1 **Title: Homicides in Mexico increased inequality of lifespans and slowed down life expec-**
2 **tancy gains in 2005-2015**
3

4 **Abstract**

5 **Objectives** To quantify the effect of the upsurge of violence on life expectancy and lifespan ine-
6 quality in Mexico after 2005.

7 **Methods** Age- and cause-specific contributions to changes in life expectancy and lifespan ine-
8 quality conditional on surviving to age 15 between 1995 and 2015 were calculated. Homicides,
9 medically amenable conditions, diabetes, ischemic heart diseases, traffic accidents by state and
10 sex were analyzed.

11 **Results** Male life expectancy at age 15 increased more than twice in 1995-2005 (1.17 years) than
12 in 2005-2015 (0.55 years). Lifespan inequality decreased by more than half a year for males in
13 1995-2005, while in 2005-2015, the reduction was about four times smaller. Homicides between
14 ages 15-49 had the largest effect on slowing down male life expectancy and lifespan inequality.
15 Between 2005 and 2015, states in the North experienced life expectancy losses, while five states
16 increased lifespan inequality.

17 **Conclusions** After ten years of the upsurge of violence, Mexico has not been able to reduce the
18 levels homicides to those prior to 2005. Thus, males in Mexico live less, on average, and experi-
19 ence higher uncertainty in their eventual death.

20

21 **Keywords:** violence, lifespan variation, avoidable mortality, causes of death, public health.
22

23

24 Word count: 3048

Introduction

Violence has become a major public health issue in Latin America.[1] This region currently experiences the highest homicide rate in the world (over 16.3 per 100,000 people), with some countries in Central America, including Mexico, undergoing an upsurge in homicides since the first years of the 21st century.[2] In Mexico, for example, homicide rates doubled between 2007 and 2012 (from 9.3 to 18.6).[3] As a result of this increase, along with an increasing burden of diabetes, male life expectancy in Mexico stagnated in the period 2000-10.[4] At the subnational level, gains in life expectancy due to causes amenable to medical service, such as infectious, respiratory diseases and birth conditions, were wiped out by the increase of homicides after 2005 in each of the 32 states in Mexico, with large regional variations.[5]

Trends in life expectancy are important and have been studied in Mexico and its states.[4-6] However, life expectancy masks inequality of lifespans or lifespan variation.[7]. Variability in ages-at-death has arisen as an important topic since it addresses the growing interest in health inequalities[8], and because it is a marker of heterogeneity at the population level, while it expresses the uncertainty in time of death at the individual level. Studying both life expectancy and lifespan inequality adds an important dimension to the study of population health because these indicators represent individuals' decisions based not only on their expected lifetime, but also on the uncertainty in their timing of death.[9] Most studies have found a negative association between these two measures, suggesting that as life expectancy increases, inequality in lifespans decreases.[10-12] However, at the subnational level increases in lifespan variation may simultaneously occur with increases in life expectancy, mostly due to a slowdown in mortality improvements in working ages (e.g., premature mortality).[13,14] This is particularly relevant for countries that have experienced an upsurge in homicides, since this increase has mainly affected working age individuals.

48   In Mexico, homicide mortality is concentrated between ages 15 and 50, affecting mainly

49   males.[3] We thus hypothesize that the Mexican population may be experiencing increases in

50   lifespan inequality due to the rise in homicides in tandem with declines in overall life expectancy

51   at the subnational level. We also expect larger changes in lifespan inequality among men and

52   uneven variability across states in the country due to the changing dynamics of violence and hom-

53   icides in Mexico.[15] For instance, states in the Northern part of Mexico (e.g., Chihuahua, Durango

54   and Sinaloa) experienced the largest losses in life expectancy due to homicides between 2005

55   and 2010[5] and it is likely they also exhibited large lifespan variation during that period, although

56   this impact may now be larger in other states as homicides spread throughout the entire country in

57   recent years.[16] However, since the more pronounced fluctuation in age-specific mortality occurred

58   over working ages,[5] it is unclear what the net effect would be on lifespan inequality but it certainly

59   had an effect on premature mortality. On the other hand, medically amenable mortality improve-

60   ments (which have been Mexico's priority since the 1990s).[17,18] could have substantial effect on

61   reducing variation in lifespans, particularly in historically poor states, which are mostly concen-

62   trated in the South.

63   This paper makes three main contributions. First, it contributes to the literature on lifespan

64   variation and inequalities in health in the context of rising homicides. Most literature in this area

65   focuses on social determinants of health (e.g., socioeconomic status and health risk factors) as

66   proximate determinants of lifespan variation and health inequality.[19] In contrast, our paper high-

67   lights the role of violence, and its ultimate consequence in the form of homicides, among young

68   adults on increasing lifespan inequality. A second contribution is its focus on Mexico. Mexico is

69   experiencing a growing violence associated with the war on drugs that started in the last decade,

70 making the increase in homicides a serious health policy concern.[5,16] Understanding the conse-

71 quences that homicides have on population health is important for policy makers in Mexico and in

72 other countries that are experiencing similar increases in homicides such as Honduras in Central

73 America, and Venezuela in South America.[2] Finally, this analysis contributes to our knowledge of

74 regional inequality in lifespans.

75   Here, we analyzed how life expectancy and lifespan inequality for the young population

76 changed over a 20-year period, from 1990 to 2015 for females and males in Mexico. This frame-

77 work allows us to thoroughly analyze premature mortality and determined the ages and causes of

78 death that contributed the most to the observed changes.

79

80 **Methods**

81   We used data on deaths from vital statistics files publicly available through the Mexican

82 Institute of Statistics[20] that includes information on cause-of-death by age, sex, and place of oc-

83 currence from 1995 to 2015. Additionally, we used population estimates corrected for complete-

84 ness, age misstatement, and international migration from the Mexican Population Council to con-

85 struct age-specific death rates by age, sex and state.[21]

86 *Cause-of-death classification*

87   We classified deaths into eight categories representing the main causes of death in Mexico

88 [5] using the concept of Amenable/Avoidable mortality (Table 1). [22] This concept assumes that there

89 are some conditions that should not cause death in the presence of timely and effective medical

90 care, and are used as a proxy for the performance of health care systems.[22] To mitigate biases due

91   to misclassification of causes of death, we focused on deaths occurring below age 95 since cause-

92   specific coding practices above that age are less reliable due to the presence of comorbidities.

93   We study two comparable 10-year periods, between 1995 and 2005, and from 2005 to

94   2015. This allowed us to identify a period of mortality improvements (1995-2005) in which life

95   expectancy increased by 2.1 and 4.3 years for males and females, respectively,[21] and homicide

96   rates declined among young adults.[20] The second period (2005-2015) is characterized by the up-

97   surge of violence and homicides in Mexico.[5]

98   *Lifespan inequality indicator*

99   We use 'years of life lost' as a dispersion indicator and we refer to it as "lifespan ine-

100   quality" or "lifespan variation" from age 15. It is defined as the average remaining life expectancy

101   when death occurs above age 15, or life years lost due to death (see Supplementary Material for a

102   summary).[10] For example, if in a cohort of newborns all die at the same age then the value of

103   lifespan inequality is zero; to the extent that death occurs at different ages, those who die "prema-

104   turely" will die before their expected lifetime contributing lost years to lifespan variation. We

105   condition on surviving to age 15 to capture the onset of homicides.

106   This indicator has three main properties: it is easy to understand, to interpret, and to

107   decompose thereby allowing us to quantify the impact of age and cause-specific mortality on

108   changes in lifespan variation over time.[23] Moreover, there is a high correlation between our pre-

109   ferred indicator and other measures of variability in ages at death (e.g., variance, or the Gini co-

110   efficient) suggesting that our main results would be consistent with those obtained with any of

111   these additional measures.[24]

112

113   *Demographic methods*

114   To mitigate random variations in cause-of-death classification, we smoothed cause-spe-

115   cific death rates over age using a 1-d p-spline separately by year, sex and state.[25] We then rescaled

116   the smoothed cause-specific deaths to all-cause death rates to maintain the overall mortality level.

117   Using these mortality rates we computed period life tables for each year (1995 to 2015), state and

118   sex following standard demographic methods.[26] Finally, we computed life expectancies and

119   lifespan variation conditioned on surviving to age 15 and estimated the age- and cause-specific

120   contributions to differences between the study periods using standard decomposition techniques

121   (see Supplementary Material).[27] All analyses were carried out using R[28]. In addition, we created

122   an interactive app to perform sensitivity analyses available here.

123   **Results**

124   *Results at the national level*

125   As expected, results for males show the largest impact of homicides on life expectancy and

126   lifespan variation for both time periods (Figures 1-4). We thus focus on these results (females'

127   results are shown in Supplementary Material, figures S1-S4).

128   Figure 1 shows age- and cause-specific contributions (in years) to male life expectancy's

129   changes at age 15 between 1995 and 2005 (Panel A) and between 2005 and 2015 (Panel B). Ver-

130   tical values in rectangles next to the y-axis represent age-specific contributions, while bars' length

131   correspond to cause-specific contributions by age. Overall cause-specific contributions across all

132   ages are shown in the panel's legend in parenthesis (also in years).

133   Among men, life expectancy at age 15 increased more than twice as fast in 1995-2005

134   (1.17 years) than in 2005-2015 (0.55 years). Most causes of death contributed to life expectancy's

135   improvement in 1995-2005 (except for diabetes, heart disease and accidents). Importantly, homi-

136   cides declined in 1995-2005 and this contributed to about one-fourth (0.44 years) of the overall

137   gain in life expectancy in this period. About 80% (0.36 years) of this contribution was concentrated

138   between ages 15-49 (red bars in Figure 1, panel A). In contrast, the slowed down improvement in

139   life expectancy in 2005-2015 was mainly the result of rising homicides (mostly between ages 15-

140   49) and heart diseases (panel B), hence their negative contributions. Results for women suggest

141   continuous improvement in life expectancy over time with a negligible impact of homicides. (Sup-

142   plementary Material, figures S1-S4). Female life expectancy increased by 0.58 year in 1995-2005

143   and by an additional half year of life in 2005-2015; all these resulted from mortality improvements

144   in most causes of death, except for diabetes and medically amenable.

145

146   [Figure 1]

147

148   Figure 2 shows results for lifespan inequality in both periods. This figure depicts infor-

149   mation in a similar format to that in Figure 1. Panel A of Figure 2, for example, shows that lifespan

150   inequality reduced by more than half a year between 1995 (14.31) and 2005 (13.77). This means

151   that, on average, Mexican males were losing six months of life less at their time of death in 2005

152   than in 1995. Although lifespan inequality also declined between 2005 and 2015 (-0.15), the re-

153   duction in 1995-2005 was about four times larger. In other words, male lifespan inequality was

154   stagnant in recent times. Nonetheless, improvements in other causes of death contributed to a re-

155   duction in lifespan inequality in both periods; for example, mortality declines in accidents and

156   cirrhosis at younger ages. Importantly, homicides (about 0.17 years at ages below 60) and amena-

157 ble causes of death had the largest effect on increasing lifespan variation in 2005-2015 (e.g., pos-

158 itive contribution). For females, lifespan variation decreased since 1995. There is a tipping point

159 at around age 70 indicating the importance of cardiovascular disease, diabetes and medical services

160 at older ages in reducing lifespan inequality, while accidents, homicides and cirrhosis play a larger

161 role at younger ages. These results underscore the major role of rising homicide rates among young

162 adults in recent times and the consequent slow improvement in reducing lifespan inequality.

163

164   [Figure 2]

165

166 *Results at the state level*

167   Figure 3 shows changes in life expectancy (panel A) and in lifespan inequality (panel B)

168 for males in each of the 32 states in Mexico between 1995 and 2005 (blue dots) and between 2005

169 and 2015 (red triangles). We grouped states into three broad regions: North, Central and South.

170   Life expectancy among males had a larger increase in 1995-2005 than in 2005-2015 across

171 all states (panel A), but some states experienced reductions in life expectancy in 2005-2015 par-

172 ticularly in the North (e.g., Chihuahua, Nuevo León and Sinaloa). Lifespan inequality (panel B)

173 was reduced in most states over the two decades, 1995-2015, except for states in the North. For

174 example, every state between 1995 and 2005 had major reductions in lifespan inequality of at least

175 0.4 years, particularly those in the South (e.g., Chiapas, Oaxaca and Puebla), but between 2005

176 and 2015, all states in the north had negligible reductions in lifespan variation with five states

177 having a large increase (Chihuahua, Nuevo León and Tamaulipas --all bordering with Texas in the

178 US, Sinaloa and Durango).

179   [Figure 3]

180

181

182   We further assess the cause-of-death contributions by state to changes in lifespan inequality

183   (Figure 4). We focus on the main causes of death, for contributions from all cause-of-death cate-

184   gories and females' results see Supplementary Material figures S4-S7.

185   Except for one state in the North (Baja California Sur) and one in the central part (Tlax-

186   cala), every state decreased lifespan inequality due to improvements in medically amenable causes

187   of death and homicides between 1995 and 2005. As we hypothesized, the states showing the larger

188   reductions were mostly concentrated in the southern region of Mexico (e.g., Chiapas, Oaxaca,

189   Puebla, Guerrero and Morelos). A decade later (2005-2015), however, there is more heterogeneity

190   on the contribution of causes of death to lifespan inequality. For example conditions amenable to

191   medical service contributed to reductions in lifespan inequality in most states, while homicides

192   increased variation of lifespans. Although the increase in homicides affected lifespan inequality in

193   all states after 2005, one state in the South was affected the most (about 1 year increase for males

194   and about two months for females in Guerrero), followed by some states in the North (increase of

195   about 0.75 and 0.5 year in Chihuahua and Sinaloa) and in the central part of the country (e.g.

196   Colima). Mortality due to diabetes shows negligible contributions to lifespan inequality in both

197   periods. Results for females indicate substantial reductions in lifespan inequality from medically

198   amenable conditions, diabetes and IHD in the period 1995-2015.

199   [Figure 4]

200

201   **Discussion**

202   After 10 years of the beginning of the War on Drugs, the Mexican government has not been

203   able to reduce homicides and its effects, at least to the levels observed back in 2005. Due to the

204   strong impact of homicides in 2005-2015, improvements in male life expectancy and lifespan in-

205   equality at age 15 slowed down relative to the trend observed in the previous decade, during which

206   young males experienced an increase of more than one year in life expectancy and a decrease of

207   more than half a year in lifespan inequality.

208   Despite major public health interventions between 2005 and 2015, such as the enactment

209   of a universal health-insurance program (*Seguro Popular*),[29] every state in the country experienced

210   less progress in life expectancy at age 15 than in the previous decade due to the spread of homicides

211   throughout the country after 2005[16]. This is consistent with previous research documenting the

212   impact of homicides between 2000 and 2010.[4,5] Despite recent efforts from the Mexican govern-

213   ment to contain the upsurge of violence in the country,[30,31] data up to 2015 shows that life circum-

214   stances among young adults have not improved and are actually deteriorating. For example, al-

215   most every state experienced a reduction in life expectancy at age 15 across all regions in Mexico

216   due to homicides (Fig S7). The strongest effect occurred in Guerrero, a state in the Southern

217   region, were life expectancy was reduced by almost 2 years between 2005 and 2015, followed by

218   Chihuahua and Sinaloa in the North, with life expectancy losses of one year each, three additional

219   states in the North (Zacatecas, Baja California Sur and Nuevo León), one in the Central region

220   (Colima), and one in the South (Morelos), experienced losses of half a year in life expectancy over

221   the same period due exclusively to increasing homicides (Fig S7).

222   Furthermore, homicides have slowed down the progress on reducing lifespan inequality

223   among young adults in Mexico. While lifespan inequality declined by more than half a year be-

224   tween 1995 and 2005, a decade later this progress was stagnant and barely reached a reduction of

225 less than two months. Increase in homicide mortality, concentrated in the young population (be-

226 tween ages 15 and 50), accounted for most this outcome. Which is consistent with the high sensi-

227 tivity of lifespan variation to premature mortality.[10,32]. Thus, males in Mexico not only live less

228 on average, as shown by life expectancy, but they also face more uncertainty in their time of death

229 due to the increase in homicides.

230 The same states that experienced reductions in life expectancy after 2005 also showed in-

231 crease in lifespan inequality due to homicides. Rising inequality of lifespans underlies increasing

232 flustered population. These results are consistent with the upsurge in violence in these parts of the

233 country. Although homicides have spread across the country,[15] they are not evenly shared between

234 states and over time. By 2010, the North of Mexico was the region most affected by homicide

235 mortality.[5] In contrast, by 2015 all regions show similar patterns of the effects of homicides on

236 lifespan inequality. Moreover, while in 2010 Chihuahua (Northern region) was the state affected

237 the most by homicides relative to the 2005 level, in 2015 Guerrero (Southern region) has overtaken

238 this place. The impact of violence in the population in these states is staggering. For instance, in

239 2010 males aged 15-50 in Chihuahua had three times higher mortality than the US-troops in Iraq

240 between 2003 and 2006.[5] Recent evidence suggests that the second and fifth most dangerous cities

241 in the world are located in the state of Guerrero, along with cities in countries with higher homicide

242 rates than Mexico.[33] As a result, young males in Guerrero experienced an increase in lifespan

243 inequality of almost an additional year due exclusively to homicides. These results indicate that

244 homicides are an additional contributor to health inequalities in the country, which complement

245 previous evidence identifying rising health inequalities between states as a challenge for Mexico.[6]

246 The consequences of the ongoing violence in Mexico represent an urgent priority for com-

247 prehensive strategies to mitigate the impact on population health; importantly, new policies cannot

248 continue to be dismissive of the extensive evidence documenting negative health impacts of the

249 war on drugs on the population.[34] For example, the increase in homicide mortality after 2005 sug-

250 gests a rapid deterioration in life expectancy,[5] in perceived vulnerability and psychosocial out-

251 comes,[35] and, as we show, in lifespan inequality in the Mexican population.

252   In an international context, Mexico's levels of violence are not even the highest around

253 the globe, nor the region. Countries in central America, such as El Salvador and Honduras, and

254 Venezuela, Colombia and Brazil in south America have higher homicide rates. Given the great

255 level of lifespan variation and life expectancy losses in Mexico, it is likely that countries in the

256 region experience higher variation in lifespans and reductions in average life due to homicides.

257 Our results from Mexico underscore the need to comprehensively reduce, through public policies

258 and strategies, the impact of violence on population health and in the uncertainty surrounding the

259 age at death in other countries from Latin America and the world.

260

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340
341   **Figures**
342
343   **Figure 1. Age-cause specific contributions to the changes in national life expectancy for males.**
344   **Panel A refers to 1995-2005 and panel B to 2005-2015. Note: Numbers in boxes are age-specific con-**
345   **tributions.**
346
347   **Figure 2. Age-cause specific contributions to the changes in national lifespan inequality for males.**
348   **Panel A refers to 1995-2005 and panel B to 2005-2015. Note: Numbers in boxes are age-specific con-**
349   **tributions.**
350
351   **Figure 3. Changes in male life expectancy (panel A) and male lifespan inequality (panel B)**
352   **by state for the periods 1995-2005 and 2005-2015.**
353
354   **Figure 4. Cause-specific contributions to changes in male lifespan inequality by state for the periods**
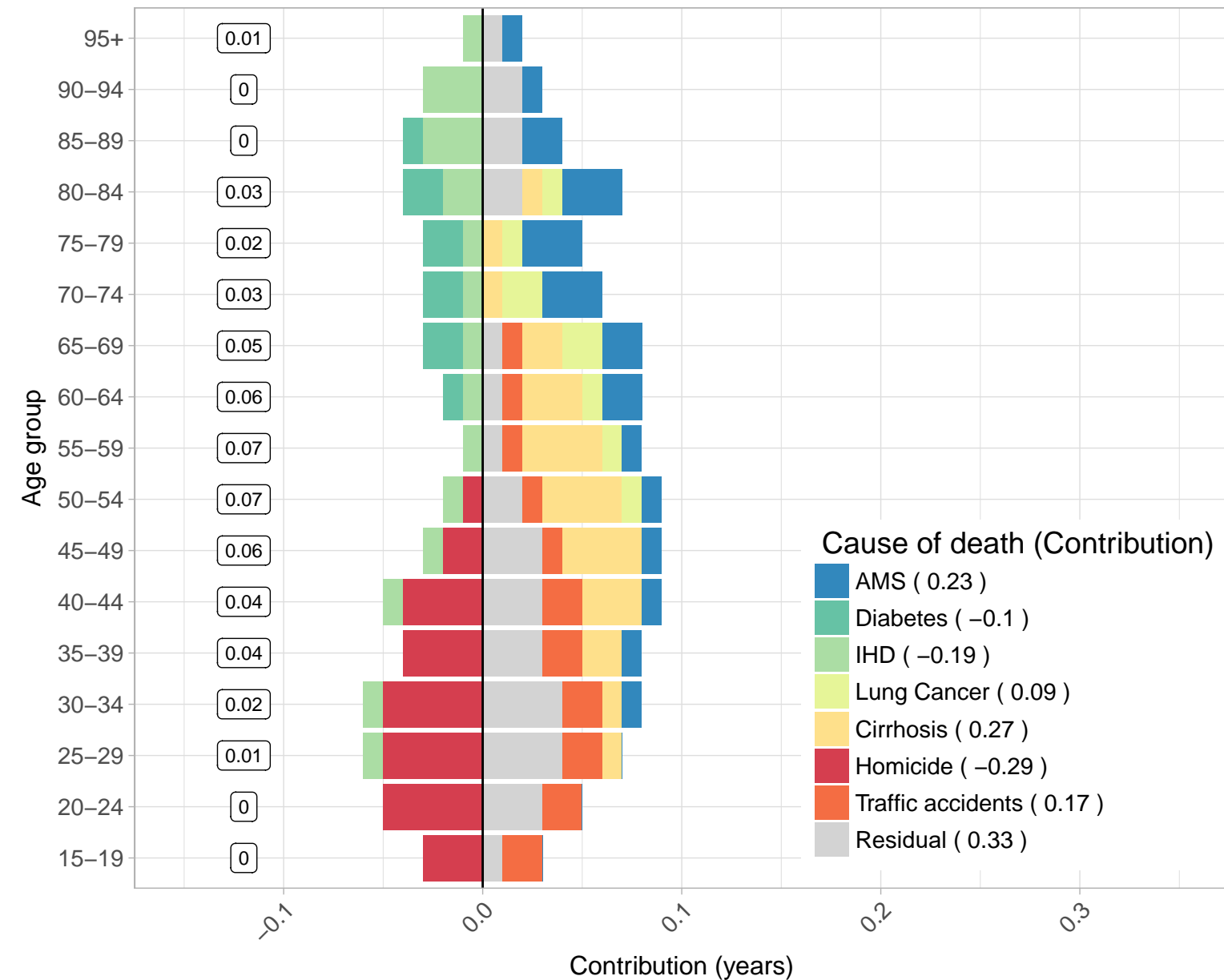355   **1995-2005 and 2005-2015.**

A) 1995–2005

Life expectancy at age 15 in 1995 = 57.08 ,in 2005 = 58.25 . Difference = 1.17
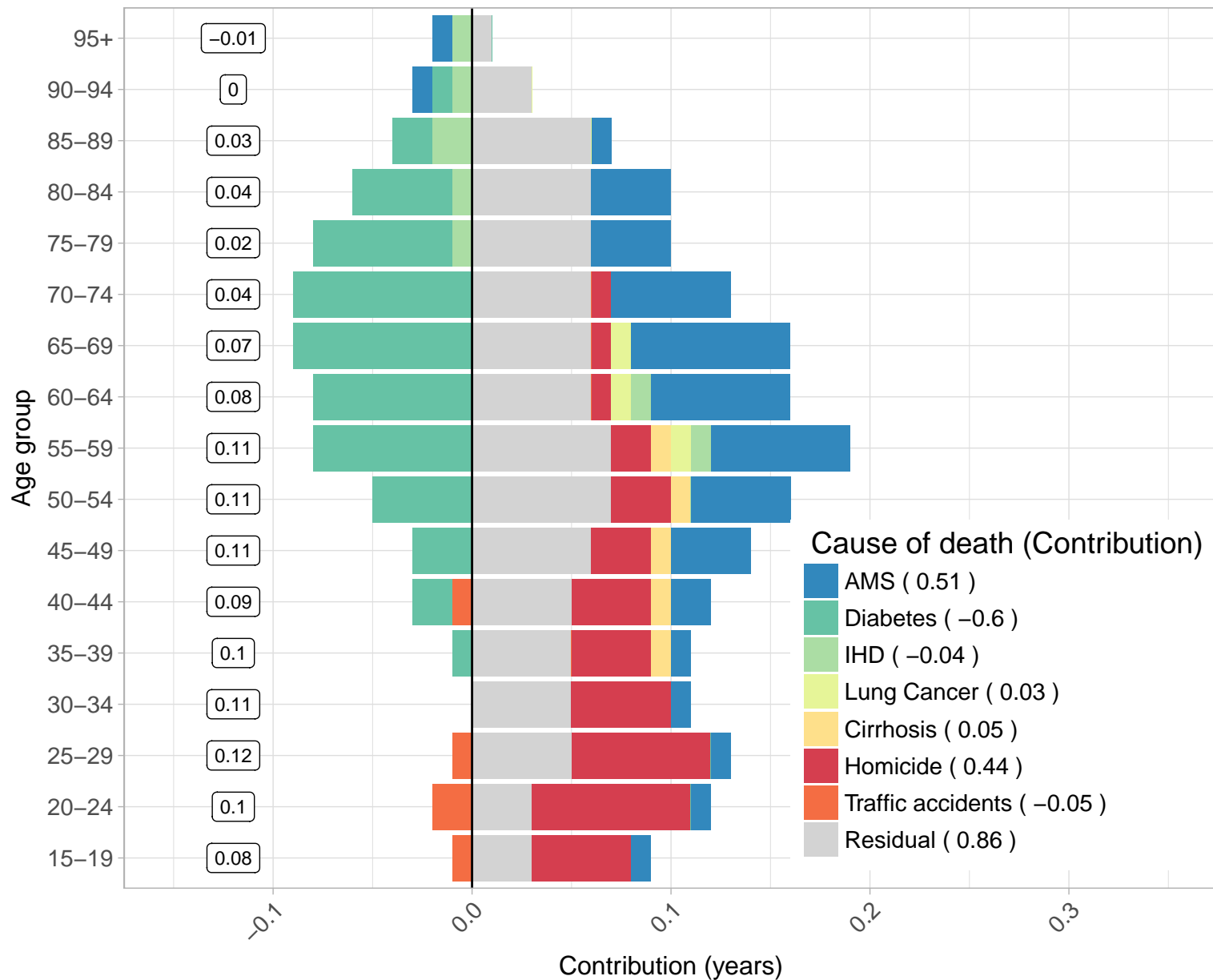
B) 2005–2015

Life expectancy at age 15 in 2005 = 58.25 , in 2015 = 58.8 . Difference = 0.55
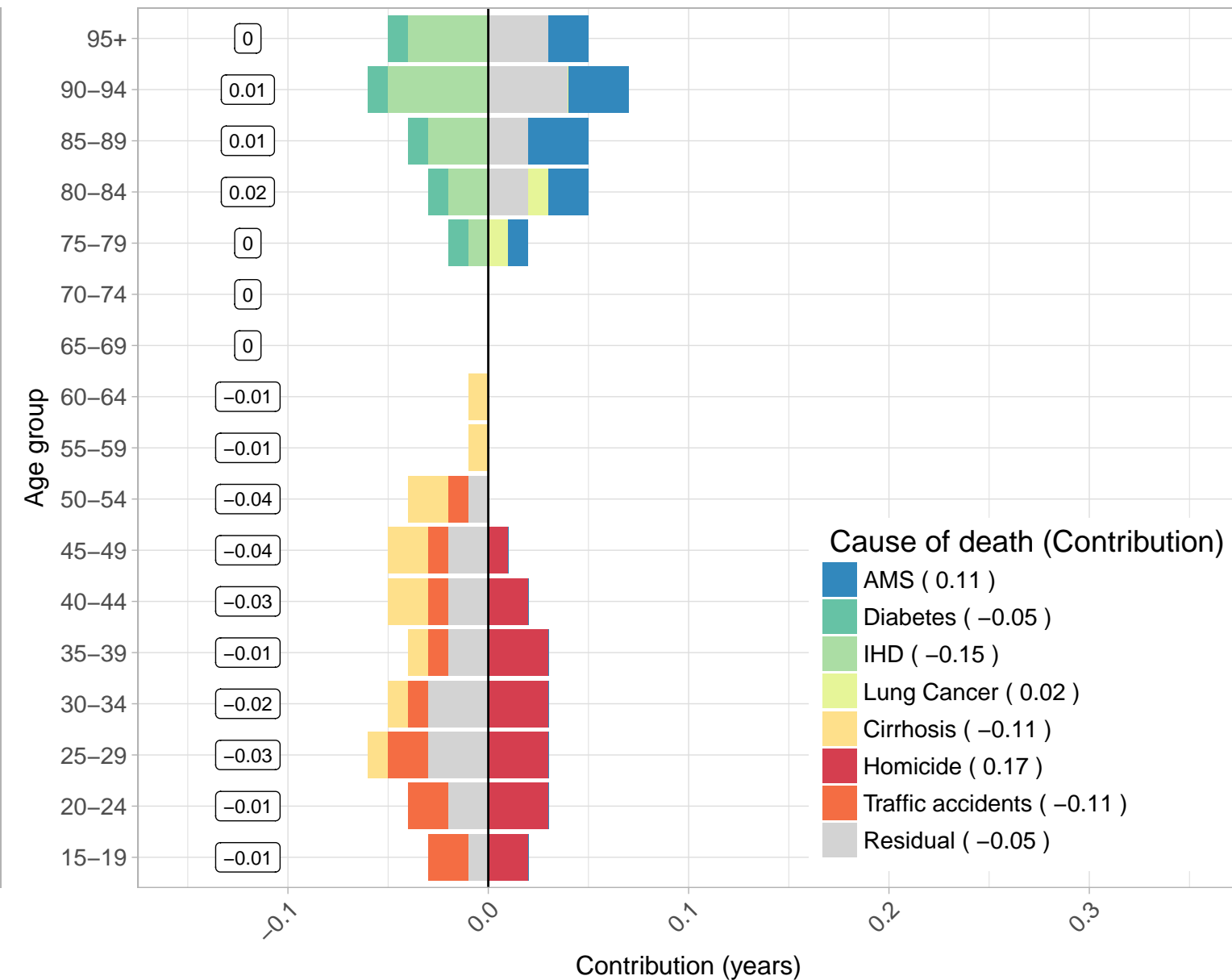
Cause of death (Contribution) [Panel A]:
- AMS (0.51)
- Diabetes (−0.6)
- IHD (−0.04)
- Lung Cancer (0.03)
- Cirrhosis (0.05)
- Homicide (0.44)
- Traffic accidents (−0.05)
- Residual (0.86)

Cause of death (Contribution) [Panel B]:
- AMS (0.23)
- Diabetes (−0.1)
- IHD (−0.19)
- Lung Cancer (0.09)
- Cirrhosis (0.27)
- Homicide (−0.29)
- Traffic accidents (0.17)
- Residual (0.33)

Age group / Contribution (years)

A) 1995–2005

Lifespan inequality at age 15 in 1995 = 14.31, in 2005 = 13.77. Difference = -0.54
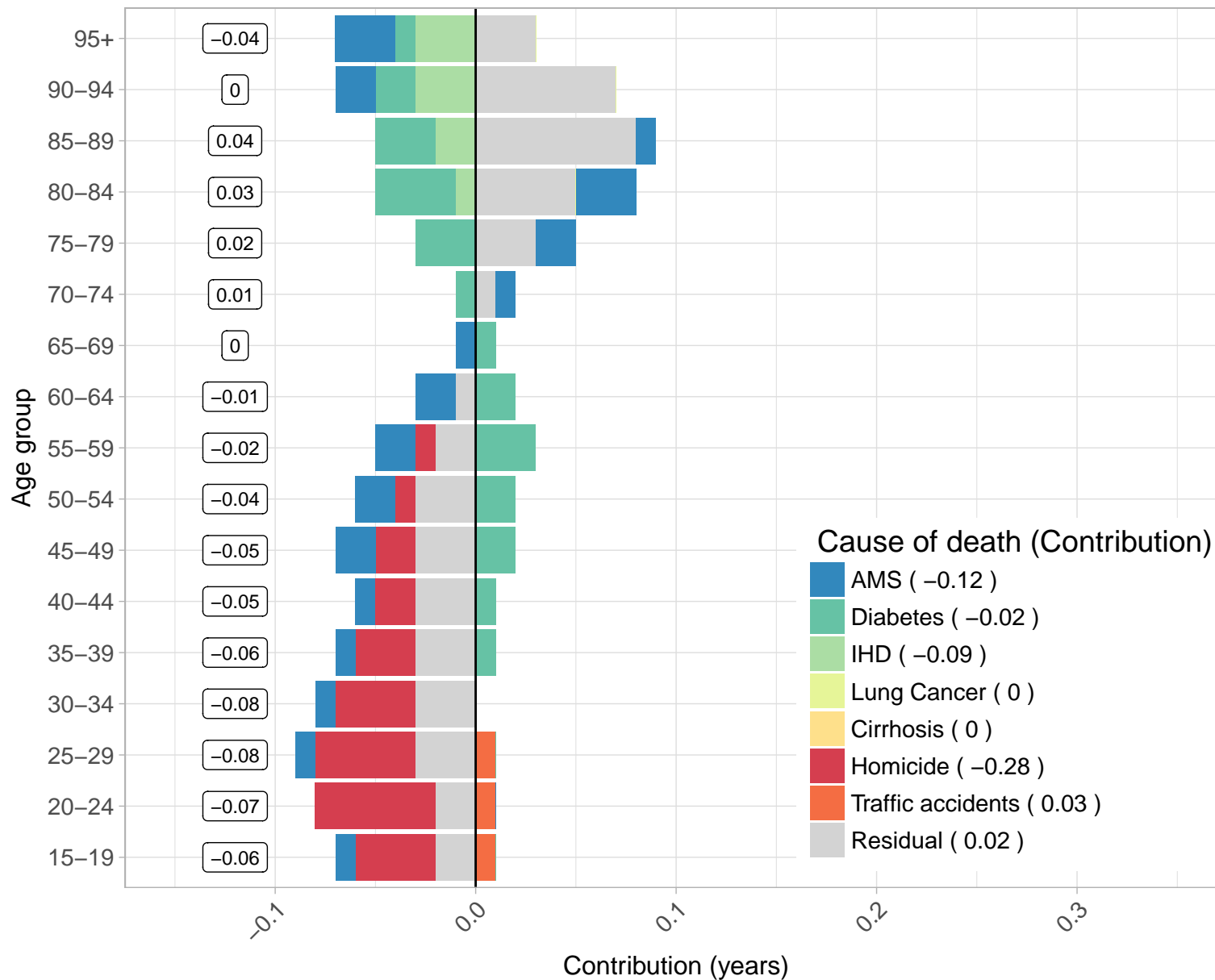
B) 2005–2015

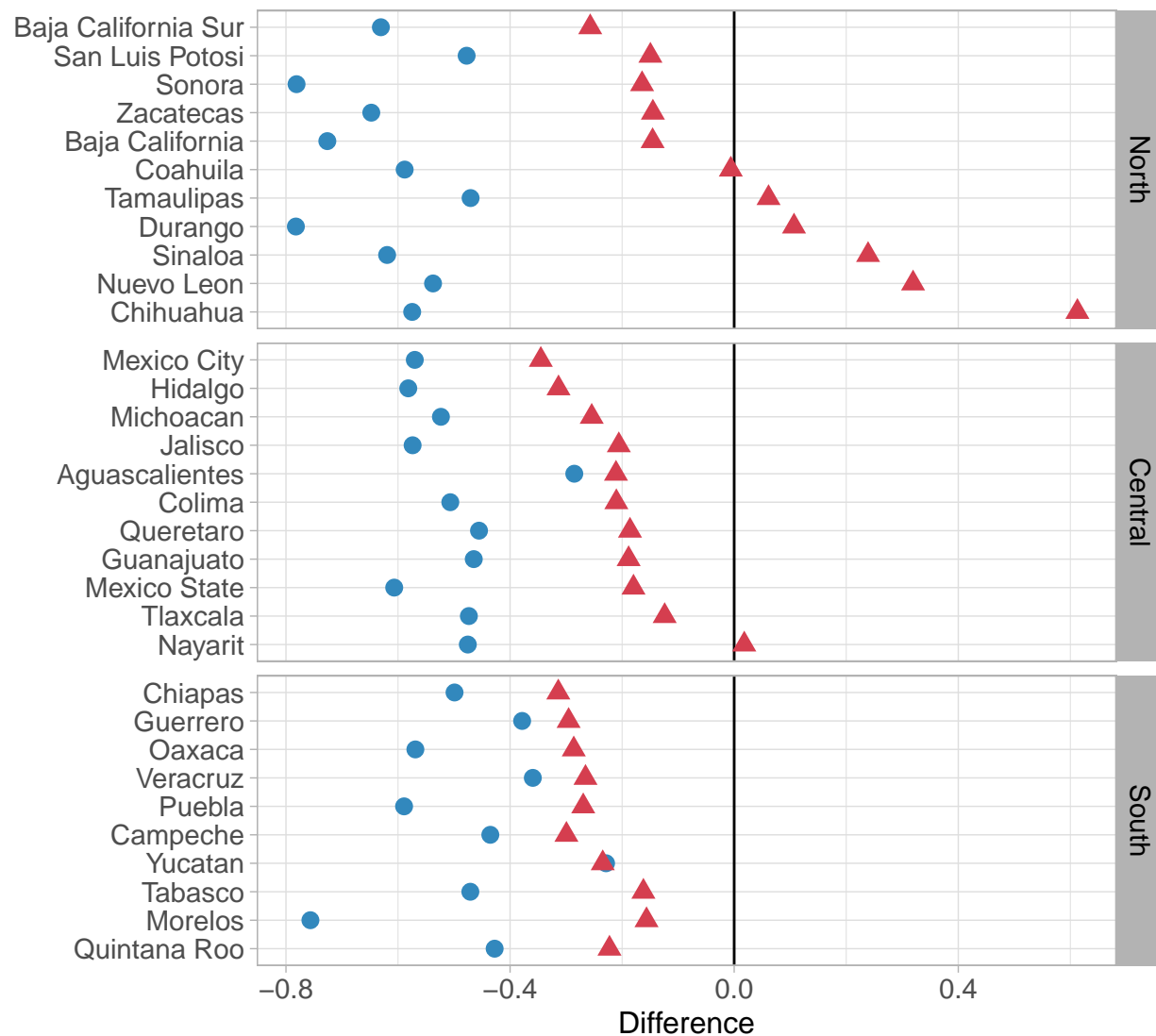Lifespan inequality at age 15 in 2005 = 13.77, in 2015 = 13.62. Difference = -0.15

Cause of death (Contribution) — Panel A:
- AMS (−0.12)
- Diabetes (−0.02)
- IHD (−0.09)
- Lung Cancer (0)
- Cirrhosis (0)
- Homicide (−0.28)
- Traffic accidents (0.03)
- Residual (0.02)

Cause of death (Contribution) — Panel B:
- AMS (0.11)
- Diabetes (−0.05)
- IHD (−0.15)
- Lung Cancer (0.02)
- Cirrhosis (−0.11)
- Homicide (0.17)
- Traffic accidents (−0.11)
- Residual (−0.05)

A Changes in state male life expectancy
by period
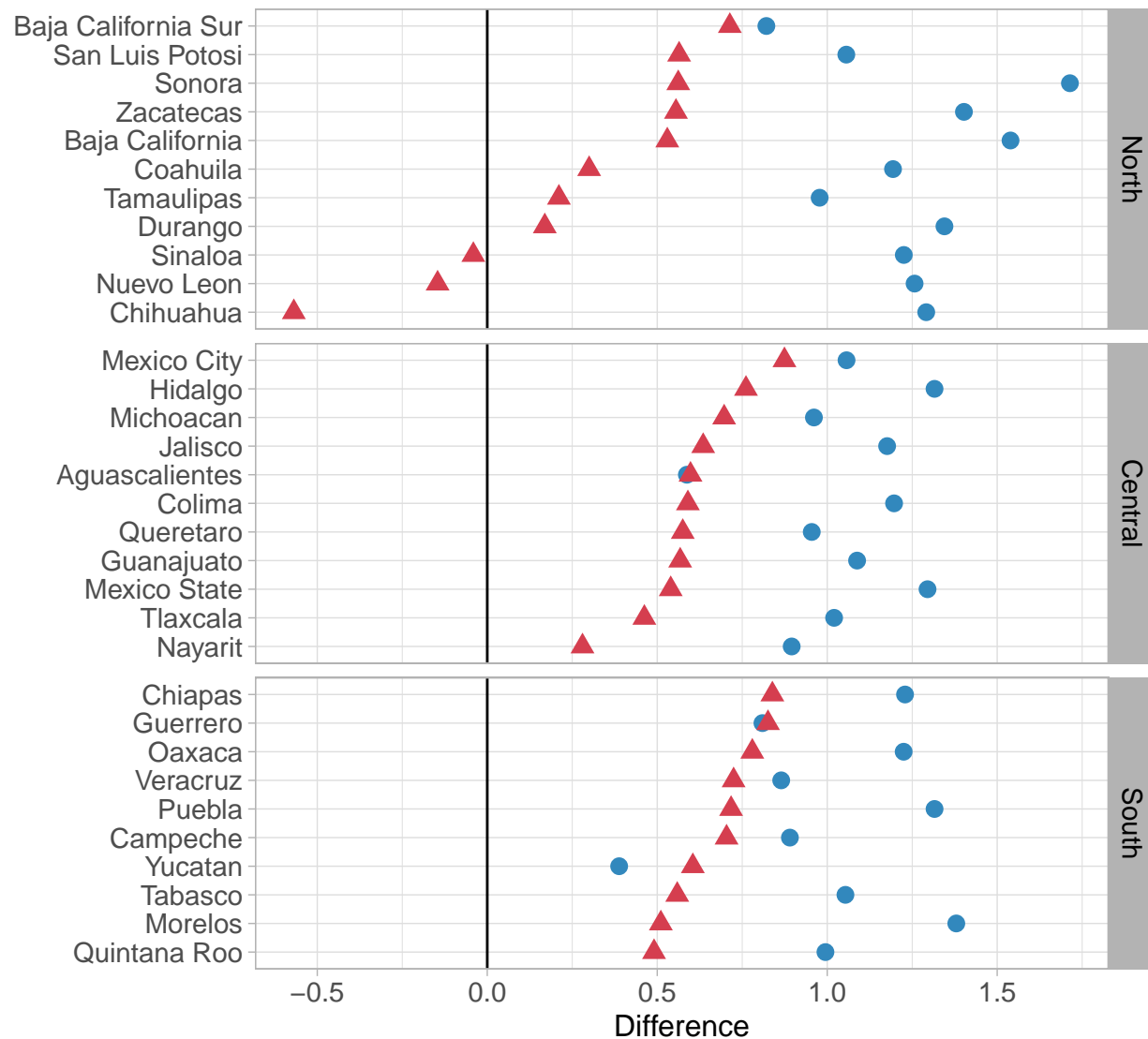
B Changes in state male lifespan inequality
by period

Period ● 1995–2005 ▲ 2005–2015

Cause−specific contributions to the change in lifespan inequality at age 15

Positive (negative) values increase (decrease) lifespan inequality

Period ● 1995−2005 ▲ 2005−2015
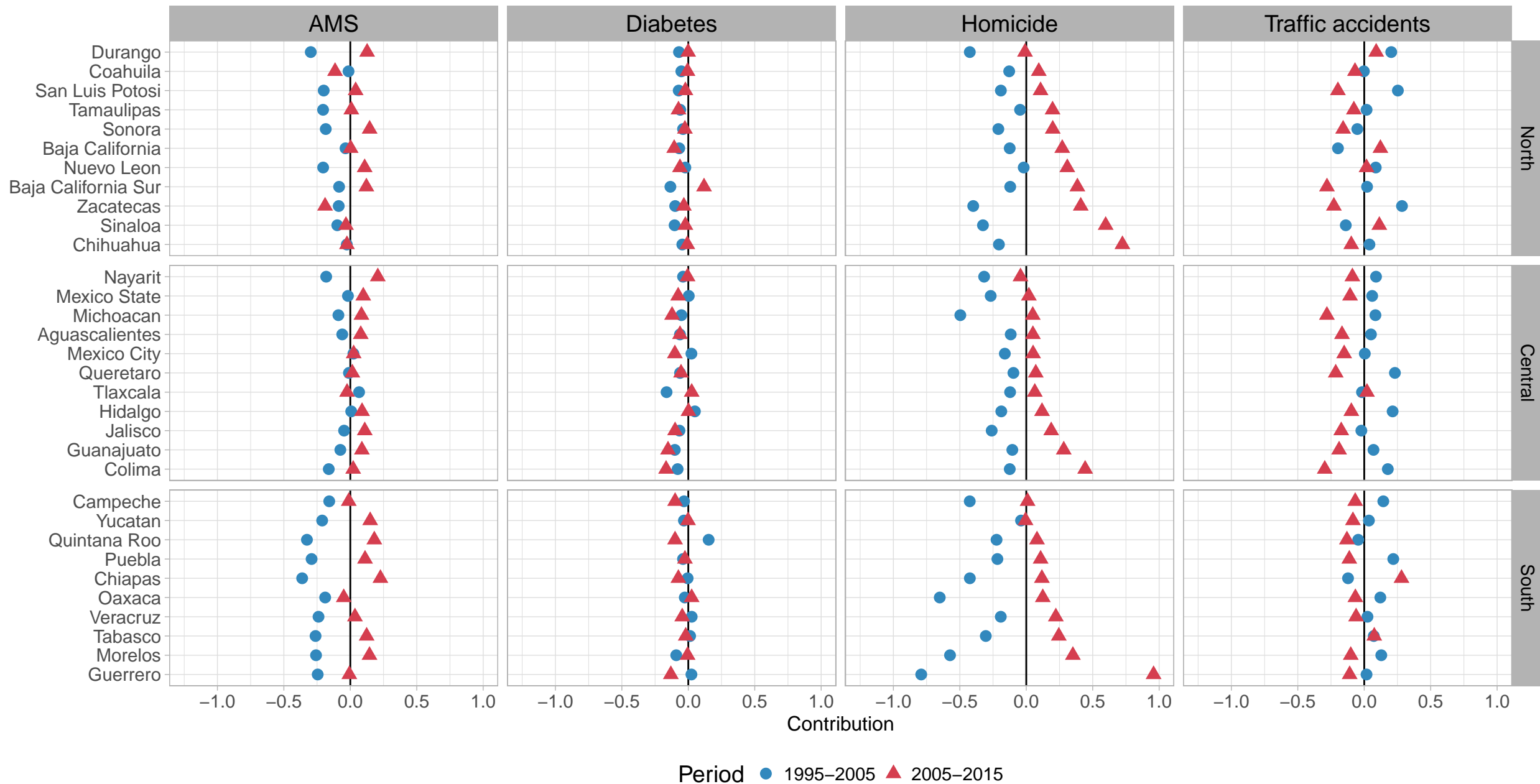
Supplemental material for the paper 'Homicides in Mexico increased inequality of lifespans and slowed down life expectancy gains in 2005-2015'

Authors: Redacted

Author affiliations: Redacted

Corresponding author: Redacted

Lifespan inequality indicator

In lifetable notation, $e_{15}^{\dagger}$ is defined as:

$$e_{15}^{\dagger} = \frac{\int_{15}^{\omega} \ell(x)\mu(x)e(x)dx}{\ell(15)} = \frac{\int_{15}^{\omega} d(x)e(x)dx}{\ell(15)}, \qquad (1)$$

where $\ell(x)$, $\mu(x)$, $e(x)$, $d(x)$ and ω are the survival function, the force of mortality, life expectancy, the age at death distribution at age x, and the open-aged interval, respectively.

Decomposition method summary

The decomposition method used in this paper is based on the line integral model (Horiuchi et al 2008). Suppose f (e.g. $e^{\dagger}$ or life expectancy) is a differentiable function of n covariates (e.g. each age-cause specific mortality rate) denoted by the vector $A = [x_1, x_2, \ldots, x_n]^T$. Assume that f and A depend on the underlying dimension t, which is time in this case, and that we have observations available in two time points t_1 and t_2. Assuming that A is a differentiable function of t between t_1 and t_2, the difference in f between t_1 and t_2 can be expressed as follows:

$$f_2 - f_1 = \sum_{i=1}^{n} \int_{x_i(t_1)}^{x_i(t_2)} \frac{\partial f}{\partial x_i} dx_i = \sum_{i=1}^{n} c_i, \qquad (2)$$

where c_i is the total change in f (e.g. $e^{\dagger}$ or life expectancy) produced by changes in the i-th covariate, x_i. The c_i's in equation (2) were computed with numerical integration following the algorithm suggested by Horiuchi et al (2008). This method has the advantage of assuming that covariates change gradually along the time dimension

Code and data to reproduce results

Available at *(redacted to avoid identification)*

Shinny app for sensitivity and state specific analysis

Results with starting age 0, available at *(redacted to avoid identification)*

Results with starting age 15, available at https://demographs.shinyapps.io/LVMx_15_App/

Supplemental figures. All figures are own calculations based on CONAPO (2017) and INEGI (2017) data.

Figure S1. Age-cause specific contributions to the changes in national life expectancy at age 15 for females. Panel A refers to 1995-2005 and panel B to 2005-2015. Note: Numbers in boxes are age-specific contributions.
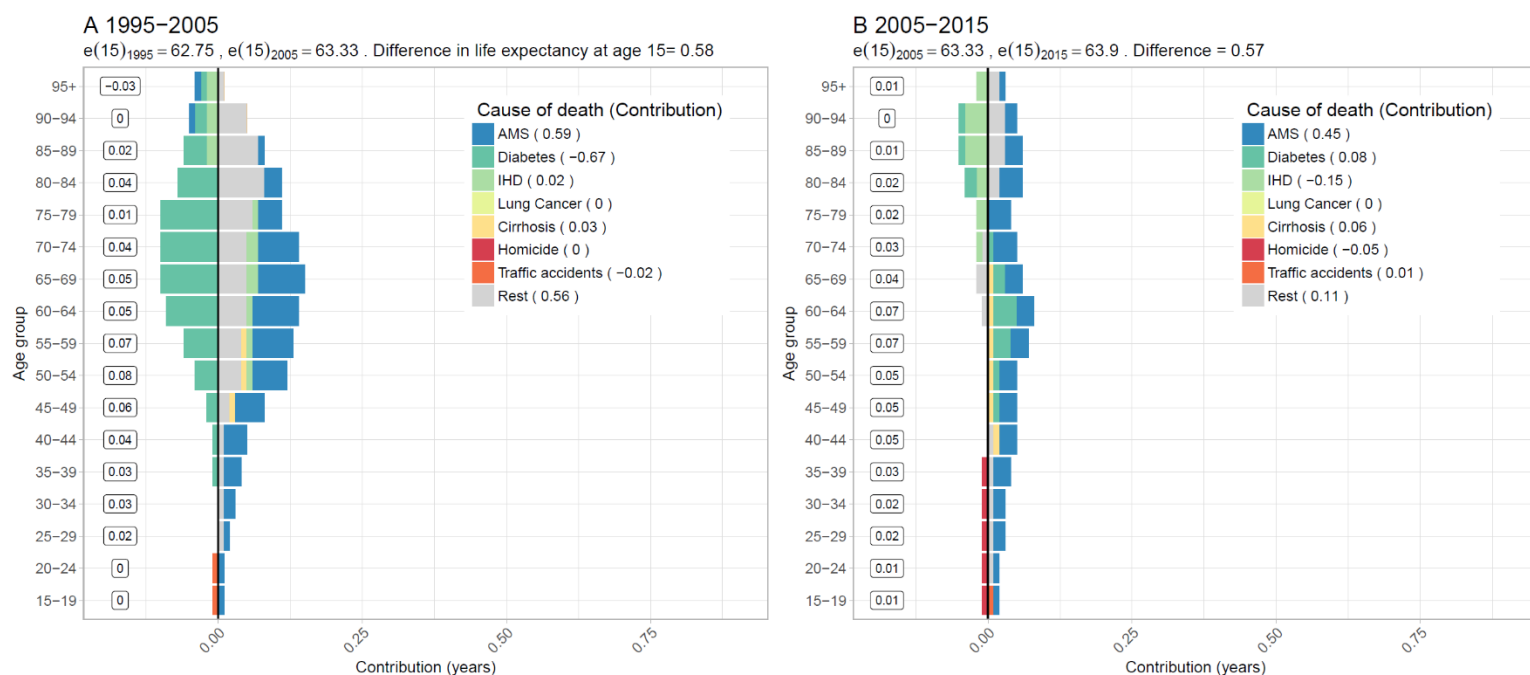
Figure S2. Age-cause specific contributions to the changes in national lifespan inequality for females. Panel A refers to 1995-2005 and panel B to 2005-2015. Note: Numbers in boxes are age-specific contributions.
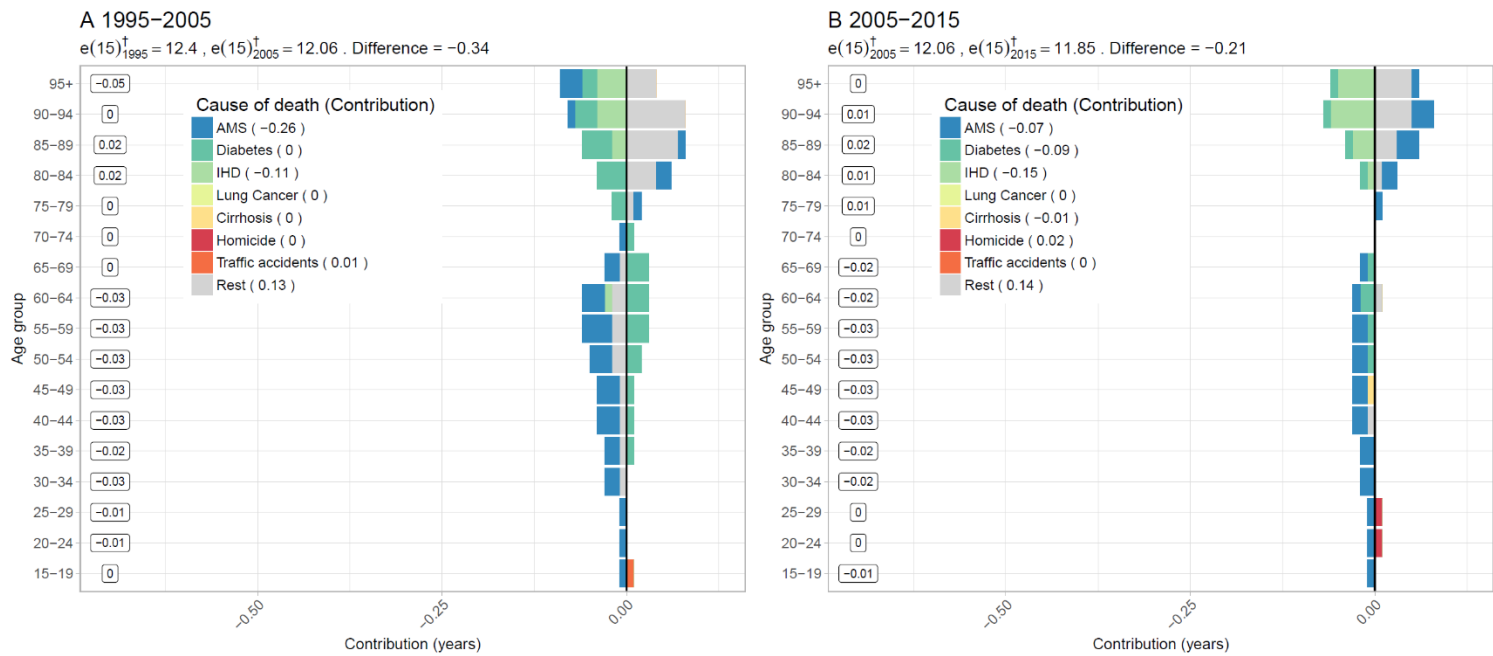

A 1995−2005

$e(15)^{\dagger}_{1995} = 12.4$, $e(15)^{\dagger}_{2005} = 12.06$. Difference = −0.34

Cause of death (Contribution)
- AMS (−0.26)
- Diabetes (0)
- IHD (−0.11)
- Lung Cancer (0)
- Cirrhosis (0)
- Homicide (0)
- Traffic accidents (0.01)
- Rest (0.13)

B 2005−2015

$e(15)^{\dagger}_{2005} = 12.06$, $e(15)^{\dagger}_{2015} = 11.85$. Difference = −0.21

Cause of death (Contribution)
- AMS (−0.07)
- Diabetes (−0.09)
- IHD (−0.15)
- Lung Cancer (0)
- Cirrhosis (−0.01)
- Homicide (0.02)
- Traffic accidents (0)
- Rest (0.14)

Figure S3. Changes in male life expectancy (panel A) and male lifespan inequality (panel B) by state for the periods 1995-2005 and 2005-2015.
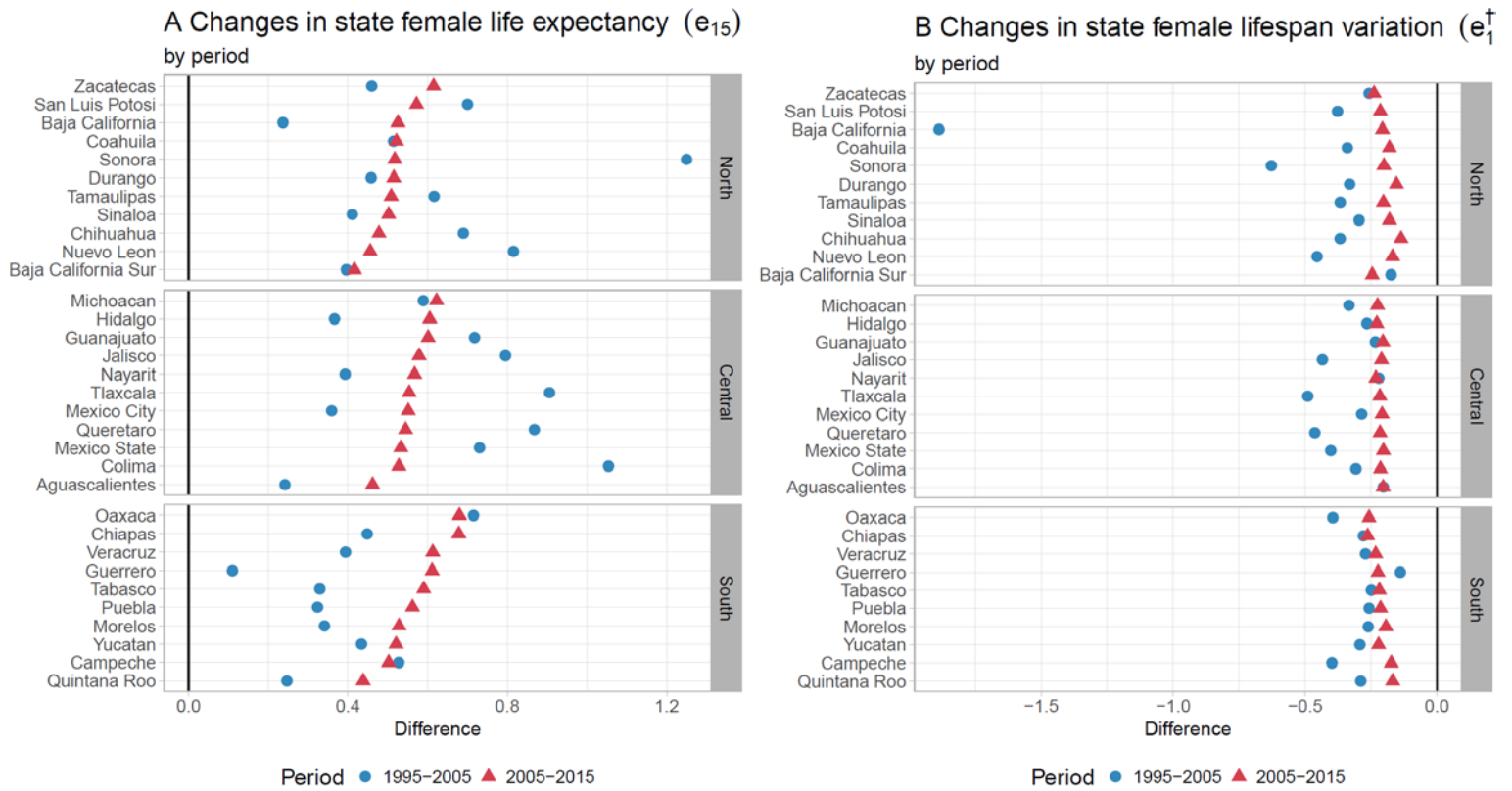
Figure S4. Cause-specific contributions to changes in female lifespan inequality at age 15 by state for the periods 1995-2005 and 2005-2015.
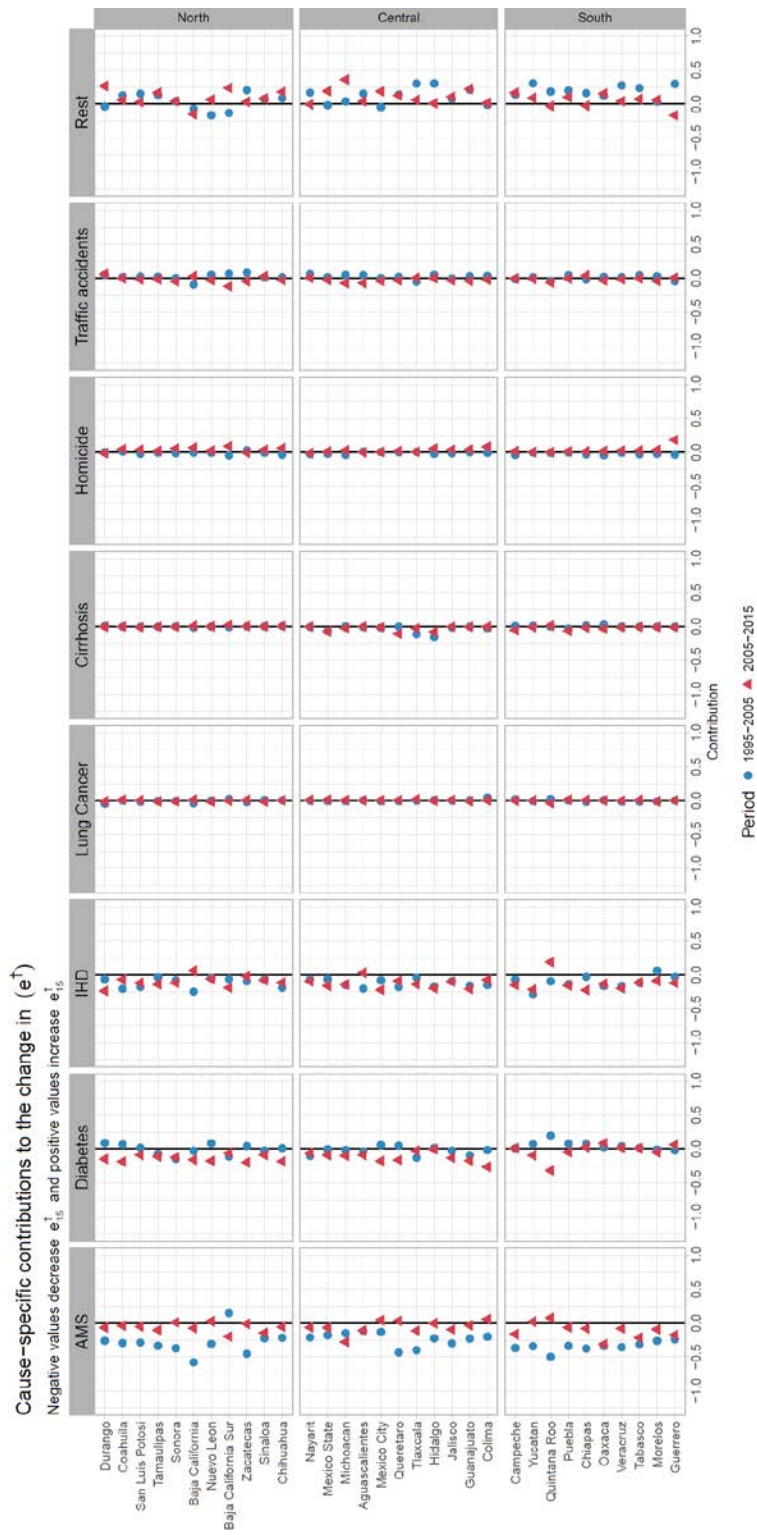
Figure S5. Cause-specific contributions to changes in female life expectancy at age 15 by state for the periods 1995-2005 and 2005-2015.
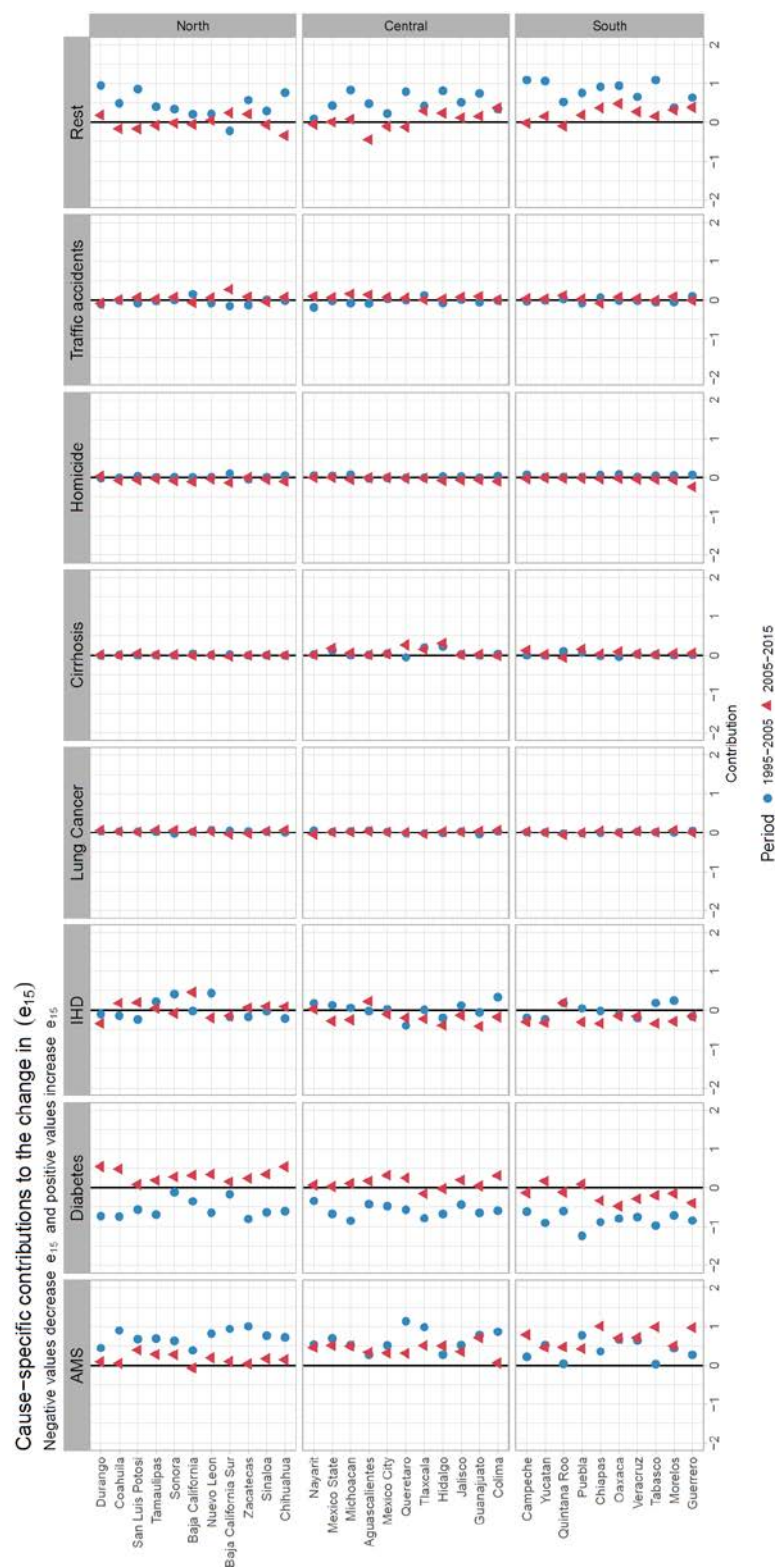
Figure S6. Cause-specific contributions to changes in male lifespan inequality at age 15 by state for the periods 1995-2005 and 2005-2015.
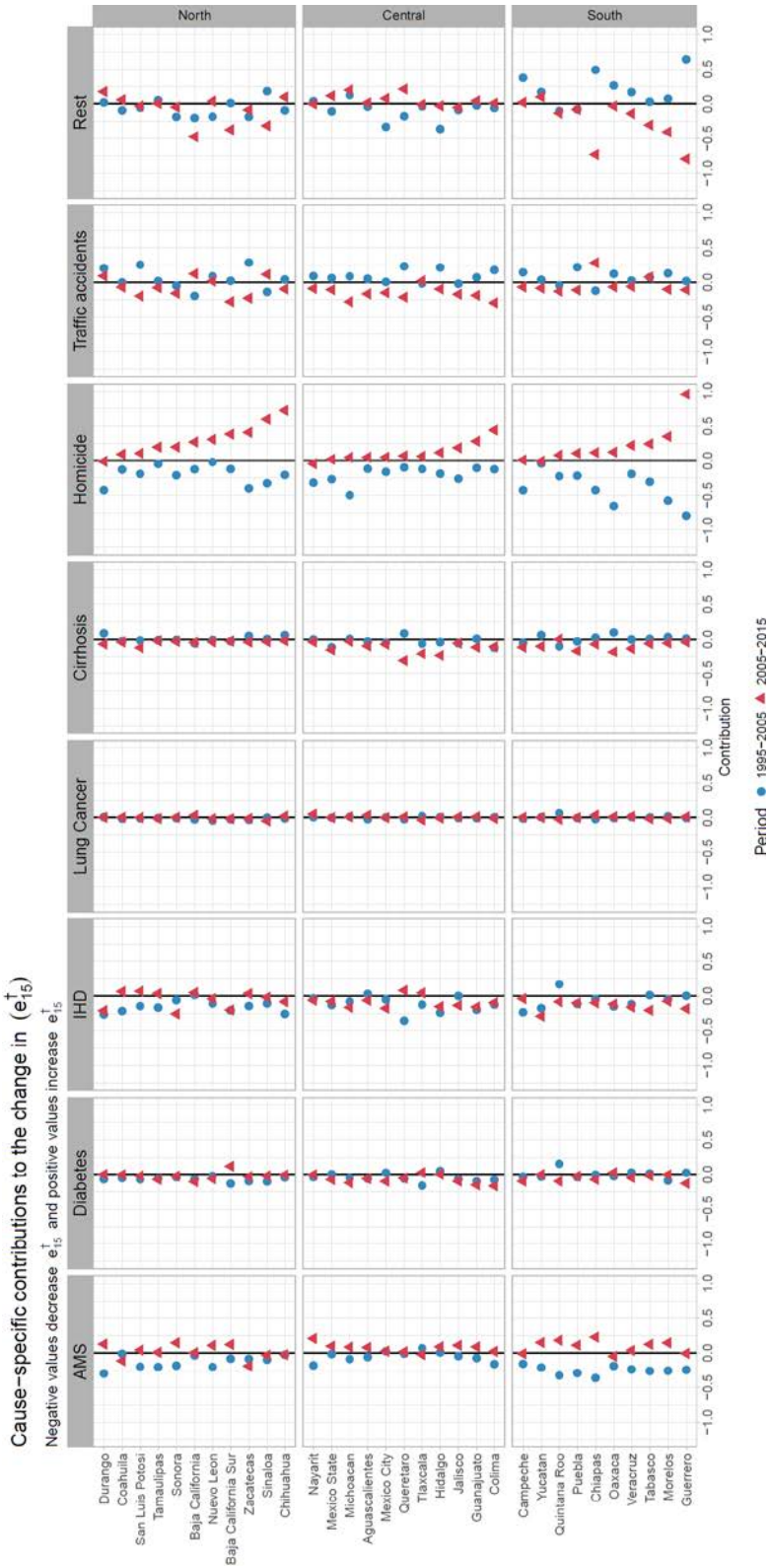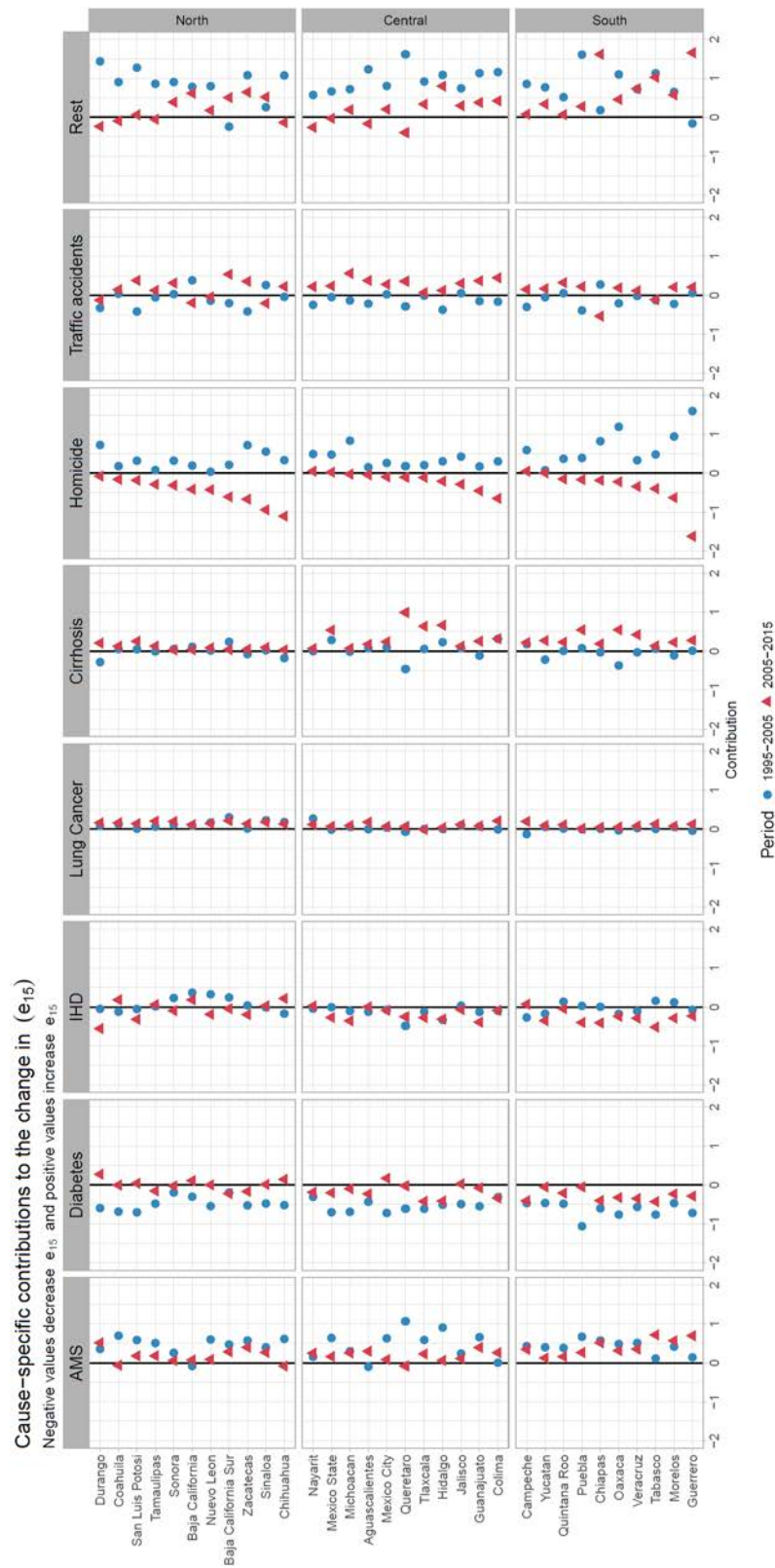
Figure S7. Cause-specific contributions to changes in male life expectancy at age 15 by state for the periods 1995-2005 and 2005-2015.

References

CONAPO. (2017). Mexican Population Council: Population estimates. Retrieved from
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INEGI. (2017). National Institute of Statistics: Micro-data files on mortality data 1995-2015. Retrieved
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