

**Title:** Trust and mortality in the contemporary United States

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Among nations with high wealth and development, all-cause mortality rates are the highest in the United States. This excessive mortality is evident for both men and women, and for all age groups except for the oldest old.<sup>1</sup> Public health experts increasingly recognise that this remarkable failure is much more than a matter of patchy health care coverage, growing socioeconomic disadvantage, and changing ethnic composition.<sup>1</sup> Although these characteristics undoubtedly set the US apart from its peers, other facets of society are also important for people's health in the US. It is widely accepted that social relationships influence health and longevity;<sup>2</sup> and among US adults, generalised trust recently reached its lowest level since 1972.<sup>3</sup> Highly dependent on the social context, generalised trust is markedly lower in the US than in many European countries.<sup>3</sup> Trust – the belief that the sincerity, benevolence, or truthfulness of others can be depended on<sup>4</sup> – is an indicator of social cohesion. Social cohesion reflects the psychosocial environment,<sup>2</sup> and is expressed by trust, altruism, reciprocity, norms and values that are shared between members of a community.<sup>5</sup> Markers of social cohesion (including trust) have been associated with better physical and mental health outcomes, including mortality according to various studies.<sup>2,5,6</sup> As US adults die sooner on the one hand, and experience lower levels of generalised trust on the other – relative to counterparts in similarly developed countries; an investigation on the relationship between generalised trust and mortality is needed to understand US population health and its determinants.

The paper by Giordano, Mewes, and Miething<sup>7</sup> is the first nationwide report on this relationship, using data from the 1978 – 2010 General Social Surveys linked with subsequent death records via the National Death Index (GSS-NDI), so far up to 2014. The study supplements early findings of a robust association between interpersonal trust (of peers, parents, teachers, physicians, and politicians, among others) and all-cause mortality in a small cohort of older US adults,<sup>4</sup> and provides up-to-date nationally representative evidence on all-cause mortality risk by generalised trust among US adults aged 18 years and over.

As in most social epidemiological literature,<sup>6</sup> the study measured generalised trust using individual responses to the question, “Generally speaking, would you say that most people can be trusted...?” In order to presume this denotes social cohesion, investigators rely on the assumption that responses reflect the perceived psychosocial environment, rather than trusting attitudes influenced by cognitive or affective biases. Hence, it is important to disentangle the individual and contextual dimensions of generalised trust to assess its effect on mortality in a precise way. Previous work on generalised trust and mortality in the US,<sup>4</sup> Northern Europe,<sup>8,9</sup> and Japan<sup>10</sup> did not employ multilevel analytical techniques, which could not discount potential information biases. Without a multilevel framework, it is also impossible to control for contextual-level factors that may confound the hypothesised trust-mortality relationship. Giordano and colleagues address these two evidence gaps by adopting a multilevel approach in their study; and by including area-level measures of household income and income inequality, two contextual determinants of both health and social cohesion.

Differences in all-cause mortality rates are evident by generalised trust at both the individual and contextual level, which grouped adults according to census region and size of area of residence. (These units may be too vast to measure the communities to which adults perceive themselves to belong to, but the authors report that more finite units were unavailable for analysis). At the individual level, US adults who agreed that most adults could be trusted

have a 17% lower risk of all-cause mortality, compared to those who do not. Contextual-level generalised trust, aggregated from individual responses, also protects against mortality, but to a smaller degree at 7%. There was some attenuation by socioeconomic and demographic characteristics at both levels, but the beneficial effect of both individual- and contextual-level generalised trust against mortality remained robust at 8% and 4%, respectively, in fully adjusted models. Notably, these effects were greater than those by income. For every \$10,000 increase in individual- and contextual-level household income, mortality risk diminishes by 6% and 1%, respectively. Giordano, Mewes, and Miething advocate for egalitarian policies to reduce mortality differentials by generalised trust in the US.

As discussed by the authors, the strong relationships observed in the US are inconsistent with evidence emanating elsewhere. A systematic review concluded no significant relationship between trust and all-cause mortality based on studies from Japan, Finland, and Sweden.<sup>6</sup> Other findings from Denmark,<sup>9</sup> Finland,<sup>8</sup> and Japan<sup>10</sup> suggested that relationships existed for one gender but not the other, with contradictory results; whereas Giordano and colleagues found that mortality differentials were strong for both US men and women. This small literature points to a palpable country difference: income inequality. The GINI coefficient, ranging from 0 (perfect equality) to 100 (perfect inequality), is much higher in the US (45.0, 2007) than in Japan (37.9, 2011) and in the three Northern European countries (ranging from 24.9 in Sweden, 2013 to 29.0 in Denmark, 2016).<sup>11</sup> Socioeconomic factors influence not only health and longevity, but also social cohesion across many societies.<sup>1 2 5</sup> In the US, the proportion of adults reporting generalised trust declined in a stepwise manner as the GINI coefficient increased from 1960 to 1998.<sup>12</sup> Minimizing socioeconomic inequality is, therefore, an obvious response to the findings by Giordano and colleagues.

In order to move social care and public health policies forward, investigators must provide a richer understanding on the social cohesion–health relationship. For instance, social scientists do not agree on the causal sequence between socioeconomic inequality and social cohesion; some have concluded that inequality erodes cohesion (and not vice versa), while others describe a symmetrical relationship as inequality and (lack of) cohesion reinforce each other.<sup>12</sup> The former sequence suggests that programs aimed to increase community participation and cohesion may be ineffective unless socioeconomic inequality is first addressed. Furthermore, a systematic review on the relationship between social cohesion (and other markers of social capital) and all-cause mortality found that the existing evidence was limited by low study power and residual confounding. In addition, no prospective studies included in the review provided direct evidence on potential mechanisms, despite the fact that plausible causal pathways are well-theorised in the literature.<sup>6</sup>

In conclusion, the large-scale, national study by Giordano and colleagues is a welcome addition to this literature, which underscores the potential importance of social cohesion on the mortality of US adults. Prospective studies using causal inference techniques are needed to confirm this relationship. Given the dramatic changes in both cohesion<sup>12</sup> and mortality<sup>1</sup> in the US over the past several decades, future investigations on potential age, period and cohort effects are also important.

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