Analysis of my AHP method vs Manual's AHP method
Hillary Tao

APP4WE -Montréal-Phase1_2020 10 26.xlsx results

Data Description: 29 participants

Introduction: Pairwise comparison matrix, priority vector (weights) and consistency index for the criteria were calculated. I am assuming that if 9999 is the answer for question 6, then there are 6 criteria; if 9999 is the answer for question 5 and 6, then there are 5 criteria; and finally, if neither question 5 nor 6 have 9999 as the answer, then there are 7 criteria to take into account.

UPDATE: Following a meeting with Dr. Rahimi, I have updated the code so that when encountering 9999, it will replace it with 1. This way, all participants have 7 criteria and it reduces the number of inconsistencies. Consequently, it has also reduced the consistency ratio of almost all participants.

ahp.py:

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Participant #1
preprocessed answers: [1, 1, 4, 5, 9, 9999, 5, 6, 5, 9, 9999, 1, 5, 9, 9999, 1, 1,
9999, 1, 9999, 9999]
processed answers: [1, 1, 4, 5, 9, 1, 5, 6, 5, 9, 1, 1, 5, 9, 1, 1, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.22185637+0.j 0.32040792+0.j 0.16414379+0.j 0.0700845 +0.j
 0.05379074+0.j 0.04602384+0.j 0.12369284+0.j]
Consistency Ratio (0.12819649775933825+0j)
Bad consistency Ratio

Participant #2
preprocessed answers: [9, 8, 9, 9, 9999, 9999, 9, 1, 8, 9999, 9999, 9, 8, 9999, 9999,
9, 9999, 9999, 9999, 9999, 9999]
processed answers: [9, 8, 9, 9, 1, 1, 9, 1, 8, 1, 1, 9, 8, 1, 1, 9, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.39884765-0.j 0.17876956-0.j 0.12512714-0.j 0.07462662-0.j
 0.0301453 -0.j 0.09624187-0.j 0.09624187-0.j]
Consistency Ratio (0.40076693427693943+0j)
Bad consistency Ratio

Participant #3
preprocessed answers: [7, 3, 3, 3, 9999, 9999, 5, 5, 5, 9999, 9999, 1, 6, 9999, 9999,
2, 9999, 9999, 9999, 9999, 9999]
processed answers: [7, 3, 3, 3, 1, 1, 5, 5, 5, 1, 1, 1, 6, 1, 1, 2, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.31710829+0.j 0.20134371+0.j 0.10791452+0.j 0.08050725+0.j
 0.0583752 +0.j 0.11737552+0.j 0.11737552+0.j]
Consistency Ratio (0.1796293490904237+0j)
Bad consistency Ratio

Participant #4
preprocessed answers: [6, 6, 6, 5, 1, 9999, 6, 6, 5, 9999, 9999, 5, 4, 4, 9999, 4, 4,
9999, 1, 9999, 9999]
processed answers: [6, 6, 6, 5, 1, 1, 6, 6, 5, 1, 1, 5, 4, 4, 1, 4, 4, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.34282788-0.j 0.20573559-0.j 0.13267734-0.j 0.08580685-0.j
 0.04143806-0.j 0.08721144-0.j 0.10430283-0.j]
Consistency Ratio (0.30584722428415034+0j)
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Bad consistency Ratio

Participant #5
preprocessed answers: [6, 8, 9, 6, 9999, 9999, 9, 1, 5, 9999, 9999, 9, 6, 9999, 9999,
5, 9999, 9999, 9999, 9999, 9999]
processed answers: [6, 8, 9, 6, 1, 1, 9, 1, 5, 1, 1, 9, 6, 1, 1, 5, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.3673092 -0.j 0.19057738-0.j 0.12930479-0.j 0.07204404-0.j
 0.03810573-0.j 0.10132943-0.j 0.10132943-0.j]
Consistency Ratio (0.3391017832215364+0j)
Bad consistency Ratio

Participant #6
preprocessed answers: [2, 5, 4, 5, 5, 4, 3, 3, 3, 5, 3, 6, 3, 5, 4, 3, 6, 4, 3, 4, 4]
processed answers: [2, 5, 4, 5, 5, 4, 3, 3, 3, 5, 3, 6, 3, 5, 4, 3, 6, 4, 3, 4, 4]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.34001302-0.j 0.21582392-0.j 0.18549192-0.j 0.10921854-0.j
 0.0695492 -0.j 0.0447647 -0.j 0.03513871-0.j]
Consistency Ratio (0.16270679805837585+0j)
Bad consistency Ratio

Participant #7
preprocessed answers: [1, 7, 7, 1, 7, 9999, 7, 7, 1, 7, 9999, 1, 7, 1, 9999, 7, 1,
9999, 7, 9999, 9999]
processed answers: [1, 7, 7, 1, 7, 1, 7, 7, 1, 7, 1, 1, 7, 1, 1, 7, 1, 1, 7, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.26019031+0.j 0.26019031+0.j 0.11574944+0.j 0.11574944+0.j
 0.10498395+0.j 0.04536389+0.j 0.09777265+0.j]
Consistency Ratio (0.3815376703827181+0j)
Bad consistency Ratio

Participant #8
preprocessed answers: [1, 5, 4, 5, 9999, 9999, 1, 1, 1, 9999, 9999, 5, 5, 9999, 9999,
5, 9999, 9999, 9999, 9999, 9999]
processed answers: [1, 5, 4, 5, 1, 1, 1, 1, 1, 1, 1, 5, 5, 1, 1, 5, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.28044488-0.j 0.12125602-0.j 0.17953703-0.j 0.11031562-0.j
 0.06593441-0.j 0.12125602-0.j 0.12125602-0.j]
Consistency Ratio (0.14740108799691257+0j)
Bad consistency Ratio

Participant #9
preprocessed answers: [7, 6, 6, 1, 1, 9999, 4, 1, 4, 4, 9999, 4, 1, 1, 9999, 3, 3,
9999, 1, 9999, 9999]
processed answers: [7, 6, 6, 1, 1, 1, 4, 1, 4, 4, 1, 4, 1, 1, 1, 3, 3, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.33586892-0.j 0.1689654 -0.j 0.10092822-0.j 0.10911557-0.j
 0.08775225-0.j 0.08775225-0.j 0.10961739-0.j]
Consistency Ratio (0.25090311284282407+0j)
Bad consistency Ratio

Participant #10
preprocessed answers: [3, 8, 6, 6, 9999, 9999, 8, 1, 8, 9999, 9999, 2, 1, 9999, 9999,
8, 9999, 9999, 9999, 9999, 9999]
processed answers: [3, 8, 6, 6, 1, 1, 8, 1, 8, 1, 1, 2, 1, 1, 1, 8, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.32301239+0.j 0.19493183+0.j 0.07712105+0.j 0.12202929+0.j
 0.05228998+0.j 0.11530773+0.j 0.11530773+0.j]
Consistency Ratio (0.19768859275721926+0j)
Bad consistency Ratio

Participant #11
preprocessed answers: [7, 9, 9, 7, 8, 9999, 9, 6, 6, 7, 9999, 9, 8, 9, 9, 9999, 7, 6,
7, 9999, 9999]
processed answers: [7, 9, 9, 7, 8, 1, 9, 6, 6, 7, 1, 9, 8, 9, 9, 1, 7, 6, 7, 1, 1]
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Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.40747059-0.j 0.23181029-0.j 0.16953528-0.j 0.06628755-0.j
 0.03682018-0.j 0.01812105-0.j 0.06995506-0.j]
Consistency Ratio (0.514306696182195+0j)
Bad consistency Ratio

Participant #12
preprocessed answers: [5, 1, 1, 1, 1, 5, 9, 9, 1, 9, 8, 1, 8, 1, 9, 9, 8, 9, 1, 8, 9]
processed answers: [5, 1, 1, 1, 1, 5, 9, 9, 1, 9, 8, 1, 8, 1, 9, 9, 8, 9, 1, 8, 9]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.22004029+0.j 0.33951745+0.j 0.12241338+0.j 0.16781623+0.j
 0.0764891 +0.j 0.06017878+0.j 0.01354476+0.j]
Consistency Ratio (0.4684112992341926+0j)
Bad consistency Ratio

Participant #13
preprocessed answers: [4, 6, 6, 1, 9999, 9999, 9, 6, 6, 9999, 9999, 9, 1, 9999, 9999,
7, 9999, 9999, 9999, 9999, 9999]
processed answers: [4, 6, 6, 1, 1, 1, 9, 6, 6, 1, 1, 9, 1, 1, 1, 7, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.27435262-0.j 0.25072038-0.j 0.12168335-0.j 0.08620615-0.j
 0.07048228-0.j 0.09827761-0.j 0.09827761-0.j]
Consistency Ratio (0.3753259936839872+0j)
Bad consistency Ratio

Participant #14
preprocessed answers: [1, 1, 1, 1, 9999, 9999, 1, 1, 1, 9999, 9999, 1, 1, 9999, 9999,
1, 9999, 9999, 9999, 9999, 9999]
processed answers: [1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[ 2.38258460e+15 -3.97097434e+14 -3.97097434e+14 -3.97097434e+14
 -3.97097434e+14 -3.97097434e+14 -3.97097434e+14]
Consistency Ratio 4.199425152246455e-16


Participant #15
preprocessed answers: [1, 1, 1, 5, 9999, 9999, 1, 1, 7, 9999, 9999, 1, 6, 9999, 9999,
1, 9999, 9999, 9999, 9999, 9999]
processed answers: [1, 1, 1, 5, 1, 1, 1, 1, 7, 1, 1, 1, 6, 1, 1, 1, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.16881252-0.j 0.18781684-0.j 0.17831468-0.j 0.13080387-0.j
 0.07264435-0.j 0.13080387-0.j 0.13080387-0.j]
Consistency Ratio (0.07624513875162114+0j)


Participant #16
preprocessed answers: [5, 8, 4, 6, 6, 9999, 1, 3, 2, 1, 9999, 2, 2, 2, 9999, 2, 4,
9999, 9999, 9999, 9999]
processed answers: [5, 8, 4, 6, 6, 1, 1, 3, 2, 1, 1, 2, 2, 2, 1, 2, 4, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.40846163-0.j 0.11987938-0.j 0.11123304-0.j 0.1042273 -0.j
 0.06246278-0.j 0.06676492-0.j 0.12697095-0.j]
Consistency Ratio (0.10352450592130555+0j)
Bad consistency Ratio

Participant #17
preprocessed answers: [6, 8, 5, 5, 5, 9999, 9, 9, 2, 7, 9999, 7, 7, 6, 9999, 9, 6,
9999, 6, 9999, 9999]
processed answers: [6, 8, 5, 5, 5, 1, 9, 9, 2, 7, 1, 7, 7, 6, 1, 9, 6, 1, 6, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.36169651+0.j 0.25033953+0.j 0.13249322+0.j 0.08529583+0.j
 0.04970678+0.j 0.02584624+0.j 0.09462189+0.j]
Consistency Ratio (0.42179414869584236+0j)
Bad consistency Ratio
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Participant #18
preprocessed answers: [8, 9, 6, 3, 7, 9, 7, 6, 4, 3, 9999, 3, 6, 4, 9999, 6, 4, 9999,
3, 9999, 9999]
processed answers: [8, 9, 6, 3, 7, 9, 7, 6, 4, 3, 1, 3, 6, 4, 1, 6, 4, 1, 3, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.48085529-0.j 0.19647268-0.j 0.09967402-0.j 0.07849792-0.j
 0.04935557-0.j 0.03201162-0.j 0.06313291-0.j]
Consistency Ratio (0.24460149631783618+0j)
Bad consistency Ratio

Participant #19
preprocessed answers: [7, 7, 1, 7, 9999, 9999, 6, 6, 7, 9999, 9999, 7, 8, 9999, 9999,
7, 9999, 9999, 9999, 9999, 9999]
processed answers: [7, 7, 1, 7, 1, 1, 6, 6, 7, 1, 1, 7, 8, 1, 1, 7, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.32874147+0.j 0.2077711 +0.j 0.13509482+0.j 0.09246361+0.j
 0.03451007+0.j 0.10070947+0.j 0.10070947+0.j]
Consistency Ratio (0.3462828751533638+0j)
Bad consistency Ratio

Participant #20
preprocessed answers: [1, 8, 4, 7, 9, 7, 7, 4, 7, 8, 4, 7, 7, 8, 7, 7, 8, 4, 1, 4, 1]
processed answers: [1, 8, 4, 7, 9, 7, 7, 4, 7, 8, 4, 7, 7, 8, 7, 7, 8, 4, 1, 4, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.34375841-0.j 0.31262111-0.j 0.17066322-0.j 0.09105062-0.j
 0.03347633-0.j 0.02196521-0.j 0.0264651 -0.j]
Consistency Ratio (0.20523230891712607+0j)
Bad consistency Ratio

Participant #21
preprocessed answers: [7, 6, 8, 8, 9999, 9999, 6, 6, 6, 9999, 9999, 7, 6, 9999, 9999,
5, 9999, 9999, 9, 9999, 9999]
processed answers: [7, 6, 8, 8, 1, 1, 6, 6, 6, 1, 1, 7, 6, 1, 1, 5, 1, 1, 9, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.34872568-0.j 0.19117423-0.j 0.12733415-0.j 0.07051957-0.j
 0.09144646-0.j 0.08178201-0.j 0.0890179 -0.j]
Consistency Ratio (0.5004369124264224+0j)
Bad consistency Ratio

Participant #22
preprocessed answers: [2, 7, 7, 2, 9999, 9999, 4, 4, 4, 9999, 9999, 5, 6, 9999, 9999,
6, 9999, 9999, 9999, 9999, 9999]
processed answers: [2, 7, 7, 2, 1, 1, 4, 4, 4, 1, 1, 5, 6, 1, 1, 6, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.29524121-0.j 0.19286184-0.j 0.14032088-0.j 0.08801978-0.j
 0.05828358-0.j 0.11263635-0.j 0.11263635-0.j]
Consistency Ratio (0.22200098917454644+0j)
Bad consistency Ratio

Participant #23
preprocessed answers: [1, 3, 1, 3, 9999, 9999, 4, 1, 6, 9999, 9999, 3, 4, 9999, 9999,
3, 9999, 9999, 9999, 9999, 9999]
processed answers: [1, 3, 1, 3, 1, 1, 4, 1, 6, 1, 1, 3, 4, 1, 1, 3, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.18074748-0.j 0.22355971-0.j 0.14776075-0.j 0.13064489-0.j
 0.06297778-0.j 0.12715469-0.j 0.12715469-0.j]
Consistency Ratio (0.10217924346320692+0j)
Bad consistency Ratio

Participant #24
preprocessed answers: [8, 7, 1, 1, 9999, 9999, 8, 8, 7, 9999, 9999, 1, 7, 9999, 9999,
7, 9999, 9999, 9999, 9999, 9999]
processed answers: [8, 7, 1, 1, 1, 1, 8, 8, 7, 1, 1, 1, 7, 1, 1, 7, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.30888846-0.j 0.23953254-0.j 0.08597908-0.j 0.11159511-0.j
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 0.06050218-0.j 0.09675131-0.j 0.09675131-0.j]
Consistency Ratio (0.3942998914764539+0j)
Bad consistency Ratio

Participant #25
preprocessed answers: [8, 6, 5, 5, 9999, 9999, 7, 7, 4, 9999, 9999, 4, 5, 9999, 9999,
5, 9999, 9999, 9999, 9999, 9999]
processed answers: [8, 6, 5, 5, 1, 1, 7, 7, 4, 1, 1, 4, 5, 1, 1, 5, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.36630575+0.j 0.20005267+0.j 0.09986635+0.j 0.07012769+0.j
 0.04583987+0.j 0.10890383+0.j 0.10890383+0.j]
Consistency Ratio (0.25796845970791277+0j)
Bad consistency Ratio

Participant #26
preprocessed answers: [8, 7, 7, 7, 9999, 9999, 8, 7, 1, 9999, 9999, 4, 7, 9999, 9999,
6, 9999, 9999, 9999, 9999, 9999]
processed answers: [8, 7, 7, 7, 1, 1, 8, 7, 1, 1, 1, 4, 7, 1, 1, 6, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.37696869+0.j 0.18782847+0.j 0.10665044+0.j 0.07156612+0.j
 0.05349975+0.j 0.10174327+0.j 0.10174327+0.j]
Consistency Ratio (0.3343570058714172+0j)
Bad consistency Ratio

Participant #27
preprocessed answers: [5, 5, 5, 4, 5, 4, 4, 3, 3, 4, 4, 4, 4, 5, 5, 4, 1, 1, 4, 4, 4]
processed answers: [5, 5, 5, 4, 5, 4, 4, 3, 3, 4, 4, 4, 4, 5, 5, 4, 1, 1, 4, 4, 4]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.38763443+0.j 0.20443512+0.j 0.15973628+0.j 0.07771489+0.j
 0.07814261+0.j 0.05407445+0.j 0.03826222+0.j]
Consistency Ratio (0.18894274574283540+0j)
Bad consistency Ratio

Participant #28
preprocessed answers: [7, 1, 1, 9, 9999, 9999, 7, 5, 5, 9999, 1, 7, 9999, 9999, 9999,
7, 9999, 9999, 9999, 9999, 9999]
processed answers: [7, 1, 1, 9, 1, 1, 7, 5, 5, 1, 1, 7, 1, 1, 1, 7, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.27860393-0.j 0.2252771 -0.j 0.14318579-0.j 0.10072643-0.j
 0.04928824-0.j 0.10145926-0.j 0.10145926-0.j]
Consistency Ratio (0.33760910579221154+0j)
Bad consistency Ratio

Participant #29
preprocessed answers: [1, 1, 4, 1, 6, 9999, 1, 4, 1, 6, 9999, 4, 1, 6, 9999, 4, 4,
9999, 9, 9999, 9999]
processed answers: [1, 1, 4, 1, 6, 1, 1, 4, 1, 6, 1, 4, 1, 6, 1, 4, 4, 1, 9, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.18947199-0.j 0.18947199-0.j 0.18947199-0.j 0.1330895 -0.j
 0.1425374 -0.j 0.03597192-0.j 0.1199852 -0.j]
Consistency Ratio (0.15772593970100152+0j)
Bad consistency Ratio
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ahpv2.py:

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Participant #1
preprocessed answers: [1, 1, 4, 5, 9, 9999, 5, 6, 5, 9, 9999, 1, 5, 9, 9999, 1, 1,
9999, 1, 9999, 9999]
processed answers: [1, 1, 4, 5, 9, 1, 5, 6, 5, 9, 1, 1, 5, 9, 1, 1, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.22185637 0.32040792 0.16414379 0.0700845  0.05379074 0.04602384
 0.12369284]
Inconsistency index of the criteria:  0.1369371680611113
The pairwise comparison matrix of the criteria is inconsistent
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Participant #2
preprocessed answers: [9, 8, 9, 9, 9999, 9999, 9, 1, 8, 9999, 9999, 9, 8, 9999, 9999,
9, 9999, 9999, 9999, 9999, 9999]
processed answers: [9, 8, 9, 9, 1, 1, 9, 1, 8, 1, 1, 9, 8, 1, 1, 9, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.39884765 0.17876956 0.12512714 0.07462662 0.0301453  0.09624187
 0.09624187]
Inconsistency index of the criteria:  0.42809195252309445
The pairwise comparison matrix of the criteria is inconsistent

Participant #3
preprocessed answers: [7, 3, 3, 3, 9999, 9999, 5, 5, 5, 9999, 9999, 1, 6, 9999, 9999,
2, 9999, 9999, 9999, 9999, 9999]
processed answers: [7, 3, 3, 3, 1, 1, 5, 5, 5, 1, 1, 1, 6, 1, 1, 2, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.31710829 0.20134371 0.10791452 0.08050725 0.0583752  0.11737552
 0.11737552]
Inconsistency index of the criteria:  0.1918768047102253
The pairwise comparison matrix of the criteria is inconsistent

Participant #4
preprocessed answers: [6, 6, 6, 5, 1, 9999, 6, 6, 5, 9999, 9999, 5, 4, 4, 9999, 4, 4,
9999, 1, 9999, 9999]
processed answers: [6, 6, 6, 5, 1, 1, 6, 6, 5, 1, 1, 5, 4, 4, 1, 4, 4, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.34282788 0.20573559 0.13267734 0.08580685 0.04143806 0.08721144
 0.10430283]
Inconsistency index of the criteria:  0.326700444121706
The pairwise comparison matrix of the criteria is inconsistent

Participant #5
preprocessed answers: [6, 8, 9, 6, 9999, 9999, 9, 1, 5, 9999, 9999, 9, 6, 9999, 9999,
5, 9999, 9999, 9999, 9999, 9999]
processed answers: [6, 8, 9, 6, 1, 1, 9, 1, 5, 1, 1, 9, 6, 1, 1, 5, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.3673092  0.19057738 0.12930479 0.07204404 0.03810573 0.10132943
 0.10132943]
Inconsistency index of the criteria:  0.3622223593502775
The pairwise comparison matrix of the criteria is inconsistent

Participant #6
preprocessed answers: [2, 5, 4, 5, 5, 4, 3, 3, 3, 5, 3, 6, 3, 5, 4, 3, 6, 4, 3, 4, 4]
processed answers: [2, 5, 4, 5, 5, 4, 3, 3, 3, 5, 3, 6, 3, 5, 4, 3, 6, 4, 3, 4, 4]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.34001302 0.21582392 0.18549192 0.10921854 0.0695492  0.0447647
 0.03513871]
Inconsistency index of the criteria:  0.17380044338053782
The pairwise comparison matrix of the criteria is inconsistent

Participant #7
preprocessed answers: [1, 7, 7, 1, 7, 9999, 7, 7, 1, 7, 9999, 1, 7, 1, 9999, 7, 1,
9999, 7, 9999, 9999]
processed answers: [1, 7, 7, 1, 7, 1, 7, 7, 1, 7, 1, 1, 7, 1, 1, 7, 1, 1, 7, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.26019031 0.26019031 0.11574944 0.11574944 0.10498395 0.04536389
 0.09777265]
Inconsistency index of the criteria:  0.40755160245426714
The pairwise comparison matrix of the criteria is inconsistent

Participant #8
preprocessed answers: [1, 5, 4, 5, 9999, 9999, 1, 1, 1, 9999, 9999, 5, 5, 9999, 9999,
5, 9999, 9999, 9999, 9999, 9999]
processed answers: [1, 5, 4, 5, 1, 1, 1, 1, 1, 1, 1, 5, 5, 1, 1, 5, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.28044488 0.12125602 0.17953703 0.11031562 0.06593441 0.12125602
```

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 0.12125602]
Inconsistency index of the criteria:  0.15745116217852023
The pairwise comparison matrix of the criteria is inconsistent

Participant #9
preprocessed answers: [7, 6, 6, 1, 1, 9999, 4, 1, 4, 4, 9999, 4, 1, 1, 9999, 3, 3,
9999, 1, 9999, 9999]
processed answers: [7, 6, 6, 1, 1, 1, 4, 1, 4, 4, 1, 4, 1, 1, 1, 3, 3, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.33586892 0.1689654  0.10092822 0.10911557 0.08775225 0.08775225
 0.10961739]
Inconsistency index of the criteria:  0.26801014326392575
The pairwise comparison matrix of the criteria is inconsistent

Participant #10
preprocessed answers: [3, 8, 6, 6, 9999, 9999, 8, 1, 8, 9999, 9999, 2, 1, 9999, 9999,
8, 9999, 9999, 9999, 9999, 9999]
processed answers: [3, 8, 6, 6, 1, 1, 8, 1, 8, 1, 1, 2, 1, 1, 1, 8, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.32301239 0.19493183 0.07712105 0.12202929 0.05228998 0.11530773
 0.11530773]
Inconsistency index of the criteria:  0.21116736044521148
The pairwise comparison matrix of the criteria is inconsistent

Participant #11
preprocessed answers: [7, 9, 9, 7, 8, 9999, 9, 6, 6, 7, 9999, 9, 8, 9, 9, 9999, 7, 6,
7, 9999, 9999]
processed answers: [7, 9, 9, 7, 8, 1, 9, 6, 6, 7, 1, 9, 8, 9, 9, 1, 7, 6, 7, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.40747059 0.23181029 0.16953528 0.06628755 0.03682018 0.01812105
 0.06995506]
Inconsistency index of the criteria:  0.5493730618309811
The pairwise comparison matrix of the criteria is inconsistent

Participant #12
preprocessed answers: [5, 1, 1, 1, 1, 5, 9, 9, 1, 9, 8, 1, 8, 1, 9, 9, 8, 9, 1, 8, 9]
processed answers: [5, 1, 1, 1, 1, 5, 9, 9, 1, 9, 8, 1, 8, 1, 9, 9, 8, 9, 1, 8, 9]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.22004029 0.33951745 0.12241338 0.16781623 0.0764891  0.06017878
 0.01354476]
Inconsistency index of the criteria:  0.5003484332728876
The pairwise comparison matrix of the criteria is inconsistent

Participant #13
preprocessed answers: [4, 6, 6, 1, 9999, 9999, 9, 6, 6, 9999, 9999, 9, 1, 9999, 9999,
7, 9999, 9999, 9999, 9999, 9999]
processed answers: [4, 6, 6, 1, 1, 1, 9, 6, 6, 1, 1, 9, 1, 1, 1, 7, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.27435262 0.25072038 0.12168335 0.08620615 0.07048228 0.09827761
 0.09827761]
Inconsistency index of the criteria:  0.4009164023442591
The pairwise comparison matrix of the criteria is inconsistent

Participant #14
preprocessed answers: [1, 1, 1, 1, 9999, 9999, 1, 1, 1, 9999, 9999, 1, 1, 9999, 9999,
1, 9999, 9999, 9999, 9999, 9999]
processed answers: [1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.14285714 0.14285714 0.14285714 0.14285714 0.14285714 0.14285714
 0.14285714]
Inconsistency index of the criteria:  4.485749594445076e-16
The pairwise comparison matrix of the criteria is consistent

Participant #15
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```
preprocessed answers: [1, 1, 1, 5, 9999, 9999, 1, 1, 7, 9999, 9999, 1, 6, 9999, 9999,
1, 9999, 9999, 9999, 9999, 9999]
processed answers: [1, 1, 1, 5, 1, 1, 1, 1, 7, 1, 1, 1, 6, 1, 1, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.16881252 0.18781684 0.17831468 0.13080387 0.07264435 0.13080387
 0.13080387]
Inconsistency index of the criteria:  0.08144367093923167
The pairwise comparison matrix of the criteria is consistent

Participant #16
preprocessed answers: [5, 8, 4, 6, 6, 9999, 1, 3, 2, 1, 9999, 2, 2, 2, 9999, 2, 4,
9999, 9999, 9999, 9999]
processed answers: [5, 8, 4, 6, 6, 1, 1, 3, 2, 1, 1, 2, 2, 2, 1, 2, 4, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.40846163 0.11987938 0.11123304 0.1042273  0.06246278 0.06676492
 0.12697095]
Inconsistency index of the criteria:  0.11058299496139457
The pairwise comparison matrix of the criteria is inconsistent

Participant #17
preprocessed answers: [6, 8, 5, 5, 5, 9999, 9, 9, 2, 7, 9999, 7, 7, 6, 9999, 9, 6,
9999, 6, 9999, 9999]
processed answers: [6, 8, 5, 5, 5, 1, 9, 9, 2, 7, 1, 7, 7, 6, 1, 9, 6, 1, 6, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.36169651 0.25033953 0.13249322 0.08529583 0.04970678 0.02584624
 0.09462189]
Inconsistency index of the criteria:  0.450552840652377
The pairwise comparison matrix of the criteria is inconsistent

Participant #18
preprocessed answers: [8, 9, 6, 3, 7, 9, 7, 6, 4, 3, 9999, 3, 6, 4, 9999, 6, 4, 9999,
3, 9999, 9999]
processed answers: [8, 9, 6, 3, 7, 9, 7, 6, 4, 3, 1, 3, 6, 4, 1, 6, 4, 1, 3, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.48085529 0.19647268 0.09967402 0.07849792 0.04935557 0.03201162
 0.06313291]
Inconsistency index of the criteria:  0.26127887106677955
The pairwise comparison matrix of the criteria is inconsistent

Participant #19
preprocessed answers: [7, 7, 1, 7, 9999, 9999, 6, 6, 7, 9999, 9999, 7, 8, 9999, 9999,
7, 9999, 9999, 9999, 9999, 9999]
processed answers: [7, 7, 1, 7, 1, 1, 6, 6, 7, 1, 1, 7, 8, 1, 1, 7, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.32874147 0.2077711  0.13509482 0.09246361 0.03451007 0.10070947
 0.10070947]
Inconsistency index of the criteria:  0.3698930711865477
The pairwise comparison matrix of the criteria is inconsistent

Participant #20
preprocessed answers: [1, 8, 4, 7, 9, 7, 7, 4, 7, 8, 4, 7, 7, 8, 7, 7, 8, 4, 1, 4, 1]
processed answers: [1, 8, 4, 7, 9, 7, 7, 4, 7, 8, 4, 7, 7, 8, 7, 7, 8, 4, 1, 4, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.34375841 0.31262111 0.17066322 0.09105062 0.03347633 0.02196521
 0.0264651 ]
Inconsistency index of the criteria:  0.2192254208887483
The pairwise comparison matrix of the criteria is inconsistent

Participant #21
preprocessed answers: [7, 6, 8, 8, 9999, 9999, 6, 6, 6, 9999, 9999, 7, 6, 9999, 9999,
5, 9999, 9999, 9, 9999, 9999]
processed answers: [7, 6, 8, 8, 1, 1, 6, 6, 6, 1, 1, 7, 6, 1, 1, 5, 1, 1, 9, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.34872568 0.19117423 0.12733415 0.07051957 0.09144646 0.08178201
 0.0890179 ]
```

```
Inconsistency index of the criteria:  0.5345576110009512
The pairwise comparison matrix of the criteria is inconsistent

Participant #22
preprocessed answers: [2, 7, 7, 2, 9999, 9999, 4, 4, 4, 9999, 9999, 5, 6, 9999, 9999,
6, 9999, 9999, 9999, 9999, 9999]
processed answers: [2, 7, 7, 2, 1, 1, 4, 4, 4, 1, 1, 5, 6, 1, 1, 6, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.29524121 0.19286184 0.14032088 0.08801978 0.05828358 0.11263635
 0.11263635]
Inconsistency index of the criteria:  0.2371374202546291
The pairwise comparison matrix of the criteria is inconsistent

Participant #23
preprocessed answers: [1, 3, 1, 3, 9999, 9999, 4, 1, 6, 9999, 9999, 3, 4, 9999, 9999,
3, 9999, 9999, 9999, 9999, 9999]
processed answers: [1, 3, 1, 3, 1, 1, 4, 1, 6, 1, 1, 3, 4, 1, 1, 3, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.18074748 0.22355971 0.14776075 0.13064489 0.06297778 0.12715469
 0.12715469]
Inconsistency index of the criteria:  0.10914601006297102
The pairwise comparison matrix of the criteria is inconsistent

Participant #24
preprocessed answers: [8, 7, 1, 1, 9999, 9999, 8, 8, 7, 9999, 9999, 1, 7, 9999, 9999,
7, 9999, 9999, 9999, 9999, 9999]
processed answers: [8, 7, 1, 1, 1, 1, 8, 8, 7, 1, 1, 1, 7, 1, 1, 7, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.30888846 0.23953254 0.08597908 0.11159511 0.06050218 0.09675131
 0.09675131]
Inconsistency index of the criteria:  0.4211839749862121
The pairwise comparison matrix of the criteria is inconsistent

Participant #25
preprocessed answers: [8, 6, 5, 5, 9999, 9999, 7, 7, 4, 9999, 9999, 4, 5, 9999, 9999,
5, 9999, 9999, 9999, 9999, 9999]
processed answers: [8, 6, 5, 5, 1, 1, 7, 7, 4, 1, 1, 4, 5, 1, 1, 5, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.36630575 0.20005267 0.09986635 0.07012769 0.04583987 0.10890383
 0.10890383]
Inconsistency index of the criteria:  0.2755572183243614
The pairwise comparison matrix of the criteria is inconsistent

Participant #26
preprocessed answers: [8, 7, 7, 7, 9999, 9999, 8, 7, 1, 9999, 9999, 4, 7, 9999, 9999,
6, 9999, 9999, 9999, 9999, 9999]
processed answers: [8, 7, 7, 7, 1, 1, 8, 7, 1, 1, 1, 4, 7, 1, 1, 6, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.37696869 0.18782847 0.10665044 0.07156612 0.05349975 0.10174327
 0.10174327]
Inconsistency index of the criteria:  0.3571540744535593
The pairwise comparison matrix of the criteria is inconsistent

Participant #27
preprocessed answers: [5, 5, 5, 4, 5, 4, 4, 3, 3, 4, 4, 4, 4, 5, 5, 4, 1, 1, 4, 4, 4]
processed answers: [5, 5, 5, 4, 5, 4, 4, 3, 3, 4, 4, 4, 4, 5, 5, 4, 1, 1, 4, 4, 4]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.38763443 0.20443512 0.15973628 0.07771489 0.07814261 0.05407445
 0.03826222]
Inconsistency index of the criteria:  0.20182520567984694
The pairwise comparison matrix of the criteria is inconsistent

Participant #28
preprocessed answers: [7, 1, 1, 9, 9999, 9999, 7, 5, 5, 9999, 1, 7, 9999, 9999, 9999,
7, 9999, 9999, 9999, 9999, 9999]
```

```
processed answers: [7, 1, 1, 9, 1, 1, 7, 5, 5, 1, 1, 7, 1, 1, 1, 7, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.27860393 0.2252771  0.14318579 0.10072643 0.04928824 0.10145926
 0.10145926]
Inconsistency index of the criteria:  0.3606279084598623
The pairwise comparison matrix of the criteria is inconsistent

Participant #29
preprocessed answers: [1, 1, 4, 1, 6, 9999, 1, 4, 1, 6, 9999, 4, 1, 6, 9999, 4, 4,
9999, 9, 9999, 9999]
processed answers: [1, 1, 4, 1, 6, 1, 1, 4, 1, 6, 1, 4, 1, 6, 1, 4, 4, 1, 9, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.18947199 0.18947199 0.18947199 0.1330895  0.1425374  0.03597192
 0.1199852 ]
Inconsistency index of the criteria:  0.1684799810442516
The pairwise comparison matrix of the criteria is inconsistent
```

Discussion: Overall, the consistency index found using the manual's method (ahpv2.py) is not much different from mine (ahp.py). They have minimal differences at the third decimal number. Sometimes one will be higher than the other, but not by an alarming amount.

APP4WE-Québec-Phase1_2020 10 26.xlsx results

Data Description: 38 participants

Introduction: Pairwise comparison matrix, priority vector (weights) and consistency index for criteria were calculated. I am assuming that if 9999 is the answer for question 6, then there are 6 criteria; if 9999 is the answer for question 5 and 6, then there are 5 criteria; and finally, if neither question 5 nor 6 have 9999 as the answer, then there are 7 criteria to take into account.

UPDATE: Following a meeting with Dr. Rahimi, I have updated the code so that when encountering 9999, it will replace it with 1. This way, all participants have 7 criteria and it reduces the number of inconsistencies. Consequently, it has also reduced the consistency ratio of almost all participants.

ahp.py:

```
Participant #1
preprocessed answers: [6, 7, 6, 6, 1, 9999, 6, 1, 5, 5, 9999, 6, 6, 1, 9999, 5, 5,
9999, 6, 9999, 9999]
processed answers: [6, 7, 6, 6, 1, 1, 6, 1, 5, 5, 1, 6, 6, 1, 1, 5, 5, 1, 6, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.34287177-0.j 0.18351592-0.j 0.1358151 -0.j 0.10824296-0.j
 0.0670143 -0.j 0.06752888-0.j 0.09501106-0.j]
Consistency Ratio (0.41667740163538564+0j)
Bad consistency Ratio

Participant #2
preprocessed answers: [3, 4, 4, 7, 9999, 9999, 4, 4, 7, 9999, 9999, 6, 5, 9999, 9999,
5, 9999, 9999, 9999, 9999, 9999]
processed answers: [3, 4, 4, 7, 1, 1, 4, 4, 7, 1, 1, 6, 5, 1, 1, 5, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.280679  -0.j 0.20931506-0.j 0.14512969-0.j 0.08236434-0.j
 0.04688993-0.j 0.11781099-0.j 0.11781099-0.j]
```

```
Consistency Ratio (0.17590694816966004+0j)
Bad consistency Ratio

Participant #3
preprocessed answers: [7, 7, 7, 1, 9999, 9999, 7, 7, 7, 9999, 9999, 7, 7, 9999, 9999,
7, 9999, 9999, 9999, 9999, 9999]
processed answers: [7, 7, 7, 1, 1, 1, 7, 7, 7, 1, 1, 7, 7, 1, 1, 7, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.33203042+0.j 0.21657905+0.j 0.12691355+0.j 0.0743703 +0.j
 0.0607633 +0.j 0.09467169+0.j 0.09467169+0.j]
Consistency Ratio (0.4211370743518044+0j)
Bad consistency Ratio

Participant #4
preprocessed answers: [6, 8, 9, 5, 9999, 9999, 8, 8, 8, 9999, 9999, 8, 1, 9999, 9999,
8, 9999, 9999, 9999, 9999, 9999]
processed answers: [6, 8, 9, 5, 1, 1, 8, 8, 8, 1, 1, 8, 1, 1, 1, 8, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.35860157-0.j 0.22316256-0.j 0.0998692 -0.j 0.07204895-0.j
 0.04563591-0.j 0.1003409 -0.j 0.1003409 -0.j]
Consistency Ratio (0.3505940360591599+0j)
Bad consistency Ratio

Participant #5
preprocessed answers: [9, 8, 9, 9, 8, 8, 8, 9, 9, 1, 1, 1, 9, 1, 1, 9, 9, 9, 8, 8, 1]
processed answers: [9, 8, 9, 9, 8, 8, 8, 9, 9, 1, 1, 1, 9, 1, 1, 9, 9, 9, 8, 8, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.441573  +0.j 0.2197384 +0.j 0.07656737+0.j 0.12520703+0.j
 0.06256396+0.j 0.03717512+0.j 0.03717512+0.j]
Consistency Ratio (0.5957338412583032+0j)
Bad consistency Ratio

Participant #6
preprocessed answers: [6, 4, 6, 6, 9999, 9999, 8, 8, 6, 9999, 9999, 1, 6, 9999, 9999,
6, 9999, 9999, 9999, 9999, 9999]
processed answers: [6, 4, 6, 6, 1, 1, 8, 8, 6, 1, 1, 1, 6, 1, 1, 6, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.33707656+0.j 0.23234923+0.j 0.08428786+0.j 0.08116879+0.j
 0.04303866+0.j 0.11103945+0.j 0.11103945+0.j]
Consistency Ratio (0.23709321665030814+0j)
Bad consistency Ratio

Participant #7
preprocessed answers: [5, 5, 5, 5, 9999, 9999, 5, 7, 5, 9999, 9999, 7, 5, 9999, 9999,
5, 9999, 9999, 9999, 9999, 9999]
processed answers: [5, 5, 5, 5, 1, 1, 5, 7, 5, 1, 1, 7, 5, 1, 1, 5, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.31668733+0.j 0.21047192+0.j 0.1325989 +0.j 0.07107069+0.j
 0.04628618+0.j 0.11144249+0.j 0.11144249+0.j]
Consistency Ratio (0.23324324814739847+0j)
Bad consistency Ratio

Participant #8
preprocessed answers: [3, 3, 2, 3, 9999, 9999, 3, 3, 3, 9999, 9999, 3, 3, 9999, 9999,
3, 9999, 9999, 9999, 9999, 9999]
processed answers: [3, 3, 2, 3, 1, 1, 3, 3, 3, 1, 1, 3, 3, 1, 1, 3, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.24375274+0.j 0.18781974+0.j 0.13656374+0.j 0.103453  +0.j
 0.07106317+0.j 0.1286738 +0.j 0.1286738 +0.j]
Consistency Ratio (0.09120447708740569+0j)


Participant #9
preprocessed answers: [9, 9, 5, 9, 9999, 9999, 9, 5, 5, 9999, 9999, 7, 8, 9999, 9999,
5, 9999, 9999, 9999, 9999, 9999]
```

```
processed answers: [9, 9, 5, 9, 1, 1, 9, 5, 5, 1, 1, 7, 8, 1, 1, 5, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.40055855-0.j 0.19275854-0.j 0.10910562-0.j 0.05842051-0.j
 0.03540557-0.j 0.1018756 -0.j 0.1018756 -0.j]
Consistency Ratio (0.3328478771263158+0j)
Bad consistency Ratio

Participant #10
preprocessed answers: [8, 1, 3, 7, 3, 3, 5, 1, 7, 3, 3, 5, 6, 1, 5, 2, 1, 4, 4, 4, 5]
processed answers: [8, 1, 3, 7, 3, 3, 5, 1, 7, 3, 3, 5, 6, 1, 5, 2, 1, 4, 4, 4, 5]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.35026161+0.j 0.2144806 +0.j 0.17436728+0.j 0.0843481 +0.j
 0.06908822+0.j 0.07462732+0.j 0.03282687+0.j]
Consistency Ratio (0.28606338736204406+0j)
Bad consistency Ratio

Participant #11
preprocessed answers: [3, 5, 4, 6, 9999, 9999, 5, 4, 5, 9999, 9999, 5, 1, 9999, 9999,
4, 9999, 9999, 9999, 9999, 9999]
processed answers: [3, 5, 4, 6, 1, 1, 5, 4, 5, 1, 1, 5, 1, 1, 1, 4, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.29070755-0.j 0.21011531-0.j 0.11237544-0.j 0.0860181 -0.j
 0.06255217-0.j 0.11911571-0.j 0.11911571-0.j]
Consistency Ratio (0.1649170525063466+0j)
Bad consistency Ratio

Participant #12
preprocessed answers: [7, 8, 7, 5, 9999, 9999, 7, 8, 5, 9999, 9999, 8, 8, 9999, 9999,
8, 9999, 9999, 9999, 9999, 9999]
processed answers: [7, 8, 7, 5, 1, 1, 7, 8, 5, 1, 1, 8, 8, 1, 1, 8, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.36602712+0.j 0.20524265+0.j 0.12378581+0.j 0.06650029+0.j
 0.03777444+0.j 0.10033484+0.j 0.10033484+0.j]
Consistency Ratio (0.3506652461776407+0j)
Bad consistency Ratio

Participant #13
preprocessed answers: [1, 4, 5, 5, 9999, 9999, 5, 5, 5, 9999, 9999, 1, 5, 9999, 9999,
5, 9999, 9999, 9999, 9999, 9999]
processed answers: [1, 4, 5, 5, 1, 1, 5, 5, 5, 1, 1, 1, 5, 1, 1, 5, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.23973329+0.j 0.25254485+0.j 0.1035397 +0.j 0.10205652+0.j
 0.05465415+0.j 0.12373575+0.j 0.12373575+0.j]
Consistency Ratio (0.12786507238163336+0j)
Bad consistency Ratio

Participant #14
preprocessed answers: [5, 4, 2, 4, 9999, 9999, 5, 4, 5, 9999, 9999, 5, 5, 9999, 9999,
2, 9999, 9999, 9999, 9999, 9999]
processed answers: [5, 4, 2, 4, 1, 1, 5, 4, 5, 1, 1, 5, 5, 1, 1, 2, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.29138198+0.j 0.20680642+0.j 0.13458887+0.j 0.07621255+0.j
 0.0553974 +0.j 0.11780639+0.j 0.11780639+0.j]
Consistency Ratio (0.17594607669140958+0j)
Bad consistency Ratio

Participant #15
preprocessed answers: [3, 9, 9, 9, 9999, 9999, 9, 9, 3, 9999, 9999, 1, 7, 9999, 9999,
9, 9999, 9999, 9999, 9999, 9999]
processed answers: [3, 9, 9, 9, 1, 1, 9, 9, 3, 1, 1, 1, 7, 1, 1, 9, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.33854077+0.j 0.23644216+0.j 0.07961829+0.j 0.08868502+0.j
 0.04228273+0.j 0.10721551+0.j 0.10721551+0.j]
Consistency Ratio (0.2750600960760858+0j)
Bad consistency Ratio
```

```
Participant #16
preprocessed answers: [9, 5, 7, 5, 3, 9999, 9, 5, 7, 7, 9999, 7, 9, 5, 9999, 3, 9999,
9999, 9999, 9999, 9999]
processed answers: [9, 5, 7, 5, 3, 1, 9, 5, 7, 7, 1, 7, 9, 5, 1, 3, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.40923345-0.j 0.23895655-0.j 0.12374366-0.j 0.04418603-0.j
 0.03446675-0.j 0.04444134-0.j 0.10497222-0.j]
Consistency Ratio (0.2986205673190672+0j)
Bad consistency Ratio

Participant #17
preprocessed answers: [3, 5, 7, 5, 3, 9999, 5, 5, 1, 9999, 9999, 1, 3, 9999, 9999, 3,
9999, 9999, 9999, 9999, 9999]
processed answers: [3, 5, 7, 5, 3, 1, 5, 5, 1, 1, 1, 1, 3, 1, 1, 3, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.34156408+0.j 0.18448747+0.j 0.09055618+0.j 0.08813474+0.j
 0.07538296+0.j 0.0958122 +0.j 0.12406237+0.j]
Consistency Ratio (0.1253501267282823+0j)
Bad consistency Ratio

Participant #18
preprocessed answers: [6, 6, 7, 4, 9999, 9999, 6, 8, 1, 9999, 9999, 5, 6, 9999, 9999,
8, 9999, 9999, 9999, 9999, 9999]
processed answers: [6, 6, 7, 4, 1, 1, 6, 8, 1, 1, 1, 5, 6, 1, 1, 8, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.33382437+0.j 0.19667289+0.j 0.12146836+0.j 0.08658385+0.j
 0.05819644+0.j 0.10162704+0.j 0.10162704+0.j]
Consistency Ratio (0.3356856551558673+0j)
Bad consistency Ratio

Participant #19
preprocessed answers: [8, 1, 1, 9, 8, 9999, 1, 1, 1, 9999, 9999, 1, 1, 9999, 9999, 1,
9999, 9999, 9999, 9999, 9999]
processed answers: [8, 1, 1, 9, 8, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.36418655-0.j 0.08597087-0.j 0.1261797 -0.j 0.1261797 -0.j
 0.08533263-0.j 0.08597087-0.j 0.1261797 -0.j]
Consistency Ratio (0.1093623336852867+0j)
Bad consistency Ratio

Participant #20
preprocessed answers: [3, 8, 8, 4, 3, 3, 6, 8, 2, 9999, 9999, 4, 3, 9999, 9999, 7,
9999, 9999, 9999, 9999, 9999]
processed answers: [3, 8, 8, 4, 3, 3, 6, 8, 2, 1, 1, 4, 3, 1, 1, 7, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.37127679+0.j 0.21774371+0.j 0.09856846+0.j 0.08483939+0.j
 0.05452867+0.j 0.0865215 +0.j 0.0865215 +0.j]
Consistency Ratio (0.20059741448850538+0j)
Bad consistency Ratio

Participant #21
preprocessed answers: [7, 8, 1, 1, 9999, 9999, 1, 8, 8, 9999, 9999, 8, 8, 9999, 9999,
1, 9999, 9999, 9999, 9999, 9999]
processed answers: [7, 8, 1, 1, 1, 1, 1, 8, 8, 1, 1, 8, 8, 1, 1, 1, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.3202566 +0.j 0.17029171+0.j 0.16972112+0.j 0.0700906 +0.j
 0.0700906 +0.j 0.09977469+0.j 0.09977469+0.j]
Consistency Ratio (0.35727921877423674+0j)
Bad consistency Ratio

Participant #22
preprocessed answers: [8, 5, 7, 3, 9999, 9999, 7, 7, 4, 9999, 9999, 5, 7, 9999, 9999,
5, 9999, 9999, 9999, 9999, 9999]
processed answers: [8, 5, 7, 3, 1, 1, 7, 7, 4, 1, 1, 5, 7, 1, 1, 5, 1, 1, 1, 1, 1]
```

```
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.35622392+0.j 0.20287485+0.j 0.11557848+0.j 0.06568883+0.j
 0.04844151+0.j 0.1055962 +0.j 0.1055962 +0.j]
Consistency Ratio (0.29196661440496186+0j)
Bad consistency Ratio

Participant #23
preprocessed answers: [1, 5, 5, 8, 9999, 9999, 6, 6, 6, 9999, 9999, 6, 1, 9999, 9999,
5, 9999, 9999, 9999, 9999, 9999]
processed answers: [1, 5, 5, 8, 1, 1, 6, 6, 6, 1, 1, 6, 1, 1, 1, 5, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.25271641-0.j 0.26225312-0.j 0.11448949-0.j 0.08231592-0.j
 0.05713441-0.j 0.11554533-0.j 0.11554533-0.j]
Consistency Ratio (0.19558064197065733+0j)
Bad consistency Ratio

Participant #24
preprocessed answers: [1, 1, 7, 8, 9999, 9999, 8, 7, 8, 9999, 9999, 7, 9, 9999, 9999,
1, 9999, 9999, 9999, 9999, 9999]
processed answers: [1, 1, 7, 8, 1, 1, 8, 7, 8, 1, 1, 7, 9, 1, 1, 1, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.18890513+0.j 0.32035743+0.j 0.16191597+0.j 0.04925688+0.j
 0.04760601+0.j 0.11597929+0.j 0.11597929+0.j]
Consistency Ratio (0.1917528650892589+0j)
Bad consistency Ratio

Participant #25
preprocessed answers: [7, 4, 4, 5, 9999, 9999, 6, 6, 6, 9999, 9999, 6, 6, 9999, 9999,
6, 9999, 9999, 9999, 9999, 9999]
processed answers: [7, 4, 4, 5, 1, 1, 6, 6, 6, 1, 1, 6, 6, 1, 1, 6, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.32925655-0.j 0.21008079-0.j 0.12635352-0.j 0.07450297-0.j
 0.04277174-0.j 0.10851722-0.j 0.10851722-0.j]
Consistency Ratio (0.26183540863113647+0j)
Bad consistency Ratio

Participant #26
preprocessed answers: [1, 7, 8, 8, 9999, 9999, 7, 7, 7, 9999, 9999, 7, 7, 9999, 9999,
8, 9999, 9999, 9999, 9999, 9999]
processed answers: [1, 7, 8, 8, 1, 1, 7, 7, 7, 1, 1, 7, 7, 1, 1, 8, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.27691288+0.j 0.26481133+0.j 0.13037639+0.j 0.07401774+0.j
 0.03819795+0.j 0.10784185+0.j 0.10784185+0.j]
Consistency Ratio (0.26865693942881574+0j)
Bad consistency Ratio

Participant #27
preprocessed answers: [1, 1, 2, 2, 3, 3, 1, 2, 1, 3, 3, 1, 2, 2, 2, 2, 1, 1, 1, 1, 1]
processed answers: [1, 1, 2, 2, 3, 3, 1, 2, 1, 3, 3, 1, 2, 2, 2, 2, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.21826946+0.j 0.20405068+0.j 0.17696599+0.j 0.12351914+0.j
 0.10261946+0.j 0.08728764+0.j 0.08728764+0.j]
Consistency Ratio (0.025670938697750 96+0j)


Participant #28
preprocessed answers: [7, 9, 7, 9, 9999, 9999, 9, 7, 9, 9999, 9999, 7, 1, 9999, 9999,
7, 9999, 9999, 9999, 9999, 9999]
processed answers: [7, 9, 7, 9, 1, 1, 9, 7, 9, 1, 1, 7, 1, 1, 1, 7, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.38180867+0.j 0.21628529+0.j 0.08892418+0.j 0.0674376 +0.j
 0.0418202 +0.j 0.10186203+0.j 0.10186203+0.j]
Consistency Ratio (0.33300245247002935+0j)
Bad consistency Ratio
```

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Participant #29
preprocessed answers: [9, 9, 9, 9, 9999, 9999, 9, 9, 4, 9999, 9999, 1, 1, 9999, 9999,
1, 9999, 9999, 9999, 9999, 9999]
processed answers: [9, 9, 9, 9, 1, 1, 9, 9, 4, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.42805705-0.j 0.18459462-0.j 0.05200815-0.j 0.05200815-0.j
 0.05493598-0.j 0.11419803-0.j 0.11419803-0.j]
Consistency Ratio (0.20764996279495143+0j)
Bad consistency Ratio

Participant #30
preprocessed answers: [5, 1, 1, 3, 9999, 9999, 3, 1, 1, 9999, 9999, 7, 1, 9999, 9999,
1, 9999, 9999, 9999, 9999, 9999]
processed answers: [5, 1, 1, 3, 1, 1, 3, 1, 1, 1, 1, 7, 1, 1, 1, 1, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.21844506-0.j 0.14577773-0.j 0.18513975-0.j 0.1025861 -0.j
 0.10417873-0.j 0.12193632-0.j 0.12193632-0.j]
Consistency Ratio (0.14196241102515042+0j)
Bad consistency Ratio

Participant #31
preprocessed answers: [8, 6, 9, 2, 9, 9999, 2, 8, 1, 9, 9999, 8, 4, 8, 9999, 8, 1,
9999, 9, 9999, 9999]
processed answers: [8, 6, 9, 2, 9, 1, 2, 8, 1, 9, 1, 8, 4, 8, 1, 8, 1, 1, 9, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.38082491-0.j 0.16218725-0.j 0.16093162-0.j 0.09038446-0.j
 0.08074109-0.j 0.02917909-0.j 0.09575157-0.j]
Consistency Ratio (0.4070559089506232+0j)
Bad consistency Ratio

Participant #32
preprocessed answers: [5, 8, 7, 3, 9999, 9999, 9999, 7, 3, 9999, 9999, 7, 7, 9999,
9999, 7, 9999, 9999, 9999, 9999, 9999]
processed answers: [5, 8, 7, 3, 1, 1, 1, 7, 3, 1, 1, 7, 7, 1, 1, 7, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.35283105+0.j 0.14063793+0.j 0.15955791+0.j 0.08029527+0.j
 0.0503443 +0.j 0.10816677+0.j 0.10816677+0.j]
Consistency Ratio (0.2653644991616853+0j)
Bad consistency Ratio

Participant #33
preprocessed answers: [6, 8, 8, 5, 9999, 9999, 6, 8, 2, 9999, 9999, 1, 5, 9999, 9999,
8, 9999, 9999, 9999, 9999, 9999]
processed answers: [6, 8, 8, 5, 1, 1, 6, 8, 2, 1, 1, 1, 5, 1, 1, 8, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.36636341+0.j 0.19437281+0.j 0.07807753+0.j 0.09363963+0.j
 0.05049897+0.j 0.10852382+0.j 0.10852382+0.j]
Consistency Ratio (0.2617691044630684+0j)
Bad consistency Ratio

Participant #34
preprocessed answers: [8, 8, 6, 6, 9999, 9999, 8, 1, 1, 9999, 9999, 8, 8, 9999, 9999,
1, 9999, 9999, 9999, 9999, 9999]
processed answers: [8, 8, 6, 6, 1, 1, 8, 1, 1, 1, 1, 8, 8, 1, 1, 1, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.37758846-0.j 0.16597427-0.j 0.1363529 -0.j 0.05784634-0.j
 0.05784634-0.j 0.10219584-0.j 0.10219584-0.j]
Consistency Ratio (0.32921201557006907+0j)
Bad consistency Ratio

Participant #35
preprocessed answers: [6, 9, 8, 1, 9999, 9999, 9, 8, 7, 9999, 9999, 9, 9, 9999, 9999,
8, 9999, 9999, 9999, 9999, 9999]
processed answers: [6, 9, 8, 1, 1, 1, 9, 8, 7, 1, 1, 9, 9, 1, 1, 8, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
```

```
[0.33114905-0.j 0.23253007-0.j 0.13337775-0.j 0.0692028 -0.j
 0.05542   -0.j 0.08916016-0.j 0.08916016-0.j]
Consistency Ratio (0.4983181078903518+0j)
Bad consistency Ratio

Participant #36
preprocessed answers: [6, 6, 9, 9, 9999, 9999, 4, 5, 9, 9999, 9999, 9, 9, 9999, 9999,
5, 9999, 9999, 9999, 9999, 9999]
processed answers: [6, 6, 9, 9, 1, 1, 4, 5, 9, 1, 1, 9, 9, 1, 1, 5, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.36515273-0.j 0.17902983-0.j 0.14371041-0.j 0.05951818-0.j
 0.03678625-0.j 0.1079013 -0.j 0.1079013 -0.j]
Consistency Ratio (0.2680530959956369+0j)
Bad consistency Ratio

Participant #37
preprocessed answers: [5, 9, 9, 8, 9999, 9999, 9, 9, 1, 9999, 9999, 9, 9, 9999, 9999,
9, 9999, 9999, 9999, 9999, 9999]
processed answers: [5, 9, 9, 8, 1, 1, 9, 9, 1, 1, 1, 9, 9, 1, 1, 9, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.35105326+0.j 0.21526314+0.j 0.13217058+0.j 0.06983859+0.j
 0.04731308+0.j 0.09218067+0.j 0.09218067+0.j]
Consistency Ratio (0.45487724071409136+0j)
Bad consistency Ratio

Participant #38
preprocessed answers: [8, 8, 8, 7, 9, 5, 8, 7, 8, 8, 7, 7, 9, 9, 9, 8, 8, 8, 7, 9,
9999]
processed answers: [8, 8, 8, 7, 9, 5, 8, 7, 8, 8, 7, 7, 9, 9, 9, 8, 8, 8, 7, 9, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.45896302+0.j 0.2487227 +0.j 0.14058034+0.j 0.07692398+0.j
 0.04201161+0.j 0.01425727+0.j 0.01854108+0.j]
Consistency Ratio (0.3840346264354276+0j)
Bad consistency Ratio
```

ahpv2.py:

```
Participant #1
preprocessed answers: [6, 7, 6, 6, 1, 9999, 6, 1, 5, 5, 9999, 6, 6, 1, 9999, 5, 5,
9999, 6, 9999, 9999]
processed answers: [6, 7, 6, 6, 1, 1, 6, 1, 5, 5, 1, 6, 6, 1, 1, 5, 5, 1, 6, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.34287177 0.18351592 0.1358151  0.10824296 0.0670143  0.06752888
 0.09501106]
Inconsistency index of the criteria:  0.44508722447416194
The pairwise comparison matrix of the criteria is inconsistent

Participant #2
preprocessed answers: [3, 4, 4, 7, 9999, 9999, 4, 4, 7, 9999, 9999, 6, 5, 9999, 9999,
5, 9999, 9999, 9999, 9999, 9999]
processed answers: [3, 4, 4, 7, 1, 1, 4, 4, 7, 1, 1, 6, 5, 1, 1, 5, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.280679   0.20931506 0.14512969 0.08236434 0.04688993 0.11781099
 0.11781099]
Inconsistency index of the criteria:  0.18790060372668232
The pairwise comparison matrix of the criteria is inconsistent

Participant #3
preprocessed answers: [7, 7, 7, 1, 9999, 9999, 7, 7, 7, 9999, 9999, 7, 7, 9999, 9999,
7, 9999, 9999, 9999, 9999, 9999]
processed answers: [7, 7, 7, 1, 1, 1, 7, 7, 7, 1, 1, 7, 7, 1, 1, 7, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.33203042 0.21657905 0.12691355 0.0743703  0.0607633  0.09467169
 0.09467169]
```

```
Inconsistency index of the criteria:  0.44985096578488204
The pairwise comparison matrix of the criteria is inconsistent

Participant #4
preprocessed answers: [6, 8, 9, 5, 9999, 9999, 8, 8, 8, 9999, 9999, 8, 1, 9999, 9999,
8, 9999, 9999, 9999, 9999, 9999]
processed answers: [6, 8, 9, 5, 1, 1, 8, 8, 8, 1, 1, 8, 1, 1, 1, 8, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.35860157 0.22316256 0.0998692  0.07204895 0.04563591 0.1003409
 0.1003409 ]
Inconsistency index of the criteria:  0.3744981748813754
The pairwise comparison matrix of the criteria is inconsistent

Participant #5
preprocessed answers: [9, 8, 9, 9, 8, 8, 8, 9, 9, 1, 1, 1, 9, 1, 1, 9, 9, 9, 8, 8, 1]
processed answers: [9, 8, 9, 9, 8, 8, 8, 9, 9, 1, 1, 1, 9, 1, 1, 9, 9, 9, 8, 8, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.441573   0.2197384  0.07656737 0.12520703 0.06256396 0.03717512
 0.03717512]
Inconsistency index of the criteria:  0.6363520577077331
The pairwise comparison matrix of the criteria is inconsistent

Participant #6
preprocessed answers: [6, 4, 6, 6, 9999, 9999, 8, 8, 6, 9999, 9999, 1, 6, 9999, 9999,
6, 9999, 9999, 9999, 9999, 9999]
processed answers: [6, 4, 6, 6, 1, 1, 8, 8, 6, 1, 1, 1, 6, 1, 1, 6, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.33707656 0.23234923 0.08428786 0.08116879 0.04303866 0.11103945
 0.11103945]
Inconsistency index of the criteria:  0.2532586632401019
The pairwise comparison matrix of the criteria is inconsistent

Participant #7
preprocessed answers: [5, 5, 5, 5, 9999, 9999, 5, 7, 5, 9999, 9999, 7, 5, 9999, 9999,
5, 9999, 9999, 9999, 9999, 9999]
processed answers: [5, 5, 5, 5, 1, 1, 5, 7, 5, 1, 1, 7, 5, 1, 1, 5, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.31668733 0.21047192 0.1325989  0.07107069 0.04628618 0.11144249
 0.11144249]
Inconsistency index of the criteria:  0.24914619688472106
The pairwise comparison matrix of the criteria is inconsistent

Participant #8
preprocessed answers: [3, 3, 2, 3, 9999, 9999, 3, 3, 3, 9999, 9999, 3, 3, 9999, 9999,
3, 9999, 9999, 9999, 9999, 9999]
processed answers: [3, 3, 2, 3, 1, 1, 3, 3, 3, 1, 1, 3, 3, 1, 1, 3, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.24375274 0.18781974 0.13656374 0.103453   0.07106317 0.1286738
 0.1286738 ]
Inconsistency index of the criteria:  0.097422964161547
The pairwise comparison matrix of the criteria is consistent

Participant #9
preprocessed answers: [9, 9, 5, 9, 9999, 9999, 9, 5, 5, 9999, 9999, 7, 8, 9999, 9999,
5, 9999, 9999, 9999, 9999, 9999]
processed answers: [9, 9, 5, 9, 1, 1, 9, 5, 5, 1, 1, 7, 8, 1, 1, 5, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.40055855 0.19275854 0.10910562 0.05842051 0.03540557 0.1018756
 0.1018756 ]
Inconsistency index of the criteria:  0.3555420505667465
The pairwise comparison matrix of the criteria is inconsistent

Participant #10
preprocessed answers: [8, 1, 3, 7, 3, 3, 5, 1, 7, 3, 3, 5, 6, 1, 5, 2, 1, 4, 4, 4, 5]
processed answers: [8, 1, 3, 7, 3, 3, 5, 1, 7, 3, 3, 5, 6, 1, 5, 2, 1, 4, 4, 4, 5]
```

```
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.35026161 0.2144806  0.17436728 0.0843481  0.06908822 0.07462732
 0.03282687]
Inconsistency index of the criteria:  0.30556770922763793
The pairwise comparison matrix of the criteria is inconsistent

Participant #11
preprocessed answers: [3, 5, 4, 6, 9999, 9999, 5, 4, 5, 9999, 9999, 5, 1, 9999, 9999,
4, 9999, 9999, 9999, 9999, 9999]
processed answers: [3, 5, 4, 6, 1, 1, 5, 4, 5, 1, 1, 5, 1, 1, 1, 4, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.29070755 0.21011531 0.11237544 0.0860181  0.06255217 0.11911571
 0.11911571]
Inconsistency index of the criteria:  0.1761613969954157
The pairwise comparison matrix of the criteria is inconsistent

Participant #12
preprocessed answers: [7, 8, 7, 5, 9999, 9999, 7, 8, 5, 9999, 9999, 8, 8, 9999, 9999,
8, 9999, 9999, 9999, 9999, 9999]
processed answers: [7, 8, 7, 5, 1, 1, 7, 8, 5, 1, 1, 8, 8, 1, 1, 8, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.36602712 0.20524265 0.12378581 0.06650029 0.03777444 0.10033484
 0.10033484]
Inconsistency index of the criteria:  0.3745742402352072
The pairwise comparison matrix of the criteria is inconsistent

Participant #13
preprocessed answers: [1, 4, 5, 5, 9999, 9999, 5, 5, 5, 9999, 9999, 1, 5, 9999, 9999,
5, 9999, 9999, 9999, 9999, 9999]
processed answers: [1, 4, 5, 5, 1, 1, 5, 5, 5, 1, 1, 1, 5, 1, 1, 5, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.23973329 0.25254485 0.1035397  0.10205652 0.05465415 0.12373575
 0.12373575]
Inconsistency index of the criteria:  0.1365831454985629
The pairwise comparison matrix of the criteria is inconsistent

Participant #14
preprocessed answers: [5, 4, 2, 4, 9999, 9999, 5, 4, 5, 9999, 9999, 5, 5, 9999, 9999,
2, 9999, 9999, 9999, 9999, 9999]
processed answers: [5, 4, 2, 4, 1, 1, 5, 4, 5, 1, 1, 5, 5, 1, 1, 2, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.29138198 0.20680642 0.13458887 0.07621255 0.0553974  0.11780639
 0.11780639]
Inconsistency index of the criteria:  0.1879424001021875
The pairwise comparison matrix of the criteria is inconsistent

Participant #15
preprocessed answers: [3, 9, 9, 9, 9999, 9999, 9, 9, 3, 9999, 9999, 1, 7, 9999, 9999,
9, 9999, 9999, 9999, 9999, 9999]
processed answers: [3, 9, 9, 9, 1, 1, 9, 9, 3, 1, 1, 1, 7, 1, 1, 9, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.33854077 0.23644216 0.07961829 0.08868502 0.04228273 0.10721551
 0.10721551]
Inconsistency index of the criteria:  0.2938141935358189
The pairwise comparison matrix of the criteria is inconsistent

Participant #16
preprocessed answers: [9, 5, 7, 5, 3, 9999, 9, 5, 7, 7, 9999, 7, 9, 5, 9999, 3, 9999,
9999, 9999, 9999, 9999]
processed answers: [9, 5, 7, 5, 3, 1, 9, 5, 7, 7, 1, 7, 9, 5, 1, 3, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.40923345 0.23895655 0.12374366 0.04418603 0.03446675 0.04444134
 0.10497222]
Inconsistency index of the criteria:  0.31898106054536723
The pairwise comparison matrix of the criteria is inconsistent
```

```
Participant #17
preprocessed answers: [3, 5, 7, 5, 3, 9999, 5, 5, 1, 9999, 9999, 1, 3, 9999, 9999, 3,
9999, 9999, 9999, 9999, 9999]
processed answers: [3, 5, 7, 5, 3, 1, 5, 5, 1, 1, 1, 1, 3, 1, 1, 3, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.34156408 0.18448747 0.09055618 0.08813474 0.07538296 0.0958122
 0.12406237]
Inconsistency index of the criteria:  0.13389672627793792
The pairwise comparison matrix of the criteria is inconsistent

Participant #18
preprocessed answers: [6, 6, 7, 4, 9999, 9999, 6, 8, 1, 9999, 9999, 5, 6, 9999, 9999,
8, 9999, 9999, 9999, 9999, 9999]
processed answers: [6, 6, 7, 4, 1, 1, 6, 8, 1, 1, 1, 5, 6, 1, 1, 8, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.33382437 0.19667289 0.12146836 0.08658385 0.05819644 0.10162704
 0.10162704]
Inconsistency index of the criteria:  0.35857331346194915
The pairwise comparison matrix of the criteria is inconsistent

Participant #19
preprocessed answers: [8, 1, 1, 9, 8, 9999, 1, 1, 1, 9999, 9999, 1, 1, 9999, 9999, 1,
9999, 9999, 9999, 9999, 9999]
processed answers: [8, 1, 1, 9, 8, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.36418655 0.08597087 0.1261797  0.1261797  0.08533263 0.08597087
 0.1261797 ]
Inconsistency index of the criteria:  0.11681885643655626
The pairwise comparison matrix of the criteria is inconsistent

Participant #20
preprocessed answers: [3, 8, 8, 4, 3, 3, 6, 8, 2, 9999, 9999, 4, 3, 9999, 9999, 7,
9999, 9999, 9999, 9999, 9999]
processed answers: [3, 8, 8, 4, 3, 3, 6, 8, 2, 1, 1, 4, 3, 1, 1, 7, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.37127679 0.21774371 0.09856846 0.08483939 0.05452867 0.0865215
 0.0865215 ]
Inconsistency index of the criteria:  0.21427451093090347
The pairwise comparison matrix of the criteria is inconsistent

Participant #21
preprocessed answers: [7, 8, 1, 1, 9999, 9999, 1, 8, 8, 9999, 9999, 8, 8, 9999, 9999,
1, 9999, 9999, 9999, 9999, 9999]
processed answers: [7, 8, 1, 1, 1, 1, 1, 8, 8, 1, 1, 8, 8, 1, 1, 1, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.3202566  0.17029171 0.16972112 0.0700906  0.0700906  0.09977469
 0.09977469]
Inconsistency index of the criteria:  0.38163916550884386
The pairwise comparison matrix of the criteria is inconsistent

Participant #22
preprocessed answers: [8, 5, 7, 3, 9999, 9999, 7, 7, 4, 9999, 9999, 5, 7, 9999, 9999,
5, 9999, 9999, 9999, 9999, 9999]
processed answers: [8, 5, 7, 3, 1, 1, 7, 7, 4, 1, 1, 5, 7, 1, 1, 5, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.35622392 0.20287485 0.11557848 0.06568883 0.04844151 0.1055962
 0.1055962 ]
Inconsistency index of the criteria:  0.3118734290234819
The pairwise comparison matrix of the criteria is inconsistent

Participant #23
preprocessed answers: [1, 5, 5, 8, 9999, 9999, 6, 6, 6, 9999, 9999, 6, 1, 9999, 9999,
5, 9999, 9999, 9999, 9999, 9999]
processed answers: [1, 5, 5, 8, 1, 1, 6, 6, 6, 1, 1, 6, 1, 1, 1, 5, 1, 1, 1, 1, 1]
```

```
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.25271641 0.26225312 0.11448949 0.08231592 0.05713441 0.11554533
 0.11554533]
Inconsistency index of the criteria:  0.20891568574138397
The pairwise comparison matrix of the criteria is inconsistent

Participant #24
preprocessed answers: [1, 1, 7, 8, 9999, 9999, 8, 7, 8, 9999, 9999, 7, 9, 9999, 9999,
1, 9999, 9999, 9999, 9999, 9999]
processed answers: [1, 1, 7, 8, 1, 1, 8, 7, 8, 1, 1, 7, 9, 1, 1, 1, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.18890513 0.32035743 0.16191597 0.04925688 0.04760601 0.11597929
 0.11597929]
Inconsistency index of the criteria:  0.20482692407261743
The pairwise comparison matrix of the criteria is inconsistent

Participant #25
preprocessed answers: [7, 4, 4, 5, 9999, 9999, 6, 6, 6, 9999, 9999, 6, 6, 9999, 9999,
6, 9999, 9999, 9999, 9999, 9999]
processed answers: [7, 4, 4, 5, 1, 1, 6, 6, 6, 1, 1, 6, 6, 1, 1, 6, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.32925655 0.21008079 0.12635352 0.07450297 0.04277174 0.10851722
 0.10851722]
Inconsistency index of the criteria:  0.27968782285598665
The pairwise comparison matrix of the criteria is inconsistent

Participant #26
preprocessed answers: [1, 7, 8, 8, 9999, 9999, 7, 7, 7, 9999, 9999, 7, 7, 9999, 9999,
8, 9999, 9999, 9999, 9999, 9999]
processed answers: [1, 7, 8, 8, 1, 1, 7, 7, 7, 1, 1, 7, 7, 1, 1, 8, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.27691288 0.26481133 0.13037639 0.07401774 0.03819795 0.10784185
 0.10784185]
Inconsistency index of the criteria:  0.286974458026235
The pairwise comparison matrix of the criteria is inconsistent

Participant #27
preprocessed answers: [1, 1, 2, 2, 3, 3, 1, 2, 1, 3, 3, 1, 2, 2, 2, 2, 1, 1, 1, 1, 1]
processed answers: [1, 1, 2, 2, 3, 3, 1, 2, 1, 3, 3, 1, 2, 2, 2, 2, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.21826946 0.20405068 0.17696599 0.12351914 0.10261946 0.08728764
 0.08728764]
Inconsistency index of the criteria:  0.02742122997259762
The pairwise comparison matrix of the criteria is consistent

Participant #28
preprocessed answers: [7, 9, 7, 9, 9999, 9999, 9, 7, 9, 9999, 9999, 7, 1, 9999, 9999,
7, 9999, 9999, 9999, 9999, 9999]
processed answers: [7, 9, 7, 9, 1, 1, 9, 7, 9, 1, 1, 7, 1, 1, 1, 7, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.38180867 0.21628529 0.08892418 0.0674376  0.0418202  0.10186203
 0.10186203]
Inconsistency index of the criteria:  0.3557071651384405
The pairwise comparison matrix of the criteria is inconsistent

Participant #29
preprocessed answers: [9, 9, 9, 9, 9999, 9999, 9, 9, 4, 9999, 9999, 1, 1, 9999, 9999,
1, 9999, 9999, 9999, 9999, 9999]
processed answers: [9, 9, 9, 9, 1, 1, 9, 9, 4, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.42805705 0.18459462 0.05200815 0.05200815 0.05493598 0.11419803
 0.11419803]
Inconsistency index of the criteria:  0.2218079148036981
The pairwise comparison matrix of the criteria is inconsistent
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Participant #30
preprocessed answers: [5, 1, 1, 3, 9999, 9999, 3, 1, 1, 9999, 9999, 7, 1, 9999, 9999,
1, 9999, 9999, 9999, 9999, 9999]
processed answers: [5, 1, 1, 3, 1, 1, 3, 1, 1, 1, 1, 7, 1, 1, 1, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.21844506 0.14577773 0.18513975 0.1025861  0.10417873 0.12193632
 0.12193632]
Inconsistency index of the criteria:  0.15164166632231976
The pairwise comparison matrix of the criteria is inconsistent

Participant #31
preprocessed answers: [8, 6, 9, 2, 9, 9999, 2, 8, 1, 9, 9999, 8, 4, 8, 9999, 8, 1,
9999, 9, 9999, 9999]
processed answers: [8, 6, 9, 2, 9, 1, 2, 8, 1, 9, 1, 8, 4, 8, 1, 8, 1, 1, 9, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.38082491 0.16218725 0.16093162 0.09038446 0.08074109 0.02917909
 0.09575157]
Inconsistency index of the criteria:  0.43480972092452935
The pairwise comparison matrix of the criteria is inconsistent

Participant #32
preprocessed answers: [5, 8, 7, 3, 9999, 9999, 9999, 7, 3, 9999, 9999, 7, 7, 9999,
9999, 7, 9999, 9999, 9999, 9999, 9999]
processed answers: [5, 8, 7, 3, 1, 1, 1, 7, 3, 1, 1, 7, 7, 1, 1, 7, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.35283105 0.14063793 0.15955791 0.08029527 0.0503443  0.10816677
 0.10816677]
Inconsistency index of the criteria:  0.2834575331954366
The pairwise comparison matrix of the criteria is inconsistent

Participant #33
preprocessed answers: [6, 8, 8, 5, 9999, 9999, 6, 8, 2, 9999, 9999, 1, 5, 9999, 9999,
8, 9999, 9999, 9999, 9999, 9999]
processed answers: [6, 8, 8, 5, 1, 1, 6, 8, 2, 1, 1, 1, 5, 1, 1, 8, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.36636341 0.19437281 0.07807753 0.09363963 0.05049897 0.10852382
 0.10852382]
Inconsistency index of the criteria:  0.27961699794918676
The pairwise comparison matrix of the criteria is inconsistent

Participant #34
preprocessed answers: [8, 8, 6, 6, 9999, 9999, 8, 1, 1, 9999, 9999, 8, 8, 9999, 9999,
1, 9999, 9999, 9999, 9999, 9999]
processed answers: [8, 8, 6, 6, 1, 1, 8, 1, 1, 1, 1, 8, 8, 1, 1, 1, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.37758846 0.16597427 0.1363529  0.05784634 0.05784634 0.10219584
 0.10219584]
Inconsistency index of the criteria:  0.3516582893589374
The pairwise comparison matrix of the criteria is inconsistent

Participant #35
preprocessed answers: [6, 9, 8, 1, 9999, 9999, 9, 8, 7, 9999, 9999, 9, 9, 9999, 9999,
8, 9999, 9999, 9999, 9999, 9999]
processed answers: [6, 9, 8, 1, 1, 1, 9, 8, 7, 1, 1, 9, 9, 1, 1, 8, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.33114905 0.23253007 0.13337775 0.0692028  0.05542    0.08916016
 0.08916016]
Inconsistency index of the criteria:  0.5322943425192393
The pairwise comparison matrix of the criteria is inconsistent

Participant #36
preprocessed answers: [6, 6, 9, 9, 9999, 9999, 4, 5, 9, 9999, 9999, 9, 9, 9999, 9999,
5, 9999, 9999, 9999, 9999, 9999]
processed answers: [6, 6, 9, 9, 1, 1, 4, 5, 9, 1, 1, 9, 9, 1, 1, 5, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
```

```
[0.36515273 0.17902983 0.14371041 0.05951818 0.03678625 0.1079013
 0.1079013 ]
Inconsistency index of the criteria:  0.28632944344988487
The pairwise comparison matrix of the criteria is inconsistent

Participant #37
preprocessed answers: [5, 9, 9, 8, 9999, 9999, 9, 9, 1, 9999, 9999, 9, 9, 9999, 9999,
9, 9999, 9999, 9999, 9999, 9999]
processed answers: [5, 9, 9, 8, 1, 1, 9, 9, 1, 1, 1, 9, 9, 1, 1, 9, 1, 1, 1, 1, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.35105326 0.21526314 0.13217058 0.06983859 0.04731308 0.09218067
 0.09218067]
Inconsistency index of the criteria:  0.48589159803550663
The pairwise comparison matrix of the criteria is inconsistent

Participant #38
preprocessed answers: [8, 8, 8, 7, 9, 5, 8, 7, 8, 8, 7, 7, 9, 9, 9, 8, 8, 8, 7, 9,
9999]
processed answers: [8, 8, 8, 7, 9, 5, 8, 7, 8, 8, 7, 7, 9, 9, 9, 8, 8, 8, 7, 9, 1]
Priority vertex (weights of criterias) from criteria 1 to 7 :
[0.45896302 0.2487227  0.14058034 0.07692398 0.04201161 0.01425727
 0.01854108]
Inconsistency index of the criteria:  0.41021880551057033
The pairwise comparison matrix of the criteria is inconsistent
```

Discussion: Overall, same as before, the consistency index found using the manual's method (ahpv2.py) is not much different from mine (ahp.py). They have minimal differences at the third decimal number. Sometimes one will be higher than the other, but not by an alarming amount.

Conclusion

Both employ a similar method of calculating the consistency ratio, such that they output similar numbers. Also, both output the same priority vector for the criterias. Based on other sources, the more popular method of calculating the consistency ratio is the one used in ahpv2.py, or otherwise known as the one the manual presents.

Disclaimer: For some participants, I was unable to calculate their consistency ratios due to an irregular amount of 9999 values. As well, for some abnormally high consistency ratios, it is also most likely due to an irregular amount of 9999 values. UPDATE: Missing values and abnormally high consistency ratios has been fixed with the new method of taking care of the 9999 value.