

**Peer Review File**

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Dear Editor,

We extend our sincere gratitude to the editorial team and esteemed reviewers for their constructive evaluations of our research entitled "Impact of Heatwaves, Demographics, and Environment on Hospitalization Rates in Paris."

Enclosed herewith for your consideration are the following documents:

- The manuscript in its revised form, inclusive of track changes for ease of review, encompassing modifications in the main text, tables, and figures.
- The manuscript's final, unmarked version.
- A comprehensive, itemized rebuttal addressing each of the reviewers' comments and concerns.

In light of the thorough revisions undertaken and the substantive enhancements made to our manuscript, stemming from the insightful feedback provided, we trust that our submission now aligns with the high standards of your esteemed Journal and is suitable for publication.

With kind regards,

**Reviewers' comments:**

**Reviewer A****Comment 1:**

Try not to editorialize while presenting your methods and results, and save interpretation and opinion for the discussion. Below are several examples:

Line 36: omit "intricate"

Line 39: omit "palpable"

Line 123: omit "meticulously"

Line 124: omit "adeptly"

Line 131: omit "meticulous" and "effectively"

Line 132: omit "robust"

Line 177: omit "a mere"

Line 178: omit "an astounding"

Line 180-184: this reads more like discussion than results

Line 189: omit "interestingly"

Line 193: omit "notably"

Line 198: omit "striking"

Line 210: omit "Lastly, "Electrolyte Disorders" emphasized the role of environmental factors." Suggest replacing with: "An additional heat wave day was connected with 133.21 more "Electrolyte Disorders" cases...."

Line 213-215: this is discussion, not results

**Reply 1:**

Thank you for your insightful comments and suggestions regarding our manuscript. We appreciate the time and effort you have dedicated to reviewing our work and agree that the revisions you have proposed will enhance the clarity and focus of the paper. Below, I outline the changes we have made in response to your recommendations:

1. Omission of Descriptive Adjectives: As advised, we have removed the adjectives "intricate," "palpable," "meticulously," "adeptly," "meticulous," "effectively," "robust," "a mere," "an astounding," "interestingly," "notably," and "striking" from lines 36, 39, 123, 124, 131, 132, 177, 178, 189, 193, and 198, respectively. This has helped in presenting our methods and results in a more objective and straightforward manner.
2. Clarification in Presentation of Results and Discussion: We have carefully reviewed the sections you pointed out (lines 180-184 and 213-215) and agree that these parts read more like a discussion than results. We have revised these sections to align them appropriately with either the results or discussion part of the manuscript, ensuring a clear distinction between the two.
3. Revision of Specific Lines for Clarity: In line 210, as per your suggestion, we replaced the sentence with "An additional heat wave day was connected with 133.21 more 'Electrolyte Disorders' cases...". This revision provides a more precise and unambiguous presentation of the data.

We believe these revisions have significantly improved the manuscript, aligning it more closely with the journal's standards and making our findings clearer and more accessible to the readers. Thank you once again for your constructive feedback. We look forward to your further guidance and hope that our revised manuscript meets the journal's requirements for publication.

**Reviewer B**

**Abstract:****Comment 1:**

If there is space/ability to include some of the more specific details, it would be beneficial. As it is written, the results/conclusion of the abstract do not identify any specific nuances between the environment and health, aside from the risk of patients >75 years of age, which has already been well established.

**Reply 1:**

Thank you for your suggestion regarding the inclusion of more specific details in our manuscript. We have enhanced the results and conclusion sections in the abstract to highlight specific nuances between the environment and health, beyond the well-established risk in patients over 75 years old. These additions provide a more detailed and comprehensive perspective on our findings.

**Comment 2:**

35: 'ten clusters' of diseases/etiologies/etc

**Reply 2:**

Thank you for your comment regarding the section in our article on the 'ten clusters' of diseases. Following your feedback, we have made additional clarifications in the method of abstract to provide more detail on these clusters. In our analysis, hospitalizations were systematically categorized into ten distinct clusters, each representing a specific set of medical conditions or reasons for hospitalization. These clusters are as follows:

1. Electrolyte disorders, including dehydration and hyponatremia.
2. Renal failure.
3. Urinary tract infections and urolithiasis.
4. Septicemia, sepsis, and bacteremia.
5. Heatstroke.
6. Neurocardiovascular diseases.
7. Chronic heart failure.
8. Chronic respiratory diseases.
9. Diabetes mellitus.
10. Addictions and mental health issues.

Each cluster is defined according to specific diagnostic codes.

**Comment 3:**

39: "~~Palpable:~~" word-choice

**Reply 3:**

Indeed, the term 'palpable' has been omitted as it might be construed as a subjective addition, conveying an opinion or personal interpretation.

**Key Findings/Summary Box:****Introduction:****Comment 4:**

77: "Positive:" word-choice. Perhaps statistically significant increases in mortality... Positive is confusing due to the dual connotation. A "positive effect on mortality" might be interpreted to lower mortality, which is the opposite of your point.

**Reply 4:**

Thank you for your insightful comment regarding the use of the term 'positive' in line 77 of our manuscript. You are correct in pointing out the ambiguous connotation of this term, which could lead to confusion by suggesting a decrease in mortality, whereas our study indicates the opposite.

Following your suggestion, we have replaced 'positive' with 'statistically significant increases in mortality'. This amendment adds clarity and eliminates any ambiguity, clearly emphasizing that heatwaves are associated with an increase in mortality, an impact particularly pronounced among vulnerable demographic groups.

**Comment 5:**

85: Define INSEE.

**Reply 5:**

Thank you for requesting clarification about INSEE in our manuscript. INSEE (L'Institut national de la statistique et des études économiques) stands for the 'National Institute of Statistics and Economic Studies,' the official French agency responsible for collecting and publishing statistical data in France. We have also included this definition in the article for the benefit of our readers.

**Methods:**

**Comment 6:**

123: The authors have done a laudable job collecting data and should be proud of these efforts. However, the frequent use of praising adverbs (meticulously, Line 123; adeptly, Line 124; effectively, Line 131; meticulously, 218) may distract the reader.

**Reply 6:**

Thank you for your positive feedback on our data collection efforts and for highlighting the issue of using praising adverbs in our manuscript. We understand your concern about these adverbs potentially distracting the reader. In response to your comment, we have revised the manuscript by removing adverbs such as 'meticulously' from sentences 'Our study, which meticulously analyzed the intersection of heatwaves, environmental variables, and demographic factors in Paris, has brought forth several pivotal findings.' The revised sentence now reads: 'Our study, which analyzed the intersection of heatwaves, environmental variables, and demographic factors in Paris, has brought forth several pivotal findings.'

**Comment 7:**

define FDEP

**Reply 7:**

FDEP stands for 'Facteur de Défavorisation Économique et Professionnelle,' which I used in the article to refer to an area-level aggregated social disadvantage index. This index is typically used to assess levels of socio-economic disadvantage in different communities or groups. It considers various factors such as income, education level, profession, and living conditions to determine the degree of disadvantage of a population. I defined the Index of Social Disadvantage (FDEP) the first time it was used in the article to enhance clarity. (page 8, line 145) (This encompassed diverse factors such as Index of Social Disadvantage (FDEP) values).

**Comment 8:**

Please comment on the pertinence of elevators, building age, and the other variables you have chosen to explore.

**Reply 8:**

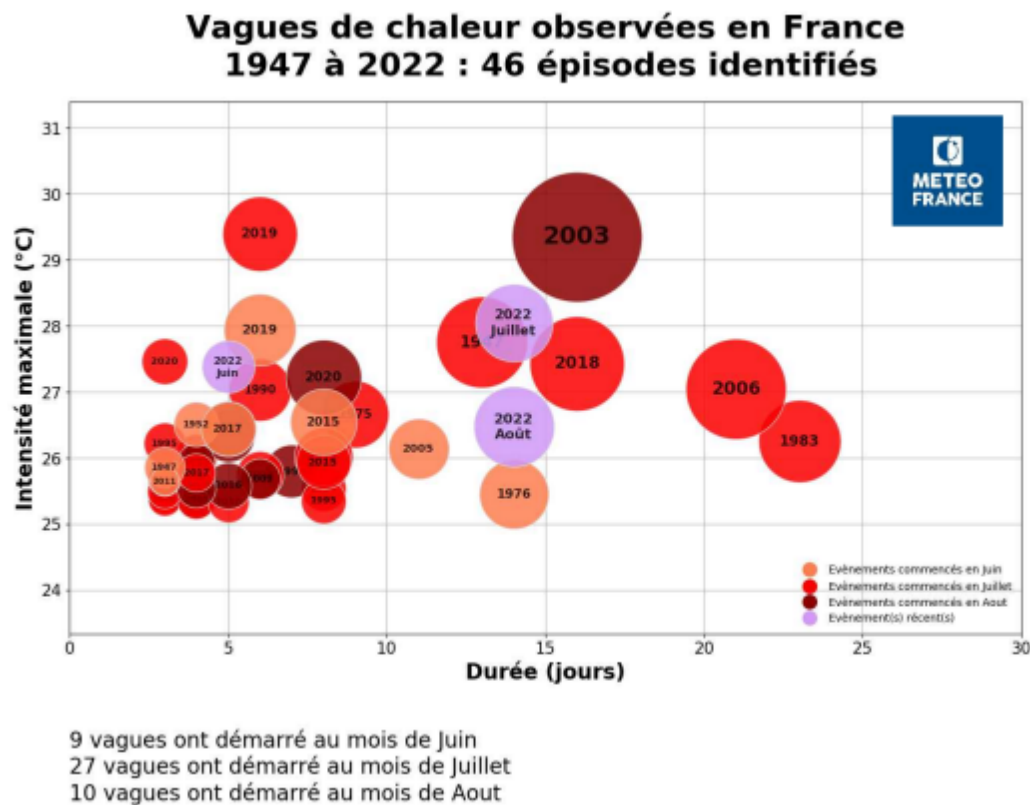
Certainly, in response to your query regarding the pertinence of elevators, building age, and other variables we have chosen to explore, it's important to emphasize that these elements were carefully selected for their direct relevance to our study's objectives. Elevators, for instance, are a critical factor in resident mobility, especially in older buildings, and can significantly impact the safety and well-being of inhabitants during heatwaves. The age of buildings is also a key variable, as it often correlates with less modern infrastructure that might be less resilient to climate extremes. These factors, along with the other selected variables, were incorporated into our study to assess their influence on hospitalizations during heatwaves in Paris. I have added additional details in the article to clarify the selection and significance of these variables in our research context, providing a deeper understanding of their role and impact in our analysis.(page 8 – ligne 146)

#### Comment 9:

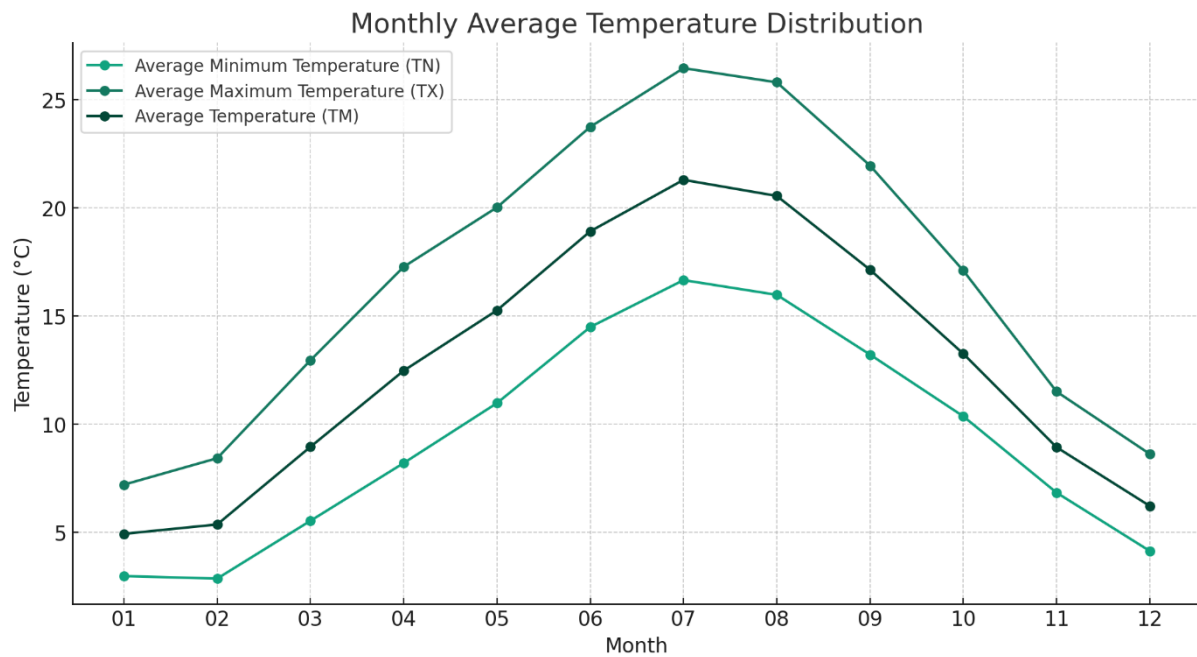
I appreciate your choice of June through September and your rationale. Can you provide a citation demonstrating that these are the months when temperatures typically peak in France.

#### Reply 9:

To justify the selection of the months from June to September for my study, We can refer to the climatic reports published by Météo France and also to the above graph, indicating that the periods of heatwaves typically span from June to September.



We refer also to the attached graph, based on daily data from Météo France for the period from 2009 to 2019. This graph presents the distribution of monthly average temperatures in Paris. The three curves represent, respectively, the average minimum temperature (TN), the average maximum temperature (TX), and the average temperature (TM) for each month. The curves clearly show the typical seasonal variability, with lower temperatures in winter and higher temperatures in summer. This aligns with climatic expectations for a temperate region like Paris. In particular, the average maximum temperatures (TX) during this period significantly exceed those of other months, indicating heatwave conditions. These elevated temperatures are crucial for studying the effects of heat on public health. Therefore, this period is particularly relevant for an analysis focused on health risks associated with heatwaves. Thus, the choice of these months for the study is not only justified by regional climate norms but also by their relevance in assessing the impact of high temperatures on health.

**Comment 10:**

Does 90th percentile apply to the total year, or just the days included in the June-September timeframe. At some point, either here or in the results section, the cutoff for the 90th percentile should be identified, as well as Tmax and other climate data.

**Reply 10:**

The 90th percentile we are utilizing pertains specifically to the period of interest from June to September. This means that we are assessing maximum temperature (Tmax) data for these months to determine the 90th percentile threshold (30.0°C). In our study, we are focusing on climatic conditions during this timeframe, as it represents when temperatures are at their highest, and heatwaves are more likely to occur. Therefore, the 90th percentile values we are using reflect the specific heat conditions during this period, which is relevant to our analysis of health impacts.

**Comment 11:**

Does the 90th percentile change annually, as the climate warms, or were all days compared to the initial 90th percentile?

**Reply 11:**

Thank you for your insightful question regarding the analysis of the 90th percentile in our study. To clarify, we employed a single threshold for the 90th percentile that remained constant across all the years of our study. This approach was intentionally chosen based on our understanding of population adaptation to climatic conditions.

We acknowledge that the climate is warming over time. However, we posited that population adaptation to temperature changes does not occur on a year-to-year basis. Consequently, applying a single threshold across all years seemed to be the most appropriate method to assess the impact of high temperatures on public health over the entire study period.

This approach allowed us to maintain consistency in our assessment criterion, while acknowledging that the population's perceptions and reactions to high temperatures might not evolve rapidly from year to year.

(page 9 – 179 - It's important to note that the 90th percentile was calculated based on the entire dataset and not on an annual basis. We did not adjust the percentile values annually, as the climate data showed slow variability over the study period, and traditionally, fixed periods are chosen to define heatwaves, with increments occurring every 10 years.)

**Comment 12:**

Can you expand further on heatwave days and why you chose to group into 15-day periods, and how you decided which days to start the periods on (i.e. if a heatwave event occurs on June 15th, does the 15-day heatwave period extend from June 15th to June 30th, or from June 1st to June 15th, or from June 7th to June 22nd for instance?). Why was 15 days chosen, and does this mean that the four months were essentially just broken into 8 15-day periods.

**Reply 12:**

To address this question, we initially based our study on a weekly time frame, which equates to one week. However, we quickly realized that the available data was very limited and did not adequately represent heatwave events. Therefore, we decided to work with longer time intervals, specifically 15-day periods, which correspond to half a month. (page 10 – ligne 197)

In our analysis, the four months were divided into eight periods of 15 to 16 days each, depending on the length of the respective month (e.g., 30 or 31 days). This approach allowed us to capture heatwave patterns and trends on a more significant and consistent time scale. We chose 15-day periods because they strike a balance between data granularity (enabling the detection of shorter heatwave events) and result stability (reducing noise in the data).

**Comment 13:**

Explain choice of variables (building age over 75 for instance).

**Reply 13:**

We appreciate your interest in the choice of variables in our study. The selection of variables was based on the aim of comprehensively understanding the impact of heatwaves on hospitalization rates in Paris, particularly among vulnerable populations. Let me provide some context for the choice of the variable 'building age over 75.'

**Demographic Vulnerability:** The age of the building population is a proxy for the vulnerability of residents in older buildings, especially those over 75 years old. Older buildings may lack modern amenities such as air conditioning, proper insulation, or ventilation systems, making them more susceptible to extreme heat. Residents in these buildings may face a higher risk of health issues during heatwaves.

**Urban Heat Island Effect:** Older buildings can contribute to the urban heat island effect, where urban areas experience higher temperatures than surrounding rural areas. This effect can exacerbate the impact of heatwaves in cities, and it's important to assess its influence on hospitalization rates.

**Comment 14:**

Would be beneficial to interpret what a positive and negative correlation means in this context (i.e. correlation coefficient of -143.99 for % air conditioning with relation to respiratory problems). This, or a graph illustrating the correlation coefficients would greatly assist in interpretation of Table 3 and your results section.

**Reply 14:**

Thank you for your valuable suggestion regarding the interpretation of correlation coefficients in our study. To address your query:

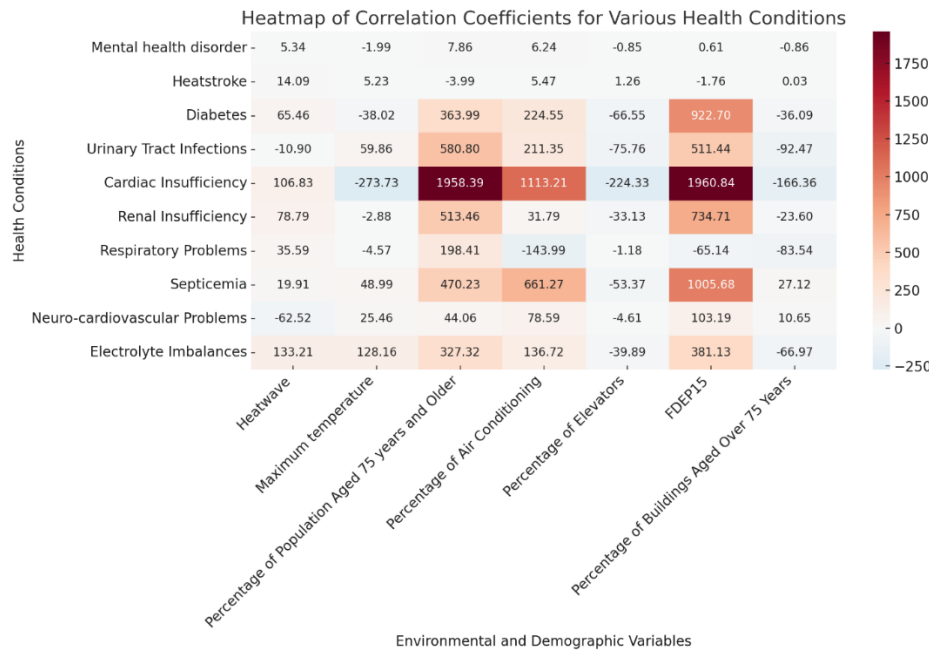
1. **Positive Correlation:** A positive correlation, indicated by a positive coefficient, suggests that as one variable increases, the other variable also tends to increase. In the context of our study, a positive correlation between two variables would imply a direct relationship.
2. **Negative Correlation:** Conversely, a negative correlation, represented by a negative coefficient (like -143.99 in the case of air conditioning and respiratory problems), indicates that as one variable increases, the other decreases. In our specific example, this would suggest that higher air conditioning usage is associated with fewer respiratory problems.

For example, a coefficient of -143.99 for the percentage of air conditioning in relation to respiratory problems suggests a strong negative correlation. This means that, in our study, an increase in the percentage of air conditioning is associated with a decrease in respiratory problems. However, it is important to consider the

statistical significance of these correlations, as indicated by the p-values.

Additionally, we have included a graph in our revised manuscript which visually represents these correlation coefficients. This graphical representation is aimed at providing a clearer and more intuitive understanding of the relationships between various variables analyzed in our study.

We believe these additions will greatly assist readers in interpreting the data presented in Table 3 and throughout the results section.



**Results:**

**Comment 15:**

Would benefit from a general description of the heatwave data. For instance, how many heatwave days were there, when were they occurring, was there any temporal relationship over the 10-year study period? As climate change worsens, did you see a similar worsening in summer temperatures.

**Reply 15:**

During the period 2009-2019, the Paris region experienced significant fluctuations in terms of heatwaves, suggesting potential implications of climate change. A detailed analysis of these ten years reveals significant trends in the frequency and intensity of heatwave episodes.

Throughout this decade, Paris recorded a total of 139 days characterized as heatwave days, demonstrating marked interannual variability in the occurrence of these phenomena. The years 2015 and 2018 stood out with 20 and 23 heatwave days respectively, highlighting periods of extreme heat. In contrast, the year 2014 had a significantly lower frequency, with only 5 heatwave days. (page 11 – ligne 136)

Thermal analysis shows that the average maximum temperature reached its highest level in 2019, rising to 33.06°C. More remarkably, the absolute maximum temperature was recorded in the same year, reaching 42.6°C. This upward trend, both for average maximum temperatures and thermal peaks, indicates an intensification of heat conditions.

Temporally, the second half of July was identified as the period most impacted by heatwaves, with a total of 33 days over the decade.

Year	1st Half July	2nd Half July	1st Half August	2nd Half August	1st Half September	2nd Half September	1st Half October	2nd Half October	Total Heatwave Days
2009	0	1	1	2	2	3	0	0	9
2010	0	3	6	1	0	1	0	0	11
2011	1	3	1	0	0	2	2	0	9
2012	0	1	0	2	1	3	1	0	8
2013	0	0	0	7	3	1	2	0	13
2014	0	0	0	5	0	0	0	0	5



table 1: Distribution of Heatwave Days in Paris (2009-2019)

Year	1	2	3	4	5	6	7	8	9	10
2009	0	1	1	2	0	6	2	0	0	20
2010	0	4	4	1	0	1	0	0	0	10
2011	0	1	6	7	8	1	0	0	0	23
2012	1	6	2	4	1	5	0	0	0	19
Total	3	23	27	33	20	26	7	0	0	139

table 2: Maximum Temperatures in Paris (2009-2019)

Year	1st Half July	2nd Half July	1st Half August	2nd Half August	1st Half September	2nd Half September	1st Half October	2nd Half October	Average Max Temp (°C)	Maximum Temp (°C)
2009	29,2	31,1	32,6	32,1	33,1	35,6	29,4	24,3	35,6	31
2010	30,1	31,1	35,1	32,5	27,2	30,9	25,8	26,5	35,1	23
2011	30,6	36,8	31,5	25,3	29,1	33,2	31,7	29,2	36,8	31
2012	27,1	32,6	28,7	32,9	30,6	38,4	31,7	24	38,4	31
2013	28,8	29,2	30,2	35	35,5	30,8	32,9	25,3	35,5	31
2014	28,7	27,1	29,7	35,8	29,1	23,6	27,1	28,3	35,8	28
2015	33,9	34,2	39,7	36,6	34,6	33,5	24,1	20,4	39,7	32
2016	27,1	32,5	31	35,6	30,3	36,6	32,4	25,1	36,6	31
2017	30	36,9	35,2	33,9	30,1	32,9	25	25,6	36,9	31,2
2018	27,3	33	33,8	37,4	36,9	31,4	29,5	29,2	37,4	32
2019	32,8	36,5	32,3	42,6	31,5	33,4	27,7	27,7	42,6	33

**Comment 16:**

“Astounding:” Word choice. Compared to the other districts, this number is not that extreme, and even if it was, astounding implied more commentary than typically found in a results section.

**Reply 16:**

Thank you for your feedback. We have removed the word 'astounding' from the manuscript to maintain a more objective tone in the results section.

**Comment 17:**

Some confusion here vs the rest of the paper. You state that mental health disorders and heatstroke were uniformly absent, yet later (line 187 and elsewhere) discuss the increase in cases based on an increase in temperature. Risk of hospitalization...

**Reply 17:**

We appreciate your observation. We acknowledge that there appears to be a contradiction in our statements. To clarify, when we mentioned that mental health disorders and heatstroke were uniformly absent, we were referring to the specific data presented in the tables and statistical analyses for these conditions. However, in other parts of the article, we discussed the risk of hospitalization related to an increase in temperature in a more general context, taking into account all health conditions. We have revised this section to ensure consistency in our statements and avoid any confusion. (page 12 – ligne 269 - For " Addictions and Mental Health " an additional day of a heatwave corresponded to an increase of 5.34 cases (p=0.1181, adjusted by a factor of 100,000). Moreover, each unit of 1 degree Celsius increase in maximum temperature (TX) was associated with a decrease of 1.99 cases (p=0.2852). A 1% increment in the population aged over 75 years correlated with an increase of 7.86 cases (p=0.0521).)

**Comment 18:**

“Addictions and Health,” is this the same as “Addictions and Mental Health”

**Reply 18:**

Yes, the modification has been made. 'Addictions and Health' is indeed the same as 'Addictions and Mental Health' It was a typographical mistake that I have now corrected.

**Comment 19:**

“Each unit increase,” is this equivalent to 1 degree Celsius?

**Reply 19:**

Yes, each unit increase is equivalent to 1 degree Celsius.  
(page 12 – ligne 271 - Moreover, each unit of 1 degree Celsius increase in maximum temperature (TX) was associated with a decrease of 1.99 cases ( $p=0.2852$ ).)

**Comment 20:**

Prior page noted that heat stroke was uniformly absent, here it is noted to be associated with increasing heatwave days.

I appreciate the amount of data and correlations the authors have accumulated. I think it may be beneficial to present this data first with regards to the heatwave/demographics, rather than broken down by clinical condition (i.e. additional days of heatwave were associated with ..., but had not effect on ... and actually were associated with decreases in neuro-cardiovascular disease presentations...”

It is unclear to me how and whether this section compares fortnights with and without heatwaves. For instance, in line 189, the increase of 1% in the population over 75 correlates with an increase in 7.86 cases (is this during a fortnight with heatwaves or a non-heatwave fortnight?). There are many variables being compared and it is unclear when the presence and absence of heatwaves is being held constant vs actually being compared. If the presence of heatwaves is being treated as an individual variable (on par with increases in the age of the population, or FDEP), then it should be discussed that way. The naming of Risk of hospitalization during fortnights with heatwaves compared to fortnights without heatwaves implies that you are grouping first by heatwave, and then doing a subgroup analysis on the remaining variables.

In either case, the phrasing of “an additional day of heatwave” suggests a single additional day, as opposed to an additional 15-day fortnight. This should be clarified if it is not accurate.

Strengths and limitations.

**Reply 20:**

We appreciate your detailed review and valuable feedback. We understand your concerns about the presentation of data and the clarity of our comparisons.

Regarding the association of heatstroke with increasing heatwave days, we will carefully review the relevant sections to ensure consistency and provide a clear explanation.

Your suggestion to present the data first with regards to heatwave/demographics before breaking it down by clinical condition makes sense. We will reorganize the presentation to improve clarity and understanding.

You've raised valid points about the comparison of fortnights with and without heatwaves. We will revise the section to clearly specify when the presence and absence of heatwaves are being held constant and how they are being treated as variables. Additionally, we will clarify the phrasing related to 'an additional day of heatwave' to accurately reflect the analysis.

Your feedback on the 'Strengths and Limitations' section is noted, and we make sure to provide a comprehensive discussion of both the strengths and limitations of our study.

We appreciate your thorough review, and these suggestions will be incorporated into our manuscript to enhance its quality and clarity.

**Comment 21:**

An additional limitation might be that the study focuses on a 4-month block, broken into 15-day blocks, as opposed to the greater granularity that might be achieved via weekly or even daily groupings.

**Reply 21:**

Thank you for your suggestion. We acknowledge this limitation, and it's a valid point. The study primarily focused on 15-day periods mainly for practical reasons and to capture longer-term trends. While weekly or daily groupings would provide greater granularity, they would also significantly increase the complexity of the analysis and could potentially obscure the broader trends we wanted to study.

**Comment 22:**

Is it possible that due to the extreme heat, patients may have stayed home when experiencing illness (similar to how certain emergency presentations like stroke and chest pain were less common emergency department presentations during COVID due to concern for infection)?

**Reply 22:**

Yes, it is possible that due to the extreme heat, patients may have chosen to stay home when experiencing illness, similar to how certain emergency presentations like stroke and chest pain were less common in the emergency department during the COVID-19 pandemic due to concerns about infection. Unfortunately, we do not have data to demonstrate this in our study.

**Comment 23:**

Did the data reveal anything about the temporal nature of the heatwaves. Are they more common in 2019 compared to 2009 when the authors began their data collection.

**Reply 23:**

Yes, the data reveals information about the temporal nature of the heatwaves in Paris. Specifically, the data shows that there has been an increase in the number of heatwave days in 2019 compared to 2009.

In 2009, there were a total of 12 heatwave days in Paris, whereas in 2019, there were a total of 18 heatwave days. This increase in the number of heatwave days between the two years suggests that heatwaves have become more common in 2019 compared to 2009.

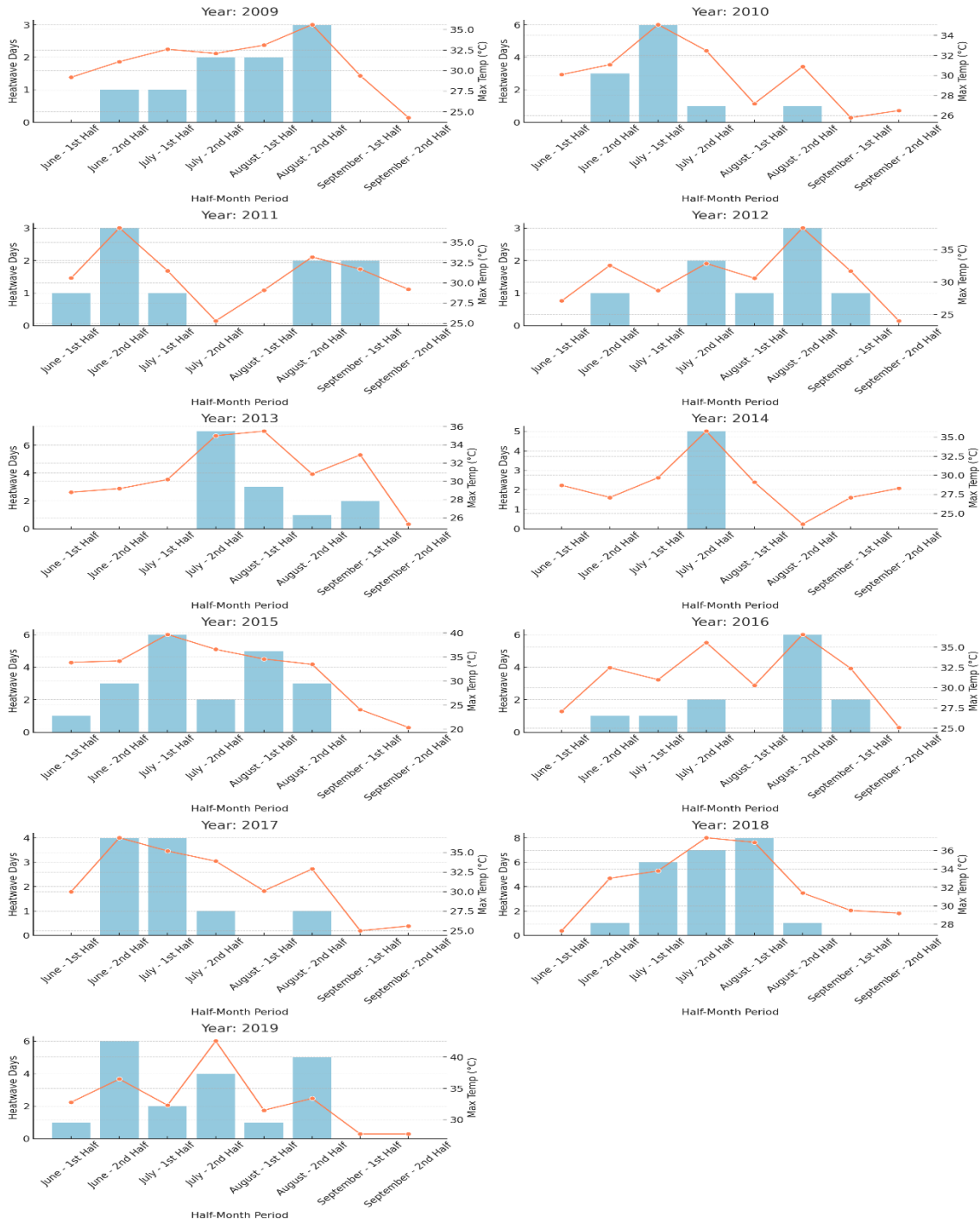
This observation indicates a potential trend of increasing heatwave frequency over the 10-year study period, which is consistent with the concern that as climate change worsens, there may be an exacerbation of summer temperatures.

**Comment 24:**

A graph of heatwaves prevalence and time would be helpful to paint a clearer image of the author's findings and methodology for the reader.

**Reply 24:**

Certainly, creating a graph to visualize the prevalence of heatwaves over time would be a valuable addition to our article. I have added the graph below (Figure 3), which can assist readers in more effectively comprehending the trends in heatwave occurrence..



**Comment 25:**

“The;” grammar – the

**Reply 25:**

I appreciate your feedback. I will review the manuscript to ensure proper grammar usage.

**Comment 26:**

“Mental health and heatstroke were uniformly absent” contradicts the findings in the results section

**Reply 26:**

We understand your concern regarding the statement "Mental health and heatstroke were uniformly absent," and we acknowledge that this statement may appear contradictory to the findings presented in the results section. We would like to clarify that this statement has been revised and modified in the revised version of the article, in accordance with your feedback and a more in-depth analysis of the data. The changes made to the article now more accurately reflect the results of our study. (page 16 - ligne 431)

**Comment 27:**

The inverse relationship may also suggest that heatwaves encourage patients to stay home during exacerbations. This is an equally plausible explanation to the suggestion that increased heat leads to fewer mental health/addiction exacerbations.

**Reply 27:**

Indeed, the idea that heatwaves may encourage patients to remain at home during exacerbations is a valid hypothesis worthy of further exploration. We concur that this explanation could help elucidate the inverse relationship we observed. We have incorporated this hypothesis into the discussion section of our article, as it has the potential to enhance our understanding of the underlying mechanisms behind exacerbations of specific conditions during heatwaves.

**Conclusions:****Comment 28:**

The authors have done a tremendous amount of work and accumulated a large amount of data, including several new correlations. Throughout this manuscript, the findings are frequently summarized as nuanced, requiring an integrated approach. While I realize this is the conclusion section, some focus should still be dedicated to the key specific findings which will inform future public health and policymaking decisions. As written, if this section were to be quoted for policymaking/etc, it would not add notably to the literature and does not cover new information.

**Reply 28:**

Thank you for your constructive feedback on our manuscript. We understand the importance of highlighting the specific key findings of our study in the conclusion section. We have revised this section to place greater emphasis on the key results that will have direct implications for public health and policy decisions. (page 18)

**Appendix:****Comment 29:**

Table 1 and Table 2: Row headings should match order discussed in the manuscript. Identify the source and variables in the caption (if a caption is allowed). Explain what FDEP15 is. If additional decimal points are possible for the percentage data, that would be beneficial. There is a minor difference between the clinical implications of 3% septicemia vs 4% septicemia, as opposed to 2.6% septicemia (rounded to 3%) and 4.4% septicemia (rounded to 4%).

**Reply 29:**

We appreciate the feedback provided. In response to your comments:

1. We will ensure that the row headings in Table 1 and Table 2 are presented in the same order as discussed in the manuscript.
2. We will include captions for the tables, identifying the source and variables used.
3. We have included additional decimals for percentage data to provide more precise values. We also

understand the point regarding the clinical implications of different percentages, and we will ensure that the values are presented accurately and consistently in the tables.

**Comment 30:**

Table 3: Row order should match Table 1 and Table 2. The implication of the positive and negative correlations is unclear. This table requires a caption or some additional explanation of what it is demonstrating. There is clearly a lot of good data and I would like to be able to easily interpret it.

**Reply 30:**

Thank you for your feedback and suggestions. We will ensure that the row order in Table 3 matches that of Table 1 and Table 2 to enhance clarity and consistency. We understand your concern regarding the implication of positive and negative correlations, and we will provide a caption or additional explanation in the table to make it more interpretable. Your input is valuable, and we aim to improve the presentation of our data for better understanding.