

## Peer Review File

**Article Information:** <http://dx.doi.org/10.21037/jgo-20-583>

### Reviewer A

**Comment 1:** We commend the work of authors, who tried to analyze data from a rather large population, who underwent pancreatic surgery and tried to identify the factors associated with poor outcomes in patients living in the rural areas, compared to urbans. This is a very unique effort in identifying the problem at rural level, where most of the patients live.

**Reply 1:** We appreciate the feedback from the reviewer who recognizing the value of our manuscript. Changes in Text: N/A

**Comment 2.** The study design, data collection, variables and statistical analyses are appropriate and matter of fact well throughout.

**Reply 2:** The reviewer acknowledged the thoroughness of our manuscript. Changes in Text: N/A

**Comment 3.** My comments on this article

**Reply 3:** We have carefully considered the reviewers comments. Changes in Text: See below.

**Comment 4.** Title is too long. Please try to shorten it

**Reply 4:** The title has been shortened: Changes in Text: On pg. 1, line 1-2, **Social Determinants of Health associated with Poor Outcome for Rural Patients following Resected Pancreatic Cancer**

**Comment 5.** Please add to sentence line 80 – “if identified at an early stage”

**Reply 5:** We have added, “if identified at an early stage.” Changes in Text: On pg. 3, line 79-80.

**Comment 6.** Line 135- Please expand PUF- Participant user files (PUF)

**Reply 6:** The correction expanding PUF was made. Changes in Text: On pg. 5, line 132.

**Comment 7.** Line 173 – the word “in miles” is duplicated

**Reply 7:** The duplications was deleted. Changes in Text: On pg. 7, line 169.

**Comment 8.** Race is limited to black or white. Does this had an impact on the analysis, as this is likely convenient sample? As we know, Hispanics and other minorities has low access to health care and they are underserved population and they also tend to live in urban areas rather than rural areas

Reply 8: The reason that race is limited to black and white is small cases for other races and ethnic groups. It is difficult to accurately ascertain residence of Hispanics and other minorities given the NCDB. Changes in Text: N/A.

Comment 9. Does the % of patients in urban vs rural areas have any effect?

Reply 9: The reason that race is limited to black and white is small cases for other races and ethnic groups. According to the population estimates (July 1, 2019) by the United States Census Bureau, Louisiana has 0.8% AIAN, 1.9% API, and 5.3% Hispanics. This study is not limited to Louisiana cases. The table below shows the case count of race/ethnicity by race group. Our study include white and black regardless the Hispanic status. Changes in Text: N/A.

Race/ethnicity	Race				
	White	Black	Other	Unknown	Total
NHW	20124	0	0	0	20124
NHB	0	2506	0	0	2506
Hispanic	1196	27	6	67	1296
Others	0	0	662	0	662
Unknown	1516	167	32	427	2142
Total	22836	2700	700	494	26730

Comment 10. The sample collected is rather convenient sample, despite the fact they included all the consecutive cases

Reply 10: We used the NCDB data for this study. The NCDB data are from the cancer registries of ACoS hospitals. Therefore, the data is not population-based. Because ACoS hospitals provide cancer care to more than 70% of cancer patients in the United States, the findings using NCDB data are still meaningful. Changes in Text: On pg. 16, lines 380-382.

Comment 11. It is not clear from the data, what is the percentage of patients that are lost for follow up (survival follow up after completion of surgery, chemo, RT etc). It is conceivable that patients with adverse SDoH could have lost for follow up. It is not clear in the study, if you collected or considered that variable and included in the study statistical analysis (please clarify appropriate. I am not sure NCDB has this information. If information is not available, please include that in the limitations section

Reply 11. We do have some variables reflecting adverse SDoH, such as income, education, and type of health insurance. We don't have the exact date for cancer diagnosis and last contact in the BCDB data. The follow-up data in the NCDB is provided as number of follow-up months. We used the June 30, 2012 as the follow-up cutoff date to estimate lost follow up rate. There are

1,928 (7.6%) patients lost to follow-up. This is clarified in the limitations section. Changes in Text: On pg. 17, line 386-388.

### Lost to follow-up

	No (N=23608, 92.4%)	Yes (N=1928, 7.6%)	Total
<b>Urban/Rural</b>	<i>p</i> = 0.0036		
<b>Urban</b>	19504 (92.2)	1643 (7.8)	21147
<b>Rural</b>	4104 (93.5)	285 (6.5)	4389
<b>Income</b>	<i>p</i> = 0.2853		
<b>&lt;\$38,000</b>	4184 (92.8)	323 (7.2)	4507
<b>\$38,000- 47,999</b>	5562 (92.6)	443 (7.4)	6005
<b>\$48,000- 62,999</b>	6296 (92.6)	504 (7.4)	6800
<b>\$63,000 +</b>	7566 (92.0)	658 (8.0)	8224
<b>Education</b>	<i>p</i> = 0.6389		
<b>≥ 21%</b>	3698 (92.2)	312 (7.8)	4010
<b>13- 20.9%</b>	6144 (92.2)	521 (7.8)	6665
<b>7- 12.9%</b>	7792 (92.6)	619 (7.4)	8411
<b>&lt; 7%</b>	5974 (92.6)	476 (7.4)	6450

Comment 12. If appropriate, please consider adding a small paragraph in discussion section, is there a role for prospective studies and solutions to fix this disparity and improve the outcomes.

Reply 12. We have addressed the disparity of rural inhabitant with a brief discussion of studies evaluating this issue in lines 281-309. A deeper discourse, in the author's opinion, should be reserved for a future study. Changes in Text: N/A

### Reviewer B

Comment 1. PDAC is a amongst the deadliest malignancies and its incidence increases in particular in US and western countries. Thus, all (really ALL) factors contributing to the outcome are worth to be studied. Besides the typical molecular oncological and clinical criteria, other issues may impact the overall survival.

The authors contribute to the field of social determinants analyses by evaluating a large (about 25,000 patient cohort) data base in US with a special focus on rural versus urban conditions. Only operable (stage I-III) patients are included.

By using state of the art statistical methods (and clever strategies) the authors identify SPECIFIC adverse social determinants of health as significantly contributing to the outcome of surgically (and adjuvantly) treated PDAC patients. The analysis is very convincingly performed and highly significant for policy makers and the general health care system. It is a pleasure to read since many confounding factors and other possible side effects are self-critically addressed.

Reply 1: We appreciate the positive comments from reviewer B. Changes in Text: N/A.