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Erosion of Traditional Employment: Impact on Health and Economic Well-Being

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Abstract

Objectives: To describe growth of alternative and contingent employment and the impacts of these changes in State of California.

Methods: We administered surveys to random samples of population of the State in 1999-2000 and 2022-2023 to compare the frequency of kinds of work, working conditions, economic well-being, and health status in the two dyads of years.

Results: Between 1999-2000 and 2022-2023, decreasing fractions of the population of the State work full-time/full-year; report regular shifts, jobs with long tenures, and upward mobility in their careers; while increasing fractions report fair or poor health and financial strain.

Conclusion: Employment changes are associated with a worsening in the health status and economic well-being of the population of the State. Longitudinal follow-up of the same individuals would be necessary to establish a causal connection among these phenomena.

Keywords: Labor market dynamics, California, impact on health and economic well-being of working age population

Learning Outcomes:

Upon completion of this educational activity, learners should understand:

- Work quantity has declined as has the percentage of the working age population reporting a promotion within a job or new better job in 12 months prior to interview, while the percentage with incomes below 125% of poverty and compromised health status has increased.
- The growth of non-traditional forms of employment is associated with a decline in jobs providing economic sufficiency and an increase in jobs with low levels of discretion and high levels of demands known to be a precursor to various stress-mediated medical conditions.

Labor market analysts have focused on several related changes in the nature of employment that have occurred over the last several decades. These include the growth of alternative employment, defined by the Bureau of Labor Statistics (BLS) as independent contracting, on-call work, subcontracted labor from one employer to another, and temp agency employment; contingent employment defined by the BLS as employment not expected to last beyond the current year [1-3]; and the erosion of working conditions including but not limited to pay, benefits, and hours, and specific demands on the job. While most analysts agree on these changes as key signposts, there is surprisingly little agreement on the magnitude of the changes, in part because slight changes in measurement often lead to large changes in the estimates of change in alternative and contingent forms of employment [4].

Analysts also disagree on whether it is possible to integrate these changes into a comprehensive model of how the nature of work has evolved, but several focus on the development of strategies to reduce the magnitude of current labor costs and reduce the risk of hiring new workers, especially those deemed to do activities not considered central to the organization's mission. Two analysts have given names to this phenomenon, one referring to the changes as part of a "Great Risk Shift" from firms to workers [5], and another to the end result of the strategy as "the fissured workplace" [6]. But others have also described the phenomena without such an explicit name to the strategies involved [7-9]. Advances in our understanding of how the labor market is changing and with what impact on workers certainly requires developing integrated theoretical models like the shifting of risks or fissuring of work. However, advances in our understanding of changes in the nature of employment are also dependent on the development of methods to capture the new ways in which individuals are hired to work. Two

papers were recently published that described efforts to improve measurement of labor market phenomena and used the new methods to assess the impact of the ways in which new modes of hiring affect the well-being of workers in California [10, 11]. Those new methods were based on the observation that alternative and contingent employment is often done episodically rather than just in the week prior to interview, the time period about which workers are typically asked to report in labor market surveys; these forms of work are also frequently done in second jobs, but surveys often do not ask the same level of detail about such jobs [3, 12]}. In addition, a large number of workers obtain clients through apps such as Uber or Doordash, a method that didn't exist prior to the last decade or so. To determine whether trends in phenomena like the use of apps or other emergent forms of employment continue, serial measurement of the phenomena will be necessary.

In a similar vein, in 1999-2000, we administered a survey about the employment and health status of working age Californians using measures thought at the time to capture important employment trends, specifically the emergence of several forms of alternative employment, the growth of self-employment, and the increasing use of episodic, contingent, and part-time and part-year work, an element of some of those forms [13]. In that survey, we incorporated several ways of synthesizing the elements of the changes in work into integrated measures.

In this paper, we show the extent to which the trends identified and measured as of 1999-2000 in individual elements of work as well as synthetic measures continued through 2022-2023 in the State. The work elements include variations in how workers are hired to do work (formally hired versus in alternative employment), the permanence of their employment (as indicated by

contingent employment and job tenures), the extent of their employment, the working conditions on the job, and the impact of the foregoing on economic well-being. Fortuitously, the data collection at both time points occurred while the economy was in a similar part of an economic cycle, with a strong demand for labor [14]. Thus, trends in the extent and nature of employment described below are largely the result of secular changes in the nature of employment, rather than differences in the stage of an economic cycle. In addition to the employment data, we provide details on the health status of the working age population at both time frames. Health status may be both a consequence of adverse working conditions, for example when ergonomic risks increase the probability of musculoskeletal conditions, and a cause of reduction of work effort due to diminished work capacity or discrimination against hiring workers with impaired health.

Materials and Methods

Data. In the US, there are two parallel systems of data collection. The Bureau of Labor Statistics (BLS) collects information on the state of the labor market and, in doing so, includes only minimal measures of the health status of the working age population. Even so, the principal BLS survey, the Current Population Survey, collects much of the detailed information on the state of the labor market in separate supplements. This makes it difficult to put together a comprehensive picture of how individuals experience labor market phenomena. The National Center for Health Statistics, in contrast, collects information on the health status of the population and, in doing so, includes only minimal measures of employment.

To overcome the bifurcation in U.S. statistical agencies, two waves of the California Work and Health Survey (CWHS), in 1999-2000 and 2022-2023, were administered to provide a

comprehensive data source on a wide range of labor market phenomena as well as their impact on the health status of the working age population in terms of symptoms, chronic conditions, and the individual's assessment of overall health. However, CWHS-2000 had a smaller sample size, 2417 for the years 1999-2000, and the respondents were solicited from a random sample of landlines, whereas the respondents for the CWHS-2023, 4014 in all, were solicited from a random sample of cell phones.

The different sampling methods may have effects on estimates about employment. When, in the CWHS-2000, a landline number was reached, the person answering the phone may not ultimately have been the individual interviewed since when two or more met the study criterion of being 18-64, there was a protocol to choose the one interviewed. In contrast, when in the CWHS-2023 a respondent was reached, because cell phones are individual devices, respondents were universally answering for themselves. In addition, by the time the CWHS-2000 was administered, many individuals, particularly younger ones, had segued to the exclusive use of cell phones. CWHS-2000 may underrepresent younger individuals of working ages.

The results of both surveys were weighted to reflect the known characteristics of the California population, the CWHS-2000 using the State of California Department of Finance annual population estimates [15] and the CWHS-2023 using the results of the California portion of the US Bureau of the Census American Community Survey [16].

Content of Surveys. The CWHS integrates measures of employment from the Bureau of Labor Statistics' Current Population Survey (including the CPS Supplements) [17, 18] and of health from the National Health Interview Survey [19] and Behavioral Risk Factor Surveillance System of the Centers for Disease Control and Prevention [20]. The employment measures capture status

in the week prior to interview and, among the employed, the extent of work over the past year, whether the work was done as a hired employee, independent contractor, or through a temporary agency, and whether a job was contingent, that is, not expected to last beyond the current year. Respondents were also queried about working conditions on their jobs. The health measures collected information on overall health status, activity limitation, body mass index (BMI), and health behaviors, including smoking history and status, and alcohol consumption. Copies of the study instruments from the CWHS-2000 and 20223 and the source of each employment and health item may be found in several references [10, 13, 21].

Analytic Strategy. In the results presented below, we compare labor market measures included in the surveys in exactly the same wording across the two timeframes of 1999-2000 and 2022-2023. This comparison can show broad trends, but due to the difference in the sampling methods, small differences should not be interpreted as reflecting secular changes in the labor market. In addition, prior to launching the CWHS-2023, measures were developed to capture the episodic nature of many contemporary employment phenomena by asking details of second jobs and expanding the scope of inquiry from the week prior to interview customary in labor market surveys to the month. Because these new measures were not available in the CWHS-2000, with one exception in which we show the further erosion of traditional terms of employment when incorporating the larger set of parameters measured in the CWHS-2023, the comparison is limited to measures included in the CWHS-2000.

Owing to the aging of the working age population and the increased participation of older groups in the labor force, we show changes in health measures for all working age Californians and for several age strata.

Because of the different sampling methodologies underlying the two surveys, rather than integrate the responses and test for differences across the surveys in labor market and health measures, for each survey we estimated the mean and 95% confidence interval for each measure. When the magnitude of change in a measure from the CWHS-2023 is such that the mean and 95% confidence interval for that measure lies outside the confidence bounds for the same measure in the CWHS-2000, we can say with greater certainty that the change is meaningful, although it may or may not be statistically significant [22].

Synthetic Measures of Change. The supposition that time-trends in the nature of employment represent something more than the growth of individual elements in the way individuals are hired, in the extent of their work, and in its quality rests in part on the assumption that such changes are the result of a conscientious policy to change the relationship between individual workers and the organizations for whom they work, and that the effects of the policy can be measured in a way that summarizes the change [8, 23-25]. Although there has certainly been progress in developing synthetic measures of change since the 1999-2000 CWHS was administered, particularly notions about the shifting of risk to workers and the organization of work to implement that shift [5, 6], we ae limited here to the use of measures established as of that survey. Two were incorporated into the 1999-2000 CWHS and repeated in the 2022-2023 CWHS: a measure called “traditional employment” that encapsulates both being formally hired by the organization for which work is done and working full-time, full-year on a regular shift [13] and the “employment continuum” [26] which merges information on economic rewards from work with that about its psychological characteristics, specifically the interplay of discretion and demands on the job.

Results

Demographic Composition of Working Age Population. Table 1 shows the demographic composition of the working age population and of the portion employed at the time of the CWHS-2000 and CWHS-2023. The female percentage of the employed population increased slightly, while the average age of the working age and employed population increased by two years each and the median age by a year. The aging of the working age and employed populations becomes even clearer by observing the increases in the oldest age category analyzed, persons 55-64. Overall, the percentage of the working age population 55-64 increased from 11.8% to 21.1%, or by about 80 percent in relative terms, while the percentage employed more than doubled, from 8.9% to 18.7%. The CWHS-2023 implemented suggested changes in the way information about racial and ethnic identity are collected, with large numbers in the survey indicating that they were from multi-racial backgrounds. Even so, the percentage of Non-Hispanic whites and African Americans in the working age and employed populations of California declined substantially while the percentage of Hispanics and Asian Americans increased. Finally, the fraction of California's employed population with a high school degree or less is at least as large in 2022-2023 as 1999-2000, while the percentage with a BA or at least some graduate school has grown only slightly despite the demands from the tech sectors for workers with high levels of education, from 37.1% in the earlier dyad of years to 39.6% in the latter dyad.

Employment Status. The percentage of the working age population currently employed, employed at any point in the year prior to interview, or ever employed was remarkably similar between the two time periods, differing by less than 2.7 percentage points on any of these parameters (Table 2). Despite the considerable changes in the composition of the working age

and employed population of the State, as described above, and changes in the industrial mix across California, employment rates have not eroded. In fact, the percentage employed in the year prior to interview and ever employed grew between 1999-2000 and 2022-2023.

Kind and Quantity of Employment and Effect on Household Economic Well-being. Labor market analysts consider not just the percentage employed, but whether individuals work full or part-time and over the full or part-year and whether any part-time work is by the individual's choice (Table 3). The fraction of the employed population of California working part-time increased by 4.0 percentage points, with the increase concentrated among those working part-time, part-year. The fraction of part-time workers indicating that their part-time schedules were not by choice grew to 6.8% of all employed in the State, although the confidence intervals surrounding the estimates of the two years overlap. The substantial decrease in full-time employment was largely fueled by a substantial decrease in those working full-time, full-year. There has also been a 3.4% decrease in the percentage working greater than full-time, defined as more than forty hours a week.

The net effect of the increase in part-time work and the decrease in full-time and greater than full-time work is that the mean usual hours of work has declined by 2.5 and the weeks worked in the past year by 2.6, resulting in a decline in the mean hours of work over the entire year across all Californian workers of 215 hours (the median reduction was 160 hours, the equivalent of about four weeks a year of full-time employment).

Between 1999-2000 and 2022-2023, the percentage in episodic employment (working fewer than 40 weeks in the year prior to interview) and in contingent employment (not expected to last beyond the current year) both increased, although the confidence intervals surrounding

these estimates in the two periods overlap. The percentage with two or more jobs changed only slightly to compensate for the growth in part-time work and declining hours of employment.

Job churning, as reflected in the percentage with job tenure of a year or less, did increase over the two dyads of years, from 24.5% in 1999-2000 to 29.8% in 2022-2023. Unfortunately, the churning of jobs and the churning of positions within jobs within the same firm did not result in an increase in the percentage stating they had a better job than in the prior year; instead, the percentage with a better job decreased from 37.8% to 31.2% between administrations of the CWHS.

Decreasing hours of employment, decreasing mobility in terms of attaining better jobs, and increased episodic and contingent work has resulted in an increase in the percentage of respondents whose households had incomes at or below 125% of the Federal Poverty Line, from 12.9% in 1999-2000 to 15.0% in 2022-2023, although the confidence intervals for these two estimates overlap. In the CWHS, respondents report on several measures of financial strain. The one that was used in both the 1999-2000 and 2022-2023 surveys asked about difficulty living on household income. There was a 11.9 percentage point increase in those reporting such difficulty between the two administrations of the CWHS, to 30.0 percent in 2022-2023.

Terms of Employment and Nature of Working Conditions. The CWHS-2000 was fielded at a time when analysts began to emphasize change in how people were hired to work, from being hired as formal employees to the various kinds of alternative employment spanning independent contracting, working for a temporary agency, being an on-call worker, or having one's work subcontracted from one employer to another. CWHS-2000 included all but the last two categories of employment, permitting comparison of several forms of employment. Analysts

were also noting the erosion of working conditions, in part attributable to the changes in the terms of employment.

Table 4 tabulates both the terms of employment and working conditions across the two timeframes. Self-employment and working as an independent contractor both grew slightly, by 1.1 percentage points for the former and 2.6 percentage points for the latter. The other form of alternative employment for which data were collected in both survey waves, temporary agency workers, actually decreased by 0.6 percentage points.

Another trend in employment that has garnered much attention is the effect of irregular work schedules. Working a regular day shift is considerably less common among CWHS-2023 respondents, declining by 9.1 percentage points from the CWHS-2000 levels. In contrast, and almost tautologically related, rotating or variable shifts have increased in frequency (slight differences in the wording of the items may account for some of this growth).

Perhaps the most profound effect of the pandemic was to increase the percentage of Californians working from home at least some of the time, from just under a third of all workers in 1999-2000 to just under a half in 2022-2023. Concurrently, the percentage indicating that they supervised the work of others declined by 10.1 percentage points, probably reflecting the growth of self-employment, independent contracting, and other forms of alternative employment. Between the two surveys, there was almost no change in the percentage of the employed population indicating that they were covered by a union contract on the job. An increasing fraction of California's employed population work in firms of a thousand workers or more, while a decreasing fraction work in firms with fewer than a hundred workers.

The CWHS surveys asked a series of questions about the nature of working conditions. There was a very small increase in the percentage reporting flexible working hours, the large growth in at-home work notwithstanding. There was also very little change in the mean scores on items tapping job demands and job control. However, the percentage reporting a high level of physical demands in at least one domain of work activity declined substantially over time.

Synthetic Measures of Employment. Labor market analysts have attempted to integrate data across three axes to synthesize the changes in employment, including employment rates, quantity of employment among those who are working, and quality of employment in terms of the form of hiring and working conditions once hired. The 1999-2000 CWHS included a set of measures that combine work quantity with terms of employment [13]. The Traditional Employment measure incorporates working full-time for the full-year on a regular day shift, hired on a permanent basis and not working as a consultant or for a temporary employment agency (Table 5). Definition One, below, incorporates all of those aspects of employment. The percentage meeting all criteria declined from 35.5% in the first dyad of years to 31.7% in the second, or by 3.8 percentage points. Definition Two expands the criteria from the first definition to incorporate the proviso that the work not be done from home, as noted the signal change in employment between 1999-2000 and 2022-2023. When that proviso is included in the definition, the proportion meeting all criteria declined by almost half, from 25.7% in the first dyad of years to 13.6% in 2022-2023. The CWHS-2023 collected information on a wider array of alternative employment arrangements than the CWHS-2000. When all forms of alternative employment are added to the criteria for alternative employment, the percentage meeting the revised Definition Three is only 29.7% of all workers.

The traditional employment criteria are objective and as such do not provide an evaluative element to the assessment of work. Grzywacz and Dooley [26] developed their Employment Continuum which integrates economic sufficiency with psychological sufficiency to characterize jobs; optimal jobs provide good wages and good working conditions; inadequate jobs do not meet the minimal standards of economic sufficiency. Inadequate work grew slightly, by 3.1 percentage points to 24.1% of workers between the two dyads of years, while work which is barely adequate expanded by 6.4 percentage points to 21.5% (the confidence intervals for the estimates of inadequate work do not overlap). Concurrently, work which is economically good but not necessarily psychologically sufficient declined, slightly, by 2.6 percentage points and work which is optimal declined substantially from 15.7 to 8.7% of all workers (the confidence intervals for the latter measure do not overlap). Combining the objective measures in the traditional employment definitions with the evaluative criteria of the Employment Continuum, the combination of traditional and optimal work declined by 4.6 percentage points between the two dyads of years, but the decrease in the percentage whose work was not traditional and optimal was even larger, 8.0 percentage points, to only 6.1%. The percentage with traditional and inadequate employment declined slightly, by 0.4 percentage points; those in non-traditional work experienced a 4.1 percentage point increase in this kind of work. Workers with terms of employment meeting criteria for traditional jobs were more than twice as likely to report optimal working conditions (13.9 vs. 6.1% in 2022-2023); they were less than a sixth as likely to experience inadequate work in that dyad of years, 5.3% vs. 33.6%.

Health Status. With the exception of the percentage of the working age population consuming some alcohol in the month prior to interview, all of the measures of health status

changed to the extent that confidence intervals for estimates for each measure in the two timeframes do not overlap (Table 6). Among all working age Californians, the percentage reporting fair or poor health increased by 8.9 percentage points, to just under a quarter; among the employed, the percentage doubled. Supplementary Table 1 (http://links.lww.com/JOM/B936), which displays the health measures stratified by age, shows that the increases happened across the age spectrum. Similarly, the proportion of the working age population reporting limitation in activities, the principal disability measure in the CWHS, also increased, from 15.7 to 22.7 percent. Body mass index increased by two points between the two administrations of the CWHS; the increase in BMI occurred in every age stratum. The CWHS data indicate the extent to which the prevalence and quantity of smoking has decreased: current smoking was about half as common in 2022-2023 as in 1999-2000, while the percentage who have never smoked increased by 18.1 percentage points to just under three-quarters. Pack-years, a measure of lifetime exposure to the hazards of smoking, decreased from 14.3 to 9.8. Although there was little change in the percentage of the working age population who had at least some alcohol in the month prior to interview, the frequency of binge drinking (having five or more drinks on an occasion) increased by 3.8 percentage points (confidence intervals for estimates of binge drinking did not overlap).

Discussion

The percentage of the Californian working age population actually employed increased very little between 1999-2000 and 2022-2023, but the composition of the employed population changed quite dramatically, with declining fractions identifying as non-Hispanic whites or African Americans and increasing fractions identifying as Hispanics and Asian Americans. Concurrently,

there was a substantial increase in the percentage of workers 55-64; the working population was slightly older on average in the second dyad of years compared to the first. The percentage of the employed population with a high school education or less or a BA or more did not change very much.

Because of the growth of part-time, episodic, and contingent employment, work quantity (usual hours per week, weeks per year, and hours per year) declined between 1999-2000 and 2022-2023. While the percentage with job tenures of a year or less increased, the percentage reporting a promotion within a job or a new better job decreased, leaving 15.0 percent of the employed at a household income level at or below 125% of the Federal Poverty level.

There were only slight increases in the percentage who are self-employed or working as independent contractors. Major changes occurred, however, in when people worked, with many fewer reporting regular day shifts and many more having rotating or variable shifts. There was very little change in the scores for job demands and job control items suggesting that the change in how people are hired and when they work has not had a profound effect on such parameters as decision latitude and work speed. Many fewer workers have at least one domain requiring a high level of physical exertion.

We used the Traditional Employment and Employment Continuum paradigms to characterize and integrate all of the changes in work. Traditional employment is considerably less common, especially so when one incorporates the work-at-home criterion. A much higher percentage of those in traditional jobs have working conditions that are optimal in terms of economic and psychological criteria. The substantial decrease in optimal work is almost

completely the result of the declining prevalence of optimal conditions in non-traditional employment.

Although the direction of causation is not clear, the evidence is consistent with the hypothesis that the growth of the working conditions associated with non-traditional employment may have adverse effects on the economic and psychological well-being of workers, the components of the definition of optimal employment from Grzywacz and Dooley's index [26]. We had previously shown that the matrix of working conditions in alternative, contingent, and app-based employment may put workers at risk for occupationally-mediated ergonomic, toxic, and stress-related conditions [10].

Worsening health status between the two dyads of years has occurred. The proportion of the working age population reporting fair or poor health, activity limitation, and partaking in binge alcohol consumption all increased. There was also a small increase in body mass. Only the prevalence of smoking has declined. These changes in health status occurred across the age spectrum, suggesting both that the worsening in health status measures was not limited to those in the age range of those in the immediate traditional pre-retirement years and that the diminution of health status earlier in life may jeopardize the work capacity of the working age population for a much greater portion of traditonal working ages.

Employment Policy. Many jurisdictions have made attempts to regulate the working conditions associated with non-traditional employment by such strategies as tightening criteria for what constitutes independent contracting, the most common form of alternative employment, bringing greater transparency or even mandating minimal standards for on-call work and shifts, and to bring such workers under the umbrella of such 20th Century protections

as minimum wages, access to workers' compensation, and rights to organize jobs when the relationship between the firm and the worker is neither a traditional "hire" or, if one, impermanent [27]. California has been in the forefront of such efforts with the passage of AB5 which defined the criteria for being an independent contractor [28] and Proposition 22 which limited the reach of the legislation for ride sharing and delivery work [29]. Cities within the State, along with several outside of California are expanding the reach of minimum wage laws to incorporate such features of non-traditional employment as waiting time and mileage [30]. The observation from this study that not only is non-traditional employment expanding in California, but the fraction of such employment meeting criteria for optimal is declining suggests that the ferment in the legislative and regulatory realms is well-placed even though there has been a fall-off, albeit smaller in relative terms, in optimal employment among those in traditional work, too. Thus, as a society we need to be vigilant in ensuring that the 20th Century agenda of protecting the health and well-being of those hired in traditional ways continues to be actively pursued, even as we expand efforts to deal with the non-traditional forms of employment in which those protections are lacking, or at best minimal.

Health Policy. At a time of low unemployment and with the recent decline in immigration, the fact that several key measures of health status worsened may mean that the demand for workers may be difficult to meet in the years to come. This is especially true given that the increase in the proportion with only fair or poor health or reporting activity limitation was not limited to those in the traditional pre-retirement years, but extended throughout the age spectrum. Given that persons with disabilities have only about two-thirds the employment rate of those without, the increase in the activity limitation rate of 7 percentage points may itself

account for a decrease of the population available for employment of several percentage points. Improving the accessibility of rehabilitation services and providing Americans with Disabilities Act-mandated accommodations may be necessary reduce the impact of worsening health on employment.

Research Policy. The research community continually and rightfully appraises the measures to be used to gauge changes in employment and health [11]. Similarly, biometricians have used the principles of Rasch analysis to improve the efficiency and validity of health status measures [31]. Few would argue that improved measures of race/ethnicity should not be chosen. However, doing so means that the declining fraction of the working age and employed populations who identify as non-Hispanic whites and Hispanics, respectively, is underestimated since some of those who might have classified themselves in these categories when forced to do so in 1999-2000, chose other classifications in 2022-2023.

Another issue concerns the extent to which results for California may be applicable to the rest of the nation. California has always been in the forefront of using alternative ways of hiring, from the use of a seasonal workers in its large agricultural sector to using project-based employment in the entertainment industry and independent contracting in its tech sectors. However, the strategy of shifting risks from firms to workers [5] and to use the fissuring of labor as an important method to do so [6] would seem to extend far beyond the State's borders. Furthermore, as a major center of technology companies, the policies used by these firms perforce extend beyond California to incorporate all of these firms' employees. Indeed, often California firms outsource certain functions to less expensive regions of the country and outside the country while retaining certain functions within the State [32].

Conclusions. With the measures available in both 1999-2000 and 2022-2023, we observed a substantial decline in full-time/full-year employment, at a population level the equivalent of an average of four weeks a year when translated into hours, a substantial increase in employment of short tenures, work that is less likely to represent an improvement within a job or a new better job and more likely to be subject to irregular shifts. All of these changes result in greater frequency of economic strain in the household, despite employment. Both the employed and not employed working age populations in California are more likely to report fair or poor health and activity limitation. The importance of serial measurement of both employment and health measures is that, to determine the extent to which poor working conditions result in poor health or whether persons with health issues are less likely to gain or maintain employment, it is necessary to array health and employment over time.

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Table 1. Composition of Working Age and Employed Population of California, 1999-2000 and 2022-2023

	1999-2000		2022-2023	
Characteristic	**All**	**Employed**	**All**	**Employed**
	Cells are % (unless noted)			
Female	51.20	43.8	48.7	45.4
Age (mean, median)	38.2, 38	38.2, 38	40.2, 39	40.1, 39
Age Categories				
18-34	41.6	39.4	38.1	36.8
35-44	23.3	31.2	22.8	25.2
45-54	19.3	20.5	18.0	19.5
55-64	11.8	8.9	21.2	18.7
Race/Ethnicity				
Non-Hispanic White	55.1	56.4	34.4	36.6
Hispanic	17.8	26.5	34.1	32.5
Asian/Pacific Islander	6.1	5.6	12.4	12.7
African American	9.9	10.6	4.2	3.6
Other (includes those classifying themselves as multiracial)	1.1	1.0	15.0	14.4
Education				
High School or Less	33.0	28.4	36.2	30.8
Some College	34,8	34.5	30.0	29.6
BA	21.4	23.8	21.6	24.4
Some Grad School	10.8	13.3	12.2	15.2

Table 2. Employment Status of the California Working Age Population, 1999-2000 and 2022-2023

Employment Status	1999-2000	2022-2023	% Difference
	Cells are % (95% CI)		
Currently Employed	68.6 (66.7, 70.4)	70.0 (68.5, 71.4)	1.4
Employed in Past Year	80.3 (78.7, 81.9)	83.0 (81.8, 84.2)*	2.7
Ever Employed	96.8 (96.1, 97.5)	98.0 (97.5, 98.4)*	1.2

*Confidence intervals for 1999-2000 and 2022-2023 do not overlap.

Table 3. Kinds and Quantity of Employment and Effect on Household Economic Wellbeing among Californians 18-64, 1999-2000 and 2022-2023

Characteristic	1999-2000	2022-2023	Difference
	Cells are % (95% CI) unless noted		
Part-time	24.7 (22.8, 26.7)	28.7 (26.6, 29.7)	4.0
Part-time, Full-Year	9.3 (8.0, 10.6)	9.2 (8.2, 10.2)	-0.1
Part-time, Part-Year	15.4 (13.8, 17.1)	19.5 (18.2, 20.9)*	4.1
Involuntary Part-time	5.3 (4.2, 6.4)	6.8 (5.8, 7.7)	1.2
Full-time	75.3 (73.4, 77.2)	71.3 (69.7, 72.9)*	-4.0
Full-time, Full-Year	56.4 (54.2, 58.7)	51.8 (50.1, 53.6)*	-4.6
Full-time, Part-Year	18.9 (17.1, 20.6)	19.5 (18.2, 20.9)	0.6
Greater than Full-time	30.9 (28.9, 33.0)	27.5 (25.9, 29.0)	-3.4
Usual Hours Per Week – Mean	40.1 (39.6, 47.0)	37.6 (37.1, 38.1)*	-2.5 hours
Weeks Worked Past Year- Mean	43.6 (42.9, 44.3)	41.0 (40.5, 41.6)*	-2.6 weeks
Hours Worked Past Year - Mean	1844 (1805, 1883)	1629 (1596, 1661)*	-215 hours/yr
Hours Worked Past Year – Median	2080	1920	-160 hours/yr
Episodic Employment	26.4 (24.4, 28.4)	28.1 (26.6, 29.7)	1.7
Contingent Employment	8.8 (7.4, 10.2)	10.6 (9.5, 11.8)	1.8
Has Two or More Jobs	12.2 (10.6, 13.8)	13.4 (12.2, 14.7)	1.2
Job Tenure of One Year or Less	24.5 (22.4, 26.6)	29.8 (28.1, 31.5)*	5.3
Promotion or Better New Job Past Yr	37.8 (35.4, 40.1)	31.2 (29.5, 32.8)*	-6.6
Household in Poverty Despite Employment	12.9 (11.2, 14.5)	15.0 (13.6, 16.4)	2.1
Difficult to Live on Household Income, Despite Employment	18.1 (16.2, 20.0)	30.0 (28.2, 31.7)*	11.9

*****Confidence intervals for 1999-2000 and 2022-2023 do not overlap.

Notes

Definitions of Employment Variables

Full-time: working 35 hours a week or more

Full-year: working 48 weeks a year which may include paid vacation time

Greater than full-time: working more than 40 hours a week

Episodic employment: working fewer than 40 weeks a year

Contingent employment: Job that is not expected to last regardless of worker's performance or state of economy.

Household in poverty despite employment: Household income is at or below 125% of Federal Poverty Level despite individual's employment.

Table 4. Terms of Employment and Nature of Working Conditions in California, 1999-2000 and 2022-2023

Terms of Employment	1999-2000	2022-2023	% Difference
	Cells are % (95% CI)		
Self-employment	12.4 (10.8, 14.0)	13.5 (12.3, 14.8)	1.1
Independent Contractor	13.8 (12.1, 15.5)	16.4 (15.0, 17.8)	2.6
Temporary Agency Worker	3.1 (2.3, 4.0)	2.5 (1.9, 3.1)	-0.6
Nature of Working Conditions			
Regular Day Shift	78.1 (76.1, 80.1)	69.0 (67.3, 70.7)*	-9.1
Rotating or Variable Shift	13.5 (12.3, 15.6)	22.2 (20.7, 23.7)*	8.7
Work from Home at Least Some	32.1 (29.8, 34.4)	48.7 (46.8, 50.5)*	16.6
Supervise Other Workers	51.2 (48.8, 53.7)	41.1 (39.2, 42.9)*	-10.1
Covered by Union Contract	22.7 (20.6, 24.8)	22.2 (20.7, 23.8)	-0.5
Size of Firm			
0-99 Workers	53.2 (50.8, 55.6)	39.2 (37.4, 41.0)*	-14
1000 or More Workers	27.0 (24.8, 29.1)	32.5 (30.7, 34.2)*	5.5
Have Flexible Work Hours	56.3 (53.9, 58.8)	58.7 (56.9, 60.6)	2.4
Job Demands and Job Control – mean scores			
Requires Learning New Things	1.55 (1.51, 1.59)	1.53 (1.51, 1.56)	-0.02
Have Freedom to Decide How Work is Done	3.09 (3.04, 3.14)	3.05 (3.02, 3.09)	-0.04
Allows Own Decision Making	1.73 (1.79, 1.86)	1.83 (1.79, 1.86)*	0.10
Have Enough Time to Get Work Done	1.84 (1.79, 1.89)	1.87 (1.83, 1.90)	0.03
Required to Work Fast without Breaks	2.70 (2.65, 2.76)	2.88 (2.84, 2.91)*	0.18
Job with High Demands and Low Control	15.0 (13.2, 16.8)	16.3 (14.9, 17.6)	1.30
Job w. High Phys. Demands in One or More Task	68.7 (66.4, 71.0)	57.1 (55.2, 58.9)*	-11.6

*Confidence intervals for 1999-2000 and 2022-2023 do not overlap.

Table 5. Synthetic Measures of Change in Nature of Employment and Working Conditions in California, 1999-2000 and 2022-2023

Synthetic Measures of Employment	1999-2000	2022-2023	% Difference
	Cells are % (95% CI)		
Extent of Traditional Work			
Definition One	35.5 (33.2, 37.9)	31.7 (30.0, 33.5)	-3.8
Definition Two	25.7 (23.6, 27.8)	13.6 (12.3, 14.8)*	-12.1
Definition Three (applicable only to 2022-2023)		29.7 (28.0, 31.9)	
Employment Continuum			
Inadequate	21.0 (19.0, 23.0)	24.1 (22.4, 25.7)	3.1
Barely adequate	15.1 (13.3, 16.8)	21.5 (20.0, 23.1)*	6.4
Economically "good"	48.2 (45.8, 50.7)	45.8 (43.8, 47.7)	-2.6
Optimal	15.7 (13.9, 17.5)	8.7 (7.6, 9.8)*	-7.0
Integrating Traditional Work and Employment Continuum			
Traditional (Def. One) and Optimal Work	18.5 (15.3, 21.7)	13.9 (11.6, 16.2)	-4.6
Not Traditional (Def. One) and Optimal Work	14.1 (12.1, 16.3)	6.1 (4.9, 7.2)*	-8.0
Traditional (Def. One) and Inadequate Work	5.7 (3.8, 7.7)	5.3 (3.8, 6.8)	-0.4
Not Traditional (Def. One) and Inadequate Work	29.5 (26.7, 32.2)	33.6 (31.3, 35.9)	4.1

***Confidence intervals for 1999-2000 and 2022-2023 do not overlap.

Notes

Traditional Employment Definitions

One: Has one job, works 48 weeks a year or more and 35 hours a week or more, on regular day shift, has a permanent job, works for someone else and not as consultant or in temporary agency

Two: Definition One and never works from home

Three: Definition One and not in any form of alternative employment, including as consultant, temporary agency employment, on-call worker, or subcontracted worker

Employment Continuum Levels

Inadequate: In poverty despite work +/- meet at most one economic criterion and at most one psychological criterion or not in poverty despite work and don't meet any economic criteria

Barely adequate: Not in poverty despite work and meet at most one economic criterion; may meet at least one psychological criterion

Economically "good": Not in poverty despite work and meet two or more economic criteria; may meet at least one psychological criterion

Optimal: Not in poverty despite work, meets two of more economic criteria and two psychological criteria

Economic criteria: 1) Earnings above $20,000/year in 1999-2000 or its approximate equivalent in 2022-2023, $40,000/year 2) Not episodic employment, no job loss in prior year, and not in contingent job 3) Job with employer-provided health insurance

Psychological criteria: Job discretion greater than and job demands less than population mean

Table 6. Health Status of Working Age Californians, 1999-2000 vs. 2022-2023

Health Measure	1999-2000	2022-2023	% Difference
	Cells are % (95% CI)		
Fair or Poor Health			
All	15.1 (13.6, 16.6)	24.0 (22.5, 25.4)*	8.9
Employed	9.5 (7.9, 11.0)	19.0 (17.5, 20.5)*	9.5
Not Employed	28.6 (25.1, 32.0)	35.8 (32.3, 39.2)*	7.2
Activity Limitation	15.7 (14.2, 17.3)	22.7 (21.3, 24.2)*	7.0
Body Mass Index	26.4 (26.1, 26.6)	28.6 (28.3, 28.8)*	2.2
Smoking			
Current	21.2 (19.4, 22.9)	9.3 (8.3, 10.3)*	-11.9
Former	23.6 (21.7, 25.4)	17.4 (16.1, 18.1)*	-6.2
Never	55.2 (53.1, 57.4)	73.3 (71.8, 74.8)*	18.1
Pack Years	14.3 (13.2, 15.4)	9.8 (9.0, 10.6)*	-4.5
Alcohol Consumption			
Some in Past Month	60.9 (58.8, 63.0)	58.7 (57.0, 60.3)	-2.2
Binge Drinking in Past Month**	19.5 (17.8, 21.2)	23.3 (21.9, 24.8)*	3.8

*Confidence intervals for 1999-2000 and 2022-2023 do not overlap.

eSupplemental Table 1. Health Status of Working Age Californians, by Age, 1999-2000 and 2022-2023

Health Measure	Ages 18-34			Ages 35-44		
	1999-2000	2022-2023	% Difference	1999-2000	2022-2023	% Difference
	Cells are % (95% CI)			Cells are % (95% CI)		
Fair or Poor Health-%						
All	14.1 (11.4, 16.7)	18.5 (16.1, 21.0)	4.4	11.8 (8.9, 14.7)	23.9 (20.9, 26.8)*	12.1
Employed	10.3 (7.5, 13.2)	16.9 (14.2, 15.6)*	6.6	7.3 (4.6, 9.9)	21.1 (18.0, 24.2)*	11.8
Not Employed	22.4 (16.8, 28.0)	22.0 (16.8, 27.1)	-0.4	28.4 (19.8, 37.0)	33.0 (24.8, 41.1)	4.6
Activity Limitation-%	10.0 (7.7, 12.3)	14.5 (12.3, 16.2)*	4.5	15.6 (12.3, 18.8)	23.1 (20.2, 26.1)*	7.5
Body Mass Index	25.8 (25.3, 26.2)	27.2 (26.7, 27.6)	1.4	26.1 (25.7, 26.6)	29.2 (28.8, 29.7)*	3.1
Smoking-%						
Current	22.7 (19.5, 25.9)	5.5 (4.1, 6.9)*	-17.2	19.7 (16.1, 23.2)	10.4 (8.3, 12.5)*	-9.3
Former	16.5 (13.7, 19.4)	8.5 (6.8, 10.2)*	-8	19.6 (16.0, 23.1)	22.1 (19.2, 25.0)	2.5
Never	60.8 (57.0, 64.5)	86.0 (83.8, 88.1)*	25.2	60.8 (56.4, 65.2)	67.5 (64.2, 70.7)	6.7
Pack Years	4.8 (4.1, 5.6)	3.3 (2.7, 4.0)*	-1.5	13.0 (11.1, 14.9)	6.3 (5.5, 7.2)*	-6.7
Alcohol Consumption-%						
Some in Past Month	65.6 (62.0, 69.3)	57.0 (54.0, 60.1)*	-8.6	58.8 (54.4, 63.2)	62.1 (58.7, 65.5)	3.3
Binge Drinking in Past Month**	26.1 (22.7, 29.4)	24.8 (22.1, 27.4)	-1.3	17.7 (14.5, 21.1)	27.7 (24.6, 30.8)	10.0

Health Measure	Ages 45-54			Ages 55-64		
	1999-2000	2022-2023	% Difference	1999-2000	2022-2023	% Difference
	Cells are % (95% CI)			Cells are % (95% CI)		
All	17.3 (14.2, 20.3)	29.4 (26.1, 32.7)*	12.1	22.1 (17.9, 26.3)	29.8 (26.5, 33.0)*	7.7
Employed	10.8 (7.9, 13.8)	21.1 (17.9, 24.4)*	10.3	10.8 (6.5, 15.1)	17.8 (14.5, 21.0)	7.0
Not Employed	34.7 (27.4, 42.3)	55.0 (46.3, 63.6)*	20.3	35.0 (27.8, 42.2)	47.9 (41.2, 54.6)*	12.9
Activity Limitation-%	20.9 (17.6, 24.2)	26.3 (23.1, 29.4)	5.4	24.6 (20.2, 28.9)	19.0 (16.2, 21.9)	-5.6
Body Mass Index	27.3 (26.8, 27.7)	30.0 (29.5, 30.5)*	2.7	27.2 (26.7, 27.8)	29.2 (28.7, 29.7)*	2.0
Smoking-%						
Current	19.8 (16.6, 23.0)	13.2 (10.7, 15.6)*	6.6	22.5 (18.2, 26.8)	11.6 (9.3, 13.9)*	10.9
Former	31.5 (27.8, 35.3)	18.5 (15.7, 21.3)*	-13.0	40.5 (35.5, 45.5)	28.0 (24.8, 31.3)*	-12.5

Never	48.6 (44.6, 52.7)	68.3 (64.9, 71.7)*	19.7	37.0 (32.1, 42.0)	60.4 (56.8, 63.9)*	23.4
Pack Years	19.5 (17.4, 21.6)	11.7 (10.2, 13.5)*	-7.8	26.0 (12.8, 29.3)	16.4 (14.4, 18.5)*	-9.4
Alcohol Consumption-%						
Some in Past Month	60.5 (56.6, 64.5)	57.3 (53.7, 60.8)	-3.2	52.6 (47.5, 57.7)	59.1 (55.5, 62.6)	6.5
Binge Drinking in Past Month**	15.1 (12.2, 18.0)	22.1 (19.1, 25.1)*	7.0	11.9 (8.6, 15.2)	16.5 (13.8, 19.1)	4.6

*Confidence intervals for 1999-2000 and 2022-2023 do not overlap.
**Binge drinking defined as five or more drinks on an occasion.