National independence, women's political participation, and life expectancy in Norway

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**Abstract**

This study investigates the role of national independence and women's political participation on population health using historical lifespan data from Norway. We use time-series methods to analyze data measuring the actual length of time lived by Norwegian birth cohorts spanning a 61 year period surrounding the political emancipation of Norway from Sweden in 1905 and the establishment of a Norwegian monarchy in 1906. The use of a discrete, historical event improves our ability to interpret the population health effects of national independence and women's political participation as causal. We find a large and significant positive effect on the lifespan of Norwegian females born in the 1906 cohort. Interestingly, the effect does not extend to all living females during the Norwegian drive toward sovereignty. We conclude that the beneficial effects were likely conferred through intrauterine biological transfers and/or neonatal investments specific to the first year of life.

**Keywords:** Norway, Political processes, Life expectancy, Time-series analysis, Intrauterine and neonatal transfers, Historical demography, Women, Lifecourse

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**Introduction**

Recent research documents a robust, positive correlation between civic participation and life expectancy. This observed relationship appears to exist on multiple ecological scales; i.e., across provinces (Young & Lyson, 2001), states (Kawachi, Kennedy, Gupta, & Prothrow-Stith, 1999), and nations (Young, 2001). The relationship between civic engagement and life expectancy has received considerable attention in part because it connects political and social processes that are not usually thought of as direct determinants of health with a robust (albeit cumulative and multicausal) indicator of human health. Popular participation in political processes may also indicate or correlate with the presence of collective identity, social capital, and collective efficacy and their apparent salutary impact on the male and female lifespan via access to services, social support, or more direct effects on health risk behaviors (Skrabski, Kopp, & Kawachi, 2004). Furthermore, participation in civic or political process is assumed to index individual characteristics that health psychologists have long associated with positive health outcomes, such as perceived control and self-efficacy. These psychological characteristics have been linked with better health behaviors (Burns & Dillon, 2005) as well as lower physiological stress (Sapolsky, 1999).

Mounting evidence shows that the salutary impact of political participation on life expectancy is closely linked with women's civic engagement. For example, Miller (2008) found that women's suffrage in the U.S. was linked with legislative changes that favored increased public health spending and a concomitant decrease in child mortality due to infectious disease; benefits from these legislative changes could be observed in the exact year associated with female suffrage in each state. Meanwhile, Kawachi et al. (1999) found women's legal rights and political participation to be associated with both male and female longevity across U.S. states. Furthermore, experimental evidence from India after the mandatory imposition of reserved local council seats for women indicates that female involvement in political decision making increases spending on and availability of public goods salutary to health, such as clean water (Chattopadhyay & Duflo, 2004).

The positive impact of women's decision-making on life expectancy does not stop at the level of the state. Rather, there is mounting evidence of the salutary impact of gender equity and women's empowerment at multiple levels – from household to institution to cultural values – on the health of children (Moss, 2002). At the household level, women with more decision-making power appear to make decisions about fertility timing, total...
There is considerable evidence that the decisions women make at the household, community, and state level preferentially favor improvements in female health and longevity, especially in less developed nations (Williamson & Boehmer, 1997). There may be many reasons for this pattern. For example, Thomas (1994) provides evidence from multiple countries that when in control of household resources, mothers preferentially invest in daughters and fathers invest in sons. At the state level, female legislators may promote gender-specific preferences (Chattopadhyay & Duflo, 2004). Preferential gains in female health and longevity concomitant with female empowerment at multiple levels (from household to state) are often due to the balancing of pre-existing systemic biases favoring male health and longevity (Moss, 2002). For example, female literacy and labor participation is associated with reduced female disadvantage in child mortality across states in India (Murthi, Guio, & Dreze, 1995).

Furthermore, female offspring may simply be more able to take advantage of broad-based improvements in the physical environment to actualize gains in total lifespan. Partially due to evolved biological reasons, men suffer increased morbidity and mortality due to behaviors that are less amenable to public health intervention (Weden & Brown, 2006). For example, Miller (2008) shows that both male and female infants benefited from lower death rates linked to infectious disease after female suffrage. However, deaths due to violence, accidents, suicide, and cardiovascular disease (all of which men suffer disproportionately) actually increased after women’s suffrage in the U.S. These causes of death are multiply determined, largely behaviorally driven, and do not have a single (e.g., infectious) agent that can be easily adjusted.

Thus, there are multiple reasons to expect that the health benefits of female empowerment and political participation should be more pronounced among female offspring. Nonetheless, female empowerment in more developed environments (where basic public health measures are already in place) may incur further benefits in both male and female longevity, as shown by Kawachi et al. (1999) analysis of variation in gender equity across U.S. states, as well as similar evidence from Mexico (Idrovo & Casique, 2006). Some evidence suggests that in highly equitable societies – for example, Sweden in the present period – additional blurring of gender lines with respect to political participation is correlated with illness and shortened life expectancy for both women and men (Backhans, Lundberg, & Månsdotter, 2007). While the contexts of these studies vary, their findings highlight the importance of looking for health effects of emancipation and civic participation in both female and male populations.

The above literature focuses on health transfers to the next generation that appear to occur through the process of parental investments in children. Another relevant pathway through which national independence and civic participation is likely to influence the health of the next generation is through biological transfers that happen in utero. For example, neighborhood measures of collective efficacy and trust were found to be associated with lower prevalence of low birthweight infants in the United States (Morenoff, 2003). Related research demonstrated that birth outcomes among children born to Arabic-named women in California significantly worsened in the months following the September 11th, 2001 attacks (Lauderdale, 2006); this finding was attributed to the stressful experiences of discrimination. Moreover, stressful exogenous shocks show clear evidence of reducing the sex ratio (less males born), likely via differentially high spontaneous abortion of male conceptuses (e.g., Catalano & Bruckner, 2005; Catalano, Bruckner, Marks, & Eskenazi, 2006).

Both human and animal literature on the transfer of intrauterine conditions to offspring frequently finds sex differences. Often, research has found that prenatal conditions more readily transfer to female offspring, including prenatal effects on birth weight (Schneider, Moore, Kraemer, Roberts, & Dejesus, 2002), endocrine function (McCormick, Smythe, Sharma, & Meaney, 1995), learning (Gue et al., 2004), and pain perception (Sternberg, 1999). Sex differences in sensitivity to the mother’s nutritional (Metcalfe & Monaghan, 2001) and hormonal (Grigore, Ojeda, & Alexander, 2008) state have also been documented in animal models, and observational evidence in humans indicates sex-specific sensitivity in the biological programming of the cardiovascular system via maternal nutritional state (Adair, Kuzawa, & Borja, 2001). It is clear then that the transfer of noxious contextual conditions onto offspring can have lasting population health effects and that these effects can be sex-specific. However, what might be the effect of a presumably positive exogenous shock; a peaceful political emancipation and dramatic upswing in female political participation?

Existing tests of the relationship between civic engagement/political participation (whether female-specific or not) have nearly all involved comparing a cross-sectional indicator of political participation with concurrent population averages for life expectancy. Miller’s study (2008) is unusual, in that it utilizes differences in the timing of women’s suffrage across states to better assess the potentially causal nature of female political participation on child health. Notably, Miller’s (2008) analysis finds that reductions in mortality rates are linked to the precise year of female suffrage, suggesting a very rapid and temporally specific effect of female political participation on population health.

To complement existing literature, we conducted a prospective test of the relationship between national sovereignty, female political participation and human longevity, using time series methods to detect changes in cohort life expectancy for a population affected by acute changes in political context. To do this, we capitalize on a unique historical event and unusually comprehensive data set. The approach provides an important methodological complement to the more common method of documenting the relationship between political context and population health, which traditionally measures regional covariance of the two phenomena. Interpreting a regional correlation as evidence of causation requires consistent measures of geopolitical context and women’s status across regions as well as accurate measures of “control” concepts to adequately rule out competing explanations. Both measures are difficult to develop (e.g., Mason & Smith, 2000; Moss, 2002). The use of a discrete and dramatic historical event with population data measured both before and after the event’s occurrence allows us to navigate several sources of potential attribution error.

Our event of interest is the independence of Norway from Sweden in 1905. This largely peaceful separation provides a unique opportunity to measure the potentially salutary effects of political emancipation because unlike most political separations, war and an attendant mortality spike did not accompany Norwegian independence. We describe the details of this period below, but it is useful to note here that the separation 1) saw a dramatic political mobilization around the issue of sovereignty, particularly among women, 2) had an important temporal component, and 3) indirectly led to a large public health intervention focused on mothers and children.

Political mobilization included a referendum in which 85% of the male population voted. Norwegian women, who were not allowed to vote in the referendum, organized a petition in favor of

fertility, and resource allocation that favor child health and longevity (Moss, 2002). At the community level, women are often involved in collective organizations designed to increase the public good, including health and well-being (Lapin & Kelber, 1994; Smuts, 2006).

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