

PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	Cross Sectional Analysis of Two Social Determinants of Health in California Cities: Racial, Ethnic, and Geographic Disparities
AUTHORS	Bustamante, Dulce; Maizlish, Neil

VERSION 1 - REVIEW

REVIEWER	Pamela Meyer Centers for Disease Control and Prevention USA
REVIEW RETURNED	17-Sep-2016

GENERAL COMMENTS	<p>This is an interesting and helpful manuscript. I have a few suggestions.</p> <ul style="list-style-type: none">- page 4 line 18 add a space between the words "time" and "period"- page 13 line 19 add "to" before "other DSOHs..."- page 13 line 21 add a reference for the statement regarding "recency of immigration profoundly influences poverty and educational attainment"- page 14, elaborate about the statement that "the Asian category includes subpopulations whose poverty and educational attainment are heterogeneous. Valuable information may have been lost by aggregation." This seems like a potential limitation of any grouping by race. What is different with the Asian classification.
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REVIEWER	Margaret Hicken University of Michigan United States of America
REVIEW RETURNED	26-Nov-2016

GENERAL COMMENTS	<p>The objective of this study was to "study the magnitude and direction of city level racial and ethnic differences in poverty and education to examine health equity and social determinants of health in California communities." In execution, the authors examined spatially-defined ethnoracial differences in two measures of socioeconomic status (SES) in California. The motivating idea for this paper is well-founded as these measures of SES, at both the area and individual levels, are robustly related to health. The authors present a very interesting idea and I particularly appreciate the discussion of the role of LHD -- an extremely important but often overlooked key factor in combating health inequalities. However, there were some challenges to this version of the manuscript and the major ones are listed here:</p> <p>-- The authors stated that they would examine health equity, but I could not find any analyses on health. It might be that the SES</p>
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	<p>measures were examined and then it was assumed that they would all result in similar ethnoracial inequalities in health. I can certainly understand that -- however, because there is literature on the relation between SES and health among groups, I would have preferred to see actual health measures.</p> <p>-- There is a large racial and economic segregation literature in the social sciences and a growing literature in public health that may have helped with modeling and interpretation.</p> <p>-- Because there was a focus on LHD, it would have been very interesting and helpful to integrate them into the modeling. Factors such as the sociodemographic characteristics of their catchment areas, the funding, etc would have been very informative, as there is some literature on the civic disinvestment in sociopolitically disadvantaged areas.</p>
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VERSION 1 – AUTHOR RESPONSE

Reviewer: 1

Reviewer Name: Pamela Meyer

Institution and Country: Centers for Disease Control and Prevention, USA

Please state any competing interests or state 'None declared': None declared

Please leave your comments for the authors below

This is an interesting and helpful manuscript. I have a few suggestions.

- page 4 line 18 add a space between the words "time" and "period"

• Authors: Suggestion accepted

- page 13 line 19 add "to" before "other DSOHs..."

• Authors: Suggestion accepted

- page 13 line 21 add a reference for the statement regarding "recency of immigration profoundly influences poverty and educational attainment

• Authors: Reference added, see Sullivan and Ziegert (2008).

- page 14, elaborate about the statement that "the Asian category includes subpopulations whose poverty and educational attainment are heterogeneous. Valuable information may have been lost by aggregation." This seems like a potential limitation of any grouping by race. What is different with the Asian classification.

• Authors: We agree with the reviewers' comment. We have modified the sentence as follows: "We acknowledge that the race categories included in the analysis are composed of subpopulations whose poverty and educational attainment are heterogeneous (for instance, differences between Asian ethnic groups). Valuable information may have been lost by aggregation."

Reviewer: 2

Reviewer Name: Margaret Hicken

Institution and Country: University of Michigan, United States of America

Please state any competing interests or state 'None declared': None declared

Please leave your comments for the authors below

The objective of this study was to "study the magnitude and direction of city level racial and ethnic differences in poverty and education to examine health equity and social determinants of health in California communities." In execution, the authors examined spatially-defined ethnoracial differences in two measures of socioeconomic status (SES) in California. The motivating idea for this paper is well-founded as these measures of SES, at both the area and individual levels, are robustly related to

health. The authors present a very interesting idea and I particularly appreciate the discussion of the role of LHD -- an extremely important but often overlooked key factor in combating health inequalities. However, there were some challenges to this version of the manuscript and the major ones are listed here:

-- The authors stated that they would examine health equity, but I could not find any analyses on health. It might be that the SES measures were examined and then it was assumed that they would all result in similar ethnoracial inequalities in health. I can certainly understand that -- however, because there is literature on the relation between SES and health among groups, I would have preferred to see actual health measures.

- Authors: We did assume that ethnoracial disparities and inequities are positively associated with disparities and inequities in health outcomes. We have conducted an additional illustrative analysis to address the reviewer's concerns on the association between disparities in the social determinants and health outcome disparities. The analysis is described below. The analysis and its results have been included in the manuscript, except for the figures which are included here for the benefit of the reviewer.

- Virginia Commonwealth University calculated life expectancy at birth (LEB) in 2010 for California census tracts using life table methods and 3-year annual average mortality rates (2009-2001) and modeling for census tracts with sparse data. The data are publically available through the Health Disadvantage Index Project (<http://phasocal.org/ca-hdi/>). Within cities, the LEB was matched on census tract for census tracts with the highest and lowest education educational attainment and for those with the highest and lowest poverty rates. Census tract differences in educational attainment and poverty were scaled so that positive differences indicated greater disparities. Census tract difference in LEB were scales so that positive differences indicated increases in life expectancy, and conversely, negative differences indicated a lower life expectancy.

- Within cities, increasing disparities in educational attainment between census tracts with the highest and lowest levels were significantly correlated with increasing disparities in which life expectancy decreased (Pearson $r=-0.24$, $p< 0.001$). A similar significant correlation was found for poverty disparities and life expectancy (Pearson $r=-0.28$). In simple linear regression analyses, 0.08 years of life expectancy was lost for each percent of educational disparity (Figure 1) and 0.05 years of life expectancy was lost for each percent of poverty disparity (Figure 2).

- Figure 1 (the figure can't be uploaded in this format but it is available upon request)

- Figure 2 (the figure can't be uploaded in this format but it is available upon request)

-- There is a large racial and economic segregation literature in the social sciences and a growing literature in public health that may have helped with modeling and interpretation.

- Authors: We acknowledged the role of racial and economic segregation as an underlying cause of the results observed in the discussion section of this manuscript as follows:

"Differences in SDOH between geographic units such as census tracts may be disparities or inequities, depending on the history of social disadvantage. Long-standing patterns of racial discrimination and economic segregation within California cities undoubtedly underlie some of the differences that we labeled disparities."

We are limited on how much we can expand on this topic as the focus of the discussion is on reviewing the role of LHD in monitoring and addressing the disparities observed.

-- Because there was a focus on LHD, it would have been very interesting and helpful to integrate them into the modeling. Factors such as the sociodemographic characteristics of their catchment areas, the funding, etc. would have been very informative, as there is some literature on the civic disinvestment in sociopolitically disadvantaged areas.

• Authors: Although we agree with the reviewer that LHD funding would be an interesting element to integrate as well as studying the potential associations between funding and magnitude of disparities, we don't have a data source that would allow us to explore funding for California's 58 county LHD's (and 3 city HD) and how that relates to city level SDOH disparities. Our goal with this manuscript is to point out that LHD's can both communicate the SDOH disparities information and be part of citywide/countywide collaborations with a wide array of partners leveraging the social capital LHDs have in their communities along with their legal and moral authority to improve population health in the communities they serve.

VERSION 2 – REVIEW

REVIEWER	Pamela Meyer Centers for Disease Control and Prevention Atlanta, Georgia, United States
REVIEW RETURNED	20-Dec-2016

GENERAL COMMENTS	<p>This is a useful and timely paper. It can be vastly improved by clarifying the objective and the geographic level throughout the manuscript.</p> <p>1. The title, "Surveillance of the social determinants of health in California communities: Racial, ethnic and geographic disparities", leads the reader to believe the manuscript is about surveillance. However, the methods appear to be research methods - the methods could be used for surveillance. By definition, public health surveillance is ongoing. The methods described in this manuscript could be used for ongoing tracking of these 2 social determinants. Maybe these findings could be used as baseline data for surveillance. This should be clarified in the very beginning of the introduction.</p> <p>- in the abstract, what is the objective:</p> <p>a) to study city level racial and ethnic differences in poverty and education to examine health equity? (this is probably the reason a reviewer asked the author to include a health outcome)</p> <p>b) to examine differences in poverty and low educational rates by race and ethnicity in California cities and towns?</p> <p>2. the geographic level is described using different terms that may have different meanings to different readers. Geographic level terms include: communities (in title), city, census tracts, towns, neighborhoods.</p> <p>I would interpret the findings in the conclusion as: Racial and ethnic differences in poverty and educational attainment vary across California. Local health departments can use these findings to target interventions by partnering with leaders in their cities. These analytic methods could be used in a surveillance system to monitor and target interventions to address these</p>
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	<p>determinants of health.</p> <p>- This wording is not clear: " This article fills a geographic gap in current public health surveillance by documenting the glaring disparities in poverty and low educational attainment by race/ethnicity and neighborhood that exist within nearly every California city. "</p> <p>Is the gap the lack of surveillance for social determinants of health? Perhaps the findings show much variation and warrants a targeted approach for interventions. Surveillance can be a tool to identify areas of need and assess whether interventions are having the desired effect.</p> <p>- A strength of this analysis is that it provides(between and within city- and town-level estimates that can be more effective for targeting interventions to where they are most needed.</p>
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REVIEWER	Margaret Hicken University of Michigan USA
REVIEW RETURNED	22-Jan-2017

GENERAL COMMENTS	The authors have addressed my concerns about this manuscript to my satisfaction,.
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VERSION 2 – AUTHOR RESPONSE

Reviewer: 1

Reviewer Name: Pamela Meyer

1. The title, "Surveillance of the social determinants of health in California communities: Racial, ethnic and geographic disparities", leads the reader to believe the manuscript is about surveillance. However, the methods appear to be research methods - the methods could be used for surveillance. By definition, public health surveillance is ongoing. The methods described in this manuscript could be used for ongoing tracking of these 2 social determinants. Maybe these findings could be used as baseline data for surveillance. This should be clarified in the very beginning of the introduction. In the abstract, what is the objective:

- to study city level racial and ethnic differences in poverty and education to examine health equity? (this is probably the reason a reviewer asked the author to include a health outcome)
- to examine differences in poverty and low educational rates by race and ethnicity in California cities and towns?

New title reads: Cross Sectional Analysis of the Social Determinants of Health in California Cities: Racial, Ethnic, and Geographic Disparities

The introduction now includes the following sentence: "We examined [...] 3) possible actions that LHDs may consider based on surveillance findings produced with the research methods suggested in this study. "

We believe the objective of this study as it currently reads comprises both objectives suggested by the reviewer: "To study the magnitude and direction of city level racial and ethnic differences in poverty and education to examine health equity and social determinants of health in California cities."

2. The geographic level is described using different terms that may have different meanings to different readers. Geographic level terms include: communities (in title), city, census tracts, towns, neighborhoods.

I would interpret the findings in the conclusion as: Racial and ethnic differences in poverty and educational attainment vary across California. Local health departments can use these findings to target interventions by partnering with leaders in their cities. These analytic methods could be used in a surveillance system to monitor and target interventions to address these determinants of health.

- This wording is not clear: " This article fills a geographic gap in current public health surveillance by documenting the glaring disparities in poverty and low educational attainment by race/ethnicity and neighborhood that exist within nearly every California city. " Is the gap the lack of surveillance for social determinants of health? Perhaps the findings show much variation and warrants a targeted approach for interventions. Surveillance can be a tool to identify areas of need and assess whether interventions are having the desired effect.

- A strength of this analysis is that it provides (between and within city- and town-level estimates that can be more effective for targeting interventions to where they are most needed.

We have made changes to the manuscript to consistently use the term "city" were appropriate.

We have used some of the language suggested by the reviewer to update the conclusion section of the abstract to read as follows: "Disparities and inequities are widespread in California. Local health departments can use these findings to partner with cities in their jurisdiction and design strategies to reduce racial, ethnic and geographic differences in economic and educational outcomes. These analytic methods could be used in a surveillance system to monitor these determinants of health."

We updated the wording in the paragraph highlighted by the reviewer to read: "This article fills contributes to fill a geographic gap in current public health surveillance methods by documenting the glaring disparities in poverty and low educational attainment by race/ethnicity and neighborhood that exist within nearly every California city." In this way, the paragraph highlights a gap in surveillance methods.

We have added the text suggested by the reviewer to the Strengths and Limitations section.

Reviewer: 2

There were no comments by this reviewer

VERSION 3 – REVIEW

REVIEWER	Pamela Meyer Centers for Disease Control and Prevention, US
REVIEW RETURNED	09-Feb-2017

GENERAL COMMENTS	The manuscript was originally titled, "Surveillance of the Social Determinants of Health in California". This does not appear to be an established ongoing surveillance system. Instead it offers a methodology that can be used for surveillance. The title has changed and has lost a surveillance focus. I have some suggestions.
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	<p>Title Edit: Cross Sectional Analysis of TWO social determinants of health... The authors only address poverty and education</p> <p>Abstract Objective: "To study.... to examine health equity. It would read better to replace "examine" with "characterize"</p> <p>Abstract Conclusion: adding "ongoing" before "surveillance system' could reinforce the difference between one research study and ongoing public health surveillance.</p> <p>Strengths and Limitations: The 3rd bullet is confusing. It seems the authors are suggesting this methodology could be used for surveillance of social determinants of health.</p> <p>Introduction, 2nd paragraph. The sentence starting: "the surveillance of SDOH..." is jarring. This is the first mention of surveillance in the body of the text. There are several references to surveillance throughout the text that seem out of place now that the manuscript seems to be reporting on a methodology and not an established surveillance system. A transition would help or maybe "the identification and monitoring of SDOH.."</p> <p>Similarly, last sentence on page 5, "3) possible actions that LHDs may consider based on "surveillance "findings".. These data seem to be a one-time study; not ongoing surveillance.</p> <p>Page 9, line 37, delete "education" before educational attainment.</p> <p>Page 13 line 28: this study identifies racial ethnic and geographic differences between 2 SDOH (education and poverty). Why not add "identifying, targeting interventions and ..." before "monitoring"</p> <p>page 17, line 52, "focused upstream" might be replaced with "addressing root causes of disease". Again, this manuscript focuses on identifying differences in 2 SDOH, so it makes sense to add "identification and targeting interventions" before 'surveillance of the social determinants of health...</p>
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VERSION 3 – AUTHOR RESPONSE

Reviewer Comments and Responses:

1. This does not appear to be an established ongoing surveillance system. Instead it offers a methodology that can be used for surveillance. The title has changed and has lost a surveillance focus. I have some suggestions. Title Edit: Cross Sectional Analysis of TWO social determinants of health... The authors only address poverty and education

Response: Thank you for your suggestion, it has been adopted. The article title was changed after the editor required to include the method in the title.

2. Abstract Objective: "To study.... to examine health equity. It would read better to replace "examine" with "characterize"

Response: the suggestion was adopted in the manuscript.

3. Abstract Conclusion: adding "ongoing" before "surveillance system' could reinforce the difference between one research study and ongoing public health surveillance.

Response: the suggestion was adopted in the manuscript.

4. Strengths and Limitations: The 3rd bullet is confusing. It seems the authors are suggesting this methodology could be used for surveillance of social determinants of health.

Response: we are indeed suggesting that this methodology could be used for surveillance therefore

no changes were made. As the reviewer points out, this article does not refer to ongoing surveillance but the methodology could be used to summarize data from multiple cities for the purposes of surveillance.

5. Introduction, 2nd paragraph. The sentence starting: "the surveillance of SDOH..." is jarring. This is the first mention of surveillance in the body of the text. There are several references to surveillance throughout the text that seem out of place now that the manuscript seems to be reporting on a methodology and not an established surveillance system. A transition would help or maybe "the identification and monitoring of SDOH.." Similarly, last sentence on page 5, "3) possible actions that LHDs may consider based on "surveillance "findings".. These data seem to be a one-time study; not ongoing surveillance.

Response: as the reviewer points out, this article does not refer to ongoing surveillance but the methodology could be used to summarize data from multiple cities for the purposes of surveillance. We believe that the word surveillance is being used appropriately across the manuscript: we frequently clarify throughout the manuscript that the methods could be used for surveillance. The discussion section highlights that the surveillance of the social determinants of health should be institutionalized at the state and local levels.

6. Page 9, line 37, delete "education" before educational attainment.

Response: the suggestion was adopted in the manuscript.

7. Page 13 line 28: this study identifies racial ethnic and geographic differences between 2 SDOH (education and poverty). Why not add "identifying, targeting interventions and ..." before "monitoring"

Response: the suggestion was adopted in the manuscript.

8. page 17, line 52, "focused upstream" might be replaced with "addressing root causes of disease". Again, this manuscript focuses on identifying differences in 2 SDOH, so it makes sense to add "identification and targeting interventions" before 'surveillance of the social determinants of health...

Response: the suggestion was adopted in the manuscript.

VERSION 4 – REVIEW

REVIEWER	Pamela A Meyer Office for State, Tribal, Local and Territorial Support Centers for Disease Control and Prevention 1600 Clifton Rd Atlanta GA 30333
REVIEW RETURNED	27-Feb-2017

GENERAL COMMENTS	This is an interesting paper that presents a methodology that could be used to conduct surveillance for two social determinants of health.
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