

PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	Development and evaluation of the OHCITIES instrument: Assessing alcohol urban environments in the Heart Healthy Hoods project
AUTHORS	Sureda Llull, Xisca; Espelt, Albert; Villalbí, Joan; Cebrecos, Alba; Baranda, Lucía; Pearce, Jamie; Franco, Manuel

VERSION 1 – REVIEW

REVIEWER	Adrianna Murphy London School of Hygiene and Tropical Medicine
REVIEW RETURNED	15-May-2017

GENERAL COMMENTS	<p>I think this is an interesting study which addresses an important topic – the role of environment in alcohol consumption. However, I have two major concerns – the first relates to the description of the design of the tool (more detail is needed), and in particular to the choice of the domains and the items representing each domain. If the implication is that these items lead to increased risk of harmful alcohol consumption, then stronger justification of their inclusion (with reference to evidence) needs to be given. The second is that they authors claim this is a validation study but (unless I have missed something) they are not testing validity, they are testing inter and intra-rater reliability.</p> <p>Major suggested revisions:</p> <ol style="list-style-type: none">1. In the introduction the authors state that there is a need for a tool that can “comprehensively assess the wide variety of alcohol related stimuli we are exposed in our cities.” It would be helpful to add one sentence that says, explicitly, what this tool would include in order to address gaps left by previous on-street observation tools used in the described literature. Is the gap that only outdoor advertising has been accounted for?2. “This instrument was developed with the intention of being transferable to other cities”. In developing this instrument, what specifically was done to ensure its transferability? (i.e. what about the process was different than had you not intended for it to be transferable?)3. Re the ‘interdisciplinary research team’ that conducted the literature review would be helpful. Are these the co-authors? That could be specified.4. Much more detail is required on the literature review. Was this a systematic review? If so, what were the search terms, inclusion
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	<p>criteria, etc? If not, what process was used to identify relevant papers and how can we be certain that nothing important was missed?</p> <p>5. The authors state that they focused on three main domains: availability and accessibility, promotion, and signs of consumption. How these domains were selected needs to be clarified. Were these domains identified through the literature review? Or were these a priori assumptions made by the expert research team?</p> <p>6. Is the hypothesis that the domains and items selected for the instrument lead to increased risk of hazardous alcohol consumption? If so, this needs to be explicitly stated. For example, in Murphy, et al (ref #33) we used the term 'alcogenic environment' to describe an environment with high availability, etc. that increases risk of hazardous consumption.</p> <p>7. What is meant by location of outlets? Is this location density? Proximity to the road or to residential areas? Proximity to transport hubs?</p> <p>8. More detail is required about what was included in the instrument for each domain. For example, for advertising, was the number of advertisements important? What are some examples of things that would be included in the third domain, "signs of consumption".</p> <p>9. Related to this point, I find it hard to understand the items chosen for the domain of availability and accessibility. Why were items such as the number of hours during which alcohol is sold, or the price not included? Similarly, how were the items for 'signs of alcohol consumption' chosen, and is the implication that these things are risks for hazardous alcohol consumption? Some might argue that a culture of public, social drinking as opposed to private drinking is protective against hazardous alcohol consumption.</p> <p>10. With respect to the piloting: "...variables that caused discrepancies between observers, and introduced new variables previously overlooked..."; some examples of these would be helpful, given that this paper is about development and validation of this tool. Also, where was the tool piloted? How were these locations selected?</p> <p>11. In the introduction, the authors criticise existing tools for only focusing on the outdoor environment, but it seems from the methods section that they only focus on the outdoor environment as well? "Observers detected all items associated with alcohol outlets from the outside without entering into them." If that is the case, again the question is what this tool offers over and above existing tools.</p> <p>12. For the second phase, the authors indicate that they use census sections to define the research area. There is a whole body of literature around the challenge of defining a community and/or discrete areas that capture all that an individual is exposed to in a given day. Any definition of the area will have its limitations, and that is fine, but these should be discussed.</p> <p>13. "The selection of the census sections was based on variation in municipal registries of outlet density (outlet density of the included census sections ranked from 102 to 1812 outlets/km2)." What does this mean? Were sections randomly selected from percentiles or categories of the distribution?</p> <p>14. In the Results section the authors describe how many outlets the field workers agreed on. It would be good to know how many they did not agree on (or did they both identify the exact same number in each census – that would be very accurate!).</p> <p>15. Looking at the results, I would again emphasise that it would be good to have some more detail about how these items were chosen. E.g. Why napkin holders but not logos on glasses or on fronts of menus?</p>
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	<p>16. In the Discussion section, the authors state that the instrument is potentially useful for enhancing our understanding of alcohol behaviours. How so? I think if there is a plan to now compare the instrument's assessment of a neighbourhood with alcohol-related outcomes, it would be good to mention this, as it is a key step to achieving this 'enhancement' of our understanding. As it is right now, the authors have shown the potential reliability of the instrument, but I am not sure that they have shown it is valid (i.e. measuring what is supposed to measure). Further research would be required for this.</p> <p>17. The authors mention that in Spain alcohol consumption is normalised and a high proportion of the population 'consumed alcohol in the past year' in 2011. As we know from extensive published literature, consuming alcohol once or twice, or in moderation, is not necessarily the same from a public health perspective as harmful alcohol consumption. Are there data on harmful alcohol consumption in Spain? Are there estimates of alcohol-related mortality? It would be good to justify more explicitly the value of assessing the alcohol environment in this country.</p> <p>18. Again, the authors state in the Discussion that: "Although the instrument was designed in the cities of Madrid and Barcelona, it was developed to have broader applicability in studies conducted in other cities worldwide."</p> <p>19. I have read reference #33 and I do not think it is accurate to say that it focuses on outdoor marketing.</p> <p>20. As mentioned above, the limitations of arbitrary community definition should be discussed. As part of this, it should be acknowledged that people often live, work, and socialise in different neighbourhoods and may thus be exposed to various different types of alcohol environments. I would also add some discussion of the</p> <p>Minor suggested revisions:</p> <p>1. The whole paper requires a thorough proof read for grammatical errors. Some examples: i) In the Abstract 'Setting' section: "Data for the validating the instrument was..." should be "Data for validating the instrument were..."; ii) In the Introduction: "The harmful use of alcohol is one of the leading contributors to the global burden of disease, and the leading contributor to premature death and disability worldwide in the 15–59 age group.[1] Globally, the harmful use of alcohol is responsible of 4% of all deaths.[2]" I would not use 'the' in front of harmful use of alcohol in these cases; iii) Also in the introduction: "Second, more opportunities for the promotion of alcohol products.[9, 11, 12]" This is not a complete sentence. iv) In the methods section: "We piloted test the instrument in four urban neighbourhoods in Madrid."</p>
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REVIEWER	Peter Anderson Institute of Health and Society, Newcastle University, England
REVIEW RETURNED	27-Jun-2017

GENERAL COMMENTS	This is an innovative study to develop an instrument to assess alcohol urban environments. The study is well executed, analyzed and reported. It provides an added contribution to the filed as more
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VERSION 1 – AUTHOR RESPONSE

Reviewer: Adrianna Murphy

I think this is an interesting study which addresses an important topic – the role of environment in alcohol consumption. However, I have two major concerns – the first relates to the description of the design of the tool (more detail is needed), and in particular to the choice of the domains and the items representing each domain. If the implication is that these items lead to increased risk of harmful alcohol consumption, then stronger justification of their inclusion (with reference to evidence) needs to be given. The second is that they authors claim this is a validation study but (unless I have missed something) they are not testing validity, they are testing inter and intra-rater reliability.

We thank the reviewer for her thoughtful comments. We are confident the article has greatly improved thanks to her work.

Response to major concerns:

1. According to the reviewer's comment we have further explained the description of the OHCITIES tool design and especially described the main variables and items included in each domain. Please see responses to reviewer's questions below.

2. We partially agree with the reviewer comment about the validation process. Nevertheless, we have changed the title of the manuscript from "validation" to "evaluation" of the OHCITIES instrument. We completely agree with the reviewer that in the manuscript we are testing inter and inter-rater reliability. However, we are also testing other aspects of validity. Several varieties of validity procedures have been described including face validity, construct validity, content validity and criterion validity. "The Standards for Educational and Psychological Testing of 2014"

(<http://www.apa.org/science/programs/testing/standards.aspx>) discussed five sources of evidence that can be used in evaluating a proposed interpretation of selection procedure test scores for a particular use: (a) relationships between predictor scores and other variables, such as test-criterion relationships, (b) content, (c) internal structure of the test, (d) response processes, and (e) consequences of testing. To test the OHCITIES instrument validity we have conducted different procedures explained in the manuscript.

To assess the face and content validity some of the authors had previously conducted a systematic review of the literature measuring alcohol environment. The conceptual model for this research has previously been published (ref #7). The coauthors constitute an interdisciplinary research team including experts on alcohol, and social epidemiology (XS, AE, JRV, JP, and MF), demography (LB), and geography (AC, and JP). Using the framework previously published, a literature search for questionnaire items in published reports, and peer-reviewed research was conducted to measure concepts related with the alcohol domains.

All of the authors reviewed the inventory of domains and items included evaluating that every item included was relevant and useful for characterizing alcohol environment. Then, we conducted pilot testing of the instrument to check for adequate item variance, reliability and convergent/discriminant validity with respect to other measures. Results of the pilot testing allowed the researchers to improve the instrument.

Finally, the authors used secondary alcohol outlets databases from the Madrid City Hall. We obtained a correlation factor of 0.93 between the density of on-premises observed on-street and secondary data bases and a correlation factor of 0.71 for off-premises (data not included in the manuscript). According to the reviewer comments, and since not all the validation procedures have been conducted we have made some changes within the manuscript. We have avoided referring to a "validation" but to an "evaluation" process of the OHCITIES instrument.

Major suggested revisions:

1. In the introduction the authors state that there is a need for a tool that can “comprehensively assess the wide variety of alcohol related stimuli we are exposed in our cities.” It would be helpful to add one sentence that says, explicitly, what this tool would include in order to address gaps left by previous on-street observation tools used in the described literature. Is the gap that only outdoor advertising has been accounted for?

We agree with the reviewer that we should have added a sentence explaining what this tool adds to the gaps left by previous on-street observation.

We found four previous studies using on-street observations tools. Some of them have focused only on outdoor marketing exposure; (ref #33 y #34), another study compared the use of Google Street View and on-street observation to characterize alcohol environment (ref #18), and another article includes measures of presence of alcohol outlets (including 24-h availability of alcohol and density of alcohol outlets) and alcohol advertisements. (ref #35). The OHCITIES tool includes information of availability and accessibility, promotion and signs of alcohol consumption in a same tool and, differently to other tools allowed us, using digital application via mobile phones, to geo-locate all the data collected and even taking pictures of alcohol related items registered.

We have stressed this information in the “Discussion” section.

2. “This instrument was developed with the intention of being transferable to other cities”. In developing this instrument, what specifically was done to ensure its transferability? (i.e. what about the process was different than had you not intended for it to be transferable?)

We appreciate and thank this reviewer comment.

The instrument was designed and pretested in the cities of Madrid and Barcelona. Also researchers working in Edinburgh (JP) and in the United States (MF) participated in the design and subsequent evaluations of the OHCITIES instrument. In fact, they participated in testing the pilot study in the city of Madrid and we are now considering the possibility of characterizing the alcohol environment in Edinburgh and Baltimore using our instrument.

Perhaps the authors have emphasized its broader applicability without having performed any feasibility assessment, collecting data, for example, in more different cities and countries. Barcelona and Madrid already showed differences in alcohol environment. The instrument correctly reflected these differences.

The authors have made changes in the “Introduction” and “Strengths and limitation of this study” section to clarify this review comment. We have also added some sentences in the “Discussion” section as follows:

“Although the instrument was designed in the cities of Madrid and Barcelona, researchers working in Edinburgh (JP) and in Baltimore (MF) participated in the design and evaluation of OHCITIES instrument. This instrument could be transferable to other cities although its adaptation might be necessary to be applicable to another urban context.

For example, some alcohol related items included in OHCITIES instrument may be modified and/or additional variables would be necessary to be developed. These modifications should be further evaluated for their reliability.”

3. Re the ‘interdisciplinary research team’ that conducted the literature review would be helpful. Are these the co-authors? That could be specified.

The interdisciplinary research team refers to the researchers with different background who participated in the development of the questionnaire. This team are effectively the coauthors of the manuscript and includes experts on alcohol and social epidemiology (XS, AE, JRV, JP, and MF), demography (LB), and geography (AC, and JP). This team reviewed the literature and developed the first version of the instrument.

According to reviewer’s recommendation, we have added a sentence in the first paragraph of the

“Methods section”.

4. Much more detail is required on the literature review. Was this a systematic review? If so, what were the search terms, inclusion criteria, etc? If not, what process was used to identify relevant papers and how can we be certain that nothing important was missed?

Again we thank the reviewer for this comment. The authors had previously published a conceptual framework to help to understand how the urban environment relates with alcohol drinking behaviors (ref #7). To conceptualize this framework the authors had previously reviewed the literature researching alcohol consumption in urban environments. In fact, we are currently on the process of writing a systematic review focusing on the methodologies used in the published literature to characterize alcohol urban environment.

We have clarified this fact in the “Methods” section.

5. The authors state that they focused on three main domains: availability and accessibility, promotion, and signs of consumption. How these domains were selected needs to be clarified. Were these domains identified through the literature review? Or were these a priori assumptions made by the expert research team?

Please, see also response to Question 4. We have clarified this comment in the “Methods” section. We have previously published work (ref #7) where we explained the framework that may relate the alcohol characteristics of the urban environment (including these 3 main domains) with individual alcohol behaviors.

6. Is the hypothesis that the domains and items selected for the instrument lead to increased risk of hazardous alcohol consumption? If so, this needs to be explicitly stated. For example, in Murphy, et al (ref #33) we used the term ‘alcogenic environment’ to describe an environment with high availability, etc. that increases risk of hazardous consumption.

We have stressed this comment including a sentence in the “Method” section indicating that the authors include three domains hypothesized to favor alcohol consumption.

We also explained in the second paragraph of the “Introduction” section how an increased availability and accessibility, promotion and signs of alcohol consumption may relate to higher consumption pattern using several published pieces of evidence.

7. What is meant by location of outlets? Is this location density? Proximity to the road or to residential areas? Proximity to transport hubs?

By location of outlets we mean the registration of the addresses and geolocation of the outlets in order to compute, in future studies, proximity and density analyses. We have specified this information in paragraph 2 in “Methods Section”.

8. More detail is required about what was included in the instrument for each domain. For example, for advertising, was the number of advertisements important? What are some examples of things that would be included in the third domain, “signs of consumption”.

The authors specified and explained the main variables and items for each domain in Supplementary Material in the previous version (Table S1). According to the reviewer’s comment, we have given more detail in the “Methods” section about what was finally included in the instrument. We have also replaced Figure 1 by Table S1 in the main text in order to provide more information about the domains, places of observation and main variables and items included in each domain.

9. Related to this point, I find it hard to understand the items chosen for the domain of availability and accessibility. Why were items such as the number of hours during which alcohol is sold, or the price not included? Similarly, how were the items for ‘signs of alcohol consumption’ chosen, and is the implication that these things are risks for hazardous alcohol consumption? Some might argue that a

culture of public, social drinking as opposed to private drinking is protective against hazardous alcohol consumption.

This is an important point raised by the reviewer.

We have further clarified the items included for the domains, and we have explained how we developed and chose that items in the main text. Please see response to Questions 4, 5, 6 and 8. In relation to prices, if the reviewer refers to registering the prices of alcohol associated to the outlets we did not record price data since we only included alcohol-related items that could be perceived from the outside without directly accessing the inside of alcohol outlets. However, we registered information of alcohol promotion in the outside of the outlet including prices for alcohol products since it serves as claim to capture customers' attention.

10. With respect to the piloting: "...variables that caused discrepancies between observers, and introduced new variables previously overlooked..."; some examples of these would be helpful, given that this paper is about development and validation of this tool. Also, where was the tool piloted? How were these locations selected?

Thank you again for this comment. Accordingly we have included some examples in relation to "...variables that caused discrepancies between observers, and introduced new variables previously overlooked...".

The location selected to pilot the instrument was already explained in the "Methods" section. We have given some example of those areas to clarify it: "We pilot tested the instrument in four convenient urban neighborhoods in Madrid and two neighborhoods in Barcelona. Researchers chose areas they knew where exposure to alcohol-related characteristics were more likely to be high to capture diverse alcohol domains and the related items for each domain, such as touristic areas."

11. In the introduction, the authors criticise existing tools for only focusing on the outdoor environment, but it seems from the methods section that they only focus on the outdoor environment as well? "Observers detected all items associated with alcohol outlets from the outside without entering into them." If that is the case, again the question is what this tool offers over and above existing tools.

In the "Introduction" section we said that previous tools using on-street observation had mainly focused on outdoor marketing exposure. We have now removed that sentence and included more specific information on the "Discussion" section explaining deeply the characteristics of other on-street observation tools and the characteristics the OHCITIES instrument add to the previous tools. Please see also response to Question 1.

12. For the second phase, the authors indicate that they use census sections to define the research area. There is a whole body of literature around the challenge of defining a community and/or discrete areas that capture all that an individual is exposed to in a given day.

Any definition of the area will have its limitations, and that is fine, but these should be discussed. We completely agree with the reviewer comment. The level at which exposure is determined is an important task in neighborhoods effects (and other social epidemiologic) research. And we will definitely face this challenge in future studies using OHCITIES instrument within the Heart Healthy Hoods study. This is not the case for the present manuscript. Also answering to Question 20 we have mentioned that challenge in future studies using OHCITIES instrument.

We selected census section in different neighborhoods to evaluate the OHCITIES instrument. We believe that for the development and evaluation of OHCITIES instrument what really mattered was the item itself (alcohol outlet, promotional item associated to the outlet, sign of alcohol consumption, etc...) and how we chose and develop these items and the results of test-retest reliability more than the area unit we used to test the instrument.

13. "The selection of the census sections was based on variation in municipal registries of outlet

density (outlet density of the included census sections ranked from 102 to 1812 outlets/km²).” What does this mean? Were sections randomly selected from percentiles or categories of the distribution? We have clarified this comment by adding this sentence: “The selection of the census sections was based on variation in municipal registries of outlet density (outlet density of the included census sections ranked from 102 to 1812 outlets/km²) to ensure that each census had a minimum of outlets for the reliability analysis and sufficient variability for these measurements.”

14. In the Results section the authors describe how many outlets the field workers agreed on. It would be good to know how many they did not agree on (or did they both identify the exact same number in each census – that would be very accurate!).

We appreciate this reviewer’s comment. In the results section (table 1 and 2) we show the % agreement of the items in the same outlets both observers registered. We have included a sentence in the “Results” section explaining how many outlets they did not agree. The same we did for the places where signs of consumption were found.

15. Looking at the results, I would again emphasise that it would be good to have some more detail about how these items were chosen. E.g. Why napkin holders but not logos on glasses or on fronts of menus?

Please, see responses to Question 8 and 9.

16. In the Discussion section, the authors state that the instrument is potentially useful for enhancing our understanding of alcohol behaviours. How so? I think if there is a plan to now compare the instrument’s assessment of a neighbourhood with alcohol-related outcomes, it would be good to mention this, as it is a key step to achieving this ‘enhancement’ of our understanding. As it is right now, the authors have shown the potential reliability of the instrument, but I am not sure that they have shown it is valid (i.e. measuring what is supposed to measure). Further research would be required for this.

We thank again the comment made by the reviewer.

This study is part of the “Heart Healthy Hoods” (<https://hhhproject.eu/>) project aiming to understand how neighborhoods in the city of Madrid (Spain) relate with cardiovascular health of its residents. The project includes information on alcohol drinking behaviors among a cohort of adult population. We will use the OHCITIES instrument to characterize the alcohol environment in Madrid and explore how it may influence alcohol consumption reported by the local residents. The OHCITIES instrument will also be used to characterize the alcohol environment in the city of Barcelona (Spain). Researchers in Barcelona will further study urban alcohol environment data in its relation with alcohol drinking behaviors reported by young people and adolescents aged 12 to 18 years in the city.

We have included all this information in the “Discussion” section.

17. The authors mention that in Spain alcohol consumption is normalised and a high proportion of the population ‘consumed alcohol in the past year’ in 2011. As we know from extensive published literature, consuming alcohol once or twice, or in moderation, is not necessarily the same from a public health perspective as harmful alcohol consumption. Are there data on harmful alcohol consumption in Spain? Are there estimates of alcohol-related mortality? It would be good to justify more explicitly the value of assessing the alcohol environment in this country.

We appreciate again this reviewer’s comment.

We have data on hazard drinking and binge drinking in Spain and we have added this information to the “Discussion” section:

In 2011-2012, the prevalence of binge drinking among individuals aged ≥ 15 years who participated in the Spanish Health Interview Survey (ENS) was 19.6% for men and 7.1% for women. Another study found that the prevalence of hazardous drinking among Spanish population aged 15 to 64 years was 6.7% for men and 3.5% for women in 2013 (ref #41).

We have also data on alcohol-related mortality in Spain. According to a study conducted in Spanish Census Cohort of adult population, the crude rate of mortality directly attributable to alcohol increased from 3.8/100 000 person-year in 2002 to 4.2/100 000 person-year in 2011 (Alonso I, et al. JECH 2017). We are inclined not to include that information so as not to overextend the manuscript. However, if the reviewer or editor consider necessary to include it, we would do it. According to the reviewer's comment, we have also stressed the value of assessing the alcohol environment in our country.

18. Again, the authors state in the Discussion that: "Although the instrument was designed in the cities of Madrid and Barcelona, it was developed to have broader applicability in studies conducted in other cities worldwide."

Please, see a detail response to this comment on Question 2.

19. I have read reference #33 and I do not think it is accurate to say that it focuses on outdoor marketing.

We completely agree with the reviewer. We have made the appropriate changes better explaining the article. It is true that article #33 (now #35) not only refers to outdoor marketing but also the authors describe 24h-availability of alcohol, and density of alcohol outlets. In this article the prices of alcohol are also included but since we are focused on alcohol environment perceived from outdoors we did not mention that.

20. As mentioned above, the limitations of arbitrary community definition should be discussed. As part of this, it should be acknowledged that people often live, work, and socialize in different neighbourhoods and may thus be exposed to various different types of alcohol environments. I would also add some discussion of the

We appreciate this reviewer comment.

We have included this important point in the "Discussion" section: "An important challenge in future studies using OHCITIES instrument to determine how the alcohol environment relates with alcohol behaviors would be to define which are the area that exert contextual influences on the individuals being studied. The area where people are exposed to "alcoogenic environments" would depend on the activity spaces of each individual, including where they live, study, work and play. Results derived from OHCITIES instrument could be combined with other qualitative and geographical research techniques to understand how the urban environment to which an individual is exposed may relate with attitudes and practices in relation to alcohol behavior."

Please, see also related response to Question 12.

Minor suggested revisions:

1. The whole paper requires a thorough proof read for grammatical errors.

We are sorry for the grammatical errors the reviewer found. We have carefully reviewed the manuscript to correct all the grammatical errors that could have been made.

Some examples:

i) In the Abstract 'Setting' section: "Data for the validating the instrument was..." should be "Data for validating the instrument were...";

This error is corrected now.

ii) In the Introduction: "The harmful use of alcohol is one of the leading contributors to the global burden of disease, and the leading contributor to premature death and disability worldwide in the 15–59 age group.[1] Globally, the harmful use of alcohol is responsible of 4% of all deaths.[2]" I would not use 'the' in front of harmful use of alcohol in these cases;

This error is corrected now.

iii) Also in the introduction: "Second, more opportunities for the promotion of alcohol products.[9, 11, 12]" This is not a complete sentence.

We have definitely completed this sentence.

iv) In the methods section: "We piloted test the instrument in four urban neighbourhoods in Madrid." "test" has been removed from the sentence.

Reviewer: Peter Anderson

This is an innovative study to develop an instrument to assess alcohol urban environments. The study is well executed, analyzed and reported. It provides an added contribution to the field as more municipalities implement alcohol policies.

We thank the reviewer for these positive comments.

VERSION 2 – REVIEW

REVIEWER	Adrianna Murphy London School of Hygiene and Tropical Medicine
REVIEW RETURNED	08-Aug-2017

GENERAL COMMENTS	My comments have all been addressed. Thank you.
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