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Health Data Science L^AT_EX Template

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Abstract

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The abstract should be a single paragraph written in plain language that a general reader can understand. Do not include citations, figures, tables, or undefined abbreviations in the abstract. Any abbreviations that appear in the title should be defined in the abstract. The length should be 200 words and not exceed 250 words, to include:

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- An opening sentence that states the question/problem addressed by the research AND

13

- Enough background content to give context to the study AND

14

- A brief statement of primary results AND

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- A short concluding sentence.

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Equations

17

Equations should be provided in a text format, rather than as an image. Equations should be numbered consecutively, in round brackets, on the right-hand side of the page by using the “\begin{equation}” command. They should be referred to as Equation 1, etc. in the main text.

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For example, see Equation 1 and Equation 2 below.

21

$$a^2 + b^2 = c^2 \tag{1}$$

$$\begin{aligned} A &= \frac{\pi r^2}{2} \\ &= \frac{1}{2}\pi r^2 \end{aligned} \tag{2}$$

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Figures and Tables

23

For initial submissions, Figures and Tables should be embedded within the main submission file at their first mention in the text. This will facilitate evaluation of the paper. Figures should be called

24

25 out within the text and numbered in the order of their citation (with title and caption formatted as
26 below). See below for detailed instructions on preparation of and preferred formats for your figures.

27 Tables should supplement, not duplicate, the text. They should be called out within the text
28 and numbered in the order of their citation in the text, as noted in Table 1. As with Figures, please
29 embed Tables within the text of the initial submission as near to their first reference as possible.
30 Each table should be preceded by a legend that starts with a short boldface title beginning with (for
31 example) **Table 1**. Every vertical column should have a heading, followed by a unit of measure (if
32 any) in parentheses. Units should not change within a column. Centered headings of the body of the
33 table can be used to break the entries into groups. Footnotes should contain information relevant
34 to specific cells of the table; use the following symbols in order, as needed: *, †, ‡, §, ||, ¶, #, **, ††,
35 etc. (Don't use footnotes in column heads; include any such details in sentence form in the table
36 legend.)

Table 1: This is an example table.

Column 1	Column 2	Column 3
Cell 1	Cell 2	Cell 3
Cell 4	Cell 5	Cell 6

37 While they should appear embedded in the text at place of first citation in initial submission, we
38 ask that Figures and Tables also be submitted as separate, raw files should your submission move
39 past the revision stage. This will make for easier production should the paper be accepted.

40 Figure legends (i.e., captions) should be listed immediately after each figure as it appears em-
41 bedded in the text. Each figure legend should start with a short boldface title beginning with (for
42 example) **Figure 1**. See Figure 1 for example. All figure titles should be phrases or sentences; do
43 not mix the two styles. No single legend should be longer than about 200 words. Nomenclature,
44 abbreviations, symbols, and units used in a figure legend (and in the figure itself) should match
45 those used in the text. Individual figure panels are in boldface when first mentioned in a legend:
46 **(A)**, **(B)**, etc.

47 1 Introduction

48 The manuscript should start with a brief introduction that lays out the problem addressed by the
49 research and describes the paper's importance. The scientific question being investigated should be
50 described in detail. The introduction should provide sufficient background information to make the
51 article understandable to readers in other disciplines and provide enough context to ensure that the
52 implications of the experimental findings are clear.

53 2 Methods

54 The methods section should provide sufficient information to allow replication of the results.



Figure 1: This is an example figure.

55 **2.1 Experimental Design**

56 Begin with a section titled Experimental Design describing the objectives and design of the study
57 as well as prespecified components. In this section, please include a diagram or flowchart to show
58 the entire experimental design and illustrate the most significant elements: materials, treatments,
59 measurements, data collection, methods of data analysis. This will facilitate the editors, reviewers
60 and readers to understand and follow the whole concept, design, and results.

61 **2.2 Statistical Analysis**

62 Include a section titled Statistical Analysis that fully describes the statistical methods with enough
63 detail to enable a knowledgeable reader with access to the original data to verify the results. The
64 values for N , P , and the specific statistical test performed for each experiment should be included
65 in the appropriate figure legend or main text.

66 This section should be broken up by subheadings. Under exceptional circumstances, when a
67 particularly lengthy description is required, a portion of the materials and methods can be included
68 in the Supplementary Materials.

69 **3 Results**

70 The results should describe the experiments performed and the findings observed. The results section
71 should be divided into subsections to delineate different experimental themes. Subheadings should
72 either be all phrases or all complete sentences. All data must be shown either in the main text or
73 in the Supplementary Materials.

- 74 • All data should be presented in the Results. No data should be presented for the first time in
75 the Discussion. Data (such as from Western blots) should be appropriately quantified.
- 76 • Subheadings must be either all complete sentences or all phrases. They should be brief, ideally
77 less than 10 words. Subheadings should not end in a period. Your paper may have as many
78 subheadings as are necessary.
- 79 • Figures and tables must be called out in numerical order. For example, the first mention of any
80 panel of Figure 3 cannot precede the first mention of all panels of Figure 2. The supplementary
81 figures (for example, Figure S1) and tables (Table S1) must also be called out in numerical
82 order.

83 4 Discussion

84 Include a Discussion that summarizes (but does not merely repeat) your conclusions, elaborates on
85 their implications or significance, and compares with previously published results. There should be
86 a paragraph outlining the limitations of your results and interpretation, as well as a discussion of
87 the steps that need to be taken for the findings to be applied. Please avoid claims of priority.

88 **Acknowledgments and other statements:** All acknowledgments statements should be
89 included at the very end of the manuscript before the references. The following sections, when
90 needed, should be listed in the order below and include the subheads in bold followed by single
91 paragraphs including the information specified.

92 **Ethical Approval**

93 For all animal experimentation described in the manuscript, authors must state their adherence to
94 the NIH Guide for the Care and Use of Laboratory Animals or the equivalent. Informed consent
95 must be obtained for studies on humans after the nature and possible consequences of the studies
96 are explained. A statement that informed consent was obtained must also appear in the manuscript.
97 All research on humans must have approval from the institutional IRB (Institutional Review Board)
98 or an equivalent body.

99 **Data Availability**

100 Submission of a manuscript to *Health Data Science* implies that the data is freely available upon
101 request or has deposited to an open database, like NCBI. If data are in an archive, include the
102 accession number or a placeholder for it. Also include any materials that must be obtained through
103 an MTA.

104 **Funding**

105 Authors must state how the research and publication of their article was funded, by naming fi-
106 nancially supporting body(s) (written out in full) followed by associated grant number(s) in square

107 brackets (if applicable), for example: “This work was supported by the Engineering and Physical
108 Sciences Research Council [grant numbers xxxx, yyyy]; the National Science Foundation [grant num-
109 ber zzzz]; and a Leverhulme Trust Research Project Grant”. If the research did not receive specific
110 funding but was performed as part of the employment of the authors, please name this employer. If
111 the funder was involved in the manuscript writing, editing, approval, or decision to publish, please
112 declare this.

113 **Authors’ Contributions**

114 Describe contributions of each author (use initials) to the paper.

115 Examples:

116 “S. Z. conceived the idea and designed the experiments.”

117 “E. F. M. and J. F. S. conducted the experiments.”

118 “All authors contributed equally to the writing of the manuscript.”

119 **Conflicts of Interest**

120 Conflicts of interest (COIs, also known as “competing interests”) occur when issues outside research
121 could be reasonably perceived to affect the neutrality or objectivity of the work or its assessment.
122 For more information, see our publication ethics policy. Authors must declare all potential interests
123 – whether or not they actually had an influence – in a ‘Conflicts of Interest’ section in the Acknowl-
124 edgements, which should explain why the interest may be a conflict. If there are none, the authors
125 should state “The author(s) declare(s) that there is no conflict of interest regarding the publication
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127 conflicts of interest will be considered by the editor and reviewers and included in the published
128 article.

129 The involvement of anyone other than the authors who 1) has an interest in the outcome of
130 the work; 2) is affiliated to an organization with such an interest; or 3) was employed or paid by
131 a funder, in the commissioning, conception, planning, design, conduct, or analysis of the work, the
132 preparation or editing of the manuscript, or the decision to publish must be declared.

133 **Acknowledgments**

134 Thank others for any contributions. Anyone who made a contribution to the research or manuscript,
135 but who is not a listed author, should be acknowledged (with their permission).

136 **Supplementary Materials**

137 Include supporting text (including notes, supplementary materials and methods, tables, and figures)
138 at the end of the main manuscript file, in a separate section titled Supplementary Materials, if this
139 can be easily done and if the total file size does not exceed 6 MB. Alternatively, Supplementary

140 Materials can be included as a separate file that can be uploaded as the final figure file within the
141 6 MB upload limit.

142 Supplementary figures should be embedded in the file in order, with the legends directly below
143 the figure.

144 Any references cited in the Supplementary Materials must already appear in the reference list;
145 no separate supplementary reference list should be created.

146 Supplementary Materials may include additional author notes—for example, a list of group
147 authors.

148 If you have any Supplemental Materials please list them by sections in the following order:
149 supplementary materials and methods (if any), supplementary figures, supplementary tables, and
150 other supplementary files (such as movies, data, interactive images, or database files). Be sure to
151 submit all Supplementary Materials with the manuscript. Materials should be named as follows:

152 Figures S1 to S#

153 Tables S1 to S#

154 Movies S1 to S#

155 Data files S1 to S#

156 Audio files S1 to S#

157 **References**

158 There is only one reference list for all sources cited in the main text, figure and table legends, and
159 Supplementary Materials. Do not include a second reference list in the Supplementary Materials
160 section. References cited only in the Supplementary Materials section are not counted toward length
161 guidelines.

162 Each reference should have a separate number and should be on a separate line ending in a
163 period.

164 See the Author Instructions for reference style.

165 Please do not include any extraneous language such as explanatory notes as part of a reference to
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167 is important enough to include, please put into main text. If you need to include notes, please explain
168 why they are needed in your cover letter to the editor.