Statistical modelling of factor analysis to set causals of hybrid learning success during Covid-19 lockdown

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Abstract. Around the world, Covid-19 outbreak caused a sudden and forced migration from face-to-face education to online education generating an unprecedented phenomenon in the history of education. In Mexico, the most affected Education level was Basic Public Education, the least unprepared while Private Higher Education has experienced by years alternative models using technology. Despite, around the world, new findings arose evidencing that students could require emotional support under the confinement due to the extended lockdown and an intense effort to follow their new educative plans revealing behavioral issues as success factors of that extended online education in the emergent strategy. Based on a statistical model of exploratory factor analysis of data applied to Freshman and Sophomore engineering students, this work presents a roadmap of statistical modelling and testing for the analysis of several dimensions of more effective causal in the success of the forced online education paradigm implementation. Obtaining a Cronbach α value of 0.817, it points to meaningful internal reliability to discriminate and rearrange those causal and dimensions into a more comprehensive education ecosystem.

1. Introduction
In the last two decades, online education has been widely used in Higher Education. Successful cases have been reported, ranging from teaching a single course [1], to teaching undergraduate [2] and graduate [3] complete programs. It is well-known that online courses connect elements of social networking, content from experts, and an extended amount of online resources [4]. Several works have been recently published reporting different social aspects related to online learning environments, which include sense of community [5], social anxiety [6], learners satisfaction [7], social networking [8] and continuance usage intention [9]. However, in the above-mentioned cases, online education has been used in an absolutely controlled environment by employing teaching materials specifically designed to be used under this paradigm.

The Covid-19 outbreak has caused around the world that education at all levels -specifically higher education forcibly migrates from a face-to-face environment to an online environment. Several studies have been published addressing experiences of such a massive migration in terms of teachers adaptation [10] and training [11], global organizational agility [12], instructional strategies [13], management policy [14], etc. Unlike access to technologies and expertise have generated differences in the experience among the diverse student’ and teacher’ populations.
Then, a still non-measurable impact on Education by country, level, gender, and socioeconomic level will be advised in the next years.

Based on an exploratory factor analysis of data statistical model from 145 survey respondents, this work to test several dimensions around the forced online education paradigm implementation during the Covid-19 pandemic as success factors. Participants were Freshman and Sophomore engineering students of a Private University in Mexico experiencing a forced migration from face-to-face education to online education due to the Covid-19 outbreak. Section 2 states briefly some literature review and context. Section 3 states the method, data collection, and analysis. Section 4. Section 5 is devoted to the discussion. Finally, we set our conclusions in the last section.

2. Educative context before and during the Covid-19 outbreak

Despite, the institutional knowledge in our university supported efficiently the fast transition to Education under the Covid-19 confinement. Zoom video conference system was adopted by our institution as the central tool to deliver the courses at distance maintaining contact between teacher and students. Such videoconference system had inspired a kind of courses under the Fit model [15] with around 10% of students involved in at least one class. Despite this, the experience of large period video classes for the entire semester carried out other challenges for teachers and students, anyone was completely prepared for that.

Educative systems around the world were never under such pressure as that generated by Covid-19 crisis. Form the students’ perspective not only the teamwork competence has been reoriented to the online context. As an instance, most of the experimental work lets to acquire competencies. They had to be redesigned to be performed on software simulators, virtual reality experiments, and remote laboratory environments. It is clear that all disciplinary competencies recommended by the Accreditation Board for Engineering and Technology (ABET) has been also undermined [16].

Commonly, schools show off among other issues about their extra-academical services offered, their setting-up, quality and capacity of their faculty, skills, and values being developed in their students among others. Thus, the current study was conceived with the pretension to set metrics or references letting to compare and to expose such factors through the student perception in the area of mechanical and mechatronics engineering. Pandemics, which has forced the transition from the face-to-face approach into online education (either mobile, blended, distance), has provided the ideal opportunity to evaluate statistically the educative model.

3. Data collection and methodology

The research was conducted at the Department of Mechanical Engineering from Tecnologico de Monterrey, Estado de Mexico campus. At the time of data collection, the student population was 480 students in their Freshman and Sophomore stages. They volunteered to answer an open call for participation in the current analysis project. The analysis was centered on the time period beginning with the lockdown and finishing with the end of that online education cycle from March to June 2020. It pursued to delimit the new conditions of the learning of students. By supposing certain circumstances being living by the students, several research questions were addressed. A random but meaningful sample of students from the programs participated in the analysis through an opinion survey using a Likert scale together with performance grades in several courses. 145 responses from the 480 students were received, conforming the entire population of those academic programs.

The objective of this research is to determine the extended factors facilitating or affecting the transition to virtual classes. They are not limited to the technology of training, instead also emotional. Different aspects were explored, namely: the influence of the environment when
attending classes from home (influence of the family, availability of resources, food), the socio-emotional aspects of the student (resilience and ability to adapt), the use of technology (student skills related to information technologies linked to learning and socialization activities), and finally, the Teacher’s disposition and capacity to face an unprecedented alteration never seen before (institutional and personal training, availability of resources, motivation). Those factors are not trivial and still probably insufficient to address a complete analysis of the context. Despite this, we set such criteria to give an exploratory insight into their meaningfulness in the learning impact. This work could be helpful to determine the types of services to be offered to college students in a continuous base, and the extent to which some kind of services should a University be prepared to offer in case of emergencies forcing a migration of the teaching paradigm.

We have considered as departure the competencies declared by our institution as key elements for academic continuity during the Covid-19 pandemics. Nevertheless, by themselves cannot become exclusive in the success. The availability and usage of technology is also a distinctive element. Then, we are considering the new context experienced by students and teachers: home services, motivation, emotionality, family support, etc.

Such maproad was adopted due to those elements are part of the cultural basements in the academic community and the services being supposed in an urban community in general. The survey consisted of twenty indicators and four latent factors measured on a five-point Likert scale used to measure four factors with five items each. The original factors considered are depicted in Figure 1a.

Table 1, shows the dimensions and the items of the instrument used to identify and to measure factors related to forced migration from face-to-face education to online education for the engineering students.

Following the methodology reported in [17] and [18] the results of the study are meaningful for our sample size. Data statistics open software jamovi (version 1.2) [19] was used to process the data under the factor analysis of data application. Collected data were analyzed first to establish the internal consistency of our survey. Next, an Exploratory Factor Analysis (EFA) was conducted to identify and measure factors in our study.

The factor analysis reduces the responses presenting the highest correlation in homogeneous groups. Initial factors are supposed independent of each other, pursuing a statistically 50% of the accumulated variance becoming concentrated in the least amount of factors facilitating the
Table 1. Latent items used to identify key factors in forced migration to online education

| Factors          | Item | Statement                                                                                     |
|------------------|------|-----------------------------------------------------------------------------------------------|
| Technological    | T1   | I consider that my technological skills were key to attend the online classes                  |
|                  | T2   | I frequently participated in social media groups with the intention of improving my academic   |
|                  |      | performance                                                                                    |
|                  | T3   | I had at my disposal the technological tools required to guarantee interaction in my courses   |
|                  | T4   | I had access to the required software for my courses                                           |
|                  | T5   | My computer equipment supported well both the required software and remote communications from |
|                  |      | my home                                                                                       |
| Social-emotional | S1   | I consider my emotional state influenced my academic performance when attending online        |
|                  |      | classes                                                                                       |
|                  | S2   | I attended online classes with the same interest/excitement as face-to-face classes            |
|                  | S3   | I felt the need to seek help or emotional support derived from the quarantine                 |
|                  | S4   | I considered at some point to drop the semester and wait for the return to                    |
|                  | S5   | I would like to normal attend online classes again                                              |
| Home-environment | E1   | I felt pushed by my parents to attend online classes                                           |
|                  | E2   | During the online class period, my diet improved                                               |
|                  | E3   | The quality of technological services (internet, electricity, etc.) was adequate to attend      |
|                  |      | online classes                                                                                 |
|                  | E4   | People around me understood the new workload I had and respected my space and my time          |
|                  | E5   | I consider the place where I took the courses was suitable for my online learning experience   |
| Academic         | A1   | I consider that my teachers have had enough skill/training to teach an online class            |
|                  | A2   | Throughout online classes, the teacher advisory frequency increased as compared to the         |
|                  |      | face-to-face period                                                                            |
|                  | A3   | I consider that my teachers’ mood was positive throughout online classes                      |
|                  | A4   | I consider the course objective initially proposed, was fully achieved                         |
|                  | A5   | The number of activities/assignments increased through the online class period                 |

Explaination of questions posed or otherwise redefining how you want to know the behavior of the population or sample under study. The statistical details of such analysis is reported in the Appendices 5 and 5. Thus, the outcomes obtained were first validated. Reliability analysis was performed with two statistical techniques using Cronbach’s $\alpha$ and McDonald’s $\omega$ [20]. In both, it is desirable to obtain values greater than 0.8, then the internal stability of the data is ensured considering any bias due to the number of responses. Correlation analysis should then conducted on the identified factors. A roadmap of statistical tests and indicators are synthetically illustrated in Figure 1b, summarizing our further analysis.

4. Analysis and discussion
In the current section, a development to reach a satisfactory explanatory ecosystem is performed through the statistical modelling and analysis, then discussing the closest meaning of the arising factors.

4.1. Exploratory Factor Analysis development
The internal consistency of the survey is shown in Table A2, it was measured at $\alpha = 0.705$ and $\omega = 0.774$. According to the item reliability statistics shown in Table A1, where items E1, S4, and S3 correlate negatively with the total scale. Moreover, item A5 correlates with the total scale with a correlation equal to 0.0292 which is the lower item-correlation value. When reviewing items E1, S4, and S3, it is noticed that a negative correlation is due to the question-wording. Therefore, we adjust the values of the survey responses by considering an inverted item wording. To complete an adjusted construct, we remove A5 by following criteria to increase $\alpha$ and $\omega$ [21]. Reliability analysis results for both, original and adjusted constructs are shown in Table A2. Item reliability statistics are also shown for both constructs in Table A1. In addition, both statistics let to improve the reliability of the data by removing items that could distort the desired measurement.
With the last outcomes obtained, the factors originally proposed and those obtained theoretically are compared. It is common to find disparities in these results with a single sample, but it is enough to develop a statistical discussion allowing the explanation of the variance accumulated by the selected factors as well as identifying which of them have the highest correlation. In this last point, it is the author’s decision whether to regroup items to explain the phenomenon or to re-apply the survey in order to confirm the overall outcomes. Below, we develop such statistical analysis departing from the raw data obtained from the survey.

Exceeding the reliability of data, it is verified whether it is possible to declare the variables as factors through the Kaiser-Meyer-Olkin (KMO) index whose minimum expected value must be $> 0.7$. Finally, an exploratory factor analysis is carried out. It is considered a factor when at least 4 items are grouped considering a load factor or correlation per item greater than 0.4. Such test is accompanied by a FIT model measure, from which the indicators are obtained: Root Mean Square Error of Approximation (RMSEA) and Tucker–Lewis index (TLI), the non-normed fit index, whose values are expected to be obtained sufficiently closer to 0.06 and $> 0.8$ respectively to ensure the maximum likelihood possible [22]. With the above resolved, the appropriate combination of several strategies and criteria to validate the statistical formation of factors must now be chosen: extraction, rotation, and parallel analysis.

Item A5 related to a workload increase due to online classes had the lowest item-total correlation value, thus indicating that such item is not measuring the same construct as the rest of them. To identify the number of factors and the item loading for each factor, we performed an Exploratory Factor Analysis (EFA) to the adjusted construct. As we are not aware of the kind of correlation among factors, two different cases are explored in this work. Both of them consider the residual minimum method for factor extraction and a factor load larger than 0.4. Case A considers the ‘varimax’ method for factor rotation, whilst case B considers the ‘oblimin’ method for factor rotation. Both cases share the model fit measures shown in Table B1.

The overall KMO measure of sampling adequacy becomes 0.801. For both cases, outcomes of the EFA are shown in Table B2. The EFA with ‘varimax’ rotation (case A), presents better factor statistics than the EFA with ‘oblimin’ rotation (case B). In Figure 2, we show the scree plot for the EFA with ‘varimax’ rotation clearly showing the conformation of a model with four factors, which meet to explain more than 50% from the initial (data) and the final (theoretical) -after rotation- variances, when the remaining factors are disregarded.

![Figure 2. Scree plot for parallel analysis of the EFA with 'varimax' rotation.](image)
### Table 2. Factors composing an online education ecosystem (A5 removed)

| Factors          | Variable Statement                                                                                     |
|------------------|--------------------------------------------------------------------------------------------------------|
| Academic environment | AR1' I consider that my teachers' mood was positive throughout online classes                        |
|                  | AR2' I consider that my teachers have had enough skill/training to teach an online class              |
|                  | AR3' I consider the course objective initially proposed, was fully achieved                           |
|                  | AR4' Throughout online classes, the teacher advisory frequency increased as compared to the face-to-face period |
|                  | AR5' I consider the place where I took the courses was suitable for my online learning experience      |
| Technological services | TS1' My computer equipment supported well both the required software and remote communications from my home |
|                  | TS2' The quality of technological services (internet, electricity, etc.) was adequate to attend online classes |
|                  | TS3' I had access to the required software for my courses                                              |
|                  | TS4' I had at my disposal the technological tools required to guarantee interaction in my courses       |
| Resilience       | R1' I attended online classes with the same interest/excitement as face-to-face classes                |
|                  | R2' I would like to attend online classes again                                                        |
|                  | R3' I considered at some point to drop the semester and wait for the return to "normal"               |
| Socio-relational | SE1' I felt the need to seek help or emotional support derived from the quarantine                     |
|                  | SE2' I felt pushed by my parents to attend online classes                                               |
|                  | SE3' I consider my emotional state influenced my academic performance when attending online classes    |
|                  | SE4' I consider that my technological skills were key to attend the online classes                     |

Therefore, following the results of case A, we propose the model of Table 2, which we call henceforth online education ecosystem. Three out of the four originally proposed domains are dominant. The so-called home-environment domain is mixed-up with the other domains. Finally, Table B3 shows the correlation matrix for the EFA with ‘varimax’ rotation. At each cell, the upper value corresponds to the Spearman $\rho$ parameter and the lower value corresponds to the $p$-value corroborating our analysis. Note that variables in Table 2 have been paraphrased from the original items in agreement with the analysis performed in Table B3.

#### 4.2. Education ecosystem

The EFA of Section 3, identifies a four-factor model indicating a good fit to the data. The four factors are labeled as academic environment, technological services, resilience, and socio-emotional.

**Academic environment** highlights the strategies implemented by the institution to deal with the Covid-19 outbreak, stopping all face-to-face activities and taking a week to design a so-called Flexible Digital Model (FDM) that was implemented just the pandemic beginning [23]. It included massive teacher training. **Technological services** includes the associated services playing an important role, such as electrical power, high bandwidth internet, and software tools. In mechanical engineering education, software simulation tools range from static bodies, pneumatic, hydraulic, and electrical circuits to 3D rigid body dynamic simulators, and remote labs, all with a large licensing variety, ranging from a limited number of temporal licenses to campus-wide licenses, requesting an important timely effort. **Resilience** highlights the willingness of students to continue training regardless of communication media, as well as, their curiosity and determination facing new challenges by recognizing themselves with enough maturity to complete their transformation from students to professionals. **Socio-relational** aspect measures the extent that model and technology are embedded into a social reality that allows students to have selective online contact when they seek help and how they become involved in school-related and comprehensive life activities.

Finally, according to the results obtained, in the areas of technological services and academic environment, it is observed that the strategy of Tecnologico de Monterrey related to investment in education in distance education (through the various means that it has used throughout of its history) has allowed to face the pandemic. Without the difficulty that other programs or
institutions have had within the country and around the world, that is, the factors involved and their items as a whole predominate in the results of the study shown. However, these results would not be possible without the other factors that make up the educational ecosystem.

5. Conclusions
The Covid-19 outbreak launched online education on a large scale and shows itself as a true paradigm. This study has served to provide an initial benchmark of students’ and teachers’ behaviors form the students’ perspective while a forced migration from face-to-face education to online education happened. Four group factors have been identified which still could be further explored, confirmed, or revised, only when the same conditions arise, i.e. a forced migration of educational paradigm. The final arrangement of items and factors could be a guide to underpin the teacher’s role in online education, the basic requirements that an educational institution must offer, and the skills that a student must have or develop. Students’ learning environment has personal, family, and school components. The above association is clearly shown in our study, both in the factors’ grouping and in the results for each item, more than 90 % of the respondents indicate that their emotional state and the role their teachers played. They were key in the educational paradigm migration. Hence, the socio-emotional skills of each student appear in a crossed among factors.

Covid-19 pandemic has been a unique world event affecting globally all human activities. For Education, it was evident the weakness of public and private Education systems, thus opening a debate about which and how to teach at the overall academic levels. The values and discipline should be improved to become independent and commitment under this kind of education, which, moreover this outbreak, begins to grow in our contemporary world society. Academic strictness, encouragement, mindfulness, and empathy should become improved and maintained during and after this world contingency. Under normal conditions, this and similar studies will be difficult to perform having the same urgency sense. Ending the pandemic, the world will not have a similar opportunity to test and to analyse new schemes of education possibly in many years, we need to convert this lockdown into an opportunity.

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Appendix A: Reliability analysis
This section reports the reliability statistics discussed in the text. For the survey data, an analysis of the internal consistency of the survey was first performed reporting in Table A1 the mean, the standard deviation and the correlation of each survey’ item.

Table A1. Item Reliability Statistics.

| Item | T4 | E5 | A2 | T1 | A3 | S1 | T1 | T5 | S2 | S5 | T2 | A1 | E4 | E3 | A4 | E1 | S4 | S3 | E2 | A5 |
|------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Mean | 4.40| 3.79| 3.61| 4.04| 4.47| 4.25| 4.06| 3.94| 2.54| 2.23| 2.83| 3.96| 3.59| 3.67| 3.63| 2.15| 2.22| 2.66| 3.26| 4.06|
| sd   | 0.853| 1.088| 1.329| 1.033| 0.842| 1.115| 1.177| 1.215| 1.225| 1.229| 1.404| 1.111| 1.412| 1.117| 1.117| 1.401| 1.450| 1.543| 1.447| 1.171|
| Corr.| 0.424| 0.399| 0.379| 0.619| 0.469| 0.268| 0.381| 0.407| 0.379| 0.279| 0.209| 0.580| 0.383| 0.316| 0.548| -0.029| -0.197| -0.099| 0.292| 0.029|

| Item | T4 | E5 | E1 | S4 | A2 | T3 | A3 | S1 | T1 | S3 | T5 | S2 | S5 | T2 | E2 | A1 | E4 | E3 | E2 | A4 | – |
|------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Mean | 4.40| 3.79| 3.85| 3.78| 3.61| 4.04| 4.47| 4.25| 4.06| 3.34| 3.94| 2.54| 2.23| 2.83| 3.26| 3.96| 3.59| 3.67| 3.63| – |
| sd   | 0.853| 1.088| 1.401| 1.450| 1.329| 1.033| 0.842| 1.115| 1.177| 1.543| 1.215| 1.225| 1.229| 1.404| 1.447| 1.111| 1.412| 1.117| 1.117| – |
| Corr.| 0.480| 0.510| 0.213| 0.359| 0.476| 0.642| 0.584| 0.054| 0.266| 0.281| 0.428| 0.491| 0.383| 0.144| 0.382| 0.592| 0.506| 0.463| 0.607| – |
after, a reliability analysis was performed using two statistical techniques, the Cronbach’s $\alpha$ and the McDonald’s $\omega$ whose outcomes are reported in Table A2.

### Table A2. Reliability analysis.

| Scale | Reliability Statistics | Scale Reliability Statistics, A5 removed |
|-------|-------------------------|------------------------------------------|
| Mean  | SD                      | Cron. | McDon. | Mean  | SD   | Cron. | McDon. |
|       |                         | $\alpha$ | $\omega$ |       | $\alpha$ | $\omega$ |
| Scale | 3.47                    | 0.479  | 0.705 | 0.774 | Scale | 3.64  | 0.596 | 0.817 | 0.839 |

### Appendix B: Exploratory Factor Analysis

To declare the remaining variables of the last analysis as factors, the Kaiser-Meyer-Olkin (KMO) index was obtained, followed by an exploratory factor analysis together with a FIT model measure obtaining the RMSEA and NNFI indicators. The outcomes are reported in Table B1.

### Table B1. KMO and Model fit measures, A5 removed.

| KMO | RMSEA 90% CI | Model Test |
|-----|--------------|------------|
|     | (l)2-3       | Lower      | Upper      | TLI | BIC | $\chi^2$ | df | p     |
| 0.801 | 0.0673    | 0.0411    | 0.0796    | 0.861 | -347 | 155    | 101 | < 0.001 |

Then, KMO indicator is used together a ‘varimax’ rotation (case A) or a ‘oblimin’ rotation (case B), where the first gives a better factor statistics (see Table B2). This information also generates the scree plot of Figure 2.

### Table B2. Exploratory Factor Analysis, A5 removed.

| Factor loadings, case A | Factor loadings, case B |
|-------------------------|-------------------------|
| Factor                  | Factor                  |
| (l)2-5                   | (l)8-11                  |
| 1 | 2 | 3 | 4 | Uniq. | 1 | 2 | 3 | 4 | Uniq. |
| A3 | 0.761 | 0.375 — | A3 | 0.810 | 0.375 |
| A1 | 0.703 | 0.411 — | A1 | 0.712 | 0.411 |
| A4 | 0.580 | 0.506 — | A2 | 0.575 | 0.614 |
| A2 | 0.560 | 0.614 — | A4 | 0.535 | 0.506 |
| E5 | 0.441 | 0.642 — | E5 | 0.642 | 0.642 |
| E4 | 0.705 | 0.642 — | E4 | 0.705 | 0.705 |
| T5 | 0.675 | 0.507 — | T5 | 0.691 | 0.507 |
| E3 | 0.638 | 0.508 — | E3 | 0.669 | 0.508 |
| T4 | 0.565 | 0.488 — | T4 | 0.505 | 0.488 |
| T3 | 0.530 | 0.379 — | T3 | 0.437 | 0.443 |
| S2 | 0.626 | 0.496 — | S5 | 0.614 | 0.592 |
| S5 | 0.613 | 0.592 — | S2 | 0.601 | 0.496 |
| S4 | 0.413 | 0.712 — | T2 | 0.803 | 0.712 |
| T2 | 0.803 — | S4 | 0.712 |
| E2 | 0.821 — | E2 | 0.821 |
| S3 | 0.567 | 0.576 — | S3 | 0.587 | 0.576 |
| S1 | -0.425 | 0.796 — | S1 | -0.426 | 0.796 |
| T1 | -0.412 | 0.648 — | T1 | 0.648 |

As a final checking, the correlation matrix is reported in Table B3 for the EFA with ‘varimax’ rotation is performed by including in each cell the Spearman $\rho$ parameter (upper value) and the corresponding $p$-value (lower value).
Table B3. Correlation matrix.

| Item | T4 | E5 | S4 | A2 | T3 | A3 | S1 | T1 | S2 | T2 | E2 | A1 | E4 | E3 | A4 | T5 | E1 |
|------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
|      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| T4   | 0.264 – | 0.001 – | 0.094 0.204 – | 0.127 0.400 0.270 – | 0.129 0.001 0.001 – | 0.411 0.315 0.168 0.385 – | 0.181 0.210 0.221 0.014 0.429 – | 0.029 0.001 0.008 0.001 0.001 – | 0.006 0.000 0.001 0.001 0.001 – | 0.252 0.589 0.190 0.218 0.008 0.205 – | 0.096 -0.034 -0.110 0.103 0.220 0.106 – | 0.093 -0.026 0.086 0.032 0.258 0.061 0.099 – | 0.267 0.760 0.304 0.705 0.001 0.470 0.235 – | 0.041 0.242 0.318 0.091 0.129 0.233 0.242 0.023 – | 0.621 0.003 0.001 0.374 0.126 0.005 0.003 0.781 – | 0.211 0.361 0.271 0.013 0.217 0.033 0.687 0.342 -0.012 0.088 0.121 – | 0.261 0.600 0.491 0.112 0.008 0.693 0.297 -0.001 0.613 0.294 0.148 – | 0.152 0.249 0.181 0.164 0.149 0.138 -0.024 0.818 0.120 0.348 0.000 0.014 – | 0.067 0.003 0.029 0.047 0.074 0.020 0.806 0.024 0.119 -0.001 0.281 0.170 – | 0.295 0.389 0.211 0.402 0.487 0.567 0.138 0.229 0.142 0.337 0.186 0.064 0.262 – | 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 – | 0.283 0.318 0.185 0.196 0.374 0.396 0.039 0.361 0.311 0.322 0.150 0.137 0.275 0.372 – | 0.014 0.001 0.026 0.018 0.001 0.001 0.637 0.053 0.001 0.001 0.071 0.100 0.001 0.001 – | 0.199 0.297 0.135 0.458 0.420 0.222 0.043 0.152 0.299 0.104 0.209 0.001 0.123 0.204 0.214 – | 0.016 0.001 0.106 0.490 0.001 0.006 0.555 0.068 0.001 0.214 0.012 0.991 0.140 0.014 0.003 – | 0.144 0.255 0.216 0.204 0.291 0.068 0.411 0.145 0.186 0.413 0.384 0.226 0.319 0.054 0.024 0.001 0.264 – | 0.001 0.001 0.009 0.001 0.001 0.001 0.001 0.087 0.023 0.035 0.001 0.004 0.096 0.001 0.001 0.001 0.001 – | 0.414 0.341 0.044 0.202 0.448 0.185 0.063 0.138 0.117 0.105 0.106 0.027 0.114 0.139 0.183 0.509 0.232 – | 0.093 0.114 0.590 0.015 0.001 0.026 0.451 0.098 0.162 0.211 0.200 0.746 0.173 0.023 0.027 0.001 0.005 – | 0.188 0.183 0.211 0.188 0.086 0.196 -0.152 -0.061 0.376 0.004 0.071 -0.086 0.172 -0.011 -0.014 0.220 0.111 0.197 – | 0.023 0.112 0.011 0.024 0.033 0.018 0.068 0.463 -0.001 0.964 0.394 0.309 0.038 0.900 0.027 0.008 0.185 0.017 – |

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