A Reverse-Engineered Pitch on the scorching truth: Investigating the impact of heatwaves on Selangor's elderly hospitalizations

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Abstract

The pitch template introduced by Faff (2015; 2021) has become increasingly popular in academic research. Therefore, this paper aims to offer readers new ideas about a more time-efficient and easy-to-understand way of exploring a new research area and topic through a reverse engineering approach. The author believes that a reverse engineering pitch is the cornerstone to assist new researchers or PhD students to sharpen their pitching skills before they start to prepare an original pitch for a new research topic.

1. Introduction

A 2-page pitching template developed by Faff (2015) has gained much attention from PhD students (pre-, current, post-) and/or new researchers. The pitch template has become increasingly popular as its simple and succinct template assists people in extracting the essential and key information of the pitched paper via correct procedures and valuable hints.

More importantly, this methodical research planning tool offers multi-faceted utility, which can be applied to various research-related training purposes (Faff,

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2021). In this regard, the benefits of the pitch template capture beyond PhD students, including research mentors, PhD supervisors, and senior research collaborators (Faff, 2021), as the pitching template can also serve as one of the most succinct, efficient, and effective means to facilitate communication between research collaborators and mentoring purposes.

This paper utilizes Professor Robert Faff's 2-page pitching template and applies it in the "third-party" reverse-engineering context. The structure of the remainder of this paper is as follows: Section 2 guides through the reverse engineering process using the "4-3-2-1" count-down design of the pitching template. Section 3 evaluates the personal reflection of the author's motivations, experiences, knowledge, and skills gained through performing this process. Section 4 concludes the paper.

2. The reverse engineering process

The design of the original research pitch template developed by Faff (2015) constitutes three categories with 11 fundamental items (A to K). The first category provides a big picture that frames the research (template items A to D). The second category builds on the core of the pitch that comprises the "3-2-1" count-down design (template items E to J). Finally, the third category, also known as the "catchall" platform (template item K), serves for the author to propound relevant information or reflection. The completed reverse-engineered pitch is illustrated in Table 1.

Item 1: The Working Title, refers to the selected article that the author used in the reverse-engineered pitch. It offers readers a general idea of associations between heatwave events, hospitalizations, and the elderly. The author cited the article in APA format for convenient referencing in the future if required.

Item 2: The Basic Research Question, tends to identify the associations between dependent and independent variables in a research paper. Sometimes, the question is clearly stated in the working title, such as in this selected article. It investigates the risk of hospitalizations for elderly people during heatwaves. Frequently, the answer to the question can be easily found in the abstract and/or conclusion sections. If the research question was not explicitly expressed, the pitcher should infer the question from these sections.

Item 3: The Three Key Papers, can be easily recognized when conducting a reverse-engineered paper. In this regard, the author should follow Faff's (2015, 2021) suggestions that the key papers should be recent papers not more than five years since the publication of the reviewed paper. Additionally, the key papers should be published in top-tier journals. In most cases, the key papers will be

frequently mentioned in the article. In this regard, the three selected key papers in
Table 1 are very recent, published between 2021 and 2023. The second key paper
by Faurie *et al.* (2022), which examines relationships between high temperature
and heatwaves alongside heat-related illnesses via a systematic review and meta-
analysis approaches, was published in a top-tier journal.

Item 4: The Motivation/Puzzle, associates with what motivates the paper. Some
studies will try to relate them to real-world phenomena and aim to address research
gaps. This pitched paper is motivated by the sparsity of research being conducted
regarding the relationship between heatwaves and vulnerable groups, such as the
elderly in developing countries and its potential impact on healthcare operations
and systems. The motivation of the paper generally is delineated in the introduction
section. In an original pitch, this is the part that warrants a justification to show the
worthiness of your paper.

Item 5: The Idea, expresses the objectives the paper intends to achieve driven by
the motivation/puzzle. In a quantitative paper, the idea can be identified in the
methodology section to examine the relationship between two or more variables
such as in this pitched paper. The ideas are clearly illustrated in Table 1. First, this
study investigates the relationships between heatwaves and hospitalizations for the
elderly by age. Second, it further investigates if heatwaves exert different impacts
on hospitalizations for elderly people with different age groups, cause-specific
illnesses, and gender. Finally, this paper estimated the lagged impacts of heatwaves
on the risks of hospitalization for the elderly. The intention is to provide a more
comprehensive understanding of heatwaves for the elderly with different
characteristics.

Item 6: The Data, provides information about the data used in most of the research
papers, ranging from source, period, type to size of the data. This information is
clearly described in the methodology section.

Item 7: The Tools, specify the approach adopted to support the processing of data
and generation of the idea. In a quantitative study, tools typically refer to the
analytical models and software used to support the analytical analysis. On the other
hand, in a qualitative study, tools can range from focus group discussions, surveys
to interviews and so on. However, this type of study may require analytical
software to generate data for further analysis. This part is always highlighted in the
methodology section. For this study, it adopts Generalized additive models (GAM)
with the Poisson family and distributed lag models (DLM) to quantify the impacts
of heatwave events on elderly's hospital admissions using time-series data, 2010 to
2020, with analysis conducted utilizing the statistical software R version 4.2.1 with
"nlme" and "mgcv" in the GAM packages.

Item 8: What's New, accentuates the novelty of the paper. This can focus on the idea, data or tools used in the paper. Depending on the paper, the novelty is often clearly underscored in the introduction or conclusion. Alternatively, the reader can deliberately scrutinize the literature review, methodology or discussion sections. However, the Mickey Mouse diagram in Figure 1 below is best utilized to present the novelty of a paper as illustrated in the intersection of the three circles of research focus, which for the pitched paper are heatwaves, hospitalizations and elderly people.
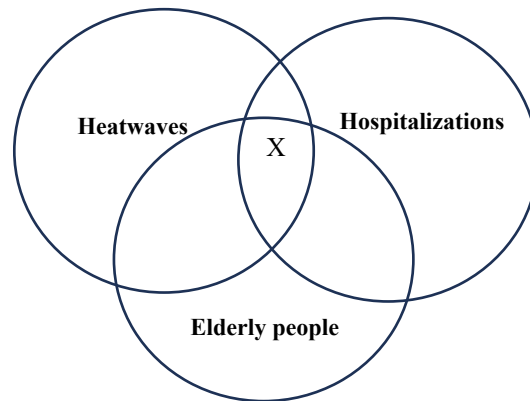

Figure 1. Mickey Mouse diagram presenting the novelty of Yong *et al.*'s (2023) paper.

Item 9: The So What, indirectly brings the reader's attention to the search for the importance of the paper. For instance, who will benefit from the research outcomes? What are the implications that the findings of the paper bring forward to the stakeholders? Some papers do not distinctly outline this part. In this instance, it is encouraged to read the paper several times to infer the "So What" by relating it to "What's New". Occasionally, the reader can also infer the relevant information from the introduction or conclusion. However, as for this pitched paper, the "So What" is found in the Materials and Methods section. The study uses a different method in defining heatwaves, in which they viewed to be more reflective of the effects of heatwaves on the human body and in line with the country's weather.

Item 10: Contribution entails the reader's thinking about the research implications to the stakeholders. This study outlines its major contributions in improving public health strategies, developing early severe weather and health warning systems, as well as reducing the burden on the hospital management system. Readers can easily retrieve this information from the abstract, introduction, and conclusion. Alternatively, this information can also be incorporated at the end of the discussion section or before the limitation of the study section such as for this study.

Item 11: Other Considerations, is the final item of the pitch template. This section is for the author to pose relevant information or final reflections. However, in the reverse engineering pitch template, this section is best used to summarize the three key findings of the paper, which can be evident in the abstract, results, discussion, and conclusion sections. As indicated in Table 1, the findings of this pitched paper support a significant positive relationship between heatwaves and risk of hospitalizations for elderly people; despite no immediate effects being identified, significant delay effects were present. More interestingly, female elderly was found to have a relatively higher risk of hospitalization than male.

3. Personal reflection

While I was stressfully starting with preparation of my proposal, I was using "the old-school" way of reading articles; annotating and highlighting the main ideas in a printed copy are among my favorite ways of studying. Undoubtedly, this is an effective way of studying a few articles, but it will not be efficient for hundreds of articles. Among the problems of "the old-school" way is the time-consuming method of constantly revisiting the information, as it makes you feel disinclined to search and reread it if any information is necessitated from a certain article.

Thanks to my mentor, Kun Hing Yong who has attended Professor Robert Faff's RBUS6914 course and introduced me to the pitch template created by Professor Robert or the 'pitch doctor' that has made my work more efficient, streamlined, and more importantly, more productive. Then, he invited me to read a pitch article by Faff (2015; 2021); Yong & Chu (2023) and Yong (2019) to gain more insights and comprehend ways of retrieving information and filling in the 2-page pitch template. Looking at the pitch template he showed me made me feel so excited, and I felt like jumping into it and giving it a try.

It was not as easy as I thought when I first applied the pitch template to reverse engineer the pitched paper. Some common problems that I encountered included rereading the article multiple times to identify the most important information which was often not explicitly highlighted. However, I felt satisfied after the completion of my first reverse engineering process as I extracted the key information from an article within one glimpse of a 2-page pitch template.

More importantly, after a few times practicing reverse engineering with the pitch template, it felt much easier when identifying key information to complete the pitch template. The benefits gained from the pitch template were that it was time-saving, concise, easy to read, and it helps with the communication of ideas and thoughts with others.

4. Conclusion

Overall, I opined that the pitch template is a very helpful tool in facilitating readers to extract relevant information during the literature review activity. I strongly encourage researchers, or those who plan to embark on a new research topic or PhD journey to employ the pitch template. This is pertinent as they will benefit from its well-structured and succinct template format when extricating core ideas from the reviewed papers. Nevertheless, consistent practices of reverse engineering a paper is the cornerstone for researchers to prepare an original pitch for a new research topic through enhancing their pitching skills.

References

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Yong, K. H., Teo, Y. N., Azadbakht, M., Phung, H., & Chu, C. (2023) "The Scorching Truth: Investigating the Impact of Heatwaves on Selangor's Elderly Hospitalisations", *International Journal of Environmental Research and Public Health*, vol. 20, no. 10: 5910.

Table 1. Completed reverse engineered pitch template for "The Scorching Truth: Investigating the Impact of Heatwaves on Selangor's Elderly Hospitalisations"

Pitcher's Name	Yen Nee Teo	FoR category	Health Economics	Date Completed	27 July 2023
(A) Working Title	A Reverse-Engineered Pitch on The Scorching Truth: Investigating the Impact of Heatwaves on Selangor's Elderly Hospitalisations				
(B) Basic Research Question	Does heatwaves increase risk of hospitalisations among elderly people?				
(C) Key paper(s)	Mason, H.M.; King, J.C.; Peden, A.E.; Watt, K.; Bosley, E.; Fitzgerald, G.; Nairn, J.; Miller, L.; Mandalios, N.; Franklin, R.C. Determining the impact of heatwaves on emergency ambulance calls in Queensland: A retrospective population-based study. Int. J. Environ. Res. Public Health 2023, 20, 4875. Faurie, C.; Varghese, B.M.; Liu, J.; Bi, P. Association between high temperature and heatwaves with heat-related illnesses: A systematic review and meta-analysis. Sci. Total Environ. 2022, 852, 158332. Van den Wyngaert I.; De Troeyer, K.; Vaes, B.; Alsaiqali, M.; Van Schaeybroeck, B.; Hamdi, R.; Casas Ruiz, L.; Van Pottelbergh, G. Impact of heat waves on hospitalisation and mortality in nursing homes: A case-crossover study. Int. J. Environ. Res. Public Health 2021, 18, 10697.				
(D) Motivation/Puzzle	The impacts of global climate change can be supported by the increase in frequency, duration, and intensity of heatwave events. The relationship between heatwaves and vulnerable groups of people, such as elderly mortality, has garnered much attention, specifically in developed countries. However, the association between heatwave and hospitalisation has been sparsely researched due to data sensitivity and availability. Thus, the impact of heatwaves on hospitalisations is worthwhile to examine, given its potential impact on healthcare operations and systems.				
THREE	Three core aspects of any empirical research project i.e. the "IDioTs" guide				
(E) Idea?	This paper aimed to investigate the associations between heatwaves and hospitalisations for the elderly by age group in Selangor, Malaysia, from 2010 to 2020. Next, it further investigates in detail if heatwaves exert different impacts on hospitalisations for elderly people of different age groups, and gender with varied cause-specific illnesses. Finally, this paper also estimated the lagged impacts of heatwaves on the risks of hospitalisation for elderly people.				
(F) Data?	Setting: Malaysia, 1 January 2010 to 31 December 2020. Sample size: 4018 days (daily weather data and hospitalisations data). Data source: Health Informatics Centre, Ministry of Health, Malaysia; Malaysian Meteorological Department, Ministry of Natural Resources, Environment & Climate Change, Malaysia.				
(G) Tools?	This study used Generalized additive models (GAM) with the Poisson family and distributed lag models (DLM) to estimate the impacts of heatwave events on elderly's hospital admissions using time-series data, 2010 to 2020; while analysed using the statistical software R version 4.2.1 with "nlme" and "mgcv" in the GAM packages.				

Pitcher's Name	Yen Nee Teo	EoR category	Health Economics	Date Completed	27 July 2023
TWO	Two key questions				
(H) What's New?	This paper is the first paper investigating the heatwaves impacts on hospitalisations of elderly people in Malaysia despite there being some related heatwaves papers. More importantly, the authors measured the impacts of heatwaves using the apparent temperatures as compared to the definition developed by Malaysian Meteorological Department.				
(I) So What?	The definition of heatwaves measured by the apparent temperatures (or heat index) or a "feels like" temperature that takes into account the effects of humidity, is opined to be more reflective of the effects of heatwaves on the human body. This is pertinent for Selangor, which is blessed with high levels of daily mean relative humidity all year round.				
ONE	One bottom line				
(J) Contribution?	Contribution of this research including to be used as a guide in improving public health strategies to target older adults who are at the greatest risk of hospitalisations related to heatwaves. It also provides an important step in developing early severe weather and health warning systems that could facilitate a reduction in the severity of the heatwave-related health risks of elderly people. This will, in turn, reduce the burden on the hospital management system in Selangor state and Malaysia in general.				
(K) Three Key Findings	i. There was no significant increase in hospitalisations for those aged 60 and older during heatwaves; however, a rise in mean apparent temperature (AT_{mean}) by 1 °C significantly increased the risk of hospital admission by 12.9%. ii. Heatwaves had no immediate effects on hospital admissions among elderly patients, but significant delay effects were identified for AT_{mean} with a lag of 0–3 days. The hospital admission rates of the elderly groups started declining after a 5-day average following the heatwave event. iii. Females were found to be relatively more vulnerable than males during heatwave periods.				