A Light of Hope? Inequalities in Mental Health and The Peace Agreement in Colombia: A Decomposition Analysis

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Research

Keywords: Conflict, mental health, inequalities, Colombia, Peace Accord

Posted Date: September 17th, 2020

DOI: https://doi.org/10.21203/rs.3.rs-78031/v1

Version of Record: A version of this preprint was published on January 19th, 2021. See the published version at https://doi.org/10.1186/s12939-021-01381-x.

A light of hope? Inequalities in mental health and the peace agreement in Colombia: A decomposition analysis

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ABSTRACT

Background: The present study seeks to evaluate the evolution of mental health inequalities in the department of Meta after the signing of Colombia's Peace Agreement in 2016 with the FARC guerrilla group. Using a validated survey instrument composed of 20 questions ('SRQ-20'), we measure changes in mental health inequalities from 2014, before the signing of the agreement, to 2018, after the signing of the agreement. We then decompose the changes in inequalities to establish which socioeconomic factors explain differences over time.

Methods: Our study uses information from the *Conflicto, Salud y Paz* (CONPAS) survey conducted in the department of Meta, Colombia, in 1,309 households in 2018, with retrospective information for 2014. To measure inequalities, we calculate the concentration indices for both years. Through the Oaxaca change decomposition method, we disaggregate changes in mental health inequalities into

its underlying factors. This method allows us to explain the relationship between changes in mental health inequalities and reduced inequality in several sociodemographic factors. It also identifies the extent to which these factors help explain the changes in mental health inequalities.

Results: Mental health inequalities in Meta were reduced almost by half from 2014 to 2018. In 2018, the population at the lower and middle socioeconomic levels had fewer chances of experiencing mental health disorders in comparison to 2014. The reduction in mental health differences is mostly attributed to reductions in the influence of certain sociodemographic variables, such as residence in rural zones and conflict-affected territories, working in the informal sector, or experiencing internal displacement. However, even though mental health inequalities have diminished, overall mental health outcomes have worsened in these years.

Conclusions: The reduction in the contribution of conflict-related variables for explaining mental health inequalities could mean that the negative consequences of conflict on mental health have started to diminish in the short run after the peace agreement. Nevertheless, conflict and the presence of other socioeconomic inequalities still contribute to persistent adverse mental health outcomes in the overall population. Thus, public policy should be oriented towards improving mental health care services in these territories, given the post-accord context.

Keywords: Conflict, mental health, inequalities, Colombia, Peace Accord

Background

Colombia's civil armed conflict has lasted more than 50 years and, by recent counts, has caused approximately 262,197 deaths, 80,154 forced disappearances, 15,687 victims of sexual assault, and almost 7,305,936 internally displaced people. (1). After four years of peace negotiations, Colombia's government and *Fuerzas Armadas Revolucionarias de Colombia* (FARC-EP), one of the most significant and influential guerilla groups in Colombia's armed conflict, signed a peace agreement on November 24, 2016, entitled *General Agreement for the End of the Conflict and the Construction of a Stable and Durable Peace*. This agreement led to the demobilization of the FARC group and its incorporation as

a political party in Colombia. Even though the agreement does not represent the end of conflict-related violence, the existence of a peace treaty is intended to facilitate public policy work in conflict-affected territories, specifically in places where the presence of the government was problematic due to the dominance of the FARC group.

Arguably, one of the most invisible consequences of the armed conflict has been its impact on mental well-being (2). Numerous studies have measured the impact that Colombia's civil conflict has generated on the mental health of populations affected by armed conflict. Studies have mostly emphasized the consequences on population groups historically affected by direct conflict violence, such as displaced populations and militaries (3), demobilized guerilla groups (4), or vulnerable populations such as women and children (5). Even though the peace process contributed to the de-escalation of direct conflict violence in Colombia, less is known about its short-run impacts on conflict-affected territories; in particular, the mental well-being of people historically affected by the armed struggle has not been sufficiently explored.

Colombia has long been considered one of the most unequal societies in Latin America (6). There are considerable regional differences in socioeconomic status, particularly within territories deeply affected by armed conflict. One of these territories is the department of Meta, located in the Eastern Plains region proximate to the Andes mountain range at the center of the country. Municipalities in this territory have been exposed to different levels of the Colombian armed conflict (7). These differences in conflict incidence, along with socioeconomic inequalities between territories and households, have generated enduring mental health inequalities (8).

These inequalities, in conjunction with political instability, may in turn increase the chances of civil conflict and limit economic development and recovery (9). Sustained mental health inequalities limit development potential in a region as a consequence of reduced productivity

and well-being (10). Simultaneously, these inequalities broaden differences between social groups due to limited physical, psychological, and social resources for improving their living conditions (11).

Few studies world-wide have explored the evolution of mental health inequalities in conflict-affected territories. National and international research has mostly focused on measuring the relationship between mental health outcomes and conflict de-escalation in post-conflict scenarios. Roberts, Damandu, Lomoro, and Sondorp (12) have found a high prevalence of PTSD symptoms (36%) and depression (50%) in victims of armed conflict after Sudan's Peace Agreement. Nevertheless, their study does not evaluate mental health outcomes before the sign of the agreement, and hence does not allow identifying changes in mental health outcomes over time. Other recent national studies (13) analyze mental health outcomes in post-conflict Colombia, but as they are focused on qualitative reported experiences, they do not allow for inference as to whether for the overall population, mental health outcomes have improved after the agreement and whether inequalities in mental health have diminished.

Against this background, the present study seeks to evaluate the evolution of mental health inequalities from 2014 to 2018 in the department of Meta, a territory that has been heavily affected by armed conflict. First, we measure mental health inequalities in both years and describe changes over time. We then use a change decomposition method to establish whether variations in these inequalities over time can be explained by changes in the distribution of important socioeconomic factors between groups or by a reduction in the determinants' explanatory power. Finally, we evaluate whether these changes have been associated with improvements in overall mental health outcomes in inhabitants of conflict-affected territories. In the following sections, we describe our methodological approach, present our results, and offer a discussion of the main conclusions driven by our analysis.

Methods

Our study uses information from the *Conflicto, Paz y Salud* (CONPAS) survey conducted in 1,309 households of the department of Meta. The survey is representative at the level of conflict incidence of the municipalities. It was conducted in 2018 and includes retrospective information for 2014.

The tendency to present mental health disorders was measured using the Self-Report Questionnaire (SRQ-20) (14), an instrument developed by the World Health Organization (WHO) that is composed of 20 questions regarding general health and well-being in the last month. If a person answers *yes* to 8 or more of the 20 questions of the questionnaire, he/she is seen as presenting a positive tendency towards experiencing mental health disorders (SRQ+).

We constructed the household Wealth Index (HWI) (15) for measuring inequalities in the distribution of mental disorders across several socioeconomic groups (SEG). The HWI is defined by Equation (1) as follows:

$$\mathrm{HWI_i} = \alpha_1\left(\frac{x_1 - \bar{x}_1}{s_1}\right) + \alpha_2\left(\frac{x_2 - \overline{x_2}}{s_2}\right) + \cdots \alpha_k\left(\frac{x_k - \overline{x_k}}{s_k}\right) \quad (1)$$

where x_i are variables that measure access to several household assets related to wealth (e.g. home appliances, public services, etc.), $\bar{x}_i$ is the mean of each variable, s_i its standard deviation and α_i are specific weights for each variable obtained through Principal Components Analysis (PCA), using the first component of the PCA as an estimator.

Along with the SRQ and the HWI indicator, we estimated health concentration indices (HCI) (16) using the SRQ indicator for 2014 and 2018. The concentration index measures the distribution of SRQ+ cases at different socioeconomic levels. The method orders all individuals from the poorest to the richest using the HWI indicator as a classification variable.

Then, the number of SRQ+ cases is classified in each specific socioeconomic group. Both variables are plotted in a graph as cumulative distributions. In the no-inequality scenario, the graph presents an even distribution of SRQ+ cases. For example, 20% of the population should represent 20% of the total SRQ+ cases. This hypothetical scenario represents the perfect equality curve. The concentration index is the ratio between the concentration curve and the perfect equality line, as shown in Equation 2:

$$HCI = \frac{2\,cov(Y,R)}{\mu_y} \quad (2)$$

where Y is the health variable (SRQ+), μ_y is its mean, and R is the person's rank (or position) in the income distribution. We calculated an HWI indicator for both 2014 and 2018 independently to determine the concentration indices. The concentration index ranges from -1 to 1, with -1 being absolute inequality favoring the rich, 0 perfect equality, and 1 perfect inequality favoring the poor. Nevertheless, as SRQ is a binary outcome variable, Wagstaff (17) proposed a mathematical correction to adjust the HCI to adequate ranges (Equation 3):

$$HCI_N = \frac{HCI}{1-\mu_y} \quad (3)$$

With this transformation, the range of our HCI moves from $\mu_y - 1$ to $1 - \mu_y$, ensuring that the HCI can be interpreted between the values of a standard concentration index.

To explain changes in mental health inequalities, we selected a group of variables that are associated with differences in mental health outcomes between socioeconomic groups in the international literature. Using a probit model, we calculated marginal effects to estimate the influence of each independent variable x on the probability of SRQ+ cases. The influence of these independent variables for explaining mental health outcomes may be formulated using Equation 4.

$$\eta_x = \beta_X \frac{\mu_x}{\mu_y} \quad (4)$$

Where μ_x and μ_y are, respectively, the means of the independent and dependent variables. Equation 4 measures the relative importance that variable x has on explaining the mean of the SRQ variable, using the marginal effects of the Probit model.

Mental health inequalities may increase/decrease over time through two mechanisms: changes in inequalities in its determinant factors (changes in the values of CI_X) or in its elasticities over time (changes in η_x). Through the Blinder- Oaxaca decomposition method (18), we decomposed the change in the health concentration index from 2014 to 2018 into two components using Equations (5) and (6):

$$\Delta HCI = \sum_{\boldsymbol{x}} \eta_{x2018}(CI_{x2018} - C_{x2014}) + \sum_{\boldsymbol{k}} C_{x2014}(\eta_{x2018} - \eta_{x2014}) + \Delta\left(\frac{GC_{\varepsilon t}}{\mu_t}\right) \quad (5)$$

$$\Delta HCI = \sum_{\boldsymbol{x}} \eta_{x2014}(C_{x2018} - C_{x2014}) + \sum_{\boldsymbol{k}} C_{x2018}(\eta_{x2018} - \eta_{x2014}) + \Delta\left(\frac{GHC_{\varepsilon t}}{\mu_t}\right) \quad (6)$$

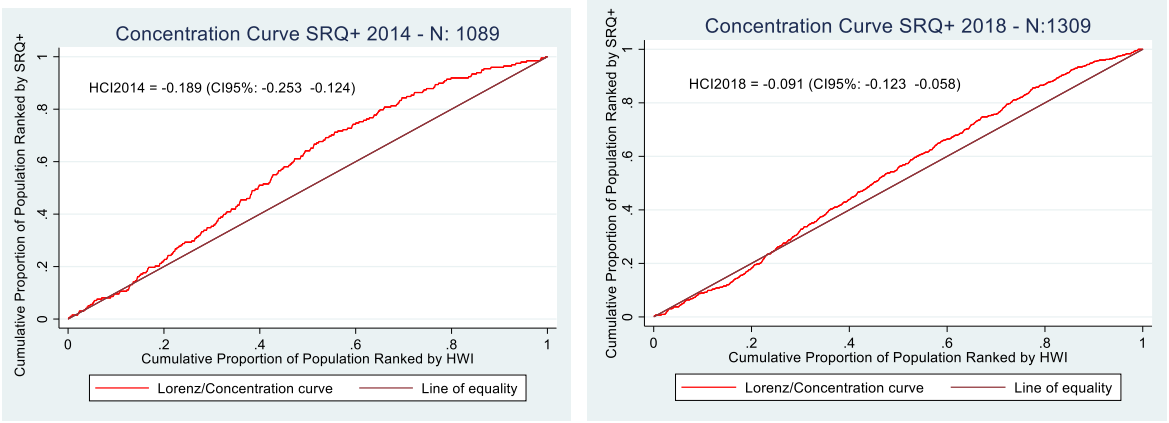
Both equations are alternative ways of decomposing the change in HCI using different weighting variables. Either one allows us to establish which sociodemographic factors contribute to the increase /decrease of mental health inequalities over time. We estimated both models along with the concentration indices and the decompositions of the HCI of SRQ for both years to evaluate changes in mental health inequalities and establish which factors explain these changes over time.

Results

Mental health inequalities in 2014 and 2018

Figures 1 and 2 show the concentration curves for the distribution of SRQ+ positive cases among different income levels of the population.

Fig. 1 and 2: Concentration Curves SRQ+ 2014 (N:1089) and SRQ+ 2018 (N:1309)



***Source**: Prepared by authors based on CONPAS 2014 and 2018*

p-value HCI2014: 0.000 - (SD 0.040) p-value HCI2018: 0.004 - (SD: 0.032)

The negative coefficient of the concentration indices indicates that there is an unequal distribution of SRQ positive cases in both years among the population of Meta. For 2014 and 2018, the population at lower socioeconomic levels have a greater tendency to present mental health disorders than those at higher income levels. Those in middle socioeconomic groups have a higher incidence of SRQ+ cases for both years in comparison lower and higher socioeconomic groups. A higher proportion of SRQ cases are found in people with income ranges of 40% to 60%. Nevertheless, in 2018 there is a significant reduction in SRQ inequality measured through concentration indices, with a change of -0.189 to -0.096. The difference in concentration indices between groups (2014 and 2018) is significant at a 95% confidence level (p-value: 0.048).

By analyzing the behavior of both curves, it is possible to understand how tendencies to present mental health disorders have evolved over time. The first difference may be found in the range between 0 and 20%. Unlike 2014, in 2018, people in the lowest socioeconomic levels (0-20%) have fewer SRQ+ positive cases. Therefore, there is a reduction in SRQ cases in the lowest income levels in 2018. Inequalities in the tendency to present mental

192 health disorders in 2018 start to appear at the 30% level, but these are much smaller than
193 in 2014. Both graphs show that tendencies to present mental health disorders are more
194 evenly distributed among population groups in 2018.

195 **Oaxaca - Blinder change decomposition**

196 Changes in mental health inequalities may be explained by changes in inequalities in
197 socioeconomic variables that are correlated to mental health outcomes. The influence of
198 these determinants can be expressed through two different mechanisms. The first involves
199 changes in the importance of specific socioeconomic variables in explaining the mental
200 health concentration index, regarded as the elasticities or unexplained components. The
201 second mechanism involves changes in the magnitude of inequalities in determinant factors,
202 measured by the concentration indices of each socioeconomic determinant. Table 1
203 presents a disaggregation of both mechanisms using the specifications of the Oaxaca-
204 Blinder method in Equations 5 and 6. For both equations, we calculate the weighted change
205 in inequalities for each socioeconomic determinant ($\Delta C\eta$) as well as the influence of these
206 determinants over time ($\Delta\eta C$). We then estimate the total change in the concentration index
207 of each socioeconomic variable, adding the two previous components (*Total*). Finally, we
208 calculate how much of the change in mental health inequalities may be attributed to changes
209 in each determinant (%).

210 INSERT TABLE 1

211 Differences in both specifications are almost zero, showing that both Oaxaca equations lead
212 to similar results. For the most critical determinants – sex, the zone of residence, conflict
213 affectation, and displacement – most of the consequent reduction on inequalities in mental
214 health is a consequence of changes in elasticities rather than in the relative distribution of
215 these factors among different socioeconomic groups. These results are intuitive, as

significant changes in population distribution and sociodemographic characteristics among populations of different poverty levels are not expected in this short period. However, results show that displacement status, sex, conflict intensity of the place of residence, and working status have a smaller influence in explaining mental health inequalities in Meta during these four years, especially in conflict-affected territories. Living in a territory slightly or highly affected by conflict has much less influence in explaining mental health inequalities, given its positive coefficients of 0.022 and 0.025 in the elasticity component of the change in concentration index. There is also a lower influence of being employed informally (0.053) and living in rural zones (0.018) for explaining inequalities over time.

The change in the contribution index of displacement and sex are both a consequence of changes in their relative importance (elasticity) for explaining mental health inequalities as well as changes in the distribution of these variables (women and displaced people) across different income groups. This means that both variables reduce mental health inequalities as a consequence of reduced importance in determining mental health inequalities and a relatively more equitable distribution of these populations among different income levels.

Even though mental health inequalities may have been reduced over time, it is necessary to analyze if the overall population's incidence of mental health disorders has also improved. The concentration indices only evaluate relative distribution, but not changes in absolute numbers of SRQ cases over time. Table 2 shows the number of SRQ+ cases for both years disaggregated by poverty quintiles:

240 ***Table 2: Incidence of SRQ+ cases 2014 – 2018 by poverty quintiles***

SRQ +	SRQ+ 2014 (N=1089)		SRQ+ 2018 (N=1089)	
	Cases	Percent	Cases	Percent
Quintile 1	39	23.1	66	18.6
Quintile 2	50	29.6	94	26.5
Quintile 3	38	22.5	77	21.7
Quintile 4	28	16.6	70	19.7
Quintile 5	14	8.3	47	13.3

241 ***Source:*** *Own elaboration based on CONPAS 2014 and 2018*

242 Results show that SRQ+ cases have increased for all poverty quintile groups from 2014 to
243 2018. In 2018 all social groups had higher tendencies to experience mental health disorders.
244 However, the distribution of these cases has changed over time. People at the lowest
245 income levels have a lower percentage of the total number of cases. Quintile 1 passes from
246 23.1 to 18.6% of total SRQ+ cases, and quintile 2 moves from 29.6% to 26.5%. Quintile 3
247 maintains a similar behavior over time in the SRQ+ distribution, with a change of only 0.8%
248 over this period (22.5 to 21.7%). Nevertheless, for the higher income groups, Quintile 4 and
249 5, SRQ+ cases over total distribution has increased from 16.6 to 19.7% and 8.3 to 13.3%.

250 These results show that overall inequality has diminished mostly because of a relatively
251 more significant tendency to present mental health disorders in people at higher income
252 levels compared to lower socioeconomic groups. However, all population groups have
253 increased the chances of experiencing mental health disorders from 2014 to 2018.

254 Discussion

255 Main conclusions

256 Results show that mental health inequalities decreased by almost half between 2014 and
257 2018, after the signing of the peace agreement in 2016. Nevertheless, the number of SRQ+

258 cases also increased simultaneously across all income levels. Differences among sex, rural
259 and urban zones, participation in the informal sector, and differences among territories of
260 various conflict incidence levels are the primary determinant factors in explaining mental
261 health inequalities in both years.

262 Changes in inequalities from 2014 to 2018 are attributed to a more equitable distribution of
263 SRQ+ cases. In 2018, people at higher socioeconomic levels had higher chances of
264 experiencing mental health disorders compared to those at lower socioeconomic levels.
265 These changes in mental health inequalities are partially explained by a lower influence of
266 several determinant factors on mental health inequalities, specifically, conflict-related
267 variables, such as internal displacement and conflict incidence.

268 Reduction in mental health inequalities, and especially, the lower influence of conflict-related
269 variables, may reflect the short-run positive consequences of conflict de-escalation, which
270 usually have a more direct impact on people exposed to everyday violence. People at lower
271 income levels are usually exposed more profoundly to conflict-related violence as a
272 consequence of insecurity in the regions or territories where they live. Reductions in direct
273 conflict violence may improve mental health outcomes on these populations, revealing,
274 simultaneously, other risk factors that may be more prominent in higher-income groups
275 (labor stress, greater responsibilities etc.). Neverthless, this new sociopolitical scenario
276 represents an adequate context for increasing awareness and treating mental health
277 disorders in these communities.

278 However, results also show that, even in this scenario, negative mental health outcomes
279 may continue to persist, not only in conflict-affected territories but also in other populations
280 and civilian groups. These continuous adverse mental health outcomes may be a
281 consequence of the persistent long-run trauma and negative experiences that years of
282 conflict violence have on people's well-being and health. These factors require time as well

as health services to improve in the long run. Meta, as well as several other territories in Colombia, still suffer from conflict-related violence such as threats and assassinations of social leaders by small factions, dissident groups of the demobilized FARC, and other guerilla groups that are still active. Therefore, results emphasize the importance of providing mental health services for the overall population to improve well-being and diminish the psychological impact of conflict-related events over time.

Even though we partially analyze mechanisms that explain the reduction of mental health inequalities in the short run, our results leave some open questions and hypotheses about the relationship between social determinants and mental health inequalities. Although conflict is an important factor for explaining mental health outcomes, the increment in tendencies to present mental health disorders between 2014 to 2018 shows that persistent socioeconomic differences still contribute and perpetuate health inequities even after conflict de-escalation. People living under these circumstances still have important challenges and limitations accentuated after the conflict, such as searching for jobs, resuming education, rebuilding social ties and relationships, and restoring confidence among peers and institutions. All of these situations are negatively affected during armed conflict and have an impact on well-being. More importantly, results show that mental disorders may easily transcend socioeconomic groups and impact even the most accommodated and economically stable individuals in conflict scenarios. The psychological consequences of conflict are difficult to overcome. For this reason, mental health services are required for extended time periods, and, most importantly, consistently and holistically appropriate to the different circumstances that impact mental health well-being and are exacerbated by conflict.

Increases in poor mental health, especially in middle and high-income groups, is challenging to interpret. Still, it is a manifestation of how armed conflict transcends different

308 socioeconomic groups and levels and is not exclusive to the most vulnerable populations.
309 In some cases, these middle-income groups may have disadvantages in accessing mental
310 health services. In specific contexts, middle-income groups may experience difficulties for
311 accessing health services prioritized and subsidized for the lower socioeconomic groups,
312 due to their relatively advantageous economic situation. At the same time, they may be
313 unable to pay or cover the more premier or high-quality medical health services that high-
314 income groups can pay. This social level' trap', commonly referred to as the *missing middle*
315 (19), may be especially crucial in these vulnerable contexts, but further analyses are
316 necessary to arrive at concluding results.

317 **Comparison with previous international and national studies**

318 Limited international studies have evaluated the evolution of mental health outcomes and
319 inequalities in conflict-affected territories. Most of them have found a high prevalence of
320 mental health disorders in postconflict societies but have not reviewed its relationship with
321 health inequalities along time. Roberts, Damandu, Lomoro, and Sondorp (12) analyze
322 mental health outcomes after the peace agreement of the Sudan civil conflict in 2005 through
323 a survey of 1,242 respondents in Juba, the capital city of South Sudan. The study finds a
324 high prevalence of mental health disorders four years after conflict de-escalation, mostly
325 related to the long-run effect of conflict exposure and trauma. However, studies of the
326 influence of socioeconomic circumstances and inequalities are limited, and the analysis
327 focuses on demographic characteristics without a more in-depth analysis of socioeconomic
328 variables. De Jong, Komproe, Van Ommeren (20) review the short-run psychological
329 consequences of armed conflict along time on 3,048 respondents in Algeria, Cambodia,
330 Ethiopia, and Palestine, finding a high prevalence of PTSD symptoms and anxiety disorders.
331 Nevertheless, their conclusion focusses only on the influence of direct conflict violence in
332 population groups.

333 In Colombia, the studies evaluating changes in mental health outcomes have also been
334 limited. Burgess and Fonseca (21) evaluate mental health distress in displaced people
335 among 40 victims of internal displacement. In this study, the mental health burden in
336 postconflict scenarios is highly related not only with past violence but sustained poverty and
337 social inequality, low paid work, unemployment, and low support from government services.
338 Nevertheless, its conclusions are mainly focused on conflict victims, not overall population
339 groups, and they do not evaluate changes over time. Cuartas et al. (8) measure mental
340 health inequalities using the National Mental Health Survey and identify critical determinants
341 for health differences. However, their study concentrates on a specific point of time (2015)
342 without evaluating changes over time in conflict-affected territories.

343 We can nevertheless draw comparisons with the results found by Cuartas et al. (8) as their
344 study also uses concentration indices for quantifying mental health inequalities in Colombia,
345 specifically, at a country level, for 2015. Cuartas et al. (8) estimate a mental health
346 concentration index of -0.12, showing that mental health disorders are unevenly distributed
347 in Colombia in the overall population, being less pronounced in comparison to Meta in 2014
348 where these inequalities are much more significant (-0.189). These results show that mental
349 health inequalities may be more critical in regions in Colombia where conflict has been more
350 rampant and severe across time – territories that usually are also characterized by higher
351 socioeconomic inequalities. Therefore, our results show preliminary exploratory results of
352 the importance of guaranteeing adequate access to mental health services, especially
353 during periods of armed struggle.

354 Mental health inequality levels in Meta diminished to an HCI value of -0.9 in 2018; however,
355 below 2015, national inequality levels. This leaves some open questions, specifically,
356 whether during the same period, national mental health inequalities also diminished. If this
357 is the case, it is crucial to assess whether mental health inequalities could have been

reduced to a larger extent in conflict-affected territories in comparison to national levels. These results could signalize that conflict is a major contributor to persistent mental health inequalities in war zones.

Strengths and weaknesses

Our key contribution is our analysis of mental health outcomes in conflict-affected territories in the short-run after Colombia's Peace agreement and the evolution of mental health inequalities over time. This study, more than judging the success or failure of this peace treaty or assessing casuality in changes in mental health outcomes, seeks to provide a clearer perspective of current health trends in these territories to improve policy-oriented decisions and signalize key health areas to focus on in post-conflict scenarios.

Moreover, our study is based on a large-scale survey that allows us to analyze mental health outcomes in Colombia more broadly among war victims and overall population groups, with a focus on a territory with particularly high conflict incidence levels in certain municipalities comparison to other regions of Colombia. This analysis is not common in most literature about mental health in Colombia and in international literature. Our study contributes to further discussions of the short-run consequences of peace agreements in conflict-affected territories.

Besides our contribution to health inequalities in conflict-related literature, our study further explores the relationship between socioeconomic inequalities and mental health. It offers a critical perspective of how peace agreements and conflict de-escalation do not necessarily translate into immediate improvements in mental health outcomes. The existence of socioeconomic inequalities may limit the positive effect of conflict de-escalation over time.

Our analysis offers some critical perspectives on the mental health effects of short-run peace agreements in economies characterized by persistent socioeconomic differences.

The use of retrospective information for the year 2014 may be subject to recall bias in some of the participants, specifically, difficulties in remembering some events and, most importantly, recalling feelings or moods. Even though we found reductions in mental health inequalities in the years we analyzed, our data does not allow us to locate specific moments or years at which these inequalities started to diminish. In this sense, inequalities could have begun to decrease even before the signing of the Peace Agreement. Our study has concentrated on the analysis of a specific territory in Colombia, for which reason some of our conclusions may be limited to the social circumstances of this area. Nevertheless, the analysis of a territory that has been historically affected by the conflict at different levels in some municipalities may give us insights about health outcomes in other conflict-affected territories with similar characteristics.

Conclusions

Mental health inequalities in conflict-affected zones may broaden social inequalities and limit social and economic development. Even though civil conflict persists in some regions, Colombia's peace treaty has reduced direct conflict violence and created a better environment for peace promotion and improvement of physical and psychological health. De-escalation of conflict has diminished the effects and influence that war-related events have on mental health. Still, the conflict has led to persistent mental health differences and increased chances of experiencing mental health disorders. A reduction of the influence of war on mental health outcomes offers opportunities for broadening social health policies oriented to health recovery and promotion in war-torn communities.

404 The increment of SRQ in all population groups shows that, even though the conflict
405 incidence and internal displacement are less determinant in explaining health inequalities,
406 the overall population is still affected by several socioeconomic circumstances and
407 difficulties that have been adversely affecting mental health. Results show the influence that
408 context, aside from individual circumstances, has on social and health outcomes over time,
409 commonly known as neighborhood effects (22). Living in vulnerable social circumstances is
410 likely to maintain adverse health outcomes even with a reduction of conflict. This is
411 particularly true in territories where political and social instability remains fragile, and where
412 years of conflict violence have diminished coping mechanisms and public policy support.

413 Public policies designed to promote capacity building, economic and social development are
414 indispensable for promoting long-run improvements in health and, simultaneously, quality of
415 life among conflict-affected populations. In the short term, these policies may focus on
416 strategies for improving mental healthcare in these territories. In the long run, policies can
417 focus on strengthening healthcare systems, access, and quality of health services, not only
418 oriented to conflict victims but to the overall population, to improve mental health outcomes
419 in these communities.

420 **Declarations**

421 **Ethics approval and consent to participate**

422 Research authorized by the ethics committees of Alberto Lleras Camargo, School of
423 Government, Universidad de los Andes, Colombia and of University of York, UK

424 **Consent for publication**

425 Not applicable

426 **Availability of data and materials**

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests

Funding

Project funded by the UK Medical Research Council, Economic and Social Research Council, DFID and Wellcome Trust (Joint Health Systems Research Initiative). Grant code: MR/R013667/1.

Authors' contributions

SLG led the writing process, the research design and selected the methodology; GC, psychiatrist, selected the mental health instruments and contributed to discussion, JSCS performed data cleaning and econometric analysis , CGU and AO revised the manuscript and contributed to data analysis and interpretation of results; RMS and OB contributed to discussion, funded survey design and facilitated contact with relevant stakeholders for data collection in the field. NK and MS revised methodological and econometric coherency and made final revisions and reviews.

Acknowledgements

We would like to thank the public officers from the department of Meta Governor's Office and, specially, the Secretary of Health, partners that facilitated and supported data collection in the territory.

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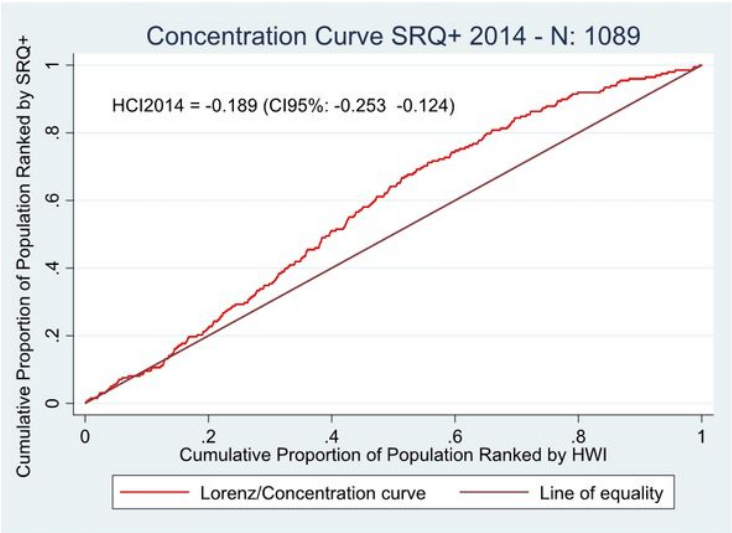
514 ***Table 1: Change Decomposition in the Concentration Index for Mental Health Disorders (2014 -18)***

	Decomposition of change in concentration index - Oaxaca type approach							
	Equation (5)		Equation (6)		Total		Total	
	ΔCη	**ΔηC**	**ΔCη**	**ΔηC**	**Total1**	**%**	**Total2**	**%**
Displaced								
No	Baseline							
Si	0.005	0.007	0.006	0.006	0.012	8%	0.013	9%
Age group								
18 – 44 years	Baseline							
45 – 64 years	0.000	-0.010	-0.001	-0.009	-0.010	-7%	-0.010	-7%
65 or more	0.000	-0.002	0.001	-0.003	-0.002	-1%	-0.002	-1%
Sex								
Male	Baseline							
Female	0.007	0.007	0.006	0.009	0.014	10%	0.015	10%
Zone of residence								
Urban	Baseline							
Rural	0.007	0.015	0.004	0.018	0.022	15%	0.023	16%
Work type								
Formal	Baseline							

Informal	-0.008	0.067	0.005	0.053	0.059	42%	0.059	41%
Out of labor force	0.002	-0.002	0.001	-0.001	0.000	0%	-0.000	0%
Conflict level								
Capital city	Baseline							
Highly affected	0.001	0.021	0.000	0.022	0.022	15%	0.022	15%
No conflict	-0.000	-0.012	0.000	-0.013	-0.012	-8%	-0.012	-8%
Lowly affected	-0.003	0.037	0.007	0.026	0.034	24%	0.034	23%
Ethnicity								
Majority	Baseline							
Minoriy	0.000	-0.000	-0.000	-0.000	0.000	0%	-0.000	0%
Education								
None	-0.000	0.001	0.001	0.001	0.001	1%	0.001	1%
Primary School	0.004	-0.015	-0.014	-0.011	-0.011	-8%	-0.011	-8%
Secondary School	-0.001	0.011	0.008	0.010	0.010	7%	0.010	7%
Undergraduate	Baseline							
WHODAS	0.010	-0.007	-0.005	0.003	0.003	2%	0.003	2%
Residual								
Total	**0.024**	**0.118**	**0.019**	**0.111**	**0.142**		**0.145**	

Source: Own analysis based on CONPAS 2014 and 2018

Figures



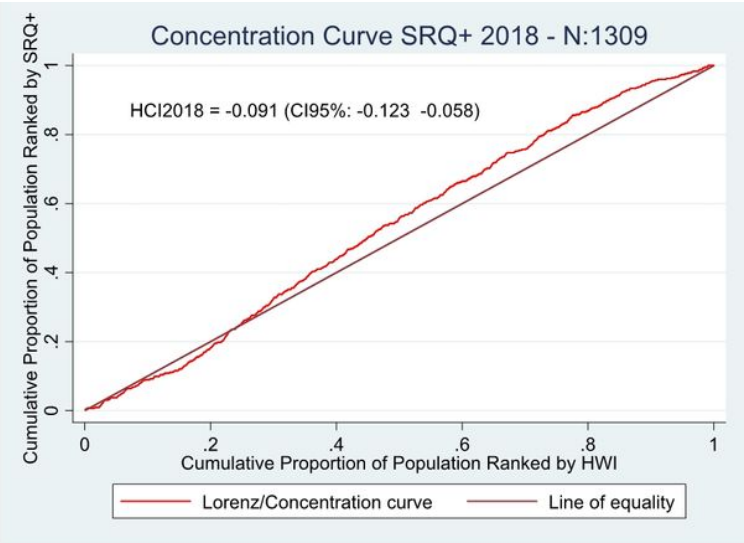


Figure 1

Fig. 1 and 2: Concentration Curves SRQ+ 2014 (N:1089) and SRQ+ 2018 (N:1309) Prepared by authors based on CONPAS 2014 and 2018 p-value HCI2014: 0.000 - (SD 0.040) p-value HCI2018: 0.004 - (SD: 0.032)