

# Occupational Health in Human History: Precarious Work from the Stone Age to the Gig Economy

## Background

In 1970, the Occupational Safety and Health Act established the National Institute for Occupational Safety and Health (NIOSH) and the Occupational Safety and Health Administration (OSHA) with the goal of ensuring "safe and healthful working conditions for working men and women." In focusing exclusively on the workplace, the Act drew a line between work sources of health and non-work sources of health that had never existed. Human evolution, it can be argued, is closely linked to work. Each technological development has transformed the design of and consequently the risks associated with work. Moreover, each technological development has altered, often fundamentally, the demographic parameters defining the labor force

## The Old Stone Age



For most of our history, humans lived in a subsistence economy in which basic needs were provided through foraging, hunting, gathering, and more recently, simple horticulture. While not the continually dire hand-to-mouth existence depicted in popular culture, humans living a subsistence lifestyle survived under precarious economic conditions that were especially susceptible to vagaries of the climate. Consequently, the technology and organization of work in the Stone Age, dictated that one must always be prepared to work. In the more recent past, the economic transition from hunting and gathering to agriculture was accompanied by, if not caused by, social and demographic changes that brought adverse health effects

## Rodeo Cowboys Compared to Neanderthals

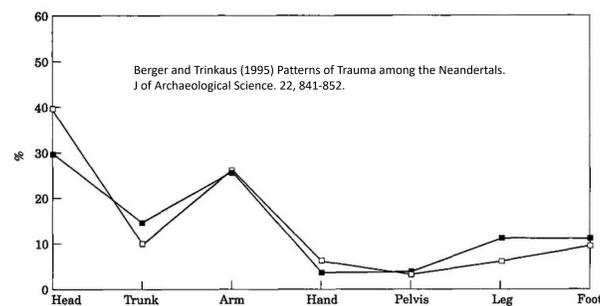


Figure 3. Percentage distributions of traumatic lesions by anatomical region for the Neanderthal total lesion sample (solid squares) versus a sample of modern human Rodeo athletes. See Table 2 and text for sample composition. —■—: Neanderthals; —□—: Rodeo.

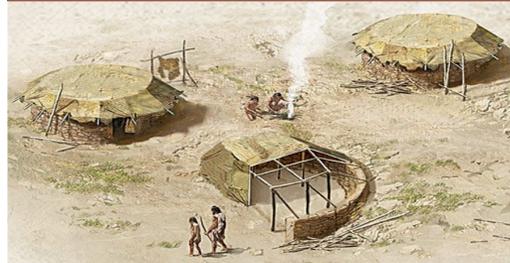


"Something's just not right —our air is clean, our water is pure, we all get plenty of exercise, everything we eat is organic and free-range, and yet nobody lives past thirty."

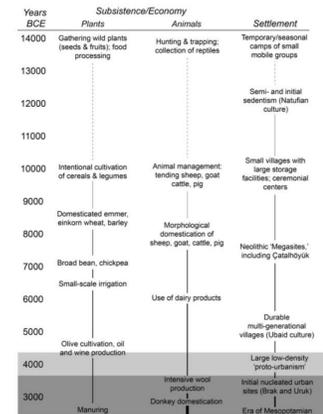
<http://KevinMKelly.com>

Kevin M. Kelly

## The Rise of Agriculture (& Sedentism & Intensification & Industrialization)



<http://damienmarieathope.com/2017/03/natufians-an-ancient-people-at-the-origins-of-agriculture-and-sedentary-life/>  
Natufian culture (12,500-9,500 BCE)  
Eastern Mediterranean sedentary or semi-sedentary incipient agricultural population

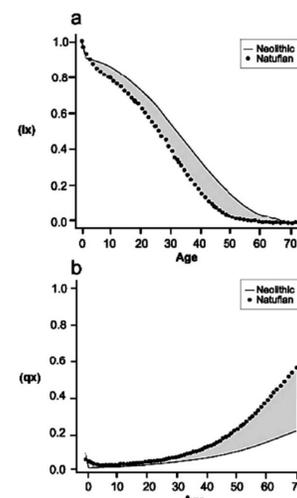
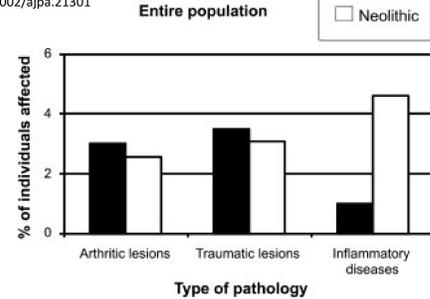


Cliff Palace Pond "fall harvest," Late Archaic/Early Woodland period (1000–200 BCE). Credits: Artist Rex Robinson, © 2000, Kentucky Heritage Council



## Work-Related Injury & Death

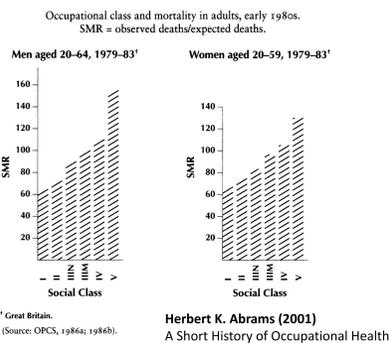
American Journal of Physical Anthropology  
Volume 143, Issue 1, pages 121-133, 27 MAY 2010 DOI: 10.1002/ajpa.21301



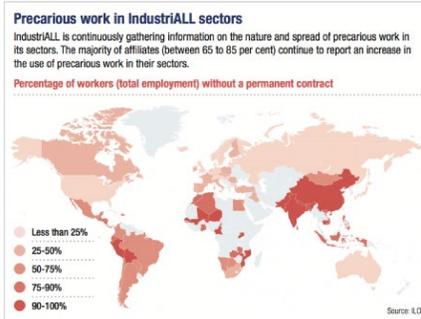
The sedentary lifestyle required by the design of agricultural work allowed infectious diseases to spread more easily as well as for sanitary conditions to worsen as human and animal waste and rubbish accumulated locally. Increasing population density associated with the intensification of agriculture further exacerbated these health conditions and later, the industrial revolution introduced additional hazards associated with mechanization.

## Industrialization

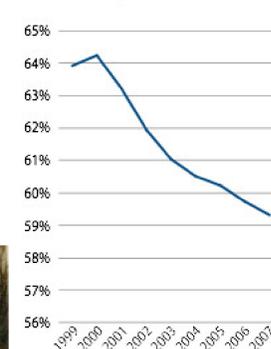
### Social Status & Health



### Employment Status & Health

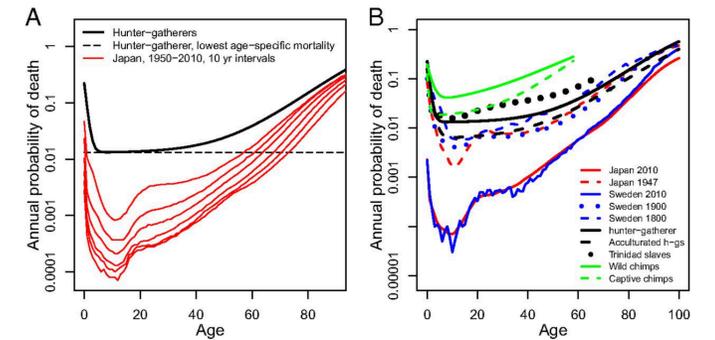


### Share of workers with employment-based health insurance, 1999-2007



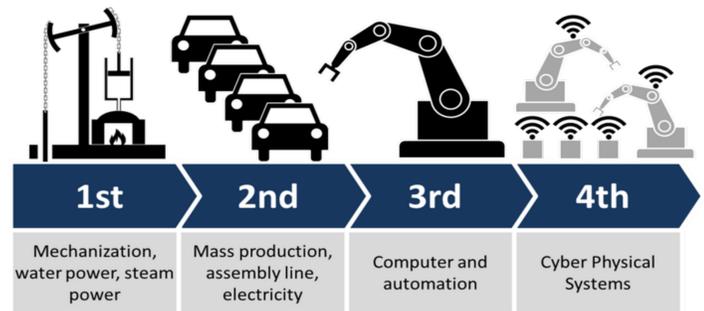
<https://www.americanprogress.org/issues/healthcare/reports/2009/05/04/6063/more-americans-losing-health-insurance-every-day/>

## Technology & Health



Oskar Burger et al. PNAS 2012;109:18210-18214

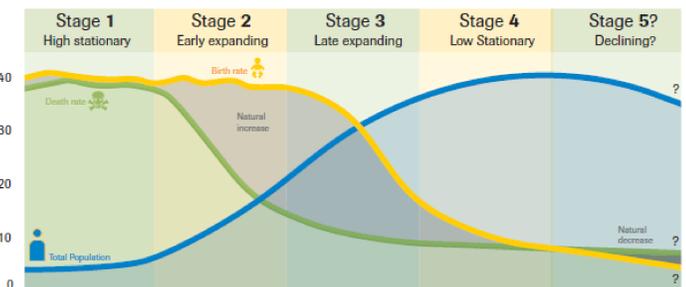
## Looking Ahead to New Technologies



<https://www.forbes.com/sites/bernardmarr/2016/04/05/why-everyone-must-get-ready-for-4th-industrial-revolution/#bc356883f90b>

In the present day, technological innovations have brought about changes that are being referred to the Fourth industrial Revolution—a new era of subsistence economics where work again occurs with great uncertainty and where a significant portion of the workforce must always be looking for work. This revolution has ushered in a new era of sedentism that has fundamentally altered the health risks of traditionally associated work. At the same time, the changing the patterns of births and death have profoundly transformed who is available and who is needed to work

## Planning Ahead For a Diminishing Workforce



## Acknowledgement

Supported by NIOSH Grant No. U19OH008868



<http://HealthierWorkforceCenter.org>

Looking back over human history, work, and in particular, one's role in the organization of work has been a major determinant of one's socioeconomic status and hence, of one's health.

