**Reply to editors**

We thank the editorial board for the opportunity to revise our manuscript. Our responses to the editors’ comments are outlined below in regular font with editor’s comments in bold font.

**Editor-in-Chief:**

**Your submitted paper has undergone peer review. Even though the topic is of interest, the paper is very difficult to read for a general public health audience and will not be publishable in this journal if an effort is not made to simplify the presentation of the results. We would be interested in reconsidering a revised version for publication in AJPH that follows the guidance of the reviews provided at the end of this correspondence. Because chances of final acceptance are small, you may prefer to withdraw the paper and submit it to a more specialized journal.**

**EIC**

**You have 8 figures but can only have a maximum of 4 figures+tables. Please summarize the findings in less figures and leave the others for the web supplemental files. Make also sure that the figures are properly labeled and the interpretation of the figure is clearly provided in the text. The current figures are extremely difficult to interpret.**

**Associate Editor:**

**This is a timely and relevant article, but it still requires some work before it can be considered for publication. As a general note, the reviewers require more attention to specific details in changing mortality rates in the studies periods, and more contextual information to help interpreting them. Reviewers #1 and #3 in particular provide helpful guidance for revising the manuscript.**

**Thank you again for considering our manuscript.**

**Reply to reviewers**

We appreciate the reviewers' comments; their detailed reading of the manuscript and many suggestions that have greatly improved the article. Our responses to the reviewers’ comments are outlined below in regular font with reviewer’s comments in bold font.

**Reviewer #1**

*To do*

**The effect of homicide on life expectancy and lifespan inequality is an important public health topic, particularly in the fields of injury prevention and global health. I think this issue is of interest for readers of the American Journal of Public Health, but the data could use some more context. I think describing some of the policies and social context contributing to the increasing homicide rate would help further frame this public health issue.**

*To do*

**I also recommend expanding on the discussion, particularly to describe some of the limitations of the study and describing more specific policy recommendations and/or future research that these study results suggest.**

**-Introduction**

**Although the authors provide more details later in the paper, I would suggest adding at least a sentence in the first few paragraphs about the specific social/political context that contributed to homicide rates doubling between 2007 and 2012 in Mexico, to provide this context upfront.**

We thank the reviewer for this suggestion. Previous evidence has shown that Mexico’s wave of violence was triggered by the interactions of competitions between drug cartels, enforcement operations trying to mitigate drug trafficking operations after 2005, and the increased profitability in the flow of trade with United States (Rios, 2013; Dell, 2015; Castillo et al. 2014). This interaction led to a cycle of violence and the spillover onto civilians which by 2017, with the newest available data just released by INEGI, has not end, and has even increased in the last couple of years (Hienle et al. 2017).

We have included in the first paragraph the next sentences:

“…In Mexico, homicides rates doubled between 2007 and 2012 due to the interaction between enforcement operations trying to mitigate drug cartels activities, increased territory competition, and higher profitability in the trade flow with United States.3-5 This led to a cycle of violence- the so-called war on drugs- and the spillover onto civilians which,6 along with an increasing burden of diabetes, stagnated male life expectancy in the period 2000-10…”

References:

Ríos, Viridiana. "Why did Mexico become so violent? A self-reinforcing violent equilibrium caused by competition and enforcement." *Trends in organized crime* 16.2 (2013): 138-155.

Dell, Melissa. "Trafficking networks and the Mexican drug war." *American Economic Review* 105.6 (2015): 1738-79.

Castillo, Juan, Daniel Mejía, and Pascual Restrepo. "Scarcity without leviathan: The violent effects of cocaine supply shortages in the mexican drug war." (2014).

Heinle, Kimberly, Octavio Rodríguez Ferrerira and David A. Shirk. "Drug violence in Mexico: Data and analysis through 2016." *Trans-Border Institute, University of San Diego, San Diego* (2017).

**The authors write, "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." I'm not sure I am correctly understanding what decisions means in this context. Are the authors arguing that these indicators are the consequence of individual decisions?**

Thank you for this observation. Life expectancy represents the average age at death if everyone experienced the prevailing deaths rates throughout their lifetime. While lifespan inequality is an indicator of how similar ages at death are. Analyzing both is important because large inequality of lifespans implies greater uncertainty in the timing of death at the individual level, and thus in the planning of life’s events (van Raalte et al. 2011, Sasson 2016). We have rephrased the sentence to make clearer that we do not mean that these indicators are the consequence of individuals’ decisions, but rather individuals consider these indicators when making decisions, it now reads (from line 43):

“…However, life expectancy masks inequality of lifespans or lifespan variation.10 Variability in ages-at-death is important because it addresses the growing interest in health inequalities11 and because larger variation of lifespans implies greater uncertainty in the timing of death at the individual level, and thus in the planning of life’s events.12,13 From a public health perspective…”

References:

Edwards RD, Tuljapurkar S. Inequality in life spans and a new perspective on mortality convergence across industrialized countries. *Population and Development Review.* 2005;31(4):645-674.

Marmot M. Inequalities in health. *New England Journal of Medicine.* 2001;345(2):134-135.

Van Raalte, Alyson A., et al. "More variation in lifespan in lower educated groups: evidence from 10 European countries." *International Journal of Epidemiology* 40.6 (2011): 1703-1714.

Sasson I. Trends in life expectancy and lifespan variation by educational attainment: United

States,1990–2010. *Demography.* 2016;53(2):269-293.

**The authors contrast their focus on "the role of violence" with other literature that "focuses on social determinants of health (e.g., socioeconomic status and health risk factors). Could violence be considered a social determinant of health? I would be interested to hear more about the social context of violence, and the social implications of lifespan inequality, as a public health issue.**

The reviewer is correct, the ‘role of violence’ and the ‘social determinants of health’ are not completely contrasting but rather complementing. For example, neighborhoods, built environment and social community context are key areas of social determinants of health to improve health in a population (Koh et al. 2011). In this sense, crime and violence are important factors that may contribute to worse health through pathways in relatively lower time compared to the lasting consequences of socioeconomic disparities, for example. Exposure to violence can increase the likelihood that young people will perpetrate gun violence; and the availability of alcohol in disadvantaged neighborhoods can influence its use among young people (Braveman et al 2014). Moreover, homicides are the ultimate form of violence, but they only represent a piece of the health and social burden (Mikton et al. 2014). Victims of violence are at risk of depression, alcohol abuse, suicidal behavior, psychological problems, among other detrimental consequences over their life course (Davidson et al. 1996). Even witnessing violence can affect the wellbeing of the population. Those who witness violence have higher rates of post-traumatic stress disorder, depression, and are more likely to externalize violent behaviors (Buka et al. 2001). In Mexico, for example, the expected years lived with perceived vulnerability increased by 30.5 million person-years between 2005 and 2014 (Canudas-Romo et al. 2017). In this sense, violence as the one experienced in Mexico, is a social determinant of health. In our paper, we add to this literature highlighting how violence increases inequality of lifespans as a proxy for vulnerability and address the need to reduce exposure to crime and violence as a public health issue to reduce its burden on individual and community health and well-being.

We made the following changes to the manuscript to address clearly this:

Replaced “Most literature in this area focuses on social determinants of health (e.g., socioeconomic status and health risk factors) as proximate determinants of lifespan variation and health inequality.11 In contrast, our paper highlights the role of violence, and its ultimate consequence in the form of homicides, among young adults on increasing lifespan inequality.”

With “Most literature in this area focuses on social determinants of health such as socioeconomic status or educational attainment as proximate determinants of lifespan variation and health inequality.12,14 Our paper highlights the role of violence, and its ultimate consequence in the form of homicides, among young adults on increasing lifespan inequality.”

Discussion; line 282: “Moreover, homicides are the ultimate form of violence but they do not represent fully its burden on population health. As a social determinant of health, exposure to violence can increase the likelihood that young people will perpetrate gun violence,31 and the risk of depression, alcohol abuse, suicidal behavior, psychological problems, among other detrimental consequences over the life course.32 Even witnessing violence can affect the wellbeing of the population by increasing rates of post-traumatic stress disorder and depression.33”

Regarding lifespan inequality and its social implications from a public health perspective. As we mention in the paper, lifespan inequality is a marker of heterogeneity at the population level that highlights a primary health indicator: age at death. At the societal level, larger lifespan variation implies increasing vulnerability, which suggest ineffectiveness of policies aiming to protect individuals against life’s vicissitudes such as social safety nets (van Raalte et al. 2011, Bartley et al. 1997). In the context of rising violence, it implies lack of effectiveness of social protection policies aiming at decreasing homicide/crime rates and increasing vulnerability at the population level beyond homicides. For example, together with the high level of lifespan inequality due to homicides, in 2016 66.5% of the population with children under age 18 did not let them go out because of fear to be a victim of some crime, while 43.6% stop going out at night for the same reason (ENVIPE 2017). Moreover, larger inequality of lifespans underlies greater heterogeneity in population health. This is important because previous evidence highlighted inequalities in adult health between states in Mexico (Aburto et al. 2018), our paper complements this by showing how homicides increased inequalities in population health within states. Therefore, preventing homicides will contribute significantly to increase life expectancy as well as greater equality of individual lifespans in Mexico.

We added the next sentences discussing further the social implications of increasing lifespan inequality:

Introduction, from line 46: “From a public health perspective, larger lifespan variation implies increasing vulnerability at the societal level, which suggest ineffectiveness of policies aiming to protect individuals against life’s vicissitudes.12 In the context of rising violence, it implies failure of social protection policies aiming at decreasing homicide/crime rates and increasing vulnerability at the population level.”

Discussion, line 258: “Larger variation of lifespans underlies greater vulnerability at the population level. For example, in Mexico the expected years lived with perceived vulnerability increased by 30.5 million person-years between 2005 and 2014.29 Moreover, increasing inequality of lifespans means more heterogeneity in population health which translates into the need of more resources to optimize health over the life course.13…”

Discussion, line 278: “These results are important because they complement previous evidence highlighting adult health inequalities between states9,22 by identifying homicides as a direct contributor to inequalities in population health between and within states”.

Conclusion, line : “Therefore, preventing homicides will contribute significantly to increase life expectancy as well as greater equality of individual lifespans in Mexico”

References:

Braveman, Paula, and Laura Gottlieb. "The social determinants of health: it's time to consider the causes of the causes." *Public health reports* 129.1\_suppl2 (2014): 19-31.

Van Raalte, Alyson A., et al. "More variation in lifespan in lower educated groups: evidence from 10 European countries." *International Journal of Epidemiology* 40.6 (2011): 1703-1714.

Bartley, Mel, David Blane, and Scott Montgomery. "Socioeconomic determinants of health: Health and the life course: why safety nets matter." *BMJ* 314.7088 (1997): 1194.

Canudas-Romo V, Aburto JM, García-Guerrero VM, Beltrán-Sánchez H. Mexico's epidemic of violence and its public health significance on average length of life. *Journal of epidemiology and community health.* 2017;71(2):188-193.

Koh, Howard K., et al. "Healthy people: a 2020 vision for the social determinants approach." *Health Education & Behavior*38.6 (2011): 551-557.

Mikton CR, Butchart A, Dahlberg LL, Krug EG. Global status report on violence prevention 2014. *American journal of preventive medicine*. 2016;50(5):652-9

Davidson JR, Hughes DC, George LK, Blazer DG. The association of sexual assault and attempted suicide within the community. *Archives of general psychiatry*. 1996;53(6):550-5.

Buka SL, Stichick TL, Birdthistle I, Earls FJ. Youth exposure to violence: Prevalence, risks, and consequences. *American Journal of Orthopsychiatry*. 2001;71(3):298-310.

Aburto, José Manuel, Tim Riffe, and Vladimir Canudas-Romo. "Trends in avoidable mortality over the life course in Mexico, 1990–2015: a cross-sectional demographic analysis." *BMJ open* 8.7 (2018): e022350.

Sasson I. Trends in life expectancy and lifespan variation by educational attainment: United States, 1990–2010. *Demography.* 2016;53(2):269-293.

Mexican National Institute of Statistics and Geography (INEGI). Mexican National Survey of Victimization and Perception of Public Safety [In spanish: Encuesta Nacional de Victimización y Percepción sobre Seguridad Pública] (ENVIPE 2017). http://www.inegi.org.mx/est/contenidos/proyectos/encuestas/hogares/regulares/envipe/

**Does the phrase "working ages" refer to a specific age range, or does it mean any age at which a person might work (which could be a very broad age range)?**

It refers to midlife ages, usually to people between 20 and 64 years. We have replaced the term “working ages” with “between 20 and 64 years” and “middle ages” in the manuscript.

**-Methods**

**If there is supporting literature available, I would recommend adding a citation to focusing on deaths below age 95 "since cause-specific coding practices above that age are less reliable."**

We thank the reviewer for this suggestion. We have added Rosenberg’s (1999) reference to stress that cause of death classification at high ages is difficult due to multi-morbidities. In addition, we decided to analyze cause-of-death data below age 85 because it is the standard age used in WHO and UN cause-of-death data as open age interval and in lifetables, respectively. Moreover, since most homicides are concentrated in middle ages (90.9% of homicides occurred between ages 15 and 65 in 2017 [INEGI, 2017]), our estimates regarding their effect on life expectancy and lifespan inequality do not change irrespective of which age is used as upper bound. We have updated the results accordingly with no major changes from the earlier version.

We have added the next sentence in the methods section:

“To mitigate biases due to misclassification of causes of death, we focused on deaths occurring below age 85 since cause-specific coding practices above that age are less reliable due to the presence of comorbidities.22”

References

Rosenberg, Harry M. "Cause of death as a contemporary problem." *Journal of the history of medicine and allied sciences* 54.2 (1999): 133-153.

World Health Organization. "WHO mortality database: Tables." *Geneva: WHO* (2018).

United Nations. "World Population Prospects; 2017." *United Nations: Department of Economic and Social Affairs.* (2017).

**-Results**

**"Importantly, homicides declined in 1995-2005 and this contributed to about one-fourth (0.44 years) of the overall gain in life expectancy in this period." Since the authors report that the 1995-2005 gain in life expectancy among men was 1.17 years, I believe they could say about one-third. I think 0.44/1.17=0.376 is closer to one-third than one-fourth.**

We have adjusted as suggested. It now reads:

Line 150: “Importantly, homicides declined in 1995-2005 and this contributed to about 38.5% (0.45 years) of the overall gain in life expectancy in this period.”

**"Life expectancy among males had a larger increase in 1995-2005 than in 2005-2015 across all states (panel A)" Is it possible that Yucatan is an exception to this overall statement? It appears from figure 3, panel A that there was a greater increase in 2005-2015 in Yucatan.**

We have made the changes accordingly. It now reads:

“Life expectancy among males had a larger increase in 1995-2005 than in 2005-2015 across all states (panel A) except for Yucatán, some states even experienced reductions in life expectancy in 2005-2015 particularly in the North (e.g., Chihuahua, Nuevo León and Sinaloa).”

**pg. 10: "For example conditions amendable to medical service contributed to reductions in lifespan inequality in most states" Looking at Figure 4, in the region of the south it appears that AMS may be contributing to small increases in lifespan inequality in most states of the south in 2005-2015, and some states of the north and central regions as well. It might be worth noting this apparent contrast with 1995-2005.**

We thank the reviewer for this observation. We have updated our results with cause-of-death analysis below age 85. Indeed, while for the period 1995-2005 all but two states reduced inequality of lifespan due to medically amenable conditions, by 2005-2015 in nine states these conditions increased lifespan variation. We have adjusted the text accordingly and highlighted this contrast.

We have made the changes accordingly. It now reads:

“In the same period, all but two states for males, Baja California Sur in the North and Tlaxcala in the central region decreased lifespan variation attributed to improvements in medically amenable conditions (SM figures 4 and 5).”

“…”

**-Discussion**

**"After 10 years of the beginning of the War on Drugs" I would recommend providing more context for the War on Drugs, describing in at least an additional sentence or two more specifically how it started, the policies and social/political impact. Not all readers of AJPH might be familiar with this important context.**

We have followed this suggestion since the first paragraph in the introduction, as previously suggested by the reviewer:

“…In Mexico, homicides rates doubled between 2007 and 2012 due to the interaction between enforcement operations trying to mitigate drug cartels activities, increased territory competition, and higher profitability in the trade flow with United States.3-5 This led to a cycle of violence- *the so-called War on drugs*- and the spillover onto civilians which,6 along with an increasing burden of diabetes, stagnated male life expectancy in the period 2000-10…”

**Pg. 12 "Rising inequality of lifespans underlies increasing flustered population" I am not quite sure I understand what this means. Might it be possible to re-phrase? I think this point and more generally the discussion of lifespan inequality needs to be made clear and expanded, particularly because this paper's primary contribution seems to be its examination of lifespan inequality, as opposed to how homicides in Mexico have reversed life expectancy gains for men and slowed them for women (as has been previously described in, for example, Aburto et al. 2016, reference #5). So I would be interested to hear more about the public health implications of the lifespan inequality findings and what this suggests about policy and future research.**

We have rephrased the sentence. It now reads:

Line 258: “...Larger variation of lifespans underlies greater vulnerability at the population level.”

In this revised version, we made sure to stress the importance of lifespan inequality in the context of rising violence and its public health implications. At the individual level, we found that the most violent states showed grater increases in lifespan inequality through homicides, which can affect long-term decision for individuals. This greater uncertainty could well be one of the determinants of the increase of perceived vulnerability of the population between 2005 and 2014. Future research should examine if indeed individuals living in states with higher increases in lifespan inequality do perceive higher vulnerability. These studies should focus on women since there exists a sex paradox between being victim of a crime and perceived vulnerability (Canudas-Romo et al. 2017), i.e. males are more likely to experience a crime but they perceived lower vulnerability. In addition, more research is needed to quantify the long-lasting consequences of rising violence in the context of the war on drugs to anticipate and intervene the pathways through which the current violence might affect future health outcomes, as those mentioned in previous points (e.g. depression, suicide, more violence).

In addition to the sentences added in the previous points in lines 46, 258, 278 and in the conclusion, we added s small paragraph on future research and policy:

“Here, we quantified the effect of rising homicides on longevity and on increasing lifespan inequality as additional consequences of the upsurge of violence in Mexico. However, our understanding of the consequences of violence would benefit from research examining if indeed individuals living in states with increases in lifespan inequality do perceive higher vulnerability and how this might affect their long-term decisions. These studies should focus on women since females are less likely to experience a crime but they perceived greater vulnerability.29 In addition, more research is needed to quantify the long-lasting consequences of rising violence in the context of the war on drugs to anticipate and intervene the pathways through which the current violence might affect future health outcomes. For example, the health system might need to be prepared for mental health issues such as depression, suicidal behavior and stress disorder.”

And added in line 299:

“In an international context, Mexico’s levels of violence are not even the highest around the globe, nor the region. Countries in central America, such as El Salvador and Honduras, and Venezuela, Colombia and Brazil in south America have higher homicide rates. It is likely that these countries experience higher variation in lifespans which, along with the existence of high levels of homicides, points to possible failure of policies to reduce the burden of violence. These policies should pay more attention to social determinants of premature mortality, psychosocial factors and get to the root of violence to prevent its diffusion towards the young population”

References:

Canudas-Romo V, Aburto JM, García-Guerrero VM, Beltrán-Sánchez H. Mexico's epidemic of violence and its public health significance on average length of life. *Journal of epidemiology and community health.* 2017;71(2):188-193.

**The discussion section needs a brief discussion of some limitations of the paper, for example, the paper does not address means of homicide, or other potential variables beyond gender that may be relevant, such as socio-economic status**

We followed this suggestion and added a subsection of limitations:

“First, inaccuracies in cause-of-death practices are likely to be present in the data that we used.8 To reduce these inaccuracies, we used broad causes of death and adjusted them with a smoothing process over age to have reliable cause-of-death distributions.24 Second, our estimated effects of homicides could be a lower bound due to undercounting, underreporting, and the large number of missing individuals.8 Third, we were not able to disaggregate our results by means of homicide. For example, it is not clear how many homicides were directly result of conflict between drug cartels and army operations. Finally, we were not able to disaggregate by socioeconomic and other social factors that could have shed more light into the pathways of violence and its effects on life expectancy and lifespan inequality.31 This illustrates the need of reliable estimates of mortality by cause of death and population by socioeconomic status and other social factors in Mexico.”

References:

Aburto JM, Beltrán-Sánchez H, García-Guerrero VM, Canudas-Romo V. Homicides in Mexico

reversed life expectancy gains for men and slowed them for women, 2000–10. *Health Affairs.*

2016;35(1):88-95.

Camarda CG. MortalitySmooth: An R Package for Smoothing Poisson Counts with P-Splines.

*Journal of Statistical Software.* 2012;50:1-24.

Braveman P, Gottlieb L. The social determinants of health: it's time to consider the causes of the

causes. *Public health reports.* 2014;129(1\_suppl2):19-31.

**I would like to see more detail and elaboration in the concluding recommendation "Our results from Mexico underscore the need to comprehensively reduce, through public policies and strategies, the impact of violence on population health and in the uncertainty surrounding the age of death" Are there any specific policies or strategies worth mentioning?**

We thank the reviewer for this suggestion.

Violence prevention should focus at the individual, family, community and, as we show, at the state level. Previous evidence suggests that school-based efforts; mental health and child welfare programs, educational programs and placement of graduates in jobs, self-employment, and continuing education, together with programs aimed at reducing alcohol consumption have been successful to mitigate violence diffusion (Hoffman et al 2011, Pinker, 2011, Viner et al, 2012). In the Mexican context, political will is essential since it has been shown that policies pursuing drug prohibition or severe suppression have not worked (Csete et al. 2016). Moreover, Mexico has failed to recognize and correct the health and human rights harms that these policies have caused. In this sense, it has been suggested that military forces’ participations should be phased out as much as possible since it exacerbates violence with drug traffickers.

We have added the next concluding paragraph:

“Mexico has failed to recognize and correct the detrimental consequences in health and human rights that suppressive and drug-prohibition policies have had on the population.34 There is an urgent need to stop these policies and complement them with regional and school-based efforts, educational and community programs to reduce the risk factors of violence (e.g. alcohol consumption).35 This will prevent homicides and contribute significantly to increase life expectancy as well as greater equality of individual lifespans in Mexico.”

References

Hoffman, Joan Serra, Lyndee M. Knox, and Robert Cohen. *Beyond suppression: Global perspectives on youth violence*. ABC-CLIO, 2011.

Pinker, Steven. "Decline of violence: Taming the devil within us." *Nature* 478.7369 (2011): 309.

Viner, Russell M., et al. "Adolescence and the social determinants of health." *The lancet* 379.9826 (2012): 1641-1652.

Csete, Joanne, et al. "Public health and international drug policy." *The Lancet* 387.10026 (2016): 1427-1480.

**Reviewer #2**

**The article was interesting and well-developed. A few conceptual questions to help strengthen the presentation of the data further:**

**\*When using the lifespan inequality or lifespan variation the cut-off was age 15--surviving to age 15 to capture the onset of homicides. Why is this the threshold set-point? Can the paper describe why this selection was made since the presentation of the data is defined by this choice?**

The aim of the paper is to capture the effect of violence, through homicides, on lifespan inequality. Previous work has found that measures of lifespan inequality are highly sensitive to whether infant and child mortality is included or excluded. Several authors have provided important insights into the variation of lifespans over the entire age range (e.g. Aburto and van Raalte, 2018), while Edwards and Tujlapurkar (2005), for example, argue that unconditional variance in age at death is a poor measure for informing analysis of mortality convergence, because improvements in infant mortality conceal dynamics in adult mortality. Since in Mexico homicides are concentrated in middle ages (Gamlin, 2015) we followed Edwards and Tuljapurkar’s suggestion and excluded infant mortality. In addition, we condition on surviving to age 15 because before that age less than 1.5% of homicides occurred, while 90.9% of homicides are concentrated between ages 15 and 65 (INEGI, 2017).

We added the next sentence to the manuscript:

“We condition on surviving to age 15 because including infant mortality conceals dynamics of mortality at adult ages10 and because 98.5% of homicides occur above that age”

References:

Aburto, José Manuel, and Alyson van Raalte. "Lifespan dispersion in times of life expectancy fluctuation: the case of Central and Eastern Europe." *Demography* (in press).

Edwards, Ryan D., and Shripad Tuljapurkar. "Inequality in life spans and a new perspective on mortality convergence across industrialized countries." *Population and Development Review*31.4 (2005): 645-674.

Gamlin, Jennie. "Violence and homicide in Mexico: a global health issue." *The Lancet* 385.9968 (2015): 605-606.

**\*How does the the distribution of poverty connect with this analysis/findings or not? The introduction mentions that historically poor states concentrated in the south but is very brief. I kept wondering if it too was a driver of the picture that this paper presents but it was never mentioned, controlled for or discussed.**

Documenting the health consequences of any change in the environment presents several challenges. In the case of violent crime, conflict intensity may be correlated with preexisting differences or trends in local characteristics that are also correlated with the health of the population.

Hiram, suggestions?

**\*What does flustered mean in line 232?**

We have rephrased the sentence. It now reads:

Line 258: “...Larger variation of lifespans underlies greater vulnerability at the population level.”

**\*The discussion could be developed more and connected with the data presented. Why is drug trafficking more violent in Mexico than other countries? The article mentioned that establishment of a single payer health system was not enough to change these trends--what are some of the policy approaches that could be adopted (educational, social, justice, etc.)?**

Here we can add the same answers we gave to R1, regarding the causes of violence and the policy approaches. Once we define the last answer for R1 I’ll put it here.

References:

Ríos, Viridiana. "Why did Mexico become so violent? A self-reinforcing violent equilibrium caused by competition and enforcement." *Trends in organized crime* 16.2 (2013): 138-155.

Csete, Joanne, et al. "Public health and international drug policy." *The Lancet* 387.10026 (2016): 1427-1480.

**Reviewer #3**

**This is a well-written manuscript describing a life expectancy in the context of severe violence related to death, using an inequity framework. In epidemiological perspective, it may not be novel the result that increasing homicide rate is associated with reducing life expectancy in population level. However, the quantification of homicide in life expectancy is still important. This study has significant policy implication as it providing alternative indicator for population impacts of severe violence.**

**I was therefore a bit disappointed to see some conceptual and logical limitations in the manuscripts. First, the manuscript does not properly address changing patterns of homicide in Mexico especially the period between 1995 and 2015. In particular, few details are provided regarding dividing panel A (1995-2005) and panel B (2005-2015). This manuscript is based on comparison of life expectancy between these two periods. This division should be justified with significant difference of homicide rate between them.**

**In discussion section, the author attempts to explain the contextual reason of reductions in life expectancy with homicide patterns in the regions. However, the paper fails to provide key difference on patterns and magnitude of homicide between 1995-2005 and 2005-2015.**

**I think the added value of this study is measuring quantified impacts of homicide on life expectancy. Therefore, it is critical to provide more details on a changing patterns of homicide rate especially before and after 2005 which led changes in life expectancy. Again, the causal association between homicide and life expectancy is not new. In addition, similarly, the authors attempted to address regional difference of lifespans using the inequality framework. The lifespan inequality is simply epidemiological results of unequal patterns of violence across the regions. So, here, unequal distribution of homicide is key underlying factors. But its description is also missing in this manuscript.**

**Lastly, I would like to suggest the authors to consider that violence rate is highly associated with underlying socioeconomic and political inequalities between regions and between individuals. And, beyond homicide, these factors are significant determinants of premature death due to diverse medical conditions. I do not think the authors have adequately conceptualized the population health impacts of violence using appropriate concept of inequality, although they attempted to measure the most severe form of violence - homicide on population health.**

**It is difficult to present a complex study such as this in limited words, as required by AJPH. I would like to make these recommendations in full understanding that it will be difficult to respond to all of them within this constraint, but I do hope the authors at least think about some of the conceptual difficulties I find with the paper.**