Composite Indices, Eigenvalues, and Contributions

Luis Carlos Castillo

University of Urbino and Universty of Bremen

2024-06-27

Inclusion of Weights in FAMD and MCA

In this study, weights were incorporated into the FAMD (Factorial Analysis for Mixed Data) and MCA (Multiple Correspondence Analysis) functions to account for the varying sample sizes across different groups. This weighting scheme ensures that the analysis accurately reflects the distribution and importance of each subgroup within the dataset. The weights were applied to balance the influence of different groups, such as:

- Years: Accounting for variations in sample sizes across different time periods.
- ▶ **Regions**: Ensuring representation from diverse geographical areas.
- ▶ **Sectors**: Reflecting the distribution of firms across various industry sectors.
- ▶ Revenue Levels: Balancing firms with different revenue scales.
- Firm Sizes: Adjusting for the representation of small, medium, and large firms.

By applying these weights, the analysis more accurately represents the population structure, leading to more reliable and generalizable results. The weighting helps mitigate biases that could arise from over- or under-represented groups, thereby enhancing the validity of the factor analysis.

Calculation Process

- Group Calculation: The dataset was divided into subgroups based on year, region, revenue levels, sectors, and firm sizes.
- 2. Count and Proportion:
 - ▶ The number of observations in each subgroup was counted.
 - The proportion of each subgroup relative to the total number of observations was calculated.
- Initial Weight Assignment: Each subgroup was assigned a weight based on the inverse of its proportion, giving more weight to smaller subgroups to balance their influence.
- 4. Normalization:
 - The weights were normalized within each year so that they sum to the total number of observations in that year.

List of variables by constructs: Access, Skills, and Usage.

Access

| Code | Variable_Name |
|-----------------|--|
| | |
| A2_A2 | Percentage of employees using the computer out of the total employee |
| A1_B2b | IT training courses for employees without specialist ICT skills |
| A2_C2 | Percentage of employees using computers connected to the internet |
| A2_C5a | Enterprise provides mobile devices with mobile connection |
| A2_C4_low | Internet download speed low |
| A2_C4_high | Internet download speed high |
| size_rev_small | Firm size small |
| size_rev,medium | Firm size medium |
| size_rev_large | Firm size large |

Skills

| Code | Variable_Name |
|-----------------|---|
| | - |
| S_B1 | Employment of specialists in computer subjects |
| S_B2a | IT training courses for employees with specialist ICT skills |
| S_B5a1 | Use of internal personnel for ICT infrastructure maintenance |
| S_B5b1 | Use of internal personnel for office software support |
| S_B5c1 | Use of internal personnel for enterprise software development |
| S_B5d1 | Use of internal personnel for enterprise software support |
| S_B5e1 | Use of internal personnel for web development |
| S_B5f1 | Use of internal personnel for web development support |
| S_B5g1 | Use of internal personnel for IT security management |
| | |
| size rev small | Firm size small |
| size_rev,medium | Firm size medium |
| size_rev_large | Firm size large |

Usage

| Code | Variable_Name |
|-----------------|--|
| | |
| UMK_C7 | Website |
| UC_C8a | Possibility to place orders or reservations online e.g., online shopping cart |
| UMK_C8c | Access to product catalogs or price lists |
| UMK_C8h | Links or references to company profiles on social media |
| UMK_C9a | Social network |
| UMK_C9c | Social media and multimedia |
| UM_E1 | Using ERP software |
| UM_E2b | Use operational CRM software |
| UM_E2a | Use analytical CRM software |
| UM_C8g | Announcement of vacancies or possibility to apply for employment online |
| UC_J7 | Web sales through intermediary websites or eCommerce sites, marketplaces or apps |
| | |
| size_rev_small | Firm size small |
| size_rev,medium | Firm size medium |
| size_rev_large | Firm size large |

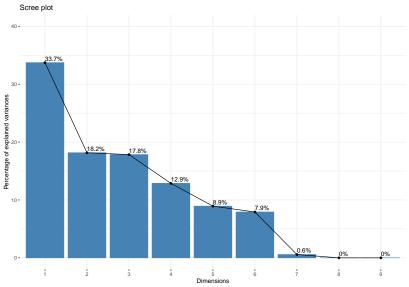


Access 2014 Composite Index

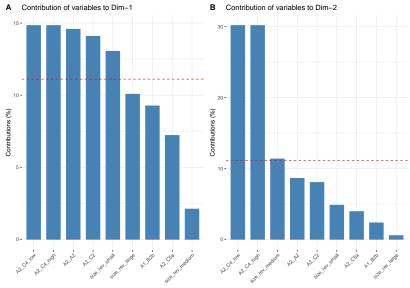
Eigenvalues Access 2014

| | eigenvalue | variance.percent | cumulative.variance.percent |
|-------|------------|------------------|-----------------------------|
| | | | |
| Dim.1 | 3.0353 | 33.7253 | 33.7253 |
| Dim.2 | 1.6341 | 18.1572 | 51.8825 |
| Dim.3 | 1.6055 | 17.8394 | 69.7219 |
| Dim.4 | 1.1578 | 12.8644 | 82.5863 |
| Dim.5 | 0.8034 | 8.9266 | 91.5129 |
| Dim.6 | 0.7126 | 7.9178 | 99.4307 |
| Dim.7 | 0.0512 | 0.5693 | 100.0000 |
| Dim.8 | 0.0000 | 0.0000 | 100.0000 |
| Dim.9 | 0.0000 | 0.0000 | 100.0000 |

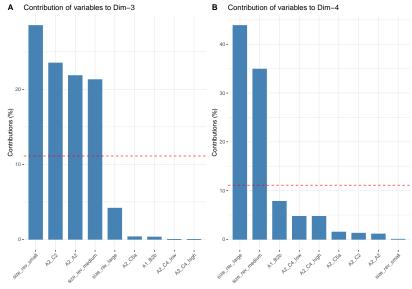
Screeplot Access 2014



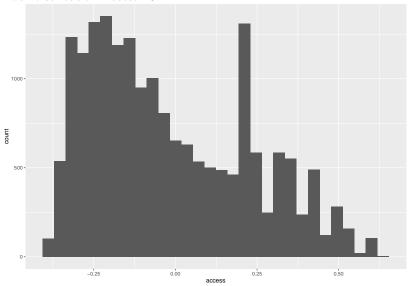
Contributions by Dimensions 1 and 2 Access 2014



Contributions by Dimensions 3 and 4 Access 2014



Index distribution Access 2014

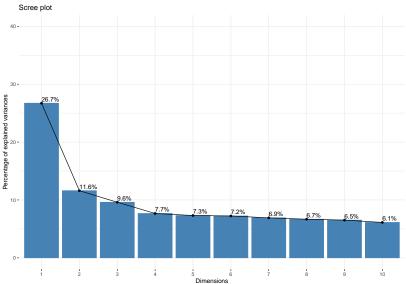


Skills 2014 Composite Index

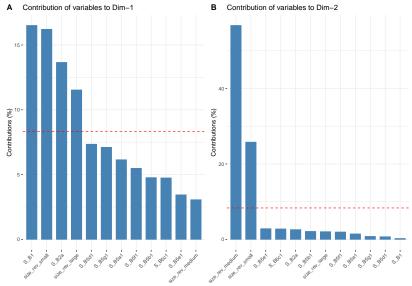
Eigenvalues Skills 2014

| | eigenvalue | variance.percent | cumulative.variance.percent |
|--------|------------|------------------|-----------------------------|
| | | | |
| Dim.1 | 3.2064 | 26.7201 | 26.7201 |
| Dim.2 | 1.3923 | 11.6028 | 38.3229 |
| Dim.3 | 1.1524 | 9.6030 | 47.9259 |
| Dim.4 | 0.9196 | 7.6632 | 55.5891 |
| Dim.5 | 0.8777 | 7.3140 | 62.9031 |
| Dim.6 | 0.8678 | 7.2316 | 70.1347 |
| Dim.7 | 0.8292 | 6.9100 | 77.0447 |
| Dim.8 | 0.8007 | 6.6726 | 83.7173 |
| Dim.9 | 0.7818 | 6.5151 | 90.2324 |
| Dim.10 | 0.7340 | 6.1164 | 96.3488 |
| Dim.11 | 0.4381 | 3.6512 | 100.0000 |
| Dim.12 | 0.0000 | 0.0000 | 100.0000 |

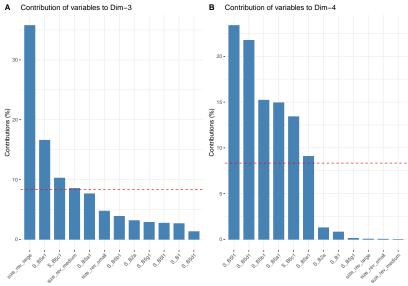
Screeplot Skills 2014



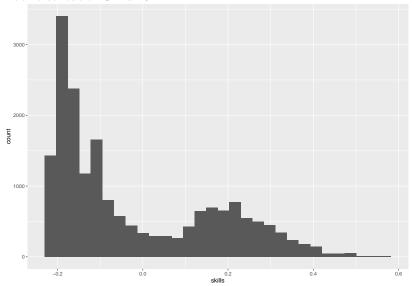
Contributions by Dimensions 1 and 2 Skills 2014



Contributions by Dimensions 3 and 4 Skills 2014



Index distribution Skills 2014

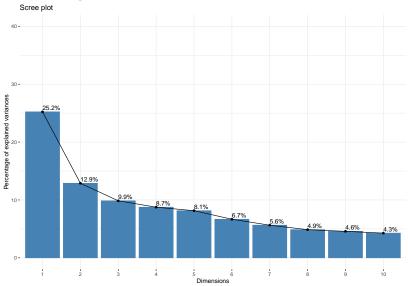


Usage 2014 Composite Index

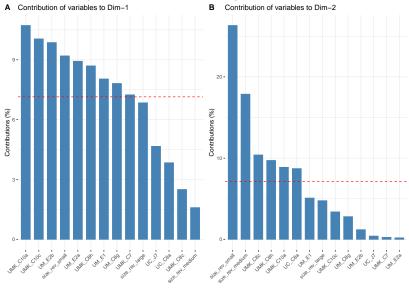
Eigenvalues Usage 2014

| | eigenvalue | variance.percent | cumulative.variance.percent |
|--------|------------|------------------|-----------------------------|
| | | | |
| Dim.1 | 3.5312 | 25.2227 | 25.2227 |
| Dim.2 | 1.8035 | 12.8824 | 38.1051 |
| Dim.3 | 1.3793 | 9.8521 | 47.9572 |
| Dim.4 | 1.2249 | 8.7494 | 56.7066 |
| Dim.5 | 1.1404 | 8.1460 | 64.8526 |
| Dim.6 | 0.9329 | 6.6638 | 71.5164 |
| Dim.7 | 0.7895 | 5.6391 | 77.1555 |
| Dim.8 | 0.6813 | 4.8663 | 82.0218 |
| Dim.9 | 0.6406 | 4.5759 | 86.5977 |
| Dim.10 | 0.5974 | 4.2673 | 90.8650 |
| Dim.11 | 0.5580 | 3.9859 | 94.8509 |
| Dim.12 | 0.3995 | 2.8537 | 97.7046 |
| Dim.13 | 0.3214 | 2.2954 | 100.0000 |
| Dim.14 | 0.0000 | 0.0000 | 100.0000 |

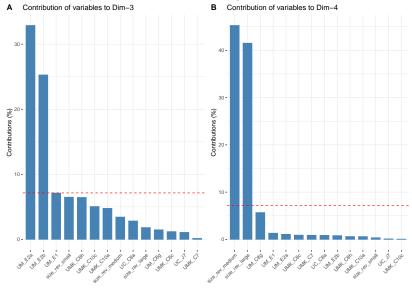
Screeplot Usage 2014



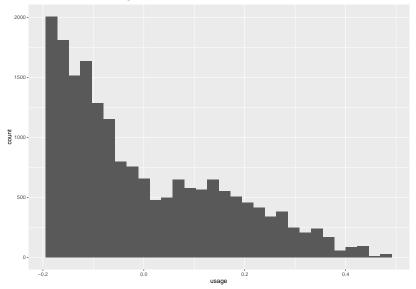
Contributions by Dimensions 1 and 2 Usage 2014



Contributions by Dimensions 3 and 4 Usage 2014



Index distribution Usage 2014



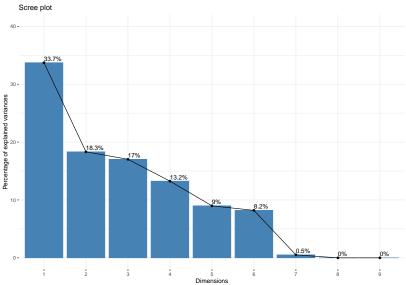
Composite Indices for 2015

Access 2015 Composite Index

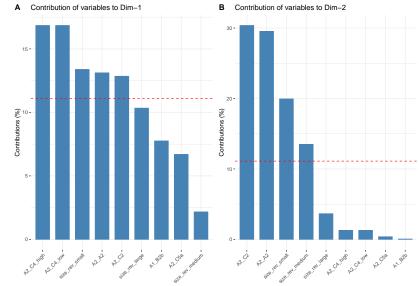
Eigenvalues Access 2015

| Dim.2 1.6483 18.3147 52.02 Dim.3 1.5324 17.0262 69.05 Dim.4 1.1924 13.2494 82.30 Dim.5 0.8087 8.9857 91.28 Dim.6 0.7382 8.2021 99.49 Dim.7 0.0458 0.5089 100.00 Dim.8 0.0000 0.0000 100.00 | | eigenvalue | variance.percent | cumulative.variance.percent |
|--|-------|------------|------------------|-----------------------------|
| Dim.2 1.6483 18.3147 52.02 Dim.3 1.5324 17.0262 69.05 Dim.4 1.1924 13.2494 82.30 Dim.5 0.8087 8.9857 91.28 Dim.6 0.7382 8.2021 99.49 Dim.7 0.0458 0.5089 100.00 Dim.8 0.0000 0.0000 100.00 | | | | |
| Dim.3 1.5324 17.0262 69.05 Dim.4 1.1924 13.2494 82.30 Dim.5 0.8087 8.9857 91.28 Dim.6 0.7382 8.2021 99.49 Dim.7 0.0458 0.5089 100.00 Dim.8 0.0000 0.0000 100.00 | Dim.1 | 3.0342 | 33.7130 | 33.7130 |
| Dim.4 1.1924 13.2494 82.30 Dim.5 0.8087 8.9857 91.28 Dim.6 0.7382 8.2021 99.49 Dim.7 0.0458 0.5089 100.00 Dim.8 0.0000 0.0000 100.00 | Dim.2 | 1.6483 | 18.3147 | 52.0277 |
| Dim.5 0.8087 8.9857 91.28 Dim.6 0.7382 8.2021 99.49 Dim.7 0.0458 0.5089 100.00 Dim.8 0.0000 0.0000 100.00 | Dim.3 | 1.5324 | 17.0262 | 69.0539 |
| Dim.6 0.7382 8.2021 99.49 Dim.7 0.0458 0.5089 100.00 Dim.8 0.0000 0.0000 100.00 | Dim.4 | 1.1924 | 13.2494 | 82.3033 |
| Dim.7 0.0458 0.5089 100.00 Dim.8 0.0000 0.0000 100.00 | Dim.5 | 0.8087 | 8.9857 | 91.2890 |
| Dim.8 0.0000 0.0000 100.00 | Dim.6 | 0.7382 | 8.2021 | 99.4911 |
| | Dim.7 | 0.0458 | 0.5089 | 100.0000 |
| D | Dim.8 | 0.0000 | 0.0000 | 100.0000 |
| Dim.9 0.0000 0.0000 100.00 | Dim.9 | 0.0000 | 0.0000 | 100.0000 |

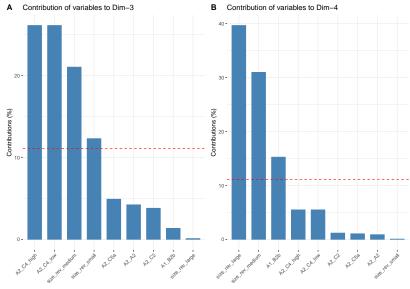
Screeplot Access 2015



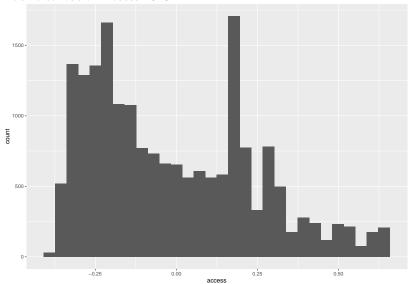
Contributions by Dimensions 1 and 2 Access 2015



Contributions by Dimensions 3 and 4 Access 2015



Index distribution Access 2015

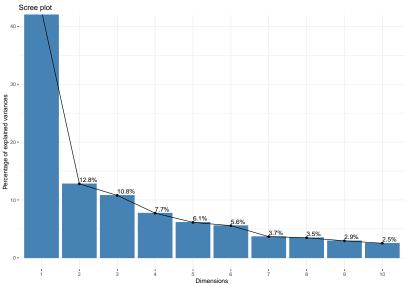


Skills 2015 Composite Index

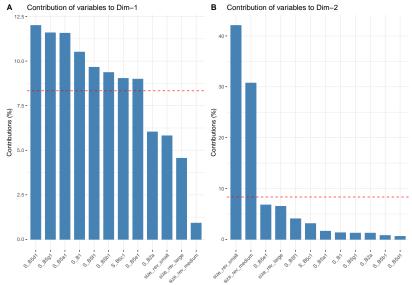
Eigenvalues Skills 2015

| | eigenvalue | variance.percent | cumulative.variance.percent |
|--------|------------|------------------|-----------------------------|
| | | | |
| Dim.1 | 5.1239 | 42.6995 | 42.6995 |
| Dim.2 | 1.5334 | 12.7782 | 55.4777 |
| Dim.3 | 1.2947 | 10.7889 | 66.2666 |
| Dim.4 | 0.9265 | 7.7205 | 73.9871 |
| Dim.5 | 0.7352 | 6.1268 | 80.1139 |
| Dim.6 | 0.6676 | 5.5630 | 85.6770 |
| Dim.7 | 0.4399 | 3.6655 | 89.3425 |
| Dim.8 | 0.4167 | 3.4727 | 92.8152 |
| Dim.9 | 0.3526 | 2.9386 | 95.7538 |
| Dim.10 | 0.3019 | 2.5160 | 98.2698 |
| Dim.11 | 0.2076 | 1.7302 | 100.0000 |
| Dim.12 | 0.0000 | 0.0000 | 100.0000 |

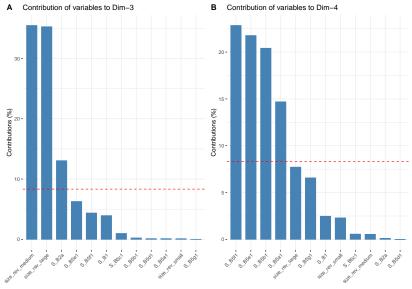
Screeplot Skills 2015



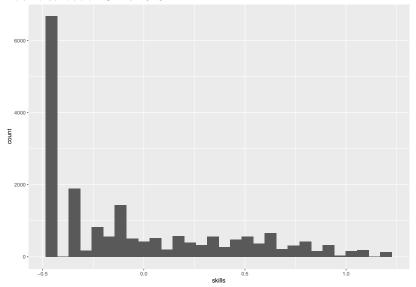
Contributions by Dimensions 1 and 2 Skills 2015



Contributions by Dimensions 3 and 4 Skills 2015



Index distribution Skills 2015

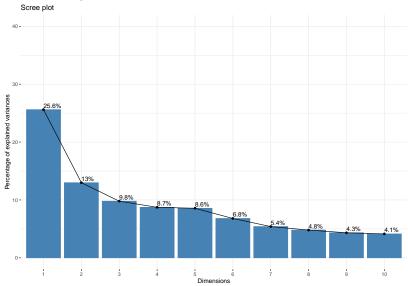


Usage 2015 Composite Index

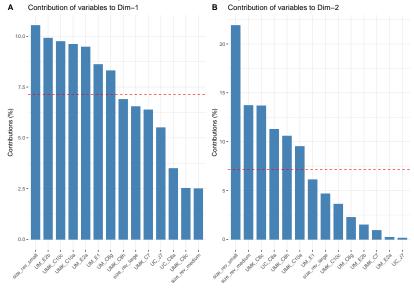
Eigenvalues Usage 2015

| | eigenvalue | variance.percent | cumulative.variance.percent |
|--------|------------|------------------|-----------------------------|
| | | | |
| Dim.1 | 3.5846 | 25.6046 | 25.6046 |
| Dim.2 | 1.8172 | 12.9801 | 38.5848 |
| Dim.3 | 1.3704 | 9.7882 | 48.3730 |
| Dim.4 | 1.2220 | 8.7284 | 57.1014 |
| Dim.5 | 1.1990 | 8.5639 | 65.6653 |
| Dim.6 | 0.9522 | 6.8013 | 72.4666 |
| Dim.7 | 0.7564 | 5.4027 | 77.8693 |
| Dim.8 | 0.6716 | 4.7975 | 82.6668 |
| Dim.9 | 0.6061 | 4.3294 | 86.9962 |
| Dim.10 | 0.5782 | 4.1300 | 91.1262 |
| Dim.11 | 0.5378 | 3.8415 | 94.9677 |
| Dim.12 | 0.3988 | 2.8483 | 97.8161 |
| Dim.13 | 0.3058 | 2.1839 | 100.0000 |
| Dim.14 | 0.0000 | 0.0000 | 100.0000 |
| | | | |

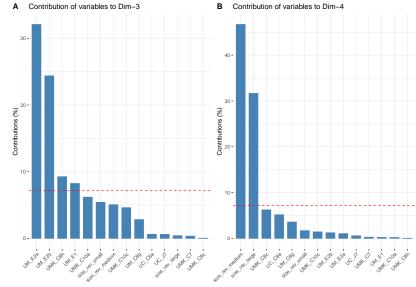
Screeplot Usage 2015



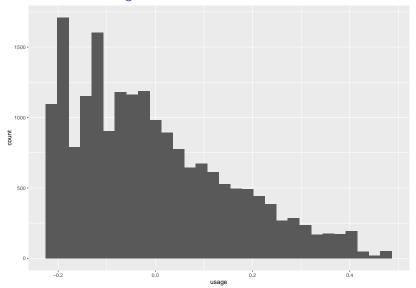
Contributions by Dimensions 1 and 2 Usage 2015



Contributions by Dimensions 3 and 4 Usage 2015



Index distribution Usage 2015



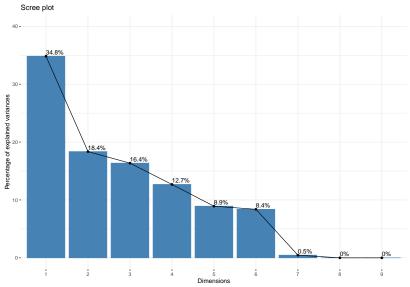
Composite Indices for 2016

Access 2016 Composite Index

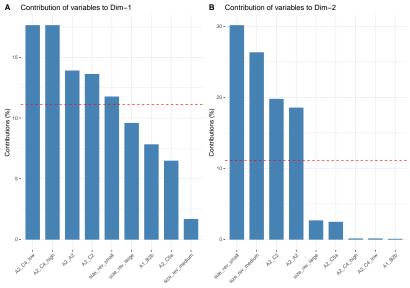
Eigenvalues Access 2016

| 3.1354 1.6522 1.4724 | 34.8377 18.3578 | 34.8377 53.1955 |
|----------------------------|--|--|
| 1.6522 | 18.3578 | |
| | | 53.1955 |
| 1 4724 | | |
| 1.4/24 | 16.3597 | 69.5551 |
| 1.1413 | 12.6808 | 82.2360 |
| 0.8029 | 8.9215 | 91.1574 |
| 0.7548 | 8.3862 | 99.5436 |
| 0.0411 | 0.4564 | 100.0000 |
| 0.0000 | 0.0000 | 100.0000 |
| 0.0000 | 0.0000 | 100.0000 |
| | 1.1413 0.8029 0.7548 0.0411 0.0000 | 1.1413 12.6808 0.8029 8.9215 0.7548 8.3862 0.0411 0.4564 0.0000 0.0000 |

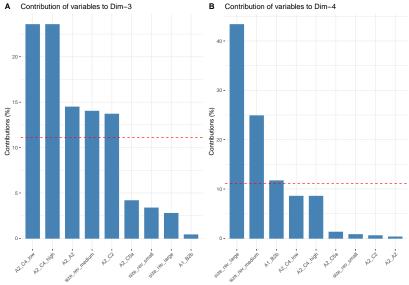
Screeplot Access 2016



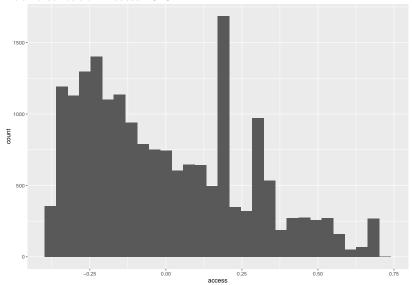
Contributions by Dimensions 1 and 2 Access 2016



Contributions by Dimensions 3 and 4 Access 2016



Index distribution Access 2016

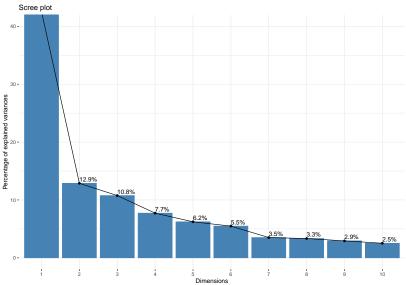


Skills 2016 Composite Index

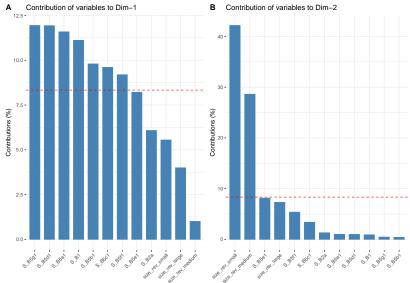
Eigenvalues Skills 2016

| | eigenvalue | variance.percent | cumulative.variance.percent |
|--------|------------|------------------|-----------------------------|
| | | | |
| Dim.1 | 5.1044 | 42.5370 | 42.5370 |
| Dim.2 | 1.5451 | 12.8762 | 55.4132 |
| Dim.3 | 1.2911 | 10.7588 | 66.1720 |
| Dim.4 | 0.9263 | 7.7190 | 73.8910 |
| Dim.5 | 0.7470 | 6.2248 | 80.1158 |
| Dim.6 | 0.6577 | 5.4812 | 85.5970 |
| Dim.7 | 0.4204 | 3.5032 | 89.1001 |
| Dim.8 | 0.4002 | 3.3349 | 92.4351 |
| Dim.9 | 0.3513 | 2.9276 | 95.3627 |
| Dim.10 | 0.3021 | 2.5172 | 97.8799 |
| Dim.11 | 0.2544 | 2.1201 | 100.0000 |
| Dim.12 | 0.0000 | 0.0000 | 100.0000 |

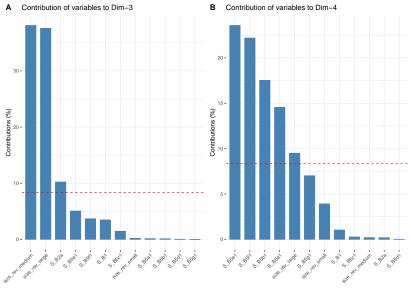
Screeplot Skills 2016



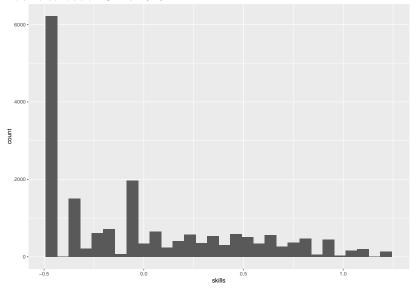
Contributions by Dimensions 1 and 2 Skills 2016



Contributions by Dimensions 3 and 4 Skills 2016



Index distribution Skills 2016

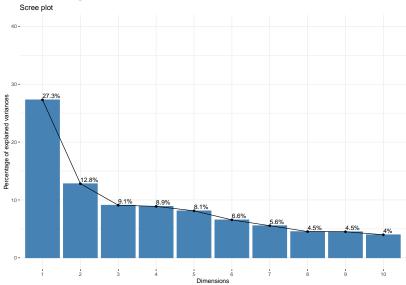


Usage 2016 Composite Index

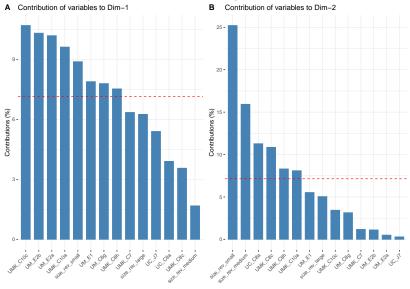
Eigenvalues Usage 2016

| | eigenvalue | variance.percent | cumulative.variance.percent |
|--------|------------|------------------|-----------------------------|
| | | | |
| Dim.1 | 3.8221 | 27.3004 | 27.3004 |
| Dim.2 | 1.7934 | 12.8100 | 40.1104 |
| Dim.3 | 1.2732 | 9.0942 | 49.2046 |
| Dim.4 | 1.2448 | 8.8914 | 58.0960 |
| Dim.5 | 1.1377 | 8.1261 | 66.2221 |
| Dim.6 | 0.9179 | 6.5565 | 72.7786 |
| Dim.7 | 0.7778 | 5.5554 | 78.3339 |
| Dim.8 | 0.6353 | 4.5381 | 82.8720 |
| Dim.9 | 0.6313 | 4.5096 | 87.3816 |
| Dim.10 | 0.5584 | 3.9886 | 91.3703 |
| Dim.11 | 0.5200 | 3.7145 | 95.0848 |
| Dim.12 | 0.3630 | 2.5929 | 97.6777 |
| Dim.13 | 0.3251 | 2.3223 | 100.0000 |
| Dim.14 | 0.0000 | 0.0000 | 100.0000 |

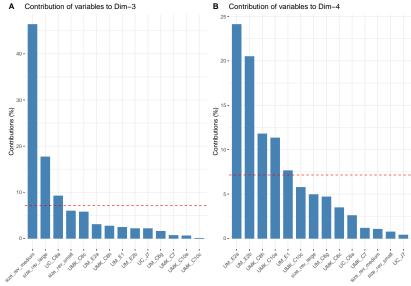
Screeplot Usage 2016



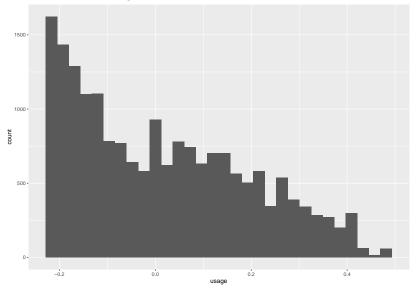
Contributions by Dimensions 1 and 2 Usage 2016



Contributions by Dimensions 3 and 4 Usage 2016



Index distribution Usage 2016



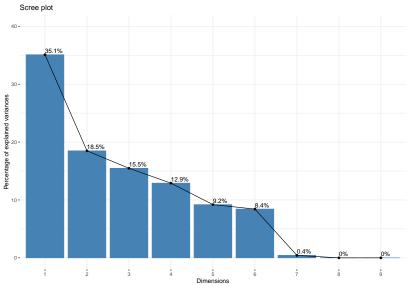


Access 2017 Composite Index

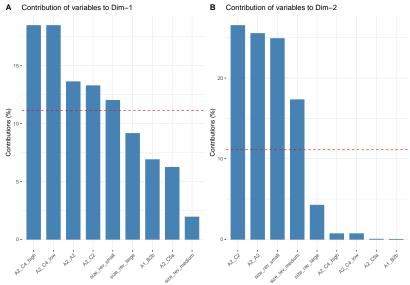
Eigenvalues Access 2017

| | eigenvalue | variance.percent | cumulative.variance.percent |
|---------|------------|------------------|-----------------------------|
| | | | |
| Dim.1 | 3.1585 | 35.0944 | 35.0944 |
| Dim.2 | 1.6639 | 18.4878 | 53.5822 |
| Dim.3 | 1.3928 | 15.4757 | 69.0579 |
| Dim.4 | 1.1612 | 12.9021 | 81.9600 |
| Dim.5 | 0.8273 | 9.1923 | 91.1523 |
| Dim.6 | 0.7583 | 8.4253 | 99.5777 |
| Dim.7 | 0.0380 | 0.4223 | 100.0000 |
| Dim.8 | 0.0000 | 0.0000 | 100.0000 |
| Dim.9 | 0.0000 | 0.0000 | 100.0000 |
| 5.111.5 | 0.0000 | 0.0000 | 100.00 |

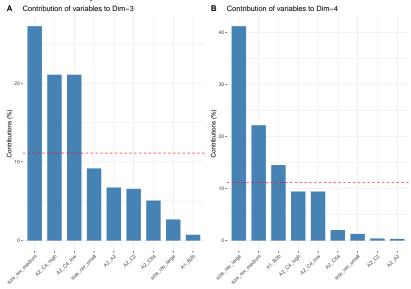
Screeplot Access 2017



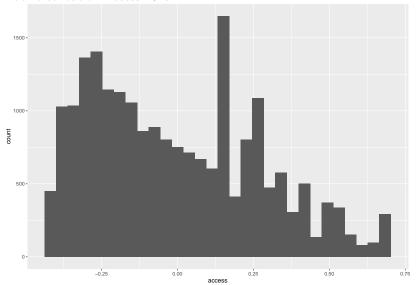
Contributions by Dimensions 1 and 2 Access 2017



Contributions by Dimensions 3 and 4 Access 2017



Index distribution Access 2017

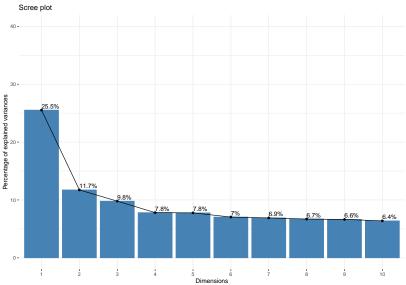


Skills 2017 Composite Index

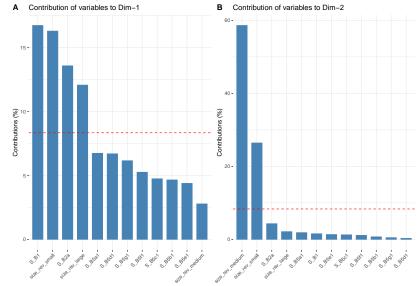
Eigenvalues Skills 2017

| | eigenvalue | variance.percent | cumulative.variance.percent |
|--------|------------|------------------|-----------------------------|
| | | | |
| Dim.1 | 3.0632 | 25.5270 | 25.5270 |
| Dim.2 | 1.4077 | 11.7312 | 37.2582 |
| Dim.3 | 1.1749 | 9.7912 | 47.0494 |
| Dim.4 | 0.9376 | 7.8133 | 54.8627 |
| Dim.5 | 0.9320 | 7.7664 | 62.6291 |
| Dim.6 | 0.8454 | 7.0448 | 69.6738 |
| Dim.7 | 0.8276 | 6.8963 | 76.5701 |
| Dim.8 | 0.8038 | 6.6980 | 83.2681 |
| Dim.9 | 0.7961 | 6.6338 | 89.9019 |
| Dim.10 | 0.7664 | 6.3870 | 96.2889 |
| Dim.11 | 0.4453 | 3.7111 | 100.0000 |
| Dim.12 | 0.0000 | 0.0000 | 100.0000 |

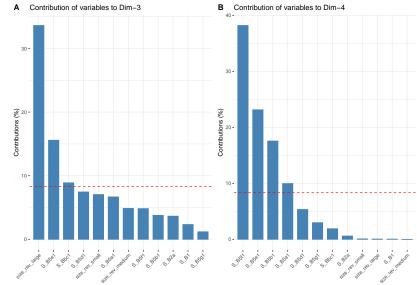
Screeplot Skills 2017



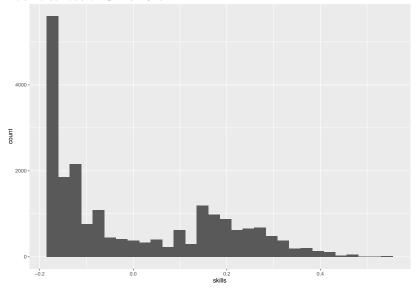
Contributions by Dimensions 1 and 2 Skills 2017



Contributions by Dimensions 3 and 4 Skills 2017



Index distribution Skills 2017

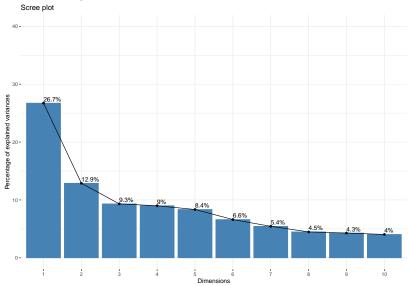


Usage 2017 Composite Index

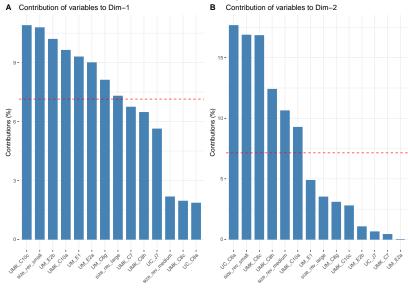
Eigenvalues Usage 2017

| | eigenvalue | variance.percent | cumulative.variance.percent |
|--------|------------|------------------|-----------------------------|
| | | | |
| Dim.1 | 3.7424 | 26.7314 | 26.7314 |
| Dim.2 | 1.8039 | 12.8850 | 39.6164 |
| Dim.3 | 1.3048 | 9.3201 | 48.9365 |
| Dim.4 | 1.2597 | 8.9976 | 57.9341 |
| Dim.5 | 1.1693 | 8.3524 | 66.2865 |
| Dim.6 | 0.9261 | 6.6147 | 72.9012 |
| Dim.7 | 0.7619 | 5.4421 | 78.3433 |
| Dim.8 | 0.6270 | 4.4788 | 82.8221 |
| Dim.9 | 0.5994 | 4.2812 | 87.1033 |
| Dim.10 | 0.5658 | 4.0413 | 91.1446 |
| Dim.11 | 0.5365 | 3.8320 | 94.9766 |
| Dim.12 | 0.3761 | 2.6864 | 97.6630 |
| Dim.13 | 0.3272 | 2.3370 | 100.0000 |
| Dim.14 | 0.0000 | 0.0000 | 100.0000 |

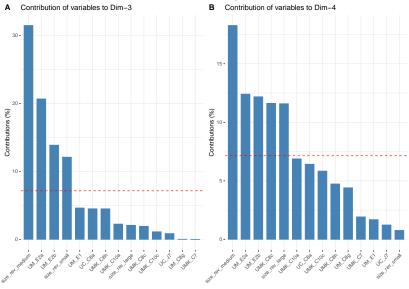
Screeplot Usage 2017



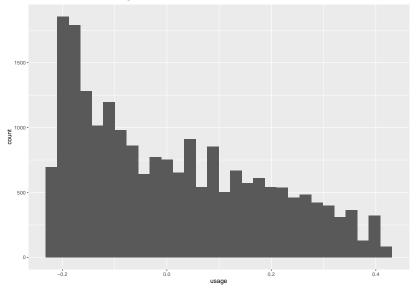
Contributions by Dimensions 1 and 2 Usage 2017



Contributions by Dimensions 3 and 4 Usage 2017



Index distribution Usage 2017



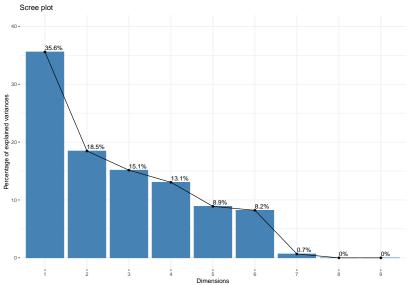
Composite Indices for 2018

Access 2018 Composite Index

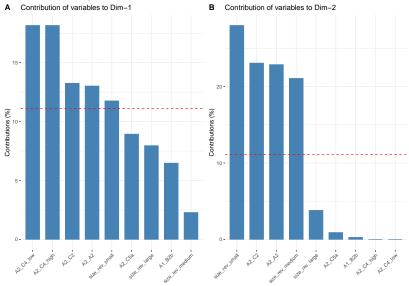
Eigenvalues Access 2018

| | eigenvalue | variance.percent | cumulative.variance.percent |
|-------|------------|------------------|-----------------------------|
| | | | |
| Dim.1 | 3.2015 | 35.5728 | 35.5728 |
| Dim.2 | 1.6612 | 18.4578 | 54.0306 |
| Dim.3 | 1.3632 | 15.1464 | 69.1770 |
| Dim.4 | 1.1746 | 13.0507 | 82.2277 |
| Dim.5 | 0.8004 | 8.8937 | 91.1214 |
| Dim.6 | 0.7391 | 8.2120 | 99.3334 |
| Dim.7 | 0.0600 | 0.6666 | 100.0000 |
| Dim.8 | 0.0000 | 0.0000 | 100.0000 |
| Dim.9 | 0.0000 | 0.0000 | 100.0000 |

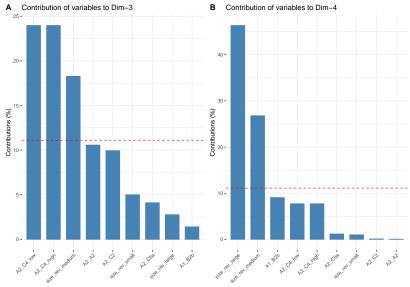
Screeplot Access 2018



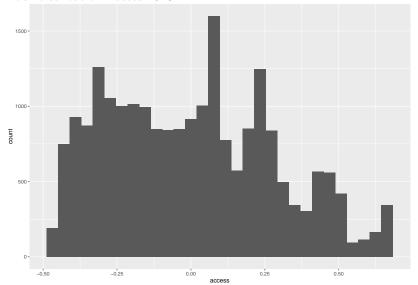
Contributions by Dimensions 1 and 2 Access 2018



Contributions by Dimensions 3 and 4 Access 2018



Index distribution Access 2018

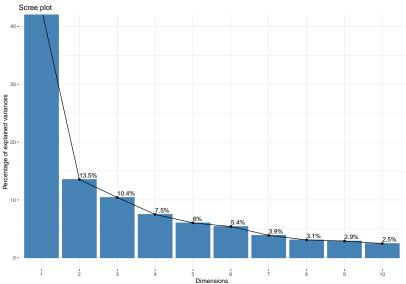


Skills 2018 Composite Index

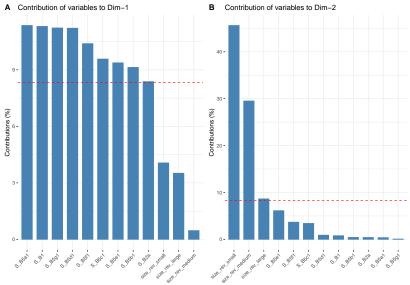
Eigenvalues Skills 2018

| | eigenvalue | variance.percent | cumulative.variance.percent |
|--------|------------|------------------|-----------------------------|
| | | | |
| Dim.1 | 5.1615 | 43.0127 | 43.0127 |
| Dim.2 | 1.6248 | 13.5403 | 56.5530 |
| Dim.3 | 1.2518 | 10.4320 | 66.9850 |
| Dim.4 | 0.8999 | 7.4994 | 74.4844 |
| Dim.5 | 0.7236 | 6.0304 | 80.5148 |
| Dim.6 | 0.6496 | 5.4131 | 85.9279 |
| Dim.7 | 0.4660 | 3.8830 | 89.8109 |
| Dim.8 | 0.3710 | 3.0919 | 92.9028 |
| Dim.9 | 0.3480 | 2.9002 | 95.8030 |
| Dim.10 | 0.2969 | 2.4740 | 98.2770 |
| Dim.11 | 0.2068 | 1.7230 | 100.0000 |
| Dim.12 | 0.0000 | 0.0000 | 100.0000 |

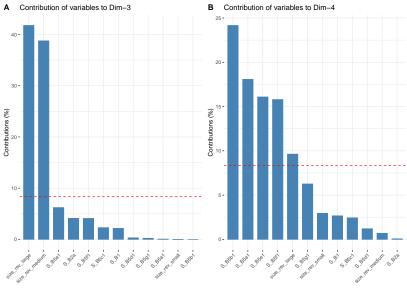
Screeplot Skills 2018



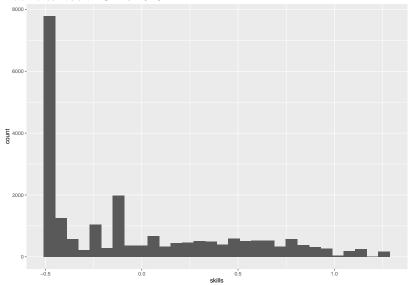
Contributions by Dimensions 1 and 2 Skills 2018



Contributions by Dimensions 3 and 4 Skills 2018



Index distribution Skills 2018

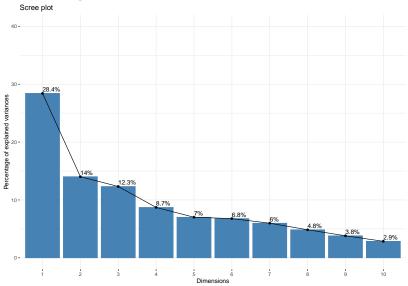


Usage 2018 Composite Index

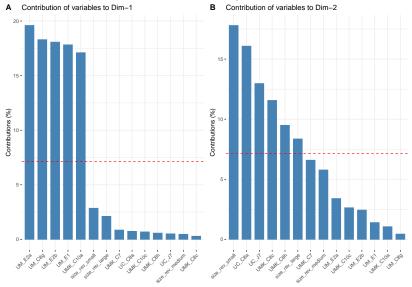
Eigenvalues Usage 2018

| | eigenvalue | variance.percent | cumulative.variance.percent |
|--------|------------|------------------|-----------------------------|
| | | | |
| Dim.1 | 3.9785 | 28.4180 | 28.4180 |
| Dim.2 | 1.9625 | 14.0178 | 42.4358 |
| Dim.3 | 1.7257 | 12.3265 | 54.7624 |
| Dim.4 | 1.2190 | 8.7070 | 63.4694 |
| Dim.5 | 0.9817 | 7.0124 | 70.4817 |
| Dim.6 | 0.9494 | 6.7815 | 77.2633 |
| Dim.7 | 0.8376 | 5.9827 | 83.2460 |
| Dim.8 | 0.6785 | 4.8468 | 88.0928 |
| Dim.9 | 0.5331 | 3.8075 | 91.9003 |
| Dim.10 | 0.3997 | 2.8551 | 94.7554 |
| Dim.11 | 0.3363 | 2.4019 | 97.1573 |
| Dim.12 | 0.2630 | 1.8788 | 99.0361 |
| Dim.13 | 0.1349 | 0.9639 | 100.0000 |
| Dim.14 | 0.0000 | 0.0000 | 100.0000 |

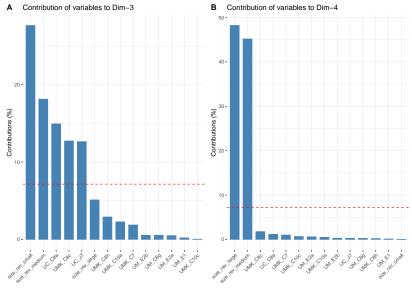
Screeplot Usage 2018



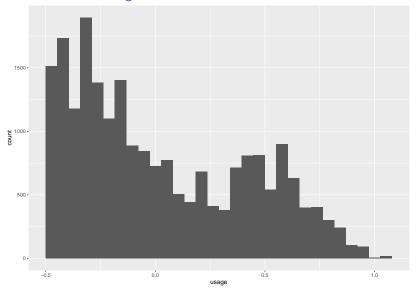
Contributions by Dimensions 1 and 2 Usage 2018



Contributions by Dimensions 3 and 4 Usage 2018



Index distribution Usage 2018



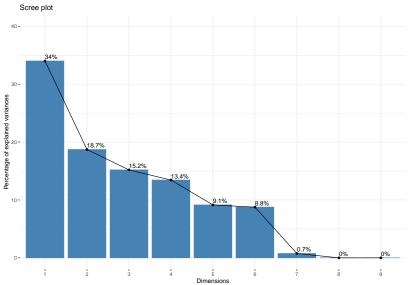


Access 2019 Composite Index

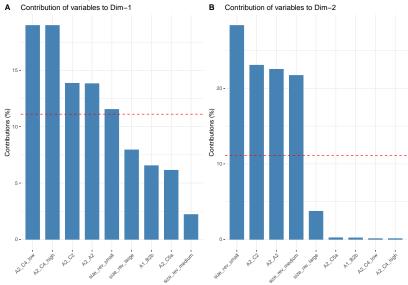
Eigenvalues Access 2019

| | eigenvalue | variance.percent | cumulative.variance.percent |
|-------|------------|------------------|-----------------------------|
| | | | |
| Dim.1 | 3.0609 | 34.0099 | 34.0099 |
| Dim.2 | 1.6845 | 18.7161 | 52.7261 |
| Dim.3 | 1.3675 | 15.1942 | 67.9203 |
| Dim.4 | 1.2096 | 13.4397 | 81.3600 |
| Dim.5 | 0.8224 | 9.1375 | 90.4975 |
| Dim.6 | 0.7882 | 8.7575 | 99.2549 |
| Dim.7 | 0.0671 | 0.7451 | 100.0000 |
| Dim.8 | 0.0000 | 0.0000 | 100.0000 |
| Dim.9 | 0.0000 | 0.0000 | 100.0000 |
| | | | |

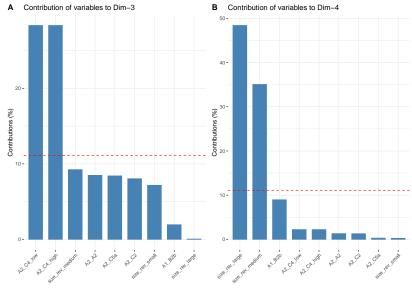
Screeplot Access 2019

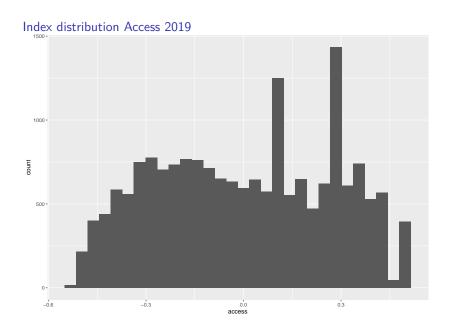


Contributions by Dimensions 1 and 2 Access 2019



Contributions by Dimensions 3 and 4 Access 2019



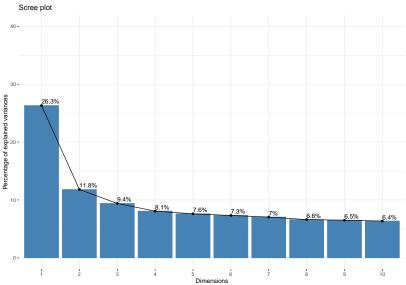


Skills 2019 Composite Index

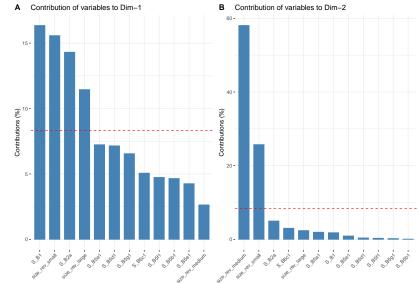
Eigenvalues Skills 2019

| | eigenvalue | variance.percent | cumulative.variance.percent |
|--------|------------|------------------|-----------------------------|
| | | | |
| Dim.1 | 3.1576 | 26.3136 | 26.3136 |
| Dim.2 | 1.4164 | 11.8030 | 38.1166 |
| Dim.3 | 1.1277 | 9.3972 | 47.5138 |
| Dim.4 | 0.9684 | 8.0701 | 55.5840 |
| Dim.5 | 0.9125 | 7.6038 | 63.1878 |
| Dim.6 | 0.8788 | 7.3236 | 70.5114 |
| Dim.7 | 0.8447 | 7.0394 | 77.5508 |
| Dim.8 | 0.7931 | 6.6092 | 84.1600 |
| Dim.9 | 0.7802 | 6.5015 | 90.6615 |
| Dim.10 | 0.7624 | 6.3536 | 97.0150 |
| Dim.11 | 0.3582 | 2.9850 | 100.0000 |
| Dim.12 | 0.0000 | 0.0000 | 100.0000 |

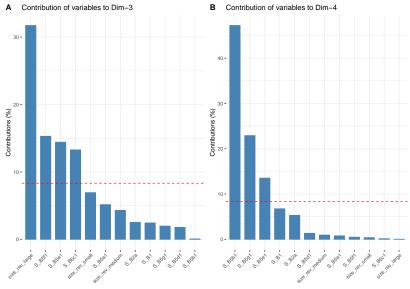
Screeplot Skills 2019



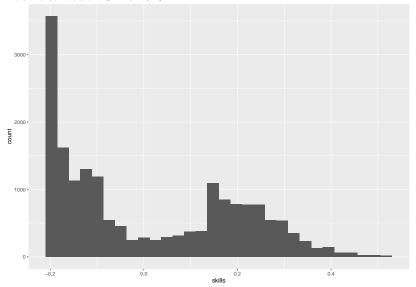
Contributions by Dimensions 1 and 2 Skills 2019



Contributions by Dimensions 3 and 4 Skills 2019



Index distribution Skills 2019

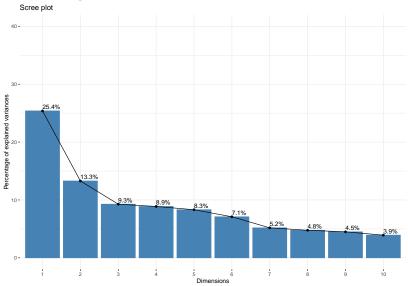


Usage 2019 Composite Index

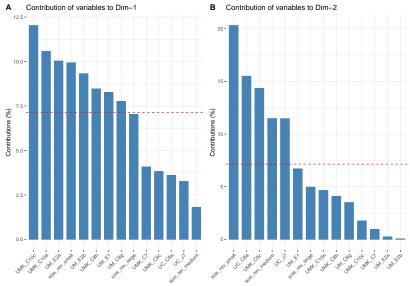
Eigenvalues Usage 2019

| | eigenvalue | variance.percent | cumulative.variance.percent |
|--------|------------|------------------|-----------------------------|
| | | | |
| Dim.1 | 3.5543 | 25.3876 | 25.3876 |
| Dim.2 | 1.8594 | 13.2814 | 38.6690 |
| Dim.3 | 1.2980 | 9.2716 | 47.9406 |
| Dim.4 | 1.2426 | 8.8756 | 56.8162 |
| Dim.5 | 1.1638 | 8.3132 | 65.1295 |
| Dim.6 | 0.9929 | 7.0924 | 72.2219 |
| Dim.7 | 0.7254 | 5.1814 | 77.4033 |
| Dim.8 | 0.6666 | 4.7612 | 82.1645 |
| Dim.9 | 0.6292 | 4.4939 | 86.6585 |
| Dim.10 | 0.5488 | 3.9200 | 90.5785 |
| Dim.11 | 0.5238 | 3.7414 | 94.3199 |
| Dim.12 | 0.4181 | 2.9862 | 97.3061 |
| Dim.13 | 0.3771 | 2.6939 | 100.0000 |
| Dim.14 | 0.0000 | 0.0000 | 100.0000 |

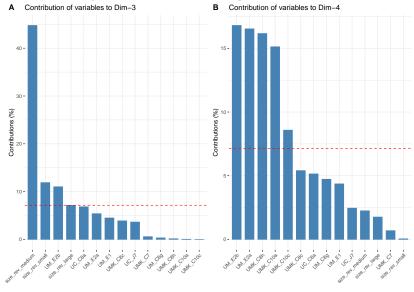
Screeplot Usage 2019



Contributions by Dimensions 1 and 2 Usage 2019



Contributions by Dimensions 3 and 4 Usage 2019



Index distribution Usage 2019

