance coverage.

Business size is also an important factor. Most large firms offer a health insurance plan to their employees, but small firms face greater barriers to providing coverage.<sup>30,31</sup> For example, small businesses often pay more per employee for health benefits because they do not have the economics of scale that big employers have. In addition, federal law still does not require employers to offer health insurance to part-time employees. In this study, standard full-time workers in small establishments and standard part-time employees were still more likely to have no health insurance coverage than standard full-time workers in middle and large establishments in 2015.

### Limitations

The findings in this report are subject to several limitations. First, all information in NHIS, including employment status and health insurance coverage, was self-reported at the time of interview. Second, the cross-sectional design of the study means that there may be some degree of reverse causality. Workers were not asked whether they chose a nonstandard work arrangement or whether they desired employer-sponsored health insurance. Some workers may have chosen nonstandard arrangements knowing that health insurance was available through another source. Also, this study looked at coverage rates, not offer rates. Some uninsured workers were eligible for health insurance through their employers but declined it. Previous studies have shown that workers cited the high cost of insurance most often as the primary factor for refusing employer-offered coverage.<sup>32</sup> Third, defining work arrangements is complex, and no standard approach has been agreed upon by researchers or policy makers. Full-time versus part-time status may have been misclassified for respondents with multiple jobs because the NHIS work hours questions refer to the hours worked in all jobs. In addition, some workers who worked less than 30 hours in the last week, but usually work 30–34 hours per week, may have been misclassified as part-time. Use of establishment size as a proxy for business size could also have led to misclassification. Fourth, health insurance coverage was

dichotomized without regard to the source. Some of the workers with health insurance may have obtained it through a family member's employer. Finally, trends may have changed since 2015, but more recent data are not available because the OHS was only included in the NHIS in 2010 and 2015.

### CONCLUSIONS

The findings of this study revealed important disparities in health insurance coverage among workers with different work arrangements that existed in 2010 and persisted in 2015. Although nonstandard work arrangements may benefit employers and even some workers, they may also pose occupational safety and health risks for some workers; therefore, health insurance coverage could be especially important for these workers. The significantly lower health insurance coverage rate for nonstandard workers could lead to increased morbidity and mortality among workers who are already prone to job hazards. Further research is needed to ensure that decisions impacting health insurance coverage consider these worker populations.

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### SUPPLEMENTAL MATERIAL

Supplemental materials associated with this article can be found in the online version at <https://doi.org/10.1016/j.amepre.2018.12.010>.

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