Dear Dr. Loder,

Thank you for your consideration of our manuscript, and another opportunity to further clarify and revise the manuscript. Please find below a point by point response to the reviewer’s comments, and attached a tracked changes and clean copy of the revised paper. If you have any further questions, please don’t hesitate to connect with us.

Yours truly,

Mohsen Naghavi

Response to Reviewers

Reviewer 1
Comments:
I have no further comment from a stats perspective - the article is much clearer on the methods front following the revision.

Response: We are glad we were able to address the reviewer’s previous comments thoroughly enough and that the methods are much clearer.

Reviewer 2
Unaddressed:

- Accuracy and completeness of suicide records beyond garbage codes. The authors recognize that under-counting/ mis-assignment of deaths from suicide is a problem, but their methods only address this issue in so far as it relates to garbage codes. Unaddressed, for example: suicides miscoded as homicides or unintentional deaths, an issue that may be substantial in places where suicide raises legal or stigma issues.

Response: We have addressed this issue on lines 358-360 of the limitations section of the article. We have added unintentional injuries as an example of plausible causes to our discussion of misclassification.

- Details on the CODEm models tested
  - “a large number of model specifications”, “multiple iterations of cross-validation tests”, and “pre-determined requirements for the direction and significance of coefficients” is vague. What it says to me is that the modeling procedure involved a number of subjective decisions, but these decisions are simply being masked by technical language.
Response: We have added clearer language on lines 163-165.

- what type of predictive validity was used (leave-one-out? 10-fold?)
  Response: In every model, 30% of data were not used in the estimation and were used only for out of sample predictive validity

- How the uncertainty intervals were derived. The authors specify percentiles of the posterior distribution, but the modeling procedure described sounds frequentist, not Bayesian - the exact model specifications remain unclear. It is unclear how the authors are deriving these posterior distributions.
  Response: We have added more text on how the draws and uncertainty intervals were produced on lines 169-172.

Reviewer 3
Comments:
The authors have done a commendable job incorporating reviewer and editor comments and revising the manuscript, which is considerably strengthened and clarified as a result. These will be important findings for the field. I have only a few minor additional comments.
  Response: We thank the reviewer for their kind words and recognition of the importance of this study for the field.

-There are no overarching findings on the association between Socio-Demographic Index level and rates of suicide, even though such findings are presented for sex and age subgroups. That appears to be one of the goals of the manuscript and would be relevant information for intervention and prevention purposes. If word counts allow, I would encourage the authors to include such an analysis.
  Response: This finding is reported in the abstract on lines 47-48. We discuss this finding on lines 318-321, however we have modified this section to use the term SDI to make it clearer to readers.

-There are several places throughout where the text says "the data is..."; these should be corrected to "the data are".
  Response: We have done so.

-Figure 2's labels still use the term "self-harm" instead of "suicide"; this should be corrected.
  Response: We have done so.